

User manual

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Prepared by SM

Responsible manufacturer: Tree Tech A/S -Part of Bredsgaard A/S

Machine: Tree Tech drilling machine



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1. About this user guide

1.1. Purpose

The purpose of this manual is to ensure correct installation, use, handling and maintenance of the machine. The machine is designed to function as a drill for drilling holes in the stump end of Christmas trees

1.2. Reading guide

This manual is prepared in accordance with EN ISO 20607:2019 *Safety of machinery- Instruction handbook* and is translated from the original manual for the machine.

Familiarity

It is the employer's (machine owner's) obligation to ensure that everyone who will operate, service, maintain or repair the machine has read the instruction manual, at least those parts of it that are relevant to their work.

In addition, anyone who is going to operate, service, maintain or repair the machine has a duty to seek information in the user manual themselves.

Accessibility

The instructions for use can be accessed at any time at www.treetech.dk. If the employer would like a printed version, please contact Tree Tech A/S

1.3. Version

Version 1

1.4. Manufacturer

Name: Tree Tech A/S

Address: parallelvej 19, 8620 Kjellerup, Denmark

Phone: +45 89707089

Email: kontakt@treetech.dk

Website: www.Treetech.dk

1.5. Machine designation

Drilling machine

1.6. Document type

Instructions for users of the machine

1.7. Relationship between this document and the machine

This manual covers the use and maintenance of the Tree Tech drill (identical information is provided on the machine's rating plate):

Company name
Full address
Ce labelling
Specification of type designation
Year of manufacture



Figure 1 Rating plate, Drilling machine

1.8. Symbol explanations



Safety footwear must be worn
Placed at the front of the machine



Protective gloves must be worn
Not placed on the machine

2. Safety and security

2.1. Intended use, hazard warnings

The Tree Tech drill is made for drilling holes in the stump end of Christmas trees.
 Only 1 person can use the machine at a time.

2.2. Substances that can cause danger to people

Hydraulic oil can cause allergic reactions. When in contact with hydraulic oil, use oil-resistant gloves.



2.3. Special conditions for different user groups, such as children

Operators	<p>Trained or trained personnel who have obtained sufficient qualifications to use the machine. The operator must be familiar with all the machine's controls, including protective measures and their functions, through training and review of the operating instructions.</p> <p>General physical well-being.</p> <p>Operational staff must have normal physical and cognitive functioning.</p>
Tractor driver (if mounted on tractor)	<p>Tractor trained with knowledge of the machine and its prerequisites for use</p> <p>Tractor driver must be familiar with the protective measures and functions of the machine</p> <p>General physical well-being.</p> <p>The tractor driver must have normal physical and cognitive functioning.</p>
Maintenance personnel	<p>Trained personnel with knowledge of the machine's functions, operating modes and safety measures.</p> <p>The qualifications must be obtained through vocational training or through adequate and equivalent training.</p> <p>Maintenance personnel must have read and understood all relevant documents such as user manuals.</p> <p>Maintenance personnel must have normal physical and cognitive functioning.</p>
Trainees and apprentices	<p>Trainees or apprentices must be accompanied and supervised by experienced and trained personnel.</p> <p>When working with the machine, trainees and apprentices must be supervised during the entire period of use.</p>

	Trainees and apprentices must have normal physical and cognitive functioning.
People in general	Visitors etc. must always be supervised by professional staff. In connection with display, this must be done after receiving safety instructions and only with a safety responsible employee.

2.4. General warnings and precautions

The tractor driver must take extra care when transporting the tractor. He must be sure that the operator is away from the machine and that the machine is lifted up (and fully packed for road transport)

There is a safety distance of 2m around the machine for people other than the operators when the machine is in operation.

The machine may only be operated by 1 person at a time.

2.5. Use of personal protective equipment

During operation:

Safety footwear with toe protection



During service, maintenance, repair of hydraulics:

Gloves that can withstand hydraulic oil



2.6. Safety symbols and pictograms

If symbols, signs and pictograms are missing, illegible or unclear, they must be replaced with new ones as soon as possible

2.6.1. Safety symbols

There are 2 safety symbols:



2.6.2. Location of safety symbols and pictograms

Safety symbols are located on the front of the machine

2.6.3. Renewal of safety symbols and pictograms

As soon as safety symbols and pictograms are illegible or unclear, new ones can be purchased from Tree Tech A/S

2.7. Safety features

The Tree Tech drill has the following safety features:

- Emergency stop, stops the machine as soon as possible.

2.7.1. Safety function 1

Name: Emergency Stop.

How it works: Takes the power from the power circuit which closes hydraulic valves and stops the drill very quickly

PL level: c

Applied standard: EN ISO 13849-1:2015

2.8. Emergency situations

2.8.1. How to operate in the event of an accident or breakdown

In case of accidents:

1. Activate emergency stop
2. Switch off the tractor
3. Provide first aid and contact relevant authorities

In the event of a breakdown: Switch the tractor off and on again to reset the machine

2.8.2. Emergency stop

Emergency stop is activated as soon as possible in case of an emergency and the machine can only be restarted by de-activating the emergency stop and resetting the machine on the electrical cabinet

Please note that emergency stops must not be used as regular stops or service stops, as this affects the quality of the emergency stop and there is a greater chance of the emergency stop failing

2.8.3. Recommended firefighting equipment

CO2 extinguisher.

2.8.4. Emission and/or leakage of hazardous substances

In case of emission and/or leakage, follow the authorities' instructions for the substance in question.

3. Overview of the machine

3.1. Description of the machine

The Tree Tech Drill is a drill for making holes in the root end of Christmas trees. It is hydraulically driven by a tractor and has its own valve block and electric control.

The machine is made to be operated by one man at a time.

The machine is made to be mounted under a Tree Tech front frame

3.2. Overview drawings etc.



Figure 2 Front view of the drilling machine

1. Locking handle for support
2. Locking pin for drill extractor
3. Protection drill
4. Locking pin for locking up/down
5. Side protection

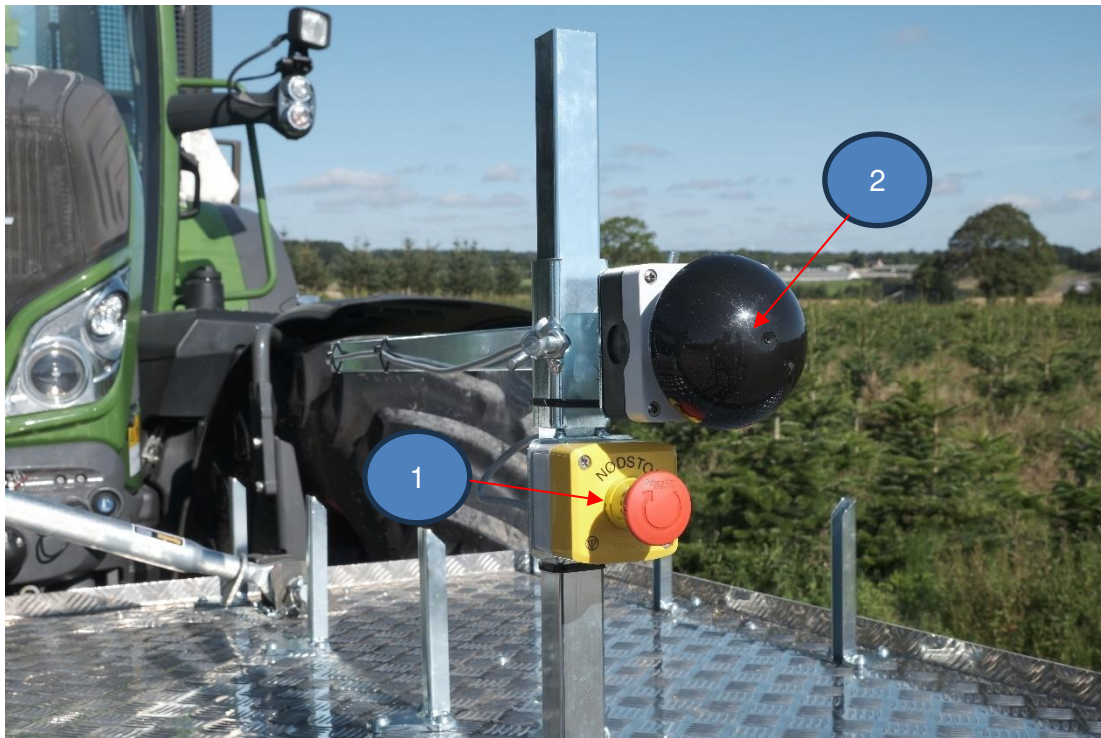


Figure 3 Shoulder switch and emergency stop

1. Emergency stop
2. Shoulder contact

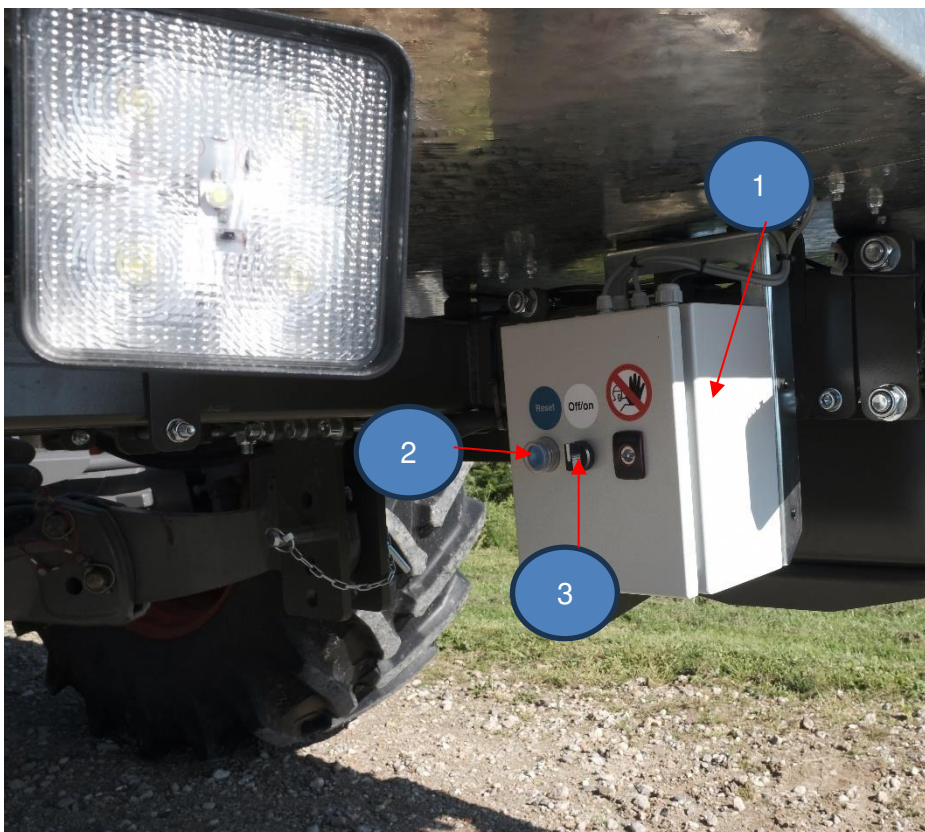


Figure 4 electrical cabinet

1. Electrical cabinet
2. Reset button
3. ON/OFF button

3.3. Intended use

Tree Tech drill is made for drilling holes in the stump end of Christmas trees

Only 1 person can use the machine at a time

3.4. Permitted substances and materials

The hydraulic oil must be filtered to a purity class of ISO 4406 19/17/14 or better. And have a viscosity of 10 - 60 cSt

3.5. Uses that are not permitted

Drilling materials other than wood

3.6. Specifications

3.6.1. Length, width and height

L:105cm W:55cm H:75cm

3.6.2. Weight

130kg

3.6.3. Power supply

Tree Tech drill gets 12V supply from the tractor

3.6.4. Tractor requirements

Working pressure (hydraulic) 200 bar max
Oil flow: 12 L/min max

3.6.5. Lifetime, machine

The lifetime of the machine is set at 20 years. If the machine is to be used for a longer period, the owner/user of the machine must assess whether the structural and functional parts of the machine still have their original strength, stability, etc. If this is not the case, the parts must be replaced with parts with identical properties.

3.6.6. Lifetime, safety components

Emergency stop 300000 Circuit.

3.7. Controls and interfaces

Machine is operated from the front by the shoulder contact on the adjustable holder and on the electrical cabinet.

3.8. Installation site and workplaces

The machine is made to work in the Christmas tree culture
1000mm clearance to the side and front of the machine is recommended

4. Transport, handling and storage

4.1. Machine (part) dimensions during transport

The machine is delivered assembled and therefore has the same dimensions as point 3.6.1

4.2. Transport and handling methods

4.2.1. Transport and handling methods

When the drill is mounted on the front frame, the machine is transported together with the front frame

4.2.2. Training and equipment

Approved lashing equipment and methods must be used

4.3. Environmental requirements during storage

It is recommended to store the machine in a dry place

5. Assembly, installation and commissioning

5.1. Assembling the machine

The machine is delivered lubricated and assembled

5.2. Safety systems, control and testing

There is an emergency stop that is connected to its own safety PLC. Emergency stop must be tested monthly

Inspection and testing see point 8.8

5.3. Commissioning

Before operation, the following must be checked:

- Correct tractor oil type. See oil specifications in section 3.4
- Shoulder switch is set and locked
- Emergency stop is checked according to section 8.8

5.4. Training

When the machine is delivered to the customer, they will receive training on the machine. After this, training takes place as one-on-one training

5.4.1. Operators

The operator must have read the user manual, and the buyer has received training on the machine, which must be passed on to the operator.

Subsequent training can be done as one-on-one training after reading the user manual.

5.4.2. Service staff

Professional education or adequate training equivalent thereto. See point 2.3

5.4.3. Cleaning staff

Operator level can clean the machine

6. Factory settings

6.1. Hydraulic equipment

The pressure relief valve is set to 200bar and must **not** be raised

6.2. Electrical equipment

There is a 10A fuse in the electrical box

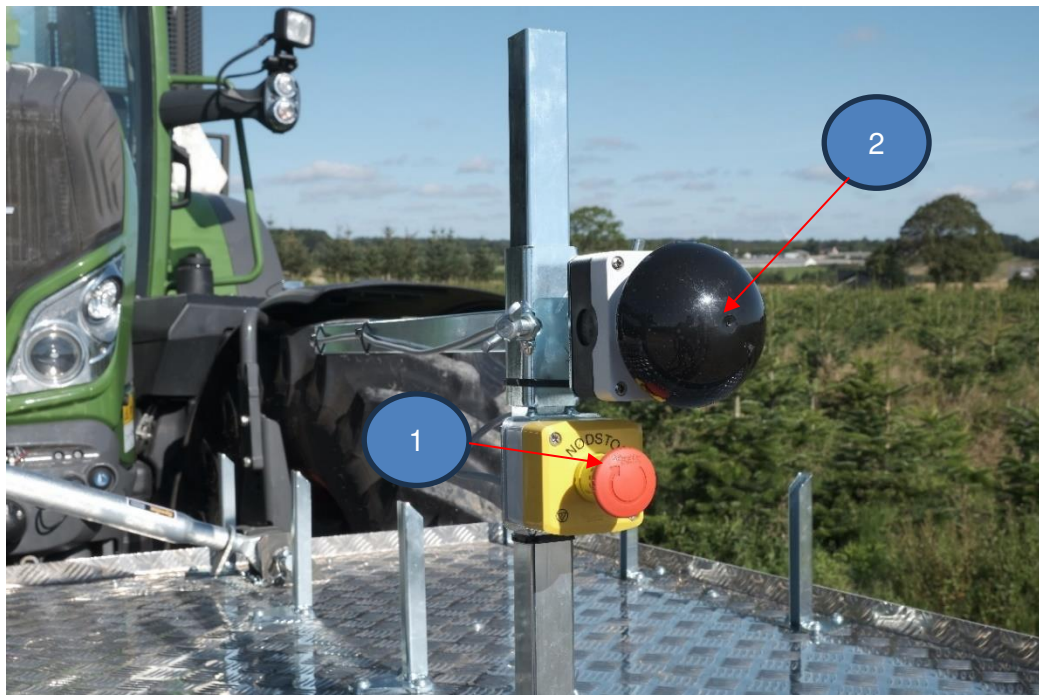
7. Operation

7.1. Risks and sources of danger

7.1.1. Training

All users (operators) must have undergone training (see above) before operating the machine for the first time. The training must ensure that the operators are aware of the risks and hazards present on the machine.

7.2. Manual controls



1. Emergency stop
2. Shoulder switch

7.3. Setting and adjusting

7.3.1. Setting the Christmas tree support

1. Loosen the red handle
2. Set desired height
3. Lock the red handle

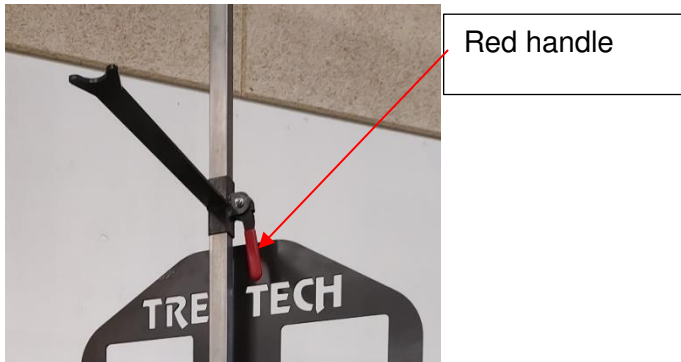


Figure 5 Adjustment handle

7.3.2. Setting shoulder switch

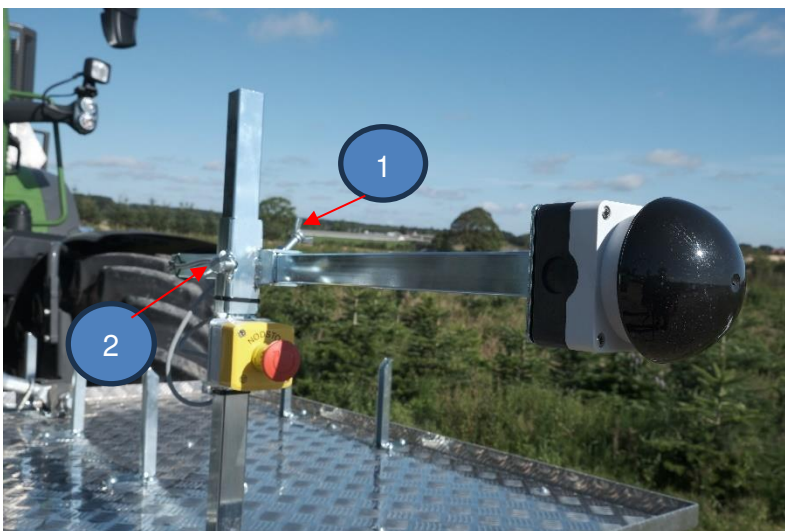


Figure 6 Adjusting shoulder switch

1. Length adjustment
2. Height adjustment

7.4. Location of operator workstations

The operator is in front of the drill during operation.

7.5. Risks that are not eliminated through design

The drill is only partially shielded and can therefore cause significant damage on contact.

7.6. Personal protective equipment

The operator must wear the protective equipment mentioned in section 2.5 at all times when the machine is in operation

7.7. Procedures

Start-up and operation takes place under the following conditions:

- Emergency stop is installed and tested.
- Operation is initiated and monitored by trained personnel.
- Operation can be stopped on emergency stop.
- The operator has the necessary training or experience.
- That the machine is maintained and serviced.

7.7.1. Get started

The machine is connected to the tractor's power and hydraulics.

Once connected, the machine can be switched on by turning the ON/OFF button to ON.



7.7.2. Drill unfolding (hydraulic)

1. Loosen the locking pin
2. Press the down arrow
3. Release the locking pin and pull out the drill

7.7.3. Packing of drilling machine (hydraulic)

1. Loosen the locking pin and push the drill in until it locks again
2. Press arrow up until the locking pin engages and locks

7.7.4. Unfolding drill (manually)



Figure 7 transport position

1. Grasp the handle and release the locking pin
2. Push the drill down



Figure 9 Between transport position and unfolded

3. Release the locking pin and pull out the drill



Figure 8 Unfolded drill

4. Make sure the drill is locked when fully extended

7.7.5. Packing the drill (manually)

Opposite of point 7.7.4.

7.7.6. Drilling a Christmas tree

1. Place Christmas tree into the cone with the drill
2. Activate the drill (hold on to the Christmas tree for good drilling)
3. Once the machine has stopped again, the tree can be removed

7.7.7. Stop

ON/OFF button is used as a regular stop

Turn the ON/OFF button to OFF to stop the machine

7.7.8. Emergency situations

1. Activate emergency stop
2. Switch off the tractor
3. Provide first aid if necessary
4. Call the relevant authorities

When restarting the machine, the emergency stop must be deactivated and the machine must be reset.

7.8. User environment

Christmas tree culture

NOTE The Christmas tree culture can be very uneven, so the operator must focus on the ground to avoid falling or tripping.

Allowable temperature range: -15°C to 30°C

Lighting in the work areas around the machine must comply with the recommendations in EN 12464 - Light and lighting - Lighting of work places - Part 2: Outdoor work places.

8. Inspection, testing and maintenance

8.1. Planned lifetime

20 years with maintenance and service performed

8.2. Spare parts, specification

For spare parts contact Tree Tech A/S

8.3. Substances used, properties

For hydraulic oil, see section 3.4

Guide rod lubrication: copper grease

8.4. Safe execution of maintenance operations

8.4.1. Maintenance operations that require technical knowledge or skills

During maintenance, the machine must be switched OFF and the tractor must be switched off

- Repairs to the machine, including hydraulics, electrics, and frames.

8.4.2. Maintenance operations that do not require technical knowledge or skills

During maintenance, the machine must be switched OFF and the tractor must be switched off

- Maintenance described in sections 8.7 and 8.8

8.4.2.1. Change drill bits:

1. Remove drill bit protection (4 pcs. bolts)
2. Loosen the grub screw on the side of the drill holder
3. Change drill bit
4. Tighten the grub screw
5. Mount drill bit protection (4 pcs. bolts)



Figure 10 Protection drill

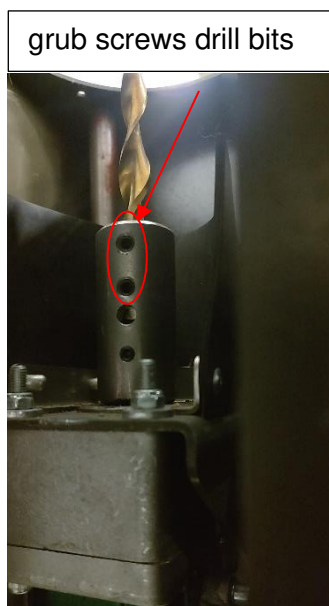


Figure 11 Drill and drill bit holder

8.4.2.2. Changing the fuse:

1. Unplug the power plug from the tractor
2. Open electrical cabinet
3. Switch fuse 10A
4. Close electrical cabinet
5. Insert power plug in tractor

8.4.2.3. Lubrication of steering rods

1. Remove drill protection (4 bolts)
2. Lubricate guiding rods
3. Install drill protection (4 bolts)

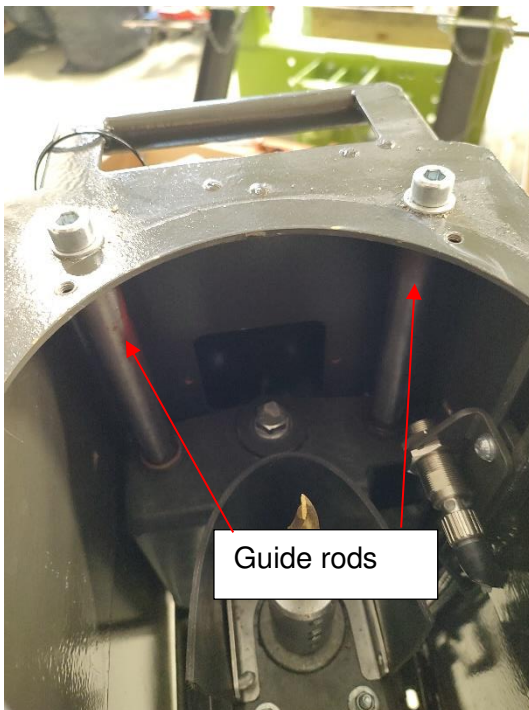


Figure 12 Steering rods

8.5. Equipment needed for maintenance

8.5.1. Tools and tools

- Socket wrench set with allen key and sockets.

8.6. Spare parts list

Contact Tree Tech A/S for spare parts.

8.7. Maintenance plan

Daily/ongoing

Frequency	Maintenance	Commentary
Daily	Test the emergency stop and open the emergency stop if necessary and spray contact spray to avoid condensation.	See section 8.8 Contact spray is used if the emergency stop freezes
Daily/ when needed	Blow and blast drill housing, (remove drill protection)	Do not use high pressure on electrical components
Daily/ when needed	Rinse and wash the drill	Do not use high pressure on electrical components

Weekly

Frequency	Maintenance	Commentary
Weekly - below 0°C	Open the emergency stop and spray contact spray to avoid condensation.	This should be done weekly when the temperature drops below 0°C

Before the start of the season

Frequency	Maintenance	Commentary
Before the start of the season at least every 12 months	Service inspection of the machine	Contact Tree Tech A/S for a service inspection
Before the start of the season	Check for damage and defects	Please contact Tree Tech A/S for repairs
Before the start of the season	Check and lubricate locking pins and guide rods if necessary	Guide rods are lubricated with cobber regular grease Locking pins with regular lubricating oil
Before the start of the season	Check wire is intact	
Before the start of the season	Inspect Emergency Stop	See section 8.8
Before the start of the season	Open the emergency stop and apply a little contact spray to avoid condensation	

Before storage

Frequency	Maintenance	Commentary
Before storage	Wash and clean the drill	Do not use high pressure on electrical components
Before storage	Blow and blast drill housing, (remove drill protection)	Do not use high pressure on electrical components
Before storage	Lubricate guide rods	Lubricate guide rods with cobber grease

Before storage	Check for damage and defects	Please contact Tree Tech A/S for repairs
Before storage	Any scratches or damage to the paint should be spray painted to prevent rust.	Contact Tree Tech for the right colour and spray cans
Before storage	Lubricate drill and drill holder with WD-40 to prevent rust	
Before storage	Check wire is intact	

8.8. Safety-relevant inspection, testing and maintenance

8.8.1. Topics covered

Emergency stop

8.8.2. Frequency

Daily when the machine is in use.

8.8.3. Methodology

Emergency stop inspection: check for cracks and breaks.

Testing the emergency stop: This is done by pressing the emergency stop very slowly, as soon as a click is heard, the emergency stop is released.

Emergency stop maintenance: Before the start of the season, open the emergency stop and spray with contact spray to avoid condensation.

8.8.4. Criteria for acceptance/non-acceptance

Inspection:

Acceptance: There are **no** breaks or cracks in the emergency stop

Not accepted: There are breaks or cracks in the emergency stop

Testing:

Acceptance: If the emergency stop is locked after the click, it is accepted.

Not accepted: If the emergency stop **does not** lock, it is not accepted.

8.8.5. Required actions in case of non-acceptance

A new emergency stop must be installed before the machine can be used again.

9. Cleaning & disinfection

9.1. Equipment and procedures needed

9.1.1. Tools, equipment, cleaning products

Brush and soap.

9.1.2. Personal protective equipment

See instructions for used substances.

9.1.3. Machine operating mode during cleaning

The machine must be set to OFF.

9.1.4. Interrupting, diverting or isolating energy

The tractor must be switched off.

9.1.5. Cleaning procedures

Clean as needed and before storage.

Note. Do not wash the machine if it is going to be left in freezing conditions and cannot dry in time
Do not use high pressure on electrical components.

10. Troubleshooting and repair

Drilling machine does not start	Reason	Problem solving
1. There is no oil	Tractor does not deliver oil	Check the tractor oil supply
	Hydraulic hoses are incorrectly installed	Check correctly installed hydraulic hoses
2. No power	The tractor is not switched on	Switch on the tractor
	The fuse is blown	Check the fuse and replace if necessary
3. Emergency stop	Emergency stop is activated	Disable emergency stop and reset
4. Contact Tree Tech	Contact Tree Tech	Contact Tree Tech

Drill <u>does not</u> raise and lower (hydraulic)	Reason	Problem solving
1. There is no oil	Tractor does not deliver oil	Check the tractor oil supply
	Hydraulic hoses are incorrectly installed	Check correctly installed hydraulic hoses
2. No power	The tractor is not switched on	Switch on the tractor
	The fuse is blown	Check the fuse and replace if necessary
	The wiring under the box is broken	Contact Tree Tech
3. Emergency stop	Emergency stop is activated	Disable emergency stop and reset
4. Contact Tree Tech	Contact Tree Tech	Contact Tree Tech

Drill does not rotate	Reason	Problem solving
1. Cannot get rid of the oil/broken	Return hydraulic hose is not installed correctly	Check and install the hydraulic hose correctly if the motor is not broken
	Hydraulic hose from engine is broken	Contact Tree Tech
2. Contact Tree Tech	Contact Tree Tech	Contact Tree Tech

10.1. Error reporting:

In case of errors or unexpected problems, please contact Tree Tech A/S

11. Disassembly, deactivation and scrapping

11.1. Personal protective equipment

When handling heavy objects

Safety footwear with toe protection must be worn



When handling hydraulic oil:

Safety gloves that resist oil must be worn



11.2. Disassembly

When dismantling the drill from the front frame, approved lifting equipment must be used. It is recommended to support the machine with pallets during disassembly where it can then be transported on the pallets

11.3. Disposal

When disposing of the material, the national applicable environmental requirements must be followed, according to the applicable regulations for each type of material.

11.4. Recycling and reutilisation

When disposing of the material, the national applicable environmental requirements must be followed, according to the applicable regulations for each type of material.

12. Documents and drawings

12.1. Information from the EC Declaration of Conformity



EF-overensstemmelseserklæring for en maskine II A

2006/42/EF bilag II A

Fabrikant	Tree Tech A/S
Adresse	Parallelsvej 19
Post no. og by	8620, Kjellerup

Erklærer hermed at maskine type:

- Tree Tech boremaskines

Er fremstillet i overensstemmelse med følgende EF direktiver:

- 2006/42/EF Maskindirektivet
- 2014/30/EU EMC direktivet

Bent Hansen

Underskriver

ADM direktør

Stilling

Kjellerup

Sted

Dato

Underskrift: