

**Passive filter units for electromagnetic interference suppression –**

**Part 1: Generic specification**

**CORRIGENDUM 1**

NOTE This corrigendum constitutes a revision of the structure of subclause 4.5, as well as an addition to subclause 4.10.3.

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**4.5 Voltage tests**

*Replace the text from 4.5 to the end of 4.5.3.5 by the following:*

**4.5 Insulation resistance**

For filters fitted with a discharge resistor, this measurement can only be made with the discharge resistor disconnected. If the discharge resistor cannot be disconnected without the filter being destroyed, the test shall be omitted for lot-by-lot tests; for qualification approval and periodic tests, where the discharge resistor cannot be disconnected without the filter being destroyed, the sample shall consist of filters specially made without discharge resistors.

**4.5.1 Measuring voltage**

Before the measurement is made, the filters shall be fully discharged. Unless otherwise specified in the relevant specification, the insulation resistance shall be measured, at the d.c. voltage specified in Table 2.

**Table 2 – DC voltage for insulation resistance**

Voltage rating of the filter	Measuring voltage
$U_R$ or $U_C < 10 \text{ V}$	$U_C$ or $U_R \pm 10 \%$
$10 \text{ V} \leq U_R$ or $U_C < 100 \text{ V}$	$(10 \pm 1) \text{ V}^{\text{a)}}$
$100 \text{ V} \leq U_R$ or $U_C < 500 \text{ V}$	$(100 \pm 15) \text{ V}$
$500 \text{ V} \leq U_R$ or $U_C$	$(500 \pm 50) \text{ V}$
<sup>a)</sup> When it can be demonstrated that the voltage has no influence on the measuring result, or that a known relationship exists, measurement can be performed at voltages up to the rated or category voltage (10 V shall be used in case of dispute).	

$U_R$  is the rated voltage for use in defining the measuring voltage to be used under standard atmospheric conditions for testing.

$U_C$  is the category voltage for use in defining the measuring voltage to be used at the upper category temperature.

#### 4.5.2 Application of measuring voltage

The insulation resistance shall be measured between the measuring points defined in Table 3, specified in the relevant specification.

Test A, between terminations, applies to all filters, whether insulated or not. See Test A of Table 3.

Test B, internal insulation, applies to insulated filters in uninsulated metal cases. This test is not applicable to coaxial filters. See Test B of Table 3.

Test C, external insulation, applies to insulated filters in non-metallic cases or in insulated metal cases. For this test, the measuring voltage shall be applied using one of the three following methods as specified in the relevant specification. This test is not applicable to coaxial filters; it is applicable only to insulated filters in a non-metallic case or in an insulated metal case. See Test C of Table 3.

##### 4.5.2.1 Foil method

A metal foil shall be closely wrapped around the body of the filter.

For filters with axial terminations, this foil shall extend beyond each end by not less than 5 mm, provided that a minimum distance of 1 mm/kV, or 1 mm, whichever is greater, can be maintained between the foil and the terminations. If this minimum distance cannot be maintained, the extension of the foil shall be reduced by as much as is necessary to establish the distance of 1 mm/kV, or 1 mm whichever is greater.

For filters with unidirectional terminations, a minimum distance of 1 mm/kV, or 1 mm, whichever is greater, shall be maintained between the edge of the foil and each termination.

##### 4.5.2.2 Method for filters with mounting devices

The filter shall be mounted in its normal manner on a metal plate, which extends at least 12,7 mm in all directions beyond the mounting face of the filter.

##### 4.5.2.3 V-block method

The filter shall be clamped in the trough of a 90° metallic V-block of such size that the filter body does not extend beyond the extremities of the block.

The clamping force shall be such as to guarantee adequate physical contact between the filter and the block. The clamping force shall be chosen in such a way that no destruction or damage of the filter occurs.

The filter shall be positioned in accordance with the following:

- a) for cylindrical filters: the filter shall be positioned in the block so that the termination furthest from the axis of the filter is nearest to one of the faces of the block;
- b) for rectangular filters: the filter shall be positioned in the block so that the termination nearest the edge of the filter is nearest to one of the faces of the block.

For cylindrical and rectangular filters having axial terminations, any out-of-centre positioning of the termination at its emergence from the filter body shall be ignored.

#### 4.5.3 Mean time to measuring

The insulation resistance shall be measured after the voltage has been applied for  $60 \text{ s} \pm 5 \text{ s}$  unless otherwise prescribed in the detail specification.

#### 4.5.4 Temperature correction factor

When prescribed by the detail specification, the temperature at which the measurement is made shall be noted. If this temperature differs from 20 °C, a correction shall be made to the measured value by multiplying the value by the appropriate correction factor prescribed in the sectional specification.

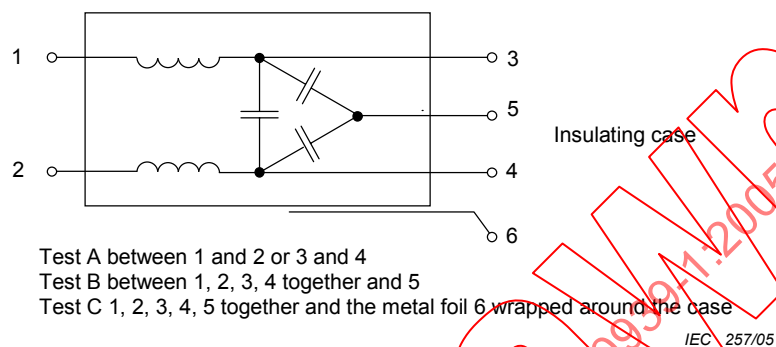
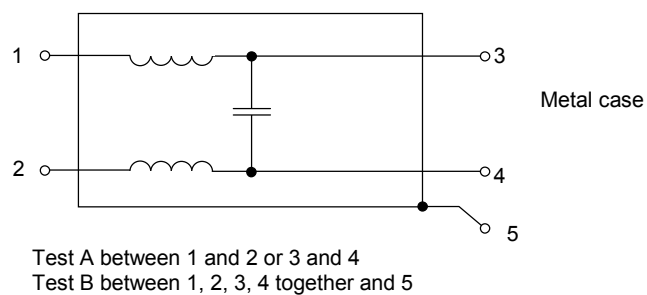
#### 4.5.5 Information to be given in a detail specification

The relevant specification shall prescribe:

- a) the tests and the measuring voltage corresponding to each of these tests (see Table 3);
- b) the method of applying the voltage (one of the methods described in 4.5.2.1, 4.5.2.2 or 4.5.2.3);
- c) time of electrification if other than 1 min;
- d) any special precautions to be taken during measurements;
- e) any correction factors required for measurement over the range of temperatures covered by the standard atmospheric conditions for testing;
- f) the temperature of measurement if other than the standard atmospheric conditions for testing;
- g) the minimum value of insulation resistance for the various tests.

**Table 3 – Measuring points**

Tests	Description
A Between terminations	Between pairs of lines carrying the load current through the suppression components e.g. line-line or line-neutral.
B Internal insulation	Between the load current terminations connected together and the case (except where the case is one termination) (metal cased types only) or between the load current termination and the earth termination.
C External insulation	Between the load current terminations connected together and the metal plate or foil or V-block (insulated cases not employing metal) or between case and metal plate or foil or V-block (insulated metal cased types only).
NOTE See Figure 2 for examples of the application of this table.	



**Figure 2 – Examples of the application of Table 3**

#### 4.5.4 Voltage proof tests

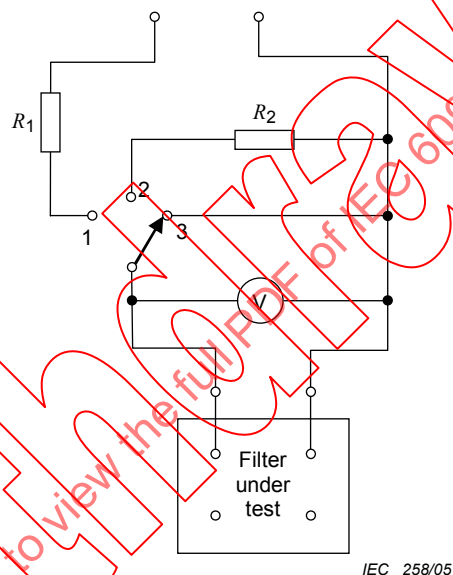
*Replace 4.5.4 and its subclauses by the following new 4.6*

#### 4.6 Voltage proof

The test prescribed in the relevant sectional or detail specification may be either a d.c. test or an a.c. test.

##### 4.6.1 Test circuit and procedure for a d.c. test

For Test A, where the test voltage will normally be applied across a capacitor, the test circuit shall be such that the conditions relating to the charging and discharging currents and the time constant for charging, prescribed in the relevant specification, are complied with.



**Figure 3 – Test circuit for d.c. test**

The resistance of the voltmeter shall be not less than 10 000  $\Omega/V$ .

The resistor  $R_1$  includes the internal resistance of the d.c. supply.

The resistors  $R_1$  and  $R_2$  shall have a resistance of sufficient value to limit the charging and discharging current to the value prescribed in the relevant specification.

##### **Procedure**

With the switch in position 2, the two terminals at the top of Figure 3 are connected to a variable d.c. supply of sufficient power, which is then adjusted to the required test voltage.

The filter to be tested is connected to the test circuit as indicated in Figure 3.

The switch is then moved to position 1 to charge the filter capacitance. Where necessary, e.g. when the filter is fitted with a discharge resistor, the voltage measured on the voltmeter shall be re-adjusted to the required test voltage.

The switch shall remain in this position for the time specified after the test voltage has been reached.