

Electric cables.



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CRANES
APPENDIX

Electric cables for mobile connections.

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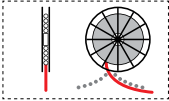
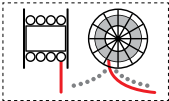
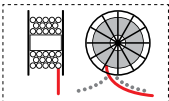
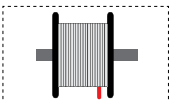
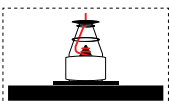
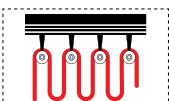
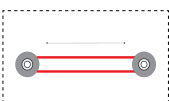
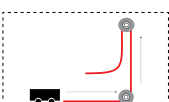
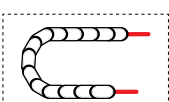
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Index.

URSUS® BASKET 300/500V	06
URSUS® FESTOON 0,6/1kV	10
URSUS® MT FO PLUS 3,6/6 ÷ 12/20 kV	14

		URSUS®	URSUS® VS	URSUS® VS SL	URSUS® PUR HF	URSUS® BASKET	URSUS® FESTOON	URSUS® MT PLUS	URSUS® MT FO PLUS
Monospiral drum									
Multispiral drum									
Cylindric drum									
Vertical drum									
Spreader basket									
Festoon									
Cable tender systems									
Guide pulley systems									
Carrier chains									

URSUS® BASKET 300/500 V

Based on DIN VDE 0250 Part 405

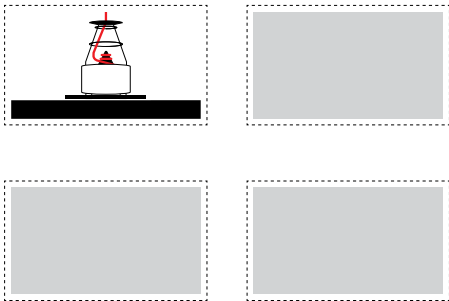


Cable construction

①	Central support element	Lead balls ropes stranded around KEVLAR® supports and EPR sheathed
②	Phase Conductors	Conductor material Bare flexible copper
		Conductor construction Class 5 VDE 0295 (IEC 60228)
③	Insulation	Insulation material Special thermoplastic compound
④	Core assembly	6 cores bundles, with central lead ball rope, stranded around the central support with interstitial lead ball ropes
⑤	Sheath	Material Halogen free polyurethane
		Colour Black



Main applications - Basket



Applications Control cable specifically designed for gravity-feed collector baskets of latest generation high-speed container cranes. In order to avoid cable damages, the cable must be installed into the basket in counter-clockwise direction, free of torsion. The basket diameter has to be bigger than 30xD (D= cable diameter) and the cable has to be hooked on the top with a proper system (cable mesh grip or 2,5 cable loops on anchoring drum).

Electrical working data

Nominal rated voltage U_0 / U	V 300/500
Test voltage	kV 2
Max AC voltage	V 318/550
Max DC voltage	V 825
Current rating	A According to VDE 0298 part 4

Thermal working data

Maximum short circuit temperature	°C 150
Maximum working temp. on the conductor	°C 70
Ambient temperature: mobile condition	°C - 20 to + 60

Mechanical working data

Bending radius	mm According to VDE 0298 part 3
Max working speed on systems to basket	m/min 160

Chemical working data

Resistance to oil	According to IEC 60811-2-1
Ozone resistance	According to IEC 60811-2-1
Weather resistance	For indoor and outdoor application
Burning behaviour	According to IEC 60332-1

URSUS® BASKET 300/500 V



Voltage	Cores x cross section	Conductor Ø	Min overall Ø	Max overall Ø	Approx weight	Central support element. Max tensile load
V	Nr x mm ²	mm	mm	mm	kg/km	N
300/500	48x1	1,3	32,5	33,6	1980	13000
300/500	30x2,5	2	32,2	33,3	2000	13000
300/500	36x2,5	2	36,0	37,1	2350	13000
300/500	42x2,5	2	39,4	41,1	2830	13000
300/500	48x2,5	2	42,6	44,3	3470	13000

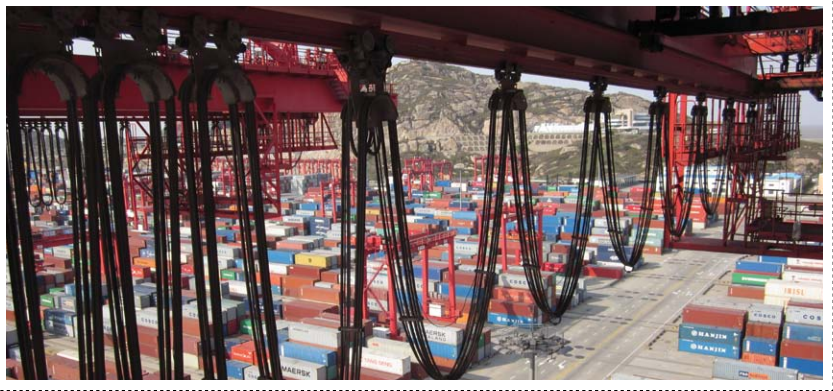
URSUS® FESTOON 0,6/1kV

Based on DIN VDE 0250 Part 814

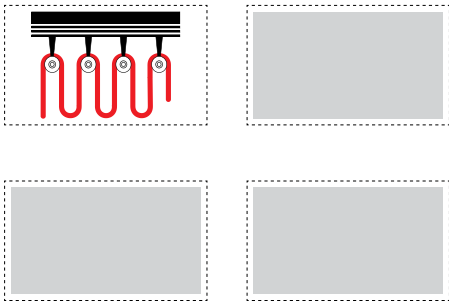


Cable construction

①	Phase Conductors	Conductor material	Bare flexible copper
		Conductor construction	Class 5 VDE 0295 (IEC 60228)
②	Insulation	Insulation material	3GI3 quality rubber compound, according to VDE 0270 Part 20
	Shield (where applicable)		Braid screen of tinned copper wires, approx coverage 80%
③	Inner sheath	Material	Rubber compound EPR based, GM1b quality according to VDE 0270 Part 21
④	Outer sheath	Material	Special rubber compound at least 5GM3 quality, according to VDE 0270 Part 21
		Colour	Black



Main applications - Festoon



Applications Power and control cable for festooning systems and connecting moveable parts of container cranes, industrial machines, material handling equipment, etc. , under high mechanical stress and frequent bending.

Electrical working data

Nominal rated voltage U_0 / U	kV	0,6/1
Test voltage	kV	4
Max AC voltage	V	0,7/1,2
Max DC voltage	V	1,8
Current rating	A	According to VDE 0298 Part 4

Thermal working data

Maximum short circuit temperature	°C	250
Maximum working temp. on the conductor	°C	90
Ambient temperature	°C	- 25 to + 80

Mechanical working data

Bending radius	mm	According to VDE 0298 Part 3
Maximum torsional stress	°/m	± 90
Maximum tensile load*	N/mm ²	15
Max working speed	m/min	240

* Referred to the total phase conductors cross section

Chemical working data

Resistance to oil	According to IEC 60811-2-1	
Ozone resistance	According to IEC 60811-2-1	
Weather resistance	For indoor and outdoor application	

URSUS® FESTOON 0,6/1kV

Power cables

Voltage	Cores x cross section	Conductor Ø	Min overall Ø	Max overall Ø	Approx weight	Max tensile load
kV	Nr x mm ²	mm	mm	mm	kg/km	N
0,6/1	1x25	6,1	12,0	12,7	350	375
0,6/1	1x35	7,2	13,9	14,6	480	525
0,6/1	1x50	8,9	16,0	16,7	650	750
0,6/1	1x70	10,6	17,7	18,4	870	1050
0,6/1	1x95	12,5	20,3	21,3	1140	1425
0,6/1	1x120	14,2	22,0	23,0	1390	1800
0,6/1	1x150	15,9	24,1	25,1	1750	2250
0,6/1	1x185	17,7	26,9	27,9	2150	2775
0,6/1	3x35 + 3x16/3	7,2	26,6	27,6	1700	1575
0,6/1	3x50 + 3x25/3	8,9	31,9	33,0	2480	2250
0,6/1	3x70 + 3x35/3	10,6	35,8	36,9	3360	3150
0,6/1	4x4	2,4	14,1	14,8	360	240
0,6/1	4x6	2,9	15,5	16,2	460	360
0,6/1	4x10	3,8	18,9	19,6	720	600
0,6/1	4x16	4,9	21,8	22,5	1020	960
0,6/1	4x25	6,1	26,7	27,7	1550	1500
0,6/1	4x35	7,2	29,2	30,3	1990	2100
0,6/1	4x50	8,9	35,7	36,8	2920	3000
0,6/1	5x4	2,4	15,3	16,0	440	300
0,6/1	5x6	2,9	17,3	18,0	600	450
0,6/1	5x10	3,8	20,6	21,6	910	750
0,6/1	5x16	4,9	23,8	24,8	1300	1200

Control cables

Voltage	Cores x cross section	Conductor Ø	Min overall Ø	Max overall Ø	Approx weight	Max tensile load
kV	Nr x mm ²	mm	mm	mm	kg/km	N
0,6/1	12x1,5	1,5	19,8	20,8	610	270
0,6/1	18x1,5	1,5	19,9	20,9	650	405
0,6/1	24x1,5	1,5	23,3	24,3	880	540
0,6/1	30x1,5	1,5	26,6	27,6	1160	675
0,6/1	36x1,5	1,5	27,6	28,6	1280	810
0,6/1	12x2,5	1,9	23,3	24,3	860	450
0,6/1	18x2,5	1,9	23,4	24,4	940	675
0,6/1	24x2,5	1,9	28,2	29,2	1330	900
0,6/1	30x2,5	1,9	32,4	33,5	1760	1125
0,6/1	36x2,5	1,9	33,4	34,5	1910	1350

Screened cables

Voltage	Cores x cross section	Conductor Ø	Min overall Ø	Max overall Ø	Approx weight	Max tensile load
kV	Nr x mm ²	mm	mm	mm	kg/km	N
0,6/1	3x(2x0,5)C	0,8	21,1	22,2	590	90
0,6/1	3x(2x1)C	1,2	25,6	26,7	880	90

URSUS® MT FO PLUS 3,6/6 ÷ 12/20 kV

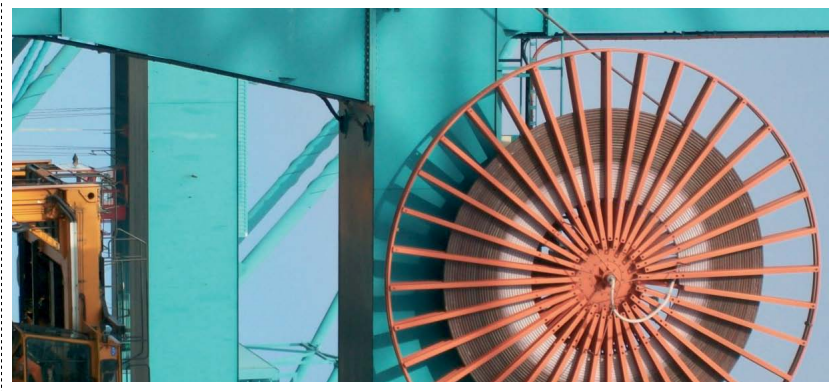
Based on DIN VDE 0250 Part 813



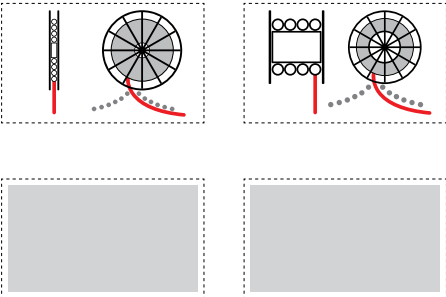
Cable construction

① Phase Conductors	Conductor material	Tinned copper
	Conductor construction	Class 5 VDE 0295 (IEC 60228)*
	Insulation material	3GI3 quality rubber compound, according to VDE 0207 Part 20
② Earth Conductors	Semiconductive layers	Semiconductive tape over the conductor and inner and outer semiconductive rubber layer on the insulation
	Conductor material	Tinned copper
	Conductor construction	Class 5 VDE 0295 (IEC 60228)*
③ Fibre optics	Covering material	Semiconductive layer
	Fibre	Transmission data kind 50/125 multimode, 62.5/125 multimode, 9/125 singlemode
	Nominal num. aperture	250 µm
Central Cradle	Fibres arrangement covering	Special rubber compound over the twisted cores
	Material	Semiconductive compound
	Assembly	Twisted cores with earth conductor split into 2 parts + FO
Cores Assembly	Separator on the twisted assembly	Semiconductive tape wound on the twisted cores
④ Inner Sheath	Material	Gm1b / 5GM5 quality rubber compound, according to VDE 0207 Part 21
	Thickness	According to VDE 0250 Part 813 (table 2)
⑤ Antitwisting element	Material	Polyester braid between inner and outer sheath
⑥ Outer Sheath	Material	5GM5 quality rubber compound, according to VDE 0207 Part 21
	Thickness	According to VDE 0250 Part 813 (table 2)

* Special construction for higher flexibility



Main applications - Reeling



Applications Flexible reeling cable with integrated fibre optics wires for high and extreme mechanical stresses, e.g. torsional stress, deflection into different planes and high reeling speed. Also usable for underground and opencast mining.

Electrical working data

Nominal rated voltage U_0 / U	kV	3,6/6	6/10	8,7/15	12/20
Test voltage	kV	11	17	24	29
Max AC voltage	kV	4,2/7,2	6,9/12	10,4/18	13,9/24
Electrical field control	Inner and outer semiconductive layers extruded in a single-pass with the insulation				
Current rating	A	According to VDE 0298 Part 4			

Thermal working data

Maximum short circuit temperature	°C	250
Maximum working temp. on the conductor	°C	90
Ambient temperature: mobile condition	°C	- 25 to + 80
Ambient temperature: static condition	°C	- 40 to + 80

Mechanical working data

Bending radius	mm	According to VDE 0298 Part 3
Maximum torsional stress	°/m	± 25
Maximum tensile load*	N/mm²	20
Max working speed	m/min	240
Special test	Reeling test	

* Referred to the total phase conductors cross section.
Upon request it's available the KN version with improved mechanical characteristics designed for ASC^s and ARMG^s

Chemical working data

Resistance to oil	According to IEC 60811-2-1
Ozone resistance	According to IEC 60811-2-1
Weather resistance	For indoor and outdoor application

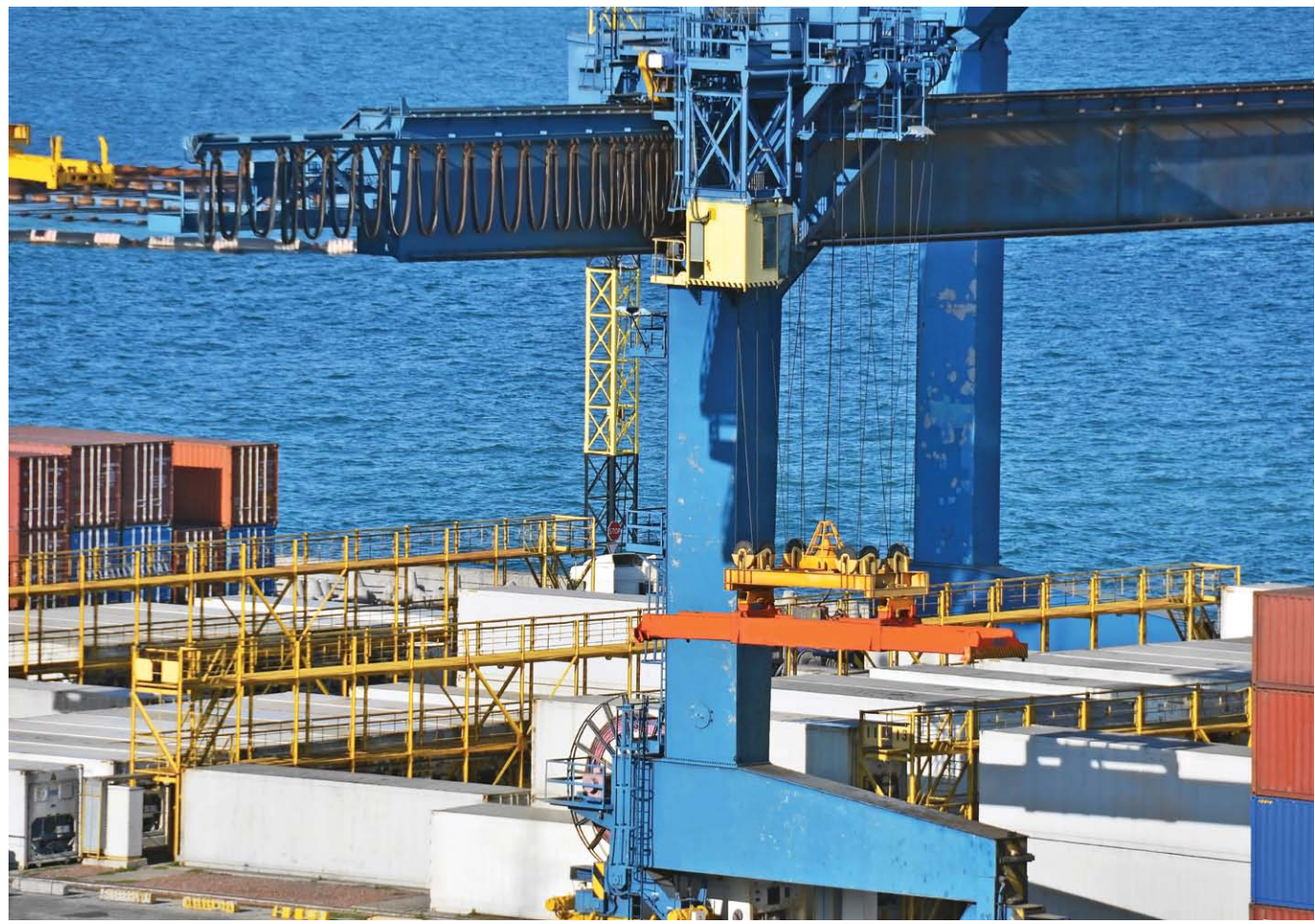
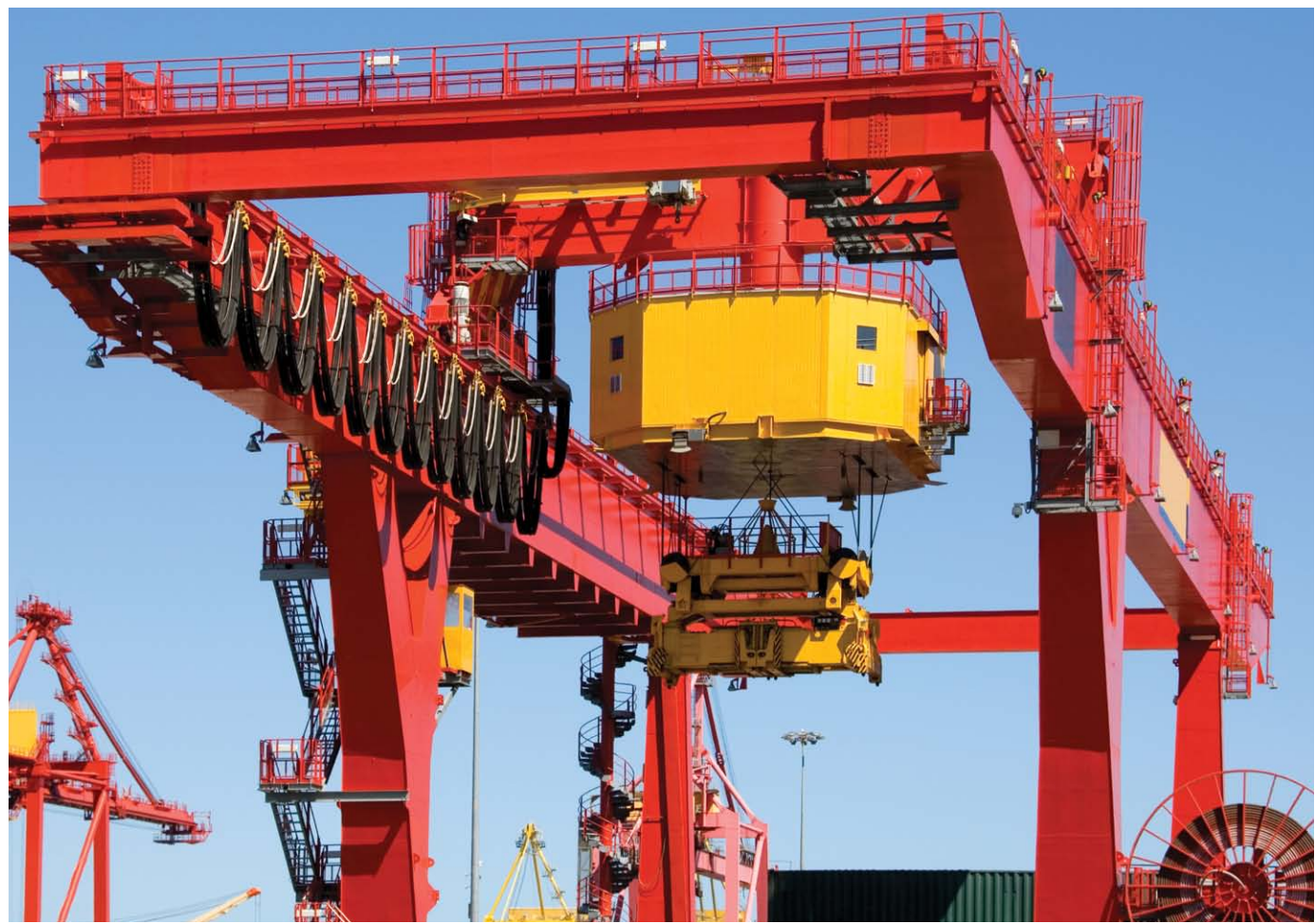
Optical working data

Graded index multimode fibre						Step index singlemode fibre			
Fibre	Attenuation at 850 nm (dB/km)	Attenuation at 1300 nm (dB/km)	Bandwidth at 850 nm (MHz*km)	Bandwidth at 1300 nm (MHz*km)	Numerical aperture	Attenuation at 1310 nm (dB/km)	Attenuation at 1550 nm (dB/km)	Chromatic disp. at 1285 - 1300 nm (ps/nm km)	Chromatic dispersion at 1550 nm (ps/nm km)
50/125	≤ 2,5	≤ 0,7	≥ 200	≥ 500	0,200±0,015				
62,5/125	≤ 3,0	≤ 0,7	≥ 200	≥ 500	0,275±0,015				
9/125						≤ 0,35	≤ 0,24	≤ 3	≤ 18

URSUS® MT FO PLUS 3,6/6 ÷ 12/20 kV

Voltage	Cores x cross section	Conductor Ø	Min overall Ø	Max overall Ø	Approx weight	Max tensile load
kV	Nr x mm²	mm	mm	mm	kg/km	N
3,6/6	3x25 + 2x25/2 + FO	6,8	42,9	44,6	2923	1500
3,6/6	3x35 + 2x25/2 + FO	7,8	46,2	47,9	3482	2100
3,6/6	3x50 + 2x25/2 + FO	9,4	49,4	51,2	4168	3000
3,6/6	3x70 + 2x35/2 + FO	11,2	53,2	55,3	5185	4200
3,6/6	3x95 + 2x50/2 + FO	12,7	59,3	61,4	6455	5700
3,6/6	3x120 + 2x70/2 + FO	14,4	63,1	65,5	7733	7200
3,6/6	3x150 + 2x70/2 + FO	16,3	69,6	72,1	9334	9000
6/10	3x25 + 2x25/2 + FO	6,8	42,9	44,6	2923	1500
6/10	3x35 + 2x25/2 + FO	7,8	46,2	47,9	3482	2100
6/10	3x50 + 2x25/2 + FO	9,4	49,4	51,2	4168	3000
6/10	3x70 + 2x35/2 + FO	11,2	53,2	55,3	5185	4200
6/10	3x95 + 2x50/2 + FO	12,7	59,3	61,4	6455	5700
6/10	3x120 + 2x70/2 + FO	14,4	63,1	65,5	7733	7200
6/10	3x150 + 2x70/2 + FO	16,3	69,6	72,1	9334	9000

Voltage	Cores x cross section	Conductor Ø	Min overall Ø	Max overall Ø	Approx weight	Max tensile load
kV	Nr x mm²	mm	mm	mm	kg/km	N
8,7/15	3x25 + 2x25/2 + FO	6,8	47,7	49,4	3443	1500
8,7/15	3x35 + 2x25/2 + FO	7,8	49,6	51,7	3892	2100
8,7/15	3x50 + 2x25/2 + FO	9,4	52,8	54,9	4575	3000
8,7/15	3x70 + 2x35/2 + FO	11,2	58,5	60,6	5863	4200
8,7/15	3x95 + 2x50/2 + FO	12,7	61,8	64,2	6819	5700
8,7/15	3x120 + 2x70/2 + FO	14,4	67,5	69,9	8379	7200
12/20	3x25 + 2x25/2 + FO	6,8	50,2	52,3	3722	1500
12/20	3x35 + 2x25/2 + FO	7,8	52,3	54,4	4182	2100
12/20	3x50 + 2x25/2 + FO	9,4	57,2	59,3	5109	3000
12/20	3x70 + 2x35/2 + FO	11,2	61,0	63,4	6216	4200
12/20	3x95 + 2x50/2 + FO	12,7	64,4	66,8	7181	5700
12/20	3x120 + 2x70/2 + FO	14,4	70,1	72,6	8813	7200



CSQ: this certified that Aristoncavi S.p.A. implements an Integrated Management System in conformity with the standard ISO 9001:2008 and ISO 14001:2004 to ensure the requested quality in design, development, manufacture of the product, taking care of the environment protection.



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Aristoncavi S.p.A.

36040 brendola, vicenza, italy, via einaudi 8, t. +39 0444 749 900, f. +39 0444 749 800, www.aristoncavi.com, info@aristoncavi.com