

THIS TEST REPORT VALID UP TO : 30th June, 2029



**NEPTUNE, NHTP-160H
ENGINE OPERATED HTP SPRAYER**



भारत सरकार

Government of India

कृषि एवं किसान कल्याण मंत्रालय

Ministry of Agriculture and Farmers Welfare

कृषि एवं किसान कल्याण विभाग

Department of Agriculture and Farmers Welfare

उत्तरी क्षेत्र कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

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

1. Date of test : 15.06.2022
2. Atmospheric conditions
 - a. Temperature : 38.3°C
 - b. Relative humidity : 38.6 %
 - c. Pressure : 97.4 kPa
3. Data recorded

Sr. No.	Working pressure (kg/cm ²)	Fluctuation range (kg/cm ²)	Pressure drop (kg/cm ²)	Ratio
1.	10.0	NIL	NIL	--
2.	15.0	NIL	NIL	--
3.	20.0	NIL	NIL	--
4.	25.0	NIL	NIL	--

4. Resistance of different pressure: Yes

10. TEST FOR HYDRAULIC SPRAY GUN

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

- Date of test : 14.06.2022
Type of gun : Screw type

10.1 TEST FOR DISCHARGE RATE OF SPRAY GUN

The discharge rate for fine cone spray & jet spray pattern as 2300 ml/min & 3500 ml/min at the pressure of 600 kPa was declared by the applicant. However, the discharge rate corresponding to 600 kPa pressure was observed as under

- For fine cone spray pattern : 6497.5 ml/min
- For jet spray pattern : 12170.0 ml/min

Remarks : The discharge rate for fine cone spray pattern & jet spray pattern were not within limit specified by the relevant Code/Standard.

10.2 TEST FOR SPRAY ANGLE OF SPRAY GUN

The spray angle for fine cone spray pattern at a pressure of 600 ± 60 kPa was declared as 70 degree by the applicant. However, the spray angle corresponding to 600 kPa pressure was observed as 84.5 degree.

Remarks:- The spray angle for fine cone spray pattern at the pressure of 600 kPa is not within the limit specified by the relevant code/standard.

10.3 STRENGTH OF GUN

Sr. No	Details	Condition
1	Condition of nozzle tip	Closed
2	Hydraulic pressure	1500 kPa
3	Duration of pressure	5 Minutes
4	Result	No leak, crack or bursting of gun was observed during test

10.4 SPRAY GUN DESIGNATION : Not marked

10.5 MARKING

Manufacturer's name or recognized trade mark : **Not marked**

Batch or code number : **Not marked**

10.6 ENDURANCE TEST OF GUN

- i. Date : 02.06.2022 to 10.06.2022
- ii. Total running time (h) : 48
- iii. Quantity of liquid collected and spray angle observed during endurance test.

Sr. No.	Collection	Discharge rate ml/min		Spray angle, degree
		Fine cone spray pattern	Jet spray pattern	
a	First collection	6652.5	12157.5	85.1
b	Second collection	6615.0	12225.0	83.9
c	Third collection	6457.5	12380.0	84.5
d	fourth collection	6292.5	12200.0	83.3
e	Fifth collection	6307.5	12280.0	83.9
f	Sixth collection	6277.5	12277.5	82.7
g	Seventh collection	6522.5	12062.5	84.5
h	Eighth collection	6392.5	12277.5	86.2

Remarks- (i) Percentage variation of discharge at cone spray pattern from first to last collection is 3.91%.

(ii) Percentage variation of discharge at jet spray pattern from first to last collection is 0.99 %.

(iii) Percentage variation in spray angle of gun at cone spray pattern from first to last collection is 1.1 degree.

11. TEST FOR NOZZLE

[Vide clause 5.15 of IS- 11313-2007 & Annex F of IS- 3652-1995]

Date of test : 14.06.2022

Type of nozzle : Solid cone, Adjustable

11.1 TEST FOR DISCHARGE RATE OF NOZZLE

The discharge rate for fine cone spray & jet spray pattern as 2100 ml/min & 3400 ml/min at a pressure of 300 kPa was declared by the applicant. However, the discharge rate corresponding to 300 kPa pressure was observed as under:-

- For fine cone spray pattern : 5272.5 ml/min

- For jet spray pattern : 11770.0 ml/min

Remarks: The discharge rate for fine cone spray pattern & jet spray pattern were not within limit specified by the relevant Code/Standard.

20. CRITICAL TECHNICAL SPECIFICATIONS

[Vide Ministry Letter No. 13-9/2019-M & T (I&P)-Part dated 26.04.2019 and F. No. 9-4/2019 M&T (I&P) dated 20.8.2019]

Sr. No.	Parameters	Specification	Observed	Remarks
1.	Tank Capacity	--	Not applicable for portable sprayer	--
2.	Discharge, ml/min	8000 (min) at rated speed and rated pressure	The discharge rate at rated pressure is 27067.5 ml/min.	Conforms
3.	Pressure regulator	Must be provided	Provided	Conforms
4.	Horizontal thrown up jet spray, m	6 (min)	9.4 meter	Conforms
5.	Mass of spray gun, kg	1.6 (max.)	0.260 kg	Conforms
6.	Spray gun marking	Manufacturer name or recognized trademark & batch or code number as per BIS code	Not marked	Does not conform
7.	Marking of nozzle	Manufacturer name or recognized trademark & batch or code number as per BIS code	Not marked	Does not conform
8.	Pressure gauge	Must be provided	Liquid filled pressure gauge is provided	Conforms
9.	Safety accessories	Mask, hand gloves and safety goggles, apron, gum boots must be provided	Not provided	Does not conform
10.	Necessary tools & spares	Spanners, set of gasket, measuring jar should be provided	A set of necessary tools are provided with pump kit, spray gun, pump spanner, spark plug spanner	Partially conform
11.	Making/labelling of sprayer	Must be riveted on the body of sprayer having name & address of manufacture, month & year of manufacture, rated speed, rated pressure, discharge rate, power rating of engine, SFC of engine	Just a sticker and not proper labeling plate is provided on the sprayer with following information:	Partially conform
12.	Literature	Operator manual, service manual & parts catalogue should be provided.	Provided	Conforms

Note: - The implementation of the critical technical specification has been deferred till 30.09.2022 vide Ministry's O.M. No. 13-1/2021 M&T (I&P) dated 03.02.2022

21. COMMENTS AND RECOMMENDATIONS

- 21.1** The discharge rate for fine cone spray pattern and jet spray pattern of spray gun at the pressure of 600 kPa does not conform the requirement of IS: 3652-1995. It **MUST** be looked into for appropriate improvement.
- 21.2** The manufacturer's name or recognized trade mark, batch or code number and designation of gun is not marked. It **MUST** be looked into.
- 21.3** The discharge rate for fine cone spray pattern & 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.
- 21.4** The strainer in nozzle is not provided. It **MUST** be looked into.
- 21.5** The manufacturer's name or recognized trade mark, batch or code number and designation of spray nozzle is not marked. It **MUST** be looked into.
- 21.6** The pressure gauge with full scale reading of 120 bar is provided. Thus, it does not conform the requirement of IS:11313-2007. It **MUST** be looked into.
- 21.7** The engaged length of outlet port of pump does not meet the requirement of relevant code/ standard. It **MUST** be looked into.
- 21.8** The safety wear is not provided. It **MUST** be looked into.
- 21.9** The necessary tools are not provided. It **MUST** be provided.
- 21.10** The diameter of connecting rod of spray gun does not meet the requirement of relevant code/standard. It **MUST** be looked into.
- 21.11** The discharge rate/suction capacity of pump at a rated pressure and rated rpm does not meet the requirement of relevant code/standard. It **MUST** be looked into.
- 21.12** The power requirement of pump does not meet the requirement of IS:11313-2007. It **MUST** be looked into
- 21.13** A suitable labeling plate (not sticker) needs to be provided with "Interlia" following information.
- (i) Manufacturer's name
 - (ii) Make
 - (iii) Model
 - (iv) Month & year of manufacturer
 - (v) Rated pressure
 - (vi) Rated speed
 - (vii) Discharge rate
 - (viii) Power rating of engine
 - (ix) SFC of engine
- 21.14 Safety provision/safety wear**
- i) Safety instructions regarding handling poisonous agro- chemical before, during and after spraying operation should be provided on sprayer.



22. TECHNICAL LITERATURE

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

- i) Operators manual
- ii) Service manual
- iii) Parts catalogue
- iv) Engine user manual & part catalogue

However, the manuals of sprayer need to be updated as per IS:8132-1999

TESTING AUTHORITY

Er. SANJAY KUMAR AGRICULTURAL ENGINEER	
Dr. MUKESH JAIN DIRECTOR	 30.06.2022

The draft test report compiled by Abhishek Chourey, MTS (Technical)

23. APPLICANT'S COMMENTS

All the comments are well noted and we assure to implement the Suggestions mentioned therein in our future supplies of products.