Bamboo Bility

Instruction Manual

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Project Description

Bamboobility is an open-source initiative that aims to enable the creation of a low-tech wheelchair that is accessible to all people, regardless of geographic or economic constraints.

The project focuses on affordability, simplicity, and accessibility. The wheelchair is designed as a DIY build, using low-cost materials and simple tools that are widely available, making it possible to reproduce and repair in low-resource contexts.

Developed at the **RWTH Aachen University** in collaboration with the Swiss association **Roll On**, Bamboobility places special emphasis on the use of bamboo, an abundant, renewable, and locally available material in many regions of the world. Bamboo's strength, flexibility, and sustainability make it a suitable core material for a robust and repairable wheelchair design.

As an **open-source project**, Bamboobility actively encourages discussion, experimentation, and shared improvements. Builders, users, engineers, designers, and communities are invited to contribute ideas, adaptations, and refinements, ensuring that the wheelchair can continuously evolve to better meet real-world needs.

Rollon.

Bamboo Bility

Intended Use and Loading Capacity

The Bamboobility wheelchair is designed for daily mobility use in both **indoor and outdoor environments**. While the wheelchair can be used outdoors, **prolonged exposure to rain is not advised**, as moisture may cause the rope bindings to absorb water and temporarily lose tension, which can affect structural stability.

The wheelchair supports **self-propelled use** through hand rims mounted on the wheels, allowing the user to move independently. In addition, it is designed for **assisted use**, where a second person can push the wheelchair from behind. The design is optimized for regular walking **speeds of up to approximately 8 km/h**. It is not intended to be pulled behind motorized vehicles, as this may introduce forces beyond the design limits.

Bamboobility is suitable for daily use, including longer distances. However, when traveling for extended periods, it is recommended to take regular breaks, for example every 30 minutes, to reduce strain on the upper body. The wheelchair is **not intended as a sports or racing device**, and it should not be used for activities involving high speed, jumping, or aggressive maneuvering.

The wheelchair can also be used in rural environments with less fortified or uneven roads. That said, even and well-maintained surfaces are strongly recommended. The wheelchair is rated for safe operation on slopes up to **12° ascent**, **11° descent**, and **16° lateral tilt**.

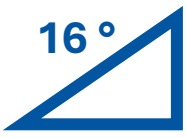
Intended Use and Loading Capacity

The **maximum recommended loading capacity is 80 kg**, including the user body weight and potential luggage. This limit is based on testing and is intended to ensure safe operation under normal conditions. The actual **load-bearing capacity may vary** depending on several factors, including:

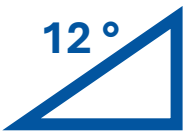
- The quality and species of bamboo used
- The precision and strength of the rope bindings and knots
- The overall craftsmanship and construction quality
- Regular inspection and maintenance of the wheelchair

Rapid **changes in temperature and humidity should be avoided**, as they can lead to bamboo splitting or loosening of joints. Whenever possible, the wheelchair should be **stored in a dry, sheltered environment** to prolong its lifespan and maintain safety.

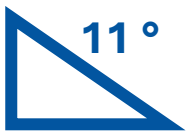
Max. load 80 kg



Max. slope sideways



Max. slope ascent



Max. slope descent

Max. velocity 8 km/h

Avoid changes in temperature

Avoid changes in humidity

Avoid intense rainfall

Cost Calculation

The cost estimates are based on inquiries with potential suppliers for quantities corresponding to the production of **1,000 wheelchairs**. Prices for locally sourced materials were calculated using **local market prices in Indonesia**. As a result, the total cost of the wheelchair should be understood as a **general reference only** and cannot be directly applied to other regions without appropriate adjustments.

Additionally, the stated costs do **not include labor expenses** or costs related to tool wear, maintenance, or replacement incurred during the construction process.

	Amount per chair	*Costs per unit*	***Total costs***
Wheelchair wheels	2 pcs	$ 10.20 / pcs	**$ 20.40**
Bamboo rods	30 m	$ 0.19 / m	**$ 5.70**
Foam material	0,4 m^2	$ 12.20 / m^2	**$ 4.88**
Heavy-duty wheels	2 pcs	$ 1.35 / pcs	**$ 2.70**
Sea freight (1000 pcs)	FCL + 2,5 m^3	$ 2130 + $ 55 / m^3	**$ 2.60**
Steel rod	1 pcs	$ 2.15 / pcs	**$ 2.15**
Natural fiber rope	100 m	$ 0.02 / m	**$ 2.00**
Inland freight (30 pcs)	100 km	$ 2.60 / pcs	**$ 1.28**
Kit packaging costs	1 pcs	0.55 $ / pcs	**$ 0.55**
Clamp ring	2 pcs	0.55 $ / pcs	**$ 0.55**
Adhesive tape	1 roll	$ 0.24 / roll	**$ 0.24**
Total costs			**$ 43.05**

Suggested Suppliers

Externally sourced items

The following items are available on request as a DIY kit through our partner NGOs. For each component, we recommend qualified suppliers suitable for bulk orders and centralized kit assembly. Distribution and shipping must be centrally organized e.g., by the NGO.

	Suggested Suppliers
Wheelchair wheels	Qindao Major Tools (CN), Qingdao Rightway Industrial (CN)
Heavy-duty wheels	Kingstron Appliance (CN), Guangzhou Xinyin Industrial Parts (CN)
Steel rod	Sms Perkasa (ID), PT. Lob Machinery Jaya (ID), Hdt Tubing (CN)
Clamp ring	Shandong Zoxa International (CN), Wuxi Ashility Technology (CN)

Locally sourced items

The following items should be sourced locally, preferably by the builder. We recommend using **local hardware stores** or **online marketplaces**, such as Lazada or Toko in Indonesia. When building multiple wheelchairs at once, additional cost savings can be achieved through bulk purchasing.

	Suggestions
Natual fibre rope	Choose strong rope with at least 4 mm diameter
Adhesive tape	Use thin tape to make it easier to thread the rope through the holes
Bamboo rods	Choose thick-walled and dried bamboo, for example Tam Vong
Foam and padding	Choose at least 3 cm thick padding, if available, use pipe insulation for the handles and cushions for the seat. It is also possible to use (rice) straw or other natural material

Assembly Instructions

Materials, Tools, Construction Overview

Basic Binding Technique

Preparation

Framework Module Construction

Interface Module Construction

Mobility Module Construction

Final Assembly

Materials

2x
Clamp Ring 20mm

100 Meter
Natural Fiber Rope

600 Millimeter
Steel Rod with 20mm outer diameter and 4mm wall thickness

25 Meter
Tam Vong Bamboo

2x
Heavy-Duty Wheels

2x
Wheelchair Wheels

Some
Adhesive Tape

700 Millimeter Pipe Insulation
Pipe Insulation

2x
Cushioning

Tools

Electric Drill

Wood Saw

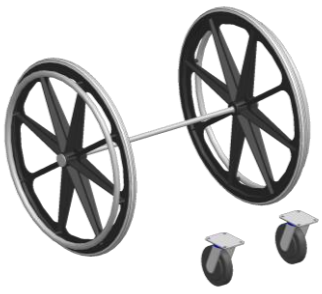
6mm Drill Bit for Steel

5mm Drill Bit for Wood

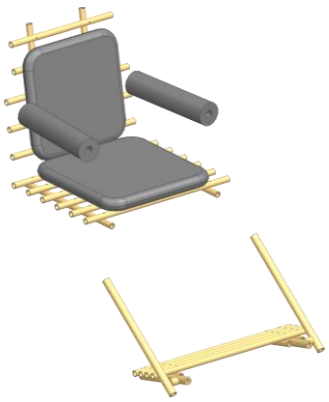
Scissors

Allen Key for Clamping Rings

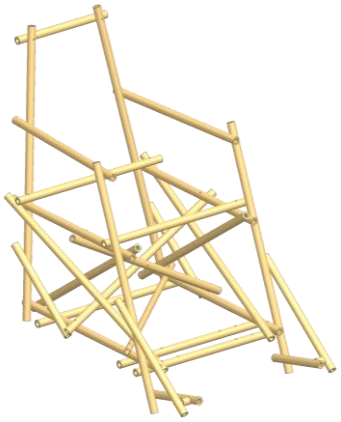
Construction Overview



Mobility Module



Interface Module

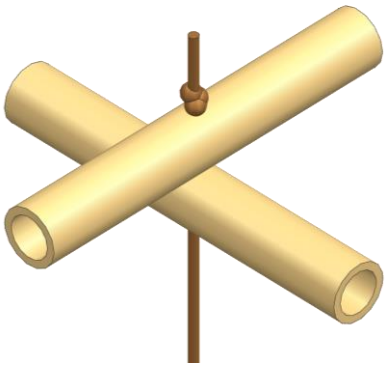


Framework Module

Basic Binding Technique

Simple square lashing

1



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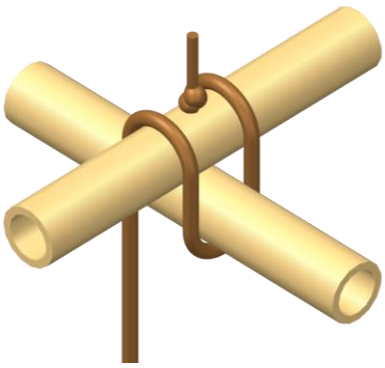

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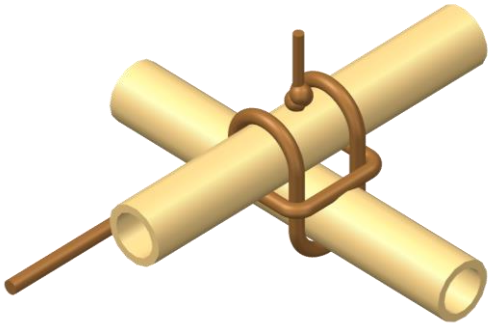

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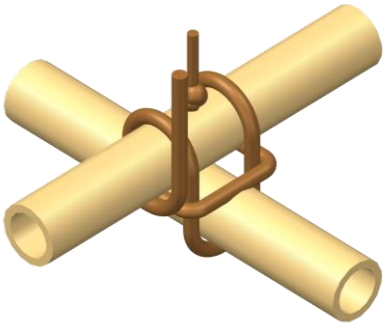

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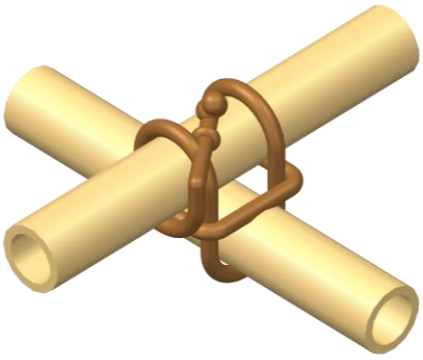
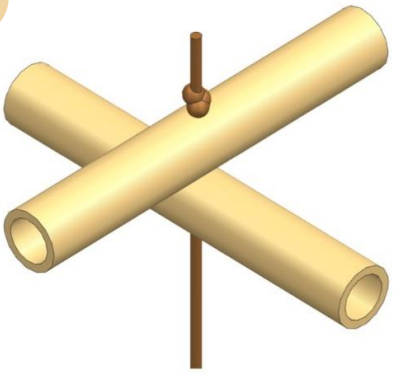


1. Pull the knotted rope through the rods
2. Bind the rope around the rods
3. Frap the rope between the rods with high tension
4. Pull the rope up while keeping tension
5. Knot the rope beginning and end together using a classic square knot

Basic Binding Technique

Strong square lashing

1



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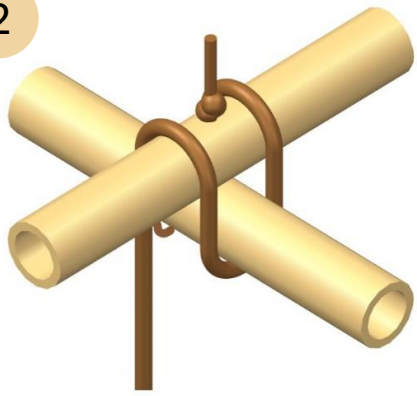

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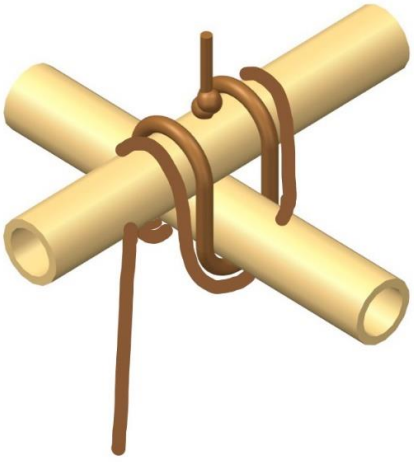

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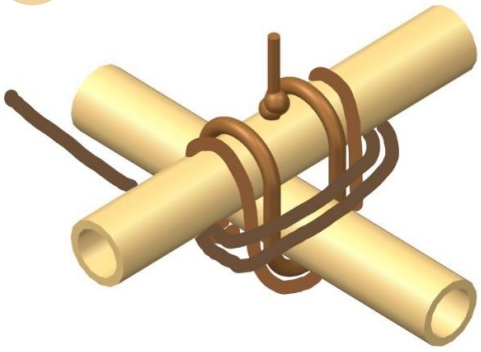

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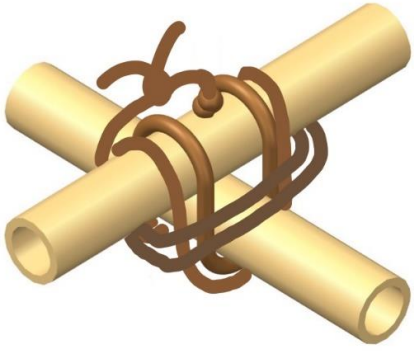
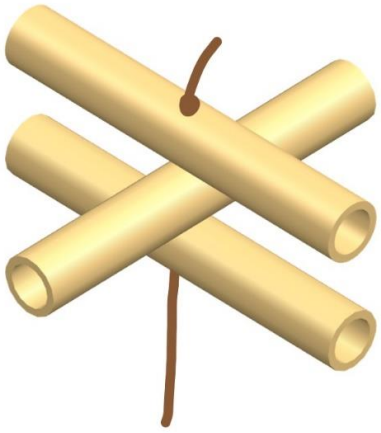


1. Pull the knotted rope through the rods
2. Bind the rope around the rods
3. Repeat Step 2
4. Frap the rope between the rods with high tension multiple times
5. Knot the rope beginning and end together using a classic square knot

Basic Binding Technique

Double strong square lashing

1



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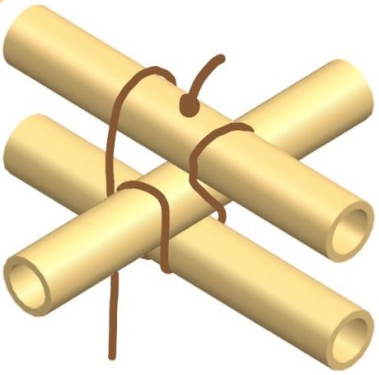

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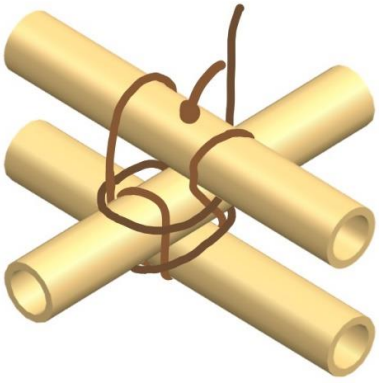

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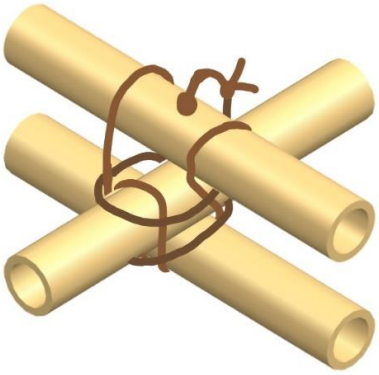
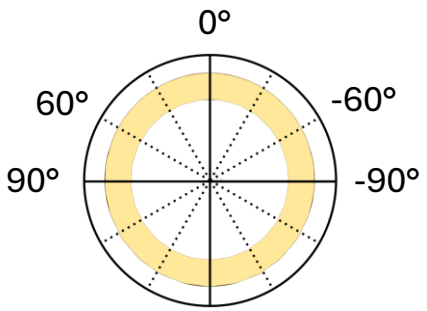


1. Pull the knotted rope through the rods
2. Bind the rope around the rods multiple times (not visualized for greater clarity)
3. Frap the rope between the lower and upper rods with high tension
4. Knot the rope beginning and end together using a classic square knot

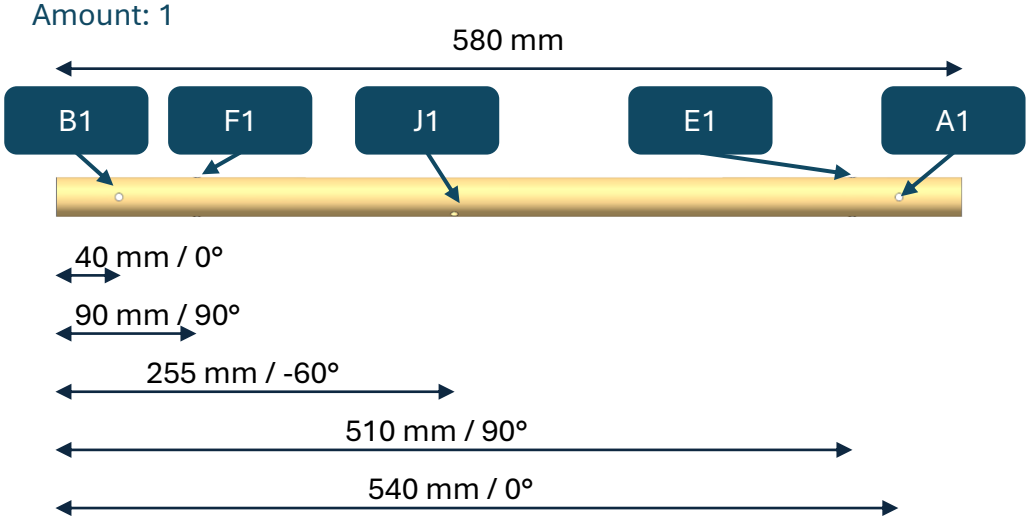
Template



Step: Rod Preparation
Needed Materials: Bamboo
Needed Tools: Wood saw, electric drill, 5 mm drill bit for wood

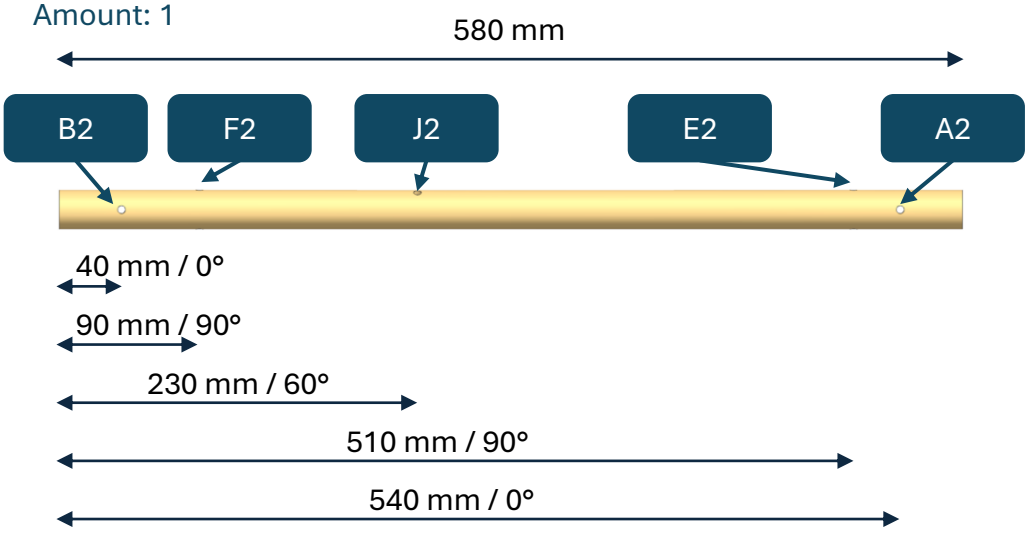
1. Mark the lengths, holes and hole numbers on the bamboo
    - The hole positions are defined by the distance from the bamboo edge and the angle as can be seen in the upper right corner
2. Cut the bamboo using a wood saw
3. Drill 5 mm holes at the marked positions using the electric drill with a 5 mm drill bit for wood

Bamboo 1.1
Amount: 1

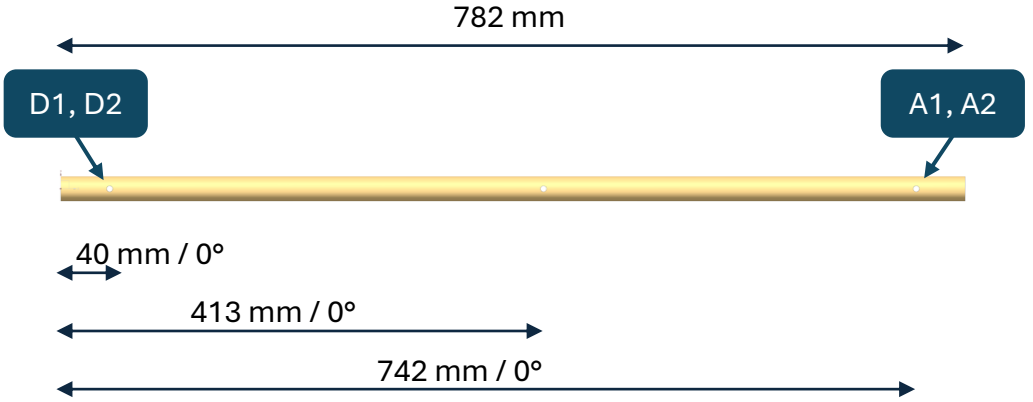


Preparation

Bamboo 1.2
Amount: 1

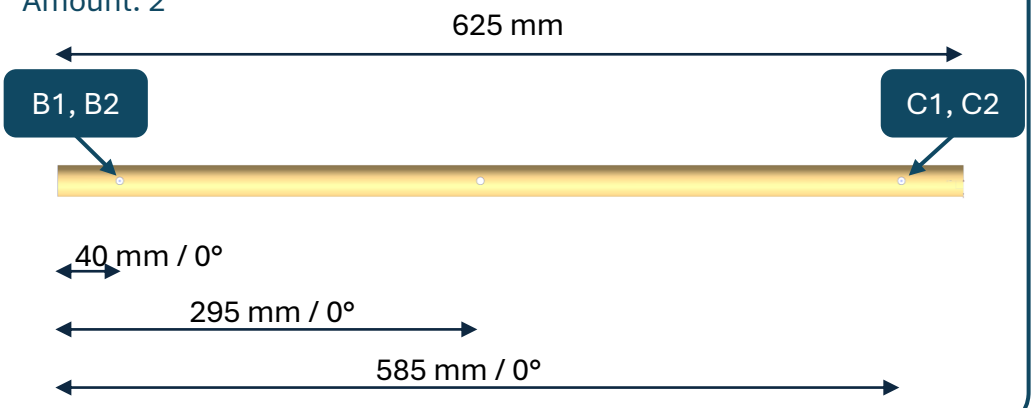


Bamboo 2
Amount: 2

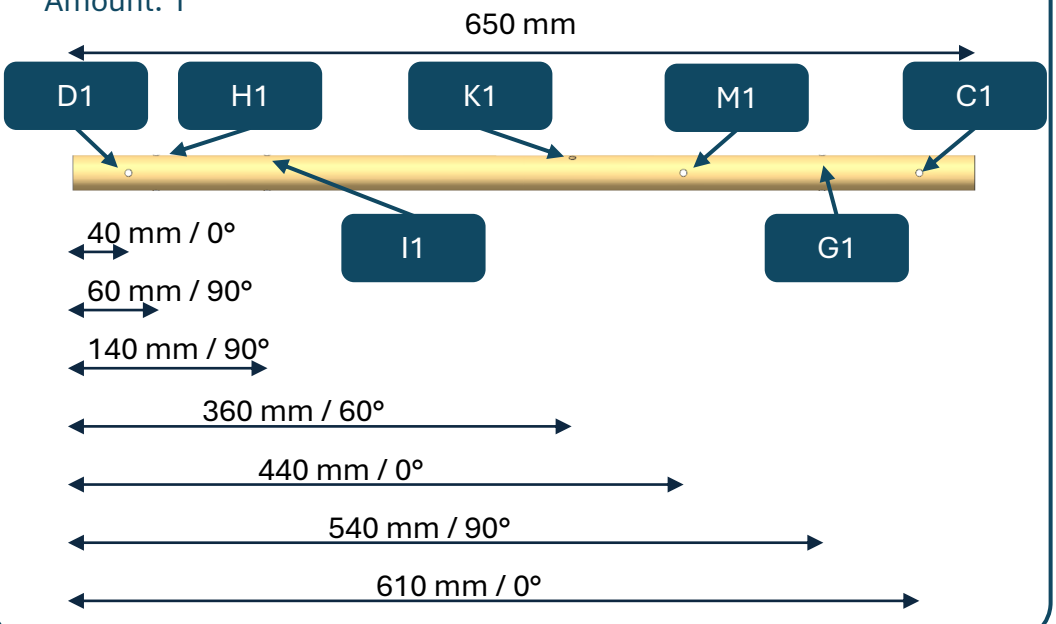


Preparation

Bamboo 3
Amount: 2

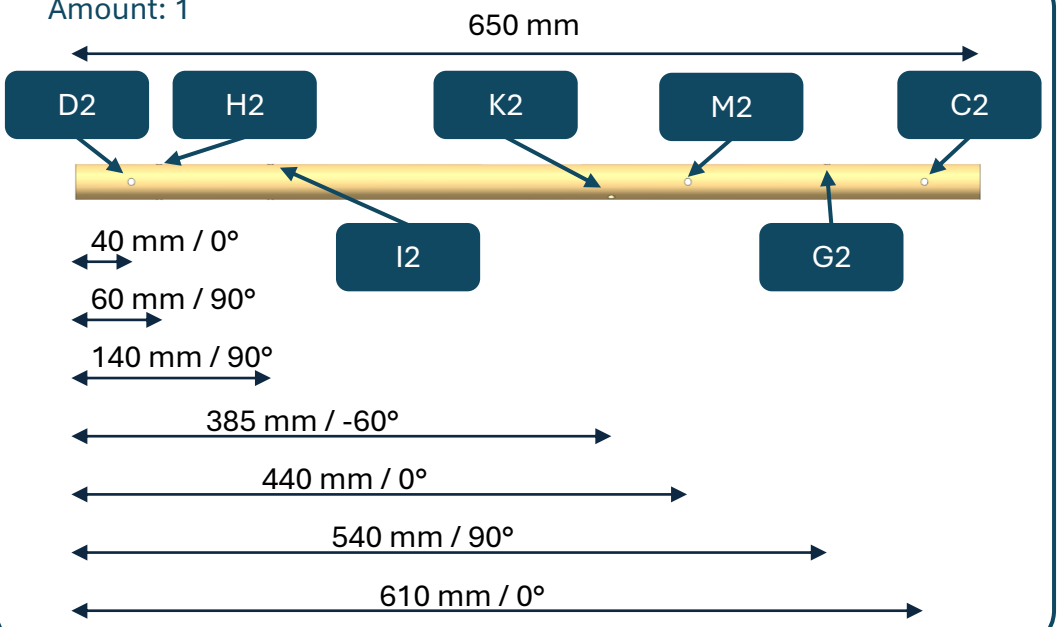


Bamboo 4.1
Amount: 1



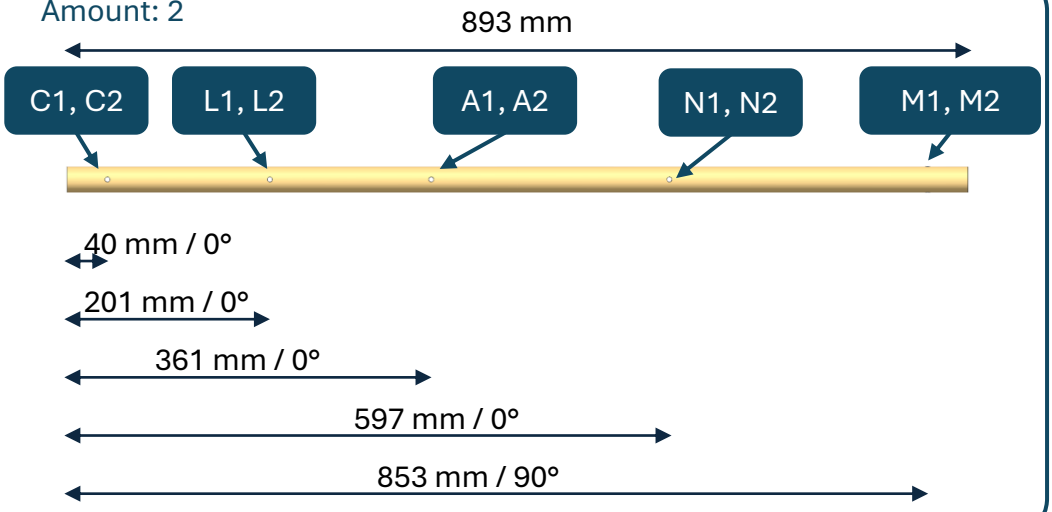
Bamboo 4.2

Amount: 1



Bamboo 5

Amount: 2



Bamboo 6
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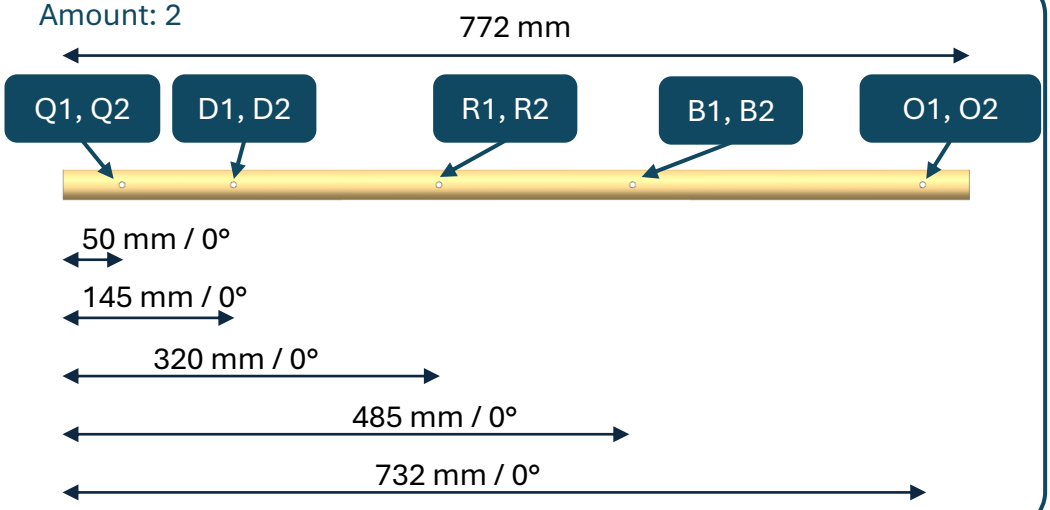

Bamboo 7
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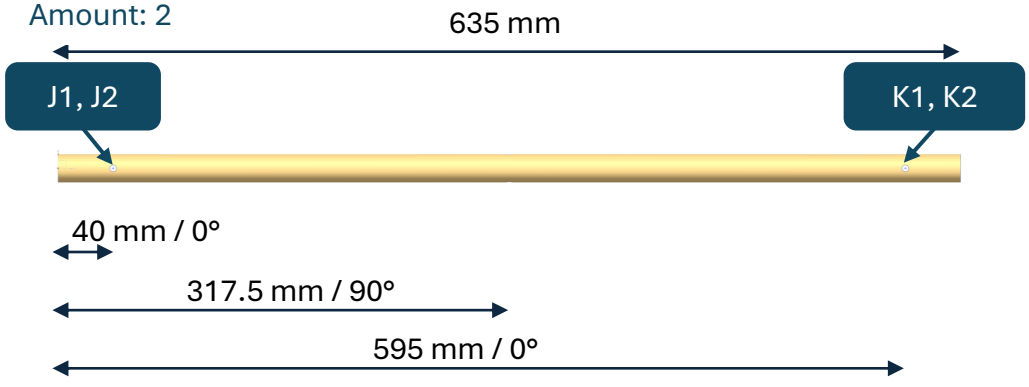
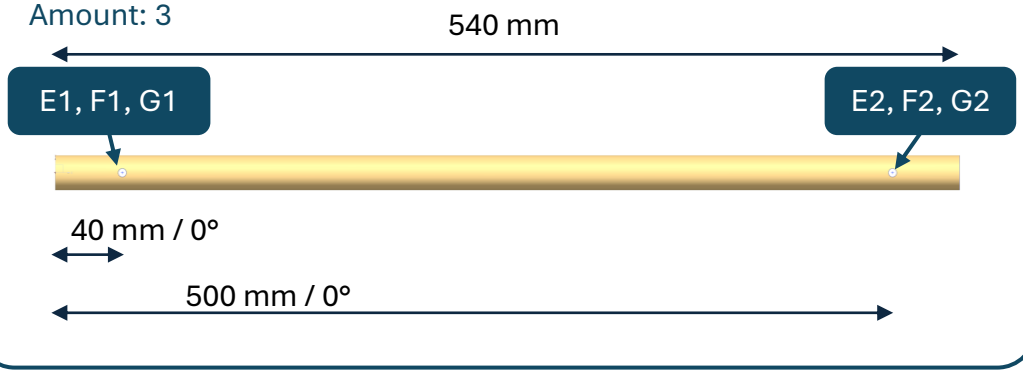


Bamboo 8
Amount: 3



Preparation

Bamboo 9

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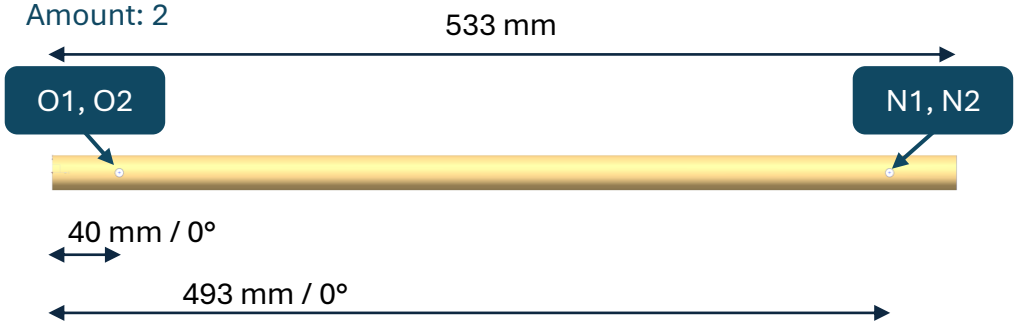
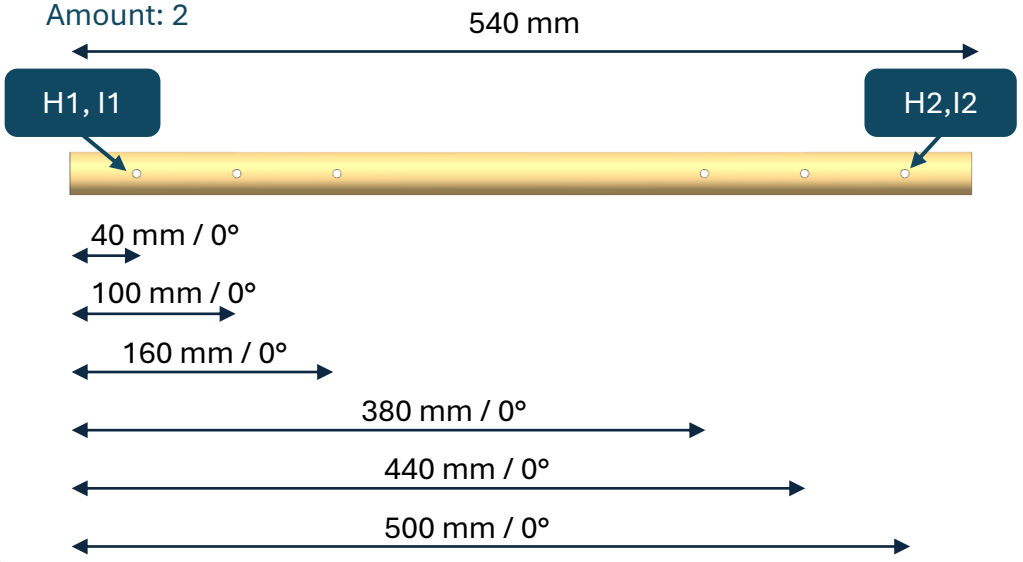


Bamboo 12

Amount: 2



Bamboo 21

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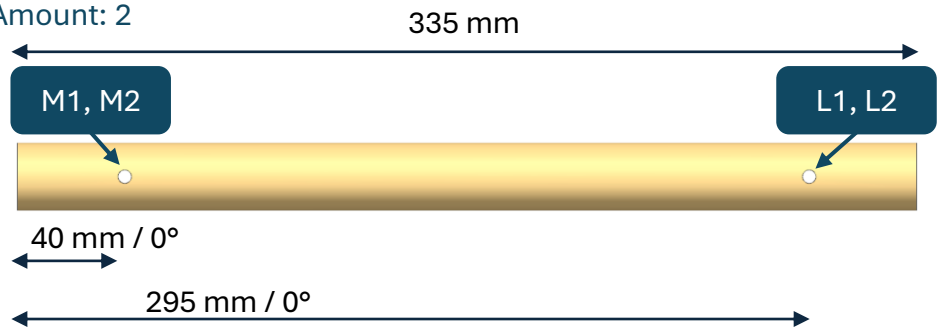

Preparation

Bamboo 22

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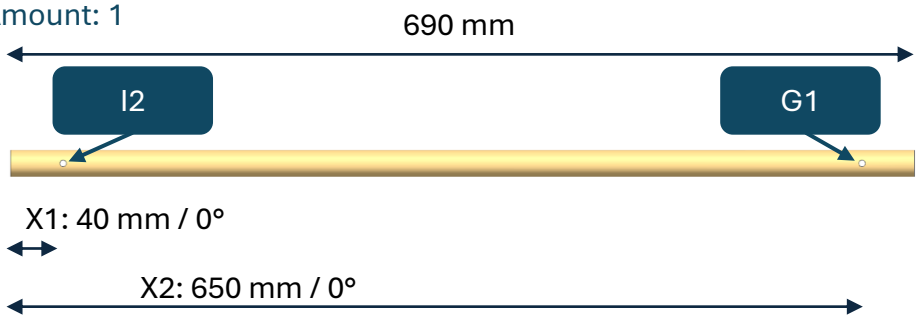
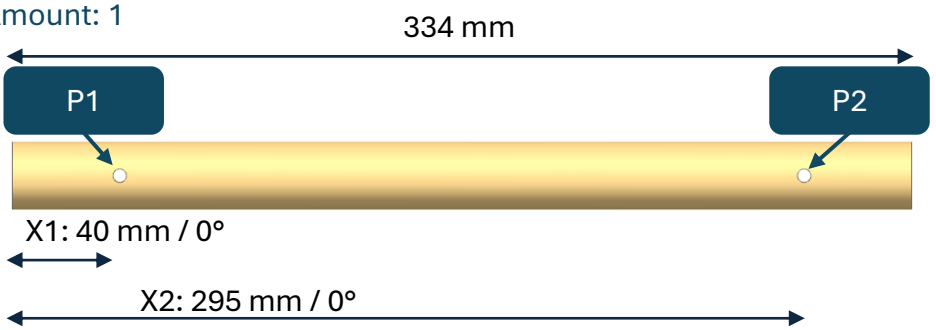


Bamboo 20

Amount: 1



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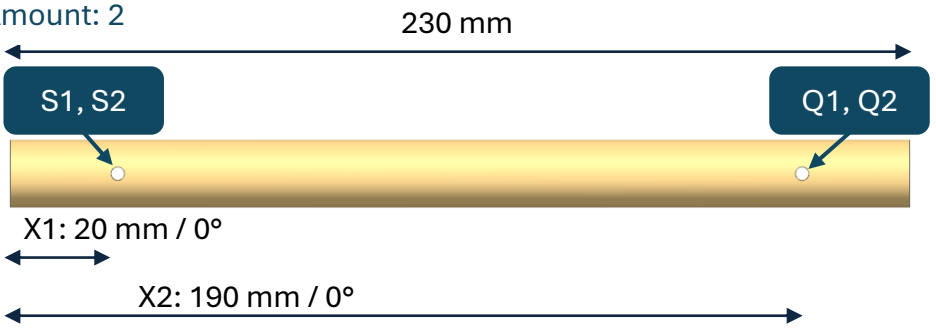

Preparation

Bamboo 14

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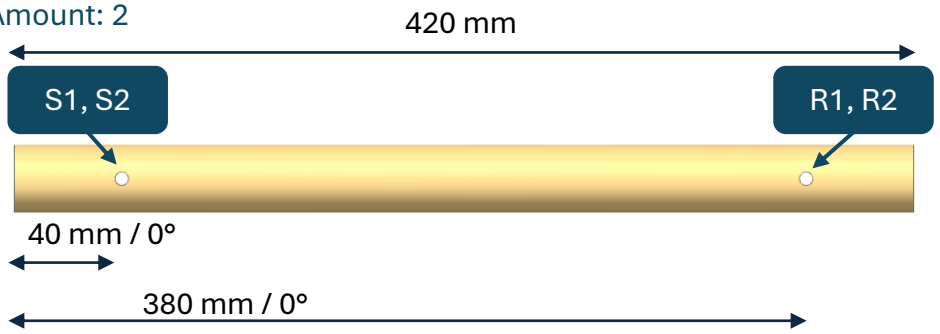
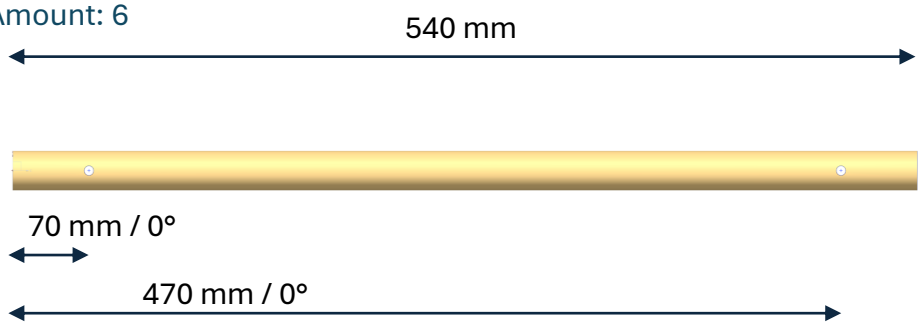


Bamboo 10

Amount: 6



Bamboo 11

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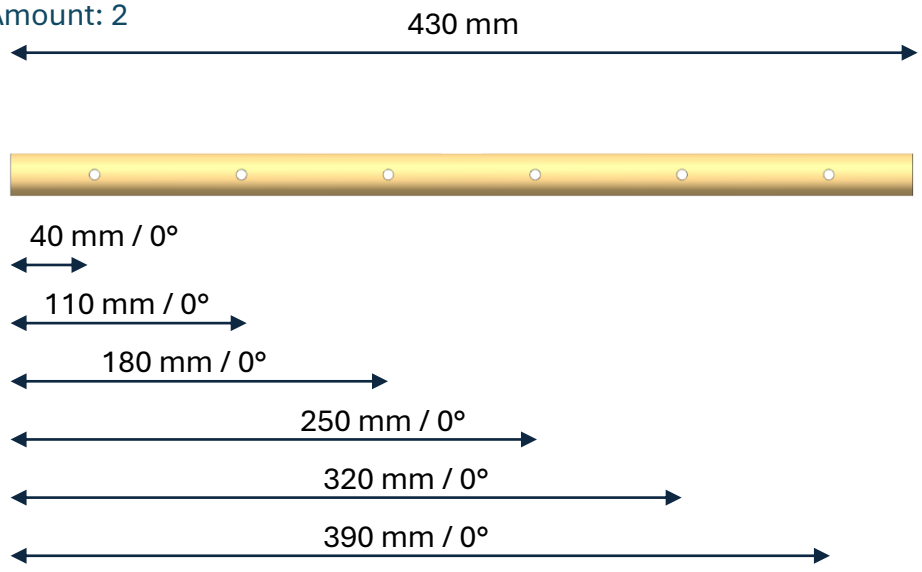

Preparation

Bamboo 17
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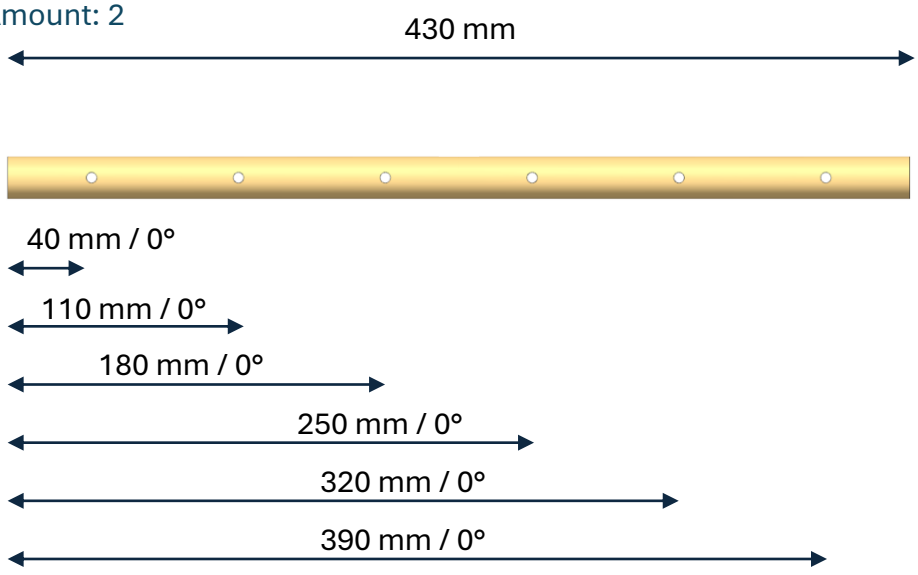

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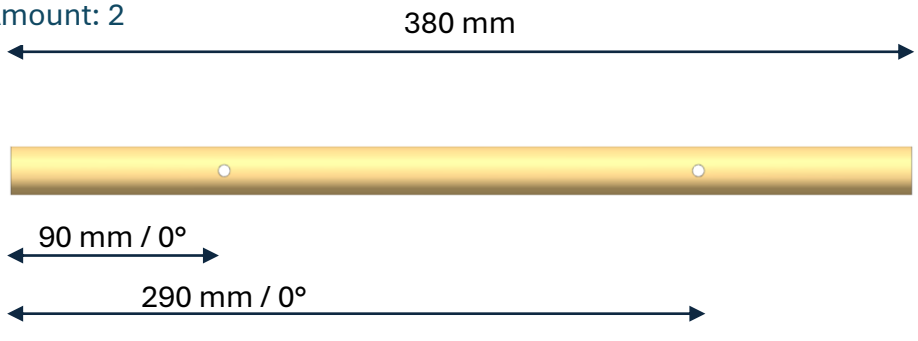

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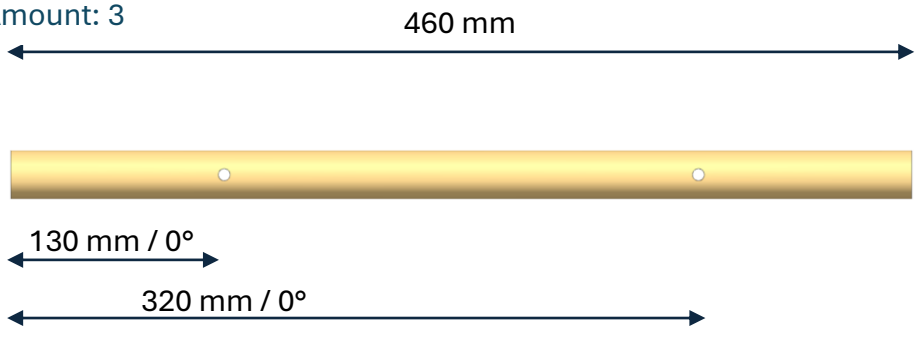

Preparation

Bamboo 15

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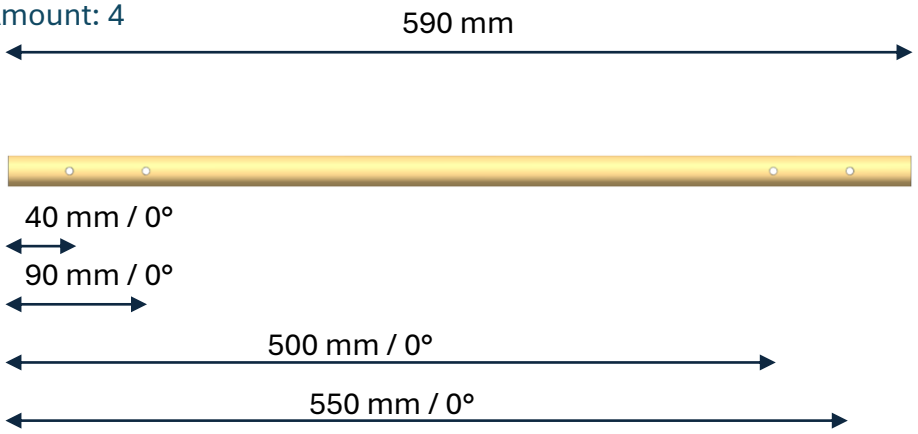
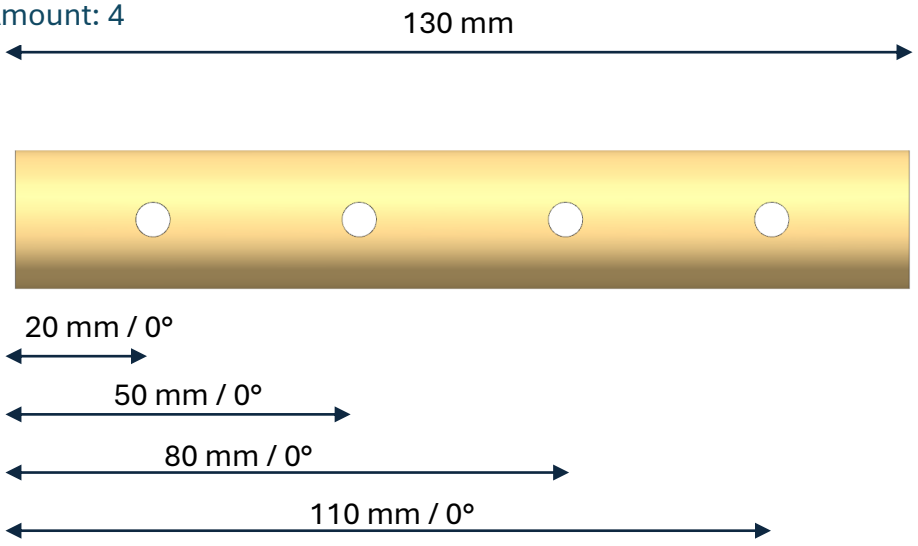


Bamboo 16

Amount: 4



Bamboo Number	Length	Amount	Holes [No. : x / alpha]
1.1	580 mm	1	**B1**: 40mm/0°, **F1**: 90mm/90°, **J1**: 255mm/-60°, **E1**: 510mm/90°, **A1**: 540mm/0°
1.2	580mm	1	**B2**: 40mm/0°, **F2**: 90mm/90°, **J2**: 230mm/60°, **E2**: 510mm/90°, **A2**: 540mm/0°
2	782mm	2	**D1**: 40mm/0°, **-**: 413mm/0°, **A1**: 742mm/0°
3	625mm	2	**B1**: 40mm/0°, **-**: 295mm/0°, **C1**: 585mm/0°
4.1	650mm	1	**D1**: 40mm/0°, **H1**: 60mm/90°, **I1**: 140mm/90°, **K1**: 360mm/60°, **M1**: 440mm/0°, **G1**: 540mm/90°, **C1**: 610mm/0°
4.2	650mm	1	**D2**: 40mm/0°, **H2**: 60mm/90°, **I2**: 140mm/90°, **K2**: 385mm/-60°, **M2**: 440mm/0°, **G2**: 540mm/90°, **C2**: 610mm/0°
5	893	2	**C1**: 40mm/0°, **L1**: 201mm/0°, **A1**: 361mm/0°, **N1**: 597mm/0°, **M1**: 853mm/90°
6	772	2	**Q1**: 50mm/0°, **D1**: 145mm/0°, **R1**: 320mm/0°, **B1**: 485mm/0°, **O1**: 732mm/0°
7	635	2	**J1**: 40mm/0°, **-**: 317.5mm/90°, **K2**: 595mm/0°
8	540	3	**E1**: 40mm/0°, **E2**: 500mm/0°
9	533	2	**O1**: 40mm/0°, **N1**: 493mm/0°

Preparation

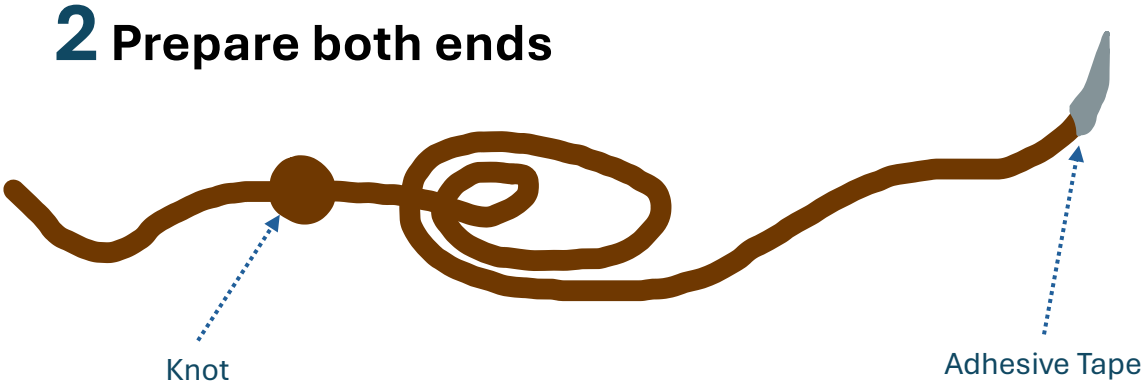
Bamboo Number	Length	Amount	Holes [No. : x / alpha]
10	540	6	-: 70mm/0°, -: 470mm/0°
11	430	2	-: 40mm/0°, -: 110mm/0°, -: 180mm/0°, -: 250mm/0°, -: 320mm/0°, -: 390mm/0°
12	540	2	**H1**: 40mm/0°, -: 100mm/0°, -: 160mm/0°, -: 380mm/0°, -: 440mm/0°, **H2**: 500mm/0°
13	230	2	**S1**: 40mm/0°, **Q1**: 190mm/0°
14	420	2	**S1**: 40mm/0°, **R1**: 380mm/0°
15	590	4	-: 40mm/0°, -: 90mm/0°, -: 500mm/0°, -: 550mm/0°
16	130	4	-: 20mm/0°, -: 50mm/0°, -: 80mm/0°, -: 110mm/0°
17	430	2	-: 40mm/0°, -: 110mm/0°, -: 180mm/0°, -: 250mm/0°, -: 320mm/0°, -: 390mm/0°
18	380	2	-: 90mm/0°, -: 290mm/0°
19	460	3	-: 130mm/0°, -: 330mm/0°
20	334	1	**P1**: 40mm/0°, **P2**: 295mm/0°
21	335	2	**M1**: 40mm/0°, **L1**: 295mm/0°
22	690	1	**I2**: 40mm/0°, **G1**: 650mm/0°

Step: Rope Preparation
Needed Materials: Rope/Adhesive Tape

1 Cut the ropes to length

	Simple Square Lashing	Strong Square Lashing	Strong Double Square Lashing	Miscellaneous
Quantity	38	16	8	20 Meter
Length [m]	1	1,60	2,10	

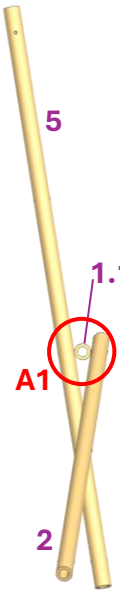
2 Prepare both ends



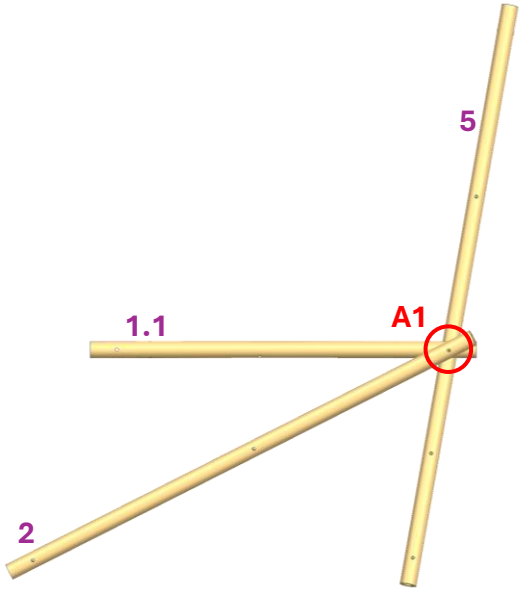
Wind adhesive Tape around the end of the Rope. This makes it easier to thread the rope through the holes of the bamboo rods

Framework Module Construction

front view



side view



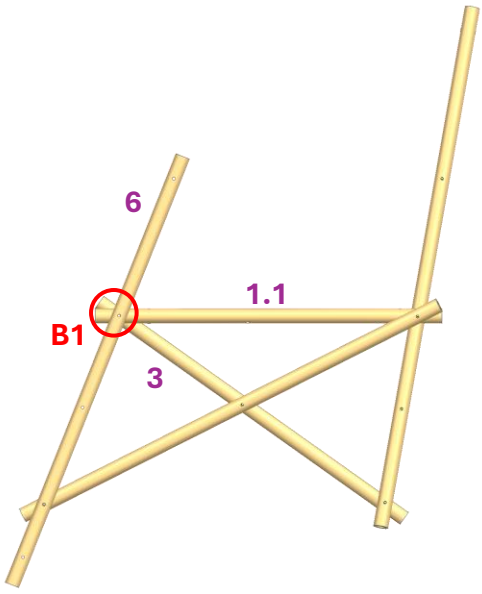
Step: left frame structure
Needed Bamboo: 1.1 / 2 / 5
Knot Name: A1
Knot Design: double strong square lashing

Comments:

Framework Module Construction

front view

side view

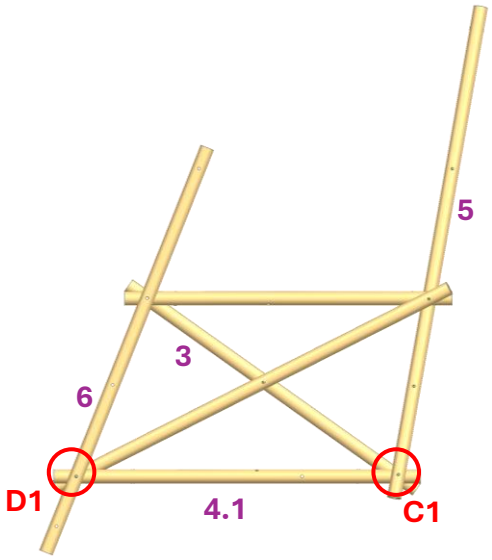


Step: left frame structure
Needed Bamboo: 1.1 / 3 / 6
Knot Name: B1
Knot Design: double strong square lashing

Comments:

front view

side view

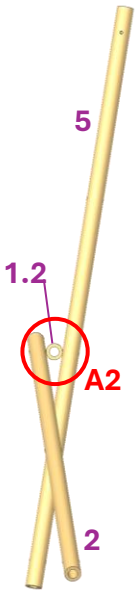


Step: left frame structure
Needed Bamboo: 3 / 4.1 / 5 , 2 / 4.1 / 6
Knot Name: C1, D1
Knot Design: double strong square lashing

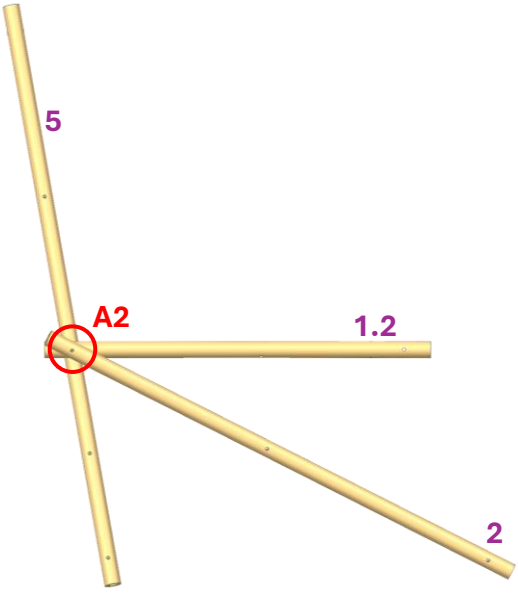
Comments:
After this step the left frame structure is completed.

Framework Module Construction

front view



side view



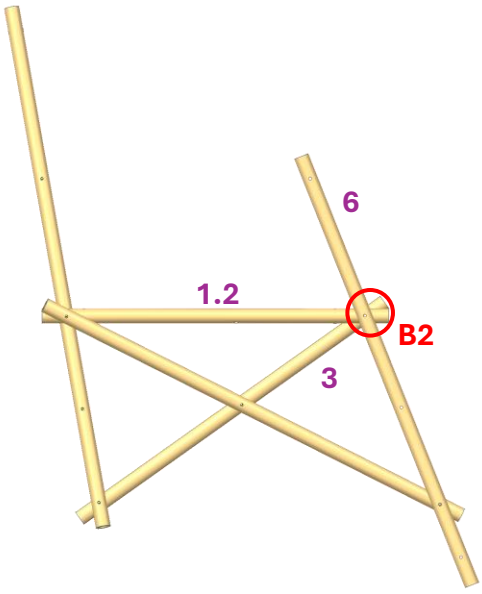
Step: right frame structure
Needed Bamboo: 1.2 / 2 / 5
Knot Name: A2
Knot Design: double strong square lashing

Comments:

Framework Module Construction

front view

side view

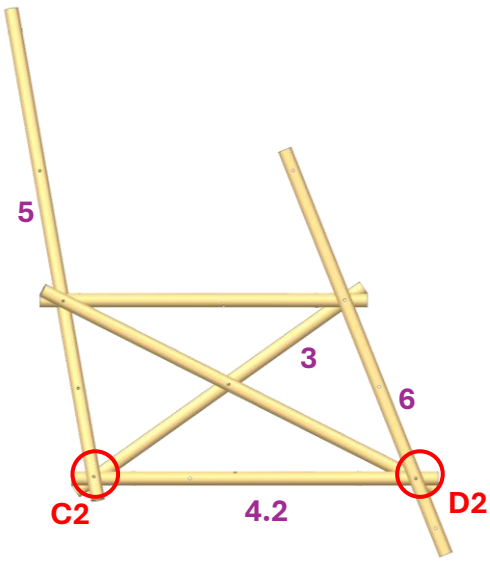


Step: right frame structure
Needed Bamboo: 1.2 / 3 / 6
Knot Name: B2
Knot Design: double strong square lashing

Comments:

front view

side view

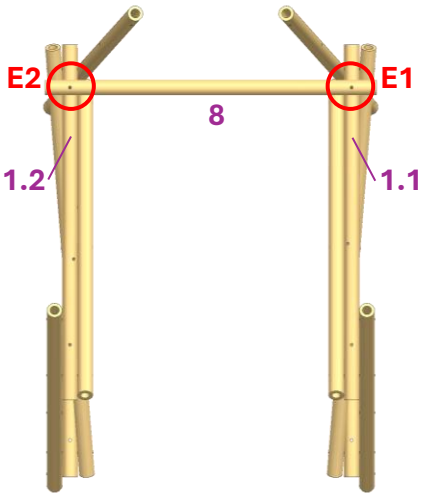


Step: right frame structure
Needed Bamboo: 3 / 4.2 / 5 , 2 / 4.2 / 6
Knot Name: C2, D2
Knot Design: double strong square lashing

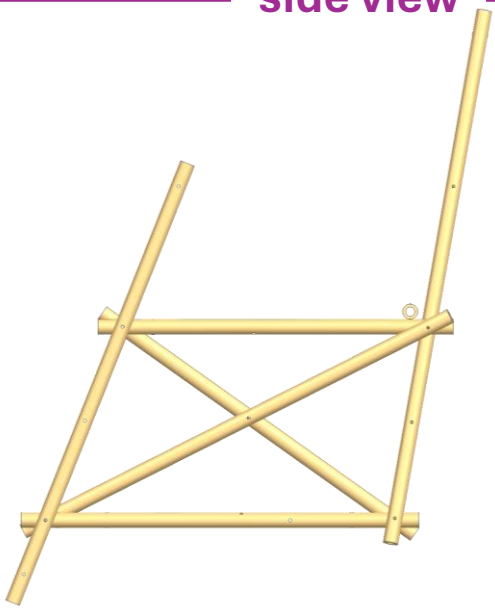
Comments:
After this step the right frame structure is completed.

Framework Module Construction

top view



side view

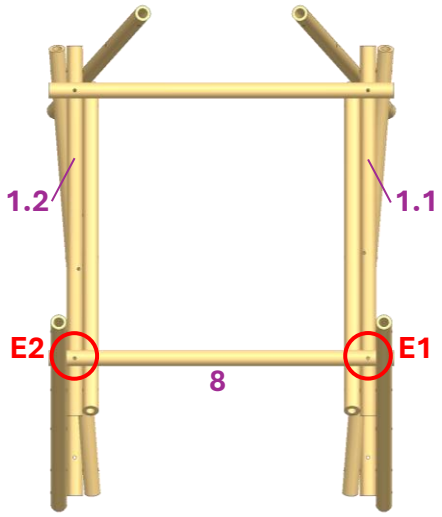


Step: connection rods
Needed Bamboo: 1.1 / 8 , 1.2 / 8
Knot Name: E1, E2
Knot Design: strong square lashing

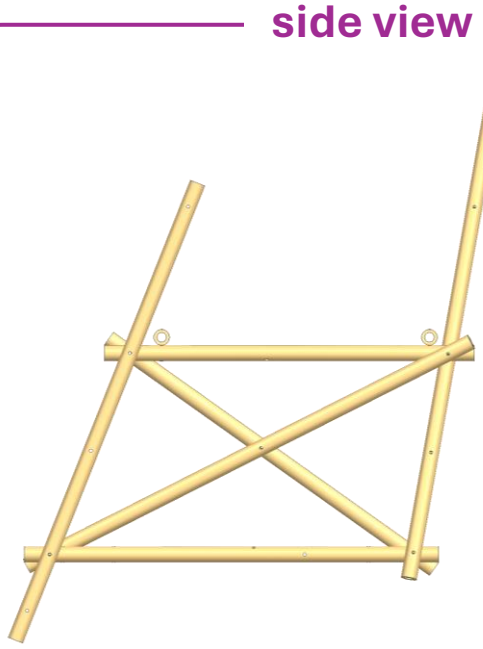
Comments:
Connect left and right frame structure.

Framework Module Construction

top view



side view

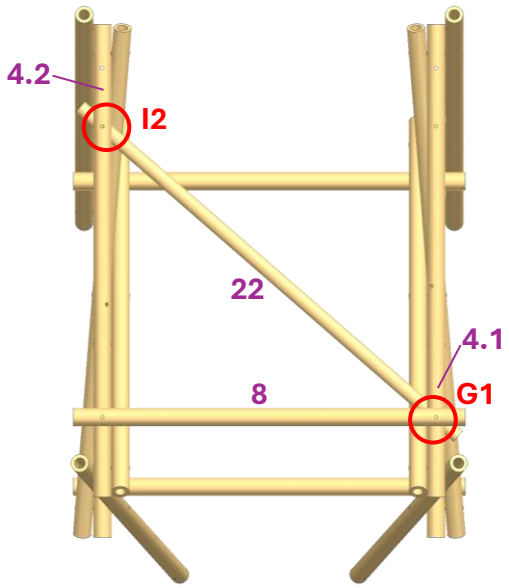


Step: connection rods
Needed Bamboo: 1.1 / 8 , 1.2 / 8
Knot Name: F1, F2
Knot Design: strong square lashing

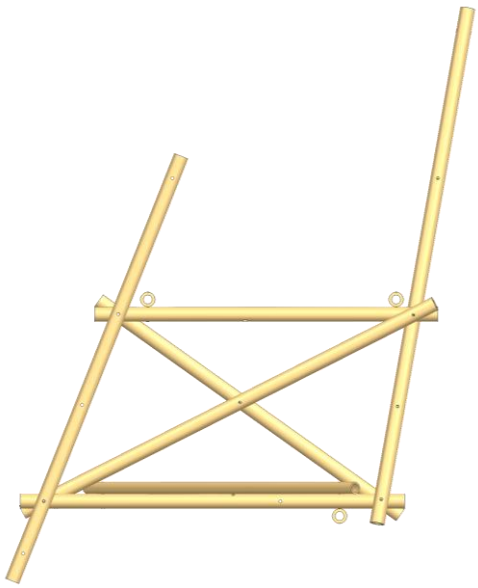
Comments:
Connect left and right frame structure.

Framework Module Construction

bottom view



side view

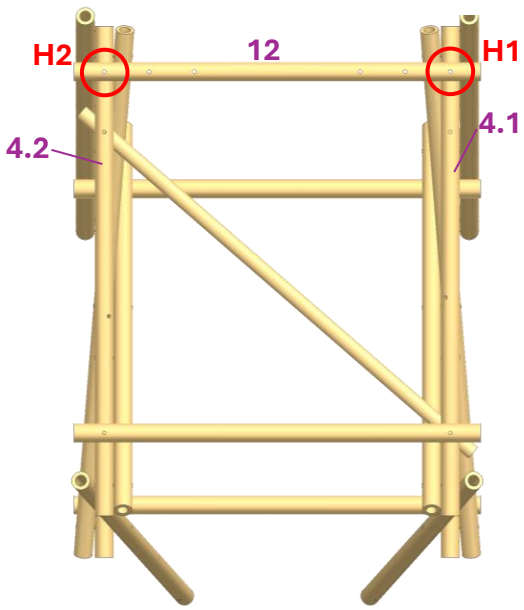


Step: connection rods
Needed Bamboo: 4.1 / 8 / 22 , 4.2 / 8
Knot Name: G1, I2
Knot Design: double strong square lashing

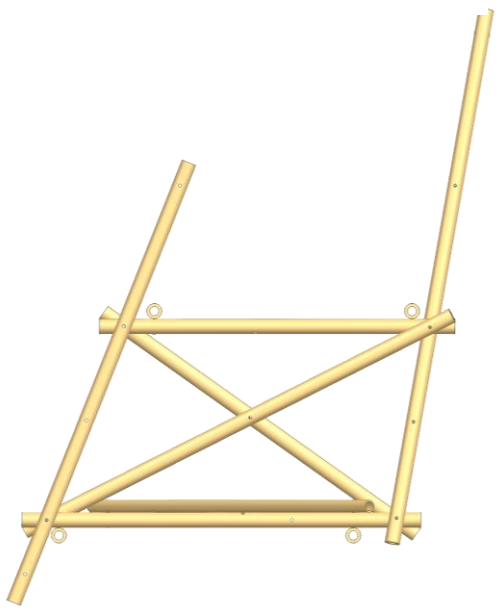
Comments:
I2 will be tied later.

Framework Module Construction

bottom view



side view

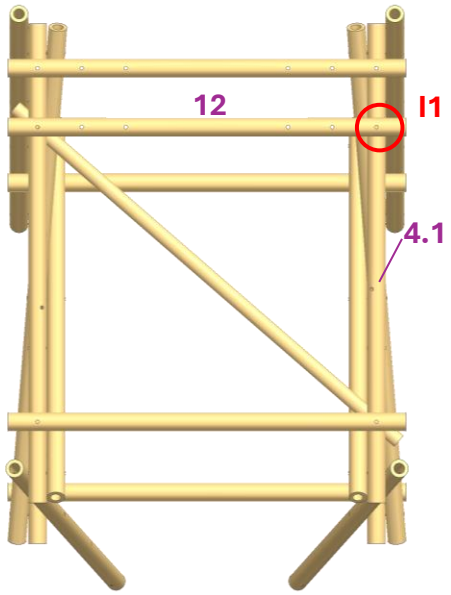


Step: connection rods
Needed Bamboo: 4.1 / 12
Knot Name: H1, H2
Knot Design: strong square lashing

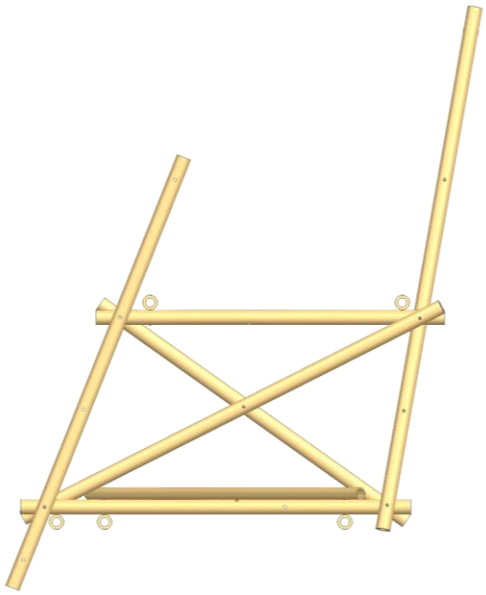
Comments:

Framework Module Construction

bottom view



side view

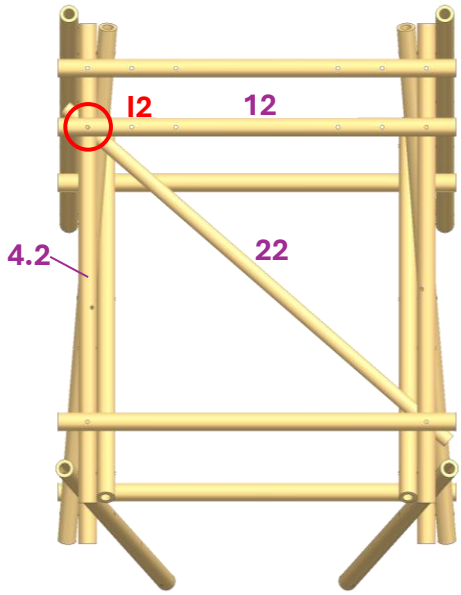


Step: connection rods
Needed Bamboo: 4.1 / 12
Knot Name: I1
Knot Design: strong square lashing

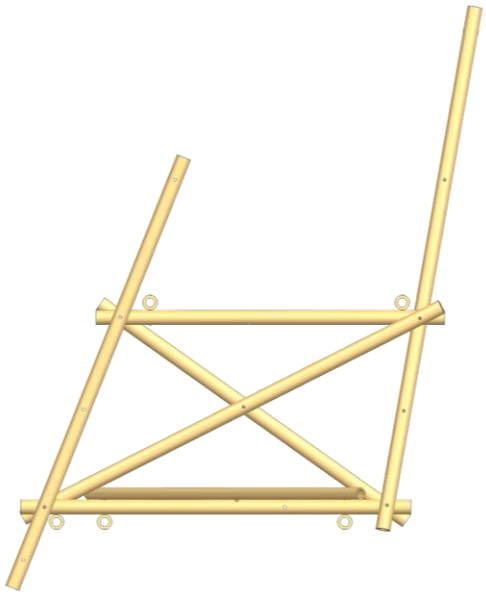
Comments:

Framework Module Construction

bottom view



side view

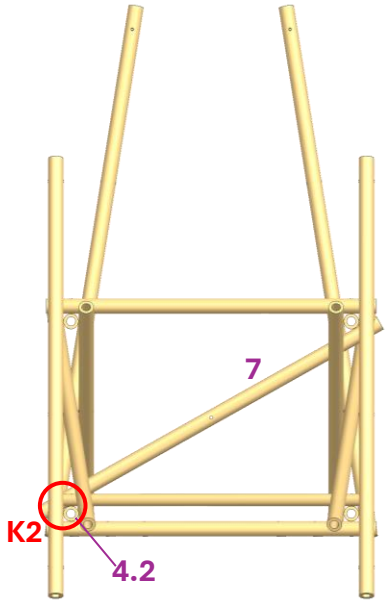


Step: connection rods
Needed Bamboo: 4.1 / 12 / 22
Knot Name: I2
Knot Design: double strong square lashing

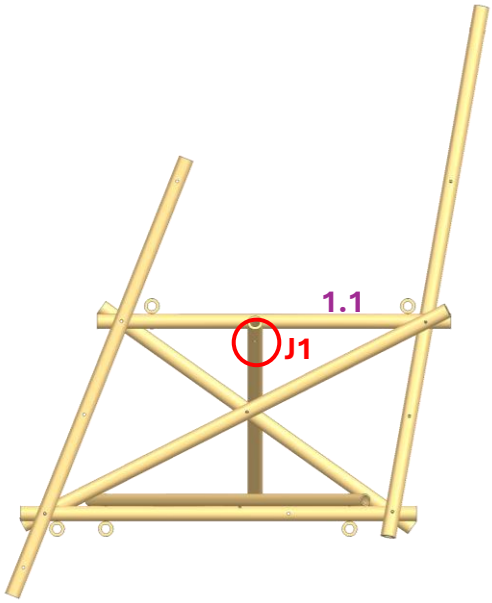
Comments:

Framework Module Construction

front view



side view

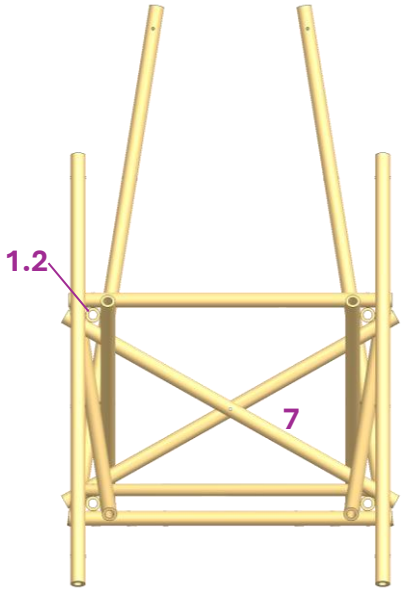


Step: cross connection rods
Needed Bamboo: 1.1 / 7 , 4.2 / 7
Knot Name: J1 , K2
Knot Design: strong square lashing

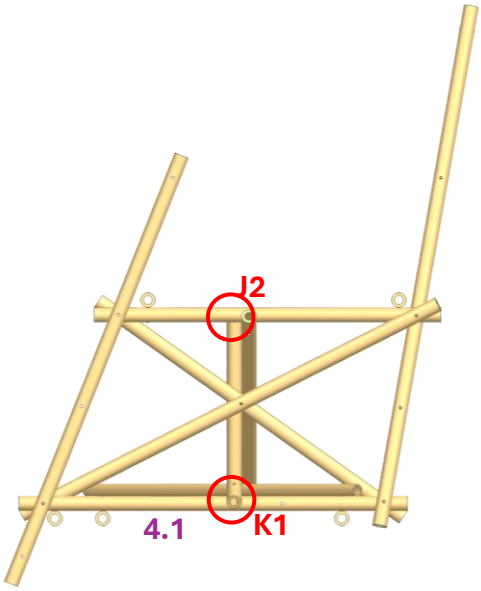
Comments:

Framework Module Construction

front view



side view



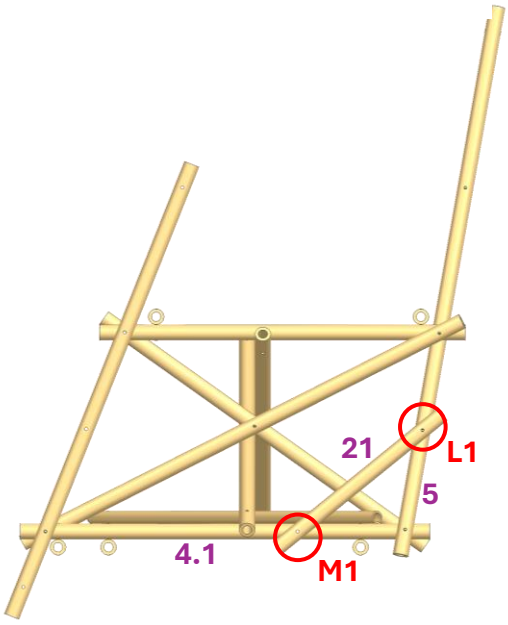
Step: cross connection rods
Needed Bamboo: 1.2 / 7 , 4.1 / 7
Knot Name: J2 , K1
Knot Design: strong square lashing

Comments:

Framework Module Construction

front view

side view



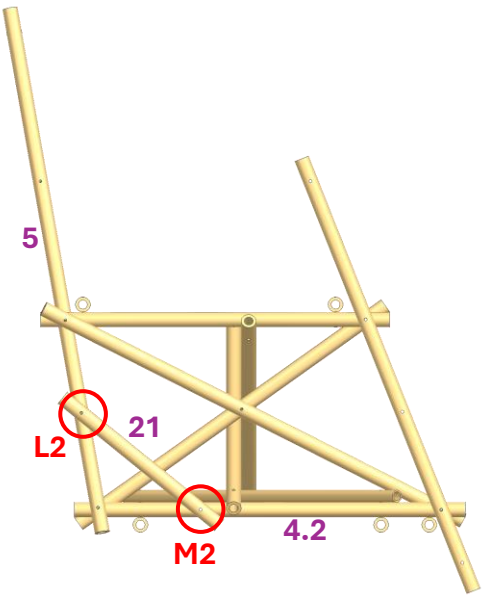
Step: axle mount rod
Needed Bamboo: 5 / 21 , 4.1 / 21
Knot Name: L1 , M1
Knot Design: strong square lashing

Comments:

Framework Module Construction

front view

side view



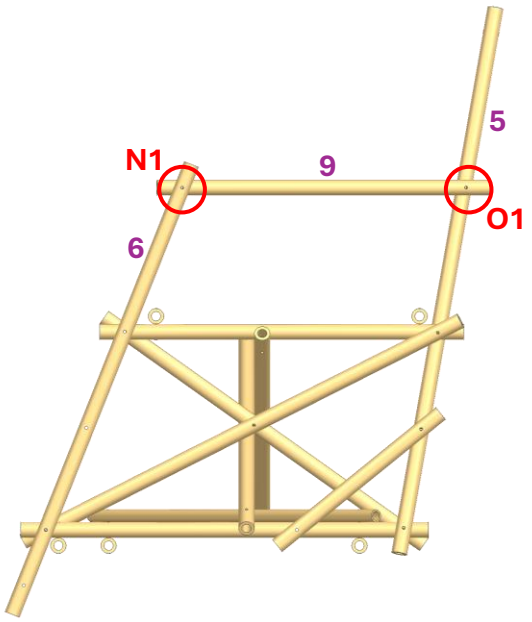
Step: axle mount rod
Needed Bamboo: 5 / 21 , 4.2 / 21
Knot Name: L2 , M2
Knot Design: strong square lashing

Comments:

Framework Module Construction

front view

side view



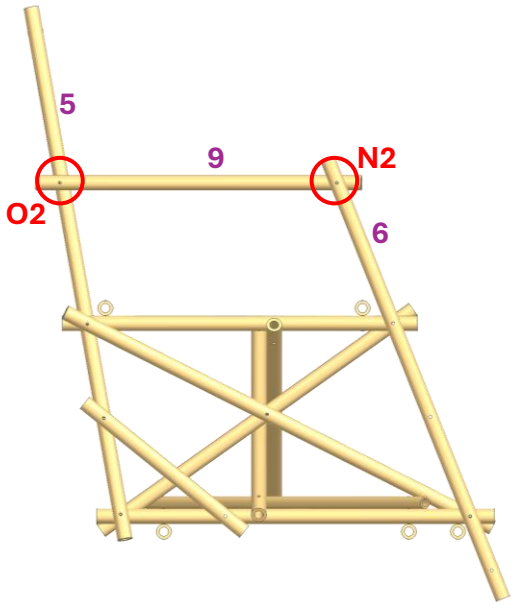
Step: armrest rods
Needed Bamboo: 5 / 9 , 6 / 9
Knot Name: N1 , O1
Knot Design: strong square lashing

Comments:

Framework Module Construction

front view

side view

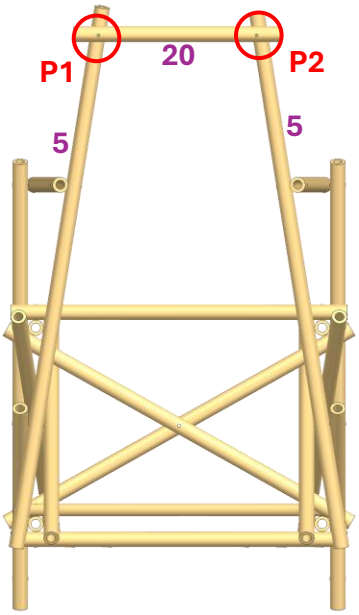


Step: armrest rods
Needed Bamboo: 5 / 9 , 6 / 9
Knot Name: N2 , O2
Knot Design: strong square lashing

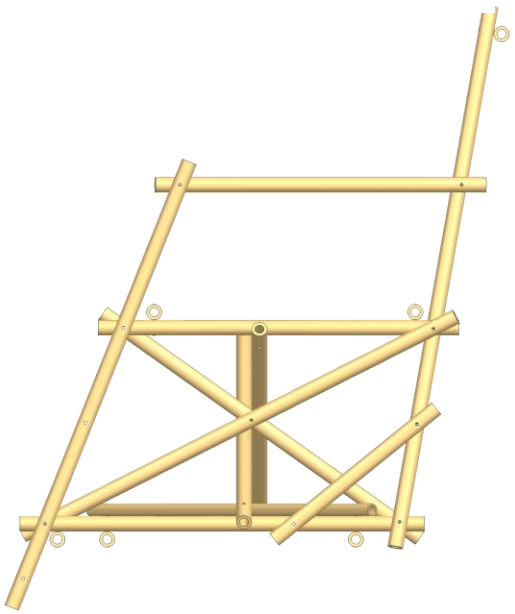
Comments:

Framework Module Construction

back view



side view

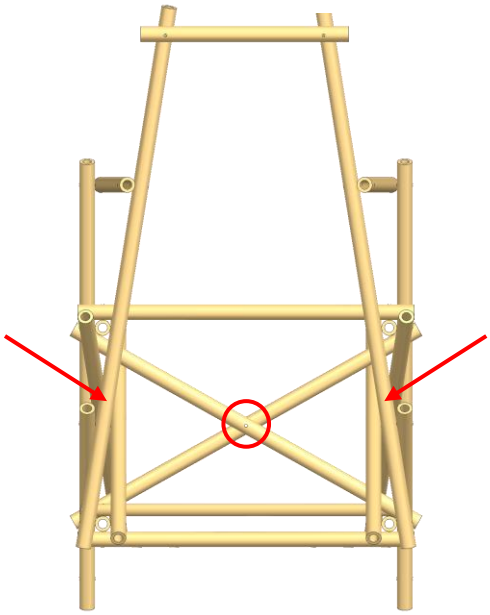


Step: push rod
Needed Bamboo: 5 / 20 , 5 / 20
Knot Name: P1 , P2
Knot Design: strong square lashing

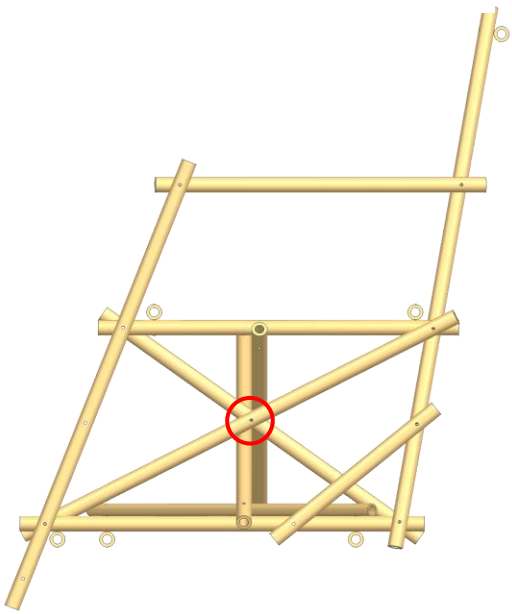
Comments:

Framework Module Construction

back view



side view

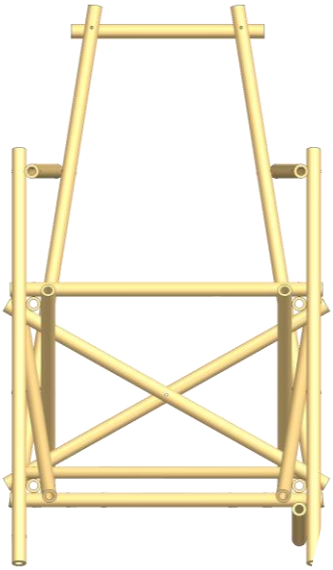


Step: cross rods
Needed Bamboo:
Knot Name:
Knot Design: strong square lashing

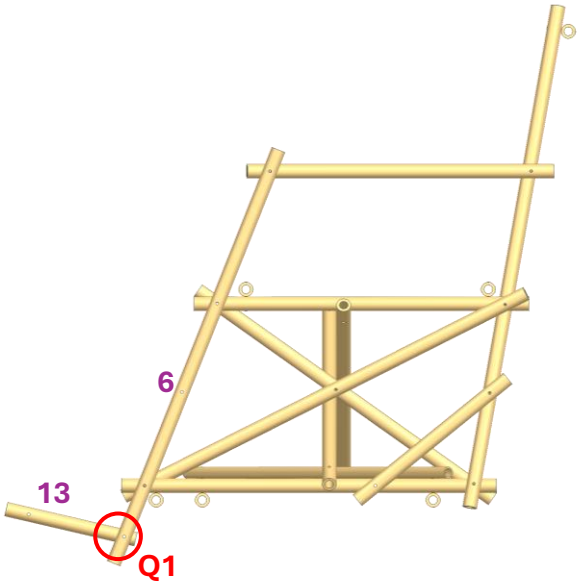
Comments:
Tie all three crosses together.

Framework Module Construction

front view



side view

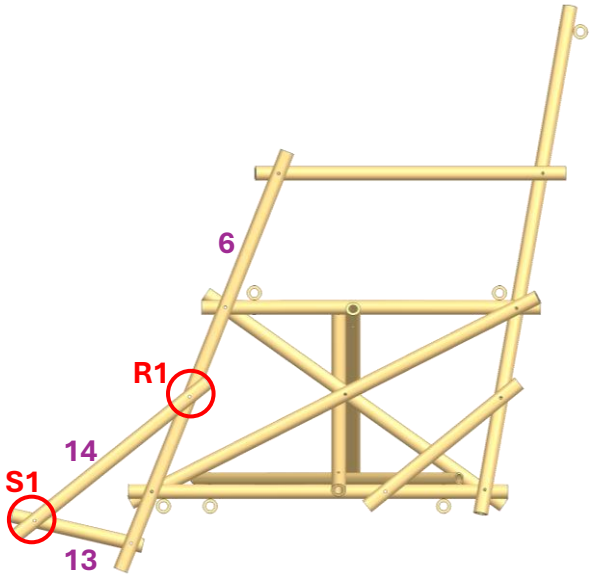


Step: footrest rods
Needed Bamboo: 6 / 13
Knot Name: Q1
Knot Design: strong square lashing

Comments:

front view

side view

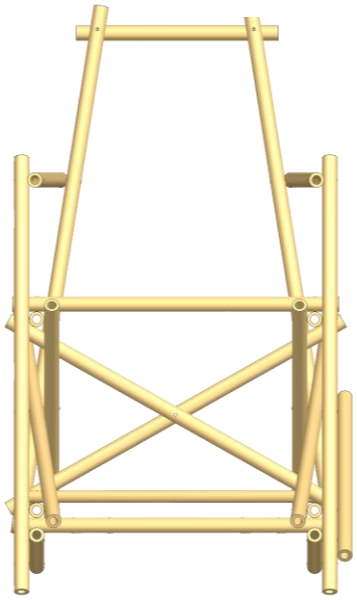


Step: footrest rods
Needed Bamboo: 6 / 14, 13 / 14
Knot Name: R1 , S1
Knot Design: strong square lashing

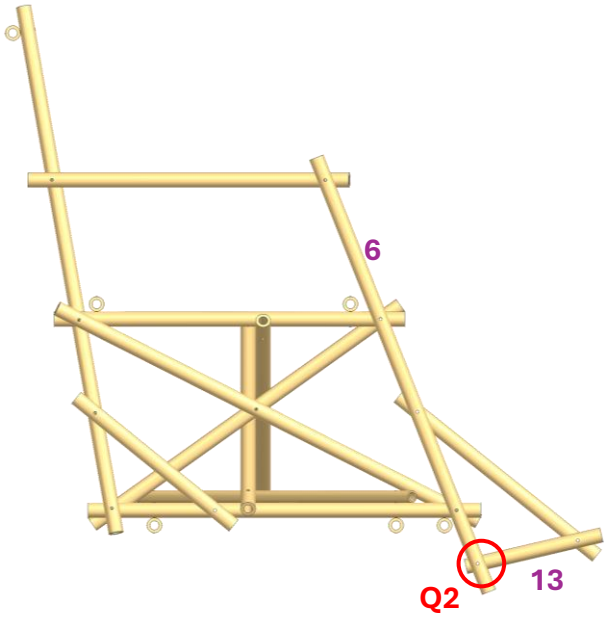
Comments:

Framework Module Construction

front view



side view

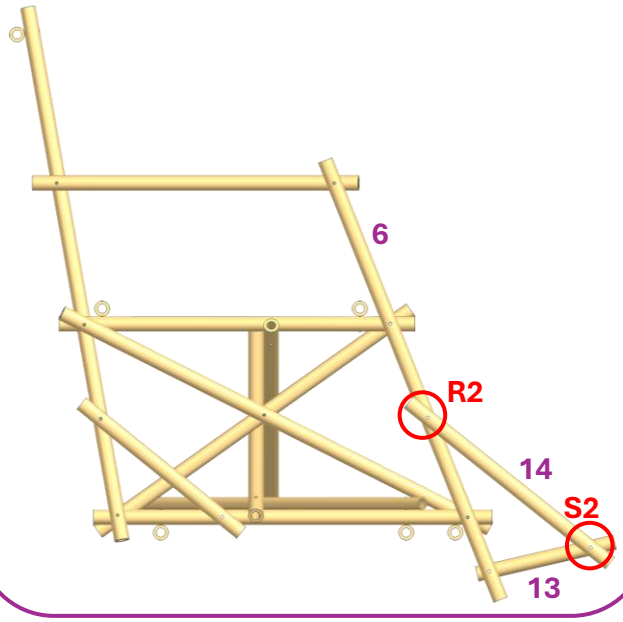


Step: footrest rods
Needed Bamboo: 6 / 13
Knot Name: Q2
Knot Design: strong square lashing

Comments:

front view

side view



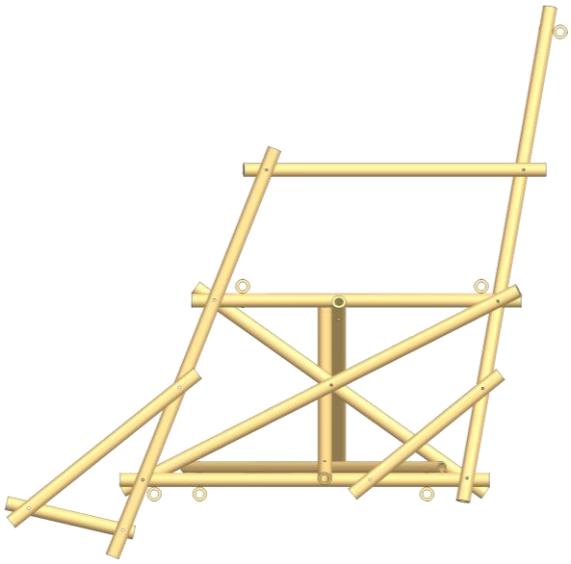
Step: footrest rods
Needed Bamboo: 6 / 14, 13 / 14
Knot Name: R2 , S2
Knot Design: strong square lashing

Comments:
After this step the framework module construction is finished.

Framework Module Construction

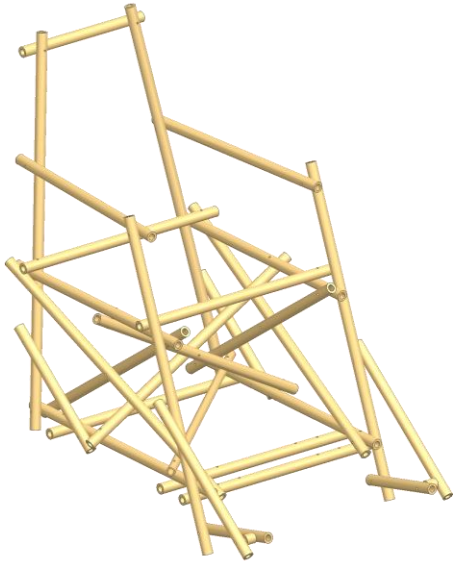
front view

side view

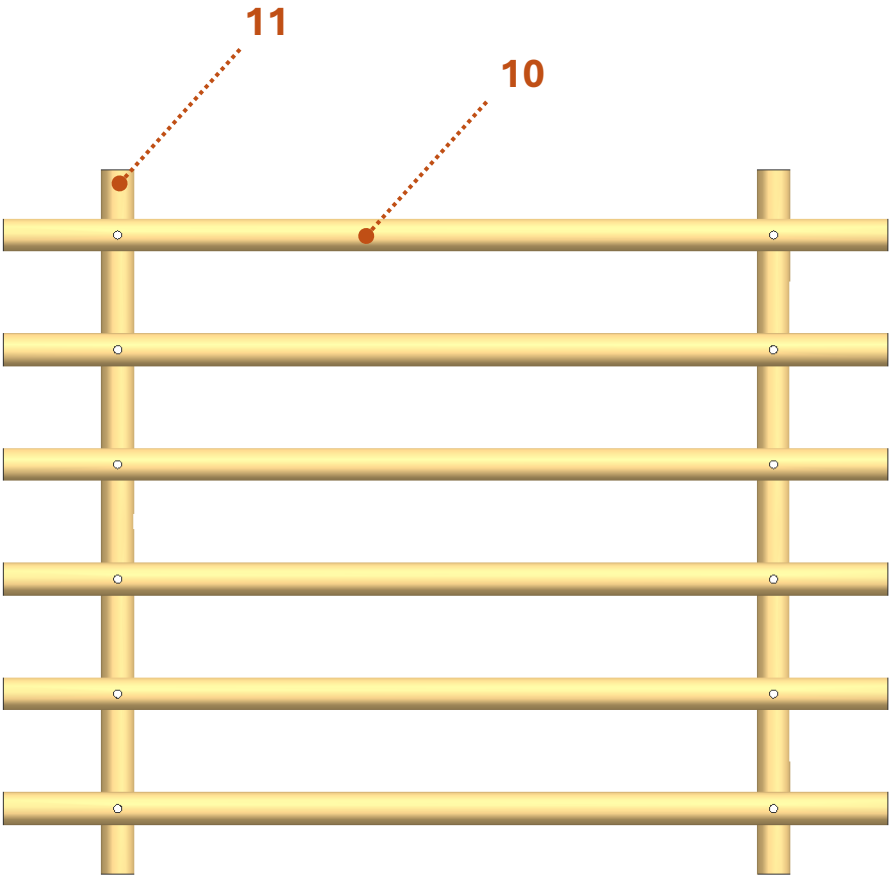


top view

iso view

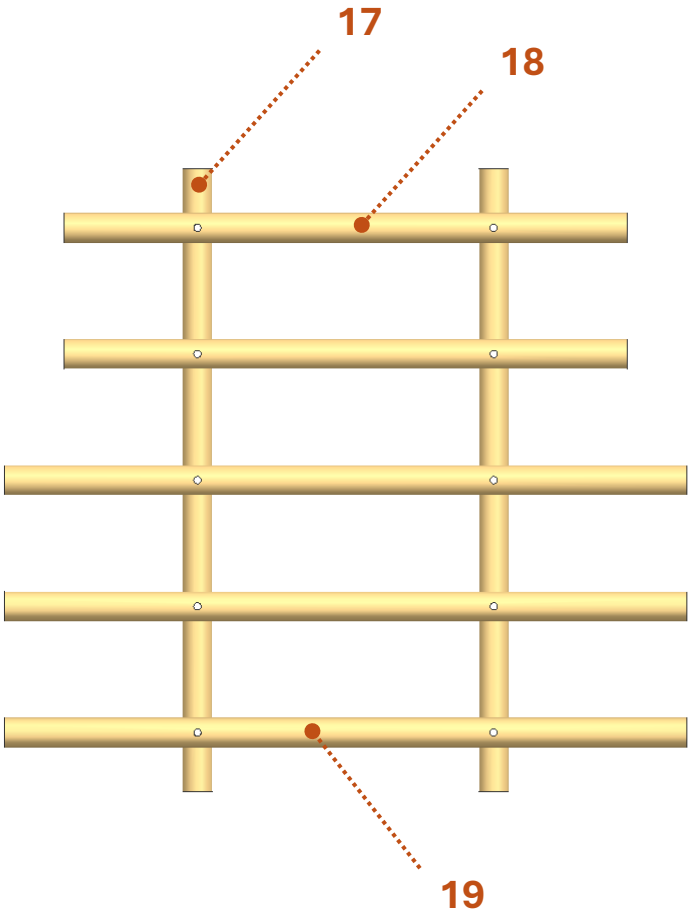


Interface Module Construction



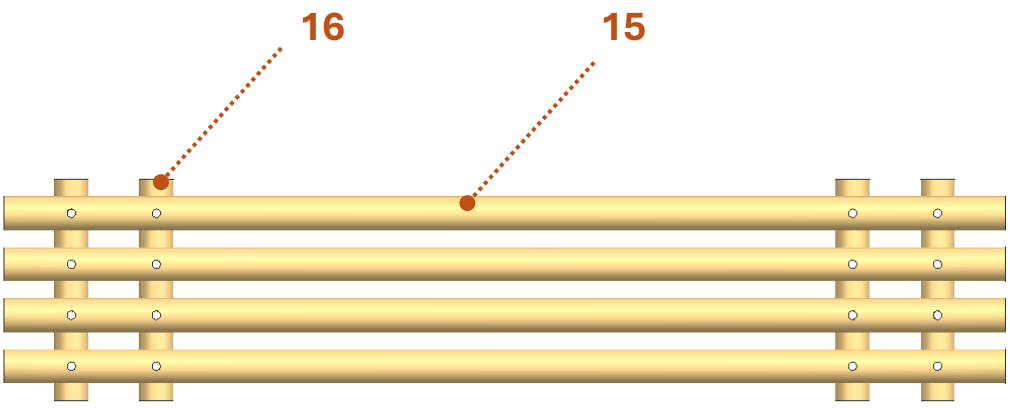
Step: Seat Module
Needed Bamboo: 6x10 / 2x11
Knot Design: Simple square lashing

Interface Module Construction



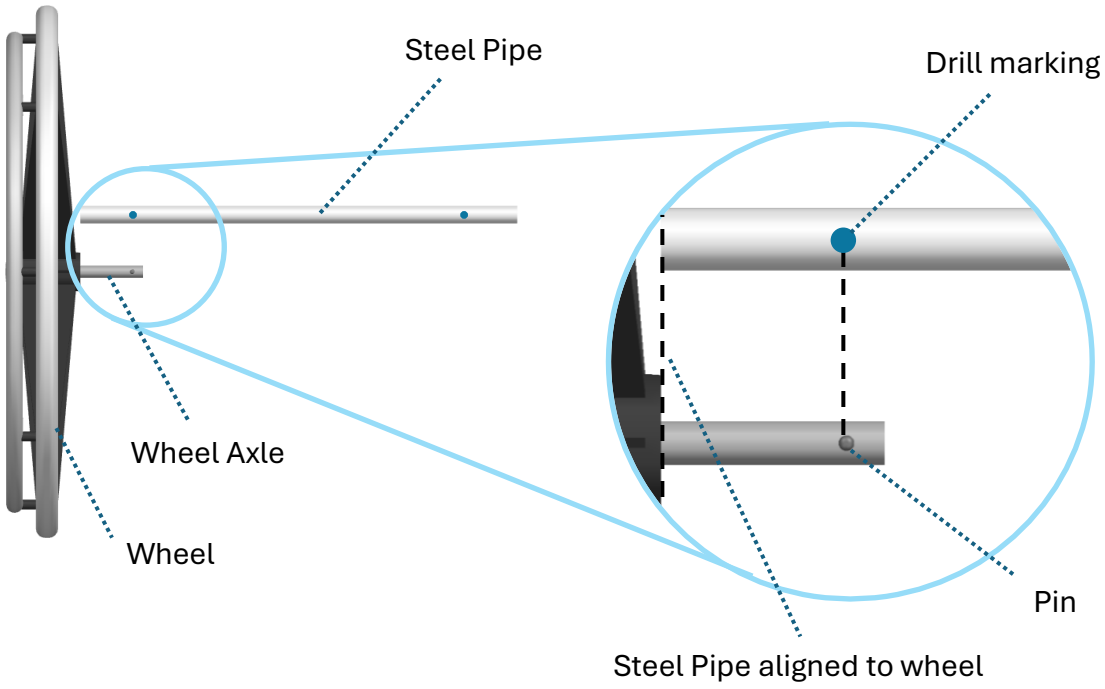
Step: Backrest Module
Needed Bamboo: 3x19 / 2x18 / 2x17
Knot Design: Simple square lashing

Interface Module Construction



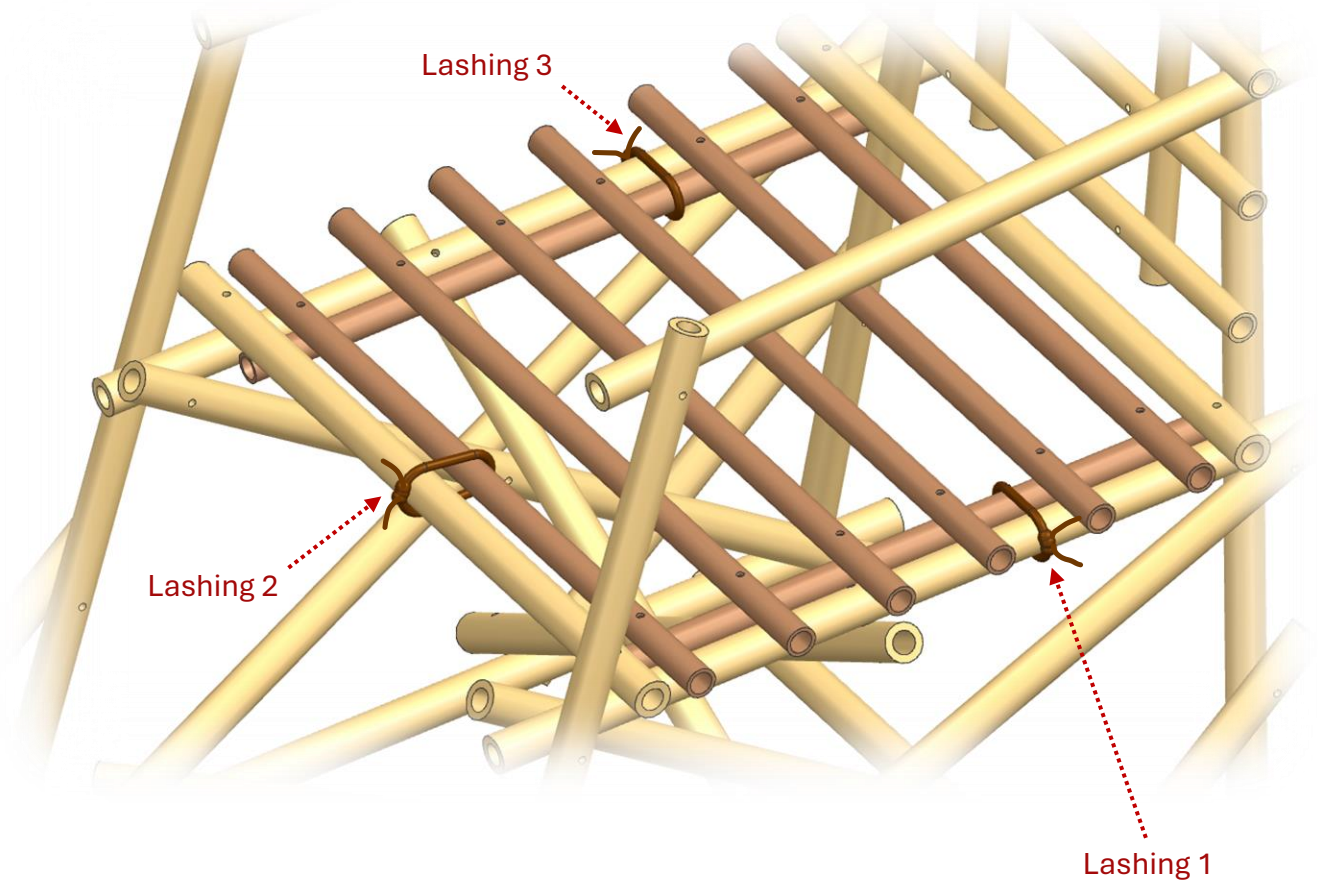
Step: Footrest Module
Needed Bamboo: 4x15 / 4x16
Knot Design: Simple square lashing

1 Mark the holes on the steel pipe



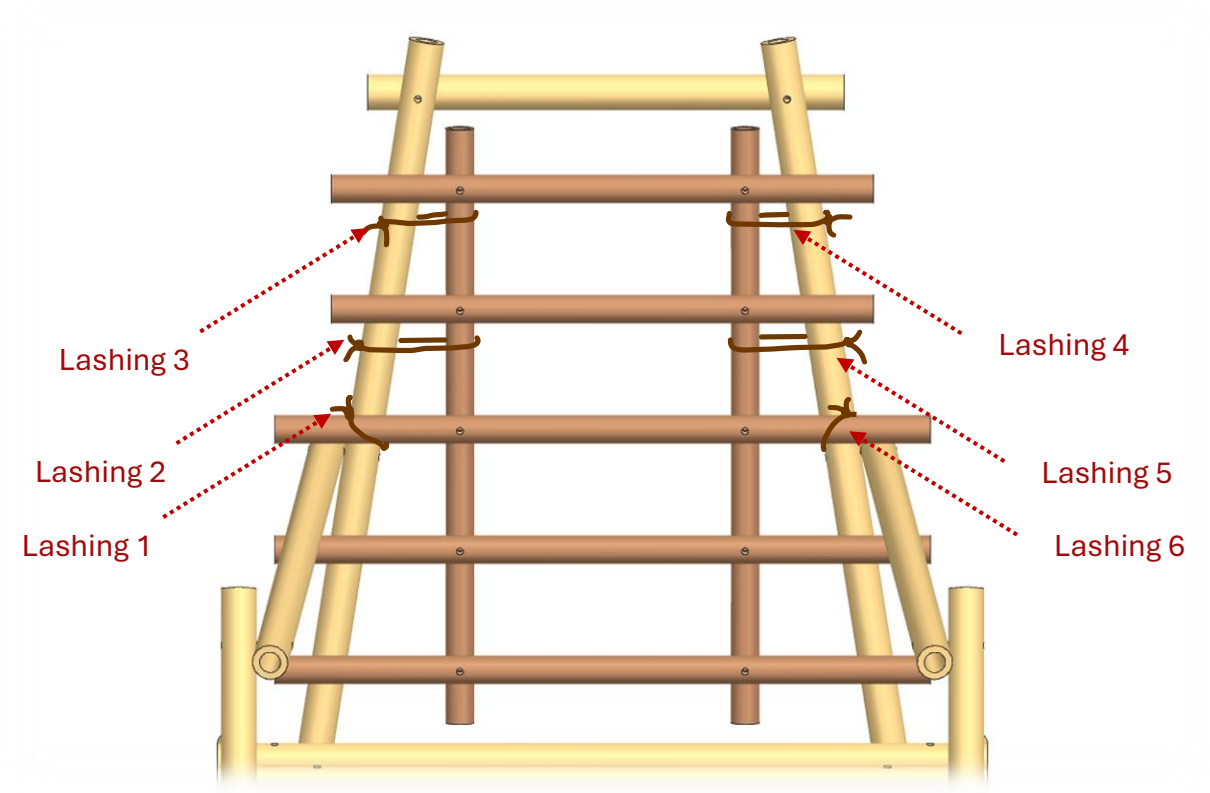
➔ **Repeat for the other side**

2 Drill the holes into the steel pipe

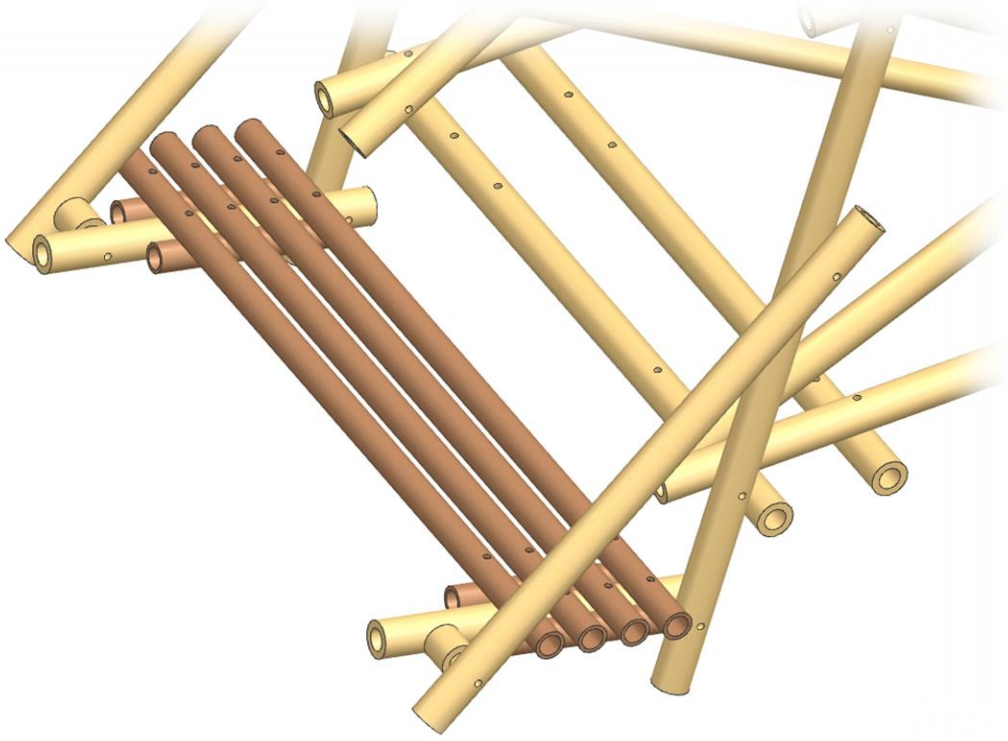


Step: Install the Seat
Needed Modules: Seat / Framework
Knot Design: Classic Square Knot

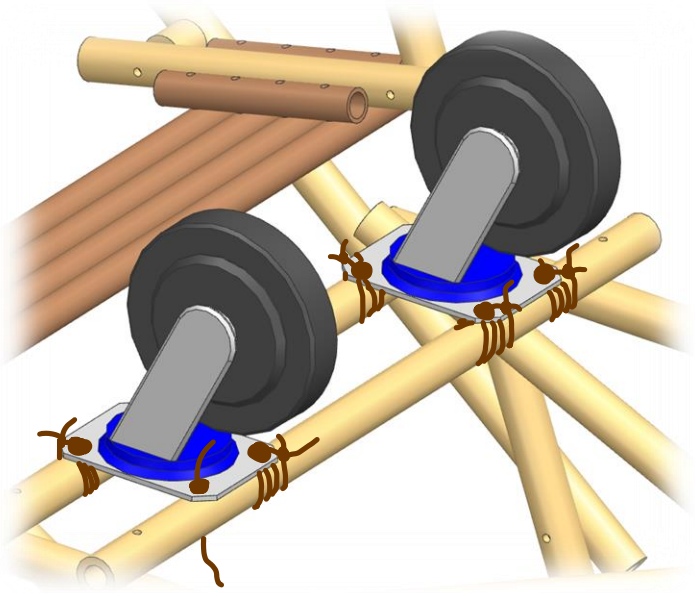
Final Assembly



Step: Install the Backrest
Needed Modules: Backrest/Framework
Knot Design: Classic Square Knot



Step: Install the Footrest
Needed Modules: Footrest/Framework
Knot Design: No knot needed

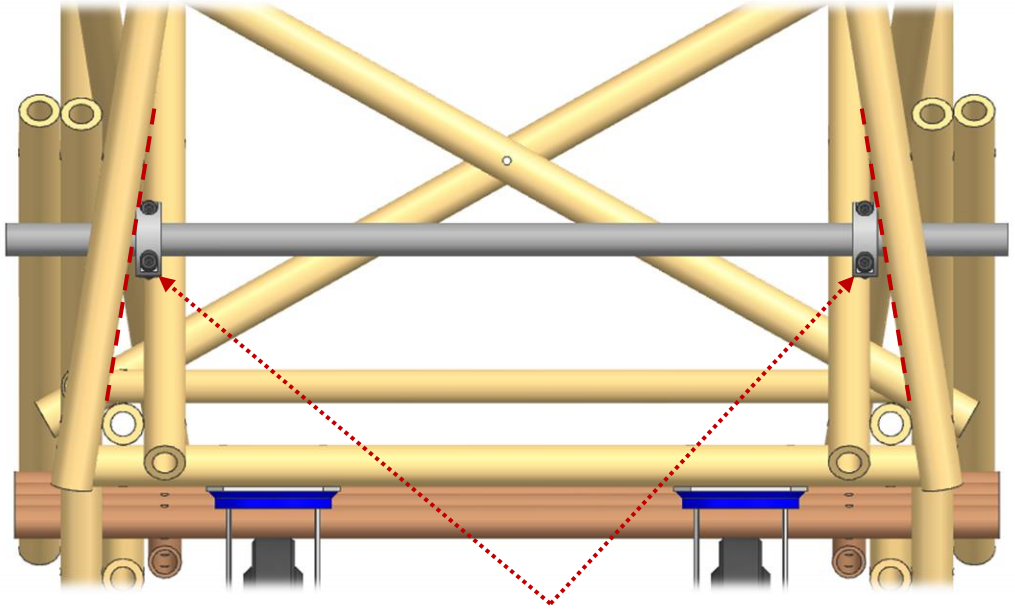


1. Tie the rope around the rod and the front wheel plate holes
2. Repeat as often as possible
3. Tie the end and beginning of the rope together using a classic square knot

Step: Install the Front Wheels
Needed Modules: Mobility/Framework
Knot Design: Classic square knot

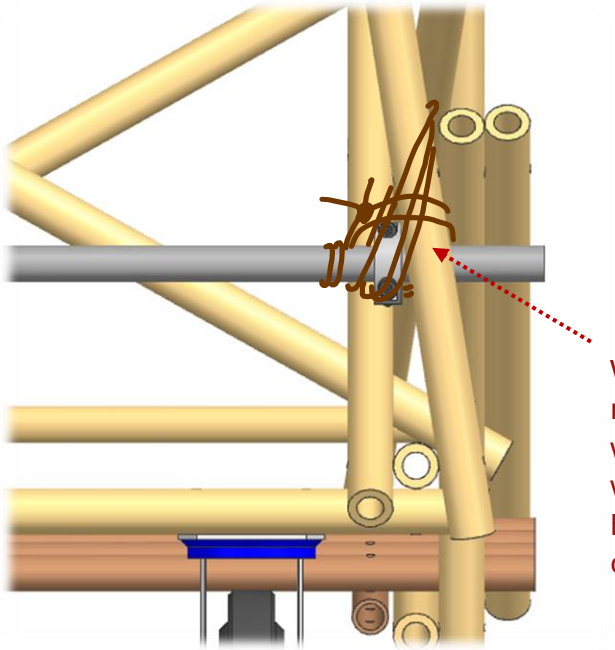
Step: Install the rear Wheels
Needed Materials: Steel Pipe/Clamping Ring/Framework/Rear Wheels

1 Install the Clamping Rings on the Steel Rod



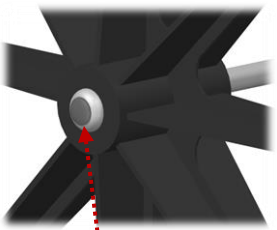
Clamping Ring sits flush to the bamboo rod

2 Install the Steel Rod to the Framework

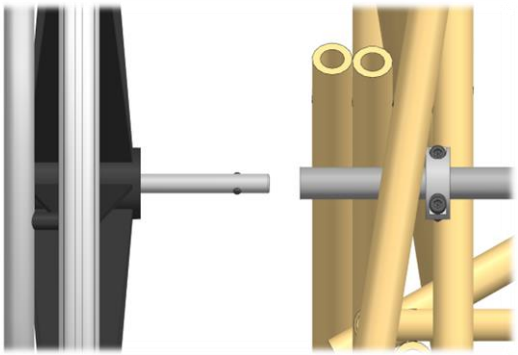


Wind the rope around the neighboring rods. This binding ensures that the wheels stay connected to the framework when the wheelchair is lifted. Tie the beginning and end together using a classic square knot.

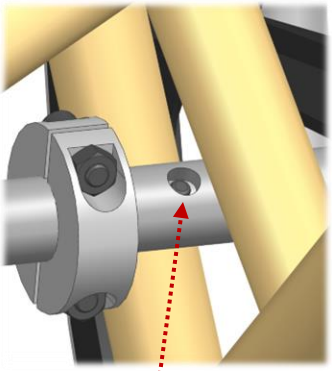
3 Install the rear Wheels



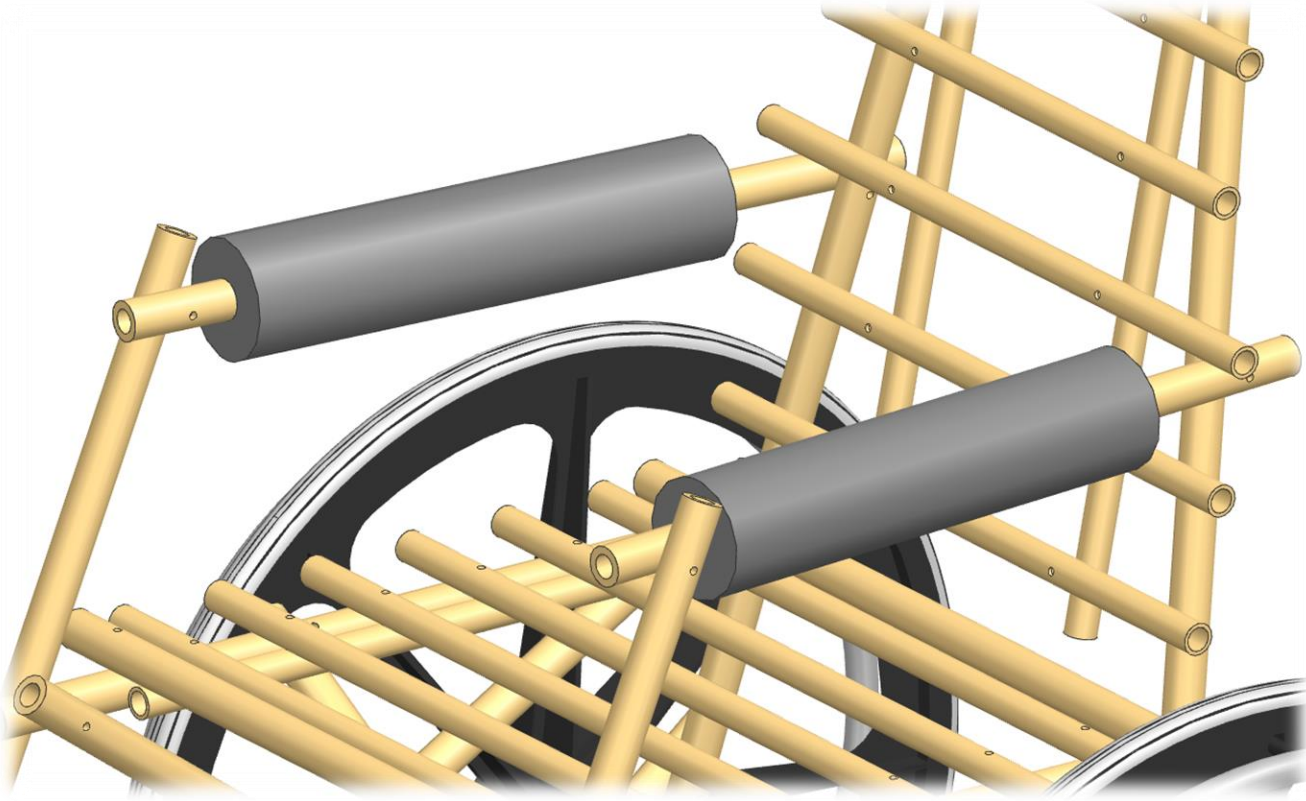
Keep the button on the axle pressed



Slide the wheel into the steel rod

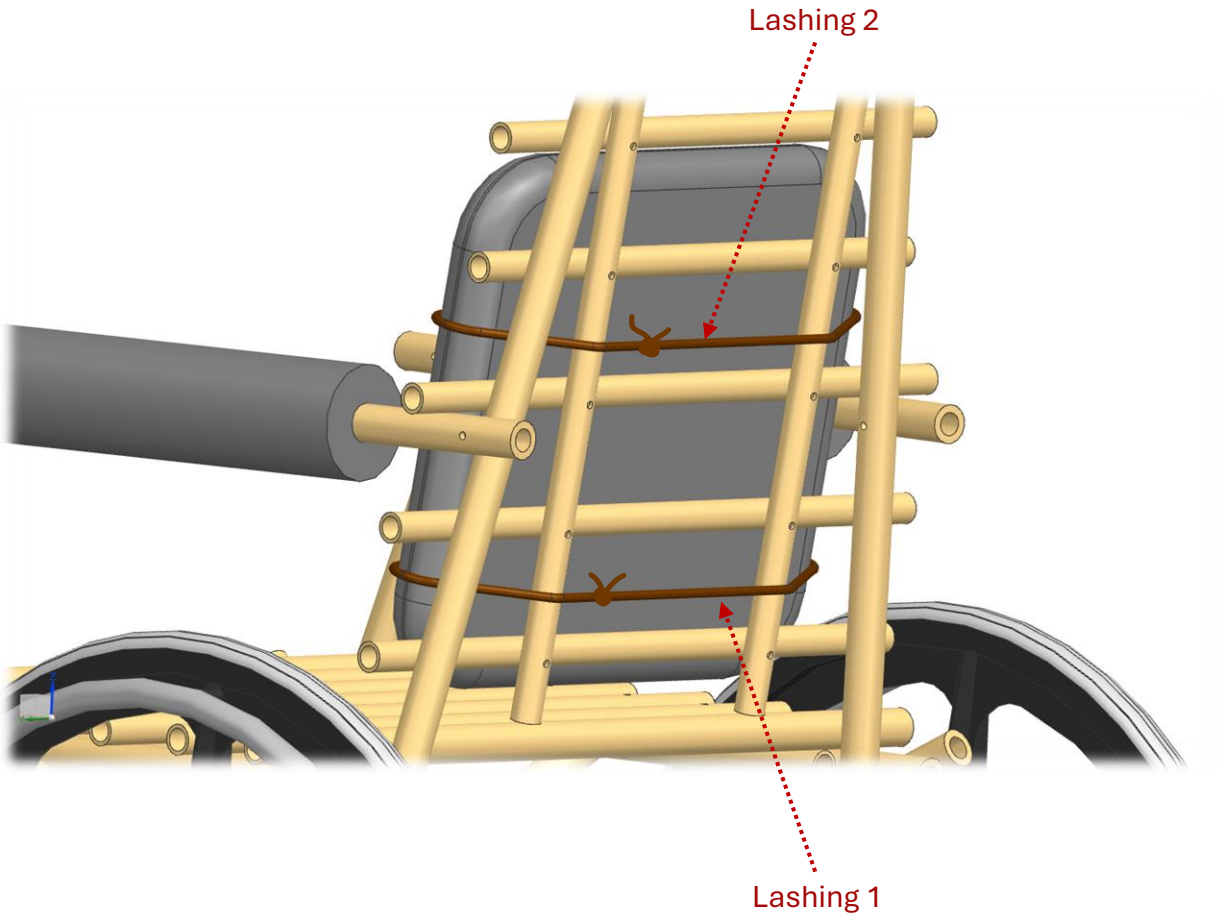


Check if the little pin is engaged in the drilled holes of the steel rod

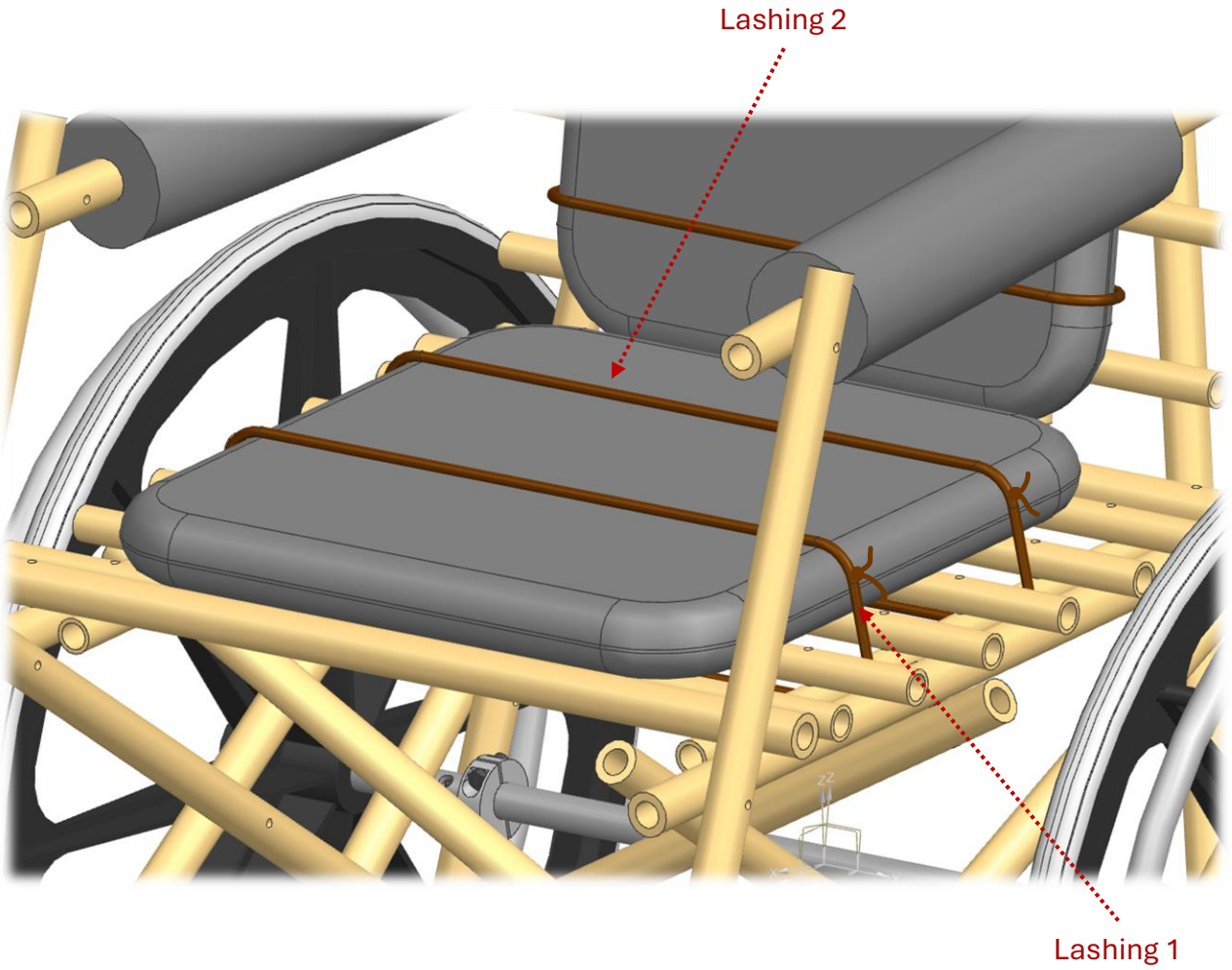


Step: Install the arm cushioning
Needed Materials: Pipe Insulation

Final Assembly



Step: Install the back cushioning
Needed Materials: Cushioning
Knot Design: Classic Square Knot



Step: Install the seat cushioning
Needed Materials: Cushioning
Knot Design: Classic Square Knot

Final Assembly

Practical Tips

- Be **careful when bending the bamboo** rods in the right position, especially on the framework sides
- Use **high speed** and **little pressure** when drilling into bamboo to avoid cracks
- **Retighten the knots** after the first few rides because stretching of the ropes might appear
- You can use sections of **bamboo** with **smaller diameters** for the **interface modules**

Typical Mistakes

- **Wrong hole positions**: A wrong hole position can lead to an unsymmetrical wheelchair, pay extra attention that the holes are at the correct place and angle
- **Loose end knots**: Ensure that you do the classic square knot the right way, otherwise, it may loosen overtime

The builder is responsible for ensuring the safe implementation of this instruction. The following warnings should be considered and taken seriously:

- **Wear gloves** when working with bamboo to be protected from sharp edges and splinters
- **Wear eye protection** for drilling holes into the steel rod to be protected from metal shavings
- Do **not exceed the maximum load of 80 kg** and make sure through tests that your own construction can take this load

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Nature of the Documentation

The assembly instructions and technical information provided in this documentation are **recommendations only**, describing one possible way to build a bamboo wheelchair. They do not constitute professional engineering, medical, or safety advice.

The information and instructions provided are **not a medical device** and do not represent a medical product within the meaning of the **EU Medical Device Regulation (MDR)** or any other comparable national or international regulation.

Responsibility of the Builder and User

Any person using this documentation to build a bamboo wheelchair does so entirely **at their own risk**. The **builder is fully responsible** for ensuring that:

- The wheelchair is structurally sound
- The materials used are suitable and safe
- The construction is appropriate for the intended use
- The wheelchair complies with any local laws or regulations

The builder is also solely responsible for **testing the wheelchair** before use. Any tests conducted by Bamboobility were performed under specific materials, methods, and environmental conditions, which may not apply to alternative materials, construction techniques, or local environments.

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- Indirect, incidental, consequential, or special damages

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Conclusion and How to Contribute

With Bamboobility, we aim to **empower people around the world** to regain and maintain their mobility in everyday life through an affordable, accessible low-tech wheelchair solution. Beyond this specific wheelchair design, Bamboobility is also intended as **inspiration for other low-tech construction projects using bamboo**.

As an open-source project, continuous improvement depends on **community involvement**. We invite you to join the discussion, share your experiences, and contribute ideas for improvement on our GitHub repository or in the comments of our YouTube videos.

We wish you a **great and rewarding experience while building the wheelchair**, and we hope this documentation supports you throughout the process.

Stay Connected

Contact: bamboobility@gmail.com
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GitHub: github.com/Bamboobility/Bamboobility
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