



व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT



संख्या / No.: Imp. 205/277
माह / Month: February, 2017



**GREENSYSTEM ROTARY TILLER, Model: RT1037 (Gear Drive)
(Tractor Operated)**



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 & FARMERS WELFARE

उत्तर पूर्वी क्षेत्र कृषि यंत्र प्रशिक्षण एवं परीक्षण संस्थान

NORTH EASTERN REGION FARM MACHINERY TRAINING & TESTING INSTITUTE

विश्वनाथ चारिअली, जिला-विश्वनाथ (असम)

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1. SCOPE OF TEST

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

1.1 Laboratory Test:

- a) Checking of specifications
- b) Hardness of soil engaging parts (Rotavator blades)
- c) Chemical analysis of critical components (Rotavator blades)
- d) Wear analysis of critical components (Rotavator blades)

1.2 Field Test:

- a) Rate of work
- b) Quality of work
- c) Ease of operation and adjustments
- d) Labour requirement
- e) 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.

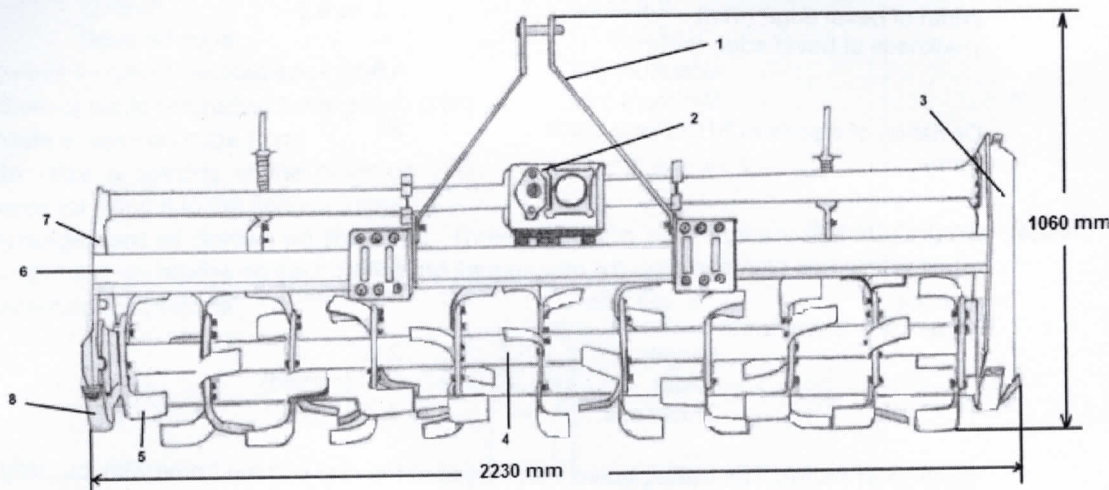
- i) IS: 6690-1981 : Specifications of blades for rotavator for power tillers
(Reaffirmed in 2012)
- ii) IS: 4931 – 1995 : Agricultural Tractors-Rear Mounted PTO Shaft (Types 1, 2 & 3)
(Reaffirmed in Mar 2009)
- iii) IS: 4468 – 1997 : Agricultural Wheeled Tractors- Rear Mounted Three Point Linkage.
(Reaffirmed in Feb 2012)
- iv) IS: 11531 – 1985 (Reaffirmed in Feb 2011) : Test code for puddler

4. SPECIFICATIONS**4.1 General:**

- | | | |
|--------------------------------------|---|---|
| Name and address of the manufacturer | : | M/s. Dasmesh Mechanical Works.
Vill: Langrian, Nabha-Malerkotla Road
Dist.-Sangrur- 148 022 (Punjab) |
| Test requested by (Applicant) | : | M/s. John Deere India Private Limited
Gat # 166 – 167 & 271 – 291, Off Pune-Nagar Raod, Sanaswadi, Pune-411 208 |
| Name of machine | : | Rotary Tiller |
| Make | : | GREENSYSTEM |
| Model | : | RT1037 |
| Type | : | Gear Drive (Tractor Operated) |
| Serial Number of machine | : | 1PYRT10LPGG000120 |

Size (mm)	: 1930 x 375 Φ
Year of manufacture	: 2016
Country of Origin	: INDIA
Power Source as recommended (hp)	: 55 to 60 HP
Power source used during the test	: New Holland NH 5500, (Refer Annexure-III)

4.2 Constructional Details (Refer Fig.1):



KEYWORDS:

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

Fig.1: **SCHEMATIC VIEW OF GREENSYSTEM MODEL- RT1037, ROTAVATOR**

4.2.1 Main Frame:

Constructional Details: It consisted of a square MS pipe of size 2041 x 60.2 x 60.2 mm welded with two nos. of cross member (MS plate) each of size 490 x 105 x 8.0 mm in RHS and LHS respectively. One MS sheet is welded over the rotor unit on the frame (top cover) of size 2041 x 470 (curved) x 3.9 mm. One MS hollow pipe of size 803 x 76.3 Φ mm was fitted to the LHS plate extending from the LHS of the primary reduction gear box. In the RHS of primary reduction gear box one more MS hollow pipe of size 910 x 76.3 Φ mm was welded and extended up to the RHS side plate.

Material	: MS sheet, MS plate & MS pipe (square)
Dimensions of frame(mm)	: 2055 x 490

4.2.2 Side plates:

Number(s)	: Two
Material	: MS plate

Dimensions (mm):

- LHS	: 620 x 490 (max.) x 8.4
- RHS	: 583 x 490 (max.) x 8.4

Method of fixing: Both LHS and RHS is bolted to the main frame by the help of 5 bolts on RHS and 6 bolts on LHS each of same size 43.2 x 11.7 Φ mm. Depth adjusting skids were bolted on each side plate. Secondary reduction gear box is fitted on the LHS 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.

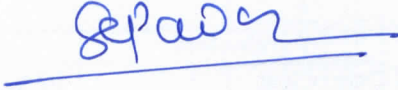
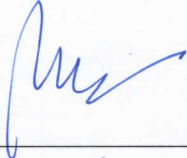

9. DEFECTS, BREAKDOWNS AND REPAIRS

No breakdown was occurred during 41.12 h of dry land and wet land operation.

10. SUMMARY OF OBSERVATIONS, COMMENTS AND RECOMMENDATIONS

- 10.1 The dimensions of PIC Yoke Bore and PIC of the rotavator does not conform to IS:4931-1995. This should be looked into for corrective action.
- 10.2 The dimensions of three point linkage of the implement does not conform to IS: 4468-1997. Therefore, it should be looked into for corrective action for standardization.
- 10.3 The hardness of the blade at the edge portion does not conform to IS 6690-1981. Hence, it is recommended to look into for corrective action for standardization.
- 10.4 The content of carbon and manganese in rotor blade was not within its desired range as per Indian Standard. Hence, this should be looked into for corrective action.
- 10.5 The rate of work was recorded as 0.497 to 0.648 ha/h with operation speed of 3.09 to 4.08 kmph.
- 10.6 The depth of operation in dry land was recorded as 8 to 11 cm with average soil moisture content of 12.1 to 22.9 % in Sandy soil. The depth of puddle was recorded as 23 to 27 cm.
- 10.7 The hourly rate of wear of blade on mass basis for Dry land & Wet land operations was recorded as 0.08 to 0.17 and 0.01 to 0.02 % respectively.
- 10.8 The hourly rate of wear of blade on dimensional basis for Dry land & Wet land operations was recorded as 0.04 to 0.29 and 0.02 to 0.24 respectively %.
- 10.9 The parameters cited on the labeling plate was found insufficient. Hence, It is recommended to look into and specify the parameters in appropriate form for future production.
- 10.10 No ingress of mud and/or water was found in primary and secondary reduction boxes after 41.12 h of operation, the sealing provided on different subassemblies were found effective.
- 10.11 **Technical literature:**
Technical specification and parts catalog in English was provided along with the machine during the course of testing. However, it is recommended to bring operators manual and service manual covered with English, Hindi and other vernacular language as per IS: 8132-1999.

TESTING AUTHORITY

<p style="text-align: center;">S. G. PAWAR AGRICULTURAL ENGINEER</p>	
<p style="text-align: center;">A.K. UPADHYAY SENOIR AGRICULTURAL ENGINEER</p>	
<p style="text-align: center;">K.K. NAGLE DIRECTOR</p>	

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Test conducted & Report compiled by -

Sh. Rahul Prajapathi & Sh. Vithato Keyho

11. APPLICANT'S COMMENTS

Para No.	Our reference	Applicant's Comments
11.1	10.1	We agree with the recommendations on dimensions of PIC yoke bore and PIC of the rotary tiller, we will make necessary corrections conforming to IS: 4931 - 1995.
11.2	10.2	We agreed with the recommendations of the implement hitch and will make necessary corrections corresponding to its IS: 4468 - 1997.
11.3	10.3	We agreed with the recommendations of the hardness of rotor blade conforming to IS: 6690 - 1981.
11.4	10.4	We agreed with the recommendations of carbon and manganese content in rotor blade conforming to IS: 6690 - 1981.
11.5	10.9	We agreed with the recommendations, we will produce sufficient information on the labeling plate in future production.
11.6	10.11	We agreed with the recommendations for technical literature we will provide in future production covering all the contents corresponding to IS: 8132 - 1999.