HV TRANSMISSION LINE STRINGING

EQUIPMENT

MORAM
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Supplier of machines and equipment for laying and pulling cables and pipelines

05

REEL-STANDS and TROLLEYS

F155

max load 70 to 200 kN

Stands fit for steel or wooden reels, used for lifting a reel and braking it while stringing the conductor/cable. The reel stands, as an option, can be hydraulically driven by a hydraulic power unit. Reel-stands are supplied in pairs.

- No. 1 self-braking disk brake.
- Each stand can be raised or lowered independently by a hydraulic hand pump.
- Mechanical safe-stops mounted on the jack arm.
- Side supports with ball joints.
- Spindle complete with accessories.
- Conical bushes for wooden reels (diameter on demand).
- Welded and painted steel framework with attachments for anchoring.
- Metallic tool box for the accessories.

OPTIONAL DEVICES

423	Additional disk brake (2 brakes in total).
410.3	No. 1 or 2 disc brakes with hydraulic clamp controlled bymanual pump.
408	Hydraulic drive to control the reel rotation, either recovering or releasing the conductor/cable (to be fed by hydraulic power unit).
078.1	Set of flexible hoses for feeding the drive unit (available lengths: 7, 10, 15 m). 401 Devices fit for steel reel and bushes to centre the reel hole (diameter on demand).
419.1	Manual rope-winder, fit to stratify different diameters of rope (max reel width to be confirmed). Available for mod. F155.05 only.
419.2	Automatic rope-winder, fit to stratify different diameters of rope (suitable for standard steel reels). Available for mod. F155.070 only
419.3	Automatic rope-winder, fit to stratify different diameters of rope (max reel width to be confirmed). Available for mod. F155.070 only.

	Reel diameter min-max (*)	Reel max width	Spindle diameter	Dimensions of each reel-stand	Weight of the pair of reel-stands (²)
	m	m	mm	m (LxW)	kg
F155.070	1,00–2,80	1,50	45	2,10 x 0,50	350
F155.100	1,50-3,20	1,70	55	2,40 x 0,55	540
F155.150	2,00–4,00	3,00	95	3,10 x 0,60	1100
F155.200	2,00–4,00	3,00	95	3,10 x 0,60	1250

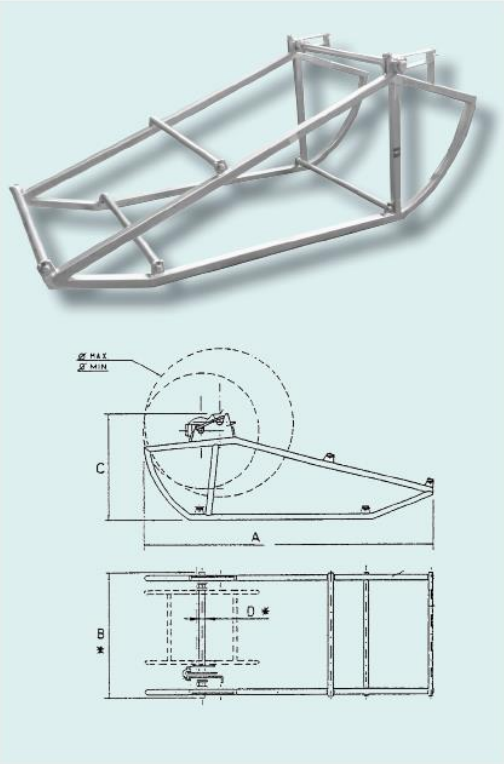
(*)on demand we can supply stands fit for reels with bigger diameter - (²) weight of a pair of standard stands, with no optional devices.

	Max load of the pair of reel-stands	Braking torque with standard brake	Braking torque with 2 brakes opt. 423	Braking torque with brake opt. 410.3	Performances with drive opt. 408		
					Max braking torque	Max recovery torque	Max speed (³)
	daN	daN m	daN m	daN m	daN m	daN m	km/h
F155.070	7000	150	300	—	225	180	5
F155.100	10000	230	460	600	280	230	5
F155.150	15000	230	460	1000	312	250	5
F155.200	20000	280	560	1200	375	300	5

(³)powered by hydraulic circuit of a tensioner and puller-tensioner or power unit.

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

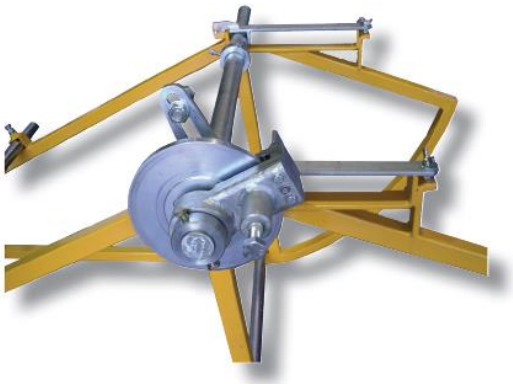
F157



Reel-cradle fit for lifting and unwinding a reel of wire. Made of welded and painted steel. Completely demountable for an easy transport. Complete with reel shaft.

OPTIONAL DEVICES

410.1	Disc brake for braked unwinding.
410.4	Disc brake with high brake capacity.
402	Conical bushes for wooden reels.
405.1	Total galvanisation.



opt.410.1

	Reel diameter Y	Overall dimensions	Spindle (ØD)	Load	Weight
	m	m	mm	daN	kg
F157.14	1,10 - 1,40	2,10 x 0,90 x 0,88	50	1000	50
F157.14.S	1,10 - 1,40	2,50 x 1,10 x 0,95	50	2000	65
F157.19	up to 1,90	3,00 x 1,10 x 1,10	50	2600	160

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

F106

Reel-winder trolley fit for reel transport and wire recovering/releasing, designed to be used with pullers, puller-tensioners or hydraulic power units, from which it receives the transmission needed to move the reel. It can even be fitted with own motorization.

	Reel Ømax	Capacity	Rope Ø	Max pull (¹)	Max speed (¹)	Dimensions AxBxC	Weight
	mm	kg	mm	daN	km/h	m	kg
F106.110	1100	1200	10-13-16	150	4	1,70 x 1,25 x 1,00	450
F106.140	1600	2000	16-18-20	250	5	2,00 x 1,35 x 1,40	700
F106.190	1900	3000	18-20-24	300	5	2,50 x 1,80 x 1,40	1200

(¹) performances obtained when connected to the hydraulic circuit of a puller or puller-tensioner

WITH AUTONOMOUS DRIVE (OPT. 417)							
	Engine power		Max pull (²)	Speed at max pull (²)	Max speed	Dimensions AxBxC	Weight
	kW	hp	daN	m/min	m/min	m	kg
F106.110	4,4	6	200	30	65	2,00 x 1,25 x 1,00	540
F106.140	5,9	8	300	30	65	2,20 x 1,35 x 1,40	800
F106.190	7,3	10	400	30	65	2,50 x 1,40 x 1,40	1350

(²) on the middle layer

CONFIGURATION

- Bi-directional hydraulic motor, controlled directly by the machine panel through flexible hoses, fit for moving the reel by means of a reduction unit.
- Neutral device to unwind the rope easily.
- Reel lifting arm hydraulic operated by manual pump.
- Automatic rope-winder complete with rope-driver rollers, fit for winding three different diameters of rope on the reel. The rope-winder may also be operated manually.
- Frame with three tires, one of them steering with drawbar, fit for towing in the job-site.
- Mechanical stabilisers and anchoring and lifting points.
- Devices for locking the reel rotation mechanically.

OPTIONAL DEVICES

416	Negative safety brake that self-operates in case of pressure drop in the hydraulic circuit feeding.
417	Installation of a diesel engine that operates a hydraulic power unit, fit to make the reel-winder autonomous.
438.2	Device that allows to lift the reel by using the reel-rotation circuit.
078.1	Set of flexible hoses for feeding the drive unit (lengths available: 5, 10, 15 m).

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

F106.220

Reel-winder trolley designed for recovering/pulling and releasing ropes and conductors to/from steel reels. The reel is operated by a hydraulic motor fed by a separate power unit or by the auxiliary hydraulic circuit of a puller, tensioner or puller/tensioner.

FEATURES	
Reel diameter (min/max)	1400/2200 mm
Reel width (max)	1560 mm
Max weight of the reel	8000 kg
Dimensions AxBxC	3,70 x 2,41 x 1,50 m
Weight	1950 Kg

PERFORMANCES	
Max pull	500 daN
Speed at max pull	2,5 km/h
Max speed	5 km/h
Pull at max speed	250 daN

CONFIGURATION

- Hydraulic motor with reduction group connected to the spindle.
- Negative safety brake self-operating in the event of hydraulic breakdown.
- Reel-carrier arms with hydraulic lifting of reel, operated through a manual pump.
- Rigid axle, tires, hand brake and drawbar for towing at low speed the job-site.
- Adjustable pivoting reel.
- Mechanical stabilisers and attachments for anchoring and lifting the machine.
- Reel arm fit for reels max diameter 2200 mm.
- Spindle with dragger and bushes for reels.
- Steel reel mod. F162.220
- Automatic rope-winder, fit to stratify the different diameters of rope on the reel. The rope-winder can also be operated manually.
- Set of flexible hoses for connection to the hydraulic power unit, length 15 m.

OPTIONAL DEVICES

005.1	Tandem axle with torsion bar suspensions, air braking system and lights.
006	Pneumatic braking system and lights.
059	Metallic reel F162.220.
096.1	Hydraulic power unit with gasoline engine mounted on trolley, to control the reel-lifter and stabilisers.
417.1	Hydraulic power unit with diesel engine mounted on trolley or separate, mounted on the trolley for autonomous use in conductor braking and recovering.

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

F10.AF.20.20

Trailer for reels, fit for recovering and releasing ropes and conductors to/from wooden or steel reels. The reel, operated by a hydraulic motor, allows to recover the wire or conductor (puller use) and to release it (tensioner use).

FEATURES	
Dimensions AxBxC	3,60x2,20x1,40 m
Weight (without rope opts)	1750 kg

REEL TRANSPORT CAPACITY	
Transportable reel dimensions	
Diameter max	1800 mm
Width max	1100 mm
Weight max	2000 kg

ENGINE	
Feeding	diesel
Power	21 hp/15,4 kW

PERFORMANCE	
Max pull/tension force	2000 daN
Speed at max pull/tension	10 m/min
Max speed	50 m/min

the performances here above are referred to the rope-layer diameter 500 mm

CONFIGURATION

- Hydraulic power unit made of electric motor or air cooled diesel engine with electric starting and a variable-delivery hydraulic pump, that allows to continuously and gradually the speed of rotation of the reel, in either directions, by operating one control handle only (puller use).
- Hydraulic circuit fit for braking the wire (tensioner use).
- Control panel with control and instruments for the machine and the engine.
- Dynamometer to check the pulling force, with possibility to set a maximum limit of the force.
- Hydraulic motor with reduction group connected to the spindle.
- Self-operating negative safety brake.
- Reel-carrier arms with hydraulic lifting of reel, operated through the power unit.
- Rigid axle, tires, hand brake and drawbar for towing at low speed the job-site.
- Adjustable pivoting wheel.
- Stabilisers and attachments for anchoring and lifting the machine.
- Spindle with dragger and conical bushes for wooden reels (reel hole diameter to be specified).
- Dragger and cylindrical bushes for steel reels (reel hole diameter to be specified).

OPTIONAL DEVICES

007	Axle with independent torsion bar suspensions, adjustable drawbar, overrun braking system, tyres and lights, for towing on road at 60 km/h (without homologation).
059	Steel cylindrical reel fit for reel wires and nylon ropes (Øext 1400 x 560 mm).
060	Conical metallic reels with opening side (Øext 1400 x 560 mm).
060.1	Conical metallic reels with opening side (Øext 1400 x 800 mm).
419.2	Automatic rope-winder, fit to stratify the different diameters of rope on the reels of different width.

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

F10.M

Trailer designed for transporting reels as well as for recovering and releasing ropes and conductors to/from wooden or steel reels. The trailer can host up to 3 or 4 reels. The reels, operated by a hydraulic motor, allow to recover the wires (like a puller) and to release them (braked tension).

	F10.M.10.10.3	F10.M.15.30.3	F10.M.20.30.4
Max number of reel hosted	3	3	3/4
Reel diameter (max)	1200 mm	1200 mm	1400 mm
Reel width (max)	1100 mm	1100 mm	1400 mm
Max pulling/braking force (¹)	20 kN @ 20 m/min	30 kN @ 20 m/min	30 kN @ 25 m/min
Max speed at low force (²)	100 m/min	100 m/min	70 m/min
Engine power	18 hp (13,2 kW)	27 hp (19,8 kW)	30 hp (22 kW)
Max reel weight	1000 kg	1600 kg	2000 kg
Dimensions (LxWxH)	3,4+1,2x2,3x1,7 m	3,6+1,2x2,3x1,8 m	4,3+1,2x2,4x2,0 m
Weight (without optional devices)	1000 kg	1800 kg	2000 kg

(¹) values referred to the medium layer of rope (²) values referred to the very external diameter of rope (full reel)

CONFIGURATION

- Hydraulic power unit made of an air cooled diesel/gasoline engine with electric starting and a variable-delivery hydraulic pump, that allows to continuously and gradually the speed of rotation of the reel, in either directions, by operating one control handle only.
- Hydraulic circuit fit for braking the wire.
- Control panel with control and instruments for the machine and the engine.
- Dynamometer to check the pulling force, with possibility to set a maximum limit of the force.
- Hydraulic motor with reduction group connected to the spindle.
- Possibility to use one or more reels idling the others.
- Self-operating negative safety brake.
- Reel-carrier arms with hydraulic lifting of reel, operated through the power unit.
- Rigid axle, tires, hand brake and drawbar for towing at low speed in workplace.
- Adjustable pivoting wheel.
- Hydraulic stabilisers and attachments for anchoring and lifting the machine.
- Spindle with dragger and conical bushes for wooden reels (reel hole diameter to be specified).
- Dragger and cylindrical bushes for steel reels (reel hole diameter to be specified).
- Heat exchanger to cool the hydraulic oil.

OPTIONAL DEVICES

007	Axle with suspensions, drawbar, overrun brake, lights and tires for towing on the road at 60 km/h. (homologation excluded).
008	Axle with leaf spring suspensions, drawbar, pneumatic braking system, tyres and lights for towing on the road at 60 km/h.
026	Protective PVC cover.
028.1	Water-cooled diesel engine.
046.B	No. 3 or 4 rope-winders fit to stratify several diameters of wires on the reels, adjustable, with neutral position.
060	No. 3 or 4 conical metallic reels with opening side.
061	No. 3 or 4 metallic reels fit for 1500 m of rope dia. 10mm.
060.1	No. 1 steel reel fit for 2500 m of rope diam. 14mm.

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

06
REELS and ROPES

21.12

Anti-twisting galvanised steel rope specifically designed for stringing operations. Made up of 12 braided strands. High resistant to break, antitwisting, flexible, safe and easy to handle. The linear contact between the braided strands grants a low stress on the rope. Supplied wound up on steel or wooden reels.

	Nominal diameter	Breaking load	Weight	Standard Lengths (*)
	mm	kN	kg	m
21.12.08	8	44	0,22	1000
21.12.10	10	72	0,35	1000
21.12.13	13	105	0,55	1000
21.12.16	16	163	0,80	1000
21.12.18	18	235	1,07	1000
21.12.20	20	268	1,24	1000
21.12.22	22	330	1,56	900
21.12.24	24	380	1,80	800
21.12.28	28	480	2,80	600

(*) other lengths on request

HIGH RESISTANCE

	Nominal diameter	Breaking load	Weight	Standard Lengths (*)
	mm	kN	kg	m
21.18.22	22	402	1,86	900
21.18.24	24	490	2,34	800
21.18.30	30	720	3,25	500

(*) other lengths on request

OPTIONAL DEVICES

146.2 Spliced eyes at both ends
146.3 Clamped eyes at both ends

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

22...1

Pilot rope made of an external polyester mesh stocking and a hi-tenacity nylon core.
Double torsion. Highly resistant to wear and UV rays. white colour.
Supplied wound up on wooden reels or in coils.

OPTIONAL DEVICES

- Clamped eyes with metallic collars at the ends (note: the clamped eyes have breaking load 30-35% lower than the rope).
- Sewn eyes (note: available up to Ø18 mm. The breaking load of the clamped eyes is the same as the breaking load of the rope).

	Nominal diameter	Elongation under tension		Breaking load	Weight	Standard Lengths (*)
	mm	at 10 % BL (¹)	at 30 % BL (²)	daN	kg/m	m
22.06.1	6	4%	7,5%	750	0,027	500 1000 1500 2000 3000
22.08.1	8	4%	7,5%	1.200	0,045	500 1000 1500 2000 3000
22.10.1	10	4%	7,5%	2.000	0,073	500 1000 1500 2000 3000
22.12.1	12	4%	7,5%	3.500	0,115	500 1000 1500 2000 3000
22.14.1	14	4%	7,5%	4.300	0,142	500 1000 1500 2000
22.16.1	16	4%	7,5%	5.000	0,195	500 1000 1500 2000
22.18.1	18	4%	7,5%	5.800	0,240	500 1000 1500
22.20.1	20	4%	7,5%	6.500	0,295	500 1000 1500
22.22.1	22	4%	7,5%	8.300	0,350	500 900
22.24.1	24	4%	7,5%	9.500	0,410	500 800

(¹) elongation rate at 10% of breaking load (²) elongation rate at 30% of breaking load

22...2

Pilot rope made of polypropylene and polyester hi-tenacity 12-fuses mesh.
Light-weight, waterproof and UV resistant. Easy to splice without any special tool.
Green colour. Supplied wound up on wooden reels or in coils.

OPTIONAL DEVICES

- Hand-spliced ends.

	Nominal diameter	Elongation under tension	Breaking load	Weight	Standard Lengths (*)
	mm	at 50 % BL (¹)	daN	kg/m	m
22.10.2	10	5%	1.500	0,040	1000
22.12.2	12	5%	2.300	0,060	1000
22.14.2	14	5%	2.800	0,075	1000
22.16.2	16	5%	3.300	0,088	1000
22.18.2	18	5%	4.500	0,120	1000
22.20.2	20	5%	5.500	0,150	1000
22.22.2	22	5%	6.200	0,165	800
22.24.2	24	5%	8.500	0,240	800

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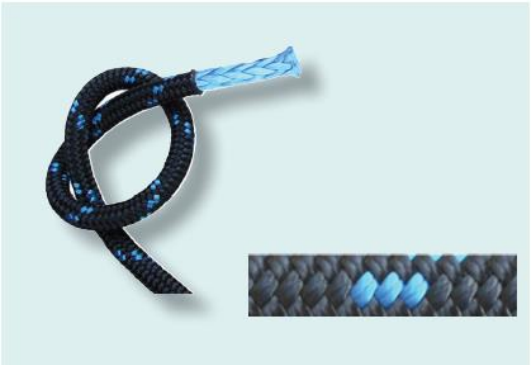
23...P



Rope with Dyneema-core and polyester covering. Supplied wound up on wooden reels or in coils.

OPTIONAL DEVICES

- Clamped eyes with metallic collars at the ends (note: the clamped eyes have breaking load 30-35% lower than the rope).
- Hand-spliced eyes.
- Head stocking-grip with eyes.
- Steel reel Ø 1100, 1400 or 1600 mm.

	Nominal diameter	Elongation under tension	Breaking load	Weight	Standard Lengths
	mm	at 8 % BL	daN	kg/m	m
23.06.P	6	3%	3.100	0,050	500 **1000** 1500 2000 3000
23.08.P	8	3%	5.480	0,064	500 **1000** 1500 2000 3000
23.10.P	10	3%	8.210	0,078	500 **1000** 1500 2000 3000
23.12.P	12	3%	11.860	0,120	500 **1000** 1500 2000
23.14.P	14	3%	16.430	0,139	500 **1000** 1500 2000
23.16.P	16	3%	20.990	0,200	500 **1000**

23...D

High resistance Dyneema rope. Light-weight and wear resistant. Supplied wound up on wooden reels or in coils.

OPTIONAL DEVICES

- Clamped eyes with metallic collars at the ends (note: the clamped eyes have breaking load 30-35% lower than the rope).
- Hand-spliced eyes.
- Head stocking-grip with eyes.
- Steel reel Ø 1100, 1400 or 1600 mm.

	Nominal diameter	Elongation under tension	Breaking load	Weight	Standard Lengths
	mm	at 2 % BL	daN	kg/m	m
23.06.D	6	3%	4.000	0,02	500 1000 1500 2000 3000
23.08.D	8	3%	6.000	0,03	500 1000 1500 2000 3000
23.10.D	10	3%	9.000	0,05	500 1000 1500 2000 3000
23.12.D	12	3%	13.000	0,07	500 1000 1500 2000
23.14.D	14	3%	18.000	0,08	500 1000 1500 2000
23.16.D	16	3%	23.000	0,12	500 1000 1500 2000
23.18.D	18	3%	29.000	0,17	500 800 1000
23.20.D	20	3%	36.500	0,20	500 800 1000

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

C02...AC

Bright steel rope 216 wires + steel core. Construction 6 (14+7/7+7+1) WS+WR. Right and left crossed.
UNI 7297-74. Resistance of wires: 180 kg/mm².

OPTIONAL
• Galvanization

Nominal diameter	Wires diameter	Breaking load	Weight
mm	mm	kN	kg/m
6	0,38	27,2	0,15
8	0,50	47,3	0,28
10	0,62	75	0,43
11	0,68	89	0,52
12	0,75	108	0,62
14	0,77	131	0,82
16	0,88	168	1,07
18	0,99	220	1,35
20	1,10	270	1,68
22	1,22	320	2,03
24	1,33	380	2,40
26	1,44	450	2,83
28	1,55	504	3,30
30	1,66	600	3,80
32	1,77	670	4,33

C02...LR

Bright steel rope 133 wires. Construction 19x7.
Lang lay or regular lay. Resistance of wires 200 kg/mm².

Rope diam.	Wires diam.	Sect.	Breaking load		Weight
mm	mm	mm2	kN	kN (¹)	kg/m
		Lang lay			
6	0,38	16,5	26	26	0,15
8	0,51	29,3	48,1	46,1	0,27
10	0,64	45,7	72,1	72,1	0,41
11	0,70	55,3	87,2	87,2	0,50
12	0,76	65,8	104	104	0,60
13	0,83	77,3	122	122	0,70
14	0,89	89,6	141	141	0,81
16	1,02	117	185	185	1,06
18	1,15	148	234	234	1,34
		Regular lay			
20	1,27	183	288	281	1,66
22	1,40	221	349	340	2,01
24	1,53	263	415	405	2,39
26	1,65	309	487	475	2,81

(¹) galvanised type

C02...AR

Bright steel rope 216 wires “compacted strands”, high resistance, with metal core.
Resistance of wires: 220 kg/mm²

Nominal diameter	Wires diameter	Breaking load	Weight
mm	mm	kN	kg/m
10	0,59	90,2	0,45
11	0,66	111	0,55
12	0,72	132	0,67
13	0,78	153	0,78
14	0,84	176	0,90
16	0,96	240	1,18
18	1,08	294	1,48
20	1,20	367	1,85
22	1,32	443	2,25
24	1,41	525	2,50
26	1,53	613	3,04
28	1,64	704	3,64
30	1,76	809	4,20

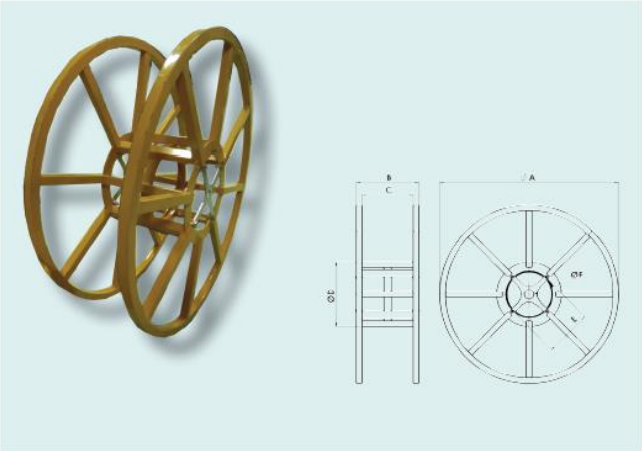
C02...AT

Bright steel rop. Construction 35x7. Resistance of wires 220 kg/mm².

Nominal diameter	Wires diameter	Breaking load	Weight
mm	mm	kN	kg/m
8	0,40	49,2	0,26
10	0,50	77	0,42
12	0,60	110,8	0,60
14	0,70	150,9	0,82
16	0,80	197,1	1,07
18	0,90	249,4	1,36
20	1,00	308	1,68
22	1,10	372,6	2,03
24	1,20	443,5	2,42
26	1,30	520,5	2,84
28	1,40	603,6	3,29
30	1,40	693	3,78

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

F162



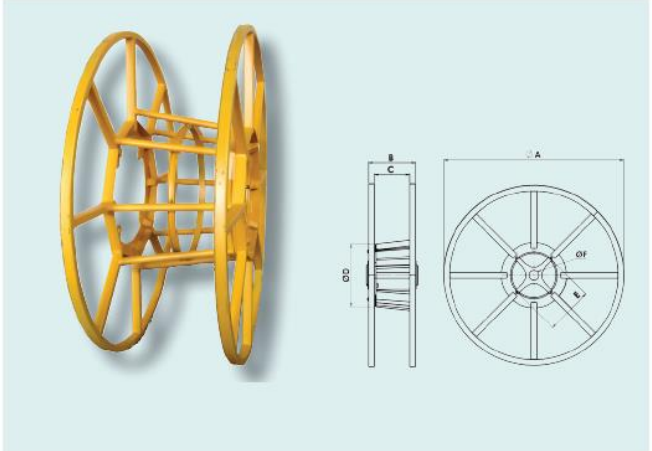
Welded and painted steel reel, complete with central dials and bolts.

OPTIONAL DEVICES

- Total galvanization.
- Additional pair of standard dials.
- Pair of dials equipped with ball bearings.
- Reinforced reel, made of square tubular (30% heavier than the standard version).

	Dimensions mm						Weight (without rope)
	A	B	C	D	E	F	kg
F162.060	700	530	460	219		50	27
F162.110	1100	560	460	570	420	50	66
F162.140	1400	560	460	570	420	50	105
F162.160	1600	560	460	570	420	50	120
F162.190	1900	560	460	570	420	50	140
F162.200	2200	1560	1400	1010	420	100	950

F164



Welded and painted steel conical reel with openable side. Complete with central dials and bolts.

OPTIONAL DEVICES

- Total galvanization.
- Additional pair of standard dials.
- Pair of dials equipped with ball bearings.
- Drum core covered with steel sheet.

	Dimensions mm						Weight (without rope)
	A	B	C	D	E	F	kg
F164.060	700	530	460	219		50	40
F164.110	1100	560	460	570	420	50	85
F164.140	1400	560	460	570	420	50	115
F164.160	1600	560	460	570	420	50	130
F164.190	1900	560	460	570	420	50	220
F164.205	2050	1310	1170	630	420	50	550
F164.220	2200	1310	1170	1010	420	100	1050

REEL CAPACITY (meters of rope)						
Rope diameter (mm)	F162.060 F164.060	F162.110 F164.110	F162.140 F164.140	F162.160 F164.160	F162.190 F164.190	F162.220 F164.220
6	2000	6300	13000	17000	25000	-
7	1500	4500	9000	12000	18000	-
8	1200	3500	6000	5500	14000	-
9	900	2800	5400	7500	11000	-
10	800	2300	4400	6000	9000	33000
11	500	1900	3600	5000	7500	31000
12	450	1600	3000	4200	6000	22000
13	400	1400	2600	3600	5400	19000
14	300	1250	2200	3000	4600	16000
16	250	1000	1700	2400	3500	13000
18	-	800	1300	1900	2800	10000
20	-	650	1100	1600	2200	8000
22	-	500	900	1200	1900	6000
24	-	-	750	1000	1500	5000
26	-	-	650	900	1300	4500
28	-	-	560	800	1100	4000
30	-	-	490	700	1000	3500
32	-	-	430	600	850	3000

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

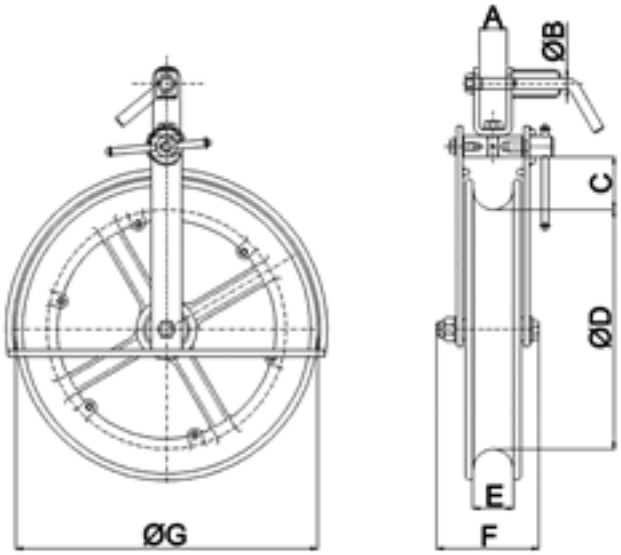
07
PULLEY BLOCKS

F144
F150

Single sheave running out block fit for stringing one conductor. Aluminium sheave mounted on sealed ball bearings. Groove lined with nylon sectors. Openable galvanised steel frame with non-fleeting device. Standard swivelling fork attachment.
Specific for OPGW: **F144.100.60.**

OPTIONAL DEVICES

301.2	Fix hook (code FT).
301.1	Swivelling hook attachment (code GG).
314	Bottom groove lined with aluminium sectors (only for sheaves with groove width E= 60, 68 and 95 mm).
327	Non-fleeting device as big as half wheel circumference.
326	Grounding device (only for wheels with groove width E=60, 68 and 95 mm;opt.314 needed).
329	Copper cable, 6-m long, with transparent PVC protection, with a clamp for tower and a terminal for the running out block (for opt.326).
328	Special U-shaped frame.
320	Box for transport and stocking.



	Dimensions (mm)									Working Load	Weight
	A	A1	A2	B	C	D	E	F	G	kN	kg
F150.23.1	25	25	26	14	110	230	50	150	300	27	8,0
F150.35	30	27	26	16	110	350	60	170	440	30	11,5
F144.50.70	40	27	27	20	150	500	68	188	630	33	25
F144.65.70	40	33	27	20	160	650	68	188	770	33	30
F144.65.95	40	33	27	20	150	650	95	210	770	40	35
F144.80.70	45	33	27	20	160	800	68	188	900	40	35
F144.80.95	45	33	27	20	150	800	95	210	900	40	41
F144.100.95	45	37	27	25	150	1000	95	230	1120	40	50
F144.100.60	40	27	27	20	160	1000	60	190	1080	30	38

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

F145

Three-sheave running out block fit for stringing two- three-bundled conductors.
Aluminium sheaves mounted on sealed ball bearings. Grooves lined with nylon sectors.
Galvanised steel frame with non-fleeting devices on lateral sheaves.
Demountable attachment revolving by 90° (available with tight wheel).

OPTIONAL DEVICES

314	Sheaves lined with aluminium sectors.
320	Cage for stocking and transport.
326	Grounding device (opt.314 needed).
329	Copper cable, 6-m long, with transparent PVC protection, with a clamp for tower and a terminal for the running out block (opt.326).
325	Reinforced central sheave with total working load 80 kN (for mod. F145.80.95 F145.100.95 only).
330	Central sheave with groove width 95 mm (for models F145.xx.68 e F149 xx.68).
327.1	Non-fleeting device between the central wheel and the lateral ones.

	Dimensions (mm)										Working Load	Weight
	A	B	C	D	E	F	G	H	I	L	kN	kg
F145.35.60	20	21	60	350	900	400	440	200	400	100	26	40
F145.50.68	25	25	68	500	1250	550	630	280	500	145	40	93
F145.65.68	25	25	68	650	1400	550	770	280	500	145	40	112
F145.65.95	25	30	95	650	1400	550	770	280	590	175	60	125
F145.80.68	25	25	68	800	1500	550	900	280	500	145	60	128
F145.80.95	25	30	95	800	1550	550	900	300	590	175	60 (¹)	156 (¹)
F145.100.95	25	30	95	1000	1750	550	1100	300	590	175	67 (¹)	200 (¹)

Larger diameters on demand

(¹) With opt.325 working load 80 kN. Weight F145.80.95=165 kg; F145.100.95=218 kg

F149

Five-sheave running out block fit for stringing four-bundled conductors.
Aluminium sheaves mounted on sealed ball bearings. Grooves lined with nylon sectors.
Galvanised steel frame with non-fleeting devices on lateral sheaves.
Demountable attachment revolving by 90° (available with tight wheel).

OPTIONAL DEVICES

314	Sheaves lined with aluminium sectors.
320	Cage for stocking and transport.
326	Grounding device (opt.314 needed).
329	Copper cable, 6-m long, with transparent PVC protection, with a clamp for tower and a terminal for the running out block (opt.326).
325	Reinforced central sheave with total working load 80 kN (for mod. F145.80.95 F145.100.95 only).
330	Central sheave with groove width 95 mm (for models F145.xx.68 e F149 xx.68).
327.1	Non-fleeting device between the central wheel and the lateral ones.

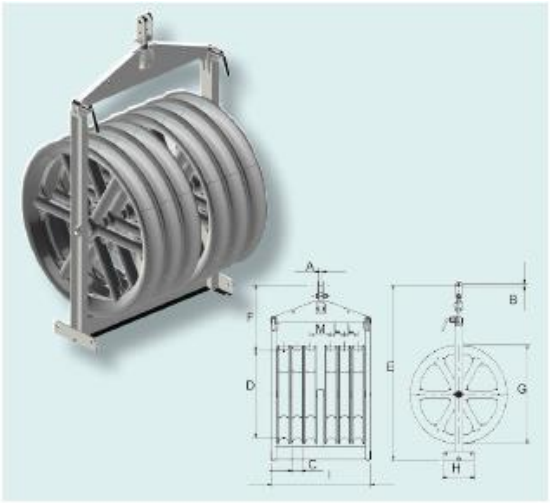
	Dimensions (mm)									Working Load	Weight
	A	B	C	D	E	F	G	H	L	kN	kg
F149.50.68	25	25	520	500	68	145	100	700	1250	40	128
F149.65.68	25	25	590	650	68	145	100	700	1400	40	147
F149.65.95	25	30	590	650	95	175	130	820	1400	60	185
F149.80.68	25	25	590	800	68	145	100	700	1560	60	180
F149.80.95	25	30	590	800	95	175	130	820	1560	60 (¹)	220 (¹)
F149.100.95	30	30	590	1000	95	175	130	820	1800	67 (¹)	272 (¹)

Larger diameters on demand

(¹) With opt.325 working load 80 kN. Weight F149.80.95=250 kg; F149.100.95=290 kg

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

F188



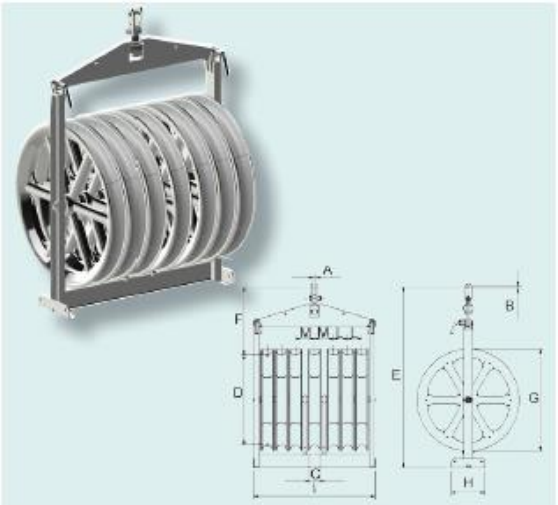
Six-sheave running out block, fit for stringing 6 conductors. Aluminium sheaves mounted on sealed ball bearings. Grooves lined with nylon sectors. Steel frame with non-fleeting devices on lateral sheaves. Demountable attachment revolving by 90°.

OPTIONAL DEVICES

314	Sheaves lined with aluminium sectors.
326	Grounding device (opt.314 needed).
329	Copper cable, 6-m long, with transparent PVC protection, with a clamp for tower and a terminal for the running out block (opt.326).

	Dimensions (mm)											Working Load	Weight
	A	B	C	D	E	F	G	H	I	L	M	kN	kg
F188.65.68	30	30	68	650	1400	550	770	400	750	100	145	40	180
F188.65.95	30	30	95	650	1400	550	770	400	880	125	170	60	207
F188.80.68	30	30	68	800	1500	550	900	500	750	100	145	60	204
F188.80.95	30	30	95	800	1550	550	900	500	880	125	170	60	240

F189



Seven-sheave running out block, fit for stringing 4 or 6 conductors. Aluminium sheaves mounted on sealed ball bearings. Grooves lined with nylon sectors. Steel frame with non-fleeting devices on lateral sheaves. Demountable attachment revolving by 90°.

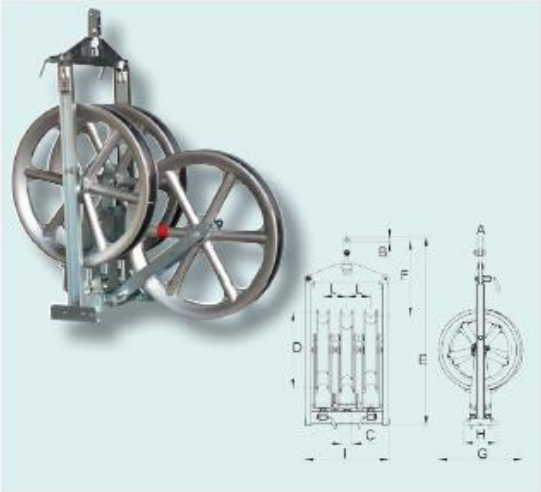
OPTIONAL DEVICES

314	Sheaves lined with aluminium sectors.
325	Central sheave lined with steel sectors.
326	Grounding device (opt.314 needed).
329	Copper cable, 6-m long, with transparent PVC protection, with a clamp for tower and a terminal for the running out block (opt.326).

	Dimensions (mm)											Working Load	Weight
	A	B	C	D	E	F	G	H	I	L	M	kN	kg
F189.65.68	30	30	68	650	1400	590	100	400	930	100	145	40	195
F189.65.95	30	30	95	650	1400	590	125	400	1100	125	170	60	235
F189.80.68	30	30	68	800	1560	590	100	500	930	100	145	60	240
F189.80.95	30	30	95	800	1560	590	125	500	1100	125	170	60	295

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

F145.S



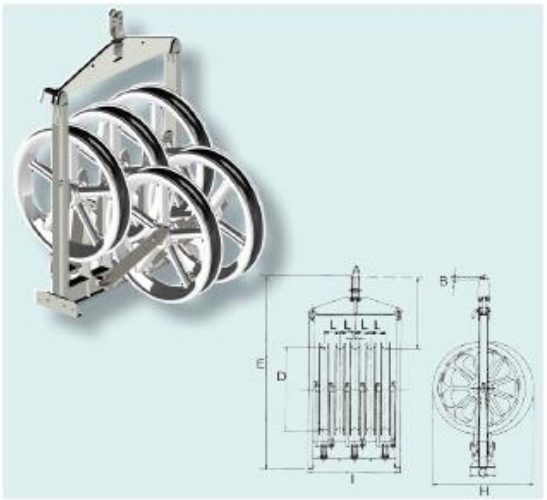
Detachable three-sheave running out block fit for stringing two- three-bundled conductors. The frame contains 3 running-out blocks that can be used singularly. Aluminium sheaves mounted on sealed ball bearings. Grooves lined with nylon sectors. Galvanised steel frame. Central sheave mounted on double bearings. Demountable attachment revolving by 90°.

OPTIONAL DEVICES

314	Sheaves lined with aluminium sectors.
326	Grounding device (opt.314 needed).
329	Copper cable, 6-m long, with transparent PVC protection, with a clamp for tower and a terminal for the running out block.

	Dimensions (mm)										Working Load	Weight
	A	B	C	D	E	F	G	H	I	L	kN	kg
F145.S.50.68	25	25	68	500	1480	600	630	280	590	148	40	122
F145.S.65.68	25	25	68	650	1550	600	770	280	590	148	40	145
F145.S.65.95	25	30	95	650	1650	600	770	280	670	178	60	165
F145.S.80.68	25	25	68	800	1750	600	900	280	590	148	60	167
F145.S.80.95	25	30	95	800	1750	600	900	300	670	178	60	190
F145.S.100.95	30	30	95	1000	1980	600	1100	300	700	178	67	230

F149.S



Detachable five-sheave running out block fit for stringing four-bundled conductors. The frame contains 5 running-out blocks that can be used singularly. Aluminium sheaves mounted on sealed ball bearings. Grooves lined with nylon sectors. Galvanised steel frame. Central sheave mounted on double bearings. Demountable attachment revolving by 90°.

OPTIONAL DEVICES

314	Sheaves lined with aluminium sectors.
326	Grounding device (opt.314 needed).
329	Copper cable, 6-m long, with transparent PVC protection, with a clamp for tower and a terminal for the running out block.

	Dimensions (mm)										Working Load	Weight
	A	B	C	D	E	F	G	H	I	L	kN	kg
F149.S.50.68	25	25	68	500	1480	600	630	280	890	148	40	185
F149.S.65.68	25	25	68	650	1550	600	770	280	890	148	40	210
F149.S.65.95	25	30	95	650	1650	600	770	280	1050	178	60	245
F149.S.80.68	25	25	68	800	1750	600	900	280	890	148	60	249
F149.S.80.95	25	30	95	800	1750	600	900	300	1050	178	60	300
F149.S.100.95	30	30	95	1000	1980	600	1100	300	1070	178	67	328

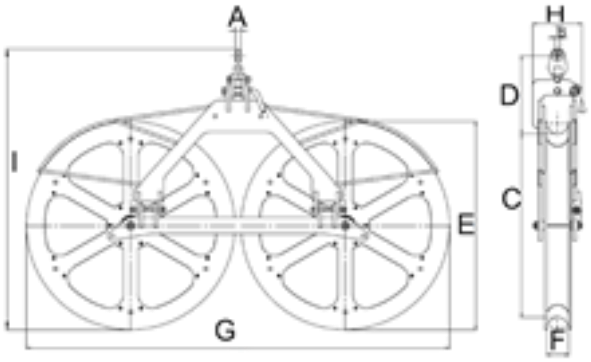
Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

F144...TA

F150...TA

F144...TA

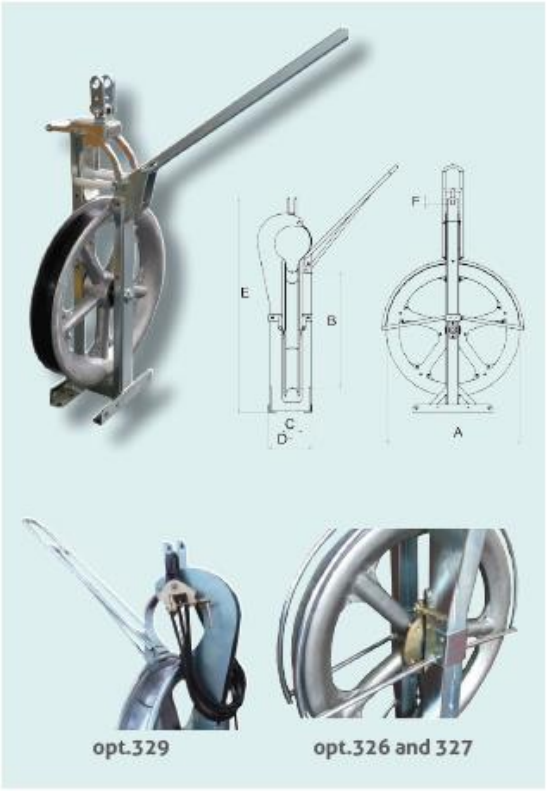
Tandem sheave running out block fit for stringing one conductor.
Aluminium sheave mounted on sealed ball bearings. Groove lined with nylon sectors.
Openable galvanised steel frame with non-fleeting device. Standard swivelling fork attachment. Designed to distribute high working loads over two pulleys.
The tandem sheaves are mounted on a special steel frame consisting of a yoke and two arms. The sheaves can also be used as standard single pulleys.



	Dimensions (mm)							Working load	Weight
	A	B	C	D	E	F	G	kN	kg
F150.23.TA	20	16	230	160	300	50	650	40	27
F150.35.TA	20	18	350	160	440	60	920	45	38
F144.50.70.TA	25	21	500	350	630	68	1300	50	72
F144.65.70.TA	25	21	650	350	770	68	1600	55	85
F144.65.95.TA	25	21	650	350	770	95	1600	65	95
F144.80.70.TA	25	21	800	350	900	68	1860	65	98
F144.80.95.TA	25	21	800	350	900	95	1860	80	120
F144.100.95.TA	30	30	1000	400	1120	95	2300	80	145

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

F144...E
F150...E



Single sheave block fit for stringing a pilot rope by helicopter. Proper devices allow to position the pulling rope in the sheave groove and keep it inside the groove during stringing operations. Aluminium sheave mounted on waterproof bearings. Groove lined with nylon sectors. Galvanized steel frame. Fix attachment.

OPTIONAL DEVICES

314 Sheaves lined with aluminium sectors.
326 Grounding device (opt.314 needed).
327 Non-fleeting device on half wheel circumference.
329 Copper cable, 6-m long, with transparent PVC protection, with a clamp for tower and a terminal for the running out block (opt.326).

	Dimensions (mm)						Working load	Weight
	A	B	C	D	E	F	kN	kg
F150.23.50.E	300	230	50	220	550	18	26	15
F150.35.60.E	440	350	60	240	680	20	30	22
F144.50.70.E	630	500	68	340	980	25	60	49
F144.65.70.E	770	650	68	340	1220	25	40	52
F144.65.95.E	770	650	95	370	1220	25	40	61
F144.80.70.E	900	800	68	340	1320	25	40	64
F144.80.95.E	900	800	95	380	1320	25	40	68
F144.100.95.E	1120	1000	95	380	1560	25	67	85

F145...E

Three-sheave block fit for stringing a pilot rope by helicopter. Proper devices allow to position the pulling rope in the sheave groove, and keep it inside the groove during stringing operations. Aluminium sheave mounted on waterproof bearings. Groove lined with nylon sectors. Galvanized steel frame. Fix attachment.

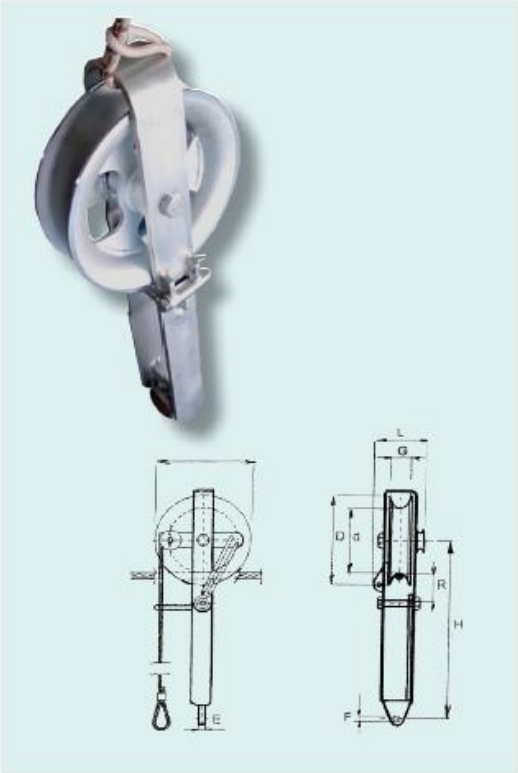
OPTIONAL DEVICES

314 Sheaves lined with aluminium sectors.
326 Grounding device (opt.314 needed).
329 Copper cable, 6-m long, with transparent PVC protection, with a clamp for tower and a terminal for the running out block (opt.326).

	Dimensions (mm)						Working load	Weight
	A	B	C	D	E	F	kN	kg
F145.50.70.E	630	500	68	670	1080	25	60	120
F145.65.70.E	770	650	68	670	1320	25	60	160
F145.65.95.E	770	650	95	780	1320	25	60	170
F145.80.70.E	900	800	68	670	1420	25	60	175
F145.80.95.E	900	800	95	800	1420	25	60	196
F145.100.95.E	1120	1000	95	800	1640	25	67	250

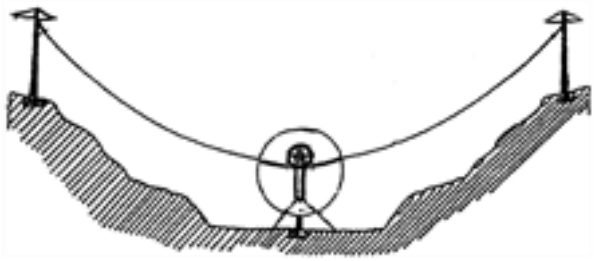
Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

F151.235



Counter-pull running-out block. Galvanised steel frame, openable side, with swivelling hooks on the ends. Automatic releasing device for recovering the unit.
vers. AS Galvanised steel pulley mounted on ball bearings.
vers. BS Aluminium pulley lined with interchangeable nylon ring.

	Dimensions (mm)								Working Load	Weight
	d	D	E	F	G	H	L	R	kN	kg
F151.235.AS	240	300	25	25	65	600	170	95	28	21
F151.235.BS	235	300	25	25	50	550	150	95	22	20



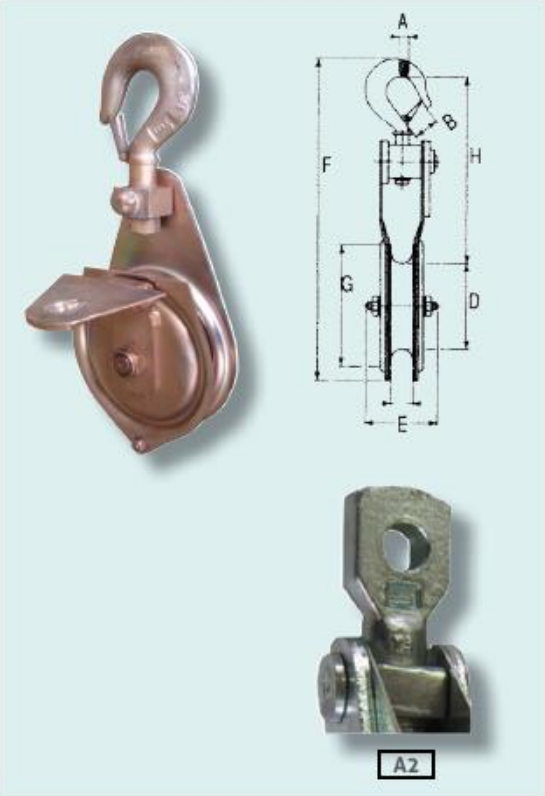
F151

Running out block fit for stringing shield wires. Galvanized steel sheave mounted on ball bearings. Galvanized steel frame with non-fleeting device.
Different attachments available:
A - swivel hook (optional).
B - swivel fork (standard).
C - fix hook (optional).
Blocks with different dimensions can be built on demand.

	Attachment U	Dimensions (mm)								Working L	Weight
		d	D	E	F	G	H	L	R	kN	kg
F151.235.A	A	230	300	25	22	65	400	155	100	28	13
F151.235.B	B/C	230	300	25	20	65	400	155	70	28	13

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

C86.ST



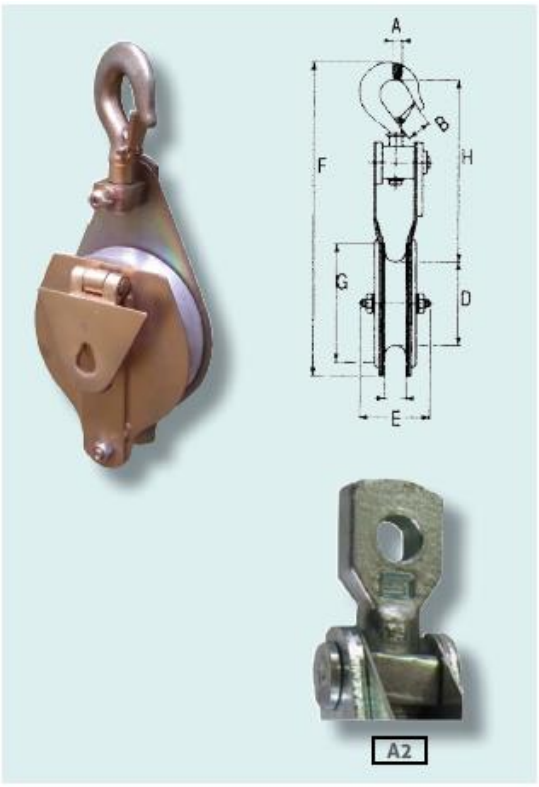
Openable snatch block. Galvanised steel sheave mounted on ball bearings.
Galvanised steel frame with openable side. Standard hook attachment.

OPTIONAL DEVICES

eye attachment **A2**

	Working C	Max	Dimensions (mm)							Weight
	kN	Ø	A	B	D	E	F	G	H	kg
C86.ST.20.1	30	20	23	28	102	75	400	132	210	6,5
C86.ST.40.1	50	25	40	45	140	90	475	165	380	10,2
C86.ST.50.1	80	27	45	45	145	115	500	192	410	14,5

C86.AL



Openable snatch block. Aluminium sheave mounted on ball bearings.
Aluminium frame with openable side. Standard steel hook attachment.

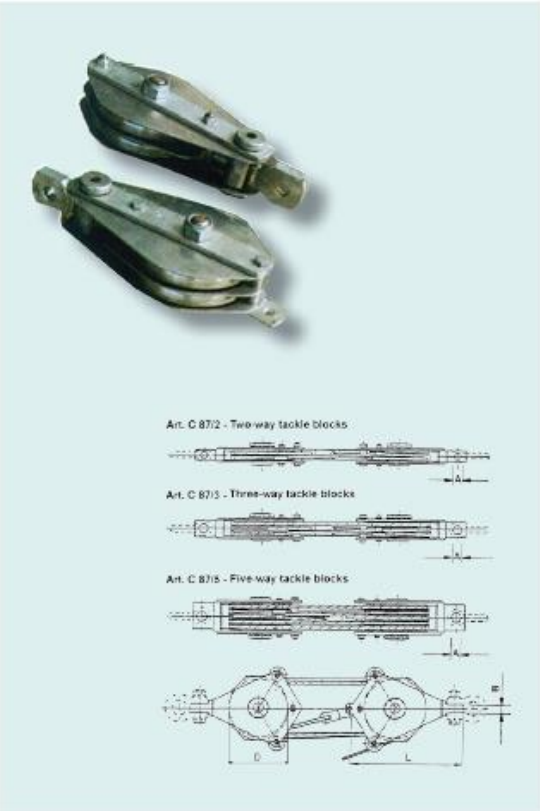
OPTIONAL DEVICES

eye attachment **A2**

	Working	Max	Dimensions (mm)							Weight
	kN	Ø	A	B	D	E	F	G	H	kg
C86.AL.6	8	16	16	16	98	72	300	120	160	1,6
C86.AL.12	12	20	18	25	130	72	320	155	180	2,8

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

C87



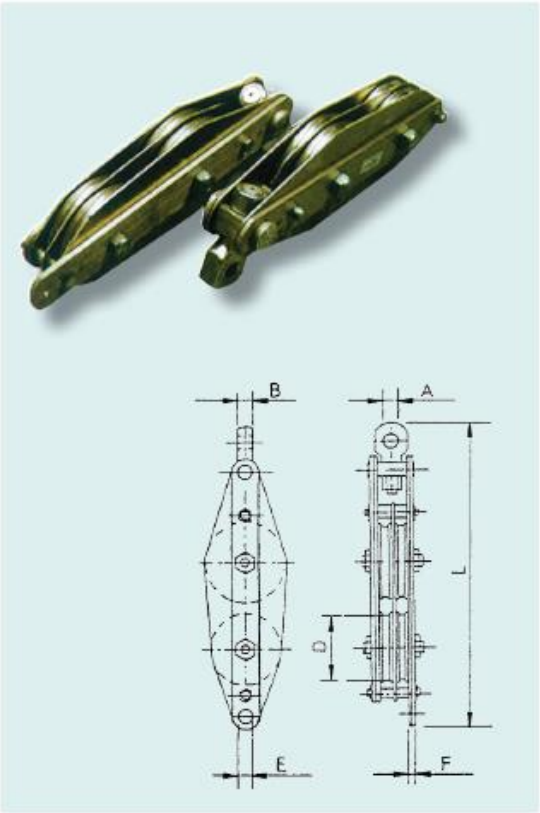
Snatch block for wire ropes. Galvanised steel frame with 2, 3 or 5 steel sheaves mounted on waterproof ball bearings. The snatch blocks are supplied in pairs.

OPTIONAL DEVICES

01 Shackle, swivel joint and wire rope (length and diameter of the rope to be specified)
02 Anti-fleeting bars.

	Sheaves	Dimensions (mm)					Working U	Weight
	no.	D min	rope Ø	L max	A	B	kN	kg
C87.2.025	2	160	8	380	22	22	30	20
C87.3.035	3	160	8	450	25	22	50	27
C87.5.055	5	160	8	500	29	22	80	45
C87.2.030	2	180	9	370	22	22	38	25
C87.3.045	3	180	9	430	25	22	60	30
C87.5.070	5	180	9	470	29	22	100	45

C88



Tackle block for high voltage lines. Steel frame with 4 or 6 steel sheaves mounted on waterproofed ball bearings. Supplied in pairs.

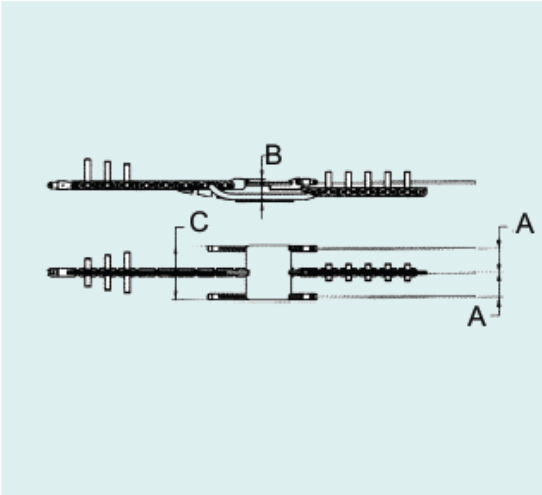
OPTIONAL DEVICES

01 Aluminium sheaves.

	Sheaves	Dimensions (mm)						Working L	Weight
	no.	D min	rope Ø	L max	A	B	E min	kN	kg
C88.4.025	4	120	6	500	23	23	11	40	25
C88.4.045	4	160	8	650	25	23	11	73	45
C88.6.065	6	160	8	680	27	35	11	105	70
C88.6.095	6	200	10	800	36	45	12	150	100
c88.6.120	6	240	12	940	38	48	14	200	130

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

F153..F



F153.2...F Fixed type running board for 2-bundle conductor, fit for connecting the pulling rope to 2 conductors. The running board is made up of:

- 1 swivel joint for the pulling rope
- 2 swivel joints for the conductors

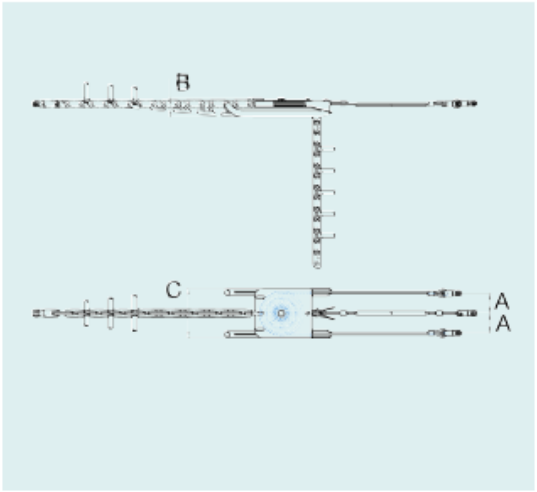
F153.3...F Fixed type running board for 3-bundle conductors, fit for connecting the pulling rope to 3 conductors. The running board is made up of:

- 1 swivel joint for the pulling rope
- 3 swivel joints for the conductors

	Cond.	Dimensions (mm)			Joints (model)		Rope for conductors		Working Load	Weight
	(a)	A	B	C	(b)	(c)	Ø mm	length m	kN	kg
F153.2.3.F	2	100	130	250	F250.R.16.1	F250.R.18.1	12	3	65	70
F153.2.1.F	2	146	160	360	F250.R.24.1	F250.R.18.1	16	3,5	95	135
F153.2.2.F	2	174	170	410	F250.R.24.1	F250.R.18.1	16	3,5	95	150
F153.3.3.F	3	100	130	250	F250.R.16.1	F250.R.18.1	12	3	65	75
F153.3.1.F	3	146	160	360	F250.R.24.1	F250.R.18.1	18	3,5	95	150
F153.3.2.F	3	174	170	410	F250.R.24.1	F250.R.18.1	18	3,5	95	170

(a) number of conductors – (b) joint for pulling rope – (c) joint for conductors

F153



F153.2 Balanced type running board for 2-bundle conductors, fit for connecting the pulling rope to 2 conductors.
The running board is made up of:

- 1 sheave with balancing counterweights
- 1 swivel joint for the pulling rope
- 2 swivel joints for the conductors
- 1 length of antitwisting steel rope for balancing the conductors

F153.3 Balanced type running board for 3-bundle conductors, fit for connecting the pulling rope to 3 conductors.
The running board is made up of:

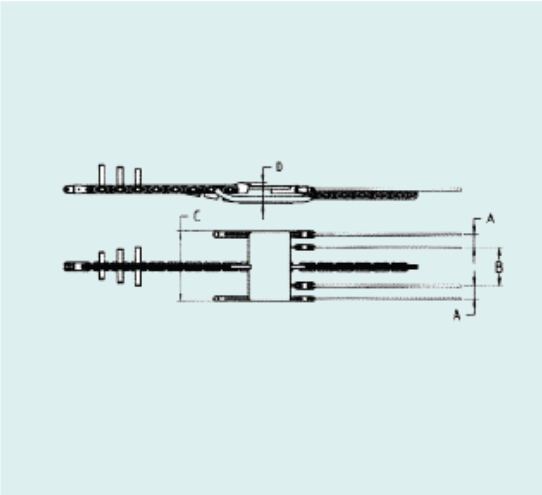
- 1 sheave with balancing counterweights
- 1 swivel joint for the pulling rope
- 3 swivel joints for the conductors
- 2 lengths of antitwisting steel rope: 1 for the lateral conductors and 1 for the central conductor

	Cond.	Dimensions (mm)			Joints (model)		Rope for conductors			Working Load	Weight
	(a)	A	B	C	(b)	(c)	Ø mm	(e) m	(f) m	kN	kg
F153.2.1	2	146	160	360	F250.R.24.1	F250.R.16.1	16	30	—	95	140
F153.2.2	2	174	170	410	F250.R.24.1	F250.R.16.1	16	30	—	95	155
F153.2.6	2	100	125	245	F250.R.18.1	F250.R.13.1	12	15	—	65	85
F153.3.1	3	146	160	360	F250.R.24.1	F250.R.18.1	18	30	15	95	155
F153.3.2	3	174	170	410	F250.R.24.1	F250.R.18.1	18	30	15	95	175
F153.3.6	3	100	125	245	F250.R.18.1	F250.R.13.1	12	15	7	65	90

(a) number of conductors – (b) swivel joint for pulling rope – (c) joint for conductors – (e) rope length for external conductors - (f) rope length for central conductor

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

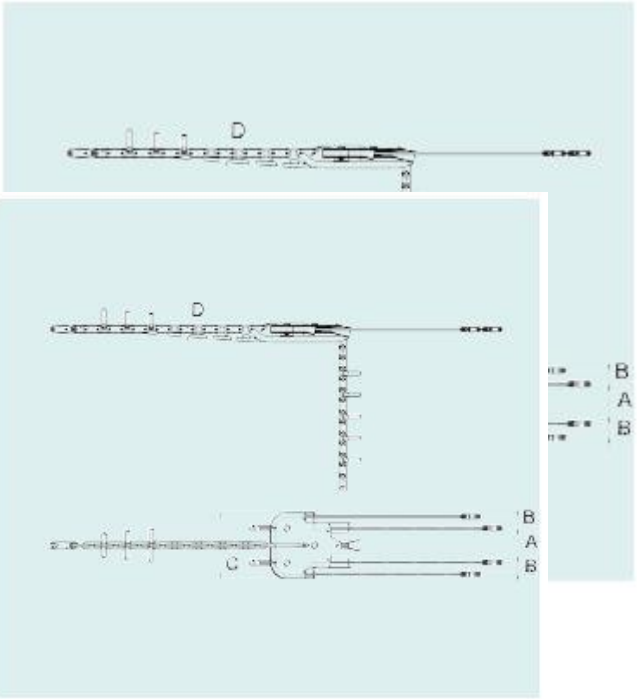
F154...F



Fixed type running board for 4-bundle conductors fit for connecting the pulling rope to 4 conductors. The running board is made up of:

- 1 swivel joint for the pulling rope
- 4 swivel joints for the conductors

	Cond.	Dimensions (mm)			Thickness	Joints (model)		Rope for conductors		Working Load	Weight
	(a)	A	B	C	mm	(b)	(c)	Ø mm	length m	kN	kg
F154.4.1.F	4	100	290	540	160	F250.R.24.1	F250.R.18.1	18	3,5	95	190
F154.4.2.F	4	130	340	640	160	F250.R.24.1	F250.R.18.1	18	3,5	95	210
F154.4.5.F	4	148	296	640	160	F250.R.24.1	F250.R.18.1	18	3,5	95	210
F154.4.6.F	4	178	356	760	160	F250.R.24.1	F250.R.18.1	18	3,5	95	230
						F250.R.28.1	F250.R.24.1	18	3,5	250	265



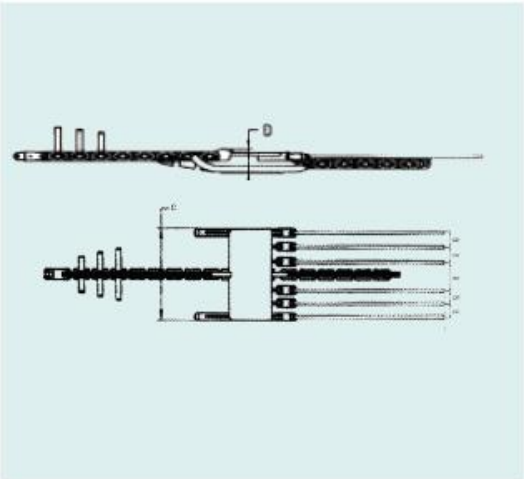
type running board for 4-bundle conductors fit for connecting
g rope to 4 conductors.
ing board is made up of:
eaves with balancing counterweights
ivel joint for the pulling rope
ivel joints for the conductors
ngths of antitwisting steel rope for balaning the conductors

	Cond.	Dimensions (mm)				Joints (model)		Rope for conductors			Working Load	Weight
	(a)	A	B	C	D	(b)	(c)	Ø mm	(e) m	(f) m	kN	kg
F154.4.1	4	290	100	540	160	F250.R.24.1	F250.R.18.1	18	30	30	95	200
F154.4.2	4	340	130	640	160	F250.R.24.1	F250.R.18.1	18	30	30	95	220
F154.4.5	4	296	148	640	160	F250.R.24.1	F250.R.18.1	18	30	30	95	220
F154.4.6	4	356	178	760	160	F250.R.24.1	F250.R.18.1	18	30	30	95	240
F154.4.8	4	340	130	640	180	F250.R.28.1	F250.R.24.1	18	30	30	250	340

(a) number of conductors – (b) swivel joint for pulling rope – (c) joint for conductors – (e) rope length for external conductors - (f) rope length for central conductor

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

F154.6...F



Fixed type running board for 6-bundle conductors fit for connecting the pulling rope to 6 conductors. The running board is made up of:

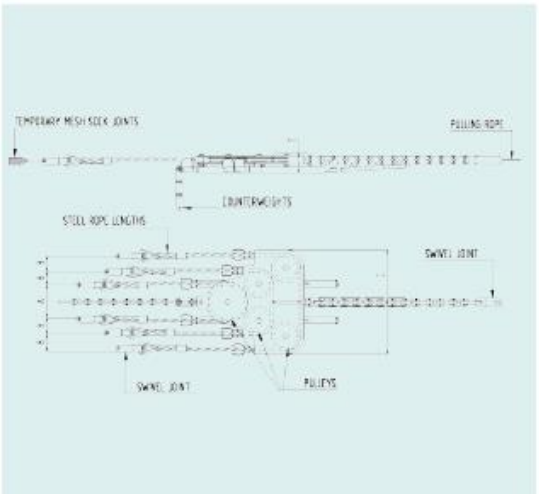
- 1 swivel joint for the pulling rope
- 6 swivel joints for the conductors

	Dimensions (mm)				Joints (model)		Rope for conductors		Working Load	Weight
	A	B	C	D	(a)	(b)	Ø mm	length m	kN	kg
F154.6.1.F	290	100	820	175	F250.R.28.1	F250.R.18.1	18	3	150	320
F154.6.2.F	340	125	1000	175	F250.R.28.1	F250.R.18.1	18	3	150	350

(a) joint for pulling rope – (b) joints for conductors

Running board fit for pulley mod. F189

F154.6



Balanced type running board for 6-bundle conductors fit for connecting the pulling rope to 6 conductors.
The running board is made up of:

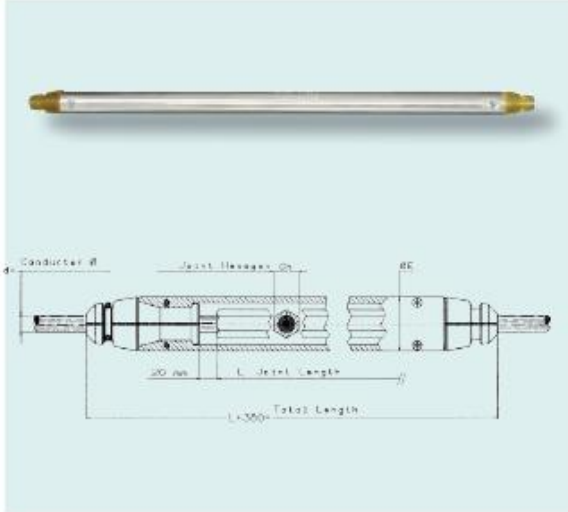
- 5 sheaves with balancing counterweights
- 1 swivel joint for the pulling rope
- 6 swivel joints for the conductors
- 3 lengths of antitwisting steel rope for balancing the conductors

	Dimensions (mm)				Joints (model)		Rope for conductors		Working Load	Weight
	A	B	C	D	(a)	(b)	Ø mm	length m	kN	kg
F154.6.1	290	100	820	175	F250.R.28.1	F250.R.18.1	18	3	150	320
F154.6.2	340	125	1000	175	F250.R.28.1	F250.R.18.1	18	3	150	350

(a) joint for pulling rope – (b) joints for conductors

Running board fit for pulley mod. F189

F166



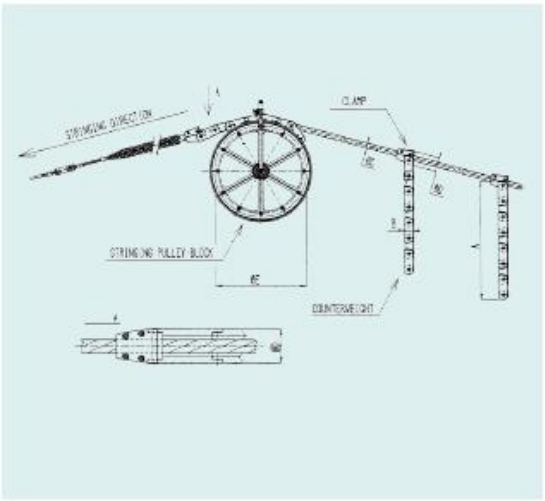
Joint protector made up of two galvanised steel shells. The ends are shaped to host the rubber protections. It is fit to limit the bending radius of the conductor during the passage in the running out blocks.

Note: in the purchase order, please specify the following dimensions: L = length of the joint after compression
d = conductor diameter
ch = hexagon dimension of the joint after compression

	for pulleys	joint protector external	conductor diam.	L max (¹)	Hexagon	Working load	Weight
	mm	mm	mm	mm	mm	kN	kg
F166.40.1	54/60	50	18	700	28	2,5 - 5	10
F166.60.1	68	57	28	995	40	4 - 6,5	16
F166.65.1*	68	70	32	1080	48	2 - 5	18
F166.92.1*	95	89	50	1240	60	6 - 6,5	32

* special - (¹)different lengths on request

F198



Antitwisting counterweight fit for stringing overhead fiber optics cables (OPGW). The counterweight allows to avoid the cable twisting during the passage in the running out blocks. Its shape is designed for passing in the grooves of the running out blocks without damaging the cable. A pair of nylon liners prevent damages to the conductor. Supplied in metallic case.

Note: the counterweights F198 must always be used in pairs.
In the purchase order, please specify the OPGW diameter.

Attention: minimum distance between the two counterweights approximately 3m.

	Dimensions (mm)			Weigth (¹)	Conductor diameter ØC	Rope for conductors	
						Ø	ve width
	ØD	A(²)	B	kg	mm	mm	mm
F198.50	50	1000	35	22	9 - 17	350/500	60/68
F198.60	64	1300	50	38	14 - 23	500/800	68
F198.88	80	1800	60	46	23 - 30	650/800	95

(¹) weight on couple - (²) indicative lenght

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

F405.10.B

Pulling robot made of light aluminium alloy. Moved by two electric motors that control two aluminium wheels lined with Vulkollan. The motors are powered by an interchangeable and rechargeable battery (max autonomy 3hours). Device for unlocking and recovering the robot in case of stop while working. Complete with radio remote control. The robot can ride any rope/conductor. The lower wheels permit to overpass obstacles, like conductor joints. Supplied in metallic box (0,90 x 0,60 x 0,80 m).
In case of failure on the electric system, the robot can be recovered and pulled by cable.

RADIO-CONTROL
Radiocontrol with forward/backward and stop control buttons, max distance 500 m. Complete with receiving unit, battery charger and 2 extractable and rechargeable batteries. Protection IP67.

OPTIONAL
- Charger for the motors battery complete with 230 V trasformer.

F405.15.S

Pulling robot made of light aluminium alloy. Moved by two electric motors that control two aluminium wheels lined with Vulkollan. The motors are powered by an electric power unit with gasoline engine. Device for unlocking and recovering the robot in case of stop while working. Complete with radio remote control.The robot can ride any rope/ conductor. The lower wheels permit to overpass obstacles, like conductor joints. Supplied in metallic box (1,00 x 0,60 x 0,90 m). In case of failure on the electric system, the robot can be recovered and pulled by cable.

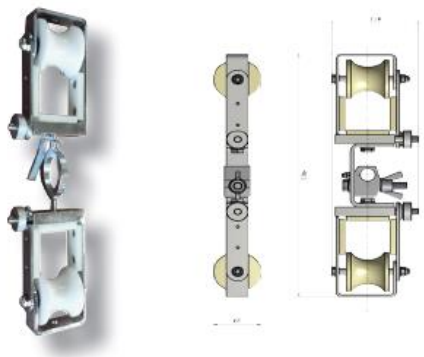
RADIO-CONTROL
Radiocontrol with forward/backward and stop control buttons, max distance 500 m. Complete with receiving unit, battery charger and 2 extractable and rechargeable batteries. Protection IP67.

ENGINE OF THE P OWER UNIT	
Feeding	gasoline
Electric power unit	12 V
Autonomy	4 hours
Power	1,8 hp
Cooling system	air

	Max pull force	Max inclination	Pull speed		Wheels Ø int.	H groove width	Min-Max Ø conduc.	Max Span joint Ø	Dimensions (LxWxH)	Weigth	Feeding	Power (each motor)	Electric system
	kN		max m/min	min m/min	mm	mm	mm	mm	m	kg		kw	
F405.10.B	1	20°	20	15	140	55	10/46	60	0,80x0,50x0,70	40	electric	0,15	12 V
F405.15.S	1,5	20°	20	15	60	50	10/46	60	0,90x0,60x0,80	45	electric	0,15	12 V

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

F183.2.70



F183.2.70.A F183.2.70.B

Cradle block designed for replacing the existing ground wire (GW) with optical ground wire (OPGW). Made of two galvanized steel half-frames linked by a ring with swivel plate. Each half-frame is complete with:

- one grooved nylon wheel mounted on ball bearings
- three nylon plates to protect the OPGW cable
- easy-to-open side

The frame is designed to avoid the contact between cable and metallic parts.

Working load: 200 daN
Wheel diameter: 70 mm (external), 40 mm (bottom groove)
Groove width: 40 mm
Dimensions: 390x65x118 mm
Weight: 2,00 kg

OPTIONAL
01 – Metallic box for 50 blocks (dimensions 800x600x600 mm)
F183.2.70.A – complete with ring and rope block device.
F183.2.70.B – complete with lateral rope block clamp.
F183.2.70.C – complete with upper rope block clamp.

F183.3.70

Cradle block designed for replacing the existing cables, with head clamp for ropes diameter from 10 to 20 mm.
Two nylon wheels mounted on ball-bearings and aluminium frame with protective nylon plate.
Working load: 200 daN
Dimensions: 364x99x160 m
Weight: 1,2 kg
OPTIONAL
01 – Metallic box for 50 blocks (dimensions 600x600x600 mm)

F183.4.70

Cradle block designed for the replacing existing cables, with clamp for ropes diameter from 10 to 20 mm. Two nylon wheels and aluminium frame.
Working load: 150 daN
Dimensions: 360x99x150 mm
Weight: 1,1 kg

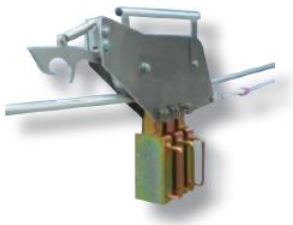
OPTIONAL
01 – Metallic box for 50 blocks (dimensions 600x600x600 mm)

F405.15.FR

Braking device for cradle blocks. Positioned behind the cradles, to keep the distance between the cradles. Aluminium frame and aluminium, rubber wheels mounted on ball-bearings.
Working load: 150 daN
Weight: 4 kg

OPTIONAL
01 – Plastic box (dimensions 600x400x200 mm)

F405.15.RR



Recovering device to hook the robot in case of extreme inclination. Towing system by rope with detachable counterweights. Aluminium frame and wheels mounted on ball bearings and galvanised steel counterweights.
Working load: 150 daN
Counterweights: 3 x 8,8 kg each
Weight: 8,3 kg (counterweights excluded)

OPTIONAL
01 – Metallic box (dimensions 600x800x300 mm)

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

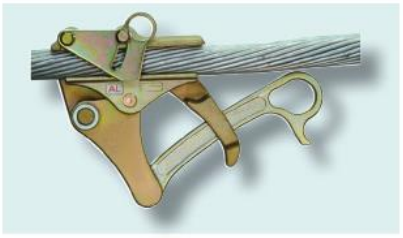
08
EQUIPMENT

C27.11

Self-gripping clamps fit for:
- Conductor ACSR, AAAC, ACSS and copper cable

Diameter: Ø 5-28 mm
Maximum safety load: 20 kN
Jaws length: 120 mm Weight:
1,9 kg
Dimensions: 320 x 180 mm

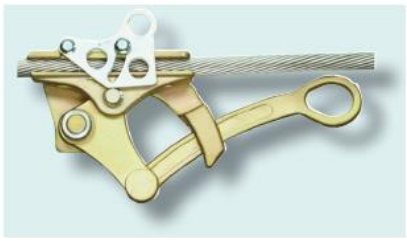
C30.11



Self-gripping clamps fit for:
- Conductor ACSR, AAAC, ACSS and copper cable

Diameter: Ø 18-35 mm
Maximum safety load: 30 kN
Jaws length: 120 mm Weight:
2,4 kg
Dimensions: 320 x 180 mm

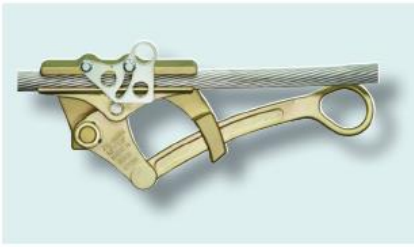
C32.10



Self-gripping clamps fit for:
- Conductor ACSR, AAAC, ACSS and copper cable

Diameter: Ø 18-36 mm
Maximum safety load: 50 kN
Jaws length: 180 mm Weight:
4,7 kg
Dimensions: 380 x 200 mm

C33.10



Self-gripping clamps fit for:
- Conductor ACSR, AAAC, ACSS and copper cable

Diameter: Ø 28-46 mm
Maximum safety load: 60 kN
Jaws length: 220 mm Weight:
7,0 kg
Dimensions: 420 x 220 mm

3105.1

Self-gripping clamps fit for:
- aluminium, ACSR and ACCC, copper conductor: 8-35,2 mm
- steel conductor and ground wire: 8-22 mm
- jaws length: 272 mm
- steel rope: 8-24 mm

Interchangeable liners (type G05) conductor diameter to be confirmed.
Maximum safety load: 75 kN
Minimum breaking load: 225 kN
Weight: 15 kg

3112

Self-gripping clamps fit for:
- Ground wires with optical fiber (OPGW) with external diameter 6-23 mm
- Interchangeable liners (type G12TA)

Maximum safety load: 49 kN
Minimum breaking load: 180 kN
Weight: 7 kg
G12TA Interchangeable liners in adiprene and aluminium, on demand according to OPGW diameter

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

C28.10.FS

Self-gripping clamps fit for:
- Guy wire, isolated cable, wire rope and copper cable

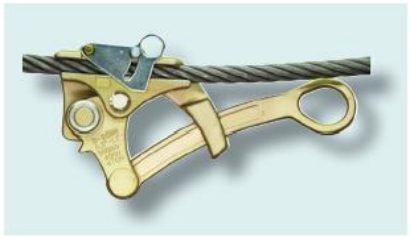
Diameter: Ø 5-22 mm
Maximum safety load: 20 kN
Jaws length: 90 mm
Weight: 1,6 kg
Dimensions: 280 x 160 mm

C28.11.FS

Self-gripping clamps fit for:
- Guy wire, isolated cable, wire rope and copper cable

Diameter: Ø 6-22 mm
Maximum safety load: 30 kN
Jaws length: 90 mm
Weight: 1,8 kg
Dimensions: 280 x 160 mm

C28.12.FS



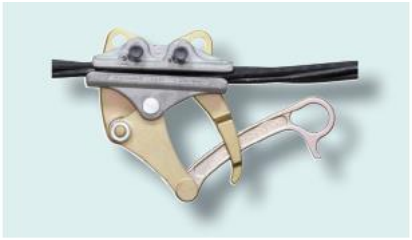
Self-gripping clamps fit for:
- Guy wire, isolated cable, wire rope and copper cable

Diameter: Ø 8-28 mm
Maximum safety load: 40 kN
Jaws length: 140 mm Weight:
3,5 kg
Dimensions: 340 x 200 mm

C26.10.ABC

Self-gripping clamps fit for:
Cable: 2 x 16 mm²/ 2 x 50 mm² 4
x 16 mm²/ 4 x 35 mm²
Maximum safety load: 3,5 kN
Dimensions: 250 x 150 mm
Weight: 0,6 kg
Aluminium jaws lined with high grip material (jaws lenght 80 mm)

C26.11.ABC



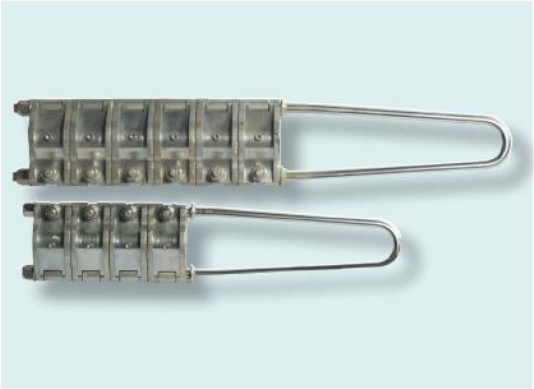
Self-gripping clamps fit for:
Cable: 4 x 25 mm² and 4 x 95 mm²
Maximum safety load: 10 kN
Dimensions: 300 x 150 mm
Weight: 2,4 kg
Aluminium jaws lined with high grip material (jaws lenght 160 mm)

C26.12.ABC

Self-gripping clamps fit for:
Cable: 4 x 95 mm² and 4 x 150 mm²
Maximum safety load: 18 kN
Dimensions: 320 x 160 mm
Weight: 2,6 kg
Aluminium jaws lined with high grip material (jaws lenght 180 mm)

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

C24



Multi-unit come-along clamp fit for pulling and anchoring overhead conductors and steel wire ropes. Made of steel elements, with aluminium liners for conductors.
On request: bronze liners for wire ropes.
Note: specify diameter and type of conductor or rope.

OPTIONAL DEVICES

01 Bronze liners fit for anti twisting steel wire ropes (rope diameter to be specified).

	Elements	Dimensions L x W x H	For ropes up to diameter	For conductors up to diameter	Working load	Weight
		mm	mm	mm	kN	kg
C24.4	4	520 x 105 x 70	14	16	16	6
C24.5	5	680 x 130 x 70	16	18	20	12
C24.6	6	740 x 130 x 70	20	22	25	14
C24.7	7	800 x 130 x 70	24	26	28	16
C24.8	8	860 x 130 x 70	26	30	34	18

C24.1

Radial come-along clamp for aluminium conductors.
Made of electrowelded and galvanised steel elements, with aluminium liners. On request: bronze liners for wire ropes.
Note: specify diameter and type of conductor or rope.

OPTIONAL DEVICES

01 Bronze liners fit for anti twisting steel wire ropes (rope diameter to be specified).

	Elements	Dimensions E	For ropes up ter	For conductors up to	Working load	Weight
		mm	mm	mm	kN	kg
C24.1.4	4	450 x 160 x 180	20	15/26	40	18
C24.1.6	6	520 x 160 x 180	24	20/35	60	27
C24.1.7	7	630 x 160 x 180	28	20/38	66	32
C24.1.8	8	690 x 160 x 180	30	30/40	80	37
C24.1.10	10	820 x 160 x 180	34	30/45	100	42
C24.1.12	12	950 x 160 x 180	36	30/48	120	49
C24.1.14	14	1080 x 160 x 180	40	30/50	150	65
C24.1.16	16	1200 x 160 x 180	45	40/52	165	77
C24.1.20	20	1450 x 180 x 220	50	40/60	200	110

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

F39

Steel hydraulic presses. Fed by a separate power pack or hand pump.

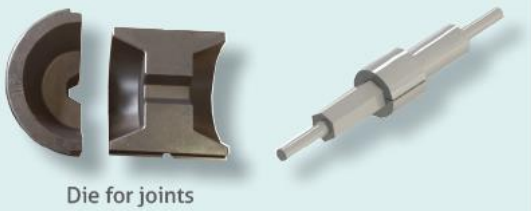
- Short pressing cycle.
- Maximum flexibility: each press can be used with power unit or hand pump.
- Adjustable pressure-control valve for die closing/opening, with manometer.
- Quick couplings for flexible hoses connection.
- Die-holder for semicircular dies.
- Base with handles.
- Press body can be rotate by 360°.
- Metallic box with handles for transport.

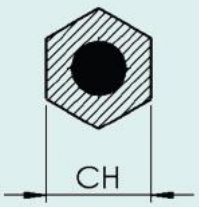
OPTIONAL DEVICES

701	Trailer for press and control hydraulic unit mod CIS.01 with rigid axle and drawbar for towing in the job-site.
026	Frame with PVC-cover for opt.701.
027	Metallic coverage for opt.701.

	Max compressionforce		Max pressure	Max hexagon	Max stroke	Dimensions S	Weight
	kN	ton	bar	mm	mm	mm	kg
F39.70.1	700	70	700	52	32	500x210x400	30
F39.100.1	1000	100	700	65	35	500x230x400	32
F39.120	1200	120	700	65	40	600x260x450	51
F39.180.1	1800	180	700	90	40	600x450x700	105

Dies and straighteners for presses F39





Press	Joint	Die				
		Compression type			Dimensions	Weight
	material	hexagonal	round	tallurit	mm	kg
F39.70.1	steel-copper	F39.2585	F39.2587			
	aluminum	F39.2586	F39.2588	F39.4949A		
F39.100.1 F39.120	steel-copper	F39.2570	F39.2558		Ø 90 x 80	2
	aluminum	F39.2566	F39.2554	F39.4648T		
F39.180.1	steel-copper	F39.2571	F39.2559		Ø 90 x 80 or	2
	aluminum	F39.2567	F39.2555	F39.4648G	Ø 130 x 120	6

Press	Joint-straighteners		
	Code	Dimensions	Weight
		mm	kg
F39.70.1	F39.2582	Ø 90 x 170	7
F39.100.1 F39.120	F39.2573	Ø 90 x 230	11
F39.180.1	F39.2575	Ø 90 x 230 - Ø 130 x 300	11 - 31

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

CID CIS CIE

Hydraulic power pack for feeding the hydraulic presses.

- Base and protection frame.
- Metallic box with handles for transport.
- 2-stage pump for a faster return of the press cylinder (except model CIS.02 single-stage).
- Quick couplings for connecting the flexible hoses.
- Exhaust valve.
- CIS.02 model equipped with heat exchanger for cooling the hydraulic oil.

OPTIONAL DEVICES

01	Control valve for presses mounted on power unit instead of the press.
02	Single phase electric motor 220 V (for model CIE.01).
03	Oil tank with capacity 25 lt (only for model CIS.01 and CID.01).
04	Increased capacity of the pump at 8 - 2 liters/minute.
05	Base frame with wheels and handles for towing and lifting.

	Engine	Power	Max pressure	Max flow	Tank capacity	Dimensions E	Weight
		kW	bar	l/min	l	mm	kg
CIS.01	gasoline	3,5	700	4,7 - 1,8	10	530 x 340 x 370	51
CIS.02	gasoline	3,5	700	3	10	520 x 400 x 400	42
CID.01	diesel	5	700	4,7 – 1,8	10	550 x 400 x 450	60
CIE.01	three phase Electric 380V	2,2	700	2,7 - 0,8	10	530 x 340 x 370	46

PL

Hand pump for presses.

- 2-stage pump for a faster return of the press cylinder.
- Light-alloy construction.
- Quick couplings for connecting the flexible hoses.

	Max pressure	Displacement 1st stage	Displacement 2nd stage	Tank capacity	Dimensions R	Weight
	bar	cm³	cm³	l	mm	kg
PL.262	700	13	3	2,5	565 x 125 x 170	8

TF

Kit of flexible hoses with quick couplings. Lengths: 3, 6, 10, 15, 20, 30, 40, 50, 60 m (specify the length needed).

GR

Quick couplings for connecting two flexible hoses.

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

C35

Grounding device to be used while stringing overhead conductors or pulling ropes. Aluminium alloy sheaves with bushes grant a good sliding and electric continuity even on junction points. Contrast spring for a safe and continuous contact on conductors with junction clamp. Supplied with:

- Copper cable section 50 mm² lined with high-insulating protection, length 6 m.
- Brass clamp, clamping capacity 0 - 40 mm.
- Metallic box for storage (mod. C35.2 and C35.1).
- Plastic box for storage.

OPTIONAL DEVICES

01 Steel-wheels fit for anti-twisting steel rope (only for C35.2).

	Short-circuit current	Fit for conductor	Dimensions	Weight	Metallic box	Metallic box weight
		mm	mm	kg	mm	kg
C35.1	10 kA for 0,4 second	Ø 3 - 40	500 x 420 x 180 x 85	17	600 x 600 x 250	17
C35.2	10 kA for 0,4 second	Ø 10 - 60	430 x 370 x 150 x 65	6,5	500 x 500 x 200	14

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

C37.AT

Short circuiting and grounding equipment for H.V. overhead lines up to 400 kV. Certified in conformity with the International Standard CEI EN 61230 (IEC 1230).

C37.AT.50	with cable section 50 mm2 - Icc: 12,7 kA eff / 1 s.
C37.AT.70	with cable section 70 mm2 - Icc: 18,6 kA eff / 1 s.
C37.AT.95	with cable section 95 mm2 - Icc: 25,2 kA eff / 1 s.
C37.AT.150	with cable section 120 mm2 - Icc: 30,7 kA eff / 1 s.

- 3 screw type contact clamps made by light alloy.
  Clamping capacity: conductors 5-60 mm diameter. Suitable for use on oxidized conductors. Lower ring for fastening and unfastening.
- 3 extraflexible electrolytic copper cables covered by transparent plastic sheath (length to be specified on demand).
- 3 ground clamps made by press forged brass. Clamping capacity: round conductors and bars up to 33 mm.
- Metallic case.
- Insulating fiberglass rod made by synthetic resin reinforced by fiberglass, in two or three elements. Length 1,5 or 2 m each, with quick coupler and top hook for maneuvering the clamps. Total length to be specified on demand.
- Heavy fabric bag for the insulating rod.

C37.MT

Short circuiting and grounding equipment for M.V. overhead bare conductors.
Certified in conformity with the International Standard CEI EN 61230 (IEC 1230).

C37.MT.25	short circuit cables section 25 mm2 - short circuit test 5,6 kA / 1 s.
C37.MT.35	short circuit cables section 35 mm2 - short circuit test 8,0 kA / 1 s.

- 3 light alloy contact clamps with automatic tightening.
  Clamping capacity: conductors 3-20 mm diameter. Tang suitable for fitting on clamp holder head.
- Light alloy clamp holder head, complete of steel recover hook and threaded tang for screwing on the head of the insulating rod.
- 2 short circuit extraflexible electrolytic copper cables, covered by transparent plastic sheath, length 2,5 m (different lengths on demand).
- Ground cable, characteristics as above, section 16 mm2, length 16 m (different lengths on demand), rolled up on cable coiler.
- Earthing rod.
- Insulating fiberglass rod made by epoxy resin reinforced by fiberglass. Total length 3 m in two elements each length 1,5 m, with fast joint and threaded M10 attack suitable for fitting on clamp holder head.
- Metallic case for the equipment, heavy fabric bag for the rod.

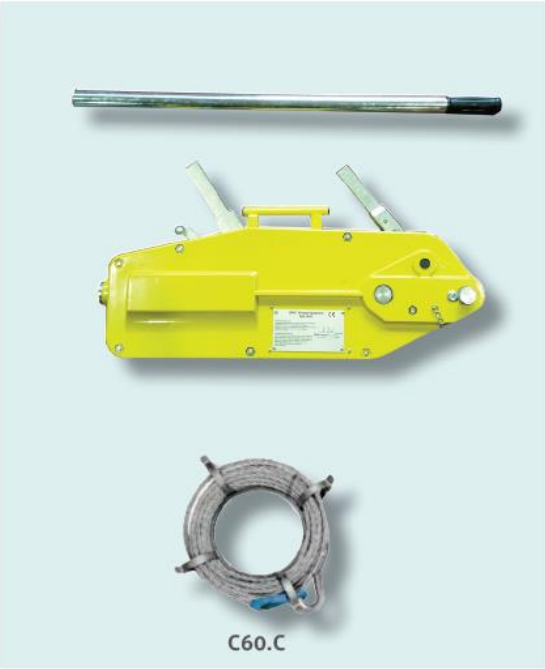
Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

C55

Chain lever hoist (pull-lift) made of steel. Fit for lifting and tensioning, with high strength chain. Swivelling hooks with safe-lock device.
Run of the hook: 1,5 m (variable on demand).
Load capacity: 750, 1500, 3000, 6000 and 9000 daN.

	Capacity	Force on handle at	length	length (¹)	falls	Dimensions width x	weight
	kN	kN	mm	m		mm	kg
C55.075	7,5	0,14	280	1,5	1	148 x 136	7
C55.150	15	0,22	410	1,5	1	172 x 160	11
C55.300	30	0,32	410	1,5	1	200 x 180	21
C55.600	60	0,34	410	1,5	2	200 x 235	31
C55.900	90	0,36	410	1,5	3	200 x 320	46

C60



Rope hoist (TIRFOR). Fit for lifting and tensioning, with endless run.

		Weight (without rope)	Overall dimensions	Rope diameter	Handle length
	kN	kg	mm	mm	mm
C60.08	8	6	428 x 65 x 260	8	800
C60.16	16	11	545 x 97 x 280	11,3	1200
C60.32	32	22	660 x 116 x 320	16,3	1200

	Fit for	Diameter	Breaking	Mass	Lengths
		mm	kN	kg/m	
C60.C.08	C60.08	8	48	0,25	10m, 20m, 30m, 40m, different lengths on demand
C60.C.16	C60.16	11,3	96	0,55	
C60.C.32	C60.32	16,3	192	0,98	

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

09

LIGHT ALLOY EQUIPMENT

C175

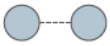
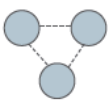
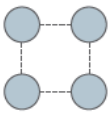
Bicycle for single, twin, 3- and 4-bundle conductor lines.
Nylon wheels mounted on ball-bearings.
Fit for moving on conductors. Equipped with negative disc brake and a safety brake clamping the conductor, safety belt, and metercounter. Max slope percentage 25%.
In models C175.2 C175.3 and C175.4, the wheel-distance is adjustable up to 500 mm.
On demand:

- 01. Bag for spacers.
- 02. Electric motor with battery, speed 15 m/min, 3-hours autonomy circa, weight 19 kg (¹).
- 03. Wheel-distance adjustable up to 600 mm (¹).
- 04. Gasoline engine 2 hp, speed 0 to 20 m/min max, weight 15 kg (¹).
- 05. Container for transporting and storing.

(¹) available for mod. C175.2 C175.3 and C175.4

C175.1

C175.2

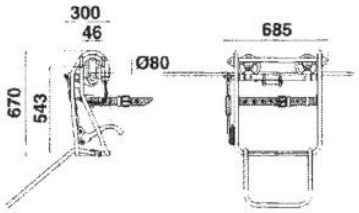
			Capacity	Dimensions	Weight
			kg	m	kg
C175.1	for single conductor lines		100	1,15 x 0,50 x 1,81	26
C175.2	for twin conductor lines (¹)		100	0,75 x 0,70 x 1,40	34
C175.3	for 3-bundle conductor lines (¹)		100	0,70 x 0,60 x 1,40	40
C175.4	for 4-bundle conductor lines (¹)		100	1,60 x 0,70 x 1,50	49

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

C150.11

Single-seat line car fit for single-conductor lines.
Aluminium alloy structure with nylon wheels mounted on ball-bearings.
Parking brake. Nylon band for back support. Foot rest.

FEATURES	
Capacity	100 kg
Weight	6,5 kg
opt.02	Aluminium wheels



C155.10

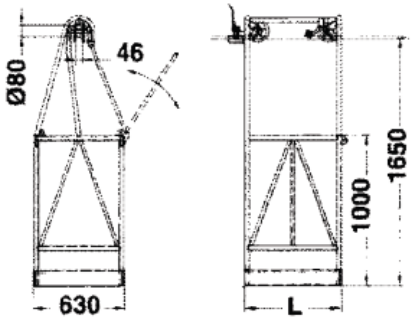
Line car for single-conductor lines. Fit for 1 or 2 linemen.
Aluminium alloy structure with nylon wheels mounted on ball-bearings. Parking brake.
Equipped with metercounter.

FEATURES C155.10.A	
Fit for 1 person	
Length	650 mm
Capacity	100 kg
Weight	28 kg

FEATURES C155.10.B	
Fit for 2 persons	
Length	1000 mm
Capacity	200 kg
Weight	38 kg

OPTIONAL DEVICES

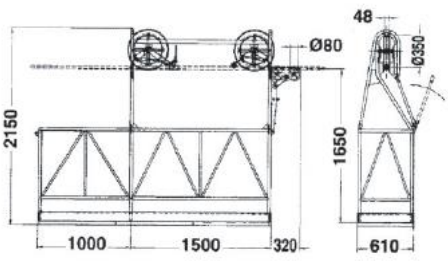
707	Negative disc brake manually controlled
709	Device for car angle adjustment (only for mod. C155.10.B).
opt.02	Aluminium wheels



C155.11

Line car for single-conductor electric lines. Fit for 2 linemen.
Aluminium alloy structure with nylon wheels mounted on ball-bearings.
Parking brake. Equipped with metercounter.

FEATURES	
Capacity	200 kg
Weight	82 kg



Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only..

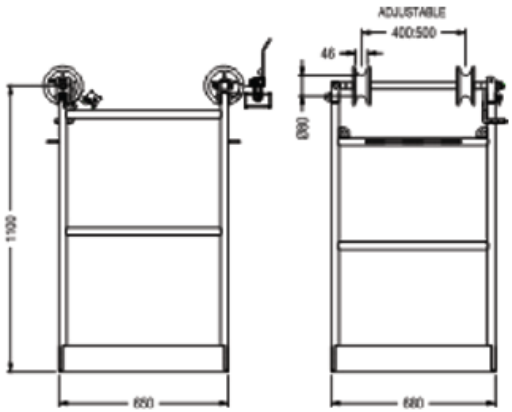
C155.A.2

Line-car for twin conductor lines (2 cond.). Made of light alloy structure with nylon wheels mounted on ball-bearings. Stationary brake and metercounter.
Also available for 3-bundle lines (3 conductors): mod. **C155.A.3**

FEATURES	
Adjustable distance between wheels	400 to 500 mm.
Capacity	100 kg
Weight	34 kg

OPTIONAL DEVICES

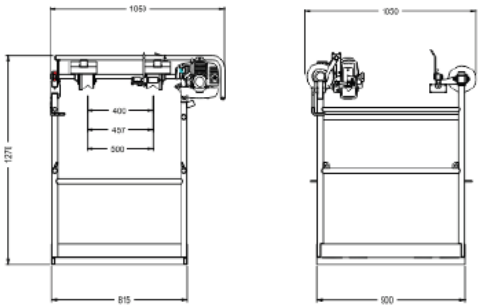
707	Negative disk brake, with manual opening
opt.02	Aluminium wheels



C155.AM.2

Motorized line-car for twin conductor lines (2 cond.). Made of light alloy structure with wulcolan wheels mounted on ball-bearings. Transmission axle with high grip rubber wheels. Stationary brake and metercounter.
Also available for 3-bundle lines (3 cond.): mod. **C155.AM.3**

FEATURES	
Adjustable distance between wheels	400 to 500 mm
Gasoline engine	2,4 hp, 2 strokes, 48 cc
Speed	0-20 m/min
Max inclination	25%
Mechanical transmission with idle device	
Capacity	100 kg
Weight	56 kg



Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

C155.B

Line-car for 2 linemen, fit for 2-, 3- or 4-bundle conductor lines.
Made of light alloy structure with nylon wheels mounted on ball-bearings.
Stationary brake and metercounter.
Max load: 200 daN

FEATURES

Capacity	200 kg

OPTIONAL DEVICES

707	Negative disk brake, with manual opening
opt.02	Aluminium wheels

n. of conductors of the line: height 'B'	2 conductors B = 1200 mm	3 conductors B = 1550 mm	4 conductors B = 1550 mm
line car without engine	C155.B.2 weight 45 kg	C155.B.3 weight 50 kg	C155.B.4 weight 55 kg


Stationary brake


Metercounter

C155.BM

Motorized line-car for 2 linemen, fit for 2-, 3- or 4-bundle conductor lines.
Light alloy structure. Aluminum wheels mounted on ball-bearings.
Transmission axle with high grip rubber wheels. Stationary brake and metercounter.

FEATURES

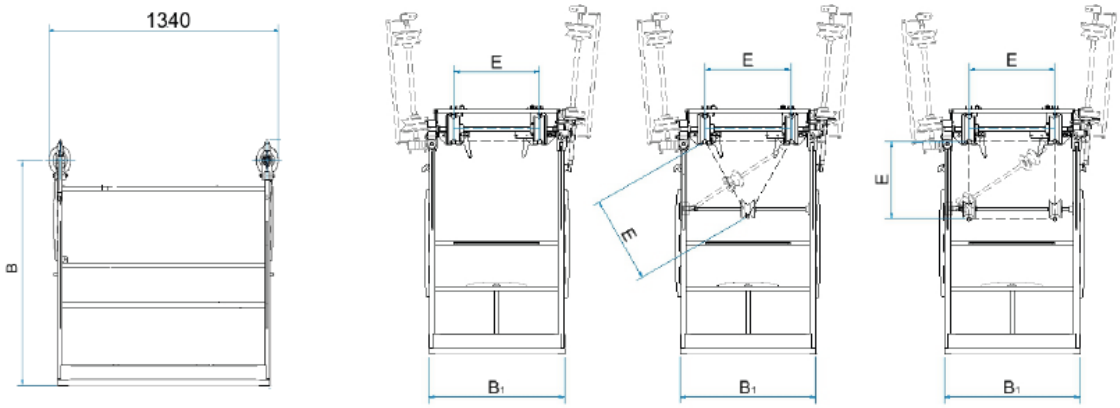
Capcity	200 kg
Gasoline engine	5 hp, 48 cc with hydraulic power unit
Translation speed	0-40 m/min
Max slope	40%.

Removable engine and hydraulic transmission group.

OPTIONAL DEVICES

707	Negative disk brake, with manual opening
opt.02	Aluminium wheels

n. of conductors of the line: height 'B'	2 conductors B = 1200 mm	3 conductors B = 1550 mm	4 conductors B = 1550 mm
line car without engine	C155.BM.2 weight 115 kg	C155.BM.3 weight 125 kg	C155.BM.4 weight 140 kg



note:the dimensions E are adjustable 400-457-500-600 mm. Line cars with different dimensions can be produced on request.

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

C155.C

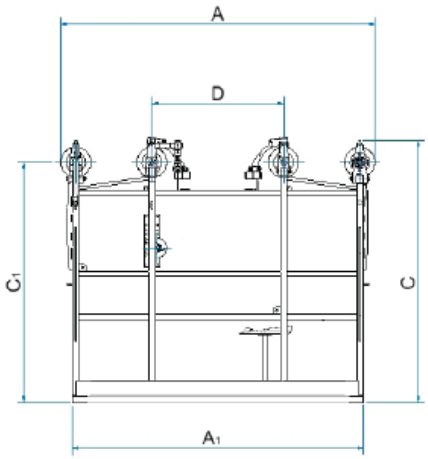
Line-car for 2 linemen, fit for 2-, 3- or 4-bundle conductor lines.

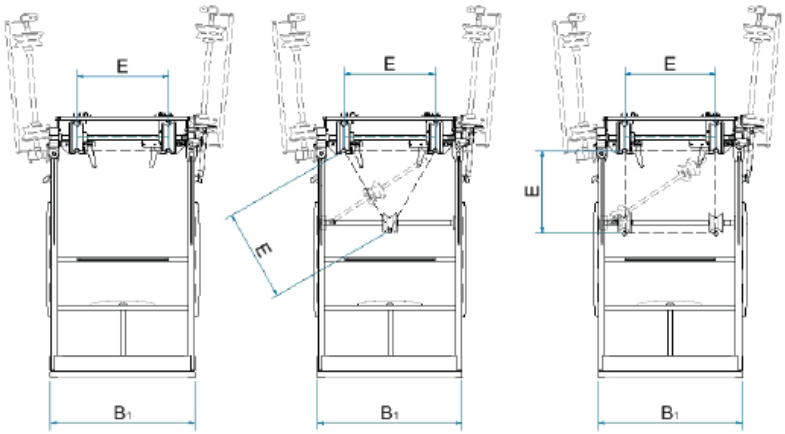
- Light aluminium-alloy structure welded TIG-system.
- Four openable arms for wheels, fit for passing obstacles.
- Aluminium wheels mounted on bearings.
- Parking brake acting on the conductor.
- Metercounter.
- Service platform.
- Fit for 2 operators.

OPTIONAL DEVICES

01	Nylon wheels mounted on bearings.
02	Negative disk brake, with manual opening.
03	Arms for wheels openable with horizontal rotation.

	Line type	Capacity	Dimensions								Weight
		kg	A	A1	B	B1	C	C1	D	E	kg
C155.C.2	2 cond.	250	2070	1900	1270	950	1570	1390	865	400-500-600	87
C155.C.3	3 cond.	250	2070	1900	1270	950	1570	1390	865	400-500-600	90
C155.C.4	4 cond.	250	2070	1900	1270	950	1570	1390	865	400-500-600	92





C155.C.2 C155.C.3 C155.C.4

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

C155.CM

Motorised line-car for 2 linemen, fit for 2-, 3- or 4-bundle conductor lines.

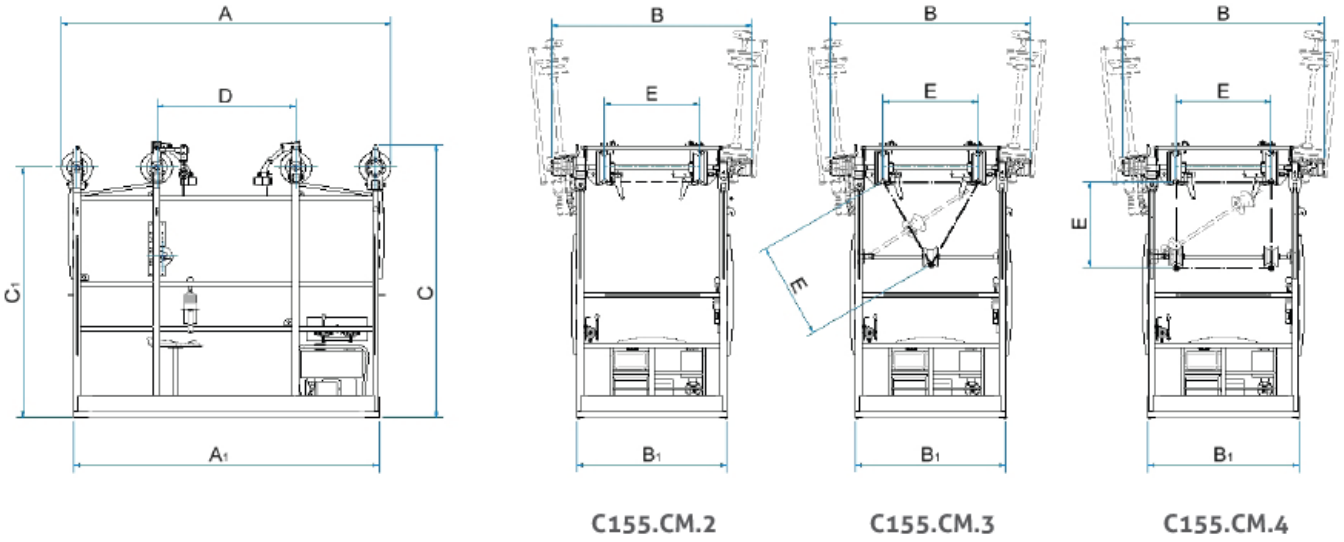
- Light aluminium-alloy structure welded TIG-system.
- Four openable arms for wheels, fit for passing obstacles.
- Aluminium wheels lined with hi-grip rubber.
- N.2 parking brakes acting on the conductor.
- Metercounter.
- Service platform.
- Fit for 2 operators.
- Hydraulic power pack transmitting the motion to the openable driven wheels.
- Gasoline engine 4 hp.
- Variable speed 0 to 30 m/min in both senses.
- Max slope allowed: 40%.
- Removable power pack.

OPTIONAL DEVICES

03	Arms for wheels openable with horizontal rotation.
04	Earthing device.
05	N.2 disk brakes manually operated by 1 lever. 06 N.4 disk brakes manually operated by 2 levers.
07	Special structure with load capacity = 400 kg.

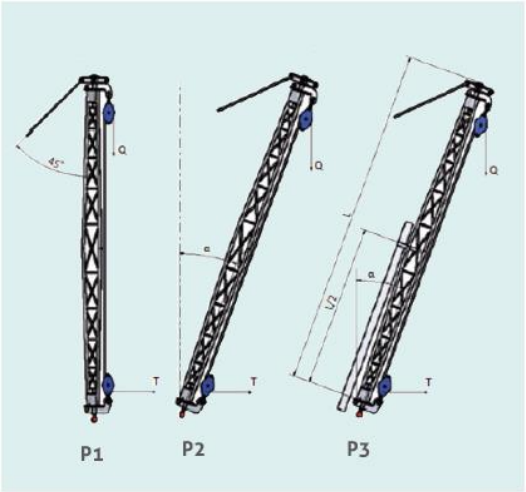
NOTE: The weight is 20% higher than the standard version.

	Line type	Capacity	Dimensions (mm)								Weight
		kg	A	A1	B	B1	C	C1	D	E	kg
C155.CM.2	2 cond.	250	2070	1900	1270	950	1570	1390	865	400-500-600	188
C155.CM.3	3 cond.	250	2070	1900	1270	950	1570	1390	865	400-500-600	197
C155.CM.4	4 cond.	250	2070	1900	1270	950	1570	1390	865	400-500-600	205



Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

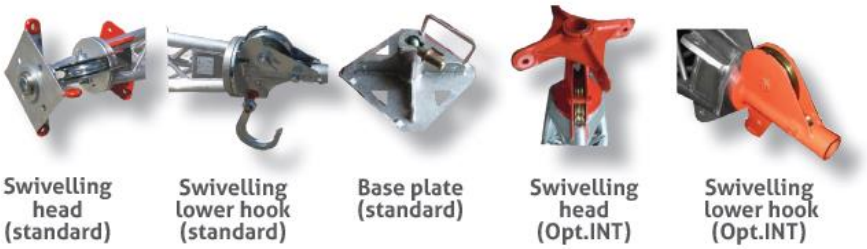
C158



Gin poles made of aluminium alloy tubular structure welded with TIG system.
Made of two or more separated sections.
Working Capacity: 1000 to 10000 daN (note: the real capacity depends on the angle of use).
Standard lengths: 6 to 20 m. Available in two versions: with external wire-rope passage (standard) or internal wire-rope passage (optional).
Complete of swivelling head, base with ground plate and base hook for tower attachment.

OPTIONAL DEVICES

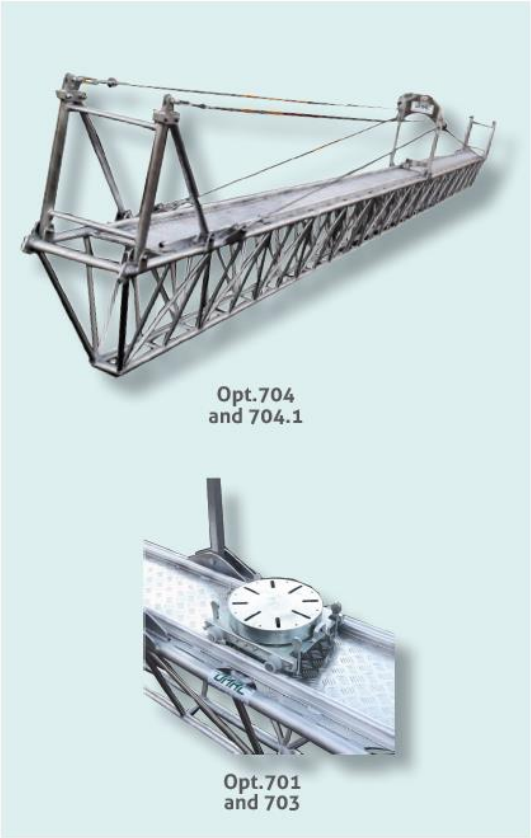
.INT Device for internal wire-rope passage, available for gin poles long 12 m or more.
Ordering code will be: C158....INT (ie: C158.100.062.INT).



	Capacity (P = Q + T)			Total length	Sections		Weight (1)		Weight of the s
	P1 a=0°	P2 a=20°	P3 a=20°		Number	Lengths	Standard	.INT version	
	daN	daN	daN	m		m	kg	kg	kg
C158.100.062	1000	600	250	8	2	4+4	60	71	10
C158.100.082									
C158.150.082	1500	900	350						10
C158.150.102									
C158.150.123									
C158.200.082	2000	1200	500	8	2	4+4	70	78	10
C158.200.103				10	3	4+2+4	85	93	
C158.200.123				12	3	4+4+4	95	103	
C158.400.102	4000	2500	1000						19
C158.400.123									
C158.400.163									
C158.400.204									
C158.500.123	5000	3000	1200	12	3	4+4+4	140	155	19
C158.500.164				16	4	4+4+4+4	210	225	
C158.500.204				20	4	5+5+5+5	250	285	
C158.700.122	7000	4500	1700				165	205	29
C158.700.163							215	255	
C158.700.164									
C158.700.204							270	290	
C158.1000.163	10000	7000	2400	16	3	5+6+5 (2)	245	282	60
C158.1000.204				20	4	5+5+5+5	298	335	
C158.1000.244				24	4	6+6+6+6	350	385	

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

F127

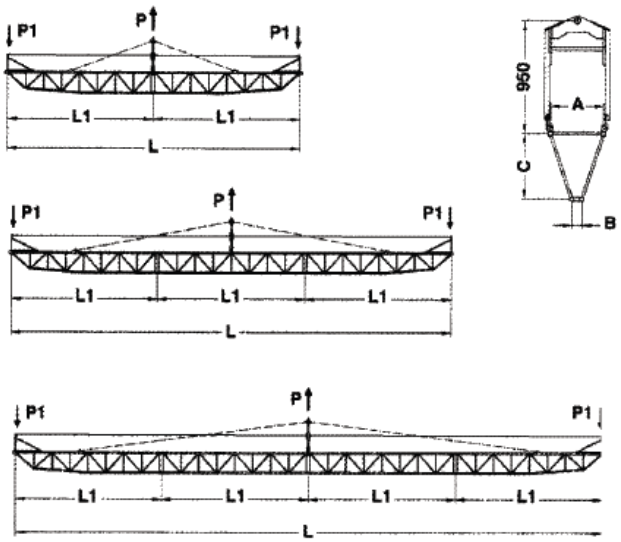


Suspension platform for overhead line works. Aluminium alloy structure.
Made of two or more trapezoidal sections, with central fitting and lateral hooks for anchoring.
Complete with wire ropes and turnbuckles.

OPTIONAL DEVICES

701	Trolley for press, swivelling 360°.
703	Rail for press-trolley.
704	Double-side antifall protection.
704.1	Single-side antifall protection.

On demand, we build suspension platforms with higher capacities or different lengths

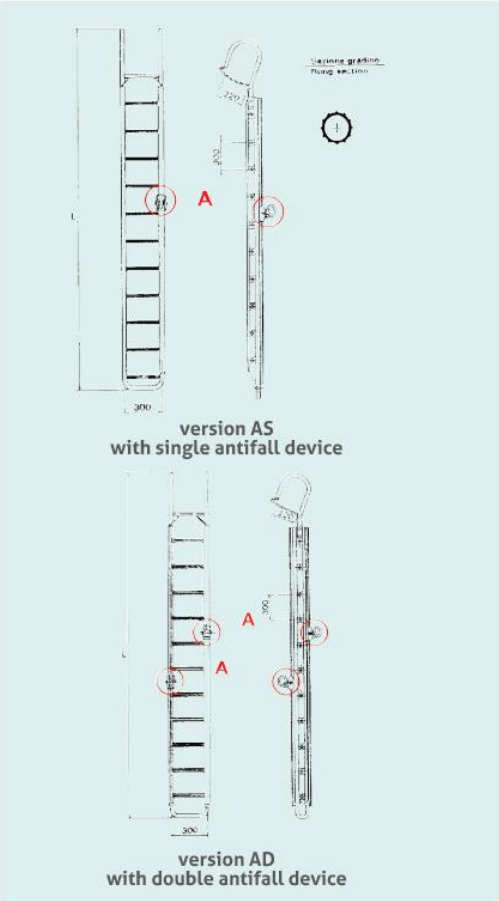


N		Length of each section L1	Working load P1	Total working load P1+P1 (P)	Breaking load	S			
	m	m	daN	daN	daN	A	B	C	kg
F127.4	4	4	300	600	1800	350	90	400	50
F127.5	5	5	300	600	1800	350	90	400	59
F127.6 (²)	6	6	300	600	1800	350	90	400	64
F127.6.2	6	3+3	300	600	1800	350	90	400	69
F127.8.2	8	4+4	300	600	1800	350	90	450	85
F127.12.2 (²)	12	6+6	300	600	1800	350	90	450	115
F127.14.3	14	5+4+5	300	600	1800	350	90	450	130
F127.16.3 (²)	16	5+6+5	300	600	1800	350	90	450	140
F127.18.3	18	6+6+6	300	600	1800	350	90	450	164
F127.20.4 (²)	20	5+5+5+5	300	600	1800	450	90	550	198

(¹) weight including 1 single antifall device opt.704.1; (²) standard length

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

C167



Ladder fit for vertical suspension, for working on transmission towers.
Aluminium alloy construction, TIG welded, in one lenght or more separated sections to facilitate the transport. Hook complete with steel safety cable.
C167.AS ladder with one guide for antifall device type DA1
C167.SD ladder with two guides for antifall devices type DA1

Working Capacity: 300 daN

OPTIONAL DEVICES

DA1	Antifall device complete with fall absorber, nylon tape and carabiner (part'A').
AGM	Wider hook opening (300 mm).


wider hook
type AGM

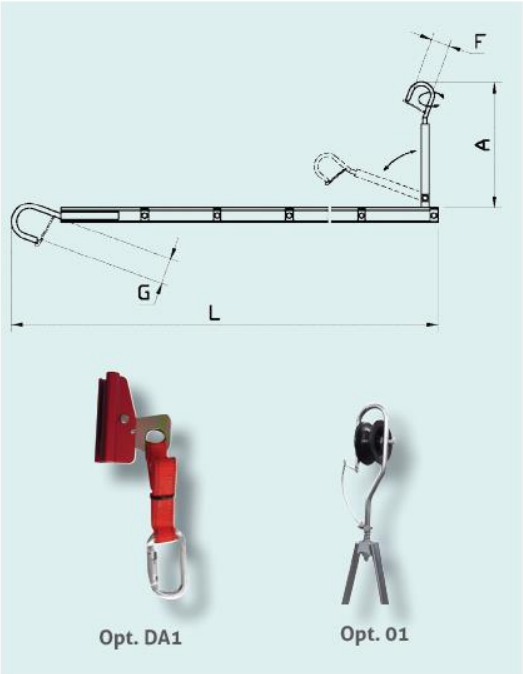

antifall device
type DA1

Version AS	Version AD	Total length (L)	Sections	Weight (ver. AS)	Weight (ver. AD)
		m	No.	kg	kg
C167.AS.251	C167.AD.251	2,5	1	9,5	11
C167.AS.351 (¹)	C167.AD.351 (¹)	3,5	1	12,5	15
C167.AS.451 (¹)	C167.AD.451 (¹)	4,5	1	15	18
C167.AS.501	C167.AD.501	5	1	18	21
C167.AS.601 (¹)	C167.AD.601 (¹)	6	1	19,5	23
C167.AS.602 (¹)	C167.AD.602 (¹)	6 (4+2)	2	21	24
C167.AS.802	C167.AD.802	8 (4+4)	2	30	35

(²) standard length

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

C167.F



Suspension ladder fit for vertical or horizontal use.
Aluminum alloy structure welded with TIG system, complete with T profile for anti-fall device. Interchangeable tower hook made of galvanized steel. The foldable end with conductor hook allows to use the ladder as a horizontal platform.
also available versione C167.G...S, working load 200 daN.

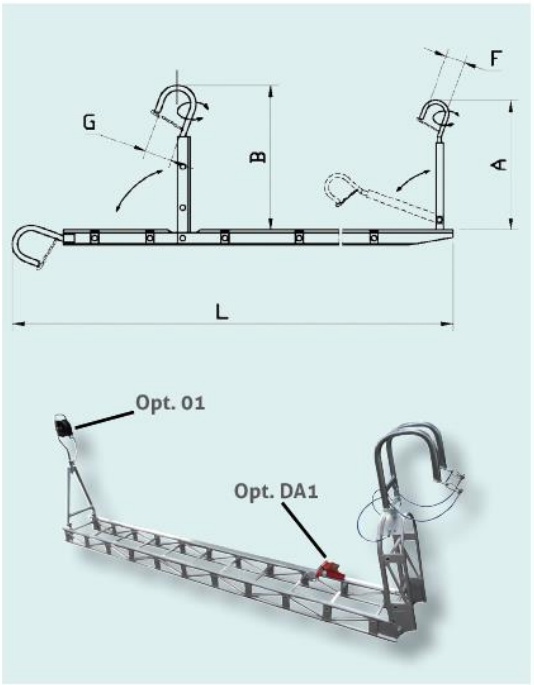
OPTIONAL DEVICES

01	Conductor hook complete with nylon sheave.
DA1	Antifall device.

FEATURES	
Vertical working load	300 daN
Horizontal working load	100 daN
Dimensions:	G=220 mm B=1000 mm F=100 mm A=900 mm

	Total length (L)	No. of parts	Weight
	m		kg
C167.F.301	3	1	16,5
C167.F.401	4	1	20
C167.F.601	6	1	29,5

C167.G



Suspension ladder fit for vertical and horizontal use.
Aluminum alloy structure welded with TIG system, complete with T profile for anti-fall device. The two foldable ends, fitted with hooks for tower and for conductor, allow to use the ladder as a horizontal platform.
also available versione C167.G...S, working load 200 daN.

OPTIONAL DEVICES

01	Conductor hook complete with nylon sheave.
DA1	Antifall device.

FEATURES	
Vertical working load	300 daN
Horizontal working load	100 daN
Dimensions:	G=220 mm B=1000 mm F=100 mm A=900 mm

	Total length (L)	No. of parts	Weight
	m		kg
C167.G.301	3,10	1	18,5
C167.G.401	4,10	1	22
C167.G.601	6,20	1	32

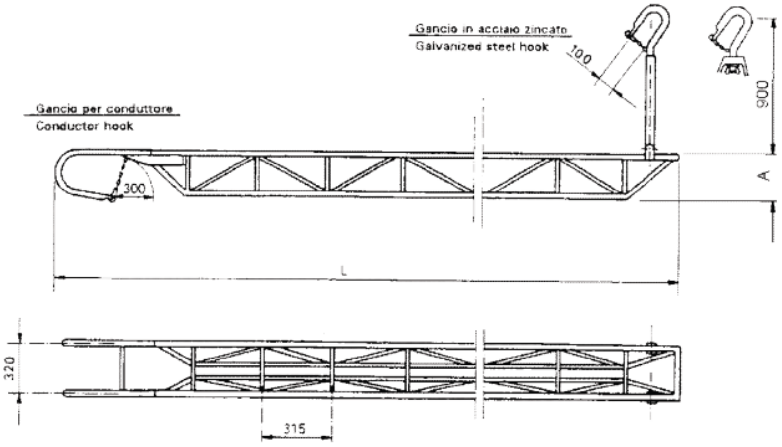
Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

C161

Anchoring ladder made of light aluminum alloy, with steps made of antislipping material and suspension hooks in hot-dip galvanized steel. The ladder is complete with a fix hook for tower, 220mm opening, and a swivel hook for leaning on the conductor, to use the ladder in horizontal position. The ladders have trapezoidal shape.

OPTIONAL DEVICES

GG2	Swivel and folding hook for tower, 220mm opening, replacing the fix hook. 01 Hook for conductor complete with nylon pulley.
AS	Guide for single antifall device DA1.
DA1	Antifall device.



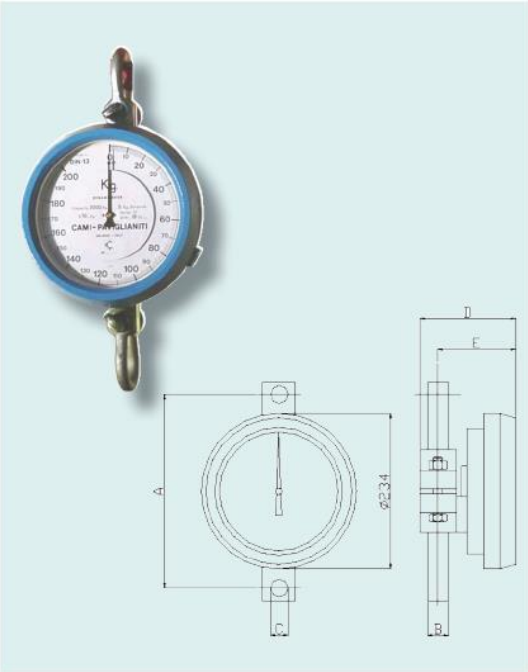
R		Length of each part	Dimension A	Min. breaking load	Max (²) horizontal working load	Max vertical working load	S
	m	No.	mm	kN	kN	kN	kg
C161.TP.351 (¹)	3,5	3,5	320	15	3	3	17
C161.TP.401	4,0	4,0	320	15	3	3	20
C161.TP.451(¹)	4,5	4,5	320	15	3	3	22
C161.TP.501	5	5	320	15	3	3	24,5
C161.TP.601 (¹)	6	6	350	15	3	3	27,5
C161.TP.652	6,5	4,5 + 2	350	15	3	3	31
C161.TP.702	7	4 + 3	350	15	3	3	35
C161.TP.802	8	4 + 4	350	15	3	3	40

(¹)Standard length (²) max horizontal working load with safety factor 1:5

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

10 CONTROL INSTRUMENTS

C40.4



Mechanical dynamometer type DIN13 with built-in dampener.
Dial diameter: 200 mm. Manual regulation of zero (tare).
Overload protection up to 180% over the full scale value.
Working temperature range: -30 to +60 °C.
Accuracy: ±1% of full scale value. Fittings for omega shackles.
Safety factor:5.

OPTIONAL DEVICES

IMAX	Index of max
GRO	Omega shackles
GAS	Hinged hook with connection for shackles

	Capacity	Sensitivity	Dimensions (mm)					Weight
	daN	daN	A	B	C	D	E	kg
C40.4.10	1000	2	268	25	20	155	134	9
C40.4.20	2000	5	268	25	20	155	134	9
C40.4.30	3000	10	268	25	20	155	134	9
C40.4.60	6000	20	282	35	26	179	158	13
C40.4.100	10000	20	298	50	36	179	158	13

C43.4

High precision digital electronic dynamometer.
Tare zeroing and weight restore. Locking/unlocking of the displayed weight.
Peak holding
function. Visualization of gross, net and tare weights. Selection of the measuring unit (kg, t, ton, Lbs, kN). Selection of the speed of reading. Auto power-off enabling function.
Calibration of zero and weight. Accuracy: ±0,15% of full scale value.
Working temperature range: -10 to +55 °C.
Max overload admitted: 200% of full scale value.
Protection factor: IP65. 5-digit 17 mm display.
Power supply: 9V with standard battery.
Autonomy: 200 hours circa.

OPTIONAL DEVICES

01	No. 1 pair of high-resistance eyebolts.
02	No. 2 sets of spare batteries.

	Capacity	Sensitivity	Dimensions	Weight
	daN	daN	mm	kg
C43.4.25	2500	1	218 x 90 x 56	1,35
C43.4.50	5000	2	230 x 90 x 56	1,85
C43.4.100	10000	5	315 x 110 x 59	3,60
C43.4.125	12500	5	315 x 110 x 59	3,60
C43.4.250	25000	10	350 x 126 x 70	5,50

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

F77

Device for measuring the length of ropes and cables. Measuring wheel made of steel. Idle wheels made of aluminum or nylon. Fit for ropes with diameter up to 50mm.

- Dimensions: A x B x C = 430 x 370 x 255 mm; D = 70 mm.
- Mass: 5,5 kg.

C120

Sagging scope for conductors, complete with fittings for tower legs.
Supplied with protective case.

- Dimensions: 400 x 300 x 180 mm
- Weight: 12 kg

OPTIONAL DEVICES

001	Device for anchorage on round poles up to 600 mm diameter.
002	Stadia for easier and more precise sagging operation. Equipped with level for horizontal alignment. Supplied with case.

F196.A

Thermometer for conductors, made up of a bulb shaped and dimensioned like a conductor. Column reading, scale in Celsius degrees (°C).

- Length 600 mm.
- Weight 0,5 to 1 kg.

Supplied with case.
NOTE: in order, please specify the diameter of the conductor.

F196.C

Thermometer for conductors. The dial diameter 80 mm, with incorporated sensor, can be fixed easily on the conductor by means of its elastic clamp.
Double scale (°C and °F).
Supplied with case.

Dimensions and weights are without optional devices. All data may change without notice. Images and drawings are indicative only.

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Certified ISO 9001 since 2003

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