

THIS TEST REPORT IS VALID UPTO 28.02.2027



AGRINEER POWER WEEDER
Model: AN186F



सत्यमेव जयते

भारत सरकार

GOVT OF INDIA

कृषि एवं किसान कल्याण मंत्रालय

MINISTRY OF AGRICULTURE & FARMERS WELFARE

कृषि, सहकारिता एवं किसान कल्याण विभाग

DEPARTMENT OF AGRICULTURE, COOPERATION & FARMERS WELFARE

उत्तर पूर्व क्षेत्र कृषि यंत्र परीक्षण एवं प्रशिक्षण संस्थान

NORTH EASTERN REGION FARM MACHINERY TRAINING & TESTING INSTITUTE

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Machine 55/420	AGRINEER POWER WEEDER Model: AN186F	COMMERCIAL (ICT)
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1. SCOPE OF TEST

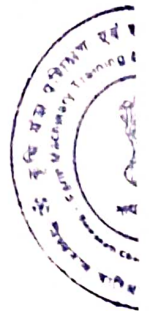
The scope of test was limited to check and assess the following:

- 1.1 Specification and other data furnished by the applicant
- 1.2 Engine performance test
- 1.3 Amplitude of mechanical vibration
- 1.4 Noise measurement
- 1.5 Hardness & chemical composition of rotor blades
- 1.6 Field performance
- 1.7 Wear analysis of rotor blades
- 1.8 Ease of operation and adjustments
- 1.9 Defects, breakdowns and repairs

2. METHOD OF SELECTION

The test sample was selected by the testing authority through random selection. The following test samples were presented by the applicant during the random selection at Applicant's site.

Serial No. of test sample	Remarks
20210720, 20210715, 20210827, 20210828, 20210823	Out of 5 samples Sl. no. 20210827 was randomly selected



3. TEST CODE/TEST 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 : Power Tiller - Test code
(Reaffirmed 2012)
- IS 12036:1995 : Agricultural tractors-test procedures-Power tests for power take-off
(Reaffirmed 2004)
- IS 9980 : 1999 : Guidelines for field performance and haulage tests of power tillers
(Reaffirmed 2004)
- IS 1976 : 1976 : Specification for Rotary paddy weeder, manually operated
(Reaffirmed 2009)
- IS 6690 : 1981 : Specification for Blades for Rotavator for Power Tillers
(Reaffirmed 2012)

4. SPECIFICATIONS

- 4.1 **General:**
- Make : AGRINEER
 - Model : AN186F
 - Name and address of manufacturer : Chongqing Haofa Machinery Manufacturing Co. Ltd., Chongqing, China

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Name and address of applicant : Agrineer Agro Machinery Pvt. Ltd.,
Ganesh Nagar, Near Forest Colony,
Satara- 415 003, Maharashtra

Name of machine : Power weeder

Type of machine : Self propelled, Walk behind

Working size of machine, (mm) : 1140

Year of manufacture : 2021

Serial no. of machine : 20210827

4.2 Details of prime mover:

Manufacturer : Chongqing Haofa Machinery Manufacturing Co. Ltd.,
Chongqing, China.

Make : Chongqing Haofa Machinery Manufacturing Co. Ltd.,
Chongqing, China.

Model : 186FA

Type : Single cylinder, four stroke, air cooled, vertical,
compression ignition engine.

Year of manufacture : 2021

Engine serial No. : 210313/126

Recommended high idle speed, rpm : 3200 ± 200
(apa)

Recommended low idle speed, rpm : 1460 ± 10
(apa)

Recommended rated speed, rpm : 3000
(apa)

Recommended rated speed for field
operation, rpm (apa) : 3000

Max. power observed, kW : 6.24 @ 2850 rpm

Country of origin : China

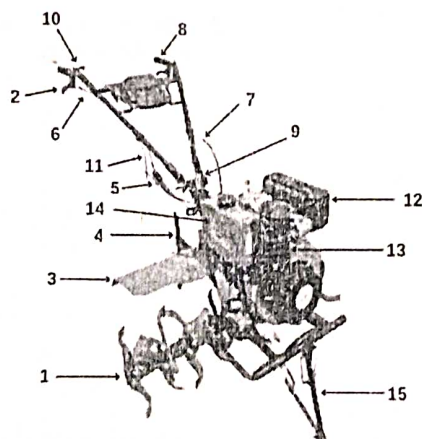
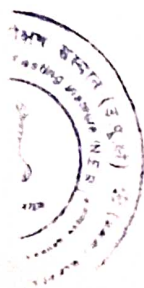


Fig.1 AGRINEER Power Weeder, AN186F

- | | |
|---|--------------------|
| 1. Rotor | 9. Handle bar |
| 2. Reverse gear engaging/ disengaging lever | 10. Throttle lever |
| 3. Rotary cover | 11. Throttle cable |
| 4. Depth adjustment bar | 12. Silencer |
| 5. Gear Shift lever | 13. Air cleaner |
| 6. Reverse cable | 14. Fuel tank |
| 7. Clutch cable | |
| 8. Handle grip | 15. Support/stand |

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10. AIR CLEANER OIL PULLOVER TEST

Not applicable

11. HARDNESS AND CHEMICAL COMPOSITION

11.1 Hardness of rotor blades :

The surface hardness of blade was recorded as under :

	As per IS 6690:1981 (Reaffirmed 2012)	As observed (HRC)	Remarks
At edge portion	56 ±3 HRC	38.9	Does not conform
At shank portion	37 to 45 HRC	40.0	Conforms

11.2 Chemical composition of rotor blades :

The material of rotary blade was got analyzed from Geological and Metallurgical Laboratories, Bangalore for chemical composition. The results of chemical analysis test results are as under:

Constituents	As per IS 6690:1981 (Reaffirmed 2012)		Composition as observed (% of weight)	Remarks
	Carbon Steel (%)	Silico Manganese Steel (%)		
Carbon (C)	0.70 -0.85	0.50-0.60	0.558	Conforms
Silicon (Si)	0.10 -0.40	1.50-2.00	0.265	Conforms
Manganese (Mn)	0.50 -1.0	0.50-1.00	0.683	Conforms
Sulphur (S)	0.05 (max)	0.05 (max)	0.012	Conforms
Phosphorous (P)	0.05 (max)	0.05 (max)	0.015	Conforms
Boron (B)	--	--	0.001	--

12. FIELD PERFORMANCE TEST

The field tests were conducted for 25.39 hours of field operation for testing the said Power Weeder. The field tests were conducted at rated rpm. The detailed test results are represented in the Annexure and summarized in the ensuing table:

Sl. No.	Parameters	Observations
1	Type of soil	Medium
2	Soil moisture (%)	12.42 to 15.34
3	Bulk density of soil (g/cc)	1.66 to 1.74
4	Speed of operation (kmph)	0.826 to 0.996
5	Depth of cut (cm)	7.02 to 7.96
6	Width of cut (m)	1.14 to 1.15

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7	Area covered (ha/h)	:	0.083 to 0.093
8	Time required for one ha (h)	:	10.75 to 12.03
9	Field efficiency (%)	:	82.30 to 91.48
10	Weeding efficiency (%)	:	80.87 to 88.00
11	Fuel consumption	- l/h	0.82 to 0.92
		- l/ha	9.77 to 10.34

12.1 Rate of work

- Av. rate of work was recorded as 0.083 to 0.093 ha/h and the speed of operation varied from 0.826 to 0.996 kmph.
- Av. time required to cover one hectare was recorded as 10.75 to 12.03 hours.

12.2 Quality of work

- Depth of cut was recorded as 7.02 to 7.96 cm.
- Working width was observed as 1.14 to 1.15 m.
- Field efficiency was found as 82.30 to 91.48 %.
- Weeding efficiency was found as 80.87 to 88.00 %.

12.3 Adequacy of power of prime mover

The power of prime mover was found adequate.

12.4 Wear Analysis of rotor blades

Sl. No.	Initial mass(g)	Final mass (g)	Loss of mass (g)	Percentage of wear	
				After 25.39 h	Per hour
1	333.9	326.3	7.6	2.28	0.09
2	327.7	320.6	7.1	2.17	0.09
3	318.0	311.1	6.9	2.17	0.09
4	335.7	328.1	7.6	2.26	0.09
5	319.8	312.9	6.9	2.16	0.08
6	327.3	319.5	7.8	2.38	0.09
7	326.8	319.6	7.2	2.20	0.09
8	328.1	320.8	7.3	2.22	0.09

13. EASE OF OPERATION & ADJUSTMENTS

Machine maneuverability at turns during field operation was not comfortable. No other noticeable difficulty was observed during the operation & adjustment of the machine.

14. DEFECTS, BREAKDOWNS AND REPAIRS

No defects & breakdowns were observed during the entire test.



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16. COMMENTS & RECOMMENDATIONS

- 16.1 Specific fuel consumption of engine corresponding to maximum power as observed during test was 266.2 g/kWh against the declared value of 220 g/kWh. This should be looked into for corrective action.
- 16.2 The maximum power and rated power of engine were observed as 6.2 kW and 3.9 kW, respectively against declared value of 5.9 kW and 5.7 kW, respectively. This shall be looked into for corrective action.
- 16.3 The maximum torque was observed as 22.60 N-m against the declared value of 20.54 N-m. This shall be looked into for corrective action.
- 16.4 The back-up torque was observed as 8.13 N-m against the declared value of 10.02 N-m. This shall be looked into for corrective action.
- 16.5 The engine lubricating oil consumption was observed as 0.85 g/kWh against the declared value of 0.61 g/kWh. This shall be looked into for corrective action.
- 16.6 During varying speed test of engine at high ambient condition, after attaining torque at 19.43 N-m, with further loading sudden drop of engine speed and thick black smoke was noticed.
- 16.7 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 the machine components. In view of the above, it should be looked into for corrective action.
- 16.8 Noise at operator's ear level was observed as 91.0 dB (A) which is on higher side of danger limit of 90 dB (A) as specified by ILO for continuous exposure of 8 hours per day. This calls for reduction in noise level to improve the operator's comfort & safety.
- 16.9 The hardness of rotary blades does not conform to the requirement of IS 6690:1981 (Reaffirmed 2012). This shall be looked into for improvement.
- 16.10 Machine maneuverability while taking turns during field operation was not comfortable. It shall be looked into to improve ease of operation for the operator.
- 16.11 **Technical literature:**
Operator's manual, service manual and parts catalogue of the machine was supplied with the test sample for reference during the test. It is however, recommended that same may be revised and brought out in Hindi & other regional languages as per IS 8132:1999 (Reaffirmed 2004) for the sake of user & technical personnel.

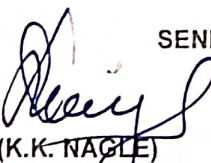
TESTING AUTHORITY


(M.R. PATIL)

AGRICULTURAL ENGINEER


(J.P. MANDAL)

SENIOR AGRICULTURAL ENGINEER


(K.K. NAGLE)
DIRECTOR

