NO. FIM /MPKV/IMPL. NO. / 218/ 2019 **MONTH: DECEMBER, 2019**

COMMERCIAL TEST REPORT

This test report valid up to 10/12/2026

Tractor Operated Ankita 5 Tyne Cultivator Attachments With Ridger, Blade Harrow, Side Cutter [Commercial]

सत्यमेव जयते

Farm Machinery Testing and Training Centre,
All India Coordinated Research Project on
Farm Implements and Machinery,
Dr. Annasaheb Shinde College of Agricultural Engineering and Technology,
Mahatma Phule Krishi Vidyapeeth
Rahuri, Dist. Ahmednagar 413 722 (M.S.)

COMMERCIAL TEST REPORT

Test Report No.	Name of the Machine/Implement, Model No.	Month	Year
FIM/ MPKV/ IMPL. NO/ 218 / 2019	Tractor Operated Ankita 5 Tyne Cultivator Attachments With Ridger, Blade Harrow, Side Cutter [Commercial]	December	2019

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MAHATMA PHULE KRISHI VIDYAPEETH
अन्नं बहु कुर्वीत तद् व्रतम्

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(The Institute is approved Testing Centre by Department of Agriculture & Cooperation, Ministry of Agriculture, GOI Vide Letter No. 8-1/2004-M&T (I&P) dated June 17, 2013 and subsequent letters)

Type of Test	:	**COMMERCIAL**
Name of machine	:	Tractor Operated Ankita 5 Tyne Cultivator Attachments With Ridger, Blade Harrow, Side Cutter [Commercial]
Test Code Referred	:	**Cultivator Attachment:** IS: 6638-1972 (reaffirmed med feb.-2006)(Tractor Mounted Cultivator) IS: 7565 (Part-II)-1988 (reaffirmed Dec-2004)(Tines For Tractor operated cultivators Part 1 Rigid Tyne Type Tines),IS:6023-1970 (Specification of reversible shovels) **Blade Harrow Attachments:** IS: 3342-1998 (Soil working Equipment-Cultivators, Animal Drawn-specification) IS: 2564-1990 (Specifiction for Animal Drawn Blade Harrow Guntaka type). **Ridger Attachment:** For tractor operated ridger the Test codes of bullock drawn ridger were used test codes IS: 2565-1979 (Reaffirmed in January, 2001) (Specification for Ridger, Animal- Drawn) & IS: 10254-1999 (Reaffirmed in January, 2001) (Specification for Share for Animal Drawn Ridger). **Side Cutter Attachment:** IS:6288-1971 (Reaffirmed in 1999) (Test code for mould board plough) IS:10691-1983 (Reaffirmed in 2001) (Specification for share for tractor operated mould board plough) and
Test requested by	:	**M/S Ankita Agro Engineering**, K- 37, MIDC Waluj, Phone No.0240-2552341/9422737939 Dist.:- Aurangabad, Pin- 431136 Maharashtra
Testing Authority	:	**All India Coordinated Research Project on Farm Implements and Machinery,** Dr. Annasaheb Shinde College of Agricultural Engineering and Technology, Mahatma Phule Krishi Vidyapeeth, Rahuri, Dist. Ahmednagar 413 722 (M.S.)
Period of test	:	**October 2019 to December 2019**
Validity period	:	**This test report valid up to 10/12/2026**

1. This Test Report should not be reproduced in part or full without prior permission of the Testing Authority.
2. The data given in the Test Report pertains to the particular machine submitted for test by the Applicant.
3. The data collected during the test do not in any way attribute to the durability of the machine.

SELECTED CONVERSIONS

Sr. No.	Units	Conversion Factor
1	**Force**	
	1 kgf	9.80665 N
		2.20462 Ibf
2	**Power**	
	1 hp	1.01387 metric hp (Ps)
		745.7 W
	1 Ps	735.5 W
	1 kW	1.35962 Ps
3	**Pressure**	
	1 psi	6.895 kPa
	1 Kgf/cm^2	98.067 kPa = 735.56 mm of Hg.
	1 bar	100 kPa = 10 N/cm^2
	1 mm of Hg	1.3332 m-bar

CONTENTS

1. SCOPE OF TEST

The purpose of test was to check and assess the following :

1.1 Laboratory Test :

- Checking of Specifications
- Hardness of soil engaging parts.
- Wear analysis of cricical components
- Chemical analysis of critical components

1.2 Field Test :

- Quality of work
- Rate of work
- Power requirement
- Ease of operation and adjustment
- Labour Requirement
- Defects.Breakdowns and Repairs

2. METHOD OF SELECTION

The machine was selected by Random Sampling method.

3. TEST PROCEDURE

The implement was tested in accordance-with Test codes as follows

Cultivator Attachment:

IS: 6638-1972 (reaffirmed med feb.-2006)(Tractor Mounted Cultivator) IS: 7565 (Part-II)-1988 (reaffirmed Dec-2004)(Tines For Tractor operated cultivators Part 1 Rigid Tyne Type Tines),IS:6023-1970 (Specification of reversible shovels)

Blade Harrow Attachments:

IS: 3342-1998 (Soil working Equipment-Cultivators, Animal Drawn-specification)

IS: 2564-1990 (Specifiction for Animal Drawn Blade Harrow Guntaka type).

Ridger Attachment:

For tractor operated ridger the Test codes of bullock drawn ridger were used test codes IS: 2565-1979 (Reaffirmed in January, 2001) (Specification for Ridger, Animal- Drawn) & IS: 10254-1999 (Reaffirmed in January, 2001) (Specification for Share for Animal Drawn Ridger).

Side Cutter Attachment:

IS:6288-1971 (Reaffirmed in 1999) (Test code for mould board plough) IS:10691-1983 (Reaffirmed in 2001) (Specification for share for tractor operated mould board plough) and

Three point hitch attachment:

IS: 4468 (pt-I)-1997 (specification of three point linkage). (Reaffirmed in 2001).

4. SPECIFICATIONS

4.1	GENERAL:		
	Manufacturer	:	M/S Ankita Agro Engineering, K-37, MIDC Waluj, Phone No.0240-2552341/9422737939 Dist.:- Aurangabad, Pin- 431136 Maharashtra
	Name of implement	:	Tractor Operated Ankita 5 Tyne Cultivator attachments with Ridger, Blade Harrow, Side Cutter.
	Type of implements	:	Tractor Mounted
	Make	:	Ankita
	Model	:	Ankita
	Serial No.	:	DD227/2019
	Year of manufacture	:	2019
	Recommended	:	18 to 27 Hp
	Power sources used	:	Mahindra Jivo 245 Di
	Tractor Engine no	:	GHJ4WLA5104
	Tractor Chesis no	:	MBN2KGBBFJGK04377
	Max PTO power, kW(Ps)		16.50 Hp

4.2	**CONTRUCTIONAL DETAILS:**		
4.2.1	**Main Frame:**		
	Constructional details: Traphezoidal, Two flats of size 540 x 110 x 10 are welded on two square beams of size 915 x 70 x 70 at rear side and 610 x 70 x 70 at front side. Same frame is used for all the attachments. Clamps are provided for attaching tynes on the frame.		

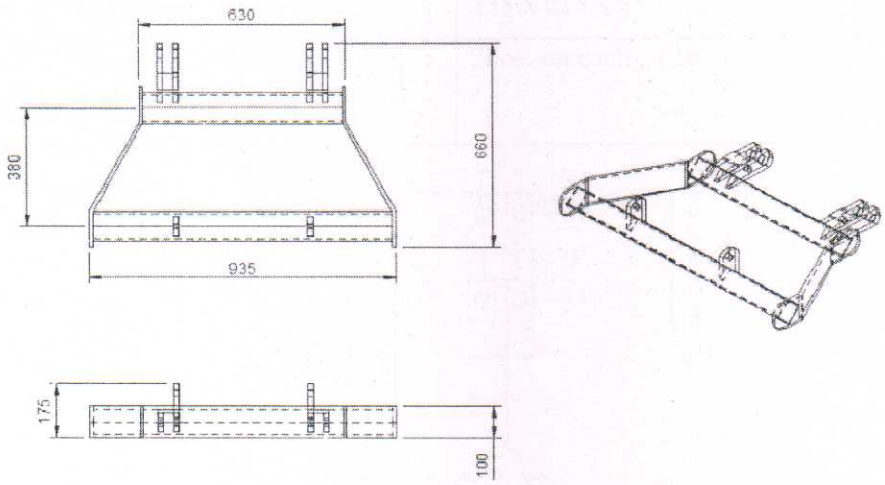


Fig no.1. Construction deatails of frame

4.2.2	**Cultivator Attachment:** Five numbers of rigid tynes are provided, two of them are provided on front side and three are on rear side. Three sweep type at rear side and two hexagonal shape reversible shovels are provided on front side.		
4.2.2.1	**Tynes**		
	Type	:	Rigid
	Number of tynes	:	5
	Size	:	450 x 75 x 20
	Method of Fixing	:	Clamps **(Ref. fig no.2)**are provided for adjusting spacing and 4 holes are provided on each tyne flat of size 17ϕ
	Provision for fixing Shovel	:	Two holes are provided on each tyne of size 12 ϕ

4.2.2.2	Shovel		
	Numbers	:	5
	Type	:	Reversible and sweep type
	Arrangement on main frame	:	2 on front and3on rear
	Material	:	EN 15
	Size of hexagonal shovel (mm)	:	245 x 40 x 7
	Size of Sweep (mm)	:	235 x 215 x 8
	Number & size of holes on each tyne for fixing shovel (mm)	:	2nos. on each , 12ϕ.

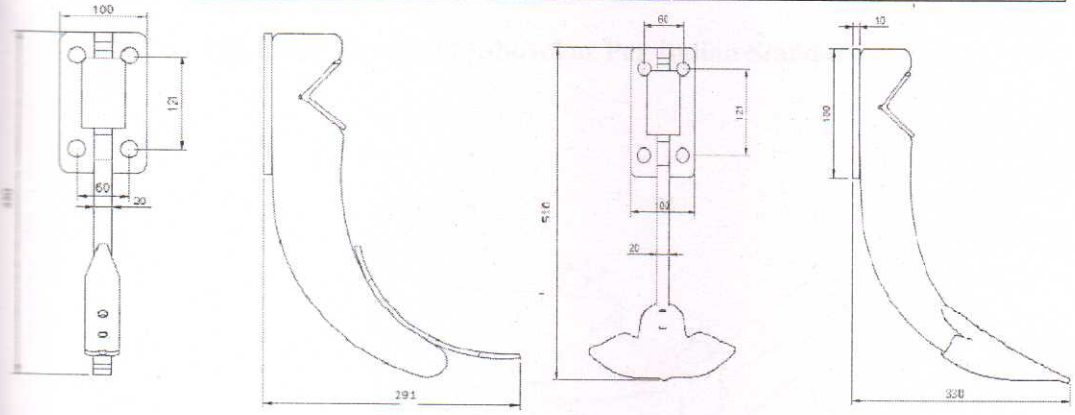


Fig. no 2 Dimensions of tyne

4.2.2.3Specification of shovel as per IS:6023-1970 (Specification of reversible shovels):

Sr. No.	Notations	Dimensions (mm)		Conformity to IS
		As per IS	As measured	
1	A	270±2	260	**Does not conforms**
2	B	75±2	45	**Does not conforms**
3	C	35±1.6	34	Conforms
4	D	15±0.5	15	Conforms
5	E	45±0.25	45	Conforms
6	α	45±5 degree	45	Conforms
7	β	10to 20 degree	17	Conforms
8	Counter Sunk Bolt	12 mm	12	Conforms

9	Bevelled cutting edge	10 mm	10	Conforms
10	Thickness	4/5/6 mm±5%	10	Conforms

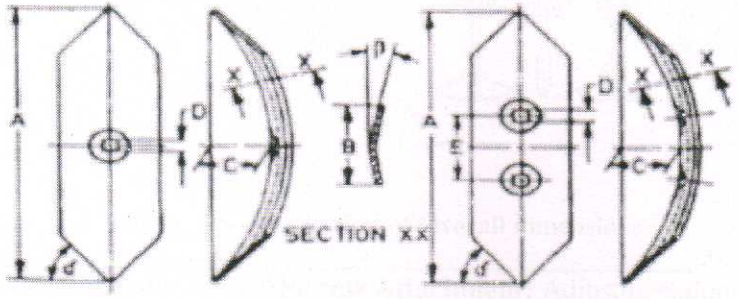
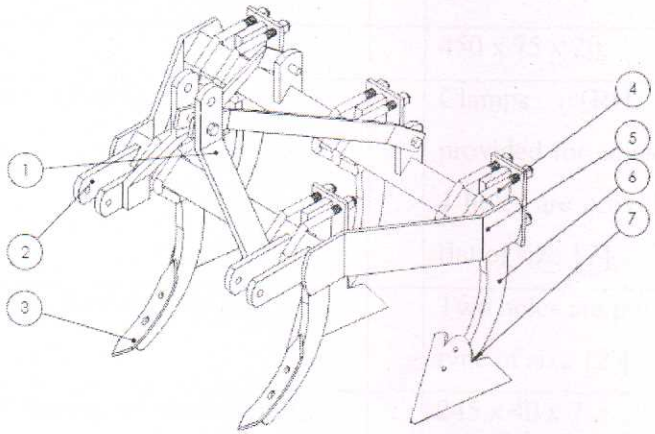


Fig. No 4: Reversible Shovel as Per Indian Standard



1. Hitch	2. Lower Hitch Point	3. Reversible Shovel	4. Clamp
5. Main frame	6. Tyne	7. Sweep	

Fig. No. 5. Schematic view of Cultivator

4.2.2.4	**Overall Dimensions**		
	Length	:	1040
	Width	:	740
	Height	:	875

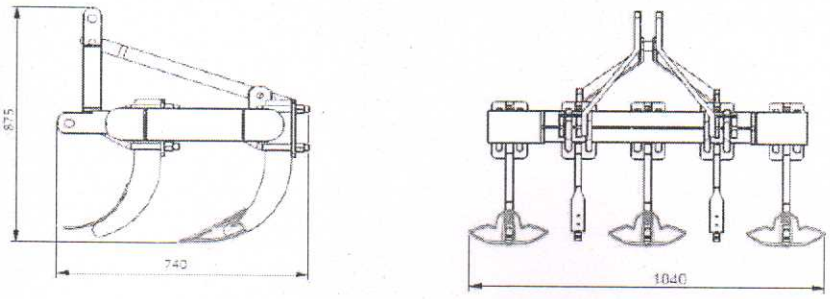


Fig no. 6 Schmatic view of Overall dimensions

4.2.3	**Cultivator Cum Blade Harrow Attachment:** Adjustment done on frame by attaching three tynes at rear for blade.		
4.2.3.1	**Tynes**		
	Type		Rigid
	Number of tynes		5
	Size		450 x 75 x 20
	Method of Fixing		Clamps **(Ref. drawings)**are provided for adjusting spacing and 4 holes are provided on each tyne flat of size 17ϕ
	Provision for fixing Shovel		Two holes are provided on each tyne of size 12 ϕ
	Size of hexagonal shovel (mm)	:	245 x 40 x 7
	Number & size of holes on each tyne for fixing shovel (mm)	:	2 nos. on each , 12 ϕ.
4.2.3.2	**Blade**		
	Numbers	:	1
	Type	:	Flat
	Material	:	SAE 1020
	Size (mm)	:	920 x 110 x 10
	No. & size of holes on each Blade point for fixing to tyne (mm)	:	3 & 12ϕ
	Method of fixing (mm)	:	Blade is fixed on three rear tynes

			with the help of three bolts of size 12 ϕ

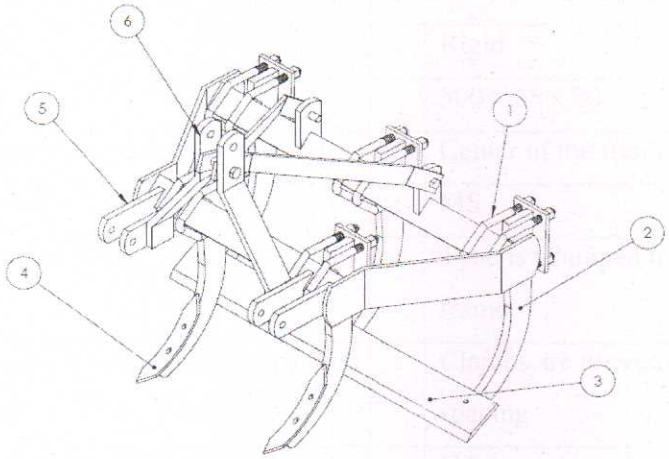


Fig.no 7. Blade Harrow Attachment

1. Clamp	2. Tyne	3. Blade
4. Shovel	5. Lower hitch point	6. Top hitch point

4.2.3.3	**Overall Dimensions**		
	Length	:	920
	Width	:	740
	Height	:	880

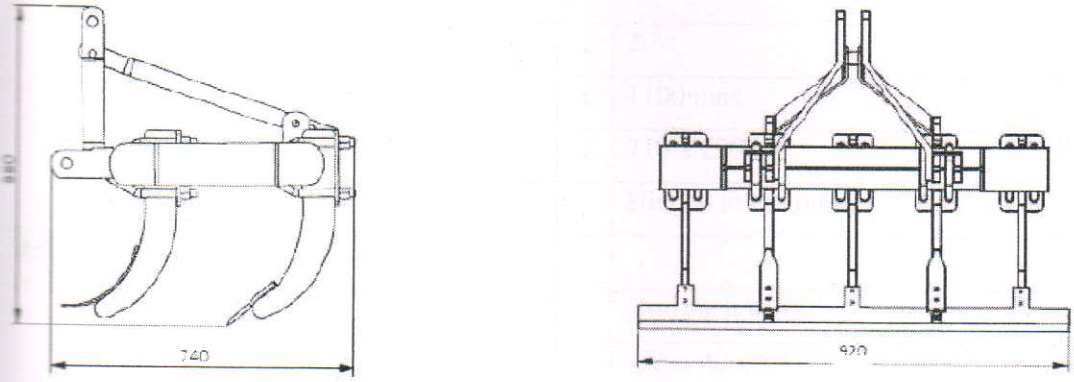


Fig No.8 Overall dimensions of blade harrow

4.2.4	**Ridger Attachment**		
4.2.4.1	**Tyne :**		
	Numbers	:	1
	Type	:	Rigid
	Size		500 x 65 x 20
	Arrangement on main frame	:	Center of the frame on rear side
	Material	:	MS
	Method of fixing	:	Tyne is Clamped to the main frame
	Provision for adjusting the spacing of type	:	Clamps are provided for changing spacing
	Provision for height adjustments	:	NA
4.2.4.2	**Share**		
	Numbers	:	1
	Type	:	V-Shaped
	Material	:	EN3
	Size (mm)	:	190 x 80 x 80
	Method of fixing (mm)	:	Each share point is welded to the tyne and hinged to moulds.
4.2.4.3	**Wings**		
	Number of wings	:	2
	Wing span (mm)	:	1100 max
	Size of Wings (mm)	:	710 x 290 x 6
	Method of fixing		Hinged to the tynes.
4.2.4.4	**Wing span adjusting braces**		
	No. of braces	:	2 on each wing
	Size of brace	:	455 x 40 x 50
	Wing span adjustment	:	Holes provided
	No. of holes, Hole to hole distance	:	10, 30 mm

	Method of fixing	:	Bolted to the flat welded on wing.

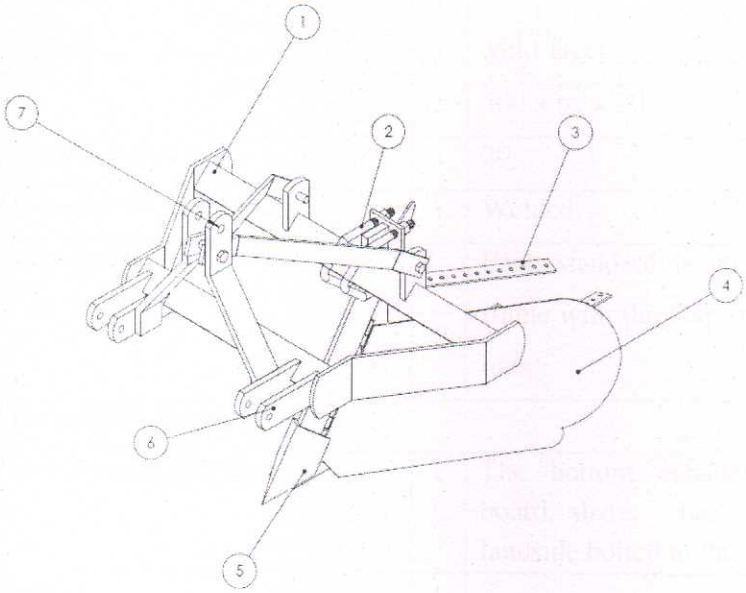


Fig. No 9. Ridger Attachment

1. Main frame	2. Clamp	3. Brace	4. Wing
5. Share	6. Lower Hitch point	7. Top hitch point	

4.2.4.5	**Overall Dimensions**		
	Length	:	1045
	Width	:	935
	Height	:	860

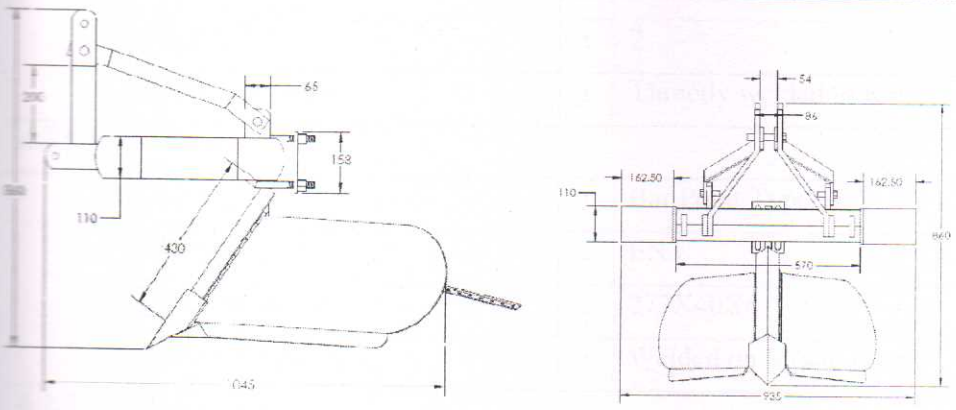
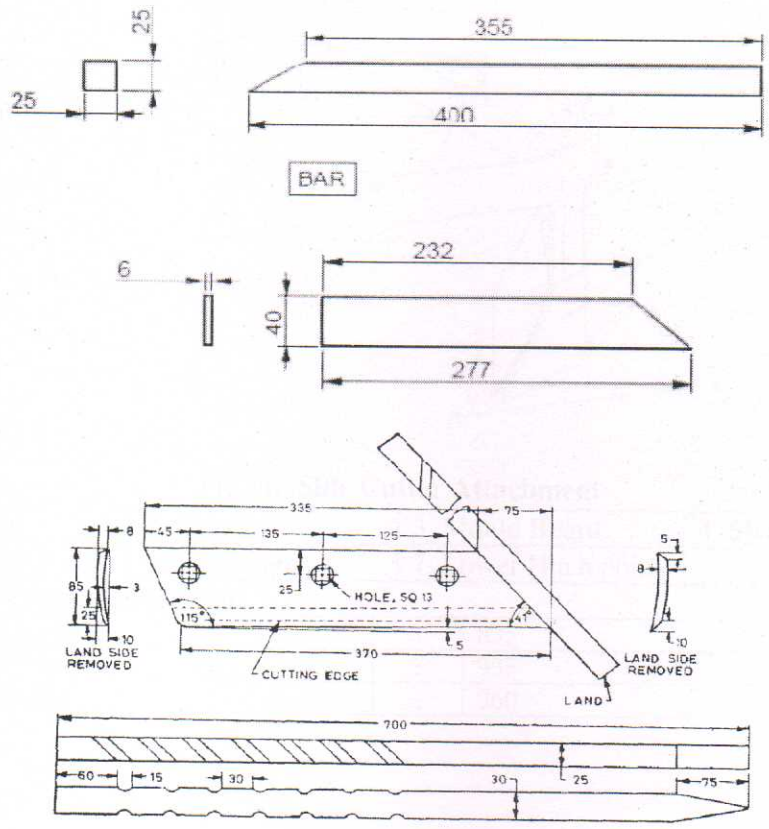


Fig no. 10. Overall dimensions of Ridger

4.2.5	**Side Cutter Attachment**		
4.2.5.1	**Standard**:		
	Numbers	:	2
	Material	:	Mild Steel
	Size	:	500 x 65 x 20
	Thickness (mm)	:	20
	Method of fixing of frog	:	Welded
	Method of fixing	:	Each standard is attached to the frame with the help of clamps and nuts.
4.2.5.2	**Side cutting Bottoms**		
	Constructional details	:	The bottom consists of mould board, share, bar point and landside bolted to the frog.
	Number	:	2
	Type	:	MB
4.2.5.3	**Mould Board**		
	Type	:	4
	Material	:	Mild Steel
	Length (mm)	:	500
	Width (mm)	:	280
	Thickness (mm)	:	5
	Frogs	:	2
	Method of fixing	:	Directly welded to forg.
4.2.5.4	**Share**:		
	Type	:	Bar Point Type
	Material	:	EN3
	Dimensions	:	277X40X6
	Method of fixing	:	Welded on Mould board
4.2.5.5	**Share Bar :**		
	Type	:	Type IV

	Material	:	HCS (High Carbon Steel)
	Size,(mm)	:	470 x 20 x 20



All dimensions in millimetres.

FIG. 6 TYPE 6 SHARE

Fig no. 11. DIMENSIONS OF SHARE AS PER INDIAN STANDARD, (mm)

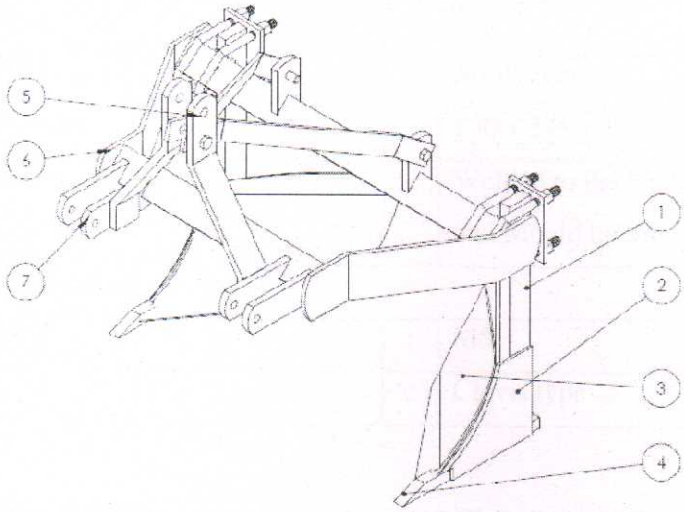


Fig.11. Side Cutter Attachment

1. Standard	2. Frog	3. Mould Board	4. Share bar
5. Top hitch point	6. Main frame	7. Lower Hitch point	

4.2.5.6	**Overall Dimensions**		
	Length	:	835
	Width	:	935
	Height	:	960

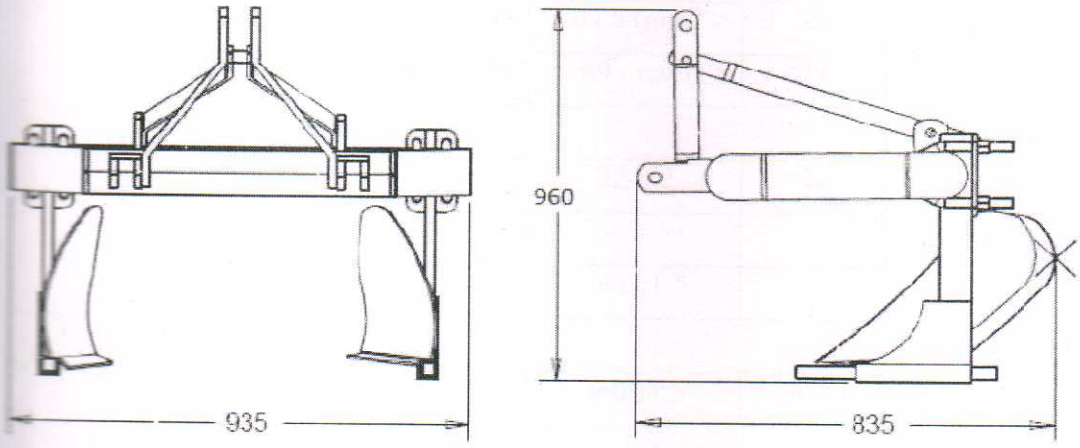


Fig. No 12. Overall dimensions of Side cutter

4.2.5.7	**Frog:**		
	Number	:	2
	Material	:	Mild Steel
	Size ,(mm)	:	130 x 245 x 10
	Method of fixing	:	Welded to the land side, Share bar, and Mould board.
4.2.6	**Hitch pyramid :**		
	Material	:	MS
	Type	:	Clevis type

4.2.7 Specification of hitch pyramid as per IS: 4468 (Part-I) 1997 (Reaffirmed in 2001):

S. N.	Specifications	Dimension (mm)		Remark
		As per IS:4468 -2001 (Cat-I/Cat-II) (mm)	As measured (mm)	
1	**Upper hitch point (cat.-I)**			The relevent code for small tractor is not available
	Diameter of hitch pin hole	19.3+2	19.4	
	Width between inner faces of yoke	44.5 (min)	45	
	Width between outer faces of yoke	69 (max)	79	
2	**Lower hitch point (cat.-I)**			
	Dia. of hitch pin	22-0.2	22	
	Lower hitch point span	683±1.5	505	
3	**Other dimensions**			
	Mast height	460±1.5	474	

4.3	**Operational Mass (kg)**	:	172.8
	Weight of ridger (kg)	:	40.0
	Weight of Side cutter(kg)	:	35.6
	Weight of cultivator with frame (kg)	:	91.0
	Weight of blade (kg)	:	6.2
	Operational Mass (kg)	:	172.8
4.4	**Colour of implement**	:	Green

5. CONFORMITY TO INDIAN STANDARD

Cultivator Attachment

Cl. No.	Requirement as per IS	Results as observed	Remarks
Cl.1.0	**MaterialIS:6638-1990**		
Cl.1.1	Frame (Mild Steel) IS:226-1969	Mild Steel	Conforms
	Tyne (Carbon Steel)IS:1570-1961	Mild Steel	**Does not Conforms**
	Hitch (Mild Steel)IS:226-1969	Mild Steel	Conforms
	Hitch Pin (Carbon Steel)IS:1570-1961	Carbon Steel	Conforms
Cl.2	**Size**		
Cl.2.1	**Working size**: The working size of the cultivator shall be determined by multiplying the number of tynes and row spacing expressed in m.	5 x 0.225	Conforms
Cl.2.1.1	When the tynes are fitted at minimum spacing it will be designated as minimum working size. Recommended minimum working sizes for 7, 9, 11 and 13	NA 5 tyne	--

	tined cultivators shall be 1.05, 1.35, 1.65 and 1.95 m respectively.		
Cl.2.1.2	**Nominal Size** — The nominal size of the cultivator shall be determined by multiplying the number of spaces between rows and row spacing and expressed in m.	5 x 0.225	Conforms
Cl.3	**DIMENSIONAL REQUIREMENTS**		
Cl.3.1	The row spacing between two tynes shall be adjustable from 150 to 250 mm preferably in steps of 25 mm.	Adjustable	Conforms
Cl.3.2	The contact angle of the shovel with tyne shall be declared. The deviation of this angle shall be not more than ± 3° of the declared angle.	Not Declared	**Does not Conforms**
Cl. 4	**OTHER REQUIREMENTS**		
Cl.4.1	The frame shall be rigid and strong	Rigid and Strong	Conforms
Cl.4.2	The number of tines shall be 7, 9, 11 or 13.	5	Not Applicable
Cl.4.3	The two tool bars of equal length and size shall be provided.	Equal	Conforms
Cl.4.4	While fixing the shovel to the tine, ensure that the shovel bolts are flush with the surface of the shovel.	Shovel bolts are flush with the surface of the shovel.	Conform

Cl. 5	**FINISH AND WORKMANSHIP**		
Cl.5.1	All components of the cultivator should be free from pits, burrs and other visual defects.	Satisfactory	Conforms
Cl.5.2	The welding of various parts shall be satisfactory in all respects (see 7.1 of IS : 822-1970§).	Satisfactory	Conforms
Cl.5.3	The exposed metallic parts shall be free from rust and shall have a protective coating which will prevent surface deterioration in transit and storage.	Oil Painted	Conforms
Cl.6	**MARKING AND PACKING**		
Cl.6.1	**Marking**		
	Each cultivator shall be marked with the following particulars:		
	a) Manufacturer's name and trade-mark, if any;	Provided	Conforms
	b) Maximum size and number of tines; and	Provided	Conforms
	c) Batch or code number.	Provided	Conforms
Cl.6.2	These particulars shall be stamped, engraved or embossed on metallic plate rigidly attached on a non-wearing part of the cultivator.	Metallic Plate Rigidly Attached	Conforms
Cl.6.3	The cultivator should be packed to ensure safety of the components in transportation as	Provided	Conforms

	agreed to between the purchaser and the supplier.		

Blade Harrow

Confomity To IS:2564-1990

Cl. No.	Requirement as per IS	Results as observed	Remarks
Cl.1.0	**Material IS:2564-1990**		
Cl.1.1	The material of construction of blade shall be steel conforming to grade C 75 of schedule Si of IS:1570-1961. The chemical composition of grade C 75 is as under. a. Carbon -0.70 to 0.80% b. Manganese-0.50 to 0.80% c. Sulphur-0.05% max d. Phosphorus-0.05% max.	Carbon - 0.185% Manganese-0.5146% Sulphur-0.0432% Phosphorus-<0.039%	**Does Not conform** Conform Coform Conform
Cl.1.2	The material of construction of components, other than blade, shall be mild steel prederably conforming to IS:226-1975. Well seasoned hard timber may also be used for beam, handle and frame	Satisfactory	Conforms
Cl.2.0	**Hardness IS: 2564-1990**		
Cl.2.1	The blade shall be hardened. The hardness shall be in range of 350 to 450 HB when tested in	Hardness is in the range of 132 HRB	**Does not conform**

	accordance with IS: 1500-1968 upto a distance of 50 mm from the cutting edge.		
Cl.3	**Dimensions** **IS: 2564-1990**		
Cl.3.1	The width of the blade shall be in the range of 60 to 100 mm	Width of blade is100 mm	Conforn
Cl.3.2	The thickness of the blade shall be in the range6 to 12 mm .	Thickness of the blade is 10 mm	Conforms
Cl.3.3	The angle of the balde shall be 15 to 30 deg. The angle shall be adjustable.	Angle of the blade is adjustable between 12 to 30 deg.	Conform
Cl.3.4	The balde shall be bevelled to a distance between 5 and 10 mm	Blade is bevelled to a distance of 10 mm.	Conforms
Cl.4	**Other requirements** **IS 2564-1990**		
Cl.4.1	All the components should preferably be detachable.	Statisfactory	Conforms
Cl.4.2	The fasteners coming in contact with soil should have coarse thread. The head of fasteners coming in contact with soil, shall be flush with the working surface. As far as possible, bolts of 10 mm size should be used for all fastening to facilitate the use of minimum number of tools. Each bolt should have spring or flat washer of appropriate size for better contact.	Statisfactory	Conforms
Cl.4.3	The cutting edge of the blade may	Cutting edge of blade	Conforms

	be straight, concave or convex	is sraight	
Cl.5	When the blade harrow is set at its working position and is placed on a plane surface, its cutting edge should touch the ground and the harrow should be well balanced.	Statisfactory	Conforms
Cl.5.1	**Worknanship and Finish IS: 2564-1990**		
Cl.5.2	The components should be free form pits, burrs and other visual defects. The welded joints shall not be porous.	Statisfactory	Conforms
Cl.5.3	The surface of the parts shall be evely dressed and have protective coating which will prevent surface deterioration in transit and storage.	Statisfactory	Conforms

Ridger Attachment

Specification for ridger, Animal Drawn (IS: 2565-1979):

Cl.	Performance requirement as per IS	As observed	Remarks
Cl.1.0	**Type:**		
Cl.1.1	On the basis of shape of share, the ridger shall be of two types, namely, V-shape and wedge shape	V-shaped	Conforms
Cl.2.0	**Materials:**		
Cl.2.1	The materials for the construction of share including detachable share point	C= 0.154	**Does Not Conform**

	and sole plate knife shall be chilled cast iron or steel conforming to Grade C75 of schedule II of IS: 1570-1961. The chemical composition of grade C75 is as under: C-0.70-0.80; Mn-0.50-0.90; S & P-0.05 (max)	Mn=0.5216	Conform
		S=0.0289	Conform
		P=0.0520	Conform
Cl.3.0	**Hardness:**		
Cl.3.1	The chilled cast iron share including detachable share point and sole plate knife shall have hardness in the range of 360 to 400 HB when tested in accordance with IS: 1789-1961 up to a distance of 50 mm from the cutting edge, depth of chilling shall be not lessthan 1.5 mm.	152	**Does not Conform**
Cl.4.0	**Dimensions:**		
Cl.4.1	**Size:** the size of ridger shall be as follows: a) Light- up to and including 400 mm b) Medium-above 400 & up to and including 900 mm and c) Heavy-above 900 mm	Heavy size 600, 650, 750, 810 and 1100 max.	Conforms
Cl.4.2	The size shall be declared. The tolerance on declared size shall be +/- 5 mm	Not declared	**Does not conform**
Cl.4.3	In case in ridger is provided with sole plate, the vertical suction for V-shaped share and Wedge-shaped share shall be in the range of 3 to 8 mm and 8 to 22 mm respectively. The suction shall not	7.5 mm	Conforms

	differ by +/- 1 mm of the declared value.		
Cl.4.4	The cutting edge of the share shall be bevelled to a distance between 5 and 10 mm	Not bevelled	**Does not conform**
Cl.4.5	The angle of cut for V-shape shall be 50 to 80^0 and for wedge shape shall be 30 to 60^0	55^0	Conforms
	The variation from declared angle shall be not more than +/- 3^0	Not declared	**Does not conform**
Cl.4.6	The angle of penetration shall be 15 to 30^0	25^0	Conforms
	The variation from declared angle shall be not more than +/- 3^0	Not declared	**Does not conform**
Cl.5.0	**Other Requirements:**		
Cl.5.1	All the components should preferably be detachable	Detachable	Conforms
	The fasteners coming in contact with soil, should have coarse thread. The head of fasteners, coming in contact with soil, shall be flush with the working surface. As for as possible, bolts of 10 mm size should be used for all fastening to facilitate the use of minimum number of tools. Each bolt should have spring or flat washer of appropriate size for better contact.	Provided	Conforms
Cl.5.2	The gauge wheel if fitted shall roll smoothly on its axis. The height of the wheel should be adjustable.	--	Not Applicable
Cl.5.3	The ridger shall have the shares of V-	V-shaped	Conforms

	shape or wedge-shape		
Cl.5.4	The mould-board braces may be fixed or adjustable type.	Adjustable type	Conforms
Cl.5.5	The rigger shall be symmetrical on both sides along with the longitudinal axis of the plough bottom.	Symmetrical on both the side	Conforms
Cl.5.6	When the ridger is set at its working position and is placed on the plane surface, its bearing points (point of share and wing of share and hell of sole plate, if present) should touch the ground and the ridger shall be well-balanced.	Balanced with used beam	Conforms
Cl.6.0	**WORKMANSHIP AND FINISH:**		
Cl.6.1	The components shall be free from pits, burrs and other visual defects. The castings shall be free from blow holes. The welded joints shall not porous.	Satisfactory	Conforms
Cl.6.2	The surface of the parts of the ridger shall be evenly dressed and shall have a protective coating which will prevent surface deterioration in transit and storage.	Painted	Conforms
Cl.7.0	**MARKING AND PACKING :**		
Cl.7.1	**Marking:** Each ridger shall be marked on non-wearing surface with the following particulars: a. Manufacturer's name and recognized trade mark if any b. Batch or code number	Marked	Conforms

Side Cutter Attachment

Sr. No.	Requirements as per IS	Observation	Conformity to IS
Cl.1	TYPES		
Cl.1.1	On the basis of the dimensions, the share shall be of following 7 types: a) Type 1 b) Type 2 c) Type 3 d) Type 4 e) Type 5 f) Type 6 g) Type 7	As per the dimensions measured the share falls in Type 6 category.	Conforms
Cl.2	**MATERIAL**		
Note:	*the sulphur and phosphorus content shall not be more than 0.05 percent each.*		
Cl.2.1	The materia! for bar point shall be 40C8 or 55C8 of IS : 5517-i993 (Reaffirmed 1998) Carbon 0.35 to 0.45 percent Or 0.50 to 060 percent Manganese 0.50 to 0.80 percent	C= 0.1191%	**Does not conform**
		Mn=0.5647%	Conforms
		S=0.0371%	Conforms
		P=0.021%	Conforms
Cl.3	**HARDNESS**		
Cl.3.1	The cutting edge of the steel share shall be hardened and tempered to give a Brinell hardness of 350 to 450 HB when tested in accordance with IS: 1500- 2005	149	**Does not conform**
Cl.4	**OTHER REUIREMENTS :**		
Cl.4.1	The cutting edge of the share shall be bevelled to a distance not more than 10 mm	10	Conform
	The thickness of cutting edge shall be between 0.5 to 2 mm and should be uniform, as far as possible.	1.5	Conform
Cl.4.2	The counter sunk bolt of 10 mm size shall be used for fixing the share with frog. As for as possible, the bolt of M10 size should be used.	Welded	Not Applicable
Cl.4.3	The shares shall be supplied with bolts in holes	--	Not Applicable
Cl.5	**WORKMANSHIP AND FINISH**		

Cl.5.1	The shares shall be free from flaws, scratches, cracks and other defects. All fins, burrs, flashes and sharp edges other than the cutting edge shall be removed.	No such defects were noticed	Conforms
Cl.5.2	In case of steel shares, the welding of gunnel shall be satisfactory in all respect. The welding shall not be porous.	No such defects were noticed	Conforms
Cl.5.3	A coating of protective paint or grease on soil-facing surface of the share shall be provided. The bottom surface not in direct contact with soil shall have an anti-rust paint coating.	Provided	Conforms
Cl.6	**MARKING AND PACKING**		
Cl.6.1	The share shall be with the following particulars:		
	Manufactures' name and recognized trade mark, if any		
	a) Size	N.P.	**Does not conform**
	b) Type	N.P.	**Does not conform**
	c) Batch/code number	Provided	Conform

6. LABORATORY TEST

6.1 Shovel

The surface hardness of shovel was recorded as:

Sr. No.	Hardness (HB)		Conformity to IS
	As per IS: 6023-1970	As observed	
1	350 to 450	260	Does not conforms
2		260	
3		260	

Remark: Hardness of shovel was observed from 260 HB

Chemical composition:

The piece of shovel was analysed for chemical composition. The results of chemical analysis are given as under:

Constutuents	As per IS: 6023-1970	Chemical composition (%) of weight	Remarks
Carbon (C)	0.70-0.80	0.400	Does not conform
Mangancese (Mn)	0.50-0.80	1.36	Does not conform
Sulpher (S)	0.05 (max)	0.0028	Conform
Phosphourous (P)	0.05 (max)	0.0175	Conform

Sweep

The surface hardness of Sweep was recorded as:

Sr. No.	Hardness (HB)		Conformity to IS
	As per IS: 6023-1970	As observed	
1	350 to 450	136	Does not conforms
2		136	
3		136	

Remark: Hardness of shovel was observed from 136 HB

Chemical composition:

The piece of Sweep was analysed for chemical composition. The results of chemical analysis are given as under:

Constutuents	As per IS: 6023-1970	Chemical composition (%) of weight	Remarks
Carbon (C)	0.70-0.80	0.1621%	**Does not conform**
Mangancese (Mn)	0.50-0.80	0.7813%	Conform
Sulpher (S)	0.05 (max)	<0.0055%	Conform
Phosphourous (P)	0.05 (max)	0.0146%	Conform

6.2 Blade Harrow

Hardness :

The surface hardness of Blade was recorded as:

Sr. No.	Hardness (HB)		Conformity to IS
	As per IS: 6023-1970	As observed	
1	350 to 450	131	**Does not conforms**
2		131	
3		133	

Remark: Hardness of blade was observed from 132.33HB.

Chemical composition:

The piece of Blade hardness was analysed for chemical composition. The results of chemical analysis are given as under:

Constutuents	As per IS: 6023-1970	Chemical composition (%) of weight	Remarks
Carbon (C)	0.70-0.80	0.1825	Does not conforms
Mangancese (Mn)	0.50-0.80	0.5146	Conforms
Sulpher (S)	6.05 (max)	0.0432	Conforms
Phosphourous (P)	0.05 (max)	0.0390	Conforms

6.3 Ridger

Hardness :

The surface hardness of Share was recorded as:

Sr. No.	Hardness (HB)		Conformity to IS
	As per IS: 6023-1970	As observed	
1	350 to 450	152	Does not conforms
2		152	
3		152	

Remark: The surface hardness of Share was recorded as152 HB.

Chemical composition:

The piece of Share of ridger hardness was analysed for chemical composition. The results of chemical analysis are given as under:

Constutuents	As per IS: 6023-1970	Chemical Composition as observed (%)	Remarks
Carbon (C)	0.70-0.80	0.1514	**Does not conform**
Mangancese (Mn)	0.50-0.80	0.5216	Conforms
Sulpher (S)	0.05 (max)	0.0289	Conforms
Phosphourous (P)	0.05 (max)	0.0520	Conforms

6.4 Side Cutter

Hardness:

Hardness of Bar-point:

Points	Hardness as per IS:10691-1983	Hardness as observed	Conformity to IS
1	350 to 450	134	**Docs not conform**

Remark: Hardness of share was recorded 134 HB against the requirement of 350 to 450 HB.

Chemical Analysis:

Chemical Analysis of Bar-point:

Constutuents	Chemical composition (%) as per IS: 10691-1983	Chemical composition as observed (%)	Conformity to IS
Carbon (C)	0.70-0.80	0.443	Does not conform
Mangancese(Mn)	0.50-0.80	0.77	Conforms
Phosphourous (P)	0.05 (max)	0.032	Conforms
Sulpher (S)	0.05max)	0.020	Conforms

7. FIELD PERFORMANCE TEST

Cultivator

SUMMARY OF FIELD PERFORMANCE TEST

Sr. No.	Parameters	Range
1	Type of soil	Medium Black
2	Soil bulk density (g/cc)	1.28 – 1.35
3	Average soil moisture (%)	14-16.8
4	Engine speed (rpm):	
	- No load	2100
	- On load	1700
5	Average speed of operation (kmph)	2.29-2.51
6	Average wheel slippage (%)	5.92-7.16
7	Average depth of cut (cm)	10.40-13.0
8	Average working width (cm)	106-109
9	Area covered (ha/h)	0.200-0.213
10	Time required to cover one hectare (h)	4.68-5.08
11	Field efficiency (%)	78.26-81.66
12	Fuel consumption -l/h	2.30-2.50
	-l/ha	11.10 – 12.44
13	Av. Implement draft (kgf)	235—265
14	Power requirement, hp	2.15-2.35

7.1.1 Rate of work:

- The rate of work was observed as 0.200-0.213 ha/h for the avarage speed of operation as 2.29-2.51 km/h.
- The time required for ploughing one hectare area was recorded as 4.68-5.08 h.
- The field efficiecy of the implement was worked out as 78.26-81.66 %.

7.1.2 Quality of work:

- The depth of operation and working width of implement were measured as 10.40-13.0 cm and 106-109 cmrespectively.
- The overall operation by this implement was found satisfactory.

Blade Harrow

SUMMARY OF FIELD PERFORMANCE TEST

Sr. No.	Parameters	Range
1	Type of soil	Medium Black
2	Soil bulk density (g/cc)	1.26 – 1.35
3	Average soil moisture (%)	14.5-16.0
4	Engine speed (rpm):	
	- No load	1900-2000
	- On load	1500-1700
5	Average speed of operation (kmph)	3.16-3.50
6	Average wheel slippage (%)	5.15-8.77
7	Average depth of cut (cm)	11.1-13.1
8	Average working width (cm)	87.8-90.40
9	Area covered (ha/h)	0.228-0.252
10	Time required to cover one hectare (h)	3.99-4.37
11	Field efficiency (%)	76.78-83.34
12	Fuel consumption -l/h	1.9-2.20
	-l/ha	8.11 – 9.27
13	Av. Implement draft (kgf)	230-255
14	Power requirement, hp	2.81-3.22

7.2.1 Rate of Work

- The rate of work was observed as 0.228-0.252ha/h for the avarage speed of operation as 3.16-3.50 km/h.
- The time required for ploughing one hectare area was recorded as 3.99-4.37 h.
- The field efficiecy of the implement was worked out as 76.78-83.34 %

7.2.2 Quality of work:

- The depth of operation and working width of implement were measured as 11.1-13.1 cm and 87.8-90.40 cm respectively.

Side cutter

SUMMARY OF FIELD PERFORMANCE TEST

Sr. No.	Parameters	Range
1	Type of soil	Medium Black
2	Soil bulk density (g/cc)	1.27 – 1.38
3	Average soil moisture (%)	14-16.4
4	Engine speed (rpm):	
	- No load	1900-2100
	- On load	1500-1800
5	Average speed of operation (kmph)	2.57-2.88
6	Average wheel slippage (%)	6.39-7.93
7	Average depth of cut (cm)	17.3-19.9
8	Average working width (cm)	60.36-61.02
9	Area covered (ha/h)	0.341-0.465
10	Time required to cover one hectare (h)	2.14-2.93
11	Field efficiency (%)	73.65-79.25
12	Fuel consumption -l/h	2.70-3.20
	-l/ha	6.69 -8.79
13	Av. Implement draft (kgf)	395-440
14	Power requirement, hp	3.76-4.45

7.3.1 Rate of Work

- The rate of work was observed as 0.341-0.465 ha/h for the avarage speed of operation as 2.57-2.88 km/h.
- The time required for ploughing one hectare area was recorded as 2.14-2.93 h.
- The field efficiecy of the implement was worked out as 73.65-79.25 %

7.3.2 Quality of work:

- The depth of operation and working width of implement were measured as 17.3-19.9 cm and 60.36-61.02 cm respectively.

Side cutter

SUMMARY OF FIELD PERFORMANCE TEST

Sr. No.	Parameters	Range
1	Type of soil	Medium Black
2	Soil bulk density (g/cc)	1.27 – 1.38
3	Average soil moisture (%)	14-16.4
4	Engine speed (rpm):	
	- No load	1900-2100
	- On load	1500-1800
5	Average speed of operation (kmph)	2.57-2.88
6	Average wheel slippage (%)	6.39-7.93
7	Average depth of cut (cm)	17.3-19.9
8	Average working width (cm)	60.36-61.02
9	Area covered (ha/h)	0.341-0.465
10	Time required to cover one hectare (h)	2.14-2.93
11	Field efficiency (%)	73.65-79.25
12	Fuel consumption -l/h	2.70-3.20
	-l/ha	6.69 -8.79
13	Av. Implement draft (kgf)	395-440
14	Power requirement, hp	3.76-4.45

7.3.1 Rate of Work

- The rate of work was observed as 0.341-0.465 ha/h for the avarage speed of operation as 2.57-2.88 km/h.
- The time required for ploughing one hectare area was recorded as 2.14-2.93 h.
- The field efficiecy of the implement was worked out as 73.65-79.25 %

7.3.2 Quality of work:

- The depth of operation and working width of implement were measured as 17.3-19.9 cm and 60.36-61.02 cm respectively.

Ridger

SUMMARY OF FIELD PERFORMANCE TEST

Sr. No.	Parameters	Range
1	Type of soil	Medium Black
2	Soil bulk density (g/cc)	1.30 – 1.40
3	Average soil moisture (%)	14.4-15.7
4	Engine speed (rpm):	
	- No load	2000-2100
	- On load	1600-1700
5	Average speed of operation (kmph)	2.40-2.64
6	Average wheel slippage (%)	7.0-8.87
7	Average depth of cut (cm)	17.94-21.50
8	Average working width (cm)	64.8-66.60
9	Area covered (ha/h)	0.324-0.445
10	Time required to cover one hectare (h)	2.24-3.08
11	Field efficiency (%)	74.71-79.83
12	Fuel consumption -l/h	2.80-3.10
	-l/ha	6.90 -8.62
13	Av. Implement draft (kgf)	420-450
14	Power requirement, hp	3.73-4.26

7.4.1 Rate of Work

- The rate of work was observed as 0.324-0.445 ha/h for the avarage speed of operation as 2.40-2.64 km/h.
- The time required for ploughing one hectare area was recorded as 2.24-3.08 h.
- The field efficiecy of the implement was worked out as 74.71-79.83 %

7.4.2 Quality of work:

- The depth of operation and working width of implement were measured as 17.94-21.50 cm and 64.8-66.60 cm respectively.

8.Wear Analysis

8.1 Wear Analysis of Cultivator reversible shovel and sweep on mass basis:

Sr. No.	Initial Weight	Final Weight	Percentage of wear	
			After 25.76 Hrs	Per hour
Reversible Shovel				
1	538	522	2.97	0.115
2	540	519	3.88	0.150
Sweep				
3	1285	1264	1.63	0.0632
4	1288	1266	1.70	0.0659
5	1284	1259	1.94	0.0753

Remark: The hourly percentage of wear of reversible shovel on mass basis was recordedas 0.115 to 0.150 and for sweep 0.0632-0.0753.

8.2 Wear Analysis of Blade on mass basis:

Sr. No.	Initial Weight	Final Weight	Percentage of wear	
			After 24.09 Hrs	Per hour
1	5491	5476	0.27	0.011

Remark: The hourly percentage of wear of Blade on mass basis was recordedas 0.011.

8.3 Wear analysis of Shear of ridger on dimensional basis

Sr. No.	Initial length	Final Length	Percentage of wear	
			After 21.67 Hrs	Per hour
1	190	177	6.84	0.31

Remark: The hourly percentage of wear of Blade on mass basis was recordedas 0.31

8.4 Wear analysis of bar of Side cutter on dimensional basis

Sr. No.	Initial length	Final Length	Percentage of wear	
			After 22.00 Hrs	Per hour
1	400	381	4.75	0.215

Remark: The hourly percentage of wear of Blade on mass basis was recordedas 0.215

Labour requirement:

- One skilled operator is needed to operate the tractor and the implement simultaneoulsy.

Service and Maintenance:

Requires checking and tightening of all the nuts and bolts of the implement especially the tyne and shovel bots as and when required. The trash and soil wrapped on the shovels needs to be removed after the day's operation.

Ease of operation and adjustments:

a) The operator can easily adjust and control the implement from operator's seat in the field as the adjustments are within the easy.

b) The operator can comfortably control the implement from the operator's seat while operations.

c) As the implement is of furrow opener's rigid Tyne type, it not safe to operate in the stone and root infested lands.

d) The implement is provided with horizontal (Tyne spacing), which enables easy adjustment of operational clearances.

e) The ridger attachment is provided with width adjusting braces so width of operation can be easily adjusted.

9. DEFECTS,BREAKDOWN AND REPAIRS

No breakdown occurred in the implement during field performance test for 93.2 hours of four attachments .

10. SUMMARY OF OBSERVATIONS, COMMENTS AND RECOMMENDATIONS

Cultivator

1	The specification of implement hitch does not conform fully to the IS: 4468(Pt-1)1997. This should be looked in to
2	The hardness of the shovel was recorded as 260 HB against the requirement of 350 to 450 HB as per this IS: 10691-1983.
3	The rate of work was observed as 0.200-0.213 ha/h for the average speed of operation as 2.29-2.51km/h, in L-3 gear in tillage operation which is considered normal
4	The depth of operation was recorded as 10.40-13.0 cm, in L-3 gear in tillage operation which is considered normal.
5	The field efficiency of the plough was recorded as 78.26-81.66 percent which is considered normal
6	The hourly rate of wear of shovel on mass basis in whole operation was recorded 0.115 to 0.150 and for sweep 0.0632-0.0753 percent
7	**Adequacy of literature: Adequacy of literature:** No Operator's Manual was supplied with test sample. The literature may bring out in vernacular languages for the guidance of users

Blade Harrow

1	The specification of implement hitch does not conform fully to the IS: 4468(Pt-1)1997. This should be looked in to
2	The hardness of the blade was recorded as 132.33 HB against the requirement of 350 to 450 HB as per this IS: 10691-1983.

3	The rate of work was observed as 0.228-0.252 ha/h for the average speed of operation as 3.16-3.50 km/h, in L-3 gear in tillage operation which is considered normal
4	The depth of operation was recorded as 11.1-13.1 cm, in L-3 gear in tillage operation which is considered normal.
5	The field efficiency of the plough was recorded as 76.78-83.34 percent which is considered normal
6	The hourly rate of wear of blade on mass basis in whole operation was recorded 0.011 %.
7	**Adequacy of literature: Adequacy of literature:** No Operator's Manual was supplied with test sample. The literature may bring out in vernacular languages for the guidance of users

Side Cutter

1	The specification of implement hitch does not conform fully to the IS: 4468(Pt-1)1997. This should be looked in to
2	The hardness of the share was recorded as 149.33 HB against the requirement of 350 to 450 HB as per this IS: 10691-1983.
3	The rate of work was observed as 0.341-0.465 ha/h for the average speed of operation as 2.57-2.88 km/h, in L-3 gear in tillage operation which is considered normal
4	The depth of operation was recorded as 17.3-19.9cm, in L-3 gear in tillage operation which is considered normal.
5	The field efficiency of the plough was recorded as 73.65-79.25 percent which is considered normal
6	The hourly rate of wear of share bar on mass basis in whole operation was recorded 0.215 percent.
7	**Adequacy of literature: Adequacy of literature:** No Operator's Manual was supplied with test sample. The literature may bring out in vernacular languages for the guidance of users

Ridger

1	The specification of implement hitch does not conform fully to the IS: 4468(Pt-1)1997. This should be looked in to
2	The hardness of the shovel was recorded as 152 HB against the requirement of 350 to 450 HB as per this IS: 10691-1983.
3	The rate of work was observed as 0.324-0.445 ha/h for the average speed of operation as 2.40-2.64 km/h, in L-3 gear in tillage operation which is considered normal
4	The depth of operation was recorded as 17.94-21.50 cm, in L-3 gear in tillage operation which is considered normal.
5	The field efficiency of the plough was recorded as 74.71-79.83 percent which is considered normal
6	The hourly rate of wear of share on mass basis in whole operation was recorded 0.31 percent
7	**Adequacy of literature: Adequacy of literature:** No Operator's Manual was supplied with test sample. The literature may bring out in vernacular languages for the guidance of users
➢	**This test report valid up to 10/12/2026** **As per office memorandum no 13-24/2018-M&T(I&P)From Additional Commissioner (Machinery), Department of Agriculture, cooperation and farmers welfares, ministry of agriculture and farmers welfare ,Government of India, New Delhi.**

11. TESTING AUTHORITY

1.	**V.D. Deshmukh** Assistant Professor, AICRP on Farm Implements and Machinery, Dr. A. S. College of Agricultural Engineering and Technology, Mahatma Phule Krishi Vidyapeeth, Rahuri	
2.	**T. B. Bastewad** Professor and Principal Investigator, AICRP on Farm Implements and Machinery, Dr. A. S. College of Agricultural Engineering and Technology, Mahatma Phule Krishi Vidyapeeth, Rahuri	
3.	**S. M. Nalawade** Head, Department of Farm Machinery and Power, Dr. A. S. College of Agricultural Engineering and Technology, Mahatma Phule Krishi Vidyapeeth, Rahuri	

Test conducted and report compiled by **Er. R.R. Gurav,** Technical Assistant, FMTTC, AICRP on FIM, MPKV, Rahuri.

12. APPLIANT'S COMMENTS

A) Specification of hitch pyramid.

Width between outer faces of yoke will be maintained as per BIS recommendation in future.

B) Laboratory Test.

Hardness and chemical composition will be improving as per BIS recommendation in future.

C) We will provide the literature in vernacular languages for the guidance of users in future.

13. ANNEXURE-I

FIELD PERFORMANCE RESULTS OF CULTIVATOR

Place: At Post Aambegaon,Dhanegaon, Aurangabad

S. No.	Parameters	TEST TRIALS					
		I	II	III	IV	V	VI
1	Date of Test	10/10/2019	11/10/2019	12/10/2019	13/10/2019	14/10/2019	15/10/2019
2	Duration of Test (h)	4.75	3.75	4.67	4.75	4.17	3.67
3	Gear used	L3					
4	Furrow length (m)	130	122	114.4	140	152.7	98.20
5	Type of soil	Medium Black					
6	Bulk density of soil (g/cc)	1.35	1.35	1.32	1.28	1.34	1.30
7	Soil moisture (%)	14.0	14.0	15.0	16.8	14.5	15.57
8	Engine speed (rpm):						
	- No load	2000	2100	2100	2100	2100	2100
	- On Load	1600	1700	1700	1700	1700	1700
9	Av. forward speed (km/h)	2.51	2.44	2.40	2.36	2.49	2.34
10	Av. wheel slip (%)	6.95	5.92	7.16	6.27	6.39	7.01
11	Av. depth of cut (cm)	10.8	11	10.4	11.8	13	11.20
12	Av. width cut (cm)	106	106.8	108.2	109	108.8	108.4
13	Area covered (ha/h)	0.213	0.260	0.200	0.207	0.196	0.254
14	Time required for one ha (h)	4.68	4.81	4.97	4.82	5.08	4.81
15	Field efficiency (%)	80.04	79.55	78.26	80.31	78.69	81.66
16	Fuel consumption:						
	l/h	2.40	2.40	2.50	2.30	2.30	2.30
	l/ha	11.24	11.56	12.44	11.10	11.69	11.07
18	Av. implement draft (kgf)	253	235	250	255	240	265
19	Power requirement , hp	2.35	2.15	2.22	2.23	2.041	2.30

ANNEXURE-II

FIELD PERFORMANCE RESULTS OF BLADE HARROW

Place: At Post – Aambegaon, Danegaon, Aurangabad

S. No.	Parameters	TEST TRIALS					
		I	II	III	IV	V	VI
1	Date of Test	10/10/2019	11/10/2019	12/10/2019	13/10/2019	14/05/2019	15/10/2019
2	Duration of Test (h)	4.0	3.75	4.0	4.84	4.0	4.0
3	Gear used	L3					
4	Furrow length (m)	130	154	104	110	123	126.8
5	Type of soil	Medium Black					
6	Bulk density of soil (g/cc)	1.30	1.35	1.35	1.26	1.35	1.30
7	Soil moisture (%)	15.6	14.8	15.5	16.0	14.5	15.6
8	Engine speed (rpm):						
	- No load	2000	2000	1900	1900	2000	2000
	- On Load	1600	1600	1600	1500	1500	1500
9	Av. forward speed (km/h)	3.16	3.75	3.30	3.44	3.50	3.50
10	Av. wheel slip (%)	7.69	8.63	8.0	5.15	8.06	8.77
11	Av. depth of cut (cm)	12.40	11.2	13.1	12.3	11.1	11.56
12	Av. width cut (cm)	9.40	88.2	89.4	89.6	87.8	88.6
13	Area covered (ha/h)	0.237	0.246	0.228	0.237	0.252	0.250
14	Time required for one ha (h)	4.27	4.05	4.37	4.21	3.99	3.99
15	Field efficiency (%)	82.29	83.34	77.46	76.78	81.97	80.61
16	Fuel consumption:						
	l/h	2.20	2.0	1.9	2.1	2.1	2.1
	l/ha	9.27	8.11	8.30	8.85	8.38	8.38
17	Av. implement draft (kgf)	240	255	235	230	228	248
18	Power requirement , hp	2.81	3.16	2.87	2.93	2.95	3.22

ANNEXURE-III

FIELD PERFORMANCE RESULTS OF SIDE CUTTER

Place: At Post- Aambewadi, Vitawa, Nandeda, Dist. Aurangaad

S. No.	Parameters	TEST TRIALS				
		I	II	III	IV	V
1	Date of Test	16/10/2019	17/10/2019	18/10/2019	19/10/2019	20/10/2019
2	Duration of Test (h)	4.59	4.34	4.25	4.34	4.5
3	Gear used	L3				
4	Furrow length (m)	189	148	253.8	253.8	165
5	Type of soil	Medium Black				
6	Bulk density of soil (g/cc)	1.28	1.35	1.38	1.27	1.38
7	Soil moisture (%)	16.4	14.4	14.7	16.0	14.0
8	Engine speed (rpm):					
	- No load	1900	2000	2100	2100	2000
	- On Load	1500	1600	1800	1700	1600
9	Av. forward speed (km/h)	2.80	2.57	2.85	2.73	2.88
10	Av. wheel slip (%)	7.31	6.39	6.61	7.40	7.93
11	Av. depth of cut (cm)	19	19.9	17.3	18.6	19.8
12	Av. width cut (cm)	60.72	60.36	60.6	61.02	60.96
13	Area covered (ha/h)	0.403	0.341	0.465	0.426	0.388
14	Time required for one ha (h)	2.47	2.93	2.14	2.34	2.57
15	Field efficiency (%)	76.41	78.41	79.25	78.32	73.65
16	Fuel consumption:					
	l/h	2.70	3.0	3.2	3.2	3.0
	l/ha	6.69	8.79	6.86	7.49	7.71
17	Av. implement draft (kgf)	425	395	402	440	410
18	Power requirement , hp	4.41	3.76	4.24	4.45	4.38

ANNEXURE-IV

FIELD PERFORMANCE RESULTS OF RIDGER

Place: At Post- Aambewadi, Vitawa, Nandeda, Dist. Aurangaad

S. No.	Parameters	TEST TRIALS				
		I	II	III	IV	V
1	Date of Test	16/10/2019	17/10/2019	18/10/2019	19/10/2019	20/10/2019
2	Duration of Test (h)	4.34	4.50	4.09	4.5	4.34
3	Gear used	L3				
4	Furrow length (m)	186	157	253.8	253.8	157
5	Type of soil	Medium Black				
6	Bulk density of soil (g/cc)	1.30	1.36	1.35	1.38	1.40
7	Soil moisture (%)	15.7	14.0	14.4	14.0	13.5
8	Engine speed (rpm):					
	- No load	2100	2000	2000	2000	2000
	- On Load	1700	1600	1600	1700	1700
9	Av. forward speed (km/h)	2.58	2.40	2.44	2.64	2.61
10	Av. wheel slip (%)	8.87	7.55	7.37	7.0	7.51
11	Av. depth of cut (cm)	17.94	19.76	19.48	21.50	20.48
12	Av. width cut (cm)	65	64.8	65.4	65.8	66.6
13	Area covered (ha/h)	0.521	0.324	0.434	0.445	0.325
14	Time required for one ha (h)	2.40	3.08	2.30	2.24	3.07
15	Field efficiency (%)	79.75	77.14	79.83	75.34	74.71
16	Fuel consumption:					
	l/h	2.9	2.8	3.0	3.10	2.8
	l/ha	6.97	8.62	6.90	6.95	8.60
17	Av. implement draft (kgf)	435	420	450	425	440
18	Power requirement , hp	4.16	3.73	4.07	4.16	4.26