

THIS TEST REPORT IS VALID UPTO 30.09.2028



VST FT 55 GE POWER WEEDER



भारत सरकार  
GOVT OF INDIA

कृषि एवं किसान कल्याण मंत्रालय

MINISTRY OF AGRICULTURE & FARMERS WELFARE

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DEPARTMENT OF AGRICULTURE AND FARMERS WELFARE

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Machine 101/472	VST FT 55 GE POWER WEEDER	COMMERCIAL (INITIAL)
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#### 4. SPECIFICATIONS

##### 4.1 General:

Make	: VST
Model	: FT 55 GE
Name and address of manufacturer	: <b>M/s Chongqing Hwasdan Machinery Manufacturing Company Ltd.,</b> Xipeng Industry Zone, Jiulongpo Dist, Changing-401326, CHINA
Name and address of applicant	: <b>M/s VST Tillers Tractors Ltd.,</b> Plot No 222-224 & 229-232, 3 <sup>rd</sup> Phase, KIADB Industrial Area, Malur, Kolar District-563130, Karnataka
Name of machine	: Power weeder
Type of machine	: Self propelled, Walk behind
Working size of machine (mm)	: 830
Year of manufacture	: 2022
Serial no. of machine	: 2224257

##### 4.2 Details of prime mover:

Make	: Hwasdan
Model	: H170F
Type	: 4 stroke, Single cylinder, Air cooled, Spark Ignition
Year of manufacture	: 2022
Serial Number	: 2208100472
Country of origin	: <b>CHINA</b>
Recommended high idle speed (rpm)	: $3800 \pm 150$
Recommended low idle speed (rpm)	: 1440
Recommended rated speed (rpm)	: 3600
Rated power observed (kW)	: <b>2.79</b>
Rated power declared (apa) (kW)	: 4.0



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## 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	0.568	Conforms
Silicon (Si)	0.10 -0.40	1.50-2.00	0.610	<b>Does not conform</b>
Manganese (Mn)	0.50 -1.0	0.50-1.00	0.923	Conforms
Sulphur (S)	0.05(max)	0.05(max)	0.017	Conforms
Phosphorous (P)	0.05(max)	0.05(max)	0.023	Conforms

## 12. FIELD PERFORMANCE TEST

The field tests were conducted for 27.90 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	
			16 nos. blade attachment	24 nos. blade attachment
1	Type of soil	:	Light	
2	Soil moisture (%)	:	7.53 to 8.20	12.23 to 12.60
3	Bulk density of soil (g/cc)	:	1.53 to 1.57	1.57 to 1.60
4	Forward Speed of operation (kmph)	:	0.83 to 1.10	1.13 to 1.18
5	Depth of cut (cm)	:	4.93 to 5.13	5.20 to 5.27
6	Width of cut (m)	:	0.592 to 0.630	0.868 to 0.874
7	Area covered (ha/h)	:	0.035 to 0.048	0.073 to 0.077
8	Time required for one ha (h)	:	20.83 to 28.57	12.99 to 13.70
9	Field efficiency (%)	:	69.35 to 71.43	73.74 to 75.49
10	Weeding efficiency (%)	:	78.07 to 89.59	73.21 to 80.65
11	Fuel consumption			
		l/h :	1.02 to 1.10	1.03 to 1.09
		l/ha :	21.25 to 31.43	13.38 to 14.93

### 12.1 For 16 nos. blade attachment in rotor

#### 12.1.1 Rate of work

- Rate of work was recorded as 0.035 to 0.048 ha/h and the forward speed of operation varied from 0.83 to 1.10 kmph.
- Time required to cover one hectare was recorded as 20.83 to 28.57 h.

#### 12.1.2 Quality of work:

- Depth of cut was recorded as 4.93 to 5.13 cm.
- Working width was observed as 0.592 to 0.630 m.
- Field efficiency was found as 69.35 to 71.43 %.
- Weeding efficiency was found as 78.07 to 89.59 %.

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## 12.2 For 24 nos. blade attachment in rotor

### 12.2.1 Rate of work

- Rate of work was recorded as 0.073 to 0.077 ha/h and the forward speed of operation varied from 1.13 to 1.18 kmph.
- Time required to cover one hectare was recorded as 12.99 to 13.70 h.

### 12.2.2 Quality of work:

- Depth of cut was recorded as 5.20 to 5.27 cm.
- Working width was observed as 0.868 to 0.874 m.
- Field efficiency was found as 73.74 to 75.49 %.
- Weeding efficiency was found as 73.21 to 80.65 %.

## 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 27.90 h	Per hour
L-1	305.5	303.5	2.00	0.65	0.02
L-2	314.5	312.0	2.50	0.79	0.03
R-1	304.0	301.0	3.00	0.99	0.04
R-2	308.5	306.5	2.00	0.65	0.02

The hourly rate of wear of blade on mass basis after field operations was recorded as 0.02 to 0.04 %.

Sl. No	Initial mass (g)	Final mass (g)	Loss of mass (g)	Percentage wear of rotor blades	
				After 7.09 h	Per hour
L-3	320.5	320.0	0.5	0.16	0.02
R-3	292.0	291.5	0.5	0.17	0.02

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

## 13. EASE OF OPERATION & ADJUSTMENTS

Machine maneuverability while turning 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.



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**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	0.13	NA	Not specified
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
5.50	5.48	5.47	5.43	0.03	0.05	Not specified	Not specified

**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. COMMENTS & RECOMMENDATIONS

**16.1** The average rated power in rating test of engine was observed as 2.79 kW against declared value of 4.0 kW by the manufacturer. This should be looked into for corrective action.

**16.2** The specific fuel consumption (SFC) in rating test of engine was observed as 414.8 g/kWh against declared value of 374 g/kWh by the 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 2011). This should be looked into for corrective action.

**16.3** It was observed that during engine performance test, at full Load, engine speed was not stable at rated speed. This shall be looked into for corrective action.


**16.4** The engine was not marked with Manufacturer name or trade-mark, Rated power, Rated speed and type of fuel used which does not fulfill the requirement of IS 7347-1974 (Amended 2011). This may be looked into.

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- 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 Machine maneuverability while taking turns during field operation was not comfortable. It shall be looked into for ease of operation for the operator.
- 16.7 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.**
- 16.8 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.
- 16.9 Through the machine is imported from China, country of origin has been mentioned as India on the labeling plate of the machine. This should be looked into for corrective action.
- 16.10 **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

  
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