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PEDAL OPERATED PADDY THRESHER

1. SPECIFICATIONS

1.1 General

Name and address of the applicant/manufacturer	:
Name of machine	:
Type	:
Make	:
Model	:
Serial no.	:
Year of manufacture	:

1.2. Body Frame

1.2.1 Base

Material
Shape
Size of MS angle section (mm)
Dimensions of base frame (mm)
Length
Width
Method of fixing

1.2.2 Side Frames

Material
Shape
Size of MS angle section (mm)
Material of side board
Dimensions of side board (mm)
Method of fixing

1.2.3 Front Grain Shield

Material
Shape
Dimensions (mm)
Method of fixing

1.3 Cylinder

1.3.1 Slat

Material
Shape
Size (mm)
Thickness of sheet (mm)
Distance between two slats (mm)
Diameter of cylinder across the end discs (mm)
Method of fixing

1.3.2 Cylinder End Discs

Material
Shape
Type
Dimensions (mm)
Diameter (mm)
Thickness (mm)

1.3.3 Threshing teeth

Material
Shape
Diameter of wire (mm)
Distance between bottom ends of each teeth (mm)
Height of teeth from slat surface (mm)
Distance between tip of two adjacent teeth (mm)
Method of fixing

1.4 Drive

1.4.1 Gear Housing

Type of gears
No. of teeth on driving gear
No. of teeth on driven gear
Diameter of driving gear
Diameter of driven gear
Gear ratio
Method of gear fixing

1.4.2 Crank

Material
Dimensions (mm)
Length
Width at bottom
Size of MS bar (mm)
Method of fixing

1.4.3 Pedal Frame Fulcrum

Material
Dimensions (mm)
Inside diameter
Thickness

1.4.4 Pedal Frame

Material
Shape
Dimensions of MS flat (mm)
Length
Width
Thickness

1.4.5 Pedal Board

Material
Shape
Dimensions (mm)
Length
Width
Thickness
Method of fixing

1.5 Cylinder Axle

Dimensions (mm)
Length
Diameter
Method of fixing

1.6 Overall Dimensions

Length (mm)
Width (mm)
Height (mm)

1.7 Mass (kg)

Place:

Date:

Signature:……

Name:……

Designation:……

6. CONFORMITY TO INDIAN STANDARDS

Clause No.	Requirements as per IS: 3327-1982	As observed	Conformity to IS
1	**2**	**3**	**4**
3.0	**Sizes**		
3.1	Size of thresher shall be up to 600 mm in case of one-person operated thresher. A tolerance of ±5 mm shall be permitted on the declared size, subject to the size remaining within the specific limits.		

4.	**Materials**			
Sl. No.	**Name of the part**	**Material as per IS 3327-1982**	**As observed**	**Conformity to IS**
1	**2**	**3**	**4**	**5**
i	Base	Wood or Mild Steel		
ii	Side frames	Mild Steel		
iii	Side boards	Mild Steel		
iv	Rear grain shield	Mild Steel or canvass		
v	Front grain shield	Wood or Mild Steel		
vi	Slats	Wood		
vii	Threshing teeth	Spring steel wire or mild steel wire		
viii	Cylinder end discs	Mild Steel		
ix	Crank	Mild Steel		
x	Axles	Mild Steel		
xi	Pedal frame fulcrum	Mild Steel		
xii	Pedal frame	Mild Steel		
xiii	Gears	Cast iron		
xiv	Gear housing	Cast iron or Aluminium alloy or Mild Steel		
xiv	Pedal board	Wood		

Constructional requirements

Clause No.	Requirements as per IS	As observed	Conformity to IS
5.1	**Body Frame** The body frame of the paddy thresher shall consist of the base, the side frames and the front grain shield. The rear grain shield may also be provided.		
5.1.1	**Base** The wooden base shall be at least		

	50 x 50 mm size. The wooden parts shall be joined to each other by mortise and tenon joints. The base shall be fixed to the side frames with carriage bolts.The base may also be of mild steel angle section of nominal size of at least 30 x 30 x 3 mm size and the parts in this case shall be welded to the side frames.		
5.1.2	**Side Frames** The side frames shall be of mild steel angle section of nominal size of at least 30 x 30 x 3 mm and the parts shall be welded or bolted. The side frames shall support side boards which shall be made of mild steel sheet of thickness between 0.5 mm to 0.8 mm and these shall be bolted to the side frames. The side boards may be webbed.		
5.1.3	**Front grain shield** The front grain shield shall be made of wooden plank of at least 12 mm thickness, or 0.5 to 0.8 mm thick MS sheet and this shall be fixed suitably to the side frames.		
5.1.4	**Rear grain shield** If provided, the rear grain shield shall be of either mild steel sheet having the same thickness as the side boards or canvas supported by at least three mild steel flat frames each of minimum 50 x 3 mm size.		
5.2	**Cylinder:** The cylinder shall be constructed of a series of slats supported on each of its two sides by a cylinder end disc. The slat shall carry the threshing teeth. The diameter of cylinder across the end discs shall be in the range of 400 mm and 430 mm.		

5.2.1	**Slat** Each slat shall be at least 12 mm thick and 60 mm wide. The slats shall be fixed to the cylinder end discs. Diameter of the cylinder across the slats shall be in the range of 300 mm and 330 mm. The distance between the two slats shall be in the range of 13 to 20mm.		
5.2.2	**Cylinder end disc** The cylinder end disc to support the slats may be webbed in order to reinforce them.		
	In case of double disc, the thickness of each disc shall be minimum 0.6 mm and the total thickness of two discs shall be minimum 1.5 mm. Mild steel bar of 6 mm diameter shall be rolled or welded along the edges of the discs.		
5.2.3	**Threshing teeth**		

	The threshing teeth shall be at least 3 mm diameter. The wire shall be curved and fixed to the slats in such a way that the distance between the bottom ends of each tooth shall be in the range of 25 to 32 mm. Threshing teeth shall project out 50 mm above the surface of the slats. The methods of fixing of the threshing teeth on the slat shall be such that when assembled, the threshing teeth on the two adjacent slats come staggered to each other. The distance between the tips of the two adjacent teeth shall be between 50 to 75 mm.		
5.3	**Drive** The drive shall be of eccentric type. The drive shall consist of a crank, one end of which shall be connected to the spur gear and the other end shall be connected suitability to the pedal frame fulcrum which shall be welded to the pedal frame. The pedal frame shall carry the pedal board.		
5.3.1	**Gear Housing** The gear housing shall consist of the spur gear which shall engage the pinion. The gear ratio shall be not less than 3.5:1.		
5.3.2	**Crank** The crank shall be made of bar of not less than 9 mm in diameter. This shall preferably be 'U' shaped.		
5.3.3	**Pedal Frame Fulcrum** The fulcrum shall be made of either mild steel tube or a bar. In case MS tube is used, the inside diameter and thickness shall be at least 20 mm and 2.5 mm respectively.		

5.3.4	**Pedal Frame** The pedal frame shall be of mild steel flat of at least 30 x 5 mm size.		

5.3.5	**Pedal Board** The pedal board shall be of wooden plank having minimum size of 25 x 65 mm and its length shall depend upon the size of the cylinder		
5.4	**Axles** The cylinder axle and the gear stub axle shall be of mild steel round bar having a diameter between 16 and 20 mm.		
	The axle shall be supported by ball or bush bearings with loose balls in cup and cones, and these shall be guarded suitably.		
6. **6.1**	**Dimensions** The overall height of the thresher shall be not more than 750 mm.		
6.2	The height between the ground level and the centre of cylinder shall be not more than 525 mm.		
6.3	The height of the pedal board from the ground level shall be 75 to 80 m.		
6.4	The distance between the centre of pedal board and the centre of pedal fulcrum shall be 360±10 mm.		
7.	**Other requirements**		
7.1	**Clearances** The clearance between the frame and the tips of the threshing teeth shall be at least 50mm.		
7.2	**Lubrication** The gear housing shall be provided with protected oil holes to facilitate lubrication of gears and provision shall also be made for easy opening of bearing cones for greasing of bearing balls.		

7.3	**Safety arrangement** The metallic and wooden edges of the paddy thresher shall be rounded in order to protect the operator from possible injuries. The necessary safety aid shall be built in to prevent the possible detachment of certain		

	parts and thin injuries to flying over, leading to the operator, while the thresher attains high rotary speed due to the centrifugal force.		
8.	**Tests**		
8.1	**Setting strength** The setting strength of the threshing teeth shall be such that when pulled by a force of 500 N, the teeth shall not come out of the slats.		
8.2	When placed on a level surface and operated at the maximum working speed, the following shall not occur: a. Oscillation of the thresher b. Undue vibration and unbalancing of the cylinder		
9 **9.1**	**Workmanship and finish** All the metallic parts of the thresher shall be given an anticorrosive rust preventive paint. The wooden parts shall be painted before assembly. The gear and bearings shall be well lubricated.		
10	**Marking**		
10.1	The paddy thresher shall be marked with the following particulars: a. Manufacturer's name and recognized trade mark, if any; b. Rotational speed; and c. Size of thresher.		
10.1.1	The particulars mentioned under **10.1** shall be punched or stencilled on the base of the thresher.		