

व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ No.: Reaper – 14/2853/2022

माह/Month: May, 2022

THIS TEST REPORT VALID UP TO : 31st May, 2027



**SPRAYMAN, SP-1200 RP,
SELF PROPELLED REAPER (WALK BEHIND)**



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

उत्तरी क्षेत्र कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

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[ISO 9001:2015 CERTIFIED]

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Atmospheric conditions

Temperature, °C	: 44.5
Pressure, kPa	: 98.34
Relative humidity, %	: 20.4
Wind velocity, m/s	: 1.9 to 2.6
Observed noise level, dB(A)	: 91.7

10. AIR CLEANER OIL PULL OVER TEST

Range of atmospheric conditions:

Temperature, °C	: 38 to 39
Pressure, kPa	: 97.96 to 98.19
Relative humidity, %	: 18.1 to 20.8
Mass of oil in the air cleaner assembly when fitted with recommended grade of oil 5% in excess than marked level (g)	: 2.85

	Position	Slope (degree)	Loss of oil (g)	Oil pull over (%)	Remarks if any
i)	Horizontal	-	0.05	0.08	NIL
ii)	Tilted longitudinally with front end up	15	0.07	0.12	
iii)	Tilted longitudinally with rear end up	15	0.09	0.15	
iv)	Tilted laterally with right side up	15	0.03	0.05	
v)	Tilted laterally with left side up	15	0.04	0.06	

11. FIELD TEST

The reaper was operated for 28.50 hours (excluding 1.00 hours running) for harvesting the wheat crop. The field tests were conducted at the 2800 rpm. During the test, HD-2967 available variety of wheat was harvested to assess the performance of reaper with regard to quality of work, rate of work, fuel consumption, safety and soundness of construction. The crop and atmospheric conditions during field test are given in Annexure-I

The crop parameters recorded during the test with wheat crops are as given below:

Parameter	Paddy	
Plant height (cm)	91.67 to 102.67	
Plant population (Nos./m ²)	326 to 424	
Moisture (%)	Grain	8.7 to 10.5
	Straw	9.6 to 11.7

The results of field performance test are given in Annexure –II and are summarized in Table-3

Summary of field test: Table-3

S. No.	Observation	Paddy
1.	Forward speed , kmph	2.10 to 2.37
2.	Area covered, ha/h	0.168 to 0.210
3.	Width of cut, m	1.13 to 1.16
4.	Fuel consumption	
		l/h
		l/ha
		0.95 to 1.15
		4.58 to 7.00
5.	Losses	
	Pre-harvest losses, kg/ha	7.5 to 15.00
	Un-cut crop by cutter bar, kg/ha	7.5 to 15.45
	Grain loss due to post harvest loss due to shattering by cutter unit, conveyor handling unit, kg/ha	63.00 to 71.70
6.	Stubble height, cm (after harvesting)	5.33 to 6.0

11.1 Wheat Harvesting

11.1.1 Rate of work

- i) The speed of harvesting ranged from 2.10 to 2.37 kmph during the test. The rate of work varied from 0.168 to 0.210 ha/h.
- ii) The fuel consumption varied from 0.95 to 1.15 l/h
- iii) The fuel consumption per unit area harvested varied from 4.58 to 7.00 l/ha.

11.1.2 Quality of work

- i) During harvesting grain loss due to cutter bar unit, conveyor unit, handling unit etc. was observed from 63.00 to 71.70 kg/ha.
- ii) Post harvest losses observed from 72.00 to 84.65 kg/ha.

11.2 Ease of operation and safety provisions:

No noticeable difficulty observed during test.

11.3 Time required for daily maintenance

15 to 20 minutes are required for daily servicing and maintenance of reaper.

11.4 Work rest cycle

Two persons are required for operation of the machine in the field. The first operator operates the reaper for 1½ hr. and then needs rest. After this, the other operator operates the machine for next 1½ hr. and the cycle continues.

12. ADJUSTMENT, DEFECTS, BREAKDOWNS & REPAIR

Engine crank shaft pulley lock broke after 9.10 hours of field test and then there was breakage of engine crank shaft pulley lock even in air cleaner oil pull over test

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10	Material of knife section	High carbon steel EN42 J or above	Not specified	Does not conform
11	Material of knife back	High carbon steel EN42 J or above	Not specified	Does not conform
12	Material of ledger plate	High carbon steel EN42 or above	Not specified	Does not conform
13	Hardness of knife section HRC	38 (Min)	52.7	Conforms
14	Hardness of ledger blade	45 (Min)	53.1	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	Not Provided	Does not conform
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	Safety pins	Conforms
20	Slip clutch/safety pins at conveyor drive	Must be provided	Not Provided	Does not conform
21	Provision of row maker/ crop guide	Must be provided	Crop guide	Conforms
22	Marking/Labelling of machine	The labelling plate should be riveted on the body of machine having Name and address of manufacturer, Country of origin, Make, Model, Year of manufacture, Serial Number, Type, Size, Size of prime mover (kW)	Country of origin, Make, Year of Mfg., Type, Size and Size of prime mover not provided.	Does not conform
23	Literature	Operator manual, service manual, parts catalogue should be provided.	Provided	Conforms

15. COMMENTS AND RECOMMENDATION

- 15.1** The specifications of knife section and knife back do not conform to IS: 6025-1999 and IS:10378, respectively. This needs to be looked into for corrective action.
- 15.2** The chemical composition of knife upper, knife lower & knife back does not conform to the requirement of IS:6025-1999. This needs to be looked into for corrective action.
- 15.3** Valve spring stiffness is not specified. It should be specified.
- 15.4** Spark arrester in engine exhaust is not provided.

- 15.5 Slip clutch/Safety pins at conveyor drive should be provided.
- 15.6 **Mechanical vibration**
The amplitude of mechanical vibration marked as (*) on the relevant chapter are on drastically higher side. It is not just directly concerned with operator's health, safety and comfort, but also affect the useful life of the components. In view of above, this deserve to be given top priority for corrective action.
- 15.7 Labelling plate of machine does not conform. This need to be looked into for corrective action.
- 15.8 Material of knife section, knife back and ledger plate not specified. It should be specified.

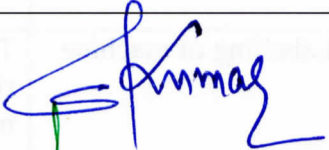
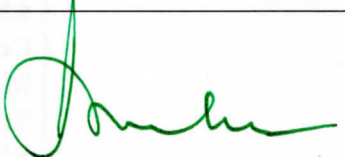
16. TECHNICAL LITERATURE

The following literature were provided with machine during test.

- i) Instruction and spare parts manual of engine
- ii) Parts catalogue of engine
- iii) User manual of machine
- iv) Parts catalogue of machine

However, the user manual should be updated as per IS : 8132-1999.

TESTING AUTHORITY

SANJAY KUMAR AGRICULTURAL ENGINEER	
Dr. MUKESH JAIN DIRECTOR	 30.05.2022

Test report compiled by : Dharmendra Kumar, Technical Assistant.

17. APPLICANT'S COMMENTS

No Specific comments received from applicant