

व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT



संख्या / No.: Imp. 208/280
माह / Month: March, 2017



**NEW SWAN ROTAVATOR, Model: NSML DT 200 (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, maintenance 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.

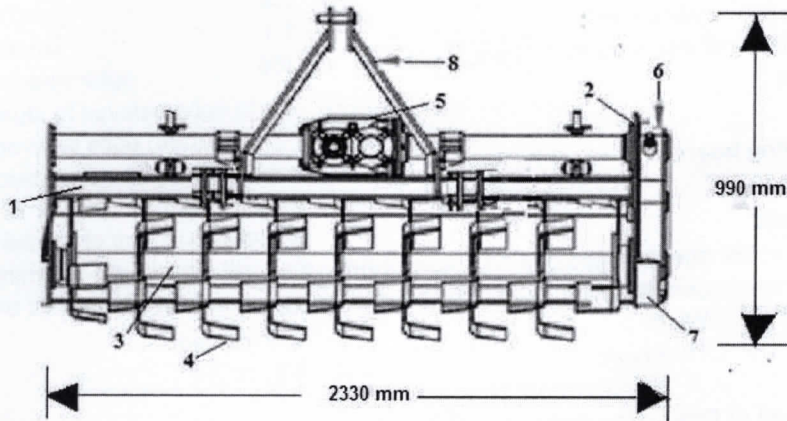
i)	IS: 6690-1981 (Reaffirmed in Mar. 2012)	:	Specifications of blades for rotavator for power tillers
ii)	IS: 4931 – 1995 (Reaffirmed in Mar. 2009)	:	Agricultural tractors-Rear Mounted PTO shaft (Types 1, 2 & 3)
iii)	IS: 4468 – 1997 (Reaffirmed in Feb. 2012)	:	Agricultural wheeled Tractors- Rear Mounted three point linkage.
iv)	IS: 11531 – 1985 (Reaffirmed in Feb. 2001)	:	Test code for puddler

4. SPECIFICATIONS**4.1 General:**

Name and address of the manufacturer	:	M/s. New Swan Multitech Limited. Village Raian, Kohara-Machiwara Road PO Heeran, Ludhiana-141 112 (Punjab)
Test requested by (Applicant)	:	M/s. New Swan Multitech Limited. C-124, Naraina Industrial Area. Phase-I, Road No. 12. New Delhi-110 027
Name of machine	:	Rotavator
Make	:	NEW SWAN
Model	:	NSML DT 200

Type	: Gear Drive (Tractor Operated)
Serial Number of machine	: NSML 0022230
Size	: 2030 x 400 Φ
Year of manufacture	: 2016
Country of origin	: Not Provided
Power Source as recommended	: Not Provided
Power source used during the test	: New Holland 7500, Tractor (Ref 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 NEW SWAN NSML DT 200 ROTAVATOR**

4.2.1 Main Frame:

Constructional Details: It consisted of a square MS pipe of size 2120 x 50.9 x 50.9 mm welded with two nos. of cross member (MS plate) each of size 550 x 110 x 8.5 mm in RHS and LHS respectively. One MS sheet is welded over the rotor unit on the frame (top cover) of size 2120 x 460 (curved) x 3.0 mm. One MS hollow pipe of size 830 x 75.9 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 1010 x 75.9 Φ mm was welded and extended up to the RHS side plate.

Material	: MS sheet, MS plate & MS pipe (square)
Dimensions of frame, mm	: 2140 x 550

4.2.2 Side plates:

Number(s)	: Two
Material	: MS plate

Dimensions (mm):

- LHS	: 640 x 420 (max.) x 8.6
- RHS	: 430 x 420 (max.) x 8.6

Method of fixing: Both LHS and RHS plate were bolted to the main frame with 4 nos. of bolts on LHS and 6 nos. of bolts on RHS each of size 43.4 x 11.7 Φ mm. Depth adjusting skids is 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 41.7 h of dry land and wet land operation.

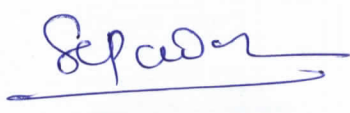

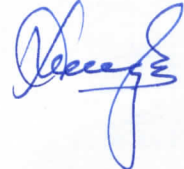
10. SUMMARY OF OBSERVATIONS, COMMENTS AND RECOMMENDATIONS

- 10.1 The dimensions of PIC yoke bore and PIC of the rotavator does not conform to IS:4931-1995.Hence, this should be looked into for corrective action for standardization.
- 10.2 The dimensions of three point linkage of the rotavator does not conform to IS: 4468-1997. Therefore, it is recommended to looked into corrective action.
- 10.3 The hardness of blade at edge portion is not within its desired range as per IS: 6690-1981.Therefore, it is recommended to looked into corrective action.
- 10.4 The rate of work was recorded as 0.432 to 0.474 ha/h with operation speed of 2.60 to 3.34 kmph.
- 10.5 The depth of operation in dry land operation was recorded as 8 to 9 cm with soil moisture content of 13.9 to 23.5 % in Sandy loam. The depth of puddle was recorded as 22 to 23 cm.
- 10.6 The hourly rate of wear of blade on mass basis in Dry land & Wetland operations was recorded as 0.07 to 0.15 % and 0.02 to 0.05 % respectively.
- 10.7 The hourly rate of wear of blade on dimensional basis in Wet land & Dry land operations was recorded as 0.02 to 0.14 % and as 0.01 to 0.11 % respectively.
- 10.8 Type, model, serial no. and year of manufacture was indicated on the labeling plate. However, it is recommended to specify size of implement and power requirement for the implement.
- 10.9 No ingress of mud and/or water was found in primary and secondary reduction boxes after 41.7 h of operation, the sealing provided on different subassemblies were found effective.

10.10 Technical literature:

No literature such as Operators manual, Service manual, Parts Catalogue, etc. were provided along with the machine during the course of testing.

TESTING AUTHORITY

S. G. PAWAR AGRICULTURAL ENGINEER	
A.K. UPADHYAY SENOIR AGRICULTURAL ENGINEER	
K.K. NAGLE DIRECTOR	

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	For further production we shall take appropriate action to improve the same as per IS:4931-1995 in future.
11.2	10.2	For further production we shall take appropriate action to improve the same as per IS:4468-1997 in future.
11.3	10.3	Review the same ensure to comply the requirement of blade as per IS:6690-1981 in future.
11.4	10.8	As per recommendation of size & power on labeling plate we implement this in future production.
11.5	10.10	Same is in process & we shall ensure to provide the same for further supplies both technical literature.