



TODAREDE

Soluções para Redes

FROM ÁFRICA TO THE WORLD



TODAREDE

Soluções para Redes

Catalog



The TODAREDE is part of a group of Companies Law Angolan, Mozambican and Portuguese, which brings together a frameset with extensive experience in the sector ENERGY, particularly in Africa and that position for more than 20 years at presentation solutions for conventional and renewable networks in the following fields:

- ✓ Electricity
- ✓ Lighting (Private and Public)
- ✓ Solar and Wind
- ✓ Gas and Other Fuels
- ✓ Telecommunications and Information Technology
- ✓ Waters

Our experience in these areas ranging from the supply equipment and materials for the production of sources of energy, transport and distribution, to the needs of the end consumer (institutional, particular, agriculture, trade and industry).

Apart from the above mentioned areas TODAREDE still presents the most varied and complete solutions Equipment and Materials Safety and Security, Individual and Collective, specialized for all sectors where we stand and for which the still affirm as expert trainers.

The TODAREDE beyond their Companies with Brand itself has several partnerships with other companies, whose skills range from project design to delivery of the final product. Partnership relations with suppliers and empathy, customers and employees, allow us special competitive conditions, in addition to a policy opening communication and very unique.

The main partner of TODAREDE to Angola and Mozambique, in exclusivity in the Energy sector, Water and Telecommunications is the TENSION in Portugal, the that allows us to extend all its brands, represented and their know-how to the markets in that are already present and the other in the near future. Challenging times mean opportunities for us continuous improvement and optimization of our effectiveness, in finding solutions that allow us to continue to be a reference in our sector.

In constant search for better service, we believe this catalog will be a useful tool for everyone our customers with the aim to find ideal solution for every situation.

We assume ourselves as an African Group, whose attitude main is to serve the customer well, 24/24 Hours, 365 days !! per year

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FROM ÁFRICA TO THE WORLD!

1 - HIGH, MEDIUM AND LOW VOLTAGE

2 - TELECOMMUNICATIONS

3 - FIXING

4 - SIGNALING AND MARKS

5 - CONNECTION

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13 - CABLE TRANSPORT AND PROTECTION

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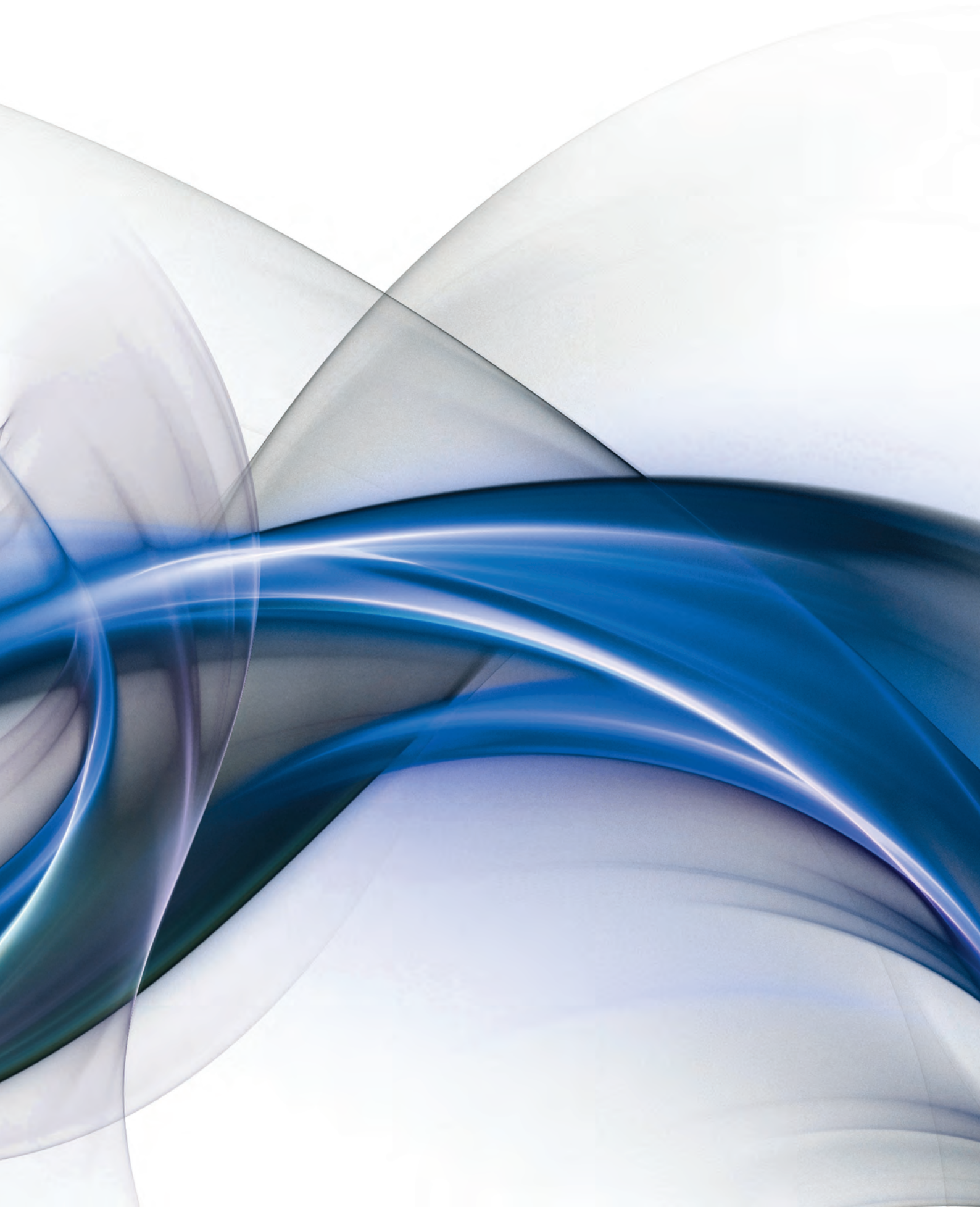
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1. High, Medium and Low Voltage



• HEAT SHRINK HELMETS



Features

- Application in L.V. cables, M. T., A. T. and telecommunications
- Sealing and Insulating various stages when applied

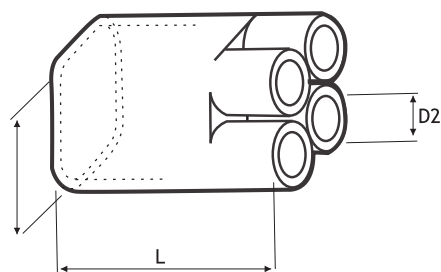
Ø Minimum inner (mm)		Average thickness after shrinkage (mm)	Internal length (mm)	For cables with Ø of up (mm)	Reference
Before refraction	After refraction				
10,0	4,0	2,0	34	4 - 9	102L011-37/42
20,0	7,5	2,3	55	7,5 - 18	102L022-37/42
35,0	15,0	3,0	90	15 - 32	102L033-37/42
55,0	25,0	3,3	143	25 - 50	102L044-37/42
73,0	31,0	3,3	150	45 - 65	102L048-37/42
100,0	45,0	4,0	162	45 - 90	102L055-37/42

• MOLDED PARTS



Features

- Heat shrink ends for low voltage of 2, 3 and 4 outputs
- Other dimensions on request

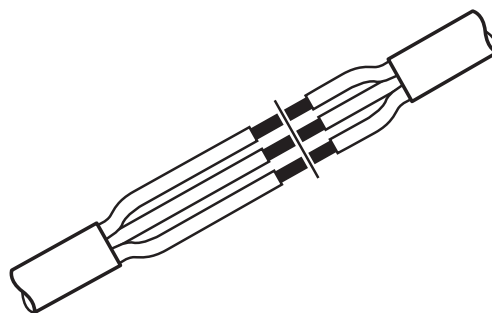


Outputs	Sections (mm ²)		H (mm)		J (mm)		P (mm) After refraction	Reference
			a min	b máx	a min	b máx		
2	10	50	28,0	9,0	12,0	4,1	90,0	302K333
	10	50	35,0	15,0	13,0	4,2	96,0	502K033
4	50	185	60,0	25,0	25,0	9,0	217,0	502K016
	185	300	90,0	31,0	33,0	13,5	223,0	502K026

• Junction boxes

Features

- Heat shrink system
- In line junction
- Application consutores cables with copper or aluminum with plastic insulation up to 1kV
- Total guarantee electrical insulation and airtightness



Type	N.º Cond.	Section (mm²)	Reference
JT-E (CU/CU)	2	1,5 4	JT-E 2x1,5-4
		4 16	JT-E 2x4-16
	3	1,5 4	JT-E 3x1,5-4
		4 16	JT-E 3x4-16
	4	1,5 4	JT-E 4x1,5-4
		4 16	JT-E 4x4-16
	2	1,5 10	JT-C 2x1,5-10
		10 50	JT-C 2x10-50
JT-C (CU/CU)	2	25 95	JT-C 2x25-95
		70 240	JT-C 2x70-240
	3	1,5 10	JT-C 3x1,5-10
		10 50	JT-C 3x10-50
		25 95	JT-C 3x25-95
		70 240	JT-C 3x70-240
	4	1,5 10	JT-C 4x1,5-10
		10 50	JT-C 4x10-50
		25 95	JT-C 4x25-95
		70 240	JT-C 4x70-240

Type	N.º Cond.	Section (mm²)	Reference
JT-AC (AL/AL/CU)	2	16	JT-AC 2x16
		25 - 35	JT-AC 2x25-35
		25 - 70	JT-AC 2x25-70
		95 - 240	JT-AC 2x95-240
	3	240 - 300	JT-AC 2x240-300
		16	JT-AC 3x16
		25 - 35	JT-AC 3x25-35
		25 - 70	JT-AC 3x25-70
		95 - 240	JT-AC 3x95-240
	4	240 - 300	JT-AC 3x240-300
		16	JT-AC 4x16
		25 - 35	JT-AC 4x25-35
		25 - 70	JT-AC 4x25-70
	4	95 - 240	JT-AC 4x95-240
		240 - 300	JT-AC 4x240-300

• Heat shrink tubes - MWTM

Features

- Medium wall heat-shrink tubes made of crosslinked polyolefin
- Tubes supplied with the standard length of 1500mm
- Garranty insulation and airtightness

Range of application for Ø of cable	Dimensions (mm)				Reference
	Ø D	Ø d	S1	S2	
3,5 - 9,0	10,0	3,0	0,4	1,0	MWTM 10/3
5,5 - 14,0	16,0	5,0	0,5	1,5	MWTM 16/5
8,5 - 22,0	25,0	8,0	0,7	2,0	MWTM 25/8
13,0 - 32,0	35,0	12,0	0,7	2,0	MWTM 35/12
17,5 - 45,0	50,0	16,0	0,7	2,0	MWTM 50/16
21,0 - 55,0	63,0	19,0	0,8	2,5	MWTM 63/19
24,0 - 68,0	75,0	22,0	0,9	3,0	MWTM 75/22
28,0 - 77,0	85,0	25,0	0,9	3,0	MWTM 85/25
32,0 - 86,0	95,0	29,0	1,0	3,3	MWTM 95/29
37,0 - 104,0	115,0	34,0	1,0	3,3	MWTM 115/34
46,0 - 126,0	140,0	42,0	1,0	3,3	MWTM 140/42
55,0 - 144,0	160,0	50,0	1,0	3,3	MWTM 160/50
66,0 - 162,0	180,0	60,0	1,0	3,5	MWTM 180/60



• HEAT SHRINK SLEEVES - CGPT

1.
Low Voltage

Features

Heat shrink thin sleeves wall without adhesive, strong and flexible, with good resistance to solvents and fluids in general, and high
- Temperature dielectric rigidity of labor
between -55° C and + 135°C
- it's range of applications is very broad, including electrical insulating, reduction of effort, outer sheaths cable, identification and coding coresem wires, cables, pipes and electrical and electronic components



Quant. standard for roll (mt)	Dimensions (mm)			Reference Raychem
	D	d	W	
300	1,2	0,6	0,45	CGPT 1,2/0,6
300	1,6	0,8	0,45	CGPT 1,6/0,8
150	2,4	1,2	0,50	CGPT 2,4/1,2
150	3,2	1,6	0,50	CGPT 3,2/1,6
150	4,8	2,4	0,50	CGPT 4,8/2,4
75	6,4	3,2	0,65	CGPT 6,4/3,2
75	9,5	4,8	0,65	CGPT 9,5/4,8
75	12,7	6,4	0,65	CGPT 12,7/6,4
75	19,0	9,5	0,75	CGPT 19/9,5
30	25,4	12,7	0,90	CGPT 25,4/12,7
30	38,0	19,0	1,00	CGPT 38/19
30	51,0	25,4	1,15	CGPT 51/25,4
15	76,0	38,0	1,25	CGPT 76/38
15	102,0	51,0	1,40	CGTP 102/51

• HEAT SHRINK TUBES - ATUM



Features

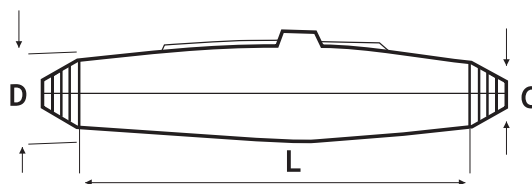
Heat shrink thin tubes, flexible wall entire sticker to ensure tightness

Thickness after shrinkage (mm)	Dimentions(mm)		Reference Raychem
	Mín. initial	Máx. contracted	
1,00	3	1	ATUM 3/1
1,00	6	2	ATUM 6/2
1,00	9	3	ATUM 9/3
1,75	12	4	ATUM 12/4
2,50	24	8	ATUM 24/8
2,50	40	13	ATUM 40/13

● RESIN BOXES - IN LINE JOINTS

Features

- Application of aluminum or copper cables
- Kit consists of mold and resin / hardener required for implementation

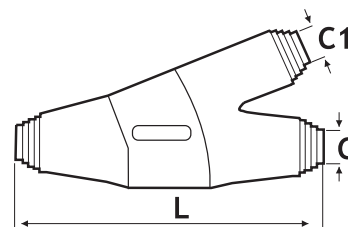


Dimensions (mm)			Sections (mm ²)	Reference
L	D	C		
160	30	10 - 21	4x1,5 a 4x4	S4 (MZ00)
210	38	10 - 30	4x4 a 4x10	S10 (M11)
310	52	17 - 38	4x10 a 4x25	S25 (M12)
370	66	20 - 36	4x25 a 4x70	S50 (M13)
600	79	30 - 49	4x50 a 4x150	S120 (M14/M15)
780	125	48 - 79	4x120 a 4x240	S240 (M16)
1240	157	55 - 103	4x240 a 4x400	S400 (M17)

● RESIN BOXES - DERIVATION JOINTS

Features

- Application of aluminum or copper cables
- Kit consists of mold and resin / hardener required for implementation
- Polyurethane Resin



Dimensions (mm)			Cable 0,6/1kv - N° Condu. X section(mm ²)		Reference
L	D	C	Main	Derivated	
190	5 - 21	5 - 21	4x1,5 a 4x4	4x1,5 a 4x4	SB4 (Y0)
220	10 - 30	10 - 30	4x4 a 4x16	4x1,5 a 4x16	SB10 (Y1)
270	18 - 38	18 - 38	4x10 a 4x35	4x1,5 a 4x35	SB25 (Y2)
400	30 - 50	20 - 40	4x50 a 4x150	4x1,5 a 4x70	SB120 (Y4/Y5)
500	45 - 60	20 - 40	4x12 a 4x30	4x1,5 a 4x70	SB240 (Y6)

● RESIN PACKAGES

Features

- Polyurethane Resin.
- Application in power cable, telephone and signal.
- High dialectical characteristics

Volume (ml)	Weight (gr)	Reference
75	107	RP0 (EG00)
175	250	RP1 (EG1/2)
300	429	RP2 (EG1)
550	787	RP3 (EG2)
900	1287	RP4 (EG4)
2000	2860	RP5 (EG7)
3000	4290	RP6 (EGD3600)



• TERMINAL BOXES



Features

- Heat shrink system
- For dry unipolar cables 36kv 7,2kv the unarmored

1.
Medium Voltage

	Admissible sections mm ²	Reference Interior Application	Reference Exterior Application
20 (24)	16 - 50	EPKT 7 A 1XI	EPKT 7 A 1XO
	70 - 120	EPKT 7B 1XI	EPKT 7B 1XO
	150 - 240	EPKT 7C 1XI	EPKT 7C 1XO
	300 - 500	EPKT 7D 1XI	EPKT 7D 1XO
	630 - 800	EPKT 7E 1XI	EPKT 7E 1XO
	16 - 25	EPKT 17 A 1XI	EPKT 17 A 1XO
	35 - 70	EPKT 17B 1XI	EPKT 17B 1XO
	95 - 240	EPKT 17C 1XI	EPKT 17C 1XO
	300 - 400	EPKT 17D 1XI	EPKT 17D 1XO
	500 - 800	EPKT 17E 1XI	EPKT 17E 1XO
30 (36)	25 - 50	EPKT 24B 1XI	EPKT 24B 1XO
	70 - 185	EPKT 24C 1XI	EPKT 24C 1XO
	240 - 300	EPKT 24D 1XI	EPKT 24D 1XO
	400 - 630	EPKT 24E 1XI	EPKT 24E 1XO
30 (36)	800 - 1000	EPKT 24F 1XI	EPKT 24F 1XO
	50 - 95	EPKT 36C 1XI	EPKT 36C 1XO
	120 - 185	EPKT 36D 1XI	EPKT 36D 1XO
	240 - 500	EPKT 36E 1XI	EPKT 36E 1XO
	630 - 800	EPKT 36F 1XI	EPKT 36F 1XO

• JUNCTION BOXES - ECIC VERSION



Features

- Heat shrink system
- For dry unipolar cables 7,2kv to 36kv unarmored

Voltage kv	Admissible sections mm ²	Reference
10 (12)	35 - 70	SXSU 4111
	95 - 150	SXSU 4121
	185 - 300	SXSU 4131
	400 - 630	SXSU 4141
15 (17,5)	35 - 50	SXSU 4111
	70 - 120	SXSU 4121
	150 - 300	SXSU 4131
	400 - 500	SXSU 4141
20 (24)	25 - 95	SXSU 5121
	120 - 240	SXSU 5131
	300 - 500	SXSU 5141
	50 - 70	SXSU 6121
30 (36)	95 - 150	SXSU 6131
	185 - 400	SXSU 6141
	500 - 630	SXSU 6151

• JUNCTION BOXES - ECIT/ECIH VERSION

Features

- Heat shrink system
- To Unipolar 12kve 36kv cables without armor

Voltage kv	Admissible sections mm ²	Reference
12,0	35 - 70	SXSU 3111
	95 - 185	SXSU 3121
	185 - 300	SXSU 3131
	400 - 500	SXSU 3141
17,5	25	SXSU 3111
	35 - 95	SXSU 3121
	120 - 240	SXSU 3131
	300	SXSU 3141
36,0	50 - 150	SXSU 6122
	185 - 300	SXSU 6132



• PRE-MOLDED PLUGS "SAFE TOUCH"

Features

- Application: Used in connection monopolar cables dry insulation to 7.2 36kv medium voltage equipment ("RM6" and transformers, without the need for terminal box
- Packaging: Set of 3 units including all accessories



• 250 AMP (OUTPUT TRANSFORMER) TO 24KV

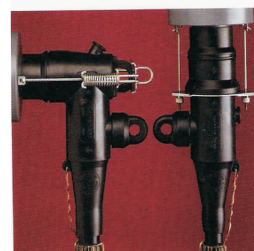
Ø allowable by isolation (mm)	Sections (mm) aluminum or copper conductors					
	25	35	50	70	95	120
16,3 - 20,8	RSES 5212	RSES 5213	RSES 5215	RSES 5217	RSES 5219	-
19,6 - 24,1	-	RSES5223	RSES 5225	RSES 5227	RSES 5229	RSES 5224
23,1 - 28,7	-	-	RSES 5235	RSES 5237	RSES 5239	RSES 5234
27,9 - 33,5	-	-	-	-	RSES 5249	RSES 5244

• 400 AMP (RING) UP TO 36KV (PIN PLUG)

Voltage kv	Reference
6/10	PMA 2-xy* 12/400
8,7/15	PMA 2-xy* 24/400
18/30	PMA 4-xy* 36/400

X- cable sector
y- nature of the cable (AL-aluminum, copper- CU)
ex: For aluminum cable 18/30 120 mm²

PMA4- 120 AL 36/400



• 630 AMP (RING) UP TO 36KV (THREADED PIN)

Voltage kv	Reference
6/10	PMA 3-xy* 12/630
8,7/15	PMA 3-xy* 24/630
18/30	PMA 5-xy* 36/630

X- cable sector
y- nature of the cable (AL-aluminum, copper- CU)
ex: For aluminum cable 18/30 120 mm²

PMA5- 120 AL 36/630



• HEAT SHRINK TUBES FOR INSULATION OF BUSBARS



Features

- Application In straight bars or curves.
- Allows reducing the distance between bus
- BPTM up to 36kv 24kV
- BBTi up to 36kv

Reference

BPTM 15/6-A/U
BPTM 30/12-A/U
BPTM 50/20-A/U
BPTM 75/30-A/U
BPTM 100/40-A/U
BPTM 120/50-A/U
BPTM 175/70-A/U

Reference

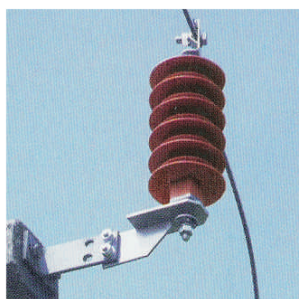
BBIT 25/10-A/U
BBIT 40/16-A/U
BBIT 65/25-A/U
BBIT 100/40-A/U
BBIT 150/60-A/U

• AVERAGE TENSION POLE BOXES (6 TO 36KV)

Features

- Junction boxes for cable and dry paper.
- Terminal boxes dry cable and paper
- Transition boxes between monopolar or tripolar cable dry and impregnated paper cables(oil) monopolar or tripolar cable to migrant oil (MI) or pop-migrant (MIND)

• SURGE DESCHARGERS



Features

- Descarregadores Voltages of 12kv to 36kv class
- 5ka and 10ka including Fault indicator, support for iso-sequins attachment, stems and extra-flexible cable 35mm² earthing

- Approved by EDP-DTA

Voltage Kv	Class Ka	Reference
12,0	5	NDA - 10
	10	HDA - 10
17,5	5	NDA - 16
	10	HDA - 16
24,0	5	NDA - 20
	10	HDA - 20
36,0	5	NDA - 30
	10	HDA - 30

• TERMINAL BOXES (72KV)

Features

To dry unipolar cables 36/60 (72,5) kv
tape shielded, cooper or lead sheat

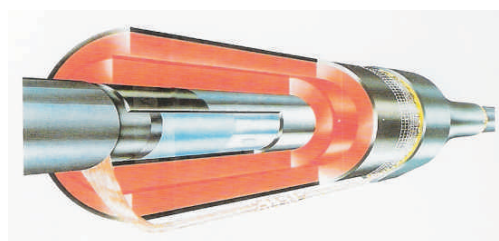


Installation	Lenght of boxes (mm)	Type of shielding	Ø Admissible on insolation (mm)	Reference
Inside	1050	copper thread	38 a 52	IHVT 7211
			50 a 65	IHVT 7212
			63 a 77	IHVT 7213
		copper tape or lead sheath	38 a 52	IHVT 7221
			50 a 65	IHVT 7222
			63 a 77	IHVT 7223
Outside	1300	Copper thread	38 a 52	OHVT 7211
			50 a 65	OHVT 7212
			63 a 77	OHVT 7213
		Copper tape or lead sheath	38 a 52	OHVT 7221
			50 a 65	OHVT 7222
			63 a 77	OHVT 7223

• JUNCTION BOXES

Features

To dry unipolar cables 36/60 (72,5) kv
tape shielded, cooper or lead sheath



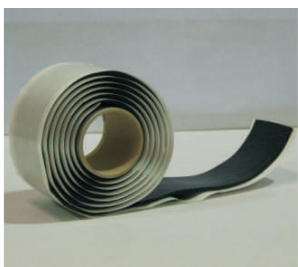
Type of sh	Length of marriage (mm)	Ø Permissible on the outer sheath (mm)	Ø Admissible on isolation (mm)	Reference
copper thread	800	65	38 a 52	EHVS 7211
		77	50 a 65	EHVS 7212
		100	63 a 77	EHVS 7213
copper thread or lead sheath	880	65	38 a 52	EHVS 7221
		77	50 a 65	EHVS 7222
	960	100	63 a 77	EHVS 7223

● SELF-VULCANIZING TAPE



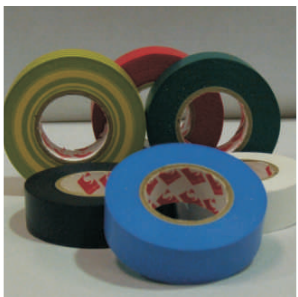
Dimensions	Reference
19 mm x 0,50mm x 9,15mt	PIB - 19
25mm x 0,50mm x 9,15mt	PIB - 25
50mm x 0,50mm x 9,15mt	PIB - 50

● VIRGIN RUBBER TAPE



Dimensions	Reference
38mm x 3,20mm x 1,5mt	Buterton 30

● INSOLATING TAPE



Dimensions	Color	Reference
19 mm x 0,13mm x 20mt	Green	2702 - VD
	Yellow	2702 - AMAR
	Red	2702 - VERM
	Blue	2702 - AZUL
	White	2702 - BR
	Brown	2702 - CAST
	Black	2702 - PT
	Green/yellow	2702 - V/A

● INSOLATING TAPE



Features

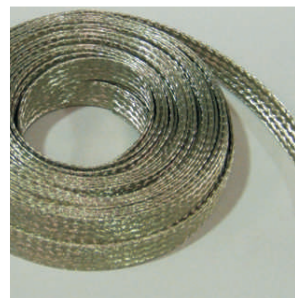
- Metal mesh for use in reconstituting the shielding in medium voltage
- Ensure electrical continuity

Dimensions	Reference
50mm x 5000mm	CU - 50 x 5000

● COPPER BRAIDS

Features

- Tin copper braid 6, 10, 16, 25, 35, 50, 70mm² in rolls of 25 meters

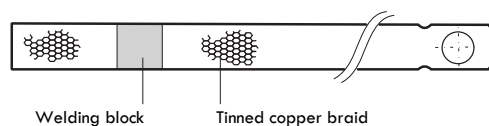


Dimensions (mm) length x thickness x width	Section (mm ²)	Reference
6 x 15,0 x 25000	6	TCE 6
10 x 1,5 x 25000	10	TCE 10
16 x 2,0 x 25000	16	TCE 16
25 x 2,0 x 25000	25	TCE 25
25 x 3,0 x 25000	35	TCE 35
30 x 3,5 x 25000	50	TCE 50
30 x 4,0 x 25000	70	TCE 70

Features

- Braid of copper 16mm² tin-planted, with soldature block and eyelet at one end for application in ground and shielding connection of the conductors electrical cables LV and MV.

Dimensions (mm) length x thickness x width	Section (mm ²)	Reference
15 x 2 x 500	16	TCA16500
15 x 2 x 700	16	TCA16700



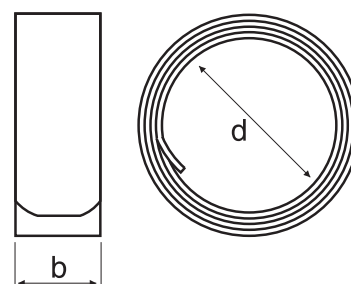
● SPRING CONSTANT PRESSURE

Features

- Spiral spring to allow contact between the copper braid the tape and metal mesh in implementing of terminal boxes and Medium voltage joint.
- Easy application avoiding the use of welds or afileamentos
- Material: Stainless steel DIN 1, 4310



Application (mm)		Dimensions (mm)		Lenght	Reference
Min.	Máx	b	d		
12	20	13	10	280	EPPA 034 - A
17	28	13	14	400	EPPA 034 - B
25	40	13	20	570	EPPA 034 - C
36	60	13	30	850	EPPA 034 - D
17	29	25	14	570	EPPA 034 - E
30	39	25	22	700	EPPA 034 - F
40	60	25	30	950	EPPA 034 - G
50	75	30	38	1100	EPPA 034 - H
50	75	30	38	1350	EPPA 034 - I
12	20	13	10	400	EPPA 034 - K
57	85	30	45	1350	EPPA 034 - L
33	45	25	25	850	EPPA 034 - M
25	34	25	19	650	EPPA 034 - N
85	110	30	70	1500	EPPA 034 - O



● HEAT SHRINK XAGA 500/500



Features

- Heat shrinkable joints for telephone cables consist of an "enhanced" liner / canister connector continuity, silica gel, clip, cleaning wipe and sheet lixa
- Possibility of using up to three cables in the open joint cadaextremo shrink sleeve

Capacity (no. of pairs)			Raychem Code	Reference PT
Ø Conduit: 0,4mm	0,6mm	0,9mm		
10	10			
20	20	10	XAGA 500-43/8-150	KIT 1 A
30				
50	35	20	XAGA 500-75/1-240	KIT 2 A
	50	30		
100	100	50	XAGA 500-100/25-240	KIT 3 A
150				
200	150			
300	200	100	XAGA 500-100/25-260	KIT 4 A
400				
600	300		XAGA 500-125/30-265	KIT 5 A
800	400			
1000	600			
1200	800		XAGA 550-122/30-650	KIT 6 A
1600	1000			
1800				
2000			XAGA 550-200/50-650	KIT 7 A
2400				

● OPEN SLEEVES - CWST



Features

- Heat shrink sleeve reinforced with fiberglass and aluminum foil application in repairing outer sheaths cabosde energy and telecomunicação
- Product Technology "Rayfort"

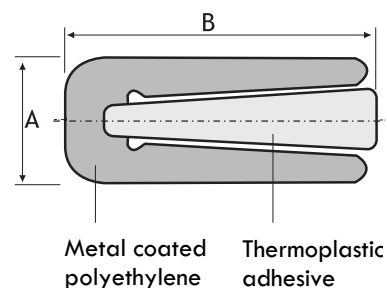
Range of application Ø Cable (mm)		Reference
Maximum	Minimum	
43	8	CWST 43/8 - 1500
75	15	CWST 75/15 - 1500
100	25	CWST 100/25 - 1500
125	30	CWST 125/30 - 1500
164	42	CWST 164/42 - 1500

• CLIP METALLIC WITH ADHESIVE

Features

Accessory to complement splicing junction with heat-shrink sleeves, in telephone cables 10-1200 pairs

Dimensions (mm)		Reference
A	B	
28	64	BOCL 20-1636
60	110	BOCL 20-1060

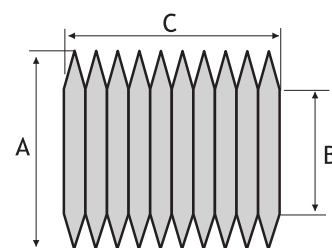


• LINER CARD

Features

- Material: laminated card not higroscópico
- Application: Protection of joints made in telephone cables

Dimensions (mm)			Reference
A	B	C	
200	140	216	E 3022-0201
240	150	384	E 3028-0241
371	280	384	E 3038-0371
490	400	384	E 3038-0491



• CREPE PAPER

Features

- Papel crepado sem impressão
- Acessório complementar à execução de juntas com mangas termoretrácteis em cabos de polirríteno com a função de

Dimensions (mm)		Reference
Length	Width	
60	15000	6123

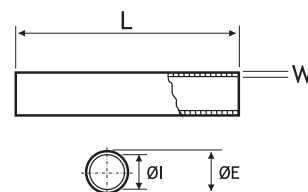


• Paper sleeves

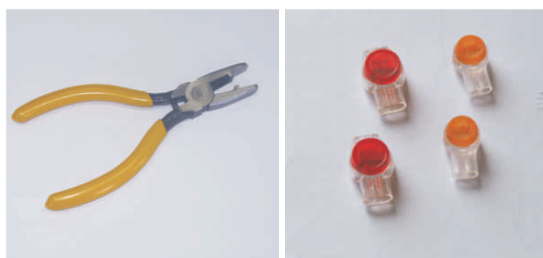
Features

- Mangas card / paper for the insulation of connections in twists, telephone cables, insulated

Dimensions (mm)					Reference
L	Ø I	Ø E	W	Qt. Emb	
50	4,3	5,2	0,9	1000	C4
50	3,0	3,7	0,7	1000	C5
50	3,7	4,3	0,6	1000	C6
50	2,5	3,1	0,6	1000	C11



• CONNECTORS - PLIERS



Features

- Connectors for telephone cables with plastic insulation

Number of allowable conductor	Ø admissible (mm)	Reference
2	0,4-0,9	UY2
3	0,4-0,9	UR2
Other query types		
Tool p / crimping of connectors		E9Y

• JOINTS AND ACESSORIES FOR FIBER OPTIC



Features

- Joint to fiber FOSC 400 (mechanical lock)
- To increase the capacity of the joint should be added to the paragraph of trays required
- Maximum capacity of 144 F.O.

Discription	Reference
Joint F.O (mechanical lock) 12 F.O	FOSC 400 B
Tray to accomodate 12 mergers	FOSC T/K-B-12
Tray to accomodate 24 margers	FOSC T/K B-24
Gasket kit support pole or wall	FOSC M.K.
Heat shrink clasp P/FOSC 100 B/H	FOSC DSK
Kit to add a cable port circular	FOSC 1-NT
Kit for adding two cables oval port	FOSC 2-NT

• PROTECTION SLEEVES OF FUSIONS



Features

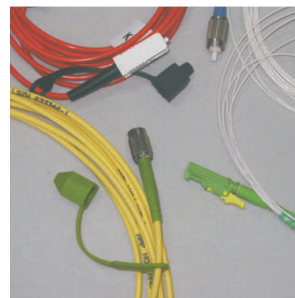
- SMOUV - SMOUV
- Heat shrink sleeve for protection of mergers fiber optic
- Available in 2 sizes
- The application / retraction of SMOUV should be done in oven / machine appropriate
- 1 - Adhesive 2 - Rod aço
- 2 - Rod steel 3 - Heat shrink tube dimensions in mm
- 3 - Heat shrink tube in mm dimensions

Descrição	Referência
Heat shrink sleeve for use in trays of 12 F.O	SMOUV 1120-01
Heat shrink sleeve for use in trays	SMOUV 1120-02

• PIGTAILS AND PATCHCORDS

Features

- Can include various types of connectors: E2000 SC APC ..
- Length request



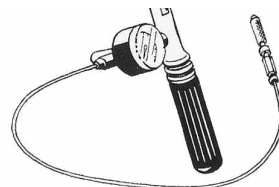
• SHUTTERS OF CONDUCT - TDUX

Features

- Shuttters ducts by means of air inflation, paracabos energy, telecommunications and subcondutas
- Can be used in ovalizadas behaviors and their instalation could be done even with the existence of water
- Can be used on cables already installed
- The cartridges contain 16 gr of CO2 and can breathe in mínimo3 units TDUX-100



For conduct. with Ø		Ø Admissible from cables (mm)		Reference
from	to	Minimum	Maximum	
32,5	45	0	32	TDUX 45
45	60	0	45	TDUX 60
55	75	0	56	TDUX 75
60	90	0	83	TDUX 90
75	100	0	90	TDUX 100
110	125	0	100	TDUX 125
Tools lobed TDUX				TDUX IT 16
CO2 refills tool for inflating				E7512 - 0160



• STIKERS FOR IDENTIFICATION

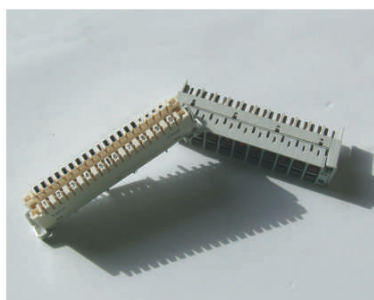
Features

- Labels on vinyl stickers, individual A to Z and 0 to 9, suitable for indoor and outdoor installation symbols on black
- yellow background color in operation temperatures: from 10c to + 60.°C



Dimensions (mm)		Reference
Lenght	Width	
25,5	39	5290-..

● LINK RULES



Features

- Use in indoor networks
- Possibility to fit a protection
- Support Stainless with 22mm or 50mm
- Approved by PT

Description	Reference
Module 10 pairs with cutting and testing	DDE
Module 10 pairs simple without cutting and testing	DDS
Magazine bipolar protection module for 10 pairs	6089.2.024-01
Bipolar discharger 5KA/5A-203V (20 uni. / Module)	6717.3.343-03

● INSTALLATION TOOLS



Discription	Reference
Crimping tool for Krone type blocks / Tyco	64172.05-01
Crimping tool for 1000/2000/5000 (vm)	C39407-A12
Crimping tool for MDF71	C39407-A9
Crimping tool for Pouyet blocks	C23403A
Crimping tool for 110 blocks	HD-601AB
Crimping tool for Reichl - Massari	Massari

● TEST CORDS

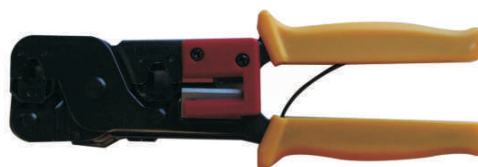
Features

- Cords cutting and testing
- Other cords on request



Description	Reference
Cord bipolar test male banana DDS (2mts)	USC-TC-M-2-P/B
Four-pole test cord banana male (2mts)	USC-TC-T-2-P/B

● CRIMPING PLIERS MICROFICHE TYPE RJ



Description	Reference
Plug crimping tool RJ11-RJ12-RJ45	RJ86
Plug crimping tool RJ9-RJ11	RJ46
Plug crimping tool RJ9-RJ11-RJ12-RJ45	ASR486

● Metal rack

Features

- Racking Steel
- steel Depth and 12, 22, 30 and 50mm



Height	Pairs	
22	XX	122.XX
30	XX	130.XX
50	XX	250.XX

3. Fixing



● SERRATED CLAMPS



Features

- The Serrated clamps are available in various types and sizes in natural colors (suffix - 9) or black (suffix - w) suitable for outdoor installation
- Technical features: good weather resistance, heat aging and ultraviolet rays.

Excellent resistance to all hydrocarbon oils, halogenated organic substances and compounds

- These clamps are not attacked by termites, microorganisms, bacteria or fungi

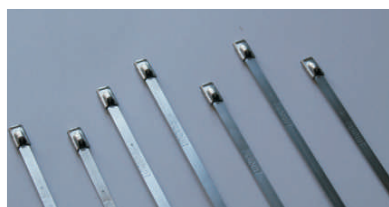
- SPECIFICATIONS:

- Material: Nylon 6,6 UV Resistance (suffix w)
- Resistance to flame propagation (suffix hs)
- Temperature range: -0 to 85 ° C
- Specifications: MIL -S- 23190-E
- Approvals: QPL ARQUIC

Fixing 3.

Dimensions (mm)		Ø Admissible (mm)	Load brack (Kg)	Reference
Lenght	Width			
98	2,5	1,0 - 21	8,2	L-2,5x98
160	2,6	1,0 - 40	8,2	L-2,6x160
200	2,6	1,0 - 52	8,2	L-2,6x200
140	3,6	2,0 - 35	13,6	L-3,6x140
200	3,6	2,0 - 50	13,6	L-3,6x200
290	3,6	2,0 - 80	13,6	L-3,6x290
200	4,8	3,0 - 50	22,7	L-4,8x200
290	4,8	3,5 - 79	22,7	L-4,8x290
360	4,8	3,5 - 103	22,7	L-4,8x360
180	7,8	3,5 - 45	54,4	L-7,8x180
300	7,8	4,0 - 80	54,4	L-7,8x300
365	7,8	8,0 - 100	54,4	L-7,8x365
540	7,8	35,0 - 158	54,4	L-7,8x540
750	7,8	35,0 - 200	54,4	L-7,8x750
780	9,0	32,0 - 233	71,4	L-9x780
1000	12,5	50,0 - 302	110,0	L- 12,5x1000

● CLAMPS STAINLESS STEEL - 304



Features

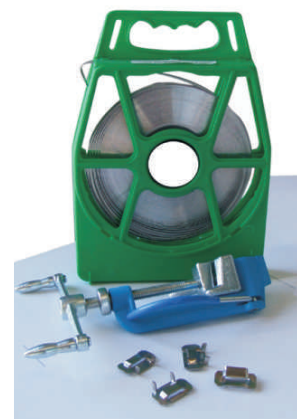
- Clamps stainless steel with high resistance to chemicals, radiation, weathering and high temperatures
- Special closing system for auto-lock allowing an extremely quick and easy installation

Dimensions (mm)		Ø Admissible (mm)	Load brack (N)	Reference
Lenght	Width			
201	4,6	50	667	KE 1128
259	4,6	69	667	KE 1138
360	4,6	102	667	KE 1148
520	4,6	152	667	KE 1158
201	7,9	50	1112	KE 1328
259	7,9	69	1112	KE 1338
360	7,9	102	1112	KE 1348
520	7,9	152	1112	KE 1358
Tool for application of clamps				K 9229

● RIBBONS OF STAINLESS STEEL - BUCKLES - TOOL

Features

- Tape capable of supporting large voltages due to its large clamping tensile strength
- Can be applied to any desired length



Designation Type	Dimensions (mm)					Quantity Packages	Reference
	Width(Pol.)	Width	Esp.	Lenght.(mt)			
Fita de aço inox	201	1/4	6,35	0,70	30,5	-	C202
	304	3/8	9,53	0,70	30,5	-	C923
	304	1/2	12,70	0,70	30,5	-	C924
	304	5/8	15,88	0,70	30,5	-	C925
Fivela de aço Inox	304	3/4	19,05	0,70	30,5	-	C926
	201	1/4	6,35			100	C252
	304	3/8	9,53			100	C953
	304	1/2	12,70			100	C954
	304	5/8	15,88			100	C925
	304	3/4	19,05			100	C926
Tool for installation of stainless steel strip						10	C001
Tool for installation of stainless steel strip isolated							C075

● RIBBONS OF STAINLESS STEEL ISOLATED

● TAPES

Features

- Tapes stainless steel coated PVC
- Recommended for corrosive areas

Width inch.	mm	Lenght (mt)	Weight (kg)	Reference
1/4	6,35	25	0,9	AE 432
3/8	9,53	25	1,2	AE 433
1/2	12,70	25	1,6	AE 434
5/8	15,88	25	2,0	AE 435
3/4	19,05	25	2,4	AE 436

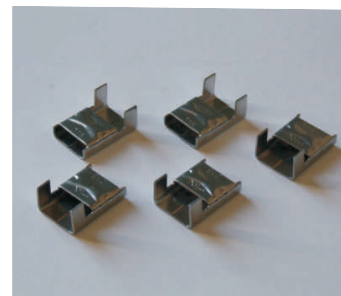


● BUCKLES

Features

- Fasteners for stainless steel strip

Width poleg.	Mm	Weight (kg)	Reference
1/4	6,35	0,1	AE 452
3/8	9,53	0,3	AE 453
1/2	12,70	0,4	AE 454
5/8	15,88	0,5	AE 455
3/4	19,05	0,6	AE 456

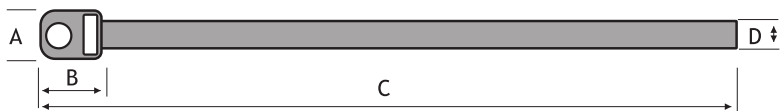


• CLAMPS FOR FIXING LIGAREX



Features

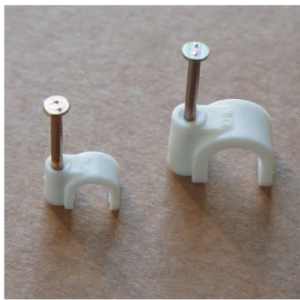
- Magnetic Clamps suitable for fixing to steel braided copper grounding in low and medium voltage terminations



Description	Dimensions		Reference
	C	D	
Roll tape Ligarex - IN0108-500	50mt	8mm	RI5000
Plier Ligarex			ALI.LIG

Description	Qtt	Dimensions (mm)				Reference
		A	B	C	D	
Clamps Ligarex - 400	100	12	15	400	8	L400
Clamps Ligarex - 600	100	12	15	600	8	L600
Buckles for ribbon ligarex	100	12	15	-	-	FIV.LIG

• CLAMPS WITH STEEL NAIL



Features

- Clamps with Nail for fixing cabos
- Application for round cables or paralelos
- Color: White, gray or black

• ROUND CABLES

• FLAT CABLES

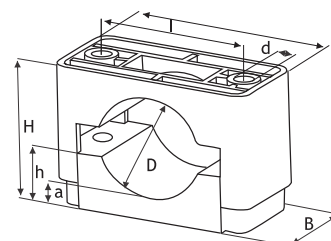
Quantity Package	Application range (mm ²)	Reference
100	1,0	KF 1,0
100	2,5	KF 2,5
100	4,0	KF 4
100	6,0	KF 6
100	10,0	KF 10
50	1,0	KF 16

Quantity Package	Application range(mm ²)	Reference
100	4	RC04R
100	5	C05
100	6	RC 06
100	7	RC 07
100	10	RC 10
100	12	RC 12
100	14	RC 14
50	16	RC 16
50	18	RC 18
50	19	RC 19

● ST SERIE

Features

- Strength plastic pipe clip 15000 N to 60000
- At medium and high voltage monopolar or tripolar cables, low, composed of two parts amovíveis.
- A bottom is fixed to the structure or surface, and subsequently put the cables to be fixed on this , then closed with the top



Dimensions								Weight		Reference
D	L	B	I	d	H	h	a	grs		
18-26	77	45	49	10	36-44	13	6	90		ST 18-26
26-38	92	60	60	12	48-60	21	10	165		ST 26-38
36-52	107	60	75	12	58-74	26	11	220		ST 36-52
50-75	128	60	95	12	76-101	35	14	300		ST 50-75
75-100	172	80	127	14	110-135	51	19	770		ST 75-100
100-130	202	80	158	14	141-170	65	20	765		ST 100-130

● SUPPORT FOR FIXING THE FACADE

Features

- Application: Fixing cables facades
- Installation: No use of plug and screw, is fast deinstalação hole 7mm in diameter
- Usage: plastic clamp with serrated larguramáxima of 9mm, resistant to UV
- Rays Material: Nylon resistant to the rays UV
- Color: Black
- Pack of 250 units



Reference

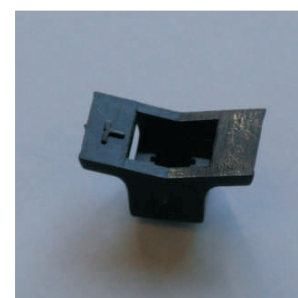
SFP

Nylofix

● BASE AUTO-TAPPING

Features

- Application: Fixing cables facades
- Installation: With the use of threaded steel nail
- Usage: plastic clamp with serrated maximum width of 9mm, UV-resistant
- Material: Nylon resistant to UV rays
- Color: Black



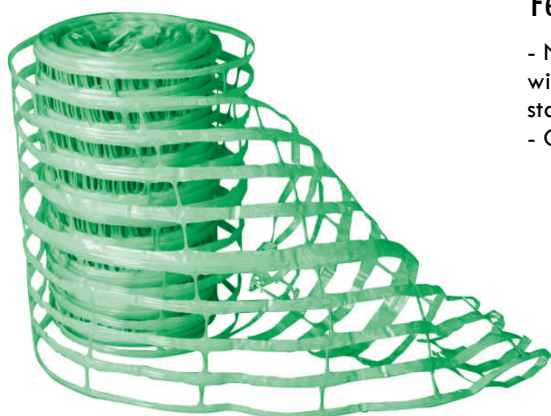
Reference

SAR-M6

4. Signs and markings



• SIGN NETWORK - FRENCH RULE NF T 54-08



Features

- Networks for signaling underground cables or pipes, polypropylene, width 200mm +/- 3mm- mesh into rectangles +/- 100x2mm as French standard NF T 54-080
- Color: Red, green, blue, yellow, brown and white

Lenght	Width	Dimensions		Dynamic traction	Weight f/ roll	Color	Function	Reference
		Perimeter of the mesh						
100mt	300mm	260mm		295 DaN/m	1,8kg	Red	Energy	5016-VM100
200mt	300mm	260mm		295 DaN/m	3,20kg	Red	Energy	5016-VM200
100mt	300mm	260mm		295 DaN/m	1,80kg	Green	Telecommunications	5016-VD
100mt	300mm	260mm		295 DaN/m	1,80kg	Blue	Network waters	5016-AZ
100mt	300mm	260mm		295 DaN/m	1,80kg	Yellow	Fiber optics and gas	5016-AM
100mt	300mm	260mm		295 DaN/m	1,80kg	Brown	Sanitation	5016-CT

• SIGN MOVIES



Features

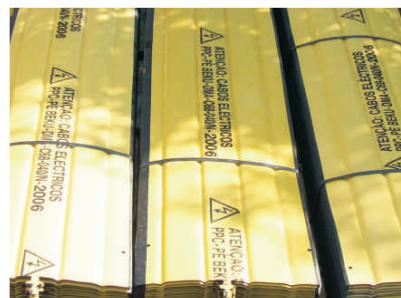
- Background color: Red, green, blue, yellow, brown or other
- Print Color: Black
- Material of base: LDPE
- Polyethylene virgin
- Custom Movies on request, subject to minimum quantities

Color	Function	Dimensions		Reference
		Lenght	Weight	
Red	Energy	500mt	202mm	830 FILME EDP
Green	Telecommunications	500mt	202mm	830 FILME TELEC
Blue	Network waters	500mt	202mm	830 SMAS
Yellow	Gas	500mt	202mm	830 GAS
Brown	Sanitation	500mt	202mm	830 SANEAMENTO
Yellow	Fiber optics	250mt	150mm	830 FIBRA
Blue	Waters	500mt	300mm	830 ÁGUAS

• P.P.C boards

Features

- Plates with 1000 x 250 mm
- Made of polyethylene (PE) or polypropylene (PP)
- Should be used as a mechanical protection of cables medium and low voltage underground

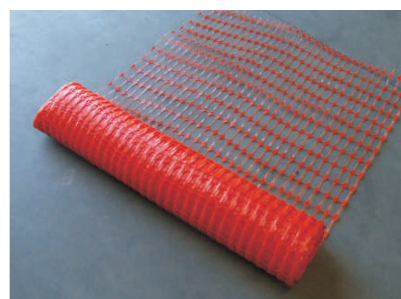


Designation	Reference
Plate for cable protection	PPC

• Network demarcation works

Features

- Network demarcation works in polypropylene, orange



Lenght	Width	Dimensions		Weight for roll	Reference
		Mesh perimeter	Dinamic traction		
50 mt	1000 mm	8 x 5 mm	700 DaN/m	7,5 kg	8330REDE-OBRA

• Signaling tape

Features

- Red / white plastic signage tape for zoning work
- Supplied in rolls of 250 mt
- Available in rolls of 500 mts by minimal amounts.
- Ability to print and logo print in other colors depending on minimal amounts of manufacture



Comprimento	Dimensões (mm)		Referência
	Largura	Espessura	
250	80	0,45	9030 FITA-V/B-250

● RECORDING TOOLS

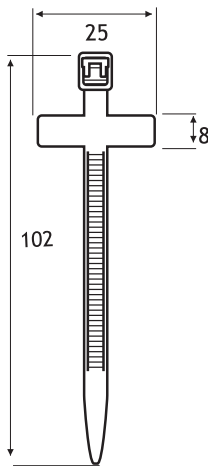


Features

- Recording tool type "DIMO" tape for use with stainless steel or aluminum tape

Description	Reference
Recording framework	ID 400
Recording framework	Dymo M1011
Stainless steel strip (roll: 12,7mmx6,4mt)	ID 405
Stainless steel strip (roll: 12,7mmx4,87mt)	ID 400 AL

● CLAMP IDENTIFICATION



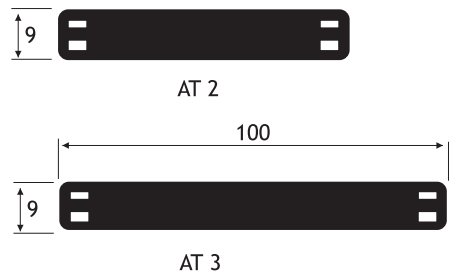
Features

- Plastic clamp with serrated incorporated label for marking with indelible ink pen
- Material: Nylon 6,6
- Color: Natural

Reference
L-2,5-100ID

● Markers for identification and clamps on cables in plastic

● Gate markers



Features

Reference	0
AT-2	
AT-3	

• Identification markers and clamps for plastic cables

• MARKERS

Features

- Markers in PVC, yellow or white background with a black symbol. Letters A through Z, numbers 0-9 and symbols. Numbers also available for code and colors
- Other sizes and types upon request
- Pack of 500 pcs. (PK)
- Packing of 1000 pcs. (PA)

Sections (mm ²)	Measure ø (mm)	Packages quantity	Reference
-	-	500	PK 2/4
0,75-4,00	2,5-5	1000	PA 1/3
0,50-0,75	1,7-2,8	1000	PA 02/3



• METAL MARKERS AND CLAMPS IDENTIFICATION OF CABLES

• STAINLESS MARKERS

FEATURES

- Stainless markers for cables identification of electric cables, especially 'substations'
- providing minimal amount of: 200 unit



Reference

PKS-100

• Gate markers in stainless steel



Reference	Lenght (mm)	Abraçadeira compatível
PKS 10060	60	TIPO KE
PKS 10080	80	Até 4,8mm largura

5. Connection



• Terminals

• Bimetallic crimp terminals B.T. and M. T.



Features

- According to French Standard
 - Terminals with aluminum body welded by friction with the tab in the eye electrolytic copper.
- For connection by crimping cable terminal aluminum or copper bar

Section (mm ²)	Ø Hole (mm)	Reference	Price	Section (mm ²)	Ø Hole (mm)	Reference
16	10	C0AU-16	4,80	150	12	C2AU-150
25	10	C0AU-25	4,80	185	14	C4AU-185
35	10	C0AU-35	4,80	240	14	C4AU-240
50	12	C1AU-50	4,80	300	16	C5AU-300
70	12	C1AU-70	4,80	400	16	C5AU-400
95	12	C1AU-95	4,80	500	*	C6AU-500
120	12	C2AU-120	6,00	630	*	C6AU-630

*-A designar pelo cliente

• Crimp terminals tinned aluminum M.T



Section (mm ²)	Reference
50	CAB 50
70	CAB 70
95	CAB 95
120	CAB 120
150	CAB 150
185	CAB 185
240	CAB 240

• Massive tinned copper terminals in M. T.



Características

- Application in medium voltage conductors
- Other sections on request

Section (mm ²)	Reference
16	DT(B)-16
25	DT(B)-25
35	DT(B)-35
50	DT(B)-50
70	DT(B)-70
95	DT(B)-95
120	DT(B)-120
150	DT(B)-150
185	DT(B)-185
240	DT(B)-240
300	DT(B)-300

• TINNED ALUMINUM CRIMP TERMINALS L.V.

Features

- Terminals made from aluminum tube and stranded conductors solids
- Perfectly tinned
- Connect the driver with appropriate tool for understanding
- Filled anti-corrosive neutral mass of aluminum for connecting cables to the surface of aluminum or copper

Section (mm ²)	Ø Hole (mm)	Reference
16	6,2	CEA 16
25	8,4	CEA 25
35	10,5	CEA 35
50	10,5	CEA 50
70	13,0	CEA 70
95	13,0	CEA 95
120	13,0	CEA 120
150	13,0	CEA 150
185	13,0	CEA 185
240	17,0	CEA 240



• COPPER FERRULES

Features

- Copper tubular Terminals
- Perfectly tinned, with inspection hole
- Material: Electrolytic Copper

Section (mm ²)	Hole
1,5	M4
1,5	M5
1,5	M6
2,5	M4
2,5	M5
2,5	M6
2,5	M8
4,0	M4
4,0	M5
4,0	M6
4,0	M8
6,0	M5
6,0	M6
6,0	M8
6,0	M10
10,0	M5
10,0	M6
10,0	M8
10,0	M10
10,0	M12
16,0	M5
16,0	M6
16,0	M8
16,0	M10
16,0	M12

Section (mm ²)	Hole
25	M6
25	M8
25	M10
25	M12
35	M6
35	M8
35	M10
35	M12
35	M14
35	M16
50	M6
50	M8
50	M10
50	M12
50	M14
50	M16
70	M6
70	M8
70	M10
70	M12
70	M14
70	M16
95	M8
95	M10
95	M12

Section (mm ²)	Hole
95	M14
95	M16
120	M8
120	M10
120	M12
120	M14
120	M16
120	M20
150	M8
150	M10
150	M12
150	M14
150	M16
150	M20
185	M10
185	M12

Section (mm ²)	Hole
185	M14
185	M16
185	M20
240	M10
240	M12
240	M14
240	M16
240	M20
300	-
400	-
500	-
630	-
800	-
1000	-



• TERMINALS IN ALUMINUM SECTOR



Features

- Sector 90 - 4 conductors
- Perfectly tinned by electronic process
- For connecting a conductor aluminum surfaces of aluminum or copper
- Spiking punçonada

Section (mm ²)	Hole	Reference
16	M6	YA 016 A4-6TN
16	M10	YA 016 A4-10TN
25	M6	YA 025 A4-6TN
25	M10	YA 025 A4-10TN
35	M6	YA 035 A4-6TN
35	M10	YA 035 A4-10TN
50	M10	YA 050 A4-10TN
50	M12	YA 050 A4-12TN
70	M10	YA 070 A4-10TN
70	M12	YA 070 A4-12TN
95	M10	YA 095 A4-10TN
95	M12	YA 095 A4-12TN
95	M16	YA 095 A4-16TN

Section (mm ²)	Hole	Reference
120	M10	YA 120 A4-10TN
120	M12	YA 120 A4-12TN
120	M16	YA 120 A4-16TN
150	M10	YA 150 A4-10TN
150	M12	YA 150 A4-12TN
150	M16	YA 150 A4-16TN
185	M12	YA 185 A4-12TN
185	M16	YA 185 A4-16TN
240	M12	YA 240 A4-12TN
240	M16	YA 240 A4-16TN

• REDUCTION BIMETALLIC L.V JUNCTION

• REDUCTION BIMETALLIC L.V JUNCTION



Features

- Connection between AL and CU with different sections or equal
- Other sizes available on request

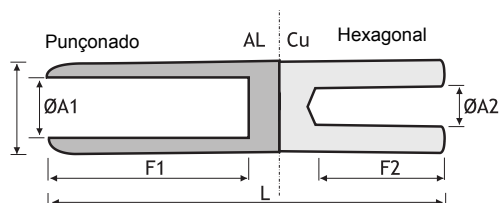
AL (mm ²)	CU (mm ²)	Reference
16	10	MJBAC 16/10
25	10	MJBAC 25/10
25	16	MJBAC 25/16
35	16	MJBAC 35/16
35	25	MJBAC 35/25
50	16	MJBAC 50/16
50	25	MJBAC 50/25
50	35	MJBAC 50/35
50	50	MJBAC 50/50
70	35	MJBAC 70/35
70	50	MJBAC 70/50
70	70	MJBAC 70/70

AL (mm ²)	CU (mm ²)	Reference
95	35	MJBAC 95/35
95	50	MJBAC 95/50
95	70	MJBAC 95/70
120	50	MJBAC 120/50
120	70	MJBAC 120/70
120	95	MJBAC 120/95
150	120	MJBAC 150/120
185	95	MJBAC 185/95
185	120	MJBAC 185/120
185	150	MJBAC 185/150
240	70 a 150	MJBAC 240/70

• BIMETALLIC AL/CU, M.T JUNCTIONS

Features

- Spiking punçonado side by aluminum
- Hexagonal crimping the copper side
- According to French Standard
- Allows AL and CU connection with different sections or equal
- Other sizes available on request



Section (mm ²)		Reference
Alu.	Cu	
50	35	50/35 MT
50	50	50/50 MT
70	35	70/35 MT
70	50	70/50 MT
70	70	70/70 MT
95	50	95/50 MT
95	70	95/70 MT
120	35	120/35 MT
120	50	120/50 MT
120	70	120/70 MT
120	95	120/95 MT
120	120	120/120 MT

Section (mm ²)		Reference
Alu.	Cu	
150	95	150/95 MT
150	120	150/120 MT
150	150	150/150 MT
240	25	240/25 MT
240	35	240/35 MT
240	50	240/50 MT
240	70	240/70 MT
240	95	240/95 MT
240	120	240/120 MT
240	150	240/150 MT
240	185	240/185 MT

• COPPER JUNCTIONS



Features

- Made from electrolytic copper
- Perfectly tinned
- Spiking compression with appropriate tool

Section (mm ²)	Reference	Section (mm ²)	Reference
1,5	CLT 1,5	95	CLT 95
2,5	CLT 2,5	120	CLT 120
4,0	CLT 4	150	CLT 150
6,0	CLT 6	185	CLT 185
10,0	CLT 10	240	CLT 240
16,0	CLT 16	300	CLT 300
25,0	CLT 25	400	CLT 400
35,0	CLT 35	500	CLT 500
50,0	CLT 50	630	CLT 630
70,0	CLT 70	800	CLT 800

• COPPER JUNCTIONS L. V.



Features

- Made from copper rod, bevelled at the ends

Section (mm ²)	Reference
16	GT-16
25	GT-25
35	GT-35
50	GT-50
70	GT-70
95	GT-95

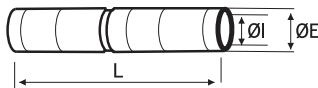
Section (mm ²)	Reference
120	GT-120
150	GT-150
185	GT-185
240	GT-240
300	GT-300

• ALUMINUM JUNCTIONS L. V.



Features

- Made from aluminum tube perfectly tinned
- Compression with appropriate crimping tool



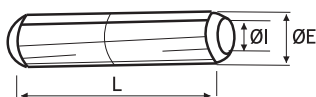
Section (mm ²)	Dimensions (mm)			Reference
	Ø I	Ø E	L	
16				MJAE 16
25	6,5	20	90,0	MJAE 25
35	8,0		91,8	MJAE 35
50	9,0		109,0	MJAE 50
70	11,0		110,0	MJAE 70
95	12,5		110,0	MJAE 95
120	13,7	25	135,5	MJAE 120
150	15,5		135,0	MJAE 150
185	17,0	32	146,0	MJAE 185
240	19,5		145,0	MJAE 240

• ALUMINUM JUNCTIONS M. V.



Features

- According to French Standard
- Unions aluminum conductors for medium voltage
- Spiking by deep punching



SecCotion (mm ²)	Reference
16	MRJA1 16
25	MRJA1 25
35	MRJA1 35
50	MRJA1 50
70	MRJA1 70
95	MRJA1 95
120	MRJA2 120
150	MRJA2 150
185	MRJA3 185
240	MRJA3 240
300	MRJA3 300
400	MRJA3 400

• SECTOR JUNCTIONS OF ALUMINIUM

Features

- Application in sectoral solid aluminum cables
- Do not deform the driver in the act of spiking

Section cond (mm ²)	L (mm)	Reference
25	50,8	LA 25
35	60,3	LA 35
50	69,8	LA 50
70	79,3	LA 70
95	89,0	LA 95
120	92,0	LA 120
150	95,3	LA 150
185	108,0	LA 185
240	120,6	LA 240



• BIMETALLIC CRIMP FERRULES

Features

- Terminal ferrule consists of a welded aluminum body by rubbing a copper ferrule

Section (mm ²)	Reference
16	CBP 16
25	CBP 25
35	CBP 35
50	CBP 50
70	CBP 70
95	CBP 95
120	CBP 120
150	CBP 150
185	CBP 185
240	CBP 240



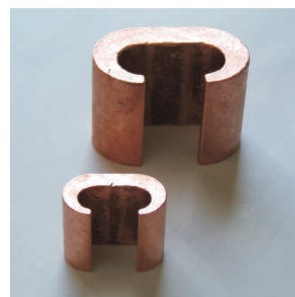
• COMPRESSION "CRIMPIT" CU-CU CONNECTORS

Features

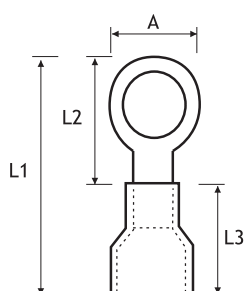
- Own networks to land
- Performs link, whips or bypass copper cables
- Application for screening

Principal cu (mm ²)	Derivative cu (mm ²)	Reference
6 a 10	2,5 a 6	YC8C8
10 a 25	4 a 6	YC4C8
16 a 25	4 a 10	YC4C6
16 a 25	16 a 25	YC4C4
35	4 a 25	YC2C4
35	16 a 35	YC2C2
50 a 70	4 a 35	YC26C2
50 a 70	35 a 70	YC26C26

Principal cu (mm ²)	Derivative cu (mm ²)	Reference
95	16 a 35	YC28C2
95	35 a 70	YC28C26
95	95	YC28C28
120	25 a 120	YC29C29
150 a 185	50 a 95	YC31C28
150	70-150	YC150MET



•INSOLATED TERMINALS

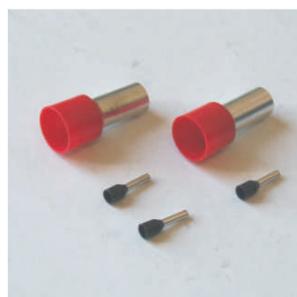


Features

- Isolation obeys the color coded
- Other types on request

Section (mm ²)	Color	Hole	Dimensions (mm)				Reference
			A	L1	L2	L3	
0,5-1,0	Red	M	6,4	17,7	13,2	9,7	IR 1,5-3,2
		M3,5	6,4	17,7	13,2	9,7	IR 1,5-3,7
		M4	6,6	18,5	14,0	9,7	IR 1,5-4
		M5	8,0	20,3	15,8	9,7	IR 1,5-5
		M6	9,8	22,5	18,8	9,7	IR 1,5-6
		M8	13,6	26,3	21,8	9,7	IR 1,5-8
		M10	13,6	26,3	21,8	9,7	IR 1,5-10
1,0-2,5	Blue	M	6,4	18,0	13,5	10,0	IR 2,5-3,2
		M3,5	6,4	18,0	13,5	10,0	IR 2,5-3,7
		M4	6,6	18,5	14,0	10,0	IR 2,5-4
		M5	8,5	21,0	16,5	10,0	IR 2,5-5
		M6	11,0	26,0	21,5	10,0	IR 2,5-6
		M8	12,0	26,5	22,0	10,0	IR 2,5-8
		M10	17,0	31,5	27,0	10,0	IR 2,5-10
4,-6,0	Yellow	M12	17,0	31,5	27,0	10,0	IR 2,5-12
		M3,5	7,8	24,3	17,8	2,5	IR 6-3,7
		M4	7,8	26,0	18,0	13,0	IR 6-4
		M5	10,0	28,0	20,0	13,0	IR 6-5
		M6	11,0	29,5	21,5	13,5	IR 6-6
		M8	14,0	34,0	26,0	13,5	IR 6-8
		M10	15,0	34,5	26,5	13,5	IR 6-10
		M12	17,0	40,0	32,0	13,5	IR 6-12

•INSOLATED FERRULES



Features

- Posted on CU electrolytic 99.9%
- Insulation prolipopileno
- Availability of uninsulated

Section (mm ²)	Packaging units	Reference
0,50	500	E02
0,75	500	E05
1,00	500	E09
1,50	500	E13
2,50	500	E16
4,00	500	E19
6,00	100	E22
10,00	100	E24
16,00	100	E26
25,00	50	E28
35,00	50	E30
50,00	50	E32

● PRE-INSULATED TERMINALS BIMETALLIC

Features

- 3 crimps
- For connection of AL conductors and terminal equipment or buses in CU
- Must be removed only 35mm of insulation from the conductor to enter
- No coating is required later on



Connection | 5.

Section (mm ²)	Dimensions (mm)		Hexagonal Array	Color	Reference
	Hole	Length			
16	10,5	67	140	Azul	CPTAU 16
25	10,5	67	140	Laranja	CPTAU 25
35	12,8	86	173	Vermelho	CPTAU 35
50	12,8	86	173	Amarelo	CPTAU 50
70	12,8	86	173	Branco	CPTAU 70
95	12,8		215		CPTAU 95

● PRE-COMPRESSION UNIONS ISOLATED

Features

- No need to shrink coating
- The junction may be done between two different insulated conductors of equal sections or
- For the neutral tensor in almelec, unions support a superior tractive effort to 1660kg
- Pre-insulated Unions reduction on request

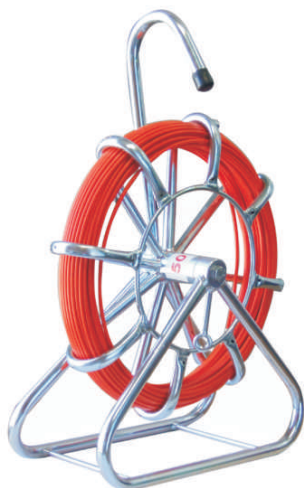


Section Cond.1	(mm ²) Cond.2	Reference
16	16	MJPT 16
25	25	MJPT 25
35	35	MJPT 35
50	50	MJPT 50
70	70	MJPT 70
95	95	MJPT 95

6. Tools



• FIBER GUIDES



Features

- Guides of high quality glass fiber with excellent tensile strength
- Covered on the outside by a sheath of polyester weatherproof giving them an excellent slip within ducts
- Other dimensions on consultations

Packages	Dimensions		Weight (kg)	Reference
	ø mm	Length (mt)		
Plastic box	3,0	30		CBS-3X30
	3,0	30		S/CARRO
Pipe structure Galvanized c / brake The bearing 9, 11 and 14mm wheels facilitate the handling and displacement	4,5	50	4,8	CBS-4,5X50
	4,5	50		S/CARRO
	6,7	60	9	CBS-6,7X60
	6,7	60		S/CARRO
	9,0	120	35	CBS-9X120
	9,0	120		S/CARRO
	11,0	150	48	CBS-11X150
	11,0	150		S/CARRO
	11,0	200	55	CBS-11X200
	11,0	200		S/CARRO
	11,0	250	62	CBS-11X250
	11,0	300	69	CBS-11X300
	11,0	300		S/CARRO
	14,0	200	73	CBS-14X200
	14,0	250	84	CBS-14X250

• ACCESSORIES FOR FIBER GUIDES



Discription	Reference
Joints without internal thread for 3mm guide	B-100-1015-F
Terminal tip with external thread for 3mm guide	B-100-1016-F
Shackle tip to guide 3mm	B-100-1017-F
Glue tube for repairs	B-100-1027-F
Flexible tip guide 3mm to 8mm head	B-100-1033-F
Flexible tip guide 3mm to 11mm head	B-100-1134-F
Conical tip 4.5mm shackle to guide	B-101-TIP-F
Terminal tip with outer thread guide for 4.5mm	B-101-END-M-F
Joint without internal thread to guide 4.5mm	B-101-FERR-E
Tip with 1st Ext. Thread int. / 2nd Lisa to 6.7 mm guide	B-101-END-F-F
Conical tip with eyelet guide for 6.7 mm	B-102-TIP-F
Terminal tip with outer thread guide for 6.7 mm	B-102-END-M-F
Joint without internal thread guide for 6.7 mm	B-102-FERR-F
Tip with 1st Ext. Thread int. / 2nd Lisa to 6.7 mm guide	B-102-END-F-F
Terminal tip with screw ext. to guide 9mm	B-103-END-M-F
Joint without internal thread to guide 9mm	B-103-FERR-F
Tip with 1st Ext. Thread int. / 2.ªLisa for 9mm guide	B-103-END-F-F
Conical tip lug to guide 9 and 11 mm	B-103-4-TIP-F
Flexible tip lug to guide 9:11 mm	B-103-4-FLEX
Tip with bearing guide 9:11 mm	B-103-4-ROLL
Swivel ferrule threaded ext. Guide to 9:11 mm	B-103-4-SWIV
Terminal tip with external thread for 11mm guide	B-104-END-M-F
Tip with 1st Ext. Thread int. / 2nd Lisa guide to 11mm	B-104-END-F-F
Junction without internal thread for 11mm guide	B-104-FERR-F
Junction without internal thread for 14mm guide	B-105-FERR-F

• ROLLERS

• SIMPLE

Features

- Roller steel for underground placement
- Slip smooth through watertight bearings with protection against dust and other impurities

Reference

171M



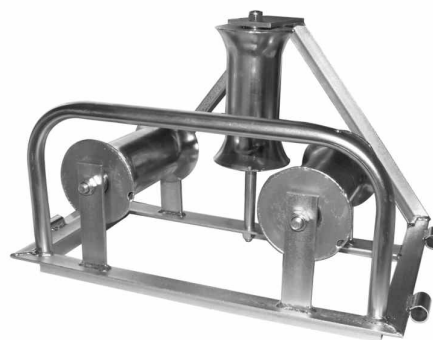
• TRIPLE

Features

- Triple roller steel for passage of underground cables in the 90 curves

Reference

KER103



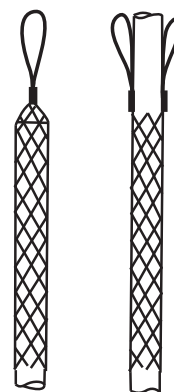
• TRACTION SLEEVES

Features

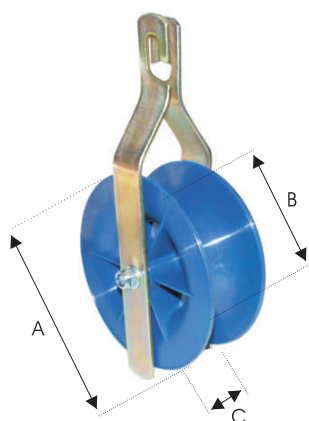
- Mangas traction to pull all kinds of cables electrical and telephone or with a diameter between 10mm and 180mm and tensile stresses 1860kg to 12736kg, double mesh with flexible lugs
- Length Of sleeves: 10 to 600mm 9mm;
110 900mm to 180mm



Ø (mm)		(c/1 olhal)	(c/2 olhais)
10 a 20	1860	546/1021	546/1022
20 a 30	2256	546/2021	546/2022
30 a 40	3696	546/3021	546/3022
40 a 50	5490	546/4021	546/4022
50 a 65	5490	546/5021	546/5022
65 a 80	7320	546/6521	546/6522
80 a 95	7320	546/8021	546/8022
95 a 110	10613	546/9521	546/9522
110 a 130	10613	546/1121	546/1122
130 a 150	12736	546/1321	546/1322
150 a 180	12736	546/1521	546/1522



• PULLEYS



Features

- Sheaves for cables or overhead lines
- Made of nylon or aluminum

Material	Cable type	Dimensions (mm)			Reference
		A	B	C	
Aluminum	Telecom	200	160	80	PA 6
Aluminum	Torçada	150	105	80	RT2
Aluminum	Nu	245	210	60	R250AL
Aluminum	Nu	650	400	60	T400AL

• CABLE SUPPORTS FOR COPS



Features

- Supports for cable reels, made of steel, featuring roller bearings. The system allows carry, unfold and wrap the cable in the coil, with a minimum of effort. System for most valid existing coils
- Several payloads according to the model

• MEASUREMENT WHEELS



Features

- Equipment for the measurement of distances
- Possibility to read even with partial 10000mts in decimetres
- System with reset to zero
- Using measure for buried cables and traces pipelines
- Supplied with carrying case

Discription	Reference
Equipamento de medição	TRUMETER (5+1)
Equipamento de medição	TRUMETER 5500

• JACKS FOR COILS

Features

- Greater stability in working position thanks to a base support
- Made of rugged steel
- Elevation through threaded system (effective lift: 300mm)
- The lifting capacity of a set of two jacks doubled relative to the capacity of a single jack
- Base support "optional": Base to allow use of larger diameter coils. Effective height: 300 mm



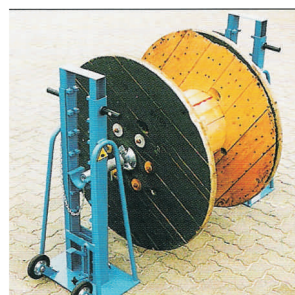
Lifting capacity per jack (ton)	Weight per jack (kg)	Height Close (mm)	Reference
3	16	300 + 570	D 246-1-F
6	22	300 + 710	D 247-F
8	27	300 + 835	D 248-1-F
Base de apoio			D 454-F
Eixo ø 50mm x 1220mm (19kg)			D 249
Eixo ø 75mm x 1830mm (37kg)			D 250

Tools | 6.

• HYDRAULIC JACKS FOR COILS

Features

- Greater stability in working position thanks to a wide base of support
- Run by hydraulic pedal
- With wheels to facilitate handling



Lifting capacity per 2 jacks	Weight per jack (kg)	Øs adm. of coils (mm)		Reference
		Mínimo	Máximo	
6 ton	55	900	2100	KT 267
10 ton	86	1000	3600	KT 268
Axes ø 70mm x 1800mm - 50 kg				Z 843
Flags for axes 76 ø				Z 807

* Set with 2 jacks and a shaft

• HOT AIR GENERATOR

Features

	HL1610S	RAPID
- Power:	1600w	2000w
- Regulation:	2 níveis	Rotary temperature control (0-10)
- Temperature:	300° a 500°C	60° a 600°C
- Flow:	240/450 l/min.	500 l/min.

Designation	Reference
RAPID - 2000 w/500 l	QUICK-L ELECTRONIC
1600 w/400 l	HL1610S

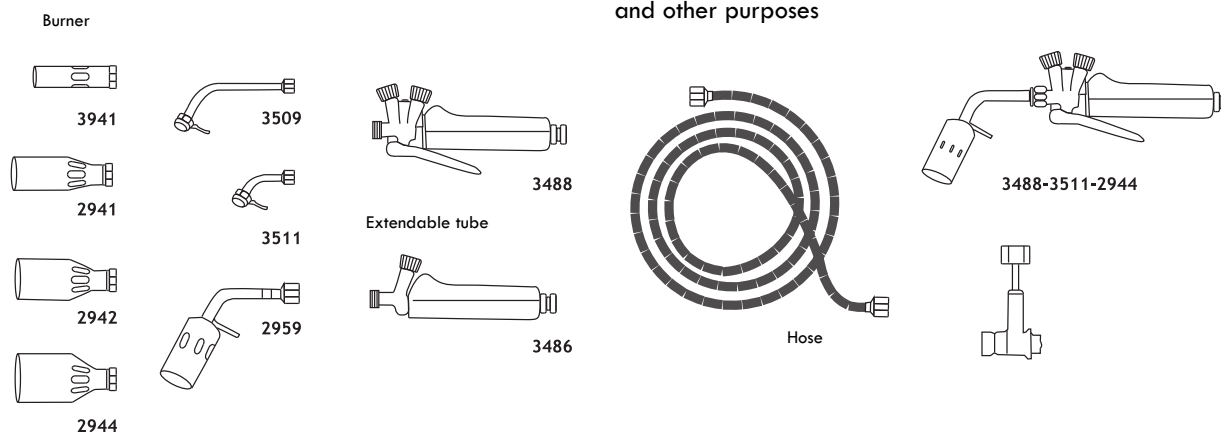


HL1610S

• Propane torch and accessories

Features

- Own torches to shrinkage of heat-shrink sleeves and other purposes



Discription	Reference
Full Torch for shrinkage of heat-shrink sleeves (no hose)	3488
Simple wrist	3486
Handle with economizer and pilot	3488
Burner (yellow flame) suitable for reduction of heat-shrink sleeves	2944
Burner hot air shrinkage of heat-shrink sleeves	2956
Burner (yellow flame) to decrease the heat-shrink sleeves	2959
Blue flame burner	2941
Burner (blue flame 35mm)	2942
Welding burner (blue flame concentrated)	3941
Extendable tube 7cm	3511
Extendable tube 18cm	3509
Reinforced hose ø 5mm (meter)	MANGUEIRA 5
Reinforced hose ø 6mm with 2 meters (racords included)	MANGUEIRA 2M
Reinforced hose ø 6mm with 5 meters (racords included)	MANGUEIRA 5M
Reducer for connecting hose	REDUTOR
Promatic fist	3366
Burner for drying joints	3334
Burner for heat shrink sleeves	3341
Regulator	3061

• HOTMELT COLA AND APPLICATORS



Features

- Fixing cables and wires by applying thermal paste

Discription	Reference
Thermostat glue applicator. Power 100w for glue ø 12mm	PAC114 c/mala
Thermostat glue applicator. Power 220w for glue ø 12mm	PAC116 c/mala
Opaque glue, normal, stick 300mm. Supplied in packs of 1 kg	Cola 12085
Transparent normal glue stick 300mm. Supplied in packs of 1 kg	Cola 300x11
Nozzle for glue applicator	114/116

● MANUAL HYDRAULIC PRESS

● Y35

Features

- Manual hydraulic press for crimping terminals and connectors in copper wires 10 and the aluminum 400mm² to 300mm² by applying appropriate punches and dies
- Can be used in any position since the pliers head is rotatable by an angle of 180°
- Strength: 12 tons
- Length: Approximately 58cm
- Weight: 6kg
- With the press is provided a portable metal enclosure



● Y39

Features

- With the same functions of Y35. Also spiking terminals, connectors and ferrules second French bimetallic standard, 16-300 mm
- Ferrule used for application of matrices and punches HN.68.D.90 with French standard application of punches adapter (UIADP-3) (NFC 33 090)
- With application adapter (UADP-1) throughout the range of the press Y35 arrays can be applied
- With the press is provided a portable metal enclosure



- The Reference Y39E1P1KE serves to modify a Y35 and turn it into Y39

Reference

Y35

Y39E1E

Y39E1P1KE

● MANUAL HYDRAULIC PLIER AND ACCESSORIES

Features

- Hydraulic rotary head pliers crimp terminals and connectors, copper and aluminum pre-insulated with hexagonal compression
- Strength: 52Kn
- Length: Approximately 372mm
- Weight: 2kg



Section mm ²		Reference
Cobre CU	Aluminio AL	
10 a 185	-	Alicate HYCP 185
10 a 16	-	Matriz AHE 1016
25 a 35	16 a 25	Matriz AHE 2535
50 a 70	35 a 50	Matriz AHE 5070
95 a 120	70 a 95	Matriz AHE 95120
150	120	Matriz AHE 120
185	150	Matriz AHE 150
-	185	Matriz AHE 185

• HYDRAULIC CRIMPING PLIERS AND ACCESSORIES



Features

- Hydraulic Crimping pliers for pre-insulated connectors and terminals 16 to 95mm², copper, aluminum and connectors in 'C' until 95mm²
- Swivel Head 180
- Strength: 5.5 tons
- Length: 35 mm
- Weight 2,72kg

• FOR PRE-INSULATED TERMINALS AND CONNECTORS

Description	Reference
Alicate hidráulico	Y500CT
Matriz para secção de 10 a 16 mm ²	W140
Matriz para secção de 25 a 70 mm ²	W173
Matriz para secção de 95 a 120 mm ²	W215

• FOR CRIMPING COPPER PER PUNCHED

Secção mm2	Matriz	Puncture
10	W10C	
16	W16C	
25	W25C	WPQ5
35	W35C	
50	W50C	
70	W70C	
95	W95C	
120	W120C	WPQ6S
150	W150C	
185	W185C	

• ADAPTERS

• ARRAY ADAPTER UADP1

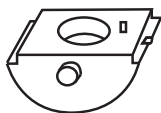


Features

- Application Y39-E1-BHE
- To receive arrays of pliers Y35 (Y35BH)

Reference
UADP1

• ARRAY ADAPTER UADP3



Features

- Application Y39-E1-BHE
- For punches, crimping terminals and connectors of the French standard HN.68.S.90 (NFC 33 090)

Reference
UIADP3

• ADAPTER WITH ARRAY INCLUDED

Reference
YPQ1E
YPQ2E
YPQ4E

• SPECIAL PUNCH TO TERMINAL REDUCED BIMETALLIC 300MM²



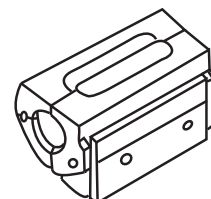
Reference
U240A4N

• DIES AND PUNCHES

• FOR HYDRAULIC PRESS (HEAD IN "U")

Features

- Application: Bimetallic terminals M. T.
- Norm EDF.HN.68S.90 / 33090
- Spiking by punching

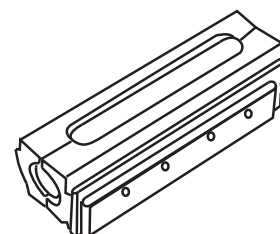


Tool	Section mm ²	Matrix	Puncture
Y39	16	MC-0E	0E
	25	MC-0E	0E
	35	MC-0E	0E
	50	MC-1E	1E
	70	MC-1E	1E
	95	MC-1E	1E
	120	MC-2E	2E
	150	MC-2E	2E
	185	MC-4E	4E
	240	MC-4E	4E
JH520USE	300	MC-5E	5E
	400	MC-5E	5E
	500	MC-6E	6E
	630	MC-6E	6E

• FOR HYDRAULIC PRESS (HEAD IN "U")

Features

- Application: Unions bimetallic M. T.
- French standard NFC-EDF



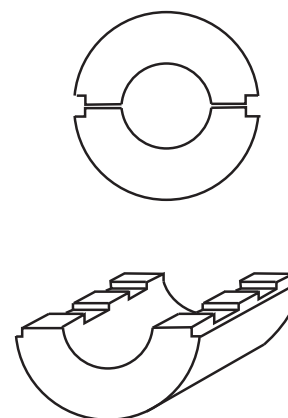
AL	Section CU	D EXT	Aluminum		Copper Throat
			Matrix	Puncture	
50 a 95	16 a 35	20mm	MJ-0E	0E	12MH173X10
50 a 95	50 a 95	20mm	MJ-1E	1E	
120 a 150	50 a 185	25mm	MJ-2E	2E	12MH215X10
185 a 240	95 240	32mm	MJ-4E	4E	12MH280X10

• PARA PRENSA HIDRÁULICA Y-35/Y-39 (MATRIZES DE PRÉ-ARREDONDAMENTO)

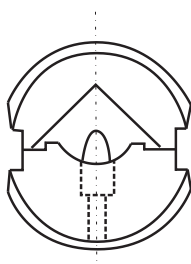
Features

- Application: sectoral stranded aluminum cables

Section mm ²	Matrix
25	U025PRGE1T
35	U035PRGE1T
50	U050PRGE1T
70	U070PRGE1T
95	U095PRGE1T
120	U120PRGE1T
150	U150PRGE1T
185	U185PRGE1T
240	U240PRGE1T
300	U300PRGE1T



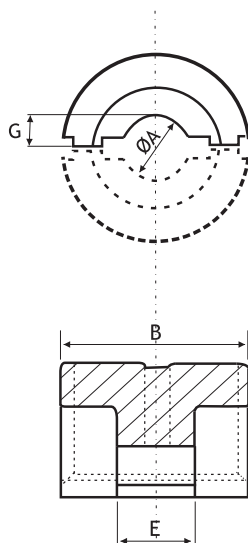
•FOR HYDRAULIC PRESS Y-35 / Y-39



Features

- Application: Terminals and sectoral joints aluminum sector 90, 4 conductors
- Spiking by punching

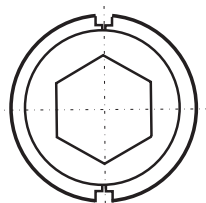
Section mm ²	Puncture	Matrix
16	UP016A4	UNA-1
25	UP025A4	
35	UP035A4	
50	UP050A4	
70	UP070A4	
95	UP095A4	UNA-4
120	UP120A4	
150	UP150A4	
185	UP185A4	
240	UP240A4	
300	UP300A4	



Features

- Application: Terminals and connectors round B.T.
- Circumferential crimping

Section mm²	Dimensions mm			Reference	
	A	G	B		
10	6,30	3,10	34,9	10,70	U8 CART
16	7,20	3,55	34,9	14,30	U6 CART
25	9,10	4,54	34,9	16,30	U4 CART
35	11,20	5,51	34,9	19,00	U2 CART
50	12,80	6,38	25,4	10,70	U25 ART
70	14,75	7,19	34,9	12,40	U25 ART
95	18,15	9,04	34,9	14,00	U28 ART
120	19,80	9,83	34,9	14,00	U29 ART
150	21,60	10,74	34,9	18,15	U30 ART
185	23,40	8,74	34,9	10,00	U31 ART
240	27,90	11,00	34,9	10,65	U34 ART
300	31,30	11,65	13,0	13,00	U36 ART



Features

- Application: Terminals and connectors copper
- Hexagonal crimping

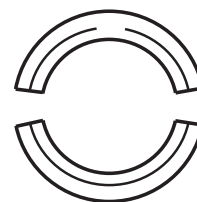
Section mm ²	Matrix
10	U010BGE1 T
16	U016BGE1 T
25	U025BGE1 T
35	U035BGE1 T
50	U050BGE1 T
70	U070BGE1 T
95	U095BGE1 T

Section mm ²	Matrix
120	U120BGE1 T
150	U150BGE1 T
185	U185BGE1 T
240	U240BGE1 T
300	U300BGE1 T
400	U400BGE1 T

• For hydraulic press Y35/Y-39

Features

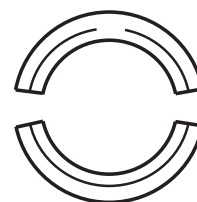
- Application: Connectors crimpits-copper (type C)
- Circular Spiking



Matrix	N.º Crimps	Connector type
U - BG	1	YC 4C8
	1	YC 4C6
	1	YC 4C4
U-C	1	YC 2C4
	1	YC 2C2
U-E	3	YC 26C2
	3	YC 26C26
	3	YC 28C2
U-F	3	YC 28C26
	3	YC 28C28
U-708	3	YC 29C29
	3	YC 31C28
	3	YC 150M

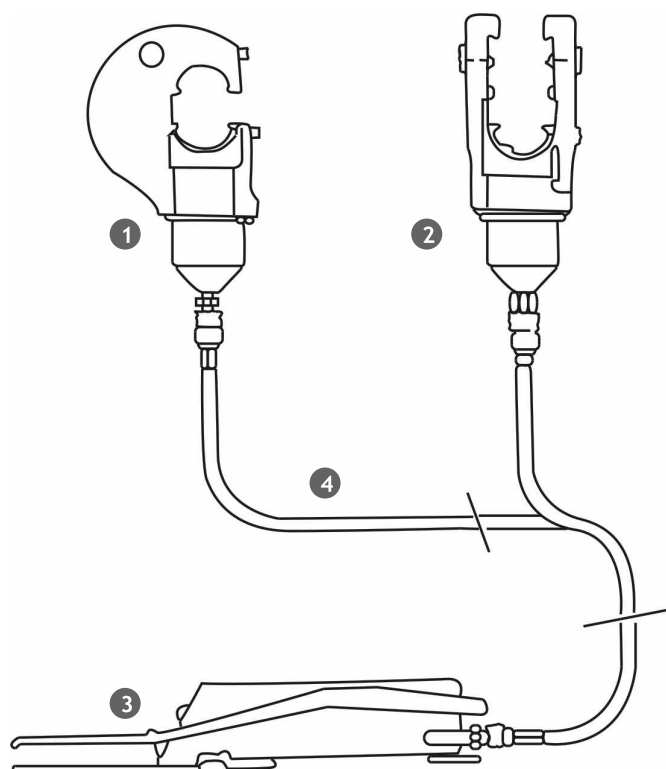
Features

- Application: Connectors crimpits aluminum (type C)
- Circular Spiking



Matrix	N.º Crimps	Connector type
U - BG	2	YC 4 A6
	2	YC 4 A4
U-C	2	YC 2 A6
	2	YC 2 A4
	2	YC 2 A2
	2	YC 25 A4
	3	YC 25 A2
		YC 25 A25
U-D3	3	YC 26 A3
	3	YC 26 A2
	3	YC 26 A25
	3	YC 26 A26
U-F	3	YC 28 A2
	3	YC 28 A25
	3	YC 28 A26

• HYDRAULIC PRESS THE PEDAL



Features

Y35/Y39E1BHE

- With the same functions of Y35 and Y39 manual presses

Y46

- Head in "U" for the treadle pump
- Spikes terminals and fittings in copper (10 to 800mm²) and aluminum (10 to 630mm²)
- Strength: 15 tons
- SPIKES SECOND STANDARD FRENCH

THS20USE

- With the same functions Y46 / Y39
- Spikes terminals and connectors and copper and aluminum up 630mm²
- Strength: 20 tons
- Spikes SECOND STANDARD FRENCH
- SRU 210
- Head in 'U' to pump the pedal
- Spikes terminal and unions (25-630mm²)
- Strength: 20 tons
- SPIKES SECOND STANDARD FRENCH

Description	Reference
1- Type head "C"	Y35H
2- Type head "U"	Y39E1BHE
2- Type head "U"	SRU210
3- Treadle pump	P703F
4- Hose	PT91

• ASSEMBLY "PERFORATING PUNCHES" WITH 6 DIES



Features

- Can be used by any hydraulic pump with a maximum of 700 bar / 10,000 psi
- Matrix: 1/2", 3/4", 1", 1 1/4", 1 1/2", 2"
- Strength: 12 ton
- Weight: 5.80 kgs

Reference

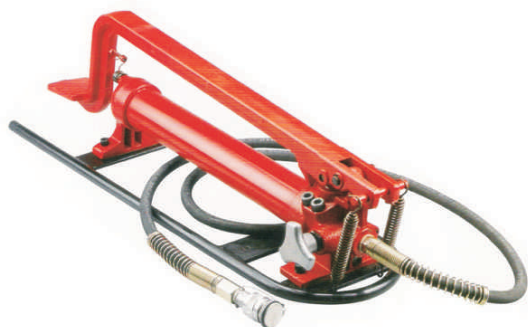
HYPH-052 0

● HYDRAULIC PUMPS

● HH-700 FT

Features

- Driven pedal (with safety valve)
- 2 speeds
- Supplied with metal housing
- Pressure: 700 bar / 10000 psi
- Weight: 8.90 kg)



Reference

HH-700FT

● HYP-700 FT

Features

- Driven by pedal (with safety valve)
- 2 speeds
- Supplied with metal housing
- Pressure: 700 bar / 10000 psi
- Weight: 13.5 kg)



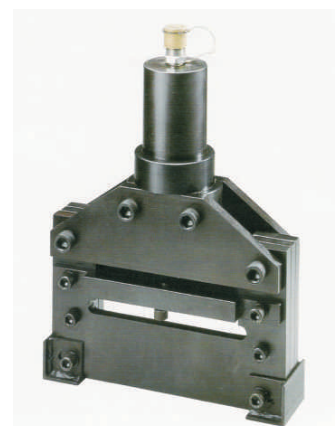
Reference

HYP-700FT

● HYDRAULIC HEAD

Features

- To cut the bars of iron, copper and aluminum up to 200mm wide and 13mm thick



Referência

HYBC-200

• SAWS

• RS-24



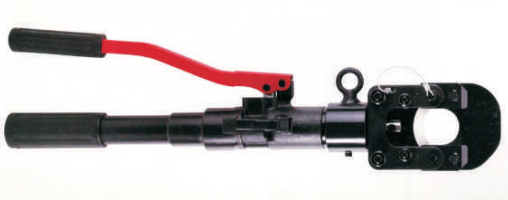
Features

- Pliers for cutting copper cables, aluminum and Al / steel (ACSR) up to 24mm
- Compression Strength: 7.6 kn
- Length: 426 mm
- Weight: 4 kg

Reference

RS-24

• RS-38



Features

- Alicates para corte de cabos de cobre, alumínio e Al/aço (ACSR) até 38mm
- Força compressão: 6 kn
- Comprimento: 580 mm
- Peso: 5,7 kg

Reference

RS-38

• SAWS



Features

- Manual cutter for copper and aluminum cables
- Do not cut steel or ACSR hard copper
- Blade booking
- Telephone Cables

Description	Reference
An outer diameter of up to 34mm (240mm ²)	KT45 R
An outer diameter of up to 45mm max telephone cables	KT 45
An outer diameter of up to 62mm max telephone cables	KT 55

• CC-08



Features

- Cut Coaxial Cable RG-6, RG-9 and cable until 10mm²
- Length: 165mm
- Weight: 0.15 kgs

Reference

CC-08

● SAWS

● CC-22

Features

- For copper and aluminum cables up to 25mm²
- Length: 165 mm
- Weight: 0.19 kgs

Reference

CC-22



● CC-38

Features

- For copper and aluminum cables up to 38mm²
- Length: 210 mm
- Weight: 0.30 kgs

Reference

CC-38



● CC-60

Features

- For copper and aluminum cables up to 60 mm²
- Length: 235mm
- Weight: 0.38 kgs

Reference

CC-60



● CC-80

Features

- For copper and aluminum cables up to 80 mm²
- Length: 320mm
- Weight: 0.73 kgs

Reference

CC-80



• SAWS

• CC-250



Features

- For copper and aluminum cables up to 250mm²
- Length: 600mm
- Weight: 1.54 kgs

CC-250

• SCC-60



Features

- For steel cables up to 5mm, 7mm wire up electrical, copper cable up to 60mm²
- Length: 310mm
- Weight: 0.73 kgs

Reference

SCC-60

• SCC-200



Features

- For steel cable up to 30mm, up to 12mm wire, copper cable up to 150mm²
- Length: 600mm
- Weight: 1.80 kgs

Reference

SCC-200

• CXC



Features

- Cut any cable without deforming dielectric

Reference

CXC

• RCC-325PH



Features

- For copper cable and aluminum up to 380mm² does not cut steel in ACSR
- Length: 285mm
- Weight: 0,85ks

Reference

RCC-325ph

● SAWS

● RCC-500/RCC-500PH

Features

RCC-500

- For copper wire to aluminum and 300mm² up to 600mm², does not cut steel or ACSR

- Length: 285mm

- Weight: 0,85ks

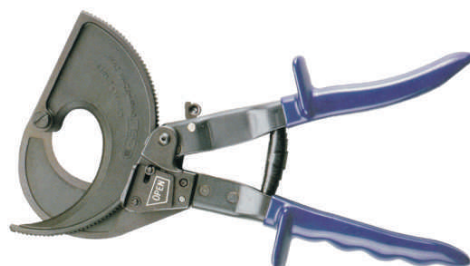
RCC-500PH

- For telephone cable up to 2700 pairs, diameter 70mm²

Reference

RCC-500

RCC-500PH



● PLIERS

● WSC-2030

Features

- Three functions: holding, stripping and cutting
- Made from special steel, with cutting quality and superior durability
- To wire up 0,5mm²
- Length: 155mm
- Weight: 115g

Reference

WSC-2030



● WSC-1022

Features

- Features same as the WS-2030
- For wire diameters between 1mm² and 1,5mm²
- Length: 155mm
- Weight: 115g

Reference

WSC-1022



● HD-0560

Features

- For crimping insulated terminals from 0.5 to 6mm²
- Length: 225mm
- Weight: 0,51kg

Reference

HD-0560



• PLIERS

• HD-16L



Features

- For non-insulated terminals from 0.5 to 16mm²
- Length: 275mm
- Weight: 0.52kg

Reference

HD-16L

• HD-25L/HD-25X



Features

- For non-insulated terminals from 4.5 to 25mm²
- For hexagonal crimping add 'x' to the reference
- Length: 354mm
- Weight: 0,78kg

Reference

HD-25L

HD-25X

• KH-150



Features

- To crimp terminals for punched from 10 to 120mm²
- Length: 570mm
- Weight: 3,10kg

Reference

KH-150 0

• MY 2913GE2



Features

- Manual Crimping plier for punçonado with matrix incorporated by adjustable bolt for crimping terminals and connectors copper 10-120 mm² aluminum and 10 to 95mm²
- Length: 570mm
- Weight: 3.7kg

Reference

MY 2913GE2

● PLIERS

● HX-50B

Features

- For hexagonal crimping of 6 to 50mm²
- Length: 390mm
- Weight: 1,10kg

Reference

HD-0650



● HX-150B

Features

- For hexagonal crimping of 25 to 150mm²
- Length: 650mm
- Weight: 2,90kg

Reference

HD-25150



● HX-120B

Features

- For hexagonal crimping of 6 to 120mm²
- Length: 650mm
- Weight: 2,90kg

Reference

HD-06120



● RJ-46

Features

- To crimp telephone microfiche 4-6 positions
- Length: 220mm
- Weight: 0,32kg

Reference

RJ-46



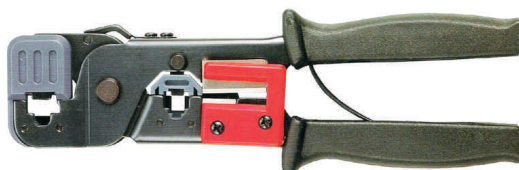
● WXN-708

Features

- To crimp telephone microfiche (RJ11 and RJ45) 6-8 positions
- Length: 220mm
- Weight: 0,32kg

Reference

WXN-708



● RCS-0425/RCS-2536



Features

- For stripping cable diameters from 4mm to 25mm
- Length: 155mm
- Weight: 0.15kg

Diameter	Reference
4 a 25	RCS-0425

● CLEANING TOOL



Features

- To clean the center conductor
- Eliminates residues of the dielectric

Reference
CC-100

● CABLES CUT



Features

- SNSIT - Crimping Tool RG Connectors T & B 59.6
- L3011B - Tool crimping connectors T & B RG11
- CST S9611 - 5,6,11 cable stripper for RG
- IT1000 - stripper for RG59 / 6 cable and crimp F plugs

Description
Crimping tool RG59/6
Crimping tool RG11
Stripping RG59/6/11
Stripping RG59/6 and crimp 'F' plug

● STRIPPER



Features

- Jacket stripper for cables 500, 565, 625, 700, 750

Cable	Reference
565	JST 565
700	JST 700
500	JST 500
625	JST 625
750	JST 750

• Cutters

Features

- Coring & Striping for cables 500, 565, 625, 700, 750
- Handle "T"

Cable	Reference
500	CST 500
625	CST 625
750	CST 750
565	CST 565TX
700	CST 700TX



• CUTTER AND STRIPPER

Features

- Set Coring & Striping for cables 540 and 715
- Set of CST + JST (CR)

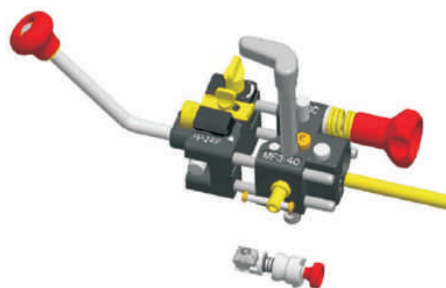
Cable	Reference
540	QRT 540
715	QRT 715



• STRIPPING CABLE TOOLS

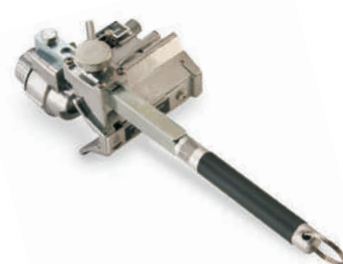
• ALROC TOOLS

Description	Reference
Sheath, insulation and peelable semiconductor (25-240mm ²)	MF3/40
Peelable semiconductor (50-240mm ²)	LHM1R
Not peelable semiconductor (50-240mm ²)	LHS1
Not peelable semiconductor (240-630mm ²)	LHS2
Insulation (16-240mm ²)	LH1
Insulation (16-240mm ²) LH1+BR+VBB+POLH+LBC1	BRMRD1
Removing tool for semiconductor	ASC40F



• SPEED SYSTEMS TOOL

Description	Reference
Sheath, insulation and peelable semiconductor (12.7 - 44,5mm ²)	1542-2AS
Replacement blade (sheath and insulation)	1562
Replacement blade (semiconductor)	1678



•CABLE TENSOR



Features

- Light, manageable and reduced dimensions
- Highly unstable

Traction capacity (daN/Kg)	Weight (kg)	Ø of cable (mm)	Reference
400	4,0	2-8	F2
600	5,2	7-15	F3
800	6,2	12-20	F4

• TIRFOR T 500



Features

- Functional design, manageable and slight
- Especially recommended where it is essential to reduce weight on the pulleys

Capacity (DdaN/Kg)	Weight (Kg)		Dimensions (mm)		Special cable Tirfor		Reference
	Apparatus	Cable	Apparatus	Alav. (Abert/fech)	ø (mm)	Rupura (kg)	
800	6,6	7,0	420x360x99	690/405	8,3	4800	T-508
1600	13,5	12,5	530x315x127	1147/648	11,5	9600	T-516
3200	24,0	26,0	631x357x148	1147/648	16,3	19200	T-532

Special cable Tirfor for T508, 20 meters lenght
Special cable Tirfor for T516, 20 meters lenght
Special cable Tirfor for T532, 20 meters lenght

•PULIFT/BRAVO STRETCHERS



Features

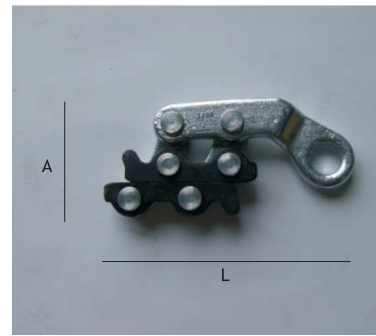
- Very light, compact and safe
- Allows quick and easy maneuvers, including in the most difficult conditions (assembly and disassembly works, factories, etc.)

Capacity (Kg)	Standard lift height (Kg)	Nº of ramadas	Maximum effort on the lever	Standard equipment weight (kg)	Cable dimensions	Reference
750	1,50	1	20	7	6 m	BRAVO 750
1500	1,50	1	21	11	7 m	BRAVO 1500
3000	1,50	1	33	20	10 m	BRAVO 3000
6000	1,50	2	35	30	10 m	BRAVO 6000

● STRETCHER FOR SPYING

Features

- To tension the spy



Dimensions (mm)		Reference
L	A	
200	80	Rana Espia

Tools 6.

● FOOTREST WITH BELT

Features

- For wooden poles

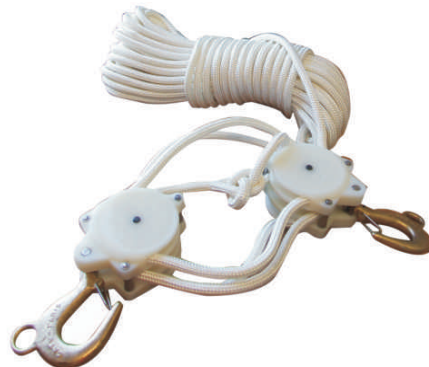


Reference
Estribos

● Hoist

Features

- Operation with 25 mts of rope and two pulleys
- Pulleys fitted with stainless steel hook



Reference
TALHA-TP10

•FROGS

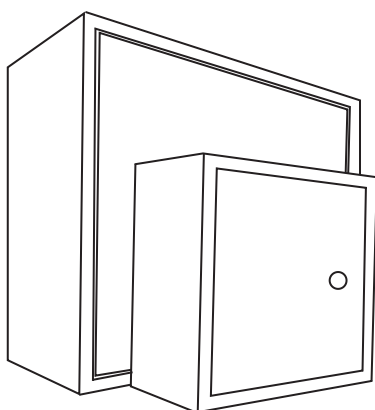


Features

- Used in tensioning cables

Ø (mm) Cable type	Traction (kg)	Reference
6a14/ACSR	800	G10
5 a 20/ACSR	1000	AL-GRIP
5 a 25/ACSR	2000	AL-MGRIP
16 a 32/ACSR	2000	AL-LGRIP
8,6 a 12/ACSR	1700	RA-57
8 a 16/ACSR-CU	3000	RA-515
17 a 34/Torçada	850	R4x2595

• COLECTIVE NETWORK BOX



Features

- Manufactured in accordance with the ITED Manual
- Plastic case (UL 94-VO)
- Cable entries from the sides and tops
- Dimensions L420 - The 335-P 117
- White Color
- Includes RJ45 cables, Plugs F, 75 Ohm Loads

Designation	Rj45 outputs	Coaxial outputs
ATI 4 box	4	4
ATI 6 box	6	6
ATI 8 box	8	8
ATI 10 box	10	10
ATI 12 box	12	12
ATI 14 box	14	14
ATI 16 box	16	16

ATI cabinets with
recessed box
included

•VOLTAGE METERS BIPOLAR / LAN NETWORK ANALYZER



Voltage (v) AC/DC	Reading	Continuity	Diodes	Resistance	Reference
120-415	LED	N			VOLT CHECK 1A
6-400	LED	N			VOLT CHECK 3
4-600	Digital	S	S	S	PT-30

• STAIRS

Features

- Conforms to European Standard EN-131
- Steps quadrangular

Bids fiberglass have the following features:

- Electrical isolation between 50,000 volts steps
- High mechanical strength (flexion / traction)
- Amounts in fiberglass
- Steps quadrangular aluminum



Tools 6.

Material	Type	Weight (mt)		Reference
		Open	Closed	
Aluminum	Simple (1 bid)	2,5	-	4025
		3,0	-	4030
		3,5	-	4035
		4,0	-	4040
	Double (2 bids)	3,5	2,0	5035
		4,5	2,5	5045
		5,0	3,0	5050
		6,0	3,5	5060
	Triple (3 bids)	4,5	2,0	6050
		6,0	2,5	6060
		7,0	3,0	6070
		8,5	4,0	6085
Glass fiber	Simple (1 bid)	2,5	-	1025
		3,0	-	1030
		3,5	-	1035
		4,0	-	1040
	Double (2 bids)	3,5	2,0	2035
		4,5	2,5	2045
		5,0	3,0	2050
		6,0	3,5	2060
	Triple (3 bids)	4,5	2,0	3050
		6,0	2,5	3060
		7,0	3,0	3070
		8,5	4,0	3085
Mixed (Aluminum with last throw in fiber glass)	Double (2 bids)	5,0	3,0	8050
		6,0	3,5	8060
		7,0	4,0	8070
		9,0	5,0	8090
	Triple (3 bids)	4,5	2,0	9050
		6,0	2,5	9060
		7,0	3,0	9070
		8,5	4,0	9085
	Enhanced triple (3 bids)	4,5	2,0	9050 Super
		6,0	2,5	9060 Super
		7,0	3,0	9070 Super
		8,5	4,0	9085 Super

• JOINTS AND CONCENTRIC TERMINALS



Features

- For concentric clamping
- In nickel-plated brass
- Conventional 10mm bore more holes on request

Diameter (mm ²)	Reference
6	LC-6
8	LC-8
10	LC-10
12	LC-12
14	LC-14
6	TCR-6
8	TCR-8
10	TCR-10
12	TCR-12
14	TCR-14
6	LCP-6
8	LCP-8
10	LCP-10
12	LCP-12
14	LCP-14

• PT's stripes



Features

- In copper
- For interconnection between the transformer (right bars) and CA2 (twisted bars)
- Other models on request

Description	Reference
Twisted bar set 3F+N 50X10	Barras torcidas
Twisted bar set 3F+N 50X10	Barras direitas

• SELECTION BOXES



Features

- For sectioning circuit, especially manufactured for speaker dock

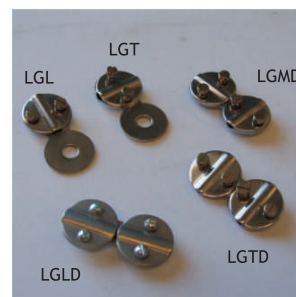
Admissible máx. section (mm ²)	Type	Reference
4x16/2x6	Monopolars	1469
4x25/2x6		1468-E
4x35/2x6	Phase	1465-4P
6x25/4x6		1478

● CAT TOUNGUE TYPE CONNECTORS (10-25MM²)

Features

- Sections 10 to 25 mm²
- Housing made from sheet brass with nickel treatment
- Carbon steel screws 8.8 eletronized

Type	Hole (mm)	N.º	Reference
Parallel joint		1	LGTD-10
Cross	7	2	LGT-10
Derived from T		3	LGMD-10
Longitudinal	7	4	LGL-10
Joint		5	LGLD-10
Triple(cross)		6	LGTT-10



● PT'S ANCHOR

Features

- On treatment with brass pin nickel
- Other measures on request

(mm ²)	Thread	Reference
4-16	M6	LT-6M6
10-25	M6	LT-10M6
25-35	M6	LT-25M6
50	M6	LT-50M6
70	M6	LT-70M6
95	M6	LT-95M6



● NILOFIX PIN

Features

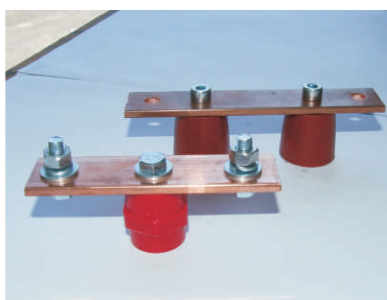
- Especially suitable for brick
- It is suggested the use of drill 6mm diameter
- Material: Polyamine



Reference

Nylofix M6

• REMOVABLE CONNECTORS



Features

- Composed of copper bar and insulator (es) resin
- Simple - to protective earth
- Double - for ground protection service more

Reference

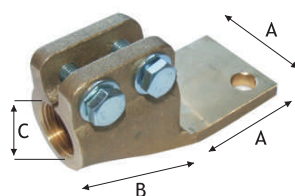
Simple
Double

• BUS INSOLATER



Description	Reference
poliester insulator 25/M6	SB-1
poliester insulator 35/M8/M10	SB-2
poliester insulator 45/M10	SB-4
poliester insulator 50/M10	SB-5
poliester insulator 60/M12	SB-6
poliester insulator 75/M12	SB-75

• TERMINALS FOR LOW VOLTAGE POWER TRANSFORMERS



Features

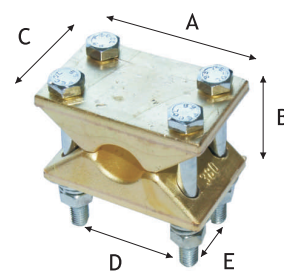
- For monopolar cable connections to the terminals of the transformers
- Glass in cast brass and steel fasteners
- Material: According to DIN 43675

Nominal power(kVA)	Connector to the trans. Rosca Ø (mm)	Nº holes of patola/Ø (mm)	Nominal intensity A	Dimensions (mm)			Reference
250/400	M20	2/14	630	A	B	C	TTP1
630/100	M30x2	2/14	1000	60	60	M30	TTP2

• CLAMPS IN BRASS OR ALUMINUM

Features

- For cable connections monopolar transformers
- Die-cast brass and steel fasteners.
- To add aluminum body 'AL' to the reference
- Normally one provide-14 (CA2 + 7 for 7 for transformers)



Section (mm ²)	Binary (Nm)	Ø	Dimensions (mm)					Reference
			A	B	C	D	E	
280 CU	22	19	70	52	44	52	25	BC4M 280
380 CU	22	22	70	52	44	52	25	BC4M 380

• CLAMPS FOR FIXING CABLES

Features

- Adjustable cable clamp, made of sheet steel, with anti-corrosion protection
- Fixing of cables inside control cabinets



Standard case	Ø Cables (mm)	Reference
4x10 VAV	Até 20	B16/20
4x16-95	20 a 40	B32/40
3x185 +95	40 a 62	B56/62

• PROTECTION AND PHOTOCELL

Features

PHOTOELECTRIC CELL

- For connection from IP circuits and other
- Operation at 220V

PROTECTION OF CELLS AGAINST VANDALISM

- Fabricadas Galvanized metal

Reference
Protection for photocell
Photocell
Cell support
Set cell and support



● CABINETS



Features

- Cabinet polyester for electrical underground distribution networks
- Pedestal (massive) to fix the cabinets
- Approval EDP
- Models for IP, water, gas and fires on request

Designation	Reference
Equipped cabinet for IP	ADE 85.59 IP
Equipped cabinet with 5T2 (X)	ADE 85.78 X
Equipped cabinet with 2T2+4T00 (Y)	ADE 85.78 Y
Equipped cabinet with 7T2 (Z)	ADE 85.111 Z
IP pedestal cabinet	MAC 90.59
Pedestal cabinet type X and Y	MAC 90.78
Pedestal cabinet type Z	MAC 90.111
Hatch 1D + 1S with 3Q00 + N (P100)	VIPOL 30.25
Hatch 2E+2S com 6T00+N(P200)	VIPOL 40.40
Hatch com 3T2+N (P400)	VIPOL 60.40
Hatch (P1000)	

● PACK FROM GOVERNING'S PT



Features

- Accessories accident prevention, putting in Pt's

Designation	Reference
Portable Rechargeable Flashlight	EASY
Portable Emergency Lantern (4-12 hours)	TOP 4
Table 1.ºs without frame	QUADRO
First aid box with frame	QUADRO-M
Carpet insulating TT-05 1x0,6 mts (3mm) 26,5Kv	TT-05
Carpet insulating TT-04-06 1x0,6 mts (4mm) 36Kv	TT-04-06
Glove insulation class 2, 17.5 Kv	TG37-T10
Glove insulation class 3, 26.5 Kv	TG23-T10
Glove insulation class 4, 36.0 Kv	TG51-T10
Land registers book	LIVRO
Aluminum danger signal death	CHAPA-PM

● CLEANERS

Features

- Solvent deiletico for cleaning cables, cabinets and Pt's in tension
- Supplied in packs of 10 liters



Reference	Description
Tensol 100E	Solvent cleaning of dielectric cables
Tensol 55F	Solvent for cleaning electrical equipment in tension
Persol 60E	Solvent for cleaning electrical equipment with voltage
Proten 45F	Protective fluid
Proper-Sol 111	Cleaning and Dehumidification
Protelec 50F	For use after cleansing with Tensol 55F or 60E Persol

8. Accessories aerial bundled Network



• HOOK EYE SCREW (PIGTAIL)



Features

- The material is electrogalvanised, and hot dip galvanized
- Fixing posts or consoles, postaletes and nail

Designation	Reference
Eyelet for post - postelete	M12-110 QUENTE
Eyelet for post - postelete	M12-110 FRIO
Eyelet for post	M12-210 QUENTE
Eyelet for post	M12-210 FRIO
Eyelet for post	M12-285 QUENTE
Eyelet for post	M16-220 QUENTE
Eyelet for post	M16-220 FRIO
Eyelet for post	M16-280 FRIO
Eyelet for post	M16-305 FRIO
Eyelet for post	M16-410 FRIO
Eyelet for sealing	M12-190 QUENTE
Eyelet for sealing	M12-190 FRIO C/UNHA
Eyelet for sealing	M12-210 FRIO C/UNHA
Eyelet for sealing	M12-220 QUENTE C/UNHA

• CRADLE OF GUIDANCE / PIPE FOR LOWLAND



Features

- Aluminum Pipe
- Stainless Steel Clamps
- Hypothesis anchor on request

Designation	Sections (mm ²)	Reference
Cradle guidance with stainless hook	4x16	TBG416
Cradle guidance with stainless hook	4x25-70	TBG425/70
Cradle guiding flunk	4x16	TBGE416
Cradle guiding flunk	4x25-70	TBGE425/70
Aluminum pipe for lowded	2x6 a 4x6	TCB26/46

• Clamps for fixing the facade



Features

- Application for aerial bundled network
- Plastic pin (PSM) or steel (BRPF)

Admissible sections (mm ²)	Wall clearance (mm)	Diameter (mm)	Reference
2x6 a 4x16	-	6-20	PSM 4x6-16
2x25 a 4x95	10	20-50	BRPF 70,1
2x25 a 4x95	60	20-50	BRPF 70,6

● CALIPERS TIE FOR NETWORKS

Features

- Anticorrosion treatment
- Body in reinforced thermoplastic rod and galvanized steel
- Use in aerial bundled network
- Stainless steel on request

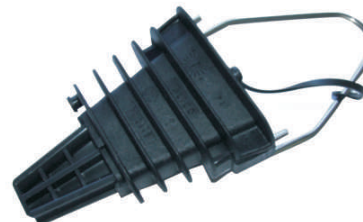


Admissible sections (mm ²)		Reference
MIN	MÁX	
4x25	4x50	PAH 450
4x70	4x95	PAH 495

● TWEEZERS MOORING FOR EXTENSIONS

Features

- Easy and quick to assemble and place
- Hooks for fixing stainless
- Body of polymer with high mechanical strength and atmospheric



Admissible sections (mm ²)		Reference
MIN	MÁX	
2x6	2x16	PA 2x6-16
2x6	4x25	PA 4x6-16

● TONGS HANGING

Features

- Armor and galvanized steel fasteners
- Body Rubber
- Use in aerial bundled network
- Stainless steel on request



Admissible sections (mm ²)		Reference
MIN	MÁX	
2x16	3x25	PS325
4x25	4x50	PS50
4x70	4x95	PS95

• DERIVATION CONNECTORS



Features

- Connector Bypass independent grip, protective enclosure with flexible PVC for leads in aerial bundled network

MAIN	Sections (mm ²)		Reference
	DERIVED		
10-25	15-35		CPB1/CT25
16-95	4-50		CPB1/CT70
35-95	16-95		CDR1/CT70
35-95	2,5-35		CPB2/CT70

• DERIVATION CONNECTORS - CALL SIMULTANEOUS (6KV)



Features

- Connector derivation of simultaneous tightening to derivations in aerial bundled BT network (Version 6kv) aluminum or copper

PRINCIPAL	Sections (mm ²)		Reference
	DERIVADO		
10-95	1,5-10		CDP70/EP95
16-95	4-35 (50)		P2x95
25-95	25-95		P3x95

Features

- Connector derivation of simultaneous tightening to derivations in aerial bundled BT network (Version 6kv) aluminum or copper

• NEUTRAL MASS



Características

- Neutral Mass for contacts
- Tubes of 275 gr

Reference

Neutral brown mass

● PRE-INSULATED TERMINALS BIMETALLIC

Features

- 3 crimps
- For connection of AL conductors and terminal equipment or buses in CU
- Must be removed only 35mm of insulation from the conductor to enter
- No coating is required later



Section (mm ²)	Dimensions (mm)		Matriz hexagonal	Color	Reference
	Furo	Comp.			
16	10,5	67	140	Blue	CPTAU 16
25	105	67	140	Orange	CPTAU 25
35	12,8	86	173	Red	CPTAU 35
50	12,8	86	173	Yellow	CPTAU 50
70	12,8	86	173	White	CPTAU 70
95	12,8		215	Grey	CPTAU 95

● PRE-ISOLATED COMPRESSION JOINTS

Features

- No need to shrink coating
- The junction may be done between two different insulated conductors of equal sections or
- For the neutral tensor in almelec, unions support one superior tractive effort to 1660kg
- Pre-insulated Unions reduction on request



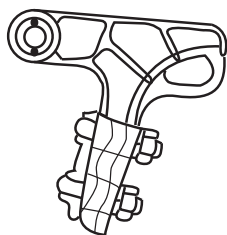
Section (mm ²)		Reference
Cond.1	Cond.2	
16	16	MJPT 16
25	25	MJPT 25
35	35	MJPT 35
50	50	MJPT 50
70	70	MJPT 70
95	95	MJPT 95

9. Airline accessories



•ACCESSORIES FOR AIRLINE NAKED - MEDIUM VOLTAGE

•MOORING CLAMP

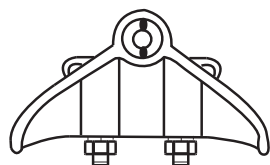


Features

- Accessories for mooring cable stirrup aluminum-160mm² and steel to compression until 235mm²

Designation	Section (mm ²)	Reference
Forceps tying stirrup (4-12mm)	30-50	GA-1
Forceps tying stirrup (10-16mm)	90	GA-2
Forceps tying stirrup (16-20mm)	130-160	GA-3
Forceps tying compression Guinea	130	1J27
Forceps tying compression (Partridge)	160	1J157
Forceps tying compression (Ibis)	235	1J234

•SUSPENSION CLAMP

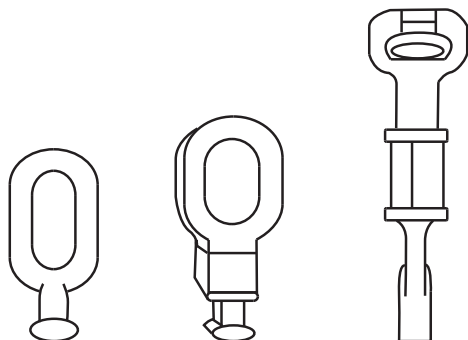


Features

- Accessories for suspension of aluminum-caliper cable 325mm² to steel and anti-vibration, including rod and collar protection rubber

Designation	Section (mm ²)	Reference
Forceps tying stirrup (5-12mm)	70-50	GS-1
Forceps tying stirrup (12-17mm)	90-130	GS-2
Tweezers suspension bracket (17-23mm)	160-235	GS-3
Tweezers suspension anti-vibration	160	GSA-160
(15,75/16,40)	235	GSA-235
Tweezers suspension anti-vibration	325	GSA-325

• BALL SIMPLE PIN, PIN BALL TO EYE BALL COURTS AND ROD FOR ROD



Description	Reference
Rótula olhal quadra para haste	R-16A-P/16
Simple ball pin	AB-16
Ball pin rod	AB-16Q

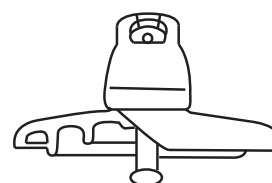
• ACCESSORIES FOR AIRLINE NAKED - MEDIUM VOLTAGE

• JOINTS FOR FULL DRAW WIRE ACSR



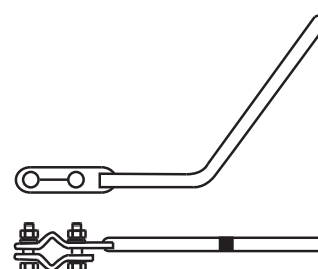
Designation	Reference
Compression joint f / acsr 30mm ² (Gophier)	1J31
Compression joint f / acsr 50mm ² (Ferret)	1J49
Compression joint f / acsr 90mm ²	1J88
Compression joint f / acsr 130mm ² (Guinea)	1J227
Compression joint f / acsr 160mm ² (Partridge)	1J157
Compression joint f / acsr 235mm ² (Ibis)	1J234
Compression joint f / acsr 325mm ² (Bear)	1J326

• INSULATION IN GLASS AND CERAMIC



Designation	Creepage	Reference
Glass insulating 70KN	320	E70/27
Anti-pollution glass insulating 100KN	445	E100PP/146
Ceramic insulator 40KN	210	AAB-1404
Ceramic insulator 70KN	300	AAB-508
Horizontal ceramic insulator 10KN	420	ALH-35
Horizontal ceramic insulator 10KN	650	ALH-45
Horizontal ceramic insulator 10KN	1240	ALH-60

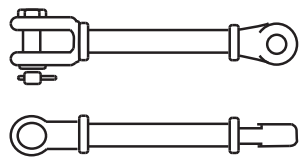
• DISCHARGE RODS BLOCK, SINGLE, DOUBLE



Description	Reference
Discharge block rod	Haste 300/110
Discharge block rod	Haste 300/172
Discharge double rod	2x300/120
Discharge double rod	2x300/180

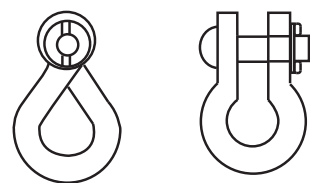
• **NAKED AIRLINE ACCESSORIES - MEDIUM VOLTAGE**

• **EXTENSOR FOR CHAIN MOORING**



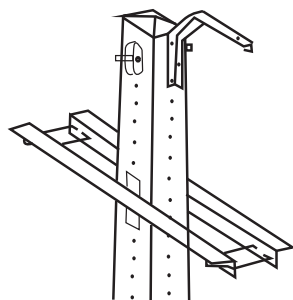
Description	Reference
Chain extender 500	Along 16-500

• **RIGHT AND CROSS SHACKLE**



Description	Reference
Right shackle	GN-16
Cross shackle	GNT-16

• **FRAMES FOR LINES MT AND BT**



	Reference
Frame	GAL
Frame	GAN
Frame	GR
Frame	HAL
Frame	HAN
Frame	HDR
Frame	HFL
Frame	HPT4
Frame	HRF
Frame	HRFSC
Frame	HRFSCE
Frame	HSC
Frame	PRF
Frame	TAL
Frame	TAN
Frame	TFL
Frame	TRF
Frame	VAN
Frame	VRF
Transition	LA/LS

• BIRDS SAFER



Section (mm ²)		Diameter (mm)		L(mm)	Reference
AL/aço	CU	AL/Aço	CU		
30	25	7,08	6,6	220	22-PEP-6,5/8,88
50	50	9,00	9,0	240	24-PEP-8,89/11,42
90	95	12,00	12,5	280	28-PEP-11,43/15,23
160	150/18	16,32	15,7/17,5	330	33-PEP-15,24/19,57
235	5	19,89		380	38-PEP-19,58/21,81
325		23,45		440	44-PEP-21,82/25,37

• PROTECTIONS RODS

Features

- Accessories for the protection of conductors in suspension

Section (mm ²)		Lenght (mm)	Diameter (mm)	Reference
AL/aço	CU			
	25	1070	6,60	107-AVP-6,6/6,95
30		1070	7,08	107-AVP-6,69/7,36
50	50	1220	9,00	122-AVP-8,81/9,31
90		1370	12,00	137-AVP-11,79/12,46
	95	1420	12,50	142-AVP-12,47/13,25
130		1520	14,60	152-AVP-14,02/14,87
	150	1630	15,70	163-AVP-15,42/16,02
160		1630	16,32	163-AVP-16,03/16,65
235	185	1730	17,50	173-AVP-17,27/17,87
325		1930	19,89	193-AVP-18,89/20,69
		2030	23,45	03-AVP-23,09/23,61



• FOOTREST CONNECTORS AL/CU

Section (mm ²)	Reference
18-34	DM-1083
34-117	DM-2143
75-235	DM-3164



• MOBILE BEACK CONNECTORS



Sections (mm ²)		Reference
Main	Derivated	
17-75 (AL)	16-60 (AL)	CD74-AP86
54-228 (AL)	34-22 (AL)	CD74-AG86
17-75 (AL)	16-60 (AL/CU)	CD74-APP86
17-75 (CU)	16-50 (AL/CU)	CD74-CPP86

• PARALLEL CONNECTOR TO DRIVERS IN ALUMINUM



Sections (mm ²)		Screws	Reference
Main	Derivated		
10-50	10-50	Steel	TLAA 10-50C
10-50	10-50	Inox	TLAA 10-50X
90-20	90-20	Steel	TLAB 90-20C
90-20	90-20	Inox	TLAB 90-20X
125-175	125-175	Steel	TLAD 175C
125-175	125-175	Inox	TLAD 175X

• BIMETALLIC CONNECTORS AL/CU



Section (mm ²)		Screw
AL	CU	
15-70	6-25	Steel
15-70	6-25	Inox
15-70	6-50	Steel
15-70	6-50	Inox
16-120	10-95	Steel
16-120	10-95	Inox

• BRASS CLAW CONNECTORS FOR COPPER

Section (mm ²)	Screw	Reference
4-16	Brass	TLCJ 4-16
10-50	Brass	TLCJ 10-50L
25-95	Brass	TLCJ 25-95
50-150	Brass	TLCJ 95-150



• BRASS COMPACT CONNECTORS FOR COPPER

Section (mm ²)	Screw	Reference
6-50	Brass	TLCK 6-50L
6-50	Inox	TLCK 6-50X
19-95	Brass	TLCK 16-95L
19-95	Inox	TLCK 16-95X



• WEDGE IN CONNECTORS 'IMPACT'

Features

- Connector to set on request



10. Fuses



● CYLINDRICAL FUSES

Features

- Manufactured according to the standards
IEC 269-2-1 and NTC63-210

● 8x31,5



Caliber (Amp)	Un (Volts)	Icc (KA)	Emb (Un)	Ø (mm)	B máx (mm)	Reference
1	400	100	10	8,5	6,7	ZR-00
2	400	100	10	8,5	6,7	ZR-00
4	400	100	10	8,5	6,7	ZR-00
6	400	100	10	8,5	6,7	ZR-00
8	400	100	10	8,5	6,7	ZR-00
10	400	100	10	8,5	6,7	ZR-00
12	400	100	10	8,5	6,7	ZR-00
16	400	100	10	8,5	6,7	ZR-00
20	400	100	10	8,5	6,7	ZR-00
25	400	100	10	8,5	6,7	ZR-00

● 10x38



Caliber (Amp)	Un (Volts)	Icc (KA)	Emb (Un)	Ø (mm)	B máx (mm)	Reference
1	500	100	10	10,3	10,5	ZR-0
2	500	100	10	10,3	10,5	ZR-0
4	500	100	10	10,3	10,5	ZR-0
6	500	100	10	10,3	10,5	ZR-0
8	500	100	10	10,3	10,5	ZR-0
10	500	100	10	10,3	10,5	ZR-0
12	500	100	10	10,3	10,5	ZR-0
16	500	100	10	10,3	10,5	ZR-0
20	500	100	10	10,3	10,5	ZR-0
25	500	100	10	10,3	10,5	ZR-0
32	400	100	10	10,3	10,5	ZR-0

● 14x51



Caliber (Amp)	Un (Volts)	Icc (KA)	Emb (Un)	Ø (mm)	B máx (mm)	Reference
2	690	100	10	14,3	13,8	ZR-1
4	690	100	10	14,3	13,8	ZR-1
6	690	100	10	14,3	13,8	ZR-1
8	690	100	10	14,3	13,8	ZR-1
10	690	100	10	14,3	13,8	ZR-1
12	690	100	10	14,3	13,8	ZR-1
16	690	100	10	14,3	13,8	ZR-1
20	690	100	10	14,3	13,8	ZR-1
25	690	100	10	14,3	13,8	ZR-1
32	690	100	10	14,3	13,8	ZR-1
40	690	100	10	14,3	13,8	ZR-1
50	690	100	10	14,3	13,8	ZR-1

● 22x58



Caliber (Amp)	Un (Volts)	Icc (KA)	Emb (Un)	Ø (mm)	B máx (mm)	Reference
16	690	100	10	22,2	16,2	ZR-2
20	690	100	10	22,2	16,2	ZR-2
25	690	100	10	22,2	16,2	ZR-2
32	690	100	10	22,2	16,2	ZR-2
40	690	100	10	22,2	16,2	ZR-2
50	690	100	10	22,2	16,2	ZR-2
63	690	100	10	22,2	16,2	ZR-2
80	690	100	10	22,2	16,2	ZR-2

• NEUTRAL CARTRIDGES

Features

- Cartridges for use in neutral circuits cuts

Designation	Quant.	Type
8,5 x 31,5	10	ZR-00
10,3 x 38	10	ZR-0
14 x 51	10	ZR-1
22 x 58	10	ZR-2



• KNIFE FUSES

Features

- Fuses high cutting power, manufactured according to the standards :
EDU 0636, IEC / EN 60 269, DIN 43620

• NH-00 TYPE

Caliber Amp	Un (Volts)	Icc (kA)	Emb (Un)	Reference
4	500	120	3	NH-00
6	500	120	3	NH-00
10	500	120	3	NH-00
16	500	120	3	NH-00
20	500	120	3	NH-00
25	500	120	3	NH-00
32	500	120	3	NH-00
35	500	120	3	NH-00
40	500	120	3	NH-00
63	500	120	3	NH-00
80	500	120	3	NH-00
100	500	120	3	NH-00
125	500	120	3	NH-00
160	500	120	3	NH-00



• NH-1 TYPE

Caliber Amp	Un (Volts)	Icc (kA)	Emb (Un)	Reference
16	500	120	3	NH-1
25	500	120	3	NH-1
32	500	120	3	NH-1
35	500	120	3	NH-1
40	500	120	3	NH-1
50	500	120	3	NH-1
63	500	120	3	NH-1
80	500	120	3	NH-1
100	500	120	3	NH-1
125	500	120	3	NH-1
160	500	120	3	NH-1
200	500	120	3	NH-1
250	500	120	3	NH-1
315	500	120	3	NH-1



• APC FUSES

• NH-2 TYPE



Caliber Amp	Un (Volts)	Icc (KA)	Emb (Un)	Reference
35	500	120	3	NH-2
40	500	120	3	NH-2
50	500	120	3	NH-2
63	500	120	3	NH-2
80	500	120	3	NH-2
100	500	120	3	NH-2
125	500	120	3	NH-2
160	500	120	3	NH-2
200	500	120	3	NH-2
250	500	120	3	NH-2
315	500	120	3	NH-2
355	500	120	3	NH-2
400	500	120	3	NH-2

• NH-3 TYPE



Caliber Amp	Un (Volts)	Icc (KA)	Emb (Un)	Reference
315	500	120	3	NH-3
355	500	120	3	NH-3
400	500	120	3	NH-3
500	500	120	3	NH-3
630	500	120	3	NH-3

• NH-4 TYPE



Caliber Amp	Un (Volts)	Icc (KA)	Emb (Un)	Reference
630	500	120	3	NH-4
800	500	120	3	NH-4
1000	500	120	3	NH-4
1250	500	120	3	NH-4

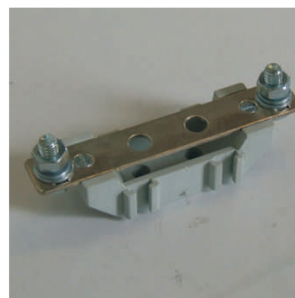
• BASES FOR NH FUSES

Un (Volts)	In (Amp)	Emb (Un)	Reference
690	160	3	BASE 00
690	160	3	BASE 0
690	250	3	BASE 1
690	400	3	BASE 2
690	630	3	BASE 3
690	1250	1	BASE 4



• NEUTRAL BASES

Un (Volts)	In (Amp)	Emb (Un)	Reference
500	160	3	PP 00N
Separador para PK 00e PP 00N			
Base unipolar para neutro amovível			



• NEUTRAL NH KNIFES

In (Amp)	Emb (Un)	Reference
100	5	NV L00
250	5	NV L1
400	5	NV L2
630	5	NV L3
1250	5	NV L4



• HANDLE PULLERS

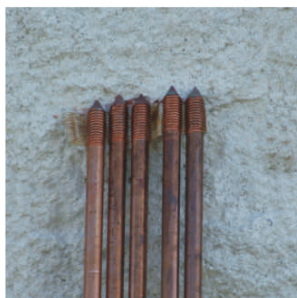
Description	Reference
Handle puller	R00-4
Handle puller	VR 00-4



11. Earth Networks and Arresters



● GROUND ELECTRODES



Characteristics

- A ground electrode comprising a steel core of high mechanical strength, threaded at both ends and coated with a layer of electrolytic copper, 99.9% pure, with a minimum thickness of 250 microns.
- Approved by the general direction of energy - Article 156 of the safety regulation of high voltage power lines.

Copper thickness	Sizes		Reference
	mm	inches	
250 microns	16x1500	5/8"	J1558/RR
	16x2000	5/8"	J2058RR
	19x2000	3/4"	J2034RR
50 microns	16x1540	5/8"	15CG
	16x2000	5/8"	20CG

● GROUND ELECTRODE ACCESSORIES

● 'G' TYPE BRONZE CLAMPS WITH BRONZE OR STAINLESS SCREW



Admissible conductors (mm2)		electrode max radius (mm)	Reference
Min	Max		
10	70	16	KR-1 Latão
10	70	16	KR-1 Inox
25	95	20	KR-2

● STEEL STOPPERS



electrode max radius (mm)	Reference
16	ST 200
(5/8")	ST 300

● SCREW JOINTS IN AL/BRONZE



electrode max radius (mm)	Reference
16	CG 270
(5/8")	CG 300

● ALUMINOTHERMIC WELDING - MOLDS

Characteristics

- The aluminothermic welding uses high-temperature chemical reaction between copper oxide and aluminum, to weld parts (cable / cable, etc.) within a graphite mold. Can be welded by this process, copper / copper or copper / regular steel, stainless steel or galvanized, as well as rails, bronze, brass, etc.
- The aluminothermic mixture is contained in the same cartridge (color cap) with the respective charge (black top) for igniting the mixture. Along with these, metal discs that prevent leakage of the mixture through the hole of the mold are provided.
- The respective molds and cartridges are chosen in the following tables, as well as tweezers and raspadores.
- The molds are made of graphite, heat resistant material and can be normal or mini. Normal allow between 70 to 100 welds, mini between 25 and 30 welds.
- Mini molds are commonly used for copper connections / helisteel, wherein helisteel is already in a structure and uses a special clamp together with a fiberglass board. In case of using ordinary copper molds for welding / helisteel and since the molds are composed of three parts, a pinch clamp beyond the normal gripper is required.

● TYPE 'CR' MINI MOLDS AND ACCESSORIES

Cartridge	Reference
C-45	M/CR-PH 10-40/25
C-45	M/CR-PH 10-40/35
C-90	M/CR-PH 10-40/50
C-90	M/CR-PH 10-40/70
C-90	M/CR-DP 10-40/50
C-90	M/CR-DP 10-40/70
	TSC 50R tweezer
	Gasket

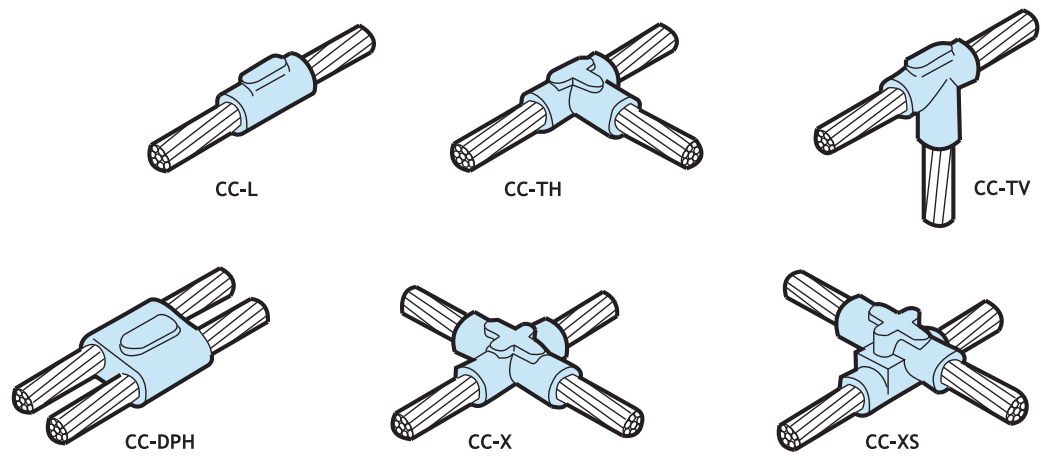


● OTHER MINI MOLDS AND ACESSORIES

Cartucho	Referência
C-45	M/CC-TH 35/35
C-65	M/CC-TH 35/50
C-90	M/CC-TH 50/50
C-65	M/CC-X 35/35
C-90	M/CC-X 35/50
C-90	M/CC-X 50/50
C-90	M/CP-T 58/50
	TSC-50 tweezer

● COMMON CONNECTIONS

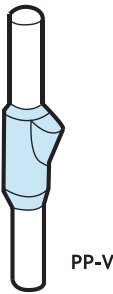
● CABLE / CABLE



CC-L	CC-TH CC-TV	CC-DPH	CC-X	CC-XS	25	35	50	70	95	120	150	185	240
25					C-32								
35					C-45	C-45							
50	25				C-45	C-45	C-45						
70	35				C-45	C-45	C-65	C-65					
95	50				C-65	C-65	C-90	C-90	C-90				
120	70	25	25		C-65	C-65	C-90	C-90	C-90	C-115			
150	95	35	35		C-90	C-90	C-90	C-90	C-115	C-115	C-115		
185	120	50	50		C-90	C-90	C-90	C-90	C-115	C-150	C-150	C-150	
240	150	70	70	25	C-90	C-115	C-115	C-115	C-150	C-150	C-200	C-200	C-200
	185	95	95	35	C-115	C-115	C-115	C-150	C-150	C-200	C-200	C-200	C-250
	240	120	120	50	C-115	C-115	C-150	C-150	C-200	C-200	C-200	C-250	2xC-150
		150	150	70		C-150	C-200	C-200	C-200	C-250	C-250	2xC-150	2xC-200
		185	185	95		C-200	C-250	C-250	C-250	C-250	C-250	C-250	2xC-250
		240	240	120			C-200	C-250	C-250	C-250	C-250	C-250	2xC-250
				150			C-250	2xC-150	2xC-150	2xC-200	2xC-200	2xC-200	2xC-250
				185				2xC-200	2xC-200	2xC-250	2xC-250	2xC-250	

TSC 80 tweezer
 TSC 100 tweezer

● ELECTRODE / ELECTRODE

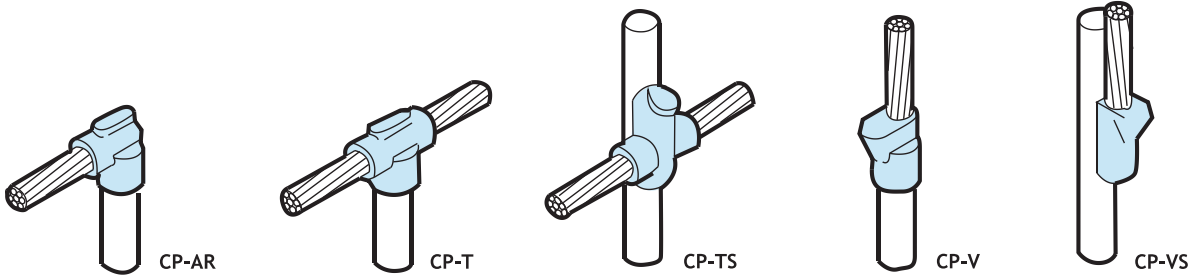


PP-V	
143	C-200
146	C-200
58	C-200
183	2xC-150
34	2xC-150

TSC 80 tweezer

● COMMON CONNECTIONS

● CABLE / ELECTRODE




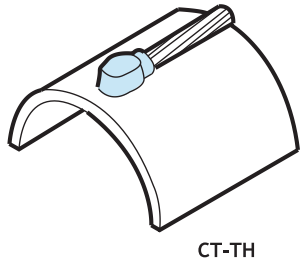
CP-AR	CP-T	P-TS	CP-V	CP-VS	25	35	50	70	95	120	150	185	240
143			143		C-65	C-65	C-90	C-90	C-90	C-90	C-115	C-115	C-150
146			146		C-65	C-65	C-90	C-90	C-90	C-90	C-115	C-115	C-150
58			58		C-65	C-65	C-90	C-90	C-90	C-90	C-115	C-115	C-150
183			183		C-90	C-90	C-90	C-90	C-90	C-90	C-115	C-115	C-150
34			34		C-90	C-90	C-90	C-90	C-90	C-90	C-115	C-115	C-150
	143				C-90	C-90	C-90	C-115	C-115	C-150	C-200	C-200	C-250
	146				C-90	C-90	C-90	C-115	C-115	C-150	C-200	C-200	C-250
	58				C-90	C-90	C-90	C-115	C-115	C-150	C-200	C-200	C-250
	183				C-90	C-90	C-115	C-115	C-115	C-150	C-200	C-200	C-250
	34				C-90	C-90	C-115	C-115	C-115	C-150	C-200	C-200	C-250
		143			C-90	C-90	C-115	C-115	C-115	C-150	C-150	C-250	2xC-200
		146			C-90	C-90	C-115	C-115	C-115	C-150	C-150	C-250	2xC-200
		58			C-90	C-90	C-115	C-115	C-150	C-150	C-150	C-250	2xC-200
		183		143	C-90	C-90	C-115	C-150	C-150	C-200	C-250	2xC-150	2xC-250
		34		146	C-90	C-90	C-115	C-150	C-150	C-200	C-250	2xC-150	2xC-250
				58	C-90	C-90	C-115	C-150	C-200	C-200	C-250	2xC-150	2xC-200
				183	C-90	C-90	C-115	C-150	C-200	C-200	C-250	2xC-150	2xC-200
				34	C-90	C-90							

 TSC 80 tweezer

● CABO / STEEL TUBING

CT-TH	
10	C-15
16	C-15
25	C-25
35	C-32
50	C-45
70	C-65

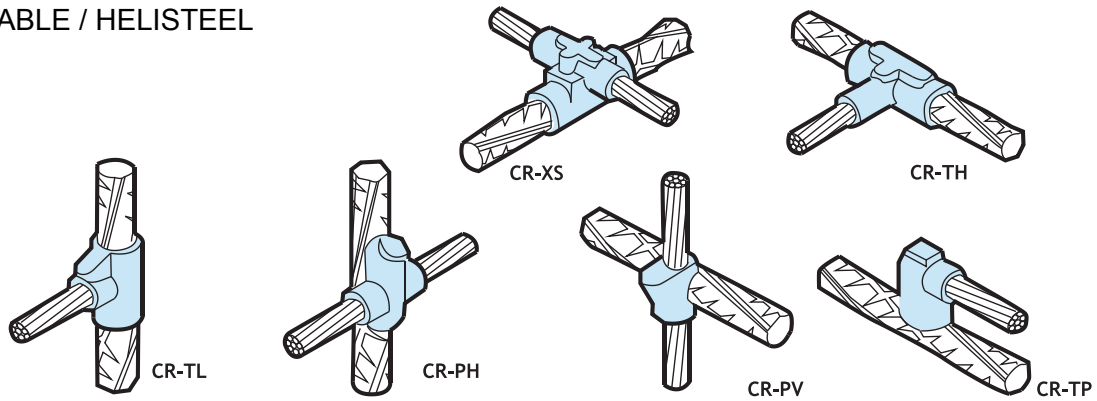
 Tweezer cable-tube MS



CT-TH

● COMMON CONNECTIONS

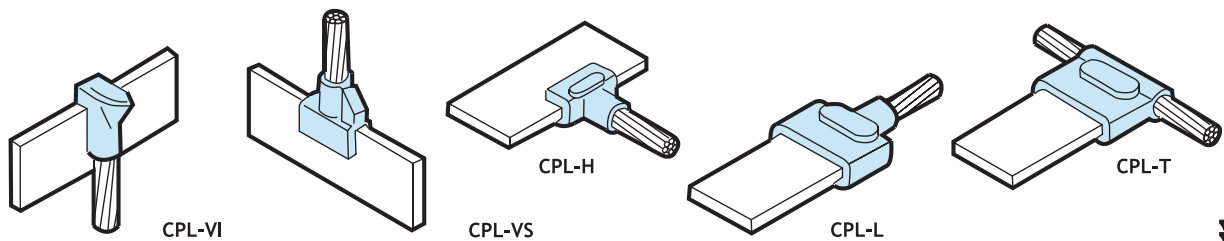
● CABLE / HELISTEEL



CR-XS	CR-TH	CR-TL	CR-PV	CR-PH	CR-TP	25	35	50	70	95	120	150	185	240
	10			10	10	C-90	C-90	C-115	C-115	C-150				
10			10			C-90	C-90	C-115	C-150	C-150				
		10		16	16	C-90	C-90	C-115	C-115	C-150	C-150	C-200		
				20	20	C-90	C-90	C-115	C-115	C-150	C-150	C-200	C-250	C-250
				20		C-90	C-90	C-115	C-115	C-150	C-150	C-200	C-250	2xC-200
			16			C-115	C-115	C-150	C-150	C-200	C-200	C-200		
			20			C-115	C-115	C-150	C-150	C-200	C-200	C-250	C-250	2xC-150
	16	16				C-150	C-150	C-150	C-150	C-200	C-200	C-250		
	20					C-150	C-150	C-200	C-200	C-200	C-250	C-250	2xC-150	2xC-200
16						C-115	C-115	C-150	C-150	C-200	C-200	C-200		
20						C-115	C-115	C-150	C-150	C-200	C-200	C-250	C-250	2xC-150
		20				C-150	C-150	C-200	C-200	C-200	C-250	C-250	2xC-150	2xC-200

□ TSC 80 tweezer ▤ TSC 100 tweezer

● CABLE / BAR

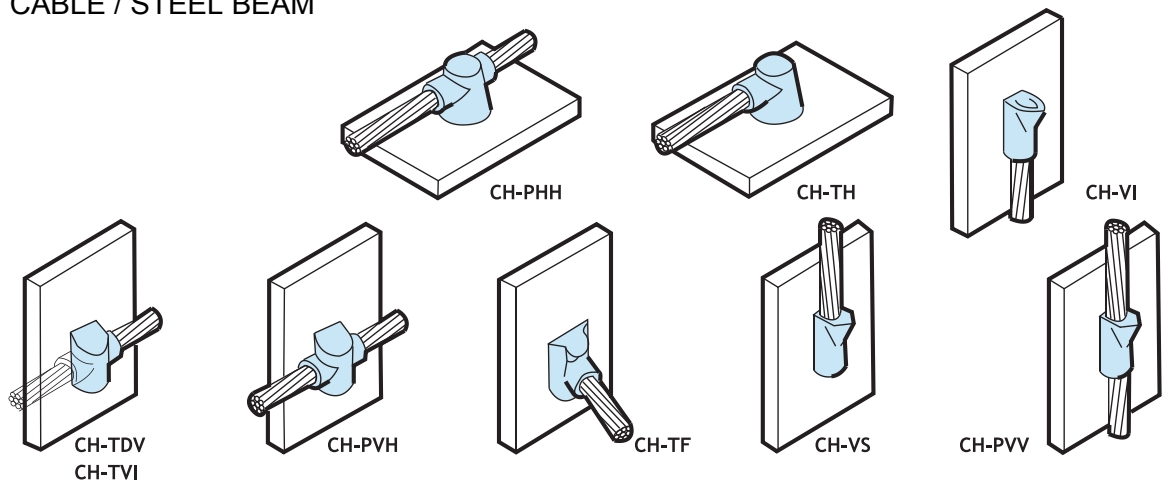


CPL-VI	CPL-VS	CPL-H	CPL-T	CPL-L	20x2	20x3	20x5	25x3	25x5	30x3	30x5	40x3	40x5	50x5	60x5
		25		25	C-32	C-45									
		35	25	35	C-45	C-45	C-45	C-45							
		50	35	50	C-45	C-45	C-65	C-65							
	25	70	50	70	C-45	C-65	C-65	C-90	C-90						
25	35	95	70	95	C-65	C-90	C-90	C-90	C-115	C-115					
35	50	120		120		C-115	C-115	C-115	C-115	C-115	C-115	C-115			
50	70	150		150		C-115	C-115	C-115	C-115	C-150	C-115	C-115	C-115	C-150	
70	95	185	95	185		C-115	C-150	C-150	C-150	C-150	C-150	C-150	C-150	C-200	
95	120	240	120	240		C-150	C-150	C-150	C-150	C-200	C-200	C-200	C-200	C-250	2xC-150
120	150						C-200	C-200	C-200	C-200	C-200	C-250	C-250	2xC-150	2xC-150
150	185							C-200	C-200	C-250	C-250	C-250	C-250	2xC-150	2xC-150
185	240								C-250	C-250	C-250	2xC-150	2xC-150	2xC-150	2xC-200
240										C-250	C-250	C-250	2xC-150	2xC-150	2xC-200



□ TSC 80 tweezer ▤ TSC 100 tweezer

● COMMON CONNECTIONS

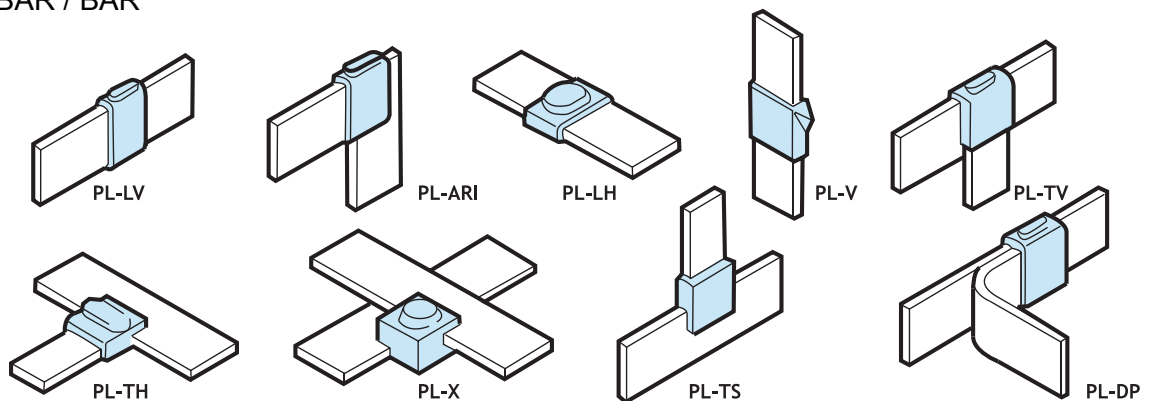
● CABLE / STEEL BEAM





	CH-TF	CH-TH	CH-VI	CH-TDV CH-TV	CH-PHH	CH-PVH	CH-VS	CH-PVV
25	C-45	C-45	C-45	C-45	C-65	C-65	C-65	C-90
35	C-45	C-65	C-65	C-65	C-90	C-90	C-90	C-115
50	C-90	C-90	C-90	C-90	C-90	C-115	C-115	C-150
70	C-90	C-90	C-90	C-90	C-115	C-115	C-150	C-200
95	C-11	C-115	C-115	C-115	C-115	C-150	C-200	C-250
120	C-115	C-115	C-115	C-115	C-150	C-150	C-200	C-250
150	C-150	C-150	C-150	C-150	C-200	C-200	C-250	2xC-150
185	C-200	C-200	C-150	C-200	C-250	C-250	2xC-150	2xC-150
240	C-200	C-200	C-200	C-200	2xC-150	2xC-150	2xC-150	2xC-200

 TSC 80 tweezer
 TSC 100 tweezer

● BAR / BAR

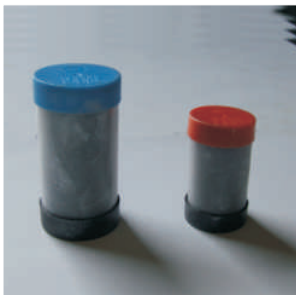


	PL-LV	PL-ARI	PL-TV	PL-V	PL-TS	PL-DP	PL-LH	PL-TH	PL-X
20x2	C-45	C-45	C-45	C-65	C-115	C-90	C-45	C-45	C-45
20x3	C-45	C-45	C-65	C-65	C-115	C-90	C-45	C-45	C-65
20x5	C-65	C-65	C-65	C-90	C-150	C-90	C-65	C-65	C-65
25x3	C-65	C-65	C-90	C-90	C-150	C-90	C-65	C-65	C-65
25x5	C-90	C-90	C-90	C-115	C-200	C-90	C-90	C-90	C-90
30x3	C-90	C-90	C-90	C-115	C-200	C-115	C-90	C-90	C-90
30x5	C-115	C-115	C-115	C-150	C-250	C-115	C-115	C-115	C-115
40x3	C-115	C-115	C-115	C-150	C-250	C-115	C-150	C-150	C-115
40x5	C-150	C-150	C-150	C-200	2xC-150	C-200	C-150	C-150	C-150
50x5	C-200	C-200	C-200	C-250	2xC-200	C-200	C-200	C-200	C-200
60x5	2xC-150	2xC-150	2xC-150	2xC-150	2xC-250	2xC-200	2xC-150	2xC-150	C-250

 TSC 80 tweezer
 TSC 100 tweezer

● ALUMINOTHERMIC WELD - ACCESSORIES

● CARTRIDGES



Reference

C-32
C-45
C-65
C-90
C-115
C-150
C-200
C-250

● MOLD SCRAPERS



Reference

R-45 (P/C-45 e C-65)
R-90 (P/C-90 e C-115)
R-150 (P/C-150 e C-250)

● TWEEZERS



Reference

TSC-80
TSC-100
TSC-50
TSC-50 R

● CLEANING BRUSH / CABLES



Reference

Cleaning brush

● ALUMINOTHERMIC WELD - ACCESSORIES

● LIGHTER AND FILLING MASS

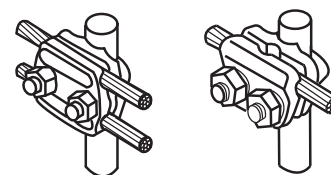
Reference
Lighter
Mass (1kg package)



● CONNECTORS FOR ELECTRODES

Characteristics

- Bronze connectors with galvanized screws
- Stainless alternative

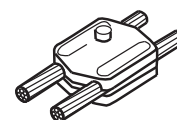


Permissible conductors (mm2)				maximum radius of the electrode (mm)	Reference
Cable: Min.	Max.	Ø Wire: Min.	Max.		
16	16	4	6	16	KU-16.16
25	25	6	11	(5/8")	KU-16.25
25	25	6	11	16	KU-20.25
70	70	10	13	20	KU-16.63
95	95	10	18	(3/4")	KU-20.12
25	25	6	11	16 e 20	KB-16.25
70	70	10	13	20	KB-16.63
95	95	13	18	16 e 20	KB-20.12

● VARIOUS CONNECTORS - REN TYPE

Characteristics

- Bronze connectors with galvanized screws
- Stainless screw alternative, REN type



Permissible conductors (mm2)				Thread	Type	Reference
Cable: Min.	Max.	Ø Wire: Min.	Max.			
25	70	6	11	M8x35	-	KBL-25
70	95	11	13	M12x60	-	KBL-63
95	185	13	18	M10x55	-	KBL-125
25	70	6	11	M8x35	'C'	KBL-25I
25	70	6	11	M12x60	'M'	KBL-25S-M12
25	70	11	11	M16x60	'M'	KBL-25S-M16
Cable		Electrode		M10	'E'	KB-16.5I
25	70	16	20			

● BROKEN PIN CONNECTORS

Characteristics

- High electrical and mechanical characteristics
- Made of anticorrosion bronze
- Suitable for joints and derivations between AL / CU or CU / CU conductors with central tab

● KSU AL-AL/ AL-CU



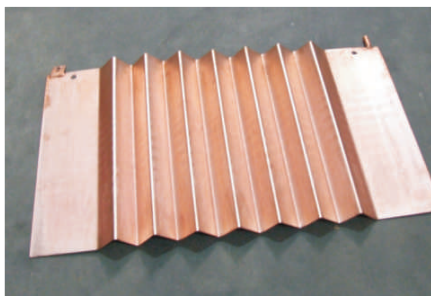
Passer AL (mm ²)	Derived CU/AL (mm ²)	Reference
4-10	2-10	KSU17
6-16	6-16	KSU20
6-25	6-25	KSU22
10-35	10-35	KSU23
35-50	6-50	KSU25
35-70	10-70	KSU26
50-120	10-120	KSU29
50-185	25-185	KSU31
185-240	35-240	KSU34

● KS CU-CU



Passer CU (mm ²)	Derived CU (mm ²)	Reference
4-6	1,5-6	KS90
6-8	2,5-8	KS15
10	2,5-8	KS17
10-16	2,5-16	KS20
16-25	2,5-25	KS22
16-35	2,5-35	KS23
25-50	2,5-50	KS25
35-70	2,5-70	KS26
50-95	10-95	KS27
50-120	10-120	KS29
50-185	10-185	KS31
70-240	70-240	KS34
95-400	95-400	KS39
150-500	95-500	KS44

● GROUND PLATES



Characteristics

- Solid copper or coppery
- Used for dispersion of discharges

length	Sizes (mm)		Reference
	width	thick.	
1000	500	2	Wavey coppery
1000	1000	2	Solid wavey

● LIGHTNING RODS AND ACCESSORIES

Characteristics

- A system for lightning protection, consists of capture devices of the type:

- Ionizing lightning rods
- Franklin type lightning rods
- Shanks for Faraday cage

And the following elements:

- Mast with fastening set
- Conductor and clamps
- Ground measuring case / removable connector
- Protection gutter
- Ground electrode, clamp / aluminothermic welding

● IONIZING LIGHTNING RODS

Range with 6m mast			
Level I	Level II	Level III	Reference
40 mts	60 mts	70 mts	9001
50 mts	70 mts	80 mts	9002
65 mts	80 mts	90 mts	9003
80 mts	93 mts	107 mts	9004



● FRANKLIN TIP

Designation	Reference
Franklin tip in stainless steel	13001



● ACCESSORIES

Designation	Reference
Adapter piece for lightning rod / pole / conductor	15001
Mast extension - galvanized steel 6m	16001
Wall mount for mast	17001
Plastic clamp for cable / tape	18008
Box proving ground / removable	21011
Metallic protection tube 3m	21013
Compound for land improvement	21015
Visit box in PCV 300x300	21018B
Solid copper conductor 8mm / 50m2	18005
Flat galvanized steel conductor 30x3.5	215025
Flat stainless steel conductor 30x2	215026
Discharges conductor	21012

12. Safety Material



● HARNESS + BELT



Characteristics

- Dorsal tied with stainless D eyelet
- Adjustable strap on the legs and shoulder area, four adjustment points
- Adaptable to belt
- EN361 and EN 358 Standards

Description	Reference
Harness 1 dorsal and thoracic mooring	HT-22
Harness 1 dorsal mooring	HT-31
Harness 1 dorsal and 2 thoracic mooring	HT-42
Harness for assembly of electrical lines	HT-
Belt with 2 D lateral mooring - M	Electra
Belt with 2 D lateral mooring - L	CE01-M

● SLINGS



Characteristics

- Positioning EN358 sling
- Restriction EN354 Drisse sling
- EN355 sling with Absorber
- Adjustable sling rope
- Nylon rope 11mm / 12mm diameter

Description	Reference
Restriction driss sling	LD11-2-10-10
Positioning sling	LD 11-10-10
Positioning sling with sleeve	LCM 04-4-M40
Reduction positioning sling	LCR 12-2-10-10
Simple rope sling with absorber	LCA 12-2-10-10
Double rope sling with absorber	LCAD 12-2-10-10
Simple rope sling with constraint	LC 12-2-10-10
Double rope sling with constraint	LCF 12-2-10-10-10

● BOOTS AND SHOES



Characteristics

- Steel toe
- Steel toe and insole
- Anti-static
- Colors: black and brown
- Sizes: 37-46

Reference
BOTA S1P
SAPATO S1P

● RAINCOATS

Characteristics

- Waterproof suit, in polyurethane, nylon or PVC, composed of jacket with hood and closed pants
- Varios sizes
- Various Colors



Description	Reference
polyurethane raincoat	POLI
nylon raincoat	NIAGARA
PVC raincoat	PVC-POL

● VEST

Characteristics

- Signaling vest in orange or yellow with reflective strips. EN471



Reference
COLETE

● MULTI-POCKET VEST

Characteristics

- Can be personalized with embroidery or printing upon minimum quantities.



Reference
COLETE MULTI

● PARKA



Characteristics

- High visibility Parka in GBTEX (polyester polyurethane)
- Reflective bands
- Colors: orange / blue or yellow / blue

Reference

Prk423027/423028

● T-SHIRTS



Characteristics

- 160g, 100% Cotton
- Round neck
- Can be personalized with stamping upon quantity

Reference

T-160

● HELMET



Characteristics

- Electrician helmet with integrated facial protection visor
- Protection against electric arc
- Anti-impact effective protection (crash-box)
- Different colors for the crash-box
- Conforms to EN397, EN50365, EN166 and EN170 standards

Description

Helmet with visor

Reference

E-SHARK

● VISOR



Characteristics

- Universal protection visor for helmets

Description

anti polycarbonate visor

Reference

WISEI. UV

● MECHANICAL PROTECTION GLOVES

Designation	Reference
Siliconized crute pipe glove no. 8	TG47
Siliconized crute pipe glove no. 9	TG40
Siliconized crute pipe glove no. 10	TG45
Siliconized crute pipe glove no. 11	TG48



● MECHANICAL PROTECTION GLOVES

Designation	Reference
Skin glove chief type no.9	Luva-9
Skin glove chief type no.10	Luva-10
Skin glove chief type no.9	Croute-9
Skin glove chief type no.10	Croute-10



● ELECTRICAL PROTECTION GLOVES

Characteristics

- Latex electrical protective glove CEI-903 standard

Class	Useful voltage (Kv)	Test voltage (Kv)	Size	Thickness (mm)	Reference
00	0,5	2,5	8	0,6	TG 41
00	0,5	2,5	9	0,6	TG 42
00	0,5	2,5	10	0,6	TG 43
00	0,5	2,5	11	0,6	TG 44
0	1	5	8	1	TG 31
0	1	5	9	1	TG 30
0	1	5	10	1	TG 35
0	1	5	11	1	TG 32
1	7,5	10	8	1,6	TG 61
1	7,5	10	9	1,6	TG 62
1	7,5	10	10	1,6	TG 63
1	7,5	10	11	1,6	TG 64
2	17	20	8	2,2	TG 38
2	17	20	9	2,2	TG 36
2	17	20	10	2,2	TG 37
2	17	20	11	2,2	TG 39
3	26,5	30	9	2,6	TG 22
3	26,5	30	10	2,6	TG 23
3	26,5	30	11	2,6	TG 24
4	36	40	10	3,4	TG 51
4	36	40	11	3,4	TG 52



● VERTICAL SIGNS



Characteristics

- Several types of signs available: "roadworks", "Closer track", etc.

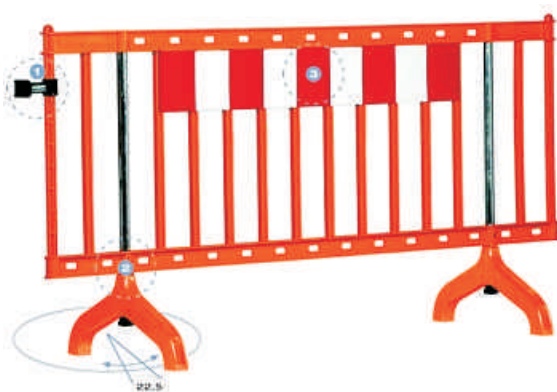
● TEMPORARY TRAFFIC LIGHTS



Characteristics

- Set of two

● POLYETHYLENE BARRIERS



Characteristics

- Constructed of high density polyethylene to ensure maximum strength.
- Lightweight and easy to install.
- Dimensions: 2,17m long x 1,10m high
- Other types available on request

● INSULATING MATS

Characteristics

- Rugs for electrical insulation in high voltage work
- Dimensions: 100x60 or other



Class	Sizes (mts)	Thickness (mm)	Voltage (Kv)	Class	Reference
3	1x0,6	3	26,5	CL-3	TT05
4	1x0,6	4	36,0	CL-4	TT04-06

● INSULATED TOOLS

● REVERSIBLE RATCHET WRENCH



Size	Description	Lenght (mm)	Reference
1/4	Ratchet wrench for 1/4" key box	105	MS55
"	Ratchet wrench for 3/8" key box	190	MS85
3/8		215	MS85P
"	Ratchet wrench for 1/2" key box	255	MS65
		268	MS65P

● EXTENSIONS



Size	Description	Lenght (mm)	Reference
1/4	Extension for key box	116	MS54
"	1/4"	166	MS54L
		140	MS84
3/8	Extension for key box	264	MS84L
"	3/8"	144	MS71
		264	MS71L

● INSULATED TOOLS

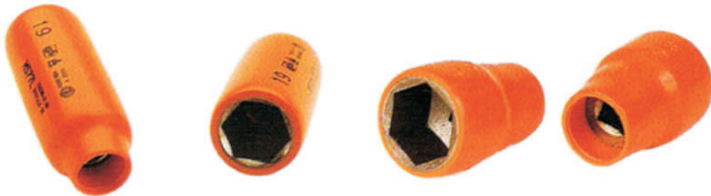
● MALE AND FEMALE BOX KEY, 6 SIDES, 1/4"



Type	Size metric syst.	Reference
Male	3	MS57
Male	4	MS57
Male	5	MS57
Male	6	MS57
Male	7	MS57

Type	Size metric syst.	Reference
Female	4	MS56
Female	5	MS56
Female	6	MS56
Female	7	MS56
Female	8	MS56
Female	9	MS56
Female	10	MS56
Female	11	MS56
Female	12	MS56
Female	13	MS56
Female	14	MS56

● FEMALE BOX KEY, 6 SIDES, 3/8"



Type	Size metric syst.	Reference
Female	6	MS77
Female	7	MS77
Female	8	MS77
Female	9	MS77
Female	10	MS77
Female	11	MS77
Female	12	MS77
Female	13	MS77
Female	14	MS77
Female	15	MS77
Female	16	MS77
Female	17	MS77
Female	18	MS77
Female	19	MS77
Female	20	MS77
Female	21	MS77
Female	22	MS77
Female	23	MS77
Female	24	MS77

Type	Size metric syst.	Reference
Female	8	MS77L
Female	9	MS77L
Female	10	MS77L
Female	11	MS77L
Female	12	MS77L
Female	13	MS77L
Female	14	MS77L
Female	16	MS77L
Female	17	MS77L
Female	18	MS77L
Female	19	MS77L
Female	21	MS77L
Female	22	MS77L
Female	24	MS77L

● INSULATED TOOLS

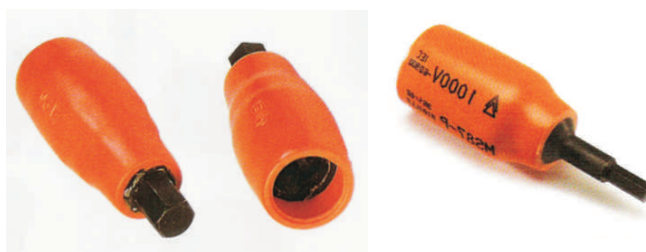
● FEMALE BOX KEY, 12 SIDES, 3/8"



Type	Size metric syst.	Reference
Female	8	MS86
Female	9	MS86
Female	10	MS86
Female	11	MS86
Female	12	MS86
Female	13	MS86
Female	14	MS86
Female	15	MS86
Female	16	MS86
Female	17	MS86
Female	18	MS86
Female	19	MS86
Female	20	MS86
Female	21	MS86
Female	22	MS86
Female	23	MS86
Female	24	MS86

Type	Size metric syst.	Reference
Female	8	MS86L
Female	9	MS86L
Female	10	MS86L
Female	11	MS86L
Female	12	MS86L
Female	13	MS86L
Female	14	MS86L
Female	16	MS86L
Female	17	MS86L
Female	18	MS86L
Female	19	MS86L
Female	21	MS86L
Female	22	MS86L

● MALE BOX KEY, 6 SIDES, 3/8"



Type	Size metric syst.	Reference
Male	3	MS87
Male	4	MS87
Male	5	MS87
Male	6	MS87
Male	7	MS87
Male	8	MS87
Male	9	MS87
Male	10	MS87

Type	Size metric syst.	Reference
Male	3	MS87P
Male	4	MS87P
Male	5	MS87P
Male	6	MS87P
Male	7	MS87P
Male	8	MS87P
Male	10	MS87P

● INSULATED TOOLS

● FEMALE BOX KEY, 12 SIDES, 1/2"



Type	Size Metric syst.	Reference
Female	12	MS66L
Female	13	MS66L
Female	14	MS66L
Female	16	MS66L
Female	17	MS66L
Female	18	MS66L
Female	19	MS66L
Female	21	MS66L
Female	22	MS66L
Female	23	MS66L
Female	24	MS66L
Female	26	MS66L
Female	27	MS66L
Female	28	MS66L
Female	29	MS66L
Female	30	MS66L
Female	32	MS66L

Type	Size Metric syst.	Reference
Female	8	MS66
Female	9	MS66
Female	10	MS66
Female	11	MS66
Female	12	MS66
Female	13	MS66
Female	14	MS66
Female	15	MS66
Female	16	MS66
Female	17	MS66
Female	18	MS66
Female	19	MS66
Female	20	MS66
Female	21	MS66
Female	22	MS66
Female	23	MS66
Female	24	MS66
Female	25	MS66
Female	26	MS66
Female	27	MS66
Female	28	MS66
Female	29	MS66
Female	30	MS66
Female	32	MS66

● MALE BOX KEY, 6 SIDES, 1/2"



Type	Size Metric syst.	Reference
Male	6	MS67
Male	8	MS67
Male	10	MS67
Male	11	MS67
Male	12	MS67
Male	14	MS67
Male	17	MS67
Male	19	MS67

● INSULATED TOOLS

● SET KEY BOX



No. of parts	Size	Components	Reference
5	1/4	MS55 + MS56-8/10/12 + MS57-5	MS59S
19	"	MS55 + MS54L + MS56-4 A 14 + MS57-3 A 7 + MS58	MS59C
17	1/4	MS65 + MS71 + MS70 + MS56-6/7 + MS66-8 A 17/19/21/22/23	MS69S
32	"	MS65 + MS71 + MS72S + MS66-8 A 32 + MS67-8/10/12/14/17	MS69C
18	1/2	MS85 + MS86-8 A 23 + MS84	MS89C
19	"	MS72J + MS84 + MS85 + MS77L-10 + MS87-4/5/7 + MS77-6 A 14/17/19/21	MS89DRB
11	1/2	MS100MN1+MS72J+MS84+MS87-6+MS77L-10/13/14/16 A 19	MS100D

● TORQUE WRENCHES AND OTHER



Type	Designation	Strenght thightness (Nm)	Width (mm)	Reference
3/8	Reversível	8-54	315	MS100RN1
"	Reversível	4-20	235	MS100N0
3/8	Não reversível	8-54	315	MS100N1 3/8
"	Não reversível	8-54	315	MS100N1 1/2
3/8	Não reversível	30-150	450	MS100N2



Type	Designation	Width (mm)	Reference
1/4"	Alongador com cabo	270	MS58
1/2"-	Redutor 1/2" para 1/4"	76	MS70
1/4"	Chave macho em T	130	MS72J
3/8"	Chave macho em T	310	MS72S

● INSULATED TOOLS

● INSULATED FRENCH WRENCH



Designation	Aperture	Reference
Insulated cable	13	MS7-115
	19	MS7-160
	24	MS7-210
	28	MS7-260
	34	MS7-310
	43	MS7-385
Fully isolated	24	MS7SC-215
	28	MS7SC-265
	34	MS7SC-315

● INSULATED WRENCH



Size metric syst.	Reference	Size metric syst.	Reference
5	MS16	21	MS16
5,5	MS16	22	MS16
6	MS16	23	MS16
7	MS16	24	MS16
8	MS16	25	MS16
9	MS16	26	MS16
10	MS16	27	MS16
11	MS16	28	MS16
12	MS16	29	MS16
13	MS16	30	MS16
14	MS16	31	MS16
15	MS16	32	MS16
16	MS16	33	MS16
17	MS16	34	MS16
18	MS16	35	MS16
19	MS16	36	MS16
20	MS16	37	MS16

● CROSSHEAD INSULATED WRENCH



Size - metric system	Reference
6/8/10/12	IS39-6x8x10
7/9/11/13	IS39-7x9x11
8/10/12/14	IS39-8x10x12
8/10/13/17	IS39-8x10x13
14/17/19/2	IS39-14x17x19

- INSULATED TOOLS

- TELESCOPIC ELBOW INSULATED SCREWDRIVER



Size Metric syst.	Reference
6	MS21
7	MS21
8	MS21
9	MS21
10	MS21
11	MS21
12	MS21
13	MS21
14	MS21
15	MS21
16	MS21
17	MS21
18	MS21
19	MS21

Size Metric syst.	Reference
20	MS21
21	MS21
22	MS21
23	MS21
24	MS21
25	MS21
26	MS21
27	MS21
28	MS21
29	MS21
30	MS21
32	MS21

- "T" HEX SCREWDRIVER



Size Metric syst.	Length (mm)	Reference
10	305	MS19
11	305	MS19
12	305	MS19
13	305	MS19
14	305	MS19
16	305	MS19
17	305	MS19
19	305	MS19
21	305	MS19
22	305	MS19
23	305	MS19
24	305	MS19

Size Metric syst.	Length (mm)	Reference
6	135	MS34
8	135	MS34
10	135	MS34
11	135	MS34
12	135	MS34
13	135	MS34
14	135	MS34
16	135	MS34
17	135	MS34
18	135	MS34

● INSULATED TOOLS

● PHILLIPS SCREWDRIVER



Reference
IC18 - 4x75
IC18 - 4x150
IC18 - 5x100
IC18 - 6x125
IC18 - 8x150
IC18 - 10x200

● SCREWDRIVERS



Reference
IS18 - 2x70
IS18 - 3x100
IS18 - 4x120
IS18 - 5,5x100
IS18 - 5,5x150
IS18 - 6,5x40
IS18 - 6,5x150
IS18 - 8x150
IS18 - 8x200
IS18 - 10x150
IS18 - 10x250
IS18 - 12x200

● POZIDRIVE SCREWDRIVERS



Reference
IP18 - 4x75
IP18 - 4x150
IP18 - 5x40
IP18 - 5x100
IP18 - 6x40
IP18 - 6x125
IP18 - 8x150
IP18 - 10x200

● INSULATED TOOLS

● PLIERS FOR CUTTING CABLES

Aperture (mm)	Length (mm)	Reference
14	160	MS30S - 160
19	230	MS30
20	195	MS45 - 195
24	230	MS45 - 230



● INSULATED KNIVES WITH POUCH

Description	Reference
Straight insulated knife with pouch	IS78
Curved insulated knife with pouch	IS79



● INSULATED SAWS

Description	Length (mm)	Reference
Insulated saw	450	IS22
Small insulated saw	263	MS22J



● INSULATED SCISSORS

Description	Reference
Insulated Scissors	MS2E



● LOW VOLTAGE DETECTORS

● VOLTAGE DETECTOR (BT) - TAG 700



Characteristics

- Voltage usage: 12v to 690v
- Verification of the absence of tension
- Phase sequence (green LED)
- AC/DC Discrimination and phase / neutral (red LED)
- Control of continuity (orange LED)
- Sound and light indication
- Supplied with pouch

Detector type	Voltage (v)	Reference
Voltage	12 to 620	TAG 700

● NO VOLTAGE DETECTOR (BT) - TAG 150



Characteristics

- Voltage usage: 50v to 380v
- Tension level indicator with LEDs and buzzer
- Discrimination of neutral phase
- Phase sequencer
- Operation without batteries

Detector type	Voltage (v)	Reference
Voltage (BT)	50 to 380	TAG 150

● HIGH VOLTAGE DETECTORS

● NO VOLTAGE DETECTOR - TAG 200



Characteristics

- Voltage detector, NFC 18311 standard
- Power usage: 5kv to 75kv
- Electronic detector of absence of tension (HTA)
- Voltage presence indicator with red LED and buzzer
- No voltage indicator with green LED
- Powered by a 9-volt alkaline battery
- Supplied in a metal box or bag

Detector type	Voltage (kv)	Reference
Voltage (HTA)	5 to 75	TAG 200

● HIGH VOLTAGE DETECTORS

● ELECTRONIC ABSENCE OF VOLTAGE DETECTOR - TAG 2000

Characteristics

- Voltage Detector, CEI 61243-1 standard
- Voltage usage: 3kv to 90kv 50Hz
- Indicator of voltage presence with three red LEDs and buzzer
- Indication of absence of voltage with green LED
- Powered by 9-volt alkaline batteries
- Supplied with box and 32715V adapter for APV rod



Detector type	Voltage (kv)	Reference
Voltage (HTA)	3 to 90	TAG 2000

● ABSENCE OF VOLTAGE ELECTRONIC DETECTOR (HTB) - TAG 300

Characteristics

- Voltage Detector, NFC 18311 standard
- Voltage usage: up to 400kv
- Indicator of voltage presence with three red LEDs and buzzer
- Indication of absence of voltage and proper functioning with green LED
- Powered by a 9-volt alkaline battery
- Supplied with metal box



Detector type	Voltage (kv)	Reference
Voltage (HTB)	Up to 400	TAG 300

● HIGH VOLTAGE DETECTORS

● PHASE COMPLIANCE DETECTOR (HF) - TAG 5000



Characteristics

- Phase compliance detector (HF), CEI standard 61481
- Power usage: 4kv the 230kv
- Consisting of two detectors, a transmitter (gray) and a receiver (Blue)
- The transmitter detects the presence of voltage through a sound and light signal, measures the phase and transmits to the receiver
- The detector measures the phase angle and indicates compliance phase through sound and light
- Powered by an alkaline 9 volt battery

Detector type	Voltage (v)	Reference
Phase compliance	4 a 230	TAG 5000

● RESCUE RODS



Characteristics

- Use indoors to rescue electrocuted, at PT work or in 1st, 2nd or 3rd class cells.

Voltage usage (kv)	Weight (kg)	Lenght (Mts)	Reference
63	1,40	1,47	TP12 EC12
90	1,70	1,97	TP12 EC2

● TELESCOPIC MANEUVER RODS (TR)

Characteristics

- Fiber glass with two or three elements
- Withstand voltage 100KV / 30cm
- Usage in voltage detectors, put to earth and maneuver disconnectors
- Can be supplied with universal socket (U) or hexagonal (APV)

Indoor use				Outdoor use	Weight (kg)	Reference
Retracted		Stretched		Stretched		
1,10m	36kv	2,00m	90kv	72,5kv	1,2	TR275
1,75m	72kv	3,20m	225kv	123kv	1,5	TR2225
2,15m	110kv	4,00m	300kv	123kv	2,2	TR2245
2,65m	150kv	5,00m	330kv	170kv	3,0	TR2330
1,65m	63kv	4,50m	150kv	-	3,0	TR3450
1,85m	90kv	5,00m	250kv	-	4,0	TR3500
2,50m	110kv	6,00m	300kv	-	5,0	TR3600



● JOINING INSULATING RODS (PXV)

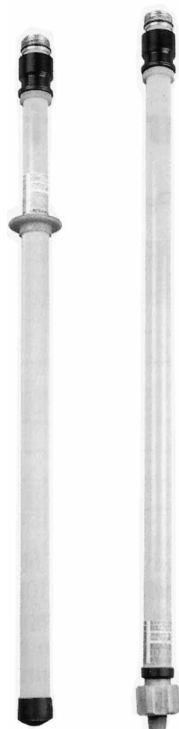
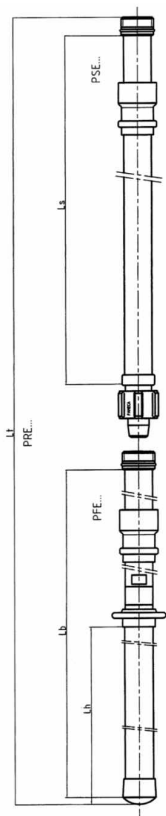
Characteristics

- 32mm Tube, IEC 60855
- Features identical to TR, but through pluggable screw 32
- Can be supplied with universal socket (U), hexagonal (APV) or bayonet (B)

Length (m)	No. of elements	Weight (kg)	Reference
2,00	2	1,50	PXV2200
3,00	2	2,10	PXV2300
4,00	2	2,60	PXV2400
6,00	2	4,10	PXV2600
3,00	3	2,15	PXV3300
4,50	3	2,90	PXV3450
6,00	3	4,30	PXV3600



● SPECIAL RODS FOR HIGH AND VERY HIGH VOLTAGE (PRE)



Characteristics

- 39mm Tube, ICE / IEC 60855
- Features identical to TR and PXV sticks but dockable with a 46 screw

Total	Length Lh	(mt) Ls	Weight (kg)	Reference
2 elements				
2,00	0,70	1,00	2,30	PRE2-200
3,00	1,00	1,50	3,00	PRE2-300
4,00	1,50	2,00	3,80	PRE2-400
3 elements				
3,00	0,70	2x1,00	3,40	PRE3-300
4,50	1,00	2x1,50	4,50	PRE3-450
6,00	1,50	2x2,00	5,70	PRE3-600
Extensions				
1,00				PSE100
1,50				PSE150
2,00				PSE200
2,50				PSE250

● GROUNDING AND SHORT CIRCUIT EQUIPMENT

● EY322-2 (TD 23-16) & EY322-25 (TD 23-25)



Characteristics

Grounding and short circuit set comprising:

- 3 MT330 tweezers
- 1 MT3 circular tweezer carrier
- 1 bobbin with 16m of cable, 16mm² copper and grounding clip
- 1 2m telescopic pole, TR 276 APV
- 1 ground electrode with 1m
- 1 metal box
- 1 canvas bag

Note: EY322-25 has 25m of 16mm² copper cable

Spacing between clamps	Cable between clamps	Cable grounding	ICC	Ø conductor mm	Reference
2,75mts	35mm ²	16mm ² (16mts)	8kA 1S	3 a 20	EY 322-2 (TD 23-1)
2,75mts	35mm ²	16mm ² (25mts)	8kA 1S	3 a 20	EY 322-25 (TD 23-25)

● GROUNDING AND SHORT CIRCUIT EQUIPMENT

● AUTOCLAM 8TC

Characteristics

Grounding for airline networks, comprising:

- 3 GDC 325 tweezers
- 2 short circuit cables (8KA-1S) with 35mm² and 2.75m in length
- 1 cable attached to land (1000A-1S) with 16mm² and 16m in length
- One grounding clip for flat conductors (0 to 25mm), round (6 to 25mm) or hexagonal
- Support for tweezers and adapt stick, GDC 24
- 1 spool to wind the cable
- One Insulating telescopic rod, 2m, TR 276 U
- 1 1m ground electrode
- 1 metal box
- 1 bag canvas



Spacing between clamps	Cable between clamps	Cable grounding	ICC	Ø conductor mm	Reference
2,75mts	35mm ²	16mm ²	8kA 1S	3 a 32	Autoclam 8TC

● PIMT 76 & PIMT 710

Characteristics

Grounding and short circuit for PT and HT installations, consisting of:

- 3 pinças MT535 para vara APV
 - 1 conjunto de ligação com cabo de cobre
 - 1 peça de trifurcação, TRIF8
 - Distância de 0,75mts entre pinça e bloco de trifurcação e 2mts do bloco até ao grampo de terra
 - 1 vara isolante telescópica TR245 APV
 - 1 caixa metálica
-
- 3 MT535 tweezers for an APV stick
 - 1 connection kit with copper cable
 - 1 piece for trifurcation, TRIF8
 - Distance of 0.75m between tweezer and trifurcation block and 2m from the block to the grounding clip
 - 1 telescopic rod insulator TR245 APV
 - 1 metal box



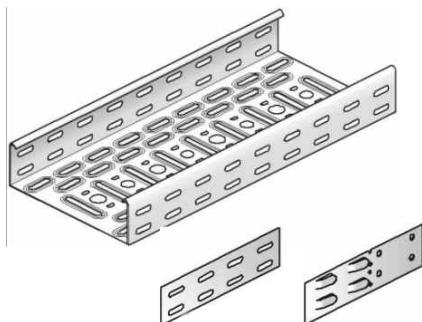
Spacing between clamps	Cable between clamps	Cable grounding	ICC	Ø conductor mm	Reference
0,75mts	35mm ²	16mm ²	6kA 1S	5 a 35	PIMT 76
0,75mts	50mm ²	16mm ²	10kA 1S	5 a 35	PIMT 710

13. Transportation and Protection of Cables



● COLD PERFORATED METAL GUTTER - SENDZIMIR

● KBS-35

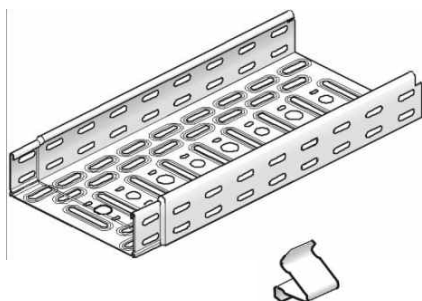


Characteristics

- Supplied in 3 meter length
- Height of the tab: 35mm
- Width: 50mm to 600mm
- V35 quick assembly joint
- V35 * 200 reinforced assembly joint

Thickness (mm)	Dimensions (mm)
0,75	KBS 50x35
0,75	KBS 75x35
0,75	KBS 100x35
0,75	KBS 150x35
0,75	KBS 200x35
0,75	KBS 250x35
0,75	KBS 300x35
1,00	KBS 400x35
1,00	KBS 500x35
1,00	KBS 600x35
1,00	V 35
1,00	V 35*200

● KBSI-60



Characteristics

- Supplied in 3 meter length
- Height of the tab: 60mm
- Width: 75mm to 600mm
- KBV quick assembly joint

Thickness (mm)	Dimensions (mm)
0,75	KBSI 75x60
0,75	KBSI 100x60
0,75	KBSI 150x60
0,75	KBSI 200x60
0,75	KBSI 250x60
0,75	KBSI 300x60
1,00	KBSI 400x60
1,00	KBSI 500x60
1,00	KBSI 600x60
-	KBV

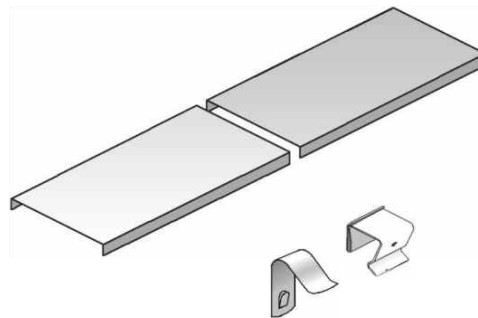
● COLD PERFORATED METAL GUTTER

● D COVERS

Characteristics

- Blind cover for metal gutters
- For fixing to metal gutters apply the DCO accessory
- For fixing to accessories apply the DCL accessory

Length (mm)	Width (mm)
3000	D50
2000	D75
2000	D100
2000	D150
2000	D200
2000	D250
2000	D300
2000	D400
2000	D500
2000	D600
-	DCO
-	DCL

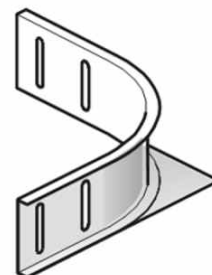


● AZH ACCESSORY - MULTIFUNCTION

Characteristics

- This accessory replaces the plane angles, T's and crosses

Reference
AZH 35
AZH 60
AZH 85
AZH 110

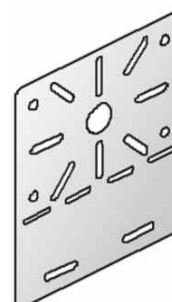


● SUPPORT FOR MPV BOXES

Characteristics

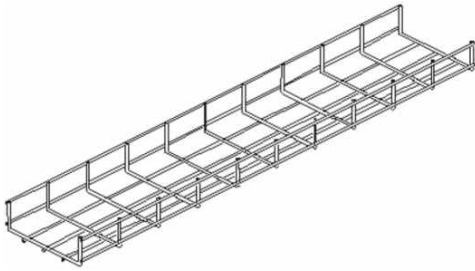
- For clamping, use the VMK 6 * 10 or KBV accessory

Reference
MPV



● ELECTRO-ZINC COATED GUTTER

● VFL/VF 35

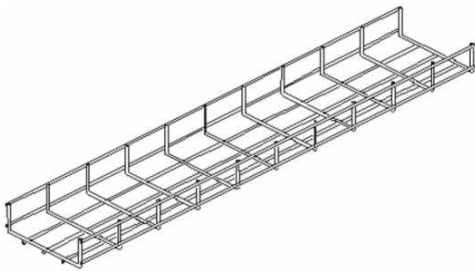


Characteristics

- Paths for cables on electrowelded rods
- Height of the tab: 35mm
- With available widths ranging from 50mm to 550mm

Ø (mm)	(mm)
3,5-5,0	VFL 65x30
3,5-5,0	VFL 100x35
3,5-5,0	VFL 150x35
3,5-5,0	VFL 200x35
3,5-5,0	VFL 250x35
5,0	VF 350x36
5,0	VF 450x36
5,0	VF 550x36

● VFL/VF60



Characteristics

- Paths for cables on electrowelded rods
- Height of the tab: 60mm
- With available widths ranging from 50mm to 600mm

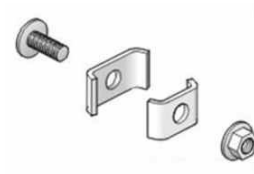
Ø (mm)	(mm)
3,5-5,0	VFL 50x60
3,5-5,0	VFL 100x60
3,5-5,0	VFL 150x60
3,5-5,0	VFL 200x60
5,0	VF 300x60
5,0	VF 400x60
5,0	VF 500x60
5,0	VF 600x60

● ELECTRO-ZINC COATED GUTTER

● SIDE / FIXATION JOINT - VFK

Characteristics

- Accessory for side joint and fixation joint for curves



Reference

VFK

● QUICK-JOINTING PLATE

Characteristics

- Quick-jointing plate for VF/VFL 35/60
- No need to use any tool



Reference

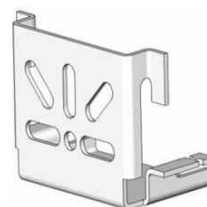
KPVF

KPVFL 35

● SUPPORT - VFMM

Characteristics

- Support for junction boxes or support rails
- VFMM - Use on 60mm rails
- VFMM 35 - Use on 35mm rails



Reference

VFMM

VFMM 35

● ELECTRO-ZINC COATED GUTTER

● FIXING CLIP - VFCL



Characteristics

- Accessory for fixing electrowelded gutters to brackets

Reference

VFCL

● ACCESSORIES

● TIM ROD



Characteristics

- Threaded rod supplied in lengths of 1 or 2 meters

Reference

TIM 6

TIM 8

TIM 10

TIM 12

● L OMEGA CONSOLE



Characteristics

- Wall console

Reference

L OMEGA 100

L OMEGA 200

L OMEGA 300

L OMEGA 400

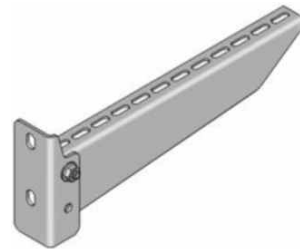
L OMEGA 500

● ACCESSORIES

● ENHANCED CONSOLE - WKS

Characteristics

- Reinforced wall console for use in all cable trays



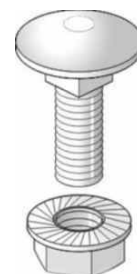
Reference

WKS 100
WKS 150
WKS 200
WKS 250
WKS 300
WKS 350
WKS 400
WKS 500

● SCREW + NUT + VMK

Characteristics

- Low block screw and nut set for use in drilled cable paths



Reference

VMK 6x10
VMK 8x15

14. Measuring Equipment



● ANALOG AC CURRENT CLAMP



Characteristics

- AC Voltage: 150/300/600 volts
- AC current: Amp 6/30/60/300/600
- Resistance: 2 Ohms (20 ohm mid-scale)
- Tolerance: 3% +/-
- Dimensions: 230x72x37mm
- Weight: 416 Gr
- Conductor diameter: 38mm max.
- Frequency: 50/60 Hz
- Power supply: Battery 1.5 volts
- Accessories: test leads, carrying case, special tip for IOHMS and instruction manual

Reference

ST-600

● DIGITAL AC CURRENT CLAMP



Characteristics

- AC Voltage: 400/600 volts
- AC Current: 400 Amp
- Resistance: 4 Ohms
- Data Hold: For all the charges (indication of empty batteries)
- Continuities: below 100 OHMS
- Dimensions: 197x65x33mm
- Weight: 250 Gr
- Conductor diameter: 27mm max.
- Frequency: 50/60 Hz
- Power supply: 9 volt battery
- Accessories: test leads, carrying case, instruction manual and 9-volt battery

Reference

ST-2600

● DIGITAL AC/DC CLAMP METER

Characteristics

- AC Voltage: 400/600 volts
- AC Current: 400/1000 amp
- Resistance: 400/2000 OHMS
- Diode: 400 MV (0.1 MA) / 2000 MV (1MA)
- Data Hold: In all charges
- Max Hold: In all charges (check function diodes).
- OHM: Function to check continuity of relays, transformers and coils engines
- True RMS: RMS value
- Dimensions: 255x80x35mm
- Weight: 420 Gr including accessories
- Conductor diameter: 40 mm max.
- Frequency: Hz 40-500HZ
- Power supply: 9 volt battery
- Accessories: Test leads, carrying case, and instruction manual 9 volt battery.



Reference

3810-CL

● PHASE SEQUENCER

Characteristics

- AC Voltage: 90/600 volts
- Operating temperature: 10°C ~ 40°C
- Dimensions: 134x85x45mm
- Weight: 540 Gr
- Frequency: 50 / 60HZ
- Withstand Voltage: 1500 VAC for one minute
- Test leads: with 1.1 m each: red R; White S; black T
- Accessories: carrying case and instruction manual



Reference

ST 850

● DIGITAL ISOLATION METER

Characteristics

- Megaohms: 0-500000 Mohm
- DC voltage: 1 to 10kv
- Power: 8 1.5 volt batteries
- Dimensions: 330x260x160 mm
- Weight: 3.6 kg
- Accessories: test leads, batteries and instruction manual



Reference

6211 IN

● DIGITAL ISOLATION METER



Characteristics

- Megohms: 20 mohms, 200 mohms, 2000 mohms
- DC Voltage: 250/500/100 volts +/- 10%
- AC Voltage: 0-750 volts +/- 1.5% rdg + 2 dgt
- Impedance: 10m
- Continuities:
 - 0-20 ohms +/- 2% + 4 dgt buzzer;
 - 0-200 ohms +/- 1.5% + 2 dgt buzzer;
 - 0-2 ohms +/- 1.5% + 2 dgt buzzer;
 - (buzzer beeps below 40 ohms. maximum open circuit voltage 3.2 volts, short circuit current 3M)
- Timer: Automatically turns off after about 5 minutes to preserve battery
- Display: 3 1/2 digit LCD 48x52mm
- Dimensions: 163x100x52mm
- Weight: 800 Gr including accessories
- Accessories: Batteries, Probes, tweezers, carrying case, instruction manual.

Reference

ST 2551

● DIGITAL ISOLATION METER



Characteristics

- Controlled by microprocessor
- Megaohms: 0-500000 Mohm
- DC voltage: 0.5 to 40 kv
- Power: 8 1.5-volt batteries
- Dimensions: 330x260x160 mm
- Weight: 3.6 kg
- Accessories: Test leads, batteries and instruction manual

Reference

6212 IN

● ANALOG ISOLATION METER

Characteristics

- Megohms: 0-200 mohms
- AC Voltage: 0-600 volts +/- 1.5% rdg '2 dgt
- Continuities: 0-50 ohms;
Maximum open circuit voltage: 600DC MV;
Short-circuit current: 240 MA DC
- Power: 8 1.5-volt batteries, type AA
- Dimensions: 170x165x92mm
- Weight: 970g including accessories
- Accessories: Batteries, test leads, 250V 1A fuse and instruction manual



Reference

1800 IN

● ANALOG GROUND METER

Characteristics

- Scales: Ground resistance 10/100/1000 mohms
Earth voltage of 30 volts (5kvhms / v)
- Accuracy: Resistance to earth +/- 3% of final value
- Measuring system:
Resistance to ground through constant current inverter 2 800Hz MA;
Earth voltage by rectifier type 5kvohms / v 40-500hz
- Power: 6 AA 1.5 volt
- Dimensions: 163x100x52mm
- Weight: 970g including accessories
- Accessories: test strings: red (15m), yellow (10m), green (5m),
transport bag for rods and instruction manual
- Remarks: with 10hm ground resistance, the allowable stress is
10 volts with less than 5% of the value indicated error.
Meets JIS C-1304 requirements



Reference

ST 1505

● DIGITAL GROUND RESISTANCE METER



Characteristics

- Scales: earth resistance 0-20 / 0-200 / 0-2000 mohms, ground of 0-200 volts AC voltage, 40-500 HZ
- Accuracy: resistance to earth +/- 1%
ground voltage +/- 1%
- Measuring system: earth resistance by constant current inverter 800Hz 2 MA
- Power: 6 AA 1.5 volt
- Dimensions: 163x100x50mm
- Weight: 800gr
- Accessories: test strings: red (15m), yellow (10m), green (5m), transport bag for roods and instruction manual

Reference

ST 1520

● ANALOG MULTIMETER



Characteristics

- DC voltage: 0-0,01 / 0.5 / 2.5 / 10/50/2500 / 1000v;
Sensitivity of 20 kohms / v
Accuracy of 3% +/-
- AC Voltage: 0-10 / 50/250 / 1,000 v;
Sensitivity 8 kohms / v
Accuracy +/- 4%
- DC Current: 0-50 ua / 2.5mA / 250ma;
Accuracy of 3% +/-
- Resistance: 2 / 20k / 2m / 20m (20 mid-scale)
- Decibels: -10a +/- -500db
- Testing transistors
- ICEO: 150U 15ma 150ma
- HFE: 0-1000
- LV: 3V
- Fuses: 0.4A / 250V (5x200mm)
- Power: 6 AA 1.5v type aa and 1 9v battery, 006P.
- Low battery indicator
- Dimensions: 148x102x46mm
- Weight: 300g
- Accessories: banana type test leads, alligator type test leads and instruction manual

Reference

ST 365 TR

● DIGITAL MULTIMETER

Characteristics

- DC voltage: 0-200 mv / 2/20/200/1000 v.
Accuracy of 0.5% +/-
- AC Voltage: 0-200 mv / 2/20/200 / 750v
Sensitivity of 8 Ohms / V.
Accuracy of 1.2% +/-
- DC Current: 0-200 ua / 2/20/200 ma / 10th.
Accuracy +/- 1.2%
- Resistance: 200/2/20 / 200K / 2M / 20M
- Testing transistors
- Diode test
- Polarity: Automatic indicating (-) for negative polarity
- Power: one 9 volt battery, 006P.
- Low battery indicator
- Dimensions: 128x72x33mm
- Weight: 300g
- Accessories: Test leads and instruction manual



Reference

ST 3201

● TEST PHONE

Characteristics

- Identification of peers by voice, continuity, intercom and call signal generation
- Self-powered test telephone test, allowing simultaneously the powering of the HSA01 handset and the test phone test type 290 or 286A
- Includes signal generator (call) and proof of continuity
- Power: 1.5-volt batteries



Reference

TS 01

● TEST PHONE



Characteristics

- **Operation in long lines:** 48 VDC; > 5 Kohm loop. Minimum current <10 mA
- **DC Resistance:** Conservation mode: 300 ohms; Empty:> 5 M ohms (48 VDC / 10uA)
- **Marking:** Impulse: 10 imp / sec, 60%; DTMF: -3dBm; Flash: 100ms (or 300/600)
- **Memory:** Last 32 digit number
- **Pause PBX:** 2 sec.
- Automatically turns off
- **Power:** 9-volt alkaline battery

Reference

DSP

● TEST PHONE



Characteristics

- Testing phone t with own marker, multifrequency type
- Equipment robust and extremely effective

Reference

290 A

● MICRO HEADPHONE



Characteristics

- Micro Headphone for testing telephone lines
- Includes its own power supply

Reference

HSA 01

● AMPLIFYING TIP SIGNAL GENERATOR



● AMPLIFYING TIP

Characteristics

- The signal detector is designed to identify and track wires and cables within a group without damaging the insulation
- Works in conjunction with a signal generator, for identification of conductors
- Volume Control (0 to 9) to increase sensitivity and fit to the surrounding environment
- Red spring button ON / OFF, not protruding, to avoid always being pressed, and prevent the battery to easily drain itself
- Powered by a 9 volt battery, with an approximate duration of 100 hours
- With a headphone jack

● SIGNAL GENERATOR

Characteristics

- Supplied with crocodile type tips and RJ11 plug with 4 contacts for each telephone socket
- A 3 position switch controls the operation modes, plus a tricolor LED to indicate the polarity of the lines, continuity and tension tests
- A switch inside the battery compartment to select tones, choosing a single or double tone
- Caution: Do not connect to an AC circuit that exceeds 24 volts in this mode

15. Public Lighting





Characteristics

- Closed luminaire for urban areas and road networks
- Reflector in high purity aluminum
- Electrical accessories block compartment in cast aluminum
- Bonnet in polyamide with fiberglass
- Polycarbonate diffuser
- Recommended height: 8 meters
- Vertical or horizontal mounting arm to 42mm (60mm on request)
- IP43 Electrical compartment
- IP65 Optical compartment

Description	Reference
Luminaire Atlântica (R9) 70W	R9-70W
Luminaire Atlântica (R9) 100W	R9-100W
Luminaire Atlântica (R9) 150W	R9-150W



Characteristics

- Closed luminaire for urban areas and road networks
- Reflector in high purity aluminum, polished and anodized
- Electrical accessories block compartment in cast aluminum
- Bonnet in polyamide with fiberglass
- Polycarbonate diffuser
- Recommended height: 8 to 10 meters
- Vertical or horizontal mounting arm to 60mm
- IP66 Electrical compartment
- IP66 Optical compartment

Description	Reference
Luminaire Tropical (R10) 150W	R10-150W
Luminaire Tropical (R10) 250W	R10-250W

Characteristics

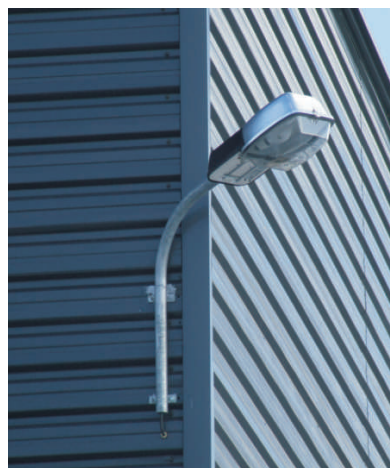
- Closed luminaire for urban areas and road networks
- Reflector in high purity aluminum, polished and anodized
- Electrical accessories block compartment in cast aluminum
- Bonnet in polyamide with fiberglass
- Polycarbonate diffuser
- Recommended height: 6 to 10 meters
- Vertical or horizontal mounting a 42mm or 60mm arm
- IP43 Electrical compartment
- IP65 Optical compartment



Description	Reference
Luminaire Bracara 150W	BRA-150W
Luminaire Bracara 250W	BRA-250W

Characteristics

- Arms for street lighting



Description	Weight (kg)	Reference
Street light arm 1 1/4" with tab 750x750	3,300	42.1500P
Street light arm 1 1/4" with tab 1250x750	4,400	42.2000P
Street light arm 2" with tab 750x750	6,200	60.1500P
Street light arm 2" with tab 1250x750	8,300	60.2000P
Clamp 1 1/4" M12 cold	0,460	Abra.12.42
Clamp 1 1/4" M16 cold	0,620	Abra.16.42
Clamp 2" M16 cold	0,800	Abra.16.60

● LAMPS



Characteristics

- High Pressure Sodium Lamp
- Tubular or Ellipsoidal
- Average life: 30,000 hours

Description	Reference
Lamp HP 70W BASIC	64419SHP70W
Lamp SHP 70W C/ IGNITOR	64419SHP70W-I
Lamp SHP 100W	64419SHP100W
Lamp SHP 150W BASIC	64419SHP150W
Lamp SHP 250W	64419SHP250W

● REACTANCES

Characteristics

- For indoor or outdoor
- For mercury or sodium lamps

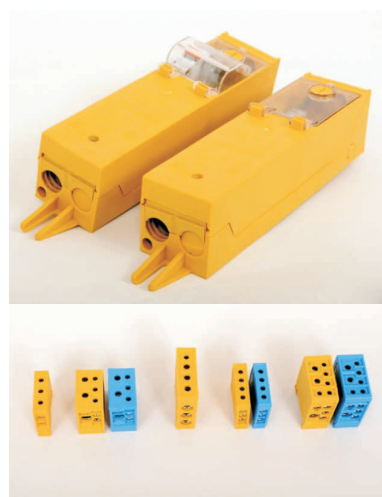
Description	Reference
Ignitor 100/400W sodium, ZX	34230-MZN400S
Indoor reactance 70W sodium vapor	10419BAL-E70W
Indoor reactance 100W sodium vapor	10419BAL-E100W
Indoor reactance 150W sodium vapor	17711VSODIO150W
Indoor reactance 250W sodium vapor	17711VSODIO250W
Outdoor reactance 70W sodium vapor	28030PH920-218-31
Outdoor reactance 100W sodium vapor	34230-100W
Outdoor reactance 150W sodium vapor	24030PH737
Outdoor reactance 250W sodium vapor	28030PH39-100-30

● CONNECTION TERMINALS

Reference	Inlet	Outlet
Borne L1	2x up to 16mm ²	1x up to 16mm ²
Borne L2	2x up to 16mm ² + 1x up to 35mm ²	1x up to 16mm ² + 1x up to 35mm ²
Borne L3	3x up to 35mm ²	1x up to 16mm ²
Borne L4	3x up to 16mm ²	1x up to 16mm ²
Borne L5	4x up to 16mm ² + 1x up to 35mm ²	1x up to 16mm ² + 1x up to 35mm ²
Borne L6	2x up to 35mm ²	1x up to 16mm ²

Characteristics

- Electrical control panels for lighting columns
- Available for columns with 4, 6, 8, 10 and 12 meters
- EDP / DMA - C71 - 590 / N
- DRE-C11 - 040 / N May 2010



Reference	Column	Cables	Dimensions (HxWxD)	Equipment
QMDT 16 (empty)	4 mt	-	300 x 60 x 63	-
QMDT 16-A	4 mt	1/2 cables LSVAV 2x16mm ²	300 x 60 x 63	1 L1 + 1 L4
QMDT 16-B	4 mt	1/2 cables LSVAV 4x16mm ²	300 x 60 x 63	3 L1 + 1 L4
QMDT 16-C	4 mt	3 cables LSVAV 2x16mm ²	300 x 60 x 63	1 L2 + 1 L4
QMDT 16-D	4 mt	3 cables LSVAV 4x16mm ²	300 x 60 x 63	1 L2 + 3 L4
QMDT 16-E	4 mt	1/2 cables AL or CU 3x16mm ²	300 x 60 x 63	2 L1 + 1 L4
QMDT 16-F	4 mt	1/2 cables AL or CU 5x16mm ²	300 x 60 x 63	4 L1 + 1 L4
QMDT 16-G	4 mt	3 cables AL or CU 3x16mm ²	300 x 60 x 63	1 L2 + 2 L4
QMDT 16-H	4 mt	3 cables AL or CU 5x16mm ²	300 x 60 x 63	5 L4
QMDT 16-I	4 mt	1/2 cables AL or CU 4x16mm ²	300 x 60 x 63	4 L1
QMDT 16-J	4 mt	3 cables AL or CU 4x16mm ²	300 x 60 x 63	4 L4
QMXT 35 (empty)	8/10/12 mt	-	300 x 85 x 90	-
QMXT 35-A	8/10/12 mt	1/2 cables LSVAV 2x16mm ²	300 x 85 x 90	1 L1 + 1 L4
QMXT 35-B	8/10/12 mt	1/2 cables LSVAV 4x16mm ²	300 x 85 x 90	3 L1 + 1 L4
QMXT 35-C	8/10/12 mt	3 cables LSVAV 2x16mm ²	300 x 85 x 90	1 L2 + 1 L4
QMXT 35-D	8/10/12 mt	3 cables LSVAV 4x16mm ²	300 x 85 x 90	1 L2 + 3 L4
QMXT 35-E	8/10/12 mt	1/2 cables LSVAV 5x16mm ²	300 x 85 x 90	1 L3 + 3 L6
QMXT 35-F	8/10/12 mt	3 cables LSVAV 4x16mm ²	300 x 85 x 90	4 L3
QMXT 35-G	8/10/12 mt	1/2 cables AL or CU 3x16mm ²	300 x 85 x 90	2 L1 + L4
QMXT 35-H	8/10/12 mt	1/2 cables AL or CU 5x16mm ²	300 x 85 x 90	4 L1 + 1 L4
QMXT 35-I	8/10/12 mt	3 cables AL or CU 3x16mm ²	300 x 85 x 90	1 L2 + 2 L4
QMXT 35-J	8/10/12 mt	3 cables AL or CU 5x16mm ²	300 x 85 x 90	1 L2 + 4 L4
QMXT 35-K	8/10/12 mt	1/2 cables AL or CU 3x35mm ²	300 x 85 x 90	1 L3 + 2 L6
QMXT 35-L	8/10/12 mt	1/2 cables AL or CU 5x35mm ²	300 x 85 x 90	1 L3 + 4 L6
QMXT 35-M	8/10/12 mt	1/2 cables AL or CU 4x16mm ²	300 x 85 x 90	4 L1
QMXT 35-N	8/10/12 mt	3 cables AL or CU 4x16mm ²	300 x 85 x 90	4 L4
QMXT 35-O	8/10/12 mt	3 cables AL or CU 3x35mm ²	300 x 85 x 90	3 L3
QMXT 35-P	8/10/12 mt	3 cables AL or CU 5x35mm ²	300 x 85 x 90	5 L3
KMNT 16-A	4 mt	1/2 cables LSVAV 2x16mm ²	155 x 76 x 47	1 L1 + 1 L4
KMNT 16-B	4 mt	1/2 cables LSVAV 4x16mm ²	155 x 76 x 47	3 L1 + 1 L4
KMNT 16-D	4 mt	1/2 cables AL or CU 5x16mm ²	155 x 76 x 47	4 L1
QMNT 16 (empty)	4 mt	-	300 x 50 x 55	-
QMNT 16-A	4 mt	1/2 cables LSVAV 2x16mm ²	300 x 50 x 55	1 L1 + 1 L4
QMNT 16-B	4 mt	1/2 cables LSVAV 4x16mm ²	300 x 50 x 55	3 L1 + 1 L4
QMNT 16-D	4 mt	1/2 cables AL or CU 5x16mm ²	300 x 50 x 55	4 L1



TODAREDE

Soluções para Redes