ENGINE OPERATED SPRAYER
ASPEE, HDP PS-26

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

1. Date of test: 20.11.2017
2. Atmospheric conditions:
   a) Temperature: 20°C
   b) Relative humidity: 43%
   c) Pressure: 97.7 kPa
3. Data recorded

<table>
<thead>
<tr>
<th>Specified speed of pump (rpm)</th>
<th>Specified pressure (kg/cm²)</th>
<th>Test No.</th>
<th>Delivery from the discharge line (ml/min)</th>
<th>Overflow (ml/min)</th>
<th>Average discharge from the discharge line (ml/min)</th>
<th>Discharge rate of pump (ml/min)</th>
<th>Power requirement (kW)</th>
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Minimum discharge rate = 25292.5 ml/min at 14 kg/cm²
Maximum discharge rate = 25425.0 ml/min at 7 kg/cm²
Discharge at rated pressure = 25292.5 ml/min at 14 kg/cm²

4. TEST FOR VOLUMETRIC EFFICIENCY OF PUMP
(Vide clause 8.4 of IS 11313:2007)

Rated pressure, kg/cm²: 14
Rated speed of pump, rpm: 950
Theoretical volume, ml: 28.12
Actual volume at rated rpm & rated pressure, ml: 26.89
Volumetric efficiency, %: 96%
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 (Reaffirmed 2011) : Does not conform in toto

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 : Conforms

15. COMMENTS AND RECOMMENDATIONS

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

15.2 Manufacturing year of sprayer and pump is specified. It MUST be specified.

15.3 Engine magneto contact breaker point gap & ignition timing is not specified. It should be specified.

15.4 Strainer should be provided in nozzle.

15.5 Suitable pressure gauge as per the requirement of Indian Standard must be provided in sprayer.

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

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

15.8 The discharge rate for fine cone and Jet spray pattern of spray gun at the pressure of 600 ± 60 kPa does not conform to the requirement of Indian Standard. It MUST be improved.

15.9 This spray angle of the gun at the pressure of 600 to 60 kpa does not conforms to the requirement of Indian standard it MUST be improved.

15.10 Maximum achievable pressure is less than that of the valve declared by the manufactures. It MUST be improved.

15.11 The discharge rate for fine cone spray & jet spray pattern at a pressure of 300 kPa was not declared by the applicant. It MUST be declared.
15.12 The spray angle of nozzle at a pressure of 300 kPa was not declared by the applicant. It **MUST** be declared.

15.13 **Labeling plate**: Provided (Sticker)

There is a labeling sticker but without mentioning all the information, thus it defeats the purpose hence to 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

15.14 **Safety provision/safety wear**

i) Safety instructions regarding handling poisonous agro-chemical and safety precautions before, during and after spraying operation **MUST** be added in operator’s manual.

16. **TECHNICAL LITERATURE**

The following literature provided with sprayer pump.

(i) Owner’s manual and specification sheet of engine.

The literature was found inadequate as all the necessary information required was not there. It needs to be updated as per IS: 8132-1999.

**TESTING AUTHORITY**

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