



**THUSARA-B018
BATTERY CUM HAND OPERATED KNAPSACK SPRAYER**



भारत सरकार

Government of India

कृषि एवं किसान कल्याण मंत्रालय

Ministry of Agriculture and Farmers Welfare

कृषि, सहकारिता एवं किसान कल्याण विभाग

Department of Agriculture, Cooperation and Farmers Welfare

उत्तरी क्षेत्र कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

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xxxiv)	The material used for different components shall be declared by the manufacturer, all the components mentioned in the table-I may not be present in a particular sprayer.	Declared in the specification sheet.	the	Conforms
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3. TEST FOR DISCHARGE RATE OF PUMP
(Vide Clause 8.3 of IS: 11313 - 2007)

1. Date of test : 23.08.2017
2. Atmospheric conditions :
 - a) Temperature : 32 °C
 - b) Relative humidity : 73 %
 - c) Pressure : 97.3 kPa

3. Data recorded

Speed of pump (rpm)	Working pressure (kg/cm ²)	Test No.	Delivery from the discharge line (ml/min)	Overflow (ml/min)	Average discharge from the discharge line (ml/min)	Discharge rate of pump (ml/min)
2846	2.0	1	2000	NIL	2000.0	2000.0
		2	2000			
		3	2000			
		4	2000			
2835	2.3	1	1800	NIL	1802.5	1802.5
		2	1800			
		3	1810			
		4	1800			
2827	2.6	1	1650	NIL	1662.5	1662.5
		2	1660			
		3	1670			
		4	1670			
2802	3.0	1	1580	NIL	1567.5	1567.5
		2	1570			
		3	1560			
		4	1560			

Minimum discharge rate = **1567.5 ml/min at 3.0 kg/cm²**
Maximum discharge rate = **2000.0 ml/min at 2.0 kg/cm²**
Discharge at rated pressure = **1567.5 ml/min at 3.0 kg/cm²**

4. TEST FOR VOLUMETRIC EFFICIENCY
(Vide Clause 8.4 of IS : 11313 - 2007)

Date of test	: 23.08.2017
Rated pressure, kg/cm ²	: 3
Discharge of water at rated pressure, l/min	: 1.567
Discharge of water at no load, l/min	: 2.537
Pump speed at no load, rev/min	: 3086
Pump speed at rated pressure, rev/min	: 2800
Volumetric efficiency of pump, %	: 68

Remark:- The volumetric efficiency does not conform to the requirement of IS:11313-2007.

5. POWER REQUIREMENT
(Vide Clause 8.5 of IS – 11313 : 2007)

The power requirement of DC motor fitted on sprayer was observed as following.

1. Motor operating voltage	: 12 V
2. Avg. current drawn by motor at no load	: 0.77 A
3. Avg. current drawn by motor at load	: 1.66 A
4. Avg. motor operating voltage	: 12.55 V
5. Avg. observed motor max. power requirement	: 20.89 Watt
6. Motor speed at no load	: 3090 rpm
7. Motor speed on load	: 1736 rpm
8. Time required for fully discharge of battery	: 8 to 8.30 hrs.
9. No load rpm of motor after 6 hours of Operation	: 2150 rpm

6. PRESSURE ADJUSTMENT TEST
(Vide Clause 8.7.1 of IS – 11313 : 2007)

1. Date of test : 30.08.2017
2. Atmospheric conditions :
 - a. Temperature : 29 °C
 - b. Relative humidity : 73 %
 - c. Pressure : 97.9 kPa
3. Data recorded

S. No.	Working pressure (kg/cm ²)	Fluctuation range (kg/cm ²)	Pressure drop (kg/cm ²)	Ratio
1.	2.0	NIL	NIL	--
2.	2.3	NIL	NIL	--
3.	2.6	NIL	NIL	--
4.	3.0	NIL	NIL	--

4. Resistance of pressure: Yes

24. CONFORMITY TO INDIAN STANDARDS

- | | |
|---|---------------------------------|
| i) IS: 11313:2007 Hydraulic power sprayers- :
specification | Does not conform in toto |
| ii) IS: 10134-1994-Method of test for manually :
operated sprayer | Does not conform in toto |
| iii) Spray nozzle and spray gun as per IS:3652- :
1995 (Reaffirmed 2011) | Does not conform in toto |
| vi) IS: 2643-2005-Pipe threads where pressure- :
tight joint are not made on the threads-
dimensions, tolerance and designation | Does not conform in toto |

25. COMMENTS & RECOMMENDATIONS

- 25.1** The year of manufacture of sprayer is not marked. It **MUST** be marked.
- 25.2** The motor serial number, motor power and rated speed is not specified. It **MUST** be specified.
- 25.3** Country of origin of battery charger is not marked. It **MUST** be marked.
- 25.4** The rated speed and country of origin of pump is not specified. It **MUST** be specified.
- 25.5** The dimension of straps does not meet the requirements of Indian Standard. It **MUST** be looked into.
- 25.6** The dimension of cushion does not meet the requirements of Indian Standard. It **MUST** be looked into.
- 25.7** During the strap drop test the buckle/bracket of strap assembly found failed to hold the strap in its position. It should be improved.
- 25.8** The material for end fitting of spray lance does not meet the requirements of Indian Standard. It **MUST** be looked into.
- 25.9** The nozzle is not marked. It **MUST** be looked into.
- 25.10** The lance is not marked. It **MUST** be marked.
- 25.11** The nominal length of the lance does not conform to the requirement of IS:3652-1995. The lance is not marked. It **MUST** be marked.
- 25.12** The discharge rate of nozzle for fine cone spray pattern does not conform to the requirement of IS: 3652-1995. It **MUST** be looked into.

- 25.13 The strainer in nozzle is not provided. It should be provided.
- 25.14 Agitator is not provided in sprayer. It may be provided.
- 25.15 The material of spray nozzles does not meet the requirement of Indian Standard. It should be looked into.
- 25.16 The material of pump inlet port end fitting does not meet the requirement of Indian Standard. It **MUST** be looked into.
- 25.17 The cut-off device is not marked. It should be marked.
- 25.18 Time required to full charge battery with AC charger is observed as 7.9 to 8.2 hours.
- 25.19 The spraying operation time after fully charging the battery was observed as 8.0 to 8.3 hours.
- 25.20 **The volumetric efficiency of sprayer on battery operated mode was observed as 68 %, which is not within the requirement of the relevant Indian Standard.**
- 25.21 The current drawn by motor at no load and on load was observed as 0.77 A and 1.66 A respectively which does not conform to requirement of IS: 14459-1997.
- 25.22 The sprayer does not conform to the relevant standard in toto. It **MUST** be looked into.
- 25.23 The nozzle designation is not marked. It **MUST** be looked into.
- 25.24 During the pump chamber hydraulic test the motor stopped beyond 5.0 kg/cm² pressure against the pressure requirement of 7.5 kg/cm². Thus the sprayer does not meet the requirement of Indian Standard.
- 25.25 The pump discharge outlet nipple length does not meet the requirement of Indian Standard. It should be looked into.
- 25.26 The Strainer in cut-off device is not provided. It should be provided.
- 25.27 The material of handle, operating lever, handle pilot does not meet the requirement of Indian Standard. It should be looked into.
- 25.28 A suitable labelling 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
 - ix. Country of origin