प्रारंभिक व्यावसायिक परीक्षण रिपोर्ट
INITIAL COMMERCIAL TEST REPORT

संख्या/No. CSIR/CMERI/FMTTC/2024/076
माह/Month: December, 2024

THIS TEST REPORT VALID UP TO : 30th November, 2031

MODISH TRACTOR AURKISAN PVT. LTD.
POST HOLE DIGGER
(MODEL: BE – 63)

सत्यमेव जयते
Goverment 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
महात्मा गांधी एवेन्यू, दुर्गापुर
Mahatma Gandhi Avenue, Durgapur
पश्चिम बंगाल - **713209**
West Bengal - 713209
Website: https://cmeri.res.in

E-mail: fmttc.cmeri@gmail.com
Telephone: 9434592007 / 7001361295
Fax: +91-343-2546745

5 SPECIFICATIONS

5.1 General

Name of machine	:	Earth Auger/ Post Hole Digger
Type of machine	:	Self-Propelled Screw Auger
Name and address of manufacturer	:	Modish Tractor Aurkisan Pvt. Ltd. C-17, Purohit Ji Ka Bas, Road No – 1, MSME Office, 22 Godam Industrial Area, Jaipur – 302006.
Name and address of applicant	:	Modish Tractor Aurkisan Pvt. Ltd. 17-C Sharma Colony, Extension. 22, Godam Industrial Area, Jaipur – 302006, Rajasthan
Make	:	Balwaan Krishi
Model	:	BE-63
Serial No.	:	Not Specified
Brand's Name	:	Balwaan Krishi
Country of origin	:	India
Year of manufacture	:	2024
Recommended use	:	Digging Holes

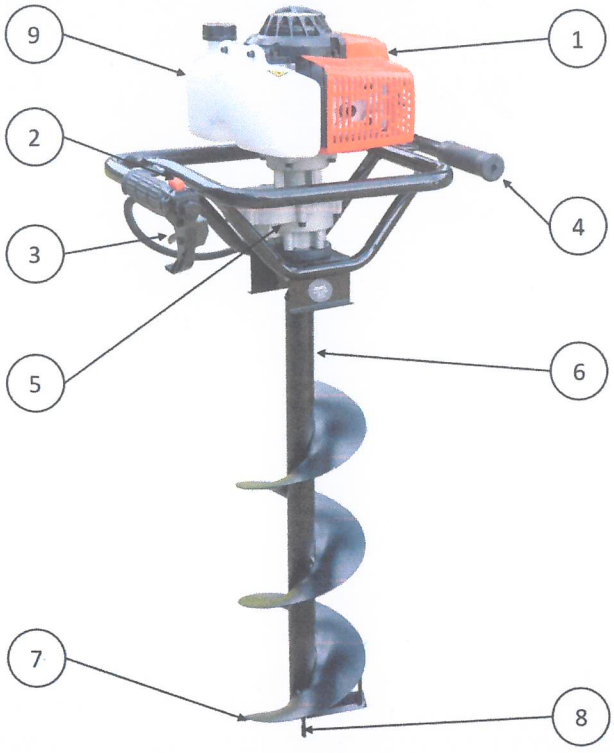

Fig.2 Schematic View of Post Hole Digger (BE-63)

1. Engine	2. Engine Stop Switch	3. Throttle Lever
4. Handle	5. Gear Box	6. Auger
7. Auger Blade	8. Auger Bit	9.

Report verified by Sukanta Kr Mandal

Report prepared by

11 HARDNESS & CHEMICAL COMPOSITION OF BLADES

11.1 Hardness

11.1.1 Hardness of Auger blade:

Sl. No.	As per IS: 6025: 1982 HRC	As observed (HRC)	Remarks
1	48 to 58	40.2	**Does not Confirm**

11.2 Chemical composition analysis

11.2.1 Chemical analysis of rotary blade

Constituents	As per IS: 6025-1982	Composition as observed (% of weight)	Remarks
Carbon (C)	0.70 – 0.95	0.2407	**Does not Confirm**
Manganese (Mn)	0.30 – 0.50	0.4769	Conforms
Silicon (Si)	--	0.1737	--
Sulphur (S)	--	0.0139	--
Phosphorous (P)	--	0.3193	--

12 FIELD TEST

Field test of Earth Auger/ Post Hole Digger was conducted for 12.46 hr. with auger attachments. Detailed results of field tests are shown in Annexure-I summarized in the ensuring table. Details about the operator are show in Annexure-II.

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	:	5850	to	5950
		On load	:	5340	to	5550
iv.	Average Dia. of hole, mm			210	to	223
v.	Average depth of hole (mm)		:	38.5	to	39
vi.	Average Numbers of holes drilled per hour		:	117	to	150
vii.	Average Time required to drill one hole (Sec.)		:	24	to	31
viii.	Average Fuel consumption					
	L/hr.		:	1.1	to	1.2
	L/hole		:	0.007	to	0.009

12.1 Rate of work

i. Average diameter of hole was recorded as 210 to 223 mm.
ii. Average depth of hole was recorded as 38.5 to 39.0 cm.
iii. Average number of holes drilled per hour was recorded as 117 to 150.
iv. Average time required to drill one hole was recorded as 24 to 31 sec.

Report prepared by

Report verified by
Subrata Kr Mandal

12.2 Fuel Consumption

Average fuel consumption was observed as 1.1 to 1.2 lit/hr.

12.3 Labor 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

Auger Size	Duration of operation (h)	Initial mass (gm)	Mass after operation (gm)	Loss of mass (gm)	Percentage wear (%)	Percentage wear on hour basis (%)
200 mm	12.46	3.4	2.9	0.5	14.7	1.2

13 EASE OF OPERATOR, ADJUSTMENT AND SAFETY

Fatigue was observed just 20 mins 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 - 20 minutes' work – 5 minutes' rest & so on

14 ADJUSTMENT, DEFECTS, BREAKDOWNS & REPAIRS

No noticeable breakdown occurred during 13.46 hours of operation.

Report prepared by

Report verified by

16 TECHNICAL LITERATURE

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

a) User's manual book

b) Parts' catalogue

c) 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	23/12/2024
Report Verified & Approved by	In-Charge, CSIR-CMERI Farm Machinery Testing Centre	23/12/2024
Report Approved for release by	Head, Business Development Unit, CSIR-CMERI, Durgapur	24/12/24

17 APPLICANT'S COMMENTS

Para No.	Our Reference	Applicant's Comments
17	15.1 – 15.4	It's ok corrective action will be taken.

CSIR - Central Mechanical Engineering Research Institute * Durgapur- 713209 *

FARM MACHINERY TRAINING AND TESTING CENTRE * CSIR-CMERI DURGAPUR