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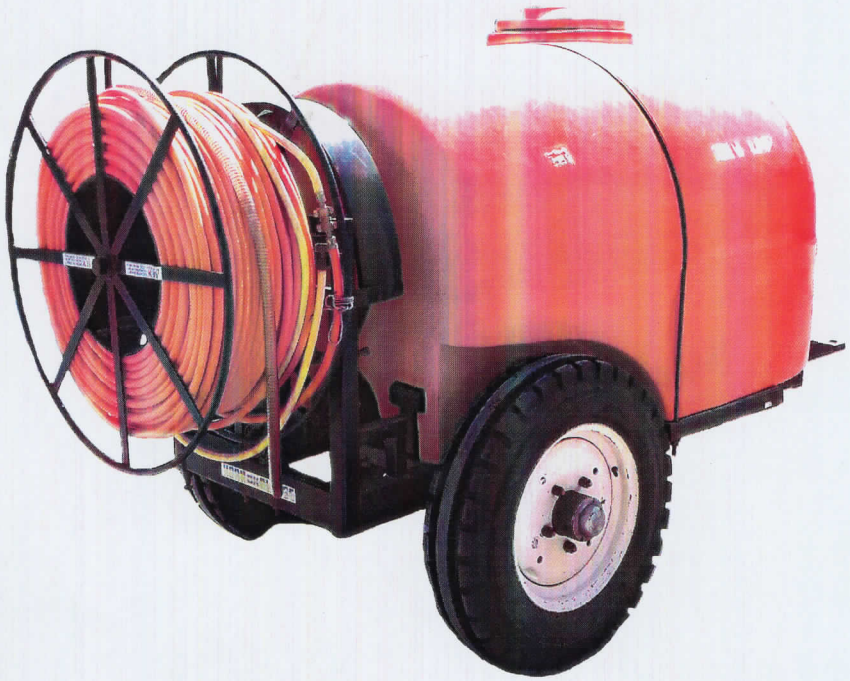
व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ **No.: PS-416/2350/2019**
माह/**Month: September, 2019**

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



ADHYA SHAKTI ASEW-1000
TRACTOR OPERATED HTP SPRAYER

सत्यमेव जयते

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
ट्रैक्टर नगर, सिरसा रोड, हिसार, (हरियाणा) - 125 001
Tractor Nagar, Sirsa Road, HISAR (Haryana)-125 001
[ISO 9001:2015 CERTIFIED]

Website: http://nrfmtti.gov.in/
E-mail: fmti-nr@nic.in Tele./FAX: 01662-276984

x)	Suction strainer	Brass, stainless steel, plastics	Stainless steel	Conforms
xi)	Strainer body	Brass, plastics	Plastic	Conforms
xii)	Gasket	Rubber, PVC, Leather, fiber	PVC	Conforms
xiii)	Spray nozzles	Brass, stainless steel	Brass	Conforms
xiv)	Spray boom	Mild steel, Galvanized, iron Braided rubber	N.A.	--
xv)	Hose	Synthetic rubber, P.V.C	PVC	Conforms
xvi)	Tank	Galvanized iron, Brass, Fiber glass reinforced plastics.	Plastics	Conforms
xvii)	Pipe for agitator	Galvanized iron, Brass, PVC	PVC	Conforms
xviii)	Piston (bucket) screw	Brass, stainless steel	NA	--
xix)	Crank case	Aluminum alloy	Aluminum alloy	Conforms
xx)	Roller pump body	Nickel resistant cast iron	N.A.	---
xxi)	Roller pump and plate	Nickel resistant cast iron	N.A.	---
xxii)	Roller pump rotor	Nickel resistant cast iron	N.A.	---
xxiii)	Piston pump crank shaft	Carbon steel	Carbon steel	Conforms
xxiv)	Pump inlet port end fitting	Brass	Brass	Conforms
xxv)	Piston rod guide	Brass, Aluminum alloy, Gunmetal, Nylon	N.A.	---
xxvi)	Connecting rod	Carbon steel	Aluminum alloy	**Does not conform**
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	Not provided	--
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 : 30.07.2019
2. Atmospheric conditions :
   a) Temperature : 33°C
   b) Relative humidity : 68%
   c) Pressure : 97.5 kPa

3. Data recorded

Speed of Pump (rpm)	Working pressure (kg/cm^2)	Test No.	Delivery from the discharge line (ml/min)	Overflow (ml/min)	Average discharge from the discharge line (ml/min)	Discharge rate of pump (ml/min)	Hydraulic power (Kw)
803	10	1	8350	49490.0	8317.5	57807.5	1.48
		2	8150				
		3	8370				
		4	8400				
801	15	1	9260	47270.0	9610.0	56880.0	1.77
		2	9580				
		3	9850				
		4	9750				
799	20	1	11550	44457.5	11512.5	55970.0	2.53
		2	11480				
		3	11600				
		4	11420				
796	25	1	12000	43455.0	11970.0	55425.0	3.05
		2	11920				
		3	12100				
		4	11860				

Minimum discharge rate = 55425.0 ml/min at 25 kg/cm^2
Maximum discharge rate = 57807.5 ml/min at 10 kg/cm^2
Discharge at Rated pressure = 56880.0 ml/min at 15 kg/cm^2

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

Rated pressure, kg/cm^2	:	15
Rated rpm of pump	:	801
Theoretical Volume, ml	:	77.21
Actual volume at rated rpm & rated pressure, ml	:	71.01
Volumetric efficiency %	:	92 %

5. POWER REQUIREMENT

(Vide Clause 6.3 of IS – 11313 : 2007)

The pump power requirement of the sprayer has been given as 3 to 7 hp (2.24 to 5.22 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 (litre/min)
		Speed (rpm)	Torque (Nm)			
1	10	481	29.17	803	1.48	57.81
2	15	481	34.71	801	1.77	56.88
3	20	480	49.83	799	2.53	55.97
4	25	470	60.33	796	3.05	55.43

Remark: i) **The power requirement was observed from 1.48 to 3.05 kW throughout the range of pressure against the declaration of 3 to 7 hp (2.24 to 5.22 kW)**

ii) **At rated speed and pressure of pump the power requirement is observed as 1.77 kW.**

6. PRESSURE ADJUSTMENT TEST

(Vide Clause 8.7.1 of IS: 11313-2007)

1. Date of test : 30.07.2019
2. Atmospheric conditions :
   a. Temperature : 33 °C
   b. Relative humidity : 68%
   c. Pressure : 97.5 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

7. TEST FOR HYDRAULIC SPRAY GUN

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

Date of test : 03.06.2019

Type of gun : Screw type

7.1 TEST FOR DISCHARGE RATE OF SPRAY GUN

The discharge rate for fine cone spray & jet spray pattern as 4100 ml/min & 9300ml/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 : 1692.5 ml/min

- For jet spray pattern : 4042.5 ml/min

Remarks :- Discharge Rate for fine cone spray pattern and jet spray pattern was observed not within the limit specified by the relevant code/standard.

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)	:	**Does not conform in toto**
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 material of connecting rod and pump inlet port end fitting does not meet the requirement of Indian Standard. It **MUST** be looked into.

16.2 The power input connection dimensions does not meet the requirement of Indian Standard. It **MUST** be improved.

16.3 The discharge rate for fine cone spray pattern and jet spray pattern spray gun at the pressure of 600 kPa does not conform the requirement of IS: 3652: 1955. It **MUST** be looked into for appropriate improvement

16.4 Provision against overload on P.T.O. drive shaft is not provided, It **MUST** be looked into.

16.5 Safety guard on P.T.O. drive shaft is not provided. It **MUST** be looked into.

16.6 The spray gun provided with sprayer is not designated as specified by relevant Indian Standard, needs to be provided.

16.7 The necessary tools are not provided. It **MUST** be provided.

16.8 A suitable pressure gauge/pressure indicator needs to be provided on sprayer as per the specifications specified by Indian Standard.

16.9 The discharge rate for fine cone spray 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.

16.10 The spray nozzle is not designated as specified by relevant Indian Standard. It should be looked into.

16.11 The spray angle for fine cone spray pattern of spray gun at pressure of 600 $\pm$ 60 kPa does not conform the requirement of IS: 3652-1995. It **MUST** be looked into.

16.12 The diameter of connecting rod does not meet the requirement of relevant code/standard. It **MUST** be looked into.

16.13 The gun batch or code number is not marked on spray gun. It **MUST** be marked.

16.14 The guard on belt pulley drive of sprayer is not provided. It **MUST** be provided.

16.15 The spray nozzle batch or code number is not marked on spray nozzle. It **MUST** be marked.

16.16 The engaged threaded length of outlet port does not meet the requirement of relevant Indian Standard. It **MUST** be looked into.

16.17 A suitable labeling plate needs to be provided with, inter alia, following information;-

i. Manufacturer's name
ii. Make
iii. Model
iv. Month & year of manufacture
v. Rated speed
vi. Rated pressure
vii. Discharge rate
viii. Recommended tractor horse power

16.18 Safety provision/safety wear

i) Apron and gum boots **MUST** be added in safety wear.

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

17. TECHNICAL LITERATURE

The following literatures are provided with the sprayer.

i) Operator's instruction manual of sprayer & pump with part's catalogue.

The following literature **MUST** be provided with the sprayer.

i) Service manual of sprayer.

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

TESTING AUTHORITY

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

18. APPLICANT'S COMMENTS

We will be fulfilling all the recommendations