TRACTOR OPERATED POWER SPRAYER
"SURYA"

GOVERNMENT OF INDIA
MINISTRY OF AGRICULTURE
(DEPARTMENT OF AGRICULTURE & COOPEARATION)

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

Website: http://nrfmtti.dacnet.nic.in
E-mail: fmtnr@nic.in
### CL.5.16.1
The exhaust outlet of the engine shall be so positioned that the smoke does not directly affect the operator or crop. A guard shall be provided on or near the exhaust pipe for the protection of the operator.

**Notes:** Not applicable as it is tractor powered sprayer.

### CL.5
The fuel and chemical discharge controls shall be in easy access of the operator.

**Notes:** Not applicable as it is tractor powered sprayer.

### CL.5.17
Air pressure chamber shall withstand the test prescribed in 8.7 without any deformation or damage.

**Notes:** No damage found in air pressure chamber.

### CL.6. IS 11313:2007 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.

**Notes:** The pump is capable to discharge 45813 ml/min water without gun at 898 rpm of pump speed and 20.0 kg/cm² pressure.

#### Cl.6.1.1
The discharge rate/suction capacity shall be declared by the manufacturer.

**Notes:** Declared on ID plate of pump as 39 – 50 l/min.

#### Cl.6.2 Volumetric Efficiency
When determined in accordance with 8.4.1, the volumetric efficiency of the piston/plunger type pump shall minimum 80 percent.

**Notes:** The volumetric efficiency is 94.60% with in specified unit.

#### Cl.6.2.2
The volumetric efficiency requirement for roller vane type pump shall be minimum 80%

**Notes:** 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.

**Notes:** Max pump shaft power requirement is 2.32 kW against the declared value of 2.20-3.68 kW by the manufacturer. (See annexure 2 for more details)

#### 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.

**Notes:** Maximum achievable pressure is more than the declared maximum value of 15-35 kg/cm²

#### Cl.6.5 Endurance test
Sprayer shall withstand the test endurance test specified in 8.8 and variation in Discharge rate between First and Last observation shall not be

**Notes:** Endurance test of 50 hrs. Completed without any

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more than ± 5 Percent. | breakdown & the variation in pressure. Percentage variation in discharge is 0.98% with in specified units (see annexure 4 for more details)

<table>
<thead>
<tr>
<th>Cl. 7</th>
<th>IS 11313:2007 OTHER REQUIREMENTS</th>
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</thead>
<tbody>
<tr>
<td>Cl. 7.1</td>
<td>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.</td>
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<td>Cl. 7.2</td>
<td>Each sprayer shall be provided with a set of necessary tools, suction strainer having aperture size of 300μm to 425μm and a measuring jar for lubricating oil.</td>
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<td>Cl. 7.3</td>
<td>On the option of the purchaser, the following accessories shall be supplied</td>
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<tr>
<td>a)</td>
<td>A set of spray nozzles (conforming to annexure E of IS 3652) for different discharge rates, and</td>
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<tr>
<td>b)</td>
<td>Spray gun conforming to Annexure – 1 of IS 3652</td>
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<tr>
<td>Cl. E 1</td>
<td>TYPES IS:3652:1995</td>
</tr>
<tr>
<td>a)</td>
<td>Trigger type</td>
</tr>
<tr>
<td>b)</td>
<td>Screw type</td>
</tr>
<tr>
<td>Cl. E 2</td>
<td>DIMENSIONS Cl. E 2.1</td>
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<tr>
<td>Cl. E 2.2</td>
<td>The diameter of the connecting rod shall be minimum of 5mm</td>
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<tr>
<td>Cl. E 2,3</td>
<td>The annular clearance between the barrel and the connecting rod shaft be not less than 2.5 mm</td>
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</table>
### 6. COMMENTS:

Tractor operated hydraulic power sprayer ‘Surya’ conforms all the clauses of IS: 11313-2004 except requirement specified in the following clause. These should be rectified and incorporated at manufacturing level:-

i) IS:4468(part-1)-2001- (a) Lower hitch point span, (b) Diameter for linch pin for upper hitch pin & (c) Diameter for linch pin for lower hitch pins (please refer para 4.8 of the test report for more details)

ii) Cl. 5.5.2 IS:11313-Dec. 2007 Drain plug

iii) Cl. E.6 IS: 3652: 1995 – Batch or code no. of spray gun.


vi) Cl. 4.3 IS:11313:2007, Declaration for material used for different component.

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### TESTING AUTHORITY

<table>
<thead>
<tr>
<th>(R. M. TIWARI)</th>
<th>AGRICULTURAL ENGINEER</th>
</tr>
</thead>
<tbody>
<tr>
<td>(P. K. CHOPRA)</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, Technical Assistant

### APPLICANT’S COMMENTS

No comments received