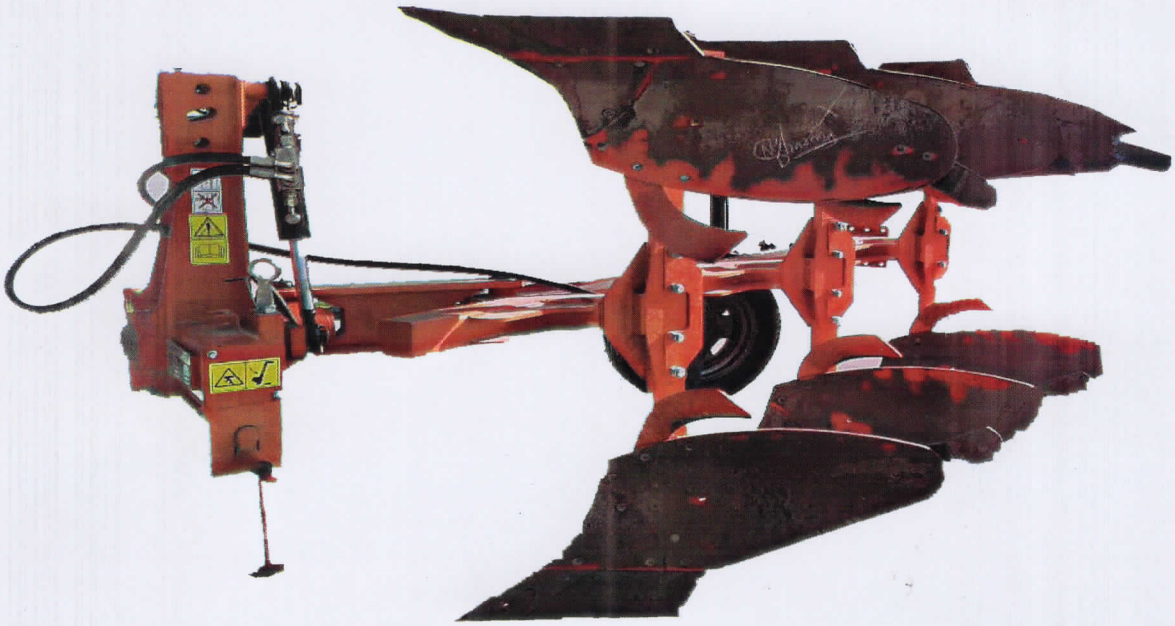
व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ No: IMP-1025/2429/2020
माह/Month : January,2020

THIS TEST REPORT VALID UP TO : 31st JANUARY, 2027



LANDFORCE, M3ARH, THREE BOTTOM HYDRAULIC REVERSIBLE M.B. PLOUGH (TRACTOR MOUNTED)

भारत सरकार
Government of India
कृषि एवं किसान कल्याण मंत्रालय
Ministry of Agriculture and Farmers Welfare
कृषि, सहकारिता एवं किसान कल्याण विभाग
Department of Agriculture, Cooperation and Farmers Welfare
उत्तरी क्षेत्र कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान
Northern Region Farm Machinery Training and Testing Institute
ट्रैक्टर नगर, सिरसा रोड, हिसार, (हरियाणा) - 125 001
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6.4.2 Chemical Analysis of slip nose share :

Constituents	Chemical composition (%) as per IS: 10691-1983	Chemical composition as observed (%)	Conformity to IS
Carbon (C)	0.70 to 0.80	0.2526	**Does not conform**
Manganese (Mn)	0.50 to 0.80	0.5873	Conforms
Silicon (Si)	0.10 to 0.40 ± 0.03	0.2666	Conforms
Phosphorous (P)	0.05 (max)	0.0213	Conforms
Sulphur (S)	0.05 (max)	0.0521	**Does not conform**

7. FIELD PERFORMANCE TEST

The field tests of the implement comprising of operation was conducted for 27.72 hours in different soil moisture conditions to assess the performance of the implement
The no load engine speed of tractor was maintained 2000 rpm and observations are summarized in Table-1.

Table-1

SUMMARY OF FIELD PERFORMANCE TEST

S. No.	Parameters	Range
1	Type of soil	Sandy loam
2	Soil bulk density, (g/cc)	1.56 to 1.65
3	Average soil moisture, (%)	11.05 to 16.5
4	Engine speed (rpm):	
	- No load	2000
	- On load	1940 to 1960
5	Average speed of operation, (km/h)	5.29 to 5.76
6	Average wheel slippage, (%)	5.12 to 12.04
7	Average depth of cut, (cm)	18.77 to 23.33
8	Average working width, (cm)	85.0 to 95.6
9	Area covered, (ha/h)	0.363 to 0.429
10	Average Time required to cover one hectare, (h)	2.33 to 2.75
11	Average Field efficiency, (%)	76.4 to 81.4
12	Average Fuel consumption	
	-l/h	6.72 to 8.05
	-l/ha	15.66 to 22.18
13	Average Implement draft, (kgf)	722
14	Average drawbar power requirement, (kW)	14.71 to 14.81

7.1.1 Rate of work:

- The average rate of work was observed 0.363 to 0.429 ha/h the average speed of operation varied between 5.29 to 5.76 km/h.
- The average time required for ploughing one hectare area was recorded as 2.33 to 2.75
- The average field efficiency of the implement was worked out as 76.4 to 81.4.

7.1.2 Quality of work:

- The average depth of operation measured as 18.77 to 23.33.
- The average working width of implement was measured 85.0 to 95.6 cm.

7.1.3 Power Requirement:

- The average draft requirement was observed 722 kgf.
- Average drawbar power requirement was measured as 14.71 to 14.81 kW.

7.1.4 Labour requirement:

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

7.1.5 Wear analysis:

7.1.5.2 On Mass Basis:

7.1.5.2.1 Share Point:

Sl. No.	Description	Initial mass (g)	Mass after 27.72 h of operation	Loss of mass (g)	Percentage of wear	
					After 27.72 h	Per h
1	Front (LHS)	3053	2900.3	152.7	5.00	0.18
2	Front (RHS)	3083	2903.8	179.2	5.81	0.21
3	Rear (LHS)	3087	2980.4	106.6	3.45	0.12
4	Rear (RHS)	3087	2873.3	213.7	6.92	0.25

7.1.5.2.2 Share Nose Point:

Sl. No.	Description	Initial mass (g) 27.72	Mass after 27.72 h of operation	Loss of mass (g)	Percentage of wear	
					After 27.72h	Per h
1	Front (LHS)	2766	2656.5	109.50	3.96	0.14
2	Front (RHS)	2796	2622.9	173.10	6.19	0.22
3	Rear (LHS)	2740	2683.1	56.90	2.08	0.07
4	Rear (RHS)	2748	2645.0	83.00	3.04	0.11

8. EASE OF OPERATION & ADJUSTMENTS

No noticeable difficulty was observed during the operation and adjustment of Three Bottom Hydraulic Reversible Mould Board Plough.

9. DEFECTS, BREAKDOWNS AND REPAIRS

No noticeable defect occurred in the Three Bottom Hydraulic Reversible Mould Board Plough during the test.

10. CRITICAL TECHNICAL SPECIFICATION

(Vide Ministry's communication F. No. 9-1/2019 M&T (I&P) dated 20.08.2019)

Sr.No	Parameters	Specifications	Observation	Remark
1.	Number of Bottoms	One/Two/Three/Four	Three	Conforms
2.	Working width (mm)	250(min) per bottom	335	Conforms
3.	Under frame clearance, mm (adjustable)	550 (Min) up to 55 HP tractor 700 (Min) Above 55HP tractor	765 and 770	Conforms
4.	Inter body clearance, mm	600 (Min)	700 to 760	Conforms
5.	Reversing mechanism	Hydraulically	Hydraulically	Conforms
6.	Angle of inclination of MB shear along the direction of travel (degree)	20 to 23	22	Conforms

11. COMMENTS & RECOMMENDATIONS

11.1 The specifications of plough share does not conform fully to the requirements of IS: 10691- 1983. It should be looked into for corrective action.

11.2 The specification of implement hitch does not conform fully to the IS: 4468 (Pt-I)-1997. It is recommended that the same should be provided conforming to the relevant Indian Standards.

11.3 The chemical composition of share and share nose does not meet, in full to the requirement of IS: 10691-1983. This should be looked into for corrective action.

11.4 Material of plough share bar (slip nose share) is not specified. This is critical parameter and therefore, it **MUST** be specified.

11.5 The hardness of plough share bar (slip nose share) **does not meet of requirement of critical technical specification. It must be looked into.**

11.6 Vertical suction **does not meet the requirement of critical technical specification. It must be looked into.**

11.7 **Adequacy of literature:**

Operator & service manual with parts catalogue was provided for reference during the testing.

However, the operator manual needs to be updated as per IS: 8132-1999.

TESTING AUTHORITY:

MAAN SINGH SENIOR TECHNICAL ASSISTANT	
P.K. PANDEY **DIRECTOR**	

Test report compiled by C. Veeranjaneyulu, Senior Technician

12. APPLICANT'S COMMENTS

We shall maintain the vertical suction within the stipulated range.