BATTERY OPERATED KNAPSACK SPRAYER
(FITTED WITH SOLAR PANEL)
HEGDE AGROTECH, SHAMBHAVI SSB-16E

Government of India
Ministry of Agriculture and Farmers Welfare
Department of Agriculture, Cooperation and Farmers Welfare
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3. TEST FOR DISCHARGE RATE OF PUMP
(Vide Clause 8.3 of IS – 11313: 2007)

1. Date of test: 09.01.2018
2. Atmospheric conditions:
   a) Temperature: 18°C
   b) Relative humidity: 46%
   c) Pressure: 99.3 kPa
3. Data recorded

<table>
<thead>
<tr>
<th>Speed of pump (rpm)</th>
<th>Working 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>
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</table>

Minimum discharge rate = 1555.0 ml/min at 4 kg/cm²
Maximum discharge rate = 3335.0 ml/min at 1 kg/cm²
Discharge rate at rated pressure = 1950.0 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 : 1.965
Avg. discharge of water at no-load, l/min : 3.697
Avg. pump speed at no-load, rev/min : 3603
Avg. pump speed at rated pressure, rev/min : 3184
Volumetric efficiency of pump, % : 60

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)

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

16. COMMENTS & RECOMMENDATIONS

16.1 The material used for different components are not declared. It MUST be provided.

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

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

16.4 The make, serial number and speed of motor is not specified. It should be specified.

16.5 Pump rated speed and country of origin is not marked. It should be marked.

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

16.7 The cut-off device and spray lance is not marked. It should be marked.

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

16.9 Agitator is not provided. It may be provided.

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

16.11 The spray angle of nozzle does not meet the requirement of Indian Standard. It MUST be looked into.

16.12 The current drawn by motor at no load and on load was observes as 0.98 and 2.08 A respectively which does not conform to requirement of IS- 14459: 1997.

16.13 Time required to full charge the battery with AC charger is observed as 7.3 to 8.2 hours.

16.14 Time required to full charge the battery with solar plate was observed as 10.3 to 12.5 hours.
16.15 The spraying operation time after fully charging the battery was observed as 8.01 to 8.20 hours.

16.16 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.

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

16.18 The nozzle designation is not marked. It MUST be marked.

16.19 The nozzle is not marked. It MUST be marked.

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

16.21 Pump discharge outlet nipple length does not meet the requirement of Indian Standard. It should be improved.

16.22 The cut-off device strainer area is less than the requirement of Indian Standard. It should be improved.

16.23 Cut-off device strainer aperture opening is less than the requirement of Indian Standard. It should be improved.

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

16.25 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