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Tech Measure 2200lite How to get started

Revision: 4.0.2

TABLE OF CONTENTS

1 HOW TO GET STARTED

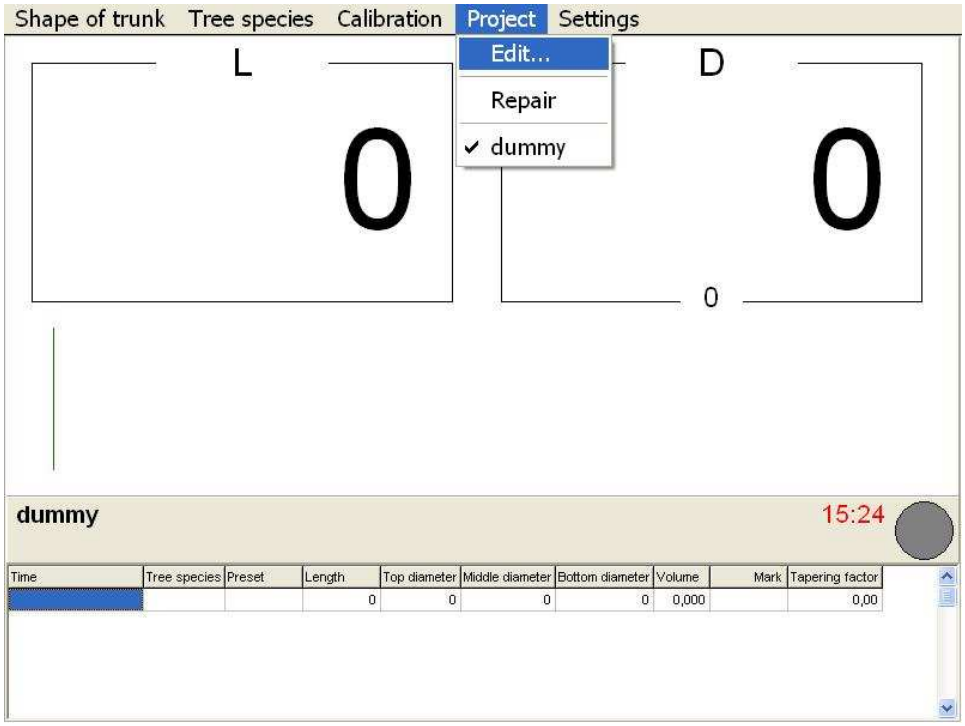
The basic settings to get started are already loaded by Techno-Matic A/S. However, there are a few settings, which are necessary to set according to the actual felling head and to the actual project.

A few parameters which are required:

- **A maneuver pattern**
- **At least one tree specie**
- **At least one preset in the actual tree specie, containing a length and a diameter**
- **A proper length calibration in order to make the logs in the right length, and a diameter calibration to fulfill the diameter requirements.**

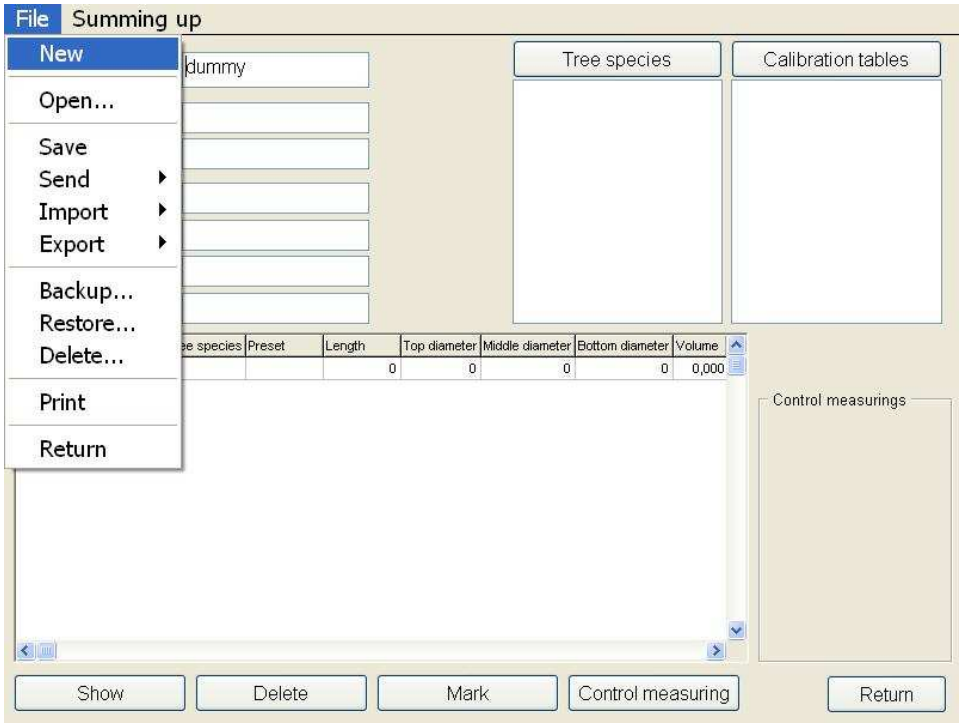
2 PROJECT MENU

The main screen looks like this when you start-up the program for the first time.
Press **"Project"** on the menu bar. Only the Dummy project is present.
Press the menu point **"Edit…"** and you will enter the Project editing window.

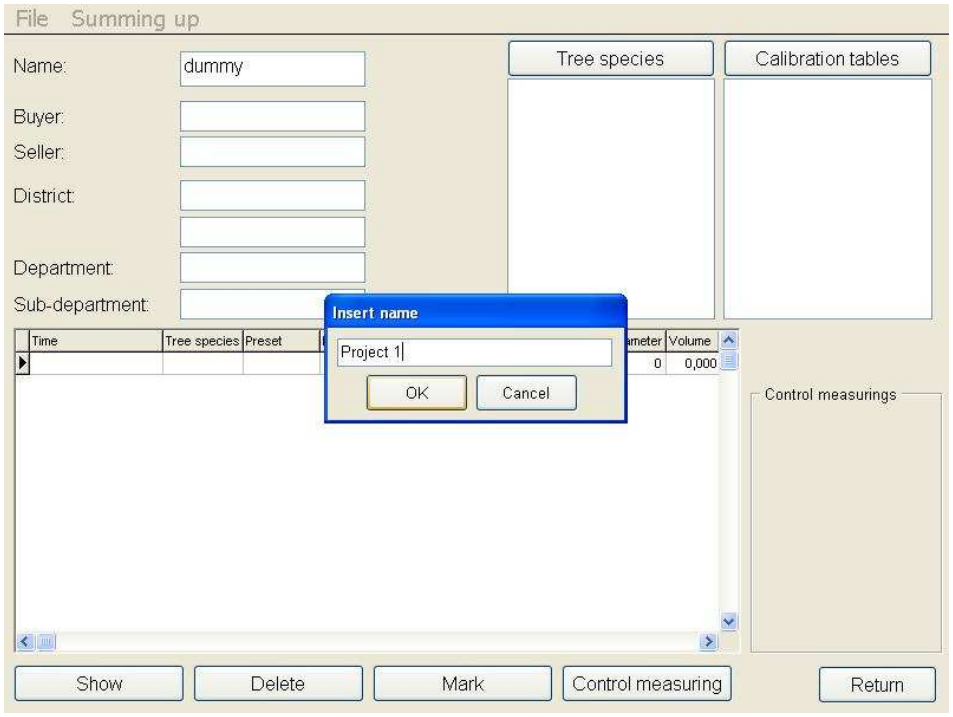


2.1 First project

In the “Edit project” window, press the menu point **“File”** and **“New”** to create a new project.

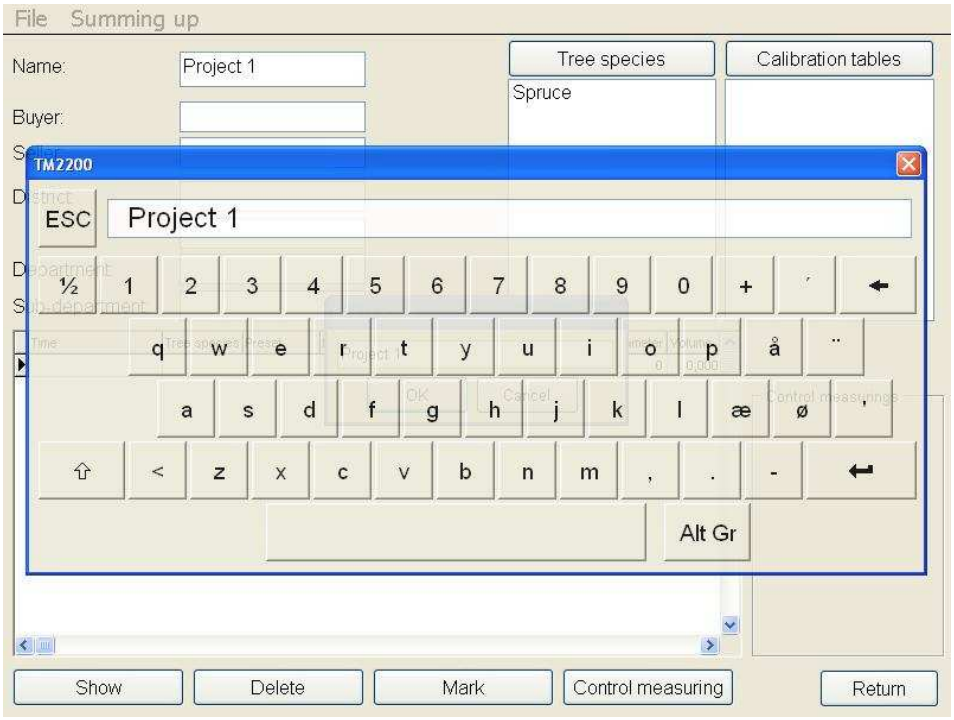


A box will pop up saying “**Insert name**”. If you have no keyboard connected to the PC, you can press the white bar to use the “on screen keyboard”



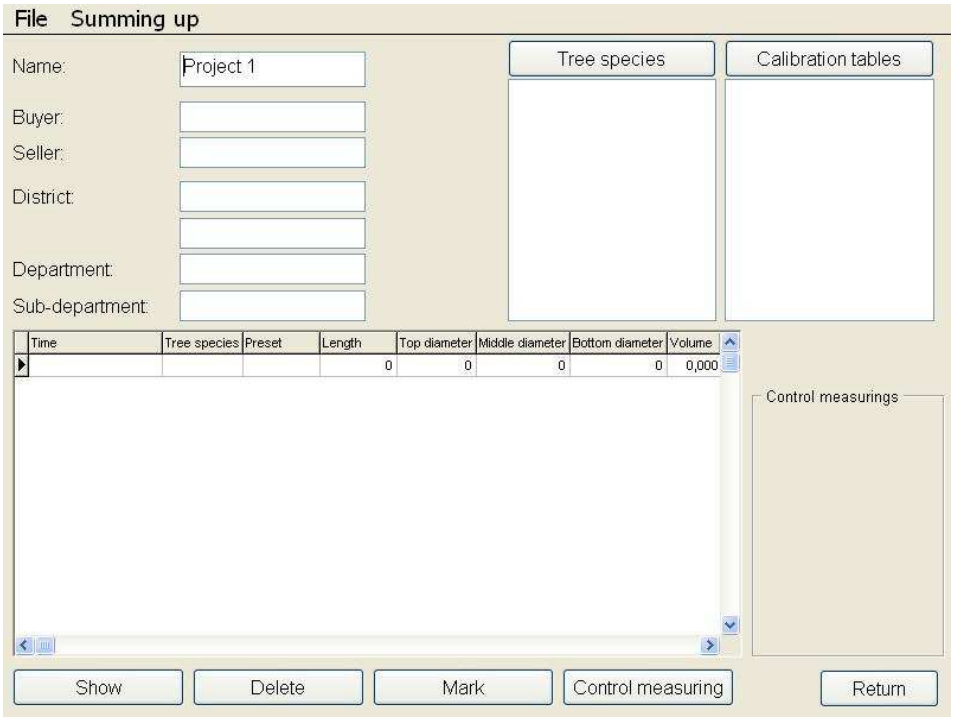
2.2 On screen keyboard

Type the name you want for the project. **Notice! Use letters or numbers, and never let the name start with a "space" and avoid special signs as /, % and others like these.** To read more about keyboard see "**Use of virtual keyboards**"
When you have written the wanted name, press "enter". The on-screen keyboard disappears and the name is now in the Message box. Press the "OK" button and the project is created.



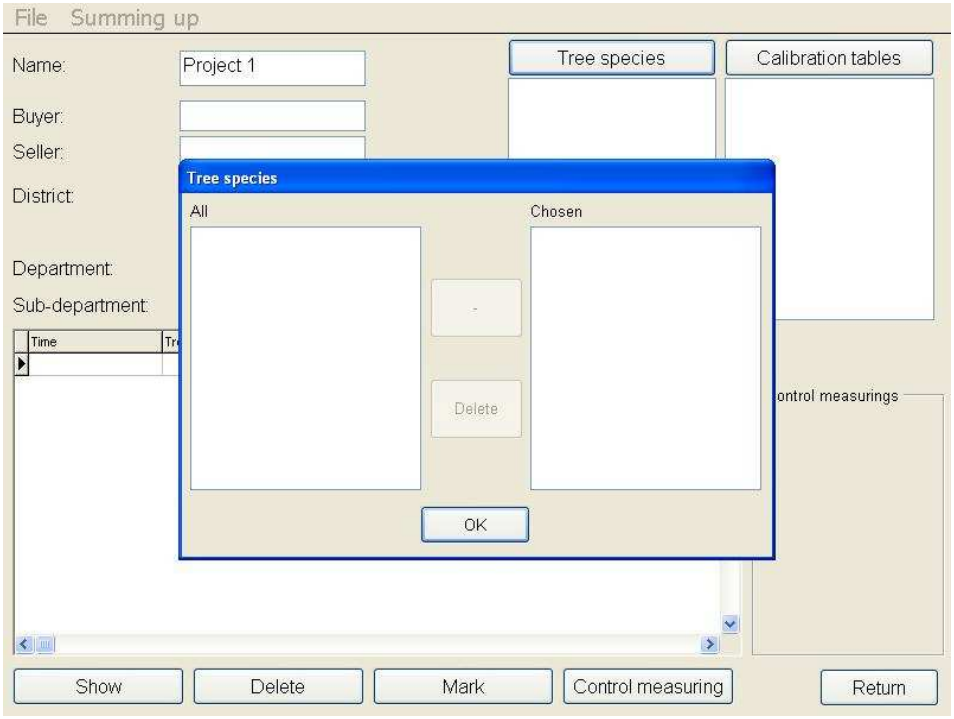
2.2.1 General project information

If further information is required, you can now write this in the boxes below the project name. Buyer (of the timber), Seller (forest owner) or maybe forest district etc.



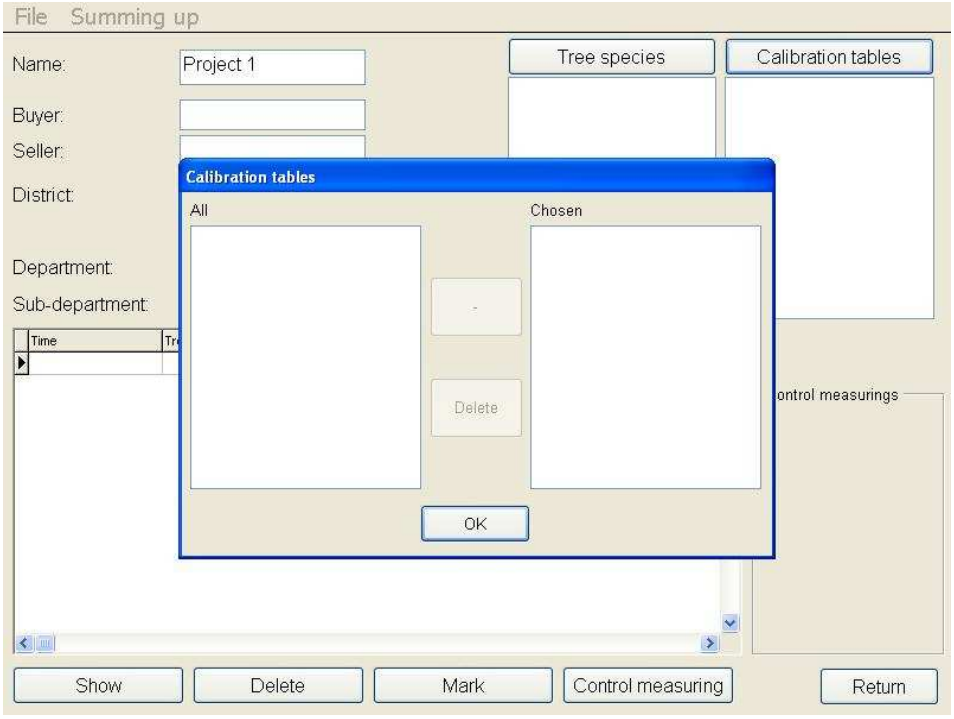
2.3 Tree species

The very first time you start-up the TM2200 program, there might not be any tree species present.
Press the **"Tree species"** button to see what might be present. At the left side, (below "All") you see tree species, which are saved from former projects. As you are just about to start, there are no species saved yet. When you have finished your first project, read the chapter: "End a project and start on a new"
Press the **"OK"** button to close the window.



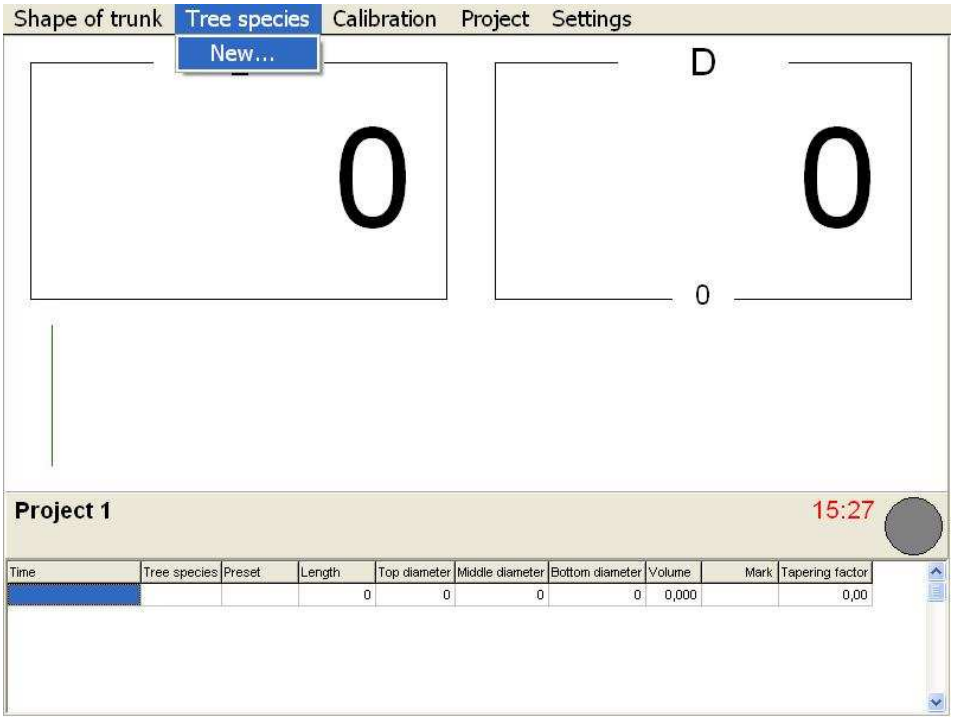
2.4 Calibration tables

The very first time you start-up the TM2200 program, there might not be any Calibration tables present. Press the "Calibration tables" button to see what might be present. At the left side (below "All") you see Calibration tables, which are saved from former projects. As you are just about to start, there are no calibration tables saved yet. When you have finished your first project, read the chapter: "End a project and start on a new" Press the **"OK"** button to close the window again

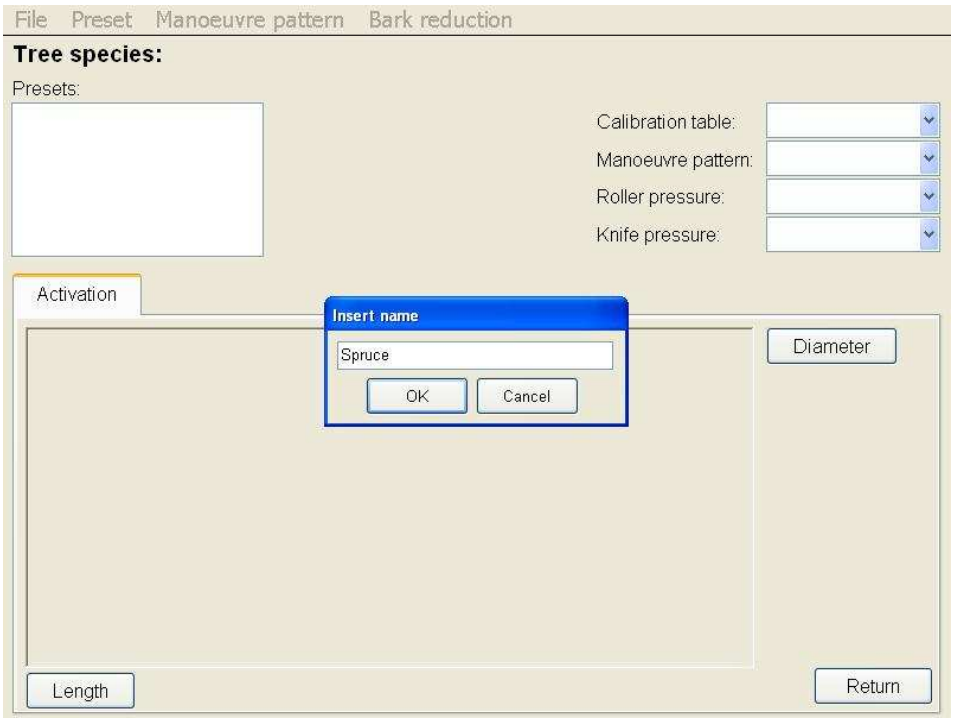


2.5 New tree specie

Now you have created the project; press the **"Return"** button to go back to the main screen.
In the main screen, press "**Tree species**" on the top-menu bar and press "**New**"

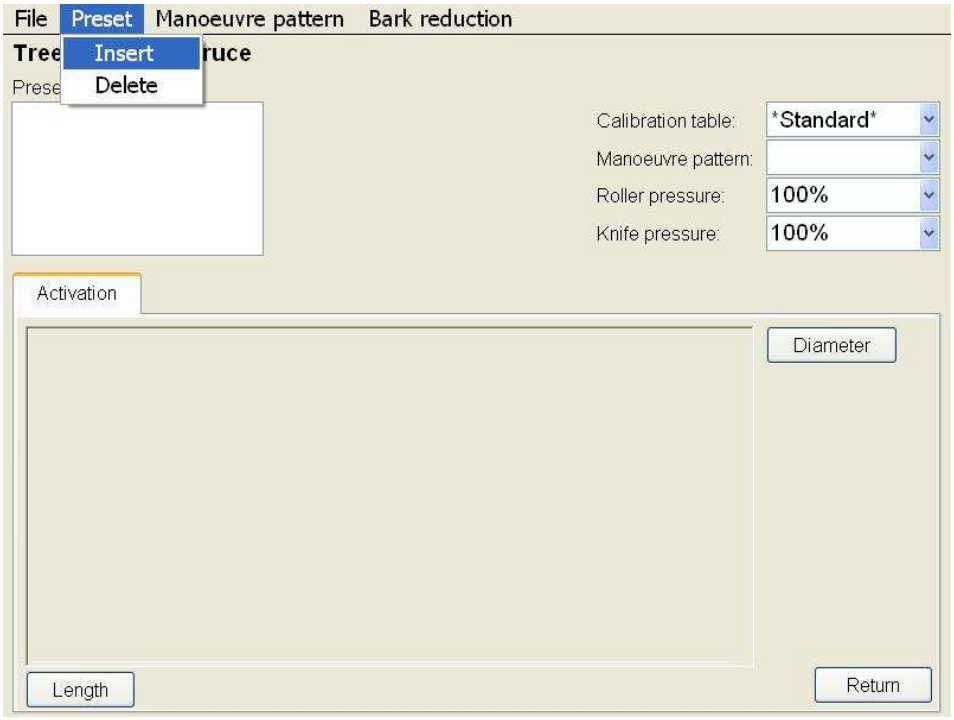


The Tree species window appears, and you can type the wanted name of the tree specie in the **Message box** and then press the **"OK"** button

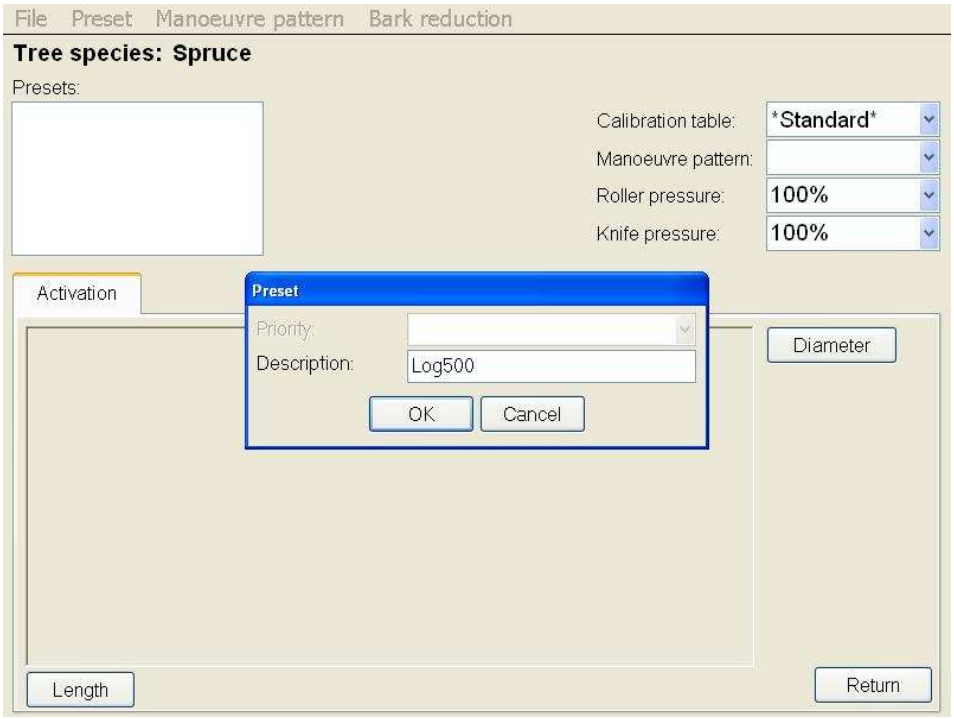


2.5.1 New preset

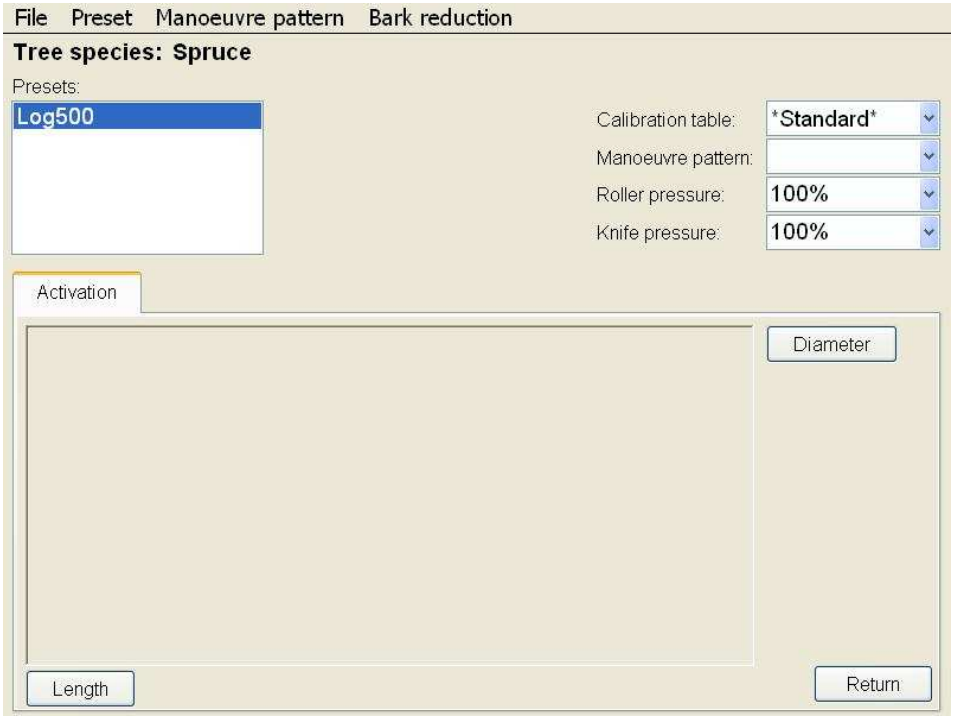
Now press **“Preset”** at the top-menu bar, and then press **“Insert”**



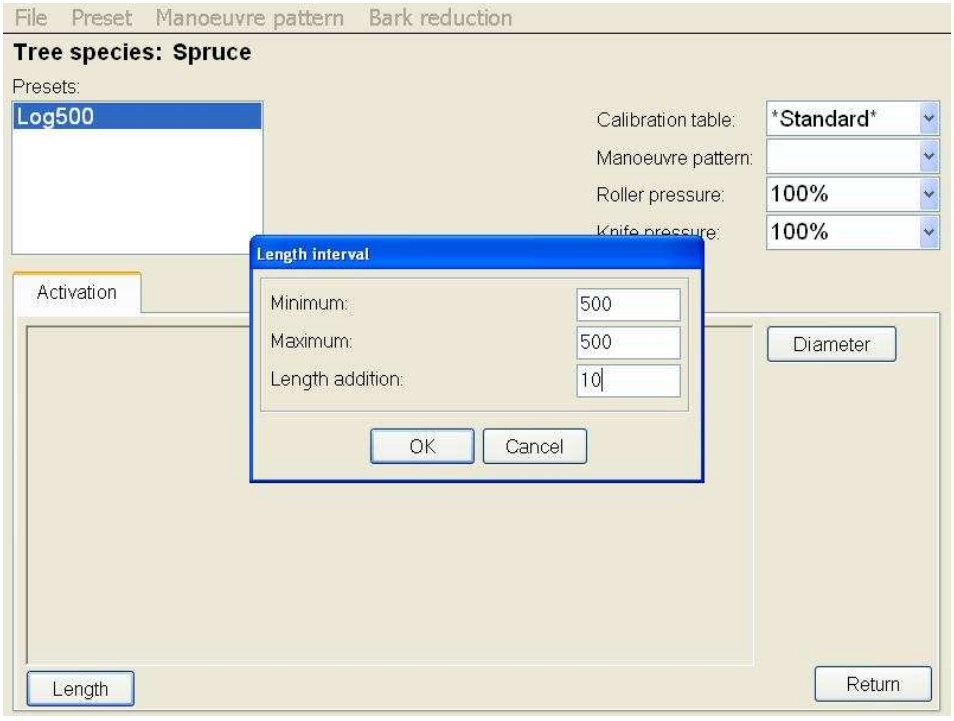
A message box appears and now type a name to the preset, and then press the **“OK”** button



2.5.2 Preset length and diameter

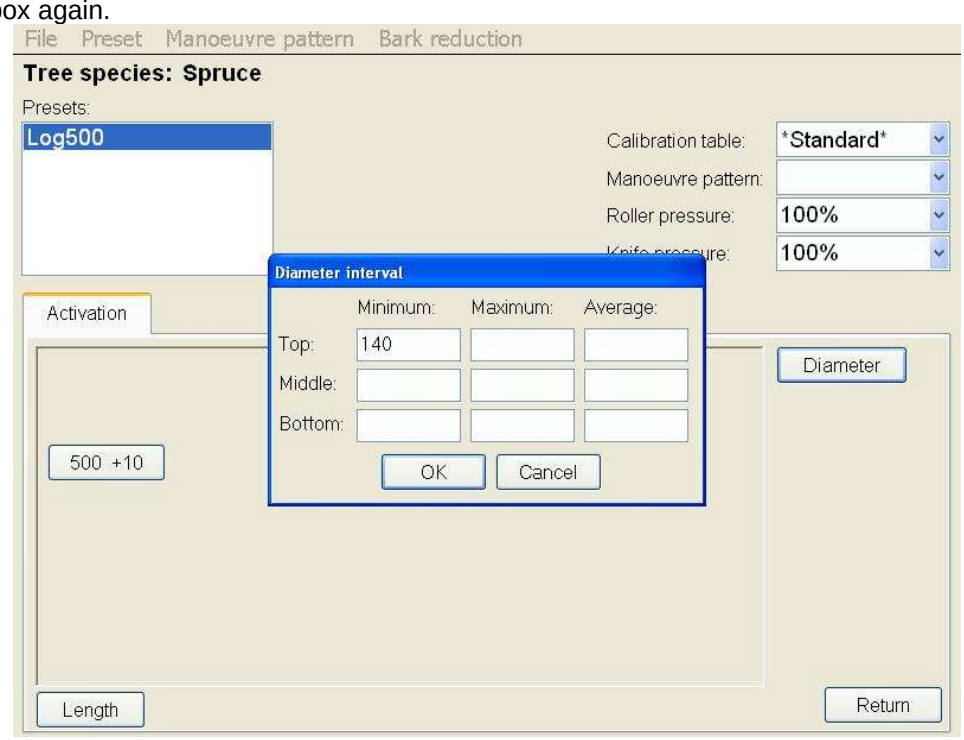


The first preset is now created. Now press the **"Length"** button (lower left side of the screen). All settings are in centimeters. (Ft. if Unit is set to "Imperial).
The message box "Length interval" appears. Type a "Minimum length", a "Maximum length" and maybe a "Length addition".
This example has 500 cm. in both min. and max. length and an addition of 10 cm. The system will now always stop at minimum 510 cm. And maximum 510cm. + the tolerance set in Maneuver pattern, (See Chapter x)
Another example could show 500 cm. in Minimum length and 510 cm. in Maximum length with no length addition. Here the system will stop from 500cm. And up to 510 cm + the tolerance set in Maneuver pattern, (See Chapter x)



Press the **"OK"** button to close the message box and you have the first length.

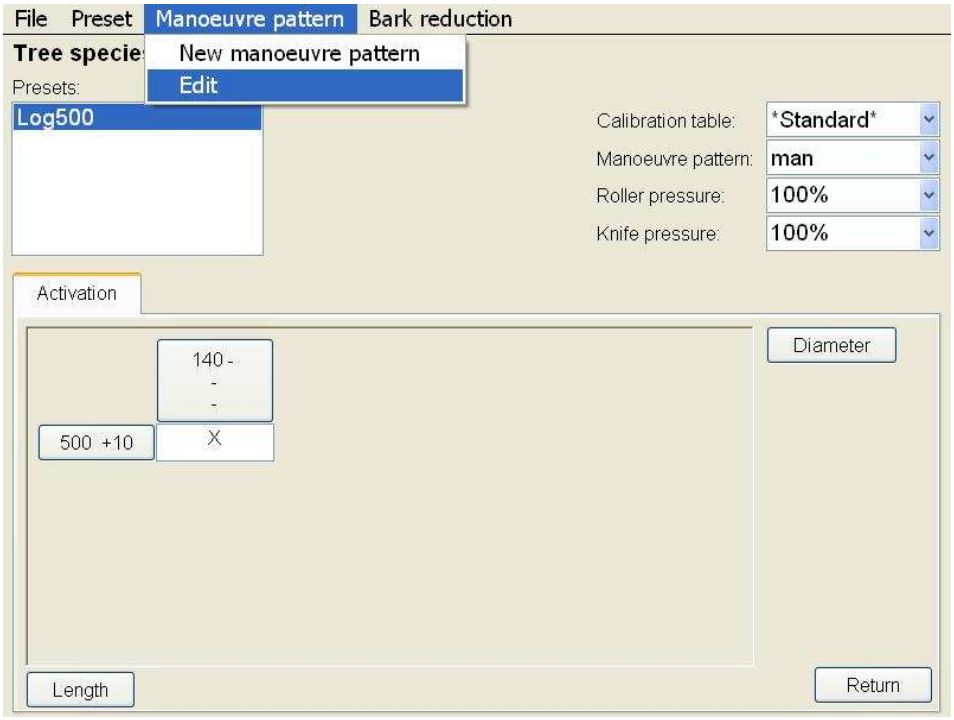
Now press the "**Diameter**" button (Mid right side of the screen) for adding "Diameter Interval" to the preset. All settings are in millimeters. (Inches. if Unit is set to "Imperial").
Here are several options for setting special criteria to the preset. Standard is to set only one or two of the criteria. However, the system can work with more criteria to the preset and even if all are set to a value. Notice! If the only criterion for the preset is that the diameter must not be less than xxx millimeters, there is no reason to set any more criteria. When the necessary diameter criteria are entered, press the **"OK"** button to close the box again.



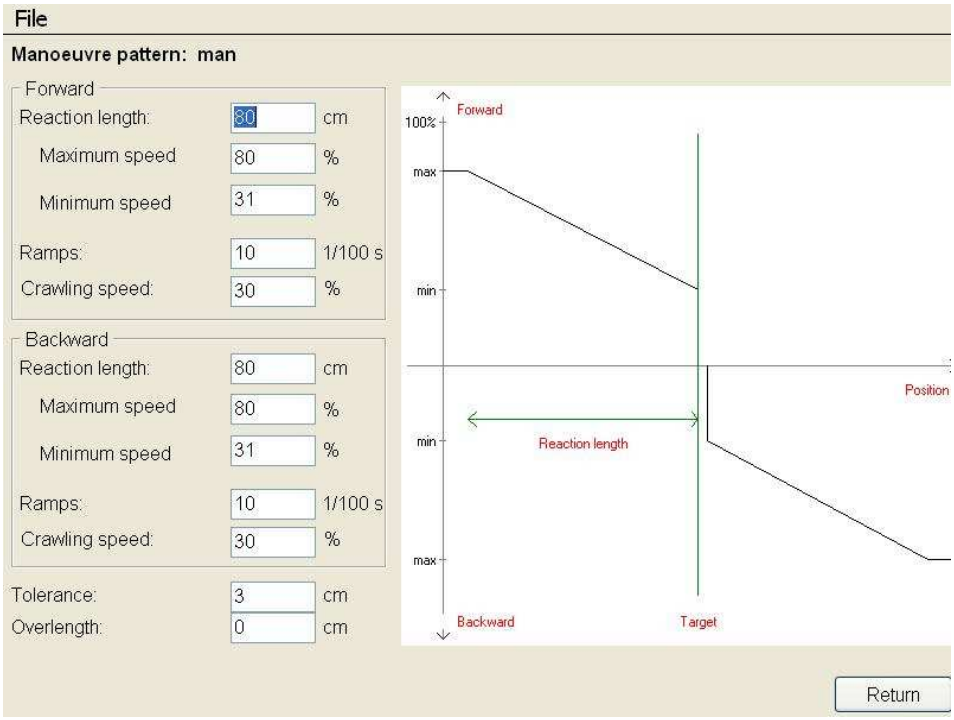
You will now see the length and the diameter are displayed in the mid left of the screen. The "X" tells that this preset is active, (the system can chose the preset) if you delete the x, this preset will not be produced. (See Chapter x)

2.6 Maneuver pattern

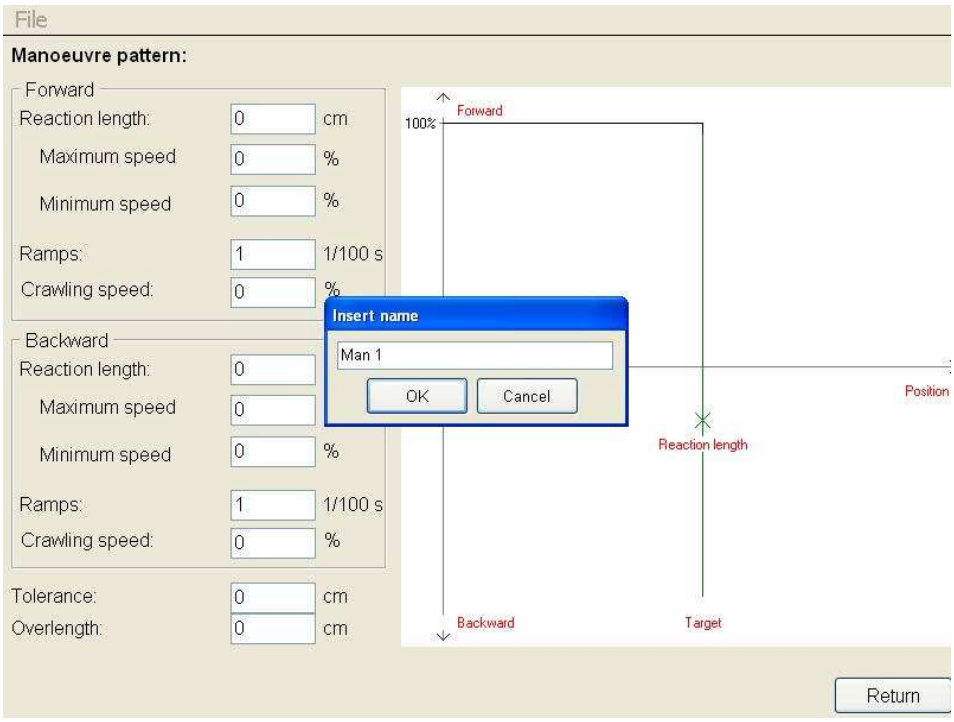
Now you only need a “Maneuver pattern” to the preset. On the upper right side of the screen, you can choose between the maneuver patterns in the Drop down menu. Choose the “Man” which is pre-installed and then press **“Edit”** in the **“Maneuver pattern”** menu, to enter the Maneuver pattern window.



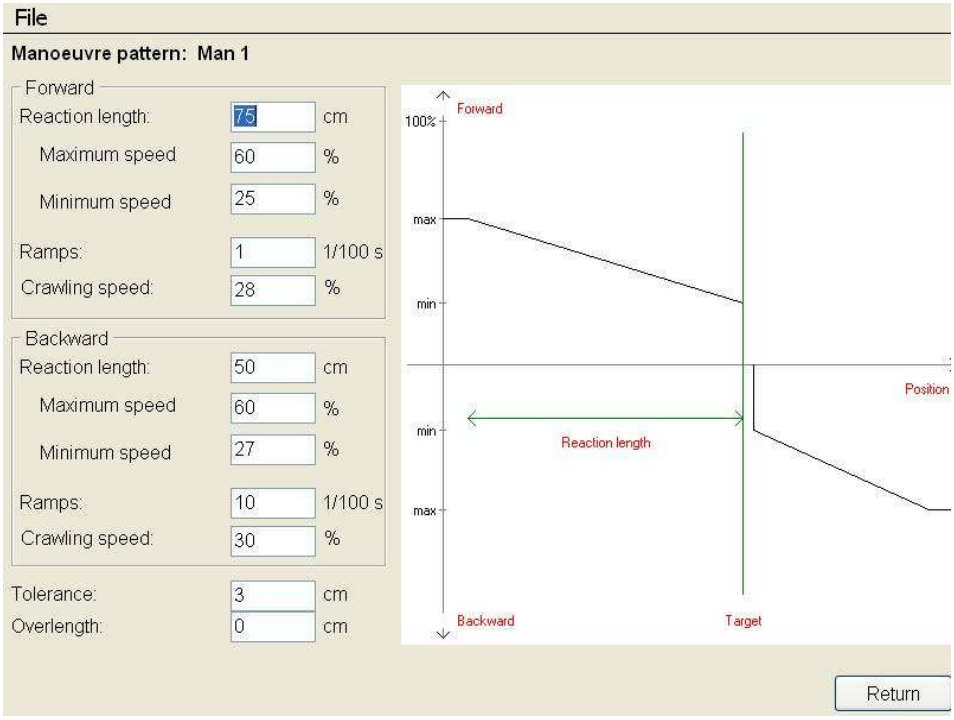
Maneuver pattern are settings for how the feeding rollers work. To the left are the editable settings, and on the graph at the right hade-side you see the settings graphically. Try to change a value in a box and watch the graph.
The “pre-installed” settings can typically be used as a start, but especially the Minimum speeds can need to be set individually for each valve. When finished, press the **“Return”** button for returning to the “Tree specie” window



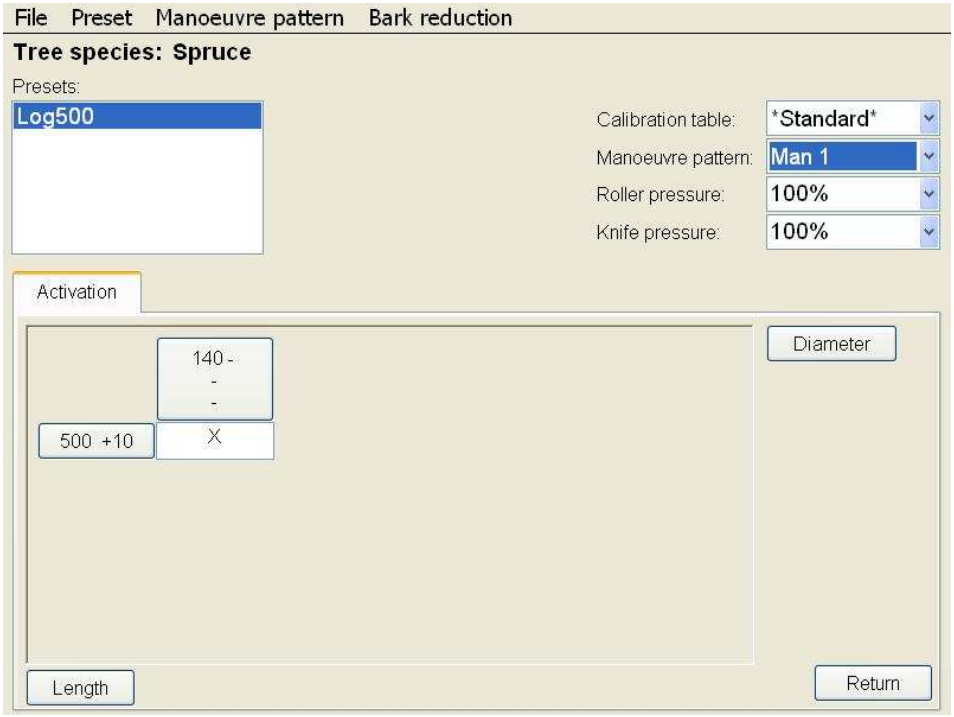
If you leave the maneuver pattern box blank and then instead press **"New maneuver pattern"** you can make your own from scratch. Insert a name, press "OK" and insert values at the left side. You will see the graph be drawn according to your entered values. Notice! Tolerance is the "cutting window" in which the system will stop and accept the length. E.g. if the preset say 500 cm. + 10 cm. the "cutting window" will be from 510 cm to 513 cm.



When all settings are done and the "Maneuver pattern" window looks like this, (not necessarily the same values) you press the **"Return"** button to come back to the "Tree specie" window.



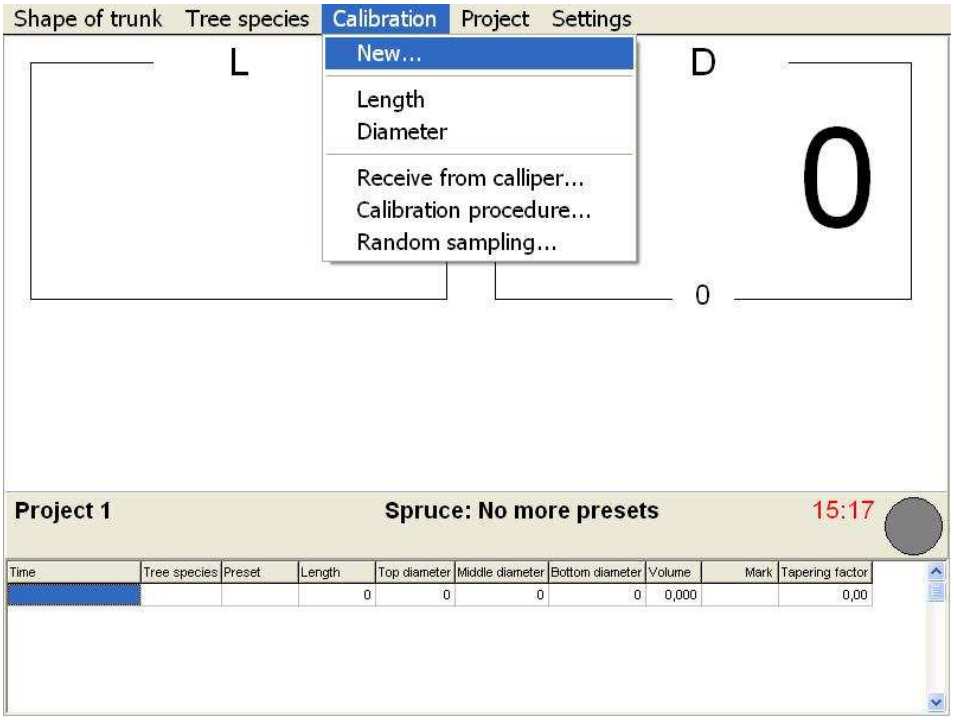
This was the first preset. Now for adding another preset, press **"Preset"** at the top-menu bar, and then press **"Insert",** and resume the procedure as many times as you need. There are no limits for the numbers of presets. Place the preset with the highest diameter criteria as the first preset and the second best below the first, and so on until the last preset, which normally are "**Pulp**" or "**Firewood**" with no diameter criteria. The reason for placing the presets this way, is to have the automatic change of preset to work properly. It will work from first preset and automatically change to the next, if the measured diameter cannot fulfill the first presets diameter criteria.



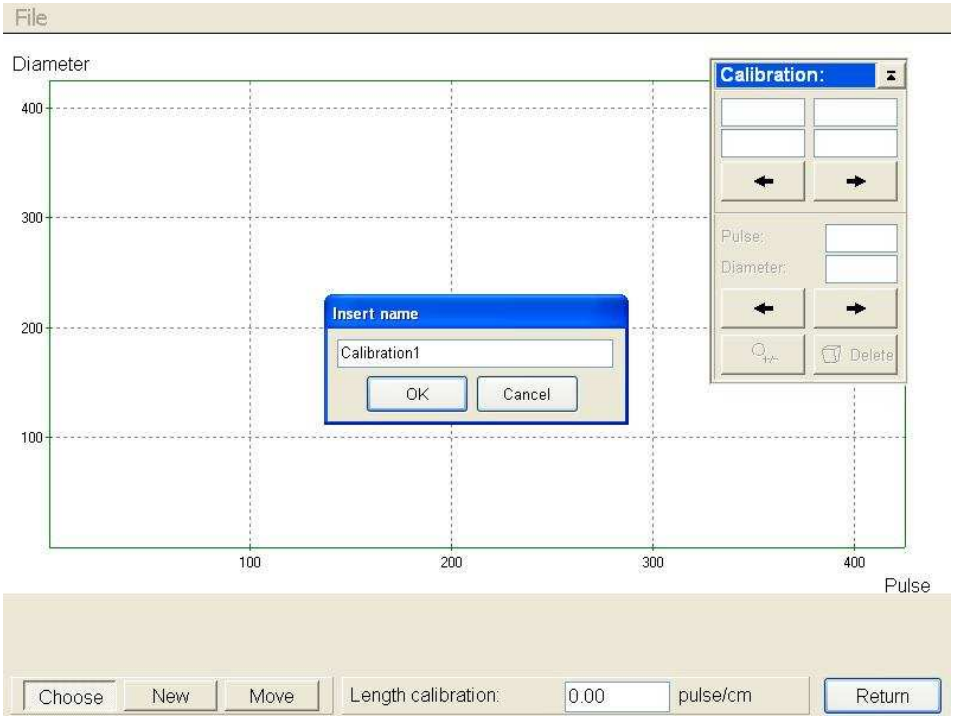
When you have inserted the number of presets you need, press **"Return"** to go back to the main screen.

2.7 Calibration

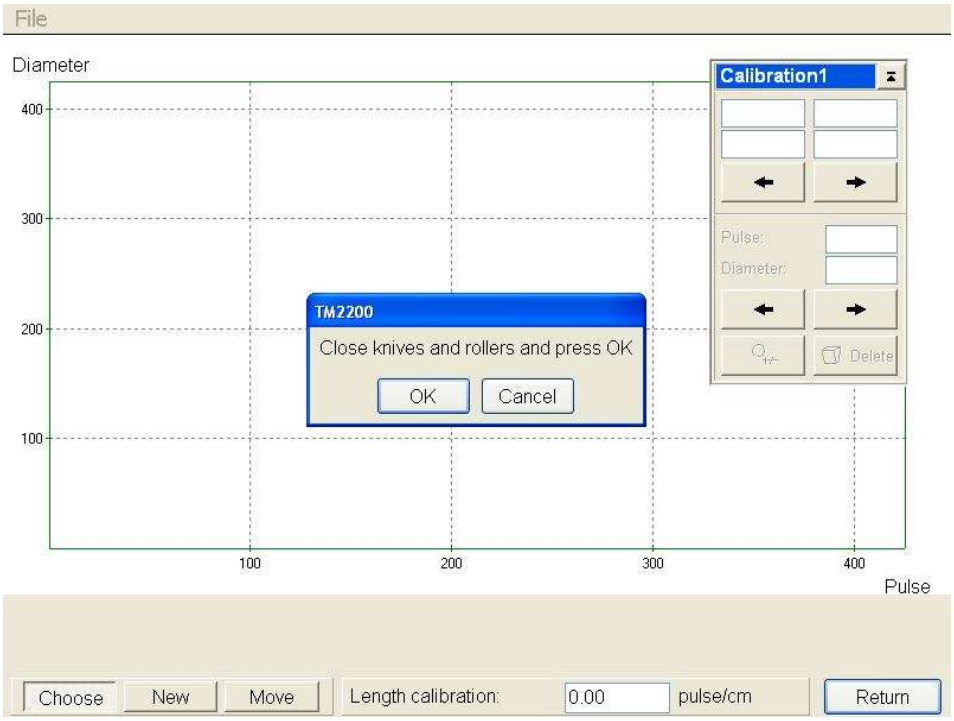
The last thing to do before you are ready to fell your first tree is to make a length and a diameter calibration. Press **"Calibration"** and **"New"**



You are now in the Calibration window. Type a name to your new calibration and press "**OK**". Before you press the "**OK**" button make sure the head is fully opened.

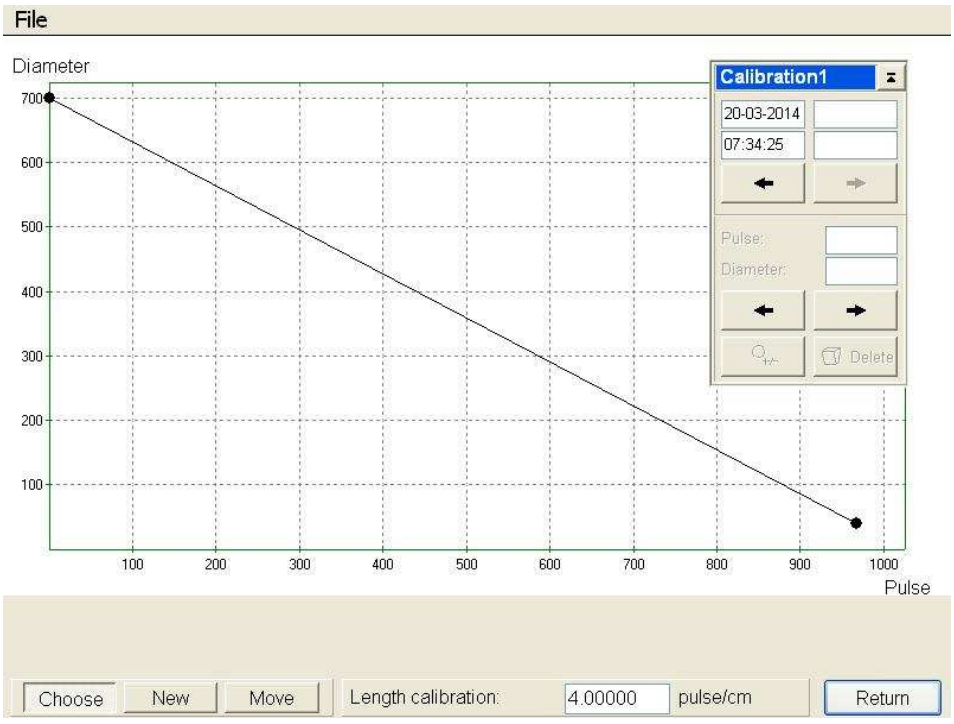


The message box tells you to close knife and rollers. When you see the knives and rollers are fully closed, you press "**OK**" and the new diameter calibration is made.



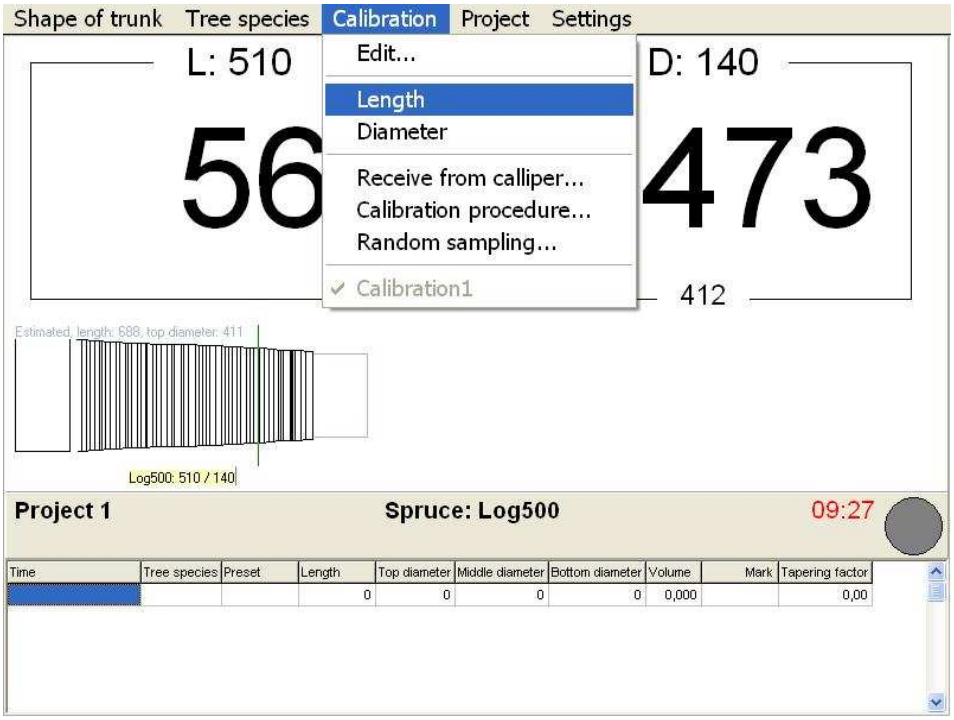
As you see it only has two points, the full open diameter and the full closed diameter. The vertical scale on the left hand side is the diameter, and the horizontal scale at the bottom is the pulses coming from the diameter encoder(s)

Press now the **"Return"** button to return to the main screen

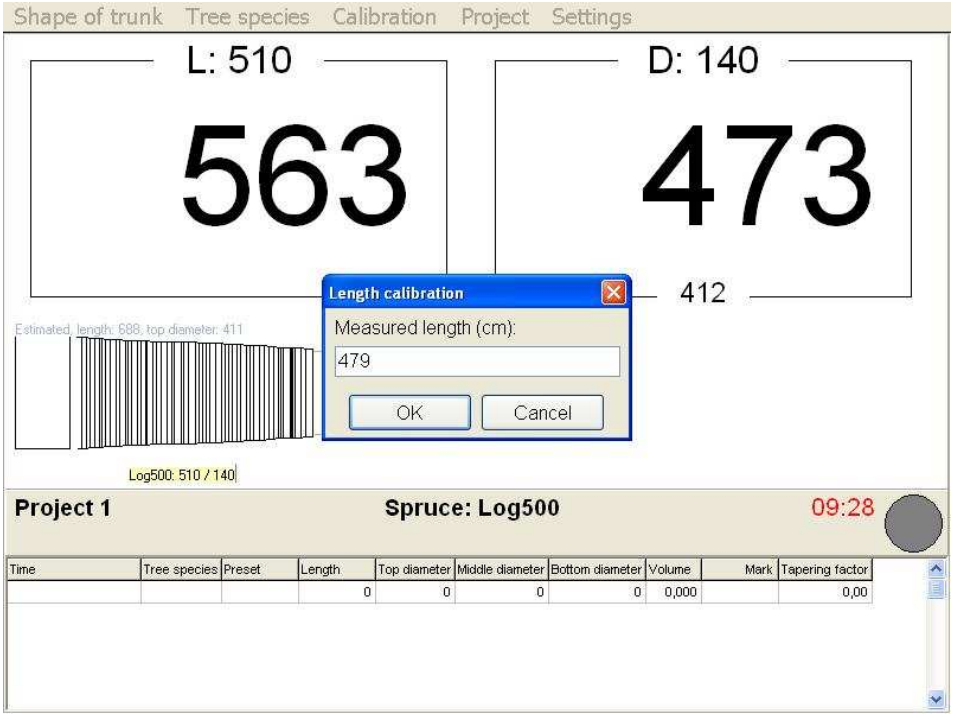


2.7.1 Length calibration

Now you only need a length calibration to be ready. Fell a tree and feed forward some meters. Stop the feeding and go out and measure the feeded length. You shall measure from the bottom end of the tree, and to where the saw is supposed to cut the tree. When returned to the cabin, press “Calibration” and “Length”.



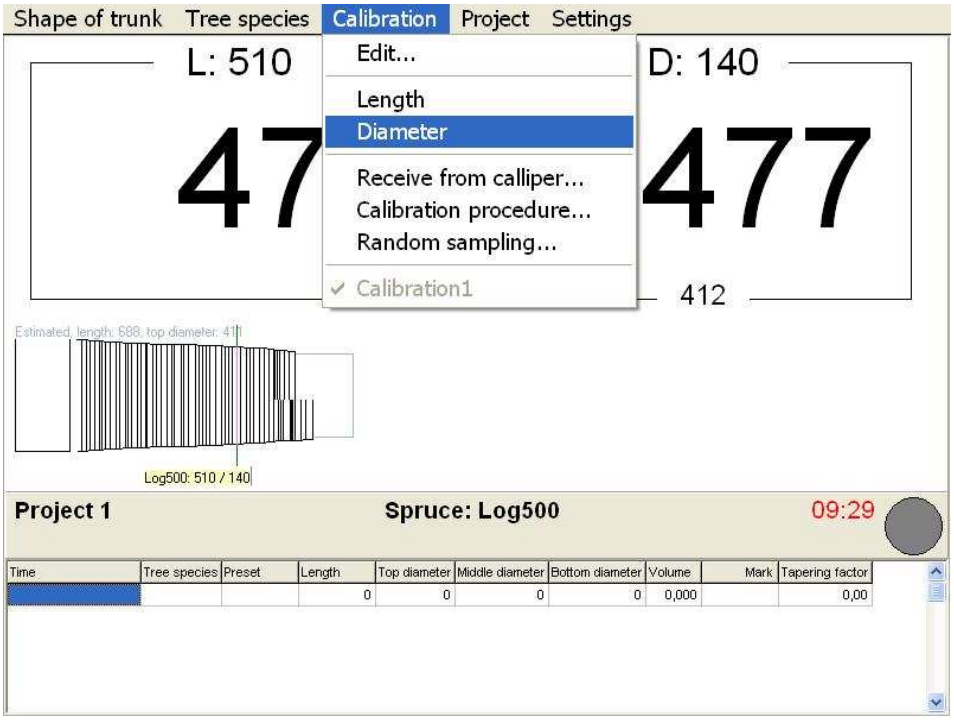
In the message box, you now enter the measured length and press the “OK” button. Watch the length that now has changed to the length you entered. (Notice! Due to calculation, the length can vary + -1 cm.)



Now the length calibration is done, and the diameter has the “ground calibrator can now start the job. Remember to do control measuring occasionally. The most important control measurings are at the start of a new project.

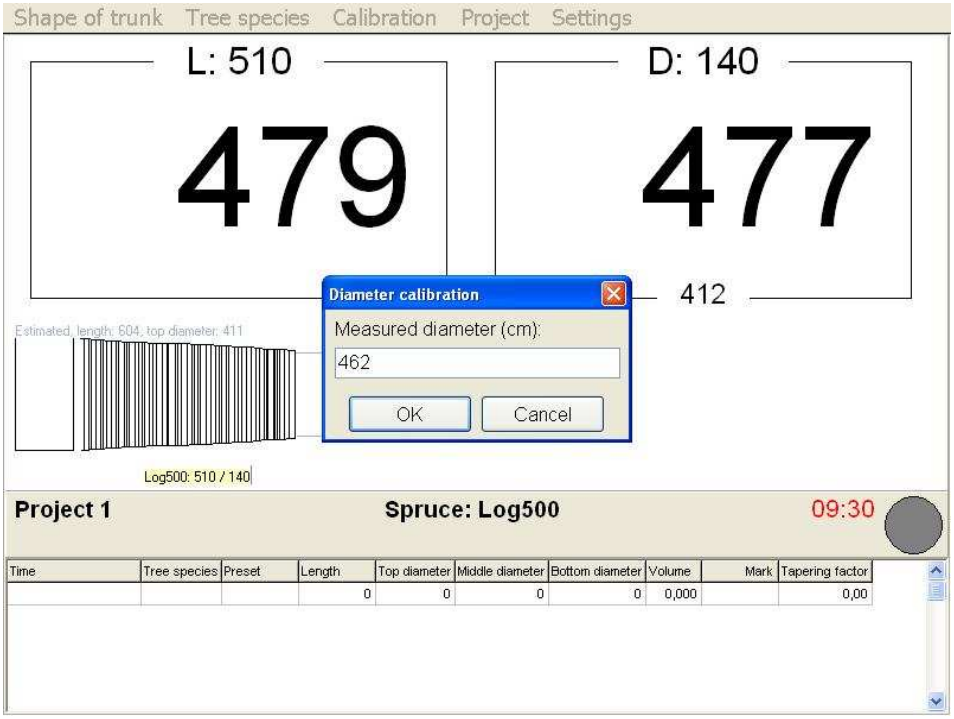
2.7.2 Adding points to Diameter calibration

After processing a few trees, we recommend to make some more points on the diameter calibration.
An easy way to do this is: Fell a tree, feed a couple of meters forward, go out and measure the diameter by the point where the saw would hit the tree if you had used the saw. Once you are back in the cabin, press “Calibration” and the menu point “Diameter”.

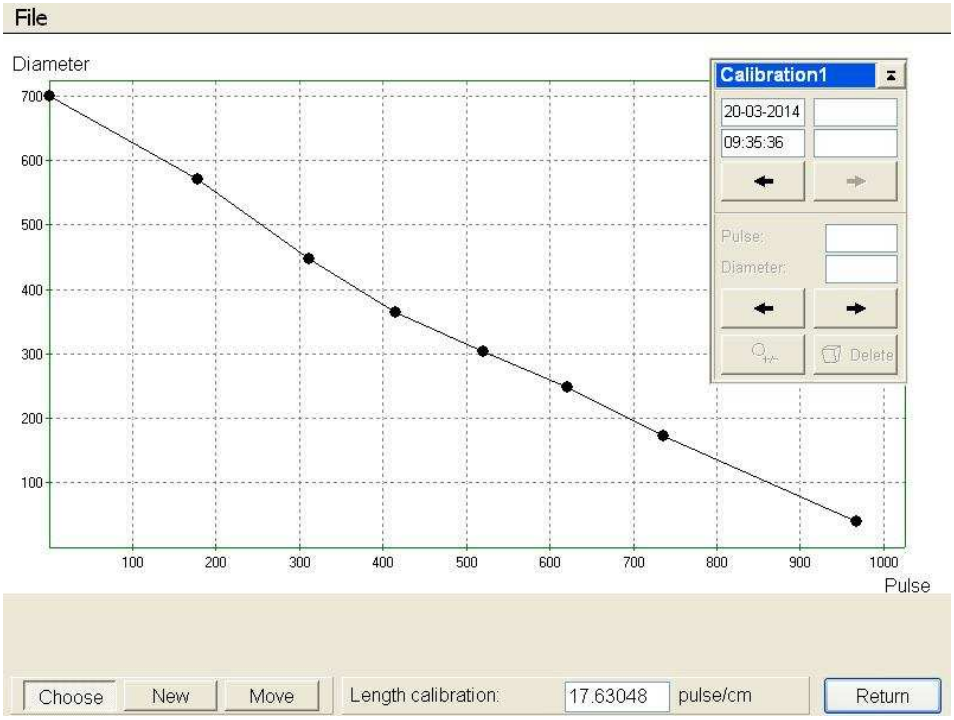


Enter the measured diameter in the message box and press “OK”. You will see the diameter now changes on the screen.

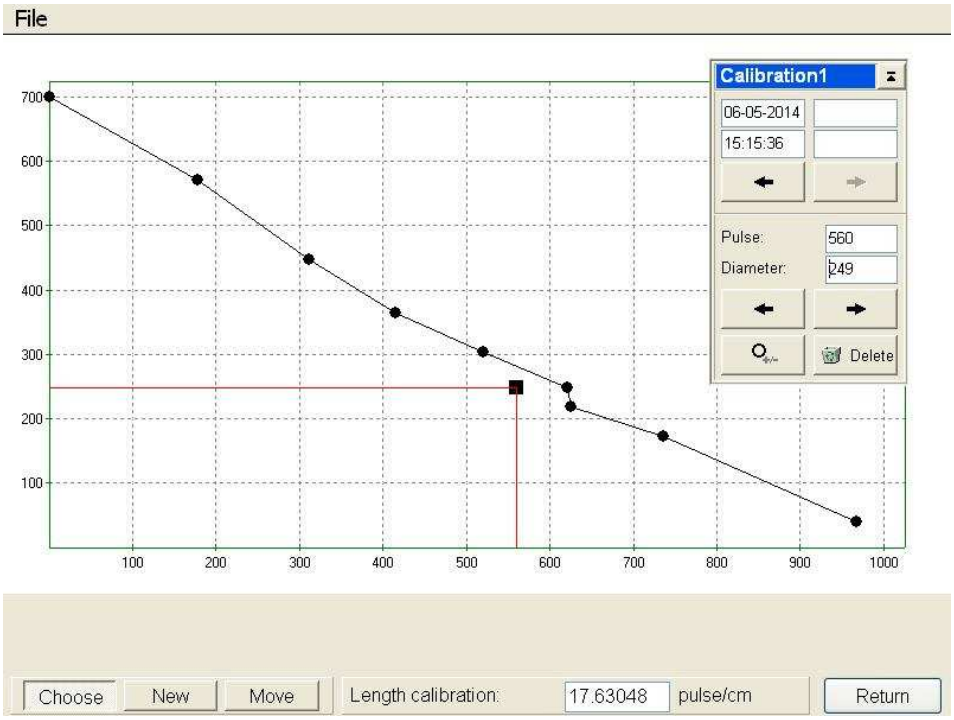
Repeat this procedure until you reach the top of the tree: Feed forwards a couple of meters, measure the diameter and enter the measured value.



When you have done this, maybe 10 times you might want to see how the diameter calibration looks now. If you press "**Calibration** and Edit", you will enter the calibration window. You might think that it does not look right. If you remember the diameter where you think the calibration is faulty, you can make a control of the calibration when you process the next tree. Feed forward until you reach the diameter (or very near) you remembered from the calibration table. Go out and measure the diameter by the saw, and compare with the actual diameter shown on the screen. If the measured is far away from the displayed, you can make a new point right here by pressing "Calibration", "Diameter" and enter the measured value. If a message pops up telling you "Invalid calibration point", it means that either the new point is out of the possible range, or maybe the calibration table needs to be corrected.



It might look like this; the point (the square) has the same (or lower diameter) as the next point. You can release the next point from the calibration (see Chapter xx) with **O+/-** and see if the new point is closer to the line.



3 SETTINGS MENU

In the "**Settings menu**", you find settings that are normally just changed occasionally. The settings for the head will all be set from the factory, but some might need small adjustments to optimize the processing of trees. E.g. in the "Button Setup" you can set the function of the switches as it suites you best. The factory settings might not fit to your hands, or to what you are used to.

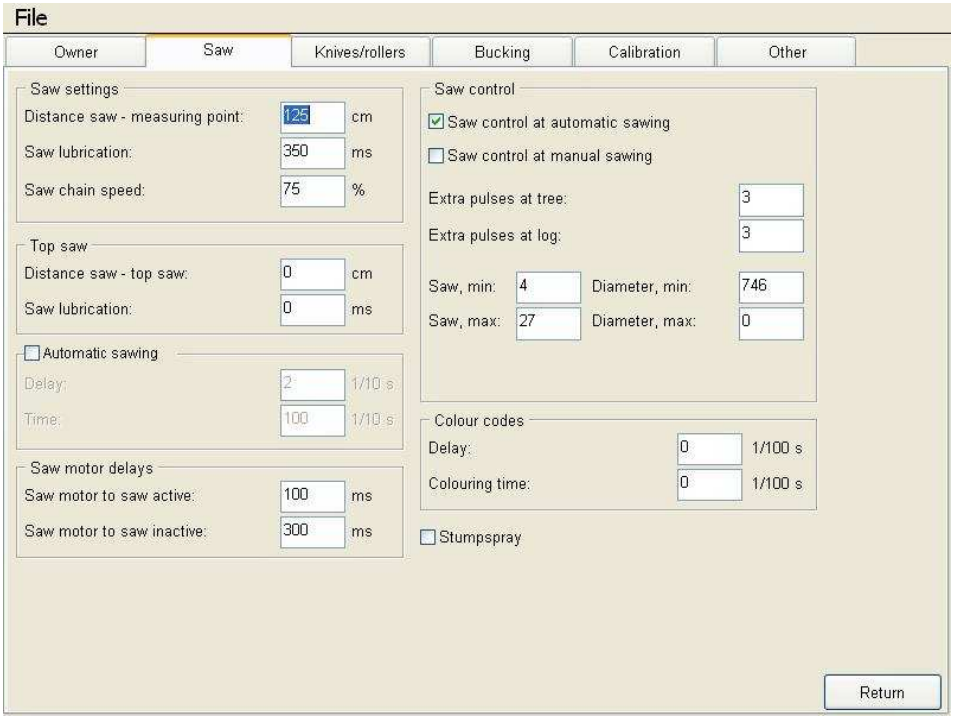
Here will only be explained the settings that might need to be changed by the first time you are working the system.

3.1.1 Owner

In the first sheet, you can type the machine owner's name, address and other information that shall figure on the printouts.

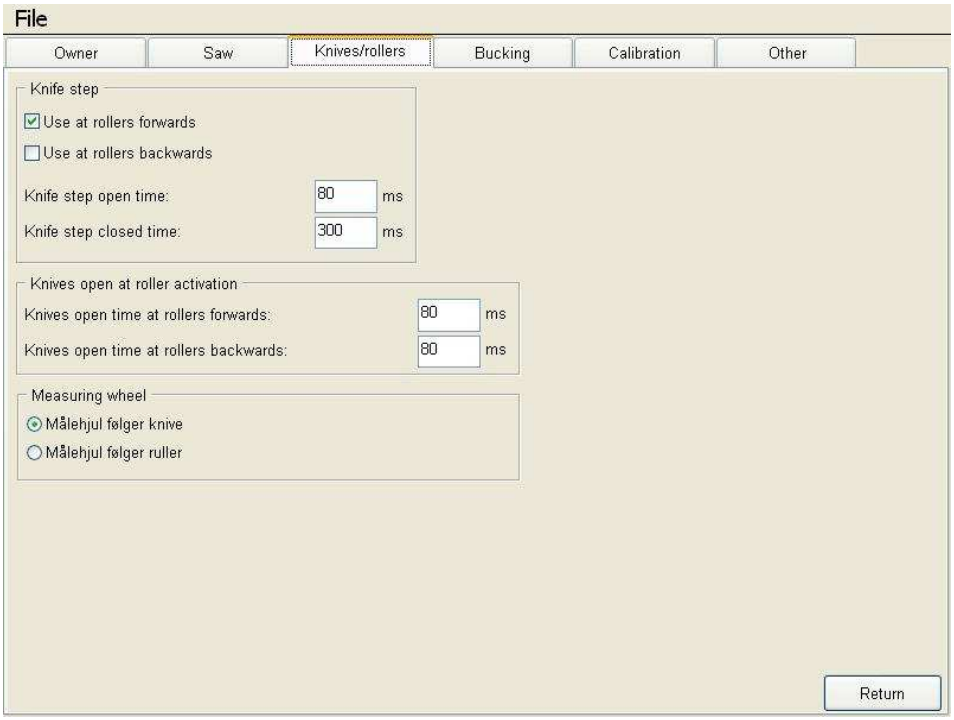
3.1.2 Saw

You can swap to automatic sawing by placing a checkmark in the **white square**. When the check is present, you can also change the times "**Delay**" (Delay between rollers stops and the sawing will take place.) You just keep the **"Forward button"** pressed and the saw will cut in the time called "**Time**" or until you release the **Forward button.** If the head is equipped with saw limit control, the "**Saw control**" parameters are also set by the producer and you do not need to change the values.



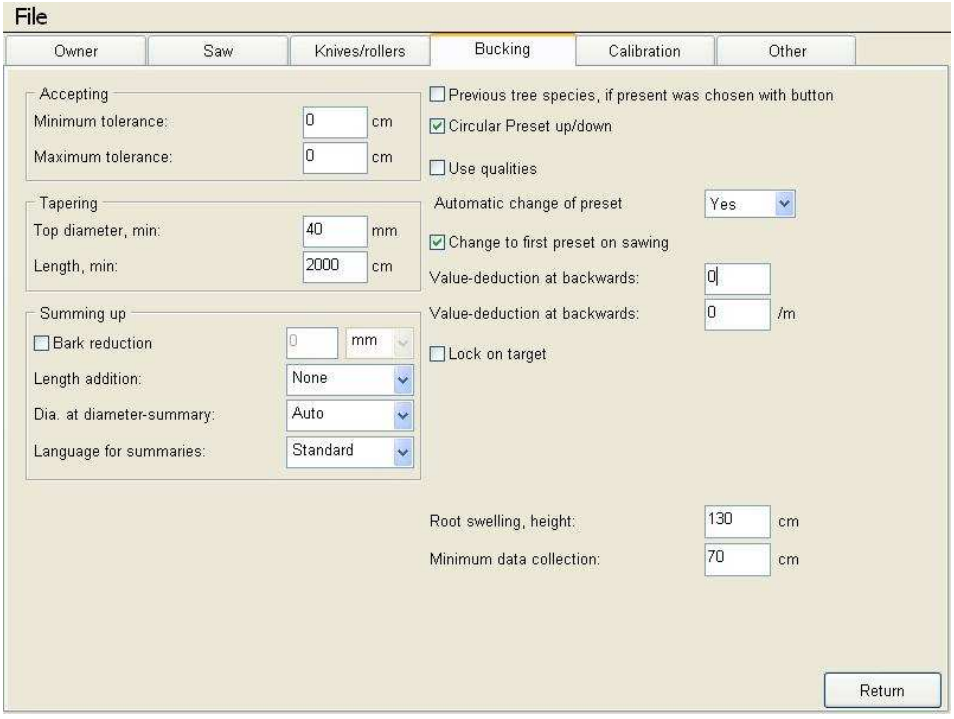
3.1.3 Knives/Rollers

Some heads need ”**Knife step**” when the feed rollers are working. If this is necessary, you set a checkmark in “**Use at rollers forward**” and/or in “**Use at rollers backward**” The valve for the roller open and close will now be activated according to the “**Opening time**” and “**Closing time**”
Also the “**Knife open at roller activation**” you might need to adjust for better performance.
The “**Measure wheel**” can follow knives in and out, or it can follow the rollers.



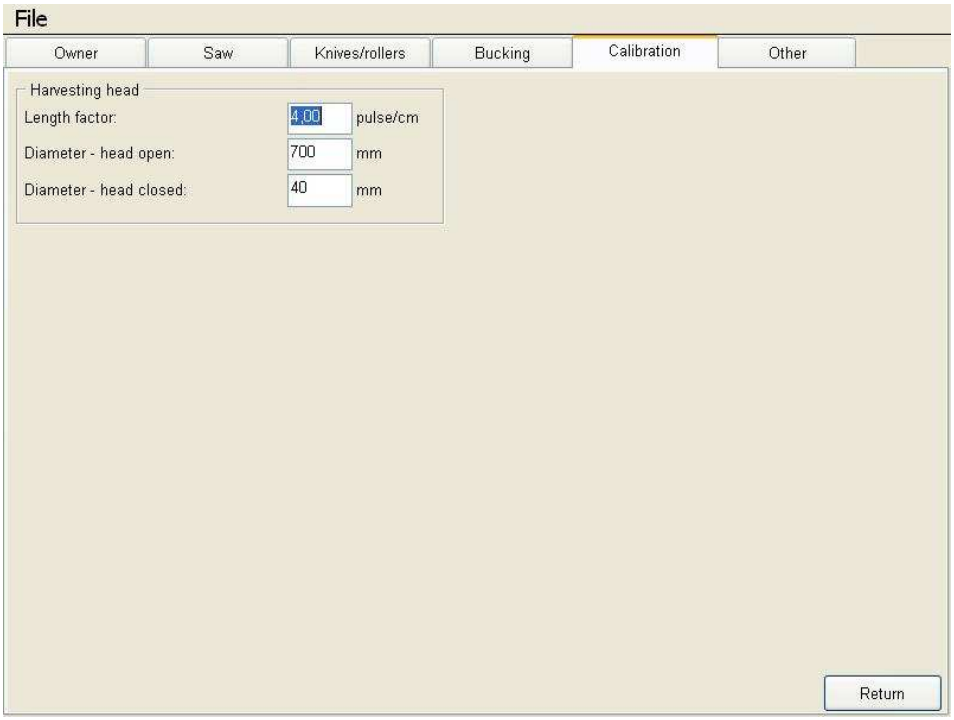
3.1.4 Bucking

At the Bucking sheet, you might want to change the way, the system changes between the presets. Choose **Yes** or **No** to **Automatic change of preset**. By “**Yes**” the presets will be chosen from top and downwards as they are placed in the Tree specie window. This means you need the preset you prefer shall be made (the item with the highest value) shall be placed as no. 1.



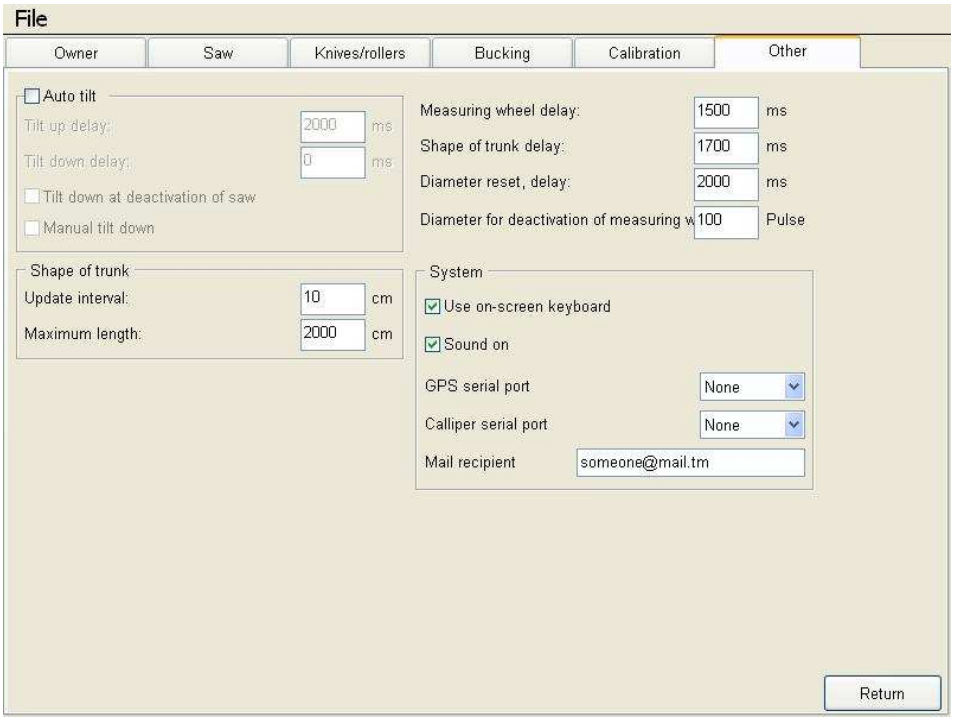
3.1.5 Calibration

The settings in the Calibration sheet is usually set by the producer of the head, and do not need to be changed.



3.1.6 Other

In the **Other** sheet, you might want to change to automatic tilt. Place a checkmark in the white square by “Auto tilt”. The settings will then be highlighted and changeable. The tilt can work the following ways: All automatic, automatic up and manual down, manual up and automatic down, all manual. Furthermore, the tilt down (tilt up release) can take place after a certain time, or by release of the saw button.



3.2 Proportional knife pressure

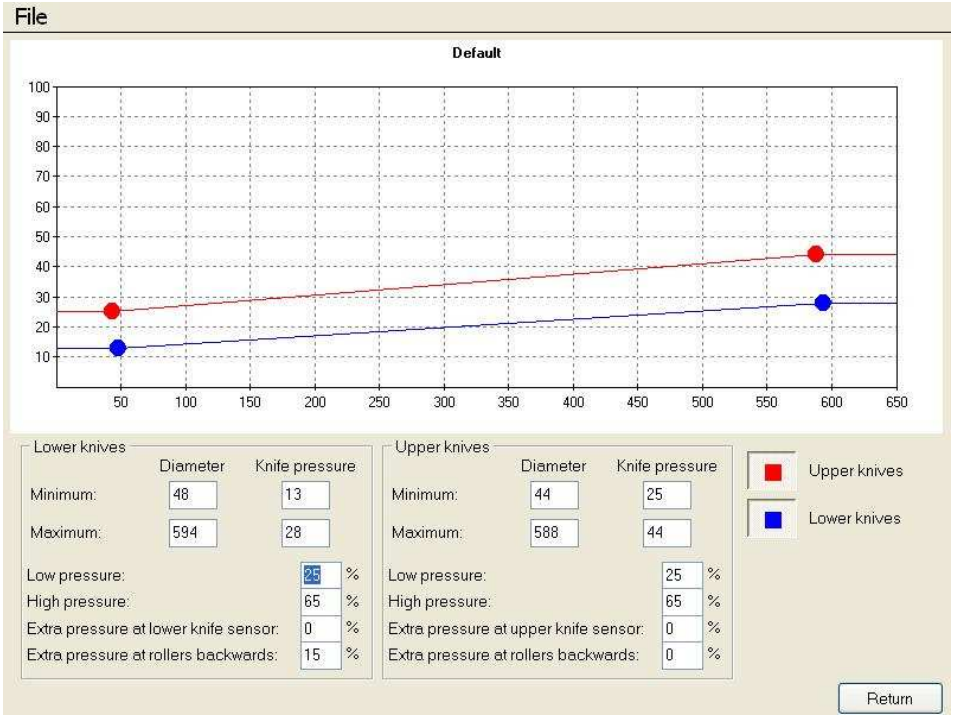
In this window, all settings are for the knife pressure. All pressure settings are in % of maximum pressure. All diameter settings are in mm.

The pressures for Upper knives (front knives) and Lower knives (Back knives) are set seperatly. Each point on the graphs can be set, either by moving the red and blue points, or enter a number in the associated boxes. (Minimum, Maximum and Diameter, pressure in %)

The “Low pressure” is the opening pressure, and the “High pressure” is the closing pressure.

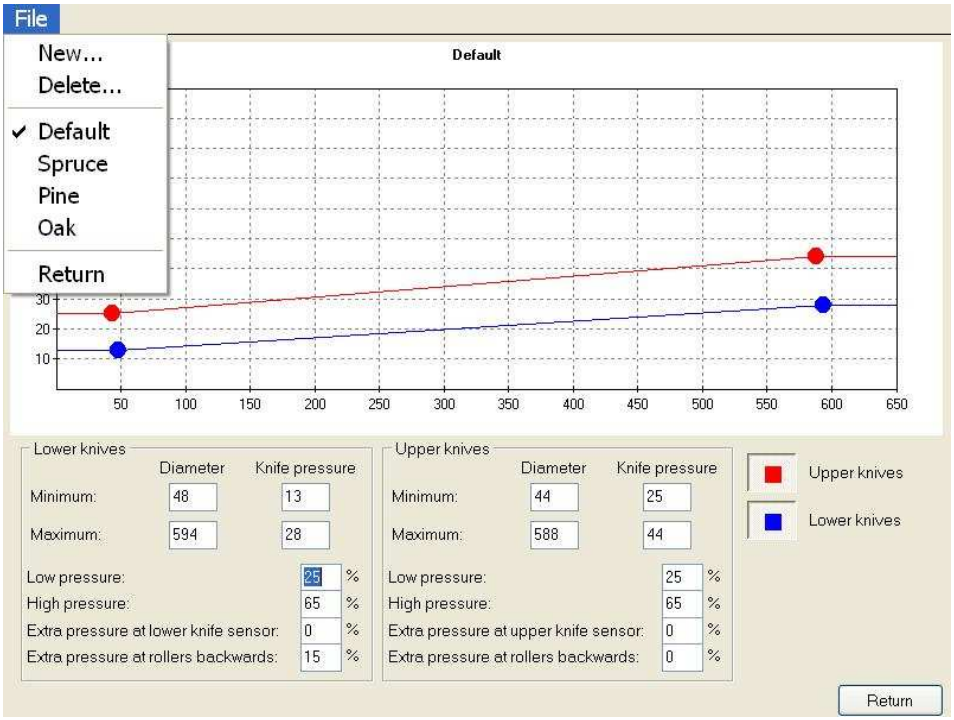
Extra pressure at sensor” is linked to a sensor or another device that can tell, if the tree is in its place in the head or the head is on its way to loose the tree.

If the head requires extra pressure when the rollers feeds reverse, a higher pressure can be set in the lower box



3.2.1 More proportional knife pressure tables

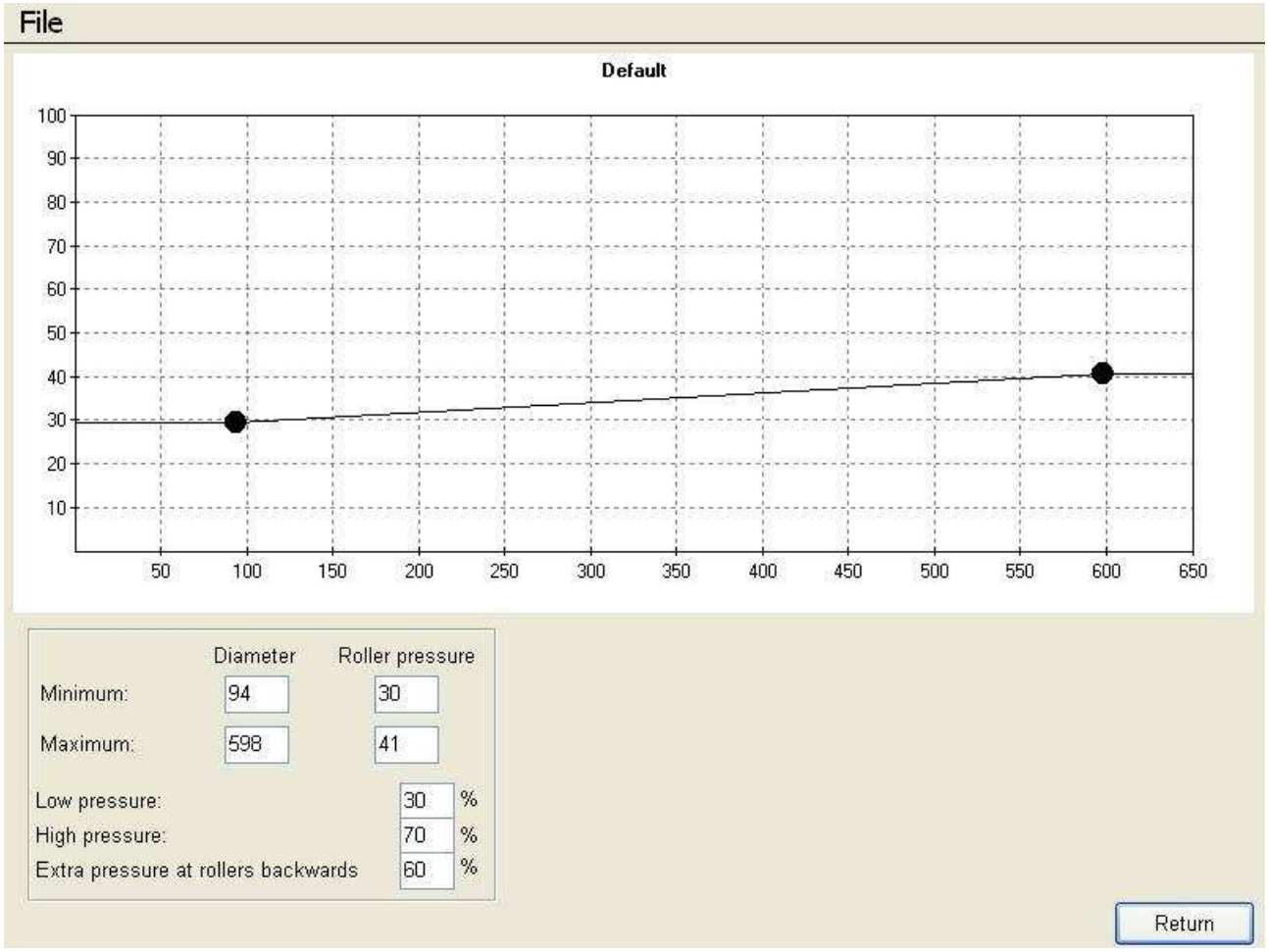
If more than one pressure table is required, you can create more tables by pressing the "**File**" menu, and "**New**". A box appears where you type the name to the new knife pressure table. Repeat this until you have the amount of tables you need. They will all have the same values, but now it is easy to choose each one on the list in the "**File**" menu, and change the values that have to be changed. Values are automatically saved when you open another pressure table, or you leave the window (press Return).



3.3 Proportional roller pressure

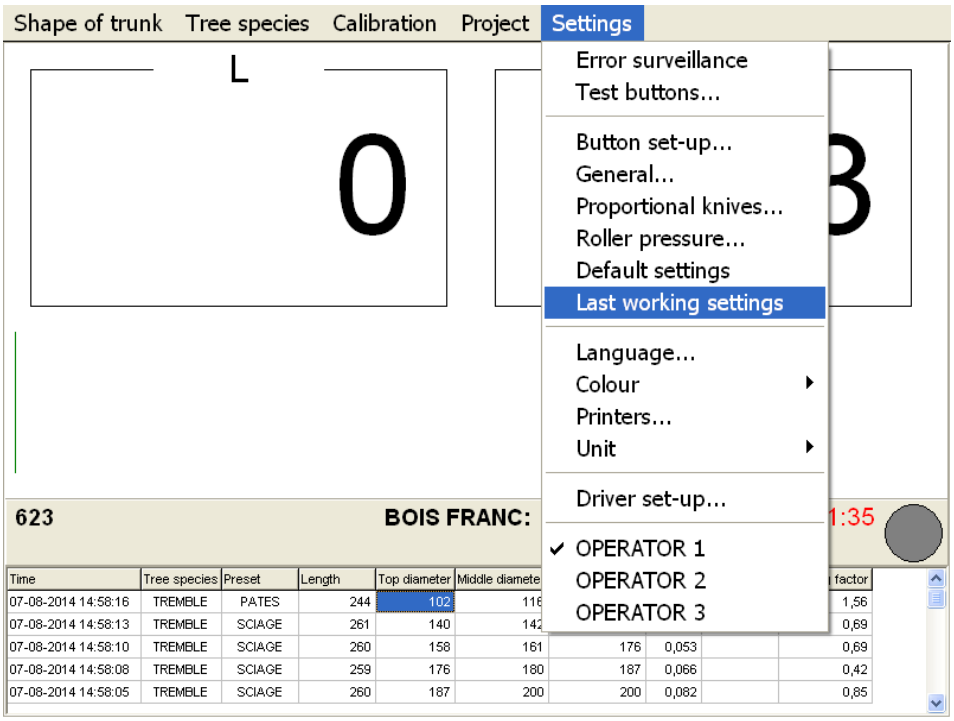
The roller pressure settings are like the knife pressure settings. You have the points on the graph in numbers, you have a “Low pressure” (Opening pressure) and a “High pressure” (Closing pressure) and a possibility to set more pressure on the rollers when feeding backwards.

If you don’t want the same roller pressure table to all tree species, you can make new pressure tables by pressing the menu “**File**” and “**New**”. Enter a name to the new pressure table, and change it to how you want it. After creating the roller pressure tables, you choose them individually in the tree species.



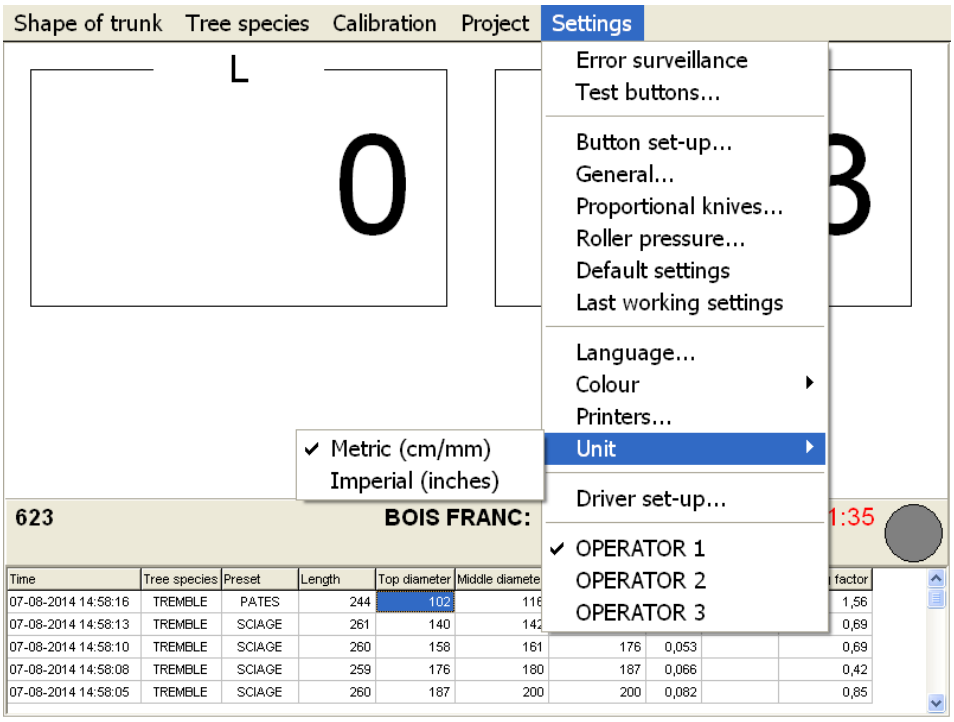
4 RETURN TO EARLIER SETTINGS.

If, for one or another reason the system is not working as supposed, the solution can be to return to **"Last working settings".** The system automatically saves a new copy of the settings for every tree workdays, where no major changes in the settings are done. A **"work day"** is when at least one valid log is made within 24 hours.
In addition, **"Default settings"** are a possibility returning to. The default setting is saved manually by the producer of the head, and is normally saved when the head with the measure system is delivered to the customer.



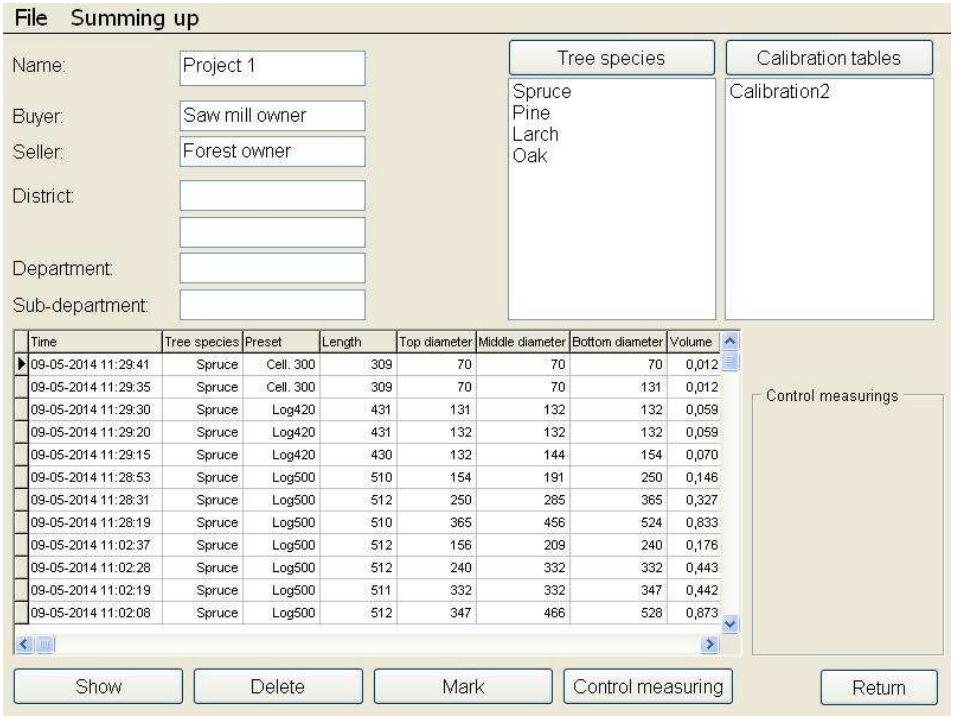
5 UNITS

The system operates either with **"Metric"** or **"Imperial"** units. Further comments are not added to this!

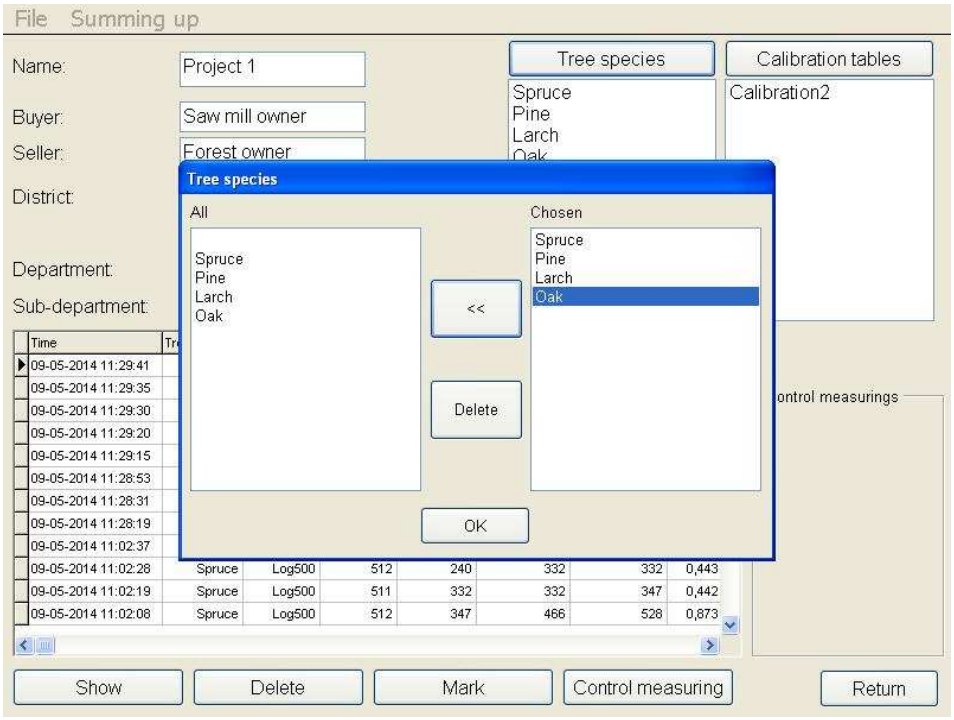


6 COMPLETITION OF A PROJECT AND CREATING A NEW

It is very common that tree species and presets are nearly the same from one project to the next.
When you have finished a project, or maybe you have to leave the current project and start a new one, you can save the tree species and the calibrations from this project and use them in the next. Enter “Project” and “Edit” window that can look as this. Four Tree species and one Calibration table are used in this project.

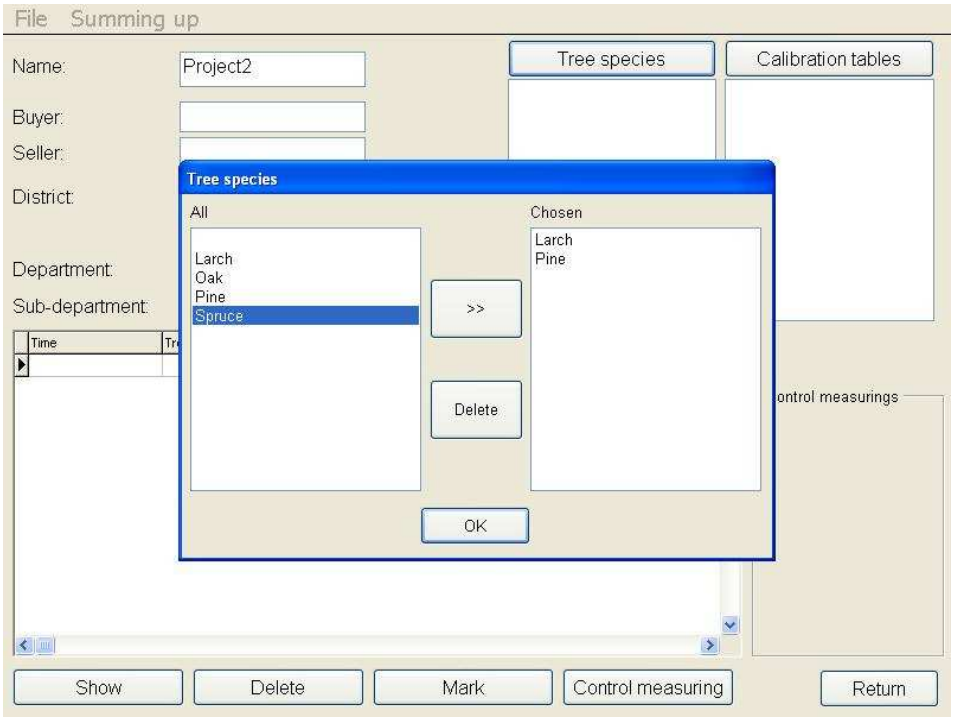


Press the “Tree species” button. Highlight the tree species one by one and press the “ **<<** ” button to copy them from “**Chosen**” and to “**All**” After finish copying the tree species, repeat this procedure with the Calibration tables.

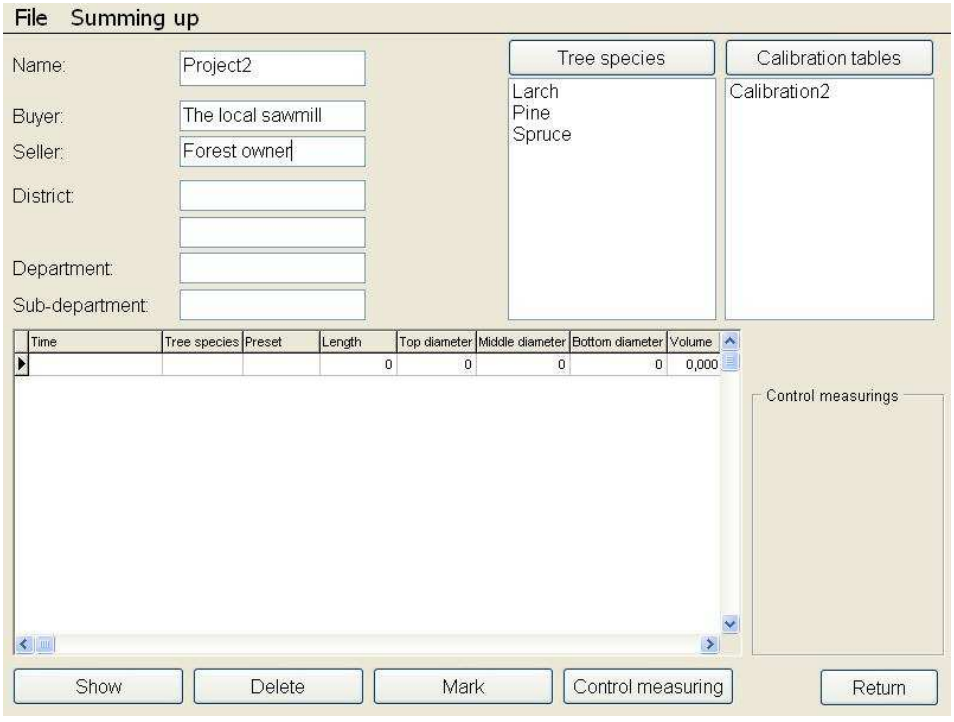


6.1 New project

To create a new project, go to the "**File**" menu and choose "**New**". Follow the procedure from creating the "**First project**". Now you have saved the **tree species** and **Calibration tables** from the previous project, and can use these here. You press first the **Tree species** button, then highlight the Tree species one by one and for each highlighted tree specie you press the " **>>** " button to copy them to "**Chosen**". Do the same procedure for the "Calibration tables" to use the calibration(s) in the next project.

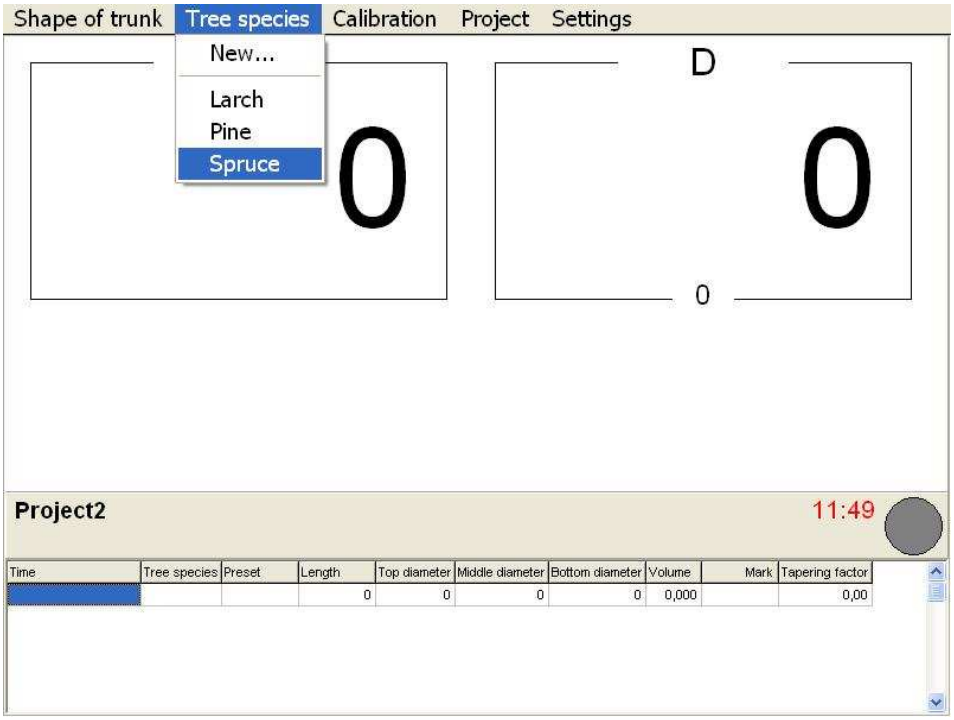


The last thing before returning to the main screen is to write additional information, e.g. the buyer, the seller and others, but for this information, you might come back and write later, or you can leave the fields blank. Now pres the "**Return**" button to go to the main screen.



6.2 Choice of tree specie

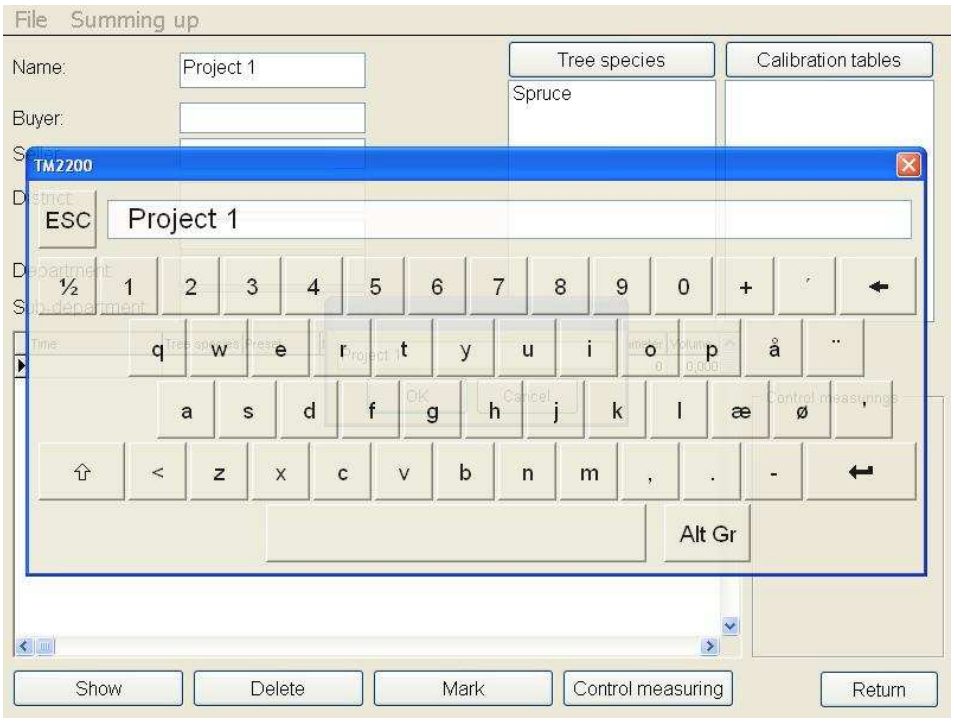
Now choose the tree specie you want to start with, either by pressing the current button, or by choosing in the “**Tree specie**” menu



7 VIRTUAL KEYBOARDS

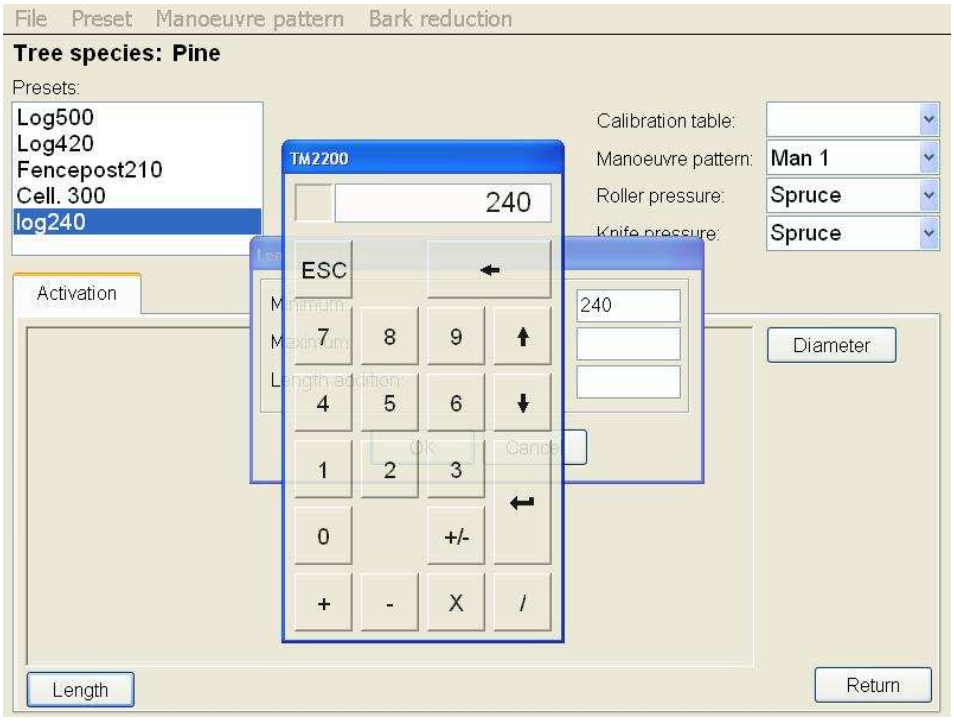
To get the keyboard on the screen, press the white field where you want to write a text or a value. The keyboard then appears automatically, either character or numeric keypad; depending on which field, you want to enter a name or a value.

The character keyboard.



The numeric keyboard

This keyboard will appear where it is only allowed to write numbers, like here in the length window.



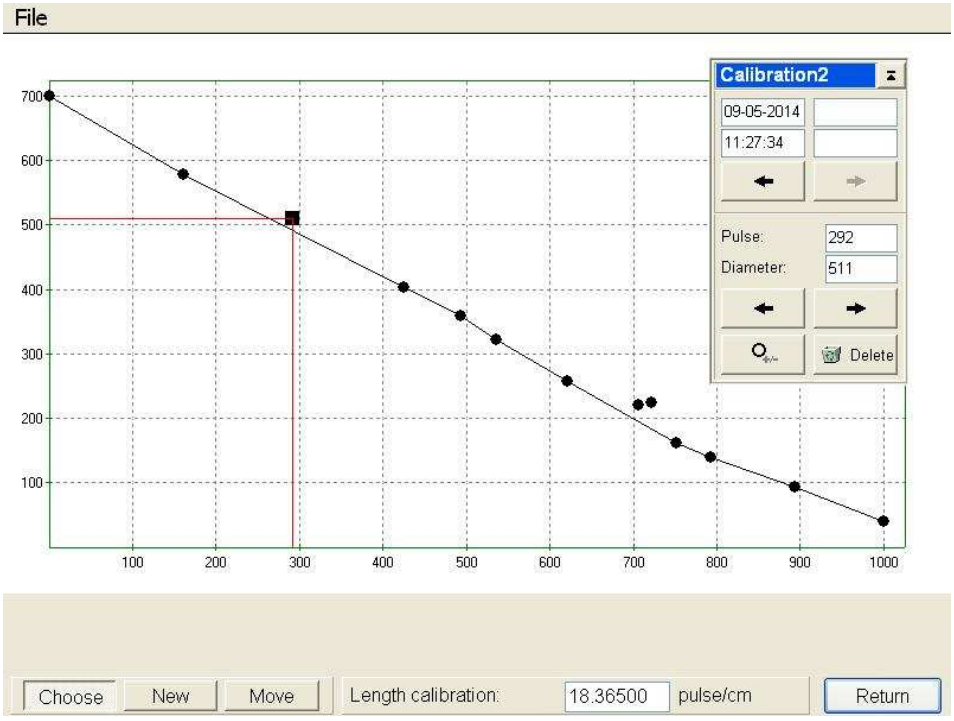
8 CALIBRATION TABLE

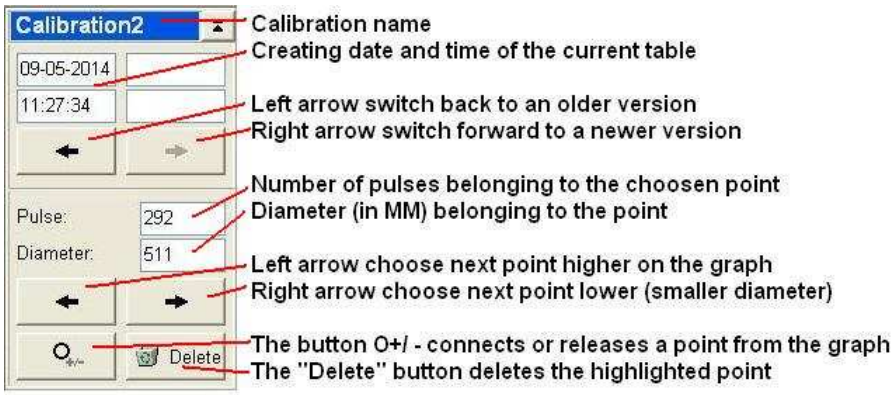
The calibration table has many features, regarding editing of the length and diameter calibration. The calibration points can be moved, new points can be added, points can be released from the curve and connected to the curve again or points can be deleted.

Choosing a point: First press the "**Choose**" button and then press the point you want shall be chosen. The point will now become a square instead of a circle.

Adding new points: press the "**New**" button and then press the screen where you want the point placed.

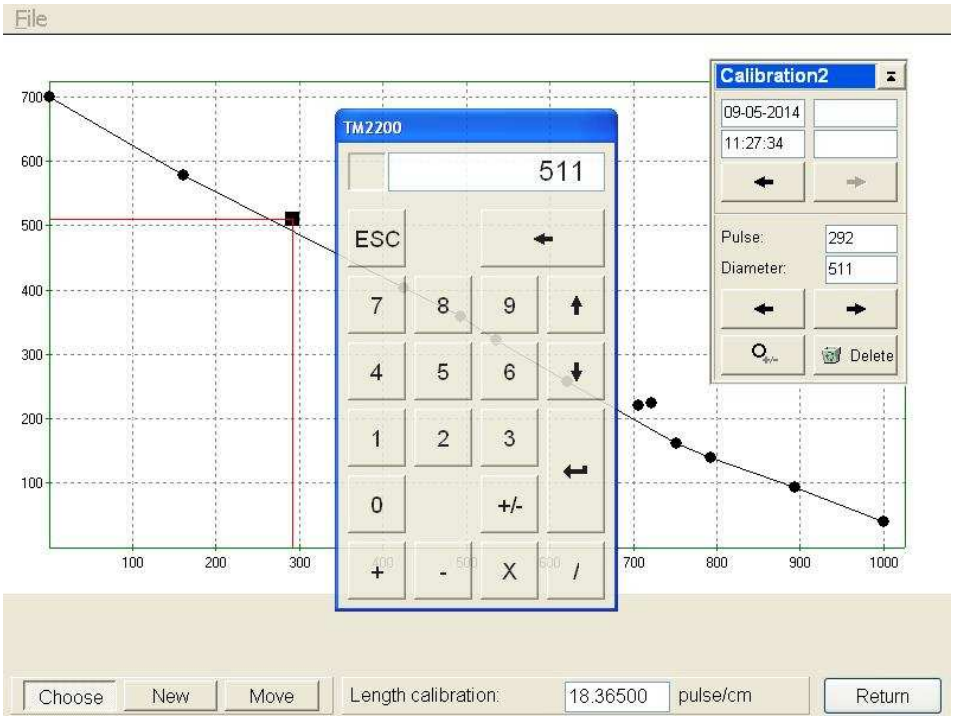
Deleting of points: Press the "**Choose**" button and choose the point you want deleted and press the 





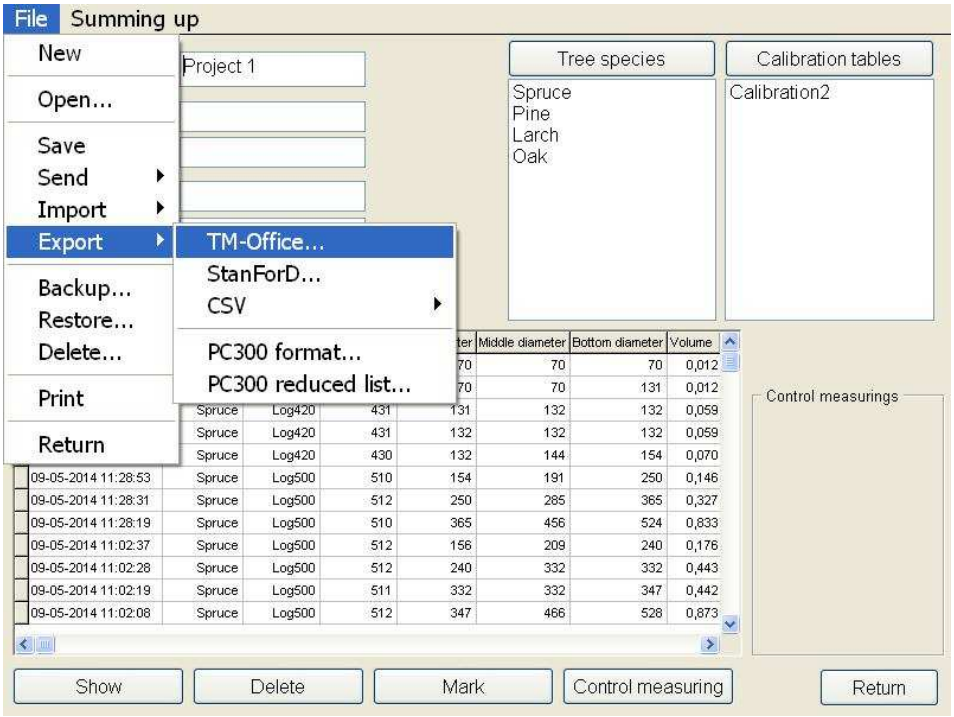
Moving of points can easily be done by changing the values belonging to the selected point.

Press the field with either the number of pulses or the diameter belonging to the point, and the numeric keypad will appear. Now you can either just write the wanted value, or alternatively, use the arrow up and down keys to raise or lower the value until you reach the wanted value. Press enter to accept the change, or the ESC to leave the setting at its old value.



9 PROCESSING OF PRODUCTION DATA AND CUSTOMIZATION OF PRINTS

The system offers a number of ways for saving and sharing the project.
It allows the driver to print out a various of lists, either created by the use of the print facilities build into the program, or the project can be saved as a TM-Office file to bring home for further sorting and printing. The system also offers an option for saving the project in various “StanForD” formats, or to a “CSV” file. (Spreadsheet file)



9.1 The File menu:

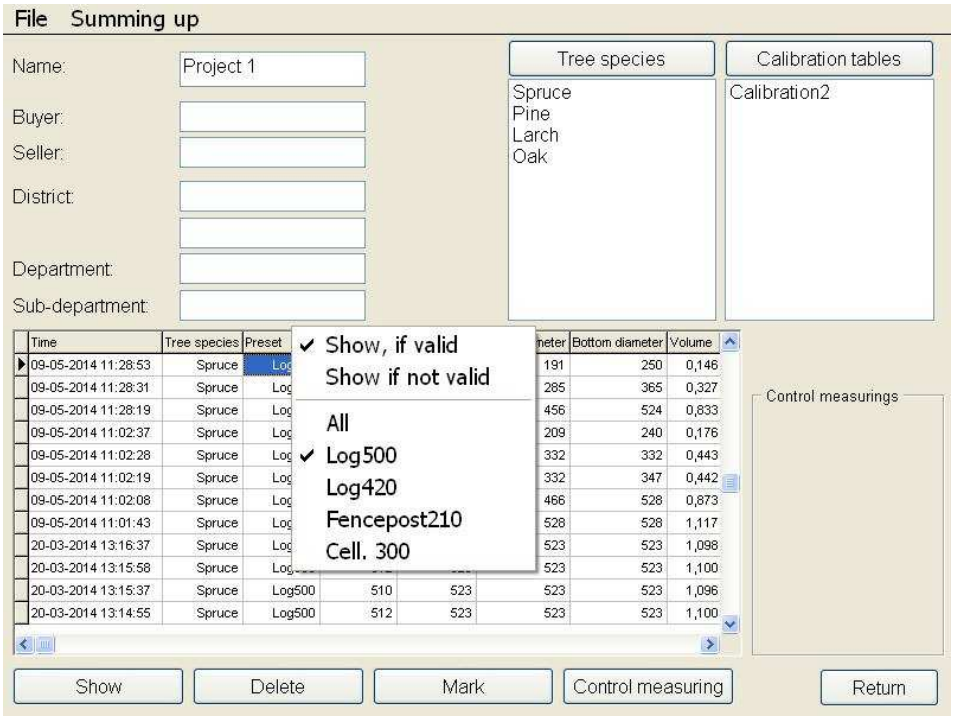
- **New.** Creates a new project.
- **Open.** Opens an existing project.
- **Save.** Save changes without leaving the Project edit window. All changes are automatically saved by returning to the main screen
- **Send.** (By Email) the project can be sent as a TM-Office file. Or it can be sent as a StanForD file, formats are “PRD”, “STM” and “HKS”
- **Import.** New or existing projects can be imported. The TM-Office format holds the most information of the back-up files, and is therefore the right format to save a project that has to be transferred, either to another machine, or from the office and to a machine.
- **Export.** Saves the project in one of the formats: TM-Office, StanForD, CSV (Comma separated file), PC300 format or PC300 reduced list (Can be opened by notepad or another text-edit program)
- **Backup…** Makes a compressed file from the project. (A “ZIP-file)
- **Restore…** Unzips an earlier made backup, either from the same machine or from another.
- **Delete…** Deletes the current project. You will get a warning saying “do you really want to delete this project” in order to avoid an undesirable action. By saying OK, the project will be deleted and can not be recreated.
- **Print.** This menu point will print the entire project, log by log with length, middle diameter, volume and tapering factor. The print opportunity is mostly used when a preset with special items needs to be printed log by log. Before printing, a sorting can be made by selecting Tree specie, preset and maybe more. Because this selecting can be done in many ways, it is not specified here, but please ask Techno-Matic service department, if you do not find a way to create a certain printout.
- **Return.** Save changes and returns to the main screen.

9.2 Summing up

- **Diameter classes.** Share the items (Normally is this done for full-length timber) chosen in classes with the middle diameter as the sorting criteria. As the sorting criteria are different for each country, this is set by the producer of the head and should not be changed.
- **Preset.** Prints out a list, where each tree specie and each preset is listed with no. of logs, Total length, average length of each log, Total volume, average volume, and the volume percentages in each tree specie
- **Control measuring.** Prints out a list of the control measured logs/trees.
- **Summary.** Prints out an overview of the total trees, logs and volume made in the project, all together without sharing in tree species and presets.
- **Result.** Print out a detailed list of the production in the project, tree specie by tree specie
- **Send.** Send the above-mentioned printouts by Email. By sending the print out as an Email, the computer needs to be adapted with a GSM modem, either by wire or by a wireless connection. Also a valid Email account need to be present.

9.3 Example of how a customized printout can be done.

In this figure is first chosen "**Spruce**" as Tree specie, and then in "**Preset**" are the choice "**Show if valid**" and the preset by the name "**Log500**".



Now a print out will look as this; the only preset with a volume is the Log500

Result: Project 1

District :
Department :
Sub-department :

Date : All
Tree species : Spruce
Preset : Log500
: Show, if valid
Length : All
Top diameter : All
Middle diameter : All
Bottom diameter : All
Volume : All
Tapering factor : All

Tree species: Spruce

	Pcs.	Length	Avg	Volume	Avg	Volume%
Log500	13	66	5.11	9.780	0.752	100.00
Log420	0	0	0.00	0.000	0.000	0.00
Pencepos	0	0	0.00	0.000	0.000	0.00
Cell. 30	0	0	0.00	0.000	0.000	0.00
Sub tot.	13	66	5.11	9.780	0.752	100.00
Number of trees : 4						
Volume per tree : 2.445						
Total	13	66	5.11	9.780	0.752	100.00

Tree species: Spruce

	Top	Middle	Bottom
Log500	378	415	442
Log420	0	0	0
Pencepos	0	0	0
Cell. 30	0	0	0

Number of logs : 13
Number of trees : 4
Total volume : 9,780 m3
Volume per tree : 2,445
Middle diameter, avg : 415 mm
Breast height diameter : 530 mm
Breast height diameter : 523 mm
Breast height diameter : 547 mm
Period of time: : 20-03-2014 -

19-05-2014

10 SPECIAL SETTINGS FOR KNIFE AND ROLLER PRESSURE.

Instead of creating more Knife- or Roller- pressure tables, it is possible to set a certain percent of the "Default" pressure table. Notice, the "Default" pressure table needs to have the highest pressure wanted.