

THIS TEST REPORT IS VALID UPTO 30.09.2032



MITSUYAMA, GX200 OEM, 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

बिश्वनाथ चारिआलि, जिला - बिश्वनाथ(असम)

BISWANATH CHARIALI, DIST- BISWANATH, ASSAM, PIN - 784 176

[AN ISO 9001:2015 CERTIFIED INSTITUTION]

4. SPECIFICATIONS

4.1 General:

Make	: MITSUYAMA
Model	: GX200 OEM
Name and address of the manufacturer	: M/s. CHONGQING SENCI WUGU AGRICULTURAL MACHINERY CO. LTD., No. 8, Longfei Road, Dongcheng Street, Tongliang Town, Chongqing, CHINA
Name and address of the applicant	: REALLY AGRITECH PRIVATE LIMITED, Building No D/3, Unit No: 13 & 14, Angel Compound, Mumbai-Nashik Highway NH-3, Village Pimpalas, Bhivandi, Thane-421311, Maharashtra
Name of machine	: Power weeder
Type of machine	: Self propelled, Walk behind
Working size of machine (mm)	: 1022
Year of manufacture	: 2025
Serial no. of machine	: MY/GX-200/03/F-0025

4.2 Details of prime mover:

Make	: HONDA
Model	: GX200
Type	: Four stroke, single cylinder, air cooled, spark ignition engine
Year of manufacture	: 2024
Serial number	: GCAFD-1492453 *QTB
Country of origin	: INDIA
Recommended high idle speed (rpm)	: 3900 ± 100
Recommended low idle speed (rpm)	: 1400 ± 150
Recommended rated speed (rpm)	: 3600
Rated power observed (kW)	: 3.51
Rated power declared (apa) (kW)	: 4.10



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	0.724	Conforms
Silicon (Si)	0.10 -0.40	1.50-2.00	0.641	Does not conform
Manganese (Mn)	0.50 -1.0	0.50-1.00	0.899	Conforms
Sulphur (S)	0.05(max)	0.05(max)	0.013	Conforms
Phosphorous (P)	0.05(max)	0.05(max)	0.018	Conforms

12. FIELD PERFORMANCE TEST

The field tests were conducted for total 25.25 hours of field operation for testing the said Power Weeder. The field tests were conducted at rated speed of 3600 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 (%)	:	8.9 to 9.5
3	Bulk density of soil (g/cc)	:	1.83 to 2.10
4	Forward speed of operation (kmph)	:	0.84 to 1.00
5	Depth of cut (cm)	:	6.48 to 6.56
6	Width of cut (m)	:	1.02 to 1.11
7	Area covered (ha/h)	:	0.070 to 0.081
8	Time required for one ha (h)	:	12.35 to 14.25
9	Field efficiency (%)	:	75.81 to 80.21
10	Weeding efficiency (%)	:	78.42 to 84.70
11	Fuel consumption		
		l/h :	1.18 to 1.20
		l/ha :	14.82 to 16.82

12.1 Rate of work

- Rate of work was recorded as 0.070 to 0.081 ha/h and the forward speed of operation varied from 0.84 to 1.00 kmph.
- Time required to cover one hectare was recorded as 12.35 to 14.25 h.

12.2 Quality of work:

- Depth of cut was recorded as 6.48 to 6.56 cm.
- Working width was observed as 1.02 to 1.11 m.
- Field efficiency was found as 75.81 to 80.21 %.
- Weeding efficiency was recorded as 78.42 to 84.70 %.



ICE/NERFMTTI, B. Chariali/ 08/08/546	MITSUYAMA, GX200 OEM POWER WEEDER	COMMERCIAL (INITIAL)
---	--------------------------------------	-------------------------

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 25.25h	Per hour
R-1	293.70	290.78	2.92	0.99	0.04
R-2	277.65	274.08	3.57	1.29	0.05
R-3	292.21	289.03	3.18	1.09	0.04
R-4	282.56	278.21	4.35	1.54	0.06
L-1	293.34	285.62	7.72	2.64	0.10
L-2	290.73	283.30	7.43	2.56	0.10
L-3	289.07	283.76	5.31	1.84	0.07
L-4	288.95	281.89	7.06	2.44	0.10

The hourly rate of wear of blade on mass basis after field operations was recorded as 0.04 to 0.10 %.

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 39.67 hours of operation.

15.1.1 Cylinder:

Cylinder	Cylinder bore dia (mm)						Max.
1	Top position		Middle positon		Bottom position		Permissible wear limit (mm)
	Thrust side	Non Thrust side	Thrust side	Non Thrust side	Thrust side	Non Thrust side	
	68.63	68.65	68.64	68.65	68.64	68.65	

ICE/NERFMTTI, B. Chariali/ 08/08/546	MITSUYAMA, GX200 OEM POWER WEEDER	COMMERCIAL (INITIAL)
---	--------------------------------------	-------------------------

15.1.2 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			As observed	Max. permissible limit (mm)
Thrust side	Non-thrust side	Thrust side	Non-thrust side			
67.68	67.68	68.04	*	67.30	0.6	1.00

*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	0.05	0.30
2nd compression ring	0.03	
Oil ring	*	0.15

*Not recorded due to ring design constraints

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	0.20	0.20	0.20	1.00
2nd compression ring	0.45	0.45	0.45	1.50
Oil ring	NA	NA	NA	1.20

15.1.5 Big end bearing:

Bearing no.	Dia of bearing (mm)	Dia of Crank pin (mm)	Clearance (mm)		Max. Permissible wear limit (mm)	
			Diametrical	Axial	Diametrical	Axial
1	30.07	29.97	0.1	NA	0.25	0.80

15.1.6 Main bearing: Two Nos. of ball bearing 8205 were used.

Bearing No.	Diametrical clearance (mm)	Crankshaft end float (mm)	Max. permissible clearance limit (mm)	
			Diametrical clearance	Crankshaft end float
1.	Ball bearing	0.15	NA	0.30
2.	Ball bearing			



ICE/NERFMTTI, B. Chariali/ 08/08/546	MITSUYAMA, GX200 OEM POWER WEEDER	COMMERCIAL (INITIAL)
---	--------------------------------------	-------------------------

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
5.47	5.47	5.46	5.44	0.01	0.03	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 & 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	1022	Conforms
3.	Type of engine	Compression ignition / Spark ignition	Spark 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

ICE/NERFMTTI, B. Chariali/ 08/08/546	MITSUYAMA, GX200 OEM POWER WEEDER	COMMERCIAL (INITIAL)
---	--------------------------------------	-------------------------

1	2	3	4	5
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
11.	Distance between consecutive flanges (mm)	80 to 150	110 to 115	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.)	5.05	Conforms
15.	Material of blade	Boron (28Mn Cr B5) / High Carbon Steel EN42j	High Carbon Steel	Conforms
16.	Hardness of Blade, HRC	38 (Min.)	40.5 (Avg.)	Conforms
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	Not Provided	Does not conform
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



ICE/NERFMTTI, B. Chariali/ 08/08/546	MITSUYAMA, GX200 OEM POWER WEEDER	COMMERCIAL (INITIAL)
---	--------------------------------------	-------------------------

27.	Marking / labelling of machine 	The labelling 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 and 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 The average rated power in rating test of engine was observed as 3.51 kW against declared value of 4.10 kW by the applicant/manufacturer. This should be looked into for corrective action.
- 17.2 During assessment of wear, it was observed that cylinder bore dia exceeded the max. permissible wear limit as declared by the applicant/manufacturer. This should be looked into.
- 17.3 Name and address of manufacturer and applicant, country of origin, Engine number, Engine HP, rated speed and SFC were not provided on the labeling plate of the machine. This should be looked into for corrective action.
- 17.4 The engine was not marked with rated power, rated speed and type of fuel used which does not fulfill the requirement of IS 7347-1974 (Amended 2021). This may be looked into.
- 17.5 The hardness and chemical composition of rotary blades does not conform to the requirement of IS 6690:1981 (Reaffirmed 2022). This may be looked into for corrective action.
- 17.6 Noise at operator's ear level was observed on higher side against warning limit of 85

ICE/NERFMTTI, B. Chariali/ 08/08/546	MITSUYAMA, GX200 OEM POWER WEEDER	COMMERCIAL (INITIAL)
---	--------------------------------------	-------------------------

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.

- 17.7 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.


17.8 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


(M.R. PATIL)
SENIOR AGRICULTURAL ENGINEER


(P.KAMALABAI)
DIRECTOR



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

18. APPLICANT'S COMMENTS

Applicant's Comments

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

ICE/NERFMTTI, B. Chariali/ 08/08/546	MITSUYAMA, GX200 OEM POWER WEEDER	COMMERCIAL (INITIAL)
---	--------------------------------------	-------------------------

ANNEXURE

FIELD PERFORMANCE RESULTS

Place of Test: NERFMTTI Farm, Biswanath Chariali, Biswanath, Assam

Sr. No.	Parameters	I	II	III	IV
1	Date of test	02.09.2025	03.09.2025	04.09.2025	05.09.2025
2	Net test duration (h)	7.00	7.50	6.50	4.25
3	Field length (m)	30.0	32.0	31.0	39.0
4	Type of soil	Medium			
5	Bulk density (g/cc)	1.86	1.91	2.10	1.83
6	Soil moisture (%)	9.5	9.0	8.9	9.2
7	Previous treatment	Nil			
8	Forward speed (kmph)	0.88	0.88	1.00	0.84
9	Av. depth of cut (cm)	6.50	6.48	6.48	6.56
10	Av. width of cut (m)	1.11	1.10	1.02	1.10
11	Area covered (ha/h)	0.078	0.077	0.081	0.070
12	Time required for one ha (h)	12.82	12.99	12.35	14.25
13	Field efficiency (%)	79.59	80.21	79.41	75.81
14	Av. height of weeds (cm)	15.1	20.6	23.6	18.6
15	Av. number of weeds per m ² (before operation)	169	179	186	184
16	Av. number of weeds per m ² (after operation)	28	34	28	40
17	Weeding efficiency (%)	83.47	81.12	84.70	78.42
18	Fuel Consumption				
	l/h	1.18	1.20	1.20	1.18
	l/ha	15.13	15.59	14.82	16.82

