9.3.4.4.4 Behaviour of the equipment during and after making and breaking capacity tests

The equipment shall perform, during the above tests, in such a manner as not to endanger an operator or cause damage to adjacent equipment.

There shall be no permanent arcing or flash-over between poles or between poles and frame and no melting of the fuse in the detection circuit.

The equipment shall remain mechanically operable. Contact welding, such as to prevent an opening operation using normal operating means, is not permitted.

9.3.4.4.5 Condition of equipment after the making and breaking capacity tests

It shall be demonstrated immediately after the test that the equipment will close and open satisfactorily during a no-load close/open operation.

The force required for opening shall not be greater than the test force of 9.2.6.2 of IEC 60947-1:2020 and Table 17 of IEC 60947-1:2020.

A closing operation is considered satisfactory when normal operation of the handle through its full stroke will close the contacts sufficiently for the equipment to be able to carry its rated operational current.

After the test and without maintenance the equipment shall comply with the requirements of 9.3.4.5.

The contacts shall be in a suitable condition to carry the rated operational current without maintenance and shall comply with the temperature-rise verification of 9.3.4.7.

If the equipment is suitable for isolation, it shall comply with 9.3.4.6 and 9.3.4.8.

9.3.4.5 Dielectric verification

After the test according to 9.3.4.4, a test shall be made according to 9.3.3.4.1, item 4) of IEC 60947-1:2020.

9.3.4.6 Leakage current

This test is made only on equipment suitable for isolation of rated operational voltage U_e greater than 50 V. The leakage current shall be checked across the contact gaps as follows:

a) disconnector and switch-disconnector: between load and line terminals;

b) disconnector-fuse, switch-disconnector-fuse, fuse-disconnector and fuse-switch-disconnector single opening: between load and line terminals;

c) disconnector-fuse, switch-disconnector-fuse, fuse-disconnector and fuse-switch-disconnector double opening: (i) between line terminals and the fuse-links; (ii) between load terminals and the fuse-links; and (iii) between load and line terminals.

The value of leakage current, with a test voltage equal to 1,1 times the rated operational voltage of equipment shall not exceed

– 0,5 mA per pole for equipment of utilization category AC-20A, AC-20B, DC-20A or DC-20B;

– 2 mA per pole for equipment of all other utilization categories.

9.3.4.7 Temperature-rise verification

After the tests according to 9.3.4.4, the temperature-rise of the terminals and accessible parts shall be checked according to 9.3.4.2, except that where a utilization category is assigned, the tests are made at the rated operational current I_e of the equipment tested.

The terminals and accessible parts shall not exceed the limiting values stated in Table 12.

Table 12 – Temperature-rise limits for terminals and accessible parts

Description of part [a]	Temperature-rise limit [b] K
Terminals for external connections	80
Manual operating means: – metallic – non-metallic	 25 35
Parts intended to be touched but not hand-held: – metallic – non-metallic	 40 50
Parts which need not be touched for normal operation: – metallic – non-metallic	 50 60

[a] No value is specified for parts other than those listed but no damage shall be caused to adjacent parts of insulating materials.

[b] The temperature-rise limits specified are not intended to apply to a new sample but are those applicable to the temperature-rise verifications during the appropriate test sequences specified in Table 10.

9.3.4.8 Strength of actuator mechanism

Subclause 9.2.6 applies to equipment suitable for isolation.

9.3.5 Test sequence II: operational performance capability

9.3.5.1 General

This test sequence applies to the types of equipment listed in Table 13 and comprises the tests according to this table.

They are made to verify compliance with 8.2.4.2.