

THIS TEST REPORT IS VALID UPTO 31/01/2027



SHREENATH AGRO SOLUTION,
SELF POWERED REAPER (SAS-SPR05)



सत्यमेव जयते

भारत सरकार
GOVT OF INDIA

कृषि एवं किसान कल्याण मंत्रालय

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

विश्वनाथचारिआलि, जिला-विश्वनाथ(असम)

BISWANATH CHARIALI: BISWANATH: ASSAM, PIN - 784 176

[AN ISO 9001:2015 CERTIFIED INSTITUTION]

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 | : | Linesh Ramesh Pande, C-40 Near Aqrsgee Plastic Prints, MIDC, Amravati, Amravati, Maharashtra-444605 |
| Name & Address of Applicant | : | M/s Shreenath Agro Solution, C-40 Near Aqrsgee Plastic Prints, MIDC, Badnera, Amravati, Maharashtra-462026 |
| Name of machine | : | Vertical Conveyor Reaper |
| Type | : | Self-Propelled, Walk behind Reaper |
| Make | : | Shreenath Agro Solution |
| Model | : | Self-powered Reaper(SAS-SPR05) |
| Year of manufacture | : | 2021 |
| Serial Number | : | QIZ3C2120013 |
| Country of origin | : | India |
| Size of reaper, mm | : | 1200 |
| Name of crop recommended (apa) | : | Paddy & Wheat |
| Name of crop in which the test was conducted | : | Paddy |

Machine 49/414

SHREENATH AGRO SOLUTION,
SELF POWERED REAPER (SAS-SPR05) - COMMERCIAL (Initial)**11.2.1 Chemical composition of Knife Blade (Stationery):**

The material of reaper knife blade was got analyzed for chemical composition. The results of chemical analysis test are as under:-

Constituents	As per IS: 6025-1982	Composition As observed (% of weight)	Remarks
Carbon (C)	0.70 -0.95	0.654	Does not Conform
Silicon (Si)	--	0.195	--
Manganese (Mn)	0.3 – 0.50	0.914	Does not Conform
Sulphur (S)	--	0.005	--
Phosphorous (P)	--	0.021	--

12. FIELD PERFORMANCE TEST

The machine was operated for 25.17 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	Ranjeet
2	Straw moisture content (Wb)(%)	45.0 to 57.0
3	Grain moisture content (Wb) (%)	20.5 to 25.4
4	Plant height (cm)	98 to 127
5	Length of ear head (mm)	180 to 248
6	Number of grains per ear head	139 to 206
7	Number of hills per square meter	20 to 33
8	Number of tiller per hill	6 to 9
9	Straw-grain ratio	2.03:1 to 2.83:1

SUMMARY OF FIELD PERFORMANCE

Table-2

S. No.	Parameters/operations	Range
1	Engine speed(rpm)	
	No load	2962 to 2992
	On load	2885 to 2916
2	Forward speed(kmph)	2.13 to 2.34
3	Width of cut(cm)	113 to 116
4	Stubble height(mm)	89.0 to 123.07
5	Losses(Percentage of total grain yield)	
	-Pre-harvested loss	0.043 to 0.15
	-Post harvest loss(Cutter bar)	0.049 to 0.12
	- Conveyor loss/shattering loss	0.40 to 0.79
6	Area harvested(ha/h)	0.1873 to 0.2149
7	Field efficiency %	72.0 to 84.94
8	Time required for one hectare(h)	4.65 to 5.34
9	Fuel consumption	
	- l/h	0.812 to 0.890
	- l/ha	3.96 to 4.43

15.1.3 Ring Side clearance

Piston Rings	Ring Side clearance (mm)	Max. Permissible wear limit (mm)
1st Compression ring	0.05	0.30
2nd compression ring	0.05	0.30
Oil ring	NA	0.30

15.1.4 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	0.30	0.35	1.0
2nd compression ring	0.45	0.45	0.45	
Oil ring	NA	NA	NA	

15.1.5 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	29.98	0.07	0.2	0.08	1.1

Condition of bearing: Normal

15.1.6 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	0.10	NA	0.50
2.	Ball bearing			

15.1.7 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	5.41	5.42	0.03	0.04	Not Spcified	Not Spcified

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

16. COMMENTS AND RECOMMENDATIONS

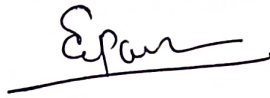
- 16.1** The amplitude of mechanical vibration marked as (*) is on drastically higher side and is directly concerned with operator's health, safety and comfort. Besides, it is also adversely affect the useful life of the component in view of above this deserves to be given top priority for corrective action.
- 16.2** 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.**
- 16.3** The hardness and chemical composition of (Movable & Stationary) knife blades does not conform to the requirement of IS 6025-1982. It should be looked into corrective action.



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- 16.4 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
- 16.5 Specification for knife sections for harvesting machine does not conform to IS 6025:1982 and it should be looked into for corrective action.
- 16.6 Specification for knife section back for harvesting machine dose not conform to IS 10378-1982 and it should be looked into corrective action.
- 16.7 M.S. hollow pipe is fitted with wheel and connected with rear axle shaft with the help of pin welding is broken in both side (LHS & RHS). It should be looked into corrective action.
- 16.8 Machine maneuverability while taking turns during field operation was not easy. It should be looked into correction action.
- 16.9 **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.

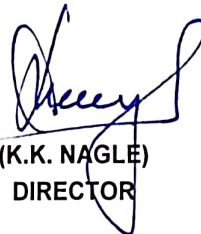
TESTING AUTHORITY



(S.G.PAWAR)
AGRICULTURAL ENGINEER



(J.P. MANDAL)
SENIOR AGRICULTURAL ENGINEER



(K.K. NAGLE)
DIRECTOR



Draft test report compiled by - **Shri Khagendra Bora**
Sr.Technical Assistant