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



संख्या/No.: Machine 99/470 माह / Month: September 2023

#### THIS TEST REPORT IS VALID UPTO 30.09.2028







#### **VST FT 70 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

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### **Machine 99/470**

## VST FT 70 POWER WEEDER

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4.1	4. SPECIFICATIONS								
	Make		:	VST					
	Model		:	FT 70					
	Name and address of manufacturer			M/s Chongqing Hwasdan Machinery Manufacturing Company Ltd., Xipeng Industry Zone, Jiulongpo Dist. Changing- 401326, China					
Dia Contraction	Name and address of applicant		:	M/s VST Tillers Tractors Ltd. Plot No 222-224 & 229-232, 3 <sup>rd</sup> Phase KIADB Industrial Area, Malur, Kolar District- 563130, Karnataka					
A REAL	Name of machine		:	Power Weeder					
- St.	Type of machine		:	Self propelled, Walk behind	nd				
×.	Working size of machine (mm)		:	1120					
	Year of m	anufacture	:	2021					
	Serial no.	of machine	:	2224737					
4.2	<b>Details</b> of Make	prime mover:	:	HWASDAN					
	Model		:	HSD178F					
	Туре		:	4 stroke, Single cylinder, A	Air cooled.				
				Diesel Engine					
	Year of ma	anufacture	:	2021					
	Serial Num	ıber	:	220868555					
	Country of	origin	:	CHINA	3				
	Recommen	nded high idle speed (rpm)	:	3750	-				
	Recommen	ded low idle speed (rpm)	:	1600					
	Recommen	ided rated speed (rpm)	:	3600					
÷	Maximum	power observed (kW)	:	4.5					
	Maximum	power declared (apa)							
	(kW)		:	4.0					

COMMERCIAL

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#### VST FT 70 POWER WEEDER

Sl.No.	Parameters		Observations
1	Type of soil	:	Light
2	Soil moisture (%)		11.3 to 14.5
3	Bulk density of soil (g/cc)	:	1.57 to 1.60
4	Forward Speed of operation (kmph)	:	1.21 to 1.25
5	Depth of cut (cm)	:	5.27 to 5.40
6	Width of cut (m)	:	1.09 to 1.11
7	Area covered (ha/h)	:	0.099 to 0.111
8	Time required for one ha (h)	:	9.01 to 10.10
9	Field efficiency (%)	:	72.79 to 79.91
10	Weeding efficiency (%)	:	73.10 to 75.44
11	Fuel consumption		
	l/h	:	0.532 to 0.655
	l/ha	:	5.37 to 6.42

#### 12.1 Rate of work:

- Rate of work was recorded as 0.099 to 0.111 ha/h and the forward speed operation was recorded from 1.21 to 1.25 kmph.
- Time required to cover one hectare was recorded as 9.01 to 10.10 h.

#### 12.2 Quality of work:

- Depth of cut was recorded as 5.27 to 5.40 cm.
- Working width was observed as 1.09 to 1.11 m.
- Field efficiency was found as 72.79 to 79.91 %.
- Weeding efficiency was found as 73.10 to 75.44 %.

#### 12.3 Adequacy of power of prime mover:

The power of prime mover was found adequate.

#### 12.4 Wear Analysis of rotor blades:

Blade		$\mathbf{D}^{\prime}$ 1 (1)	T	Percentage wear of rotor blades		
No.	Initial mass(g)	Final mass (g)	Loss of mass (g)	After 25.17 h	Per hour	
L-1	313.5	310.0	3.5	1.12	0.04	
L-2	306.0	303.5	2.5	0.82	0.03	
L-3	302.0	299.5	2.5	-0.83	0.03	
L-4	301.5	298.5	3.0	1.00	0.04	
R-1	314.5	311.5	3.0	0.95	0.04	
R-2	302.0	299.5	2.5	0.83	0.03	
R-3	301.0	297.5	3.5	1.16	0.05	
R-4	299.0	295.0	4.0	1.34	0.05	

The hourly rate of wear of blade on mass basis after field operations was recorded as 0.03 t ( 0.05%.

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#### **Big end bearing** 15.1.5

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Bearing	Dia of	Dia of Crank pin	Clearance (	(mm)	Max. Permissible wear limit (mm)	
no.	(mm)	(mm)	Dimetrical	Axial	Dimetrical	Axial
1	38.09	38.01	0.08	0.25	specified	specified

Condition of bearing: Normal

Main bearing: One No. of ball bearing 6307 was used. 15.1.6

	Discontrol	Crankshaft	Max. permissible clearance limit,(mm)		
Bearing No.	clearance,	end float,	Diametrical clearance	Crankshaft end float	
Bush bearing	0.06	0.06	Not specified	Not specified	
			1		

#### 15.1.7 Valve guide clearance

Valve guide		Valve stem		Valve guide clearance (mm)		Max. Permissible wear limit (mm)	
Inlat	Exhaust	Inlet	Exhaust	Inlet	Exhaust	Inlet	Exhaust
5.98	5.98	5.96	5.95	0.02	0.03	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 :
- Clutch: No noticeable defect was observed. 15.2
- Transmission gears: No noticeable defect was observed. 15.3
- **Rotary drive unit:** 15.4

The rotary drive unit was dismantled and all the components were found in normal condition.

## 16. COMMENTS & RECOMMENDATIONS

The specific fuel consumption (SFC) of engine corresponding at rated power was 16.1 recorded as 310.5 g/kWh under natural ambient condition against the declared value of 280 g/kWh by the manufacturer. This shall be looked into for corrective action.

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#### **Machine 99/470**

- 16.2 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.
- **16.3** 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.
- 16.4 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.
- **16.5** Machine maneuverability while taking turns during field operation was not comfortable. It shall be looked into for ease of operation for the operator.
- **16.6** Country of origin and working width have been wrongly mentioned on the labelling plate of the machine. This should be looked into for corrective action.

#### 16.7 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

Sr. Technical Assistant

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