
Kalmar Group Standard

KGS 91002

Part

Article Standards

Name

Screened High Voltage Cable - Specification

Group

System Components

1 Scope

The scope is to simplify the process of sourcing high voltage cables without depending on exclusive items. This standard specifies the requirements needed for a screened high voltage cable and it is based on ISO 19642 that is specifically made for high voltage cables used on automotive applications, which in turn is based on ISO 6722.

2 Purpose

To set the cable specifications of high voltage cable used for high voltage applications.

3 Responsibilities

Electrical Engineer - for the purpose of naming and properly specifying the item in technical documents such as drawings and BOMs.

4 Definitions

Arbitrary - Open to choose within the limitations of the standard mentioned.

HV - High Voltage

BOM - Bill Of Material

5 Records / References / Attachments

ISO 19642-1	Road vehicles - Automotive cables - Vocabulary and design guidelines
ISO 19642-2	Road vehicles - Automotive cables - Test methods
ISO 19642-5	Road vehicles - Automotive cables - Dimensions and requirements for 600 V [...]
ISO 19642-9	Road vehicles - Automotive cables - Dimensions and requirements for 600 V [...]
ISO 6722-1	Road vehicles - 60 V and 600 V single-core cables - Dimensions, test [...]
EN 1175	Safety of industrial trucks - Electrical/electronic requirements

6 Procedure Description / Requirements

6.1 Designation

The designation shall be as per below:

The word "Cable" followed by a comma followed by a space followed by the word "Shielded" followed by a comma followed by a space followed by the abbreviation "HV" followed by a comma followed by a space followed by the color code "OG" followed by a comma followed by space followed by the area.

The area can be found in Table 1.

Example

A high voltage cable with the area of 35 mm^2 shall be designated:

Cable, Shielded, HV, OG, 35

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6.2 Dimensions

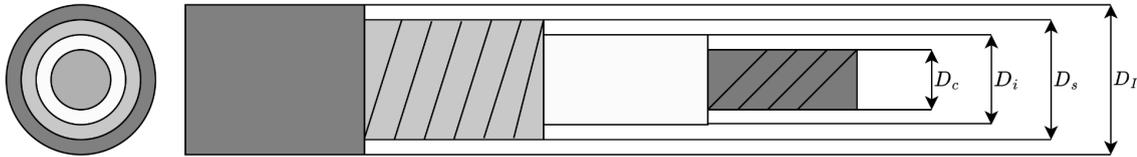


Figure 1 - Screened High Voltage Cable

D_c = Conductor
 D_i = Inner isolation
 D_s = Screen
 D_I = Outer isolation

Table 1 - Dimensions (measures in mm)

Area [mm^2]	35	50	70	95	120
D_I nom [mm]	12.7±0.3	14.9±0.3	17.0±0.3	19.9±0.4	22.6±0.4
D_s max [mm]	10.4	12.6	14.6	17.3	19.1
D_i nom [mm]	9.70	11.5	13.7	16.2	18.0
D_c max [mm]	7.9	9.4	11.6	13.5	15.1
Amount of wires	> 273	> 385	> 360	> 480	> 589
Diameter of individual wires [mm]	0.41	0.41	0.51	0.51	0.51

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6.3 Requirements

It is mandatory that the cable meet the requirements of the relevant ISO standards listed in Table 2. Cable shall be built according to the specifications mentioned in the relevant fields. Each specification that is reused from an international standard will be referred to where used.

Table 2 - Requirements

Cable	Cable type	Single core with shield
	International standards	ISO 19642-9
Conductor	Material	Conductor material specified in ISO 19642-5:2019 4.5
	Dimensions	See Table 1
	International standards	ISO 19642-5
Screen	Material	Arbitrary conductive material Specified from ISO A19642-1:2023 3.3.32
	Dimensions	See Table 1
	International standards	ISO 19642-1
Colour on cable	Colour	Orange Specified from ISO 19642-1:2023-1:2023 3.3.11
	Abbreviation	OG
	International standards	ISO 19642-1
Operating temperature	Least maximum operating temperature	125°C (ISO 19642-1:2019 Class C)
	Greatest minimum operating temperature	-40°C (ISO 19642-1:2019 Class C, D)
	Least Class	ISO 19642-1:2019 Class C
	Preferred Class	ISO 19642-1:2019 Class D or better
	International standards	ISO 19642-1
Rated Voltage	DC	≥ 1500 V
	AC	≥ 1000 V
	International standards	ISO 19642-9
Insulation	Material	Arbitrary dielectric material
	Dimensions	See Table 1
	International standards	ISO 19642-9
Bending radius	Fixed	4x
	Flexible	6x
Dielectrics test	Voltage, Current Type, Frequency, Time	3kV, AC, 25-100Hz, 1 min Specified in EN 1175:2020
	European standard	EN 1175
	International standards	ISO 19642-5
Environmental tests	Highlighted mandatory tests in ISO 19642-9:2019 table 1	Oil, Petrol, Brake fluid, Chemicals Specified in ISO 19642-2:2019 6.4.10 Heat aging 3000h Specified in ISO 19642-2:2019 6.4.2 Flame retardant Specified in ISO 19642-2:2019 6.4.14
	International standards	ISO 19642-9
	Testing methods	International standards