



**BLUSTAL E-POWER  
BATTERY OPERATED KNAPSACK SPRAYER**



सत्यमेव जयते

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

**Northern Region Farm Machinery Training and Testing Institute**

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

1. Date of test : 12.10.2017
2. Atmospheric conditions :
  - a) Temperature : 33 °C
  - b) Relative humidity : 60 %
  - c) Pressure : 97.4 kPa

## 3. Data recorded

Speed of Pump (rpm)	Pressure (kg/cm <sup>2</sup> )	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)
2894	1	1	2690	NIL	2686.25	2686.25
		2	2700			
		3	2670			
		4	2685			
2730	2	1	2270	NIL	2273.75	2273.75
		2	2280			
		3	2275			
		4	2270			
2599	3	1	1860	NIL	1877.5	1877.5
		2	1880			
		3	1890			
		4	1880			
2541	4	1	1570	NIL	1567.5	1567.5
		2	1560			
		3	1560			
		4	1580			

**Minimum discharge rate** = 1567.5 ml/min at 4 kg/cm<sup>2</sup>  
**Maximum discharge rate** = 2686.25 ml/min at 1 kg/cm<sup>2</sup>  
**Discharge at rated pressure** = 1877.5 ml/min at 3 kg/cm<sup>2</sup>

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

Rated pressure, kg/cm<sup>2</sup> : 3  
Avg. discharge of water at rated pressure, l/min : 1.872  
Avg. discharge of water at no-load, l/min : 2.995  
Avg. pump speed at no-load, rev/min : 3036  
Avg. pump speed at rated pressure, rev/min : 2601  
Volumetric efficiency of pump, % : 73 %

**Remarks : The volumetric efficiency does not conform to the requirement of IS: 11313:2007.**

## 16. COMMENTS &amp; RECOMMENDATIONS


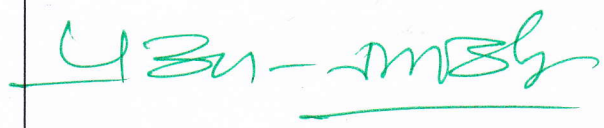
- 16.1 The sprayer serial number is not marked. It **MUST** be marked.
- 16.2 Battery charger make, model and country of origin is not marked. It **MUST** be marked.
- 16.3 The make, Serial No ,Motor voltage, Max current, speed of motor is not specified. It **MUST** be specified.
- 16.4 Pump make, model, serial number and country of origin is not marked. It **MUST** be marked.
- 16.5 The strainer in nozzle is not provided. It should be provided.
- 16.6 The cut-off device and spray lance batch or code number is not marked. It **MUST** be marked.
- 16.7 The material used for different components of sprayer is not declared. It should be declared.
- 16.8 The volumetric efficiency of pump does not meet the requirement of Indian Standard. It **MUST** be improved.
- 16.9 Agitator is not provided. It may be provided.
- 16.10 The strap width and strap cushion thickness does not meet the requirement of Indian Standard. It **MUST** be looked into.
- 16.11 The discharge rate of nozzle for fine cone and jet spray pattern does not meet the requirement of Indian standard. It **MUST** be looked into
- 16.12 The spray angle of nozzle does not meet the requirement of Indian Standard. It **MUST** be looked into.
- 16.13 The spray lance is not marked. It **MUST** be marked.
- 16.14 The current drawn by motor at no load and on load was observes as 0.85 and 1.70A respectively which does not conform to requirement of IS- 14459: 1997.
- 16.15 Time required to full charge the battery with AC charger is observed as 7.09 to 8 hours.
- 16.16 The area of strainer does not meet the requirement of Indian standard. It **MUST** be looked into.
- 16.17 The spraying operation time after fully charging the battery was observed as 8.02 to 9 hours.
- 16.18 During the pump chamber hydraulic test the motor stopped beyond 5.0 kg/cm<sup>2</sup> pressure against the pressure requirement of 7.5 kg/cm<sup>2</sup> and the test could not be conducted. This **MUST** be looked into and improved.
- 16.19 The nozzle designation does not meet the requirement of Indian Standard. It **MUST** be improved.
- 16.20 The nozzle batch or code number is not marked. It **MUST** be marked.

- 16.21 The cut off device is not marked. It **MUST** be marked.
- 16.22 The material of pump inlet port end fitting does not meet the requirement of Indian Standard. It should be looked into.
- 16.23 A suitable labeling 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

### 17. TECHNICAL LITERATURE

Operator, maintenance & parts manual of sprayer was provided during the test. However, the manual should be updated as per IS : 8132-1999, with the inclusion of safety instructions regarding handling of poisonous agro-chemicals, safety precautions before, during and after spraying.

### TESTING AUTHORITY

R. K. NEMA SENIOR AGRICULTURAL ENGINEER	
P. K. PANDEY DIRECTOR	

### 18. APPLICANT'S COMMENTS

Para No.	Our Reference	Applicant's Comments
18.1	16.1	Serial number will be marked in all future supplies.
18.2	16.2	Battery charger making will be marked in our all future supplies.
18.3	16.3	Specification of motor will be marked in future supplies.
18.4	16.4	Pump make, Serial number and country of origin will be marked in all future supplies.
18.5	16.6	Cut off device & spray lance will be marked in all future supplies.
18.6	16.8	We will improve volumetric efficiency in future supplies.
18.7	16.10	We will increase the strap width and strap cushion thickness.