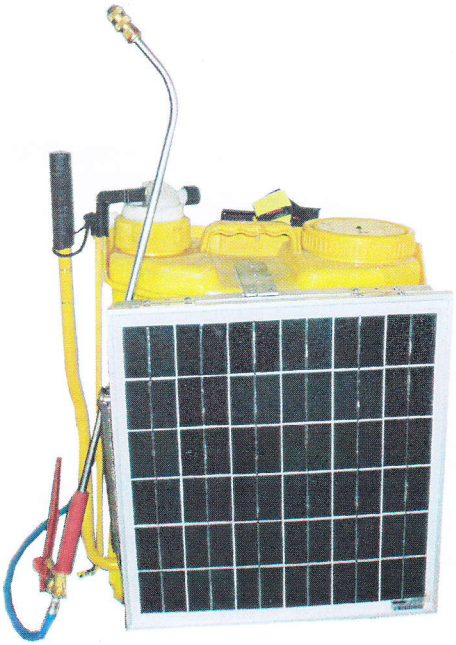
व्यावसायिक परीक्षण रिपोर्ट

COMMERCIAL TEST REPORT

संख्या/ **No.: PS-275/1999/2017**

माह/**Month : April, 2017**



SHAKTI SBS-620
BATTERY OPERATED KNAPSACK SPRAYER (FITTED WITH SOLAR PANEL) CUM MANUALLY OPERATED

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

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

1. Date of test : 18.02.2017
2. Atmospheric conditions :
   a) Temperature : 23° C
   b) Relative humidity : 71 %
   c) Pressure : 99.3 kPa
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)
3020	100	1	2510	NIL	2507.5	2507.5
		2	2500			
		3	2520			
		4	2500			
2872	200	1	2160	NIL	2192.5	2192.5
		2	2210			
		3	2200			
		4	2200			
2806	300	1	1500	NIL	1497.5	1497.5
		2	1500			
		3	1490			
		4	1500			
2760	400	1	1160	NIL	1165.0	1165.0
		2	1170			
		3	1170			
		4	1160			
2232	450	1	920	NIL	907.5	907.5
		2	900			
		3	910			
		4	900			

Minimum discharge rate = 907.5 ml/min at 450 kPa
Maximum discharge rate = 2507.5 ml/min at 100 kPa
Discharge at rated pressure = 1165 ml/min at 400 kPa

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

Rated pressure, kg/cm^2 : 4
Discharge of water at rated pressure, l/min : 1.165
Discharge of water at no-load, l/min : 2.723
Pump speed at no-load, rev/min : 3155
Pump speed at rated pressure, rev/min : 2760
Volumetric efficiency of pump, % : 48.90

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

24. 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**

25. COMMENTS & RECOMMENDATIONS

25.1 The serial number of sprayer is not marked. It should be marked.

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

25.3 The battery serial number, model and country of origin is not specified. It should be specified.

25.4 Battery charger country of origin is not marked. It should be marked.

25.5 Solar panel for battery charging model and serial number is not specified. It should be specified.

25.6 Pump country of origin is not specified. It should be specified.

25.7 The material of pump inlet port end fitting does not conform to the requirements of Indian Standard. It should be looked into.

25.8 The discharge rate of nozzle at pressure of 300 kPa for jet spray pattern does not conform to the requirement of IS: 3652:1995.

25.9 The dimension of straps does not meet the requirements of Indian Standard.

25.10 The lance batch or code number is not marked. It should be marked.

25.11 The strainer is not provided in cut-off device. It may be provided.

25.12 The trigger actuation force is observed more than as defined in Indian Standard. It should be examined & improved.

25.13 The nozzle designation does not meet the requirement of Indian Standard. It should be improved.

25.14 The nozzle is not marked as batch or code number. It should be marked.

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

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

25.17 The cut-off device batch or code number is not marked. It should be marked.

25.18 Time required to full charge battery with AC charger is observed as 8 to 9 hours.

25.19 The spraying operation time after fully charging with electric charger was observed as 6.5 to 7 hours.

25.20 The volumetric efficiency of sprayer on battery operated mode does not conform to the requirement of IS: 11313:2007.

25.21 Time required to full charge of battery with solar plate was observed as 13 to 14 h.

25.22 The current drawn by motor at no load and on load was observed as 0.8 A and 1.5 A respectively which does not conform to requirement of IS: 14459-1997.

25.23 The sprayer does not conform to the relevant standard in toto. It should be looked into.

25.24 The delivery of hose length is not as per Indian Standard. It should be looked into.

25.25 The metallic threaded connection provided on sprayer does not meet the requirement of Indian Standard. It should be looked into.

25.26 During the pump chamber hydraulic test the motor stopped at 6.0 kg/cm^2 pressure against the pressure requirement of 10 kg/cm^2 and the test could not be conducted. This should be looked into and improved.

25.27 The strap cushion thickness is not as per Indian Standard. It should be looked into.

25.28 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