ENGINE OPERATED KNAPSACK POWER SPRAYER
SHREE KARTHIK AGRO INDUSTRY, FM-888

GOVERNMENT OF INDIA
MINISTRY OF AGRICULTURE & FARMERS WELFARE
(DEPARTMENT OF AGRICULTURE, COOPERATION & FARMERS WELFARE)

NORTHERN REGION FARM MACHINERY TRAINING AND TESTING INSTITUTE
TRACTOR NAGAR, SIRSA ROAD, HISAR-125001 (HARYANA)
**Performance Requirements**

**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 6482 ml/min without gun at 6011 rpm of engine speed and 10 kg/cm² pressure. **Does not conform**

**Cl. 6.1.1**
The discharge rate/suction capacity shall be declared by the manufacturer.
7.1 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 97.79% 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 25 kg/ cm² with gun against the declaration of 15 to 25 kg/cm². **Conforms**

**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 percentage variation in discharge is 1.50% which is within specified limit (see annexure IV for more details). **Conforms**

**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**

**Cl. 7.2**
Each sprayer shall be provided with a set of necessary tools, suction strainer having aperture size of 300 μm to 425 μm and a measuring jar for lubricating oil.
One set of Gaskets, spanner, ballock & tool kit with suction strainer of 350 μm aperture size is provided. **Conforms**
6. COMMENTS AND RECOMMENDATION:

6.1 Engine operated power sprayer Shree Karthik Agro Industry, FM-888 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) The prime mover fitted in the sprayer manufactured by M/s Fusite Co. Ltd., China, Model TU-26 petrol engine of 0.7 kW at rated speed of 6000 rpm, In pursuance of ministry’s order no. 7-23/2011-M&T (I&P) dated 20.04.2011 the engine performance test as per IS:7347/1974 has not been conducted and the performance parameters as specified by the applicant have been presumed taking into consideration that the engine manufacturing company is ISO-9001:2008 certified company as is evident from the certificate registration No. 03413Q21652ROM valid upto 17.09.2016.

ii) Cl. 4.1 IS: 11313:2007 (Table-1)-The material of plunger and pump inlet port end fitting is not as per Indian Standard.

iii) Cl. 6.1 IS: 11313:2007- Discharge rate/suction capacity of sprayer pump is not conform.

iv) Cl. E 2.2 IS: 3652:1995-The dia. of connecting rod of gun is not as per IS.

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

vi) The gun does not conform the requirement of IS: 3652:1995 Clause E-6 (a) & (b). Manufacturer name, recognized trade mark, serial No., batch/code No. Should be on marked gun.

vii) Cl. 10.1 IS: 11313:2007- Sr. No. & batch/code No. of sprayer is not provided. It should be provided on each sprayer.
6.2 Safety signs and hazard pictorials are not provided on the machine. It should be provided on the machine as well as in operator’s manual to alert person to and existing or potential hazard, identify the hazard, describe the nature of hazard, explain the consequences of potential injury from the hazard and instruct the persons about how to avoid the hazard.

7. LITERATURE:
The following literature are provided for reference during the test.
i) User manual-FM-888 High Pressur Knapsack Power Sprayer (English)
   It is found adequate however, it may be updated as well as spare parts catalogue and service manual may be brought as per IS: 8132:1999. Literature may also be provided in Hindi as well as other regional languages for guidance of users.

**TESTING AUTHORITY**

<table>
<thead>
<tr>
<th>G.R. AMBALKAR</th>
<th>Agricultural Engineer</th>
</tr>
</thead>
<tbody>
<tr>
<td>R.K. NEMA</td>
<td>Senior Agricultural Engineer</td>
</tr>
<tr>
<td>HIMAT SINGH</td>
<td>Director</td>
</tr>
</tbody>
</table>

Test report compiled by: Sh. Maan Singh, Sr. Technical Assistant

8. **APPLICANT’S COMMENTS**

<table>
<thead>
<tr>
<th>Para No.</th>
<th>Our Reference</th>
<th>Applicant’s Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.1</td>
<td>6.1, 6.2 &amp; 7</td>
<td>We will take corrective action at the time of production level for all recommendations.</td>
</tr>
</tbody>
</table>