

व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ No.: Machine- 59/3106/2023
माह/Month: November, 2023

THIS TEST REPORT VALID UP TO : 30th November, 2028



**FALCON, FBC-35N
BRUSH CUTTER**



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

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12. FIELD TEST

Field tests were conducted for 12.98 hours with nylon rope attachment and 13.92 hours with straight blade attachment. Detailed results of field tests are shown in Annexure-I & II and summarized in the ensuing table. Details about the operator are show in Annexure-III.

| Sr. No. | Parameters | Seasonal grass cutting | |
|---------|----------------------------------|------------------------|--------------------|
| | | For nylon rope | For straight blade |
| 1. | Field condition | Leveled | Leveled |
| 2. | Intensity of grass/bush | High | High |
| 3. | Number of grass/bush in 1 sq. m | 380 to 406 | 360 to 402 |
| 4. | Height of grass/bush, cm | 12 to 30 | 116 to 221 |
| 5. | Diameter of grass/bush, mm | 1.10 to 2.10 | 10.10 to 17.20 |
| 6. | Mass of grass/bush cut | | |
| | (kg/h) | 422.70 to 460.10 | 2835.40 to 3833.60 |
| | (kg/ha) | 4498 to 4895 | 29545 to 39524 |
| 7. | Area covered (Rate of work) ha/h | 0.094 to 0.096 | 0.096 to 0.098 |
| 8. | Time required for one hectare, h | 10.42 to 10.64 | 10.20 to 10.42 |
| 9. | Fuel consumption | | |
| | l/h | 0.59 to 0.60 | 0.59 to 0.60 |
| | l/ha | 6.15 to 6.38 | 6.02 to 6.25 |

12.1 Cutting using nylon rope assembly**12.1.1 Rate of work**

- Area covered (Rate of work) was observed as 0.094 to 0.096 ha/h.
- Time required for one hectare was observed as 10.42 to 10.64 hours.
- Numbers of perennial weed in one square meter was 380 to 406
- Mass of perennial weed cut was 422.70 to 460.10 kg/h to 4498 to 4895 kg/ha.

12.1.2 Fuel consumption

Fuel consumption was observed as 0.59 to 0.60 l/h and 6.15 to 6.38 l/ha.

12.2 Cutting using straight blade assembly**12.2.1 Rate of work**

- Area covered (Rate of work) was observed as 0.096 to 0.098 ha/h.
- Time required for one hectare was observed as 10.20 to 10.42 h.
- Mass of bush cut was observed as 2835.40 to 3833.60 kg/h to 29545 to 39524 kg/ha.
- No. of bush stem in one m² area was 360 to 402

12.2.2 Fuel consumption

Fuel consumption was observed as 0.59 to 0.60 l/h. and 6.02 to 6.25 l/ha.

12.3 Labor requirement

To ensure the cutting work without interruption, two operators are required to work alternatively. Additionally, one more labour is needed to gather the collected bush/weeds.

12.4 Adequacy of power of prime mover

The power of prime mover was found adequate.



16. CRITICAL TECHNICAL SPECIFICATION

(Vide Ministry's communication No. 13-9/2019 M&T (I&P)-Part, dated 26.04.2019)

| Sr. No. | Parameters | Specification | Observed | Remarks |
|-----------------------|--|---|--|----------|
| 1. | Type | Self propelled, portable | Self propelled | Conforms |
| 2. | Type of cutting attachment | Circular disc/Straight blade/Nylon rope | Straight blade & nylon rope used | Conforms |
| Circular blade | | | | |
| 3. | Material of circular/Straight blade | Alloy Steel | Alloy steel | Conforms |
| 4. | No. of teeth on circular disc blade | 50-100 | Circular blade is not recommended by applicant | -- |
| 5. | Root diameter/Overall diameter (mm) | 200-270 | | |
| 6. | Thickness of disc (mm) | 1.5 Min | | |
| 7. | Teeth thickness (mm) | 2.0 Min | | |
| 8. | Material of blade | M42 | | |
| 9. | Hardness of blade, HRC | 68-70 | | |
| Straight blade | | | | |
| 10. | Diameter of straight blade (mm) | 250-350 | 299 | Conforms |
| 11. | Width of ends/at center (mm) | 50/70, Min. | 50/80 | Conforms |
| 12. | Thickness of straight blade (mm) | 1.5 Min | 1.5 | Conforms |
| Nylon rope | | | | |
| 13. | Length of nylon rope (mm) | 2000-4000 | Length 3010 mm | Conforms |
| 14. | Diameter of nylon rope (mm) | 2.5 to 4.0 | Diameter- 3.0 mm | Conforms |
| 15. | Type of engine | Compression ignition/Spark ignition | Spark ignition | Conforms |
| 16. | Starting method | Manual/Recoil/Self-starting | Manual/Recoil start | Conforms |
| 17. | Type of clutch | Cone/Centrifugal | Centrifugal | Conforms |
| 18. | Type of gear drive | Bevel pinion | Bevel pinion | Conforms |
| 19. | Capacity of fuel tank (l) | 1.0 (min) | 1.0 lit. | Conforms |
| 20. | On off provision in fuel supply system | Must be provided | Provided | Conforms |
| 21. | Provision for easy start of engine | Must be provided | Choke is provided | Conforms |
| 22. | Provision for emergency stop of engine | Must be provided | Provided | Conforms |
| 23. | Provision for shield/cover to prevent flying of mud and stone from rotor | Must be provided | Provided | Conforms |
| 24. | Provision for grass deflector at the rear of the cutting mechanism | | | |
| 25. | Provision for pad with shoulder bet to dampen the vibration | Must be provided | Provided | Conforms |
| 26. | Provision for cover on exhaust. | Must be provided | Provided | Conforms |
| 27. | Direction of exhaust emission away from operator | Must be provided | Provided | Conforms |

| | | | | |
|-----|--|---|--------------------------------|-------------------|
| 28. | Provision for safety kit (helmet, ear plug, mask, hand gloves, safety glass, Protective cloth, safety shoes) | Must be provided | Provided | Conforms |
| 29. | Marking/labeling of 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 | Partially conform |
| 30. | Literature | Operator manual, Service manual and Parts catalogue should be provided. | Provided | Conforms |

17. COMMENTS AND RECOMMENDATIONS

17.1 Engine performance

- i) Rated power is observed as 1.04 kW. The manufacturer has not declared Rated power. It must be declared.
- ii) Specific fuel consumption (SFC) at average rated power in rating test was observed as 317 g/kWh against declared value of 507 g/kWh.

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

17.3 The hardness of blade does not conform, to the requirement of IS: 6025-1982. This needs to be looked into for corrective action.

17.4 The chemical composition of blades does not conform, to the requirements of IS: 6025-1982. This needs to be looked into for corrective action.

17.5 A suitable labeling plate (not sticker) needs to be provided with "Inter alia" following information.

- i) Name and address of manufacturer
- ii) Name and address of applicant
- iii) Country of origin
- iv) Make
- v) Model
- vi) Year of manufacturer
- vii) Serial number
- viii) Engine number
- ix) Engine hp
- x) Rated rpm
- xi) SFC





18. TECHNICAL LITERATURE

The following literatures were provided during the testing.

- i) Operator manual
- ii) Service manual
- iii) Parts catalogue

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

TESTING AUTHORITY

| | |
|---|--|
| Er. SANJAY KUMAR AGRICULTURAL ENGINEER |  |
| Dr. MUKESH JAIN DIRECTOR |  29.11.2023 |

The test report is compiled by Sh. Deny Hasnu, Senior Technician

19. APPLICANT'S COMMENTS

We shall take necessary corrective measures for Falcon Brush Cutter, FBC-35N as per comments and recommendation.

