COMMERCIAL TEST REPORT

RSR RETAIL PVT. LTD., HY-805N
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
Tractor Nagar, Sirsa Road, HISAR (Haryana)-125 001
[ISO 9001:2008 COMPLIANT INSTITUTION]

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

1. Date of test : 18.10.2016
2. Atmospheric conditions:
   a) Temperature : 32° C
   b) Relative humidity : 29 %
   c) Pressure : 738.5 mm of Hg

As there is no pressure regulator provided on a sprayer, the discharge rate of the pump could not be ascertained as per clause 8.3 of IS: 11313 : 2007 however, the discharge rate of pump was measured between minimum pressure of 50 kPa & maximum pressure of 500 kPa as per clause 8.3 of IS : 11313-2007

1. 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>
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<td>1530</td>
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<td>480</td>
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</tbody>
</table>

Minimum discharge rate = 483 ml/min at 500 kPa  
Maximum discharge rate = 1534 ml/min at 50 kPa

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

As applicant has not specified the rated pressure and rated speed of pump, hence volumetric efficiency could not be ascertained, as per the requirement of relevant code.
However, volumetric efficiency, so to speak, was found to be 78.2 % & 23.5 % at 50 kPa and at 500 kPa pressure respectively. Hence the Volumetric Efficiency was not found as much as required by the code.
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
    Does not conform in toto
    (Reaffirmed 2011)

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

16. COMMENTS & RECOMMENDATIONS

16.1 The width of strap is not as per Indian Standard.

16.2 The spray nozzle is not designated and marked by its identification mark. The identification mark as specified by relevant Indian Standard, needs to be provided.

16.3 The cut off device and spray lance marked by providing sticker. Printed or engraved marking may be provided.

16.4 As applicant has not specified the rated pressure and rated speed of pump, hence volumetric efficiency could not be ascertained. As per the requirement of relevant code, In order to facilitate the testing in the true letter and spirit, this needs to be declared.

16.5 As the applicant has not specified the specific speed for sprayer operation, the power requirement cannot be ascertained. In order to facilitate the testing in the true letter and spirit, this needs to be declared.

16.6 As the discharge rate of nozzle at a pressure of 300 kPa was not declared by the applicant, the conformity of discharge to Cl F 3.1 of Annexure F of IS 3652-1995 could not be ascertained. In order to facilitate the testing in the true letter and spirit, this needs to be declared.

16.7 As the spray angle of nozzle at a pressure of 300 kPa was not declared by the applicant, the conformity of discharge to Cl F 3.2 of Annexure F of IS 3652-1995 could not be ascertained. In order to facilitate the testing in the true letter and spirit, this needs to be declared.

16.8 Threaded connections provided on sprayer does not meet the requirements of Indian Standard. It should be looked into.

16.9 Discharge outlet nipple and tube length does not meet the requirements of Indian Standard. It should be looked into.

16.10 The Strainer in cut off device is not provided. It may be provided.

16.11 The maximum trigger actuation torque is 48 kgf-cm. This exceeds the limit specified by Indian Standard. It should be improved.
16.12 During the strap drop test the buckle/bracket of strap assembly found failed to hold the strap in its position. It should be improved.

16.13 Agitator is not provided. It may be provided.

16.14 Battery charger country of origin is not specified by applicant. It should be specified on charger.

16.15 Motor serial number and speed is not specified. It should be specified.

16.16 Pump make and serial number is not specified by applicant. It should be specified on sprayer.

16.17 The discharge rate of sprayer is drastically lower than the declaration. It should be looked into.

16.18 The cushion provided on sprayer does not meet the requirements of Indian Standard. It should be improved.

16.19 The current drawn by motor at no load and on load was observes as 0.4 and 1.1A respectively which does not conform to requirement of IS- 14459: 1997.

16.20 Even after fully charged condition, the spryer could run only for the period of 5 to 5.5 hours, which is considered on lower side and deserves to be looked into.

16.21 The volumetric efficiency of sprayer, though truly unascertainable for the want of required declaration, was observed less than 80%, which needs to be examined.

16.22 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

16.23 Safety provisions/safety wear
   i) The accessories viz mask, hand gloves and safety goggles for operator’s safety are provided with sprayer.

   ii) The safety instructions regarding handling of poisonous chemicals & first aid should be provided in operator’s manual.