
**Road vehicles — Fuse-links with
axial terminals for use in 48V
networks — Types SF36-70V, SF51-
70V and SF56-70V**

*Véhicules routiers — Liaisons fusibles avec languettes axiales pour
réseaux 48V — Types SF36-70V, SF51-70V et SF56-70V*

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Preview



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations/governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 32, *Electrical and electronic components and general system aspects*.

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Voorbeeld
Preview

Road vehicles — Fuse-links with axial terminals for use in 48V networks — Types SF36-70V, SF51-70V and SF56-70V

1 Scope

This document specifies fuse-links with axial terminals (Strip fuse-links) Types SF36-70V, SF51-70V and SF56-70V used in road vehicles. It establishes, for these fuse-link types, the rated current, test procedures, performance requirements, and dimensions.

This document is applicable to fuse-links with a rated voltage of 70 V DC, a rated current of 30 A to 500 A, and a breaking capacity of 2 500 A intended for use in the electrical system of road vehicles with a nominal voltage of 48 V DC.

This document is intended to be used in conjunction with ISO 8820-1 and with ISO 8820-2. The numbering of its clauses corresponds to that of ISO 8820-1, whose requirements are applicable, except where modified by requirements particular to this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 6722-1, *Road vehicles — 60 V and 600 V single-core cables — Part 1: Dimensions, test methods and requirements for copper conductor cables*

ISO 8820-1:2014, *Road vehicles — Fuse-links — Part 1: Definitions and general test requirements*

ISO 16750-3:2012, *Road vehicles — Environmental conditions and testing for electrical and electronic equipment — Part 3: Mechanical loads*

ISO 16750-5:2010, *Road vehicles — Environmental conditions and testing for electrical and electronic equipment — Part 5: Chemical loads*

IEC 60068-2-14:2009, *Environmental testing — Part 2-14: Tests — Test N: Change of temperature*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 8820-1 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

4 Marking, labelling and colour coding

See ISO 8820-1. The fuse-link shall be additionally marked with U_R "70 V", the colour coding given in [Table 1](#) shall apply.

Table 1 — Fuse-link colour coding

Fuse-link rated current A	Fuse-link type SF36-70V	Fuse-link types SF51-70V and SF56-70V
30	orange	—
40	green	
50	red	
60	yellow	light blue
70	brown	dark grey
80	white	red
100	blue	yellow
125	pink	green
150	grey	orange
175	light brown (tan)	white
200	violet	blue
225		light brown (tan)
250		pink
300		light grey
350		dark green
400		violet
450		gold/dark yellow
500		brown

5 Design and test requirements

5.1 General

5.1.1 General test conditions

See ISO 8820-1 and the following:

- Install the fuse-link in the test fixture with a torque of $9 \text{ Nm} \pm 1 \text{ Nm}$ for M6 bolts and a torque of $20 \text{ Nm} \pm 1 \text{ Nm}$ for M8 bolts. For a method to conduct retightening torque and setting behaviour, see [Annex A](#).
- The bolt-down fuse-link validation shall apply to the clinchable version.
- If clinchable fuse-links need to be tested on the test fixtures shown in [Figures 10, 11, or 12](#) for the tests, then a hole should be produced into the clinch-terminal to fit the bolt-down test fixture.

Perform the tests according to the test sequence in [Table 2](#).

Fuse-link types SF51-70V and SF56-70V with a rated current between 300 A and 500 A shall only be used for short circuit protection.

5.1.2 General performance requirements

See ISO 8820-1 and the following:

- After the tests, the insulator shall be intact, visible cracks are not permitted.

5.1.3 General fuse-link requirements

The general fuse-link requirements are as follows:

- The terminals shall be made out of a copper material.
- The surface of the terminals shall be tin coated with a thickness of 0,5 µm to 6 µm.
- The insulator shall enclose the fuse-element completely.

5.1.4 Test sequence

Table 2 — Test sequence

No.	Test	Clause	Breaking capacity, I ² t-value	Operating time rating	Current steps	Current cycling	Chemical loads	Climatic loads	Temperature shock	Shock, & Vibration	Derating (optional)	Mechanical stability	Dimensions		
	Sample group		A	B	C	D	E	F	G	H	J	K	L		
	Number of samples		6	a	6	12	6	12	12	12	6	12	10		
1	Dimensions	6											X		
2	Marking	4					X	X	X						
3	Cold resistance	5.1.1	X	X	X	X		X	X	X	Z	X			
4	Retightening torque	A.1				Z		Z	Z	Z	Z				
5	Temperature shock	5.4.5							X						
6	Climatic loads	5.4.2						X							
7	Chemical loads	5.4.3					X								
8	Shock & Vibration	5.4.4								X					
9	Current cycling	5.3				X									
10	Derating	A.2									Z				
11	Current steps	5.6			X										
12	Breaking capacity	5.7	X												
13	Mechanical stability	5.8										X			
14	Cold resistance	5.1.1				X		X	X	X		X			
15	Retightening torque	A.1							Z						
16	Overload test	1,35 I _R ^b	5.11			Y		Y	Y	Y		Y			
		2,0 I _R				Y		Y	Y	Y		Y			
17	Operating time rating	0,75 I _R or I _R (with voltage drop measurement)	5.5 5.2		Y										
		1,35 I _R ^b			Y										
		1,5 I _R ^b			Y										
		2,0 I _R			Y										
		3,0 I _R or 3,5 I _R			Y										
		5,0 I _R ^b			Y										
6,0 I _R ^b		Y													
18	I ² t-value	A.2	Z												
19	Insulation resistance	5.9	X	X	X	X		X	X	X					
20	Retightening torque	A.1				Z		Z		Z	Z				
21	Marking	4	X				X	X	X	X					

a Use at least 6 samples for each test current in the overload test.
b If applicable.
Y Each rated current shall be divided equally on these tests. The fuses are intended for a single operation only.
Z These tests are optional.

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