व्यावसायिक परीक्षण रिपोर्ट (प्रारंभिक) COMMERCIAL TEST REPORT (Initial)



संख्या/No.: Imp. 268/347 माह / Month: September, 2019

THIS TEST REPORT VALID UPTO 30/09/2026



SHAKTIMAN ROTARY TILLER, Model: SRT-5(150)/SS CD SC CENTRALLY MOUNTED, CHAIN DRIVE, SINGLE SPEED



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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 चारिआलि, जिला-विश्वनाथ (असम)

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SCOPE OF TEST

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

1.

1.1 Laboratory Test:

- Checking of specifications a)
- b) Hardness of soil engaging parts (Blades of Rotary tiller (Rotavatur))
- c) Chemical analysis of critical components (Blades of Rotary tiller (Rotavator))
- d) Wear analysis of critical components (Blades of Rotary tiller (Rotavator))

Field Test : 1.2

- Rate of work a)
- b) Quality of work
- Ease of operation, maintenance and adjustments c)
- d) Labour requirement
- Defects, Breakdowns & Repairs. e)

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

IS: 17045 : 2018 i)

Rotary Tiller (Rotavator) - Tractor Driven - Test Procedure, and Recommendation on Selected Performance Characteristics

"SHAKTIMAN" Survey No-108/1 Plot No-B.NH-27, NrBharudi Toll Plaza, Bhunava (Village),

Dist:Rajkot,

4. SPECIFICATIONS

4.1 General: Name and address of the manufacturer : M/s TIRTH AGRO TECHNOLOGY PVT. LTD.

Taluka: Gondal, INDIA-360 311 Name & Address of Applicant M/s TIRTH AGRO TECHNOLOGY PVT. LTD.

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"SHAKTIMAN" Survey No-108/1 Plot No-B.NH-27, NrBharudi Toll Plaza, Bhunava (Village), Taluka: Gondal, Dist:Rajkot, State:Gujarat INDIA-360 311 Name of machine : Rotary Tiller (Rotavator) Type Centrally Mounted, Chain Drive, Single Speed 1 Make M/s TIRTH AGRO TECHNOLOGY PVT. LTD. Model SRT-5(150)/SS CD SC 2 Year of manufacture 2018 ٠ Serial Number AFBI101109834 1 Recommended power source, hp : Above 45 Type of blade Hatchet(L-Shaped) . Size (cm) {Rotor Dia × Working width} . 48Φ × 148

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1	2	3	4	5	6	7
iv.	Size, (m) {Dia of Rotor X Width of Cut}	Evaluative	Should be provided rotary tiller (Rotavator)		0.48 x 1.48	Yes
٧.	Country of origin	**	11.77		India	Yes
vi.	Year of manufacture		N ar o	(2018	Yes
vii.	Chassis, Serial Number				AFBI101109834	Yes
viii	Recommended PTO speed of Prime mover(rpm)			8 -3	540	Yes
ix.	Maximum PTO power requirement, kW	: 22			34-45/45-60	Yes
8.	Category of breakdowns/ defects					
	Category of breakdowns	Category Evaluative/ Non Evaluative	Requirements		As Observed	Whether meets the requiremen ts (Yes/ No)
Ì.	Critical breakdowns	Evaluative	No critical breakdown		None	Yes
íi,	Major breakdown	Evaluative	Not more than one and neither of them should be repetitive in nature.		None	Yes
iii.	Minor breakdowns	Evaluative	Not more than three and frequency of it's should not be more than two.		None	Yes
iv.	Total breakdowns	Evaluative	In no case, the total no of breakdown should exceed four, I e (1 major + 3 minor) or 4 minor breakdown		None	Yes

11. SUMMARY OF OBSERVATIONS, COMMENTS AND RECOMMENDATIONS

- **11.1** The dimension of three point linkage (hitch pyramid) of the rotary tiller (Rotavator) does not conform to IS: 4468-1997. This should be looked into for corrective action for standardization.
- **11.2** Dimensions of PIC and PIC yoke bore of implement does not conform to IS: 4931-1995 and therefore, it should be looked into for corrective action.
- **11.3** Chemical composition of rotor blades does not conform to IS: 6690-2002. The percentage of carbon and Manganese content in composition of rotary tiller blade material was recorded as 0.256 and 1.275 respectively. The carbon contentwas on lower side and Manganese content was on higher side when compared with the relevant Indian Standard. Moreover, the hardness of edge portion of rotor blades also does not conform to relevant Indian Standard. It is therefore, recommended that the material of rotary tiller blade should be improved and provided as per requirement of Indian Standard.
- **11.4** The rate of work was recorded as 0.4032 to 0.4325 ha/h and the speed of operation vary from 3.06 to 3.21 kmph.

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- **11.5** In dry land operation average depth of cut was recorded 8.67 cm which does not meet the requirement of Indian Standard and field efficiency was recorded 90.73 % which is as per requirement of Indian standards in sandy loam soil, an average depth of puddle and puddling index was recorded as 22.5 cm and 78.45% respectively, which is as per requirement of Indian standards.
- **11.6** The hourly rate of wear of blade on mass basis in Wet land& Dry land operations was recorded as 0.08 to 0.13.% and 0.32 to 0.48 % respectively.
- **11.7** The hourly rate of wear of blade on dimensional basis in Wet land & Dry land operations was recorded as 0.01 to 0.15% and as 0.09 to 0.69 % respectively.
- **11.8** No ingress of mud and/or water was found in primary and secondary reduction boxes after 36.66 hr of field operations and the sealing provided on different subassemblies were found effective.

11.9 Technical literature: An Operator cum Service Manual & Parts Catalogue was provided along with the machine during the course of testing.

TESTING AUTHORITY

S. G. PAWAR AGRICULTURAL ENGINEER	& pasa
J. P. MANDAL SENIOR AGRICULTURAL ENGINEER	grondel.
K.K. NAGLE DIRECTOR	Aleeys

Test conducted & draft test report compiled by - Khagendra Bora, STA

12. APPLICANT'S COMMENTS

* Para No.	Our Reference	Applicant Comments
12.1	11.1	Dimension of three-point linkage (Hitch Pyramid) will be modified to confirm IS 4468-1997.
12.2	11.2	The dimension of PIC & PIC Yoke of implements will be modified to confirm IS 4931-1995.
12.3	11.3	Shaktiman Rotary Tiller blade are made of "BORON" steel which is better than Carbon & Silicon Manganese steel Referred in IS 6690- 2002. Chemical compositions and Hardness of Rotavator Blade are maintaining as per "BORON" steel.
12.4	11.5	We will take necessary action for increase depth of operation.

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