

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



**ESCORTS LIMITED, PROGUARD-600,  
SELF PROPELLED HIGH GROUND CLEARANCE  
SPRAYER, BOOM TYPE**



सत्यमेव जयते  
भारत सरकार

**Government of India**

कृषि एवं किसान कल्याण मंत्रालय

**Ministry of Agriculture and Farmers Welfare**

कृषि एवं किसान कल्याण विभाग

**Department of Agriculture and Farmers Welfare**

उत्तरी क्षेत्र कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

**Northern Region Farm Machinery Training and Testing Institute**

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**[ISO 9001:2015 CERTIFIED]**

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**22.1.5 Big end bearing**

Bearing No.	Inner dia. of big end (mm)	Outer dia. of crank pin (mm)	Diametrical clearance (mm)	Axial clearance (mm)	Discard limit (mm)	
					Diametrical clearance	Axial
1	48.04	47.94	0.10	0.20	0.15	0.50
2	48.03	47.94	0.09	0.20		
3	48.04	47.94	0.10	0.20		

**22.1.6 Main bearing**

Bearing no.	Inner dia. of main bearing (mm)	Outer dia. of crank at main bearing (mm)	Diametrical clearance (mm)	Crank shaft end float	Discard limit (mm)	
					Diametrical clearance	Crank shaft end float
1	52.09	52.02	0.07	0.14	0.10	0.50
2	52.08	52.02	0.06			
3	52.08	52.02	0.06			
4	52.07	52.01	0.06			

**22.1.7 Valve guide and valves stem**

Cylinder No.	Inner dia. of valve guide (mm)		Outer dia. of valve stem (mm)		Clearance (mm)		Max. Permissible limit (mm)	
	Inlet	Exhaust	Inlet	Exhaust	Inlet	exhaust	Inlet	Exhaust
1	6.59	6.60	6.56	6.53	0.03	0.07	<b>Not Provided</b>	
2	6.59	6.59	6.57	6.53	0.02	0.06		
3	6.60	6.59	6.57	6.54	0.03	0.05		

**22.1.8 Valve guides and valve springs**

Valve spring stiffness, kgf/mm

- I. -Inlet valve : 0.91
- Exhaust valve : 1.08
- II. -Inlet valve : 1.06
- Exhaust valve : 1.11
- III. -Inlet valve : 1.01
- Exhaust valve : 0.91

**Discard limit**

**Not provided**

**22.2 Timing gears** : No noticeable defect observed

**22.3 Hydraulic system**

All components of the main transmission & spray boom speed control hydraulic systems were inspected visually and found to be in normal working condition.

**23. SUMMARY OF OBSERVATIONS**

**23.1 Engine Performance Test**

Brake Power (kW)	Engine speed (rpm)	Fuel consumption			Specific energy (kWh/l)
		(l/h)	(kg/h)	Specific (kg/ kWh )	
(1)	(2)	(3)	(4)	(5)	(6)
<b>i) Maximum power- 2 hours test:-</b>					
17.48	2381	6.01	5.03	0.288	2.91
16.92	2305	5.75	4.81	0.284	2.94
<b>ii) Power at rated engine speed: (2700 rpm)</b>					
16.88	2700	6.31	5.27	0.312	2.68

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#### 24. CRITICAL TECHNICAL SPECIFICATIONS

[Vide Ministry letter No.13-9/2019- M&T (I&P) part dated. 26.04.2019 and F.No. 9-4/2019 M&T (I&P) dated 20.8.2019]

Sr. No.	Parameters	Specification	Observation	Remarks
1	Tank capacity	Should not be less than 100 lit.	Capacity of tank is 600 lit	Conforms
2	Provision for folding boom	Must be provided	Provided	Conforms
3	Pressure regulator	Must be provided	Provided	Conforms
4	Pressure gauge with pressure dampener	Liquid filled pressure gauge must be provided	Liquid filled pressure gauge is provided	Conforms
5	Discharge rate, ml/min	Min 8000, at rated speed and rated pressure	The discharge rate at rated speed & rated pressure is 31562.5 ml/min	Conforms
6	Strainer at filling hole	Must be provided	Provided	Conforms
7	Spray gun designation and marking	Designation, manufacturers name or recognized trade mark & batch or code number should be marked	Not applicable, as it is self propelled high clearance boom sprayer.	Conforms
8	Length of spray boom, m	6 (Min.)	Length of spray boom is 9.650 m	Conforms
9	Nozzle designation and marking	Designation, manufacturers name or recognized trade mark & batch or code number should be marked	Marked	Conforms
10	P.T.O. drive shaft -Safety against overload -Guard on shaft	Must be provided Must be provided	Not applicable, as it is self propelled high clearance boom sprayer	Conforms
11	Guard on belt pulley drive	Must be provided	NA	--
12	Safety wear	Mask, hand gloves, gum boots and goggles, aprons must be provided	Mask, hand gloves, gum boots, goggle and apron are provided	Conforms
13	Labeling plate sprayer	Metallic labeling plate should be riveted with following information manufactures name, make, model, serial number, month, & year of manufacture, rated speed, rated pressure and recommended tractors horse power	Provided	Conforms

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14	Literature	Operator manual, service manual & parts catalogue should be provided	Operator manual, parts catalogue & service manual are provided	Conforms
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<b>25. CONFORMITY TO INDIAN STANDARDS</b>			
i)	IS:11313-2007 (Reaffirmed 2012)-Hydraulic power sprayer-specification	:	<b>Partially conform</b>
ii)	Spray nozzle and spray gun as per IS:3652-1995 (Reaffirmed 2011)	:	<b>Partially conform</b>
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.	:	<b>Partially conform</b>

## 26. COMMENTS AND RECOMMENDATIONS

- 26.1** The spray angle for fine cone spray pattern (Flat Fan) of spray nozzle at the pressure of 300 kPa does not conform to the requirement of IS:3652-1995. It **MUST** be looked into for further improvement.
- 26.2** The engaged threaded length of outlet port does not meet the requirement of relevant code/Standards in toto, it **MUST** be looked into
- 26.3** The pressure gauge with full scale reading of 60 bar is provided. Thus, it does not conform the requirement of IS:11313-2007. It **MUST** be looked into.
- 26.4 Safety provision/safety wear**
- i) Safety instructions regarding handling poisonous agro-chemical before, during and after spraying operation should be provided on sprayer.

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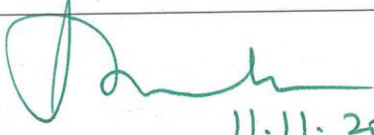
**27. TECHNICAL LITERATURE**

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

- i) Operator manual
- ii) Service manual
- iii) Parts catalogue

However, the manuals of sprayers should be updated as per IS:8132-1999.

**TESTING AUTHORITY**

Er. SANJAY KUMAR AGRICULTURAL ENGINEER	
Dr. MUKESH JAIN DIRECTOR	 11.11.2022

The test report is compiled by Sh. Abhishek Chourey, MTS (Technical)

**28. APPLICANT'S COMMENTS**

Para No.	Our Reference	Applicant Comments
28.1	26.1, 26.2 & 26.3	Those parameters which does not conform that particular parameter we will match according to recommendation by you. Next production as your recommendation and norms we will comply with immediate effect.
28.2	26.4	We will provide to the customers all the safety wears as recommended.

