



THIS TEST REPORT IS VALID UPTO 31.08.2027



55 DLX-HW VST SELF PROPELLED REAPER



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)

BISWANATH CHARIALI: BISWANATH: ASSAM, PIN - 784 176

[AN ISO 9001:2015 CERTIFIED INSTITUTION]

1. SCOPE OF TEST

The scope of test was limited to check and assess the following:

- 1.1 Specifications and other data furnished by the applicant.
- 1.2 Engine Performance test
- 1.3 Vibration measurement
- 1.4 Noise measurement
- 1.5 Air cleaner oil pull over test
- 1.6 Tuning Ability
- 1.7 Wear analysis of critical components (Cutter Bar knife section)
- 1.8 Hardness and chemical analysis (Cutter Bar knife section)
- 1.9 Field performance
- 1.10 Ease of operation and adjustments
- 1.11 Defects, breakdowns and repair

2. METHOD OF SELECTION

As per Govt. of India, OM No. 13-1/2021-M&T (I&P), dated 03.02.2022, the selection of sample for test was exempted. Hence, the machine was directly submitted by the applicant at this Institute for test.

3. TEST CODE/PROCEDURE

There is no Indian Standard Test Code available for testing of reaper as such. The guidelines, however, have been taken from the following:

1. IS: 11467:1985 (Reaffirmed 2012) : Test code for cereal harvesting machines.
2. IS: 6025:1982 (Reaffirmed 1999) : Specification for knife sections for harvesting machine.
3. IS: 10378:1982 (Reaffirmed 2001) : Specification for knife back for harvesting machine.
4. IS: 7347:1974 (Amended 2011) : Specification for Performance of Small Size Spark Ignition Engines.

4. SPECIFICATIONS**4.1 General:**

Name and address of the manufacturer	: VST TILLERS TRACTORS LTD Plot No -1, Dyavasandra Industrial Layout, Whitefield Road, Mahadevapura Post, Bengaluru, Karnataka- 560 048
Name & address of applicant	: VST TILLERS TRACTORS LTD Plot No 222-224 & 229-232, 3 rd Phase, KIADB Industrial Area, Malur, Kolar District, Karnataka- 563 130
Name of machine	: Reaper
Type	: Self Propelled, Walk behind

Machine 64/435	55 DLX-HW VST SELF PROPELLED REAPER	COMMERCIAL (INITIAL)
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Make : VST
 Model : 55 DLX-HW
 Year of manufacture : 2022
 Serial Number : AAKTEE002920
 Country of origin : **INDIA**
 Size of reaper (mm) : 1180
 Name of crop recommended by applicant : Paddy
 Name of crop in which the test was conducted : Paddy

4.2 Details of Prime Mover Used:

Name and address of the manufacturer : M/s Honda India Power Products Ltd., Plot No -5, Sector-41(Kasna) Greater Noida Industrial Development Area, Dist. Gautam Budh Nagar, Uttar Pradesh 201310
 Make : Honda
 Model : GX 160
 Type : 4 stroke Petrol Engine, Single cylinder, Air cooled
 Year of manufacture : **Not Specified**
 Serial Number : GCAED-1015047
 Country of origin : **INDIA**
 Recommended high idle speed (rpm) : 1950 ± 50 (at PTO)
 Recommended low idle speed (rpm) : 700(+100/-75) (at PTO)
 Recommended rated speed (rpm) : 1800 (at PTO)
 Recommended speed for field test (rpm) : 1500-1800 (at PTO)
 Rated power observed (kW) : 3.3

13. FIELD PERFORMANCE TEST

The machine was tested for 25.90 hours during harvesting Paddy crop. The performance of the machine was assessed with regard to quality of work, rate of work, fuel consumption, safety and soundness of construction. The detailed test results have been given in Annexure-I & II and summarized in Table 1 & 2 below.

SUMMARY OF CROP PARAMETERS**Table-1**

S. No.	Parameters	Range
1	Variety of crop	Jaya
2	Straw moisture content (%)	39.9 to 42.7
3	Grain moisture content (%)	17.9 to 19.4
4	Plant height (cm)	87.8 to 99.0
5	Length of ear head (mm)	176.4 to 197.0
6	Number of grains per ear head	193.0 to 205.8
7	Number of hills per square meter	25 to 32
8	Number of tillers per hill	21 to 24
9	Straw-grain ratio	2.88:1 to 2.95:1

SUMMARY OF FIELD PERFORMANCE**Table-2**

S. No.	Parameters/operations	Range
1	Forward speed (kmph)	2.67 to 2.74
2	Width of cut (cm)	110 to 111
3	Stubble height (mm)	58.4 to 61.4
4	Losses (Percentage of total grain yield)	
	-Pre-harvest loss	0.000 to 0.004
	-Post harvest loss (Cutter bar)	0.10 to 0.21
	-Conveyor loss/shattering loss	0.34 to 0.52
5	Area harvested (ha/h)	0.217 to 0.237
6	Field efficiency (%)	73.47 to 78.46
7	Time required for one hectare (h)	4.22 to 4.61
8	Fuel consumption	
	- l/h	0.980 to 1.040
	- l/ha	4.30 to 4.65

13.1 Rate of work

- The forward speed of machine was observed as 2.67 to 2.74 kmph.
- The area harvested by the machine was recorded as 0.217 to 0.237 ha/h.

16.1.7 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
5.47	5.47	5.42	5.43	0.05	0.04	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

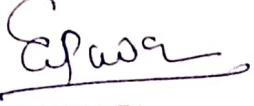
17. COMMENTS AND RECOMMENDATIONS

- 17.1 Rated power of the engine was observed as 3.31 kW against declared value of 2.9 kW by the manufacturer. This may be looked into.
- 17.2 The specific fuel consumption (SFC) in rating test of engine was observed as 390.50 g/kWh against declared value of < 348 g/kWh by the manufacturer. Which exceeded by more than 5 percent of that declared by the manufactures & does not fulfill the requirement of IS 7347-1974 (reaffirmed 2006). This should be looked into for corrective action.
- 17.3 The amplitude of mechanical vibration marked as (*) was 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.
- 17.4 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 operator's comfort & safety.
- 17.5 Specification of knife sections of the cutter bar does not conform to IS 6025:1982 (Reaffirmed 1999) and it should be looked into for corrective action.
- 17.6 Specification of knife section back of the machine does not conform to IS 10378-1982 (Reaffirmed 2001) and it should be looked into for corrective action.
- 17.7 The hardness and chemical composition of knife sections (both movable and stationary) does not conform to the requirement of IS 6025-1982 (Reaffirmed 1999). It should be looked into for improvement.
- 17.8 The mentioned value of Rated power (3.6 kW) of engine on the marking /labeling plate of the machine was not matching with the observed value during engine test. This may be looked into.

- 17.9 Provision for main gearbox oil level check was not provided. It should be looked into for corrective action.
- 17.10 Clogging of crops at cutter bar was observed several times which resulted in breakage of safety pin. This shall be looked into for improvement.
- 17.11 **Technical literature:**
Operator cum Service Manual & Parts Catalogue was provided along with the machine during the course of testing. It is further recommended to bring out these manuals in Hindi and other vernacular languages as per IS: 8132-1999.

TESTING AUTHORITY


(M.R. PATIL)
AGRICULTURAL ENGINEER


(S.G. PAWAR)
AGRICULTURAL ENGINEER


(DR. P.P. RAO)
DIRECTOR

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

18. APPLICANT'S COMMENTS

Sr. No.	Page No. /Clause No.	Applicant's Comments
01	Page No. 24/17.1, 17.2, 17.3, 17.5, 17.6 Page No. 25/17.9	The necessary corrective action will be taken and will be incorporate in further production models.
02	Page No. 24/17.4, 17.7, 17.8 Page No. 25/17.10, 17.11	Suggestion & recommendation will be incorporated for the quality of product & Necessary corrective action will be taken. This will be implemented immediately.