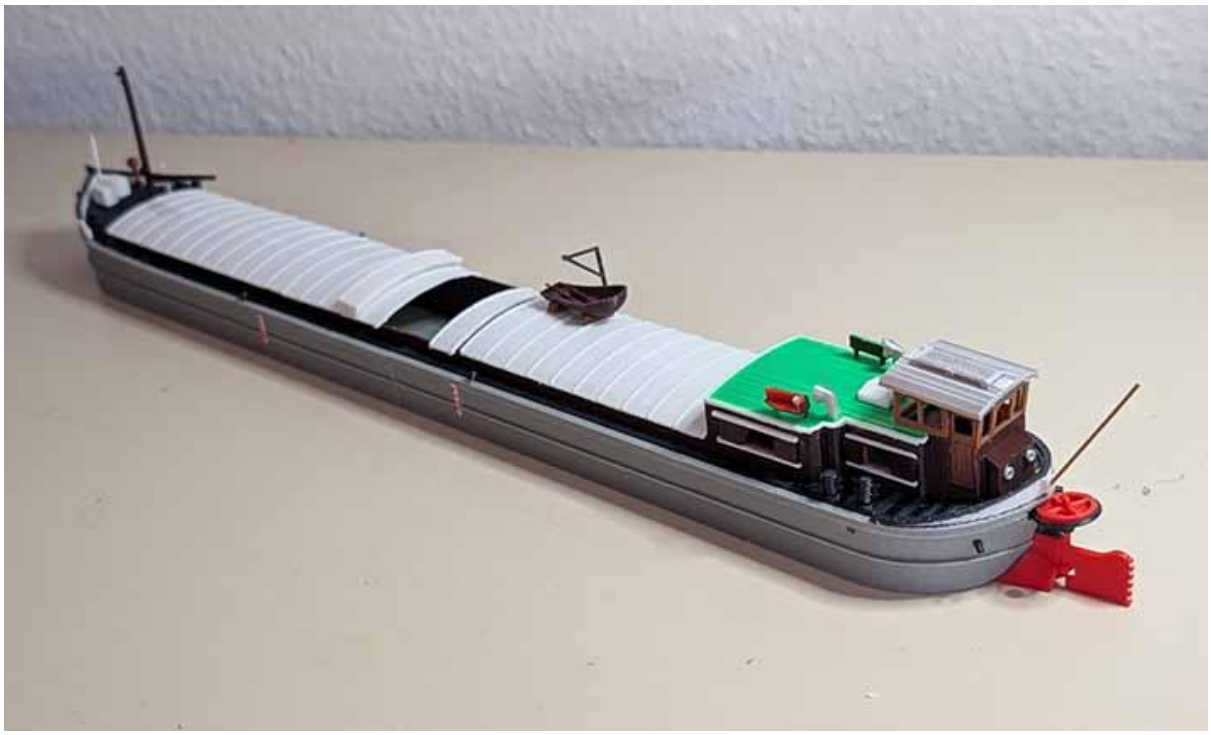
# Binnenschiff Willi

River Barge Willi

Assembly Instructions

V1.0, April 2026





# Content

1 Introduction ..... 3
1.1 About the ship ..... 3
1.2 Preparations for assembly ..... 3
1.3 About the model ..... 3
2 Files and Parts ..... 4
3 Hull Assembly ..... 5
4 Fitting out the hull ..... 7
4.1 Fitting out the bow section ..... 7
4.2 Fitting out the stern section ..... 8
4.3 Installing the rudder system ..... 9
5 Cargo hold and cabin installation ..... 11
5.1 Cabin preassembly ..... 11
5.2 Cabin roof installation ..... 12
5.3 Installation of cargo hold and cabin ..... 13
5.4 Install the wheelhouse ..... 14
5.5 Fitting out the midship section ..... 16
6 Final result ..... 18

# 1 Introduction

## 1.1 About the ship

This is the model of an old river barge named “Willy” which had a long working life and is now preserved as an active museum ship. It is a rather small barge on the European waterways – contemporary barges are much larger – and will have been at home on large rivers as well as small canals.

I constructed the model as part of a challenge in a modeler`s forum and I used images from the internet as the only plans. Fortunately there are just enough online images available to get a good look from all angles, and only very little was left to guesswork.

## 1.2 Preparations for assembly

Tools you will need: a cutter and maybe a small file for cutting and finishing the parts that come off the printer. Make sure that you remove all access plastic, adhesion brims and other unwanted residues from the printing process. Tweezers may be helpful for installing some small part. You may also have to rework pins/holes for connecting parts due to the small scale. And you will need glue for plastic models.

## 1.3 About the model

The model is in H0 model railway scale (1:87). I designed it in Tinkercad and have printed my copies on a Bambu Lab X1C printer using PLA filament. I wanted the model to be realistic, hence some parts have become tiny and may be beyond the precision of some printers. Ships have curved shapes in all dimensions, and this one is no exceptions. Therefore, curved parts have to be printed with supports – there are no even surfaces where the parts can be safely placed for printing.

The joints and part fittings are designed with tolerances of 0,1 to 0,2mm, so they will fit rather tight. You may have to cut and file some edges after print.

The model is medium size – about 50cm long and consists of little over 100 parts. Some of the tiny parts are a challenge for assembly, especially with clumsy fingers like I have. But it is worth it. It will be a nice display model or fit nicely on a model railway with a river/port theme.

Enjoy.

# 2 Files and Parts

The model is divided into quite many files that can be printed separately (see below). So you will have a lot of flexibility in your choice of filament color for different parts when printing. Some files will require support to print, others should work fine without.

| Filename | Contains | Support needed | Suggested Color | # Parts |
|---|---|---|---|---|
| Binnenschiff Willi.3mf | Project file for BambuLab printers including all print files and colors | | | |
| Binnenschiff Willi Hull (2).stl | Ship hull, stern and bow | No | Gray or Black | 2 |
| Binnenschiff Willi Black (3).stl | Miscellaneous parts: anchors, bollards, rudder system, exhausts etc | No | Black | 25 |
| Binnenschiff Willi Black (3).stl | Ship deck, stern and bow | Yes | Black | 2 |
| Binnenschiff Willi Brown (1).stl | Rowboat and mast | Yes | Dark brown | 2 |
| Binnenschiff Willi Brown (2).stl | Cabin | No | Dark brown | 1 |
| Binnenschiff Willi Brown.stl | Cargo holds, shutters etc. | No | Dark brown | 15 |
| Binnenschiff Willi Cabin Roof.stl | Cabin roff | Yes | Green/White | 1 |
| Binnenschiff Willi Copper.stl | Bow ventilation | No | Copper | 1 |
| Binnenschiff Willi Green.stl | Starboard signal | No | Green | 1 |
| Binnenschiff Willi Light Brown (1).stl | Rowboat supports | Yes | Light brown | 2 |
| Binnenschiff Willi Light Brown (3).stl | Stern flagpole, wheelhouse, cabin window frames | No | Light brown | 14 |
| Binnenschiff Willi Red White (1).stl | Draught markers | No | Red/White | 6 |
| Binnenschiff Willi Red.stl | Rudder system, port signal | No | Red | 4 |
| Binnenschiff Willi Silver (1).stl | Cabin roof | Yes | Silver | 1 |
| Binnenschiff Willi Silver.stl | Miscellaneous parts: bullseyes, vents, signal lamps, exhaust pipe | No | Silver | 10 |
| Binnenschiff Willi White (4).stl | Cargo hold hatches | Yes | White | 3 |
| Binnenschiff Willi White (6).stl | Bow and stern railings | Yes | Black/White | 2 |
| Binnenschiff Willi White (7).stl | Miscellaneous parts: shutter rails, covers, flagpole etc | No | White | 13 |

# 3 Hull Assembly

Assemble the hull first. The hull and deck is divided into a bow and stern section short enough to fit onto regular size 3D printers. The hull and deck parts are shown in Figure 1.



*Figure 1 Hull and deck parts, bow left and stern right*

Assemble as follows:

1. Glue the stern and bow parts together. Make sure they fit tightly.
2. Glue the deck parts onto the hull. Again, make sure they fit tightly. You can check the fit by loosely installing the cargo holds and the cabin, see Figure 14 below.
3. Glue the bow and stern railings onto the hull.

The result is shown in Figure 2 and Figure 3.



*Figure 2 Hull and deck assembled (top view)*




*Figure 3 Hull and deck assembled, bow (left) and stern (right)*

# 4 Fitting out the hull

## 4.1 Fitting out the bow section

The parts for the bow section are shown in Figure 4.



*Figure 4 Parts layout for the bow section*

Assemble as follows:

1. Insert the red/white draught marker at the bottom of bow.
2. Install the anchors left and right. First glue the black rings into the hole, then slide the anchors into the slot.
3. Install the white boxes for the anchor winch onto the deck.
4. Install a pair of bollards left and right onto the corresponding pins on the deck.
5. Install the copper ventilator into the corresponding hole on the starboard side.
6. Install the white flagpole at the top of the bow with the little silver signal light on top
7. Install the silver exhaust pipe into the hole in front of the forward cargo hold. Install the little curved section on the top.
8. Install the cargo mast in front of the cargo hold. Add the white position light on top. The position light consists of three parts (bottom with pin, white center section, little black cover on top).

The result is shown in Figure 5.




*Figure 5 Bow section fitted out*

## 4.2 Fitting out the stern section

The parts for the stern section of the hull are shown in Figure 6. Assemble as follows.

1. Glue a pair of bollards left and right onto the corresponding pins
2. Glue the little curved exhaust pipes into the outer stern hull left and right
3. Glue the long brown flagpole into the little hole on the outer side of the railing in the center.

The result is shown in .Figure 7

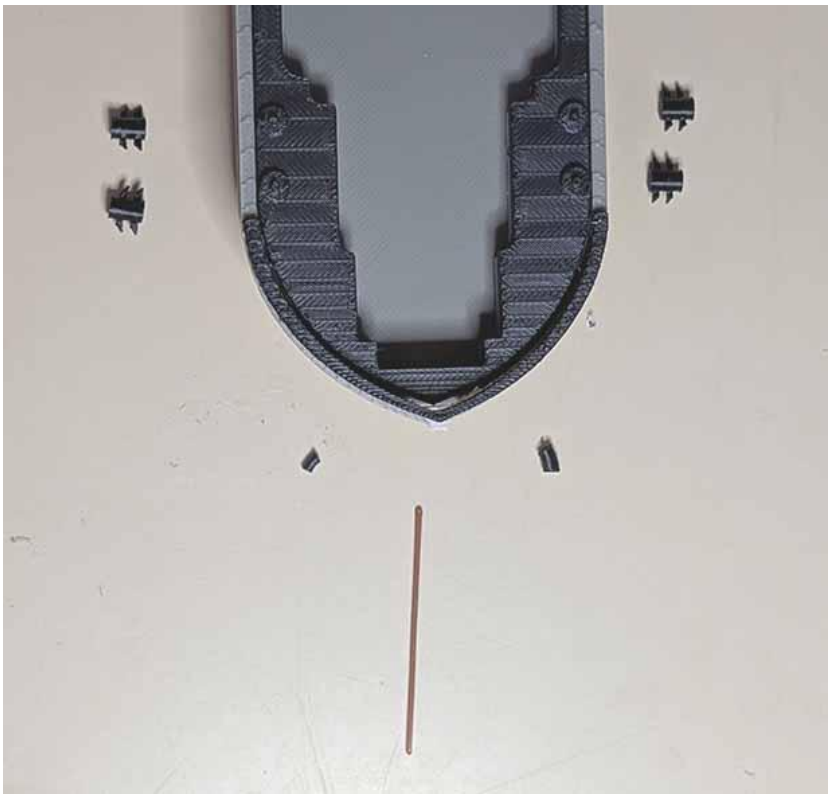


*Figure 6 Parts layout for the stern section*

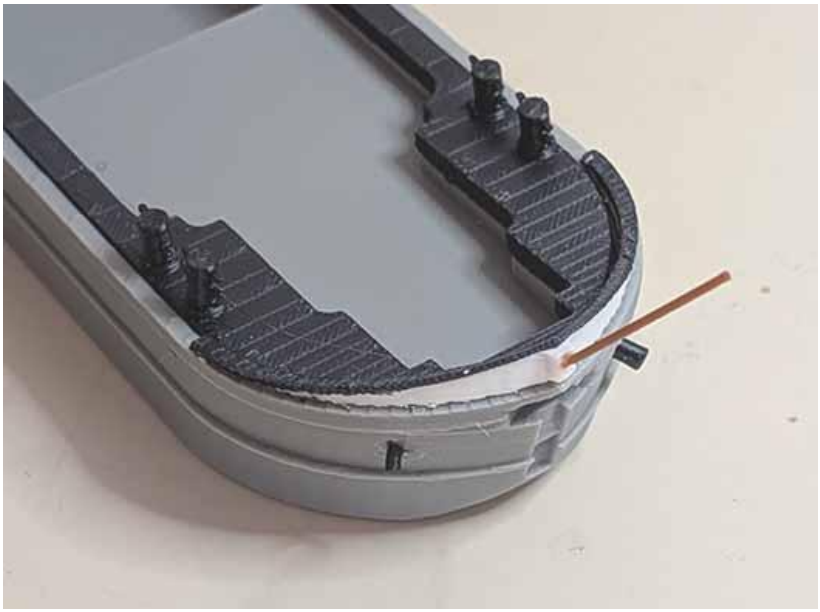


*Figure 7 Stern section fitted out*

## 4.3 Installing the rudder system

The barge has a fairly unique rudder system. The parts for the rudder system at the stern are shown in Figure 8.

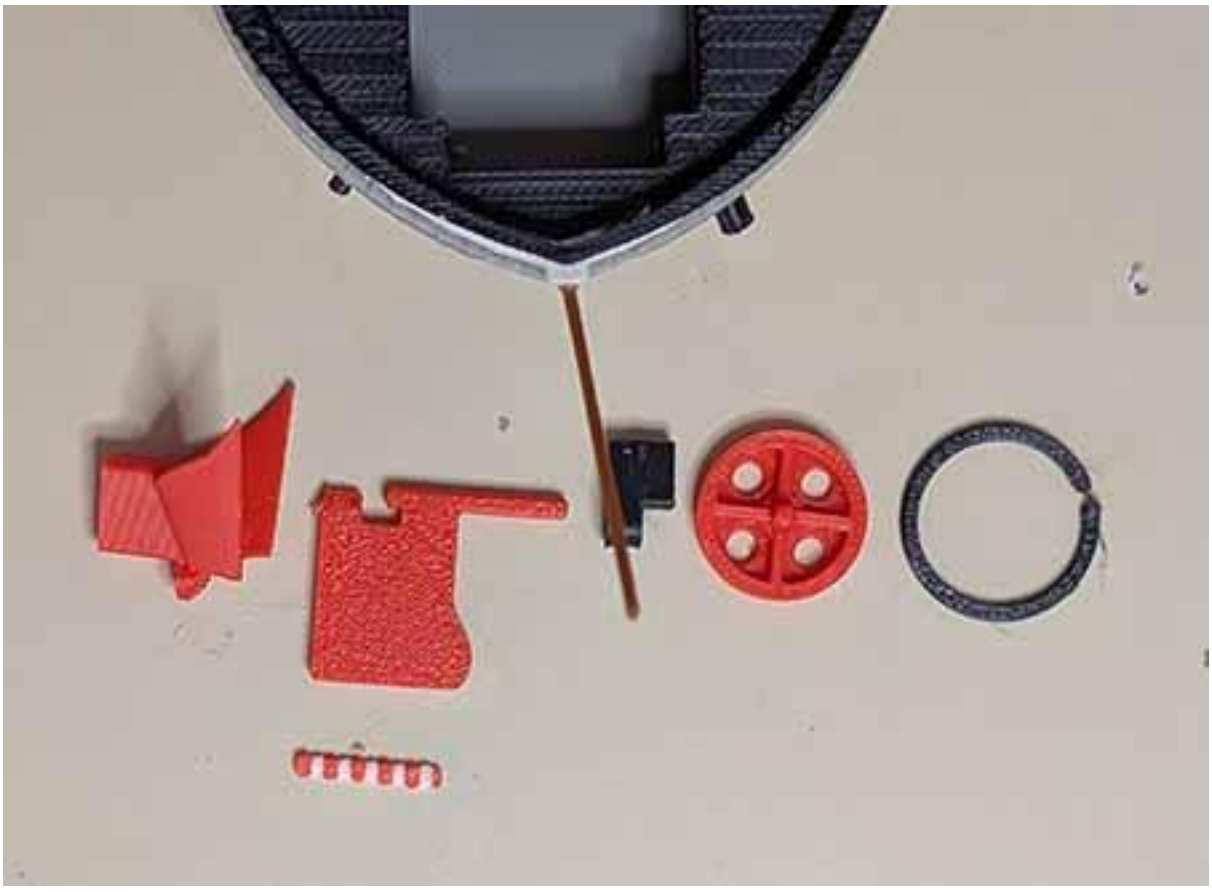


*Figure 8 Parts layout for the rudder system*

Assemble as follows:

1. Glue the red/white draught marker to the rear end of the rudder.
2. Glue the screw cover into the stern hull at the bottom.

3. Slide the black rudder bearing loosely over the top rudder axle.
4. Insert the lower end of the rudder axle into the little hole on the screw cover and glue the black rudder bearing into the hull.
5. Slide the black transmission belt over the rudder gearwheel (with glue).
6. Slide the rudder gearwheel into the slot at the top of the stern hull and glue the gearwheel onto the rudder axle.

The result should look as shown in Figure 9.



*Figure 9 Rudder system installed*

# 5 Cargo hold and cabin installation

## 5.1 Cabin preassembly

The parts for the cabin are shown in Figure 10.

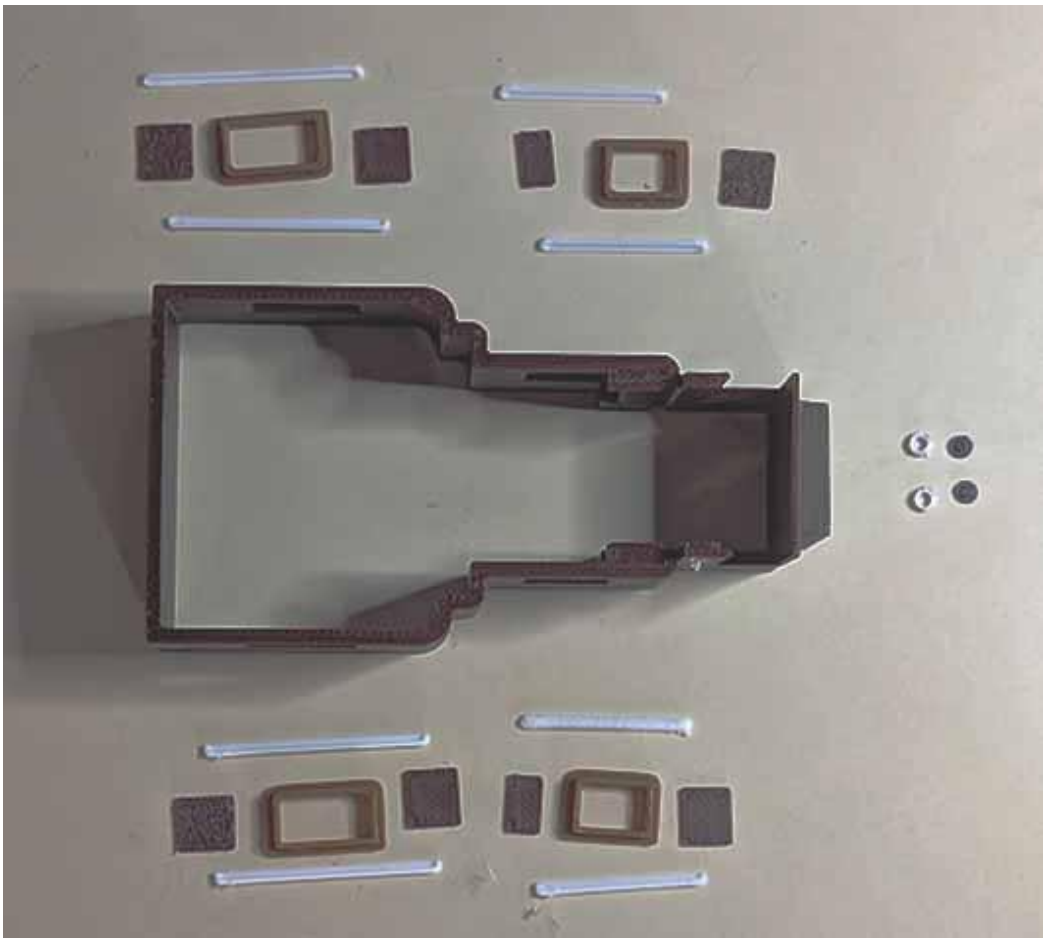


*Figure 10 Cabin parts layout*

Assemble as follows:

1. Glue the four window frames into the window holes from the inside.
2. Install the window shutters (4x). First glue the white shutter sliding rails into the groves on the cabin walls. The slots on the rails should point down for the upper rails and down for the lower rails.
3. Glue the brown shutters into the rails. You can install the shutters open or closed, as you prefer.
4. Glue the two portholes into the rear cabin wall. First the black disk with a pin, then the silver porthole frame.

The result should like shown in Figure 11.



*Figure 11 Cabin preassembled*

## 5.2 Cabin roof installation

The parts for the cabin roof are shown in Figure 12. Assemble as follows:

1. Glue the white box onto the cabin roof into the square space center / rear.
2. Glue the position signals (green and red) into the brown signal racks (green = starboard, red = port). Glue the little silver lamps into the hole of the position signals. Then glue the rack into the corresponding holes on the cabin roof on either side.
3. Glue the silver vents onto the pins on the cabin roof. The openings should point forward.
4. Glue the cabin roof onto the cabin.

The result is shown in Figure 13.

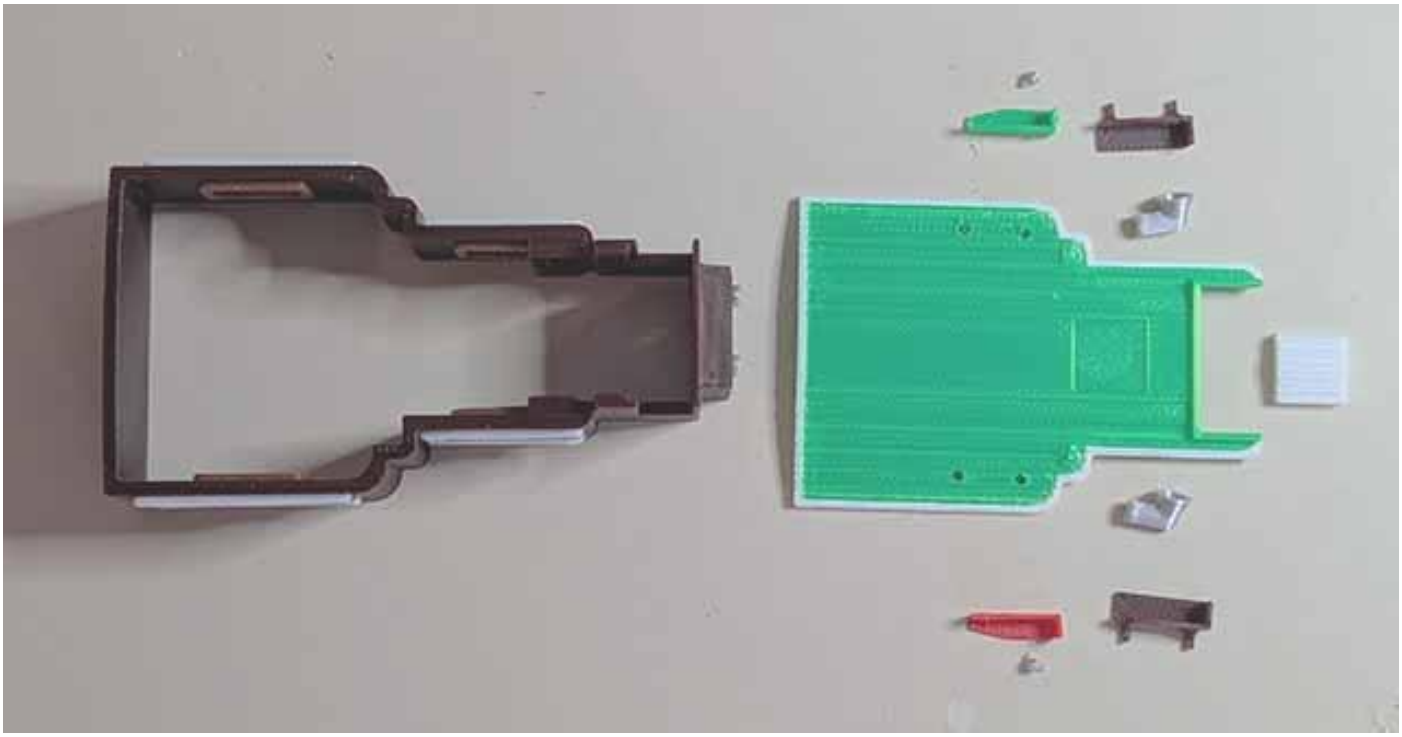


*Figure 12 Parts layout for cabin roof*

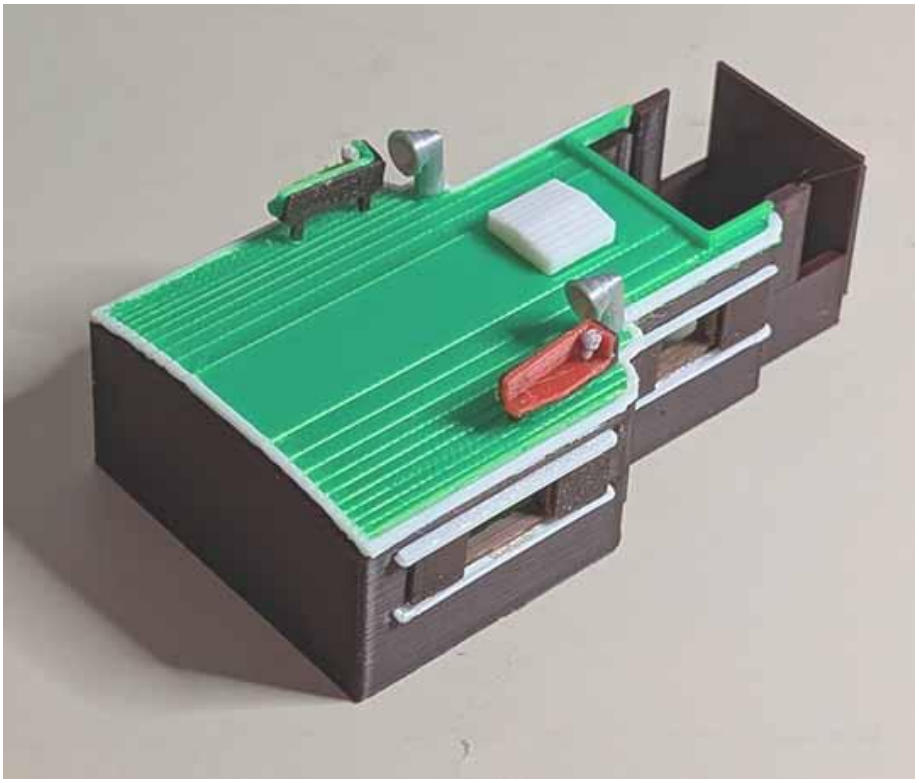


*Figure 13 Cabin roof assembled and installed*

## 5.3 Installation of cargo hold and cabin

Position the cargo holds and cabin ready for installation as shown in Figure 14.

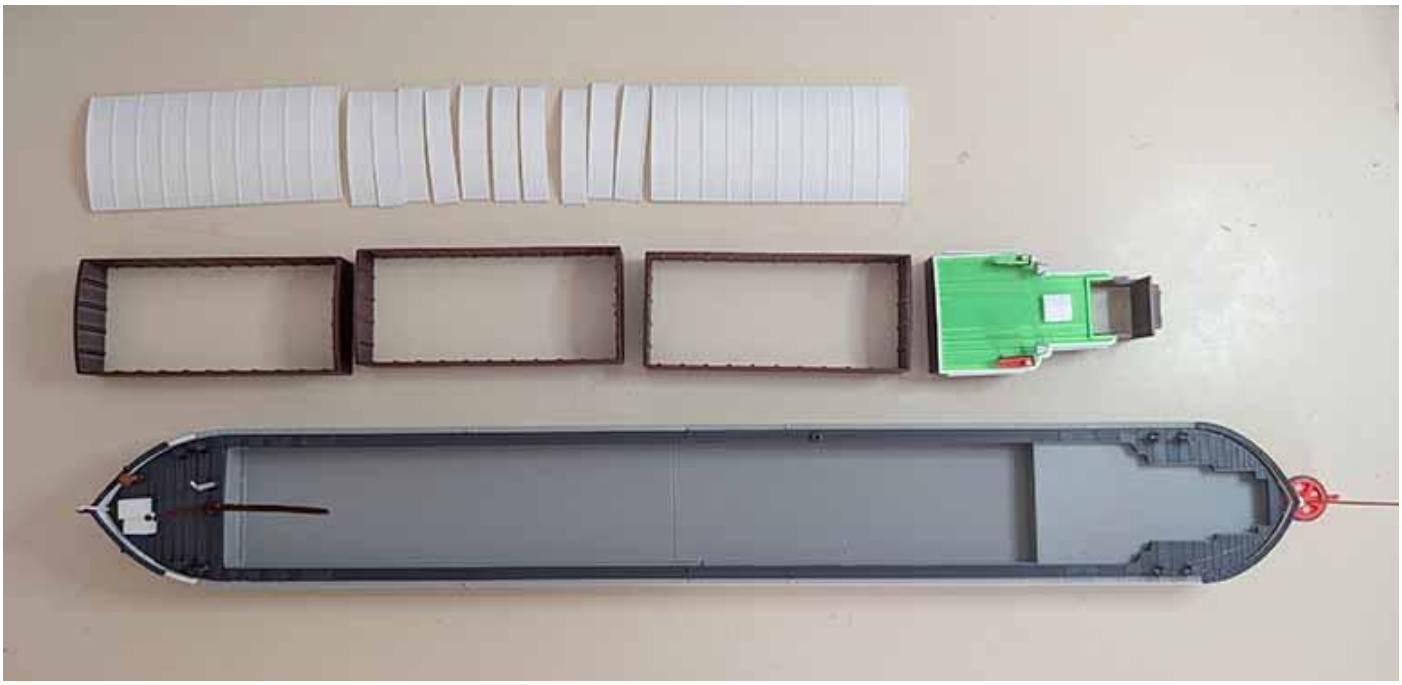


*Figure 14 Cargo holds and cabin ready for installation into the hull*

Install as follows:

1. Glue the three cargo holds and the cabin into the openings in the hull.
2. Install the cargo hatches. The STL file contains two types of hatches, one for cargo holds fully closed and one divided into ten section for open / partially open holds. Use either type as you prefer. Glue the hatches onto the holds. For open / partially open holds stack the sections aside.

The result should look as shown in Figure 15.

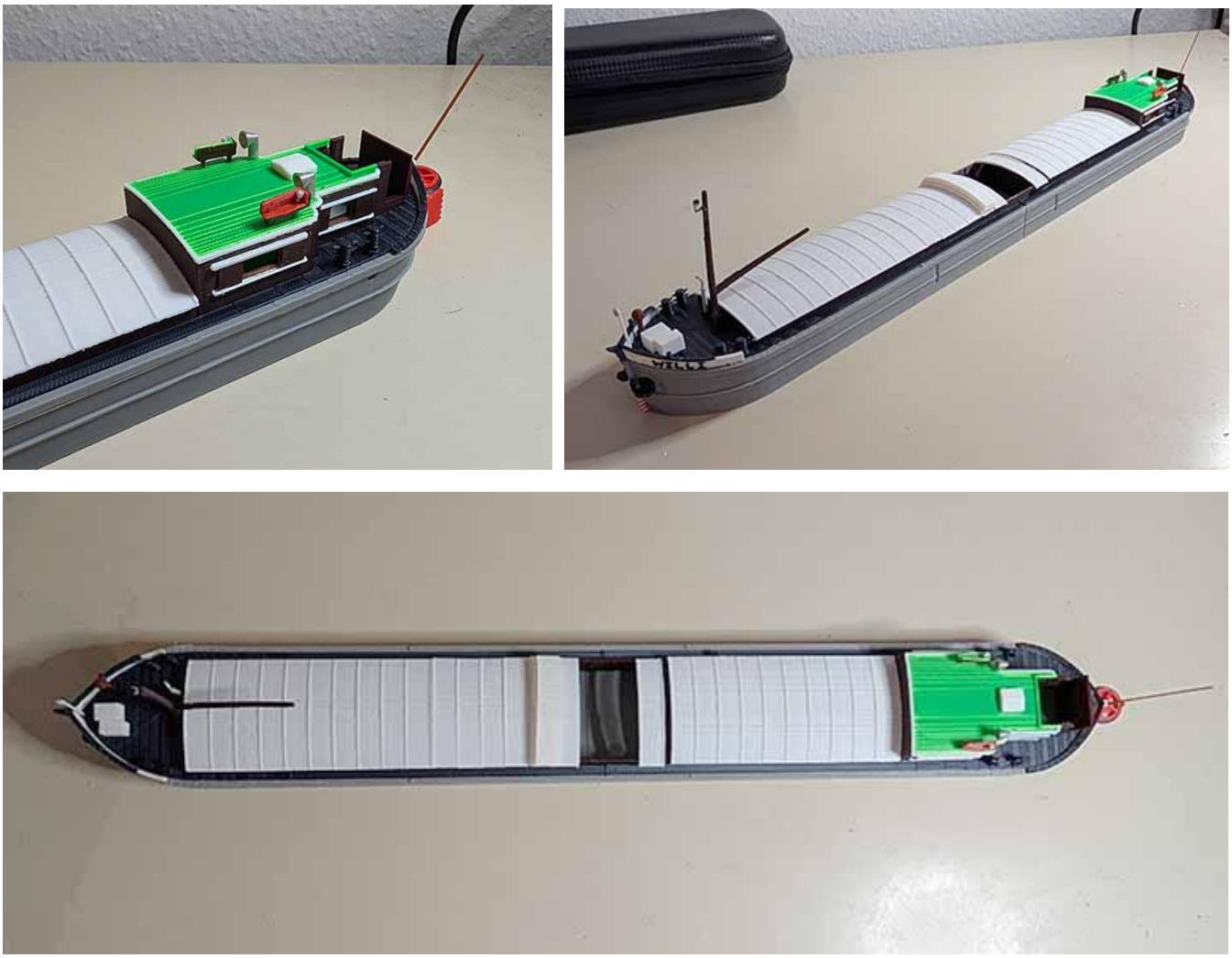


*Figure 15 Cabin and cargo holds installed. The center cargo is partially open with stacked cover sections*

## 5.4 Install the wheelhouse

The parts of the wheelhouse are shown in Figure 16. Assemble as follows

1. Install the wheelhouse bottom first. Slide the large brown plate vertically into the cabin walls, then glue the small plate horizontally on top. Then, glue the wheelhouse floor block into the opening. The result should look as shown in Figure 17.
2. Install the wheelhouse walls. First glue the doors left and right into the cabin walls. Then glue each wall element onto the cabin and/or cabin roof.
3. Glue the silver roof onto the wheelhouse, the long cover facing forwards.
4. Glue the silver rectangular cover onto the wheelhouse roof.

The wheelhouse should look as shown in Figure 18.



*Figure 16 Parts layout for wheelhouse*

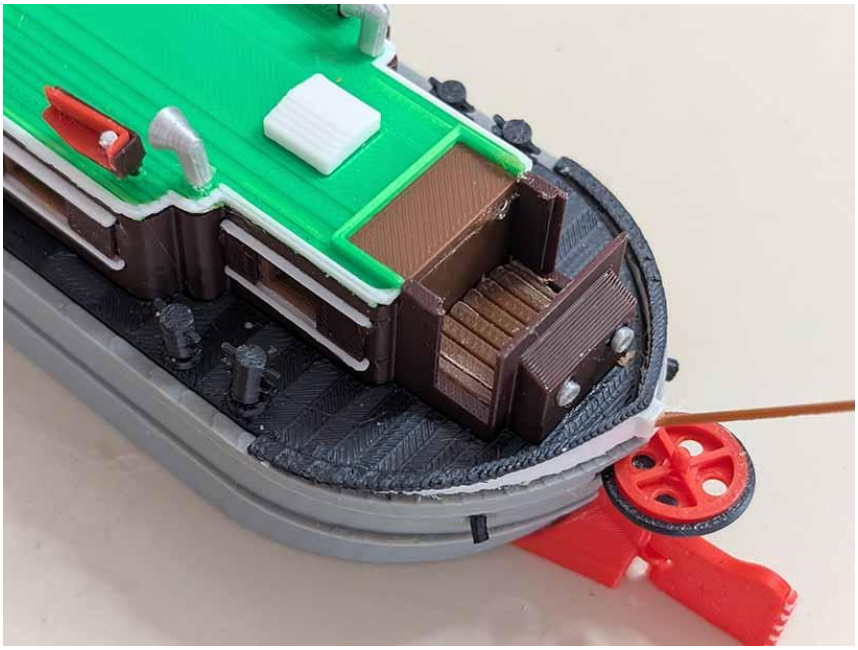


*Figure 17 Wheelhouse bottom installed*




*Figure 18 Wheelhouse installed*

## 5.5 Fitting out the midship section

The parts for the midship section are shown in Figure 19.

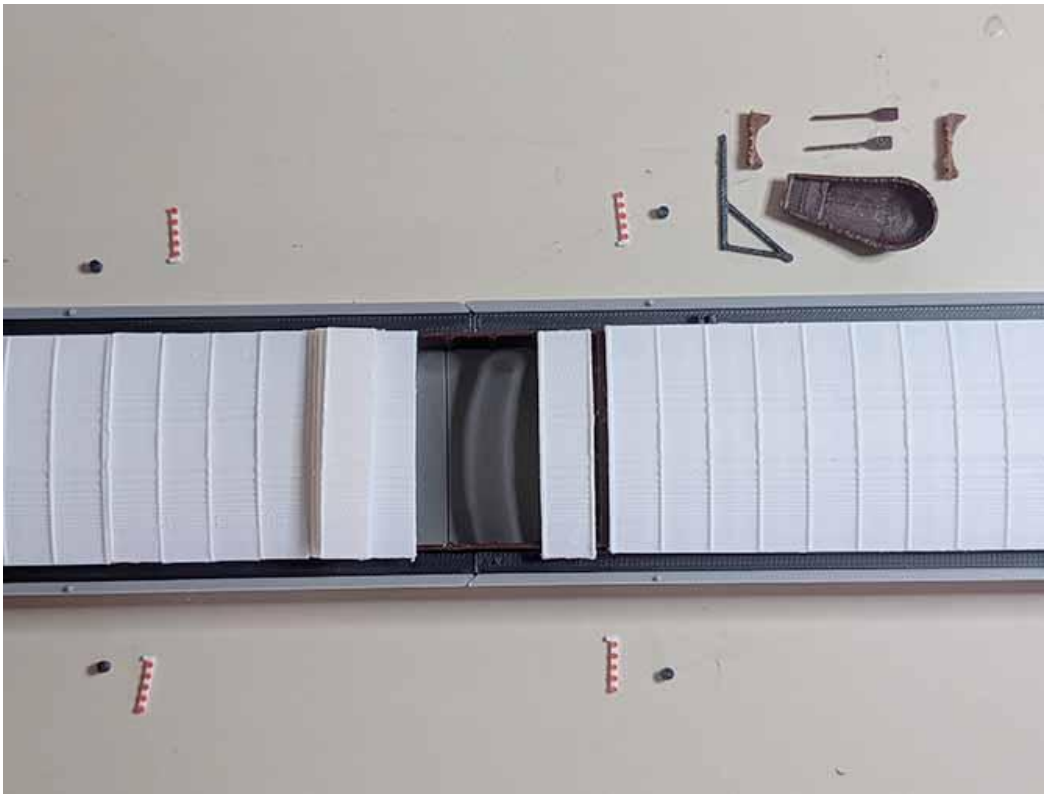


*Figure 19 Parts layout for midship section*

Assemble as follows:

1. Glue the draught markers into the corresponding groves on the outside hull (4x)
2. Glue the small midship pollards onto the pins on the hull
3. Locate the boat crane hole on the deck (Glue the curved boat supports (rear cargo hull, starboard). Glue the boat supports on top of the cargo hatch.
4. Glue the rowboat onto the supports and install the rows in the boat.
5. Glue the crane into the deck hole next the boat.

The result is shown in Figure 20.

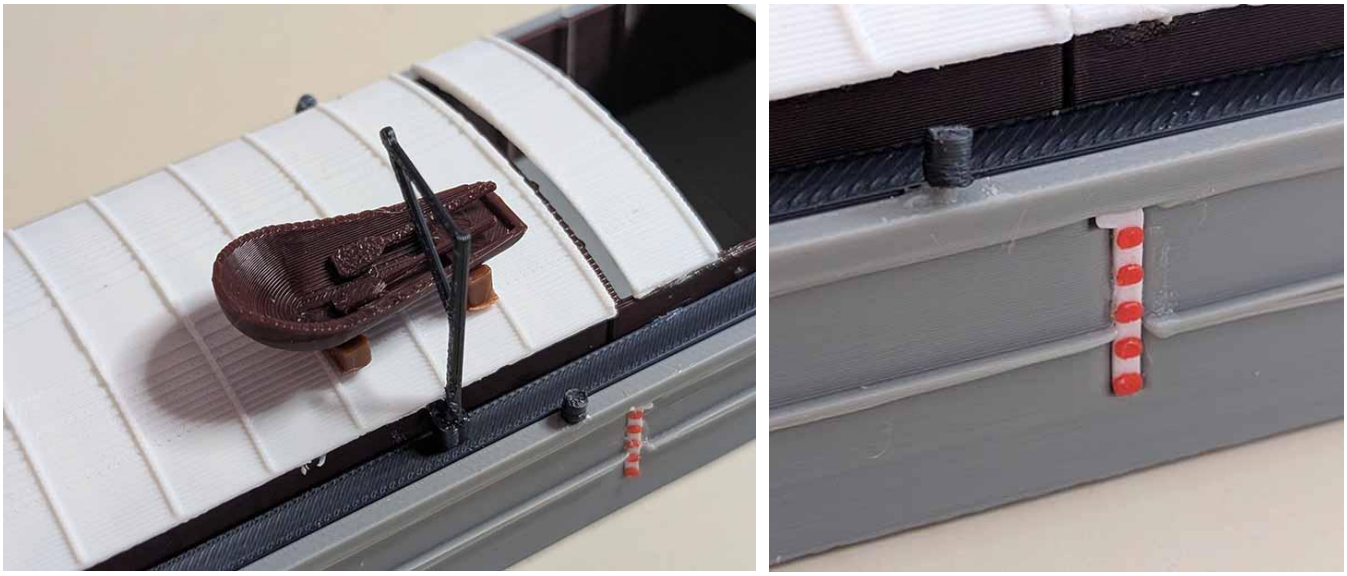


*Figure 20 Midship section after installation. Rowboat on the left, pollard and draught marker right*

# 6 Final result

Congratulations. You finished the model assembly. The final result is shown in Figure 21 to Figure 23.

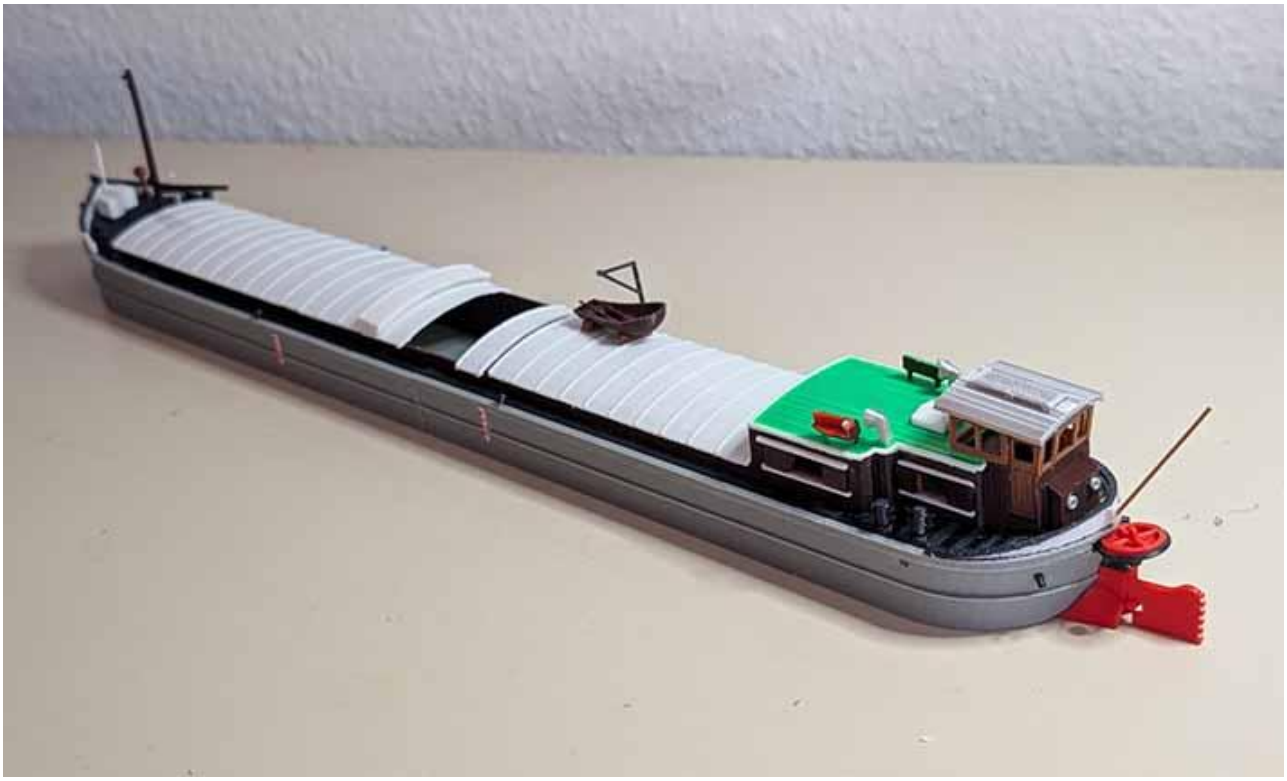


*Figure 21 Barge fully assembled (1)*



*Figure 22 Barge fully assembled (2)*




*Figure 23 Barge fully assembled (3)*