COMMERCIAL TEST REPORT

Telephone: 01662-276824, 276172
Website: http://dacnet.nic.in/nrfmtti

ROTARY POWER WEEDER
‘PUBERT MB25H’

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

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

Telephone: 01662-276824, 276172
Telefax No.: 01662-276984
Website: http://dacnet.nic.in/nrfmtti
E-Mail: fmti-nr@nic.in
6. TURNING ABILITY

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Minimum turning diameter (m)</th>
<th>Minimum clearance diameter (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>L.H.S.</td>
<td></td>
<td>Not applicable as drive wheel is not provided.</td>
</tr>
<tr>
<td>R.H.S.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8. HARDNESS & CHEMICAL COMPOSITION OF BLADES:

8.1 Hardness of blades:

<table>
<thead>
<tr>
<th>Hardness (HRC)</th>
<th>As per IS:6690-1996</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>At edge portion</td>
<td>39 to 58</td>
<td>56±3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Does not conform</td>
</tr>
<tr>
<td>At shank portion</td>
<td>25 to 56</td>
<td>37 to 45</td>
</tr>
<tr>
<td></td>
<td></td>
<td>--do--</td>
</tr>
</tbody>
</table>

8.2 Chemical composition of blades:

<table>
<thead>
<tr>
<th>Elements</th>
<th>Requirements as per IS:6690-1996 (%)</th>
<th>As observed (%) (for Alloy steel)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Carbon</td>
<td>0.50 to 0.60</td>
<td>0.56 to 0.64</td>
<td>Does not conform</td>
</tr>
<tr>
<td>Manganese</td>
<td>0.50 to 1.00</td>
<td>0.60 to 0.90</td>
<td>Conforms</td>
</tr>
<tr>
<td>Silicon</td>
<td>1.50 to 2.00</td>
<td>1.5 to 2.0</td>
<td>Conforms</td>
</tr>
<tr>
<td>Phosphoruous</td>
<td>0.05(Max.)</td>
<td>0.035</td>
<td>Conforms</td>
</tr>
<tr>
<td>Sulphur</td>
<td>0.05(Max.)</td>
<td>0.035</td>
<td>Conforms</td>
</tr>
</tbody>
</table>

9. FIELD TEST

The field tests consisting of dry land operation were conducted for 50.3 hrs. All the field tests were conducted at the full accelerator setting containing 4 flanges for 280 mm of working width. In all, 15 tests were conducted in light soil at the farm attached to the Institute and EBS farm, Hisar. The summary of the field test for dry land operation is represented in table-3.

TABLE-3

SUMMARY OF FIELD PERFORMANCE TEST

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Parameter</th>
<th>Sandy loam &amp; Light soil</th>
</tr>
</thead>
<tbody>
<tr>
<td>i)</td>
<td>Type of soil</td>
<td></td>
</tr>
<tr>
<td>ii)</td>
<td>Av. Soil moisture, %</td>
<td>14.7 to 19.5</td>
</tr>
<tr>
<td>iii)</td>
<td>Bulk density of soil, g/c.c</td>
<td>1.89 to 2.10</td>
</tr>
<tr>
<td>iv)</td>
<td>Speed of operation, kmph</td>
<td>1.95 to 3.24</td>
</tr>
<tr>
<td>v)</td>
<td>Depth of cut, cm</td>
<td>3.0 to 4.0</td>
</tr>
</tbody>
</table>

NORTHERN REGION FARM MACHINERY TRAINING & TESTING INSTITUTE, HISAR
9.1 Rate of work:
The rate of work is assessed by the area covered during field operation. Area covered by the machine ranged from 0.036 to 0.051 ha/h at the speed of 1.65 to 3.24 kmph.

9.2 Quality of work:
Quality of work is assessed by the depth of cut in field operation. Depth of cut was observed from 3.0 to 4.0 cm.

The field performance of the machine was found satisfactory.

10. ADJUSTMENT, DEFECTS, BREAKDOWNS & REPAIR:
No Breakdown occurred during 50.3 hrs of field test.

11.1 Valve guides and valve springs
The condition of valve guide & valve spring was observed normal

11.2 Timing Gears
The timing gears were visually inspected and found in normal working condition.

11.3 Clutch:
All the components were found in normal working condition.

11.4 Transmission gears:
All the components of the transmission system were found in normal working condition.

11.5 Brakes:
The rotary tiller has not been provided with separate brake system. The stopping of the machine is done by controlling the engine rpm which in form disconnect the drive through centrifugal clutch. The condition of clutch was found normal.
11.10 Safety requirements:

<table>
<thead>
<tr>
<th></th>
<th>Safety requirements</th>
<th>Yes</th>
<th>--</th>
<th>Provided</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>i) Provision of guards on moving parts other than rotavator</td>
<td>Yes</td>
<td>--</td>
<td>Provided</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>ii) Location and direction of exhaust emission to be away from the operator and machine for stationary operation</td>
<td>Yes</td>
<td>--</td>
<td>Provided</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>iii) Covers on hot parts</td>
<td>Yes</td>
<td>--</td>
<td>Provided</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>iv) Locking of parking stand lever</td>
<td>Yes</td>
<td>--</td>
<td>Provided</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>v) Protective shield for rotavator to prevent flying of mud and stones</td>
<td>Yes</td>
<td>--</td>
<td>Provided</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>

12. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

12.1 Mechanical Vibration
The amplitude of mechanical vibration on all points/control is within limit.

12.2 Noise measurement:
Maximum noise at operator’s ear level & maximum ambient noise emitted by the Rotary tiller was observed as 66.8 dB(A) & 69.1 dB(A) which are considered to be normal against danger limit of 90 dB(A) as specified by ILO.

12.3 Rotavator Blades:
12.3.1 The dimensions of the blades does not conform to IS : 6690-1981 (reaffirmed-2002)

12.3.2 The hardness of hatchet blade does not meet the requirements of IS :6690-1981 (reaffirmed in 2002) This may be looked into.

12.3.3 The hourly rate of wear of hatchet blade was observed to be 0.101 to 0.114%.

12.3.4 The percentage of Carbon was recorded as 0.56 to 0.64 % which is on higher side against the requirement of 0.50 to 0.60%.

12.4 Field test:
No breakdown occurred during field testing of rotary tiller.

12.5 Engine performance test:
In pursuance of Ministry’s letter No. 7-23/2011-M&T (I&P) dated 20.4.2011 the engine fitted on the equipment i.e. Honda GX 25 of power rating 0.64 kW(0.86 Ps) at 6000 rpm has not been tested for performance evaluation separately and the performance parameters in respect of GX-25 Honda as stipulated by the manufacturer is presumed.
12.6 Safety and Comfort:
Controls are not provided with symbols as per IS: 6283(Part I & II)-1988.
Provision of spark arresting device may be considered for incorporation in the
exhaust system essentially.

12.7 General observation:
The handle grip does not meet the requirement of IS: 11858-1986. This may be
looked into for compliance.

12.8 Maintenance/Service problems:
No noticeable maintenance/service problem was observed during the test.

13. Literature
The literature in English is provided as leaflet and booklet for tiller and engine.
However it needs to be modified as per IS:8132-1999 in Hindi or other regional
languages for the guidance of the end users.

TESTING AUTHORITY

(J.P. MANDAL)
AGRICULTURE ENGINEER

(P.K. CHOPRA)
SENIOR AGRICULTURE ENGINEER

(A.N. MESHRAM)
DIRECTOR

APPLICANT COMMENTS
COMMENTS RECEIVED AND ADDED IN FINAL TEST REPORT