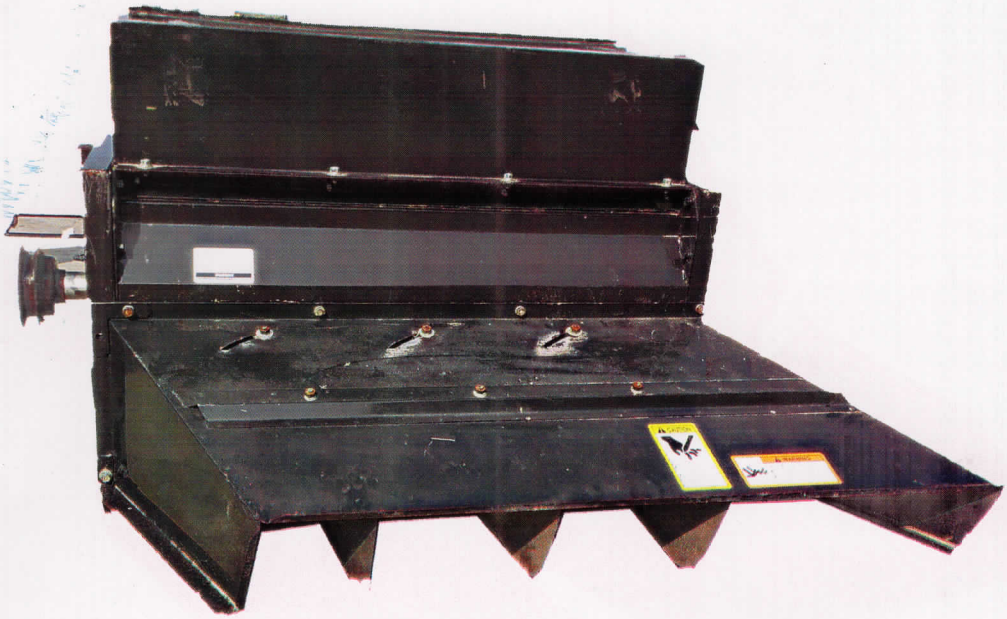
व्यावसायिक परीक्षण रिपोर्ट

COMMERCIAL **TEST REPORT**

संख्या/ **No.: COMP-187/2460/2020**

माह/**Month : February, 2020**

THIS TEST REPORT VALID UP TO : 28th FEBRUARY, 2027



YANMAR, CSS850 EN, SMS, FITTED ON YANMAR-AW70 GV, SELF- PROPELLED TRACK TYPE COMBINE HARVESTER

सत्यमेव जयते

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

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4. ROTOR BALANCNING TEST

	Date of test	:	14.12.2019
	Make and model of Rotor balancing machine	:	PROTEQ and H - 1 K
	Mass of the job (kg)	:	30.16
	Service speed of the job rpm	:	2873
	ISO balancing grade	:	G 16
	Balancing speed rpm	:	2873

S.No.	**Particulars**	As permissible	As observed	Remark
	Unbalance weight (Left side plane) (g)	14.59	1.5	Balanced
	Unbalance weight (Right side plane) (g)	14.59	8.72	Balanced

	Unbalance angle (**Left side plane**) (degree)	233.87
	Unbalance angle (**Right side plane**) (degree)	177.14

5. FIELD PERFORMANCE TEST

5.1 The SMS fitted on Yanmar AW 70 GV combine harvester was operation in the paddy field for 5.56 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	:	110 to 116
2.	Average number of tillers/m^2	:	240 to 296
3.	Average length of ear head, cm	:	22 to 29
4.	Average straw/grain ratio	:	2.6
5.	Average moisture, %		
	- Grain	:	156
	- Straw	:	70.2

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 through-put (t/h)
									(l/h)	(l/ha)		
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**
PADDY												
1509	1.1	0.4	1.2	98.9	97.7	0.03	1.95	0.321	8.75	27.24	2049.79	7.45

SUMMARY OF FIELD PERFORMANCE OF SMS

Uniformity of straw spread, CV, (percent)	14.7
Weighted mean size of chopped straw, cm	8.3

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 Yanmar AW 70 GV Combine Harvester**	
1	Uniformity of straw spread, CV, (percent)	14.7
2	Weighted mean size of chopped strew, cm	8.3

7.1.2 Performance of Yanmar AW 70 GV combine harvester with Yanmar CSS 850, EN Super SMS

S. No	Parameters	Observations
1.	Speed of operation (kmph)	1.95
2.	Area covered (ha/h)	0.321
3.	Fuel consumption: - (l/h) - (l/ha)	 8.75 27.24
4.	Crop throughput (tonne/h)	7.45
5.	Grain breakage in main grain outlet (%)	0.03
6.	Header losses (%)	0.38
7.	Total non-collectable losses (%)	0.4
8.	Total collectable losses (%) (un threshed + broken from main outlet)	1.1
9.	Total processing losses (%)	1.2
10.	Threshing efficiency (%)	98.9
11.	Cleaning efficiency (%)	97.7

	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 No 13-9/2019 M &T (I & P) dated 26.04.2019)

Sl No.	Parameters	Specification	Observation	Remarks
Rotor				
1.	Rotor diameter, mm	73 (Min.)	114	Conforms
2.	No. of lugs on rotor in row	4 (Min.)	6	Conforms
3.	No. of rows in periphery	2 (Min.)	4	Conforms
4.	Length of pivotal flail, mm	120 (Min.)	178.4	Conforms
5.	Width of flail, mm	40 (Min.)	50/26.2	Conforms
6.	Thickness of flail, mm	4±0.1	5.0	**Does not conform**
7.	No of flails in one set	2	01	**Does not conform**
8.	Spacing between flails of one set, mm	35 (Max)	NA	---
9.	Distance between adjacent flails units, mm	200±10	124	**Does not conform**
10.	No of rows/bars of serrated blades	1	1	Conforms
11.	No of serrated blades in row	24 (Min.)	25	Conforms
12.	Spacing between serrated blades, mm	50 (Max.)	29.9	Conforms
13.	Overlapping of pivotal blade on serrated blade, mm	60 (Min.) (adjustable)	38	**Does not conform**
Spreader				
14.	Total no of flaps	6 + 2 (side)	3+2	**Does not conform**
15.	Length of flaps, cm	---	38.5	---
16.	Distance between flaps (left to right)	Adjustable	Adjustable	Conforms

17.	Spreader angle with horizontal, degree	Adjustable preferably downwards	Adjustable	Conforms
18.	Spreader angle with line of travel, degree	15 (Min.) (adjustable)	21° (Max.)	Conforms
19.	Spreader sheet thickness, mm	2.5-3.0	3.0	Conforms
20.	SMS sheet thickness, mm	5.0 (Min.)	1.5	**Does not conform**
21.	Rotor balancing	Should be dynamically balanced	Observe balanced	Conforms
22.	Rotor rpm	1600 min.	2873	Conforms
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)	Address of manufacturer year of manufacturer type, Size, requirement of prime mover (kw) and weight of the machine (kgs) are not specified	**Does not conform in toto**
26.	Literature	Operator manual, Service manual and Parts catalogue should be provided	Provided	Conforms

10. COMMENTS AND RECOMMENDATIONS

10.1 Field performance test

No noticeable defect observed during field test.

10.2 Thickness of flail **does not meet the requirement of Critical technical specification. It must be looked in to.**

10.3 No of flails in one set **does not meet the requirement of Critical technical specification. It must be looked in to.**

10.4 Distance between adjacent flails of one set **does not meet the requirement of Critical technical specification. It must be looked in to.**

10.5 Over lapping of flail (pivotal) blade one fixed (serrated) **does not meet the requirement of Critical technical specification. It must be looked in to.**

10.6 Total no of flaps **does not meet the requirement of Critical technical specification. It must be looked in to.**

10.7 SMS sheet thickness **does not meet the requirement of Critical technical specification. It must be looked in to.**

10.8 Marking/labelling of machine **does not meet the requirement of Critical technical specification. It must be looked in to.**

10.9 Ease of operation and safety provision

No noticeable difficulties observed during operation of SMS.

10.8 Literature supplied with the test sample

The following literature provided during the test

i) Assembly manual
ii) Operation manual
iii) Service manual and
iv) Parts catalogue

The operation manual need to be updated as per IS:8132-1999

TESTING AUTHORITY

MAAN SINGH SENIOR TECHNICAL ASSISTANT	
P. K. PANDEY **DIRECTOR**	

The test report compiled by C.Veeranjaneyulu, Senior Technician

11. APPLICANT'S COMMENTS

We will take corrective action.