

व्यावसायिक परीक्षण रिपोर्ट  
COMMERCIAL TEST REPORT

संख्या/ No.: PS-450/2567/2020  
माह/Month : November, 2020

**THIS TEST REPORT VALID UP TO : 30<sup>th</sup> November, 2027**



**XTRA POWER, XPS-825  
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

Northern Region Farm Machinery Training and Testing Institute

ट्रेक्टर नगर, सिरसा रोड, हिसार, (हरियाणा) - 125 001

Tractor Nagar, Sirsa Road, HISAR (Haryana)-125 001

[ISO 9001:2015 CERTIFIED]

Website: <http://nrfmtti.gov.in/>

E-mail: [fmti-nr@nic.in](mailto:fmti-nr@nic.in)

Tele./FAX: 01662-276984

### 3. TEST FOR DISCHARGE RATE OF PUMP

[vide Clause 8.3 of IS- 11313: 2007]

1. Date of test : 11.11.2020
2. Atmospheric conditions :
  - a) Temperature : 26.0° C
  - b) Relative humidity : 19.8 %
  - c) Pressure : 98.3 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)
5765	8	1.	6180	NIL	6135.0	6135.0	0.08
		2.	6120				
		3.	6100				
		4.	6140				
5623	10	1.	5750	NIL	5745.0	5745.0	0.09
		2.	5760				
		3.	5740				
		4.	5730				
5520	12	1.	5650	NIL	5647.5	5647.5	0.11
		2.	5680				
		3.	5640				
		4.	5620				
5400	14	1.	5500	NIL	5517.5	5517.5	0.13
		2.	5520				
		3.	5540				
		4.	5510				

**Minimum discharge rate** = 5517.5 ml/min at 14 kg/cm<sup>2</sup>  
**Maximum discharge rate** = 6135.0 ml/min at 8 kg/cm<sup>2</sup>  
**Discharge at rated pressure** = 6135.0 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 : 11.11.2020  
 Rated pressure, kg/cm<sup>2</sup> : 8  
 Engine speed corresponding to rated pressure (rpm) : 5791  
 Theoretical cubic capacity of pump, ml : 6621.2  
 Actual volume at rated pressure, ml : 6182.5  
 Volumetric efficiency, % : 93.4



### 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 0.72 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, Petrol engine.
ii	Bore,(mm)	:	35
iii	Stroke (mm)	:	26
iv	Displacement,(cc)	:	25
v	Net power out put	:	0.72 kW @ 7000 rpm
vi	Max Torque	:	1.02 Nm @ 5000 rpm

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

1. Date of test : 11.11.2020
2. Atmospheric conditions
  - a. Temperature : 26.4 °C
  - b. Relative humidity : 19.6 %
  - c. Pressure : 98.3 kPa
3. Data recorded

S. No.	Working pressure(kg/cm <sup>2</sup> )	Fluctuation range (kg/cm <sup>2</sup> )	Pressure drop (kg/cm <sup>2</sup> )	Ratio
1.	8	NIL	NIL	--
2.	10	NIL	NIL	--
3.	12	NIL	NIL	--
4.	14	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 : 30.10.2020  
 Type of gun : Screw type

### 17. COMMENTS AND RECOMMENDATIONS

- 17.1 The serial number of sprayer is not specified. It **MUST** be looked into.
- 17.2 The spray nozzle is not designated and marked by its identification mark. The identification marked as specified by relevant Indian Standard. It **MUST** be looked into.
- 17.3 The manufacturing year and country of origin of pump is not specified. It **MUST** be looked into.
- 17.4 The discharge rate for fine cone spray pattern and jet 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.
- 17.5 The spray angle for fine cone spray pattern of spray gun at a pressure of 600 kPa does not conform to the requirement of IS:3652-1995. It **MUST** be looked into.
- 17.6 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.
- 17.7 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.
- 17.8 At rated pressure of 5 Kg/cm<sup>2</sup> the pump discharge was observed as 6135 ml/min. against the minimum requirement of 8000.0 ml/min. This **MUST** be examined.
- 17.9 The pressure gauge with full scale reading 100 bar is provided, thus it does not conform to requirement of IS: 11313-2007. It **MUST** be looked into.
- 17.10 The engaged length of outlet port does not meet the requirement of relevant code/standard. It **MUST** be looked into.
- 17.11 The strainer in nozzle is not provided. It may be considered for providing.
- 17.12 The spray gun is not designated and marked by, is identification marked. The identification marked as per specified by Indian Standard. It **MUST** be looked into.
- 17.13 The necessary tools are not provided. It **MUST** be looked into.
- 17.14 The thickness of the wall of barrel of gun does not meet the requirements of Indian Standard. It **MUST** be looked into.
- 17.15 The diameter of connecting rod of the gun does not meet the requirement of Indian Standard. It **MUST** be looked into.
- 17.16 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 manufacturer
  - v) Rated speed
  - vi) Rated pressure
  - vii) Discharge rate
  - viii) Power rating of engine
  - ix) SFC of engine



### 18. TECHNICAL LITERATURE

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

i) Instruction manual.

However, the manual of sprayer should be updated as per IS 8132-1999

### TESTING AUTHORITY

MAAN SINGH SENIOR TECHNICAL ASSISTANT	
P. K. PANDEY DIRECTOR	

### 19. APPLICANT'S COMMENTS

Para No.	Our reference	Applicant's Comments
19.1	17.1	The Serial number of sprayer will be specified.
19.2	17.11	The Strainer in the nozzle will be provided.
19.3	17.13	The manufacturing year and country of origin of pump will be specified.
19.4	17.4 & 17.5	Necessary modifications will be done so that the discharge rate and spray angle for fine cone spray pattern and Jet spray pattern of gun at a pressure of 600 Kpa conforms to the requirement of IS: 3652-1995.
19.5	17.2 & 17.12	The spray nozzle and spray gun will be designated as specified by Indian Standard.
19.6	17.8	Necessary modifications will be done so that at rated pressure of 5 kg/cm <sup>2</sup> , the pump discharge is 8000 ml/min.
19.7	17.9	The Pressure gauge conforming to the requirement of IS:11313-2007 will be provided.
19.8	17.10	The engaged length of outlet port will be as per the requirement of relevant code/standard.
19.9	17.13	Necessary tools will be provided.
19.10	17.14	The thickness of the wall of barrel of gun meeting the requirements of Indian Standard will be used.
19.11	17.15	The diameter of connecting rod of the gun meeting the requirement of Indian Standard will be used.
19.12	17.16	A suitable labeling plate (Not Sticker) will be provided with relevant information.
19.13	18	Manual of Sprayer will be updated as per IS 8132-1999

