

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



**BALAJI DIMOND-530,
TRACTOR OPERATED 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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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	Cast iron	Does not conform
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	Gunmetal	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 : 13.02.2019
2. Atmospheric conditions :
 - a) Temperature : 23°C
 - b) Relative humidity : 58%
 - c) Pressure : 99.1 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)
802	20	1	32180	Nil	32200	32200	1.12
		2	32200				
		3	32220				
		4	32200				
797	25	1	32000	Nil	31937.5	31937.5	1.58
		2	32000				
		3	31850				
		4	31900				
787	30	1	31400	Nil	31230	31230	1.91
		2	31100				
		3	31320				
		4	31100				
775	35	1	30900	Nil	30795	30795	2.15
		2	30750				
		3	30760				
		4	30770				

Minimum discharge rate = 30795 ml/min at 35 kg/cm²
Maximum discharge rate = 32200 ml/min at 20 kg/cm²
Discharge at Rated pressure = 32200 ml/min at 20 kg/cm²

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

Rated pressure, kg/cm² : 20
Rated rpm of pump : 802
Theoretical Volume, ml : 41.48
Actual volume at rated rpm & rated pressure, : 40.15
ml
Volumetric efficiency % : 97 %

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

The pump power requirement of the sprayer has been given as 3 hp (2.24 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	20	393	27.0	802	1.12	32.200
2	25	388	38.7	797	1.58	31.938
3	30	383	47.2	787	1.91	31.230
4	35	381	53.5	775	2.15	30.795

- Remark:**
- The power requirement was observed from 1.12 to 2.15 kW throughout the range of pressure against the declaration of 3 hp (2.24 kW)
 - At rated speed and pressure of pump the power requirement is observed as 1.12 kW.

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

- Date of test : 13.02.2019
- Atmospheric conditions :
 - Temperature : 23 °C
 - Relative humidity : 58%
 - Pressure : 99.1 kPa
- Data recorded

S. No.	Working pressure(kg/cm ²)	Fluctuation range (kg/cm ²)	Pressure drop (kg/cm ²)	Ratio
1.	20	NIL	NIL	--
2.	25	NIL	NIL	--
3.	30	NIL	NIL	--
4.	35	NIL	NIL	--

- 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 : 13.02.2019
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 4000 ml/min & 5000 ml/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 : 5145 ml/min
- For jet spray pattern : 6600 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.

Cl.9			
Cl. 9.1	All the components of the sprayer shall be free from burrs, pits and other visual defects which may be detrimental for their use.	Nothing that may be detrimental for use was noticed	Conforms
Cl. 9.2	The exposed metallic parts shall have a protective coating to prevent surface deterioration.	Exposed metallic parts have the protective coating.	Conforms

Cl.10. MARKING AND PACKING (Cl.10 IS:11313-2007)			
Cl.10.1 Marking	Each sprayer shall be marked with the following particulars :-		
a)	Manufacturer's name and his registered trade mark, Sl. No. and batch or code No.	SRI BALAJI AGRO INDUSTRY S.N. 285 & 286, HANUMAN GUTHI ROAD, YERRAGUNTLA YSR KADAP DISTT. ANDHRA PARDESH MOB. 9849963548.	Does not conform in spirit and also in toto

14. 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:1): 1997(Reaffirmed 2012) : **Does not conform in toto**
- vi) Dimensions of PIC yoke as per IS: 4931:1995 (Reaffirmed 2009) : **Does not conform in toto**

15. COMMENTS AND RECOMMENDATIONS

- 15.1 The serial No. of sprayer ,year of manufacture and recommended Tractor Power is not specified. It **MUST** be specified.
- 15.2 The year of manufacture of pump and Serial No is not specified. It should be specified.
- 15.3 The material of pump cylinder, pressure regulator and pump inlet port end fitting does not meet the requirement of Indian Standard. It **MUST** be looked into.
- 15.4 The three point linkage and power input connection dimensions does not meet the requirement of Indian Standard. It **MUST** be improved.
- 15.5 The discharge rate for fine cone spray pattern and jet spray pattern of gun at the pressure of 600 kPa does not conform to the requirement of IS: 3652: 1955. It **MUST** be looked into for appropriate improvement.

- 15.6 Provision against overload on P.T.O. drive shaft is not provided, It **MUST** be looked into.
- 15.7 Safety guard on P.T.O. drive shaft is not provided. It **MUST** be looked into.
- 15.8 Maximum achievable pressure does not meet the requirement of relevant Indian Standard. It **MUST** be looked into.
- 15.9 The spray gun provided with sprayer is not designated as specified by relevant Indian Standard. It should be designated
- 15.10 A suitable drain plug should be provided at the bottom of the tank for cleaning.
- 15.11 A suitable pressure gauge/pressure indicator needs to be provided on sprayer as per the specifications specified by Indian Standard.
- 15.12 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.
- 15.13 The spray nozzle is not designated as specified by relevant Indian Standard, needs to be provided.
- 15.14 The spray angle for fine cone spray pattern of spray gun at the pressure of 600±60 kPa does not conform to the requirement of IS : 3652-1995. It **MUST** be looked for further improvement.
- 15.15 Necessary tools are not provided with sprayer. It **MUST** be provided.
- 15.16 The engaged threaded length of outlet port does not meet the requirement of relevant Indian Standard. It **MUST** be looked into.
- 15.17 The aperture size of suction strainer does not meet the requirement of relevant Indian Standard. It **MUST** be looked into.
- 15.18 As an important thing as pressure regulator was found “ not working”. It **MUST** be looked into.
- 15.19 The spray angle for fine cone spray pattern of spray nozzle at the pressure of 300±30 kPa does not conform to the requirement of IS : 3652-1995. It **MUST** be looked for further improvement.
- 15.20 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

15.21 Safety provision/safety wear

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

16. TECHNICAL LITERATURE

Operator manual and parts catalogue is provided with the sprayer.

It is recommended to provide service manual for guidance of user.

The operator manual should be updated as per IS 8132-1999.

The operator manual should contain safety instructions regarding handling poisonous agrochemical before, during and after spraying operation.

TESTING AUTHORITY

R.K. NEMA SENIOR AGRICULTURAL ENGINEER	<i>Rema</i>
P. K.PANDEY DIRECTOR	<i>U3n - JMSH</i>

17. APPLICANT'S COMMENTS

We will improve the sprayer at production level.

