



## R 76 DoMC-03 rev.0

### Additional requirements from Canada

#### Creep Test

Revision number	Date of the revision	Nature of the revision
Rev.0	29/09/2006	Initial document

The R 76 CPR (Committee on Participation Review) has accepted additional creep test requirements requested by Canada for nonautomatic weighing instruments.

These additional requirements are defined below:

#### 1. Application

This test is performed on any complete mechanical or electronic weighing device and on any mechanical or electronic weighing element tested separately.

#### 2. Settings

- AZSM may be in operation during the tests. It must be set to the lowest value; if zero is the lowest selectable value, it will be set to zero. The amount that the AZSM may track at once can not exceed **0.6 e** which is the maximum value prescribed by the Specifications.
- If a device is provided with an IZSM, the tests will be performed once with the IZSM set to the maximum of its range.
- The device must be set for the maximum capacity and smallest verification scale interval for which the approval is sought.
- If so equipped, the "enhance resolution feature" of the device will be used during the tests. If this feature is not available, use the small weight method to determine the device errors before rounding.
- The creep test is performed at the following temperatures:
  - First round: at nominal temperature (around 20 °C, or at the mid point of the temperature range if significantly different from 20 °C);
  - Second round: at high temperature (+ 40 °C, or the higher point of the temperature range marked on the device);

- Third round: at low temperature (- 10 °C, or the lower point of the temperature range marked on the device).
- The creep-return to zero test is performed at ambient (around 20 °C) temperature only.
- Note that these tests are combined with the test performed to assess the temperature effect on linearity and hysteresis.
- The temperature of the DUT must have stabilized to within  $\pm 1^\circ\text{C}$ .

NOTE: The temperature of the DUT can be monitored by attaching a thermocouple with adhesive tape inside the DUT onto a component of relatively large mass. However, the thermocouple must not be attached to any live component(s) of the DUT. The temperature will be deemed to be stable when the temperature obtained from the thermocouple will have stabilized within  $\pm 1^\circ\text{C}$ . Once stabilized, the temperature obtained from the thermocouple will likely be different than the overall temperature of the environmental chamber. The requirement is only that the temperature of the DUT stabilizes to within  $\pm 1^\circ\text{C}$ .

- Moisture content in the environmental chamber must not exceed 50% RH at test temperatures.
- The test equipment such as load cell simulators, high precision reference indicators, must be isolated from the test conditions and maintained at constant ambient temperature and humidity.
- The increasing and decreasing load tests must be performed before the creep test and creep-return-to-zero test; a recovery time period equal to the accuracy (increasing and decreasing) test time is permitted before conducting the creep test; the scale should be exercised 3 times up to at least 90% Max before conducting the creep and creep-return-to zero test if an extended period of time has passed since the scale was last tested.

### 3. Procedure

#### 3.1. Creep test

- Following the increasing and decreasing load test, allow the device to "recover" for a period of time equal to the increasing and decreasing test time. Exercise the scale 3 times up to at least 90% Max.
- Place on the weighing element a load equal to at least 90% of Max, and take a reading 20 seconds after the indication has stabilized. Observe the indication for one hour. Take a second reading.
- Remove the load and wait for the indication to stabilize (no more than 20 seconds). Take a reading.

NOTE: if a single range device returned to zero within 0.5 e immediately after the removal of the load that has remained on the platter for one hour, there is no need to perform the creep-return-to-zero test.

#### 3.2. Creep test on a multiple range device

- The test describe above must be performed for each of the ranges.

#### 4. Interpretation of results

The device meets the requirements if the difference between the indication obtained 20 seconds after placing the load on the device and the indication observed during the following one hour does not exceed the absolute value of the applicable limit of error for that load.

##### 4.1. Creep-Return-to-Zero Test (at around 20 °C only)

- Allow the device to recover for a minimum of one hour. Exercise the device with a load of 90% Max.
- Place on the weighing element a load equal to at least 90% Max. Leave that load on the device for a period of ½ hour.
- Remove the load and take a reading as soon as the indication has stabilized (wait no more than 20 seconds).

##### 4.2. Creep-Return-to-Zero test on multiple range devices (at around 20 °C only)

- Allow the device to recover for a minimum of one hour. Exercise the device with any convenient load that is available.
- Place, on the weighing element, a load equal to around 90% of the maximum capacity of the lowest range.
- Leave that load on the device for a period of ½ hour.
- Remove the load and take a reading as soon as the indication has stabilized.
- Place, on the weighing element, a load equal to at least 90% of the maximum capacity of the highest range. Leave that load on the device for a period of ½ hour.
- Remove the load and take a reading as soon as the indication has stabilized (Wait no more than 20 seconds).
- Immediately, switch the device to the lowest range, take a reading of the weight indication.
- Observe the weight indication for 5 minutes. Record any changes in the weight indication.

#### 5. Interpretation of results

- The deviation on returning to zero as soon as the indication has stabilized shall not exceed  $0.5 e$
- On multi-interval device, the deviation shall not exceed  $0.5 e_1$
- On a multiple range device, the deviation on returning to zero from  $Max_i$  shall not exceed  $0.5e_i$  ; moreover, after returning to zero from any load greater than  $Max_1$  and immediately after switching to the lowest weighing range, the indication near zero shall not vary by more than  $e_1$  during the following 5 minutes.

## **6. Test report**

Results for the Creep test can be reported in the format shown in Test Form 6.2 of the Pattern evaluation report OIML R 76-2; however, note (\*) is not applicable and a second note shall be added as follows:

(\*\*) Under the MAA, f or Canadian requirements, t he test shall not be terminated prior to a period of 60 min.

The report shall specify the duration of the test.