



**TEST INSTRUCTION IEC 60269-2 AND HD 60269-2**

**CONDITIONS FOR TESTING LOW VOLTAGE FUSES  
SUPPLEMENTARY REQUIREMENTS FOR FUSES FOR USE  
BY AUTHORIZED PERSONS (FUSES MAINLY FOR INDUSTRIAL APPLICATION)**

This test instruction is based on the following standards:

General Rules:

IEC 60269-1: 2009 Edition 4.1  
EN 60269-1: 2007

Specific Requirements:

IEC 60269-2: 2010 Edition 4.0  
HD 60269-2: 2007

It complies with this standard in all respects, and provides additional information ensuring a suitable degree of repeatability of the tests between the different test stations.

M. Saverio Manganaro  
Chairman of LOVAG Technical Committee

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Author: ASEFA

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A handwritten signature in blue ink, appearing to read 'M. Saverio Manganaro'.

**PREAMBLE**

The tests shall be carried out after the reference standards have been studied, since this test instruction only provides details on certain specific points.

For convenience in the use of this test instruction, the paragraphs are numbered according to the clauses in the standard IEC 60269-2-1.

It is noted that only those clauses are listed for which LOVAG provides additional information in order to ensure a suitable degree of repeatability of the tests.

**SUPPLEMENTARY REQUIREMENTS FOR FUSES FOR USE BY AUTHORIZED PERSONS****Fuse System A****7.1.7. Construction of a fuse-link**

Insulated gripping lugs

For security reasons, gripping lugs made of metal for which the manufacturer declares being insulated from live parts, are subjected to an impulse voltage test.

These impulses are given by a generator producing positive and negative impulses having a front time of 1.2  $\mu$ s and a time to half value of 50  $\mu$ s, the tolerance being :

- $\pm 5\%$  for the peak value
- $\pm 30\%$  for the front line
- $\pm 20\%$  for the time to half value.

Three positive and three negative impulses are applied between the gripping lugs and the live parts, the rated impulse withstand value being 6 kV for a rated voltage of the fuse-link of 400V or 500 V and 8 kV for the rated voltage of 690 V (these values are in accordance with IEC 60947-1 - Table H.1 and table 12).

The insulation has passed the test if no flashover or disruptive discharge occurs during the tests.

**8.3.4.2 Power dissipation of a fuse-link.**

When testing fuse-links rated currents according to R 20 of ISO standard 3 (not mentioned in table 17 of IEC 60269-1), the applicable cross-section of the next lower rated current shall be selected.

**8.7.4 Verification of overcurrent discrimination**

For fuses between 16 A and 1250 A and rated currents selected according to the R 20 series of ISO standard 3 the  $I^2t$  values (minimum pre-arcing and maximum operating) shall be calculated by multiplying the values of the next lower rated current according to Table 113 by a factor 1.25.

**8.9.1 Fuse-base.**

Irrespective of their construction fuse-bases are to be subjected to the tests of this subclause.

**8.9.1.3 Acceptability of test results**

The following dimensions of Fig. 102 shall be checked:  $150 \pm 1.5$ ,  $25 \pm 0.5$ , "v", "s". These dimensions of the fuse-base after test are deemed to be satisfactory if they are within the tolerances given in the Fig. 102.

**8.10.2 Test method**

According to the standard the test shall be made at room temperature between 15°C and 25°C. If this temperature is within the range 18°C up to 22°C the correction of result according to the given formula is not necessary. In other cases this formula shall be applied considering the temperature coefficient " $\alpha_{20}$ " of the basic material used for the fuse-link blades and the fuse-base contacts.

**8.11. Mechanical and miscellaneous tests**

For tests at 100 and 150°C the room may be ventilated or not.

**Fuse systems E, F and H:** No specific comments.