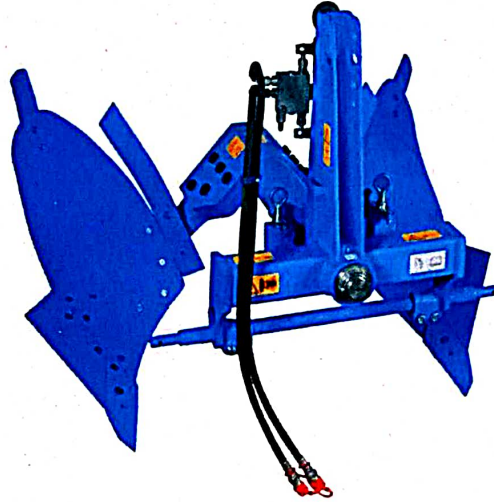




THIS TEST REPORT IS VALID UPTO 31.07.2029



ARCTIC 01 BHUDEV
SINGLE BOTTOM HYDRAULIC REVERSIBLE M. B. PLOUGH
(Tractor Mounted)



सत्यमेव जयते

भारत सरकार

GOVT OF INDIA

कृषि एवं किसान कल्याण मंत्रालय

MINISTRY OF AGRICULTURE & FARMERS WELFARE

कृषि एवं किसान कल्याण विभाग

DEPARTMENT OF AGRICULTURE & FARMERS WELFARE

उत्तर पूर्वी क्षेत्र कृषि यंत्र प्रशिक्षण एवं परीक्षण संस्थान

NORTH EASTERN REGION FARM MACHINERY TRAINING & TESTING INSTITUTE

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BISWANATH CHARIALI: BISWANATH: ASSAM, PIN - 784 176

[AN ISO 9001:2015 CERTIFIED INSTITUTION]

IMP. 322/432	ARCTIC 01 BHUDEV SINGLE BOTTOM HYDRAULIC REVERSIBLE M. B. PLOUGH (Tractor Mounted)	COMMERCIAL (INITIAL)
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1. SCOPE OF TEST

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

- 1.1 **Laboratory Test:**
- Checking of specifications
 - Hardness of soil engaging parts
 - Chemical analysis of critical components
 - Wear analysis of critical components
- 1.2 **Field Test:**
- Rate of work
 - Quality of work
 - Ease of operation and adjustments
 - Labour requirement
 - Power requirement
 - Defects, Breakdowns & Repairs



2. METHOD OF SELECTION

As per Govt. of India, OM No. 13-1/2021-M&T (I&P), dated 03.02.2022, the selection of sample for test was exempted. Hence, the machine was directly submitted by the applicant at this Institute for test.

3. TEST PROCEDURE

The following codes were referred for testing of Two Bottom Hydraulic Reversible Mouldboard Plough

- IS: 6288:1971 (Reaffirmed Mar 1999) : Test code for Mould board ploughs.
- IS: 10691:1983 (Reaffirmed Feb 2001) : Specification for Share for tractor-operated Mould board ploughs
- IS: 4468 (Part I): 1997 (Reaffirmed Feb. 2012) : Agricultural wheeled tractors – Rear-mounted Three-Point Linkage: Part 1 Categories 1, 2, 3 & 4

4. SPECIFICATIONS

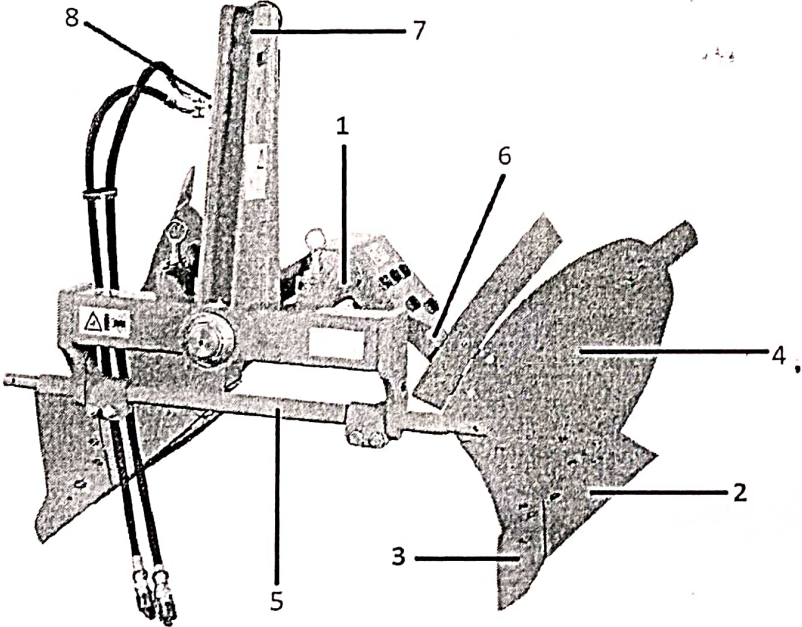
- 4.1 **General:**
- Name and address of the manufacturer : M/s. Micro Laser Pvt. Ltd., Plot No- 243, Sector No-10, PCNTDA, MIDC, Bhosari, Pimpri- Chinchwad, Maharashtra- 411026
- Test requested by (Applicant) : M/s. Micro Laser Pvt. Ltd., Plot No- 243, Sector No-10, PCNTDA, MIDC, Bhosari, Pimpri- Chinchwad, Maharashtra- 411026

IMP. 322/432	ARCTIC 01 BHUDEV SINGLE BOTTOM HYDRAULIC REVERSIBLE M. B. PLOUGH (Tractor Mounted)	COMMERCIAL (INITIAL)
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Name of machine : Single bottom Hydraulic Reversible M.B. Plough
 Make : BHUDEV
 Model : ARCTIC 01
 Serial Number of machine : MLPL 001
 Size of implement (mm) : 340
 Year of manufacture : 2022
 Country of origin : India
 Power Source as recommended (hp) : 45 & above
Prime Mover Used:
 Tractor : L & T John Deere 5310 & John Deere 5310 4WD
 Chassis No./ Engine no. : PY5310S006207/PY30290112007&1PY5310ECLA049490/PY3029H143675



4.2 Constructional Details (Refer Fig.1):



KEYWORDS			
1.	Main Frame	5.	Cross shaft
2.	Share	6.	Standard
3.	Share nose	7.	Hitch Pyramid
4.	Mould Board	8.	Hydraulic cylinder

Fig.1: SCHEMATIC VIEW OF SINGLE BOTTOM HYDRAULIC REVERSIBLE M.B. PLOUGH

8. FIELD PERFORMANCE TEST

The implement was operated for 25.50 hr. for assessing its field performance. Total five trial were carried out and reported in Annexure and are summarized in ensuing Table.

L & T John Deere 5310 & John Deere 5310 (4WD) tractor was used as prime -mover during field performance test.

Summary of Field Performance Test

Sl. No.	Parameters/Operations	Observations
1.	Gear used	A-2
2.	Type of soil	Light
3.	Av. soil moisture (%)	9.30 to 13.0
4.	Av. bulk density of soil (g/cc)	1.51 to 1.65
5.	Previous treatment	Nil
6.	Engine speed (rpm) :	
	- No load	2565 to 2587
	- On load	2495 to 2512
7.	Speed of operation (kmph)	2.83 to 3.02
8.	Av. wheel slip (%)	4.79 to 10.46
9.	Av. depth of cut (cm)	24.93 to 30.67
10.	Av. working width (cm)	39.0
11.	Area covered (ha/h)	0.0920 to 0.1034
12.	Time required for one ha (h)	9.67 to 10.86
13.	Field efficiency (%)	82.73 to 88.48
14.	Fuel consumption	
	-l/h	3.85 to 6.16
	-l/ha	37.22 to 62.07
15.	Av. Implement draft (kgf)	647 to 951
16.	Drawbar Power requirement (kW)	5.41 to 7.63

8.1.1 Rate of work :

- The area covered was recorded as 0.0920 to 0.1034 ha/h at the average speed of operation from 2.83 to 3.02 kmph.
- The time required to cover one hectare area was recorded as 9.67 to 10.86 h.

8.1.2 Quality of work:

- The depth of cut was recorded as 24.93 to 30.67 cm.
- Average working width was observed as 39.0 cm.
- Field efficiency was observed as 82.73 to 88.48 %.

8.1.3 Power requirement:

The average draft of implement was recorded from 647 to 951 kgf and Drawbar power requirement was calculated as 5.41 to 7.63 kW.

8.2 Labour requirement:

One skilled operator was needed to operate the tractor with the implement.

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3.3.2 Share nose of front bottom II :

S. No.	Notation	Dimension (mm)		Wear (%)	
		Initial	Final	After 26.50 h	Per hour
1.	Total length	240.80	237.18	1.50	0.06
2.	Total width	96.01	95.34	0.70	0.03

Remarks: The hourly percentage of wear of both share noses on dimension basis was observed as 0.02 to 0.07.

9. EASE OF OPERATION AND ADJUSTMENTS

No noticeable difficulty was observed during the operation and adjustment of Single Bottom Hydraulic Reversible M.B. plough.

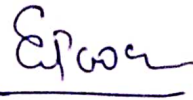
10. DEFECTS, BREAKDOWNS AND REPAIRS

No noticeable defect or breakdown was observed during test

11. COMMENTS AND RECOMMENDATIONS

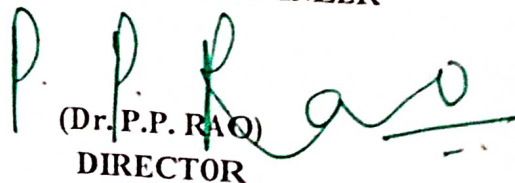
- 11.1 The dimensions of the share and share nose of plough does not conforms to IS: 10691-1983. This should be looked into for corrective action for standardisation.
- 11.2 The dimension of three point linkage, hitch pyramid does not conform to IS: 4468-1997. Therefore, this should be looked into for corrective action.
- 11.3 The chemical composition in share was not within its range as per IS: 10691-1983. This is recommended to looked into for corrective action of standardisation.
- 11.4 The labelling plate should be provided as per the requirements of Indian Standard.
- 11.5 **Technical literature :**
Operator manual, service manual, parts manual covered in English was submitted along with the implements. However, it is recommended to bring out the same covered in Hindi and other vernacular languages as per IS: 8132-1999.

TESTING AUTHORITY



(S.G. PAWAR)

AGRICULTURAL ENGINEER



(Dr. P.P. RAO)

DIRECTOR

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