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BUREAU OF INDIAN STANDARDS

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***DRAFT* AMENDMENT NO. 1**

TO

IS 1791 : 2020 General Requirements for Batch Type Concrete Mixers

(*Third Revision* of IS 1791)

ICS 91.220

Construction Plant and Machinery Sectional Committee, MED 18	Last date for receipt of comments: **18 April 2025**

(*First cover, Hindi Title*) — Substitute the following for the existing:

बैच टाइप ड्रम कंक्रीट मिश्रण के लिए सामान्य अपेक्षाएं

(तीसरा पुनरीक्षण)

(*First cover, English Title*) — Substitute the following for the existing:

General Requirements for Batch Type Drum Concrete Mixers

(Third Revision)'

(*Page* 1, *clause* **3**) — Substitute the following for the existing clause:

'**3.1 Batch Mixer —** A mixer with cyclic operations charged with materials in batches. Each batch is charged only after the previous batch is discharged out.

3.2 Continuous Mixer — A mixer in which charging of the materials is continuous with a continuous discharge of finished concrete as well.

3.3 Datum Ground Level — The level on which the road wheels stand, or if rail wheels are fitted, the level of the top of rail.

3.4 Discharge Point

3.4.1 In a tilting mixer, the lowest point of drum opening when the drum is tilted to the highest position at which it will effectively discharge its batch.

3.4.2 In a non-tilting mixer, the lowest point of the standard movable discharge chute when in its discharge position, or the lowest point of a standard fixed chute extension, if fitted.

3.4.3 In the reversing drum type, the lowest point of discharge opening, or the lowest point of the standard fixed chute extension, if fitted.

3.5 Drum Speed — The number of revolutions per minute of the drum beyond which segregation of the ingredients takes place.

3.6 Duration of Mixing — The time in seconds from the moment the charging with all ingredients is terminated to the start of the discharge of the concrete.

3.7 Forced Action Mixer

a) *Batch Type* — A forced action mixer of a batch type has pan (or trough) and set of blades (or paddles) moving relatively one to the other. The mixing action is accomplished by the relative movements between the mix, the pan and the blades (or paddles).

b) *Continuous Type* — In a continuous type, the mixer consists of a drum in which there are two horizontal parallel shafts with blades. Mixing action takes place by the simultaneous contrary revolutions of the parallel shafts.

3.8 Free-Fall Mixer (Drum Type) — A free-fall mixer has a drum with series of blades fitted internally, which rotates about a horizontal or inclined axis. The mixing action is achieved by causing each part of the mix to be lifted in turn as the drum rotates and at a certain point in each revolution allowing it to be dropped or directed towards the bottom of the drum where it combines with other parts of the mix in continuously changing sequence to form a homogeneous mix.

3.9 Free-Fall Continuous Mixer — A mixer with a cylindrical drum of the non-tilting type rotating abut a horizontal axis. The ingredients fed at one end by a funnel or hopper are moved by blades fixed to the drum to the opposite discharging end, the charging, mixing and discharging takes place continuously.

3.10 Gyramixer — A portable pan mixer in which the ingredients are mixed by gyratory action of blades in a horizontal stationary mixing pan.

3.11 Loading Point — The loading point is used to establish the loading height above the datum ground level and is that point to which material should be raised in order to commence charging the loading skip or mixer itself as applicable.

3.12 Mixing Cycle — This is the time taken to mix one batch satisfactorily from the moment the materials are discharged into the mixer until the mixed concrete is completely discharged. The mixing cycle shall comprise the following:

a) *Charging Time* — It is the time required for charging all the unmixed materials including water into the mixer;

b) *Mixing Time* — It is the time taken to mix to the required consistency, batch of unmixed materials after the charging is complete; and

c) *Discharge Time* — It is the time taken from opening the discharged gate and closing after complete discharge of the mixed material.

3.13 Nominal Capacity

3.13.1 In a batch type of mixer, the nominal capacity is the volume in litres of mixed concrete which may be held and mixed satisfactorily in one batch.

3.13.2 In a continuous type of mixer, the nominal capacity is the output of mixed concrete given in m^3/h.

3.14 Non-titling Mixer (Batch Type) — The free-fall mixer in which the drum rotates in one direction on a horizontal axis and comprises a single compartment drum having two openings.

3.15 Pan Type Concrete Mixer — The pan mixer is an annular mixer of compact design. The mixing arm consisting of steel bar and fitted with mixing paddles, rotate in the annular mixing chamber. The material to be mixed is moved quickly from internal and external zones to the central zone and turned round in an extensive manner in continuously changing direction, including pan bottom to upwards. The mix is thus in continuous motion which results in faster homogenization at short mixing time. The annular pan rotates about a vertical axis in which steel bars and mixing paddles which are concentrically placed, rotate in the mixing chamber.

3.16 Reversing Drum Type — The free-fall mixer in which the drum rotates on a horizontal axis, the direction being reversed to discharge.

3.17 Stationary Mixer — A mixer not provided with wheels and usually built into a mixing plant.

3.17.1 *Portable Mixer* — A mixer fitted with a simple form of wheels.

3.17.2 *Trailer Mixer* — A mixer fitted with road wheels so that it may travel or be towed efficiently and safely at maximum statutory speed.

3.18 Tilting Mixer (Batch Type) — The free-fall mixer in which the drum has an inclinable axis and is a single compartment.

3.19 Transit Agitator — A mobile equipment mounted on a truck or other suitable haulage unit, in which freshly mixed concrete may be agitated by rotating the drum continuously or intermittently during transit

3.20 Transit Mixer — A mixer generally mounted on truck or similar mobile haulage unit capable of mixing ingredients of a partly mixed concrete and agitating the mixture during transit from a concrete batching plant to the point of placement of concrete.

3.21 Two Cone Drum Mixer (Batch Type) — A free-fall mixer with an inclined drum in the shape of two truncated cones, charged and discharged from either side of the mixing drum. Blades spiralling the opposite directions in the two drums move the concrete ingredients towards each other.

3.22 Vibro Mixer — A mixer in which vibration of the concrete is done in addition to mixing by the rotation of a special unbalanced shaft within the main hollow shaft. Vibro mixer produces concrete of higher strength form stiff mixes than that of concrete mixed in the ordinary way.

3.23 Water Measurement

3.23.1 *Automatic Water Tank* — A tank which, on manipulation of a valve is filled by and discharge a predetermined quantity of water, according to a predetermined setting, without reference to gauge indicating the water level.

3.23.2 *Water Meter* — A meter which measures the amount of water entering a mixer where it is controlled by a valve operated either manually or automatically.'

(*Page* 1, *clause* **4**) — Substitute the following for the existing clause:

'The size of a batch type concrete mixer shall be designated by the number representing its nominal mixed batch capacity in litres together with the letter T to indicate the tilting type, the letters NT to indicate non-tilting type or the letter R for reversing type.

Thus, a mixer having a nominal mixed batch capacity of 200 litres will have the designation 200 T if it is of tilting type, 200 NT if it is of the non-tilting type, or 200 R if it is of reversing type.'

(*Page* 1, *clause* **5.1.1**) — Substitute the following for the existing:

'Mixers, when operating on level sites, shall be capable of holding and mixing an actual mixing batch 10 percent in excess of the nominal mixed batch capacity mentioned in **5.1**, without any spillage.'

(*Page* 1, *clause* **6.1**, *Table* 1) — Substitute the following for the existing:

Table 1 Minimum Ratio of Drum Volume to Nominal Sizes for the Preferred Sizes of Free-Fall Mixers

(*Clause* **6.1**)

Sl No.	**Nominal Size of Mixer (T, NT or R) Litres**	**Minimum Ratio of Total Interior Drum Volume to Nominal Size of the Mixer**		
		Type T	Type NT	Type R
(1)	(2)	(3)	(4)	(5)
i)	100	2.5	-	-
ii)	140	2.5	-	-

iii)	200	2.5	4.0	4.5
iv)	280	-	4.0	4.5
v)	375	-	4.0	4.4
vi)	500	-	3.9	4.3
vii)	1000	-	3.8	4.2

(*Page* 1, *clause* **6.3.1**) — Substitute the following for the existing clause:

'If mutually agreed between the purchaser and the supplier, a revolution counter shall be provided and installed at a convenient location of the concrete mixer for guidance to the operator.'

(*Page* 2, *clause* **7**) — Substitute the following for the existing clause:

'Based on mutual agreement between the purchaser and the supplier, each mixer of 200 litres or larger capacity shall be provided with weigh batching system of water measurement or any one of the types of volumetric water measuring systems, as described in **7.1** and **7.2**. All pipes and fittings necessary for smooth flow of water and its measurement shall be provided with the mixer. The system and all associated equipment shall operate satisfactorily with water of any temperature up-to 90 °C. The water measurement shall be expressed in litres for volumetric measurement system or in kgs for weigh batching system. Provision shall be made to facilitate periodic checking of the accuracy of water measurement system.'

(*Page* 3, *clause* **7.1.3**) — Substitute the following for the existing clause:

'Measuring tanks, whether automatic or non-automatic and their fittings shall be such that under the lowest water pressure, the total time cycle for feeding the water tanks as specified in **7.1.1**, with the quantities specified in col (3) of Table 3 and for discharging these quantities into the mixers, does not exceed two minutes and the time for discharging these quantities shall not exceed half of the minimum mixing time.'

(*Page* 3, *clause* **7.4**, *Table* 4) — Substitute the following for the existing title:

'**Table 4 Size of Water Supply Connections**
(*Clause* **7.4**)'

(*Page* 3, *clause* **7.5**) — Substitute the following for the existing clause:

'**7.5 Water Supply Pump**

Hand or power pumps, when fitted, shall be of sufficient capacity to ensure that the time taken for feeding the water tank with the quantities specified in col (3) of Table 3 is less than one minute.'

(*Page* 5, *clause* **15**, *clause name*) — Substitute ‘POWER UNITS’ *for* ‘POWER UNLTS’.

(*Page* 7, *Annex* A) — Delete the following from the Annex A:

‘IS 11386 : 1985 Glossary of terms relating to concrete mixers’

(MED 18)