व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT (ICT)

संख्या/No. : IMP-779/1822/2016
माह/Month: January, 2016

# TRACTOR OPERATED TRAILED OFFSET DISC HARROW PYARA, 8X8

सत्यमेव जयते

भारत सरकार
कृषि एवं किसान कल्याण मंत्रालय
(कृषि, सहकारिता एवं किसान कल्याण विभाग)

GOVERNMENT OF INDIA
MINISTRY OF AGRICULTURE & FARMERS WELFARE
(DEPARTMENT OF AGRICULTURE, COOPERATION & FARMERS WELFARE)

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| | | | | |
|---|---|---|---|---|
| | G | 15, 16 | 12 | **Does not conform** |
| | H | 15 , 18 | 18 | Conforms |
| | J | Ø (130 , 140) ± 2 | 119 | **Does not conform** |
| **Cl. 7.7** | In trailed type harrows transport wheels may be provided for transportation of harrow from one place to another. | | Two pneumatic wheels are provided for transport at rear. | Conforms |
| **Cl. 7.8** | In trailed type harrows, the draw bar should be manufactured in such a manner that it should conform to the requirements of tractor drawbars as given in IS: 12362 (Part 1)-2007 and/or IS: 12362 (Part 3)-1994. | | Dimensions of drawbar are not as per IS. | **Does not conform** |
| **Cl. 7.10** | Operation & maintenance manual and set of tools including adjustable wrench and grease gun should be provided. | | Not provided | **Does not conform** |
| **Cl. 8 Finish & workmanship Cl. 8.2** | Welding of various parts shall be satisfactory in all respect. | | Welding is rigid and satisfactory in all respect. | Conforms |
| **Cl. 8.3** | The components should be free from pits, and other visual defects. | | The components are free from pits and other visual defects. | Conforms |
| **Cl. 8.4** | The exposed metallic parts shall be free from rust and shall have protective coating. | | Exposed parts are painted | Conforms |
| **Cl. 9.1 Marking Cl. 9.1.1** | Each harrow shall be marked with the following particulars :- | | | |
| | a) manufacturer's name & trade mark if any | | Marked | Conforms |
| | b) Type and size | | Not marked | **Does not conform** |
| | c) Batch and code number | | Not marked | **Does not conform** |

## 7. FIELD TEST

The field test of disc harrow was conducted at CSF farm & NRFMT&TI Hisar for 25.11 hrs. with John Deere 5050 D V5 tractor as prime mover for operating the harrow. The working of disc harrow was observed satisfactory.

During the field test, data collected and analyzed for quality of work, rate of work, fuel consumption of prime mover and draft of implement. The details of test results are given in Annexure-II and summarized in Table I.

**TABLE - I**

| Sl. No. | Parameter | Range |
|---|---|---|
| 1. | Soil moisture, % | 7.06 to 17.88 |
| 2. | Av. Wheel slip , % | 7.84 to 11.82 |
| 3. | Av. Speed of operation, kmph | 5.47 to 6.10 |
| 4. | Av. depth of cut ,cm | 10.16 to 14.0 |
| 5. | Av. width of cut, cm | 172 to 191 |
| 6. | Area covered, ha/h | 0.78 to 1.02 |
| 7. | Fuel consumption<br>l/h<br>l/ha | <br>3.543 to 3.753<br>3.485 to 4.766 |
| 8. | Av. Draft of implement , kgf | 240 to 268 |
| 9 | Soil type | Sandy loam |
| 10. | Field efficiency , % | 75.72 to 91.17 |

**7.1 Rate of work**

(i) The speed of operation of the tractor with disc harrow ranged from 5.47 to 6.10 kmph in $B_1$ gear of John Deere 5050 D V5.

(ii) The area covered ranged from 0.78 to 1.02 ha/h while fuel consumption was observed to be 3.543 to 3.753 l/h.

**7.2 Quality of work**

Field performance of the harrow was observed to be satisfactory. Average depth of cut and average working width ranged from 10.16 to 14.0 cm & 172 to 191 m respectively.

## 8. EASE OF OPERATION AND ADJUSTMENT

The gang angle can be adjusted easily, and no difficulty was observed in operation and adjustment of harrow for field operation.

## 9. WEAR OF DISC

Initial and final weight of the discs of harrow before and after 25.11 hrs. of field test were taken. Wear in the disc was observed in the range of 0.54 to 1.63 %.

| Sl. No. | Initial weight (gms) | Final weight (gms) | Weight loss (gm) | (%) wear on mass basis | (%) wear per hour |
|---|---|---|---|---|---|
| 1. | 9891.6 | 9837.2 | 54.4 | 0.54 | 0.021 |
| 2. | 9836.0 | 9741.6 | 94.4 | 0.95 | 0.037 |
| 3. | 9814.7 | 9717.0 | 97.7 | 0.99 | 0.039 |
| 4. | 9904.5 | 9810.6 | 93.9 | 0.94 | 0.037 |
| 5. | 9616.7 | 9459.3 | 157.4 | 1.63 | 0.065 |
| 6. | 9664.4 | 9602.2 | 62.2 | 0.64 | 0.025 |
| 7. | 9637.5 | 9575.5 | 62.0 | 0.64 | 0.025 |
| 8. | 9605.5 | 9536.7 | 69.1 | 0.71 | 0.028 |

## 10. LUBRICATION AND SERVICING

Before start of the field tests, the bolts & nuts were tightened and greasing was done to keep the machine in proper running condition.

## 11. BRAKDOWNS AND REPAIRS

No breakdown was observed during 25.11 hours field test.

## 12. COMMENTS AND RECOMMENDATIONS

12.1 Maneuverability of tractor with harrow and quality of work were observed to be satisfactory.

12.2 The Hardness of disc is not as per the recommended values in IS: 4366 (Part- I) –1985. It should be looked into for improvement.

12.3 The marking on the harrow as well as in disc does not conforms to relevant Indian Standard, it should be provided.

12.4 Carbon content in discs of harrows is not as per the recommended values in IS:9442-1980. It should be looked into for necessary corrective action.

12.6 The specifications of spool does not conforms with IS: 7230-1974. The spools conforming to IS code under reference should be used at regular production level.

12.6 Specifications of disc does not conforms to IS: 4366 (Part 1)-1985. It should be looked into.

12.7 The safety and hazard warning labels are not provided on the implement. It should be provided.

12.8 The labeling plate is not provided on the implement. The revitted labeling plate with following information may be provided on the implement.

i) Manufacturer's name
ii) Make
iii) Model
iv) Serial No. and year of mgf.
v) Size of implement
vi) Approx power requirement
vii) Mass of implement, etc

## 13. LITERATURE

The manufacturer has not provided the literature of machine. However, the manufacturer should develop a manual in Hindi or English & other regional languages as per IS: 8132-1983 for the guidance of users & technical personnel.

## TESTING AUTHORITY

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|---|---|
| **G.R. AMBALKAR**<br>**Agricultural Engineer** | |
| **R.K. NEMA**<br>**Senior Agricultural Engineer** | |
| **HIMAT SINGH**<br>**Director** | |

Test report compiled by: **Sh. Maan Singh, Sr. Tech. Assistant**

## 14. APPLICANT'S COMMENTS

No specific comments received from applicant.