

TESTING MANUAL FOR PLATFORM WEIGHING MACHINES

1.0 DEFINITION:

A platform weighing machine means a weighing instrument with compound levers and with the goods receptacles generally in the form of a platform.

1.1.1: Platform weighing machines may be of the following capacities

10kg, 20kg, 50kg, 100kg, 250kg, 300kg, 500kg, 1000kg, 2000kg, 3000kg, and 5000kg.

The capacity of the machine shall include the capacity of graduated tare bar or bars wherever provided.

2.0 CAPACITY

2.1.0 The capacity of these machines should not exceed 5000kg (5Tonnes) and the Weight of the Load is indicated with steelyard or other form of indicator.

3.0 TYPES OF PLATFORM

There are three main types of platform machines:-

- (i) Non-self indicating
 - a. With loose weights or proportional weights
 - b. With no loose weights

Note: In the case of non loose weight there are one or two or even three sliding poises one for the major bar and the other for the minor bar of the steel yard.
- (ii) Self indicating platform machines

4.0 EXAMINATION AND TESTING

4.1: EXAMINATION

Before testing for accuracy the platform machine like any other weight, measure, measuring or weighing instrument shall be visually inspected for metrological characteristics which include the compliance of several requirements.

The following are general requirements:

4.1.1. Recognition

Recognize the platform under test to establish or know its completeness class, type, capacity trade mark, model, denominations and if it is provided with the stamping plug and stamped (check last stamp mark)

4.1.2. General Requirements

4:1:2:1 Steelyard (Whenever provided)

- a. The steelyard in the platform weighing machines shall not have any readily removable part except the support for proportional weights. There shall be one or more stops to prevent the sliding poise or poises from traveling behind the zero mark.
- b. The minimum travel of the steelyard blade in platform machines shall be 10mm each way
- c. The stop and bottom of the guide and or steelyard shall be fitted with non magnetic material
- d. When the steelyard is provided with notches these shall be suitably protected
- e. The value of the smallest graduation on the minor bar shall not exceed the maximum permissible error.

4:1:2:2: Proportional weights (where provided)

- a. All proportional weights in the platform machine shall be identified with the machine by a number or any other suitable mark of identification which shall be indelible.
- b. The proportional weight shall be hexagonal in shape with a slot of suitable size to allow lead being placed on the counter balance.
- c. The counter balance shall be identified with the machine
- d. The proportional weights shall be made of cast iron or brass
- e. The proportional weights shall have one rectangular loading hole which shall be undercut or tapering outward so as to hold lead securely for adjustment
- f. The surface of the lead in the loading hole of the new proportional weight shall be at least 3mm inside from the bottom surface of the weight.
- g. The smallest denomination of proportional weight shall be equivalent to the weight represented by the maximum graduation on the steelyard.
- h. The denomination of the proportional weight shall be kg, 2kg, 5kg, or multiple or sub-multiple by 10 or a power of 10 of any of these weights.

The total equivalent of all the proportional weights should not exceed the capacity of the weighing machine.

4:1:2:3 **in the case o platform weighing machines provided with dials**

- a. the racks and pinions shall be suitable hard-wearing material and shall be finished smooth
- b. the extremity of the pointer shall in no position be at a greater distance from the graduated surface of the dial than 5mm
- c. the dial shall be graduated into reasonably equal parts and the minimum distance between the graduation marks shall be at least 2mm
- d. The graduation marks shall be clear and distinct. Denomination of sub-divisions shall be of longer lines than minor graduations.

4:1:2:4 **Balancing Arrangement**

The balancing arrangement shall have a range not exceeding 0.5 per cent of the maximum capacity of the machine and not less than 0.1 percent of the capacity each way.

Where a balance ball is provided it shall be actuated by a detachable key.

4:2 TESTING

4:2:1 TEST REQUIREMENTS

4:2:1:1: The steelyard of the platform weighing machine shall remain horizontal at no load. In the case of a machine fitted with dial the pointer shall be at zero at no load

4:2:1:2: Platform weighing machine shall be tested to verify the accuracy of major graduations or notches up to the maximum capacity.

4:2:1:3: All proportional weights where are provided, shall be tested and then suitably sealed to prevent tempering.

4:2:1:4: All numbered graduations shall be tested and intermediate graduation may be tested if necessary.

On self indicating instruments provided with indicators on both the seller's and purchaser's sides the reading in both charts shall coincide. The weight shall be correctly indicated whether the test is forward or backward.

4:2:2: **MODE OF TESTING**

4:2:2: **Test at Zero**

Start by balancing the platform at no load

- in the case of steel yard type – the steelyard should remain horizontal
- in the case of self indicating – the pointer should be at zero at no load

4:2:3 **test of numbered graduations**

Each numbered graduation shall be tested and minor graduation may be tested if necessary

4:2:4 **test of loose counterpoises**

All loose counter poises or proportional weights shall be tested starting by the small one to the higher graduation.

4:2:5 **test at quarter load**

Half the allowance for error shall not be exceeded if the load equal to one quarter of the maximum capacity or as near thereto as practicable is placed successively at the middle near the ends and at the corners of the platform.

4:2:6: **Relieving gear Test**

When a platform machine or weighbridge is fitted with relieving gear the prescribed limits of errors shall not be exceeded when the machine is put steadily out of gear.

4:2:7: **Test at maximum load**

The machine shall be tested to its maximum capacity or as near there to as circumstances permit.

Note: When sufficient standard weights are not available to test a machine to its maximum capacity, it may where practicable be loaded with suitable weights whose maximum weight is not less than one third (1/3) of the maximum capacity of the Instrument when applying dummy weights.

4:2:6:1 **Error and sensitivity tests**

Platform weighing machines with steelyard arrangement shall be tested for error and sensitivity at maximum load.

The errors and sensitivity should not exceed the prescribed limits.

Note: No sensitivity test shall be carried out in the dial (self indicating) type.

4:3 Sealing/ certifying

4:3:1 Position of stamping plug

The platform machines other than self indicating – the stamping plug shall be inserted either in the shoulder or the nose end of the steelyard or on a conspicuous part of the steelyard. On self indicating machines the stamping plug shall be inserted in the dial or beam

Other dial types may be fitted with soft metal plug to receive the stamp or seal of verification.

The plug or stud fitted on the dial or frame shall be so supported as to prevent the risk of any damage to the instrument.

4:3:1 Mode of certifying loose counter weights

Loose counter weight or proportional weights shall be date marked upon the lead in the adjusting hole after the completion of the test.

SENSITIVITY AND ERROR FOR VIBRATING PLATFORM MACHINES AND DEAD- WEIGHT MACHINES

| CAPACITY (kg) | SENSITIVITY when new or after repair (g) | SENSITIVITY on re- verification or inspection (g) | ERROR IN EXCESS OR DEFICIENCY when new or after repair (g) | ERROR IN EXCESS OR DEFICIENCY on re- verification or inspection (g) |
|--------------------------|---|---|--|---|
| Not exceeding 200 | 20 | 40 | 40 | 80 |
| Ex. 200 not ex. 300 | 50 | 100 | 100 | 200 |
| Ex. 300 not ex. 400 | 70 | 150 | 120 | 250 |
| Ex. 400 not ex. 500 | 100 | 200 | 170 | 350 |
| Ex. 500 not ex.1000 | 150 | 300 | 300 | 600 |
| Ex. 1000 not ex. 1500 | 200 | 400 | 350 | 700 |
| Ex. 1500 not ex. 2000 | 250 | 500 | 400 | 800 |
| Ex. 2000 not ex.5000 | 300 | 500 | 500 | 1000 |

TEST FORM FOR PLATFORM WEIGHING MACHINES

1. OWNER'S NAME AND ADDRESS

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2. GENERAL EXAMINATION:

Type Model Serial No.

.....

Maximum capacity Stamping plug (provided / not provided)

..... Last stamped

.....

Note other features of non-compliance with the Act and Regulations.....

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3. ACCURACY TEST:

(a) Balance at zero

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(b) Range of balancing arrangement

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(c) Test for sliding

poise.....

(d) Test for minor poise

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(e) Test for proportional weights

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(f) Test for numbered graduations from zero to quarter load

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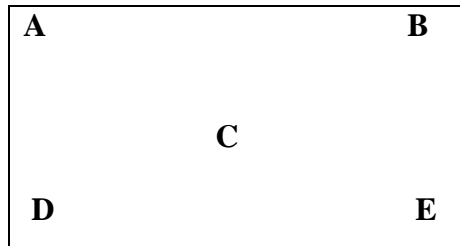
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(g) Carry out corner test

Load applied maximum permissible error

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| Position | Variation from Centre | Error | Maximum permissible error |
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|----------|-----------------------|-------|---------------------------|

| | | | |
|----------------|-------|-------|--|
| A | | | |
|----------------|-------|-------|--|

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|----------------|-------|-------|--|
| B | | | |
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|----------------|-------|-------|--|
| C | | | |
|----------------|-------|-------|--|

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|----------------|-------|-------|--|
| D | | | |
|----------------|-------|-------|--|

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E

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Compare Variation Error Maximum
permissible error

A and B

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A and D

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A and E

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B and D

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B and E

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D and E

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Comments

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4. UPWARD AND DOWNWARD ACCURACY TEST FOR SELF-INDICATING PLATFORM SCALES:

| FORWARD TEST | | | | | BACKWARD TEST | | | | |
|--------------|----------------|-------|-----|-------------|---------------|----------------|-------|-----|-------------|
| Load Applied | Load Indicated | Error | MPE | PASS / FAIL | Load Remained | Load Indicated | Error | MPE | PASS / FAIL |
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5. TEST FOR ERROR AND SENSITIVITY AT MAXIMUM LOAD:

Load appliedError at maximum

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MPE PASS / FAIL

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Sensitivity at maximum PASS / FAIL

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6. TEST FOR ACCURACY OF TARE DEVICE:

Tare device maximum Accuracy of tare device

..... PASS / FAIL.....

7. DECISION:

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Signature of Assizer **Date**

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Signature of Owner / User