



**TRACTOR OPERATED SPRAYER
JAPUJI, KAT TS-61**



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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xiii)	Spray nozzles	Brass, stainless steel	Plastic	Does not conform
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	Plastic	Conforms
xvii)	Pipe for agitator	Galvanized iron, Brass, PVC	PVC	Conforms
xviii)	Piston (bucket) screw	Brass, stainless steel	Stainless steel	Conforms
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	Brass	Conforms
xxv)	Piston rod guide	Brass, Aluminum alloy, Gunmetal, Nylon	N.A.	---
xxvi)	Connecting rod	Carbon steel	Aluminum	Does not conform
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	Gun metal	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.		Provided	Conforms

3. TEST FOR DISCHARGE RATE OF PUMP [vide Clause 8.3 of IS- 11313: 2007]

1. Date of test : 16.11.2017
2. Atmospheric conditions :
 - a) Temperature : 21°C
 - b) Relative humidity :42%
 - c) Pressure : 99 kPa

3. Data recorded

Specified speed of Pump (rpm)	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)
850	15.0	1	27820	15622.5	27990.0	43612.5
		2	27940			
		3	28050			
		4	28150			
847	18.3	1	31200	12125.0	31162.5	43287.5
		2	31150			
		3	31100			
		4	31200			
845	21.6	1	32900	9767.5	32990.0	42757.5
		2	33200			
		3	32860			
		4	33000			
843	25.0	1	35600	6847.5	35695.0	42542.5
		2	35110			
		3	35650			
		4	35820			

Minimum discharge rate = 42542.5ml/min at 25 kg/cm²
Maximum discharge rate = 43612.5ml/min at 15 kg/cm²
Discharge at Rated pressure = 43612.5 ml/min at 15 kg/cm²

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

Rated pressure : 15 kg/cm²
 Rated rpm of pump : 850
 Theoretical volume, ml : 53.11
 Actual volume at rated rpm & rated pressure, ml : 50.96
 Volumetric efficiency % : 96%



5. POWER REQUIREMENT (Vide Clause 8.5 of IS – 11313 : 2007)

The pump power requirement of the sprayer has been marked as 3 to 5 hp (2.2 to 3.7kW) .

15. COMMENTS AND RECOMMENDATIONS

- 15.1 The chemical tank provided with the sprayer **MUST** have provision for drain plug and graduations to read the level of liquid in the tank.
- 15.2 Sprayer serial number, batch or code number should be marked on sprayer.
- 15.3 The recommended tractor power is not specified on sprayer. It **MUST** be specified on sprayer.
- 15.4 The three point linkage and power input connection dimensions do not meet the requirement of Indian Standard. It **MUST** be improved.
- 15.5 A suitable pressure gauge as per the requirement of Indian Standard **MUST** be provided on sprayer.
- 15.6 Material of construction of spray nozzle does not meet the requirement of Indian standard. It **MUST** be looked into.
- 15.7 Material of construction of connecting rod does not meet the requirement of Indian standard. It **MUST** be looked into.
- 15.8 The spray angle of nozzle does not meet the requirement of Indian standard. It **MUST** be looked into.
- 15.9 The discharge rate of nozzle does not meet the requirement of Indian standard. It **MUST** be looked into.
- 15.10 The spray gun provided with sprayer is not designated and marked by its identification mark and batch or code number. The identification mark and batch number **MUST** be provided on spray gun.
- 15.11 The spray angle of the gun does not meet the requirement of Indian standard. It **MUST** be looked into.
- 15.12 The discharge rate of gun does not meet the requirement of Indian standard. It **MUST** be looked into.
- 15.13 The spray nozzle is not designated and marked by its identification mark. The identification mark as specified by relevant Indian Standard, **MUST** be provided. Necessary tools, suction strainer of suitable aperture size and measuring jar for lub. oil must be provided with sprayer.
- 15.14 Relevant Indian Standard **MUST** be followed with regard to marking on spray gun.
- 15.15 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

15.16 Safety provision/safety wear

- i) The accessories viz. mask, hand gloves and safety goggles for operator's safety has not been provided with sprayer. It should be provided

16. TECHNICAL LITERATURE

Though an operation manual was provided, the same was, however, found inadequate as all necessary information required was not there. It needs to be updated as per IS: 8132-1999 with the inclusion of safety instructions regarding handling poisonous agro-chemical, safety precautions before, during and after spraying operation.

TESTING AUTHORITY

R.K. NEMA SENIOR AGRICULTURAL ENGINEER	<i>Ran</i>
P. K. PANDEY DIRECTOR	<i>P. K. Pandey</i>

17. APPLICANT'S COMMENTS

No comments received from the applicant.

