LASER LAND LEVELLER
‘MOBA, LLS-101’

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

NORTHERN REGION FARM MACHINERY TRAINING AND TESTING INSTITUTE
TRACTOR NAGAR, SIRSA ROAD, HISAR-125001 (HARYANA)

Website: http://nrfmtti.gov.in
E-mail: fmti-nr@nic.in
5.12 Workmanship and finish:

i) All components of terracer shall be free from pits, burrs and other visual defects.

ii) The welding of various parts shall be free from blow holes, exposed porosity, exposed inclusions unfilled crate and un fused welds.

iii) The exposed metallic parts shall be free from rust and shall have a protective coating.

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**

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

**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.

**SOUNDNESS OF CONSTRUCTION**

No breakdown occurred during 21.17 hrs. of operation field operation.

**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

<table>
<thead>
<tr>
<th>G.R. AMBALKAR</th>
<th>Agricultural Engineer</th>
</tr>
</thead>
<tbody>
<tr>
<td>R.K. NEMA</td>
<td>Senior Agricultural Engineer</td>
</tr>
<tr>
<td>HIMAT SINGH</td>
<td>Director</td>
</tr>
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</table>

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

11. APPLICANT’S COMMENTS

<table>
<thead>
<tr>
<th>Para No.</th>
<th>Our Reference</th>
<th>Applicant’s Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.1</td>
<td>--</td>
<td>No specific comments are offered by the applicant.</td>
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