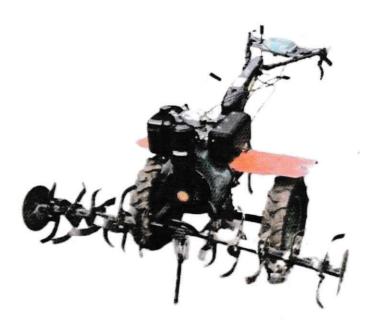
व्यावसायिक परीक्षण रिपोर्ट (प्रारंभिक) COMMERCIAL TEST REPORT (Initial)



संख्या/No.: Machine 115/486

माह / Month: March 2024

THIS TEST REPORT IS VALID UPTO 31.03.2031





SECHANAM AIW-10 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-विश्वनाथ (असम)

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Machine 115/486

SECHANAM AIW-10 POWER WEEDER

COMMERCIAL (INITIAL)

4. SPECIFICATIONS

4.1 General:

Make

: SECHANAM

Model

: AIW-10

Name and address of manufacturer

Chongquing Senci Wugu Agriculture Machinery Import & Export Company Limited, Longfei Road, Dongchen Street, Tongliang District, Chongqing, China-

402560

Name and address of applicant

: Aquatix India,

Madan

Mohan

Lane,1646/B, Near Binayak Steel, Gosala

Road, Cuttack-753004, Odisha

Name of machine

: Power Weeder

Type of machine

: Self propelled, Walk behind

Working size of machine (mm)

: 1390

Year of manufacture

: 2023

Serial no. of machine

2022 IW

4.2 Details of prime mover:

Make

: Not specified

Model

: 186FA

Type

: 4 stroke, Single cylinder, Air cooled,

Diesel Engine

Year of manufacture

: 2023

Serial Number

: F13BBAJ0027

Country of origin

China

Recommended high idle speed (rpm)

 3200 ± 100

Recommended low idle speed (rpm)

 1600 ± 100

Recommended rated speed (rpm)

3000

Maximum power observed (kW)

5.03

Maximum power declared (apa)

(kW)

7.55

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SECHANAM AIW-10 POWER WEEDER

COMMERCIAL (INITIAL)

10. AIR CLEANER OIL PULL OVER TEST

Date of test

13.10.2023

Range of atmospheric conditions:

Temperature (°C)

: 29.2 to 30.2

Pressure (kPa)

: 100.1 to 100.2

Relative humidity (%)

: 57.5 to 65.1

Mass of oil before test (g)

: 34.34

Sl. No.	Position of Power Weeder	Loss of oil (g)	Oil pullover (%)
1	Parked on level ground	0.00	Nil
2.	Tilted to 15° laterally with RHS up	0.01	0.03
3	Tilted to 15° laterally with LHS up	0.01	0.03
4	Tilted to 15° longitudinally with front end up	0.00	Nil
5	Tilted to 15° longitudinally with rear end up	0.00	Nil

11. HARDNESS AND CHEMICAL COMPOSITION OF ROTOR BLADE

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	50.0	Does not conform
At shank portion	37 to 45 HRC	49.6	Does not conform

11.2 Chemical composition of rotor blades :

		S 6690:1981 rmed 2012)	Composition as observed	Remarks
Constituents	Carbon Steel (%)	Silicon Manganese Steel (%)	(% by weight)	Remarks
Carbon (C)	0.70 -0.85	0.50-0.60	0.711	Conforms
Silicon (Si)	0.10 -0.40	1.50-2.00	0.798	Does not conform
Manganese (Mn)	0.50 -1.0	0.50-1.00	0.876	Conforms
Sulphur (S)	0.05(max)	0.05(max)	0.009	Conforms
Phosphorous (P)	0.05(max)	0.05(max)	0.022	Conforms

12. FIELD PERFORMANCE TEST

The field tests were conducted for 26.92 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:

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Sl.No.	Parameters		Observations
1	Type of soil		
2	Soil moisture (%)		Light
3	Bulk density of soil (g/cc)	- 1:	8.27 to 10.97
4	Forward Speed of operation (kmph)	•	1.48 to 1.54
5	Depth of cut (cm)	1.	1.09 to 1.19
6	Width of cut (m)		5.40 to 5.80 1.39 to 1.43
7	Area covered (ha/h)		0.116 to 0.130
8	Time required for one ha (h)		7.69 to 8.62
9	Field efficiency (%)		70.30 to 78.31
10	Weeding efficiency (%)	1.	71.19 to 75.66
11	Fuel consumption	•	/1.19 10 /3.00
	l/h	1:	0.82 to 1.20
	l/ha	:	7.07 to 9.23

12.1 Rate of work:

- Rate of work was recorded as 0.116 to 0.130 ha/h and the forward speed of operation was recorded from 1.09 to 1.19 kmph.
- Time required to cover one hectare was recorded as 7.69 to 8.62 h.

12.2 Quality of work:

- Depth of cut was recorded as 5.40 to 5.80 cm.
- Working width was observed as 1.39 to 1.43 m.
- Field efficiency was found as 70.30 to 78.31 %.
- Weeding efficiency was found as 71.19 to 75.66 %.

12.3 Adequacy of power of prime mover:

The power of prime mover was found adequate.

12.4 Wear Analysis of rotor blades:

Blade No.	Initial mass(g)	Final mass (g)	Loss of mass (g)	Percentage wear of rotor blades		
			Loss of mass (g)	After 26.92 h	Per hour	
L-1	310.0	307.5	2.5	0.81	0.03	
L-2	300.0	297.0	3.0	1.00		
L-3	293.0	289.5	3.5	1.19	0.04	
L-4	305.0	302.5	2.5		0.04	
L-5	303.0	298.5	4.5	0.82	0.03	
R-1	311.0	308.0		1.49	0.06	
R-2	308.0	377,000,000,000	3.0	0.96	0.04	
R-3		304.0	4.0	1.30	0.05	
	307.0	304.5	2.5	0.81	0.03	
R-4	312.0	310.0	2.0	0.64	0.02	
R-5	306.0	302.5	3.5			
	v rate of wear a		3.5	1.14	0.04	

The hourly rate of wear of blade on mass basis after field operations was recorded as 0.02 to 0.06%.



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SECHANAM AIW-10 POWER WEEDER

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Condition of bearing: Normal

15.1.6 Main bearing: One No. of ball bearing 6308 was used.

Bearing	Diametrical	Crankshaft	Max. permissible clear	ance limit,(mm)
No.	clearance, (mm)	end float, (mm)	Diametrical clearance	Crankshaft end float
Bush bearing	0.09	0.02	Not specified	0.30

15.1.7 Valve guide clearance

Valve guide diameter (mm)		diameter (mm)		Valve stem diameter (mm)		Valve guide clearance (mm)		Max. Permissible we limit (mm)		
Inlet	Exhaust	Inlet	Exhaust	Inlet	Exhaust	Inlet	Exhaust			
6.99	6.99	6.94	6.95	0.05	0.04	Not specified	Not specified			

Valve, guide and timing gear:-

Any marked sign of overheating of valves

Pitting of seat/faces of valves

Any visual damage to teeth of timing gears

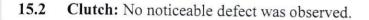
Condition of ignition coil & magneto

: None

: Normal

None

: Normal



15.3 Transmission gears: No noticeable defect was 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 maximum power was observed as 5.03 kW against the declared value of 7.55 kW by the applicant/manufacturer. This shall be looked into for corrective action.
- 16.2 The specific fuel consumption (SFC) of engine corresponding to maximum power was recorded as 269 g/kWh under natural ambient condition against the declared value of 390 g/kWh by the manufacturer. This shall be looked into for corrective action.
- 16.3 Noise at operator's ear level was observed on higher side against danger limit of 90 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.
- 16.4 The amplitude of mechanical vibration marked as (*) is on drastically higher side and is FARM MACHINERY TRAINING & TESTING INSTITUTE (NER), B. CHARIALI, ASSAM (THIS TEST REPORT IS VALID UP TO 31.03.2031)

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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.
- Machine maneuverability while taking turns during field operation was not comfortable. It shall be looked into for ease of operation for the operator.
- Working width of the machine and type of engine (Petrol/Diesel) should be provided on the labeling plate of the machine. This should be looked into for corrective action.
- 16.8 On labeling plate of the machine, manufacturer's address and maximum power have been mentioned wrongly. This should be looked into for corrective action.

16.9 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

> (Dr. P.P. RAO) DIRECTOR

Draft test report compiled by - Shri Khagendra Bora, STA

17. APPLICANT'S COMMENTS

Para No	Our Reference	e Applicant's Comments					
17.1	16.1 to 16.9	As prec	per aution	comments ary measures	and will be	recommendations e taken during future	necessary products.

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