

THIS TEST REPORT VALID UP TO : 28th February, 2027



**RALLI, ECO URJA-DM
BATTERY OPERATED KNAPSACK SPARYER**



भारत सरकार

Government of India

कृषि एवं किसान कल्याण मंत्रालय

Ministry of Agriculture and Farmers Welfare

कृषि एवं किसान कल्याण विभाग

Department of Agriculture and Farmers Welfare

उत्तरी क्षेत्र कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

Northern Region Farm Machinery Training and Testing Institute

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[ISO 9001:2015 CERTIFIED]

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xxxiv)	The material used for different components shall be declared by the manufacturer. All the components mentioned in the Table No.-I of IS:11313-2007 may not be present in a particular sprayer.	Declared by the manufacturer	Conforms
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4. RUNNING-IN

Applicant has not recommend running-in of sprayer

5. TEST FOR DISCHARGE RATE OF PUMP (Vide Clause 8.3 of IS: 11313: 2007)

1. Date of test : 19.02.2022
2. Atmospheric conditions
 - a) Temperature : 20.6 °C
 - b) Relative humidity : 65.6 %
 - c) Pressure : 98.4 kPa
3. Data recorded

Avg. 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)
3695	1.0	1	5080	NIL	5035.0	5035.0
		2	5000			
		3	5040			
		4	5020			
3586	2.0	1	4000	NIL	4000.0	4000.0
		2	4020			
		3	3980			
		4	4000			
3556	3.0	1	3600	NIL	3602.5	3602.5
		2	3620			
		3	3580			
		4	3610			
3486	4.0	1	3140	NIL	3105.0	3105.0
		2	3060			
		3	3100			
		4	3120			

Minimum discharge rate = 3105.0 ml/min at 4 kg/cm²
Maximum discharge rate = 5035.0 ml/min at 1 kg/cm²
Discharge at rated pressure = 3602.5 ml/min at 3 kg/cm²

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

Date of Test : 19.02.2022
 Rated pressure, kg/cm² : 3.0
 Avg. discharge of water at rated pressure, : 3602.5 ml/min

Avg. discharge of water at no-load, ml/min : 6487.5
 Avg. pump speed at no-load, rev/min : 3938
 Avg. pump speed at rated pressure, rev/min : 3556
 Volumetric efficiency of pump, % : 61.48

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

7. POWER REQUIREMENT (Vide Clause 8.5 of IS : 11313 -2007)

Date of test : 20.02.2022
 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 : 3.05 A
3. Avg. current drawn by motor at load : 4.51 A
4. Avg. motor operating voltage : 12.39 V
5. Avg. observed motor power requirement : 55.89 watt
6. Avg. motor speed at no load : 3938 rpm
7. Avg. motor speed at load : 3556 rpm
8. Avg. time required for fully discharge of battery : 7.0 to 7.6 hours
9. Avg. No load rpm of motor after 6 hours of operation : 3167 rpm
10. Time required to full charge the battery with AC charger was observed as : 6.0 to 6.5 hours
11. The spraying operation time after fully charging the battery was observed as : 6.8 to 7.6 hours

8. PRESSURE ADJUSTMENT TEST

1. Date of test : 19.02.2022
2. Atmospheric conditions
 - a. Temperature : 20.6 °C
 - b. Relative humidity : 65.6 %
 - c. Pressure : 98.4 kPa
3. Data recorded

S. No.	Working pressure (kg/cm ²)	Fluctuation range (kg/cm ²)	Pressure drop (kg/cm ²)	Ratio
1.	1.0	NIL	NIL	--
2.	2.0	NIL	NIL	--
3.	3.0	NIL	NIL	--
4.	4.0	NIL	NIL	--

4. Resistance to different pressure: Yes

19. COMMENTS & RECOMMENDATIONS

- 19.1** The model of pump is not specified. It **MUST** be looked into.
- 19.2** The discharge rate of nozzle at a pressure of 300 kPa for fine cone spray pattern does not conform to the requirement of IS: 3652-1995. It **MUST** be looked into.
- 19.3** The manufacturer's name or recognized trade mark, type of cut-off device and batch or code number is not marked. It **MUST** be looked into.
- 19.4** The strainer in nozzle is not provided. It may be provided.
- 19.5** Agitator is not provided. It may be provided.
- 19.6** During the strap drop test, the buckle/bracket of strap assembly failed to hold the strap in its position. It should be improved as per relevant standard
- 19.7** The tank capacity does not meet the requirement of Indian Standard. It should be improved.
- 19.8** The discharge outlet nipple length does not meet the requirement of Indian standard. It should be improved.
- 19.9** The volumetric efficiency of pump does not meet the requirement of Indian Standard. It **MUST** be improved.
- 19.10** The average aperture size of cut-off device strainer does not meet the requirement of Indian standard. It **MUST** be looked into.
- 19.11** The manufacturer's name or recognized trade mark, nominal length and batch or code number of lance is not marked. It **MUST** be looked into.
- 19.12** The manufacturer's name or recognized trade mark, batch or code number and designation of nozzles is not marked. It **MUST** be looked into.
- 19.13** The strap cushion thickness does not meet the requirement of Indian Standard. It may be looked into.
- 19.14** The dimension of straps do not meet the requirement of Indian standard. It **MUST** be looked into.
- 19.15** **Safety provision/Safety wear**
The safety instructions regarding handling poisonous agrochemical before, during and after spraying operation should be provided on sprayer.

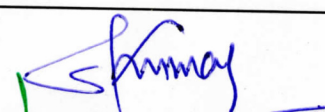
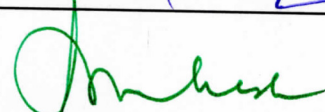
20. TECHNICAL LITERATURE

The following literatures are provided with sprayer for guidance to the user.

- i. Operator Manual
- ii. Service manual
- iii. Parts catalogue

However, the manuals of sprayers should be updated as per IS: 8132-1999.

TESTING AUTHORITY

Er. SANJAY KUMAR AGRICULTURAL ENGINEER	
Dr. MUKESH JAIN DIRECTOR	 28.02.2022

The Draft test report compiled by Abhishek Chourey, MTS (Technical)

21. APPLICANT'S COMMENTS

Para No.	Our reference	Applicant's comments
21.1	19.1, 19.11 & 19.12	We will ask manufacturing unit to specify.
21.2	19.2, 19.3, 19.4, 19.6, 19.10, 19.13 & 19.14	Our manufacturing unit will look into.
21.3	19.5	We will look into the possibility.
21.4	19.7	Owing to popular demand for a sprayer with a bigger capacity, we have manufactured this sprayer.
21.5	19.8 & 19.9	Will be improved as per IS.
21.6	19.15	Will be provided on the sprayer.