

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



**KISAN SHAKTHI KS-708, ENGINE 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

Northern Region Farm Machinery Training and Testing Institute

ट्रेक्टर 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

xii)	Gasket	Rubber, PVC, fiber	PVC	Conforms
xiii)	Spray nozzles	Brass, stainless steel	Brass	Conforms
xiv)	Spray boom	Mild steel, Galvanized, iron Braided rubber	N.A.	--
xv)	Hose	Synthetic rubber, P.V.C	PVC	Conforms
xvi)	Tank	Galvanized iron, Brass, Fiber glass reinforced plastics, plastics	Plastic	Conforms
xvii)	Pipe for agitator	Galvanized iron, Brass, PVC	PVC	Conforms
xviii)	Piston (bucket) screw	Brass, stainless steel	Not applicable	--
xix)	Crank case	Aluminum alloy	Not applicable	--
xx)	Roller pump body	Nickel resistant cast iron	Not applicable	--
xxi)	Roller pump and plate	Nickel resistant cast iron	Not applicable	--
xxii)	Roller pump rotor	Nickel resistant cast iron	Not applicable	--
xxiii)	Piston pump crank shaft	Carbon steel	A quadrant gear driven by drive shaft of gear box mounted on plunger rod.	--
xxiv)	Pump inlet port end fitting	Brass	Aluminum	Does not conform
xxv)	Piston rod guide	Brass, Aluminum alloy, Gunmetal, Nylon	Not applicable	--
xxvi)	Connecting rod	Carbon steel	N.A.	--
xxvii)	Gudgeon pin	Carbon steel	N.A.	--
xxviii)	Big end bearing	Steel coated with tin base white metal	Not applicable	--
xxix)	Small end bush	Gunmetal	Not applicable	--
xxx)	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.		Not declared	Does not conform

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)
6585	12	1	6720	NIL	6707.5	6707.5	0.13
		2	6680				
		3	6720				
		4	6710				
6565	13	1	6640	NIL	6657.5	6657.5	0.14
		2	6660				
		3	6660				
		4	6670				
6513	14	1	6550	NIL	6560.0	6560.0	0.14
		2	6560				
		3	6560				
		4	6570				
6438	15	1	6510	NIL	6457.5	6457.5	0.16
		2	6460				
		3	6450				
		4	6410				

Minimum discharge rate = 6457.5 ml/min at 15 kg/cm²
Maximum discharge rate = 6707.5 ml/min at 12 kg/cm²
Discharge at rated pressure = 6457.5 ml/min at 15 kg/cm²

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

Rated pressure, kg/cm² : 15
 Engine speed corresponding to rated pressure (rpm) : 6438
 Theoretical cubic capacity of pump, ml : 7349.2
 Actual volume at rated pressure, ml : 6457.5
 Volumetric efficiency, % : 88



5. POWER REQUIREMENT

During the pump operation from minimum to maximum pressure range, the max. hydraulic power was observed as 0.16 kW against the declared net power output of engine as 0.65 kW.

6. ENGINE PERFORMANCE TEST

In pursuance of Ministry's order No. 7-23/2011-M&T (I&P) dated 20.04.2011 the engine performance test has not been conducted and the specifications/performance as specified by the applicant/ declared in the manual have been endorsed.

S.No.	Parameter		Declaration
i	Engine Type	:	Single cylinder 4 stroke air cooled spark ignition engine.
ii	Bore,(mm)	:	33
iii	Stroke (mm)	:	30
iv	Displacement,(cc)	:	26
v	Net power out put	:	0.65 kW@ 6500 rpm
vi	Max Torque	:	1.0 Nm at @ 5500 rpm

7. PRESSURE ADJUSTMENT TEST (Vide clause 8.7.1 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

S. No.	Working pressure(kg/cm ²)	Fluctuation range (kg/cm ²)	Pressure drop (kg/cm ²)	Ratio
1.	12	NIL	NIL	--
2.	13	NIL	NIL	--
3.	14	NIL	NIL	--
4.	15	NIL	NIL	--

4. Resistance of pressure: Yes

8. TEST FOR HYDRAULIC SPRAY GUN

[vide Clause 7.3(b) of IS- 11313: 2007 & Annex E of IS- 3652; 1995]

Date of test : 10.12.2018
Type of gun : Screw type

8.1 TEST FOR DISCHARGE RATE OF SPRAY GUN

The discharge rate for fine cone spray & jet spray pattern as 1650 ml/min & 2800 ml/min at the pressure of 600 kPa was declared by the applicant. The discharge rate corresponding to 600 kPa pressure was observed as under

- For fine cone spray pattern : 1632.5 ml/min
- For jet spray pattern : 3475.0 ml/min

Remarks: The discharge rate for jet spray pattern does not conform to the requirement of IS:3652:1995.

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 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 relevant Indian Standard. It **MUST** be looked into.
- 16.14 Suction strainer aperture size does not meet the requirement of relevant Indian Standard. It **MUST** be looked into.
- 16.15 At rated pressure of 15 Kg/cm² the pump discharge was observed as 6457.5 ml/min. against the minimum requirement of 8000 ml/min. This must be examined.
- 16.16 During the discharge rate test of pump at rated pressure of 15 kg/cm² , the engine speed dropped 6438 rpm against the rated engine speed of 7000 rpm. This **MUST** be looked into for necessary action.
- 16.17 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.
- 16.18 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.
- 16.19 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