BATTERY OPERATED KNAPSACK SPRAYER
CHAKRADHAR CHEMICALS, GODAVARI

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

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Tele./FAX: 01662-276984
3. TEST FOR DISCHARGE RATE OF PUMP
(Vide Clause 8.3 of IS – 11313: 2007)

1. Date of test : 15.05.2018
2. Atmospheric conditions :
   a) Temperature : 34°C
   b) Relative humidity : 25%
   c) Pressure : 97.8 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>
</tr>
</thead>
<tbody>
<tr>
<td>3110</td>
<td>1</td>
<td>1</td>
<td>2200</td>
<td>NIL</td>
<td>2190.0</td>
<td>2190.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>2180</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>2210</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>2170</td>
<td>NIL</td>
<td></td>
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</tr>
<tr>
<td>2936</td>
<td>2</td>
<td>1</td>
<td>1850</td>
<td>NIL</td>
<td>1830.0</td>
<td>1830.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>1800</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
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<td>4</td>
<td>1840</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2872</td>
<td>3</td>
<td>1</td>
<td>1560</td>
<td>NIL</td>
<td>1545.0</td>
<td>1545.0</td>
</tr>
<tr>
<td></td>
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<tr>
<td></td>
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<td>3</td>
<td>1530</td>
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<tr>
<td></td>
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<td>4</td>
<td>1550</td>
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</tr>
<tr>
<td>2809</td>
<td>4</td>
<td>1</td>
<td>1280</td>
<td>NIL</td>
<td>1272.5</td>
<td>1272.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>1300</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
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<td>3</td>
<td>1260</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>1250</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Minimum discharge rate = 1272.5 ml/min at 4 kg/cm²
Maximum discharge rate = 2190.0 ml/min at 1 kg/cm²
Discharge at rated pressure = 1545.0 ml/min at 3 kg/cm²

4. TEST FOR VOLUMETRIC EFFICIENCY
(Vide Clause 8.4 of IS – 11313: 2007)

<table>
<thead>
<tr>
<th>Rated pressure, kg/cm²</th>
<th>Avg. discharge of water at rated pressure, l/min</th>
<th>Avg. discharge of water at no-load, l/min</th>
<th>Avg. pump speed at no-load, rev/min</th>
<th>Avg. pump speed at rated pressure, rev/min</th>
<th>Volumetric efficiency of pump, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>1.552</td>
<td>2.7425</td>
<td>3351</td>
<td>2873</td>
<td>66</td>
</tr>
</tbody>
</table>

BATTERY OPERATED KNAPSACK SPRAYER
CHAKRADHAR CHEMICALS, GODAVARI (COMMERCIAL)

The exposed mild steel parts shall have a protective coating to prevent surface deterioration. The steel used for hose ferrule/clip shall be plated with cadmium, zinc or nickel exposed brass parts may be given a suitable protective finish with clear transparent lacquer.

Conforms

Each sprayer shall be marked with the following particulars

- Manufacturer's name or recognized trade mark: Godavari Sampoorti™ 16 L
- Batch or Serial No.: Not marked
- Tank nominal capacity: Marked as 16 L

Marking & Packing

Conforms

Each sprayer shall be packed as agreed to between the purchase and the supplier for safe handling in transit.

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 perIS: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

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16. COMMENTS & RECOMMENDATIONS

16.1 Sprayer serial No/ Batch No is not specified. It should be specified.

16.2 Battery charger, make, model and country of origin is not marked. It should be marked.

16.3 The Serial No. and speed of motor is not specified. It should be specified.

16.4 Pump make, model serial number and country of origin is not marked. It should be marked.

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

16.6 The cut-off device and spray lance batch or code number is not marked. It should be marked.

16.7 The material used for different components of sprayer is not declared. It should be declared.

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

16.9 The material of pump inlet port end fitting does not meet the requirement of Indian Standard. It MUST be looked into.
16.10 Agitator is not provided. It may be provided.

16.11 The material used for different component is not declared. It should be declared.

16.12 The strap cushion thickness does not meet the requirement of Indian Standard. It MUST be looked into.

16.13 The strap width does not meet the requirement of Indian Standard. It MUST be looked into.

16.14 The spray lance is not marked. It MUST be marked.

16.15 The current drawn by motor at no load and on load was observes as 0.804 and 1.624 A respectively which does not conform to requirement of IS-14459: 1997.

16.16 Time required to full charge the battery with AC charger is observed as 10.0 to 10.12 hours.

16.17 The spraying operation time after fully charging the battery was observed as 7.04 to 7.08 hours.

16.18 During the pump chamber hydraulic test the motor stopped beyond 6.0 kg/cm² pressure against the pressure requirement of 7.5 kg/cm² and the test could not be conducted. This MUST be looked into and improved.

16.19 The nozzle designation does not meet the requirement of Indian Standard. It MUST be improved.

16.20 The discharge rate of nozzle for fine cone spray pattern does not meet the requirement of Indian Standard. It MUST be looked into.

16.21 The spray angle of nozzle for fine cone spray pattern at a pressure of 300±30 kPa does not conform to the requirement of IS : 3652-1995. It MUST be looked into.

16.22 The nozzle batch or code number is not marked. It MUST be marked.

16.23 The nozzle designation, Batch or Code No. is not marked. It MUST be marked.

16.24 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.

16.25 The cut off device is not marked. It MUST be marked.

16.26 The strainer area of cut off device does not meet the requirement of Indian Standard . It MUST be looked into.

16.27 No spare parts was provided during test. It should be provided.

16.28 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
17. TECHNICAL LITERATURE

No literature is supplied with the sprayer. The operator manual should be provided with sprayer as per IS : 8132-1999 with the inclusion of safety instructions regarding handling of poisonous chemicals, safety precaution before, during and after spraying.

TESTING AUTHORITY

R. K. NEMA
SENIOR AGRICULTURAL ENGINEER

P. K. PANDEY
DIRECTOR

18. APPLICANT'S COMMENTS

No comments received from applicant.