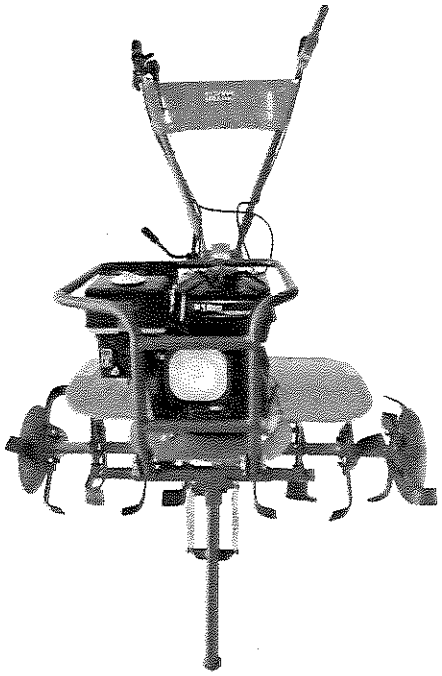
व्यावसायिक परीक्षण रिपोर्ट (प्रारंभिक)
COMMERCIAL TEST REPORT (Initial)

एक कदम स्वच्छता की ओर

संख्या/No.: Machine 147/521
माह / Month: February 2025

THIS TEST REPORT IS VALID UPTO 29.02.2032



KISHANKING, HT1000, POWER WEEDER

सत्यमेव जयते

भारत सरकार
GOVERNMENT OF INDIA
कृषि एवं किसान कल्याण मंत्रालय
MINISTRY OF AGRICULTURE AND 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
बिश्वनाथ चारिआलि, जिला - बिश्वनाथ(असम)
BISWANATH CHARIALI, DIST- BISWANATH, ASSAM, PIN - 784 176
[AN ISO 9001:2015 CERTIFIED INSTITUTION]

Ph. No. 03715-222094 **Website: https://nerfmtti.nic.in** **E-mail: fmti-ner@nic.in**

4. SPECIFICATIONS

4.1 General:

Make	:	KISHANKING
Model	:	HT1000
Name and address of manufacturer	:	Fujian Everstrong Lega Power Equipments Co., Ltd. Address: Hongkuan Industry Zone, Fuqing, Fuzhou City, Fujian Province 350323, **CHINA**
Name and address of applicant	:	JEEKO AGRITECH LLP Plot No. 332 Road No. R Gate No. 2 Phase-1 Khirasra GIDC Rajkot, Gujarat - 360021
Name of machine	:	Power Weeder
Type of machine	:	Self propelled, Walk behind
Country of origin	:	**CHINA**
Working size of machine (mm)	:	1140
Year of manufacture	:	2024
Serial no. of machine	:	HTY24057150

4.2 Details of prime mover:

Make (apa)	:	Fujian Everstrong Lega Power Equipments Co., Ltd.
Model	:	170 F
Type	:	4 stroke, Single cylinder, Air cooled, Spark Ignition engine
Year of manufacture	:	2024
Serial number	:	051617324
Country of origin	:	**CHINA**
Recommended high idle speed (rpm)	:	3800 ± 100
Recommended low idle speed (rpm)	:	1400 ± 100
Recommended rated speed (rpm)	:	3600
Rated power observed (kW)	:	**3.37**
Rated power declared (apa) (kW)	:	5.51

11.2 Chemical composition of rotor blades:

Constituents	As per IS 6690:1981 (Reaffirmed 2022)		Composition as observed (% by weight)	Remarks
	Carbon Steel (%)	Silicon Manganese Steel (%)		
Carbon (C)	0.70 -0.85	0.50-0.60	0.763	Conforms
Silicon (Si)	0.10 -0.40	1.50-2.00	0.615	**Does not conform**
Manganese (Mn)	0.50 -1.0	0.50-1.00	0.963	Conforms
Sulphur (S)	0.05(max)	0.05(max)	0.004	Conforms
Phosphorous (P)	0.05(max)	0.05(max)	0.013	Conforms

12. FIELD PERFORMANCE TEST

The field tests were conducted for total 26.98 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 (%)	:	1.6 to 4.2
3	Bulk density of soil (g/cc)	:	1.40 to 1.57
4	Forward speed of operation (kmph)	:	1.99 to 2.37
5	Depth of cut (cm)	:	5.8 to 6.3
6	Width of cut (m)	:	1.08 to 1.11
7	Area covered (ha/h)	:	0.169 to 0.215
8	Time required for one ha (h)	:	4.66 to 5.91
9	Field efficiency (%)	:	78.7 to 82.4
10	Weeding efficiency (%)	:	82.4 to 87.7
11	Fuel consumption		
	l/h	:	0.96 to 1.20
	l/ha	:	4.89 to 7.09

12.1 Rate of work:

- Rate of work was recorded as 0.169 to 0.215 ha/h and the forward speed of operation varied from 1.99 to 2.37 kmph.
- Time required to cover one hectare was recorded as 4.66 to 5.91 h.

12.2 Quality of work:

- Depth of cut was recorded as 5.8 to 6.3 cm.
- Working width was observed as 1.08 to 1.11 m.
- Field efficiency was found as 78.7 to 82.4 %.
- Weeding efficiency was recorded as 82.4 to 87.7 %.

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 wear of rotor blades	
				After 26.98 h	Per hour
R-1	364.52	353.49	11.03	3.03	0.11
R-2	365.24	355.84	9.4	2.57	0.10
R-3	357.11	348.93	8.18	2.29	0.08
R-4	349.61	341.22	8.39	2.40	0.09
L-1	362.95	351.99	10.96	3.02	0.11
L-2	364.16	357.37	6.79	1.86	0.07
L-3	358.15	348.46	9.69	2.71	0.10
L-4	368.15	340.29	27.86	7.57	0.28

The hourly rate of wear of blade on mass basis after field operations was recorded as 0.07 to 0.28 %.

13. EASE OF OPERATION AND ADJUSTMENTS

Machine maneuverability while taking turns during field operation was not comfortable.

14. DEFECTS, BREAKDOWNS AND REPAIRS

No defect or breakdown was observed during test.

15. COMPONENTS / ASSEMBLY INSPECTION AND ASSESSMENT OF WEAR

15.1 Engine:

The Engine and other assemblies were dismantled after 41.14 hours of operation.

15.1.1 Cylinder:

Cylinder	Cylinder bore dia. (mm)						Max. permissible wear limit (mm)
	Top position		Middle positon		Bottom position		
1	Thrust side	Non Thrust side	Thrust side	Non Thrust side	Thrust side	Non Thrust side	
	70.02	70.02	70.01	70.01	70.01	70.00	70.035

15.1.2 Piston:

Piston dia., mm				Max. permissible wear limit at skirt (mm)	Clearance between piston & cylinder liner at the skirt of the piston, mm	
Top (above top compression ring)		At skirt				
Thrust side	Non-thrust side	Thrust side	Non-thrust side		As observed	Max. permissible limit, (mm)
69.49	69.49	69.96	*	69.85	0.05	Not specified

*Not recorded due to piston design constraints.

15.1.3 Ring side clearance:

Piston Rings	Ring side clearance (mm)	Max. permissible wear limit (mm)
1st Compression ring	0.03	0.10
2nd Compression ring	0.03	0.08
Oil ring	NA	NA

15.1.4 Ring end gap clearance:

Ring No.	Ring end gap (mm)			Max. permissible wear limit (mm)
	At top	At middle	At bottom	
1st Compression ring	0.20	0.15	0.15	0.5
2nd Compression ring	0.30	0.30	0.30	0.5
Oil ring	NA	NA	NA	NA

15.1.5 Big end bearing:

Bearing no.	Dia of bearing (mm)	Dia of crank pin (mm)	Clearance (mm)		Max. permmissible wear limit (mm)	
			Diametrical	Axial	Diametrical	Axial
1	30.04	29.96	0.08	NA	0.15	0.20

15.1.6 Main bearing: Two nos. of ball bearing 6205 were used

Bearing No.	Diametrical clearance, (mm)	Crankshaft end float, (mm)	Max. permissible clearance limit (mm)	
			Diametrical clearance	Crankshaft end float
1.	Ball bearing	0.20	NA	0.15
2.	Ball bearing			

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
5.49	5.49	5.46	5.42	0.03	0.07	0.03	0.04

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. CRITICAL TECHNICAL SPECIFICATIONS
(Vide Ministry's letter No. 13-9/2019-(M&T) (I&P)-Part dated 26.04.2019)

Sl. No.	Parameters	Specifications	Observation	Remarks
1	2	3	4	5
1.	Type	Self-propelled, walk behind	Self-propelled, walk behind	Conforms
2.	Working width (mm)	300 –1500	1140	Conforms
3.	Type of engine	Compression ignition / Spark ignition	Spark ignition	Conforms
4.	Starting method	Manual / recoil /self-starting	Recoil starting	Conforms
5.	Type of clutch	Dry / Wet	Wet	Conforms
6.	Type of primary gear box	Sliding / constant mesh or combination of both	Sliding mesh	Conforms
7.	Type of secondary gear box	Gear type	Gear type	Conforms
8.	Material for rotor shaft	SAE1045 (CRS) / EN8 / EN9	Mild steel (apa)	**Does not conform**
9.	No. of flanges	4 - 10	8	Conforms
10.	Type of flanges	Square / circular/ rectangular	Square	Conforms
11.	Distance between consecutive flanges (mm)	80 to 150	130	Conforms

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
5.49	5.49	5.46	5.42	0.03	0.07	0.03	0.04

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. CRITICAL TECHNICAL SPECIFICATIONS
(Vide Ministry's letter No. 13-9/2019-(M&T) (I&P)-Part dated 26.04.2019)

Sl. No.	Parameters	Specifications	Observation	Remarks
1	2	3	4	5
1.	Type	Self-propelled, walk behind	Self-propelled, walk behind	Conforms
2.	Working width (mm)	300 –1500	1140	Conforms
3.	Type of engine	Compression ignition / Spark ignition	Spark ignition	Conforms
4.	Starting method	Manual / recoil /self-starting	Recoil starting	Conforms
5.	Type of clutch	Dry / Wet	Wet	Conforms
6.	Type of primary gear box	Sliding / constant mesh or combination of both	Sliding mesh	Conforms
7.	Type of secondary gear box	Gear type	Gear type	Conforms
8.	Material for rotor shaft	SAE1045 (CRS) / EN8 / EN9	Mild steel (apa)	**Does not conform**
9.	No. of flanges	4 - 10	8	Conforms
10.	Type of flanges	Square / circular/ rectangular	Square	Conforms
11.	Distance between consecutive flanges (mm)	80 to 150	130	Conforms

1	2	3	4	5
12.	No. of blades in each flange	3 - 6	4	Conforms
13.	No .of rotor blade	12 (Min.)	32	Conforms
14.	Thickness of rotor blade (mm)	5 (min.)	4.6	**Does not conform**
15.	Material of blade	Boron (28Mn Cr B5) / High Carbon Steel EN42j	65 Mn (apa)	**Does not conform**
16.	Hardness of Blade, HRC	38 (Min.)	46	Conforms
17.	Shape of rotor blade	C / J shape	J shape	Conforms
18.	Provision for handle height adjustment	Must be provided	Provided	Conforms
19.	Provision for handle rotation	Must be provided	Not Provided	**Does not conform**
20.	Provision for emergency stop of engine	Must be provided	Provided	Conforms
21.	Provision for easy start of engine	Must be provided	Provided	Conforms
22.	Provision for shield/cover to prevent flying of mud & stone from rotor	Must be provided	Provided	Conforms
23.	Depth control mechanism	Must be provided	Provided	Conforms
24.	Provision for transport wheels	Must be provided	Provided	Conforms
25.	Provision for cover on exhaust	Must be provided	Provided	Conforms
26.	Direction of exhaust emission away from operator	Must be provided	Provided	Conforms
27.	Marking / labelling of machine	The labeling plate should be riveted on the body of machine having Name and address of manufacturer & Applicant, Country of origin, Make, Model, Year of manufacturer, Serial number, Engine number, Engine HP, rated rpm & SFC.	Name and address of manufacturer & applicant, country of origin, Make, engine serial number, rated rpm and SFC were not provided.	**Does not conform**
28.	Literature	Operator manual, Service manual and Parts catalogue should be provided.	Provided	Conforms

17. COMMENTS AND RECOMMENDATIONS

17.1 The average rated power in rating test of engine was observed as 3.37 kW against declared value of 5.51 kW by the applicant/manufacturer. This should be looked into for corrective action.

17.2 The specific fuel consumption (SFC) in rating test of engine was observed as 402 g/kWh against declared value of 295 g/kWh by the applicant/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 2021). This should be looked into for corrective action.

17.3 Type of engine (Petrol/Diesel), manufacturer's address and country of origin, Make, engine serial number, rated rpm and SFC should be provided on the labeling plate of the machine. This should be looked into for corrective action.

17.4 The engine was not marked with Manufacturer name or trade-mark, serial number of engine, Rated power, Rated speed and type of fuel used which does not fulfill the requirement of IS 7347-1974 (Amended 2021). This may be looked into.

17.5 Machine maneuverability while taking turns during field operation was not comfortable. It shall be looked into for ease of operation for the operator.

17.6 The hardness and chemical composition of rotary blades does not conform to the requirement of IS 6690:1981 (Reaffirmed 2022). This may be looked into for corrective action.

17.7 Noise at operator's ear level was observed on higher side against warning limit of 85 dB(A) as specified by the 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 and safety.

17.8 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.

17.9 It was observed that valve guide clearance for exhaust valve exceeded the maximum permissible wear limit declared by the applicant/manufacturer. This should be looked into for corrective action.

17.10 Crankshaft end float clearance was observed as 0.20 mm against the discard limit of 0.15 mm as declared by the applicant/manufacturer. This should be looked into for corrective action.

17.11 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: 8132-2023.

TESTING AUTHORITY

(M.R. PATIL)
SENIOR AGRICULTURAL ENGINEER

(P. KAMALABAI)
DIRECTOR

Draft test report compiled by - **Shri Vithato Keyho, Sr. Technical Assistant**

18. APPLICANT'S COMMENTS

Applicant's Comments
We will take necessary action as per comments and recommendations in the test report for improvement in the future production.