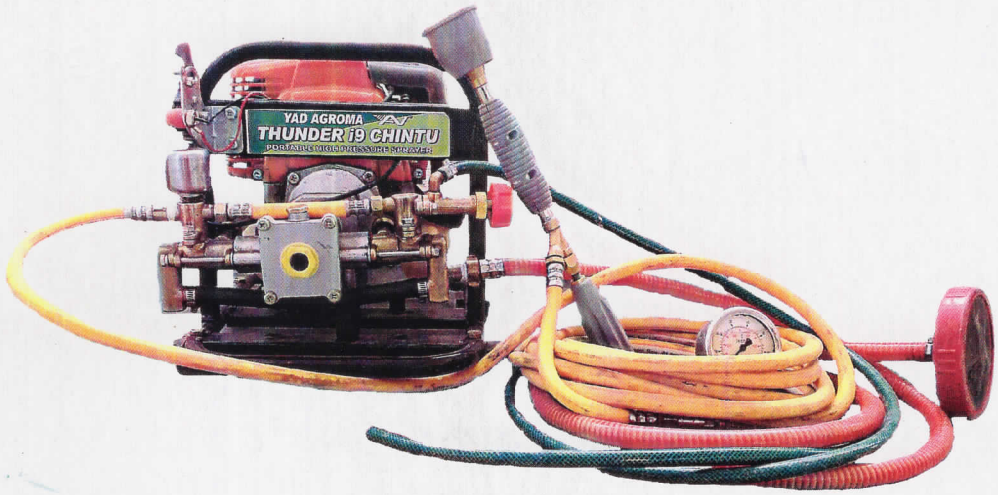
व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ **No.: PS-405/2327/2019**
माह/**Month: June, 2019**

THIS TEST REPORT VALID UP TO : 30th JUNE, 2026



YAD AGROMA THUNDER, CHINTU i9 ENGINE OPERATED PORTABLE SPRAYER

सत्यमेव जयते

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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3. TEST FOR DISCHARGE RATE OF PUMP

[vide Clause 8.3 of IS- 11313: 2007]

1. Date of test : 11.05.2019
2. Atmospheric conditions
   a) Temperature : 48 °C
   b) Relative humidity : 20 %
   c) Pressure : 98.3 kPa
3. Data recorded

Speed of engine (rpm)	Working pressure (kg/cm^2)	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)
6560	6	1	7340	Nil	7387.5	7387.5	0.07
		2	7380				
		3	7420				
		4	7410				
6205	8	1	6910	Nil	6955.0	6955.0	0.09
		2	6940				
		3	6970				
		4	7000				
6043	10	1	6780	Nil	6732.5	6732.5	0.11
		2	6750				
		3	6650				
		4	6750				
5813	12	1	6470	Nil	6422.5	6422.5	0.13
		2	6410				
		3	6370				
		4	6440				

Minimum discharge rate = 6422.5 ml/min at 12 kg/cm^2
Maximum discharge rate = 7387.5 ml/min at 6 kg/cm^2
Discharge at rated pressure = 6955.0 ml/min at 8 kg/cm^2

4. TEST FOR VOLUMETRIC EFFICIENCY OF PUMP

[vide clause 8.4 of IS: 11313-2007]

Rated pressure, kg/cm^2	:	8
Engine speed corresponding to rated pressure, (rpm)	:	6205
Theoretical cubic capacity of pump	:	7278.73
Actual volume at rated pressure, ml	:	6955.00
Volumetric efficiency, %	:	96

5. POWER REQUIREMENT

During the pump operation from minimum to maximum pressure range the max. hydraulic power was observed as 0.13 kW against the declared net power output of engine as 0.70 kW.

6. ENGINE PERFORMANCE TEST

In pursuance of Ministry's order No. 7-23/2011-M&T (I&P) dated 20.04.2011 the engine performance test has not been conducted and the specifications/performance as specified by the applicant have been endorsed.

S.No.	Parameter		Declaration
i	Engine Type	:	Single cylinder four stroke air cooled spark ignition engine.
ii	Bore,(mm)	:	39
iii	Stroke (mm)	:	25
iv	Displacement,(cc)`	:	30
v	Net power out put	:	0.7 kW @ 6200 rpm
vi	Max Torque	:	0.8 Nm@5800

7. PRESSURE ADJUSTMENT TEST

1. Date of test : 11.05.2019
2. Atmospheric conditions :
   a. Temperature : 48 °C
   b. Relative humidity : 20 %
   c. Pressure : 98.3 kPa
3. Data recorded

S. No.	Working pressure(kg/cm^2)	Fluctuation range (kg/cm^2)	Pressure drop (kg/cm^2)	Ratio
1.	6	NIL	NIL	--
2.	8	NIL	NIL	--
3.	10	NIL	NIL	--
4.	12	NIL	NIL	--

4. Resistance of pressure: Yes

8. TEST FOR HYDRAULIC SPRAY GUN

[Vide Clause 7.3(b) of IS- 11313: 2007 & Annex E of IS- 3652; 1995]

Date of test : 10.05.2019
Type of gun : Screw type

8.1 TEST FOR DISCHARGE RATE OF SPRAY GUN

The discharge rate for fine cone spray & jet spray pattern as 2300 ml/min & 3800 ml/min at the pressure of 600 ± 60 kPa was declared by the applicant.
The discharge rate corresponding to 600 kPa pressure was observed as under:-

- For fine cone spray pattern : 1362.5 ml/min
- For jet spray pattern : 3090 ml/min

16. CONFORMITY TO INDIAN STANDARDS

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

17. COMMENTS AND RECOMMENDATIONS

17.1 The manufacturing year and serial number of sprayer is not marked. It **MUST** be looked into.

17.2 The pump manufacturing year is not specified. It **MUST** be looked into.

17.3 The thickness of barrel does not meet the requirement of relevant code/Standard. It **MUST** be looked into.

17.4 The diameter of connecting rod does not meet the requirement of relevant code/Standard. It **MUST** be looked into.

17.5 The length of spray gun does not meet the meet the requirement of relevant code/Standard. It **MUST** be looked into.

17.6 The discharge rate for fine cone spray pattern and jet spray pattern of nozzle at a pressure of 600 kPa does not conform to the requirement of IS:3652-1995. It **MUST** be looked into for appropriate improvement.

17.7 The discharge rate for fine cone spray pattern and jet 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 for appropriate improvement.

17.8 The spray gun is not designated and marked by its identification mark. The identification mark as specified by relevant Indian Standard, **MUST** to be provided.

17.9 The spray nozzle is not designated and marked by its identification mark. The identification mark as specified by relevant Indian Standard, **MUST** to be provided.

17.10 The spray angle for fine cone spray pattern of gun at a pressure 600 kPa does not conform to the requirement of IS:3652-1995. It **MUST** be looked into for further improvement.

17.11 The spray angle for fine cone spray pattern of nozzle at a pressure 300 kPa does not conform to the requirement of IS:3652-1995. It **MUST** be looked into for further improvement.

17.12 The spray nozzle batch or code number on nozzle is not provided. It **MUST** be provided.

17.13 The spray gun batch or code number on spray gun is not provided. It **MUST** be provided.

17.14 Though a pressure regulator provided but that was not in the working condition therefore its conformity IS: 11313-2007 could not be ascertained. It **MUST** be looked into for corrective action.

17.15 The pressure gauge with full scale reading of 70 kg/cm^2 is provided, thus it does not conform to requirement of IS: 11313-2007. It **MUST** be looked into.

17.16 The strainer in nozzle is not provided. It may be considered for providing.

17.17 At rated pressure of 8 kg/cm^2 the pump discharge was observed as 6955.0 ml/min against the minimum requirement of 8000 ml/min. This **MUST** be examined.

17.18 The engaged threaded length of outlet port does not meet the requirement of relevant code/Standard. It **MUST** be looked into.

17.19 A suitable labeling plate (not sticker) 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. Power rating of engine
ix. SFC of engine

17.20 Safety provision/safety wear

i) The safety instructions before, during and after spraying operation **MUST** be provided on sprayer.

18. TECHNICAL LITERATURE

The following literature are provided with the sprayer

i) Instruction service manual of sprayer with parts catalogue.

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

i) Operation, service manual and parts catalogue of engine.

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

TESTING AUTHORITY

R. K. NEMA SENIOR AGRICULTURAL ENGINEER	
P. K. PANDEY **DIRECTOR**	

19. APPLICANT'S COMMENTS

Para No	Our reference	Applicant's comments
19.1	17.2	We will provide manufacture year.
19.2	17.4	We will change connecting rod design as per Indian Standard.
19.3	17.5	We will maintain spray gun length as per Indian Standard.
19.4	17.6	We will make necessary changes in Spray gun.
19.4	17.7	We will make necessary changes in Spray nozzle.
19.6	17.8	We will provide identification mark on Spray gun as per Indian Standard.
19.7	17.9	We will provide identification mark on Spray nozzle as per Indian Standard.
19.8	17.10	We will make necessary changes in gun.
19.9	17.11	We will make necessary changes in nozzle.
19.10	17.12	Batch and code number will be provide on Spray nozzle.
19.11	17.13	Batch and code number will be provide on Spray gun.
19.12	17.14	We will provide pressure regulator as per Indian Standard.
19.13	17.15	We will provide pressure gauge as per Indian Standard.
19.14	17.16	We will provide strainer in nozzle.
19.15	17.17	We will look into this matter.
19.16	17.18	We will maintain outlet port length as per relevant Standard.
19.17	17.19	We will provide metal name plate with all details.