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व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ No.: PS-425/2494/2020

माह/Month: August, 2020

THIS TEST REPORT VALID UP TO : 31st August, 2025



**LANDFORCE LFVS 1210
VEHICLE MOUNTED 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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[ISO 9001:2015 CERTIFIED]

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9 .TEST FOR DISCHARGE RATE OF SPRAYER

1.	Date of test	:	01.08.2020
2.	Atmospheric conditions		
	a) Temperature	:	34.8°C
	b) relative humidity	:	59.4%
	c) Pressure	:	730.09 mm of hg
3.	Condition of Vehicle	:	Engine of the vehicle was kept at Stopped condition.
4.	Manufacturer's recommendation for this test		
4.1	Flow control valve	:	20 l/h, 40 l/h and 60 l/h setting.
4.2	Droplet size controller setting.	:	There are 8 positions for adjusting the fan blade angle, which in turn, changes the drop let size. Applicant, however, has requested the testing at setting No. 2, 5 and 8
4.3	Recommended engine speed for this test, rpm	:	3300
4.4	Blower speed corresponding to 3300 rpm of engine, rpm	:	3302
4.5	Atomizer speed corresponding to 3300 rpm of engine, rpm	:	4176, 2395 and 1380 at the atomizer setting No 2, 5 and 8 respectively.



PS- 425 / 2494 / 2020

**LANDFORCE LFVS 1210
VEHICLE MOUNTED SPRAYER (COMMERCIAL)**

Engine speed rpm	Droplet size controller setting no.	Test No.	Dia. of outlet mm	Air velocity of fan, m/s	Avg. Air velocity of fan m/s	Avg. Air output m ³ /min
3301	At position No. 02	1.	103	35.8	35.68	14.3
		2.		35.2		
		3.		35.6		
		4.		36.1		
3301	At position No. 05	1.	103	41.5	41.82	16.7
		2.		41.9		
		3.		42.1		
		4.		41.7		
3301	At position No. 08	1.	103	46.1	46.15	18.4
		2.		45.9		
		3.		46.4		
		4.		46.2		

Remark:- Maximum air output : 18.4 m³/min

Maximum air velocity: 46.15 m/s

PS- 425 / 2494 / 2020

**LANDFORCE LFVS 1210
VEHICLE MOUNTED SPRAYER (COMMERCIAL)**

Level of water in tank	Flow control valve setting	Avg. Engine speed rpm	Droplet size controller setting, no.	Test No.	Discharge rate l/min	Average discharge rate l/min	Variation in discharge w.r.t declared setting i.e 0.333 l/m, 0.667 l/min and 1.0 l/min respectively (%)		Declared discharge l/min
							Maximum	Minimum	
Full	20l/h	3301	At position No. 02	1.	0.330	0.330	-0.90		0.333
				2.	0.340				
				3.	0.330				
				4.	0.320				
				1.	0.330				
				2.	0.320				
				3.	0.330				
				4.	0.330				
				1.	0.330				
				2.	0.320				
				3.	0.340				
				4.	0.320				
Full	40l/h	3301	At position No. 08	1.	0.660	0.660	-1.05		0.667
				2.	0.650				
				3.	0.670				
				4.	0.660				
				1.	0.650				
				2.	0.660				
				3.	0.660				
				4.	0.660				
				1.	0.660				
				2.	0.650				
				3.	0.660				
				4.	0.660				
Full	60l/h	3301	At position No. 05	1.	1.050	1.050	+5.0		1.000
				2.	1.040				
				3.	1.050				
				4.	1.060				
				1.	1.060				
				2.	1.050				
				3.	1.040				
				4.	1.040				
				1.	1.050				
				2.	1.040				
				3.	1.050				
				4.	1.060				
Full	60l/h	3301	At position No. 08	1.	1.050	1.050	+5.0		1.000
				2.	1.040				
				3.	1.050				
				4.	1.060				
				1.	1.060				
				2.	1.050				
				3.	1.040				
				4.	1.040				
				1.	1.050				
				2.	1.040				
				3.	1.050				
				4.	1.060				

Remark:- Maximum variation in discharge : -1.80 %
Minimum variation in discharge : +5.0 %

NORTHERN REGION FARM MACHINERY TRAINING AND TESTING INSTITUTE, HISAR

18 of 31

[THIS REPORT VALID UP TO : 31-August 2025]

**10. DETERMINATION OF VARIATION IN DISCHARGE OF SPRAYER DUE TO
PARTIAL TANK FILLING**

1.	Date of test	:	01.08.2020
2.	Atmospheric conditions		
	a) Temperature	:	37.3 ° c
	b) relative humidity	:	53.8 %
	c) Pressure	:	729.6 mm of Hg
3.	Condition of Vehicle	:	Engine of the vehicle was kept at stopped condition.
4.	Manufacturer's recommendation for this test		
4.1	Flow control valve	:	20 l/h, 40 l/h and 60 l/h setting.
4.2	Droplet size controller setting.	:	There are 8 positions for adjusting the fan blade angle, which in turn, changes the drop let size. Applicant, however, has requested the testing at setting No. 2, 5 and 8
4.3	Recommended engine speed for this test, rpm	:	3300
4.4	Blower speed corresponding to 3300 rpm of engine, rpm	:	3302
4.5	Atomizer speed corresponding to 3300 rpm of engine, rpm	:	4176, 2395 and 1380 at the atomizer setting No 2, 5 and 8 respectively.



PS- 425/2494/2020

**LANDFORCE LFVS 1210
VEHICLE MOUNTED SPRAYER (COMMERCIAL)**

Level of water in tank	Nozzle control valve setting	Avg. Engine speed rpm	Droplet size controller setting, no.	Test No.	Discharge rate l/min	Average discharge rate l/min	Variation in discharge w.r.t that on full tank (%)	Full tank discharge, l/min
One-fourth 28 lit	20 l/h	3301	At position No. 02	1.	0.320	0.320	-3.03	0.330
				2.	0.310			
				3.	0.330			
				4.	0.320			
			At position No. 05	1.	0.320	0.318	-2.75	0.327
				2.	0.310			
				3.	0.320			
				4.	0.320			
			At position No. 08	1.	0.320	0.320	-3.03	0.327
				2.	0.310			
				3.	0.330			
				4.	0.320			
One-half 56 lit	20 l/h	3301	At position No. 02	1.	0.320	0.325	-1.52	0.330
				2.	0.320			
				3.	0.330			
				4.	0.330			
			At position No. 05	1.	0.330	0.323	-1.22	0.327
				2.	0.320			
				3.	0.330			
				4.	0.310			
			At position No. 08	1.	0.320	0.323	-1.22	0.327
				2.	0.330			
				3.	0.320			
				4.	0.320			
Three-fourth 84 lit	20 l/h	3301	At position No. 02	1.	0.320	0.326	-1.21	0.330
				2.	0.330			
				3.	0.330			
				4.	0.330			
			At position No. 05	1.	0.320	0.325	-0.61	0.327
				2.	0.330			
				3.	0.320			
				4.	0.330			
			At position No. 08	1.	0.320	0.323	-0.22	0.327
				2.	0.330			
				3.	0.320			
				4.	0.320			

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NORTHERN REGION FARM MACHINERY TRAINING AND TESTING INSTITUTE, HISAR
[THIS REPORT VALID UP TO : 31-August 2025]

20 of 31

PS- 425/2494/2020

**LANDFORCE LFVS 1210
VEHICLE MOUNTED SPRAYER (COMMERCIAL)**

Level of water in tank	Flow control valve setting	Avg. Engine speed rpm	Droplet size controller setting- no.	Test No.	Discharge rate l/min	Average discharge rate l/min.	Variation in discharge w.r.t that on full tank (%)	Full tank discharge, l/min
One-fourth 28 lit	40 l/h	3301	At position No. 02	1.	0.650	0.648	-1.82	0.660
				2.	0.650			
				3.	0.640			
				4.	0.650			
			At position No. 05	1.	0.660	0.650	-1.22	0.658
				2.	0.650			
				3.	0.650			
				4.	0.640			
			At position No. 08	1.	0.650	0.648	-1.52	0.658
				2.	0.640			
				3.	0.650			
				4.	0.650			
One-half 56 lit	40 l/h	3301	At position No. 02	1.	0.660	0.653	-1.06	0.660
				2.	0.660			
				3.	0.650			
				4.	0.650			
			At position No. 05	1.	0.660	0.650	-1.22	0.658
				2.	0.650			
				3.	0.640			
				4.	0.650			
			At position No. 08	1.	0.640	0.650	-1.22	0.658
				2.	0.650			
				3.	0.650			
				4.	0.660			
Three-fourth 84 lit	40 l/h	3301	At position No. 02	1.	0.650	0.655	-0.76	0.660
				2.	0.660			
				3.	0.650			
				4.	0.660			
			At position No. 05	1.	0.650	0.653	-0.76	0.658
				2.	0.650			
				3.	0.660			
				4.	0.650			
			At position No. 08	1.	0.660	0.655	-0.46	0.658
				2.	0.660			
				3.	0.650			
				4.	0.650			

Continue.....

NORTHERN REGION FARM MACHINERY TRAINING AND TESTING INSTITUTE, HISAR

[THIS REPORT VALID UP TO : 31-August 2025]

21 of 31



PS- 425/2494/2020

LANDFORCE LFVS 1210

VEHICLE MOUNTED SPRAYER (COMMERCIAL)

Level of water in tank	High/Reagent valve setting	Avg. Engine speed rpm	Droplet size controller setting. no.	Test No.	Discharge rate l/min	Average discharge rate l/min	Variation in discharge w.r.t that on full tank (%)	Full tank discharge. l/min			
One-fourth 28 lit	60 l/h	3301	At position No. 02	1.	1.040	1.037	-1.24	1.050			
				2.	1.030						
				3.	1.040						
				4.	1.040						
			At position No. 05	1.	1.020	1.028	-1.91	1.048			
				2.	1.030						
				3.	1.030						
				4.	1.030						
			At position No. 08	1.	1.020	1.028	-2.09	1.050			
				2.	1.030						
				3.	1.020						
				4.	1.040						
			One-half 56 lit	60 l/h	3301	At position No. 02	1.	1.040	1.040	-0.95	1.050
							2.	1.040			
							3.	1.030			
							4.	1.050			
At position No. 05	1.	1.040				1.043	-0.48	1.048			
	2.	1.050									
	3.	1.050									
	4.	1.030									
At position No. 08	1.	1.040				1.040	-0.95	1.050			
	2.	1.050									
	3.	1.030									
	4.	1.040									
Three-fourth 84 lit	60 l/h	3301	At position No. 02	1.	1.040	1.042	-0.76	1.050			
				2.	1.030						
				3.	1.050						
				4.	1.050						
			At position No. 05	1.	1.040	1.038	-0.95	1.048			
				2.	1.030						
				3.	1.040						
				4.	1.040						
			At position No. 08	1.	1.040	1.040	-0.95	1.050			
				2.	1.050						
				3.	1.040						
				4.	1.030						

Remarks:- Maximum variation in discharge : 3.03 %
Minimum variation in discharge : 0.22

NORTHERN REGION FARM MACHINERY TRAINING AND TESTING INSTITUTE, HISAR

[THIS REPORT VALID UP TO : 31-August 2025]

22 of 31

- 16.3 Provision for draining of sediments/water of fuel supply system is not provided. It should be provided.
- 16.4 Provision for fuel on/off in the fuel supply system is not provided. It should be provided.
- 16.5 Oil filter is not provided. It should be looked into for necessary action
- 16.6 Model of Governor is not specified. It should be looked into.
- 16.7 Maximum current and rated speed of motor is not specified. It should be looked into.
- 16.8 Air velocity and air output is not specified. It should be looked into.
- 16.9 There is no agitator provided in the chemical tank. It may be looked into for ensuring the uniform spraying of chemicals
- 16.10 Atomizer make, model and Sr. No. is not specified. It should be specified for the guidance of users
- 16.11 Necessary tools required for routine maintenance should be provided with machine
- Safety provision/ safety wear :-**
- i) Safety instruction regarding handling poisonous agro-chemical before, during and after spraying operation should be provided on sprayer.
- ii) Safety signs and Hazard pictorial are not provided on the machine. It **MUST** be provided on machine for safety of user.



17 TECHNICAL LITERATURE:

The following literature provided during the test.

- Operator's manual cum service manual cum part manual.
- Maintenance manual & spare parts list of engine.
- Photocopy of work-shop manual of engine.

However the same need to be updated as per IS:8132-1999 including relevant information such as operating parameters, safety during spraying etc.

TESTING AUTHORITY

MAAN SINGH SENIOR TECHNICAL ASSISTANT	
P. K. PANDEY DIRECTOR	

18. APPLICANT'S COMMENTS

We agree with the report. We will make further improvements in Vehicle Mounted Sprayer.

