व्यावसायिक परीक्षण रिपोर्ट

COMMERCIAL TEST REPORT

संख्या/ **No.: PS-334/2145/2018**

माह/**Month : April, 2018**

BATTERY CUM HAND OPERATED KNAPSACK SPRAYER VIJAY KRUSHI, VKA 18C-2 AIRAVAT

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

ट्रैक्टर नगर, सिरसा रोड, हिसार, (हरियाणा) - 125 001

Tractor Nagar, Sirsa Road, HISAR (Haryana)-125 001

[ISO 9001:2015 CERTIFIED]

Website: http://nrfmtti.gov.in/

E-mail: fmti-nr@nic.in

Tele./FAX: 01662-276984

3. RUNNING – IN

Though the applicant has not recommended running-in, with the consent of the applicant the running-in of the sprayer was conducted for one hour in order to overcome variation in initial performance. Lubrication and the adjustment of the components were done as per applicant's recommendation.

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

1. Date of test : 16.01.2018
2. Atmospheric conditions :-
   a) Temperature : 23 °C
   b) Relative humidity :45 %
   c) Pressure : 99.0 kPa

3. Data recorded

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)
2952	1.0	1	2430	NIL	2425.0	2425.0
		2	2410			
		3	2440			
		4	2420			
2788	2.0	1	2080	NIL	2055.0	2055.0
		2	2050			
		3	2030			
		4	2060			
2668	3.0	1	1750	NIL	1745.0	1745.0
		2	1730			
		3	1740			
		4	1760			
2643	4.0	1	1490	NIL	1475.0	1475.0
		2	1480			
		3	1460			
		4	1470			

Minimum discharge rate = 1475.0 ml/min at 4.0 kg/cm^2
Maximum discharge rate = 2425.0 ml/min at 2 kg/cm^2
Discharge at rated pressure = 1745.0 ml/min at 3.0 kg/cm^2

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

Date of test	:	17.01.2018
Rated pressure, kg/cm^2	:	3 kg/cm2
Avg. discharge of water at rated pressure, l/min	:	1.750
Avg. discharge of water at no load, l/min	:	2.957
Avg. pump speed at no load, rev/min	:	3132
Avg. pump speed at rated pressure, rev/min	:	2667
Volumetric efficiency of pump, %	:	70 %

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

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

The 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	:	0.78A
3. Avg. current drawn by motor at load	:	1.64A
4. Avg. motor operating voltage	:	12.72V
5. Avg. observed motor power requirement	:	20.81Watt
6. Avg. motor speed at no load	:	3132 rpm
7. Avg. motor speed at on load	:	2643
8. Avg. Time required for fully discharge of battery	:	8.0 to 8.3 Hour
9. Avg. No load rpm of motor after 6 hours of Operation	:	2000 rpm

7. PRESSURE ADJUSTMENT TEST
(Vide Clause 8.7.1 of IS – 11313 : 2007)

1. Date of test : 16.02.2018
2. Atmospheric conditions :
   a. Temperature : 23 °C
   b. Relative humidity : 45 %
   c. Pressure : 99.0 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 of pressure: Yes

25. CONFORMITY TO INDIAN STANDARDS

i)	IS: 11313:2007 Hydraulic power sprayers-specification	:	**Does not conform in toto**
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**
vi)	IS: 2643-2005-Pipe threads where pressure-tight joint are not made on the threads-dimensions, tolerance and designation	:	**Does not conform in toto**

26. COMMENTS & RECOMMENDATIONS

26.1 The sprayer year of manufacture is not marked. It should be marked.

26.2 The battery model and country of origin is not specified. It should be specified.

26.3 The serial number, motor power and rated speed of motor is not specified. It should be specified.

26.4 The Serial number and country of origin of pump is not specified. It should be specified.

26.5 The material used for spray nozzles does not meet the requirements of Indian Standard. It **MUST** be looked into.

26.6 The dimension of straps does not meet the requirements of Indian Standard. It **MUST** be looked into.

26.7 The material used for pump inlet port end fitting does not meet the requirements of Indian standard. It **MUST** be looked into.

26.8 During the strap drop test the buckle/bracket of strap assembly found failed to hold the strap in its position. It should be provided.

26.9 The batch or code number on nozzle is not provided. It **MUST** be looked into

26.10 The tank capacity of sprayer does not meet the requirement of IS : 3906-1995. It **MUST** be looked into.

26.11 The length of discharge outlet does not meet the requirements of Indian standard. It **MUST** be looked into.

26.12 The strap cushion thickness does not meet the requirement of Indian standard. It **MUST** be looked into.

26.13 The lance is not marked with batch or code number. It **MUST** be marked

26.14 The material used for handle and operating level does not meet the requirement of Indian standard. It **MUST** be looked into.

26.15 The cut off device is not marked. It must be marked.

26.16 The strainer in nozzle is not provided. It should be provided.

26.17 Agitator is not provided in sprayer. It may be provided.

26.18 The batch or code number and type of cut-off device is not marked. It should be marked.

26.19 Time required to full charge battery with AC charger is observed as 8.0 to 8.3 hours.

26.20 The spraying operation time after fully charging the battery was observed as 7.4 to 7.5 hours.

26.21 The current drawn by motor at no load and on load was observed 0.78 to 1.64 Amp respectively which does not conform to requirement of IS : 14459 : 1997.

26.22 The volumetric efficiency of sprayer on battery operated mode was observed as 70 %, which is not within the requirement of the relevant Indian Standard.

26.23 The sprayer does not conform to the relevant standard in toto. It **MUST** be looked into.

26.24 The nozzle is not marked. It should be marked.

26.25 During the pump chamber hydraulic test the motor stopped beyond 5.0 kg/cm^2 pressure against the pressure requirement of 7.5 kg/cm^2. Thus the sprayer does not meet the requirement of Indian Standard.

26.26 The operating lever of sprayer distorted during test. It should be examined & improved.

26.27 A suitable labelling 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

26.28 The tank capacity of sprayer does not meet the requirement of Indian Standard. It **MUST** be looked into.