**IS : 1434 - 1959**

**Indian Standard**

**SPECIFICATION FOR**

**COUNTER MACHINES**

**0. FOREWORD**

**0.1** This Indian Standard was adopted by the Indian Standards Institution on 14 November 1959, after the draft finalized, by the Commercial Weights and Measures Sectional Committee had been approved by the Engineering Division Council.

**0.2** This standard is one of a series of Indian Standards on commercial weighing instruments being prepared at the instance of the Standing Metric Committee, Government of India, in connection with the introduction of metric system of weights and measures in the country. Other

Standards being issued in the series are:

~~IS: 1432-1959 GENERAL REQUIREMENTFSO R WEIGHING INSTRUMENTS~~

IS: 1433-186 SPECIFICATIONF OR BEAM SCALES

~~IS: 1435-l 960 SPECIFICATIONFO R PLATFORMW EIGHINGM ACHINES~~

~~IS: 1436- 1960 SPECIFICATIONF OR WEIGH-BRIDGES~~

IS: 1437-1967 SPECIFICATI~RF OR AUTOMATICW EGHING MACHINES

~~IS: 1438-1960 SPECIFICATIONFO R CRANE WEIGHING MACHINES~~

~~IS: 1439-1959 SPECIFICATIONF OR STEEL-YARDS~~

IS: 16514 : Part 1: 2018 Non-Automatic Weighing Instruments Part 1 Terminology and Definitions

IS 16514: Part 2 : 2019 Specification for Non-Automatic Weighing Instruments Part 2 Metrological and Technical Requirements

**~~0.2.1~~** ~~An Indian Standard Specification for spring balances is also under preparation. .~~

**0.3** In determining the limits for sensitiveness and greatest error, due consideration was given to the views of manufacturers and testing organizations, the prevalent rules and regulations pertaining to weights and measles in India and the practices current in several metric countries.

It is pointed out that the values of sensitiveness and greatest error specified in this standard (see Table I on P 6) are for new machines only.

**0.4** The Indian Standard General Requirements for Weighing Instruments ~~(IS: 1432- 1959)~~ (IS: 16514 : Part 1 : 2018 and IS 16514 : Part 2 : 2019) ~~is~~ are a necessary adjunct to this specification.

 **0.4.1** Wherever a reference to ~~IS: 1432-1959~~ (IS: 16514 : Part 1 : 2018 and IS 16514 : Part 2 : 2019) appears in this specification, it shall be taken as a ’reference to its latest version.

**0.5** For the purpose of deciding whether a particular requirement of this standard is compiled with the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with

\*IS: 2- 1949 Rules for Rounding Off Numerical Values. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

**0.6** This standard is intended chiefly to cover the technical provisions relating to counter machines, and it does not include all the necessary provisions of a contract.

**1. SCOPE**

**1.1** This standard covers the requirements for counter machines.

**2. DEFINITION**

**2.1** For the purpose of this standard, a counter machine shall mean an equal armed weighing instrument of capacity not exceeding 50 kg, the pans of which are above the beam. Figure I illustrates a typical counter machine.

**3. CAPAClTIES**

**3.1** The machines shall he of the following maximum capacities:

 500 g, I kg, 2 kg, 3 kg, 5 kg, ~~IO kg~~ 10 kg, I5 kg, 20 kg, 25 kg, 30 kg and 50 kg.

**4. GENERAL REQUIREMENTS**

**4.1** The machines shall comply with the general requirements specific in ~~IS: 1432-1959~~ IS 16514: Part 2 : 2019. In addition, they shall comply with the requirements given in 4.2 to 4.6.

**4.2** When the beam or body has two sides, they shall be connected together by not less than two. Cross-bars. The supports for the pans shall be of a suitable rigid structure such as cross members strengthened by straps. Central pieces or forks shall be fixed so that they are not twisted or dislocated.

**4.3** Bearing surfaces, knife-edges and points of contact of all stays, hooks and loops shall be of hard steel or agate. The knife-edges and bearings shall be so fitted as to allow the beam to move freely. The knife-edges shall practically bear upon the whole length of their working part.

**4.4** A counter machine may have a balance box for minor adjustments. In such a case, the balance box shall be permanently fixed beneath the weight pan and shall be large enough to contain loose material to an amount up to one percent of the capacity of the machine. No other adjusting contrivance shall be used.

\*Since revised.



FIG. COUNTER MACHINE

**4.5** The pans may be made of mild steel, stainless steel, brass, bronze or any other suitable material and may be of any shape — flat, oblong, egg-shaped, scoop, etc. — but shall balance with the pan on the other side.

**4.6** The minimum fall either way, on counter machine shall be as follows.

|  |  |
| --- | --- |
| **Capacity** | **Fall** |
| 500 g, 1 kg and 2 kg | 6 mm |
| 3 kg, 5 kg, 10 kg and 15 kg | 10 mm |
| 20 kg, 25 kg and 30 kg | 12 mm |
| 50 kg | 13 mm |

**5. TESTS**

**5.0** The machine shall be tested on a horizontal level plane.

**5.1 Sensitiveness and Error**

 **5.1.1** The machine shall be tested for sensitiveness at full load with the beam in horizontal position and ascertaining that the addition of the weight specification in Table 1 shall cause the pointer to rise or fall to the limit of its range of movement.

 **5.1.2** The machine shall he tested for error by ascertaining the weight in excess or deficiency, if any, required to bring the beam of the instrument to a horizontal position when fully Loaded.

**5.2** NO test for sensitiveness at a lower load shall “be made.

**5.3** With the pans loaded to half the capacity, no appreciable difference in the accuracy of the machines shall result by moving the knife-edges or bearings, laterally or backward and forward within their limits of movement.

**5.4** When the goods pan is in the form of’ a scoop, the machine shall be correct to the prescribed limits o! error if half the full load is placed against the middle of the back of the scoop and the other half-at any position on the scoop.

**5.5** When the goods pan is not in the form of a scoop, the counter math lines shall indicate the same weight within half the prescribed limits of error, if the centre of a load equal to half the capacity is placed on the goods pan anywhere within a distance from the centre equal to one third of the greatest length of the pan, or if the pan has a vertical side ,against the middle of that side, the weight being entirely on the weight pan, but in any position on it.

**6. SEALING**

**6.1** Each machine shall be provided with a plug or stud of soft metal on a conspicuous part of the beam or body for receiving a seal. Such a plug (w stud shall be made irremovable by undercutting it or by some other suitable method.

 **TABLE I LIMITS FOR SENSITIVENESS AND GREATEST ERROR FOR**

 **COUNTER MACHINES**

 (Clauses 0.3 and 5.1.1)

|  |  |  |
| --- | --- | --- |
|  CAPACITY | SENSITIVENESS WHEN FULLY LOADED | GREATEST ERROR ALLOWED IN EXCESS OR DEFICIENCY WHEN FULLY LOADED |
| (1) | (2) | (3) |
|  | g | g |
| 500 g | 1.5 | 2.2 |
| 1 kg | 2 | 3.0 |
| 2 “ | 3 | 4.5 |
| 3 kg | 4.0  | 6.0 |
| 5 “ | 6 | 9.0 |
| 10 “ | 7 | 10.5 |
| 15 “ | 8 | 12.0 |
| 20 “ | 9 | 13.5 |
| 25 “ | 10 | 15 |
| 30 kg | 11.0 | 20 |
| ~~30~~ 50 “ | 15 | 30 |