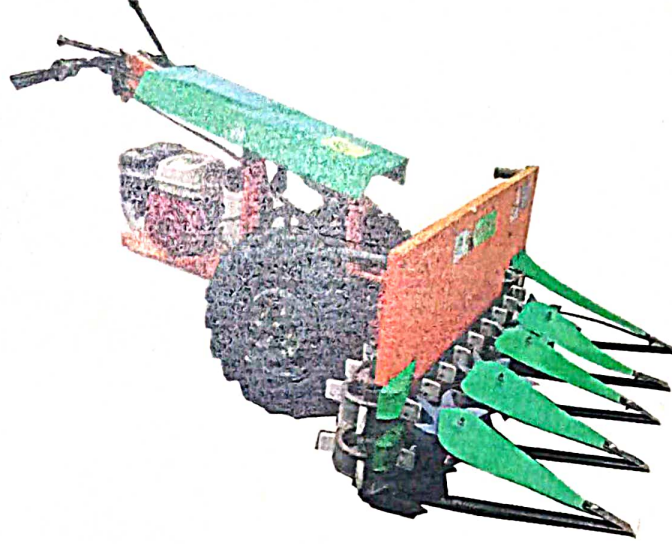


व्यावसायिक परीक्षण रिपोर्ट (प्रारंभिक)
COMMERCIAL TEST REPORT (Initial)



संख्या/No.: Machine 41/405
माह / Month: September 2021

THIS TEST REPORT IS VALID UPTO 30/09/2026



**DHARMATECH, SELF PROPELLED VERTICAL CONVEYOR REAPER
MODEL DI-02**



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)

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[AN ISO 9001:2015 CERTIFIED INSTITUTION]

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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: 7347:1974 (Reaffirmed 2006) : Specification for Performance of Small Size Spark Ignition Engines.
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-02 |
| Year of manufacture | : | 2020 |
| Serial Number | : | DIP 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	: Honda siel power products ltd. Plot-5, sec-41 (kasna) Greater Noida Indl. Dev Area, Gautam Budh Nagar (U.P) 201310
Make	: Honda
Model	: GX 200
Type	: 4 stroke, Single cylinder, Air cooled
Year of manufacture	: 2020
Serial Number	: GCAFD-1023532
Country of origin	: India
Recommended high idle speed (rpm)	: 3800 ± 100
Recommended low idle speed (rpm)	: 1400 ± 100
Recommended rated speed (rpm)	: 3600 ± 50
Recommended speed for field test (rpm)	: 3600 ± 50
Speed at maximum torque, (rpm)	: 2500
Maximum power observed, kW	: 3.14

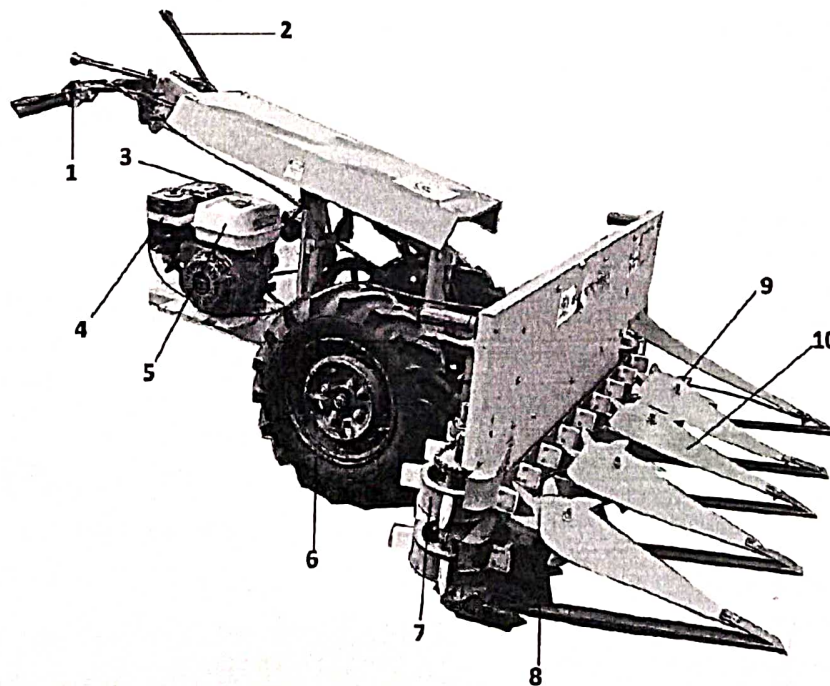


Fig.1: Dharmatech Self-Propelled Vertical Conveyor Reaper

KEYWORDS:

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

13. FIELD PERFORMANCE TEST

The VCR was operated for 26.42 hours for harvesting the wheat crop. During the test variety wheat harvested was wheat-273 to assess the performance of machine with regard to quality work, rate of work, fuel consumption, safety and soundness of construction. The crop parameters 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
1	Variety of crop	Wheat 273
2	Straw moisture content (Wb)(%)	16.0 to 20.0
3	Grain moisture content (Wb) (%)	7.35 to 8.25
4	Plant height (cm)	84.75 to 92.0
5	Length of ear head (cm)	79.8 to 88.4
6	Number of grains per ear head	35.0 to 40.0
7	Number of tillers per square meter	310.0 to 358.75
8	Straw-grain ratio	1.14:1 to 1.52:1

SUMMARY OF FIELD PERFORMANCE

Table-2

S. No.	Parameters/operations	Range
1	Engine speed(rpm)	
2		No load 3609 to 3622
3		On load 3592 to 3602
4	Forward speed(kmph)	2.77 to 2.97
5	Width of cut(cm)	124 to 126
6	Stubble height (mm)	71.27 to 78.0
7	Losses(Percentage of total grain yield)	
	-Pre-harvested loss	Nil
	-Post harvest loss(Cutter bar)	0.09 to 0.13
	- Conveyor loss/shattering loss	0.27 to 0.40
8	Area harvested(ha/h)	0.2428 to 0.2709
9	Field efficiency, %	69.57 to 72.96
10	Time required for one hectare(h)	3.69 to 4.12
11	Fuel consumption	
	- l/h	0.783 to 0.846
	- l/ha	2.89 to 3.43

13.1 Rate of work

- The speed of harvesting ranged between 2.77 to 2.97 kmph
- The area harvested the machine was recorded as 0.2428 to 0.2709 ha/h

13.2 Quality of work

- Field efficiency was recorded 69.57 to 72.96 %.
- The post-harvest loss was observed as 0.09 to 0.13 %
- The conveyor loss/shattering loss was observed as 0.27 to 0.40 %
- The stubble height was recorded as 71.27 to 78.0 cm
- Machine leaves the harvested crop in windrows

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	0.30	0.35	0.35	0.50
2nd compression ring	0.45	0.50	0.50	
Oil ring	NA	NA	NA	

16.1.5 Big end bearing

Bearing no.	Dia of bearing (mm)	Dia of Crank pin (mm)	Clearance (mm)		Max. Permissible wear limit (mm)	
			Dimentrical	Axial	Dimentrical	Axial
1	30.06	30.00	0.06	--	0.15	0.2

Condition of bearing: Normal

16.1.6 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	0.11	NA	Not Specified
2.	Ball bearing			

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
5.42	5.42	5.40	5.40	0.02	0.02	NA	NA

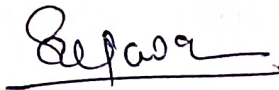
Valve, guide and timing gear:-

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

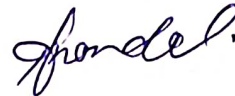
17. COMMENTS AND RECOMMENDATIONS

- 17.1** Specific fuel consumption of engine as observed during test 472.48 g/kWh against 395 g/kWh of that declared by the applicant/manufacturer. This does not fulfill the requirement of IS 7347-1974 and should be looked into for corrective action.
- 17.2** Rated power of the engine has been observed as 3.12 kW as against declaration of 3.1 kW. This may be looked into for 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 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.
- 17.6 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
- 17.7 Specification for knife sections for harvesting machine does not conform to IS 6025:1982 and it should be looked into for corrective action.
- 17.8 Specification for knife back for harvesting machine does not conform to IS 10378-1982 and it should be looked into for corrective action.
- 17.9 **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 17.9	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.