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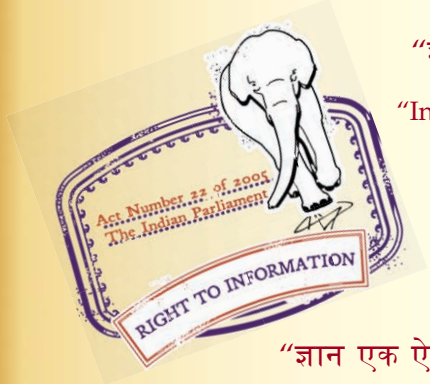

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SPECIFICATION FOR WHEEL WEIGHERS

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SPECIFICATION FOR WHEEL WEIGHERS

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Indian Standard
SPECIFICATION FOR WHEEL WEIGHERS

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 24 May 1967, after the draft finalized by the Commercial Weights and Measures Sectional Committee had been approved by the Mechanical Engineering Division Council.

0.2 Wheel weighers are used for ascertaining the approximate load carried on the axle of a vehicle and thus are generally to be used either in pairs or with a dummy platform under the other wheel of the axle.

0.3 This standard has been prepared under the provisions of the Weights and Measures Act to help the inspectors for testing and verification of the wheel weighers.

0.4 This standard is one of a series of Indian Standards on commercial weighing instruments being prepared at the instance of Standing Metric Committee (now the Directorate of Weights and Measures), Government of India.

0.5 'Indian Standard general requirements for weighing instruments (IS : 1432-1959)' is a necessary adjunct to the standard.

0.6 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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1. SCOPE

1.1 This standard covers the requirements for steelyard type and dial type wheel weighers of capacities 1, 3, 5, 10 and 15 tonnes. The steelyard type wheel weighers may be provided with proportional weights and/or sliding weights.

*Rules for rounding off numerical values (*revised*).

2. GENERAL REQUIREMENTS

2.1 The wheel weigher shall comply with the general requirements specified in IS : 1432-1959*. In addition, it shall comply with the requirements given in **2.2** to **2.3.**

2.2 Steelyard — In the case of steelyard type wheel weigher, the steelyard shall not have any readily removable parts except the support for the proportional weights. One or more stops shall be provided to prevent the sliding poise or poises from travelling past the zero mark.

2.2.1 The top and bottom of the guide and/or steelyard shall be fitted with non-magnetic material.

2.2.2 When steelyard is provided with notches they shall be suitably protected.

2.2.3 In the wheel weigher provided with more than one bar, the value of the interval between successive graduations on the minor bar shall not exceed the greatest error allowed for that capacity as specified in Table 1.

2.3 Dial Type — In dial type machines, the racks and pinions shall be of suitably hard wearing material and shall be finished smooth.

2.4 Graduations — The value of the interval between successive graduations on dials or minor steelyards and major steelyards of weighing instruments shall be such that it corresponds to one of the weights in the series 1, 2 and 5 or its decimal multiples.

3. PROPORTIONAL WEIGHTS

3.1 Proportional weights shall be hexagonal in shape with a slot of suitable size to allow them being placed on the counterbalance.

3.2 The proportional weights shall be made of cast iron, preferably of Grade 15 of IS : 210-1962† or brass of Grade 3 of IS : 292-1961‡.

3.3 The proportional weights shall have one rectangular loading hole which shall be under-cut or tapering outwards, so as to hold the lead securely for adjustment. The surface of the lead in the loading hole of a new proportional weight shall be at least 3 mm inside from the bottom surface of the weight.

3.4 The smallest denomination of the proportional weight shall be equivalent to the weight represented by the maximum graduation on the minor bar.

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*General requirements for weighing instruments.
†Specification for grey iron castings (*revised*).
‡Specification for brass ingots and casting (*revised*).

3.5 The denominations of the proportional weights shall be chosen from the series of weights conforming to 1, 2, 5 and their decimal multiples. Further, any number of proportional weights in any one of the aforesaid denominations may be included provided the total equivalent of all the proportional weights does not exceed the capacity of the weighing instruments.

NOTE — While arriving at the capacity of the wheel weigher, the maximum graduation shown on the steelyard in the case of 'loose weight' type wheel weighers and on the minor bar in the case of 'no loose weight' type wheel weighers shall not be taken into account.

4. TESTS AND TEST METHODS

4.1 The range of balancing or adjusting arrangement shall not exceed two percent of the capacity of the machine. Wheel weighers of the steelyard type shall be tested for sensitiveness and error at full load and shall comply with the requirements specified in col 2 and 3 of Table 1. Wheel weighers of the dial type shall be tested for error at full load and shall comply with the requirements specified in col 4 of Table 1. The wheel weighers may be tested for accuracy by any of the methods given in **4.2** to **4.4**.

4.2 Weigh-Bridge Test Method

4.2.1 The machine shall be correctly adjusted to zero.

4.2.2 A pair of the machines shall be laid in such a way that one shall be on the platform of a weigh-bridge and one off the weigh-bridge platform. (If necessary a dummy may be used in place of the other machine.)

4.2.3 A pair of wheels shall be driven on to the wheel weighers. The load on one of the wheels is then recorded simultaneously by the weigh-bridge and the axle weigher. The other three wheels of the vehicle are clear off the weigh-bridge platform.

4.2.4 The weighers shall be loaded with increments of heavy, loose materials, so as to show indications on the weigh-bridge corresponding to the numbered graduations on the wheel weigher to the highest practicable amount.

4.2.5 The readings of the wheel weigher shall be compared with the weigh-bridge indications allowing plus or minus tolerance as laid down in Table 1, and the necessary allowances shall be given for the error, if any, of the weigh-bridge used for testing wheel weigher.

TABLE 1 SENSITIVENESS AND ERROR VERIFICATION FOR WHEEL WEIGHERS

(*Clauses* 2.2.3, 4.1 *and* 4.2.5)

CAPACITY	SENSITIVENESS WHEN FULLY LOADED	GREATEST ERROR ALLOWED IN EXCESS OR IN DEFICIENCY WHEN FULLY LOADED (FOR STEELYARD TYPE MACHINES)	GREATEST ERROR ALLOWED IN EXCESS OR IN DEFICIENCY WHEN FULLY LOADED (FOR DIAL TYPE MACHINES)
(1)	(2)	(3)	(4)
Tonne	kg	kg	kg
1	1	2	4
3	2	4	8
5	3	6	12
10	5	10	20
15	5	10	20

4.3 Calibrated Lever Test Method

4.3.1 The instrument shall be placed on the calibrating platform with the calibrating lever in position adjusted to zero.

4.3.2 Test weights shall be added to the calibrating lever in ratio to the graduations on the steelyard or dial of the instrument.

4.3.3 The instrument shall be tested at each numbered graduation upto and including one tonne or such smaller amount as the last graduation on the steelyard indicator or dial may show. The instrument shall be tested upto its maximum capacity. All loose counterpoises and proportional weights relating to the instrument should be tested.

4.4 Wheel Weigher Test Method

4.4.1 Wheel weigher testing machine of a suitable capacity and with an interval between successive graduation corresponding to 5 kg or less shall be used.

4.4.2 The wheel weigher shall be kept on the platform of the machine and the zero of both testing machine and the wheel weigher adjusted. The wheel weigher shall then be loaded with the help of the loading wheel and readings of the wheel weigher and testing machine shall be compared as specified in **4.2.5**.

5. IDENTIFICATION OF PARTS

5.1 Detachable parts which may affect the accuracy of the wheel weighers shall be indelibly numbered or marked so as to facilitate identification.

5.2 All loose proportional weights shall be identified with the machine by a number or any other suitable mark of identification which shall be indelible.

6. SEALING

6.1 Dial machines shall be fitted with soft metal plug or stud for receiving the seal of the verification authority and wherever practicable, this plug shall be passed through the dial and the frame. The plug or stud fitted on the dial shall be so supported as to allow no risk of damage to the instrument.

6.2 On wheel weighers other than those of dial type, a plug or stud shall be provided in a conspicuous position on the indicating lever or steelyard.

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