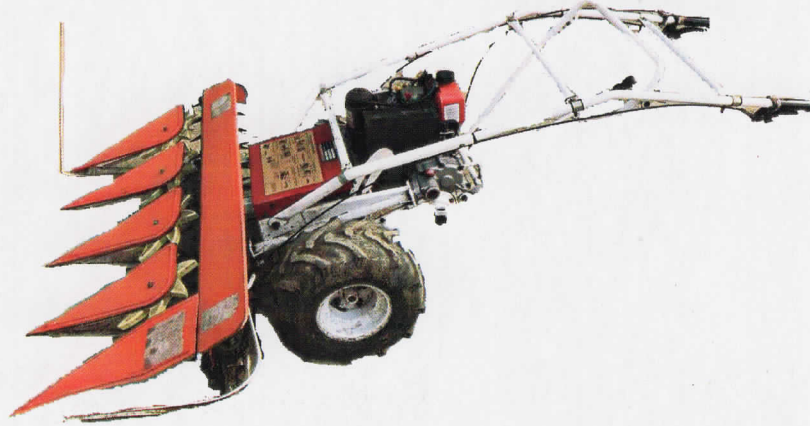


व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ No.: IMP-982/2276/2019
माह/Month : February, 2019

THIS TEST REPORT VALID UP TO : 28th FEBRUARY, 2026



**SAROVER SDR-120, SELF PROPELLED VERTICAL
CONVEYOR REAPER (WALK BEHIND)**



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

8. AIR CLEANER OIL PULL OVER TEST

Range of atmospheric conditions:

Temperature(° C)	:	21
Pressure, kPa (kPa)	:	98.4
Relative humidity (%)	:	50
Mass of oil in the air cleaner assemblies when fitted with recommended grade of oil 5% in excess than marked level (g)	:	81.7

	Position	Slope (degree)	Loss of oil (g)	Oil pull over (%)	Remarks if any
i)	Horizontal	--	0.2	0.24	--
ii)	Tilted longitudinally with front end up	15°	0.1	0.12	
iii)	Tilted longitudinally with rear end up	15°	0.1	0.12	
iv)	Tilted laterally with right side up	15°	0.2	0.24	
v)	Tilted laterally with left side up	15°	0.2	0.24	

9. FIELD TEST

The reaper was operated for 26.53 and 26.22 hours (excluding 0.92 hours running) for harvesting the wheat and paddy crop. During the test different available varieties of wheat and Paddy were 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 under

Parameter	Wheat	Paddy
Plant height (cm)	82 to 111	134.0 to 154.6
Plant population (Nos./m ²)	398 to 580	256 to 294
Moisture (%)		
Grain	1.7 to 3.8	16.5 to 21.9
Straw	6.1 to 7.7	25.0 to 29.9

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	Wheat	Paddy
1.	Forward speed (kmph)	2.66 to 2.99	2.82 to 2.90
2.	Area covered (ha/h)	0.204 to 0.236	0.193 to 0.215
3.	Width of cut (m)	1.04 to 1.08	1.00 to 1.11
4.	Fuel consumption		
		l/h	0.35 to 0.55
		l/ha	0.47 to 0.52
			2.36 to 2.84

5.	Losses		
	Pre-harvest losses (kg/ha)	7.7 to 26.7	1.33
	Un-cut crop by Cutter bar (kg/ha)	Nil	Nil
	Grain loss due to cutter bar unit, conveyer unit, handling unit etc (kg/ha)	28.20 to 62.73	12.0 to 20.0
	Post harvest loss (kg/ha)	28.20 to 62.73	12.0 to 20.0
6.	Stubble height (cm) (after harvesting)	7.5 to 28.7	20.3 to 30.8

9.1 Wheat Harvesting

9.1.1 Rate of work

- The speed of harvesting ranged 2.66 to 2.99 kmph during the tests the rate of work varied from 0.204 to 0.236 ha/h.
- The fuel consumption varied from 0.35 to 0.55 l/h .
- The fuel consumption per unit area harvested varied from 1.48 to 2.55 l/ha.

9.1.2 Quality of work

- During harvesting, grain loss due to cutter bar unit, conveyer unit, handling unit etc was observed from 28.20 to 62.73 kg/ha.

9.2 Paddy Harvesting

9.2.1 Rate of work

- The speed of harvesting ranged 2.82 to 2.90 kmph during the tests the rate of work varied from 0.193 to 0.215 ha/h .
- The fuel consumption varied from 0.47 to 0.52 l/h .
- The fuel consumption per unit area harvested varied from 2.36 to 2.84 l/ha.

9.2.2 Quality of work

- During harvesting, grain losses due to cutter bar unit, conveyer unit, handling unit etc was observed from 12.0 to 20.0 kg/ha.

9.3 Ease of operation and safety provisions:

No noticeable difficulty observed during test.

9.4 Time required for daily maintenance

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

9.5 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 cycle continues.

10. ADJUSTMENT, DEFECTS, BREAKDOWNS & REPAIR

No breakdown was observed during testing.

11. COMPONENTS/ASSEMBLY INSPECTION AND ASSESSMENT OF WEAR

11.1 Engine :

The Engine and other assemblies were dismantled after 55.8 hrs. of engine operation.

11.1.8 Valve spring stiffness, kgf/mm :

Inlet valve : 0.07

Exhaust valve : 0.09

The condition of valve guide & valve spring was observed normal.

11.2 Clutch

All the components were found in normal working condition.

11.3 Timing gear

The timing gear wear visually inspected and found in normal working condition.

11.4 Transmission gears

All the components of the transmission system were found in normal working condition.

11.5 cutter drive unit

The rotary drive unit components were found in normal working condition.

11.6 Reaper components

- i) Crop conveyance unit- The condition of nylon star wheel canvas belts, lugs & chain & sprocket were observed normal.
- ii) Power transmission unit- The condition of all power transmission pulleys and belts were observed normal.
- iii) All the gear & other components of the reaping bevel box were inspected visually and found to be in normal condition.

12. SUMMARY OF OBSERVATION, COMMENTS AND RECOMMENDATION**12.1 Engine performance test**

- i) The maximum power during rating test was observed as 2.07 kW.
- ii) The specific fuel consumption during rating test test was observed as 296.8 g/kWh.

12.2 Field test**12.2.1 Wheat harvesting**

- i) The area covered varied from 0.204 to 0.236 ha/h.
- ii) The fuel consumption varied from 0.35 to 0.55 l/h and 1.48 to 2.55 l/ha.
- iii) During harvesting, grain loss due to cutter bar unit, conveyer unit, handling unit etc was observed from 28.20 to 62.73 kg/ha.

12.2.2 Paddy harvesting

- i) The area covered varied from 0.193 to 0.215 ha/h.
- ii) The fuel consumption varied from 0.47 to 0.52 l/h and 2.36 to 2.84 l/ha.
- iii) During harvesting, grain losses due to cutter bar unit, conveyer unit, handling unit etc was observed from 12.0 to 20.0 kg/ha.

12.3 Ease of operation & adjustment

- i) Safety guards/shields need to be provided for transmission pulleys and chain drives.
- ii) The exhaust is required to be provided with spark arresting device.

12.4 Assessment of wear

- i) The max permissible wear limit of piston diameter and valve guide clearance is not specified. It MUST be specified.

12.5 Hardness and chemical composition

- i) The hardness of knife blade and knife back does not meet the requirements of IS: 6025-1999 and IS: 6024-1983 respectively.
- ii) The carbon & manganese content of knife blade and knife guard are not within the required range as per IS: 6025-1999. Use of materials meeting BIS requirement is recommended.
- iii) Dimensions of knife blade and knife back are not as per IS: 6024-1999.

12.6 Noise measurement

- i) The noise at operation's driver's ear level was measured as 93.2 dB(A). Which is on higher side when compared with danger levels 90 dB(A) for an exposure of 8 hours per day specified by ILO.

12.7 Mechanical vibration

The amplitude of mechanical vibration of components marked as (*) in chapter 8 of this report may be considered on higher side. This calls for providing suitable remedial measures to dampen the vibration in order to improve the operational comfort and service life of various components & sub assemblies.


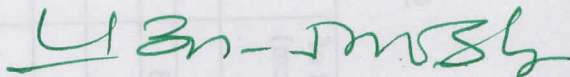
13. TECHNICAL LITERATURE

The following literature were provided with machine during testing.

1. Engine manual book
2. Engine parts catalogue
3. Spares parts catalogue of reaper
4. User manual
5. Assembly instruction of reapers.

The engine manual book should be updated as per IS : 8132 -1999

TESTING AUTHORITY

R. K. NEMA SENIOR AGRICULTURAL ENGINEER	
P. K. PANDEY DIRECTOR	

Draft test report compiled by : V.S. Shinde, S.T.A

14. APPLICANT'S COMMENTS

We will instruct our knife assembly vendor to manufacture the knife cutter assembly with proper chemical composition/hardness as per IS 6025-1985.

