



THIS TEST REPORT IS VALID UPTO 31/10/2026



KALINGA SHAKTHI PADDY REAPER NP-120R



भारत सरकार
GOVT OF INDIA

कृषि एवं किसान कल्याण मन्त्रालय

MINISTRY OF AGRICULTURE & FARMERS WELFARE

कृषि, सहकारिता एवं किसान कल्याण विभाग

DEPARTMENT OF AGRICULTURE, COOPERATION & FARMERS WELFARE

उत्तर पूर्वी क्षेत्र कृषि यंत्र प्रशिक्षण एवं परीक्षण संस्थान

NORTH EASTERN REGION FARM MACHINERY TRAINING & TESTING INSTITUTE

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[AN ISO 9001:2015 CERTIFIED INSTITUTION]

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1. SCOPE OF TEST

The scope of test was limited to check and assess the following:

- 1.1 Specification and other data furnished by the applicant.
- 1.2 Engine Performance test
- 1.3 Vibration measurement
- 1.4 Noise measurement
- 1.5 Tuning Ability
- 1.6 Wear analysis of critical components (Cutter Bar blade)
- 1.7 Hardness and chemical analysis (Cutter Bar blade)
- 1.8 Field performance
- 1.9 Ease of operation and adjustments
- 1.10 Defects, breakdowns and repair

**2. METHOD OF SELECTION**

As per Govt. of India, OM No. 13-13/2020-M&T (I&P), dated 27.07.2021 the random selection was exempted. Hence, the machine was directly submitted by the applicant at this Institute for test.

3. TEST CODE/PROCEDURE

There is no Indian Standard Test Code available for testing of self-propelled vertical conveyor reaper as such. The guidelines, however, have been taken from the following:

- | | | | |
|---|-----------------------------------|---|---|
| 1 | IS: 11467:1985 (Reaffirmed 2012) | : | Test code for cereal harvesting machines. |
| 2 | IS: 6025:1982 (Reaffirmed 1999) | : | Specification for knife sections for harvesting machine. |
| 3 | IS: 10378:1982 (Reaffirmed 2001) | : | Specification for knife back for harvesting machine. |
| 4 | IS: 7347:1974 (Reaffirmed 2006) | : | Specification for Performance of Small Size Spark Ignition Engines. |

4. SPECIFICATIONS**4.1 General:**

- | | | |
|--|---|---|
| Name and address of the manufacturer | : | M/s Samson Agri Power Equipment Pvt. Limited 132, LaxmisagarChhak Cuttack Road, Bhubaneswar, KhordhaOdiha 751006 |
| Name & Address of Applicant | : | M/s Samson Agri Power Equipment Pvt. Limited 132, LaxmisagarChhak Cuttack Road, Bhubaneswar, Khordha Odiha 751006 |
| Name of machine | : | Vertical Conveyor Reaper |
| Type | : | Self-Propelled, Walk behind Reaper |
| Make | : | Samson Agri Power Equipment Private Limited |
| Model | : | Kalinga Shakthi Paddy Reaper NP-120R |
| Year of manufacture | : | 2020 |
| Serial Number | : | KS 20 KA 0210 |
| Country of origin | : | India |
| Size of reaper, mm | : | 1200 |
| Name of crop recommended (apa) | : | Paddy and Wheat |
| Name of crop in which the test was conducted | : | Paddy |

13. FIELD PERFORMANCE TEST

The Self-Propelled Reaper was operated for 25.21 hours for harvesting the Paddy crop. During the test of Paddy harvested to assess the performance of machine with regard to quality of work, rate of work, fuel consumption, safety and soundness of construction. The crop parameters conditions and performance field test are given in Annexure-I & II and summarized in table 1 & 2.

SUMMARY OF CROP PARAMETERS

Table-1

S. No.	Parameters/operations	Range
1	Variety of crop	Sona Gold Paddy, Paddy BRR1 75, MTU-100
		NR
2	Straw moisture content (Wb)(%)	10.0 to 21.9
3	Grain moisture content (Wb) (%)	88.1 to 99.70
4	Plant height (cm)	15.6 to 22.6
5	Length of ear head (cm)	87 to 236
6	Number of grains per ear head	21.2 to 30.8
7	Number of hills per square meter	1.81:1 to 2.82:1
8	Straw-grain ratio	

SUMMARY OF FIELD PERFORMANCE

Table-2

S. No.	Parameters/operations	Range
1	Engine speed(rpm)	
2	No load	2832 to 2837
3	On load	2772 to 2787
4	Forward speed(kmph)	3.21 to 3.46
5	Width of cut(cm)	115.9 to 116.0
6	Stubble height(cm)	15.8 to 17.4
7	Losses(Percentage of total grain yield)	
	-Pre-harvested loss	0.025
	-Post harvest loss(Cutter bar)	0.019 to 0.09
	- Conveyor loss/shattering loss	0.25 to 0.57
8	Area harvested(ha/h)	0.2448 to 0.2886
9	Field efficiency % was observed	64.53 to 71.91
10	Time required for one hectare(h)	3.46 to 4.08
11	Fuel consumption	
	- l/h	0.6 to 0.744
	- l/ha	2.39 to 2.90

13.1 Rate of work

- The speed of harvesting ranged between 3.21 to 3.46 kmph.
- The area harvested the machine was recorded as 0.2448 to 0.2886 ha/h.

13.2 Quality of work

- Field efficiency was observed 64.53 to 71.91 %.
- The post-harvest loss (cutter bar) was observed as 0.019 to 0.09 %.
- The conveyor loss/shattering loss was observed as 0.25 to 0.57%.
- The stubble height was recorded as 15.8 to 17.4 cm.
- Machine leaves the harvested crop in windrows.

16.1.4 Ring end gap clearance

Ring No.	Ring End gap (mm)			Max. Permissible wear limit (mm)
	At top	At middle	At bottom	
1st Compression ring	0.30	0.35	0.35	1.0
2nd compression ring	0.45	0.50	0.50	
Oil ring	NA	NA	NA	

16.1.5 Big end bearing

Bearing no.	Dia of bearing (mm)	Dia of Crank pin (mm)	Clearance (mm)		Max. Permissible wear limit (mm)	
			Dimentrical	Axial	Dimentric al	Axial
1	30.05	30.00	0.05	0.2	0.120	1.1

Condition of bearing: Normal

16.1.6 Main bearing: Two Nos. of ball bearing 6205 were used

Bearing No.	Diametrical clearance, (mm)	Crankshaft end float, (mm)	Max. permissible clearance limit,(mm)	
			Diametrical clearance	Crankshaft end float
1.	Ball bearing	0.12	NA	Not Specified
2.	Ball bearing			

16.1.7 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	Inlet	Exhaust
5.44	5.46	5.42	5.42	0.02	0.04	0.10	0.12

Valve, guide and timing gear:-

Any marked sign of overheating of valves	: None
Pitting of seat/faces of valves	: Normal
Any visual damage of teeth of timing gears	: None
Condition of ignition coil & magneto	: Normal



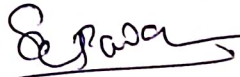
17. COMMENTS AND RECOMMENDATIONS

- 17.1 Specific fuel consumption of engine as observed during test at rated speed 352.19 g/kWh against the applicats/manufacture declared 298.7 g/kWh. it should be looked into for corrective action.
- 17.2 The amplitude of mechanical vibration marked as (*) is on drastically higher side and is directly concerned with operator's health, safety and comfort. Besides, it is also adversely affect the useful life of the component in view of above this deserves to be given top priority for corrective action.
- 17.3 Noise at operator's ear level was observed on higher side against warning limit of 85 dB (A) as specified by ILO for continuous exposure of 8 hours per day. **This calls for reduction in noise level to improve the operator's comfort & safety.**
- 17.4 The hardness and chemical composition of knife blades does not conform to the requirement of IS 6025-1982. It should be looked into corrective action.

Machine 45/409	KALINGA SHAKTHI PADDY REAPER NP-120R - COMMERCIAL (Initial)
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- 17.5 A Safety pin on conveyor chain for cutter bar is not provided to take care of overloading of cutter bar. it needs to be provided at suitable place
- 17.6 Specification for knife sections for harvesting machine does not conform to IS 6025:1982 and it should be looked into for corrective action.
- 17.7 Specification for knife section back for harvesting machine dose not conform to IS 10378-1982 and it should be looked into corrective action.
- 17.8 **Technical literature:**
Operator cum Service Manual & Parts Catalogue was provided along with the machine during the course of testing. It is further recommended to bring out these manuals in hindi and other vernacular languages as per IS: 8132-1999.

TESTING AUTHORITY


(S.G.PAWAR)

AGRICULTURAL ENGINEER


(J.P. MANDAL)

SENIOR AGRICULTURAL ENGINEER


(K.K. NAGLE)
DIRECTOR



Draft test report compiled by - **Shri Pankaj Sethi,**
Technical Assistant

18. APPLICANTS COMMENTS

Sr. No.	Our Reference No	Applicant's comments
18.1	17.4	We hereby confirm that will take necessary action for improvement on the following non- conformity areas as mentioned on report.
18.2	17.6	
18.3	17.7	