KISHAN AGROTECH, KRISHI CRAFT KC-767
ENGINE 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 9001:2015 CERTIFIED]

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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** : 05.06.2019
2. **Atmospheric conditions**
   - a) Temperature : 40 °C
   - b) Relative humidity : 41%
   - c) Pressure : 97.8 kPa
3. **Data recorded**

<table>
<thead>
<tr>
<th>Speed of engine (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 delivery from the discharge line (ml/min)</th>
<th>Discharge rate of pump (ml/min)</th>
<th>Hydraulic Power (kW)</th>
</tr>
</thead>
<tbody>
<tr>
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<td>4</td>
<td>5860</td>
<td></td>
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</tr>
</tbody>
</table>

- **Minimum discharge rate** = 5922.5 ml/min at 16 kg/cm²
- **Maximum discharge rate** = 6225.0 ml/min at 10 kg/cm²
- **Discharge at rated pressure** = 6225.0 ml/min at 10 kg/cm²
16. CONFORMITY TO INDIAN STANDARDS

i) IS:11313-2007 (Reaffirmed 2012)-Hydraulic : Does not conform in toto
   power sprayer-specification

ii) Spray nozzle and spray gun as per IS:3652-1995 : Does not conform in toto
    (Reaffirmed 2011)

iii) Hose and hose connection as per IS:10134-1994 : Conforms

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

v) IS: 7347-1974 (Reaffirmed 2006)-Specification for performance of small size spark ignition engines for agricultural water pumps, sprayers, tillers, reapers and other similar applications : Could not be ascertained

17. COMMENTS AND RECOMMENDATIONS

17.1 The sprayer serial number is not specified. It MUST be specified.

17.2 The engine make and serial number is not specified. It MUST be specified.

17.3 The sprayer year of manufacture is not specified. It should be specified.

17.4 The spray gun is not designated and marked by identification mark. The identification mark as specified by relevant Indian Standard MUST be specified.

17.5 The pump manufacturing year and, serial No is not specified. It MUST be specified.

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

17.7 The strainer in nozzle is not provided. It may be considered for providing.

17.8 The manufacturer’s name or recognized trade mark and batch or code number on nozzle is not provided. It MUST be provided.

17.9 The manufacturer’s name or recognized trade mark and batch or code number is not marked on spray gun. It MUST be provided.

17.10 The material of spreader does not meet the requirement of relevant code/Standard. It MUST be looked into.

17.11 The material of pump inlet port end fitting does not meet the requirement of relevant code/Standard. It MUST be looked into.

17.12 The manufacture’s name or recognized trade mark and batch or code number is not marked on spray gun. It MUST be provided.

17.13 The diameter of connecting rod is less than the valve specified in the relevant code/Standard. It MUST be improved.
17.14 The thickness of wall of barrel does not meet the requirement of relevant code/Standard. It MUST be improved.

17.15 The discharge rate for fine cone spray pattern and jet spray of gun at pressure at 600 kPa does not conform to the requirement of IS: 3652-1995. It MUST be looked into.

17.16 The discharge rate for fine cone spray pattern and jet spray of nozzle at a pressure of 300 kPa does not conform to the requirement of IS: 3652-1995. It MUST be looked into.

17.17 The spray angle for fine cone spray pattern of gun at a pressure of 600 kPa does not conform to the requirement of IS: 3652-1995. It MUST be looked into for further improvement.

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

17.19 At rated pressure of 8 Kg/cm² the pump discharge was observed as 6225.0 ml/min. against the minimum requirement of 8000.0 ml/min. This MUST be examined.

17.20 The pressure gauge with full scale reading 120 kg/cm² is provided, thus it does not conform to requirement of IS: 11313-2007. It MUST be looked into.

17.21 Though a pressure regulator provided but that was not in working condition therefore its conformity to IS: 11313-2007 could not be ascertained. It MUST be looked into for corrective action.

17.22 No necessary tools are provided with sprayer. It MUST be provided.

17.23 The suction strainer aperture size does not meet the requirement of Indian Standard. It MUST be looked into.

17.24 At the rated pressure of 8 Kg/cm² the engine speed dropped up to 6143 rpm against the rated engine speed of 6500 rpm. This MUST be looked into.

17.25 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 of engine
ix. SFC of engine

17.26 Safety provision/safety wear
i) Apron, gum boots and ear protector must be added in safety wear.

ii) Safety instructions regarding handling poisonous agro-chemical before, during and after spraying operations should be provided on sprayer.
18. TECHNICAL LITERATURE

The following literatures are provided with sprayer for guidance to the user.

i) Operation manual and parts catalogue of sprayer.

The following literature **MUST** be provided with the sprayer :-

   i) Service manual of sprayer.
   ii) Operation, service manual and parts catalogue of engine.

The operation manual of sprayer needs to be updated as per IS 8132-1999.

**TESTING AUTHORITY**

<table>
<thead>
<tr>
<th>R. K. NEMA</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>SENIOR AGRICULTURAL ENGINEER</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>P. K. PANDEY</td>
<td></td>
</tr>
<tr>
<td>DIRECTOR</td>
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</tbody>
</table>

19. **APPLICANT’S COMMENTS**

<table>
<thead>
<tr>
<th>Para No</th>
<th>Our reference</th>
<th>Applicant’s comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>19.1</td>
<td>17.3</td>
<td>Spray gun will be marked with trade mark</td>
</tr>
<tr>
<td>19.2</td>
<td>17.4,17.5,17.7,17.9</td>
<td>We will take corrective action</td>
</tr>
<tr>
<td>19.3</td>
<td>17.6,17.8</td>
<td>Will be provided</td>
</tr>
<tr>
<td>19.4</td>
<td>17.10 to 17.17</td>
<td>Our manufacturing unit will look into the same and will take corrective action</td>
</tr>
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</table>