

प्रारंभिक व्यावसायिक परीक्षण रिपोर्ट
INITIAL COMMERCIAL TEST REPORT

संख्या/No. CSIR/CMERI/FMTTC/2024/050
माह/Month: September 2024

THIS TEST REPORT VALID UP TO : 31st AUGUST, 2031



**SAI AGRO EQUIPMENT
EARTH AUGER
(MODEL: SAI-EA-35)**



सत्यमेव जयते
Government Of India



कृषि मशीनरी प्रशिक्षण और परीक्षण केंद्र
Farm Machinery Training and Testing Centre
सीएसआईआर- केन्द्रीय यांत्रिक अभियांत्रिकी अनुसंधान संस्थान
CSIR - Central Mechanical Engineering Research Institute

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5 SPECIFICATIONS

5.1 General

| | |
|----------------------------------|---|
| Name of machine | : Earth Auger |
| Type of machine | : Engine Powered |
| Name and address of manufacturer | : M/s. SAI Agro Equipment, AT/PO: Swampatna, Dist.: Keonjhar, Odissa, PIN- 758030 |
| Name and address of applicant | : M/s. SAI Agro Equipment, AT/PO: Swampatna, Dist.: Keonjhar, Odissa, PIN- 758030 |
| Make | : SAI Agro Equipment |
| Model | : SAI-EA-35 |
| Serial No. | : Not Specified |
| Brand's Name | : Sun Agro |
| Country of origin | : China |
| Year of manufacture | : 2024 |
| Recommended use | : Digging Holes |

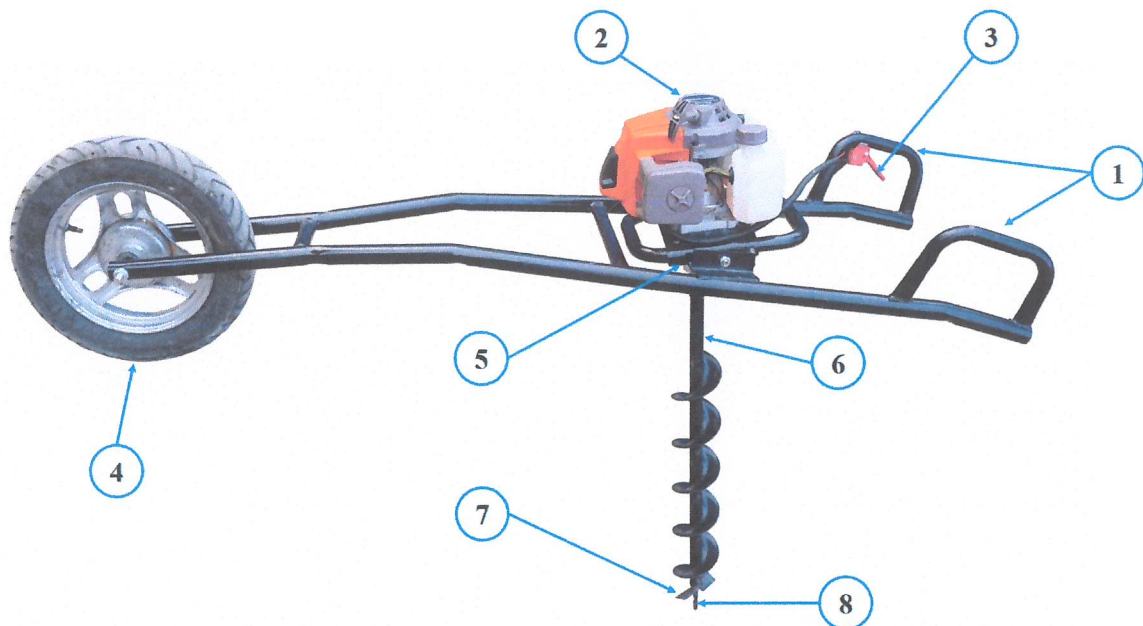


Fig.1 Schematic View of Post Hole Digger (SAI – EA – 35)

| | |
|-------------------|--------------------|
| 1. Handle | 2. Engine |
| 3. Throttle Lever | 4. Transport Wheel |
| 5. Gear Box | 6. Auger |
| 7. Auger Blade | 8. Auger Bit |

Report prepared by

Report verified by

12 FIELD TEST

Field test of Earth Auger/ Post Hole Digger was conducted for 12.68 hr. with auger attachments. Detailed results of field tests are shown in Annexure-I summarized in the ensuing table. Details about the operator are show in Annexure-II.

Table 4: Summary of field performance test

| Sl. No. | Parameter | | Range |
|---------|--|---------|------------------|
| i. | Average Soil moisture (%) | : | 14.62 to 17.13 |
| ii. | Average Bulk density of soil (g/cc) | : | 1.52 to 1.71 |
| iii. | Average Engine Speed, rpm | No load | : 7850 to 8010 |
| | | On load | : 7340 to 7550 |
| iv. | Average Dia. of hole, mm | | 214 to 250 |
| v. | Average depth of hole (cm) | : | 34 to 48 |
| vi. | Average Numbers of holes drilled per hour | : | 73 to 88 |
| vii. | Average Time required to drill one hole (Sec.) | : | 41 to 68 |
| viii. | Average Fuel consumption | | |
| | | L/hr. | : 2.00 to 2.7 |
| | | L/hole | : 0.026 to 0.050 |

Report verified by
Subrata Kumar Mandal

12.1 Rate of work

- i. Average diameter of hole was recorded as 214 to 250 mm.
- ii. Average depth of hole was recorded as 34 to 48 cm.
- iii. Average number of holes drilled per hour was recorded as 73 to 88.
- iv. Average time required to drill one hole was recorded as 41 to 68 sec.

12.2 Fuel Consumption

Average fuel consumption was observed as 2.0 to 2.7 lit/hr.

12.3 Labour requirement

To ensure the digging work without interruption, two operators are required to work alternates

12.4 Adequacy of power of prime mover

The power of prime mover was found adequate

12.5 Wear analysis of critical components

| Components | Duration of operation (h) | Initial mass (gm) | Mass after operation (gm) | Loss of mass (gm) | Percentage wear (%) | Percentage wear on hour basis (%) |
|------------|---------------------------|-------------------|---------------------------|-------------------|---------------------|-----------------------------------|
| Auger | 12.68 | 3.12 | 2.58 | 0.54 | 17.3 | 1.4 |

Report prepared by

13 EASE OF OPERATOR, ADJUSTMENT AND SAFETY

Fatigue was observed just half an hour of operation of the machine, mainly, due to excessive mechanical vibration and noise. The operator complained about pain in different parts of body like wrist & shoulder etc. during operation.

Work-Rest cycle for this machine is observed on follows

20 minutes' work – 10 minutes' rest – 20 minutes' work – 10 minutes' rest - 25 minutes' work – 10 minutes' rest & so on

14 ADJUSTMENT, DEFECTS, BREAKDOWNS & REPAIRS

No noticeable breakdown occurred during 13.68 hours of operation.

15 CRITICAL TECHNICAL SPECIFICATION

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

16 COMMENTS & RECOMMENDATION

- 16.1** The amplitude of mechanical vibration marked as (*) under section 7, 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. It needs to be corrected.
- 16.2** Hardness of the Auger blade does not confirm with the requirement as per IS: 6025-1982. It should be looked into.
- 16.3** Chemical Composition of the Auger blade does not confirm with the requirement as per IS: 6025-1982. It should be looked into.
- 16.4** The User manual, Parts catalogue and service manual is not provided. It should be provided..
- 16.5** Labeling plate should be riveted on machine with following information.
- | | |
|---|----------------------|
| a. Name and address of the manufacturer | b. Country of origin |
| c. Make | d. Model |
| e. Year of manufacturer | f. Serial no |
| g. Engine number | h. Engine HP |
| i. Rated rpm | |

Report prepared by

J. S. Chel

Report verified by
Subrata kr Mandal

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|---------------------------|---|
| CSIR/CMERI/FMTTC/2024/050 | SAI AGRO EQUIPMENT EARTH AUGER (MODEL: SAI-EA-35) (INITIAL COMMERCIAL TEST) |
|---------------------------|---|

17 TECHNICAL LITERATURE

The following literatures are provided by the applicant during the test along with the application form.

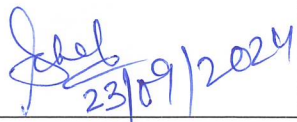
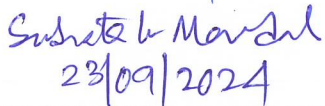
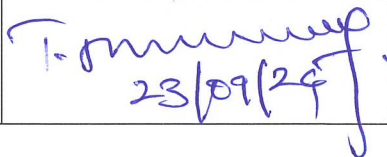
- a) User's manual book

The following literatures are not provided by the applicant during the test along with the application form

- a) Parts' catalogue
b) Service manual

These manuals are need to be updated as per IS: 8132-1999.

TESTING AUTHORITY

| | | |
|--------------------------------|---|---|
| Report Prepared by | Sr. Technical Officer, CSIR-CMERI Farm Machinery Testing Centre |  23/09/2024 |
| Report Verified & Approved by | In-Charge, CSIR-CMERI Farm Machinery Testing Centre |  23/09/2024 |
| Report Approved for release by | Head, Business Development Unit, CSIR-CMERI, Durgapur |  23/09/24 |

18 APPLICANT'S COMMENTS

| Para No. | Our Reference | Applicant's Comments |
|----------|---------------|--|
| 18 | 16.1 to 16.5 | We take necessary step with your recommendation in future production |

