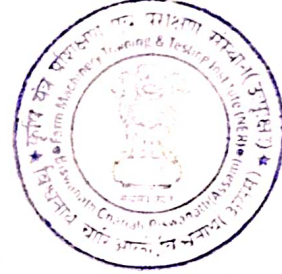




THIS TEST REPORT IS VALID UPTO 31.10.2027



INDOXEN 105 A R AGRO EQUIPMENTS
POWER WEEDER



सत्यमेव जयते

भारत सरकार
GOVT OF INDIA

कृषि एवं किसान कल्याण मंत्रालय

MINISTRY OF AGRICULTURE & FARMERS WELFARE

कृषि एवं किसान कल्याण विभाग

DEPARTMENT OF AGRICULTURE AND 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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[AN ISO 9001:2015 CERTIFIED INSTITUTION]

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1. SCOPE OF TEST

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

- 1.1 Specification and other data furnished by the applicant.
- 1.2 Engine performance test
- 1.3 Vibration Measurement
- 1.4 Noise measurement
- 1.5 Air cleaner oil pull over test
- 1.6 Hardness & chemical composition
- 1.7 Field performance
- 1.8 Wear analysis of rotor blades
- 1.9 Ease of operation and adjustments
- 1.10 Defects, breakdowns and repairs

2. METHOD OF SELECTION

As per Govt. of India, OM No. 13-1/2021-M&T (I&P), dated 03.02.2022, the selection of sample for test was exempted. Hence, the machine was directly submitted by the applicant at this Institute for test.

3. TEST CODE AND PROCEDURE

There is no Indian standard/test code available for testing of self-propelled power weeder as such. The guidelines, however, have been taken from the following:

IS 9935 : 2002 (Reaffirmed 2012)	: Power Tiller - Test code
IS 9980 : 1999 (Reaffirmed 2004)	: Guidelines for field performance and haulage tests of power tillers
IS: 7347-1974 (Reaffirmed 2006)	: Specification for Performance of Small Size Spark Ignition Engines.
IS 1976 : 1976 (Reaffirmed 2009)	: Specification for Rotary paddy weeder, manually operated
IS 6690 : 1981 (Reaffirmed 2012)	: Specification for Blades for Rotavator for Power Tillers

4. SPECIFICATION

4.1 General:	
Make	: A R AGRO EQUIPMENTS
Model	: INDOXEN 105
Name and address of manufacturer	: Chongqing Guanteng Machinery Co. Ltd. High-Tech Industrial Zone, Done, Dazu District, Chongqing, China

Name and address of applicant : A R AGRO EQUIPMENTS 45/1149, Near
Cheruvannur High School, Kolathara, Po,
Kozhikode, Kerala, 673655

Name of machine : Power weeder

Type of machine : Self propelled, Walk behind

Working size of machine (mm) : 1030

Year of manufacture : 2021

Serial no. of machine : Not Specified

4.2 Details of prime mover:

Make : Not specified

Model : 170 FB

Type : 4 stroke, Single cylinder, Air cooled

Year of manufacture : Not Specified

Serial Number : 70240211210112A

Country of origin : CHINA

Recommended high idle speed (rpm) : 3800 ± 100

Recommended low idle speed (rpm) : 1400 ± 200

Recommended rated speed (rpm) : 3600

Rated power observed (kW) : 3.31

11.2 Chemical composition of rotor blades :

Constituents	As per IS 6690:1981 (Reaffirmed 2012)		Composition as observed (% by weight)	Remarks
	Carbon Steel (%)	Silicon Manganese Steel (%)		
Carbon (C)	0.70 -0.85	0.50-0.60	0.592	Conforms
Silicon (Si)	0.10 -0.40	1.50-2.00	0.624	Does not conform
Manganese (Mn)	0.50 -1.0	0.50-1.00	0.776	Conforms
Sulphur (S)	0.05(max)	0.05(max)	0.008	Conforms
Phosphorous (P)	0.05(max)	0.05(max)	0.019	Conforms

12. FIELD PERFORMANCE TEST

The field tests were conducted for 25.08 hours of field operation for testing the said Power Weeder. The field tests were conducted at rated rpm of 3600. The detailed test results are represented in the Annexure and summarized in the ensuing table:

Sl.No.	Parameters	Observations
1	Type of soil	Light
2	Soil moisture (%)	8.4 to 10.2
3	Bulk density of soil (g/cc)	1.53 to 1.66
4	Forward Speed of operation (kmph)	0.7 to 1.53
5	Depth of cut (cm)	5.4 to 6.67
6	Width of cut (m)	1.02 to 1.07
7	Area covered (ha/h)	0.056 to 0.127
8	Time required for one ha (h)	7.87 to 17.86
9	Field efficiency (%)	73.8 to 85.71
10	Weeding efficiency (%)	66.95 to 79.89
11	Fuel consumption	
	l/h	1.17 to 1.26
	l/ha	9.92 to 20.9

Rate of work:

- Rate of work was recorded as 0.056 to 0.127 ha/h and the forward speed of operation varied from 0.7 to 1.53 kmph.
- Time required to cover one hectare was recorded as 7.87 to 17.86 h.

Quality of work:

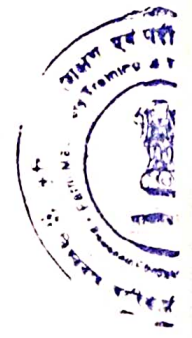
- Depth of cut was recorded as 5.4 to 6.67cm.
- Av. working width was observed as 1.02 to 1.07 m.
- Field efficiency was found as 73.8 to 85.71 %.
- Weeding efficiency was found as 66.95 to 79.89 %

15.1.7 Valve guide clearance

Valve guide diameter (mm)		Valve stem diameter (mm)		Valve guide clearance (mm)		Max. Permissible wear limit (mm)	
Inlet	Exhaust	Inlet	Exhaust	Inlet	Exhaust	Inlet	Exhaust
5.43	5.43	5.41	5.41	0.02	0.02	Not specified	Not specified

Valve, guide and timing gear:-

Any marked sign of overheating of valves	: None
Pitting of seat/faces of valves	: None
Any visual damage of teeth of timing gears	: None
Condition of ignition coil & magneto	: Normal



- 15.2 Clutch:** No noticeable defects observed
- 15.3 Transmission gears:** No noticeable defects observed
- 15.4 Rotary drive unit:**
The rotary drive unit was dismantled and all the components were found in normal condition.

16. COMMENTS & RECOMMENDATIONS

- 16.1** It was observed that rotor shaft extension welding broken while field performance test. On request of the applicant, rotor shaft extension welded during field performance test after 3.71 hours of operation. This shall be looked into for quality improvement.
- 16.2** The average rated power in rating test of engine was observed as 3.31 kW against declared value of 4.0 kW by the manufacturer. This should be looked into for corrective action.
- 16.3** The specific fuel consumption (SFC) in rating test of engine was observed as 375.6 g/kWh against declared value of 320 g/kWh by the manufacturer which exceeded by more than 5 percent of that declared by the manufacturer and hence does not fulfill the requirement of IS 7347-1974 (Amended 2011). This should be looked into for corrective action.
- 16.4** It was observed that during engine performance test, at full Load, engine rpm was not stable at rated speed. This shall be looked into for corrective action.
- 16.5** Machine maneuverability while taking turns during field operation was not comfortable. It shall be looked into for ease of operation for the operator.

- 16.6 Choking of weeds on rotor axle was observed repeatedly during field performance test. This shall be looked into for improvement.
- 16.7 The engine was not marked with Manufacturer name or trade-mark, Rated power, Rated speed and type of fuel used which does not fulfill the requirement of IS 7347-1974 (Amended 2011). This may be looked into.
- 16.8 The hardness and chemical composition of rotary blades does not conform to the requirement of IS 6690:1981 (Reaffirmed 2012). This may be looked into for corrective action.
- 16.9 Noise at operator's ear level was observed on higher side against warning limit of 85 dB (A) as specified by International Labour Organization (ILO) for continuous exposure of 8 hours per day. **This calls for reduction in noise level to improve the operator's comfort & safety.**
- 16.10 The amplitude of mechanical vibration marked as (*) is on drastically higher side and is directly concerned with operator's health, safety and comfort. Besides, it is also adversely affect the useful life of machine components. In view of above, this deserves to be given top priority for corrective action.
- 16.11 Engine model as mentioned on the labeling plate of the machine was not matching with the observed model number on the engine. This shall be looked into for corrective action.
- 16.12 While in Inspection, it was noticed that the machine model no was wrongly mentioned on the labeling plate of the machine. On request of the applicant, labeling plate was replaced with corrected one. This shall be looked into for corrective action in future production.
- 16.13 Power (HP) has been mentioned as 5.3 on the labeling plate of the machine. However, during engine rating tests the power (HP) was observed 4.50. This may be looked into for corrective action.
- 16.14 Labeling plate should be provided on the machine as per Indian Standard with all relevant information.

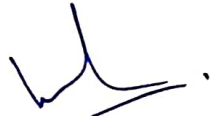
16.15 Adequacy of Literature

The following literature in English language was provided for reference during testing:

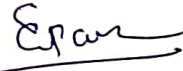
- Operator's/ Service manual
- Parts catalogue

It is recommended to bring out the manual in Hindi and other vernacular languages as per IS: 8132-1999.

TESTING AUTHORITY



(M.R. PATIL)
AGRICULTURAL ENGINEER



(S.G. PAWAR)
AGRICULTURAL ENGINEER



(Dr. P.P. RAO)
DIRECTOR

Draft test report compiled by - **Shri Khagendra Bora**
Sr. Technical Assistant

