

---

---

**Road vehicles — Fuse-links —**  
**Part 6:**  
**Single-bolt fuse-links**

*Véhicules routiers — Liaisons fusibles —*

*Partie 6: Liaisons fusibles à poste singulier*

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[ISO 8820-6:2007](https://standards.iteh.ai/catalog/standards/sist/e51c9772-4f8d-4e76-8f9c-a5917f0f358d/iso-8820-6-2007)

<https://standards.iteh.ai/catalog/standards/sist/e51c9772-4f8d-4e76-8f9c-a5917f0f358d/iso-8820-6-2007>



**PDF disclaimer**

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

ISO 8820-6:2007

<https://standards.iteh.ai/catalog/standards/sist/e51c9772-4f8d-4e76-8f9c-a5917f0f358d/iso-8820-6-2007>

© ISO 2007

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Case postale 56 • CH-1211 Geneva 20  
Tel. + 41 22 749 01 11  
Fax + 41 22 749 09 47  
E-mail [copyright@iso.org](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

Published in Switzerland

## Contents

Page

Foreword.....	iv
<b>1</b> <b>Scope</b> .....	<b>1</b>
<b>2</b> <b>Normative references</b> .....	<b>1</b>
<b>3</b> <b>Terms and definitions</b> .....	<b>1</b>
<b>4</b> <b>Marking and labelling</b> .....	<b>2</b>
<b>5</b> <b>Tests and requirements</b> .....	<b>2</b>
<b>5.1</b> <b>General</b> .....	<b>2</b>
<b>5.1.1</b> <b>General test conditions</b> .....	<b>2</b>
<b>5.1.2</b> <b>Test sequence</b> .....	<b>3</b>
<b>5.1.3</b> <b>Test cable sizes</b> .....	<b>3</b>
<b>5.2</b> <b>Voltage drop</b> .....	<b>4</b>
<b>5.2.1</b> <b>Tests</b> .....	<b>4</b>
<b>5.2.2</b> <b>Requirements</b> .....	<b>4</b>
<b>5.3</b> <b>Transient current cycling</b> .....	<b>4</b>
<b>5.3.1</b> <b>Test</b> .....	<b>4</b>
<b>5.4</b> <b>Environmental conditions</b> .....	<b>5</b>
<b>5.5</b> <b>Operating time rating</b> .....	<b>5</b>
<b>5.5.1</b> <b>Test</b> .....	<b>5</b>
<b>5.5.2</b> <b>Requirement</b> .....	<b>5</b>
<b>5.6</b> <b>Current steps</b> .....	<b>6</b>
<b>5.6.1</b> <b>Test</b> .....	<b>6</b>
<b>5.6.2</b> <b>Requirement</b> .....	<b>6</b>
<b>5.7</b> <b>Breaking capacity</b> .....	<b>6</b>
<b>5.7.1</b> <b>Test</b> .....	<b>6</b>
<b>5.7.2</b> <b>Requirement</b> .....	<b>6</b>
<b>5.8</b> <b>Strength of terminals</b> .....	<b>6</b>
<b>5.9</b> <b>Strength of insulating body of the fuse-link and insulating nut</b> .....	<b>6</b>
<b>5.9.1</b> <b>Purpose</b> .....	<b>6</b>
<b>5.9.2</b> <b>Test</b> .....	<b>6</b>
<b>5.9.3</b> <b>Requirement</b> .....	<b>7</b>
<b>6</b> <b>Dimensions</b> .....	<b>7</b>
<b>6.1</b> <b>Single-bolt fuse-link</b> .....	<b>7</b>
<b>6.2</b> <b>Mounting example</b> .....	<b>8</b>
<b>7</b> <b>Test fixture</b> .....	<b>8</b>

## 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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 8820-6 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 3, *Electrical and electronic equipment*.

ISO 8820 consists of the following parts, under the general title *Road vehicles — Fuse-links*:

- *Part 1: Definitions and general test requirements*
- *Part 2: User's guide*
- *Part 3: Fuse-links with tabs (blade type)*
- *Part 4: Fuse-links with female contacts (type A) and bolt-in contacts (type B) and their test fixtures*
- *Part 5: Fuse-links with axial terminals (Strip fuse-links) Types SF 30 and SF 51 and test fixtures*
- *Part 6: Single-bolt fuse-links*
- *Part 7: Fuse-links with tabs (Type G) with rated voltage of 450 V*

# Road vehicles — Fuse-links —

## Part 6: Single-bolt fuse-links

### 1 Scope

This part of ISO 8820 specifies single-bolt fuse-links in road vehicles. It establishes, for this fuse-link type, the rated current, test procedures, performance requirements and dimensions.

This part of ISO 8820 is applicable to fuse-links with a rated voltage of 58 V, a current rating of  $\leq 300$  A and a breaking capacity of 2 000 A intended for use in road vehicles at a nominal voltage of 12 V, 24 V and/or 42 V.

This part of ISO 8820 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 part of ISO 8820.

### 2 Normative references

The following referenced documents are indispensable for the application 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 4017, *Hexagon head screws — Product grades A and B*

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

ISO 8820-2, *Road vehicles — Fuse-links — Part 2: User's guide*

ISO 6722, *Road vehicles — 60 V and 600 V single-core cables — Dimensions, test methods and requirements*

### 3 Terms and definitions

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

#### 3.1

##### **insulating nut**

electrically insulated device used to assemble a single-bolt fuse

## 4 Marking and labelling

The requirements given in ISO 8820-1 and Table 1 of this part of ISO 8820 apply.

**Table 1 — Fuse-link colour coding**

Fuse-link rating A	Colour
50	red
75	brown
100	yellow
125	green
150	orange
175	white
200	blue
250	pink
300	grey

## 5 Tests and requirements

### 5.1 General

#### 5.1.1 General test conditions

In addition to carrying out the test procedures in accordance with ISO 8820-1, the following criteria shall apply:

- Tests shall be performed following the test sequences in Table 2.
- The test fixtures for electrical tests shall be designed in accordance with Figure 4. The connection resistance shall be 0,35 mΩ max. to ensure the proper function of the test fixture.
- Terminals shall have a suitable finish which will assure corrosion protection, and shall have satisfactory mechanical and electrical properties.
- The mounting torque shall be  $(12 \pm 1)$  Nm.
- The insulation resistance of the insulating nut measured with 100 V d.c. shall be  $> 10$  MΩ.

iTeh STANDARD PREVIEW  
(standards.iteh.ai)

ISO 8820-6:2007  
<https://standards.iteh.ai/catalog/standards/sist/c51e9772-418d-4e76-85c-a5917f0f358d/iso-8820-6-2007>

## 5.1.2 Test sequence

Table 2 — Test sequences

No.	Requirement/Test	Clause	Sample groups <sup>a</sup>							
			1	2	3	4	5	6	7	
1	Dimensions	6	X	X	X					
2	Marking and labelling	4	X	X	X	X	X	X	X	
3	Strength of insulating body	5.9	X	X	X	X	X	X	X	
4	Voltage drop	5.2	X	X	X					
5	Accelerated ageing	5.4				X				
6	Fluid compatibility	5.4					X			
7	Mechanical load	5.4						X		
8	Transient current cycling	5.3							X	
9	Voltage drop	5.2				X	X	X	X	
10	Current steps	5.6			X					
11	Breaking capacity	5.7	X							
12	Operating time rating	5.5	1,00 $I_R$		X		X	X	X	X
			1,35 $I_R$		Y <sup>b</sup>		Y	Y	Y	Y
			1,50 $I_R$		Y		Y	Y	Y	Y
			2,00 $I_R$		Y		Y	Y	Y	Y
			3,50 $I_R$		Y		Y	Y	Y	Y
	6,00 $I_R$		Y		Y	Y	Y	Y		
13	Strength of insulating body	5.9	X	X	X	X	X	X	X	

<sup>a</sup> Each sample group shall contain a minimum of 10 fuse links.

<sup>b</sup> For these operating time tests noted with a Y, the sample groups 2, 4, 5, 6 and 7 for each current rating shall be divided equally. These fuses are intended to be subjected to a single operating time test only.

## 5.1.3 Test cable sizes

Test cable sizes shall be as given in Table 3. All tests for a particular fuse-link rating shall be performed using the same cable size.

Test cable sizes are specified to allow comparative fuse-link tests to be carried out. The cable size specified does not necessarily indicate the size of cable to be used in the vehicle application.

Table 3 — Test cable sizes

Fuse-link rating A	Conductor cross-sectional area <sup>a</sup> mm <sup>2</sup>
50	10
75	
100	16
125	
150	25
175	
200	35
250	50
300	70

<sup>a</sup> Conductor material according to ISO 6722.

## 5.2 Voltage drop

### 5.2.1 Tests

The test given in ISO 8820-1 and Figure 3 of this part of ISO 8820 shall apply.

### 5.2.2 Requirements

The requirements given in Table 4 shall apply.

ISO 8820-6:2007  
<https://standards.iteh.ai/catalog/standards/sist/e51c9772-4f8d-4e76-89c-a3917f0f358d/iso-8820-6-2007>

Table 4 — Voltage drop

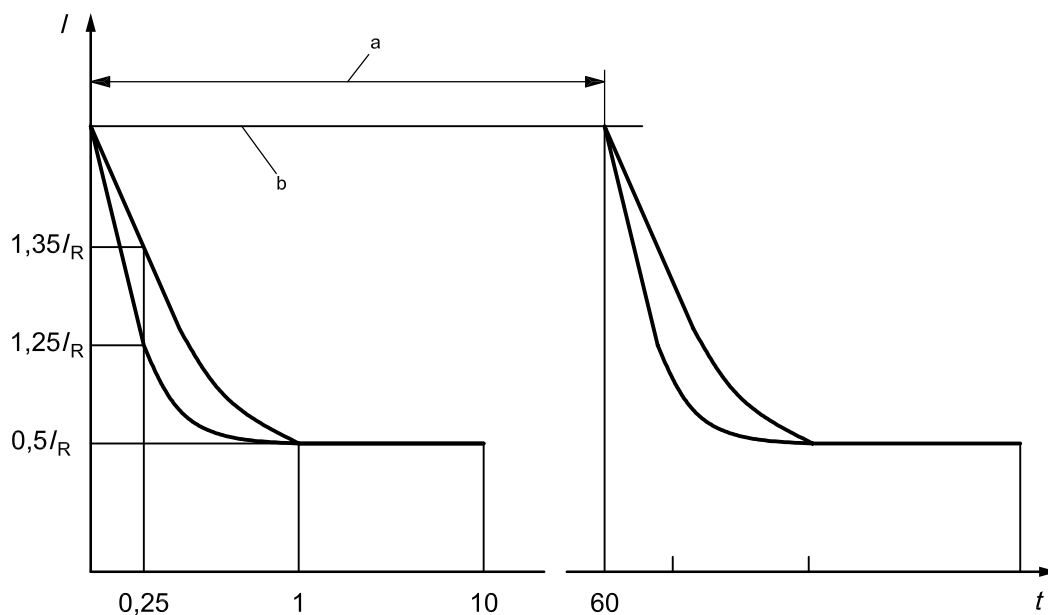
Fuse-link rating A	Max. fuse-link voltage drop mV
50	110
75	105
100	100
125	95
150	90
175	85
200	80
250	75
300	70

## 5.3 Transient current cycling

### 5.3.1 Test

Figure 1 and the test given in ISO 8820-1 shall apply. This test shall be performed at an environmental temperature of  $(90 \pm 5) ^\circ\text{C}$ . At an elapsed time of 0,25 s on-time, the current shall fall to a value between  $1,25 I_R$  and  $1,35 I_R$ . At no time shall the steady state current fall below  $0,50 I_R$ .



**Key**

- $I$  current in A  
 $t$  time in s  
 $a$  one cycle  
 $b$   $4 I_R$

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

**Figure 1 — Transient current cycling**

[ISO 8820-6:2007](https://standards.iteh.ai/catalog/standards/sist/e51c9772-4f8d-4e76-8f9c-a5917f0f358d/iso-8820-6-2007)

**5.3.2 Requirement** <https://standards.iteh.ai/catalog/standards/sist/e51c9772-4f8d-4e76-8f9c-a5917f0f358d/iso-8820-6-2007>

The requirements given in ISO 8820-1 shall apply.

**5.4 Environmental conditions**

The tests and requirements given in ISO 8820-1 shall apply.

**5.5 Operating time rating****5.5.1 Test**

The test given in ISO 8820-1 shall apply.

**5.5.2 Requirement**

The requirements given in Table 5 shall apply.

After activation, the current through the fuse-link shall not exceed 0,5 mA at the rated voltage of the fuse-link.