COMMERCIAL TEST REPORT

SHAKTI SBS-620
BATTERY OPERATED KNAPSACK SPRAYER
(FITTED WITH SOLAR PANEL) CUM MANUALLY OPERATED

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

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

1. Date of test: 18.02.2017
2. Atmospheric conditions:
   a) Temperature: 23°C
   b) Relative humidity: 71%
   c) Pressure: 99.3 kPa
3. Data recorded

<table>
<thead>
<tr>
<th>Speed of Pump (rpm)</th>
<th>Working pressure (kPa)</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>3020</td>
<td>100</td>
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<td>2510</td>
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Minimum discharge rate = 907.5 ml/min at 450 kPa
Maximum discharge rate = 2507.5 ml/min at 100 kPa
Discharge at rated pressure = 1165 ml/min at 400 kPa

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

<table>
<thead>
<tr>
<th>Rated pressure, kg/cm²</th>
<th>Discharge of water at rated pressure, l/min</th>
<th>Discharge of water at no-load, l/min</th>
<th>Pump speed at no-load, rev/min</th>
<th>Pump speed at rated pressure, rev/min</th>
<th>Volumetric efficiency of pump, %</th>
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24. 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

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

25. COMMENTS & RECOMMENDATIONS

25.1 The serial number of sprayer is not marked. It should be marked.

25.2 The motor serial number, motor power and rated speed is not specified. It should be specified.

25.3 The battery serial number, model and country of origin is not specified. It should be specified.

25.4 Battery charger country of origin is not marked. It should be marked.

25.5 Solar panel for battery charging model and serial number is not specified. It should be specified.

25.6 Pump country of origin is not specified. It should be specified.

25.7 The material of pump inlet port end fitting does not conform to the requirements of Indian Standard. It should be looked into.

25.8 The discharge rate of nozzle at pressure of 300 kPa for jet spray pattern does not conform to the requirement of IS: 3652:1995.

25.9 The dimension of straps does not meet the requirements of Indian Standard.

25.10 The lance batch or code number is not marked. It should be marked.

25.11 The strainer is not provided in cut-off device. It may be provided.

25.12 The trigger actuation force is observed more than as defined in Indian Standard. It should be examined & improved.

25.13 The nozzle designation does not meet the requirement of Indian Standard. It should be improved.

25.14 The nozzle is not marked as batch or code number. It should be marked.
25.15 Agitator is not provided in sprayer. It may be provided.

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

25.17 The cut-off device batch or code number is not marked. It should be marked.

25.18 Time required to full charge battery with AC charger is observed as 8 to 9 hours.

25.19 The spraying operation time after fully charging with electric charger was observed as 6.5 to 7 hours.

25.20 The volumetric efficiency of sprayer on battery operated mode does not conform to the requirement of IS: 11313:2007.

25.21 Time required to full charge of battery with solar plate was observed as 13 to 14 h.

25.22 The current drawn by motor at no load and on load was observed as 0.8 A and 1.5 A respectively which does not conform to requirement of IS: 14459-1997.

25.23 The sprayer does not conform to the relevant standard in toto. It should be looked into.

25.24 The delivery of hose length is not as per Indian Standard. It should be looked into.

25.25 The metallic threaded connection provided on sprayer does not meet the requirement of Indian Standard. It should be looked into.

25.26 During the pump chamber hydraulic test the motor stopped at 6.0 kg/cm² pressure against the pressure requirement of 10 kg/cm² and the test could not be conducted. This should be looked into and improved.

25.27 The strap cushion thickness is not as per Indian Standard. It should be looked into.

25.28 A suitable labelling 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