COMMERCIAL TEST REPORT

No. : IMP-675/1648/2014

Month: October, 2014

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

LASER LEVELLER
‘RATTAN-88-7FT’
The exposed metallic parts shall be free from rust and shall have a protective coating.

Yes

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

An identification plate with following parameters is provided on chassis frame.
i) Serial No.
ii) Model No. & size
iii) Mfd. By
iv) Year of manufacture

Yes

FIELD TEST
The field tests of 20.17 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>
<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>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>1.3 to 8.5</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>1.78 to 1.82</td>
</tr>
<tr>
<td></td>
<td>After operation(Disturbed soil)</td>
<td>1.510 to 1.659</td>
</tr>
<tr>
<td>vi)</td>
<td>Av. Depth of cut, mm</td>
<td>5 to 7</td>
</tr>
<tr>
<td>vii)</td>
<td>Av. Working width, m</td>
<td>2.07 to 2.10</td>
</tr>
<tr>
<td>viii)</td>
<td>Av. speed of operation, kmph</td>
<td>5.86 to 7.40</td>
</tr>
<tr>
<td>ix)</td>
<td># Wheel slippage, %</td>
<td>0.72 to 2.29</td>
</tr>
<tr>
<td>x)</td>
<td>* Area covered, ha/h</td>
<td>0.055 to 0.083</td>
</tr>
<tr>
<td>xi)</td>
<td>Time required for one hectare, h</td>
<td>12.05 to 18.18</td>
</tr>
<tr>
<td>xii)</td>
<td>Fuel consumption</td>
<td></td>
</tr>
<tr>
<td>xiii)</td>
<td>- l/h</td>
<td>3.175 to 4.400</td>
</tr>
<tr>
<td></td>
<td>- l/ha</td>
<td>40.13 to 79.99</td>
</tr>
<tr>
<td>xiv)</td>
<td>Draft requirement, kg</td>
<td>828 to 1328 (Av.=1119)</td>
</tr>
<tr>
<td>xv)</td>
<td>Drawbar horse power, kW</td>
<td>18.1 to 22.9</td>
</tr>
<tr>
<td>xvi)</td>
<td>Range dia. of laser beam, m</td>
<td>700</td>
</tr>
</tbody>
</table>
6.1 **Rate of Work**

6.1.1 The rate of work in sandy loam soil was recorded as 0.055 to 0.083 ha/h and the forward speed as 5.86 to 7.40 kmph.

6.1.2 The time required to cover one hectare area was recorded as 12.05 to 18.18 h.

6.1.3 Fuel consumption of tractor varies from 3.175 to 4.400 l/h whereas fuel consumption per hectare varies from 40.13 to 79.99 l/ha.

6.2 **Quality of work**

6.2.1 Depth of cut of soil cutting blade was varies from 5 to 7 mm.

6.2.2 Slope of land across its length & width after laser leveler operation was observed as 0.044 to 0.052% & 0.039 to 0.056% respectively. 

6.2.3 Coefficient of variation & evenness of the operation of leveling after operation were observed as 0.003 to 0.013 and from 98.7 to 99.7 % 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 20.17 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 of soil cutting blade are not conforming the limit as specified in their relevant codes & therefore these should be looked into in future at regular production level.

9.6 Draft requirement varies from 828 to 1328 kg, where as the average draft requirement was observed as 1119 kg.

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

9.8 Safety signs and hazard pictograms should be provided on machine.

10. LITERATURE:

Following literatures was supplied by the manufacture

1. Laser operation guide

2. A literature in English with detail technical specification, calibration & adjustments of control box, receiver & emitter

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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HIMAT SINGH
Director

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APPLICANT’S COMMENTS

No comments received from applicant