COMMERCIAL TEST REPORT

BALAJI AGENCIES, AGRITECH BA-708 H
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 9001:2008 COMPLIANT INSTITUTION]

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Tele./FAX: 01662-276984
| Cl. 5.17 | The fuel and chemical discharge controls shall be in easy access of the operator. | Easy accessible to the operator. | Conforms |
| Cl. 5.18 | Air pressure chamber shall with stand the test prescribed in 8.7 without any deformation or damage. | No damage found in air pressure chamber. | Conforms |

**PERFORMANCE REQUIREMENTS**

**Cl. 6. IS 11313:2007**

| Cl. 6.1 Discharge rate/Suction capacity | When tested in accordance with the method given in 8.3, the pump shall be capable of discharging/sucking a minimum of 8000 ml water per minute at its rated speed and rated pressure. | The pump is capable to discharge 7605 ml/min at 20 kg/cm² pressure. | Does not conform |
| Cl. 6.1.1 | The discharge rate/suction capacity shall be declared by the manufacturer. | 4.5 to 7.2 l/min declared in the manual submitted by the manufacturer. | Conforms |
| Cl. 6.2 Volumetric Efficiency Cl. 6.2.1 | When determined in accordance with 8.4.1, the volumetric efficiency of the piston/plunger type pump shall minimum 80 percent. | The volumetric efficiency is 94.23% which is within specified limit. | Conforms |
| Cl. 6.2.2 | The volumetric efficiency requirement for roller vane type pump shall be minimum 80%. | Not applicable | -- |
| Cl. 6.3 Power requirement | When tested in accordance with the method given in 8.5, pump shaft power requirement shall not be more than that of the value declared by the manufacturer. | Not applicable | -- |
| Cl. 6.4 Maximum achievable pressure | When tested in accordance with the method given in 8.7, maximum achievable pressure shall not be less than that of the value declared by the manufacturer. | Maximum achievable pressure observed as 20 kg/cm² against the declaration of 20 to 25 kg/cm². | Does not conform |
| Cl. 6.5 Endurance test | Sprayer shall withstand the test endurance test specified in 8.8 and the variation in Discharge rate between first and last observation shall not be more than ± 5 Percent. | Endurance test of 50 hrs. completed without any breakdown & the variation in pressure. Percentage variation in discharge is 0.230% with in specified limit (see Annexure IV for more details). | Conforms |

**Cl. 7 OTHER REQUIREMENTS**

**IS 11313:2007**

| Cl. 7.1 | Each sprayer shall be provided with parts catalogue and manual giving detailed information about sprayer, engine, its rated speed along with operational and maintenance instructions and safety precautions. | Manual and parts catalogue is provided by the manufacturer and found adequate in contents. | Conforms |
**MARKING AND PACKING (CL10 IS:11313-2007)**

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<tr>
<th>Cl.10.1 Marking</th>
<th>Each sprayer shall be marked with the following particulars :-</th>
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<td>a)</td>
<td>Manufacturer’s name &amp; his registered trade mark</td>
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<tr>
<td>b)</td>
<td>Sl. No. and batch or code No.</td>
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### 5. SUMMARY OF OBSERVATION

5.1 The discharge rate was observed as 7605 ml/min at 20 kg/cm² pressure.

5.2 Volumetric efficiency was observed as 94.23% against the minimum requirement of 80%.

5.3 Power requirement: 1.0 kW as declared by the manufacturer. The engine provided on sprayer found having adequate power to spray.

5.4 Pressure adjustment: No fluctuation of the pressure was observed during the test.

5.5 Maximum achievable pressure was observed as 20 kg/cm².

5.6 **Endurance test**

   a) The test was conducted 50 hours, the discharge rate variation is observed as 0.230%, which is within the limit of ±5%.

   b) No breakdown was observed during the endurance test.

### 6. COMMENTS AND RECOMMENDATION

**Conformity to Indian Standard**

Engine operated knapsack sprayer Balaji Agencies, Agritech BA-708 H conforms all the clauses of IS: 11313-2007 except requirement specified in the following clause. **These should be rectified and incorporated at manufacturing level**:-

i) Cl. 6.1 IS: 11313:2007-Discharge rate/suction capacity of sprayer pump is not conform. It should be looked into.

ii) Cl. E-2.2 IS: 3652-1995-The diameter of connecting rod is not as per IS.

iii) C1.E.5 IS: 3652:1995- The spray gun is not designated by its identification mark.

iv) The gun does not conform the requirement of IS: 3652-1995 Clause E-6 (a) & (b). The manufacturer’s name or recognized trade mark & batch or code No. respectively is not provided. It may provide.

v) Cl. 10 IS; 11313-2007 Sub Clause Cl. 10.1 marking (b)-Sr. No. and batch or code No. is not provided. It may provide.

vi) The pump make, model and serial number is not specified by applicant. It should be essential specified on sprayer.
vi) The pressure gauge and pressure dampener is not provided on sprayer. The pressure gauge should be essentially provided for guidance of user.

vii) The max. pressure was observed as 20 kg/cm² against the declaration of 20 to 25 kg/cm². It should be looked into.

6.2 Safety provisions/safety wear
i) The accessories viz mask, hand gloves and safety goggles for operator’s safety has been provided with sprayer for safety of user.

ii) Safety signs and hazard pictorials are not provided on the machine. It must be provided on the machine for safety of user.

iii) Safety instructions regarding handling poisonous agrochemical and first aid may also be added in operator’s manual.

7. TECHNICAL LITERATURE
Following literature are provided by the applicant for reference during test:-
b) Material of construction of various components & technical data of engine.

The literatures provided found adequate, however it may be updated with inclusion of calibration procedure, spare parts catalogue and service manual may be brought as per IS:8132:1999.

TESTING AUTHORITY

<table>
<thead>
<tr>
<th>G. R. AMBALKAR</th>
<th>R. K. NEMA</th>
<th>P. K. PANDEY</th>
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<tbody>
<tr>
<td>AGRICULTURAL ENGINEER</td>
<td>SENIOR AGRICULTURAL ENGINEER</td>
<td>DIRECTOR</td>
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8. APPLICANT’S COMMENTS

No specific comment received from applicant.