

व्यावसायिक परीक्षण रिपोर्ट  
COMMERCIAL TEST REPORT

संख्या/ No. Power weeder-142/2831/2022

माह/Month: April, 2022

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



**GREAVES COTTON LTD, GS 520 DIL  
POWER WEEDER**



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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**12. FIELD TEST**

The field tests under dry land condition were conducted for 27.07 h. The field tests were conducted at the rated 3600 rpm. In all, 5 tests trials were conducted in sandy loam soil at NRFMTTI farm, Hisar. The summary of the field test for dry land operation is given in table-6.

**Crop parameters**

- i) Type of weed - Seasonal weeds  
ii) Height of weed, cm - 3.0 to 13.0

**Table 6: SUMMARY OF FIELD PERFORMANCE TEST**

Sl. No.	Parameter		Range
i)	Type of soil	:	Sandy loam
ii)	Average Soil moisture, %	:	13.9 to 15.2
iii)	Average Bulk density of soil, g/cc	:	1.49 to 1.68
iv)	Average Speed of operation, kmph	:	2.22 to 2.53
v)	Average depth of cut, cm	:	6.1 to 6.8
vi)	Average Width of cut, m	:	1.07 to 1.11
vii)	Average Area covered, ha/h	:	0.191 to 0.240
viii)	Average Time required for one ha	:	4.17 to 5.05
ix)	Average Fuel consumption		
		l/h :	0.70 to 0.85
		l/ha :	3.43 to 4.45
x)	Average Weeding efficiency, %	:	79.35 to 89.23
xi)	Average Field efficiency, %	:	79.92 to 85.41

**13. ADJUSTMENT, DEFECTS, BREAKDOWNS & REPAIR**

No noticeable defect/breakdown observed during test.

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

The Engine and other assemblies were dismantled after 40.58 hours 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	
78.00	78.01	78.00	78.01	78.00	78.01	0.15

7.	Type of secondary gear box	Gear type, chain & sprocket type	Gear type	Conforms
8.	Material for rotor shaft	SAE 1045 (CRS) / EN8 / EN9	EN8	Conforms
9.	No. of flanges	4 – 10	8	Conforms
10.	Types of flanges	Square/circular/rectangular	Square	Conforms
11.	Distance between consecutive flanges, mm	80 to 150	130	Conforms
12.	No. of blades in each flange	3-6	04	Conforms
13.	No. of rotor blade	12 (min.)	32	Conforms
14.	Thickness of rotor blade, mm	5 (min.)	5.50	Conforms
15.	Material of blade	Boron (28MnCrB5) / High carbon steel EN 42j	High carbon steel EN 42j	Conforms
16.	Hardness of Blade, HRC	38 (min.)	38.63 (Average)	Conforms
17.	Shape of rotor blade	C / J shape	J shape	Conforms
18.	Provision for handle height adjustment	Must be provided	Provided	Conforms
19.	Provision for handle rotation	Must be provided	<b>Not Provided</b>	<b>Does not conform</b>
20.	Provision for emergency stop of engine	Must be provided	Provided	Conforms
21.	Provision for easy start of engine	Must be provided	Provided	Conforms
22.	Provision for shield/cover to prevent flying of mud & stone from rotor	Must be provided	Provided	Conforms
23.	Depth control mechanism	Must be provided	Provided	Conforms
24.	Provision for transport wheels	Must be provided	Provided	Conforms
25.	Provision for cover on exhaust	Must be provided	Provided	Conforms
26.	Direction of exhaust emission away from operator	Must be provided	Provided	Conforms

27.	Marking/labeling machine	The labeling plate should be riveted on the body of machine having Name and address of manufacturer & Applicant, Country of origin, Make, Model, Year of manufacturer, Serial number, Engine number, Engine HP, rated rpm & SFC.	Partially meet the requirement	Conforms
28.	Literature	Operator manual, service manual and Parts catalogue should be provided.	Provided	Conforms

**Note:-** The implementation of critical technical specifications has been deferred till 30.09.2022 vide Ministry's O.M. No. 13-1/2021 M&T (I&P) dated 03.02.2022

## 16. COMMENTS & RECOMMENDATIONS

### 16.1 Engine performance

**16.1.1** The maximum power of engine was observed as 5.15 kW against the declared power 4.00 kW

**16.1.2** The rated power is observed as 3.35 kW at 3600 rpm against manufacturer's declared power of 3.70 kW at 3600 rpm

**16.1.3** The specific fuel consumption corresponding to maximum power was observed as 322 g/kwh against declared value of 299 g/kwh

### 16.2 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 deserve to be given top priority for corrective action.

**16.3** 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.


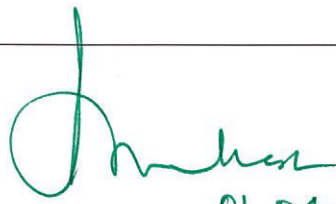
**17. TECHNICAL LITERATURE**

The following literatures are provided by the applicant.

- i) Operator manual
- ii) Spare parts manual
- iii) Owner's Manual of engine

However, the manuals needs to be updated as per IS: 8132-1999.

**TESTING AUTHORITY**

SANJAY KUMAR AGRICULTURAL ENGINEER	
<b>Dr. MUKESH JAIN</b> <b>DIRECTOR</b>	 01.04.2022

Test report compiled by Er. Dharmendra Kumar, Technical Assistant

**18. APPLICANT'S COMMENTS**

Para No.	Our reference	Applicant's comments
18.1	16.2	Suitable measures like providing anti vibration mountings (AVM) to reduce the vibration levels will be introduced during the production lot.
18.2	16.3	Action initiated at the supplier and for conformance to the raw material standards (as per IS 6690:1981)