

व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ No.: PS-391/2309/2019
माह/Month : April, 2019

THIS TEST REPORT VALID UP TO : 30th APRIL, 2024



**YAD AGROMA, HUNTER i7-HTRB2
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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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	Steel	Conforms
	Cushion	Foam, rubber, foam plastic	NA	--
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 : 02.04.2019
2. Atmospheric conditions :
 - a) Temperature : 28 °C
 - b) Relative humidity : 52 %
 - 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)
3594	1	1	3000	NIL	2997.5	2997.5
		2	2980			
		3	2990			
		4	3020			
3524	2	1	2570	NIL	2575.0	2575.0
		2	2600			
		3	2550			
		4	2580			
3469	3	1	2100	NIL	2042.5	2042.5
		2	2050			
		3	2000			
		4	2020			
3445	4	1	1570	NIL	1557.5	1557.5
		2	1520			
		3	1550			
		4	1590			

Minimum discharge rate = 1557.5 ml/min at 4 kg/cm²
 Maximum discharge rate = 2997.5 ml/min at 1 kg/cm²
 Discharge at rated pressure = 2042.5 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	:	2.0425
Avg. discharge of water at no-load, l/min	:	3.3825
Avg. pump speed at no-load, rev/min	:	3737
Avg. pump speed at rated pressure, rev/min	:	3469
Volumetric efficiency of pump, %	:	65

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	:	0.95 A
3. Avg. current drawn by motor at load	:	2.00 A
4. Avg. motor operating voltage	:	12.69 V
5. Avg. observed motor power requirement	:	25.33 watt
6. Avg. motor speed at no load	:	3733 rpm
7. Avg. motor speed at load	:	3466 rpm
8. Avg. time required for fully discharge of battery	:	7.0 to 7.5 h
9. Avg. No load rpm of motor after 5 hours of operation	:	1448 rpm

6. PRESSURE ADJUSTMENT TEST

1. Date of test : 02.04.2019
2. Atmospheric conditions:-
 - a. Temperature : 28 °C
 - b. Relative humidity : 52 %
 - 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

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 Cl. 9.1 Marking	Each sprayer shall be marked with the following particulars		
	a) Manufacturer's name or recognized trade mark	AV AGROMA HUNTER i7	Conforms
	b) Batch or Serial No.	Not marked	Does not conform
	c) Tank nominal capacity	Marked	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 : **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)
- iv) IS: 2643-2005-Pipe threads where pressure-tight : **Does not conform in toto** joint are not made on the threads-dimensions, tolerance and designation

16. COMMENTS & RECOMMENDATIONS

- 16.1 The batch or serial number of sprayer is not specified. It **MUST** be specified.
- 16.2 The make, model and country of origin of battery charger is not specified. It should be specified.
- 16.3 Pump Model and country of origin is not marked. It should be marked.
- 16.4 Motor max current and speed is not specified. It should be specified.
- 16.5 The strainer in nozzle is not provided. It should be provided.
- 16.6 The volumetric efficiency of pump does not meet the requirement of Indian Standard. It **MUST** be improved.
- 16.7 The average size of strainer of filling hole does not meet the requirement of relevant code/Standard. It **MUST** be looked into.
- 16.8 The average size of strainer of cut off device does not meet the requirement of Indian Standard. It **MUST** be looked into.
- 16.9 Agitator is not provided. It may be provided.

- 16.11 The strap cushion thickness does not meet the requirement of Indian Standard. It **MUST** be looked into.
- 16.12 The spray nozzle is not designated and marked by its identification mark. The identification mark as specified by relevant Indian Standard. It **MUST** be provided.
- 16.13 The batch or code number on nozzle is not provided. It **MUST** be looked into.
- 16.14 Manufacturer's name or recognized trade mark and nominal length on spray lance is not marked. It **MUST** be marked.
- 16.15 The cut off device manufacturer's name or recognized trade mark and batch or code number is not provided. It **MUST** be provided.
- 16.16 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.
- 16.17 The current drawn by motor at no load and on load was observed as 0.95A and 2.0 A respectively which does not conform to requirement of IS- 14459: 1997.
- 16.18 Time required to full charge the battery with AC charger is observed as 7 to 7.5 hours.
- 16.19 The spraying operation time after fully charging the battery was observed as 5.0 to 5.5 hours.
- 16.20 During the pump chamber hydraulic test the motor stopped beyond 6.0 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.
- 16.21 The back rest cushion is not provided with sprayer. It **MUST** be provided.
- 16.22 The length of spray lance does not meet the requirement of IS : 3652-1995. It **MUST** be looked into.
- 16.23 The dimension of metallic threaded connection does not conform to the requirement of relevant/code standard. It **MUST** be looked into.
- 16.24 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.
- 16.25 The material of pump inlet port end fitting does not meet the requirement of Indian Standard. It should be improved.
- 16.26 The length of operating trigger does not meet to requirement of relevant code/Standard. It **MUST** be looked into.
- 16.27 No necessary tools are provided with sprayer. It **MUST** be provided.
- 16.28 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



16.29 Safety provision/Safety wear

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

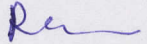
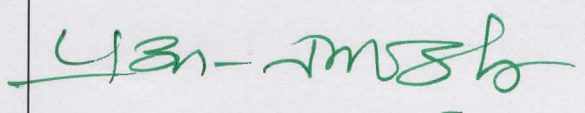
17. TECHNICAL LITERATURE

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

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

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

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	16.2,16.3,16.4,16.9, 16.13,	Will be provided.
18.2	16.6,16.17	We will improve.
18.3	16.7, 16.8,16.11	Will be maintain in future as per Indian Standard.
18.4	16.10	We will maintain.
18.5	16.12	We will mark in future.
18.6	16.14	Will be provided in future.
18.7	16.15,16.21	We will provide.
18.8	16.20	We will improve pump quality.
18.9	16.22	We will provide as per Indian Standard.
18.10	16.23	We will take corrective action.
18.11	16.24	We will improve bracket quality.
18.12	16.25,16.26	We will make corrective changes.
18.13	16.27	We will provide necessary tools.
18.14	16.28	We will provide labeling plate.

