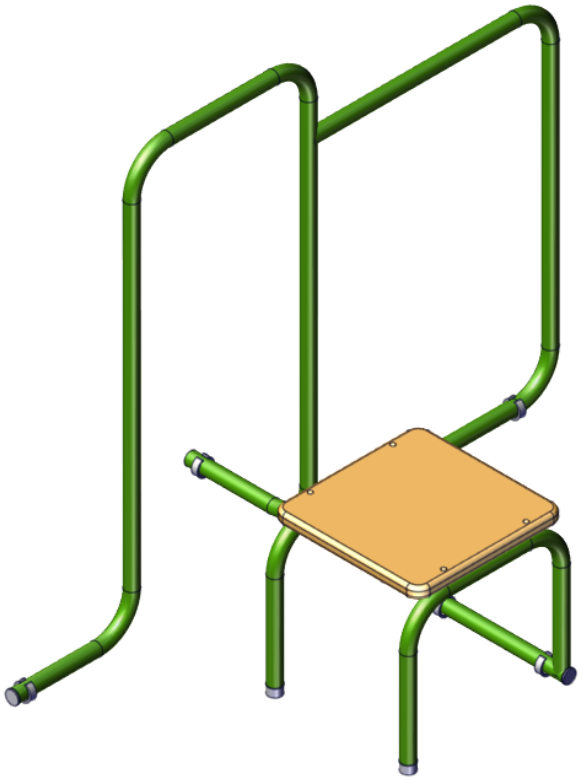
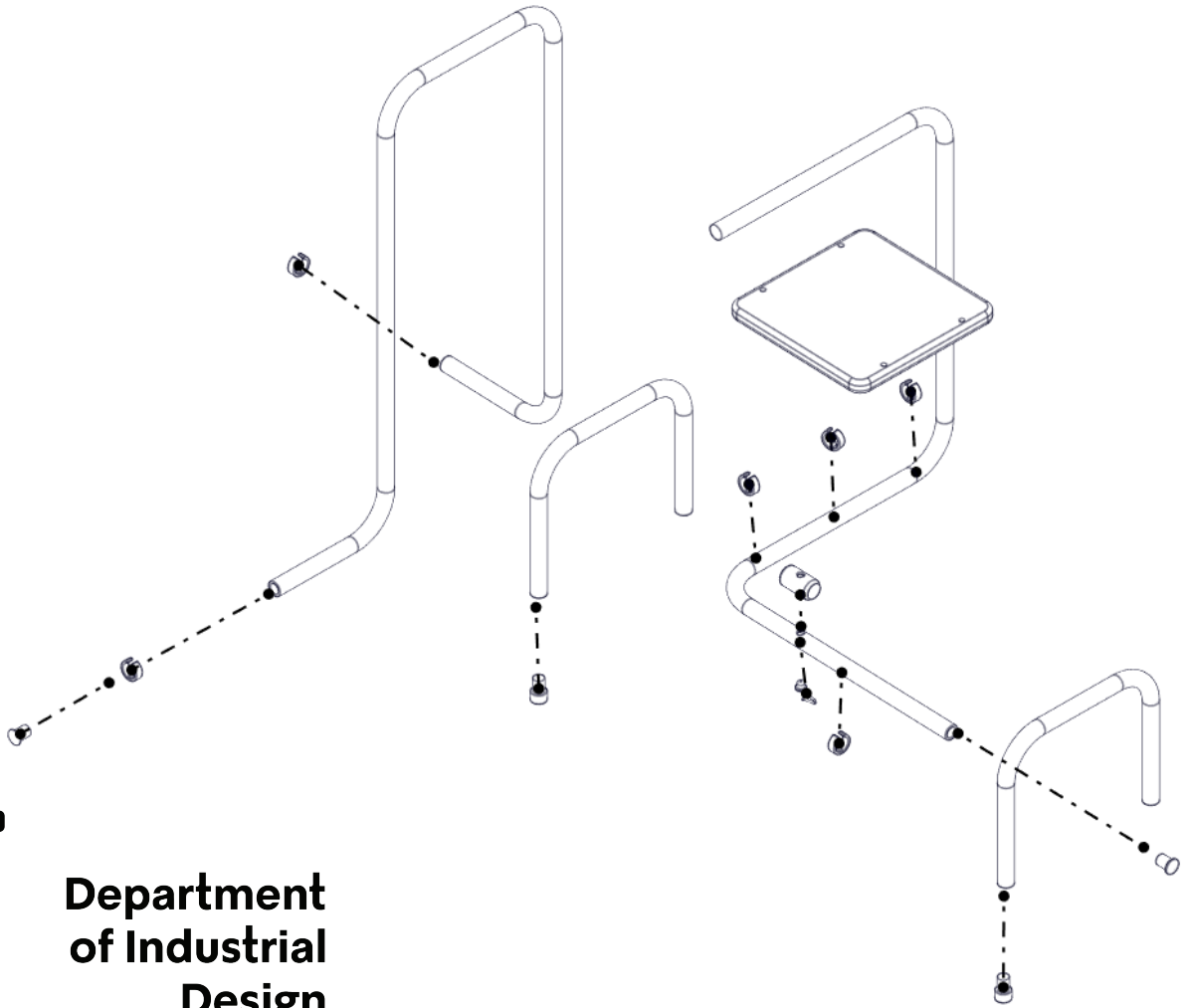
Lifting Apparatus from the Floor for Michal



By: Aviv Haas & Moria Ido



HIT ID
Department of Industrial Design

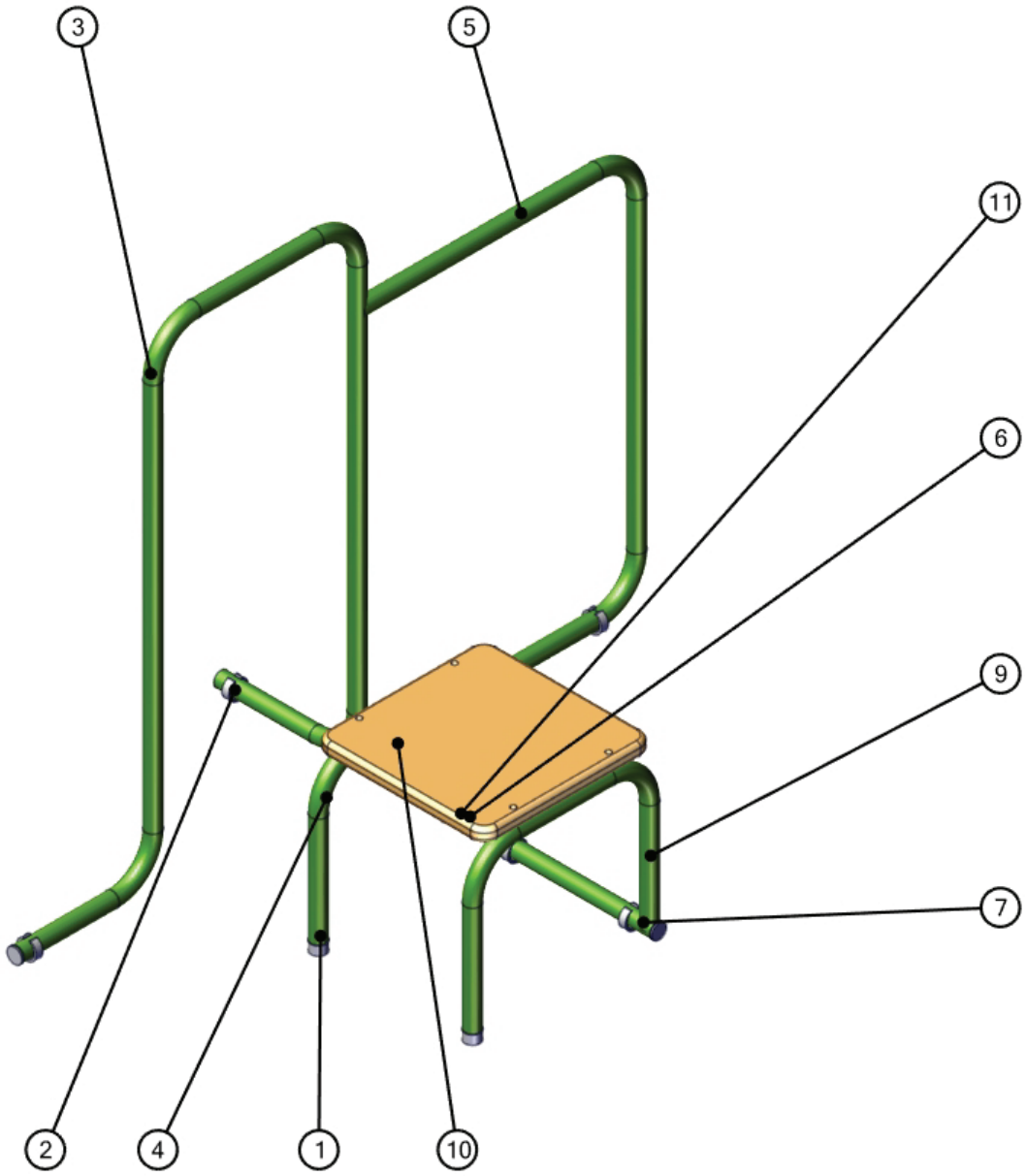
Introduction

Hello dear maker! This project was developed as part of the FIXPERTS course in the Bachelor's Industrial Design program at the Holon Institute of Technology (HIT) in Israel, with the goal of creating a product that increases independence for people with disabilities in their daily routines. Our work focused on Michal, a remarkable woman who is paralyzed from the chest down and hopes to join her two young children as they play on the living room floor—an activity that requires her to move from her wheelchair to the floor and back again. Currently, she accomplishes this by effectively "falling" out of the chair and then using the sofa to pull herself up, a process that is both difficult and physically taxing. In response, we (students Moriah Ido and Aviv Haas) designed a railing system intended to simplify and support Michal's transition from the floor to her wheelchair.

Please note that our product is still in development as part of an academic project, so if any dimensions appear inconsistent during construction, feel free to adjust them to suit your needs. We hope you enjoy building this product and that it can be of benefit to you or someone

BOM

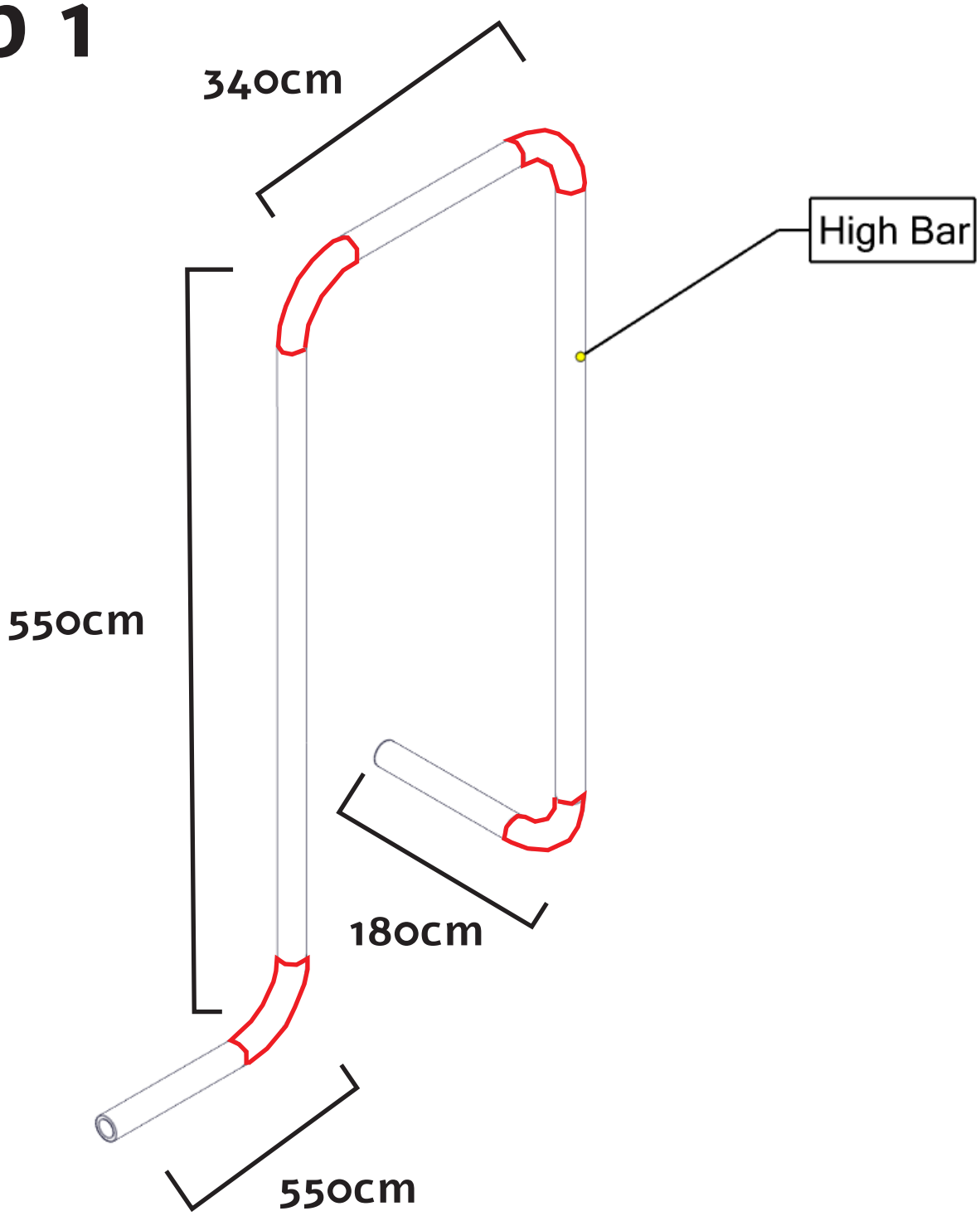
Description	BOM ID	Qty
Floor Plug	1	2
Floor lift	2	6
High Bar	3	1
Left Stool leg	4	1
Low Bar	5	1
Pin lock	6	1
Pipe Plug	7	1
Right Stool leg	9	1
Wood sit	10	1
lock House	11	1



Cutting list

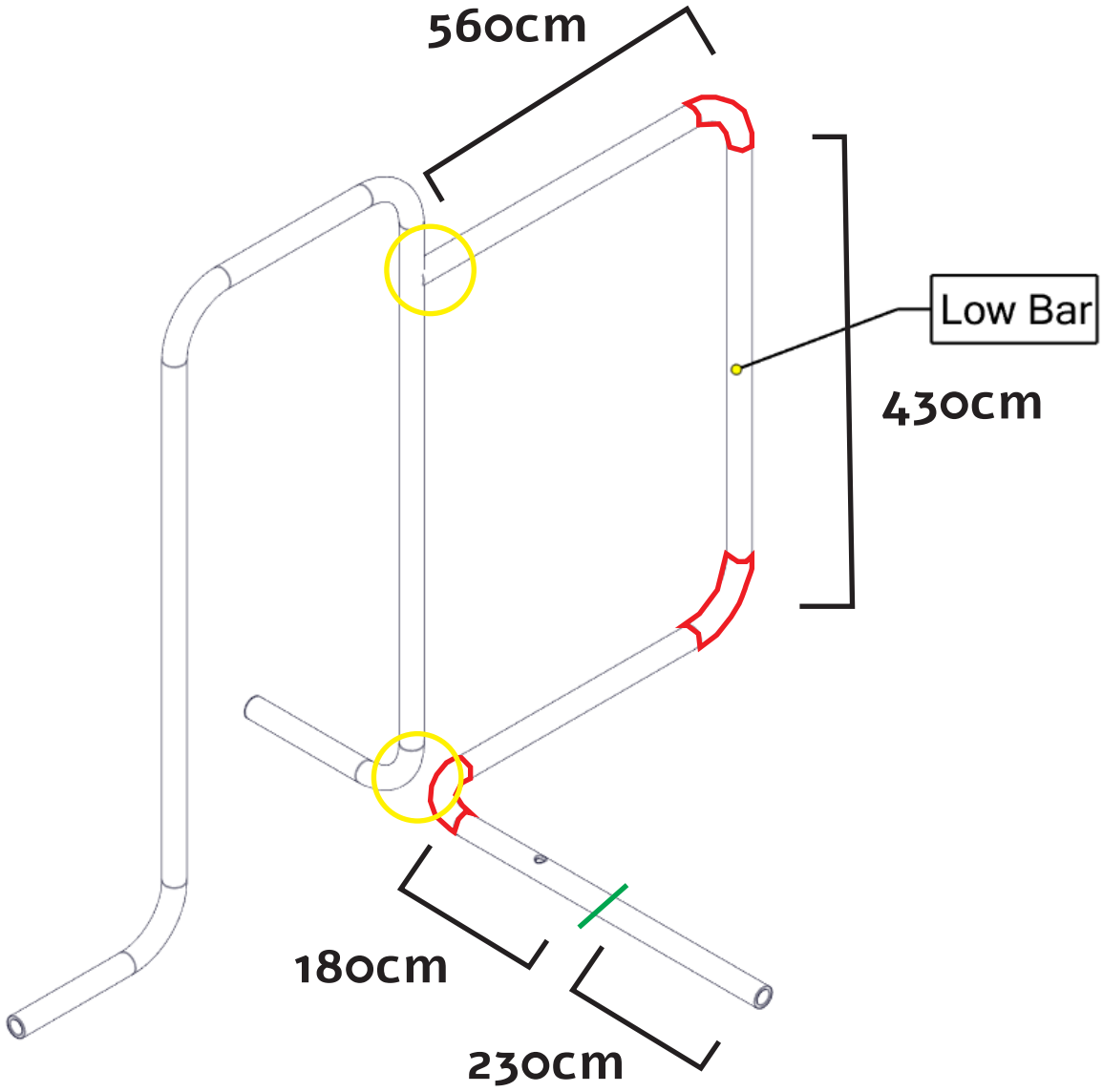
2) Pipe A – 1820 cm
3) Pipe B – 1890 cm
4) Stool legs – 650 cm (X 2)
5) Pipe C – 650 mm

Step 1



Take the pipe of length X and bend it using a 60 mm Beck pipe bender with a diameter of 22 mm and bend it to 90 degrees in the marked areas.

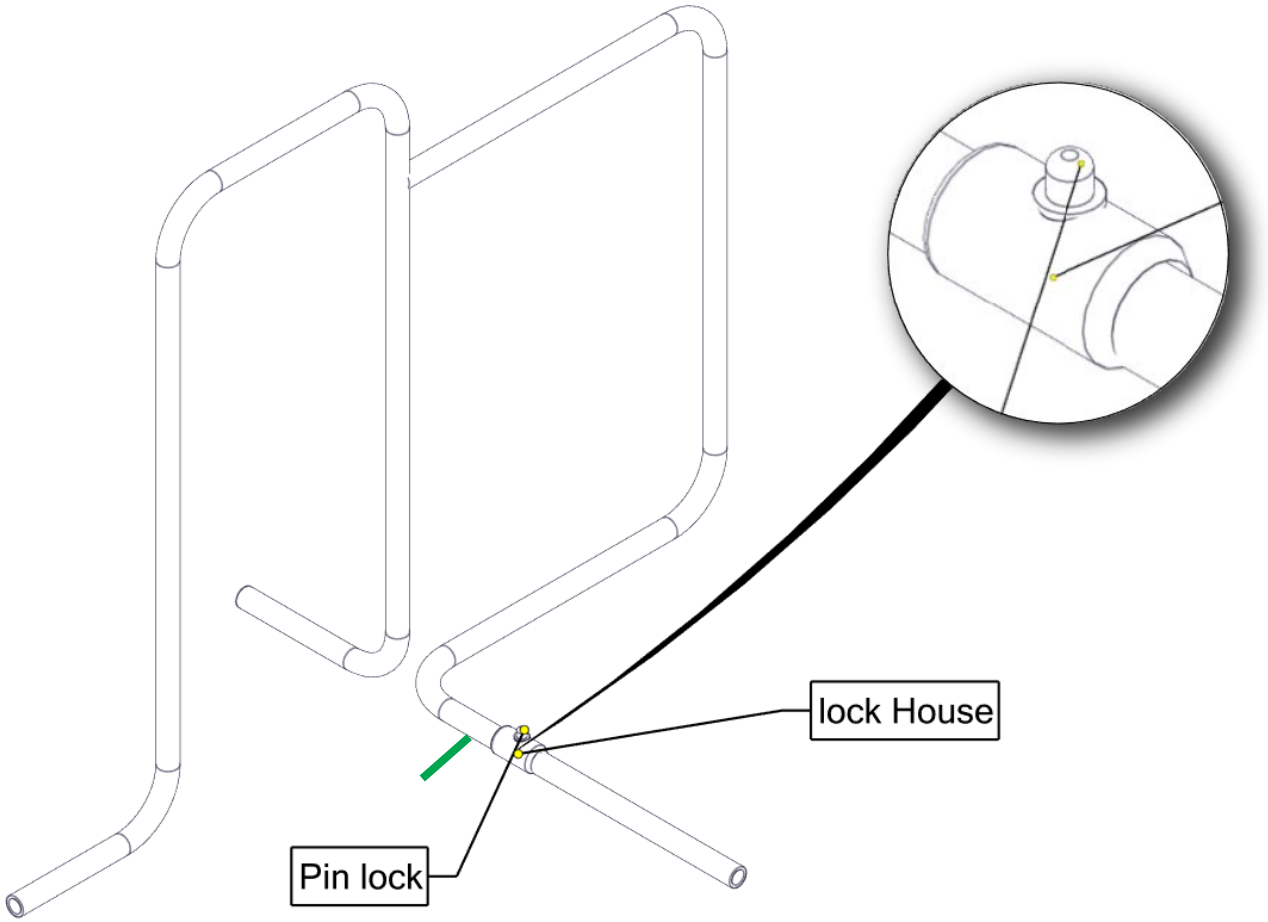
Step 2



Do the same thing as in the first step.

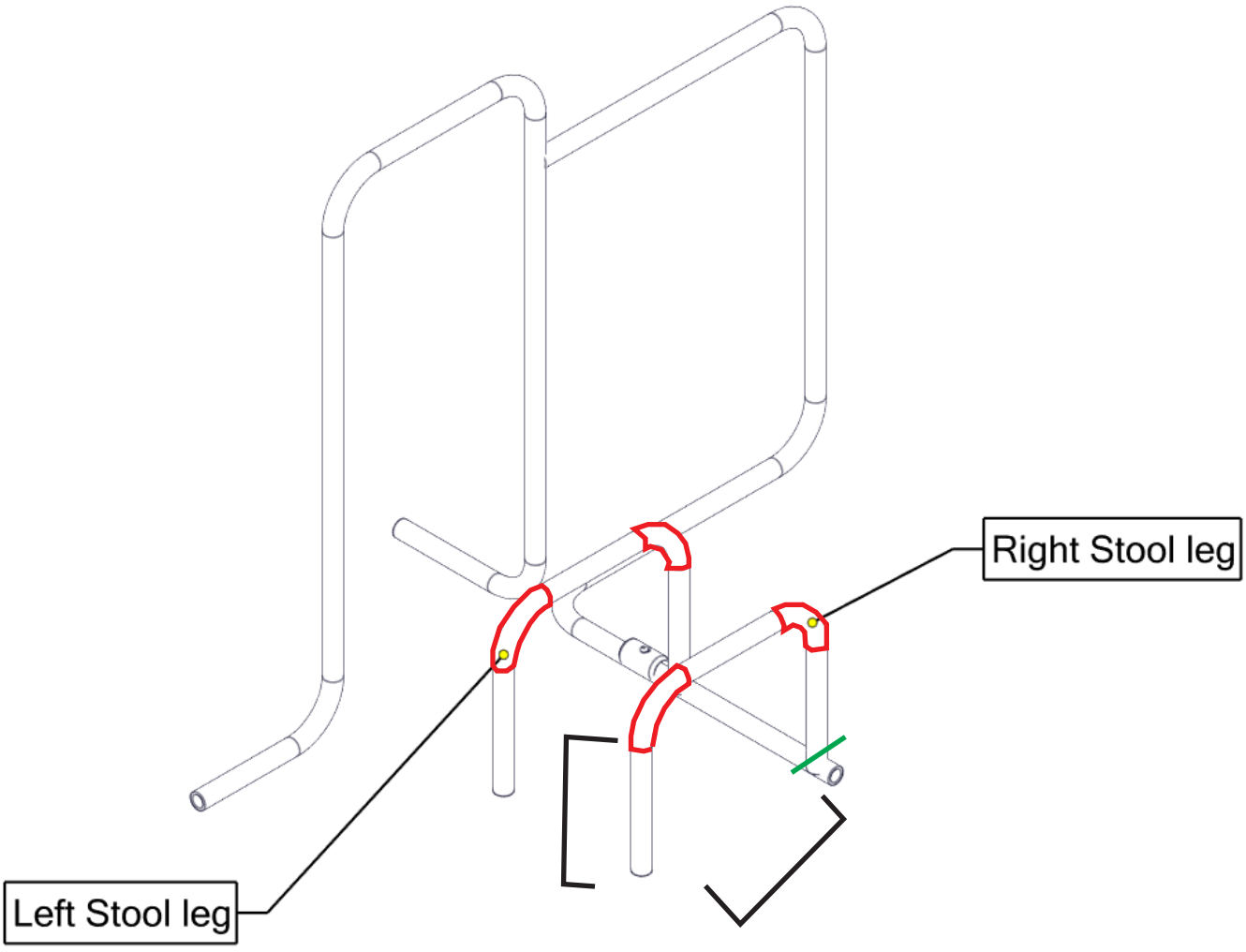
Then weld the two bent pipes in the marked areas
After welding, cut the pipe in the marked area, 24 cm from the marked end.
After welding, cut the pipe in the marked area, 24 cm from the marked edge.
Then drill a 10 mm diameter hole 15 mm from the marked edge.
After you have drilled the 10mm hole, carefully insert the locking pin.

Step 3



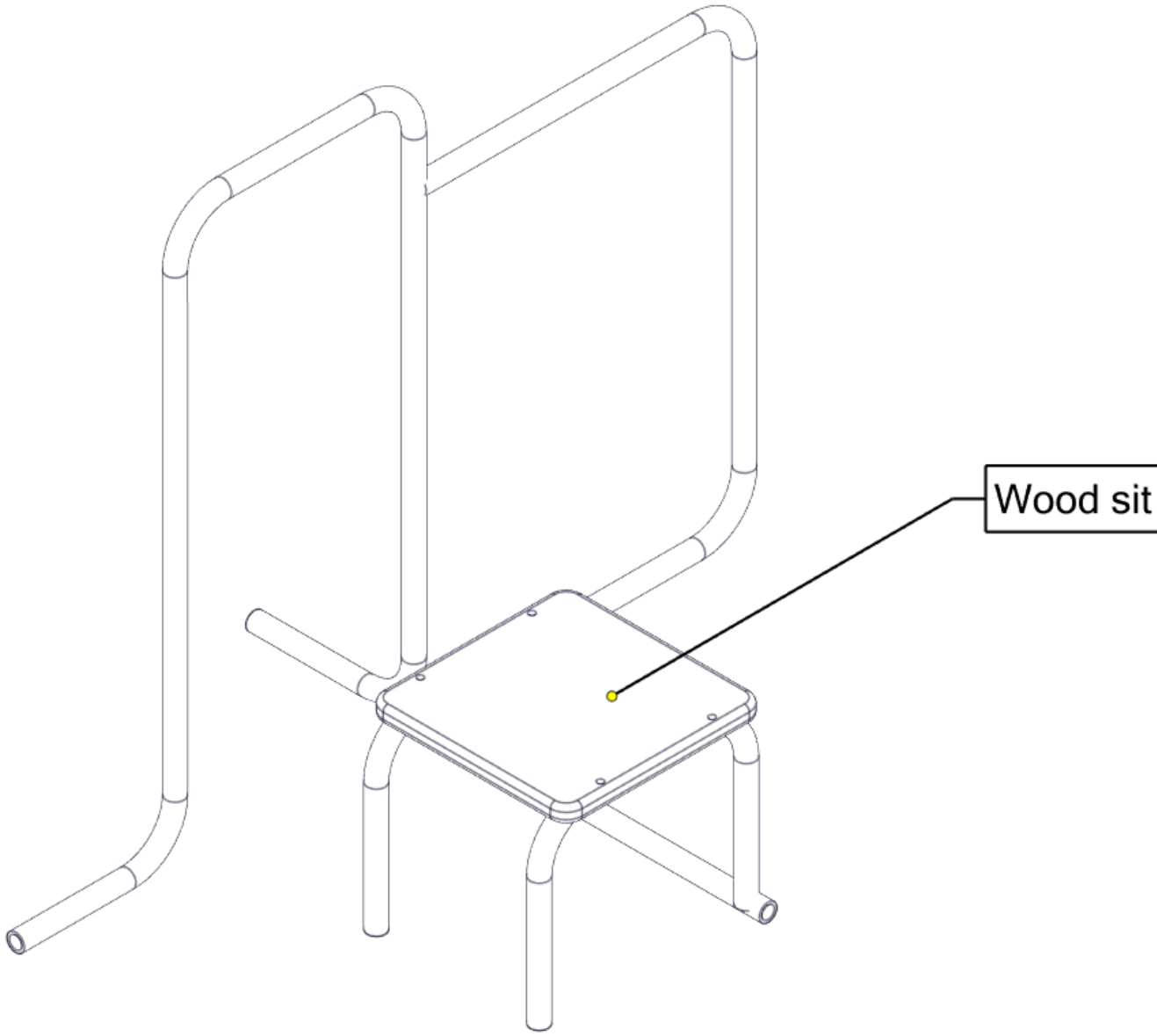
Take a 25 mm diameter pipe and cut a 65 mm long piece from it. Drill a 10 mm diameter hole 23 mm from the marked end.
Then weld the 25 mm diameter pipe so that the 22 mm pipe overlaps the inside by a depth of 3 cm. Check that the locking pin passes through both tubes and that the lock is good.

Step 4



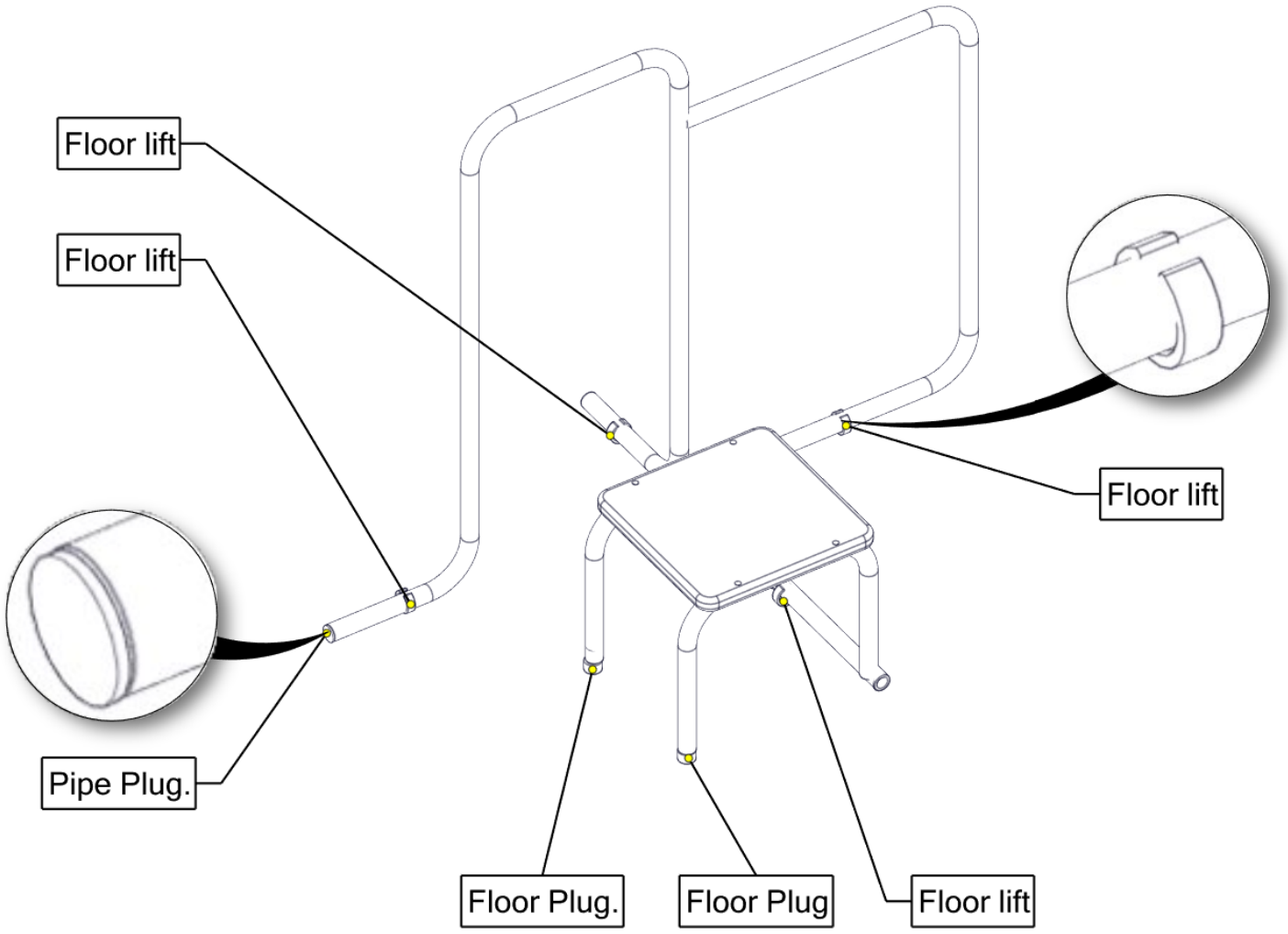
Bend the pipes so that they complete a half shape as shown in the diagram. After bending, cut one end to a depth of 22 mm. Then weld the cut end to the pipe as shown in the diagram. The distance between the pipes is 17 cm.

Step 5



Cut a piece of wood measuring 25 cm x 25 cm and 20 mm thick. Pre-drill holes in the wood for the final connection to the frame. Use self-tapping screws and carefully screw the seat to the frame.

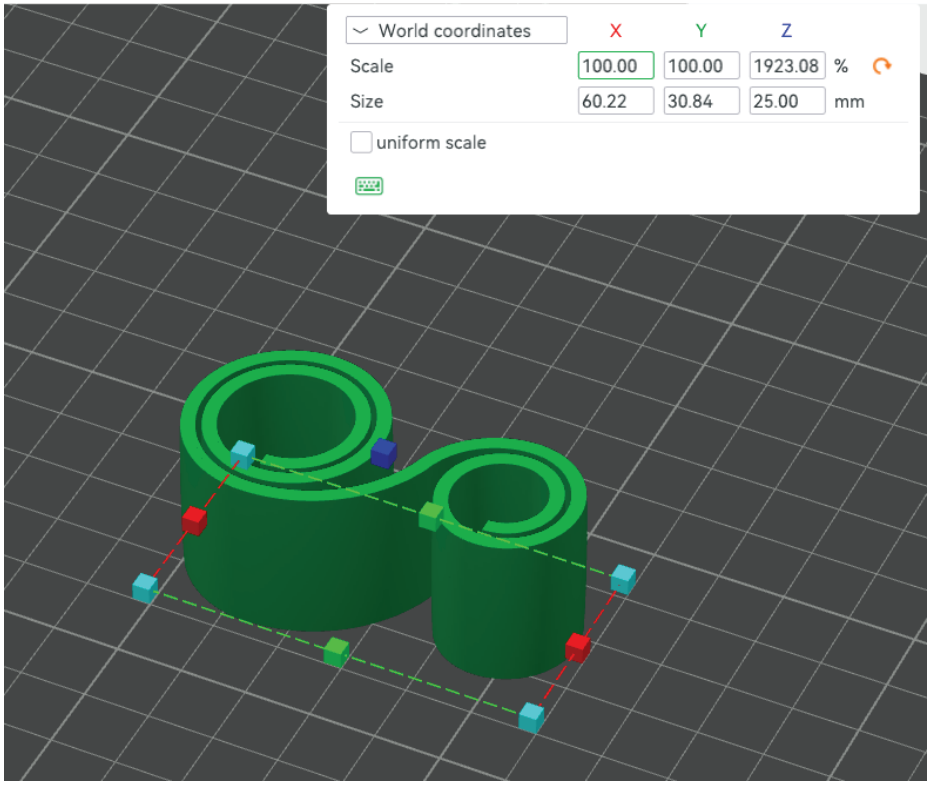
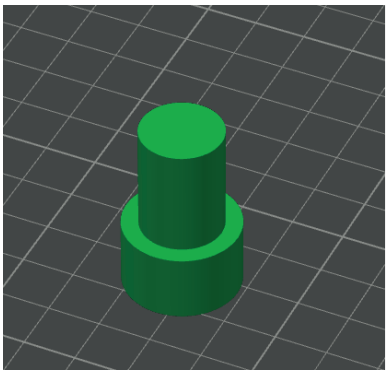
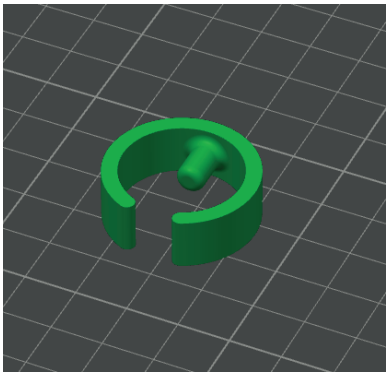
Step 6



Pre-drill holes with a diameter of 5.5 mm in the marked areas and connect the printed parts according to the drawing.

3D Prints

Print the 3D files in the orientation shown in the pictures.

Attention!

Extend the Z-axis wheel lock model to 25 mm.