व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ **No.: PS-368/2252/2018**
माह/**Month : December, 2018**

THIS TEST REPORT VALID UP TO : 31st DECEMBER, 2025

KISAN SHAKTHI KS-899H, ENGINE 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
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[ISO 9001:2015 CERTIFIED]

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3. TEST FOR DISCHARGE RATE OF PUMP
[vide Clause 8.3 of IS- 11313: 2007]

1. Date of test : 07.12.2018
2. Atmospheric conditions :
   a) Temperature : 24° C
   b) Relative humidity : 50 %
   c) Pressure : 98.9 kPa
3. Data recorded

Speed of engine (rpm)	Working pressure (kg/cm^2)	Test No.	Delivery from the discharge line (ml/min)	Overflow (ml/min)	Average delivery from the discharge line (ml/min)	Discharge rate of pump (ml/min)	Hydraulic Power (kW)
6955	5	1	7230	NIL	7242.5	7242.5	0.06
		2	7280				
		3	7200				
		4	7260				
6645	10	1	6950	NIL	6902.5	6902.5	0.11
		2	6930				
		3	6830				
		4	6900				
6348	15	1	6580	NIL	6582.5	6582.5	0.16
		2	6570				
		3	6580				
		4	6600				
6133	20	1	6210	NIL	6242.5	6242.5	0.20
		2	6230				
		3	6280				
		4	6250				

Minimum discharge rate = 6242.5 ml/min at 20 kg/cm^2
Maximum discharge rate = 7242.5 ml/min at 5 kg/cm^2
Discharge at rated pressure = 6902.5 ml/min at 10 kg/cm^2

4. TEST FOR VOLUMETRIC EFFICIENCY OF PUMP
[vide clause 8.4 of IS: 11313-2007]

Rated pressure, kg/cm^2 : 10
Engine speed corresponding to rated pressure (rpm) : 6645
Theoretical cubic capacity of pump, ml : 7372.8
Actual volume at rated pressure, ml : 6902.5
Volumetric efficiency, % : 94

16. COMMENTS AND RECOMMENDATIONS

16.1 The sprayer serial number is not specified. It **MUST** be specified.

16.2 The sprayer year of manufacture is not specified . It should be specified.

16.3 The spray gun is not designated and marked by identification mark. The identification mark as specified by relevant Indian Standard, **MUST** be provided.

16.4 The pump make, model manufacturing year, Country of origin is not specified. It **MUST** be specified.

16.5 The spray nozzle is not designated and marked by its identification mark. The identification mark as specified by relevant Indian Standard, **MUST** be provided.

16.6 The strainer in nozzle is not provided. It may be considered for providing.

16.7 The manufacture's name or recognized trade mark and batch or code number on nozzle is not provided. It **MUST** be provided.

16.8 The spray gun manufacturer's name or recognized trade mark & batch or code number is not marked on gun. It **MUST** be marked.

16.9 The material of pump inlet port end fitting does not meet the requirement of IS-11313-2007. It **MUST** be looked into.

16.10 The discharge rate for fine cone spray pattern and jet spray pattern of spray gun at the pressure of 600 kPa does not conform to the requirement of IS: 3652:1995. It **MUST** be looked into for appropriate improvement.

16.11 The discharge rate for fine cone spray pattern and jet spray pattern of nozzle at a pressure of 300 kPa does not conform to the requirement of IS: 3652-1995. It **MUST** be looked into.

16.12 The thickness of the wall of the barrel of gun does not meet the requirement of relevant Indian Standard. It **MUST** be looked into.

16.13 The diameter of connecting rod of gun does not meet the requirement of Indian Standard. It **MUST** be looked into.

16.14 Suction strainer aperture size does not meet the requirement relevant Indian Standard. It **MUST** be looked into.

16.15 Percentage variation of discharge for fine cone spray pattern was not within limit specified by the relevant Indian Standard.

16.16 The spray angle for fine cone spray pattern of nozzle at a pressure of 300 kPa does not conform to requirement of IS : 3652-1995. It **MUST** be looked into.

16.17 At rated pressure of 10 Kg/cm^2 the pump discharge was observed as 6902.5 ml/min. against the minimum requirement of 8000 ml/min. This must be examined.

16.18 At the rated pressure of 10 kg/cm^2 , the engine speed dropped up to 6645 rpm against the rated engine speed of 7000 rpm. This **MUST** be looked into for necessary action.

16.19 The pressure gauge with full scale reading 120 bar is provided, thus it does not conform to requirement of IS: 11313-2007. It **MUST** be looked into.

16.20 Though a pressure regulator provided but that was not in working condition therefore its conformity to IS: 11313-2007 could not be ascertained. It **MUST** be looked into for corrective action.

16.21 A suitable labeling 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 of engine
ix. SFC of engine

16.22 Safety provision/safety wear

i) Safety instructions regarding handling poisonous agro-chemicals before, during and after spraying operations should be provided on sprayer.

17. TECHNICAL LITERATURE

The following literatures are provided with sprayer for guidance to the user.

i) Operator's instruction manual and parts catalogue of sprayer.

The following literature MUST be provided with the sprayer :-

i) Parts catalogue of engine.
ii) Service manual of engine.

The operator 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	16.1 to 16.19	Now we are following these points at the time of manufacturing
18.2	16.20	Now we are providing safety wear at the time of delivery of sprayers to farmers along with the packing.