



Reference copy



**GREENSYSTEM ROTARY TILLER, Model: RT1028 (Gear Drive)
(Tractor Operated)**

FMITTI-NER, LIA
No. 2122
DATE 26.07.16



सत्यमेव जयते

भारत सरकार
GOVT OF INDIA

कृषि एवं किसान कल्याण मन्त्रालय

MINISTRY OF AGRICULTURE & FARMERS WELFARE

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DEPARTMENT OF AGRICULTURE, COOPERATION & FARMERS WELFARE

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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 (Rotavator blades)
- Chemical analysis of critical components (Rotavator blades)
- Wear analysis of critical components (Rotavator blades)

1.2 Field Test :

- Rate of work
- Quality of work
- 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 PROCEDURE

The following codes were referred for testing of Rotavator.

- | | | |
|------|--|---|
| i) | IS: 6690-1981
(Reaffirmed in 2002) | : Specifications of blades for rotavator for power tillers |
| ii) | IS: 4931 – 1995
(Reaffirmed in December1999) | : Agricultural tractors-Rear Mounted PTO shaft
(Types 1, 2 & 3) |
| iii) | IS: 4468 – 1997 (Part-1)
(Reaffirmed in 2012) | : Agricultural wheeled Tractors- Rear Mounted
three point linkage. |
| iv) | IS: 11531 – 2001
(Reaffirmed in 2001) | : Test code for puddler |

4. SPECIFICATIONS

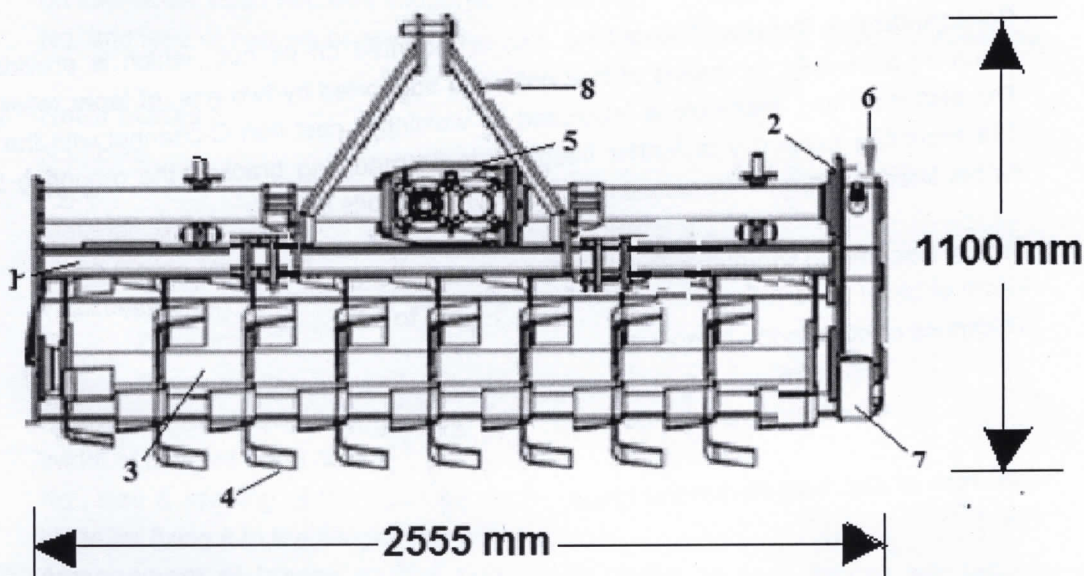
4.1 General:

Name and address of the manufacturer	: M/s. Dasmesh Mechanical Works Nabha-Malerkotla Road, Vill: Langrian, Dist.: Sangrur- 148022 (Punjab)
Name & Address of Applicant	: M/s. John Deere India Private Limited Gat # 166 – 167 & 271 – 291, Off Pune-Nagar Raod, Sanaswadi, Pune-412208
Name of machine	: Rotary Tiller (Gear Drive) (Tractor Operated)
Make	: GREENSYSTEM
Model	: RT1028
Type	: Tractor Mounted
Serial Number of machine	: 1PYRT10CCF8202839
Size	: 2180 x 452 Φ
Year of manufacture	: NA



Country of origin : India
 Power Source as recommended : 50 hp or above
 Power source used during the test : John Deere 5310 tractor (Refer Annexure-III)

4.2 Constructional Details (Refer Fig.1) :



KEYWORDS:

- | | |
|----------------|---------------------------------|
| 1. Mainframe | 5. Primary reduction gear box |
| 2. Side plate | 6. Secondary reduction gear box |
| 3. Rotor shaft | 7. Skid |
| 4. Rotor blade | 8. Hitch pyramid |

Fig.1: SCHEMATIC VIEW OF GREENSYSTEM RT1028 ROTAVATOR

4.2.1 Main Frame :

Constructional Details : It consisted of a square M.S. pipe of size 2260 x 61.0 x 61.0mm welded with two nos. of cross members (MS plate) each of size 610 x 150 x 8.3 mm in RHS and LHS respectively. One MS sheet was welded over the rotor unit on the frame (top cover) of size 2260 x 535(curved) x 4.2 mm. One M.S. hollow pipe of size 815 x 76.0 Φ mm was fitted to the LHS plate. In the RHS of primary reduction gear box one more M.S. hollow pipe of size 1020 x 76.0 Φ mm was welded up to the RHS side plate.

Material : MS sheet, MS flat & MS hollow pipe
 Dimensions of frame(mm) : 2277 x 610

4.2.2 Side plates :

Number(s) : Two
 Material : MS plate

8. EASE OF OPERATION & ADJUSTMENTS

The operator can easily adjust and control the implement from operator's seat in the field as the adjustments are within the easy reach of operator. However the operator has to get down from the tractor in order to raise/lower the depth adjusting skids. No noticeable difficulty was observed during the operation and adjustment of rotavator.

9. DEFECTS, BREAKDOWNS AND REPAIRS

No breakdown was occurred during 41.2 h of wet land and dry land operation.

10. SUMMARY OF OBSERVATIONS, COMMENTS AND RECOMMENDATIONS

- 10.1 The dimension of three point linkage (hitch pyramid) of the rotavator does not conform to Cat. I & Cat. II to IS: 4468-2012. This should be looked into for corrective action for standardization.
- 10.2 Dimensions of PIC and PIC yoke bore of implement do not conform to IS: 4931-1995 and therefore, it should be looked into for corrective action.
- 10.3 Chemical composition of rotor blades does not conform to IS: 6690-2002. The percentage of carbon and manganese content in composition of rotavator blade material was recorded as 0.282 and 1.237 % respectively. The carbon content was on lower side and manganese content was on higher side when compared with the relevant Indian Standard. Moreover, the hardness of rotor blades also does not conform to relevant Indian Standard. It is therefore, recommended that the material of rotavator blade should be improved and provided as per requirement of Indian Standard.
- 10.4 The rate of work was recorded 0.464 to 0.640 ha/h at forward speed of 2.97 to 3.06 kmph in dry land operation.
- 10.5 The depth of operation in dry land operation was recorded as 6 to 10 cm with soil moisture content of 16 to 26 % in medium soil and considered on lower side. The depth of puddle was recorder as 21 to 26 cm which is considered as normal for wetland operation.
- 10.6 The hourly rate of wear of blade on mass basis in Dry land & Wet land operations was recorded as 0.03 to 0.10 % and 0.02 to 0.05% respectively. The average wear of blade is considered as on higher side.
- 10.7 The hourly rate of wear of blade on dimensional basis in Dry land & Wet land operations was recorded as 0.01 to 0.16 % and as 0.01 to 0.09 % respectively. The average wear of blade is considered as on higher side.
- 10.8 Manufacturer's name, address & trademark (if any), size of implement, power requirement and year of manufacture should also be indicated on the labeling plate.
- 10.9 No ingress of mud and/or water was found in primary and secondary reduction boxes after 15.7 hours of wet land operations and the sealing provided on different subassemblies were found effective.

**10.10 Technical literature:**

An Operator cum Service Manual & Parts Catalogue was provided along with the machine 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

K. K. NAGLE
DIRECTOR

Test conducted and report compiled by : K. Bora, TA & P. Lodh, TA

11. APPLICANT'S COMMENTS

Para No.	Our reference	Applicant's Comments
11.1	10.1	We agree with the recommendations and will provide implement hitch for Rotary Tiller conforming to Indian Standards IS: 4468-2012.
11.2	10.2	We agree with the recommendations on PIC and PIC Yoke bore of implement and will make necessary corrections on dimensions of implement to conform to IS: 4931-1995.
11.3	10.3	We agree with recommendations and will provide rotor blades conforming to IS: 6690-2002 for Carbon and Manganese content.
11.4	10.8	We agree with recommendation and will include size of implement and power requirement on the labeling plate.
11.5	10.10	We will provide the booklet in Hindi and other local languages. Booklet will include tractor compatibility sheet.