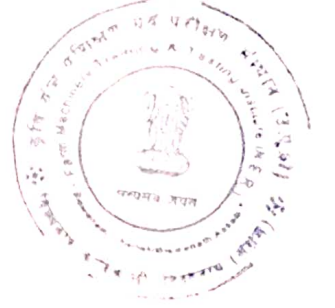
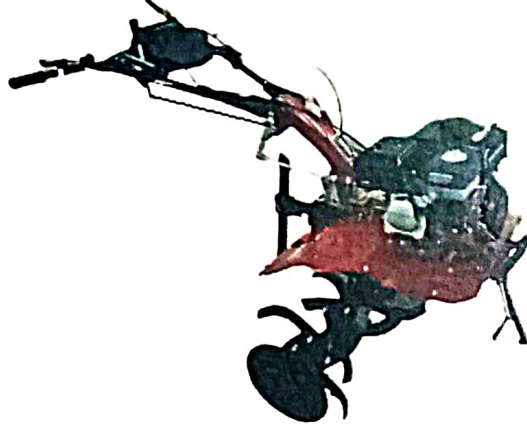


व्यावसायिक परीक्षण रिपोर्ट (प्रारंभिक)
COMMERCIAL TEST REPORT (Initial)



संख्या/No.: Machine 84/455
माह / Month: February 2023

THIS TEST REPORT IS VALID UPTO 29.02.2028



WM 990 WEIMA MAIJO
POWER WEEDER



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- शोणितपुर (असम)

BISWANATH CHARIALI: SONITPUR: ASSAM, PIN - 784 176

[AN ISO 9001:2015 CERTIFIED INSTITUTION]

Ph. No. 03715-222094

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

Fax No: 03715-230358

E-Mail: fnti-ner@nic.in

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
- 1.3 Vibration Measurement
- 1.4 Noise measurement
- 1.5 Air cleaner oil pull over
- 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. SPECIFICATIONS

4.1 General:	
Make	: WEIMA MAIJO
Model	: WM 990
Name and address of manufacturer	: Weima Agricultural Machinery Co. Ltd. Area B, Luohuang Industry Zone, Jianjgin District. Chongqing, CHINA

Machine 84/455	WM 990 WEIMA MAIJO POWER WEEDER	COMMERCIAL (INITIAL)
----------------	------------------------------------	-------------------------

Name and address of applicant : **George Maijo Industries Pvt. Ltd. 2B, Apex Plaza, 5, Nungambakkam High Road, Chennai, Tamil Nadu, 600034**

Name of machine : Power weeder

Type of machine : Self propelled, Walk behind

Working size of machine (mm) : 870

Year of manufacture : 2021

Serial no. of machine : **Not Specified**

4.2 Details of prime mover:

Make : WEIMA

Model : 170F 224P13

Type : 4 stroke, Single cylinder, Air cooled

Year of manufacture : 2021

Serial Number : WM2205218

Country of origin : **CHINA**

Recommended high idle speed (rpm) : 3840±100

Recommended low idle speed (rpm) : 1400

Recommended rated speed (rpm) : 3600

Rated power observed (kW) : **3.90**



Machine 84/455	WM 990 WEIMA MAIJO POWER WEEDER	COMMERCIAL (INITIAL)
----------------	------------------------------------	-------------------------

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	0.537	Conforms
Silicon (Si)	0.10 -0.40	1.50-2.00	0.584	Does not conform
Manganese (Mn)	0.50 -1.0	0.50-1.00	0.788	Conforms
Sulphur (S)	0.05(max)	0.05(max)	0.003	Conforms
Phosphorous (P)	0.05(max)	0.05(max)	0.008	Conforms

12. FIELD PERFORMANCE TEST

The field tests were conducted for 26.64 hours of field operation for testing the said Power Weeder. The field tests were conducted at rated speed of 3600 rpm. 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 (%)	: 7.9 to 9.1
3	Bulk density of soil (g/cc)	: 1.59 to 1.70
4	Forward Speed of operation (kmph)	: 1.07 to 1.10
5	Depth of cut (cm)	: 4.70 to 5.70
6	Width of cut (m)	: 0.934 to 0.971
7	Area covered (ha/h)	: 0.082 to 0.089
8	Time required for one ha (h)	: 11.24 to 12.19
9	Field efficiency (%)	: 77.35 to 87.25
10	Weeding efficiency (%)	: 82.90 to 89.32
11	Fuel consumption	
		l/h : 1.01 to 1.15
		l/ha : 11.75 to 13.77

12.1 Rate of work:

- Rate of work was recorded as 0.082 to 0.089 ha/h and the forward speed of operation varied from 1.07 to 1.10 kmph.
- Time required to cover one hectare was recorded as 11.24 to 12.19 h.

12.2 Quality of work:

- Depth of cut was recorded as 4.70 to 5.70 cm.
- Working width was observed as 0.934 to 0.971 m.
- Field efficiency was found as 77.35 to 87.25 %.
- Weeding efficiency was found as 82.90 to 89.32 %.



Machine 84/455	WM 990 WEIMA MAIJO POWER WEEDER	COMMERCIAL (INITIAL)
----------------	------------------------------------	-------------------------

- 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 The average rated power in rating test of engine was observed as 3.90 kW against declared value of 5.0 kW by the manufacturer. This should be looked into for corrective action.
- 16.2 The specific fuel consumption (SFC) in rating test of engine was observed as 415 g/kWh against declared value of 395 g/kWh.
- 16.3 It was observed that during engine performance test, at full Load, engine rpm was not stable at rated speed and it was fluctuated from 3580 to 3641 rpm. This shall be looked into for corrective action.
- 16.4 During air cleaner oil pull over test, percentage of oil pull over was observed on higher side. It should be looked into for corrective action.
- 16.5 There was no serial number mentioned on the machine. Advised to take necessary corrective action in this regarding.
- 16.6 Machine maneuverability while taking turns at head land during field operation was not comfortable. It shall be looked into for ease of operation for the operator.
- 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.

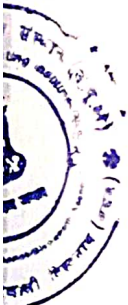
- 16.11 Working depth has been mentioned as 150-300 mm on labeling plate of the machine. However, during field test it was observed as 47 to 57 mm only. This will misguide the farmers & other end users and shall be looked into for corrective action.
- 16.12 Power has been mentioned as 7.0 hp on the labeling plate of the machine. However, during engine rating test the power was observed as 5.30 hp only. This will misguide the farmers & other end users and shall be looked into for corrective action.
- 16.13 Model of the engine as mentioned on the labeling plate of the machine was different than the observed model number. This shall 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:

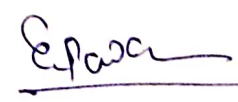
- Operator's/ Service manual
- Parts catalogue

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