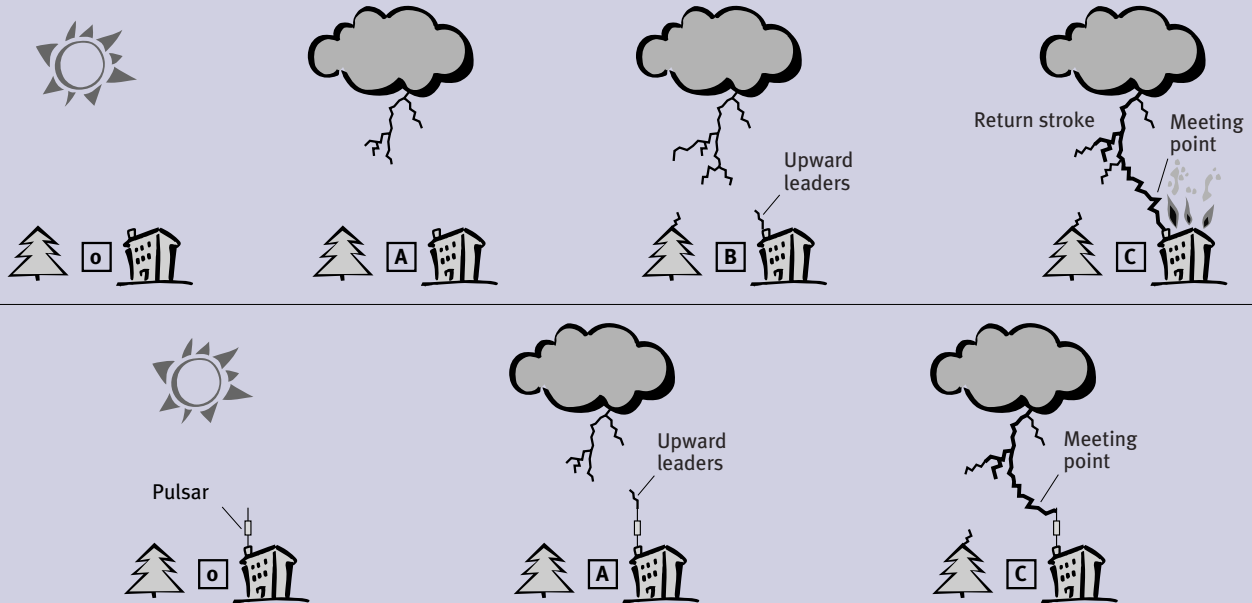


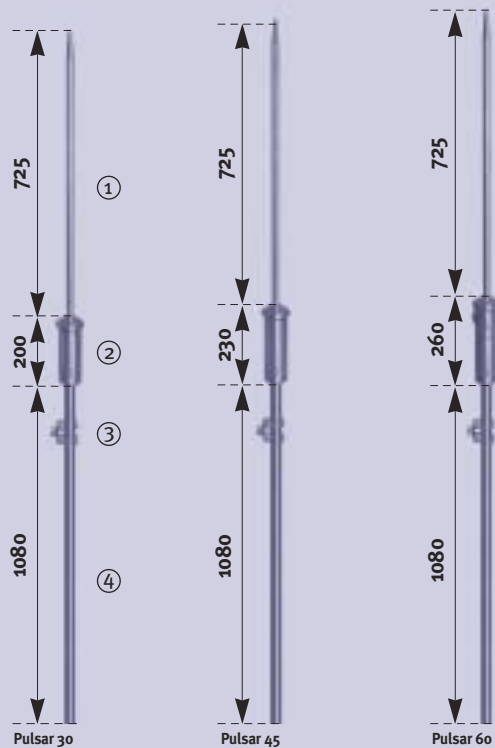
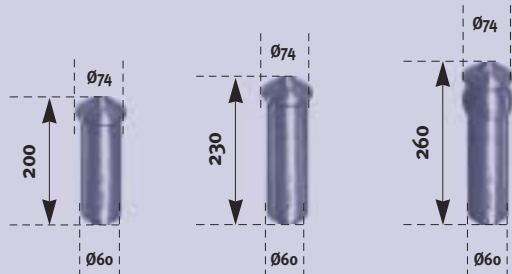
## INSTALLATION

### The advantage of early streamer emission



### Pulsar references

- ① tip
- ② body
- ③ clamp
- ④ pole



آدرس: مشهد-بلوار وکیل آباد -بین وکیل آباد ۲۱ و ۲۳- پلاک ۴۱۷- شرکت مهندسی همایش نیرو

سایت: [www.hamayeshniroo.com](http://www.hamayeshniroo.com) ایمیل: [info@hamayeshniroo.com](mailto:info@hamayeshniroo.com)

فکس: ۰۵۱۱-۶۰۱۸۰۳۹

تلفن تماس: ۰۵۱۱-۶۰۱۸۰۲۴-۵



The early streamer emission concept implemented in the Pulsar lightning conductor delivers a unique gain in efficiency: anticipating the natural formation of an upward leader, the Pulsar generates a leader that propagates rapidly to

capture the lightning stroke and conduct it towards the ground. Successfully demonstrated in laboratory conditions, this triggering time, compared with simple rod lightning conductors, offers critical extra protection.

**Radius of protection provided by Pulsar**

Level of protection	I (D = 20 m)			II (D = 45 m)			III (D = 60 m)		
Pulsar	Pulsar 30	Pulsar 45	Pulsar 60	Pulsar 30	Pulsar 45	Pulsar 60	Pulsar 30	Pulsar 45	Pulsar 60
<b>h(m)</b>	<b>Radius of protection RP (m)</b>								
2	19	25	32	25	32	40	28	36	44
3	28	38	48	38	48	59	42	57	65
4	38	51	64	50	65	78	57	72	87
<b>5</b>	<b>48</b>	<b>63</b>	<b>79</b>	<b>63</b>	<b>81</b>	<b>97</b>	<b>71</b>	<b>89</b>	<b>107</b>
6	48	63	79	64	81	97	72	90	107
8	49	64	79	65	82	98	73	91	108
10	49	64	79	66	83	99	75	92	109
15	50	65	80	69	85	101	78	95	111
20	50	65	80	71	86	102	81	97	113
45	50	65	80	75	90	105	89	104	119
60	50	65	80	75	90	105	90	105	120

The level of protection is calculated according to Appendix B of the French standard NF C 17-102.

For the Pulsar 60, the 60  $\mu$ s limit adopted for the gain in sparkover time  $\Delta T$  used to

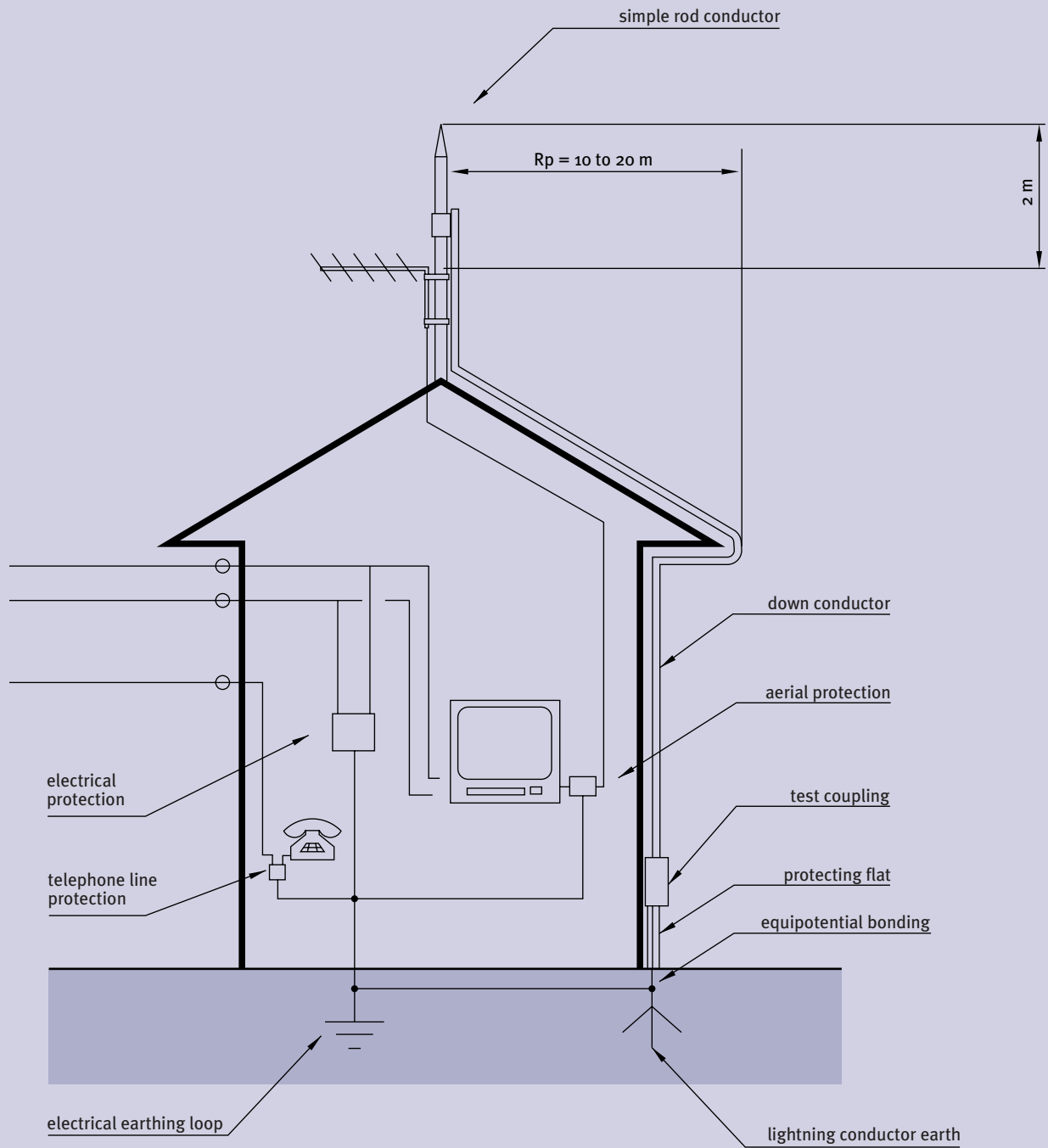
calculate the radius of protection has been validated in laboratory conditions by Gimelec, the French electrical and electronic equipment manufacturers association.



Reference	Designation	Length (m)	Weight (kg)
IMH.3012	Pulsar 30 stainless steel 2 M	2,00	5,0
IMH.3013	Pulsar 30 stainless steel 3 M	3,00	6,5
IMH.3022	Pulsar 30 stainless steel copper 2 M	2,00	5,0
IMH.3032	Pulsar 30 stainless steel black 2 M	2,00	5,0
IMH.4512	Pulsar 45 stainless steel 2 M	2,03	5,3
IMH.4513	Pulsar 45 stainless steel 3 M	3,03	6,8
IMH.4522	Pulsar 45 stainless steel copper	2,03	5,3
IMH.4532	Pulsar 45 stainless steel black 2 M	2,03	5,3
IMH.6012	Pulsar 60 stainless steel 2 M	2,06	5,7
IMH.6013	Pulsar 60 stainless steel 3 M	3,06	7,0
IMH.6022	Pulsar 60 stainless steel copper 2 M	2,06	5,7
IMH.6032	Pulsar 60 stainless steel black 2 M	2,06	5,7

## INSTALLATION

## PROTECTION OF INDIVIDUAL HOUSES



The rods are made of a tapered solid stainless steel tip ( $L = 0.20$  m), a stainless steel mast ( $\varnothing 24/30$  mm) and a connecting clamp.

In accordance with standard NF C 17-100 (paragraph 2.3.1.), the protection radii are as follows:

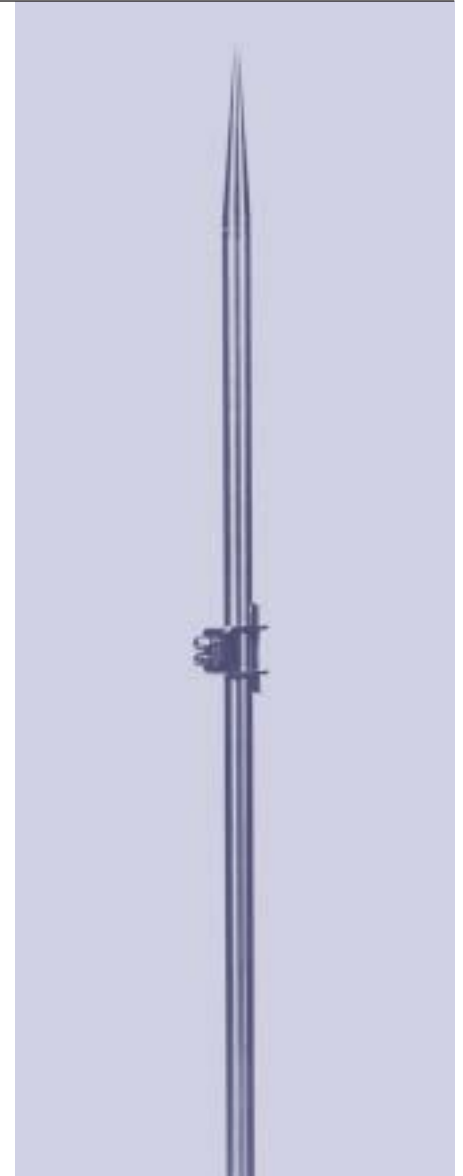
Radius of protection $R_p$ (m)				
Level of protection H (m)				
H (m)	I	II	III	IV
2	5	6	9	11
4	8	10	12	15
6	10	12	15	20
8	10	13	17	21
10	10	14	17	22
20	10	15	21	29

$H$ : height of conductor tip above protected surface(s).

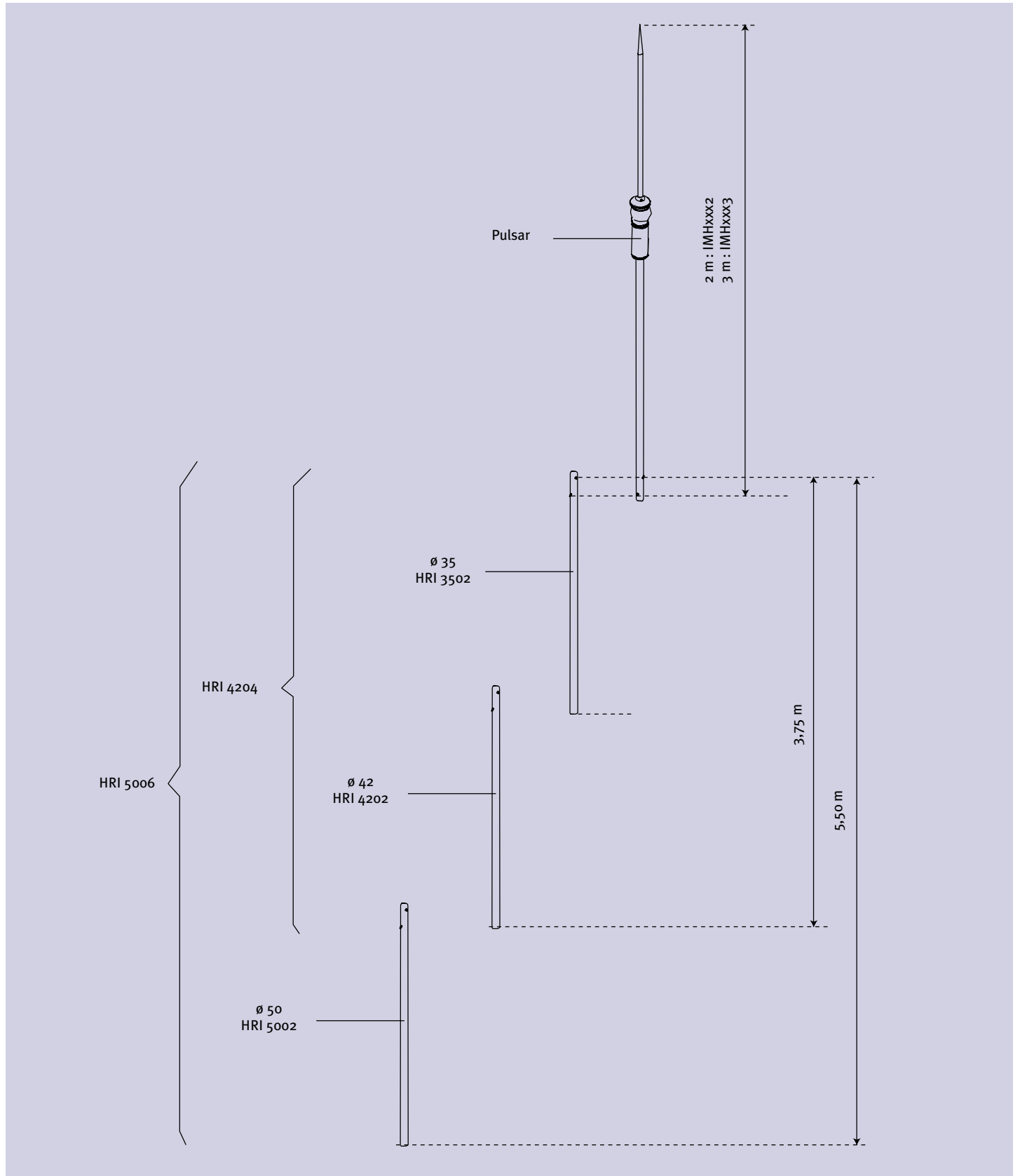
$R_p$ : radius of protection in horizontal plane located at a vertical distance  $h$  from the conductor tip.

Reference	Designation	L. (m)	W. (kg)
HPF 1001	on 1 m stainless steel mast	1,20	2,00
HPF 2001	on 2 m stainless steel mast	2,20	3,50

Other mast heights and finishes on request.



## INSTALLATION

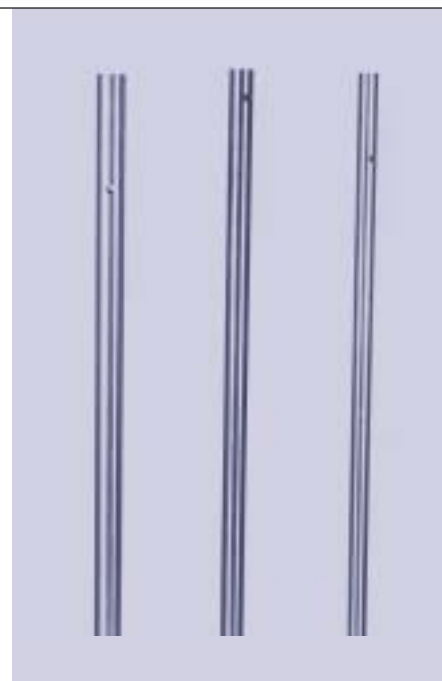


The interlocking extension masts reach a maximum height of 5.75 m, i.e. 7.60 m when equipped with a 2 m lightning conductor.

Specially designed to eliminate the use of guying kit.

- **Material:** stainless steel
- Delivered complete with hardware and stainless steel connection clamps.

Reference	Designation	Length	Weight (kg)
HRI 3502	Stainless steel mast ø 35 / int. 31	2 m	3,4
HRI 3503	Stainless steel mast ø 35 / int. 31	3 m	5,2
HRI 4202	Stainless steel mast ø 42 / int. 36	2 m	6,4
HRI 4203	Stainless steel mast ø 42 / int. 36	3 m	9,6
HRI 5002	Stainless steel mast ø 50 / int. 44	2 m	7,5
HRI 4204	Set of 2 stainless steel masts / int. 44	3,75 m	9,8
HRI 4206	Set of 2 stainless steel masts / int. 44	5,75 m	14,8
HRI 5006	Set of 3 stainless steel masts / int. 44	5,50 m	17,3



## MAST SELECTION GUIDE

France is divided by the NV65 regulations into 4 snow and wind zones (see map overleaf).

These regulations define the maximum wind speed to be considered in each zone.

### I - REGION I / REGION II (normal site)

Nominal height	Conductor type	Mast type
4 m	IMH xx 12	HRI 3502
5 m	IMH xx 13	HRI 3502
6 m	IMH xx 13	HRI 3503
7 m	IMH xx 13	HRI 3502 + HRI 4202 = HRI 4204
8 m	IMH xx 12	HRI 3503 + HRI 4203 = HRI 4206

### II - REGION II (exposed site / REGION III )

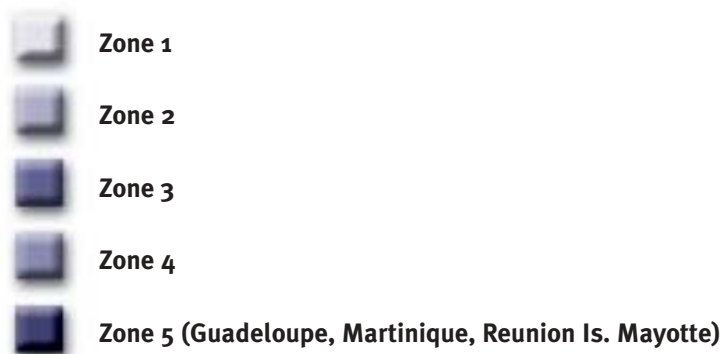
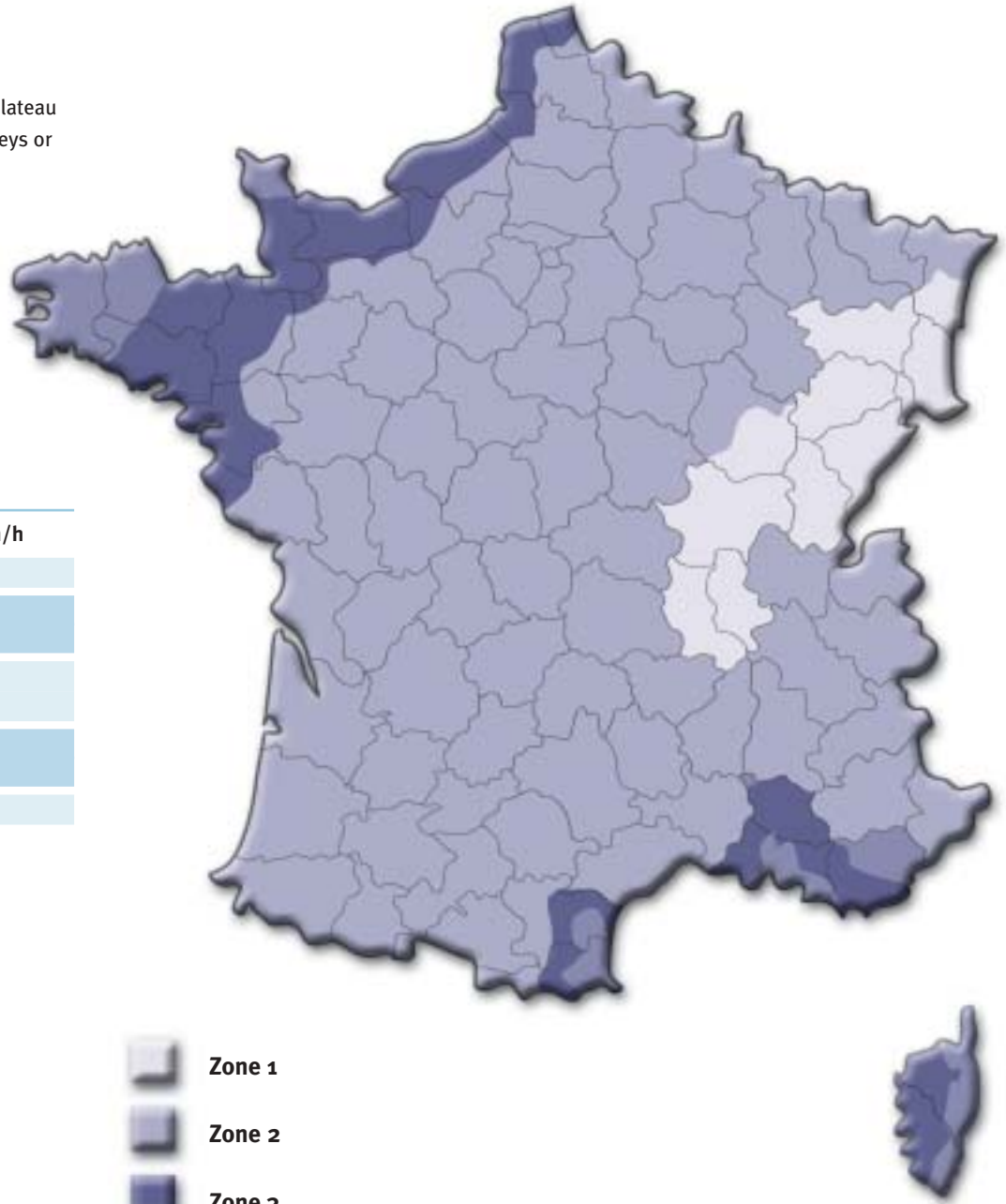
Nominal height	Conductor type	Mast type
4 m	IMH xx 12	HRI 3502
5 m	IMH xx 13	HRI 3502
6 m	IMH xx 12	HRI 3502 + HRI 4202 = HRI 4204
7 m	IMH xx 13	HRI 3502 + HRI 4202 = HRI 4204
8 m	IMH xx 12	HRI 3502 + HRI 4202 + HRI 5002 = HRI 5006

## WIND MAP OF FRANCE

### Site determination

- **Normal site:** very large plain or plateau with slopes of less than 10% in valleys or undulating hills.
- **Exposed site:** near the sea (within 6 km of the coast), on cliff tops, narrow islands or peninsulas, in narrow valleys, isolated or high mountains and some mountain passes.

Zone	Wind speed in km/h
I - Normal site	136
I - Exposed site	149
II - Normal site	149
II - Exposed site	170
III - Normal site	170
III - Exposed site	186
IV - Normal site	186
IV - Exposed site	200



## AERIAL MAST SUPPORT

- **Material:** stainless steel
- Delivered complete with stainless steel connecting clamp for conductor.
- With M 30 screw thread to fit PULSAR lightning conductor without pole (overall height 4 meters)
- Possible heightening by  $\varnothing$  42 mm mast.

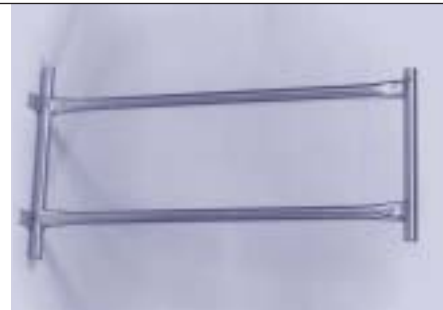
Reference	$\varnothing$ (mm)	Height (m)	Weight (Kg)
HRI 3530	35	3	5,2



## OFFSET RODS FOR INDUSTRIAL CHIMNEY STACKS

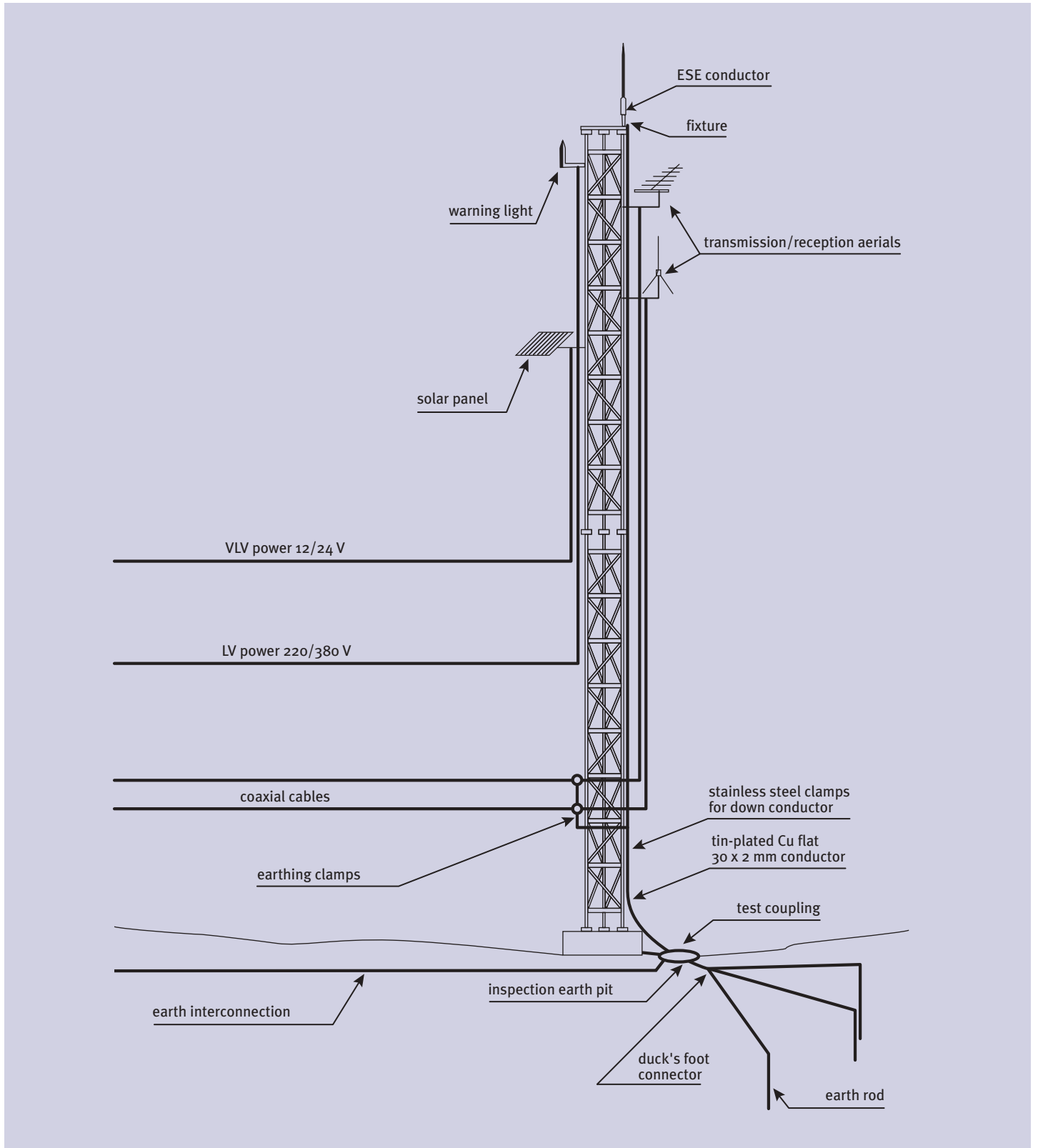
- **Material:** stainless steel
- Delivered complete with hardware and stainless steel connecting clamp for conductor.
- To offset a solitary lightning conductor (without extension mast) by 1 m from a chimney stack
- Assembly:
  - lightning conductor bolts into right-hand tube
  - offset rod fitted to chimney stack by two brackets each with two  $\varnothing$  8 mm drill holes

Reference	Offset (m)	Weight (Kg)
HRI 3501	1	5,2





## INSTALLATION



# 4 PYLONS

## SELF CARRYING PYLONS

- **Material:** hot galvanised steel
- These pylons are made of a welded steel lattice with a triangular cross-section. Each element is 3 m in length, except the ground anchoring section (length 3.70 m).
- Delivered complete with stainless steel hardware and HELITA Ø 35 mast head.
- The concrete anchorage blocks should be made with concrete in a proportion of 350 kg/m<sup>3</sup> and should be calculated for a good ground.



## GUYED PYLONS

- **Material:** hot galvanised steel
- These pylons are made of a welded steel lattice with a triangular cross-section (centerline distance 175 mm) supplied in lengths of 3 or 6 m.
- Use: lightning conductors supports for flat roofs.
- Fibre glass guying (1 set per section).
- Delivered complete with base and neoprene tile, HELITA Ø 35 mast head, fibre glass and accessories (anchoring clips and stay tighteners) for guying, with bolted anchoring.



Height *(m)	SELF-SUPPORTING				GUYED
	Zone I (136 km/h)	Zone II (149 km/h)	Zone III (167 km/h)	Zone IV (183 km/h)	Zones I and II
9	HPA 0109	HPA 0209	HPA 0309	HPA 0409	HPH 0900
12	HPA 0112	HPA 0212	HPA 0312	HPA 0412	HPH 1200
15	HPA 0115	HPA 0215	HPA 0315	HPA 0415	HPH 1500
18	HPA 0118	HPA 0218	HPA 0318	HPA 0418	HPH 1800

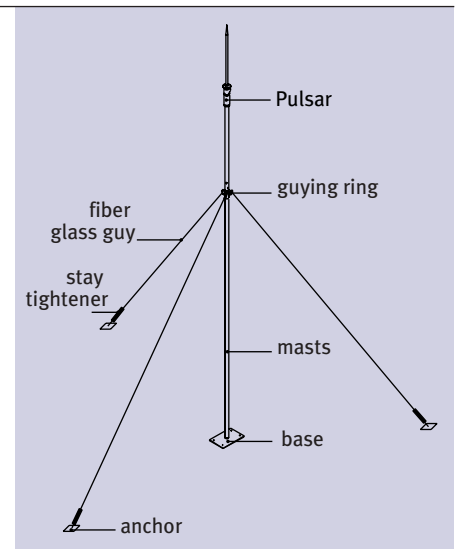
\* other sizes on request  
 \* technical specifications available  
 \* for wind zone V (210 km/h) please consult us

## GUYING KIT

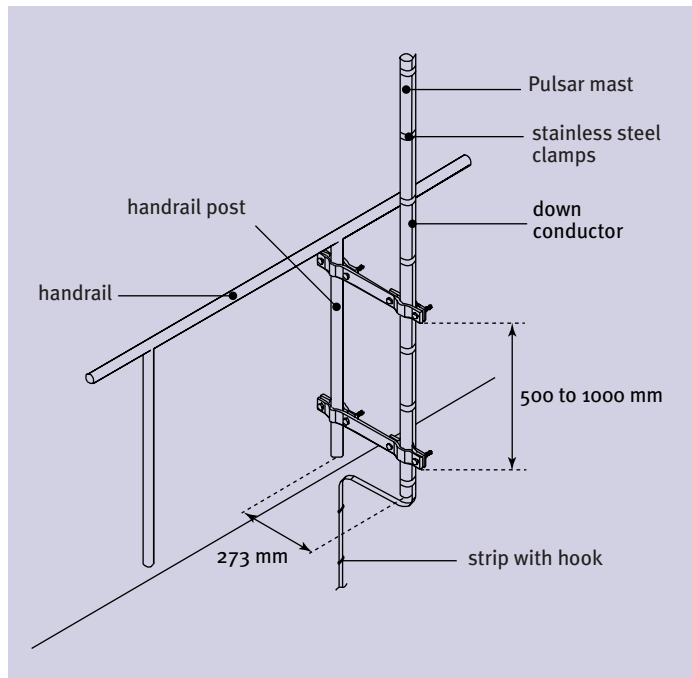
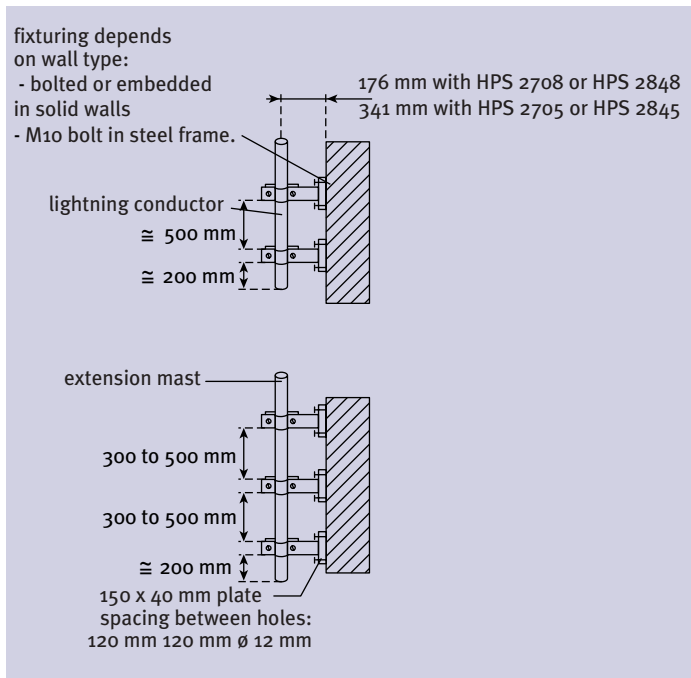
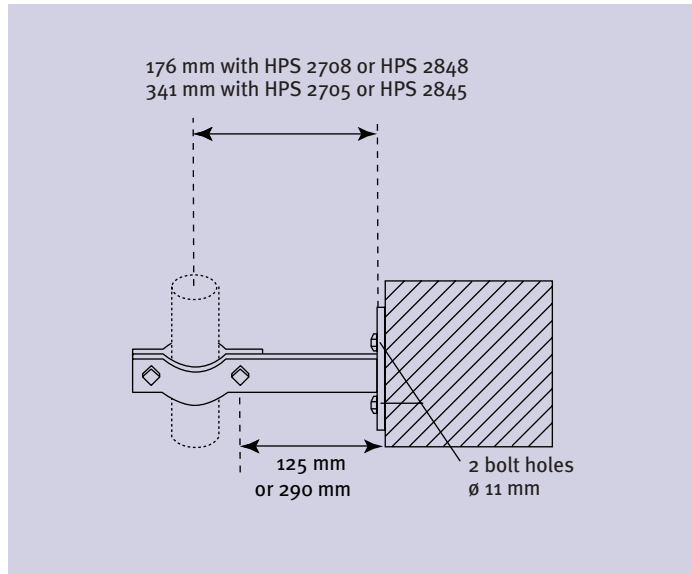
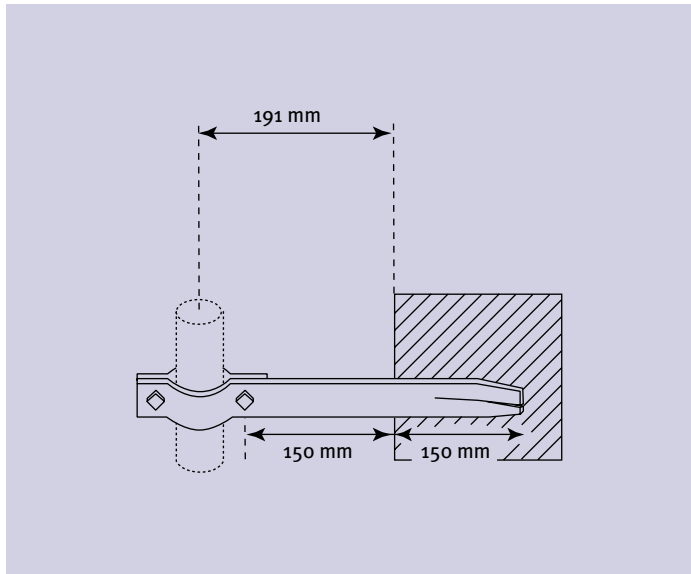
Complete kit with:

- 25 metres of fibre glass cable
- 6 anchoring clips
- 3 stay tighteners
- 3 ring fasteners
- 1 3-directional clamp
- 1 base

Reference	Designation	W. (kg)
HKH 0025	Guying kit	12



INSTALLATION



- **Material:** galvanised steel
- Delivered complete with stainless steel hardware
- Clamping diameter: 30 to 55 mm
- Set of two brackets: used for gable fixing of a lightning conductor with or without a 2 m extension mast. Distance between brackets = 50 cm

## BOLTED BRACKETS

- Use: bolted fixing for an offset mast on a vertical wall (M 10)
- Bolt hole diameter:  $\varnothing$  11 mm
- Distance between bolt holes: 120 mm.

Reference	Designation/offset	W. (kg)
HPS 2709	Set of 2 brackets / 190 mm	3,80
HPS 2845	Set of 2 brackets / 190 mm	5,70
HPS 2708	Set of 2 brackets / 125 mm	2,80
HPS 2848	Set of 3 brackets / 125 mm	4,20



## SCREW-IN BRACKETS

- Use: fixing of a mast along a horizontal or vertical standard section

Reference	Designation	W. (kg)
HPS 2902	Set of 2 brackets	1,6
HPS 2903	Set of 3 brackets	2,4



## OFFSET CLAMPS

- Use: fixing of a mast offset from a vertical wall or a horizontal section by means of  $\varnothing$  10 mm bolts.

Reference	Designation	Use	W. (kg)
HPS 2704	Set of 2 clamps	Horizontal support	3,40
HPS 2844	Set of 3 clamps	Horizontal support	5,10
HPS 2706	Set of 2 clamps	Vertical support	3,40
HPS 2846	Set of 3 clamps	Vertical support	5,10



## WALL ANCHORS

- Use: fixing of a mast embedded in a masonry wall
- Offset distance: max. 150 mm maxi
- Embedded distance: min. 150 mm

Reference	Designation	W. (kg)
HPS 2707	Set of 2 brackets	2,8
HPS 2847	Set of 3 brackets	4,2



## OFFSET BRACKETS

- Use: fixing of a mast offset from a vertical section
- Offset distance: max. 190 mm

Reference	Designation	W. (kg)
HPS 2709	Set of 2 brackets	3,6
HPS 2849	Set of 3 brackets	5,4



## STEEL HOOPS

- Use: fixing of a mast on a chimney, a concrete mast, etc.

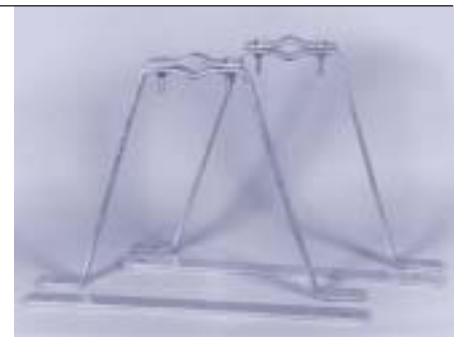
Reference	Designation	Clamping $\varnothing$ (mm)	W. (kg)
HCC 4000	Set of 2 brackets	from 30 to 60	2,0
HCC 4001	Set of 3 brackets	from 30 to 60	3,0
HFC 4002	Coil of steel hoop (25 m)		5,0



## WIDE OFFSET BRACKET

- Use: bolted fixing of a mast offset from a vertical wall (M 10)
- **Material:** galvanised steel
- Offset distance: 45 cm
- Distance between bolt holes: 54 cm
- Minimum distance between brackets: 50 cm to fix a set of masts for a building with a height of 5 m; 1 m for higher buildings
- Delivered complete with hardware and back plate

Reference	Designation	Clamping $\varnothing$ (mm)	W. (kg)
HPS 2710	Set of 2 brackets	from 30 to 60	10,5



## CARRIAGE BOLT HOLDFASTS

■ Use: to fix of a single conductor rod (with no extension mast) in timber frameworks or bedding in masonry

- **Material:** galvanised steel
- Delivered complete with hardware

Reference	Designation	Effective thread L.	Effective L. after fixing	Hole ø	W. (kg)
HST 2044	Short sup.	150 mm	0,10 m	18 mm	1,25
HST 2698	Long sup.	150 mm	1,00 m	18 mm	5,90



## THREADED BASES

■ Use: to fix a conductor to a metal framework. The conductor may be raised by a ø 35 mm extension mast

- **Material:** stainless steel
- Delivered complete with hardware

Reference	Designation	Max. tightening L.	Thread ø	W. (kg)
HEF 2107	Conductor base	115 mm	30 mm	2,20
HEF 2313	ø 35 mm ext. mast base	150 mm	36 mm	4,50



## WATER DEFLECTING CONES

■ Use: to ensure the watertightness of roofing when vertical fixing is used. Cut according to mast diameter (CRE) or welded around mast (CCH).

- **Material:** rubber (CRE) or copper (CCH)
- For CCH: rubber thickness 8/10

Reference	Taper opening	H. (mm)	W. (kg)
CRE 2700	30 to 50 mm	85	0,07
CCH 0113	29 mm	85	2
CCH 0097	21 mm	75	1,6



## INDUSTRIAL CHIMNEY BRACKET

■ Use: to offset a single rod conductor (HPF 1001 or HPF 2001) from a chimney stack

- **Material:** stainless steel
- Delivered complete with stainless steel hardware

Reference	Designation	W. (kg)
HPS 2630	Stainless steel chimney bracket	1,3



## SUPPORTING PLATES / TRIPODS

■ Use: to fix lightning conductors or elevation masts to flat roofs

- **Material:** galvanised steel
- Bolt hole diameters: 14 mm

Reference	Designation	H. (mm)	Dimensions of base	Centerline dist.	W. (kg)
HPP 4523	Plate for 30 to 35 mm tube	330	200 x 200	125 x 125	5,5
TSH 4525	Tripod for 42 to 50 mm tube	800	420 face	390 face	8,5



## ADAPTOR SLEEVES

■ Use: to fix a PULSAR lightning conductor to an existing support with max.  $\varnothing$  49 mm.

■ **Material:** stainless steel

Reference	Designation	Max. tightening L.	Diameter (mm)	W. (kg)
HMA 5030	For Pulsar block (1)	180 mm	Thread $\varnothing$ 30	1,30
HMA 5115	For Pulsar masts with Franklin tip (2)	180 mm	Tube $\varnothing$ 30	2,30



## AIR TERMINAL

■ Hérita air terminals are designed for easy, rapid installation on a wide range of structures.

They are made up of:

■ a cylindrical ( $\varnothing$  18 mm) bright nickel-plated copper cylinder tapered at the top and with a threaded lower section.

■ a bright tapped nickel-plated brass base M 10 for the connection and intersection of flat or round conductors.

They are adaptable to all fixtures shown below.

Reference	Material	L. (m)	W. (kg)
HPC 3000	Nickel Copper	0,30	1,00
HPC 5000	Nickel Copper	0,50	1,50

NB: Different lengths on request.



## FIXTURE ACCESSORIES FOR AIR TERMINALS

### Vertical mounting

■ **Material:** tin-plated or galvanised steel

Reference	Designation	Hole $\varnothing$ (mm)	Length (cm)	W. (kg)
SSH 5001	To bed	16	10	0,120
STH 5002	To bold	8	16	0,070
EFH 5003	S/Steel threaded base	10	13	0,100

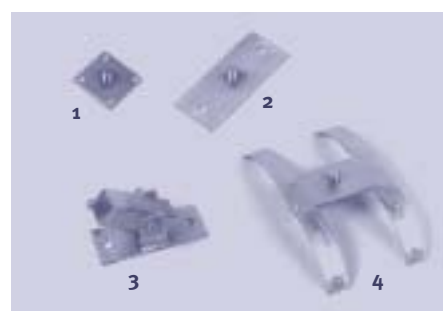


### Supporting plates

■ **Material:** stainless steel

■ Fixing: 2  $\varnothing$  10 mm bolt holes  
(centerline distance 93 mm)

Reference	Designation	Length x width (mm)	W. (kg)
PSH 5002 (1)	Flat plate PM	50 x 50	0,100
PSH 5004 (2)	Flat plate GM	120 x 50	0,200
SOH 5006 (3)	Swivelling plate	120 x 50	0,460
PFH 5000 (4)	Roof ridge plate	250 x 120	0,500



### Offset plates

■ **Material:** galvanised steel

■ Fixing: by M8 screw

Reference	Designation	W. (kg)
PDH 5005	5 cm offset plate	0,110
PDH 5015	15 cm offset plate	0,200





### Adaptor sleeves

- Use: to fix air terminals to existing supports (max.  $\varnothing$  50 mm)
- **Material:** stainless steel

Reference	Max. tightening L.	W. (kg)
HMA 5010	100 mm	0,400



**FLAT CONDUCTORS\*** (sold per meter)

Reference	Designation	Material	W. (kg/m)
CPC 2712	30 x 2 mm strip	Tin-plated copper	0,535
CPC 2711	30 x 2 mm strip	Red copper	0,535
CPA 2715	30 x 3 mm strip	Aluminium	0,235
CPI 2711	30 x 2 mm strip	Stainless steel	0,474

\*Other dimensions on request

**ROUND CONDUCTORS\***

Reference	Designation	Material	W. (kg/m)
CRC 6001	ø 6 red copper	28 mm <sup>2</sup>	0,252
CRC 8001	ø 8 red copper	50 mm <sup>2</sup>	0,450
CRC 8000	ø 8 tin-plated copper	50 mm <sup>2</sup>	0,450

\*Other dimensions on request

**FLEXIBLE BRAIDS\***

■ **Material:** tin-plated copper

Reference	Dimensions	Section	W. (kg/m)
CTC 2714	30 x 3,5 mm	50 mm <sup>2</sup>	0,50

\*Other dimensions on request

**PREFORMED BENDS\***

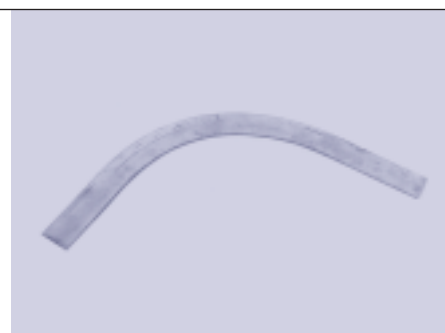
■ **Material:** tin-plated copper

■ Curvature radii to lightning conductor standards

■ We recommend the use of a soldering joint or two special strip flat / flat connections for connecting two bends.

Reference	Dimensions	Section	W. (kg)
CCP 2716	30 x 2 mm	60 mm <sup>2</sup>	0,50

\*Other dimensions on request

**SHUNTS**

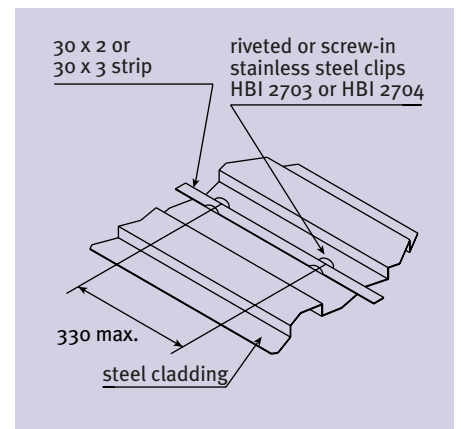
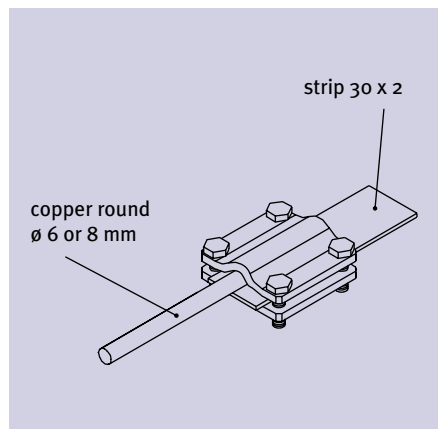
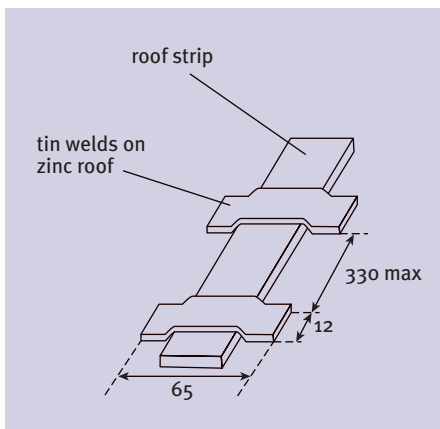
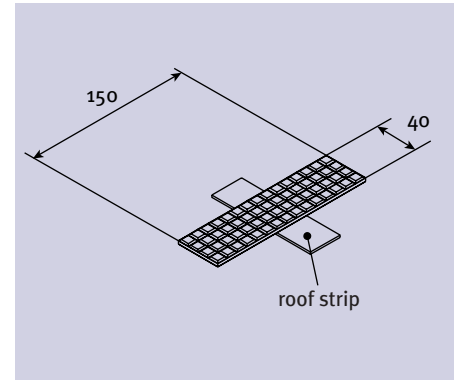
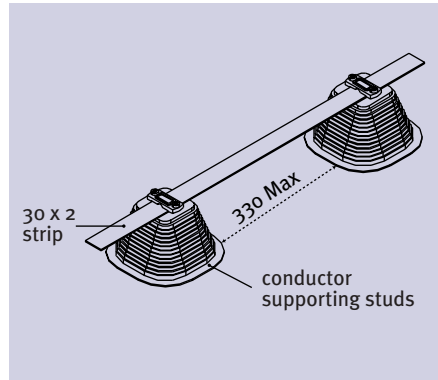
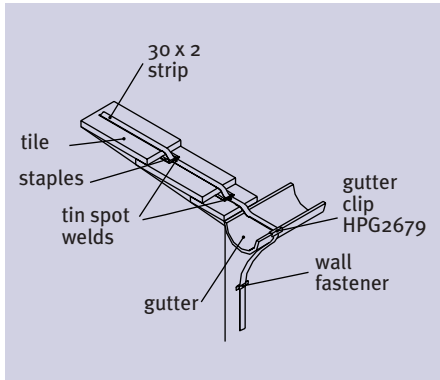
■ Electrolytically tin-plated flat flexible copper braid with welded eyelet at each end

■ Other lengths and cross-sections available on request

Reference	L. (m)	Section	W. (kg)
STP 5030	0,30	50 mm <sup>2</sup>	0,16
STP 5050	0,50	50 mm <sup>2</sup>	0,27
STP 5075	0,75	50 mm <sup>2</sup>	0,40
STP 5100	1,00	50 mm <sup>2</sup>	0,60



## INSTALLATION



## TILE AND SLATE STAPLES

- **Material:** tin-plated copper
- For 30 mm wide strip
- To prevent the staple sliding, tack weld the strip to the staple

Reference	L.	W. (kg)
HAA 2701	0,09 m	0,020
HAA 2641	0,20 m	0,047
HAA 2672	0,30 m	0,070



## CLIPPED TILE FASTENERS

- **Material:** tin-plated copper strip saddle 25 x 1 mm
- Clips: stainless steel. Used for fixing a 30 mm strip to all types of slate of unbedded roofing tiles
- PVC: grey or red copper

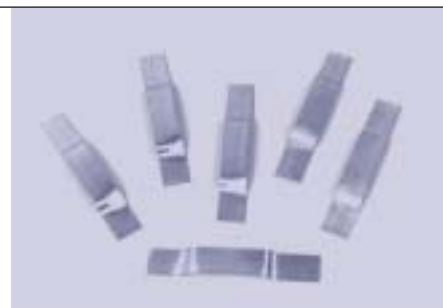
Reference	L.	W. (kg)
HAA 2673	0,175 m	0,040
HAR 2745	grey	0,045
HAR 2746	copper	0,045



## METAL ROOF CLIPS

- **Material:** tin-plated copper
- For 30 mm strip
- For welding on to the roof and the strip, but can be fixed with copper rivets.

Reference	Dimensions (mm)	W. (kg)
HBZ 2702	65 x 12	0,005



## RUBERALU BRACKETS FOR FLAT ROOF WITH WATERPROOFING

- **Material:** bituminised aluminium
- For 30 mm wide strip
- These brackets are attached by hot-melt gluing

Reference	Dimensions (mm)	W. (kg)
HBR 2717	150 x 40	0,020



## RUBERALU BAND

- **Material:** bituminised aluminium
- Fixed by hot-melt gluing
- Length: 10 m roll

Reference	W. (mm)	Th. (mm)	W. (kg)
HBR 1500	150	3	0,50



## CONDUCTOR SUPPORTING STUDS

- **Material:** black synthetic exterior filled with cement (except HPV 2771 which is hollow).
- Eliminates the need to drill through waterproofing to attach the conductor.
- Can be glued with neoprene glue.
- Height: 8 cm

Reference	Designation	Use	W. (kg)
HPV 2771	Hollow stud	ø 8 mm conductor 30 x 2 mm conductor Cable raceway	0,16
HPB 2772	Solid stud	ø 8 mm conductor 30 x 2 mm conductor	1,29
HPB 2773	Solid stud		1,00



## HOOK FOR MASONRY WALLS

- Fixing: on masonry by driving into lead dowels
- For flat strip

Reference	Designation	Material	W. (kg)
HCM 2704	Hook 30 mm	Galvanised steel	0,014
HCM 2703	Hook 40 mm	Galvanised steel	0,020
HCM 2702	Hook 50 mm	Galvanised steel	0,026
HCM 2706	Hook 30 mm	Stainless steel	0,020
HCC 2696	Dowel	Lead	0,003



## MASONRY FIXTURES

- For 30 mm wide strip; supplied with wood screw

**Material:** brass

- For round conductors; supplied with wood screw

**Material:** copper

Reference	W. (kg)
HCL 2642 (1)	0,020
SCP 3000 (2)	0,046



1



2

## PVC FIXTURES

- Fixing: on 30 mm wide strip with isolation from supporting material (screw-hole spacing 15 mm)

- Colour: grey

- HAP for flat conductors;  
HAR for round conductors

Reference	Adaptation	W. (kg)
HAP 3001	Sole M 8	0,024
HAP 3002	Dowel $\varnothing$ 8	0,024



Reference	Colour	Use	W. (Kg)
HAR 2845	Grey	Masonry	0,016
HAR 2846	Copper	Masonry	0,016
HAR 2445	Grey	Adapts to thread M 8	0,007
HAR 2446	Copper	Adapts to thread M 8	0,007



## STAINLESS STEEL CLIPS

- **Material:** stainless steel

- For fixing a flat strip conductor

- Fixed with pop rivets or screws ( $\varnothing$  4 mm) not supplied

- $\varnothing$  5 mm drill hole for waterproof cladding clips

Reference	Designation	W. (kg)
HCB 4240	Clips for waterproof cladding	0,005
HBI 2703	Stainless steel clips for 30 x 2	0,002
HBI 2704	Stainless steel clips for 30 x 3	0,002
HRP 2705	50 aluminium waterproof pop rivets $\varnothing$ 4	0,1
HRP 2706	50 copper rivets $\varnothing$ 4	0,1



## WATERPROOF FIXING ON CLADDING

- Fixing: on cladding and roofs of galvanised or thermo-lacquered steel plate (ref. FDT 0045)

- Fixing: on tiles or fibrocement (ref. FDT 0046)

- Fixed entirely from outside and guaranteeing perfect watertightness. May be equipped with a bakelite insulator

- Drill hole  $\varnothing$ : 10 mm

Reference	Use	W. (kg)
FDT 0045	Metal cladding Dowel L. 15 mm	0,03
FDT 0046	Tiles or cement fibre Dowel L. 25 mm	0,04
HAR 2545	Metal cladding (grey)	0,017
HAR 2546	Metal cladding (copper)	0,017



- FDT for flat conductors;  
HAR for round conductors

## INSULATING SUPPORTS

- Fixing: strip on timber framework or thatch

- **Material:** bakelite

- Supplied complete with wood screws

- HIS for flat conductors;  
HAR for round conductors

Reference	Insulator H (mm)	Thread $\varnothing$	W. (kg)
HIS 6000	35	6 mm	0,05
HAR 2645	grey	8 mm	0,05
HAR 2646	copper	8 mm	0,05



## ANGLE BRACKETS

- Fixing: flat or round conductors along a metal sectional part
- **Material:** zinc-coated steel

Reference	Spacing	W. (kg)
HPC 2773	12 mm max	0,05



## SWIVELLING ANGLE BRACKET

- Fixing of a round conductor on to an angle with a max. thickness of 11 mm, enabling the conductor to be routed either parallel or perpendicular to the support.
- **Material:** galvanised steel

Reference	Designation	W. (kg)
PCP 2500	Galvanised support ø 8- angle	0,128



## GUTTER BRACKETS

- Use: to earth gutters where they are in contact with conductors
- **Material:** tin-plated steel
- For round ø 8 mm conductors and 30 mm wide strips

Reference	W. (kg)
HPG 2679	0,09



## STAINLESS STEEL CLAMPS

- Use: to clamp a conductor to a special part
- **Material:** stainless steel

Reference	Tightening ø (mm)	W. (kg)
HCI 2419	30 to 50	0,015
HCI 2420	40 to 70	0,020
HCI 2421	60 to 100	0,025



## COIL OF STAINLESS STEEL TAPE

- Use: to fix a conductor to a standard section of ø > 100 mm using a crimping tool
- **Material:** stainless steel

Reference	Designation	W. (kg)
HFP 2640	Stainless steel tape 10 x 0.7 (50 m)	2,0
HCP 2641	50 tightening clips 10 mm	0,2



## COUPLING STRIPS

- Use: for coupling or crossing two conductors without riveting.
- The “standard” models accommodate 30 mm wide strips and rounds with  $\varnothing$  6 and 8 mm. These can be equipped with different types of fasteners.
- The “multiple” model also enables crossings of round conductors.
- The special strip model only accommodates flat strips.

Reference		Designation	W. (kg)
BRP 2680	(1)	Galvanised steel “standard” coupling	0,300
BRC 2780	(2)	Copper “standard” coupling	0,210
BRC 2783	(3)	Copper “standard” coupling for masonry	0,220
BRC 2784	(4)	Copper “standard” coupling for cladding	0,220
BRC 2785	(5)	Copper “standard” coupling for fibre-cement	0,220
BRX 3780	(6)	Copper “multiple” coupling	0,300
BRH 2779	(7)	Special copper coupling for strip	0,200
BRC 2781	(8)	30 x 2 and $\varnothing$ 8 mm line coupling	0,204
BRI 2779	(9)	Special stainless steel coupling for strip	0,202



## CONNECTORS FOR ROUND CONDUCTORS

- **Material:** uncoated or tin-plated brass

Reference	Designation		$\varnothing$ tightening (mm)	W. (Kg)
PRC 6000	Lug with offset base	(1)	6	0,030
PRC 8000	Lug with offset base	(1)	8	0,050
PRM 6000	Sleeve	(2)	6	0,030
PRM 8000	Sleeve	(2)	8	0,050
PRT 6000	Tee	(3)	6	0,040
PRT 8000	Tee	(3)	8	0,060
PRX 6000	Cross	(4)	6	0,045
PRX 8000	Cross	(4)	8	0,065



## SCREW-IN COUPLINGS FOR ROUND CONDUCTORS

- **Material:** die-cast brass or copper (HRC)
- The HAR 2744 coupling is supplied with a lug with a wood screw
- The HCT 6080 crossing lug is drilled for  $\varnothing$  11 mm

Reference	Designation		$\varnothing$ tightening (mm)	W. (Kg)
HRC 8010	Line coupling	(1)	8 to 10	0,075
HCT 6080	Crossing lug	(2)	6 to 8	0,075
HAR 2844	Tee coupling - line cross		8	0,080
HRC 6080	Multiple coupling		8	0,120
HRC 6180	Multiple coupling		6	0,050





This counter is a standard down conductor fitting and records each passing lightning stroke with a current in the range 0.4 kA to 150 kA.

### Operation

Mounted as a standard fitting on the down conductor, this counter uses the current induced in a secondary circuit to activate an electromechanical counter. It has been tested in High Voltage laboratories and in situ.

### Characteristics

- Minimum trip threshold: 0.4 kA (4/10  $\mu$ s)
- Dimensions: 80 x 120 x 170 mm
- Weight: 1.570 kg
- Protection level: IP 67
- Service temperature: - 20°C to + 60°C
- Connection terminals: tin-plated copper  
 $\varnothing$  10 mm
- ECM conformity

### Connection

- The CCF 4045 counter is connected as a standard fitting on the down conductor above the test coupling and always at a height of 2 m above ground level (NF C 17-102)
- The counter is available in two versions:
  - **Réf. CCF 4045:** the counter is supplied with a connector for 30 x 2 mm flat strip conductors
  - **Réf. CCJ 4008:** the counter is supplied with a connector for 30 x 2 mm flat strip conductors and a standard test coupling specially adapted to  $\varnothing$  10 mm conductors.
  - For  $\varnothing$  8 or 10 mm round conductors, **ref. HRC 8010** connectors (not supplied) should be used.

### Fixing

The CCF 4045 counter can be fixed:

- to a wall using M4 screws,
- to a steel section using two 20 mm wide steel clips

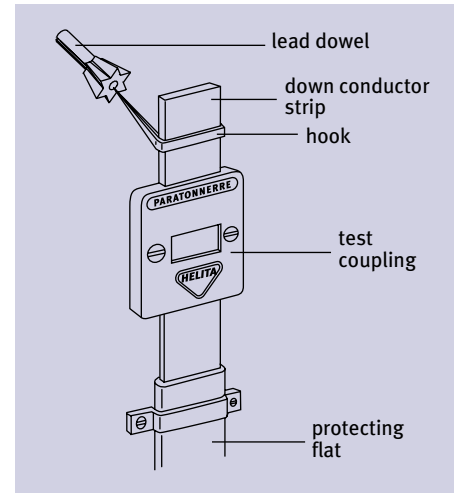
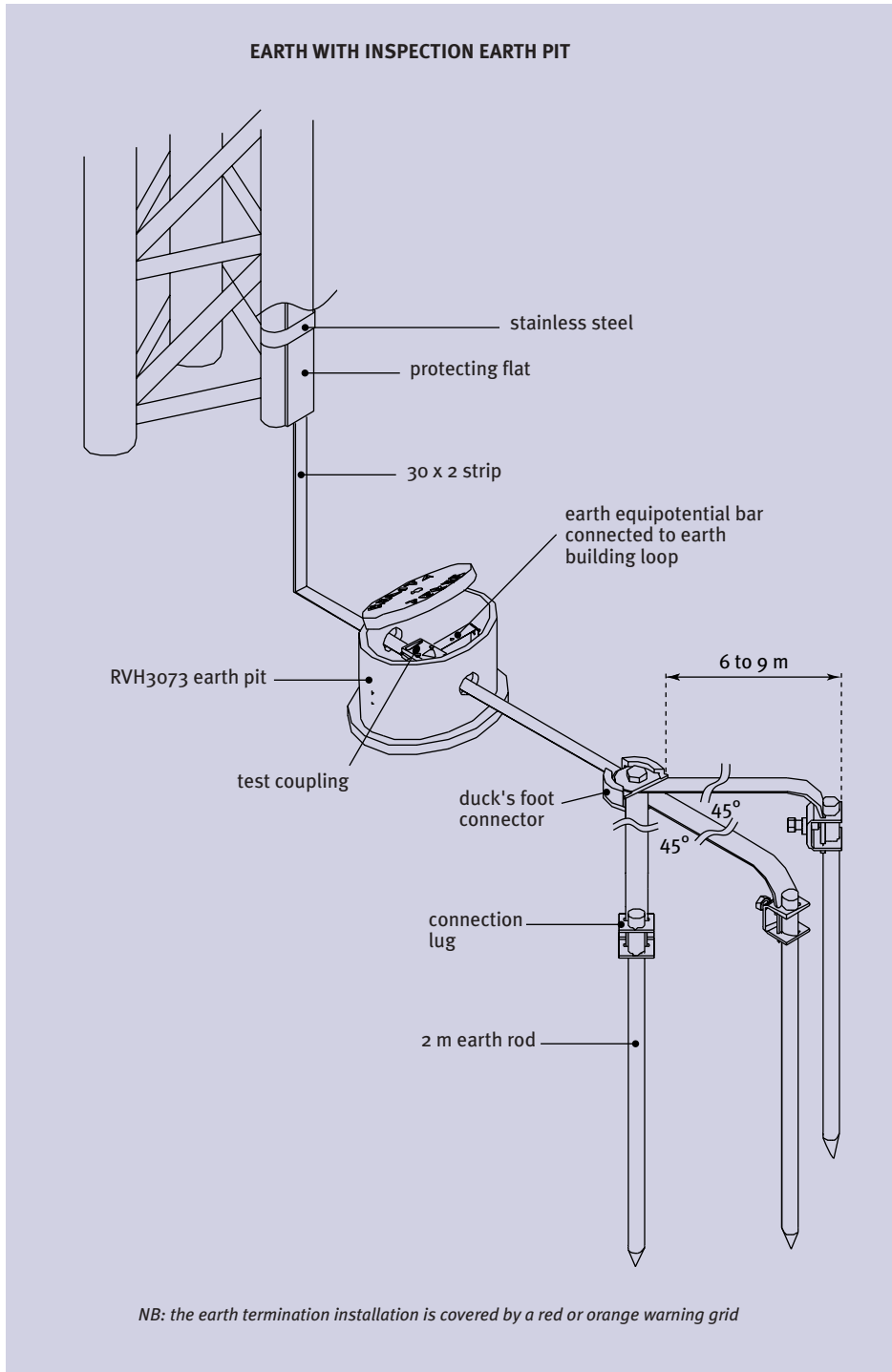
### Use / monitoring

Lightning counter users should maintain a register in which the initial counter display is recorded along with the results of the subsequent periodical measurements.



Reference	Designation	Weight (kg)
CCF 4045	Lightning stroke conductor with 2 flat conductor connectors	1,6
CCJ 4008	Combination lightning stroke conductor / test coupling	2,1
HRC 8010	Line coupling for round conductor 8 to 10 mm	0,15

### INSTALLATION



## TEST COUPLING

- Enables the disconnection of the conductors for insulation and earthing measurements
- **Material:** die-cast brass
- No need to drill the conductors.
- Accommodate  $\varnothing$  6 and 8 mm round conductors and 30 x 2 or 30 x 3 mm flat conductors
- Guarantee perfect conductivity; low impedance
- Fixed by brackets with wood or metal screws, etc.
- Marking to NF C 17- 100 and NF C 17-102 standards

Reference	Dimensions (mm)	W. (kg)
JCH 2708	70 x 50 x 20	0,39



## PROTECTING FLATS AND TUBES

- 2 m galvanised steel flats or tubes to protect the down conductors against mechanical impact. Generally placed between the test coupling and the ground.
- Delivered complete with 2 clamps (bracket, wood screw)

Reference	Designation	W. (kg)
TPH 2705	Protecting flat for strip	1
HTP 2782	Clamp for TPH 2705	0,035
TPH 2768	Protecting tube for round	1,2
HTP 6827	Clamp for TPH 2768	0,045



## INSPECTION EARTH PIT

- Used to house the test coupling at ground level, the earth rod connections or earth interconnections
- The RVH 3073 and RVH 3074 models are equipped with a copper bar enabling the interconnection of 3 conductors or 2 conductors and a test coupling.

Reference	Material	Dim. (mm)	W. (kg)
RVH 3071	Cast iron $\varnothing$ ext.	190	2,4
RVH 3072	Yellow polyester concrete	350 x 250	13,00
RVH 3073	Yellow polyester concrete	350 x 250	14,50
RVH 3074	Grey PVC	300 x 300	3,3



## INTERCONNECTION BOX FOR EQUIPOTENTIAL BONDING

- These boxes are fixed to the bottom of the down conductor and enable easy, accessible interconnection and disconnection of the lightning conductor earth and the building's entrenched loop.
- They are made of a galvanised steel cover over a copper bar mounted on two insulators enabling the connection of 2 conductors.
- Delivered complete with wood screw brackets and earth identification labels.
- 2 lugs with offset bases (PRC 8000) are supplied to enable the BLH 2709 to be used with round conductors.

Reference	Dimensions (mm)	W. (kg)
BLH 2707	150 x 65 x 65	0,550
BLH 2709	150 x 65 x 65	0,650



## IDENTIFICATION PLATES

- **Material:** aluminium
- Used to mark conductors on their path or at the interconnection points.
- Back letters on yellow ground.

References	Text	Design	Dimensions (mm)
PSH 2708	Lightning conductor earth	Triangular	100 x 100 x 100
PSH 2709	Surge arrester earth	Triangular	100 x 100 x 100
PSH 3701	Lightning conductor earth	Circular	Diameter 30
PSH 3702	Building earth	Circular	Diameter 30
PSH 3703	Tower earth	Circular	Diameter 30



## EARTHING SELF

- Device placed on the connection between two earths to limit the risk of transmission of a fault current from one to the other

Reference	Dimensions (mm)	W. (kg)
HSA 3073	200 x 100 x 70	1,2

### Technical characteristics

- Inductivity: 20  $\mu$ H
- d.c. resistance: 1,5 m $\Omega$
- Resonance frequency: 10 MHz



## DUCK'S FOOT CONNECTORS

- Zinc-plated, die-cast brass parts enabling the connection of three or four strands of tin-plated copper 30 x 2 mm conductor strip
- Variable strand angles
- Perfect electrical conductivity and strong tightening

Reference	Dimensions (mm)	W. (kg)
RPO 2840	∅ 85 - thickn. 30	0,80



## EARTH GRIDS

- Earth grids are made of solid red copper with a mesh size of 115 x 40 mm

Reference	Dimensions (m)	Thickness	W. (kg)
GMD 6692	0.66 x 0.92	3 mm	3,80
GMD 1020*	1.00 x 2.00	4 mm	8,40

\*Other dimensions on request



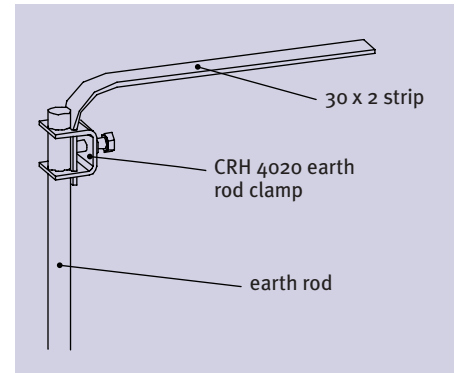
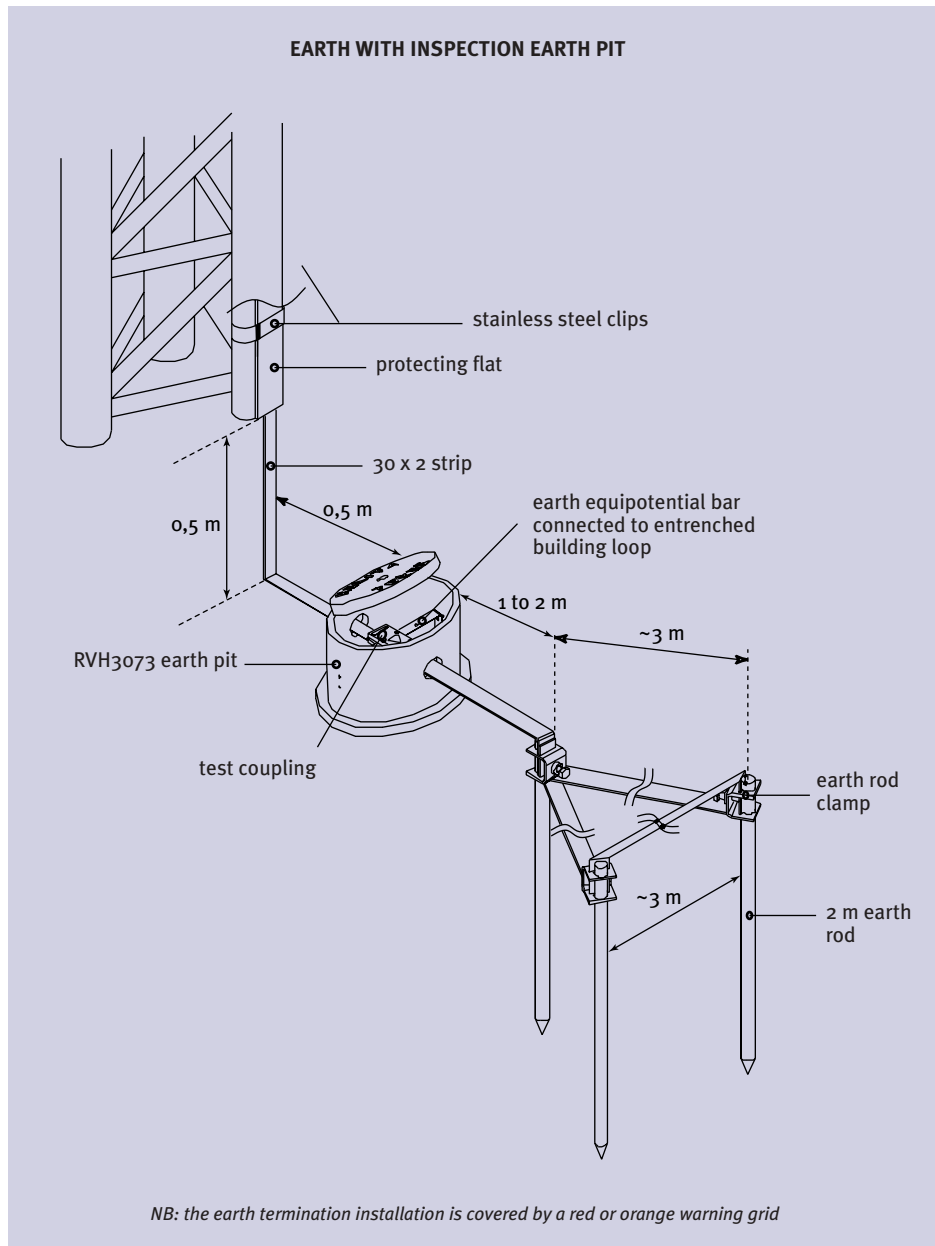
## TEREC

- The addition of this product to the soil used to fill in around an earth connection considerably reduces the resistance value.
- This conductive material combines several properties that dissipate electronic, electrical fault current and lightning currents.
- Packaged in 20 kg pail.

Reference	Description (m)	W. (kg)
HTS 4020	0,30 x 0,29 x 0,38	20



## INSTALLATION



## GALVANISED STEEL EARTH RODS\*

- Resistance welded tubes, hot-galvanised on external and internal surfaces.
- Preformed pointed tips, reinforced for enhanced soil penetration
- Resistant to impacts when driving in
- Fitted with removable connection lug

Reference	external ø (mm)	L. (m)	W. (kg)
PVB 2110	21	1,00	1,25
PVB 2115	21	1,50	1,80



## SELF-EXTENSIBLE EARTH RODS\*

- High resistance steel tube either ø 20 mm hot-galvanised or ø 19 mm with 250 µ electrolytically plated copper.
- One-piece point
- Patented interlocking system without sleeve (pullout strength: 3,500 to 6,000 kg)
- The use of a reusable treated steel snap tool is recommended to protect the rod head when driving in.

Reference	Designation	W. (kg)
PCA 1910	Steel copper rod ø 19 ; L. 1 m	2,1
PVB 2010	Galvanised steel rod ø 20 ; L. 1 m	2,4
BMA 0019	Manual snap tool ø 19	0,3
BMA 0020	Manual snap head ø 20	0,3



## EARTH ROD CLAMPS

- **Material:** die-cast brass
- Movable on rods
- The CHR 4020 clamp enables two strips to cross

Reference	for rod ø (mm)	Conductor cross-section (mm <sup>2</sup> )	W. (kg)
CRA 0015	15	35 (ø 7)	0,06
CRA 0019	19	50 (ø 8)	0,09
CRA 0020	20	80 (ø 10)	0,10
CRH 4020	15 to 20	60 (30 x 2 strip)	0,15



\* Other dimensions available on request

## COPPERBOND RODS \*

- Steel core specially designed to give the rod rigidity and flexibility: the outer envelope has a constant thickness guaranteed along the entire length of the rod: perfect steel/copper contact.
- High corrosion resistance in the ground due to a 250 µ thickness of electrolytically plated copper.
- All models have chamfered base. The conical point is machined (neither heated nor stamped).
- Available in two versions, standard and extendable.
- Rods are designed to support manual and mechanical driving into the ground.
- Manual snap tools (BMA 0015 and BMA 0019) should be used to drive in the standard rods. Strike heads (HFT 0015 and HTF 0019) screwed on to the sleeves should be used for the extendable rods.
- The extendable rods are threaded at each end to enable connection by brass sleeve couplings. These are designed to guarantee the contact at the rod tip with the end of the preceding rod.

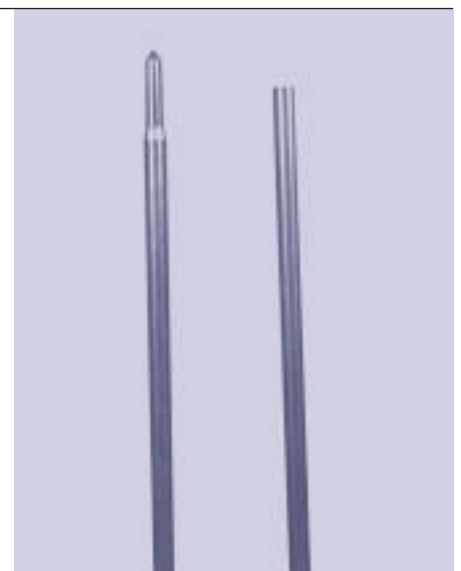
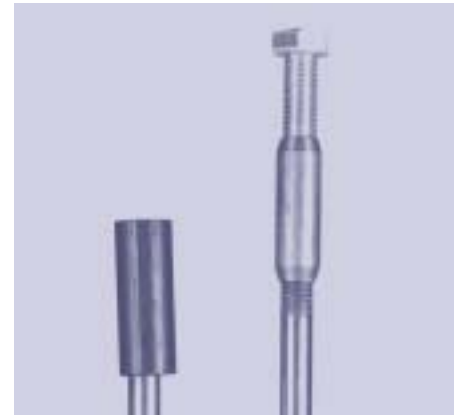
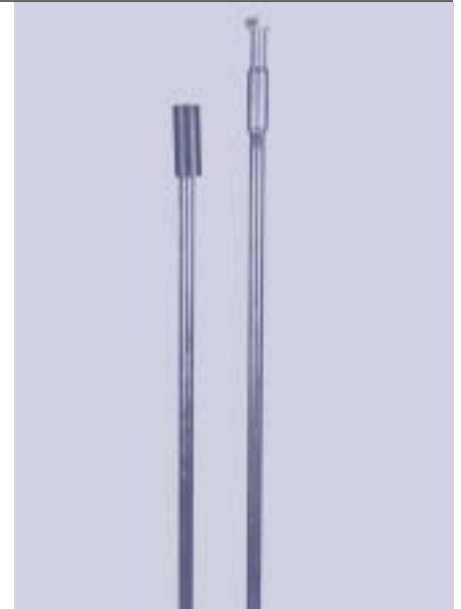
Reference	Designation	L. (m)	actual ø (mm)	nominal ø (mm)	W. (kg)
PCS 1520	Standard copperbond rod	2,10	14,5	-	2,67
PCS 1920	Standard copperbond rod	2,10	17,5	-	3,94
PCA 1515	Extendable copperbond rod	1,50	14,5	15,90	1,91
PCA 1915	Extendable copperbond rod	1,50	17,5	19,05	2,81
HMF 0015	Threaded sleeve coupling ø 15 mm	-	-	-	0,10
HMF 0019	Threaded sleeve coupling ø 19 mm	-	-	-	0,25
HTF 0015	Strike head ø 15 mm	-	-	-	0,15
HTF 0019	Strike head ø 19 mm	-	-	-	0,15
BMA 0015	Manual snap tool ø 15 mm	-	-	-	0,35
BMA 0019	Manual snap tool ø 19 mm	-	-	-	0,30

\*other dimensions on request

## STAINLESS STEEL RODS

- Self-extendable
- In some soils rich in chloride (coastal areas, marshes, former salt lakes, etc.), the use of steel or copper rods is inadvisable.
- Stainless steel rods are recommended for these environments.
- Lug with 95 mm<sup>2</sup> tightening capacity.

Reference	Designation	L. (m)	Diameter (mm)	W. (kg)
PIA 1620	Stainless steel rod	2	16	3
PIA 1610	Stainless steel rod	1	16	1,45
CRI 3016	Stainless steel lug for rods	-	-	0,13





## DIGITAL EARTH TEST SET

Battery-powered and watertight the ACA 6423 is a device that is easy to use and has been designed for operation in the field.

On all installations requiring the qualification of electrical or lightning conductor earths, using traditional earth rod methods, the ACA 6423 measures the earth resistance.

### Measurement characteristics

- Measurement validated by self-diagnostics
- Measurement point capacity: 0 to 2000 points with three measurement ranges:

Measurement range	Resolution	Measured current	Precision
0,00.to.19,99 $\Omega$	0,01 $\Omega$	10 mA	$\pm 2\%L \pm 1 \text{ pt}$
20,00.to.199,9 $\Omega$	0,1 $\Omega$	1 mA	$\pm 2\%L \pm 1 \text{ pt}$
200,0.to.1999 $\Omega$	1 $\Omega$	0,1 mA	$\pm 2\%L \pm 3 \text{ pt}$

- Measurement frequency: 128 Hz
- Off-load voltage: 42 V crest
- Conditions of use: -10 to +55°C / 20 to 90% HR
- Response time: 4 to 8 s depending on measurement conditions

### Other characteristics

- Powered by 8 R6 1.V alkaline batteries
- Constantly monitored battery operation for 1,800 measurements of 15 s
- Device protected by HPC fuse
- Watertight case IP 54
- Dimensions (L x w x h): 238 x 136 x 150 mm.
- Weight: around 1,3 kg

### Conformity with standards

- Electrical safety: backed-up apparatus insulation, compliant IEC 1010
- Electromagnetic compatibility: EN 50081-1, EN 50082-1

Reference	Designation	Weight (kg)
ACA 6423	Digital earth test set	1,3
ACA 1824	Accessory set (3 leads + 2 rods)	4,4

## DIGITAL EARTH AND RESISTIVITY TEST SET

All the characteristics of the ACA 6425 are identical to the ACA 6423, but 4 terminals

can be used to measure the resistivity and earth coupling.

Reference	Designation	Weight (kg)
ACA 6425	Digital earth and resistivity test set	1,3
ACA 1825	Accessory set (4 leads + 4 rods)	6,0



**PULSAR LIGHTNING CONDUCTOR TESTING KIT**

The testing kit enables a contact with the Pulsar tip, the tester being connected to the bottom of the pole and to the down conductor. It tests the Pulsar electronics by activating the high-voltage generator.

Reference	Designation	Length	Weight
PMH 0800	8 m testing kit with case	8 m	6 kg

**GRIP FOR EARTH LOOP MEASUREMENT**

An active aspect of all electrical protection, earthing is generally achieved by several connections to the equipotential plane (on the surface of the ground) forming a number of loops.

The grip is especially useful for measuring the earths of meshed cages.

In addition to the traditional measurements of continuity and earths, the earth grip offers the advantage of offering rapid and totally safe inspection (the electrical installation remains constantly connected to the earth even during testing).

**Electrical characteristics**

- Conformity with EN 61010-2-032 standards
- Dual insulation, class 2
- 150 V, cat. III, poll. degree 2
- Max. overvoltage: 100 A AC constant
- Measurement frequency: 2400 Hz
- Battery operation: with 9 V alkaline battery (Cd/Ni batteries supported):  
1,500 measurements x 30 s

Reference	Designation	Weight (kg)
ACA 6410	Earth loop measurement grip	1,3

**General characteristics**

- Clamping diameter: 32 mm
- Operating temperature: -10 to + 55°C
- Storage temperature: -30 to + 70°C
- Relative humidity: 0 to 75%
- IP 30, in accordance with EN 60529 standard
- Dimensions: 235 x 100 x 55 mm
- Supplied in a carrying case with a 9 V battery and handbook.



## ANTENNA MAST ARRESTER

- Use: temporary grounding of an antenna mast in the event of a lightning impact.
- In normal circumstances, the arrester insulates the antenna from the earth, but also from the lightning protection system in the event of a lightning strike.  
The arrester can also be used to earth metallic structures such as pylons, motor chassis, roof equipment, etc...

### Characteristics

- dynamic excitation: < 1800 V
- static excitation voltage: < 1100 V
- nominal discharge current: 25 kA
- dimensions: 280 x 45 x 30 mm
- delivered complete with clamp for mast attachment

Reference	Designation	W. (kg)
EAH 4005	Antenna mast arrester	0,400



## EARTHING KIT

- Use: earthing of screened coaxial cables. These connections must be located close to the antenna and the foot of the tower, at the entrance to the building.
- The maximum distance between two connections must be less than 30 m.
- Tested at 150 KA

Reference	Designation	W. (kg)
HKT 0334	Earthing kit for 11 mm cable	0,250
HKT 6471	Earthing kit for 16 mm cable	0,300
HKT 4562	Earthing kit for 28 mm cable	0,325
HKT 0332	Earthing kit for 40 mm cable	0,350
HKT 2051	Connection strip 5 kits on 30 x 2 mm strip	0,290



## CUT-OFF AND EQUIPOTENTIAL TERMINAL

### BCH

- Cut-off terminal for earthing network. Supported current: 50 A
- Fixing: with dowels and screw-in bracket
- Supplied with 2 lugs for 28 to 75 mm cables

### BCP

- This cut-off terminal is specially designed for telecommunication towers.
- Fixing: by soldering or hoops on the tower frame. Enables the disconnection of the lightning conductor earth and the interconnection with the building and tower earths.

Reference	Designation	W. (kg)
BCP 2710	Cut-off and equipotential terminal for pylons	0,9
BCH 2709	Cut-off terminal	0,3



- Mounted on bronze roller (roosters, weathervanes, sockets)
- For rod with 30 mm external  $\varnothing$  (fits on to Héliita lightning conductor)

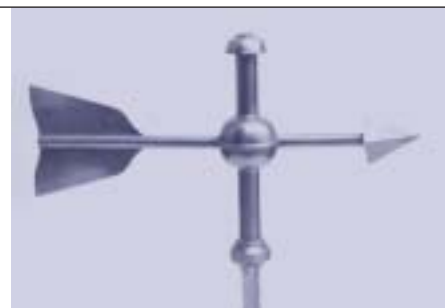
## ROOSTER

Reference	Designation	Material	L. (m)	W. (kg)
HCG 2718	With ball	Tin-plated copper	0,83	5,0
HCG 2694	With ball	Copper	0,83	5,0
HCG 2720	Standard	Tin-plated copper	0,57	4,3
HCG 2741	Standard	Copper	0,57	4,3



## WEATHERVANES

Reference	Material	L. (m)	W. (kg)
HGF 2719	Tin-plated copper	0,60	1,50
HGF 2695	Copper	0,60	1,50



## CARDINAL POINTS

Reference	Material	L. (m)	W. (kg)
HPC 2116	Tin-plated copper	0,60	0,80
HPC 2865	Copper	0,60	0,80



## SOCKETS

- Use: to adapt roosters to Héliita lightning conductors

Reference	Material	L. (m)	W. (kg)
HFG 5800	Copper	0,43	1,50



## LIGHTNING CONDUCTORS PULSAR TYPE (CNRS/HELITA PATENTS)

Designation	Reference	Pages
PULSAR 30 stainless steel 2 m	IMH 3012	39
PULSAR 30 stainless steel 3 m	IMH 3013	39
PULSAR 30 stainless steel black 2 m	IMH 3032	39
PULSAR 30 stainless steel copper 2 m	IMH 3022	39
PULSAR 45 stainless steel 3 m	IMH 4513	39
PULSAR 45 stainless steel black 2 m	IMH 4532	39
PULSAR 45 stainless steel copper	IMH 4522	39
PULSAR 45 stainless steel 2 m	IMH 4512	39
PULSAR 60 in stainless steel 2 m	IMH 6012	39
PULSAR 60 in stainless steel 3 m	IMH 6013	39
PULSAR 60 in stainless steel black 2 m	IMH 6022	39
PULSAR 60 in stainless steel copper 2 m	IMH 6032	39

## HELITA AIR-TERMINALS SIMPLE RODS

Designation	Reference	Pages
1 m stainless steel simple rod	HPF 1001	41
2 m stainless steel simple rod	HPF 2001	41

## ELEVATION MASTS FOR HELITA LIGHTNING CONDUCTORS

Designation	Reference	Pages
Aerial mast support	HRI 3530	45
Guyed Pylons	HPH XX00	47
Guying kit	HKH 0025	47
Offset rods for industrial chimney stacks	HRI 3501	47
Self carrying pylons 12 m. Zone 1	HPA XX12	47
Set of 2 stainless steel masts / int. 44	HRI 4204	43
Set of 2 stainless steel masts / int. 45	HRI 4206	43
Set of 3 stainless steel masts / int. 46	HRI 5006	43
Stainless steel mast $\emptyset$ 35 / int. 31	HRI 3502	43
Stainless steel mast $\emptyset$ 35 / int. 31	HRI 3503	43
Stainless steel mast $\emptyset$ 42 / int. 36	HRI 4202	43
Stainless steel mast $\emptyset$ 42 / int. 37	HRI 4203	43
Stainless steel mast $\emptyset$ 50 / int. 44	HRI 5002	45

## FIXING FOR AIR-TERMINALS AND ELEVATION MASTS

Designation	Reference	Pages
Adaptor sleeve for PULSAR	HMA 5030	52
Coil of steel hoop (25 m)	HFC 4002	50
Flat saddle for mast $\varnothing$ 30 to 35	HPP 4523	51
For Pulsar masts with Franklin tip	HMA 5115	52
Long carriage bolt holdfast (lightning cond.)	HST 2698	51
Set of 2 brackets	HCC 4000	50
Set of 2 brackets	HPS 2902	49
Set of 2 brackets / 125 mm	HPS 2848	49
Set of 2 brackets / 190 mm	HPS 2709	49
Set of 2 brackets / 190 mm	HPS 2845	49
Set of 2 lateral sealing brackets (150 mm)	HPS 2707	49
Set of 2 offset brackets (190 mm)	HPS 2705	50
Set of 2 offset clamps	HPS 2706	49
Set of 2 offset clamps - H support	HPS 2704	49
Set of 2 wide offset brackets (45 cm)	HPS 2710	50
Set of 3 brackets	HCC 4001	50
Set of 3 brackets	HPS 2903	49
Set of 3 brackets / 125 mm	HPS 2708	49
Set of 3 lateral sealing brackets (150 mm)	HPS 2847	49
Set of 3 offset brackets (190 mm)	HPS 2849	50
Set of 3 offset clamps	HPS 2846	49
Set of 3 offset clamps - H support	HPS 2844	49
Short carriage bolt holdfast (lightning cond.)	HST 2044	51
Stainless steel chimney bracket	HPS 2630	51
Threaded base 25x30 (lightning conductor)	HEF 2107	51
Threaded base for mast $\varnothing$ 35	HEF 2313	51
Tripod for elevation mast $\varnothing$ 42 to 50	TSH 4525	51
Water deflecting cone copper	CCH 0097	51
Water deflecting cone copper	CCH 0113	51
Water deflecting cone rubber	CRE 2700	51

## STRIKE POINTS AND FIXINGS FOR MESHED CAGES

Designation	Reference	Pages
Adaptor sleeve for strike point	HMA 5010	54
Carriage bolt mount	STH 5002	53
Flat plate GM	PSH 5004	53
Flat plate PM	PSH 5002	53
Offset plate 15 cm	PDH 5015	53
Offset plate 5 cm	PDH 5005	53
Roof ridge plate	PFH 5000	53
Strike point 0,3 m in copper	HPC 3000	53

## STRIKE POINTS AND FIXINGS FOR MESHED CAGES

Designation	Reference	Pages
Strike point 0,5 m in copper	HPC 5000	53
Swivelling plate	SOH 5006	53
Threaded base	EFH 5003	53
Vertical mount	SSH 5001	53

## CONDUCTORS FOR SURFACE AND GROUNDING EQUIPMENT

Designation	Reference	Pages
Aluminium tape 30x2 mm (the meter)	CPA 2715	55
Copper earthing grid 0,666x0,920 mm	GMD 6692	67
Copper earthing grid 1000x2000 mm	GMD 1020	67
Flat conductors 30x2 mm strip	CPC 2711	55
Flat conductors 30x2 mm strip	CPI 2711	55
Preformed elbow 30x2 mm	CCP 2716	55
Red copper round conductor $\varnothing$ 6 (the meter)	CRC 6001	55
Red copper round conductor $\varnothing$ 8 (the meter)	CRC 8001	55
Shunt 30x3 of 0,3 m	STP 5030	55
Shunt 30x3 of 0,5 m	STP 5050	55
Shunt 30x3 of 0,75 m	STP 5075	55
Shunt 30x3 of 1 m	STP 5100	55
Tinned copper flexible braid 30x3 mm	CTC 2714	55
Tinned copper round conductor $\varnothing$ 8 (the meter)	CRC 8000	55
Tinned copper tape 30x2 mm (the meter)	CPC 2712	55

## FIXINGS OF FLAT CONDUCTORS

Designation	Reference	Pages
50 aluminium pop watertight rivets $\varnothing$ 4	HRP 2705	59
50 copper pop watertight rivets $\varnothing$ 4	HRP 2706	59
Angle bracket	HPC 2773	60
Clips for waterproof cladding	HCB 4240	59
Copper clamp for 30x2 mm copper tape	HCL 2642	58
Holding cope 10 mm (per 50)	HCP 2641	60
Lead plug for 30 mm masonry cramp	HCC 2696	58
Metal roof clip	HBZ 2702	57
PVC clamping band for 30x2 - $\varnothing$ 8	HAP 3001	59
PVC clamping band for 30x2 - $\varnothing$ 8	HAP 3002	59
Ruberalu bracket	HBR 2717	57
Ruberalu tape 10 m roll	HBR 1500	57
Stainless-steel clamping band 30 - 50	HCI 2419	60
Stainless-steel clamping band 40 - 70	HCI 2420	60
Stainless-steel clamping band 60 - 100	HCI 2421	60

## FIXINGS OF FLAT CONDUCTORS

Designation	Reference	Pages
Stainless-steel clips for 30x2 mm	HBI 2703	59
Stainless-steel clips for 30x3 mm	HBI 2704	59
Stainless-steel masonry 30 mm hook	HCM 2706	58
Standard 30 mm masonry hook	HCM 2704	58
Standard 40 mm masonry hook	HCM 2703	58
Standard 50 mm masonry hook	HCM 2702	58
Staple 20 cm for tile and slate	HAA 2641	57
Staple 30 cm for tile and slate	HAA 2672	57
Staple 9 cm for tile and slate	HAA 2701	57
Staple clip for tile and slate	HAA 2673	57
Strip-steel 10x0,7 mm (50 m rings)	HFP 2640	60
Supporting stud for conductor	HPB 2772	58
Supporting stud for conductor	HPB 2773	58
Supporting stud hollow for conductor	HPV 2771	58
Tinned-steel gutter bracket	HPG 2679	60
Watertight fixings for cladding	FDT 0045	59
Watertight fixings for tile	FDT 0046	59

## CONNECTION OF FLAT CONDUCTORS

Designation	Reference	Pages
30x2 mm and $\varnothing$ 8 mm line coupling	BRC 2781	61
Copper std conductor coupling	BRC 2780	61
Galvanized-steel std conductor coupling	BRP 2680	61
Multiple copper coupling	BRX 3780	61
Special copper tapeconductor coupling	BRH 2779	61
Special tape stainless-steel coupling	BRI 2779	61
Std copper coupling fixable to abestos-cement	BRC 2785	61
Std copper coupling fixable to cladding	BRC 2784	61
Std copper coupling fixable to masonry	BRC 2783	61

## FIXINGS OF ROUND CONDUCTORS

Designation	Reference	Pages
Copper fixing $\varnothing$ 8 - masonry	SCP 3000	58
Copper PVC fixing $\varnothing$ 8 - cladding	HAR 2546	59
Copper PVC fixing $\varnothing$ 8 - M8	HAR 2446	59
Copper PVC fixing $\varnothing$ 8 - masonry	HAR 2846	59
Copper PVC fixing $\varnothing$ 8 - slate	HAR 2746	57
Copper PVC fixing $\varnothing$ 8 - wood	HAR 2646	59
Galvanized support $\varnothing$ 8 - angle	PCP 2500	60



## FIXINGS OF ROUND CONDUCTORS

Designation	Reference	Pages
Grey PVC fixing $\varnothing$ 8 - slate	HAR 2745	57
Grey PVC fixing $\varnothing$ 8 - cladding	HAR 2545	59
Grey PVC fixing $\varnothing$ 8 - M8	HAR 2445	59
Grey PVC fixing $\varnothing$ 8 - masonry	HAR 2845	59
Grey PVC fixing $\varnothing$ 8 - wood	HAR 2645	59
Insulating support	HIS 6000	59

## CONNECTION OF ROUND CONDUCTORS

Designation	Reference	Pages
Cross $\varnothing$ 6	PRX 6000	61
Cross $\varnothing$ 8	PRX 8000	61
Crossing lug $\varnothing$ 6 and $\varnothing$ 8	HCT 6080	61
Line coupling $\varnothing$ 8 to 10 mm	HRC 8010	61
Lug with offset base $\varnothing$ 6	PRC 6000	61
Lug with offset base $\varnothing$ 8	PRC 8000	61
Multiple copper coupling $\varnothing$ 6	HRC 6180	61
Multiple copper coupling $\varnothing$ 8	HRC 6080	61
Sleeve brass coupling $\varnothing$ 8	HAR 2844	61
Sleeve $\varnothing$ 6	PRM 6000	61
Sleeve $\varnothing$ 8	PRM 8000	61
Tee $\varnothing$ 6	PRT 6000	61
Tee $\varnothing$ 8	PRT 8000	61

## ACCESSORIES FOR DOWN-CONDUCTORS AND EARTHING SYSTEMS

Designation	Reference	Pages
5 signalling circles "terre bâtiment"	PSH 3702	66
5 signalling circles "terre pylône"	PSH 3703	66
5 signalling plates "terre paratonnerre"	PSH 3701	66
Case for equipotential connection	BLH 2707	65
Case for equipotential connection w.connections $\varnothing$ 8	BLH 2709	65
Clamp for TPH 2705	HTP 2782	65
Clamp for TPH 2768	HTP 6827	65
Control junction	JCH 2708	65
Cut-off and equipotential terminal for pylons	BCP 2710	73
Cut-off terminal	BCH 2709	73
Duck foot connector	RPO 2840	67
Earth self	HSA 3073	66
Lightning flash counter	CCF 4045	63
Lightning flash counter Combined CCF 4045 + JCH 2708	CCJ 4008	63

## ACCESSORIES FOR DOWN-CONDUCTORS AND EARTHING SYSTEMS

Designation	Reference	Pages
Line coupling for round conductor 8 to 10 mm	HRC 8010	63
Protective tube for round conductor	TPH 2768	65
Protective tube for tape conductor	TPH 2705	65
Sighting plate in cast iron	RVH 3071	65
Sighting plate in polyester concrete	RVH 3072	65
Sighting plate in polyester concrete with equipot	RVH 3073	65
Sighting PVC plate with equipotential bare	RVH 3074	65
Signalling plate "terre parafoudre"	PSH 2709	66
Signalling plate "terre paratonnerre"	PSH 2708	66

## MAST DIVERTER

Designation	Reference	Pages
Aerial mast diverter	EAH 4005	73
Coupling 5 kits on 30x2 mm tape	HKT 2051	73
Earthing kit for 16 mm cable	HKT 6471	73
Earthing kit for 28 mm cable	HKT 4562	73
Earthing kit for 40 mm cable	HKT 0332	73
Earthing kit for coaxial cable	HKT 0334	73

## MEASUREMENT INSTRUMENTS FOR GROUNDING INSTALLATIONS

Designation	Reference	Pages
8 m testing kit with case	PMH 0800	72
Accessory set (3 leads + 2 rods)	ACA 1824	71
Accessory set (4 leads + 4 rods)	ACA 1825	71
Digital earth and resistivity test set	ACA 6425	71
Digital earth test set	ACA 6423	71
Earth loop measurement grip	ACA 6410	72
Terec	HTS 4020	67

## MISCELLANEOUS

Designation	Reference	Pages
Copper cardinal points	HPC 2865	75
Copper French rooster with ball	HCG 2694	75
Copper standard French rooster	HCG 2741	75
Copper weathervane	HGF 2695	75
Socket to support rooster air-terminals	HFG 5800	75
Zinc cardinal points	HPC 2116	75

## MISCELLANEOUS

Designation	Reference	Pages
Zinc French rooster with ball	HCG 2718	75
Zinc standard French rooster	HCG 2720	75
Zinc weathervane	HGF 2719	75

## GALVANIZED-STEEL EARTH RODS

Designation	Reference	Pages
Galvanized-steel rod $\varnothing$ 21 - 1,50 m with clamp	PVB 2115	69
Galvanized-steel rod $\varnothing$ 21 - 1 m with clamp	PVB 2110	69
Self extensible rod $\varnothing$ 20 - 1 m	PVB 2010	69

## COPPERBOND EARTH RODS

Designation	Reference	Pages
Extensible threaded rod $\varnothing$ 15 - L 1,5 m	PCA 1515	70
Extensible threaded rod $\varnothing$ 19 - L 1,5 m	PCA 1915	70
Stainless steel lug for rod	CRI 3016	70
Stainless steel rod	PIA 1610	70
Stainless steel rod	PIA 1620	70
Standard copperbond rod $\varnothing$ 15 L 2,10 m	PCS 1520	70
Standard copperbond rod $\varnothing$ 19 L 2,10 m	PCS 1920	70
Steel copper rod $\varnothing$ 19 L 1 m	PCA 1910	69

## ACCESSORIES FOR EARTH RODS

Designation	Reference	Pages
Earth rod clamp $\varnothing$ 15	CRA 0015	69
Earth rod clamp $\varnothing$ 15 to 20 and tape 30x2 m	CRH 4020	69
Earth rod clamp $\varnothing$ 19	CRA 0019	69
Earth rod clamp $\varnothing$ 20	CRA 0020	69
Manual snap tool $\varnothing$ 15	BMA 0015	70
Manual snap tool $\varnothing$ 19	BMA 0019	70
Manual snap tool $\varnothing$ 20	BMA 0020	69

آدرس: مشهد-بلوار وکیل آباد - بین وکیل آباد ۲۱ و ۲۳ - پلاک ۴۱۷ - شرکت مهندسی همایش نیرو

ایمیل : [info@hamayeshniroo.com](mailto:info@hamayeshniroo.com)

سایت : [www.hamayeshniroo.com](http://www.hamayeshniroo.com)

فکس : ۰۵۱۱-۶۰۱۸۰۳۹

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