

THIS TEST REPORT IS VALID UPTO 31/10/2026



**DHARMATECH, SELF PROPELLED VERTICAL CONVEYOR REAPER
MODEL DI-01**



सत्यमेव जयते

भारत सरकार
GOVT OF INDIA

कृषि एवं किसान कल्याण मन्त्रालय

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

विश्वनाथचारिआलि, 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 Specification and other data furnished by the applicant.
- 1.2 Engine Performance test
- 1.3 Vibration measurement
- 1.4 Noise measurement
- 1.5 Tuning Ability
- 1.6 Wear analysis of critical components (Cutter Bar blade)
- 1.7 Hardness and chemical analysis (Cutter Bar blade)
- 1.8 Field performance
- 1.9 Ease of operation and adjustments
- 1.10 Defects, breakdowns and repair

2. METHOD OF SELECTION

As per Govt. of India, OM No. 13-13/2020-M&T (I&P), dated 22.12.2020, the random selection 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 self-propelled vertical conveyor 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: 12036:1995 (Reaffirmed 2004) : Agricultural Tractors- Test procedure-Power Tests for Power Take-Off.
5. IS:6024:1983 : Specification for Guard for harvesting machine.

4. SPECIFICATIONS**4.1 General:**

- Name and address of the manufacturer : M/s Dharmatech Industries, 23/2, Parishikhar Ind. Estate, Nr. Ramol Toll Plaza, S. P. Ring Road, Ramol, Ahmedabad, Gujarat- 382449
- Name & Address of Applicant : M/s Dharmatech Industries, 23/2, Parishikhar Ind. Estate, Nr. Ramol Toll Plaza, S. P. Ring Road, Ramol, Ahmedabad, Gujarat- 382449
- Name of machine : Vertical Conveyor Reaper
- Type : Self-Propelled, Walk Behind
- Make : Dharmatech Industries
- Model : DI-01
- Year of manufacture : 2020
- Serial Number : DID 20J 001



Country of origin : India
 Size of reaper, mm : 1280
 Name of crop recommended (apa) : Paddy, wheat, Soya been, and different types of fodders.
 Name of crop in which the test was conducted : Wheat

4.2 Details of Prime Mover Used:

Name and address of the manufacturer : Greaves Cotton Limited, Plot J2 M. I. D C
 Chikalthana Aurangabad (Maharashtra)
 Made in India
 Make : Greaves Cotton Limited
 Model : 5520
 Type : Single Cylinder 4 Stroke, Air cooled Diesel Engine.
 Year of manufacture : 2020
 Serial Number : AOKI429803
 Country of origin : India
 Recommended high idle speed (rpm) (apa) : 3700 ± 100
 Recommended low idle speed (rpm) (apa) : 1150 ± 100
 Recommended rated speed (rpm) (apa) : 3450 ± 50
 Recommended rated speed for field test (rpm) (apa) : 3000 ± 50
 Speed at maximum torque, (Nm) (apa) : 10.5
 Maximum power observed, kW : 3.80

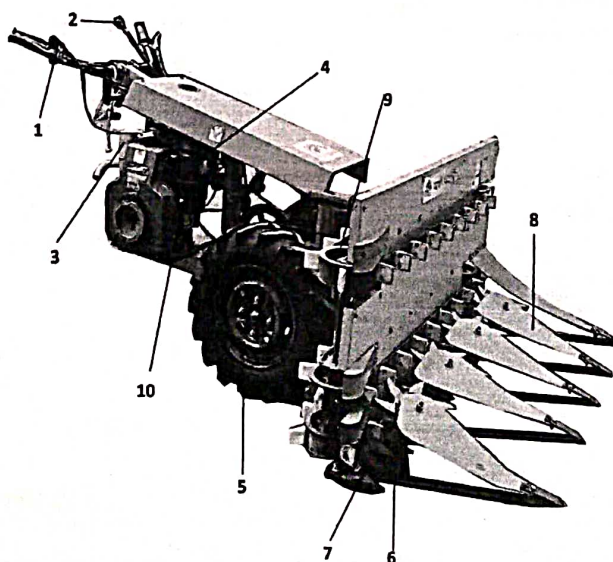


Fig.1: Dharmatech Self-Propelled Vertical Conveyor Reaper

KEYWORDS:

- | | |
|-----------------------------|------------------|
| 1. Accelerator | 6. Star wheel |
| 2. Main gear shifting lever | 7. Cutter bar |
| 3. Silencer | 8. Crop divider |
| 4. Fuel tank | 9. Conveyor Belt |
| 5. Transport Wheel | 10. Air cleaner |

13. FIELD PERFORMANCE TEST

The reaper was operated for 26.5 hours for harvesting the wheat crop. During the test variety of wheat harvested was wheat 273 to assess the performance of machine with regard to quality of work, rate of work, fuel consumption, safety and soundness of construction. The crop parameter and Field performance test are given in Annexure- I & II and summarized in table 1 & 2.

SUMMARY OF CROP PARAMETERS

Table-1

S. No.	Parameters/operations	Range
		Wheat 273
1	Variety of crop	7.3 to 8.0
2	Straw moisture content (%)	15.5 to 16.0
3	Grain moisture content (%)	73.1 to 90.2
4	Plant height (cm)	82.0 to 91.0
5	Length of ear head (mm)	35.8 to 40.0
6	Number of grains per ear head	321.25 to 343.75
7	Number of tillers per m ²	1.13 to 1.67
8	Straw-grain ratio	
9	Atmospheric Conditions	
	- Temperature °C	37.0 to 38.0
	- Humidity (%)	12.0 to 16.0
	- Pressure (kPa)	99.98 to 100.1

SUMMARY OF FIELD PERFORMANCE

Table-2

S. No.	Parameters/operations	Range
1	Engine speed (rpm)	
2		No load 3019 to 3028
3		On load 3002 to 3008
4	Forward speed (kmph)	2.94 to 3.03
5	Width of cut (cm)	1.24 to 1.26
6	Stubble height (mm)	60.0 to 79.13
7	Losses (% of total grain yield)	
	- Pre-harvested loss	0.00 to 0.01
	- Post-harvest loss(Cutter bar + Uncut)	0.05 to 0.20
	- Conveyor loss/shattering loss	0.33 to 0.53
8	Area harvested (ha/h)	0.2391 to 0.2633
9	Field Efficiency, %	68.37 to 70.83
10	Time required for one hectare (h)	3.80 to 4.18
11	Fuel consumption	
	- l/h	0.72 to 0.815
	- l/ha	2.80 to 3.10

13.1 Rate of work

- The speed of harvesting ranged between 2.94 to 3.03 kmph
- The area harvested the machine was recorded as 0.2391 to 0.2633 ha/h

16.1.3 Ring Side clearance

Piston Rings	Ring Side clearance (mm)	Max. Permissible wear limit (mm)
1st Compression ring	0.01	0.15
2nd compression ring	0.05	
3rd compression ring	0.06	
Oil ring	0.07	

16.1.4 Ring end gap clearance

Ring No.	Ring End gap (mm)			Max. Permissible wear limit (mm)
	At top	At middle	At bottom	
1st Compression ring	0.05	0.06	0.06	0.30
2nd compression ring	0.05	0.06	0.06	
3rd compression ring	0.05	0.06	0.06	
Oil ring	0.05	0.05	0.05	0.40

16.1.5 Big end bearing

Bearing no.	Dia of bearing (mm)	Dia of Crank pin (mm)	Clearance (mm)		Max. Permissible wear limit (mm)	
			Dimetrical	Axial	Dimetrical	Axial
1	40.12	40.06	0.06	0.50	0.20	0.60

Condition of bearing: Normal

16.1.6 Main bearing

Bearing No.	Diametrical clearance, (mm)	Crankshaft end float, (mm)	Max. permissible clearance limit, (mm)	
			Diametrical clearance	Crankshaft end float
Bush Bearing	0.06	0.31	0.10	0.50

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
6.90	6.97	6.88	6.95	0.02	0.02	Not Specified	Not Specified

16.2 Valve guide and springs

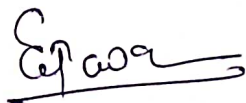
Valve, guide and timing gear:-

- Pitting of seat/faces of valves : Normal
- Any visual damage of teeth of timing gears : None
- Condition of ignition coil & magneto : Normal

17. COMMENTS AND RECOMMENDATIONS

- 17.1 Specific fuel consumption of engine as observed during test 370 g/kWh against 299 g/kWh of that declared by the applicant/manufacture. This should be looked into for corrective action.
- 17.2 The hardness and chemical composition of Knife blades does not conform to the requirement of IS 6025-1982. It should be looked into corrective action.

- 17.3 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.
- 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 the operator's comfort & safety.**
- 17.5 A Safety pin on conveyor chain for cutter bar is not provided to take care of overloading of cutter bar. it needs to be provided at suitable place
- 17.6 Specification for knife sections for harvesting machine does not conform to IS 6025:1982 and it should be looked into for corrective action.
- 17.7 Specification for knife back for harvesting machine does not conform to IS 10378-1982 and it should be looked into for corrective action.
- 17.8 **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


(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

**18. APPLICANT'S COMMENTS**

Para No	Our Reference	Applicants Comments
18.1	17.1 to 17.8	With immediate Effects, We will inform to our Production Department to take care the Corrective Actions before dispatching material from the factory to sales unit.