Testing and Training Center of Farm Machinery
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Regd. Post

JAU/CAET/FMP/ RKVY/ 256 /2025
Junagadh. Date: 21/02/2025

To

Shreeji Agro Industries
Panchasar Road, Nr. Shreeji PVC Pipe, Opp. Shreeji Power Transformer,
Wankaner-363 621, Dist. Morbi (Gujarat)

Sub.: To release "Test Report"

Ref.: Your application dated 27/11/2024

With reference to above cited subject and referred application for the testing of **THREE BOTTOM HYDRAULICALLY REVERSIBLE MOULD BOARD PLOUGH (TRACTOR MOUNTED) "SHREEJI-3FH4809",** please find attached herewith the "Test Report" of the same.

Testing Incharge
and Professor & Head

Encl.: As above

COMMERCIAL TEST REPORT

No.: TTCFMJ/A/607/1553

Date of Report: 21/02/2025

This Test Report is valid up to Date: 20/02/2032

THREE BOTTOM HYDRAULICALLY REVERSIBLE MOULD BOARD PLOUGH
(TRACTOR MOUNTED) "SHREEJI-3FH4809"

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TTCFMJ/A/607/1553	THREE BOTTOM HYDRAULICALLY REVERSIBLE MOULD BOARD PLOUGH (TRACTOR MOUNTED) "SHREEJI-3FH4809"	COMMERCIAL

Name of machine	:	**Three Bottom Hydraulically Reversible Mould Board Plough (Tractor Mounted) "Shreeji-3FH4809"**
Test requested by (Applicant)	:	**Shreeji Agro Industries** Panchasar Road, Nr. Shreeji PVC Pipe, Opp. Shreeji Power Transformer, Wankaner-363 621, Dist. Morbi (Gujarat)
Manufacturer	:	**Shreeji Agro Industries** Panchasar Road, Nr. Shreeji PVC Pipe, Opp. Shreeji Power Transformer, Wankaner-363 621, Dist. Morbi (Gujarat)
Testing Authority	:	Testing & Training Center of Farm Machinery Department of Farm Machinery & Power Engineering College of Agricultural Engineering & Technology Junagadh Agricultural University, Junagadh (Gujarat)
Type of test	:	COMMERCIAL
Test Code /Procedure	:	IS:6288-2005, IS:10691-1983, IS:9818-2004 (Part-I), IS:9818-2009 (Part-II) and IS:4468-2001 (Part-I)
Test Report No.	:	TTCFMJ/A/607/1553
Date of Release	:	**21/02/2025**
This Test Report is valid up to Date	:	**20/02/2032**

1. The data given in the Test Report pertain to the particular machine submitted for test. The data collected during the test do not in any way attribute to the durability of the machine.
2. The results reported in this report are observed values and no corrections have been applied for atmospheric and site conditions.
3. The Test Report contains only performance data/ parameters obtained for a particular sample. However, this do not communicate/signify the approval/ recommendation of the Govt. of India or the Testing Authority for any Govt. programmes or otherwise.
4. This Test Report should not be reproduced in part or full without prior permission of the Testing Incharge, Testing & Training Center of Farm Machinery, College of Agricultural Engineering & Technology, Junagadh Agricultural University, Junagadh (Gujarat).

SELECTED CONVERSIONS

Sr. No		Units	Conversion Factor
1	**Force**	1 kgf	9.80665 N
			2.20462 lbf
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

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1. SCOPE OF TEST

1.1 LABORATORY TEST :

- ✓ Checking of specifications
- ✓ Hardness of the soil engaging components
- ✓ Chemical analysis of the soil engaging components
- ✓ Wear analysis of the soil engaging components

1.2 FIELD TEST:

- ✓ Rate of work
- ✓ Quality of work
- ✓ Draft requirement
- ✓ Labour requirement
- ✓ Ease of operation and adjustments
- ✓ Defects, breakdowns and repairs

2. METHOD OF SELECTION

The test sample was selected by the testing authority through random selection from 10 nos. sample (Serial No. GJ/2444/437/2025/ 6153, 6159, 6161, 6162 and 6164) made available at the time of random selection process.

3. TEST PROCEDURE

The following test codes were referred:

1) IS:6288-2005, Test Code for Mould Board Plough
2) IS:10691-1983, Specification for Share for Tractor Operated Mould Board Ploughs
3) IS:9818-2004 (Part-I: General terms) and IS:9818-2009 (Part-II: Terms relating to Equipment), Glossary of terms relating to Tillage and Intercultivation Equipment
4) IS:4468-2001 (Part-I), Agricultural wheeled tractor - rear mounted three point linkage

4. SPECIFICATIONS

(Annex A, Clause 4.2 & 5.1, IS:6288-2005)

4.1 General:

a)	Name	:	Three Bottom Hydraulically Reversible Mould Board Plough
b)	Type	:	Two way
c)	Make	:	Shreeji
d)	Serial Number	:	GJ/2444/437/2025/ 6162
e)	Model	:	3HF4809
f)	Year of manufacture	:	2024-25
g)	No. of plough bottom(s)	:	Three on each side
h)	Size of plough (mm)	:	3x275
i)	Recommended source of power as per applicant	:	Tractor (40 hp and above), Brief specification of tractor used is given in **Annexure-I**.

4.2 Constructional Details (Refer Fig. 1):

4.2.1 **Frame:**

a)	Constructional details	:	Fabricated from two MS (as per applicant) flats of 1180x100x25 and 1340x100x25 mm size are joined together with welded joint at front with MS lateral flat 590x125x20, 480x100x16 and 230x100x16 mm (2 nos.). Standards are bolted to the frame. Hitch pyramid is welded to main shaft.
b)	Dimensions (mm):		
i	Length	:	1200
ii	Width (front/rear)	:	590/80

iii Number & size of holes on frame for fixing standard (mm) : 9 holes for standard (20 Ø)

c) Balancing weight : Not provided

4.2.2 **Standard (Refer Fig. 2):**

a) Numbers : 3
b) Material : MS (as per applicant) plate
c) Type : Common for both bottoms
d) Dimensions (mm)
- Projected length : 910
- Curved length : 1110
- Width : 125 (middle) & 45 (tip)
- Thickness : 30

e) No., size & spacing of holes for fixing frog (mm) : 3 holes of 20 Ø spaced at 100 and 65 from each other
f) No. & size of holes for fixing to the frame (mm) : 3 holes at each front, middle & rear of 20 Ø
g) Method of fixing : One end of standard is bolted to the frame whereas another end is bolted to the frog to which plough bottom is fixed.

4.2.3 **Plough Bottoms:**

a) Numbers : 6 (3 on each side)
b) Type : Fixed
c) Size of plough (mm) : 3x275
d) Vertical suction (mm) : 16-18
e) Horizontal suction (mm) : 4-5
f) Constructional details : The fixed type plough bottom consists of mould board, shin, share, share-bar and landside bolted to the frog.

4.2.3.1 **Mould Board:**

a) Numbers : 6 (3 on each side)
b) Type : General purpose
c) Material : 30MnCrB5 (as per applicant) plate
d) Dimensions (mm):
- Length : 685
- Width : 365
- Thickness : 8

e) No & size of hole on mould board (mm) : 9 holes of 14/23 Ø at front (6 for bolting frog, 2 for wing and 1 for bolting brace), 9 holes of 14/23 Ø at middle (6 for bolting frog, 2 for wing and 1 for bolting brace) and 9 holes of 14/23 Ø at rear (6 for bolting frog, 2 for wing and 1 for bolting brace)
f) Angle of inclination of MB along the direction of travel (deg.) : 22
g) Method of fixing mould board : Directly bolted to the frog with 6 sunk headed L-Key bolts & nuts.

4.2.3.2 **Share (Refer Fig. 3b):**

a) Numbers : 6 (3 on each side)
b) Type : TYPE-6 (as per IS:10691-1983) **(Refer Fig. 3a)**
c) Dimensions (mm) : Steel plate of size 390x125x12
d) No & size of holes on share (mm) : 2, 14/23 Ø

e) Method of fixing share to the bottom : Share is bolted to the frog with 2 sunk headed L-Key bolts of size 38x12 mm Ø

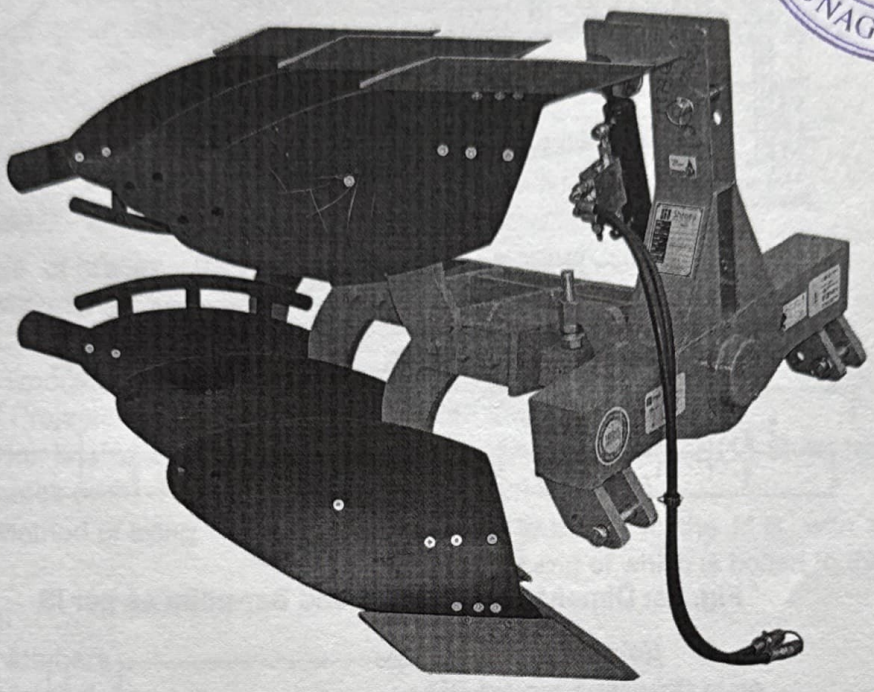


Fig. 1: Schematic View of Three Bottom Hydraulically Reversible Mould Board Plough

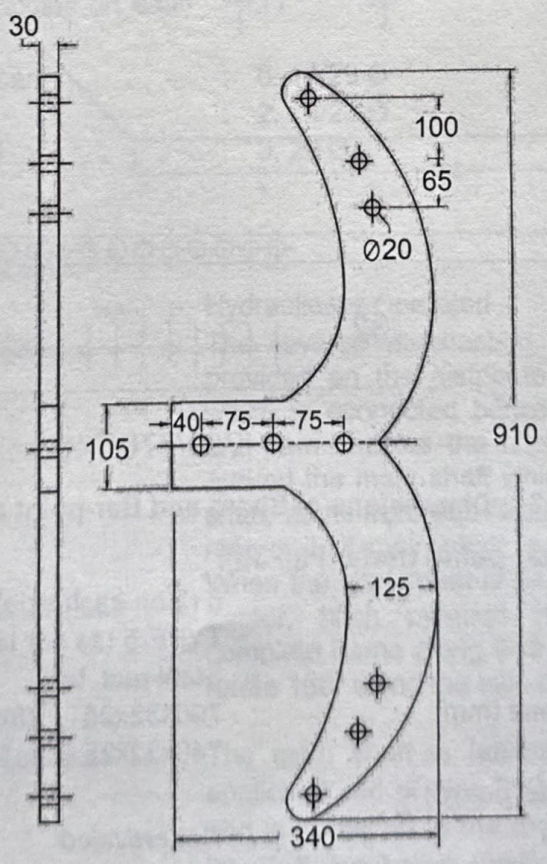
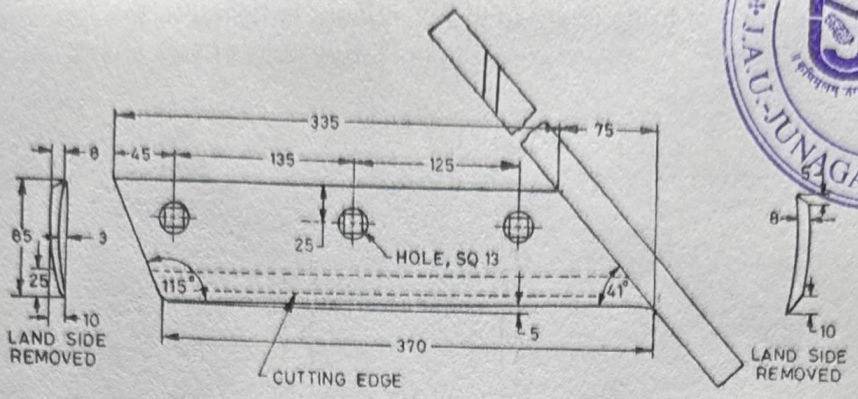
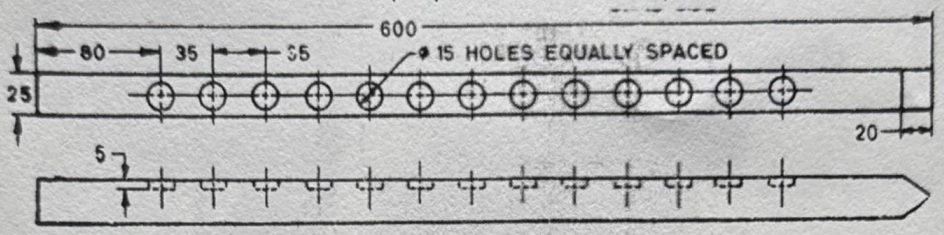


Fig. 2: Dimensions of Standard as observed



TYPE-6 (as per IS:10691-1983)



All dimensions in millimetres

FIG. 5 TYPE 5 SHARE

Fig. 3a: Dimensions of Share and Bar-point as per IS

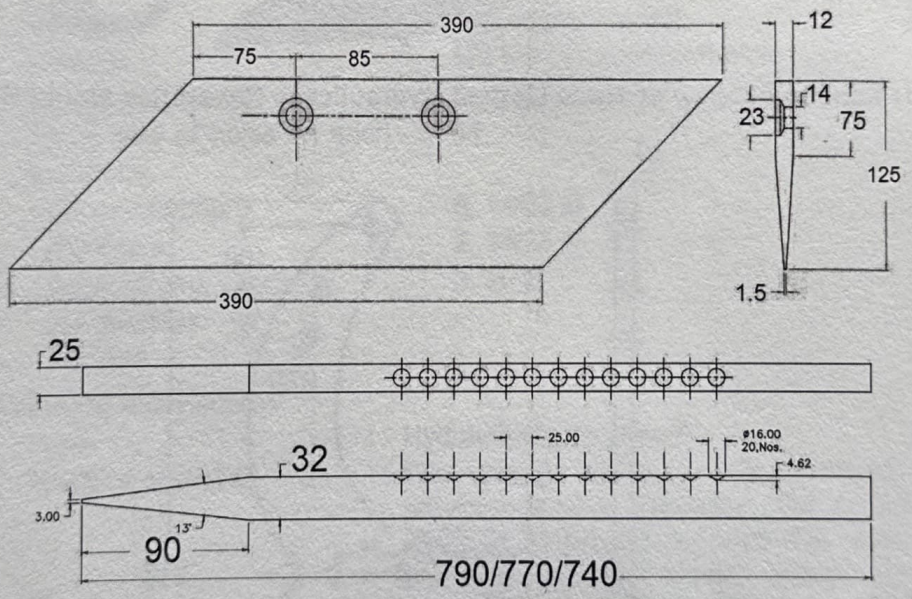


Fig. 3b: Dimensions of Share and Bar-point as observed

4.2.3.3 **Share bar (Bar-point) (Refer Fig. 3b):**

a)	Numbers	:	6 (3 on each side)
a)	Type	:	TYPE-5 (as per IS:10691-1983) **(Refer Fig. 3a)**
b)	Material	:	Steel rect. bar
c)	Dimensions (mm)	:	790x32x25 (front), 770x32x25 (middle), 740x32x25 (rear)

4.2.3.4 **Shin of mould board:**

a)	Numbers	:	Not provided
b)	Material & thickness (mm)	:	-
c)	No & size of hole on shin for fixing on frog (mm)	:	-

4.2.3.5 **Landside:**

a)	Numbers	:	6 (3 on each side)
b)	Material	:	MS (as per applicant) plate
c)	Dimensions (mm)	:	
	- Length & Thickness	:	430x25 (front/middle) & 480x25 (rear)
d)	No & size of hole on landside (mm)	:	Nil
e)	Method of fixing landside to frog	:	Welded to frog

4.2.3.6 **Braces:**

a)	No. of braces	:	6 (3 on each side)
b)	Material & size (mm)	:	MS (as per applicant) flat, 260x40x10 (front/ middle /rear)
c)	Dimensions (mm)		
	- Projected length	:	250 (front/middle/rear)
d)	No. & size of hole on each brace (mm)	:	2 on front/middle/rear (14 Ø on mould board & 14 Ø on landside)
e)	Method of fixing	:	Brace is bolted to the M.B. with one bolt and another end of which is bolted to the landside.

4.2.3.7 **Frog:**

a)	Numbers	:	6 (3 on each side))
b)	Material	:	MS (as per applicant) plate
c)	Dimensions (mm)	:	Irregular shape of size 330x210x11
d)	No. & size of holes on each frog (mm)	:	11
i	-for mould board	:	6, 14/23 Ø
ii	-for share	:	2, 14/23 Ø
iii	-for standard	:	3, 20 Ø
iv	-for landside	:	-
v	-for shin	:	-

4.2.4 **Reversing Mechanism:**

a)	Type	:	Hydraulically Operated
b)	Mode of operation	:	The reverse mechanism is operated by a lever provided on the distributor. The hydraulic cylinder which is connected between the upper hitch point and cam enables the hitch pyramid to rotate 180° around the main shaft which is inserted in a hollow shaft, as its front end fixed to the hitch pyramid and rear end of main shaft is fixed to the main frame. When the implement is hitched to 3-point linkage of tractor, hitch pyramid becomes fixed and the complete frame along with plough bottoms is free to rotate 180° along the axis of hollow shaft.

4.2.4.1 **Main Shaft:**

a)	Constructional details	:	The main shaft is fabricated from a MS (as per applicant) rod of size 590x90 mm Ø mm. The rear end is tightened to the main frame and front end is inserted in a hollow shaft of MS pipe (200x145/125 OD/ID mm) and supported by two taper roller bearings.

4.2.4.2 **Cam:**

a)	Material	:	MS flat
b)	Dimensions (mm)		
i	-Total Length	:	155
ii	-Effective length	:	125
iii	-Width	:	75
iv	-Thickness	:	15
v	-Size of cam pin (mm)	:	30 Ø, 90 length
vi	-Size of linch pin hole on cam pin (mm)	:	10 Ø

4.2.4.3 **Hydraulic Cylinder:**

a)	Type	:	Double acting
b)	Size of cylinder (mm)	:	280x62 Ø (OD)
c)	Size of piston (mm)	:	255x28 Ø
d)	Size of connecting arm (mm)	:	32/75 Ø (ID/OD) & top pin 95x30 Ø
e)	Stoke length (mm)	:	125

4.2.4.4 **Distributor:** :

a)	Type	:	Double acting
b)	Overall Size (mm)	:	95x85x35
c)	No. and size of hose pipes between tractor and distributor (mm)		2, 1180x19 Ø (OD)

4.2.4.5 **Reversing Mechanism Lock** : Provided

4.2.5 **Hitch Pyramid:**

a)	Constructional details	:	The hitch pyramid is fabricated from two MS flats to form upper hitch point and a cross bar of MS channel to form lower hitch points. Both the upper and lower hitch points are welded on a hollow shaft of reversing mechanism.
b)	Size of upper hitch (mm)	:	Box type fabricated from 570x125x7 MS plate having box thickness 80
c)	Size of Cross bar (mm)	:	Box type fabricated from MS (as per applicant) c-channel (150x125) of length 915

Specification of Hitch Pyramid As per IS: 4468-2001 (Part-I)

Sr.	Dimen. (Refer Fig. 4)	Description	Category-II	As observed (mm)	Remarks
Upper Hitch attachments					
1	-	Dia. of hitch pin	25.37-25.50	-	-
2	d_1	Dia. of hitch pin hole	25.70-25.90	25.90	Conforms
3	b'_1	Width between inner faces of yoke	52.0 (Min)	63.85	Conforms
4	b'_2	Width between outer faces of yoke	86 (Max)	100.00	Does not conform
Lower hitch points					
5	-	Dia. of hitch pin	27.80-28.00	-	-
6	D_2	Dia. of hitch pin hole	28.70-29.00	28.70	Conforms
7	b'_3	Linch pin hole distance	49 (Min)	110.00	Conforms
8	l	Lower hitch point span	823.5- 826.5	712.00	Does not conform
Other dimensions					
9	d	Dia. of linch pin hole (upper hitch pin)	12 (Min)	12.00	Conforms
10	d	Dia. of linch pin hole (lower hitch pin)	12 (Min)	12.00	Conforms
11	h	Mast height	608.5- 611.5	610.00	Conforms

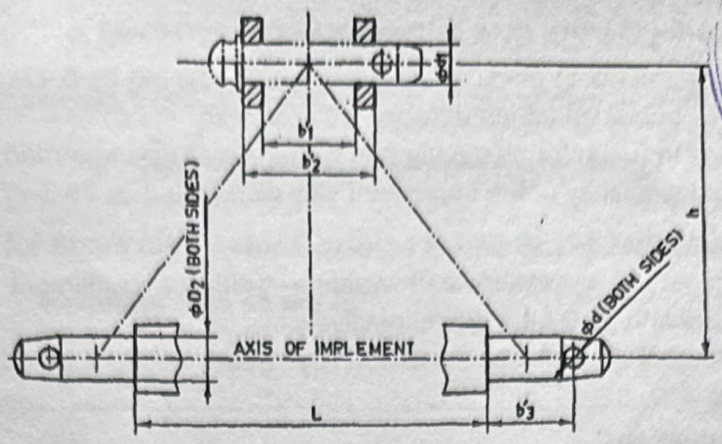


Fig.4: Implement Hitch Attachment as per IS

4.3 Overall dimensions (mm) :

a)	Length	:	1890
b)	Width	:	1115
c)	Height	:	1240

4.4 Total mass (kg) : 562.5

4.5 Color of implement : Light Blue

5. FIELD PERFORMANCE TESTS

5.1 The plough was operated in the uncultivated land for 23.0 hours in medium black soil of Weed Control Farm. The brief specifications of the tractor used in field testing is given in **ANNEXURE-I.** The results are given in **ANNEXURE-II** and are summarized in **Table 1.**

Table - 1

SUMMARY OF FIELD PERFORMANCE TEST

Sr.	Parameters	Range	
		Min.	Max.
1	Type of soil	Medium black	
2	Soil bulk density (g/cc)	1.36	1.46
3	Av. soil moisture (%)	15.4	16.1
4	Av. speed of operation (km/h)	2.7	2.9
5	Av. wheel slippage (%)	11.6	13.0
6	Av. depth of cut (cm)	20.4	22.0
7	Av. working width (cm)	82.9	84.4
8	Area covered (ha/h)	0.174	0.187
9	Time required to cover 1 hectare (h)	5.35	5.75
10	Field efficiency (%)	75.3	77.3
11	Soil inversion (%)	94.3	95.3
12	Fuel consumption (l/h)	5.92	6.00
13	Fuel consumption (l/ha)	31.7	34.5
14	Av. implement draft (kgf)	594	636
15	Power requirement (hp)	6.04	6.84

5.1.1 **Rate of work:**

a) The rate of work in medium black soil was observed as 0.174-0.187 ha/h when the speed of operation varied between 2.7-2.9 km/h.
b) The time required for ploughing one hectare area was recorded as 5.35-5.75 h.
c) The field efficiency of the implement was worked out as 75.3-77.3 %.

5.1.2 **Quality of work:**

a) The depth of operation and working width of implement were measured as 20.4-22.0 and 82.9-84.4 cm respectively.
b) The percentage of soil inversion by weed count method was measured as 94.3-95.3 %.

5.1.3 **Draft requirement**

The implement draft was measured as 594-636 kgf.

5.1.4 **Labour requirement:**

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

5.1.5 **Wear analysis (Mass basis):**

5.1.5.1 **Share:**

Share	Mass of share (g)		Percentage of wear	
	Before operation	After 23.0 hours of operation	After 23.0 hours of operation	Per hour
Front-1	3484.0	3460.0	0.69	0.030
Front-2	3732.0	3711.5	0.55	0.024
Middle-1	3433.0	3413.5	0.57	0.025
Middle-2	3566.5	3541.0	0.71	0.031
Rear-1	3631.0	3610.0	0.58	0.025
Rear-2	3560.0	3535.0	0.70	0.031

Remark: The percentage hourly wear on mass basis was observed as 0.024-0.031 %.

5.1.5.2 **Bar-point:**

Bar- point	Mass of bar point (g)		Percentage of wear	
	Before operation	After 23.0 hours of operation	After 23.0 hours of operation	Per hour
Front-1	4256.0	4227.5	0.67	0.029
Front-2	4197.5	4175.5	0.52	0.023
Middle-1	4096.0	4072.0	0.59	0.025
Middle-2	4084.0	4058.5	0.62	0.027
Rear-1	4460.0	4433.5	0.59	0.026
Rear-2	4192.0	4164.5	0.66	0.029

Remark: The percentage hourly wear on mass basis was observed as 0.023-0.029 %.

5.1.6 **Ease of operation and adjustments:**

a) The implement can be leveled by adjusting the top link easily from the operator's seat.
b) The operator can easily adjust and control the implement from operator's seat in the field as the adjustments are within the easy reach of operator.
c) All the components like share, mould board, bar-point etc. are bolted to each other and can be easily detachable and replaceable.

6. DEFECTS, BREAK DOWNS AND REPAIRS

No breakdown was occurred during 23.0 hour of operation of plough.

7. CONFORMITY TO INDIAN STANDARDS

Specifications for Share for Tractor-Operated Mould Board Plough (IS: 10691-1983):

Cl. No.	Requirements as per IS	Observation	Conformity to IS
1	2	3	4
3	**TYPES**		
3.1	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, and g) Type 7	Type 6	Conforms
4	**MATERIAL**		
4.1	The share shall be manufactured from chilled cast iron or steel conforming to Grade 75C6 of IS: 1570 (Part 2)-1979. Steel equivalent or better than this grade may also be used.	Steel	Conforms
	The composition of Grade 75C6 is given below for guidance: Carbon 0.70 to 0.80 percent Manganese 0.50 to 0.80 percent **Note:** The sulphur and phosphorus content shall not be more than 0.05 percent each.	C: 0.7952 % Mn: 0.6845 %	Conforms
4.2	The material of bar-point shall be 40C8 or 55C8 of IS: 5517-1978. Carbon 0.70 to 0.80 percent Manganese 0.50 to 0.80 percent	C: 0.7953 % Mn: 0.6874 %	Conforms
	The material of share (EN 42) and bar-point (EN 42) was got analyzed from Yor Lab LLP, Rajkot vide Test Report No. A250078/01 and A250077/01, Dt. 06/01/2025 respectively.		
5	**HARDNESS**		
5.1	The chilled cast iron shares shall have a Brinell hardness of 360 to 400 HB when tested in accordance with IS:1789-1961 and depth of chilling shall be not less than 1.5 mm.	N.A.	-
5.2	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:1500-1968.	421 HBW (Share)	Conforms
		386 HBW (Bar-point)	Conforms
	The hardness of share and bar-point was determined from Yor Lab LLP, Rajkot vide Test Report No. A250078/02 and A250077/02, Dt. 06/01/2025 respectively.		

6	**DIMENSIONS AND TOLERANCES**		
6.1	The dimensions of types 1 to 7 plough shares shall be as given in Fig.3a. The tolerances on dimensions unless indicated otherwise, shall be ± 10 percent.	Refer Fig. 3b	
6.2	The dimensions of bar for plough share shall be in accordance with Fig.3a.	Refer Fig. 3b	
7	**OTHER REQUIREMENTS**		
7.1	The cutting edge of the share shall be bevelled to a distance not more than 10 mm.	8-10 mm	Conforms
	The thickness of cutting edge shall be between 0.5 to 2 mm and should be uniform, as far as possible.	1.0-1.5 mm	Conforms
7.2	The counter sunk bolts of 10 mm size shall be used for fixing the share with frog. As far as possible, the bolt of M10 size should be used.	Counter sunk bolt of 12 mm	Conforms
7.3	The shares shall be supplied with bolts in holes.	Supplied	Conforms
8	**WORKMANSHIP AND FINISH**		
8.1	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.	Satisfactory	Conforms
8.2	In case of steel shares, the welding of gunnel shall be satisfactory in all respect. The welding shall not be porous.	Satisfactory	Conforms
8.3	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
9	**MARKING AND PACKING**		
9.1	The share shall be with the following particulars:		
	a) Manufacturer's name and recognized trade-mark, if any	Marked (Shreeji)	Conforms
	b) Size	Not marked	Does not conform
	c) Type	Not marked	
	d) Batch/ Code Number	Marked (GJ/2444/437/2025/ 6162)	Conforms
9.1.1	Each share may also be marked with the ISI Certification Mark	-	-
9.2	The shares of same type may be packed together for safe handling in transit and storage.	N.A.	-

8. SUMMARY OF OBSERVATIONS, COMMENTS AND RECOMMENDATIONS

1. The marking / labeling plate should be marked as per IS.

2. Operator's-cum Service Manual and Parts catalogue should be also provided in vernacular language for the guidance of users.

3. The specification of implement hitch does not fully conform to the IS: 4468 (Pt-I)-2001. This should be looked into. However, looking to the present hitching system provided in the tractor, it is found suitable to attach the plough.

4. The rate of work was recorded as 0.174-0.187 ha/h at corresponding forward speed of 2.7-2.9 km/h which is considered normal for three bottom mould board plough.

5. The depth of operation was recorded as 20.4-22.0 cm in the soil having 15.4-16.1 % average moisture, which is considered normal.

6. The average soil inversion by weed count method was recorded as 94.3-95.3 % which is considered normal for mould board plough.

7. The implement cut, throw and pulverize the furrow slice completely and leaves clear furrow without disturbing the natural topography of the land. The overall field performance of plough was found satisfactory.

Note: Test conducted by Er. H. R. Shekhda, Lab. Tech.

TESTING AUTHORITY

Prof. D. B. Chavda Test Engineer & Assistant Professor	
Prof. A. L. Vadher Test Engineer & Assistant Professor	
Dr. T. D. Mehta Testing Incharge and Professor & Head (I/c)	

9. APPLICANT'S COMMENTS

1. The marking will be marked as per IS.

2. Operator's-cum Service Manual and Parts catalogue will be also provided in vernacular language for the guidance of users.

Annexure-I

Brief specifications of the tractor used during field test

1	Make, model and type	Mahindra Novo 605 DI PP V1 (As per CFMTTI, Budni (MP) Test report No. T-1790/ 2321/2023, Oct.-2023) **GJ-11CL-9962**	
2	Max. Engine Power, (hp)	60.08	
3	Number of cylinders	4	
4	Engine rpm at Max. Power	2100	
5	Engine rpm at Max. Torque	1200	
6	Engine rated speed, (rpm)	2100	
7	PTO Power at rated engine speed, (kW)	39.8	
8	Max. drawbar pull with ballast corresponding to 15 percent wheel slip, (kN)	-	
9	Max. drawbar pull without ballast corresponding to 15 percent wheel slip, (kN)	22.20	
10	Max. drawbar power without ballast, (kW)	36.8	
11	Number & size of tyre		
	Front	7.50 x 16 in, 8 PR	
	Rear	16.9 x 28 in, 12 PR, Lugs-20	
12	Inflation pressure of tyres, (psi)	Front	Rear
	For Field	24	17
	For Transport	28	20
13	Standard track width, (mm)		
	Front	1397	
	Rear	1539	
14	Wheel base, (mm)	2150	
15	Total Operation Mass, (kg)		
	Front	-	
	Rear	-	
	Total	2610	

Annexure-II

Field Performance Results

Place of Test: **Weed Control Farm**

Sr.	Parameters	TEST TRIALS			
		I	II	III	IV
1	Date of Test	22/01/2025	23/01/2025	24/01/2025	28/01/2025
2	Duration of Test (h)	5.0	6.0	6.0	6.0
3	Gear used	L4	L4	L4	L4
4	Furrow length (m)	246	239	218	221
5	Type of soil	Medium black			
6	Bulk density of soil (g/cc)	1.46	1.36	1.44	1.45
7	Soil moisture (%, d.b.)	15.4	16.1	15.9	16.0
8	Av. forward speed (km/h)	2.8	2.9	2.8	2.7
9	Av. wheel slippage (%)	12.5	13.0	12.2	11.6
10	Av. depth of cut (cm)	20.4	21.6	22.0	21.7
11	Av. width of cut (cm)	83.1	84.4	82.9	83.6
12	Area covered (ha/h)	0.177	0.187	0.174	0.177
13	Time required for 1 ha(h)	5.65	5.35	5.75	5.65
14	Field efficiency (%)	75.3	76.3	76.0	77.3
15	Soil inversion (%)	95.2	94.3	94.7	95.3
16	Fuel consumption (l/h)	5.92	5.93	6.00	5.97
17	Fuel consumption (l/ha)	33.5	31.7	34.5	33.7
18	Av. implement draft (kgf)	622	636	611	594
19	Power requirement (hp)	6.52	6.84	6.25	6.04

Annexure-III

Symbols and Abbreviations

A. Symbols assigned to basic SI units

Sr.	Physical Quantity	Name of SI Unit	Symbol
1	Length	Meter	m
		Centimeter	cm
		Milimeter	mm
2	Mass	Kilogram	kg
		Gram	g
		Tonne	t
3	Time	Hour	h
		Minute	min
		second	S

B. Symbols assigned to some derived units

Sr.	Physical Quantity	Name of SI Unit	Symbol
1	Area	Square centimeter	cm^2
		Square meter	m^2
		Hectare	ha
2	Speed/Velocity	Meter Per second	m/s
		Kilometer per hour	km/h
3	Pressure	Newton per square milimeter	n/mm^2
4	Time	Minute	min
		Hour	h
5	Volume	Cubic centimeter	cm^3
		Mililitre	ml
		Litre	L

C. Abbreviations

Cl	:	Clause	Fig.	:	Figure
deg	:	Degree	kW	:	Kilowatt
IS	:	Indian Standard	N.A.	:	Not applicable
No.	:	Number	%	:	Percent
N.R.	:	Not Recorded	rpm	:	Revolution per minute
Ref.	:	reference	km/h	:	Kilometer per hour