COMMERCIAL TEST REPORT

No. : IMP-674/1646/2014
Month: September, 2014

LASER LEVELLER
‘FIELDKING, FKLLL ESD-7-1.7’

GOVERNMENT OF INDIA
MINISTRY OF AGRICULTURE
(DEPARTMENT OF AGRICULTURE & COOPERATION)

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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-
wearable part of terracer

An identification plate with following parameters is provided
i) Serial No.
ii) Model No.
iii) Mfd. by
iv) Year of manufacturer

Yes

6. FIELD TEST

The field tests of 20.25 hours with 5 replications were conducted. The each replication was of minimum 3 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>Swaraj- 855</td>
</tr>
<tr>
<td>ii)</td>
<td>Gear used</td>
<td>L-4</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>5.4 to 12.0</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>1.795 to 1.80</td>
</tr>
<tr>
<td></td>
<td>After operation(Disturbed soil)</td>
<td>1.575 to 1.618</td>
</tr>
<tr>
<td>vi)</td>
<td>Av. Depth of cut, mm</td>
<td>5 to 8</td>
</tr>
<tr>
<td>vii)</td>
<td>Av. Working width, m</td>
<td>1.94 to 1.98</td>
</tr>
<tr>
<td>viii)</td>
<td>Av. speed of operation, kmph</td>
<td>4.15 to 5.03</td>
</tr>
<tr>
<td>ix)</td>
<td># Wheel slippage, %</td>
<td>16.2 to 25.6</td>
</tr>
<tr>
<td>x)</td>
<td>* Area covered, ha/ha</td>
<td>0.063 to 0.154</td>
</tr>
<tr>
<td>xi)</td>
<td>Time required for one hectare, h</td>
<td>6.49 to 15.87</td>
</tr>
<tr>
<td>xii)</td>
<td>Fuel consumption</td>
<td></td>
</tr>
<tr>
<td>xiii)</td>
<td>- l/h</td>
<td>3.17 to 4.67</td>
</tr>
<tr>
<td></td>
<td>- l/ha</td>
<td>22.0 to 74.11</td>
</tr>
<tr>
<td>xiv)</td>
<td>Draft requirement, kg</td>
<td>1075 to 1175 (1125)</td>
</tr>
<tr>
<td>xv)</td>
<td>Drawbar horse power, kW</td>
<td>12.9 to 15.6</td>
</tr>
<tr>
<td>xvi)</td>
<td>Range dia. of laser beam, m</td>
<td>700</td>
</tr>
<tr>
<td>xvii)</td>
<td>Land slope before operation, %</td>
<td>Lengthwise 0.061 to 0.21</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Widthwise   0.066 to 1.62</td>
</tr>
</tbody>
</table>

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| xvii) | Blade bucket capacity, kg (Approx) | 811.21 to 833.36 |
| xviii) | Coefficient of variation of leveling after leveling | 0.002 to 0.006 |
| xviv) | Evenness in leveling, % | 99.4 to 99.8 |

# 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 0.063 to 0.154 ha/h and the forward speed as 4.15 to 5.03 kmph.

6.1.2 The time required to cover one hectare area was recorded as 6.49 to 15.87 h.

6.1.3 Fuel consumption of tractor varies from 3.17 to 4.67 l/h whereas fuel consumption per hectare varies from 22.0 to 74.11 l/ha.

### 6.2 Quality of work

6.2.1 Depth of cut of soil cutting blade was varies from 5 to 8 mm.

6.2.2 Slope of land across its length & width after laser leveler operation was observed as 0.013 to 0.024% & 0.013 to 0.081% respectively.

6.2.3 Coefficient of variation & evenness of the operation of leveling after operation were observed as 0.002 to 0.006 and from 99.4 to 99.8 % respectively.

6.2.4 Working diameter of laser beam was recorded 700 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 20.25 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 of soil cutting blade do not conform to the limit specified in their respective codes therefore these should be looked into in future at regular production level.

9.6 Draft requirement varies from 1075 to 1175 kg, whereas the average draft requirement was observed as 1125 kg.

9.7 An identification plate is provided on the chassis of laser leveler.

10. LITERATURE:
Following literatures was supplied by the manufacture
1. Laser instruction small booklet.
2. Leaflets containing brief information of laser unit &
3. Operator's service/parts manual with details information in English of control box, receivers & emitter are provided which is sufficient, however the literature should be brought out as per IS: 8132-1999 in Hindi, English & other regional languages for the guidance of users & technical personnel.

TESTING AUTHORITY

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Agricultural Engineer

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Senior Agricultural Engineer

HIMAT SINGH
Director

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APPLICANT'S COMMENTS
No specific comment is given by the applicant.