ICS FT- 828
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

Website: http://nrfmtti.gov.in/
E-mail: fmti-nr@nic.in  
Tele./FAX: 01662-276984
ENGINE OPERATED KNAPSACK SPRAYER
ICS FT-828 (COMMERCIAL)

3. TEST FOR DISCHARGE RATE OF PUMP
   [vide Clause 8.3 of IS-11313: 2007]

1. Date of test: 16.02.2017
2. Atmospheric conditions:
   a) Temperature: 24°C
   b) Relative humidity: 56%
   c) Pressure: 99 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>
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</thead>
<tbody>
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</table>

Minimum discharge rate = 7147.5 ml/min at 9 kg/cm²
Maximum discharge rate = 7490 ml/min at 7 kg/cm²
Discharge at rated pressure = 7490 ml/min at 7 kg/cm²

4. TEST FOR VOLUMETRIC EFFICIENCY OF PUMP
   [vide clause 8.4 of IS: 11313-2007]

Rated pressure, kg/cm² : 7
Pump speed corresponding to rated speed of engine : 1898
Theoretical volume, ml : 4.07
Actual volume at rated speed and pressure, ml : 3.94
Volumetric efficiency, % : 96.8
14. CONFORMITY TO INDIAN STANDARDS

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

15. COMMENTS AND RECOMMENDATIONS

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

15.2 The compression ratio of engine is not declared. It should be declared.

15.3 The pump serial number and rated speed is not specified. It MUST be specified.

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

15.5 The pressure gauge marking exceeds 2.5 times the declared value of pressure. Suitable pressure gauge MUST be provided to ensure the compliance of the relevant Indian Standard.

15.6 The thickness of the wall of the barrel is less than the value specified in the relevant Indian Standard. It MUST be improved.

15.7 Regulator cum relief valve are possible to increase pressure up to 22 kg/cm², which is more than 25% of the maximum pressure declared by the applicant. It MUST be looked into.

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

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

15.10 The discharge rate for fine cone spray & jet 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.

15.11 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.
15.12 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

16. TECHNICAL LITERATURE

The following literatures is provided with sprayer for guidance to the user.
   i) User manual and specification sheet of sprayer pump.

The literature was found inadequate as all the necessary information required was not there. It needs to be updated as per IS: 8132-1999, with the inclusion of safety instructions regarding handling poisonous agro-chemical and first aid.

TESTING AUTHORITY

<table>
<thead>
<tr>
<th>R. K. NEMA</th>
<th>SENIOR AGRICULTURAL ENGINEER</th>
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<table>
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<tr>
<th>P. K. PANDEY</th>
<th>DIRECTOR</th>
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17. APPLICANT'S COMMENTS

<table>
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<tr>
<th>Para No.</th>
<th>Our Reference</th>
<th>Applicant's Comments</th>
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</thead>
<tbody>
<tr>
<td>17.1</td>
<td>15.1 to 15.12</td>
<td>We will inform to the production unit to take care the corrective actions and in future supply, above points will be considered before dispatch from the factory to the sales unit.</td>
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</tbody>
</table>