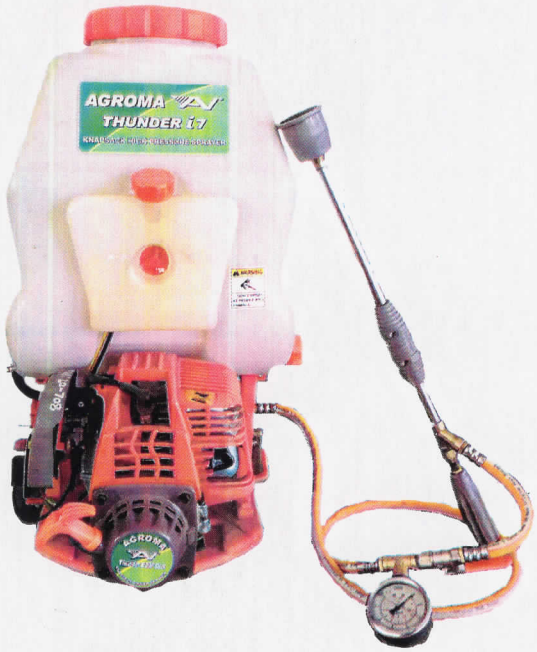
व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ **No.: PS-406/2328/2019**
माह/**Month: June, 2019**

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



YAD AGROMA THUNDER, i7 TR5
ENGINE OPERATED KNAPSACK 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
Northern Region Farm Machinery Training and Testing Institute
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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 : 34° C
   b) Relative humidity : 38 %
   c) Pressure : 98.8 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)
6653	6	1.	7300	NIL	7252.5	7252.5	0.07
		2.	7250				
		3.	7240				
		4.	7220				
6370	8	1.	6800	NIL	6847.5	6847.5	0.09
		2.	6850				
		3.	6840				
		4.	6900				
6125	10	1.	6600	NIL	6512.5	6512.5	0.11
		2.	6450				
		3.	6550				
		4.	6450				
5963	12	1.	6350	NIL	6312.5	6312.5	0.12
		2.	6320				
		3.	6280				
		4.	6300				

Minimum discharge rate = 6312.5 ml/min at 12 kg/cm^2
Maximum discharge rate = 7252.5 ml/min at 6 kg/cm^2
Discharge at rated pressure = 6847.5 ml/min at 8 kg/cm^2

4. TEST FOR VOLUMETRIC EFFICIENCY OF PUMP
[vide clause 8.4 of IS: 11313-2007]

Date	:	12.06.2019
Rated pressure, kg/cm^2	:	8
Engine speed corresponding to rated pressure (rpm)	:	6208
Theoretical cubic capacity of pump, ml	:	7283.06
Actual volume at rated pressure, ml	:	6715.0
Volumetric efficiency, %	:	92

Remarks : The high idle engine speed had to be set @ 6850 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 0.7 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/ declared in the manual have been endorsed.

S.No.	Parameter		Declaration
i	Engine Type	:	Single cylinder 4 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	:	0.5 Nm at @ 5800 rpm

7. PRESSURE ADJUSTMENT TEST
(Vide clause 8.7.1 of IS: 11313-2007)

1. Date of test : 11.05.2019
2. Atmospheric conditions :
   a. Temperature : 34 °C
   b. Relative humidity : 38 %
   c. Pressure : 98.8 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 kPa was declared by the applicant. The discharge rate corresponding to 600 kPa pressure was observed as under

		must be provided		**in toto**
10.	Necessary tools & spares	Spanners, set of gasket, measuring jar should be provided	Spark plug spanner, screw driver and open spanner and measuring jar are provided. Suction strainer having 400µm aperture size was provided	**Does not conform in toto**
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 :- AGROMA THUNDER i7 Knapsack High Pressure Sprayer	**Does not conform**
12.	Literature	Operator manual, Service manual & parts catalogue should be provided, One day training.	Owner's manual of sprayer with parts catalogue provided	**Does not conform in toto**

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 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 material of pump inlet port end fitting does not meet the requirement of relevant code/Standard. It **MUST** be looked into.

17.4 The thickness of the wall of barrel of gun does not meet the requirement of Indian Standard. It **MUST** be looked into.

17.5 The diameter of connecting rod of gun does not meet the requirement of Indian Standard. It **MUST** be looked into.

17.6 The spray gun is not designated and marked by identification mark. The identification mark as specified by relevant Indian Standard. It **MUST** be provided.

17.7 The pump manufacturing year and serial No is not specified. It **MUST** be specified.

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

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

17.10 The discharge rate 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.

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

17.12 The spray gun batch or code number is not marked on gun. It **MUST** be marked.

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 The necessary tools are not provided. It **MUST** be provided.

17.17 At rated pressure of 8 Kg/cm^2 the pump discharge was observed as 6847.5 ml/min. against the minimum requirement of 8000.0 ml/min. This must be examined.

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

17.19 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.

17.20 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

17.21 Safety provision/safety wear

i) Apron, gum boots and ear protector must be added on safety wear.

ii) 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.

i) Instruction service manual and parts catalogue of sprayer

The following literature MUST be provided with the sprayer :-

i) Operation, service manual and spare parts catalogue 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 on sprayer.
19.2	17.3	We will look in this matter.
19.3	17.5	We will change connecting rod design as per Indian Standard.
19.4	17.6	Spray gun will be designated as per Indian Standard.
19.5	17.7	We will provide manufacture serial number on pump.
19.6	17.8	Spray nozzle will be designated as per Indian Standard.
19.7	17.9	We will provide strainer in nozzle.
19.8	17.10	We will make necessary changes in Spray gun.
19.9	17.11	We will provide batch and code number on Spray nozzle.
19.10	17.12	We will provide batch and code number on Spray gun.
19.11	17.13	We will make necessary changes in Spray nozzle.
19.12	17.14	We will make necessary changes in Spray gun.
19.13	17.15	We will make necessary changes in Spray nozzle.
19.14	17.16	We will provide necessary tools.
19.15	17.17	We will look into this matter.
19.16	17.18	We will provide pressure gauge as per Indian Standard.
19.17	17.19	We will provide pressure regulator as per Indian Standard.
19.18	17.20	We will provide metallic plate with all details.
19.19	17.21	We will provide gum boots ,ear protector and instruction book.