

व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

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LANDFORCE, DCSR-9, RIGID TYNE CULTIVATOR (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

विश्वनाथ चारिआलि, जिला-शोणितपुर (असम)

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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 (Shovel)
- Chemical analysis of critical components (Shovel)
- Wear analysis of critical components (Shovel)

1.2 Field Test :

- Rate of work
- Quality of work
- Power requirement
- Ease of operation, maintenance and adjustments
- Labour requirement
- 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 cultivator.

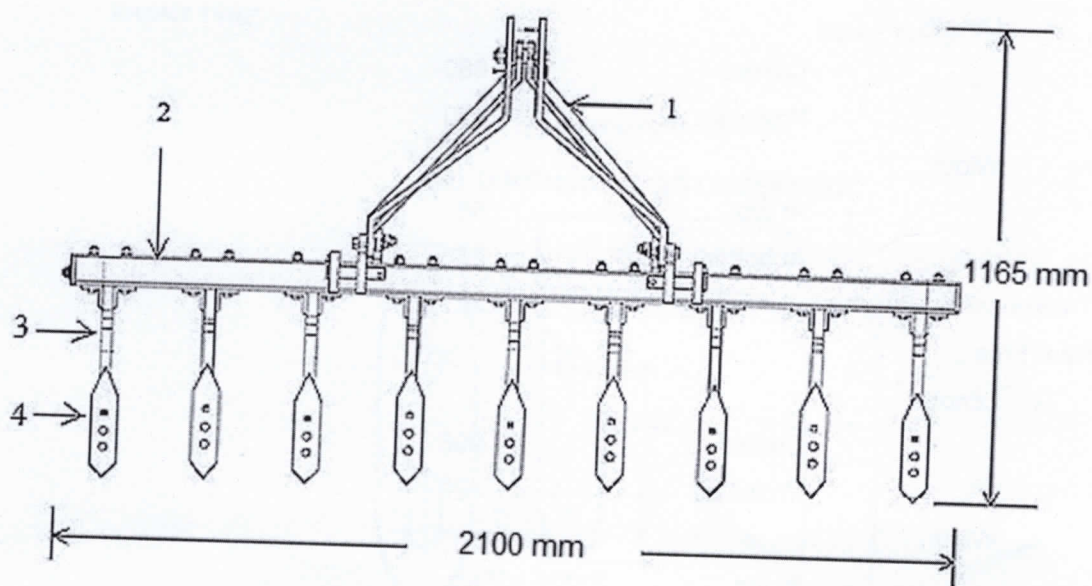
- | | | | |
|------|---------------------------------------------------|---|-------------------------------------------------------------------------------------------------|
| i) | IS: 7565 (Part-I): 1975
(Reaffirmed Mar. 2009) | : | Specification for Tines for Tractor operated cultivators: Part 1 Rigid tines |
| ii) | IS: 4468 (Part I): 1997
(Reaffirmed Feb. 2012) | : | Agricultural wheeled tractors – Rear-mounted three-point linkage: Part 1 Categories 1, 2, 3 & 4 |
| iii) | IS: 3342:1998
(Reaffirmed Mar., 2009) | : | Soil Working Equipment – Cultivators, Animal Drawn - Specification |

4. SPECIFICATION**4.1 General :**

- | | | |
|--------------------------------------|---|-----------------------------------------------------------------------------------------------------------|
| Name and address of the manufacturer | : | M/s. Dasmesh Mechanical Works
Nabha-Malerkotla Road, Amargarh,
Dist.: Sangrur (Pb.) - 148022 |
| Name & Address of Applicant | : | M/s. Dasmesh Mechanical Works
Nabha-Malerkotla Road, Amargarh,
Dist.: Sangrur (Pb.) - 148022 |
| Make | : | LANDFORCE |

Model	DCSR-9
Type	: Rigid tyne, Mounted
Serial Number of machine	: 0315600395
Year of manufacture	: 2015
Size of implement (mm)	: 9 × 227
Working width of implement (mm)	: 1830
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. Hitch pyramid | 3. Tyne |
| 2. Mainframe | 4. Shovel |

Fig.1: LANDFORCE DCSR-9 RIGID TYNE CULTIVATOR

7.6.2 On dimension basis (Refer Fig. 3):

Sl. No	Notation	Dimension (mm)		Wear (%)	
		Initial	Final	After 25.3 h	Per h
1.	A	249.0	239.6	3.78	0.15
	B	58.8	58.4	0.68	0.03
	C	36.6	32.3	11.75	0.46
2.	A	247.5	240.6	2.79	0.11
	B	58.7	57.6	1.87	0.07
	C	35.8	32.3	9.78	0.39
3.	A	249.3	240.4	3.57	0.14
	B	59.3	58.2	1.85	0.07
	C	38.5	33.7	12.47	0.49
4.	A	247.4	239.1	3.35	0.13
	B	59.4	58.2	2.02	0.08
	C	38.8	34.4	11.34	0.45
5.	A	250.3	240.8	3.80	0.15
	B	59.2	57.4	3.04	0.12
	C	38.5	32.1	16.62	0.66
6.	A	245.4	238.1	2.97	0.12
	B	58.6	57.4	2.05	0.08
	C	40.0	33.6	16.00	0.63
7.	A	245.1	238.2	2.82	0.11
	B	58.7	58.3	0.68	0.03
	C	36.3	35.7	1.65	0.07
8.	A	248.0	238.3	3.91	0.15
	B	58.8	57.5	2.21	0.09
	C	41.1	33.7	18.00	0.71
9.	A	249.5	241.3	3.29	0.13
	B	58.7	57.6	1.87	0.07
	C	38.9	30.9	20.57	0.81

Remarks: The hourly percentage wear of reversible shovel on dimensional basis was recorded as 0.03 to 0.81.

8. EASE OF OPERATION & ADJUSTMENTS

No noticeable difficulty was observed during the operation and adjustment of cultivator.

9. DEFECTS, BREAKDOWNS AND REPAIRS

No breakdown was occurred during 25.3 h of field test of the cultivator.

10. SUMMARY OF OBSERVATIONS, COMMENTS AND RECOMMENDATIONS

- 10.1** The specifications of implement hitch, does not conform with IS: 4468-1997 (Part-1) (Reaffirmed Feb., 2012). Hence, it is recommended to look into at production level for standardization.
- 10.2** The specification of the reversible shovel and tyne does not conform to IS: 3342-1998 (Reaffirmed Mar., 2009) and IS: 7565 (PART I) - 1975 (Reaffirmed Mar., 2009) respectively. This should be looked into at future production level.

- 10.3** Chemical composition and hardness of shovel does not conform to relevant Indian Standards. This needs to be looked into for corrective action.
- 10.4 Performance of the cultivator :**
- 10.4.1 Rate of work :**
- The rate of work was recorded as 0.859 to 1.035 ha/h and the speed of operation varies from 4.96 to 5.72 kmph. which is considered normal.
 - The time required to cover one hectare was recorded as 1.0 to 1.2 h.
- 10.4.2 Quality of work :**
- The depth of cut was recorded as 10.0 to 14.0 cm. which is considered normal for secondary tillage operations.
 - Average working width was observed as 199.0 to 204.0 cm.
 - Field efficiency was observed as 80 to 95 %.
- 10.4.3 Power requirement :**
- The draft of implement was recorded from 520 to 562 kgf and power requirement was calculated as 7.6 to 8.2 kW.
- 10.4.4 Labour requirement :**
- One skilled operator was needed to operate the tractor with the implement.
- 10.5 Wear Assessment:**
- The hourly rate of wear of the reversible shovel on mass and dimensional basis was recorded as 0.27 to 0.32% and 0.03 to 0.81% respectively. The hourly percentage of wear was considered normal.
- 10.6** Provision was not made for adjustment of tyne spacing, which should be looked into for correction to suit different row spacing conditions.
- 10.7** As the implement is rigid tyne type, it is not suitable for root & stone infested lands.
- 10.8** Most of the shovel fixing bolts were got stripped during dismantling, due to the use of inferior quality bolts. Therefore, it is recommended that fine threaded high tensile bolts with provision of both plain and spring washers should be used.
- 10.9 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.

**10.10 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. P. Lodh, Technical Assistant

11. APPLICANT'S COMMENTS

- 11.1 We agree with the report. However in respect of non-conformities, we will make the improvements in accordance to the relevant BIS Standards.