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Indian Standard

SPECIFICATION FOR PORTABLE SWING WEIGHBATCHERS FOR CONCRETE (SINGLE AND DOUBLE BUCKET TYPE)

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

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Indian Standard

SPECIFICATION FOR PORTABLE SWING WEIGHBATCHERS FOR CONCRETE (SINGLE AND DOUBLE BUCKET TYPE)

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 20 June 1964, after the draft finalized by the Construction Plant and Machinery Sectional Committee had been approved by the Building Division Council.

0.2 Weighbatching is essential to achieve accurate proportioning of materials for concrete by effecting good control in the measurement of sand, coarse aggregate and cement as it overcomes the variation in density due to bulking of materials. Weighbatching is considered a normal practice these days for the production of controlled quality concrete. Weighbatching may be done either by devices fitted integrally with the mixing equipment or by independent units. In the absence of integral weighing devices, which are not very common in this country at present, portable swing weighbatchers can be usefully employed for weighbatching of materials and can be used even on small single mixer jobs. This standard is intended to deal with the essential features of this type of weighbatcher to serve as guidance to both manufacturers and purchasers.

0.3 The Sectional Committee responsible for the preparation of this standard has taken into consideration the views of producers, consumers and technologists and has related the standard to the manufacturing and trade practices followed in the country in this field. Due weightage has also been given to the need for international co-ordination among standards prevailing in different countries of the world.

0.4 This standard is one of a series of Indian Standard specifications covering machinery for manufacture of concrete. Other specifications in the series are:

IS : 1791-1961 Batch Type Concrete Mixers

IS : 2505-1963 Concrete Vibrators, Immersion Type

IS : 2506-1964 Screed Board Concrete Vibrators

IS : 2514-1963 Concrete Vibrating Tables

0.5 Wherever a reference to any Indian Standard appears in this specification, it shall be taken as a reference to its latest version.

0.6 Metric system has been adopted in India and all quantities and dimensions in this standard have been given in this system.

0.7 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 Rules for Rounding Off Numerical Values (*Revised*). The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

0.8 This standard is intended chiefly to cover the technical provisions relating to portable swing weighbatchers for concrete, and it does not include all the necessary provisions of a contract.

1. SCOPE

1.1 This standard lays down requirements regarding materials, design, construction, capacity and performance of single and double bucket swing weighbatchers.

2. TERMINOLOGY

2.0 For the purpose of this standard, the following definitions shall apply.

2.1 Chassis — Frame provided with necessary arrangements for supporting the swing carriage and includes pedestal, jack feet and wheels.

2.2 Loading Hopper — The hopper of concrete mixer which receives the materials after they have been weighed in the swing weighbatcher.

2.3 Swing Carriage — Frame supported on the chassis and provided with necessary arrangements for supporting the weigh bucket and capable of rotating horizontally on a vertical axis.

2.4 Weigh Bucket — The container in which cement, sand and aggregate are fed for weighing.

2.5 Weigh Dial — The calibrated dial on which the weight of materials contained in the weigh bucket is indicated.

3. MATERIALS

3.1 Steel sections and bars for construction of chassis, swing carriage and pedestal shall conform to IS : 226-1962 Specification for Structural Steel (Standard Quality) (*Third Revision*).

3.2 Steel Sheet — Steel sheet for construction of weigh bucket shall conform to Grade 34-1079 of IS : 1079-1963 Specification for Light Gauge Structural Quality Hot Rolled Carbon Steel Sheet and Strip (*Revised*).

3.3 Rivet Bars — Rivet bars shall conform to IS : 1148-1957 Specification for Rivet Bars for Structural Purposes.

3.4 Bolts and Nuts — Bolts and nuts shall conform to the appropriate requirements of relevant Indian Standards.

3.5 All other materials used in the construction of portable swing weighbatcher shall conform to the relevant Indian Standards.

4. DESIGNATION OF TYPES

4.1 The type of swing weighbatcher shall be indicated by the number of weigh buckets it carries. A machine with one weigh bucket shall be termed as 'single bucket swing weighbatcher' and the one with two weigh buckets shall be termed as 'double bucket swing weighbatcher'.

5. SIZE AND CAPACITY

5.1 Weigh bucket shall be of size and shape suitable for receiving and discharging the maximum nominal batch of unmixed materials without spillage under the normal operating conditions on a level site.

5.2 Size of weighbatcher shall be denoted by the capacity of weigh bucket in litres.

5.2.1 Full load capacity of a single weigh bucket shall be not less than 400 litres.

5.2.2 In case of double bucket weighbatcher, full load capacity for each of the weigh bucket shall be not less than 400 litres.

6. CONSTRUCTION

6.1 Portable weighbatcher shall consist of a chassis and swing carriage on which are mounted one or two weigh buckets, suspended on knife edges. Each weigh bucket shall be connected to independent weigh dial for indicating the weight of materials contained in it.

6.2 Chassis and Swing Carriage — The chassis and swing carriage shall be constructed of suitable steel sections of adequate strength and stiffness. The swing carriage shall be capable of rotating horizontally on the vertical axis with a minimum of manual effort when the bucket or buckets are fully loaded. The radius of swing of the outer corners of the weigh buckets shall be not more than 1·5 metres and the angle of swing shall be such as to allow the weigh bucket/buckets to reach the diametrical opposite points on the arc of rotation.

6.2.1 Chassis shall be provided with a pedestal fitted with adjustable jack feet to allow the weigh bucket to discharge direct into the loading hopper. The jack feet shall be capable of raising the discharge height of the weigh bucket/buckets beyond that specified in **6.3.4** to any desired height up to a maximum of 200 mm.

6.3 Weigh Bucket — Weigh bucket shall be constructed of mild steel sheets of not less than 3·15 mm thickness suitably welded and braced. It shall have a four point suspension on hardened steel (or equivalent material) knife edges having a hardness between 60 to 66 RC. Each knife edge shall preferably have four bearing edges with a suitable arrangement to allow for utilization of any one of these bearing edges at a time. The knife edges and their bearing edges shall be replaceable and shall be protected against corrosion and dirt by providing suitable knife edge covers.

6.3.1 Each swing weigh bucket shall be provided with a discharge gate to discharge aggregate after weighment direct on to the loading hopper.

6.3.2 The discharge gate shall be so constructed that it can be easily operated by hand. The width of the discharge gate shall be not less than 600 mm nor more than 900 mm.

6.3.3 *Loading Height* — The loading height of the bucket shall be not more than 1 050 mm from ground-level.

6.3.4 *Discharge Height* — The discharge height of the bucket shall be not less than 600 mm from ground-level.

6.4 Weighing Mechanism — The weighing mechanism shall conform to the appropriate requirements of IS : 1432 - 1959 *Specification for General* Requirements for Weighing Instruments. This shall consist of a suitable mechanical arrangement comprising a dial with a pointer capable of registering correct weights through a rack and pinion arrangement connected to the balance arm by a system of levers. Rack and pinion shall be of suitable hard wearing material and shall be finished smooth.

6.4:1 *Dial* — The dial face shall be not less than 450 mm in diameter and shall be so positioned that it can be conveniently read by the operator. The dial shall be calibrated to register weights up to 1 000 kg by 2 kg divisions. The minimum distance between the graduations shall be not less than 2 mm. The indicator needle shall be adjustable for zero readings. If required by the purchaser, a special device for damping the indicator needle shall be provided.

6.4.2 The extremity of the indicator needle shall in no position be at a greater distance than 5 mm from the graduated surface of the dial. The extremity of the needle shall be on the graduated portion of the dial, and it shall be so made as not to obscure the graduations or make them difficult to read.

6.4.3 *Accuracy of Weighing* — The error in excess or deficiency under all stages of loading shall be not more than one percent under normal working conditions.

6.4.3.1 The machine shall also be tested for sensitiveness by adding loads equal to the major divisions and then ascertaining that an additional load equal to the value of one division is correctly indicated.

6.5 Wheels — The weighbatcher shall be provided with wheels capable of easy steering. The wheels shall be of any one of the following designs as desired by the purchaser:

a) Fitted with metal or rubber tyred wheels for towing at slow speed;
b) Fitted with flanged metal wheels for travelling on rails;
c) Fitted with pneumatic road wheels, complete with suitable encased anti-friction bearing, and hubs, for towing at higher speeds.

6.5.1 Suitable parking brakes shall be provided for wheels and suitable breaking arrangements shall be provided for wheels capable of towing at high speed.

6.6 Tow Bar — A suitable tow bar of adequate strength shall be provided with each weighbatcher.

6.7 Lifting Arrangements — The machine shall be fitted with suitable means for attachment of chains and ropes required for lifting without appreciable deflection in the chassis.

6.8 Finishing — All exposed parts of the machine shall be finished with at least two coats (excluding the primer) of suitable anti-corrosive paint conforming to relevant Indian Standards.

7. LUBRICATION

7.1 Adequate arrangements shall be provided to facilitate proper and easy lubrication of different parts.

8. TOOLS

8.1 A strong tool box with lock and key and containing necessary tools for normal adjustments and lubrication of the machine together with instructions and inventory of tools shall be provided with the machine. Provisions shall be made for affixing the tool box on the machine.

9. MARKING PLATE

9.1 Each machine shall have a plate firmly attached to some part not easily removable, the plate shall have clearly marked on it the following particulars:

a) Manufacturer's name or trade-mark,
b) Manufacturer's reference number of the machine,
c) Type of machine (*see* **4**),
d) Size of machine, and
e) Year of manufacture.

9.1.1 Each machine may also be marked with the Standard Mark.

9.1.2 The use of the Standard Mark is governed by the provision of Bureau of Indian Standards Act, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

BUREAU OF INDIAN STANDARDS

Headquarters:
Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002
Telephones: 323 0131, 323 3375, 323 9402
Fax : 91 11 3234062, 91 11 3239399, 91 11 3239382

Telegrams : Manaksanstha
(Common to all Offices)

	Telephone
Central Laboratory :	
Plot No. 20/9, Site IV, Sahibabad Industrial Area, Sahibabad 201010	8-77 00 32
Regional Offices:	
Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002	323 76 17
*Eastern : 1/14 CIT Scheme VII M, V.I.P. Road, Maniktola, CALCUTTA 700054	337 86 62
Northern : SCO 335-336, Sector 34-A, CHANDIGARH 160022	60 38 43
Southern : C.I.T. Campus, IV Cross Road, CHENNAI 600113	235 23 15
†Western : Manakalaya, E9, Behind Marol Telephone Exchange, Andheri (East), MUMBAI 400093	832 92 95
Branch Offices::	
'Pushpak', Nurmohamed Shaikh Marg, Khanpur, AHMEDABAD 380001	550 13 48
‡Peenya Industrial Area, 1st Stage, Bangalore-Tumkur Road, BANGALORE 560058	839 49 55
Gangotri Complex, 5th Floor, Bhadbhada Road, T.T. Nagar, BHOPAL 462003	55 40 21
Plot No. 62-63, Unit VI, Ganga Nagar, BHUBANESHWAR 751001	40 36 27
Kalaikathir Buildings, 670 Avinashi Road, COIMBATORE 641037	21 01 41
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Savitri Complex, 116 G.T. Road, GHAZIABAD 201001	8-71 19 96
53/5 Ward No.29, R.G. Barua Road, 5th By-lane, GUWAHATI 781003	54 11 37
5-8-56C, L.N. Gupta Marg, Nampally Station Road, HYDERABAD 500001	20 10 83
E-52, Chitaranjan Marg, C- Scheme, JAIPUR 302001	37 29 25
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Seth Bhawan, 2nd Floor, Behind Leela Cinema, Naval Kishore Road, LUCKNOW 226001	23 89 23
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Institution of Engineers (India) Building 1332 Shivaji Nagar, PUNE 411005	32 36 35
T.C. No. 14/1421, University P. O. Palayam, THIRUVANANTHAPURAM 695034	6 21 17

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*Sales Office is at 5 Chowringhee Approach, P.O. Princep Street, CALCUTTA 700072	27 10 85
†Sales Office is at Novelty Chambers, Grant Road, MUMBAI 400007	309 65 28
‡Sales Office is at 'F' Block, Unity Building, Narashimaraja Square, BANGALORE 560002	222 39 71

Reprography Unit, BIS, New Delhi, India