

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



संख्या/No.: H&TH/NERFMTTI, B. Chariali/  
06/06/563  
माह / Month: February 2026

THIS TEST REPORT IS VALID UPTO 28.02.2033



DHARMATECH INDUSTRIES, DPR 120, SELF-PROPELLED REAPER



सत्यमेव जयते

भारत सरकार

GOVERNMENT OF INDIA

कृषि एवं किसान कल्याण मंत्रालय

MINISTRY OF AGRICULTURE AND 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

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H&TH/NERFMTTI, B.Chariali/ 06/06/563	DHARMATECH INDUSTRIES, DPR 120 SELF-PROPELLED REAPER	COMMERCIAL (INITIAL)
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#### 4. SPECIFICATIONS

##### 4.1 General:

Name and address of the manufacturer	:	DHARMATECH INDUSTRIES 23/2, Parishikhar Ind. Estate, S.P. Ring Road, Ramol, Ahmedabad, Gujarat -382 449
Name and address of the applicant	:	DHARMATECH INDUSTRIES 23/2, Parishikhar Ind. Estate, S.P. Ring Road, Ramol, Ahmedabad, Gujarat -382 449
Name of machine	:	Self-propelled reaper/ Vertical conveyor reaper
Type	:	Self-propelled, walk behind
Make	:	DHARMATECH INDUSTRIES
Model	:	DPR 120
Year of manufacture	:	2025
Serial Number	:	103
Country of origin	:	INDIA
Size of reaper (mm)	:	1205
Name of the crop recommended by the applicant	:	Paddy
Name of the crop in which test was conducted	:	Paddy

##### 4.2 Details of prime mover used:

Name and address of the manufacturer (apa)	:	M/s Honda Siel Power Products Ltd, Plot No-5, Sector-41 (Kasna) Greater Noida Industrial development Area, Dist. Gautam Budh Nagar, Uttar Pradesh -201 310
Make	:	HONDA
Model	:	GX160
Type	:	4-stroke, single cylinder, air cooled, petrol engine
Year of manufacture	:	2025
Serial Number	:	GCAED-1263448*LKA
Country of origin	:	INDIA
Recommended high idle speed (rpm)	:	1950 ± 50 (at PTO) 3900 ± 100 (at engine)
Recommended low idle speed (rpm)	:	700(+100/-75) (at PTO) 1400 (+200/-150) (at engine)
Recommended rated speed (rpm)	:	1800 (at PTO) 3600 (at engine)
Recommended speed for field test (rpm)	:	1500-1800 (at PTO) 3000-3600 (at engine)
Engine rated power observed (kW)	:	3.06
Engine rated power declared (kW)	:	2.90

**13. FIELD PERFORMANCE TEST**

The machine was tested for total of 25.28 hours for 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**

Sr. No.	Parameters	Range
1	Variety of crop	Paddy ( <i>Ranjit</i> )
2	Straw moisture content (%)	34.8 to 40.4
3	Grain moisture content (%)	14.5 to 16.2
4	Plant height (mm)	761 to 1101
5	Length of ear head (mm)	155.4 to 245.0
6	Number of grains per ear head	102 to 228
7	Number of hills per m <sup>2</sup>	12 to 27
8	Number of tillers per hill	8 to 11
9	Straw-grain ratio	2.14:1 to 2.69:1

**SUMMARY OF FIELD PERFORMANCE TEST****Table-2**

Sr. No.	Parameters	Range
1	Forward speed (kmph)	3.33 to 3.56
2	Width of cut (m)	1.12 to 1.15
3	Stubble height (mm)	128 to 180
4	Losses (percentage of total grain yield)	
	-Pre harvest loss	0.04 to 0.05
	-Post harvest loss (cutter bar)	0.08 to 0.10
	-Conveyor loss/shattering loss	1.22 to 1.39
5	Area harvested (ha/h)	0.32 to 0.34
6	Field efficiency (%)	82.50 to 84.21
7	Time required for one hectare (h)	2.94 to 3.13
8	Fuel consumption	
	- l/h	0.94 to 0.98
	- l/ha	2.83 to 3.07

**13.1 Field performance during paddy harvesting****13.1.1 Rate of work**

- The forward speed of machine was observed as 3.33 to 3.56 kmph.
- The area harvested by the machine was recorded as 0.32 to 0.34 ha/h.

### 13.1.2 Quality of work

- Field efficiency was observed as 82.50 to 84.21 %.
- The post-harvest loss (cutter bar) was observed as 0.08 to 0.10 % of total grain yield.
- The conveyor loss/shattering loss was observed as 1.22 to 1.39 % of total grain yield.
- The stubble height was recorded as 128 to 180 mm.
- Machine leaves the harvested crop in windrows.

### 13.3 Labour requirement

- One unskilled labour is required for cutting the crop manually at corner and side of each field.
- Two skilled labours are required for operating the machine continuously.

### 13.4 Operator's comfort, safety and ease of operation

- All the controls were within the easy reach of the operator.
- The machine was provided with main clutch for stopping forward motion of the machine and cutter bar operation at the same time.

## 14. EASE OF OPERATION AND ADJUSTMENTS

No noticeable difficulties were observed in operation and adjustment during the field test.

## 15. DEFECTS, BREAKDOWNS AND REPAIR

No noticeable defect or breakdown was observed during entire test.

## 16. COMPONENTS / ASSEMBLY INSPECTION AND ASSESSMENT OF WEAR

### 16.1 Engine:

The engine and other assemblies were dismantled after 39.19 hours of operation.

#### 16.1.1 Cylinder:

Cylinder	Cylinder bore dia (mm)						Max. Permissible wear limit (mm)
	Top position		Middle position		Bottom position		
	Thrust side	Non Thrust side	Thrust side	Non Thrust side	Thrust side	Non Thrust side	
1	68.03	68.02	68.03	68.02	68.03	68.02	68.165

### 16.1.2 Piston:

Piston no.	Piston dia (mm)				Piston liner side clearance observed (mm)	Max. Permissible wear limit (mm)
	At top		At skirt			
	Thrust side	Non Thrust side	Thrust side	Non Thrust side		
1	67.91	67.93	67.99	NA	0.04	67.845

### 16.1.3 Ring side clearance

Piston rings	Ring side clearance (mm)	Max. permissible wear limit (mm)
1 <sup>st</sup> compression ring	0.08	0.15
2 <sup>nd</sup> compression ring	0.08	0.15
Oil ring	NA	--

### 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	0.45	0.45	0.45	1.00
2nd compression ring	0.40	0.40	0.40	1.00
Oil ring	NA	NA	NA	1.00

### 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	30.12	30.05	0.07	0.45	0.12	1.10

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	0.15	NA	1.0
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
5.44	5.44	5.42	5.42	0.02	0.02	0.30	0.30

**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 and magneto : Normal

**17. CRITICAL TECHNICAL SPECIFICATIONS**

(Vide Ministry's letter No. 13-9/2019-(M&T) (I&P)-Part dated 26.04.2019)

Sr. No.	Parameters	Specifications	Observation	Remarks
1.	Type of machine	Walk-behind type	Walk-behind type	Conforms
2.	Effective width of cutter bar (mm)	1100 (Min.)	1257	Conforms
3.	Number of crop dividers	5 (Min.)	5	Conforms
4.	Type of knife section	Serrated	Serrated	Conforms
5.	Number of knife sections on cutter bar	24 (Min.)	24	Conforms
6.	Type of crop conveyor	Chain/Belt	Chain	Conforms
7.	Numbers and type of wheel equipment	Two/Pneumatic or Iron	Two pneumatic	Conforms
8.	Type of prime mover	Diesel/Petrol/Kerosene/Petrol start kerosene run IC engines.	Petrol	Conforms
9.	Minimum power of prime mover (kW)	2.0 to 4.5	3.06	Conforms
10.	Material of knife section	High Carbon steel EN42J or above	High Carbon steel	Conforms
11.	Material of knife back	High Carbon steel EN42J or above	High Carbon steel EN42J (apa)	Conforms
12.	Material of ledger plate	High Carbon steel EN44 above	High Carbon steel	Conforms
13.	Hardness of knife section HRC	38 (Min)	50.5	Conforms
14.	Hardness of ledger plate	45 (Min.)	55.5	Conforms
15.	Provision for adjusting the height of cutter bar	Must be provided	Provided	Conforms
16.	Guards against all moving parts/drives and hot parts	Must be provided	Provided	Conforms
17.	Spark arrester in engine exhaust	Must be provided	Provided	Conforms


18.	Location and direction of exhaust emission to be away from the operator and machine for satisfactory operation	Must be provided	Provided	Conforms
19.	Slip clutch /safety pins at cutter bar drive	Must be provided	Provided	Conforms
20.	Slip clutch/safety pins at conveyor drive	Must be provided	Provided	Conforms
21.	Provision of row marker/crop guide	Must be provided	Provided	Conforms
22.	Marking/labeling of machine	The labeling plate should be riveted on the body of machine having Name and address of manufacturer, Country of origin, Make, Model, Year of manufacturer, Serial number, Type, size, Size of prime mover (kW)	Country of origin, type, and size were not provided.	<b>Does not conform</b>
23.	Literature	Operator manual, Service manual and Parts catalogue should be provided.	Provided	Conforms

**18. COMMENTS AND RECOMMENDATIONS**

- 18.1** During air cleaner oil pull over test, percentage of oil pull-over was observed on higher side. It should be looked into for corrective action.
- 18.2** 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 affecting the useful life of machine components. In view of above, this deserves to be given top priority for corrective action.
- 18.3** Noise at operator's ear level was observed on higher side against warning limit of 85 dB(A) as specified by International Labor Organization (ILO) for continuous exposure of 8 hours per day. This calls for reduction in noise level to improve the operator's comfort & safety.
- 18.4** Specification of knife sections of the cutter bar does not conform to IS 6025:2024 and it should be looked into for corrective action.
- 18.5** Specification of knife section back of the machine does not conform to IS 10378-2024 and it should be looked into for corrective action.

- 18.6 The hardness of knife section (both movable and stationary) and chemical composition of knife section (both movable and stationary) did not conform to the requirement of IS 6025-2024. It should be looked into for improvement.
- 18.7 The mentioned value of rated power as 5 hp on the labeling plate of the machine was not matching with the observed value during engine test. This may be looked into for correction.
- 18.8 The information such as country of origin, type, and size of machine were not provided on the labeling plate. This should be looked into for corrective action.
- 18.9 **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)  
 SENIOR AGRICULTURAL ENGINEER

  
 (P. KAMALABAI)  
 DIRECTOR

Draft test report compiled by - Sh. D. Deori, Technical Assistant

**19. APPLICANT'S COMMENTS**

We have gone through the comments and recommendations as stated in the draft test report and we will take care as per comments and recommendations in our future products.

ANNEXURE-I

**CROP PARAMETERS**

- Places of test: 1. Village - Monabari, Dist.- Biswanath  
 2. Village - Totobari, Dist.- Biswanath  
 3. Village - Nagshankar, Dist.- Biswanath  
 Name of the crop in which field test conducted: Paddy

Sr. No.	Parameters	I	II	III	IV
1	Date of test	22.12.25	26.12.25	27.12.25	29.12.25
2	Av. moisture content (%)				
	- Grain	14.5	16.2	15.1	14.8
	- Straw	34.8	40.4	36.5	35.2
3	Variety of crop	Paddy ( <i>Ranjit</i> )			
4	Av. plant height (mm)	1030	1101	761	908
5	Av. length of ear head (mm)	161.0	245.0	155.4	199.0
6	Av. no. of grains per ear head	102	214	228	186
7	No. of hills per m <sup>2</sup>	19	27	12	19
8	No. of tillers per hill	11	11	8	9
9	Straw- grain ratio	2.14:1	2.35:1	2.69:1	2.52:1
10	Atmospheric conditions				
	Av. temperature (°C)	29.0	31.0	29.0	30.5
	Av. humidity (%)	62.0	67.0	69.1	65.0
	Av. pressure (kPa)	99.7	100.2	100.2	100.2

ANNEXURE-II

**FIELD PERFORMANCE RESULTS**

- Places of test:** 1. Village - Monabari, Dist.- Biswanath  
 2. Village - Totobari, Dist.- Biswanath  
 3. Village - Nagshankar, Dist.- Biswanath

**Name of the crop in which field test conducted:** Paddy

Sr. No.	Parameters	I	II	III	IV
1	Variety of crop	Paddy ( <i>Ranjit</i> )			
2	Date of test	22.12.25	26.12.25	27.12.25	29.12.25
3	Net test duration (h)	6.70	6.58	6.50	5.50
4	Forward speed (kmph)	3.33	3.54	3.54	3.56
5	Av. width of cut (m)	1.13	1.12	1.13	1.15
6	Av. stubble height (mm)	131	134	180	128
7	Losses (% of total grain yield)				
	- Pre harvest loss	0.04	0.05	0.04	0.04
	- Post harvest loss (cutter bar + uncut)	0.10	0.10	0.09	0.08
	- Conveyor loss/shattering loss	1.26	1.39	1.22	1.31
8	Av. mass of crop per m <sup>2</sup> (g)	1189.8	1096.2	1115.8	1147.4
9	Area harvested (ha/h)	0.32	0.33	0.33	0.34
10	Field efficiency (%)	84.21	82.50	82.50	82.93
11	Time required for one ha (h)	3.13	3.03	3.03	2.94
12	Fuel consumption				
	- l/h	0.98	0.95	0.94	0.96
	- l/ha	3.07	2.88	2.85	2.83