

प्रारंभिक व्यावसायिक परीक्षण रिपोर्ट

INITIAL COMMERCIAL TEST REPORT

संख्या/No. CSIR/CMERI/FMTTC/2022/009

माह/Month: AUGUST, 2022

THIS TEST REPORT VALID UP TO

:

31st August, 2029



**ASPEE PSB30A1N/SBDGS
ENGINE OPERATED POWER SPRAYER**



कृषि मशीनरी प्रशिक्षण और परीक्षण केंद्र

Farm Machinery Training and Testing Centre

सीएसआईआर- केन्द्रीय यांत्रिक अभियांत्रिकी अनुसंधान संस्थान

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Manufacturer	: ASPEE Agro Equipment Pvt. Ltd. Opp. Gram Panchayat office, Chikhli Road, Antalia Village, Bilimora-396321, Ta-Gandevi, Dist-Navsari, GUJARAT
Test requested by	: The applicant
Selected for test by	: The applicant
Method of selection	: The sprayer is directly submitted by the applicant for the test. Hence, method of selection is not known.

1. SPECIFICATIONS

1.1 General

Name of Machine	: ASPEE Bili HTP Power sprayer
Type	: HTP Hydraulic Power sprayer pump
Make	: ASPEE
Model	: PSB30A1N/SBDGS
Brand	: ASPEE
Serial No.	: C/048047
Output capacity li/min	: 30 lit./min
Name of manufacturer	: ASPEE Agro Equipment Pvt. Ltd. Opp. Gram Panchayat office, Chikhli Road, Antalia Village, Bilimora-396321, Ta-Gandevi, Dist-Navsari, GUJARAT
Year of manufacture	: December-2021
Working pressure, kg/cm ²	: 14 (200psi)

1.2 Recommended Source of Power : Engine

1.3 Prime Mover

Type	: Single Cylinder, 4 Stroke, Petrol Engine
Make	: Honda
Model	: GX160
Power rating, kW*	: 2.9 kW / 3600 RPM
Max. torque, Nm*	: 11 Nm @ 2500 RPM
Engine Sr. No.	: JHIG8F GCAA8-41174G7
Country of origin	: China

1.3.1 Cylinder

Number	: 1
Disposition	: Horizontal
Bore / Stroke, mm*	: 68 / 45
Capacity, c.c.*	: 163
Compression ratio*	: 9:1

*As declared by the applicant

12. ENDURANCE TEST OF SPRAYER

(Vide clause 8.8 of IS-11313:2007)

1. Date of Test : 11.07.2022 to 22.07.2022
2. Total running hours : 50
3. Quantity of liquid collected during endurance :-
Avg. discharge (ml/min)
 - a) First Collection - 38400
 - b) Second Collection - 38200
 - c) Third Collection - 38100
 - d) Fourth collection - 37900
 - e) Fifth Collection - 38150
 - f) Sixth Collection - 37950
 - g) Seventh Collection - 37800
4. Percentage variation of discharge from first to last collection, was observed to be 1.56 %.

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 :		
Sr. No.	Details	Condition
1	Test Condition	Hose outlet end closed
2	Hydraulic pressure applied	1.5 MPa
3	Duration of pressure	1 Minute
4	Result	No Leak, Crack or Breakage observed in hose and hose connection during the test.

14. ASSESSMENT OF CONSTRUCTIONAL REQUIREMENTS

14.1	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
CL5.1.1	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
CL5.2.1	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.	Three grease cups provided and indicated in the manual.	Conforms
CL.5.3.2	The pump shaft of roller vane type displacement pump shall be supported by permanently lubricated bearings.	Not applicable as plunger pump is provided.	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.	Satisfactory	Conforms
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.	Pulley having two grooves for belt is provided on shaft for drive from Prime mover.	Conforms
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 $\frac{1}{2}$ B IS:2643-2005. The engaged length of the thread shall be not less than 6 mm.	Three delivery spout with thread size of G 5/16 is provided with engaged length 10.80 mm.	Conforms
CL.5.8 Overflow Pipe	An overflow pipe of suitable diameter and length shall be provided.	Overflow pipe of 2820 mm length and 7.0 mm dia. is provided.	Conforms
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. bolts. The thread size of outlet is G5/16. The engaged threaded length of outlet port is 11 mm.	Does not conform in toto
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.	A pressure regulator to adjust the working pressure up to rated pressure is provided. It is not possible to increase pressure beyond 42 kg/cm ² which is within the limit of 25% of extra pressure of declared maximum pressure i.e. 43.75 kg/cm ² .	Conforms

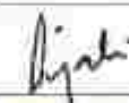
18. COMMENTS AND RECOMMENDATIONS

- 18.1 The spray angle of the spray gun at a pressure of 600 ± 60 kPa for extreme adjustment of fine cone spray pattern is not declared by the manufacturer. However the applicant has declared 100° angle at recommended operating pressure of 200 PSI (1379kPa). But the measured value of angle is 73° . It does not conform the relevant standard. It MUST be looked into.
- 18.2 The discharge rate of the spray gun for extreme adjustment for fine cone spray and jet spray patterns at a pressure of $600 \text{ kPa} \pm 60 \text{ kPa}$ is not declared by the manufacturer. However the observed discharge rate for fine cone spray pattern and jet spray pattern is within limit specified by the relevant Code/ Standards for declared value of the applicant at the recommended operating pressure i.e. 200 PSI (1379kPa). It MUST be looked into.
- 18.3 A pressure gauge up to 120 bar is provided. The indicator full scale reading exceeds 2.5 times of rated pressure i.e. 35 kg/cm^2 which does not conform IS: 11313-2007. It MUST be looked into.
- 18.4 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.
- 18.5 The identification mark of spray gun is provided as 1008000 10000JET at working pressure of 200 PSI. The applicant needs to declare at 600 kPa as per standard. It should be looked into.
- 18.6 The necessary tools are not provided. It MUST be provided.
- 18.7 The suction strainer aperture size is $525 \mu\text{m}$ which should be less than $425 \mu\text{m}$. It MUST be looked into.
- 18.8 Country of origin of pump is not specified. It should be specified.

19. 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

Dr. ANJALI CHATTERJEE Chief Scientist	
Dr. SUBRATA KUMAR MANDAL Senior Principal Scientist	
Md. IMRAN SHEKH Senior Scientist	