व्यावसायिक परीक्षण रिपोर्ट (प्रारंभिक)
COMMERCIAL TEST REPORT
(Initial)

संख्या/No.: H&TH/NERFMTTI, B. Chariali/
05/05/562
माह / Month: February 2026

THIS TEST REPORT IS VALID UPTO 28.02.2033

VELMOC AGRO, 4S-100L, SELF-PROPELLED REAPER

सत्यमेव जयते

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
उत्तर पूर्वी क्षेत्र कृषि यंत्र प्रशिक्षण एवं परीक्षण संस्थान
NORTH EASTERN REGION FARM MACHINERY TRAINING & TESTING INSTITUTE
बिश्वनाथ चारिआलि, जिला - बिश्वनाथ(असम)
BISWANATH CHARIALI, DIST- BISWANATH, ASSAM, PIN - 784 176
[AN ISO 9001:2015 CERTIFIED INSTITUTION]

Ph. No. 03715-222094 Website: https://nerfmtti.nic.in E-mail: fmti-ner@nic.in

4. SPECIFICATIONS

4.1 General:

Name and address of the manufacturer	:	Weifang Shengchuan Machinery Co., Ltd, No. 5999, Qiingyuan Street, ETDZ, Weifang, Shandong, **CHINA**
Name and address of the applicant	:	MACAN AGROMART PRIVATE LIMITED, Shambhu Kalan, Adjoining Woodland Warehouse, Gian Jyoti College Road, Banur Ambala Highway, Tepla, Patiala, Punjab, 140417
Name of machine	:	Self-propelled reaper/ Vertical conveyor reaper
Type	:	Self-propelled, walk behind
Make	:	VELMOC AGRO
Model	:	4S-100L
Year of manufacture	:	2025
Serial Number	:	1112006004091
Country of origin	:	**CHINA**
Size of reaper (mm)	:	1230
Name of the crops recommended by applicant	:	Paddy and wheat
Name of the crop in which field test was conducted	:	Paddy

4.2 Details of prime mover used:

Name of manufacturer (apa)	:	Chongqing Jiamu Machinery Co. Ltd.
Make (apa)	:	GM170
Model	:	R210
Type	:	Four stroke, single cylinder, air cooled, petrol engine
Year of manufacture	:	2025
Serial Number	:	A2412073740
Country of origin	:	**CHINA**
Recommended high idle speed (rpm)	:	3800
Recommended low idle speed (rpm)	:	1650
Recommended rated speed (rpm)	:	3600
Recommended speed for field test (rpm)	:	3600
Engine rated power observed (kW)	:	**4.11**
Engine rated power declared (kW)	:	4.00

13. FIELD PERFORMANCE TEST

The self-propelled reaper was tested for total of 25.78 hours for harvesting paddy crop. The performance of the machine was assessed with regard to quality of work, rate of work, fuel consumption, safety and soundness of construction. The detailed test results have been given in Annexure-I & II and summarized in Table 1 & 2 below.

SUMMARY OF CROP PARAMETERS

Table-1

Sr. No.	Parameters	Observations
1	Variety of crop	*Ranjit*
2	Straw moisture content (%)	34.8 to 37.5
3	Grain moisture content (%)	14.5 to 15.2
4	Plant height (mm)	817 to 1126
5	Length of ear head (mm)	168.6 to 230.4
6	Number of grains per ear head	107 to 208
7	Number of hills per square meter	19 to 23
8	Number of tillers per hill	8 to 10
9	Straw-grain ratio	2.40:1 to 2.60:1

SUMMARY OF FIELD PERFOMANCE TEST

Table-2

Sr. No.	Parameters/operations	Observations
1	Forward speed (kmph)	3.63 to 3.70
2	Width of cut (m)	1.12 to 1.14
3	Stubble height (mm)	141.8 to 161.0
4	Losses (percentage of total grain yield)	
	- Pre-harvest loss	0.03 to 0.06
	- Post harvest loss (cutter bar)	0.06 to 0.09
	- Conveyor loss/shattering loss	1.22 to 2.36
5	Area harvested (ha/h)	0.32 to 0.35
6	Field efficiency (%)	78.05 to 83.33
7	Time required for one hectare (h)	2.86 to 3.13
8	Fuel consumption	
	- l/h	0.97 to 0.99
	- l/ha	2.80 to 3.04

13.1 For paddy harvesting

13.1.1 Rate of work

- The forward speed of machine was observed as 3.63 to 3.70 kmph.
- The area harvested by the machine was recorded as 0.32 to 0.35 ha/h.

13.1.2 Quality of work

- Field efficiency was observed as 78.05 to 83.33 %.
- The post-harvest loss (cutter bar) was observed as 0.06 to 0.09 % of total grain yield.
- The conveyor loss/shattering loss was observed as 1.22 to 2.36 % of total grain yield.
- The stubble height was recorded as 141.8 to 161.0 mm.
- Machine leaves the harvested crop in windrows.

13.2 Labour requirement

- One unskilled labour is required for cutting the crop manually at corner and side of each field.
- Two skilled labours are required for operating the machine continuously.

13.3 Operator's comfort, safety and ease of operation

- All the controls were within the easy reach of the operator.
- The machine was provided with main clutch for stopping forward motion of the machine and cutter bar operation at same time.

14. EASE OF OPERATION AND ADJUSTMENT

No noticeable difficulties were observed in operation and adjustment during the field test.

15. DEFECTS, BREAKDOWNS AND REPAIRS

During field performance test it was observed that gear shift lever was broken at the point of welding and it was re-welded.

16. COMPONENTS / ASSEMBLY INSPECTION AND ASSESSMENT OF WEAR

16.1 Engine:

The engine and other assemblies were dismantled after 39.87 hours of operation.

16.1.1 Cylinder:

Cylinder	Cylinder bore dia (mm)						Max. permissible wear limit (mm)
	Top position		Middle positon		Bottom position		
	Thrust side	Non Thrust side	Thrust side	Non Thrust side	Thrust side	Non Thrust side	
1	70.02	70.02	70.02	70.02	70.01	70.01	70.30

16.1.2 Piston:

Piston dia., mm				Max. permissible wear limit at skirt (mm)	Clearance between piston & cylinder liner at the skirt of the piston, mm	
Top (above top compression ring)		At skirt				
Thrust side	Non-thrust side	Thrust side	Non-thrust side		As observed	Max. permissible limit (mm)
69.52	69.54	69.98	*	68.50	0.03	0.50

16.1.3 Ring side clearance

Piston Rings	Ring side clearance (mm)	Max. permissible wear limit (mm)
1st Compression ring	0.05	0.50
2nd compression ring	0.05	0.50
Oil ring	NA	NA

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	0.15	0.15	0.15	0.40
2nd compression ring	0.40	0.40	0.40	0.40
Oil ring	NA	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)	
			Dimetrical	Axial	Dimetrical	Axial
1	30.00	29.95	0.05	0.60	0.75	0.75

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	0.02	0.45	0.40
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
5.50	5.48	5.46	5.45	0.04	0.03	0.15	0.15

Valve, guide and timing gear:-

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

17. CRITICAL TECHNICAL SPECIFICATIONS

(Vide Ministry's letter No. 13-9/2019-(M&T) (I&P)-Part dated 26.04.2019)

Sr. No.	Parameters	Specifications	Observation	Remarks
1.	Type of machine	Walk-behind type	Walk-behind type	Conforms
2.	Effective width of cutter bar (mm)	1100 (Min.)	1180	Conforms
3.	Number of crop dividers	5 (Min.)	5	Conforms
4.	Type of knife section	Serrated	Serrated	Conforms
5.	Number of knife sections on cutter bar	24 (Min.)	24	Conforms
6.	Type of crop conveyor	Chain/Belt	Chain	Conforms
7.	Numbers and type of wheel equipment	Two/Pneumatic or Iron	Two pneumatic	Conforms
8.	Type of prime mover	Diesel/Petrol/Kerosene/Petrol start kerosene run IC engines.	Petrol	Conforms
9.	Minimum power of prime mover (kW)	2.0 to 4.5	4.11	Conforms
10.	Material of knife section	High Carbon steel EN42J or above	High Carbon steel	Conforms
11.	Material of knife back	High Carbon steel EN42J or above	EN42J (apa)	Conforms
12.	Material of ledger plate	High Carbon steel EN44 above	High Carbon steel	Conforms
13.	Hardness of knife section HRC	38(Min)	56.5	Conforms
14.	Hardness of ledger plate	45 (Min.)	56	Conforms
15.	Provision for adjusting the height of cutter bar	Must be provided	Not Provided	**Does not conform**
16.	Guards against all moving parts/drives and hot parts	Must be provided	Provided	Conforms
17.	Spark arrester in engine exhaust	Must be provided	Provided	Conforms
18.	Location and direction of 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	Not Provided	**Does not conform**
20.	Slip clutch/safety pins at conveyor drive	Must be provided	Not Provided	**Does not conform**
21.	Provision of row marker/crop guide	Must be provided	Provided	Conforms

22.	Marking/labeling of machine	The labeling 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)	Name and address of manufacturer, Country of origin, Year of manufacture, Type, Size of prime mover (kW) were not provided.	**Does not conform**
23.	Literature	Operator manual, Service manual and Parts catalogue should be provided.	Provided	Conforms

18. COMMENTS AND RECOMMENDATIONS

18.1 During field performance test it was observed that gear shift lever was broken at the point of welding and it was re-welded. This should be looked into for quality improvement.

18.2 The amplitude of mechanical vibration marked as (*) was 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 machine components. In view of above, this deserves to be given top priority for corrective action.

18.3 Noise at operator's ear level was observed on higher side against danger limit of 90 dB(A) as specified by International Labor Organization (ILO) for continuous exposure of 8 hours per day. This calls for reduction in noise level to improve the operator's comfort and safety.

18.4 Specifications of knife section of the cutter bar do not conform to IS 6025:2024 and it should be looked into for corrective action.

18.5 Specifications of knife section back does not conform to IS 10378:2024 and it should be looked into for corrective action.

18.6 The hardness of knife section (movable) and chemical composition of knife section (both movable and stationary) did not conform to the requirement of IS 6025:2024. It should be looked into for improvement.

18.7 Parameters such as provision for adjusting the height of cutter bar, slip clutch/safety pins at cutter bar drive and slip clutch/safety pins at conveyor drive did not conform to critical technical specifications vide Ministry's letter No. 13-9/2019-(M&T) (I&P)-Part dated 26.04.2019. This should be looked into for corrective action.

18.8 Name and address of manufacturer, country of origin, year of manufacture, type, size of prime mover (kW) was not provided on the labeling plate of the machine. This should be looked into for corrective action.

18.9 Adequacy of Literature

The following literature in English language was provided for reference during testing:

- Operator's/ Service manual
- Parts catalogue

It is recommended to bring out the manual in Hindi and other vernacular languages as per IS: 8132-1999.

TESTING AUTHORITY

(M.R. PATIL)
SENIOR AGRICULTURAL ENGINEER

(P. KAMALABAI)
DIRECTOR

Draft test report compiled by - **Shri D. Deori, Technical Assistant**

19. APPLICANT'S COMMENTS

We have gone through the comment and recommendation as stated in the draft test report and we will take care as per comments and recommendations in our future products.

ANNEXURE-I

CROP PARAMETERS

Places of test: 1. Village-Monabari, Dist- Biswanath, Assam
2. Village-Totobari, Dist- Biswanath, Assam
3. Village-Nagshankar, Dist- Biswanath, Assam

Name of the crop in which field test conducted: Paddy

Sr. No.	Parameters	I	II	III	IV
1	Date of test	22.12.25	26.12.25	27.12.25	29.12.25
2	Av. moisture content (%)				
	- Grain	14.5	15.2	14.8	14.9
	- Straw	34.8	36.2	37.5	35.7
3	Variety of crop	Paddy (*Ranjit*)			
4	Av. plant height (mm)	867	1126	817	828
5	Av. length of ear head (mm)	168.6	230.4	222.0	195.6
6	Av. no. of grains per ear head	107	208	163	159
7	No. of hills per m^2	20	19	23	20
8	No. of tillers per hill	8	9	10	10
9	Straw- grain ratio	2.62:1	2.52:1	2.60:1	2.40:1
10	Atmospheric conditions				
	- Temperature (^{0}C)	29.0	30.5	28.0	30.6
	- Humidity (%)	62.0	65.0	60.5	66.0
	- Pressure (kPa)	97.7	98.1	100.2	100.3

ANNEXURE-II

FIELD PERFORMANCE RESULTS

Place of test: 1. Village-Monabari, Dist- Biswanath, Assam
2. Village-Totobari, Dist- Biswanath, Assam
3. Village-Nagshankar, Dist- Biswanath, Assam

Name of the crop in which field test conducted: Paddy

Sr. No.	Parameters	I	II	III	IV
		Paddy (*Ranjit*)			
1	Date of test	22.12.25	26.12.25	27.12.25	29.12.25
2	Net test duration (h)	6.70	6.58	6.50	6.00
3	Forward speed (kmph)	3.68	3.68	3.63	3.70
4	Av. width of cut (m)	1.14	1.13	1.12	1.13
5	Av. stubble height (mm)	152.8	161.0	151.6	141.8
6	Losses (% of total grain yield)				
	- Pre-harvest loss	0.06	0.06	0.03	0.03
	- Post harvest loss (cutter bar + Uncut)	0.09	0.08	0.06	0.06
	- Conveyor loss/shattering loss	2.26	2.36	1.22	1.60
7	Av. mass of crop per m^2 (g)	1192.2	1122.6	1107.2	1017.6
8	Area harvested (ha/h)	0.35	0.33	0.32	0.34
9	Field efficiency (%)	83.33	78.57	78.05	80.95
10	Time required for one ha (h)	2.86	3.03	3.13	2.94
11	Fuel consumption				
	- l/h	0.98	0.99	0.97	0.99
	- l/ha	2.80	3.00	3.04	2.93