



**NEW SWAN, NSML DP3, THREE BOTTOM DISC PLOUGH
(Tractor Mounted)**



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)

BISWANATH CHARIALI :: BISWANATH :: ASSAM, PIN - 784 176

Ph. No. 03715-222094

Website: <http://nerfmtti.nic.in>

Fax No: 03715-230358

E-Mail: fmti-ner@nic.in

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 components.
- c) Chemical analysis of critical components.
- d) Wear analysis of critical components.

1.2 Field Test:

- a) Rate of work
- b) Quality of work
- c) Power requirement
- d) Labour requirement
- e) Ease of operation and adjustments
- f) 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 Disc plough

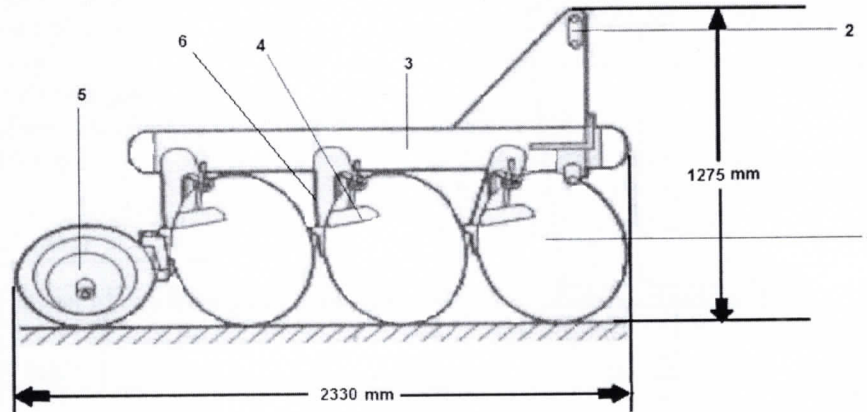
a)	IS: 10233 - 1982 (Reaffirmed in Mar., 2009)	:	Specification for Tractor Operated Disc Ploughs.
b)	IS: 4366 (Part 1 & 2): 1985 (Reaffirmed Feb., 2011)	:	Specification for Agricultural Tillage Discs: Part 1 Concave Type & Part 2 Flat Type.
c)	IS: 6288 - 1971 (Reaffirmed Mar., 2009)	:	Test Code for Mould Board Plough
d)	IS: 4468 (Part-1) - 1997 (Reaffirmed in 2012)	:	Agricultural Wheeled Tractors- Rear Mounted Three Point Linkage.

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	:	DISC PLOUGH 3 BOTTOM
Make	:	NEW SWAN
Model	:	NSML DP3
Type	:	Tractor Mounted
Serial Number of machine	:	00104
Year of manufacture	:	2016

No. of plough bottom	: 03
Size of plough (mm)	: 3 x 321 at slot one (from top).
Country of origin	: Not Provided
Power Source as recommended	: Not Provided
Power source used during the test	: NH 7500 (Refer Annexure-II)

4.2 Constructional Details (Refer Fig.1):



KEYWORDS:

1.	Disc	4.	Scraper
2.	Hitch pyramid	5.	Furrow wheel
3.	Main frame	6.	Standard

Fig.1: SCHEMATIC VIEW OF NEW SWAN NSML DP 3

4.2.1 Main Frame:

Constructional Details: It consist of MS hollow pipe having a dimension 1930 (curved) x 174.3 Φ mm covered at both end fabricated to MS channel of size 460x65x11.2x7.9 mm at the front side, supported with two MS plate each of same size having a dimension 152x125x11.2 mm.

Material : MS hollow pipe, MS channel

4.2.2 Cross Shaft:

Material : Mild Steel
 Shape : Hexagonal
 Dimension (mm) : 745 x 57.5 (max.)
 Method of fitting : The cross shaft is supported to the MS channel by means of clamp and bolted with two bolts. One bolt is further bolted to it passing through the cross shaft.

4.2.3 Standard (Refer Fig.2):

Numbers : Three
 Materials : MS hollow pipe, MS flat

Dimensions (mm):

- Height	: 401
- Top width	: 142.3
- Bottom width	: 187

10. DEFECTS, BREAKDOWNS AND REPAIRS

No breakdown was occurred during 29.47 h of field test.

11. SUMMARY OF OBSERVATIONS, COMMENTS AND RECOMMENDATIONS

11.1 Performance of disc plough:

11.1.1 Rate of work:

- a) The area cover was recorded as 0.223 to 0.287 ha/h at the speed of operation from 3.44 to 3.85 km/h.
- b) The time required to cover one hectare area was recorded as 3.49 to 4.49 h.

11.1.2 Quality of work:

- a) The depth of cut was recorded as 18 to 24 cm.
- b) Average working width was observed as 86 to 95 cm.
- c) Field efficiency was observed as 70.5 to 87.8%.

11.1.3 Power requirement:

The draft of implement was recorded from 819 to 1001 kgf and power requirement was calculated as 8.16 to 10.50 kW.

11.2 Labour requirement:

One skilled operator was needed to operate the tractor with the implement.

11.3 The dimension of the disc does not conform to IS 4366-1985. Hence, it is recommended to look into for corrective action.

11.4 The disc angle of disc does not conform to IS 10233-1982. Hence, it is recommended to look into for corrective action for standardization.

11.5 The dimension of hitch point of the implement does not conform to IS: 4468-1997 (Part-1). This should be looked into for corrective action for standardization.

11.6 The hardness of the disc and furrow wheel does not conform to IS 4366-1985 (Part I&II). This should be looked into for corrective action for standardization.

11.7 The chemical composition of the Disc and Furrow wheel does not conform to IS: 9442:1980. This should be looked into for corrective action for standardization.

11.7 Wear Assessment:


The hourly rate of wear of the disc and furrow wheel on mass and dimensional basis was recorded as 0.05 to 0.22 and 0.01 to 0.32 % respectively.

11.8 Labelling plate:

Manufacturer's name, address, 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 on the labelling plate.

11.9 Technical literature:

No technical literature was submitted along with the implement nor 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

12. APPLICANT'S COMMENTS

Para no.	Our reference	Applicant's Comments
12.1	11.3	For further production we shall take appropriate action to improve the same as per IS: 4366-1985 in future.
12.2	11.4	For further production we shall take appropriate action to improve the same as per IS: 10233-1982 in future.
12.3	11.5	We shall review the same & ensure it will confirm to IS 4468:1997 (PART-1) in future supplies.
12.4	11.6	Review the same ensure to comply the requirement of blade as per IS: 4366-1985 (PART 1&2) in future.
12.5	11.7	We shall review the same & ensure it will confirm to IS 9442:1980 in future supplies.
12.6	11.9	Same is in process & We shall ensure to provide the same for further supplies both technical literature as per IS 8132:1999 for further supplies.