3000 Measuring & Control System Version 7.0 with Version 8.0 updates OPERATORS MANUAL

OPERATORS MANUAL
3000 Measuring & Control

F056233 (English)

CALIFORNIA
Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

If this product contains a gasoline engine:

⚠ WARNING

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

The State of California requires the above two warnings.

Worldwide Construction And Forestry Division

A1. Foreword

We would like to explain a little about how this instruction manual is organised so that you can quickly become familiar with the Timberjack 3000 system. You can use the instruction manual in several different ways, depending on whether you are newcomer or are already familiar with the Timberjack 3000 system. Choose the approach that suits you best!

The instruction manual is divided into the following three parts:

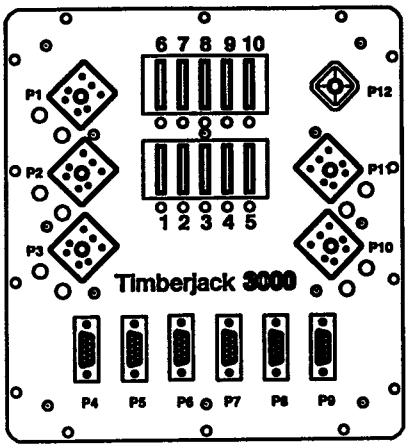
1. **Part A: Quick Reference**

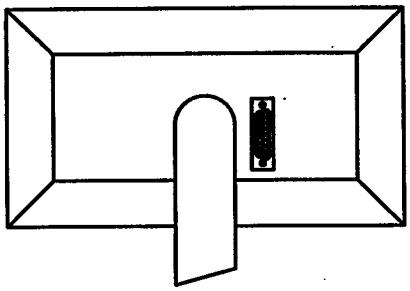
   This section gives you an overview of Timberjack 3000 - the organization of the system and its functions, and gives you the basic knowledge you require to work confidently, safely and effectively with your Timberjack 3000 system. As a newcomer this provides you with the information necessary to get started as quickly and easily as possible, or if you are already familiar with the system it can serve as a useful reference to refresh your memory.

2. **Part B: Detailed User Instructions**

   This section gives you detailed information about all the functions and characteristics of the Timberjack 3000 system. You can use this section to improve your knowledge of the system, its characteristics, operating principles and various settings. You can also use it as a technical reference section for setting up the machine.

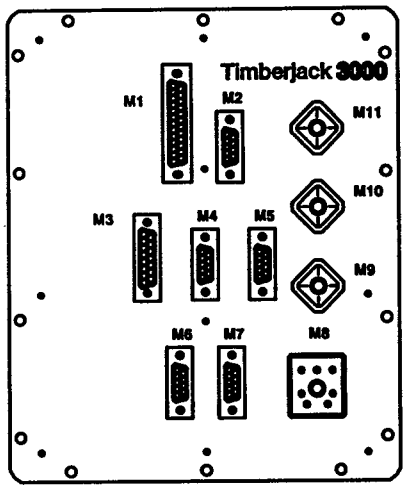
PSU

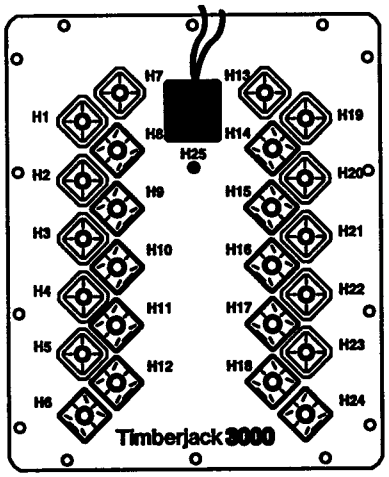




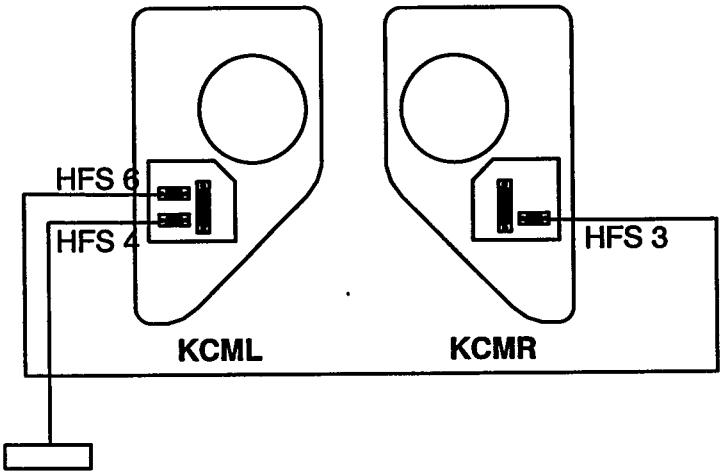
DM

MCM





HHM



A5.3.1 Menu structure

The settings menus form a sort of tree structure. You can imagine the main menu as the trunk, while the other settings menus make up the branches, twigs and finally leaves.

1. **How to move between menus using the cursor**

   You can move freely through the menu tree by using the cursor and L2, L4, L6, L8, E keys combined with the key. In certain cases it is necessary to mark a special symbol.

   for example:

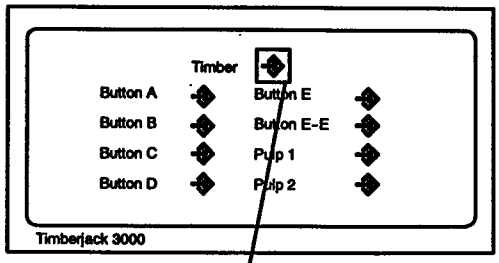
   to move to the next menu, and in some cases you must mark special text.

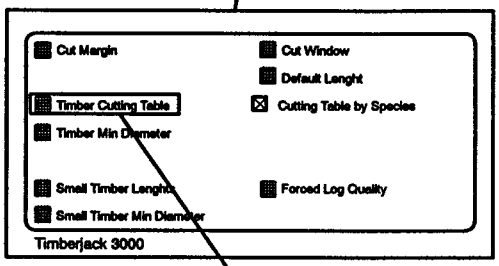
   The symbol means that you can open the following settings menu.

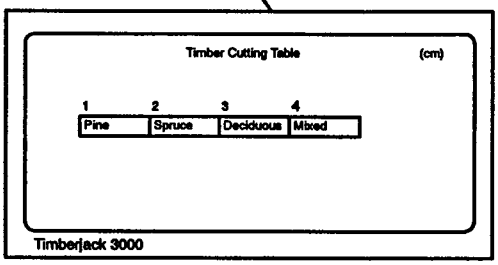
   The symbol means that you can open a table, which might contain numerical values or text.

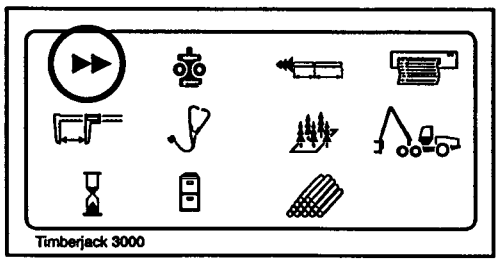
   By pressing the key on the left keypad together with the key you can return directly to operating mode, regardless of where you are in the menu tree.

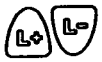
   Similarly you can move from the main menu directly to the last menu in which you changed a setting by marking the symbol ▶▶ and confirming your choice by pressing E.









4. **Sign** 

   These keys are used to indicate the sign when entering numbers directly.

5. **Delete** 

   This key is used to delete the last character.

6. **Confirm** 

   Use this key to confirm your choice or a setting you have changed.

7. **Undo** 

   You can use this key to undo your choice or a setting you have changed.This key is also used to return to the previous menu.

8. **Quick return** 

   If you hold down the shift key and press the undo key at the same time you will return to operating mode whatever your position in the menu tree.

9. **Copy** 

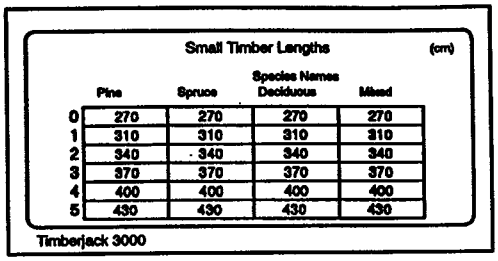
   You can use this key to copy a numerical value or text from a table to the memory.

10. **Paste** 

    Use this key to copy a numerical value or text to a table from the memory.

Another example of a large table is the small timber table.

On the display this appears as shown here.



Small Timber Lengths (cm)

	Species Names Pine	Spruce	Deciduous	Mixed
0	270	270	270	270
1	310	310	310	310
2	340	340	340	340
3	370	370	370	370
4	400	400	400	400
5	430	430	430	430

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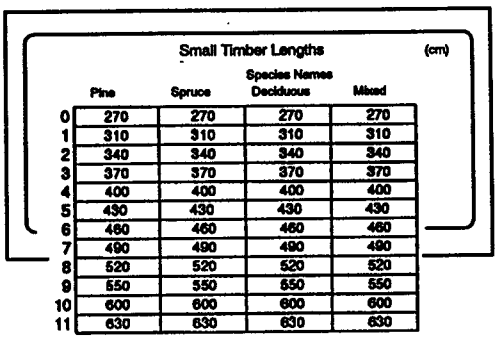
In reality the small timber table looks like this.

For example, by pressing (L3)(L3)(L3) you move the window three steps down.

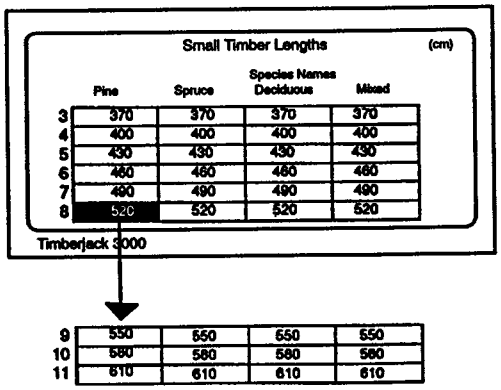
The cursor must be in the bottom row before you can move the window downwards.

In this way you can move in any direction in a large table to gain an overview.



Small Timber Lengths (cm)

	Species Names Pine	Spruce	Deciduous	Mixed
0	270	270	270	270
1	310	310	310	310
2	340	340	340	340
3	370	370	370	370
4	400	400	400	400
5	430	430	430	430
6	460	460	460	460
7	490	490	490	490
8	520	520	520	520
9	550	550	550	550
10	600	600	600	600
11	630	630	630	630



	Species Names Pine	Spruce	Deciduous	Mixed
0	270	270	270	270
1	310	310	310	310
2	340	340	340	340

Small Timber Lengths (cm)

	Species Names Pine	Spruce	Deciduous	Mixed
3	370	370	370	370
4	400	400	400	400
5	430	430	430	430
6	460	460	460	460
7	490	490	490	490
8	520	520	520	520

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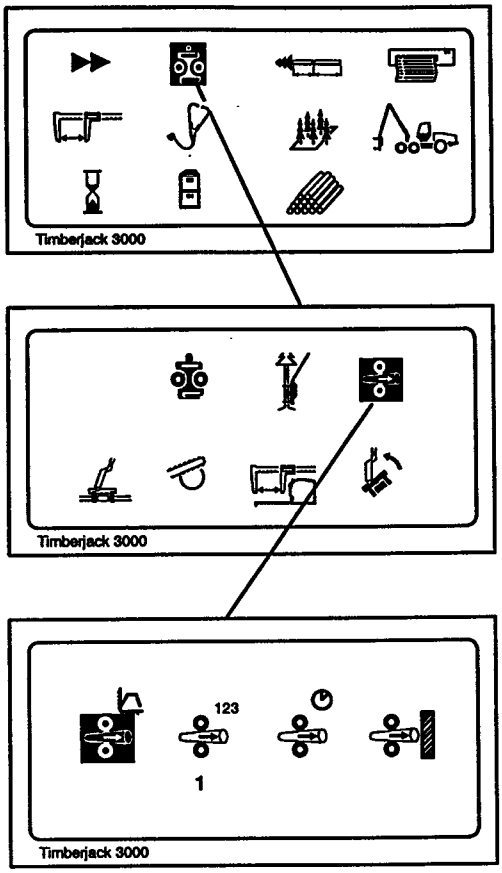
9	550	550	550	550
10	580	580	580	580
11	610	610	610	610

A7.3 Automatic modes

The Timberjack 3000 system gives you one manual and three automatic modes for processing. These three automatic modes decide how feeding will proceed during processing.

There is also another type of auto mode, auto cutting mode, which controls the way the saw bar and cut function work.



NOTE

You can stop automatic feed in any auto mode by pressing STOP on the right keypad!

NOTICE! Forward feed cannot start until the saw is in the guard!

A7.3.1 Manual crosscutting

You remain in manual mode until you press a length selection key. In this mode you control feeding and cutting using the keys on the keypads. The display continuously gives you information about the length and diameter, and it is up to you to decide the cutting position. You cannot cut a log of normal length unless you have entered the species.

A8. Production results

A8.1 Displaying production results

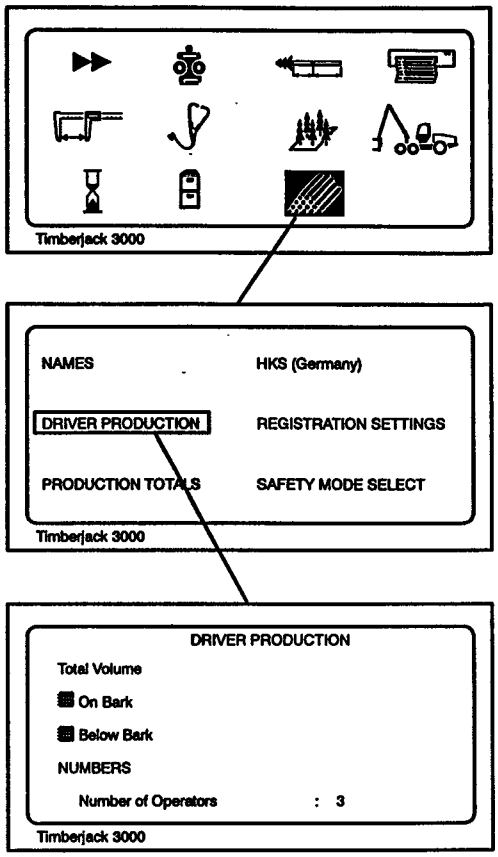
You can check how much you have produced at any time by getting the computer to display production results on the screen.

A8.1.1 Driver production

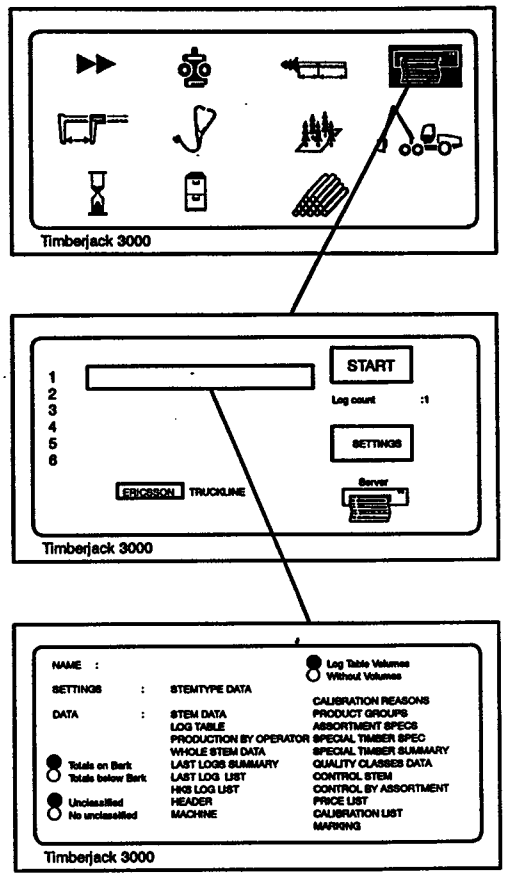
So that operator-specific production can be registered, the Tj 3000 must have a 'Work and Repair Statistics' code lock. If there is a code lock instructions are in the group NO TAG.

A No of Operators

The default structure contains space for registering total production for three operators separately.

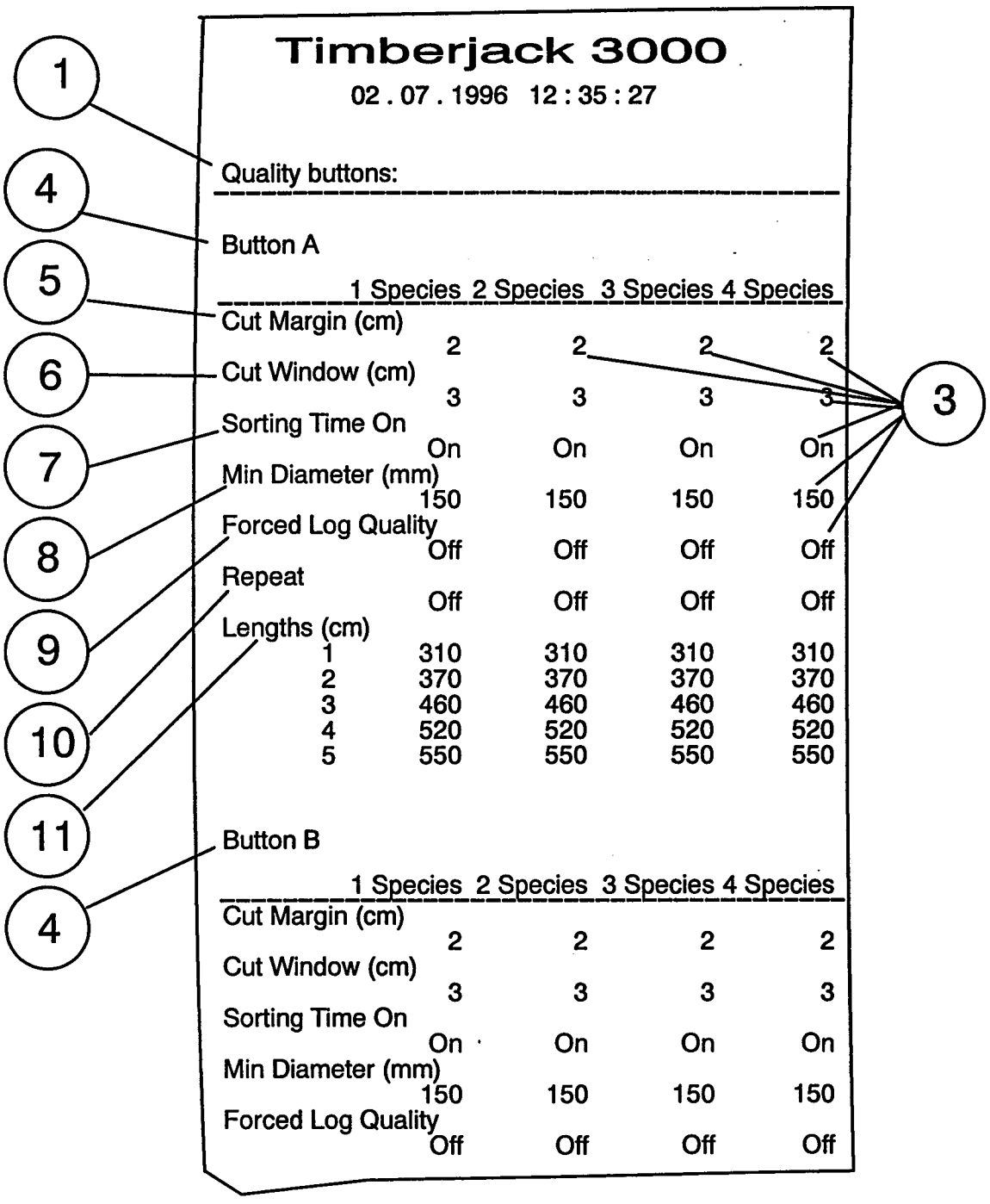


A9.2 How to set up a printout

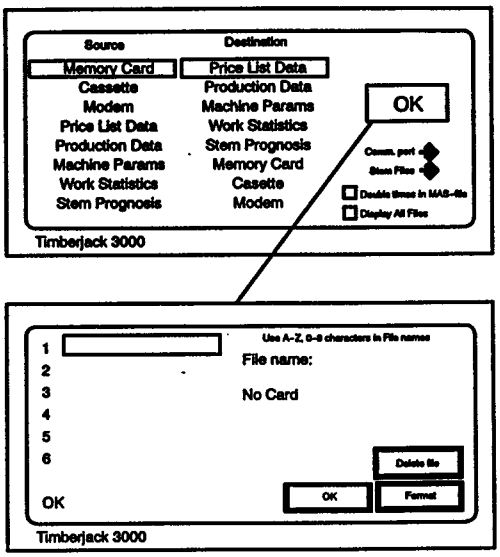


Go from the main menu to the next level by clicking on the printing symbol. A menu will appear on the screen showing six fields numbered 1 to 6. There are 12 fields in all, where you can prepare and name different reports as required.

- Choose the printout required from the list by moving the cursor to the relevant row using the arrow keys.
- When the (E) key is pressed, the menu for the relevant print-out appears, from which information for the report can be selected and the report can be named.
- If you move the cursor from the selected print-out to the right using the arrow key, you get to the Start print-out command.


1
4
5
6
7
8
9
10
11
4
3
Timberjack 3000
02 . 07 . 1996 12 : 35 : 27
Quality buttons:
Button A
1 Species 2 Species 3 Species 4 Species
Cut Margin (cm) 2 2 2 2
Cut Window (cm) 3 3 3 3
Sorting Time On On On On On
Min Diameter (mm) 150 150 150 150
Forced Log Quality Off Off Off Off
Repeat Off Off Off Off
Lengths (cm)
1 310 310 310 310
2 370 370 370 370
3 460 460 460 460
4 520 520 520 520
5 550 550 550 550
Button B
1 Species 2 Species 3 Species 4 Species
Cut Margin (cm) 2 2 2 2
Cut Window (cm) 3 3 3 3
Sorting Time On On On On On
Min Diameter (mm) 150 150 150 150
Forced Log Quality Off Off Off Off

A10.1.1 Entering price list data into the 3000



When you want to load a new price list from the memory card to the Tj 3000 for use during optimization.

1. Insert the memory card into the 3000.

NOTICE! If you have production in the Tj3000, it is important to print a report of production in accordance with chapter A9, since all production data disappears when a new price list is entered.

2. Move the cursor to the "File Handling" , press .
3. Highlight MEMORY CARD under SOURCE, press .
4. Highlight PRICE LIST DATA under DESTINATION, press .
5. Highlight OK, press .
6. Highlight the correct name, press .
7. Move the cursor to the right and then down to OK, press .
8. Highlight YES, press .
9. Wait until the price list has been loaded and "Done!" appears on the display. Wait also until RECALC has disappeared.
10. Press and at the same time to exit straight out to the operating mode.

B4.7 Object Handling 4-28

B5. Color Marking and Stump Treatment 5-1

B5.1 Color Marking 5-1

B5.1.1 Automatic Marking 5-2

B5.1.2 Manual Marking 5-2

B5.1.3 Adjusting the Delay and Duration in Color Marking 5-3

B5.2 Stump Treatment 5-5

If this time is set at too low a value this means that the limbing knives and feed rollers will close fully even with brief pressure on the button.

The parameters DT: Max Closing Speed and DT: Min Closing Speed are closely linked with this function. If the minimum speed is set too low, this may mean that nothing will happen before the feed rollers and limbing knives come together.

If you are unaccustomed to the system, it may be necessary to increase the parameter equivalent to a somewhat longer time in the beginning and gradually reduce it.

The default value is 40.

C DT: Max Closing Speed

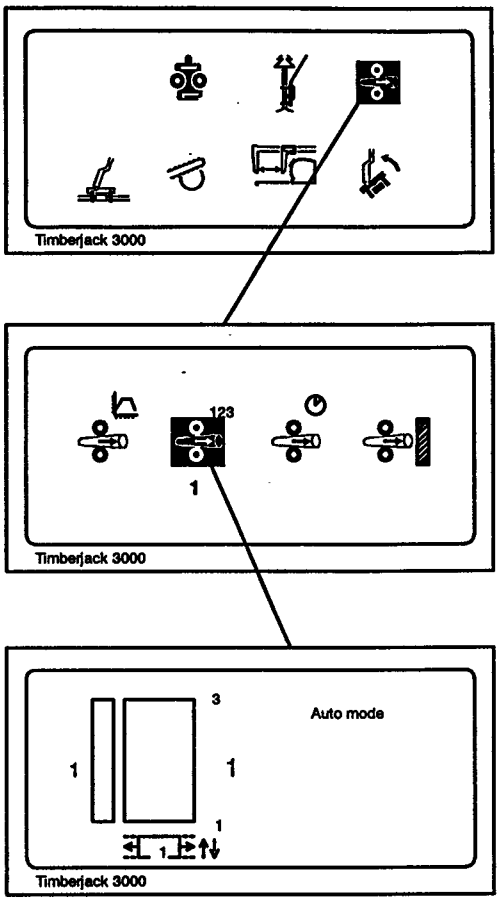
When you use a harvester head with proportional hydraulic valves (only available as additional equipment), for example on 746B, 762B and 743, this parameter will limit the maximum current value which is output by the 3000. You will get this current when the button is activated at maximum.

With the button activated at maximum, you will get the maximum speed which the knives can attain. This maximum speed is equivalent to the corresponding parameter value.

If a harvester head is not equipped with proportional valves, this value should be set at 2000.

The default value is 2000.

B1.4.2 Auto Mode



This parameter provides you with the option of selecting the automatic level you wish to use when feeding the stem.

The value can be set between 1 ... 3, with each value for this parameter being equivalent to a level of automation.

The default value is 1.

1. **Auto Mode 1**

   The feeding runs only when one of the feeding buttons are pressed. This means that the harvester head will feed as long as you hold down the feed button, and will stop as soon as the button is released or the correct length is reached.

2. **Auto Mode 2 and 3**

   NOTICE! In Auto Modes 2 and 3 the feed continues automatically to the cutting window after the start permission.

   NOTICE! ***With automatic feeding, you may deactivate automation by pressing the STOP or one of the feed buttons.***

WARNING

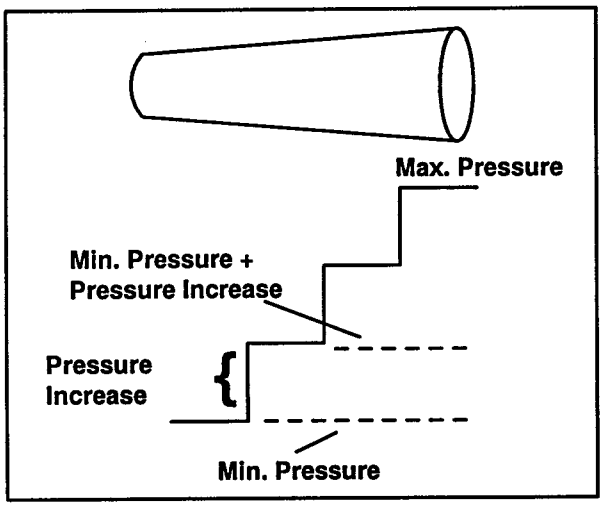
Do not feed the stem towards yourself or others.

Auto modes are explained in more detail in A7.3.

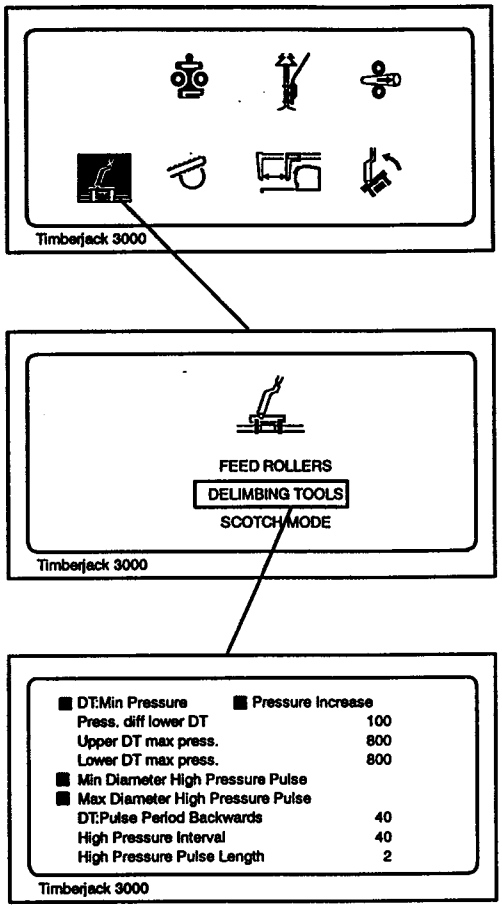
B1.5.3 Limbing Knives

In the case of large diameters, you can get the limbing knives to press harder against the stem to obtain a better grip on the timber. This will depend on the diameter of the stem. The larger the diameter, the higher the pressure.

The Min. Pressure is the default level. The Pressure Increase will then increase the pressure level towards Max. pressure in a number of steps like a staircase, one step every 50 mm, beginning at a diameter of 150 mm



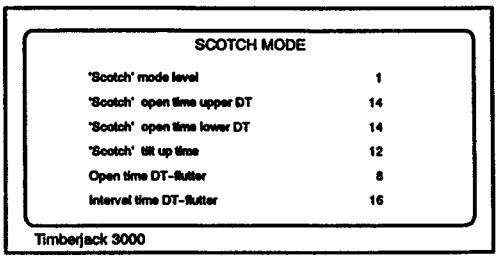
To get this to function well, the Min. pressure must be given a default setting. See group B1.5.4.



A DT:Min Pressure

When setting the default value, you have to inform the 3000 of the level at which the proportional valve spool will begin to close, and giving a higher pressure. You set this level by means of this parameter.

The default value is 150.



E Open time DT - flutter

This is activated only in Scotch mode level 1 or 2.

By pressing [L7], you activate fluttering of the upper delimbing tools. The delimbing tools will then open and close continuously during processing.

"Open time DT - flutter", in combination with the "Interval time DT - flutter" parameter, controls the nature of the fluttering.

The open time controls how far the knives manage to open before they are automatically closed again.

The default value is 8.

When fluttering of the upper knives is activated, this is indicated in the display with the symbol  . The function remains activated until the next time you press [L7].

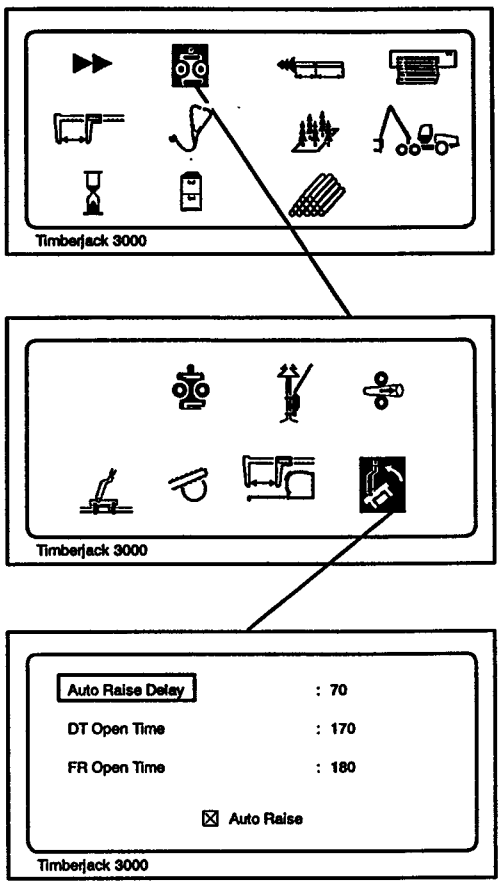
F Interval time DT - flutter

This is activated only in Scotch mode level 1 or 2.

The interval time governs the length of time between each flutter, i.e. how often the knives are opened.

The default value is 16.

B1.7 Raising the unit



Normally when a tree ends you want the harvester head to open fully and rise to vertical. This can always be done by pressing the 'head open' button once for as long as required.

The head opens completely or partly and auto raise is also possible by pressing the button for a short time, depending on the following set values.

A Auto Raise Delay

When you press the 'head open' button after ending a tree, the harvester head waits for this delay before rising to vertical.

If you do not use auto raise, the harvester head rises only if you press the 'head open' button for longer than this delay time. This is useful if you want to be able to pick up stems lying on the ground easily where necessary.

The default value is 70.

B DT open time

Here you can limit the time the limbing knives open when the harvester head is opened. The limbing knives open completely if you press the 'head open' button longer than this set time. When the open time has been set sufficiently long, the knives always open completely.

The default value is 170.

B2. Calibration

B2.1 Measuring settings

Selectable Metric or US units for length and diameter are shown in the operating mode display to assist operator. Once selected the system will stay in that mode at power up. The US units are not available in print-outs.

B2.1.1 Diameters

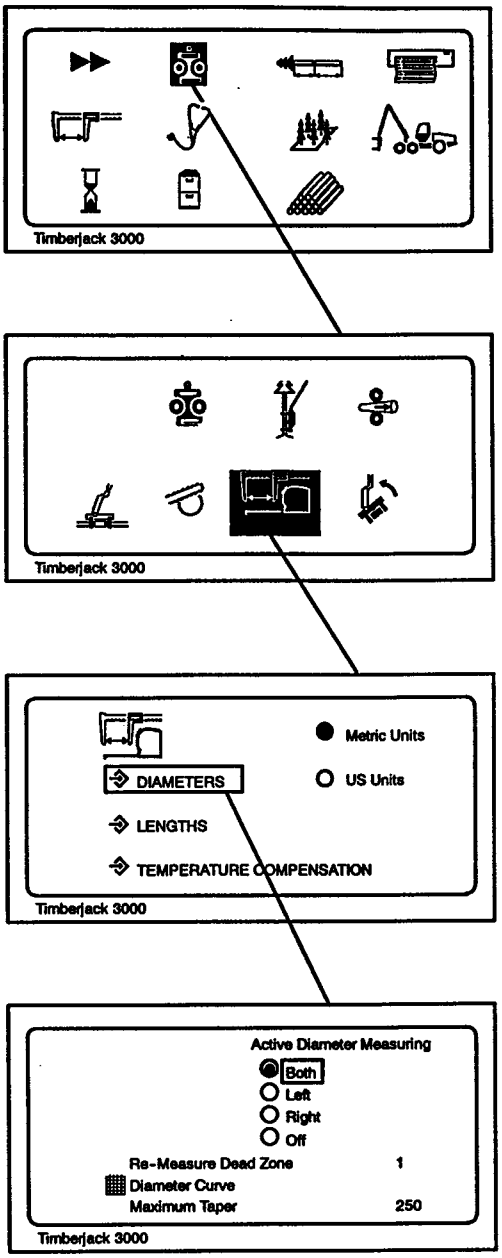
A Active Diameter Measuring

Using this parameter, you will be given the option of determining whether both, only one, or none of the diameter sensors are to be used when measuring the stem.

This parameter has been created to provide you with the option of deselecting a faulty sensor, to be able to carry on running temporarily until you have the opportunity to install a new one.

NOTICE! If a sensor is deselected, your diameter measurement precision will be reduced.

The default value is Both.



B2.3 Continuous monitoring of calibration

To be able to monitor calibration properly, you have to have statistics. You obtain the statistics by checking and noting down the Tj 3000 measurement results compared with your actual measured results.

You should set safety margins for short lengths by means of "cut margin".

If you work with optimization, then safety margins for diameter class limits should be set during the production of the price list in the administration program.

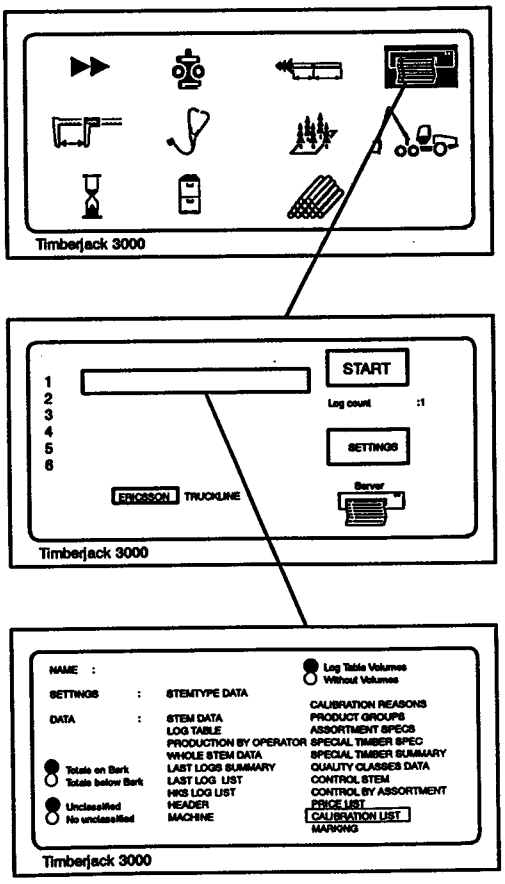
B2.3.1 Length and diameter statistics

Use an approved measuring tape plus a calliper with mm graduations. You should note down the result on the "Length or Diameter Diagram", which you will find under chapter C1. (Photocopy the diagram and use the copies.)

During each change you should then select 5 representative stems on which you will base the calibration lists.

A Calibration List is produced as follows:

When the tree is processed, you should press "Long Stop" and then follow the pictures alongside.

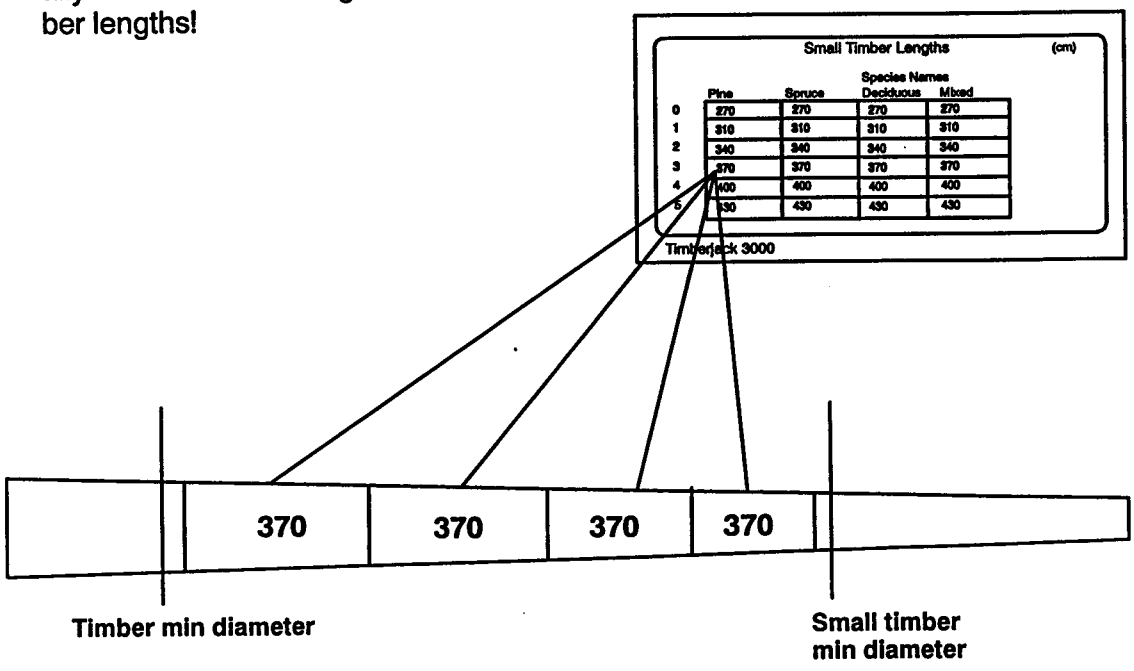


2. Cutting table for small timber = small timber lengths

If the system automatically switches to small timber, then it will choose the small timber length that was last selected using the length selection keys L0 ... L9, L9 L+, L9 L+ L+, when the system last worked with small timber. If no small timber length has been selected then the default length (same as for timber) will be used. If the operator presses L0 ... L9, L9 L+, L9 L+ L+, then a new length of small timber will be chosen. If the minimum diameter for small timber is larger than the minimum diameter for timber then the system will not switch to small timber at all.

E.g. If you have chosen length no. 3 = 370, then the system will cut small timber of this length until the minimum diameter for small timber is reached.

Note that small timber will only be cut if the system automatically switches from timber to small timber. You CANNOT switch manually to the small timber grade and small timber lengths!



B3.4 Registration and classification of logs

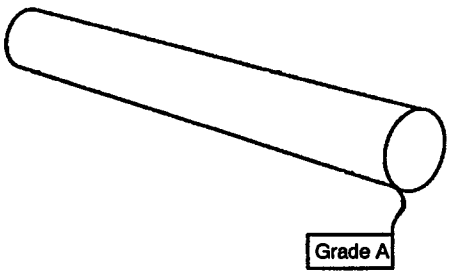
When logs of a given species are classified into different assortments, the grade of each log is used as the first classification factor.

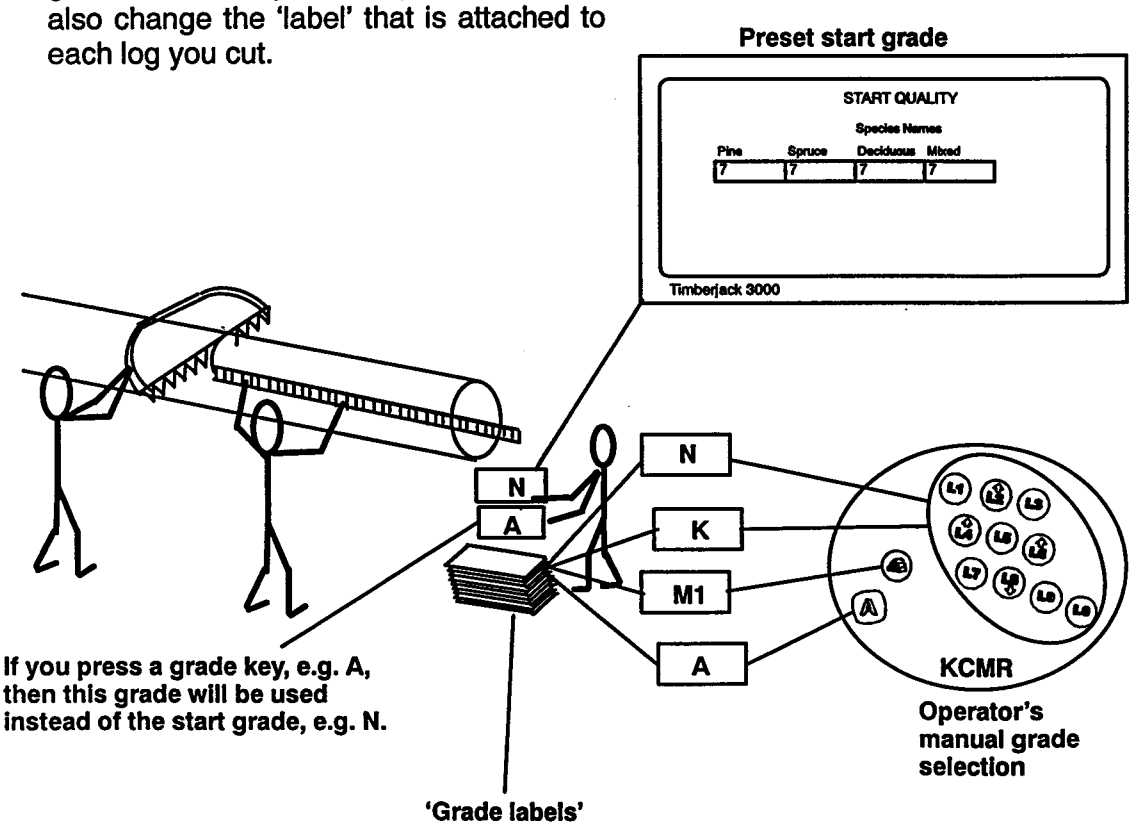
The lengths and diameters of the log are then used as secondary classification factors.

B3.4.1 The term 'grade'

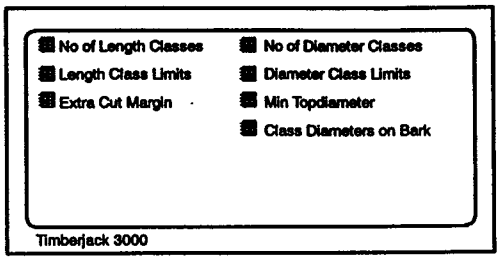
The term grade refers to a sort of 'recognition code' or 'label' that is attached to each log that is cut. This 'label' is then used by the system to decide how each log should be registered. You can think of the grade as a tool you use to control the way logs are handled later on by the Tj 3000 system.

Each length category is linked to a certain grade, i.e. when you change category you also change the 'label' that is attached to each log you cut.





3. No of Diameter Classes



The number of diameter classes used for each assortment is displayed here. This number is the same as the number of diameters in the price list.

The maximum diameter, which is the upper limit of that which may be registered in the assortment, should not be included.

If you enter here and reduce the number you want to use, you must remember to check that the maximum diameter for the assortment is correct. The reason for this is that when you reduce the number of diameter classes, the maximum diameter will be set at the diameter of the first diameter class not included.

So don't forget to check the maximum diameter!

During optimization, the number can be max. 20 for all assortments and will be set in the administration software while the price list is being established.

8. Assortment Pricing Type

The price type specifies how log's volume and value are calculated.

It is very important that it is set properly so that the competition between the assortments should be correct.

The Assortment Pricing Type will normally be entered into the administration software, but can naturally also be set by the machine operator.

The Tj 3000 uses the codes 1...7 and 129...135.

With price types 1 to 7 the volume of the log is calculated under bark.

If you want the volume of the log to be calculated on bark, you must add the value 128 to the selected price type.

For all price types apart from price types 3 and 4, the value of the log is calculated by multiplying the price in the price list by the log's volume. For price types 3 and 4, the price in the price list is used as the log's value.

For the others, the various price types specify different ways of calculating the volume of a log.

A Free

You can start an object which is free. It will then become Active. As long as the object is Free it will contain no information.

B Active

When you carry out felling using the machine, the Tj 3000 will carry out all recording in the object which is Active.

If you press on Start Object when an object other than the active one is highlighted, this object will become Active while the previously active object will change to OK (Inactive).

C OK (Inactive)

The inactive object will always have been Active before it became OK, and it is possible that the object might contain recorded data.

If you highlight an OK object and then select Start Object, it will become Active and the data which exist in the object will have more data added to it when you process the next tree.

D Closed

If you press End Object, it will be ended and will be given a status of Closed.

When an object is Closed, you should save Production Data or print the production details on the printer, then you can make the object Free by selecting End Object. You could also make the object Active by selecting Start Object.

F056241

INSTRUCTION MANUAL
Part C
Appendixes

Timberjack
3000

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Fax int. +358 204 80 163

rev 300399

A

FOREWORD
WARRANTY
SAFETY PRECAUTIONS
OVERVIEW
USER INTERFACE
HOW TO CHANGE A COMPUTER SETTING
USING THE TIMBERJACK 3000
PRODUCTION RESULTS
PRINTOUTS
FILE HANDLING AND MEMORY CARDS

B

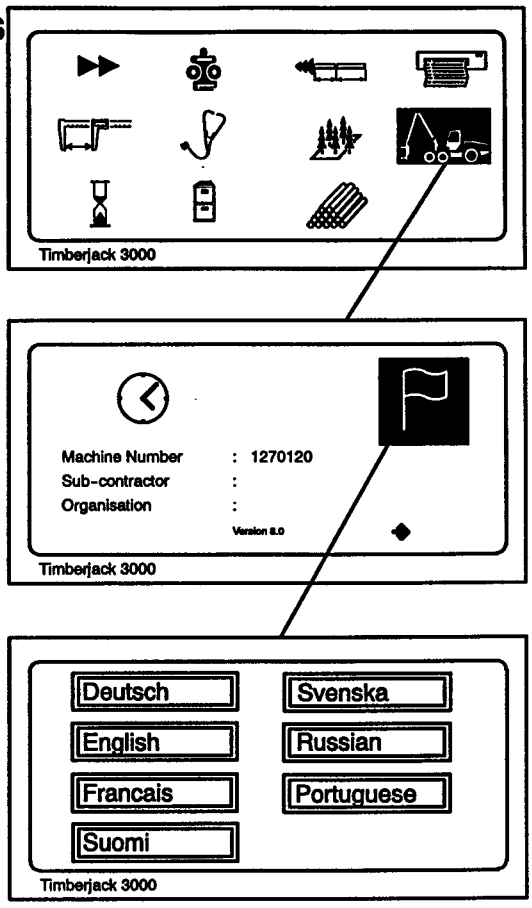
MACHINE PARAMETERS
CALIBRATION
MARKING FOR CROSS-CUTTING
REGISTRATION
Code lock functions:
COLOR MARKING AND STUMP TREATMENT
OPTIMIZATION
WORK AND REPAIR STATISTICS
ELECTRONIC CALIPER
DATATRANSFER

C

DIAGRAMS
DEFAULT SETTINGS, RESET VALUES AND SOFTWARE LOADING
ELECTRICAL SYSTEM
SENSORS
TROUBLESHOOTING
ERROR MESSAGES

C2.2 Default settings, Preset values

After carrying out operations such as loading software, it is important to follow the correct sequence of default settings and reset values. See group C2.3.



1. **Select language**

   You can choose a language under the machine symbol.

   When you select a language, you instruct the Tj 3000 to reconfigure the entire computer so that all information is printed and displayed on screen in the language you choose.

   All messages and settings are also displayed in the selected language.

   Select the language by highlighting the language you want then pressing (E).

2. **Select Harvester Head Type**

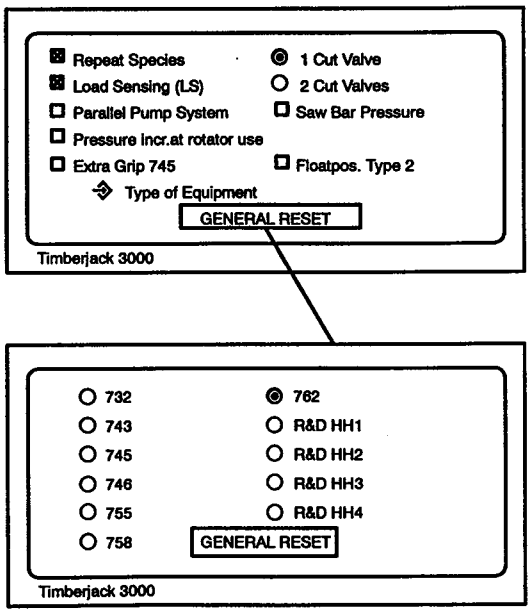
   This value determines factors such as the outputs to be used on HHM, the diameter settings to be used and which default values need to be set.

   See group B1.2.2.

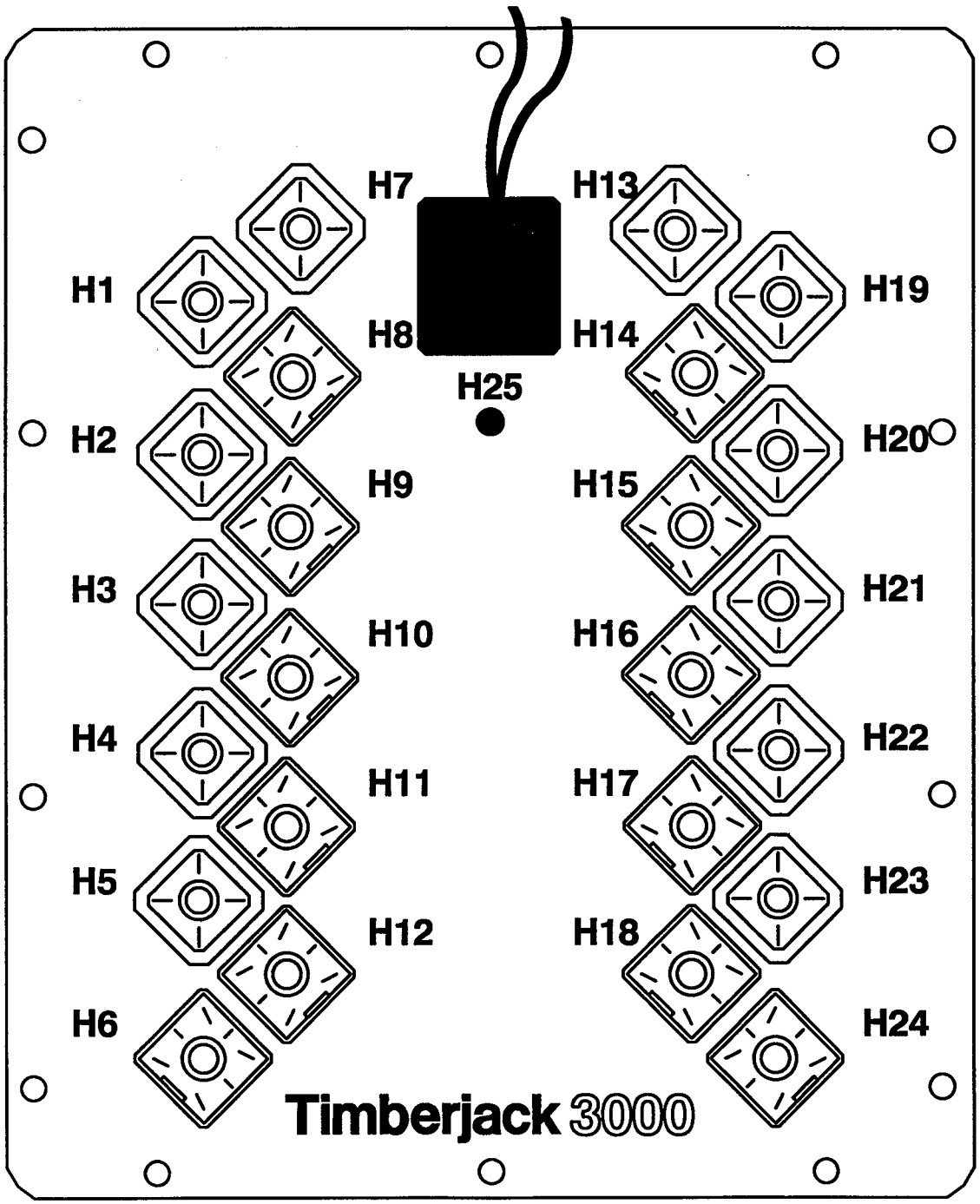
3. **General Reset (Harvester Head Reset)**

   After selecting the correct Harvester Head Type, you should do general reset to set the default values applicable to your particular Harvester Head. This is to ensure that the harvester head works properly with the Tj 3000.

   After the General Reset, parameters such as length and diameter measurements will have the appropriate initial values.



HHM


H7
H13
H1
H19
H8
H14
H25
H2
H20
H9
H15
H3
H21
H10
H16
H4
H22
H11
H17
H5
H23
H12
H18
H6
H24
Timberjack 3000

Pos	Description	Diagram	Location
A13	HHM Tj3000	1008E	Harvester head
H1	4-pole adapter	1002G	HHM
H2	4-pole adapter	1005G	HHM
H3	4-pole adapter	1009G	HHM
H4	4-pole adapter	1013G	HHM
H5	4-pole adapter	1016G	HHM
H19	4-pole adapter	1002R	HHM
H20	4-pole adapter	1005R	HHM
H21	4-pole adapter	1009R	HHM
H22	4-pole adapter	1013R	HHM
H23	4-pole adapter	1016R	HHM
Y437	Dye A	1005L	Harvester head
Y438	Dye B	1007L	Harvester head
Y456	Limbing open pair 2	1001X	Harvester head
Y457	Limbing close pair 2	1003X	Harvester head
Y457D	High pressure, limbing pair 2 lower	1017L	Harvester head
Y466	Dye C	1014X	Harvester head
Y470	Guide bar feed	1005X	Harvester head
Y481	Tilt, up	1016X	Harvester head
Y482	Feed rollers close	1009X	Harvester head
Y482D	High pressure, feed rollers	1014L	Harvester head
Y483	Feed rollers open	1010X	Harvester head
Y484	Saw	1007X	Harvester head
Y487	Tilt down	1017X	Harvester head
Y487A	Float mode, tilt	1012X	Harvester head
Y490	Forward feed	1001L	Harvester head
Y491	Reverse feed	1003L	Harvester head
Y492	Limbing, close pair 1 upper	1010L	Harvester head
Y492D	High pressure, pair 1 upper	1016L	Harvester head
Y493	Limbing, open pair 1 upper	1008L	Harvester head

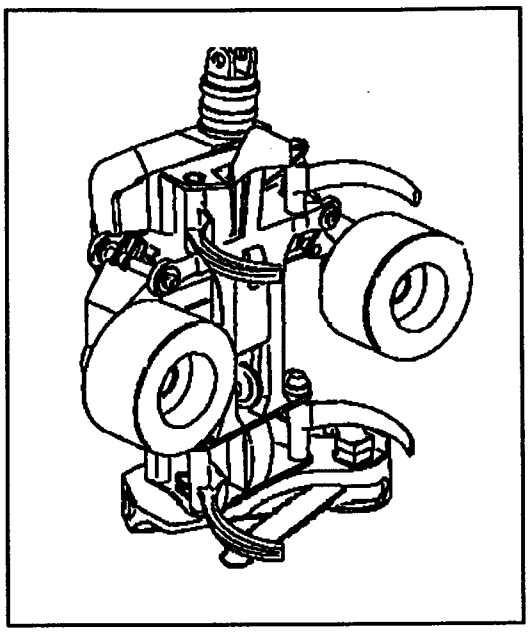
C4.1.3 Adjustment

Two operators should always be present when carrying out adjustments - one to make the adjustments and the other to check the start position values in the display.

Before adjusting the sensor, you need to loosen by one or two turns the four Allen screws (2) holding the upper cover in place.

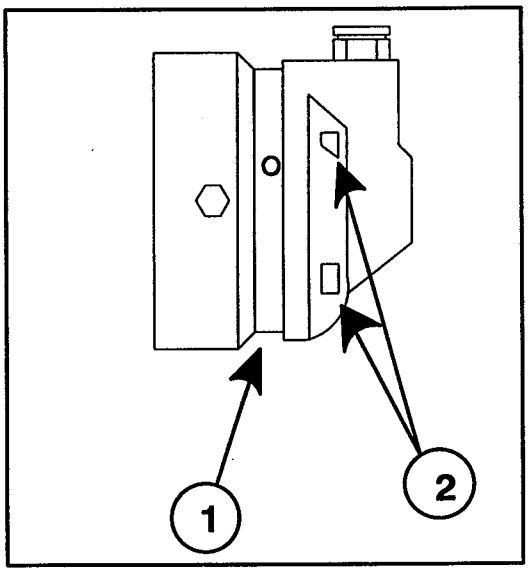
When the cover is loose, you can adjust the sensor by turning the plate (1) underneath the cover.

Make sure you screw the cover down tightly when you have finished the adjustment.



DANGER

Always switch off the engine when working with the head.



C5.2.1 Start-up

Each time you start up the TJ3000, the MCM (main computer) will check whether all of the other units are present, by sending out a query on the CAN network in the form "Who there?" The MCM contacts the other units, which will then respond to the MCM in a specific order.

1. DM Display Module
2. KCML Left keypad
3. KCMR Right keypad
4. HHM Harvester Head Module

If any unit does not respond to the MCM within a specific time, the MCM will report this to the DM (display module), which in turn will report this to you on screen using a visual and/or audio message. These messages are dealt with in Group C6.1. The feature known as the ERROR Log will also be activated at the same stage and will save the error message.

If the MCM should fail and not enquire "Who there?" within a certain time, the DM itself will give you a message indicating that the MCM is not present (see Group C6.1).

When all units have responded to the MCM's enquiry "Who there?" and the MCM has received all of these responses, the MCM will begin its work of loading all Machine Parameters into the HHM (Harvester Head Module).

The MCM does this because the HHM has no memory of its own and loses all data as soon as the power is switched off.

Connect P7 again, but disconnect HFS4 below the KCML, left keypad. Measure the voltage in the HFS4 connector between pin 9 and pin 5. The voltage here should be approx. 24V. If the voltage is not 24V and the display is functioning, the fault will probably be located in the cable to the KCML.

Next, measure the voltage between pin 4 and pin 1. The voltage at this point should be approx. 12V. If you are not getting 12V here, you should check that fuse 5 on the PSU (group C3.2) really is intact. If the fuse is intact and the mini-system seems to be working, there may be a fault in the cable between the PSU and the KCML.

Then, switch off the 3000.

Connect cables HFS4 and HFS6 which are normally located under the KCML, and then connect plug F024441 to the cable HFS3 which is located below the KCMR.

Ensure that the plugs in P8 and P9 are correctly located.

Go out to the connector which you disconnected from the cab wall, measure the resistance between pin 1 and pin 2, in the socket which is located on the wall (870B, 1270B: measure the resistance between pin 2 and pin 3 in the cable detached from P4). In this way, you will see that the end resistance is OK. The resistance should be approx. 82Ω.

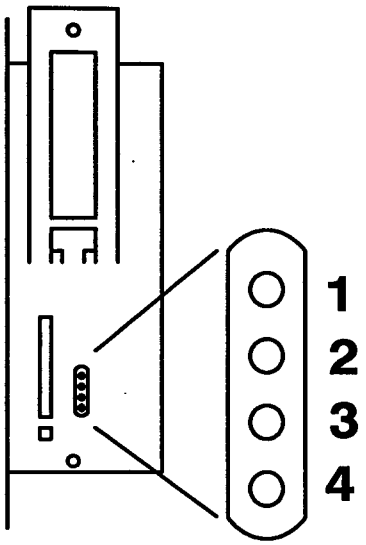
1. **Outer red LED**

   If the outer red LED (no. 4) lights up, a CAN error has occurred in MCM when transmitting or receiving a CAN message. This might happen if the CAN bus is faulty, for example, or if the CAN power supply from the PSU is interrupted.

   Check the cables and connector between the PSU and MCM, and between the PSU and DM. Also check fuse number 5 for power supply to CAN.

   If you cannot find a fault, you will need to work through the entire CAN bus using the model in Group C5.4 "Systematic Troubleshooting in CAN".

   If you cannot find any faults anywhere in the CAN bus, you should replace the MCM because the fault must be located in this unit.

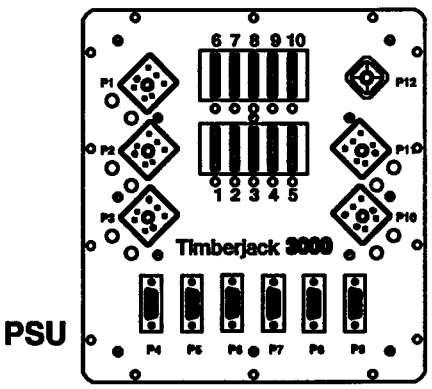


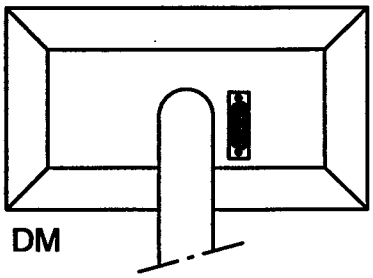
2. **Yellow LED**

   If the yellow LED (no. 2) flashes or lights up while the red LED (no. 4) is off, the MCM is operating properly but the DM has not received the message "Who's there?" for some reason.

   The fact that the outer red LED is not lit indicates that some other unit in the system has received the "Who's there?" message.

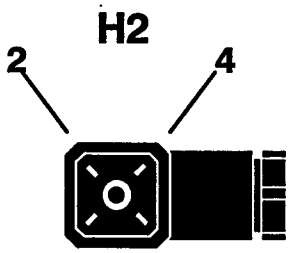
   If all the connectors are correctly attached as described in Group C3.1.2, the fault is likely to be in the cable to the display or in one of the connectors between the PSU and the DM. If there is no fault here, the display must be faulty and will need to be replaced.





C6.2.7 Output H2 2-4 error

This message indicates that there is a fault at output H2 in the HHM, and the Tj 3000 also informs you that the fault is at pin 2 or 4.



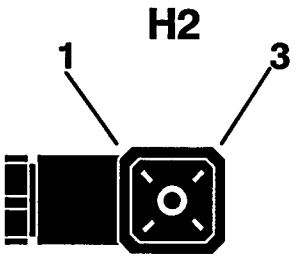
The fault is located somewhere on the loop between pin 2 and pin 4, which controls the function Colour Marking with colour A.

It may be caused by a broken cable, or by a short circuit between the (+) cable (pin 4) and earth or the (-) cable (pin 2).

The cable number for this function is 437.

C6.2.8 Output H2 1-3 error

This message indicates that there is a fault at output H2 in the HHM, and the Tj 3000 also informs you that the fault is at pin 1 or 3.



The fault is located somewhere on the loop between pin 1 and pin 3, which controls the function Colour Marking with colour B.

It may be caused by a broken cable, or by a short circuit between the (+) cable (pin 3) and earth or the (-) cable (pin 1).

The cable number for this function is 438.

Timberjack 3000

Measuring and Control System
Ver 7.0 with KCM Mark I keypads

Appendix of
Instruction Manual

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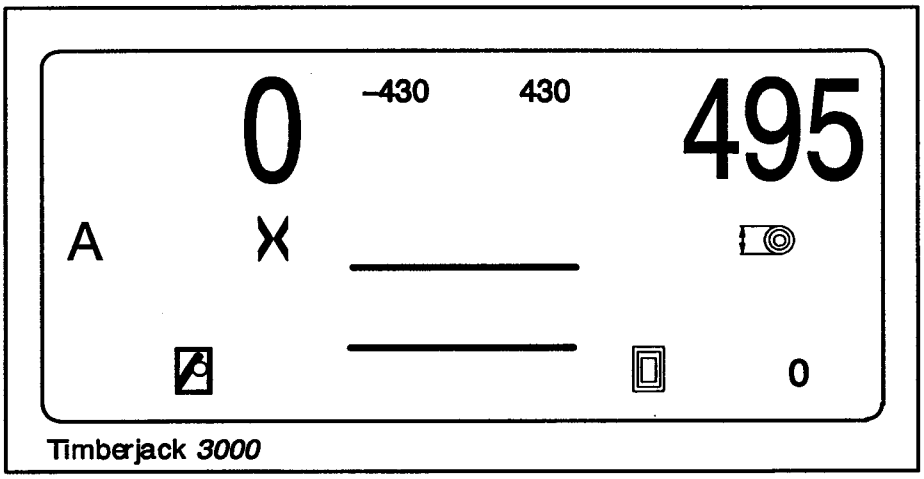

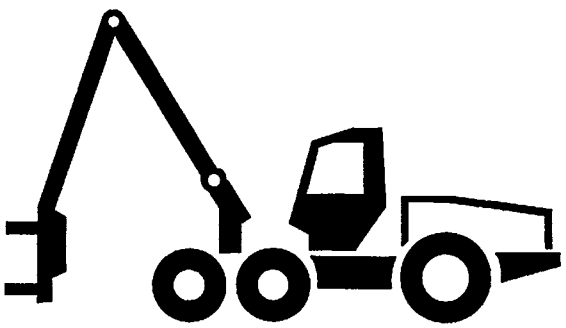

ENG

Timberjack 3000

Measuring System Attachment Installation

APPENDIX I

of Instruction Manual

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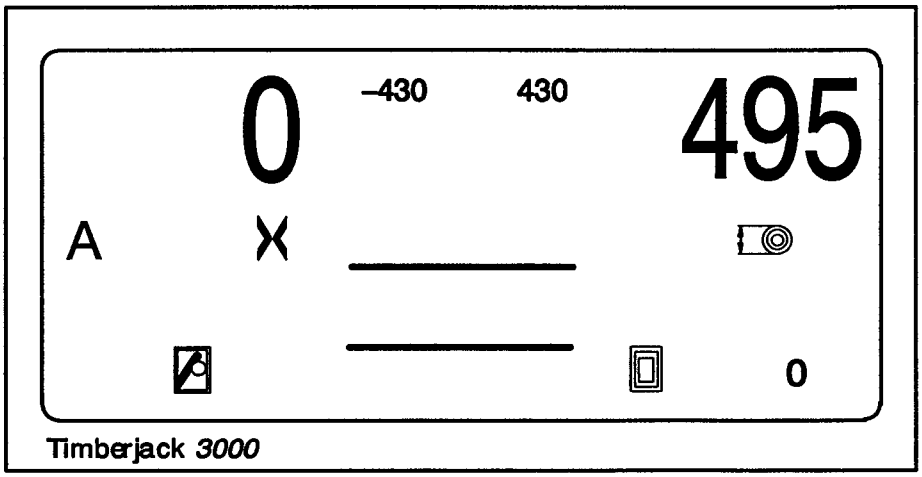

ENG

pos	pcs	name	part no
1	1	cable harness	F019319
2	1	circuitboard	F019316
3	1	key set	F019322
4	1	fitting	F018363
5	4	screw	F003316
6	4	fiber washer	F018339
7	1	bracket	F018356
8	1	bracket	F018341
9	1	angel bracket	F018340
10	2	screw M3	F045031
11	2	nut M3	F003583
12	2	washer	F003338
13	2	nut	F003563
14	1	rubber border	F018357
15	1	jam nut	F010710
16	1	locking lever	F018358
17	2	washer	F018359
18	1	fastener	F018360
19	1	finger nut	F018361
20	1	overlay	F019314
21	1	bushing	F018117
22	1	lever head	F018345
23	2	resistor	F045361
24	1	overlay	F019330
25	1	mounting plate	F018351
26	1	cable grommet	F040044