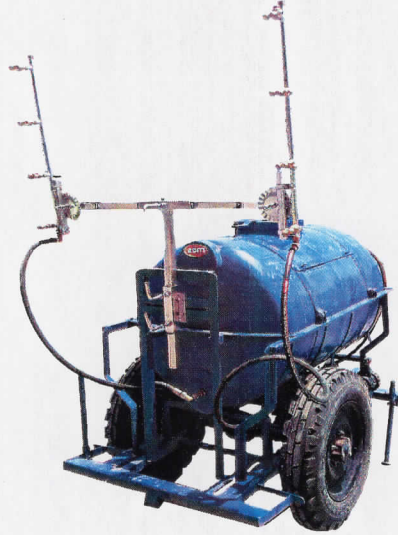


व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ No.: PS-407/2329/2019

माह/Month: JUNE, 2019

THIS TEST REPORT VALID UP TO : 30th JUNE, 2026



TRACTOR OPERATED BOOM SPRAYER
BORASTE ADITI SPT-6A



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

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[ISO 9001:2015 CERTIFIED]

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xxv)	Piston rod guide	Brass, Aluminum alloy, Gunmetal, Nylon	N.A.	---
xxvi)	Connecting rod	Carbon steel	Carbon steel	Conforms
xxvii)	Gudgeon pin	Carbon steel	Carbon steel	Conforms
xxviii)	Big end bearing	Steel coated with tin base white metal	Steel coated with tin base white metal	Conforms
xxix)	Small end bush	Gunmetal	Gun metal	Conforms
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.		Declared	Conforms

3. TEST FOR DISCHARGE RATE OF PUMP

[vide Clause 8.3 of IS- 11313: 2007]

1. Date of test : 28.03.2019

2. Atmospheric conditions

a) Temperature : 32 °C

b) Relative humidity : 42 %

c) Pressure : 98.9 kPa

3. Data recorded

Speed of Pump (rpm)	Pressure (kg/cm ²)	Test No.	Delivery from the discharge line (ml/min)	Avg. over flow (ml/min)	Average discharge from the discharge line (ml/min)	Discharge rate of pump (ml/min)	Hydraulic Power (kW)
370	10	1	19800	NIL	19675.0	19675.0	0.32
		2	19700				
		3	19700				
		4	19500				
364	15	1	19100	NIL	19150.0	19150.0	0.47
		2	19000				
		3	19300				
		4	19200				
350	20	1	18600	NIL	18575.0	18575.0	0.61
		2	18700				
		3	18400				
		4	18600				
345	25	1	18000	NIL	17912.5	17912.5	0.73
		2	17750				
		3	18000				
		4	17900				

Minimum discharge rate	=	17912.5 ml/min at 25 kg/cm ²
Maximum discharge rate	=	19675.0 ml/min at 10 kg/cm ²
Discharge at rated pressure	=	18575.0 ml/min at 20 kg/cm ²

4. TEST FOR VOLUMETRIC EFFICIENCY OF PUMP (Vide clause 8.4 of IS-11313 : 2007)

Date of test	:	27.05.2019
Rated pressure, kg/cm ²	:	20
Rated rpm of pump	:	350
Theoretical volume, ml	:	57.26
Actual volume, ml	:	53.07
Volumetric efficiency %	:	93

5. POWER REQUIREMENT (Vide Clause 6.3 of IS – 11313 : 2007)

The pump power requirement of the sprayer has been marked as 5 hp (3.68 kW) .
The test for power required for operating the sprayer was conducted as per clause 8.5 of IS: 11313-2007 and data recorded is reported herewith

Test No.	Pressure (kg/cm ²)	Dynamometer reading		Pump speed (rpm)	Required power (kW)	Discharge (liter/min)
		Speed (rpm)	Torque (Nm)			
1	10	295	20.00	370	0.62	19.68
2	15	289	24.83	364	0.76	19.15
3	20	283	29.67	350	0.89	18.58
4	25	279	37.17	345	1.10	17.91

Remark: The power requirement was observed from 0.62 kW to 1.10 kW throughout the range of pressure against the declaration of 3.68 kW. At rated speed and pressure of pump the power requirement is observed as 0.89 kW.

6. PRESSURE ADJUSTMENT TEST (Vide Clause 8.7.1 of IS: 11313-2007)

1. Date of test : 28.03.2019
2. Atmospheric conditions
 - a. Temperature : 32° C
 - b. Relative humidity : 42 %
 - 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.	10	NIL	NIL	--
2.	15	NIL	NIL	--
3.	20	NIL	NIL	--
4.	25	NIL	NIL	--

4. Resistance of pressure: Yes

15. CONFORMITY TO INDIAN STANDARDS

i)	IS:11313-2007 (Reaffirmed 2012)-Hydraulic power sprayer-specification	:	Does not conform in toto
ii)	Spray nozzle and spray gun as per IS:3652-1995 (Reaffirmed 2011)	:	Does not conform in toto
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: I/ Part II): 1997 (Reaffirmed 2012)	:	Not applicable
vi)	Dimensions of PIC and PIC yoke as per IS: 4931:1995 (Reaffirmed 2009)	:	Does not conform in toto

16. COMMENTS AND RECOMMENDATIONS

- 16.1 The Sprayer year of manufacturer is not specified. It should be specified.
- 16.2 The power input connection dimensions does not meet the requirement of Indian Standard. It **MUST** be improved.
- 16.3 Pump, year of manufacture and serial No is not specified. It should be specified.
- 16.4 The discharge rate for hollow cone nozzle (+ side) and hollow cone nozzle (-side) at a pressure of 300 ± 30 kPa does not conform to the requirement of IS: 3652-1995. It **MUST** be looked into.
- 16.5 The spray angle for hollow 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 for further improvement.
- 16.6 Necessary tools are not provided with the sprayer. It **MUST** be provided.
- 16.7 The pressure gauge with full scale reading 104 bar is provided, thus it does not conform to requirement of IS: 11313-2007. It **MUST** be looked into.
- 16.8 Though a pressure regulator provided but that was not working in condition therefore its conformity to IS: 11317-2007 could not be ascertained. It **MUST** be looked into for corrective action.
- 16.9 The spray nozzle is not designated and marked by its identification mark. The identification mark as specified by relevant Indian Standard. It **MUST** be provided.
- 16.10 Provision against overload on P.T.O. drive shaft is not provided. It **MUST** be looked into.
- 16.11 Safety guard on P.T.O. drive shaft is not provided. It **MUST** be looked into.

- 16.12 The length of spray boom does not meet the requirement of critical technical specifications. It **MUST** be looked into.
- 16.13 The guard on belt pulley drive is not provided. It **MUST** be looked into.
- 16.14 The engaged threaded length of out let port does not meet the requirement of relevant code/standard. It **MUST** be improved.
- 16.15 A suitable labeling plate needs to be provided with, inter alia, following information:-
- Manufacturer's name
 - Make
 - Model
 - Month & year of manufacture
 - Rated speed
 - Rated pressure
 - Discharge rate
 - Recommended tractor horse power
- 16.16 Safety provision/safety wears.
- Gum boots **MUST** be added on safety wear.
 - The safety instructions before during and after spraying operation **MUST** be provided on sprayer.


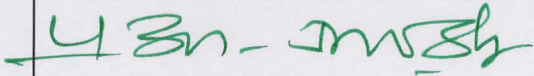
17. TECHNICAL LITERATURE

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

- Operator's manual of sprayer.
- Service manual of sprayer.
- Parts catalogue of sprayers

The operator's manual of sprayer needs to be updated as per IS: 8132-1999.

TESTING AUTHORITY

R. K. NEMA SENIOR AGRICULTURAL ENGINEER	
P. K. PANDEY DIRECTOR	

18. APPLICANT'S COMMENTS

No specific comments received from applicant