

व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ No.: Powerweeder-108/2638/2021

माह/Month : January, 2021

THIS TEST REPORT VALID UP TO : 31st January, 2026



**XTRA POWER, XPW-1150P
POWER WEEDER**



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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11. RUNING IN

In the agreement with applicant's representative the Power weeder was run-in for 0.75 hour before the actual test. All the fastness was checked tightened thereafter.

12. FIELD TEST

The field tests under dry land condition were conducted for 26.6 h. The field tests were conducted at the rated 3600 rpm. In all, 5 tests trials were conducted in sandy loam soil at the NRFMTTI farm, Hisar. The summary of the field test for dry land operation is represented in table-3.

Crop parameters

- i) Type of weed - Seasonal weeds
ii) Height of weed, cm - 14 to 27

Table 5: SUMMARY OF FIELD PERFORMANCE TEST

Sl. No.	Parameter	Range
i)	Type of soil	: Sandy loam
ii)	Average Soil moisture, %	: 8.2 to 21.7
iii)	Average Bulk density of soil, g/cc	: 1.41 to 1.61
iv)	Average Speed of operation, kmph	: 1.30 to 1.47
v)	Average depth of cut (cm)	: 6.44 to 8.40
vi)	Average Width of cut, m	: 1.12 to 1.18
vii)	Average Area covered, ha/h	: 0.127 to 0.147
viii)	Average Time required for one ha	: 6.80 to 7.87
ix)	Average Fuel consumption	
	l/h	: 1.60 to 1.80
	l/ha	: 10.88 to 14.17
x)	Average Weeding efficiency (%)	: 67 to 75
xi)	Average Field efficiency (%)	: 85 to 89

13. ADJUSTMENT, DEFECTS, BREAKDOWNS & REPAIR

No noticeable breakdown occurred during test.

14. COMPONENTS/ASSEMBLY INSPECTION AND ASSESSMENT OF WEAR**14.1 Engine :**

The Engine and other assemblies were dismantled after 43 h of engine operation.

14.1.1 Cylinder :

Cylinder bore dia. (mm)						Max. permissible wear limit
Top Position		Middle position		Bottom Position		
Thrust	Non-thrust	Thrust	Non-thrust	Thrust	Non-thrust	
77.01	77.02	77.02	77.02	77.02	77.01	77.027

- 14.2 Valve guides and valve springs** Discard limit (kgf/mm)
- Valve spring stiffness, N/mm (kgf/mm)
- | | | |
|---------------|----------------|-----|
| Inlet valve | : 11.71 (1.19) | 0.9 |
| Exhaust valve | : 12.36 (1.26) | 0.9 |
- 14.3 Timing gears**
No noticeable defect observed.
- 14.4 Clutch**
No noticeable defect observed.
- 14.5 Transmission**
No noticeable defect observed.
- 14.6 Rotary drive unit**
No noticeable defect observed.
- 14.7 Wear of blades:**
- 14.7.1 Mass basis:**
The wear of the rotary weeder blades was measured after 27.35 hrs. of field operation and the observations are as under:

Sl. No.	Initial mass (g)	mass after 27 hrs.(g)	Loss of mass (g)	Percent wear (%)	Percent wear per hour
1	364.2	358.0	6.20	1.70	0.06
2	363.0	357.4	5.60	1.54	0.06
3	368.6	363.5	5.10	1.38	0.05
4	357.2	350.6	6.30	1.76	0.06
5	360.4	353.9	6.50	1.80	0.07
6	359.6	353.5	6.10	1.70	0.06
7	365.0	359.8	5.20	1.42	0.05
8	355.3	347.3	8.00	2.25	0.08

15. SUMMARY OF OBSERVATIONS

S. No.	Characteristics	Declaration	Tolerance (as per IS :13539-2008)	As observed	Whether within the tolerance limit (Yes/No)
1	2	3	4	5	6
15.1	Engine performance test				
i)	Average rated power in rating test, kW	5.0	± 5 %	4.87	Yes
ii)	Specific fuel consumption at average rated power in rating test, g/kwh	374	± 5 %	399	No
iii)	Governing test		Tolerance (as per IS :7347-1974)		

iv)	Momentary speed change in percentage of rated speed.	-	For class-1 governing- 12% (Max) and class-2 governing- 15% (Max)	8.81	Yes
v)	Permanent change in speed in percentage of rated speed		For class-1 governing- 6% (Max) and class-2 governing- 10% (Max)	7.39	Yes

15.2 Wear assessment

S. No.	Characteristics	Declaration	As observed	Whether within the tolerance limit (Yes/No)
i)	Cylinder bore diameter	77.027	77.02	Yes
ii)	Clearance between piston & cylinder liner	0.077	0.07	Yes
iii)	Ring end gap			
	-Top ring	0.4	0.30	Yes
	-2 nd ring	0.4	0.35	Yes
	-oil ring	--	Not measured due to ring design constraint	--
iv)	Ring groove clearance:			
	-Top ring	0.4	0.03	Yes
	-2 nd ring	0.5	0.02	Yes
	-Oil ring	--	Not measured due to ring design constraint	--
v)	Clearance of big end bearing :			
	-Diametrical	0.1	0.06	Yes
	-Axial	0.12	0.85	No
vi)	Clearance of main bearing			
	-Diametrical	Ball bearing Provided both side		--
	-Crankshaft end float			--
15.3	Safety requirements			
i)	Provision of guards on moving parts other than rotary	--	Provided	Yes
ii)	Provision of guard for tilling component as per clause 5.2 of IS 15925-2012	--	Provided	Yes
iii)	Location and direction of exhaust emission to be away from the operator	--	Provided	Yes

iv)	Covers on hot parts	--	Provided	Yes
v)	Provision of parking stand with locking	--	Provided	Yes
vi)	Identification of controls	Shall have the direction and/or method of operation clearly identified by durable label or mark	Provided	Yes
vii)	Marking/labels with Advice to read operator's manual Advice Wear eye and ear protection Cautionary information Safety signs near tines, Distance warning for bystanders	--	Provided	Yes
viii)	Pertinent instructions	Shall be provided as presented in Annex A of IS:15925-2012	Not provided	No

Sr. No.	Characteristics	Declaration	Tolerance (as per IS :13539-2008)	As observed	Whether within the tolerance limit (Yes/No)
1	2	3	4	5	6
15.4 Amplitude of mechanical vibration (microns) at :					
i)	Steering handle grips				
	Left	100 max.	--	315	No
	Right	100 max.	--	235	No
ii)	Clutch/brake lever	100 max.	--	327	No
iii)	Accelerator lever	100 max.	--	318	No

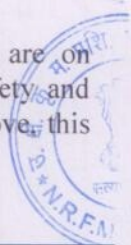
16. CRITICAL TECHNICAL SPECIFICATIONS

Deferred till 31.03.2021 vide Ministry O.M. No. 13-13/2020-M&T(I&P) dated 22.12.2020

17. COMMENTS & RECOMMENDATIONS

17.1 Mechanical vibration

The amplitude of mechanical vibration marked as (*) on the relevant chapter, are on drastically higher side. It is not just directly concerned with operator's health, safety and comfort, but also adversely affect the useful life of the components. In view of above, this deserved to be given top priority for corrective action.



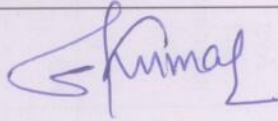
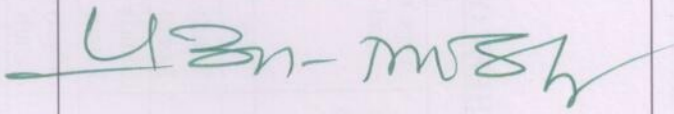
- 17.2 The chemical composition of blades does not conform in toto, to the requirements of IS: 6690-1981. This needs to be looked into for corrective action.
- 17.3 The hardness of blades does not conform in toto, to the requirements of IS: 6690-1981. This needs to be looked into for corrective action.
- 17.4 Pertinent instructions are not mentioned. It **MUST** be mentioned.
- 17.5 Make & model of governor is not specified. It **MUST** be specified.
- 17.6 Specific fuel consumption at average rated power in rating test g/kWh does not meet the requirement. It **MUST** be looked into.
- 17.7 Clearance of big end bearing of Axial has exceeded the discard limit. It **MUST** be looked into.

18. TECHNICAL LITERATURE

No Technical literature provided by the applicant during the test
The following literature, therefore, **MUST** be provided as per IS: 8132-1999 for guidance of users.

- i) Operator's manual
- ii) Service manual
- iii) Part's catalog

TESTING AUTHORITY

SANJAY KUMAR AGRICULTURAL ENGINEER	
P. K. PANDEY DIRECTOR	

Draft test report compiled by Abishek Verma, B. Tech (Ag. Engg)

19. APPLICANT'S COMMENTS

Para No.	Our reference	Applicants comments
19.1	17.1	Corrective action will be taken to reduce the amplitude of mechanical vibration at different locations of Power Weeder.
19.2	17.2	Efforts will be made to comply with the requirement of IS 6690-1981.as far as chemical composition and hardness of blade is concerned.
19.3	17.	Pertinent instructions will be mentioned on the power weeder.
19.4	17.5	Make and Model of governor will be specified.
19.5	17.6	Necessary efforts will be made to meet the requirement of specific fuel consumption at average rated power.
19.6	17.7	Clearance of the big end bearing will be revised.
19.7	18.0	Technical literature will be provided