व्यावसायिक परीक्षण रिपोर्ट

COMMERCIAL TEST REPORT

संख्या/ **No.: PS-270/1955/2016**

माह/**Month : October, 2016**

GREEN KING GK-16 EL
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

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

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

[ISO 9001:2008 COMPLIANT INSTITUTION]

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

E-mail: fmti-nr@nic.in

Tele./FAX: 01662-276984

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

1. Date of test : 19.10.2016
2. Atmospheric conditions :
   a) Temperature : 31° C
   b) Relative humidity : 30 %
   c) Pressure : 734.5 mm of Hg

As there is no pressure regulator provided on a sprayer, the discharge rate of the pump could not be ascertained as per clause 8.3 of IS:11313-2007 however , the discharge rate of pump was measured between minimum pressure of 50 kPa & maximum pressure of 500 kPa as per clause 8.3 of IS:11313-2007, on the test bench.

3. Data recorded

Speed of Pump (rpm)	Working pressure (kPa)	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)
2573	500	1	1080	NIL	1078	1078
		2	1070			
		3	1080			
		4	1080			
2624	350	1	1445	NIL	1447	1447
		2	1450			
		3	1440			
		4	1450			
2745	200	1	1910	NIL	1902	1902
		2	1900			
		3	1895			
		4	1900			
2985	50	1	2600	NIL	2607	2607
		2	2610			
		3	2610			
		4	2605			

Minimum discharge rate = 1078 ml/min at 500 kPa
Maximum discharge rate = 2607 ml/min at 50 kPa

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

As applicant has not specified the rated pressure and rated speed of pump, hence volumetric efficiency could not be ascertained, as per the requirement of relevant code.

However, volumetric efficiency, **so to speak,** was found to be 92.6 % & 44.5 % at 50 kPa and at 500 kPa pressure respectively. Hence the **Volumetric Efficiency was not found as much as required by the code, throughout the range of pressure.**

16. COMMENTS & RECOMMENDATIONS

16.1 Sprayer batch/ serial number, year of manufacturer and working pressure is not specified. It should be specified.

16.2 The motor make, serial number and speed is not specified. It should be specified.

16.3 Battery make and serial number is not specified. It should be specified.

16.4 Battery charger make, model and country of origin is not specified. It should be specified.

16.5 Pump make, model, serial number, working pressure, rated pressure, rated speed and country of origin is not specified. It should be specified.

16.6 The width of strap is not as per Indian Standard.

16.7 The spray nozzle is not designated and marked by its identification mark. The identification mark as specified by relevant Indian Standard, needs to be provided.

16.8 The cut off device and spray lance marked by providing sticker. Printed or engraved marking may be provided.

16.9 As applicant has not specified the rated pressure and rated speed of pump, hence volumetric efficiency could not be ascertained. As per the requirement of relevant code. In order to facilitate the testing in the true letter and spirit, this needs to be declared.

16.10 As the applicant has not specified the specific speed for sprayer operation, the power requirement cannot be ascertained. In order to facilitate the testing in the true letter and spirit, this needs to be declared.

16.11 As the discharge rate of nozzle at a pressure of 300 kPa was not declared by the applicant, the conformity of discharge to Cl F 3.1 of Annexure F of IS 3652-1995 could not be ascertained. In order to facilitate the testing in the true letter and spirit, this needs to be declared.

16.12 As the spray angle of nozzle at a pressure of 300 kPa was not declared by the applicant, the conformity of discharge to Cl F 3.2 of Annexure F of IS 3652-1995 could not be ascertained. In order to facilitate the testing in the true letter and spirit, this needs to be declared.

16.13 Threaded connections provided on sprayer does not meet the requirements of Indian Standard. It should be looked into.

16.14 Discharge out let nipple and tube length does not meet the requirements of Indian Standard. It should be looked into.

16.15 The Strainer in cut off device is not provided. It should be provided.

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

16.17 Agitator is not provided. It should be provided.

16.18 Battery charger country of origin is not specified by applicant. It should be specified on charger.

16.19 The discharge rate of sprayer is drastically lower than the declaration. It should be looked into.

16.20 The cushion provided on sprayer does not meet the requirements of Indian Standard. It should be improved.

16.21 The current drawn by motor at no load and on load was observes as 0.5 and 1.5 A respectively which does not conform to requirement of IS:14459- 1997.

16.22 The volumetric efficiency of sprayer, though truly unascertainable for the want of required declaration, was observed less than 80%, at 50 kPa pressure which needs to be examined.

16.23 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

16.24 Safety provisions/safety wear

i) The accessories viz mask, hand gloves and safety goggles for operator's safety are provided with sprayer.

ii) The safety instructions regarding handling of poisonous chemicals & first aid should be provided in operator's manual.

17. TECHNICAL LITERATURE

A leaflet is provided with the sprayer during test, **which is not found adequate**. It is recommended to develop the operator's manual as per IS:8132-1999. Service manual and spare part catalogue should also be brought out for guidance of user.

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	16.1-16.5, 16.18, 16.23, 16.24 (ii)	We will take the necessary action towards the same.
18.2	16.6-16.8, 16.13-16.16, 16.23	We will intimate the same to the manufacturer to take the necessary action towards the same.