व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या / No. : IMP-748/1777/2015
माह / Month: August, 2015

LASER LAND LEVELLER
'MOBA, LLS-101'

सत्यमेव जयते

भारत सरकार
कृषि एवं किसान कल्याण मंत्रालय
(कृषि एवं सहकारिता विभाग)

GOVERNMENT OF INDIA
MINISTRY OF AGRICULTURE AND FARMERS WELFARE
(DEPARTMENT OF AGRICULTURE & COOPEARATION)

उत्तरी क्षेत्र कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान
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xi	The blade and mould board should have a contour such that it allows the free rolling of earth the curvature of mould board with blade shall be 300 or 375 mm with a tolerance of ±20mm. (Ref fig.2)	The blade mould board have a contour shape curvature of mould board with blade is 357 mm that allows the free rolling of earth.	Conforms
5.12	**Workmanship and finish:**		
i	All components of terracer shall be free from pits, burrs and other visual defects.	All components of terracer are free from pits, burrs and other visual defects.	Conforms
ii	The welding of various parts shall be free from blow holes, exposed porosity, exposed inclusions unfilled crate and un fused welds.	The welding of various parts are free from blow holes, exposed porosity, exposed inclusions unfilled crate and un fused welds.	Conforms
iii	The exposed metallic parts shall be free from rust and shall have a protective coating.	The exposed metallic parts are free from rust and shall have a protective paint coating.	Conforms
5.13	**Marking and packing:**		
	Marking- Each terracer shall be marked with: a) Manufacturer's name and trade-mark, if any. b) Size; and c) Batch or code number These particulars shall be stamped, embossed or engraved on metallic plate and rigidly fitted on a non-wearing part of terracer	The labeling plate is revitted on machine. (Refer 4.11) The size of machine is not marked.	**Does not conform**

6. FIELD TEST

The field tests of 21.17 hours with 5 replications were conducted. The each replication was of minimum 3.08 hour. The field performance observation are given in annexure II

The summary of field performance test is given in Table VIII

TABLE-VIII: Summary of field performance

Sl. No.	Parameters	Observations
i)	Tractor used	New Holland-3630
ii)	Gear used	H-1
iii)	Type of soil	Sandy loam
iv)	Av. soil moisture, %	1.9 to 8.9
v)	Bulk density of soil, g/cc Before operation(Undisturbed soil) After operation(Disturbed soil)	 1.747 to 1.828 1.418 to 1.496
vi)	Av. Depth of cut, mm	33 to 50
vii)	Av. Working width, m	1.92 to 2.08

viii)	Av. speed of operation, kmph	4.68 to 4.85
ix)	# Wheel slippage, %	9.73 to 12.95
x)	* Area covered, ha/h	0.128 to 0.165
xi)	Time required for one hectare, h	6.06 to 7.82
xii)	Fuel consumption	
xiii)	- l/h	3.05 to 3.7
	- l/ha	18.92 to 28.15
xiv)	Draft requirement, kg	740 to 1154 (930)
xv)	Range dia. of laser beam, m	1200
xvi)	Land slope before operation , % Lengthwise Widthwise	0.046 to 0.080 0.138 to 0.325
xvii)	Land slope after operation , % Lengthwise Widthwise	0.004 to 0.012 0.013 to 0.067
xviii)	Blade bucket capacity, kg (Approx)	614.92 to 648.74
xix)	Coefficient of variation of leveling after leveling	0.001 to 0.003
xx)	Evenness in leveling, %	99.7 to 99.9

Vary with depth of cut of blade
* Vary with land slope & depth of cut

6.1 Rate of Work

6.1.1 The rate of work in sandy loam soil was recorded as 0.128 to 0.165 ha/h and the forward speed as 4.68 to 4.85 kmph.

6.1.2 The time required to cover one hectare area was recorded as 6.06 to 7.82 h.

6.1.3 Fuel consumption of tractor varies from 3.05 to 3.7 l/h whereas fuel consumption per hectare varies from 18.92 to 28.15 l/ha.

6.2 Quality of work

6.2.1 Depth of cut of soil cutting blade was varies from 33 to 50 mm.

6.2.2 Slope of land across its length & width after laser leveler operation was observed as 0.004 to 0.012% & 0.013 to 0.067% respectively.

6.2.3 Coefficient of variation & evenness of the operation of leveling after operation were observed as 0.001 to 0.003 and from 99.7 to 99.9 % respectively.

6.2.4 Working diameter of laser beam was recorded as 1200 m.

7. EASE OF OPERATION, ADJUSTMENTS & SAFETY

7.1 Depth of cut of soil cutting blade can be adjusted by raising/lowering the receiver height from operator seat & for this operator need not to get down from tractor

7.2 Maneuverability of the laser leveler unit during field operation was satisfactory.

8. SOUNDNESS OF CONSTRUCTION

No breakdown occurred during 21.17 hrs. of operation field operation

9. COMMENTS & RECOMMENDATIONS

9.1 Quality of field leveling was satisfactory.

9.2 Deflection of laser beam before & after the field test was within the limit & the deflection was also normal after the temperature gradient & vibration test.

9.3 No leakage of hydraulic oil from hydraulic circuits observed during field & lab test.

9.4 No mist or water vapour were observed inside emitter prism glass when tested as per IP 65 for water resistance test.

9.5 Hardness, carbon content and dimension of soil cutting blade does not conform to the limit specified IS: 9813:2002 therefore these should be looked into for corrective action in future at regular production for level.

9.6 Draft requirement varies from 740 to 1154 kg, where as the average draft requirement was observed as 930.03 kg.

9.7 Working range diameter of laser beam was found 1200 m against the declared value of 800 m.

9.8 An identification plate provided on the implement. The identification plate does not conforms the requirement of marking. The size of machine, minimum tractor power requirement & mass of machine should be added on the plate.

9.9 The appropriate safety warnings, signs and pictograms are not provided on the machine. It should be provided on the machine and also be included in operator's manual with instructions for safety.

10. LITERATURE :

Following literatures was supplied by the manufacture

1. Leaflets containing brief information of laser unit &
2. Operator's user manual small booklet with details information in English of control box, receivers & emitter and specification of machine & laser unit are provided. The literature operator's manual, service manual and parts catalogue should be updated as per IS: 8132-1999 and bought out in Hindi, regional languages & English for the guidance of users & technical personnel.

TESTING AUTHORITY

G.R. AMBALKAR **Agricultural Engineer**	
R.K. NEMA **Senior Agricultural Engineer**	
HIMAT SINGH **Director**	

Test report compiled by: **Sh. Maan Singh, Sr. Tech. Assistant**

11. APPLICANT'S COMMENTS

Para No.	Our Reference	Applicant's Comments
11.1	--	No specific comments are offered by the applicant.