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भारतीय मानक मसौदा

पावर टिलर के लिए केज व्हील — विशिष्टि

(आइ एस 10282 का पहला पुनरीक्षण)

Draft Indian Standard

CAGE WHEEL FOR POWER TILLERS — SPECIFICATION

(First Revision of IS 10282)

ICS 65.060.01

Agricultural Machinery and
Equipment Sectional Committee,
FAD 11

Last date for Comments: **13 May 2024**

FOREWORD

(Formal clause will be added later)

Power tillers are generally supplied with pneumatic wheels for transportation and dry land cultivation. Studies indicate that the conversion of engine power into drawbar pull by these wheels is very poor when operated in puddled soil. This may be due to either more slippage or higher rolling resistance from sinkage, or both. To improve traction under such conditions, most of the manufacturers have been supplying different types of cage wheels for power tillers.

In order to rationalize the dimensions of cage wheel of power tiller, the standard was first published in 1982 deriving assistance from the work done at Indian Institute of Technology, Kharagpur. The first revision of the standard has been undertaken to incorporate the amendment issued to the earlier version of the standard, to incorporate classification of cage wheels used in power tillers, updating the marking clause, making necessary editorial corrections and to bring it out in the latest style and format of Indian Standards. Reference to the Indian Standards wherever applicable have also been updated.

In revision of this standard, considerable assistance has been derived from the technical information provided by Agricultural Machinery Manufacturers Association (AMMA-India).

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: 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Draft Indian Standard***CAGE WHEEL FOR POWER TILLERS — SPECIFICATION***(First Revision of IS 10282)***1 SCOPE**

1.1 This standard specifies material, dimensions and other requirements of cage wheel for power tillers.

2 REFERENCES

The standards given below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of these standards.

<i>IS No.</i>	<i>Title</i>
IS 2062 : 2011	Hot rolled medium and high tensile structural steel — Specification (<i>seventh revision</i>)
IS 7201 (Part 1) : 1987	Methods of sampling for agricultural machinery and equipment: Part 1 Hand-tools and hand-operated / animal drawn equipment (<i>first revision</i>)

3 TYPES

Based on type of soil, four types of cage wheels are used in power tiller.

3.1 Regular Cage Wheel — This type of cage wheel is suitable for general-purpose use and can perform reasonably well on various types of soils. It provides good traction and works effectively in most agricultural conditions.

3.2 Paddle Cage Wheel — This type of wheel is ideal for use in muddy and waterlogged soils. The paddle design allows them to push through the mud and prevent clogging, ensuring smooth operation even in challenging conditions.

3.3 Spike Cage Wheel — This type of wheel is used in heavy and compacted soils. The spikes help break up hard ground and improve traction, making it easier for the power tiller to move through dense soil.

3.4 Slotted Cage Wheel — This type of wheel is used in sandy and loose soils. The slots allow the cage wheel to work effectively in sandy terrain, preventing the wheel from sinking too deep and maintaining traction in softer soils.

4 MATERIAL

The material for various components such as hub, braces, lugs and rim of the cage wheel shall be of mild steel (*see* IS 2062) or any material superior to this.

NOTE — The cage wheel may be made of a lattice of reinforced steel angles, flats or bars.

5 DIMENSIONS

5.1 The overall diameter of the wheel (*see A in Fig. 1*) shall be within 650 to 800 mm.

5.2 Effective lug diameter of the wheel (*see B in Fig. 1*) shall be within 575 to 780 mm.

5.3 Overall width of the wheel (*see D in Fig. 1*) shall be within 320 to 520 mm.

NOTE — Cage wheels are approximately two to three times the width of the normal pneumatic wheel of a power tiller. The wide cage wheels provide good floatation and traction for the power units pressing organic materials down into the puddle and the wheels themselves have a considerable puddling effect.

5.4 The fixing holes shall be 4 Nos. equally spaced and the diameter of holes shall be a minimum 14 mm.

5.5 The hub hole diameter (*see F in Fig. 1*) shall be within 80 to 135 mm.

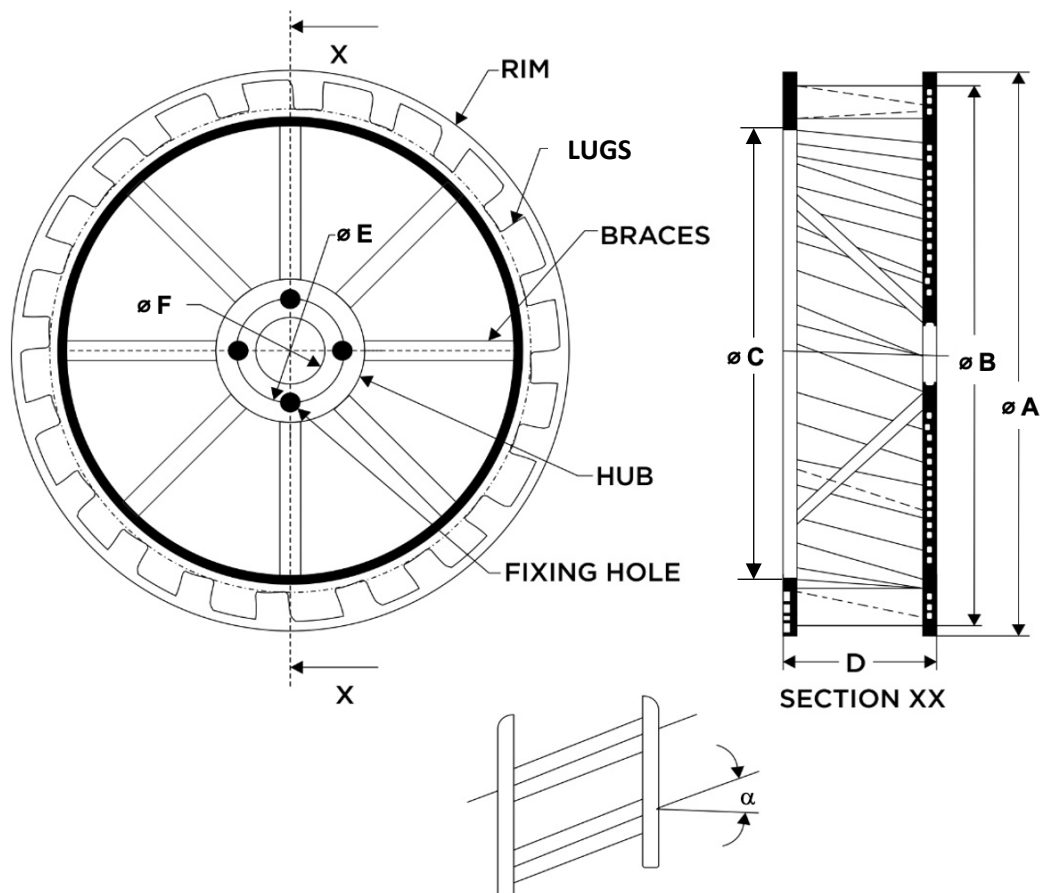


FIG. 1 CAGE WHEEL FOR POWER TILLER

6 WORKMANSHIP AND FINISH

6.1 The components shall be free from pits, burrs, cracks and other visual defects which may be detrimental for their use.

6.2 The various components shall be rigidly attached and welding shall not be porous.

6.3 The components shall be painted to prevent surface deterioration.

7 MARKING

7.1 The following particulars shall be marked legibly and indelibly on the cage wheel:

- a) Manufacturer's name or recognized trademark, if any;
- b) Batch or code number;
- c) Type and size; and
- d) Any other markings required under the *Standards of Legal Metrology (Packaged Commodities) Rules, 2011* and any other statutory requirement.

7.2 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act, 2016* and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark

8 SAMPLING AND CRITERIA FOR CONFORMITY

8.1 Unless otherwise agreed to between the purchaser and the supplier, sampling of the cage wheel for lot acceptance shall be as per IS 7201 (Part 1).