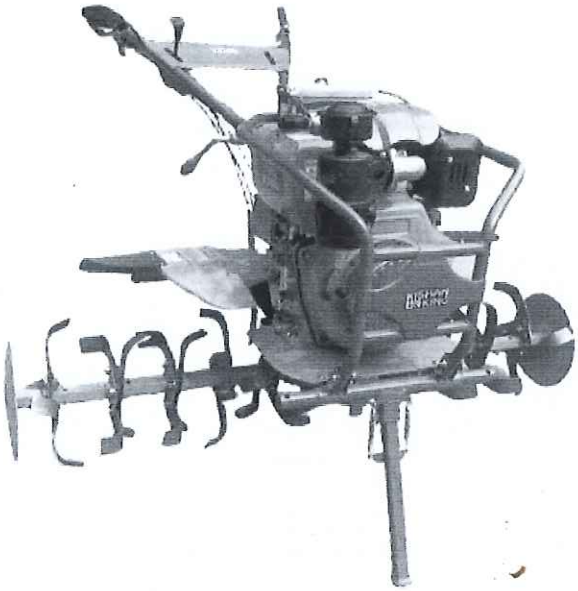
व्यावसायिक परीक्षण रिपोर्ट (प्रारंभिक)
COMMERCIAL TEST REPORT (Initial)

स्वच्छ भारत
एक कदम स्वच्छता की ओर

संख्या/No.: Machine 150/524
माह / Month: March 2025

THIS TEST REPORT IS VALID UPTO 31.03.2032



कृषि यंत्र प्रशिक्षण एवं परीक्षण संस्थान (उत्तर पूर्वी क्षेत्र) ★ Farm Machinery Training & Testing Institute (NERI) ★ Biswanath Chariali, Biswanath(Assam) ★ बिश्वनाथ चारि आलि,बिश्वनाथ(असम)

KISHANKING, HT1350DE, 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
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4. SPECIFICATIONS

4.1 General:

Make	:	KISHANKING
Model	:	HT1350DE
Name and address of manufacturer	:	FUJIAN EVERSTRONG LEGA POWER EQUIPMENTS CO. LTD., 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)	:	1455
Year of manufacture	:	2024
Serial No. of machine	:	HTY24057179

4.2 Details of prime mover:

Make (apa)	:	FUJIAN EVERSTRONG LEGA POWER EQUIPMENTS CO., LTD.
Model	:	186FAE
Type	:	4 stroke, Single cylinder, Air cooled, Diesel engine.
Year of manufacture	:	2024
Serial number	:	HTC405231125
Country of origin	:	**CHINA**
Recommended high idle speed (rpm)	:	3200 ± 100
Recommended low idle speed (rpm)	:	1400 ± 100
Recommended rated speed (rpm)	:	3000
Maximum power observed (kW)	:	**4.99**
Maximum power declared (apa) (kW)	:	6.30

12. FIELD PERFORMANCE TEST

The field tests were conducted for total 26.72 hours of field operation for testing the said Power Weeder. The field tests were conducted at rated speed of 3000 rpm. The detailed test results are represented in the Annexure and summarized in the ensuing Table:

Sr. No.	Parameters		Observations
1	Type of soil	:	Light
2	Soil moisture (%)	:	3.4 to 4.8
3	Bulk density of soil (g/cc)	:	1.45 to 1.50
4	Forward Speed of operation (kmph)	:	1.79 to 2.07
5	Depth of cut (cm)	:	4.9 to 6.1
6	Width of cut (m)	:	1.27 to 1.40
7	Area covered (ha/h)	:	0.194 to 0.245
8	Time required for one ha (h)	:	4.08 to 5.17
9	Field efficiency (%)	:	78.9 to 87.1
10	Weeding efficiency (%)	:	77.2 to 83.9
11	Fuel consumption		
	l/h	:	0.56 to 0.74
	l/ha	:	2.46 to 3.62

12.1 Rate of work

- Rate of work was recorded as 0.194 to 0.245 ha/h and the forward speed of operation varied from 1.79 to 2.07 kmph.
- Time required to cover one hectare was recorded as 4.08 to 5.17 h.

12.2 Quality of work:

- Depth of cut was recorded as 4.9 to 6.1 cm.
- Working width was observed as 1.27 to 1.40 m.
- Field efficiency was found as 78.9 to 87.1 %.
- Weeding efficiency was recorded as 77.2 to 83.9 %.

12.3 Adequacy of power of prime mover:

The power of prime mover was found adequate.

12.4 Wear Analysis of rotor blades:

Sr. No.	Initial mass(g)	Final mass (g)	Loss of mass (g)	Percentage wear of rotor blades	
				After 26.72 h	Per hour
1	2	3	4	5	6
L-1	365.08	358.42	6.66	1.82	0.07
L-2	357.06	350.80	6.26	1.75	0.07
L-3	361.53	356.69	4.84	1.34	0.05
L-4	357.92	352.70	5.22	1.46	0.05
L-5	366.08	357.16	8.92	2.44	0.09

1	2	3	4	5	6
R-1	373.15	365.05	8.10	2.17	0.08
R-2	360.64	349.36	11.28	3.13	0.12
R-3	359.66	352.29	7.37	2.05	0.08
R-4	361.55	355.62	5.93	1.64	0.06
R-5	369.21	361.32	7.89	2.14	0.08

The hourly rate of wear of blade on mass basis after field operations was recorded as 0.05 to 0.12 %.

13. EASE OF OPERATION AND ADJUSTMENTS

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

14. DEFECTS, BREAKDOWNS AND REPAIRS

During maximum power search test under Natural Ambient Condition, welded joint between pre-cleaner and main air cleaner was damaged and on request of the applicant, it was repaired. Also, during test at full load varying speed under Natural Ambient Condition welded joint between main air cleaner and inlet manifold was damaged and on request of the applicant, complete assembly of air cleaner was replaced with new one.

15. COMPONENTS / ASSEMBLY INSPECTION AND ASSESSMENT OF WEAR

15.1 Engine:

The Engine and other assemblies were dismantled after 42.02 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	
	86.01	85.99	86.01	85.98	86.01	85.98	88.15

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)
85.34	85.29	85.88	*	87.99	0.13	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	0.02	0.10
2nd compression ring	0.04	0.08
Oil ring	0.03	Not specified

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	0.20	0.20	0.5
2nd compression ring	0.30	0.30	0.30	
Oil ring	0.20	0.30	0.30	

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	42.16	41.98	0.18	0.40	0.025	0.038

15.1.6 Main bearing: Two Nos. of ball bearing 6307 were used.

Bearing No.	Diametrical clearance, (mm)	Crankshaft end float, (mm)	Max. permissible clearance limit (mm)	
			Diametrical clearance	Crankshaft end float
1	0.03	0.10	0.03	0.023

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
7.00	7.00	6.94	6.93	0.06	0.07	0.04	0.06

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)

Sr. 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	1455	Conforms
3.	Type of engine	Compression ignition / Spark ignition	Compression ignition	Conforms
4.	Starting method	Manual / recoil /self-starting	Recoil & self-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	10	Conforms
10.	Type of flanges	Square / circular/ rectangular	Square	Conforms

1	2	3	4	5
11.	Distance between consecutive flanges (mm)	80 to 150	140	Conforms
12.	No. of blades in each flange	3 - 6	4	Conforms
13.	No .of rotor blade	12 (Min.)	40	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.)	43	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 labelling 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 During maximum power search test under Natural Ambient Condition, welded joint between pre- cleaner and main air cleaner was damaged. Also, during test at full load varying speed under Natural Ambient Condition welded joint between main air cleaner and inlet manifold was damaged. This should be looked into for improvement.

17.2 The average maximum power observed during engine testing was 4.99 kW against declared value of 6.3 kW by the applicant/manufacturer. This should be looked into for corrective action.

17.3 During air cleaner oil pull over test, percentace of oil pull over was observed on higher side. This should be looked into for corrective action.

17.4 Type of engine (Petrol/Diesel), manufacturer's address and country of origin, make, engine serial number, rated rpm and SFC were not provided on the labeling plate of the machine. This should be looked into for corrective action.

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 danger limit of 90 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 It was observed that valve guide clearance for both inlet and exhaust valve exceeded the maximum permissible wear limit declared by the applicant/manufacturer. This should be looked into for corrective action.

17.9 During wear assessment, the diameter of piston at skirt was observed as 85.88 mm against the discard limit of 87.99 mm as declared by the applicant/manufacturer. Also, the diametrical and axial clearance of big end bearing was observed as 0.18 and 0.40 mm against the discard limit of 0.025 mm and 0.038 mm as declared by the applicant/manufacturer respectively. This should be looked into for corrective action.

17.10 During wear assessment, crankshaft end float was measured 0.10 mm against the discard limit of 0.023 mm as declared by the applicant/manufacturer. This should be looked into for corrective action.

17.11 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.

17.12 **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.

ANNEXURE

FIELD PERFORMANCE RESULTS

Place of Test: NERFMTTI Farm, Biswanath Chariali, Biswanath, Assam

Sr. No.	Parameters	I	II	III	IV	V
1	Date of test	11.02.2025	12.02.2025		13.02.2025	14.02.2025
2	Net test duration (h)	6.60	3.25	3.55	6.77	6.55
3	Furrow length (m)	40	43	67	68	84
4	Type of soil	Light				
5	Bulk density (g/cc)	1.50	1.48	1.45	1.50	1.45
6	Soil moisture (%)	4.8	3.6	4.0	3.4	4.3
7	Previous treatment	Nil				
8	Forward speed (kmph)	2.07	1.93	1.98	2.02	1.79
9	Av. depth of cut (cm)	5.2	6.0	6.1	4.9	5.8
10	Av. width of cut (m)	1.36	1.27	1.31	1.40	1.39
11	Area covered (ha/h)	0.227	0.194	0.208	0.245	0.217
12	Time required for one ha (h)	4.40	5.17	4.81	4.08	4.61
13	Field efficiency (%)	80.7	78.9	80.1	86.6	87.1
14	Av. height of weeds (cm)	9.4	9.3	9.2	25.1	24.9
15	Av. number of weeds per m^2 (before operation)	215	72	99	161	69
16	Av. number of weeds per m^2 (after operation)	49	13	16	26	15
17	Weeding efficiency (%)	77.2	78.9	83.8	83.9	78.3
18	Fuel Consumption					
	- l/h	0.56	0.70	0.66	0.74	0.61
	- l/ha	2.46	3.62	3.17	3.02	2.81