

**व्यावसायिक परीक्षण रिपोर्ट**  
**COMMERCIAL TEST REPORT**

संख्या/ No.: PS-404/2326/2019

माह/Month: June, 2019

**THIS TEST REPORT VALID UP TO : 30<sup>th</sup> JUNE, 2026**



**KRISHI CRAFT KC-KPS-204**  
**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

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**3. TEST FOR DISCHARGE RATE OF PUMP**

[vide Clause 8.3 of IS- 11313: 2007]

1. Date of test : 01.06.2019

2. Atmospheric conditions :

a) Temperature : 40° C

b) Relative humidity : 20 %

c) Pressure : 97.7 kPa

3. Data recorded

Speed of engine (rpm)	Working pressure (kg/cm <sup>2</sup> )	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)
6918	8	1.	7600	NIL	7625.0	7625.0	0.10
		2.	7620				
		3.	7650				
		4.	7630				
6820	10	1.	7500	NIL	7497.5	7497.5	0.12
		2.	7480				
		3.	7460				
		4.	7550				
6745	12	1.	7320	NIL	7342.5	7342.5	0.14
		2.	7370				
		3.	7330				
		4.	7350				
6678	14	1.	7250	NIL	7240.0	7240.0	0.17
		2.	7230				
		3.	7220				
		4.	7260				

Minimum discharge rate = 7240.0 ml/min at 14 kg/cm<sup>2</sup>Maximum discharge rate = 7625.0 ml/min at 8 kg/cm<sup>2</sup>Discharge at rated pressure = 7497.5 ml/min at 10 kg/cm<sup>2</sup>**4. TEST FOR VOLUMETRIC EFFICIENCY OF PUMP**

[vide clause 8.4 of IS: 11313-2007]

Date : 06.06.2019

Rated pressure, kg/cm<sup>2</sup> : 10

Engine speed corresponding to rated pressure (rpm) : 6820

Theoretical cubic capacity of pump, ml : 7997.51

Actual volume at rated pressure, ml : 7497.50

Volumetric efficiency, % : 94



**5. POWER REQUIREMENT**

During the pump operation from minimum to maximum pressure range, the max. hydraulic power was observed as 0.17 kW against the declared net power output of engine as 0.72 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)	:	39
iii	Stroke (mm)	:	26
iv	Displacement,(cc)	:	34
v	Net power out put	:	0.72 kW@ 7000 rpm
vi	Max Torque	:	1.0 Nm at @ 5000 rpm

**7. PRESSURE ADJUSTMENT TEST**  
(Vide clause 8.7.1 of IS: 11313-2007)

1. Date of test : 01.06.2019
2. Atmospheric conditions :
  - a. Temperature : 40 °C
  - b. Relative humidity : 20 %
  - c. Pressure : 97.7 kPa
3. Data recorded

S. No.	Working pressure(kg/cm <sup>2</sup> )	Fluctuation range (kg/cm <sup>2</sup> )	Pressure drop (kg/cm <sup>2</sup> )	Ratio
1.	8.0	NIL	NIL	--
2.	10.0	NIL	NIL	--
3.	12.0	NIL	NIL	--
4.	14.0	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 : 31.05.2019  
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 1540 ml/min & 3310 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 : 3135.0 ml/min
- For jet spray pattern : 4130.0 ml/min



			1000 µm aperture size was provided	
11.	Marking/Labeling of sprayer	Must be riveted on the body of sprayer having name & address of manufacturer, month & Year of manufacture, Rated speed, Rated pressure, discharge rate, Power rating of engine, SFC of engine	Just a sticker provided on pump & engine with following information :- Krishi Craft KC-KPS-204 KNAPSACK POWER SPRAYER	<b>Does not conform</b>
12.	Literature	Operator manual, Service manual & parts catalogue should be provided, One day training.	Owner's manual of sprayer with parts catalogue provided	<b>Does not conform in toto</b>

### 16. CONFORMITY TO INDIAN STANDARDS

- i) IS:11313-2007 (Reaffirmed 2012)-Hydraulic : **Does not conform in toto**  
power sprayer-specification
- ii) Spray nozzle and spray gun as per IS:3652-1995 : **Does not conform in toto**  
(Reaffirmed 2011)
- iii) Hose and hose connection as per IS:10134-1994 : **Conforms**
- iv) IS: 2643-2005-Pipe threads where pressure-tight : **Conforms**  
joint are not made on the threads-dimensions,  
tolerance and designation
- v) IS: 7347-1974 (Reaffirmed 2006)-Specification : **Could not be ascertained**  
for performance of small size spark ignition  
engines for agricultural water pumps, sprayers,  
tillers, reapers and other similar applications

### 17. COMMENTS AND RECOMMENDATIONS

- 17.1 The sprayer serial number is not specified. It **MUST** be specified.
- 17.2 The sprayer year of manufacture is not specified. It should be specified.
- 17.3 The material of spreader does not meet the requirement of relevant code/Standard. It **MUST** be looked into.
- 17.4 The material of pump inlet port end fitting does not meet the requirement of relevant code/Standard. It **MUST** be looked into.
- 17.5 The spray gun is not designated and marked by identification mark. The identification mark as specified by relevant Indian Standard, **MUST** be provided.
- 17.6 The pump manufacturing year, serial number is not specified. It **MUST** be specified.
- 17.7 The spray nozzle is not designated and marked by its identification mark. The identification mark as specified by relevant Indian Standard, **MUST** be provided.



- 17.8 The strainer in nozzle is not provided. It may be considered for providing
- 17.9 The manufacture's name or recognized trade mark and batch or code number on nozzle is not provided. It **MUST** be provided.
- 17.10 The spray gun manufacturer's name or recognized trade mark & batch or code number is not marked on gun. It **MUST** be marked.
- 17.11 The discharge rate for fine cone spray pattern and jet spray pattern of gun at a pressure of 600 kPa does not conform to the requirement of IS: 3652-1995. It **MUST** be looked into.
- 17.12 The discharge rate for fine cone spray pattern and jet spray of nozzle at a pressure of 300 kPa does not conform to the requirement of IS: 3652-1995. It **MUST** be looked into.
- 17.13 The spray angle for fine cone spray pattern of gun at a pressure of 600 kPa does not conform to the requirement of IS: 3652-1995. It **MUST** be looked into for further improvement.
- 17.14 The spray angle for fine cone 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.
- 17.15 At rated pressure of 10 Kg/cm<sup>2</sup> the pump discharge was observed as 7497.5 ml/min. against the minimum requirement of 8000.0 ml/min. This must be examined.
- 17.16 The pressure gauge with fuel scale reading 120 bar is provided, thus it does not conform to requirement of IS: 11313-2007. It **MUST** be looked into.
- 17.17 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.
- 17.18 At rated pressure of 10 Kg/cm<sup>2</sup> the engine speed dropped upto 6820 rpm against the rated engine speed of 7000 rpm. This **MUST** be looked into for necessary action.
- 17.19 Suction strainer apertures size does not meet the requirement of relevant code/standard. It **MUST** be looked into.
- 17.20 The necessary tools are not provided. It **MUST** be provided.
- 17.21 The thickness of the wall of barrel of gun does not meet the requirement of relevant code/Standard. It **MUST** be looked into.
- 17.22 The diameter of connecting rod of gun does not meet the requirement of relevant code/Standard. It **MUST** be looked into.
- 17.23 A suitable labeling plate (not sticker) needs to be provided with, inter alia, following information:-
- Manufacturer's name
  - Make
  - Model
  - Month & year of manufacture
  - Rated speed
  - Rated pressure
  - Discharge rate
  - Power rating of engine
  - SFC of engine





**17.24 Safety provision/safety wear**

- i) Apron, gum boots and ear protector must be added on safety wear.
- ii) Safety instructions regarding handling poisonous agro-chemical before, during and after spraying operations should be provided on sprayer.

**18. TECHNICAL LITERATURE**

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

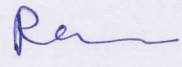
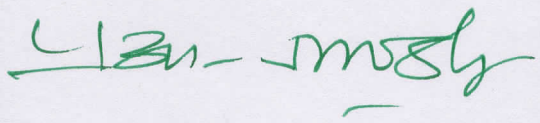
- i) Operator's instruction manual and parts catalogue of sprayer

The following literature MUST be provided with the sprayer :-

- i) Service manual of sprayer.

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	

**19. APPLICANT'S COMMENTS**

Para No	Our reference	Applicant's comments
19.1	17.2	Spray gun will be marked with trade mark
19.2	17.5,17.7,17.8,17.10	We will take corrective action
19.3	17.6,17.9	Will be provided
19.4	17.3,17.4,17.11, 17.12,17.21,17.22	Our manufacturing unit will look into the same and will take corrective action

