

व्यावसायिक परीक्षण रिपोर्ट  
COMMERCIAL TEST REPORT

संख्या/ No.: Powerweeder-122/2749/2021  
माह/Month: September, 2021

**THIS TEST REPORT VALID UP TO : 30<sup>th</sup> September, 2026**



**FALCON GARDEN TOOLS PVT. LTD., FRTC-2015 H  
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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**[ISO 9001:2015 CERTIFIED]**

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**11. RUNING - IN**

The Power weeder was run-in for 1.17 hour before field performance test. All the fasteners were checked and tightened thereafter.

**12. FIELD TEST**

The field tests under dry land condition were conducted for 25.98 h. The field tests were conducted at the rated 3000 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 given in table-4.

**Crop parameters**

- i) Type of weed - Seasonal weeds  
ii) Height of weed, cm - 2.5 to 12

**Table 4: SUMMARY OF FIELD PERFORMANCE TEST**

| Sl. No. | Parameter                          |        | Range          |
|---------|------------------------------------|--------|----------------|
| i)      | Type of soil                       | :      | Sandy loam     |
| ii)     | Average Soil moisture, %           | :      | 10.33 to 12.07 |
| iii)    | Average Bulk density of soil, g/cc | :      | 1.52 to 1.68   |
| iv)     | Average Speed of operation, kmph   | :      | 1.68 to 1.74   |
| v)      | Average depth of cut, cm           | :      | 7.46 to 8.16   |
| vi)     | Average Width of cut, m            | :      | 0.70 to 0.71   |
| vii)    | Average Area covered, ha/h         | :      | 0.099 to 0.103 |
| viii)   | Average Time required for one ha   | :      | 9.71 to 10.10  |
| ix)     | Average Fuel consumption           |        |                |
|         |                                    | l/h :  | 0.85 to 1.00   |
|         |                                    | l/ha : | 8.58 to 9.90   |
| x)      | Average Weeding efficiency, %      | :      | 79.13 to 84.50 |
| xi)     | Average Field efficiency, %        | :      | 82.50 to 85.71 |

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

No noticeable defect or breakdown observed during test.

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

The Engine and other assemblies were dismantled after 33 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 | 68.165                      |
| 68.02                   | 68.02      | 68.02           | 68.02      | 68.02           | 68.02      |                             |

## 16. CRITICAL TECHNICAL SPECIFICATIONS

Vide Ministry O.M. No. 13-9/2019-M&amp;T (I&amp;P) dated 26.04.2019.

| Sr. No. | Parameters                               | Specifications                               | Observed                         | Remarks                 |
|---------|--|--|----------------------------------|-------------------------|
| 1.      | Type                                     | Self-propelled, walk behind                  | Self propelled, walk behind type | Conforms                |
| 2.      | Working width, mm                        | 300-1500                                     | 920                              | Conforms                |
| 3.      | Type of engine                           | Compression/Spark ignition                   | Spark ignition                   | Conforms                |
| 4.      | Starting method                          | Manual/recoil/self-starting                  | Recoil                           | Conforms                |
| 5.      | Type of clutch                           | Dry/Wet                                      | Wet                              | Conforms                |
| 6.      | Type of primary gear box                 | Sliding/constant mesh or combination of both | Sliding mesh                     | Conforms                |
| 7.      | Type of secondary gear box               | Gear type, chain & sprocket type             | Gear type                        | Conforms                |
| 8.      | Material for rotor shaft                 | SAE 1045 (CRS) / EN8 / EN9                   | 20CrMnTi                         | <b>Does not conform</b> |
| 9.      | No. of flanges                           | 4 - 10                                       | 6                                | Conforms                |
| 10.     | Types of flanges                         | Square/circular/rectangular                  | Square                           | Conforms                |
| 11.     | Distance between consecutive flanges, mm | 80 to 150                                    | 120                              | Conforms                |
| 12.     | No. of blades in each flange             | 3-6  | 04                               | Conforms                |
| 13.     | No. of rotor blade                       | 12 (min.)                                    | 24                               | Conforms                |
| 14.     | Thickness of rotor blade, mm             | 5 (min.)                                     | 5.50                             | Conforms                |
| 15.     | Material of blade                        | Boron (28MnCrB5) / High carbon steel EN 42j  | EN45                             | <b>Does not conform</b> |
| 16.     | Hardness of Blade, HRC                   | 38 (min.)                                    | 40.03<br>(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. | Provided | Conforms |
| 28. | Literature   | Operator manual, service manual and Parts catalogue should be provided.  | Provided | Conforms |

### 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 Make & model of governor are not specified. It should be specified.

17.5 The provision for handle rotation in not provided. It **MUST** be looked into.


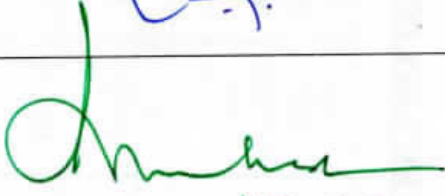
**18. TECHNICAL LITERATURE**

The following literatures are provided by the applicant.

- i) Operator Manual
- ii) Part's Catalogue
- iii) Service manual
- iv) Owner's Manual of engine

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

**TESTING AUTHORITY**

|  |   |
|--|---|
| G.R. AMBALKAR<br>AGRICULTURAL ENGINEER |                 |
| DR. MUKESH JAIN<br>DIRECTOR            | <br>15-09-2021 |

Test report compiled by Er. Dharmendra Kumar, Technical Assistant

**19. APPLICANT'S COMMENTS**

| Para No. | Our reference | Applicant's comment   |
|----------|---------------|---|
| 19.1     | 17.1          | We will take corrective action to reduce the vibration in future.   |
| 19.2     | 17.2          | We will take corrective action that chemical composition of blade is as per the requirement of IS: 6690-1981. |
| 19.3     | 17.3          | We will take corrective action that hardness of blade is as per the requirement of IS: 6690-1981.             |
| 19.4     | 18            | Manuals will be updated as per requirement of IS: 8132-1999.  |

