

THIS TEST REPORT VALID UP TO : 31st August, 2029



**JAMNA, JAIMLLL-8,
LASER LAND LEVELER**



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

उत्तरी क्षेत्र कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

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14. HARDNESS AND CHEMICAL COMPOSITION OF CRITICAL PARTS

14.1 The result of test of Hardness of blade is tabulated in Table-VII.

Table- VII

As per IS: 9813-2002	Hardness observed (HB)	Remark
353 to 421	177 to 191	Does not conform

14.2 Chemical composition**Table- VIII.**

Sr. No.	Material	Requirement as per IS: 9813-2002	As observed	Remark
1.	Carbon (C)	0.4 to 0.7	0.28	Does not conform
2.	Silicon (Si)	--	0.32	--
3.	Manganese (Mn)	--	0.61	--
4.	Sulphur (S)	--	0.11	--
5.	Phosphorous (P)	--	0.02	--

15. RUNNING-IN

The laser land leveler was running-in 1.18 hours prior to start of the test as per the recommendation of the applicant.

16. FIELD TEST

The field tests of 26.47 hours with 3 replications were conducted. The field performance observations are given in Annexure-I to IV.

The summary of field performance test is given in Table-IX.

Table-IX: Summary of field performance

Sr. No.	Parameters	Observations
i)	Tractor used	Swaraj-969 FE
ii)	Gear used	M-4
iii)	Type of soil	Sandy Loam
iv)	Soil moisture, %	4.90 to 7.90
v)	Bulk density of soil, g/cc	Before operation After operation
		1.43 to 1.62 1.38 to 1.60
vi)	Area covered, ha/h	0.042 to 0.047
vii)	Time required for one hectare, h	21.28 to 23.80
viii)	Fuel consumption	
	- l/h	4.49 to 5.09
	- l/ha	99.20 to 108.40
ix)	Total volume of cut, m ³	84.33 to 123.76
x)	Total volume of fill, m ³	103.46 to 161.33
xi)	Total volume of earth work	m ³
		m ³ /h
		m ³ /l
xii)	Leveling Index before operation	10.57 to 11.59
xiii)	Leveling index after operation	0.62 to 0.69
xiv)	Draft requirement, kg	1208

16.1 Rate of Work

16.1.1 The field capacity in sandy loam soil was recorded as 0.042 to 0.047 ha/h.

16.1.2 Total volume of cut 84.33 to 123.76 m³

16.1.3 Total volume of fill 103.46 to 161.33 m³

16.1.4 The time required to cover one hectare area was recorded as 21.28 to 23.80 h.

16.2 Quality of work

Leveling Index before and after field operation was observed from 10.57 to 11.59 and 0.62 to 0.69 respectively.

16.3 Fuel Consumption:

l/h : 4.49 to 5.09

l/ha : 99.20 to 108.40

17. CONFORMITY TO INDIAN STANDARD

17.1 Table -X: Material for different components of leveler (As per IS: 9813-2002)			
Sr. No.	Components	Material(Requirements)	Observations
I	Frame	Mild steel	Mild steel
ii	Hitch	Mild steel	Mild steel
iii	Hitch pin	Carbon steel	Carbon steel
Iv	Pin adjusting screw	Carbon steel	N.A.
V	Drag bucket frame	Mild steel	Mild steel
Vi	Side plate	Mild steel	Mild steel
Vii	Drag bucket	Mild steel	Mild steel
viii	Scarified	Carbon steel	N.A.

17.2 Other requirements: (As per IS: 9813-2002)			
Sr. No.	REQUIREMENTS	Observations	Conformity
i	The size of terracer shall be determined by length of blade plus the length of extension blade if any, in meters. The nominal size of the terracer may be between 1.5 to 3.5 meter.	The size of terracer blade is 2.39 m.	Conforms
ii	The beveling shall be done on lower side of the blade. Both the upper and lower sides of the blade may be beveled to make it reversible.	Provided	Conforms
iii	The blade shall be beveled. The length of beveling may be 10 mm. The thickness of the edge shall be as far as possible uniform and may be between 1.5 to 3.0 mm.	Provided	Conforms
iv	The corners of the square holes shall be slightly rounded.	Round hole provided	Conforms
v	The holes of the blade shall be provided with counter-sunk bolts of 10-mm size. As far as possible, the bolts should conform to grade M10 of IS:2609-1964 'Specification for couch bolts (M6 to M24). The bolt head should flush with the blade surface.	The bolts of size 50.0 × 15.8 × 1.98 are provided & its heads are flushed with the blade surface.	--

19. SOUNDNESS OF CONSTRUCTION

No noticeable breakdown during 26.47 hours of field operation was observed.

20. COMMENTS & RECOMMENDATION

- 20.1** The safety warnings, signs and pictograms are not provided on the machine. It should be provided for safety of the users.
- 20.2** The hardness & chemical composition of the soil cutting blade do not meet the requirement of IS: 9813-2002. This should be looked into.



21. TECHNICAL LITERATURE

Following literature was submitted by applicant for reference during test.

- (i) Operator manual
- (ii) Parts catalogue
- (iii) Service manual

However, the manuals need to be updated as per IS: 8132-1999.

TESTING AUTHORITY

Er. SANJAY KUMAR AGRICULTURAL ENGINEER	
Dr. MUKESH JAIN DIRECTOR	 30.08.2022

The test report is compiled by Sh. Deny Hasnu, Sr. Technician

22. APPLICANT'S COMMENTS

We will comply with during our regular production of laser land leveler.