



Quality Through Experience

NAVY CABLES



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Navy Cables for Military Vessels

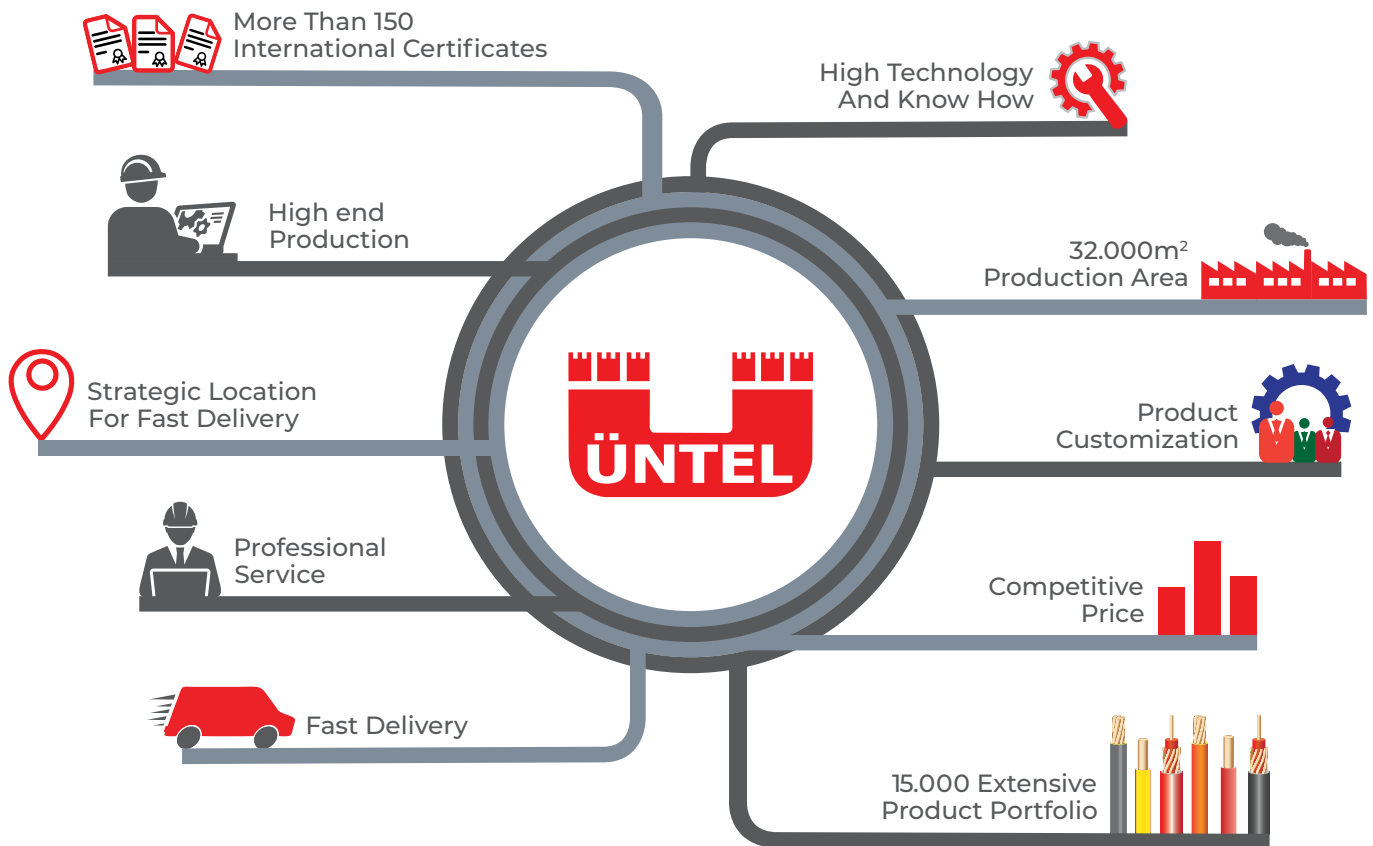


Quality Through Experience

ALMOST 50 YEARS IN PRODUCTION

ALMOST 50 YEARS IN PRODUCTION

Exporting Over 70 Countries on 6 Continents



Industrial
Cables



Marine
Cables



Mining
Cables



Offshore
Cables



Railway
Cables



Airport Runway
Cables



Defense
Cables



Crane
Cables



ABOUT US

ÜNTEL KABLO, one of leading cable manufacturers in the world was established in 1972, Turkey. With almost 50 years of experience, continuously develops and optimize her product range with the help of advanced technology and well trained staff.

Product range consists over 15.000 different types of cables, covers both rubber and thermoplastic cables up to Medium Voltage (MV) range. ÜNTEL's power and instrumentation cables supplies energy for industries which requires experience like marine, offshore, mines and tunnels, airports, railways and have been used in industrial ways such as heavy-duty rubber drum reeling cables, welding cables, control cables and fire resistant cables. ÜNTEL is also able to produce tailor made products for special purposes. Today these products are exported over 70 countries on six continents.

By the end of 2009, ÜNTEL finalized the investment of a new high-tech plant near Istanbul. Now continues her operations on 43.000 m2 land space with 32.000 m2 closed area. By having 3.000 tons copper drawing and 4.000 tons different type of

compound processing capacity, ÜNTEL produces 30.000 tones of cable per year. By means of new factory building, state of the art machines and unique ERP system investments ÜNTEL aimed absolute customer satisfaction.

Üntel's laboratories which are approved by organisations that specify the standards are equipped with advanced technology test and measurement devices. Within the scope of Quality System Certificates there is a quality management system presents in Üntel according to ISO, IQnet and TSE quality standards.. Around 200 different types of cables are certified by global organisations like VDE, KEMA, ABS, UL, BV, DNV-GL, RINA and TSE.

Üntel Kablo evaluate customer needs and expectations in a sectoral wiew and provide effective solutions with hundred percent customer satisfaction and qualified production philisopy. Üntel's biggest value is well trained and experienced staff and believe that exceptional quality comes through this experience.

Üntel Kablo offers also variety of Type Approved
Marine and Offshore cables



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NAVY CABLES

Longest journeys start with “trust”.

Üntel Kablo is one of the leading manufacturer of shipbuilding cables for navy vessels in Europe and has been producing with approved quality for a half century

In this catalogue Üntel Kablo presents its series of energy, control, signal and instrumentation cables with VG 95218 approvals for fixed installation on navy vessels like defence or war ships. These cables are ideally suited for permanent installation on ships and boats, especially on decks

Üntel provides full range of VG 95218 Part 60-66 cables from a single source, with design principles that are developed throughout years of experience.

Navy vessels today are larger, more sophisticated and needs special equipment and complex cable systems. Most of the navies are anxious to broaden their naval capabilities including carriers, frigates, corvettes, patrol boats, mine ships, landing crafts submarines and surface combatants.

We committed to philosophy of being a true partner with reputable references like NB#182 -Turkish Naval Forces Command - TCG Anadolu - Multipurpose Amphibious Assault Ship - 230 meters long, beam 32 m, height 58 m - The Largest Military Vessel Constructed In Turkey (LHD).

Üntel Navy Cables have been approved by its customers for an easy installation, enhanced flexibility, easy pulling, easy strippable and reduced size and weight.

Üntel Kablo produces Marine Cables for Navy Vessels accordance with VG 95218 standard series from Part 60 to Part 66 features and

complies the general requirements of BV 3400 (Specification for Cable Systems of German Navy Vessels

Our cables are produced with best quality compounds together with our decades of production experience to create solutions and added value for shipbuilders, owners and shipyards.

Üntel's marine cables for navy vessels meet the high requirements of safety on board and have been developed with improved characteristics to reduce the amount of toxic and corrosive gas emitted during combustion and hence do not cause secondary damage to the control, communication and power systems nor is it a threat to human life.

Our Marine Cables for Navy vessels have been tested by VDE and approved by the German Navy - Bundesamt für Ausrüstung, Informationstechnik und Nutzung der Bundeswehr (BAAINBw).

While continuously investing on Research & Development and being in the market with almost 50 years of experience, producing wide variety of cables with high-tech production machines and with well trained staff enables Üntel to satisfy customer's special requests and needs by supplying the best quality products.

Please go through our product pages for further technical information, if your requirement is for more specialised or for technical support or assistance, our technical team is at your disposal



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VG 95218 Part 60 (MGSGO/MGGO)

HALOGEN FREE, FLAME RETARDANT POWER CABLE



CABLE STRUCTURE

Conductor	Electrolytic, stranded, copper wire to DIN EN 60228 Class 2 or Class 5
Insulation	Halogen free cross linked polymeric compound
Core Identification	According to VG 95218 part 60
Common Covering	Halogen free compound. (only for MGSGO types B and D)
Separator	Polyester foil over the single core or over common covering over laid-up multi cores
Screen	Copper wire braiding screen with separating foil over braid (only for MGSGO types A, B and D)
Outer Sheath	Halogen free, cross-linked elastomeric compound.

STANDARDS & MAIN CHARACTERISTICS

Construction	VG 95218 Part 60
Max Permissible Operating Voltage	AC 1200V / DC 1800V for type A, B, C AC 660V / DC 1000V for the type D
AC Test Voltage	3,5 kV for type A, B, C 3 kV for type D
Working Temperature	-30°C / + 90°C
Min Bending Radius (Fixed)	4xD for types with flexible conductor 5xD for all other types
General Requirements and Tests	VG 95218-2
Current Ratings	VG 95218-5
Flame Retardant	IEC 60332 /1, IEC 60332 / 3-24 Cat. C
Halogen Content	IEC 60754 / 1 - 2
Smoke Density	IEC 61034 / 1-2 (DIN EN 50268/1-2)

Lowest installation temperature: -15°C

Application

Used as fixed installation cable in power, control and lighting electrical systems in most areas, below and above deck on Navy vessels.

Comply the general requirements of BV 3400 (Specification for Cable Systems of German Navy Vessels). These cables are not suitable for permanent installation in and under water.

VG 95218 Part 60 (MGSGO/MGGO)

Designation as per VG95218 Part.60 Dash No	Cores x size	Number of the single wires (min)	Wall thickness of insulation nominal	Wall thickness of sheath	Outer Diameter (min- max.)		Cable Weight Approx.	Min. Bending Radius Fixed Installed	Conductor resistance at (20°C) (max)	Insulation resistance (20°C) (min)
	No. x mm ²		mm	mm	mm	mm	kg/km	mm	(Ω/km)	(MΩ·km)
A001	1 x 4	7	1,0	1,0	7,5	8,5	140	43	4,7	850
A002	1 x 6	7	1,0	1,0	8,4	9,4	155	47	3,11	750
A003	1 x 10	7	1,0	1,1	9,5	10,5	200	53	1,84	600
A004	1 x 16	7	1,0	1,1	10,0	11,2	290	56	1,16	500
A005	1 x 25	7	1,2	1,2	12,0	13,0	395	65	0,734	450
A006	1 x 35	7	1,2	1,2	13,0	14,0	540	70	0,529	400
A007	1 x 50	19	1,4	1,3	15,0	16,2	680	81	0,391	400
A008	1 x 70	19	1,4	1,3	17,0	18,2	910	91	0,270	350
A009	1 x 95	19	1,6	1,4	19,5	20,5	1210	103	0,195	350
A016	1 x 95	660	1,6	1,4	19,6	21,0	1200	84	0,210	350
A010	1 x 120	37	1,6	1,5	21,0	22,4	1500	112	0,154	300
A017	1 x 120	845	1,6	1,5	21,8	23,0	1485	92	0,164	300
A011	1 x 150	37	1,8	1,5	23,0	24,5	1785	123	0,126	300
A018	1 x 150	1060	1,8	1,5	24,0	25,2	1825	101	0,132	300
A012	1 x 185	37	2,0	1,6	25,5	27,0	2200	135	0,100	300
A015	1 x 185	1290	2,0	1,6	26,2	27,4	2170	110	0,108	300
A013	1 x 240	61	2,2	1,7	29,0	30,5	2850	153	0,0762	300
A019	1 x 240	1735	2,2	1,7	29,5	31,0	2780	124	0,0817	300
A014	1 x 300	61	2,4	1,8	31,5	33,0	3250	165	0,0607	300
A020	1 x 300	2100	2,4	1,8	32,5	34,0	3350	136	0,0654	300
B034	2 x 1,5	7	1,0	1,2	11,5	12,7	255	64	12,2	1200
B035	2 x 2,5	7	1,0	1,2	12,5	13,5	305	68	7,56	1000
B036	2 x 4	7	1,0	1,2	13,4	14,7	355	74	4,7	850
B037	2 x 6	7	1,0	1,3	14,7	16,0	440	80	3,11	750
B038	2 x 10	7	1,0	1,3	16,2	17,9	565	90	1,84	600
B039	2 x 16	7	1,0	1,4	19,0	20,5	775	103	1,16	500
B040	2 x 25	7	1,2	1,5	22,5	24,0	1075	120	0,734	450
B041	3 x 1,5	7	1,0	1,2	12,0	13,2	290	66	12,2	1200
B042	3 x 2,5	7	1,0	1,2	13,0	14,2	350	71	7,56	1000
B043	3 x 4	7	1,0	1,2	14,0	15,2	415	76	4,7	850
B044	3 x 6	7	1,0	1,3	15,5	17,0	530	85	3,11	750
B045	3 x 10	7	1,0	1,4	17,6	19,1	700	96	1,84	600
B046	3 x 16	7	1,0	1,4	20,0	21,6	980	108	1,16	500
B065	3 x 16	115	1,0	1,4	20,0	21,6	965	87	1,24	500
B047	3 x 25	7	1,2	1,6	24,0	25,6	1455	128	0,734	450
B066	3 x 25	175	1,2	1,6	24,0	25,6	1400	103	0,795	450
B048	3 x 35	7	1,2	1,7	26,0	28,2	1850	141	0,529	400
B067	3 x 35	250	1,2	1,7	26,2	28,4	1810	114	0,565	400
B049	3 x 50	19	1,4	1,8	30,0	32,4	2270	162	0,391	400
B068	3 x 50	360	1,4	1,8	31,0	33,2	2470	133	0,393	400
B050	3 x 70	19	1,4	1,9	34,5	36,9	3260	185	0,270	350
B063	3 x 70	490	1,4	1,9	36,0	38,2	3100	153	0,277	350
B051	3 x 95	19	1,6	2,1	39,7	42,2	4200	211	0,195	350
B062	3 x 95	660	1,6	2,1	41,6	43,8	4150	176	0,210	350

VC 95218 Part 60 (MGSGO/MGGO)

Designation as per VC95218 Part.60 Dash No	Cores x size	Number of the single wires (min)	Wall thickness of insulation nominal	Wall thickness of sheath	Outer Diameter (min- max.)		Cable Weight Approx.	Min. Bending Radius Fixed Installed	Conductor resistance at (20°C) (max)	Insulation resistance (20°C) (min)
	No. x mm ²		mm	mm	mm	mm	kg/km	mm	(Ω/km)	(MΩ.km)
B052	3 x 120	37	1,6	2,1	43,0	45,7	5350	229	0,154	300
B069	3 x 120	845	1,6	2,1	44,5	46,5	5340	186	0,164	300
B053	4 x 4	7	1,0	1,3	15,2	16,7	515	84	4,7	850
B054	4 x 6	7	1,0	1,3	17,0	18,5	625	93	3,11	750
B055	4 x 10	7	1,0	1,4	19,4	20,9	880	105	1,84	600
B056	4 x 16	7	1,0	1,5	22,0	23,7	1235	119	1,16	500
B070	4 x 16	115	1,0	1,5	22,0	23,7	1165	95	1,24	500
B057	4 x 25	7	1,2	1,7	26,4	28,0	1800	140	0,734	450
B071	4 x 25	175	1,2	1,7	26,4	28,2	1715	113	0,795	450
B058	4 x 35	7	1,2	1,8	29,2	31,2	2315	156	0,529	400
B064	4 x 35	1030	1,2	1,8	31,0	33,0	2400	132	0,565	400
B059	4 x 50	19	1,4	1,9	33,5	36,0	3130	180	0,391	400
B072	4 x 50	360	1,4	1,9	34,3	37,0	3155	148	0,393	400
B060	4 x 70	19	1,4	2,1	38,2	40,9	4335	205	0,270	350
B073	4 x 70	490	1,4	2,1	40,0	42,5	4385	170	0,277	350
B061	4 x 95	19	1,6	2,3	44,2	46,7	5500	234	0,195	350
B074	4 x 95	660	1,6	2,3	45,5	48,2	5685	193	0,210	350
B100	5 G 2,5	7	1,0	1,3	16,0	17,5	460	88	7,56	1000
B101	5 G 4	7	1,0	1,4	17,5	19,0	605	95	4,70	850
B102 ^a	7 G 2,5	7	1,0	1,4	17,5	19,0	585	95	7,56	1000
B103	7 G 2,5	7	1,0	1,4	17,5	19,0	585	95	7,56	1000
B30 ^a	33 X 0,75	7	0,8	1,4	22,5	24,5	980	123	24,8	1200
B104	33 x 0,75	7	0,8	1,4	22,5	24,5	980	123	24,8	1200
C005	1 x 25	7	1,2	1,2	10,7	12,4	355	62	0,734	450
C006	1 x 35	7	1,2	1,2	12,0	13,7	475	69	0,529	400
C007	1 x 50	19	1,2	1,2	13,2	14,9	600	75	0,391	400
C008	1 x 70	19	1,4	1,3	15,7	17,4	790	87	0,270	350
C009	1 x 95	19	1,6	1,4	18,2	19,9	1085	100	0,195	350
C011	1 x 95	660	1,6	1,4	18,3	20,0	1095	80	0,206	350
C010	1 x 120	37	1,6	1,4	19,8	21,5	1200	108	0,154	300
C012	1 x 120	845	1,6	1,5	20,1	21,8	1240	88	0,161	300
C001	1 x 150	37	1,8	1,5	21,5	24,0	1625	120	0,126	300
C013	1 x 150	1060	1,8	1,5	21,6	23,0	1640	92	0,129	300
C002	1 x 185	1290	2,0	1,6	24,8	26,3	1950	106	0,106	300
C003	1 x 240	1735	2,2	1,7	27,3	28,9	2510	116	0,080	300
C004	1 x 300	2100	2,4	1,8	30,0	31,5	3025	126	0,064	300
D001 ^a	19 X 6	73	0,7	1,8	29,4	30,8	1860	124	3,39	750
D002	19 x 6	73	0,7	1,8	29,4	30,8	1860	124	3,39	750

a: Not for new design



VG 95218 Part 61 (LMGSGO)

HALOGEN FREE, FLAME RETARDANT LIGHT POWER CABLE



CABLE STRUCTURE

Conductor	Electrolytic, stranded, copper wire to DIN EN 60228 Class 2
Insulation	Halogen free cross linked polymeric compound
Core Identification	According to VG 95218 part 61
Covering of Cores	At up to 4 cores wrapped foil or extruded compound More than 4 cores wrapped polyester foil
Screen	Copper wire braiding screen with separating foil over and under braid
Outer Sheath	Halogen free, cross-linked elastomeric compound.

STANDARDS & MAIN CHARACTERISTICS

Construction	VG 95218 Part 61
Max Permissible Operating Voltage	AC 550V / DC 825V
AC Test Voltage	2,5 kV
Working Temperature	-30°C / + 90°C
Min Bending Radius (Fixed)	5xD for all types
General Requirements and Tests	VG 95218-2
Current Ratings	VG 95218-5
Flame Retardant	IEC 60332 /1, IEC 60332 / 3-24 Cat. C
Halogen Content	IEC 60754 / 1 - 2
Smoke Density	IEC 61034 / 1-2 (DIN EN 50268/1-2)

Lowest installation temperature: -15°C

Application

Used as fixed installation cable in light power, control, distribution and lighting electrical systems in most areas, below and above deck on Navy vessels.

Comply the general requirements of BV 3400 (Specification for Cable Systems of German Navy Vessels). These cables are not suitable for permanent installation in and under water.

VG 95218 Part 61 (LMGSCO)

Designation as per VG95218 Part.61 Dash No	Cores x size	Number of the single wires (min)	Wall thickness of insulation nominal	Wall thickness of sheath	Outer Diameter (min- max.)		Cable Weight Approx.	Min. Bending Radius Fixed Installed	Conductor resistance at (20°C) (max)	Insulation resistance (20°C) (min)
	No. x mm ²		mm	mm	mm	mm	kg/km	mm	(Ω/km)	(MΩ.km)
A019	2 x 1,5	7	0,4	0,8	7,0	8,0	102	40	12,2	600
A020	2 x 2,5	7	0,4	0,8	7,7	8,8	138	44	7,56	500
A021	3 x 1,5	7	0,4	0,8	7,2	8,4	120	42	12,2	600
A022	3 G 1,5	7	0,4	0,8	7,2	8,4	120	42	12,2	600
A023	3 x 2,5	7	0,4	0,8	8,0	9,4	170	47	7,56	500
A024	3 G 2,5	7	0,4	0,8	8,0	9,4	170	47	7,56	500
A025	4 x 1,5	7	0,4	0,8	7,8	9,4	150	47	12,2	600
A026	4 x 2,5	7	0,4	0,8	8,7	10,4	205	52	7,56	500
A027	5 x 1,5	7	0,4	0,8	8,3	9,6	170	48	12,2	600
A028	5 G 1,5	7	0,4	0,8	8,3	9,6	170	48	12,2	600
A107	5 G 2,5	7	0,4	1,0	10,5	12,0	215	60	7,56	500
A005 (*) / A116 (**)	7 x 1,5	7	0,4	1,0	9,3	10,8	225	54	12,2	600
A105 (*) / A117 (**)	7 G 1,5	7	0,4	1,0	9,3	10,8	225	54	12,2	600
A017 (*) / A118 (**)	7 x 2,5	7	0,4	1,0	10,3	12,0	300	60	7,56	500
A108 (*) / A119 (**)	7 G 2,5	7	0,4	1,0	10,3	12,0	300	60	7,56	500
A006 (*) / A120 (**)	10 x 1,5	7	0,4	1,0	10,8	12,5	290	63	12,2	600
A106 (*) / A121 (**)	10 G 1,5	7	0,4	1,0	10,8	12,5	290	63	12,2	600
A007 (*) / A122 (**)	12 x 1,5	7	0,4	1,0	12,0	13,5	330	68	12,2	600
A008 (*) / A123 (**)	14x1,5	7	0,4	1,0	12,7	14,2	370	71	12,2	600
A009 (*) / A124 (**)	16x1,5	7	0,4	1,0	13,2	14,8	420	74	12,2	600
A010 (*) / A125 (**)	19x1,5	7	0,4	1,0	13,9	15,3	480	77	12,2	600
A011 (*) / A126 (**)	24x1,5	7	0,4	1,0	15,5	17,5	625	88	12,2	600
A012 (*) / A127 (**)	27x1,5	7	0,4	1,0	16,6	18,3	685	92	12,2	600
A013 (*) / A128 (**)	33x1,5	7	0,4	1,0	17,5	19,5	815	98	12,2	600
A018 (*) / A129 (**)	37x1,5	7	0,4	1,0	20,0	22,0	950	110	12,2	600

(*) Black cores with numbers

(**) White cores with numbers

G : with green/yellow core

x : without green/yellow core

VG 95218 Part 62 (FMGSGO)

HALOGEN FREE, FLAME RETARDANT TELECOM CABLE



CABLE STRUCTURE

Conductor	Electrolytic, stranded, copper wire to DIN EN 60228 Class 2
Insulation	Halogen free cross linked polymeric compound
Core Identification	According to VG 95218 part 62
Covering of Cores	Halogen free compound or binder tape
Screen	Copper wire braiding screen with separating foil over braid
Outer Sheath	Halogen free, cross-linked elastomeric compound.

STANDARDS & MAIN CHARACTERISTICS

Construction	VG 95218 Part 62
Max Permissible Operating Voltage	AC 250V / DC 355V
AC Test Voltage	2 kV
Working Temperature	-30°C / + 90°C
Min Bending Radius (Fixed)	5xD
General Requirements and Tests	VG 95218-2
Current Ratings	VG 95218-5
Flame Retardant	IEC 60332 /1, IEC 60332 / 3-24 Cat. C
Halogen Content	IEC 60754 /1 - 2
Smoke Density	IEC 61034 /1-2 (DIN EN 50268/1-2)

Lowest installation temperature: -15°C

Application

Used as fixed installation cable in telecommunication, signal, radio, radar and information systems in most areas, below and above deck on Navy vessels. They are not designed for continuous installation in water. Comply the general requirements of BV 3400 (Specification for Cable Systems of German Navy Vessels)

VG 95218 Part 62 (FMGSCO)

Designation as per VG95218 Part.62 Dash No	Cores x size	Number of the single wires (min)	Wall thickness of insulation nominal	Wall thickness of sheath	Outer Diameter (min- max.)		Cable Weight Approx.	Min. Bending Radius Fixed Installed	Conductor resistance at (20°C) (max)	Insulation resistance (20°C) (min)
	No. x mm ²		mm	mm	mm	mm	kg/km	mm	(Ω/km)	(MΩ·km)
A008	1x2x0,75	7	0,4	0,8	6,0	7,2	62	36	53,2	800
A001	2x2x0,75	7	0,4	0,8	6,7	8,0	97	40	53,2	800
A002	4x2x0,75	7	0,4	1,0	9,6	11,2	190	56	53,2	800
A003	6x2x0,75	7	0,4	1,0	10,8	12,5	230	63	53,2	800
A004	8x2x0,75	7	0,4	1,0	11,9	13,6	300	68	53,2	800
A005	10x2x0,75	7	0,4	1,0	13,7	15,4	335	77	53,2	800
A006	14x2x0,75	7	0,4	1,0	14,9	16,7	450	84	53,2	800
A007	16x2x0,75	7	0,4	1,0	16,1	18,1	505	91	53,2	800



VG 95218 Part 63 (FMSCSGO)

HALOGEN FREE, FLAME RETARDANT TELECOM CABLE



CABLE STRUCTURE

Conductor	Electrolytic, stranded, copper wire to DIN EN 60228 Class 2
Insulation	Halogen free cross linked polymeric compound
Core Identification	According to VG 95218 part 63
Individual Screen	Copper wire braiding screen with separating foil under and over braid
Covering of Cabling	Wrapped polyester tape with an overlap coverage
Screen	Copper wire braiding screen with separating foil over braid
Outer Sheath	Halogen free, cross-linked elastomeric compound.

STANDARDS & MAIN CHARACTERISTICS

Construction	VG 95218 Part 63
Max Permissible Operating Voltage	AC 250V / DC 355V
AC Test Voltage	2 kV
Working Temperature	-30°C / + 90°C
Min Bending Radius (Fixed)	5xD
General Requirements and Tests	VG 95218-2
Current Ratings	VG 95218-5
Flame Retardant	IEC 60332 /1, IEC 60332 / 3-24 Cat. C
Halogen Content	IEC 60754 / 1 - 2
Smoke Density	IEC 61034 / 1-2 (DIN EN 50268/1-2)

Lowest installation temperature: -15°C

Application

Used as fixed installation cable in telecommunication, signal, radio, radar and information systems in most areas, below and above deck on Navy vessels. They are not designed for continuous installation in water. Comply the general requirements of BV 3400 (Specification for Cable Systems of German Navy Vessels)

VG 95218 Part 63 (FMSCSGO)

Designation as per VG95218 Part.63 Dash No	Cores x size	Number of the single wires (min)	Wall thickness of insulation nominal	Wall thickness of sheath	Outer Diameter (min- max.)		Cable Weight Approx.	Min. Bending Radius Fixed Installed	Conductor resistance at (20°C) (max)	Insulation resistance (20°C) (min)
	No. x mm ²		mm	mm	mm	mm	kg/km	mm	(Ω/km)	(MΩ·km)
A001	2x2x0,75	7	0,4	0,8	11,1	12,5	215	63	53,2	800
A002	4x2x0,75	7	0,4	1,0	12,9	14,5	330	73	53,2	800
A003	7x2x0,75	7	0,4	1,0	14,9	16,4	480	82	53,2	800
A004	11x2x0,75	7	0,4	1,2	19,6	21,4	700	107	53,2	800
A005	14x2x0,75	7	0,4	1,2	20,8	22,8	890	114	53,2	800
A006	19x2x0,75	7	0,4	1,4	23,4	25,4	1120	127	53,2	800
A007	24x2x0,75	7	0,4	1,4	26,4	28,4	1420	142	53,2	800



VG 95218 Part 64 (LFMGSSGO / LFMGSGO)

HALOGEN FREE, FLAME RETARDANT LIGHT TELECOM CABLE



CABLE STRUCTURE

Conductor	Electrolytic, stranded, copper wire to DIN EN 60228 Class 2
Insulation	Halogen free cross linked polymeric compound
Core Identification	According to VG 95218 part 64
Covering of Cabling	Wrapped polyester tape with an overlap coverage
Screen A	Copper wire braiding screen with separating foil over braid
Screen B	Copper wire braiding screen with separating foil over braid. (Only for Type A, LFMGSSGO type)
Outer Sheath	Halogen free, cross-linked elastomeric compound.

STANDARDS & MAIN CHARACTERISTICS

Construction	VG 95218 Part 64
Max Permissible Operating Voltage	AC 250V / DC 355V
AC Test Voltage	2 kV
Working Temperature	-30°C / + 90°C
Min Bending Radius (Fixed)	5xD
General Requirements and Tests	VG 95218-2
Current Ratings	VG 95218-5
Flame Retardant	IEC 60332 /1, IEC 60332 / 3-24 Cat. C
Halogen Content	IEC 60754 / 1 - 2
Smoke Density	IEC 61034 / 1-2 (DIN EN 50268/1-2)

Lowest installation temperature: -15°C

Application

Used as fixed installation cable in telecommunication, signal, radio, radar and information systems in most areas, below and above deck on Navy vessels. They are not designed for continuous installation in water. Comply the general requirements of BV 3400 (Specification for Cable Systems of German Navy Vessels)

VG 95218 Part 64 (LFMGSSGO / LFMGSGO)

Designation as per VG95218 Part.64 Dash No	Cores x size	Number of the single wires (min)	Wall thickness of insulation nominal	Wall thickness of sheath	Outer Diameter (min- max.)		Cable Weight Approx.	Min. Bending Radius Fixed Installed	Conductor resistance at (20°C) (max)	Insulation resistance (20°C) (min)
	No. x mm ²		mm	mm	mm	mm	kg/km	mm	(Ω/km)	(MΩ·km)
A001	2x2x0,4	7	0,2	0,8	5,8	7,0	80	35	115	1500
A002	4x2x0,4	7	0,2	0,8	7,7	9,0	130	45	115	1500
A003	7x2x0,4	7	0,2	0,9	9,4	11,0	210	55	115	1500
A004	12x2x0,4	7	0,2	1,0	12,8	14,5	320	73	115	1500
A005	19x2x0,4	7	0,2	1,0	13,8	15,7	420	79	115	1500
A006	27x2x0,4	7	0,2	1,1	15,5	17,5	510	88	115	1500
B001	30x2x0,4	7	0,2	1,4	17,5	18,7	480	94	115	1500
B002	45x2x0,4	7	0,2	1,6	20,6	22,7	670	114	115	1500



VG 95218 Part 65 (LFMSGSGO)

HALOGEN FREE, FLAME RETARDANT LIGHT TELECOM CABLE



CABLE STRUCTURE

Conductor	Electrolytic, stranded, copper wire to DIN EN 60228 Class 2
Insulation	Halogen free cross linked polymeric compound
Core Identification	According to VG 95218 part 65
Individual Screen	Bare copper wire braiding screen with separating foil under and over braid
Covering of Cabling	Wrapped polyester tape with an overlap coverage
Screen	Electrolytic, bare copper wire braiding screen with separating foil over braid
Outer Sheath	Halogen free, cross-linked elastomeric compound.

STANDARDS & MAIN CHARACTERISTICS

Construction	VG 95218 Part 65
Max Permissible Operating Voltage	AC 250V / DC 355V
AC Test Voltage	2 kV
Working Temperature	-30°C / + 90°C
Min Bending Radius (Fixed)	5xD
General Requirements and Tests	VG 95218-2
Current Ratings	VG 95218-5
Flame Retardant	IEC 60332 /1, IEC 60332 / 3-24 Cat. C
Halogen Content	IEC 60754 /1 - 2
Smoke Density	IEC 61034 /1-2 (DIN EN 50268/1-2)

Lowest installation temperature: -15°C

Application

Used as fixed installation cable in telecommunication, signal, radio, radar and information systems in most areas, below and above deck on Navy vessels. They are not designed for continuous installation in water. Comply the general requirements of BV 3400 (Specification for Cable Systems of German Navy Vessels)

VG 95218 Part 65 (LFMSGSGO)

Designation as per VG95218 Part.65 Dash No	Cores x size	Number of the single wires (min)	Wall thickness of insulation nominal	Wall thickness of sheath	Outer Diameter (min- max.)		Cable Weight Approx.	Min. Bending Radius Fixed Installed	Conductor resistance at (20°C) (max)	Insulation resistance (20°C) (min)
	No. x mm ²		mm	mm	mm	mm	kg/km	mm	(Ω/km)	(MΩ·km)
A001	2x2x0,4	7	0,2	0,8	9,3	10,5	150	53	115	1500
A002	4x2x0,4	7	0,2	0,8	10,0	11,5	210	58	115	1500
A003	7x2x0,4	7	0,2	0,9	12,0	13,7	320	69	115	1500
A004	12x2x0,4	7	0,2	1,0	15,5	17,0	480	85	115	1500
A005	19x2x0,4	7	0,2	1,0	18,4	20,4	715	102	115	1500
A006	27x2x0,4	7	0,2	1,1	22,5	24,5	1000	123	115	1500



VG 95218 Part 66 (LFMSGSSGO)

HALOGEN FREE, FLAME RETARDANT LIGHT TELECOM CABLE



CABLE STRUCTURE

Conductor	Electrolytic, stranded, copper wire to DIN EN 60228 Class 2
Insulation	Halogen free cross linked polymeric compound
Core Identification	According to VG 95218 part 66
Individual Screen	Copper wire braiding screen over triples with separating foil under and over braid
Cabling	The screened tripples laid up together in concentric layers. Fillers may be used in need
Covering of Cabling	Wrapped polyester tape with an overlap coverage
Screen A	Copper wire braiding screen with separating foil over braid
Screen B	Copper wire braiding screen with separating foli over braid
Outer Sheath	Halogen free, cross-linked elastomeric compound.

STANDARDS & MAIN CHARACTERISTICS

Construction	VG 95218 Part 66
Max Permissible Operating Voltage	AC 250V / DC 355V
AC Test Voltage	2 kV
Working Temperature	-30°C / + 90°C
Min Bending Radius (Fixed)	5xD
General Requirements and Tests	VG 95218-2
Current Ratings	VG 95218-5
Flame Retardant	IEC 60332 /1, IEC 60332 / 3-24 Cat. C
Halogen Content	IEC 60754 /1 - 2
Smoke Density	IEC 61034 /1-2 (DIN EN 50268/1-2)

Lowest installation temperature: -15°C

Application

Used as fixed installation cable in telecommunication, signal, radio, radar and information systems in most areas, below and above deck on Navy vessels. They are not designed for continuous installation in water. Comply the general requirements of BV 3400 (Specification for Cable Systems of German Navy Vessels)

VG 95218 Part 66 (LFMSCSSGO)

Designation as per VG95218 Part.66 Dash No	Cores x size	Number of the single wires (min)	Wall thickness of insulation nominal	Wall thickness of sheath	Outer Diameter (min- max.)		Cable Weight Approx.	Min. Bending Radius Fixed Installed	Conductor resistance at (20°C) (max)	Insulation resistance (20°C) (min)
	No. x mm ²		mm	mm	mm	mm	kg/km	mm	(Ω/km)	(MΩ·km)
A001	5x3x0,4	7	0,2	1,0	12,2	13,9	360	70	57,5	1500
A002	12x3x0,4	7	0,2	1,2	16,9	18,9	650	95	57,5	1500







TECHNICAL DATA

REFERENCE STANDARDS

VG 95211	Approval of products
VG 95212	Lists of approved components (LZB)
VG 95214-4	Test methods of components — Part 4: Resistance against chemicals, test media, test conditions
VG 95218-1	Cables and insulated wires — Part 1: Summary
VG 95218-2:2017-12	Cables and insulated wires — Part 2: Generic standard
VG 95218-2/A1:2019-12	Cables and insulated wires — Part 2: Generic standard; Amendment A1
VG 95218-5	Electrical cables and insulated wires — Part 5: Current rating
VG 95343-13	Heat shrinkable components — Part 13: Compatibility test for component groups, requirements, tests
VG 95343-14	Heat shrinkable components — Part 14: Compatibility test for component groups, requirements, tests
DIN EN 60228 (VDE 0295):2005-09	Conductors of insulated cables (IEC 60228:2004)
DIN EN 60332-3-24 (VDE 0482-332-3-24)	Tests on electric and optical fibre cables under fire conditions Part 3-24: Test for vertical flame spread of vertically-mounted bunched wires or cables — Category C
DIN EN 60811-401 (VDE 0473-811-401): 2018-05	Electric and optical fibre cables — Test methods for non-metallic materials — Part 401: Miscellaneous tests — Thermal ageing methods — Ageing in an air oven (IEC 60811-401:2012 + A1:2017)
DIN EN 60811-412 (VDE 0473-811-412): 2012-12	Electric and optical fibre cables — Test methods for non-metallic materials — Part 412: Miscellaneous tests — Thermal ageing methods — Ageing in an air bomb
DIN EN 60811-502 (VDE 0473-811-502): 2012-12	"Electric and optical fibre cables — Test methods for non-metallic materials — Part 502: Mechanical tests — Shrinkage test for insulations"
DIN EN 60811-507 (VDE 0473-811-507): 2012-12	"Electric and optical fibre cables — Test methods for non-metallic materials — Part 507: Mechanical tests — Hot set test for cross-linked materials (IEC 60811-507:2012)"
DIN EN 60811-508 (VDE 0473-811-508): 2018-05 (IEC 60811-508:2012 + A1:2017);	"Electric and optical fibre cables — Test methods for non-metallic materials — Part 508: Mechanical tests — Pressure test at high temperature for insulation and sheaths"
DIN EN 60811-509 (VDE 0473-811-509): 2018-05 (IEC 60811-509:2012 + A1:2017)	"Electric and optical fibre cables — Test methods for non-metallic materials — Part 509: Mechanical tests — Test for resistance of insulations and sheaths to cracking (heat shock test)"
DIN VDE 0293-308 (VDE 0293-308):2003-01	Identification of cores in cables and flexible cords by colours; German version HD 308 S2:2001
IEC 62153-4-3:2013-10	Metallic communication cable test methods — Part 4-3: Electromagnetic Compatibility (EMC) Surface transfer impedance — Triaxial method
IEC 62153-4-6:2017-08	Metallic cables and other passive components test methods — Part 4-6: Electromagnetic compatibility (EMC) — Surface transfer impedance — Line injection method
BV 3400	Specification for Construction of German Navy vessels

TECHNICAL DATA

CODING AND DESCRIPTION OF CABLES

Type	VG 95218	Coding
Power Cables with and without screen, with sheath, halogenfree, low fire hazard	Part 60	MGSGO , MGGO
Light Power Cable with screen and sheath, light weight, halogenfree, low fire hazard	Part 61	LMGSGO
Telecommunication Cable with overall screen and sheath, pair formation, not screened, halogenfree, low fire hazard	Part 62	FMGSGO
Telecommunication Cable with individual and overall screen and sheath, pair formation, screened, halogenfree, low fire hazard	Part 63	FMSGSGO
Light Telecommunication Cable with overall single and double screen, with sheath, pair and triple formation, not screened, halogen-free, low fire hazard	Part 64	LFMGSSGO, LFMGSGO
Light Telecommunication Cable with individual and overall screen and sheath, cabled single elements, screened, halogenfree, low fire hazard	Part 65	LFMSGSGO
Light Telecommunication Cable with individual and double overall screen, with sheath, triple formation, screened, halogenfree, low fire hazard	Part 66	LFMSGSSGO

CORE IDENTIFICATION ACCORDING TO HD 308.S2

0,6/1 KV Power and Control Cables

N. of cores	Cores Colour					
1x...	-	-	-	Black	-	-
2x...	-	Blue	Brown	-	-	-
3G...	Green/Yellow	Blue	Brown	-	-	-
3x...	-	Brown	Black	Grey	-	-
4G...	Green/Yellow	Brown	Black	Grey	-	-
4x...	-	Blue	Brown	Black	Grey	-
5G...	Green/Yellow	Blue	Brown	Black	Grey	-
5x...	-	Blue	Brown	Black	Grey	Black

TECHNICAL DATA

CURRENT RATING OF CABLES ACCORDING TO VG 95218 PART 5

For Cables VG 95218 Part 60

Nominal cross-section mm ²	Number of loaded cores			
	1	2	3	4
	Max. permissible current (A)			
1,5	-	23	20	-
2,5	-	31	28	-
4	52	43	37	31
6	67	55	47	39
10	91	75	65	55
16	122	100	87	73
25	158	130	110	93
35	197	-	137	115
50	239	-	167	140
70	307	-	214	180
95	374	-	259	218
120	435	-	301	-
150	502	-	-	-
185	575	-	-	-
240	679	-	-	-
300	785	-	-	-

For Cables to VG 95218 Part 61

Number of loaded cores	Nominal cross-section (mm ²)	Max. permissible current (A)
2	1,5	23
3		20
4		17
5		15
7		13
10		11
12		10
14		10
16		9
19		9
24		8
27		8
33		7
37		7
2	2,5	31
3		28
4		24
5		21
7		18

Notes for above tables:

The values are valid for single cable installation at continuous operation and for maximal conductor temperature of 90 °C. At ambient temperatures above 45 °C the current rating values shall be reduced by the correction factors. An entrained protective conductor is not considered to be a loaded core.

Supply frequency: 0 Hz to 60 Hz

TECHNICAL DATA

CURRENT RATING OF CABLES ACCORDING TO VG 95218 PART 5

For Cables to VG 95218 Part 62 and Part 63

Max. permissible current: 2 A

Ambient temperature: 45 °C

Supply frequency: 0 Hz to 60 Hz

Correction factors for temperatures

Permissible operating temperature °C	Ambient temperature (°C)											
	35	40	45	50	55	60	65	70	75	80	85	95
60	1,29	1,15	1	0,82	-	-	-	-	-	-	-	-
70	1,18	1,1	1	0,89	0,77	0,63	-	-	-	-	-	-
75	1,15	1,08	1	0,91	0,82	0,71	0,58	-	-	-	-	-
80	1,13	1,07	1	0,93	0,85	0,76	0,63	0,53	-	-	-	-
85	1,12	1,06	1	0,94	0,87	0,79	0,71	0,61	0,5	-	-	-
90	1,11	1,05	1	0,94	0,88	0,82	0,75	0,67	0,58	0,47	-	-
95	1,1	1,05	1	0,95	0,89	0,84	0,77	0,71	0,63	0,55	0,45	-
105	1,08	1,04	1	0,96	0,91	0,87	0,82	0,76	0,71	0,65	0,58	-

Correction factors for bundlings

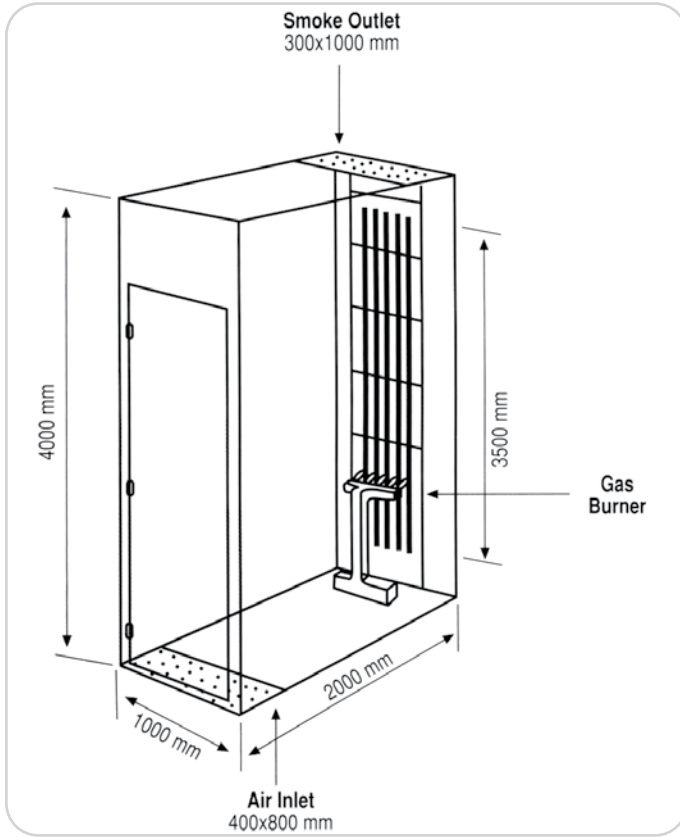
For the naval shipbuilding the factor 0,8 is valid for bundlings and clusters.

TECHNICAL DATA

TESTS ON ELECTRIC CABLES UNDER FIRE CONDITIONS

IEC 60332/3 Fire test on bunched and vertical laid cables.

Test chamber



Flame application time

Required volume of combustible material
per 1 m of cable bunch (lt) : V

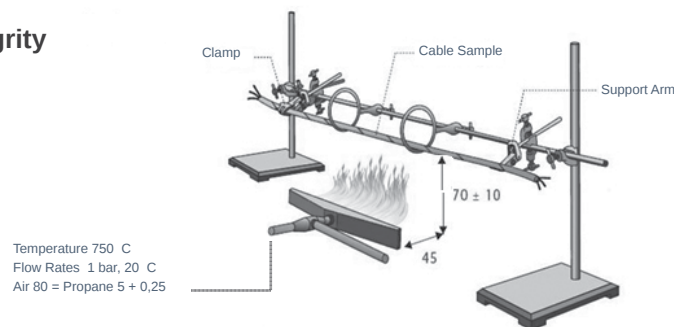
IEC 60332/3 CATEGORY	V	MINIMUM BURNING TIME
A	7lt.	40 minutes
B	3.5lt.	40 minutes
C	1.5lt	20 minutes

Test Conditions of IEC 60332/3

This test is to determine the fire propagation characteristics of a bunch of cables. The test should be carried out if the external wind speed measured by an anemometer fitted on the top of the test rig is not greater than 5 m/s and the temperature of the walls of the test chamber is in between 5 °C and 40 °C. The temperature inside of the chamber should be 23±5 °C before the test

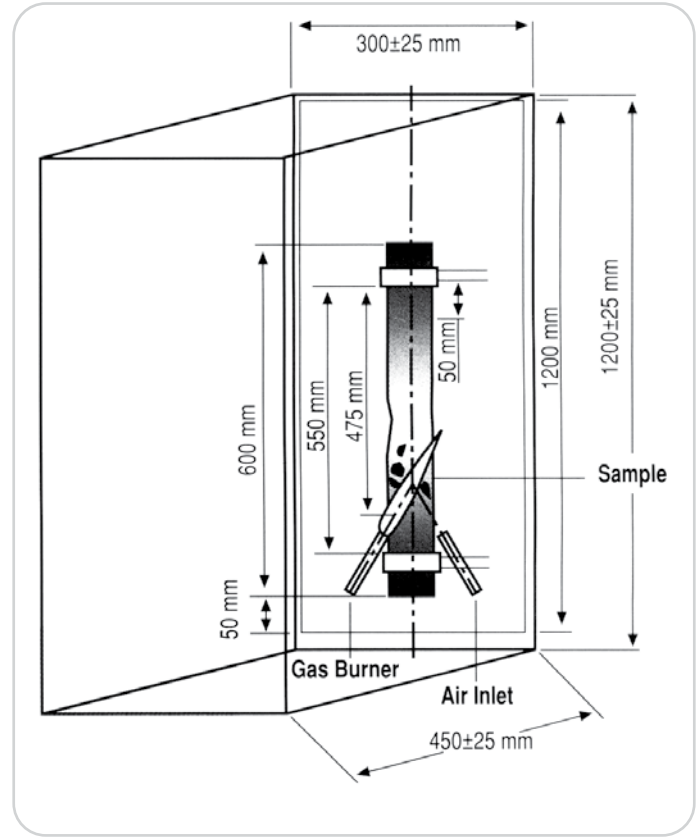
IEC 60331 - 21

Fire Test for circuit integrity



IEC 60332/1 Fire test on a vertical laid single cable.

Test chamber



Flame application time

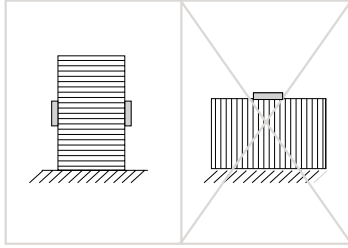
Weight of test piece (kg) : m
Flame application time (s) = 60+m/25



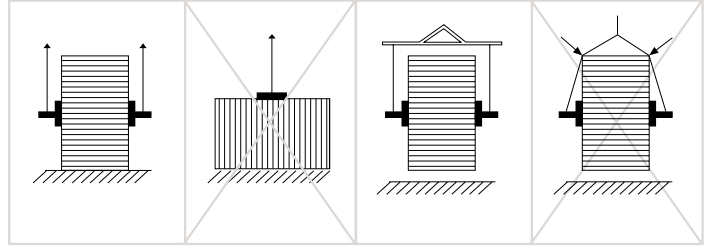
TECHNICAL DATA

Cables and Drums User Guide Drums Handling

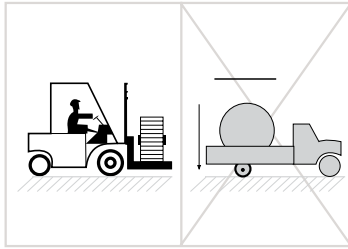
1.1.Position of Drums



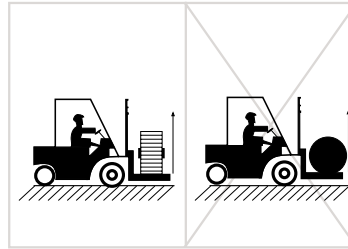
1.2.Loading



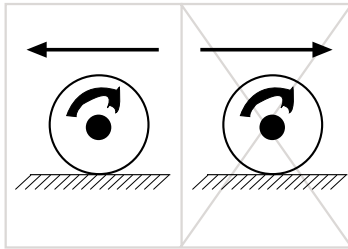
1.3.Unloading



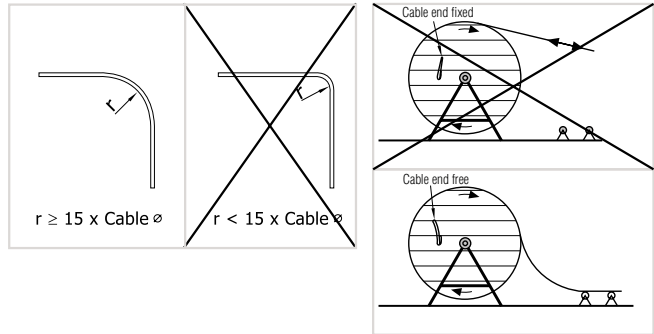
1.4.Handling by forklift



1.5.Rolling

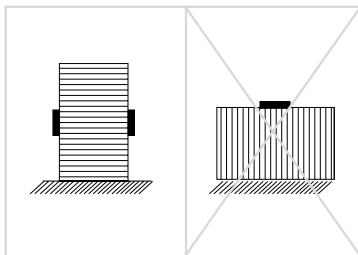


1.6.Paying-off the Cable

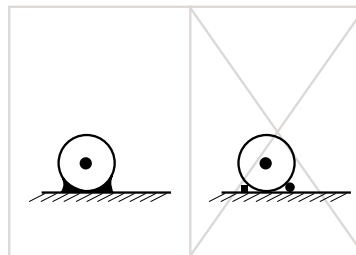


Transport Requirements

2.1.Position of the Drums

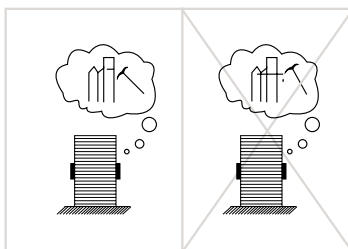


2.2.Fastening Drums

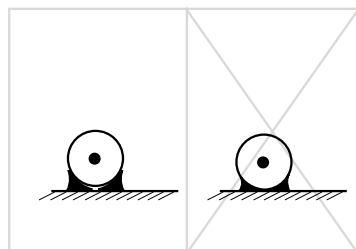


Cables and Drums User Guide

2.3.Use of nails

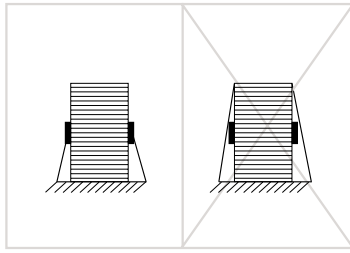


2.4.Bigger Drums

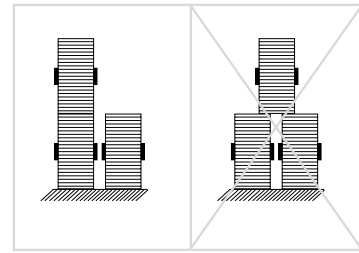


TECHNICAL DATA

2.5. Binding of the Drums

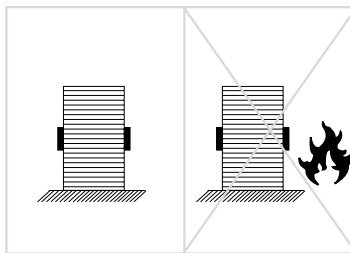


2.6. Multiple Drum Storage

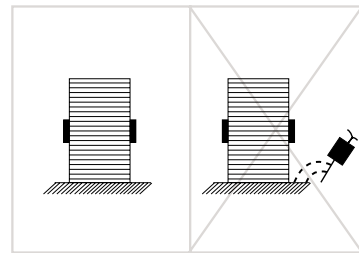


Storage Requirements

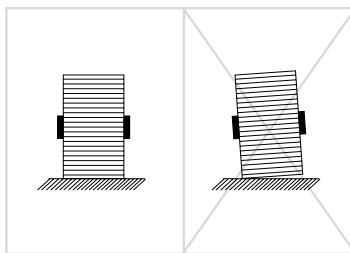
3.1. Do not store near heat sources



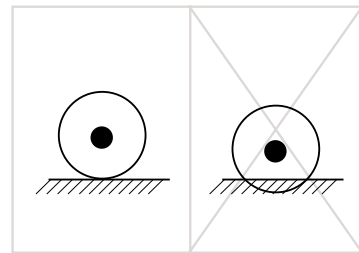
3.2. Do not store on vibrating surfaces. (Ship engine room etc.)



3.3. Do not store on irregular surfaces.



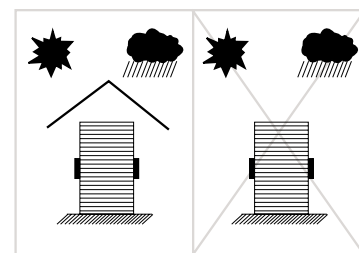
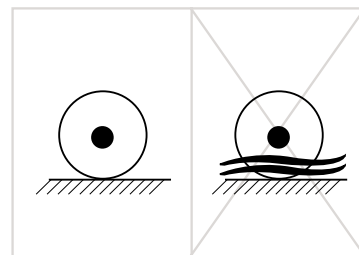
3.4. Do not store on soft surfaces



Cables and Drums User Guide

3.5. Do not store on areas liable of flooding. All cable ends must be fully sealed at all times to prevent the ingress of water. It is preferable to store reels off the ground on timbers or other supports. In damp locations, it is advisable to allow at least 3 inches between reels to permit circulation of air.

3.6. If storage is likely to last more than 6 months, drums should be stored in order to be protected from effects like rain, sunlight etc.



NOTES

NOTES

**OFFSHORE
CABLES**



**AIRPORT
CABLES**



**CRANE
CABLES**



**MINING
CABLES**



**DEFENSE
INDUSTRY
CABLES**



**MARINE
CABLES**



**RAILWAY
CABLES**



**INDUSTRIAL
CABLES**



**TUNNELLING
CABLES**



**INSTRUMENTATION
CABLES**

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