CHAKRA DHAR 804, FOUR STROKE SAMPOORTI 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

[ISO 9001:2015 CERTIFIED]
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3. TEST FOR DISCHARGE RATE OF PUMP
[vide Clause 8.3 of IS- 11313: 2007]

1. Date of test : 13/11/2018
2. Atmospheric conditions :
   a) Temperature : 30.0° C
   b) Relative humidity : 42%
   c) Pressure : 98.6 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>10.0</td>
<td>1</td>
<td>6000</td>
<td>NIL</td>
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</tbody>
</table>

Minimum discharge rate = 4492.3 ml/min at 13 kg/cm²
Maximum discharge rate = 5987.5 ml/min at 10 kg/cm²
Discharge at rated pressure = 5987.5 ml/min at 10 kg/cm²

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

Rated pressure, kg/cm² : 10
Engine speed corresponding to rated pressure (rpm) : 5598
Theoretical cubic capacity of pump, ml : 6533.9

Actual volume at rated pressure, ml : 5987.5
Volumetric efficiency, % : 92

NORTHERN REGION FARM MACHINERY TRAINING & TESTING INSTITUTE, HISAR
[THIS REPORT VALID UP TO : 31ST DECEMBER, 2025]
16. COMMENTS AND RECOMMENDATIONS

16.1 The sprayer serial number is not specified. It MUST be specified.
16.2 The sprayer year of manufacture is not specified. It should be specified.
16.3 The Engine serial number is not specified. It must be specified.
16.4 The magneto connect breaker point gap is not specified. It should be specified.
16.5 The grade of lubrication oil is not specified. It should be specified.
16.6 The material used for different components are not declared. It should be declared.
16.7 The spray gun is not designated and marked by identification mark. The identification mark as specified by relevant Indian Standard MUST be provided.
16.8 The pump make, model, manufacturing year, Serial No & country of origin are not specified. It MUST be specified.
16.9 The spray nozzle is not designated and marked by its identification mark. The identification mark as specified by relevant Indian Standard MUST be provided.
16.10 The strainer in nozzle is not provided. It may be considered for providing
16.11 The manufacture’s name or recognized trade mark and batch or code number on nozzle is not provided. It MUST be provided.
16.12 The spray gun manufacturer’s name or recognized trade mark & batch or code number is not marked on gun. It MUST be marked.
16.13 The discharge rate for fine cone spray pattern and jet spray pattern of spray gun at the pressure of 600 kPa does not conform to the requirement of IS: 3652:1995. It MUST be looked into for appropriate improvement.
16.14 The discharge rate for fine cone spray of nozzle at a pressure of 300 kPa does not conform to the requirement of IS: 3652-1995. It MUST be looked into.
16.15 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.
16.16 The diameter of connecting rod of gun does not meet the requirement of Indian Standard. It MUST be looked into.
16.17 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.
16.18 At rated pressure of 10Kg/cm² the pump discharge was observed as 5987.5 ml/min. against the minimum requirement of 8000 ml/min. This must be examined.
16.19 At the rated pressure of 10kg/cm², the engine speed dropped up to 5598 rpm against the rated engine speed of 6500 rpm. This MUST be looked into for necessary action.
16.20 The pressure gauge with fuel scale reading 120 bars is provided, thus it does not conform to requirement of IS: 11313-2007. It MUST be looked into.
16.21 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.
16.22 The pump inlet port end fitting material does not meet the requirement of Indian Standard. It MUST be looked into.
16.23 The necessary tools are not provided during the test. It MUST be provided.
16.24 Percentage variation of discharge for pump at rated pressure was not within in limit specified by the relevant code/standard. It MUST be looked into.

16.25 Percentage variation of discharge for cone spray pattern at 600 KPa pressure was not within in limit specified by the relevant code/standard. It MUST be looked into.

16.26 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

16.27 Safety provision/safety wear
   (i) Accessories for operators safety against pesticides is not provided. It MUST be provided.

   (ii) Safety instructions regarding handling poisonous agro-chemical, safety precautions before, during and after spraying MUST be added in operators manual.

17. TECHNICAL LITERATURE

The following literature was provided with sprayer .
   i) Instruction manual and parts catalogue of sprayer.

The following literature MUST be provided with the sprayer :-

   i) Service manual of Engine

The instruction manual should be updated as per IS 8132-1999

TESTING AUTHORITY

| R. K. NEMA          |                          |
| SENIOR AGRICULTURAL ENGINEER | Ren |

| P. K. PANDEY  |                          |
| DIRECTOR    | L Sh- GMH |

18. APPLICANT'S COMMENTS

No specific comments received from applicant.