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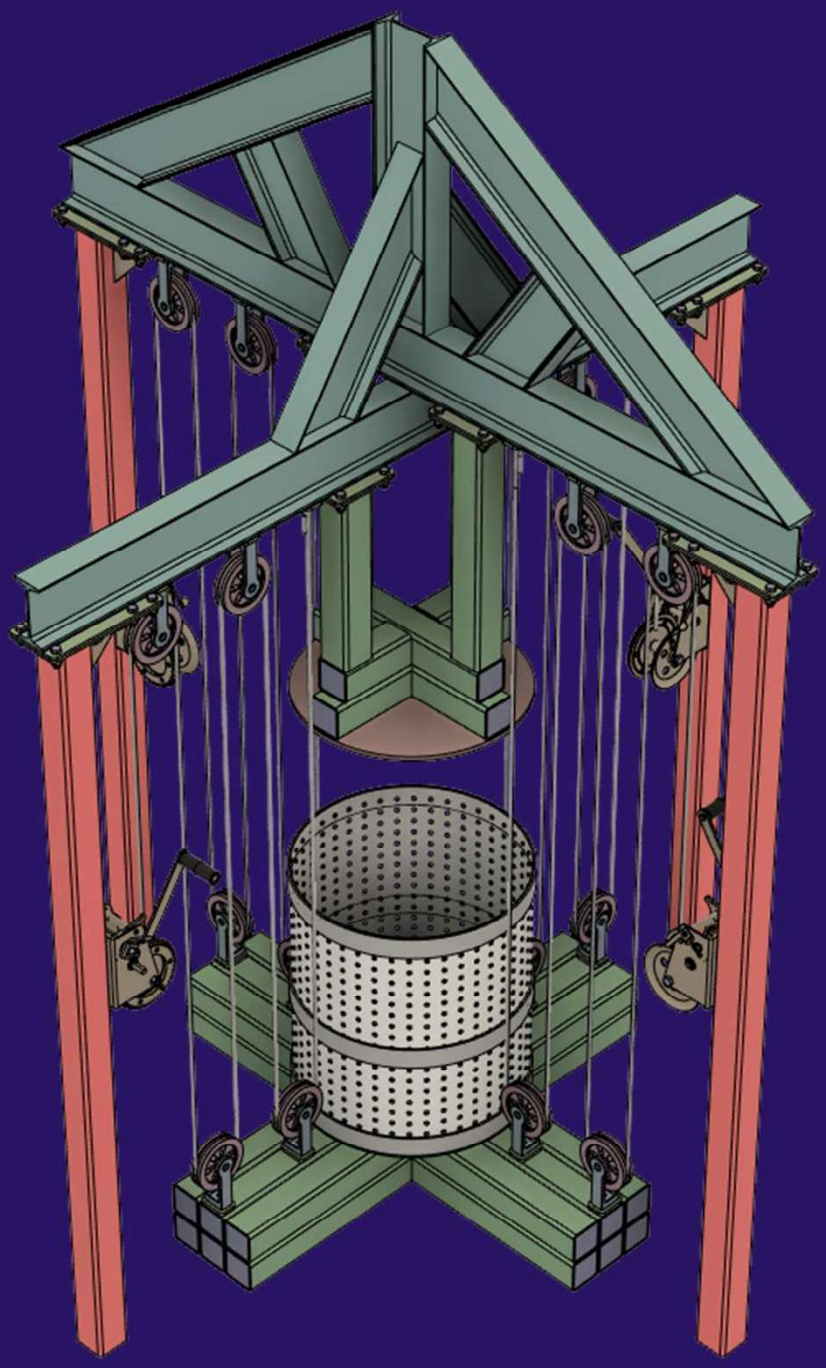
Winch operated cassava press

Dr Marcelo Precoppe



February 2020

Winch operated cassava press

Overview

The press was designed to dewater cassava mash. It uses 4 hand-operated winches and a system of pulleys to gain mechanical advance. The material is added to a perforated basket, that is lift against a plunger (Figure 1)

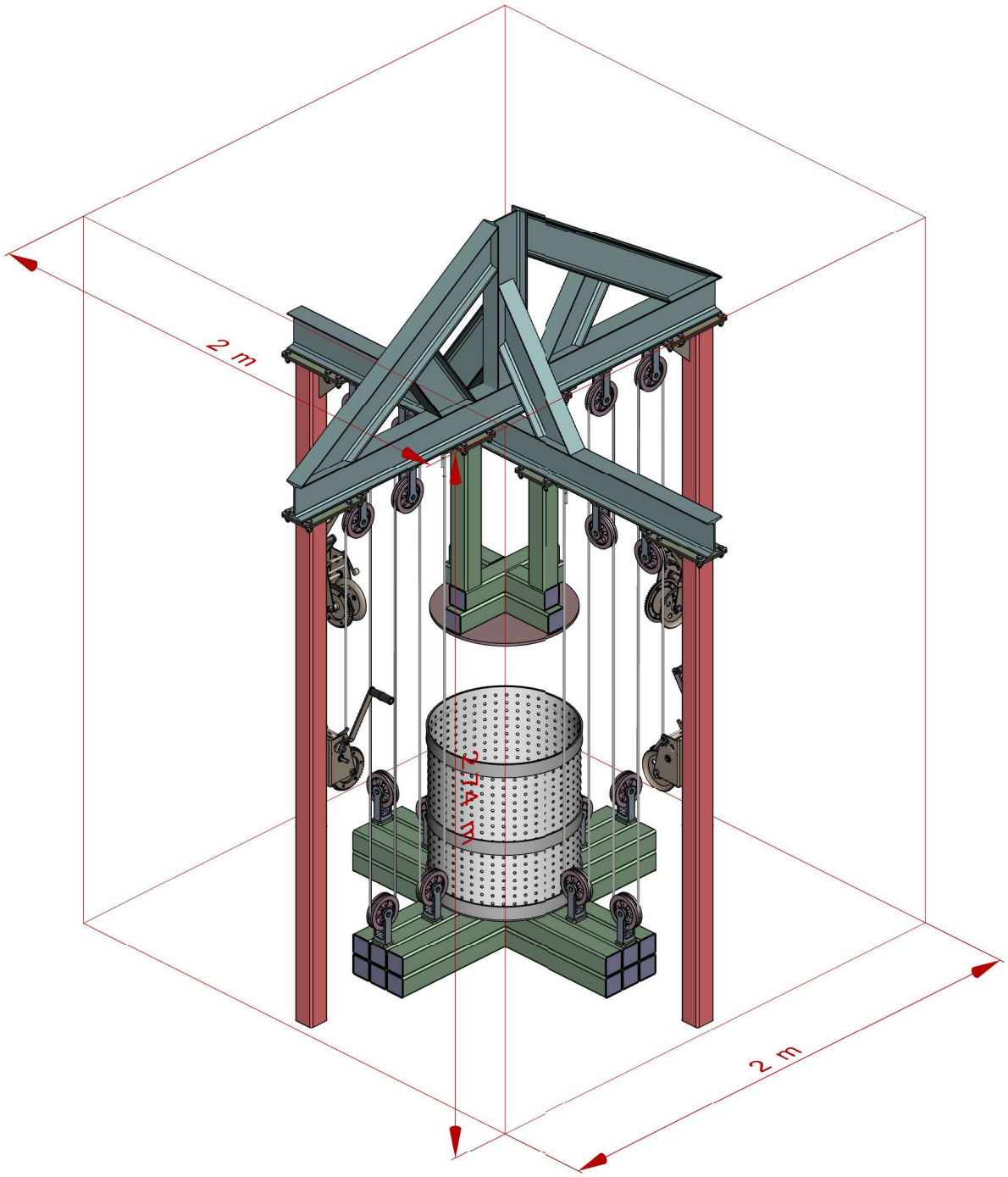


Figure 1 Overview of the winch operated press where the material is squeezed against a plunge.

Perforated basket

The basket is made of stainless steel and is perforated with holes of a diameter inferior to 5 mm. The basket is fixed to a base, built with 80 mm square profiles (Figure 2).

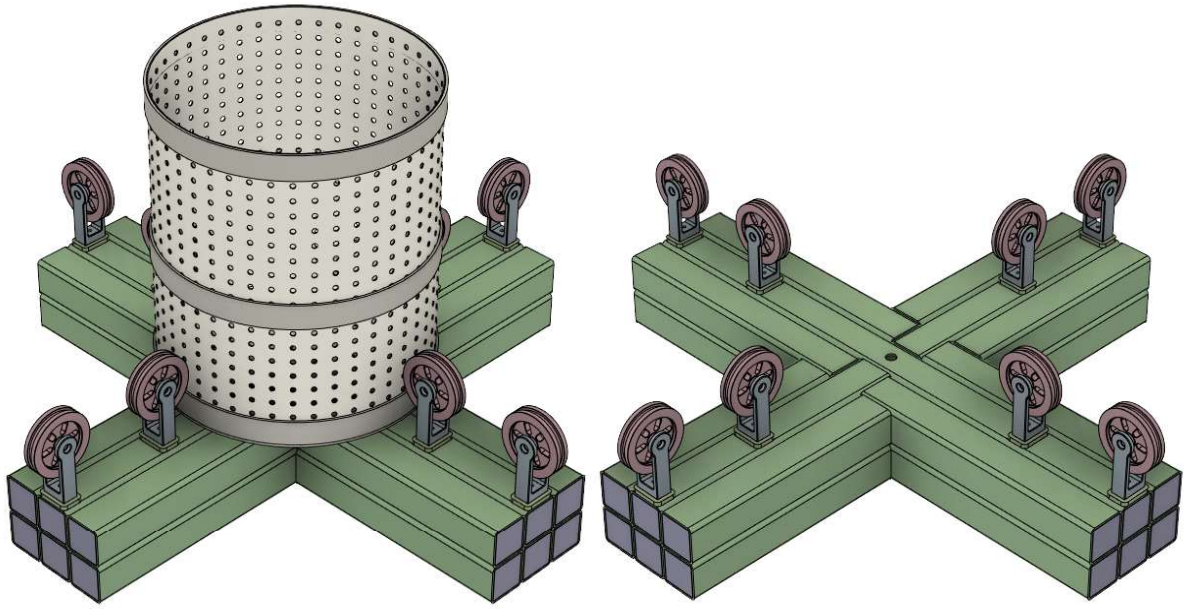


Figure 2 Perforated basket where the material is placed and base built with square profiles.

Plunger

The plunger is the structure that the material is squeezed against and is built with 80 mm square profiles (Figure 3).

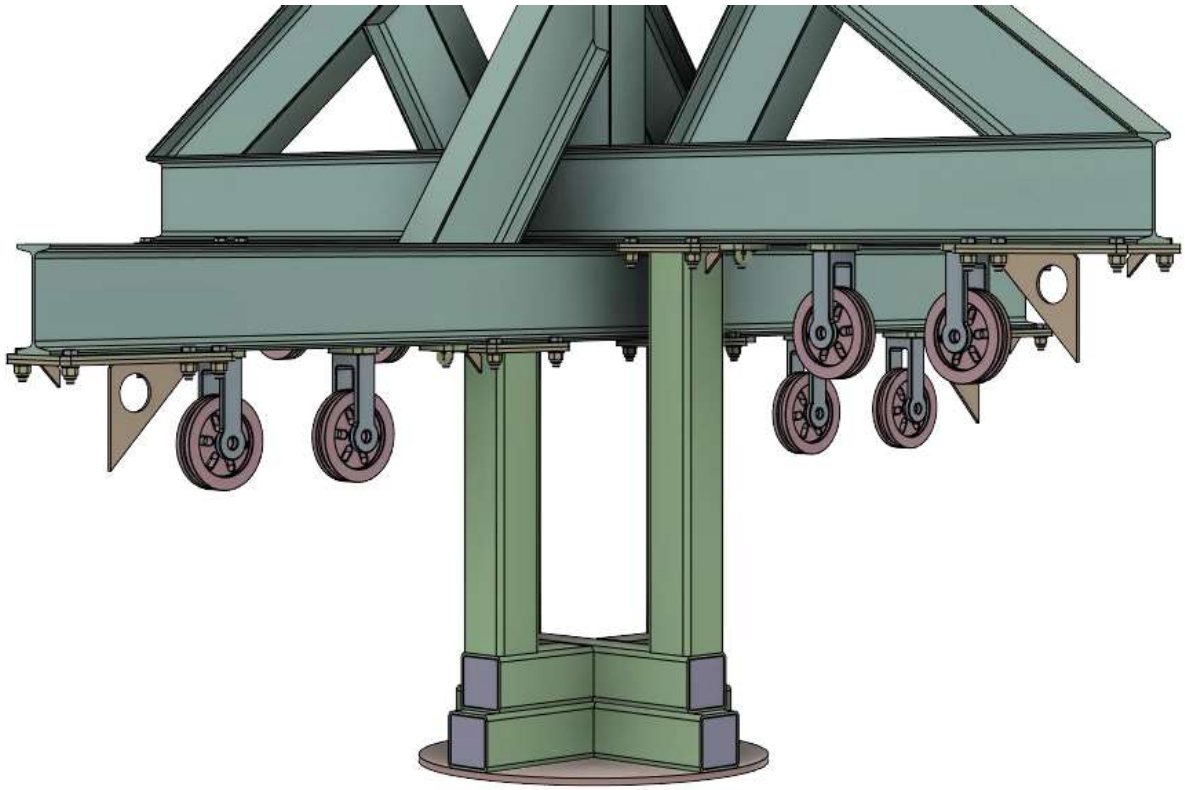


Figure 3 Plunger, on the top of the press, where the material in the basket is squeezed against.

Trusses

The plunger is fixed on a set of trusses, built using 140 mm I-beams (also known as H-beam), as shown in Figure 4.

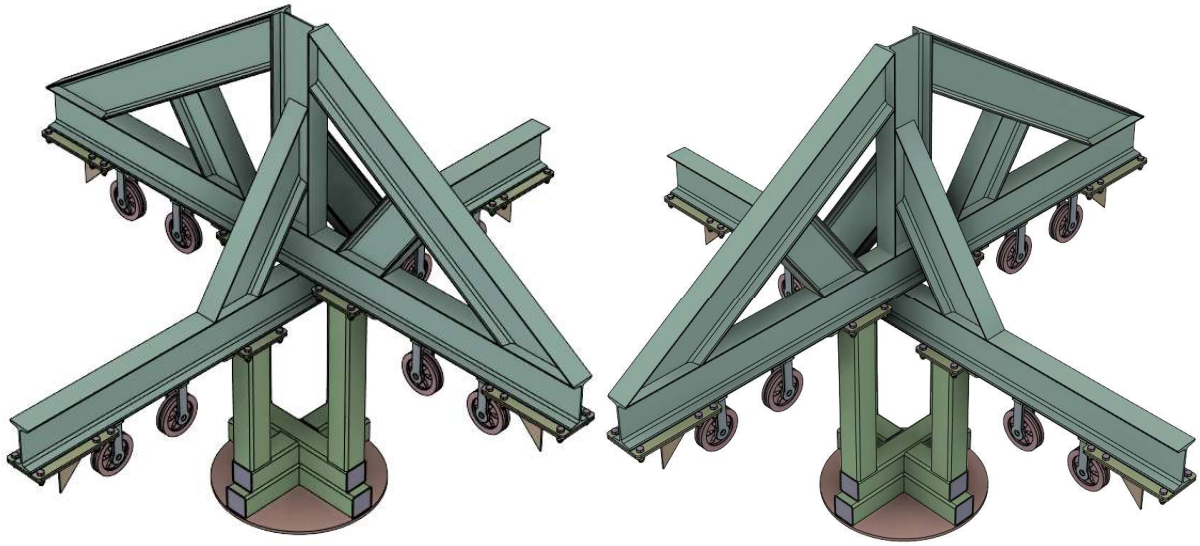


Figure 4 *Metal trusses provide support to the plunger and pulleys.*

Poles

The structure is supported by 4 poles, constructed using 80 mm square profiles (Figure 5).

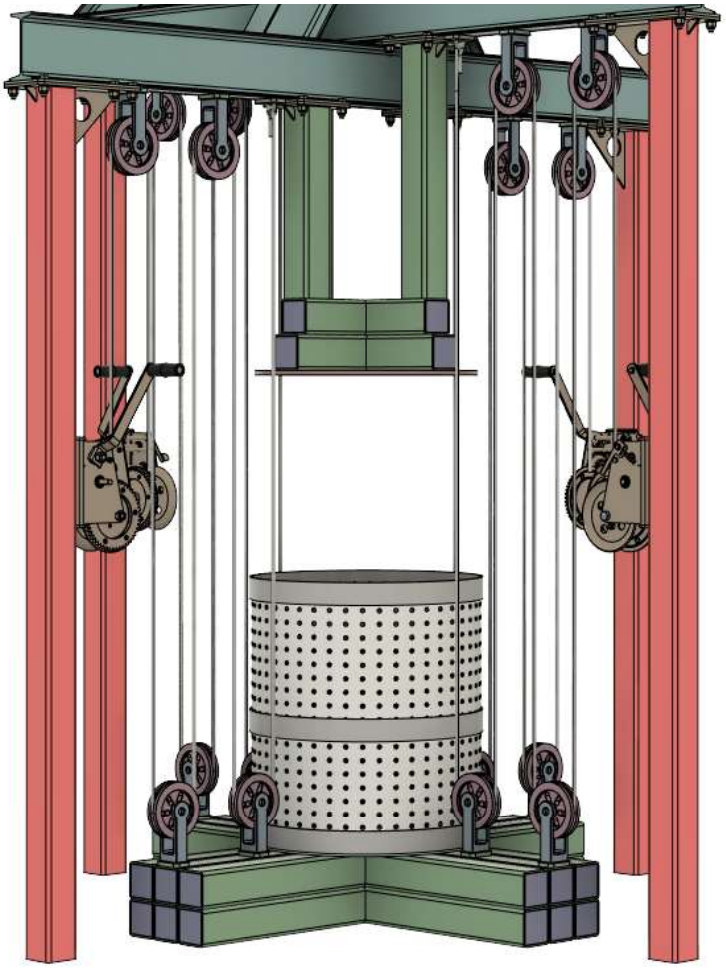


Figure 5 Square profiles of 80 mm support the press.

Pulleys and rope

The pulleys have a diameter of 117 m and their groove size depends on the choice of the rope. If a nylon rope or a polyester rope is used, it must have a minimum diameter of 36 mm. If is a wire rope is used, it must have a minimum diameter of 18 mm. When assembling the press, it is important to assure that the pulleys are aligned in a way that the rope is perfectly vertical as shown in Figure 6.

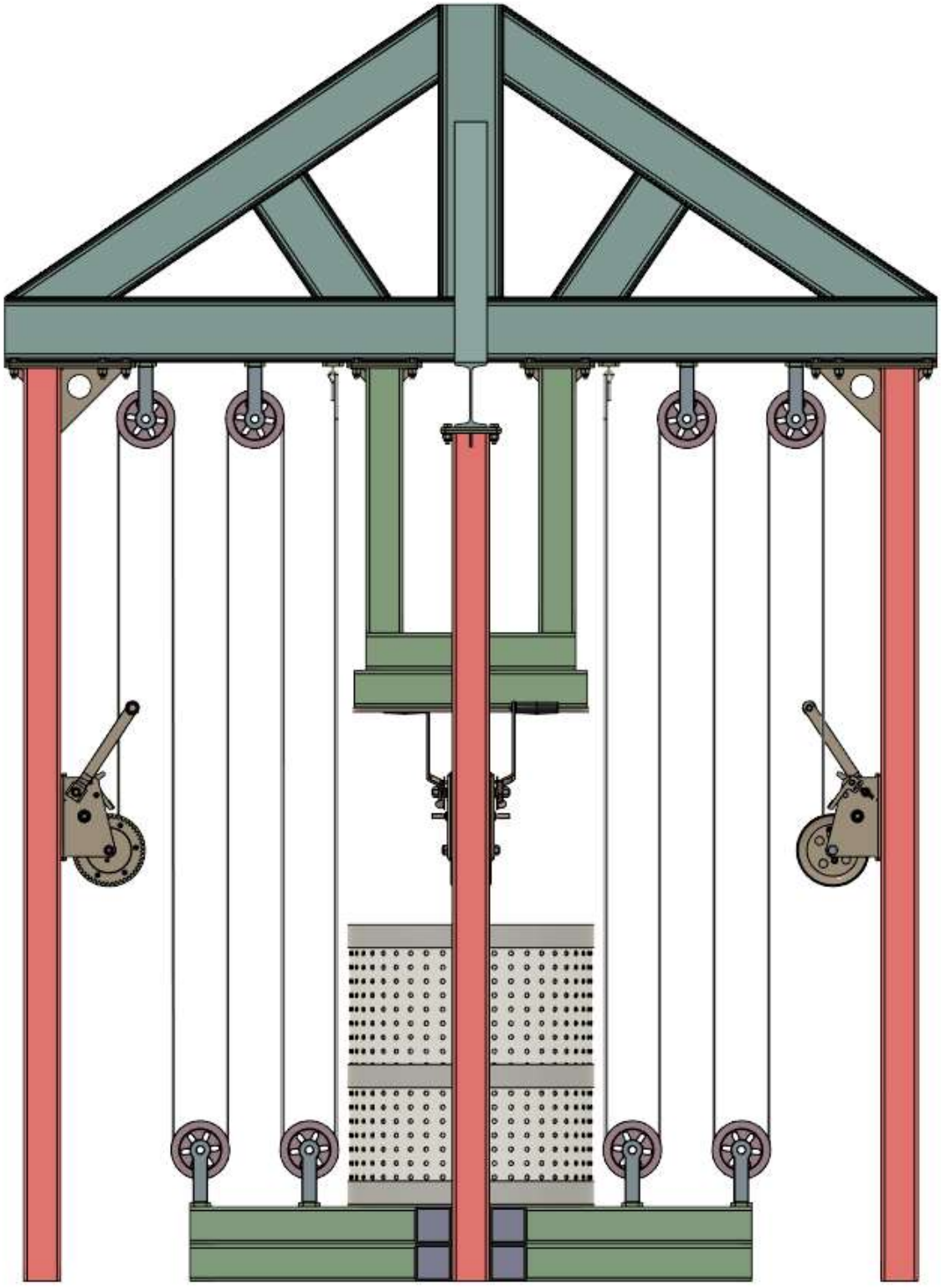


Figure 6 *Arrangement of the pulleys on the press to assure the ropes are perfectly vertical.*

Hand winch

The hand winch has two speeds, one moves the rope faster, the other moves the rope slower, achieved by swapping the handlebar (Figure 7).

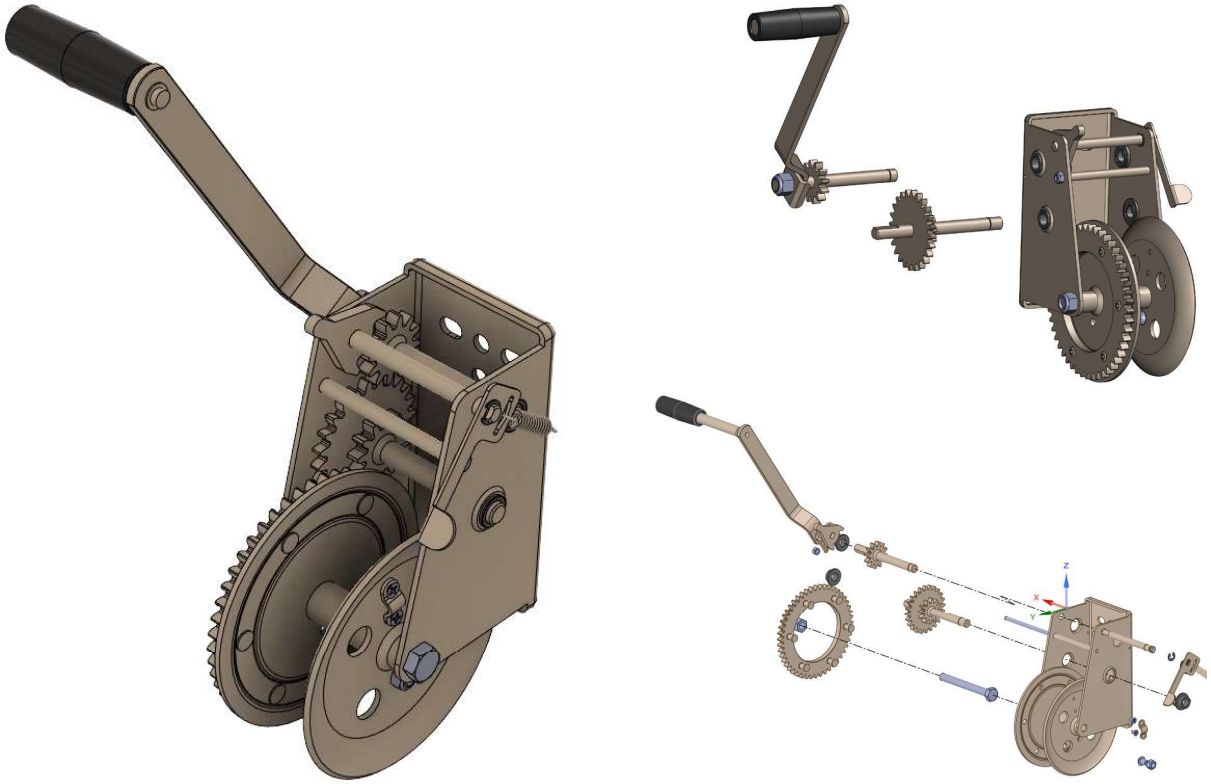


Figure 1 *Hand winch with 2 speeds*

Dimensions

Dimensions of the press should be obtained from the 3D CAD drawings available at https://a360.co/2GVK4up or at https://bit.ly/3825KRK. See Appendix 1 for instructions on how to download. Appendix 2 provides an overview of the main dimensions of the equipment.

It should be noted that at the drawings, the size of the orifices at the perforated basket should be smaller than shown. In addition, the size of the groove on the pulley should be determined ty the diameter of the rope being used.

Equipment delivery

The equipment should be delivered before 29 February 2020. It should be installed at FRI Processing Centre and picture evidence are required. In all photos, a measuring tape must be present to allow verifying if the equipment was built correctly.

Payments

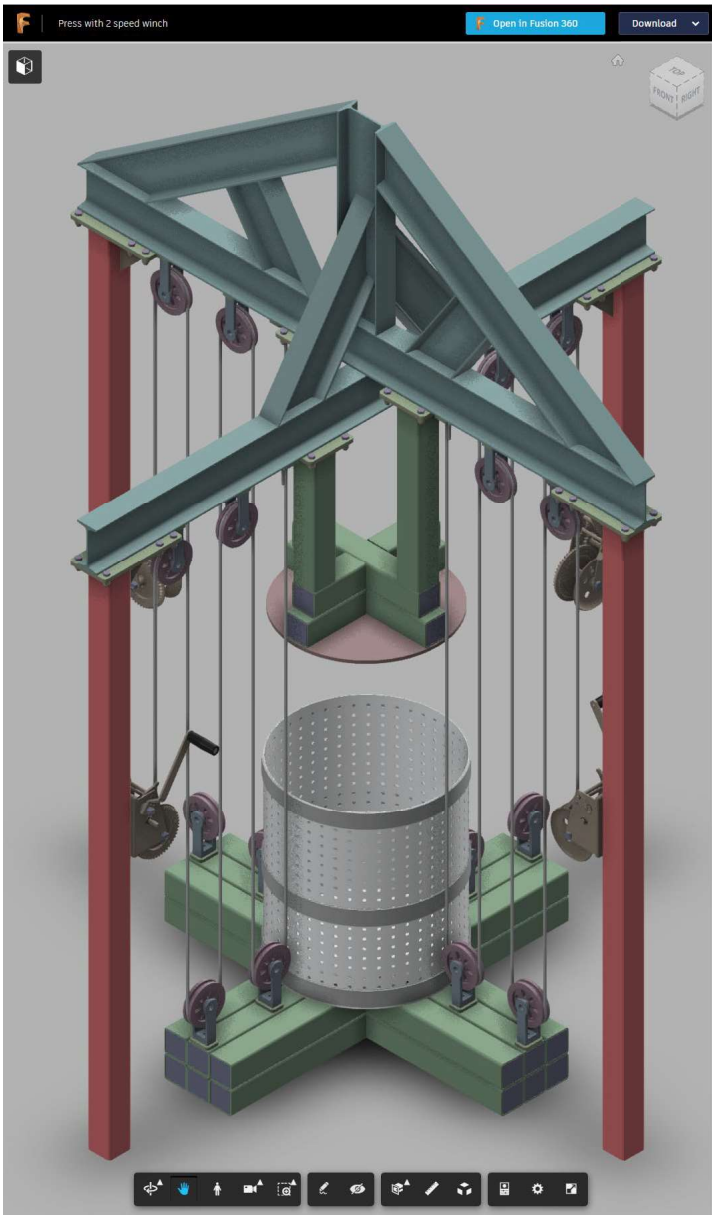
Payment will be done by international bank transfer, 50% at the start, 50% at delivery. Payment processing time is of about 15 days.

Appendix 1

How to download a 3D CAD file from the cloud

The 3D cloud is provided by Autodesk, is free to use, does not require a login and does not require the use of Autodesk programs (i.e. do not need Fusion 360).

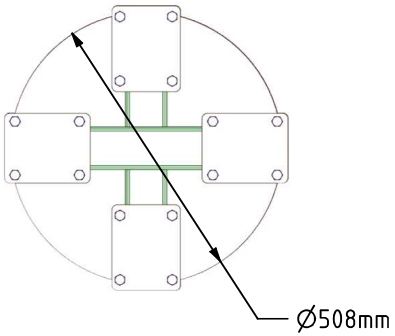
At the browser, is possible to visualize the 3D cad file, make measurements, create cross-sections and exploded views. To download it, click at the “Download” button on the top right corner of the screen and choose the desired format (IGES, SAT, STEP, DWG, etc).

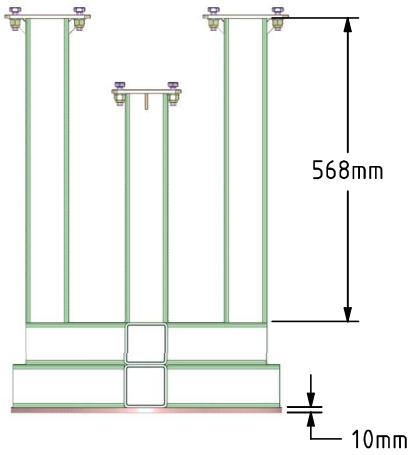


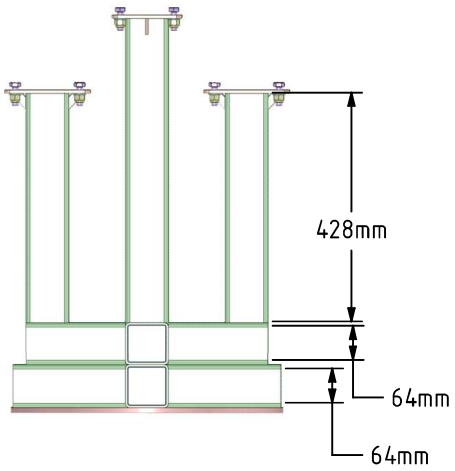
After downloading the 3D CAD file, open it using your usual 3D CAD software.

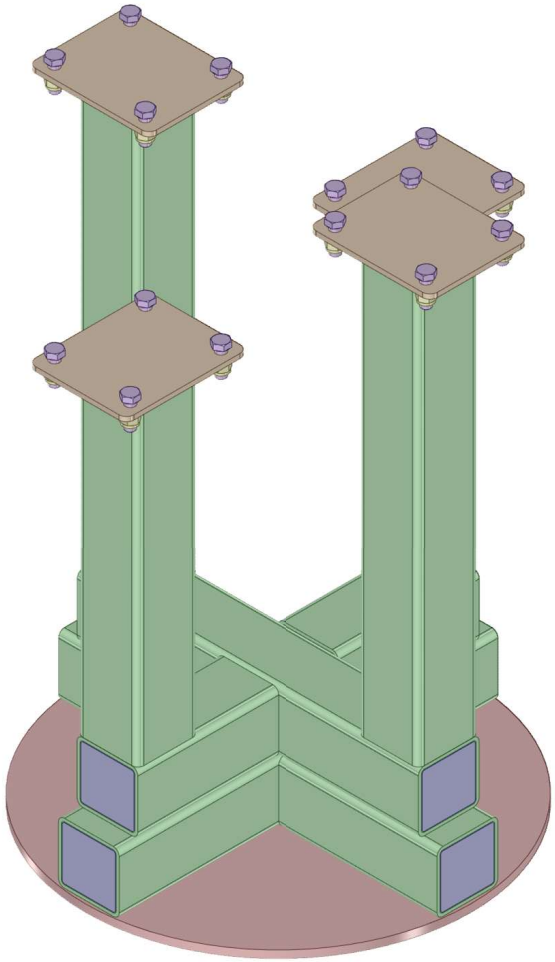
Appendix 2

Drawings of the winch operated cassava press









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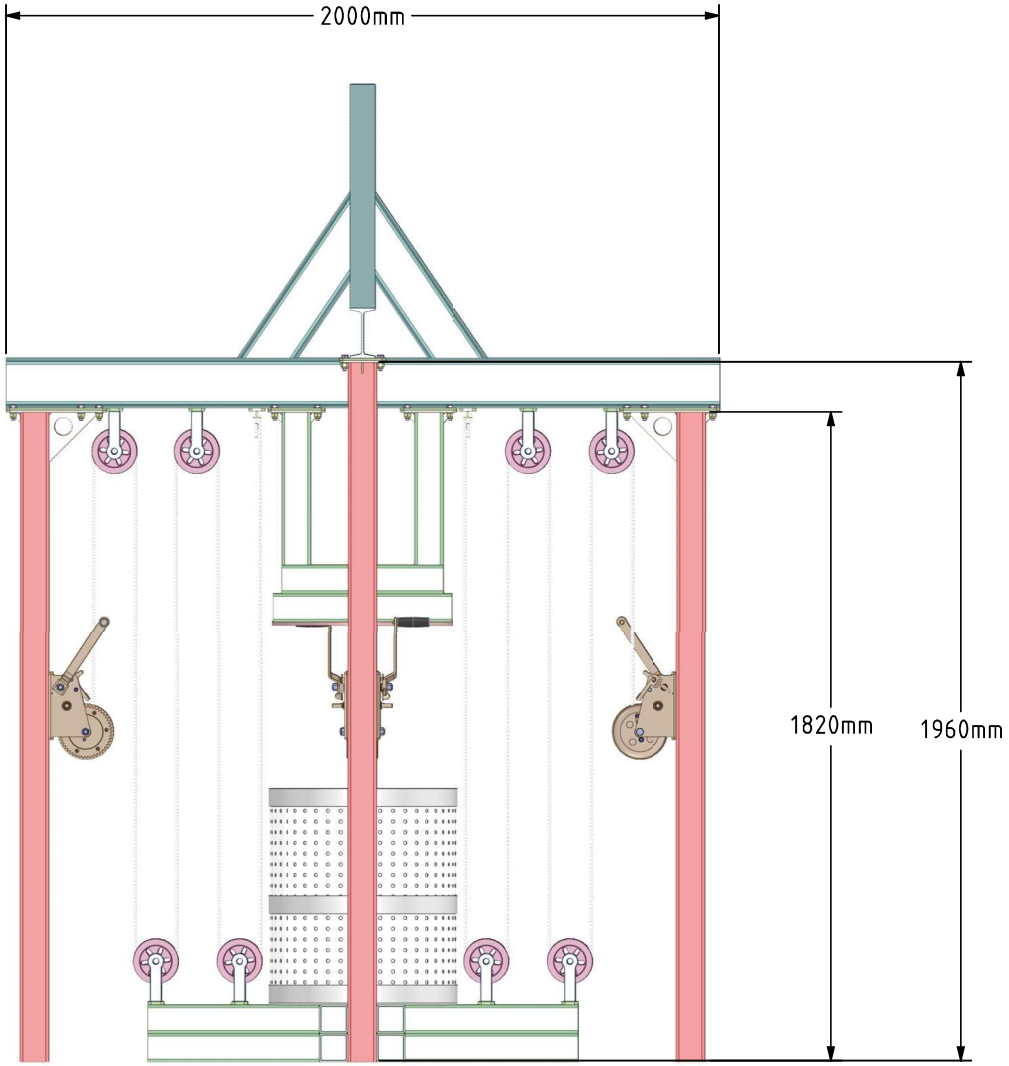

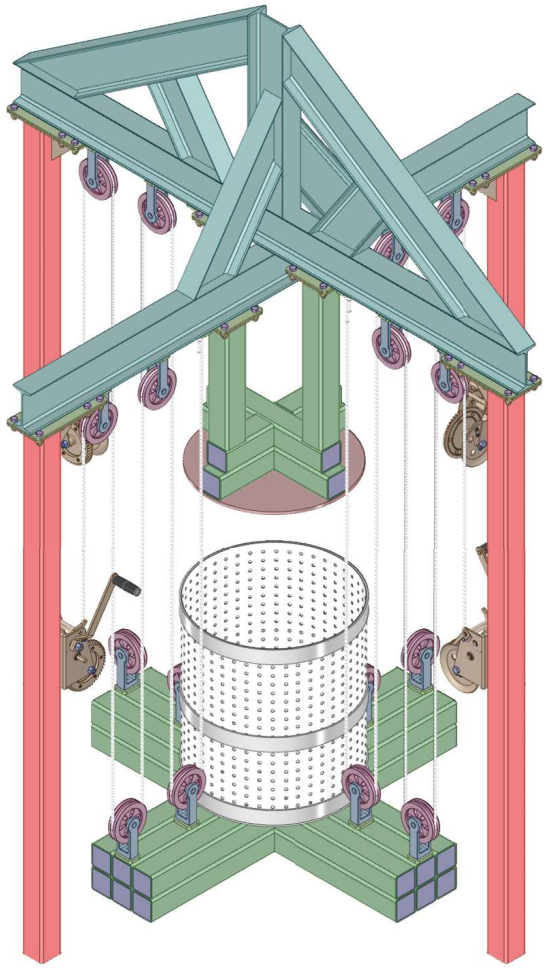

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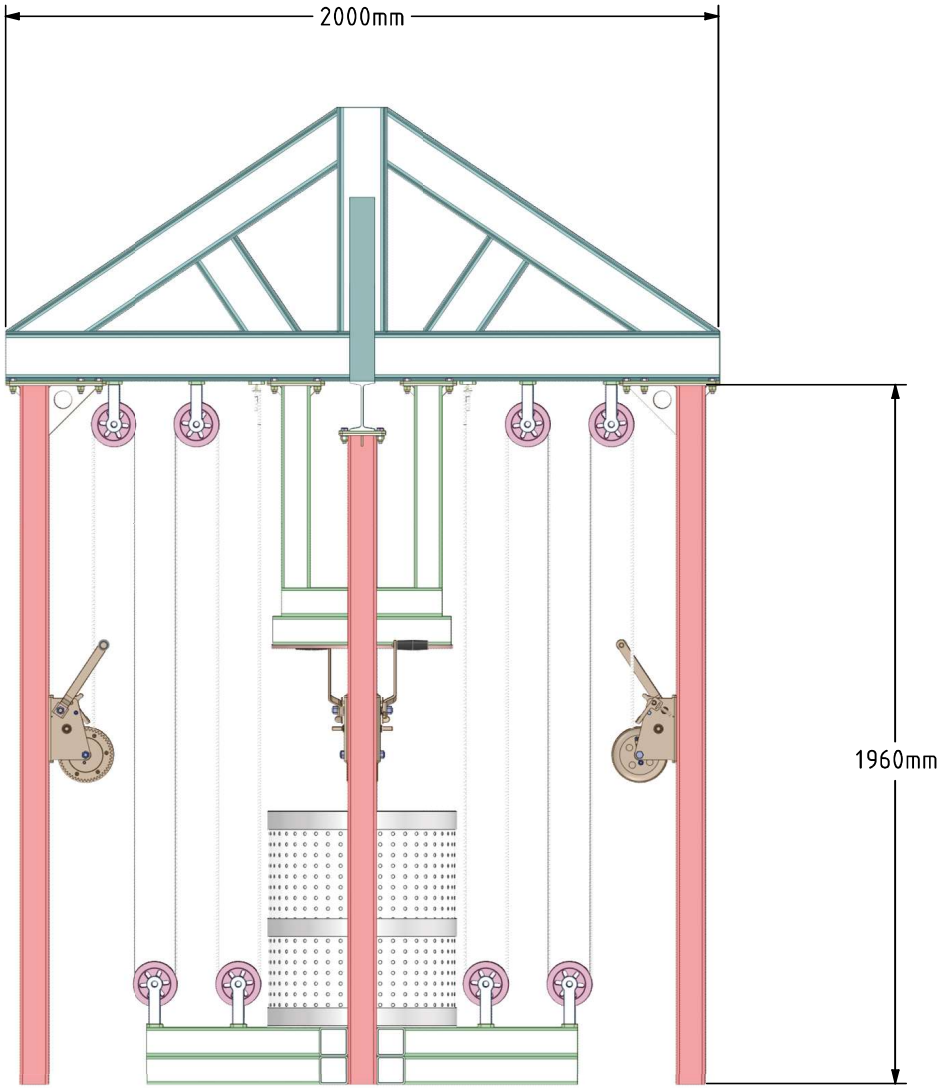

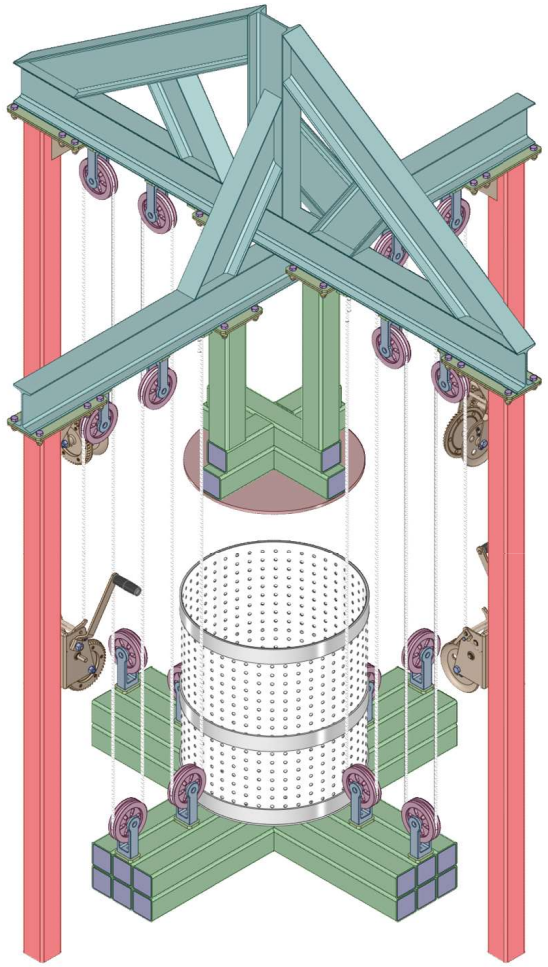

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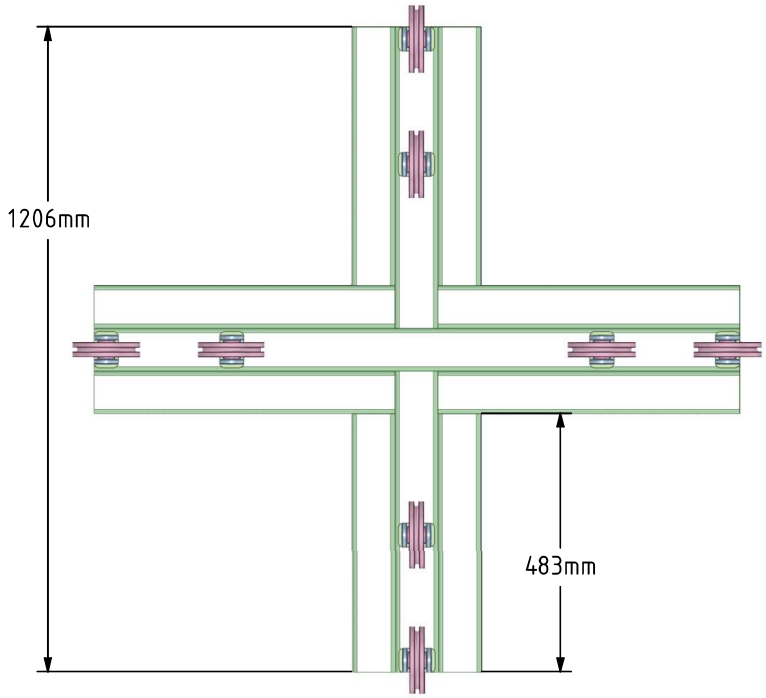

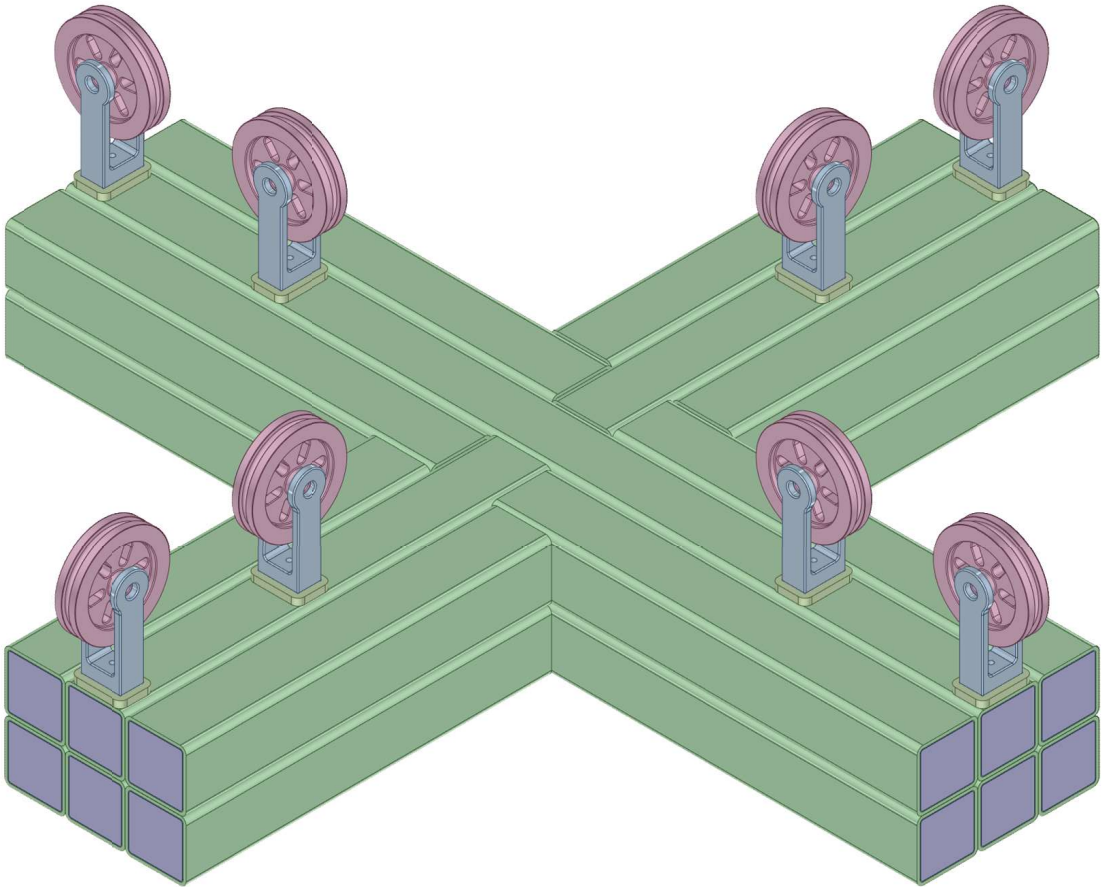

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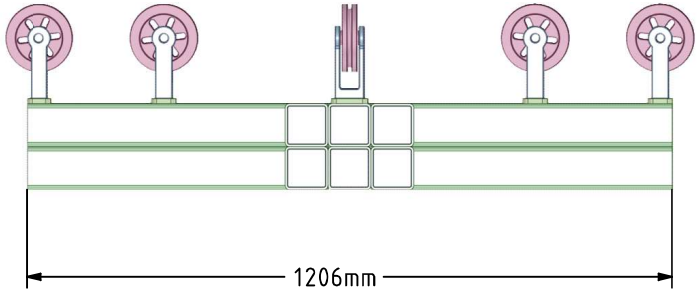

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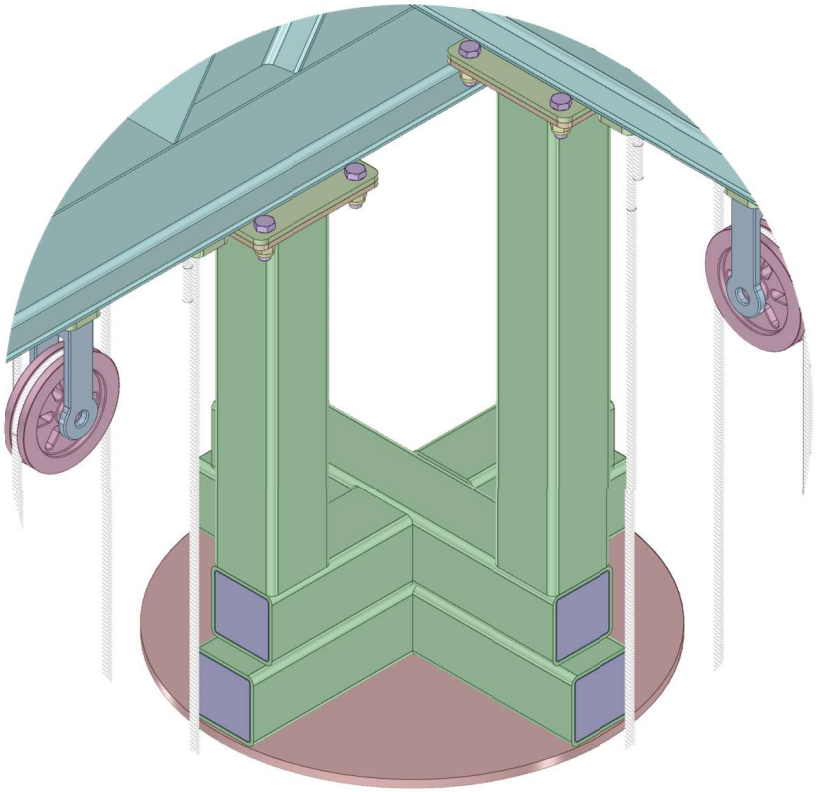

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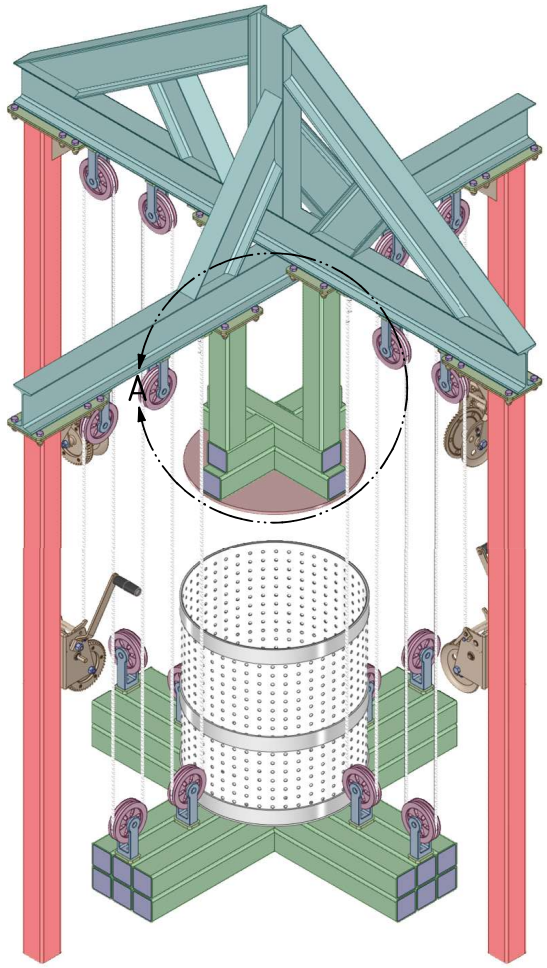

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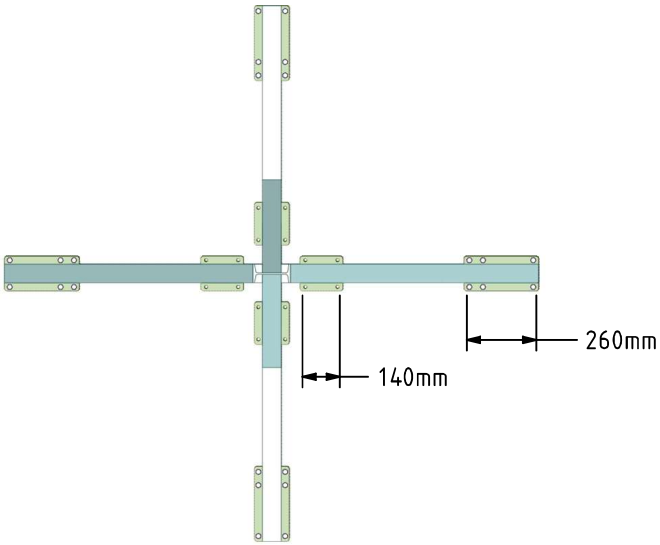

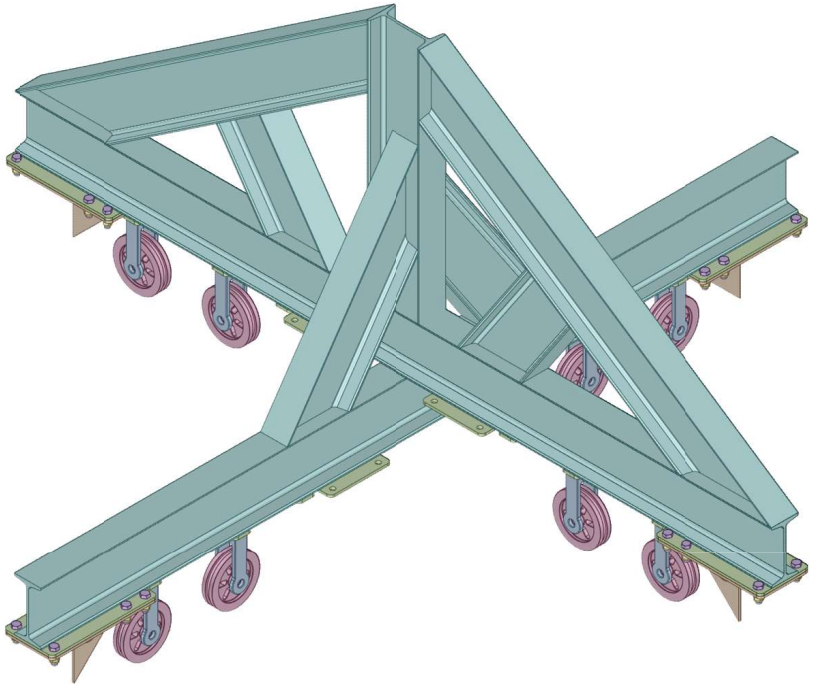

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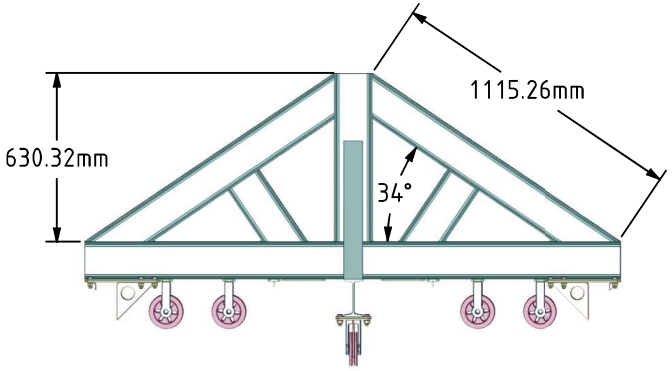

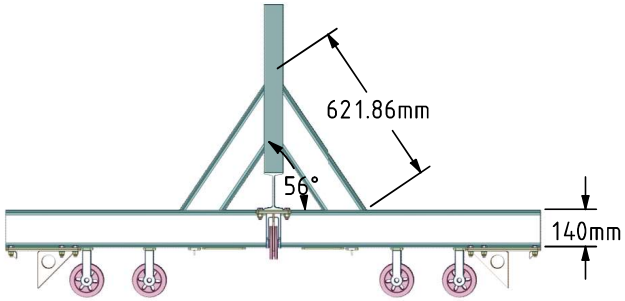

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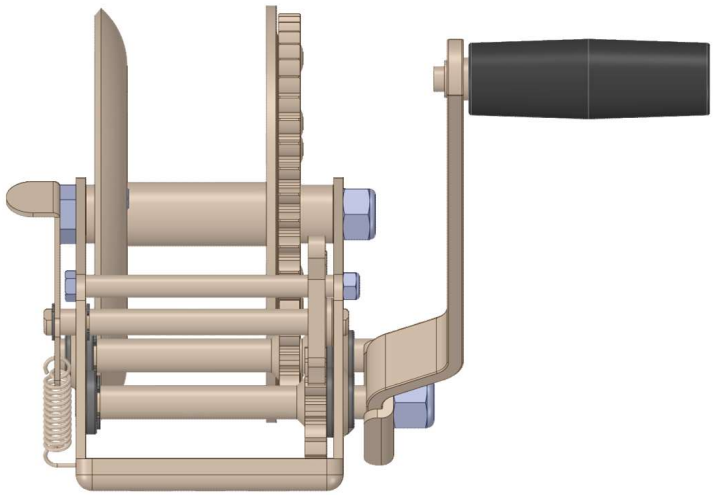

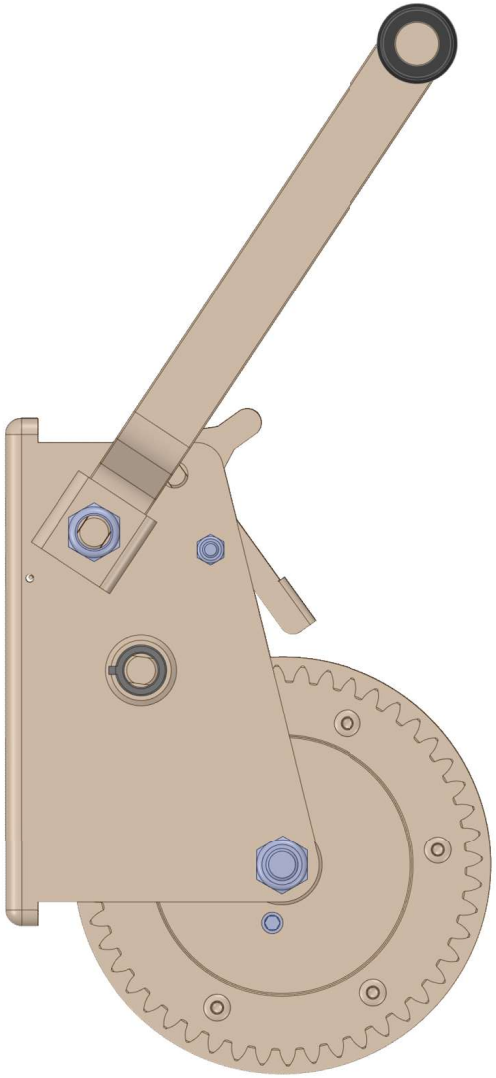

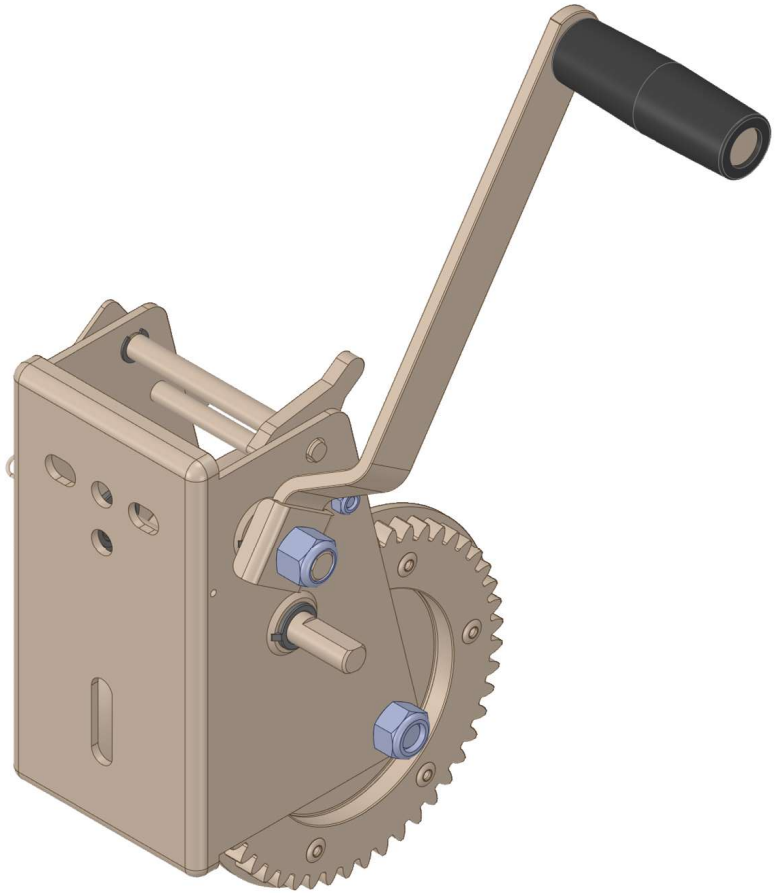

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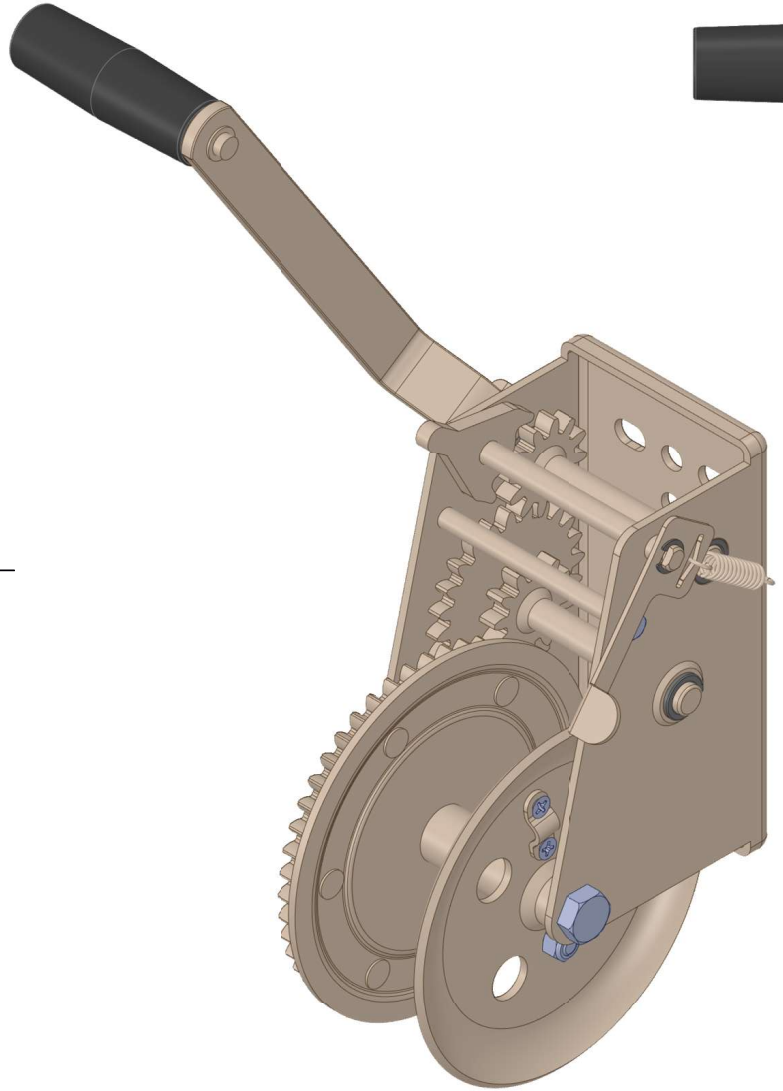

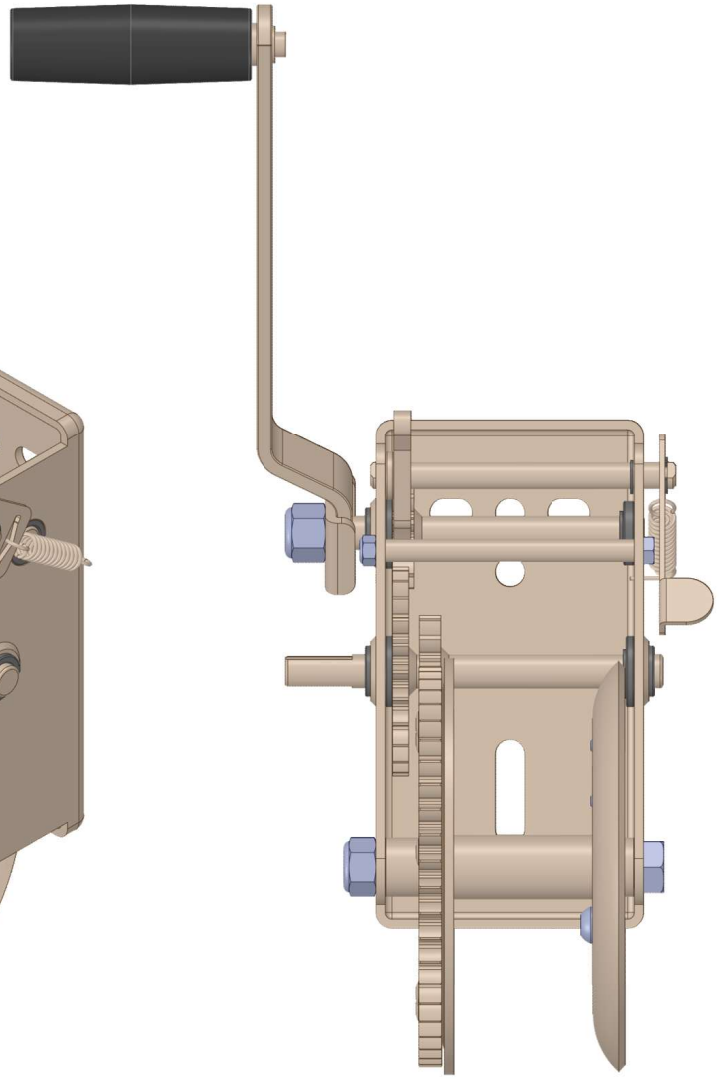

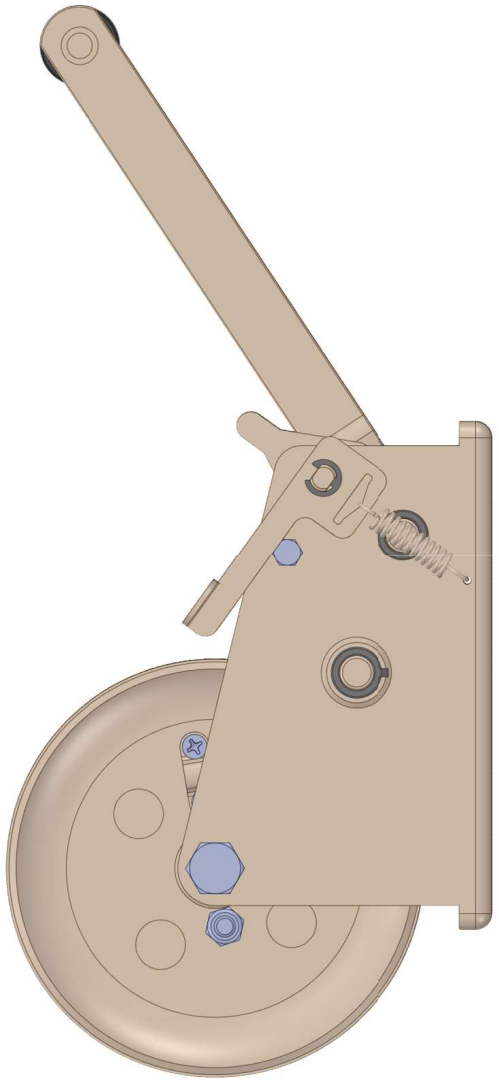

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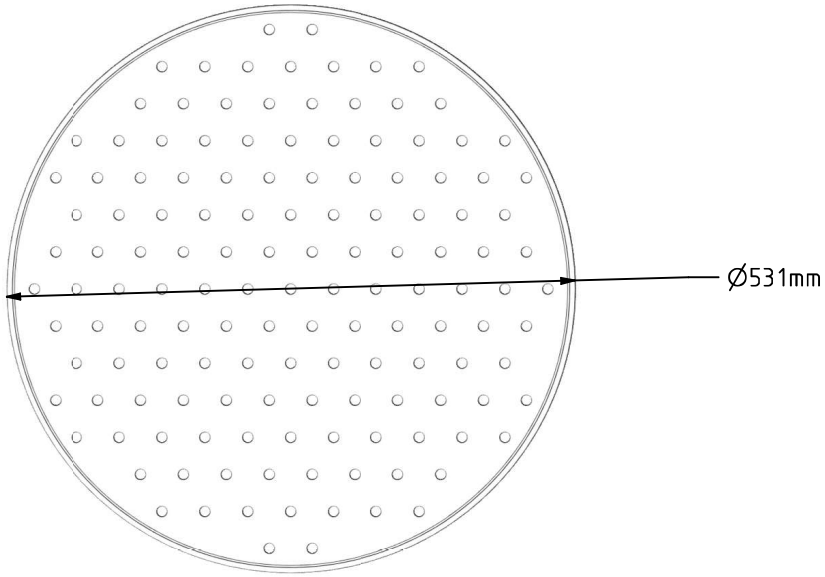

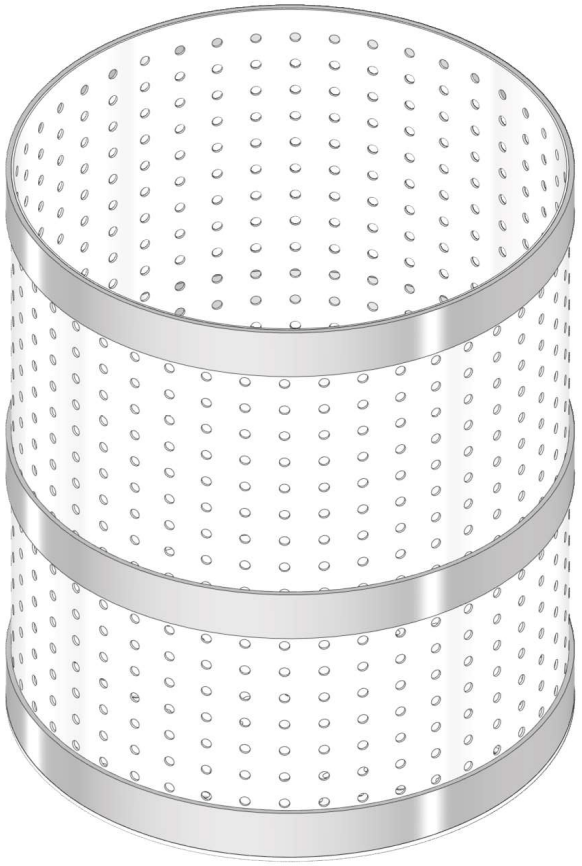

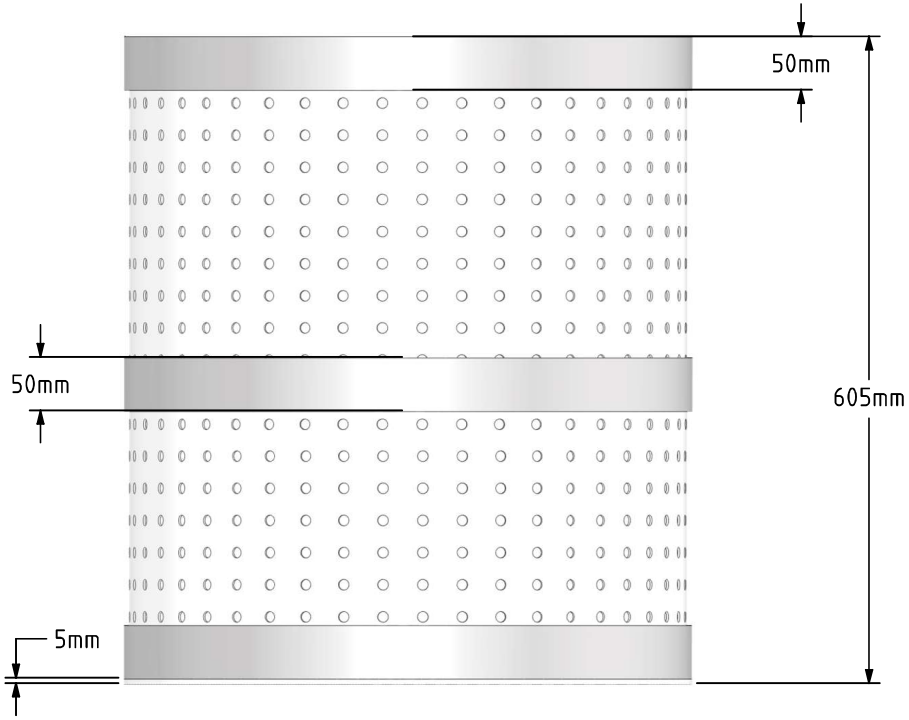

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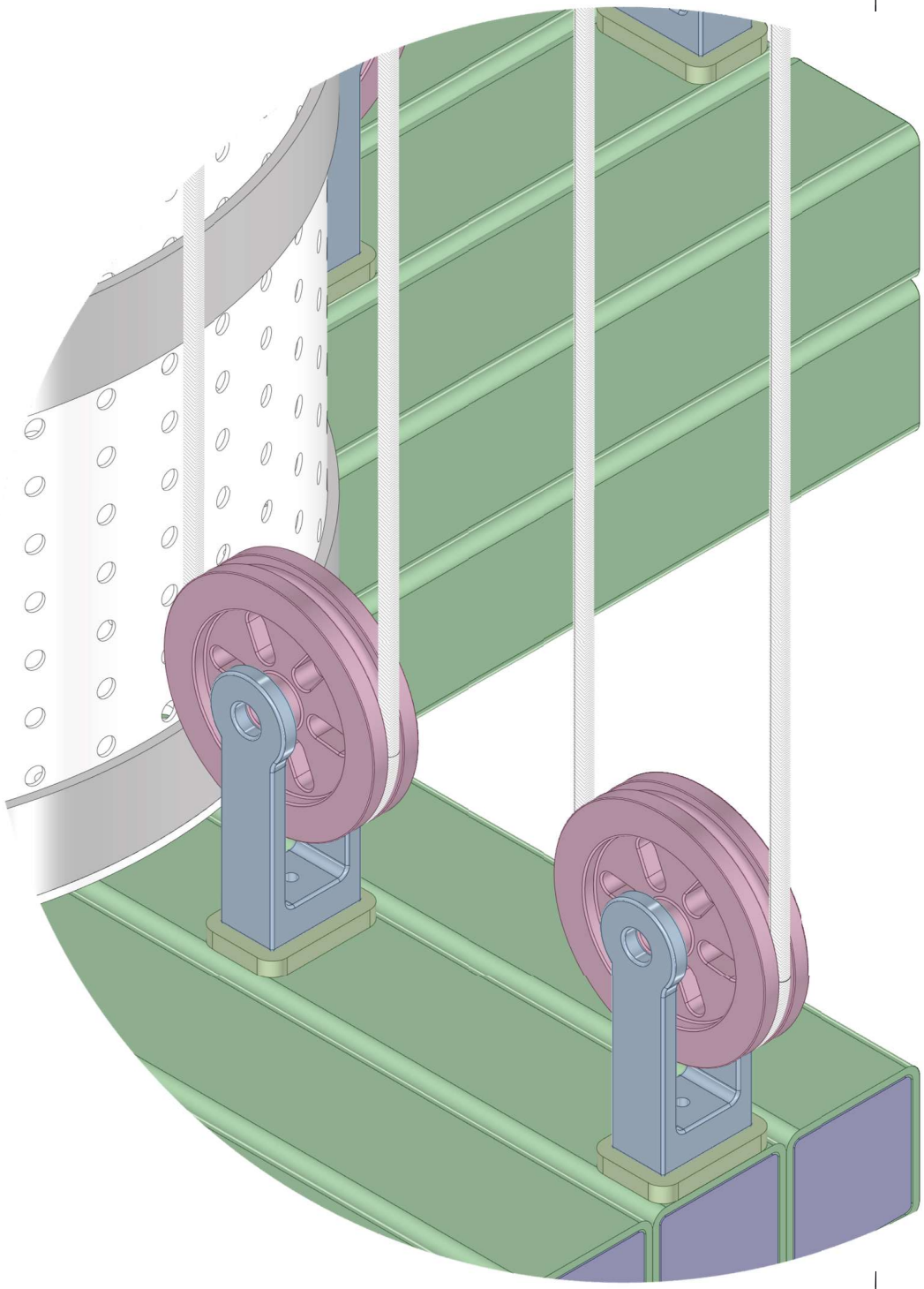

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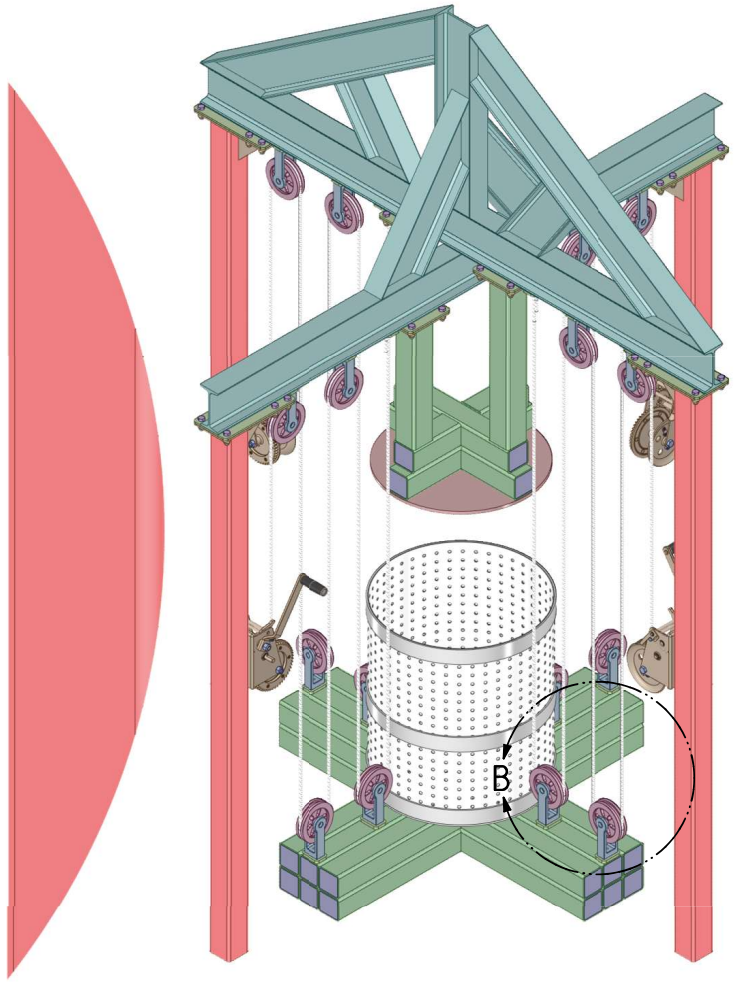

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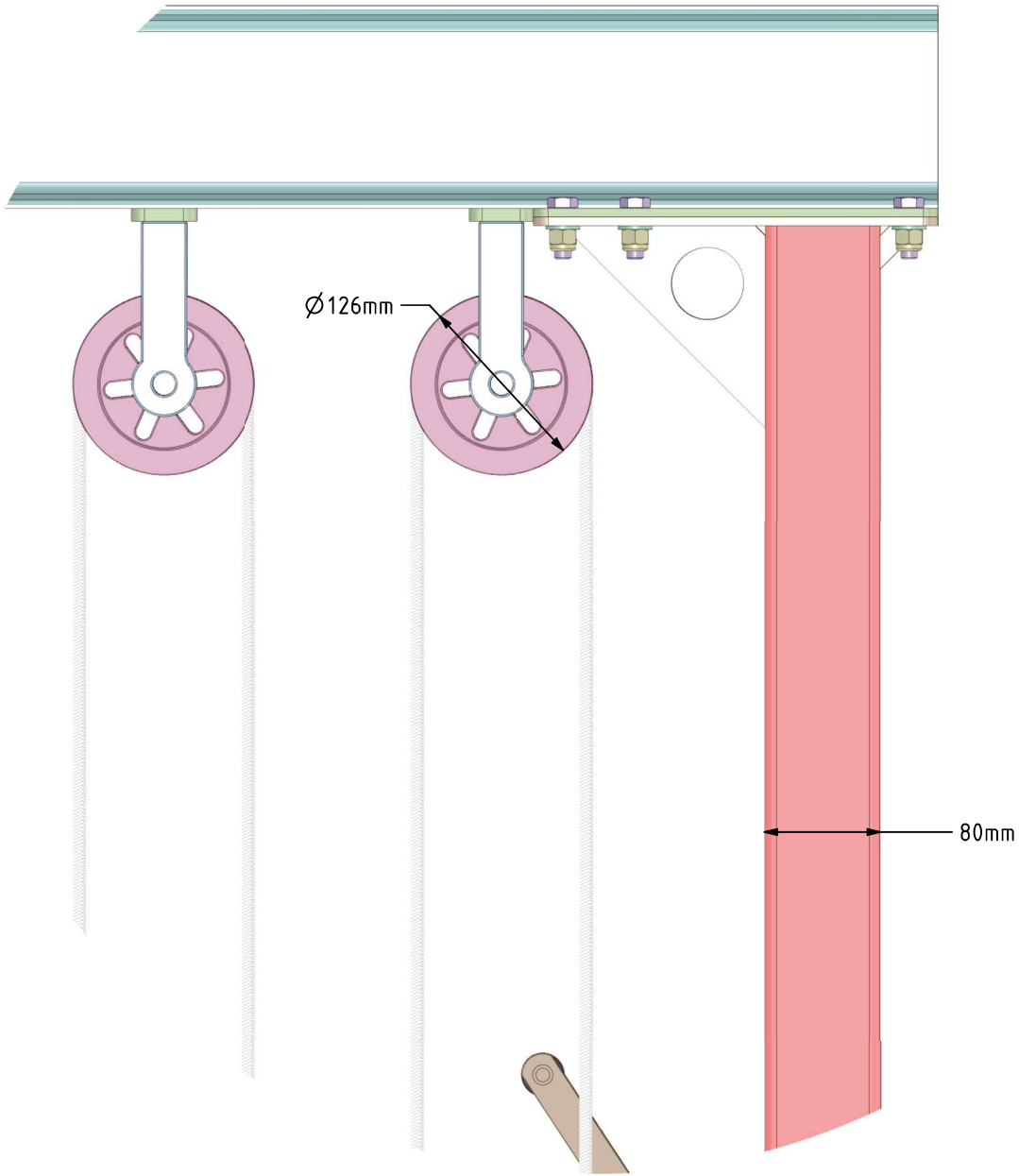

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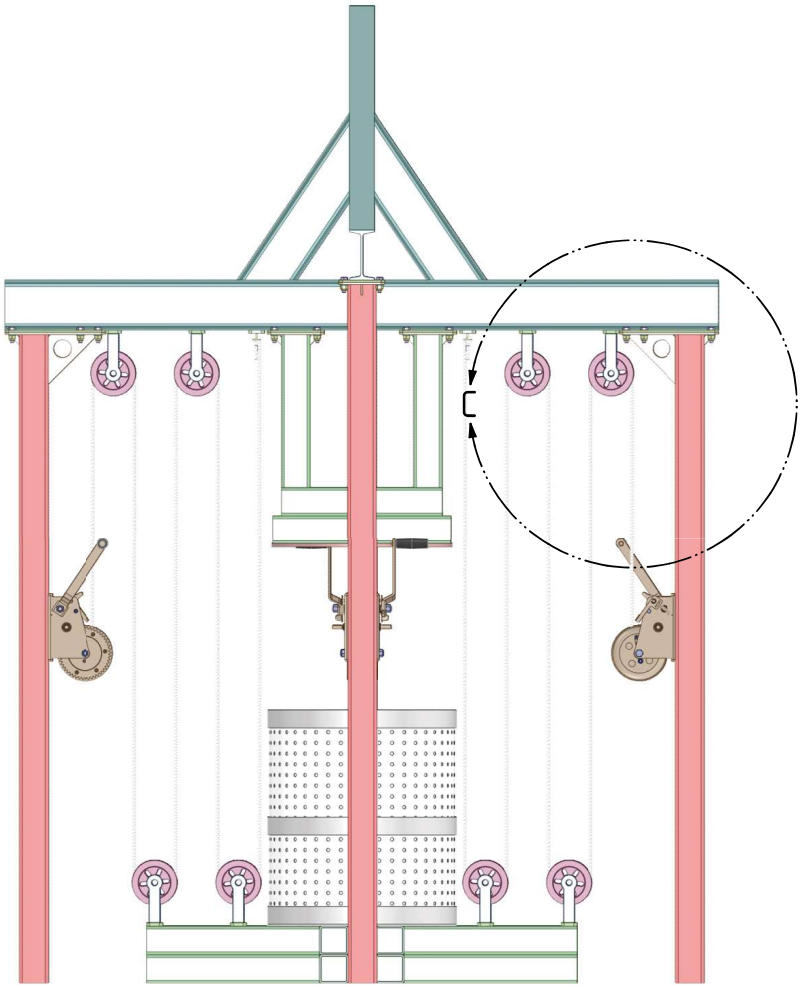

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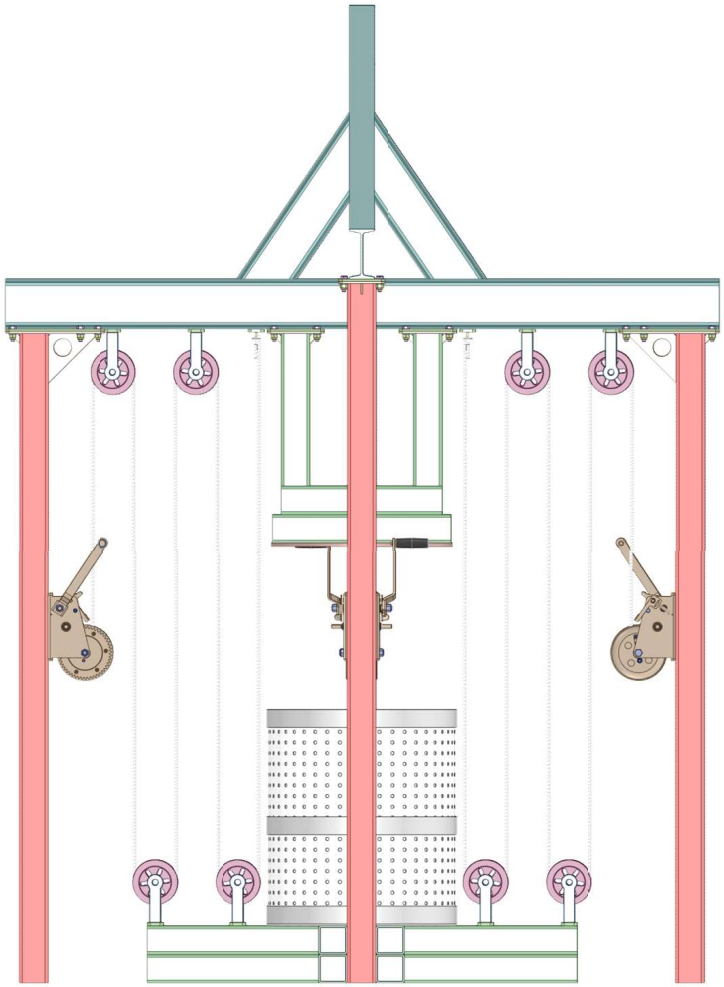

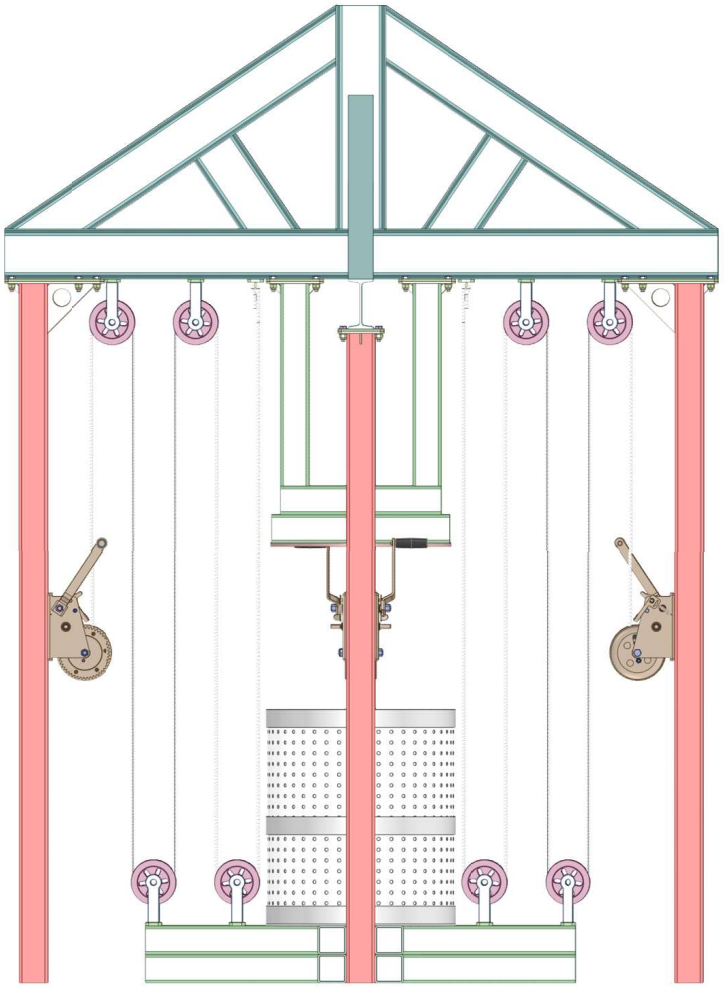

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