

प्रारंभिक व्यावसायिक परीक्षण रिपोर्ट  
INITIAL COMMERCIAL TEST REPORT

संख्या/No. CSIR/CMERI/FMTTC/2023/011  
माह/Month: August, 2023

THIS TEST REPORT VALID UP TO : 31<sup>st</sup> AUGUST, 2028



**GLPBS  
PORTABLE BATTERY OPERATED SPRAYER**



कृषि मशीनरी प्रशिक्षण और परीक्षण केंद्र  
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**1. SPECIFICATIONS****1.1 General**

Type	: Battery Operated Portable Sprayer
Make	: GALAXY
Model	: GLPBS
Serial No.	: 00001
Name of manufacturer	: Siddharth Agro Industries 201, Shree Ram Plaza, Station Road, Patna – 800001 (Bihar)
Year of manufacture	: 2023
Output Capacity of sprayer, L/min.	: 3.5
Working pressure, kg/cm <sup>2</sup>	: 4.2 – 5.6 (60 – 80 psi)

**1.2 Motor (As per Sticker)**

Type	: D C Motor
No. of Motor	: 02
Make	: EARTH
Serial number	: C21/08C
Motor operating voltage	: 12 V, DC
Motor power	: Not Specified
Max. Current	: 6.0 A
Rated speed, rpm	: 3500

**1.3 Battery (As per Sticker)**

Type	: Sealed, Lead-Acid Battery
Make	: JIUHA
Model	: 6-DZF-12
Serial number	: GF20221071-0638
Capacity & rating	: 12V, 12 AH/ 20HR
Country of origin	: Not Specified
Location	: Under the body cover.

**1.4 Battery Charger from AC Supply**

Make	: PRACHI
Model	: Not specified
Input voltage	: AC - 220V
Output voltage	: DC 12 V
Output current	: 2.0 A
Country of origin	: Not specified

**1.5 Pump**

Type	: Diaphragm
Make	: EARTH
Model	: ZQ-7002
Sr. number	: C21/08C
Method of drive	: Directly connected to motor
Working pressure, kg/cm <sup>2</sup>	: 4.2 – 5.6 (60 – 80 psi)
Rated pressure, kg/cm <sup>2</sup>	: 4.2 (60 psi)



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Rated speed, rpm : 3500  
 Discharge capacity at rated pressure\*, L/min : 3.5  
 Country of origin : Not specified  
 Mounting arrangement : Motor & pump is mounted on body.

\* As per data provided by the applicant

1.6 Chemical Tank : Not Applicable

1.7 Agitating Device : Not Applicable.

**1.8 Spray Gun**

Make : Not specified  
 Type : Screw type  
 No. of Spray gun : 1  
 Recommended operating pressure, : Not specified  
 Discharge rate, lit/ min : Cone – 1.8 lit/ min  
 Jet – 2.60 lit/min

1.9 Accessories (for operator's safety against pesticides) : Mask, hand gloves and goggles provided.

**1.10 Overall Dimensions, mm**

Height : 284  
 Width : 213  
 Length : 210

**1.11 Total Mass, kg**

1.11.1 Mass with all accessories, Kg : 7.39

1.11.2 Identification/Labelling plate : a) One sticker is provided on the sprayer with following details:

GALAXY GL-PBS  
 BATTERY OPERATED SPRAYER  
 SR. NO .00001 BATCH: 2023  
 SIDDHARTH AGRO INDUSTRIES  
 201, SHREE RAM PLAZA, STATION ROAD, PATNA -800001



*[Handwritten signature]*



**4. TEST FOR DISCHARGE RATE OF PUMP**  
(Vide Clause 8.3 of IS: 11313 - 2007)

1. Date of test : 04.07.2023
2. Atmospheric conditions: -
- a) Temperature : 38 °C
  - b) Relative humidity : 65 %
  - c) Pressure : 100.3 kPa

3. Data recorded :

Speed of Pump (rpm)	Working pressure (kg/cm <sup>2</sup> )	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)
3588	2	1	4110	NIL	4110	4110
		2	4100			
		3	4120			
		4	4110			
3495	3	1	3560	NIL	3573	3573
		2	3580			
		3	3570			
		4	3580			
3460	4	1	2940	NIL	2953	2953
		2	2960			
		3	2960			
		4	2950			
3540	5	1	2130	NIL	2130	2130
		2	2140			
		3	2120			
		4	2130			

Minimum discharge rate = 2130 ml/min at 5.0 kg/cm<sup>2</sup>  
 Maximum discharge rate = 4110 ml/min at 2.0 kg/cm<sup>2</sup>  
 Discharge at rated pressure = 2953 ml/min at 4.0 kg/cm<sup>2</sup>

**5. TEST FOR VOLUMETRIC EFFICIENCY**  
(Vide Clause 8.4 of IS: 11313 - 2007)

Date of test : 10.07.2023  
 Rated pressure, kg/cm<sup>2</sup> : 4  
 Avg. discharge of water at rated pressure, l/min : 2.953  
 Avg. discharge of water at no load, l/min : 5.15  
 Avg. pump speed at no load, rev/min : 4890  
 Avg. pump speed at rated pressure, rev/min : 3460  
 Volumetric efficiency of pump, % : 81.04  
 Remark: - The volumetric efficiency conforms to the requirement of IS:11313-2007.



## 12 ASSESSMENT OF CONSTRUCTIONAL REQUIREMENTS

12.1	GENERAL REQUIREMENTS		
Ref. Cl. No.	Specified requirements as per Indian Standard IS: 11313-2007	Observation	Remarks
Cl. 5.1	The tank, if provided, its capacity shall be not less than 100 liters the tank capacity shall be declared by the manufacturer.	Not applicable for portable power sprayer.	NA
Cl.5.1.1	The tank when filled up to its total capacity, the tank shall not show any sign of leakage and shall not buckle.	Not applicable for this design.	NA
Cl. 5.2 Filling Hole	A filling hole of suitable diameter shall be provided on top of the tank.	Not applicable for this design.	NA
Cl.5.2.1	The hole shall be covered with a tightly fitted cap.	Not applicable for this design.	NA
Cl. 5.2.2	The suitable drain plug shall be provided at the bottom of the tank for cleaning.	Not applicable for this design.	NA
Cl.5.3 Lubrication Cl. 5.3.1	A suitable arrangement shall be provided for lubricating the moving parts and shall be indicated by the manufacturer in the manual	Not applicable for this design.	NA
Cl.5.3.2	The pump shaft of roller vane type displacement pump shall be supported by permanently lubricated bearings.	Not applicable for this design.	NA
Cl.5.4 Spreader	If provided, shall be able to hold the piston in its position without distortion against the wall of the pump cylinder.	Not applicable for this design.	NA
Cl.5.5 Driving Shaft	A suitable driving shaft shall be provided so that either it can be coupled directly to the prime mover or through a pulley.	Not applicable for this design.	NA
Cl.5.6 Suction Spout	There shall be one suction spout having serrated nipple or threaded connection. In case of threaded connection external thread size, minimum of designation G $\frac{1}{2}$ B IS: 2643:2005	One suction spout is of serrated nipple type provided.	Conforms
Cl. 5.7 Delivery Spout	There may be two delivery spouts having threaded connection. The external thread size shall be not less than the designation of G $\frac{1}{4}$ B IS:2643-2005. The engaged length of the thread shall be not less than 6 mm.	One delivery spout with thread size of G 5/16 is provided with engaged length 10.97 mm.	Conforms



Cl.5.8 Overflow Pipe	An overflow pipe of suitable diameter and length shall be provided.	Not applicable for this design.	NA
Cl. 5.9 Pump Inlet/ Outlet Port	This may be integral or separately attached to pump body. The thread size of inlet/outlet port shall conform to thread size specified in IS: 2643-2005. The engaged length of the thread shall be not more than 8 mm.	Pump body is separately attached with four nos. screws. The engaged threaded length of outlet port is 12.60 mm.	Conforms
Cl. 5.10 Regulator cum Relief Valve	A pressure regulator or valve to adjust the working pressure up to rated pressure shall be provided. It shall be able to release all or part of the liquid delivered by the pump to be returned to the tank at set pressure. It shall not allow the increase of pressure by more than 25% of maximum pressure declared by the manufacturer.	Not applicable for this design.	NA
Cl. 5.11 Pressure Gauge	A suitable pressure gauge/ pressure indicator having full scale reading not exceeding two and half times and not less than 1.5 times the rated pressure shall be provided.	Not applicable for this design.	NA
Cl.5.12 Pressure Dampener	A pressure dampener may be provided at the option of the purchaser to facilitate easy reading of pressure.	Not applicable for this design.	NA
Cl. 5.13 Gaskets	The gaskets, wherever provided shall withstand the test prescribed in 7.4 of IS:10134-1994.	Not applicable as made of PVC.	Conforms
Cl. 5.14 Delivery Hose	If provided with couplings shall have suitable diameter and length as agreed to between the purchaser and the supplier.	Delivery hose provided of dia. 12.2 mm and length 15.12 meters.	Conforms
Cl. 5.14.1 Hose Connections	The hose connections for threaded type and nipple type connections shall be nut-nipple and clamp type and clamp type respectively.	The hose connection is threaded nut type.	Conforms
Cl. 5.14.2	The metallic nut if provided shall have the internal thread size, minimum of designation G $\frac{1}{4}$ B IS:2643-2005 Part-I. The clamp shall consist of ferrule or clip. Other thread sizes if used shall be of standard pipe threads.(IS:2643-2005)	Metallic nut of internal, thread size G5/16 is provided.	Conforms
CL 5.14.3	The hose and hose connection shall withstand the test prescribed in 7.2 of IS: 10134-1994.	There was no leakage, crack and breakage in hose & hose connection during testing.	Conforms




## 15 TECHNICAL LITERATURE

The operator, maintenance & parts manual of sprayer was provided during the test which found adequate, however, the manual should be updated as per IS: 8132:1999, with the inclusion of safety instructions regarding handling poisonous agrochemical and first aid.

## TESTING AUTHORITY

Report Prepared by	Sr. Technical Officer, CSIR-CMERI Farm Machinery Testing Centre	<i>[Signature]</i> 10/08/2023
Report Verified by	Scientist, CSIR-CMERI Farm Machinery Testing Centre	<i>[Signature]</i> 10/08/23
Report Approved by	In-Charge, CSIR-CMERI Farm Machinery Testing Centre	<i>[Signature]</i> 10/8/2023
Report Approved for release by	Head, Business Development Group, CSIR-CMERI, Durgapur	<i>[Signature]</i> 10/8/23

## 16. APPLICANT'S COMMENTS

Para No.	Our Reference	Applicant's Comments
16	14.1 - 14.9	Noted and will be rectify as per your recommendations

