YAD AGROMA, YUVI i7 DLX-YTRB2
BATTERY OPERATED KNAPSACK SPRAYER

Government of India
Ministry of Agriculture and Farmers Welfare
Department of Agriculture, Cooperation and Farmers Welfare
Northern Region Farm Machinery Training and Testing Institute

E-mail: fmti-nr@nic.in
Website: http://nrfmtti.gov.in/
Tele./FAX: 01662-276984
Strap buckle | Steel, Enng. Plastic | Steel | Conforms
--- | --- | --- | ---
Cushion | Foam, rubber, foam plastic | Foam | Conforms

The material used for different components shall be declared by the manufacturer, all the components mentioned in the table-I may not be present in a particular sprayer.

3. TEST FOR DISCHARGE RATE OF PUMP
(Vide Clause 8.3 of IS – 11313: 2007)

1. Date of test : 02.04.2019
2. Atmospheric conditions
   a) Temperature : 28 °C
   b) Relative humidity : 52 %
   c) Pressure : 99.1 kPa
3. Data recorded

<table>
<thead>
<tr>
<th>Speed of Pump (rpm)</th>
<th>Pressure (kg/cm²)</th>
<th>Test No.</th>
<th>Delivery from the discharge line (ml/min)</th>
<th>Overflow (ml/min)</th>
<th>Average discharge from the discharge line (ml/min)</th>
<th>Discharge rate of pump (ml/min)</th>
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<td>2200</td>
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</tr>
<tr>
<td>3111</td>
<td>4</td>
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</tr>
<tr>
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<td>2</td>
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<td>4</td>
<td>1940</td>
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</tr>
</tbody>
</table>

Minimum discharge rate = 1927.5 ml/min at 4 kg/cm²
Maximum discharge rate = 3067.5 ml/min at 1 kg/cm²
Discharge at rated pressure = 1927.5 ml/min at 4 kg/cm²

4. TEST FOR VOLUMETRIC EFFICIENCY
(Vide Clause 8.4 of IS – 11313: 2007)
Rated pressure, kg/cm² : 4
Avg. discharge of water at rated pressure, l/min : 1.9275
Avg. discharge of water at no-load, l/min : 3.7375
Avg. pump speed at no-load, rev/min : 3694
Avg. pump speed at rated pressure, rev/min : 3111
Volumetric efficiency of pump, % : 61

5. POWER REQUIREMENT
(Vide Clause 8.5 of IS – 11313 : 2007)

Power requirement of DC motor fitted on sprayer was observed as following:-

1. Motor operating voltage : 12 V
2. Avg. current drawn by motor at no load : 0.90 A
3. Avg. current drawn by motor at load : 1.71 A
4. Avg. motor operating voltage : 12.58 V
5. Avg. observed motor power requirement : 21.49 watt
6. Avg. motor speed at no load : 3692 rpm
7. Avg. motor speed at load : 3114 rpm
8. Avg. time required for fully discharge of battery : 7.0 to 7.5 h
9. Avg. No load rpm of motor after 5 hours : 1425 rpm

6. PRESSURE ADJUSTMENT TEST

1. Date of test : 02.04.2019
2. Atmospheric conditions:-
   a. Temperature : 28 °C
   b. Relative humidity : 52 %
   c. Pressure : 99.1 kPa
3. Data recorded

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Working pressure (kg/cm²)</th>
<th>Fluctuation range (kg/cm²)</th>
<th>Pressure drop (kg/cm²)</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1</td>
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<td>NIL</td>
<td>--</td>
</tr>
<tr>
<td>2.</td>
<td>2</td>
<td>NIL</td>
<td>NIL</td>
<td>--</td>
</tr>
<tr>
<td>3.</td>
<td>3</td>
<td>NIL</td>
<td>NIL</td>
<td>--</td>
</tr>
<tr>
<td>4.</td>
<td>4</td>
<td>NIL</td>
<td>NIL</td>
<td>--</td>
</tr>
</tbody>
</table>

4. Resistance of pressure: Yes

7. TEST FOR SPRAY LANCE
(Vide Annex D of IS – 3652: 1995)

Date of test : 22.04.2019
Type : Gooseneck (Type-B2)

7.1 STRENGTH OF SPRAY LANCE

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Details</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Test Condition</td>
<td>Outlet closed</td>
</tr>
<tr>
<td>2</td>
<td>Hydraulic pressure applied</td>
<td>1 MPa</td>
</tr>
<tr>
<td>3</td>
<td>Duration of pressure retained</td>
<td>5 minutes</td>
</tr>
<tr>
<td>4</td>
<td>Result</td>
<td>No leak, crack, or burst of lance was observed during test</td>
</tr>
</tbody>
</table>

7.2 MARKING ON SPRAY LANCE
Manufacturer’s name or recognized trade mark : Not marked
Nominal length : Not marked
15. CONFORMITY TO INDIAN STANDARDS

i) IS: 11313:2007 Hydraulic power sprayers- specification : Does not conform in toto

ii) IS: 10134-1994-Method of test for manually operated sprayer : Does not conform in toto

iii) Spray nozzle and spray gun as per IS:3652-1995 (Reaffirmed 2011) : Does not conform in toto

iv) IS: 2643-2005-Pipe threads where pressure-tight joint are not made on the threads-dimensions, tolerance and designation : Does not conform in toto

16. COMMENTS & RECOMMENDATIONS

16.1 The batch or serial number of sprayer is not specified. It MUST be specified.

16.2 The make, model and country of origin of battery charger is not specified. It should be specified.

16.3 Pump Model and country of origin is not marked. It should be marked.

16.4 Motor max current and speed is not specified. It should be specified.

16.5 The strainer in nozzle is not provided. It should be provided.

16.6 The volumetric efficiency of pump does not meet the requirement of Indian Standard. It MUST be improved.

16.7 The average size of strainer of filling hole does not meet the requirement of relevant code/Standard. It MUST be looked into.

16.8 The average size of strainer of cut off device does not meet the requirement of Indian Standard. It MUST be looked into.

16.9 Agitator is not provided. It may be provided.

16.10 The discharge rate of nozzle for fine cone spray pattern and jet spray pattern as a pressure of 300 kPa does not conform to the requirement of IS : 3652-1995. It MUST be looked into.
16.11 The strap cushion thickness does not meet the requirement of Indian Standard. It MUST be looked into.

16.12 The spray nozzle is not designated and marked by its identification mark. The identification mark as specified by relevant Indian Standard. It MUST be provided.

16.13 The batch or code number on nozzle is not provided. It MUST be looked into.

16.14 Manufacturer’s name or recognized trade mark and nominal length on spray lance is not marked. It MUST be marked.

16.15 The Manufacturer’s name or recognized trade mark and batch or code number of cut off device is not provided. It MUST be provided.

16.16 The spray angle for fine cone spray pattern of nozzle at a pressure of 300 kPa does not conform to the requirement of IS : 3562-1995.

16.17 The current drawn by motor at no load and on load was observes as 0.90 and 1.71A respectively which does not conform to requirement of IS- 14459: 1997.

16.18 Time required to full charge the battery with AC charger is observed as 7.0 to 7.5 hours.

16.19 The spraying operation time after fully charging the battery was observed as 5.0 to 5.5 hours.

16.20 During the pump chamber hydraulic test the motor stopped beyond 6.5 kg/cm² pressure against the pressure requirement of 10 kg/cm² and the test could not be conducted. This MUST be looked into and improved.

16.21 The length of spray lance does not meet requirement of relevant code/Standard. It MUST be looked into.

16.22 The dimension of metallic threaded connection does not conform to the requirement of relevant/code standard. It MUST be looked into.

16.23 During the strap drop test the buckle/bracket of strap assembly found failed to hold the strap in it’s position. It should be improved.

16.24 The material of pump inlet port end fitting does not meet the requirement of Indian Standard. It should be improved.

16.25 The length of operating trigger does not meet the requirement of relevant code/Standard. It MUST be looked into.

16.26 No necessary tools are provided with sprayer. It MUST be provided.

16.27 A suitable labeling plate (not sticker) needs to be provided with ,inter alia ,following information:-

i. Manufacturer’s name
ii. Make
iii. Model
iv. Month & year of manufacture
v. Rated speed
vi. Rated pressure
vii. Discharge rate
viii. Power rating
ix. Country of origin
16.28 Safety provision/Safety wear

i) Safety instruction regarding handling poisonous agro-chemical before, during and after spraying operation should be provided on sprayer.

17. TECHNICAL LITERATURE

The following literature provided with sprayer for guidance to the user.

i) Operator’s manual with part’s catalogue.

The operator instruction manual of sprayer needs to be updated as per IS : 8132 -1999.

TESTING AUTHORITY

R. K. NEMA  
SENIOR AGRICULTURAL ENGINEER

P. K. PANDEY  
DIRECTOR

18. APPLICANT’S COMMENTS

<table>
<thead>
<tr>
<th>Para No</th>
<th>Our reference</th>
<th>Applicant’s comments</th>
</tr>
</thead>
<tbody>
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<td>18.1</td>
<td>16.2,16.3,16.4,16.5,16.9, 16.13</td>
<td>Will be provided.</td>
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<tr>
<td>18.2</td>
<td>16.6,16.17,16.20</td>
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<tr>
<td>18.3</td>
<td>16.7,16.8, 16.11</td>
<td>We will maintain as per Indian Standard</td>
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<td>18.6</td>
<td>16.14</td>
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<td>16.21</td>
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<td>18.8</td>
<td>16.22</td>
<td>We will take corrective action.</td>
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<td>18.9</td>
<td>16.23</td>
<td>We will improve bracket quality.</td>
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<td>16.24,16.25</td>
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<td>16.26</td>
<td>We will provide necessary tools.</td>
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<td>18.12</td>
<td>16.27</td>
<td>We will provide labeling plate.</td>
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</tbody>
</table>