प्रारंभिक व्यावसायिक परीक्षण रिपोर्ट | संख्या/No. CSIR/CMERI/FMTTC/2023/010

INITIAL COMMERCIAL TEST REPORT | माह/Month: August, 2023

THIS TEST REPORT VALID UP TO : 31st AUGUST, 2028

GL1212DM
BATTERY OPERATED KNAPSACK SPRAYER

कृषि मशीनरी प्रशिक्षण और परीक्षण केंद्र

Farm Machinery Training and Testing Centre

सीएसआईआर- केन्द्रीय यांत्रिक अभियांत्रिकी अनुसंधान संस्थान

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1.3 Battery (As per Sticker)

Type	:	Sealed, Lead-Acid Battery
Make	:	JIUHA
Model	:	**Not specified**
Serial number	:	LS202112H4ZS
Capacity & rating	:	12V, 15AH/ 20HR
Country of origin	:	**Not Specified**
Location	:	Below the chemical tank.

1.4 Battery Charger from AC Supply

Make	:	GALAXY
Model	:	90611A-B
Input voltage	:	AC 240V, 50/60 Hz
Output voltage	:	DC 12 V
Output current	:	1.7 A
Country of origin	:	**Not specified**

1.5 Pump

Type	:	Diaphragm
Make	:	EARTH
Model	:	ZQ-7002
Sr. number	:	C21/07C
Method of drive	:	Off/ On Switch
Working pressure, kg/cm^2	:	1 – 4
Rated pressure, kg/cm^2	:	3
Rated speed, rpm	:	3100
Discharge capacity at rated pressure, l/min	:	3.5
Country of origin	:	**Not specified**
Mounting arrangement	:	Battery, motor & pump is mounted below the chemical tank

1.6 Chemical Tank

Material of construction	:	PVC
Size (mm)	:	390 x 375 x 185
Capacity (l)	:	20
Location	:	Above battery, motor and pump mounting

1.7 Agitating Device : Not provided.
However, there is a pump in equipment through which excess pumped spray solution returned to the tank. This returned spray solution full-fill the agitation of spray solution.

1.8 Nozzle

Type of nozzle	:	Flat fan, Fixed hollow cone (4 hole & 8 hole), Double hole Nozzle type
Nozzle designation	:	Not Marked
Number of nozzle	:	Four

1.9 Mounting arrangement : Battery, motor and pump is mounted beneath the chemical tank

1.10	**Accessories (for operator's safety against pesticides)**	:	Mask, hand gloves and goggles are provided.
1.11	**Overall Dimensions, mm**		
	Height	:	480
	Width	:	200
	Length	:	425
1.12	**Total Mass, kg**		
1.12.1	**Mass with all accessories and chemical tank, kg**	:	6.75
1.12.2	**Mass with accessories and chemical tank full, kg**	:	26.75
1.13	**Identification/Labelling plate**	:	

i) The text "**GALAXY**" is marked on the tank.
ii) The following text is embossed on the tank of the sprayer.

"**ISO 9001 : 2018**"

iii) Also One Sticker containing

GALAXY GL-1212DM
BATTERY OPERATED SPRAYER
SR. NO. 00006 BATCH: 2023
SIDDHARTH AGRO INDUSTRIES
201, SHREE RAM PLAZA, STATION ROAD, PATNA -800001

is pasted on the tank.

11. ENDURANCE TEST OF SPRAYER
(Vide clause 8.8 of IS-11313:2007)

1. Date of test: 05.06.2023 to 12.06.2023
2. Total running time (h) - 50
3. Quantity of liquid collected during endurance: -

			Avg. discharge (ml/min)
a)	First Collection	-	2820
b)	Second Collection	-	2850
c)	Third Collection	-	2850
d)	Fourth collection	-	2810
e)	Fifth Collection	-	2850
f)	Sixth Collection	-	2820
g)	Seventh Collection	-	2850

4. Percentage variation of discharge from first to last collection, 1.06 %

12. TEST FOR PUMP CHAMBER
(Vide Clause 7.1 of IS 10134-1994)

Date of test : 15.06.2023

Sr. No.	Details	Condition
1	Test Condition	Outlet end closed
2	Pressure applied -Hydraulic pressure -Pneumatic pressure	Motor stopped beyond 6.00 kg/cm² pressure against the pressure requirement of 7.5 kg/cm². 4.5 kg/cm²
3	Duration	1 minutes each
4	Result	No leakage, crack deformation or breakage observed in pump chamber during the test.

Remarks : Tendency of stalling of motor was observed beyond 6.00 kg/cm² hydraulic pressure and therefore sprayer does not comfirm to the requirement laid down in clause 7.1 of IS: 10134:1994.

13. TEST FOR HOSE AND HOSE CONNECTION
(Vide Clause 5.14.3 of IS 11313:2007 & Clause 7.2 of IS 10134-1994)

Date of test : 14.06.2023

Sr. No.	Details	Condition
1	Test condition	Outlet end closed
2	Hydraulic pressure applied	1.5 MPa
3	Duration	1 minutes
4	Result	No leakage, crack or breakage observed in hose and hose connection during the test.

C-10 MARKING	Each cut-off device shall be marked with the following particulars:		
a)	Manufacturer's name or recognized trade-mark.	Not marked	**Does not confirm**
b)	Batch or code number, and	Not marked	**Does not confirm**
c)	Type of cut-off device.	Not marked	**Does not confirm**
14.5 OTHER REQUIREMENTS AS PER IS: 3652-1995			
F-3.1 Rate of discharge F-3.1.1	The discharge rate of the nozzle shall be declared by the manufacturer. In case of adjustable nozzle, the declared value shall be for extreme adjustments for cone and jet spray patterns at a pressure of 300 kPa.	Declared as 3.50 l/min for hollow cone spray pattern by the manufacturer.	Conforms
F-3.1.2	When tested in accordance with F-7, The nozzles shall provide a rate of discharge as given in Table-3. The rate of discharge shall be within ± 5 percent for fixed type and ±10 percent for adjustable type of nozzle, of the declared value.	Withstand the test. (Refer chapter 10 clause 10.1 of this test report).	Conforms
F-3.2 Spray Angle	The spray angle of the nozzle shall be declared by the manufacturer. The angle, when tested in accordance with method given in F-9 shall not differ by ±3 deg. for fixed type and ±5° for adjustable type nozzles from the declared value	The spray angle of nozzle is measured between 68° to 70°. The spray angle value is 70° declared by the manufacturer.	Conforms
F-3.3 Endurance test	The hydraulic spray nozzle when test in accordance with F-7 & F-9 at a pressure of 300±30 kPa for 48 hrs. duration with continuous stretches of 6 hrs. variation in discharge rate and spray angle from initial values should not be more than 5% and 3 degree respectively.	Withstand the test (Refer chapter 10 clause 10.3 of this test report).	Conforms
F-4 Other Requirements F-4.1	If strainer is provided, the average size of any side or diameter of the apertures shall be not more than 450 µm.	Strainer is not provided in nozzle.	--
F-4.2	At the option of the purchaser the provision shall be made for rotating the nozzle by hand to make it swivel type.	NA	--

F-5 Designation F-5.1	The cone and fan nozzle shall be designated by its identification mark, spray angle and discharge rate. An adjustable nozzle shall be designated by its identification mark AN-C-J for cone and Jet spray pattern and discharge rate at a controlled pressure of 300 kPa.	Not marked	**Does not confirm**
F-6 Workmanship & Finish F-6.1	The components of the spray nozzles shall be free from burrs and other defects; this applies particularly to the internal surfaces and specially to the orifice.	No noticeable defect observed.	Conforms
F-6.2	The mating faces of the cap, tip and nozzle body or boss, shall be finished flat so as to seal on the end face of the nozzle body or boss, a gasket may be used, if necessary.	Mating faces of nozzle body is provided with gaskets to seal on the end face of nozzle body.	Conforms
F-6.3	The screw thread shall be well formed and the crests of the threads shall be free from burrs or any other defects which may prevent free engagement.	Satisfactory	Conforms
F-11 Marking	Each nozzle shall be marked with following particulars:-		
	a) Manufacturer's name & recognized trade mark	Not marked	**Does not confirm**
	b) Nozzle designation	Not marked	**Does not confirm**
	c) Batch or code number	Not marked	**Does not confirm**

15. TEST FOR STRAP AND ITS ASSEMBLY

(Vide Clause 7.3 of IS 10134-1994)

Date of test: 16.06.2023

The sprayer was filled with clean water to its specified capacity. The sprayer was hung from a solid support by its straps simulating its carriage on the shoulder of an operator. The tank was vertically raised to height of 300 mm and was allowed to drop freely and hung by straps.

Observation: No damage was observed during testing.

18. 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	10/08/2023
Report Verified by	Scientist, CSIR-CMERI Farm Machinery Testing Centre	10/08/23
Report Approved by	In-Charge, CSIR-CMERI Farm Machinery Testing Centre	10/8/2023
Report Approved for release by	Head, Business Development Group, CSIR-CMERI, Durgapur	10/8/23

19. APPLICANT'S COMMENTS

Para No.	Our Reference	Applicant's Comments
19	17.1 – 17.14	Noted and will be rectify as per your recommendations