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

संख्या/No.: Machine 52/417
माह / Month: February 2022

THIS TEST REPORT IS VALID UPTO 28.02.2027

KRISHITEK INDUSTRIES PRIVATE LIMITED,
POWER WEEDER, MODEL: POWERTEK 5.5 WP

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 पूर्वी क्षेत्र कृषि यंत्र प्रशिक्षण एवं परीक्षण संस्थान
NORTH EASTERN REGION FARM MACHINERY TRAINING & TESTING INSTITUTE
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4. SPECIFICATION

4.1 General:

Make	:	Krishitek Industries Pvt. Ltd
Model	:	Powertek 5.5 WP
Name and address of manufacturer	:	**M/s Krishitek Industries Pvt. Ltd, Plot No- 40, Prime Industrial Park, Santej, Taluka- Kalol, Dist- Gandhinagar, Gujrat, India, 382721,**
Name and address of applicant	:	**M/s Krishitek Industries Pvt. Ltd, Plot No- 40, Prime Industrial Park, Santej, Taluka- Kalol, Dist- Gandhinagar, Gujrat, India, 382721**
Name of machine	:	Power weeder
Type of machine	:	Self propelled, Walk behind
Working size of machine, (mm)	:	840
Year of manufacture	:	2021
Serial no. of machine	:	0015

4.2 Details of prime mover:

Name and address of the manufacturer	:	Honda India Power Products ltd. Plot No-5, sec-41 (kasna) greater Noida Indl. Dev Area, GautamBudh Nagar (U.P) 201310
Make	:	Honda
Model	:	GX 200
Type	:	4 stroke, Single cylinder, Air cooled
Year of manufacture	:	2021
Serial Number	:	GCAFD-1235637
Country of origin	:	India
Recommended high idle speed (rpm) (apa).	:	3700-4000
Recommended low idle speed (rpm) (apa).	:	1350-1800
Recommended rated speed (rpm) (apa).	:	3600
Recommended speed for field test (rpm) (apa).	:	3600
Speed at maximum torque, (rpm)	:	2500
Maximum power observed, kW	:	3.48

9. AIR CLEANER OIL PULLOVER TEST

Date of test : 28.01.2022

Range of atmospheric conditions :

Temperature, (°C) : 23 to 24

Pressure, (kPa) : 101.3 to 101.6

Relative humidity, (%) : 45 to 55

Mass of oil before test, (g) : 44.56

Sl. No.	Position of Paddy reaper	Loss of oil (g)	Oil pullover (%)
i)	Parked on level ground	0.01	0.02
ii)	Tilted to 15° laterally with RHS up	0.02	0.04
iii)	Tilted to 15° laterally with LHS up	0.06	0.13
iv)	Tilted to 15° longitudinally with front end up	0.01	0.02
v)	Tilted to 15° longitudinally with rear end up	0.01	0.02

10.RUNNING-IN

Running-in was not recommended by the applicant. However, the machine was run-in for 1.0 hour before the actual test. All the fasteners were checked and tightened thereafter.

11. LABORATORY TEST

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	48.9	**Does not conform**
At shank portion	37 to 45 HRC	49.2	**Does not conform**

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	0.155	**Does not conform**
Silicon (Si)	0.10 -0.40	1.50-2.00	0.249	**Does not conform**
Manganese (Mn)	0.50 -1.0	0.50-1.00	1.093	**Does not conform**
Sulphur (S)	0.05(max)	0.05(max)	0.023	Conforms
Phosphorous (P)	0.05(max)	0.05(max)	0.026	Conforms

12. FIELD PERFORMANCE TEST

The field tests were conducted for 25.50 hours of field operation for testing the said Power Weeder. The field tests were conducted at rated engine 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 (%)	:	10.5 to 14.1
3	Bulk density of soil (g/cc)	:	1.61 to 1.78
4	Forward Speed of operation (kmph)	:	1.34 to 1.55
5	Depth of cut (cm)	:	5.73 to 6.80
6	Width of cut (m)	:	0.85 to 0.87
7	Area covered (ha/h)	:	0.1020 to 0.1150
8	Time required for one ha (h)	:	8.69 to 9.80
9	Field efficiency (%)	:	84.68 to 89.55
10	Weeding efficiency (%)	:	75.44 to 78.66
11	Fuel consumption		
	l/h	:	1.06 to 1.15
	l/ha	:	9.56 to 11.27

12.1 Rate of work:

- Rate of work was recorded as 0.1020 to 0.1150 ha/h and the forward speed of operation vary from 1.34 to 1.55 kmph.
- Time required to cover one hectare was recorded as 8.69 to 9.80 hr.

12.2 Quality of work:

- Depth of cut was recorded as 5.73 to 6.80 cm.
- Av. working width was observed as 0.85 to 0.87 m.
- Field efficiency was found as 84.68 to 89.55 %.
- Weeding efficiency was found as 75.44 to 78.66 %

12.3 Adequacy of power of prime mover:

The power of prime mover as used during test 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 26.50 h	Per hour
L-1	374.0	366.0	8.0	2.14	0.08
L-2	388.0	379.0	9.0	2.32	0.09
L-3	367.0	361.5	5.5	1.50	0.06
R-1	389.0	379.5	9.5	2.44	0.09
R-2	374.0	365.0	9.0	2.41	0.09
R-3	365.0	358.0	7.0	1.92	0.07

The hourly rate of wear of blade on mass basis after field operations was recorded as 0.06 to 0.09%

13. EASE OF OPERATION & ADJUSTMENTS

No noticeable difficulty was observed during the operation & adjustment of the machine.

14. DEFECTS, BREAKDOWNS AND REPAIRS

No noticeable defect or breakdown was observed during test

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
5.45	5.45	5.43	5.42	0.02	0.03	Not specified	Not specified

Valve, guide and timing gear:-

Any marked sign of overheating of valves	:	None
Pitting of seat/faces of valves	:	Normal
Any visual damage of teeth of timing gears	:	None
Condition of ingnition 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.

16.0 COMMENTS & RECOMMENDATIONS

16.1 Specific fuel consumption of engine as observed during test 350.95g/kWh against 400 g/kWh of that declared by the applicant/manufacturer.

16.2 Rated power of the engine has been observed as 3.48 kW as against declaration of 3.7kW@ 3600 RPM.

16.3 Noise at operator's ear level was observed on higher side against warning limit of 85 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.**

16.4 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 component in view of above this deserves to be given top priority for corrective action.

16.5 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.

16.6 The rated speed was not found stable at full load before engine performance test. On request of the applicant, carburetor was changed before engine performance test. This may be looked into for corrective action.

16.7 Power (HP) has been mentioned as 5.5 on the labeling plate of the machine. However, during engine rating tests the power (HP) was observed 4.67. This may be looked into for corrective action.

16.8 SFC has been mentioned as 1.7 l/hr on the labeling plate of the machine. However, during engine rating tests the SFC was observed 350.95 gm/kWh. This may be looked into for corrective action.

16.9 **Tech... ...erature:**

Operator's manual, service manual and parts catalogue of the machine was supplied with the test sample. It must be provided in Hindi & other regional languages as per IS 8132:1999 (Reaffirmed 2004) for the sake of user & technical personnel.

TESTING AUTHORITY

(S.G.PAWAR)
AGRICULTURAL ENGINEER

(J.P. MANDAL)
SENIOR AGRICULTURAL ENGINEER

(K.K. NAGLE)
DIRECTOR

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

17. APPLICANTS COMMENTS

Para No	Our Reference	Applicants Comments
17.1	16.3 to 16.6	We will take corrective actions for all our future product.
17.2	16.7 & 16.8	We will take all corrective action for mentioning correct Power (HP) and SFC on labelling plate.
17.3	16.9	We will provide Operator manual, service manual and part catalogue in Hindi as well as other required regional languages.