

व्यावसायिक परीक्षण रिपोर्ट  
COMMERCIAL TEST REPORT

संख्या / No. : Imp. 89/132  
माह / Month : May, 2011



**NIPHA NP 1500 ROTAVATOR (TRACTOR-MOUNTED)**



सत्यमेव जयते

भारत सरकार  
GOVT OF INDIA

कृषि मन्त्रालय

MINISTRY OF AGRICULTURE

कृषि एवं सहकारिता विभाग

DEPARTMENT OF AGRICULTURE AND COOPERATION

उत्तर पूर्वी क्षेत्र कृषि यंत्र प्रशिक्षण एवं परीक्षण संस्थान  
NORTH EASTERN REGION FARM MACHINERY TRAINING & TESTING INSTITUTE

विश्वनाथ चारिआलि, जिला-शोणितपुर (असम)  
BISWANATH CHARIALI :: SONITPUR :: ASSAM, PIN - 784 176

Website: [www.dacnet.nic.in/NERFMTTI](http://www.dacnet.nic.in/NERFMTTI)

Ph. 03715-222094

Fax No: 03715-222374

E-Mail: [fmmti-nor@nic.in](mailto:fmmti-nor@nic.in)

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### 1. SCOPE OF TEST

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

#### **1.1 LABORATORY TEST:**

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

#### **1.2 FIELD TEST:**

- Rate of work
- Quality of work
- Ease of operation, maintenance and adjustments
- Labour requirement
- Defects, Breakdowns & Repairs

### 2. METHOD OF SELECTION

The implement was directly submitted by the applicant for test at this Institute, hence method of selection is not known.

### 3. TEST PROCEDURES

- |      |                        |   |
|------|------------------------|---|
| i)   | IS: 6690-2002          | : Specifications for blades for rotavator for power tillers         |
| ii)  | IS: 4931-1995          | : Agricultural tractors-Rear Mounted PTO                            |
| iii) | IS: 4468 – 1997 (Pt-I) | : Agricultural wheeled Tractors - Rear Mounted three point linkage. |
| iv)  | IS: 11531-2001         | : Test code for puddler   |

### 4. SPECIFICATIONS

#### **4.1 General:**

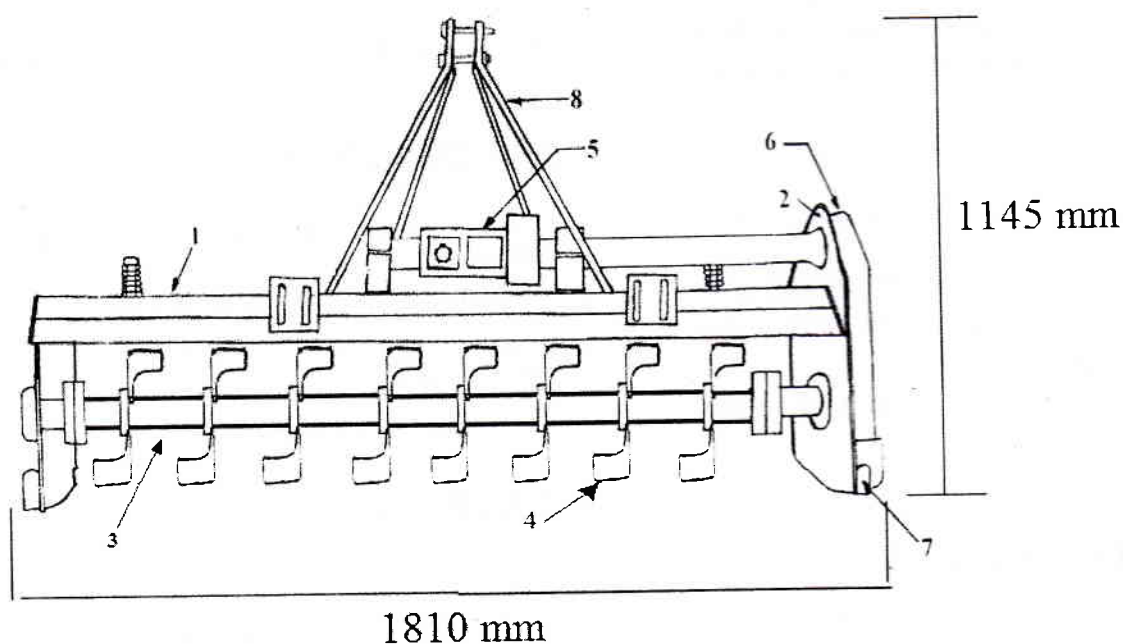
- |                 |   |  |
|-----------------|---|--|
| Manufacturer    | : | M/s NIPHA Exports Pvt. Ltd.<br>48 Ganga Jamuna,<br>28/1 Shakespeare Sarani,<br>Kolkata (WB) – 700017 |
| Name of machine | : | Rotavator  |

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Type : Tractor-Mounted (Chain drive)  
 Make : NIPHA  
 Model : NP 1500  
 Serial number : 530  
 Year of manufacture : 2010  
 Type of blade : Hatchet (L-Shaped)  
 Working width of implement (mm) : 1520  
 Power source as recommended : 40 HP  
 Prime Mover Used during test : New Holland 5500

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

- |               |                                |
|---------------|--------------------------------|
| 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: NIPHA NP 1500 Rotavator**

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### **9. EASE OF OPERATION & ADJUSTMENTS**

- 9.1 The propeller shaft has two telescopic sections, to shorten or lengthen the drive shaft.
- 9.2 Depth adjustment can be made by raising or lowering the skids.
- 9.3 The propeller shaft is provided with shear bolt for safety during overload.
- 9.4 Implement does not have provisions to vary rotor shaft speed to cater to different soil and moisture conditions.

### **10. DEFECTS, BREAKDOWNS AND REPAIRS**

- 10.1 Oil leakage was observed from the oil filling cap of secondary reduction gear box.
- 10.2 3 number of rotor blades were broken after 11.20 hours of dry land field testing.
- 10.3 Excessive heating of RHS rotor hub was observed after completion of 13.5 hours of operation.
- 10.4 In spite of all the adjustments made, tendency of side-draft (right-side) was observed during the field testing of rotavator.




### **11. COMMENTS AND RECOMMENDATIONS**

- 11.1 The specifications of implement hitch do not conform to the IS: 4468 (Pt-I)-1997. Hence, it is recommended that implement should be provided with the hitch conforming to relevant Indian standards.
- 11.2 Oil leakage was observed from the oil filling cap of secondary reduction gear box, and hence should be looked into for corrective action.
- 11.3 The grade and change period of oil used in gear boxes of rotavator, should be given in the printed literature and suitable sticker should also be pasted on rotavator.
- 11.4 During operation, it was observed that the implement was taking side-draft towards right. Suitable modification should be made for corrective action.
- 11.5 Marking is not provided on the dipstick of the primary reduction gear box for checking the level of oil there into. This needs to be looked into for appropriate action.

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- 1.6 Hardness and chemical composition of rotor blades do not conform to relevant Indian Standards. This needs to be looked into for corrective action.
- 1.7 It is recommended that arrangement for changing the rotor speed to suit various soils and moisture condition should be provided.
- 1.8 Size of implement and power requirement should also be indicated on the labeling plate.
- 1.9 **Adequacy of literature:** No literature was provided by the applicant with the rotavator. Hence, it is recommended that operator's manual, service manual, and spare parts catalogue should be provided in English, Hindi and other regional languages as per IS: 8132-2004.

**TESTING AUTHORITY**

<p style="text-align: center;"><b>H. L. YADAV</b> AGRICULTURAL ENGINEER</p>	
<p style="text-align: center;"><b>P. K. PANDEY</b> SENIOR TEST ENGINEER</p>	
<p style="text-align: center;"><b>M.K. VISHWAKARMA</b> DIRECTOR</p>	



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## 12. APPLICANT'S COMMENTS

Para No.	Our Reference	Applicant's comments
12.1	11.1	Suitable improvements will be done to meet the specification of implement hitch in our regular production. We will confirm to IS 4468 – 1997 (Part 1)
12.2	10.1 & 11.2	We will take suitable steps to ensure this in regular production
12.3	11.3	We will provide appropriate stickers, marking in our regular production
12.4	10.4 & 11.4	We will ensure that location of the primary gear box is suitably modified to eliminate this problem in regular production
12.5	10.2 & 11.6	We will ensure that our blades conform to IS 6690 – 1981 and improve the quality of our blades in regular production
12.6	9.4 & 11.7	NIPHA will develop a multi speed rotavator to cater to the farmers who need to use the rotavator in different soil and moisture conditions. In the multi speed model, one can vary the speed of the rotor shaft.
12.7	11.8	We will provide appropriate stickers, marking in our regular production
12.8	11.9	We will provide literature, manuals (operator and service) in our regular production along with literature in various vernacular and English and Hindi Language along with our regular production