# GabbieCam Manual

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# 1 About this document

This is the ***GabbieCam*** manual. The manual is available as

- HTML
- ePub
- PDF

## 1.1 Helpers

### 1.1.1 test

here a foot note: [1] there an other one: [2]

this is a html format

Roses are red, violets are blue.

The softwares name is .

[1] This is a footnote.
[2] This is an other footnote.

# 2 Intro

## 2.1 Workflows

### 2.1.1 Pep-System

...

### 2.1.2 Single Part

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### 2.1.3 Beam Test

...

### 2.1.4 OccView

This is the main 3D View

# 3 Health and Safety

> ⚠ Warning
>
> **WARNING:** The user of the system is responsible for the health and safety.

The following tips and comments are points we learned over time and are not legal correct. **You need to consult the Health and Safety inspector in your region to make sure all is in right order and a safe operation of the system is guaranteed.**

# 4 Installation

## 4.1 Track

The correct installation of the track is the most important part of the setup. Like the foundation of a house: if the track is not straight the cuts won't be either and it will bite you in your behind later. So take your time: do it once, do it right.

Please read carefully the instructions. Do step by step - Do not assume anything. If something is not 100% clear contact us to verify.

### 4.1.1 Steps in short

- Find highest point of the floor
- Place the first module
- Install the piano wire
- Align module by module
- Secure to the ground

### 4.1.2 Preparation

#### 4.1.2.1 Highest point of the floor

Before you install the track you have to find the lowest point first. Shoot a laser over the floor and measure the depth in a 500mm pattern. Write down the points and calculate the biggest difference. The difference can't be more than the length of the set screw of the track.

#### 4.1.2.2 Piano Wire

A piano wire is a strong steel wire that acts as a guide/template for the track.

To install the piano wire (get one here) set the holder at the start and end of the track. The wire has to be really tight so it doesn't sag. Take a laser or better a precision water level to ensure the track will be as leveled as possible. If the track is straight, but not level, there will be a constant force on the bearings and they will wear out faster.

#### 4.1.2.2.1 Set the piano wire

Measure the distance (green) from the guide rail to the bottom of the foot and add 5mm (1/4 inch). This is the minimum distance at the highest point of your floor.

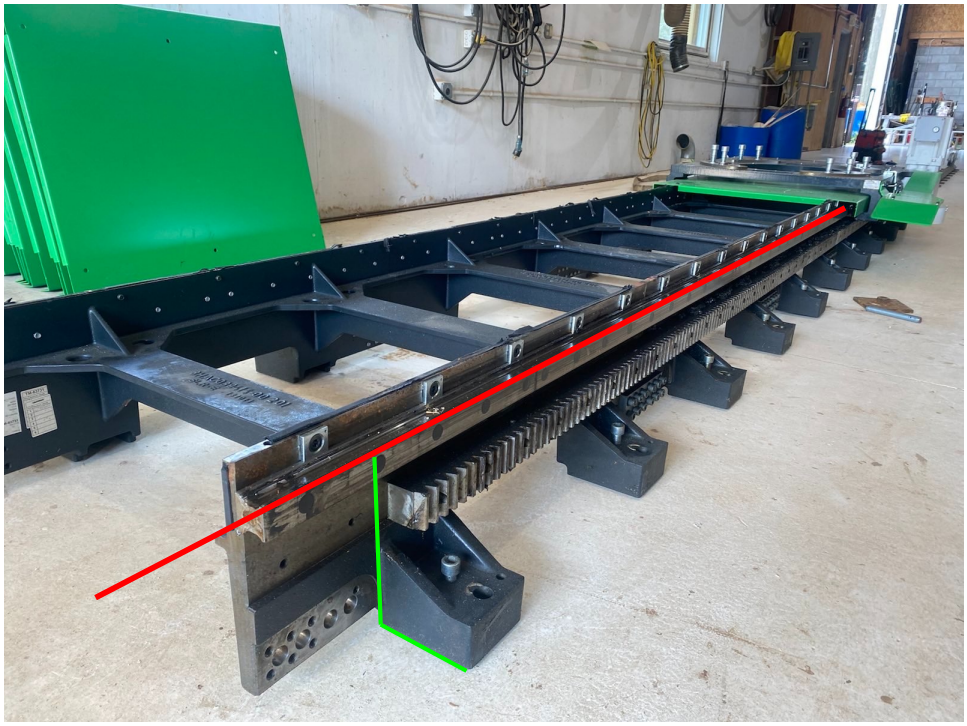


Figure 4.1: Alignment of the piano wire

Place the piano wire like in the sketch below. Again: the green line is the distance + 5mm (1/4 inch) on the **highest** point of your floor.

Make sure the wire is as straight as possible.

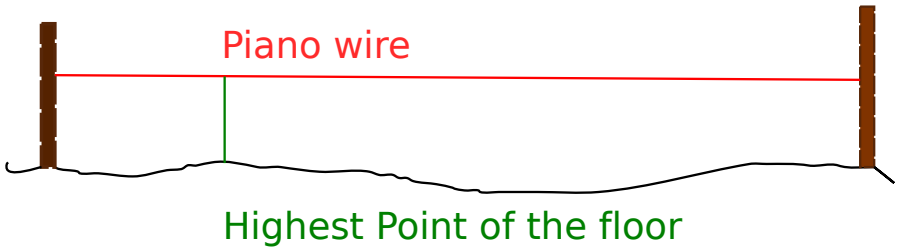



Figure 4.2: Piano wire side view

Repeat this process on the other side. Make sure the piano wires are level in cross as well, otherwise the track would be rotated over the X Axis. This also would put stress on the bearings which decreases the life of the bearings.

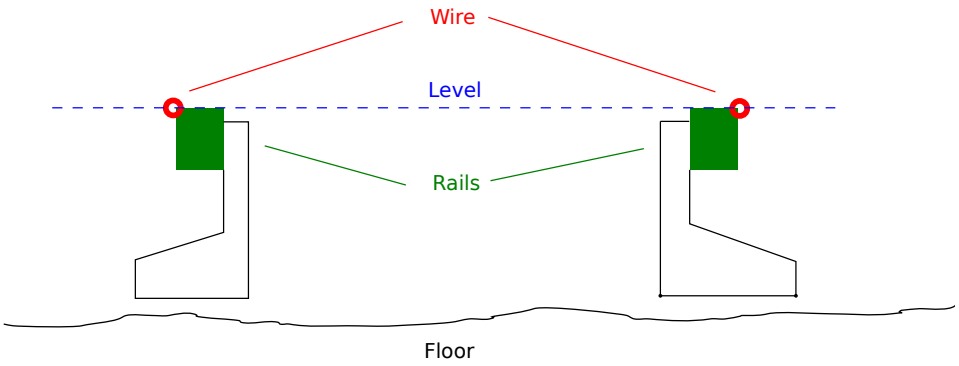



Figure 4.3: Piano wire front view

### 4.1.3 Placing the track

Start placing the track modules one after the other. Before you move on with the next make sure the track element is as straight as possible. It is much easier to align a module when it is only attached on one side. When the whole track is screwed together only small movement can be corrected.

#### 4.1.4 Bolting down

##### 4.1.4.1 Direct to the floor

##### 4.1.4.2 Plate

In case you can not just drill holes in the floor (for example you have floor heating) then you can install a 1/2" steel plate on both sides of the track and drill the holes where it is safe. After this is done you then place bolts with base welded on into the track foot and weld it to the base plate after aligning the track.

### 4.2 Robot

> **Warning**
>
> **WARNING:** Do **NOT** lift the robot on the arm - use the dedicated anchor points on the base or you could damage the robot!

#### 4.2.1 Mounting to the track

#### 4.2.2 Wiring

#### 4.2.3 Alignment

# 5 Parts

A Part can be a beam or a round log. They have in common that they can have processes attached. All parts have following properties:

## 5.1 Base

This is the base class.

### 5.1.1 Properties

| Name | Description | Datatype |
|---|---|---|
| Caption | Caption of the Base | String |
| Pos X | Position in X-Axis | Double |
| Pos Y | Position in Y-Axis | Double |
| Pos Z | Position in Z-Axis | Double |
| Rot X | Rotation in X-Axis | Double |
| Rot Y | Rotation in Y-Axis | Double |
| Rot Z | Rotation in Z-Axis | Double |
| Scale | Scaling | Double |
| Locked | When True the part is locked into his current position | Boolean |
| Enabled | When True the part is included in general actions | Boolean |
| Selectable | When True the part can be selected | Boolean |
| Local Transition | | Boolean |
| Do Export | When True the part is included when export is running | Boolean |

## 5.2 All Parts

| Name | Description | Datatype |
|---|---|---|
| Name | Name of the part | String |
| Part type | | Integer |
| Faces | While a beam has 6 faces (front/back/top/bottom/start/end) a log can have unlimited faces. | Face |
| Bottom Face | Describes on which face the part is sitting on the holder | Face |
| Workobject | On which workobject are you cutting the part | Workobject |
| Length | The length of the part | Double |
| Amount | How many of those parts are needed | Integer |
| Scan Orientation | If set to `TRUE` the orientation is based on the attached scan. Otherwise by the 2/3 point orientation | Boolean |
| Cutprocesses | If set, the processes will be cut out of the part in the 3D model | Boolean |
| Endcut Start | Defines what kind of cut will be used on the start face | Cuts |
| Endcut End | Defines what kind of cut will be used on the end face | Cuts |

## 5.3 Beam

| Name | Description | Datatype |
|---|---|---|
| Width | The width of the part | Double |
| Height | The height of the part | Double |
| Facing | If set to `TRUE` then the faces will be milled with the 120mm endmill. This is useful when the beams are not straight. *Not implemented yet.* | Boolean |

## 5.4 Log Round

| Name | Description | Datatype |
|---|---|---|
| Diameter | The diameter of the log | Double |

## 5.5 Pep Log

# 6 Processes

## 6.1 Standard

### 6.1.1 Drilling

### 6.1.2 Cylinder

### 6.1.3 Slice

### 6.1.4 Tennon

### 6.1.5 Mortise

### 6.1.6 Trapeze

### 6.1.7 Round

## 6.2 Addons Loghome

### 6.2.1 Electric Outlet

This process can be used to cut an electric outlet at any position with ease. It can be a box or round, with a hood or without also clips - even only on one side if needed.

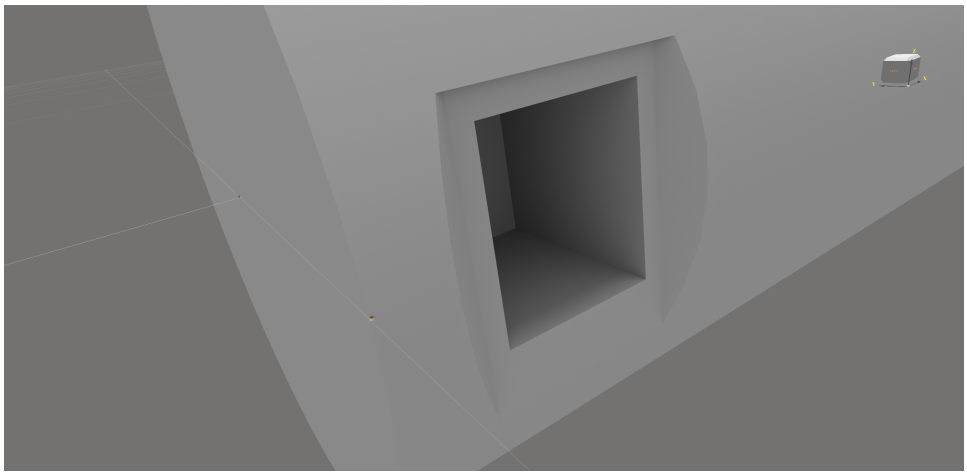


Figure 6.1: Outlet as box with clips

| Property | Description | Remarks |
|---|---|---|
| Tool | The tool to cut the outlet | *The whole process is cut with one tool. This tool needs to be able to plunge. Best is the 30mm end mill* |
| Width | Width of the box | *if Style = 0* |
| Height | Height of the box | *if Style = 0* |
| Depth | Depth of the box/cylinder from the plate | |
| Diameter | Diameter of the cylinder | *if Style = 1* |
| PlateWidth | Width of the plate | |
| PlateHeight | Height of the plate | |
| PlateDepth | Depth of the Plate (not needed for cutting) | |
| Overcut | Dimension to make sure the cut will be vertically long enough to cut out of the wood. | *Standard value is good enough for 99% of cases and don't need to be changed.* |
| ClipLeft | Cuts a 45 deg clip on the left | |
| ClipRight | Cuts a 45 deg clip on the right | |
| Hood | Leaves a hood for rain protection if true. If false, it will cut to the top | |
| Style | Set box=0 or cylinder=1 | |

**How to place an outlet**

Currently an outlet can only be placed on a “normal” log (not on a panel log).

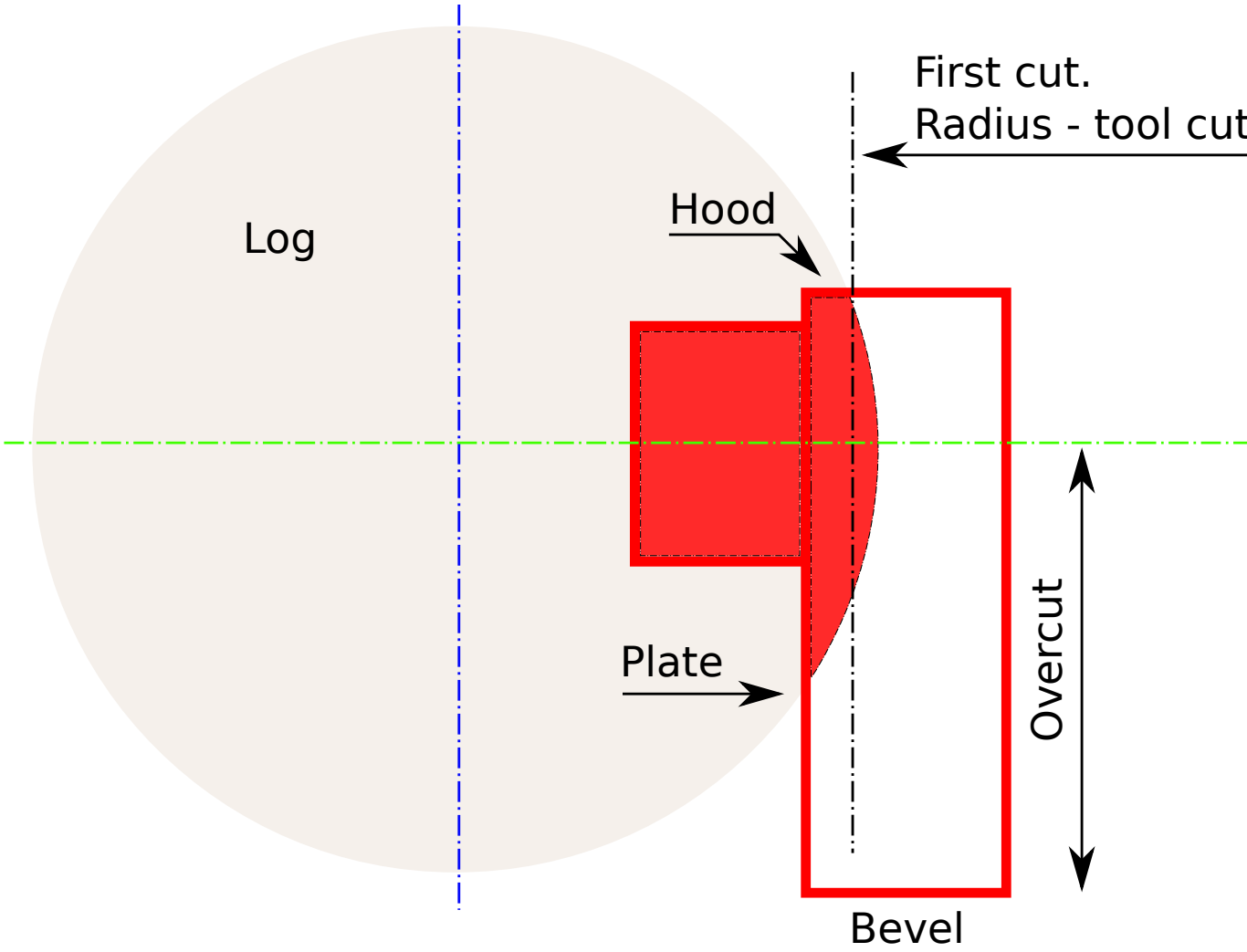



Figure 6.2: Placing an electric outlet

> **Warning**
>
> **WARNING:** The start of the cutting is the radius of the log. So make sure that the diameter of the log is set correct. Otherwise there is a possibility of a crash.

**Best way to place an electric outlet:**

1. Switch to Ortho mode
2. Switch to Wireframe view
3. Look at the log from the side
4. Add an outlet and set the parent face of the outlet to 180 degrees
5. Move the outlet only in the Z-Axis (blue) into the log until the hood is to your liking
6. Look from the top
7. Move the outlet in the X-Axis (red) to the desired position

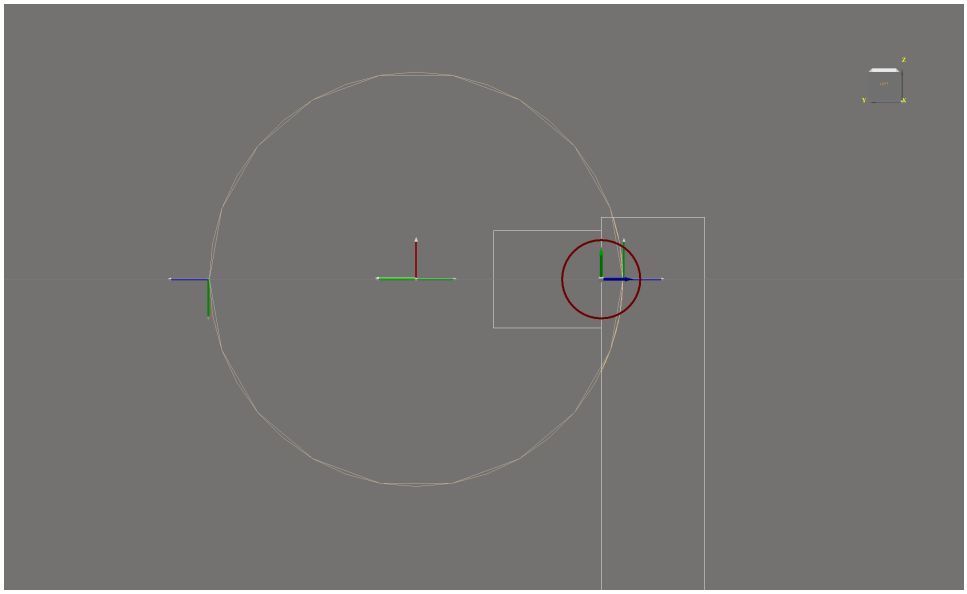


Figure 6.3: Look from the side

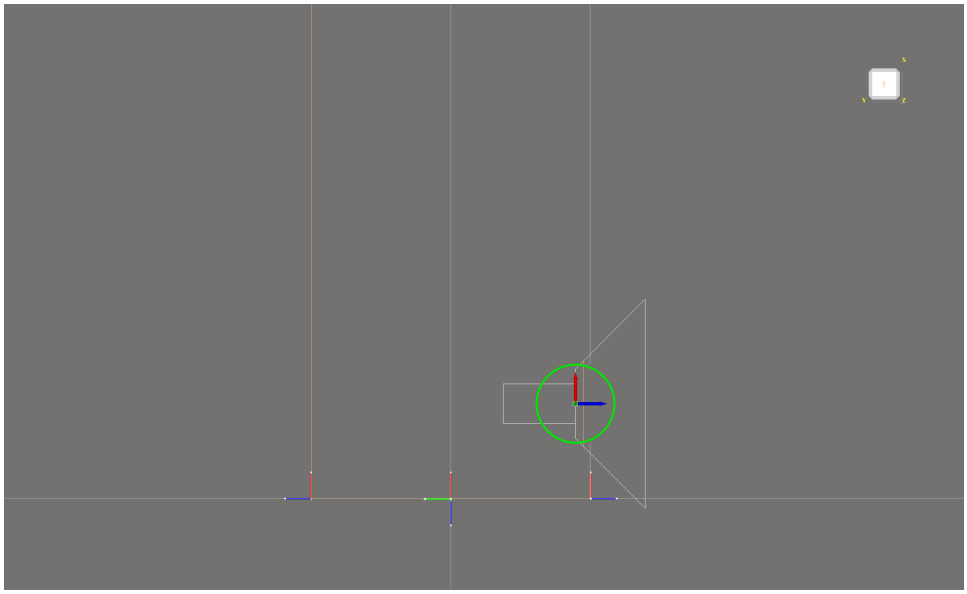


Figure 6.4: Look from the top

# 7 Scanning

- Scanning allows to place cuts without a 2 or 3 point measurement.
- The cuts are always related to the part.
- Place the scan so that the part is fully in the scan or it will cut outside of the log

## 7.1 Preparation

> **Note**
>
> **INFO:** Logs need to be dry and out of the sun to be able to scan

Before you can produce a part you need to scan it.

### 7.1.1 Logs

Cracks in a log can make your life really difficult when you use the scan to calculate a scribeline because the cracks will be scanned. While humans ignore the scan and still see the whole log, the scanner is seeing the cracks and will take them as what it is - a surface of the log. The resulting scribeline calculation will make it really difficult to calculate a scribeline. It can be that the calculation will find a better match in the crack than the surface. Since this is technically correct, it is not what we want.

To prevent this there is an easy solution: tape the crack with a painter's tape. A painter tape

- is easy to attach in seconds
- is cheap and does not create much garbage
- keeps the natural shape of the log - the scan is 1:1 as there would be no crack
- easy to remove
- doesn't leave any marks when you remove it
- the resulting scribeline calculation will be perfect


Figure 7.1: Painter Tape

Figure 7.2: Cracks covered up

### 7.1.2 Hardware

Make sure the cable is in a position that it won't be pulled or is in the way of the scanner.

Figure 7.3: Placement of the cable for scanning.

### 7.1.3 Software

#### 7.1.3.1 Adjust Settings

- Check settings and adjust OffsetZ and CenterOffset
- Mark X = Panel(Log) Length
- End X = Panel(Log) length + 300

#### 7.1.3.2 Turn scanner on

- On the handheld select "Inputs and outputs"
- Select `View > Digital outputs`
- Mark `do_LaserPower`
- Set value to `1` by clicking on the `1` on the bottom (Select `0` will turn off the scanner)
- Wait approx 30 seconds to allow the scanner to boot up

#### 7.1.3.3 Create the robot code

Press the button "Create Robot Code" in *GabbieCam*

## 7.2 How scanning works

A scan of a log or beam is built out of two halves. First the robot will move the scanner along the log(s) on one side and then switches to the outer side and scans in the opposite direction. This scan will be saved as `tempScanData.gsc` as a backup in case something goes wrong in the next steps.


Figure 7.4: Raw scan of multiple logs

Those half scans will be automatically put together so that every log has the correct half and saves the single scans to separate files.

## 7.3 Procedure for single-scan

Every part has a scan attached. This means every part can be scanned. This also becomes really handy for beams because they are not always 100% straight.

1. Select the log in the panel that is going to be scanned
2. Press Record in GabbieCam
3. PP Main
4. Start Robot
5. The Robot will go to start position and stops when the laser is on top. Laser will be turned on for marking the log
6. Move the log in so that the laser line is approx. 100mm from the log start
7. Mark the log with a pencil
8. Hit start again on the robot, the robot will start scanning the log on both sides
9. Press Stop Recording

The log is now completely scanned and the data is saved.

## 7.4 Procedure to scan a Panel

A panel has multiple logs that need to be scanned. The scans will be saved under the Scandata Dir folder (settings).

There are two different ways to scan the logs for a panel:

- Single mode
- Multiple mode

### 7.4.1 Single mode

The single mode means you have to scan every single log alone.

The procedure is exactly the same as Procedure for single-scan, except you need to select the log in the panel you are going to scan. This will make sure that the scan is saved in the correct folder.

### 7.4.2 Multiple mode

In the multiple mode more than one log can be scanned. GabbieCam will scan all the logs and recognize the amount of logs. GabbieCam will choose the right data and will create single files in the background.

Make sure there is a gap between the logs of **between 900mm and 1000mm** to allow space to cut the ends.

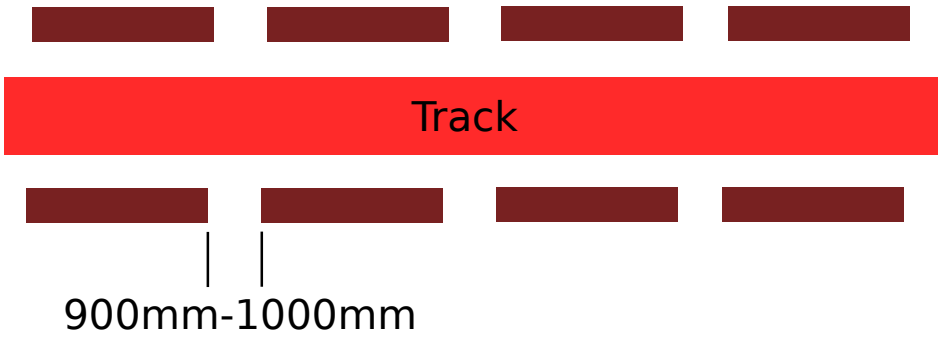



Figure 7.5: Scanning multiple logs

Select the panel where those scans will be attached. Make sure the panel has a unique name. The scans will be saved in the `Scandata-Dir folder/panel name/log_n`.

Example: `D:/scans/panelA1B1/log_1.gsc`

Start the scan. The single scans will be created and saved in the folder. When finished, the scan will show up in the panel.

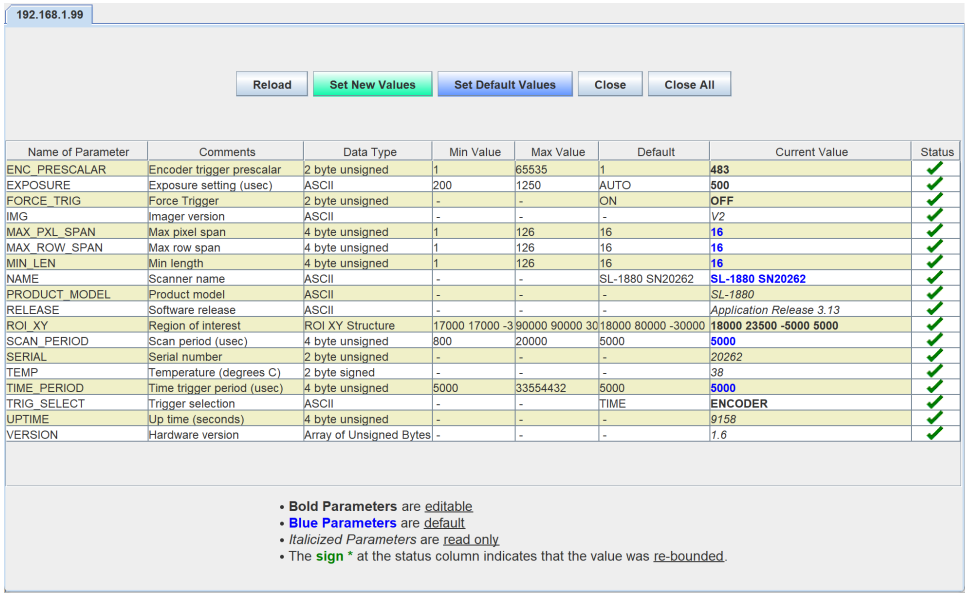
## 7.5 Settings

### 7.5.1 Scanner

For 14” log:

| Name | Description |
|---|---|
| Offset Z | 240mm |
| Center Offset | 800mm |

### 7.5.2 Hermary settings




| Name of Parameter | Comments | Data Type | Min Value | Max Value | Default | Current Value | Status |
|---|---|---|---|---|---|---|---|
| ENC_PRESCALAR | Encoder trigger prescalar | 2 byte unsigned | 1 | 65535 | 1 | **483** | ✓ |
| EXPOSURE | Exposure setting (usec) | ASCII | 200 | 1250 | AUTO | **500** | ✓ |
| FORCE_TRIG | Force Trigger | 2 byte unsigned | - | - | ON | **OFF** | ✓ |
| IMG | Imager version | ASCII | - | - | - | *V2* | ✓ |
| MAX_PXL_SPAN | Max pixel span | 4 byte unsigned | 1 | 126 | 16 | **16** | ✓ |
| MAX_ROW_SPAN | Max row span | 4 byte unsigned | 1 | 126 | 16 | **16** | ✓ |
| MIN_LEN | Min length | 4 byte unsigned | 1 | 126 | 16 | **16** | ✓ |
| NAME | Scanner name | ASCII | - | - | SL-1880 SN20262 | **SL-1880 SN20262** | ✓ |
| PRODUCT_MODEL | Product model | ASCII | - | - | - | *SL-1880* | ✓ |
| RELEASE | Software release | ASCII | - | - | - | *Application Release 3.13* | ✓ |
| ROI_XY | Region of interest | ROI XY Structure | 17000 17000 -3 | 90000 90000 30 | 18000 80000 -30000 | **18000 23500 -5000 5000** | ✓ |
| SCAN_PERIOD | Scan period (usec) | 4 byte unsigned | 800 | 20000 | 5000 | **5000** | ✓ |
| SERIAL | Serial number | 2 byte unsigned | - | - | - | *20262* | ✓ |
| TEMP | Temperature (degrees C) | 2 byte signed | - | - | - | *38* | ✓ |
| TIME_PERIOD | Time trigger period (usec) | 4 byte unsigned | 5000 | 33554432 | 5000 | **5000** | ✓ |
| TRIG_SELECT | Trigger selection | ASCII | - | - | TIME | **ENCODER** | ✓ |
| UPTIME | Up time (seconds) | 4 byte unsigned | - | - | - | *9158* | ✓ |
| VERSION | Hardware version | Array of Unsigned Bytes | - | - | - | *1.6* | ✓ |

Figure 7.6: Scanner Settings in scanner.

> **Note**
>
> **INFO:** On startup the scanner Force_Trig needs to be set to ON or the scanner will not turn on.

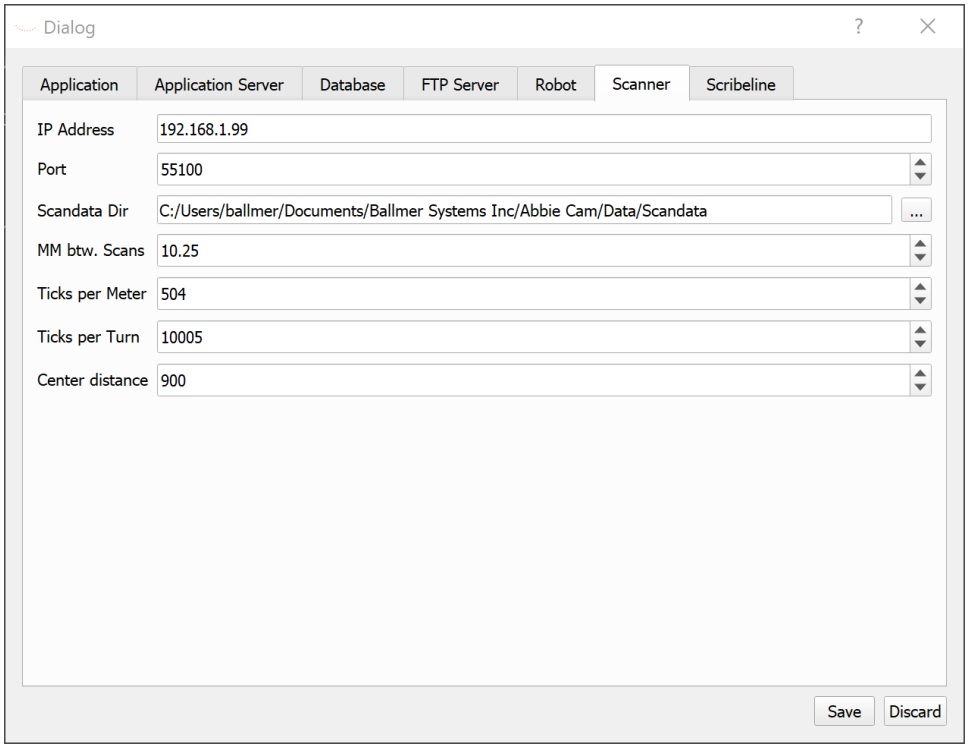



Figure 7.7: Scanner Settings.

Table 7.2: Caption of the table

| Name | Description |
|---|---|
| IP Address | IP Address of the Scanner |
| Port | Port where the Scan Data will be received |
| Scandata Dir | Folder where to save the data |
| MM btw. Scans | How many mm are between single scans |

$a^2 + b^2 = c^2$

## 7.6 Limits

Only the left and right sides of a log can be scanned at the moment.

# 8 Pep (Piece en piece)

The Pep-System is a combination of Software and Hardware that produces standard parts that automatically fit together.

## 8.1 Pep Properties

The parameters of the single cuts are defined in a database and can be adjusted as necessary in the `Pep Properties`.

Those values are default values when a Pep-Part is created and can still be overwritten by changing the properties on the part.

> **Note**
>
> **Info!** When the values are changed in the database existing panels won't take over the new values. You need to delete a panel and create a new one.
> You also can overwrite the setting in the panel parameter.

> **Warning**
>
> **Warning!** When parameters are changed in single parts they may not fit together anymore.

### 8.1.1 General

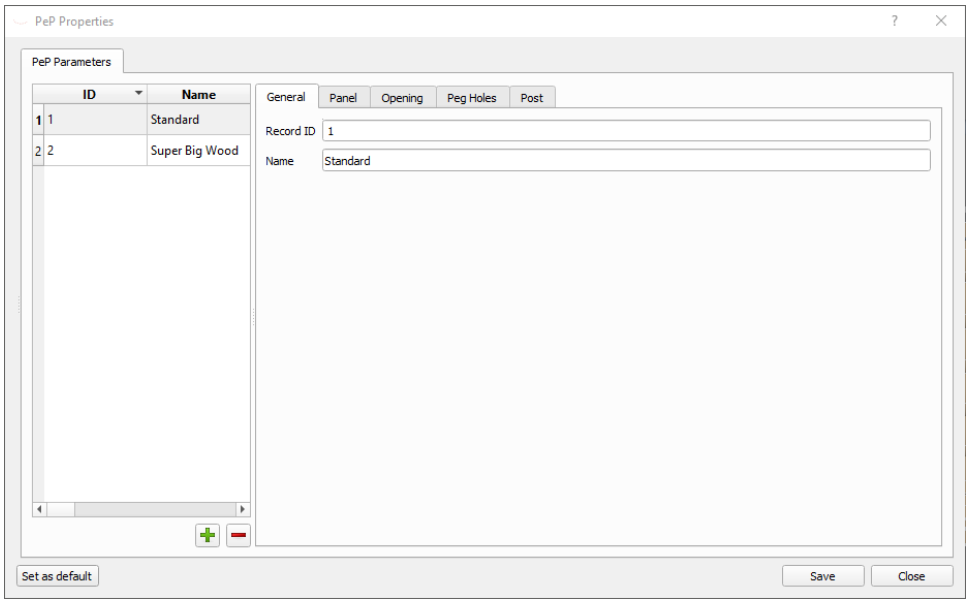



Figure 8.1: Panel Tab

| Property | Description |
|---|---|
| RecordID | Database identifier for internal use. Will be filled automatically and cannot be changed |
| Name | Name of the properties |

### 8.1.2 Panel

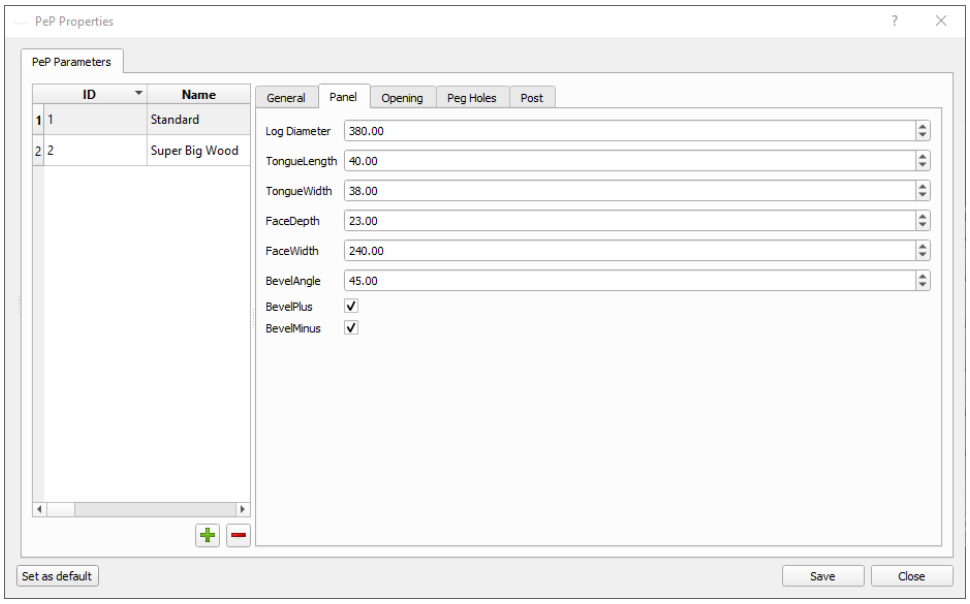



Figure 8.2: General Tab

| Property | Description |
|---|---|
| Log Diameter | Average diameter of the logs in a panel |
| Tongue Length | Length of the tongue |
| Tongue Width | Width of the tongue |
| Face Depth | Distance from the post center to the face of the panel-log |
| Face Width | The width of the face |
| Bevel Angle | Angle of the Bevels |
| Bevel Plus | Cuts a Bevel on the y-plus side of the panel |
| Bevel Minus | Cuts a Bevel on the y-minus side of the panel |

### 8.1.3 Opening

An Opening can be a window or a door.

There are multiple openings possible in a panel (vertical and/or horizontal).

Make sure the single logs are not too short after you placed the openings. A panel log needs a minimum length to work. It also depends on the part holder whether the part can be cut.

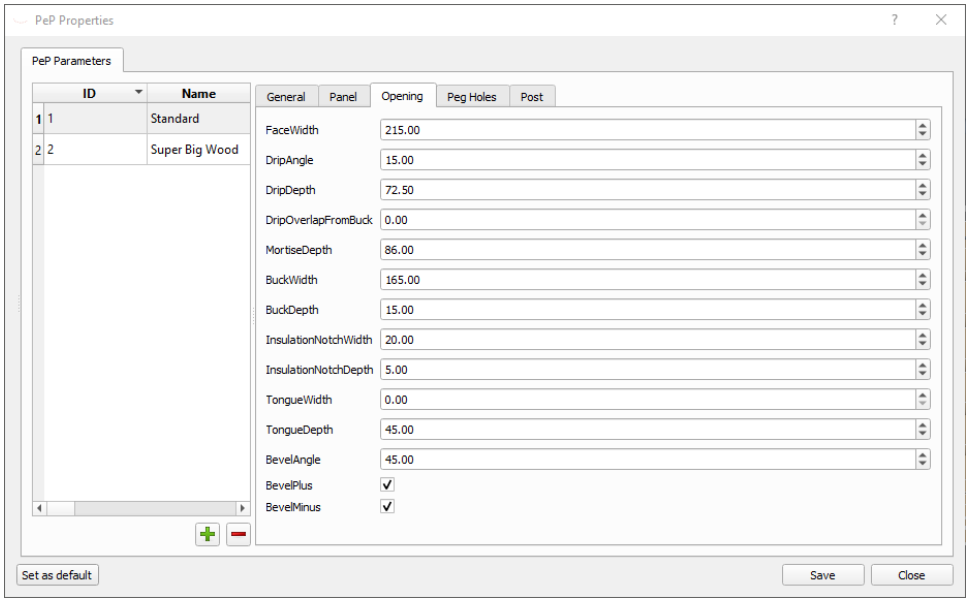



Figure 8.3: Opening Tab

| Property | Description |
|---|---|
| Face Width | Average diameter of the logs in a panel |
| Drip Angle | Angle of the drip window sill |
| Dri | |

# 9 Custom Parts

How to produce an individual Part with GabbieCam.

## 9.1 Overview

- Bring Part into place where it can be cut
  - Lock the part to the carts
  - Lock the cart to the track
- Adjust scanning/Adjust Settings “Scan settings” (scan from, scan to etc.)
- Scan
- Set workobject compensation
  - Cut off from pos1=0.0
  - Point 1

| Axis | Value |
|---|---|
| x | 0.0 |
| y | 0.0 |
| z | Scan ZOffset |

  - Point 2

| Axis | Value |
|---|---|
| x | 10’0000.0 |
| y | 0.0 |
| z | Scan ZOffset |

- Add a Part and set the final dimensions (diameter/width/height/length)
- Align Part (cylinder or beam) in GabbieCam to the center (x,y,z) of the scandata
- Place the cuts
- Choose workobject wo_Scan
- Create Robot Code
- Cut the Part

# 10 Production

## 10.1 Placing

Before placing the part in front of the robot make sure that the orientation (butt/tip) is correct and aligns to the part in GabbieCam.

## 10.2 Calibrate a part

The robot needs to know where the part is before you can start cutting. Since we don't have a fixed coordinate system, like a CNC table, we need to define where the X/Y/Z coordinate system is and at what angle.

There are two ways to do that:

1. 2/3 point measurement
2. Scanner

### 10.2.1 2/3 point measurement

#### 10.2.1.1 Difference between 2 and 3 point measurement

With this method we are using the robot with the tool Pin to measure the position of the part. The difference between a 2 or 3 point measurement is that the 2 point assumes that the rotation over X is 0 degrees, on a 3 point we also rotate over X.

#### 10.2.1.2 2 Point measurement

Let's say you want to measure a log — you have a center line through the log. You will mark the butt and tip with a marker and so define the line.

So now we have 2 points for the start and end of that center line. Go with the tool to the first point (P1) and record the coordinates (X/Y/Z values). Do the same on the other side with P2.

Make sure the tool Pin is selected plus the workobject you are going to cut with.

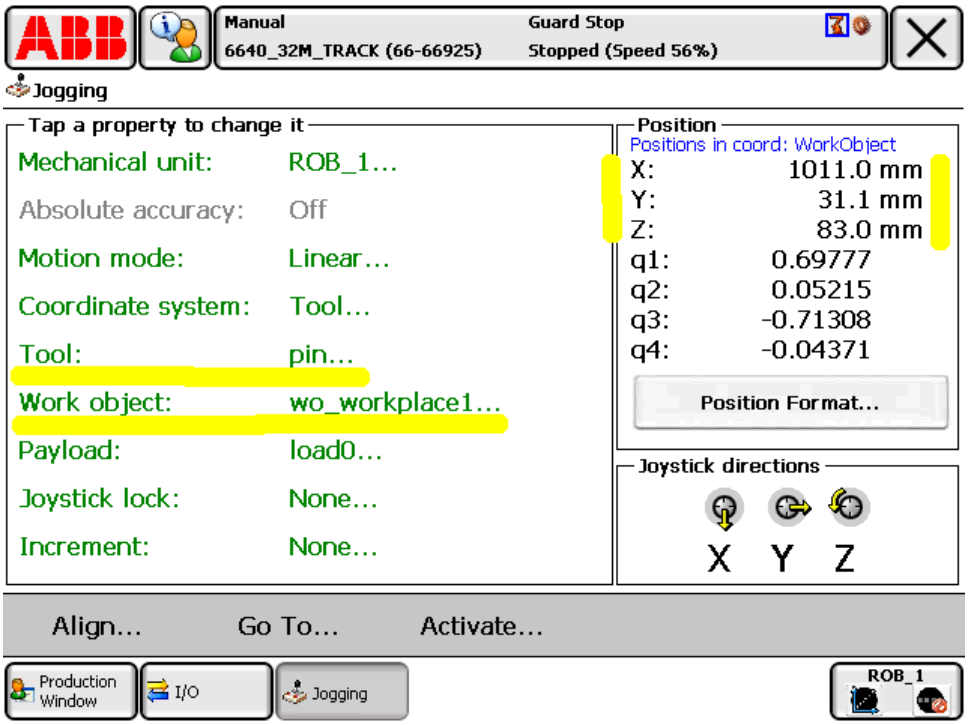



Figure 10.1: Coordination points

#### 10.2.1.3 Insert the points

Insert the points into the dialog “Workobject Compensation”.

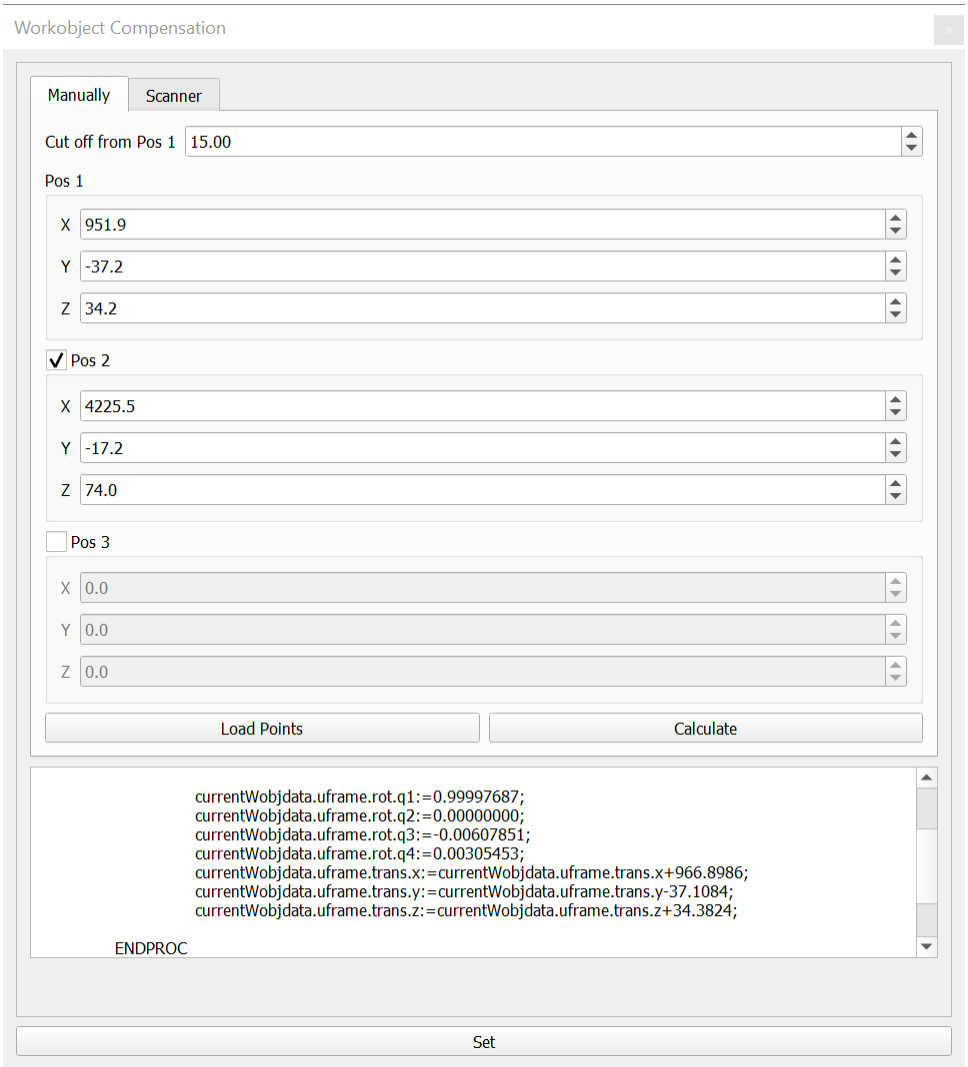



Figure 10.2: Workobject Compensation Dialog

| Name | Description | Datatype |
|---|---|---|
| Cut off from Pos1 | Distance the zero point will be moved into the part | Double |
| Pos 1 X | X value of pos 1 | Double |
| Pos 1 Y | Y value of pos 1 | Double |
| Pos 1 Z | Z value of pos 1 | Double |
| Pos 2 X | X value of pos 2 | Double |
| Pos 2 Y | Y value of pos 2 | Double |
| Pos 2 Z | Z value of pos 2 | Double |

| Name | Description | Datatype |
|---|---|---|
| Pos 3 X | X value of pos 3 | Double |
| Pos 3 Y | Y value of pos 3 | Double |
| Pos 3 Z | Z value of pos 3 | Double |

> **Note**
>
> **INFO:** Set property scan at the log to false (means you are using 2/3 point measurement and not the scanner) and choose the same workobject you were measuring the points with.

After inserting the values press “Calculate” to calculate the values for the robot. You can see the result in the text field below. To confirm click on the button “Set” at the very bottom. Confirm to write the values to the server so the robot can read them.

The coordinate system is now aligned as shown in the picture below and you can now start cutting.

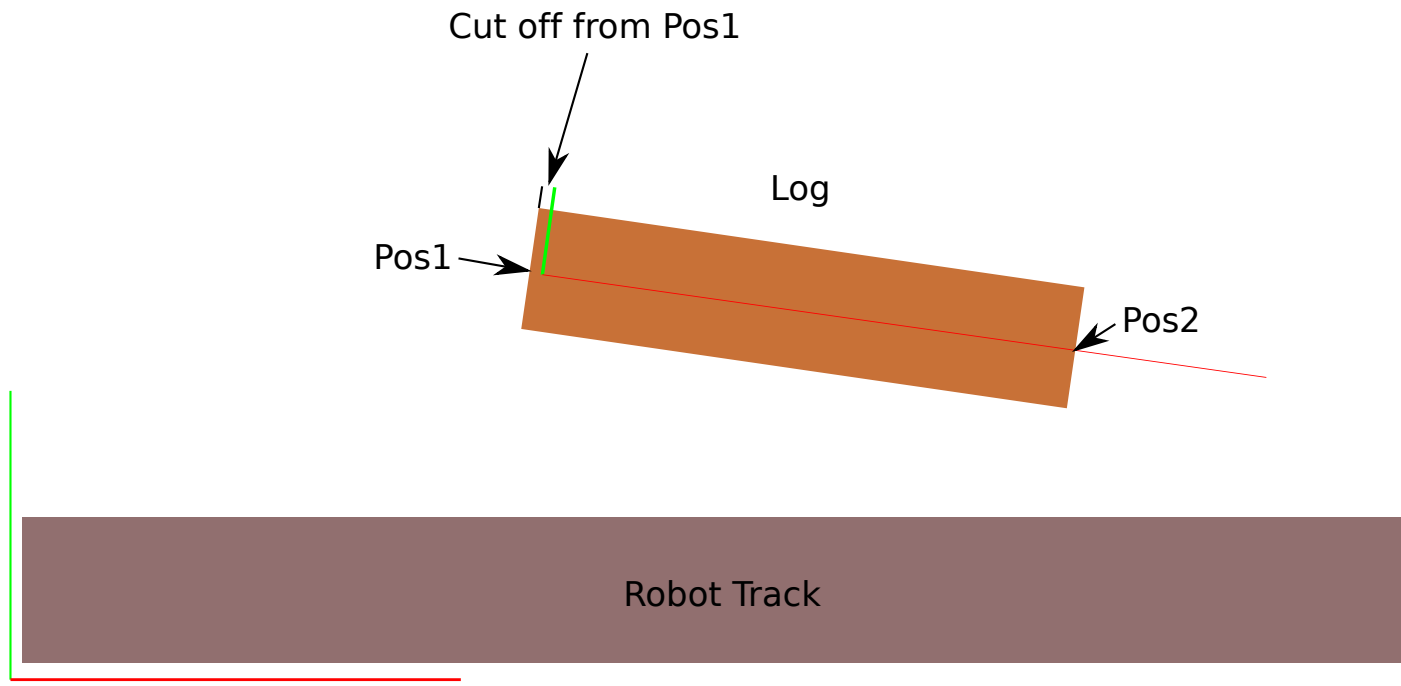



Figure 10.3: 2 point measurement

### 10.2.2 Scan Orientation

If you choose Scan Orientation then you have to scan the part first and load it into the scan. Move the scan points so that the part fits nicely into it.

Set Scan Orientation in the properties to `TRUE`.

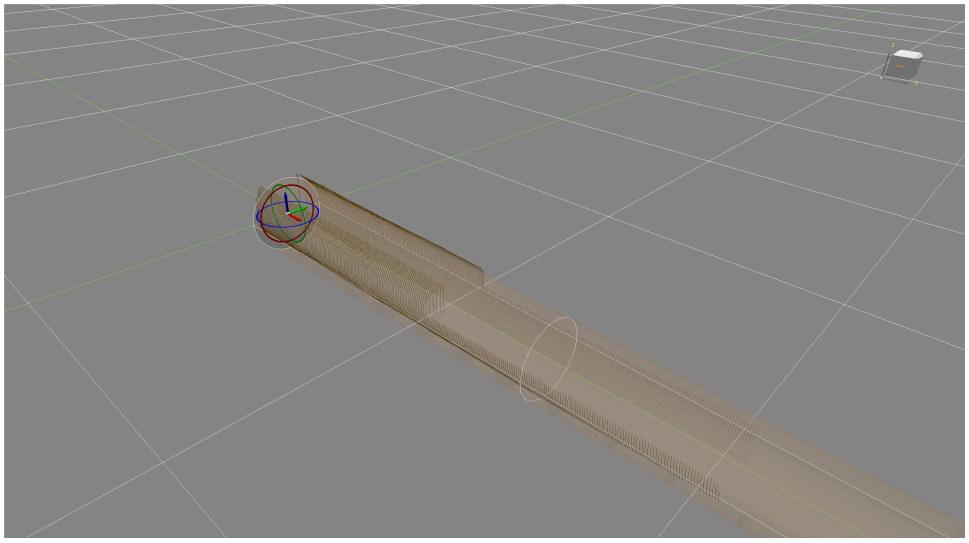


Figure 10.4: Scan attached to a part

## 10.3 Post

### 10.3.1 Loading

1. Choose fitting log by measuring tip, butt and length against the drawing
2. Load the log with butt towards X0 — tip towards X+ on the wagon. Keep a longer distance at the tip side for the cut off (in case the log is too long)
3. Screw the log to the wagons
4. Move the log to cutting position

### 10.3.2 Placing

If the post is a 90 degree post then find the 2 sides that are the most straight. This has 2 advantages:

1. Less wood removal
2. The flair in the butt looks good from the outside of the building

### 10.3.3 Cutting

1. Find the center with the template
2. 2-point measurement with pin
3. Start cutting with chainsaw for the ends

> **Note**
>
> **Info:** There are currently some restrictions:
>
> - Orientation of tool at top cuts with chainsaw has to be [90,0,90]
> - Orientation of tool at side cuts with chainsaw has to be [-90,0,-90]
> - If cutting roof angle from minus side set trackoffset 2300
> - Use only 180 (top) and 270 (side) cuts. If you need 90 then inverse posY and rotY or the chainsaw runs in the wrong direction and crashes
> - Top Tenon makes the spindle turn in the wrong direction and crashes the cable. So cut bottom tenon instead but check the orientation of the log first. Means butt is at the end

## 10.4 Panel

### 10.4.1 Cutting dimensions

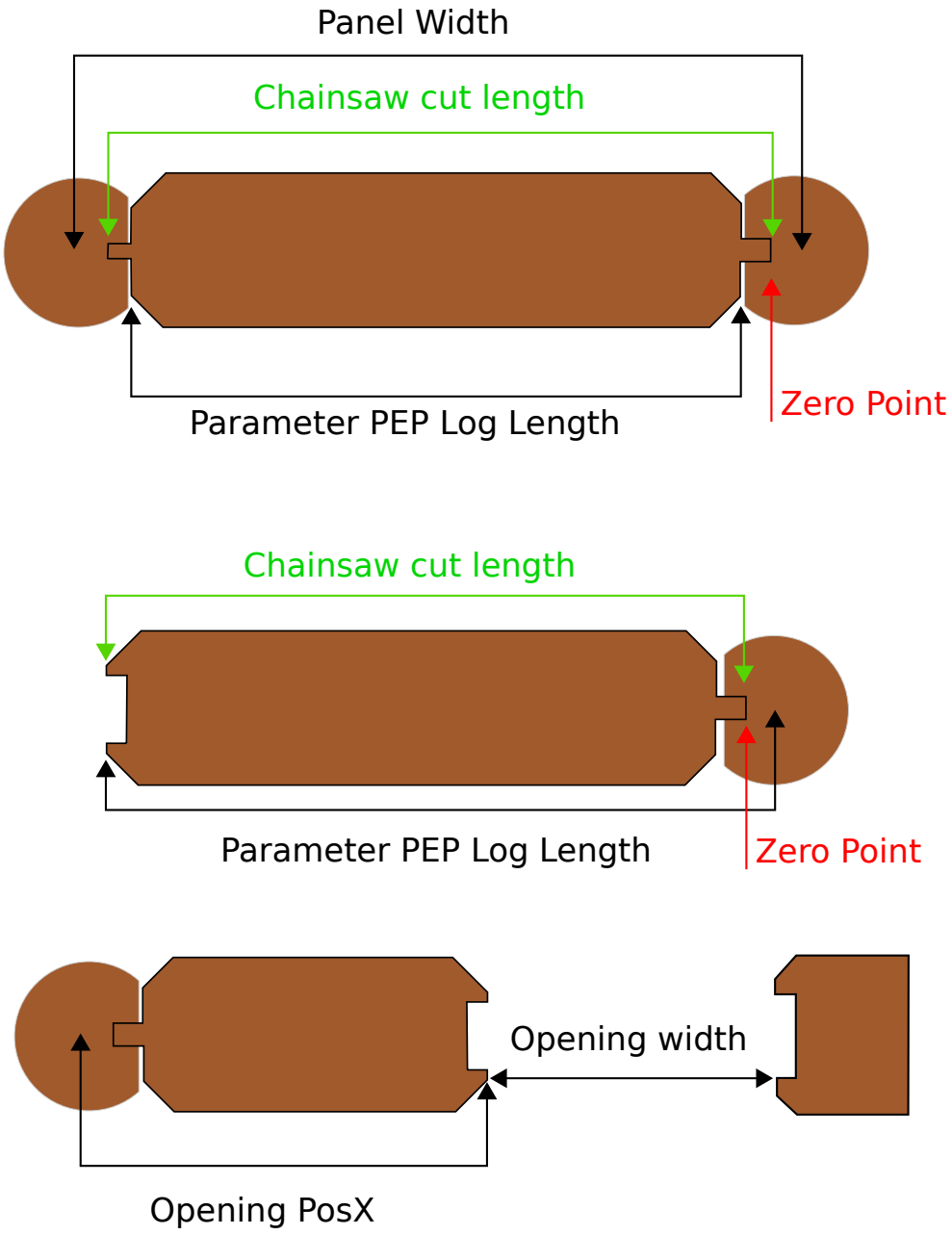



Figure 10.5: Part Dimensions

#### 10.4.1.1 Regular panel log

If the first scribeline is higher than the second one (happens when the bottom log starts before the log above) then the angle has to be plus -15.

Dimension is center post to center post.

Example: if center to center post is 5000mm then the cut log length is 5000 - 2x150 (face width) + 2x40 (tongue length) = 4780mm

#### 10.4.1.2 Window end to post end

Set the length of the log from tongue to total end of the log. If you want to make a log with window to post then add the 40mm for the tongue to the opening width.

Example: if opening width is 2000mm then the log length is 2040mm.

### 10.4.2 Chinking

Nothing special here.

### 10.4.3 Scanning for scribeline

- Align the scan to the log
- Do not move the log

### 10.4.4 Opening

Precut with chainsaw needs to be tested.

## 10.5 Top Plate

> **Note**
>
> **Info:** There are currently some restrictions:
>
> - Orientation of tool at top cuts with chainsaw has to be [90,0,90]
> - Orientation of tool at side cuts with chainsaw has to be [-90,0,-90]
> - If cutting roof angle from minus side set trackoffset 2300
> - Use only 180 (top) and 270 (side) cuts. If you need 90 then inverse posY and rotY

or the chainsaw runs in the wrong direction and crashes

# 11 Tools

## 11.1 GabbieCam

### 11.1.1 Manipulator

# 12 IPC-Host

## 12.1 What is it for?

To find a Scribeline is extremely calculation intensive. On a 16ft log on average 1'100 billion (1.1 million x million) calculations are necessary to find a single fit between the two logs.

Even with modern CPUs (Computer Processing Units) this would take way too long. For this reason the calculations are made on the Nvidia GPU (Graphics Processing Unit). A Nvidia RTX 2080 GPU has 2944 cores, an Intel i7 (depending on the model) less than 10 cores. That means the GPU can calculate 2944 points in the same time while a CPU only 10. GPUs are also more optimized for 3D calculations and that is exactly what needs to be done to find the scribeline.

To be able to calculate a scribeline you need a Nvidia Graphics Card that is CUDA enabled.

## 12.2 Start order

The IPC-Host must be started **before** GabbieCam, otherwise GabbieCam cannot find the IPC-Host.

## 12.3 Start of the IPC-Host

When you start the IPC-Host there will be an icon (second in the picture below) in the System Tray.

Figure 12.1: IPC-Host is running in the System Tray

## 12.4 Functions

By right clicking on the icon in the System Tray a menu will be shown.

Here is what the single items will do:

### 12.4.1 Save as

Here the log can be saved to a file.

### 12.4.2 Clear

This will clear all text. A *Save as* dialog will automatically appear to remind you to save the log. If you don't need to save the log simply click Cancel and the list will be empty.

### 12.4.3 Minimize/Maximize/Restore

This has the same function as a standard Windows window.

### 12.4.4 Stay on top

This will keep the window above everything. This is handy when you want to see the results while working in GabbieCam.

### 12.4.5 Close

Closes the IPC-Host.[1]

[1] Please note that clicking on the X in the window does not close the IPC-Host. It just hides the window. GabbieCam can still perform Scribeline calculations.

# 13 Networking

## 13.1 OpenVPN

### 13.1.1 What is OpenVPN

To access the work computer in a shop you need to make a VPN connection first.

### 13.1.2 Client software

Download and install the OpenVPN-Connect Client.

### 13.1.3 OVPN file

You need an OVPN file to connect to the server. You need to send us a request and we will produce one for you.

# 14 Drawings

## 14.1 Pep

### 14.1.1 Log End for post

### 14.1.2 Window

# 15 System

# References

# 16 Summary

In summary, this book has no content whatsoever.

```
[1] 2
```