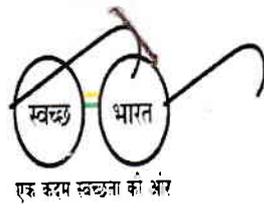


व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT



संख्या / No.: Imp. 183/243
माह / Month: February, 2016

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**LANDFORCE, DDM-3, THREE BOTTOM DISC PLOUGH
(Tractor Mounted)**



सत्यमेव जयते

भारत सरकार
GOVT OF INDIA

कृषि एवं किसान कल्याण मन्त्रालय

MINISTRY OF AGRICULTURE & FARMERS WELFARE

कृषि, सहकारिता एवं किसान कल्याण विभाग

DEPARTMENT OF AGRICULTURE, COOPERATION AND FARMERS WELFARE

उत्तर पूर्वी क्षेत्र कृषि यंत्र प्रशिक्षण एवं परीक्षण संस्थान

NORTH EASTERN REGION FARM MACHINERY TRAINING & TESTING INSTITUTE

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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 components.
- Wear analysis of critical components.
- Chemical analysis of critical components.

1.2 Field Test :

- Rate of work
- Quality of work
- Power requirement
- Labour requirement
- Ease of operation and adjustments
- Defects, Breakdowns & Repairs

2. METHOD OF SELECTION

The implement was directly submitted for test by the applicant at this Institute. Hence, the method of selection is not known.

3. TEST CODE AND PROCEDURE

The following codes were referred for testing of disc plough.

- | | | | |
|------|--|---|--|
| i) | IS: 10233 - 1982
(Reaffirmed in Mar., 2009) | : | Specification for Tractor Operated Disc Ploughs |
| ii) | IS: 4366 (Part 1 & 2): 1985
(Reaffirmed Feb., 2011) | : | Specification for Agricultural Tillage Discs: Part 1 Concave Type & Part 2 Flat Type |
| iii) | IS: 6288 - 1971
(Reaffirmed Mar., 2009) | : | Test Code for Mould Board Plough |
| iv) | IS: 4468(Part-1) – 1997
(Reaffirmed in Feb., 2012) | : | Specification of Three Point Linkage. |

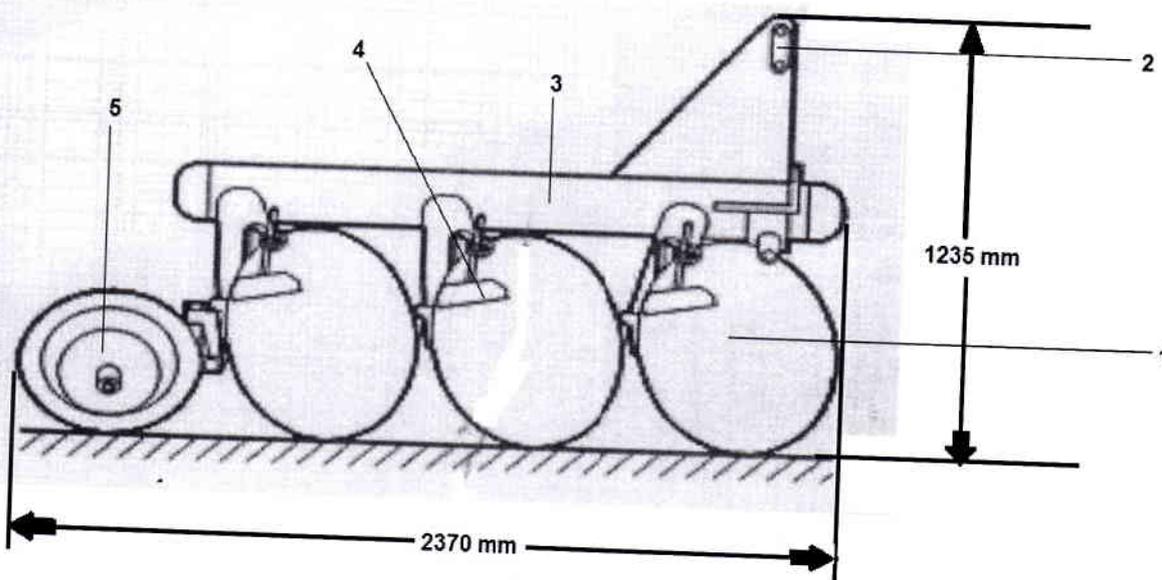
4. SPECIFICATION

4.1 General:

Name and address of the manufacturer : **M/s. Dasmesh Mechanical Works**
Nabha-Malerkotla Road, Amargarh,
Dist.: Sangrur (Pb.) – 148 022

Name & Address of Applicant	: M/s. Dasmesh Mechanical Works Nabha-Malerkotla Road, Amargarh, Dist.: Sangrur (Pb.) – 148 022
Make	: LANDFORCE
Model	: DDM-3
Type	: Tractor mounted , Disc Plough (3- Bottom)
Serial Number of machine	: 0215600123
Year of manufacture	: 2015- 2016
No. of plough Bottoms	: 03
Size of Plough (mm)	: 3 x 327 at 15° tilt angle
Country of origin	: India
Power Source as recommended	: Not recommended
Power source used during the test	: Swaraj 855 FE Tractor. (Specification given in Annexure-II)

4.2 Constructional Details (Refer Fig.1) :



- | | |
|-----------------|------------------|
| 1. Disc | 2. Hitch pyramid |
| 3. Main frame | 4. Scraper |
| 5. Furrow wheel | |

Fig.1: LANDFORCE DDM-3 DISC PLOUGH

SI. No.	Notation	Dimension (mm)		Wear (%)	
		Initial	Final	After 26.0 h	Per hr.
1	2	3	4	5	6
1	D1-D2 (front disc dia.)	662.2	660.3	0.29	0.01
2	D3-D4 (front disc dia.)	662.1	660.8	0.19	0.007
3	D1-D2 (middle disc dia.)	660.5	659.5	0.15	0.006
4	D3-D4 (middle disc dia.)	660.7	660.0	0.10	0.004
5	D1-D2 (Rear disc dia.)	662.8	661.3	0.23	0.008
6	D3-D4 (Rear disc dia.)	662.7	661.5	0.18	0.007
7	W1 (Front bevel width)	14.5	13.5	6.89	0.27
8	W2 (Front bevel width)	14.7	13.4	8.84	0.34
9	W3 (Front bevel width)	14.5	13.5	6.89	0.27
10	W4 (Front bevel width)	14.8	13.6	8.10	0.31
11	W1 (Middle bevel width)	14.8	13.9	6.08	0.23
12	W2 Middle bevel width)	14.9	13.8	7.38	0.28
13	W3 (Middle bevel width)	14.9	13.9	6.71	0.26
14	W4 (Middle bevel width)	14.9	13.9	6.71	0.26
15	W1(Rear bevel width)	13.6	13.0	4.41	0.17
16	W2(Rear bevel width)	13.7	13.1	4.38	0.17
17	W3(Rear bevel width)	13.7	13.0	5.10	0.19
18	W4 (Rear bevel width)	13.6	13.1	3.68	0.14
19	D1-D2 (furrow Wheel)	513	512	0.19	0.007
20	D3-D4 (furrow Wheel)	513	512	0.19	0.007

Remarks: The hourly percentage wear of discs and furrow wheel on dimensional basis was recorded as 0.004 to 0.34%

9. EASE OF OPERATION & ADJUSTMENTS

- 9.1 The width of cut can be adjusted by rotating the cranks of cross bar.
- 9.2 The tilt angle of disc can be adjusted by changing the slat provided on the disc flange holder. Total three adjustments are provided for these three slats. However the operator has to go down the tractor for this adjustment.

10. DEFECTS, BREAKDOWNS AND REPAIRS

No breakdown was occurred during 26.0 h of field test of the three bottom disc plough.

11. SUMMARY OF OBSERVATIONS, COMMENTS AND RECOMMENDATIONS

11.1 Performance of the disc plough :

11.1.1 Rate of work :

- a) The average area covered was recorded as 0.104 to 0.140 ha/h and the speed of operation vary from 1.92 to 2.50 kmph.
- b) The time required to cover one hectare was recorded as 7.1 to 9.6 h.

11.1.2 Quality of work :

- a) The depth of cut was recorded as 21 to 26 cm.
- b) Average working width was observed as 64 to 72 cm.
- c) Field efficiency was observed as 74 to 90%.

11.1.3 Power requirement:

The draft of implement was recorded from 691 to 771 kgf and power requirement was calculated as 3.72 to 7.43 kW.

11.1.4 Labour requirement:

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

11.2 The specification of discs does not conform with IS: 4366-1985. Hence, it is recommended to look into at production level for standardization.

11.3 The specification of disc plough does not conform to IS: 10233-1982. This should be looked into at future production level.

11.4 The specification of hitch does not conform to IS: 4468 (Part-1)-1997. This should be modified according to the relevant IS for the effective weight transfer of the implements.

11.5 The hardness of disc and furrow wheel were recorded as 36 and 22 HRC respectively against the requirements of 38-45 HRC as per IS: 4366 (Part-1 & Part-2)-1985. This should be looked into at future production level.

11.6 The Chemical composition of discs and furrow wheel does not conform to relevant Indian Standards. This needs to be looked into for corrective action.

11.7 Wear Assessment:

The hourly rate of wear of the disc on mass and dimensional basis was recorded as 0.04 to 0.14% and 0.004 to 0.34% respectively. The hourly percentage of wear was considered normal.

11.8 Labeling of the Implement:

Labeling Plates are provided on the main frame. However, the information provided was insufficient as per the relevant codes. This should be looked into.

11.9 Adequacy of Literature:

An Operator cum Service Manual & Parts Catalogue was provided along with the implement during the course of testing. It is further recommended to bring out these manuals in Hindi and other vernacular languages as per IS: 8132-1999.

TESTING AUTHORITY**S. G. PAWAR****AGRICULTURAL ENGINEER****J. J. R. NARWARE****DIRECTOR**

Test conducted and report compiled by -

Sh. K. Bora, Technical Assistant

12. APPLICANT'S COMMENTS

We agree with the report. As regard non-conformities, we will make the necessary changes in accordance to the relevant BIS Standards in next production line.