IS 13291 : 1992
(Reaffirmed 1998)

भारतीय मानक

कंकरीट के ब्लॉक बनाने की मशीन — सामान्य अपेक्षाएं

Indian Standard

CONCRETE BLOCK MAKING MACHINES — GENERAL REQUIREMENTS

UDC 69-05 : 666·972-41

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

February 1992

Price Group 2

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Construction Plant and Machinery Sectional Committee had been approved by the Heavy Mechanical Engineering Division Council.

Concrete blocks are commonly used in walls, partitions, roof, etc. This standard, covering requirements for size, operation speed and construction of concrete block making machines, has been prepared with a view to provide guidance both in the manufacture and purchase of this type of machines.

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 or analysis, 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.

Indian Standard

CONCRETE BLOCK MAKING MACHINES — GENERAL REQUIREMENTS

1 SCOPE

1.1 This standard lays down requirements for concrete solid and cavity block making machines of stationery and travelling type, having electrical motor driven vibration and (for travelling type) travel mechanism for manufacturing concrete block according to IS 2185 (Part 1) : 1979 'Specification for concrete masonary units : Part 1 Hollow and solid concrete blocks (*second revision*)'.

1.2 This standard does not cover completely manually operated hand moulding sets.

2 TERMINOLOGY

2.1 For the purpose of this standard, the following definitions shall apply. Nomenclature of the parts of the concrete block making machine is explained in Fig. 1.

2.2 Stationary Type

A concrete block making machine with frame fixed on ground or on an elevated structure. The blocks are laid on wooden or metal pallets to be transported either manually or mechanically.

2.3 Travelling Type/Engineering Laying Type

A concrete block making mobile machine which lays blocks on a level plateform on which it moves. The machine lays a particular number of blocks over the platform and moves further to lay another set of blocks, so as to cover the casting platform, in a continuous casting process.

2.4 Moulds

A mild steel fabricated member for moulding concrete blocks of required shapes and sizes.

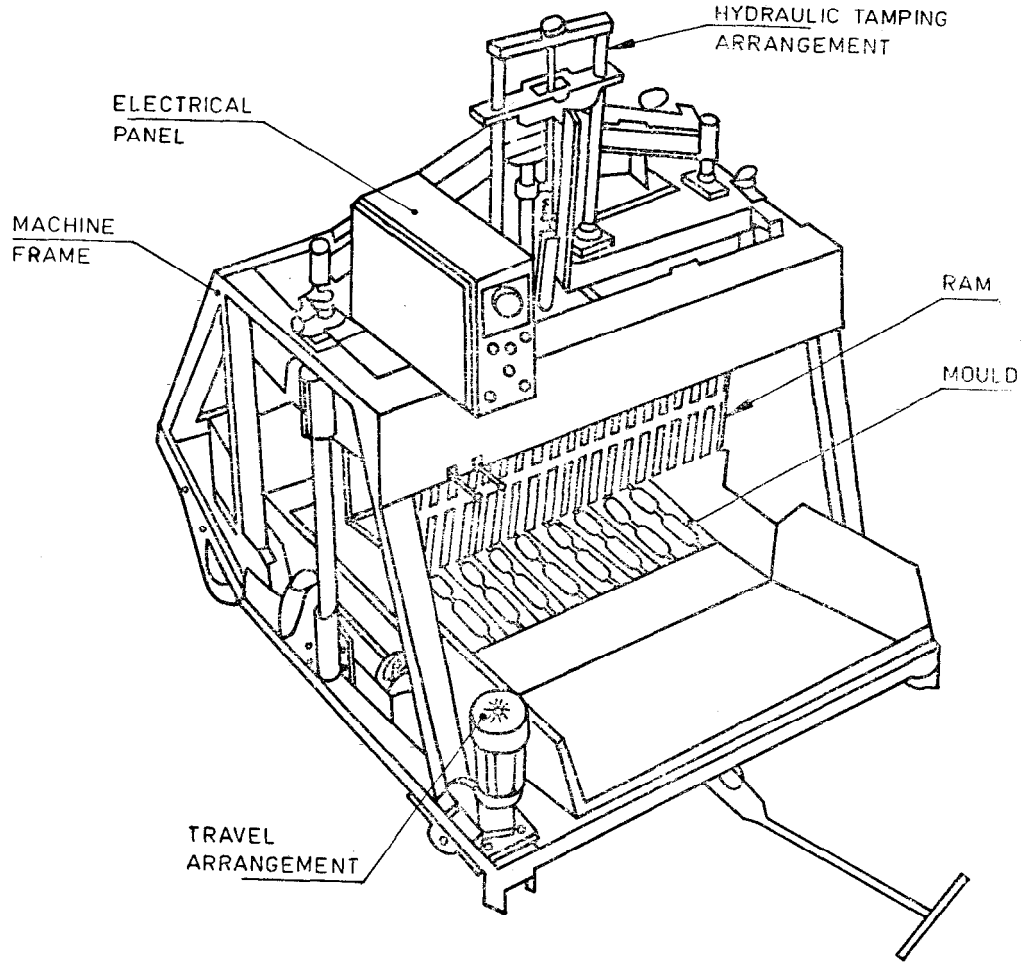

FIG. 1 A TYPICAL SKETCH OF CONCRETE BLOCK MAKING MACHINE

2.5 Ram

A mild steel fabricated member of complementary shape to the moulds with requisite tolerances for compaction of block concrete and for cast blocks from the moulds.

2.6 Machine Assembly

Structural assembly of the machine consisting of:

a) Main supporting frame to support the machine on platform and provide mobility mechanism for mobile machines;

b) Ram fixing frame; and

c) Mould fixing frame.

2.7 Vibrator Assembly

Electrically operated vibrating mechanism fixed to the mould frame to provide to produce dense blocks.

2.8 Tamping Arrangement

A form fitting arrangement to obtain compaction through raming action and to provide required height to the concrete in the moulds after compaction.

3 DESIGNATION OF SIZES

3.1 The sizes of concrete block making machines shall be designated by the number representing the standard sizes of the machine expressing in mm.

Designation	*Casting Area in mm²*
860	800 × 600
1 600	100 × 600

3.2 The intermediate and other sizes shall not be considered as standard sizes, although these may be supplied by mutual agreement between the purchaser and the supplier.

4 OPERATION SPEEDS

4.1 The machine travelling speed shall not be less than 15 m/min along the casting platform.

4.2 Casting Speed

Number of casting operations of the machine shall be between 40 to 55 numbers of casting of block operations per hour. The number of operations per hour shall be specified for each machine. The specifications for the motor shall be clearly identified.

5 GENERAL CONSTRUCTION

5.1 Besides vehicle chasis and the operating/driven mechanism, other main components of the concrete block making machines shall be the frame structures for mounting the moulds and the mould assembly. The charging hopper and mould of concrete block making machines of the same size manufactured or supplied under a specific contract shall be physically and mechanically identical.

5.2 All parts and components of the concrete block making machines shall be properly cleaned and treated. All parts shall be painted in accordance with the relevant Indian Standards.

5.3 Generally frame shall be made from not less than 6 mm thick plate and partition from 3 to 4 mm thick plates.

5.4 Ram frame shall be made from not less than 6 mm thick plates. The pockets for cavity shall be made from 3 to 4 mm plates. Fabrications is done by welding. The edges and welds are dressed to remove burrs and irregularities so that the block contact surfaces are left cleaned and smooth.

5.5 Block machine should have normal provision for fitment and use of different moulds. The machine should have versatility for production of different types of concrete blocks and allied products. The removal of one ram mould pair and fitment of another ram mould pair shall be easy and require minimum time.

5.6 The machines shall have provision for making adjustment to the fitment of ram and mould assembly so as to have proper level and alignment.

5.7 The frame of machines shall be manufactured from suitable sections and plates with normal cares for welding and cleaning for all machine parts like girders, bushes, suitable raw materials shall be used. The machine shall be capable of incorporating ram and mould assembly for blocks sizes which shall be as specified in the relevant Indian Standards.

5.8 The vibrations shall be approximately 6 000 vibrations per minute. Amplitude of vibrations shall be as required for proper compactions of the blocks as per the mix used. Vibration arrangement shall have scope for adjusting amplitude of vibration by adjusting the counter weights. The vibration spindles shall be rested on proper ball bearing to obtain smooth operation and belt vibrator with an electric motor as prime mover fixed to the main frame shall be used.

5.9 The travel of the ram shall be controlled so as to exert pressure on the concrete due to its travel till the correct height for the block is achieved. The height of the block shall be obtained by the ram assembly with the help of limit switches which shall out off the power to the vibrator motor at appropriate time.

6 INSPECTION OF THE MACHINE

6.0 On completion of the machine it should be checked for the following points:

a) Workmanship;

b) Welding and cleaning of welds;

c) dry run of machine; and

d) Sample moulding of blocks.

6.1 Sample Moulding of Blocks

The test is done to ensure that the blocks are cast without damage and with correct size.

6.1.1 The mould and ram are fixed to the respective frames and by trying movements the aligment is checked and adjusted, if necessary.

6.1.2 *Platform for Trial*

The trial is conducted on a concrete platform (or pallet) with good strength, surface finish and level.

6.1.3 The concrete is fed to the machine by spreader as in the actual use and one or two sets of blocks are cast to ascertain the concrete shape and dimensions. Any correction required is made immediately and more sets of blocks are cast till satisfactory results are obtained.

7 INSPECTION RECORD

7.1 A proper inspection record of the machine at the time of final testing is maintained as given in Annex A.

8 MARKING

8.1 Each concrete block making machine shall have firmly attached to it a plate giving the following particulars:

a) Indication of the source of manufacture;

b) Type; and

c) Size.

ANNEX A
(*Clause* 7.1)

INSPECTION REPORT

Block Making Machine Type:

Sl No.	Particulars of Inspection	Remarks
1.	**General Inspection**	
	a) Welding and cleaning	
	b) Nuts, bolts and washer fitting	
	c) Adjustments for trough and height of block	
	d) General lubrication and Gearing	
	e) Painting	
2.	**Ram and Mould**	
	a) Welding	
	b) Dimensional accuracy	
	c) Fixing arrangement and adjustment	
3.	**Assembled Unit**	
	a) Various clearances required for operation	
	b) Smooth operation and correct alignment in dry run	
	c) Motors details and currents	

Standard Mark

The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act, 1986* to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Revision of Indian Standards

Indian Standards are reviewed periodically and revised, when necessary and amendments, if any, are issued from time to time. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition. Comments on this Indian Standard may be sent to BIS giving the following reference :

Doc : No. HMD 18 (4336)

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters :
Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones : 331 01 31, 331 13 75

Telegrams : Manaksanstha
(Common to all Offices)

Regional Offices :	Telephones
Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW Delhi-110002	331 01 31 331 13 75
Eastern : 1/14 C.I.T. Scheme VII M, V.I.P. Road, Maniktola CALCUTTA 700054	37 86 62
Northern : SCO 445-446, Sector 35-C, CHANDIGARH 160036	53 38 43
Southern : C.I.T. Campus, IV Cross Road, MADRAS 600113	412916
Western : Manakalaya, E9 MIDC, Marol, Andheri (East) BOMBAY 400093	6 32 92 95

Branches : AHMADABAD, BANGALORE, BHOPAL, BHUBANESHWAR, COIMBATORE, FARIDABAD, GHAZIABAD, GUWAGATI, HYDERABAD, JAIPUR, KANPUR, PATNA, THIRUVANANTHAPURAM.

Printed at Swatantra Bharat Press, Delhi, India