

Tower housing

Handle

Boom

Lazy Susan bearing

Tower

Base plate

Tolerances for linear & angular dimensions
DIN ISO 2768 T.1 fine medium coarse

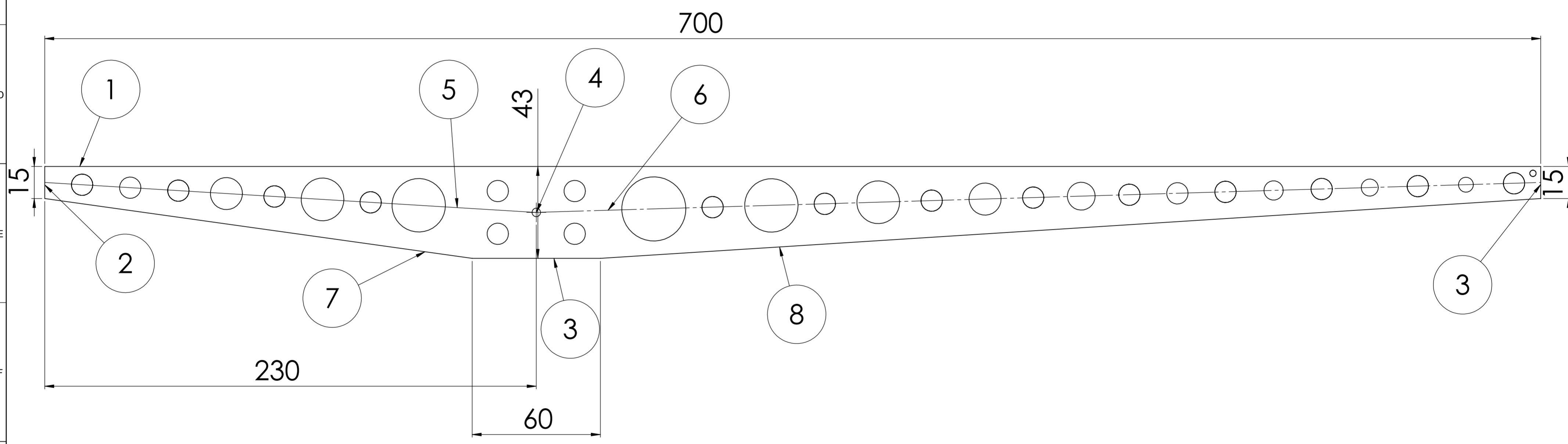
Prepared Ryan MacKenzie		Status	
Approved Zz .E. MacKenzie		Title CRANE ASSEMBLY INSTRUCTIONS	Page 1 / 15
		Document id. HAGENFALK DESIGN	Scale 1:10
			Rev. 1
			Lang. EN

Start by measuring out the lines on the wood. (1) should be on the long edge of the wood.

Draw (2) and (3) 15mm down, marking the midway point at 7,5mm. Find the center (4) and draw two line to the midpoint of (5) and (6). These are the center lines for your holes.

Measure out 30mm on each side of (4) and draw (3). Draw lines (7) and (8) to the end of (2) and (3)

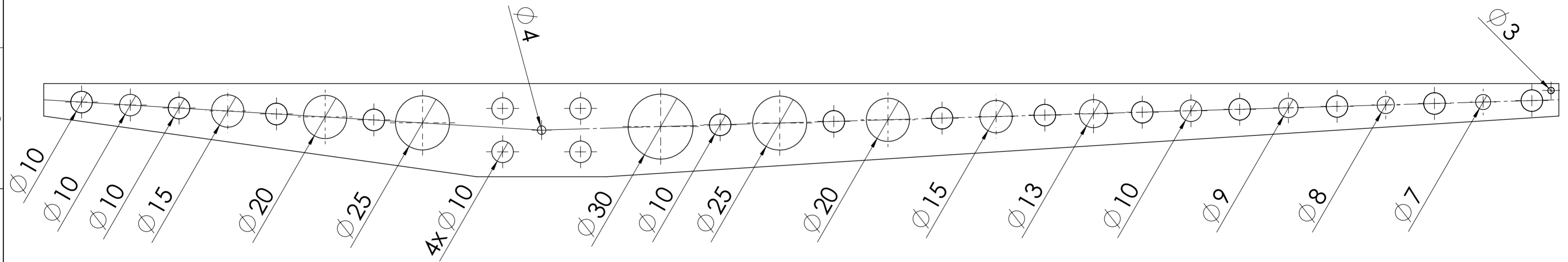
Tolerances for linear & angular dimensions
DIN ISO 2768 T.1 fine medium coarse



TIP: A set square will be really useful for vertical lines using (1) as the straight edge

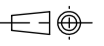
Prepared Ryan MacKenzie	Status	Page 2 / 15	Scale
Approved Zz .E. MacKenzie	Title CRANE ASSEMBLY INSTRUCTIONS	Rev. 1	Lang. EN
	Document id. HAGENFALK DESIGN		

Mark out the locations of the holes.
 Screw the marked out piece of wood to the unmarked piece, Making sure they line up perfectly.
 Drill the holes through pieces according to the sizes below.
 Sand rough or sharp edges and paint all sides, even the inside of the holes.

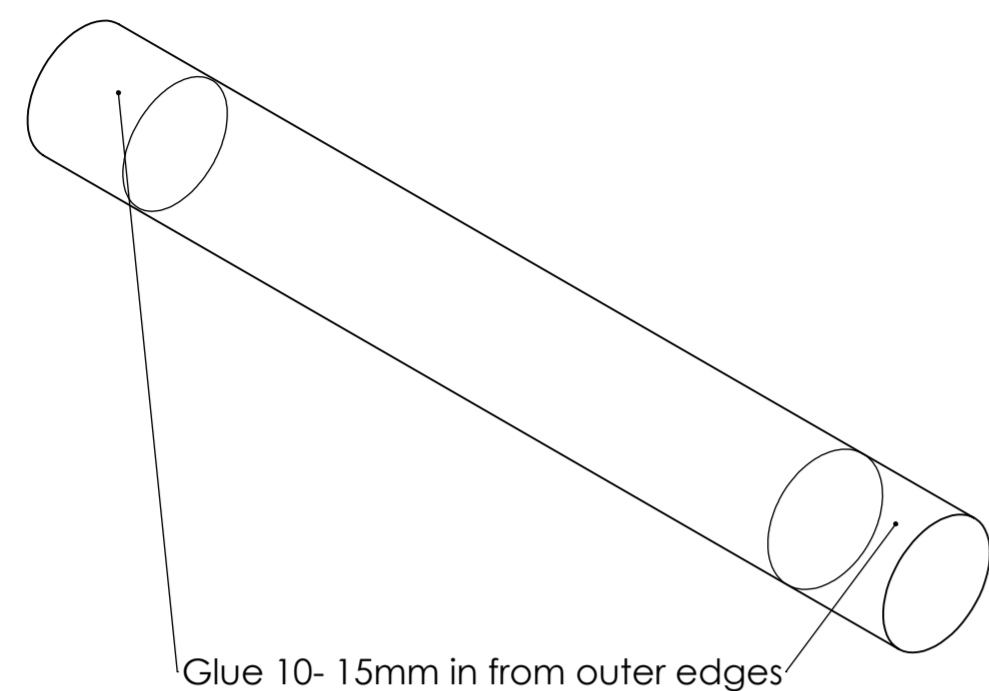


All holes that do not have sizes are 10mm

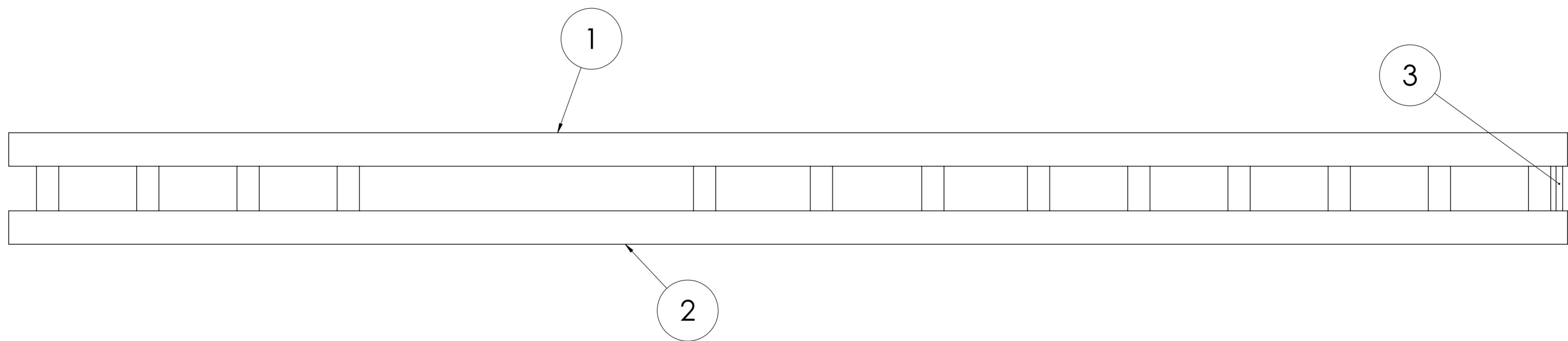
Tolerances for linear & angular dimensions
 DIN ISO 2768 T:1 fine medium coarse

Prepared Ryan MacKenzie	Status	
Approved Zz .E. MacKenzie	Title CRANE ASSEMBLY INSTRUCTIONS Document id. HAGENFALK DESIGN	
	Page 3 / 15	Scale
	Rev. 1	Lang. EN

Tolerances for linear & angular dimensions
DIN ISO 2768 T.1
fine medium coarse

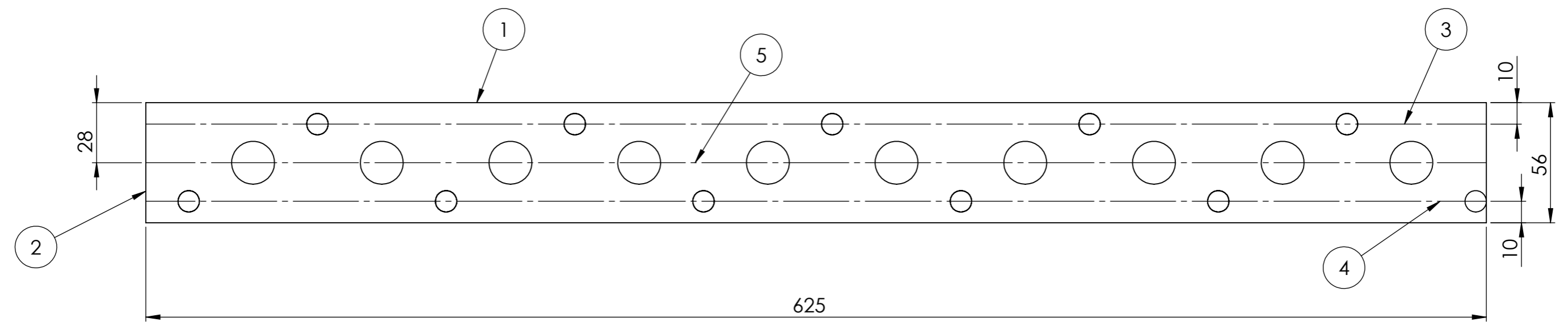


Place all the prepainted 50mm dowel rods into the holes and make sure that **1** and **2** align. If the parts don't quite match, redrill the holes to 10.5mm and test again. Remove the dowels and glue the last 10mm of each one. Insert each dowel into **2** ensuring they are flush with the bottom. Clean off any excess glue. Place **1** on top and again make sure dowels are flush. Check both sides. Glue and insert the headless nail **3**. Leave to dry. Add another coat of paint to the outside parts.




Prepared Ryan MacKenzie	Status	Page 4 / 15	Scale
Approved Zz .E. MacKenzie	Title CRANE ASSEMBLY INSTRUCTIONS	Rev. 1	Lang. EN
Document id. HAGENFALK DESIGN			

Start by measuring out the lines on the wood. (1) should be on the longedge of the wood and (2) should be the short end. Draw (3) and (4) 10mm from the edge, marking the midway line (5) at 28mm. These are the center lines for your holes.



Tolerances for linear & angular dimensions
DIN ISO 2768 T.1

- coarse
- medium
- fine

Prepared Ryan MacKenzie	Status	
Approved Zz. E. MacKenzie	Title CRANE ASSEMBLY INSTRUCTIONS	
	Document id. HAGENFALK DESIGN	Rev. 1
		Scale EN

Next measure out all the hole centers shown below. Note that (1) is the bottom of the crane.

Screw the second piece of wood to this marked out piece to save time.

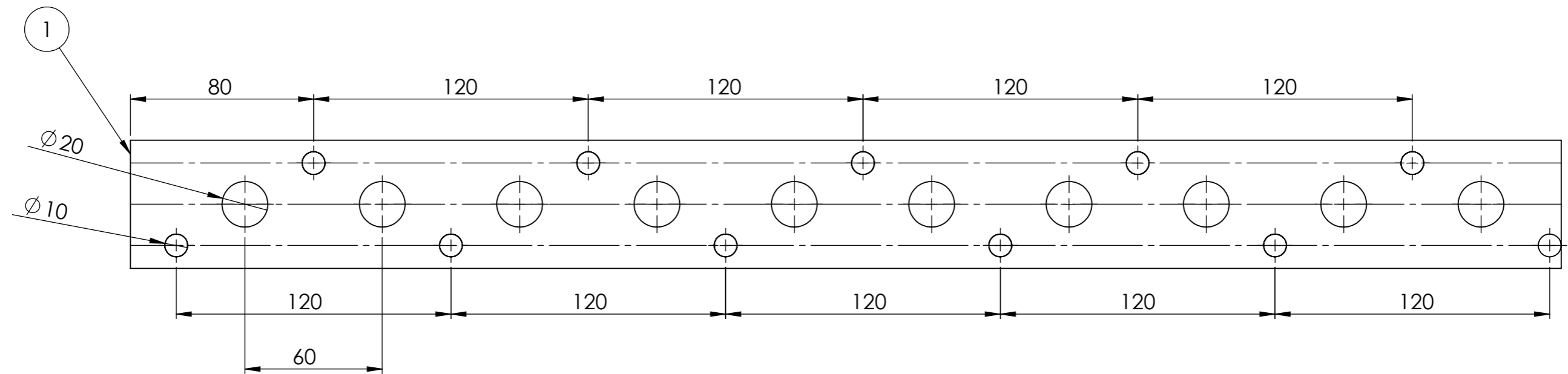
Cut to size and drill the holes.


Remove the screws so you have two identical parts, sand and test fit using the same method as the Boom.

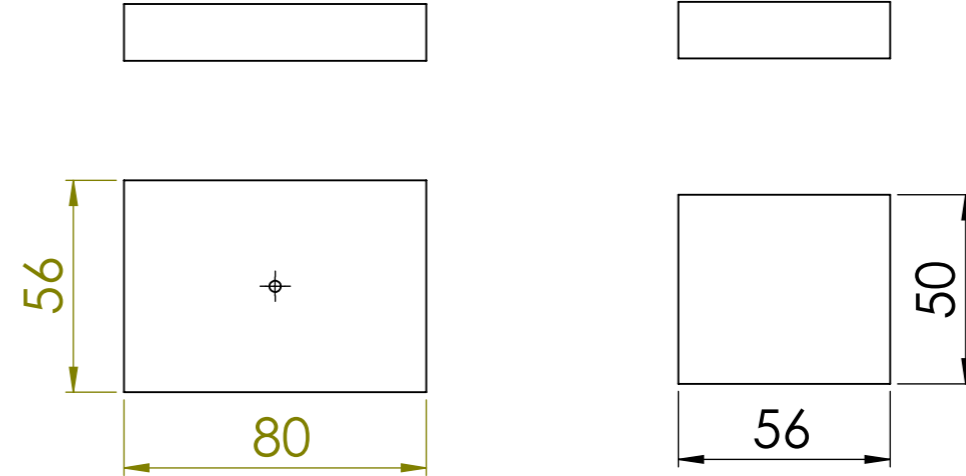
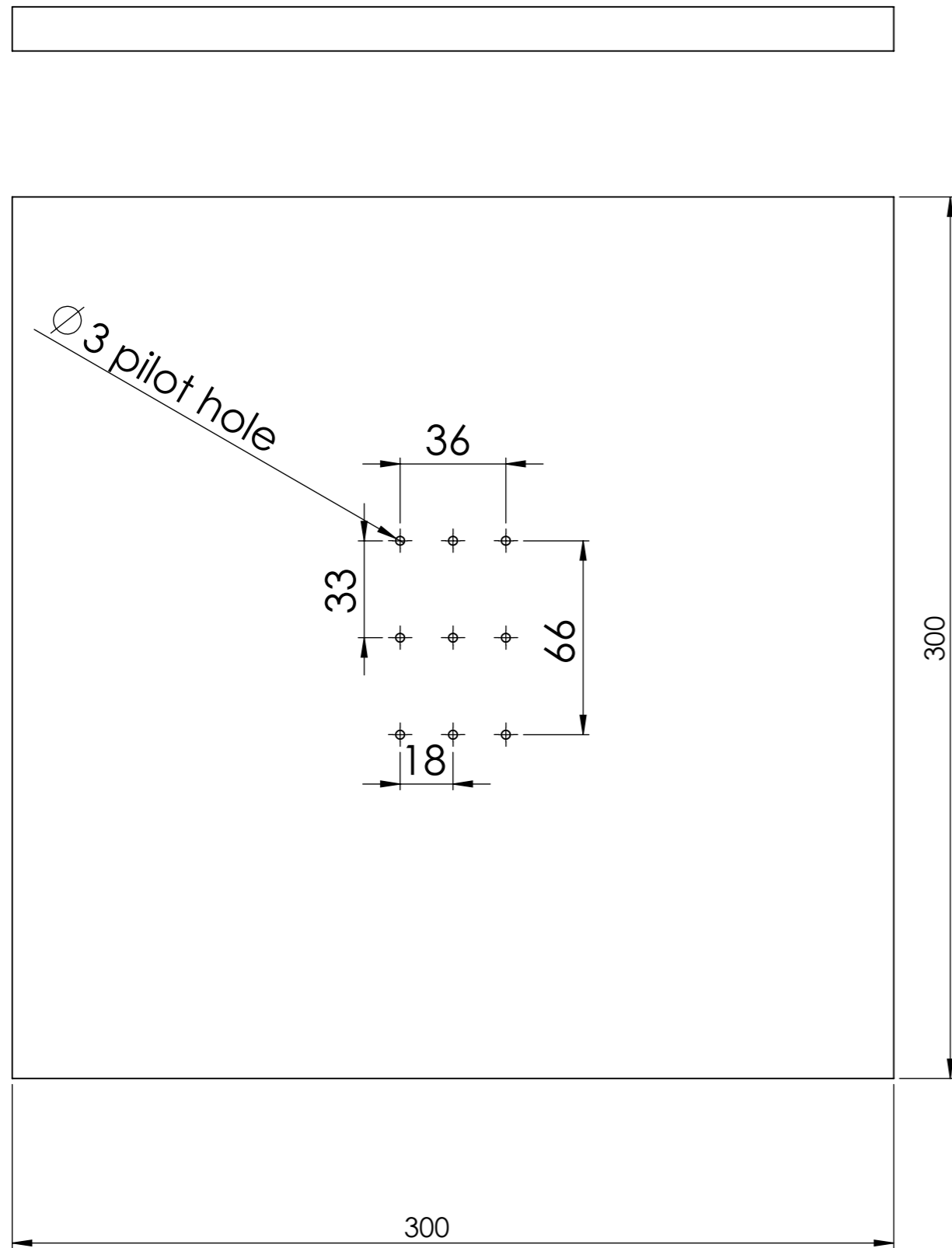
Once everything fits, paint two coats of desired color.

Glue in the 80mm dowel rods into place and fit the two tower pieces together the same way as done before in the boom assembly

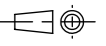
Tolerances for linear & angular dimensions
DIN ISO 2768 T.1
coarse
medium
fine



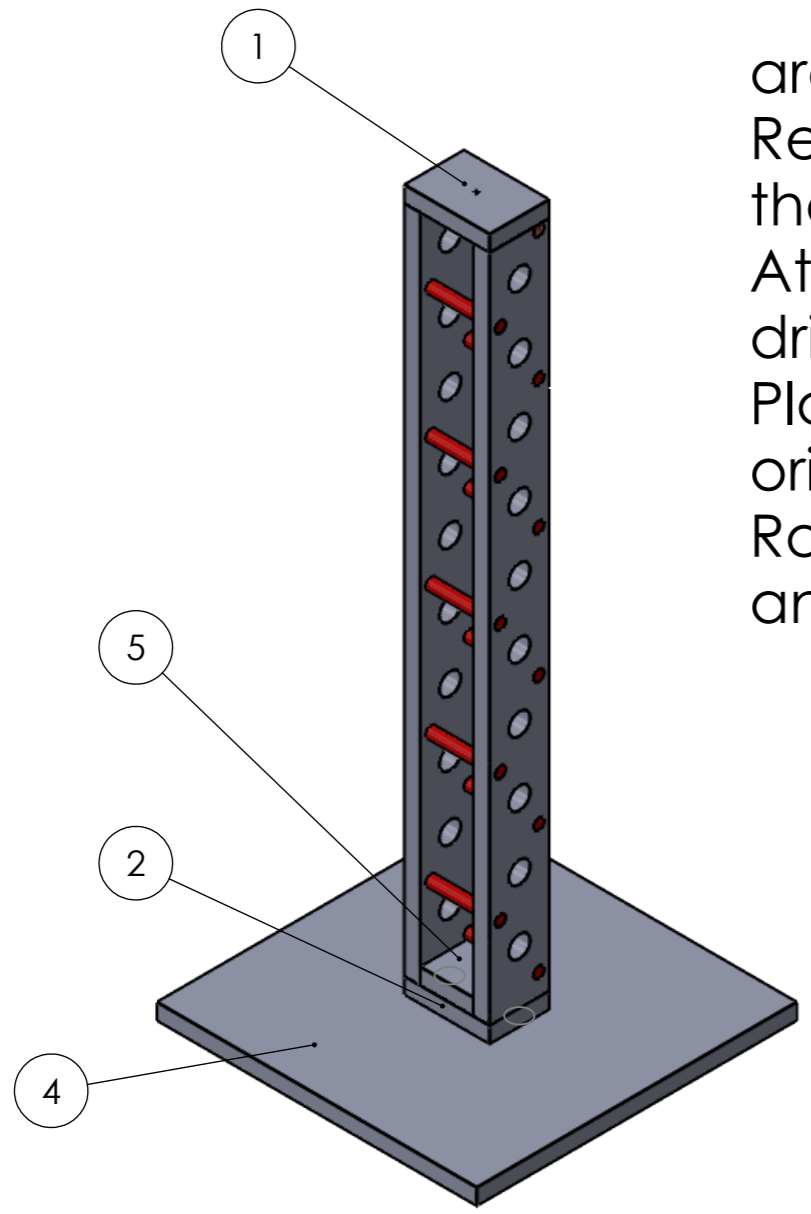
Prepared Ryan MacKenzie	Status		
Approved Zz. E. MacKenzie	Title CRANE ASSEMBLY INSTRUCTIONS		Page 6 / 15
	Document id. HAGENFALK DESIGN	Rev. 1	Lang. EN



Cut out the the 2x tower ends, the tower strengthener and base plate.
 Pre drill the base plate and bottom tower end to help line up everthing.
 Sand and paint

Prepared Ryan MacKenzie	Status	
Approved Zz. E. MacKenzie	Title CRANE ASSEMBLY INSTRUCTIONS	
	Document id. HAGENFALK DESIGN	Lang. EN

Tolerances for linear & angular dimensions
DIN ISO 2768 T.1
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Once the tower pieces have dried.

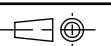
Place the tower (1) in the middle of the base plate (4) and draw around the tower.

Remove the tower and then make a new square 10mm smaller inside the original square.

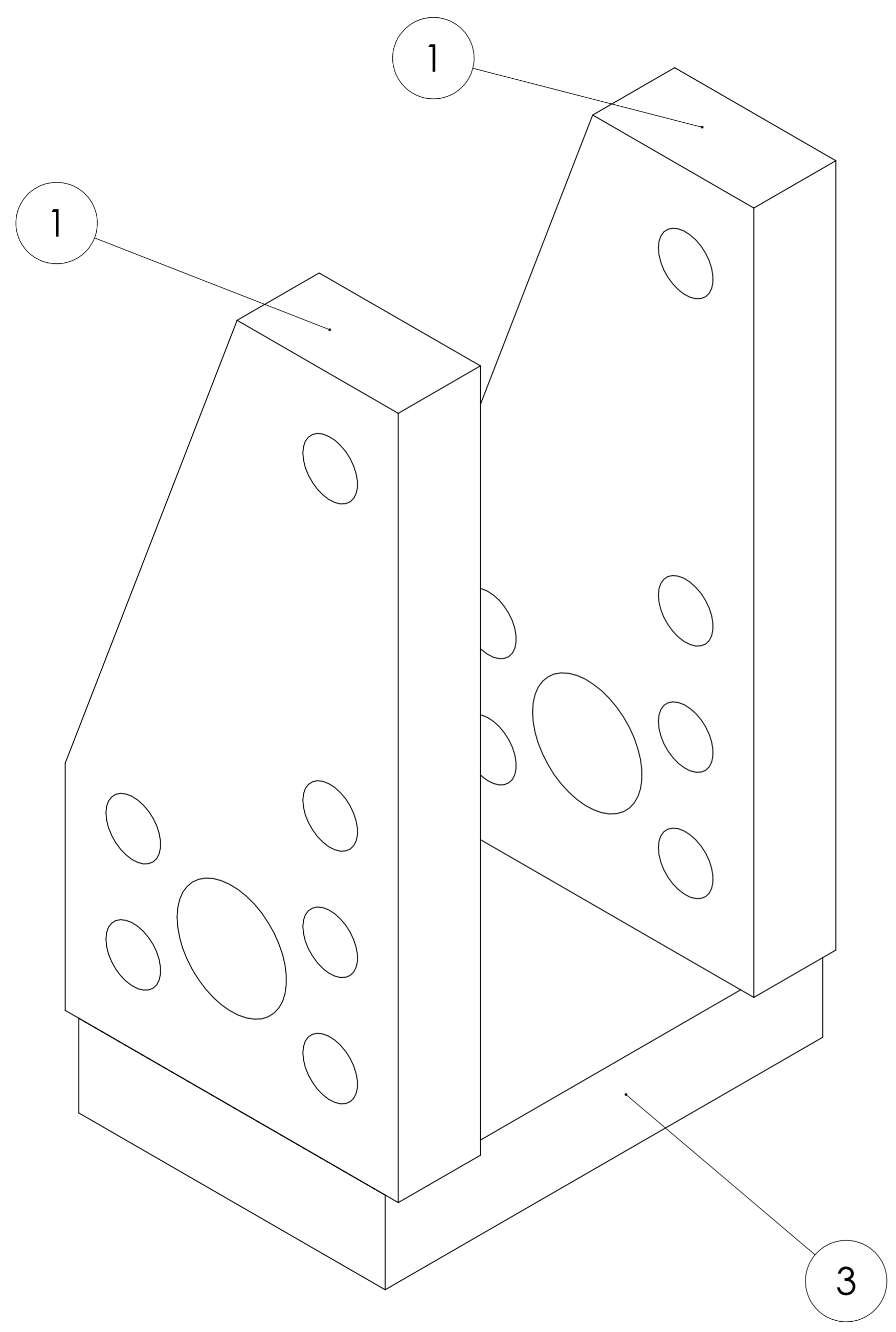
At this point its best to look at the previous drawing to see where to drill the pilot holes for the screws. 3mm bit should be good.

Place the tower back on the base plate so that it sits back inside the original box and screw the middle screw.

Rotate the tower to make sure the corners line up with the first box and screw in the rest of the screws.

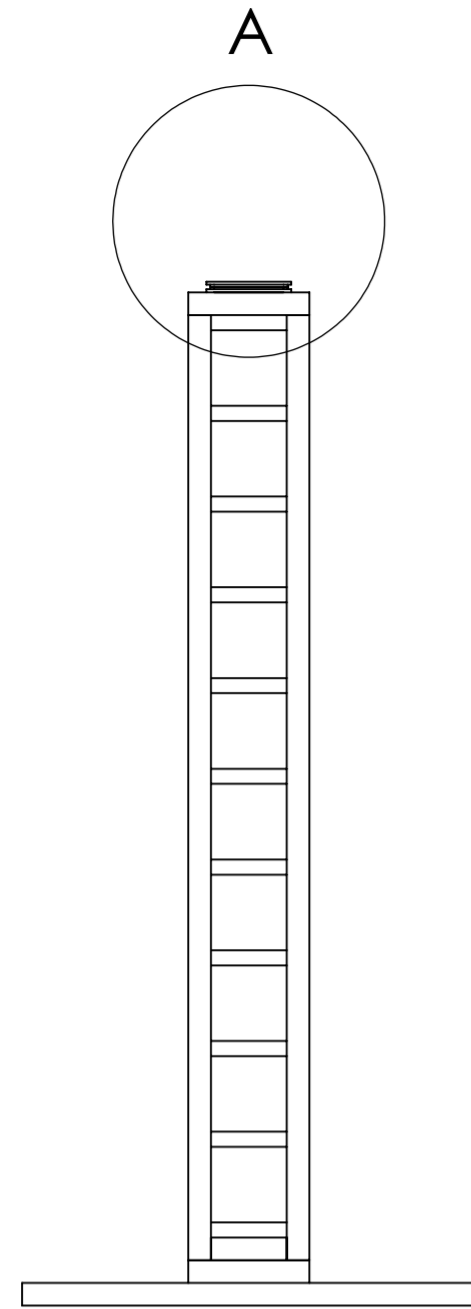
Prepared Ryan MacKenzie	Status		
Approved Zz. E. MacKenzie	Title CRANE ASSEMBLY INSTRUCTIONS		Page 8 / 15
	Document id. HAGENFALK DESIGN	Rev. 1	Scale Lang. EN

Tolerances for linear & angular dimensions
DIN ISO 2768 T.1 fine medium course

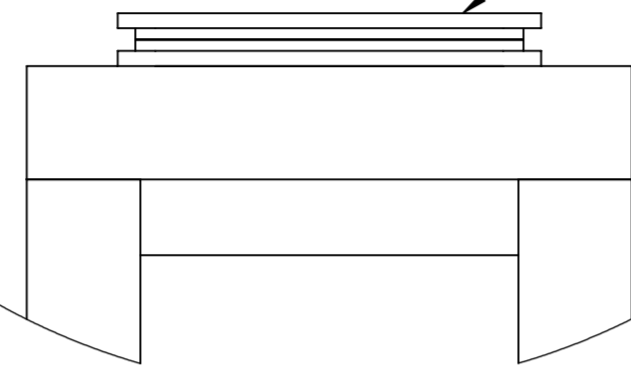
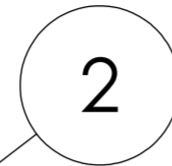


Align the two tower housings (1) at the long edge of (3). Pre-drill and screw them (1) into place.

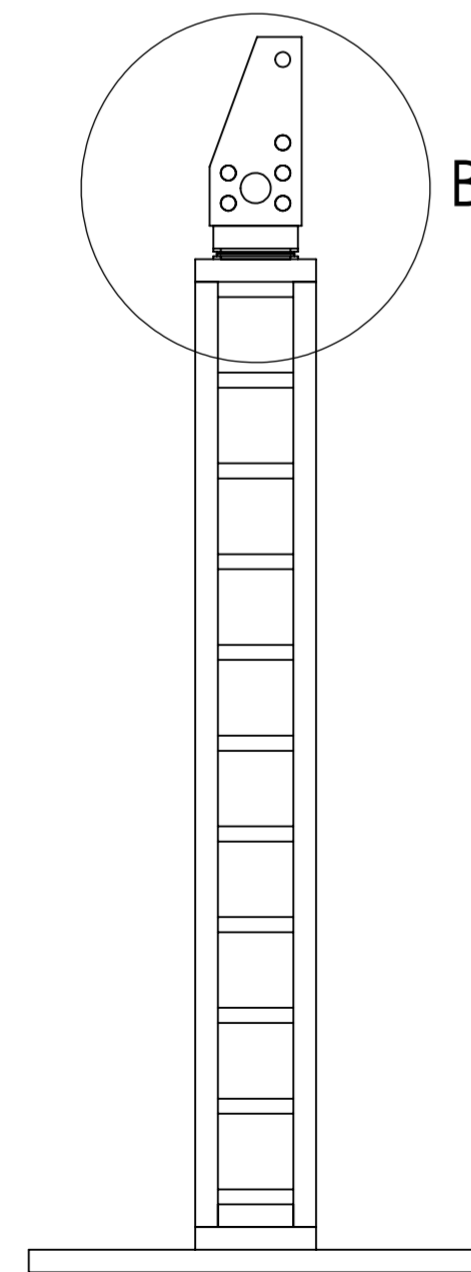
Prepared Ryan MacKenzie	Status	Page 9 / 15	Scale 1:10
Approved Zz .E. MacKenzie	Title CRANE ASSEMBLY INSTRUCTIONS		
Document id. HAGENFALK DESIGN	Rev. 1	Lang. EN	



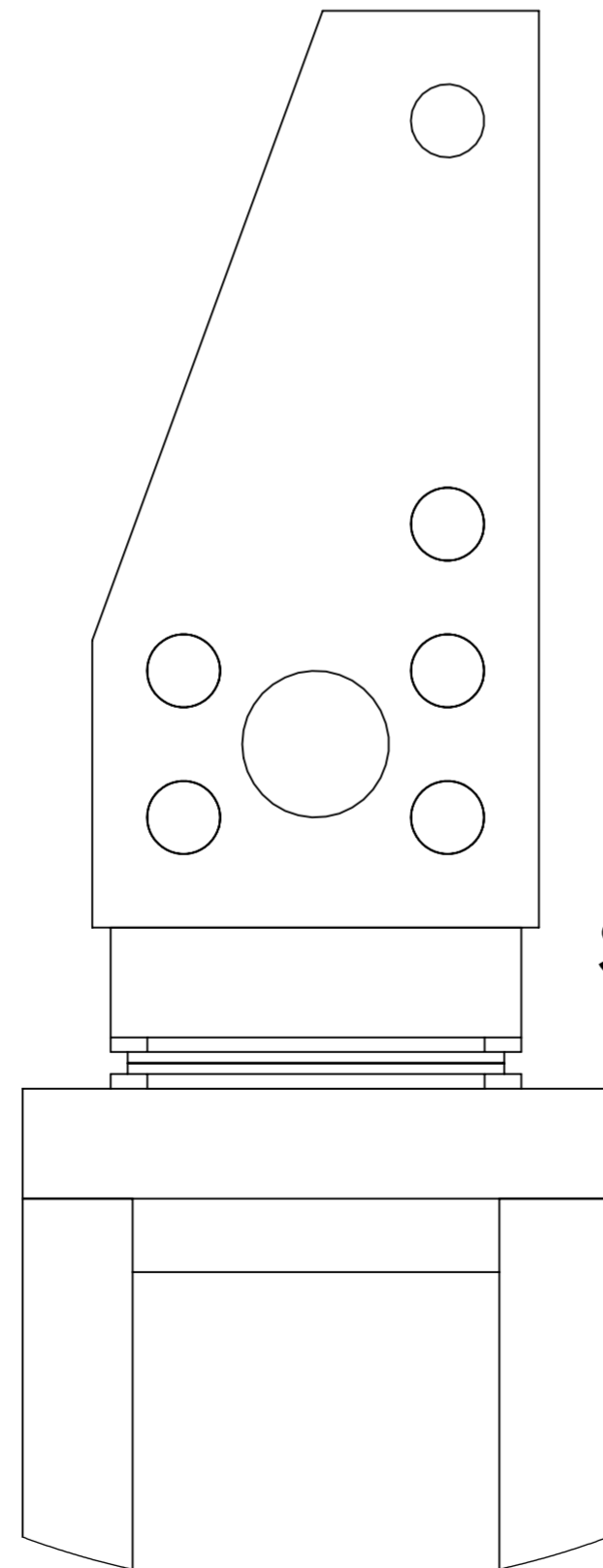
DETAIL A
SCALE 1 : 1



Using a 5 min epoxy glue the lazy susan bearing **2** to tower and let cure. The bearing should be as centered as possible. Its best to leave the epoxy overnight for the stongest bond.

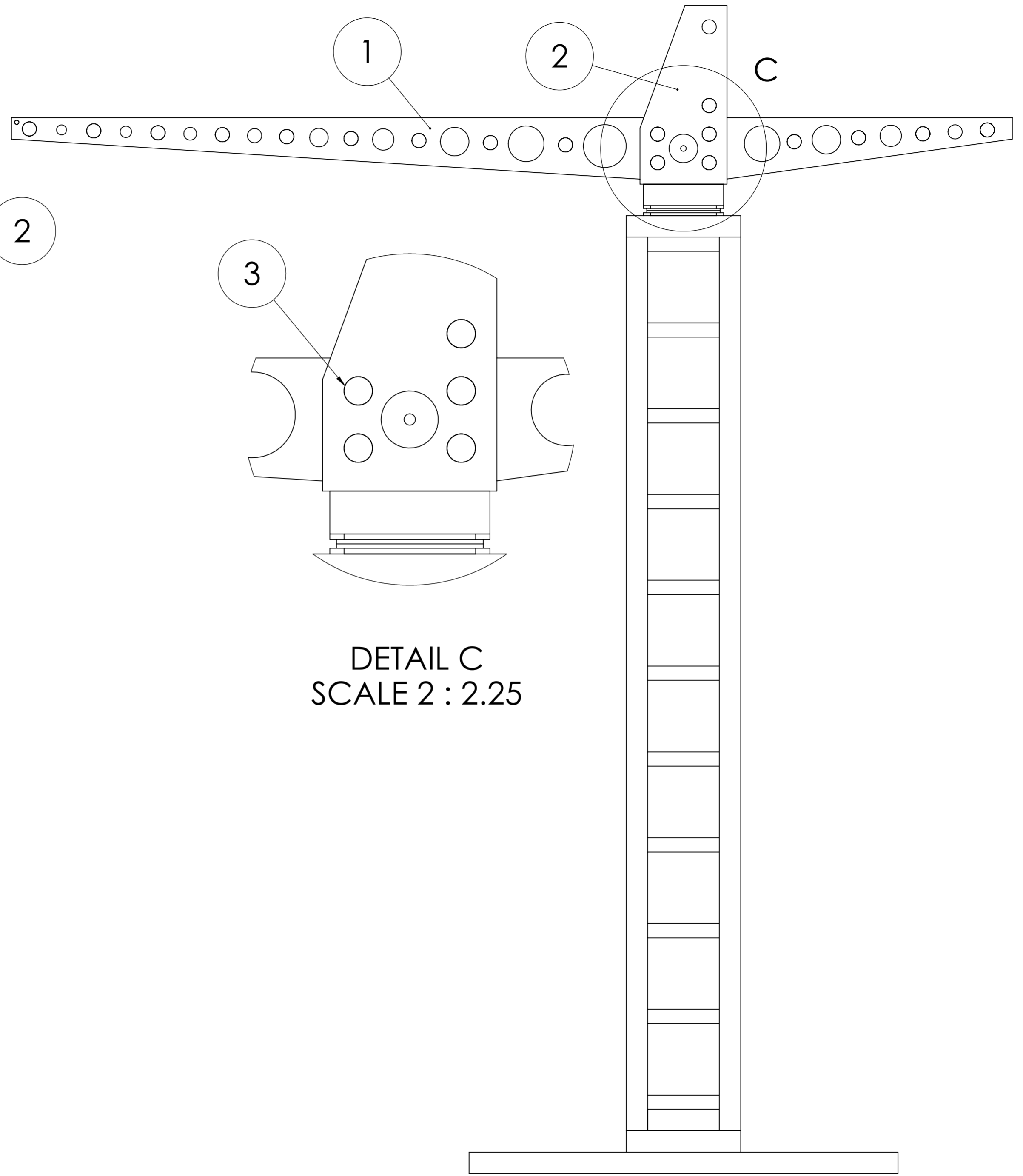


DETAIL B
SCALE 1 : 1



Once the bearing has cured to the tower, apply epoxy to the top side of the bearing and attach the tower house. Again let this cure overnight. Double check that the boom fits in the gap between the two tower house pieces.

Prepared Ryan MacKenzie		Status	
Approved Zz .E. MacKenzie		Title CRANE ASSEMBLY INSTRUCTIONS	Page 10 / 15
		Document id. HAGENFALK DESIGN	Scale 1:10
			Lang. EN

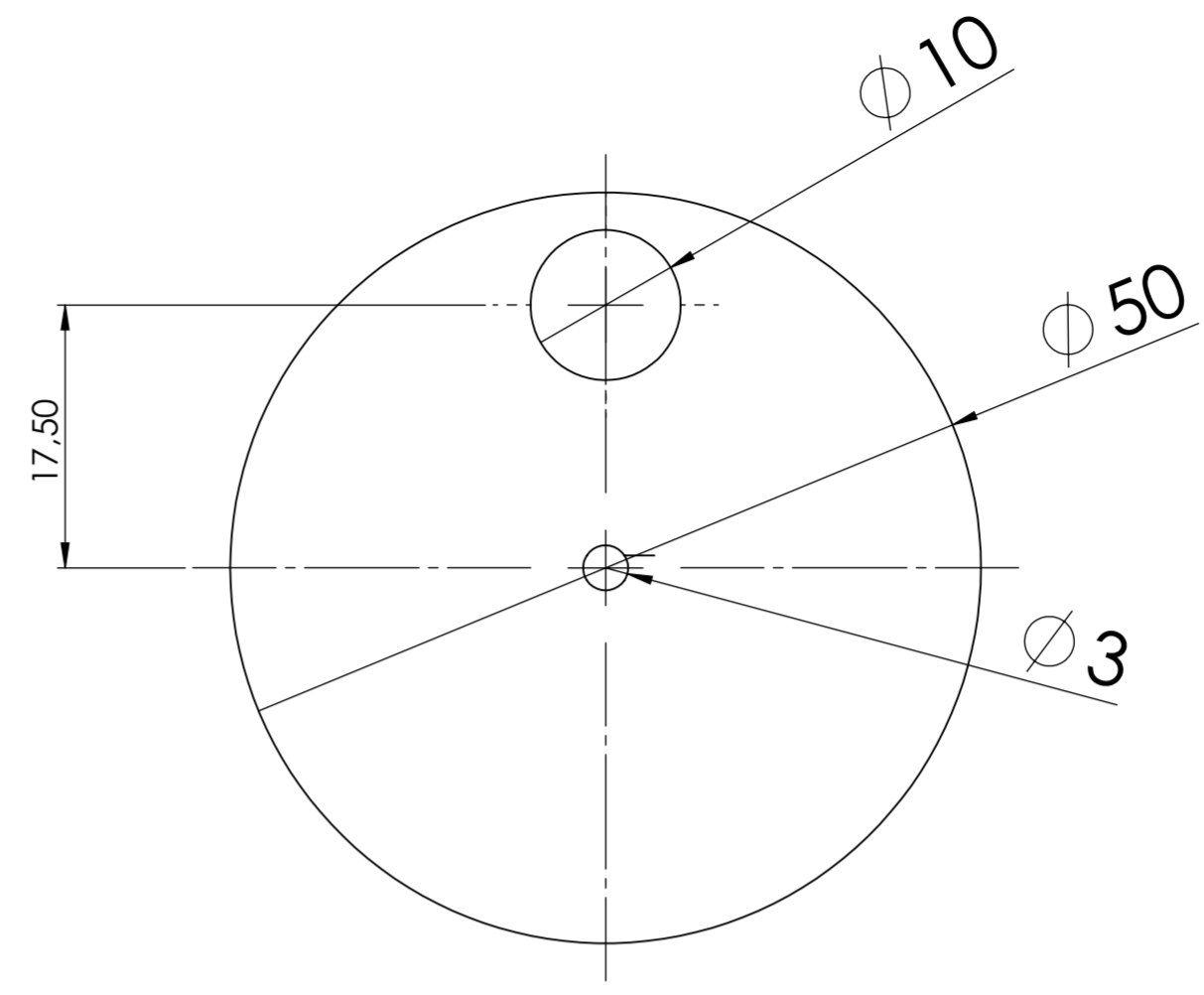
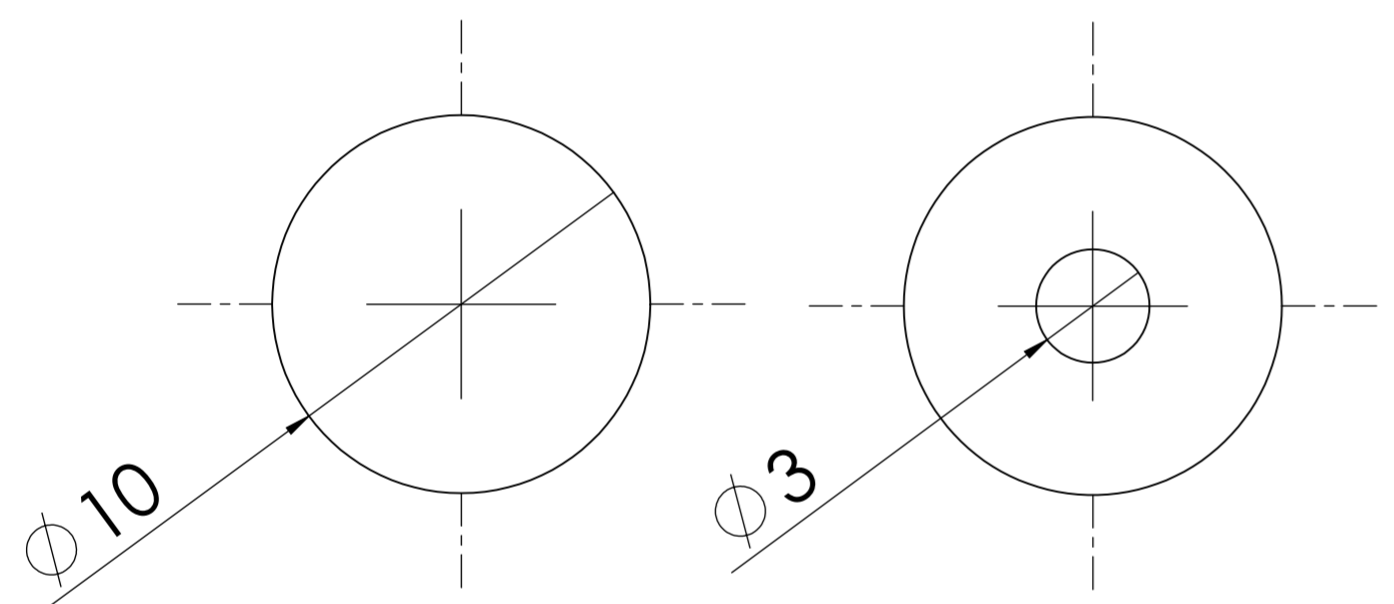
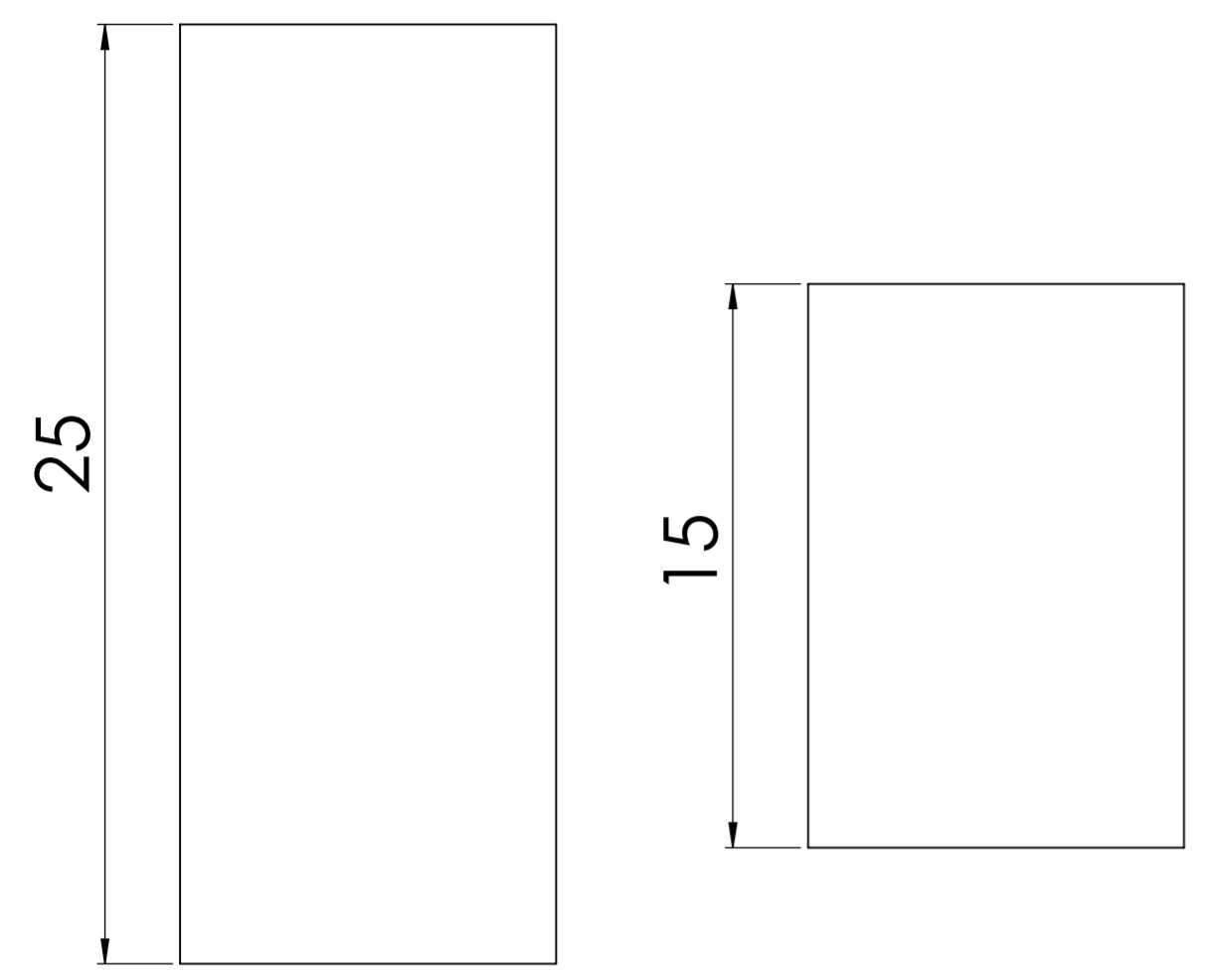


Slide the Boom (1) into the tower house (2)
 Glue and insert the last 5 dowls (3).

DETAIL C
 SCALE 2 : 2.25

Prepared Ryan MacKenzie	Status	
Approved Zz .E. MacKenzie	Title CRANE ASSEMBLY INSTRUCTIONS	
Document id. HAGENFALK DESIGN	Page 11 / 15	Scale 1:10
	Rev. 1	Lang. EN

Tolerances for linear & angular dimensions
DIN ISO 2768 T.1 fine medium coarse



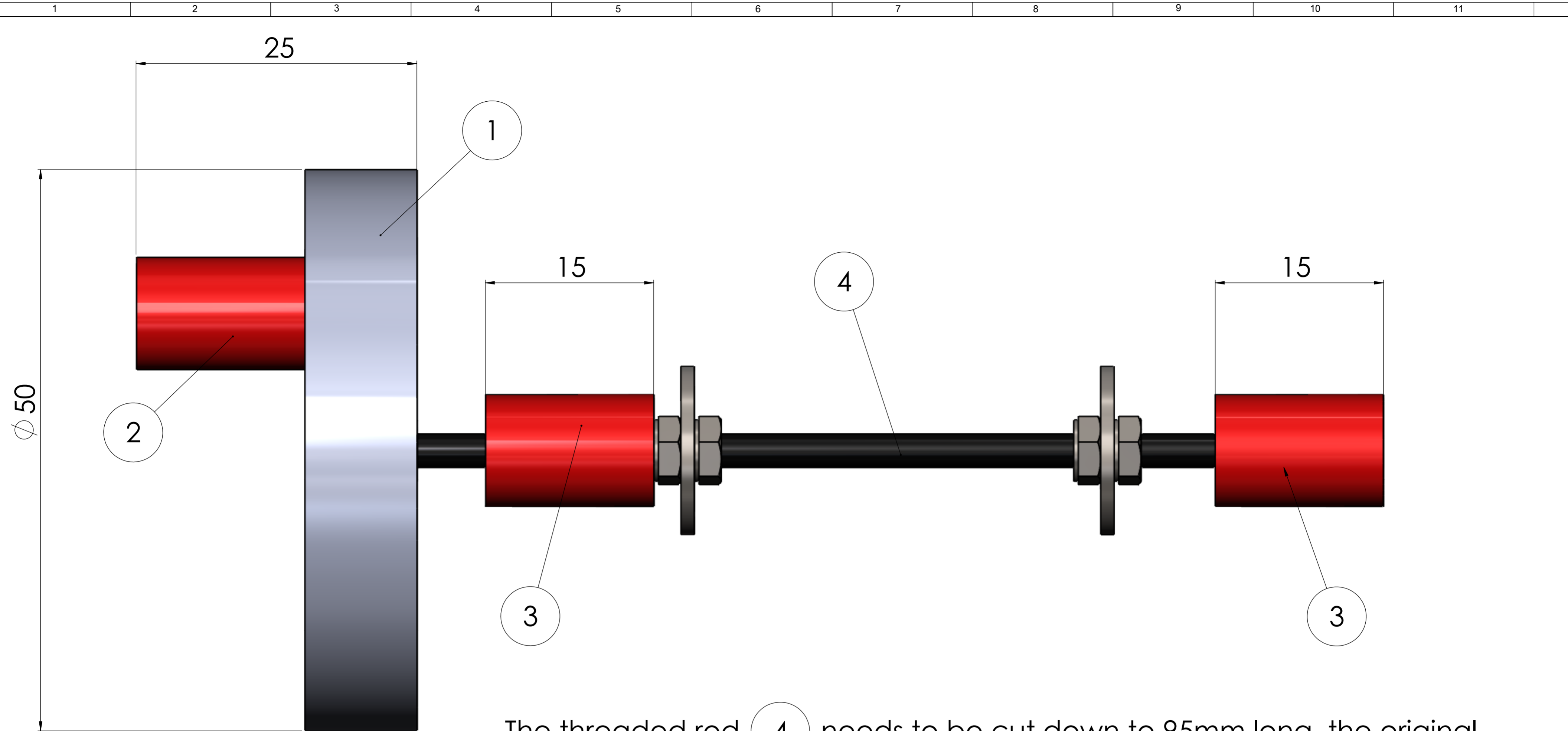
The last few pieces are by far the simplest. You need 3 pieces of dowle rod one piece 25mm and two pieces 15mm. The shorter pieces need to have a hole drilled through there center so they can fit over the threaded rod. You might want to cut a few extra as its a bit tricky to get the holes in the center on the first go.

The 50mm wheel is simply made using a hole saw. We are going to use the piece that is normally thown away. The size of the wheel is not critical so almost any size around 50mm will work. The center drill of the hole saw will most likely not be 3mm and again this is OK. Once cut and removed from the saw the edge will be very rough. Sand these smooth. Drill out a 10mm hole 17,5mm from the center of wheel.

Glue the 25mm dowl in the that hole. Sand and paint.

Prepared Ryan MacKenzie	Status	
Approved Zz .E. MacKenzie	Title CRANE ASSEMBLY INSTRUCTIONS Document id. HAGENFALK DESIGN	
	Page 12 / 15	Scale 1:10
	Rev. 1	Lang. EN

Tolerances for linear & angular dimensions
DIN ISO 2768 T.1
fine medium coarse



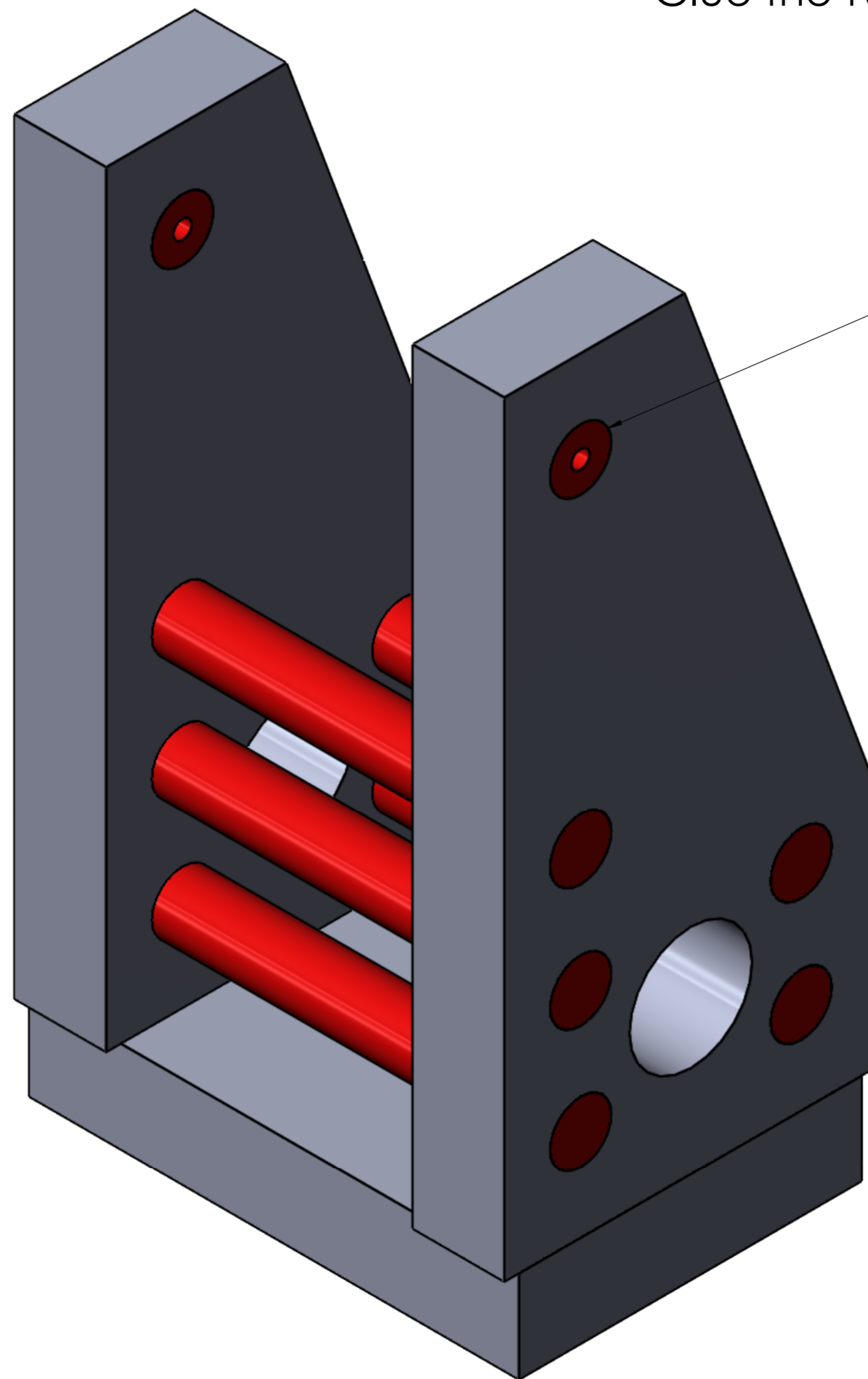
The threaded rod (4) needs to be cut down to 95mm long, the original design called for a bend at the hand wheel end but these rods are too soft and will most likely break if bent.

Using epoxy glue the rod (4) to the wheel (1) and let cure.

Glue the 25mm (2) dowel into place. Sand and paint.

Prepared Ryan MacKenzie	Status	Page 13 / 15	Scale 1:10
Approved Zz .E. MacKenzie	Title CRANE ASSEMBLY INSTRUCTIONS	Rev. 1	Lang. EN
Document id. HAGENFALK DESIGN			

Glue the two 15mm dowel rods into the tower house pieces.



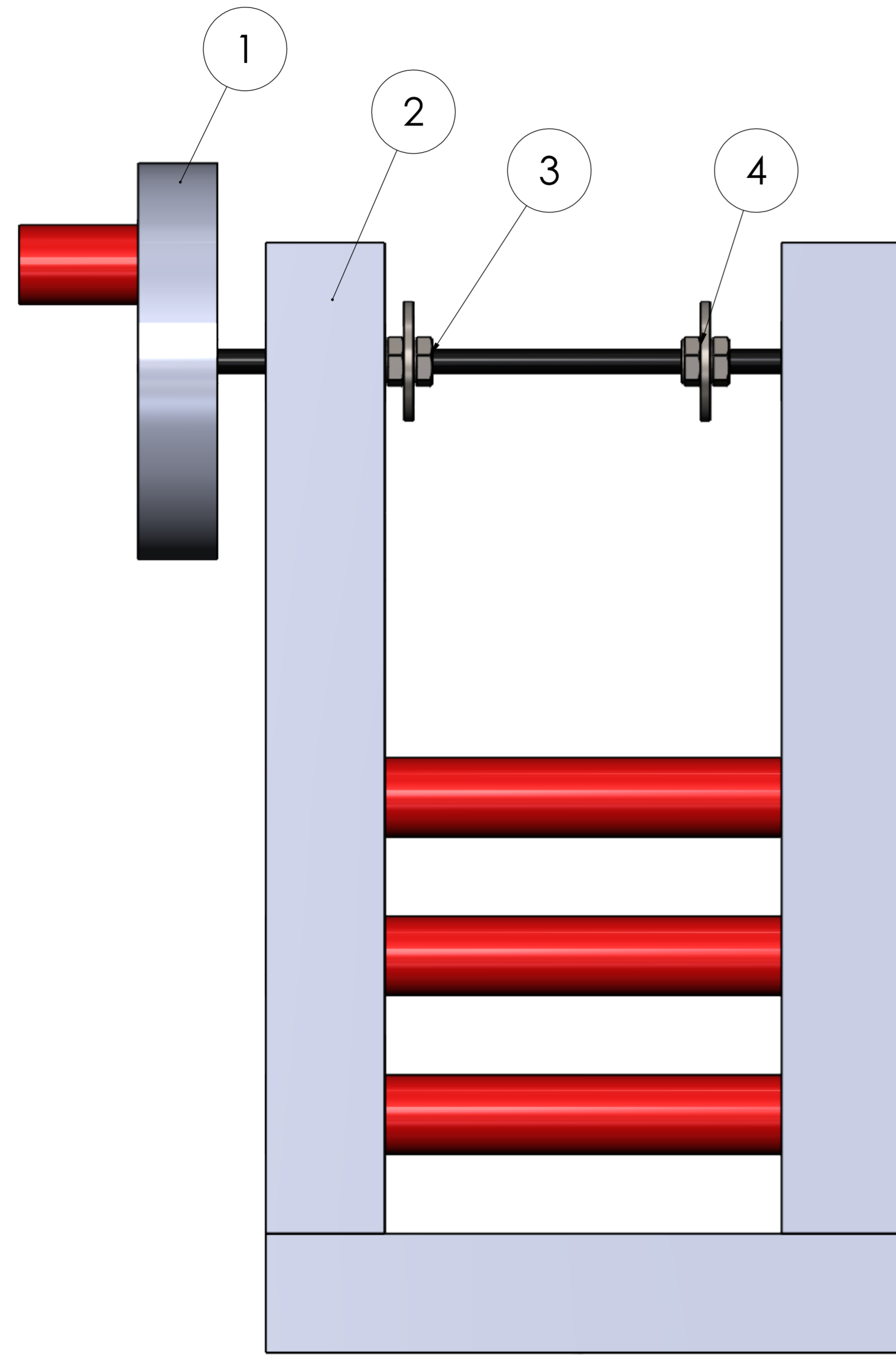
Dowl rod

The Boom is hidden to make this a bit easier to see

Tolerances for linear & angular dimensions
DIN ISO 2768 T:1 fine medium coarse

Prepared Ryan MacKenzie		Status	
Approved Zz .E. MacKenzie		Title CRANE ASSEMBLY INSTRUCTIONS	Page 14 / 15
		Document id. HAGENFALK DESIGN	Scale 1:10
			Rev. 1
			Lang. EN

Tolerances for linear & angular dimensions
DIN ISO 2768 T.1 fine medium course



Insert the threaded rod into (2) and add the nut and washer assemblies (3) and (4). Nut and washer assembly (3) should be as far over to (2) as possible, touching in fact. (4) should be the same but in the other direction. If the wheel is a bit tight to turn then loosen (3) and (4) until it runs smoothly. Worst case drill out the dowls 0,5mm more. (4) is not that import for keeping the rod in place it mostly relies on the wheel (1) and washer assmebly (3) for not faling out

Finally add a string to the dowl rod, highly recoomend the end of the string is wrapped a few times around the dowl rod between (3) and (4) then epoxy it in place.

Prepared Ryan MacKenzie	Status	Page 15 / 15	Scale 1:10
Approved Zz .E. MacKenzie	Title CRANE ASSEMBLY INSTRUCTIONS	Rev. 1	Lang. EN
Document id. HAGENFALK DESIGN			