

व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ No.: COMP-171/2410/2019

माह/Month: December, 2019

THIS TEST REPORT VALID UP TO : 31st DECEMBER, 2026



**PDC SUPER SMS, FITTED ON HIND-999
SELF-PROPELLED COMBINE HARVESTER**



भारत सरकार

Government of India

कृषि एवं किसान कल्याण मंत्रालय

Ministry of Agriculture and Farmers Welfare

कृषि, सहकारिता एवं किसान कल्याण विभाग

Department of Agriculture, Cooperation and Farmers Welfare

उत्तरी क्षेत्र कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

Northern Region Farm Machinery Training and Testing Institute

ट्रैक्टर नगर, सिरसा रोड, हिसार, (हरियाणा) - 125 001

Tractor Nagar, Sirsa Road, HISAR (Haryana)-125 001

[ISO 9001:2015 CERTIFIED]

Website: <http://nrfmtti.gov.in/>

E-mail: fmti-nr@nic.in

Tele./FAX: 01662-276984

4. ROTOR BALANCING TEST

Date of test	:	13.12.2019
Make and model of Rotor balancing machine	:	PROTEQ and H - 1 K
Mass of the job (kg)	:	86
Service speed of the job rpm	:	1437
ISO balancing grade	:	G 16
Balancing speed rpm	:	1000*

* Beyond the speed of 1000 RPM excessive vibrations were observed due to unbalanced rotor.

S.No.	Particulars	As permissible	As observed	Remark
	Unbalance weight (Left side plane) (g)	55.43	176.66	Unbalanced
	Unbalance weight (Right side plane) (g)	55.43	3.01	Balanced

	Unbalance angle (Left side plane) (degree)	31.12
	Unbalance angle (Right side plane) (degree)	13.29

5. FIELD PERFORMANCE TEST

- 5.1 The SMS fitted on Hind-999 combine harvester was operation in the paddy field for 5.57 hrs, to assess (a) performance of SMS and, (b) performance of combine harvester with SMS.

The crop parameters recorded during the test were as under:-

Crop Parameters

Sl. No.	Parameters		Observations
1.	Average plant height, cm	:	98 to 108
2.	Average number of tillers/m ²	:	269 to 304
3.	Average length of ear head, cm	:	24 to 28
4.	Average straw/grain ratio	:	1.9:1
5.	Average moisture, %		
	- Grain	:	13.0
	- Straw	:	73.4

The results of field performance test of paddy crop harvesting are summarised in Table and presented in detail in Appendix – II to V.



Table: SUMMARY OF LOSSES & EFFICIENCIES OBSERVED DURING FIELD PERFORMANCE TEST.

Crop variety	Collectable losses (%)	Non-collectable losses (%)	Total processing losses (%)	Threshing efficiency (%)	Cleaning efficiency (%)	Grain breakage in main grain tank (%)	Forward speed (kmph)	Area covered (ha/h)	Fuel consumption		Grain output (kg/h)	Crop throughput (t/h)
									(l/h)	(l/ha)		
1	2	3	4	5	6	7	8	9	10	11	12	13
PADDY												
Pusa 44	2.0	0.7	2.4	98.6	97.1	0.69	1.67	0.480	10.91	22.73	3766.11	11.1

SUMMARY OF FIELD PERFORMANCE OF SMS

Uniformity of straw spread, CV, (percent)	19.7
Weighted mean size of chopped straw, cm	7.5

6. DEFECTS, ADJUSTMENTS, BREAKDOWNS AND REPAIRS

No noticeable defect observed

7. SUMMARY OF OBSERVATIONS**7.1 Field test**

7.1.1	Performance of SMS with Hind-999 Combine Harvester	
1	Uniformity of straw spread, CV, (percent)	19.7
2	Weighted mean size of chopped straw, cm	7.5

7.1.2 The performance of Hind-999 combine harvester with PDC Super SMS

S. No	Parameters	Observations
1.	Speed of operation (kmph)	1.67
2.	Area covered (ha/h)	0.480
3.	Fuel consumption:	
	- (l/h)	10.91
	- (l/ha)	22.73
4.	Crop throughput (tonne/h)	11.10
5.	Grain breakage in main grain outlet (%)	0.69
6.	Header losses (%)	0.28
7.	Total non-collectable losses (%)	0.7
8.	Total collectable losses (%) (un threshed + broken from main outlet)	2.0

vi) Break down (critical, major & minor)					
Sr. No	Category of breakdowns	Category (Evaluative/ Non evaluative)	Requirements as per IS 15806:2018	As observed	Whether meets the requirements (Yes/No)
1.	Critical	Evaluative	No critical breakdown	None	Yes
2.	Major	Evaluative	Not more than two and neither of them should be repetitive in nature	None	Yes
3.	Minor	Evaluative	Not more than five and frequency of each should not be more than two	None	Yes
4.	Total breakdown	Evaluative	In no case total no of (major + minor) breakdowns exceed five	None	Yes

9. CRITICAL TECHNICAL SPECIFICATIONS

(Vide Ministry's communication F. No 9-1/2019- M&T (I&P) dated 20.08.2019)

Sl No.	Parameters	Specification	Observation	Remarks
Rotor				
1.	Rotor diameter, mm	165-170	165	Conforms
2.	No. of lugs on rotor in row	6	6	Conforms
3.	No. of rows in periphery	4	4	Conforms
4.	Length of pivotal flail, mm	170-180	177.6	Conforms
5.	Width of flail, mm	50 ± 1	50	Conforms
6.	Thickness of flail, mm	5.0 (Min.)	5.0	Conforms
7.	No of flails in one set	2	2	Conforms
8.	Spacing between flails of one set, mm	35 (Max)	38.4	Does not conform
9.	Distance between adjacent flails units, mm	200±10	204	Conforms
10.	No of rows/bars of serrated blades	1	1	Conforms
11.	No of serrated blades in row	20 (Min.)	24	Conforms
12.	Spacing between serrated blades, mm	50 (Max.)	49.8	Conforms
13.	Overlapping of pivotal blade on serrated blade, mm	60 (Min.) (adjustable)	95	Conforms
Spreader				
14.	Total no of flaps	6 + 2 (side)	6+2	Conforms
15.	Length of flaps, cm	38 (Min.)	39.5	Conforms
16.	Distance between flaps (left to right)	Adjustable	Adjustable	Conforms

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17.	Spreader angle with horizontal, degree	Adjustable preferably downwards	Adjustable	Conforms
18.	Spreader angle with line of travel, degree	15 (Min.) (adjustable)	30° (Max.)	Conforms
19.	Spreader sheet thickness, mm	2.5-3.0	3.0	Conforms
20.	SMS sheet thickness, mm	5.0 (Min.) for outer	5.3	Conforms
21.	Rotor balancing	Should be dynamically balanced	Unbalanced	Does not conform
22.	Rotor rpm	Min. 1600	1437	Does not conform
23.	Fitting of SMS on combine harvester	Rigidly fixed to the combine chassis	Rigidly fixed	Conforms
24.	Fitting of power transmission system on combine harvester	Rigidly fixed to the combine chassis	Rigidly fixed	Conforms
25.	Marking/labelling of machine	Labelling 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 required size of prime mover (kW), Weight of the machine (Kgs)	Type, Size required size of prime mover (kW) and weight of the machine (kgs) are not provided	Does not conform in toto
26.	Literature	Operator manual, Service manual and Parts catalogue should be provided	Not Provided	Does not conform

10. COMMENTS AND RECOMMENDATIONS**10.1 Field performance test**

No noticeable defect was observed during field test.

10.2 Spacing between flails of one set does not meet the requirement of critical technical specification. It must be looked into.**10.3 Rotor of SMS is not properly balanced. This is Critical parameter, and therefore it must be looked into.****10.4 The rotor rpm does not meet the requirement of critical technical specification. It must be looked into.****10.5 Marking/Labelling of machine does not meet the requirement of critical technical specification. It must be looked into.****10.6 Applicant has recommended Hind-999 combine harvester for SMS field testing. This is vital information and therefore the same must be inscribed in labelling plate also for the guidance of users.****10.7 Ease of operation and safety provision**

No noticeable difficulties observed during operation of SMS.

10.8 Material of SMS blade and bushes are not specified. It should be specified.**10.9 Hardness**

The harness of fixed & flail blade of SMS does not conform to the requirement of IS 15806:2018. It MUST be looked into as it is evaluative requirement


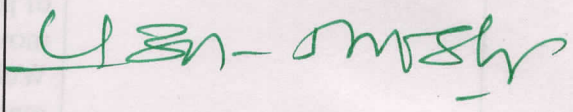
10.10 Literature supplied with the machine

No literature was supplied by the applicant

The following literature should be supplied with the machine

- i) Operator manual
- ii) Service manual
- iii) Part's catalogue

TESTING AUTHORITY

MAAN SINGH SENIOR TECHNICAL ASSISTANT	
P. K. PANDEY DIRECTOR	

Test report compiled by C.Veeranjaneyulu, Senior Technician

11. APPLICANT'S COMMENTS

We shall full fill all the noticed shortfalls well within reasonable time.

