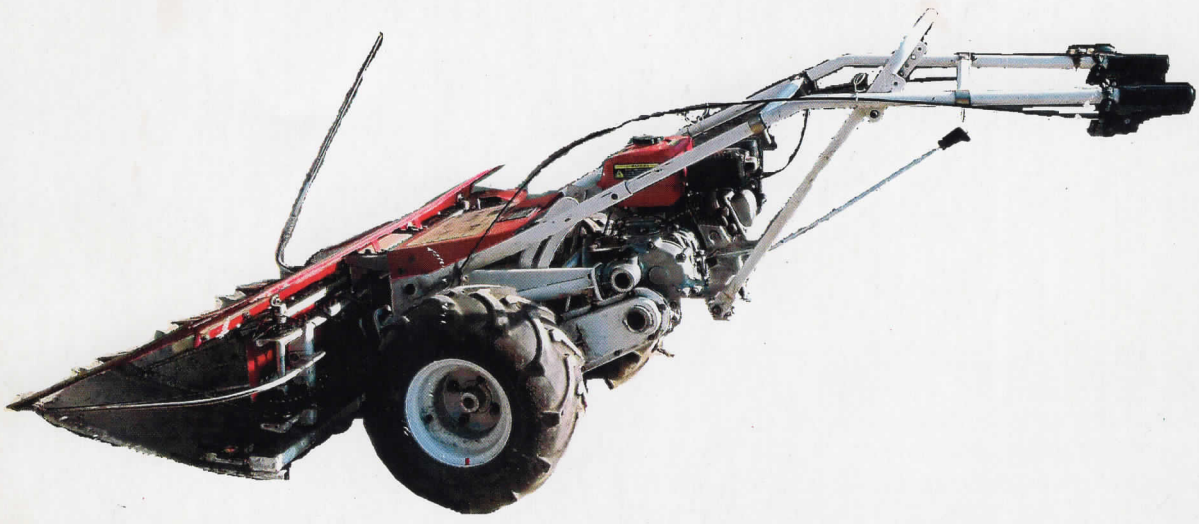
व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ **No.: IMP-981/2275/2019**
माह/**Month : February, 2019**

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



SAROVER SPR 120 SELF PROPELLED VERTICAL CONVEYOR REAPER (WALK BEHIND)

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
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8. AIR CLEANER OIL PULL OVER TEST

Range of atmospheric conditions:

Temperature(° C)	:	21.0
Pressure, kPa (mm of Hg)	:	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)	:	42.1

	Position	Slope (degree)	Loss of oil (g)	Oil pull over (%)	Remarks if any
i)	Horizontal	--	00	00	NIL
ii)	Tilted longitudinally with front end up	15°	0.1	0.24	
iii)	Tilted longitudinally with rear end up	15°	0.1	0.24	
iv)	Tilted laterally with right side up	15°	0.1	0.24	
v)	Tilted laterally with left side up	15°	0.1	0.24	

9. FIELD TEST

The reaper was operated for 25.48 and 25.30 hours (excluding 0.88 hours running) for harvesting the wheat and paddy crop. During the test, different available varieties of wheat and paddy 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 under

Parameter		Wheat	Paddy
Plant height (cm)		81.7 to 116.3	143.2 to 147.4
Plant population (Nos./m^2)		349.6 to 466.6	275.7 to 301.0
Moisture (%)	Grain	1.8 to 4.1	16.5 to 22.1
	Straw	6.2 to 7.8	27.5 to 29.1

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)		3.48 to 3.73	3.17 to 3.26
2.	Area covered (ha/h)		0.231 to 0.340	0.208 to 0.251
3.	Width of cut (m)		1.07 to 1.14	0.99 to 1.10
4.	Fuel consumption	l/h	0.70 to 0.78	0.62 to 0.75
		l/ha	2.12 to 3.28	2.59 to 3.39

5.	Losses		
	Pre-harvest losses (kg/ha)	8.7 to 26.7	1.67
	Un-cut crop by Cutter bar (kg/ha)	Nil	Nil
	Grain loss due to cutter bar unit, conveyor unit, handling unit etc (kg/ha)	12.60 to 85.53	18.0 to 27.86
	Post harvest loss (kg/ha)	12.60 to 85.53	18.0 to 27.86
6.	Stubble height (cm) (after harvesting)	8.9 to 11.3	20.3 to 32.2

9.1 Wheat Harvesting

9.1.1 Rate of work

i) The speed of harvesting ranged 3.48 to 3.73 kmph during the tests the rate of work varied from 0.231 to 0.340 ha/h.

ii) The fuel consumption varied from 0.70 to 0.78 l/h

iii) The fuel consumption per unit area harvested varied from 2.12 to 3.28 l/ha.

9.1.2 Quality of work

i) During harvesting, grain loss due to cutter bar unit, conveyor unit, handling unit etc was observed 12.60 to 85.53 kg/ha.

9.2 Paddy Harvesting

9.2.1 Rate of work

i) The speed of harvesting ranged 3.17 to 3.26 kmph during the tests the rate of work varied from 0.208 to 0.251 ha/h.

ii) The fuel consumption varied from 0.62 to 0.75 l/h.

iii) The fuel consumption per unit area harvested varied from 2.59 to 3.39 l/ha.

9.2.2 Quality of work

i) During harvesting, grain losses due to cutter bar unit, conveyor unit, handling unit etc was observed 18.0 to 27.86 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 $1^1/_2$ hr. And then needs rest. After this the other operator operates the machine for next $1^1/_2$ hr. and cycle continues.

10. ADJUSTMENT, DEFECTS, BREAKDOWNS & REPAIR

i) The cutter bar drive gear box bearing (No 6202 RS) was found damaged in paddy harvesting after 21.30 hrs, the bearing was changed with new one.

11.1.7 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	
5.53	5.55	5.48	5.48	0.05	0.07	**Not specified**

11.1.8 Valve spring stiffness, kgf/mm :

Inlet valve : 0.05
Exhaust valve : 0.07

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 gears & sprockets observed normal.

iii) The bearing of reaping gear box was found damaged during field performance of paddy harvesting and was replaced with new one. It **MUST** be looked into.

12. SUMMARY OF OBSERVATION, COMMENTS AND RECOMMENDATION

12.1 Engine performance test

i) The maximum power during rating test was observed as 2.80 kW.

ii) The specific fuel consumption during rating test was observed as 353 g/kWh.

12.2 Field test

12.2.1 Wheat

i) The area covered varied from 0.231 to 0.340 ha/h.

ii) The fuel consumption varied from 0.70 to 0.78 l/h and 2.12 to 3.28 l/ha.

iii) During harvesting, grain loss due to cutter bar unit, conveyor unit, handling unit etc was observed 12.60 to 85.53 kg/ha.

12.2.2 Paddy

i) The area covered varied from 0.208 to 0.251 ha/h.

ii) The fuel consumption varied from 0.62 to 0.75 l/h and 2.59 to 3.39 l/ha.

iii) During harvesting, grain losses due to cutter bar unit, conveyor unit, handling unit etc was observed 18.0 to 27.86 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 wear of different engine components was observed to be normal.

ii) 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 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 testing.

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

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

TESTING AUTHORITY

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

Test report compiled by : V.S. Shinde, Senior Technical Assistant.

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.