

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



संख्या/No.: Machine 124/495
माह / Month: June 2024

THIS TEST REPORT IS VALID UPTO 30.6.2031



MHASWADKAR, BAM5139IC, POWER WEEDER



भारत सरकार

GOVERNMENT OF INDIA

कृषि एवं किसान कल्याण मंत्रालय

MINISTRY OF AGRICULTURE AND FARMERS WELFARE

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Machine 124/495	MHASWADKAR, BAM5139IC POWER WEEDER	COMMERCIAL (INITIAL)
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4. SPECIFICATIONS

4.1 General:

Make	: Mhaswadkar
Model	: BAM5139IC
Name and address of the manufacturer	: M/s Yongkang Vauban Trade Co. Ltd., 4th floor, 9-3 Jiuding Road, Economic Development Zone, Yongkang City, Zhejiang Province, CHINA
Name and address of the applicant	: Mhaswadkar Autolines Pvt Ltd, 283/3/1B, Karanje, New Radhika Road, Satara, Maharashtra- 415001
Name of the machine	: Power Weeder
Type of the machine	: Self propelled, Walk behind
Working size of machine (mm)	: 365
Year of manufacture	: 2022
Serial no. of machine	: BAM139P0009

4.2 Details of prime mover:

Make	: Not Specified
Model	: BAM139P
Type	: 4 stroke, Single cylinder, Air cooled, Spark Ignition
Year of manufacture (apa)	: 2022
Serial Number	: BAM139P0009
Country of origin	: China
Recommended high idle speed (rpm)	: 8000 ± 100
Recommended low idle speed (rpm)	: 2800 ± 200
Recommended rated speed (rpm)	: 7000
Rated power observed (kW)	: 0.39
Rated power declared (apa) (kW)	: 0.40



10. HARDNESS AND CHEMICAL COMPOSITION OF ROTOR BLADE

10.1 Hardness of rotor blades:

The surface hardness of blade was recorded as under :

	As per IS 6690:1981 (Reaffirmed 2012)	As observed (HRC)	Remarks
At edge portion	56 ±3 HRC	89.4	Does not conform
At shank portion	37 to 45 HRC	86.9	Does not conform

10.2 Chemical composition of rotor blades:

Constituents	As per IS 6690:1981 (Reaffirmed 2012)		Composition as observed (% by weight)	Remarks
	Carbon Steel (%)	Silicon Manganese Steel (%)		
Carbon (C)	0.70 -0.85	0.50-0.60	0.074	Does not conform
Silicon (Si)	0.10 -0.40	1.50-2.00	0.022	Does not conform
Manganese (Mn)	0.50 -1.0	0.50-1.00	0.201	Does not conform
Sulphur (S)	0.05(max)	0.05(max)	0.017	Conforms
Phosphorous (P)	0.05(max)	0.05(max)	0.018	Conforms

11. FIELD PERFORMANCE TEST

The field tests were conducted for total of 25.5 hours of field operation for testing the said power weeder. The field tests were conducted at rated speed of 7000 rpm. The detailed test results are represented in the Annexure and summarized in the ensuing table:

Sl.No.	Parameters	Observations	
1	Type of soil	: Light	
2	Soil moisture (%)	: 8.5 to 14.2	
3	Bulk density of soil (g/cc)	: 1.58 to 1.64	
4	Forward Speed of operation (kmph)	: 0.77 to 1.13	
5	Depth of cut (cm)	: 3.25 to 3.84	
6	Width of cut (m)	: 0.36 to 0.37	
7	Area covered (ha/h)	: 0.023 to 0.034	
8	Time required for one ha (h)	: 29.41 to 43.48	
9	Field efficiency (%)	: 80.8 to 82.9	
10	Weeding efficiency (%)	: 81.3 to 83.3	
11	Fuel consumption		
		l/h	: 0.61 to 0.69
		l/ha	: 17.9 to 25.6



Machine 124/495	MHASWADKAR, BAM5139IC POWER WEEDER	COMMERCIAL (INITIAL)
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14.1.6 Main bearing: Two Nos. of ball bearing 6201-LU and 6002-RS were used.

Bearing No.	Type of bearing	Diametrical clearance (mm)	Crankshaft end float (mm)	Max. permissible clearance limit (mm)	
				Diametrical clearance	Crankshaft end float
1.	Ball bearing	NA	0.04	NA	0.30
2.	Ball bearing	NA			

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 and magneto : Normal

14.2 Clutch: No noticeable defects were observed.

14.3 Transmission gears: The worm gear was worn out.

14.4 Rotary drive unit:

The rotary drive unit was dismantled and all the components were found in normal condition.

15. COMMENTS & RECOMMENDATIONS

15.1 It was observed that machine performance is satisfactory only if the weeds are less and height is small up to 15 cm.

15.2 During field test it was observed that teeth of worm gear were worn out, after completion of 16.5 hours of field operation. After approval of competent authority, the worm gear was replaced with new one. This should be looked into for quality improvement.

15.3 The specific fuel consumption in rating test of engine was observed as 974.1 g/kWh against declared value of 540 g/kWh by the applicant/manufacturer which exceeded by more than 5 percent that declared by the manufacturer and hence does not fulfill the requirement of IS 7347-1974 (Amended 2011). This should be looked into for corrective action.


15.4 The engine was not marked with Manufacturer name or trade-mark, Rated power, Rated speed and type of fuel used which does not fulfill the requirement of IS 7347-1974 (Amended 2011). This may be looked into.

15.5 It was observed that during engine performance test, at full load, engine speed was not stable at rated speed. This shall be looked into for corrective action.

Machine 124/495	MHASWADKAR, BAM5139IC POWER WEEDER	COMMERCIAL (INITIAL)
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- 15.6 It was observed that piston ring end gap clearance exceeded the maximum permissible wear limit. This should be looked into.
- 15.7 It was observed that provision for exhaust emission away from operator was not provided. This should be looked into.
- 15.8 The working width of the machine was 365 mm, however 80 mm of width at the middle of the rotor was not tilling the soil and hence two passes were must. This should be looked into.
- 15.9 The hardness and chemical composition of rotary blades does not conform to the requirement of IS 6690:1981 (Reaffirmed 2012). This may be looked into for corrective action.
- 15.10 Noise at operator's ear level was observed on higher side against warning limit of 85 dB(A) as specified by International Labour 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.
- 15.11 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 machine components. In view of above, this deserves to be given top priority for corrective action.
- 15.12 Working width of the machine, type of engine (petrol/diesel) and manufacturer's name and address should be provided on the labeling plate of the machine. This should be looked into for corrective action.
- 15.13 **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)
AGRICULTURAL ENGINEER


(Dr. P.P. RAO)
DIRECTOR

Draft test report compiled by- Shri. J. Bhon Singh, STA