techno-matic

Tech Measure 1000

USER MANUAL

Tm1000 User Manual Ver. 4.10

Techno-Matic A/S
Granlidevej 22, Hornum
DK-9600 Aars
Denmark

Tel: +45 96987711
Fax: +45 98661822

tm@techno-matic.dk
www.techno-matic.dk

PROCESS CONTROL IN MOTION

Contents:

Introduction

- Congratulations on your new Tech Measure 1000-measuring system !

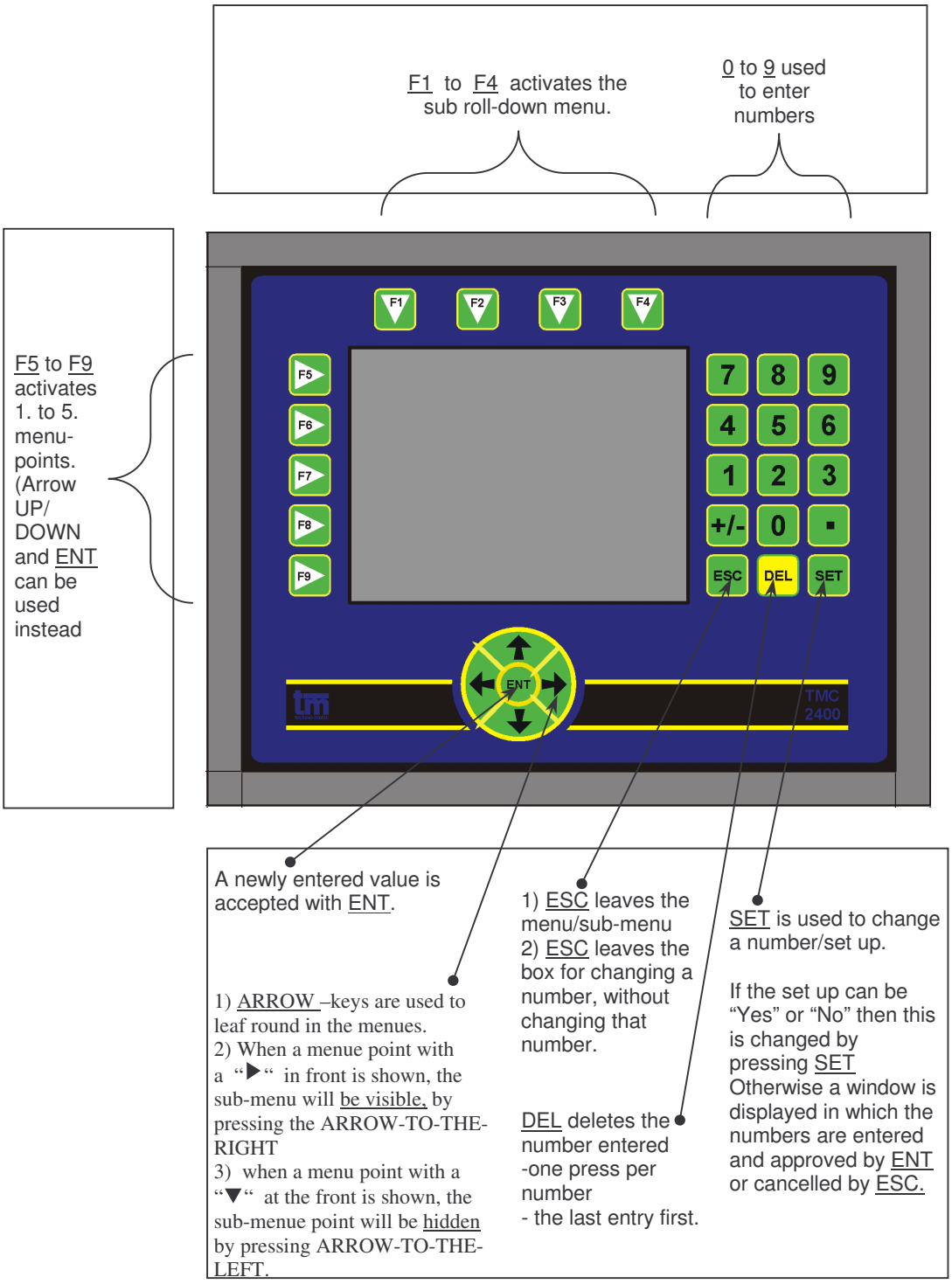
Tech Measure 1000 is a very precise measuring system, designed to make your work as easy and efficient as possible.
The system has a robust construction and has the facility to write out all relevant data on paper by means of a printer.

In the development of the Tech Measure 1000 measuring system, great attention has been paid to choosing a logical construction, and to enabling the user to service the system merely by following the instructions on the screen, wherever possible.

But it is important to get started in the right way, so we recommend that you read at least the following five sections as the minimum:

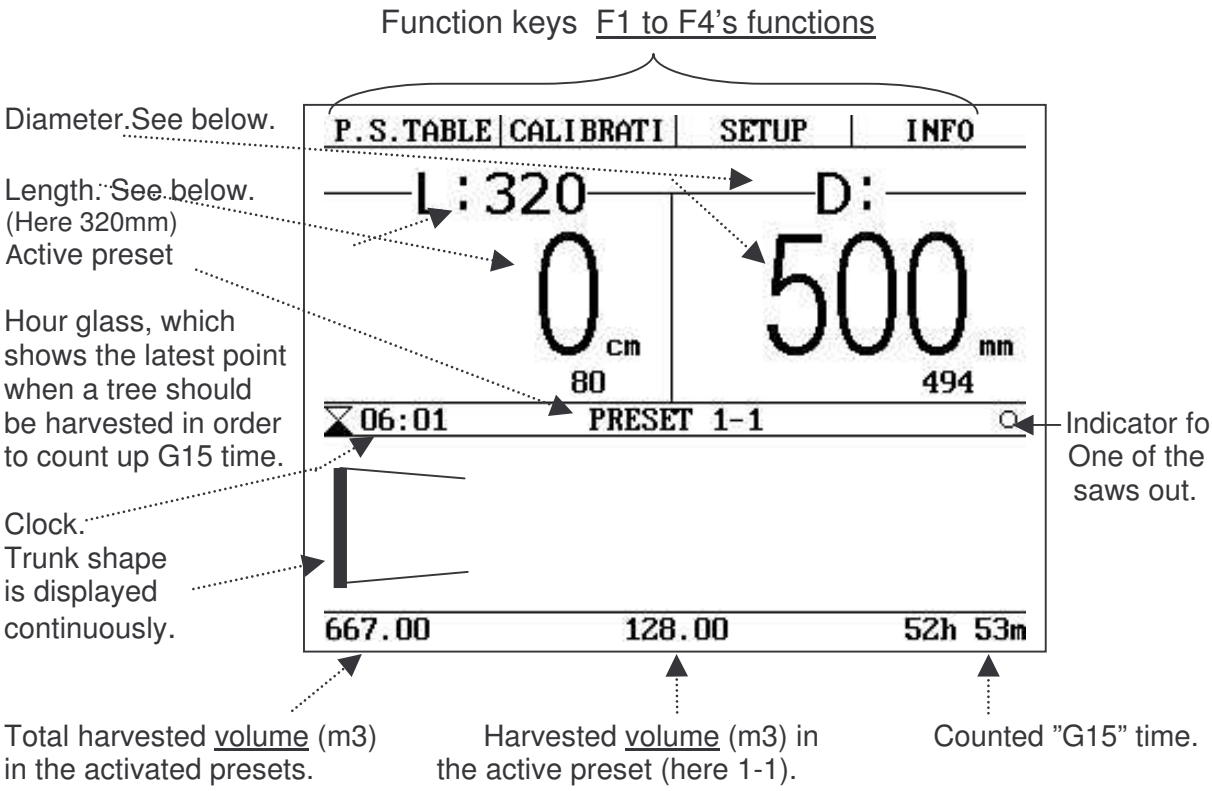
"An overview of the function keys"
"Main screen picture"
"Editing presets"
"Diameter Calibration"
"Length Calibration"

An overview of the function keys:



Main Screen:

On the ”Main Screen” you will find the most important information, you need. Please note that some functions, not available on your system, might be explained as well.



PLEASE NOTE:
The SMALL figures (Here L 80 cm and D 494 mm) are the length and diameter at the upper saw. These are estimates, based on the previously cut trees). **These figures will of course only be shown, if the upper saw function is activated.**

G15 time:
Note that if the clock displays ”00.00”, the G15 time does not work. Check, therefore, that the time/date settings are OK. Upon cutting a valid piece of trunk, the hour-glass is “turned round” so that all the ”sand” is on top, whereupon it “runs” down to the bottom half of the glass, if no work is carried out. Upon cutting a valid piece of trunk, while there is still sand in the top part of the hour-glass, the G15 time counter counts up (bottom to the right on the screen).

Diameter:
The large number shows the diameter at the saw (the diameter, which has been measured previously). Important: If ”mm” (millimetres) are not displayed, you are not working according to a valid diameter calibration table! Which is why not millimetres, but only the number of pulses from the encoder are displayed !!! If a small number is shown (as above 320 mm), the system runs according to this. When/If this goal is met then the number is displayed “inverted” e.g.: D: 320 (instead of **D: 320**).

Length:
The large number shows the actual length, at which the saw is situated at the moment (set to zero every time it cuts). If a small number is shown (e.g. L: 400 cm), the system is running according to that. When/If this goal is met then the number is displayed “inverted” e.g..: **L: 400** (instead of **D: 400**).

It is valid to saw, when at least one of the numbers is shown “inverted”!
The sawing is ”at the target”, when BOTH the length and the diameter are shown ”inverted” : **L: 400** and **D: 320**

Editing presets:

Press F1 for ”Preset Table”.

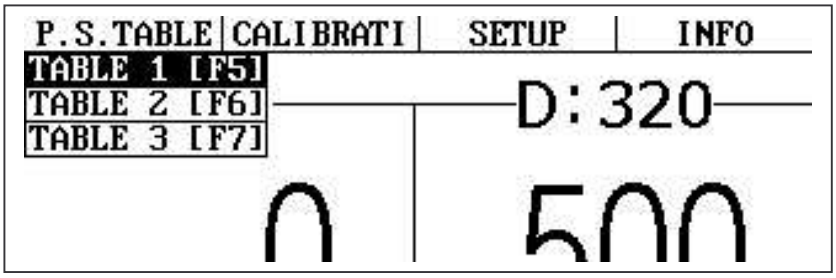
Press e.g. F5 for “Table 1”.

F5

F6

F7

F1



Number of cubic meters of cut timber in this preset table.

Number of cubic meters of wasted timber in this preset table.

Active preset is marked by a star “ * “

A Preset changes from active/inactive by pressing “SET”, when SET is marked.

Copy PRESET TABLE 1 Move

Volume:667.00 Pieces:11131

Waste:102.76 Number of trees:2447

Preset	Length	Dia.	Volume	Number
*1	320		128.0	658
*2	205		539.0	10473
3			0.0	0
4			0.0	0
5			0.0	0
6			0.0	0
7			0.0	0
8			0.0	0
9			0.0	0

1

The arrow-keys up/down highlights each single preset. Press “ENT” for editing the highlighted preset.

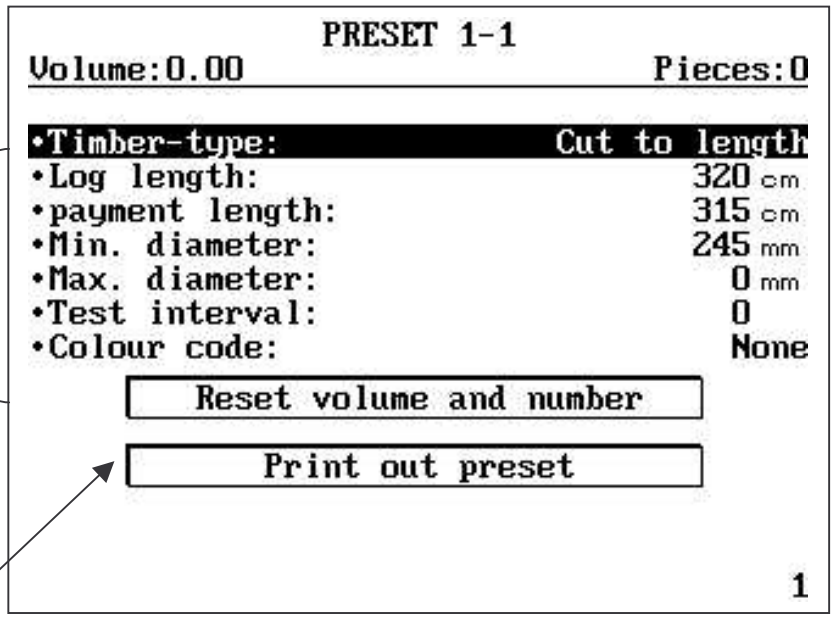
Only activated presets can be edited. Further only activated presets are used during felling, which means that you can have entered parameters in all 9 presets, but only use the ones activated with a star “*”

Number of cubic meters in this preset.

Choose type by means of “SET”

Changing the measurements: Press “SET” and enter the value wanted. Accept by means of “ENT” or “SET”
or regret by “ESC”

Choose the colour code by means of “SET”.



Zero setting of production in this preset.

Printing out the settings for the preset:
Press the arrow up/down in order to highlight the “print pre-set”. Press “ENT” to print out the settings in a single preset.

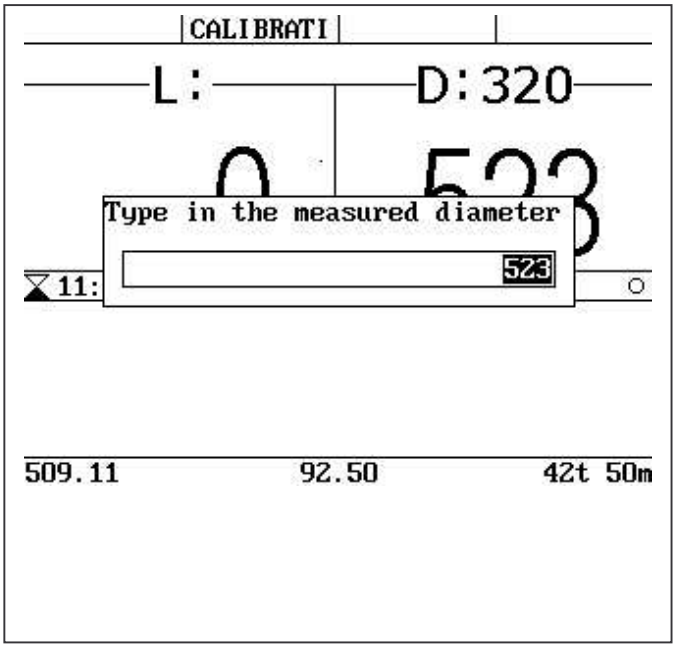
Printing out the ENTIRE preset table:
Press “set-up” F3 (during which the ‘main display’ is shown), and afterwards “print” F8.

F2

Diameter Calibration:

Press “F2” for “CALIBRATION”
Press “F5” for “DIAMETER”

After which the following box is indicated in which the measured diameter must be entered.



Means of calibration:

First, a suitable tree is felled (without too many branches and preferably straight). Afterwards run further than the distance between the point of measurement (knives/rollers) and saw.
Now measure the tree’s diameter at the saw. The diameter measured is entered in the box and you complete the procedure by pressing ENT.

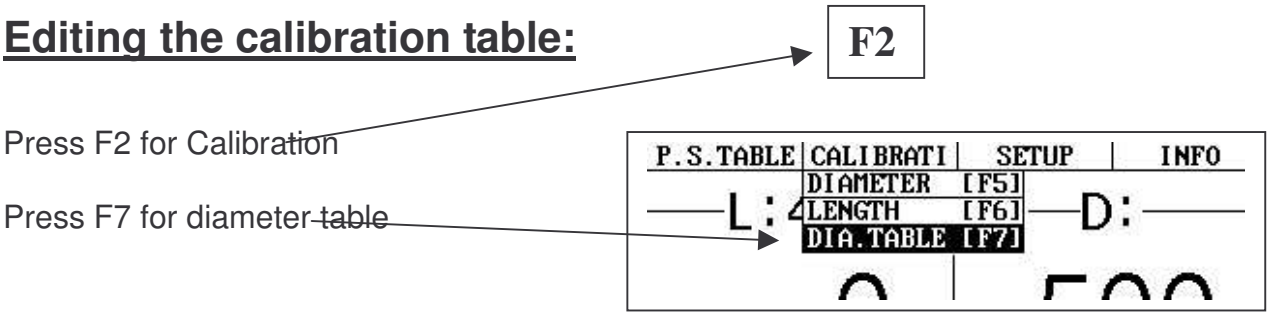
The same procedure at the following points of measurement:

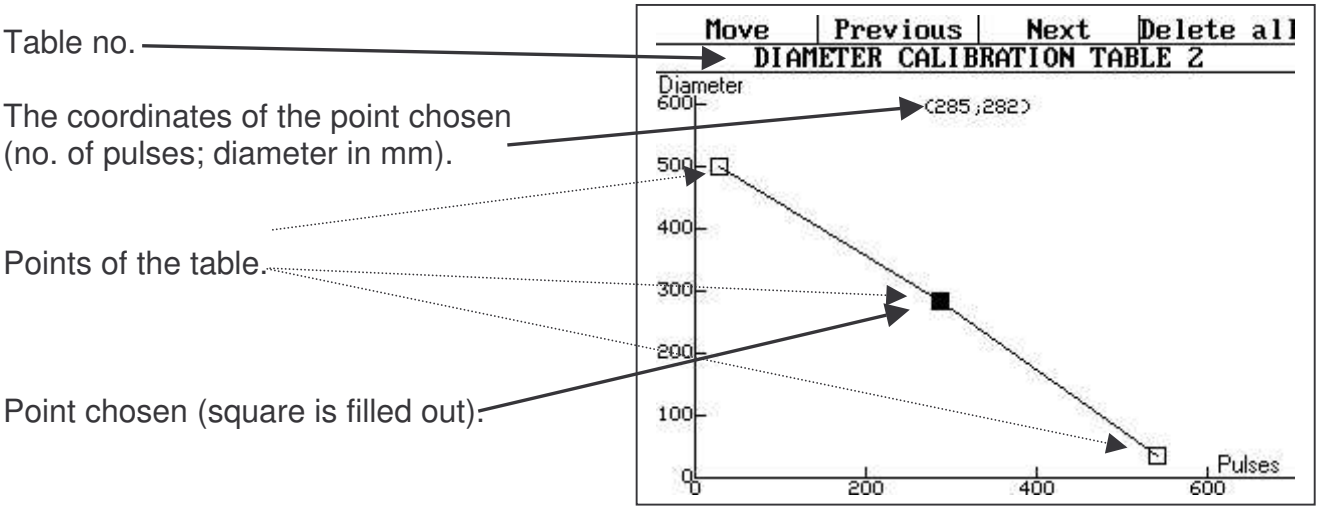
Run 2-3 meters forwards and measure the diameter at the saw. Press F2 for calibration, afterwards F5 for diameter and then enter the diameter measured into the box. Complete with ENT. You can enter 10 points of measurements including diameter at knives/rollers closed with or without log in the harvesting head.
You can later enter further points of measurements, if not all 10 are in use from the start.

Important:

If no diameter-table with points of calibration has been chosen, “mm” will not be shown to the right of the large diameter number (under “D”)!! -In such a case the number shows only a number of pulses from the diameter-encoder and no tree-shape is shown at the bottom of the screen.

Editing the calibration table:





In the above example three points have been put into the diameter calibration table of which the middlemost point has been chosen (the square is filled in).

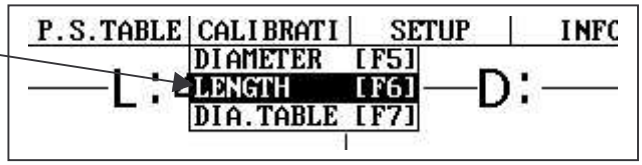
It is possible to move the points which have been entered:
Press F1 or ENT in order to move and the point chosen can be moved by means of the arrow-keys (if SET is held down simultaneously, the point is moved ten times as fast).
At the same time the coordinates of the point are changed.

F2 chooses the previous point (larger diameter)
F3 chooses the next point (lesser diameter)
F4 erases all points (start of a new table)
DEL erases the chosen point.

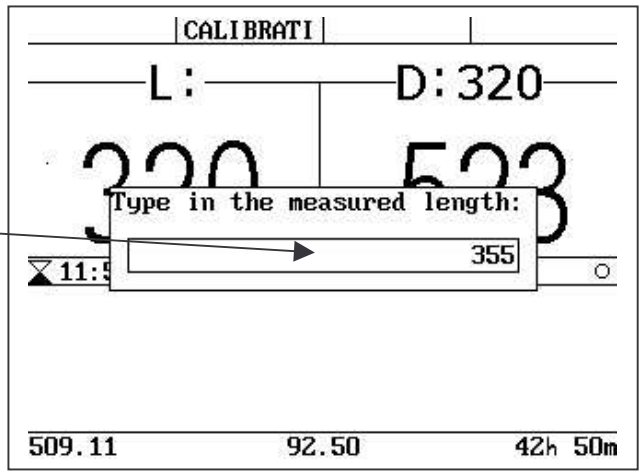
Length Calibration:

Press F2 for calibration.

Press F6 for length.



Box to key in the measured length (in cm.)



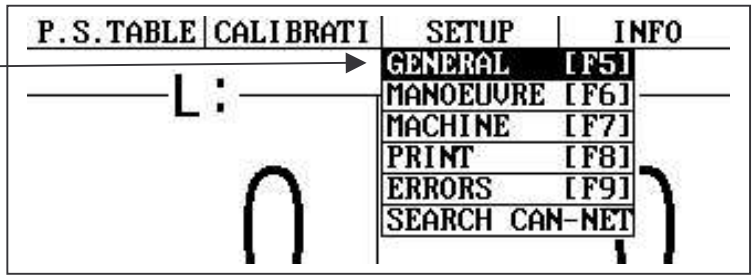
How to carry out length calibration.

First fell a suitably large tree, run 20-30 cm forwards and cut of the root swelling, run thereafter forwards 3-5 meters, after which the length run through is measured and must be entered into the box (in cm.).

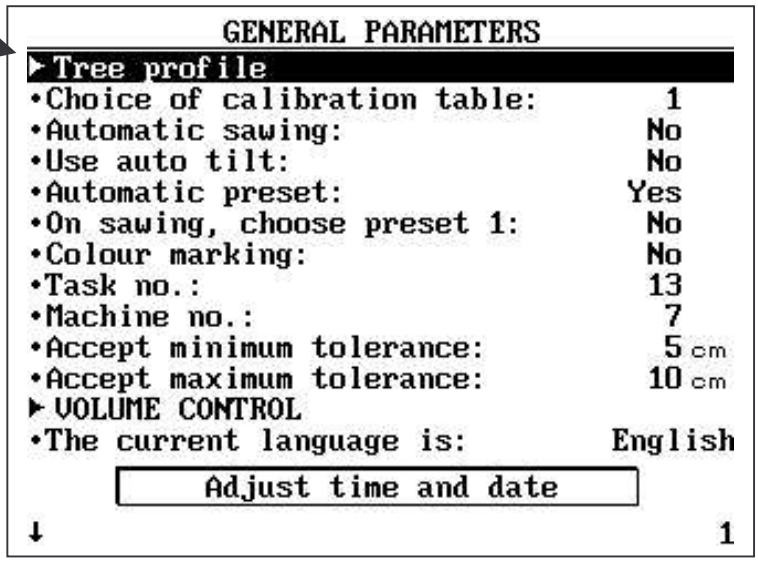
General parameters:

Press F3 for SET UP. → F3

Press F5 for GENERAL.



When the menu "Tree profile" is highlighted, the sub-points will be shown by pressing the ARROW –TO-THE-RIGHT,, and hidden again upon pressing the ARROW-TO-THE-LEFT.



Sub-points to the "Tree profile".

The Calibration-table, according to which the measuring is done (and which can be viewed/ adjusted under "CALIBRATION" [F2], and then DIA TABLE [F7].

"AUTOMATIC SAWING": Yes means that the saw is activated when the target has been reached.

The system can automatically shift preset ("downwards") when the criteria of the actual preset are not being met.
Preset 1 can be "auto-chosen" after cutting.

Colour-marking on- / off is chosen here.

If you want to change a set up, press ARROW DOWN until the line in question is highlighted. Afterwards press SET, following which the new value either changes directly (if e.g. YES/NO) or a window comes up in the middle of the screen, in which the new value can be entered.

Example1: You "leaf" down to "Automatic cutting: No"- By pressing SET, this changes to "Yes".
Example 2: You "leaf" up to: "Root swelling, height: 130cm" – By pressing SET you call forth a window in the middle of the screen in which the new value (e.g. 120) can be entered. ENT completes the process.

- Continued on the next page !

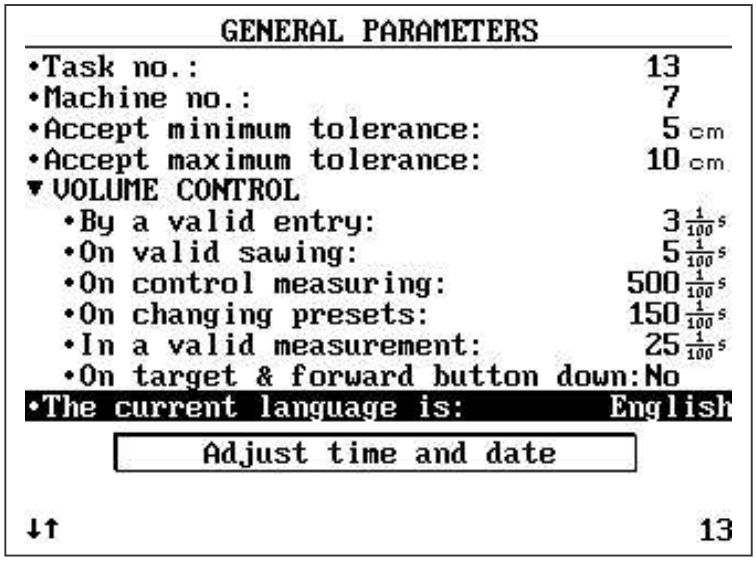
Task No.: Is selected here. If you want to change to another task number, press SET and a box will appear, enabling you to choose, whether or not you want to reset all presets and G15 time.

Machine no.: Is selected here

Accept minimum tolerance and Accept maximum tolerance: Here you can enter the minimum and maximum tolerance wanted. Please note that these values DO NOT influence the accuracy of the system, but they determine the acceptable cutting area.

Volume control (BEEP): a sound indication of differing length can be given in certain situations.

Language: Dependant on the version, it will be possible to choose between e.g. Danish, English, German and French.



Adjust time and date:
At a press on ENT, when the above menu is highlighted, a window is shown in which the date can be changed and the clock can be set.

Reset current preset table:
By pressing ENT, when the above menu is highlighted, the actual preset table is nullified.

Invert the display:
By pressing ENT, when the above is highlighted, the colours yellow and black in the display (on the screen) are inverted. In certain light-conditions, this can be of advantage. This choice has absolutely no bearing on how the information is SHOWN on the screen. - You could use the "inverted" for about half of the working time in order to extend the display's life-time, as this means that all points on the screen are "worn" equally. Regarding life of display: See also below.

Display contrast (not shown):
The contrasts (light strengths) on the screen can be entered as a number from 1 to 100.
100 is equivalent to the yellow colour lighting up powerfully.
1 is equivalent to the yellow colour lighting up faintly.

Bright light should be avoided, unless the light conditions make it absolutely necessary!!!

Due to the fact that it is a very strongly lit display, the choice of a high light strength can result in the points on the screen, which are in use the whole time (or almost the whole time) will “stay permanently on the screen” meaning that they will be shown continuously as a weak ”shadow” on the screen.

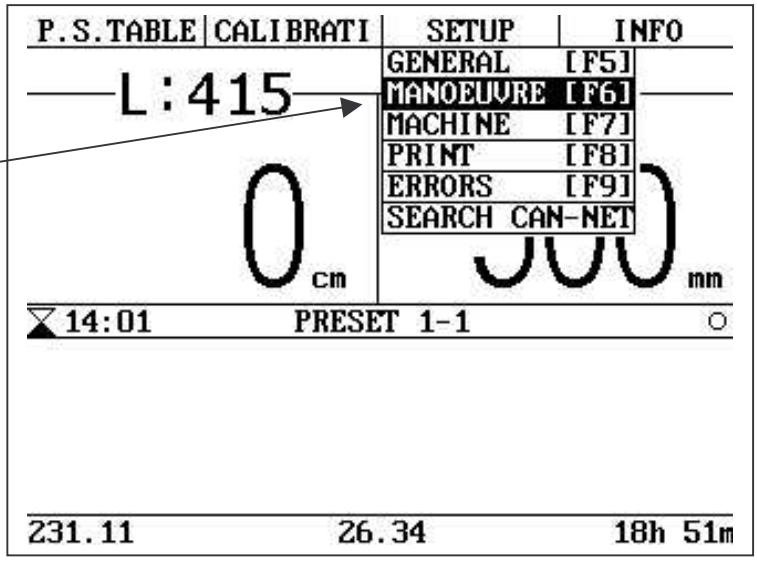
→ **THEREFORE IT IS STRONGLY ADVISED TO SELECT AS WEAK A LIGHT SOURCE AS POSSIBLE** (dependant on the surrounding light), IN ORDER TO EXTEND THE LIFE OF THE DISPLAY!!!

”Close down screen after use” (not shown):
In order to reduce wear and tear on the screen, and in order to save power, the screen is closed down after the entered number of minutes (from 1 to 30) during which the system is not being used.
- After this time a pause-screen is shown: A little yellow line (at the bottom of the screen), which slowly moves from side to side. When the computer is used again, the display returns to normal.

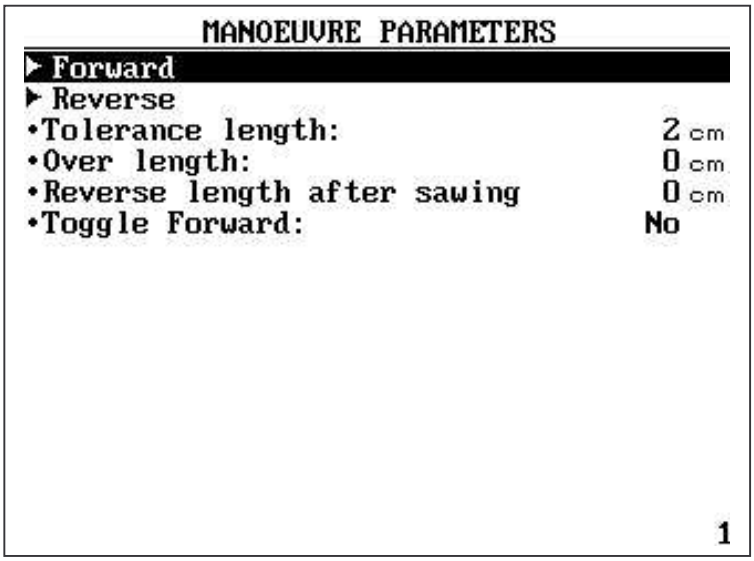
Manoeuvre Parameter:

Press F3 for SET UP. → 

Press F6 for MANOEUVRE.



The following display is shown.



Forward parameter (settings) is displayed by pressing on ARROW-down, until "Forward" is displayed and thereupon pressing ENT (See next page).

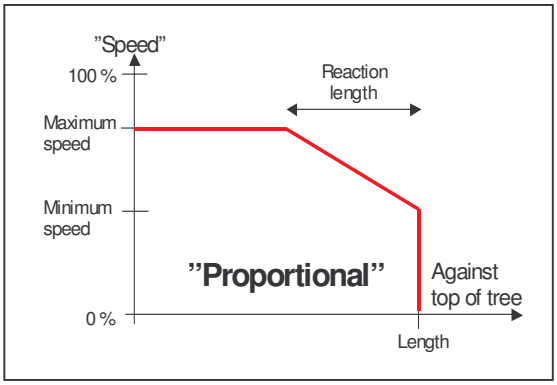
Same procedure with the reverse-parameters. (See next page).

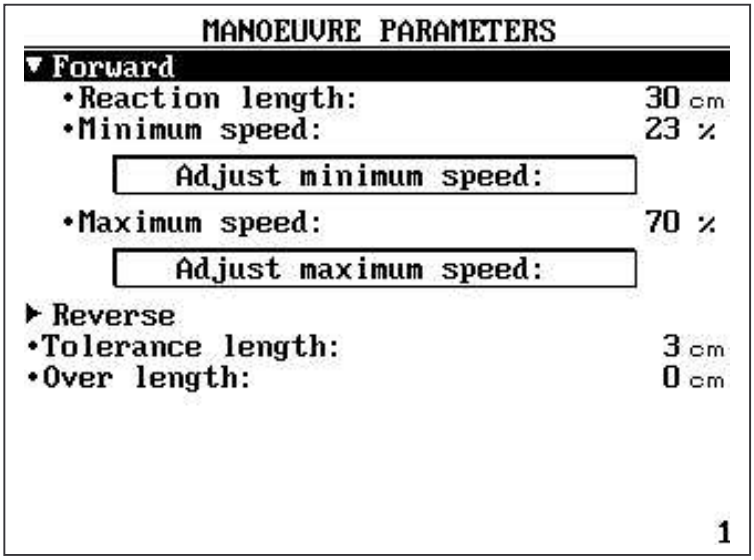
Tolerance length:
A piece is accepted, if it is within this tolerance.
The tolerance is **added to** the required measurement, if you are working according to length measurements and deducted to diameter (like full-length timber, not rounded off). Press SET, followed by a new value, and press ENT in order to change.

Over Length:
When the wanted measurement has been achieved (e.g. a length of 3.60 meters) the machine runs a little longer forwards, and reverts to the wanted measurement, ready for cutting. "Over length" indicates how long it is desired to run past the measurement wanted.
Aim: To remove the branches at the start of the next piece, so that it is easier to start again after cutting.The settings under "Forwards" apply to running forwards with the feeding rollers of the

head, i.e. when the tree is pulled through from the root swelling to the top.

Reaction-length:
Minimum speed:
Maximum speed:





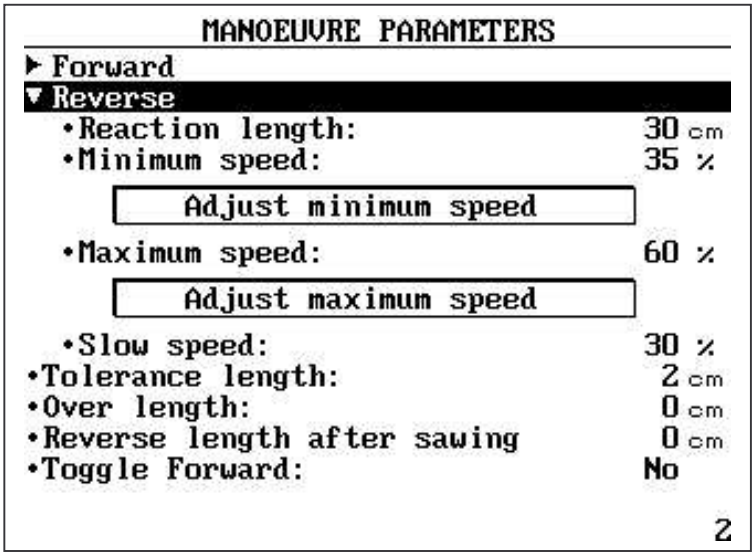
Adjust minimum / maximum speed: By pressing ENT, when this menu is highlighted, **the rollers are activated** and the desired minimum/ maximum speed can be adjusted. Conclude by pressing ENT.

The settings under "Reverse" apply to driving in reverse with the feeding rollers of the head, i.e. when the tree is pulled through from the top towards the root swelling.

Reaction length:
The length between maximum and minimum speed.
Can also be called "braking length".

Minimum speed:
The lowest speed with which, you want the rollers to run in order to reach the target.

Maximum-speed:
The highest speed with which you want the rollers to run.



Slow speed:
The speed of the rollers, when you activate creeper speed forwards or reverse. Further, this speed must be used, if the function "slow running at tilt up" has been chosen. See Machine parameters, Tilt.

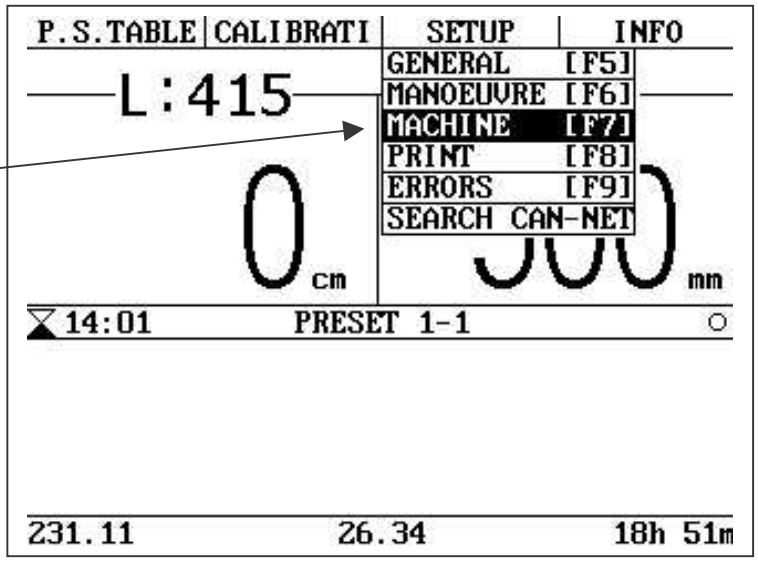
Reverse Length after cutting
When working in heavy trees on steep slopes, it can be a help when working downhill , if the rollers reverse 1 or 2 cm, as soon as you release the saw button, this will make the saw reverse easier.

Toggle forwards
When "toggle forwards" is activated, you must push once on the forward-button and the rollers will continue to target. When you push again on forwards or reverse, if there are no pulses from the measuring wheel or knives/rollers are open, the rollers will stop.

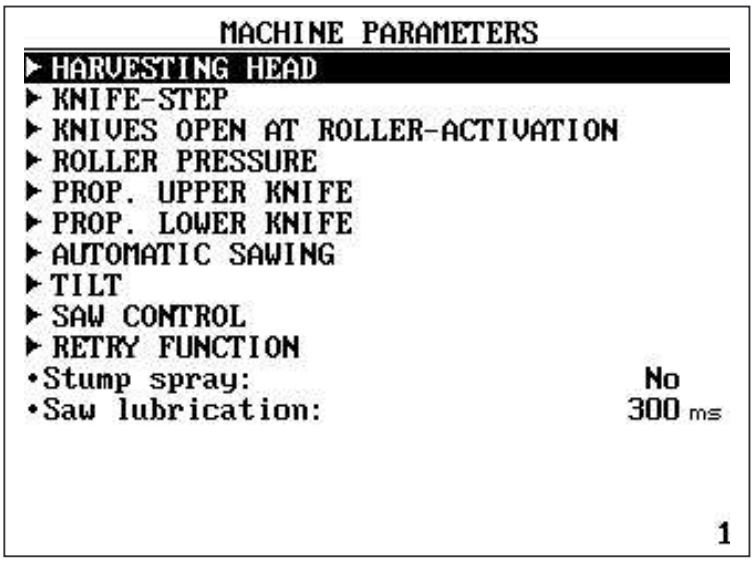
Machine parameters:

Press F3 for SET UP.

Press F7 for MACHINE.



The following screens come up:



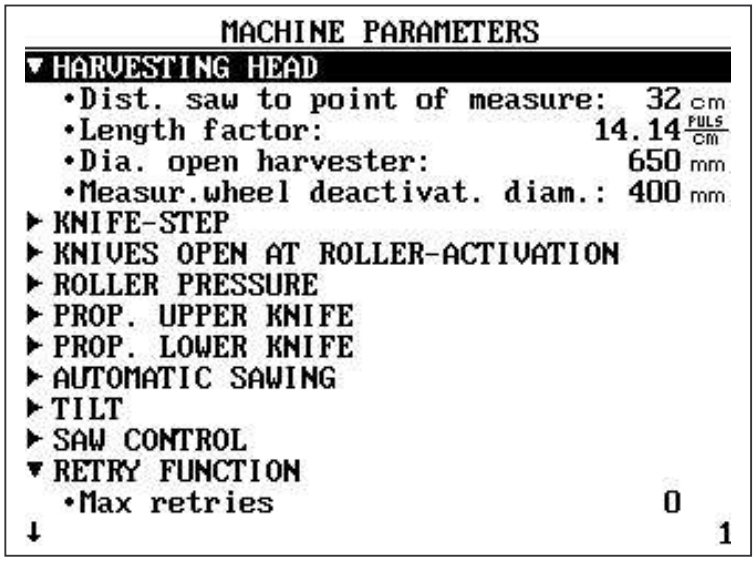
HARVESTING HEAD- settings,
KNIFE-STEP- settings,
KNIVES OPEN AT ROLLER-ACTIVATION:
Settings for rollers forward and rollers reverse respectively
ROLLER PRESSURE
Here you set the pressure wanted
* PROP. UPPER KNIFE
* PROP. LOWER KNIFE
COLOURCODE
AUTOMATIC SAWING
* TILT
* SAW CONTROL
AUT. REVERSE, IF STUCK

STUMP SPRAY:
Engages and disengages stump spray automatically.

SAW LUBRICATION:
The time for activation of the valve for the saw lubrication.

* The values marked with * might have been dropped by the harvesting producer.

HARVESTING HEAD:



Distance from saw to point-of-measuring
The distance from the saw to the knives e.g. 60 cm.

Length factor:
Length calibration e.g. 5.70 pulses/cm from the length encoder.

Diameter Open Harvester:
Diameter when the harvesting head is fully open.

RESET DIAMETER ENCODERS
When deactivation of the measuring wheel takes place, when a certain diameter has been exceeded, you can reset the diameter encoders in the following way:
Press down “Rollers Open” for a minimum of 1.5 seconds (the rollers must not move outwards for this period of time) and the encoders will be reset.

Measuring wheel delay:
The number of tenths of a second from ”Knife and roller close” is being pressed until the measuring wheel falls into place, ready to measure.

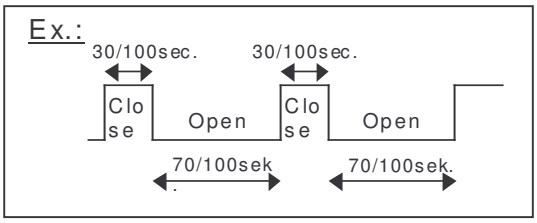
Tree shape delay:
The number of tenths of a second from pressing ”Knife and roller close” until the first part of the trunk shape shows on the display.

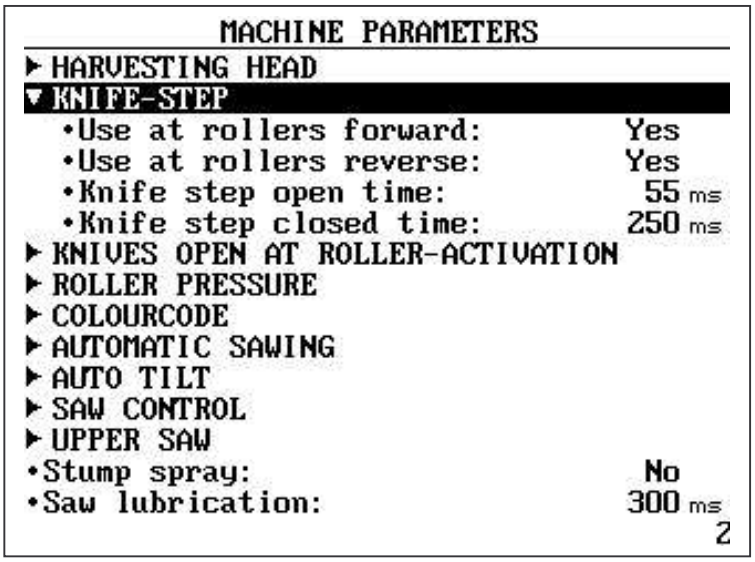
Tree shape reset delay:
The delay from the point of opening the knives until the system registers that the tree has been dropped to the ground. This makes it possible for you to loosen the tree a little and directly afterwards close again in order to get a firmer grasp on the tree.

KNIFE-STEP:
The knives can ”be kept on the go”. See figure.

Use with rollers forwards:
Use with rollers backwards:
Here is determined when the knife-step is to be applied.

Knife step open time:
Knife step closure time:

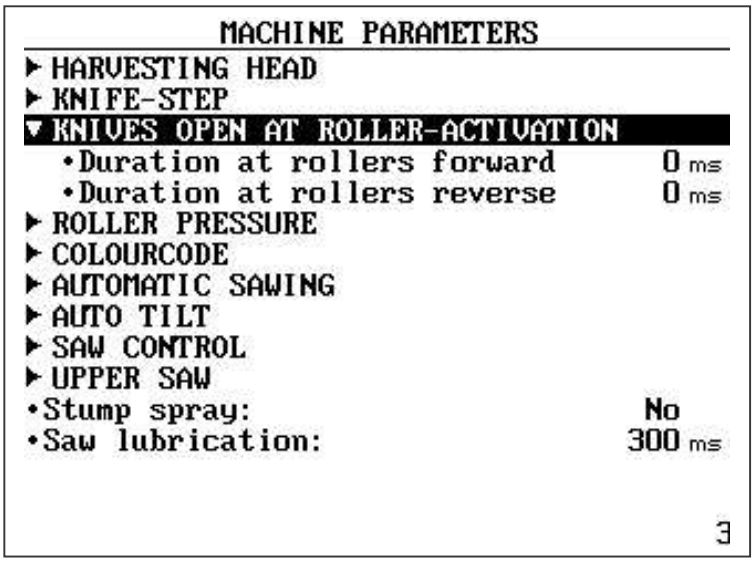




Knives open at roller-activation:
It is possible to get the knives to open briefly every time the rollers are activated forwards and/or backwards.

With the rollers forwards:
Here you can enter, how many tenths of a second the knives should open (and thereafter close) every time the rollers start to move forwards.

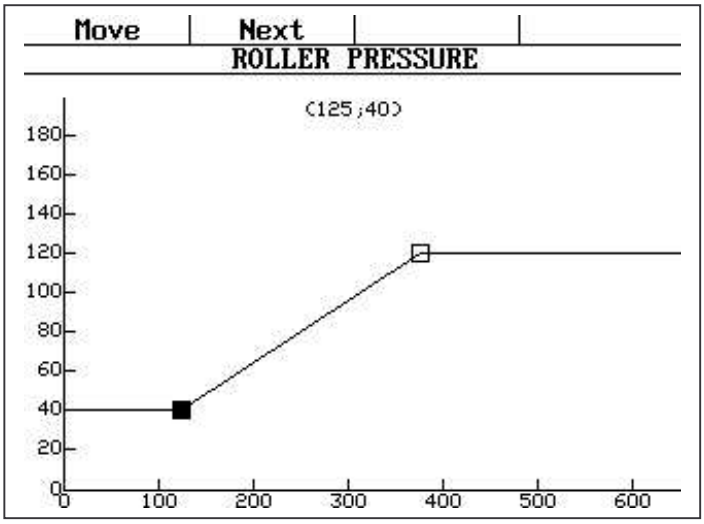
With the rollers backwards:
Here you can key in how many tenths of a second the knives should open (and thereafter close again) every time the rollers start to move backwards.



Roller Pressure:

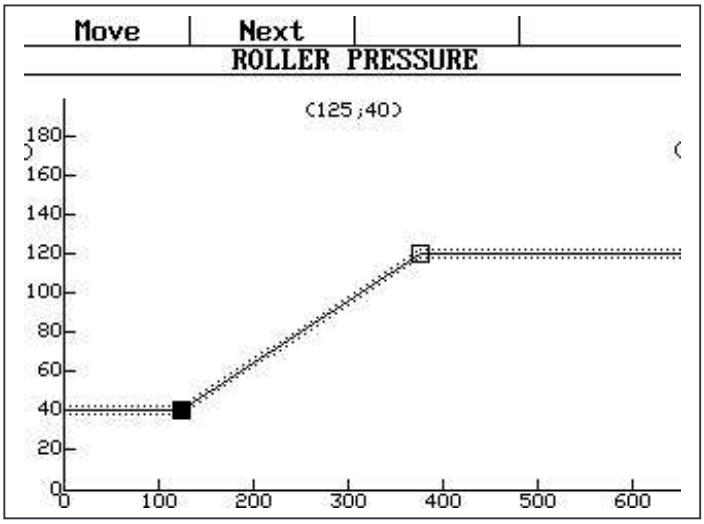
Here the harvesting head producer has chosen one of the adjustment principles, shown below.

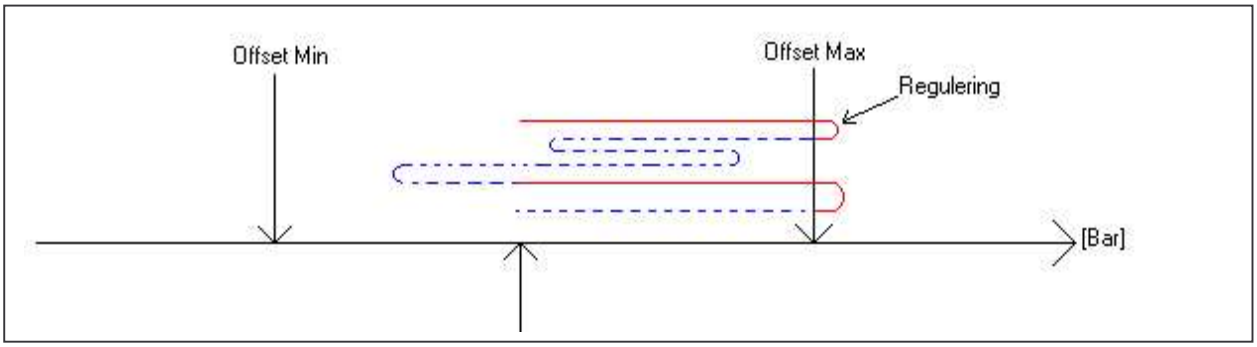
Adjustment principle 1:
Here the rollerpressure is controlled with a proportionally controlled pressure reduction. On the curve there are 2 points, one for minimum pressure and one for maximum pressure. These are also opening and closing pressure respectively. When the rollers are running, the pressure is controlled based on the diameter in relation to the curve.



Adjustment principle 2:
Here the actual roller pressure is measured with a pressure transducer. The pressure is controlled by opening or closing the roller valve itself. Then the roller valve is blocked in the center-position. Further to the wanted pressure, this principle of adjustment has a min. and a max. offset. When the pressure is within these values, the valve is closed, If it is not, the roller valve is closed or opened respectively.

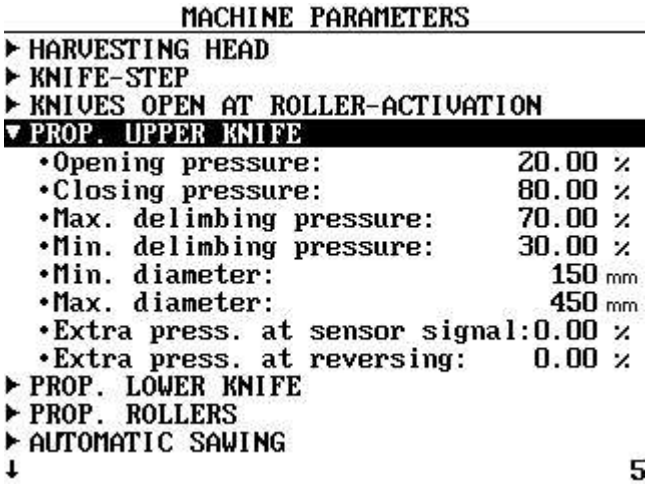
PLEASE NOTE:
Offset has been adjusted by the producer!





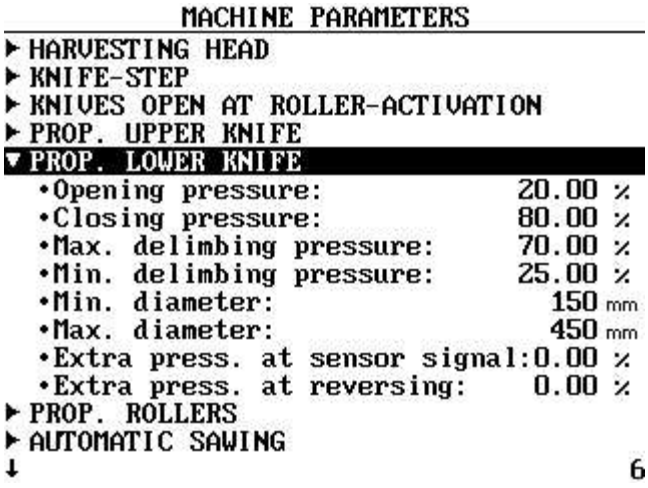
Proportional upper knives.

Opening pressure: The pressure used to open upper knives.
Closing pressure: The pressure used to close upper knives.
Max. delimbing pressure:
Min. delimbing pressure:
Min. Diameter and Max. Diameter:
are used for setting the correct pressure in proportion to the actual diameter.
Extra pressure at sensor signal: If the head has built-in sensors for increasing the pressure, an extra % can be added to the pressure, when the sensor gives signal.
Extra pressure at reversing: If the head requires extra pressure at reversing, a % can be set to increase the pressure at reversing.

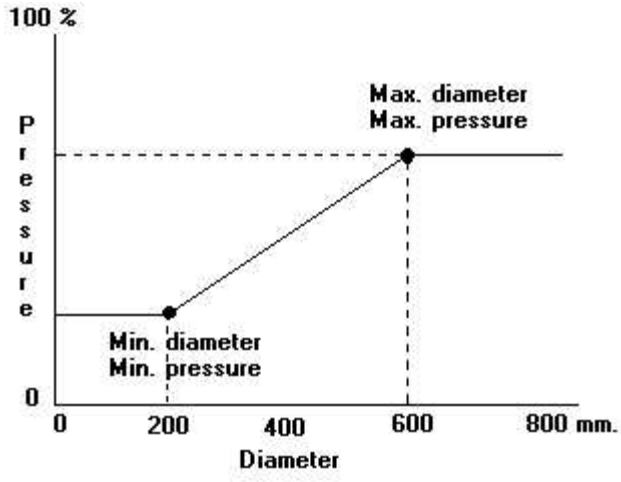


Proportional lower knives.

Opening pressure: The pressure used to open the lower knives.
Closing pressure: The pressure used to close the lower knives.
Max. delimbing pressure:
Min. delimbing pressure:
Min. Diameter and Max. Diameter:
are used for setting the right pressure in proportion to the actual diameter.
Extra pressure at sensor signal: If the head has built-in sensors for increasing the pressure, an extra % can be added to the pressure, when the sensor gives a signal.
Extra pressure at reversing: If the head requires extra pressure at reversing, a % can be set to increase the pressure.



The adjustable parameters for knives and rollers:



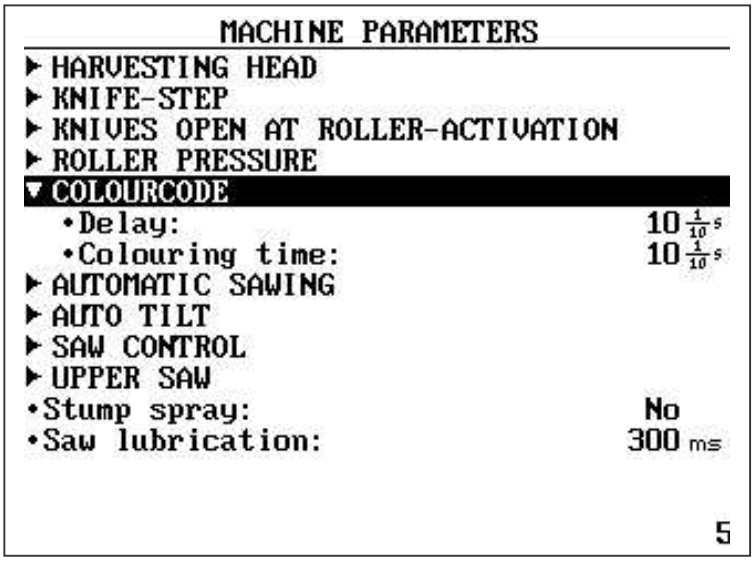
Colour Code:

During sawing, a colour code can be sprayed on to the part of the tree being cut.

Delay:
From commencing the sawing and until it begins to apply colour.

Colouring time
For how many tenths of a second colour is to be applied.

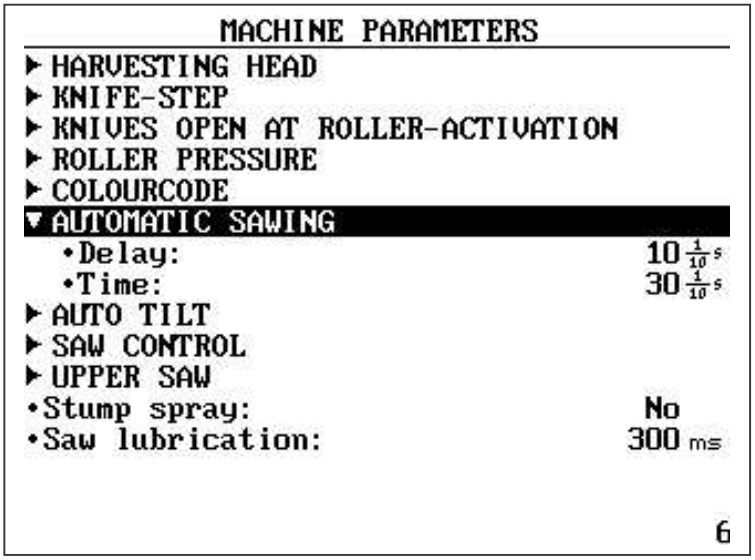
Note:
Under ”Set up” [F3] – “General” [F5] colour-marking is turned off/on.



Automatic Sawing:

Delay:
The number of tenths of a seconds’ pause from having reached the target until cutting
commences.

Time:
The period of time in which you saw.
- If you want to utilize saw control (see following page), you must key in a “Time”, which is long enough to never be exceeded, not even by the trees taking the longest time to saw.



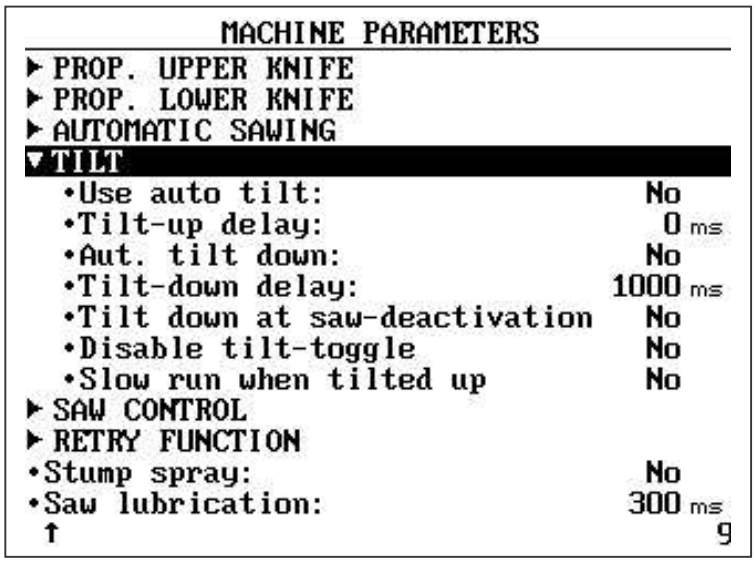
Techno-Matic A/S
Granlidevej 22, Hornum
DK-9600 Aars
Denmark

Tel: +45 96987711
Fax: +45 98661822

tm@techno-matic.dk
www.techno-matic.dk

Auto Tilt

The function "Tilt" offers you a lot of possibilities. If you e.g. choose "No" to both Auto tilt up and tilt down, the tilt function works completely manually. If you choose "Yes" to both, it all works automatically. You can also choose a combination (semi-automatic). Further you can choose delays. When knives/rollers are opened, the head tilts up after expiration of the delay. (Tilt up delay). When the head is clasping a tree and you saw, the head will tilt down after the expiration of the delay. (Tilt down delay). Instead of delay, you can choose tilt down, when the saw button has been released.
(Tilt down at deactivation of saw.)

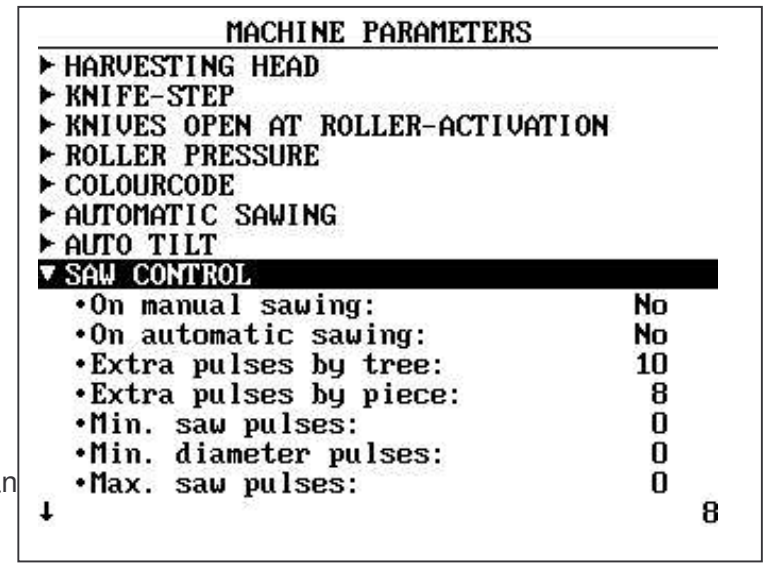


Disengage tilt-toggle
By choosing "yes" to this, the tilt valve will only be activated for as long as the button is being pushed at manual tilt up.

Slow speed at tilt up:
After having tilted up the head, here you can choose, if by pushing rollers forwards/ reverse they must only run slowly. (Speed adjustment: See manoeuvre pattern "Slow Speed").

Saw Control:

In order to save time, you can choose to work with saw control. By doing this, the saw does not go further through than is necessary for any given tree thickness.



At manual sawing:
Saw control can be set on/off here.

At automatic sawing:
Saw control can be set on/off here. When the tree is felled at the root, you can here enter an number of EXTRA saw pulses, that the is to run through after it ought actually to have cut through the tree (this is in order to saw completely through the root swelling).

Extra pulses by the tree:
In order to be sure that the tree is sawn completely through.

Extra pulses by the pieces:
In order to ensure that the saw cuts completely through the single pieces, when they are cut off, a number of EXTRA saw-pulses, that the saw is to run, can be entered here.
At the first sawing (when the tree is felled) “Extra pulses at the tree” (see above) is utilized.

Minimum saw impulses:
The number of saw pulses at the minimum diameter i.e. with the narrowest tree, which you want to be able to fell. Go in under ”SET UP” [F3] - ”ERROR” [F9] – “See encoder-details”.
The number of diameter pulses can be read off here with the saw in different positions.

Min. diameter pulses:
The number of diameter pulses at the minimum diameter i.e. at the narrowest tree, which you want to be able to fell. Go in under “SET UP” [F3] – “ERROR” [F9] – “See encode details”.
The number of diameter pulses can be read off here with the knives in different positions.

Max. saw pulses:
The number of saw pulses at the maximum diameter i.e. at the thickest tree, which you want to be able to fell. Go in under ”SET UP” [F3} - ”ERROR” [F9] - ”See encoder details”.
The number of saw pulses can be read off, with the saw in different positions.

Max. diameter-pulses:
The number of diameter pulses at the maximum diameter i.e. with the thickest tree, which you want to be able to fell. Go in under ”SET UP” [F3] - ”ERROR” [F9] – ”See encoder details”.
The number of diameter pulses can be read off here, with the knives in different positions.

Aut. reverse if stuck

Max. number of repetitions:
Here you can choose the number of times you want the head to reverse automatically, if the head is stuck (while you push the button forwards, without getting pulses from the measuring wheel).
Reverse length:
The length you want the head to reverse, if the head is stuck.

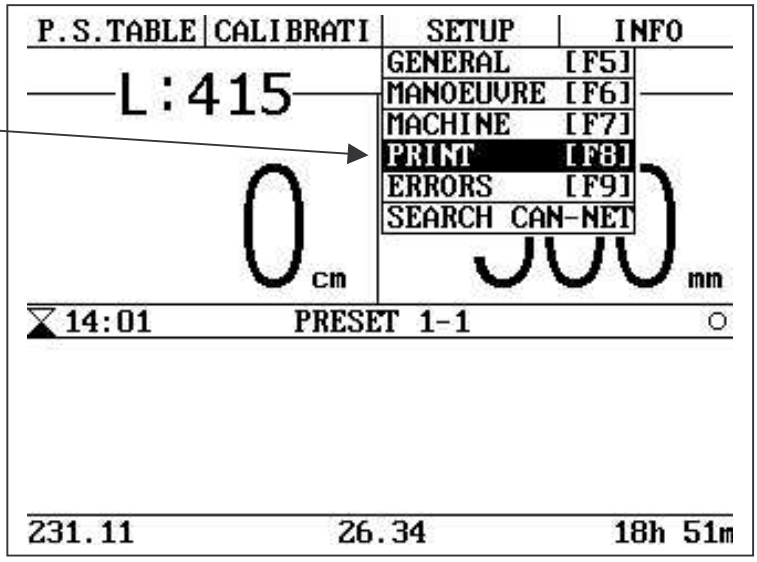
Top-saw (not shown)
Here you can adjust the lubrication of the top-saw and the distance between top-saw and "normal"-saw.
Stump-Spray:
When this line is highlighted, you can choose between "Yes" and "No" by pushing SET.
If "Yes" is chosen, the stump is sprayed the first time you cut, after tilt up.
Saw lubrication:

By pushing ENT, when this bar is highlighted, a window appears, in which you can enter a new value. The new value is accepted by pushing ENT.

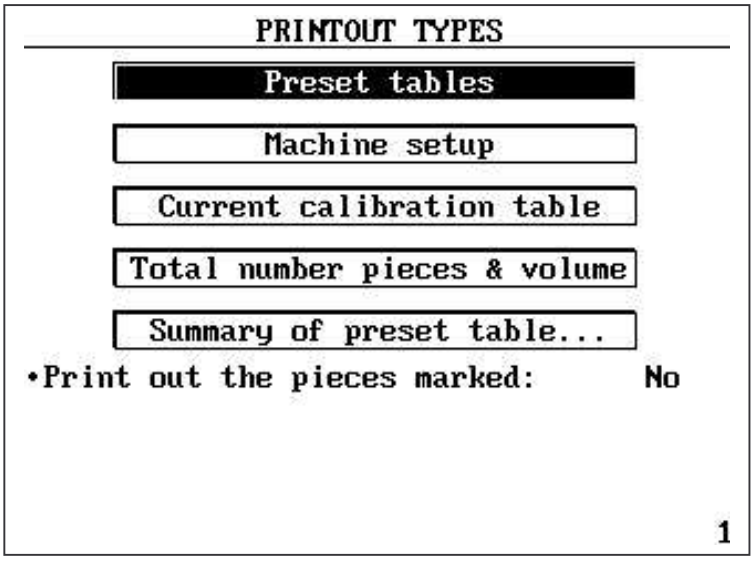
Every time you saw, the machine opens for oil to the saw during this period.

Print out types:
Press F3 for SET UP.

Press F8 for PRINT.



The following screen comes up:



Print out types:

Preset tables: When this text is marked and ENT is pressed, the set up's for all the active preset tables are written out on paper (see enclosure).

Machine setup:
When this text is marked, and ENT is pressed, the set up's for the whole machine / measuring system are written out (See enclosure).

Current calibration table:
When this text is marked and ENT is pressed, the points in the actual diameter calibration table are written out.

Total number of pieces and volume: When this text is marked and ENT is pressed, the total number of pieces & volume (See enclosure) is written out.

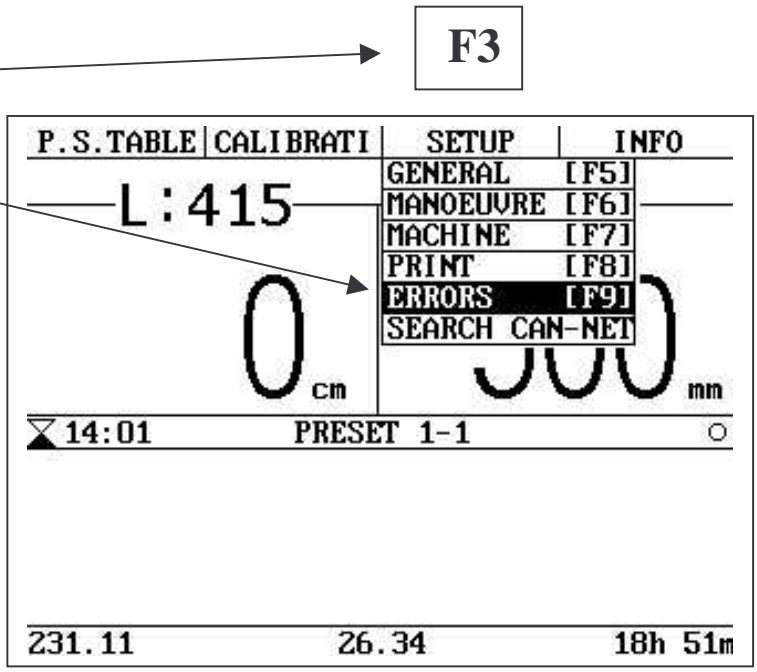
Summary of preset table: By pressing ENT, when this text is marked, you can key in a preset table number. By again pressing ENT you can print out the number of pieces and the volume of the active presets of this table (enclosure).

Printing out the marked pieces: When this line is displayed, you can by pressing SET choose on/off of printing out immediately on paper every marked piece.

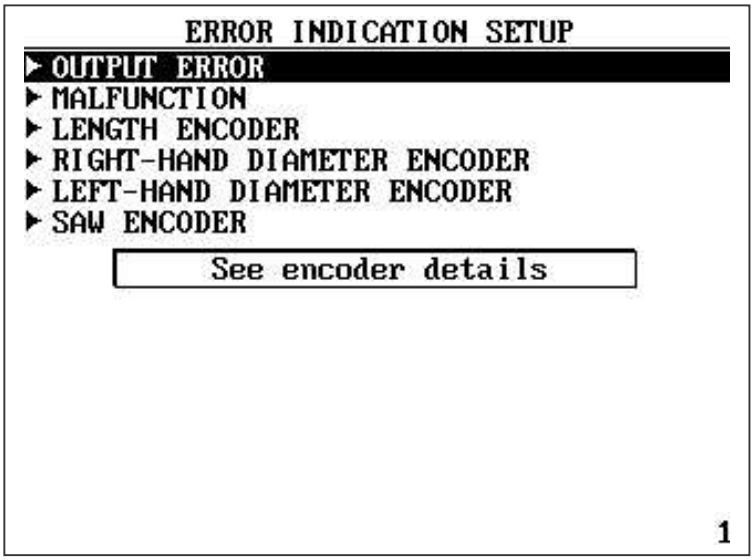
Indication of errors:

Press F3 for SET UP.

Press F9 for ERRORS.



The following screen comes up:



ERROR INDICATION SET UP:

OUTPUT ERROR – settings[1],
MALFUNCTION-Here you can enter, whether you want indication of the following errors:
Rollers – length-pulses
Open/Close left diameter-pulses
Open/Close right diameter-pulses
Saw out
Upper saw out
Roller pressure
LENGTH ENCODER – settings,
RIGHT-HAND DIAMETER ENCODER-settings,
LEFT-HAND DIAMETER ENCODER-settings,
SAW ENCODER- settings,
or
See encoder-details
is shown by pressing ARROW-down, until the text in question is displayed, whereupon ENT is pressed
(see also the following pages).

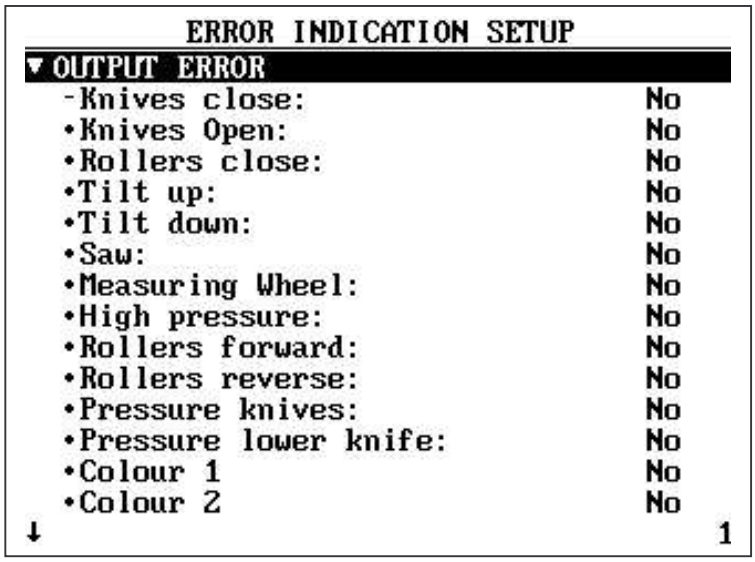
[1] When using DANFOSS outputs, errors will not be registered (menu-points won't appear).

OUTPUT ERRORS – settings:

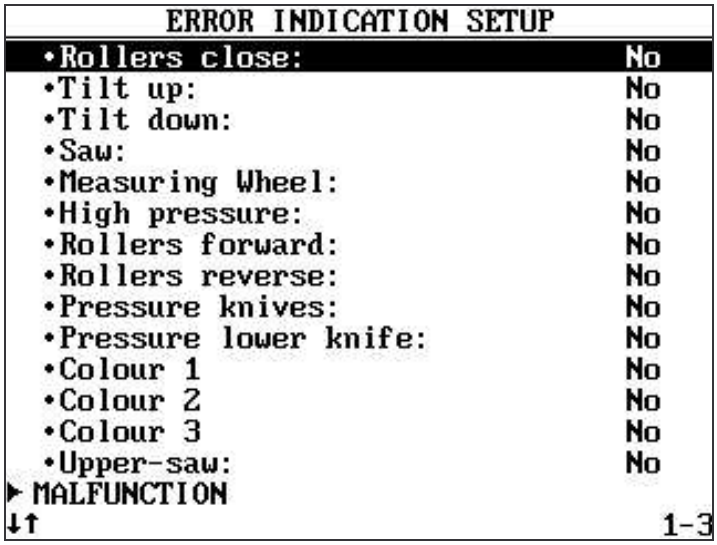
You can indicate here which errors you want shown on the display, if they are detected.

YES means: Show error.
NO means: Do not show error.

If the indicator to the left of the line flashes, it indicates that the error in question is
present at that moment.



Error indication continued – Please note that the arrows at the bottom indicate that there are more menu-point (you leaf down with the arrow).



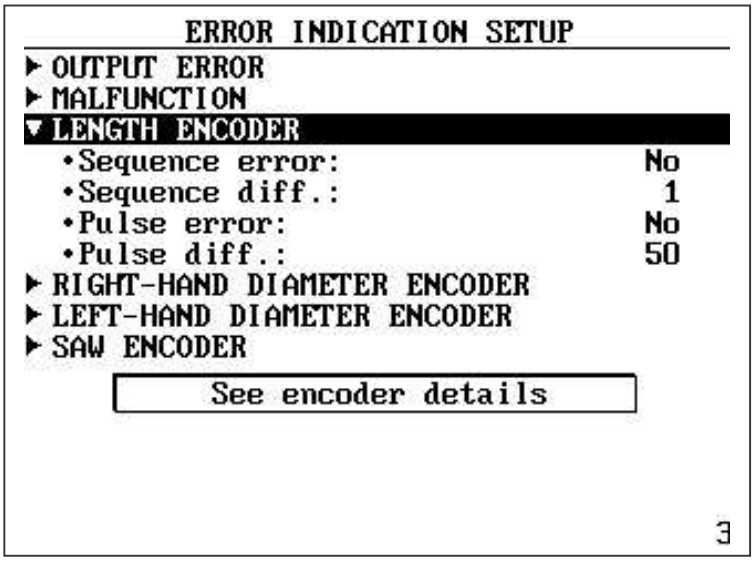
LENGTH ENCODER-settings:

Sequence error:
On-/off choice of whether a sequence error should give a warning indication on the screen.

Sequence diff.:
The number of sequence errors that are tolerated before a warning indication is finally given on the screen.

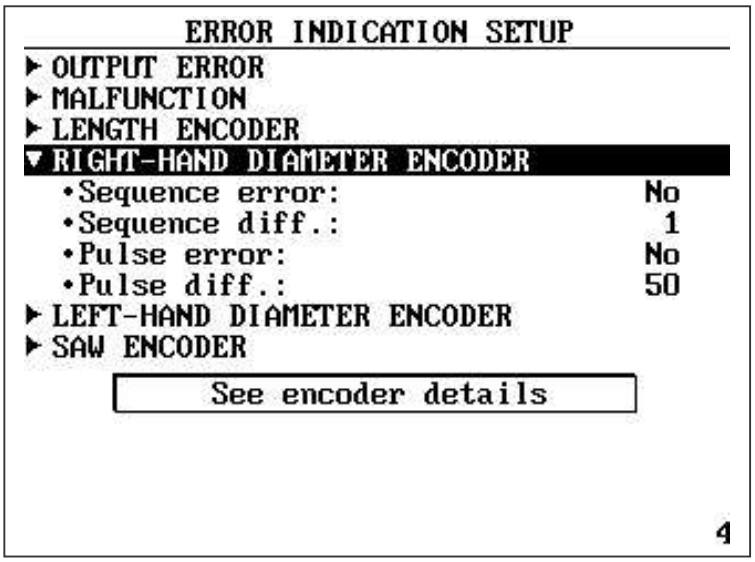
Pulse error:
On/off choice of whether a pulse error should give a warning indication on the screen.

Pulse diff.:
The difference in the number of pulses from the encoder exits A and B, which are allowed before a warning is finally given on the screen.



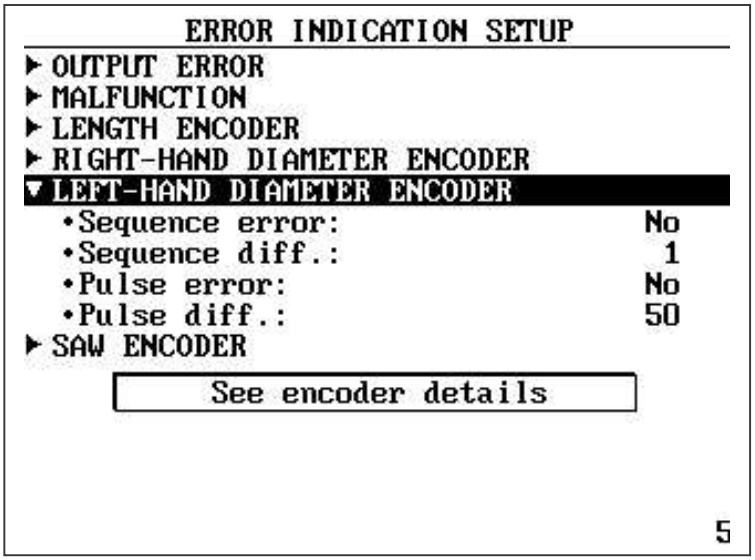
RIGHT-HAND DIAMETER ENCODER-settings:

- Please see the description above on ”LENGTH ENCODER”.



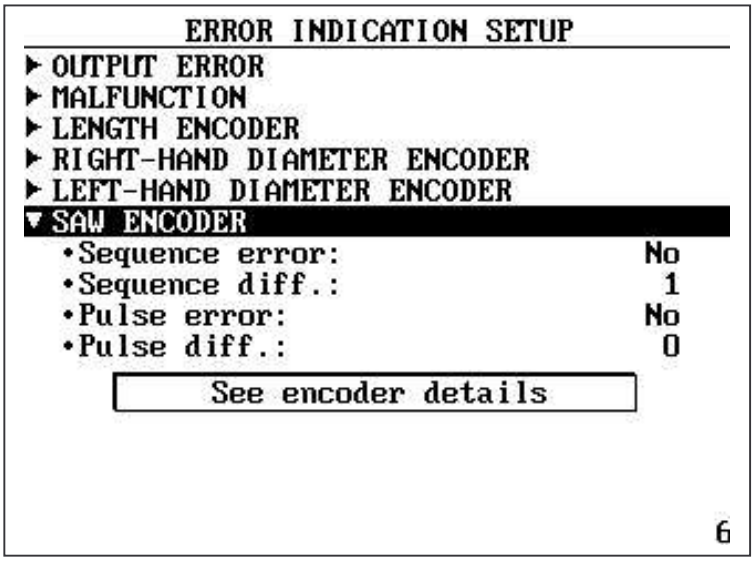
LEFT-HAND DIAMETER ENCODER-settings:

Please see description on the previous page to “LENGTH ENCODER”



SAW ENCODER-settings:

Please see the description on the previous page to ”LENGTH ENCODER”



See encoder-details:

For each of the four encoders (“pulse emitters”)
details are shown regarding the pulse counts.

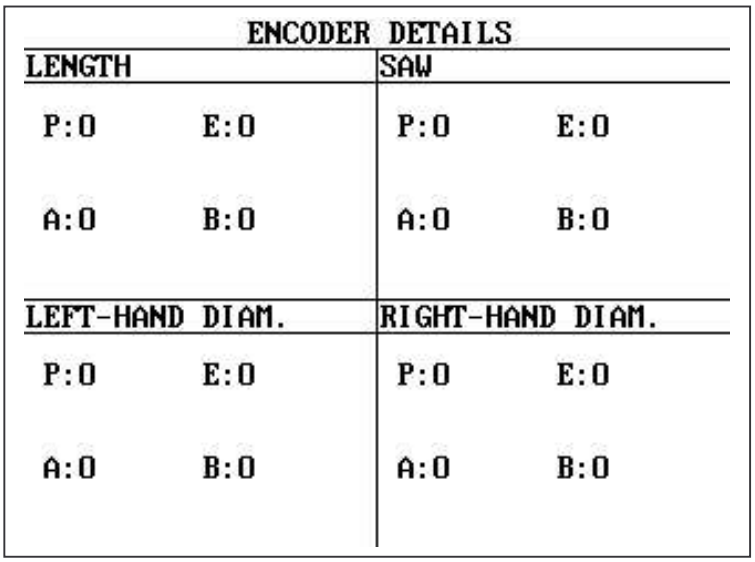
Each encoder has two exits (A and B),
which send pulses (according to a staggered pattern)
to the module/control box on the felling head.

P: Position for the relevant movement (is controlled from A and B).

E: Error, i.e. the difference between A and B of the encoder in question.

A: The number of pulses which are registered on the encoder’s terminal A.

B: The number of pulses which are registered on the encoder’s terminal B.

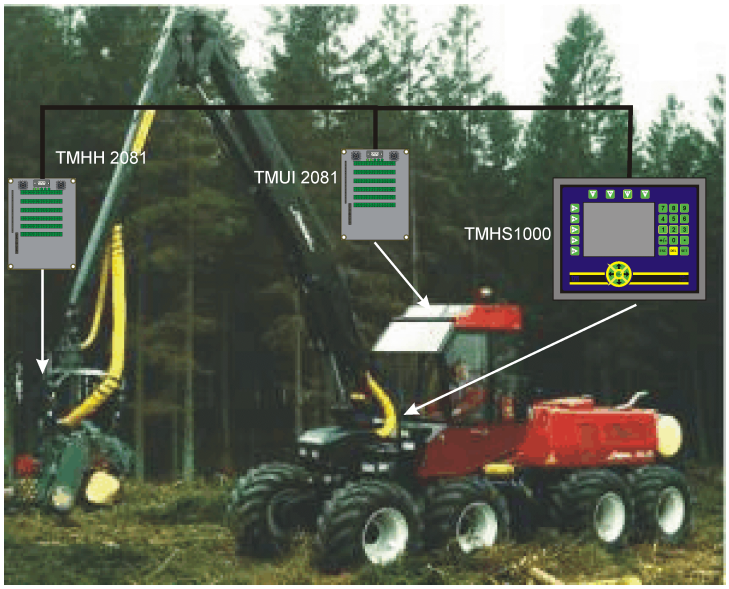


Searching CAN-net:

For the inter-connection of the 3 units:

1) "TMHH 2081" (Tech Measure Harvesting-head. Sensor-inputs, and outputs for hydraulic valves)
2) "TMUI 2081" (Tech Measure User Interface. Servicing the control-buttons on the seat)
3) "TMHS 1000" (Tech Measure Harvesting System. The display-box. Type: TMC2400)

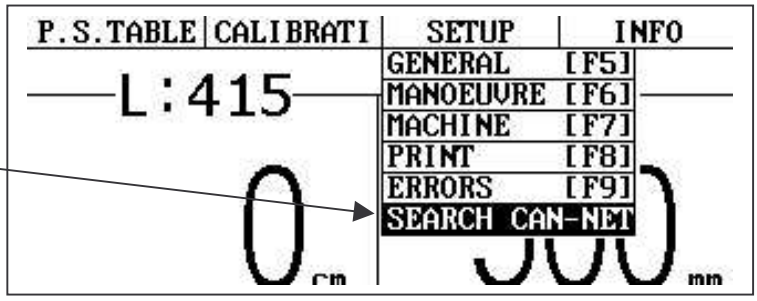
We use the international standard connection-system:
CAN (Controller Area Network), which uses a two-wire connection to transfer of a large amount of data in high speed.



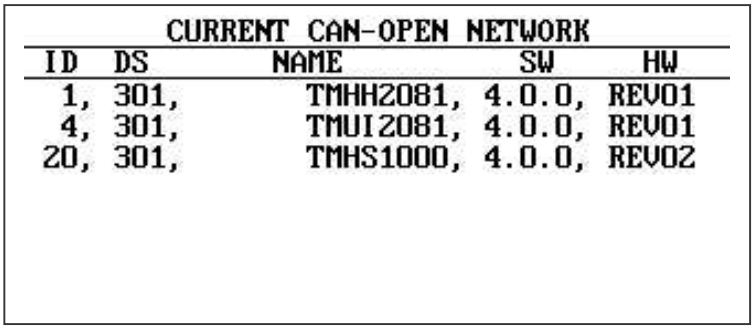
CAN is an extremely reliable system. Nevertheless any communication system might "drop out" (i.e. if the cables are cut), and for troubleshooting purposes, we have integrated a CAN-net scanner. By means of this you can tell, whether the units are able to communicate.

Press F3 for SET UP.

Scroll down to "SEARCH CAN-NET". Press "ENT" to start searching the CAN-net.



Normally, the result should be like this (SW and HW numbers might differ):



Press ESC in order to return to normal operation.

GOOD TO KNOW !!!

It is a good idea to take back-up and a print-out of your production and data every day.

Should the system “get stuck”, meaning that the main screen does not appear when turning on the system, you can retrieve your data in the following way:

Turn off the system, connect the printer, keep the 0-key pressed down, while turning on the system. Keep the 0-key pressed down until the print out has started. Now the system will print out the set up and your production data.

Then you turn off and switch on the system again, while keeping SET and F5 pressed down, which will reset the computer, meaning that all data are lost.

Then you can enter the various settings again, however, you cannot enter your production data.

Technical specifications:

You will find the technical specifications in the separate “Technical manual”.

Examples of printer write-outs:

```
     PRESET TABLES SET UP
---------------------------------------
Date: 16/02/01  Time: 13:53:25  No: 7
---------------------------------------

Preset  1-1
---------------------------------------
Timber type:               Cut to length
Length:                          415 cm

Preset  1-3
---------------------------------------
Timber type:               Cut to length
Length:                          248 cm
Payment length:                  240 cm
Min. length:                     245 cm
Max. length:                     255 cm
Min. diameter:                   140 mm
Max. diameter:                     0 mm
Test interval:                     0
Colour code:                        None
---------------------------------------

Preset  2-1
---------------------------------------
Timber type:     Rounded off full length
Top diameter:                    230 mm
Min. length:                    1000 cm
Max. length:                    1050 cm
Min. diameter:                   230 mm
Max. diameter:                     0 mm
Test interval:                     0
Colour code:                        None
---------------------------------------

Preset  3-3
---------------------------------------
Timber type:     Rounded off full length
Top diameter:                    250 mm
Rounding off:                      0 cm
Min. length:                    1000 cm
Max. length:                       0 cm
Min. diameter:                   250 mm
Max. diameter:                     0 mm
Test interval:                     0
Colour code:                        None
---------------------------------------
```

Print out of "Activated Calibration table", example:

DIAMETER CALIBRATION TABLE 2

```
---------------------------------------
Date: 16/02/01  Time: 14:39:42  No: 7
---------------------------------------
Length factor:       5.70 pulses/cm
---------------------------------------
Pulses      Diameter
   0  ->      500 mm
 206  ->      336 mm
 236  ->      314 mm
 285  ->      282 mm
 351  ->      230 mm
 378  ->      207 mm
 416  ->      174 mm
 458  ->      131 mm
 491  ->      102 mm
---------------------------------------
```

Print out of ”Total number of pieces and volume”, example:

TOTAL NUMBER AND VOLUME
Task nr.: 11

```
----------------------------------------
Date: 16/02/01  Time: 14:40:43  No: 7
----------------------------------------
Preset            Piece:        Volume:
 1-1                  94          17.74
 1-2                 514          20.88
 1-3                 189          16.21
 2-1                   9           5.68
 3-1                   0           0.00
 3-2                   0           0.00
 3-3                   0           0.00
----------------------------------------
Total:               806          60.51
Waste:                            12.36
Number of Trees:                    189
G15 time:                     4hrs 42min
----------------------------------------
```

Print out of "Summary of preset table…", example:

PRESET TABLE 1
Task no: 11

```
---------------------------------------
Date: 16/02/01  Time: 14:41:52  No: 7
---------------------------------------
Preset            Piece:        Volume:
 1-1                  94          17.74
 1-2                 514          20.88
 1-3                 189          16.21
---------------------------------------
Total:               797          54.83
Waste:                            12.15
No. Of trees:                       180
G15 time:                   4hrs 42min
---------------------------------------
```