



**TAIZHOU YONGSHUN IMP. & EXP. CO. LTD., JB-16C-2
BATTERY OPERATED KNAPSACK 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

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F-3 PERFORMANCE REQUIREMENTS			
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.	3.6 lpm, declared by 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.	The rate of discharge is as given in table 3 of IS: 3652-1995. Rate of discharge is 745 ml/min.	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 deg. for adjustable type nozzles from the declared value.	The maximum spray angle of nozzle is 88.40 deg. as measured. The spray angle value is not declared by manufacturer.	Does not conform
F-3.3 Endurance test	The hydraulic spray nozzle when tested in accordance with F-7 and F-9 at a pressure of 300 ± 30 kPa after operating for 48 hour duration with continuous stretches of 6h, variation in discharge rate and spray angle from initial values should not be more than ± 5 percent and ± 3 deg. respectively.	Endurance test of spray nozzle completed and variation in discharge and spray angle is 1.32 % & 0.39 % respectively.	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 μ m.	Strainer is not provided in the nozzle.	Conforms
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 conform
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.	Satisfactory	Conforms

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Cl.7.3.1 Strap Cushion	A cushion of minimum 40 mm width and 20 mm thickness may be provided with each strap at least on the portion that rests on shoulder of the operator. The cushion, if provided, shall be covered with suitable covering material, such as canvas, Rexene & PVC or plastic coated fabrics.	Cushion of width 68 mm and 10 mm thickness is provided.	Conforms for width and Does not conform for thickness
Cl.7.3.2 Back rest cushion	A back rest cushion may be provided. The cushion if provided, shall be covered with suitable covering material, such canvas, Rexene and PVC or plastic coated fabrics	Back rest cushion is not provided.	Does not conform
Cl.7.3.3 Agitator	Agitator may be provided.	Not Provided	Does not conform
Cl.7.3.4 Choice of operation	The sprayer may be supplied with arrangement for operating lever to be fixed either on right or on left side.	Not applicable	--
Cl.7.3.5	Each spray shall be provided with a set of mask ,hand gloves and safety goggles	A set of mask hand gloves and safety goggles is provided with sprayer.	Conforms
Cl.8 Workmanship & Finish	The components of the sprayer shall have a smooth finish and shall be free from pits burrs, sharp edges and other defects, that may be detrimental for their use.	Satisfactory	Conforms
Cl. 8.2	The exposed mild steel parts shall have a protective coating to prevent surface deterioration. The steel used for hose ferrule/clip shall be plated with cadmium, zinc or nickel exposed brass parts may be given a suitable protective finish with clear transparent lacquer.	Metallic part are coated with enamel paint.	Conforms
Cl. 9 Marking & Packing	Each sprayer shall be marked with the following particulars		
Cl. 9.1 Marking	a) Manufacturer's name or recognized trade mark	Not marked	Does not conform
	b) Batch or Serial No.	Provided	Conforms
	c) Tank nominal capacity	16 ltr.	Conforms
Cl.9.3 IS:3906-1995 Packing	Each sprayer shall be packed as agreed to between the purchase and the supplier for safe handling in transit.		

4. SUMMARY OF OBSERVATION

4.1 The discharge rate was observed as 745 ml/min at 300 kPa pressure against the minimum of 500 ml/min.

4.2 Endurance test

- a) The test was conducted 48 hours. The discharge rate variation is observed as 1.32%, which is within the limit of $\pm 5\%$.
- b) No noticeable breakdown was observed during test.



5. COMMENTS & RECOMMENDATIONS:

5.1 Conformity to Indian Standard

The time required for full charging of battery was observed as 11 to 12 hours the sprayer operation time after full charging was observed as 8 to 9 hrs.

Taizhou Yongshun Imp. & Exp. Co. Ltd., JB-16C-2 battery operated sprayer does not conform the following requirements specified in Indian Standard. **These should be rectified as per relevant Indian Standard.**

- i) Cl. 4.1 IS: 3652-1995 – Material for spray lance and nipple is not as per IS.
 - ii) Cl.6 IS 3906:1995 – The width of strap is not as per IS.
 - iii) Cl. 6.5 IS: 3652 – 1995- Threaded connections are not as per IS.
 - iv) Cl. 6.10 IS: 3906-1995- Discharge out let nipple length is on power side.
 - v) Cl. 3.2 – The Strainer area is less than 1000 mm².
 - vi) Cl. 3.2.1 – The average size of any side or diameter of apertures of the strainer is 900 µm more than the specified limit of 450 µm.
 - vii) Cl-6.2 - The maximum trigger actuation torque is 42 Kgf-cm. This is at higher side than the specified in IS.
 - viii) Manufacturer's name or recognized trade mark is not marked. It should mark.
 - ix) Cl. 10 Marking-b) Batch or code number is not marked on cut of device as per IS.
 - x) Cl. 10 Marking-c) Type of cut-off device is not marked on cut of device as per IS.
 - xi) Cl. 6.8.3 IS: 3652-1995 D-2 Material of spray lance is not as per IS.
 - xii) Cl. 6.8.3 IS: 3652-1995 D-2 (a)-Manufacturer's name or recognized trade mark is not marked. It should mark.
 - xiii) Cl. 6.8.3 IS: 3652-1995 D-5 b) Nominal Length is not marked as per IS.
 - xiv) Cl. 6.8.3 IS: 3652-1995 D-5 c) Batch or code number is not marked as per IS.
 - xv) F-3.2 – Spray Angle is not declared by manufacturer.
 - xvi) Cl. 6.14 Sub. Clause F 5(b) IS: 3652-1995 Nozzle designation is not provided.
 - xvii) Cl. 6.14 Sub. Clause F (a), 11 (b) & (c) IS: 3652-1995- Nozzle marking is not provided.
 - xviii) Cl. 7 IS 3906-1995 sub clause - Cl.7.3.1 Strap cushion is not provided as per IS. It may provide.
 - xix) Cl. 7 IS 3906-1995 sub clause - Cl.7.3.3 Agitator is not provide. It should be provided.
 - xx) Battery charger make, model, output current and country of origin is not specified by applicant. It should be specified on charger.
 - xxi) Motor make, speed and serial number is not specified by applicant. It should be specified on sprayer.
 - xxii) Pump make and serial number is not specified by applicant. It should be specified on sprayer.
 - xxiii) Nozzle manufacturer name/trade mark, designation and batch or code number is not marked on nozzle. It should be marked.
- 5.2 Spray distribution pattern is complying in fig. 221 Rectangular distribution limit as per IS: 3652-1995.

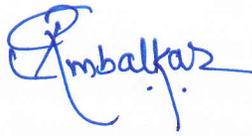
5.3 Safety provisions/safety wear

- i) Safety signs and hazard pictorials are not provided on the machine. It must be provided for the safety of the users.
- ii) The accessories viz mask, hand gloves and safety goggles for operator's safety are provided with sprayer.
- iii) The safety instructions regarding handling of poisonous chemicals & first aid should be provided in operator's manual.

6. TECHNICAL LITERATURE

Operator's manual is provided with the machine during test. The operator's manual, service manual and spare part catalogue should be updated and brought out as per IS:8132-2007.

TESTING AUTHORITY

G. R. AMBALKAR AGRICULTURAL ENGINEER	
R. K. NEMA SENIOR AGRICULTURAL ENGINEER	
P. K. PANDEY DIRECTOR	

7.**APPLICANT'S COMMENTS**

We accept the above report in full.