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

संख्या/No.: ICE/NERFMTTI, B. Chariali/ 2025-26/06/544
माह / Month: August 2025

THIS TEST REPORT IS VALID UPTO 31.08.2032

MITSUYAMA, MY-578D, POWER WEEDER

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
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4. SPECIFICATIONS

4.1 General:

Make	:	MITSUYAMA
Model	:	MY-578D
Name and address of manufacturer	:	M/S. CHONGQING SENCI WUGU AGRICULTURAL MACHINERY CO. LTD., No.8, Longfei Road, Dongcheng Street, Tongliang Town, Chongqing, **CHINA**
Name and address of applicant	:	M/s. Really Agritech Private Limited, Building No D/3, Unit No: 13 & 14, Angel Compound, Mumbai-Nashik Highway, NH 3 Village Pimpalas, Bhiwandi, Thane – 421 311, Maharashtra
Name of machine	:	Power Weeder
Type of machine	:	Self-propelled, Walk behind
Country of origin	:	**CHINA**
Working size of machine (mm)	:	1140
Year of manufacture	:	2025
Serial No. of machine	:	MY/578D/03/F-0009

4.2 Details of prime mover:

Make (apa)	:	SENCI
Model	:	WGT178F
Type	:	4 stroke, Single cylinder, Air cooled, Diesel engine
Year of manufacture	:	2025
Serial number	:	1507136699
Country of origin	:	**CHINA**
Recommended high idle speed (rpm)	:	3600±200
Recommended low idle speed (rpm)	:	1400± 100
Recommended rated speed (rpm)	:	3400
Maximum power observed (kW)	:	**4.40**
Maximum power declared (apa) (kW)	:	4.50

11.2 Chemical composition of rotor blades:

Constituents	As per IS 6690:1981 (Reaffirmed 2022)		Composition as observed (% by weight)	Remarks
	Carbon Steel (%)	Silicon Manganese Steel (%)		
Carbon (C)	0.70 -0.85	0.50-0.60	0.660	**Does not conform**
Silicon (Si)	0.10 -0.40	1.50-2.00	0.267	Conforms
Manganese (Mn)	0.50 -1.0	0.50-1.00	1.276	**Does not conform**
Sulphur (S)	0.05(max)	0.05(max)	0.008	Conforms
Phosphorous (P)	0.05(max)	0.05(max)	0.013	Conforms

12. FIELD PERFORMANCE TEST

The field tests were conducted for total 26.17 hours of field operation for testing the said Power Weeder. The field tests were conducted at rated speed of 3400 rpm. The detailed test results are represented in the Annexure and summarized in the ensuing Table:

Sr. No.	Parameters		Observations
1	Type of soil	:	Medium
2	Soil moisture (%)	:	8.5 to 11.2
3	Bulk density of soil (g/cc)	:	1.60 to 1.82
4	Forward Speed of operation (kmph)	:	0.85 to 0.99
5	Depth of cut (cm)	:	5.24 to 6.30
6	Width of cut (m)	:	1.19 to 1.22
7	Area covered (ha/h)	:	0.084 to 0.093
8	Time required for one ha (h)	:	10.78 to 11.89
9	Field efficiency (%)	:	77.70 to 83.35
10	Weeding efficiency (%)	:	79.24 to 83.60
11	Fuel consumption		
	l/h	:	0.71 to 0.76
	l/ha	:	7.61 to 9.04

12.1 Rate of work

- Rate of work was recorded as 0.084 to 0.093 ha/h and the forward speed of operation varied from 0.85 to 0.99 kmph.
- Time required to cover one hectare was recorded as 10.78 to 11.89 h.

12.2 Quality of work:

- Depth of cut was recorded as 5.24 to 6.30 cm.
- Working width was observed as 1.19 to 1.22 m.
- Field efficiency was found as 77.70 to 83.35 %.
- Weeding efficiency was recorded as 79.24 to 83.60 %.

12.3 Adequacy of power of prime mover:

The power of prime mover was found adequate.

12.4 Wear Analysis of rotor blades:

Sr. No	Initial mass(g)	Final mass (g)	Loss of mass (g)	Percentage wear of rotor blades	
				After 26.17 h	Per hour
R-1	315.2	308.8	6.4	2.03	0.08
R-2	308.1	302.2	5.9	1.91	0.07
R-3	314.4	310.7	3.7	1.18	0.05
R-4	303.4	299.0	5.4	1.78	0.07
L-1	301.0	296.0	5.0	1.66	0.06
L-2	315.1	310.5	4.6	1.46	0.06
L-3	303.9	299.1	4.8	1.58	0.06
L-4	310.5	306.3	4.2	1.35	0.05

The hourly rate of wear of blade on mass basis after field operations was recorded as 0.05 to 0.08 %.

13. EASE OF OPERATION AND ADJUSTMENTS

Machine maneuverability while taking turns during field operation was not comfortable.

14. DEFECTS, BREAKDOWNS AND REPAIRS

No defect or breakdown was observed during test.

15. COMPONENTS / ASSEMBLY INSPECTION AND ASSESSMENT OF WEAR

15.1 Engine:

The Engine and other assemblies were dismantled after 39.25 hours of operation.

15.1.1 Cylinder:

Cylinder	Cylinder bore dia. (mm)						Max. permissible wear limit (mm)
	Top position		Middle positon		Bottom position		
1	Thrust side	Non Thrust side	Thrust side	Non Thrust side	Thrust side	Non Thrust side	
	78.04	78.03	78.03	78.02	78.03	78.02	78.30

15.1.2 Piston:

Top (above top compression ring)		At skirt		Max. permissible wear limit at skirt (mm)	Clearance between piston & cylinder liner at the skirt of the piston, mm	
Thrust side	Non-thrust side	Thrust side	Non-thrust side		As observed	Max. permissible limit (mm)
77.49	77.50	77.94	*	77.30	0.06	Not specified

*Not recorded due to piston design constraints.

15.1.3 Ring side clearance:

Piston rings	Ring side clearance (mm)	Max. permissible wear limit (mm)
1st Compression ring	0.07	0.30
2nd compression ring	0.05	0.30
Oil ring	0.05	0.15

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	0.45	0.40	0.40	1.00
2nd compression ring	0.50	0.45	0.45	1.50
Oil ring	0.25	0.25	0.25	1.20

15.1.5 Big end bearing:

Bearing no.	Dia of bearing (mm)	Dia of Crank pin (mm)	Clearance (mm)		Max. permmissible wear limit (mm)	
			Diametrical	Axial	Diametrical	Axial
1	36.06	35.97	0.09	0.45	0.25	0.80

*Axial clearance was not recorded due to design constraints of crank shaft.

15.1.6 Main bearing: One No. of ball bearing 6307 was used.

Bearing No.	Diametrical clearance (mm)	Crankshaft end float (mm)	Max. permissible clearance limit(mm)	
			Diametrical clearance	Crankshaft end float
1	0.12	0.15	Not Specified	0.30

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
6.01	6.02	5.96	5.95	0.05	0.07	0.15	0.20

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

15.2 Clutch: No noticeable defects were observed.

15.3 Transmission gears: No noticeable defects were observed.

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

16. 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	2	3	4	5
1.	Type	Self-propelled, walk behind	Self-propelled, walk behind	Conforms
2.	Working width (mm)	300 –1500	1140	Conforms
3.	Type of engine	Compression ignition / Spark ignition	Compression ignition	Conforms
4.	Starting method	Manual / recoil /self-starting	Recoil starting	Conforms
5.	Type of clutch	Dry / Wet	Wet	Conforms
6.	Type of primary gear box	Sliding / constant mesh or combination of both	Sliding mesh	Conforms
7.	Type of secondary gear box	Gear type	Gear type	Conforms
8.	Material for rotor shaft	SAE1045 (CRS) / EN8 / EN9	EN8 (apa)	Conforms
9.	No. of flanges	4 - 10	8	Conforms
10.	Type of flanges	Square / circular/ rectangular	Square	Conforms

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1	2	3	4	5
11.	Distance between consecutive flanges (mm)	80 to 150	139.1	Conforms
12.	No. of blades in each flange	3 - 6	4	Conforms
13.	No .of rotor blade	12 (Min.)	32	Conforms
14.	Thickness of rotor blade (mm)	5 (min.)	5.08	Conforms
15.	Material of blade	Boron (28Mn Cr B5) / High Carbon Steel EN42j	High Carbon Steel	Conforms
16.	Hardness of Blade, HRC	38 (Min.)	28.5	**Does not conform**
17.	Shape of rotor blade	C / J shape	J shape	Conforms
18.	Provision for handle height adjustment	Must be provided	Provided	Conforms
19.	Provision for handle rotation	Must be provided	Provided	Conforms
20.	Provision for emergency stop of engine	Must be provided	Provided	Conforms
21.	Provision for easy start of engine	Must be provided	Provided	Conforms
22.	Provision for shield/cover to prevent flying of mud & stone from rotor	Must be provided	Provided	Conforms
23.	Depth control mechanism	Must be provided	Provided	Conforms
24.	Provision for transport wheels	Must be provided	Provided	Conforms
25.	Provision for cover on exhaust	Must be provided	Provided	Conforms
26.	Direction of exhaust emission away from operator	Must be provided	Provided	Conforms
27.	Marking / labeling of machine	Labeling plate should be riveted on the body of machine having Name and address of manufacturer & Applicant, Country of origin, Make, Model, Year of manufacture, Serial number, Engine number, Engine HP, rated rpm & SFC.	Name and address of manufacturer & Applicant, Country of origin, Engine number, Engine HP, rated rpm & SFC were not provided.	**Does not conform**
28.	Literature	Operator manual, Service manual and Parts catalogue should be provided.	Provided	Conforms

17. COMMENTS AND RECOMMENDATIONS

17.1 During air cleaner oil pull over test, percentace of oil pull-over was observed on higher side. This should be looked into for corrective action.

17.2 Name and address of manufacturer and applicant, Country of origin, Engine number, Engine HP, rated rpm and SFC should be provided on the labeling plate of the machine. This should be looked into for corrective action.

17.3 The hardness and chemical composition of rotary blades do not conform to the requirement of IS 6690:1981 (Reaffirmed 2022). This may be looked into for corrective action.

17.4 Noise at operator's ear level was observed on higher side against danger limit of 90 dB(A) as specified by the 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.

17.5 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.

17.6 **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: 8132-2023.

TESTING AUTHORITY

3/9/25

(M.R. PATIL)
SENIOR AGRICULTURAL ENGINEER

(P. KAMALABAI)
DIRECTOR

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

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18. APPLICANT'S COMMENTS

We have gone through your comments and recommendations we will do the corrective action in future products.

ANNEXURE

FIELD PERFORMANCE RESULTS

Place of Test: NERFMTTI Farm, Biswanath Chariali, Dist. - Biswanath, Assam

Sr. No.	Parameters	I	II	III	IV
1	Date of test	15.07.2025	18.07.2025	21.07.2025	22.07.2025
2	Net test duration (h)	7.08	6.75	6.84	5.50
3	Field length (m)	29.0	31.0	29.0	29.0
4	Type of soil	Medium			
5	Bulk density (g/cc)	1.60	1.66	1.82	1.72
6	Soil moisture (%)	10.5	9.2	8.5	11.2
7	Previous treatment	Nil			
8	Forward speed (kmph)	0.99	0.91	0.85	0.95
9	Av. depth of cut (cm)	5.40	5.24	6.30	6.30
10	Av. width of cut (m)	1.21	1.22	1.19	1.20
11	Area covered (ha/h)	0.093	0.090	0.084	0.090
12	Time required for one ha (h)	10.78	11.12	11.89	11.12
13	Field efficiency (%)	77.70	81.22	83.35	79.53
14	Av. height of weeds (cm)	26.4	22.8	24.9	20.8
15	Av. number of weeds per m^2 (before operation)	131	126	128	172
16	Av. number of weeds per m^2 (after operation)	27	21	23	32
17	Weeding efficiency (%)	79.24	83.60	81.69	81.63
18	Fuel Consumption				
	l/h	0.71	0.73	0.76	0.75
	l/ha	7.61	8.07	9.04	8.29