ELECTRIC MOTOR OPERATED SPRAYER
KISAN KRAFT, KK-18 A3

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)
<table>
<thead>
<tr>
<th>Cl.5.14.2</th>
<th>The metallic nut if provided shall have the internal thread size, minimum of ( \frac{1}{4} )B IS:2643-2005 (Reaffirmed 2010) Part I. The clamp shall consist of ferrule or clip. Other thread sizes if used shall be of standard pipe threads IS:2643-2005 (Reaffirmed 2010).</th>
<th>Metallic nut of internal thread size ( \frac{5}{16} ) is provided.</th>
<th>conforms</th>
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<tbody>
<tr>
<td>Cl.5.14.3</td>
<td>The hose and hose connection shall withstand the test prescribed in 7.2 of IS: 10134-1994. A minimum hydrostatic pressure of 1.5 MPa, using water as a liquid, shall be developed in the Hose assembly and the pressure shall be retained for a period of 5 minutes.</td>
<td>There was no leakage, crack and breakage in hose &amp; hose connection during testing.</td>
<td>Conforms</td>
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<tr>
<td>Cl.5.15 Nozzle</td>
<td>Unless otherwise specified by the purchaser, the nozzle shall conform to the requirement of Annexure F of IS: 3652-1995 (Reaffirmed 2006).</td>
<td>Fixed straight solid cone nozzle.</td>
<td>Conforms</td>
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<td>Cl.5.16</td>
<td>The engine and electric motor shall conform to the requirements as given in IS:7347-1974 (Reaffirmed 2006) and IS:325-1996 (Reaffirmed 2007) respectively.</td>
<td>Single phase electric motor, 0.735 kW used but not BIS marked.</td>
<td>Does not conform</td>
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<td>Cl.5.16.1</td>
<td>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.</td>
<td>Not applicable</td>
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<td>Cl.5.17</td>
<td>The fuel and chemical discharge controls shall be in easy access of the operator.</td>
<td>Not applicable as chemical tank not provided.</td>
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<tr>
<td>Cl.5.18</td>
<td>Air pressure chamber shall withstand the test prescribed in 8.7 without any deformation or damage.</td>
<td>No damage found in air pressure chamber during test.</td>
<td>Conforms</td>
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</tbody>
</table>

**CL.6 IS 11313:2007 PERFORMANCE REQUIREMENTS**

<table>
<thead>
<tr>
<th>Cl.6.1 Discharge rate/Suction capacity</th>
<th>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.</th>
<th>The pump is capable to discharge 7123 ml/min without gun at 1488 rpm of motor speed and 10.0 kg/cm² pressure.</th>
<th>Conforms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cl.6.1.1</td>
<td>The discharge rate/suction capacity shall be declared by the manufacturer.</td>
<td>Declared as on ID plate of pump 10 to 18 l/min.</td>
<td>Conforms</td>
</tr>
<tr>
<td>Cl.6.2 Volumetric Efficiency Cl.6.2.1</td>
<td>When determined in accordance with 8.4.1, the volumetric efficiency of the piston/plunger type pump shall minimum 80 percent.</td>
<td>The volumetric efficiency is 88.51% &amp; with in specified limit.</td>
<td>Conforms</td>
</tr>
</tbody>
</table>
**Cl. E 2 DIMENSIONS**

| Cl. E 2.1 | The thickness of the wall of the barrel shall be minimum of 0.63 mm. | 0.64 mm | Conforms |
| Cl. E 2.2 | The diameter of the connecting rod shall be minimum of 5 mm. | 5.8 mm | Conforms |
| Cl. E 2.3 | The annular clearance between the barrel and the connecting rod shaft be not less than 2.5 mm. | The annular clearance between the barrel and the connecting rod is 2.88 mm. | Conforms |
| Cl. E 2.4 | The total length of the spray gun when measured from top of the nozzle to the tip of the trigger or screw shall be not less than 500 mm. | 570 mm | Conforms |

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**Cl. E 3.1**

The discharge rate of the spray gun for extreme adjustment for fine cone spray and jet spray patterns at a pressure of 600 kPa ± 60 kPa shall be declared by the manufacturer. The discharge rate when tested in accordance with F7 shall be within ±10% of the declared value.

Not applicable as the working pressure is 980.7 to 3922.7 kPa which is not covered in reference clause.

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**Cl. E 3.2**

The spray angle of the spray gun at a pressure of 600 ± 60 kPa for extreme adjustment of fine cone spray pattern shall be declared by the manufacturer. The angle when tested in accordance with the method given in F9, by mounting the gun on test bench shall not differ by ±5° from the declared value.

Not applicable as the working pressure is 980.7 to 3922.7 kPa.

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**Cl. E 3.3**

When tested in accordance with the method given in C6.2 the maximum torque required in case of trigger type spray gun shall be not more than 7.0 Nm (70 kg/cm).

Not applicable as no trigger is provided.

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**Cl. E 3.4**

The gun shall withstand the tests given in E-3.4.1 and E-3.4.2

**Cl. E 3.4.1** The horizontal thrown up jet spray should reach at a distance of 6 m from the tip of the gun at a working pressure of 600 ± 60 kPa.

The jet sprayer reached at a distance of 7.8 m from the tip of the gun at pressure of 6.0 kg/cm². Conforms

**Cl. E 3.4.2** The gun should not leak, crack or burst on application of 1500 kPa hydraulic pressure for 5 minutes without discharge through the nozzle.

Applicable only for trigger or nob type cut off device. Conforms

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**Cl. E 3.5** When tested in accordance with the method given in C9, no leakage or breakdown shall occur in the spray gun.

Not applicable Conforms
6. COMMENTS AND RECOMMENDATION

6.1 Conformity to Indian Standard

Electric motor operated hydraulic power sprayer ‘Kisan Kraft, KK-18 A3’ 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. 5.16 IS: 325-The electric motor provided is not BIS marked. The electric motor with BIS mark should be provided.

ii) Cl. 6.3 IS: 11313:2007-The pump shaft power requirement is more than that of declared rated power of electric motor. This will cause overloading of electric motor. It is undesirable. The corrective action should be taken.

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

iv) The gun does not conform the requirement of IS: 3652-1995 Clause E-6 (b). The batch No. or code No. should be on marked gun.

v) Cl. 10.1 IS:11313:2007-The marking on sprayer is not as per Indian Standard. It should be provided.

6.2 The country of manufacturer/origin is not provided on labeling plate and packing. It may be provided.

6.3 Safety wear

i) The accessories viz mask, hand gloves and safety goggles for operator’s safety has not been provided with sprayer. It is emphatically recommended to take corrective action immediately. The compliance report may be submitted to the Institute within one month time.

ii) Safety signs and hazard pictorials are not provided on the machine. it should be provided on the machine 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.

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