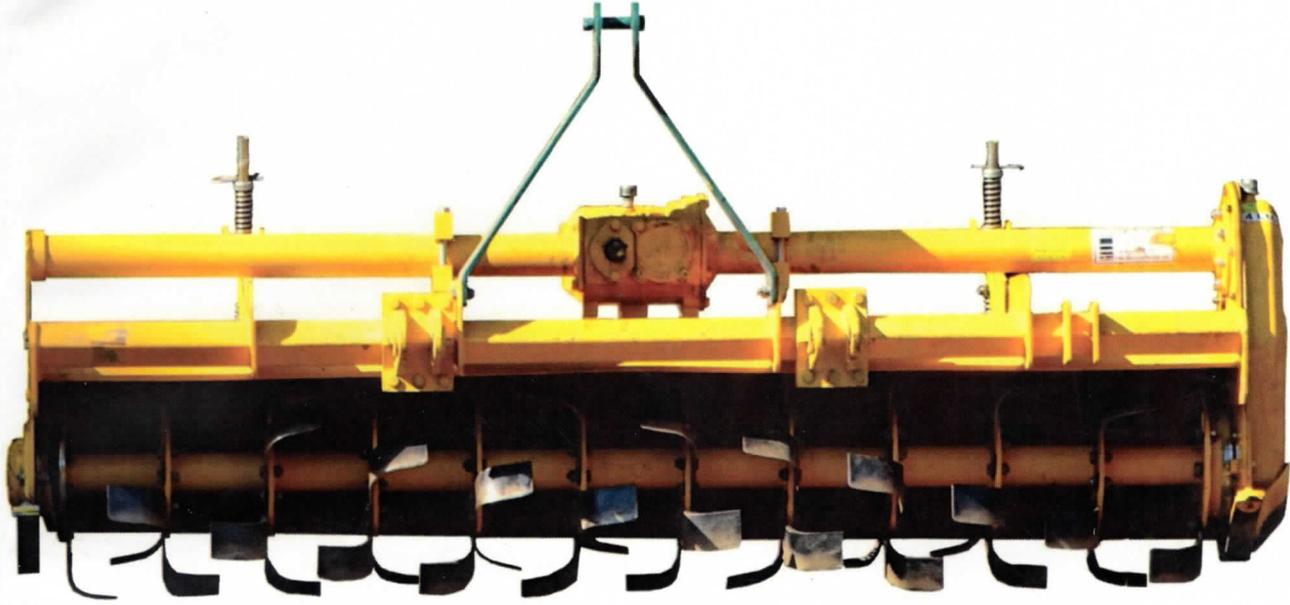


व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT



संख्या / No.: Imp.202/274
माह / Month: February, 2017



**NEW SWAN ROTAVATOR, Model: NSML GT 225 (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

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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.

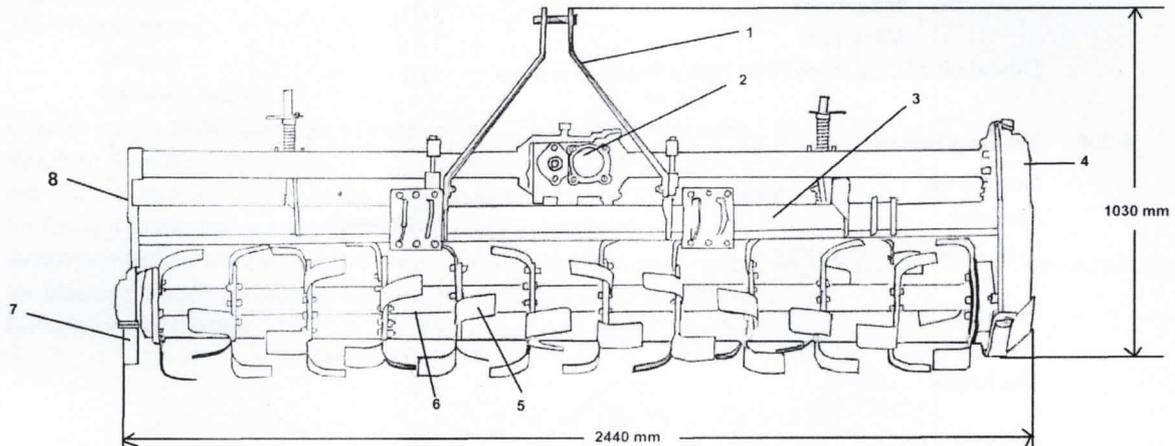
i)	IS: 6690-1981 (Reaffirmed in 2012)	:	Specifications of blades for rotavator for power tillers
ii	IS: 4931 – 1995 (Reaffirmed in Mar 2009)	:	Agricultural Tractors-Rear Mounted Power Take Off (Types 1, 2 & 3)
iii)	IS: 4468 – 1997 (Reaffirmed in Feb 2012)	:	Agricultural Wheeled Tractors- Rear Mounted Three Point Linkage.
iv)	IS: 11531 – 1985 (Reaffirmed in Feb 2011)	:	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 GT 225

Type	: Gear Drive (Tractor Operated)
Size (mm)	: 2195 x 405
Serial Number of machine	: NSML0022750
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 (Refer Annexure-III)

4.2 Constructional Details (Refer Fig.1):



KEYWORDS:

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

Fig.1: SCHEMATIC VIEW OF NEW SWAN GT 225 ROTAVATOR

4.2.1 Main Frame:

Constructional Details: It consisted of a square MS pipe of size 2280 x 60.5 x 60.5 mm welded with two nos. of cross member (MS plate) each of size 540 x 167 x 8.1 mm in RHS and LHS respectively. One MS sheet is welded over the rotor unit on the frame (top cover) of size 2280 x 565 (curved) x 3.0 mm. One MS hollow pipe of size 1010 x 76.7 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 1050 x 76.7 Φ mm was welded and extended up to the RHS side plate.

Material : MS sheet, MS plate & MS pipe (square)
Dimensions of frame, mm : 2280 x 565

4.2.2 Side plates:

Number(s) : Two
Material : MS plate

Dimensions (mm):

- LHS : 680 x 540 (max.) x 8.4
- RHS : 600 x 424 (max.) x 8.4

Method of fixing: Both LHS and RHS plate were bolted to the main frame with 4 nos. of bolts each of size having a dimensions 43.3 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.

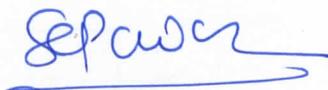
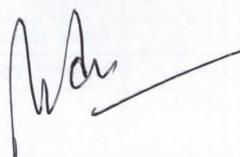
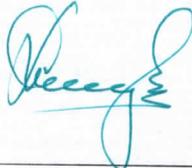
9. DEFECTS, BREAKDOWNS AND REPAIRS

- 9.1 The nuts and bolts which bolted the blade and the flange are found broken and gets loosen frequently.

10. SUMMARY OF OBSERVATIONS, COMMENTS AND RECOMMENDATIONS

- 10.1 The dimensions of PIC and PIC yoke bore does not conform to IS: 4931-1995. This should be looked into for corrective action.
- 10.2 The dimension of three point linkage does not conform to IS: 4468-1997. Therefore, it is recommended to looked into for corrective action for standardization.
- 10.3 The hardness of blade does not conform to IS: 6690-1981. This should be looked into for corrective action for standardization.
- 10.4 The rate of work was recorded as 0.525 to 0.724 ha/h with operation speed of 2.88 to 4.12 kmph.
- 10.5 The depth of puddle was recorder as 22 to 35 cm. The depth of operation in dry land was recorded as 9 to 11 cm with soil moisture content of 10.1 to 22.9 % in Sandy soil.
- 10.6 The hourly rate of wear of blade on mass basis in Wet land and Dry land operations was recorded as 0.02 to 0.05 % and 0.07 to 0.17 % respectively.
- 10.7 The hourly rate of wear of blade on dimensional basis in Wet land and Dry land operations was recorded as 0.02 to 0.08 % and 0.02 to 0.22 % respectively.
- 10.8 Type, model, serial no. and year of manufacture was indicated on the labeling plate. However, it is recommended to specify size and power requirement of the implement.
- 10.9 The bolts and nuts tightening the blade and flange get loosen easily. Hence it is recommended to looked into for corrective action.
- 10.10 No ingress of mud and/or water was found in primary and secondary reduction boxes after 42.11 h of Wet land operations and the sealing provided on different subassemblies were found effective.
- 10.11 **Technical literature:**
No technical literature was provided 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	We will take appropriate action to improve the PIC of implement as per IS: 4931-1995 in future production.
11.2	10.2	For future production, as per IS: 4468-1997 we will take appropriate dimensions for three point linkage.
11.3	10.3	For future production we will ensure to comply the hardness of blades as per IS: 6690-1981.
11.4	10.9	We are working on it for the improvement of quality of nuts and bolts.
11.5	10.11	We will provide the Technical literature in future supply.