

व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ No.: PS-365/2234/2018
माह/Month : November, 2018

THIS TEST REPORT VALID UP TO : 30th NOVEMBER, 2025



RALLI ULTRA MAX, ENGINE 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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3. TEST FOR DISCHARGE RATE OF PUMP

[vide Clause 8.3 of IS- 11313: 2007]

1. Date of test : 27.09.2018
2. Atmospheric conditions :
 - a) Temperature : 31° C
 - b) Relative humidity : 63 %
 - c) Pressure : 98.4 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)
6135	9.0	1	6600	NIL	6525.0	6525.0	0.09
		2	6500				
		3	6550				
		4	6450				
6008	10.0	1	6400	NIL	6287.5	6287.5	0.10
		2	6300				
		3	6200				
		4	6250				
5675	11.0	1	5950	NIL	5875.0	5875.0	0.11
		2	5800				
		3	5850				
		4	5900				
5503	12.0	1	5550	NIL	5475.0	5475.0	0.11
		2	5500				
		3	5450				
		4	5400				

Minimum discharge rate = 5475.0 ml/min at 12 kg/cm²
Maximum discharge rate = 6525.0 ml/min at 9 kg/cm²
Discharge at rated pressure = 6525.0 ml/min at 9 kg/cm²

4. TEST FOR VOLUMETRIC EFFICIENCY OF PUMP

[vide clause 8.4 of IS: 11313-2007]

Rated pressure, kg/cm² : 9
 Engine speed corresponding to rated pressure (rpm) : 6135
 Theoretical cubic capacity of pump, ml : 7196.46
 Actual volume at rated pressure, ml : 6525.0
 Volumetric efficiency, % : 91



Cl.10. MARKING AND PACKING (Cl.10 IS:11313-2007)			
Cl.10.1 Marking	Each sprayer shall be marked with the following particulars :-		
a)	Manufacturer's name & his registered trade mark, Sl. No. and batch or code No.	KNAPSACK POWER SPRAYER ULTRA MAX	Does not conform- in spirit and also in toto

15. 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**

16. COMMENTS AND RECOMMENDATIONS

- 16.1 The sprayer serial number is not specified. It **MUST** be specified.
- 16.2 The sprayer year of manufacture is not specified. It should be specified.
- 16.3 The spray gun is not designated and marked by identification mark. The identification mark as specified by relevant Indian Standard, **MUST** be provided.
- 16.4 The pump make, model manufacturing year, serial No & Country of origin is not specified. It **MUST** be specified.
- 16.5 The spray nozzle is not designated and marked by its identification mark. The identification mark as specified by relevant Indian Standard, **MUST** be provided.
- 16.6 The strainer in nozzle is not provided. It may be considered for providing.
- 16.7 The manufacture's name or recognized trade mark and batch or code number on nozzle is not provided. It **MUST** be provided.
- 16.8 The spray gun manufacturer's name or recognized trade mark & batch or code number is not marked on gun. It **MUST** be marked.
- 16.9 The material of pump inlet port end fitting does not meet the requirement of IS-11313-2007. It **MUST** be looked into.

- 16.10 The discharge rate for fine cone spray pattern and jet spray pattern of spray gun at the pressure of 600 kPa does not conform to the requirement of IS: 3652:1995. It **MUST** be looked into for appropriate improvement.
- 16.11 The discharge rate for fine cone spray of nozzle at a pressure of 300 kPa does not conform to the requirement of IS: 3652-1995. It **MUST** be looked into.
- 16.12 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.
- 16.13 The diameter of connecting rod of gun does not meet the requirement of Indian Standard. It **MUST** be looked into.
- 16.14 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.
- 16.15 As an important thing as pressure regulator was found "not working". It **MUST** be looked into.
- 16.16 At rated pressure of 9 Kg/cm² the pump discharge was observed as 6525.0 ml/min. against the minimum requirement of 8000 ml/min. This must be examined.
- 16.17 At the rated pressure of 9 kg/cm², the engine speed dropped up to 6135 rpm against the rated engine speed of 7000 rpm. This **MUST** be looked into for necessary action.
- 16.18 The pressure gauge with fuel scale reading 120 bar is provided, thus it does not conform to requirement of IS: 11313-2007. It **MUST** be looked into.
- 16.19 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.
- 16.20 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
- 16.21 **Safety provision/safety wear**
- Hand gloves must be added on safety wear.
 - Safety instructions regarding handling poisonous agro-chemical before, during and after spraying operations should be provided on sprayer.

