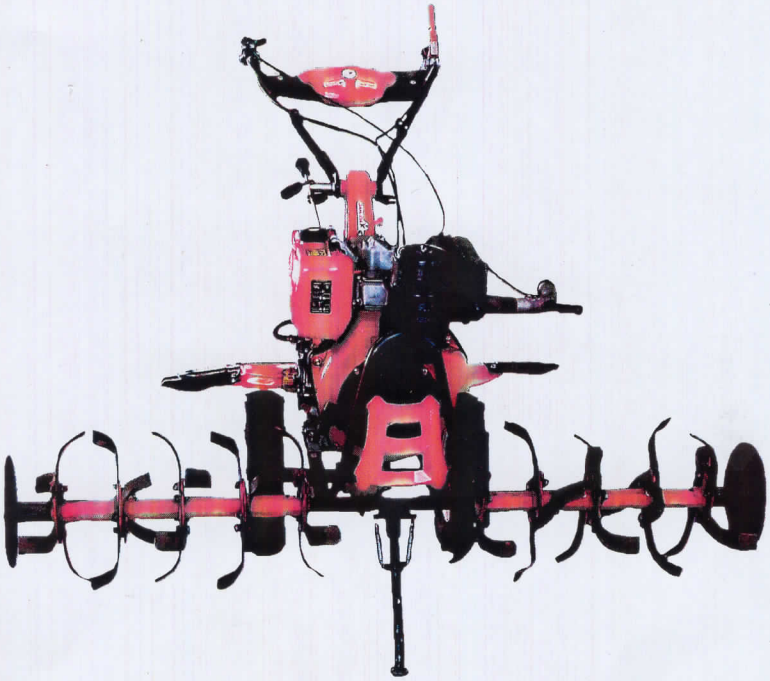
व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ **No.: IMP – 1016/2361/2019**
माह/**Month: September, 2019**

THIS TEST REPORT VALID UP TO : 30th SEPTEMBER, 2026



GARUDA HWASDAN, GH-135D
POWER WEEDER

सत्यमेव जयते

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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10.2 Table 4 : Chemical analysis of rotary blade

Elements	Requirements as per IS: 6690-1996 (%)	As observed (%)	Remarks
1.	2.	3.	4.
Carbon	0.50 to 0.60	0.3930	**Does not conform**
Manganese	0.50 to 1.00	1.9377	**Does not conform**
Silicon	1.50 to 2.00	0.2889	**Does not conform**
Phosphorous	0.05 (Max.)	0.0176	Conforms
Sulphur	0.05 (Max.)	0.294	Conforms

11. FIELD TEST

The field tests under dry land condition were conducted for 26.83 h. (including running in and field adjustment time) The field tests were conducted at the rated 3600 rpm. In all, 6 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 - 1.0 to 22.0

Table 5: SUMMARY OF FIELD PERFORMANCE TEST

Sl. No.	Parameter		Range
i)	Type of soil	:	Sandy loam
ii)	Average Soil moisture, %	:	11.2 to 14.9
iii)	Average Bulk density of soil, g/cc	:	1.52 to 1.86
iv)	Average Speed of operation, kmph	:	1.20 to 1.66
v)	Average depth of cut (cm)	:	6.72 to 7.39
vi)	Average Width of cut, m	:	1.39 to 1.44
vii)	Average Area covered, ha/h	:	0.121 to 0.206
viii)	Average Time required for one ha	:	4.85 to 8.26
ix)	Average Fuel consumption		
	l/h	:	0.85 to 1.00
	l/ha	:	4.5 to 7.44
x)	Average Weeding efficiency (%)	:	67.3 to 86.0
xi)	Average Field efficiency (%)	:	71.2 to 93.6

12. ADJUSTMENT, DEFECTS, BREAKDOWNS & REPAIR

No noticeable breakdown occurred during test.

13. COMPONENTS/ASSEMBLY INSPECTION AND ASSESSMENT OF WEAR

13.1 Engine :

The Engine and other assemblies were dismantled after 46.45 h of engine operation.

16. COMMENTS & RECOMMENDATIONS

16.1 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.

16.2 Make and model of fuel injection pump is not mentioned. It **MUST** be specified.

16.3 Make and model of fuel injection is not mentioned. It **MUST** be specified.

16.4 The material of blade does not meet the requirement of Critical Technical Specification. It **MUST** be looked into.

16.5 Provision for handle rotation adjustment is not provided. It **MUST** be provided.

16.6 Provision for emergency stop of engine is not provided. It **MUST** be provided.

16.7 Make model of fuel injector is not specified. It **MUST** be specified.

16.8 Model of governor is not specified. It **MUST** be specified.

16.9 Maximum permissible wear limit for piston to cylinder clearance is not provided. It **MUST** be mentioned for ensuring the proper repairs.

16.10 The specific fuel consumption at average rated power in rating test was observed more than 36 % of the declare value. It **MUST** be looked into.

16.11 The power observed during engine performance test is 9.2 % less than the value declared by the applicant. It **MUST** be looked into.

16.12 Maximum permissible wear limit for valve guide to valve clearance is not specified. It **MUST** be specified for ensuring the proper repairs.

16.13 Discard limit for valve spring stiffness and piston to cylinder clearance not specified. It **MUST** be specified.

16.14 The chemical composition of blades does not conform to as per IS: 6690-1981. This needs to be looked into for corrective action at production level.

16.15 The noise at operators ear level was observed on higher side. It should be looked in to.

16.16 The air cleaner oil pull over was observed on higher side. It should be looked in to.

16.17 Serial No. of machine is not specified. It **MUST** be specified.

16.18 Pertinent instructions are not mentioned. It **MUST** be mentioned.

16.19 A suitable labeling plate needs to be provide with interlaid following instruction-

1. Name and address of manufacturers & applicant
2. Country of origin
3. Make
4. Model
5. Engine number
6. Engine HP
7. Rated rpm
8. SFC

17. TECHNICAL LITERATURE

The following literatures are provided by manufacturer.

(a) Operator's cum Service manual with parts catalogue.

The operator's manual should be updated as per IS 8132-1999.

TESTING AUTHORITY

R. K. NEMA SENIOR AGRICULTURAL ENGINEER	
P. K. PANDEY **DIRECTOR**	

18. APPLICANT'S COMMENTS

Para No	Our reference	Applicant's comments
18.1	16.1	We will take corrective action to dampen the vibration in future production.
18.2	16.4,16.14	We will ask the supplier to up-grade the blade material in future supplies.
18.3	16.5	We will ask the manufacturer to make necessary changes in the Handle Design in future supplies.
18.4	16.6	We will provide.
18.5	16.8	We will provide in future.
18.6	16.9,16.12	We will specify.
18.7	16.10	We will look into and necessary Settings will be made in the fuel pump.
18.8	16.11,16.16	We will take it up with the manufacturer to rectify it.
18.9	16.13	We will specify.
18.10	16.15	We will raise this with our manufacturer and solve it by introducing noise Dampening mechanism in future production.
18.11	16.17,16.19	Hence forth we will provide all the parameters required to be mentioned in the Labeling Plate
18.12	16.18	Hence forth we will provide all the pertinent Instructions in our future supplies.
18.13	17	The operator's Manual will hence forth be updated as per requirements of IS 8132-1999