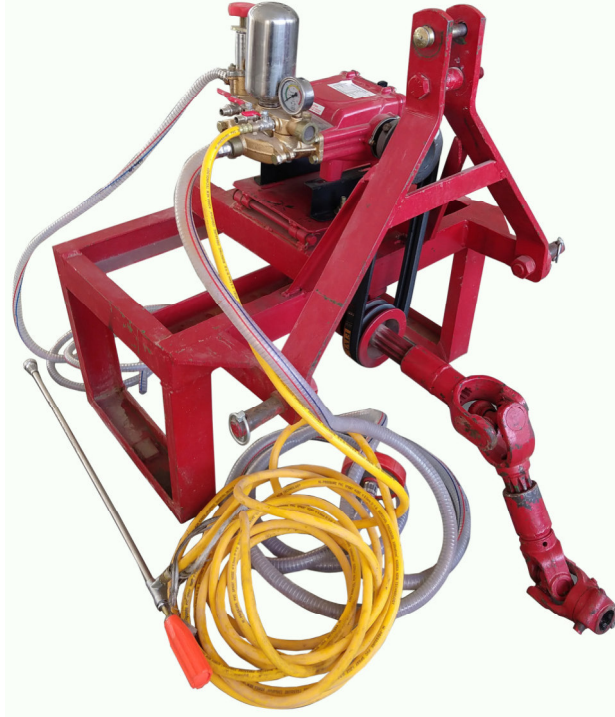


व्यावसायिक परीक्षण रिपोर्ट  
COMMERCIAL TEST REPORT

संख्या/ No.: PS-505/2834/2022  
माह/Month: April, 2022

**THIS TEST REPORT VALID UP TO : 30<sup>th</sup> April, 2029**



**FORTUNEAGRO, FAI-50A  
TRACTOR 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

**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]**

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838	21.0	1	29370	9100	9025.0	29405.0	38430.0	1.32
		2	29500	9150				
		3	29450	8950				
		4	29300	8900				
832	25.0	1	32600	5500	5420.0	32687.5	38107.5	1.56
		2	32760	5430				
		3	32740	5280				
		4	32650	5470				

Minimum discharge rate = 38107.5 ml/min at 25 kg/cm<sup>2</sup>

Maximum discharge rate = 39202.5 ml/min at 15 kg/cm<sup>2</sup>

Discharge at Rated pressure = 39202.5 ml/min at 15 kg/cm<sup>2</sup>

## 6. TEST FOR VOLUMETRIC EFFICIENCY OF PUMP

[Vide clause 8.4 of IS: 11313 -2007]

Date of test	: 23.02.2022
Rated pressure, kg/cm <sup>2</sup>	: 15
Rated rpm of pump	: 850
Theoretical Volume, ml	: 48.75
Actual volume at rated rpm & rated pressure, ml	: 46.12
Volumetric efficiency, %	: 94.61%

## 7. PRESSURE ADJUSTMENT TEST

[Vide Clause 8.7.1 of IS: 11313-2007]

1. Date of test : 21.02.2022
  - a. Atmospheric conditions
  - b. Temperature : 24.7 °C
  - c. Relative humidity : 60.4%
  - d. Pressure : 99.2 kPa
2. Data recorded

Sr. No.	Working pressure (kg/cm <sup>2</sup> )	Fluctuation range (kg/cm <sup>2</sup> )	Pressure drop (kg/cm <sup>2</sup> )	Ratio
1.	15.0	NIL	NIL	--
2.	18.0	NIL	NIL	--
3.	21.0	NIL	NIL	--
4.	25.0	NIL	NIL	--

3. Resistance to different 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	: 19.02.2022
Type of gun	: Screw type

**8.1 TEST FOR DISCHARGE RATE OF SPRAY GUN**

The discharge rate for fine cone spray pattern & jet spray pattern as 2200 ml/min & 6600 ml/min at the pressure of 600 kPa was declared by the applicant. The discharge rate corresponding to 600 kPa pressure was observed as below

- For fine cone spray pattern : 3652.5 ml/min
- For jet spray pattern : 4982.5 ml/min

**Remarks:- Discharge rate for fine cone spray pattern and jet spray pattern is not within the limit specified by the relevant code/standard.**

**8.2 TEST FOR SPRAY ANGLE OF SPRAY GUN**

The spray angle for fine cone spray pattern at a pressure of 600 kPa was declared as 85 degree by the applicant. The spray angle corresponding to 600 kPa pressure was observed as 82.1 degree.

**8.3 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

**8.4 SPRAY GUN DESIGNATION** : Marked as AG-C85 2500-J 7500

**8.5 MARKING**

Manufacturer's name or recognized trade mark : Marked as Fortuneagro

Batch or code number : Marked as SEP/2021

**8.6 ENDURANCE TEST OF GUN**

- i) Date : 09.02.2022 to 17.02.2022
- ii) Total running time (h) : 48
- iii) Quantity of liquid collected and spray angle observed during endurance test

Sr. No	Collection	Avg. discharge rate, ml/min		Spray angle, degree
		Fine cone spray pattern	Jet spray pattern	
a)	First collection	3655.0	4935.0	80.9
b)	Second collection	3660.0	4962.5	82.1
c)	Third collection	3667.5	4937.5	81.5
d)	Fourth collection	3695.0	4972.5	82.7
e)	Fifth collection	3720.0	4965.0	80.3
f)	Sixth collection	3705.0	5000.0	81.5
g)	Seventh collection	3672.5	4972.5	80.9
h)	Eighth collection	3572.5	4860.0	82.1

**Remarks : (1) Percentage variation of discharge rate at fine cone spray pattern from first to last collection is 2.26%.**

**(2) Percentage variation of discharge rate at jet spray pattern from first to last Collection is 1.52 %.**

**(3) The variation in spray angle of gun at fine cone spray pattern, from first to last collection is 1.2 degree.**

**9. TEST FOR NOZZLE**

[vide Clause 5.15 of IS:11313- 2007 &amp; Annex F of IS: 3652-1995]

Date of test : 19.02.2022  
 Type of nozzle (apa) : Solid cone, Adjustable

**9.1 TEST FOR DISCHARGE RATE OF NOZZLE**

The discharge rate for fine cone spray pattern & jet spray pattern as 1850 ml/min & 6100 ml/min at a pressure of 300 kPa was declared by the applicant. The discharge rate corresponding to 300 kPa pressure was observed as below :-

-For fine cone spray pattern : 3030.0 ml/min  
 - For jet spray pattern : 4285.0 ml/min

**Remarks :- Discharge rate for fine cone spray & Jet spray pattern is not within the limit specified by the relevant code/standard.**

**9.2 TEST FOR SPRAY ANGLE OF NOZZLE**

The spray angle for fine cone spray pattern at the pressure of 300 kPa was 85 degree declared by the applicant. However, the spray angle corresponding to 300 kPa pressure was observed as 75.2 degree.

**Remarks : The spray angle for fine cone spray pattern at the pressure of 300 kPa is not within the limit specified by the relevant code/standard.**

**9.3 SPRAY DISTRIBUTION PATTERN OF NOZZLE**

The liquid discharge from nozzle at 300 kPa pressure was collected in glass tube of patternator. The spray pattern as per the quantity of liquid collected is represented in tabular form and in Fig. 5.

**9.4 NOZZLE DESIGNATION** : Marked as AN-C85 2000-J 6500  
 Provision of strainer in nozzle : **Not provided**

**9.5 MARKING**

Manufacturer's name or : Marked as Fortuneagro  
 recognized trade mark  
 Batch or code number : Marked as SEP/2021

**15. 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	Specifications	Observed	Remarks
1	Tank capacity, l	100 (Min.)	Not applicable for this design	--
2	Pressure regulator	Must be provided	Provided	Conforms
3	Pressure gauge with pressure dampener	Full scale reading of pressure gauge should not be more than 2.5 times and not less than 1.5 times the rated pressure.	Provided	Conforms
4	Discharge rate, ml/min	Min. 8000 at rated speed and rated pressure.	The discharge rate at rated pressure is 39202.5 ml/min.	Conforms
5	Strainer at filling hole	Must be provided	Not applicable for this design	--
6	Hose length (m)	100 (Min.)	10.0 m provided	<b>Partially conform</b>
7	Provision of hose reel	Must be Provided	<b>Not provided</b>	<b>Does not conform</b>
8	Spray gun designation and marking	Designation, manufacturers name or recognised trade mark & batch or code number should be marked	Marked	Conforms
9	Length of spray gun	Should not be less than 500 mm	885 mm	Conforms
10	Nozzle designation and marking	Designation, manufacturers name or recognised trade mark & batch or code number should be marked	Marked	Conforms
	Nozzle Material	Brass / nylon/ hardened / Stainless Steel / tungsten Carbide, ceramic	Stainless steel	Conforms
11	Mass of spray gun	Must be less than 1.6 kg	0.340 kg	Conforms
12	Provision of drain plug in the tank	Must be Provided	Not applicable for this design	--
13	Safety against overload P.T.O. drive shaft and Guard on shaft	Must be Provided	Provided	<b>Partially conform</b>
14	Guard on belt pulley drive	Must be Provided	<b>Not provided</b>	<b>Does not conform</b>
15	Safety wear	Mask, Apron, hand gloves, Gum boots and goggles must be provided.	Provided	Conforms

16	Marking/labelling of machine	The labelling plate should be riveted on the body of machine having Name and address of manufacturer, Country of origin, Make, Model, Year of manufacturer, Serial number, Type, size, required size of prime mover (kW)	Provided	Conforms
17	Literature	Operator manual, service manual & parts catalogue must be provided in English, Hindi, Local language.	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

### 16. CONFORMITY TO INDIAN STANDARDS

- i) IS:11313-2007 (Reaffirmed 2012)-Hydraulic power sprayer-specification : **Partially conform**
- ii) Spray nozzle and spray gun as per IS:3652-1995 (Reaffirmed 2011) : **Partially conform**
- iii) Hose and hose connection as per IS:10134-1994 : **Conforms**
- iv) IS: 2643-2005-Pipe threads where pressure-tight joint are not made on the threads-dimensions, tolerance and designation. : **Conforms**
- v) Three point linkage hitch as per IS: 4468 (Part:1): 1997(Reaffirmed 2012) : **Partially conform**
- vi) Dimensions of PIC yoke as per IS: 4931:1995 (Reaffirmed 2009) : **Partially conform**

### 17. COMMENTS AND RECOMMENDATIONS

- 17.1 The three point linkage, power input connection and PIC yoke bore dimensions do not meet the requirement of Indian Standard. It **MUST** be improved.
- 17.2 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.
- 17.3 Safety guard on P.T.O. drive shaft and belt pulley is not provided. It **MUST** be looked into.
- 17.4 The strainer in nozzle is not provided. It may be provided.
- 17.5 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.
- 17.6 The spray angle for fine cone spray pattern of spray nozzle at the pressure of 300 kPa does not conform to the requirement of IS:3652-1995. It **MUST** be looked for further improvement.

**17.8 Safety provision/safety wear**

Safety instructions regarding handling poisonous agro chemical before, during and after spraying operations should be provided on sprayer


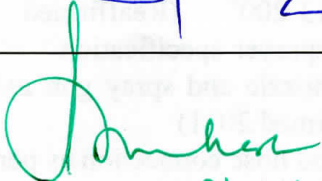
**18. TECHNICAL LITERATURE**

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

- i) Operator manual
- ii) Service manual
- iii) Parts catalogue

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

**TESTING AUTHORITY**

Er. SANJAY KUMAR AGRICULTURAL ENGINEER	
Dr. MUKESH JAIN DIRECTOR	 01-04-2022

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

**19. APPLICANT'S COMMENTS**

Para No.	Our reference	Applicant's comments
19.1	17.1, 17.2, 17.3, 17.4, 17.5, 17.6, 17.7 & 17.8	With immediate effect we consider yours comments & recommendations & we undertake the corrective actions in future supply of material.