

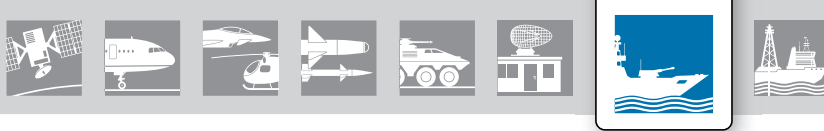


Lightweight Low Fire Hazard Cables according to VG95218 part 28

Marine application profile with cross-reference
to VG95218, parts 61 to 66



EVERY CONNECTION COUNTS



TE CONNECTIVITY - YOUR PARTNER FOR INNOVATION

TE Connectivity is a leading global supplier of engineered electronic components, network solutions, specialty products and undersea telecommunication systems to customers in more than 150 countries.

The Aerospace, Defense & Marine Business Unit supplies components which are used in both space and deep sea applications and which are adapted to the specific environmental conditions. With our global sales, engineering, production and logistics network, we actively support the development of new airplanes, ships and defense solutions for our customers and their supplier industries in a global organizational framework.

The product portfolio includes passive electronic components, such as cables, connector systems and relays as well as harness protection systems geared to match the most demanding military and civilian profiles.

■ Areas of application

- Passive electronics inside the box
- Box input/output and box chassis products
- Products for environmental-controlled conditions within the platform
- Products for hazardous areas

AEROSPACE, DEFENSE & MARINE MAIN PRODUCT GROUPS



Connectors and Backshells



Wire and Cable



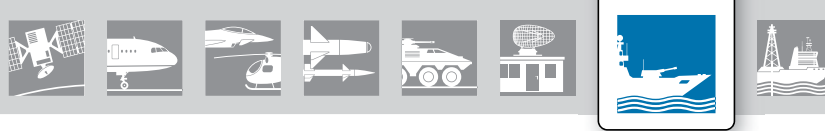
Relays and Contactors



Engineered Polymer solutions

RELIABLE AND INNOVATIVE PRODUCTS

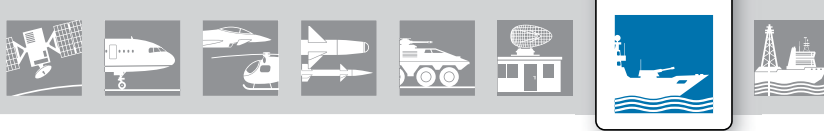
- Global sourcing with one stop shop capabilities
- Technology access to all TE developments worldwide
- Ability for specific product customization from military specifications and high-end commercial products
- Cooperation for new industry standards
- Manufacturing cooperation
- Inventory management
- Offset programs
- Design-to-cost



Contents

Introduction	2
VG95218 part 28 type C and E cables	3
System compatibility	5
Primary wire - technical description	6
Cable color coding	7
Marking on cable sheath	7
Wire coding for part 28 type C and E cables	8
Cross-reference to VG95218 parts 61 to 66	11
Cable type overview	13

This document is a product presentation, issued by TE Connectivity, a member of the VG Cable Technical Committee of Normenstelle Elektrotechnik (public agency for electrotechnical standards). This document was prepared to the best of our knowledge. In the case of any discrepancy in this brochure, the original VG standard prevails.



Introduction

This document shows the conformity of our products with the standard series VG95218 part 28 the copyright of which is held by Bundesamt für Wehrtechnik und Beschaffung (Federal Office of Defense Technology and Procurement) (BWB).

The VG95218 part 28 type C and E standard series covers halogen-free cables with a low fire hazard. It has been developed in accordance with the state of the art in cabling techniques with thin-wall insulation for primary wires and an optimized cable design process in the interest of minimum weight and diameter.

In the past, cables from the VG95218 part 60 to 66 standard series were used for marine applications. The standard series was drafted many years ago and technical development in the electronics sector led to changes in shipbuilding. State of the art electronics is used in an effort to address the increasing demands on the functionality and tasks of military vessels. The result is an increasingly extensive and complex structure of power supply systems, electronic systems and networks which must be connected by a cabling system that should be as efficient and reliable as possible. Furthermore, the demand for lighter and/or smaller cable diameters is becoming more and more important.

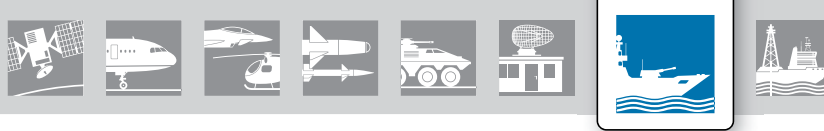
Through technical improvement in the following sectors, a crucial development step was achieved with the VG95218 parts C and E standard series which reflects both new requirements in shipbuilding and empirical values from the past.

- **Significantly increased service life**
- **Long-term resistance to environmental influences**
- **Reduction in weight and diameter**
- **Increased EMC requirements**

This documentation contains technical specifications of cables according to part 28 type C and type E as alternatives to parts 61 to 66 of the VG95218 standard series. The range of tests for cables according to VG95218 part 28 types C and E was adapted to the requirements of modern marine equipment. In addition to electrical and mechanical requirements, it also fulfils the specifications for limiting fire hazards thanks to the following properties:

- halogen free
- flame retarded
- low smoke generation
- low corrosivity of combustion gases
- low toxicity of combustion gases

The VG95218 part 28 standard series was approved for use in marine applications and is additionally also suitable for further military applications.



VG95218 part 28 type C and E cables

The VG95218 part 28 standard generally covers a range of different cable types for various applications.

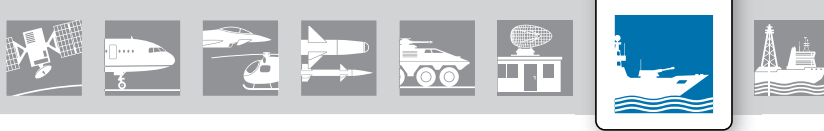
The cables types are classified as types A, B, C, D and E, including relevant test requirements. VG95218 part 2 addresses the standards (national and international standards are referred to, such as DIN, EN, IEC, etc.) which are applied in the individual tests section.

Halogen-free cables with improved performance under fire conditions are specified for marine applications. Cables fulfilling these requirements belong to types C and E. More than 100 different cable designs are currently available as type C (single outer screen) cables (C001 to C122). Type E (double outer screen) currently includes a range of 88 designs numbered from E001 to E011.

The types of cables which can be directly compared with parts 61 - 66 are specified in part 28 under part nos. C033 to 122 and E004 to E011.

Only these designs are described in this document.

Although all other designs of types C and E fulfill similar requirements, they differ significantly in terms of cable layout, number of wires, conductor cross-sections and combination of primary wires because they were customized to reflect a specific application.



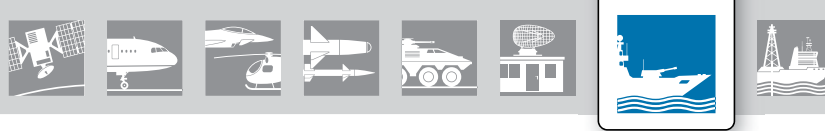
VG95218 part 28 type C and E cables

Cables approved according to VG95218 part 28 types C and E include primary wires, components and sheath materials which were approved and licensed individually and independent of each other according to the applicable design standards. Every design standard contains test requirements for electrical and mechanical parameters, as well as criteria concerning resistance to fluids and improved performance in the case of fire.

VG95218 part 28 C and E cables include:

- **Primary wires**, specified in component standard **VG95218 part 20 type E**. Available in cross-sections of 0.15 mm² to 3.0 mm² in 11 different colors, including green/yellow. The primary wires can be used as components in cables and for wiring units or cabinets.
- **Unscreened cable components - in pairs, triples and quads** as specified in the component standard **VG95218 part 21 type C**. Part 21 type E elements include part 20 type E primary wires and additionally define different color combinations of primary wires.
- **Screened cable components - in pairs, triples and quads** as specified in component standard **VG95218 part 23 type C** component standard. Part 23 type G elements include part 21 type C elements. Elements defined in color are screened and protected by a wrap. These elements can only be used as components in cables.
- **The sheath material** and the complete cable are specified in component standard **VG95218 part 28 types C and E** which includes both the cable design specifications as well as the complete test specifications for the complete cable and cable sheath.

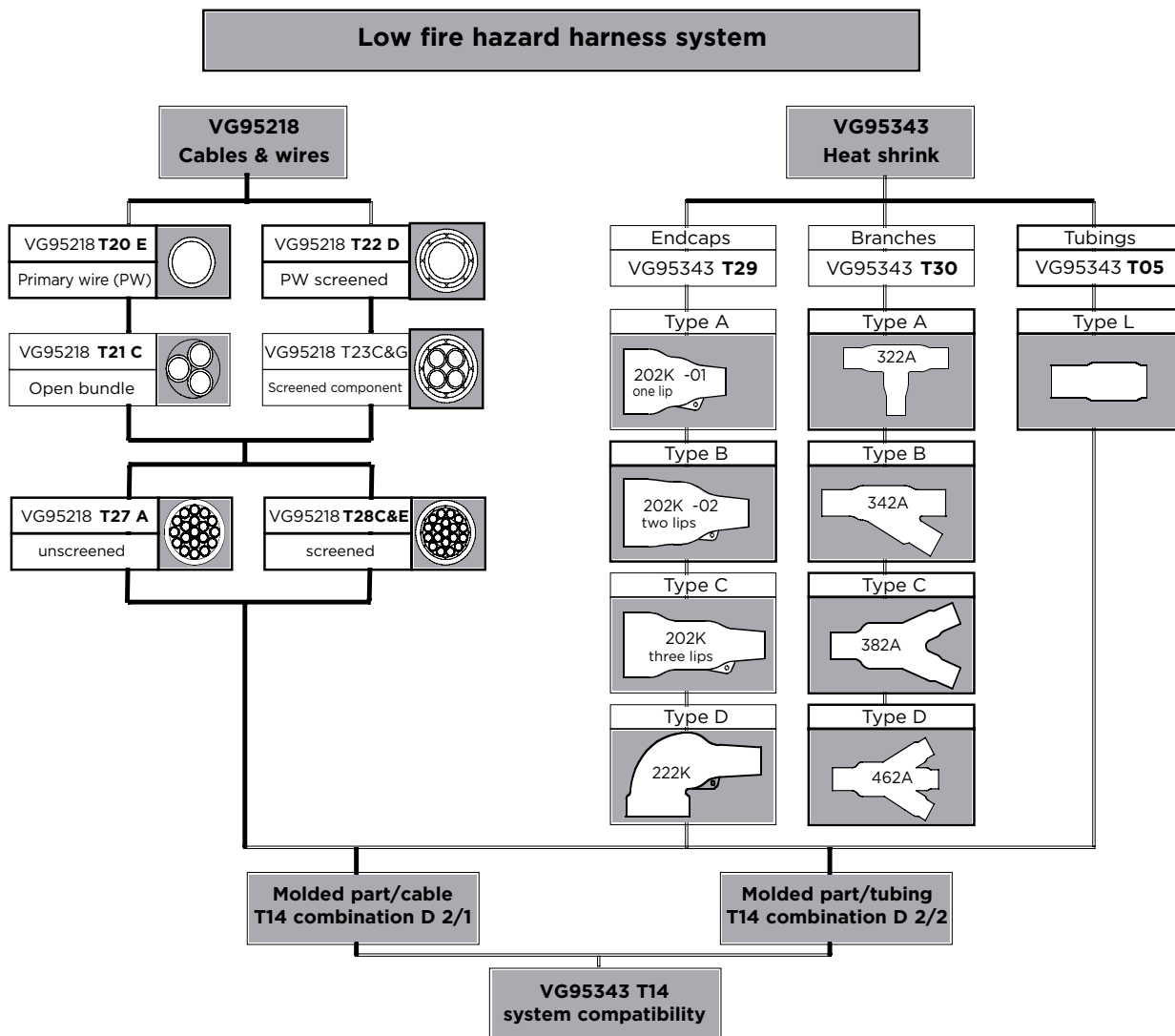
The VG95218 part 28 standard series features a modular approach which enables the free design and definition of a cable configuration according to the user's requirements using tested and approved cable elements according to parts 20 to 23.

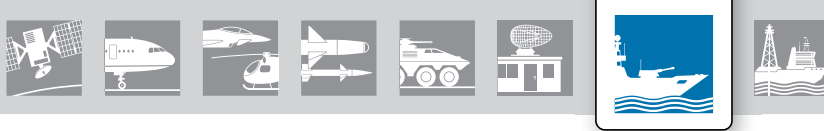


System compatibility

Cables according to VG95218 part 28 types C and E fulfill the requirements of the VG95214 part 14 standard where the individual VG-approved sheath materials are tested for “system compatibility” as an integrated system. This means that the cable sheath is tested together with halogen-free heat-shrinkable endcaps of all VG-approved manufacturers and the appropriate glue. This reflects gluing capability with halogen-free, heat-shrinkable endcaps, VG95343 part 5 type L and halogen-free molded parts according to VG95343 part 29 (connector housings) and part 30 (branches).

This is illustrated by the diagram below:





Primary wire – technical description

Primary wires, specified in VG95218 part 20 type E

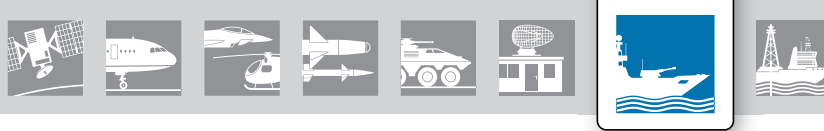
Part number VG95218-T20	Conductor cross-section mm ²	Qty./diameter of primary wires mm	Conductor diameter, max. mm	Cable diameter, nom. mm	Conductor resistance, max. Ohm/km
12*	0.15	19/0.10	0.55	1.03	135
01*	0.25	19/0.13	0.66	1.14	84.4
02*	0.4	19/0.16	0.84	1.33	50.5
03*	0.5	19/0.18	0.94	1.4	40.1
04*	0.6	19/0.20	1.04	1.52	31.1
05*	0.75	19/0.23	1.2	1.6	26.7
06*	1	19/0.25	1.32	1.75	20
07*	1.2	19/0.29	1.47	1.93	15.3
08*	1.5	37/0.23	1.68	2.08	13.7
09*	2	37/0.25	1.87	2.36	10.5
10*	2.5	37/0.29	2.14	2.55	8.21
11*	3	37/0.32	2.29	2.78	6.58

The asterisk symbol* in the part number (e.g. VG95218-T20-E01*) is replaced by the insulation color code as follows:

- 0 = black;
- 1 = brown;
- 6 = blue;
- 8 = grey;
- 9 = white;
- G = green/yellow.

These are the standard colors used in marine cables.

Further colors are available and defined in the VG95217-T20 type E component standard.



Cable color coding

Depending on the given standard, the individual components shown in the cable designs, are either given consecutive numbers or color codes according to the following standard pattern:

- 0 = black**
- 1 = brown**
- 2 = red**
- 3 = orange**
- 4 = yellow**
- 45 = yellow/green**
- 5 = green**
- 6 = blue**
- 7 = violet**
- 8 = grey**
- 9 = white**

Cable sheath marking

According to VG requirements, the cable sheath must show the manufacturer's name, the VG number, the VDE registration number and the manufacturer code for identification and packaging purposes.

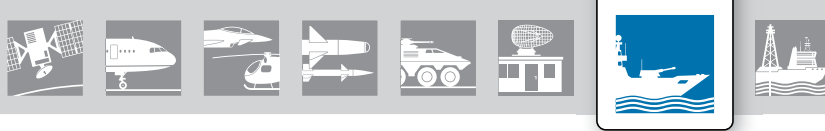
Additional information may be printed which is useful in determining the cable configuration:

Example:

- L - Lightweight cable**
- F - Telecommunications cable**
- M - Marine cable**
- G - Insulation or sheath**
- S - Screen**
- O - No defined functional integrity in the case of fire**

Cable marking example:

Raychem - VG95218-T28-C050 - VDE Reg. Nr. 7095 - K1010 - FMGSGO (4 x 2 x 0.75)



Wire coding for part 28 type C and E cables

The color codes shown below are exclusively applicable to part 28 type C and E part numbers which are defined as direct alternatives to VG95218 parts 61 - 66. Other part numbers from parts 28 C and E chiefly include wires with white insulation and number printing.

A) Cables - overall screen - 1.5 mm² and 2.5 mm² - table 1 (LMGSGO)

Cables with green/yellow earth wire

- 3-wire: blue, brown, green/yellow
- 5-wire: blue, brown, black, grey, green/yellow
- 7 to 10-wire: green/yellow (in outer layer), all other black with white numbers, counting from the center towards the outside

Cables without green/yellow earth wire

- 2-wire: black, blue
- 3-wire: black, blue, brown
- 4-wire: black, grey, blue, brown
- 5-wire: brown, black, grey, black, blue
- 7-wire and more: white with black numbers, counting from the center towards the outside

B) Cables - overall screen with unscreened twisted pairs - 0.75 mm² and 1.00 mm² - table 2 (FMGSGO)

2-pair cable (2 pairs = 1 star quad)

Black, blue, grey, brown (black and gray opposite each other)

4-pair cable (4 pairs = 2 star quads)

- 1st pair: black, blue
- 2nd pair: black, brown
- 3rd pair: black, grey
- 4th pair: black, grey

6 to 16-pair cable (3 to 8 star quads)

Each star quad: black, blue, grey, brown (black and grey opposite each other)

C) Cables - overall screen with screened pairs - 0.75 mm² - table 3 (FMSGGO)

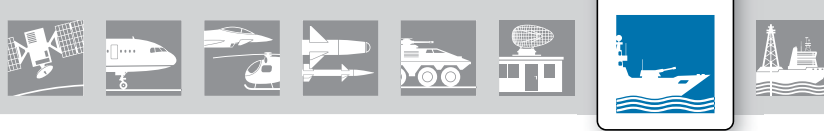
2-pair cable (2 pairs = 1 star quad)

- 1st pair: black, blue
- 2nd pair: black, brown

4 to 24-pair cable, valid for any layer

- 1st pair: black, blue (pilot and direction)
- 2nd pair: black, brown (counting direction)
- 3rd and following pairs: black, grey

Position of pairs for start and counting direction identical in every wire layer.



Wire coding for part 28 type C and E cables

D) Cables - overall screen with unscreened twisted pairs - 0.4 mm² - table 4A (LFMGSGO)

2-pair cable (2 pairs = 1 star quad)

Black, blue, grey, brown (black and grey opposite each other)

4 to 54-pair cable, valid for every layer

1st pair: black, blue (pilot and direction)

2nd pair: black, brown (counting direction)

3rd and following pairs: black, grey

Position of pairs for start and counting direction identical in every wire layer.

E) Cables - double screened twisted pairs - 0.4 mm² - table 4B (LFMGSSGO)

2-pair cable (2 pairs = 1 star quad)

Black, blue, grey, brown (black and grey opposite each other)

4 to 54-pair cable, valid for every layer

1st pair: black, blue (pilot and direction)

2nd pair: black, brown (counting direction)

3rd and following pairs: black, grey

Position of pairs for start and counting direction identical in every wire layer.

F) Cables - screened triples - 0.4 mm² - table 4C (LFMGSGO)

Three-wire cables with color-coded element coding for the counting direction

Black, white and green/yellow

3 to 44 three-wire cable, valid for every layer

1st pair: red element coding (pilot and direction)

2nd pair: green element coding (counting direction)

Position of pairs for start and counting direction identical in every wire layer.

G) Cables - overall screen with screened twisted pairs - 0.4 mm² - table 5A (LFMSGGO)

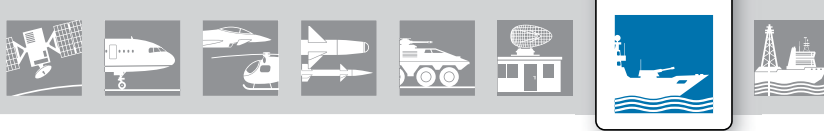
In every wire layer

1st pair: black, blue (pilot and direction)

2nd pair: black, brown (counting direction)

3rd and following pairs: black, grey

Position of pairs for start and counting direction identical in every wire layer.



Wire coding for part 28 type C and E cables

H) Cables - overall screen with screened twisted pairs - 0.25 mm² - table 5B (LFMSGSGO), including multi-wire cable 3 x 2 x 1.2 + 18 x 2 x 0.25

Wire and star quad - 0.25 mm²

For every cable layer

1 st star quad: black, white, grey, blue,	element coding: red (pilot and direction)
2 nd star quad: black, white, grey, blue,	element coding: green (counting direction)
3 rd star quad: black, white, grey, blue	

Wire and pair coding for cables 3 x 2 x 1.2 + 18 x 2 x 0.25

Wires in each pair: black, white

Pair coding

1st pair with 1.2 mm²: red
 2nd pair with 1.2 mm²: green
 3rd pair with 1.2 mm²: transparent

For every layer

1 st pair with 0.25 mm ² :	red (pilot and direction)
2 nd pair with 0.25 mm ² :	green (counting direction)
3 rd and following pairs with 0.25 mm ² :	nature

Position of pairs for start and counting direction identical in every wire layer.

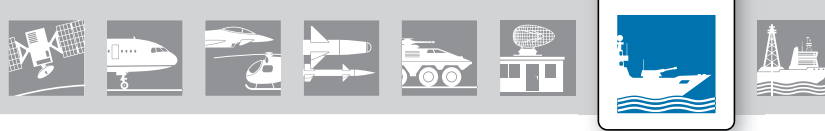
I) Cables - double screened twisted triples - table 6 (LFMSGSSGO)

Wires in 3-wire element:

Black, white, grey

Element coding in each layer

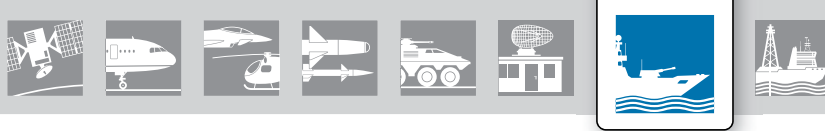
1st element: red
 2nd element: green
 3rd element: transparent



Cross-reference list for VG95218 parts 61 to 66

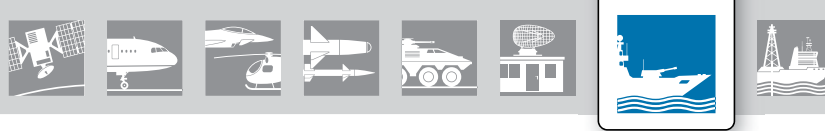
Number of wires x nominal cross-section	New VG numbers VG 95218 T28	Old VG numbers VG 95218 T61 to 66
LMGSGO	T28	T61
(2 x 1.5)	C033 (old), C083 (new)*	A001 (old), A016 (new)
(3 x 1.5)	C035 (old), C122 (new)*	A002 (old), A021 (new)
(4 x 1.5)	C042 (old), C088 (new)*	A003 (old), A025 (new)
(5 x 1.5)	C044 (old), C090 (new)*	A004 (old), A027 (new)
(7 x 1.5)	C046	A005
(10 x 1.5)	C052	A006
(12 x 1.5)	C055	A007
(14 x 1.5)	C058	A008
(16 x 1.5)	C060	A009
(19 x 1.5)	C061	A010
(24 x 1.5)	C065	A011
(27 x 1.5)	C066	A012
(33 x 1.5)	C070	A013
(37 x 1.5)	C005	A018
(3G1.5)	C036 (old), C085 (new)*	A102 (old), A022 (new)
(5G1.5)	C045 (old), C091 (new)*	A104 (old), A028 (new)
(7G1.5)	C047	A105
(10G1.5)	C053	A106
(2 x 2.5)	C034 (old), C084 (new)*	A014 (old), A020 (new)
(3 x 2.5)	C037 (old), C086 (new)*	A015 (old), A023 (new)
(4 x 2.5)	C043 (old), C089 (new)*	A016 (old), A026 (new)
(7 x 2.5)	C048	A017
(3G2.5)	C038 (old), C087 (new)*	A115 (old), A024 (new)
FMGSGO	T28	T62
(1 x 2 x 0.75)	C032 (old), C082 (new)*	A008
(2 x 2 x 0.75)	C040	A001
(4 x 2 x 0.75)	C050	A002
(6 x 2 x 0.75)	C054	A003
(8 x 2 x 0.75)	C059	A004
(10 x 2 x 0.75)	C062	A005
(14 x 2 x 0.75)	C067	A006
(16 x 2 x 0.75)	C069	A007
(1 x 2 x 1.0)	C092	A009
(2 x 2 x 1.0)	C099	A010
(4 x 2 x 1.0)	C104	A011
(6 x 2 x 1.0)	C106	A012
(8 x 2 x 1.0)	C108	A013
(10 x 2 x 1.0)	C109	A014
(14 x 2 x 1.0)	C111	A015
(16 x 2 x 1.0)	C113	A016

* Harmonization on the European market was implemented as a result of a change in wire color harmonization on the basis of DIN VDE 0293-308. This also necessitated a modification of VG Kabel.



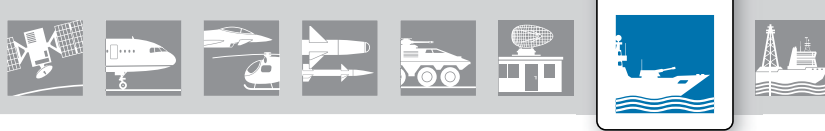
Cross-reference list for VG95218 parts 61 to 66

Number of wires x nominal cross-section	New VG numbers VG 95218 T28	Old VG numbers VG 95218 T61 to 66
FMSGSGO	T28	T63
(2 x 2 x 0.75)	C041	A001
(4 x 2 x 0.75)	C051	A002
(7 x 2 x 0.75)	C057	A003
(11 x 2 x 0.75)	C063	A004
(14 x 2 x 0.75)	C068	A005
(19 x 2 x 0.75)	C072	A006
(24 x 2 x 0.75)	C074	A007
LFMGSSGO	T28	T64
(2 x 2 x 0.4)	E004	A001
(4 x 2 x 0.4)	E005	A002
(7 x 2 x 0.4)	E006	A003
(12 x 2 x 0.4)	E008	A004
(19 x 2 x 0.4)	E010	A005
(27 x 2 x 0.4)	E011	A006
(30 x 2 x 0.4) LFMGSGO	C076	B001
(45 x 2 x 0.4) LFMGSGO	C077	B002
LFMGSGO	T28	T64
(30 x 2 x 0.4)	C076	B001
(45 x 2 x 0.4)	C077	B002
(3 x 3 x 0.4)	C105	D001
(5 x 3 x 0.4)	C107	D002
(7 x 3 x 0.4)	C110	D003
(10 x 3 x 0.4)	C112	D004
(12 x 3 x 0.4)	C114	D005
(14 x 3 x 0.4)	C115	D006
(19 x 3 x 0.4)	C116	D007
(24 x 3 x 0.4)	C117	D008
(30 x 3 x 0.4)	C118	D009
(37 x 3 x 0.4)	C119	D010
(44 x 3 x 0.4)	C121	D011
LFMSGSGO	T28	T65
(2 x 2 x 0.4)	C039	A001
(4 x 2 x 0.4)	C049	A002
(7 x 2 x 0.4)	C056	A003
(12 x 2 x 0.4)	C064	A004
(19 x 2 x 0.4)	C071	A005
(27 x 2 x 0.4)	C075	A006
(3 x 2 x 1.2 und 18 x 2 x 0.25)	C073	B001
(27 x 4 x 0.25)	C078	C001
LFMSGSSGO	T28	T66
(5 x 3 x 0.4)	E007	A001
(12 x 3 x 0.4)	E009	A002



Overview of cable types for VG95218 part 28 type C and E

LMGSGO VG95218 part 28 C Cables - overall screen Table 1	14
FMGSGO VG95218 part 28 C Cables - overall screen with unscreened twisted pairs Table 2	15
FMSGSGO VG95218 part 28 C Cables - overall screen with screened pairs Table 3	16
LFMGSGO VG95218 part 28 C Cables - overall screen with unscreened twisted pairs Table 4A	17
LFMGSSGO VG95218 part 28 E Cables - double screened twisted pairs Table 4B	18
LFMGSGO VG95218 part 28 C Cables - screened triples Table 4C	19
LFMSGSGO VG95218 part 28 C Cables - overall screen with screened twisted pairs Table 5A, Table 5B	20
LFMSGSSGO VG95218 part 28 E Cables - double screened twisted triples Table 6	21



LMGSGO VG95218 part 28 C Cables - overall screen

Example:
VG95218 T28 C061

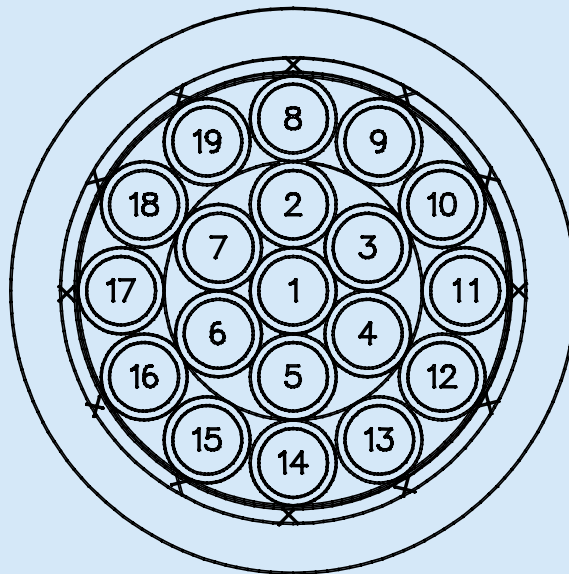
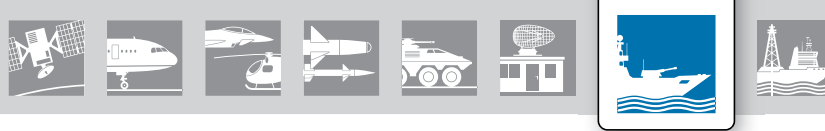


Table 1 - LMGSGO
Cables - overall screen - 1.5 mm² and 2.5 mm²

Number of wires x nominal cross-section mm ²	VG ref. no. T28	Cable bundle diameter mm nom.	Nominal diameter of screened wire		Wall thickness of sheath mm min.	Cable diameter		Weight kg/km max.	Resistance at 20°C Ohm/km max.
			AWG	mm min.		mm min.	mm max.		
2 x 1.5	C033+C083	4.9	36	0.13	0.7	6.2	6.8	94	14.1
3 x 1.5	C035+C122	5.2	36	0.13	0.7	6.5	7.1	112	14.1
4 x 1.5	C042+C088	5.8	34	0.16	0.7	7.0	7.8	135	14.1
5 x 1.5	C044+C090	6.3	36	0.13	0.7	7.6	8.4	156	14.1
7 x 1.5	C046	6.9	36	0.13	0.7	8.0	8.8	196	14.1
10 x 1.5	C052	9.1	34	0.16	0.8	10.2	11.2	273	14.1
12 x 1.5	C055	9.5	34	0.16	0.8	10.6	11.6	309	14.6
14 x 1.5	C058	10.0	34	0.16	0.8	11.1	12.1	358	14.6
16 x 1.5	C060	10.6	34	0.16	0.8	11.5	12.7	402	14.6
19 x 1.5	C061	11.2	34	0.16	0.8	12.1	13.3	456	14.6
24 x 1.5	C065	13.5	32	0.20	0.7	14.2	15.6	585	14.1
27 x 1.5	C066	13.8	32	0.20	0.8	14.5	15.9	640	14.1
33 x 1.5	C070	14.9	32	0.20	0.9	15.6	17.2	760	14.1
37 x 1.5	C005	15.6	32	0.20	1.0	18.2	19.2	868	14.6
3G1.5	C036+C085	5.2	36	0.13	0.7	6.5	7.3	112	14.1
5G1.5	C045+C091	6.3	36	0.13	0.7	7.6	8.4	156	14.1
7G1.5	C047	6.9	36	0.13	0.7	8.0	8.8	196	14.1
10G1.5	C053	9.1	34	0.16	0.8	10.2	11.2	273	14.6
2 x 2.5	C034+C084	5.8	36	0.13	0.7	7.1	7.7	126	8.46
3 x 2.5	C037+C086	6.2	36	0.13	0.7	7.5	8.1	151	8.46
4 x 2.5	C043+C089	6.9	36	0.13	0.7	8.0	9.0	186	8.46
7 x 2.5	C048	8.5	34	0.16	0.7	9.5	10.3	278	8.46
3G2.5	C038+C087	6.2	36	0.13	0.7	7.5	8.1	151	8.46

G: green/yellow



FMGSGO VG95218 part 28 C

Cables - overall screen with unscreened twisted pairs

Example:
VG95218 T28 C067

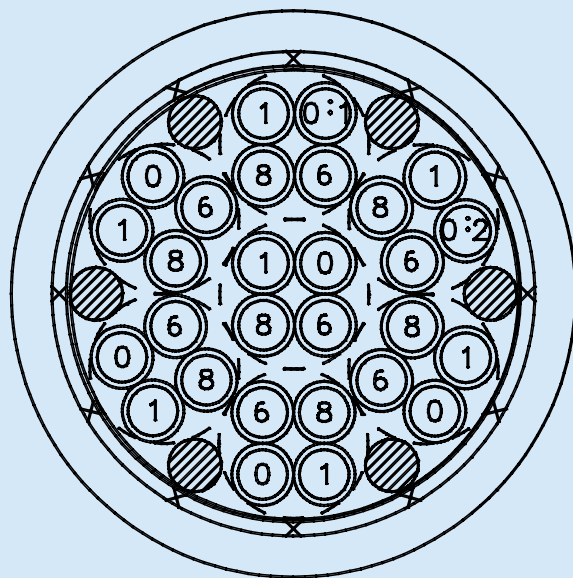
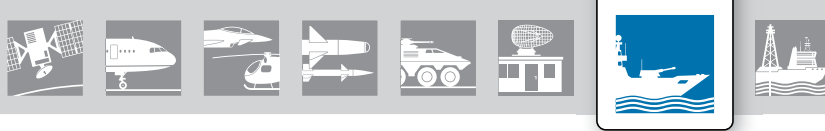


Table 2 - FMGSGO

Cables - overall screen with unscreened twisted pairs - 0.75 mm² and 1.00 mm² (star quad)

Number of wires x nominal cross-section mm ²	Part no. T28	Cable bundle diameter mm nom.	Nominal diameter of screened wire		Wall thickness of sheath mm min.	Cable diameter		Weight kg/km max.	Resistance at 20°C Ohm/km max.
			AWG	mm min.		mm min.	mm max.		
1 x 2 x 0.75	C032	3.7	36	0.13	0.7	5.2	5.6	57	30.5
2 x 2 x 0.75	C040	4.3	36	0.13	0.7	5.6	6.2	75	28.4
4 x 2 x 0.75	C050	7.5	34	0.16	0.7	8.5	9.3	156	28.4
6 x 2 x 0.75	C054	8.7	34	0.16	0.8	9.8	10.8	218	30.5
8 x 2 x 0.75	C059	9.6	34	0.16	0.8	10.7	11.7	265	30.5
10 x 2 x 0.75	C062	10.9	32	0.2	0.8	11.6	12.8	316	30.5
14 x 2 x 0.75	C067	11.8	34	0.16	0.8	12.7	13.9	394	30.5
16 x 2 x 0.75	C069	13.2	32	0.20	0.8	13.9	15.3	466	30.5
(1 x 2 x 1.0)	C092	4.1	36	0.13	0.8	5.8	6.4	65	21.4
(2 x 2 x 1.0)	C099	4.8	36	0.13	0.8	6.5	7.1	93	21.4
(4 x 2 x 1.0)	C104	8.9	36	0.13	1.3	11.5	12.7	223	21.4
(6 x 2 x 1.0)	C106	9.6	34	0.16	0.7	10.7	11.9	238	21.4
(8 x 2 x 1.0)	C108	10.6	34	0.16	0.75	11.9	13.1	308	21.4
(10 x 2 x 1.0)	C109	11.8	34	0.16	0.75	13.0	14.4	370	21.4
(14 x 2 x 1.0)	C111	13.2	32	0.2	0.75	14.3	15.9	479	21.4
(16 x 2 x 1.0)	C113	15.9	32	0.2	0.85	17.3	19.1	618	21.4



FMSGSGO VG95218 part 28 C Cables - overall screen with screened pairs

Example:
VG95218 T28 C057

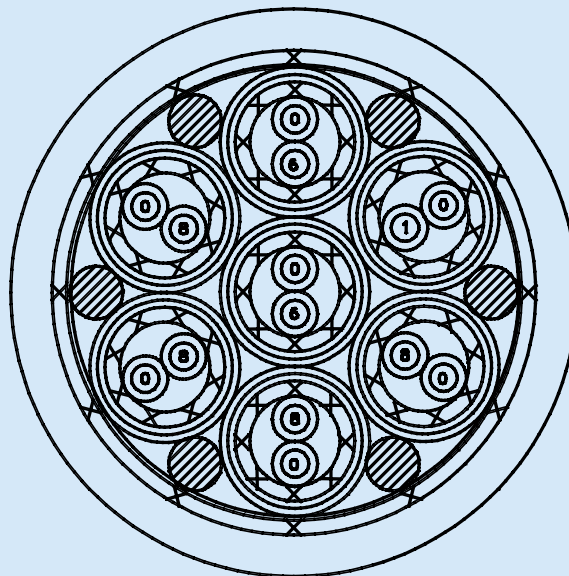
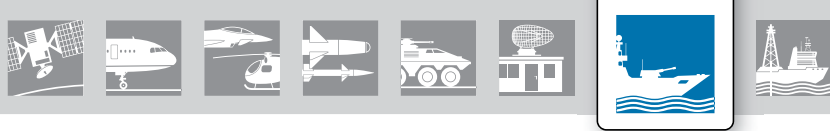


Table 3 - FMSGSGO
Cables - overall screen with screened pairs - 0.75 mm²

Number of wires x nominal cross-section mm ²	Part no. T28	Cable bundle diameter mm nom.	Nominal diameter of screened wire		Wall thickness of sheath mm min.	Cable diameter mm		Weight kg/km max.	Resistance at 20°C Ohm/km max.
			AWG	mm min.		mm min.	mm max.		
2 x 2 x 0.75	C041	8.3	36	0.13	0.70	9.4	10.2	160	28.4
4 x 2 x 0.75	C051	9.5	34	0.16	0.80	10.6	11.6	241	28.4
7 x 2 x 0.75	C057	11.7	34	0.16	0.80	12.6	13.8	355	30.5
11 x 2 x 0.75	C063	14.8	32	0.20	0.90	15.5	17.1	552	30.5
14 x 2 x 0.75	C068	15.8	32	0.20	0.90	16.5	18.1	659	30.5
19 x 2 x 0.75	C072	18.3	32	0.20	0.90	18.8	20.6	872	30.5
24 x 2 x 0.75	C074	20.4	32	0.20	1.00	20.7	22.9	1059	30.5



LFMGSGO VG95218 part 28 C

Cables - overall screen with unscreened twisted pairs

Example:
VG95218 T28 C076

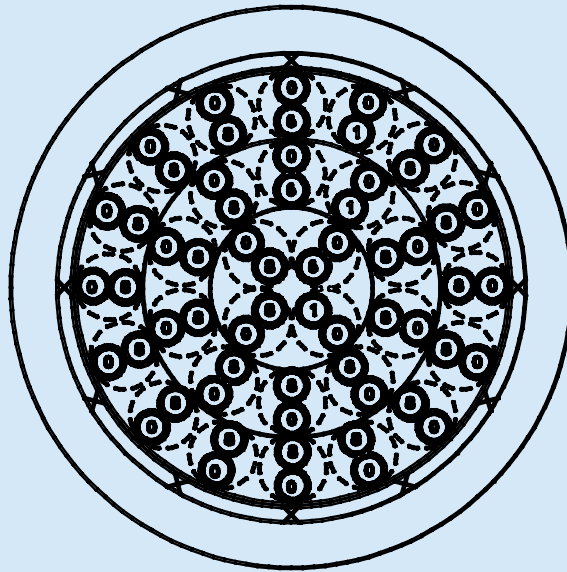
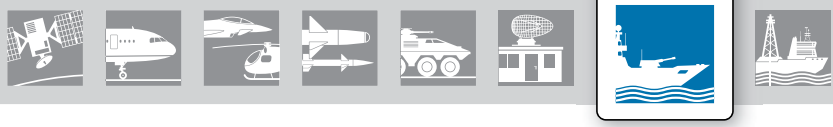


Table 4A - LFMGSGO

Cables - overall screen with unscreened twisted pairs - 0.4 mm²

Number of wires x nominal cross-section mm ²	Part no.	Cable bundle diameter mm nom.	Nominal diameter of screened wire		Wall thickness of sheath mm min.	Cable diameter		Weight kg/km max.	Resistance at 20°C Ohm/km max.
			AWG	mm min.		mm min.	mm max.		
30 x 2 x 0.4	C076	14.1	32	0.20	0.9	15.1	16.5	493	57
45 x 2 x 0.4	C077	17.6	32	0.20	0.9	18.1	20.0	699	57



LFMGSSGO VG95218 part 28 E Cables - double screened twisted pairs

Example:
VG95218 T28 E006

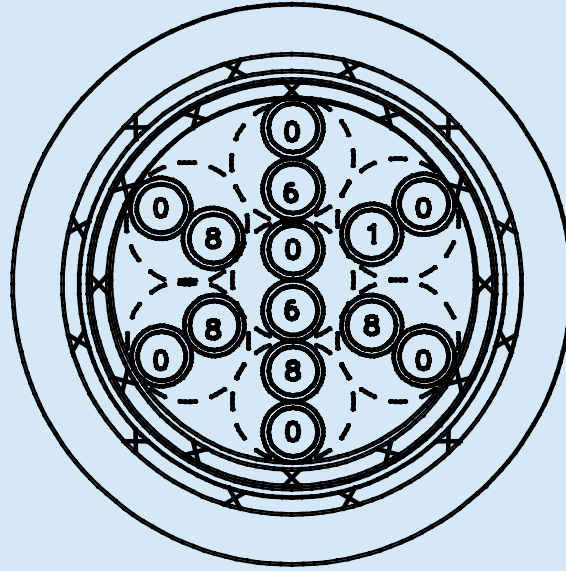
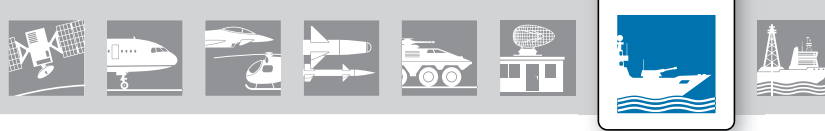


Table 4B - LFMGSSGO
Cables - double screened twisted pairs - 0.4 mm²

Number of wires x nominal cross-section mm ²	Part no. T28	Cable bundle diameter mm nom.	Nominal diameter screened wire			Wall thickness of sheath mm min.	Cable diameter		Weight kg/km max.	Resistance at 20°C Ohm/km max.
			AWG1 mm min.	AWG2 mm min.	mm min.		mm max.			
2 x 2 x 0.4	E004	4.4	36	0.13	36	0.13	0.7	5.7 6.3	76	52
4 x 2 x 0.4	E005	6.8	36	0.13	36	0.13	0.7	7.9 8.7	130	52
7 x 2 x 0.4	E006	8.3	36	0.13	34	0.16	0.7	9.4 10.2	182	55
12 x 2 x 0.4	E008	10.2	34	0.16	34	0.16	0.8	11.3 12.3	282	55
19 x 2 x 0.4	E010	12.4	34	0.16	34	0.16	0.8	13.1 14.5	385	55
27 x 2 x 0.4	E011	14.8	32	0.20	32	0.20	0.9	15.5 17.1	550	55



LFMGSGO VG95218 Teil 28 C

Cables - screened triples

Example:
VG95218 T28 C110

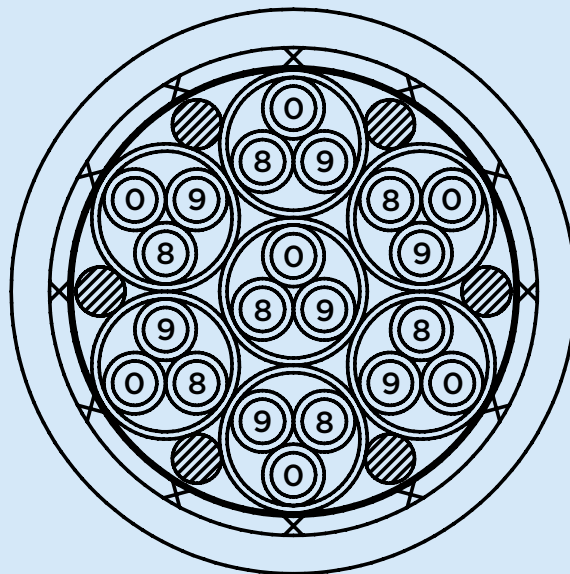
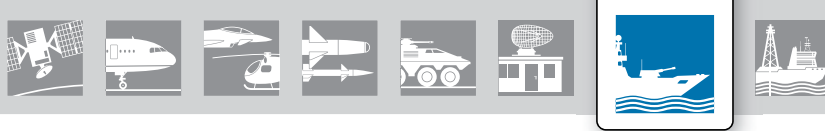


Table 4C - LFMGSGO
Cables - screened triples - 0.4 mm²

Number of wires x nominal cross-section mm ²	Part no. T28	Cable bundle diameter mm nom.	Nominal diameter of screened wire		Wall thickness of sheath mm min.	Cable diameter		Weight kg/km max.	Resistance at 20°C Ohm/km max.
			AWG	mm min.		mm min.	mm max.		
3 x 3 x 0.4	C105	6.7	36	0.13	1.0	8.8	9.6	128	52.0
5 x 3 x 0.4	C107	8.2	36	0.13	0.7	9.5	10.5	159	52.0
7 x 3 x 0.4	C110	9.1	34	0.16	0.7	10.9	11.9	216	52.0
10 x 3 x 0.4	C112	11.9	34	0.16	0.75	13.9	15.3	300	52.0
12 x 3 x 0.4	C114	12.4	34	0.16	0.75	14.2	15.6	326	52.0
14 x 3 x 0.4	C115	13.3	32	0.20	0.75	15.2	16.6	387	52.0
19 x 3 x 0.4	C116	14.9	32	0.20	0.75	16.7	18.3	480	52.0
24 x 3 x 0.4	C117	17.7	32	0.20	0.85	18.9	20.7	563	52.0
30 x 3 x 0.4	C118	18.8	32	0.20	0.85	19.9	21.9	662	52.0
37 x 3 x 0.4	C119	20.7	30	0.25	0.85	21.7	23.9	816	52.0
44 x 3 x 0.4	C121	23.7	28	0.33	0.9	24.7	26.1	1014	52.0



LFMSGSGO VG95218 part 28 C

Cables - overall screen with screened twisted pairs

Example:
VG95218 T28 C056

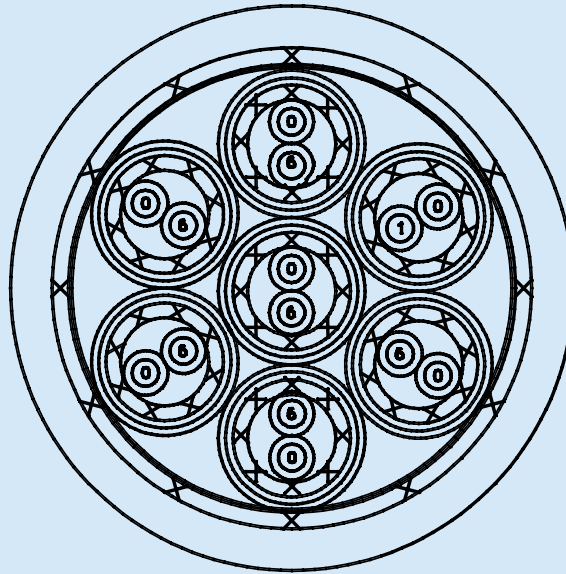


Table 5A LFMSGSGO

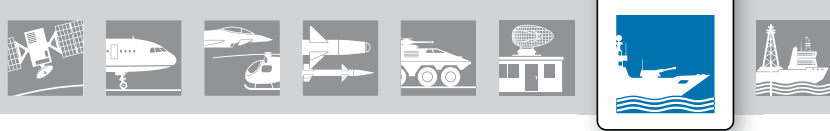
Cables - overall screen with screened twisted pairs - 0.4 mm²

Number of wires x nominal cross-section mm ²	Part no.	Cable bundle diameter mm nom.	Nominal diameter of screened wire		Wall thickness of sheath mm min.	Cable diameter		Weight kg/km max.	Resistance at 20°C Ohm/km max.
			AWG	mm min.		mm min.	mm max.		
2 x 2 x 0,4	C039	6.3	36	0.13	0.70	8.1	8.9	118	53
4 x 2 x 0.4	C049	8.1	34	0.16	0.70	9.1	9.9	170	53
7 x 2 x 0.4	C056	9.9	34	0.16	0.80	11.0	12.0	253	56
12 x 2 x 0.4	C064	12.5	32	0.20	0.80	13.2	14.6	395	56
19 x 2 x 0.4	C071	15.5	32	0.20	0.90	16.2	17.8	572	56
27 x 2 x 0.4	C075	18.2	32	0.20	0.90	18.7	20.5	774	56

Table 5B LFMSGSGO

Cables - overall screen with screened twisted pairs - 0,25 mm²

Number of wires x nominal cross-section mm ²	Part no.	Cable bundle diameter mm nom.	Nominal diameter of screened wire		Wall thickness of sheath mm min.	Cable diameter		Weight kg/km max.	Resistance at 20°C Ohm/km max.
			AWG	mm min.		mm min.	mm max.		
3 x 2 x 1.2 + 18 x 2 x 0.25	C073	16.5	32	0.20	0.90	17.8	19.6	610	56
27 x 4 x 0.25	C078	20.3	32	0.20	1.00	20.6	22.8	980	56



LFMSGSSGO VG95218 part 28 E
Cables - double screened twisted triples

Example:
VG95218 T28 E007

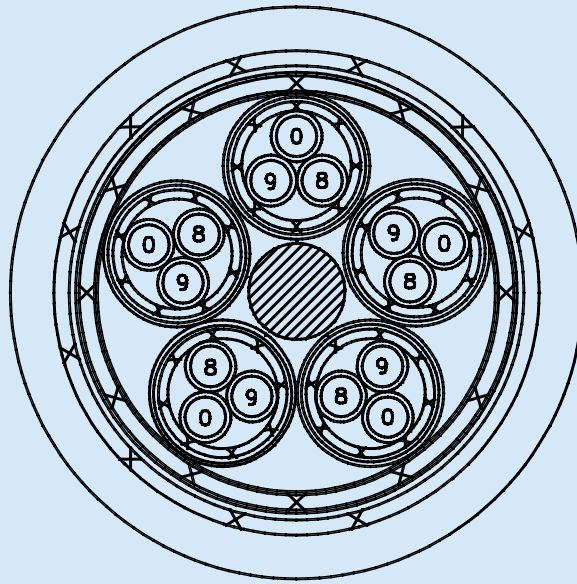


Table 6 - LFMSGSSGO
Cables - double screened twisted triples - 0.4 mm²

Number of wires x nominal cross-section mm ²	Part no.	Cable bundle diameter mm nom.	Nominal diameter of screened wire		Wall thickness of sheath mm min.	Cable diameter		Weight kg/km max.	Resistance at 20°C Ohm/km max.		
			AWG1 mm min.	AWG2 mm min.		mm min.	mm max.				
5 x 3 x 0.4	E007	10,3	34	0.16	34	0.16	0.8	11.2	12.4	310	53
12 x 3 x 0.4	E009	15,2	32	0.20	32	0.20	0.9	15.9	17.5	624	56

FOR MORE INFORMATION

Technical Support

North America	+1 800 522 6752
Asia/Pacific	+86 0 400 820 6015
Austria	+43 1 905 601 228
Baltic Regions	+46 8 5072 5000
Benelux	+31 73 6246 999
Czech Republic	+420 800 701 462
France	+33 1 34 20 86 86
Germany	+49 6251 133 1999
Hungary	+36 809 874 04
Italy	+39 011 401 2632
Nordic	+46 8 5072 5000
Poland	+48 800 702 309
Russia	+7495 790 790 2
Spain/Portugal	+34 93 2910366
Switzerland	+41 52 633 66 26
United Kingdom	+44 800 267 666

Follow us on Twitter for all the latest product news
@TEConnectivity, and on Facebook, TEConnectivity.

Connect with one of our Subject Matter Experts
at www.DesignSmarterFaster.com

www.te.com/ADM

© 2013 Tyco Electronics Corporation. All Rights Reserved.

1654420-1 ADM 1M 01/2013

Raychem, TE Connectivity and the TE connectivity (logo) are trademarks of the TE Connectivity Ltd. family of companies.

Other products, logos, and company names mentioned herein may be trademarks of their respective owners.

While TE has made every reasonable effort to ensure the accuracy of the information herein, nothing herein constitutes any guarantee that such information is error-free, or any other representation, warranty or guarantee that the information is accurate, correct, reliable or current. The TE entity issuing this publication reserves the right to make any adjustments to the information contained herein at any time without notice. All implied warranties regarding the information contained herein, including, but not limited to, any implied warranties of merchantability or fitness for a particular purpose are expressly disclaimed. The dimensions herein are for reference purposes only and are subject to change without notice. Specifications are subject to change without notice. Consult TE for the latest dimensions and design specifications.

In case of any potential ambiguities or questions, please don't hesitate to contact us for clarification.



EVERY CONNECTION COUNTS