COMMERCIAL TEST REPORT

BATTERY OPERATED KNAPSACK SPRAYER
CHAKRADHAR CHEMICALS, MEGHA

Government of India
Ministry of Agriculture and Farmers Welfare
Department of Agriculture, Cooperation and Farmers Welfare
Northern Region Farm Machinery Training and Testing Institute
Tractor Nagar, Sirsa Road, HISAR (Haryana)-125 001
[ISO 9001:2015 CERTIFIED]

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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: 26%
   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</th>
<th>Average discharge from the discharge line (ml/min)</th>
<th>Discharge rate of pump (ml/min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2983</td>
<td>1</td>
<td>1</td>
<td>2430</td>
<td>NIL</td>
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<td></td>
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<td>2400</td>
<td></td>
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<td></td>
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<tr>
<td></td>
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<td>3</td>
<td>2450</td>
<td></td>
<td></td>
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<tr>
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<td>4</td>
<td>2460</td>
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<tr>
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<tr>
<td></td>
<td></td>
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<td>2200</td>
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<tr>
<td></td>
<td></td>
<td>3</td>
<td>1800</td>
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<tr>
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<td></td>
<td></td>
<td>4</td>
<td>1480</td>
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</tr>
</tbody>
</table>

Minimum discharge rate = 1472.5 ml/min at 4 kg/cm²
Maximum discharge rate = 2435.0 ml/min at 1 kg/cm²
Discharge at rated pressure = 1472.5 ml/min at 3 kg/cm²

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

Rated pressure, kg/cm² : 3
Avg. discharge of water at rated pressure, l/min : 1.812
Avg. discharge of water at no-load, l/min : 2.960
Avg. pump speed at no-load, rev/min : 3152
Avg. pump speed at rated pressure, rev/min : 2708
Volumetric efficiency of pump, % : 71%

Remark: The volumetric efficiency does not conform to the requirement of IS: 11313:2007.
### Cl. 8.2

| 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. | Metallic part is coated with enamel paint. | Conforms |

### Cl. 9

<table>
<thead>
<tr>
<th><strong>Marking</strong></th>
<th>Each sprayer shall be marked with the following particulars</th>
<th>Conforms</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cl. 9.1</strong></td>
<td>a) Manufacturer’s name or recognized trade mark</td>
<td>MEGHA 16L Sampoorti™</td>
</tr>
<tr>
<td><strong>Marking</strong></td>
<td>b) Batch or Serial No.</td>
<td>Not marked</td>
</tr>
<tr>
<td><strong>Packing</strong></td>
<td>c) Tank nominal capacity</td>
<td>Marked 16 L</td>
</tr>
</tbody>
</table>

### Cl. 9.3

| IS:3906-1995 | Each sprayer shall be packed as agreed to between the purchase and the supplier for safe handling in transit. | Conforms |

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### 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: --

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### 16. COMMENTS & RECOMMENDATIONS

16.1 The Serial No. of sprayer 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 Serial No of battery is not specified. It should be specified.

16.4 The serial No. and speed of motor is not specified. It should be specified.

16.5 The back rest cushion is not provided. It should be provided.

16.6 Spare parts not provided with the sprayer. It MUST be provided.

16.7 Strainer area of cut off device does not meet the requirement of Indian Standard. It MUST be improved.

16.8 Pump make, model and country of origin is not marked. It should be marked.

16.9 The strainer in nozzle is not provided. It should be provided.
16.10 The cut-off device and spray lance batch or code number is not marked. It should be marked.

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

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

16.13 Agitator is not provided. It may be provided.

16.14 The material of pump inlet port end fitting does not meet the requirement of Indian Standard. It MUST be looked into.

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

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

16.17 The current drawn by motor at no load and on load was observed as 0.79 and 1.802 A 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 9.25 hours.

16.19 The spraying operation time after fully charging the battery was observed as 6.80 hours.

16.20 During the pump chamber hydraulic test the motor stopped beyond 5.5 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.

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

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

16.23 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.

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

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

16.26 During the strap drop test the buckle/bracket of strap assembly found failed to hold the strap in its position. It should be improved.

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

16.28 The cut-off device is not marked. It MUST be marked.

16.29 The material of pump inlet port end fitting does not meet the requirement of Indian Standard. It should be looked into.
16.30 The length of operating trigger does not meet the requirement of Indian Standard. It should be looked into.

16.31 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

16.32 Safety provision/safety wear:-
   i) The accessories VIZ: Mask, hand gloves for operator’s safety has not been provided with sprayer. It should be provided.
   ii) Safety instruction before, during and after spraying operation must be added in operator’s manual.

17. TECHNICAL LITERATURE

The operator, manual of sprayer was provided during the test which found inadequate. The user manual should be update as per IS : 8132-1999, with the inclusion of safety instruction regarding handling poisonous agrochemical, during and after spraying operation.

TESTING AUTHORITY

| R. K. NEMA          | P. K. PANDEY     |
| SENIOR AGRICULTURAL ENGINEER | DIRECTOR |

18. APPLICANT’S COMMENTS

No comments received from applicant.