

व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ No.: PS-467/2644/2021
माह/Month : January, 2021

THIS TEST REPORT VALID UP TO : 31st January, 2026



**GANGA, G-10
HAND 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

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[ISO 9001:2015 CERTIFIED]

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xxix)	Material of construction off cut of device			
	-Body, valve seat, gland nut, cap & collar, valve stem, Nipple	Brass, Engineering plastic, Stainless steel	Engg. Plastic	Conforms
	-Valve	Brass, synthetic rubber, Stainless steel, plastic	Plastic	Conforms
	-Strainer	Brass, stainless steel, plastic	Plastic	Conforms
	-Operating knob	Brass, Engineering plastic	NA	--
	- Operating trigger	Steel, Engineering plastic	Engg. Plastic	Conforms
	-Spring	Stainless steel	Stainless Steel	Conforms
	-Gasket	Synthetic rubber, fibre, PVC	PVC	Conforms
	-Gland packing	Asbestos rope	NA	--
	-Gland seal	PVC	PVC	Conforms
	-Split pin/Pivot pin	Steel	Plastic	Does not conform
Clause No.	Specified requirement	Observations	Remarks	
Cl. 4.4 IS 3906:1995	The material used for different components shall be declared by the manufacturer in the manual.	Declared by the Manufacturer	Conforms	

4. RUNNING – IN

Applicant has not recommended running-in of sprayer

5. TEST FOR DISCHARGE RATE (Vide Clause 6.1.3 of IS 10134-1994)

1. Date of test : 13.01.2021
2. Atmospheric conditions :
 - a) Temperature : 15.5 °C
 - b) Relative humidity : 61.3 %
 - c) Pressure : 98.8 kPa
3. Data recorded

No. of hand strokes per minute	Working Pressure (kPa)	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)
16	300	1	240	Nil	235.0	235.0
16	300	2	230	Nil		
16	300	3	250	Nil		
16	300	4	220	Nil		

Average discharge rate: 235.0 ml/min at 300 kPa pressure



6. TEST FOR VOLUMETRIC EFFICIENCY
(Vide Clause 6.2 of IS 10134-1994)

Sl. No.	Date of test	:	14.01.2021
Sl. No.	Details	:	Observation
1.	Discharge of water in 10 successive stroke	:	127.5 ml
2.	No of cycle in one minute	:	10
3.	Actual volume of water in one cycle	:	12.75 ml
4.	Inner diameter of pump cylinder	:	44 mm
5.	Stroke length at normal working pressure	:	19 mm
6.	Piston displacement	:	28.87 cc
7.	Theoretical volume of water in one cycle	:	28.87 ml
8.	Volumetric efficiency, %	:	44.2 %

Remarks - The volumetric efficiency of pump does not conform to the requirement of IS 10134-1994.

7. TEST FOR SPRAY LANCE
(Vide Annex. D of IS: 3652-1995)

Date of test : 14.01.2021
Type : Straight Type (Type - A)

7.1 STRENGTH OF SPRAY LANCE

Sr. No	Details	Condition
1	Test Condition	Outlet closed
2	Hydraulic pressure applied	1 MPa
3	Duration of pressure retained	5 minutes
4	Result	No leak, crack, or burst of lance was observed during test

7.2 MARKING ON SPRAY LANCE

- a) Manufacturer's name or recognized trade mark : Marked as Saaransh
b) Nominal length, mm : Marked as 770 mm
c) Batch or code number : Marked as 04

8. TEST FOR CUT-OFF DEVICE
(Vide Annex C Clause 6.8.3 of IS:3652 : 1995)

Date : 14.01.2021
Type : Trigger type (Type - A)

8.1 MAXIMUM TRIGGER ACTUATION TORQUE

Required torque	:	Less than 35 kgf-cm
Observed torque	:	31.4 kgf-cm



8.2 STRENGTH TEST FOR CUT-OFF DEVICE

Sr. No	Details	Condition
1	Condition of outlet	Closed
2	Hydraulic pressure	750 kPa
3	Duration of pressure retained	5 Minute
4	Observation	No drip or leak of cut off device through valve was observed during test.

8.3 LEAKAGE AND RELIABILITY TEST FOR CUT-OFF DEVICE

Sr. No	Details	Condition
1	Test Condition	Mounted on test setup
2	Hydraulic pressure retained	300 kPa
3	Operating cycles	5000 cycles at pressure 300 kPa and repeated for 500 cycles at a pressure of 600 kPa @ approx.15 cycles per minutes
4	Observation	No drip or leak of cut-off device through valve was observed during the test.

8.4 MARKING ON CUT-OFF DEVICE

- a) Manufacturer's name or recognized trade mark : Marked as Saaransh
 b) Batch or code number : Marked as 06
 c) Type of cut-off Device : Trigger type

9. TEST FOR PRESSURE CHAMBER**(Vide Clause 7.1 of IS 10134-1994)**

Date of test : 13.01.2021

Sr. No	Details	Condition
1	Test Condition	Outlet end closed
2	Pressure applied -Hydraulic pressure -Pneumatic pressure	7.5 kg/cm ² 4.5 kg/cm ²
3	Duration	1 minutes each
4	Result	No leakage, crack, deformation or breakage observed in pressure chamber during the test.

10. TEST FOR OPERATING LEVER, HANDLE & PISTON ROD**(Vide clause 7.6 of IS-10134:1994)**

Date of test : 13.01.2021

Sr. No	Details	Condition
1	Test Condition	Discharge outlet closed
2	Pressure applied	7.5 kg/cm ²
3	Result	No distort, crack or break observed in handle, operating lever and piston rod during the test.



11. ENDURANCE TEST OF SPRAYER
(Vide clause 8.1 of IS-10134:1994)

1. Date :26.12.2020 to 02.01.2021
2. Total running time (h)- 48
3. Quantity of liquid collected during endurance:-

	Avg. discharge (ml/min)
a) First Collection	- 230.0
b) Second Collection	- 220.0
c) Third Collection	- 230.0
d) Fourth collection	- 225.0
e) Fifth Collection	- 237.0
f) Sixth Collection	- 217.5
g) Seventh Collection	- 237.5
h) Eighth Collection	- 227.5

Remark :- Percentage variation of discharge from first to last collection, 1.09 %.

12. TEST FOR STRAP AND ITS ASSEMBLY
(Vide Clause 7.3 of IS 10134-1994)

Date of test : 13.01.2021

The sprayer was filled with clean water to its specified capacity. The sprayer was hung from a solid support by its straps simulating its carriage on the shoulder of an operator. The tank was vertically raised to height of 300 mm and was allowed to drop freely and hung by straps.

Observation: No break of strap and brackets was found of during the test.

13. TEST FOR NOZZLE
[Vide Annex F of IS: 3652-1995]

Date of test : 14.01.2021
Type of Nozzle (apa) : Solid Cone Type

13.1 TEST FOR DISCHARGE RATE OF NOZZLE

The discharge rate of nozzle at a pressure of 300 kPa has been declared by applicant as 440 ml/min for fine cone spray pattern. The discharge rate corresponding to 300 kPa pressure was observed as under:-

- For fine cone spray pattern : 205.0 ml/min

Remarks:- The discharge rate for fine cone spray pattern does not conform to the requirement of IS: 3652:1995

13.2 TEST FOR SPRAY ANGLE OF NOZZLE

The spray angle of nozzle at a pressure of 300 kPa has been declared by applicant as 80 degree. The spray angle corresponding to 300 kPa pressure was observed as 81.5 degree.



13.3 ENDURANCE TEST OF NOZZLE

- i) Date : 04.01.2021 to 12.01.2021
 ii) Total running time (h) : 48
 iii) Quantity of liquid collected and spray angle observed during endurance test.

Sr. No.	No. of collection	Avg. discharge rate ml/min	Spray angle, degree
a)	First collection	200.0	80.9
b)	Second collection	200.0	79.7
c)	Third collection	202.5	82.1
d)	Fourth collection	217.5	78.5
e)	Fifth collection	200.0	80.3
f)	Sixth collection	205.0	79.1
g)	Seventh collection	207.5	81.5
h)	Eighth collection	205.0	82.1

Remarks : i) Percentage variation in discharge rate from first to last collection, 2.50 %.
 ii) Percentage variation in spray angle from first to last collection, 1.48 %.

13.4 SPRAY DISTRIBUTION PATTERN OF NOZZLE

The liquid discharge from nozzle at 300 kPa pressure was collected in glass tubes of patternator. The spray pattern as per the quantity of liquid collected is represented in tabular form and in Fig. 1.

13.5 NOZZLE DESIGNATION : AN 80C440J
 Provision for strainer in nozzle : **Not provided**

13.6 MARKING OF NOZZLE
 Manufacturer's name or recognized trade mark : Marked as Saaransh
 Batch or code number : Marked as 02
 Nozzle designation : Marked as AN 80C 440J



18. COMMENTS & RECOMMENDATIONS

- 18.1 The Make, Model and Serial Number of pump is not specified. It should be specified.
- 18.2 The strainer is not provided in the nozzle. It may be provided.
- 18.3 The back rest cushion is not provided. It may be provided.
- 18.4 The pump volumetric efficiency does not meet the requirement of Indian Standard. It **MUST** be looked into.
- 18.5 The strap cushion is not provided. It may be provided.
- 18.6 The agitator is not provided in sprayer. It May be provided.
- 18.7 The discharge rate of nozzle at pressure of 300 Kpa for fine cone spray pattern does not conform to the requirement of IS: 3652-1995. It **MUST** be looked into.
- 18.8 The average aperture size of filling hole strainer does not meet the requirement of Indian Standard. It **MUST** be looked into.
- 18.9 The discharge rate of pump does not meet the requirement of Indian Standard. It **MUST** be looked into
- 18.10 The Average size of Strainer of cut-off device does not meet the requirement of Indian Standard. It **MUST** be looked into
- 18.11 A Suitable labelling plate (Not Sticker) needs to be provided with “interalia” following information
- i) Manufacturer Name
 - ii) Make
 - iii) Model
 - iv) Month & year of Manufacturer
 - v) Rated Pressure
 - vi) Discharge rate
 - vii) Country of origin




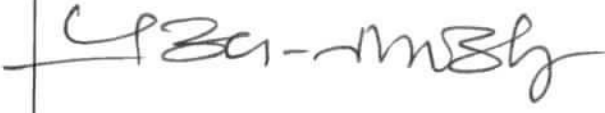
19. TECHNICAL LITERATURE

The following literature provided with sprayer for guidance to the user.

- i) Instruction Manual
- ii) Service Manual
- iii) Part's Catalogue

However, the manual of sprayer needs to be updated as per IS : 8132 -1999

TESTING AUTHORITY

MAAN SINGH SENIOR TECHNICAL ASSISTANT	
P. K. PANDEY DIRECTOR	

20. APPLICANT'S COMMENTS

Para No.	Our Reference	Applicant's Comments
20.1	18.1, 18.2, 18.8, 18.9, 18.10 & 18.11	Noted, we will do needful.
20.2	18.3	Noted, It is optional item
20.3	18.4, 18.5, 18.6, & 18.7	Noted, we will needful.

