

व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ No.: PS-380/2274/2019
माह/Month : February, 2019

THIS TEST REPORT VALID UP TO : 28th FEBRUARY, 2024



**ASPEE V-DYUT DELUX (VBD/09)
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

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[ISO 9001:2015 CERTIFIED]

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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	Plastic	Conforms
	Cushion	Foam, rubber, foam 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	Conforms

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

1. Date of test : 17.01.2019
 2. Atmospheric conditions :
 a) Temperature : 18.4 °C
 b) Relative humidity : 55.5%
 c) Pressure : 99.1 kPa

3. Data recorded

Speed of Pump (rpm)	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)
2730	1	1	2240	NIL	2250.0	2250.0
		2	2260			
		3	2240			
		4	2260			
2606	2	1	1690	NIL	1687.5	1687.5
		2	1660			
		3	1700			
		4	1700			
2591	3	1	1350	NIL	1377.5	1377.5
		2	1370			
		3	1390			
		4	1400			
2527	4	1	1000	NIL	1000.0	1000.0
		2	1000			
		3	1000			
		4	1000			

Minimum discharge rate = 1000 ml/min at 4 kg/cm²
 Maximum discharge rate = 2250 ml/min at 1 kg/cm²
 Discharge at rated pressure = 1377.5 ml/min at 3 kg/cm²

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

Rated pressure, kg/cm ²	:	3
Avg. discharge of water at rated pressure, l/min	:	1.3775
Avg. discharge of water at no-load, l/min	:	3.075
Avg. pump speed at no-load, rev/min	:	3123
Avg. pump speed at rated pressure, rev/min	:	2591
Volumetric efficiency of pump, %	:	54

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)

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	:	0.85 A
3. Avg. current drawn by motor at load	:	2.06 A
4. Avg. motor operating voltage	:	12.55 V
5. Avg. observed motor power requirement	:	25.88 watt
6. Avg. motor speed at no load	:	3122 rpm
7. Avg. motor speed at load	:	2590 rpm
8. Avg. time required for fully discharge of battery	:	7.5 to 8.5 h
9. Avg. No load rpm of motor after 6 hours of operation	:	2006 rpm

6. PRESSURE ADJUSTMENT TEST

1. Date of test	:	17.01.2019
2. Atmospheric conditions:-		
a. Temperature	:	18.4 °C
b. Relative humidity	:	55.5 %
c. Pressure	:	99.1 kPa
3. Data recorded	:	

S. No.	Working pressure (kg/cm ²)	Fluctuation range (kg/cm ²)	Pressure drop (kg/cm ²)	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	:	16.01.2019
Type	:	Gooseneck (Type-B2)

Cl.7.3.3 Agitator	Agitator may be provided.	Not provided	Does not conform
Cl.7.3.5	Each spray shall be provided with a set of mask, hand gloves and safety goggles.	Safety goggles, mask and hand gloves are provided.	Conforms
Cl.8 Workmanship & Finish	The components of the sprayer shall have a smooth finish and shall be free from pits burrs, sharp edges and other defects that may be detrimental for their use.	Satisfactory	Conforms
Cl. 8.2	The exposed mild steel parts shall have a protective coating to prevent surface deterioration. The steel used for hose ferrule/clip shall be plated with cadmium, zinc or nickel exposed brass parts may be given a suitable protective finish with clear transparent lacquer.	Metallic part is coated with enamel paint.	Conforms
Cl. 9 Marking & Packing	Each sprayer shall be marked with the following particulars		
Cl. 9.1 Marking	a) Manufacturer's name or recognized trade mark	ASPEE V-DYUT DELUX VBD/09	Conforms
	b) Batch or Serial No.	000001	Conforms
	c) Tank nominal capacity	16 lit	Conforms
Cl.9.3 IS:3906-1995 Packing	Each sprayer shall be packed as agreed to between the purchase and the supplier for safe handling in transit.		

15. 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 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**
- iv) IS: 2643-2005-Pipe threads where pressure-tight joint are not made on the threads-dimensions, tolerance and designation : **Does not conform in toto**

16. COMMENTS & RECOMMENDATIONS

- 16.1 The make, model and country of origin of battery charger is not specified. It should be specified.
- 16.2 Pump Model, Serial No. and country of origin is not marked. It should be marked.
- 16.3 Motor max current and speed is not specified. It should be specified.
- 16.4 The strainer in nozzle is not provided. It may be provided.
- 16.5 The volumetric efficiency of pump does not meet the requirement of Indian Standard. It **MUST** be improved.

- 16.6 The average size of strainer of cut off device does not meet the requirement of Indian Standard. It **MUST** be looked into.
- 16.7 Agitator is not provided. It may be provided.
- 16.8 The discharge rate of nozzle for fine cone spray pattern as a pressure of 300 kPa does not conform to the requirement of IS : 3652-1995. It **MUST** be looked into.
- 16.9 The strap cushion thickness does not meet the requirement of Indian Standard. It may be looked into.
- 16.10 The spray angle for fine cone spray pattern of nozzle at a pressure of 300 kPa does not conform to the requirement of IS : 3562-1995.
- 16.11 The current drawn by motor at no load and on load was observed as 0.85A and 2.06 A respectively which does not conform to requirement of IS- 14459: 1997.
- 16.12 Time required to full charge the battery with AC charger is observed as 7.5 to 8 hours.
- 16.13 The spraying operation time after fully charging the battery was observed as 7.5 to 8 hours.
- 16.14 During the pump chamber hydraulic test the motor stopped beyond 5.5 kg/cm² pressure against the pressure requirement of 7.5 kg/cm² and the test could not be conducted. This **MUST** be looked into and improved.
- 16.15 The back rest cushion are not provided with sprayer. It may be provided.
- 16.16 The leakage was observed through the valve of cut off device during test of leakage and reliability test for cut off device. It **MUST** be looked into for necessary action.
- 16.17 The variation of discharge rate of pump does not meet the requirement of IS : 11313:2007. It **MUST** be looked into.
- 16.18 The dimension of metallic threaded connection does not conform to the requirement of relevant/code standard. It **MUST** be looked into.
- 16.19 During the strap drop test the buckle/bracket of strap assembly found failed to hold the strap in its position. It should be improved.
- 16.20 The percentage variation in discharge rate of fine cone spray pattern does not within limit specified by the relevant code/Standard. It **MUST** be looked into.
- 16.21 The material of pump inlet port end fitting does not meet the requirement of Indian Standard. It should be improved.
- 16.22 No necessary tools are provided with sprayer. It **MUST** be provided.
- 16.23 A suitable labeling plate (not sticker) needs to be provided with ,inter alia ,following information:-
- Manufacturer's name
 - Make
 - Model
 - Month & year of manufacture
 - Rated speed
 - Rated pressure
 - Discharge rate
 - Power rating
 - Country of origin



16.24 Safety provision/Safety wear

- i) Safety instruction regarding handling poisonous agro-chemical before, during and after spraying operation should be provided on sprayer.

17. TECHNICAL LITERATURE

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

- i) Operator's manual with part's catalogue.

The operator instruction manual of sprayer needs to be updated as per IS : 8132 -1999.

TESTING AUTHORITY

R. K. NEMA SENIOR AGRICULTURAL ENGINEER	<i>Ren</i>
P. K. PANDEY DIRECTOR	<i>U3n-Im8y</i>

18. APPLICANT'S COMMENTS

Para No	Our reference	Applicant's comments
18.1	16.1,16.3	Will specify.
18.2	16.5,16.6,16.8,16.10, 16.14,16.16,16.19,16.20	We will improve.
18.3	16.11	Noted.
18.4	16.23	We will provide stickers providing complete information.
18.5	16.24	We will provide.

