
**Building construction machinery and
equipment — Pedestrian-controlled
vibratory (percussion) rammers —
Terminology and commercial
specifications**

*Machines et matériels pour la construction des bâtiments — Dames
vibrantes (à percussion) guidées à la main — Terminologie et
spécifications commerciales*

ISO 19452:2008(E)



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Foreword

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ISO 19452 was prepared by Technical Committee ISO/TC 195, *Building construction machinery and equipment*.

Introduction

The purpose of this International Standard is to define the main terms and commercial specifications for pedestrian-controlled vibratory (percussion) rammers, used for material (primarily soil) compaction. These machines are typically used in the building trades to improve soil density characteristics.

Building construction machinery and equipment — Pedestrian-controlled vibratory (percussion) rammers — Terminology and commercial specifications

1 Scope

This International Standard provides a terminology and sets out commercial specifications for pedestrian-controlled vibratory (percussion) rammers used in building construction.

It is not applicable to rammers that compact by use of a tamping action of the foot-plate (shoe), nor is it applicable to explosion-type rammers.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

2.1

pedestrian-controlled vibratory rammer

pedestrian-controlled percussion rammer

machine designed for the purpose of improving material (primarily soil) density and stiffness through use of a displacement-driven foot-plate for compaction

See Figure 1.

NOTE The machine compacts material through a vibrating action performed by the foot-plate.

2.2

prime mover

driving energy source for the percussion mechanism

See Figure 1.

NOTE The following prime mover types are used for vibratory rammers: combustion engine (see Figure 2); hydraulic (see Figure 3).

2.3

vibratory mechanism

system of components that translates the prime mover energy to the foot-plate

2.4

foot-plate

shoe

machine element that contacts the material being compacted

See Figure 1.

NOTE Foot-plate materials include steel, wood and polymer blends.

2.5

impact force

force generated by the rammer as it strikes the material surface

NOTE Results from using the rammer, e.g. forces, are application-specific.

2.6

operating mass

machine mass with equipment, attachments and all fluid systems (i.e. hydraulic oil, engine oil, lubrication oil, transmission oil) at the levels specified by the manufacturer, and — when applicable — with the fuel tank half-full

2.7

shipping mass

machine mass as configured for shipping

2.8

overall dimensions

maximum length, L , width, W , and height, H , with the machine upright and standing on its foot-plate

See Figure 4.

2.9

foot-plate [shoe] size

foot-plate as defined by its length, L_s , and width, W_s

See Figure 4.

2.10

vibration frequency

percussion frequency

frequency at which the foot-plate (shoe) contacts material to be compacted

2.11

maximum travel speed

maximum horizontal distance the rammer travels over material being compacted in a given unit of time

2.12

operating speed

maximum operating speed of the prime mover

2.13

fuel-to-oil ratio

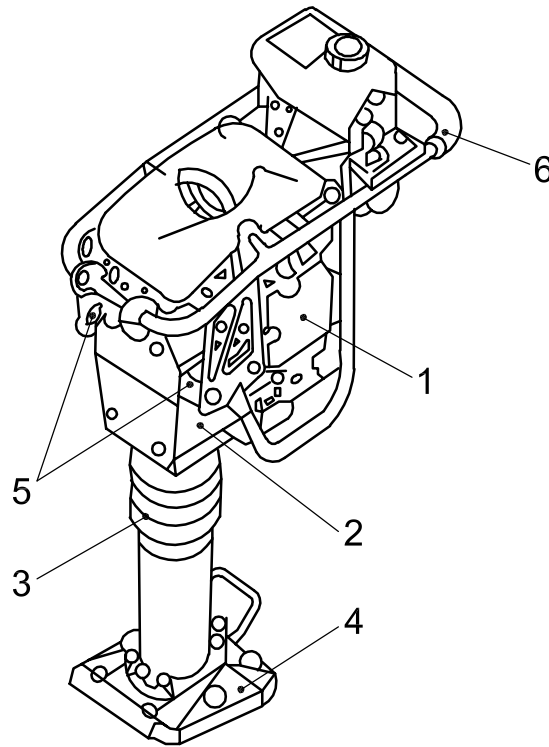
fuel oil mixture

ratio of parts of oil to gasoline required on a two-cycle internal combustion engine

2.14

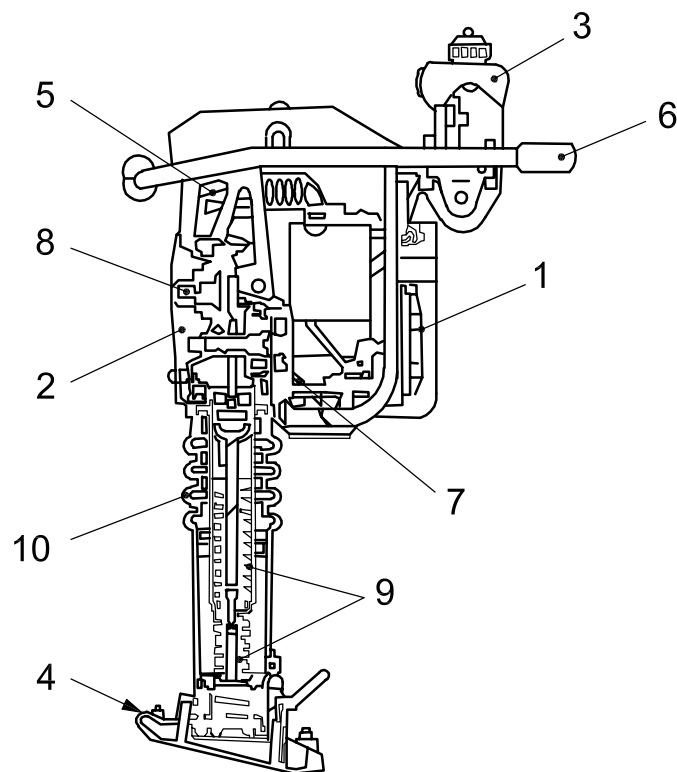
stroke

total movement of the foot-plate (shoe) in the vertical direction without forward motion

**Key**

- 1 prime mover
- 2 transmission
- 3 bellows
- 4 foot-plate (shoe)
- 5 vibration isolation mounts
- 6 operator control bar

Figure 1 — Basic structure of pedestrian-controlled vibratory (percussion) rammer

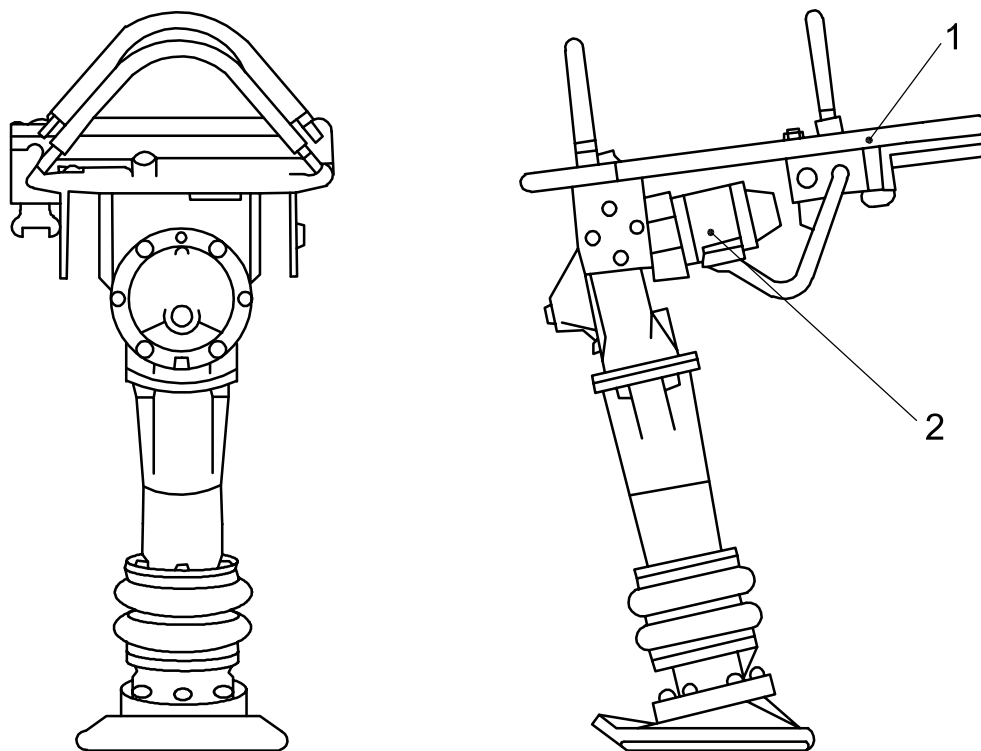


Key

- 1 prime mover
- 2 transmission
- 3 fuel tank
- 4 foot-plate (shoe)
- 5 vibration isolation mounts
- 6 operator control bar
- 7 centrifugal clutch
- 8 crank mechanism
- 9 spring set
- 10 bellows

Shown in cross-section.

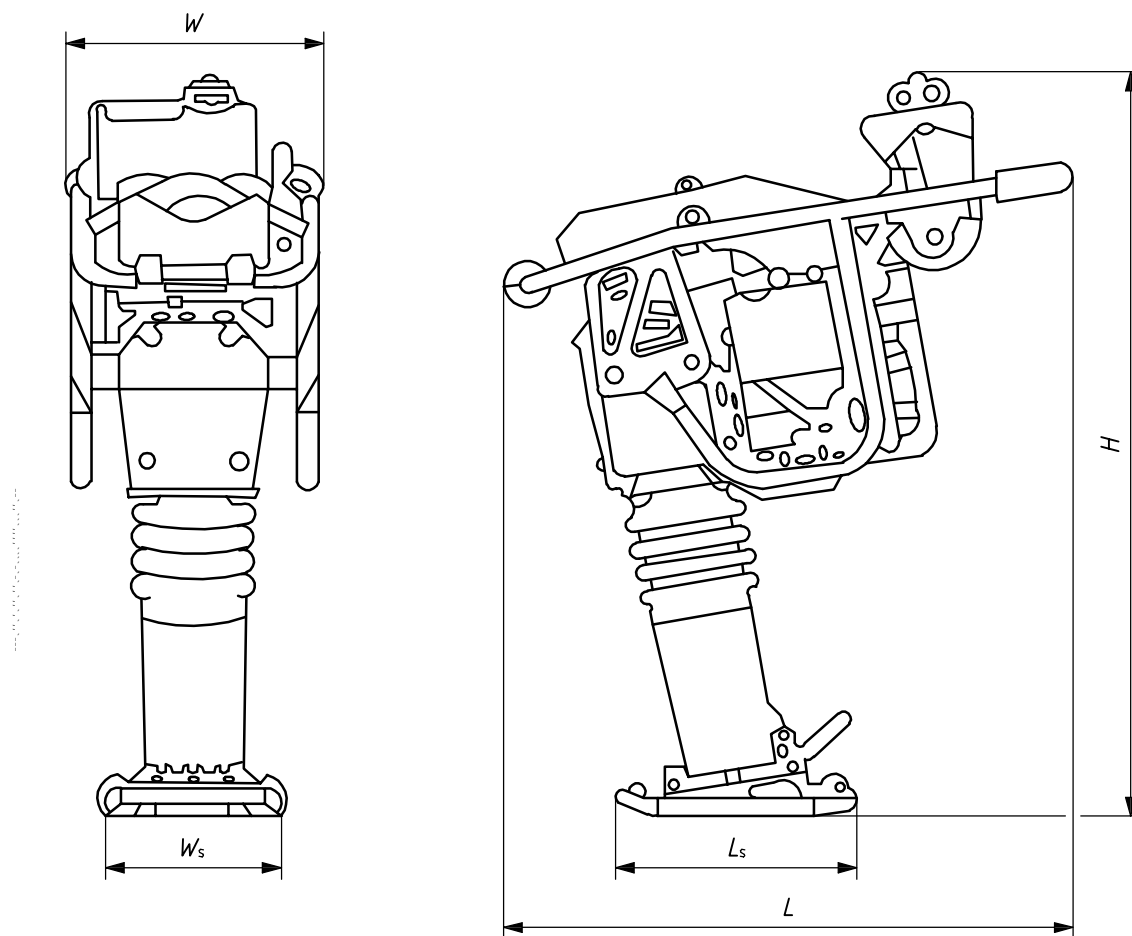
Figure 2 — Combustion-engine-driven pedestrian-controlled vibratory (percussion) rammer — Example



Key

- 1 input for pneumatic prime-mover source
- 2 pneumatic motor

Figure 3 — Pedestrian-controlled vibratory (percussion) rammer with pneumatic drive — Example



Key

- L length
- W width
- H height
- L_s foot-plate length
- W_s foot-plate width

Figure 4 — Overall and foot-plate dimensions

3 Commercial specifications

3.1 General

The following general data shall be presented:

- a) model and type;
- b) manufacturer;
- c) serial number;
- d) prime mover type (internal combustion engine, electric, hydraulic, pneumatic);
- e) operating mass kg;
- f) stroke mm;
- g) foot-plate (shoe) size ($W_s \times L_s$) mm (see Figure 4);
- h) vibration frequency Hz;
- i) maximum travel speed m/min;
- j) overall dimensions (see Figure 4):
 - length, L mm;
 - width, W mm;
 - height, H mm.

3.2 Prime mover

3.2.1 For combustion engines

The following internal combustion engine data shall be presented:

- a) engine type:
 - with spark ignition (2 or 4 cycle) or
 - compression ignition;
- b) model;
- c) manufacturer;
- d) operating revolutions min^{-1} ;
- e) swept capacity cm^3 ;
- f) engine net power kW (as specified by the engine manufacturer);
- g) fuel type;
- h) fuel/oil ratio in mixture (if applicable);
- i) fuel tank capacity l.

3.2.2 For electric motors

The following electric motor data shall be presented:

- a) model and type;
- b) rated current A;
- c) voltage, phase and frequency V/phase/ Hz;
- d) maximum operating revolutions min^{-1} .

3.2.3 For hydraulic or pneumatic drives

The following hydraulic or pneumatic drive data shall be presented:

- a) maximum supply pressure MPa;
- b) air consumption rate (pneumatic) m^3/h ;
- c) pump output (hydraulic) l/min ;
- d) cycle rate at stated pressure and flow Hz.

3.3 Other data (optional)

The following other data is optional, but if provided, shall be presented:

- a) shipping mass kg;
- b) impact force kN;
- c) impact energy J.

Bibliography

- [1] LEMB Standard No. 1, *Uniform method for rating vibratory rammers (Hand-guided, walk behind)* ¹⁾
- [2] EN 500-1, *Mobile road construction machinery — Safety — Part 1: Common requirements*
- [3] EN 500-4, *Mobile road construction machinery — Safety — Part 4: Specific requirements for compaction machines*

1) The Light Equipment Manufacturers Bureau (LEMB) — a bureau of the Construction Industry Manufacturers Association, Milwaukee, Wisconsin (Association of Equipment Manufacturers).

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