International Standard

ISO 18651

Building construction machinery and equipment — Internal vibrators for concrete — Vocabulary and commercial specifications

Machines et matériels pour la construction des bâtiments — Vibrateurs internes pour le béton — Vocabulaire et spécifications commerciales

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Foreword

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This document was prepared by Technical Committee ISO/TC 195, *Building construction machinery and equipment*, Subcommittee SC 1, *Machinery and equipment for concrete work*.

This first edition of ISO 18651 cancels and replaces ISO 18651-1:2011, which has been technically revised.

The main changes are as follows:

— revised ISO 18651-1 to ISO 18651 and eliminated “Part 1”;

— revised a few term definitions and added terms to Clause 3;

— changed term 3.7 “vibration head” to “vibrator assembly” and designated respective component in Figures A.1 to A.9;

— changed term 3.10 “flexible drive shaft” to “flexible shaft”;

— removed Clause 4 "Structure";

— removed 5.2 "Complementary data for all types of immersion vibrator";

— removed “c) length of the hose-handle m” in 5.3.2;

— modified Figure A.1 a) to replace the section by correct one without electric motor;

— modified the title of Figure A.1 and subfigures a), b);

— deleted Figure A.10 which was not mentioned in the body.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Building construction machinery and equipment — Internal vibrators for concrete — Vocabulary and commercial specifications

1 Scope

This document defines vocabulary and provides commercial specifications for internal vibrators used for compacting uncured concrete mix.

2 Normative references

The following documents referred to in this text in such a way that some or all of their content constitutes requirements for this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 11375, *Building construction machinery and equipment — Terms and definitions*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 11375 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
internal vibrator
immersion vibrator
straight bar-shaped equipment with extended hose or handle used to compact uncured concrete mix by generating or transmitting vibration

Note 1 to entry: The *vibrator assembly* (3.7) is immersed into uncured concrete mix, so it is called an internal vibrator or immersion vibrator.

3.2
internal vibrator with flexible drive
vibrator with drive transmission from prime mover to *vibrator assembly* (3.7) in the form of a flexible shaft

Note 1 to entry: The *flexible shaft* (3.10) can be enclosed within an outer sheath to permit handling during use.

3.2.1
electric internal vibrator
vibrator in which the drive for the vibration generator is composed of an electric motor with a flexible shaft to the *vibrator assembly* (3.7)

Note 1 to entry: The *flexible shaft* (3.10) can be enclosed within an outer sheath to permit handling during use.

Note 2 to entry: For an example, see Annex A, Figure A.8.

3.2.2
combustion engine internal vibrator
vibrator in which the drive for the vibration generator is composed of an internal combustion engine with a flexible shaft to the vibrator assembly

Note 1 to entry: For an example, see Annex A, Figure A.9.

3.3
built-in motor-type electric internal vibrator
vibrator in which an electric motor and the vibration generator are both enclosed in the vibrator assembly

Note 1 to entry: It is typically composed of a frequency and voltage converter, protective hose and control box with contactor.

Note 2 to entry: It can be classified as either an external converter type or integrated converter type.

Note 3 to entry: For examples, see Annex A, Figures A.2, A.3 and A.4.

3.4
hydraulic internal vibrator
vibrator comprised of a rotating eccentric mass directly coupled to a hydraulic motor to produce a stable and powerful vibration that typically enables precise regulation of frequency

Note 1 to entry: It is usually designed for use in the production of large concrete elements with large aggregate

Note 2 to entry: For an example, see Annex A, Figure A.5.

3.5
pneumatic internal vibrator
vibrator comprised of a pneumatic motor powered by compressed air

Note 1 to entry: It is typically composed of a vibrator assembly, protective hose (incorporating air supply) and twist grip throttle control

Note 2 to entry: For an example, see Annex A, Figure A.6.

3.6
portable-type internal vibrator
vibrator whose components are all handled by an operator during operation

Note 1 to entry: For an example, see Annex A, Figure A.7.

3.7
vibrator assembly
sealed component consisting of head, housing and vibration generator which is designed for immersion into uncured concrete mix

Note 1 to entry: Vibrator assembly typically has a cylindrical form and connected to power source defined in 3.2 to 3.5.

Note 2 to entry: For examples, see Annex A, Figures A.1 to A.9.

3.8
eccentric-type vibration generator
mechanism generating harmonic vibration by the eccentricity of a mass rotating inside the casing in bearings

Note 1 to entry: For an example, see Annex A, Figure A.1 a).

3.9
pendulum-type vibration generator
mechanism generating double vibration with a pendulum by rotating an out-of-balance mass along a circular path

Note 1 to entry: For an example, see Annex A, Figure A.1 b).

3.10
flexible shaft
component made of flexible material or of segments that transmit rotary motion from a power source to a vibrator assembly

Note 1 to entry: Since the flexible shaft can also be used as a handling medium, it typically has a protective shroud that permits the shaft to rotate within the shroud.

3.11
protective hose
medium used to hold the insulated electric motor or the hose carrying compressed air to the pneumatic motor in the vibrator assembly, and which incorporates appropriate protective devices or mechanisms

3.12
frequency and voltage converter
unit used for the electric supply of an internal vibrator with an increased frequency than that supplied by the power source and, if included, safety voltage

3.13
high and normal frequency generating set
unit consist either of an internal combustion engine, electric generator or frequency converter

3.14
bi-amplitude
peak-to-peak amplitude or displacement of internal vibrator

4 Commercial specifications

4.1 Basic data for all types of internal vibrators

The following basic data shall be presented:

a) diameter of vibrator assembly mm;

b) length of vibrator assembly mm;

c) total mass of vibrator kg;

d) centrifugal force kN (no load);

e) vibration frequency Hz (no load);

f) bi-amplitude mm (no load).

4.2 Complementary data for internal vibrator types and associated units

4.2.1 Electric internal vibrators with flexible drive

For electric immersion vibrators, the following data shall also be presented:

a) electric motor data:

   1) motor type: single- or three-phase, synchronous, commutator;

   2) rated power and current kW, A;

   3) voltage and frequency V, Hz;

   4) revolutions per minute min^{-1};