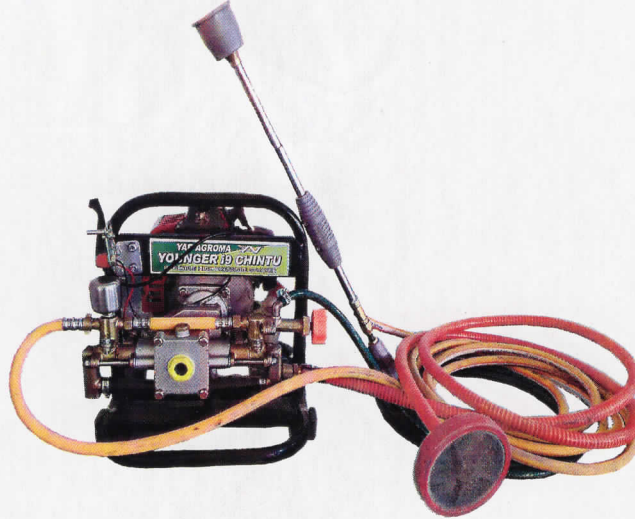


व्यावसायिक परीक्षण रिपोर्ट  
COMMERCIAL TEST REPORT

संख्या/ No.: PS-397/2315/2019

माह/Month : May, 2019

**THIS TEST REPORT VALID UP TO : 31<sup>st</sup> MAY, 2026**



**YAD AGROMA YOUNGER CHINTU i9  
ENGINE OPERATED PORTABLE 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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xiv)	Spray boom	Mild steel, Galvanized, iron Braided rubber	Not applicable	--
xv)	Hose	Synthetic rubber, P.V.C	PVC	Conforms
xvi)	Tank	Galvanized iron, Brass, Fiber glass reinforced plastics, plastics	NA	--
xvii)	Pipe for agitator	Galvanized iron, Brass, PVC	PVC	Conforms
xviii)	Piston (bucket) screw	Brass, stainless steel	Not applicable	--
xix)	Crank case	Aluminum alloy	Not applicable	--
xx)	Roller pump body	Nickel resistant cast iron	Not applicable	--
xxi)	Roller pump and plate	Nickel resistant cast iron	Not applicable	--
xxii)	Roller pump rotor	Nickel resistant cast iron	Not applicable	--
xxiii)	Piston pump crank shaft	Carbon steel	A quadrant gear driven by drive shaft of gear box mounted on plunger rod.	--
xxiv)	Pump inlet port end fitting	Brass	Brass	Conforms
xxv)	Piston rod guide	Brass, Aluminum alloy, Gunmetal, Nylon	Not applicable	--
xxvi)	Connecting rod	Carbon steel	Not applicable	--
xxvii)	Gudgeon pin	Carbon steel	Not applicable	--
xxviii)	Big end bearing	Steel coated with tin base white metal	Not applicable	--
xxix)	Small end bush	Gunmetal	Not applicable	--
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.		Declared	Conforms

**3. TEST FOR DISCHARGE RATE OF PUMP**

[vide Clause 8.3 of IS- 11313: 2007]

1. Date of test : 16.03.2019

2. Atmospheric conditions :

- a) Temperature : 25° C  
b) Relative humidity : 40 %  
c) Pressure : 99.5 kPa





## 3. Data recorded

Speed of engine (rpm)	Working pressure (kg/cm <sup>2</sup> )	Test No.	Delivery from the discharge line (ml/min)	Overflow (ml/min)	Average delivery from the discharge line (ml/min)	Discharge rate of pump (ml/min)	Hydraulic Power (kW)
6410	6	1.	6730	NIL	6690.0	6690.0	0.07
		2.	6650				
		3.	6680				
		4.	6700				
6318	8	1.	6430	NIL	6455.0	6455.0	0.08
		2.	6460				
		3.	6450				
		4.	6480				
6038	10	1.	6150	NIL	6142.5	6142.5	0.10
		2.	6200				
		3.	6100				
		4.	6120				
5910	12	1.	5920	NIL	5932.5	5932.5	0.12
		2.	5950				
		3.	6000				
		4.	5860				

Minimum discharge rate = 5932.5 ml/min at 12 kg/cm<sup>2</sup>Maximum discharge rate = 6690.0 ml/min at 6 kg/cm<sup>2</sup>Discharge at rated pressure = 6455.0 ml/min at 8 kg/cm<sup>2</sup>

## 4. TEST FOR VOLUMETRIC EFFICIENCY OF PUMP

[vide clause 8.4 of IS: 11313-2007]

Date : 22.04.2019

Rated pressure, kg/cm<sup>2</sup> : 8

Engine speed corresponding to rated : 5990

pressure (rpm)

Theoretical cubic capacity of pump, ml : 7023.26

Actual volume at rated pressure, ml : 6125.0

Volumetric efficiency, % : 87

**Remarks:** The high idle engine speed had to be set @ 6640 rpm against declared high idle 7000 rpm to obtain rated pressure at rated rpm of pump.

## 5. POWER REQUIREMENT

During the pump operation from minimum to maximum pressure range, the max. hydraulic power was observed as 0.12 kW against the declared net power output of engine as 0.60 kW.



10.	Necessary tools & spares	Spanners, set of gasket, measuring jar should be provided	Spark plug spanner, Allen key, open spanner and fuel mixing jar are provided.	<b>Does not conform in toto</b>
11.	Marking/Labeling of sprayer	Must be riveted on the body of sprayer having name & address of manufacturer, month & Year of manufacture, Rated speed, Rated pressure, discharge rate, Power rating of engine, SFC of engine	Just a sticker provided on pump & engine with following information :- YAD AGROMA AV YOUNGER i9 CHINTU Portable High Pressure Sprayer	<b>Does not conform</b>
12.	Literature	Operator manual, Service manual & parts catalogue should be provided, One day training.	Instruction Manual of sprayer and parts catalogue is provided.	<b>Does not conform in toto</b>

### 16. CONFORMITY TO INDIAN STANDARDS

- i) IS:11313-2007 (Reaffirmed 2012)-Hydraulic : **Does not conform in toto**  
power sprayer-specification
- ii) Spray nozzle and spray gun as per IS:3652-1995 : **Does not conform in toto**  
(Reaffirmed 2011)
- iii) Hose and hose connection as per IS:10134-1994 : **Conforms**
- iv) IS: 2643-2005-Pipe threads where pressure-tight : **Conforms**  
joint are not made on the threads-dimensions, tolerance and designation
- v) IS: 7347-1974 (Reaffirmed 2006)-Specification : **Could not be ascertained**  
for performance of small size spark ignition engines for agricultural water pumps, sprayers, tillers, reapers and other similar applications

### 17. COMMENTS AND RECOMMENDATIONS

- 17.1 The sprayer serial number is not specified. It **MUST** be specified.
- 17.2 The sprayer year of manufacture is not specified. It should be specified.
- 17.3 The spray gun is not designated and marked by identification mark. The identification mark as specified by relevant Indian Standard. It **MUST** be specified.
- 17.4 The engine serial number is not specified. It **MUST** be specified.
- 17.5 The pump manufacturing year, serial No & Country of origin is not specified. It **MUST** be specified.
- 17.6 The spray nozzle is not designated and marked by its identification mark. The identification mark as specified by relevant Indian Standard, **MUST** be provided.
- 17.7 The strainer in nozzle is not provided. It may be considered for providing.
- 17.8 The spray nozzle batch or code number on nozzle is not provided. It **MUST** be provided.
- 17.9 The spray gun batch or code number is not marked on spray gun. It **MUST** be marked.



- 17.10 The diameter of connecting rod is less than the valve specified in the relevant code/Standard. It **MUST** be improved.
- 17.11 The thickness of wall of barrel does not meet the requirement of relevant code/Standard. It **MUST** be improved.
- 17.12 The discharge rate for fine cone spray pattern and jet spray pattern of spray gun at pressure at 600 kPa does not conform to the requirement of IS: 3652-1995. It **MUST** be looked into.
- 17.13 The discharge rate for fine cone spray pattern and jet spray of nozzle at a pressure of 300 kPa does not conform to the requirement of IS: 3652-1995. It **MUST** be looked into.
- 17.14 The spray angle for fine cone spray pattern of gun at a pressure of 600 kPa does not conform to the requirement of IS: 3652-1995. It **MUST** be looked into for further improvement.
- 17.15 The spray angle for fine cone spray pattern of nozzle at a pressure of 300 kPa does not conform to the requirement of IS: 3652-1995. It **MUST** be looked into.
- 17.16 At rated pressure of 8 Kg/cm<sup>2</sup> the pump discharge was observed as 6455 ml/min. against the minimum requirement of 8000.0 ml/min. This **MUST** be examined.
- 17.17 The pressure gauge with fuel scale reading 70 kg/cm<sup>2</sup> is provided, thus it does not conform to requirement of IS: 11313-2007. It **MUST** be looked into.
- 17.18 Though a pressure regulator provided but that was not in working condition therefore its conformity to IS: 11313-2007 could not be ascertained. It **MUST** be looked into for corrective action.
- 17.19 The length of spray gun does not meet the requirement of relevant code/Standard. It **MUST** be looked into.
- 17.20 Necessary tools are not provided with sprayer. It **MUST** be provided.
- 17.21 A suitable labeling plate (not sticker) needs to be provided with, inter alia, following information;-
- Manufacturer's name
  - Make
  - Model
  - Month & year of manufacture
  - Rated speed
  - Rated pressure
  - Discharge rate
  - Power rating of engine
  - SFC of engine
- 17.22 **Safety provision/safety wear**
- Safety instructions regarding handling poisonous agro-chemical before, during and after spraying operations should be provided on sprayer.

## 18. TECHNICAL LITERATURE

The following literatures are provided with sprayer for guidance to the user.

- Instruction manual and parts catalogue of sprayer.



The following literature **MUST** be provided with the sprayer.

i) Service manual of sprayer.

The operator instruction manual of sprayer needs to be updated as per IS 8132-1999.

### TESTING AUTHORITY

R. K. NEMA SENIOR AGRICULTURAL ENGINEER	<i>Rema</i>
P. K. PANDEY DIRECTOR	<i>YBn-mssly</i>

### 19. APPLICANT'S COMMENTS

Para No	Our reference	Applicant's comments
19.1	17.1,17.2	We will provide.
19.2	17.3	We will design spray gun as per Indian Standard and will provide identification mark on it.
19.3	17.4	We will provide serial number on engine.
19.4	17.6	We will design spray nozzle as per Indian Standard.
19.5	17.7	We will provide strainer in nozzle.
19.6	17.8	We will provide batch and code number on nozzle.
19.7	17.9	We will provide batch and code number on spray gun.
19.8	17.10	We will change connecting rod design.
19.9	17.12,17.13	We will improve gun design as per Indian Standard.
19.10	17.14	We will change gun turbine to achieve spray angle.
19.11	17.16	We will improve.
19.12	17.17	We will look in this matter.
19.13	17.18	We will provide pressure regulator as per requirement of Indian Standard.
19.14	17.19	We will provide spray gun length as per Indian Standard
19.15	17.20	We will provide necessary tools with sprayer
19.16	17.21	We will provide labeling plate
19.17	17.22	We will provide safety instruction book with sprayer

