

व्यावसायिक परीक्षण रिपोर्ट  
COMMERCIAL TEST REPORT

संख्या/ No.: PS-465/2635/2021  
माह/Month : January, 2021

**THIS TEST REPORT VALID UP TO : 31<sup>st</sup> January, 2026**



**E-AGROCARE, EAC-16C35  
BATTERY 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

Northern Region Farm Machinery Training and Testing Institute

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xxxii)	Material of construction of cut off device components			
	-Body, valve seat, gland nut, cap & collar, Valve stem	Brass, Engineering plastic, stainless steel	Engineering plastic	Conforms
	-Nipple	Brass, Engineering plastic, stainless steel,	Not applicable	--
	-Valve	Brass, synthetic rubber, plastic, stainless steel	Plastic	Conforms
	-Strainer	Brass, stainless steel, plastic	Plastic	Conforms
	-Operating knob	Brass, Engineering plastic	Not applicable	--
	- Operating trigger	Steel, Engineering plastic	Engineering plastic	Conforms
	-Spring	Stainless steel,	Stainless steel	Conforms
	-Gasket	Synthetic rubber, fiber, PVC	PVC	Conforms
	-Gland seal	PVC	PVC	Conforms
	-Gland packing	Asbestos rope	Not applicable	--
xxxiii)	Material of construction of various components as per IS: 3906-1995			
	Strap	Woven web cotton/synthetic yarn	Synthetic Yarn	Conforms
	Skirt/Stand	Steel, plastic	Plastic	Conforms
	Strap buckle	Steel, Engg. Plastic	Engg. Plastic	Conforms
	Cushion	Foam, rubber, foam plastic	Plastic rubber	Conforms
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 by the applicant	Conforms

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

1. Date of test : 11.12.2020
2. Atmospheric conditions
  - a) Temperature : 21.3 °C
  - b) Relative humidity : 56.1 %
  - c) Pressure : 98.7 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)
3503	1	1	1920	NIL	1905	1905
		2	1900			
		3	1910			
		4	1890			

3431	2	1	1560	NIL	1565	1565
		2	1550			
		3	1580			
		4	1570			
3392	3	1	1420	NIL	1410	1410
		2	1390			
		3	1430			
		4	1400			
3337	4	1	730	NIL	735	735
		2	740			
		3	720			
		4	750			

Minimum discharge rate = 735 ml/min at 4 kg/cm<sup>2</sup>  
Maximum discharge rate = 1905 ml/min at 1 kg/cm<sup>2</sup>  
Discharge at rated pressure = 1410 ml/min at 3 kg/cm<sup>2</sup>

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

Date of test : 11.12.2020  
Rated pressure, kg/cm<sup>2</sup> : 3  
Avg. discharge of water at rated pressure, ml/min : 1410  
Avg. discharge of water at no-load, ml/min : 2505  
Avg. pump speed at no-load, rev/min : 3691  
Avg. pump speed at rated pressure, rev/min : 3392  
Volumetric efficiency of pump, % : 61.3

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

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

Date of test : 11.12.2020  
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 : 0.70 A  
3. Avg. current drawn by motor at load : 1.27 A  
4. Avg. motor operating voltage : 12.19 V  
5. Avg. observed motor power requirement : 15.52 watt  
6. Avg. motor speed at no load : 3691 rpm  
7. Avg. motor speed at load : 3392 rpm  
8. Avg. time required for fully discharge of battery : 7 to 8  
9. Avg. No load rpm of motor after 6 hours of operation : 2966 rpm

**6. PRESSURE ADJUSTMENT TEST**

1. Date of test : 11.12.2020
2. Atmospheric conditions:-
  - a. Temperature : 21.3 °C
  - b. Relative humidity : 56.1 %
  - c. Pressure : 98.7 kPa
3. Data recorded

S. No.	Working pressure (kg/cm <sup>2</sup> )	Fluctuation range (kg/cm <sup>2</sup> )	Pressure drop (kg/cm <sup>2</sup> )	Ratio
1.	1	NIL	NIL	--
2.	2	NIL	NIL	--
3.	3	NIL	NIL	--
4.	4	NIL	NIL	--

4. Resistance of pressure: Yes

**7. TEST FOR SPRAY LANCE**  
(Vide Annex D of IS – 3652: 1995)

- Date of test : 08.12.2020  
Type : Straight (Type-A)

**7.1 STRENGTH OF SPRAY LANCE**

Sr. No	Details	Condition
1	Test Condition	Outlet closed
2	Hydraulic pressure applied	1 MPa
3	Duration of pressure retained	5 minutes
4	Result	No leak, crack, or burst of lance was observed during test

**7.2 MARKING ON SPRAY LANCE**

- Manufacturer's name or recognized trade mark : Not Marked  
Nominal length : Not Marked  
Batch or code Number : Not Marked

**8. TEST FOR CUT-OFF DEVICE**  
(Vide Annex C Clause 6.8.3 of IS – 3652: 1995)

- Date : 08.12.2020  
Type : Trigger type (Type – A)

**8.1 MAXIMUM TRIGGER ACTIVATION TORQUE**

Required torque	:	Observed torque
Less than 35 kgf-cm	:	28.9 kgf-cm

**8.2 STRENGTH TEST FOR CUT-OFF DEVICE**

Sr. No	Details	Condition
1	Condition of outlet	Closed
2	Hydraulic pressure	750 kPa
3	Duration of pressure retained	5 Minute
4	Observation	No Leakage, crack or burst of cut-off device was observed during test.

**8.3 LEAKAGE AND RELIABILITY TEST FOR CUT-OFF DEVICE**

Sr. No.	Details	Condition
1	Test Condition	Mounted on test setup
2	Hydraulic pressure retained	300 kPa
3	Operating cycles	5000 cycles at pressure 300 kPa and repeated for 500 cycles at a pressure of 600 kPa @ 15 cycles per minutes
4	Observation	No drip or leak of cut off device through valve was observed during the test

**8.4 MARKING ON CUT-OFF DEVICE**

- a) Manufacturer's name or recognized trade mark : **Not Marked**  
 b) Batch or code number : **Not Marked**  
 c) Type of cut-off device : **Not Marked**

**9. TEST FOR NOZZLE**  
(Vide Annex F of IS – 3652: 1995)

Date of test : 10.12.2020  
 Type of Nozzle (apa) : Solid Cone

**9.1 TEST FOR DISCHARGE RATE OF NOZZLE**

The discharge rate for fine cone spray pattern as 1500 ml/min at a pressure of 300 kpa was declared by the applicant. The discharge rate corresponding to 300 kpa pressure was observed as under:-

- For fine cone spray pattern : 1315 ml/min

**Remark: The discharge rate for fine cone spray pattern does not conform to the requirement of IS: 3652:1995.**

**9.2 TEST FOR SPRAY ANGLE OF NOZZLE**

The spray angle of nozzle at a pressure of 300 kPa has been declared by applicant as 50° degree. The spray angle corresponding to 300 kPa pressure was observed as 52.7 degree.

**15. CRITICAL TECHNICAL SPECIFICATIONS**

(Deferred till 31.03.2021 vide Ministry's O.M. No 13-13/2020 M &amp; T (I &amp; P) dated 22.12.2020)

**16. CONFORMITY TO INDIAN STANDARDS**

- i) IS: 11313:2007 Hydraulic power sprayers- : **Does not conform in toto**  
specification
- ii) IS: 10134-1994-Method of test for manually : **Does not conform in toto**  
operated sprayer
- iii) Spray nozzle and spray gun as per IS:3652-1995 : **Does not conform in toto**  
(Reaffirmed 2011)

**17. COMMENTS & RECOMMENDATIONS**

- 17.1 The year of manufacturer of sprayer is not specified. It should be specified.
- 17.2 The battery charger make, model and country of origin is not specified. It should be specified
- 17.3 The motor serial number and speed is not specified. It should be specified.
- 17.4 The country of origin of pump is not specified. It should be specified.
- 17.5 The manufacturer's name or recognized trade mark, type of cut-off device and batch or code number of cut off device is not marked. It **MUST** be looked into.
- 17.6 The strainer in nozzle is not provided. It may be considering for providing.
- 17.7 The volumetric efficiency of pump does not meet the requirement of Indian Standard. It **MUST** be improved.
- 17.8 Agitator is not provided. It may be provided.
- 17.9 The strap cushion thickness does not meet the requirement of Indian Standard. It may be looked into.
- 17.10 Time required to full charge the battery with AC charger is observed as 8 to 9 hours.
- 17.11 The spraying operation time after fully charging the battery was observed as 6 to 7 hours.
- 17.12 The discharge rate of nozzle for fine cone spray pattern does not meet the requirement of Indian Standard. It **MUST** be looked into.
- 17.13 During the strap drop test the buckle/bracket of strap assembly found failed to hold the strap in it's position. It should be improved.
- 17.14 The strap width does not meet the requirement of Indian Standard. It **MUST** be looked into.
- 17.15 The country of origin of battery is not specified. It should be specified.
- 17.16 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.
- 17.17 The manufacturer name or recognized trade mark, batch or code number and designation of nozzle is not marked. It **MUST** be looked into.
- 17.18 The strainer area of cut-off device does not meet the requirement of Indian Standard. It **MUST** be looked into.
- 17.19 The discharge outlet nipple length does not meet the requirement of Indian Standard. It **MUST** be looked into.

17.20 A suitable labeling plate (Not Sticker) needs to be provided with "interalia" following information.

- i) Manufacturer's name
- ii) Make
- iii) Model
- iv) Month & year of manufacturer
- v) Rated speed
- vi) Rated pressure
- vii) Discharge rate
- viii) Power rating
- ix) Country of origin


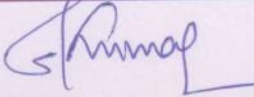
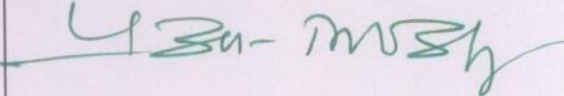
### 18. TECHNICAL LITERATURE

The following literature provided with sprayer for guidance to the user.

- i. User Manual
- ii. Product catalogue

The user's manual of sprayer needs to be updated as per IS: 8132-1999

### TESTING AUTHORITY

MAAN SINGH SENIOR TECHNICAL ASSISTANT	
SANJAY KUMAR AGRICULTURAL ENGINEER	
P. K. PANDEY DIRECTOR	

### 19. APPLICANT'S COMMENTS

Para No.	Our Reference	Applicant's Comments
19.1	17.1, 17.2, 17.3, 17.4, 17.5, 17.15, 17.16 & 17.20	We will ensure that it will be specified in future production.
19.2	17.6, 17.8	We will ensure that it will be provided in future production.
19.3	17.13, 17.7, 17.12, 17.18 & 17.19	We will put up this issue with principal manufacturer to meet specified standards.
19.4	18	User manual will be updated as per specified standards.

