R 76 OIML-CS-01 Rev.1

Additional requirements from Canada

Accuracy Class IIIHD

Revision number	Date of Revision (DD/MM/YYYY)	Nature of the Revision
Rev. 0	11/07/ 2006	Initial document
Rev. 1	11/04/ 2018	Replace logo and reference to OIMIL MAA with reference to OIML-CS.

Measurement Canada identifies specific specifications and tolerances for heavy duty devices. These additional requirements are defined in the following publications:

- Specifications Relating to Non-automatic Weighing Devices (1998)

Introduction

In Canada, there exists a separate set of step tolerances on measuring instruments marked with a IIIHD Accuracy Class. It can best be described as a tolerance class between a Class III and a Class IIII. These additional requirements are defined and summarized below:

1.   Classification of non-automatic weighing devices

Class	Accuracy	Verification scale interval (e)		Number of verification scale intervals	
		International Units	Canadian Units	Minimum	Maximum
IIIHD	Medium (high capacity devices)	2 kg ≤ e	5 lb ≤ e	2 000	---

2.   Verification scale interval

2.1.   The verification scale interval for Class I and II weighing devices that are not equipped with auxiliary indicating elements, for Class III, IIIHD and IIII weighing devices, for multiple range devices and for multi-interval devices is equal to the actual scale interval.

2.2.   For multi-interval devices, the verification scale interval of a particular partial weighing range must be smaller than the verification scale interval of the immediately superior partial weighing range, and each range must comply with the requirements set out in section 3 for the class into which the device falls.

In-service limits of error

The in-service limits of error that apply to a Class IIIHD weighing device are ±1 e where the load is not less than zero and not more than 500 verification scale intervals, and where the load exceeds 500 verification scale intervals, calculated by adding ± 1 e for each additional 800 verification scale intervals or less, to a maximum of ± 22 e.

CLASS III HD IN-SERVICE LIMITS OF ERROR

In-service LOE in terms of the number of verification scale intervals	Verification scale interval			
	2 kg	**5 kg**	**10 kg**	**20 kg**
	Load in kg	Load in kg	Load in kg	Load in kg
1	0 - 1 000	0 - 2 500	0 - 5 000	0 - 10 000
2	> 1 000 - 2 600	> 2 500 - 6 500	> 5 000 - 13 000	> 10 000 - 26 000
3	> 2 600 - 4 200	> 6 500 - 10 500	>13 000 - 21 000	> 26 000 - 42 000
4	> 4 200 - 5 800	> 10 500 - 14 500	> 21 000 - 29 000	> 42 000 - 58 000
5	> 5 800 - 7 400	> 14 500 - 18 500	> 29 000 - 37 000	> 58 000 - 74 000
6	> 7 400 - 9 000	> 18 500 - 22 500	> 37 000 - 45 000	> 74 000 - 90 000
7	> 9 000 - 10 600	> 22 500 - 26 500	> 45 000 - 53 000	> 90 000 - 106 000
8	> 10 600 - 12 200	> 26 500 - 30 500	> 53 000 - 61 000	> 106 000 - 122 000
9	> 12 200 - 13 800	> 30 500 - 34 500	> 61 000 - 69 000	> 122 000 - 138 000
10	> 13 800 - 15 400	> 34 500 - 38 500	> 69 000 - 77 000	> 138 000 - 154 000
11	> 15 400 - 17 000	> 38 500 - 42 500	> 77 000 - 85 000	> 154 000 - 170 000
12	> 17 000 - 18 600	> 42 500 - 46 500	> 85 000 - 93 000	> 170 000 - 186 000
13	> 18 600 - 20 200	> 46 500 - 50 500	> 93 000 - 101 000	> 186 000 - 202 000
14	> 20 200 - 21 800	> 50 500 - 54 500	> 101 000 - 109 000	> 202 000 - 218 000
15	> 21 800 - 23 400	> 54 500 - 58 500	> 109 000 - 117 000	> 218 000 - 234 000
16	> 23 400 - 25 000	> 58 500 - 62 500	> 117 000 - 125 000	> 234 000 - 250 000
17	> 25 000 - 26 600	> 62 500 - 66 500	> 125 000 - 133 000	> 350 000 - 266 000
18	> 26 600 - 28 200	> 66 500 - 70 500	> 133 000 - 141 000	> 266 000 - 282 000
19	> 28 200 - 29 800	> 70 500 - 74 500	> 141 000 - 149 000	> 282 000 - 298 000
20	> 29 800 - 31 400	> 74 500 - 78 500	> 149 000 - 157 000	> 298 000 - 314 000
21	> 31 400 - 33 000	> 78 500 - 82 500	> 157 000 - 165 000	> 314 000 - 330 000
22	> 33 000	> 82 500	> 165 000	> 330 000

The following formula may be used to calculate the in-service limits of error (LOE) for Class III HD devices:

In-service limit of error expressed in terms of "e"

$$LOE = \left[\frac{(L/e) - 500}{800} \right] + 1$$

(Round the value up to the next whole number)

where:

- L = the load or standards used to determine the LOE
- e = the value of the verification scale interval
- The result is divided by 2 to find the acceptance LOE.

Example:

- In-service LOE for a known test load of 11 500 kg
- e = 5 kg
- 11 500 kg ÷ 5 kg = 2 300
- 2 300 − 500 = 1 800
- 1 800 ÷ 800 = 2.25
- 2.25 + 1 = 3.25
- 3.25 rounded up to the next whole number = 4 e
- Hence, the in-service LOE is 20 kg (4 × 5 kg) and the acceptance LOE is 10 kg.

3.   Acceptance limits of error

The acceptance limits of error applicable for each class of non-automatic weighing device are one-half the in-service limits of error set out in 3 for that device for a specified load.