

व्यावसायिक परीक्षण रिपोर्ट  
COMMERCIAL TEST REPORT



संख्या / No.: Imp.195/265  
माह / Month: December, 2016



**NEW SWAN ROTAVATOR, Model: NSML DT175 (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 2012)	:	Specifications of blades for rotavator for power tillers
ii)	IS: 4931 – 1995 (Reaffirmed in December 1999)	:	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 – 1985 (Reaffirmed in 2001)	:	Test code for puddler

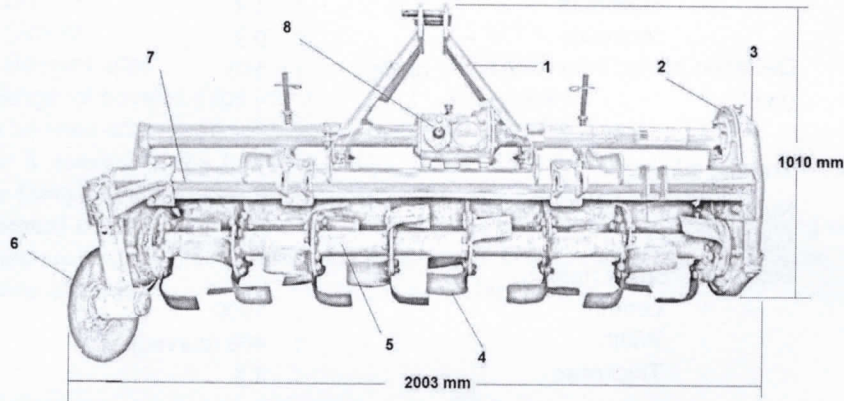
**4. SPECIFICATIONS****4.1 General:**

Name and address of the manufacturer	:	<b>M/s. New Swan Multitech Limited.</b> Village Raian, Kohara-Machiwara Road PO Heeran, Ludhiana-141 112 (Punjab)
Test requested by (Applicant)	:	<b>M/s. New Swan Multitech Limited.</b> C-124, Naraina Industrial Area. Phase-I, Road No. 12. New Delhi-110 027
Name of machine	:	Rotavator
Make	:	NEW SWAN
Model	:	NSML DT 175



Type	: Gear Drive (Tractor Operated)
Serial Number of machine	: NSML 0022806
Size	: 1775 x 394 $\Phi$
Year of manufacture	: 2016
Country of origin	: Not Provided
Suitability	: Land preparatory before seeding.
Power Source as recommended, hp	: Not Provided
Power source used during the test	: Swaraj 855 FE Tractor & John Deere 5310, collar shaft tractor (Refer Annexure-III)

#### 4.2 Constructional Details (Refer Fig.1):



#### KEYWORDS:

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

Fig.1: **SCHEMATIC VIEW OF NEW SWAN NSMLDT 175 ROTAVATOR**

#### 4.2.1 Main Frame:

**Constructional Details:** It consisted of a square MS pipe of size 1860x51.4x51.4 mm welded with two nos. of cross member (MS plate) each of size 540x167x8.3 mm in RHS and LHS respectively. One MS sheet is welded over the rotor unit on the frame (top cover) of size 1860x457 (curved) x3.1 mm. One MS hollow pipe of size 700.4x76.6  $\Phi$  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 900x76.2  $\Phi$  mm was welded and extended up to the RHS side plate.

Material	: MS sheet, MS plate & MS pipe (square)
Dimensions of frame, mm	: 1901x540

#### 4.2.2 Side plates:

Number(s)	: Two
Material	: MS plate

#### Dimensions (mm):

- LHS	: 650x423(max.)x8.0
- RHS	: 430x423(max.)x8.0

### **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.

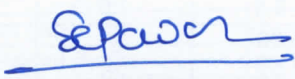
### **10. SUMMARY OF OBSERVATIONS, COMMENTS AND RECOMMENDATIONS**

- 10.1 The dimensions of PIC of the rotavator does not conform to IS: 4931-1995. The manufactures should look into the matter for its corrective action.
- 10.2 The dimensions of PIC yoke bore of the rotavator does not conform to IS: 4931-1995. This should be looked into the matter for its corrective action to meet the standard.
- 10.3 The diameter of upper hitch pin hole, diameter of lynch pin hole and width of inner face of yoke, diameter of hitch pin hole of lower hitch point does not conform to IS: 4468-1997. Therefore, manufactures look into for its corrective action for standardization.
- 10.4 The hardness of blade at edge portion does not conform to IS 6690-1981. The manufactures should look into the matter for its corrective action for standardization.
- 10.5 The rate of work was recorded as 0.337 to 0.594 ha/h with operation speed of 2.42 to 3.91 kmph.
- 10.6 The depth of operation in dry land operation was recorded as 10 to 12 cm with soil moisture content of 11.2 to 15.7 % in Sandy loam. The depth of puddle was recorded as 22 to 28 cm.
- 10.7 The hourly rate of wear of blade on mass basis in Wet land & Dry land operations was recorded as 0.02 to 0.05 % and 0.08 to 0.20 % respectively.
- 10.8 The hourly rate of wear of blade on dimensional basis in Wet land & Dry land operations was recorded as 0.01 to 0.04 % and as 0.01 to 0.33 % respectively.
- 10.9 Type, model, serial no. and year of manufacture was indicated on the labeling plate. However, size of implement and power requirement should also specify on the labeling plate.
- 10.10 The bolts and nuts tightening the blade and flange are found broken and gets loosen frequently. Therefore, it should be looked into for corrective action.
- 10.11 No ingress of mud and/or water was found in primary and secondary reduction boxes after 15.38 h of Wet land operations and the sealing provided on different subassemblies were found effective.



**10.12 Technical literature:**

No technical literature was submitted with the implement during the period of testing. Hence, it is recommended to provide Owner's manual/Operator's manual and Parts catalog with the implement to refer by the operator and field personnel, covered with English, 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 -

Sh. Vithato Keyho & Sh. Rahul Prajapati

**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	We shall review the same and ensure it will conform to IS: 4931-1995 in future supplies.
11.3	10.3	For further production we shall take appropriate action to improve the same as per IS: 4468-1997 in future.
11.4	10.4	Review the same ensure to comply the requirement of blade as per IS: 6690-2002 in future.
11.5	10.10	We are already working on the same taking appropriate action to improve the same in future.
11.6	10.12	Same is in process & We shall ensure to provide the same for further supplies both technical literature.