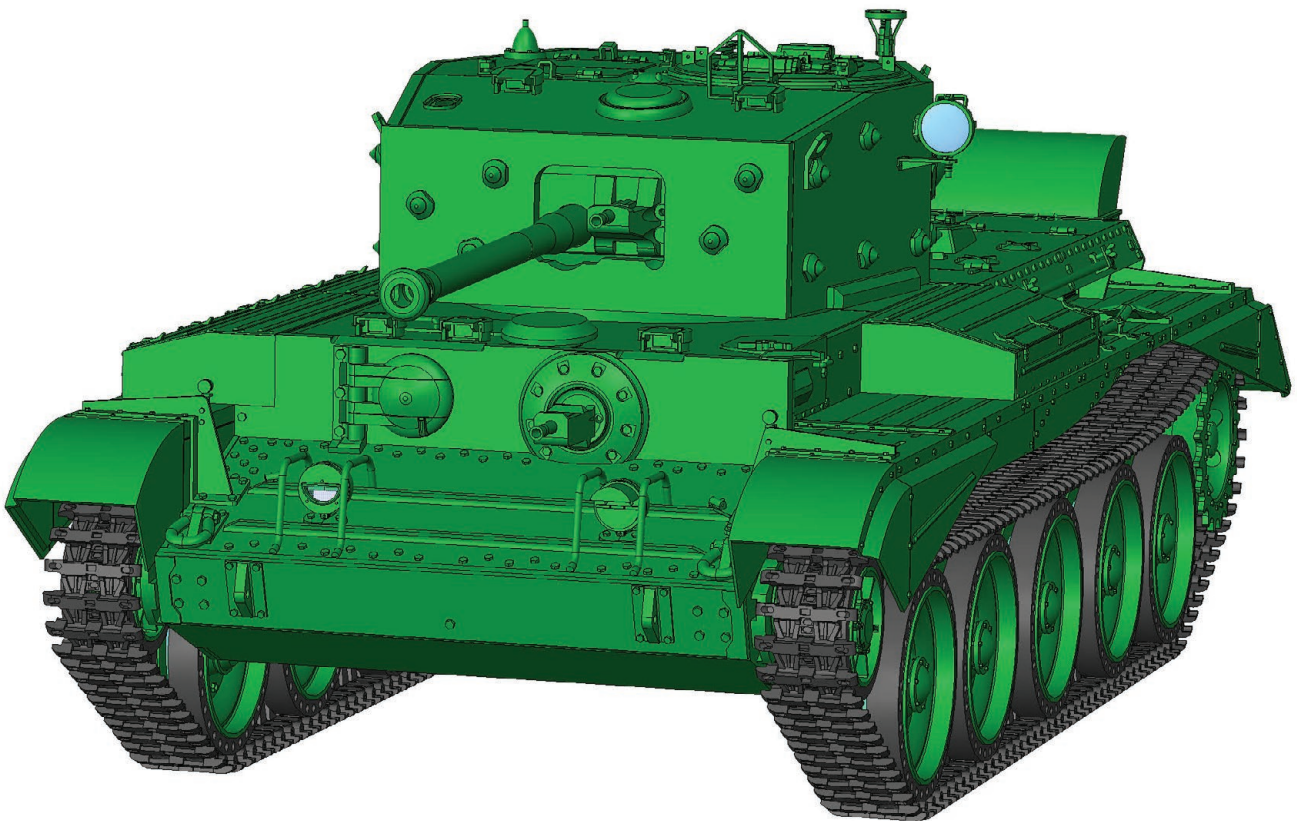


Cromwell Mk.IV

Cruiser Tank Mk. VIII

Assembly guide



1/16 scale RC model by  **WARPRINTS**

Cromwell Mk.IV

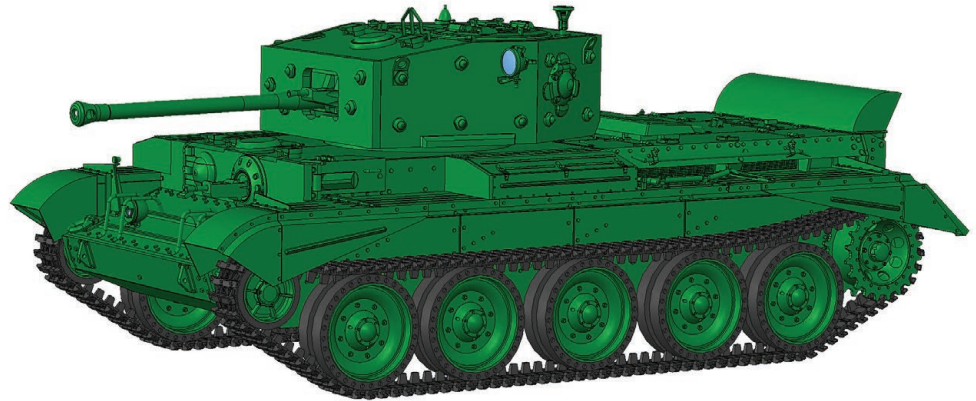
Assembly guide

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Cromwell Mk.IV

Assembly guide



Thank you for choosing our model.

We hope that the assembly will be trouble-free and you will enjoy the model. The model is designed to be as easy to service and modify as possible. At the same time, we tried to offer a wide range of options and compatibility in assembly.

This part of the manual will guide you through the assembly of the model, it also contains a list of materials needed for its assembly.

A list of all printed parts can be found in the second part of the manual entitled Cromwell Mk.IV PRINTING GUIDE.

DO NOT BE CONCERNED BY THE LARGE NUMBER OF PAGES OF THIS MANUAL. IT'S FULL OF LARGE PICTURES AND SAVES NO SPACE.

It is prepared so that the position of all parts is clearly visible and the procedure is sufficiently described. Each page contains one construction step.

If you still encounter problems or ambiguities during construction, contact us on our forum <https://www.warprints.xyz/forum>

In the manual you will find everything you need to build the model, including the location of mechanical parts such as servomotors, motors or various bearings. The manual is divided into six separate sets for clarity.

All printed parts are numbered according to the order in which they are installed on the model.

Some printed parts are identical or mirrored, but have different numbering to maintain the clarity of the assembly.

Follow the assembly procedure according to the instructions, do not skip or neglect any steps.

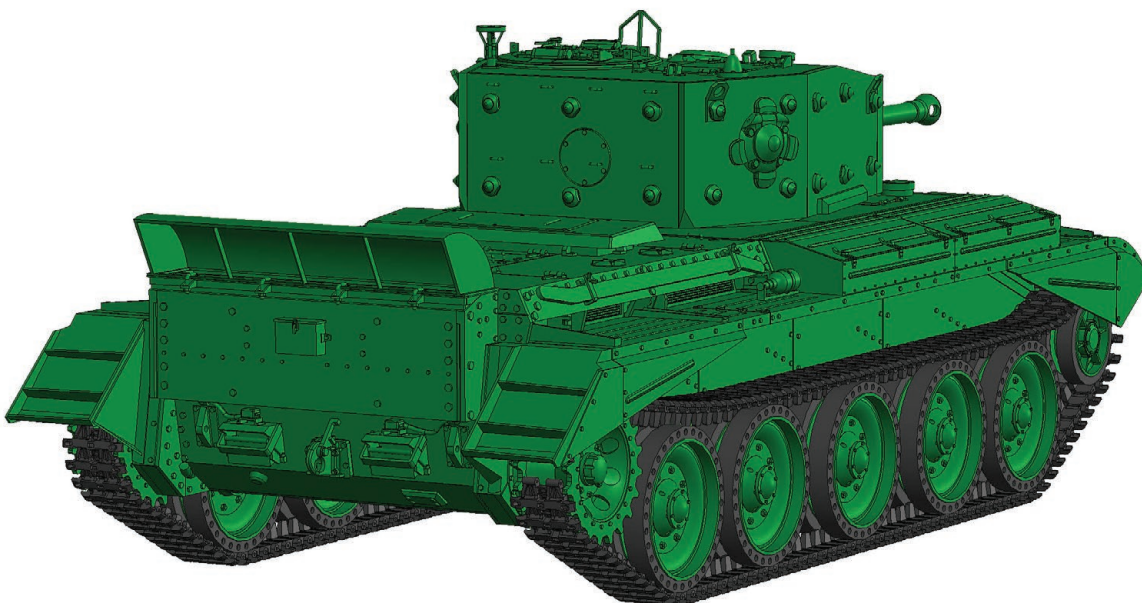
Failure to follow the instructions may prevent further construction, or even lead to damage on the model during use!!!

Cromwell Mk.IV

Assembly guide

The manuals contain all alternative parts and procedures, other alternative parts and functions may be available in the future.

- possibility to use four different types of motor for turret rotation
- possibility of connecting a smoke generator to the exhaust
- 3 functional headlights.
- built-in track tensioners
- cannon equipped with servos for recoil and aiming.
- all hatches on the model are openable. A total of 23 different hatches and covers. If you do not want to use these options, you can simplify printing and production by using an alternative part for the version without openable hatches.
- the rims of the drive wheels can be printed from flexible material. At the same time, you have a simple one-piece wheel at your disposal, in case you do not want or cannot print from flexible materials.
- preparation for FPV camera in the driver's hatch.



The manual contains the entire assembly of the model, except for the installation of the control unit, transmitter, battery and the final connection of the electronics. The connection of the electronics and especially the control unit depends on the choice of the model and parts configuration.

The choice of control unit is up to you, it will greatly affect the final price of the model but also its functions.

The model in full configuration requires a sophisticated control unit. We recommend IBU2 because it is currently the only control unit on the market that contains sounds for Cromwell.

Of course, you can also use the most common and affordable control units, such as the RX-18 from various manufacturers.

Cannon control requires a control unit that can control servomotors.

Due to the complexity of the topic of electronics connection, all diagrams and procedures of connection of various variants of electronics will be summarized on our forum.

On our forum, we can actively help you not only with the connection of electronics, but with the entire assembly.

At the same time, your questions and our answers on the forum will help many other enthusiasts who are looking for help.

Therefore, please address your questions about the assembly and use of the model on the forum instead of e-mailing us. Thank you.

The model is intended for advanced modelers.

Check moving parts regularly.

The bolts on all wheels and servomotor arms must be secured against falling out.

Tighten the tracks sufficiently using the tensioners on the front wheels.

Due to the limitations of the construction of a real vehicle, the drive is solved using closed tracks.

This solution has a longer service life and is less noisy than 3D printed gears.

You can use JGA25-370 motors with 280 revs or POLOLU #1573 - 34:1 Metal Gearmotor 25Dx52L mm HP 6V, according to your preferences.

You will find all the necessary components except the control unit, battery, receiver and transmitter in the following lists.

Cromwell Mk.IV

Assembly guide

This list contains the material needed to build the model in full configuration.

If you decide not to use some features of the model and the associated parts, you will probably not need a part of the listed materials.

In this case, check the lists of nonprinting materials at the beginning of each chapter in this guide to select only the materials you need.

PART	AMOUNT
M1,6 Nut	14
M2 Nut	201
M3 Nut	30
M4 Nut	14
M2 Washer	51
M3 Washer	10
M1,6x6 Screw	2
M1,6x8 Screw	10
M1,6x12 Screw	2
M2x6 Screw	4
M2x8 Screw	12
M2x10 Screw	8
M2x12 Screw	31
M2x16 Screw	58
M2x20 Screw (optional)	2
M2x30 Screw	22
M3x6 Screw - gurb/worm (optional)	1
M3x5 Screw	2
M3x12 Screw	5
M3x20 Screw	4
M3x25 Screw	3
M3x30 Screw	8
M3x50 Screw	2
M4 Threaded rod	2x70mm

Cromwell Mk.IV

Assembly guide

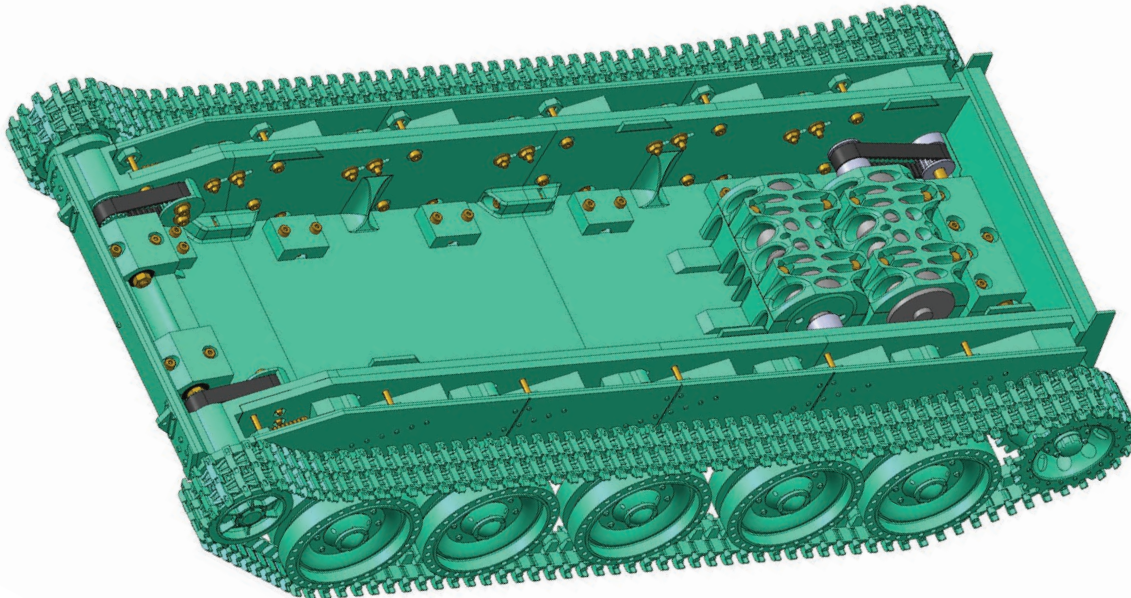
PART	AMOUNT
633 bearing (3x13x5mm)	4x
623 bearing (3x10x4mm)	4x
MF74ZZ bearing (4x7x8,2x2mm)	10x
MR72ZZ or 602zz bearing (2x7x2,5mm)	36x
604ZZ bearing (4x12x4mm)	2x
F604ZZ bearing (4x12x13,5x4)	2x
Rounded magnets diameter = 5mm - lenght = 3mm	8x
Pin -diameter 0,6mm -lenght 4,7mm	4x
Pin -diameter 0,6mm -lenght 5,5mm	8x
Pin -diameter 0,6mm -lenght 11mm	2x
Pin -diameter 0,6mm -lenght 12mm	2x
Pin -diameter 0,8mm -lenght 15mm	1x
Pin -diameter 0,8mm -lenght 17,4mm	240x
Pin -diameter 0,8mm -lenght 20mm	1x
Closed loop belt GT2 -lenght 110mm	1x
Closed loop belt GT2 -lenght 190mm (200mm optional)	1x
Belt (opened) GT2 -lenght 80mm	2x
Pulley 2GT - 16 teeth -bore 4mm	4x
JGA25-370 (280RPM) or POLOLU 34:1 Metal Gearmotor 25Dx52L mm HP 6V	2x
TOWERPRO® SG90 9g Servo + arm + screw	2x
SMD LED - type 5630 with pre-soldered wires	3x
Tension spring -wire diameter 0,8mm -diameter 7,5-8mm -lenght 30mm	10x
Heng-Long® or compatible turret rotation motor (optional)	1x
FS90R 360° servo or compatible (optional)	1x
JGY-N20 motor with worm gear (optional)	1x
N20 geared motor or HPCB Pololu Micro Motor (optional)	1x

Cromwell Mk.IV
Assembly guide

Cromwell Mk.IV

Assembly guide

Assembly 01 - Lower Hull

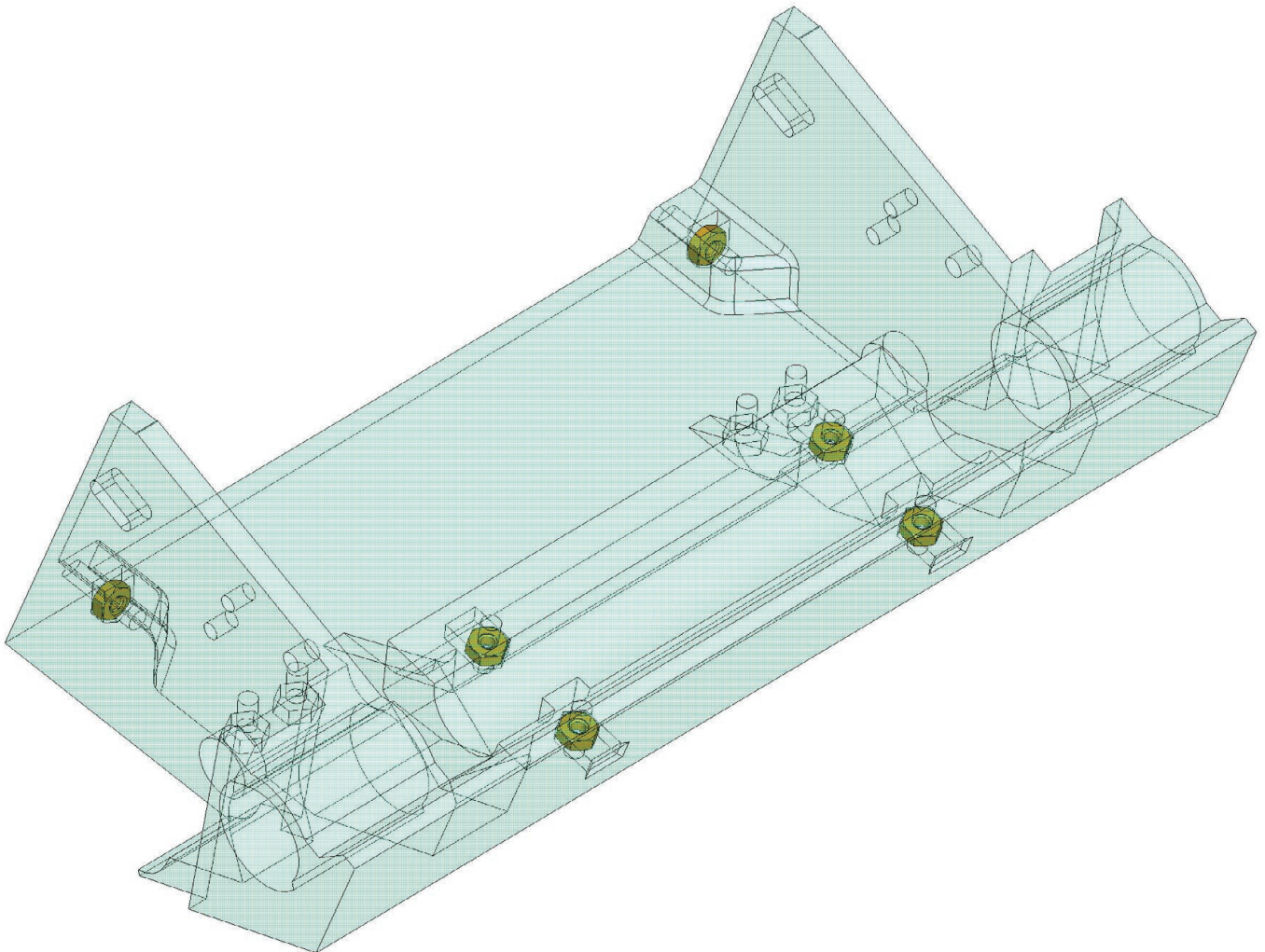
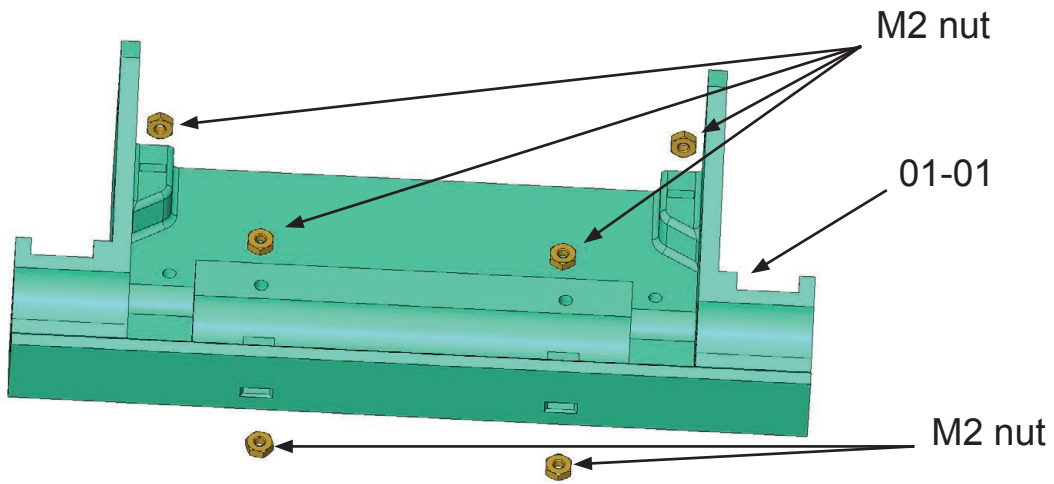


3D PRINTED PARTS:	01-01 (1x), 01-01 (1x), 01-03 (1x), 01-04 (1x), 01-05 (1x), 01-06 (1x), 01-07 (1x), 01-08 (1x), 01-09 (1x), 01-10 (1x), 01-11A (1x), 01-11B (1x), 01-11C (1x), 01-12A (1x), 01-12B (1x), 01-12C (1x), 01-13 (1x), 01-14A (1x), 01-14B (1x), 01-15A (4x), 01-15B (2x), 01-15C (2x), 01-16 (1x), 01-17 (1x), 01-18 (1x), 01-19 (1x), 01-20 (2x), 01-21 (2x), 01-22 (2x), 01-23A (5x), 01-23B (5x), 01-24A (5x), 01-24B (5x), 01-25A (20x), 01-25B (10x), 01-25C (10x), 01-25D (10x), 01-26 (10x), 01-27 (2x), 01-28 (8x), 01-29 (5x), 01-30 (5x), 01-31A (1x), 01-31B (1x), 01-31C (1x), 01-31D (1x), 01-31E (1x), 01-32A (1x), 01-32B (1x), 01-32C (1x), 01-32D (1x), 01-32E (1x), 01-33A (2x), 01-33B (2x), 01-33C (2x), 01-33D (2x), 01-34 (1x), 01-35 (1x), 01-36 (1x), 01-37 (2x), 01-38 (2x), 01-39 (242x).
OPTIONAL 3D PRINTED PARTS:	01-15AB (4x), 01-15AC (2x), 01-25AB (10x), 01-25AC (10x), 01-37_POLOLU (2x), 01-38_POLOLU (2x),
NON-PRINTED PARTS:	M1,6 nut (12x), M2 nut (175x), M3 nut (12x), M4 nut (14x), M2 washer (44x), M3 washer (10x), M1,6x8mm screw (10x), M1,6x12mm screw (2x), M2x8mm screw (2x), M2x10mm screw (2x), M2x12mm screw (25x), M2x16mm screw (54x), M2x30mm screw (22x), M3x30mm screw (8x), M3x50mm screw (2x), M4 threaded rod (140mm), 623 bearing (3x10x4mm) (4x), MF74ZZ bearing (10x), MR72ZZ or 602zz bearing (34x), 604ZZ bearing (2x), F604ZZ bearing (2x), GT2 belt -closed -190mm (1x), GT2 belt -closed -190mm (1x), GT2 belt -opened (170mm), GT2 pulley -16 teeth -4mm bore (4x), Tension spring -wire diameter 0,8mm -diameter 7,5-8mm -lenght 30mm (10x), Magnet -diameter 5mm -lenght3mm (4x), Geared motors JGA25-370 -280RPM or POLOLU #1573 (2x), Pin -diameter 0,8mm -lenght 17,4mm (240x).

Cromwell Mk.IV

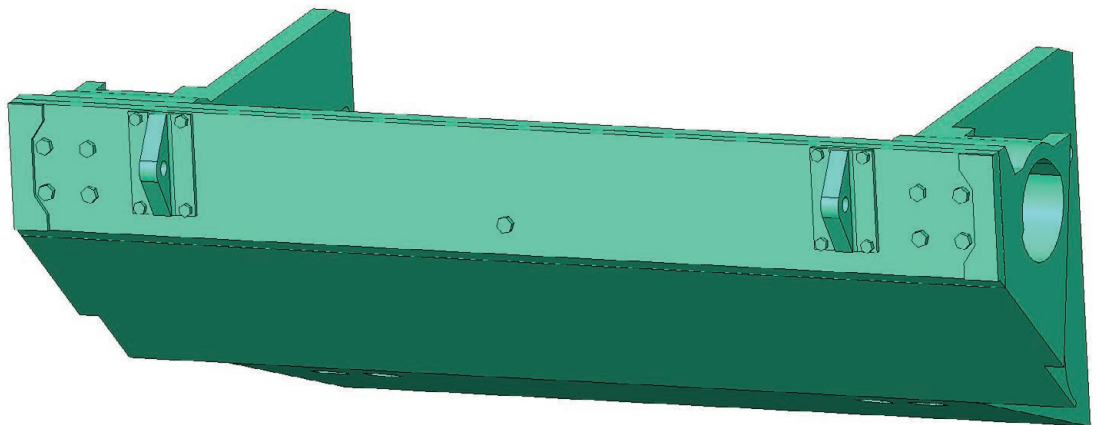
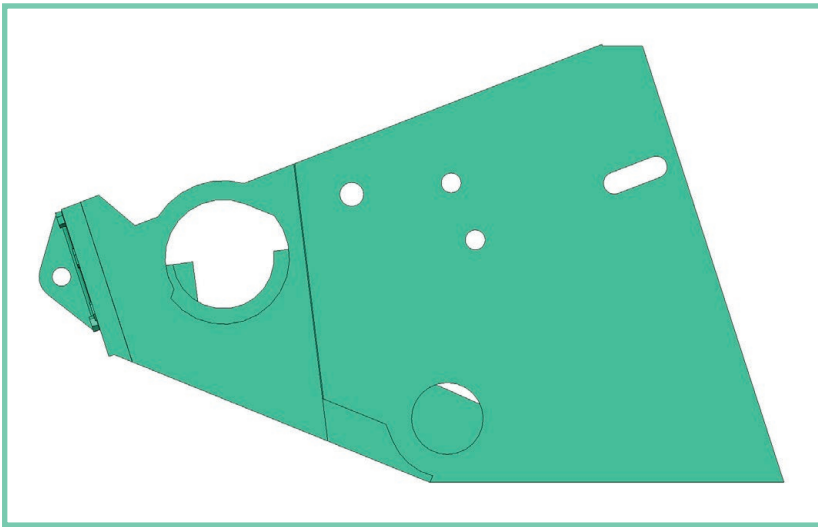
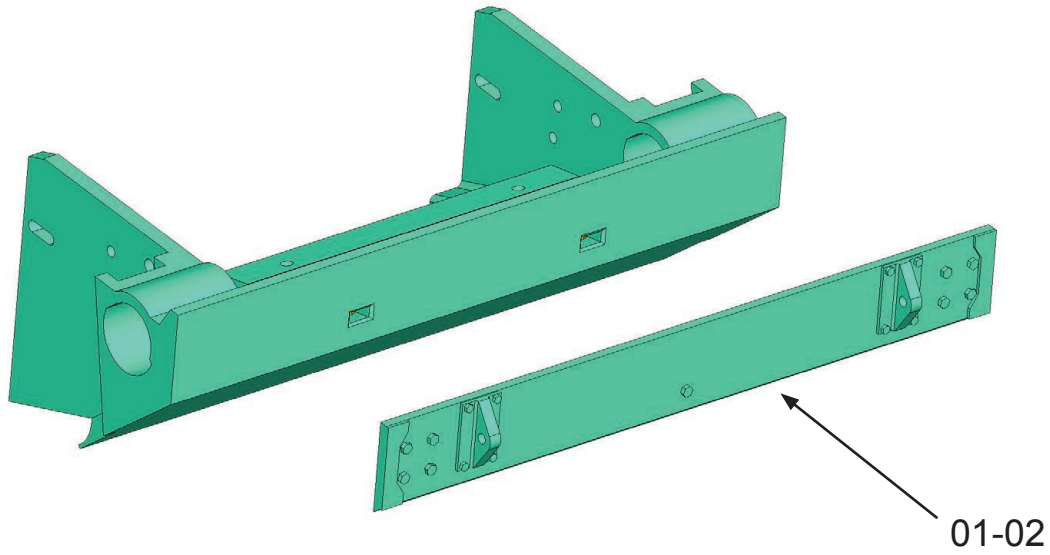
Assembly guide

Assembly 01 - Lower Hull



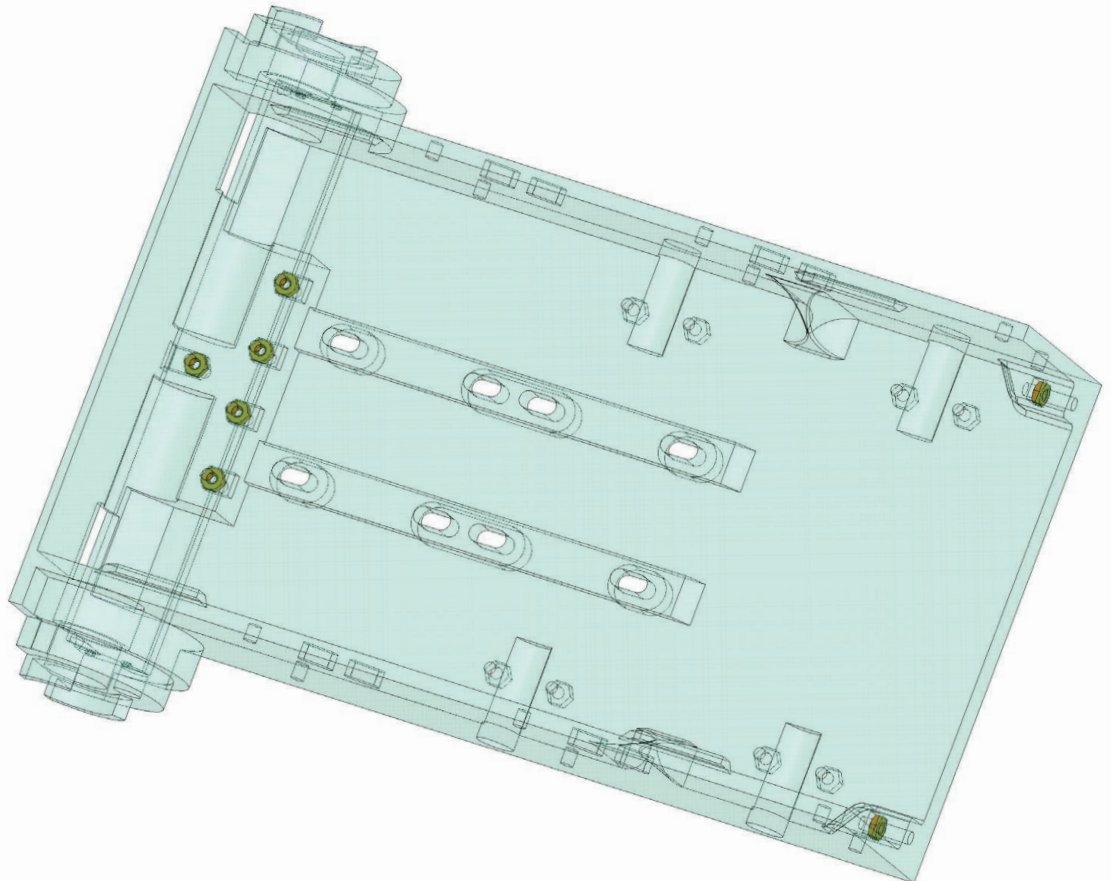
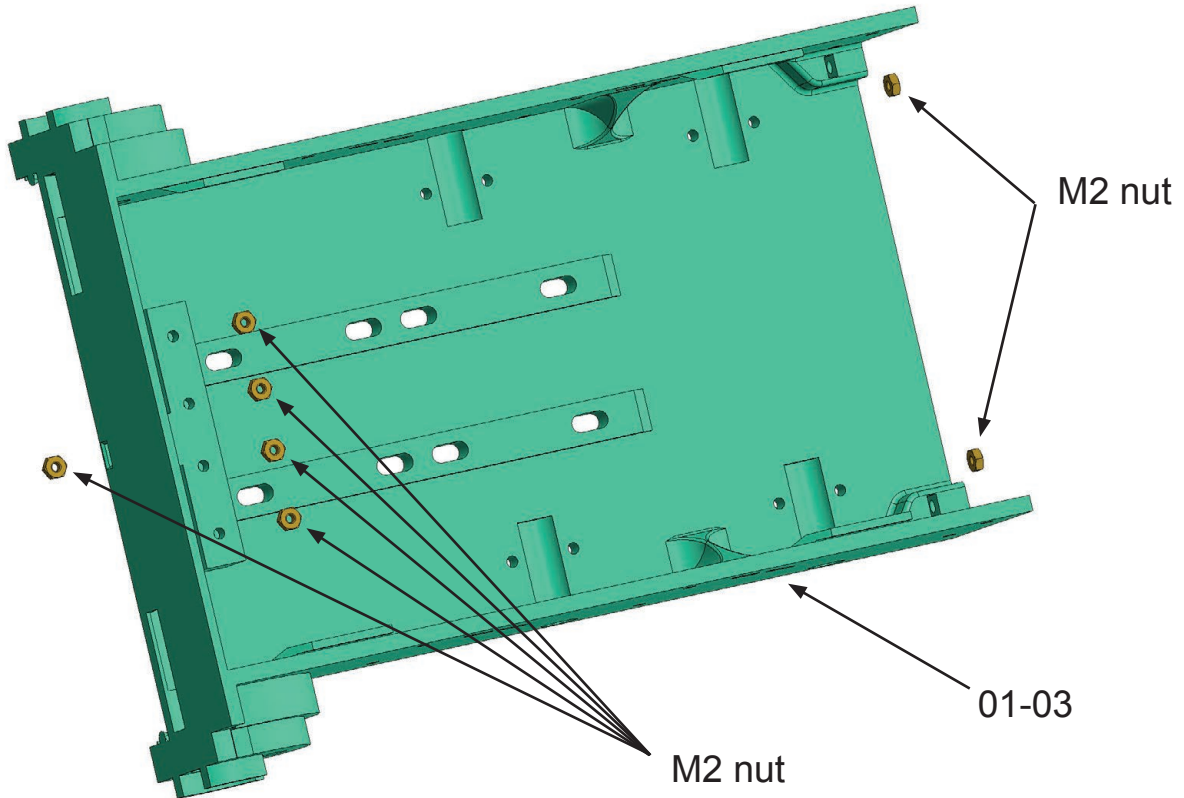
Insert 6 M2 nuts into part 01-01.

Assembly 01 - Lower Hull



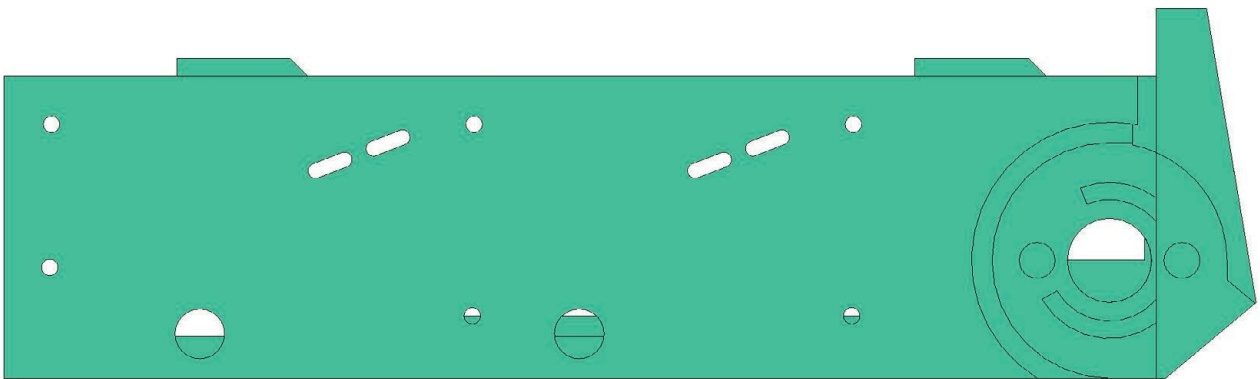
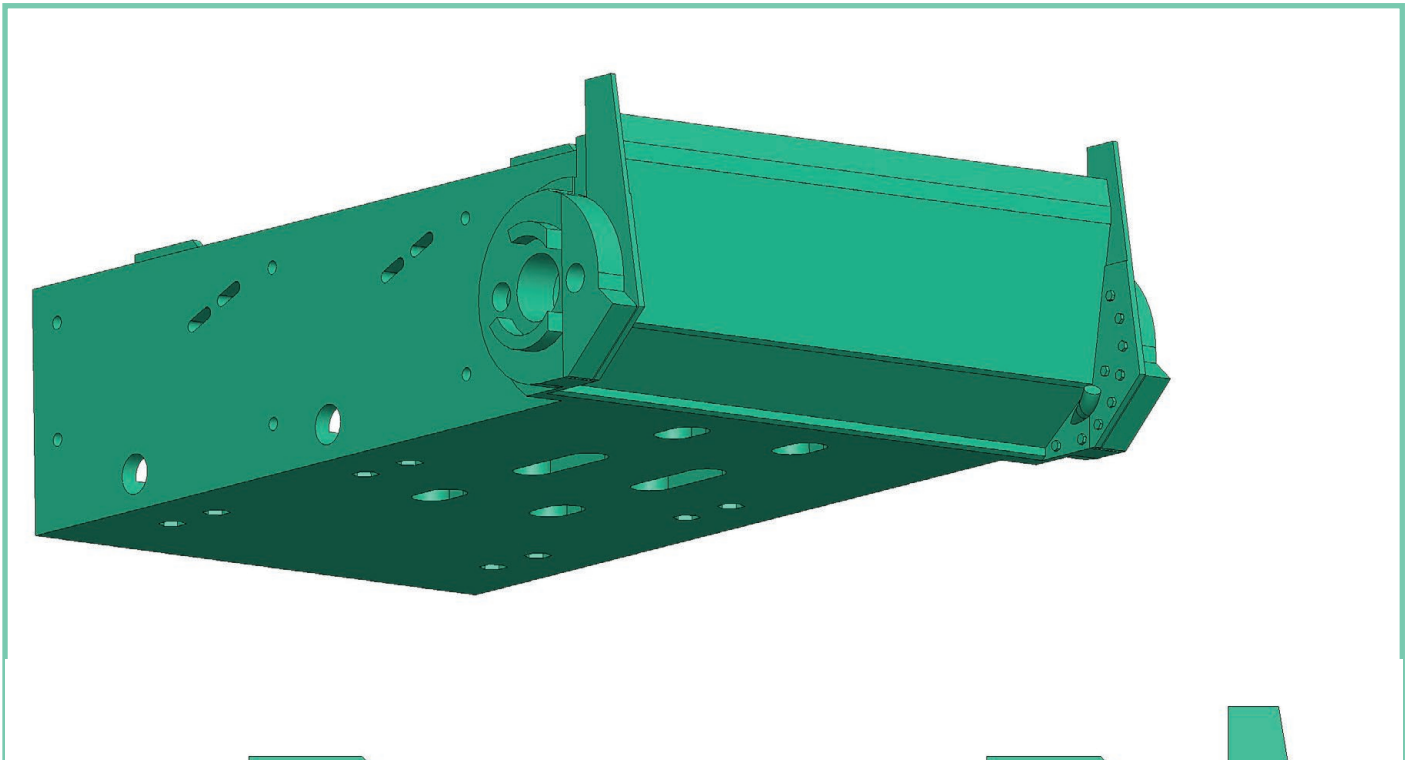
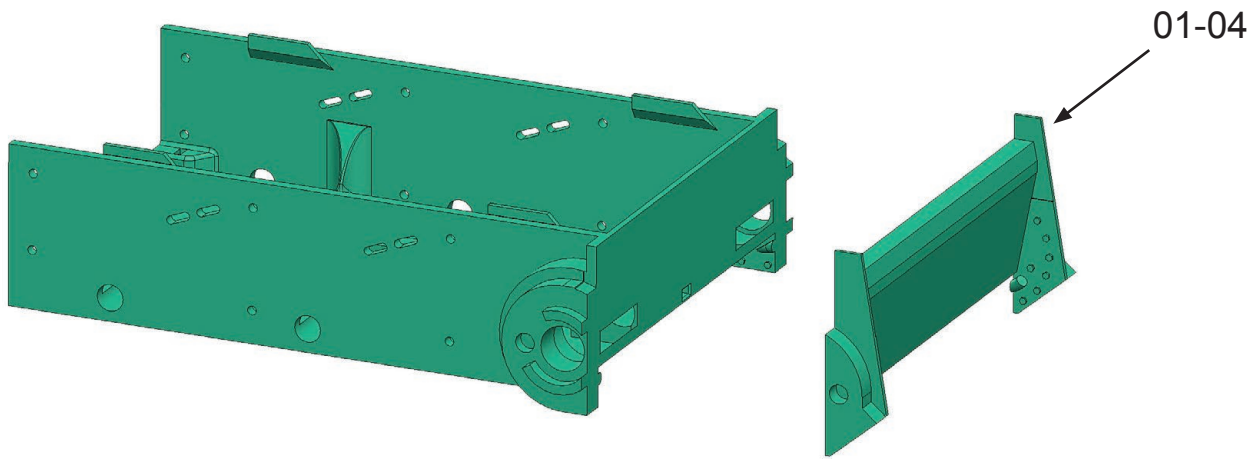
Glue part 01-02. Make sure the nuts are in the correct position.

Assembly 01 - Lower Hull



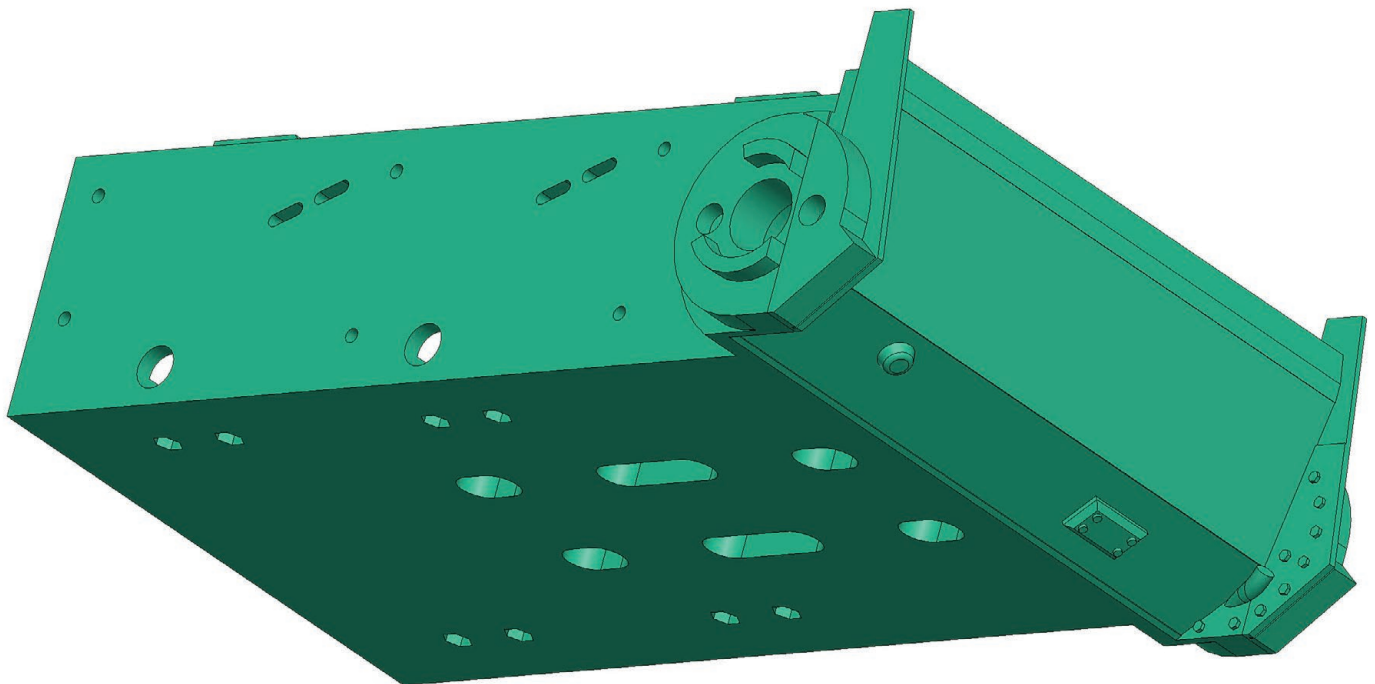
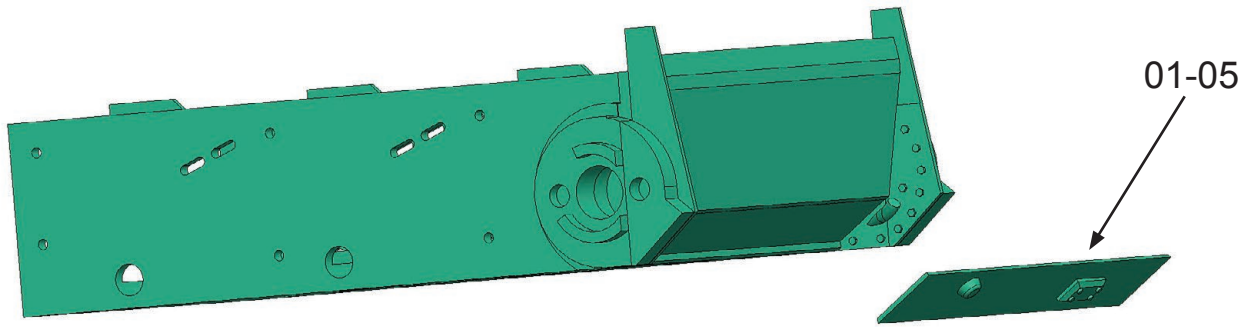
Insert 7 M2 nuts into part 01-03.

Assembly 01 - Lower Hull



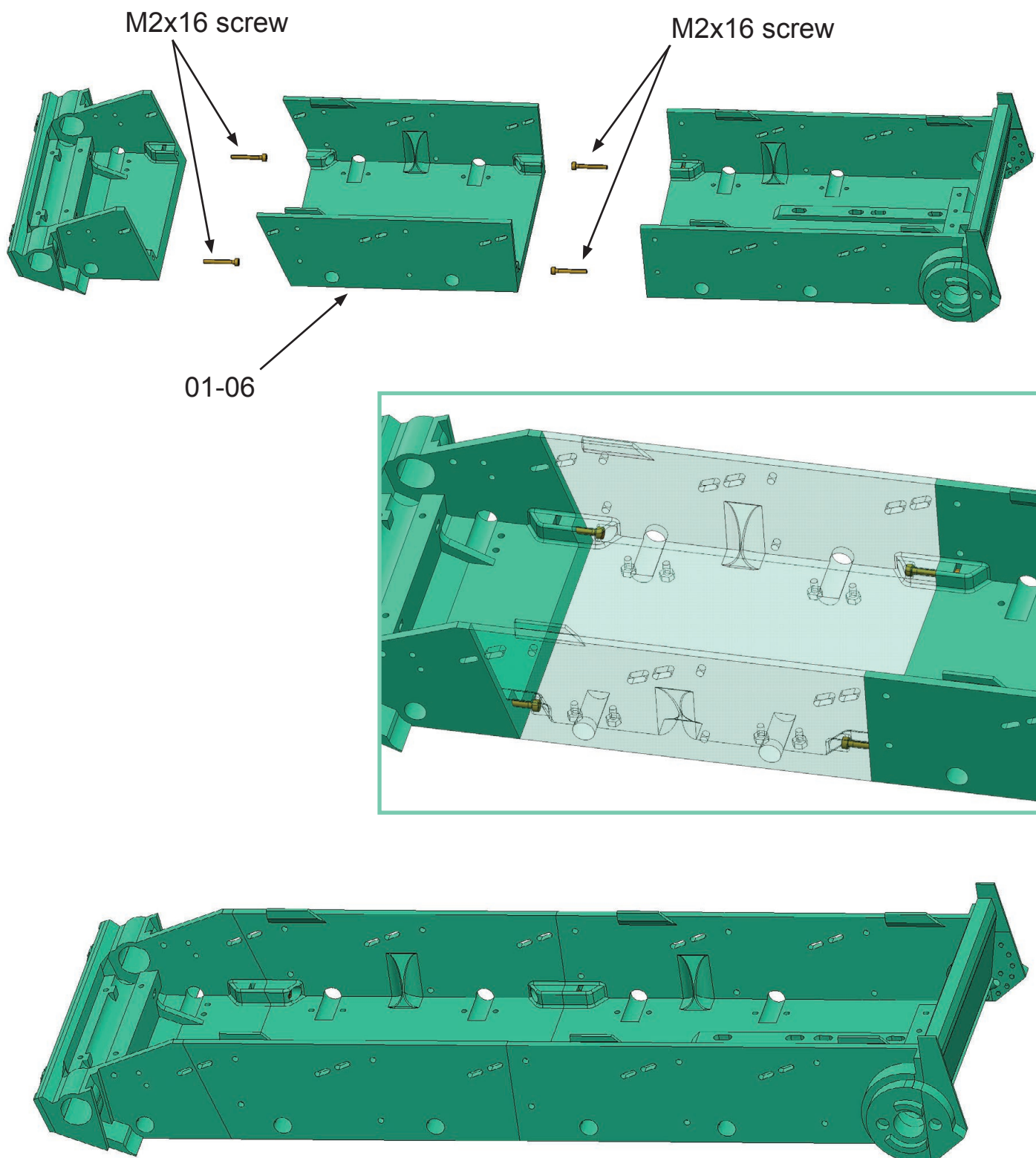
Glue part 01-04 to part 01-03.

Assembly 01 - Lower Hull



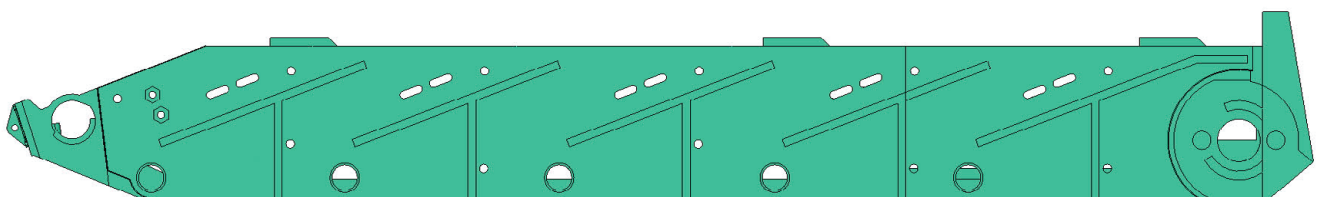
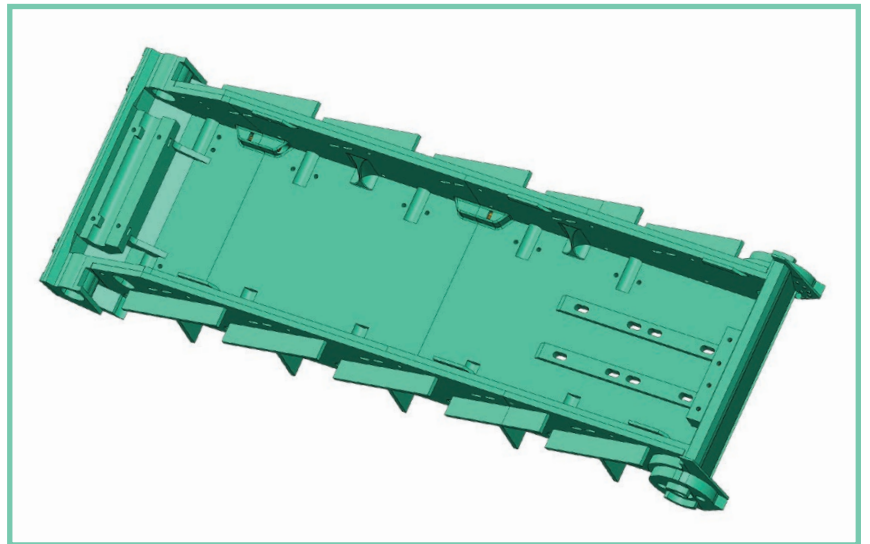
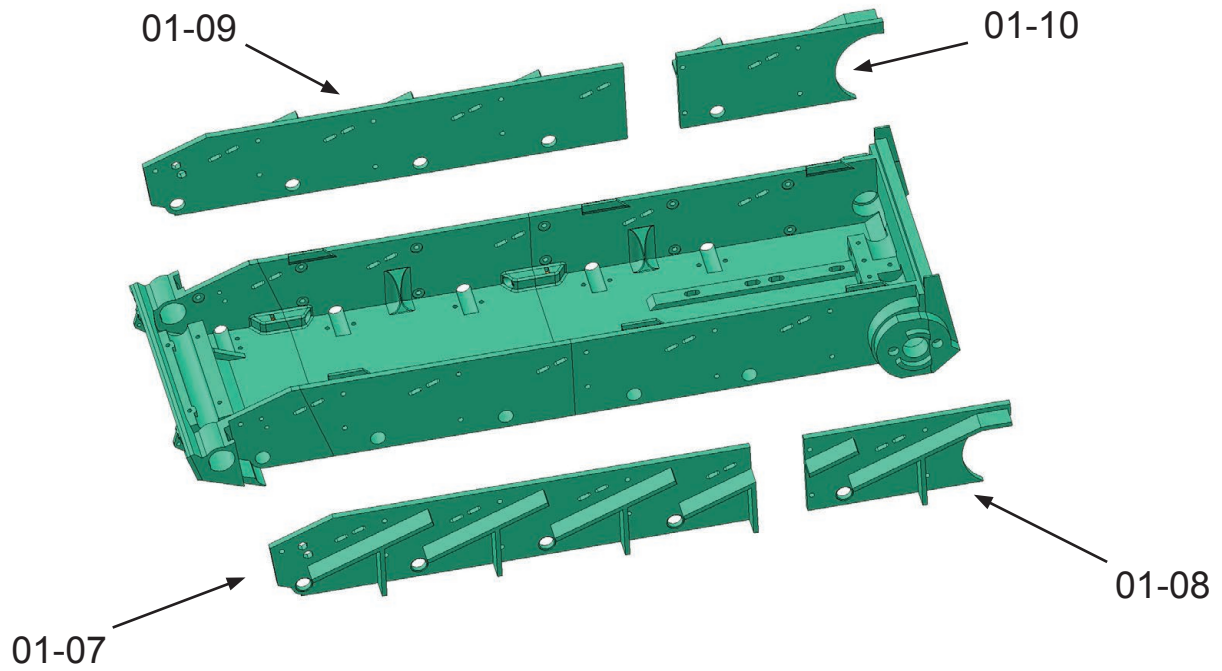
Glue part 01-05 to parts 01-03 and 01-04.

Assembly 01 - Lower Hull



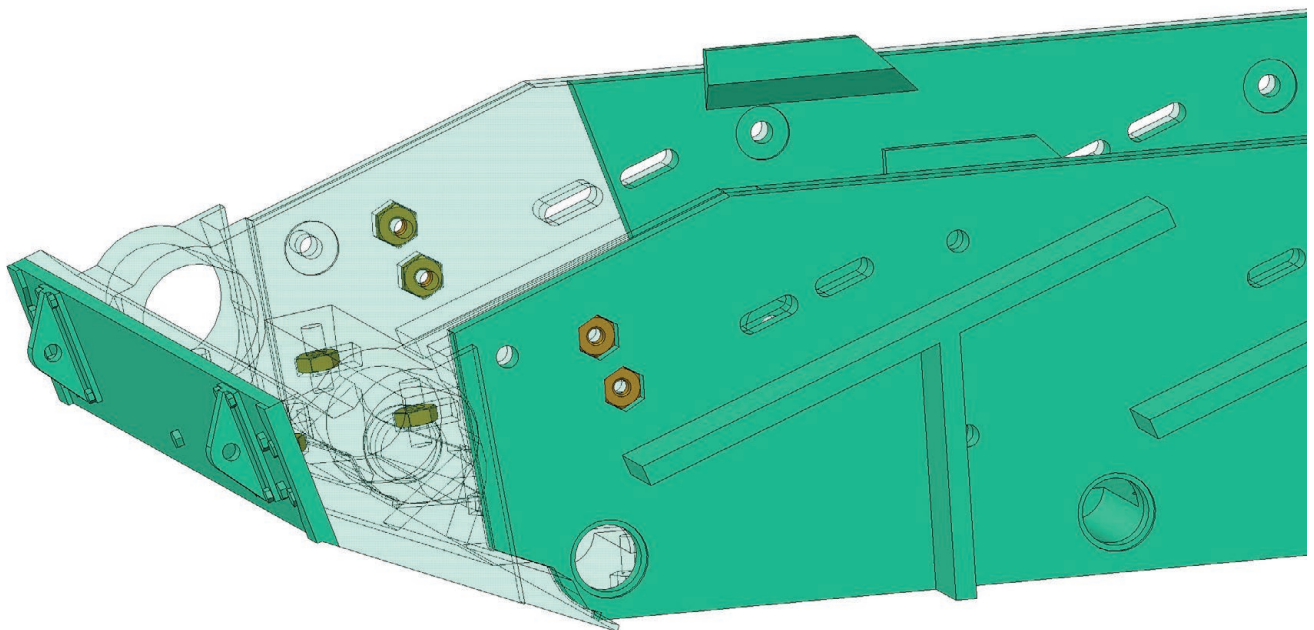
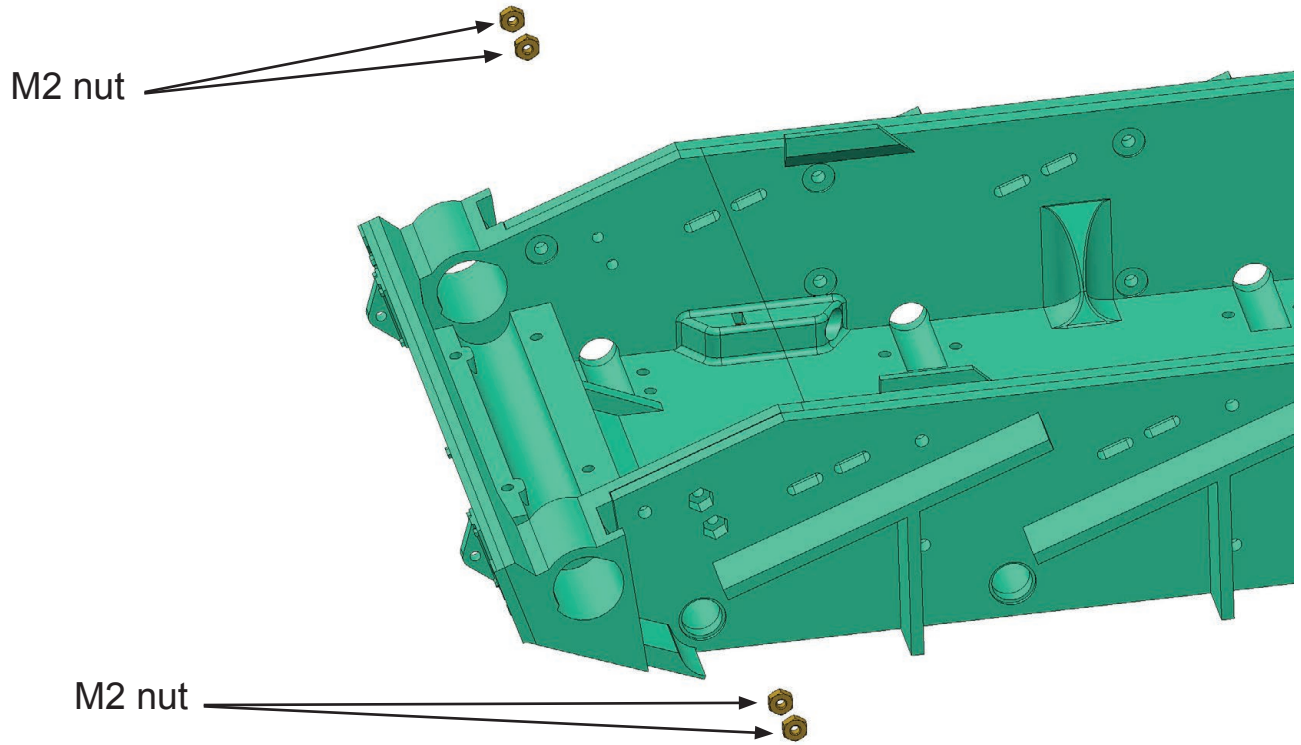
Glue parts 01-01, 01-03 and 01-06. Use 4 M2x16 screws. These help with precise gluing and strengthen the structure.

Assembly 01 - Lower Hull



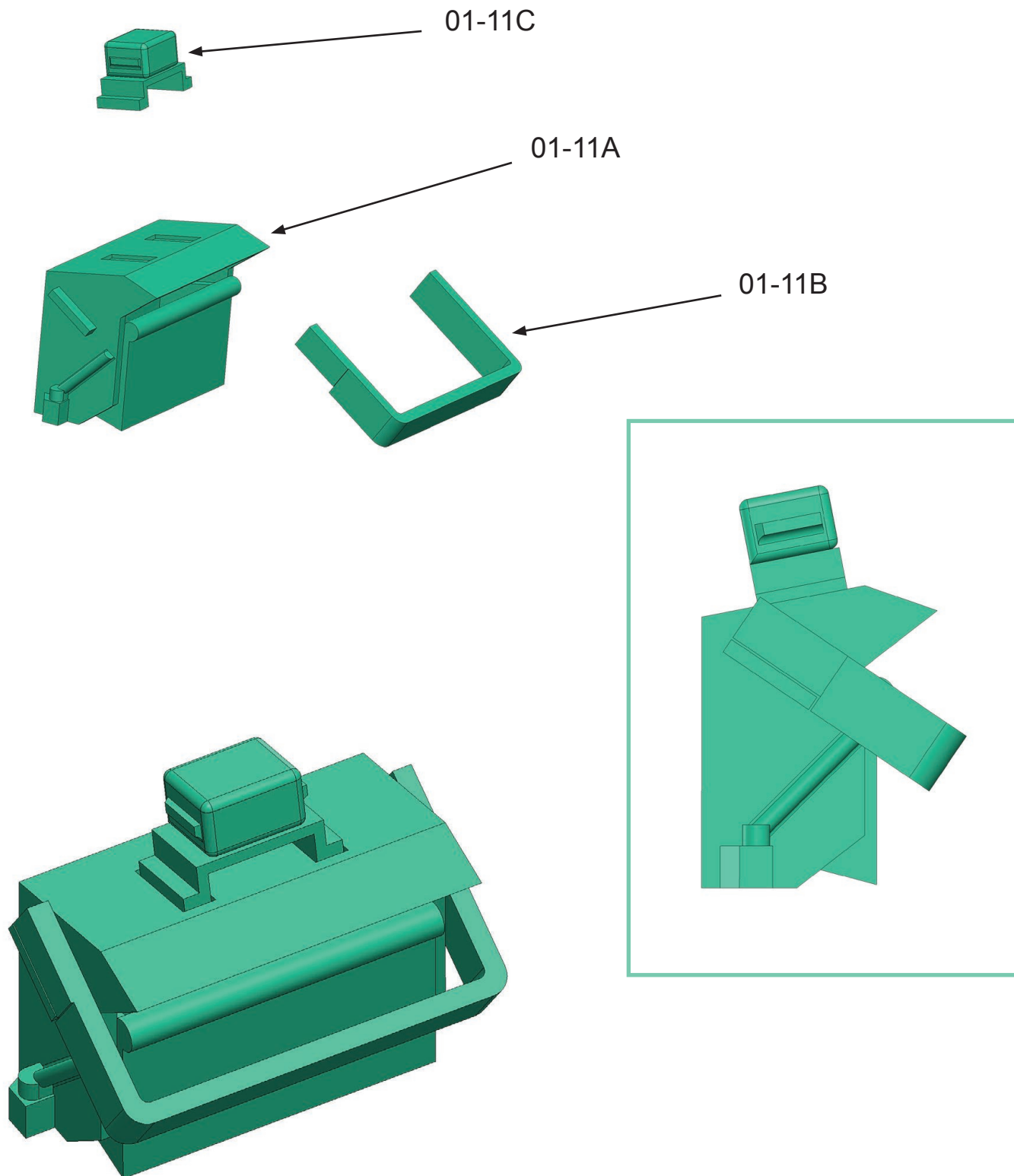
Glue parts 01-07 to 01-10.

Assembly 01 - Lower Hull



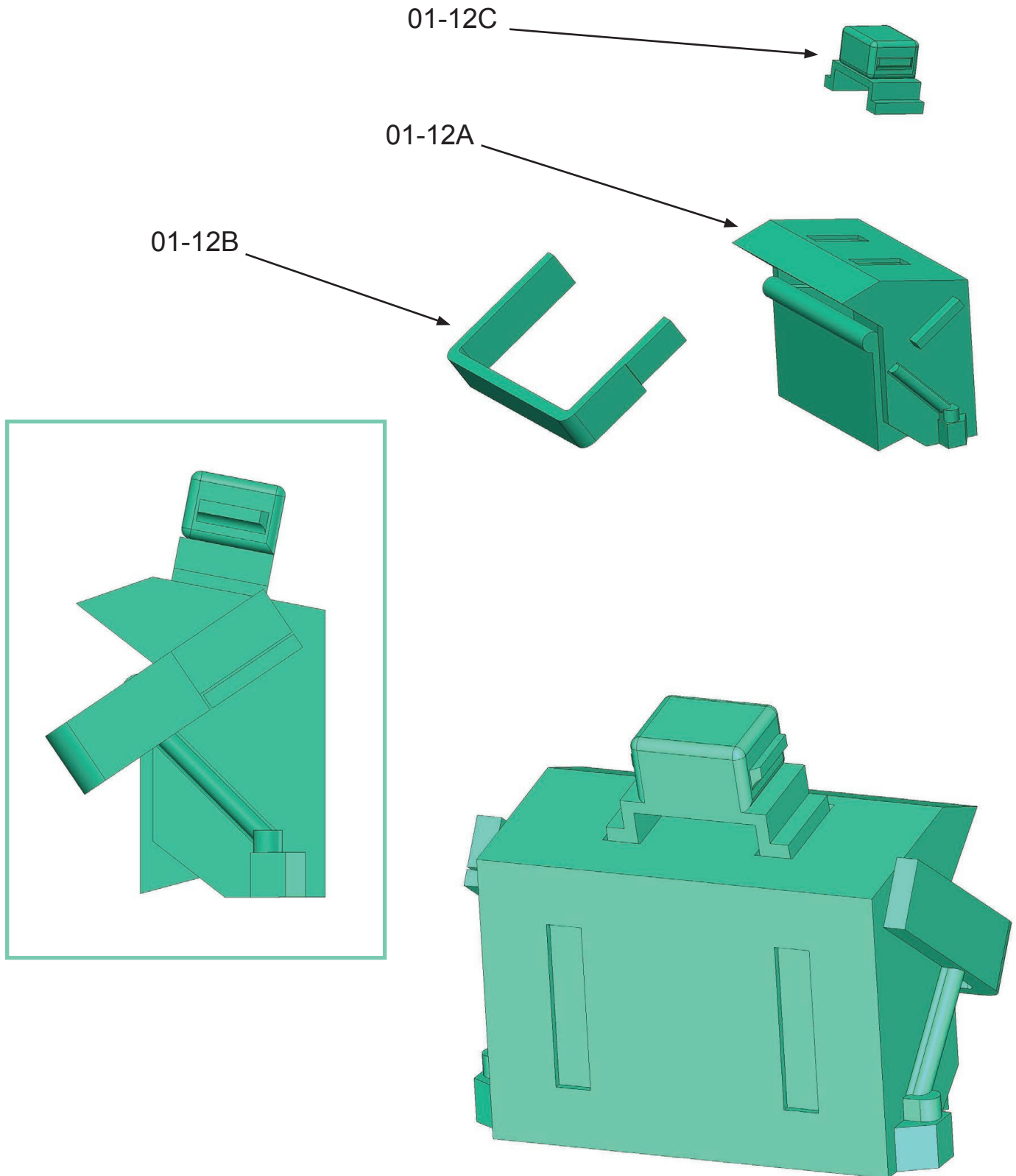
Insert 4 M2 nuts into parts 01-07 and 01-09.

Assembly 01 - Lower Hull



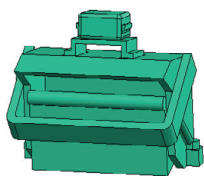
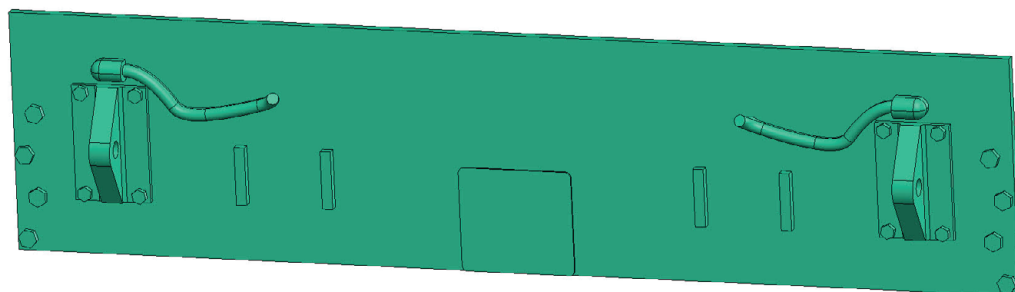
Glue parts 01-11A, 01-11B and 01-11C

Assembly 01 - Lower Hull

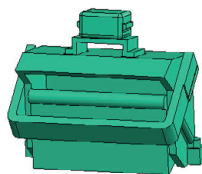


Glue parts 01-12A, 01-12B and 01-12C.
The parts are mirrored with respect to assembly 01-11.

Assembly 01 - Lower Hull

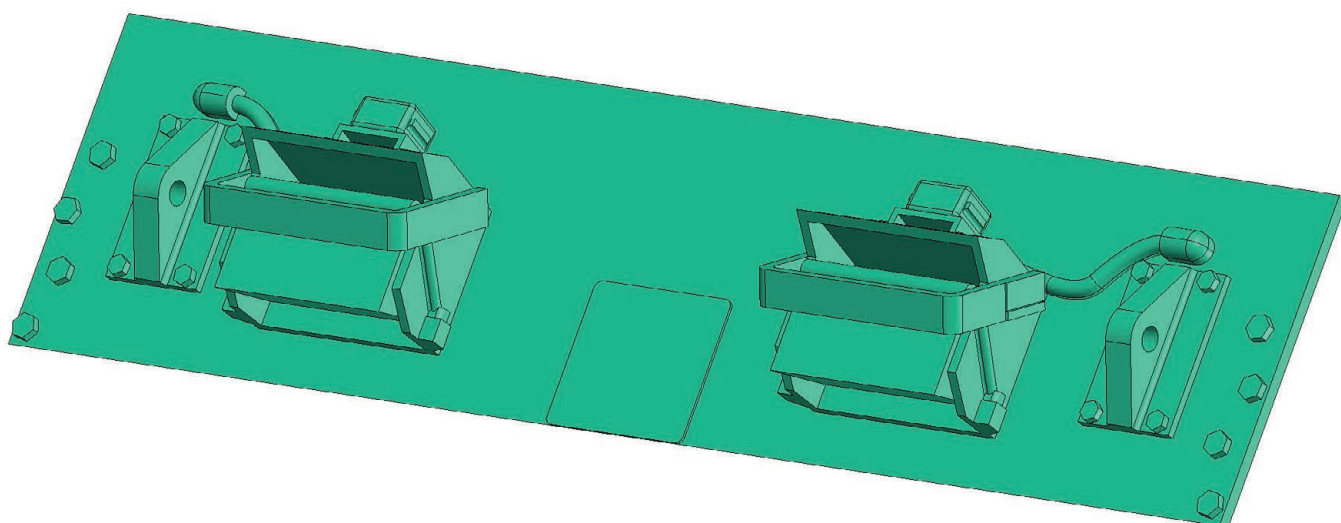


01-11A+B+C



01-12A+B+C

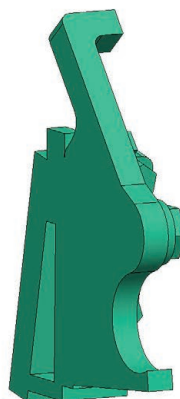
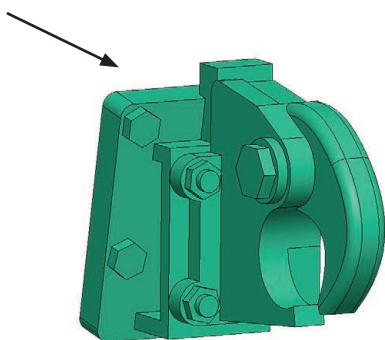
01-13



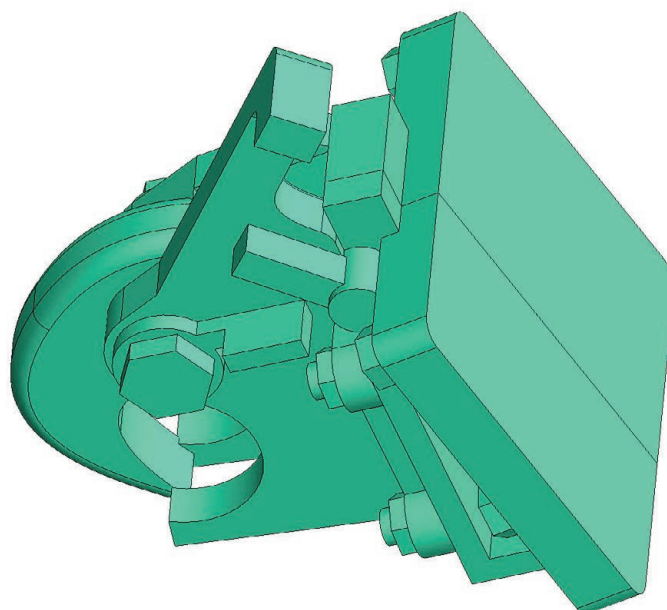
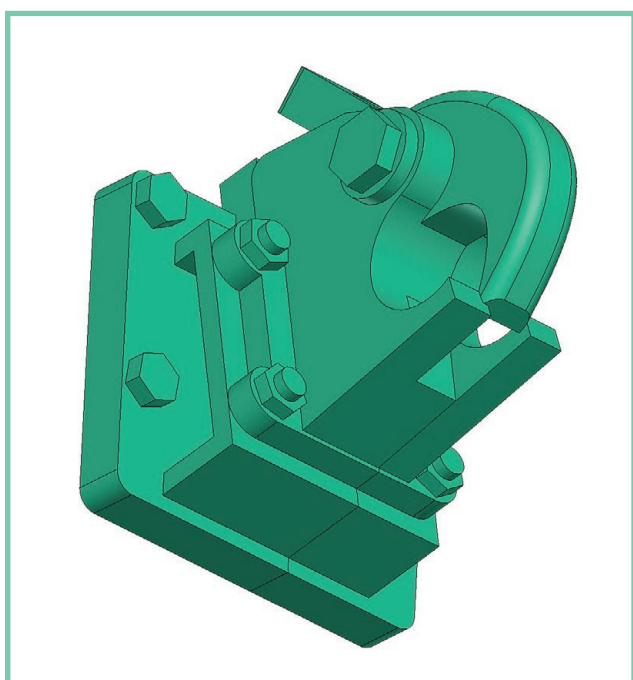
Glue the parts assemblies 01-11 and 01-12 to part 01-13.

Assembly 01 - Lower Hull

01-14B

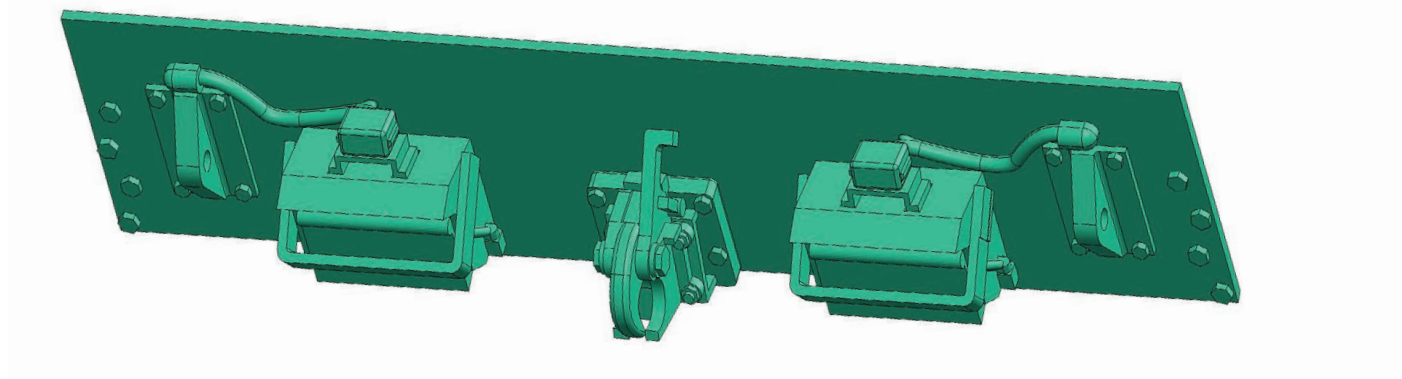
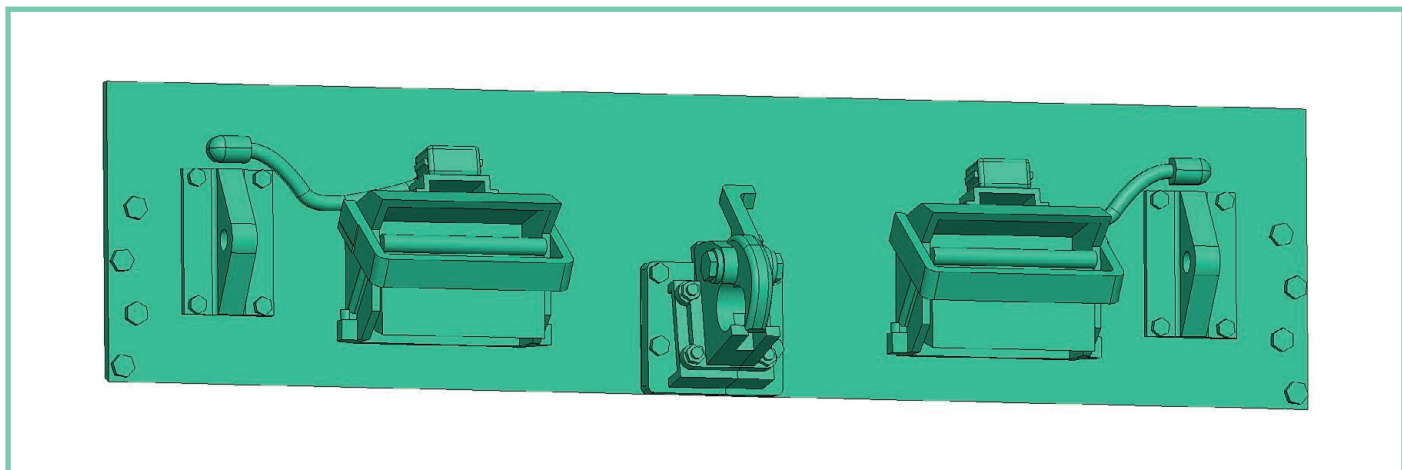
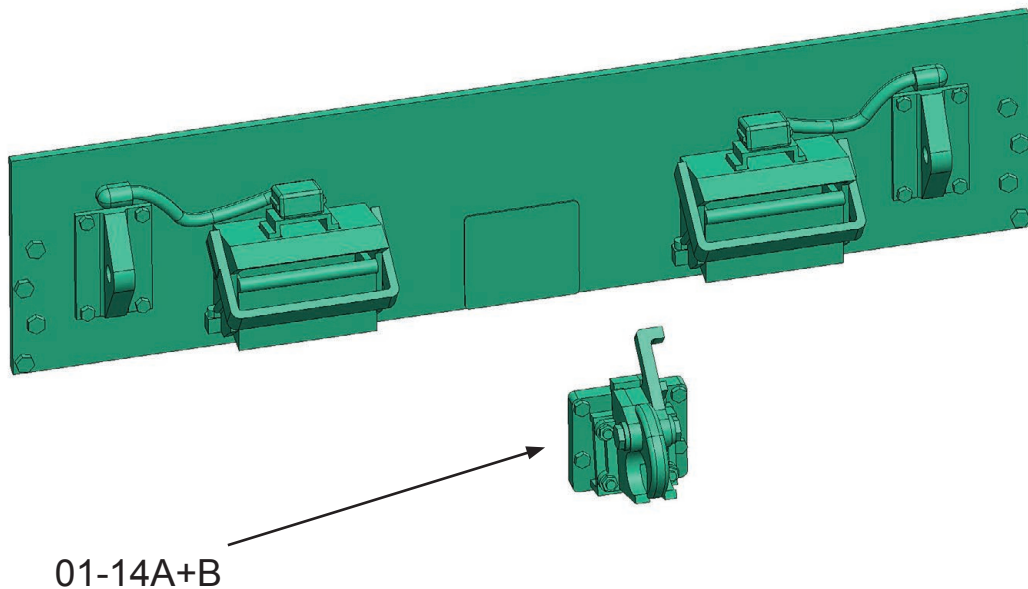


01-14A



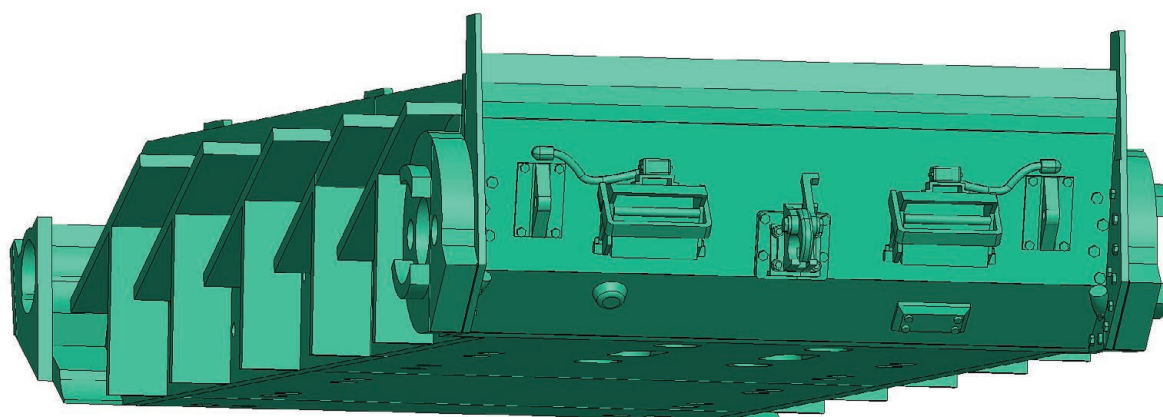
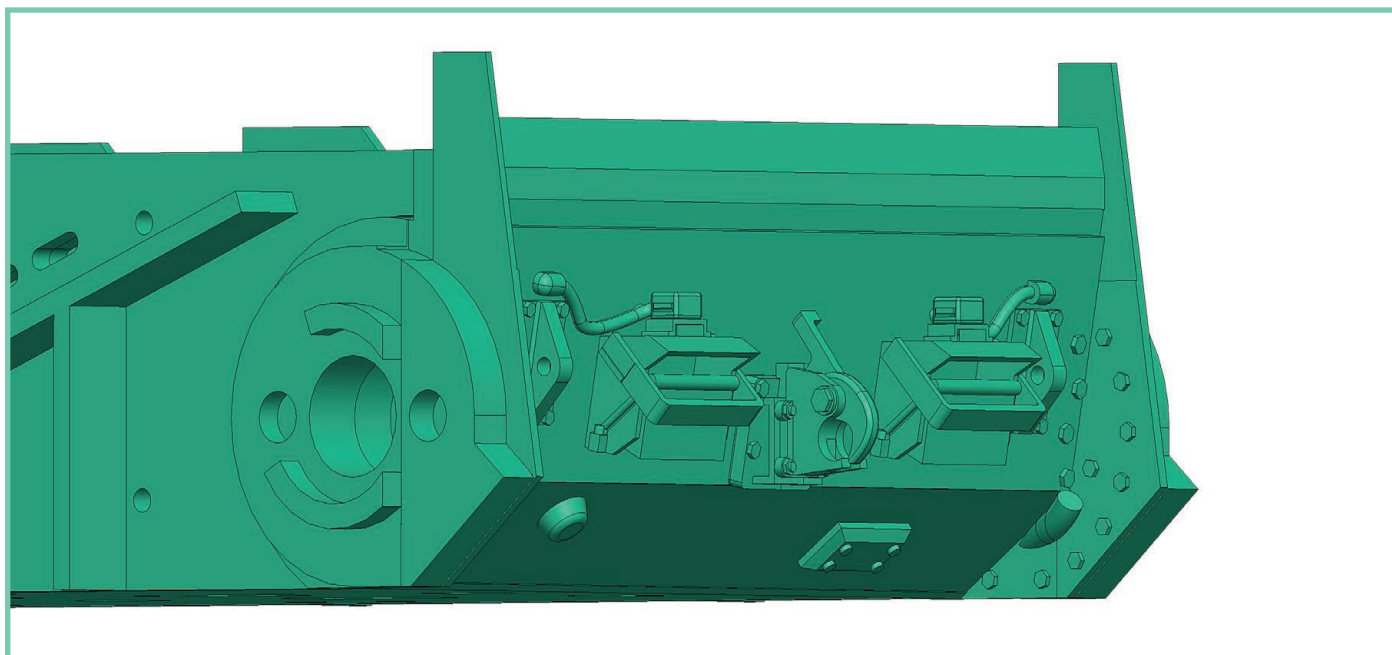
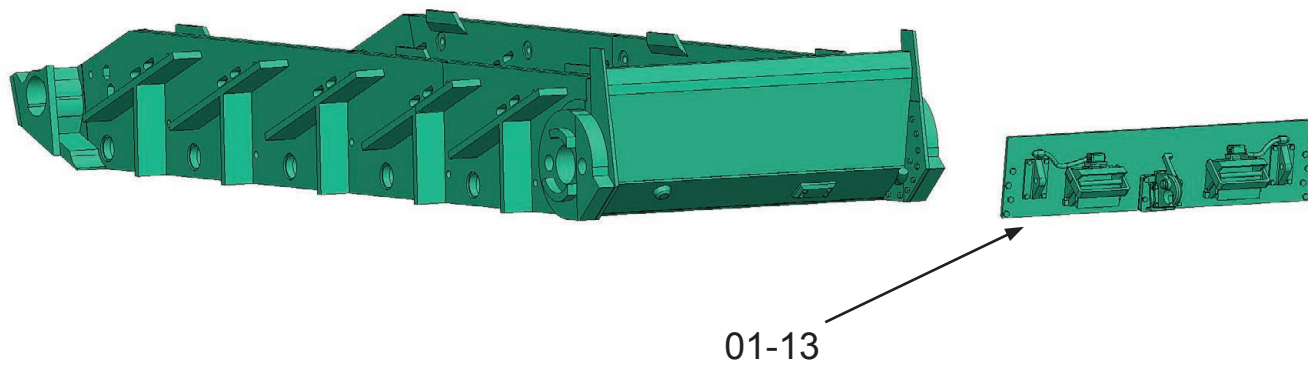
Glue parts 01-14A and 01-14B.

Assembly 01 - Lower Hull



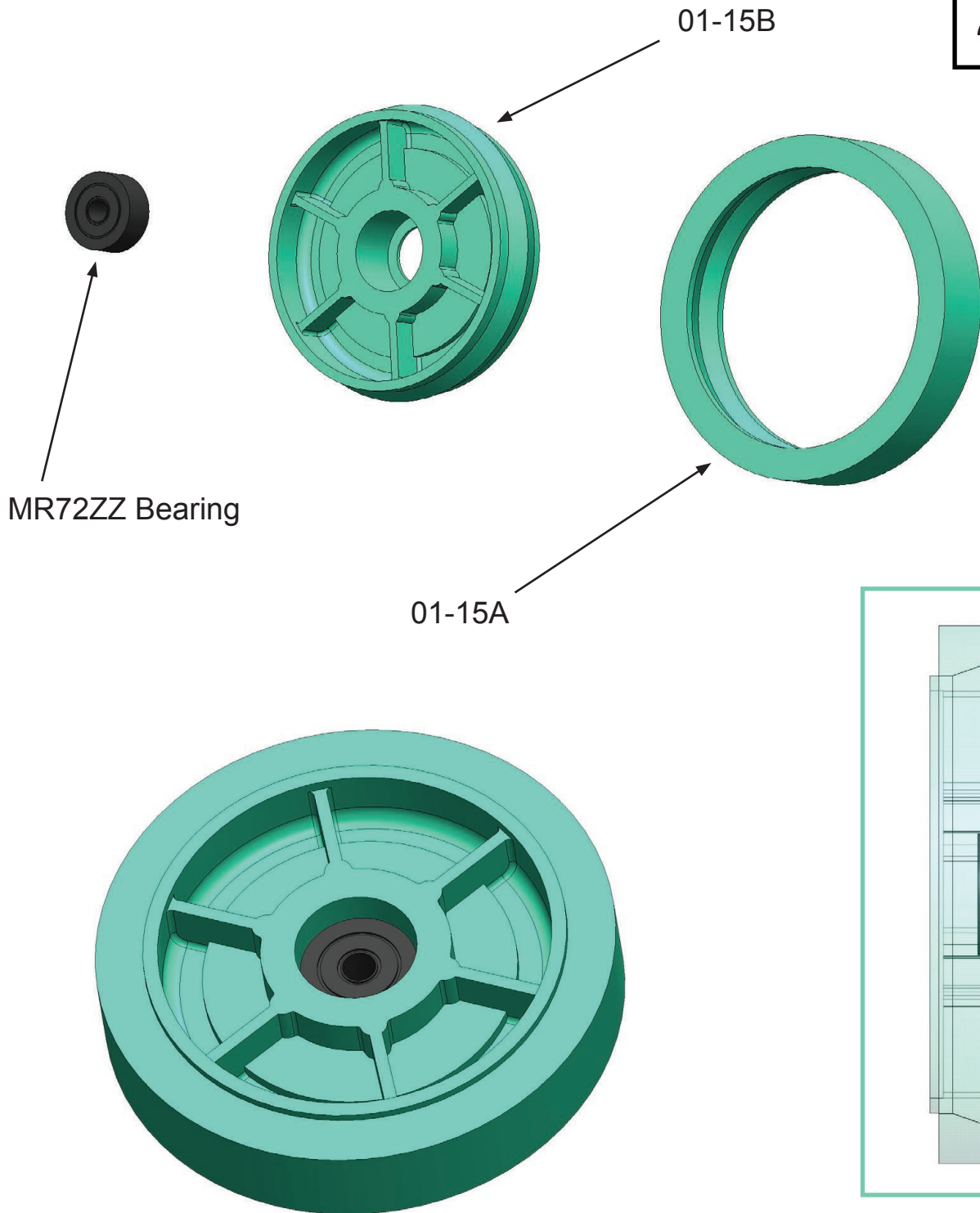
Glue parts assemblies 01-14 to part 01-13.

Assembly 01 - Lower Hull



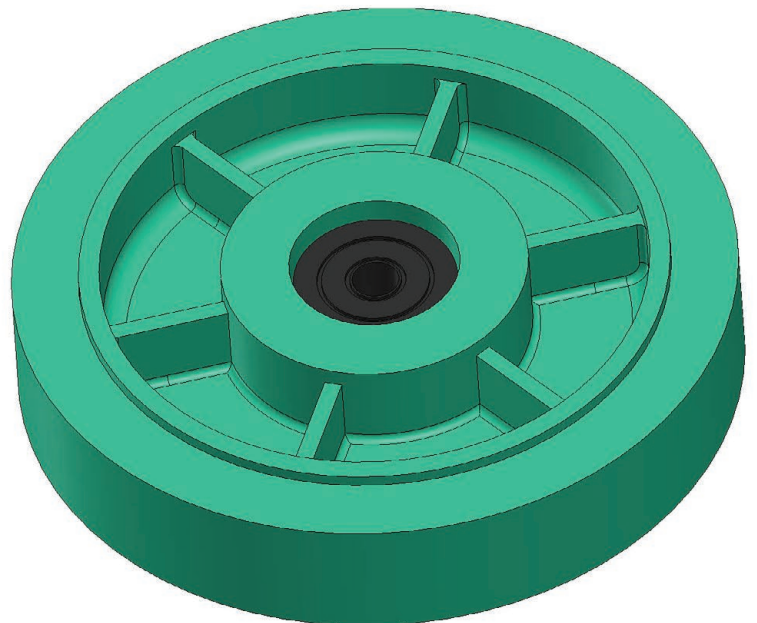
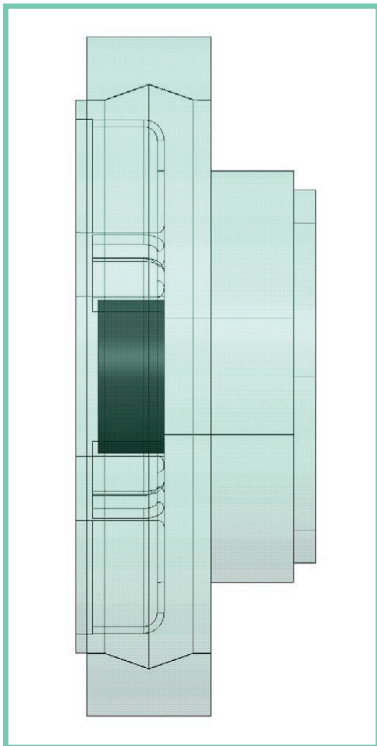
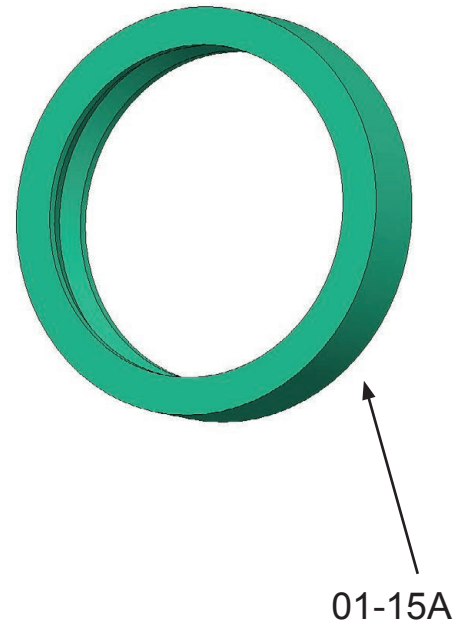
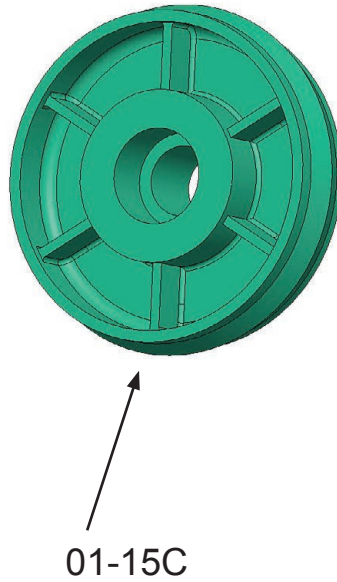
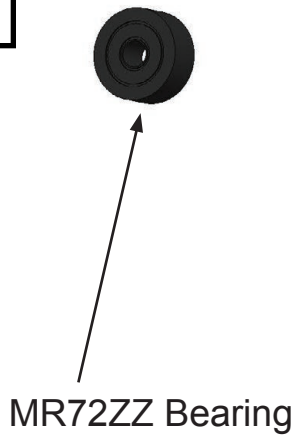
Glue part 01-13 to part 01-04.

Assembly 01 - Lower Hull

2x

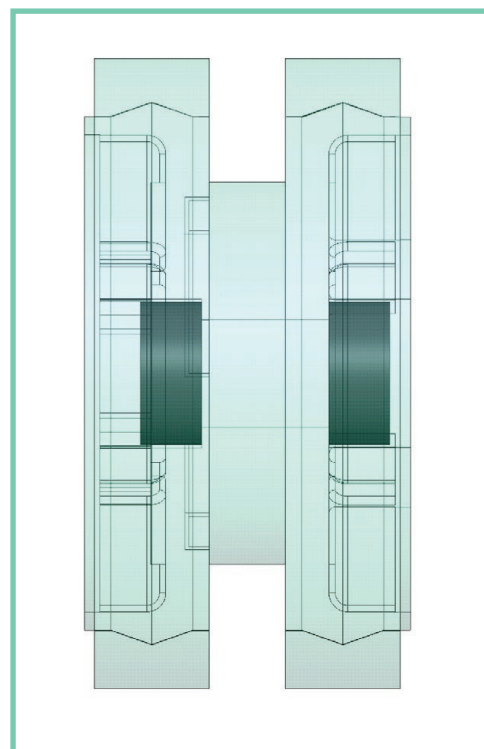
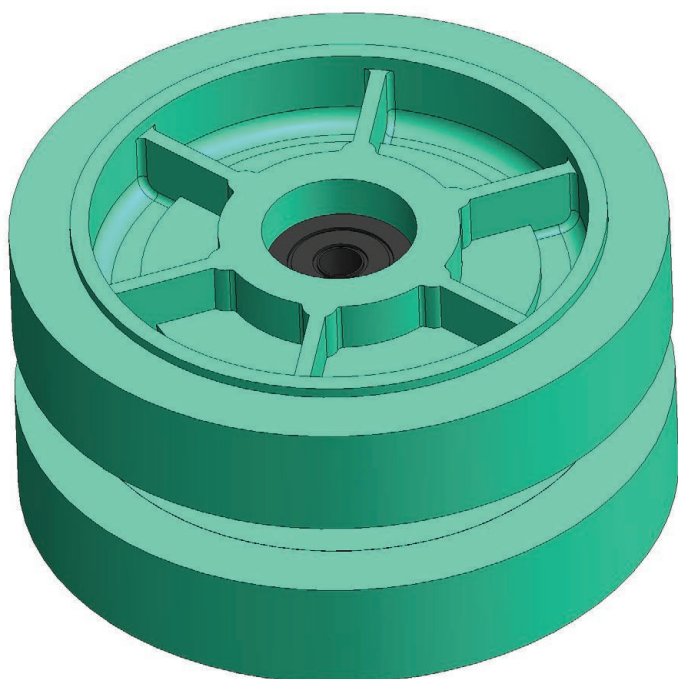
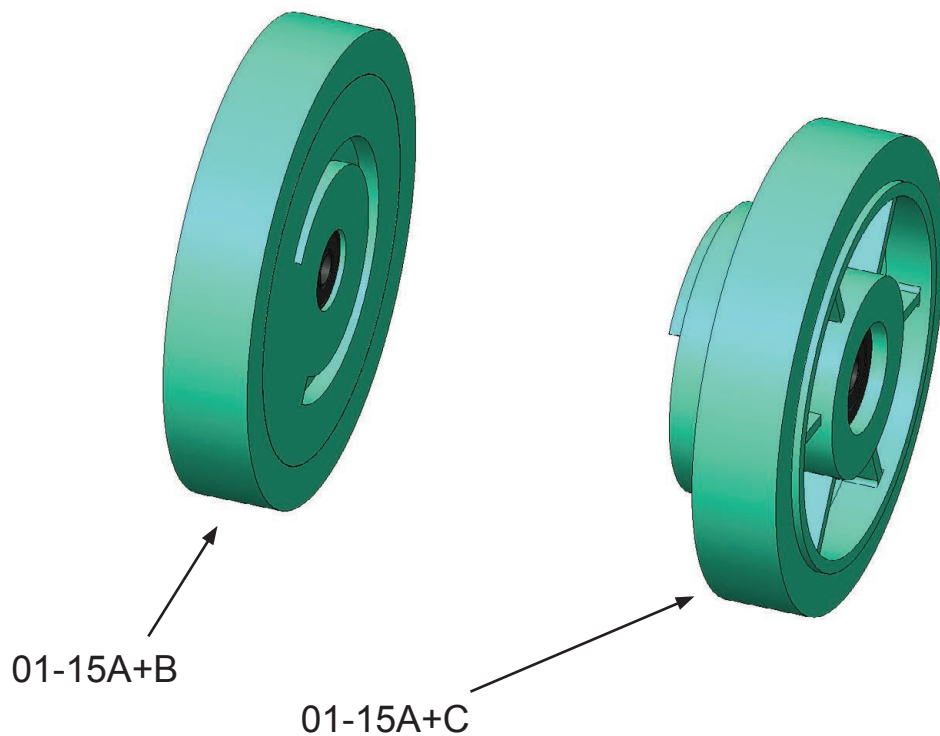
Insert the MR72ZZ (or 602ZZ) bearing into part 01-15B.
Install part 01-15A. Glue if necessary.
You can use alternative part 01-15AB (no rubber).

Assembly 01 - Lower Hull

2x

Insert the MR72ZZ (or 602ZZ) bearing into part 01-15C.
Install part 01-15A. Glue if necessary.
You can use alternative part 01-15AC.

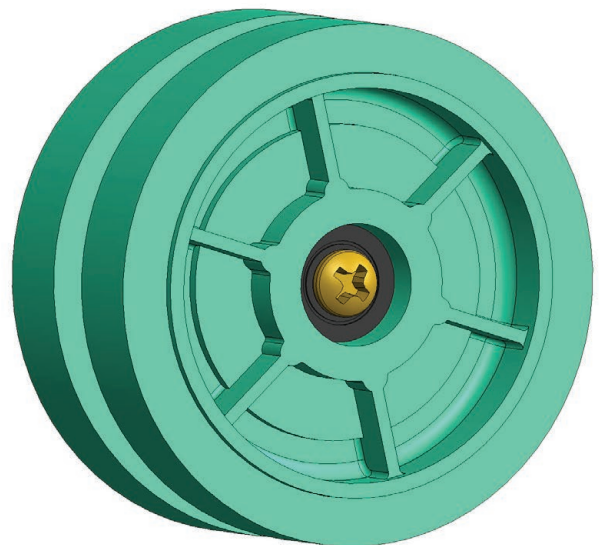
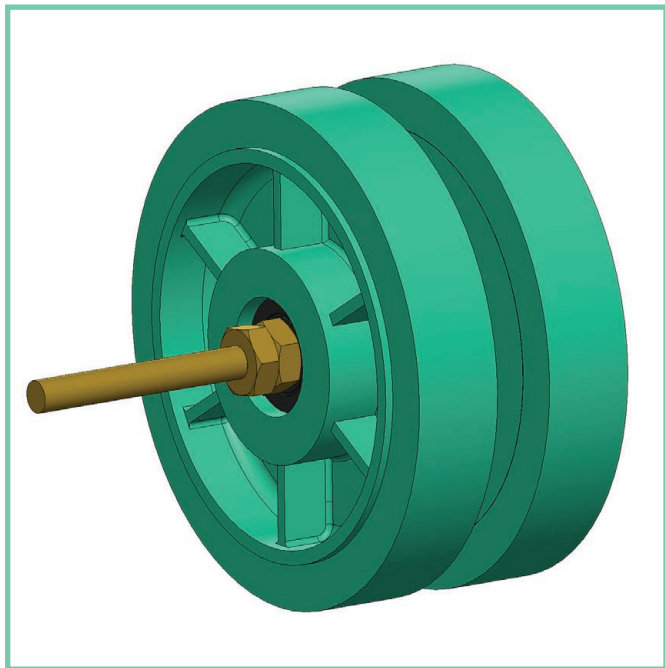
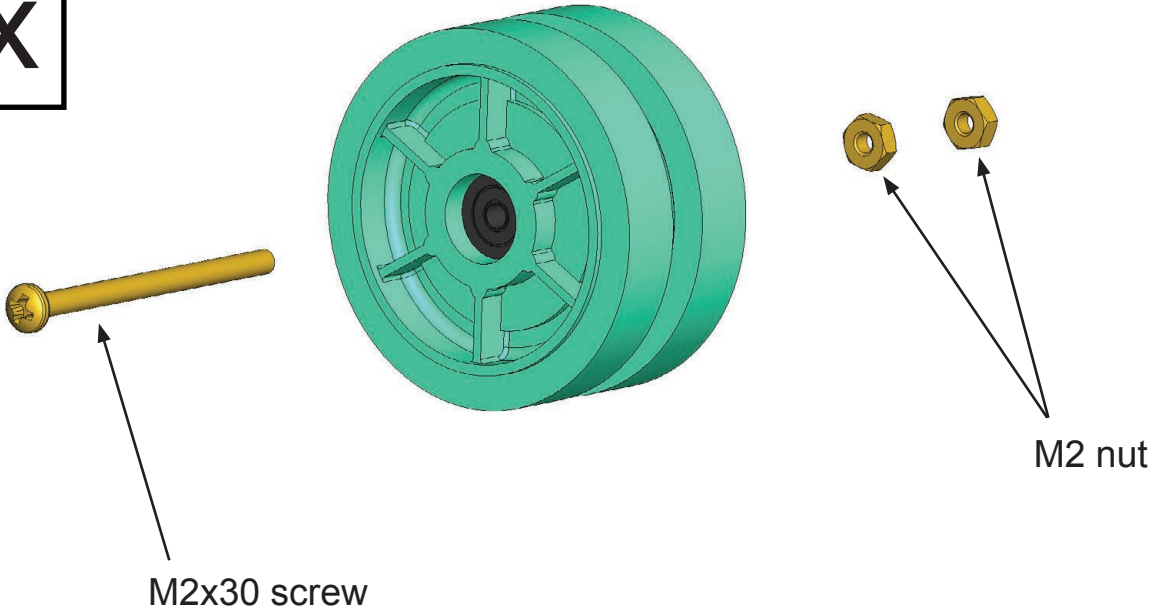
Assembly 01 - Lower Hull

2x

Glue the assemblies of parts 01-15A + B and 01-15A + C.

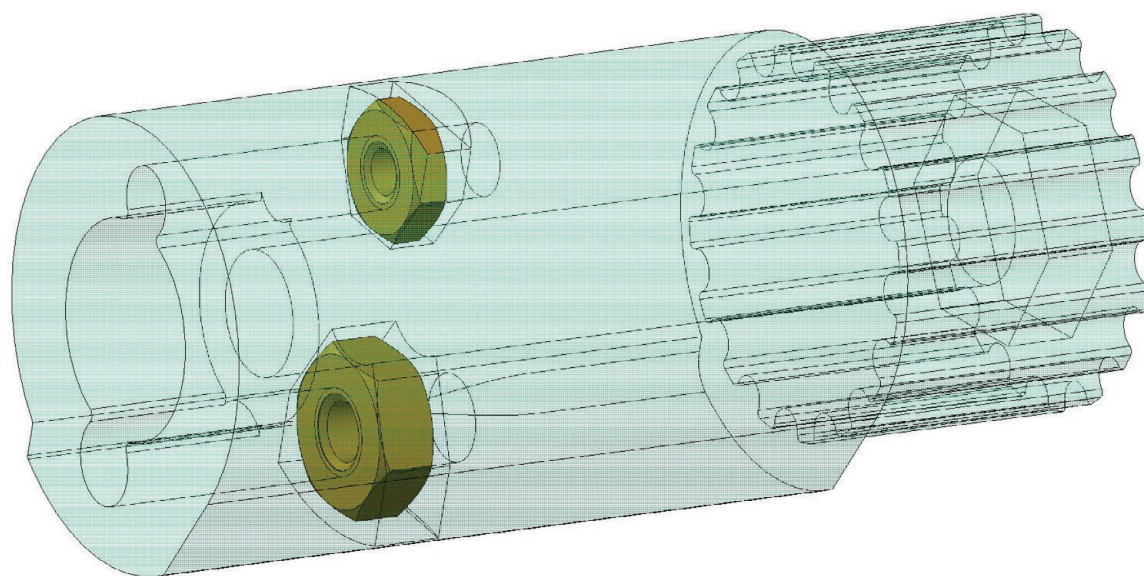
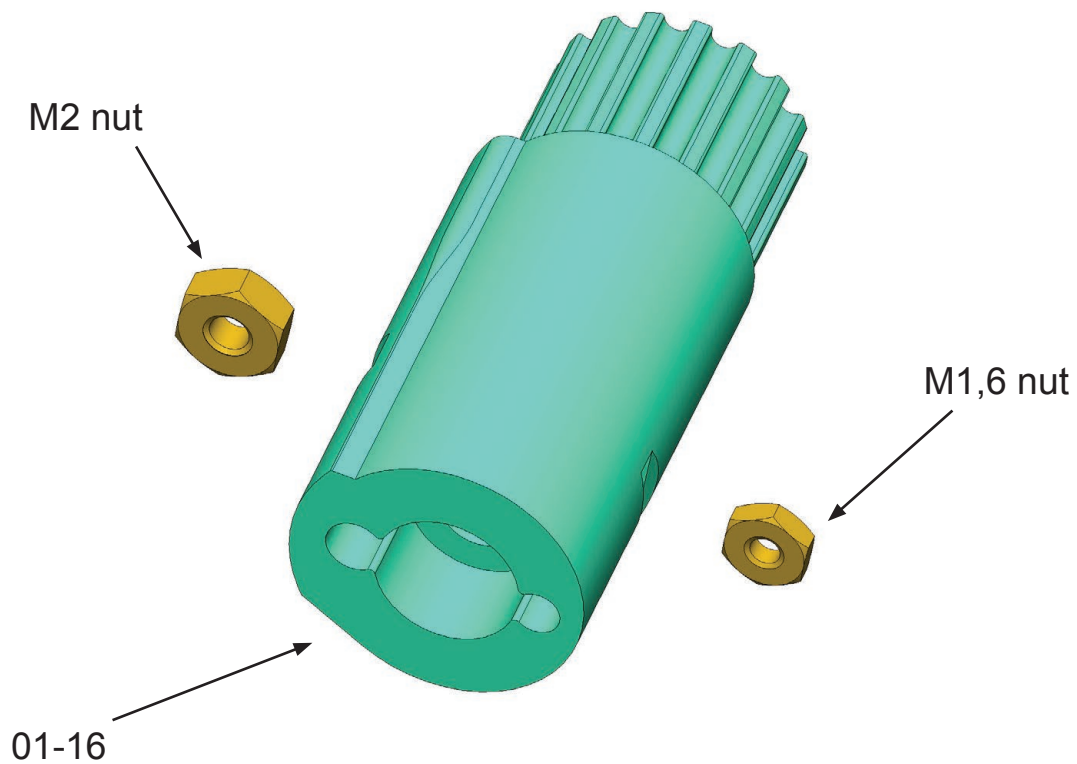
Assembly 01 - Lower Hull

2x



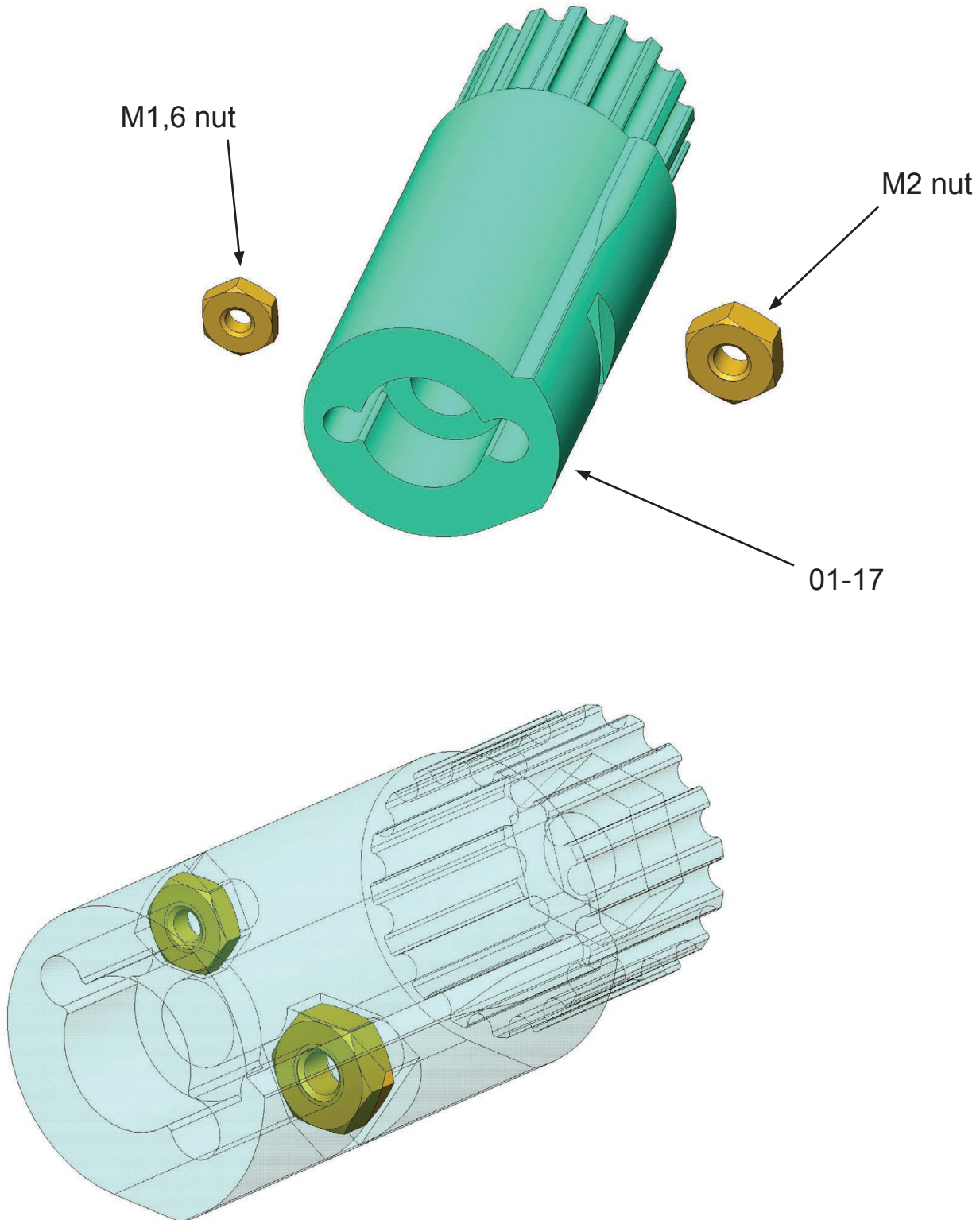
Insert the M2x30mm screw. Secure with two M2 nuts.

Assembly 01 - Lower Hull



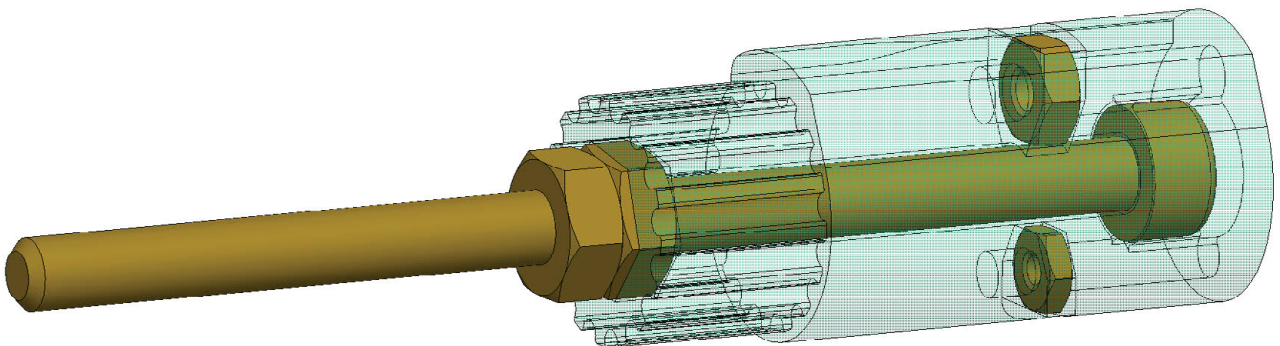
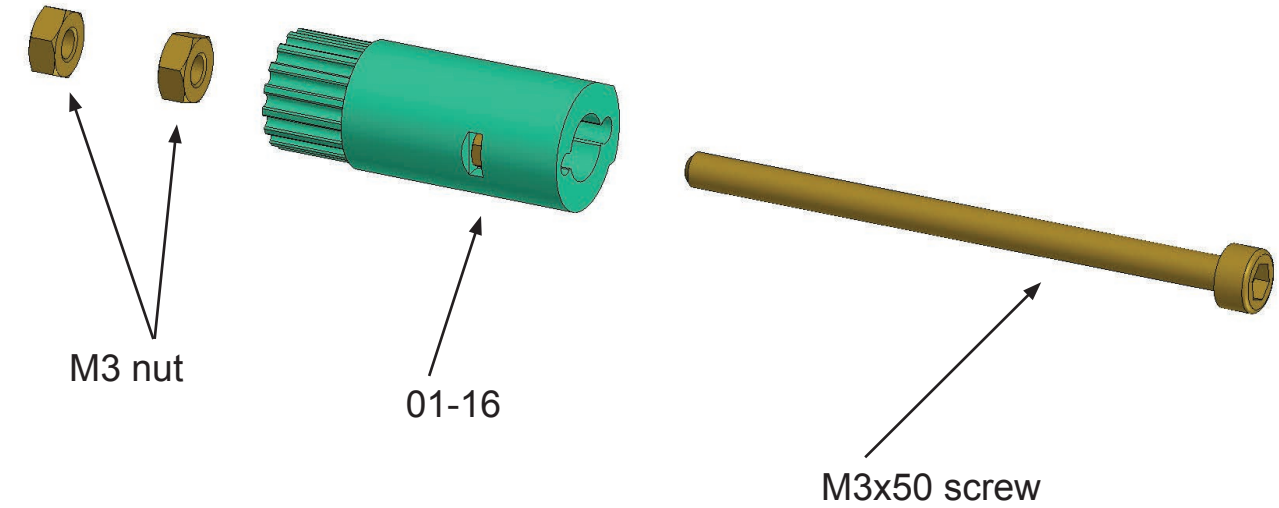
Insert M2 nut and M1.6 nut into part 01-16.

Assembly 01 - Lower Hull



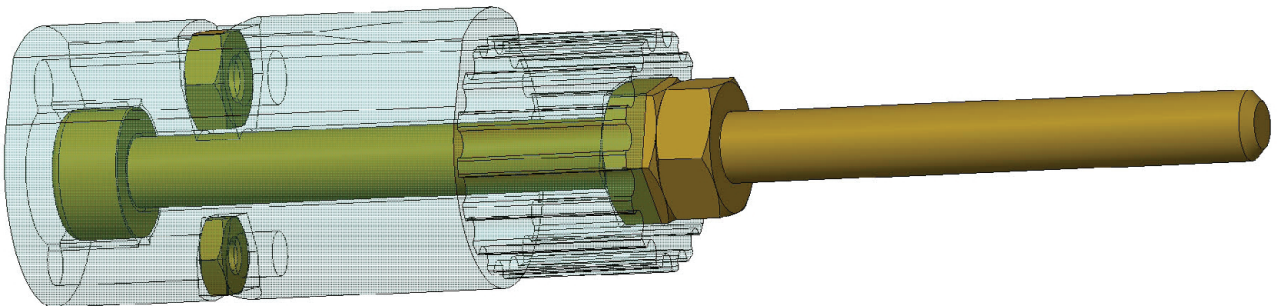
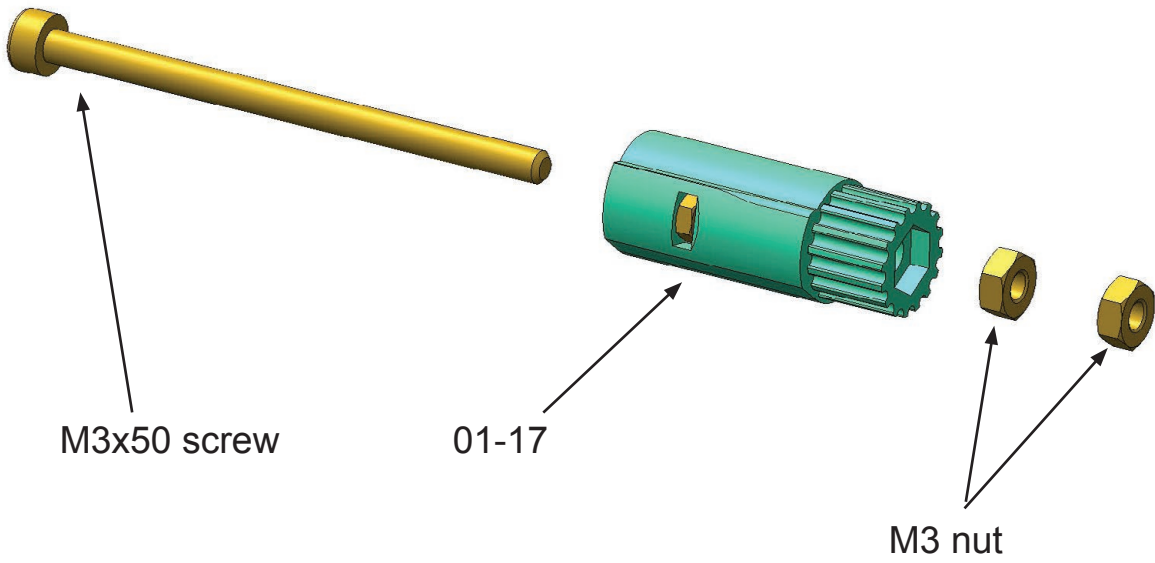
Insert M2 nut and M1.6 nut into part 01-17.
Part 01-17 is mirrored with respect to part 01-16.

Assembly 01 - Lower Hull



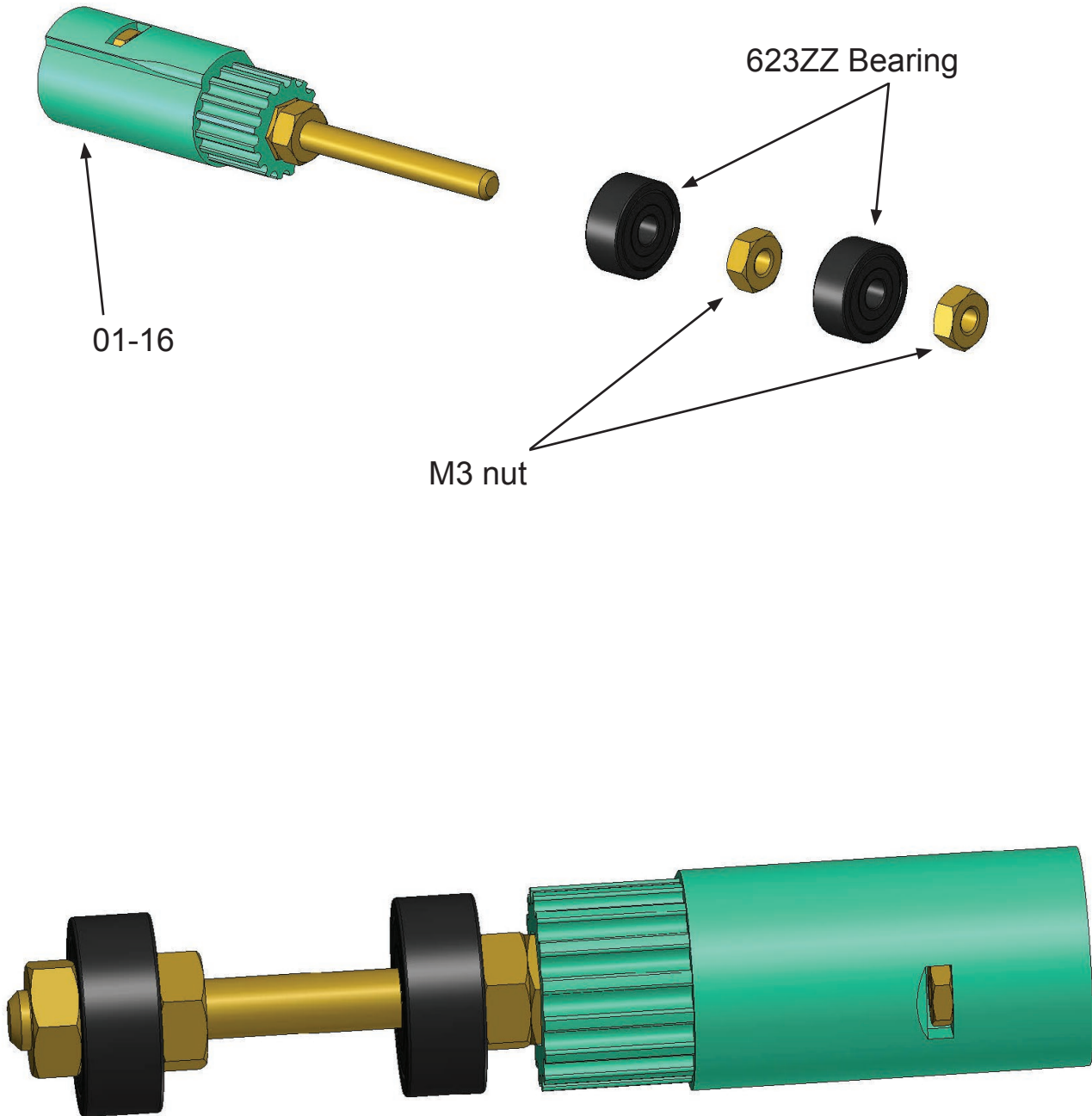
Insert the M3x50mm screw. Secure with two M3 nuts.

Assembly 01 - Lower Hull



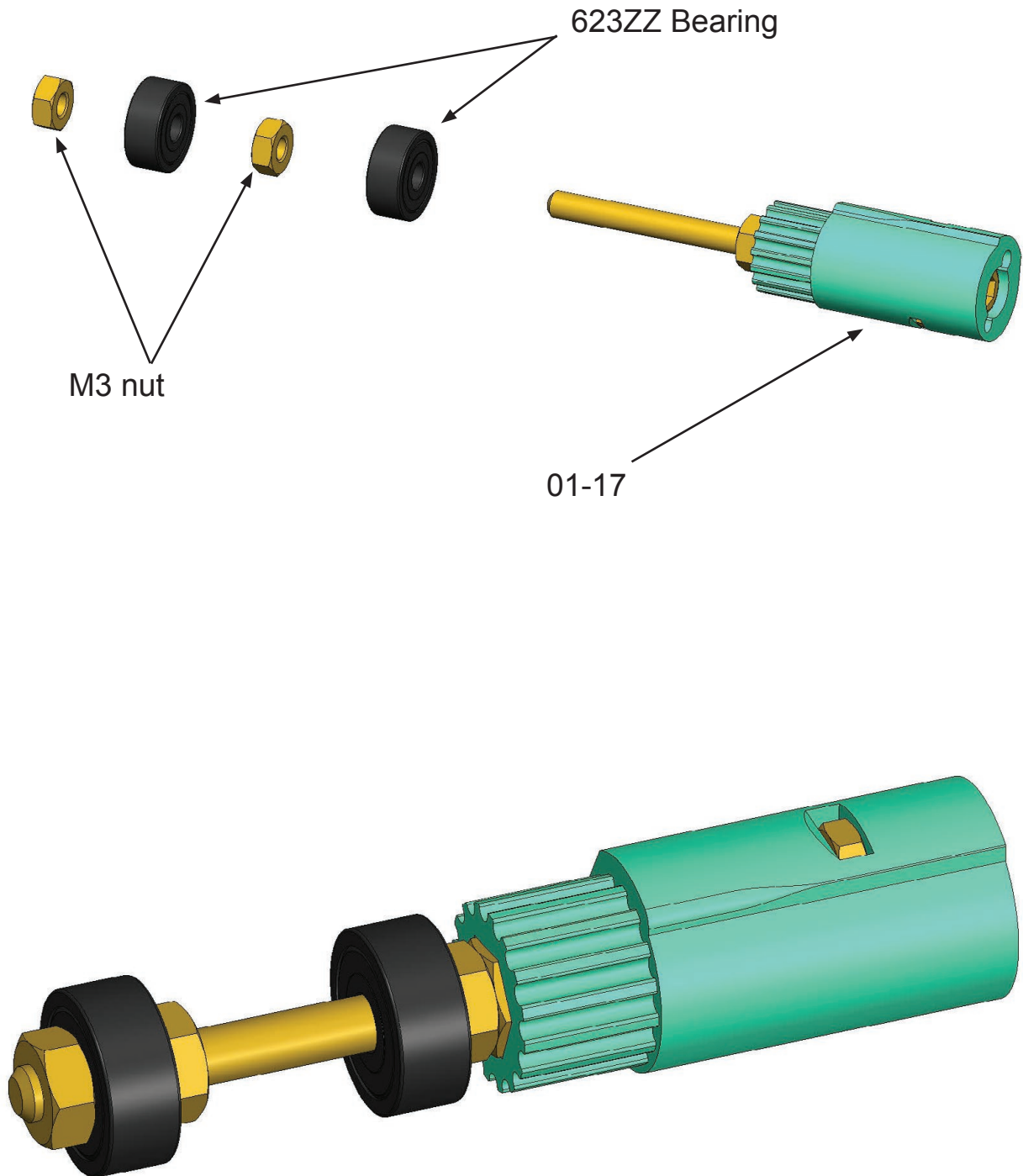
Insert the M3x50mm screw. Secure with two M3 nuts.

Assembly 01 - Lower Hull



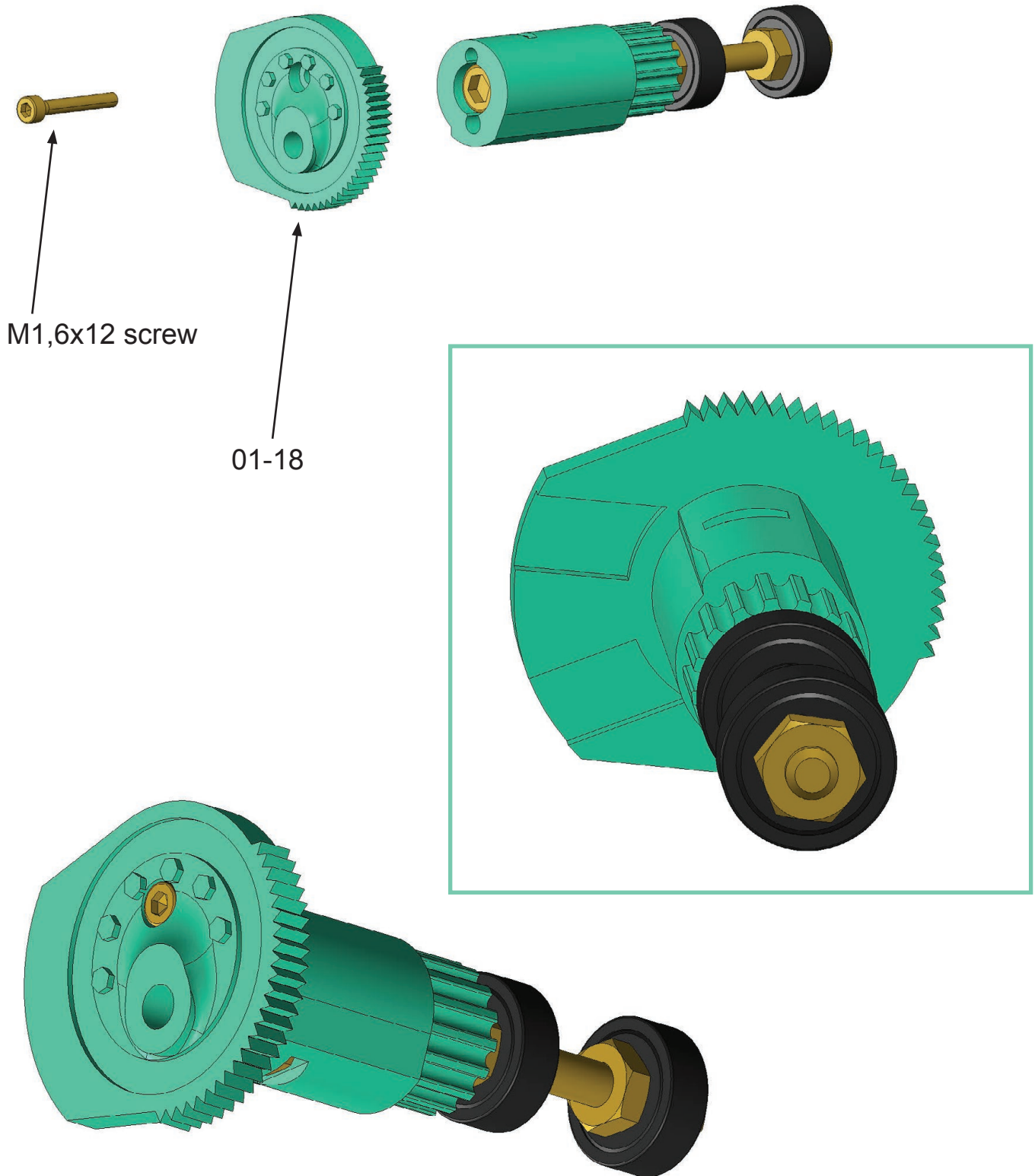
Add two 623ZZ bearings and two M3 nuts to part 01-16.
Both nuts serve to secure one bearing.
The second bearing is mounted free.

Assembly 01 - Lower Hull



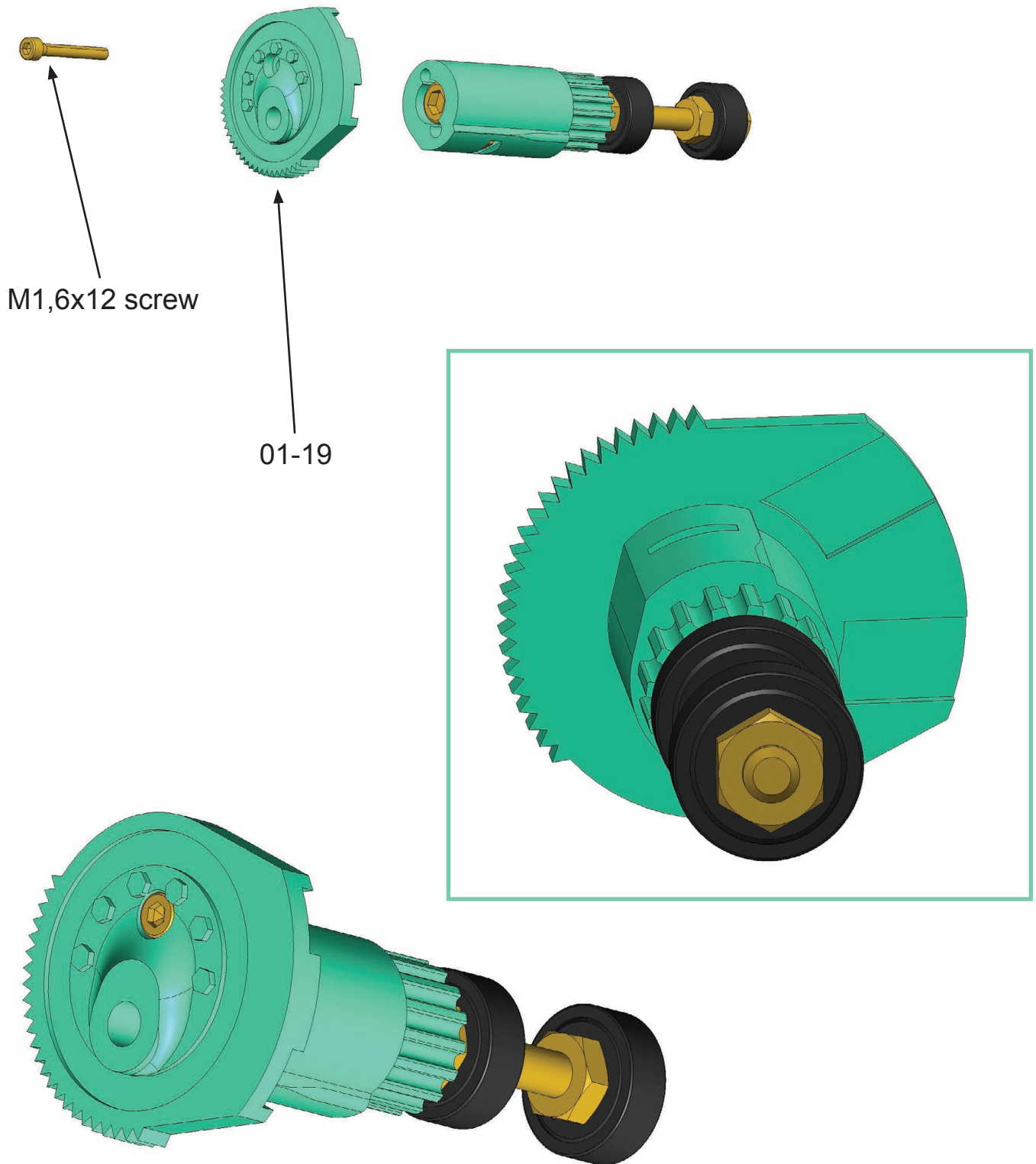
Add two 623ZZ bearings and two M3 nuts to part 01-17.
Secure the nuts against loosening.
We recommend using self-locking nuts.

Assembly 01 - Lower Hull



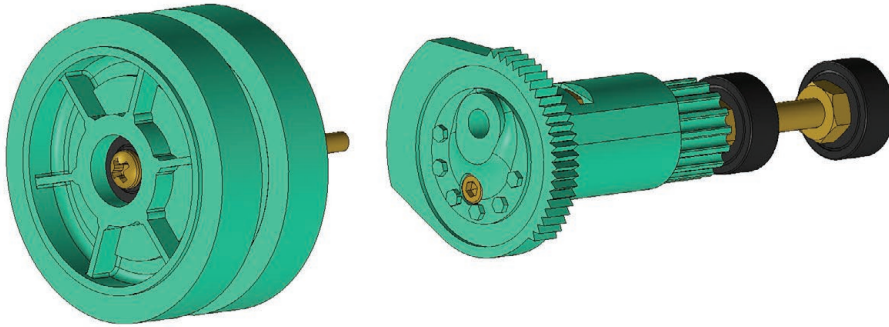
Attach part 01-18 to part 01-16. Use the M1.6x12mm screw.

Assembly 01 - Lower Hull

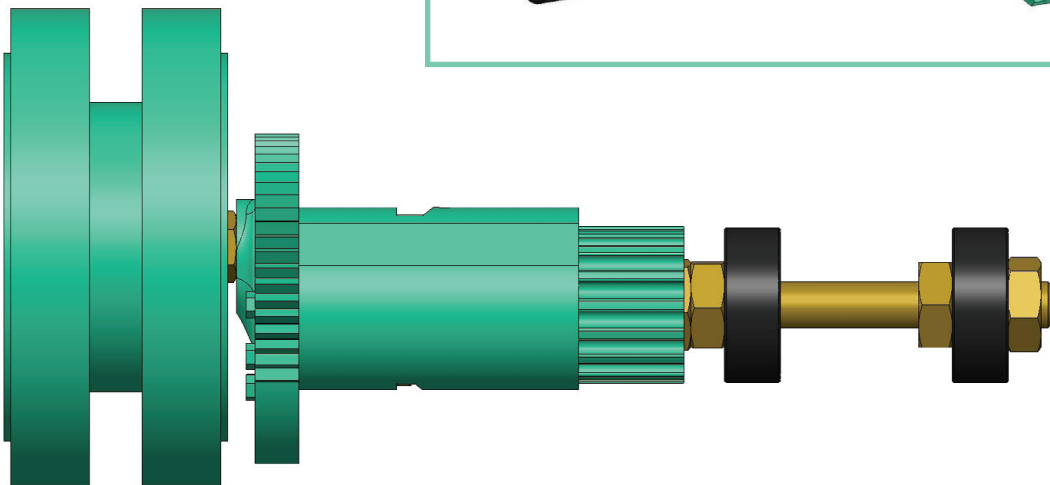
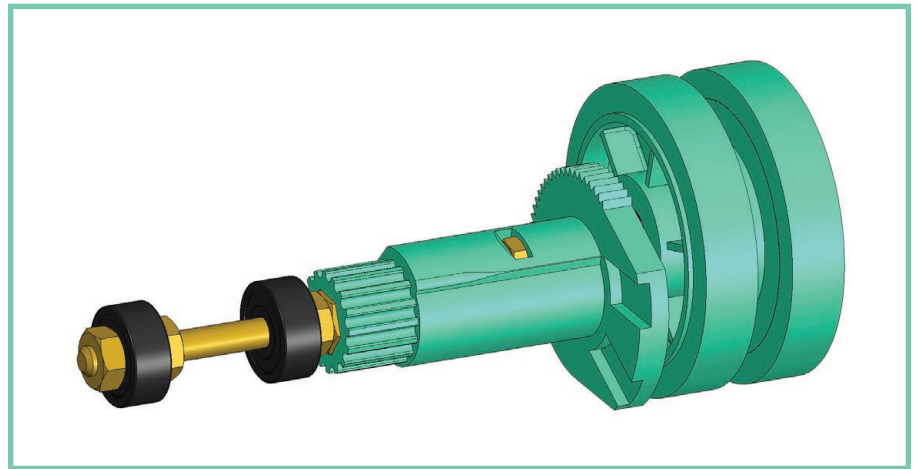


Attach part 01-19 to part 01-17. Use the M1.6x12mm screw.

Assembly 01 - Lower Hull

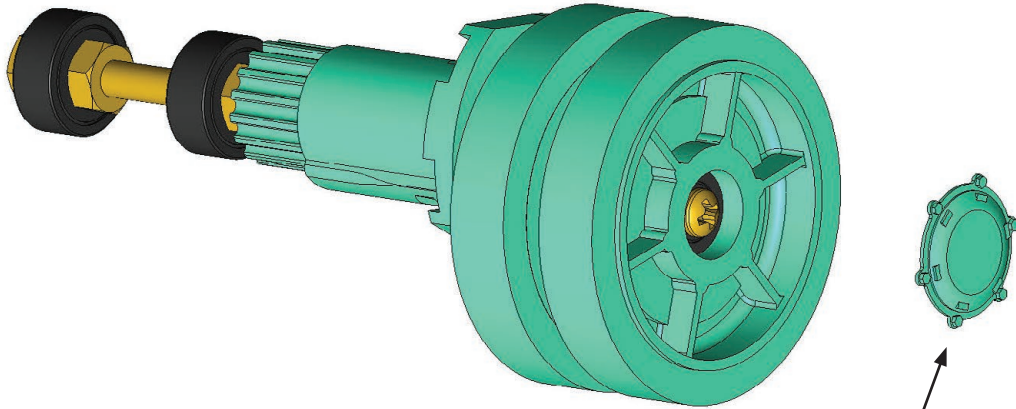


01-15A+B+C

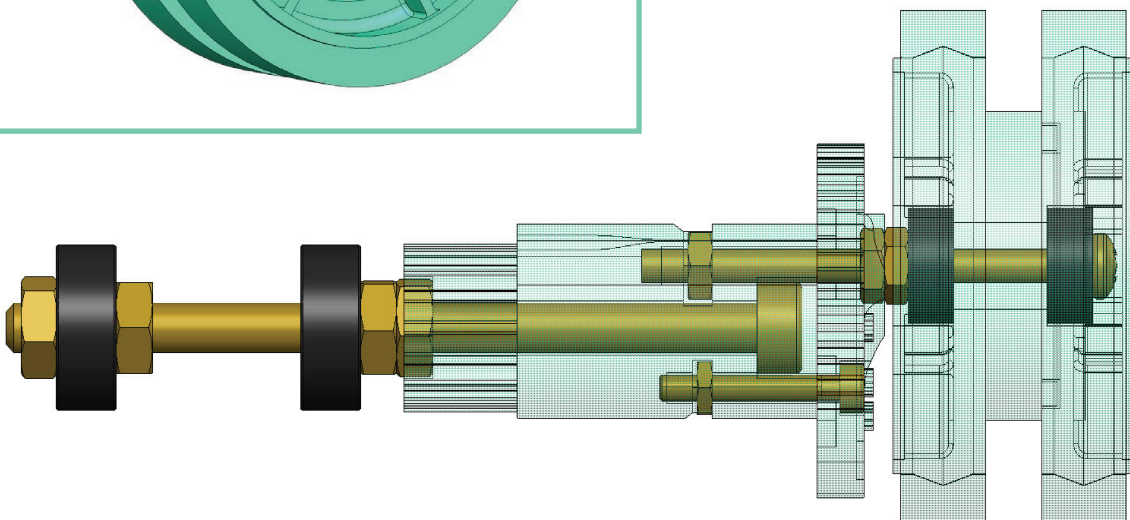


Attach the 01-15 part assembly to the 01-17 and 01-19 parts assembly.

Assembly 01 - Lower Hull

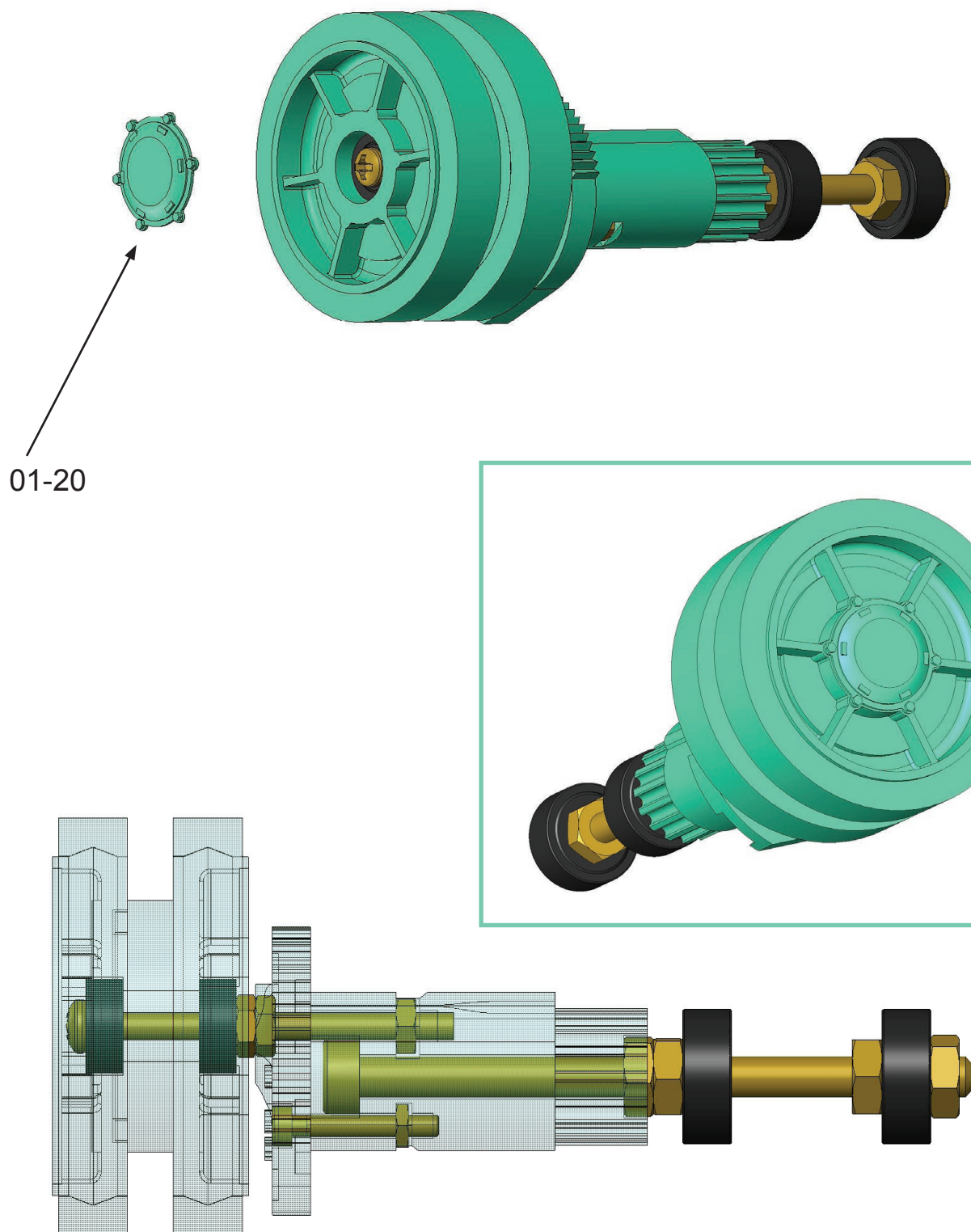


01-20



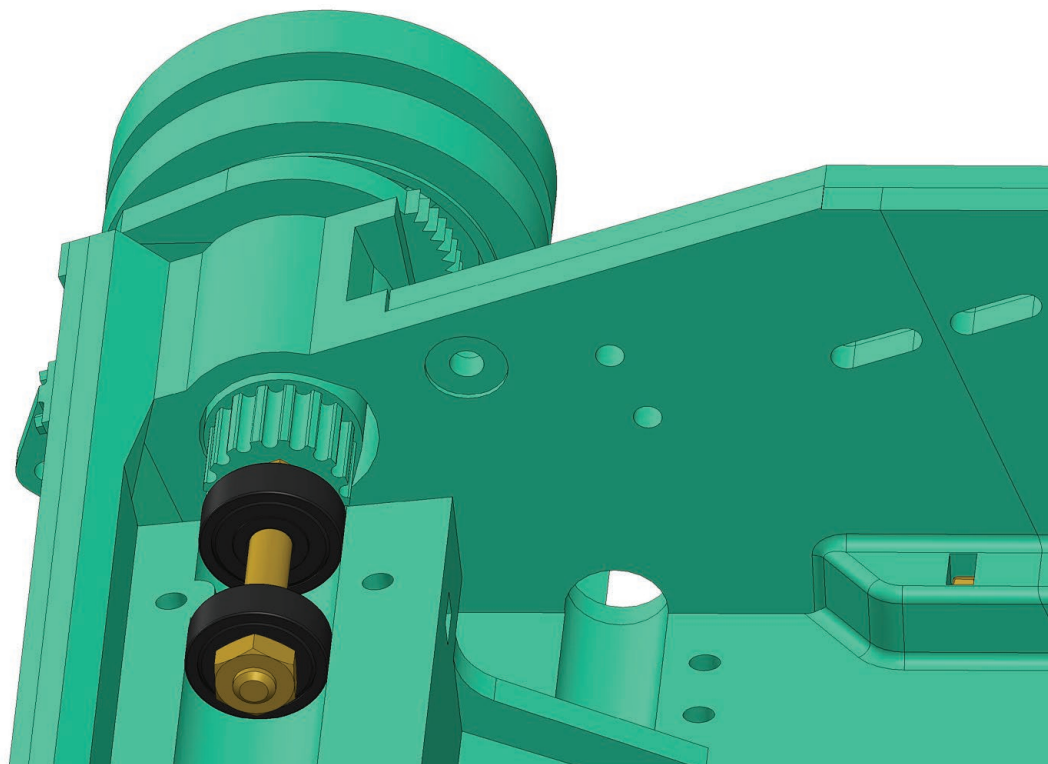
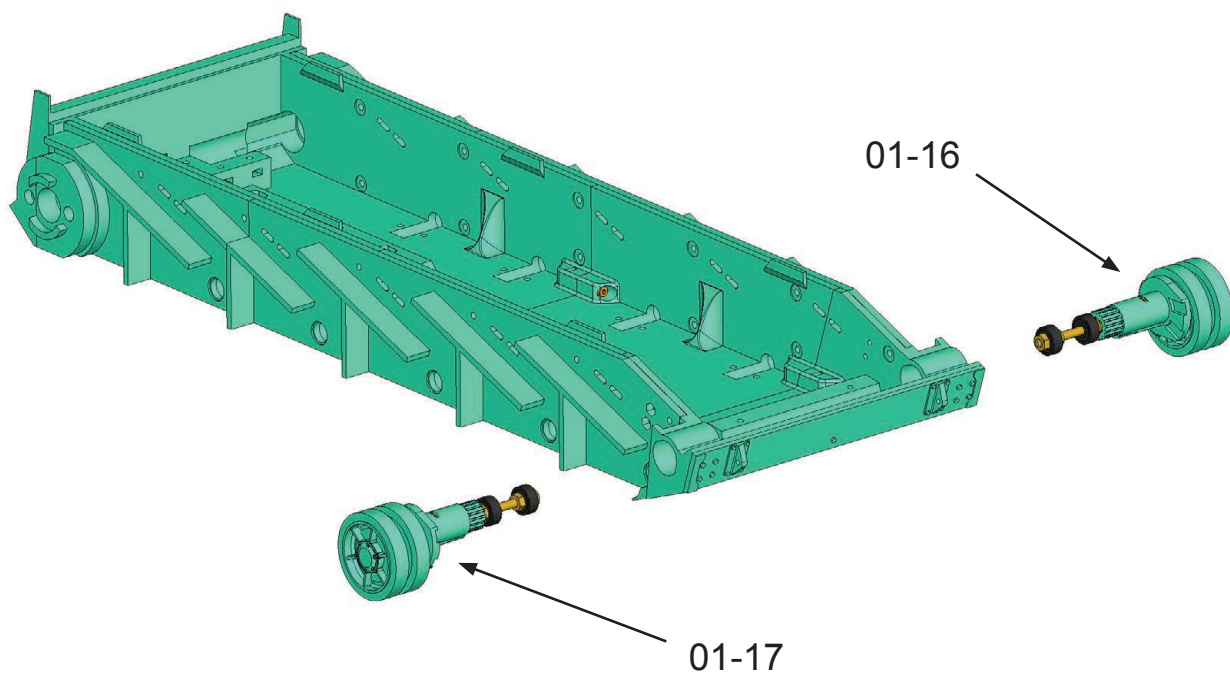
Check all parts again to make sure the screws won't fall out.
Glue part 01-20 to the assembly of parts 01-16 and 01-18.
We recommend using an adhesive that can be erased in the future.

Assembly 01 - Lower Hull



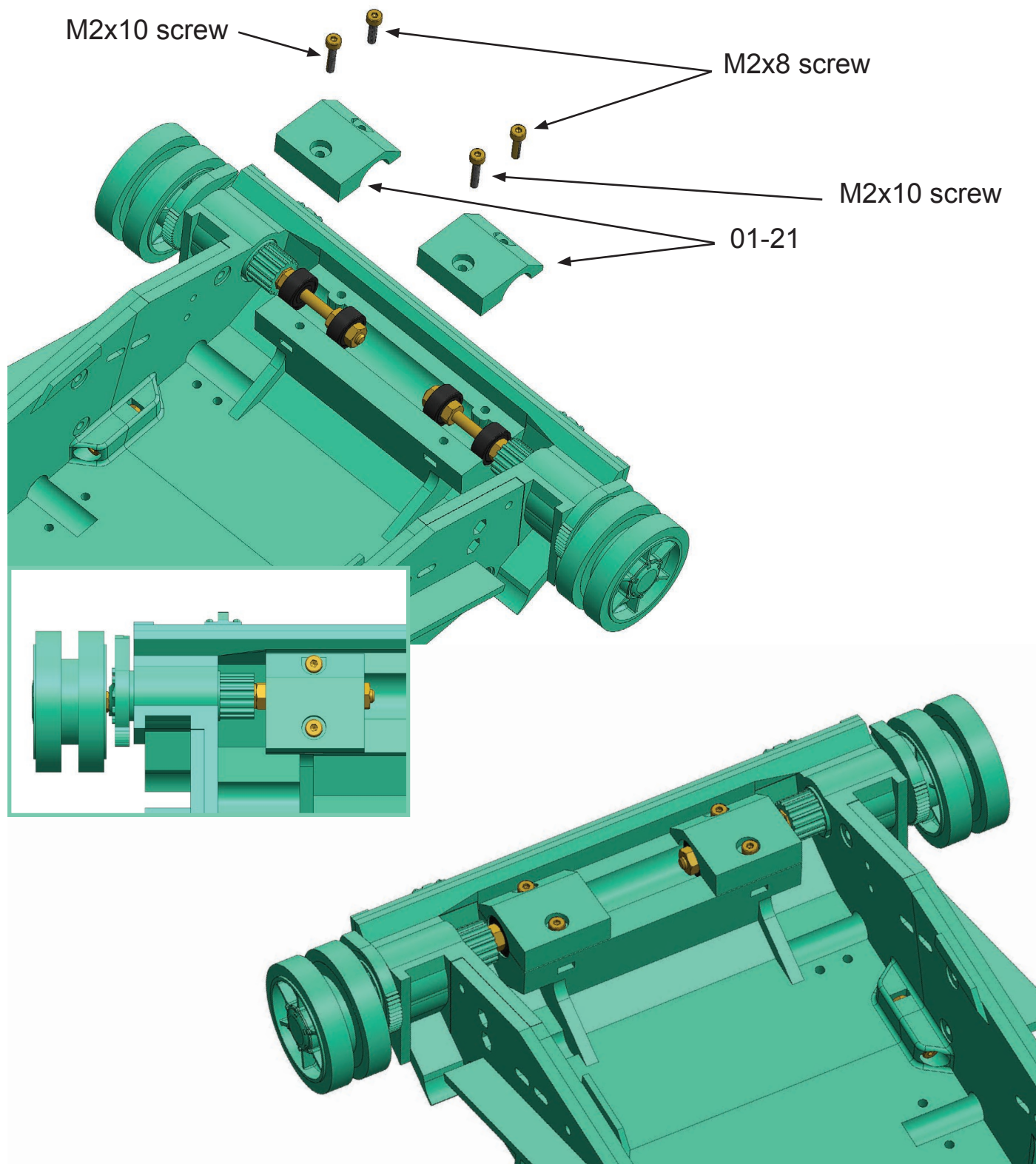
Glue part 01-20 to the assembly of parts 01-17 and 01-19.

Assembly 01 - Lower Hull



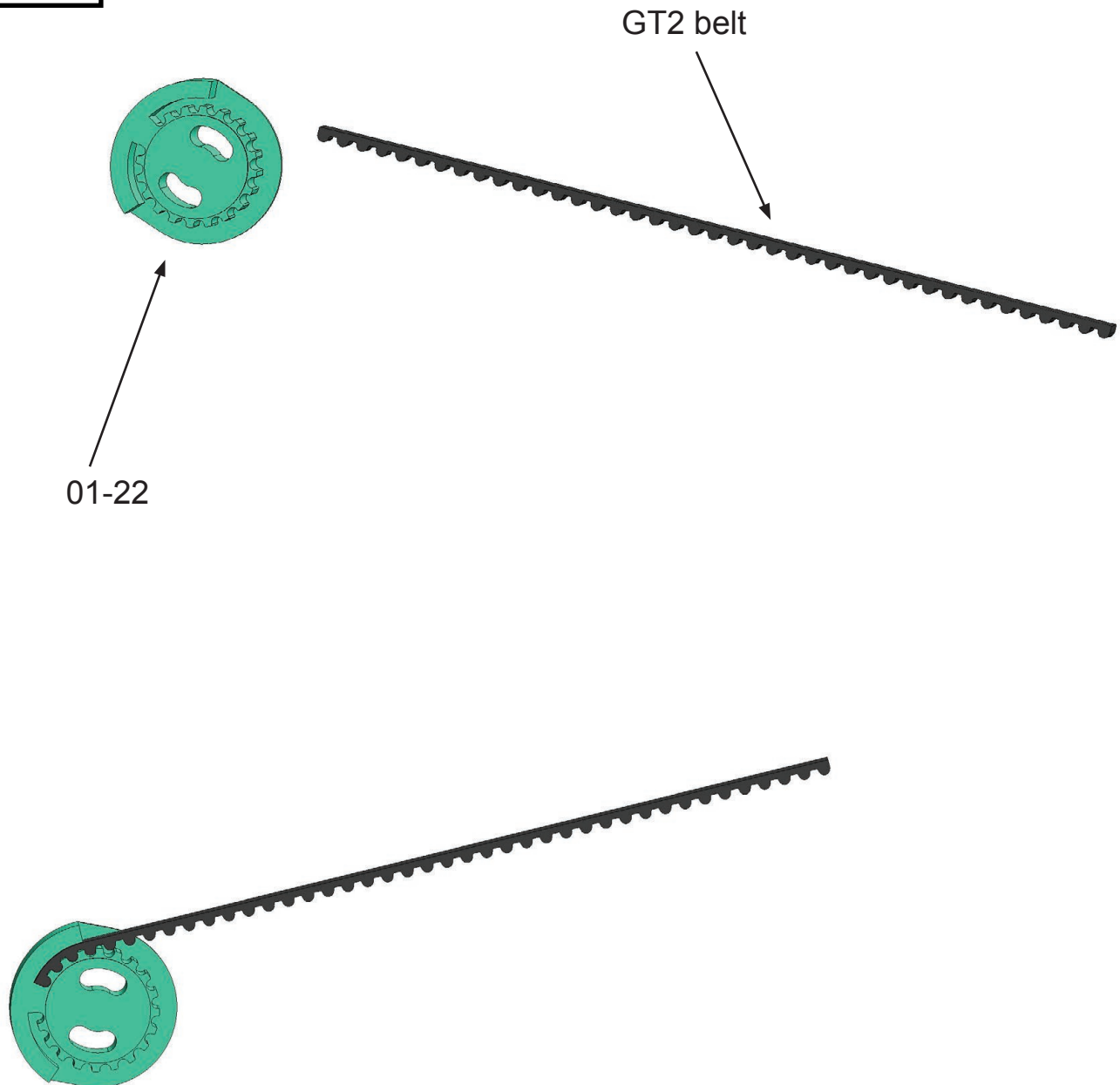
Insert both wheels into part 01-01.

Assembly 01 - Lower Hull



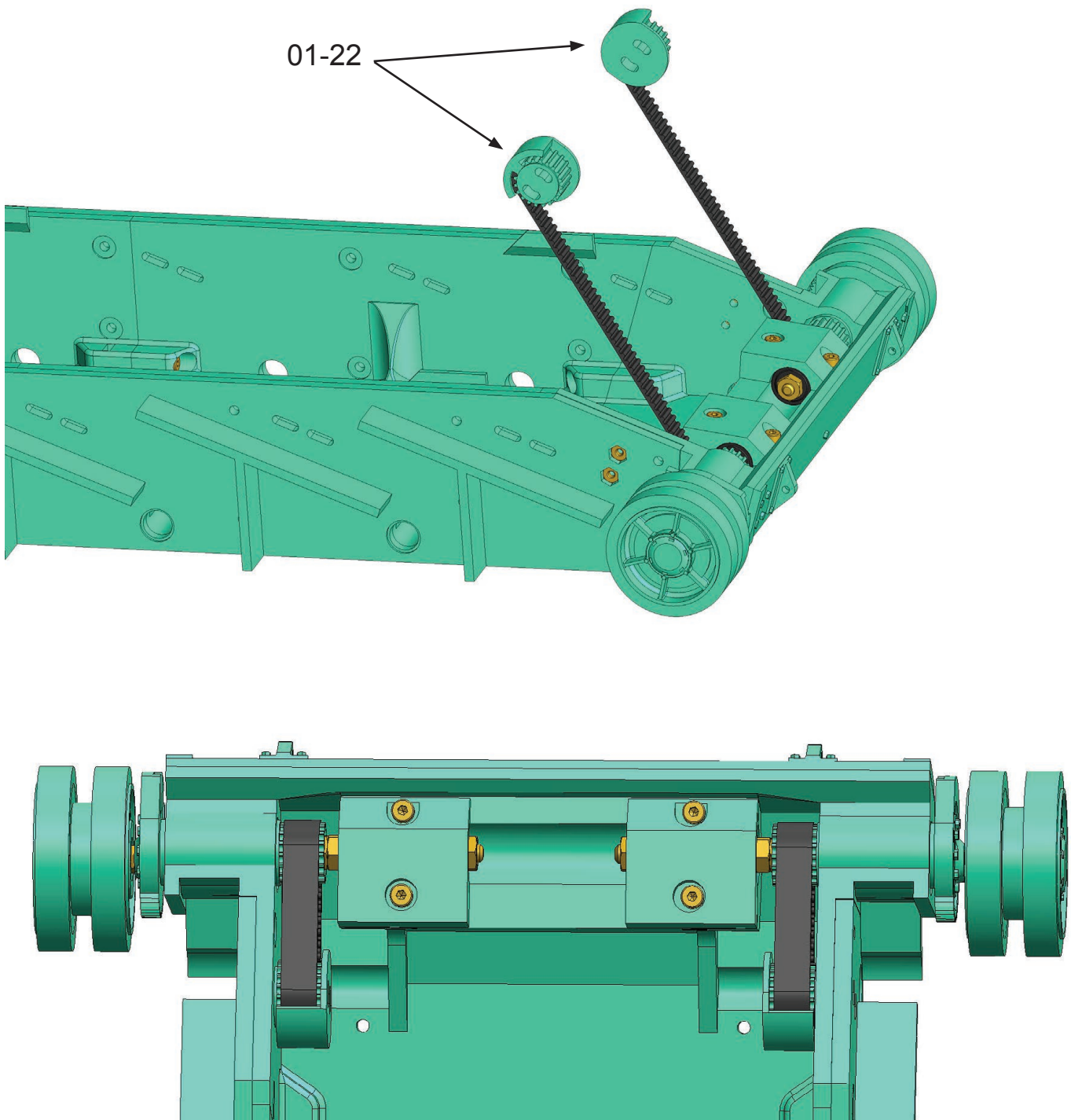
Secure the wheels with parts 01-21.
Use two M2x10mm screws at the back and
two M2x8mm screws in the front.

Assembly 01 - Lower Hull

2x

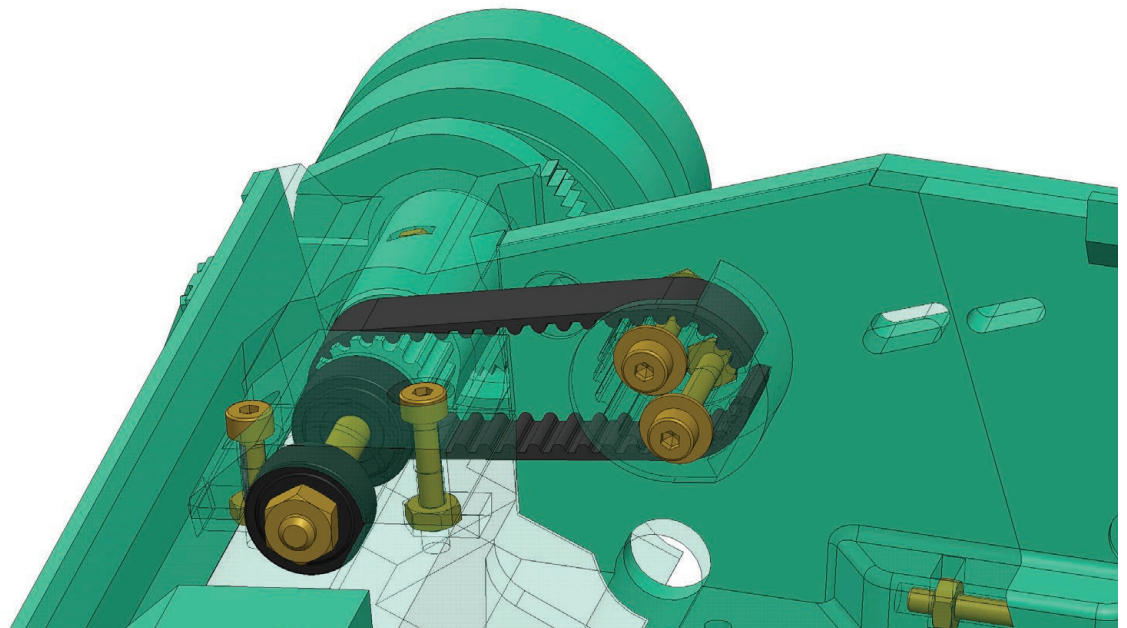
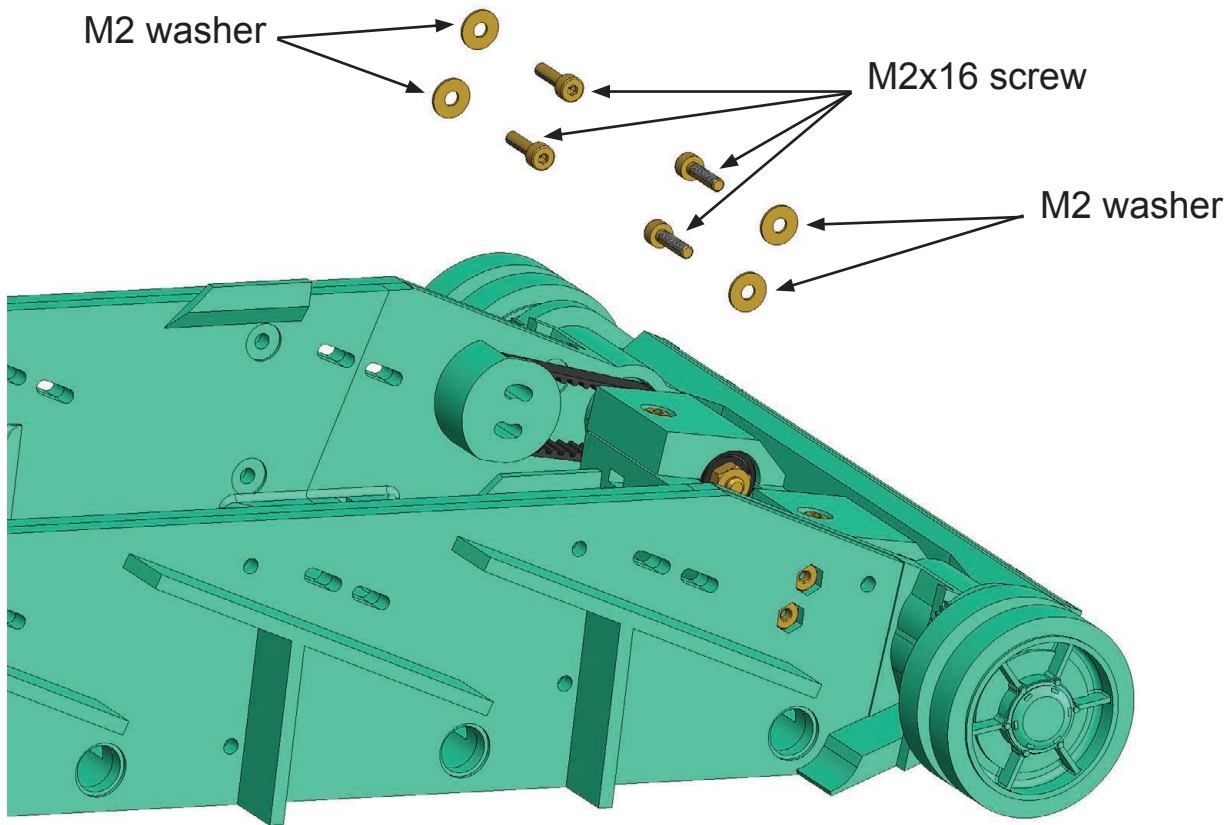
Insert the GT2 belt into part 01-22.
The length of the belt is about 80mm.
You can also cut the exact length of the belt later.

Assembly 01 - Lower Hull



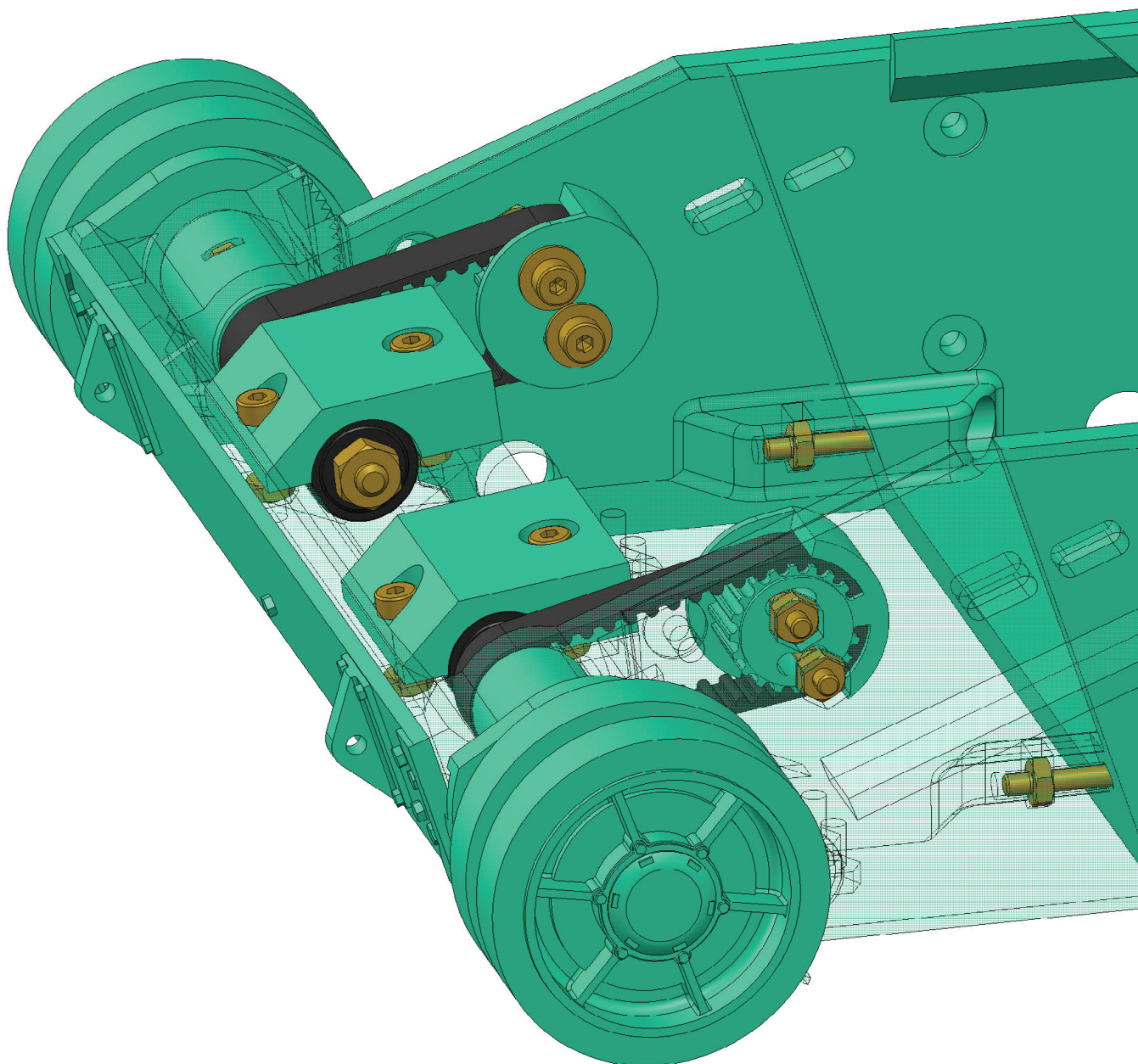
Insert parts 01-22 into the hull.
Slide the belts around parts 01-16 and 01-17 and close.
You can see the detail of the belt clamp on the next page.

Assembly 01 - Lower Hull



Fix the position of parts 01-22 with four M2x16mm screws and washers.
The belt must be slightly taut.
You can rotate the track tensioners by turning parts 01-22.

Assembly 01 - Lower Hull

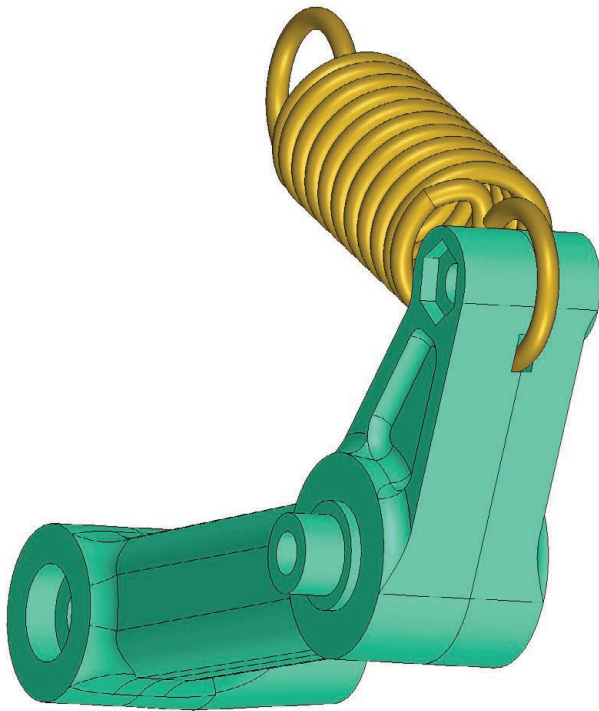
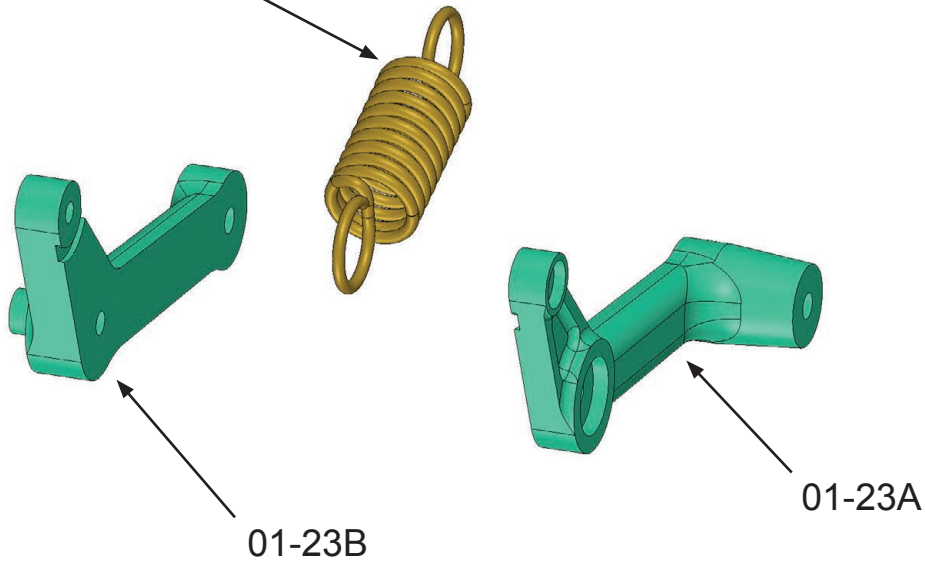


Auxiliary view for installation of parts 01-22.

Assembly 01 - Lower Hull

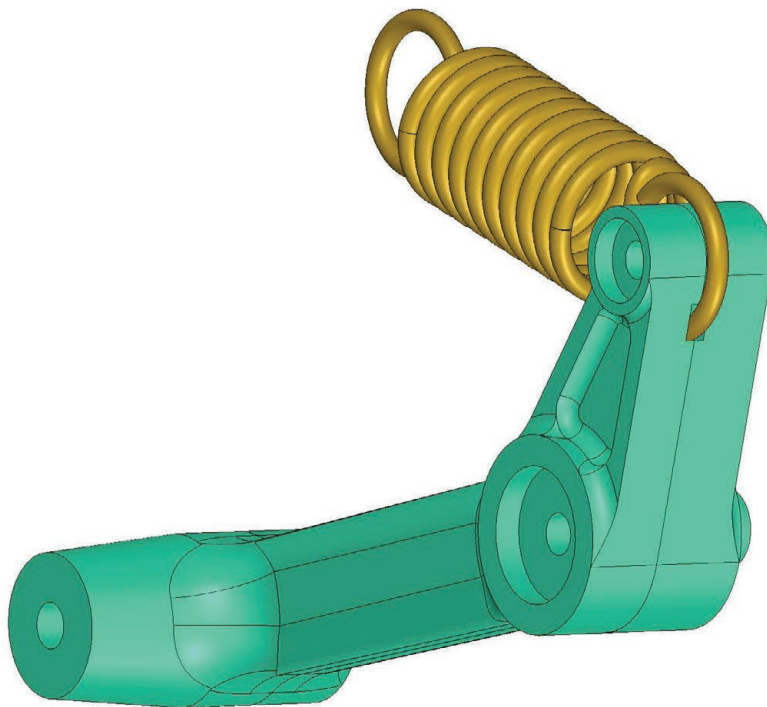
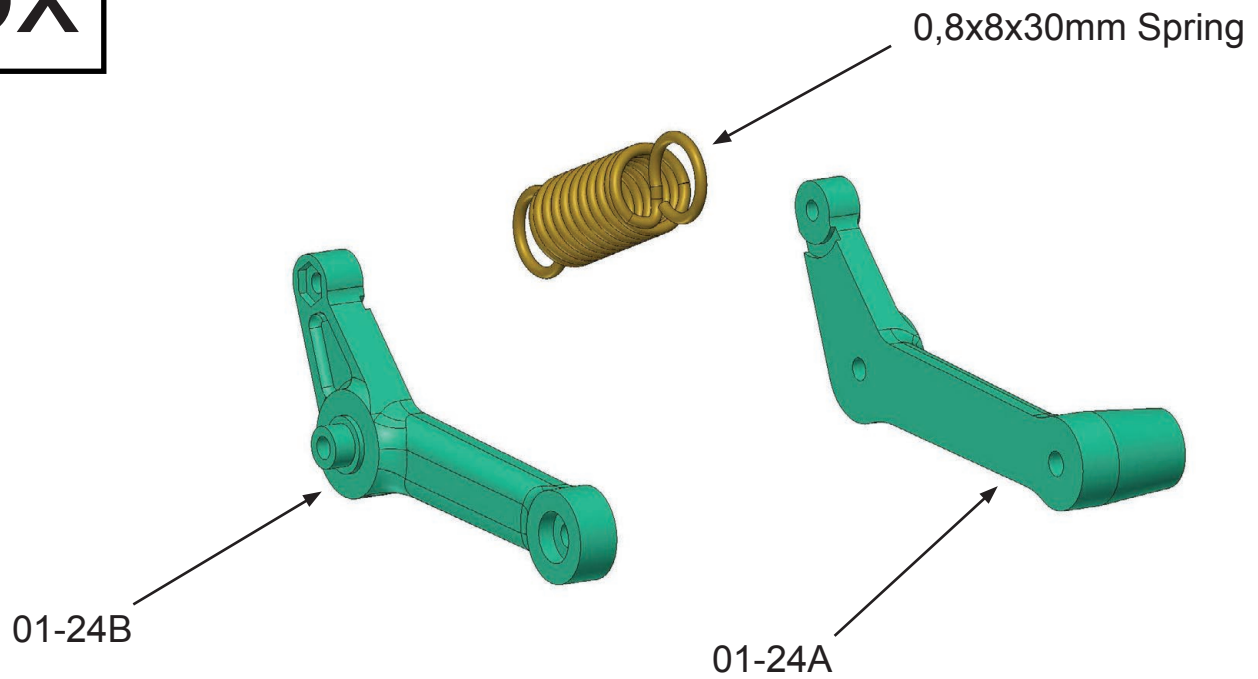
5x

0,8x8x30mm Spring



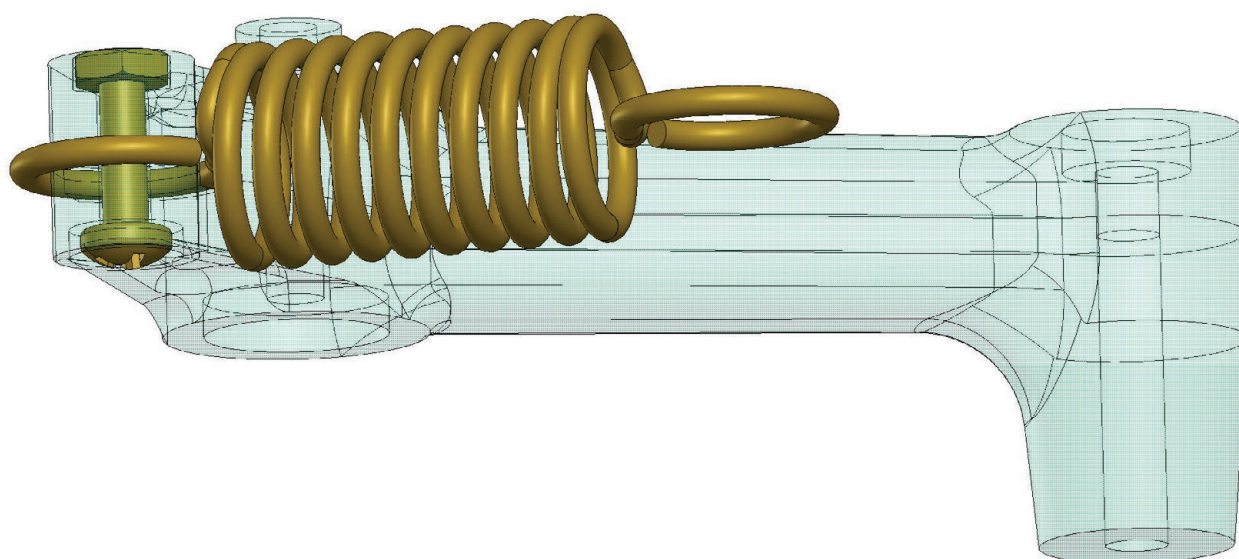
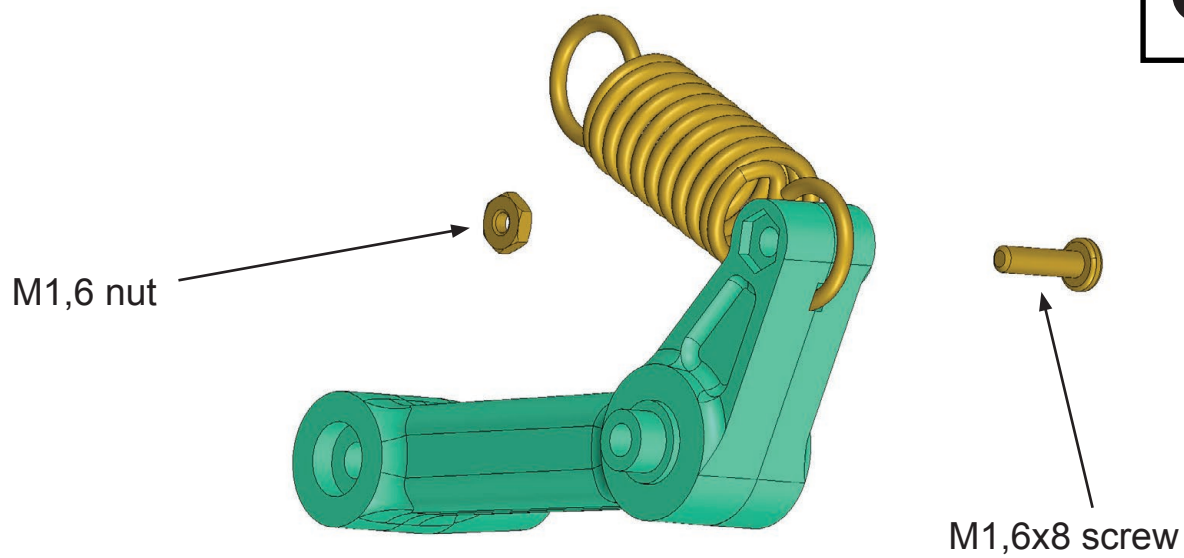
Glue parts 01-23A and 01-23B.
When gluing, insert a 30mm tension spring between parts.
Wire diameter is 0.8mm, total diameter 7.5-8mm.

Assembly 01 - Lower Hull

5x

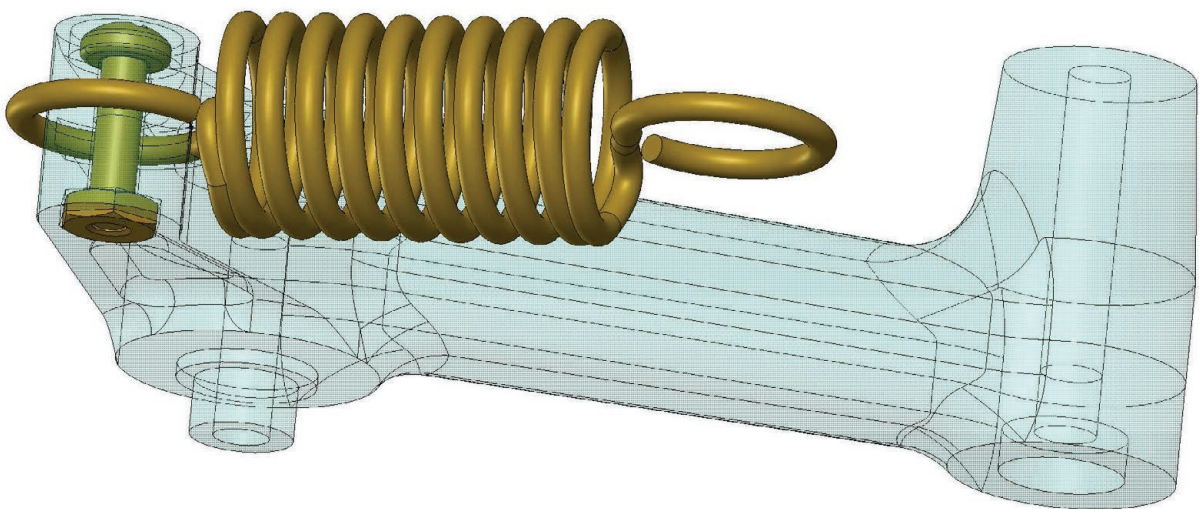
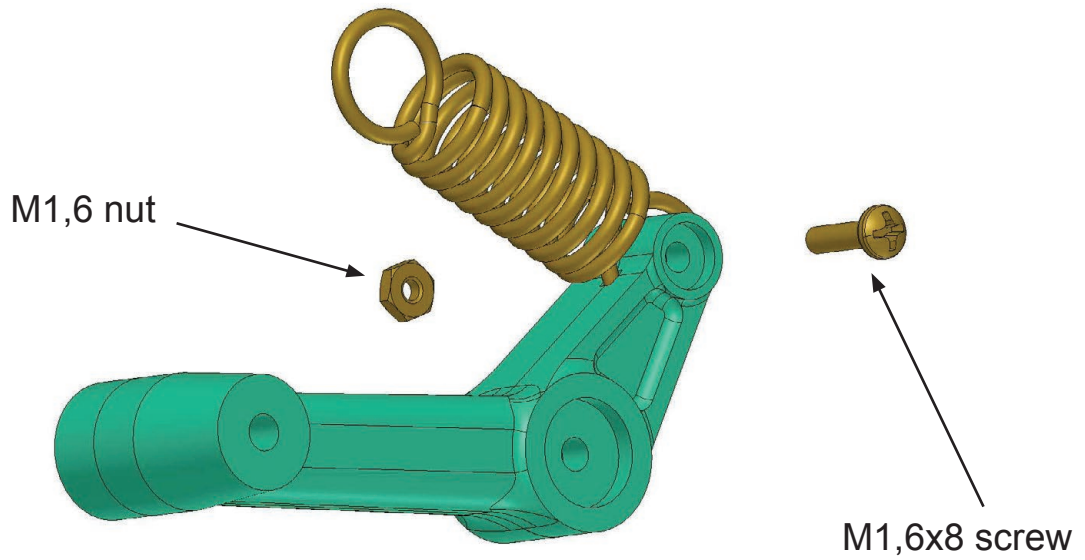
Glue parts 01-24A and 01-24B.
When gluing, insert the same-length spring between parts.

Assembly 01 - Lower Hull

5x

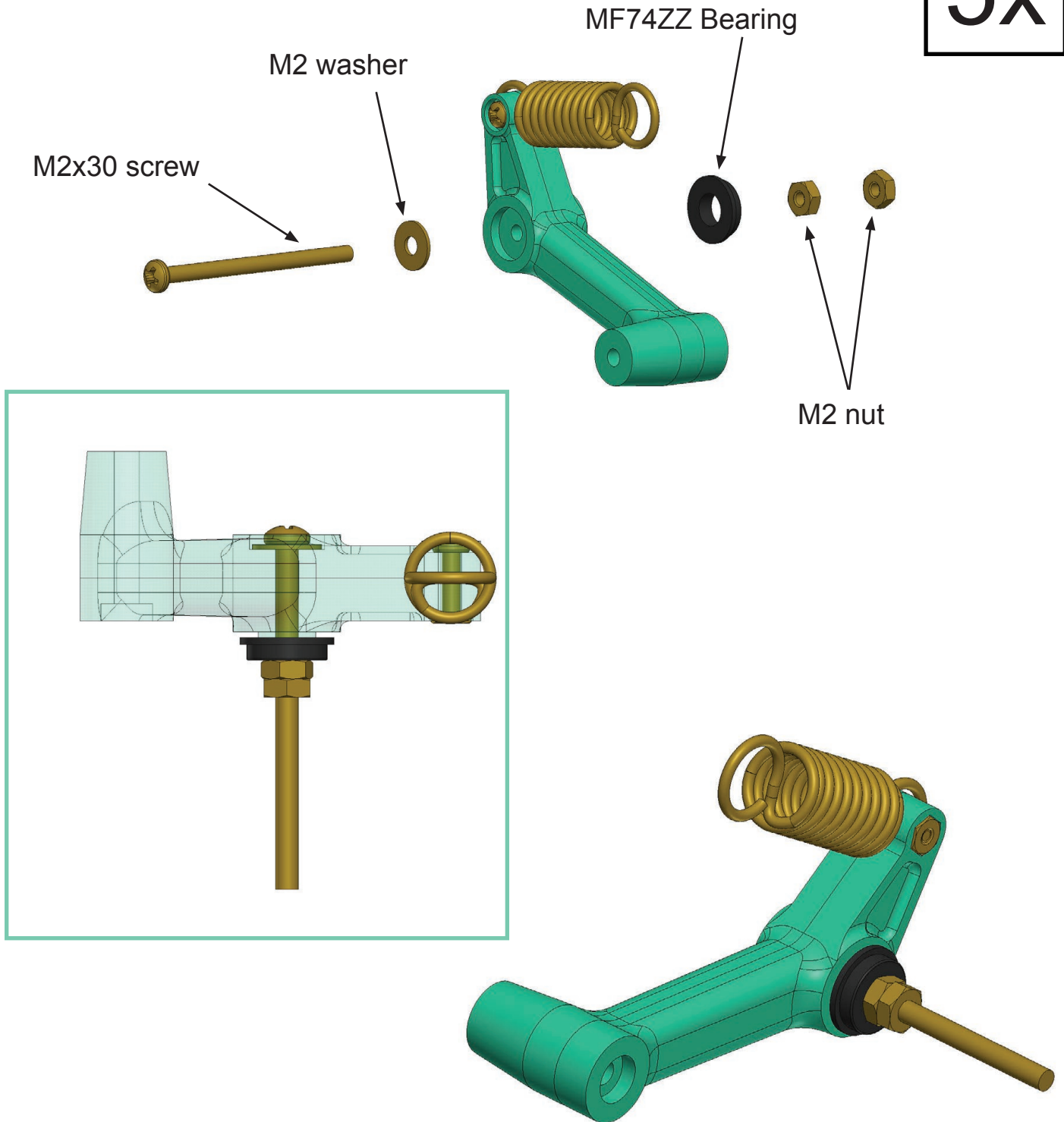
Secure the spring with an M1.6x8mm screw and an M1.6 nut.

Assembly 01 - Lower Hull

5x

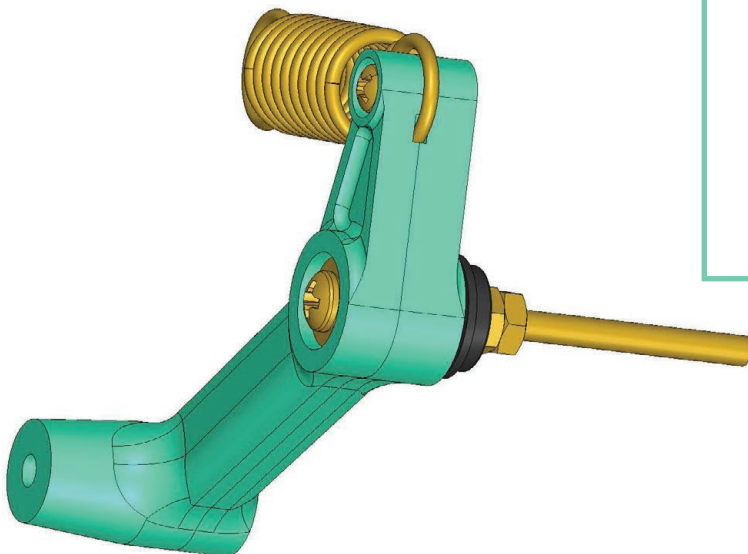
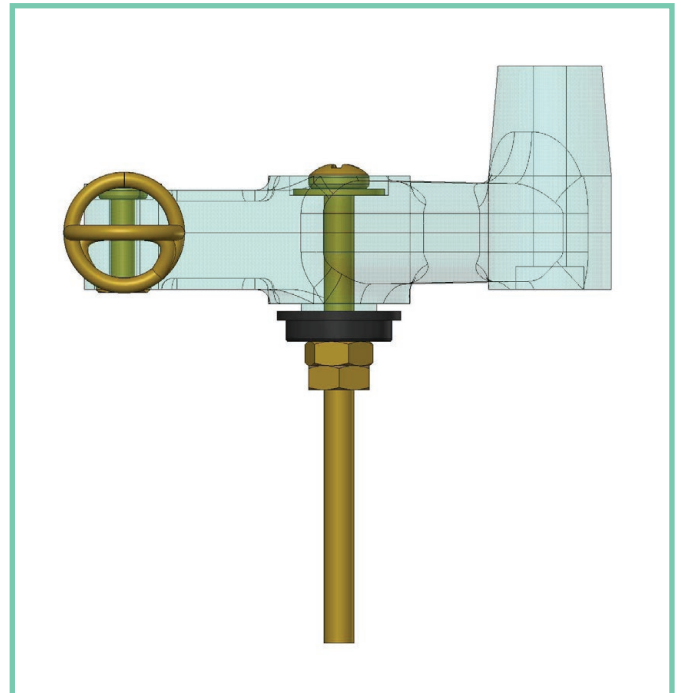
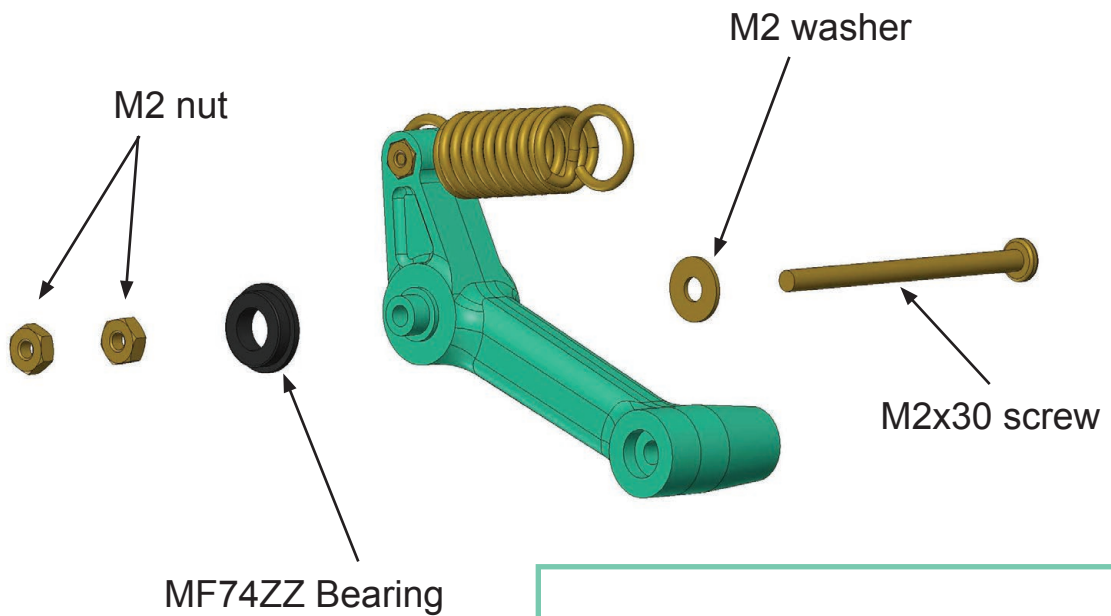
The procedure for the other 5 arms is the same.
Secure the spring with an M1.6x8mm screw and an M1.6 nut.

Assembly 01 - Lower Hull

5x

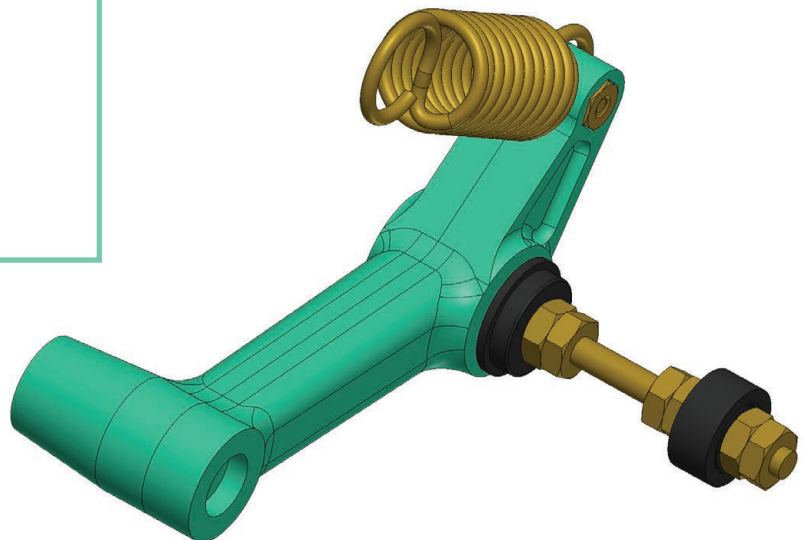
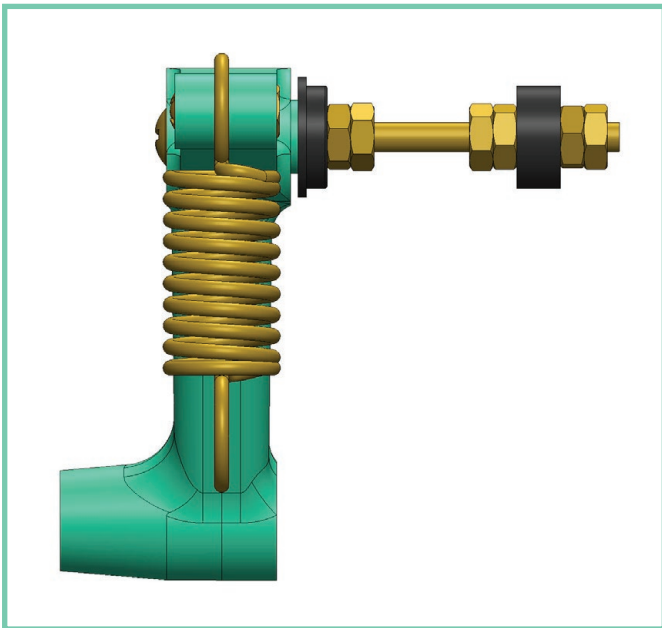
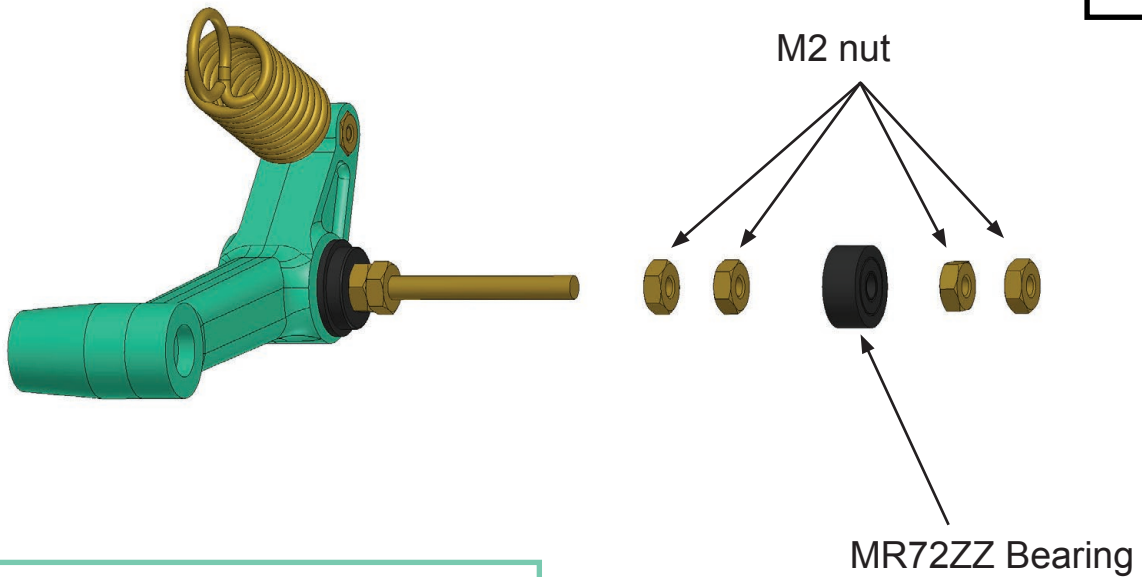
Attach the MF74ZZ bearing to the 01-23A and 01-23B assembly.
Use an M2x30mm screw, washer and two M2 nuts.

Assembly 01 - Lower Hull

5x

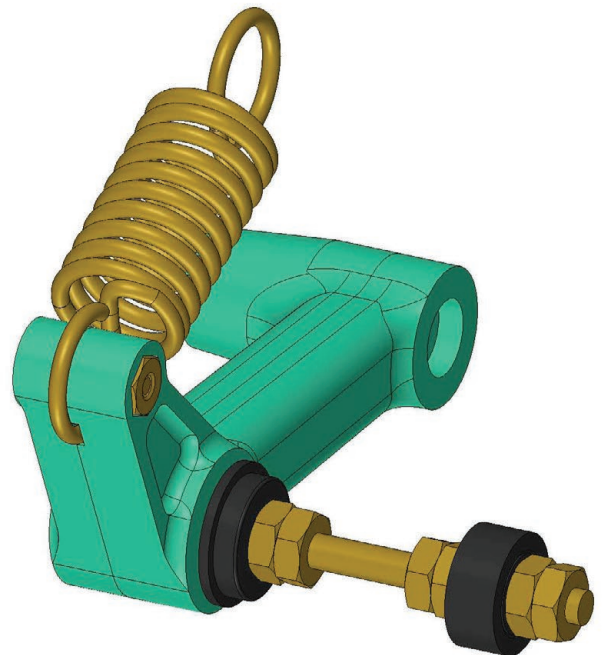
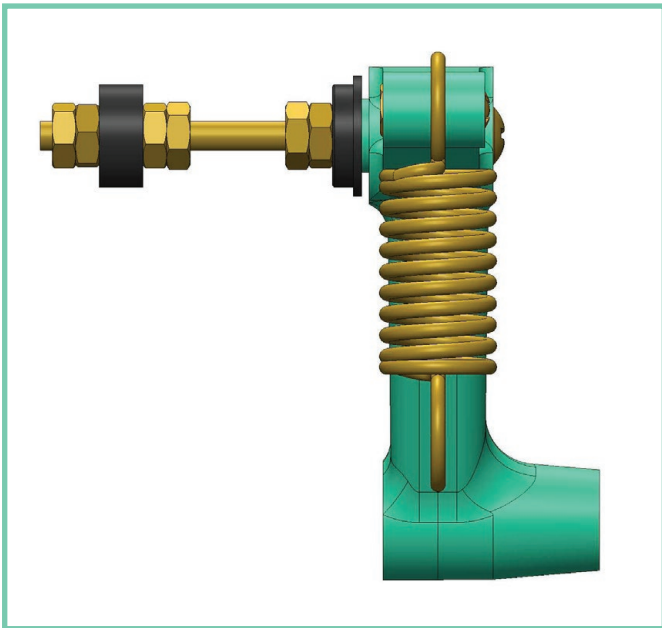
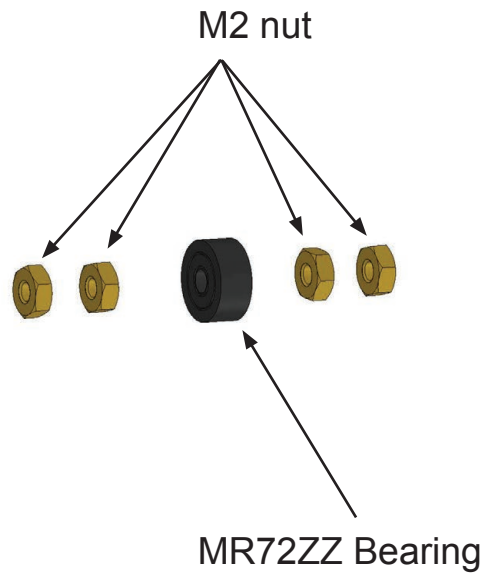
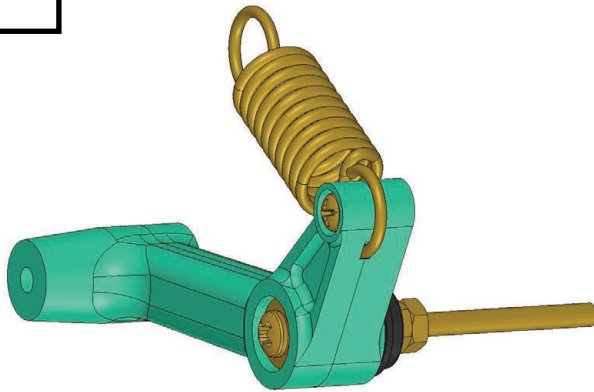
Attach the MF74ZZ bearing to the 01-24A and 01-24B assembly.
Use an M2x30mm screw, washer and two M2 nuts.

Assembly 01 - Lower Hull

5x

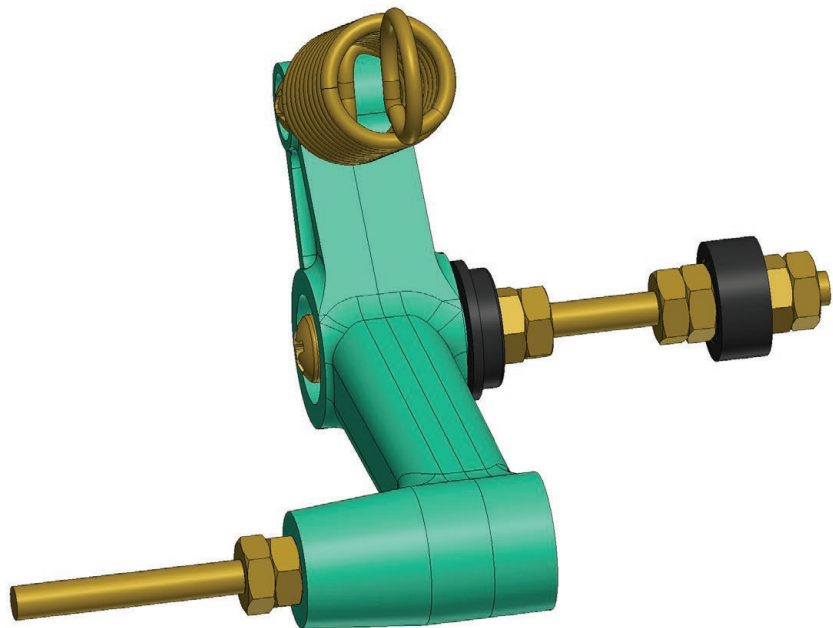
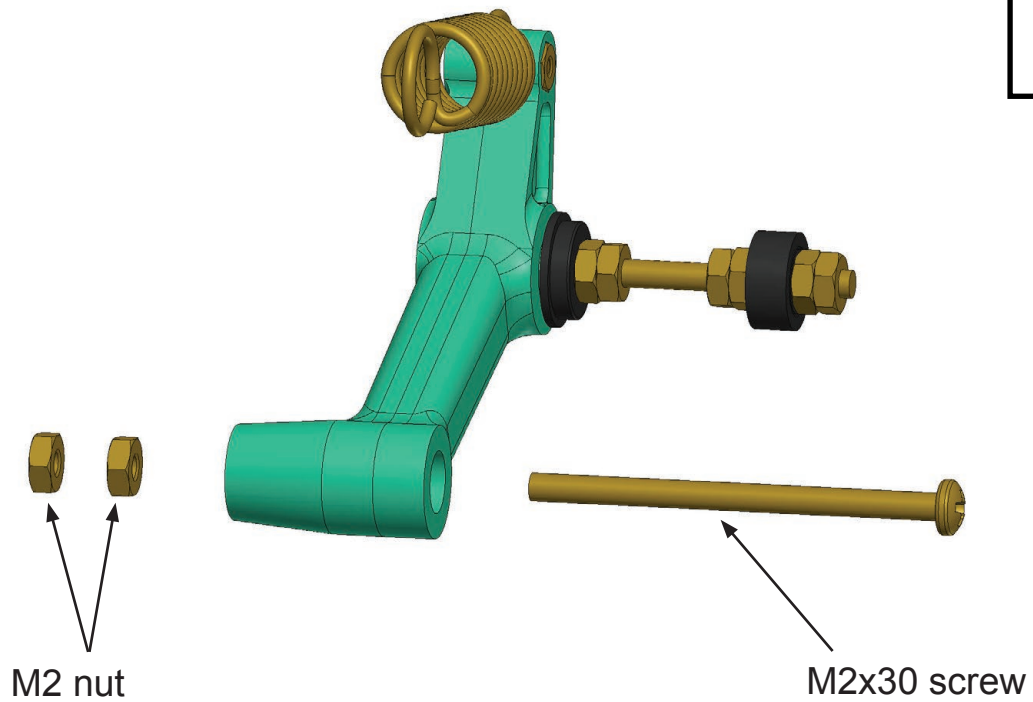
Attach the MR72ZZ bearing to the 01-23A and 01-23B assembly.
Use four M2 nuts.

Assembly 01 - Lower Hull

5x

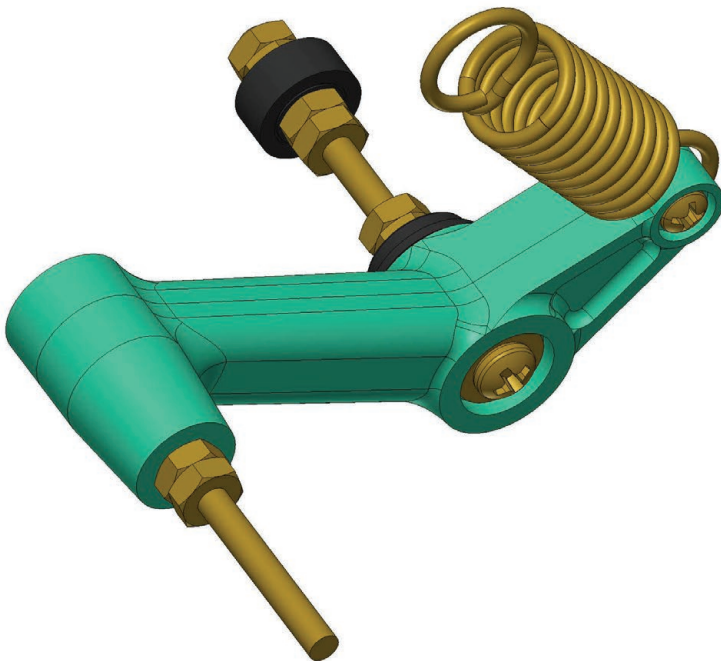
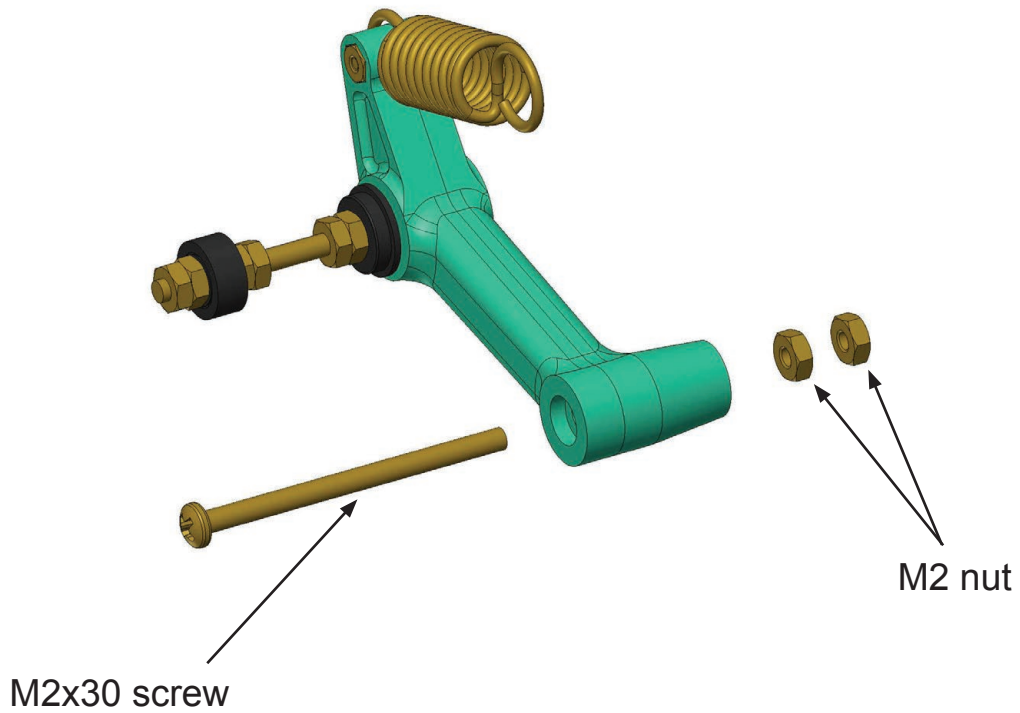
Attach the MR72ZZ bearing to the 01-24A and 01-24B assembly.
Use four M2 nuts.

Assembly 01 - Lower Hull

5x

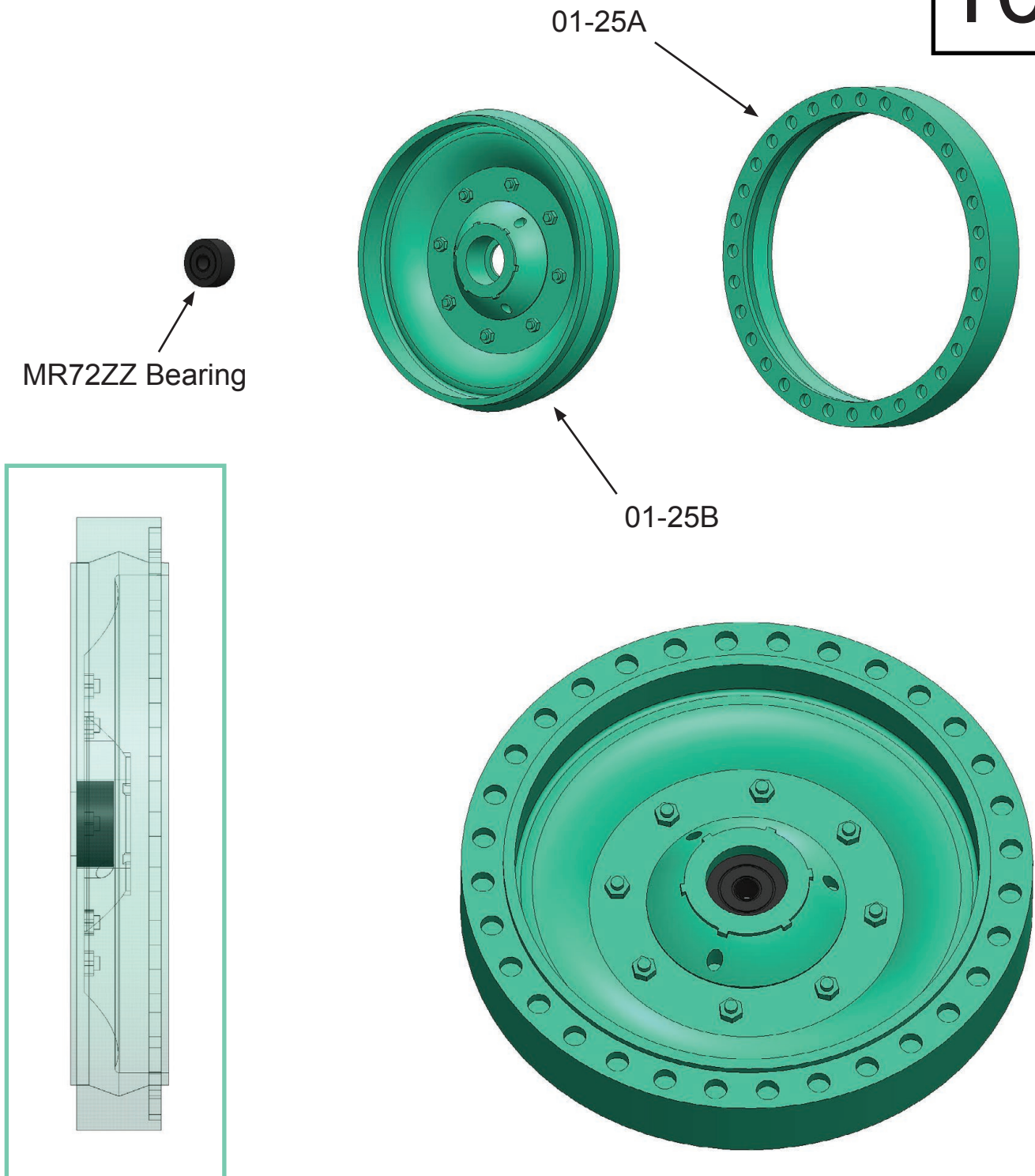
Attach the M2x30mm screw to the 01-23A and 01-23B assembly.
From the other side, secure with two M2 nuts.

Assembly 01 - Lower Hull

5x

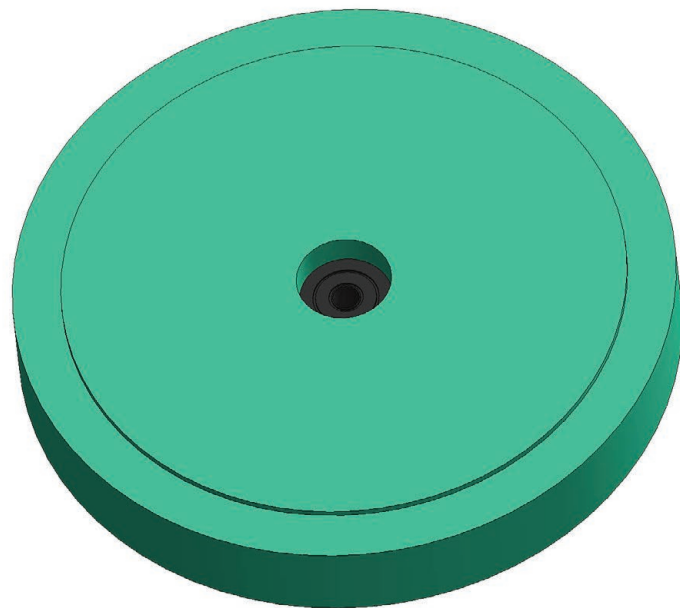
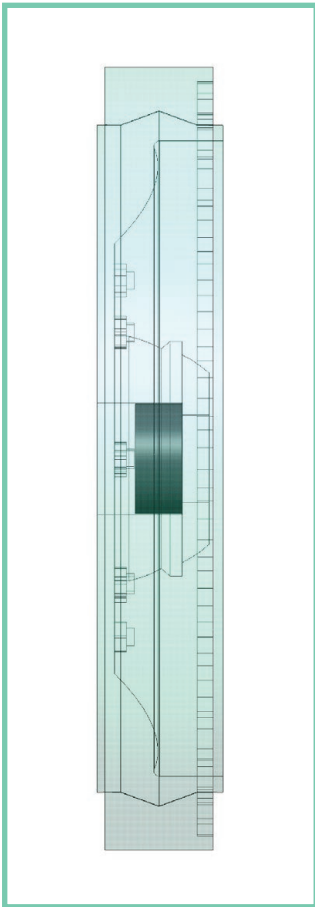
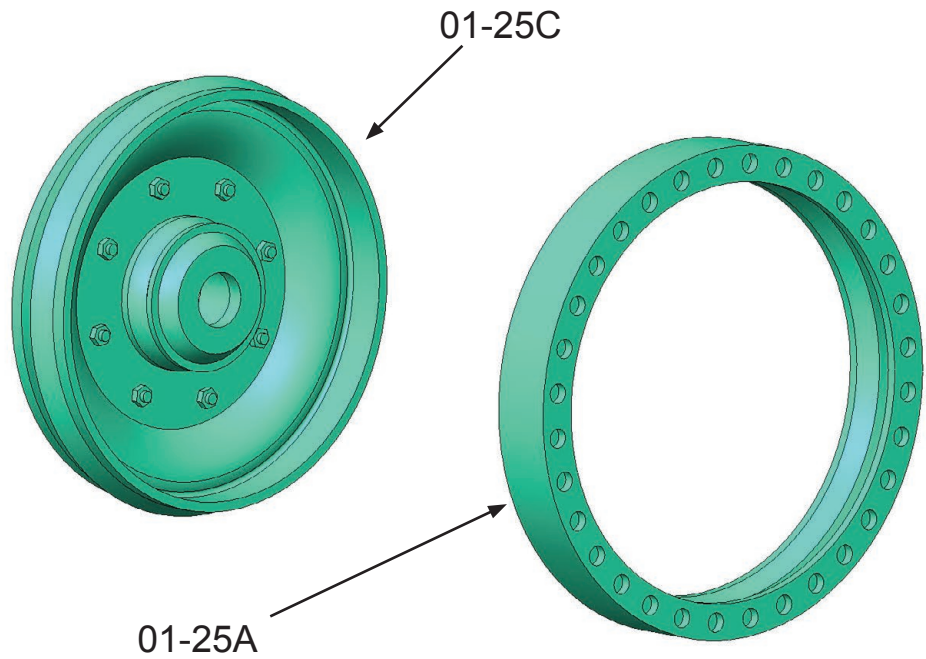
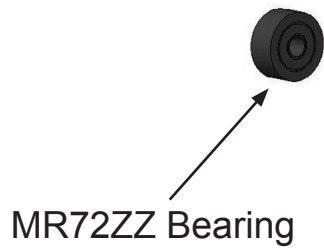
Attach the M2x30mm screw to the 01-24A and 01-24B assembly.
From the other side, secure with two M2 nuts.

Assembly 01 - Lower Hull

10x

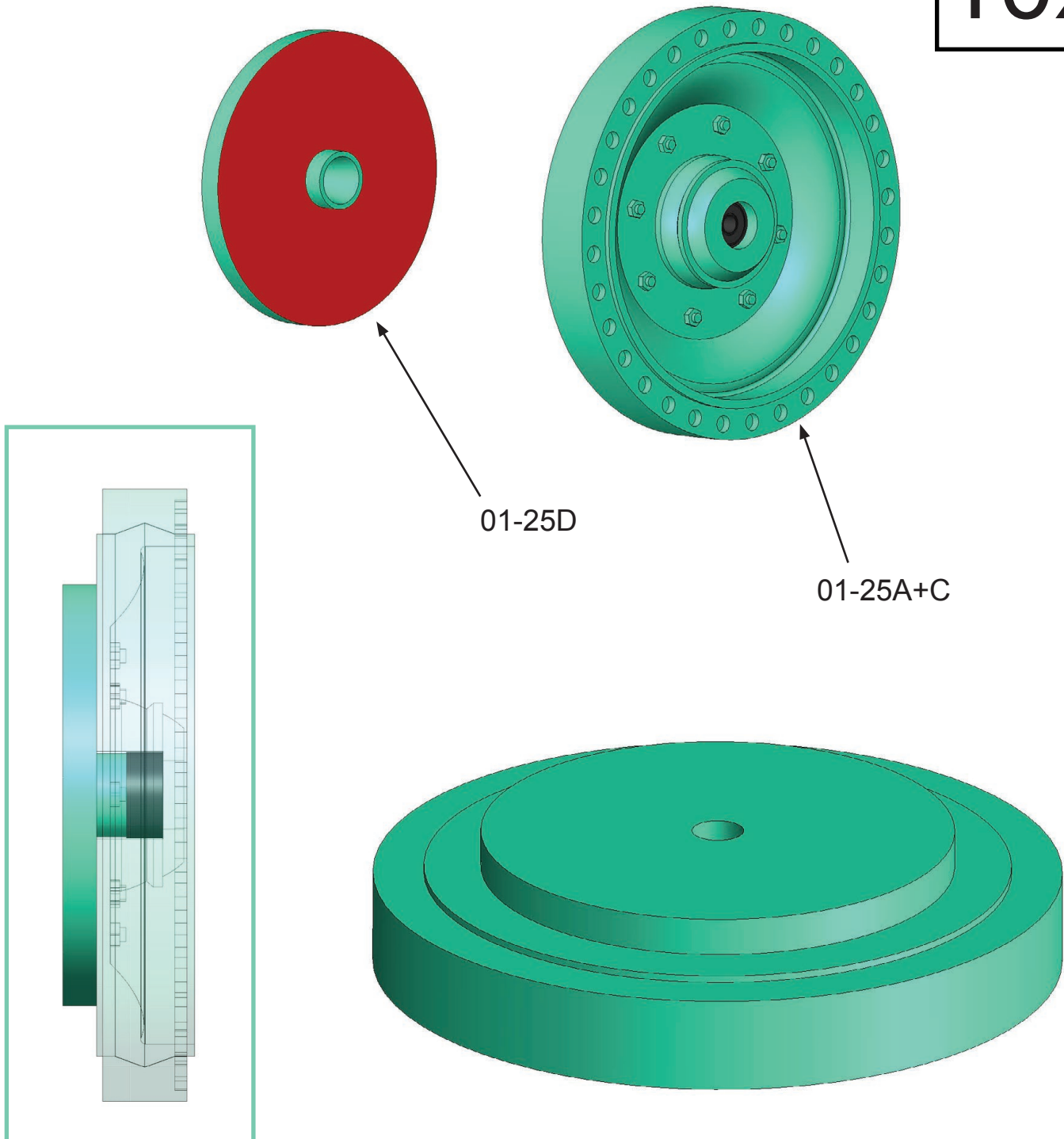
Insert the MR72ZZ bearing into part 01-25B.
Install part 01-25A. Glue if necessary.
You can use alternative part 01-25AB.

Assembly 01 - Lower Hull

10x

Insert the MR72ZZ bearing into part 01-25C.
Install part 01-25A. Glue if necessary.
You can use alternative part 01-25AC.

Assembly 01 - Lower Hull

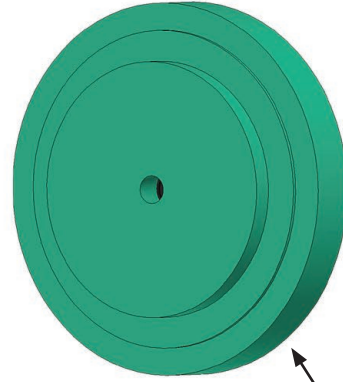
10x

Glue part 01-25D to the assembly of parts 01-25A and 01-25C.
Before gluing, check the correct position of the bearing.
Apply the adhesive only to the areas marked in red.

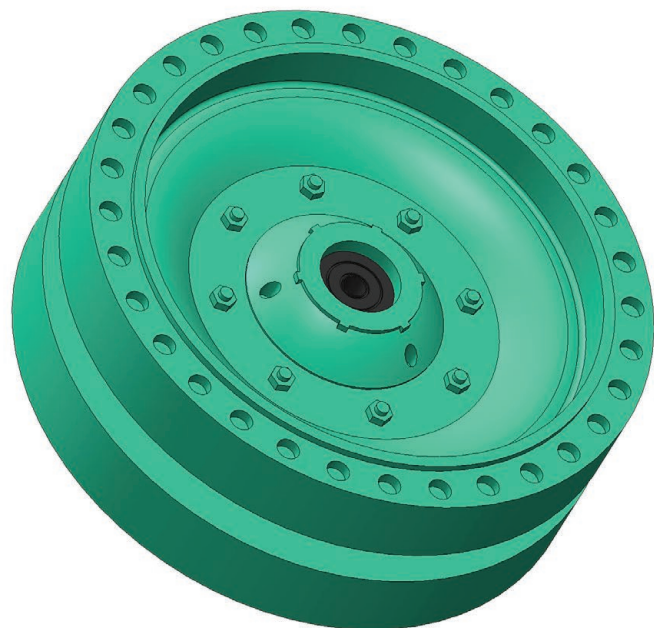
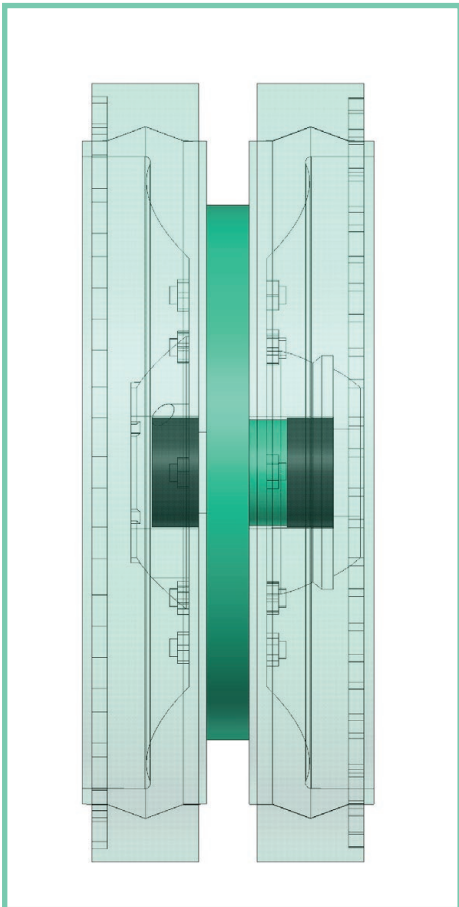
Assembly 01 - Lower Hull

10x

01-25A+B



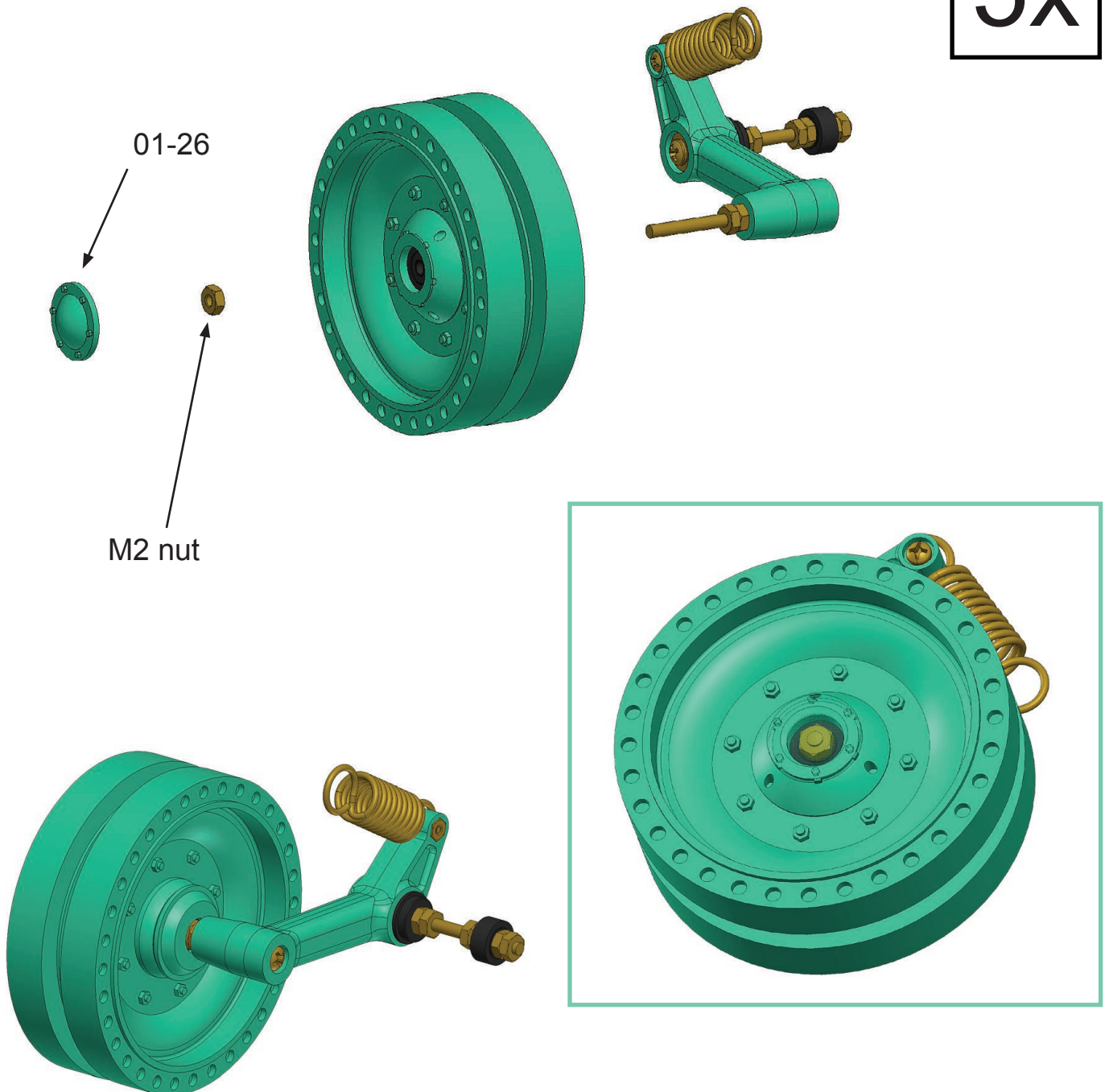
01-25A+C+D



Finish the wheels.
Glue the assemblies of parts 01-25A + B and 01-25A + C + D together.
Align the parts carefully.

Assembly 01 - Lower Hull

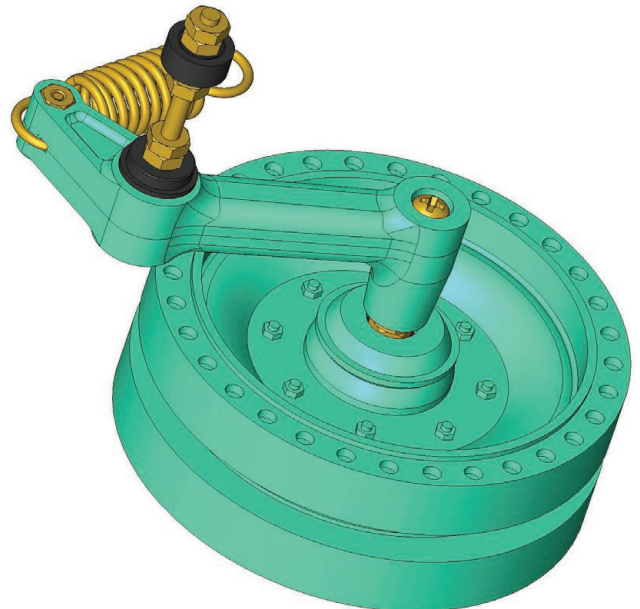
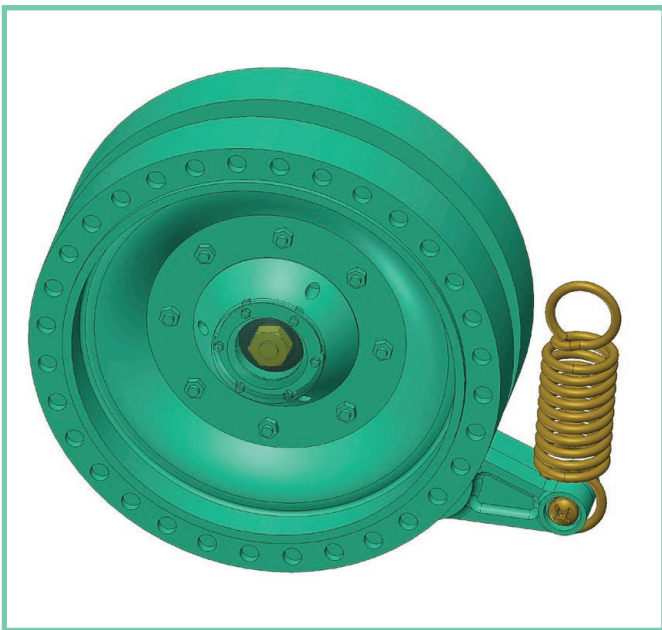
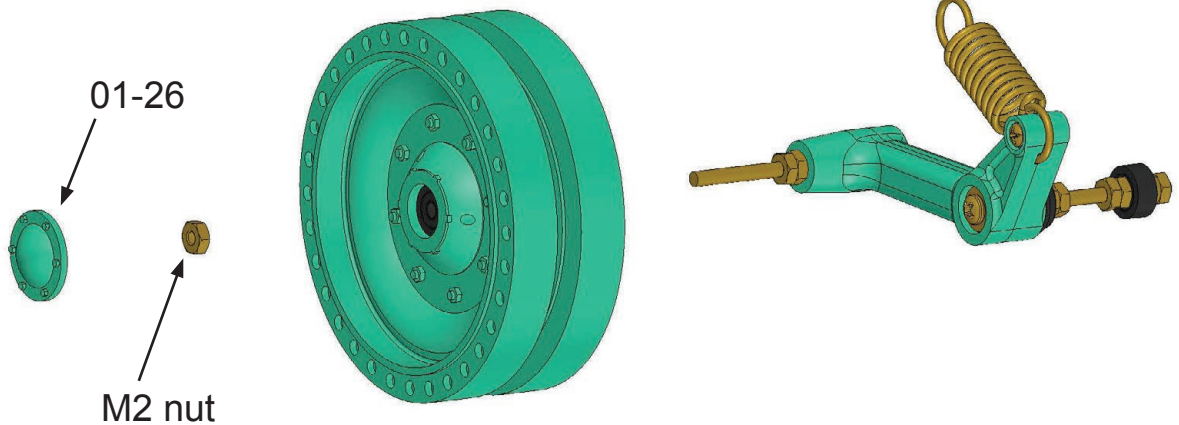
5x



Prepare 5 wheels for the left side.
 Attach parts assemblies 01-23A + B to parts 01-25A + B + C + D.
 Secure with M2 nut. Secure the nut with glue.
 It must not come loose under any circumstances.
 Check everything and glue part 01-26.
 We recommend using an adhesive that can be erased in the future.

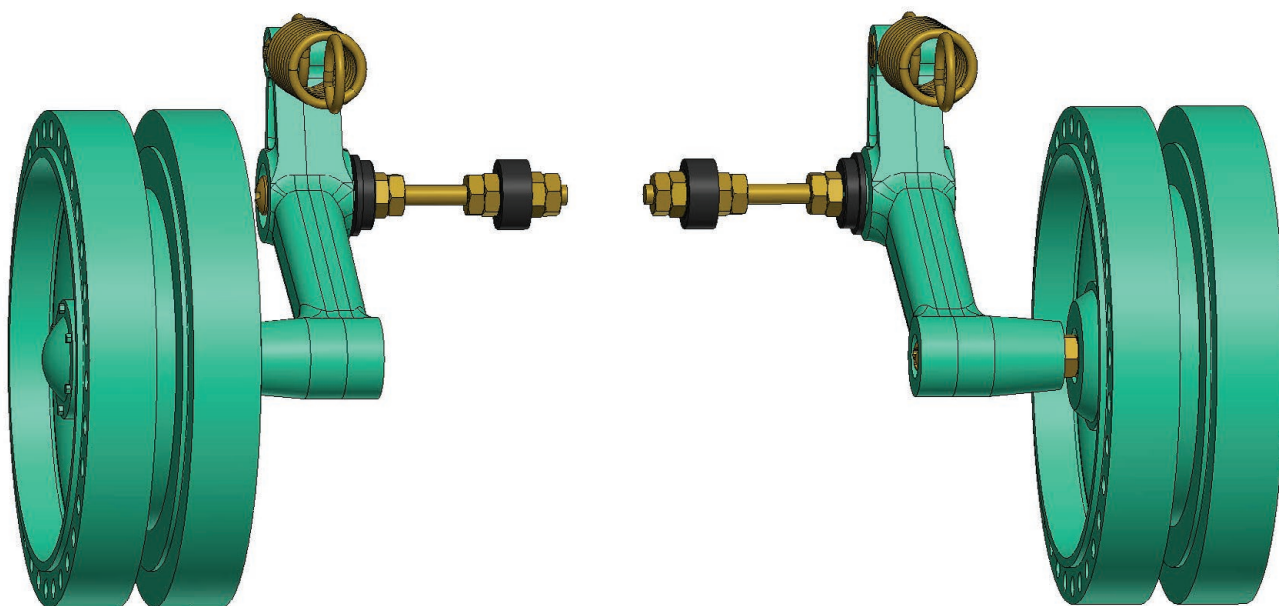
Assembly 01 - Lower Hull

5x



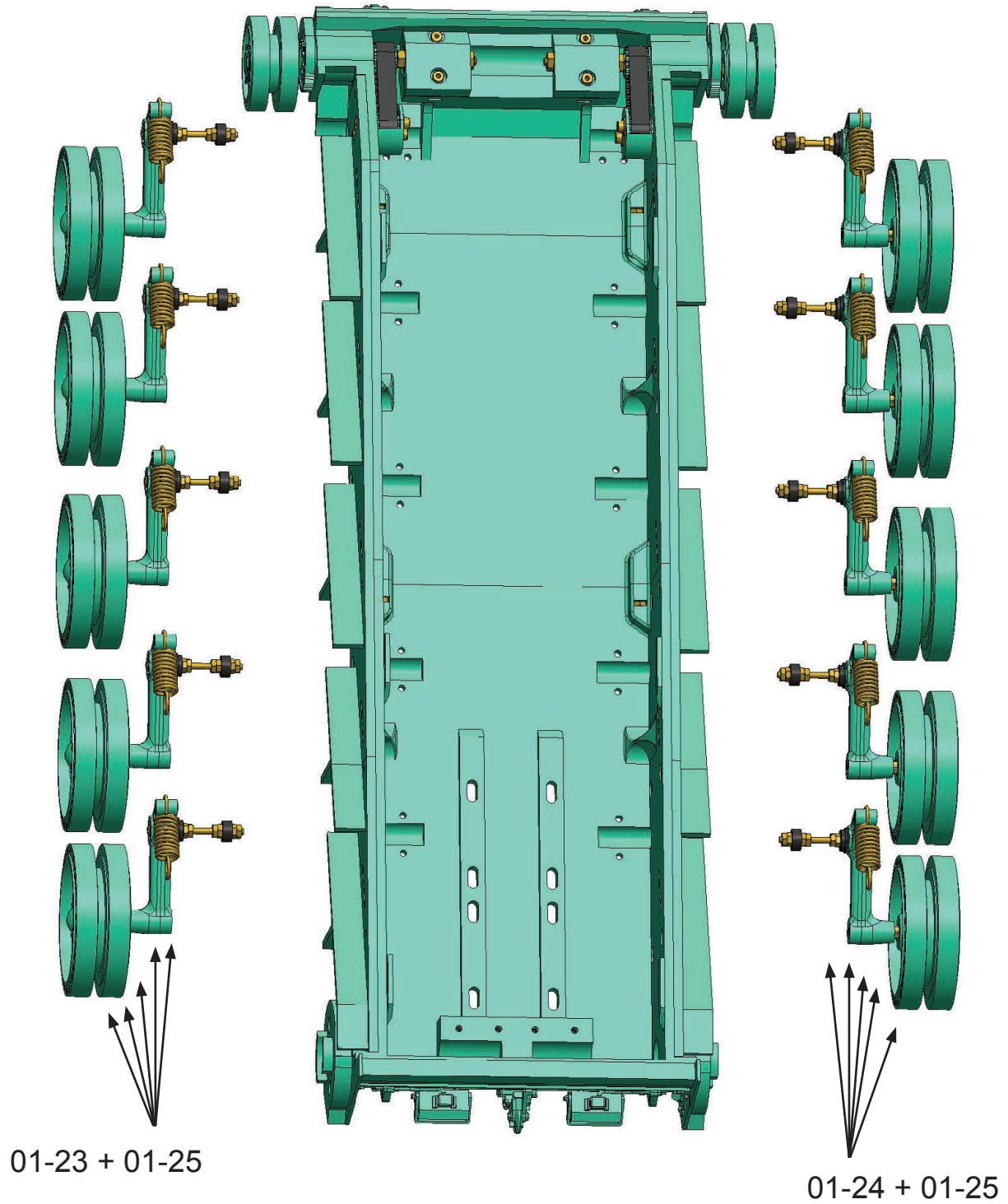
Prepare 5 wheels for the right side.
 Attach parts assemblies 01-24A + B to parts 01-25A + B + C + D.
 Secure with M2 nut. Secure the nut with glue.
 It must not come loose under any circumstances.
 Check everything and glue part 01-26.
 We recommend using an adhesive that can be erased in the future.

Assembly 01 - Lower Hull



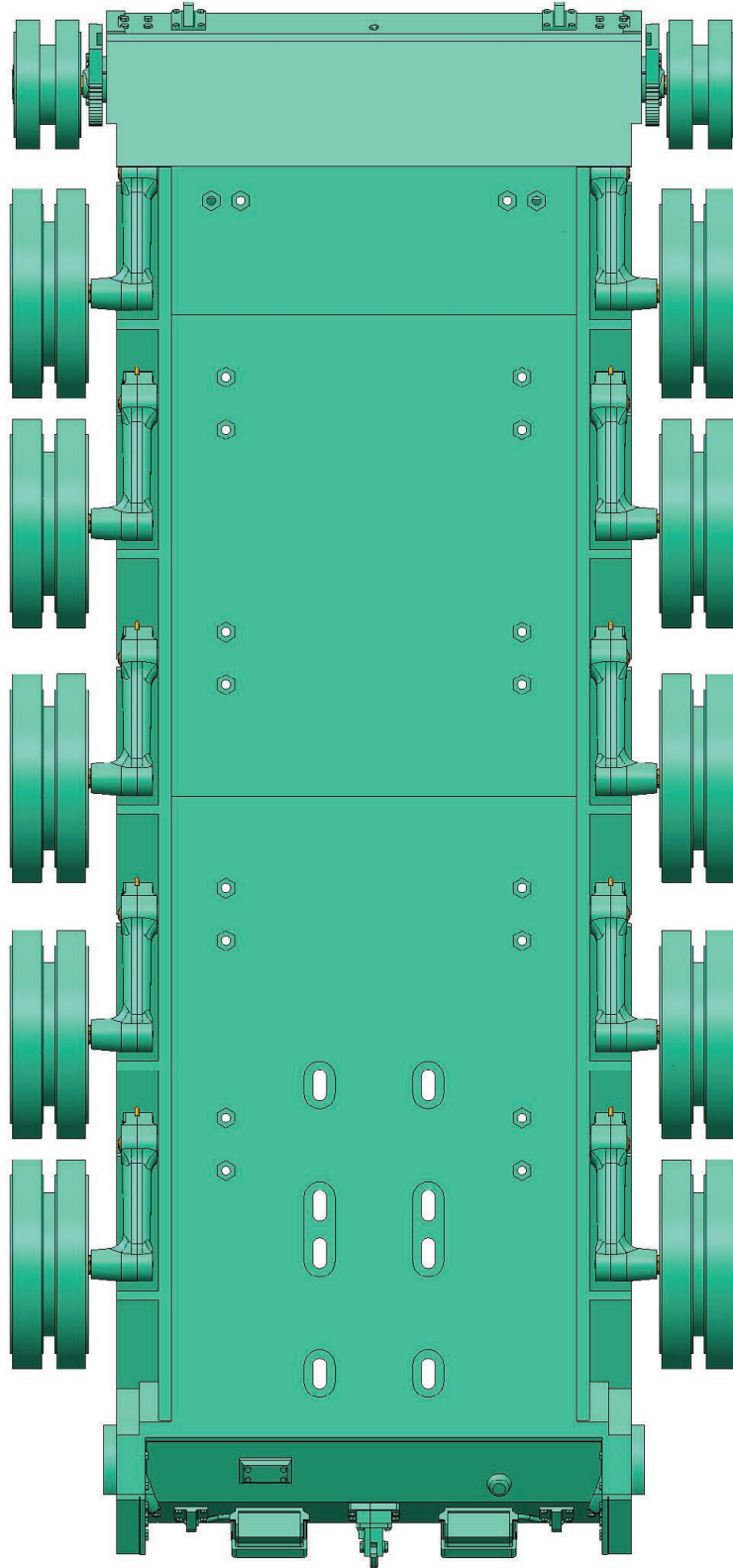
View of the finished wheels.

Assembly 01 - Lower Hull



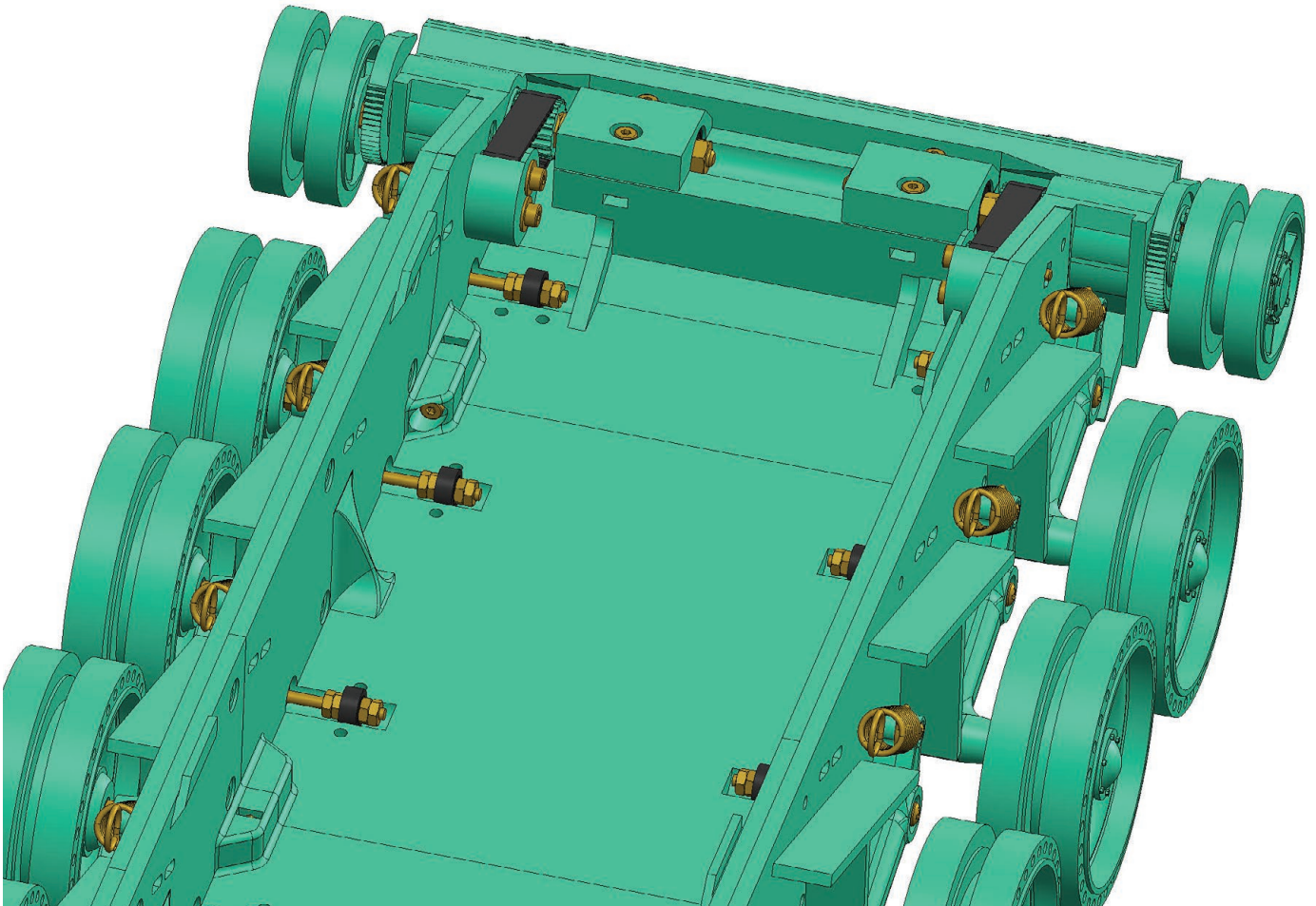
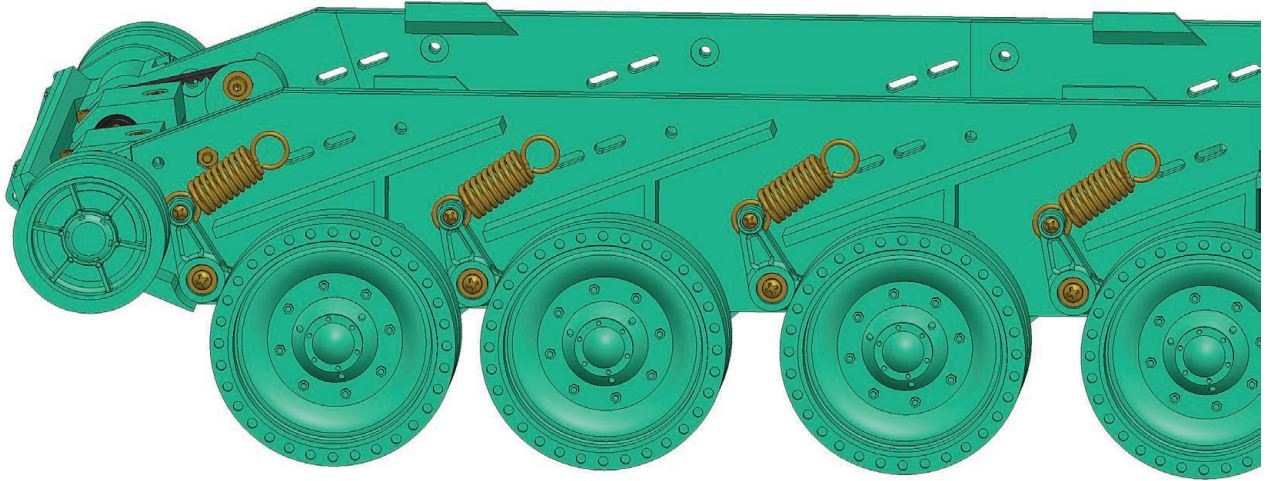
Insert the prepared wheels into the hull.

Assembly 01 - Lower Hull



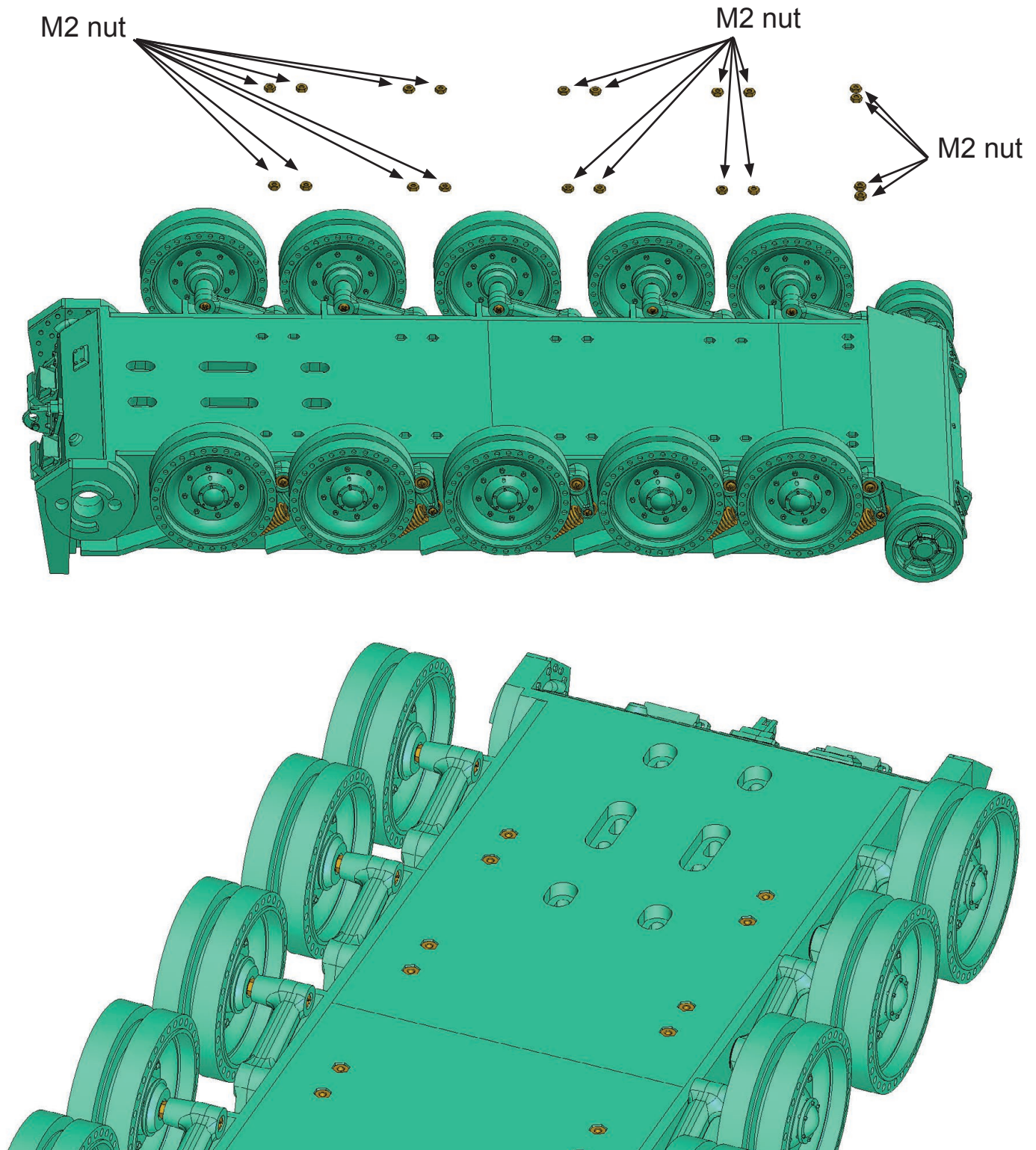
View of the installed wheels - bottom side.

Assembly 01 - Lower Hull



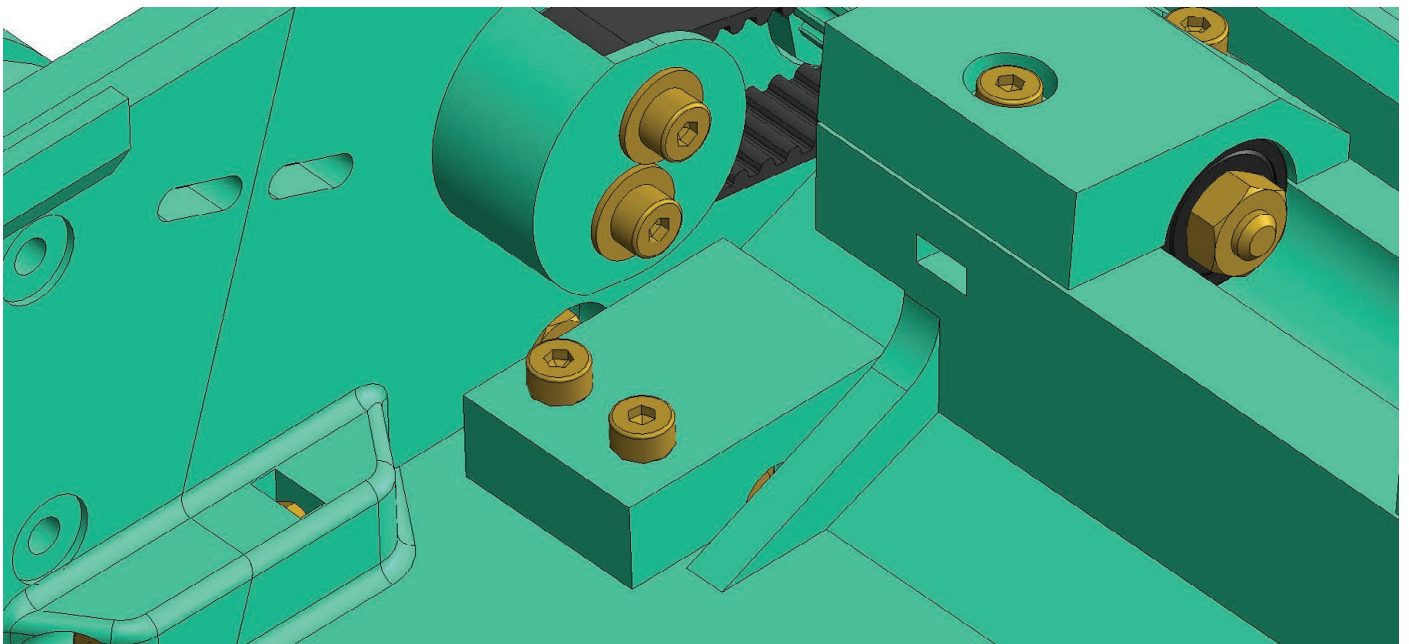
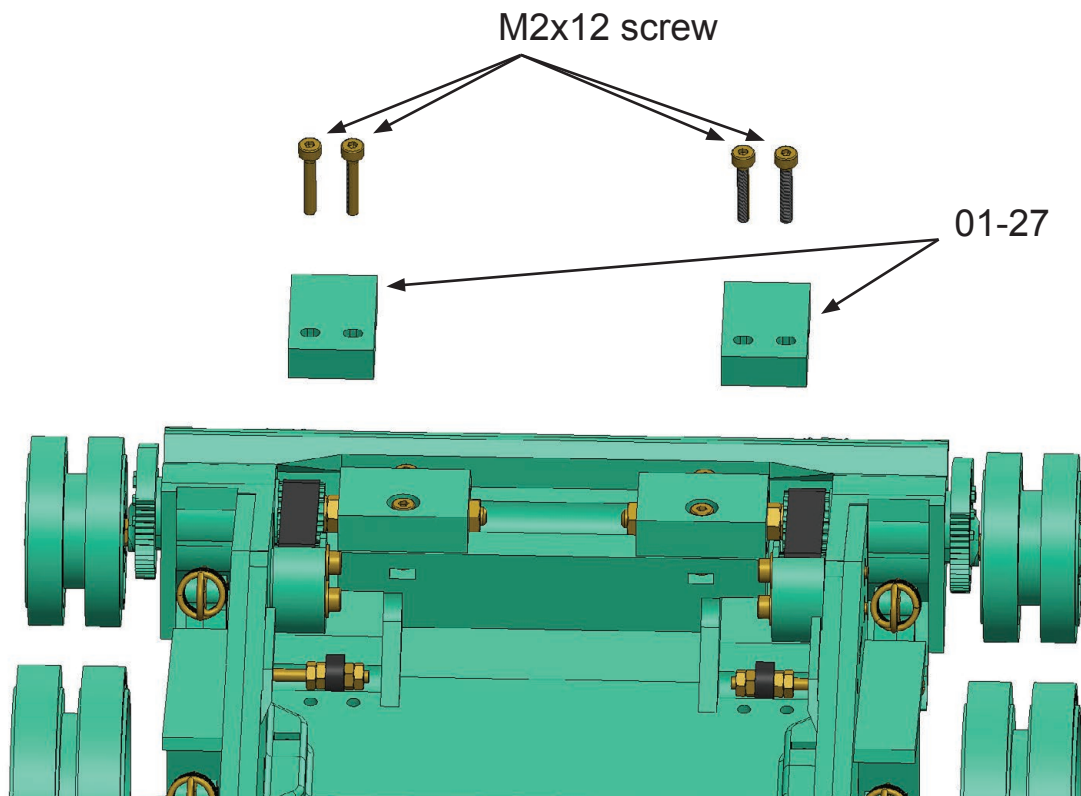
Additional auxiliary views for wheel installation.

Assembly 01 - Lower Hull



Insert 20 M2 nuts to secure the wheels.

Assembly 01 - Lower Hull

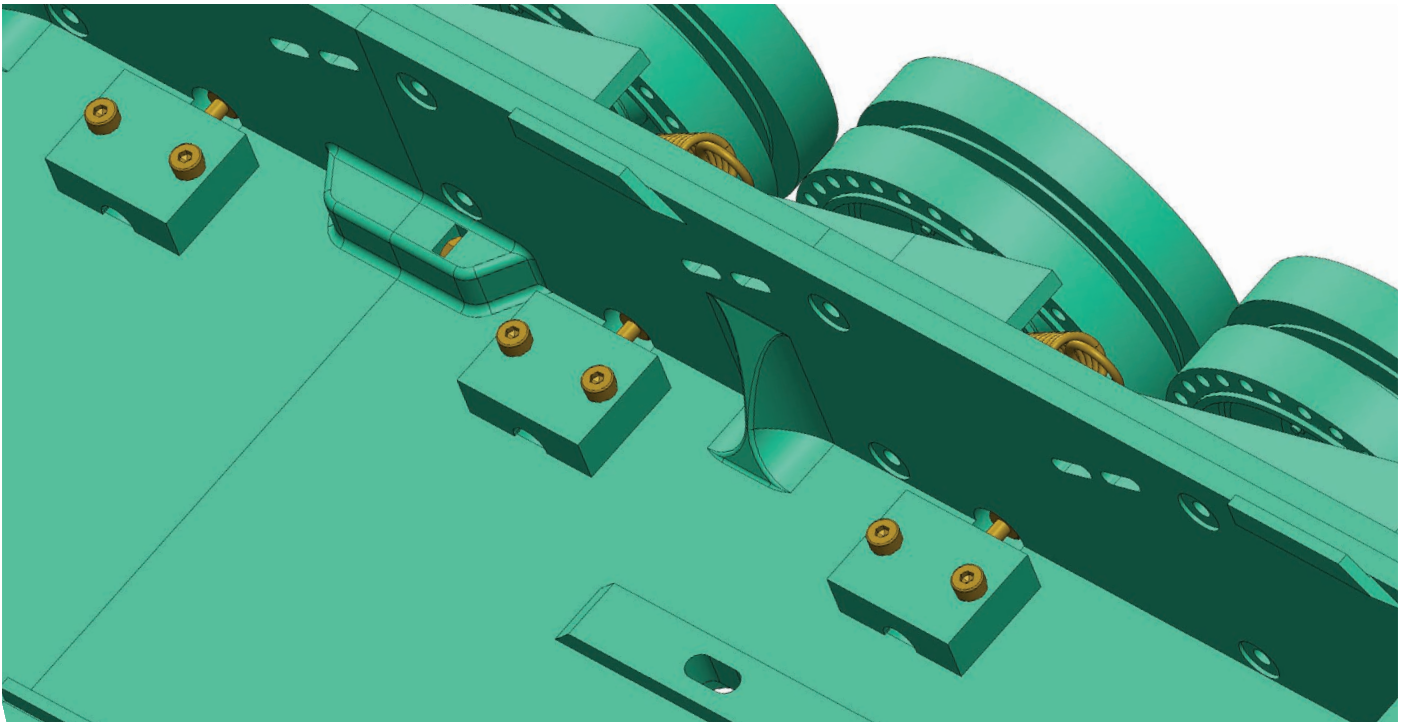
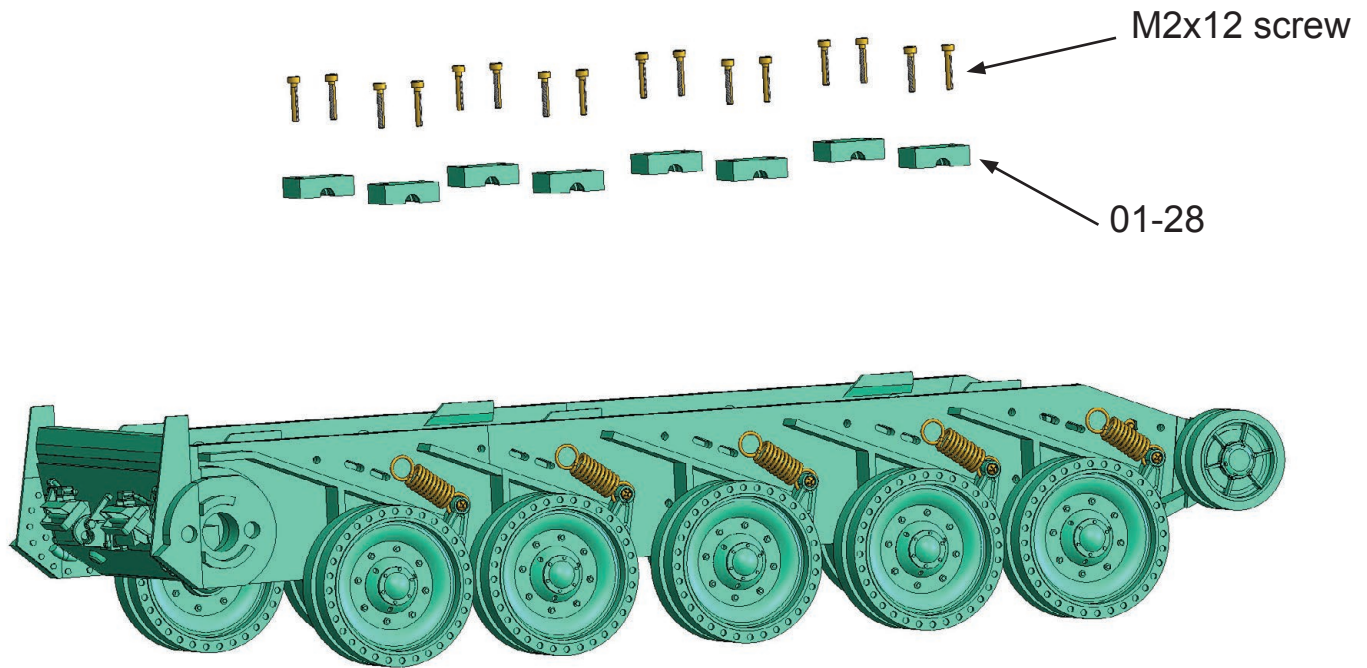


A pair of drive wheels, which are closest to the front of the tank, must be secured with parts 01-27. Use four M2x12mm screws.

Cromwell Mk.IV

Assembly guide

Assembly 01 - Lower Hull

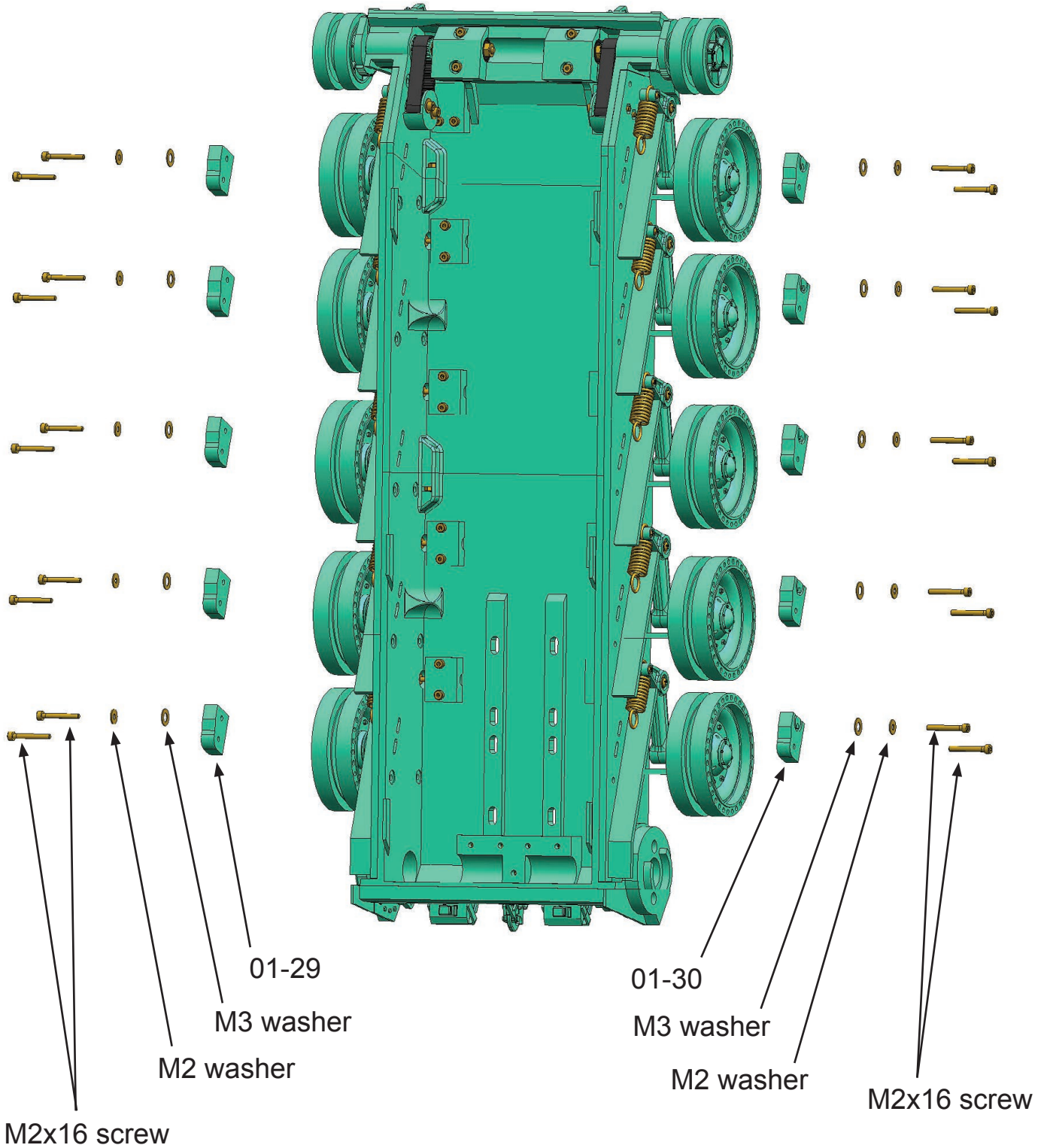


Secure the other wheels. You will need 8 parts labelled 01-28.
Use 16 M2x12mm screws.

Cromwell Mk.IV

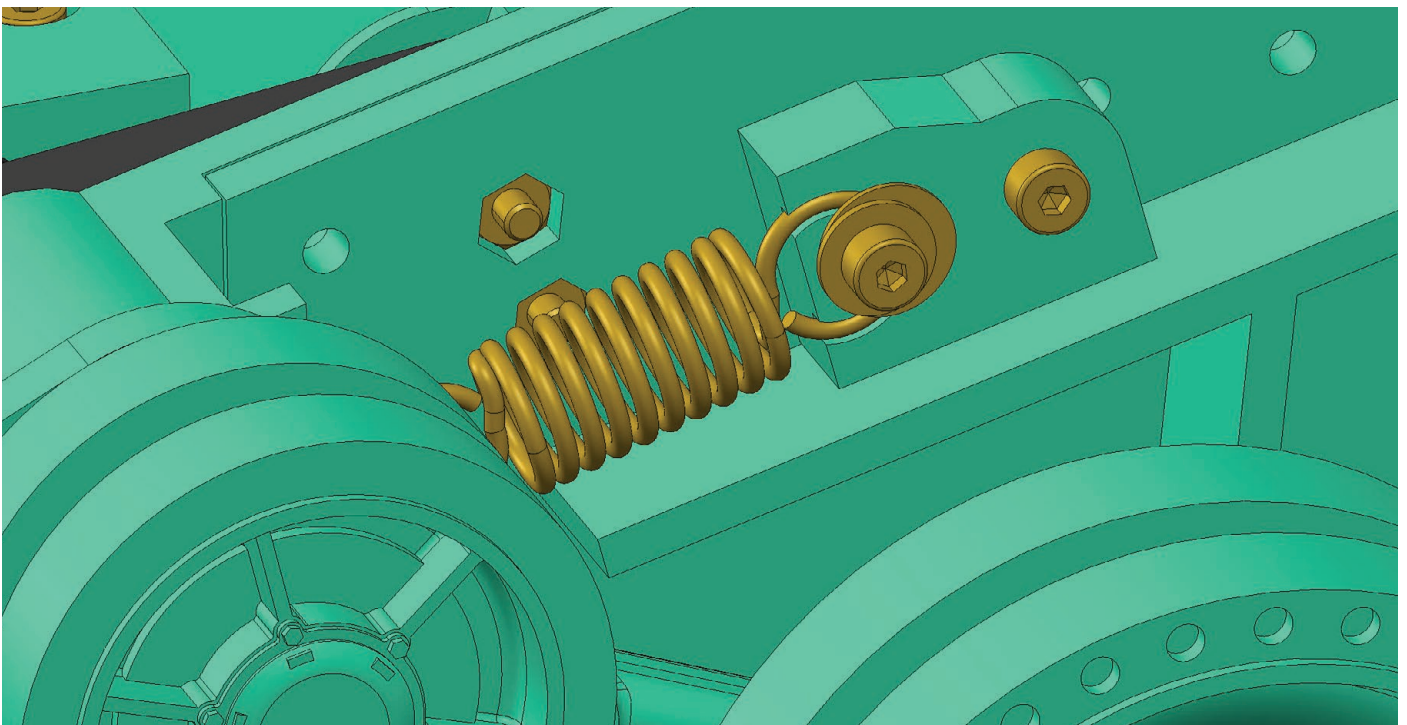
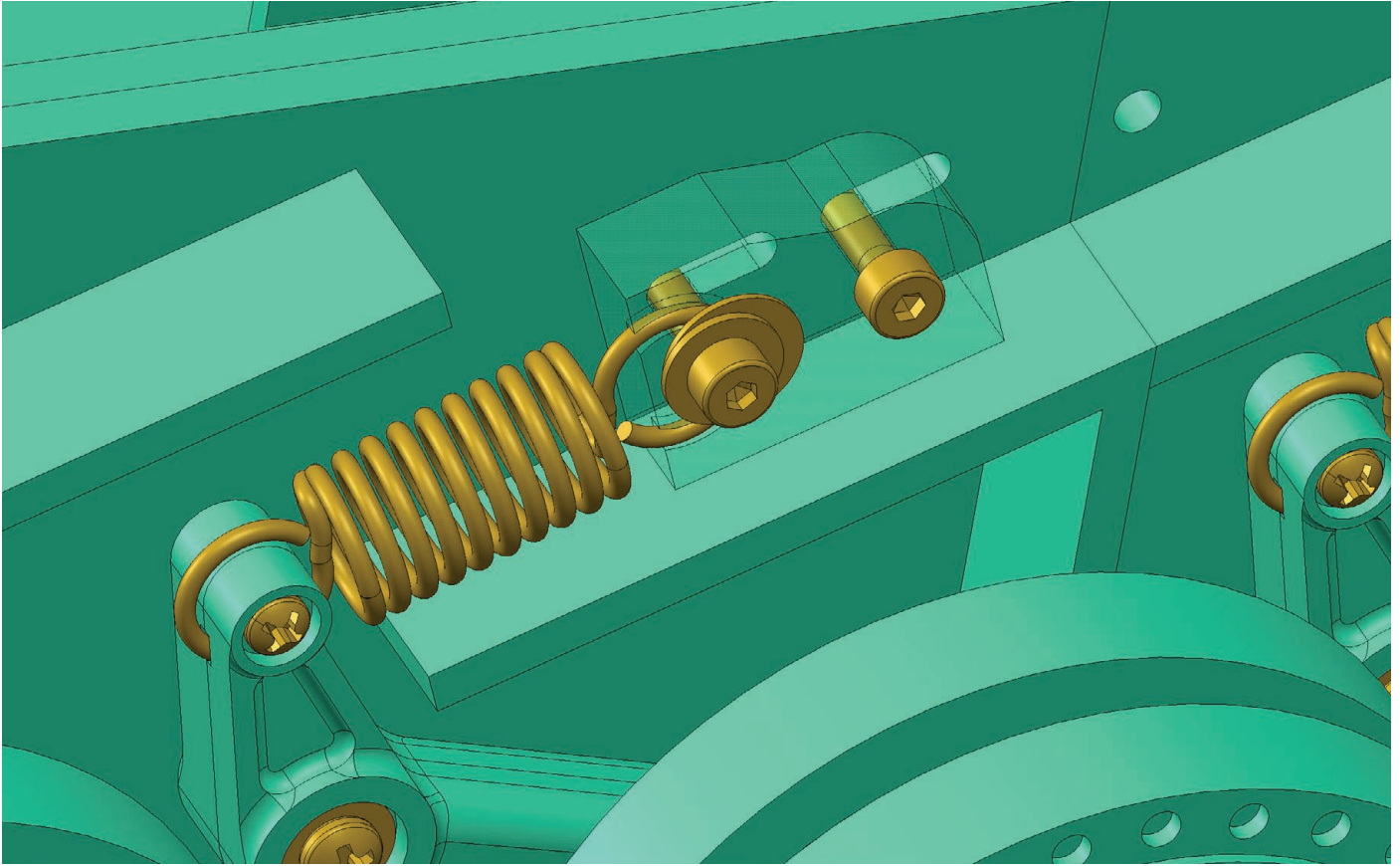
Assembly guide

Assembly 01 - Lower Hull



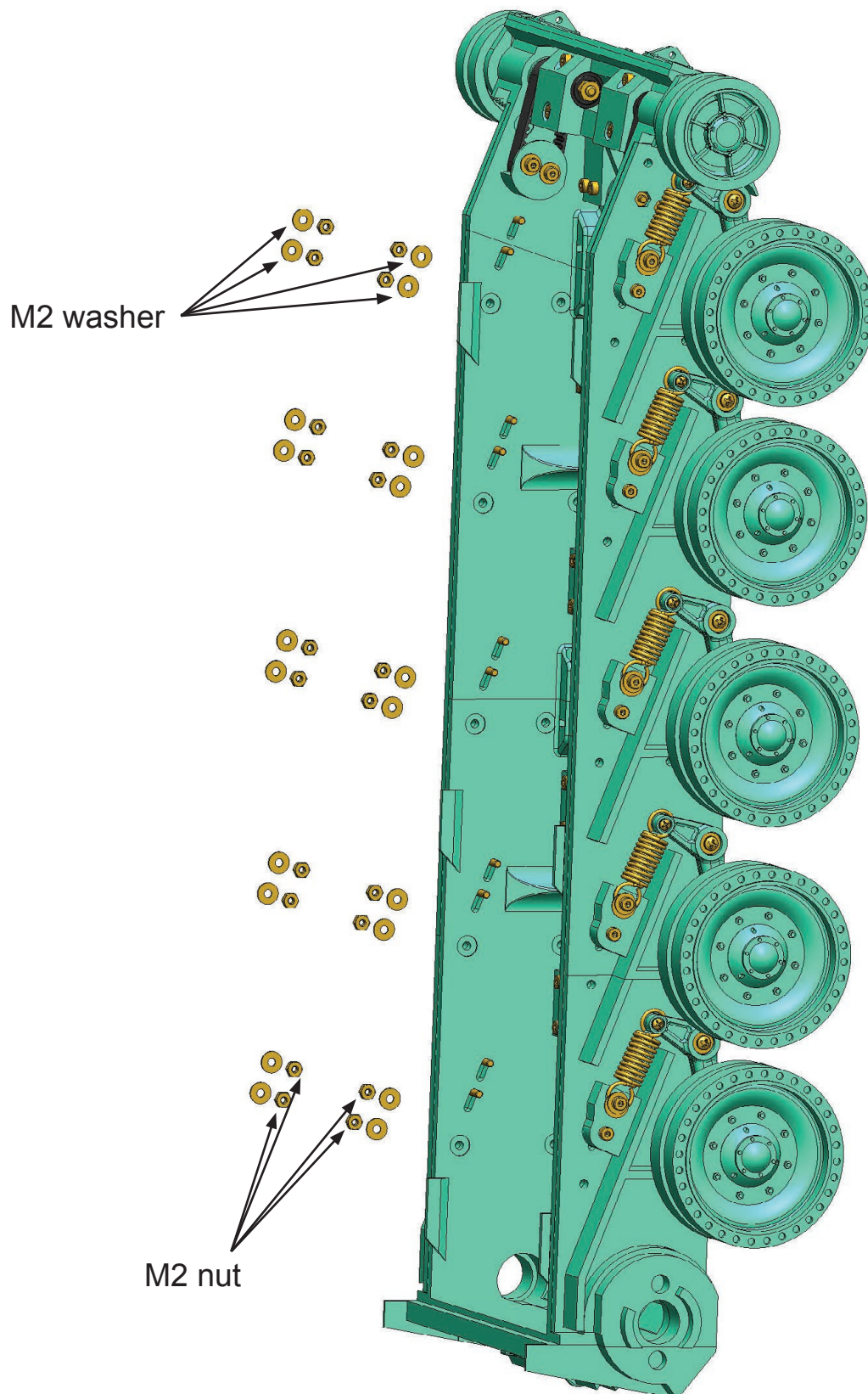
Secure the springs with parts 01-29 (5x) and 01-30 (5x).
 Both washers, M2 and M3, must be fitted to the screw securing the spring.
 You will need 20 M2x16mm screws.

Assembly 01 - Lower Hull



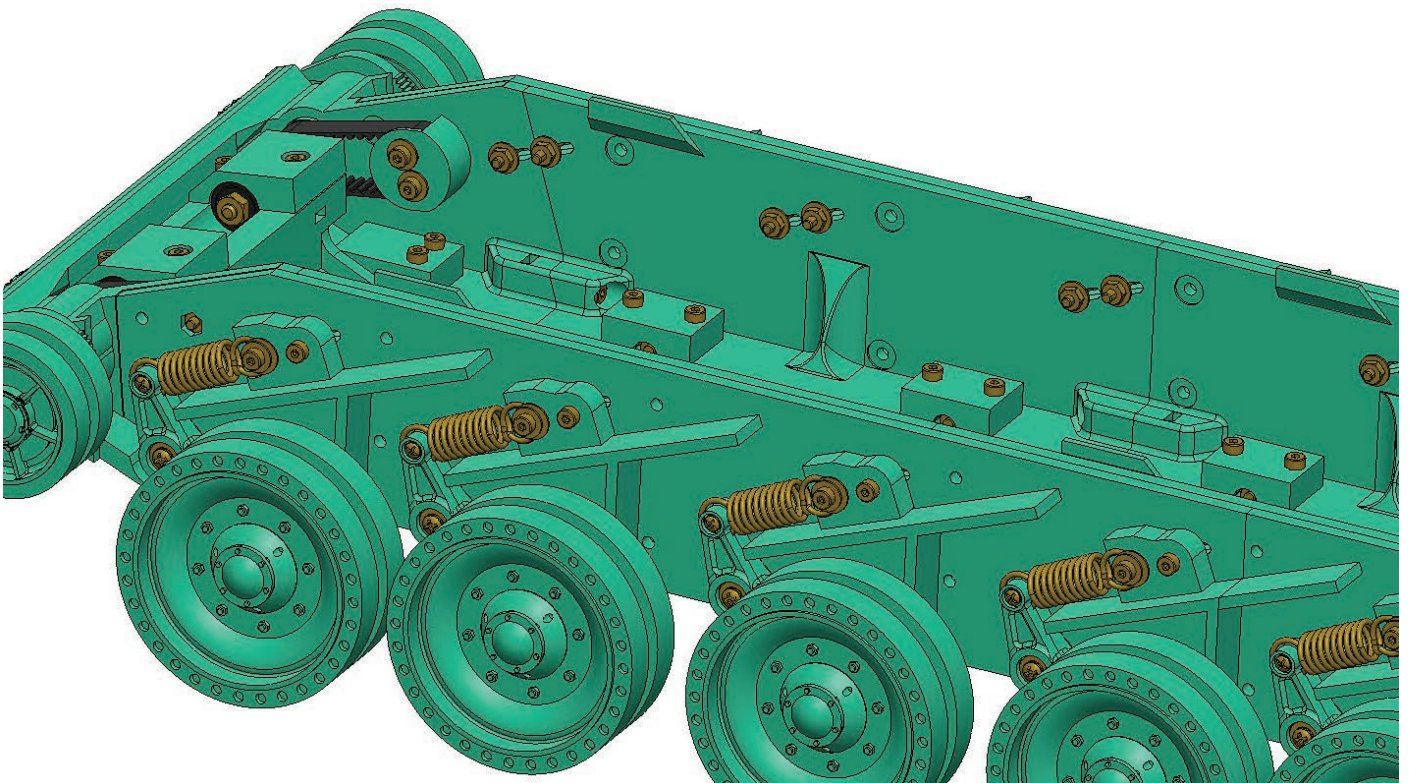
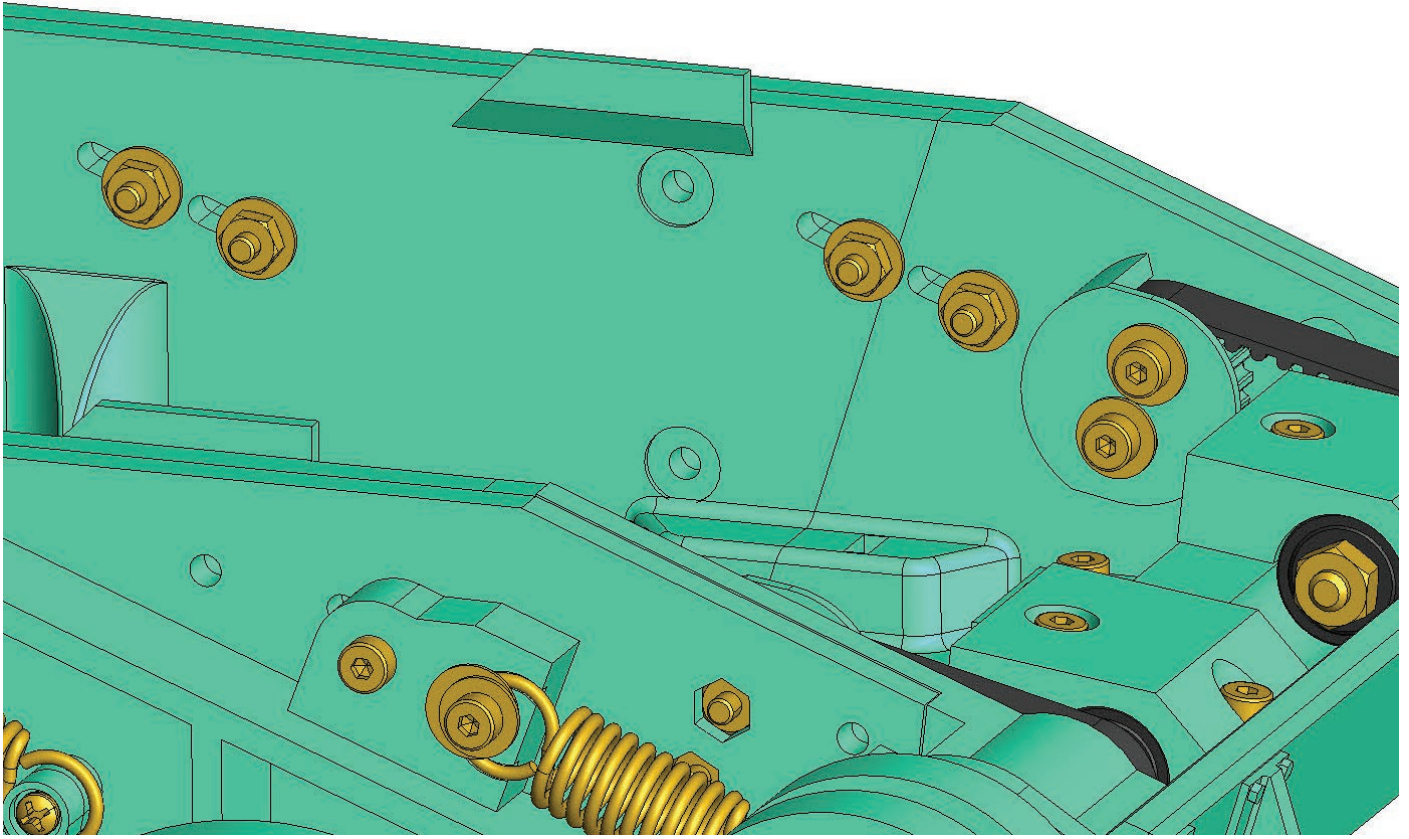
Auxiliary views for installation of parts 01-29 and 01-30.

Assembly 01 - Lower Hull



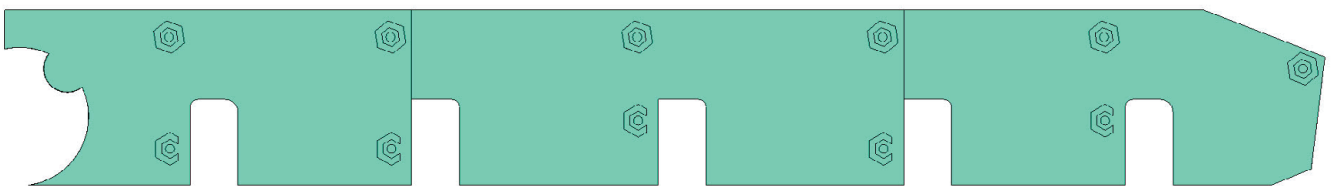
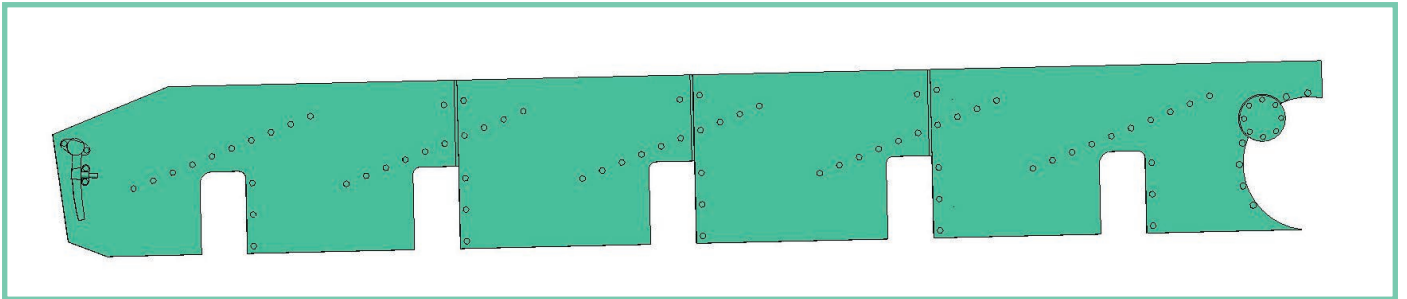
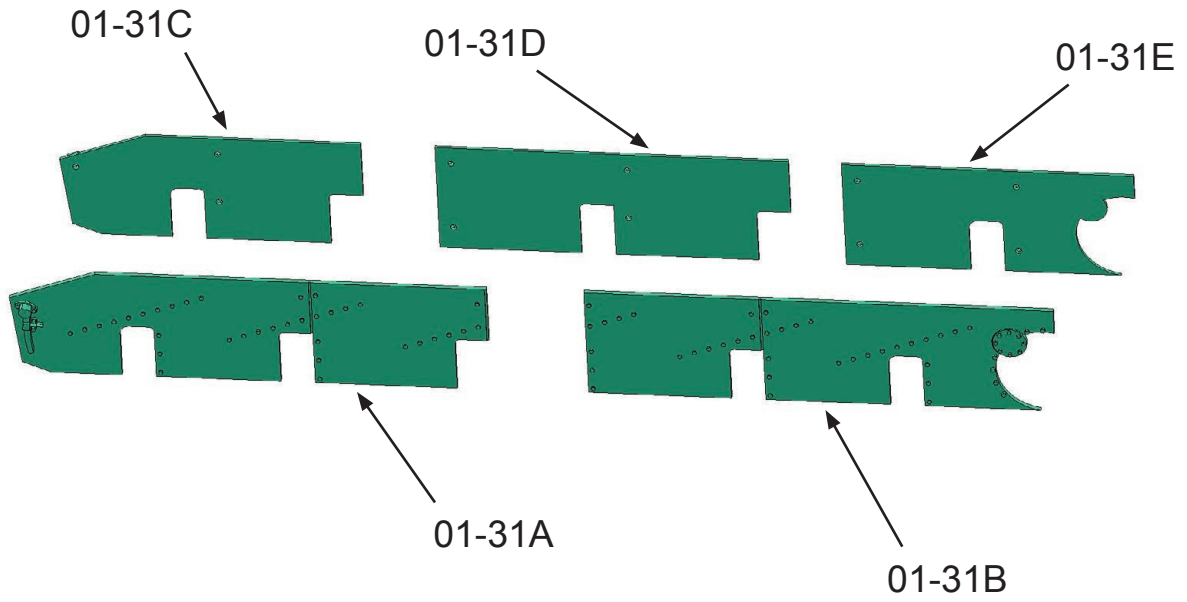
Secure parts 01-29 and 01-30 on the other side with 20 M2 nuts and 20 washers.
You can move the parts in the grooves to adjust the suspension springs.

Assembly 01 - Lower Hull



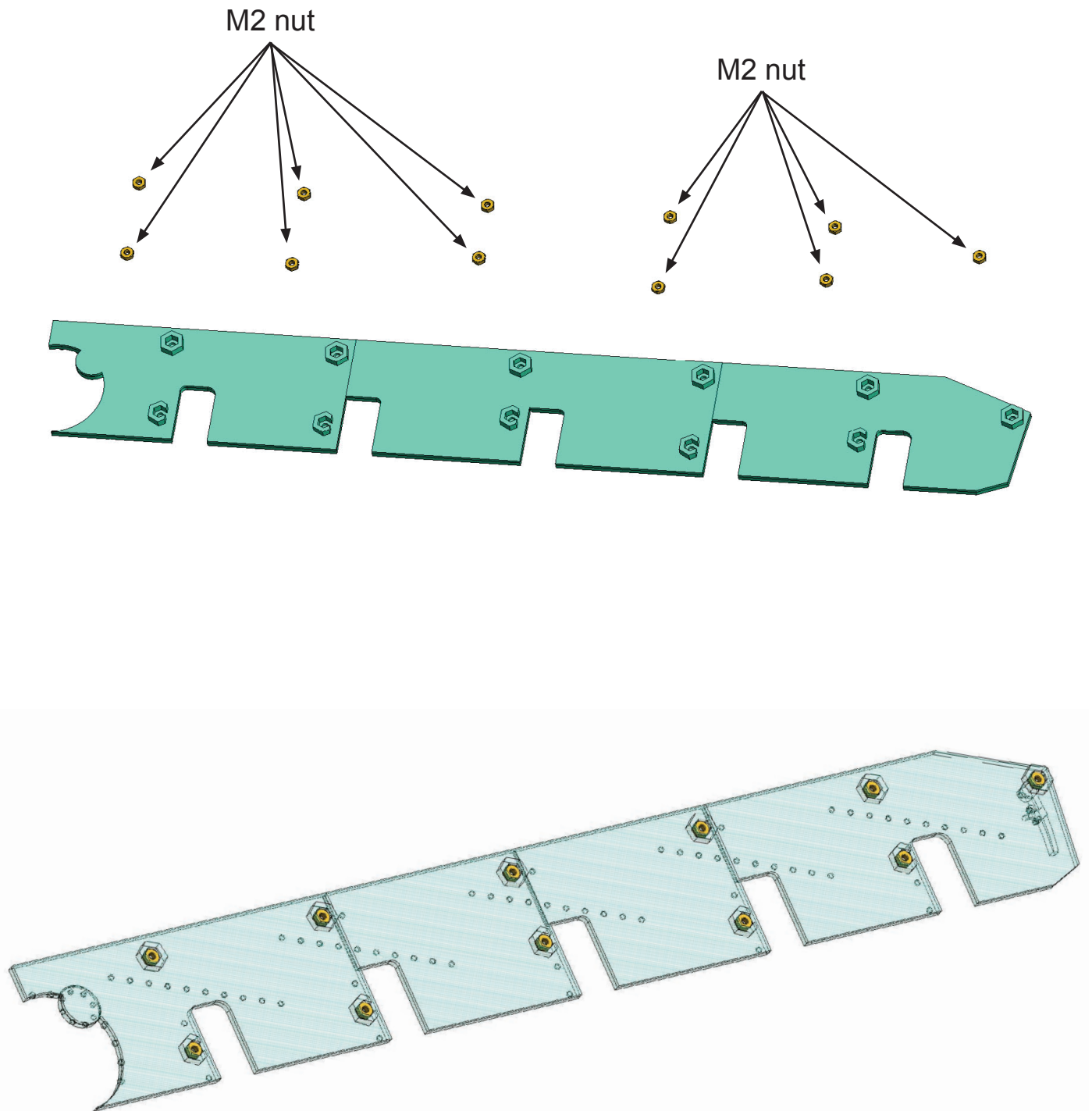
Auxiliary views for installing nuts.

Assembly 01 - Lower Hull



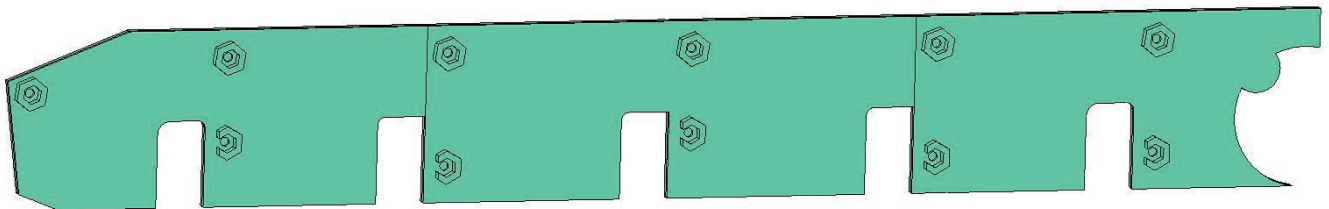
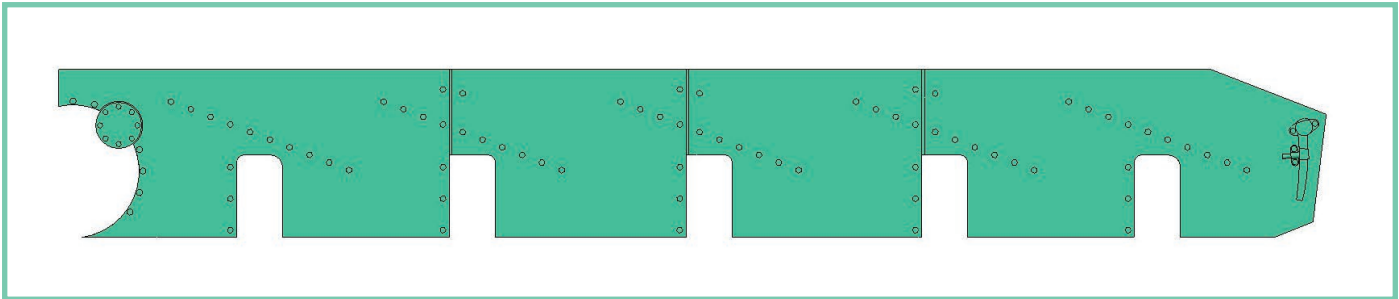
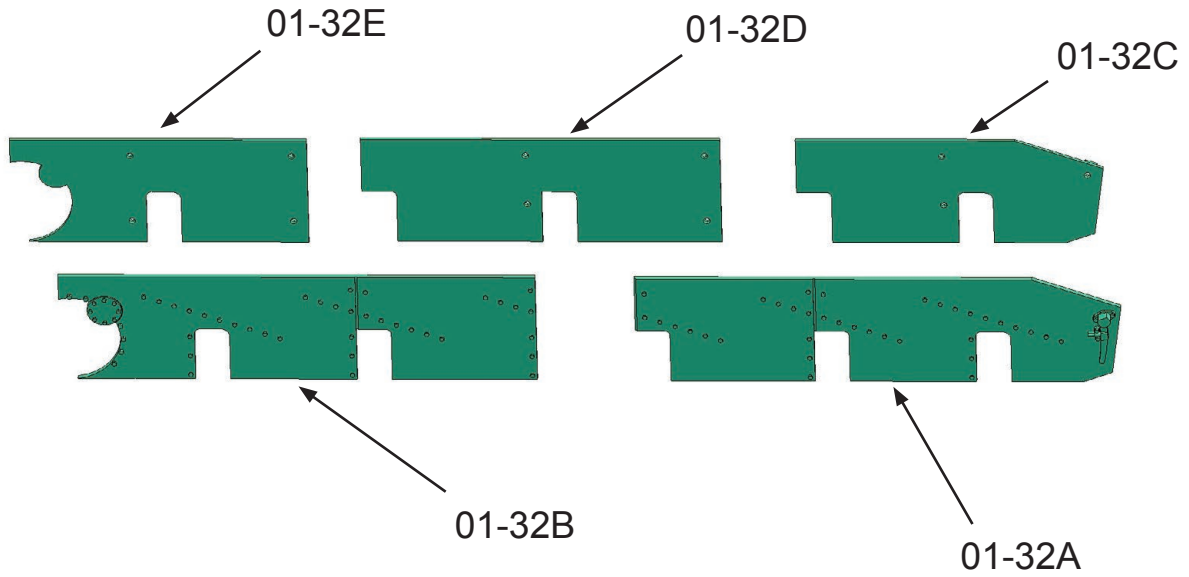
Glue parts 01-31A to 01-31E together.

Assembly 01 - Lower Hull



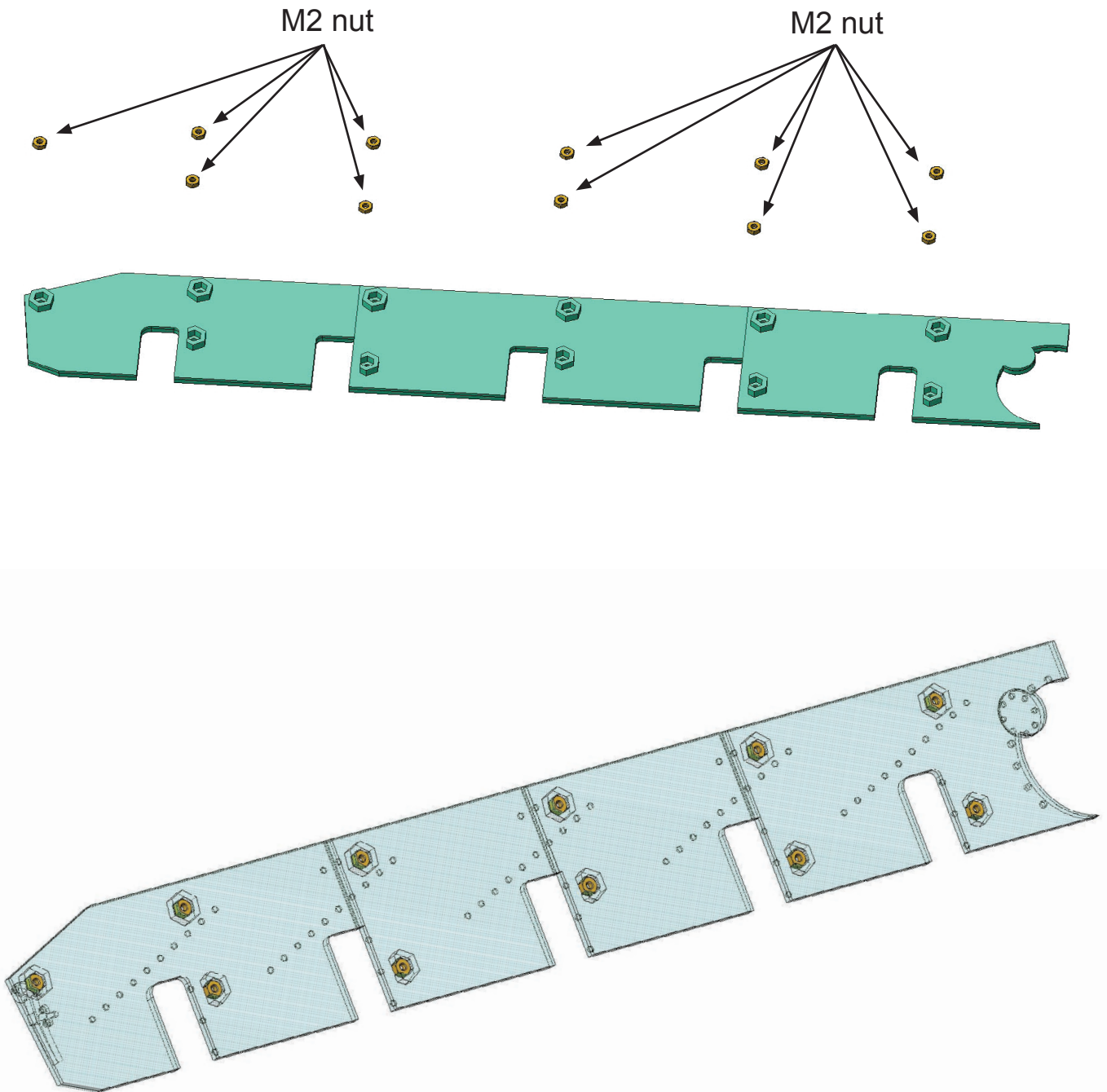
Glue 11 M2 nuts. The nuts must be fastened so that they do not fall out.

Assembly 01 - Lower Hull



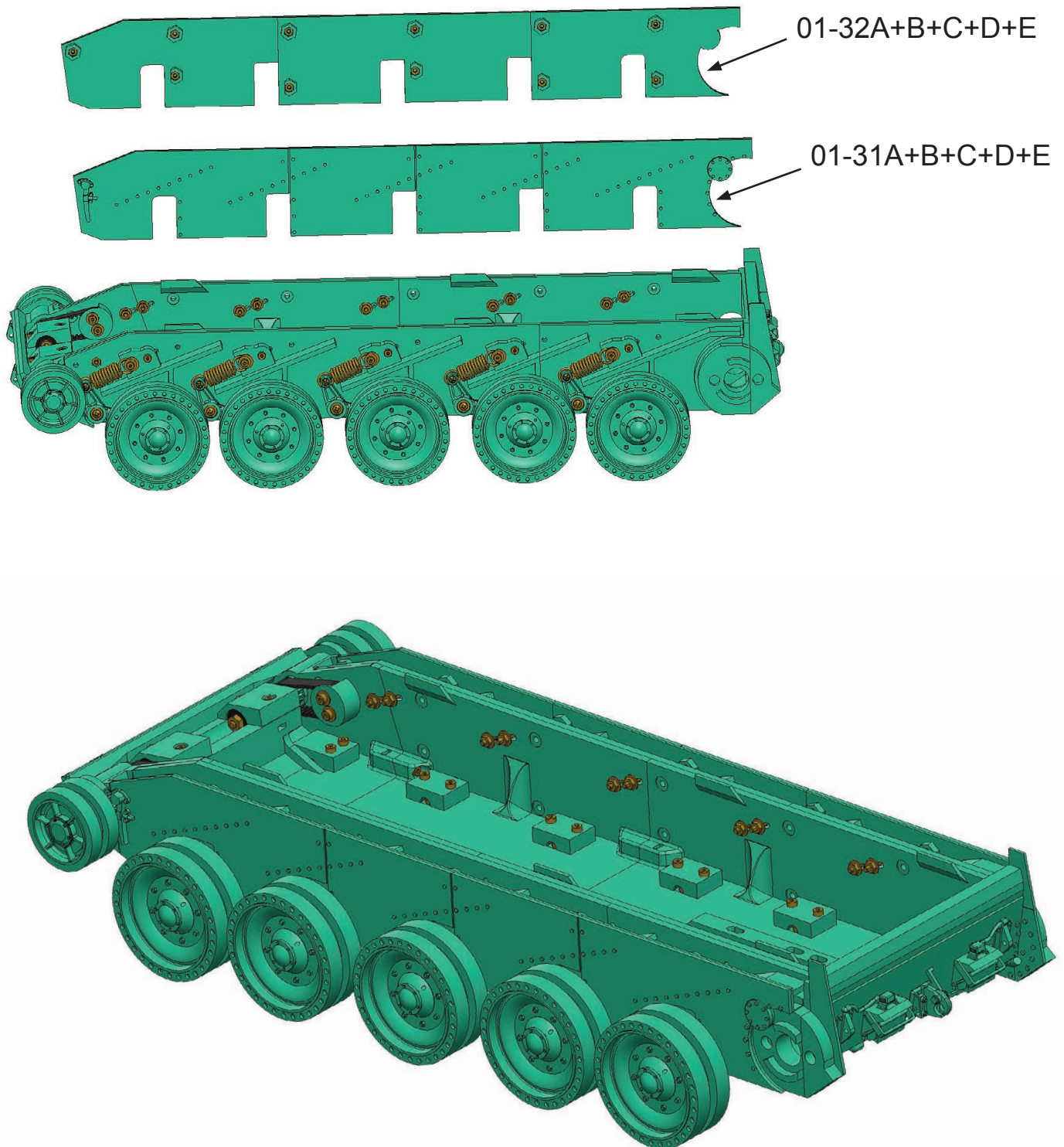
Glue parts 01-32A to 01-32E together.

Assembly 01 - Lower Hull



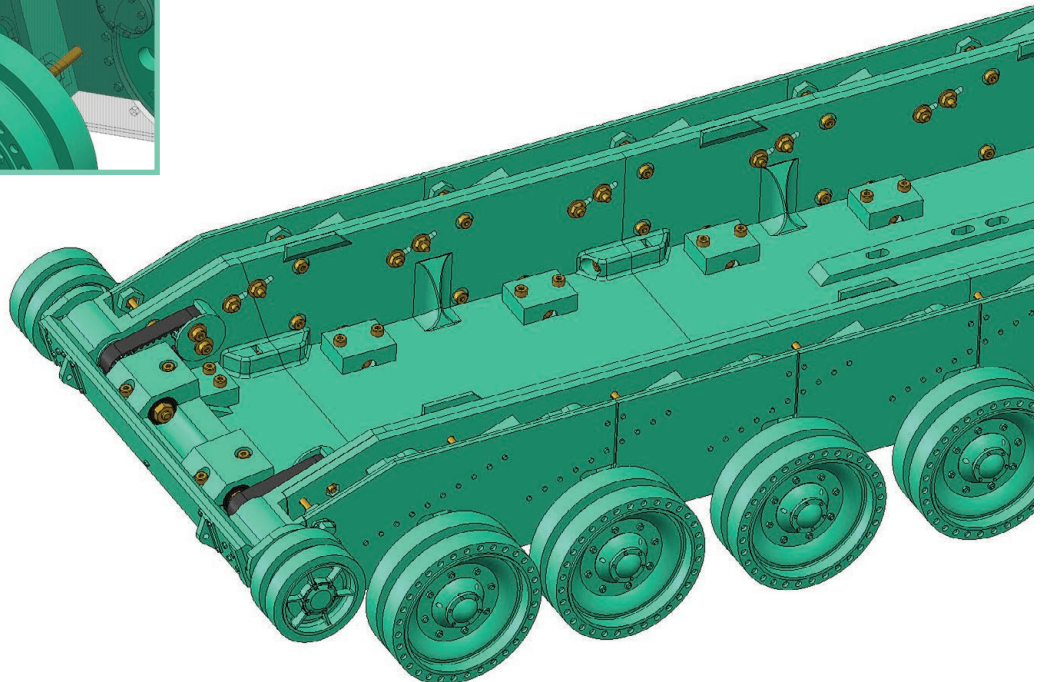
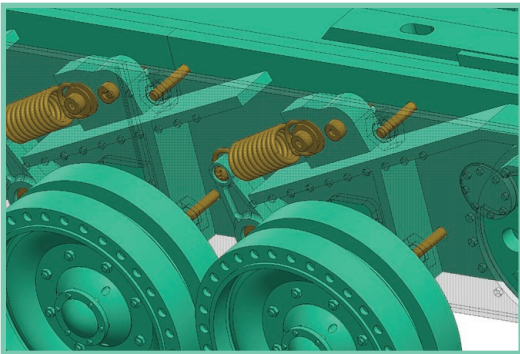
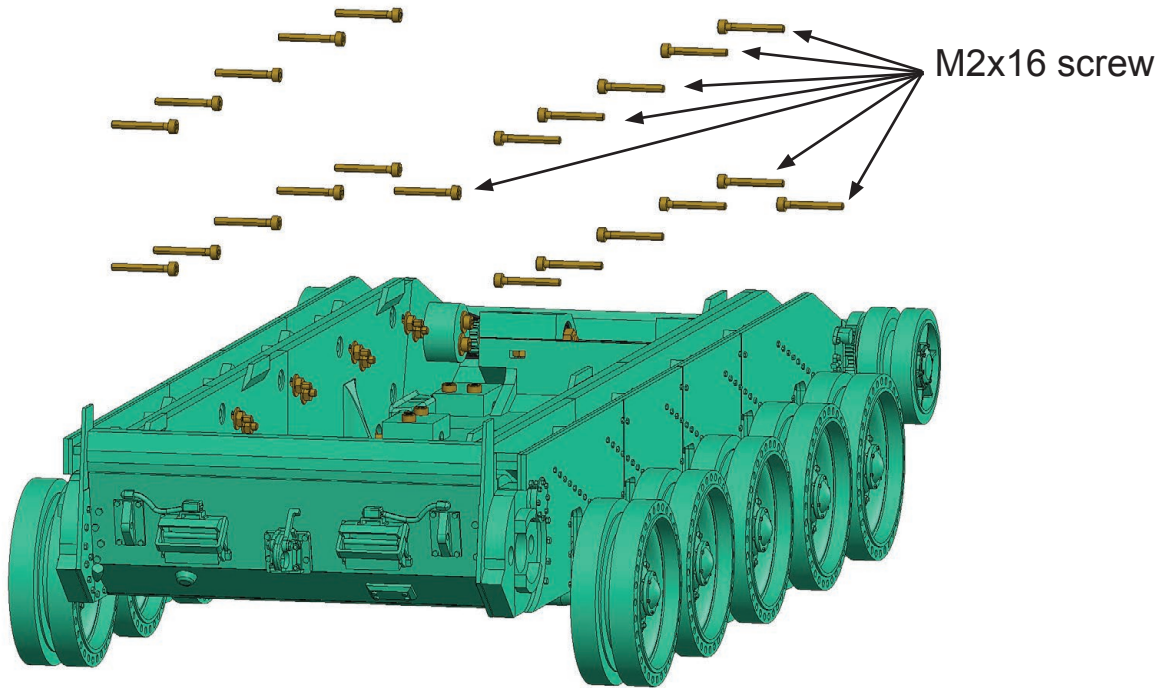
Glue 11 M2 nuts. The nuts must be fastened so that they do not fall out.

Assembly 01 - Lower Hull



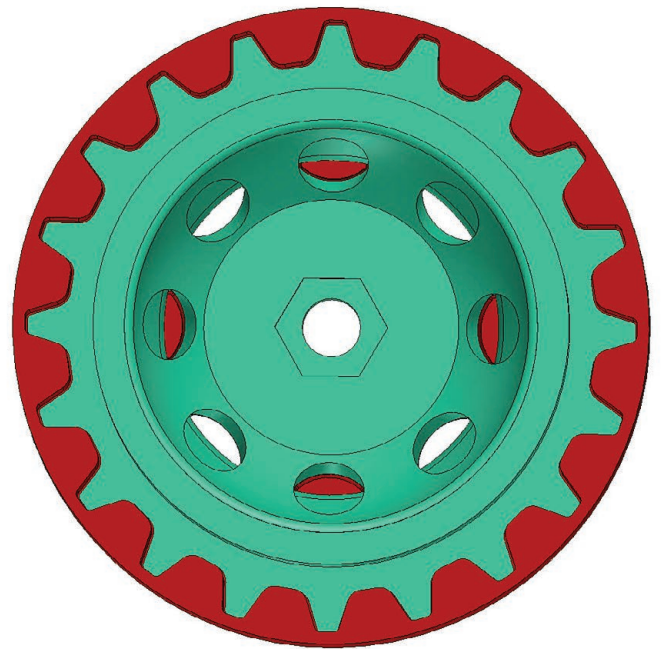
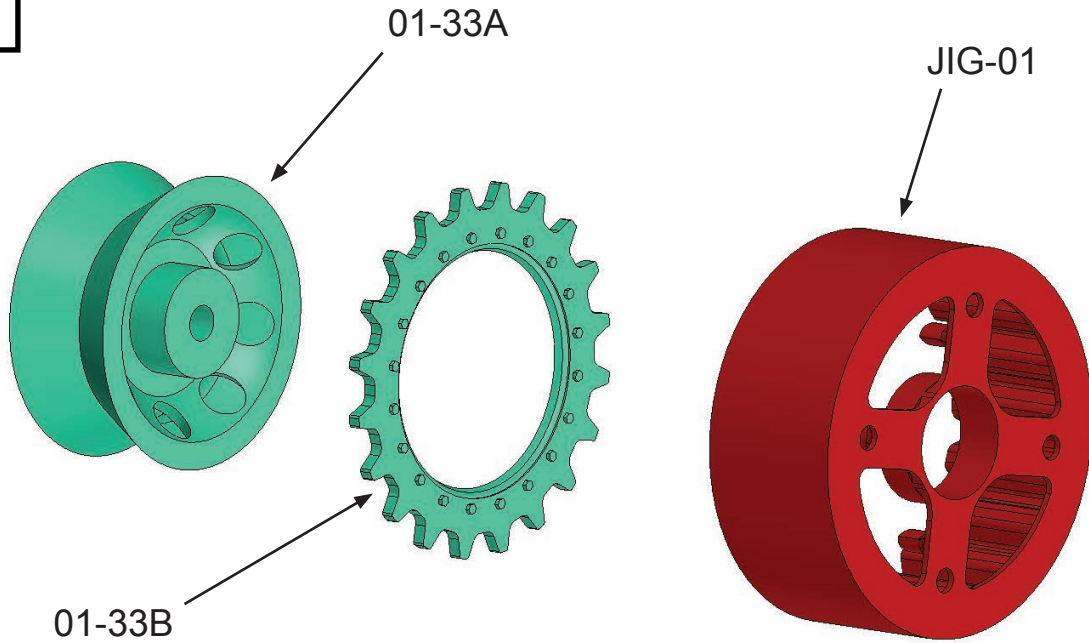
Install the chassis side armor - parts assemblies 01-31 and 01-32.
Do not glue these parts to the tank!

Assembly 01 - Lower Hull



Secure the parts assemblies 01-31 and 01-32 from the inside with 22 M2x16mm screws.

Assembly 01 - Lower Hull

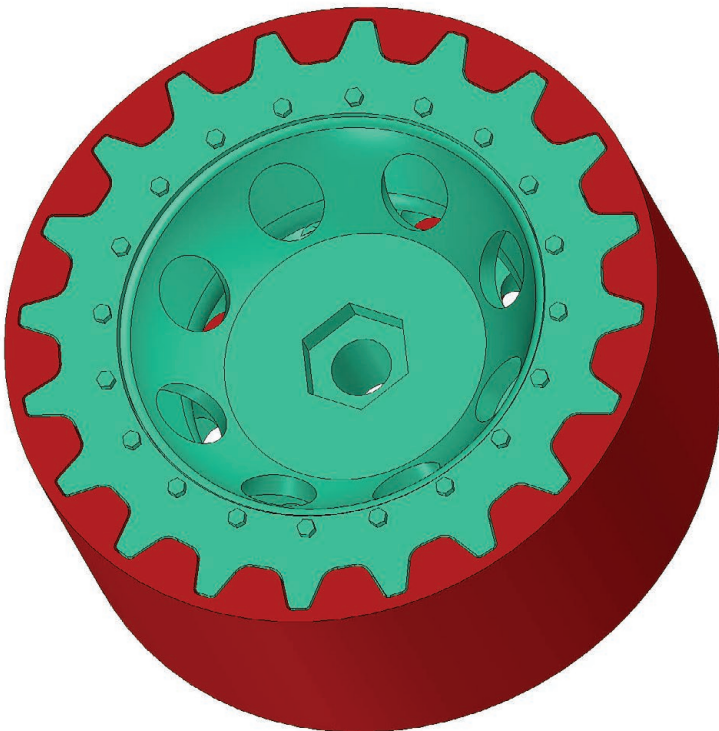
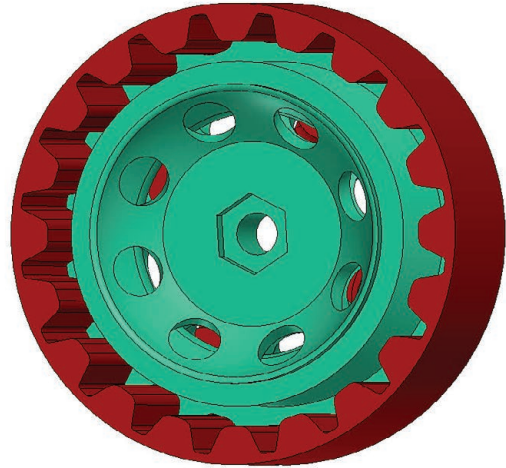
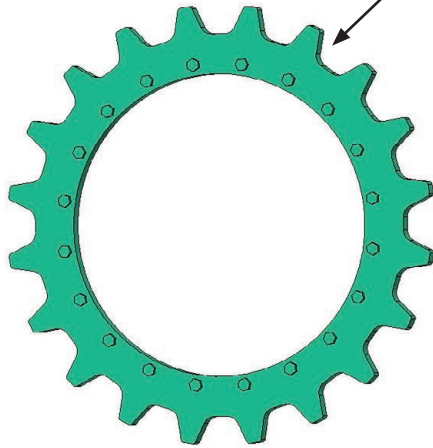
2x

Glue part 01-33A to part 01-33B.
You can use JIG-01 tool for precise gluing.

Assembly 01 - Lower Hull

2x

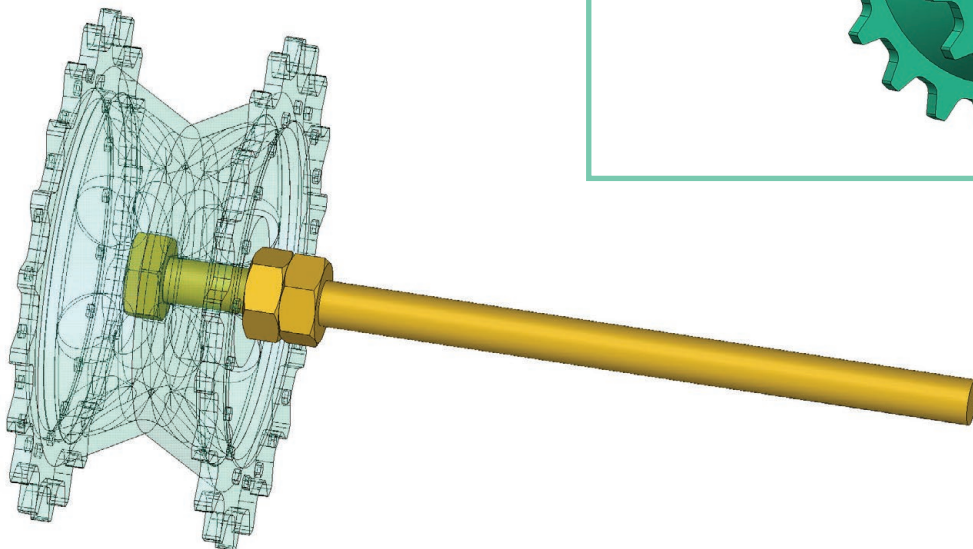
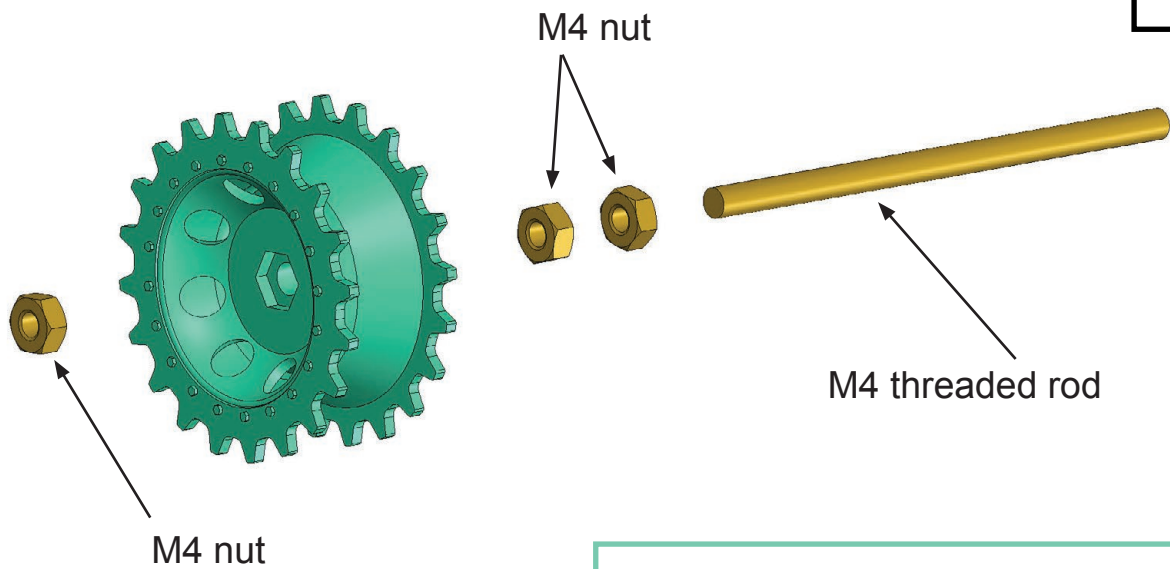
01-33C



Finish the wheel. Glue part 01-33C to part 01-33B.
You can use JIG-01 again for precise gluing.

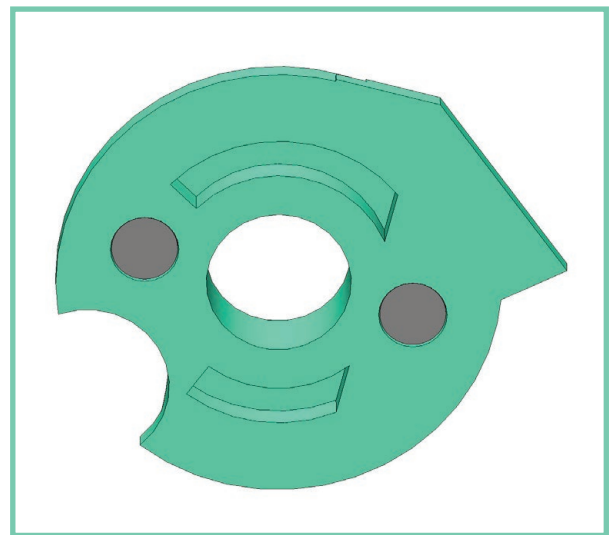
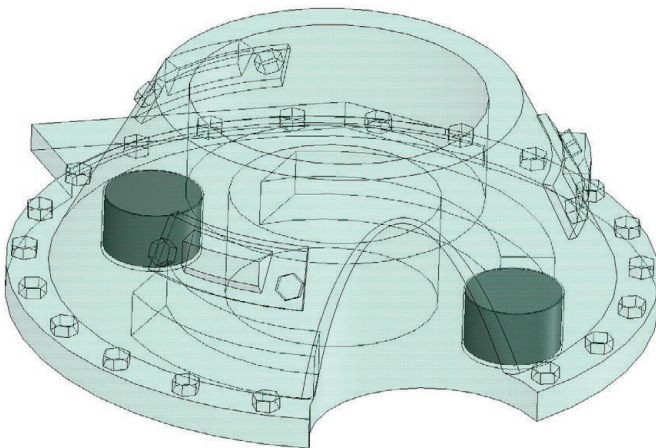
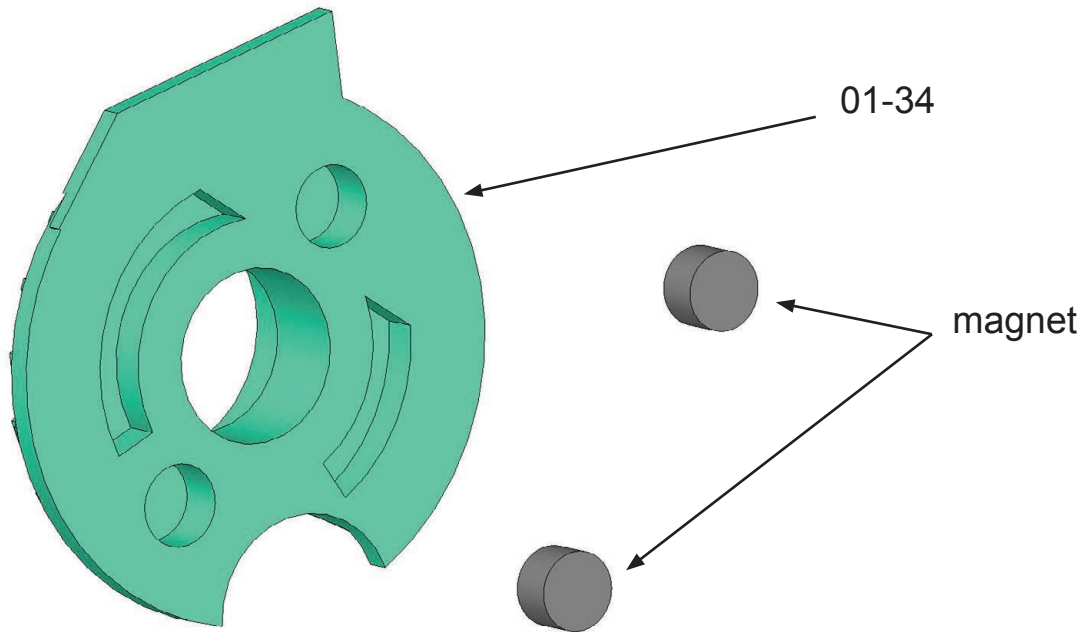
Assembly 01 - Lower Hull

2x



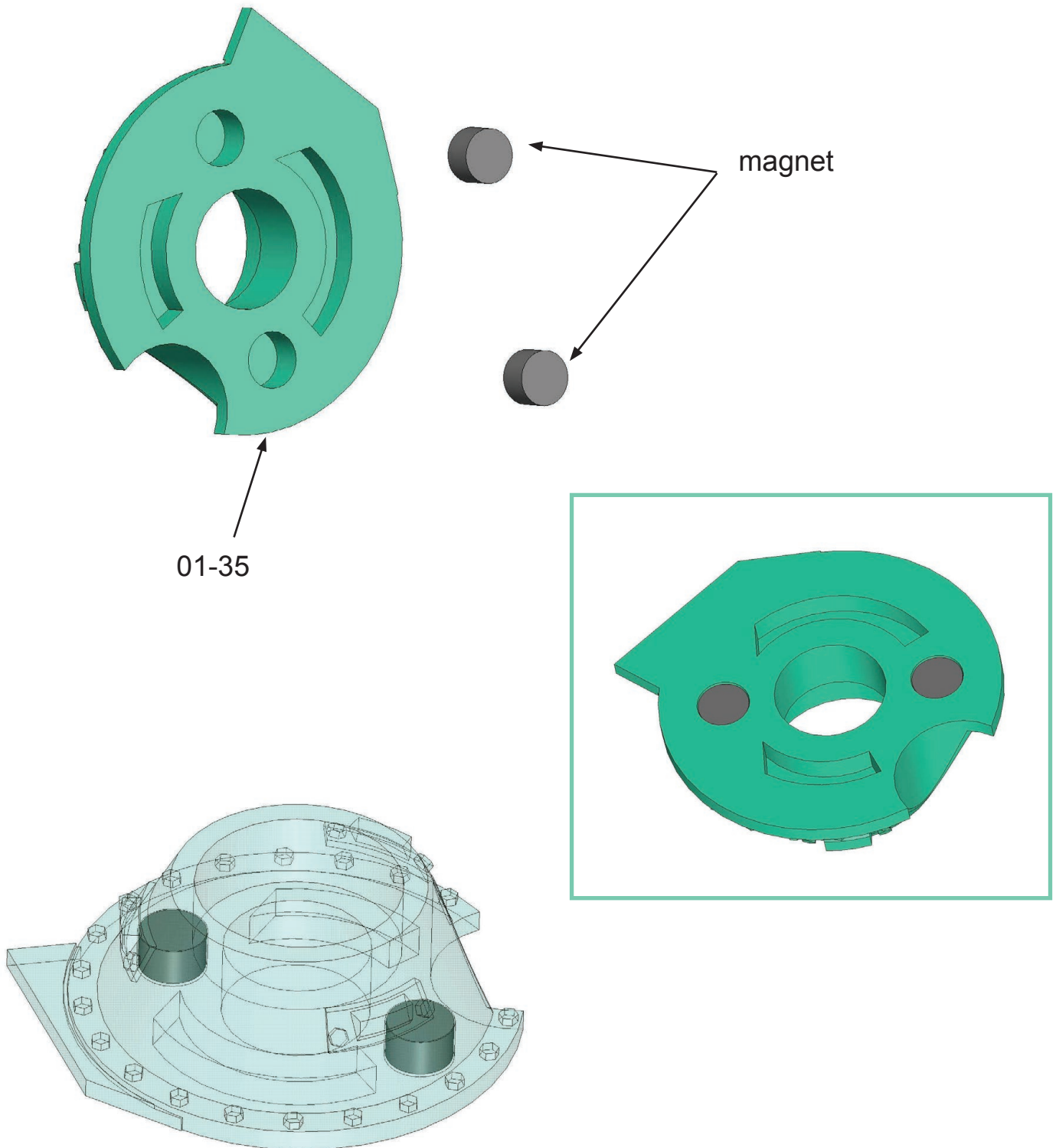
Insert the 70mm long M4 threaded rod into part 01-33A.
Secure with three M4 nuts.

Assembly 01 - Lower Hull



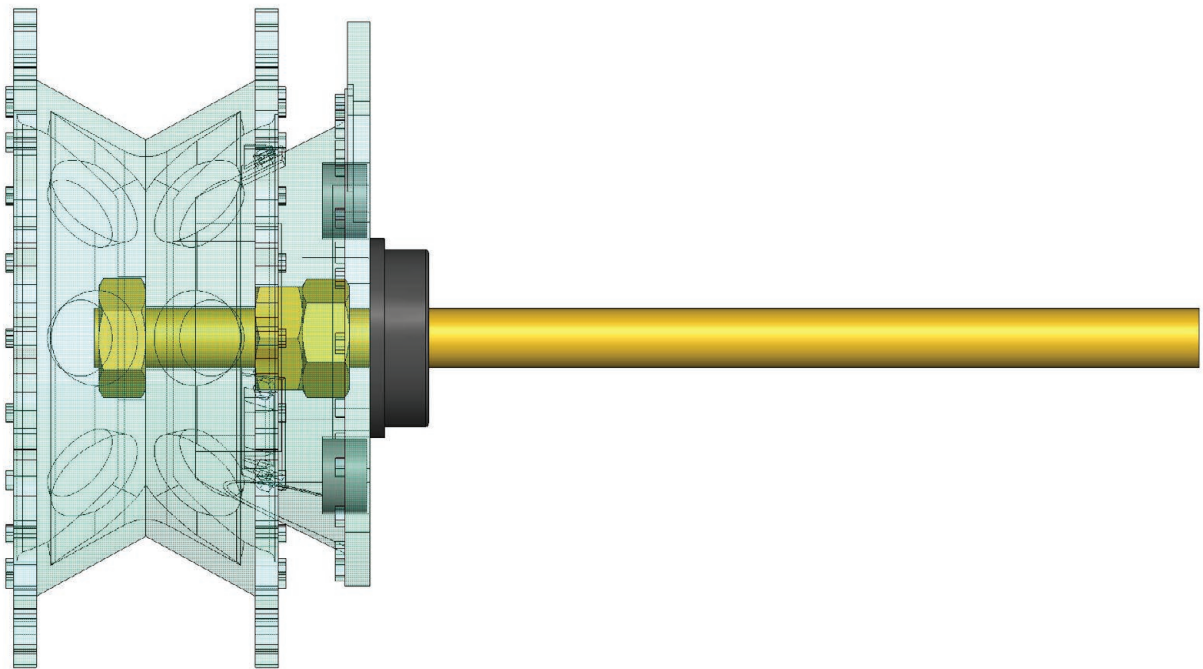
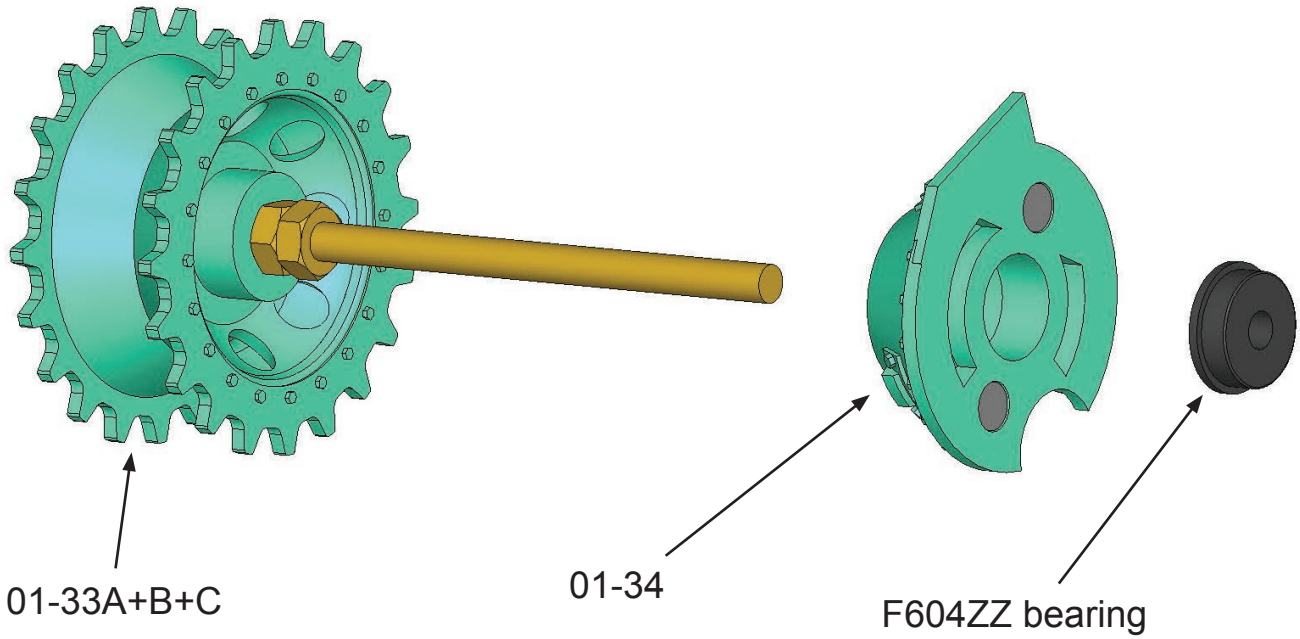
Insert two magnets 5mm in diameter and 3mm long into part 01-34.

Assembly 01 - Lower Hull



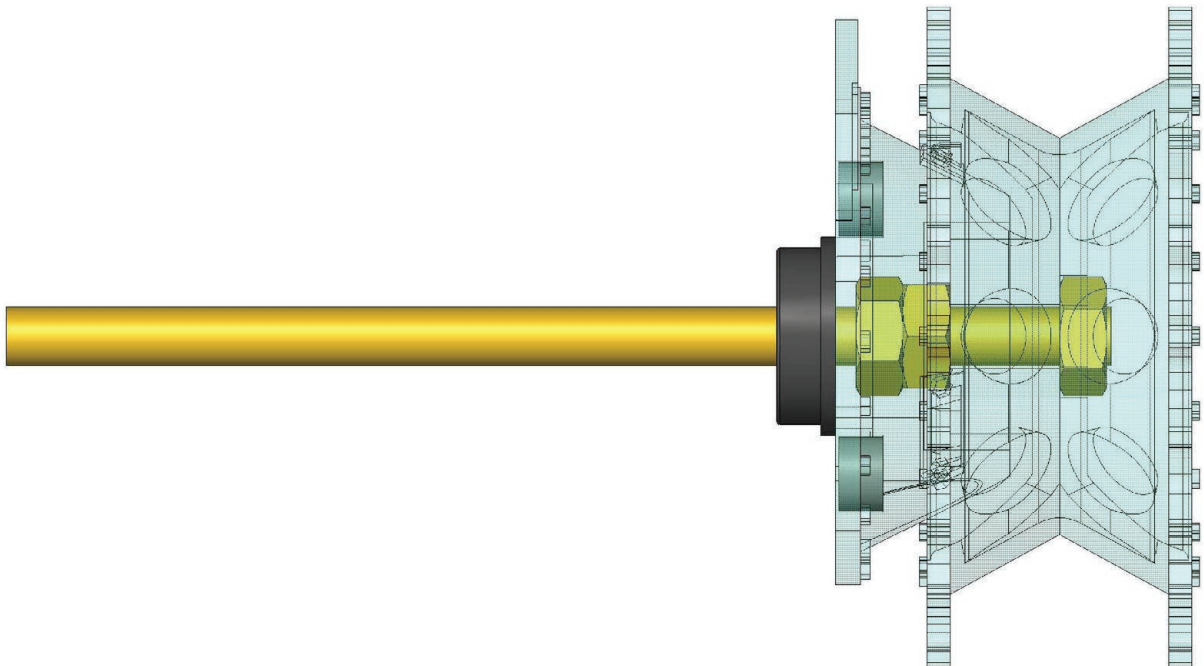
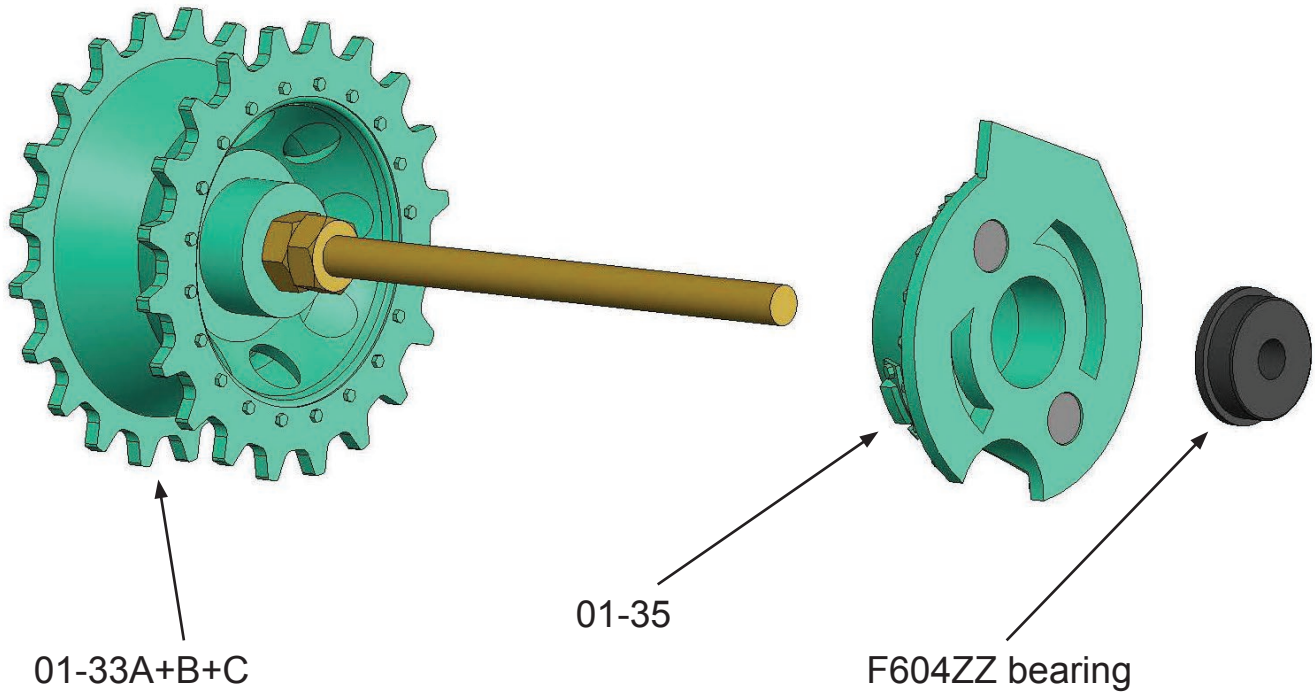
Insert two magnets 5mm in diameter and 3mm long into part 01-35.

Assembly 01 - Lower Hull



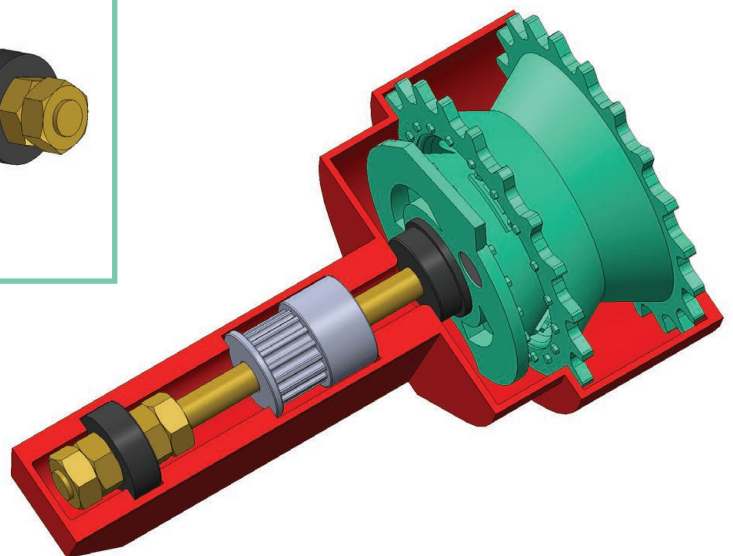
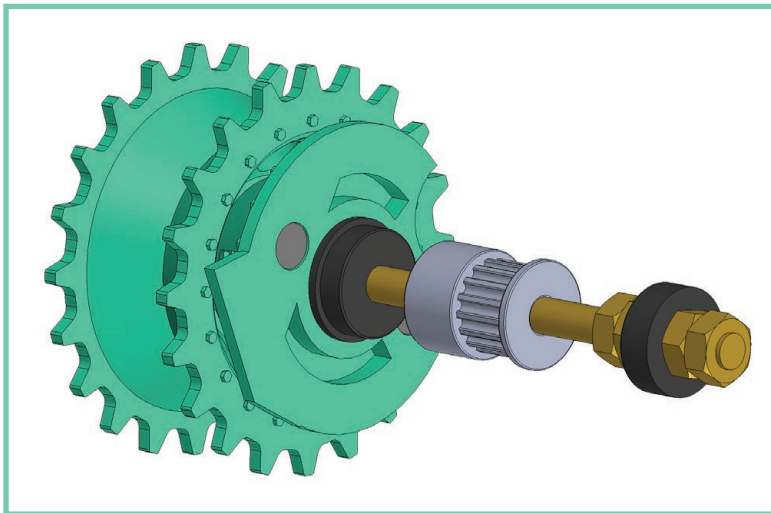
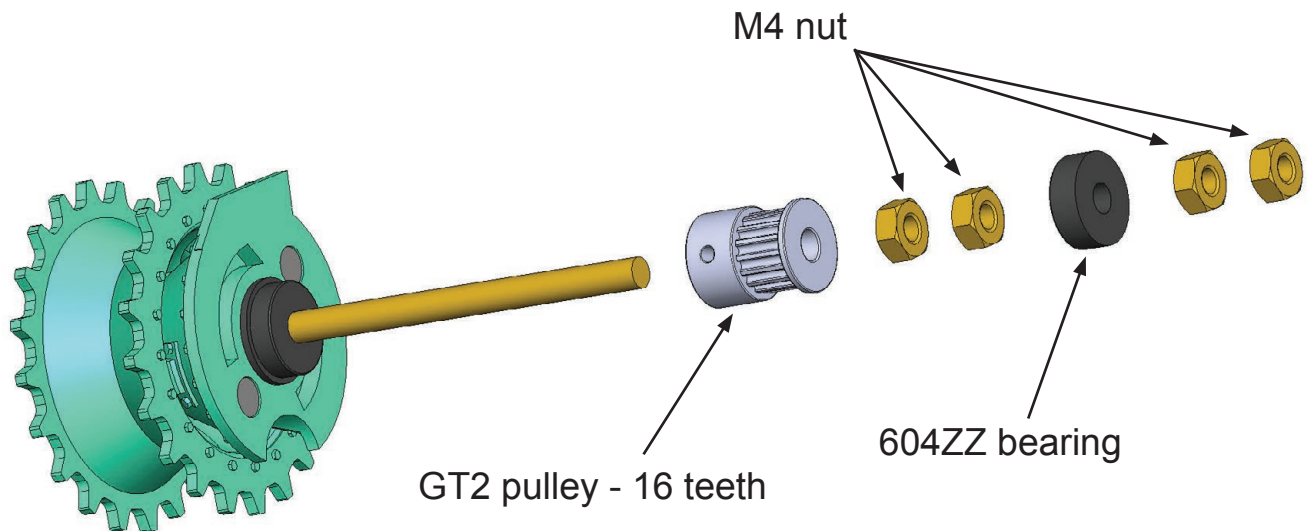
Add part 01-34 and bearing F604ZZ to parts assembly 01-33.

Assembly 01 - Lower Hull



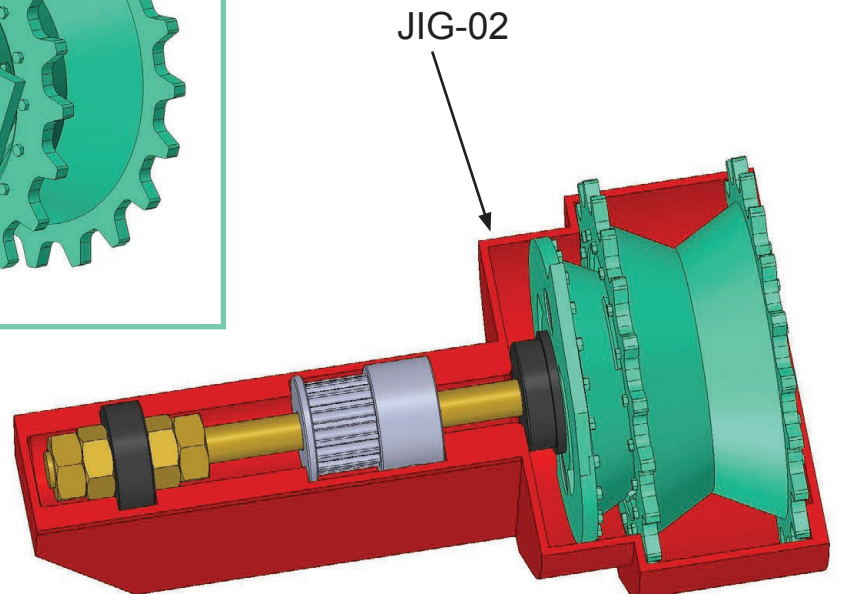
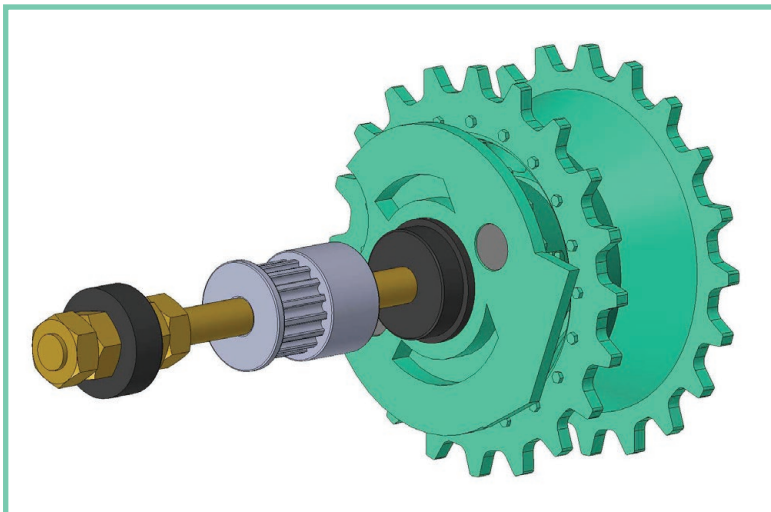
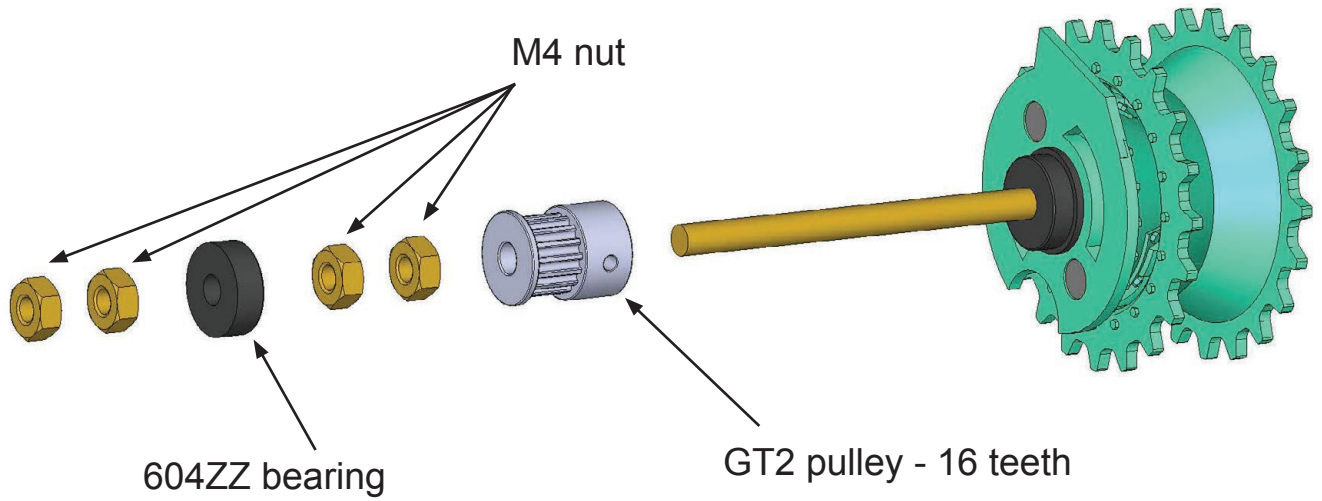
Add part 01-35 and bearing F604ZZ to (second) parts assembly 01-33.

Assembly 01 - Lower Hull



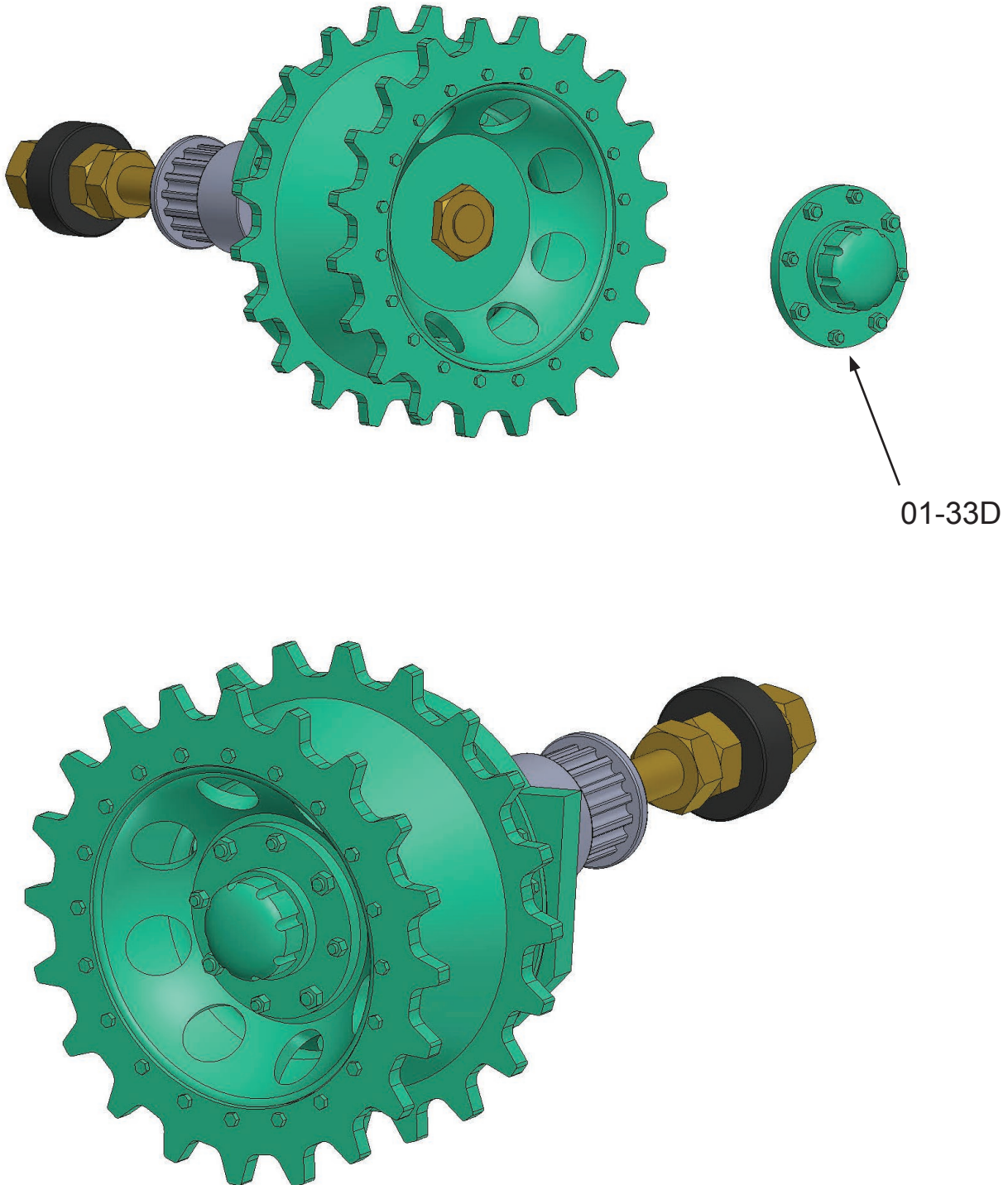
Add GT2 track - 16 teeth, shaft diameter 4mm to the set of parts 01-33.
Finally, add a 604ZZ bearing. Secure it on both sides with two nuts.
Make sure the nuts do not loosen.

Assembly 01 - Lower Hull



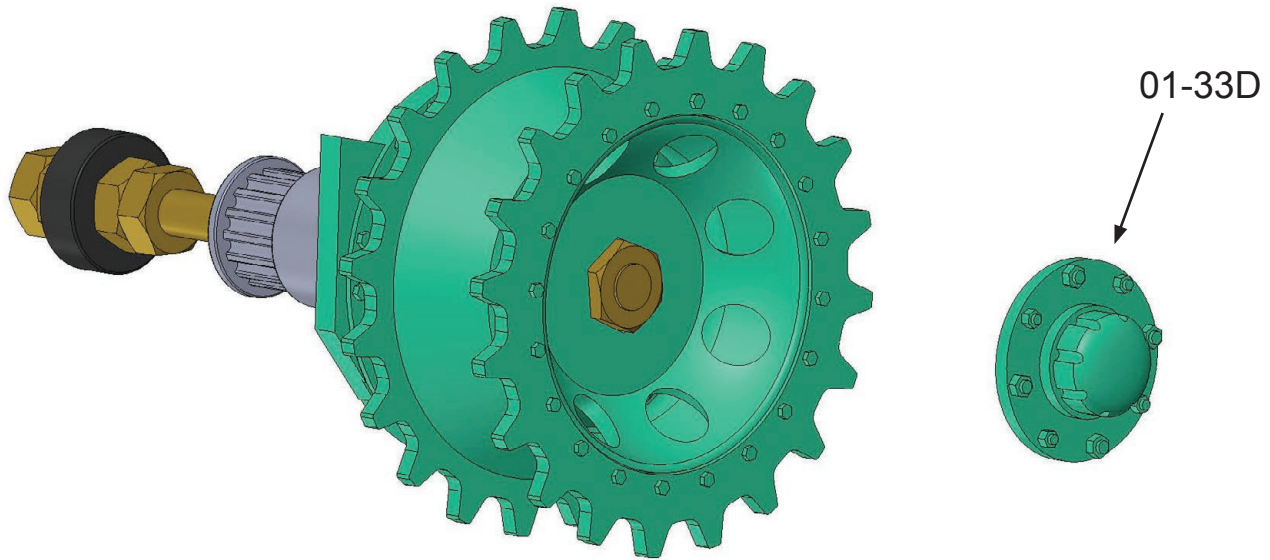
The procedure is the same on the other side.
You can use JIG-02 for more accurate and easier assembly of both wheels.

Assembly 01 - Lower Hull



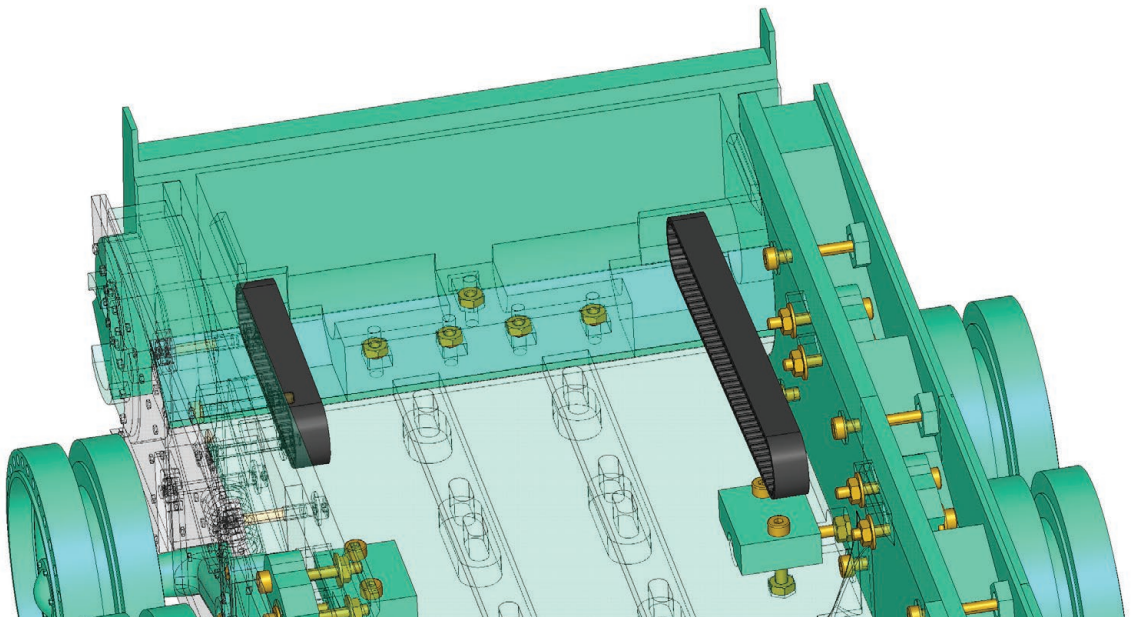
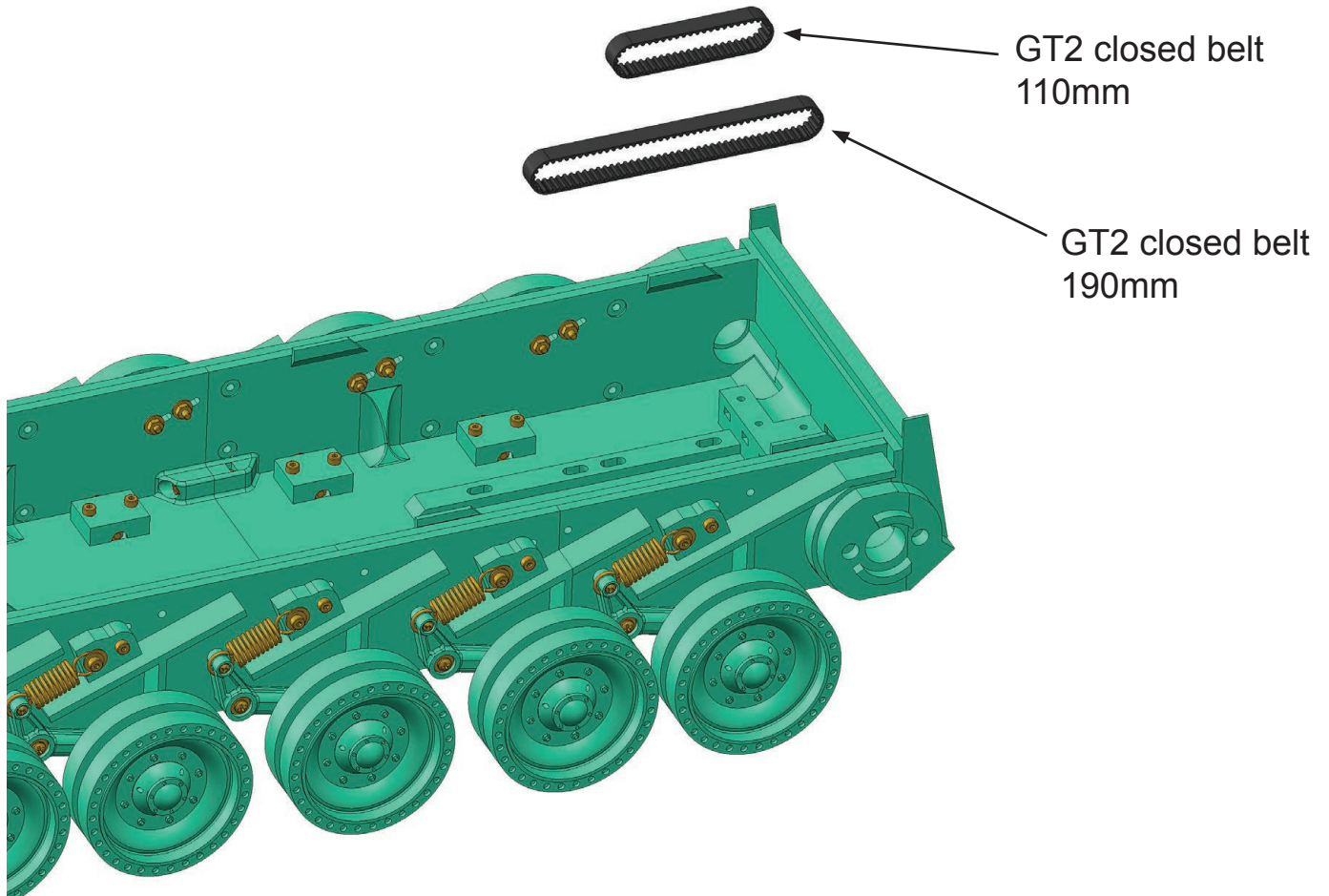
Check everything and glue part 01-33D.
We recommend using an adhesive that can be erased in the future.

Assembly 01 - Lower Hull



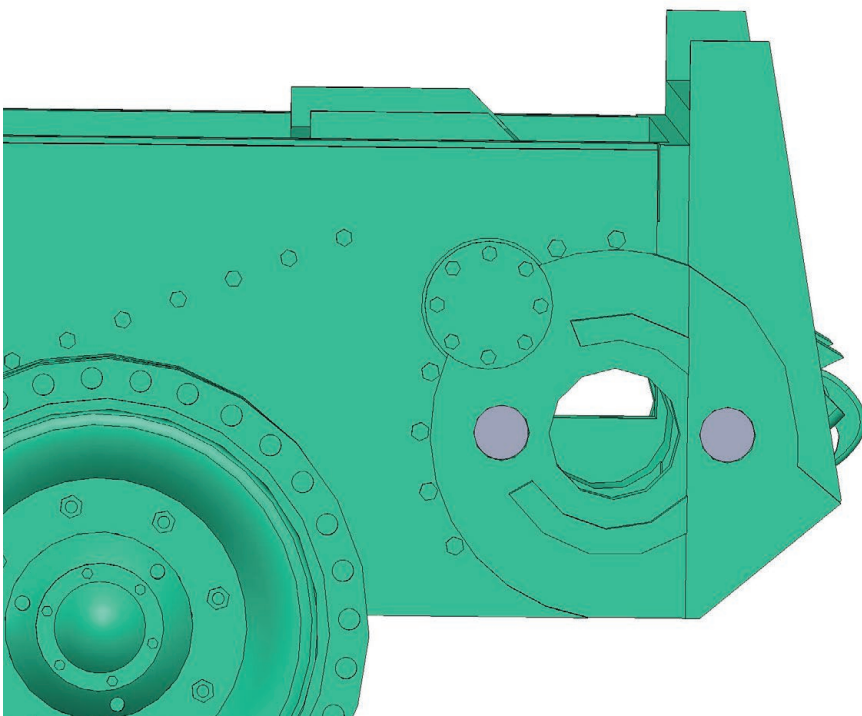
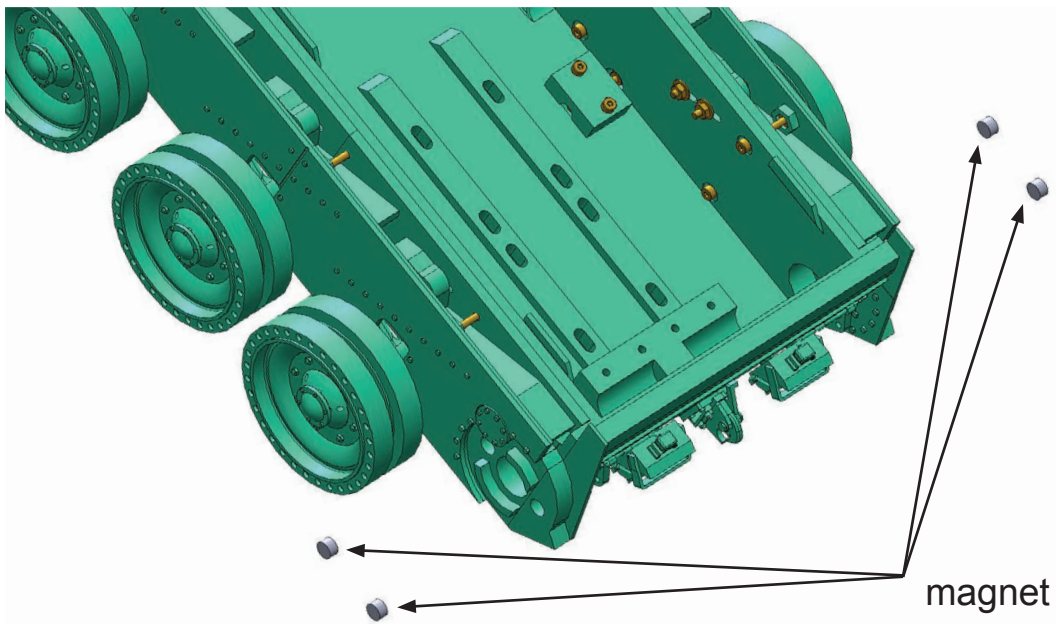
The procedure is the same on the second wheel. Glue part 01-33D.

Assembly 01 - Lower Hull



Before installing the wheels, prepare the belts in the correct position.
You need closed GT2 belt with a length of 110mm and 190mm.
You can use 200mm belt with an alternate part 01-03_200mm.

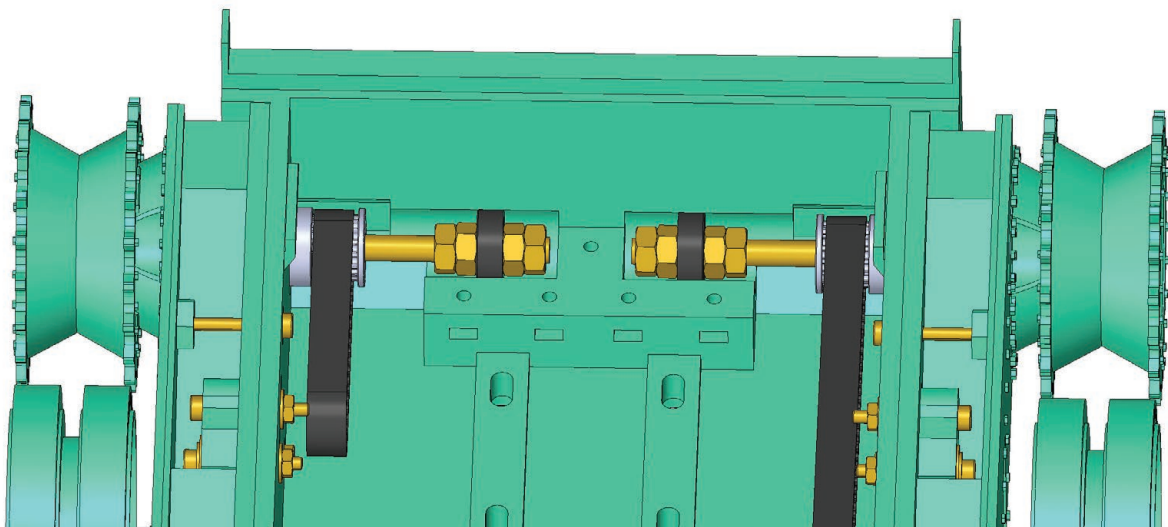
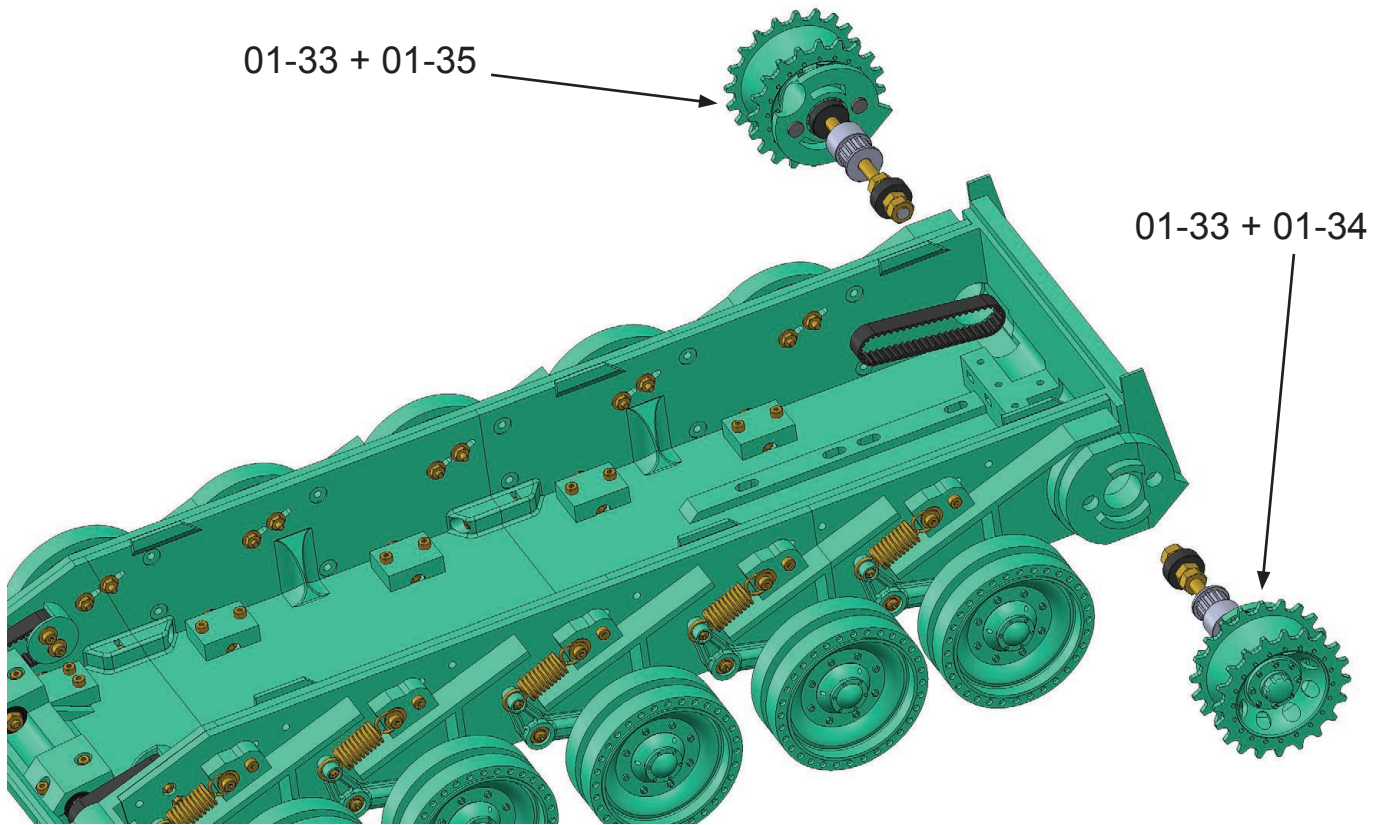
Assembly 01 - Lower Hull



Insert 4 magnets with a diameter of 5mm and a length of 3mm into parts 01-03 and 01-04.

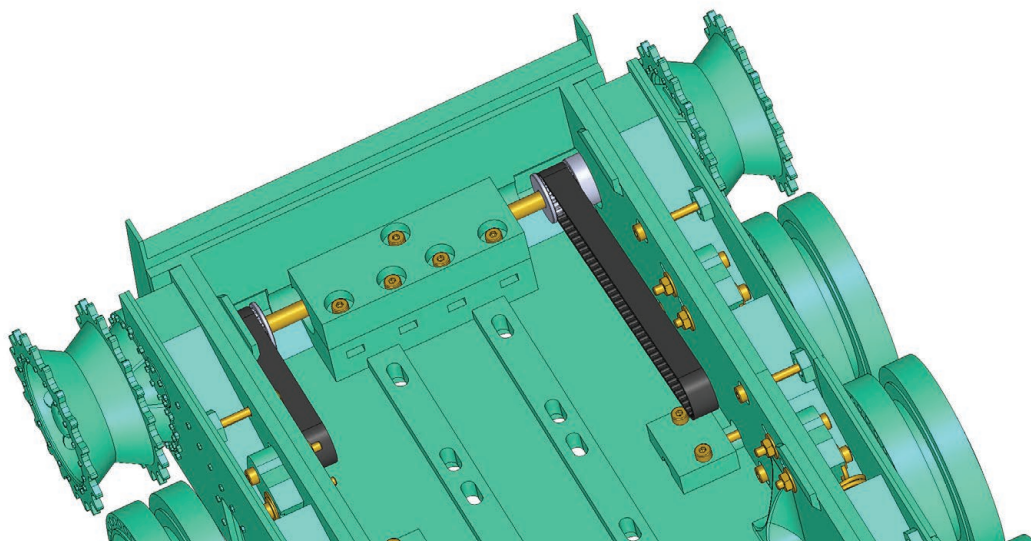
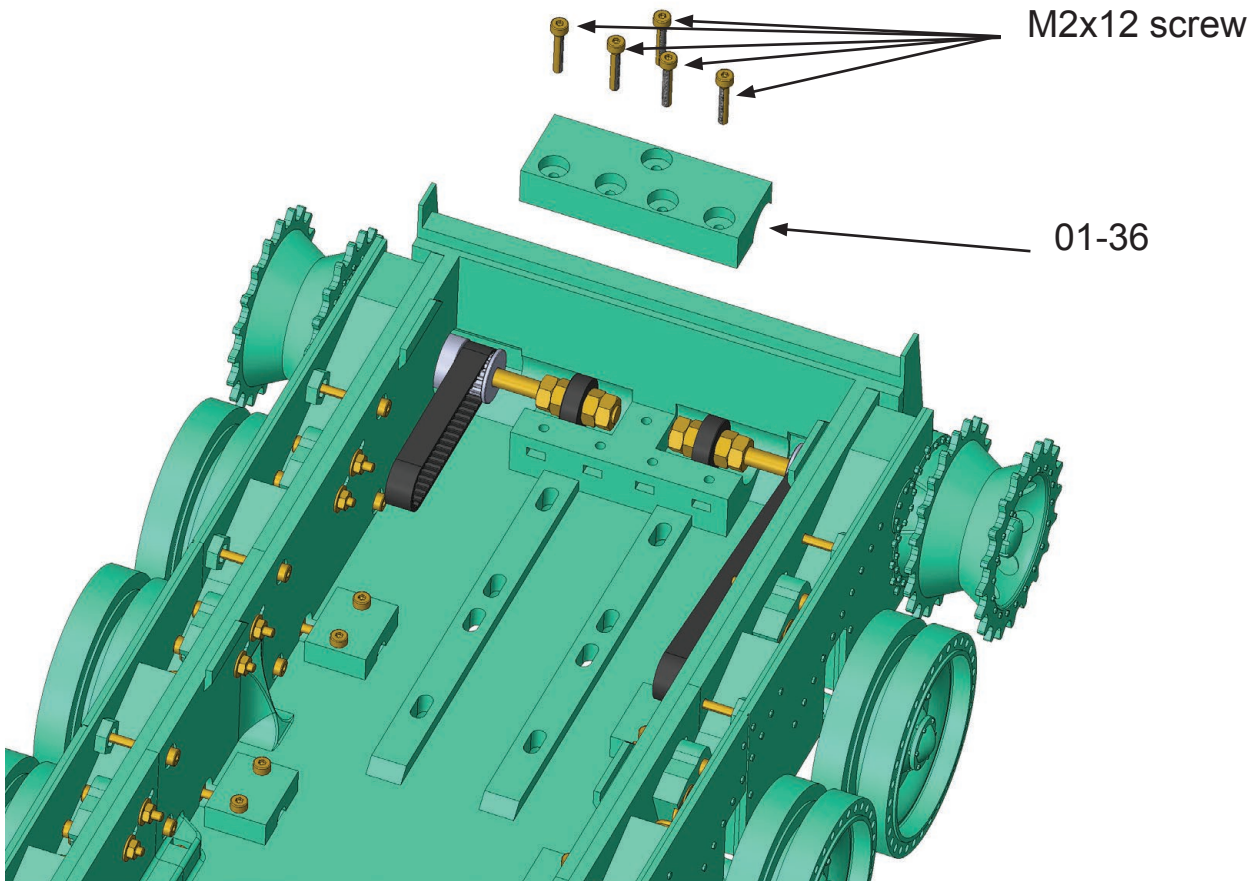
Pay attention to the correct polarity of the magnets with respect to the magnets in parts 01-34 and 01-35.

Assembly 01 - Lower Hull



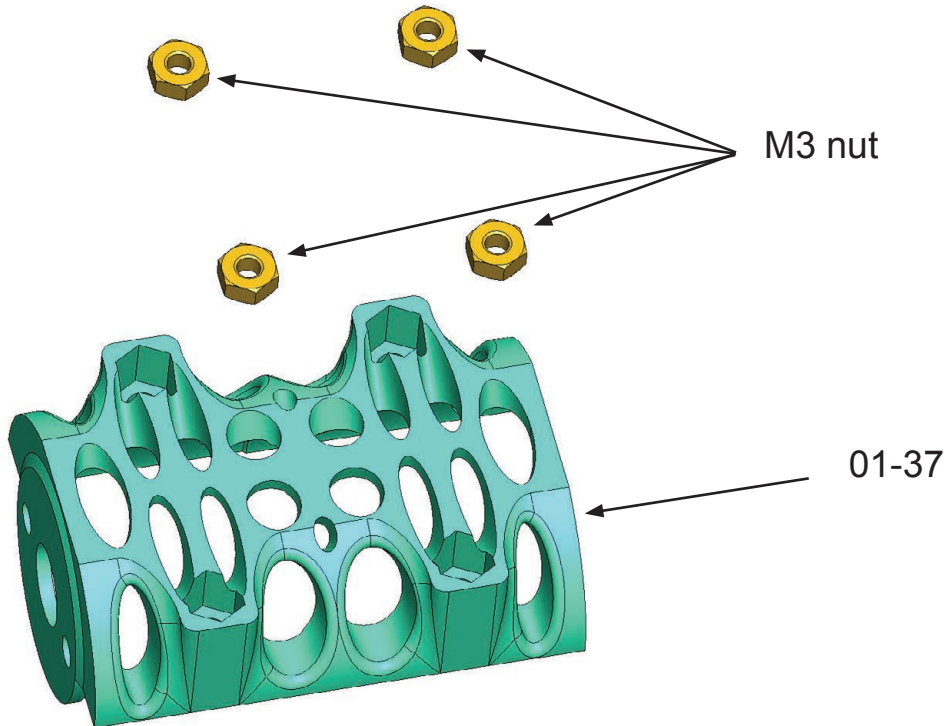
Insert parts assemblies 01-33.

Assembly 01 - Lower Hull



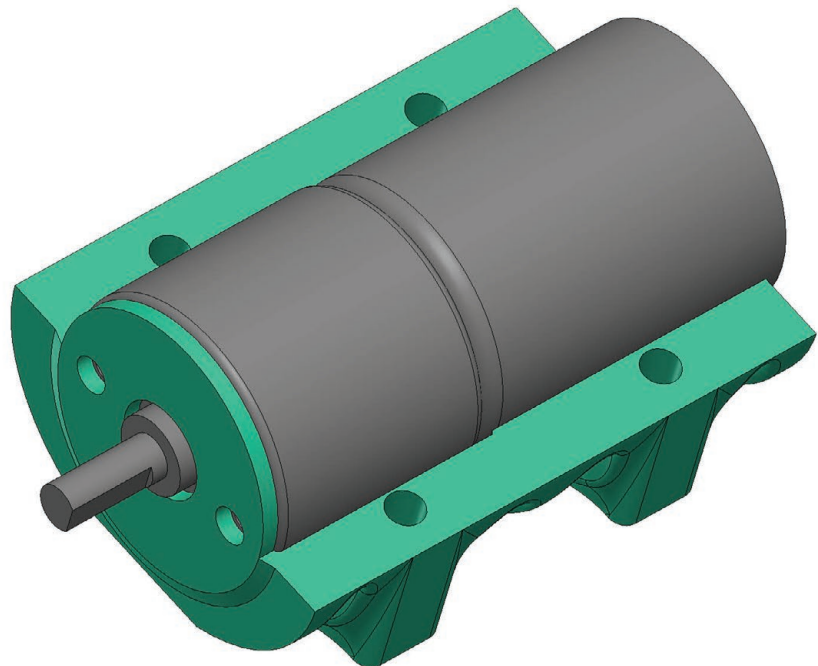
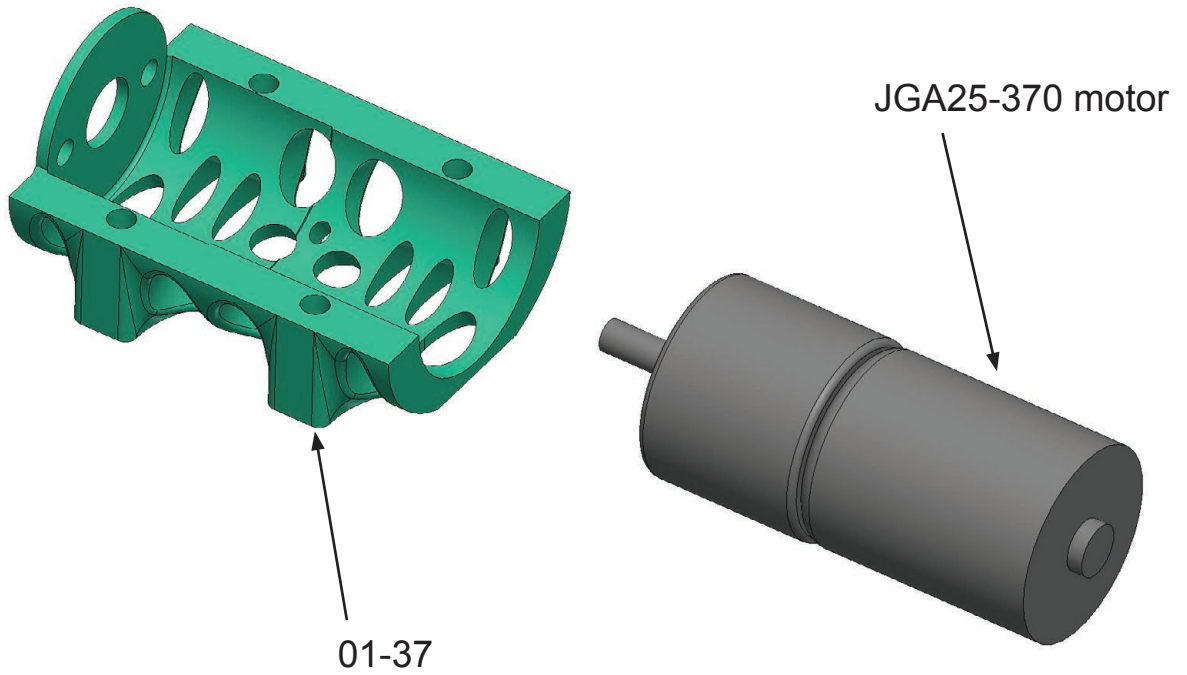
Secure the sprockets. You will need part labelled 01-36.
Use 5 M2x12mm screws.

Assembly 01 - Lower Hull

2x

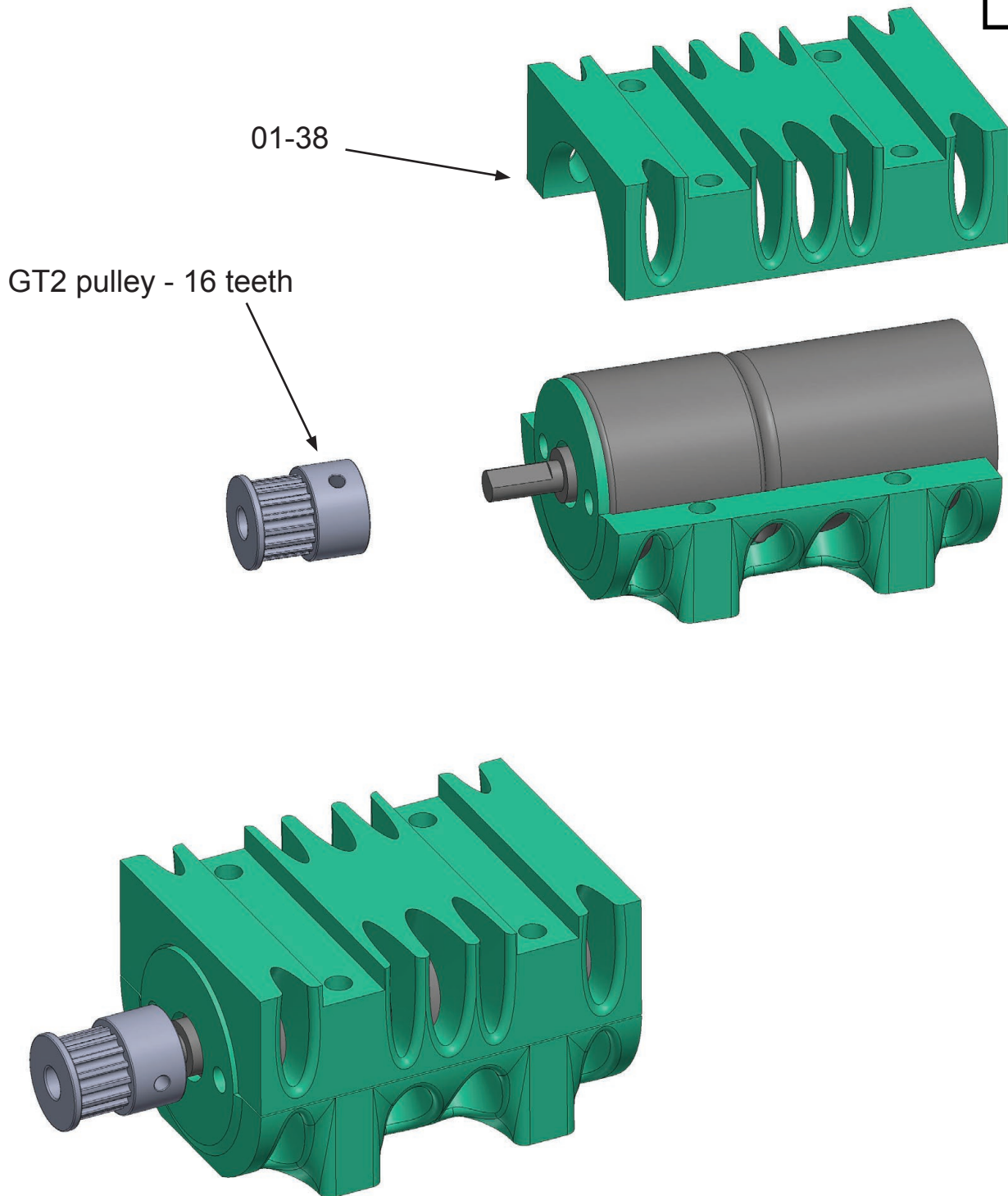
Insert 4 M3 nuts into part 01-37.

Assembly 01 - Lower Hull

2x

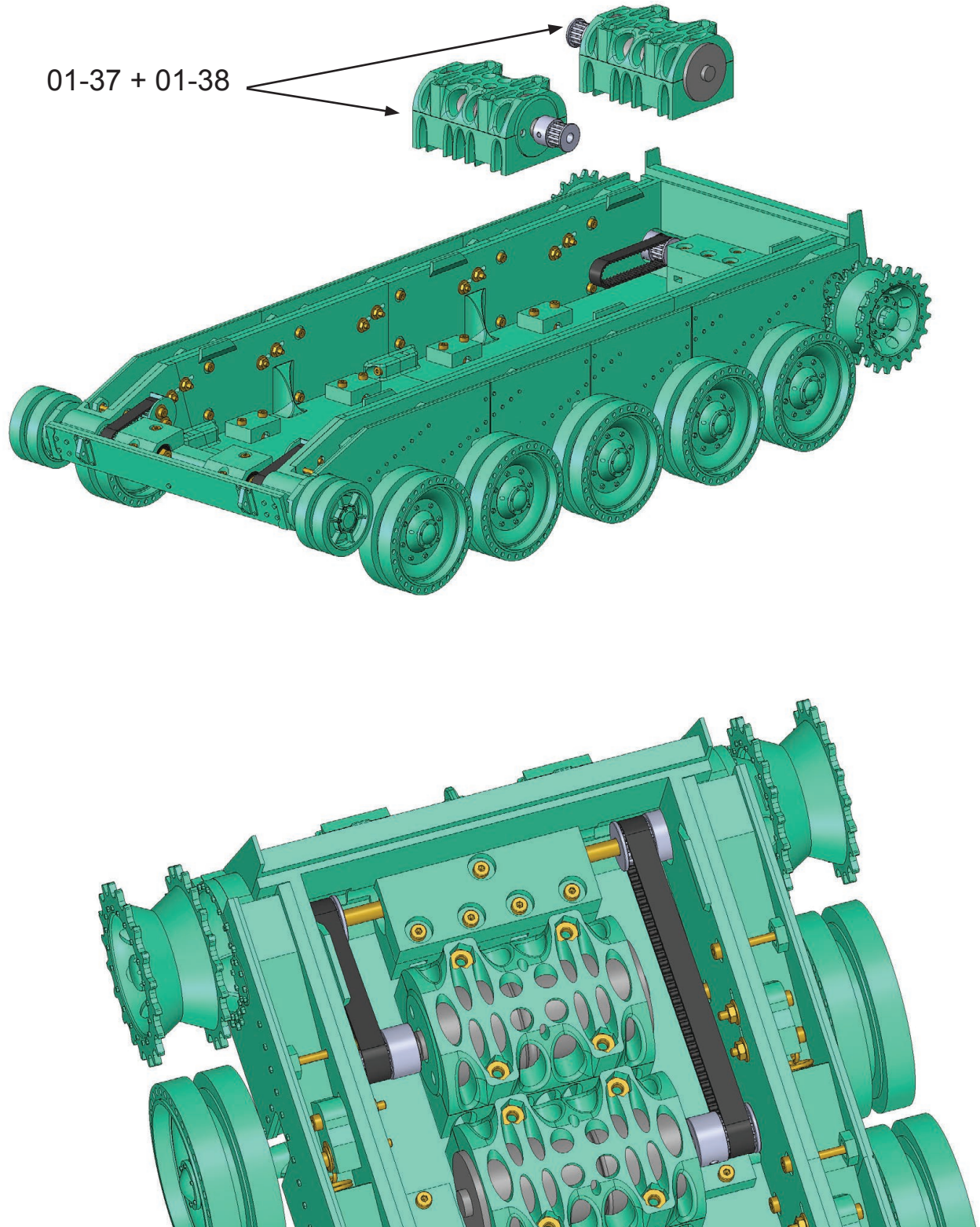
Insert the motor into part 01-37.
You can use JGA25-370 or POLOLU #1573 motors.

Assembly 01 - Lower Hull

2x

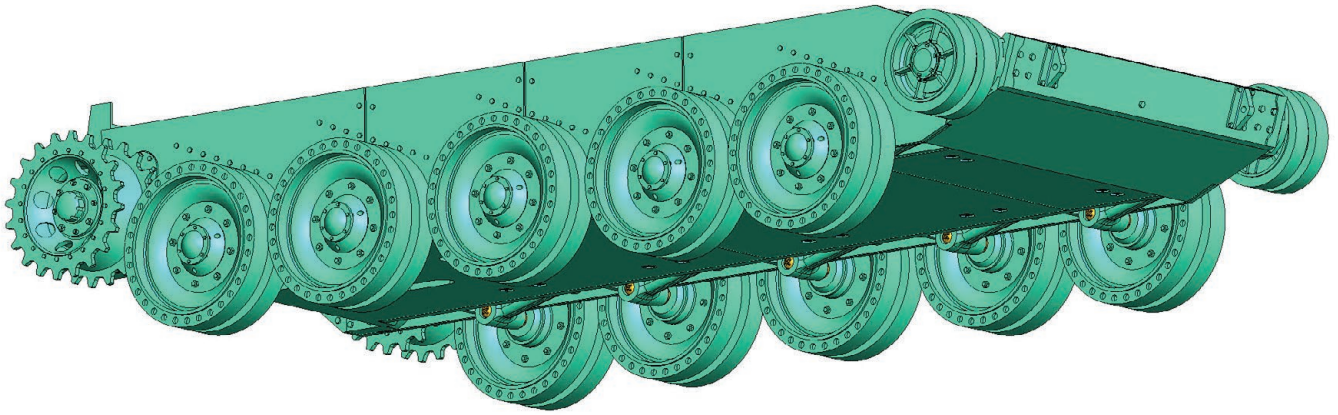
Add part 01-38 and GT2 pulley (16 teeth, bore 4mm).

Assembly 01 - Lower Hull

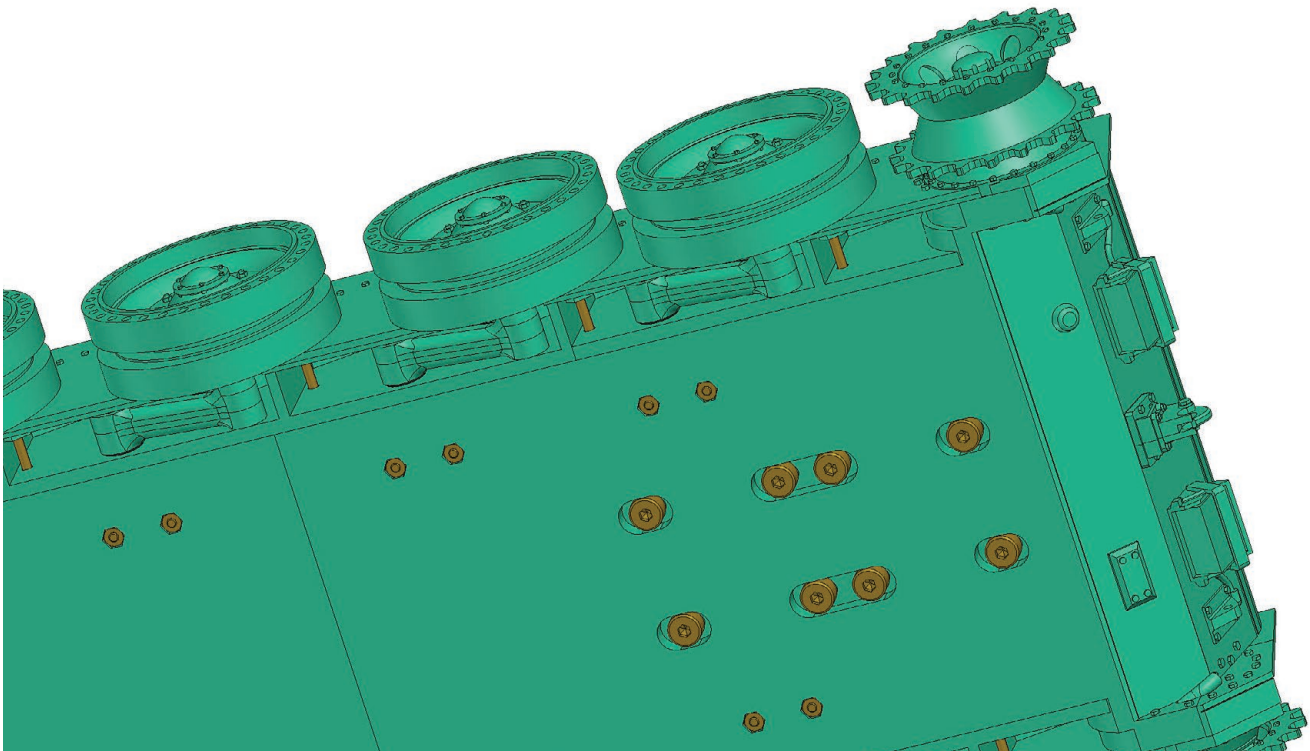


Insert the motors into the tank.
You can adjust the track tension by moving the entire motor.

Assembly 01 - Lower Hull

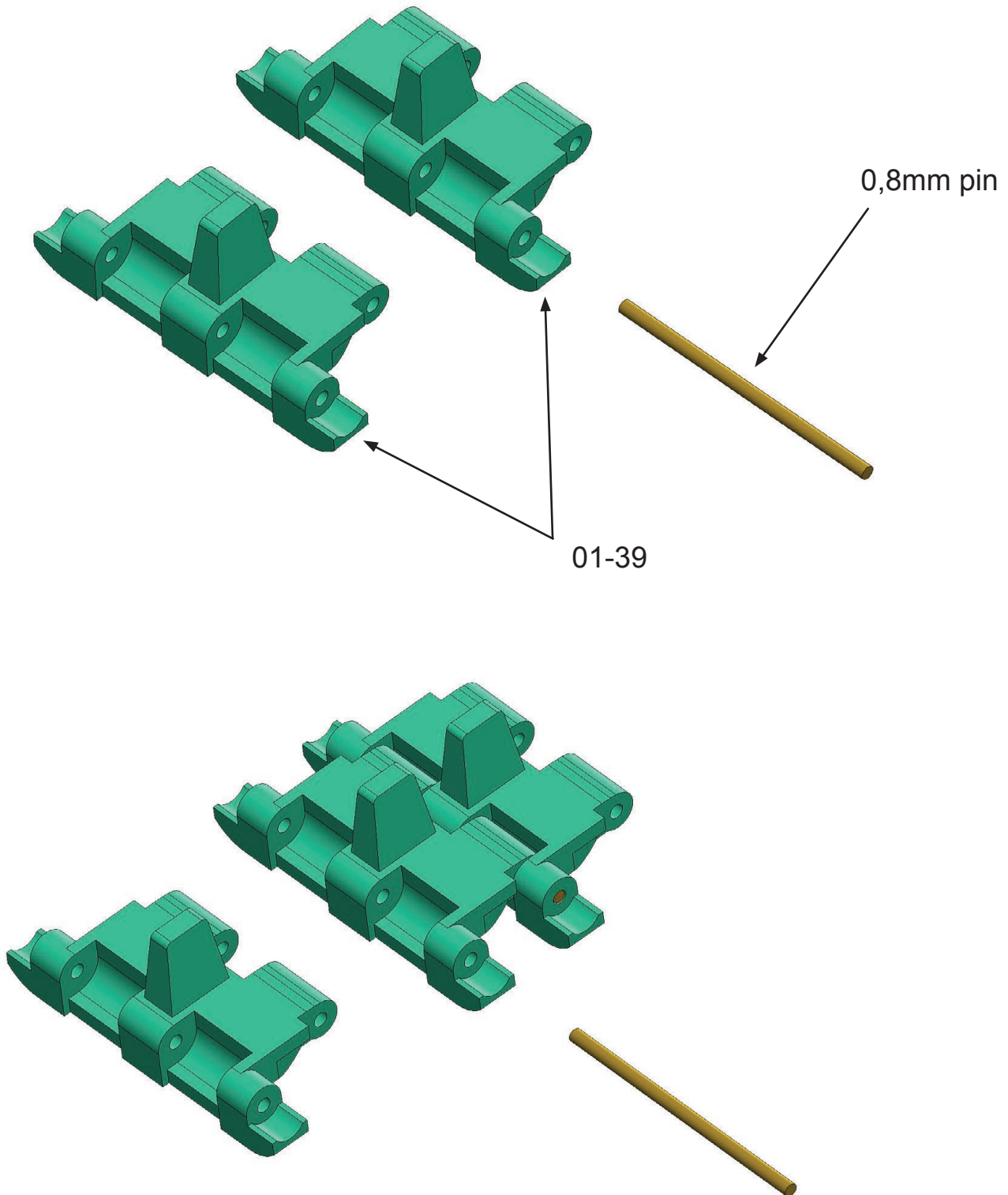


M3x30 screw



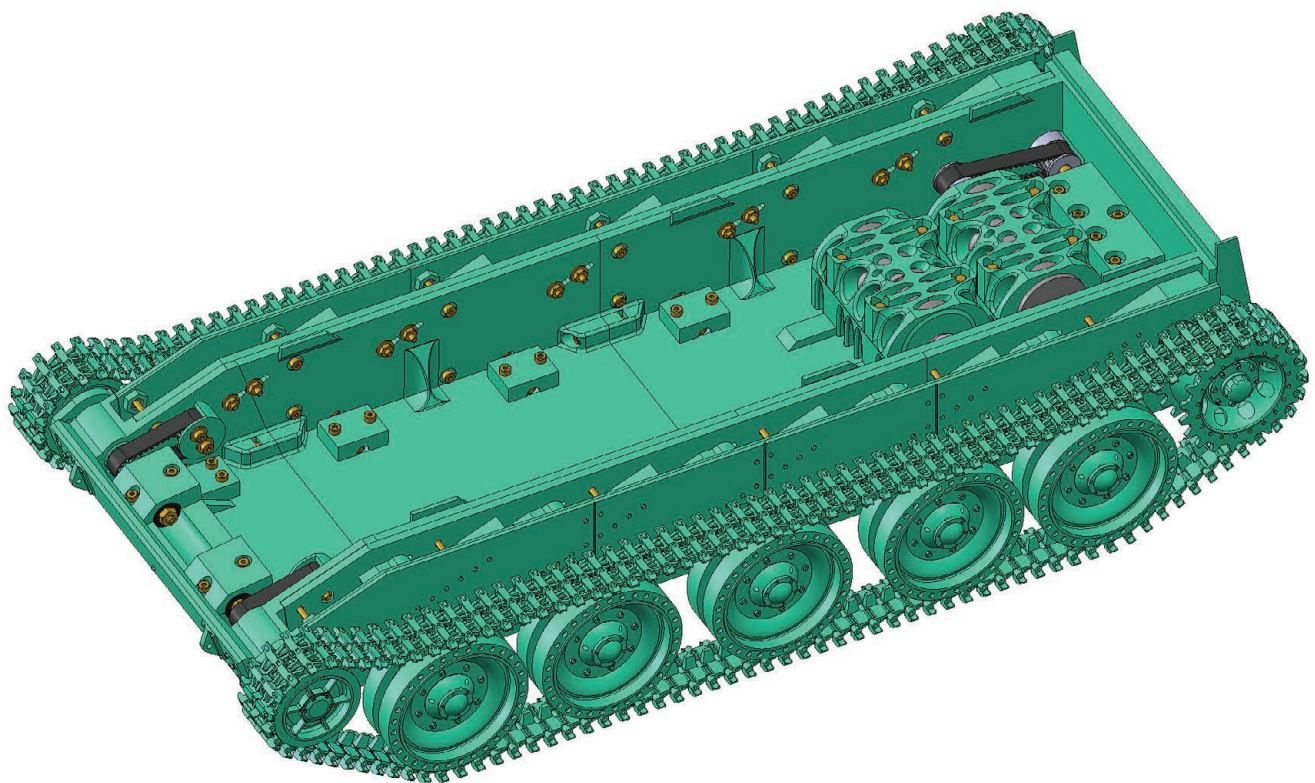
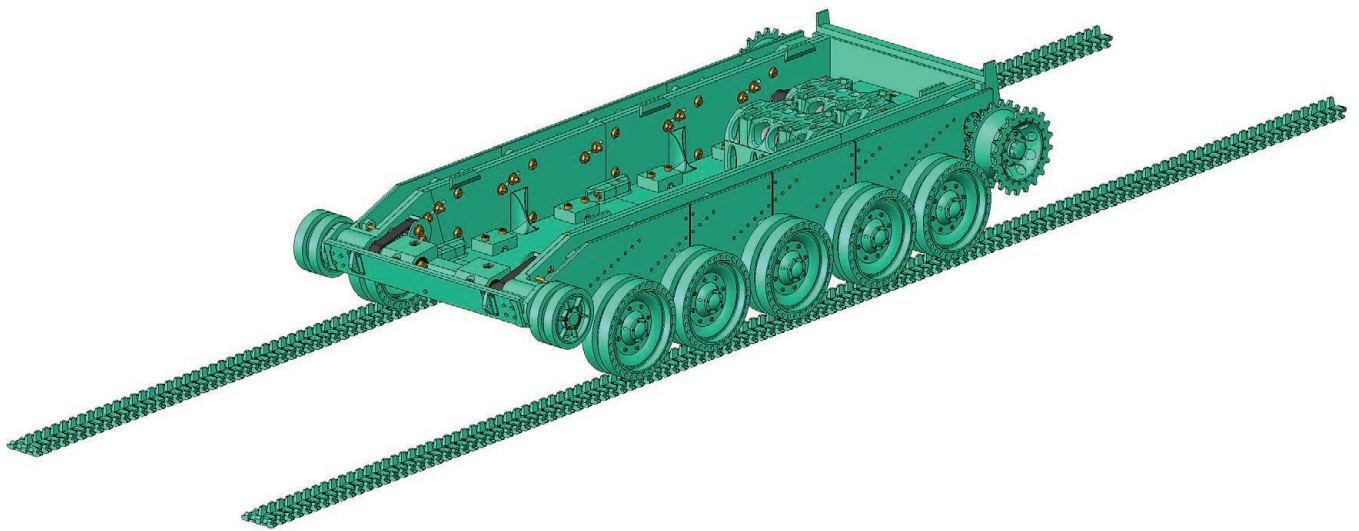
Secure parts 01-37 and 01-38. Use 8 M3x30mm screws.

Assembly 01 - Lower Hull



Join the tracks - parts 01-39.
Use a wire with a diameter of 0.8 mm and a length of 17.4 mm 2x120 tracks.

Assembly 01 - Lower Hull



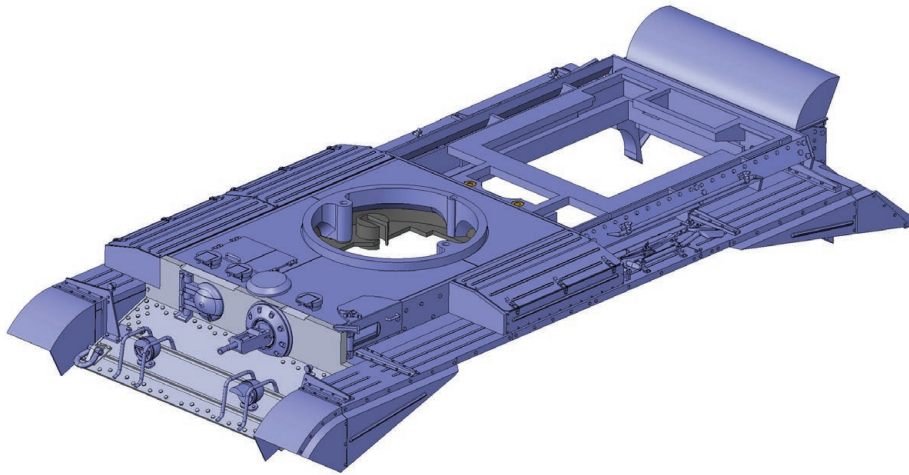
Install the tracks on the tank.

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Cromwell Mk.IV
Assembly guide

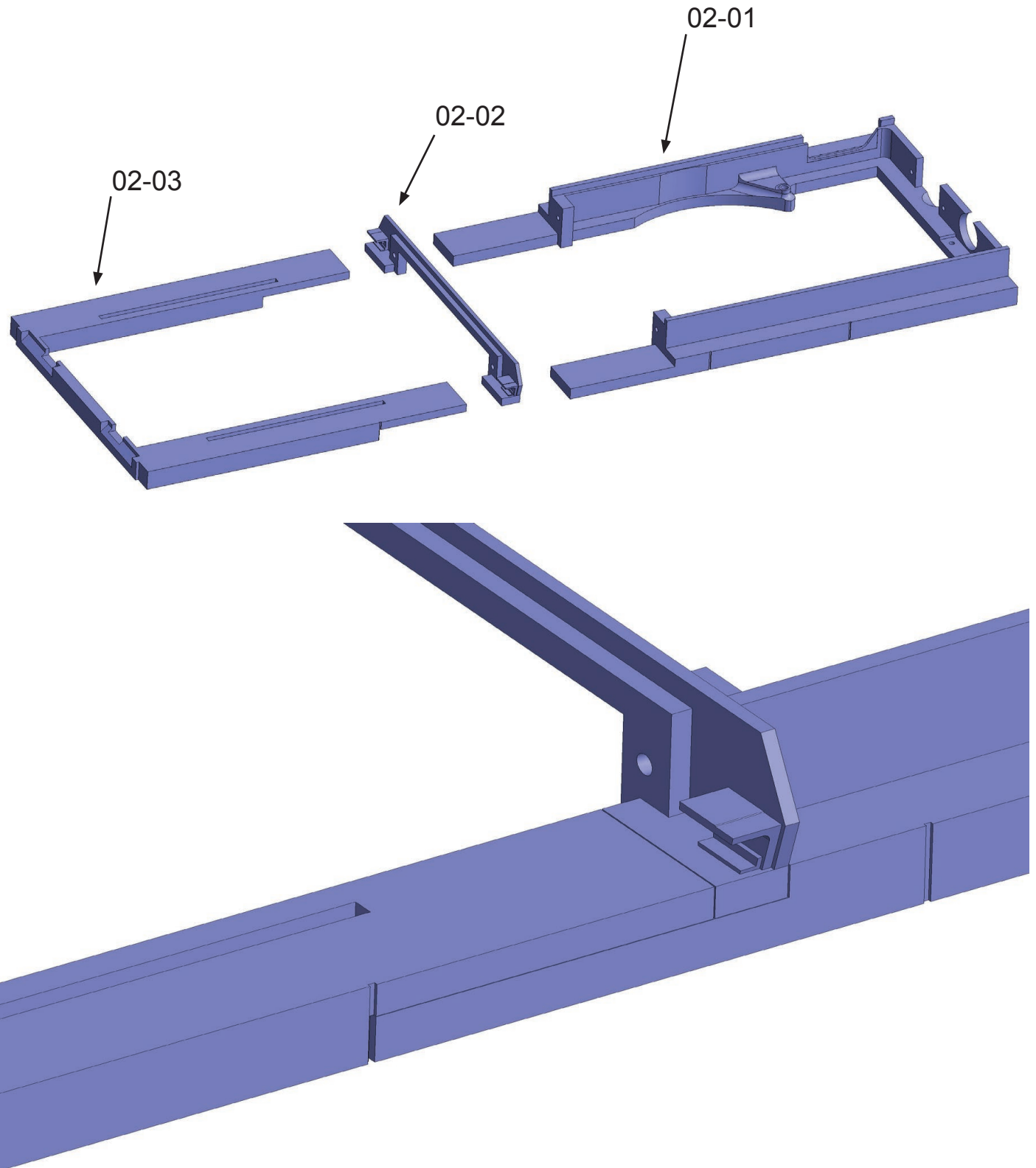
Assembly 01 - Lower Hull

Assembly 02 - Upper Hull

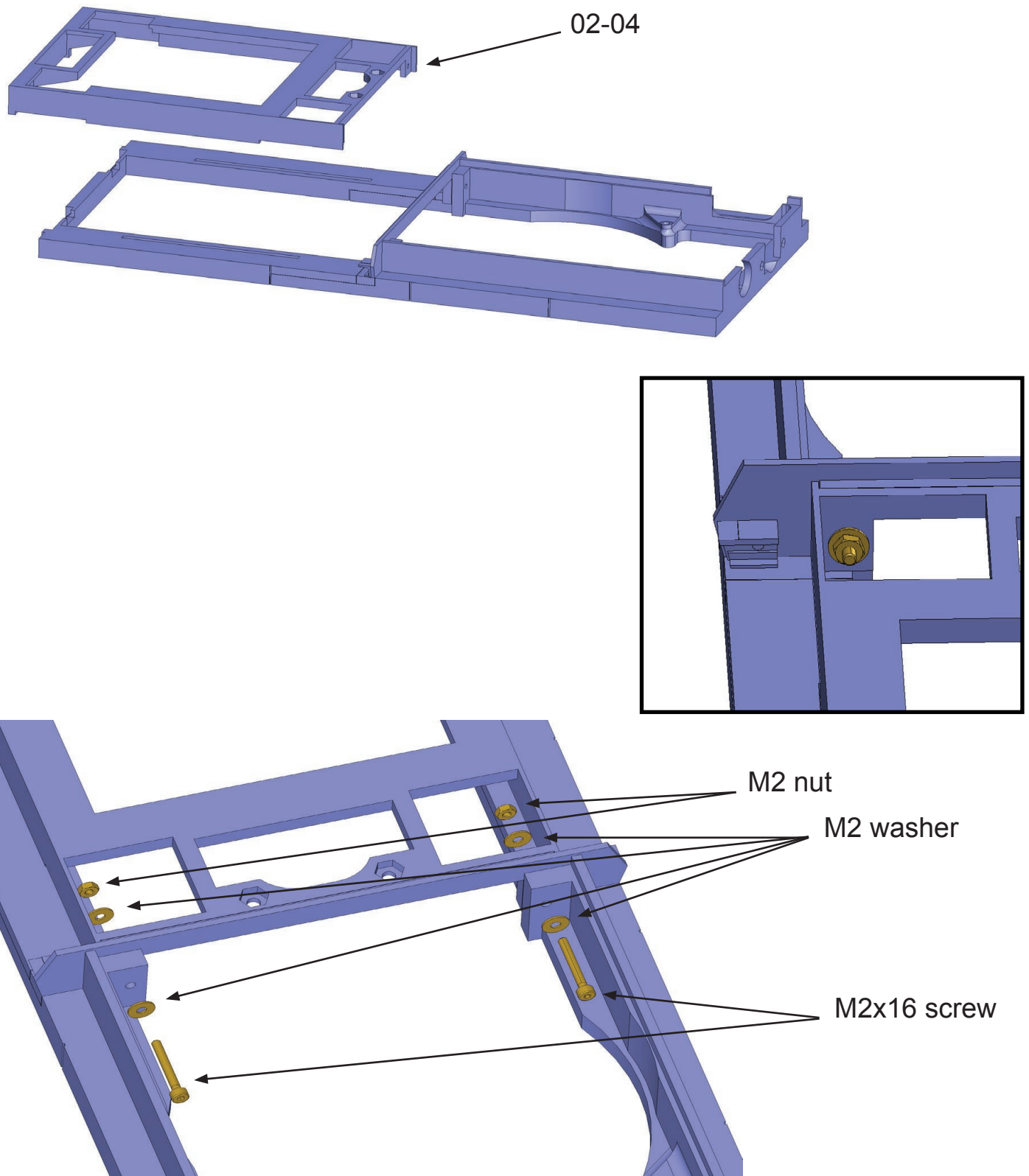


3D PRINTED PARTS:	<p>02-01 (1x), 02-02 (1x), 02-03 (1x), 02-04 (1x), 02-05 (1x), 02-06 (1x), 02-07 (1x), 02-08 (1x), 02-09 (1x), 02-10 (1x), 02-11 (1x), 02-12 (1x), 02-13 (1x), 02-14 (8x), 02-15A (1x), 02-15B (1x), 02-16A (1x), 02-16B (1x), 02-17 (1x), 02-18 (1x), 02-19A (1x), 02-19B (1x), 02-20A (1x), 02-20B (1x), 02-21A (1x), 02-21B (1x), 02-22A (1x), 02-22B (1x), 02-23 (2x), 02-24 (1x), 02-25 (1x), 02-26 (1x), 02-27 (2x), 02-28A (1x), 02-28B (1x), 02-28C (1x), 02-28D (1x), 02-28E (1x), 02-29 (1x), 02-30 (1x), 02-31 (1x), 02-32 (1x), 02-33A (1x), 02-33B (1x), 02-33C (1x), 02-34A (1x), 02-34B (1x), 02-34C (1x), 02-34D (1x), 02-35A (4x), 02-35B (4x), 02-36A (2x), 02-36B (2x), 02-37A (1x), 02-37B (1x), 02-37C (1x), 02-37D (1x), 02-38 (1x), 02-39A (1x), 02-39B (1x), 02-40A (1x), 02-40B (1x), 02-41 (3x), 02-42 (1x), 02-43 (3x), 02-44 (1x), 02-45A (1x), 02-45B (1x), 02-46A (1x), 02-46B (1x), 02-46C (1x), 02-47A (1x), 02-47B (1x), 02-48A (1x), 02-48B (1x), 02-48C (2x), 02-49A (2x), 02-49B (2x), 02-49C (1x), 02-50A (2x), 02-50B (2x), 02-50C (1x), 02-51A (1x), 02-51B (1x), 02-51C (1x), 02-51D (1x), 02-51E (1x), 02-51F (1x), 02-51G (1x), 02-51H (1x), 02-52A (1x), 02-52B (1x), 02-52A_S (1x), 02-52B_S (1x),</p>
OPTIONAL PRINTED PARTS:	<p>02-08_alt, 02-09_alt, 02-10_alt, 02-28D_alt (SLA), 02-35AB (SLA), 02-35AB_support (SLA), 02-36AB (SLA), 02-37B_no_handles, 02-45AB (SLA), 02-46C_alt (SLA) 02-46C_alt (SLA), 02-47A_alt (SLA), 02-47B_alt (SLA), 02-47C_alt (SLA), 02-48AB (SLA), 02-48AB_support (SLA), 02-48C_alt (SLA), 02-49AB (SLA), 02-49AB_support (SLA), 02-50AB (SLA), 02-50AB_support (SLA), 02-51EF, 02-52A_HL, 02-52B_HL</p>
NON-PRINTED PARTS:	<p>M2 nut (8x), M3 nut (11x), M2 washer (6x), M2x6mm screw (2x), M2x8mm screw (6x), M2x16mm screw (4x), M2x20mm screw (2x), M3x5mm screw (2x), M3x12mm screw (5x), M3x20mm screw (4x), M3x6mm worm screw (1x), 633 bearing (3x13x5mm) (4x), SMD LED - type 5630 with pre-soldered wires (2x), wire -diameter 0,6mm -lenght 4,7mm (4x), wire -diameter 0,8mm -lenght 15mm (1x), wire -diameter 0,8mm -lenght 20mm (1x)</p>

Assembly 02 - Upper Hull

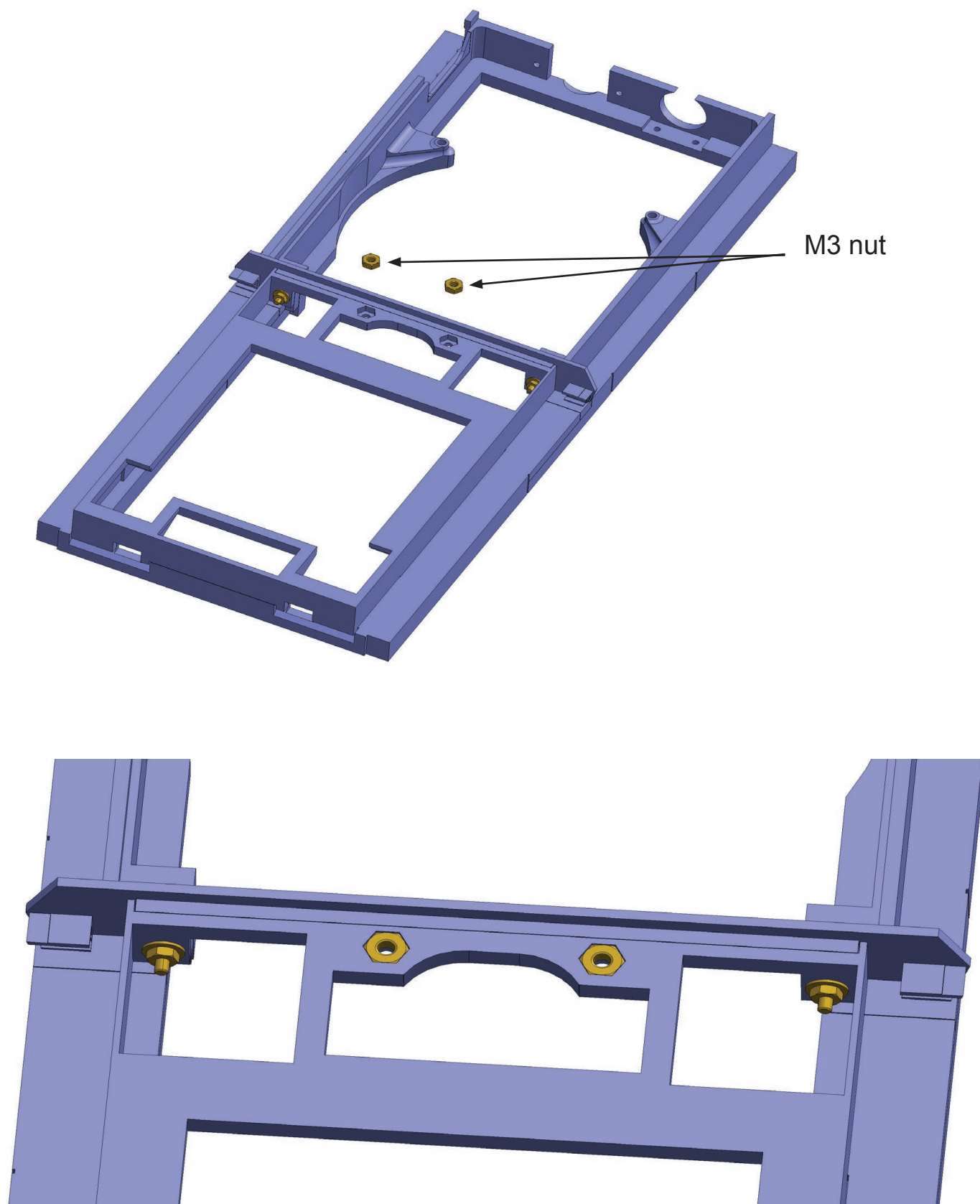


Assembly 02 - Upper Hull



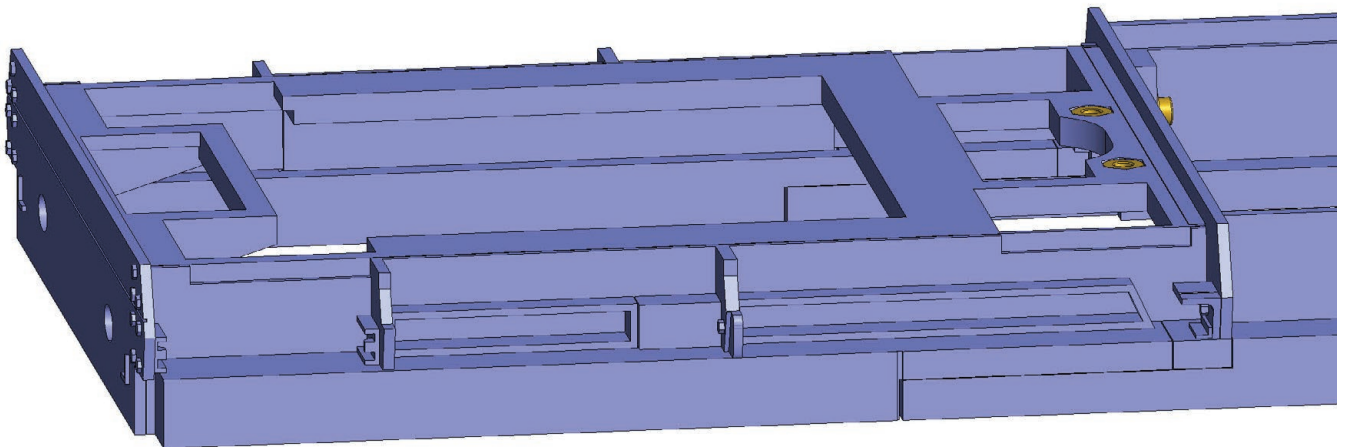
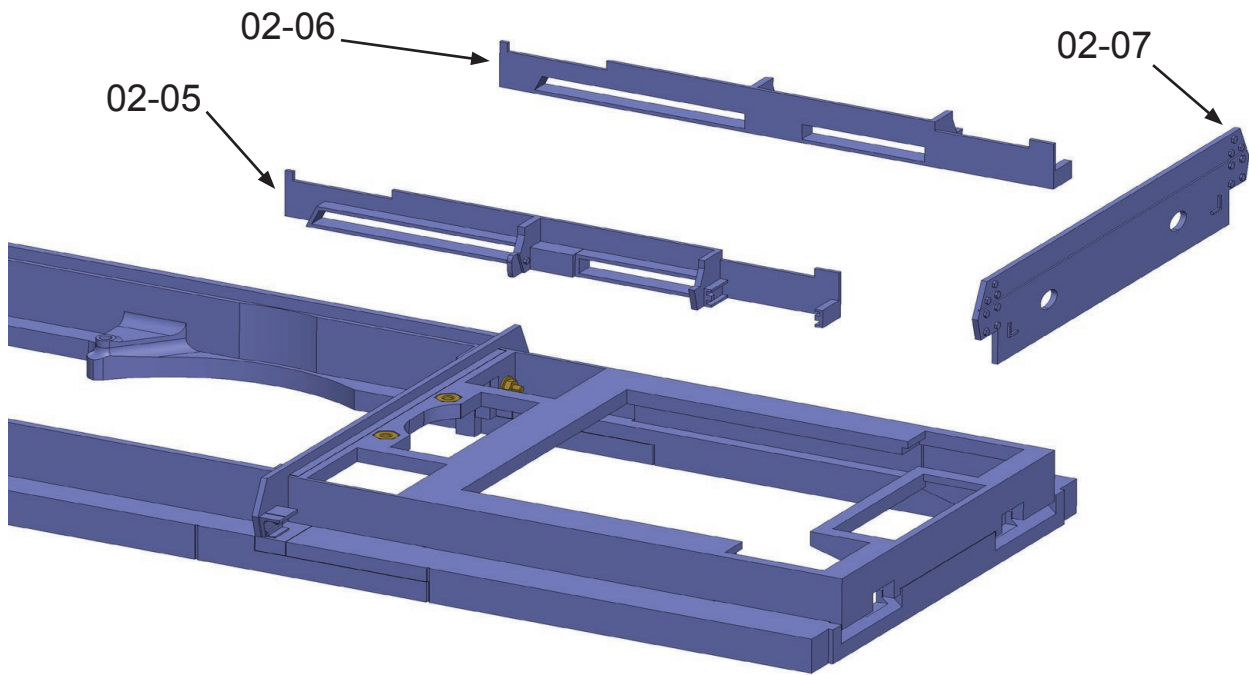
Glue part 02-04. Secure the whole parts assemblies from 02-01 to 02-04 with M2x16 screws. You will need two M2 nuts, we recommend using washers.

Assembly 02 - Upper Hull



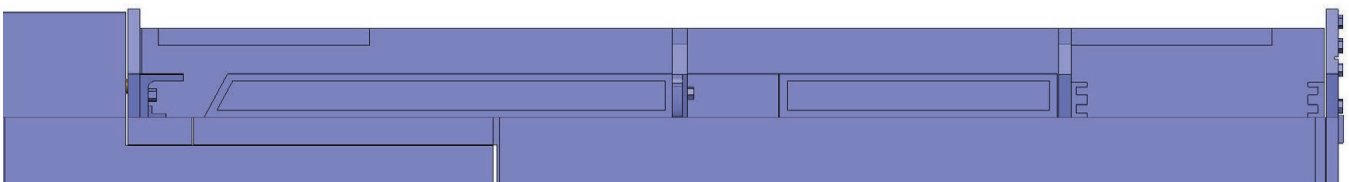
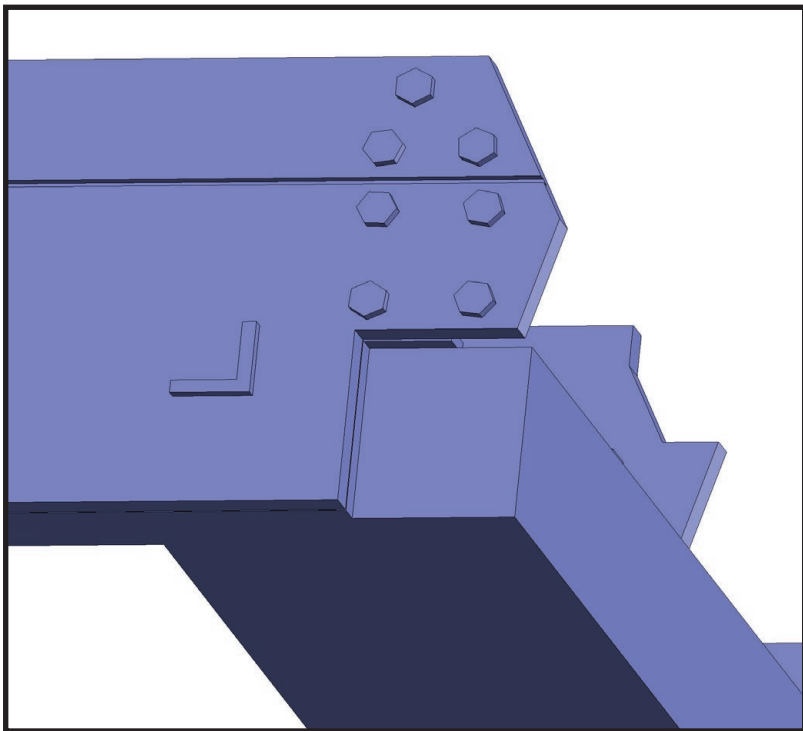
Insert two M2 nuts into part 02-04.

Assembly 02 - Upper Hull



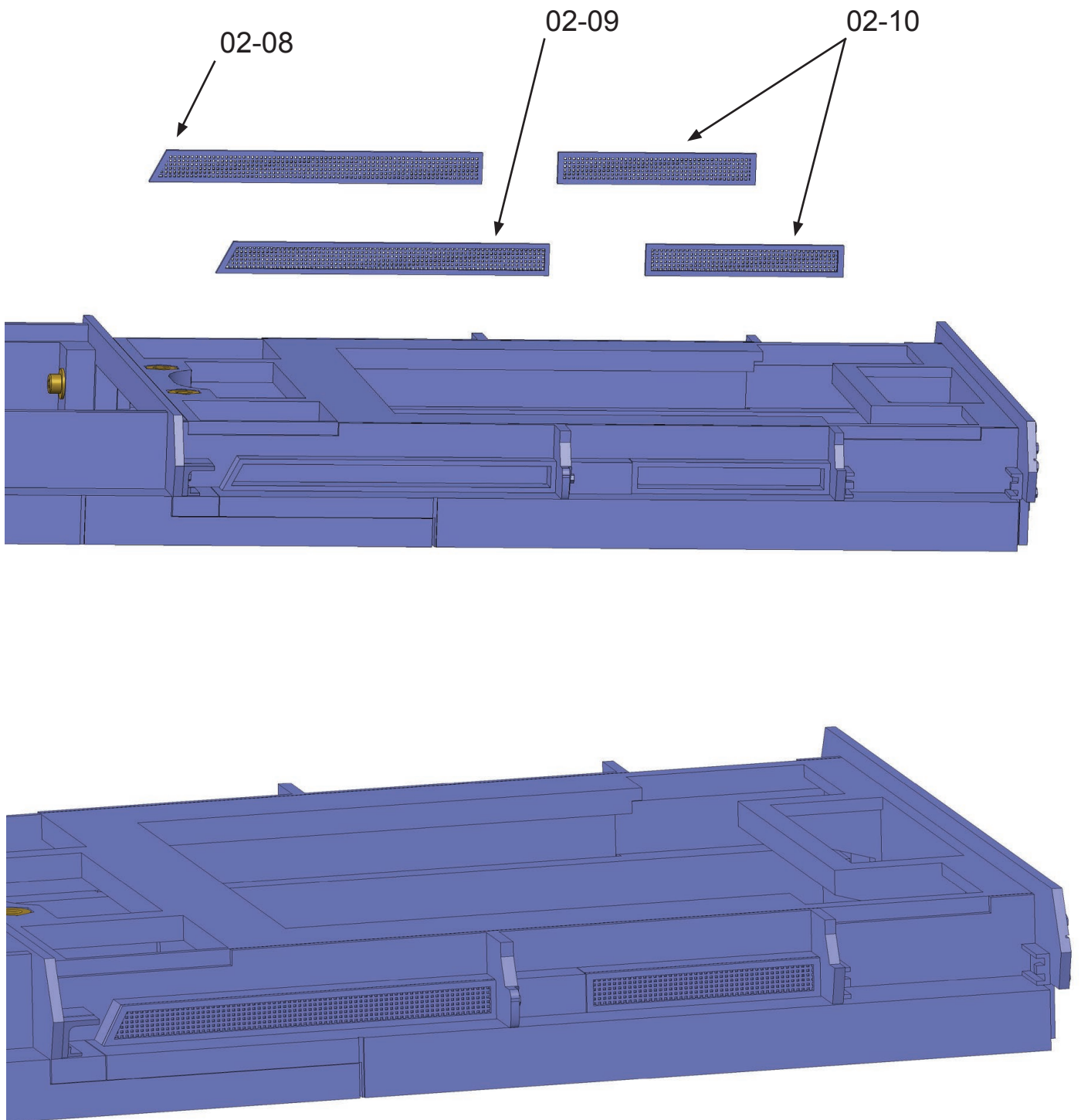
Glue parts 02-05, 02-06 and 02-07.

Assembly 02 - Upper Hull



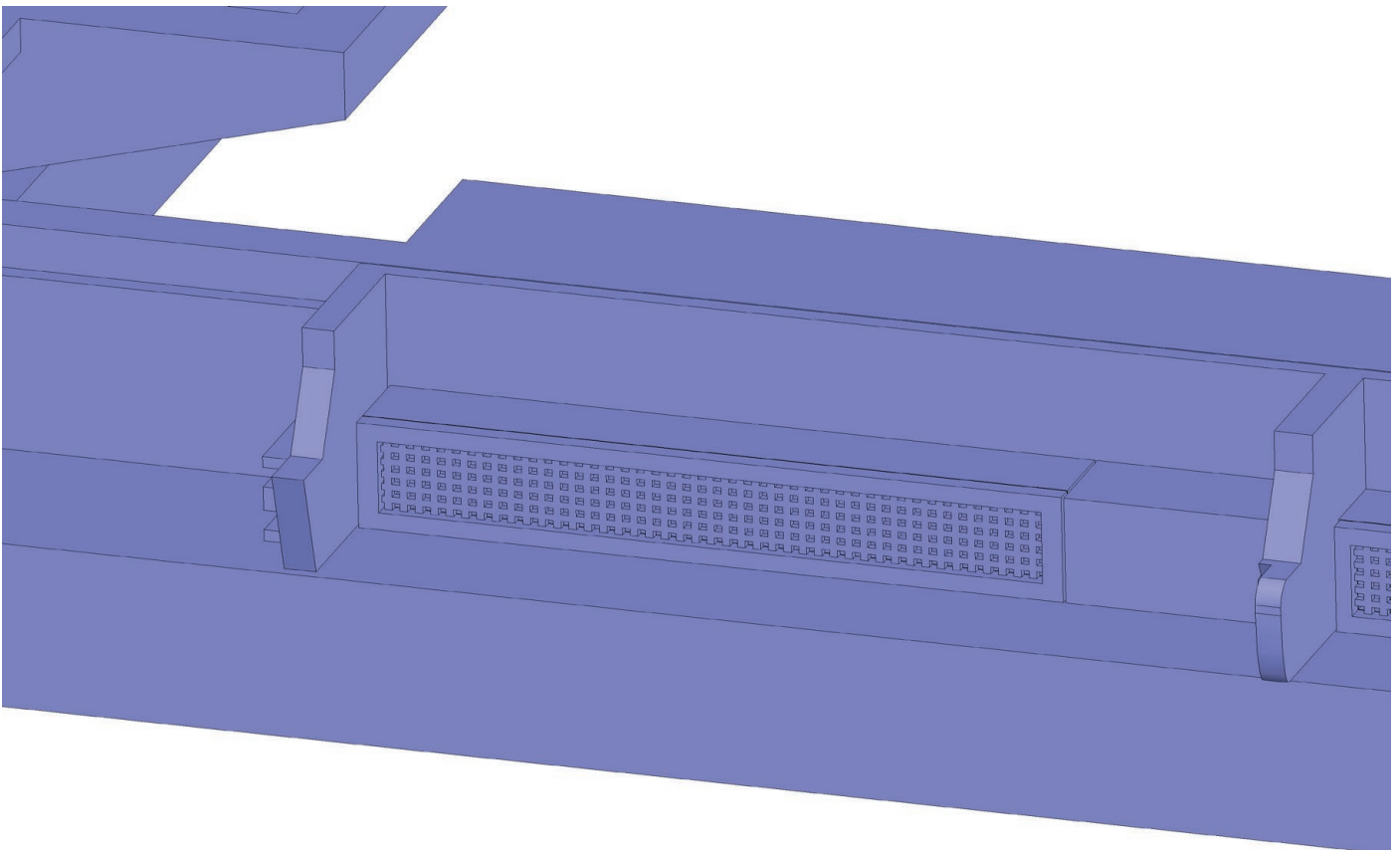
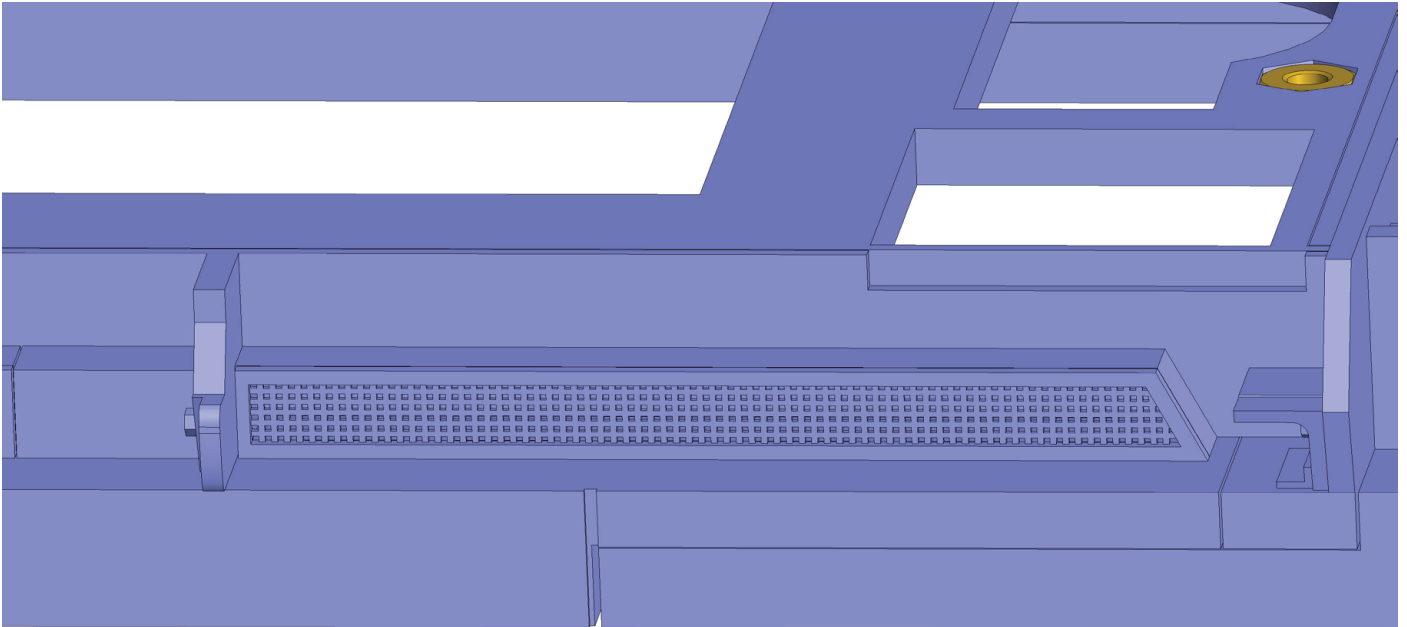
Auxiliary views for gluing parts 02-05 to 02-07.

Assembly 02 - Upper Hull



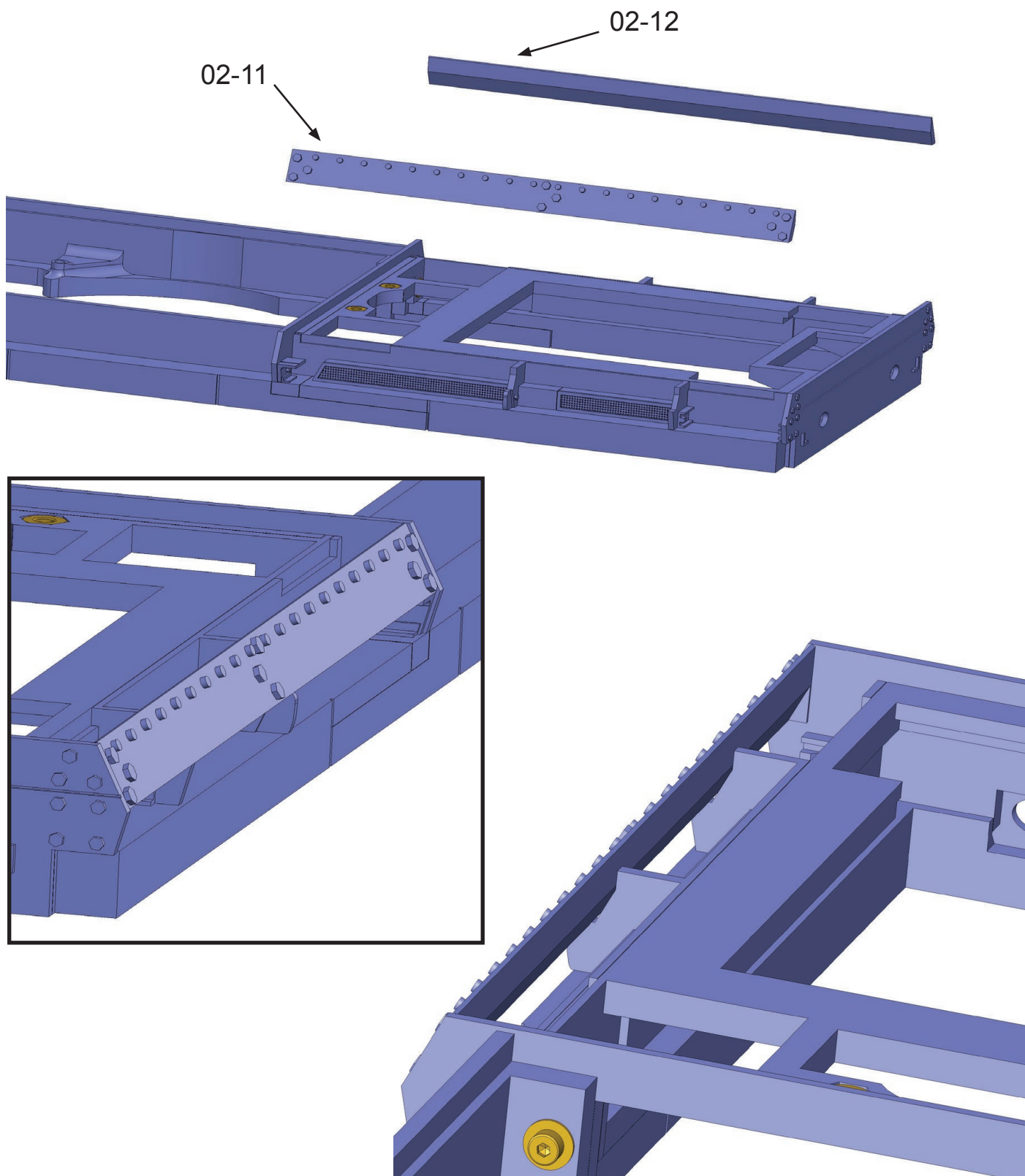
Glue parts 02-08, 02-09 and 02-10 (2x).
You can use alternative parts with a metal grid.

Assembly 02 - Upper Hull



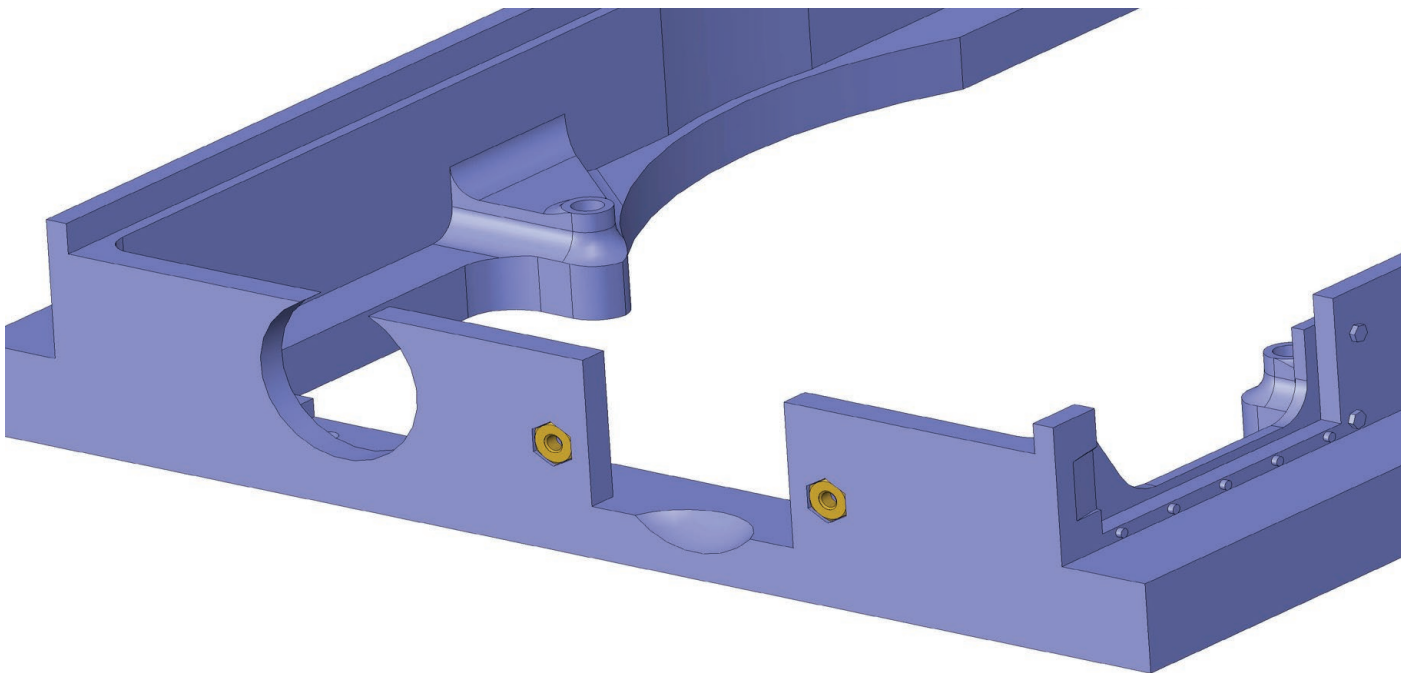
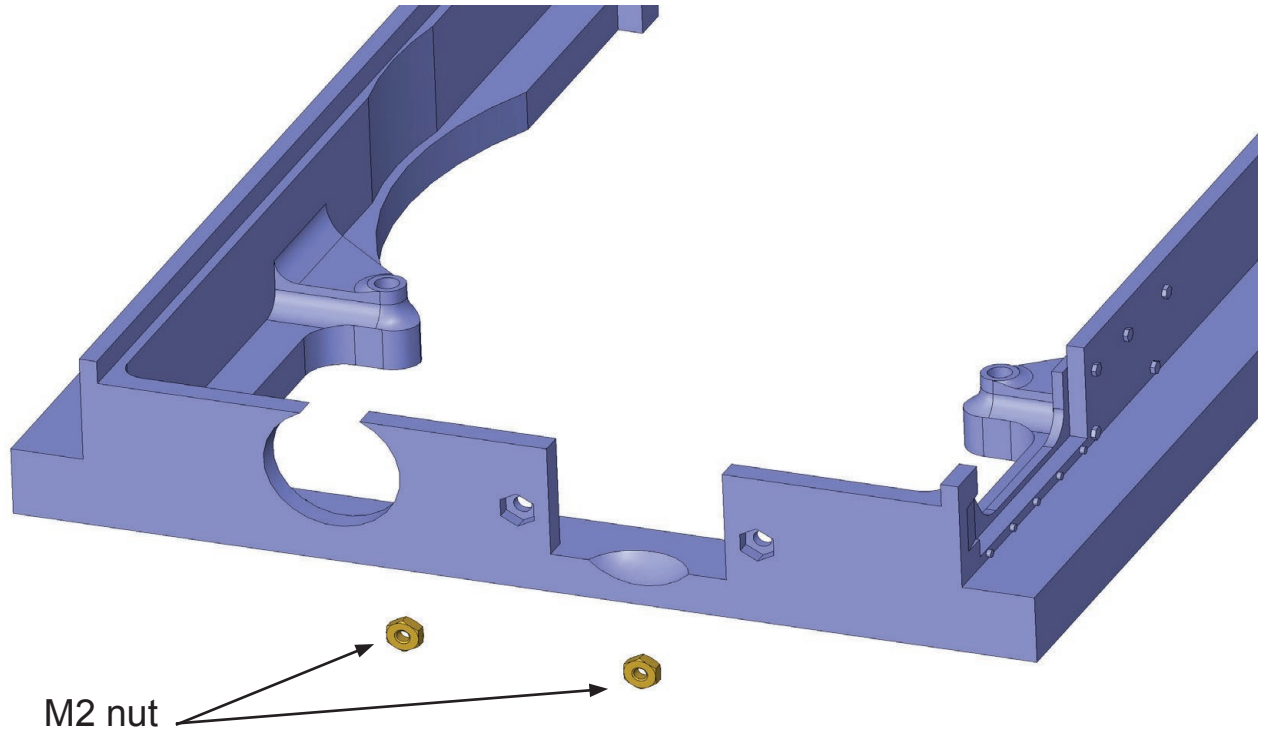
Auxiliary views for gluing parts 02-08 to 02-10.

Assembly 02 - Upper Hull



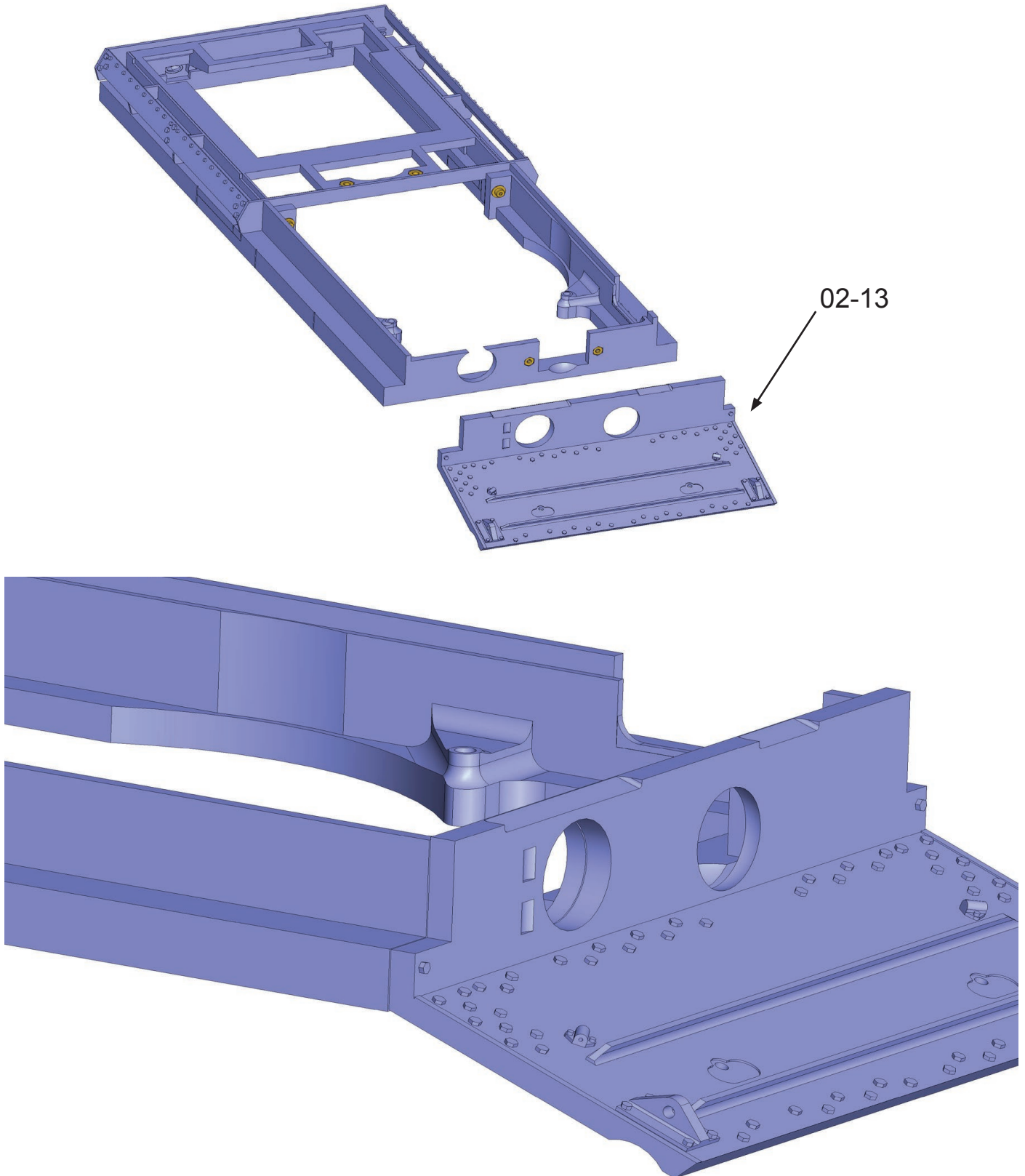
Glue parts 02-11 and 02-12.
Do not misplace the parts, install them according to the first figure.

Assembly 02 - Upper Hull



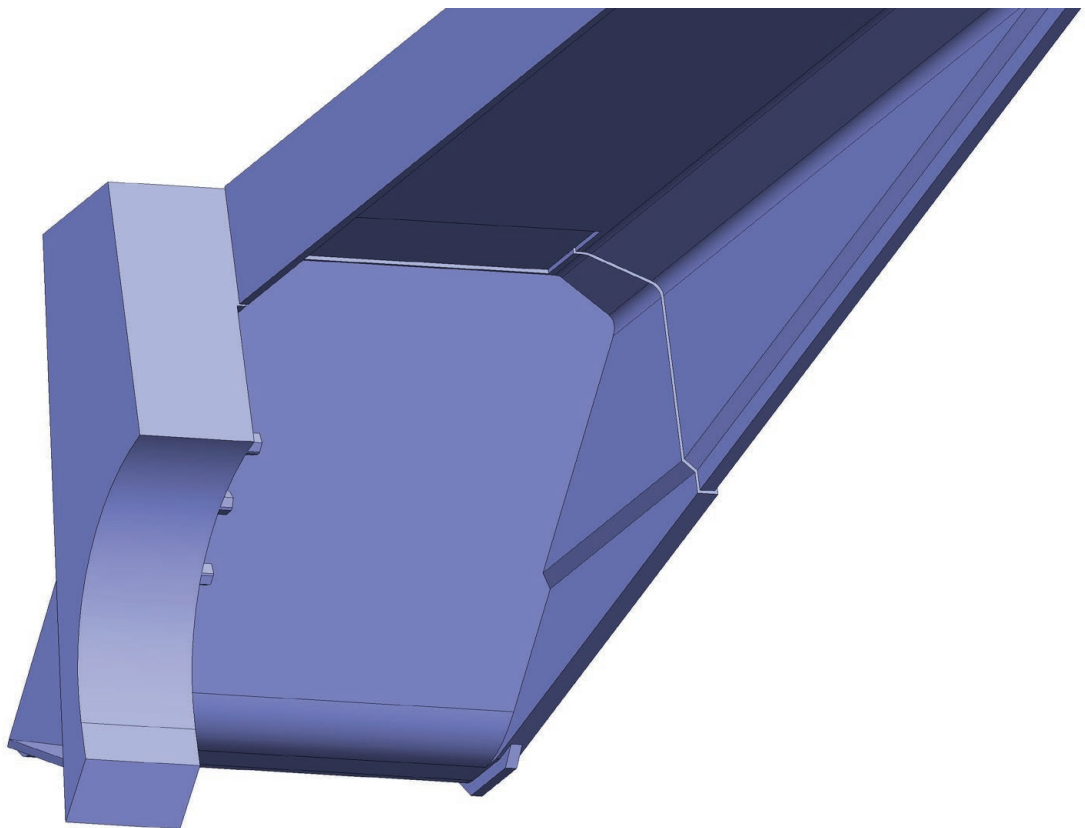
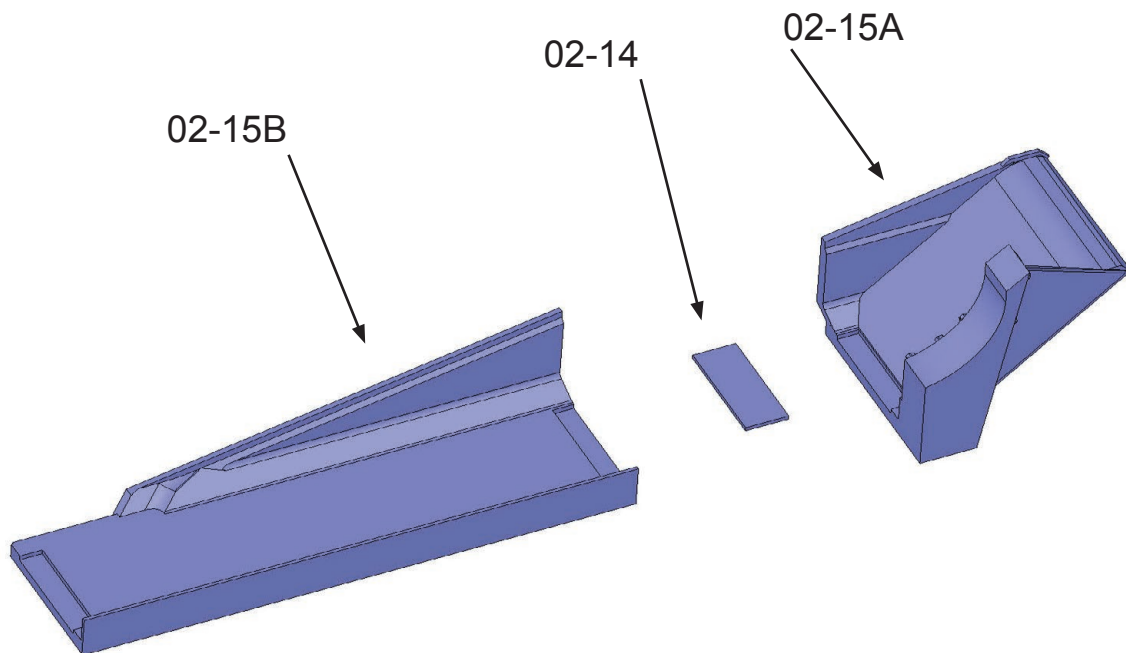
Insert two nuts into part 02-01. It will not be possible later.

Assembly 02 - Upper Hull



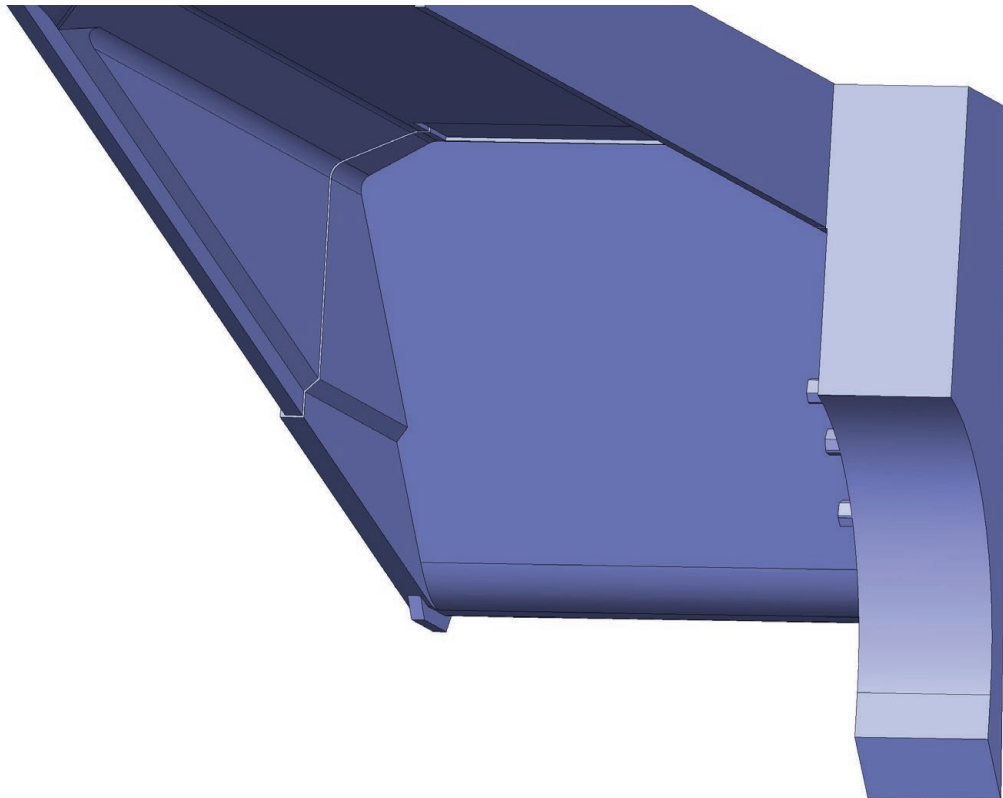
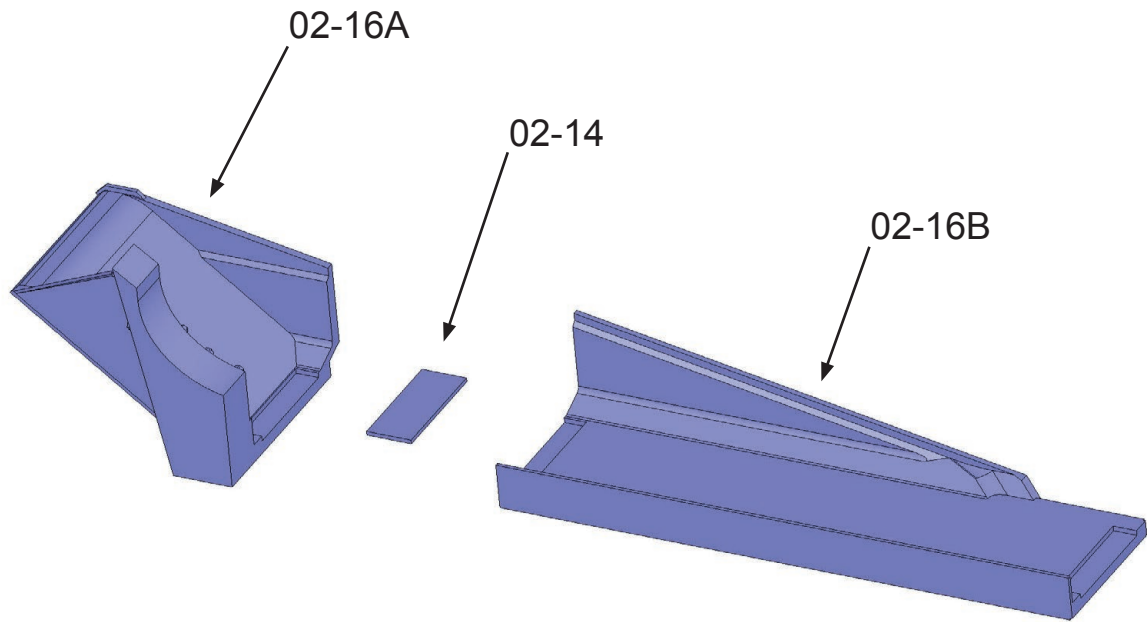
Glue part 02-13. Align the edges as shown below.

Assembly 02 - Upper Hull



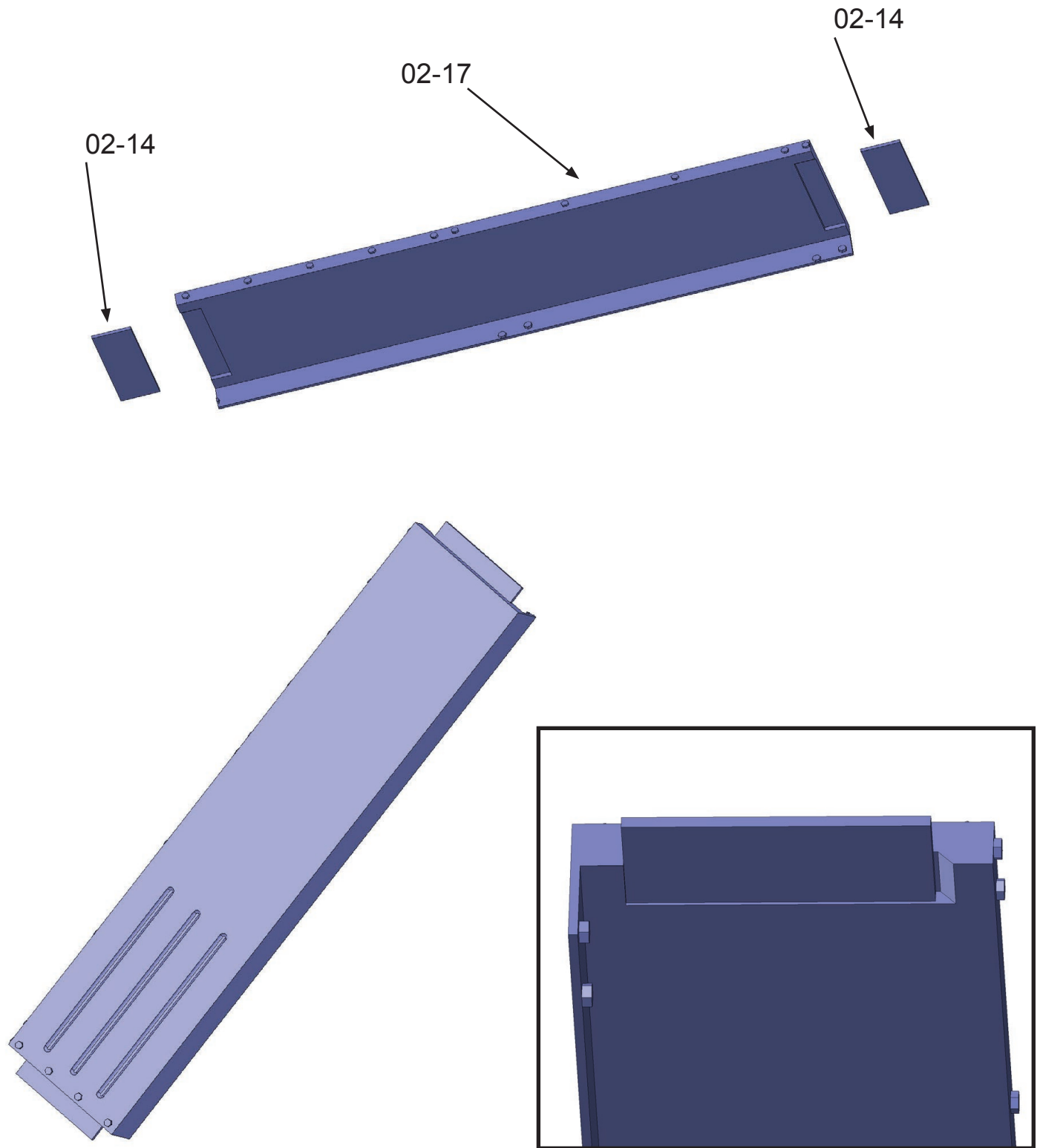
Glue parts 02-14, 02-15A and 02-15B.

Assembly 02 - Upper Hull



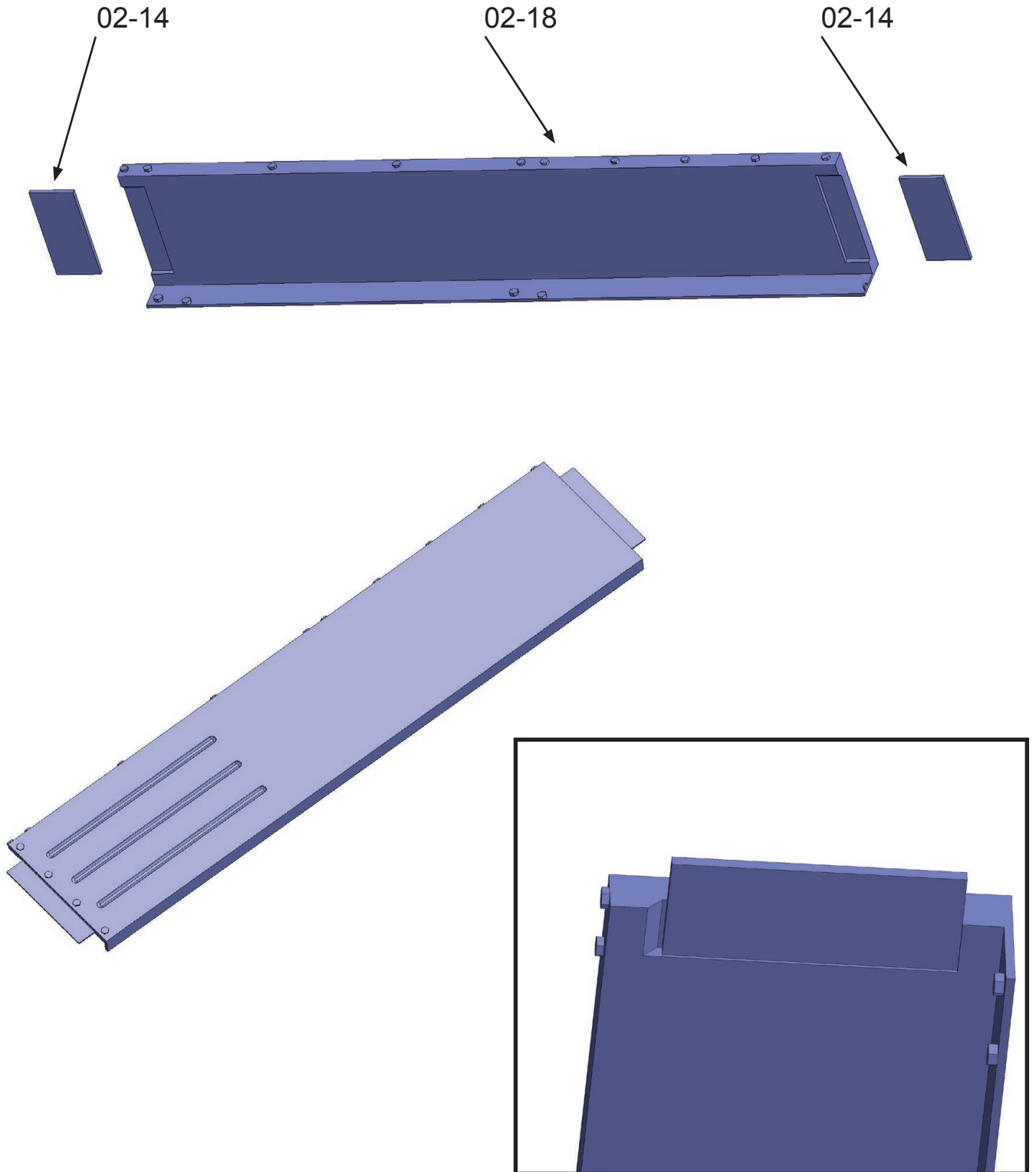
Glue parts 02-14, 02-16A and 02-16B.

Assembly 02 - Upper Hull

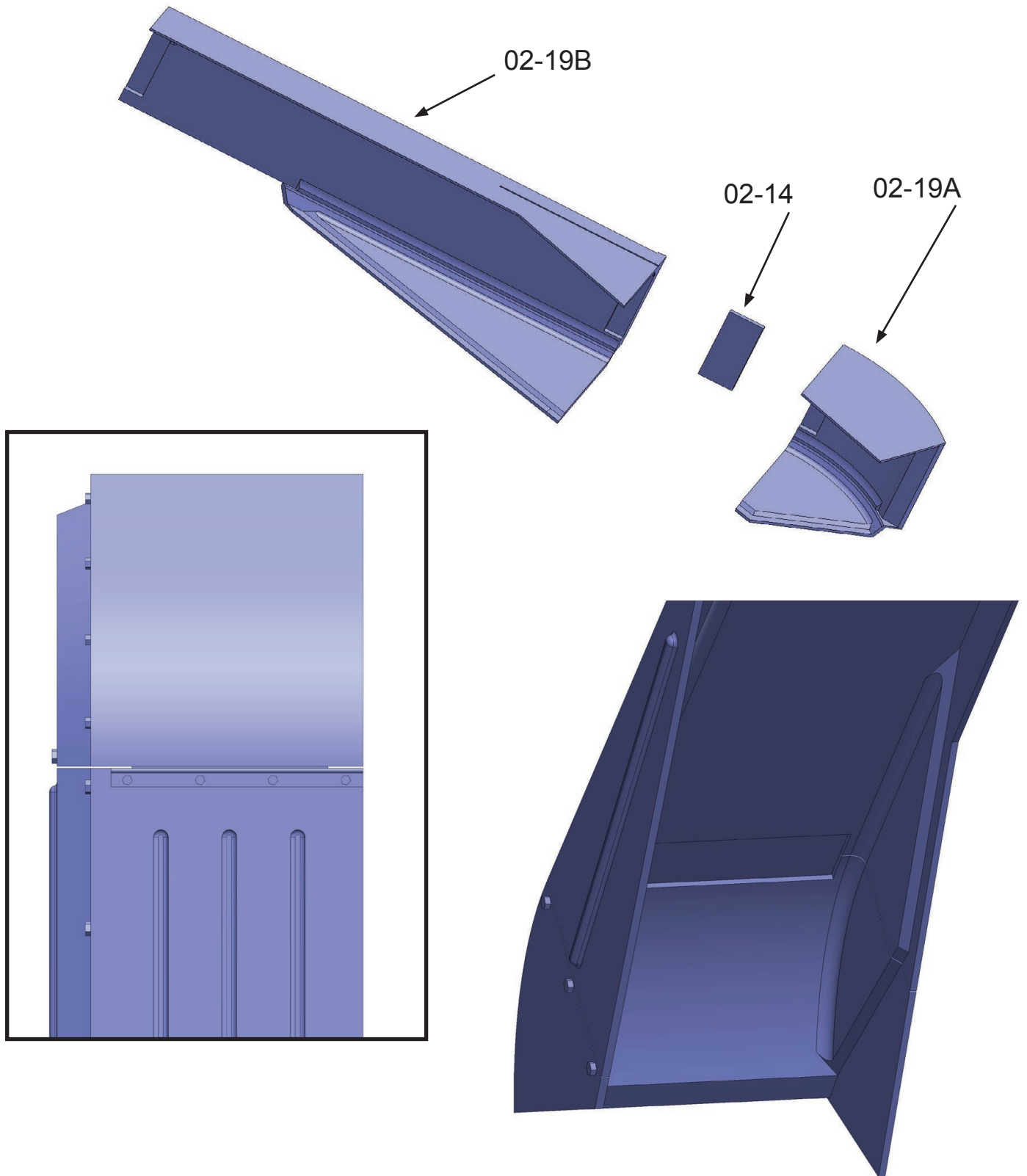


Glue parts 02-14 (2x) and 02-17.

Assembly 02 - Upper Hull

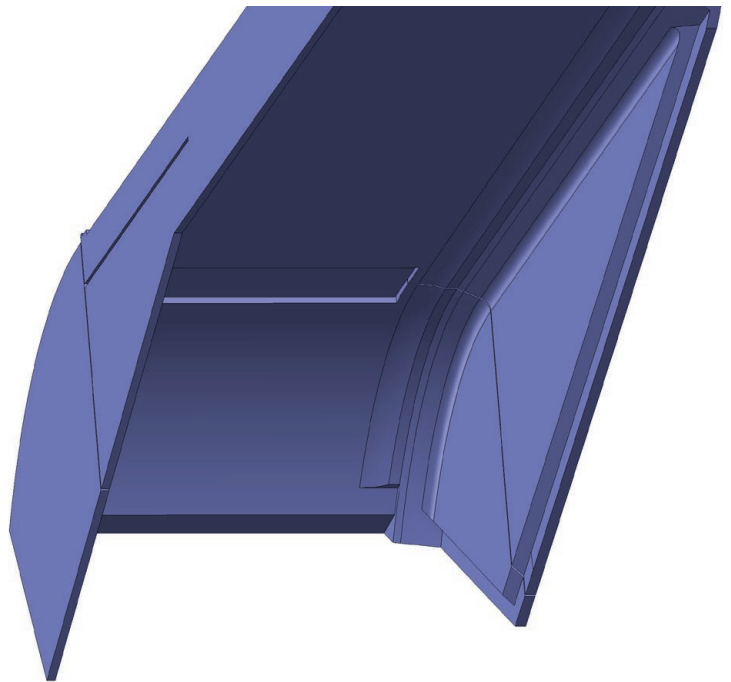
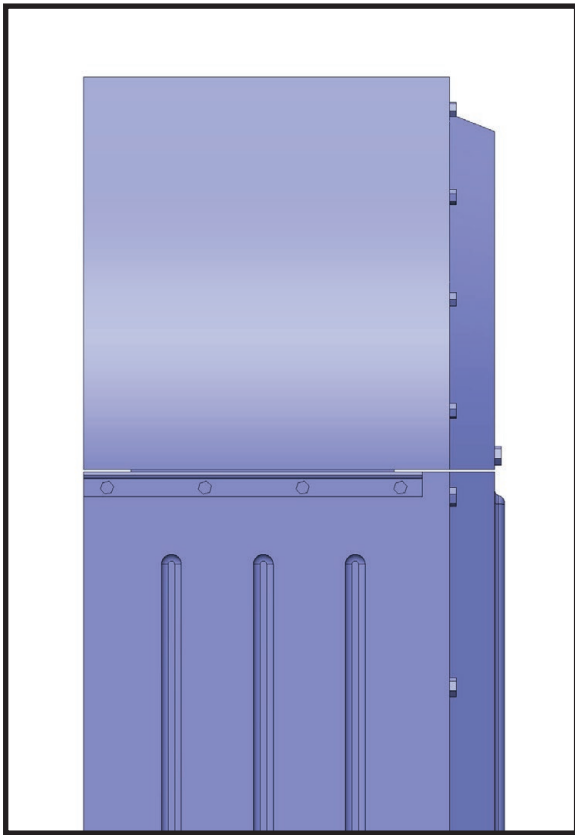
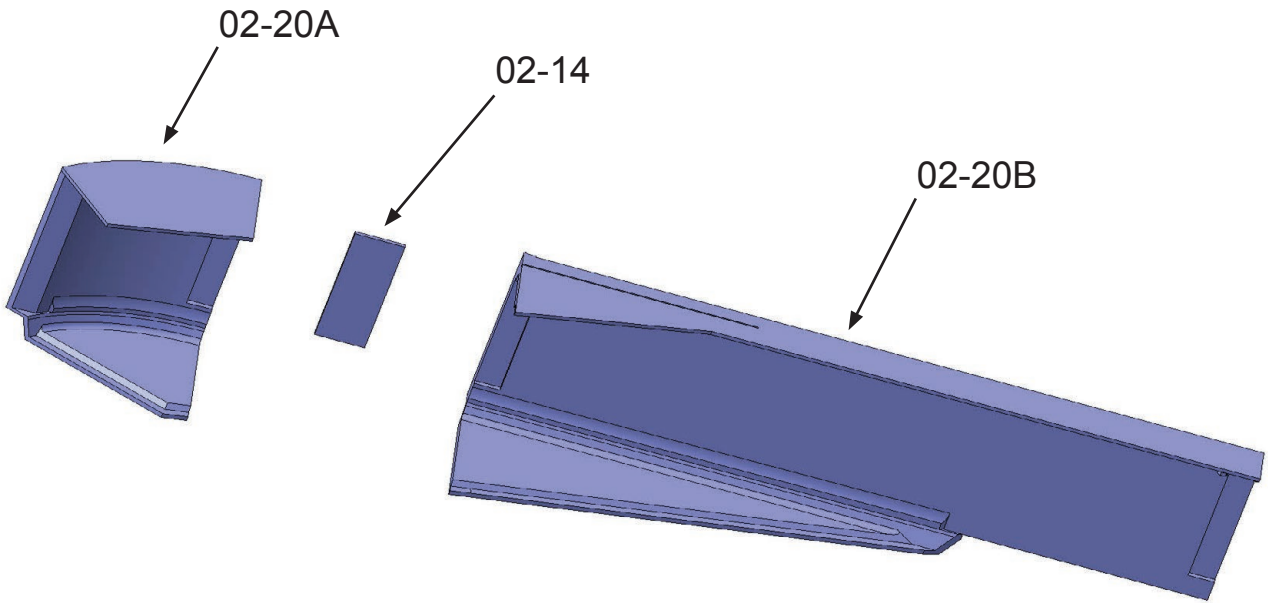


Assembly 02 - Upper Hull



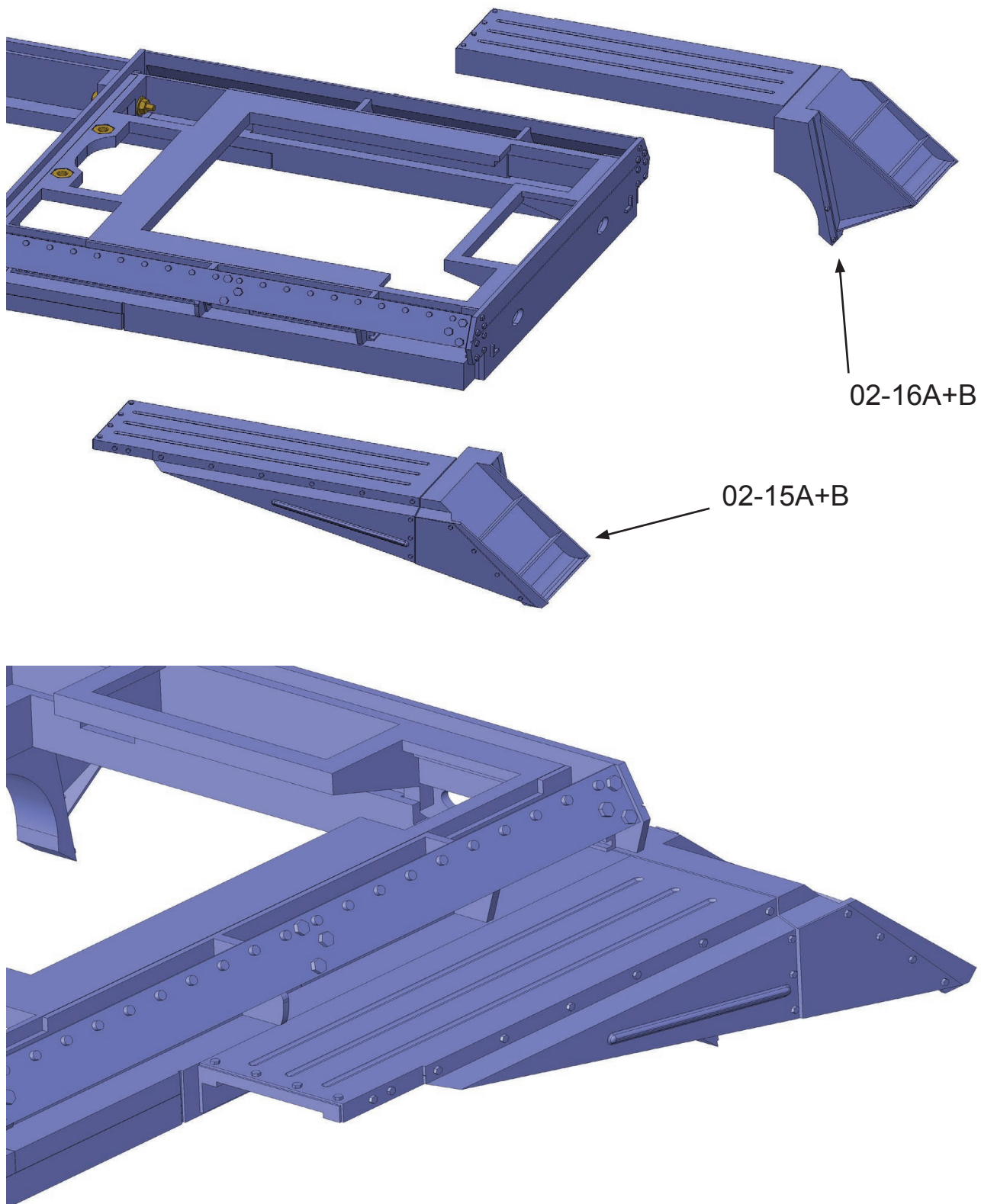
Glue parts 02-14, 02-19A and 02-19B.

Assembly 02 - Upper Hull



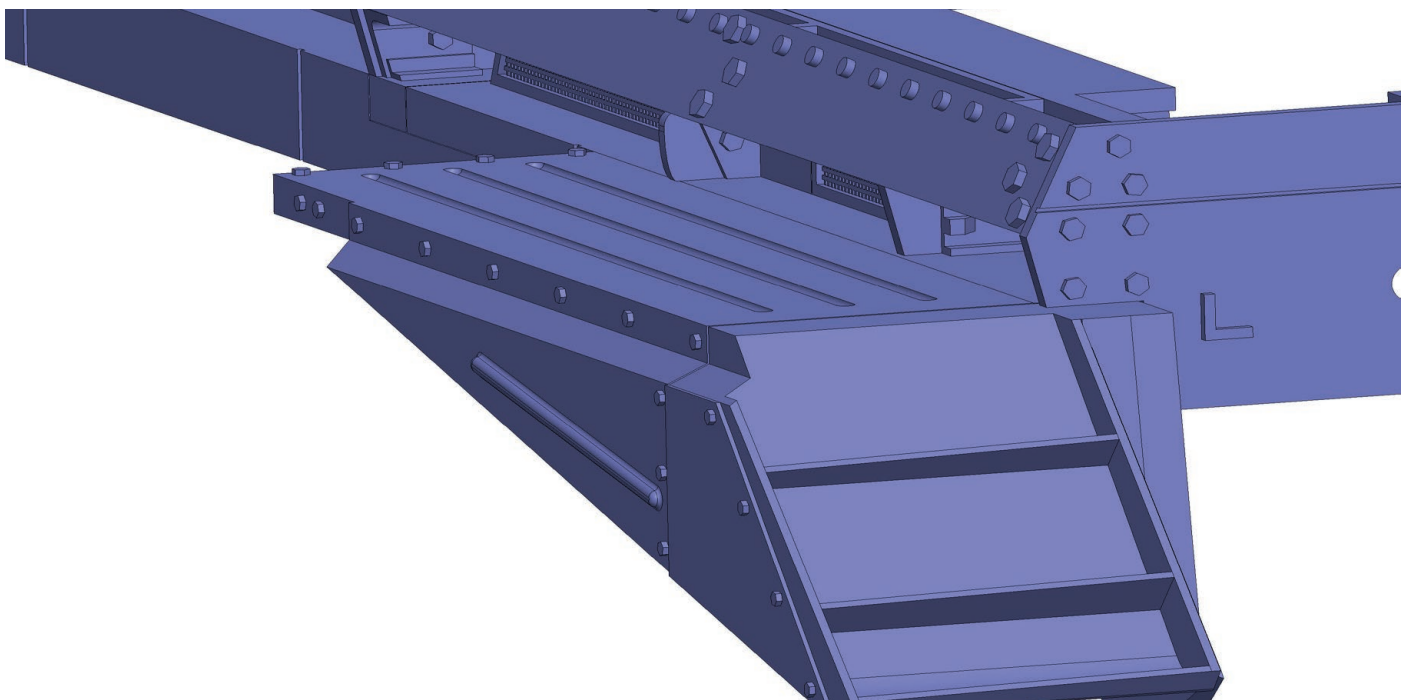
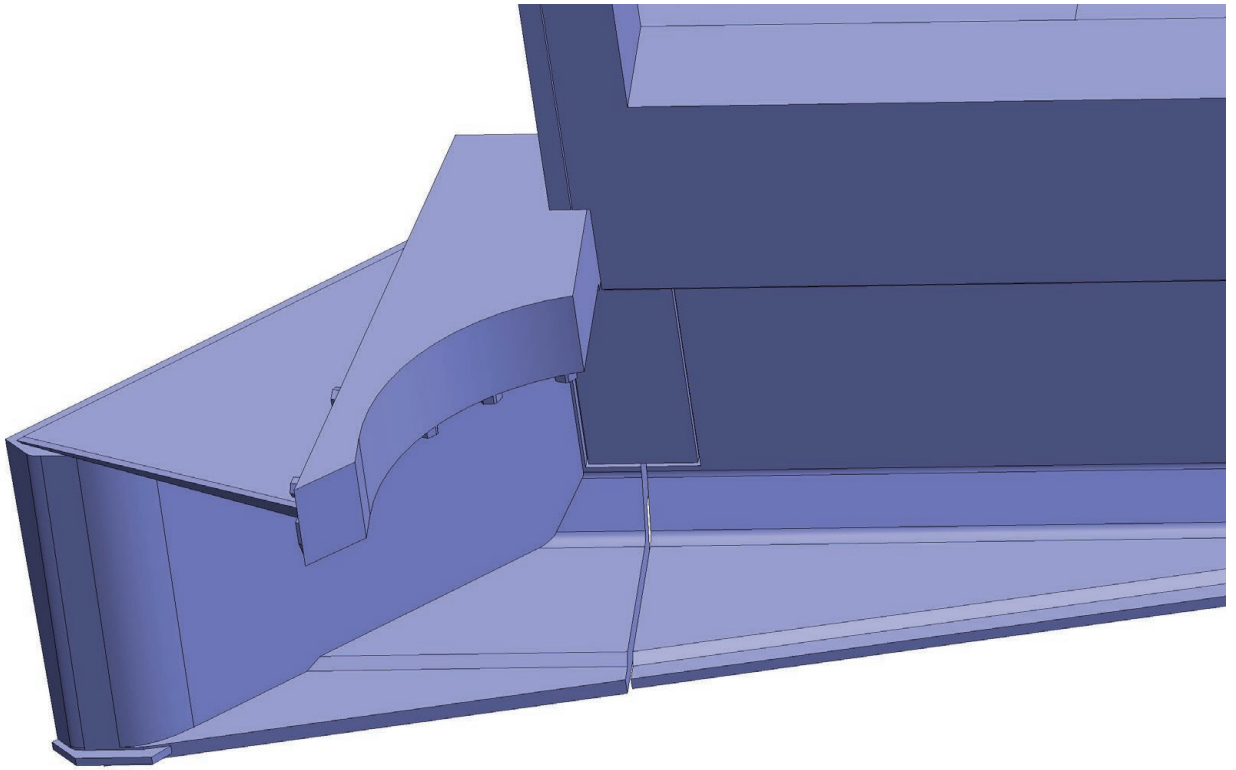
Glue parts 02-14, 02-20A and 02-20B.

Assembly 02 - Upper Hull



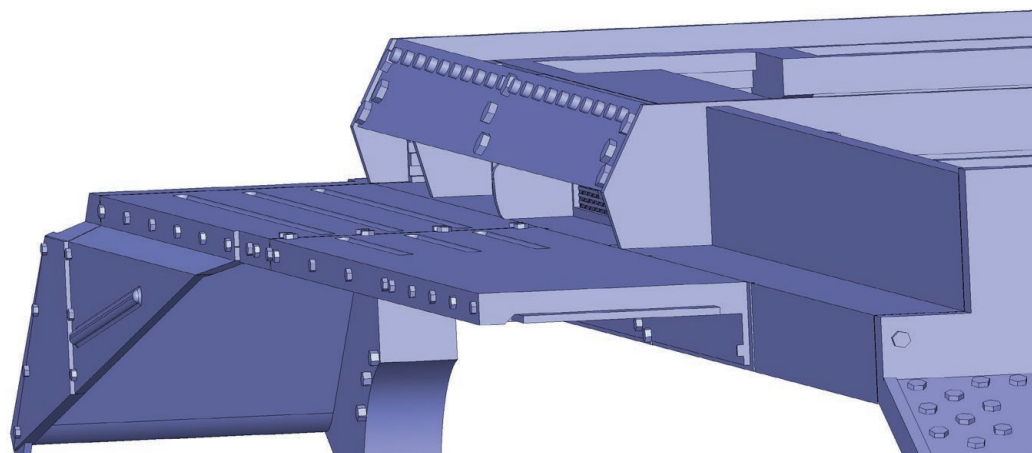
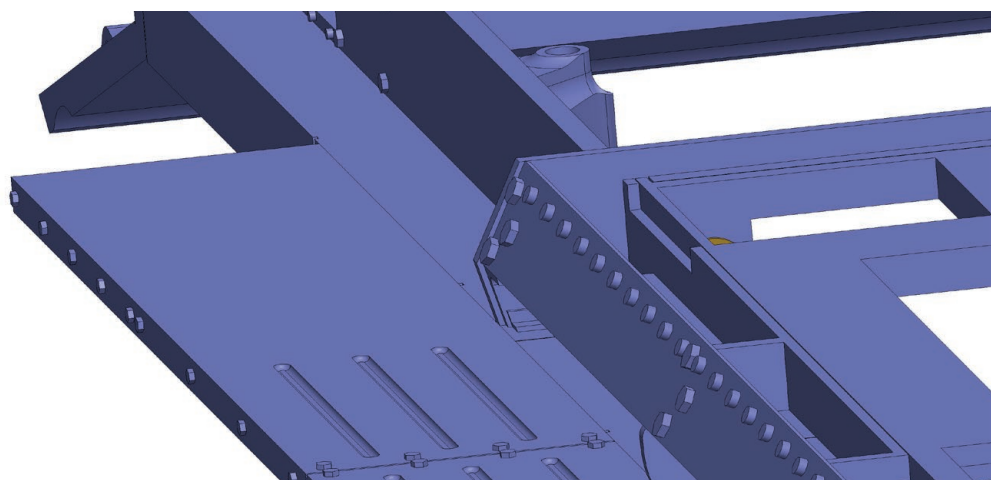
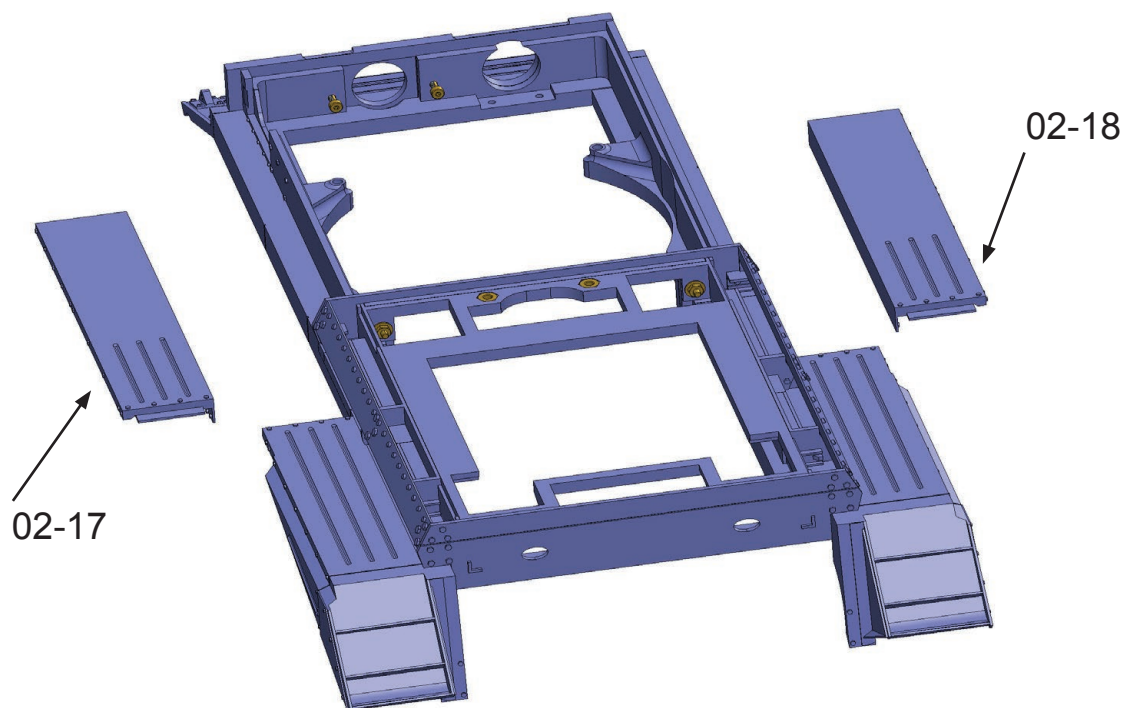
Glue the parts assemblies 02-15A + B and 02-16A + B to the hull.

Assembly 02 - Upper Hull



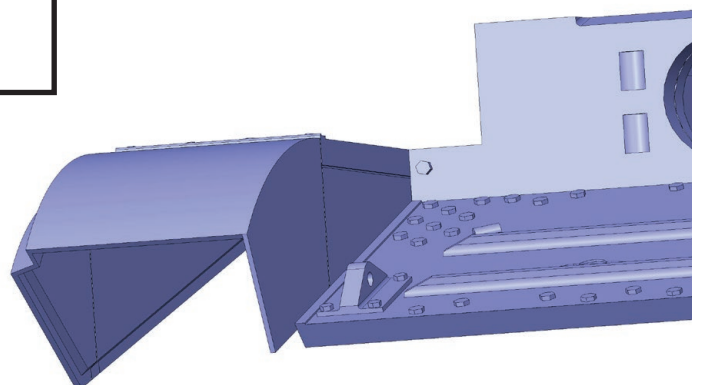
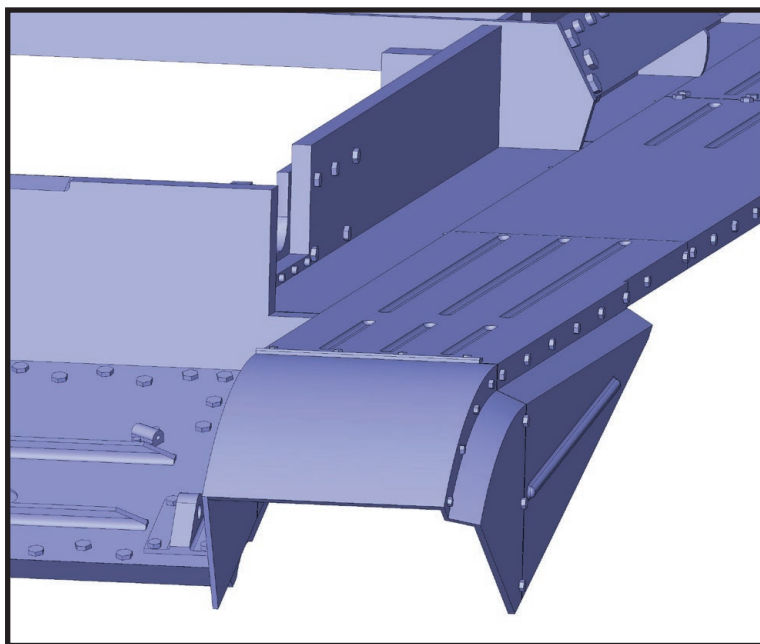
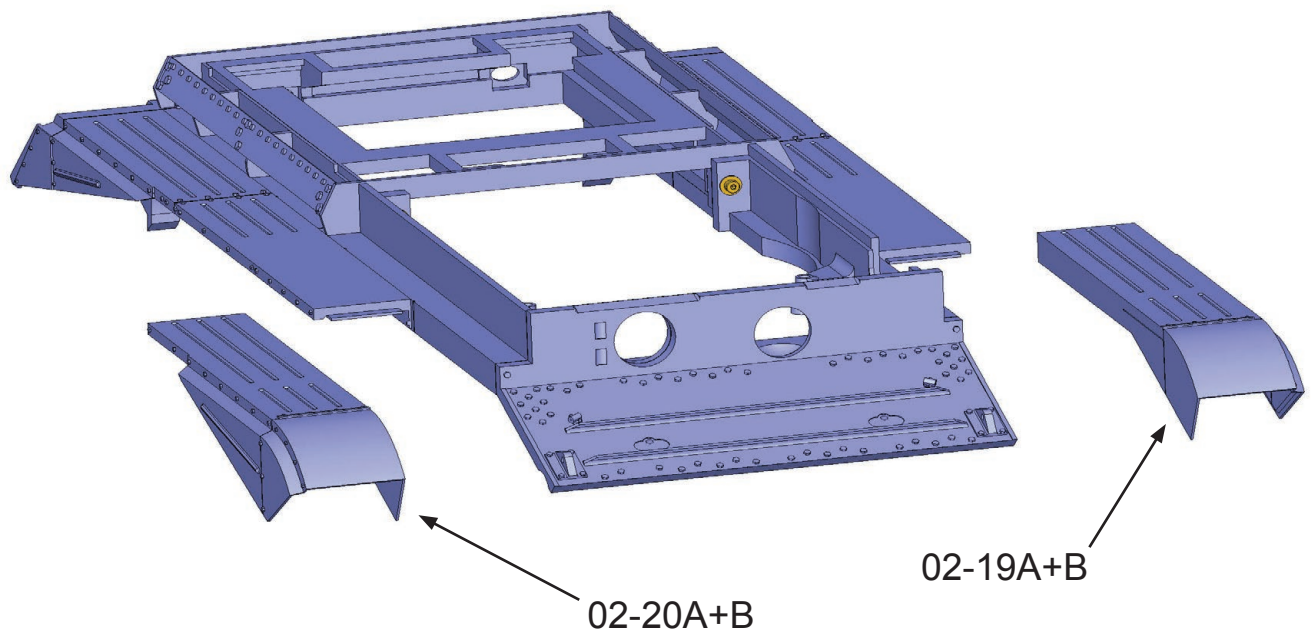
Auxiliary views for gluing parts 02-15A + B and 02-16A + B.

Assembly 02 - Upper Hull



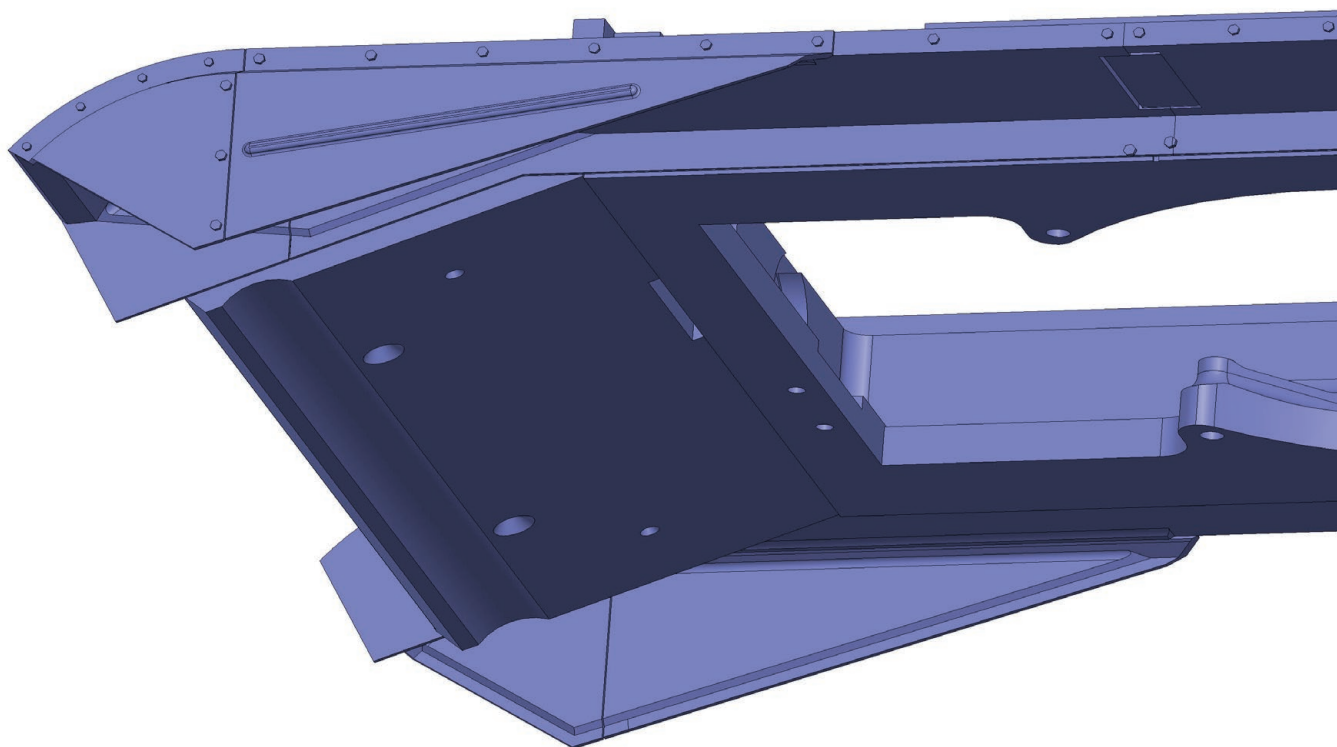
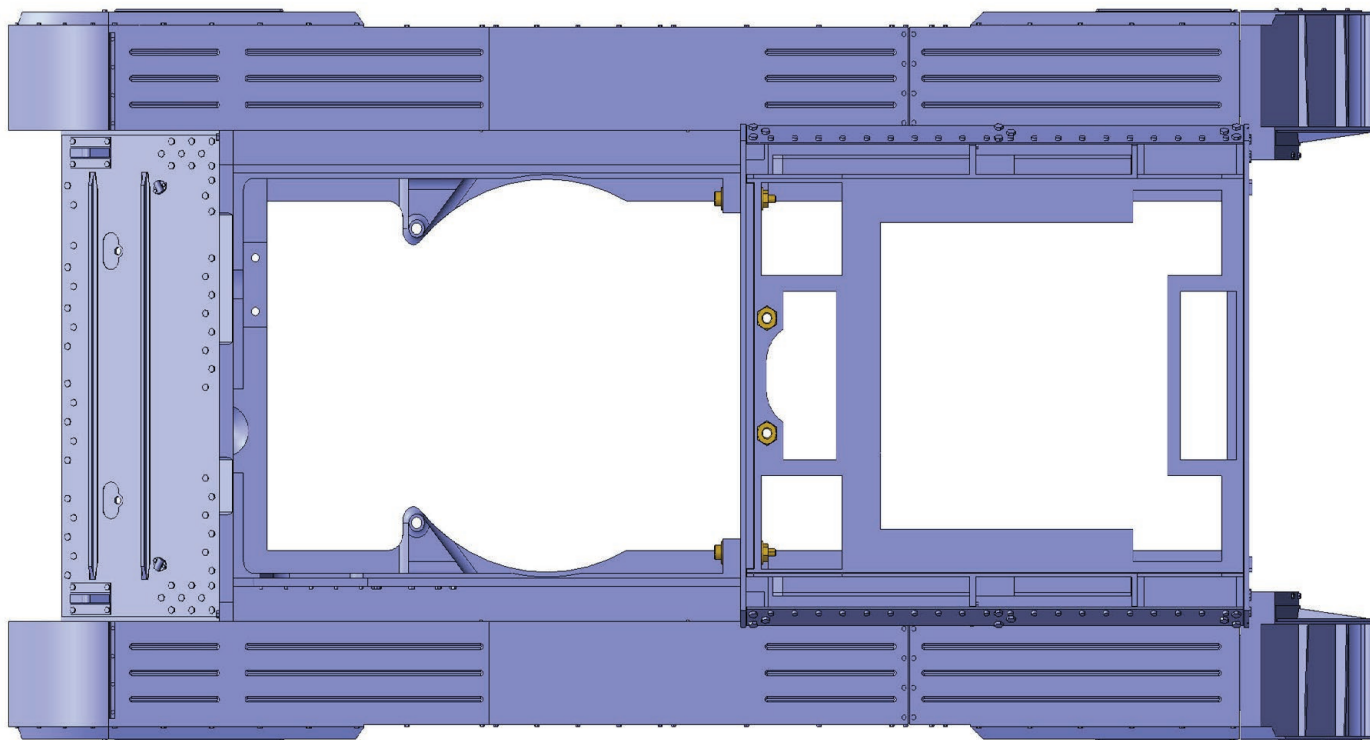
Glue the assemblies of parts 02-17 and 02-18.

Assembly 02 - Upper Hull



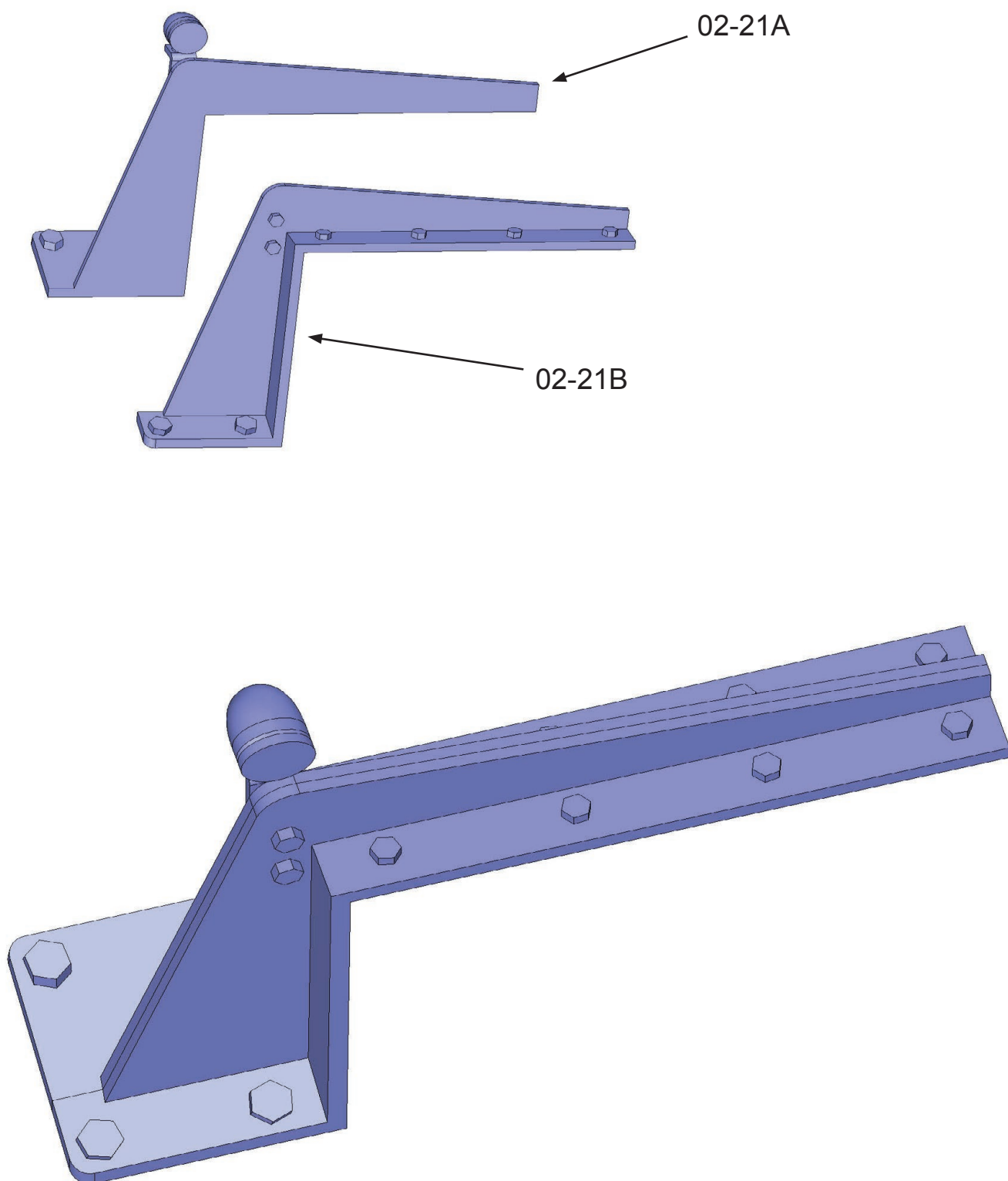
Glue the assemblies of parts 02-19A + B and 02-20A + B.

Assembly 02 - Upper Hull



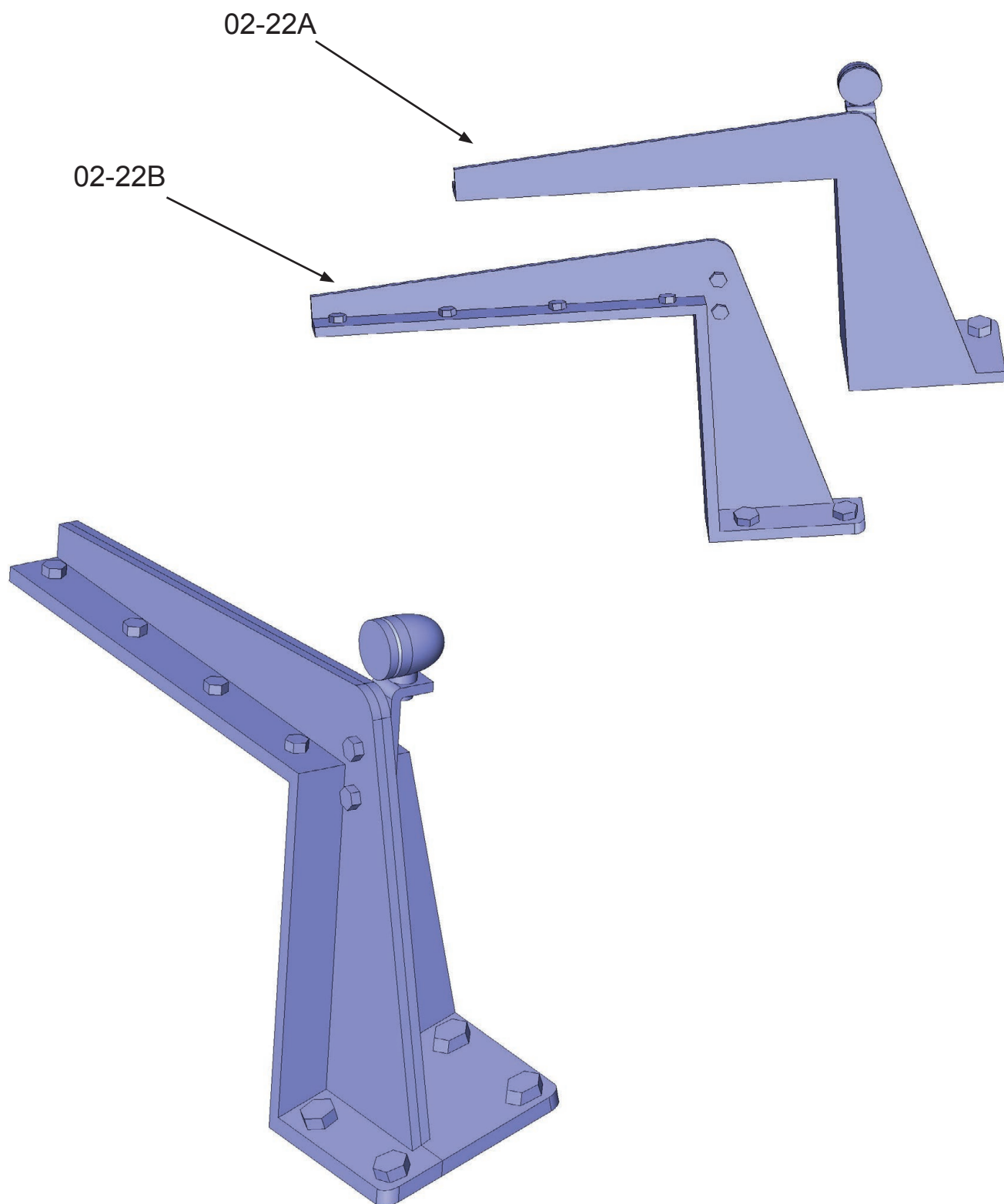
Auxiliary views for gluing parts 02-19A+B and 02-20A+B.

Assembly 02 - Upper Hull



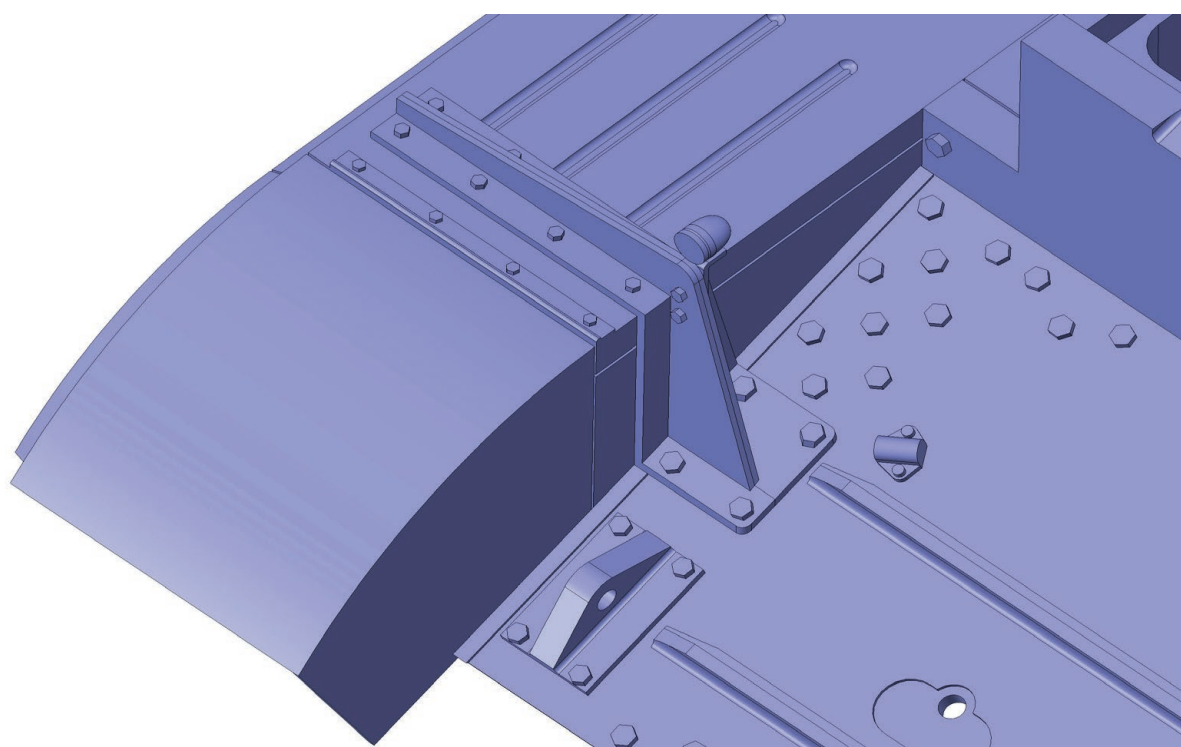
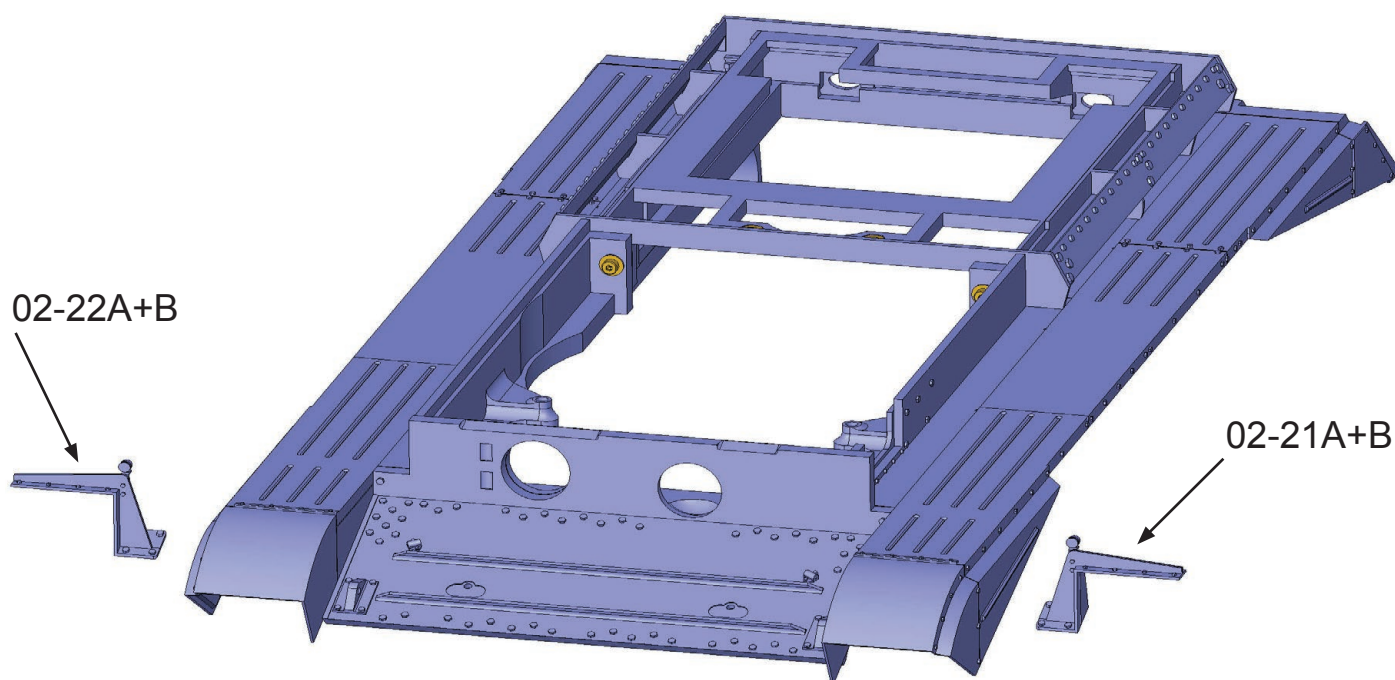
Glue part 02-21A to part 02-21B.

Assembly 02 - Upper Hull



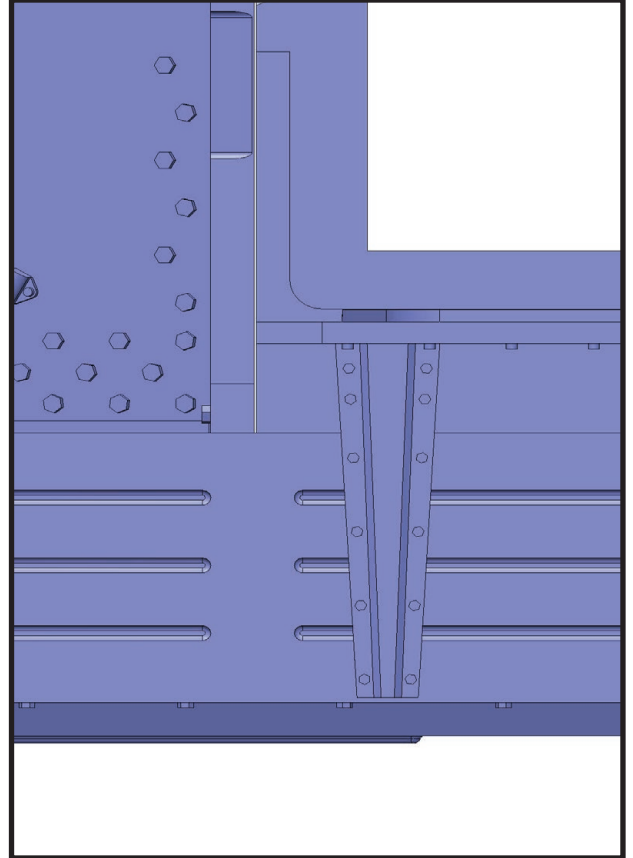
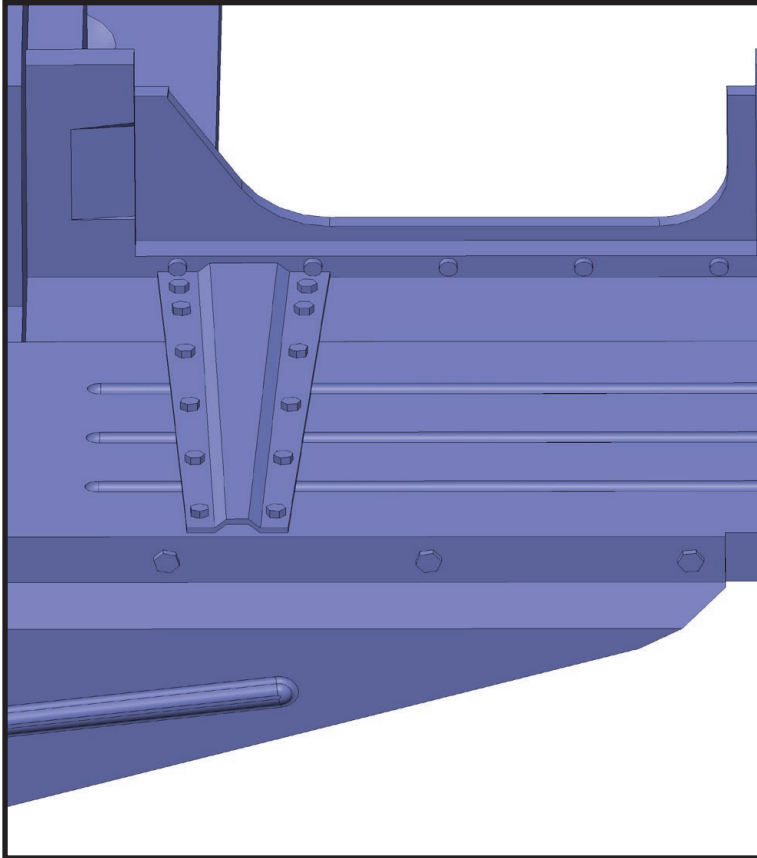
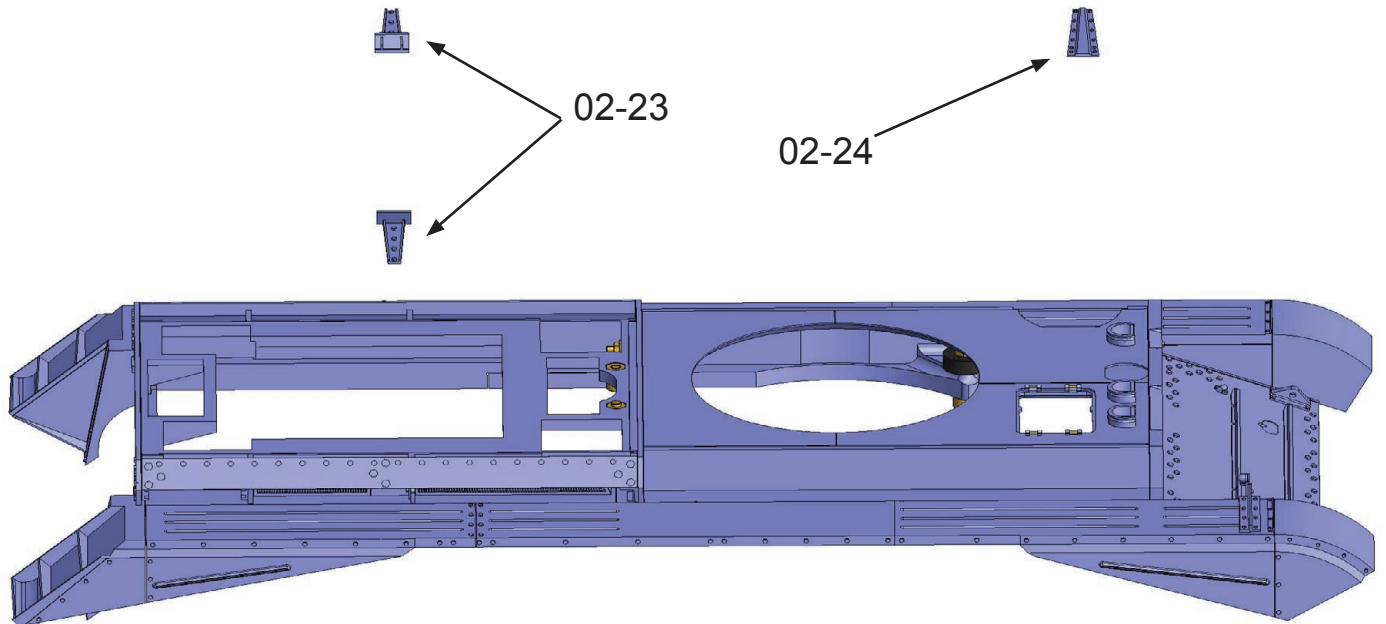
Glue part 02-22A to part 02-22B.

Assembly 02 - Upper Hull



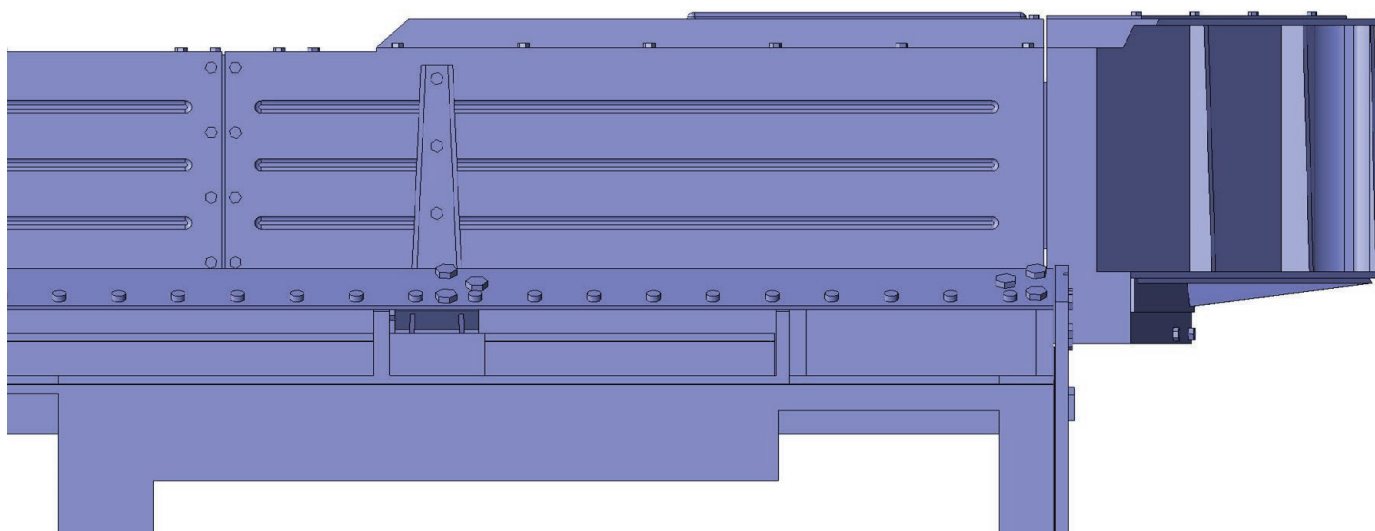
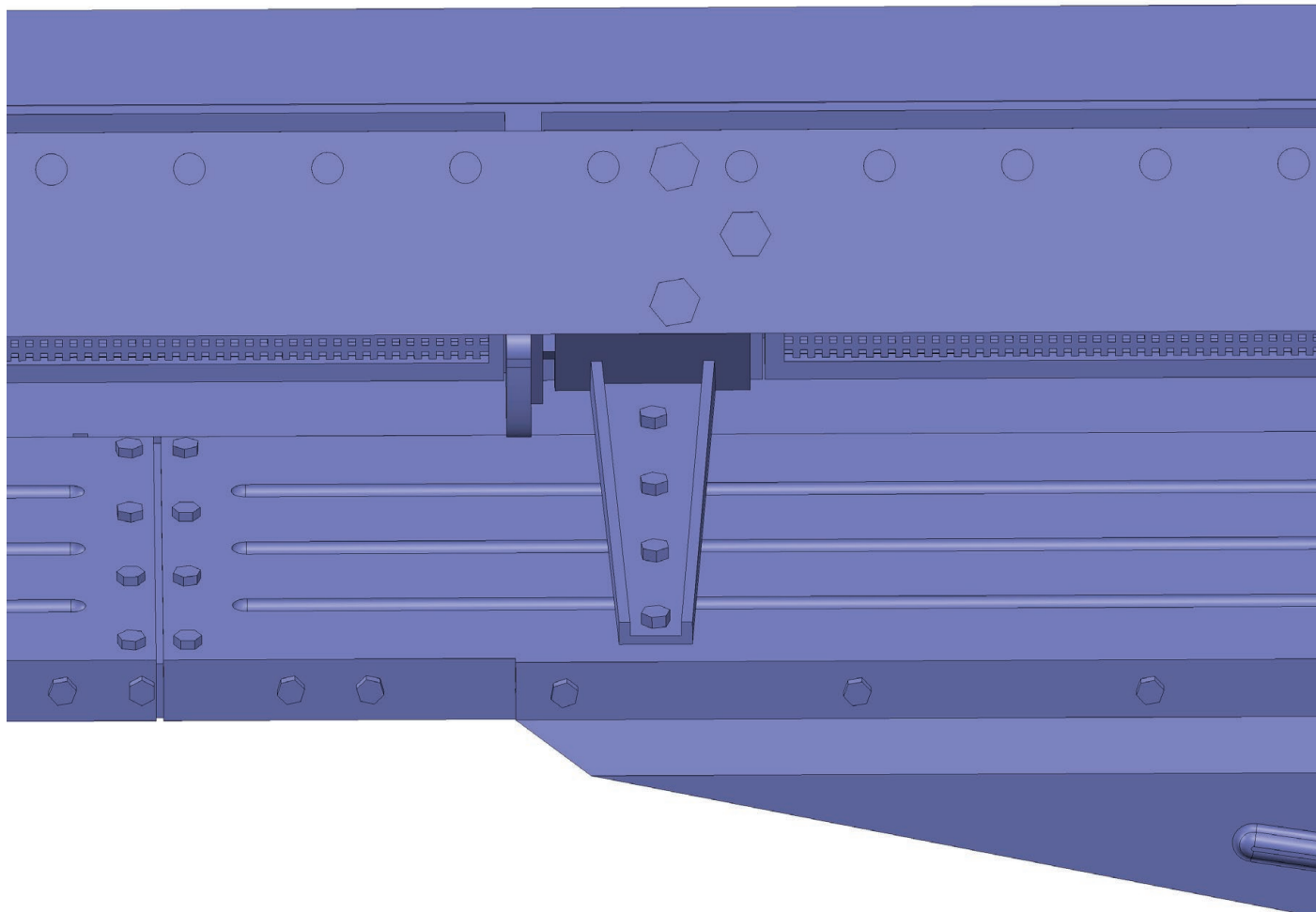
Glue the prepared assemblies of parts 02-21 and 02-22.

Assembly 02 - Upper Hull



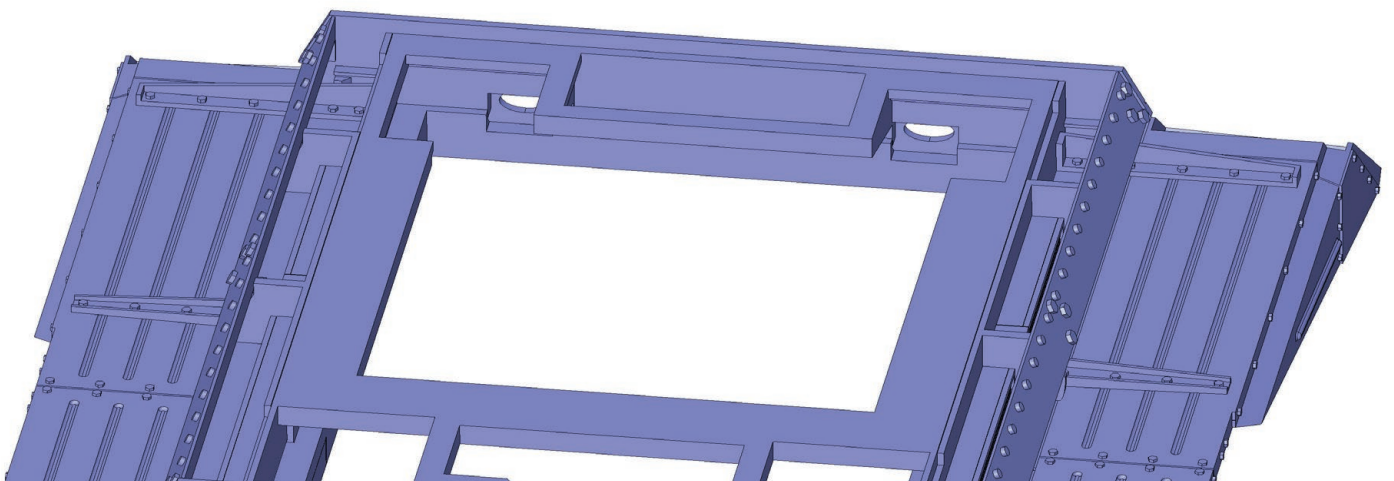
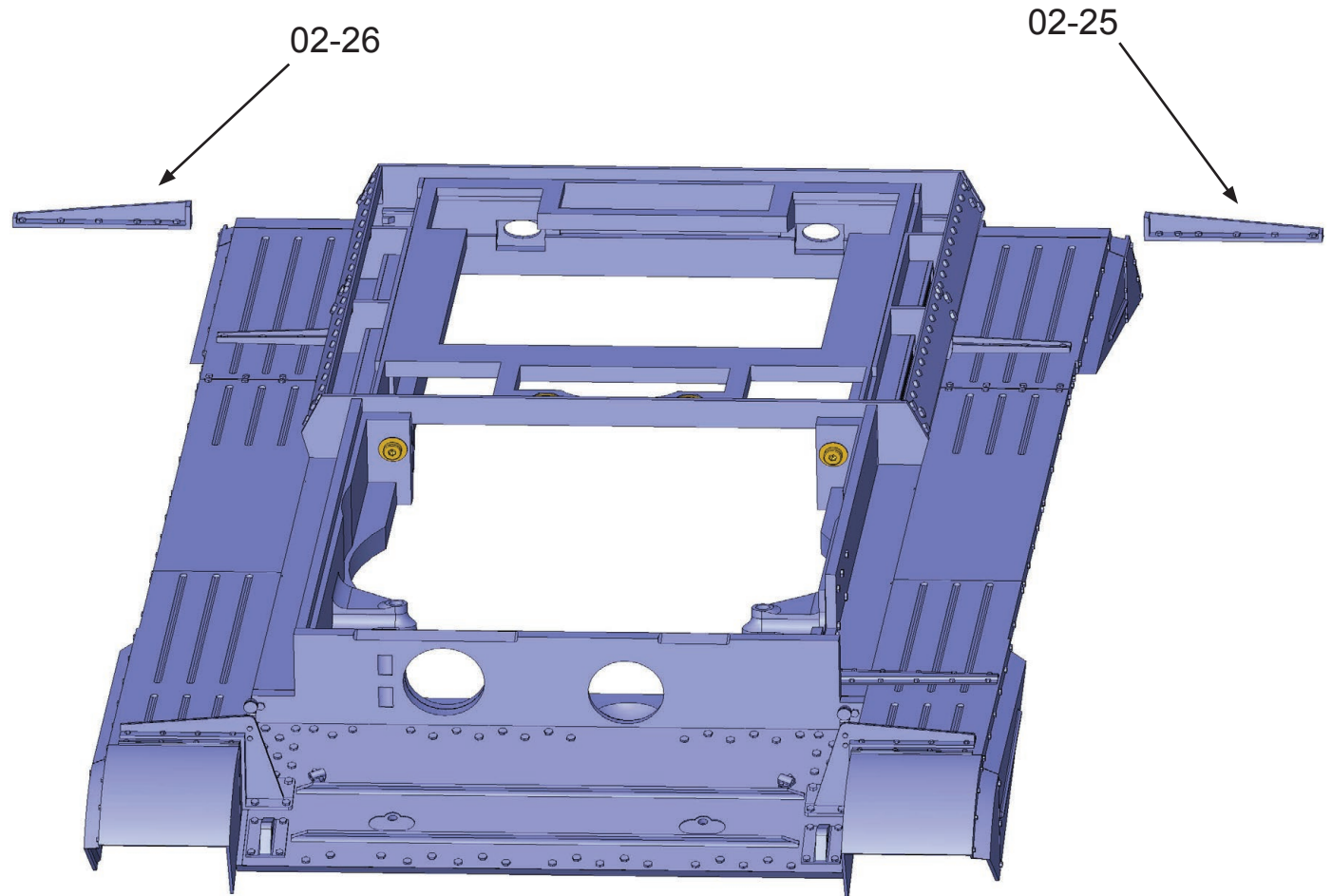
Glue parts 02-23 (2x) and 02-24.
The figures below show the correct position of part 02-24.

Assembly 02 - Upper Hull



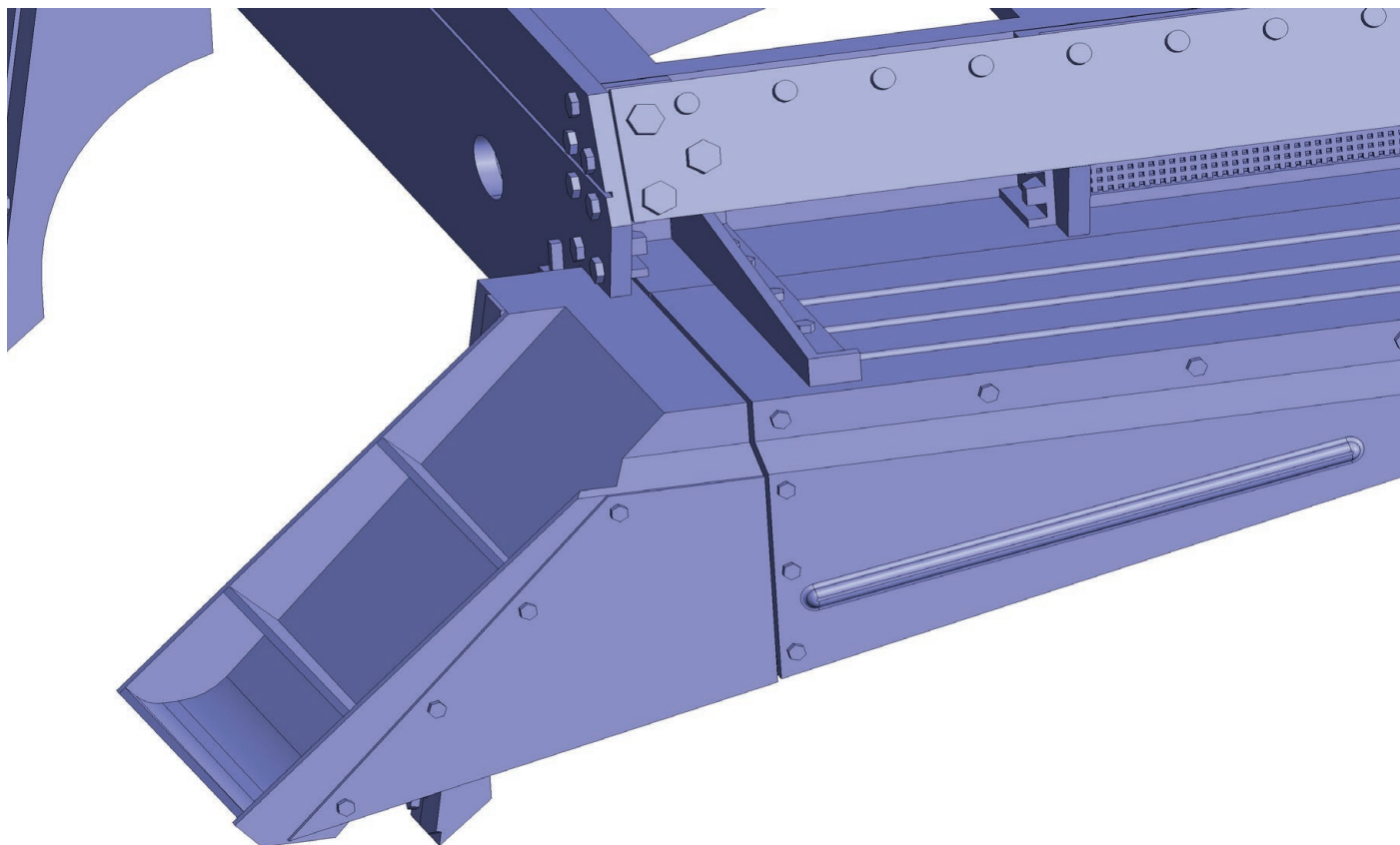
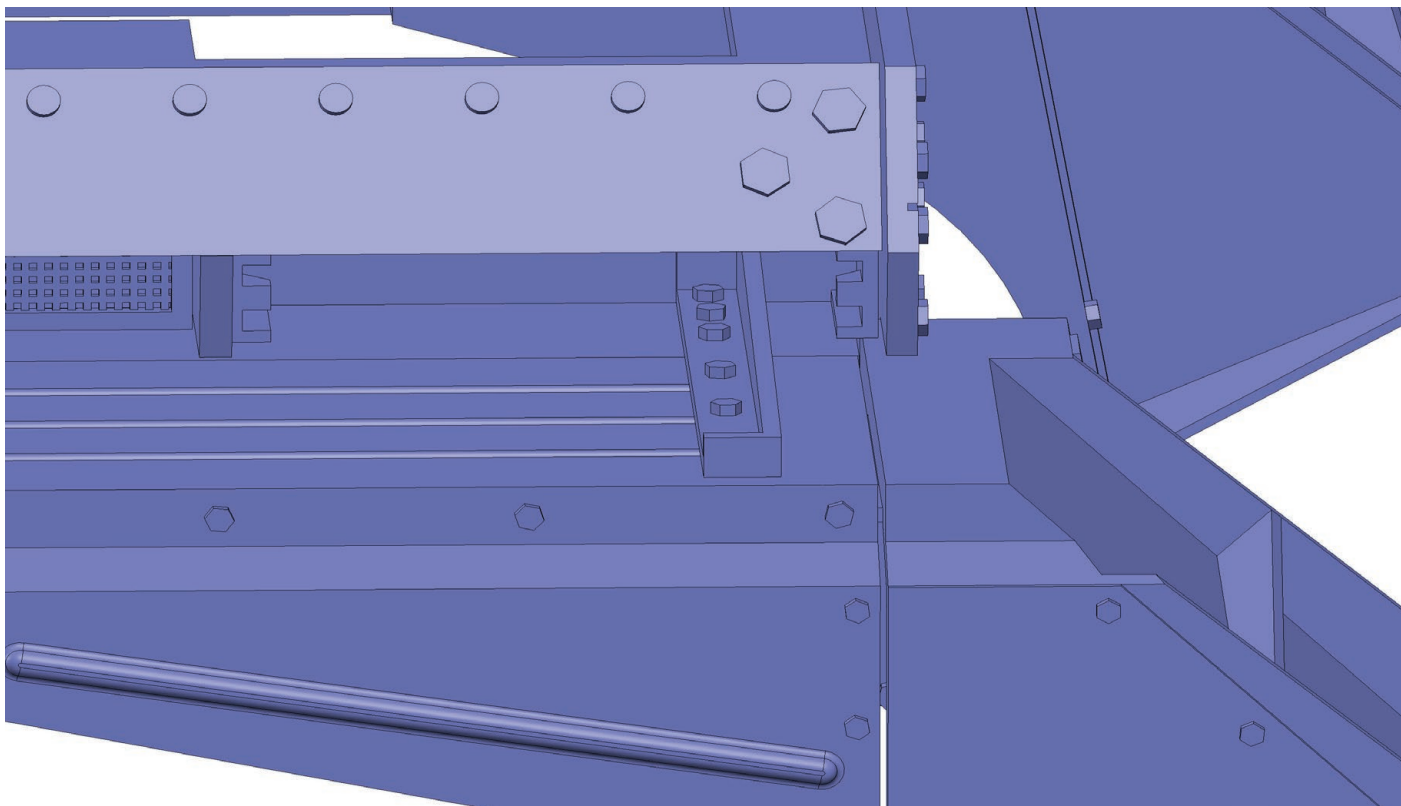
Correct position of parts 02-23. Both sides are symmetrical.

Assembly 02 - Upper Hull



Glue parts 02-25 and 02-26.

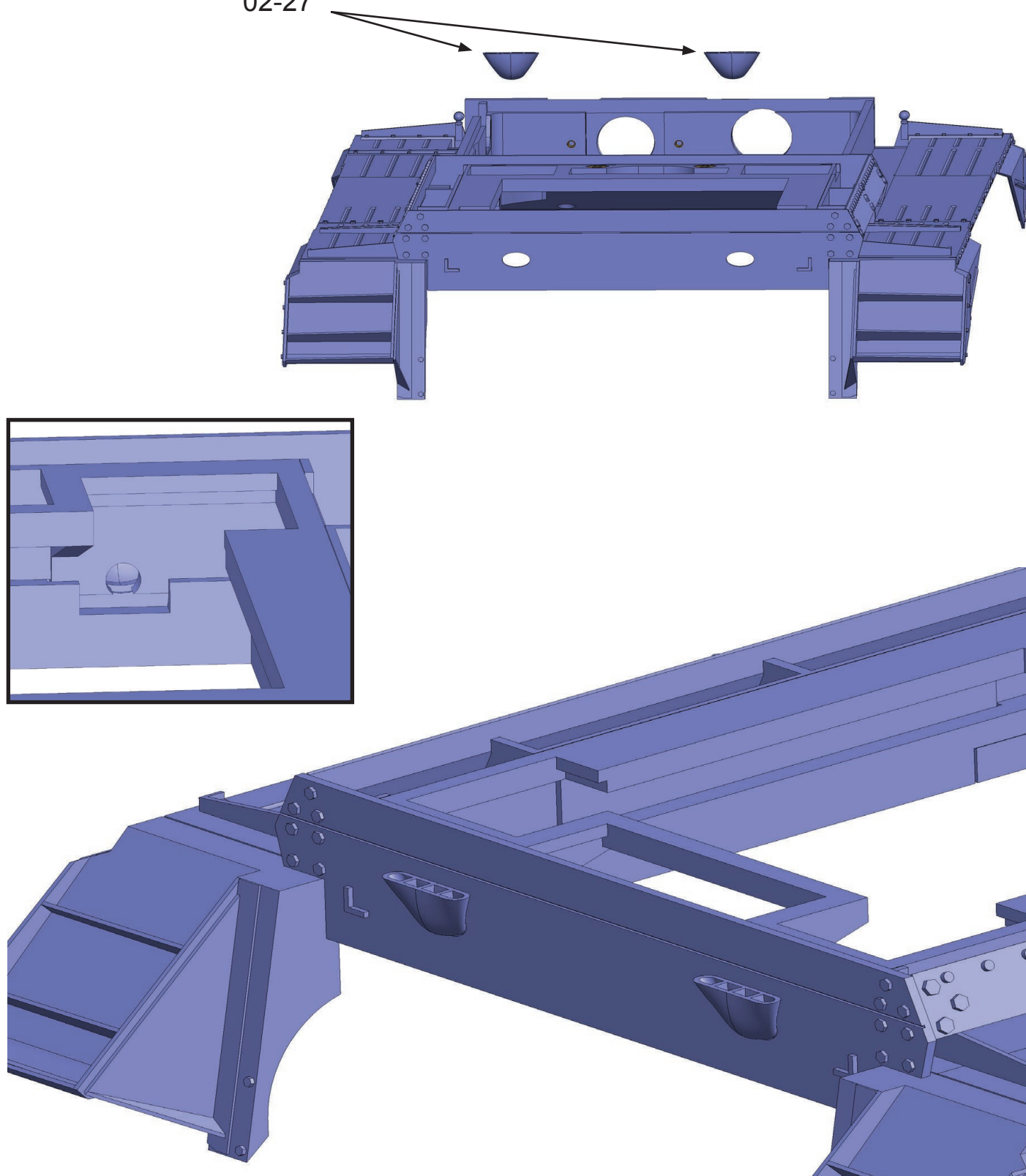
Assembly 02 - Upper Hull



Correct position of parts 02-25 and 02-26. Parts are symmetrical.

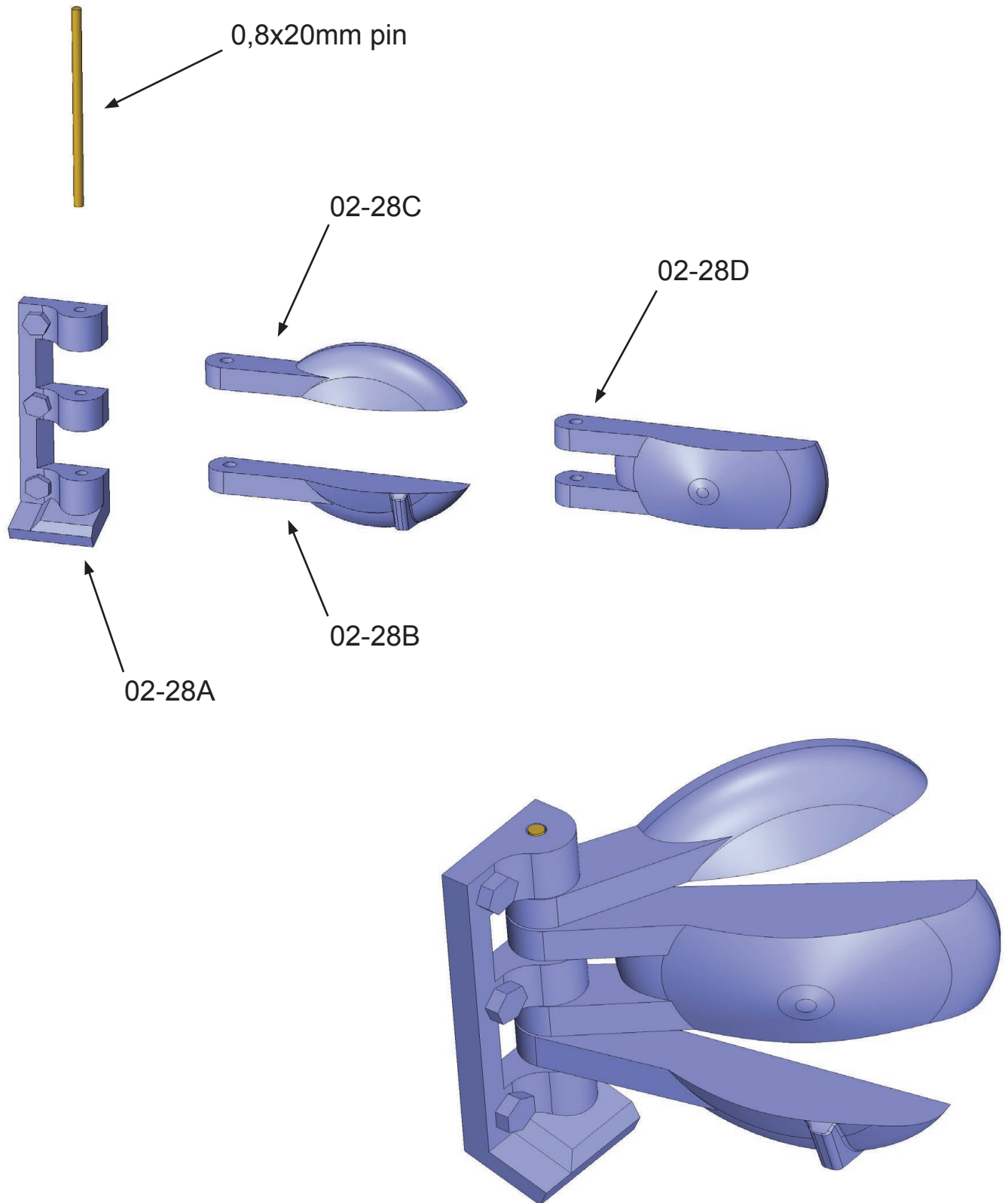
Assembly 02 - Upper Hull

02-27



Glue the two parts 02-27.

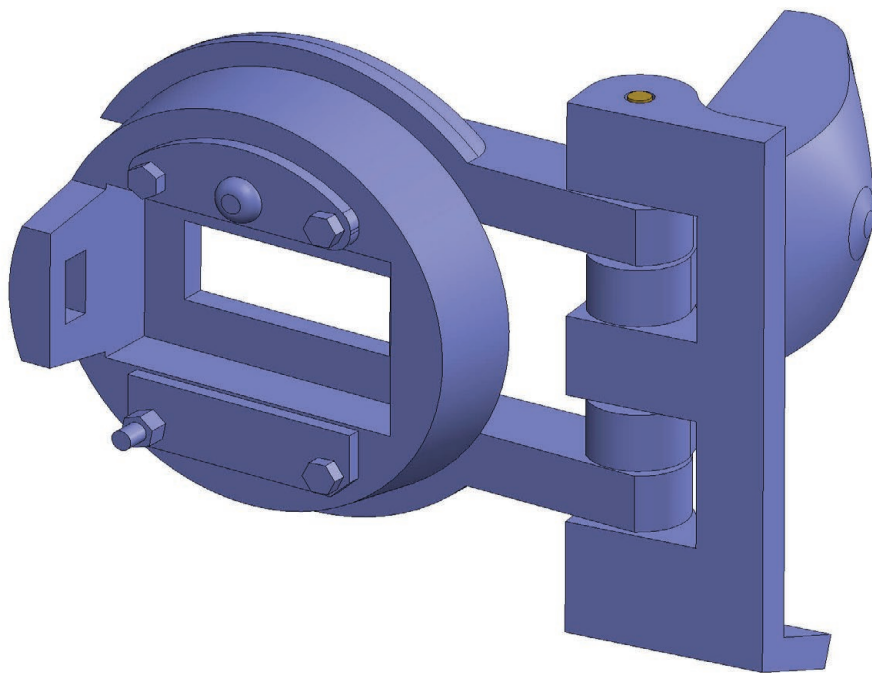
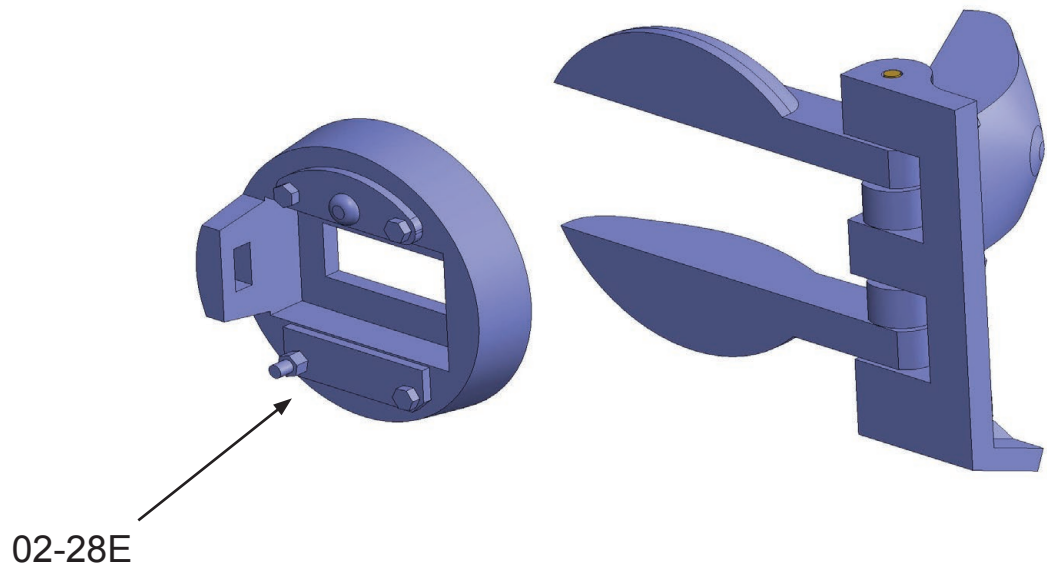
Assembly 02 - Upper Hull



Connect parts 02-28A to 02-28D with a wire or pin 0.8 mm in diameter and 20 mm long.

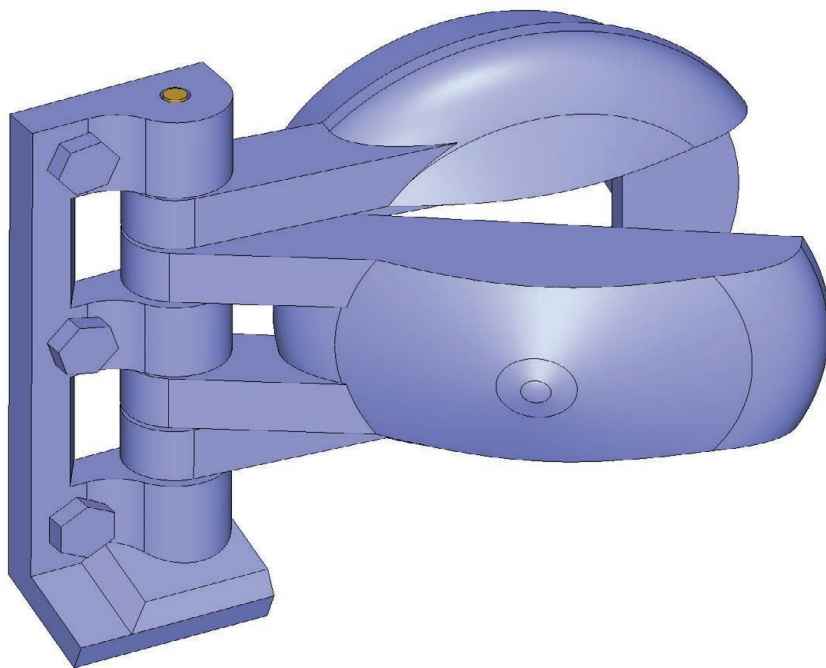
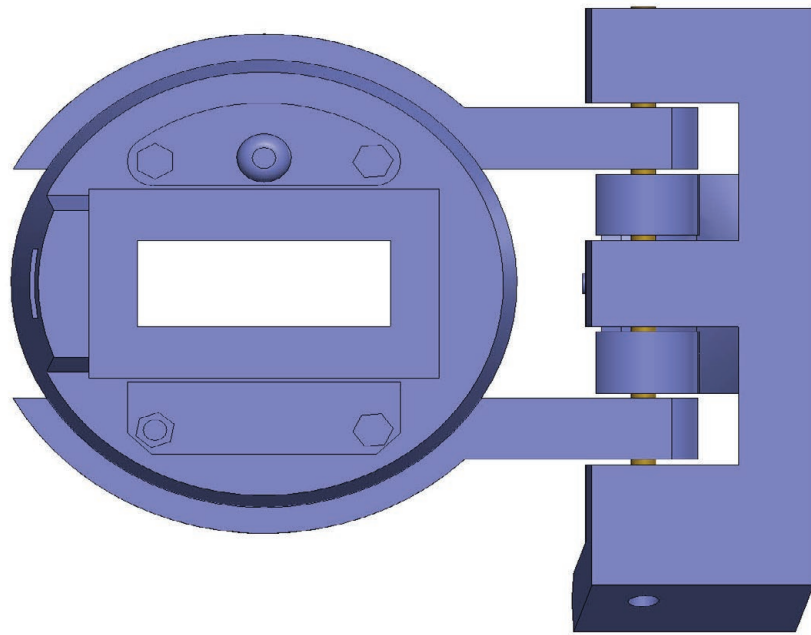
Fix the ends of the wire with glue. Make sure that all parts rotate independently.

Assembly 02 - Upper Hull



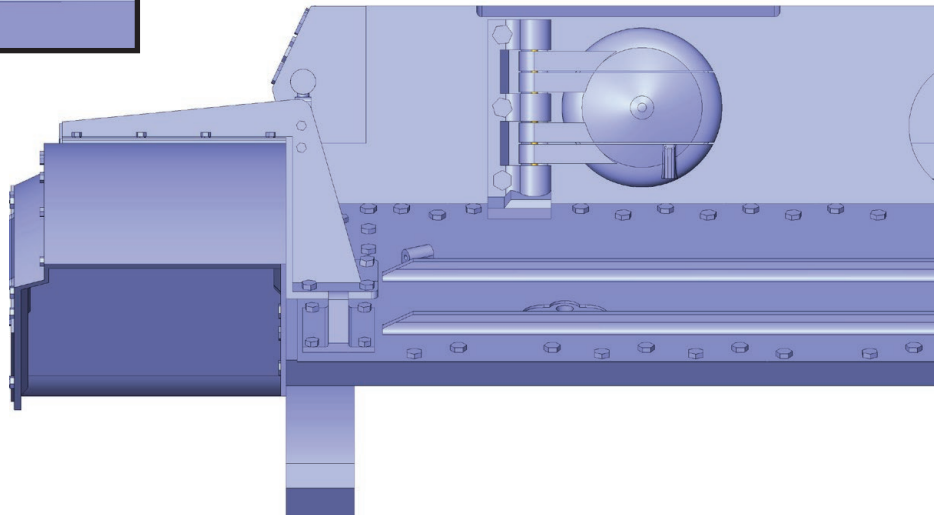
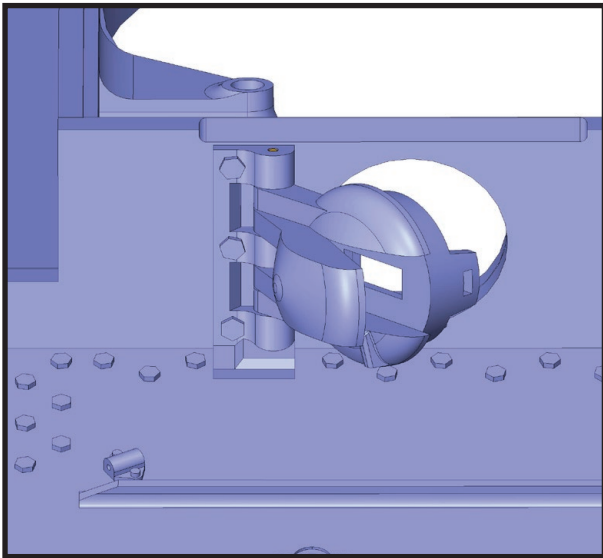
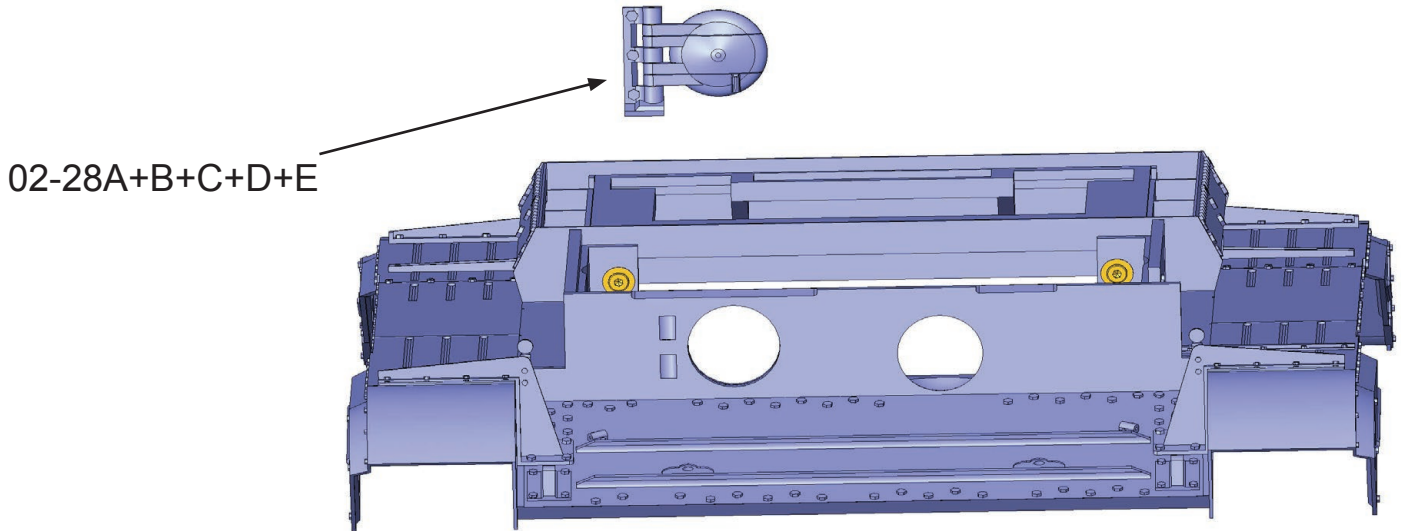
Glue part 02-28E. Glue the part only to parts 02-28B and 02-28C.
Part 02-28D must rotate independently.

Assembly 02 - Upper Hull



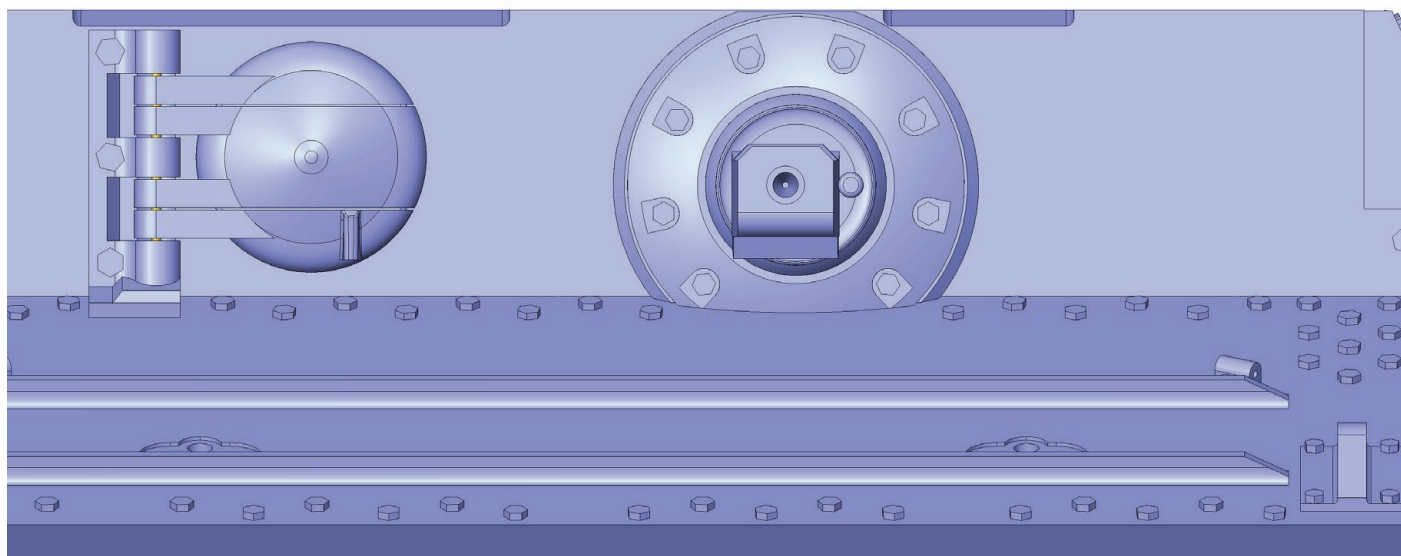
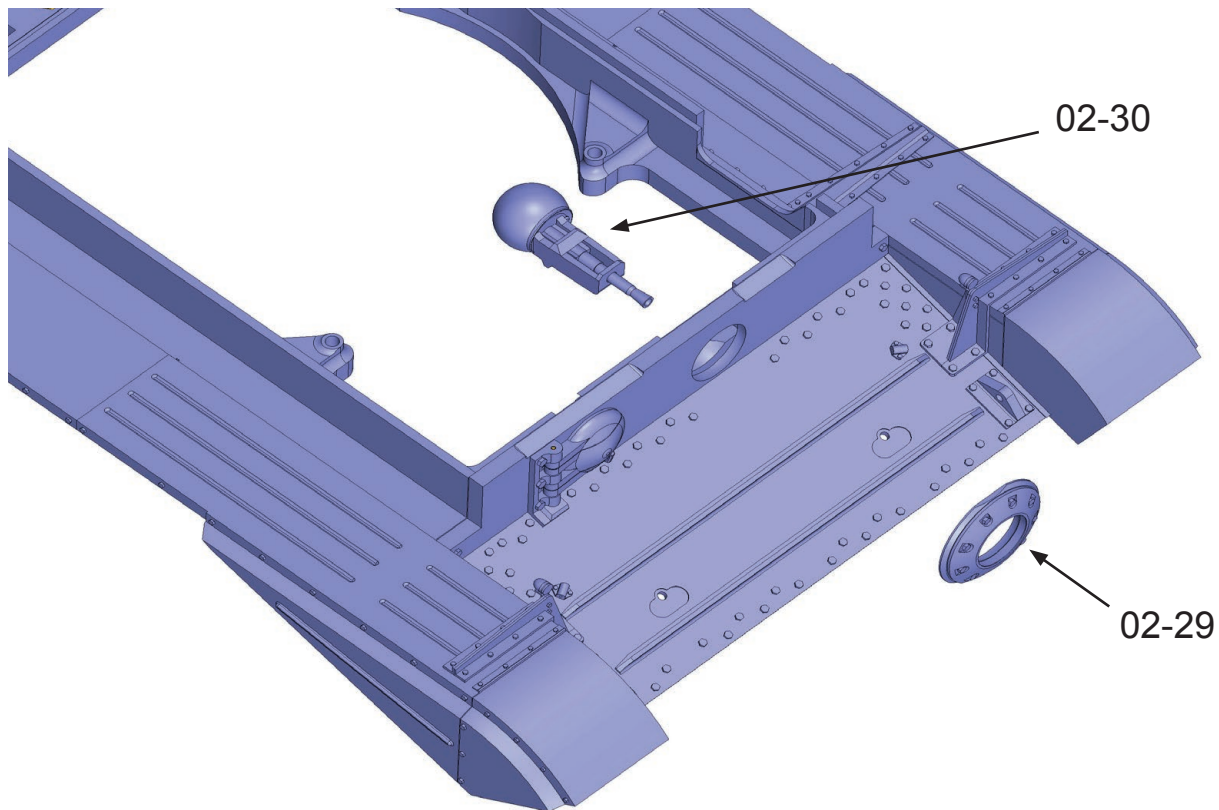
Parts assembly details 02-28A to 02-28E.
Make sure that part 02-28E is correctly centered against parts 02-28B and 02-28C.

Assembly 02 - Upper Hull



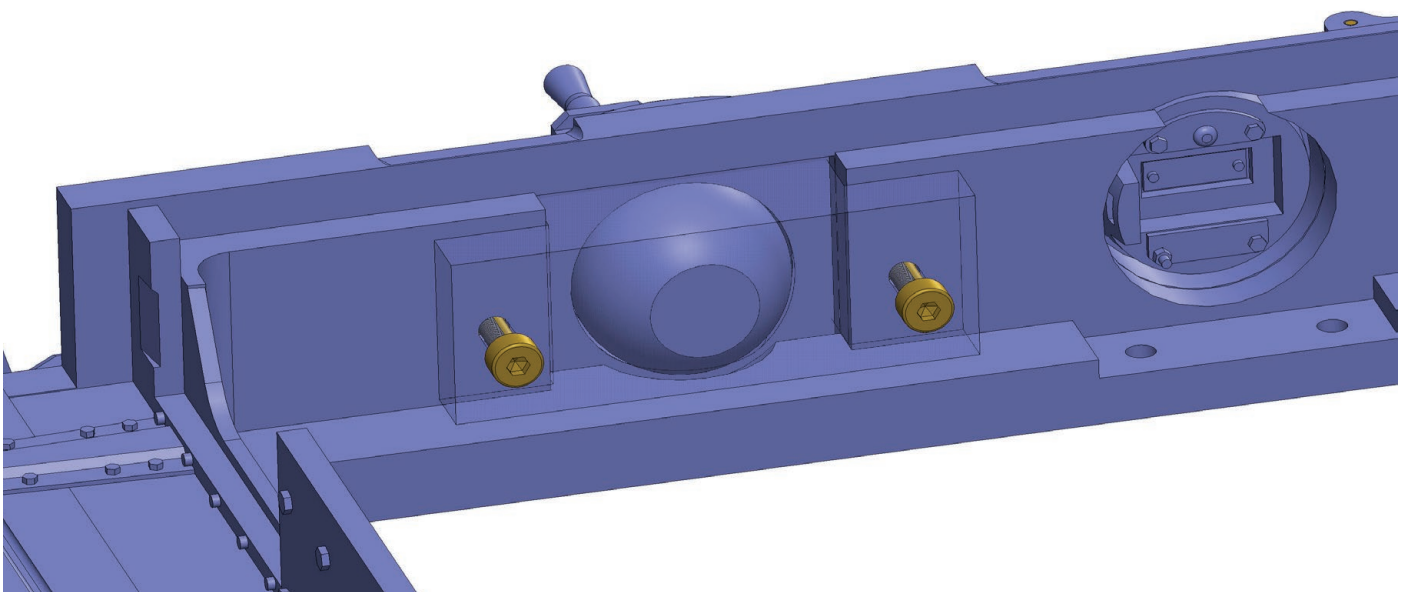
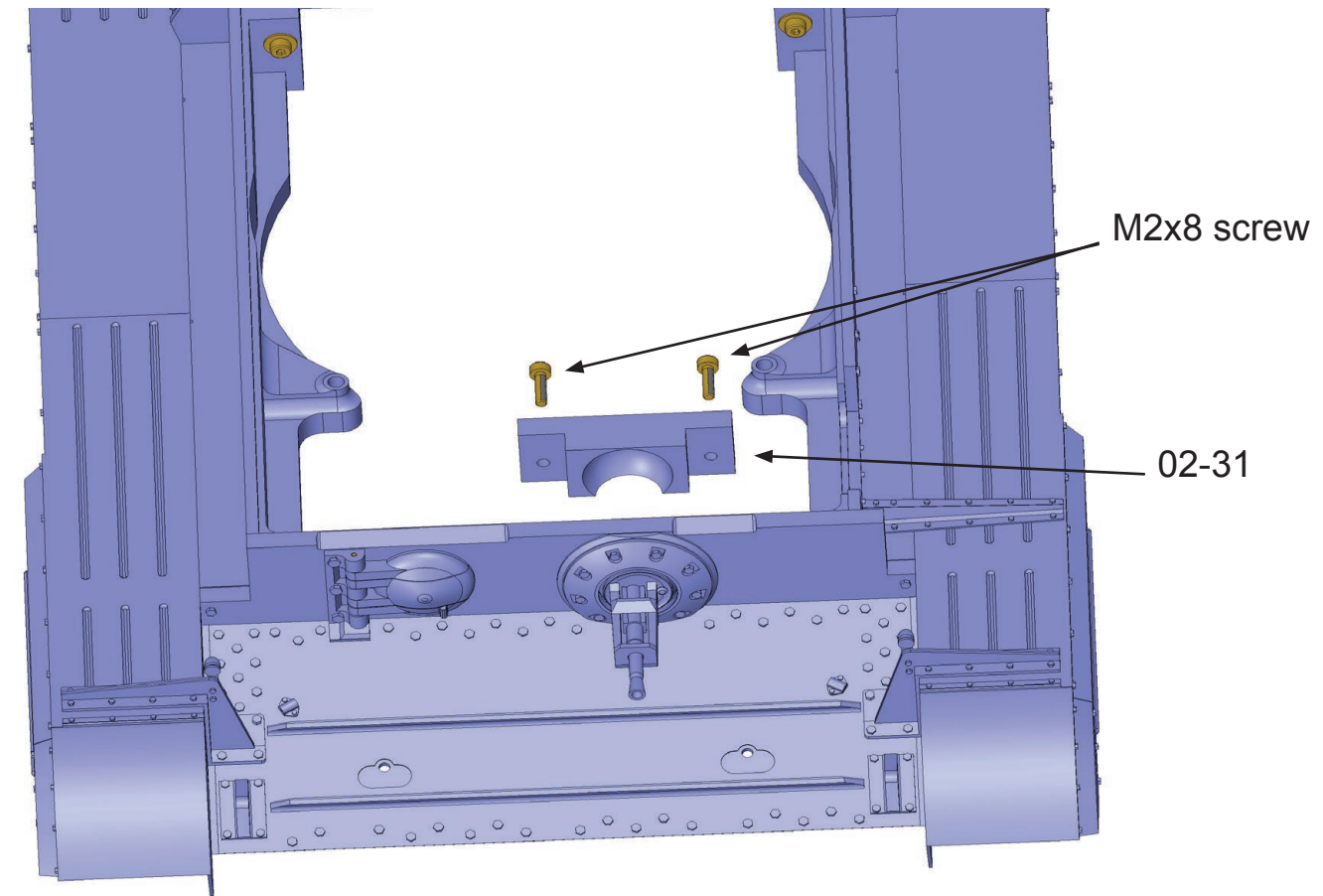
Glue the parts assemblies 02-28A to 02-28E.

Assembly 02 - Upper Hull



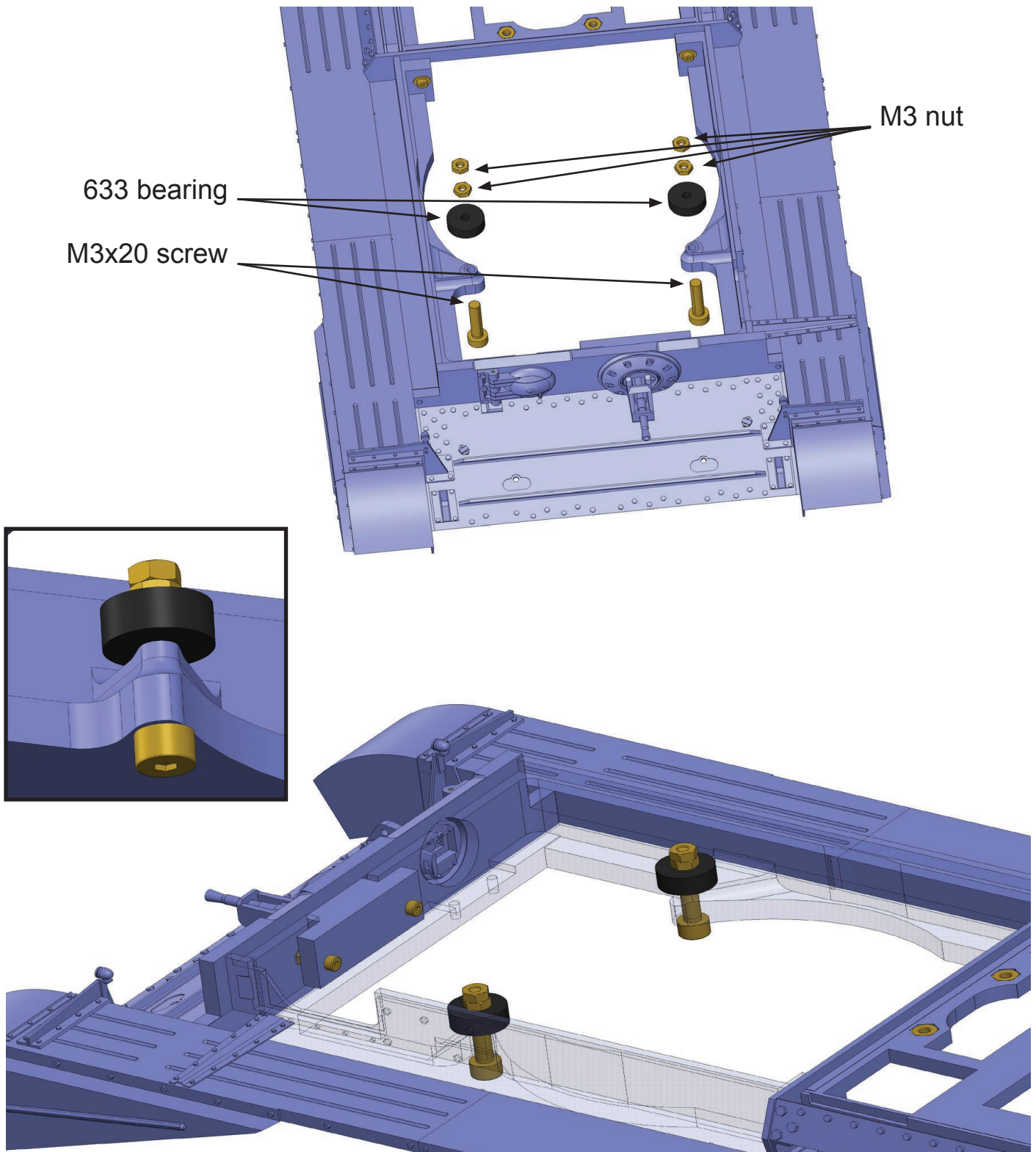
Glue part 02-29. Insert part 02-30. Do not glue part 02-30.

Assembly 02 - Upper Hull



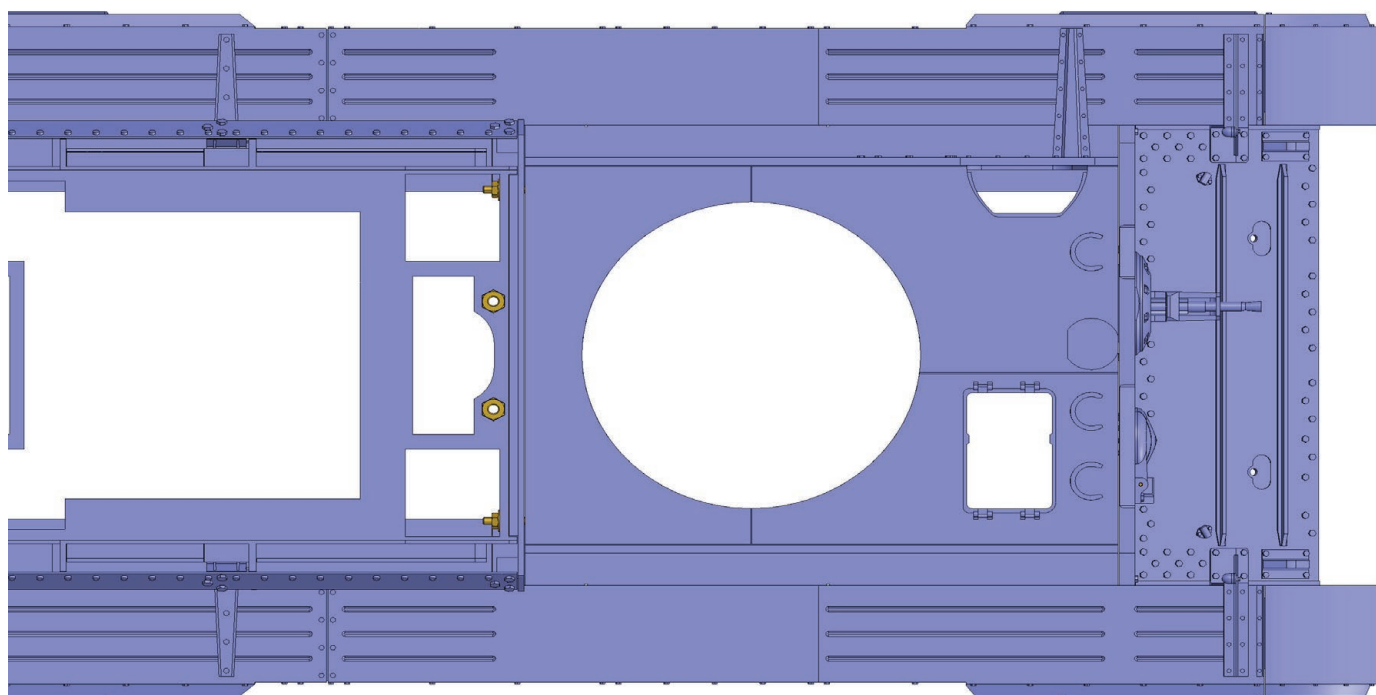
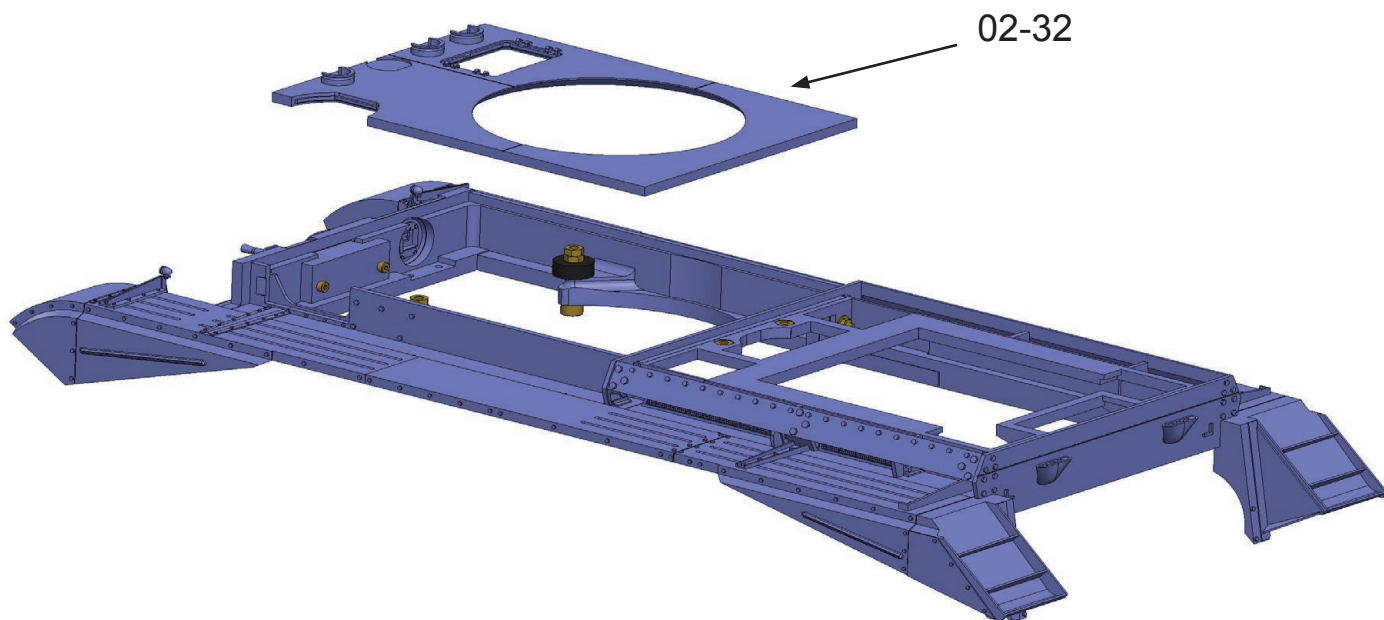
Secure part 02-30 with part 02-31.
Tighten gently so that the machine gun can move freely.
Use two M2x8 screws.

Assembly 02 - Upper Hull



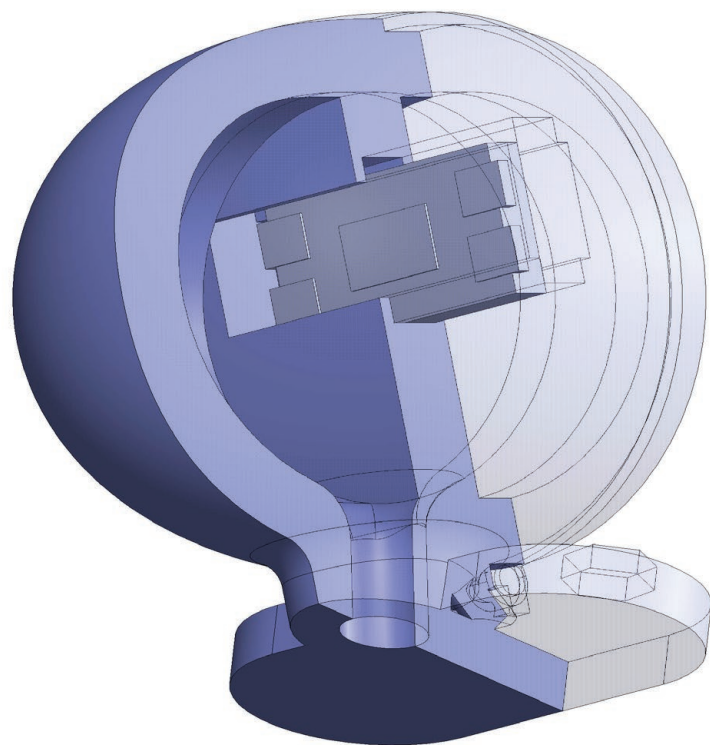
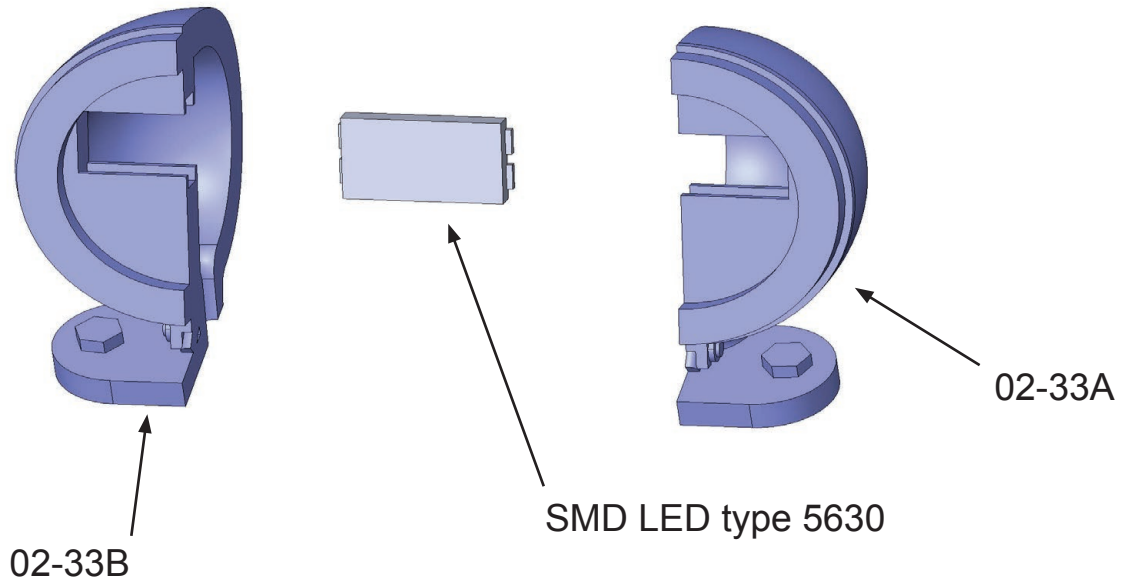
You can take this step at any time later, but it will be less convenient.
Fasten the two 633 bearings with M3x20 screws (2x).
Secure with a pair of M3 nuts tightened against each other, or use self-locking nuts.

Assembly 02 - Upper Hull



Glue part 02-32.

Assembly 02 - Upper Hull



Prepare SMD LED type 5630.

According to the documentation, solder the wires to the diode.

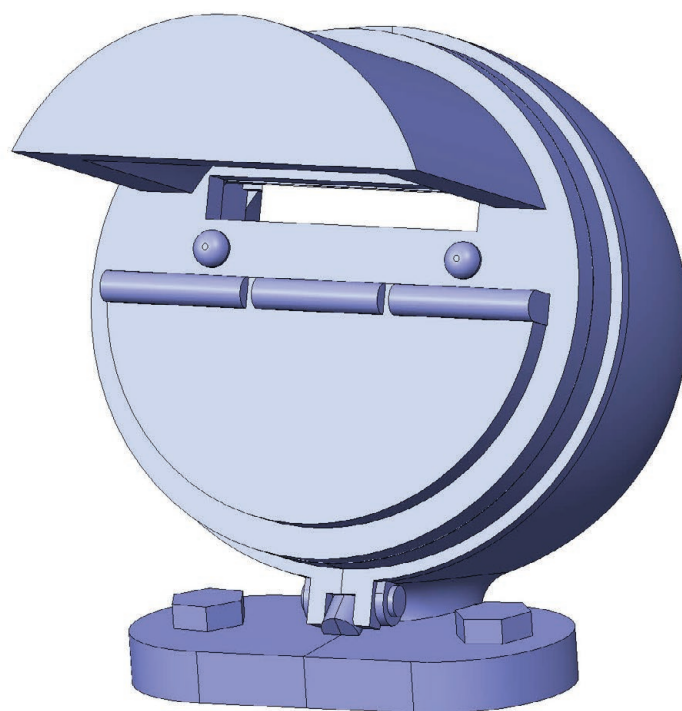
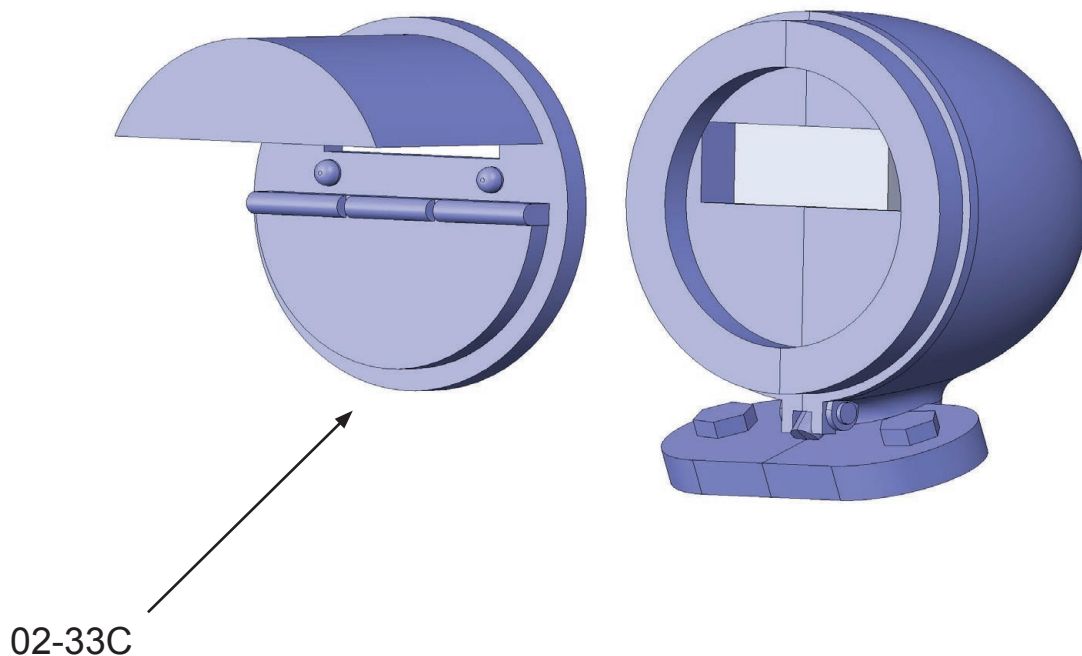
We recommend wires with a maximum diameter of 0.5 mm.

The installation hole for the cables has a diameter of 1.5 mm.

Insert the prepared and tested diode into one of the parts 02-33A and 02-33B.

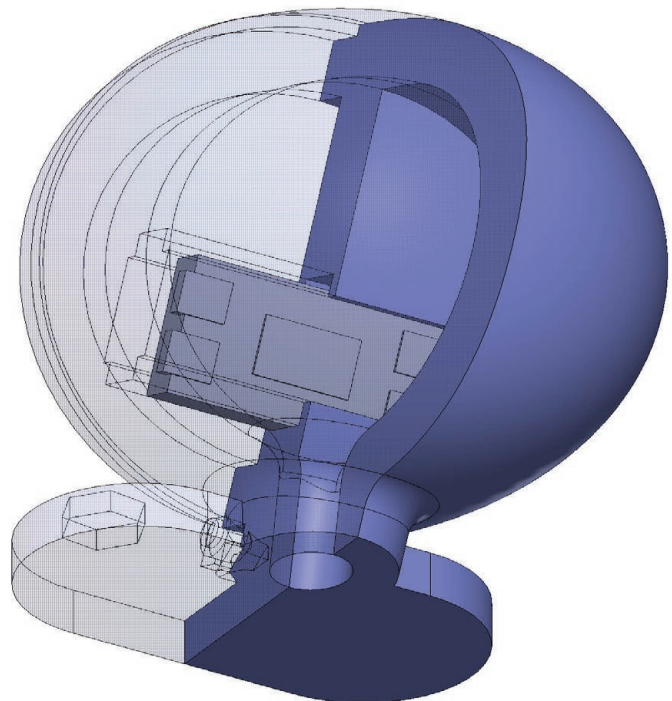
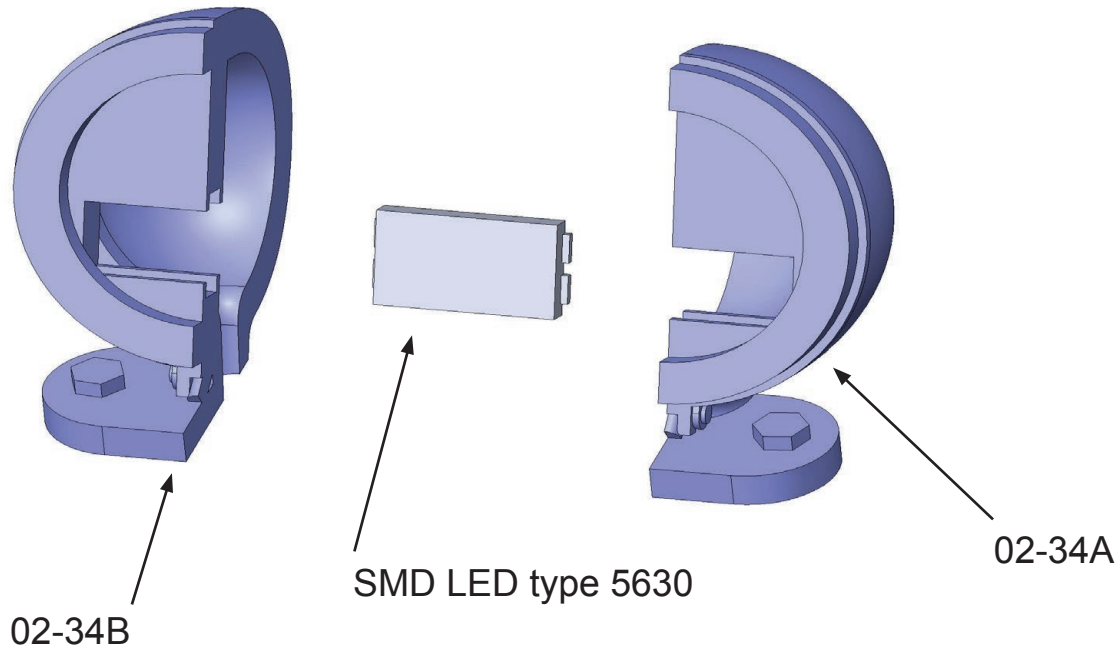
Seal the unit with glue.

Assembly 02 - Upper Hull



Glue part 02-33C.

Assembly 02 - Upper Hull



The procedure is similar for the second headlight.

Prepare SMD LED type 5630.

According to the documentation, solder the wires to the diode.

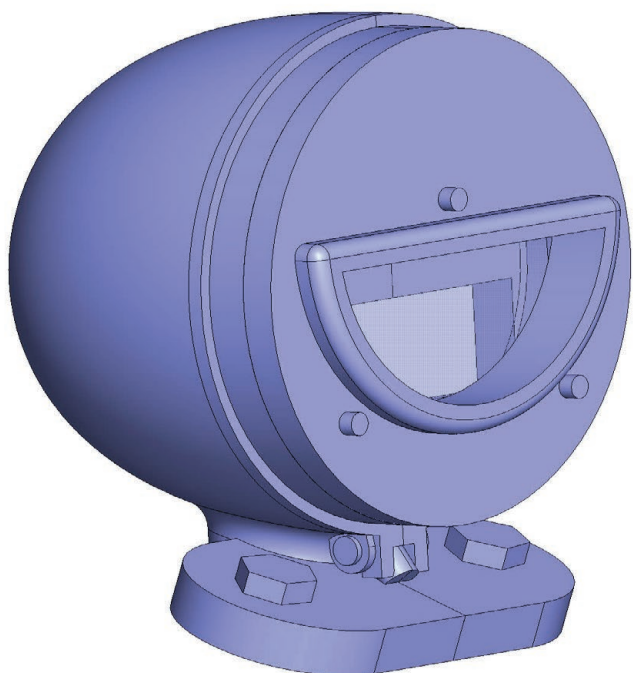
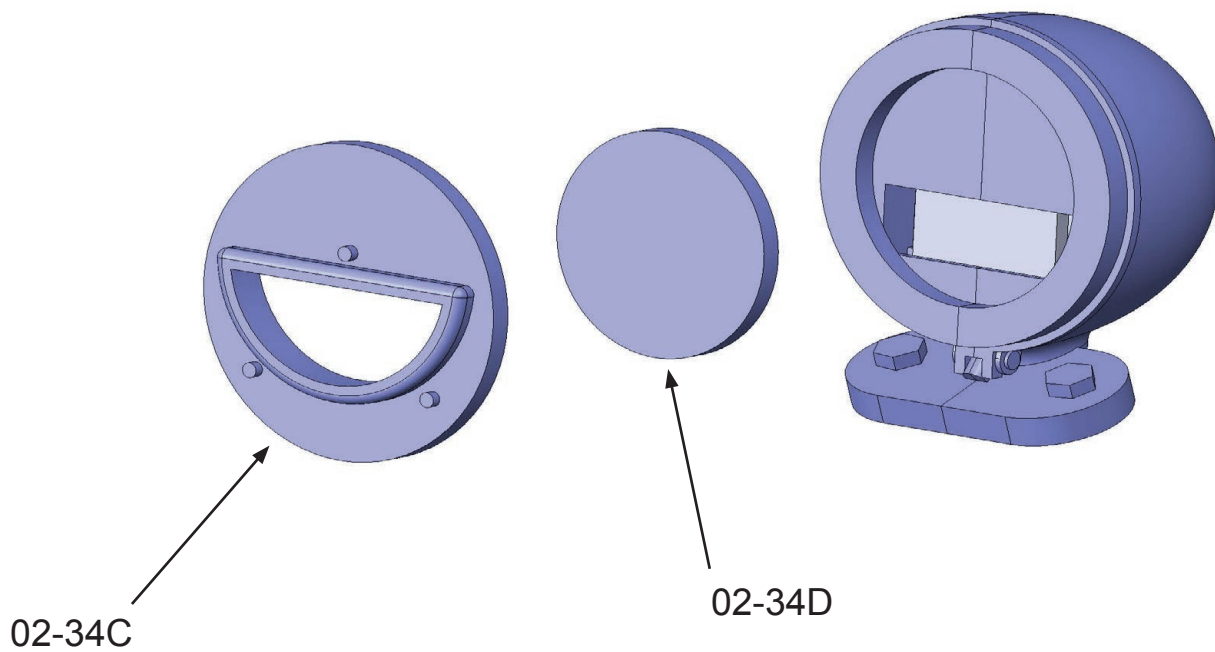
We recommend wires with a maximum diameter of 0.5 mm.

The installation hole for the cables has a diameter of 1.5 mm.

Insert the prepared and tested diode into one of the parts 02-34A and 02-34B.

Seal the unit with glue.

Assembly 02 - Upper Hull

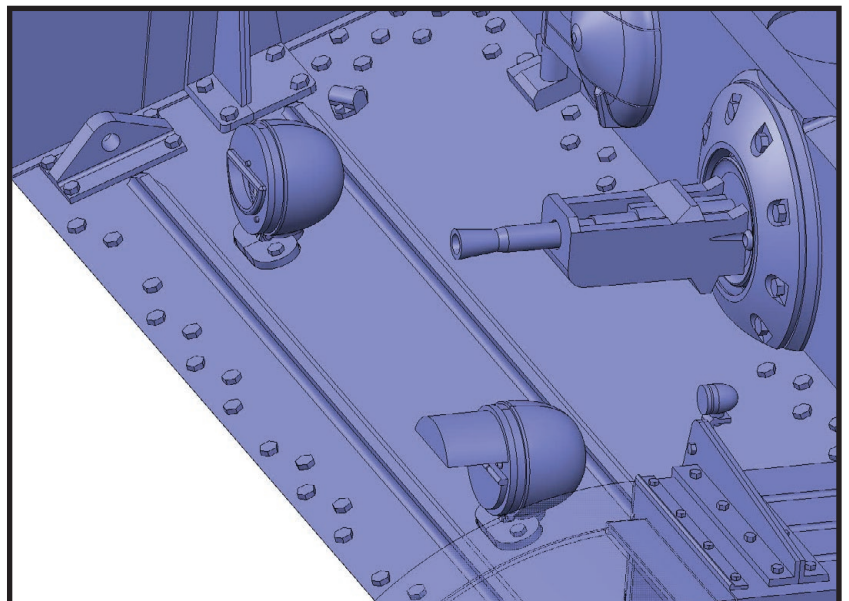
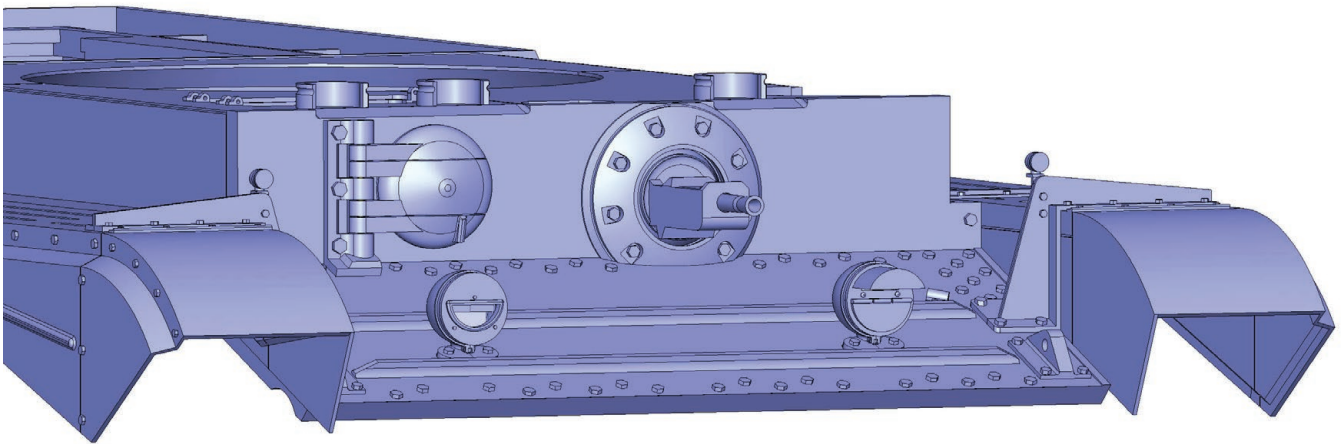
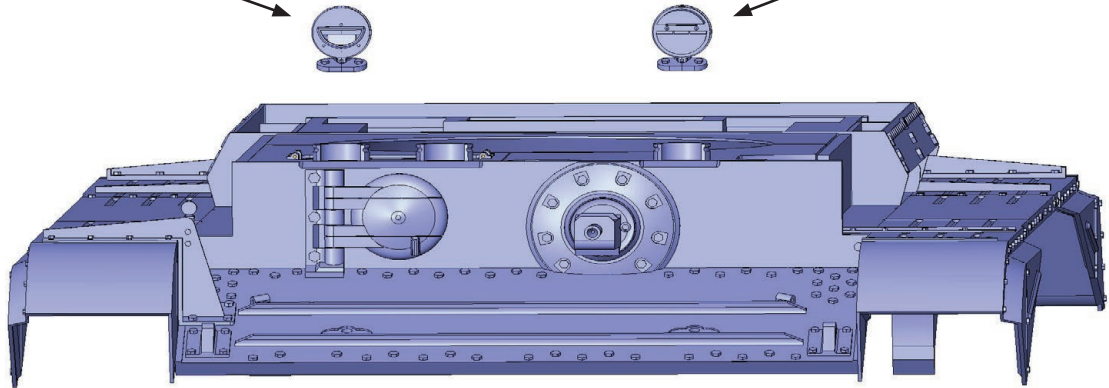


Glue parts 02-34C and 02-34D. Part 02-34D must be translucent.
You can use any thick translucent foil instead.
Cut a circle with a diameter of 7.5 mm.

Assembly 02 - Upper Hull

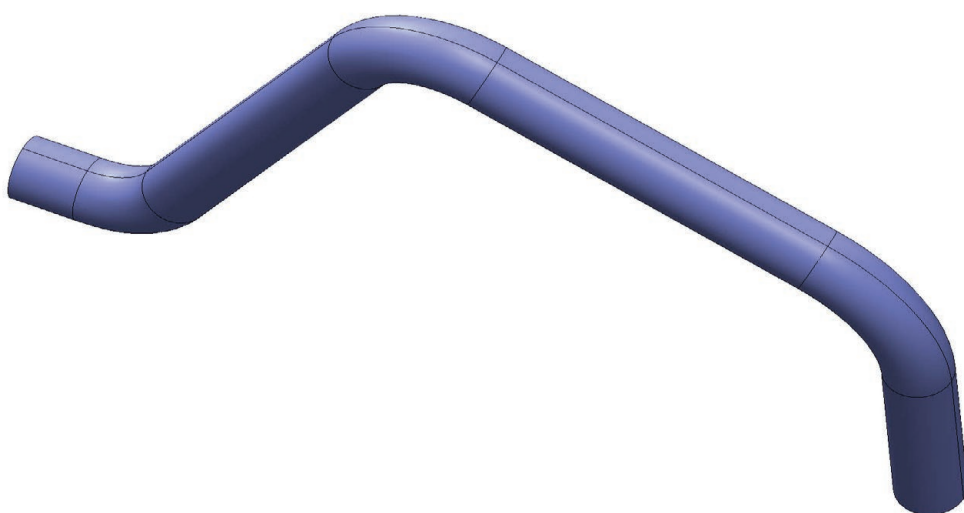
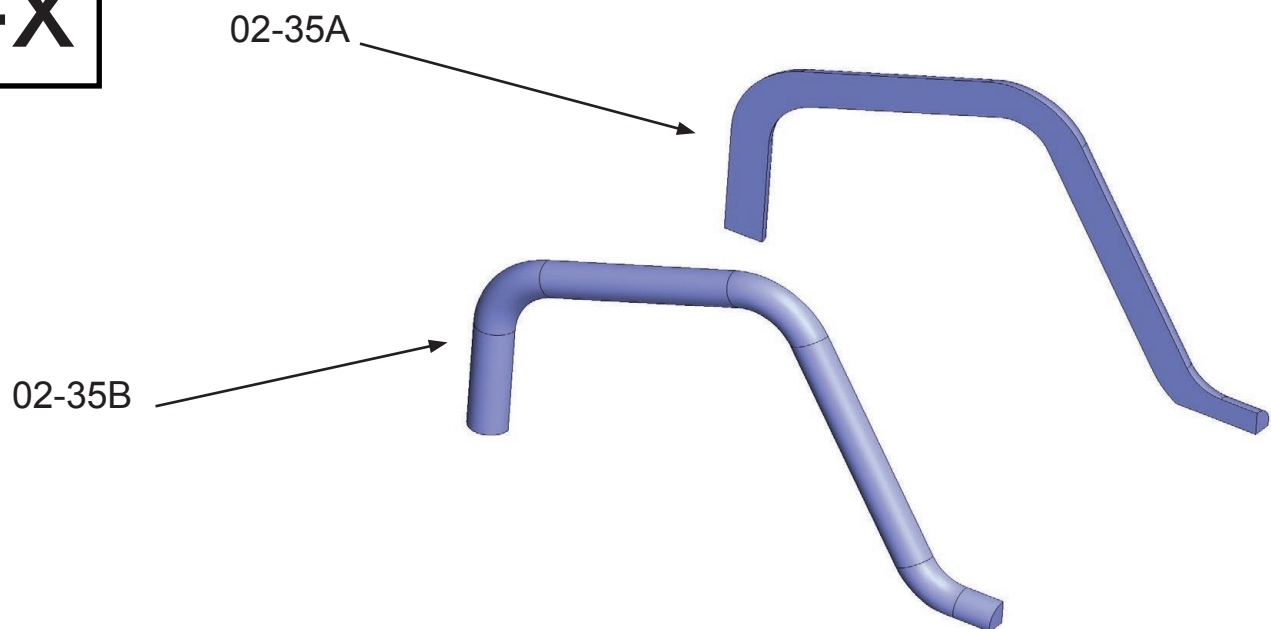
02-34A+B+C+D

02-33A+B+C



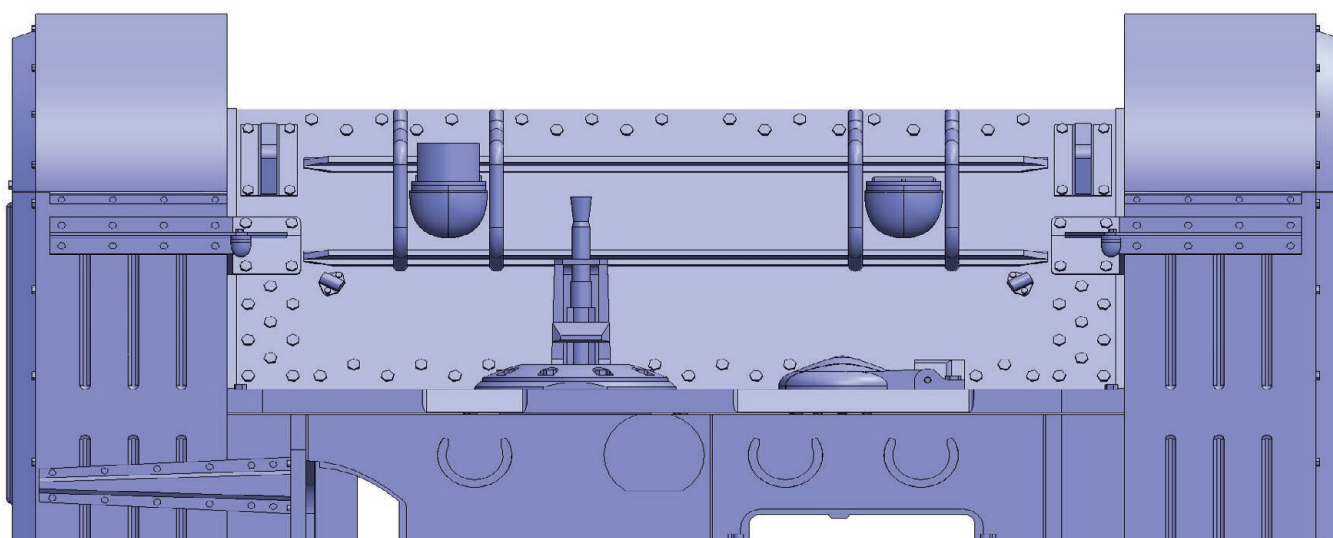
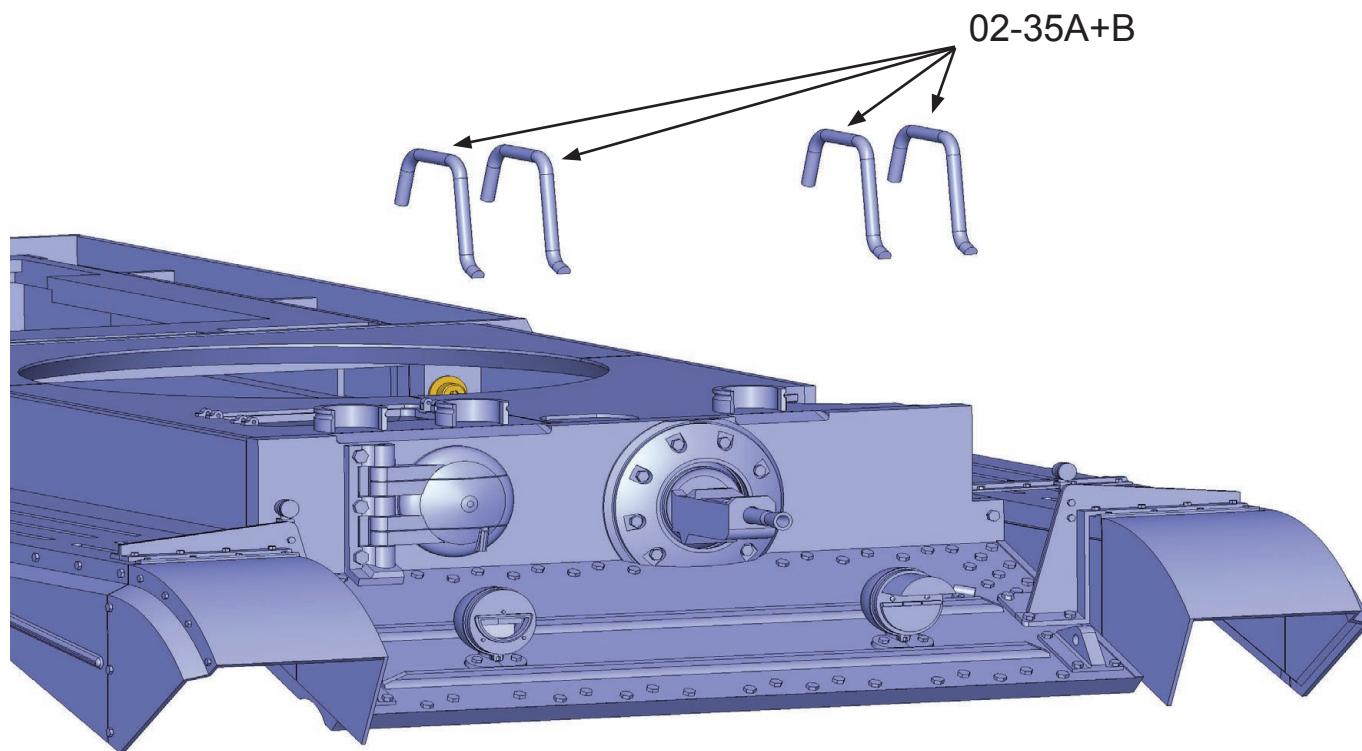
Glue the parts assemblies 02-33A + B + C and 02-34A + B + C + D.
Before doing so, of course, run the wires through the appropriate holes.

Assembly 02 - Upper Hull

4x

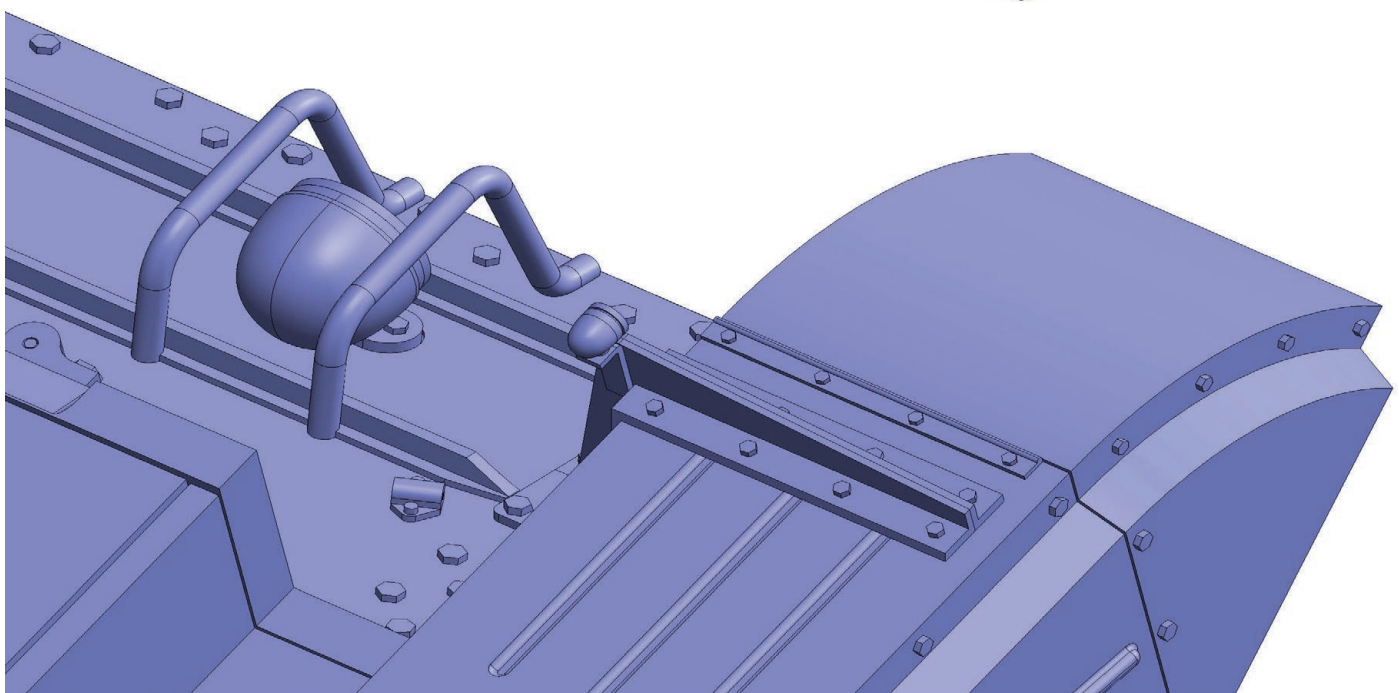
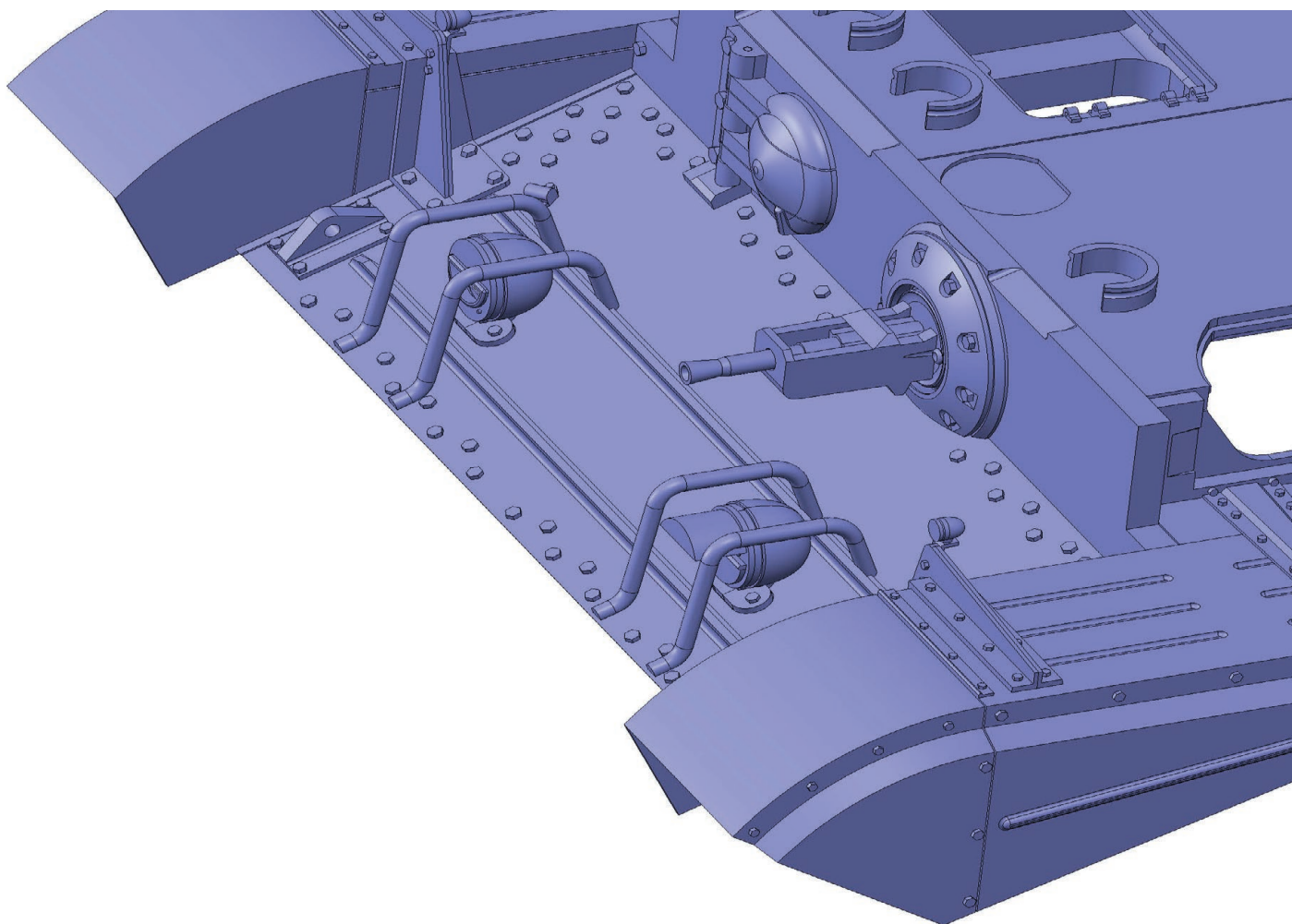
Glue parts 02-35A and 02-35B. You will need 4 such assemblies.

Assembly 02 - Upper Hull



Glue the 4 prepared subassemblies of parts 02-35A + B.

Assembly 02 - Upper Hull

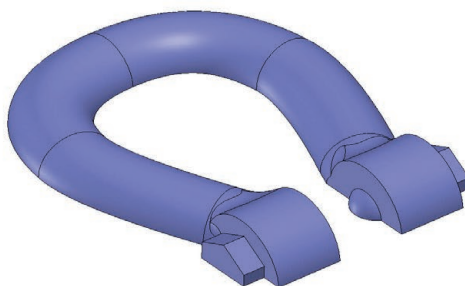


Correct position of parts 02-35A + B.

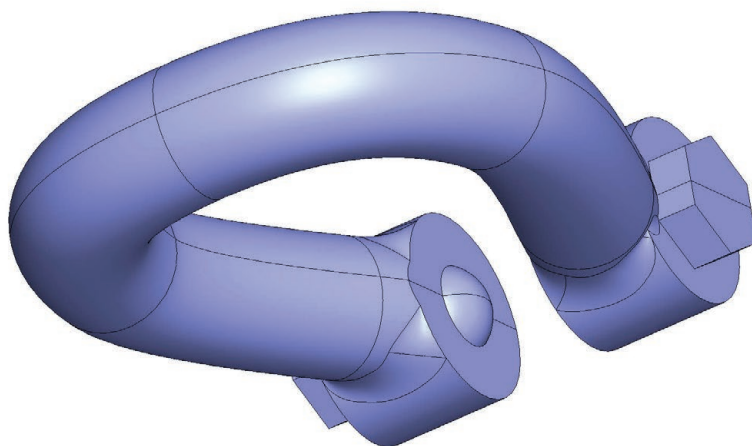
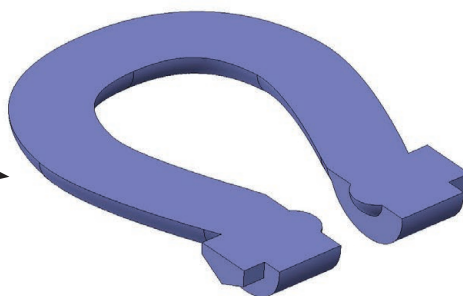
Assembly 02 - Upper Hull

2x

02-36A

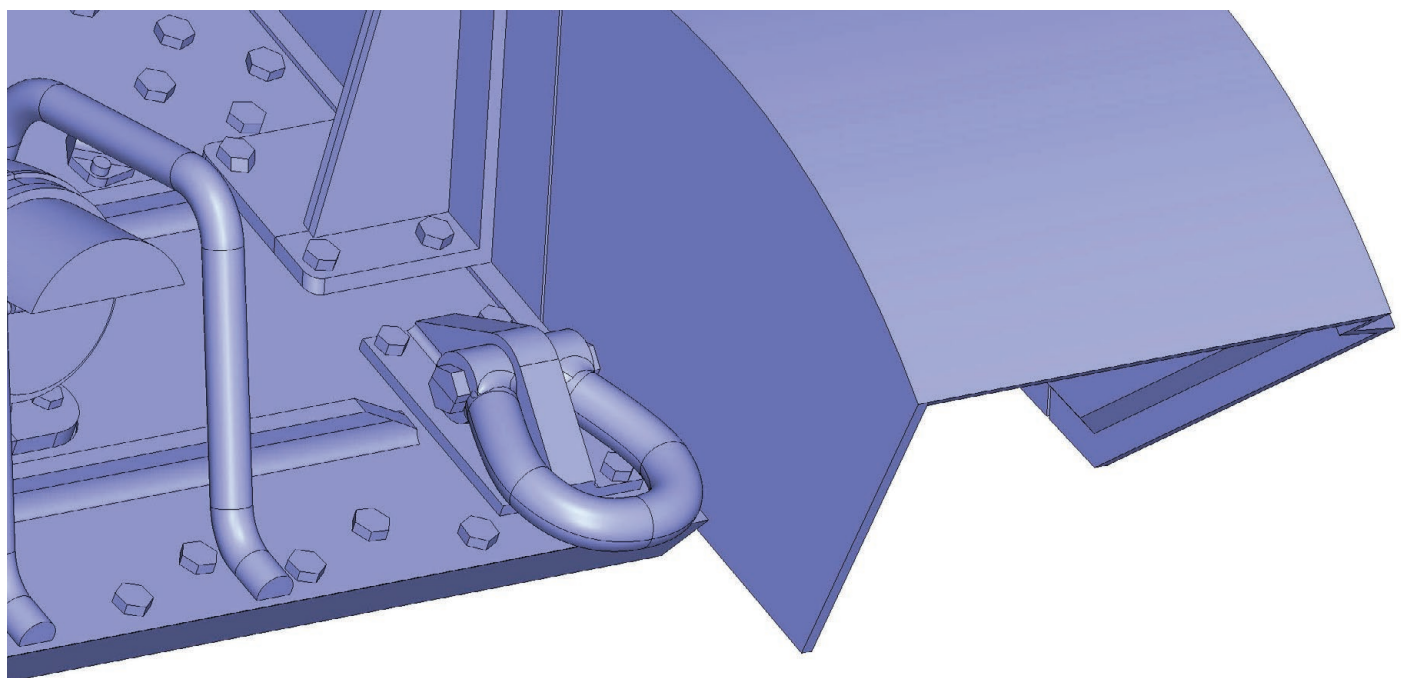
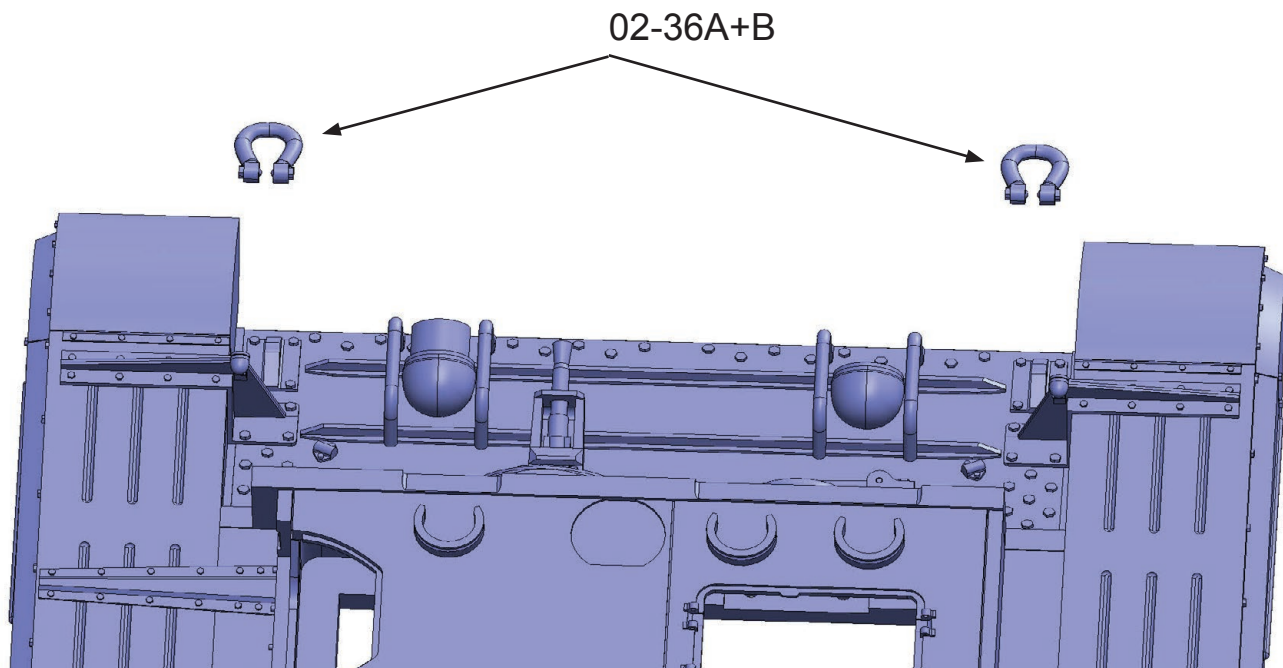


02-36B



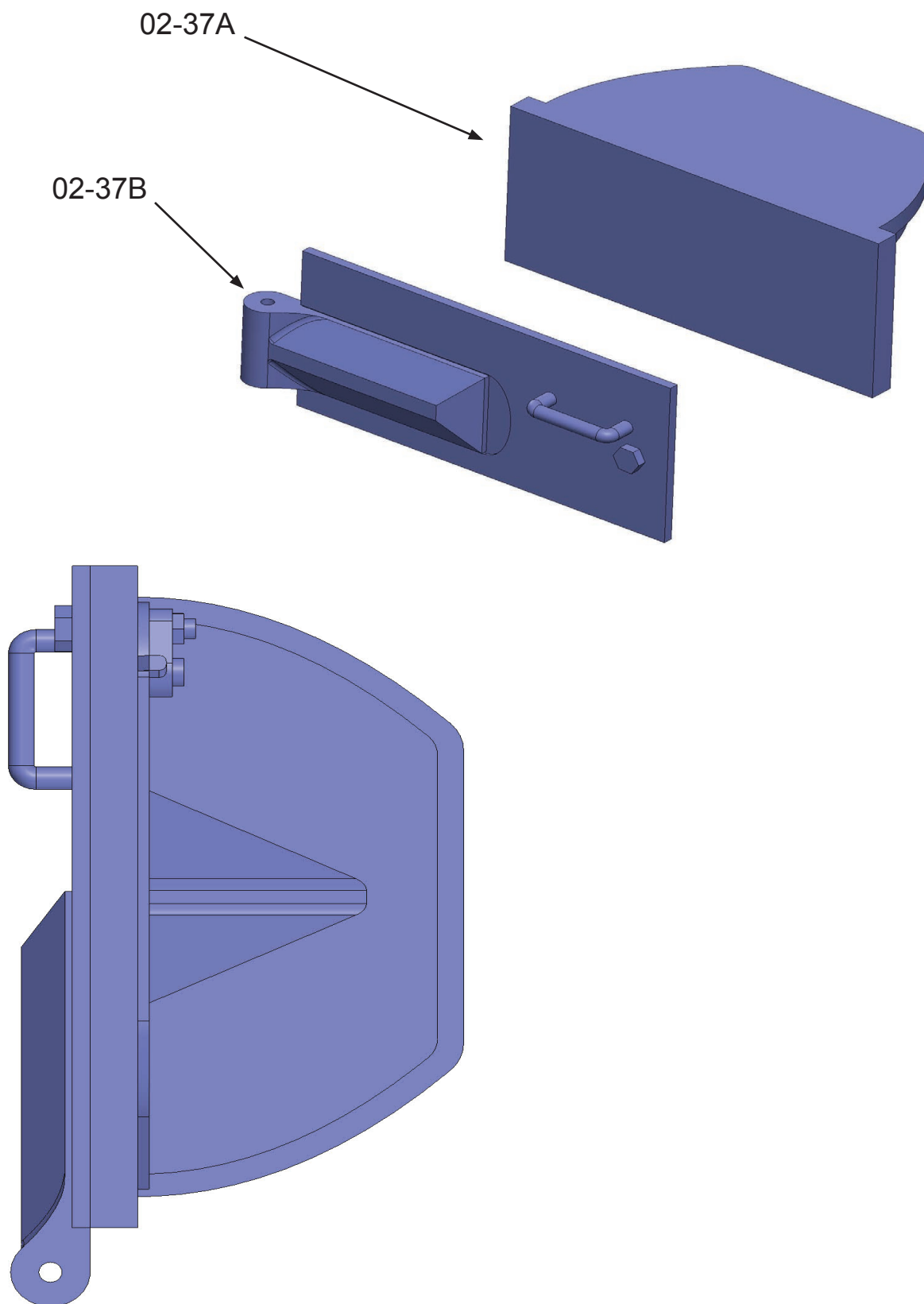
Glue parts 02-36A and 02-36B. You will need 2 such assemblies.

Assembly 02 - Upper Hull



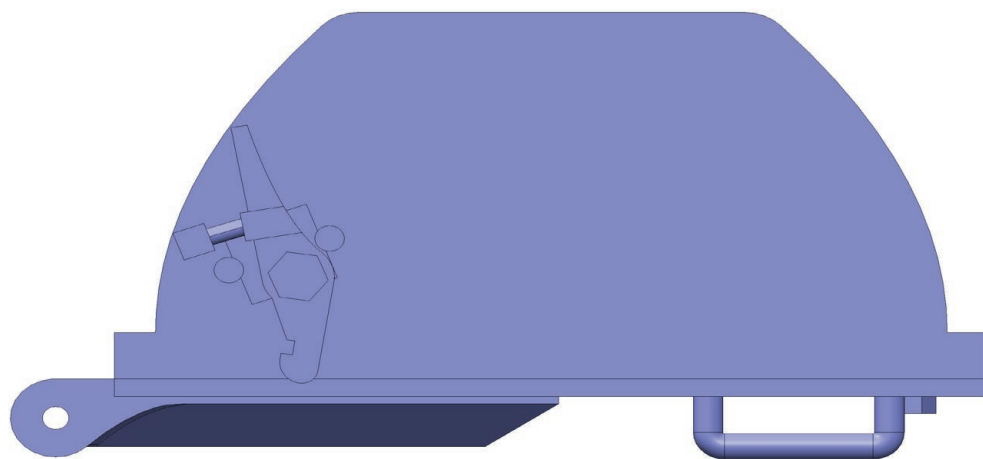
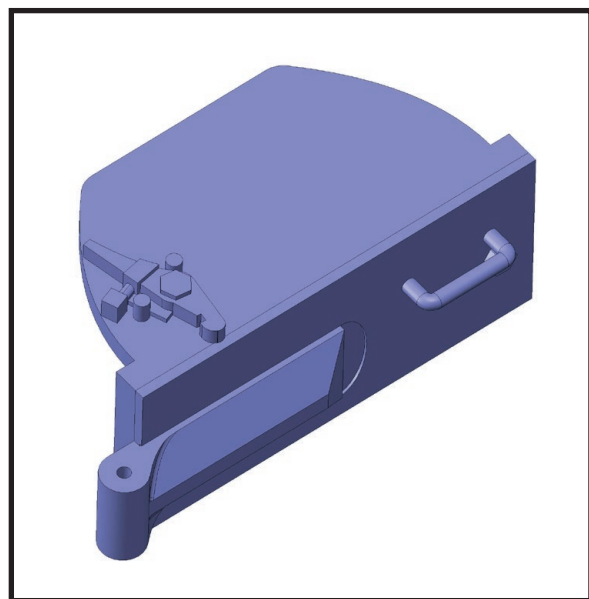
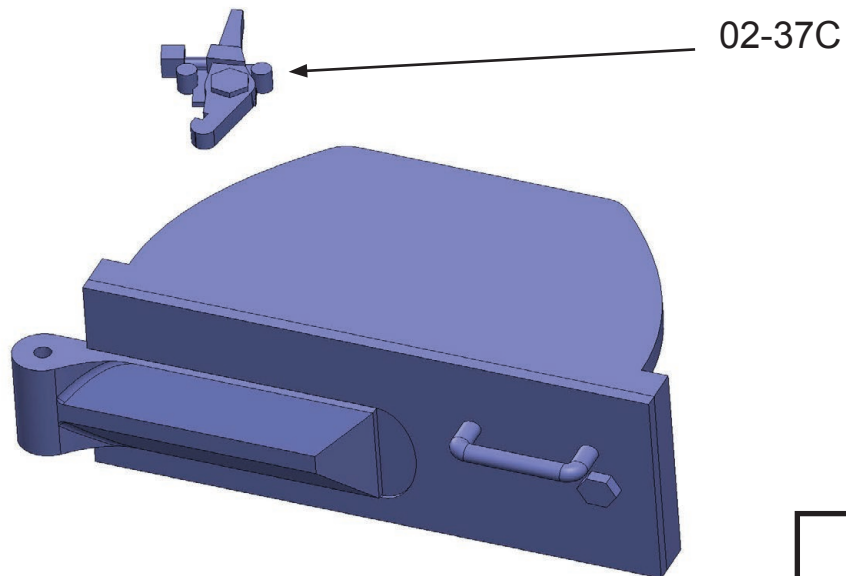
Attach both parts assemblies 02-36A + B.
Under normal circumstances,
they do not need to be glued and can remain partially mobile.

Assembly 02 - Upper Hull



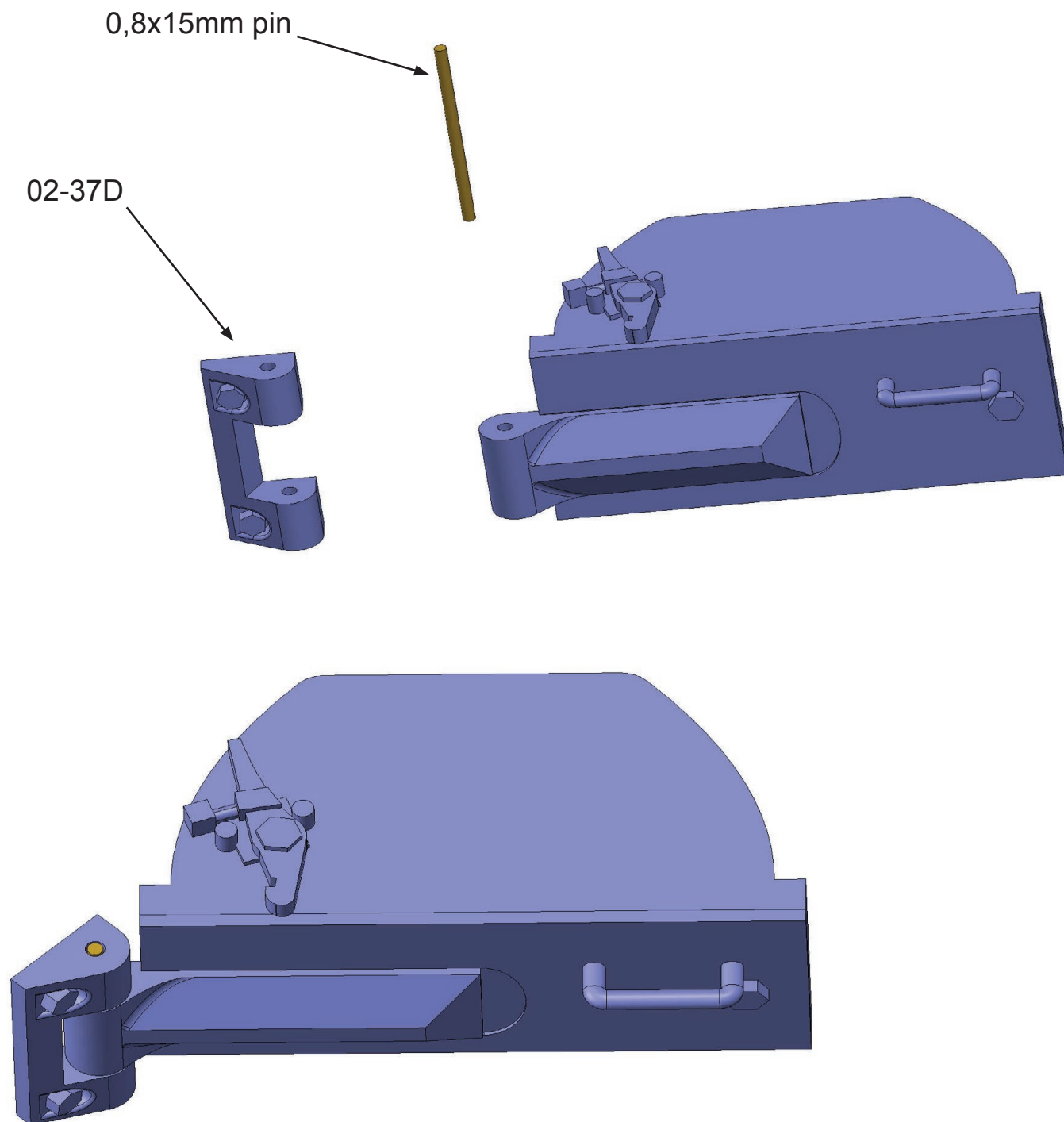
Glue parts 02-37A and 02-37B.

Assembly 02 - Upper Hull



Glue part 02-37C.

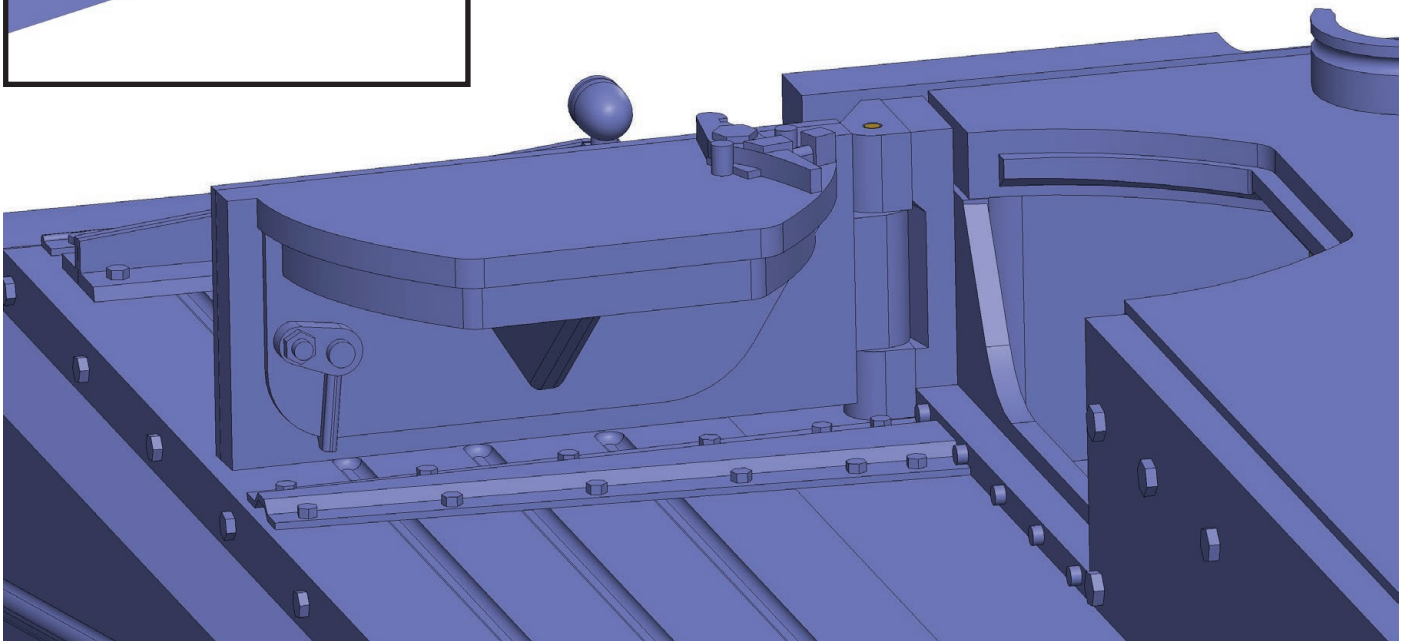
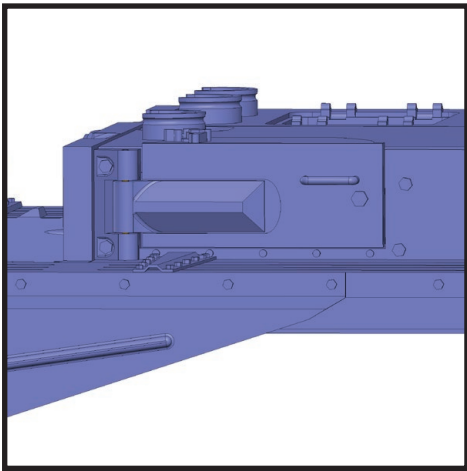
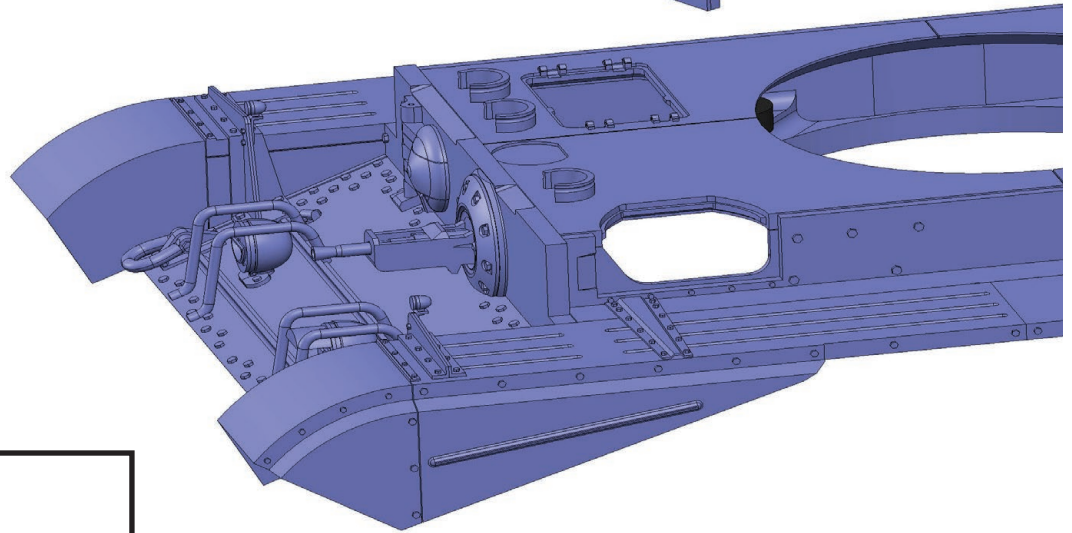
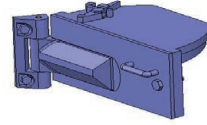
Assembly 02 - Upper Hull



Add part 02-37D.
Join with a pin (wire) with a diameter of 0.8 mm and a length of 15 mm.
Fix with glue. The part must rotate freely.

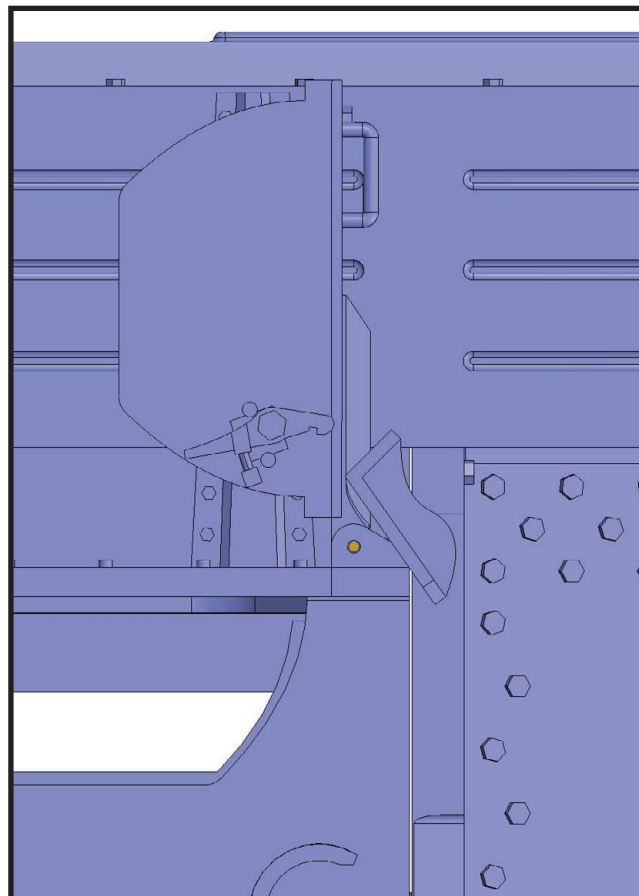
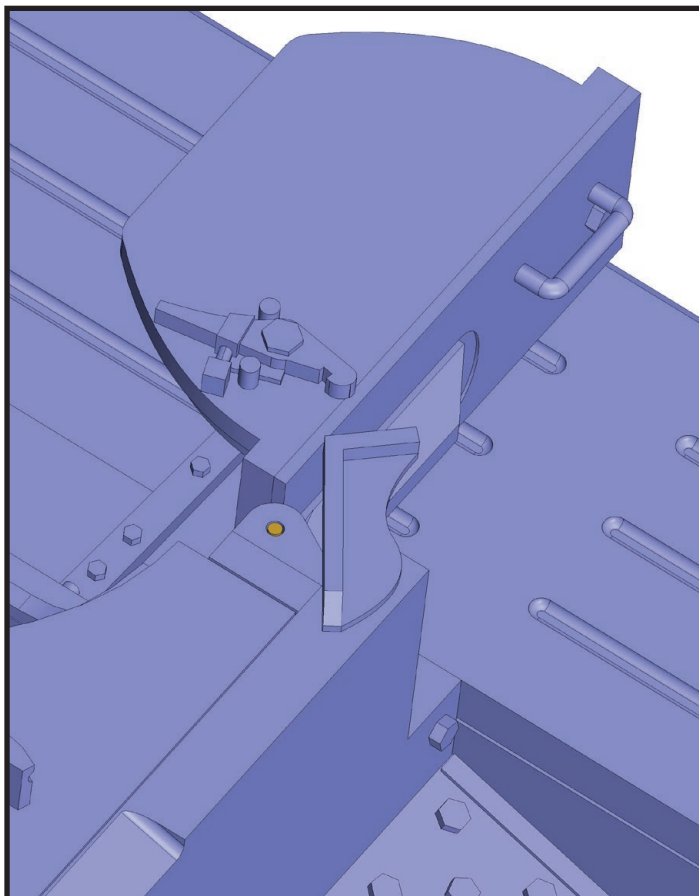
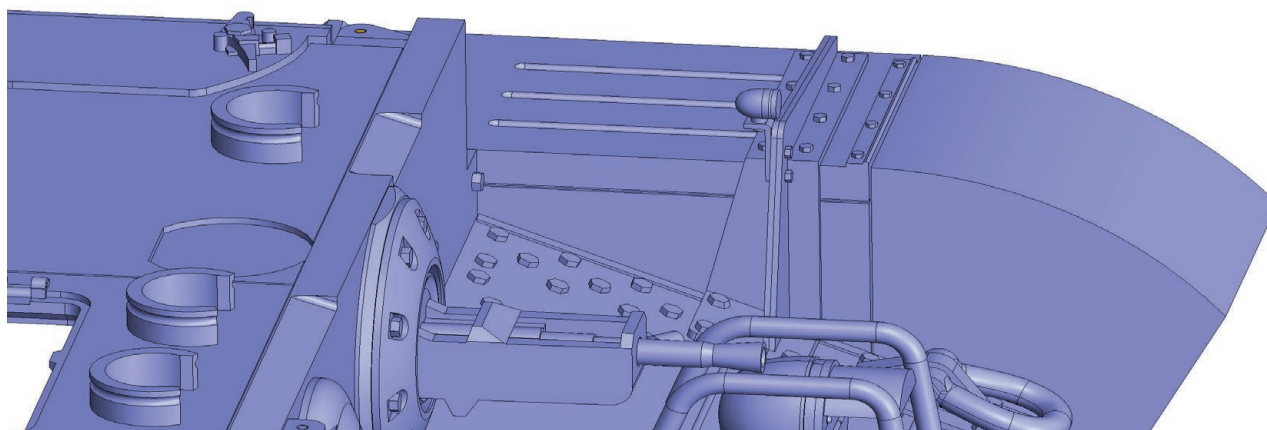
Assembly 02 - Upper Hull

02-37A+B+C+D



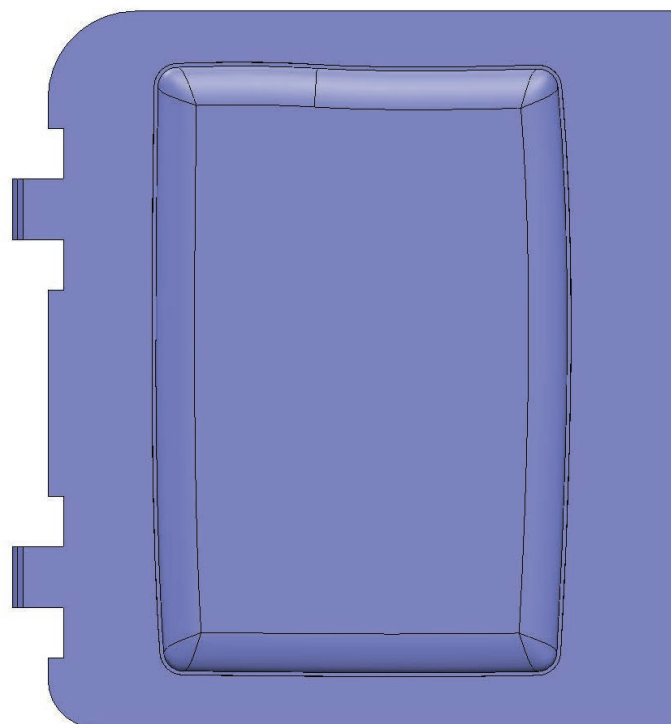
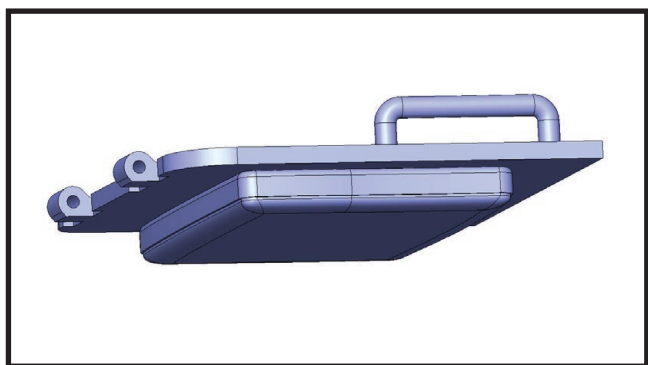
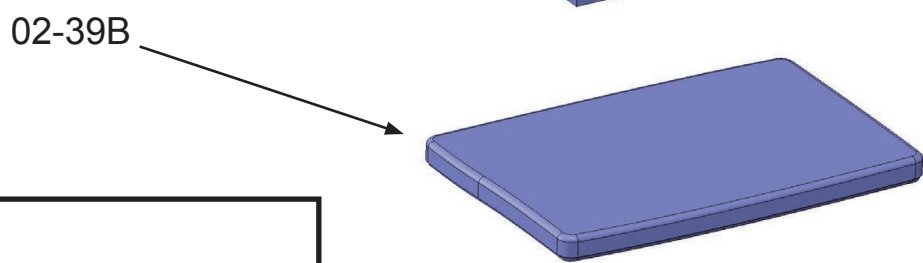
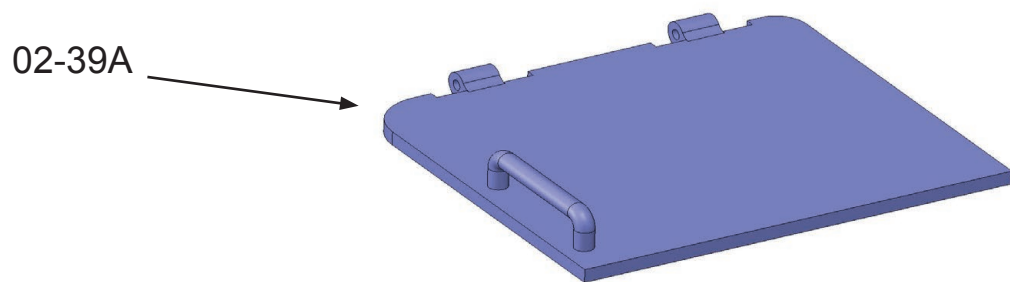
Glue the parts assemblies 02-37A to 02-37D.

Assembly 02 - Upper Hull



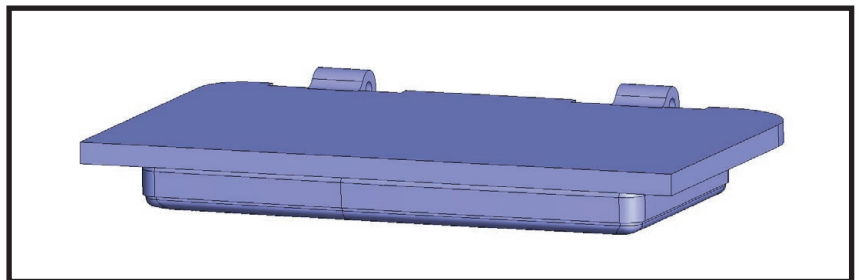
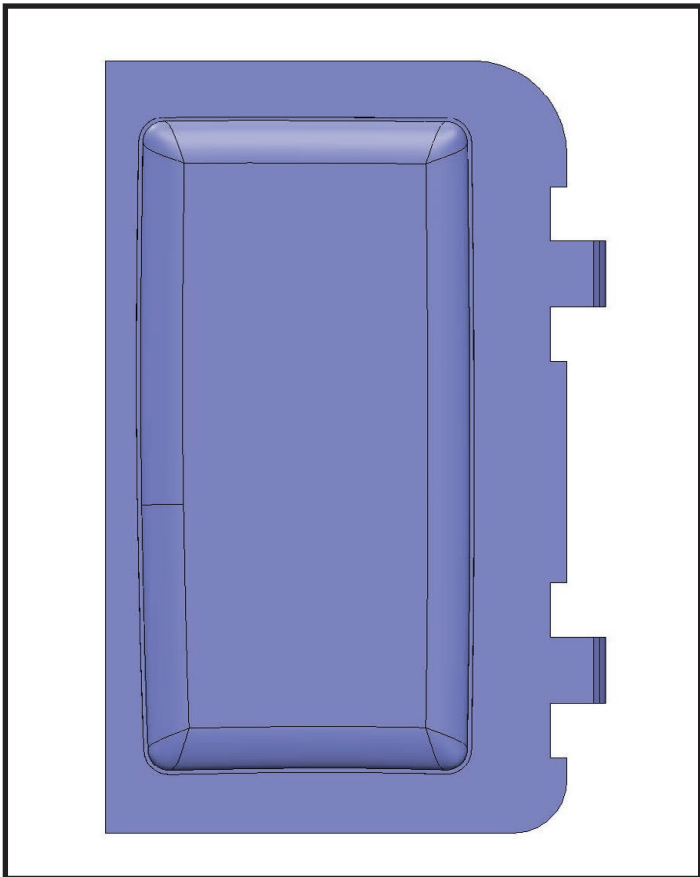
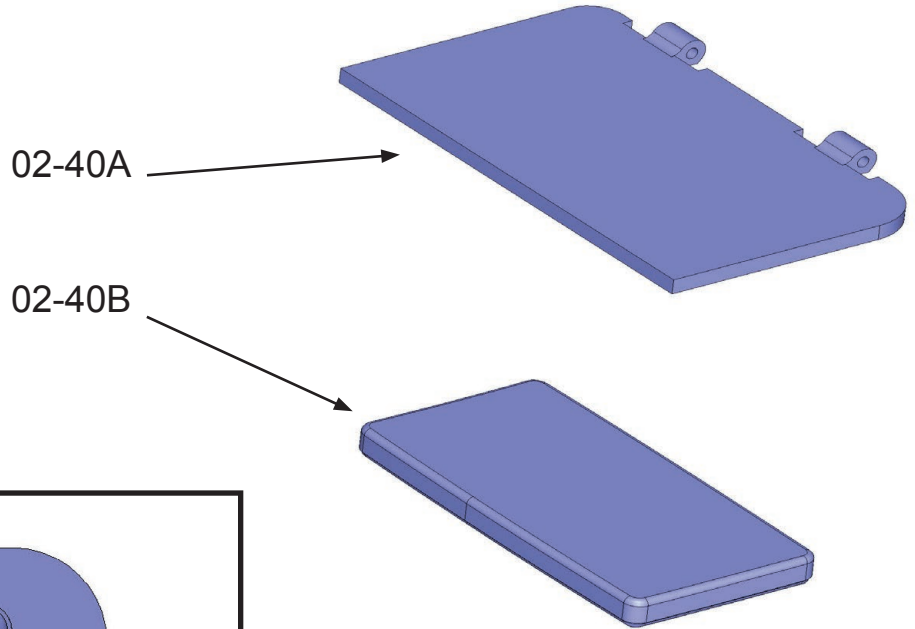
Glue part 02-38.

Assembly 02 - Upper Hull



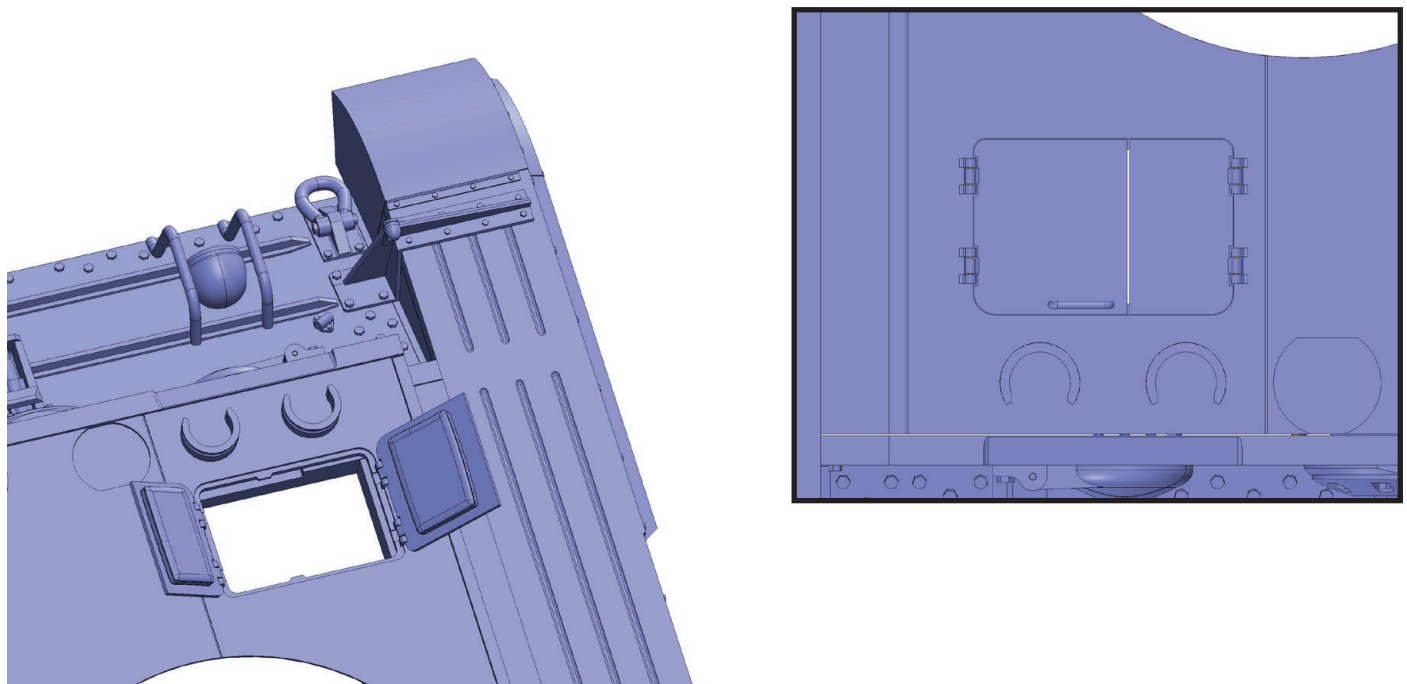
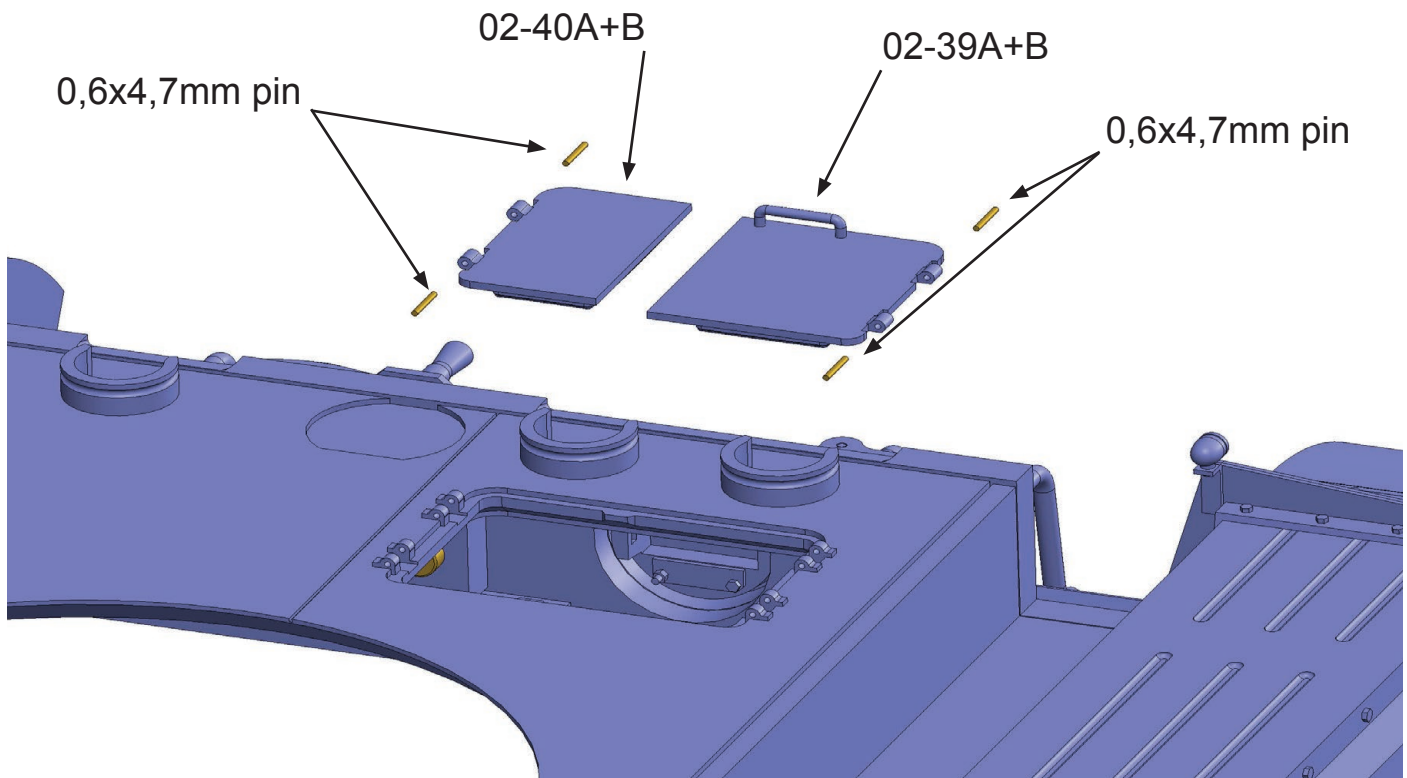
Glue parts 02-39A and 02-39B

Assembly 02 - Upper Hull



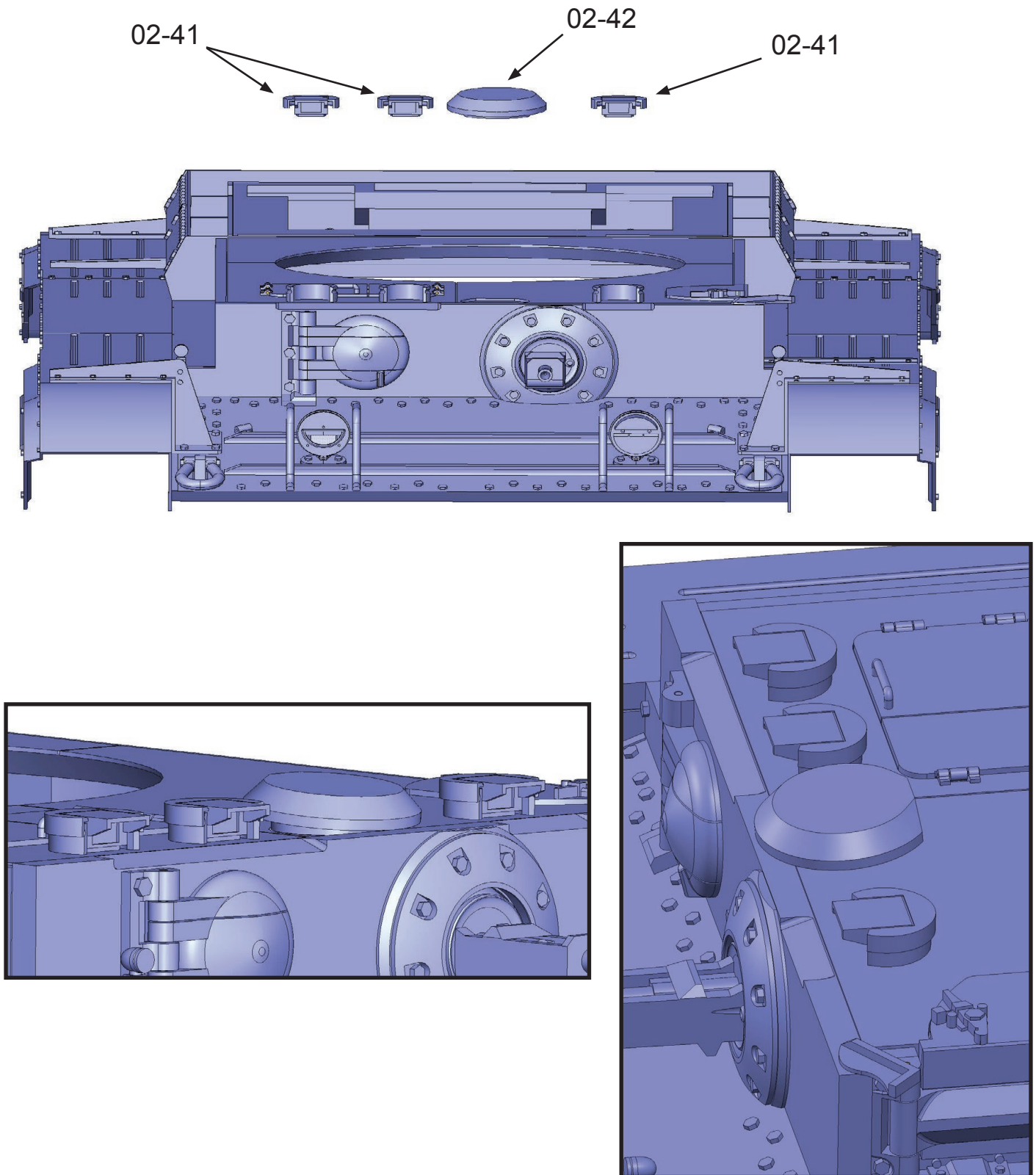
Glue parts 02-40A and 02-40B

Assembly 02 - Upper Hull



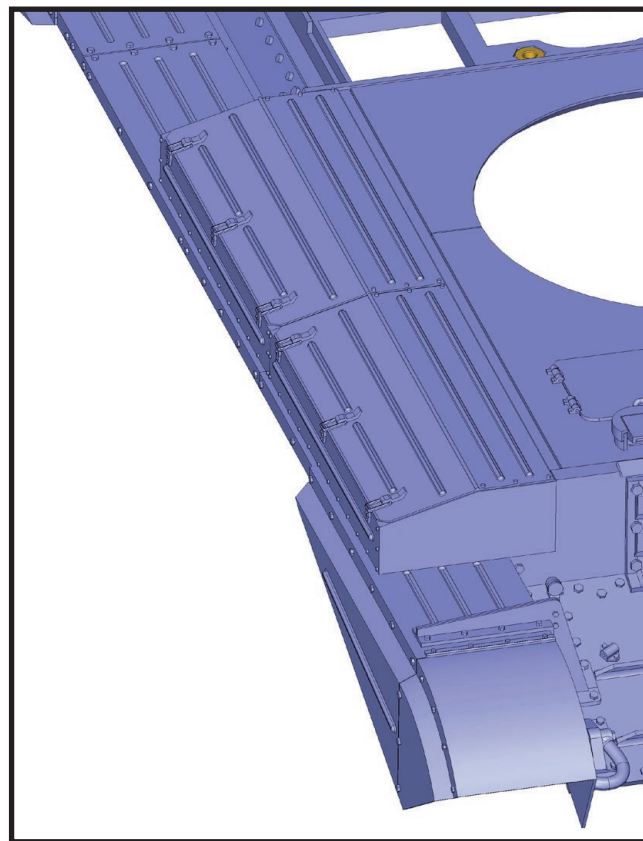
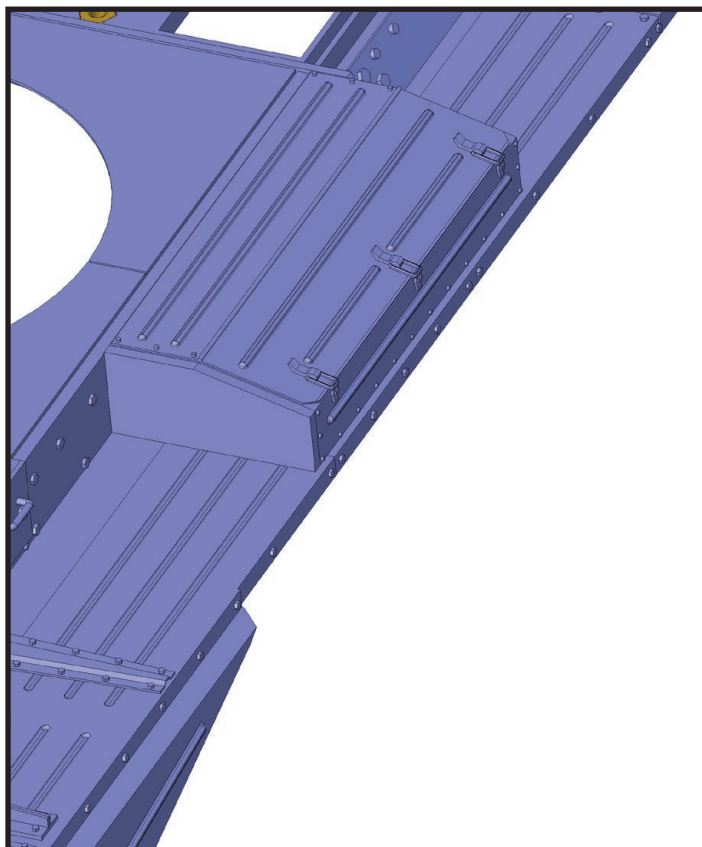
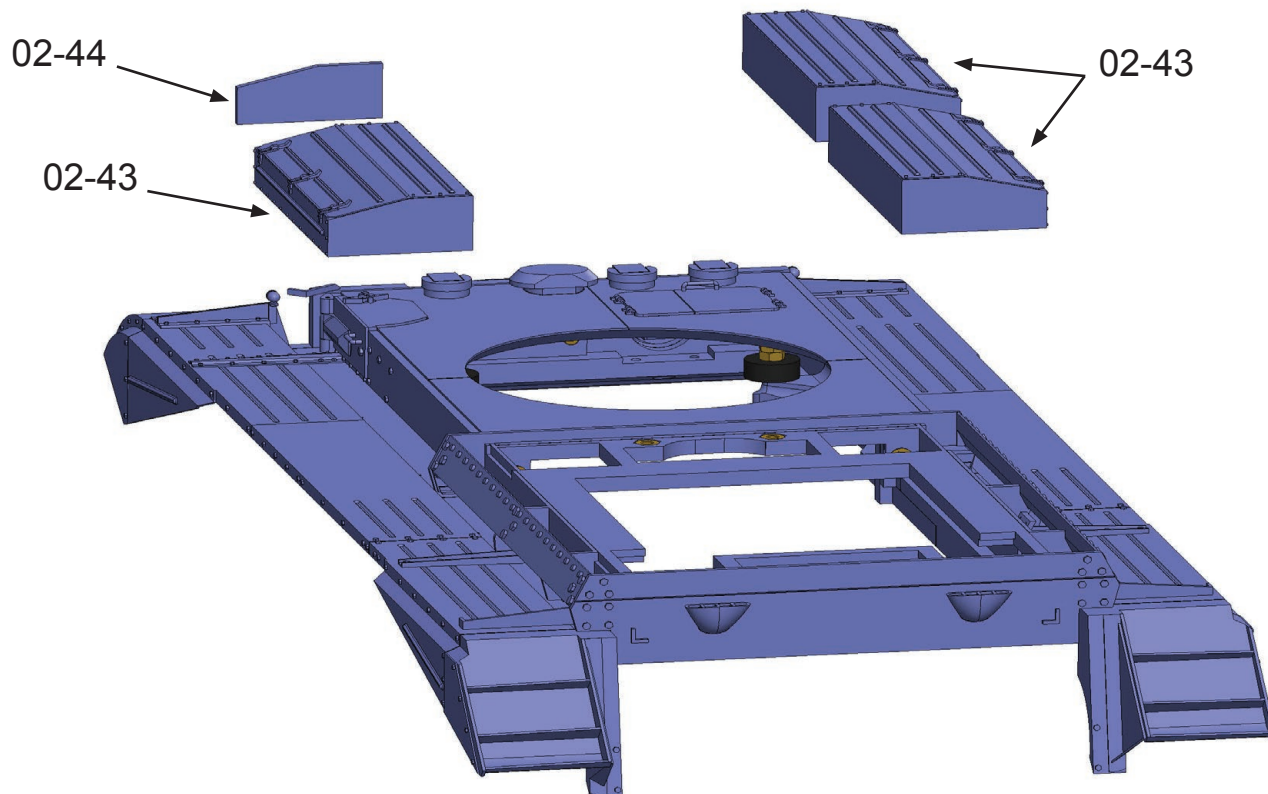
Attach the 02-39A + B and 02-40A + B parts assemblies.
Use a wire with a diameter of 0.6 mm. The length of the wires is 4.7 mm.
We recommend sliding the wire into place first and only then cutting it to size.

Assembly 02 - Upper Hull



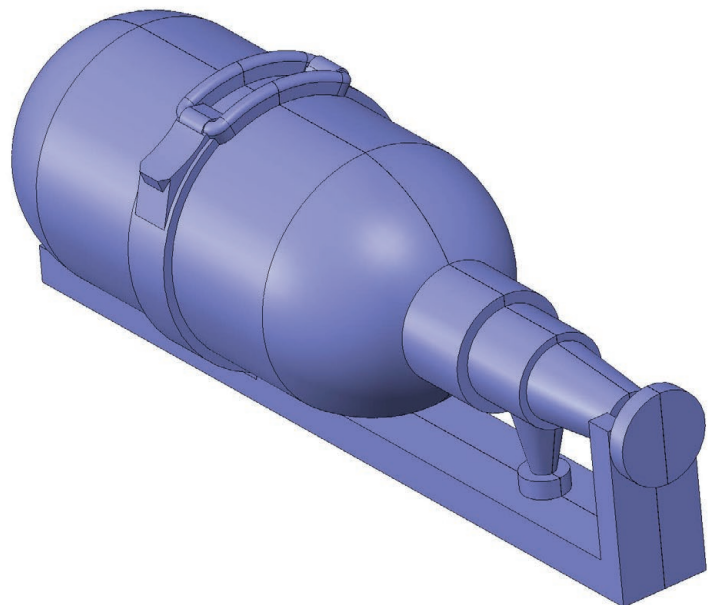
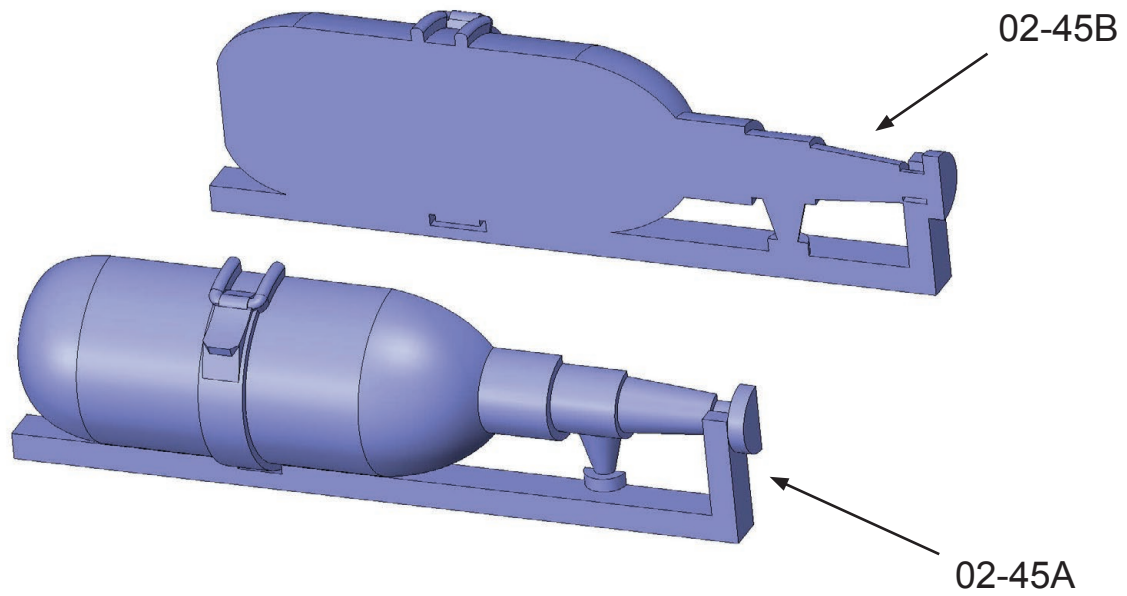
Attach three parts 02-41. The parts do not need to be glued.
They can be partially rotated. Glue part 02-42.

Assembly 02 - Upper Hull



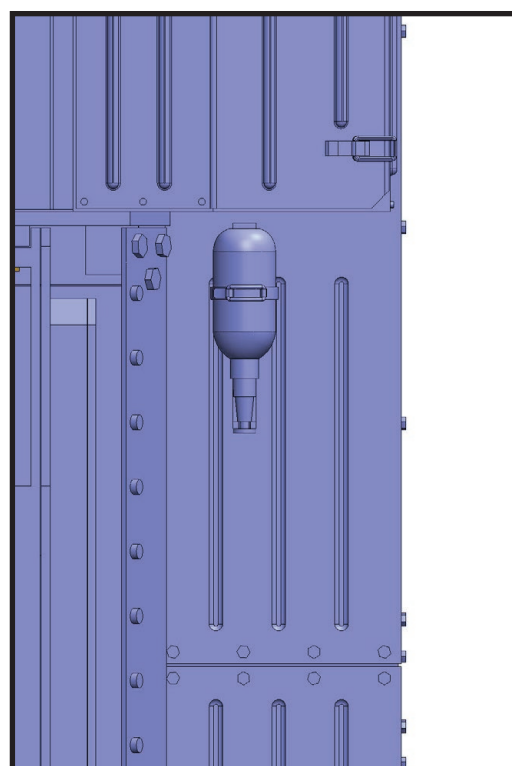
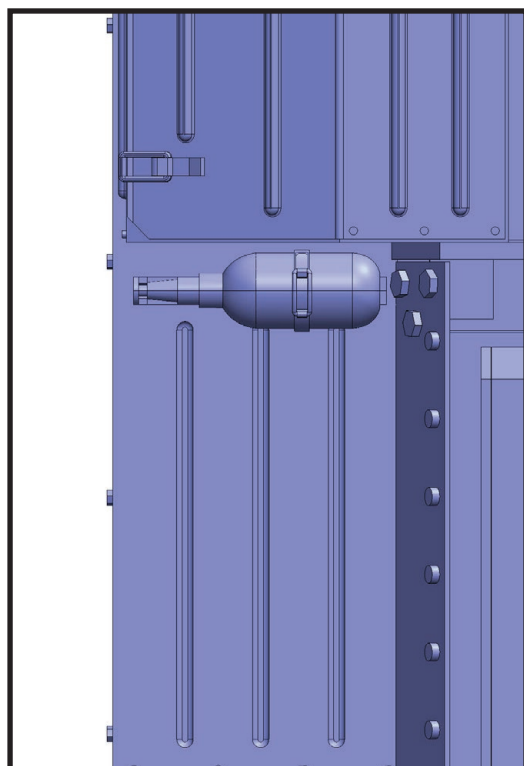
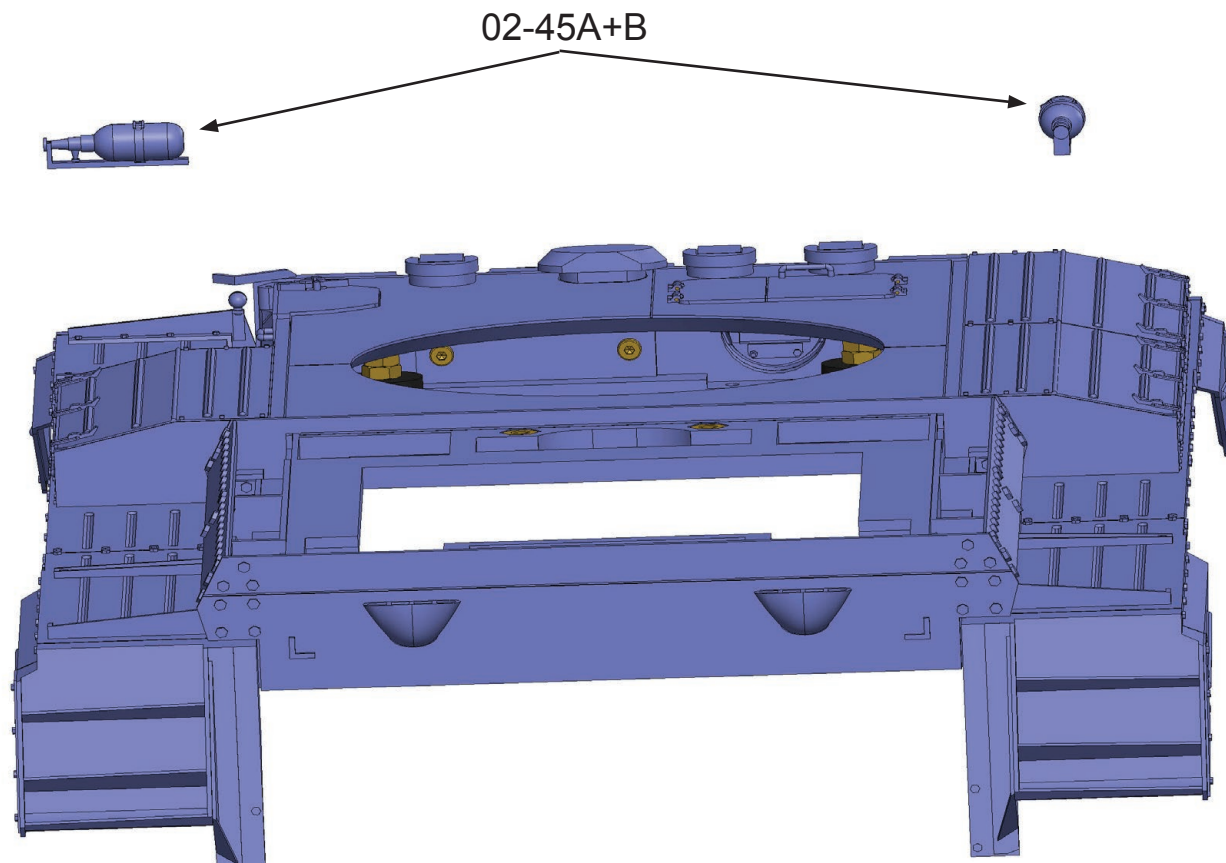
Glue three parts 02-43 and one part 02-44.

Assembly 02 - Upper Hull

2x

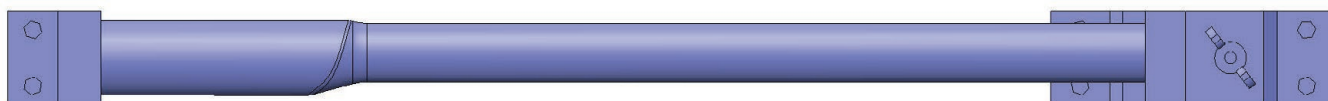
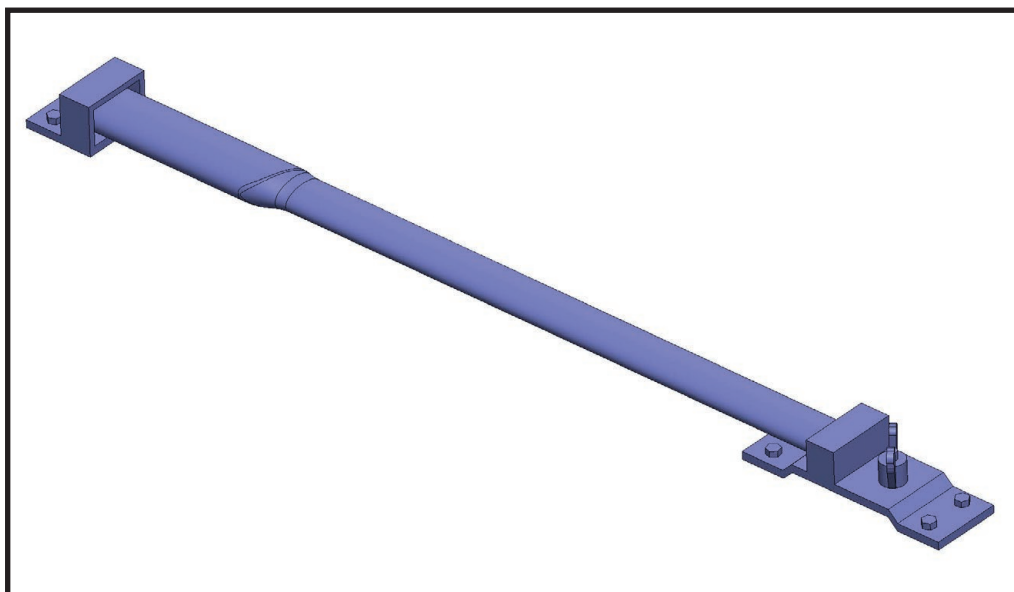
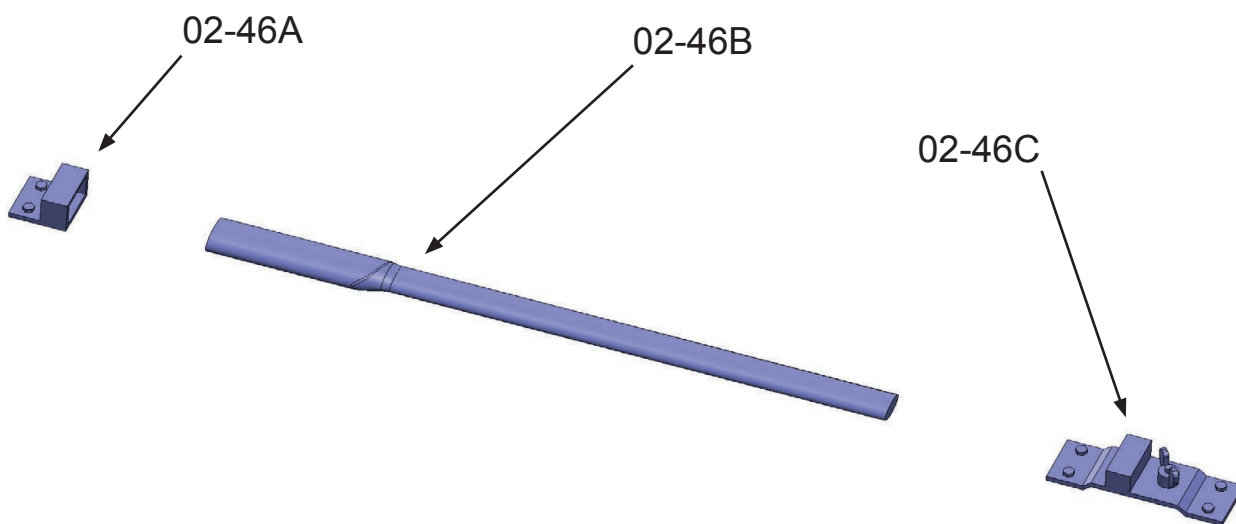
Glue parts 02-45A and 02-45B. You will need two pieces.

Assembly 02 - Upper Hull



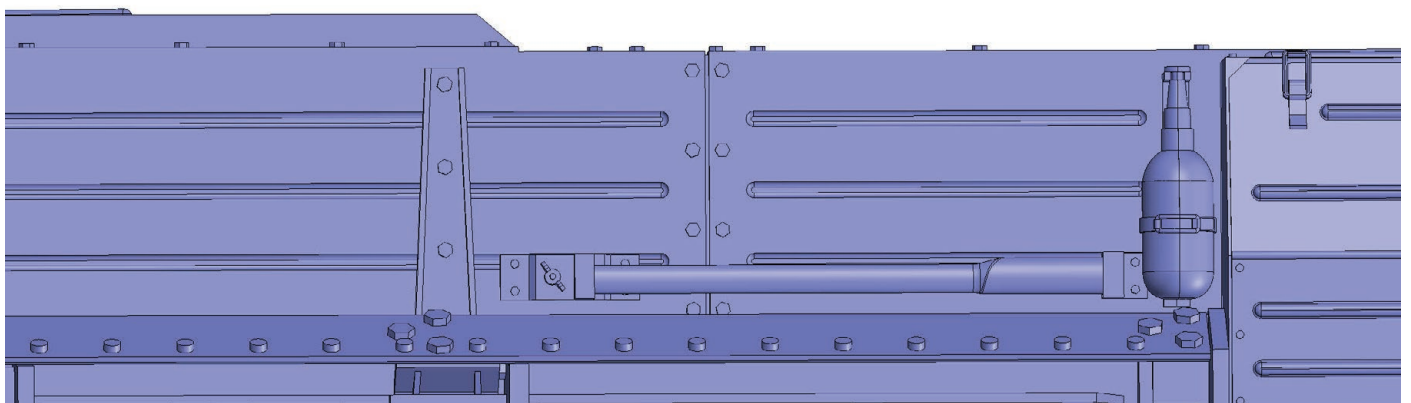
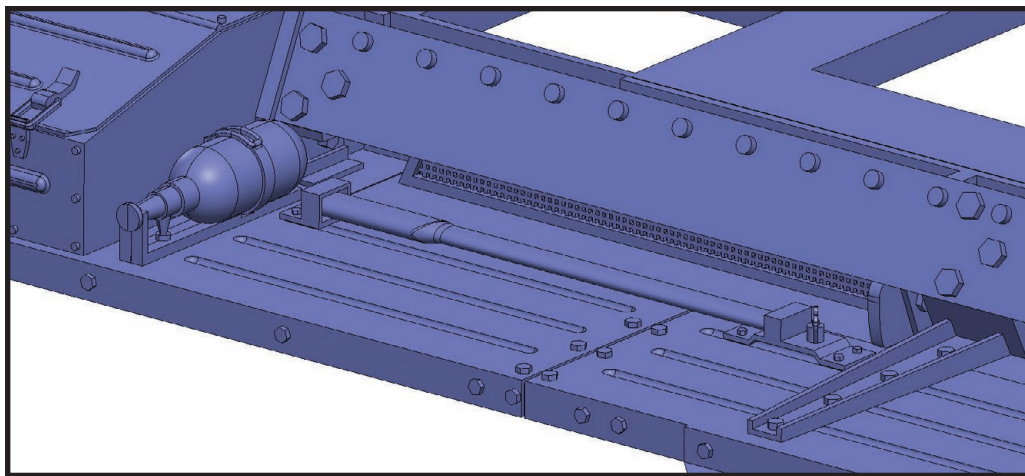
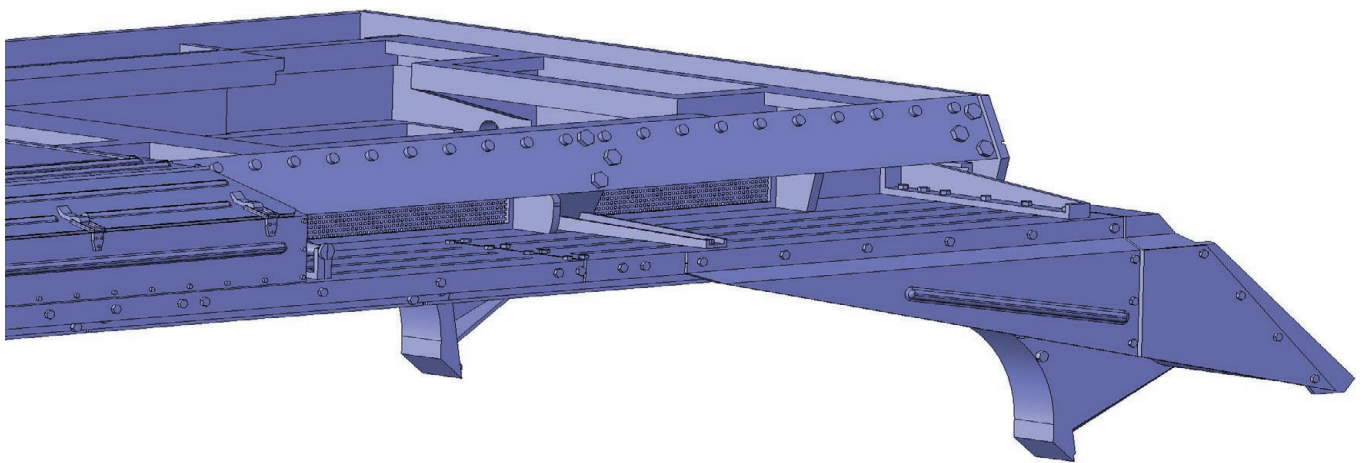
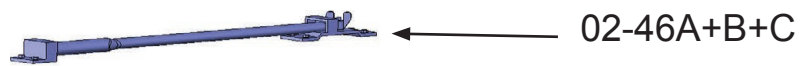
Glue parts 02-45A + B (2 pieces).

Assembly 02 - Upper Hull



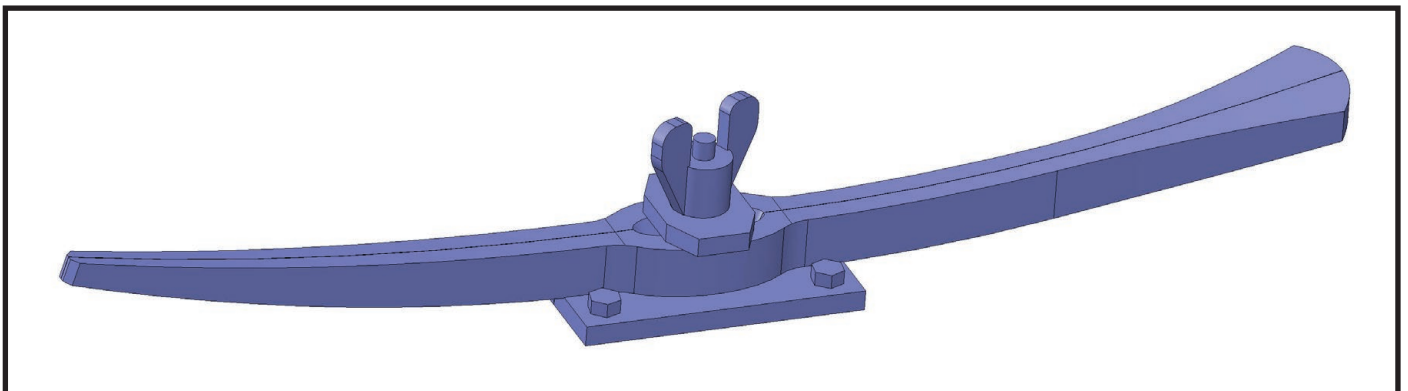
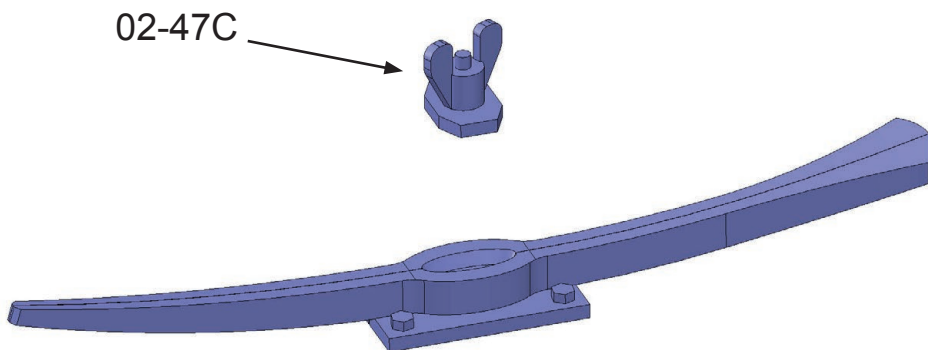
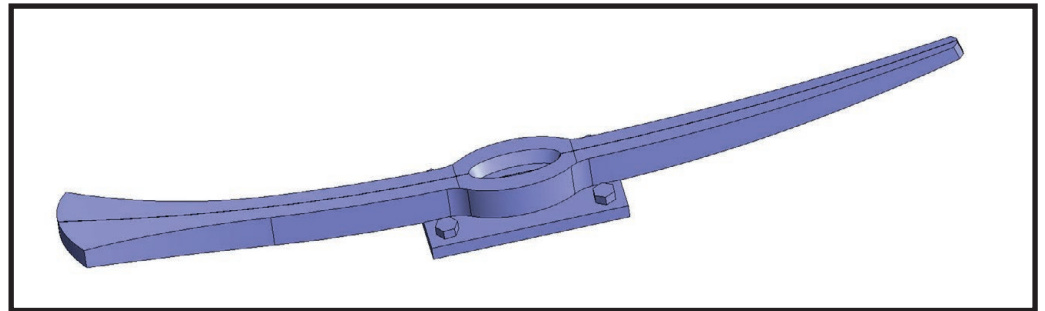
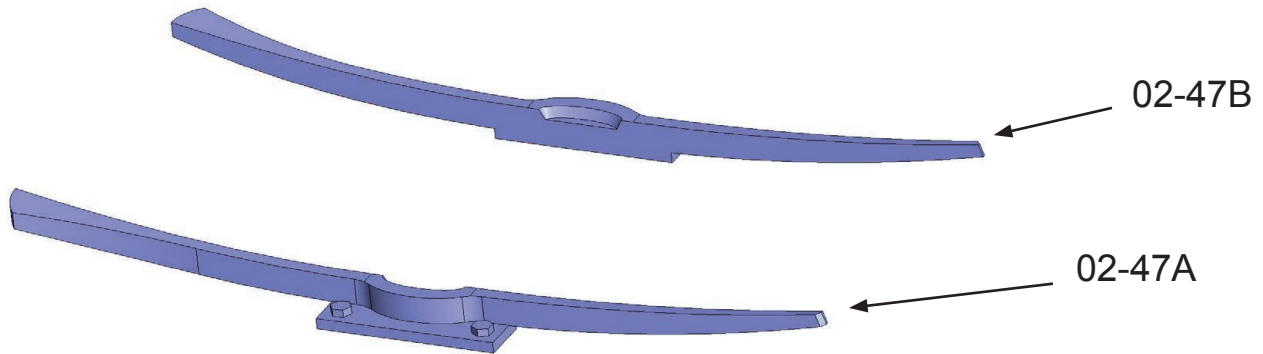
Glue parts 02-46A to 02-46C.

Assembly 02 - Upper Hull



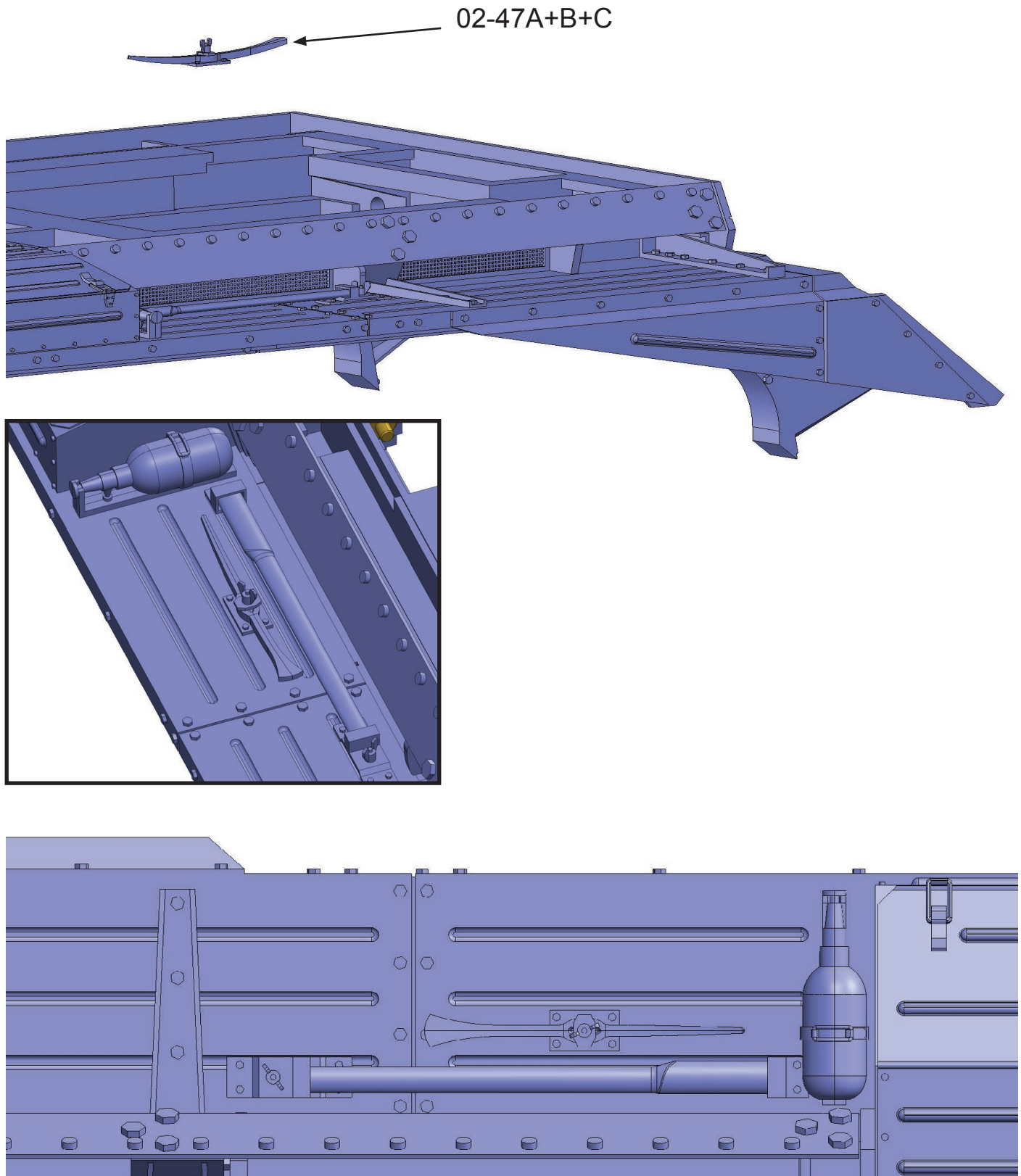
Glue the parts assemblies from 02-46A to 02-46C.

Assembly 02 - Upper Hull



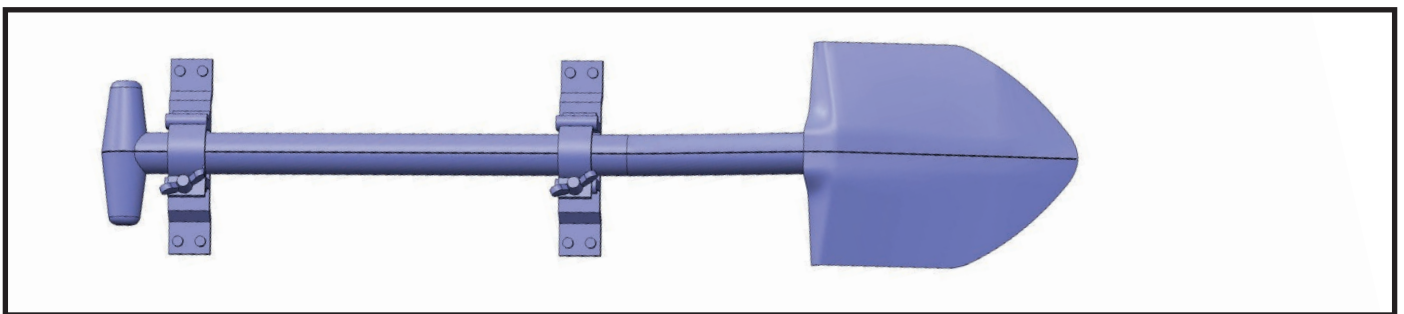
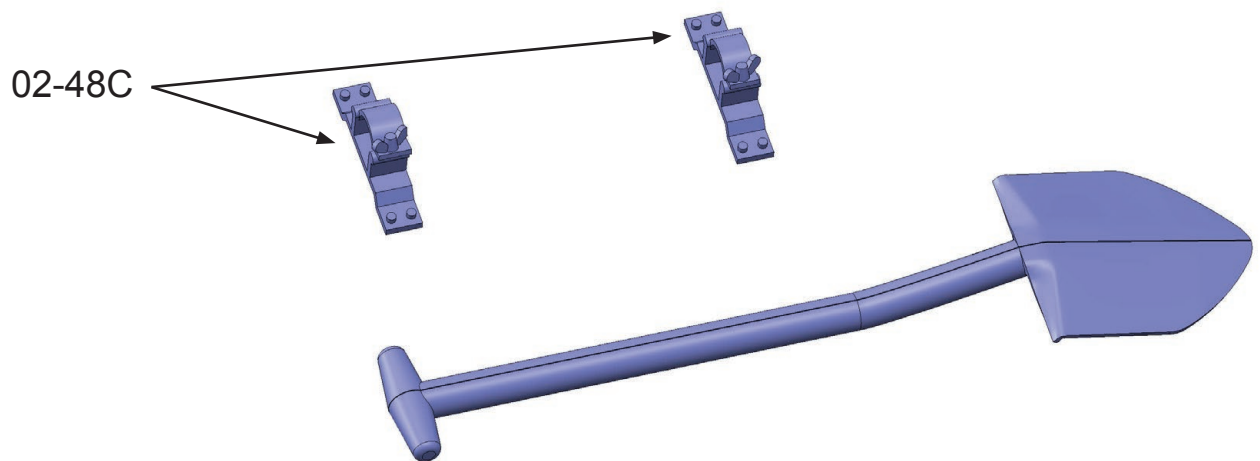
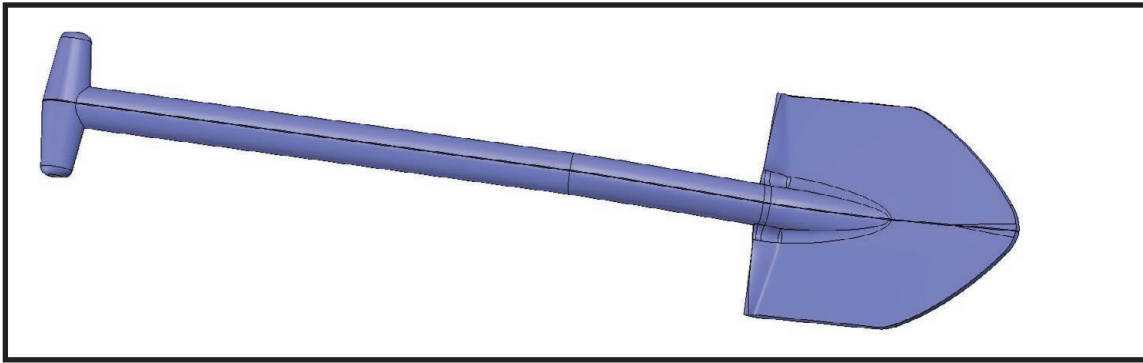
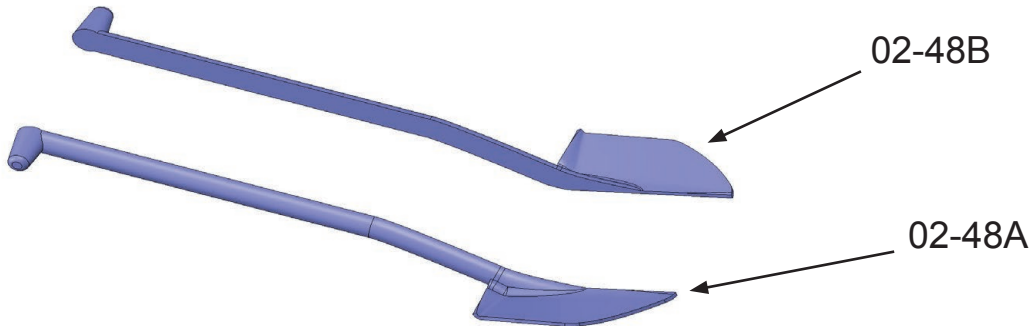
Glue parts 02-47A and 02-47B.
Then glue part 02-47C.

Assembly 02 - Upper Hull



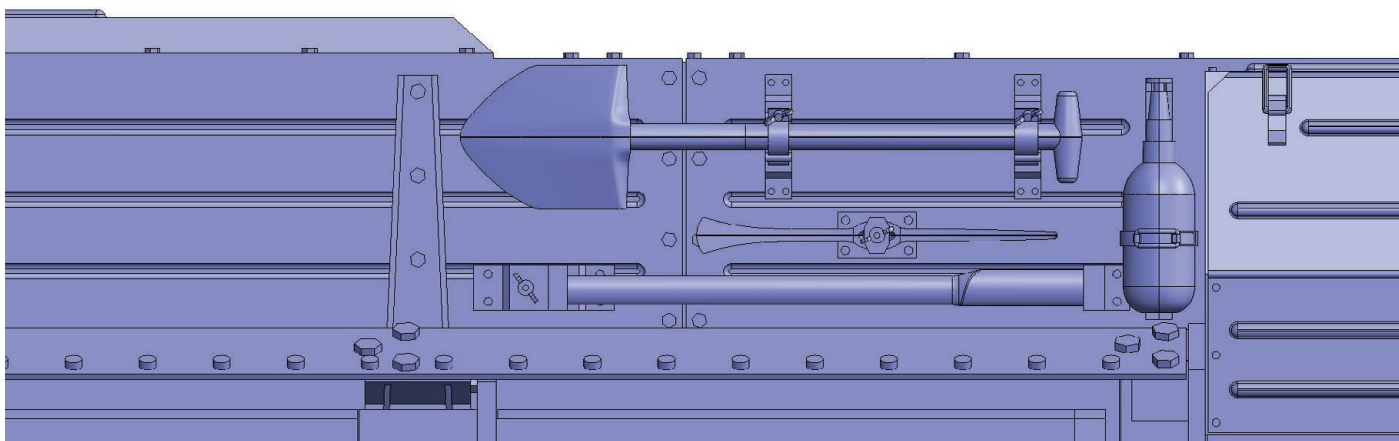
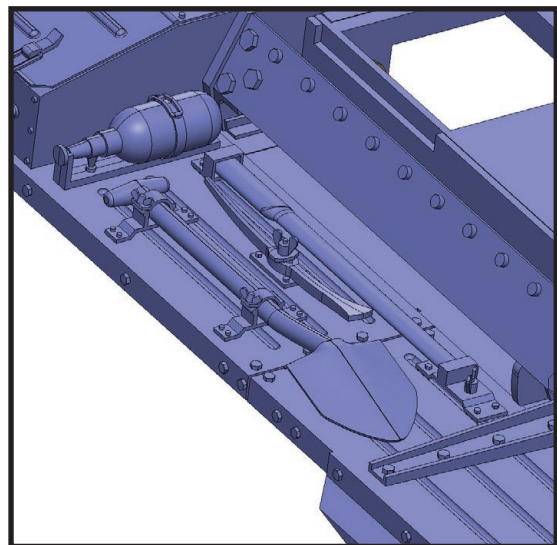
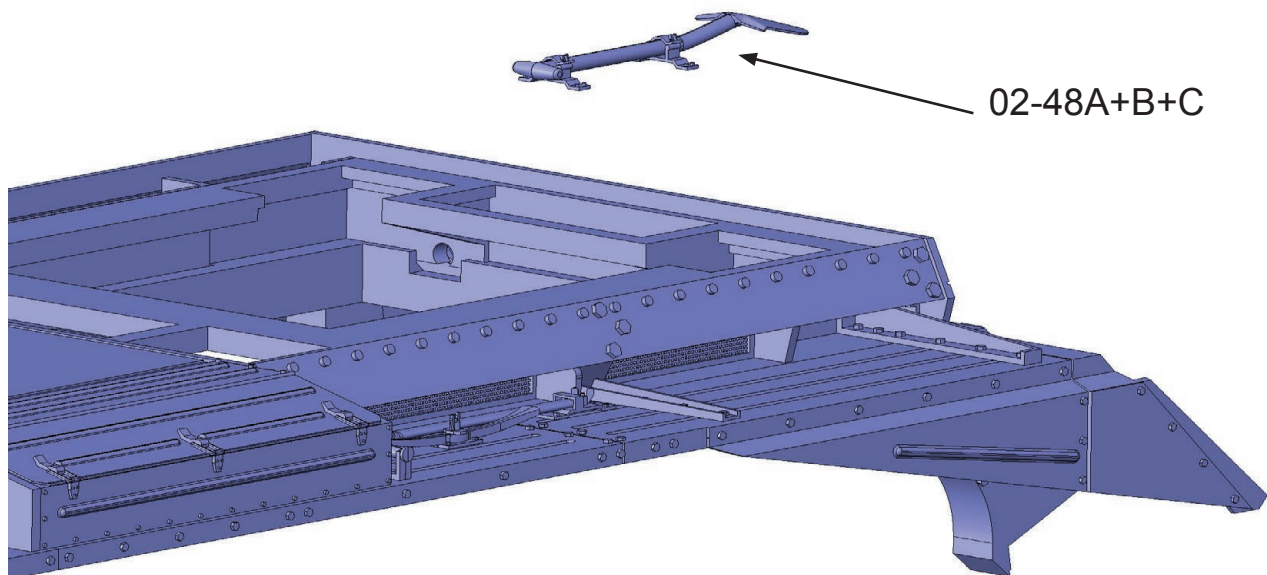
Glue the parts assemblies from 02-47A to 02-47C.

Assembly 02 - Upper Hull



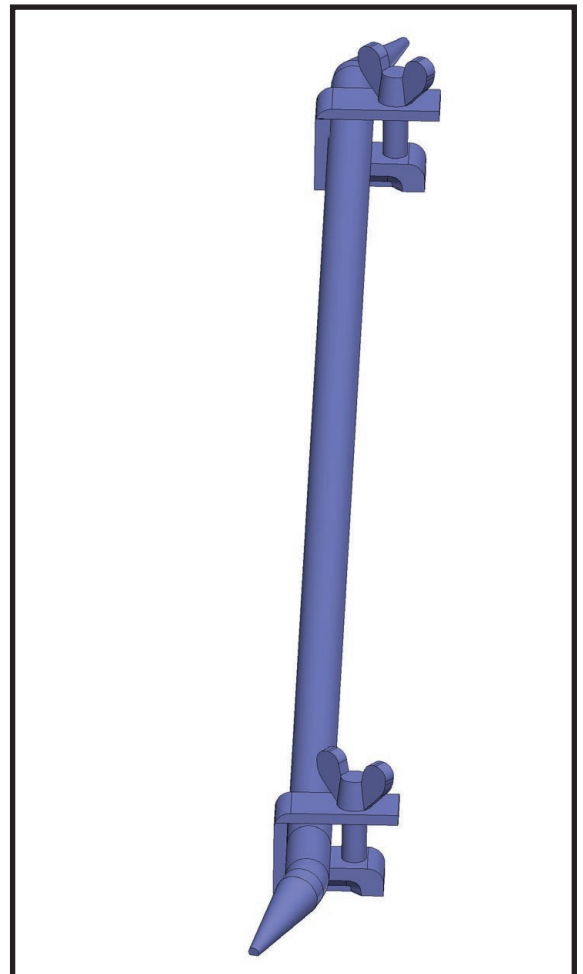
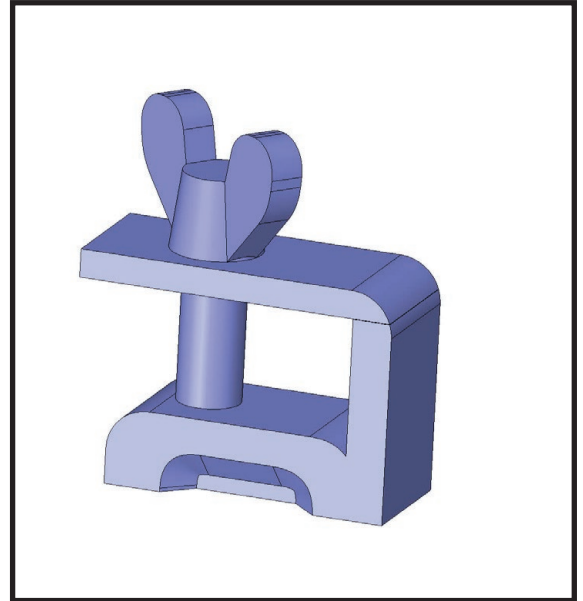
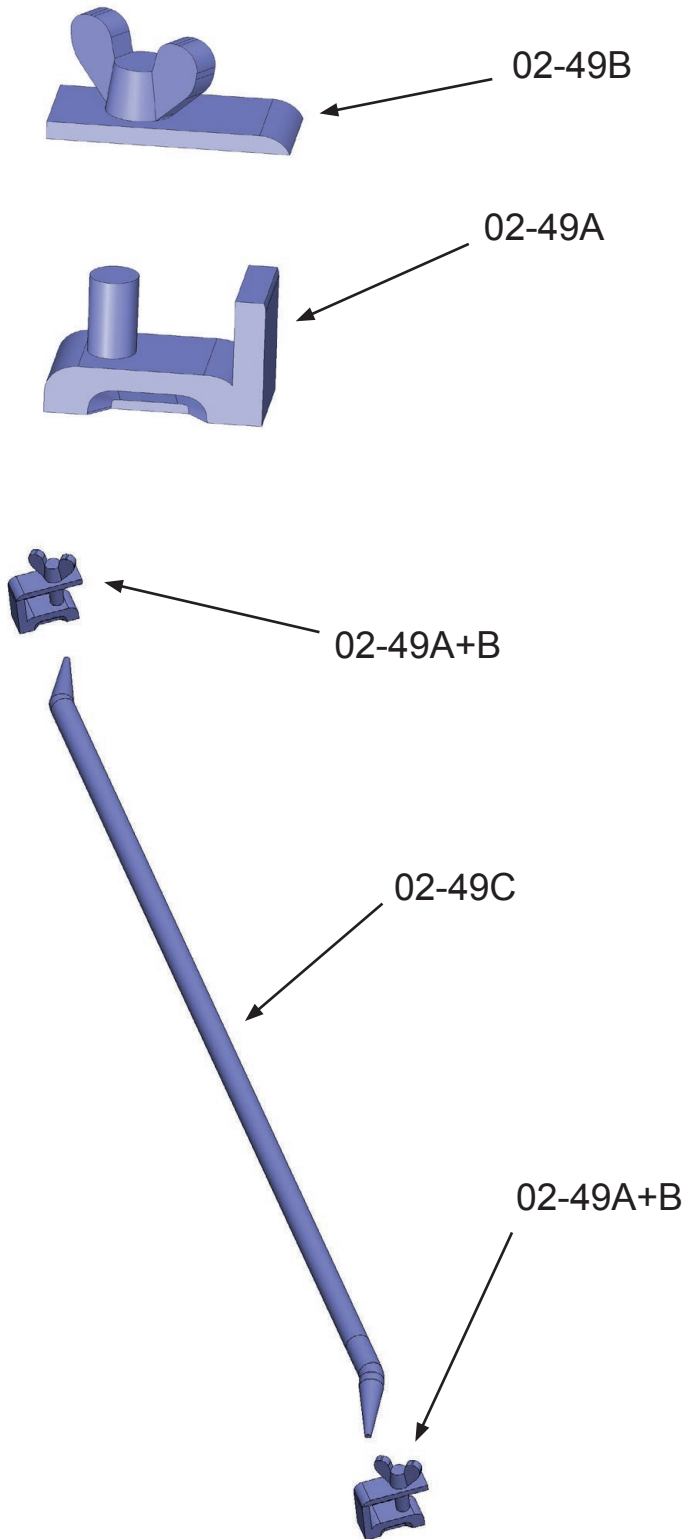
Glue parts 02-48A and 02-48B together.
Then glue the two parts 02-48C.

Assembly 02 - Upper Hull



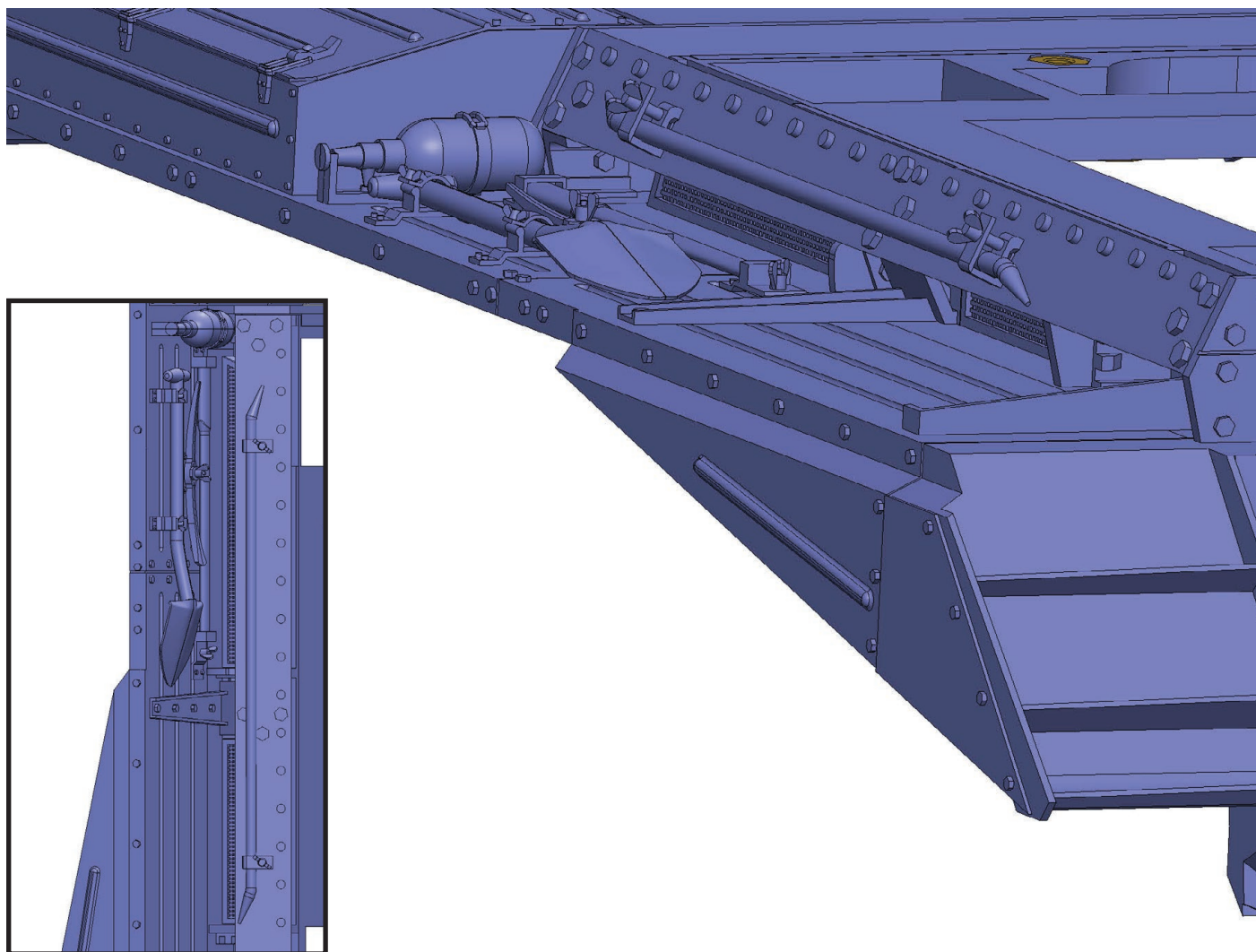
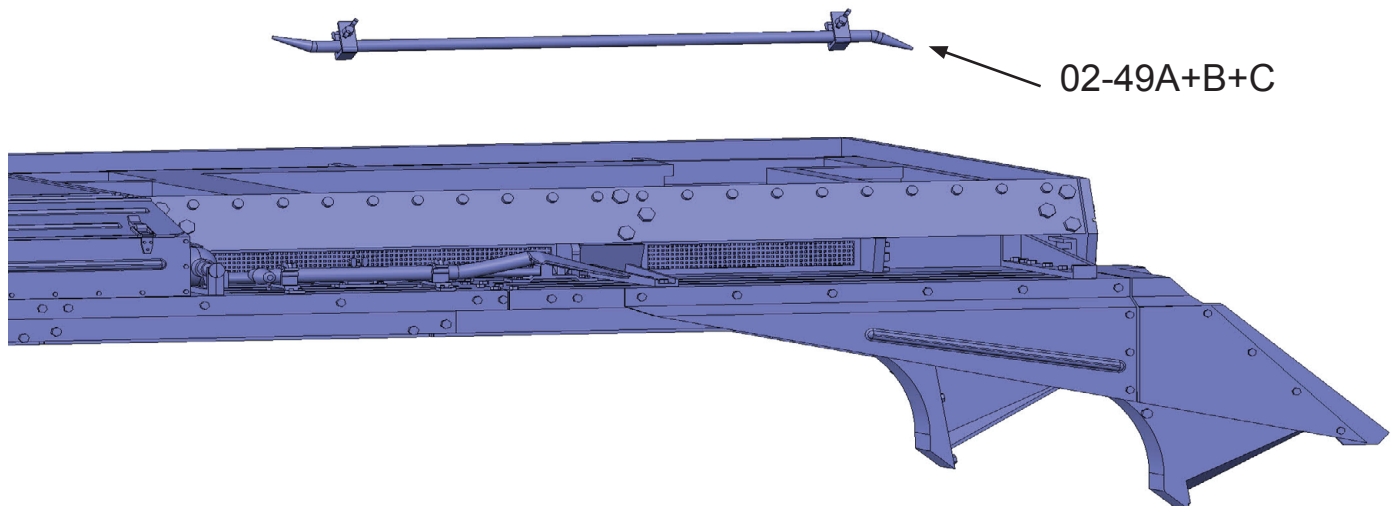
Glue the parts assemblies from 02-48A to 02-48C.

Assembly 02 - Upper Hull



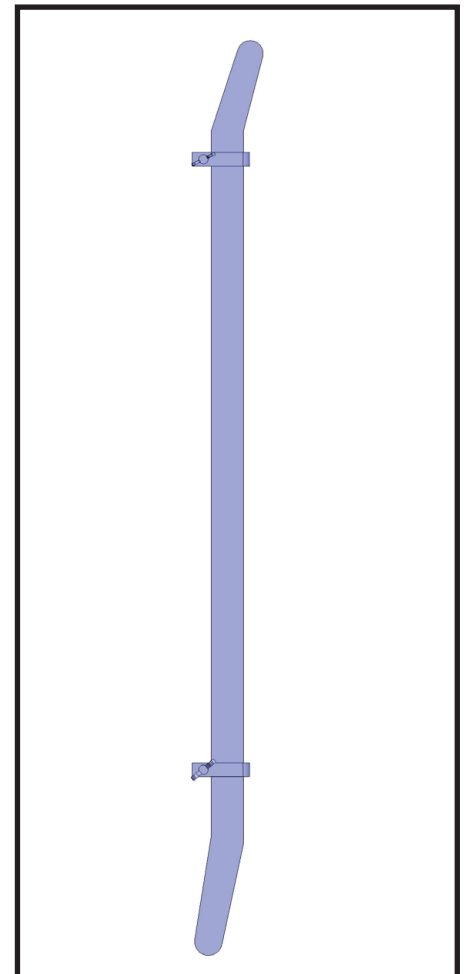
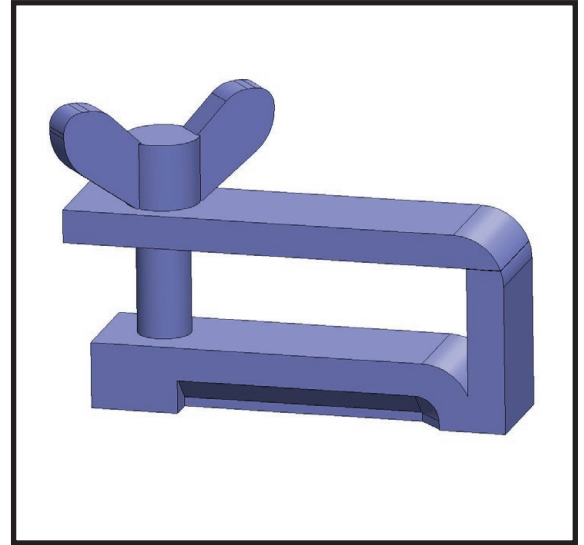
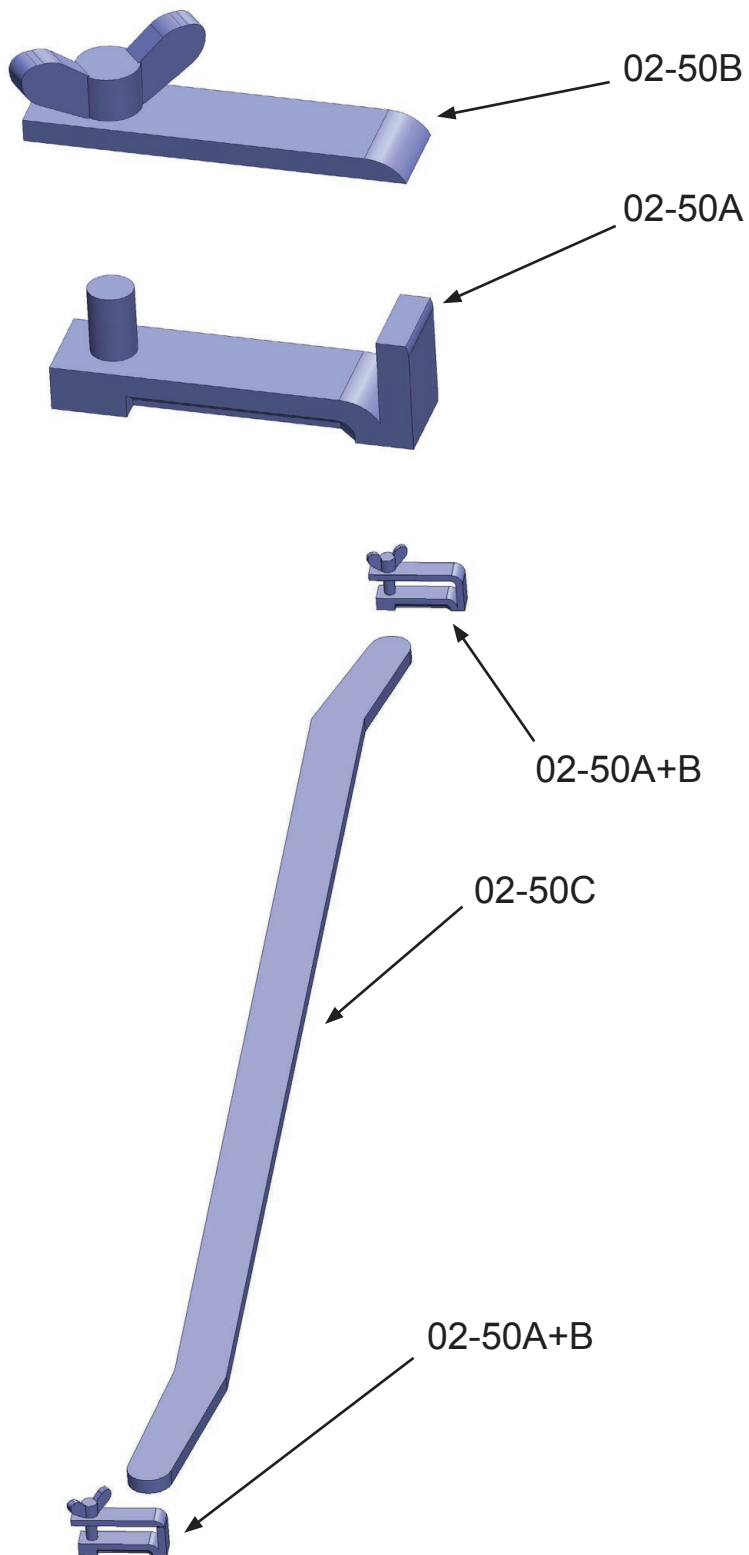
Glue parts 02-49A and 02-49B. You will need two such units.
Slide the units onto part 02-49C.

Assembly 02 - Upper Hull



Glue the parts assemblies from 02-49A to 02-49C.

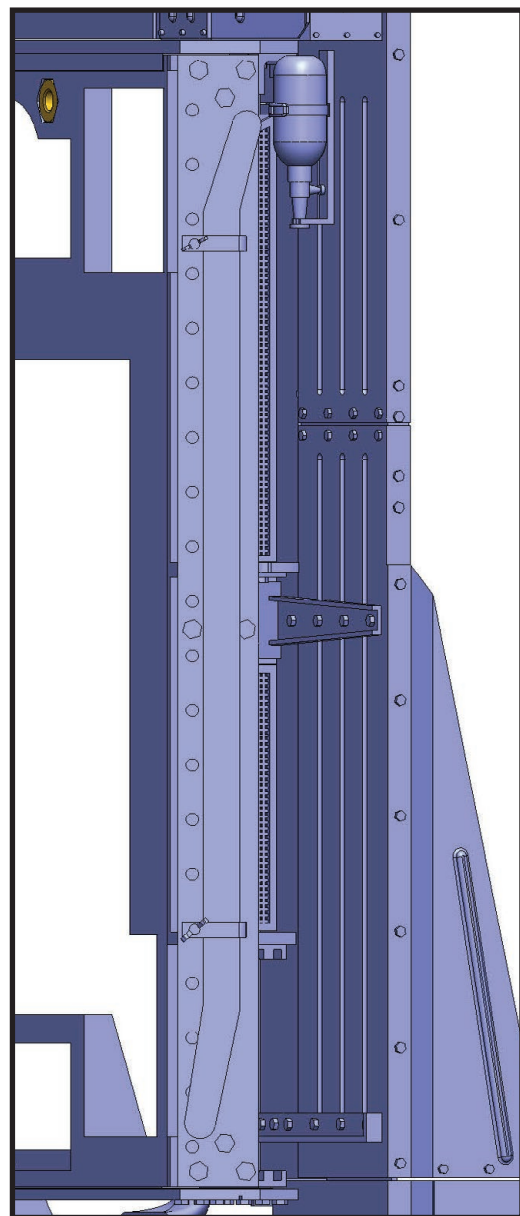
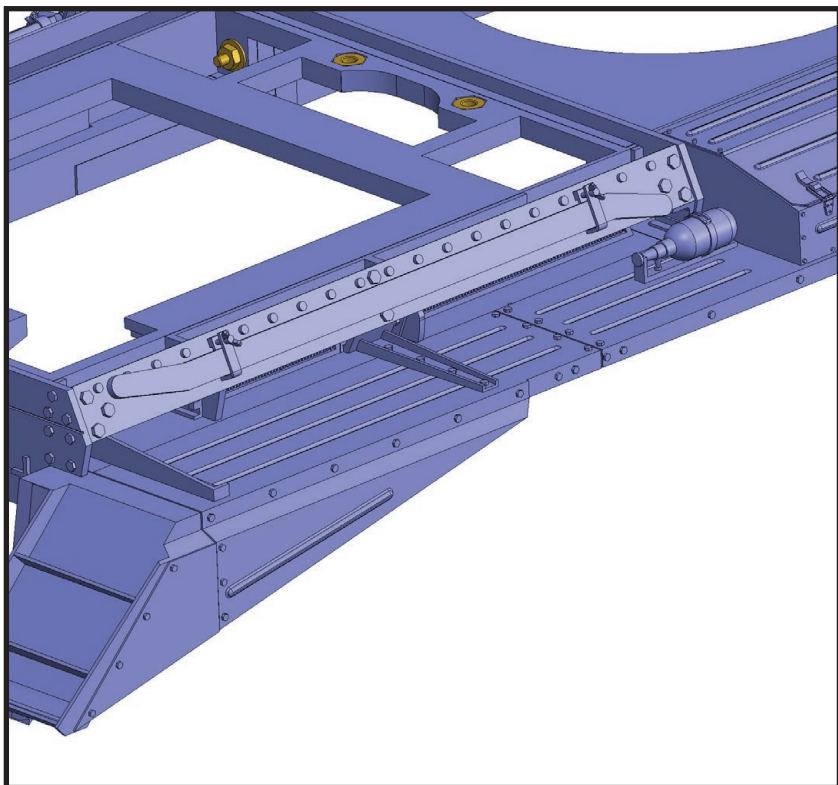
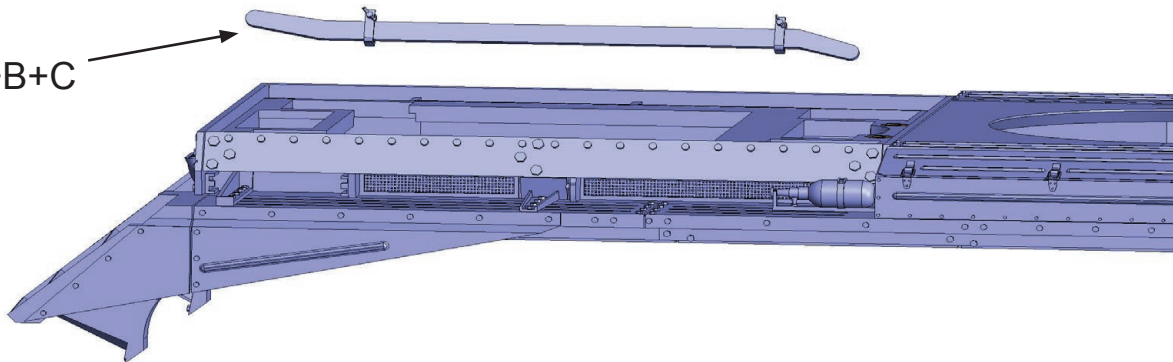
Assembly 02 - Upper Hull



Glue parts 02-50A and 02-50B together. You will need two such units.
Slide the units onto part 02-50C.

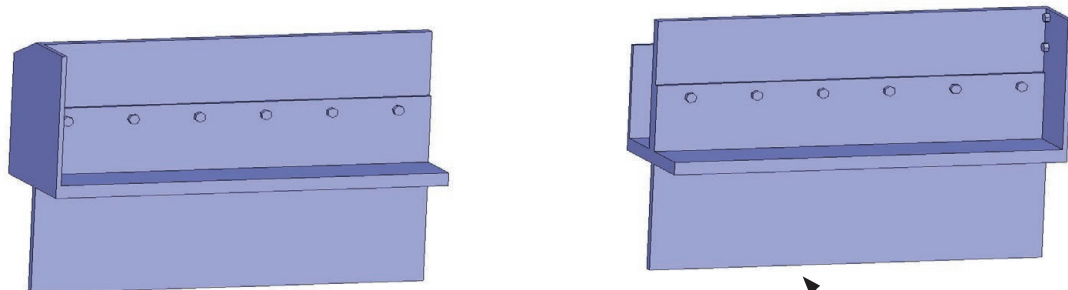
Assembly 02 - Upper Hull

02-50A+B+C



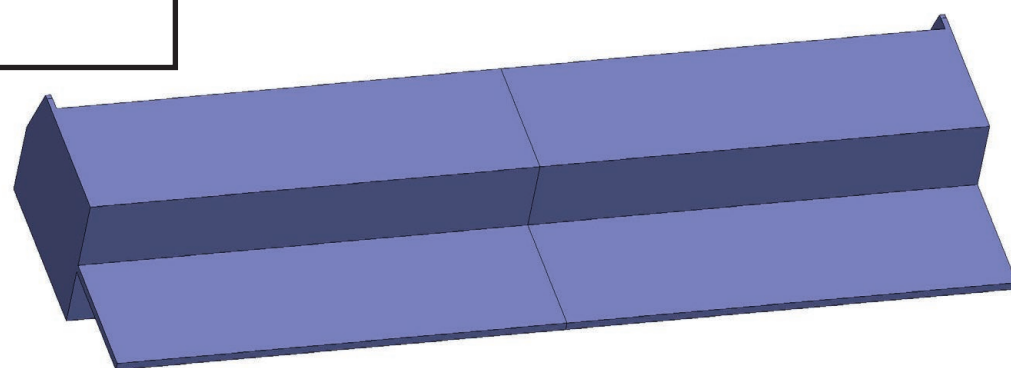
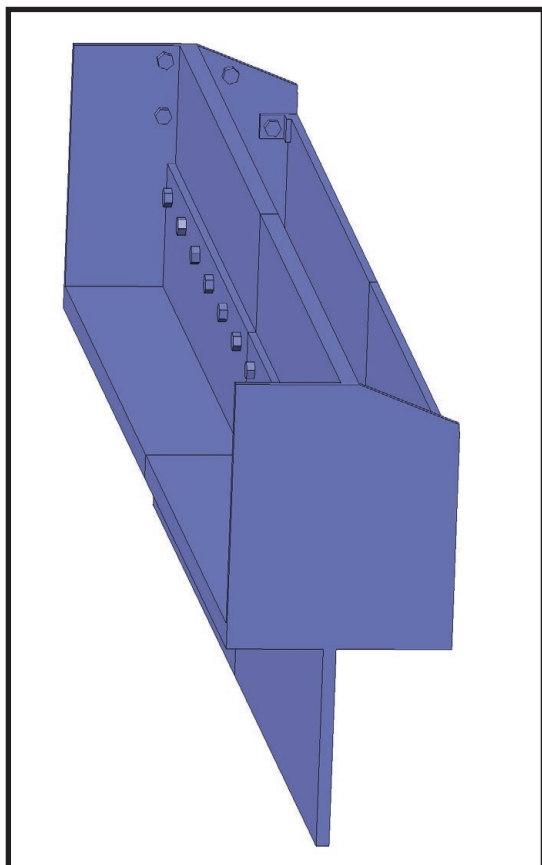
Glue the parts assemblies from 02-50A to 02-50C.

Assembly 02 - Upper Hull



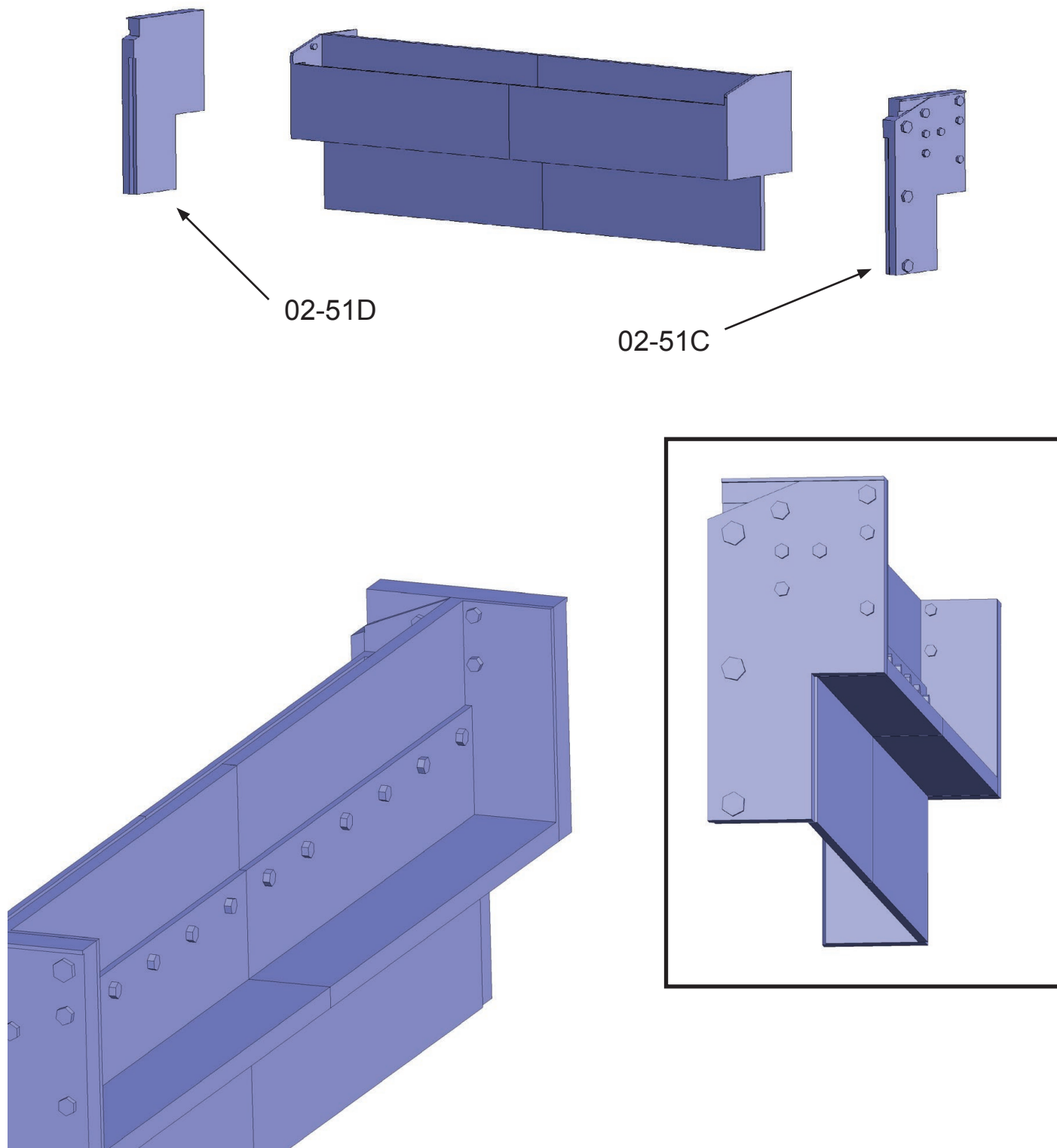
02-51A

02-51B



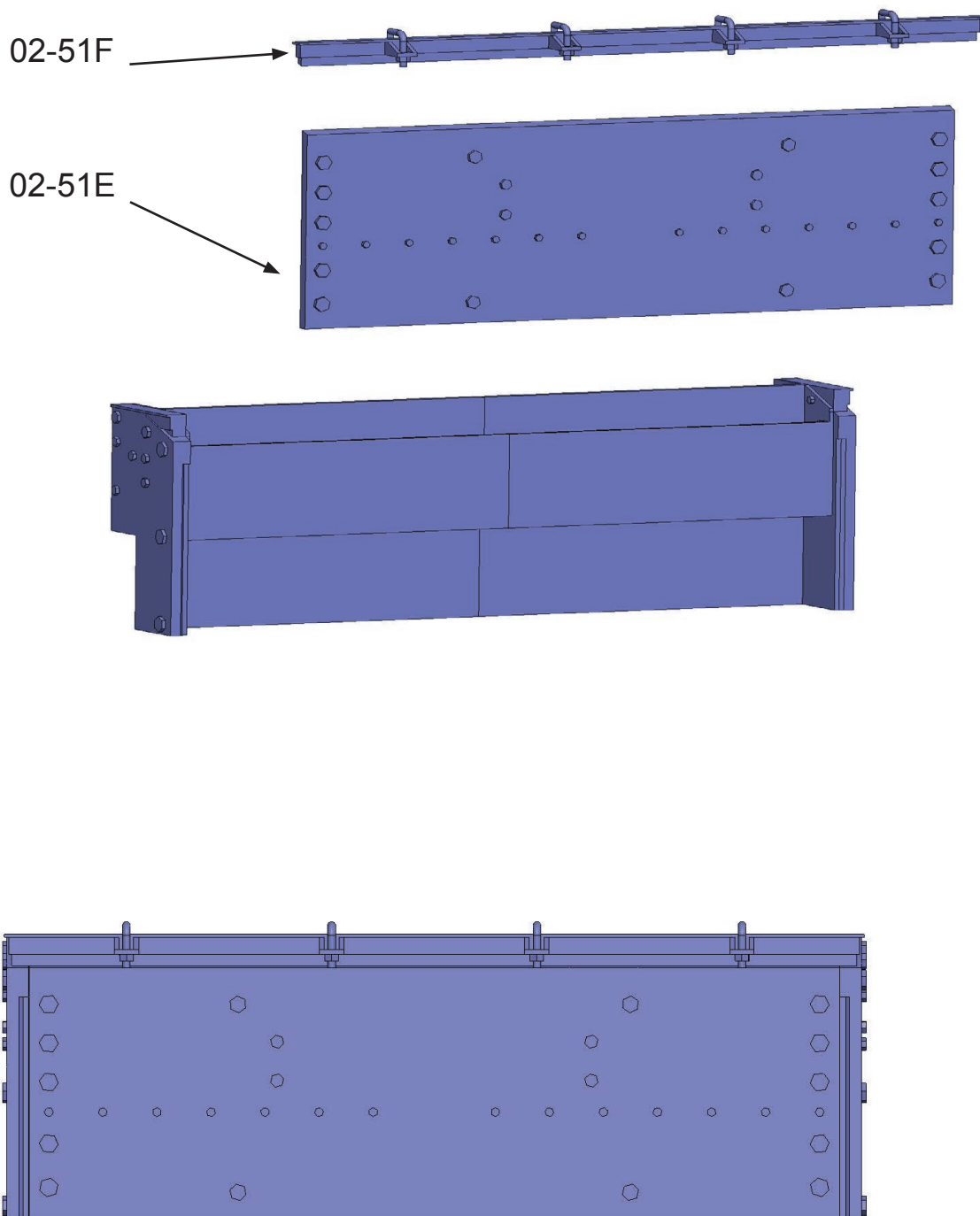
Glue parts 02-51A and 02-51B together.

Assembly 02 - Upper Hull



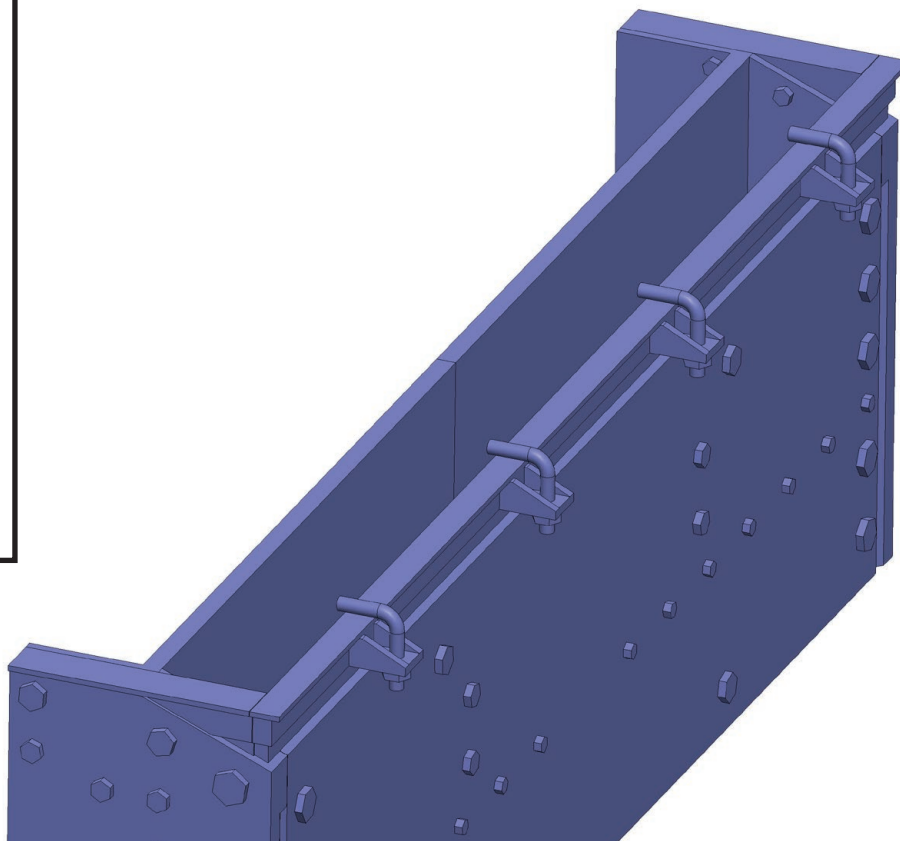
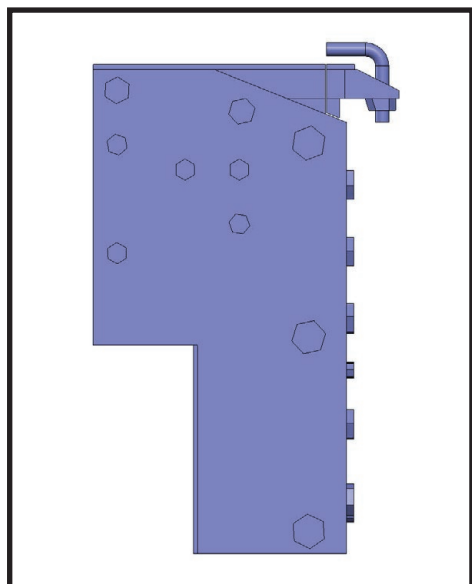
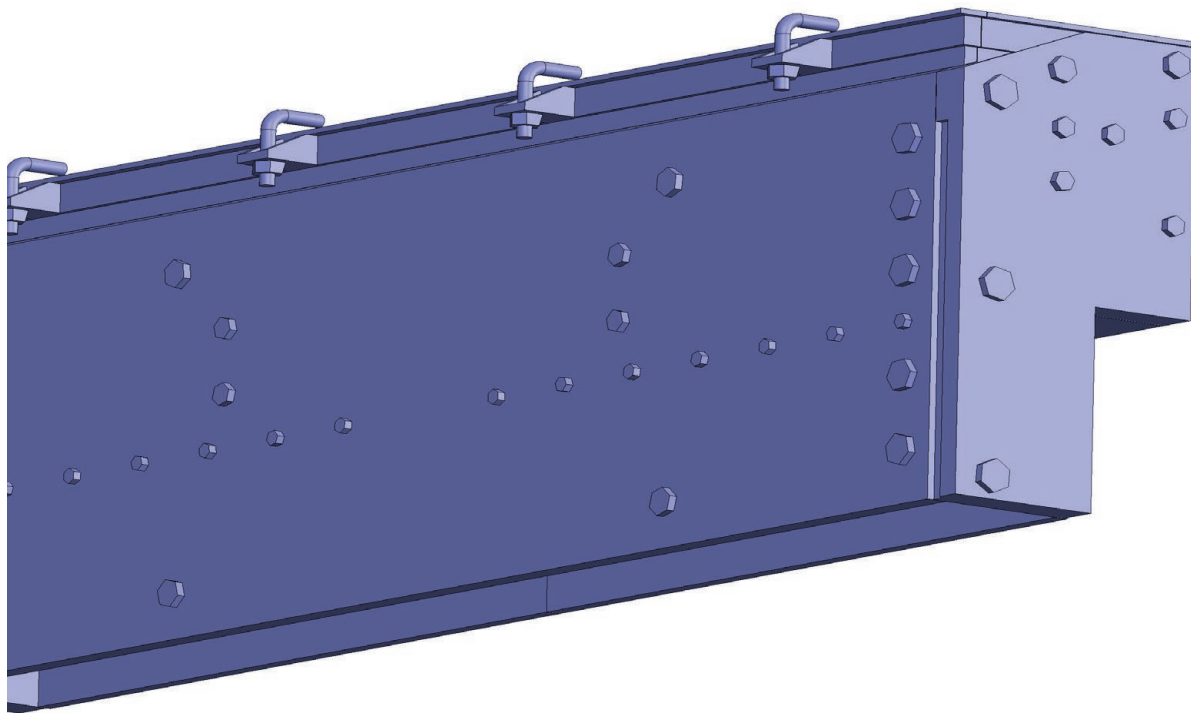
Glue parts 02-51C and 02-51D.

Assembly 02 - Upper Hull



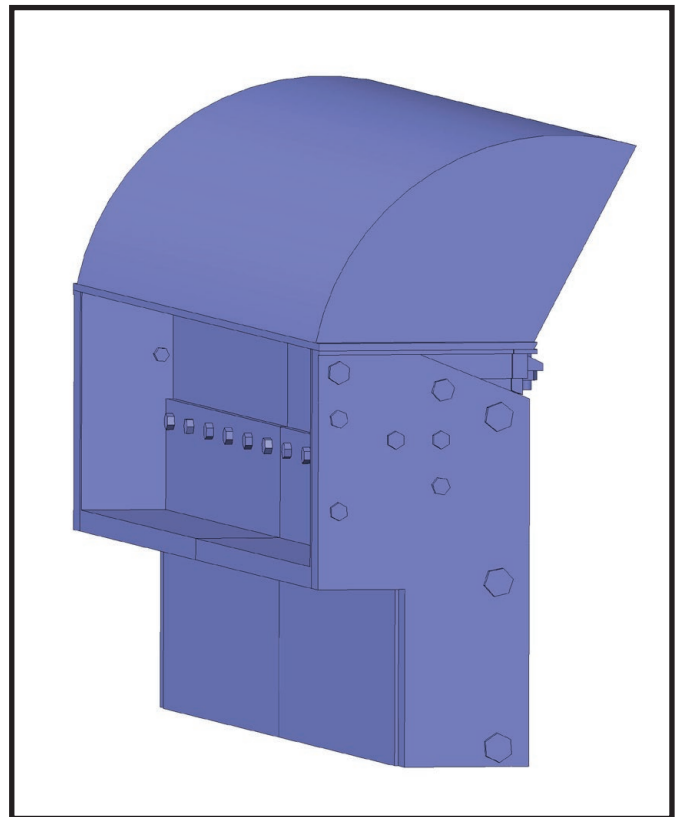
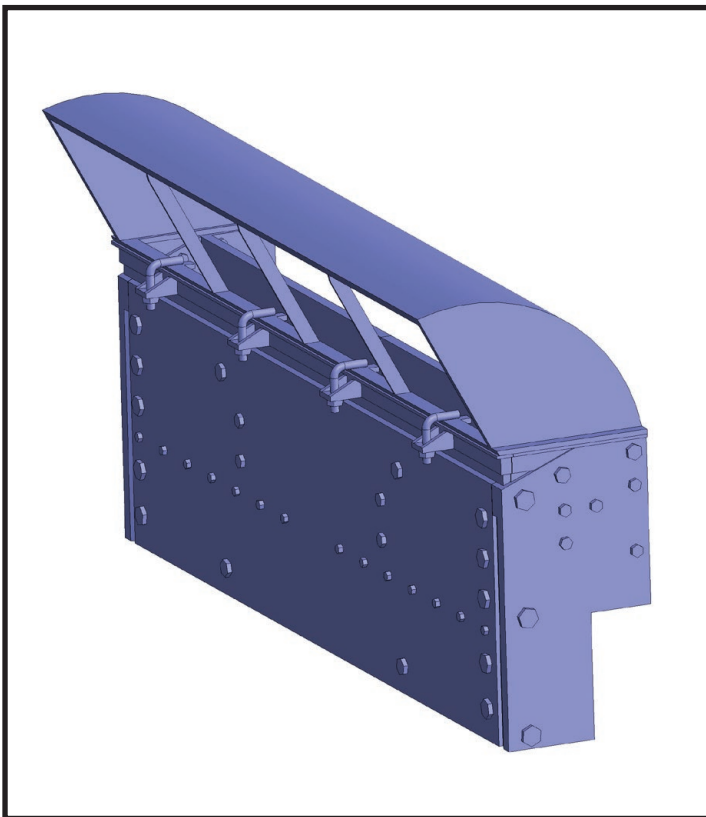
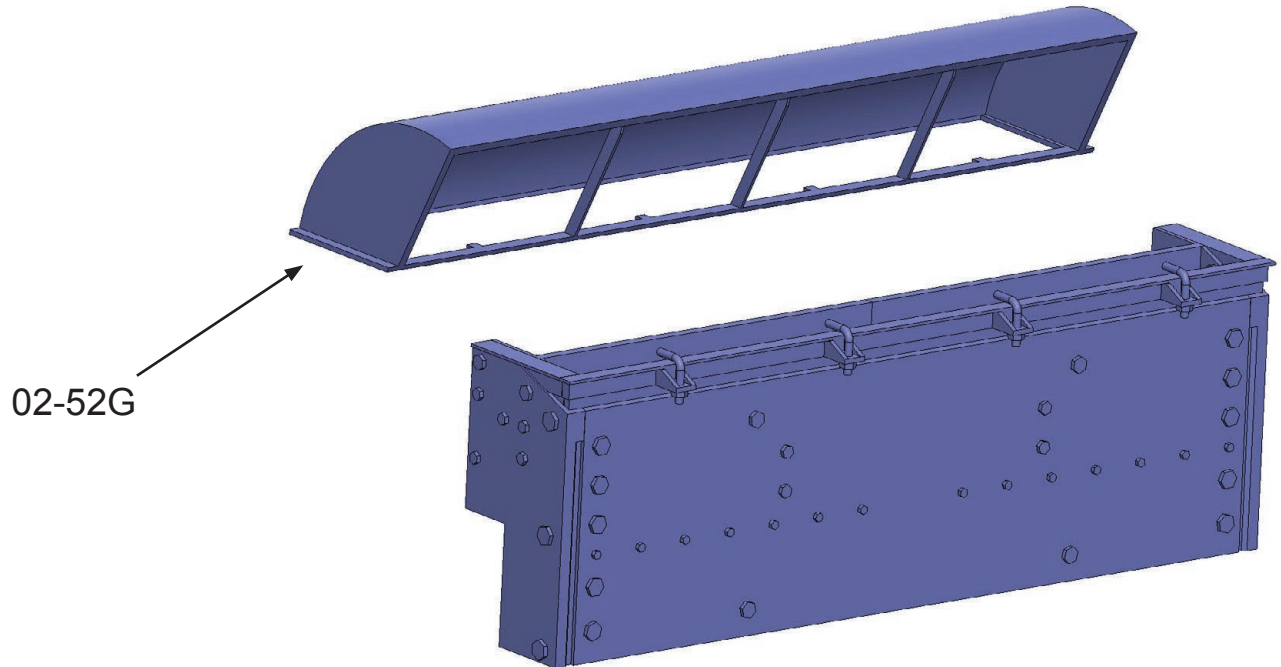
Glue parts 02-51E and 02-51F.
You can use a simplified, alternative version of part 02-51EF.

Assembly 02 - Upper Hull



Correct position of parts 02-51A to 02-51F.

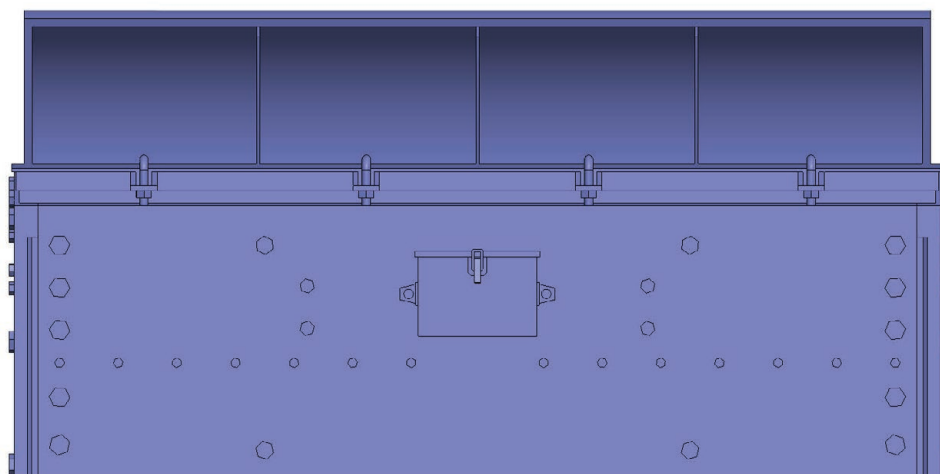
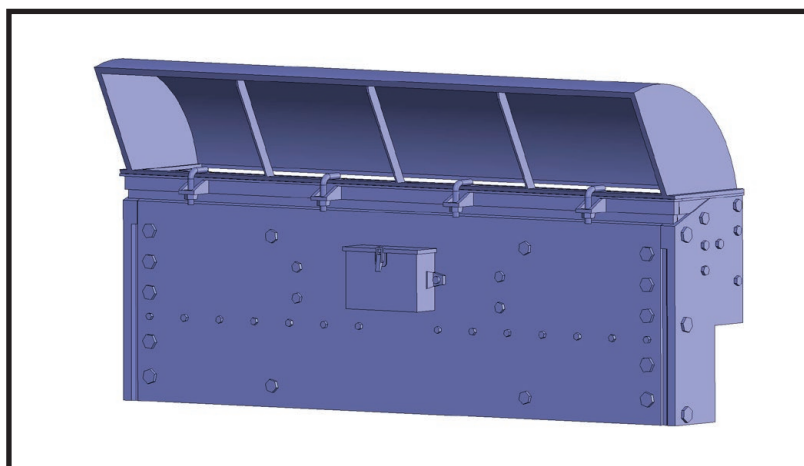
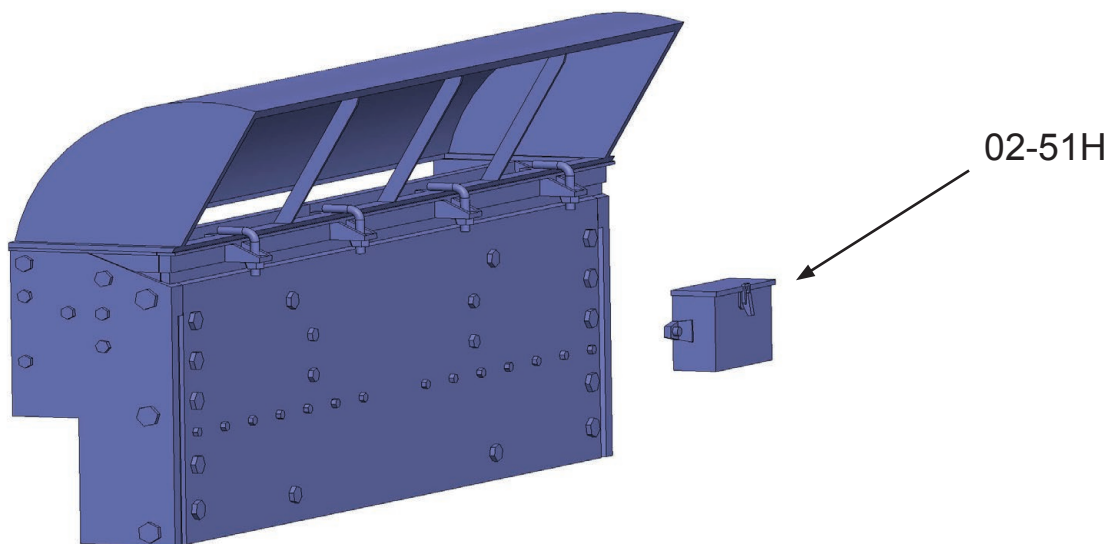
Assembly 02 - Upper Hull



Glue part 02-51G.

If you are interested in another version of the exhaust, see file 02-51G_alt.

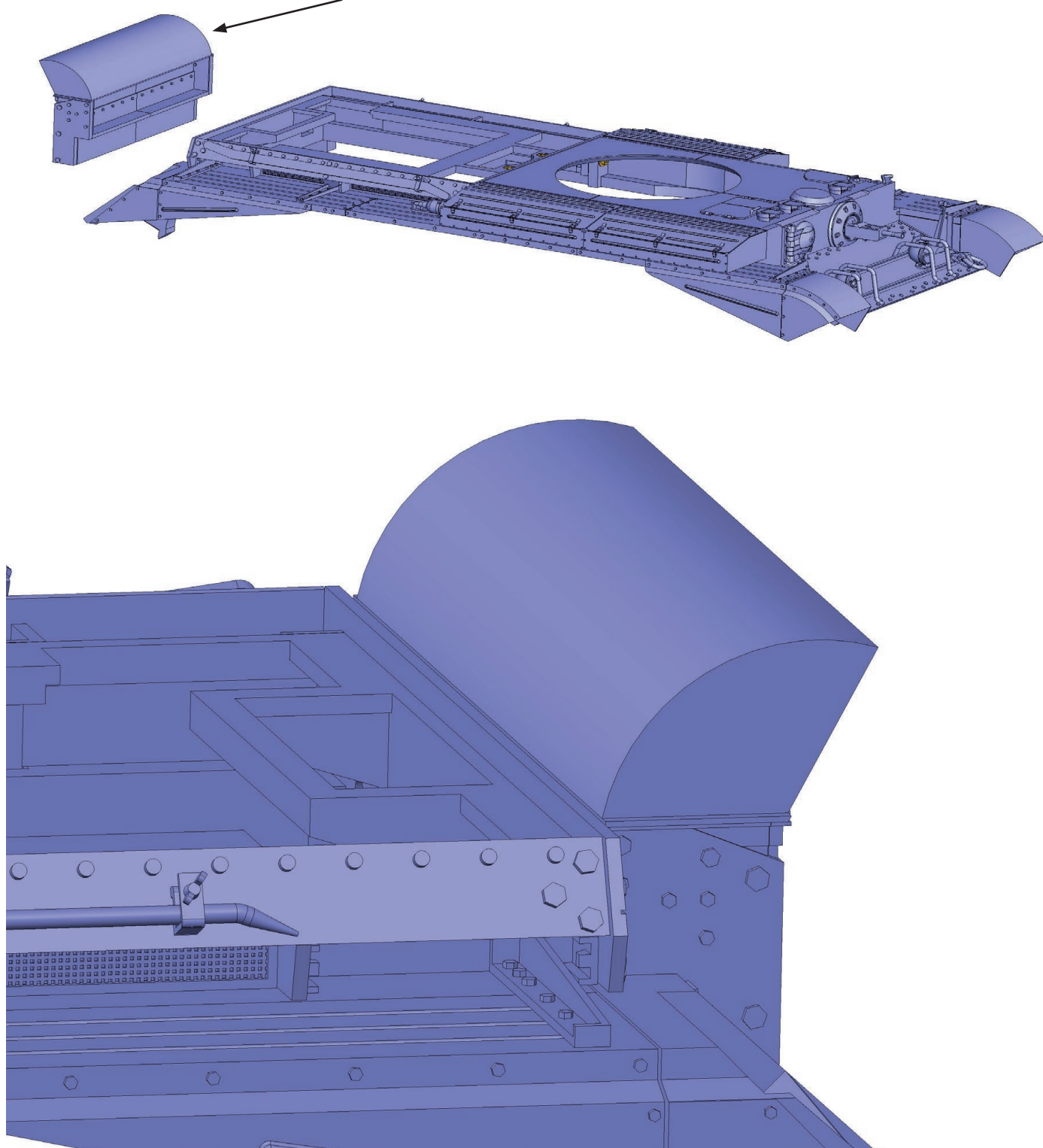
Assembly 02 - Upper Hull



Glue part 02-51H.

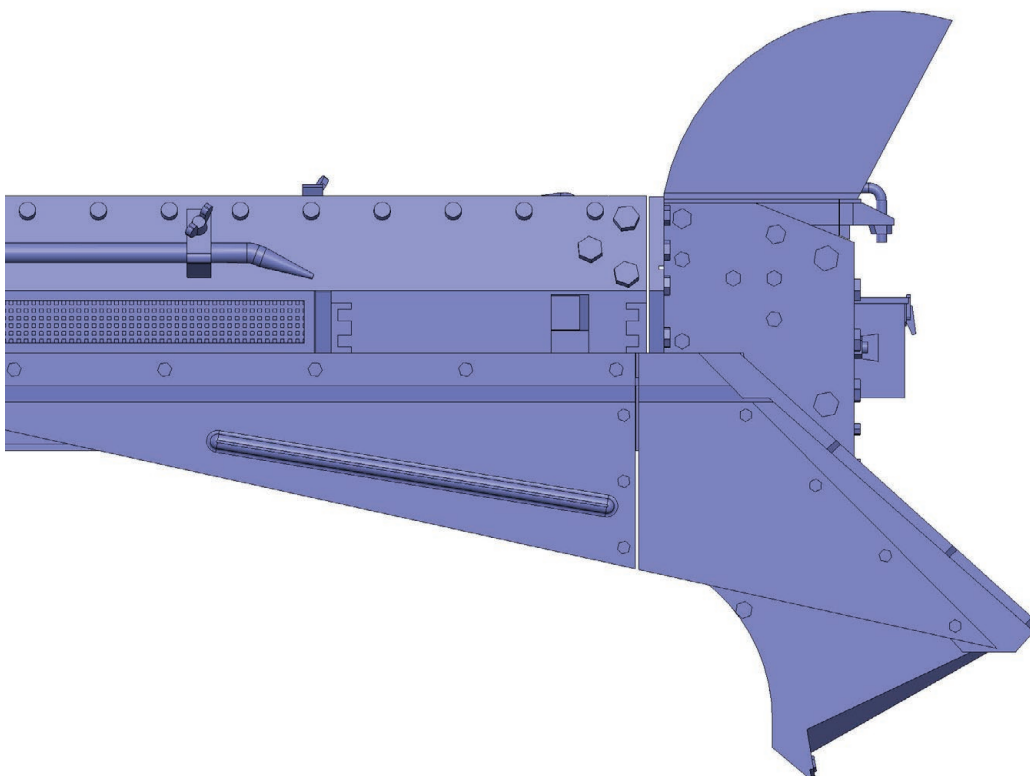
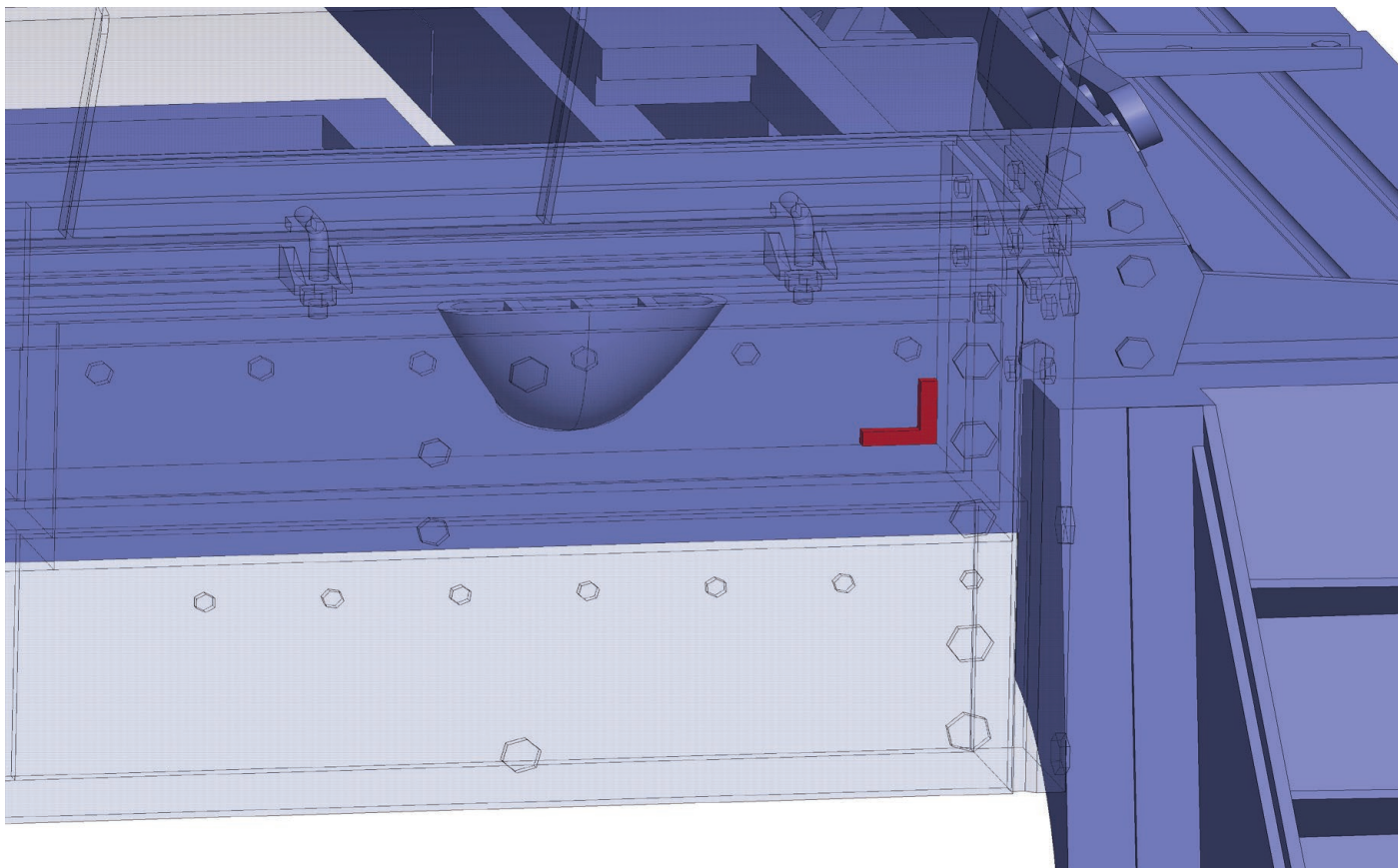
Assembly 02 - Upper Hull

02-51A+B+C+D+E+F+G+H



Glue the parts assemblies from 02-51A to 02-51H.

Assembly 02 - Upper Hull



Correct position of the parts assemblies 02-51A to 02-51H.
Areas marked in red are used for precise fitting of parts.

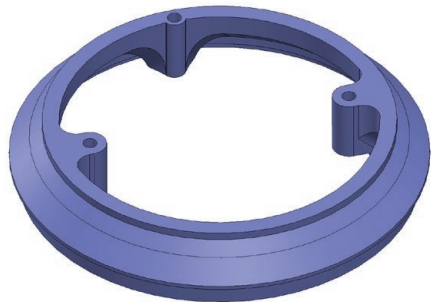
181

Cromwell Mk.IV

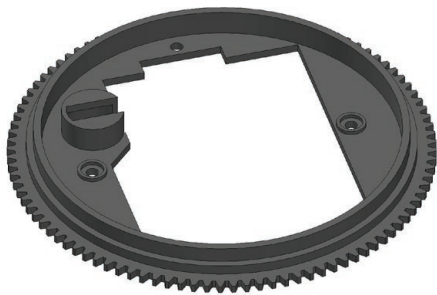
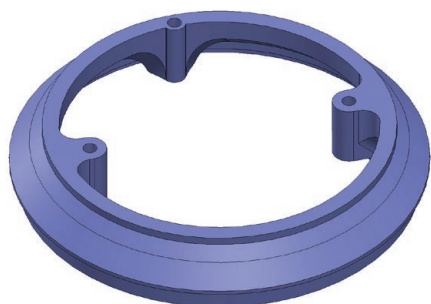
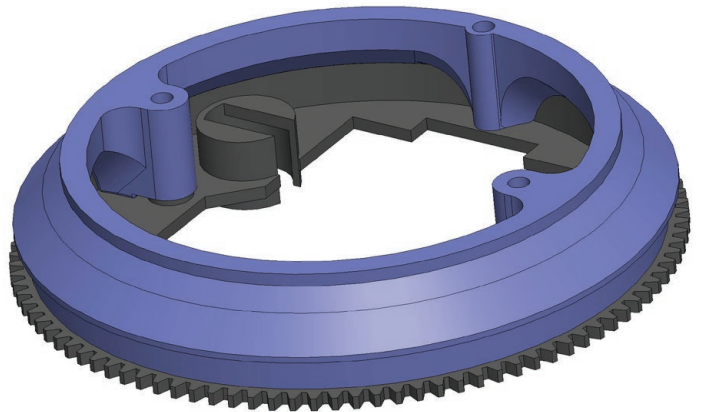
Assembly guide

Assembly 02 - Upper Hull

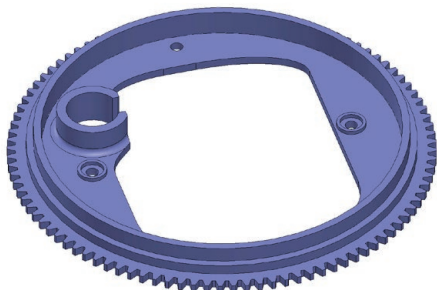
Assembly 02 - Upper Hull



02-52A

Heng-Long® compatible
360° turret rotation ring**OR**

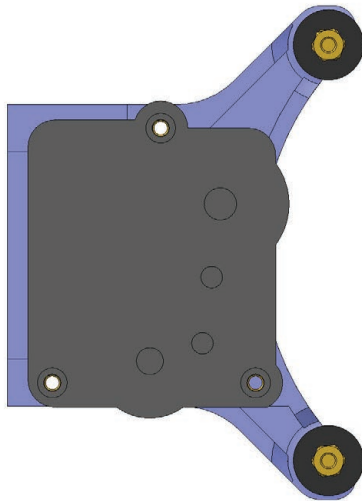
02-52A



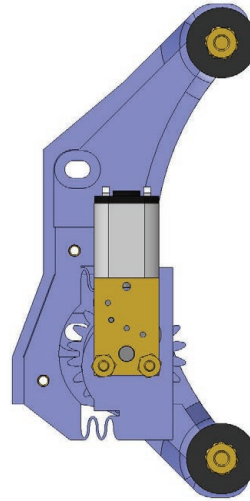
02-52B

Prepare a rotating ring.
Use a Heng-Long® compatible 360 ° rotation ring.
Attach it to part 02-53A. If you do not have the ring, use part 02-53B.

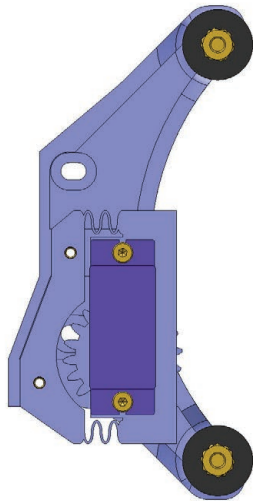
Assembly 02 - Upper Hull



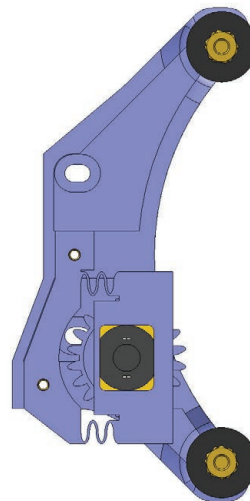
Heng-Long® or compatible
turret rotation motor
+02-53_HL



JGY-N20 or compatible
geared N20 motor with worm gear
and 90° angle shaft
+02-53_S



FS90R 360° servo
or compatible
+02-53_S

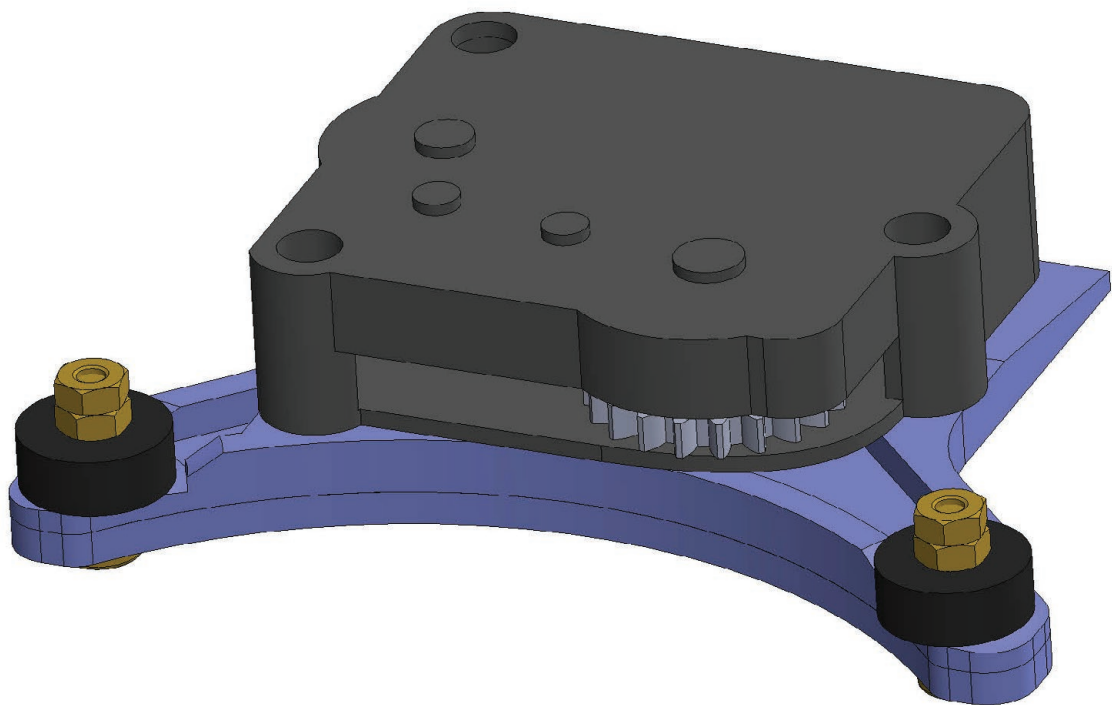


N20 geared motor
or **HPCB Pololu Micro Motor**
+02-53_S

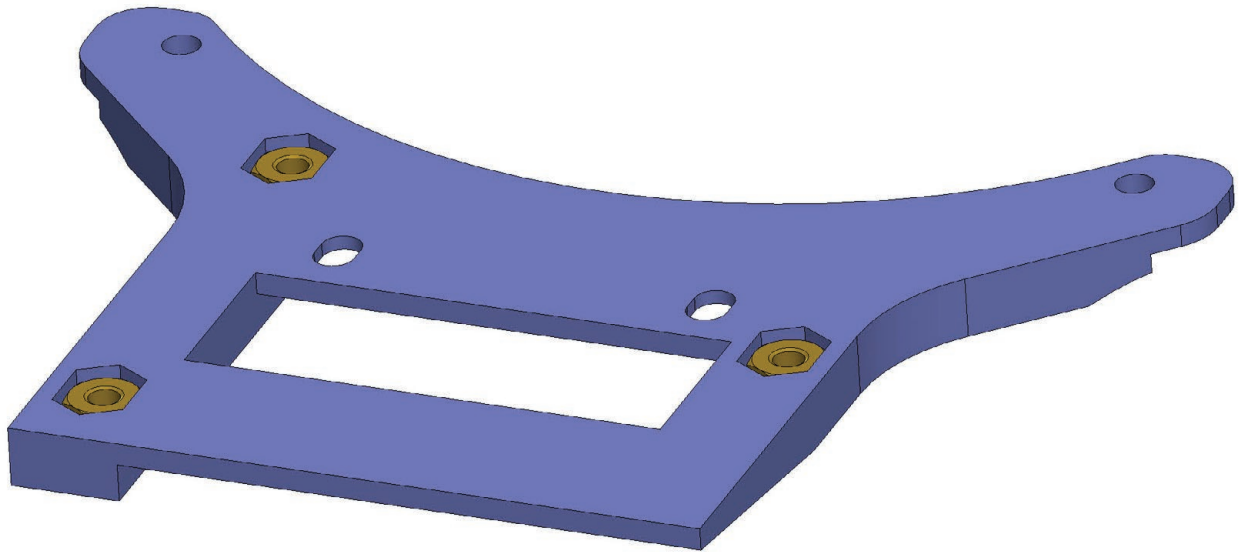
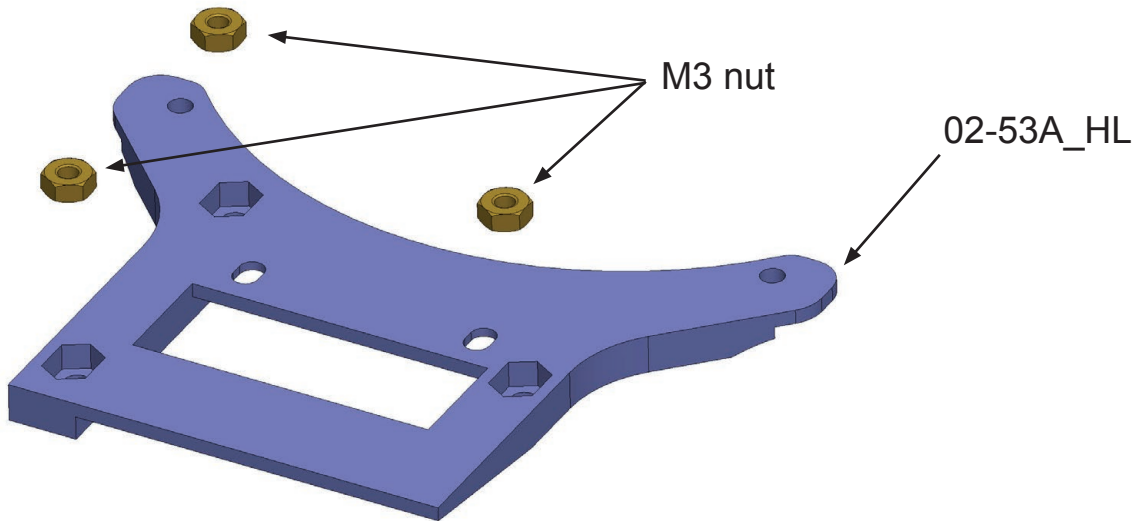
You can use 4 different types of motors for turret rotation.
Use motors compatible with the Heng-Long® turret rotation motor with parts 02-53_HL.
Use all other motor types with parts 02-53_S.

Assembly 02 - Upper Hull

**Turret rotation -
Heng-Long® compatible**



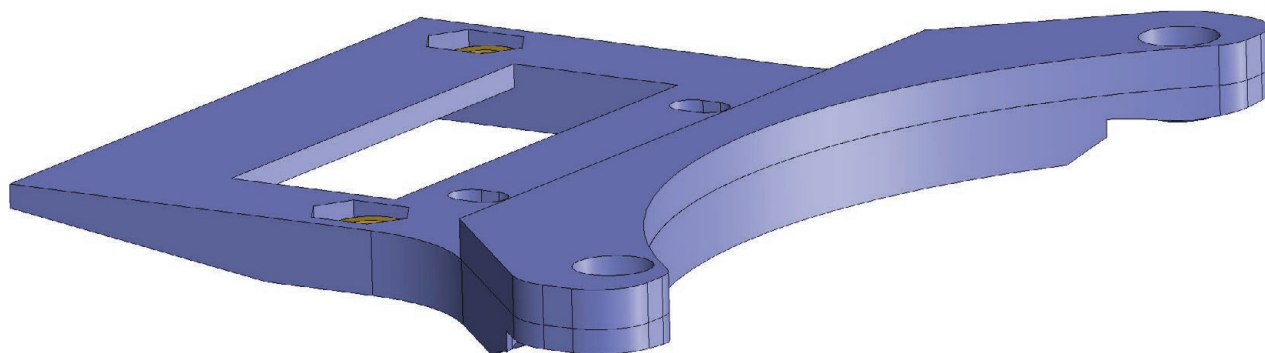
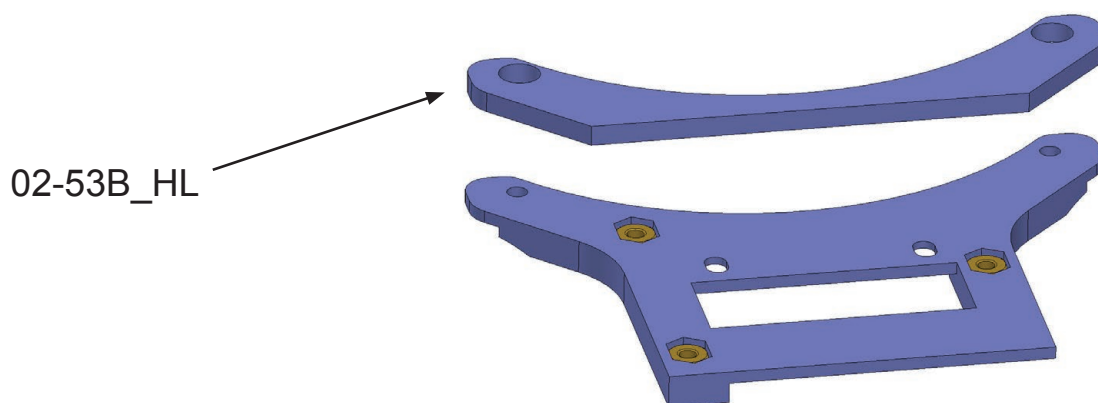
Assembly 02 - Upper Hull

**Turret rotation -
Heng-Long® compatible**

Insert three M3 nuts into part 02-53A_HL.

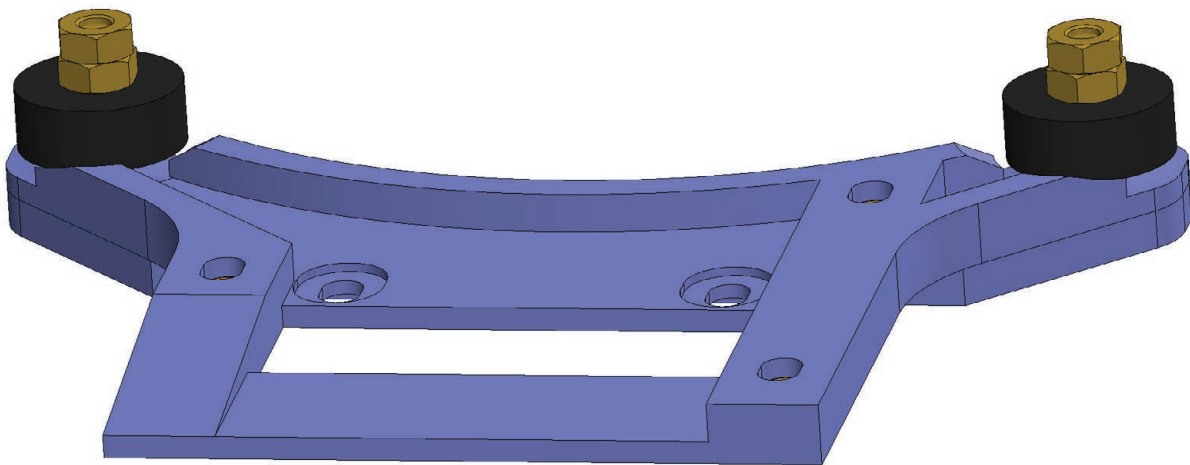
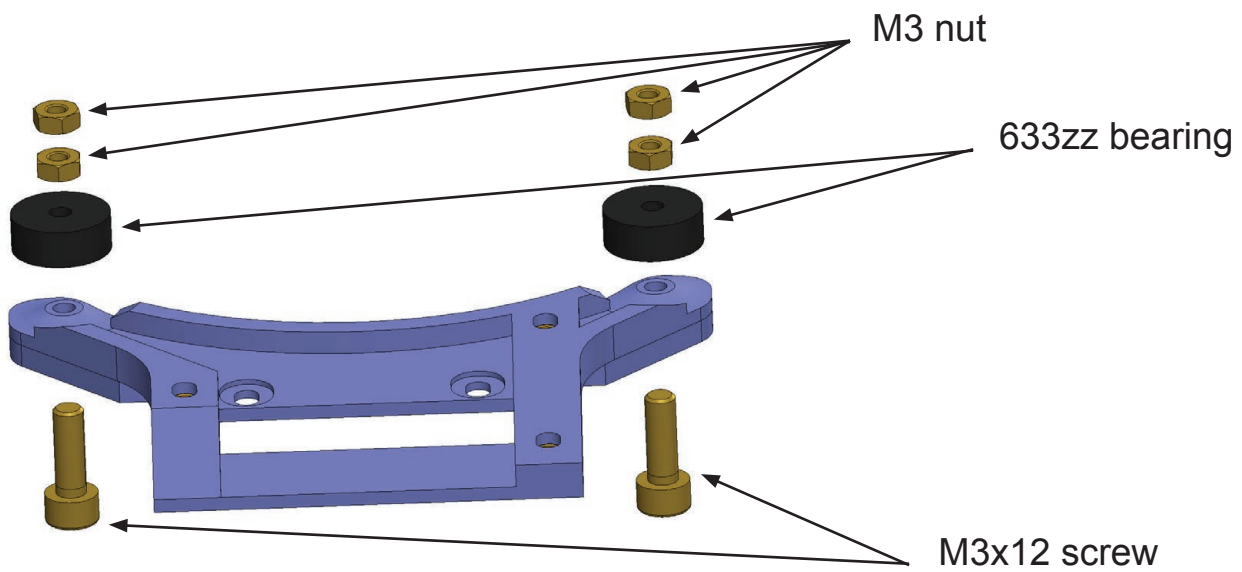
Assembly 02 - Upper Hull

**Turret rotation -
Heng-Long® compatible**



Glue part 02-53B_HL.

Assembly 02 - Upper Hull

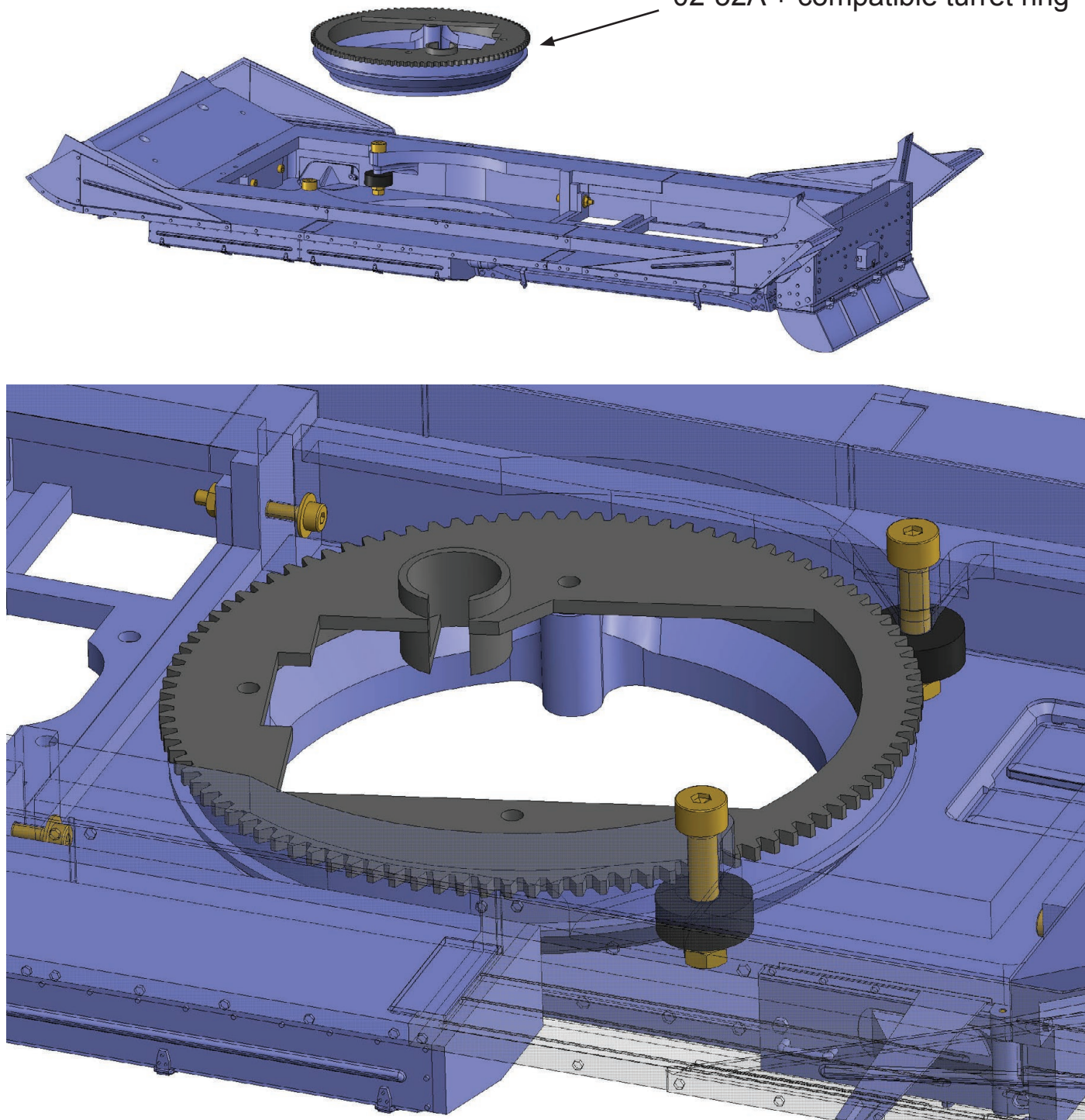
**Turret rotation -
Heng-Long® compatible**

Attach two bearings type 633ZZ. Use M3x12 screws.
Secure with a pair of nuts tightened against each other, or use self-locking nuts.

Assembly 02 - Upper Hull

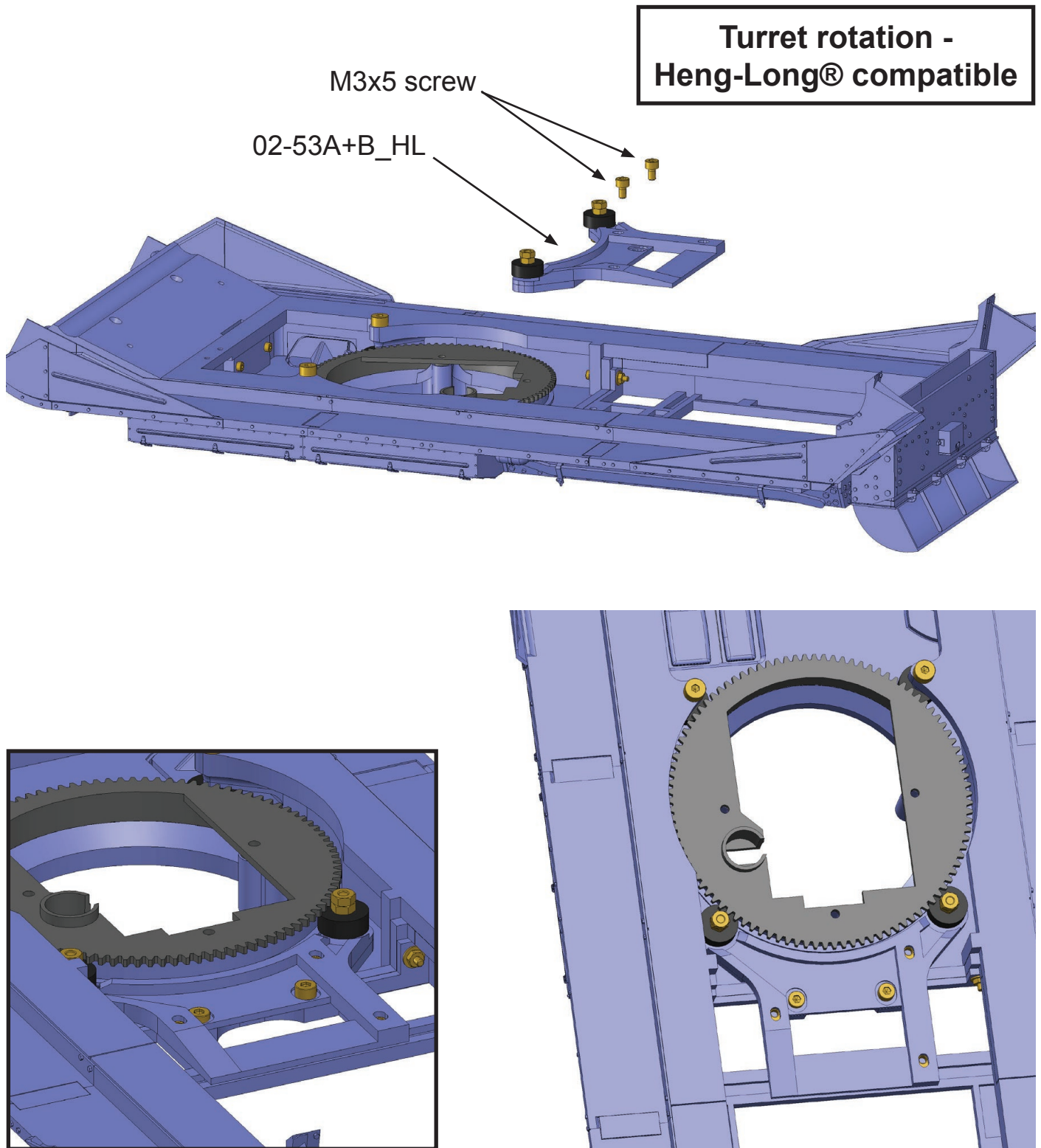
**Turret rotation -
Heng-Long® compatible**

02-52A + compatible turret ring



Insert one of the two versions of the turret rotation ring.
The bearings shall be placed in the grooves.

Assembly 02 - Upper Hull



Fix the turret rotation ring. Insert the 02-53A_HL and 02-53B_HL parts assembly.
Fasten with two M3x5mm screws (or M3x6mm with washers).

The screws move in the grooves.

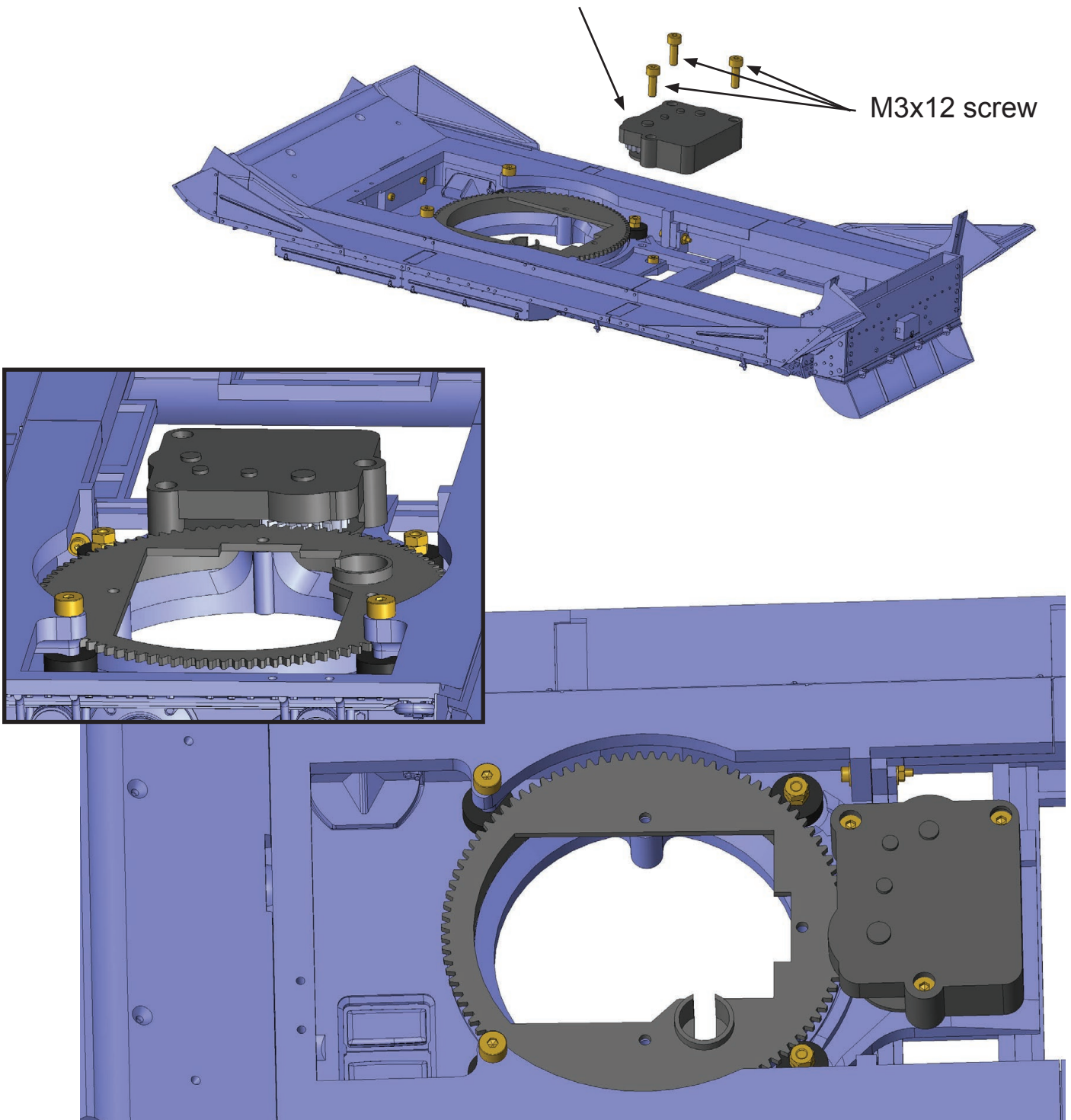
Use these grooves to define the clearance between the bearings and the turret ring.

Assembly 02 - Upper Hull

**Turret rotation -
Heng-Long® compatible**

Heng-Long® or compatible
turret rotation motor

M3x12 screw



Fasten the motor with three M3x12mm screws. The screws move in the grooves.
Use these grooves to define the clearance between the gears.

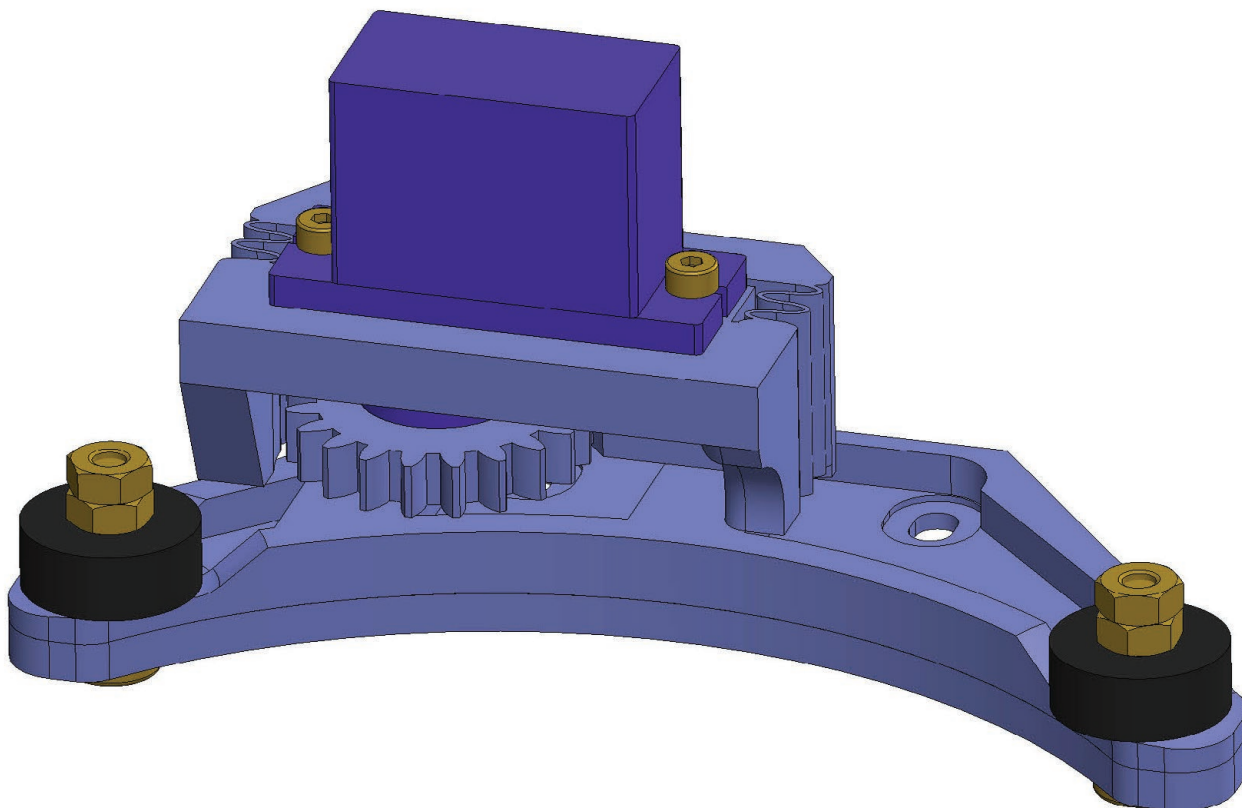
191

Cromwell Mk.IV
Assembly guide

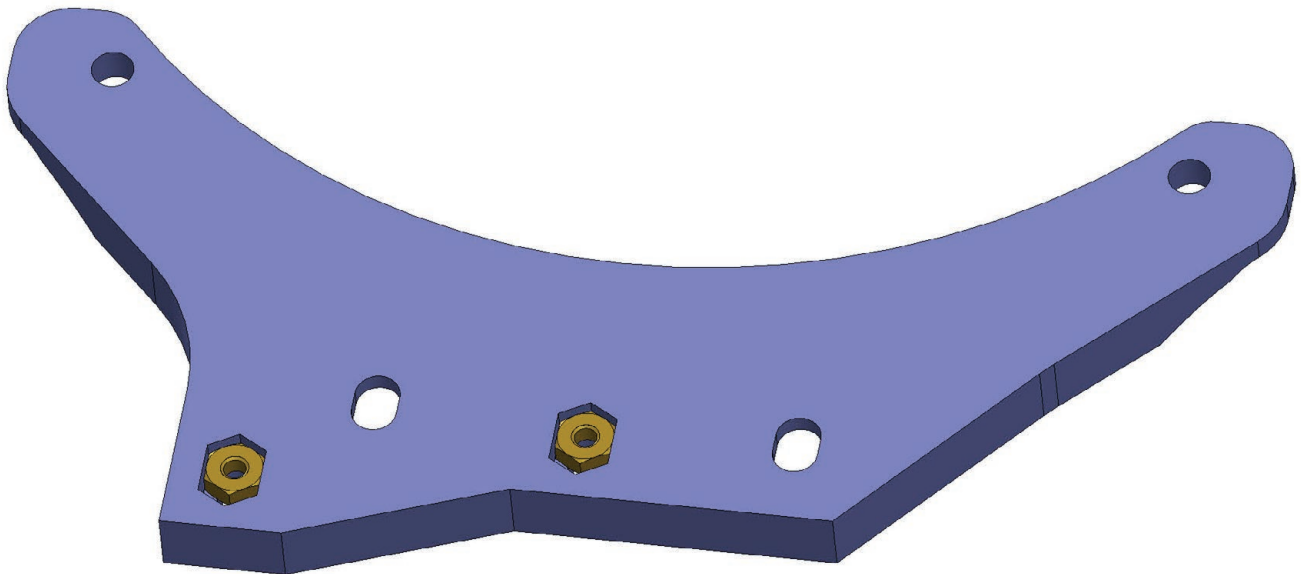
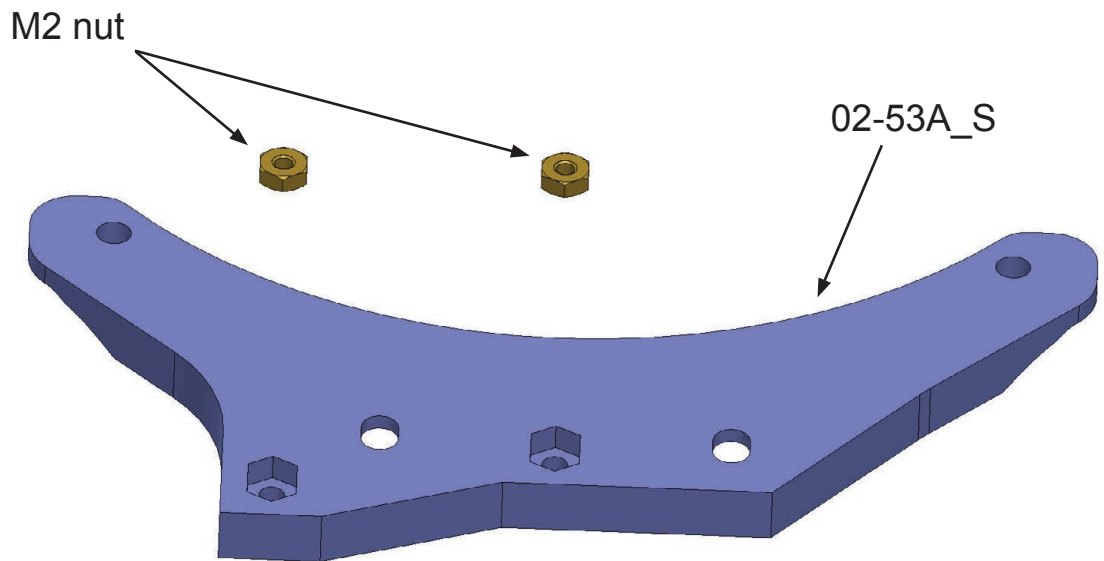
Assembly 02 - Upper Hull

Assembly 02 - Upper Hull

**FS90R 360° servo
or compatible**



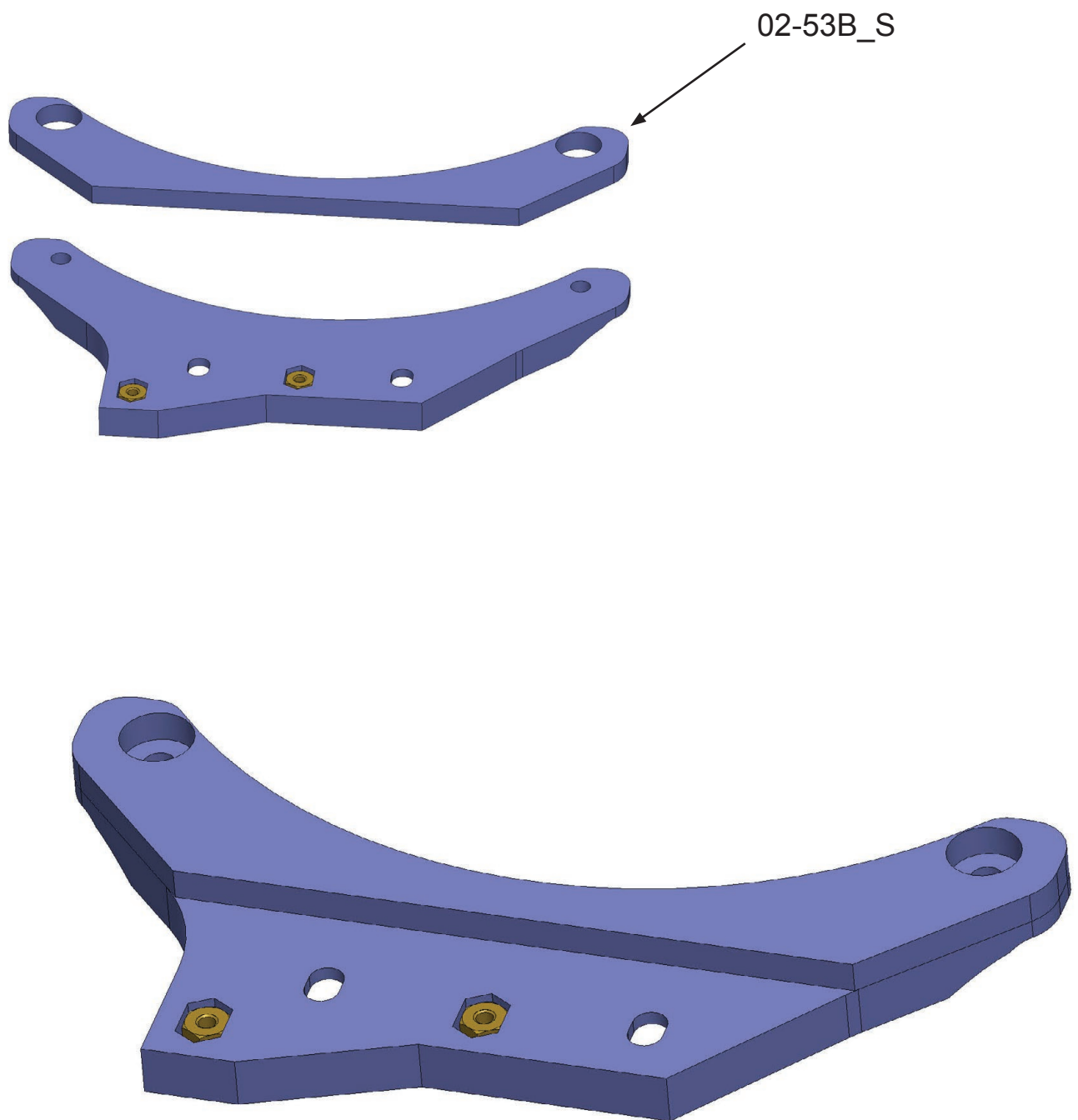
Assembly 02 - Upper Hull

**FS90R 360° servo
or compatible**

Insert two M2 nuts into part 02-53A_S.

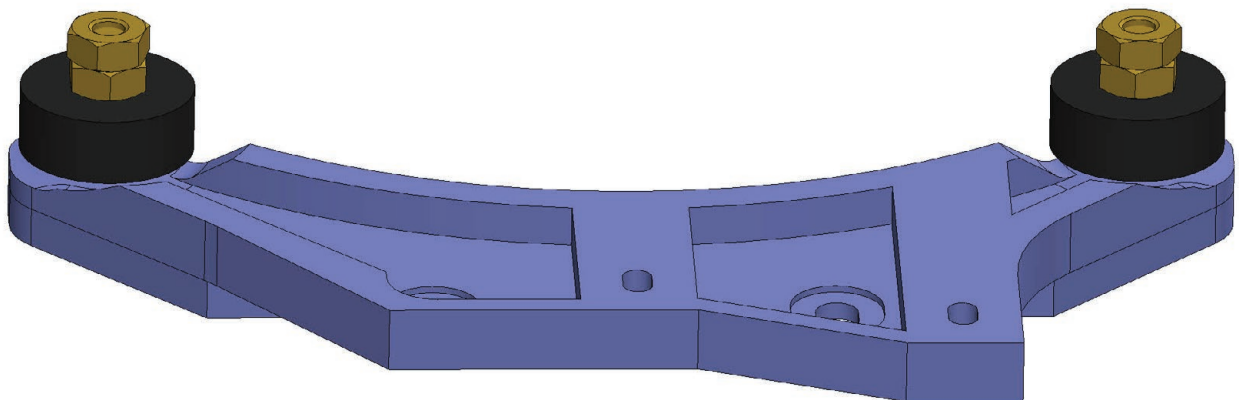
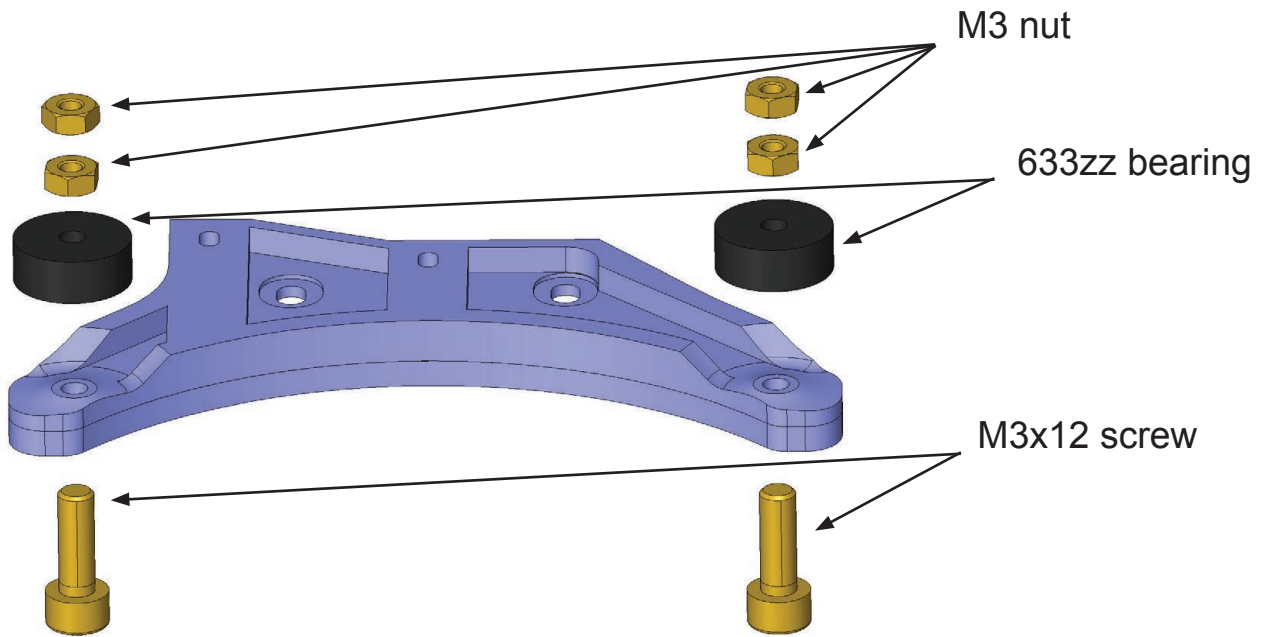
Assembly 02 - Upper Hull

**FS90R 360° servo
or compatible**



Glue part 02-53B_S.

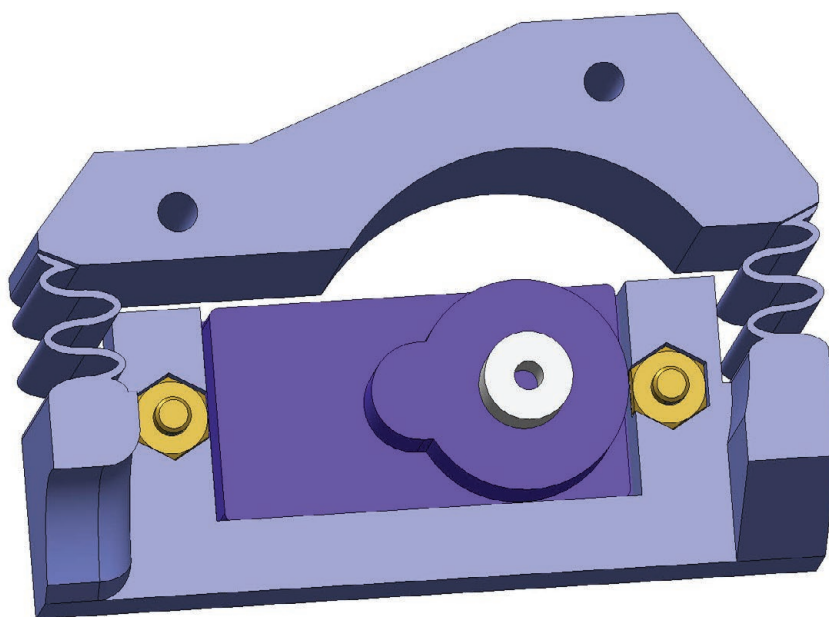
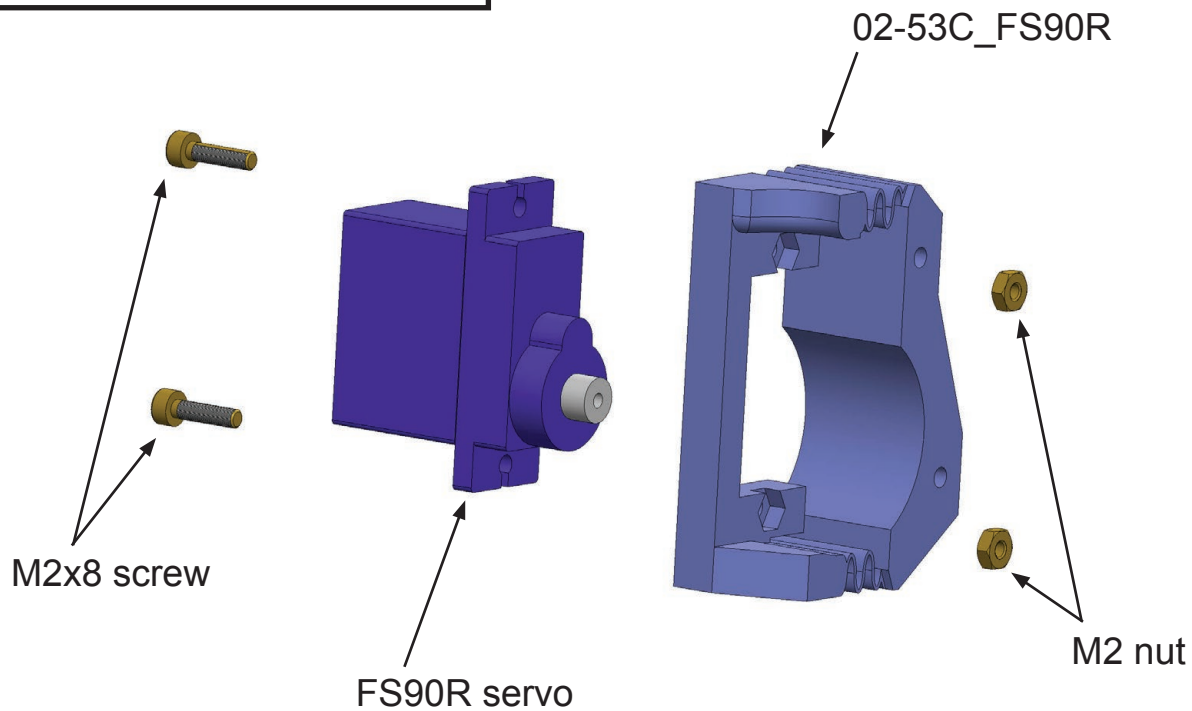
Assembly 02 - Upper Hull

**FS90R 360° servo
or compatible**

Attach two bearings type 633ZZ. Use M3x12 screws.
Secure with a pair of nuts tightened against each other, or use self-locking nuts.

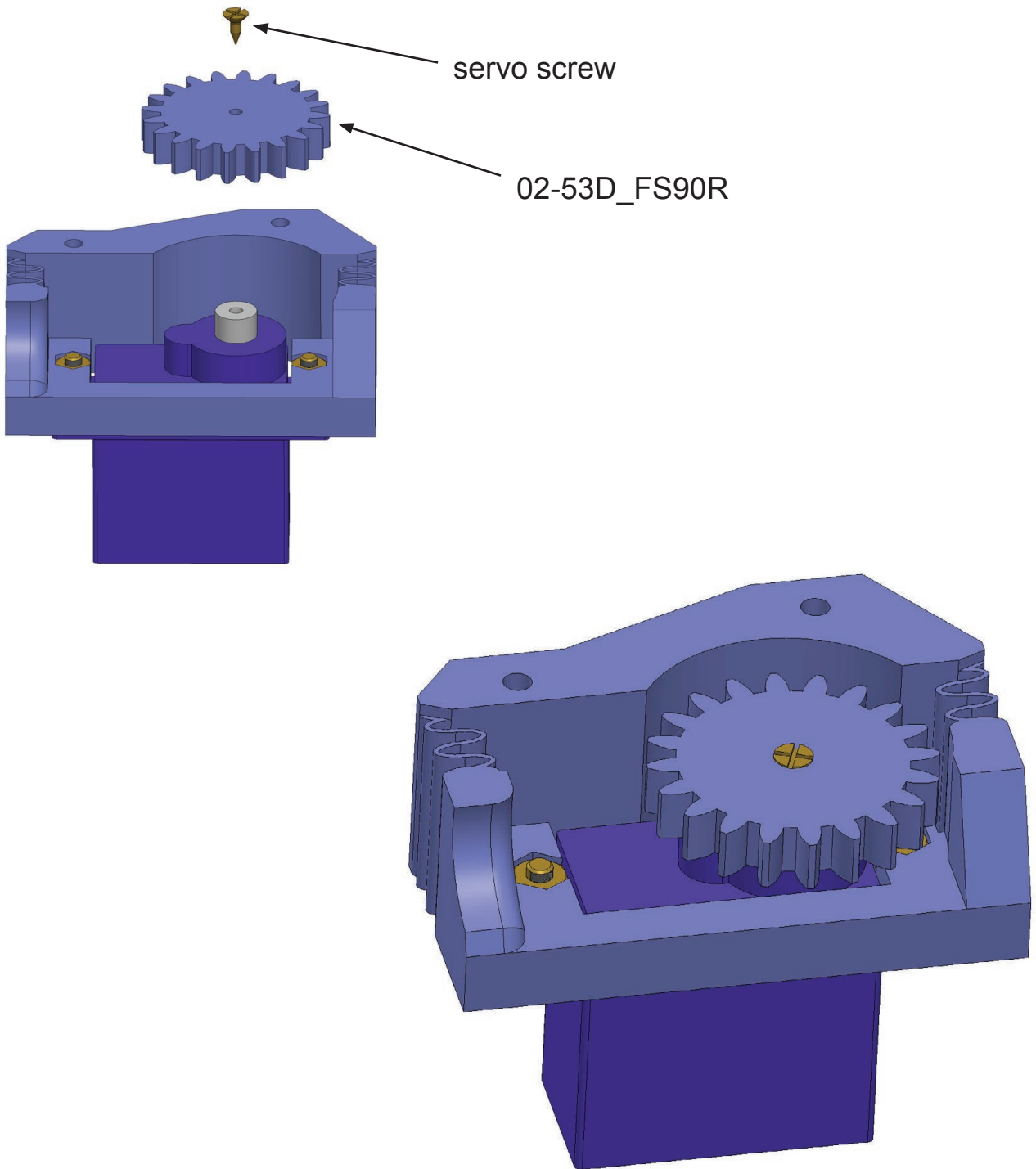
Assembly 02 - Upper Hull

**FS90R 360° servo
or compatible**



Attach a FS90R or other compatible servo to part 02-53C_FS90R.
Use two M2x8 screws and M2 nuts.

Assembly 02 - Upper Hull

**FS90R 360° servo
or compatible**

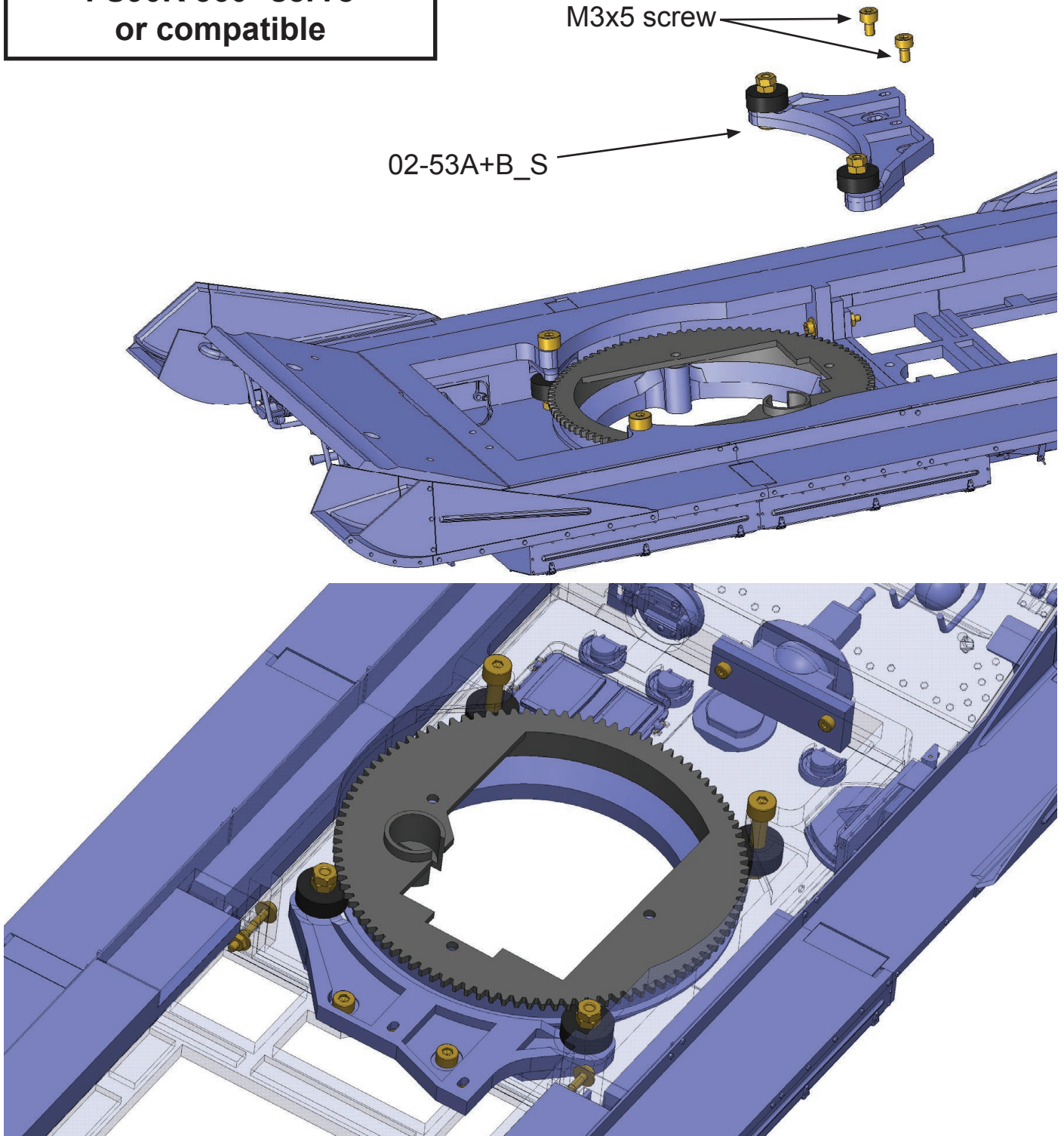
Attach the 02-53D_FS90R gear to the servo using the screw provided.
The screw is part of the servomotor package.

Assembly 02 - Upper Hull

**FS90R 360° servo
or compatible**

M3x5 screw

02-53A+B_S

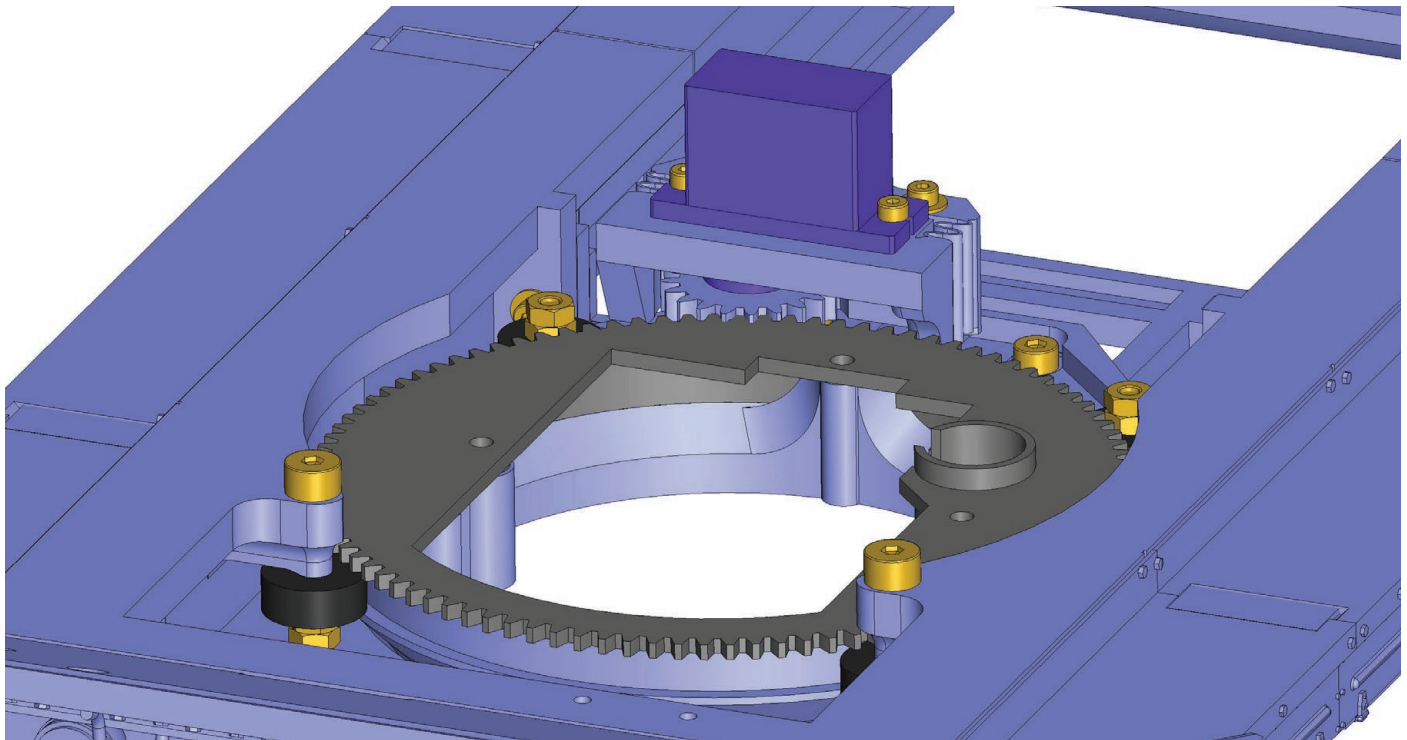
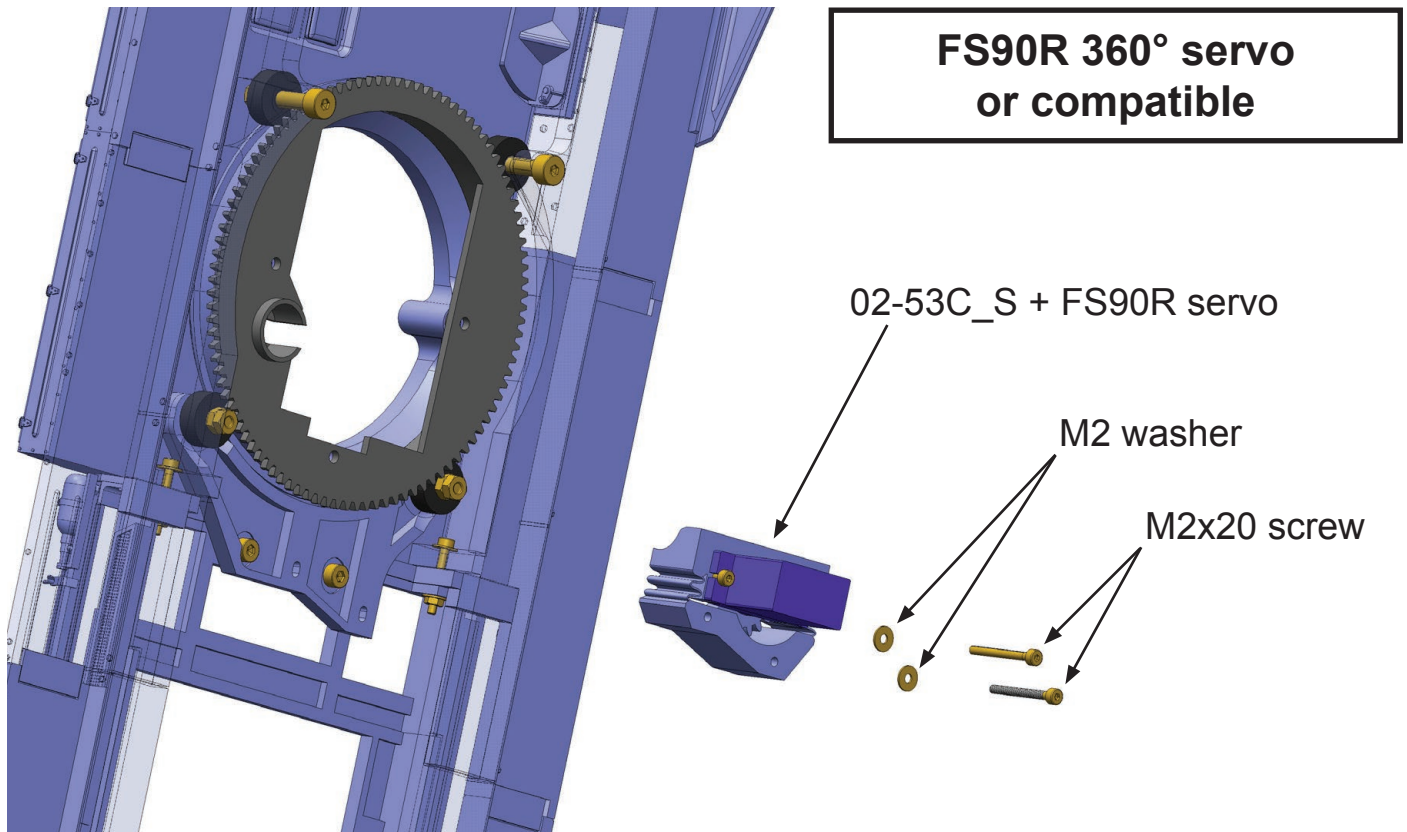


Fix the turret rotation ring. Insert the parts assembly 02-53A_S + 02-53B_S.
Fasten with two M3x5mm screws (or M3x6mm with washers).

The screws move in the grooves.

Use these grooves to define the clearance between the bearings and the turret ring.

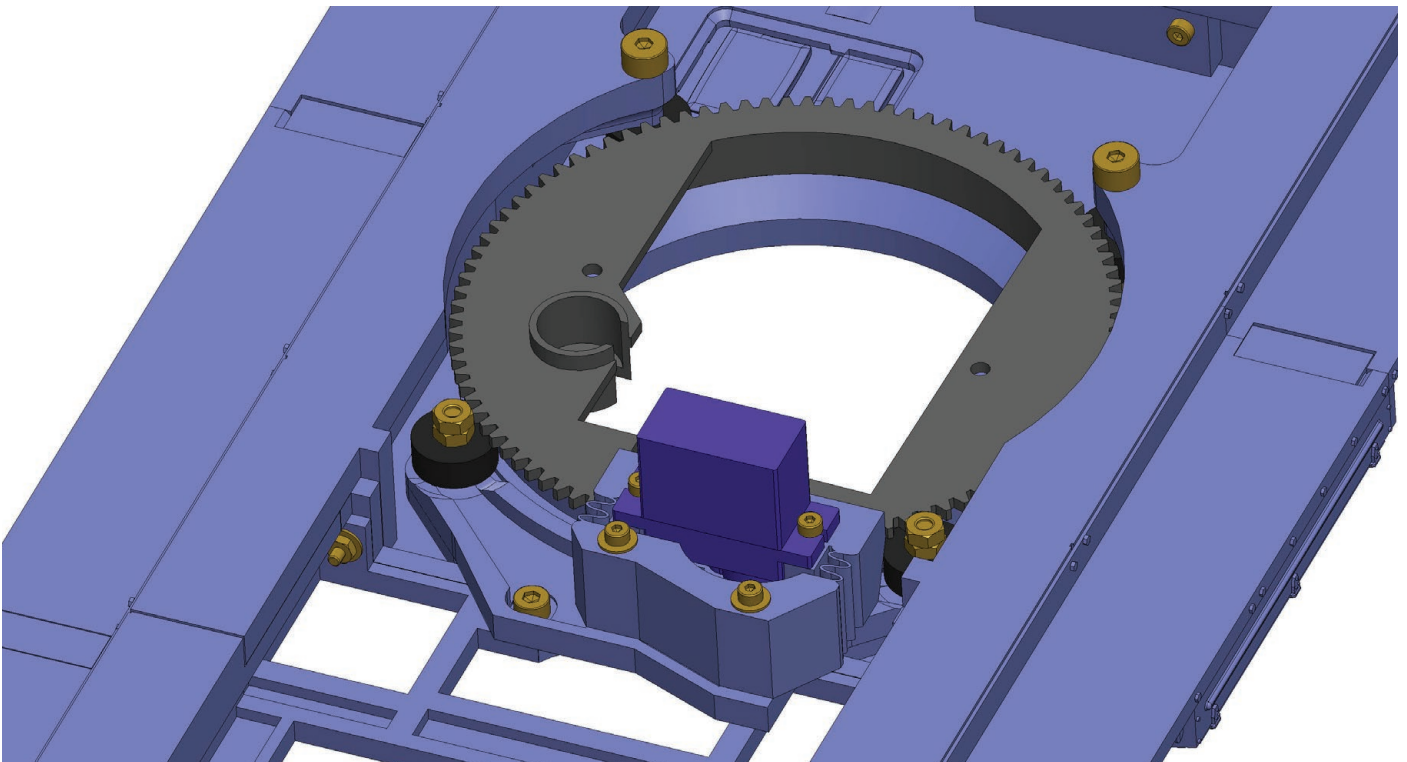
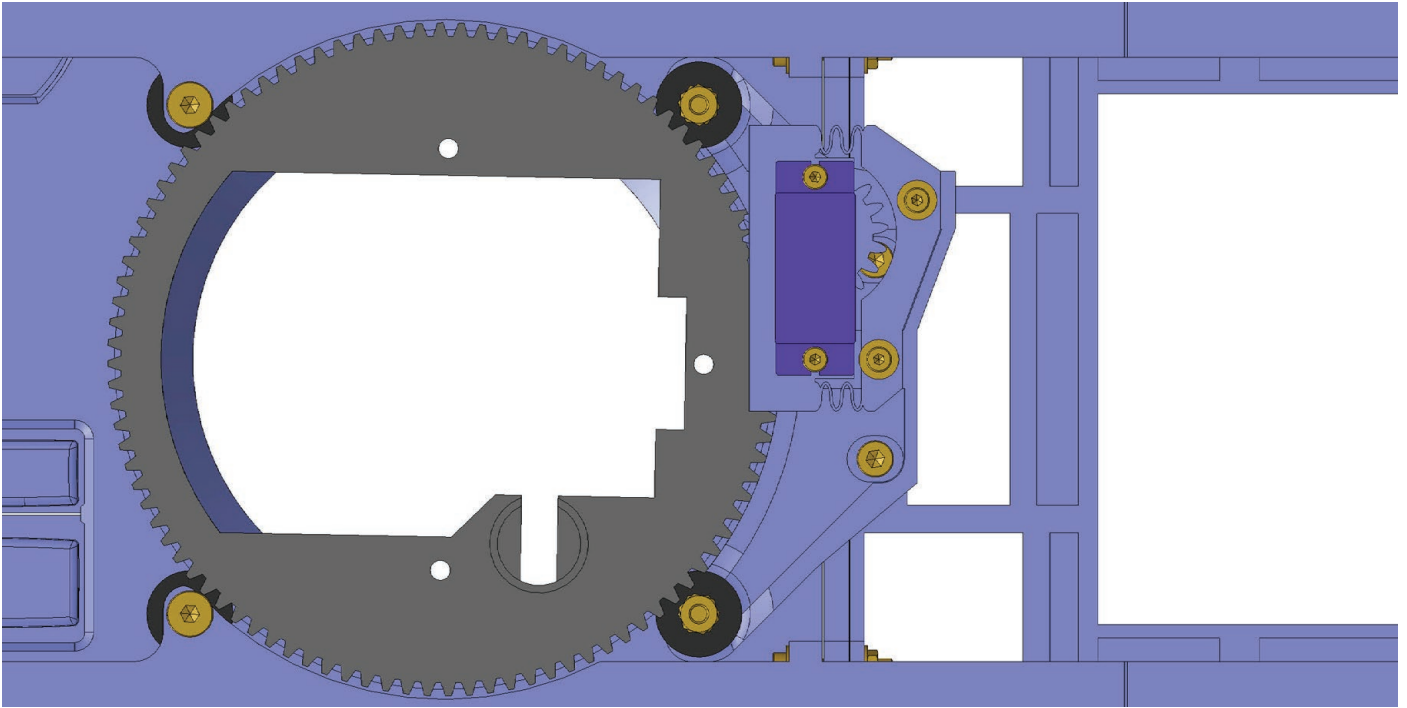
Assembly 02 - Upper Hull



Fasten the servo with two M2x20mm screws. Use washers.
The screws move in the grooves.
Use these grooves to define the clearance between the gears.

Assembly 02 - Upper Hull

**FS90R 360° servo
or compatible**



Auxiliary views for servo installation.

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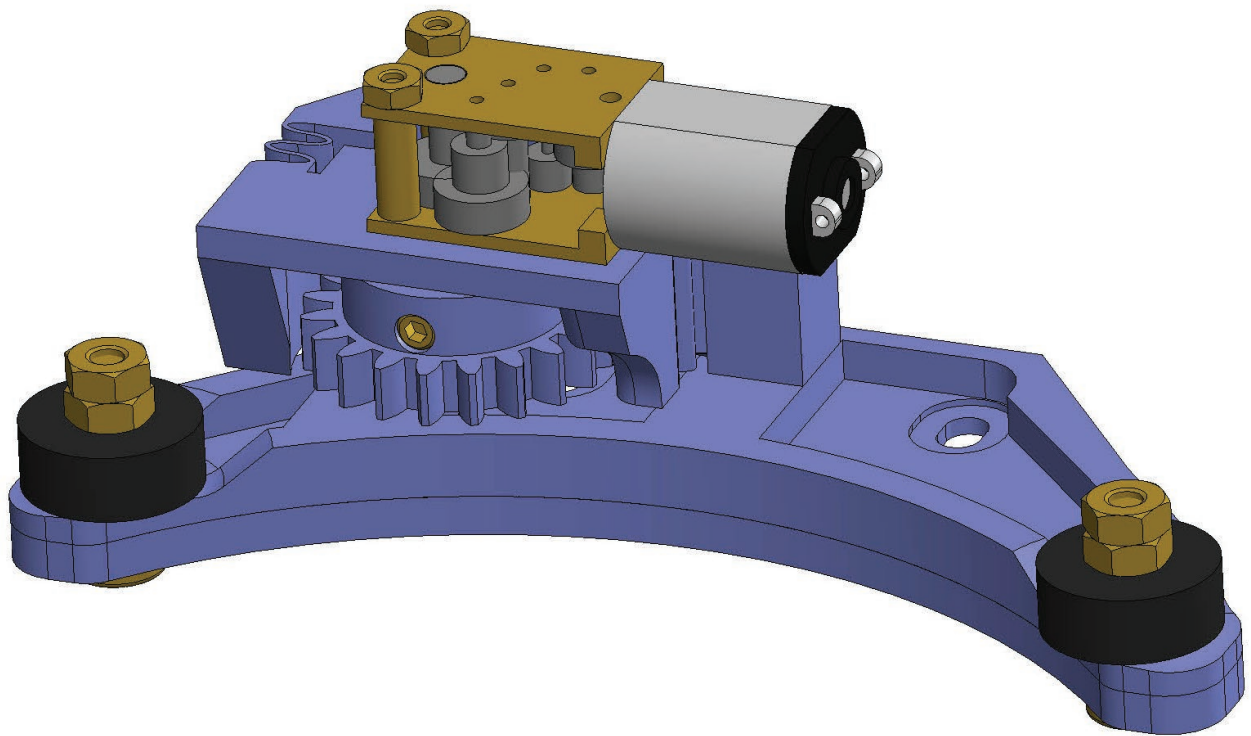
Cromwell Mk.IV

Assembly guide

Assembly 02 - Upper Hull

Assembly 02 - Upper Hull

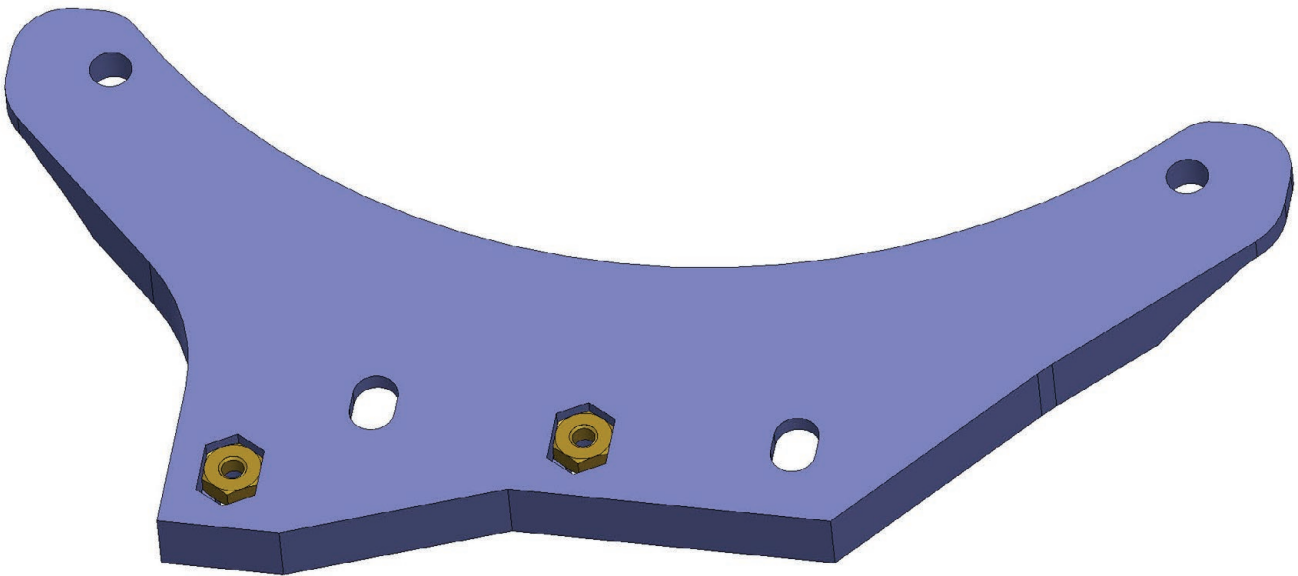
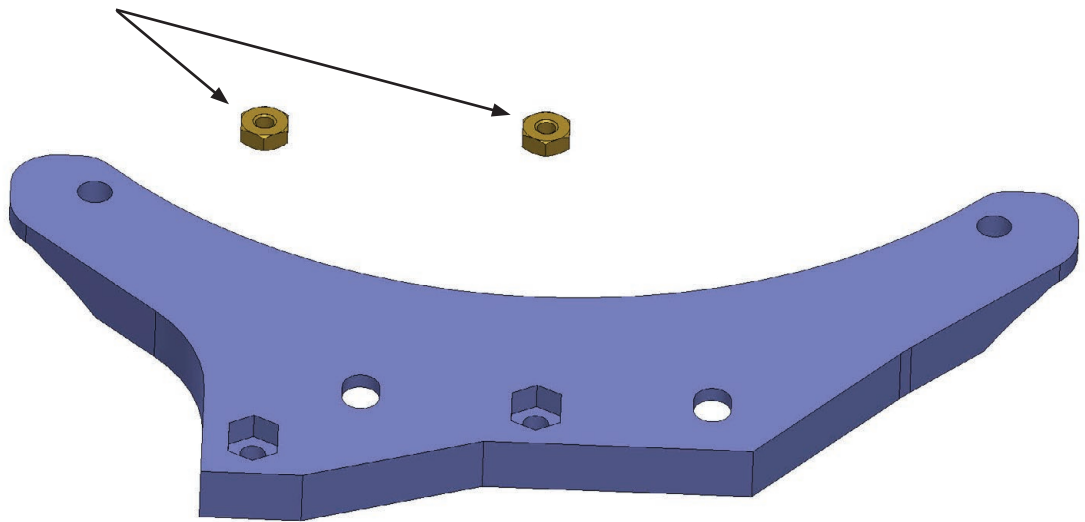
**JGY-N20 or compatible
geared N20 motor**



Assembly 02 - Upper Hull

**JGY-N20 or compatible
geared N20 motor**

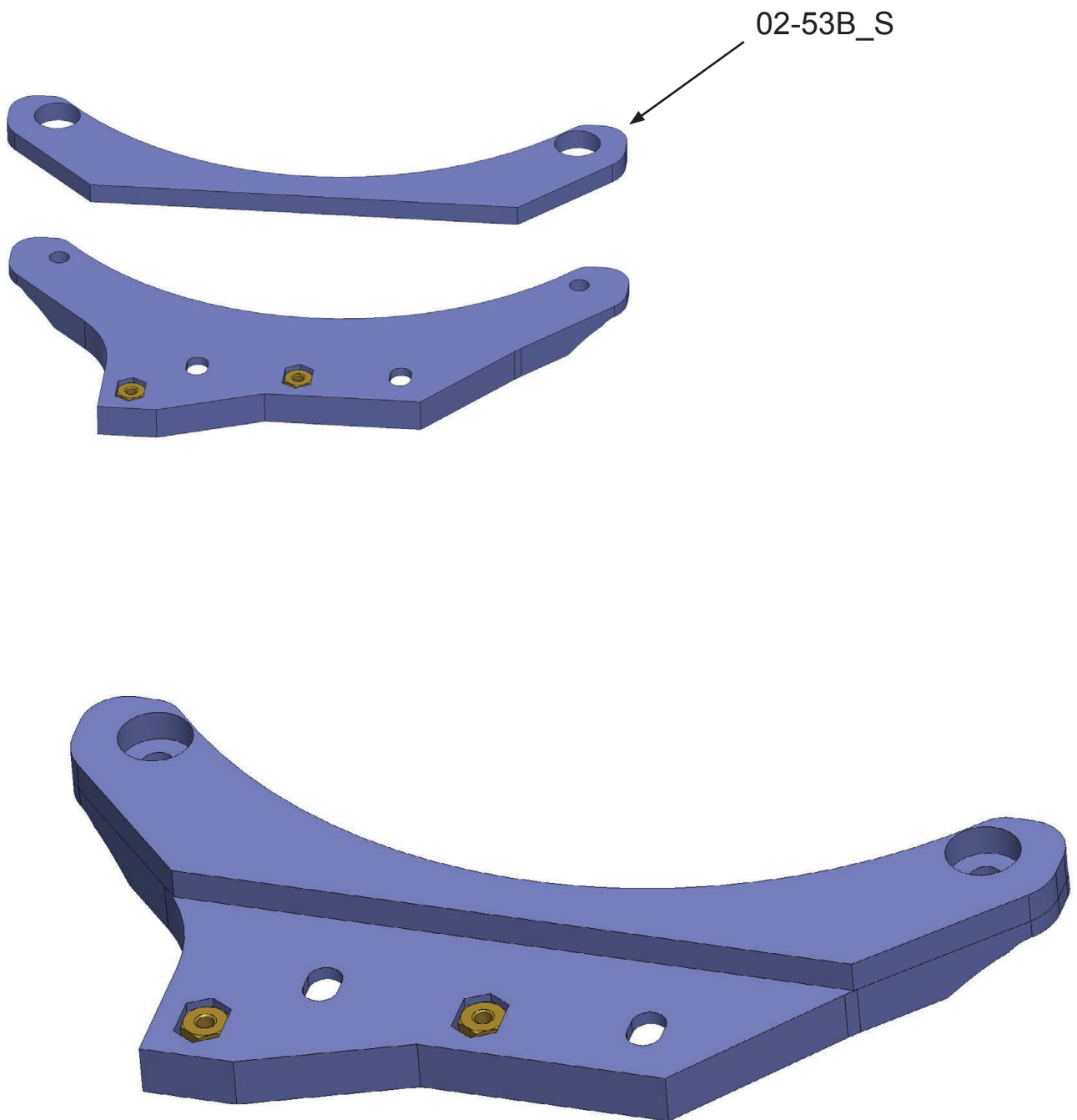
M2 nut



Insert two M2 nuts into part 02-53A_S.

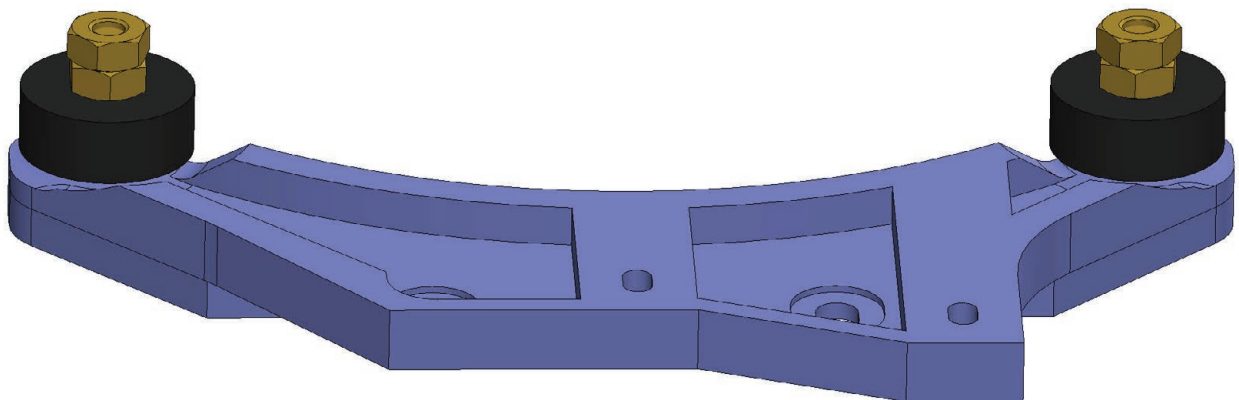
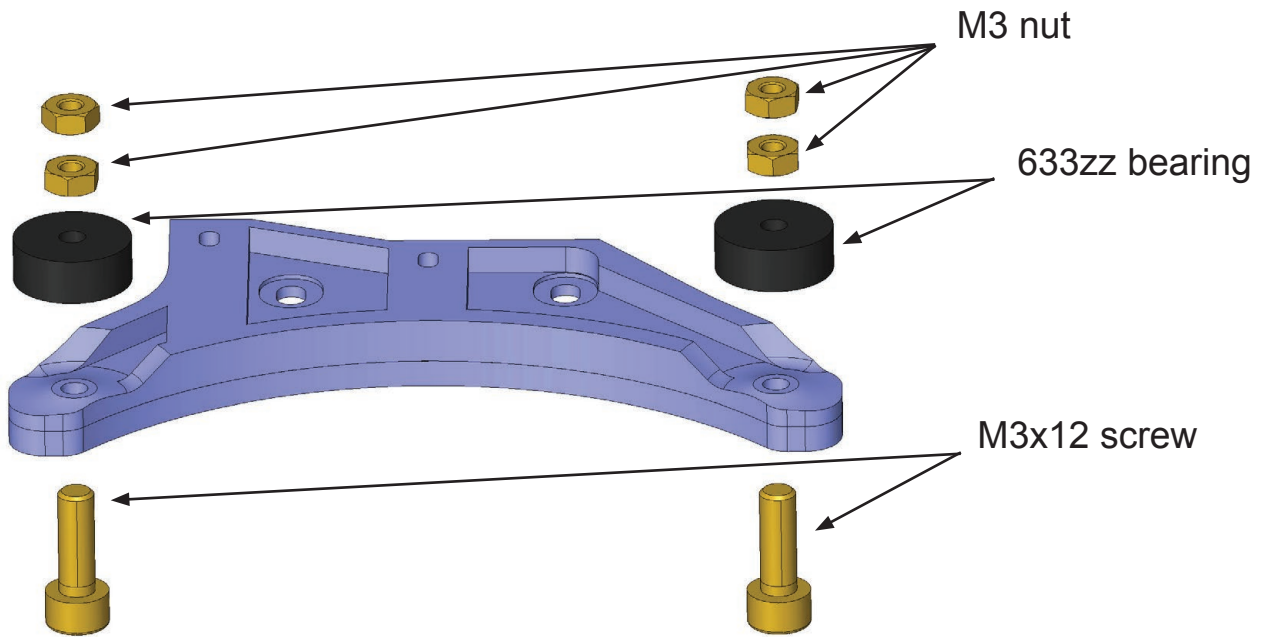
Assembly 02 - Upper Hull

**JGY-N20 or compatible
geared N20 motor**



Glue part 02-53B_S.

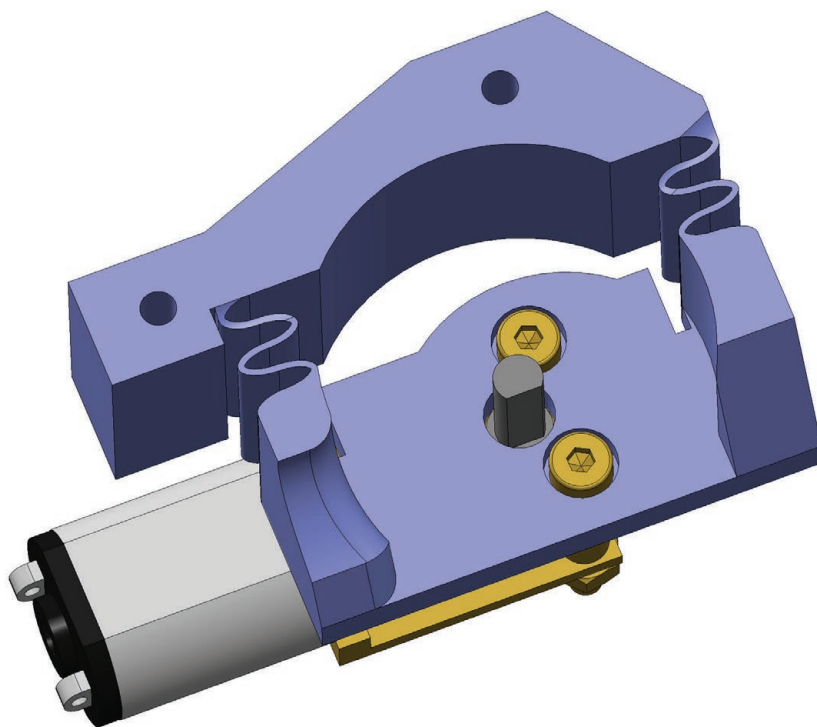
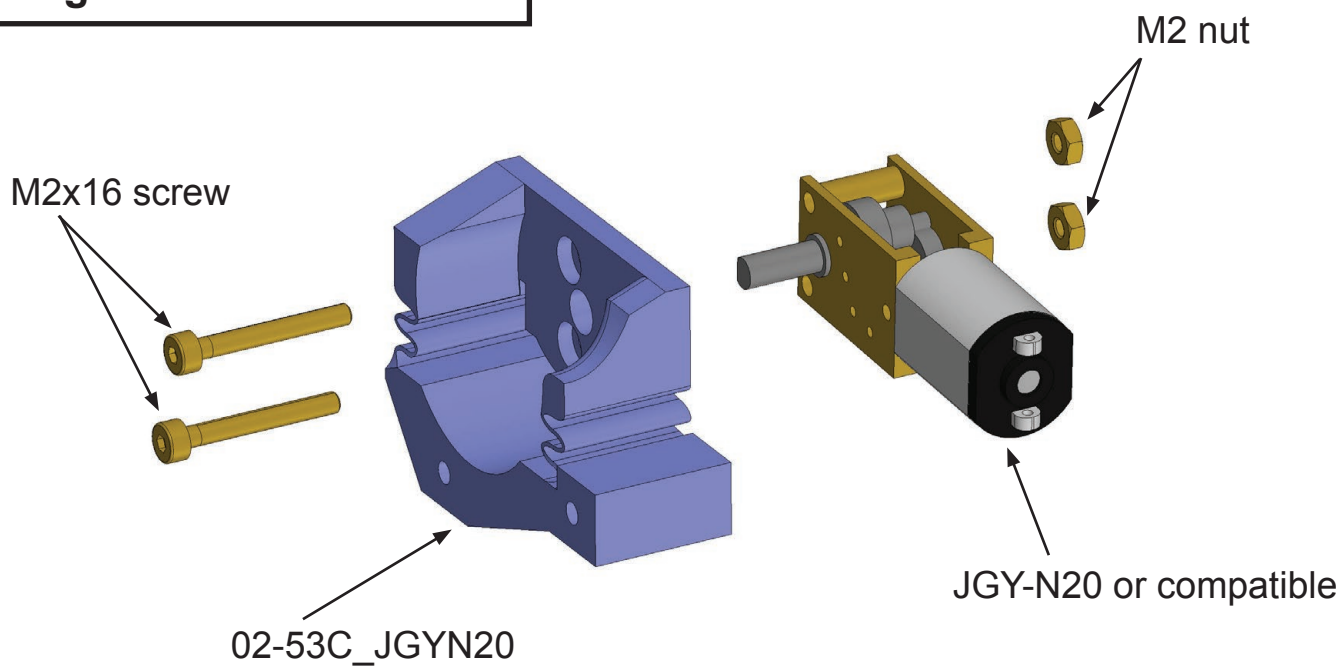
Assembly 02 - Upper Hull

**JGY-N20 or compatible
geared N20 motor**

Attach two bearings type 633ZZ. Use M3x12 screws.
Secure with a pair of nuts tightened against each other, or use self-locking nuts.

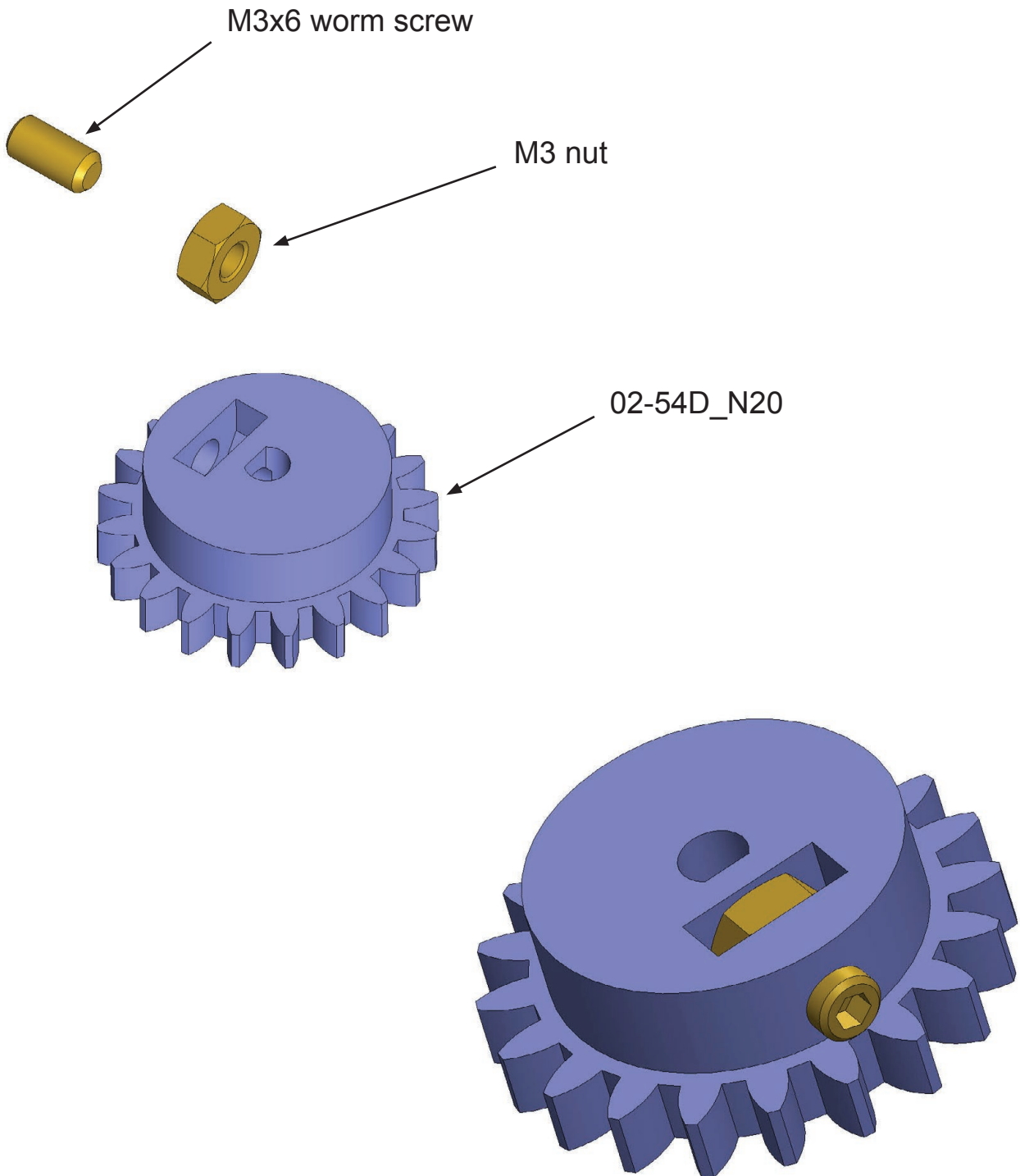
Assembly 02 - Upper Hull

**JGY-N20 or compatible
geared N20 motor**



Mount the JGY-N20 motor or other compatible to part 02-53C_JGYN20.
The motors have different installation holes.
In the example we use M2x16 screws and nuts.

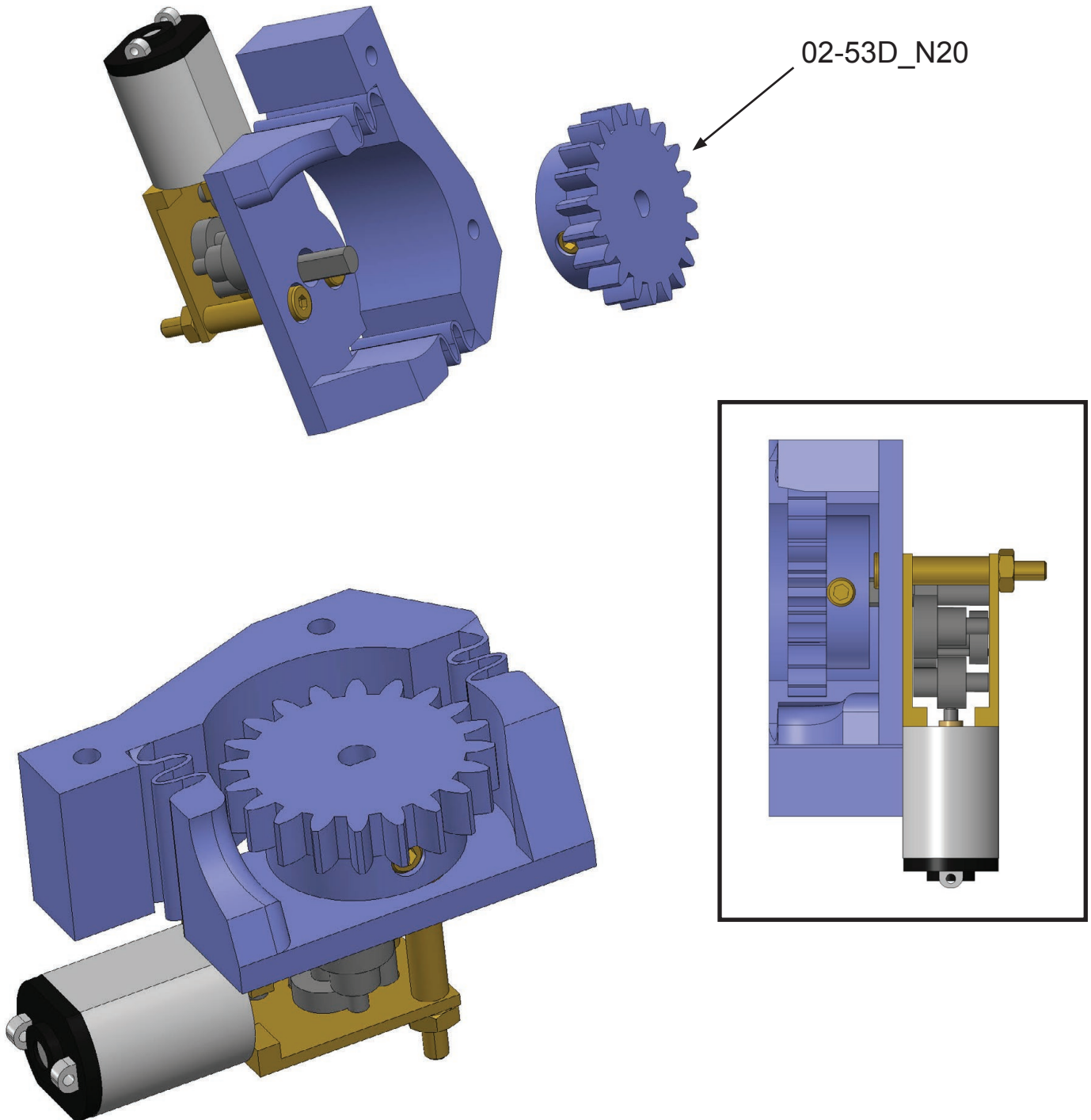
Assembly 02 - Upper Hull

**JGY-N20 or compatible
geared N20 motor**

Insert the M3 nut into the 02-53C_N20 part.
Add the M3x6 grub screw.

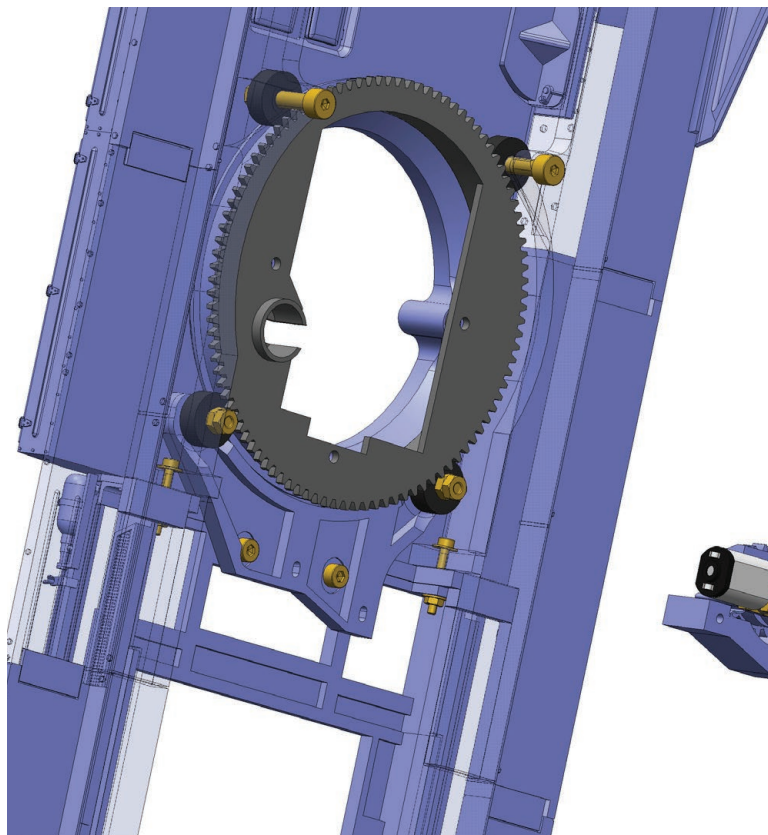
Assembly 02 - Upper Hull

**JGY-N20 or compatible
geared N20 motor**

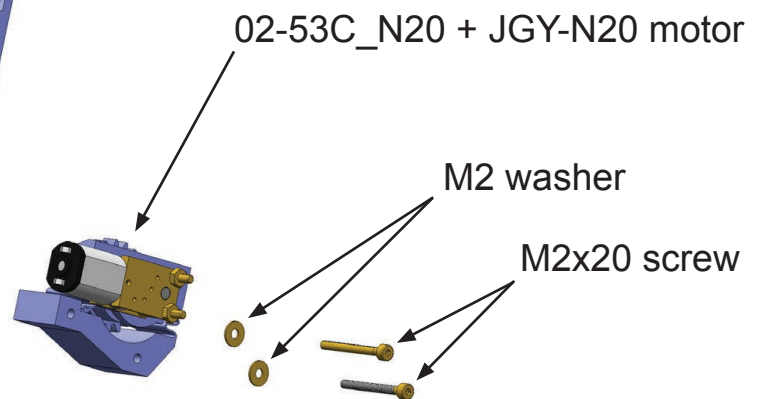


Attach part 02-53D_N20 to the motor shaft. Secure with a grub screw.

Assembly 02 - Upper Hull



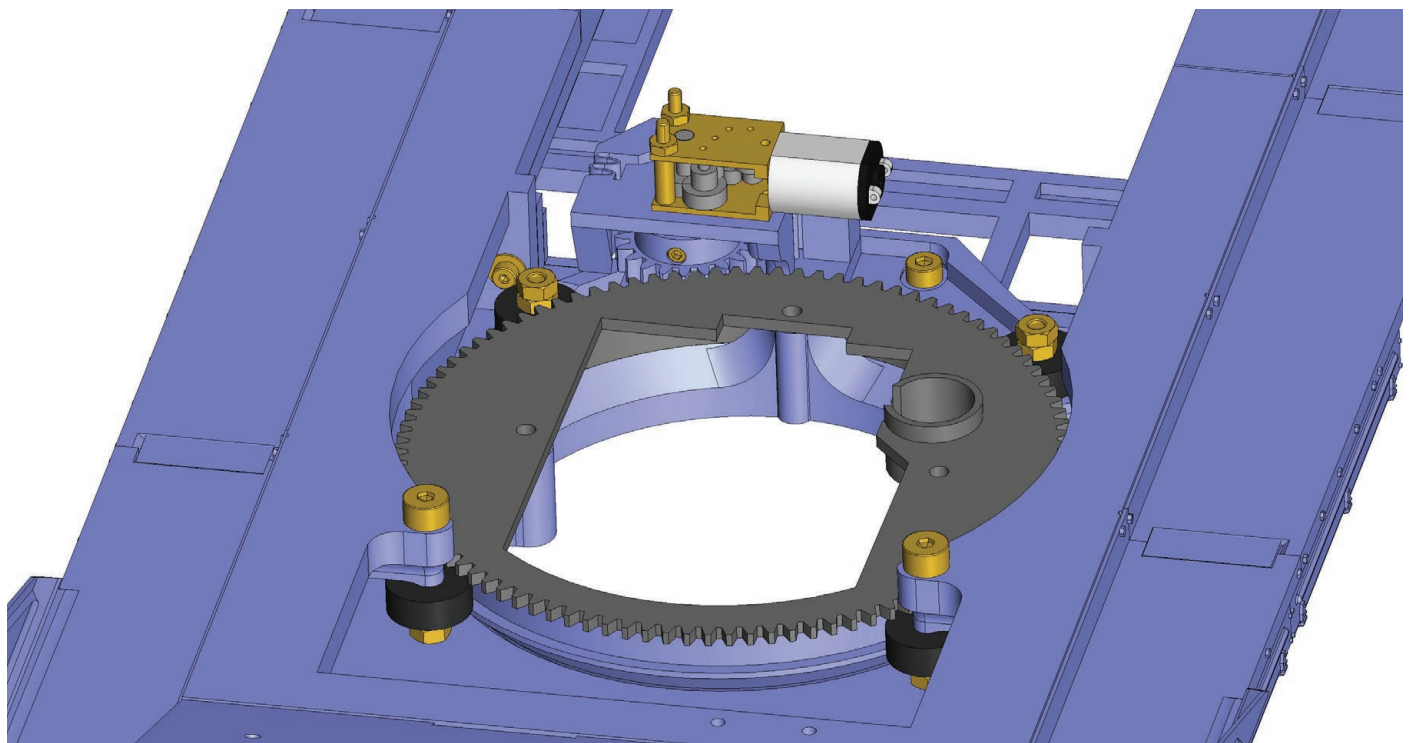
**JGY-N20 or compatible
geared N20 motor**



02-53C_N20 + JGY-N20 motor

M2 washer

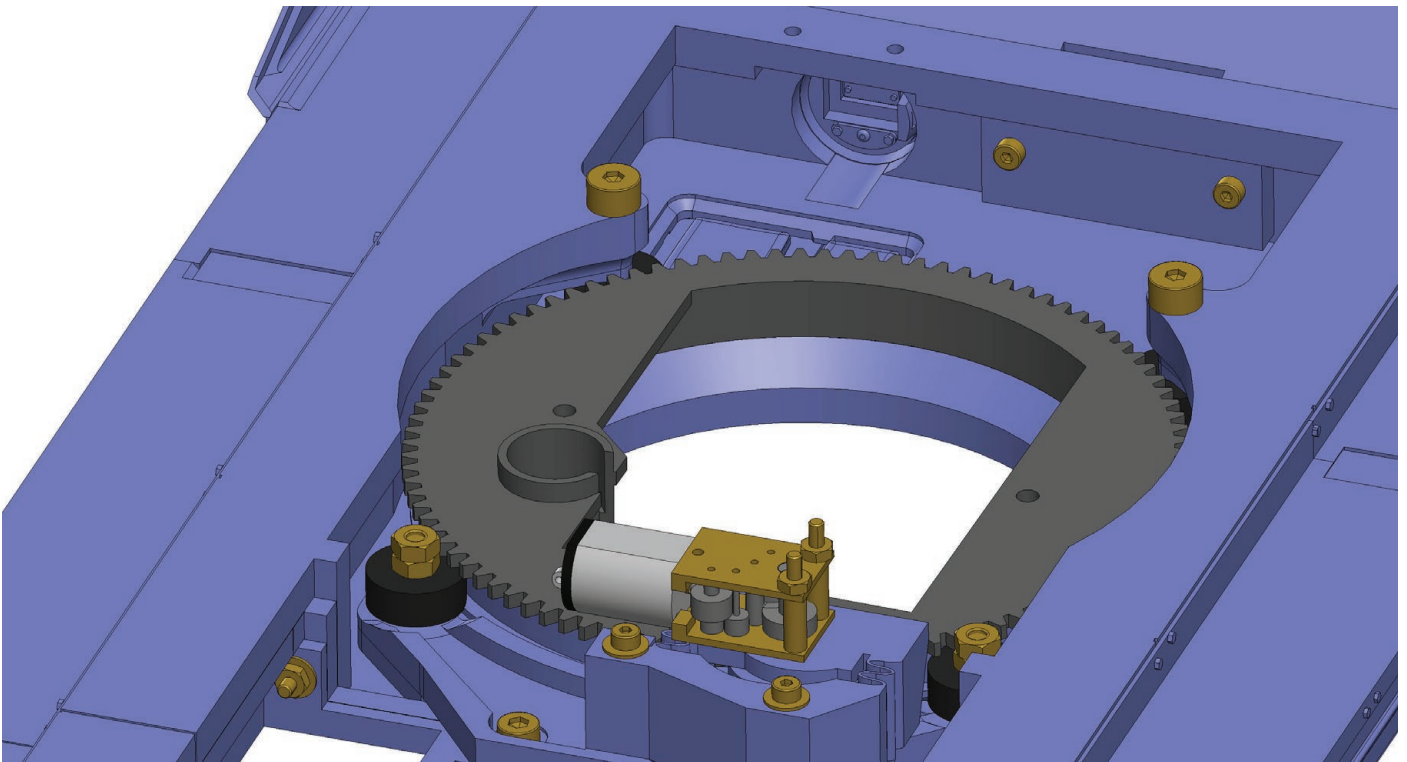
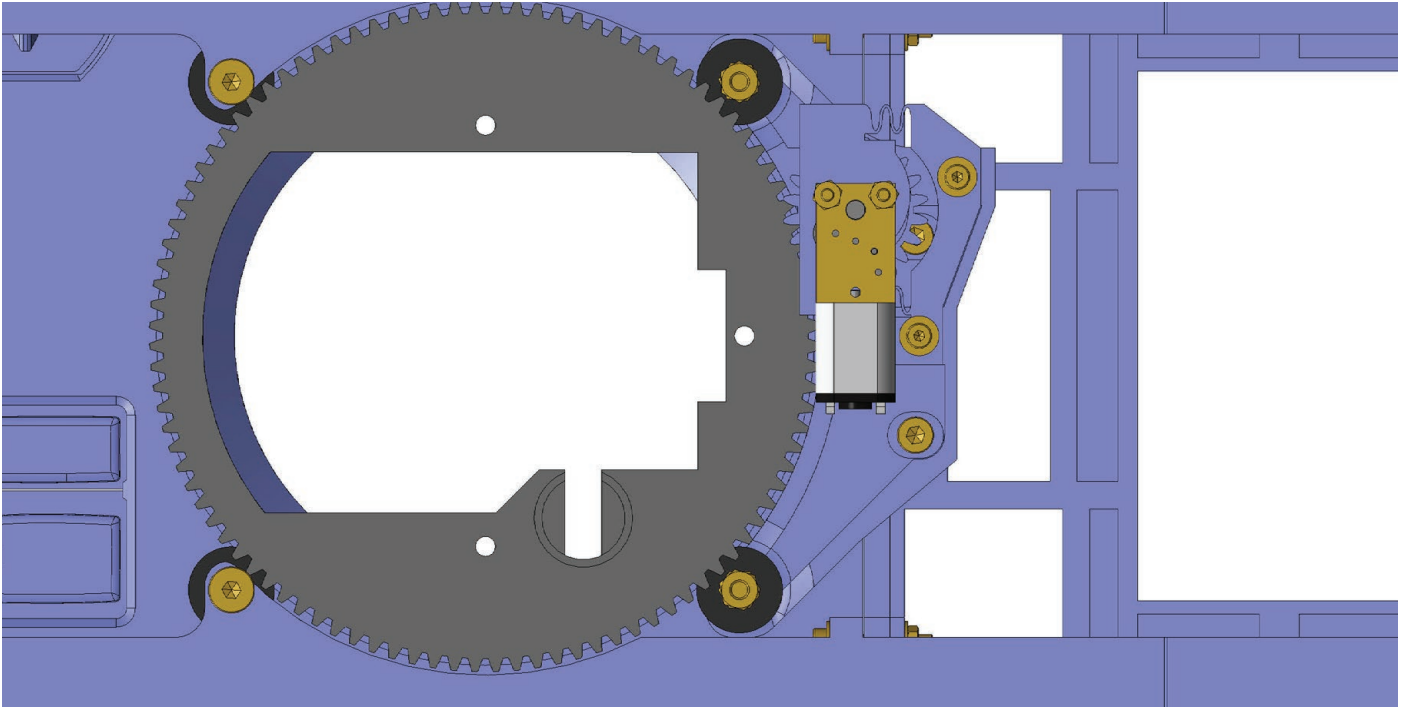
M2x20 screw



Fasten the motor with two M2x20mm screws. Use washers.
The screws move in the grooves.
Use these grooves to define the clearance between the gears.

Assembly 02 - Upper Hull

**JGY-N20 or compatible
geared N20 motor**



Auxiliary views for motor installation.

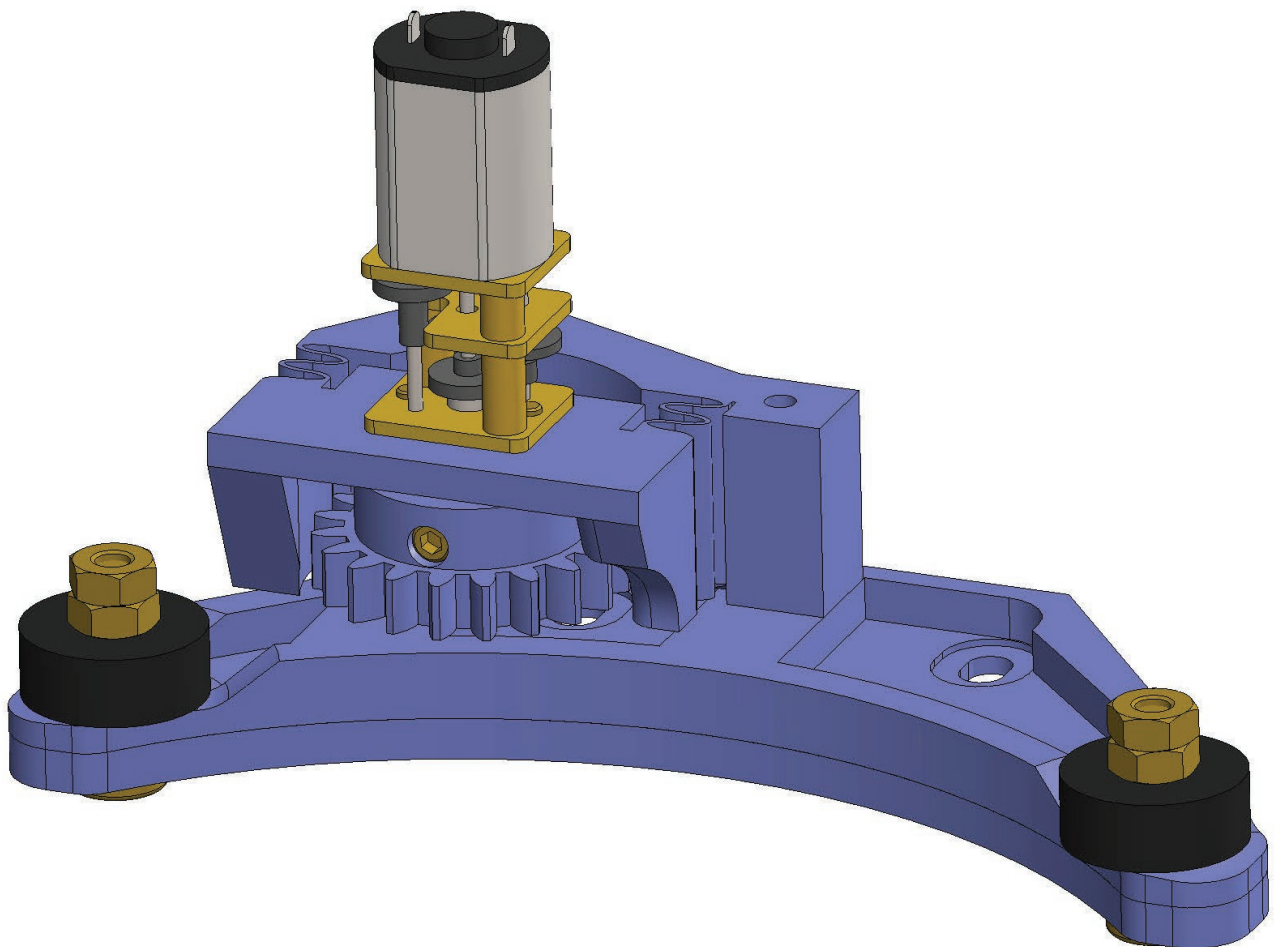
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Assembly 02 - Upper Hull

Assembly 02 - Upper Hull

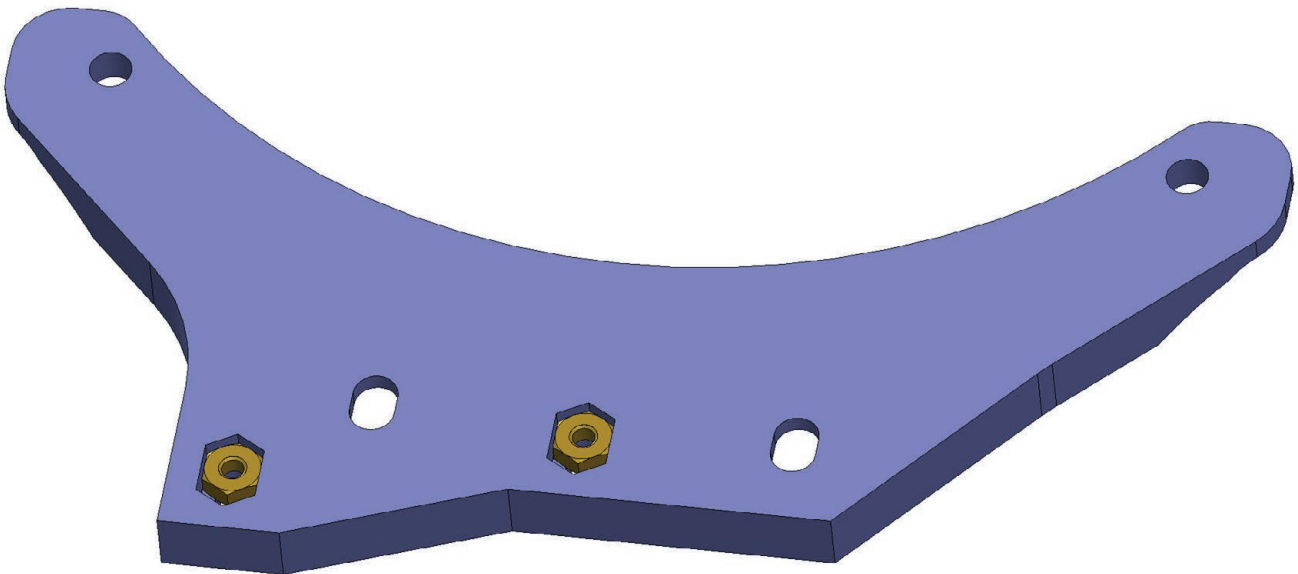
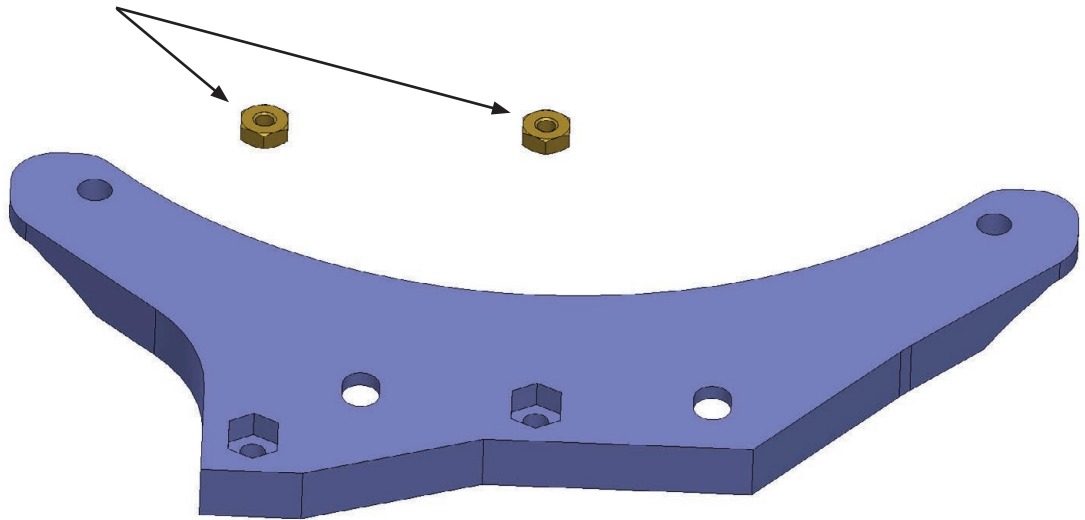
**N20 geared motor
or POLOLU HPCB**



Assembly 02 - Upper Hull

N20 geared motor
or POLOLU HPCB

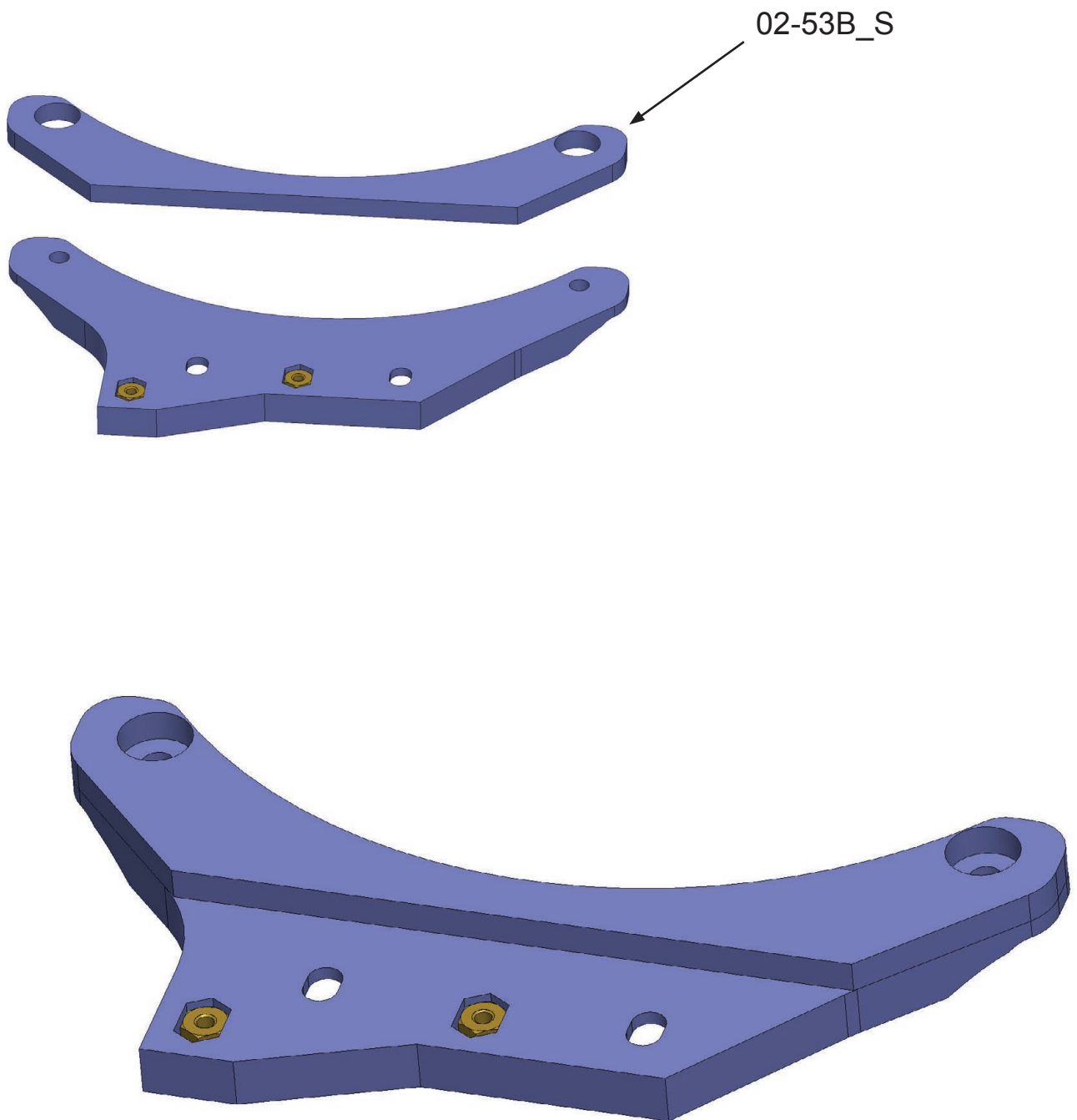
M2 nut



Insert two M2 nuts into part 02-53A_S.

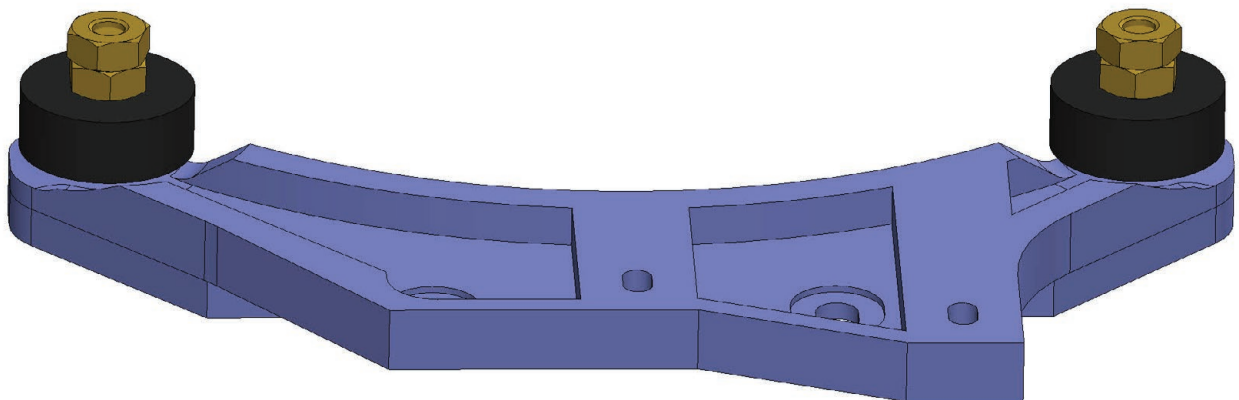
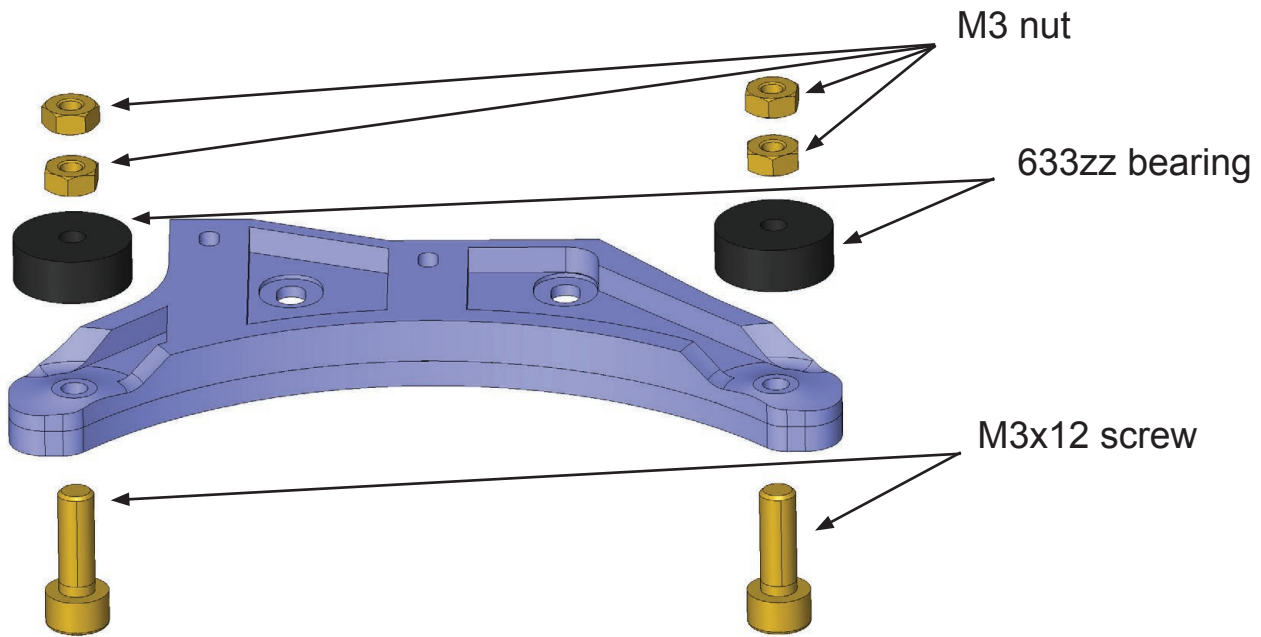
Assembly 02 - Upper Hull

**N20 geared motor
or POLOLU HPCB**



Glue part 02-53B_S.

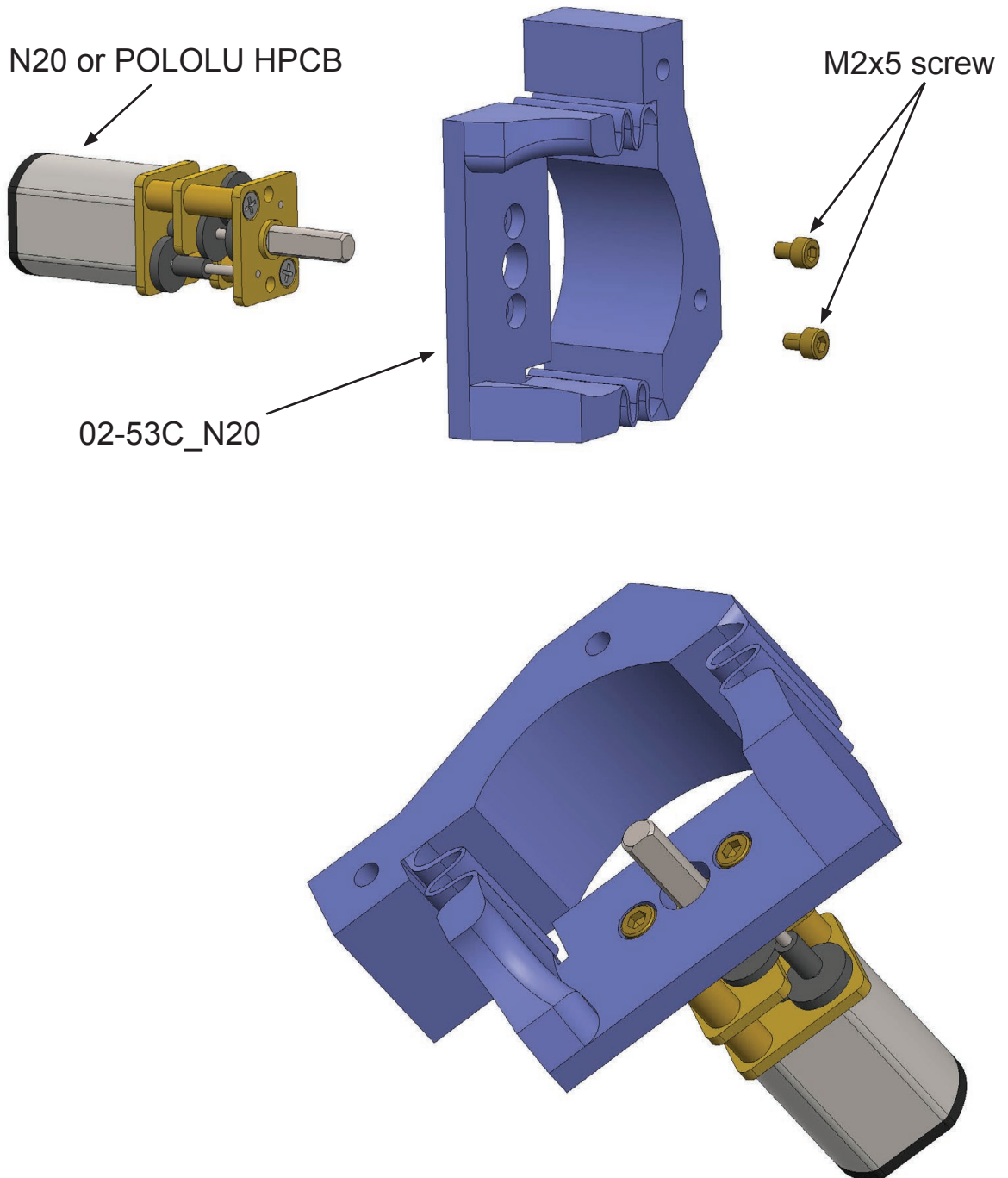
Assembly 02 - Upper Hull

**N20 geared motor
or POLOLU HPCB**

Attach two bearings type 633ZZ. Use M3x12 screws.
Secure with a pair of nuts tightened against each other, or use self-locking nuts.

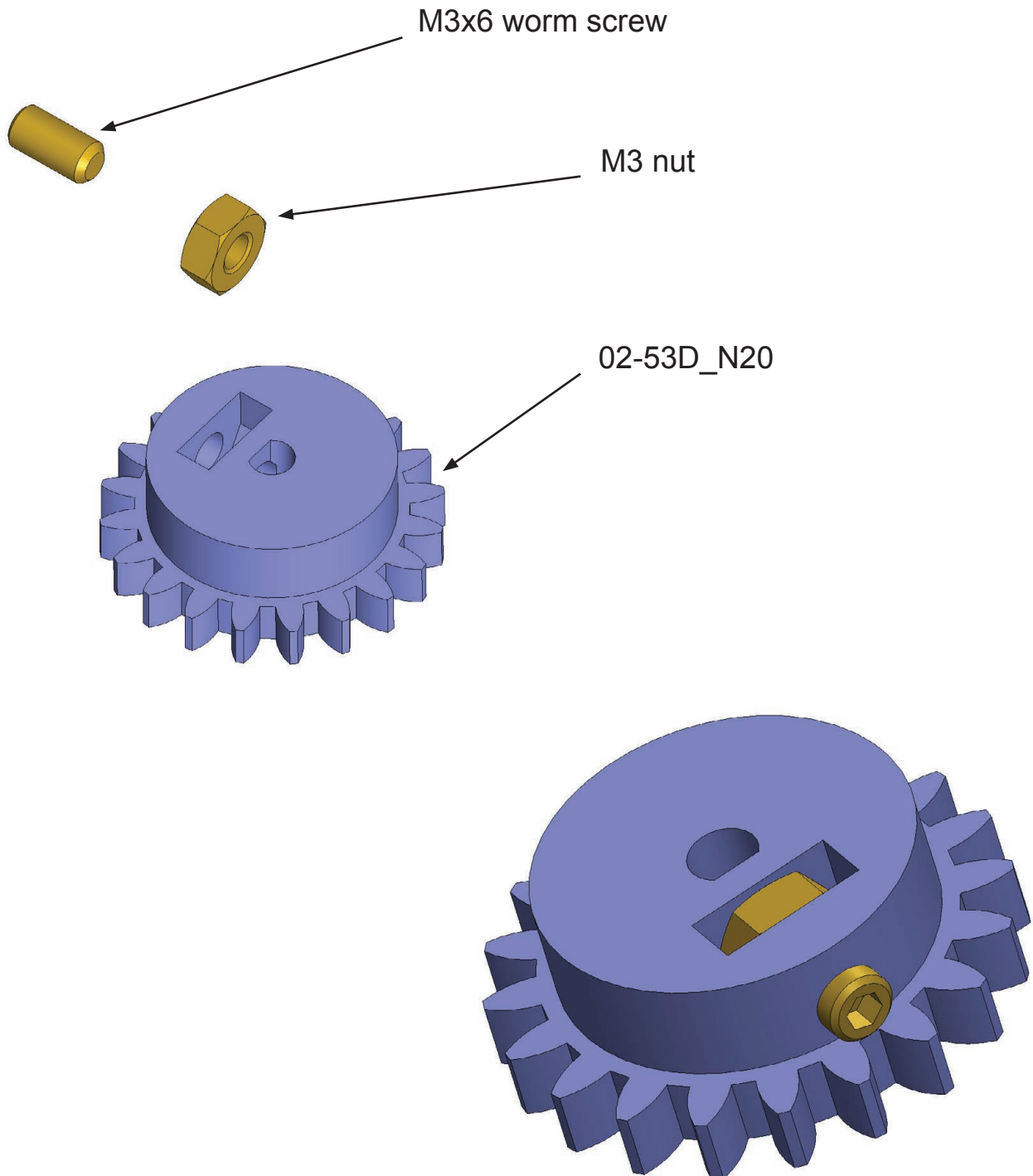
Assembly 02 - Upper Hull

**N20 geared motor
or POLOLU HPCB**



Mount the N20 (POLOLU HPCB) motor or other compatible to part 02-53C_N20.
The motors have different installation holes.
In the example we use M2x5 screws and nuts.

Assembly 02 - Upper Hull

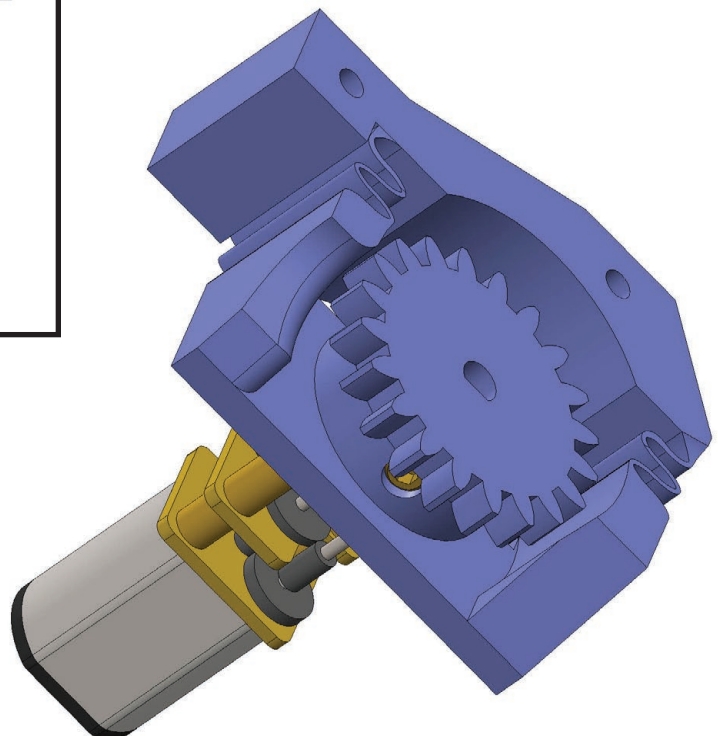
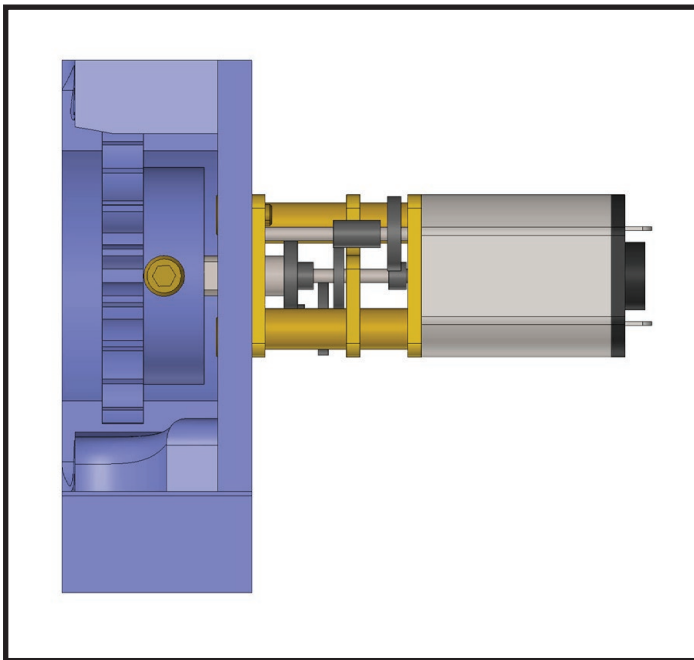
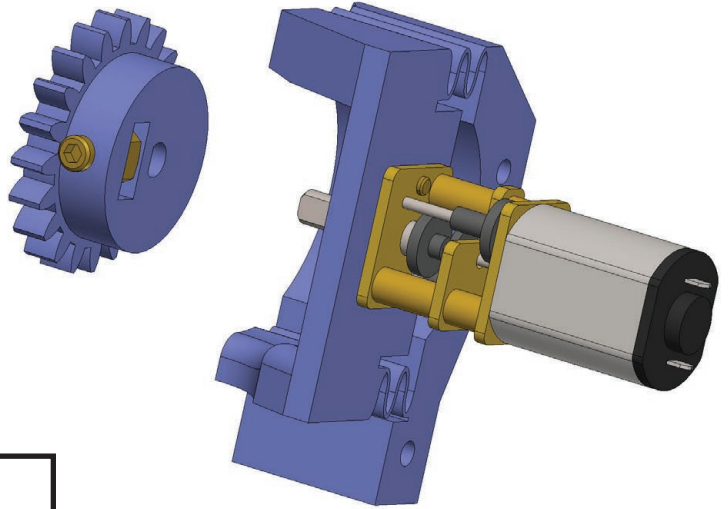
**N20 geared motor
or POLOLU HPCB**

Insert the M3 nut into the 02-53C_N20 part.
Add the M3x6 grub screw.

Assembly 02 - Upper Hull

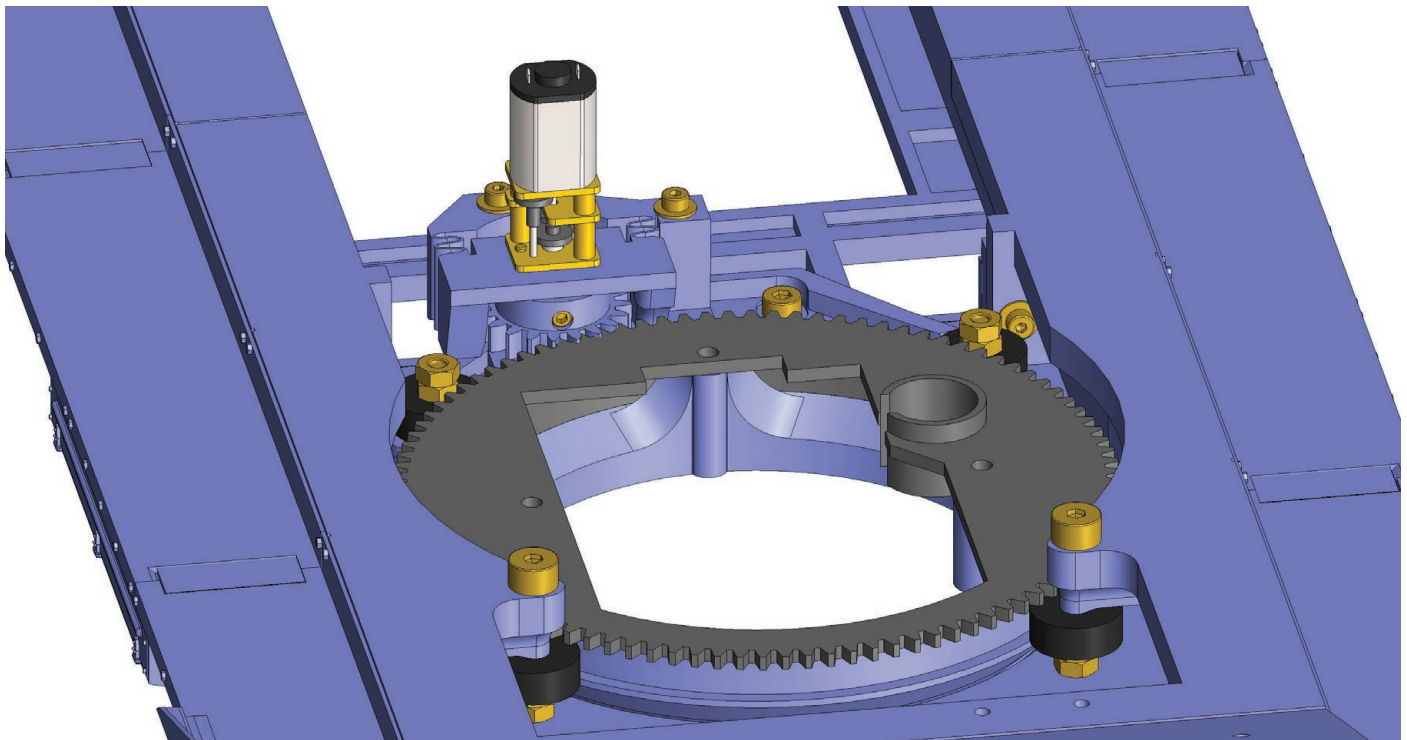
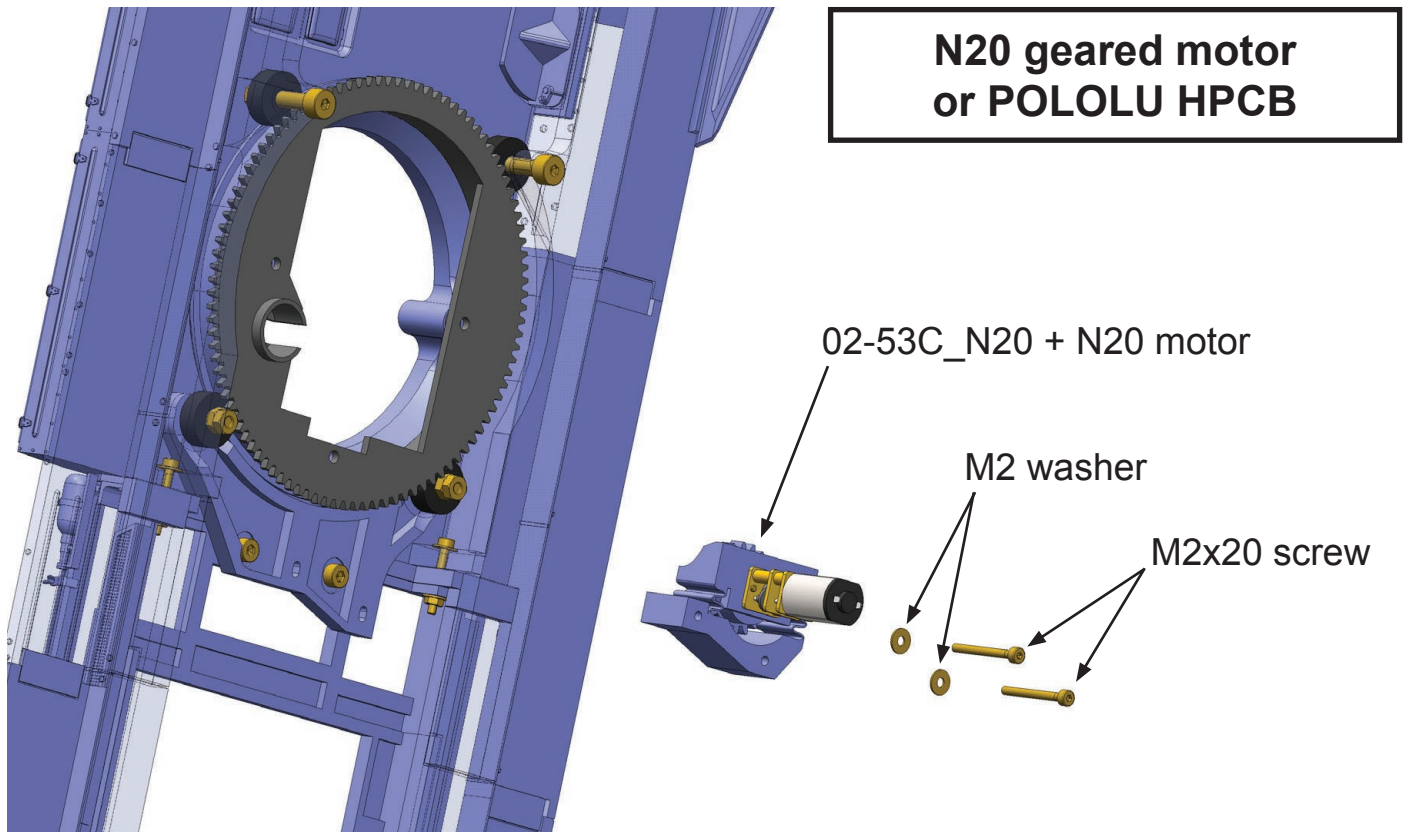
**N20 geared motor
or POLOLU HPCB**

02-53D_N20



Attach part 02-53D_N20 to the motor shaft. Secure with a grub screw.

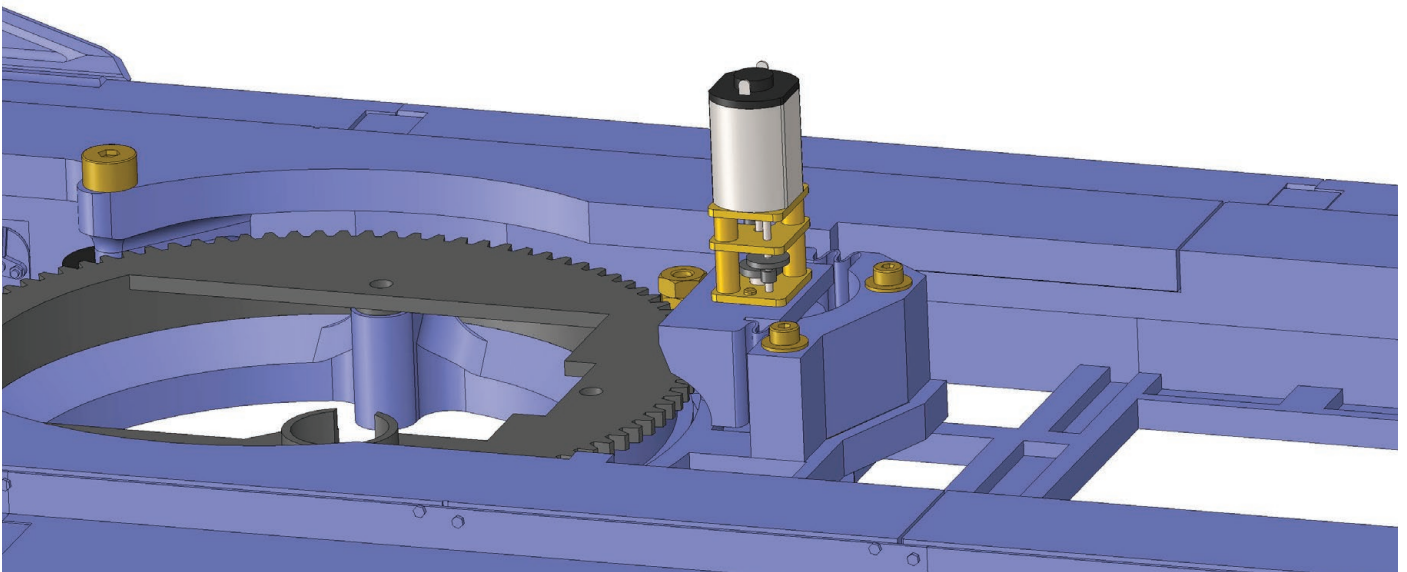
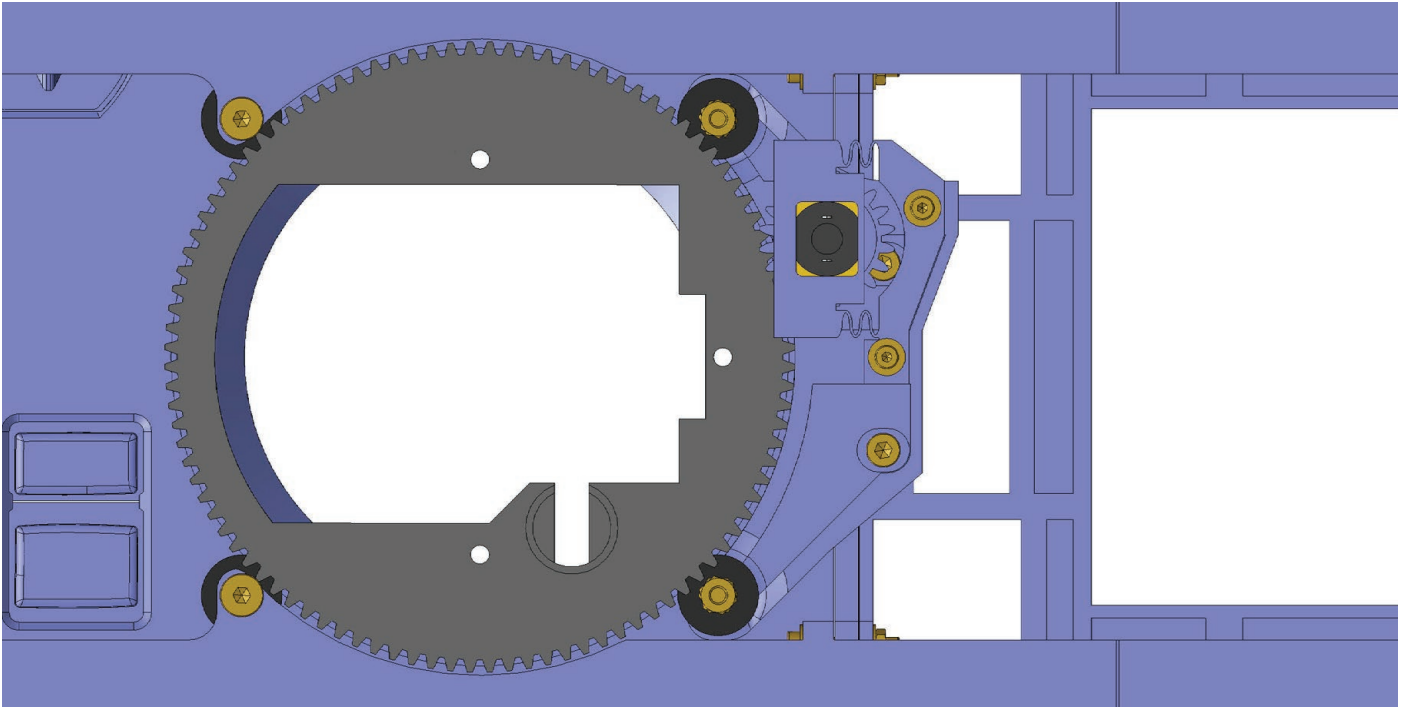
Assembly 02 - Upper Hull



Fasten the motor with two M2x20mm screws. Use washers.
The screws move in the grooves.
Use these grooves to define the clearance between the gears.

Assembly 02 - Upper Hull

**N20 geared motor
or POLOLU HPCB**



Auxiliary views for motor installation.

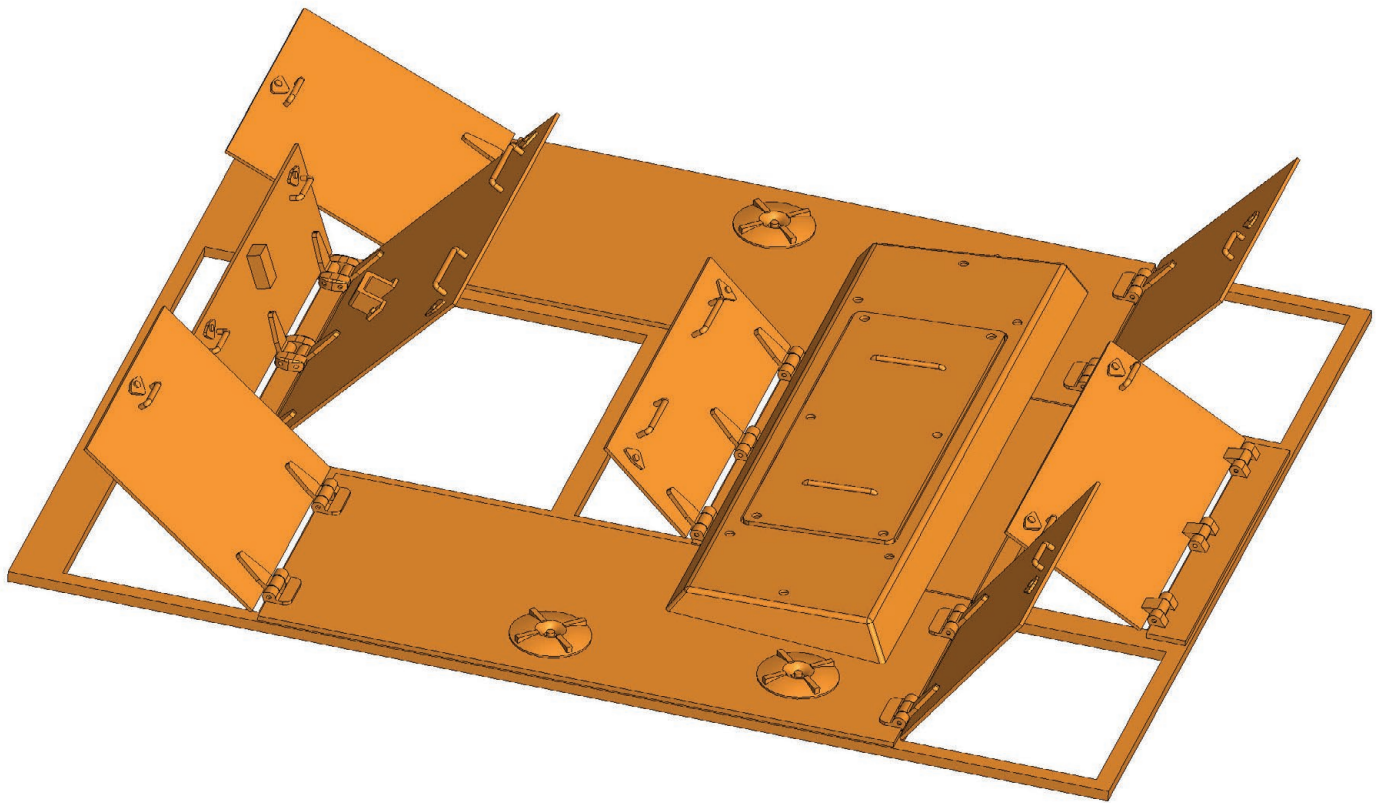
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Cromwell Mk.IV

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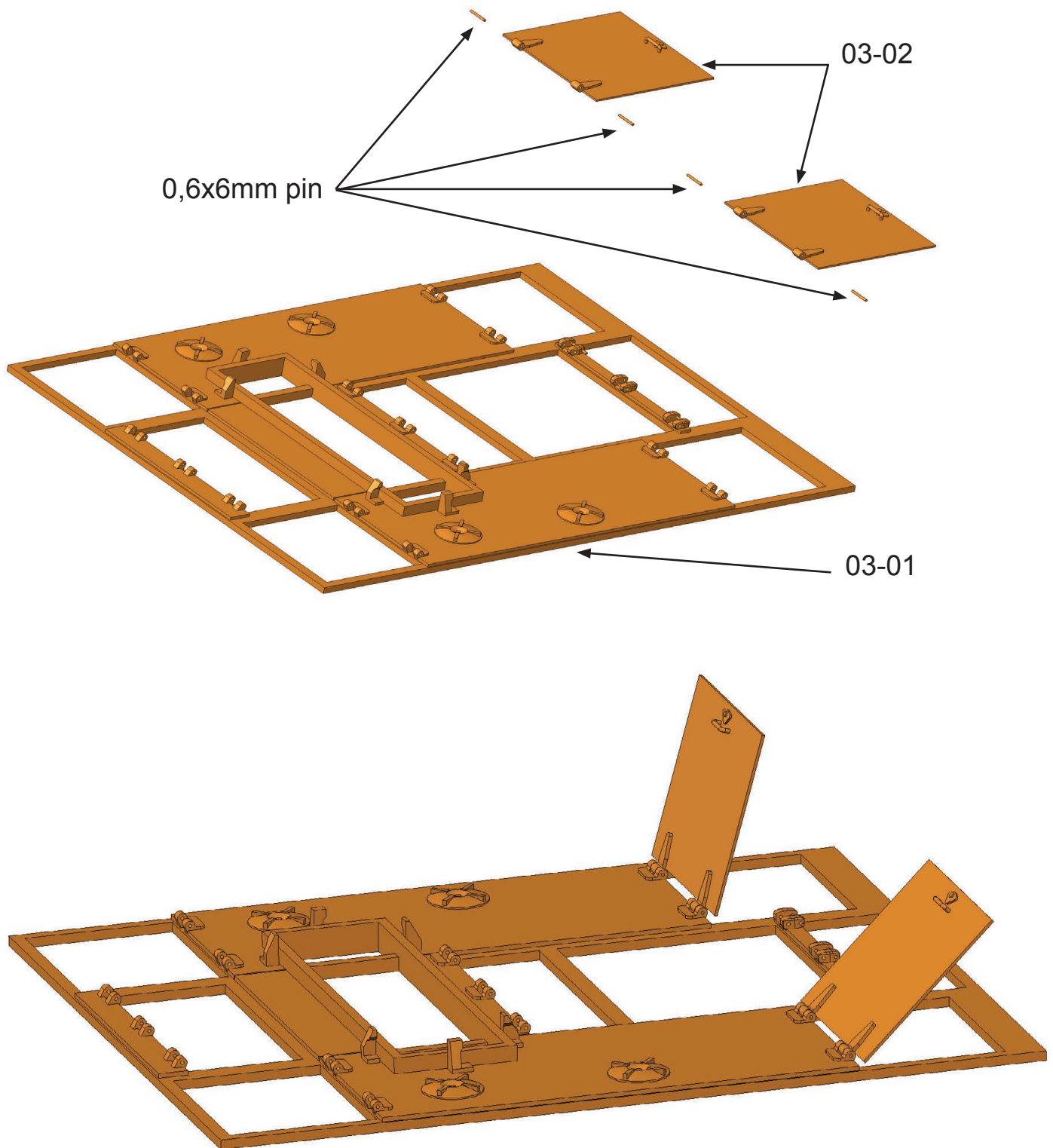
Assembly 02 - Upper Hull

Assembly 03 - Engine Cover



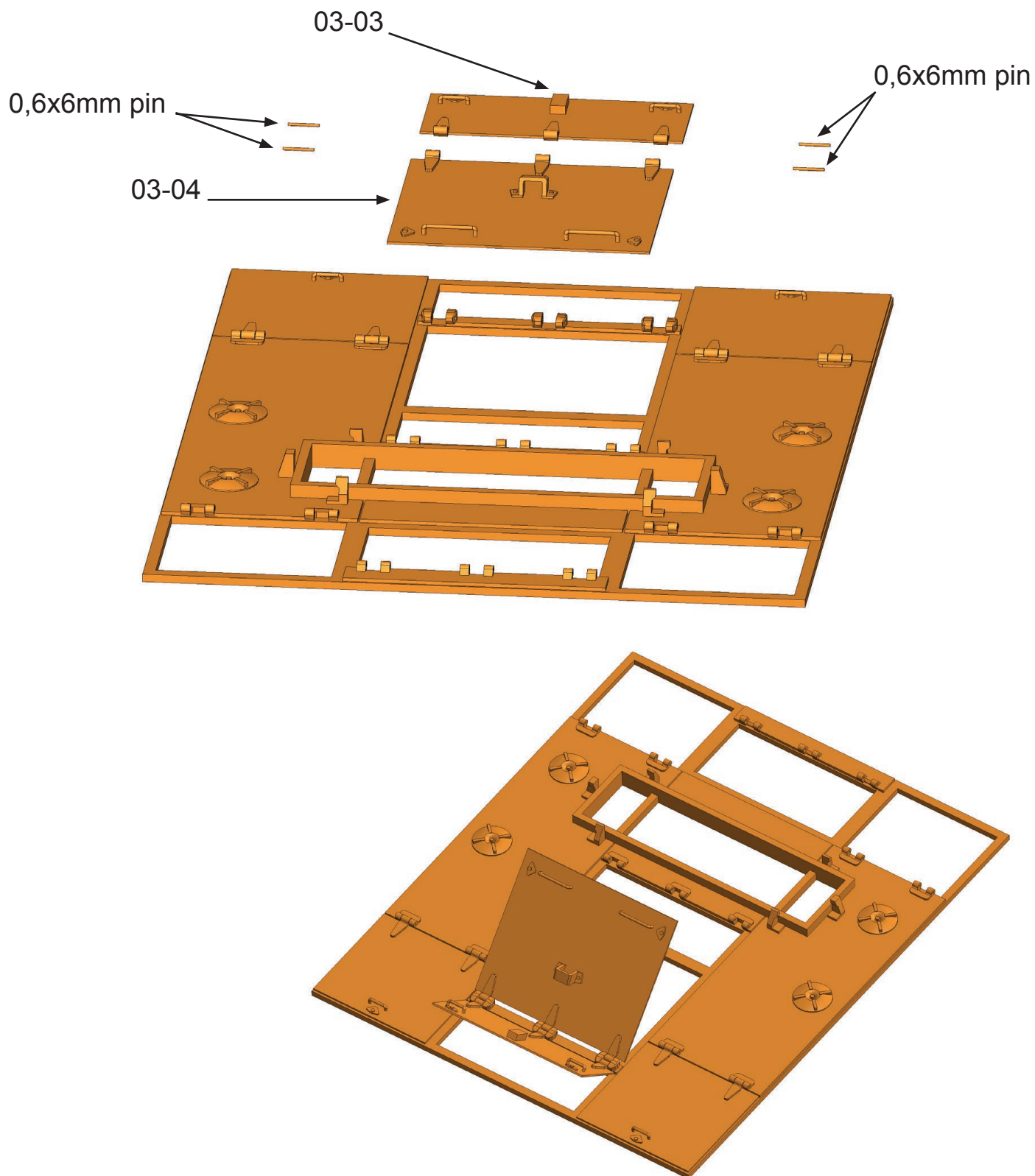
3D PRINTED PARTS:	03-01 (1x), 03-02 (2x), 03-03 (1x), 03-04 (1x), 03-05 (1x), 03-06 (1x), 03-07 (1x), 03-08 (1x), 03-09A (1x), 03-09B (1x).
OPTIONAL 3D PRINTED PARTS:	03-02_no_handles, 03-03_no_handles, 03-04_no_handles, 03-05_no_handles, 03-06_no_handles, 03-07_no_handles, 03-08_no_handles, 03-09AB.
NON-PRINTED PARTS:	wire -diameter 0,6mm -lenght 6mm (16x).

Assembly 03 - Engine Cover



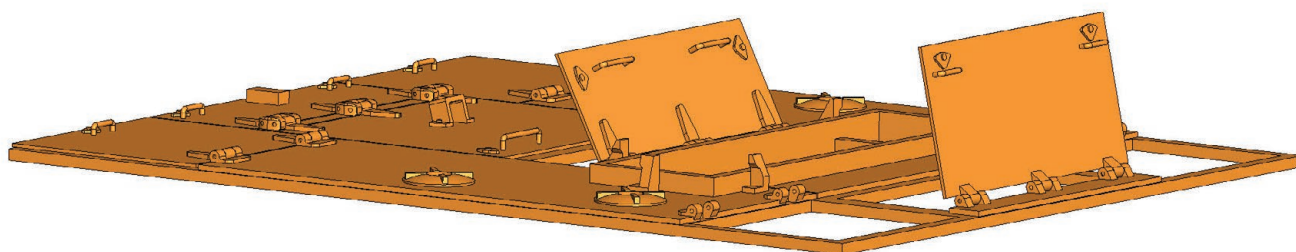
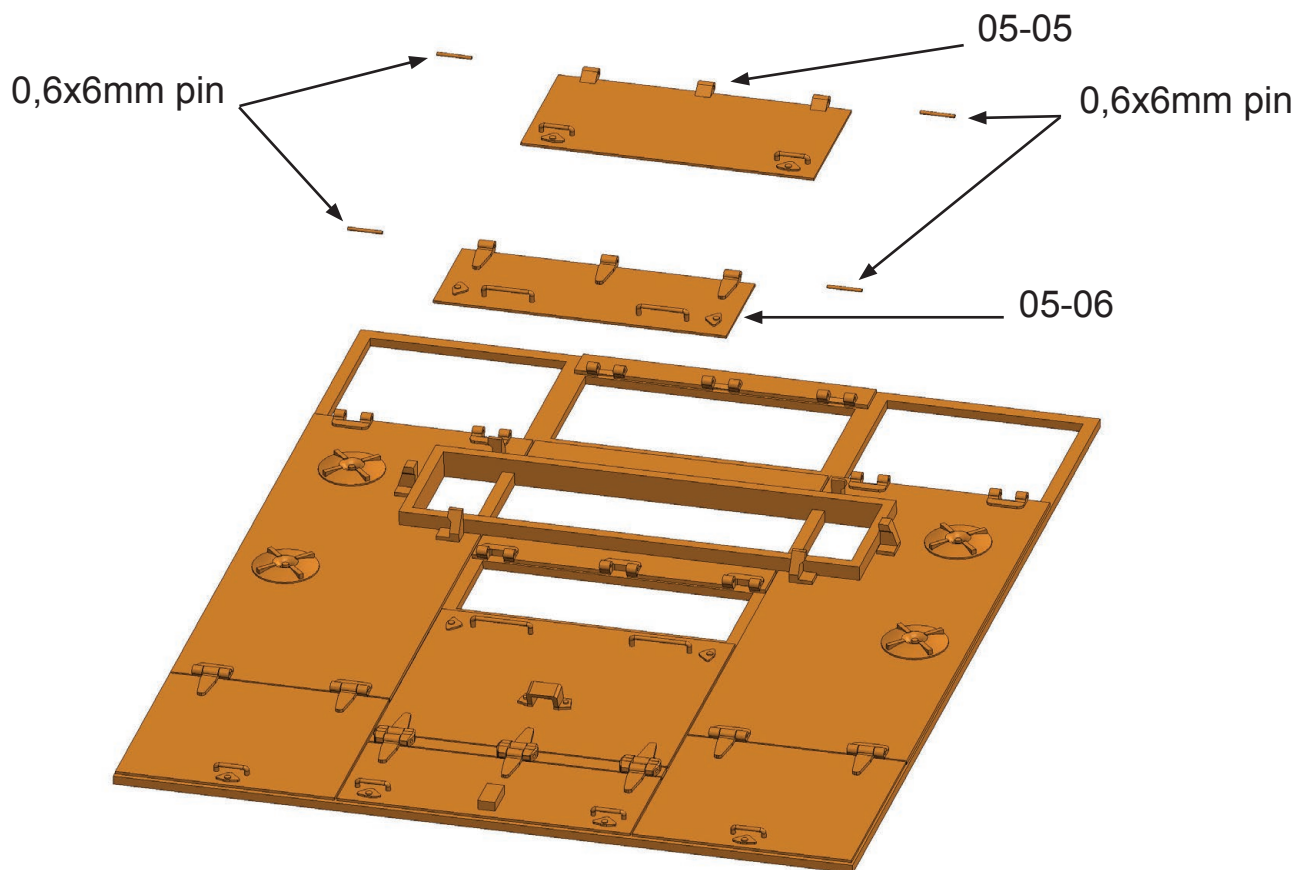
Attach two parts 03-02 to part 03-01. Use a wire with a diameter of 0.6 mm.
The length of the wire is 6 mm.
We recommend cutting the wire only after sliding it into the hinge.

Assembly 03 - Engine Cover



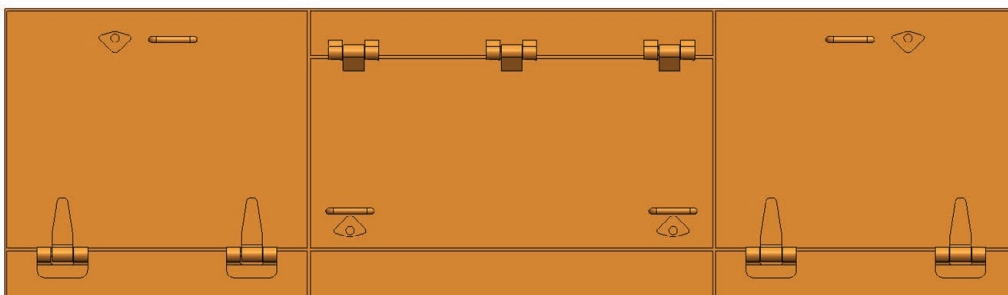
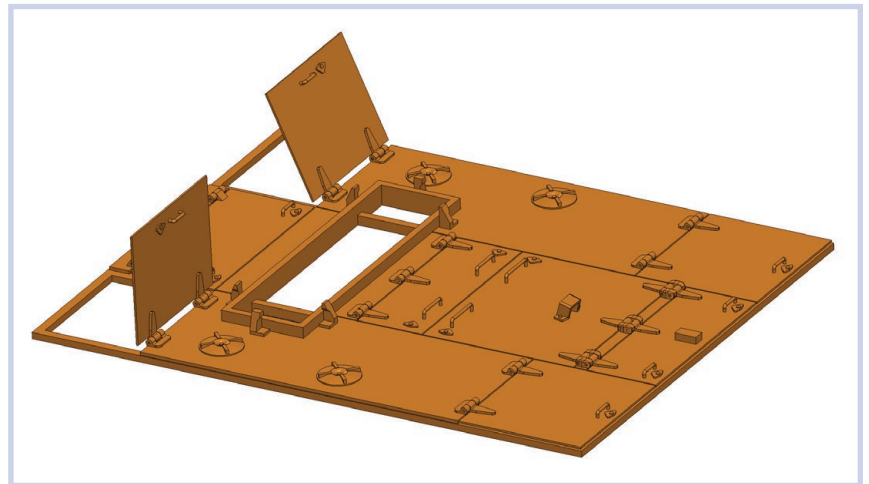
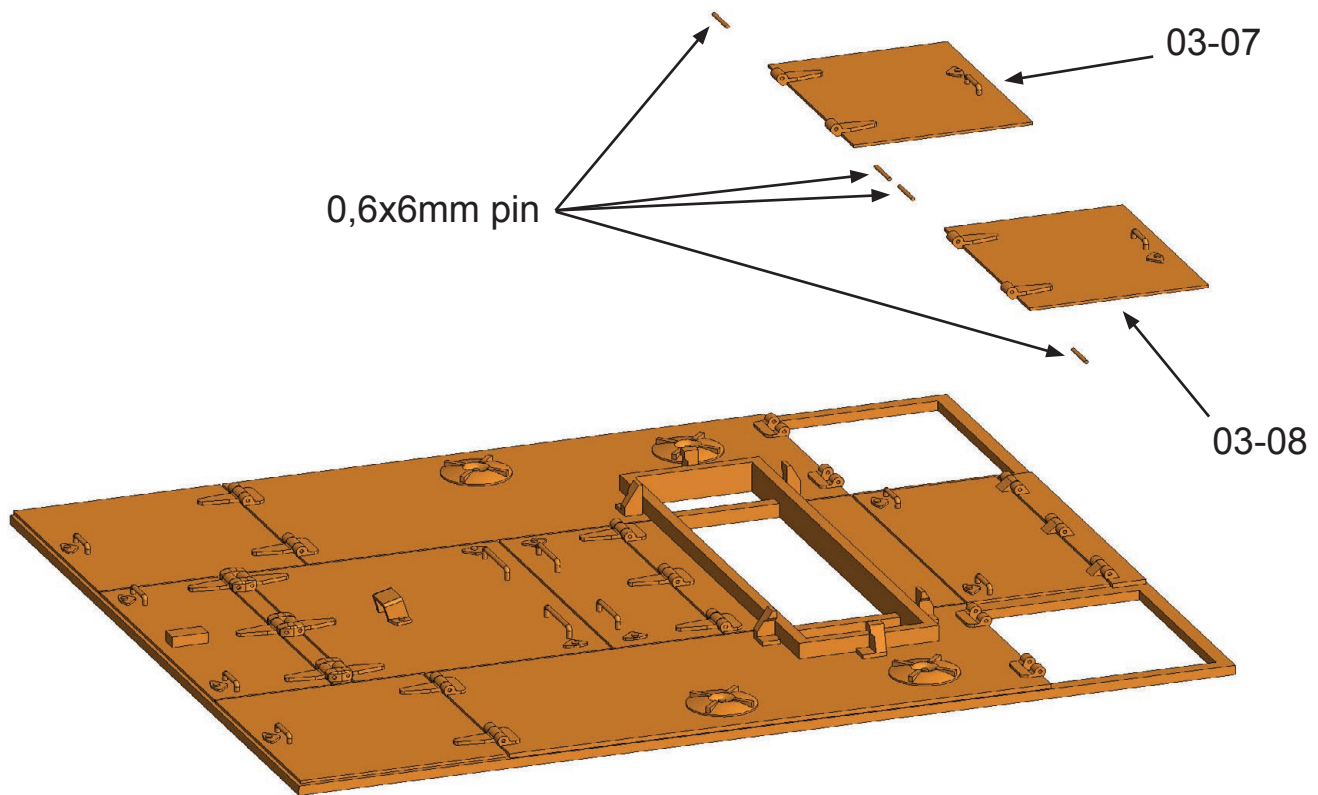
Attach part 03-03 and 03-04 to part 03-01. Use a wire with a diameter of 0.6 mm.
The length of the wire is 6 mm.
We recommend cutting the wire only after sliding it into the hinge.

Assembly 03 - Engine Cover



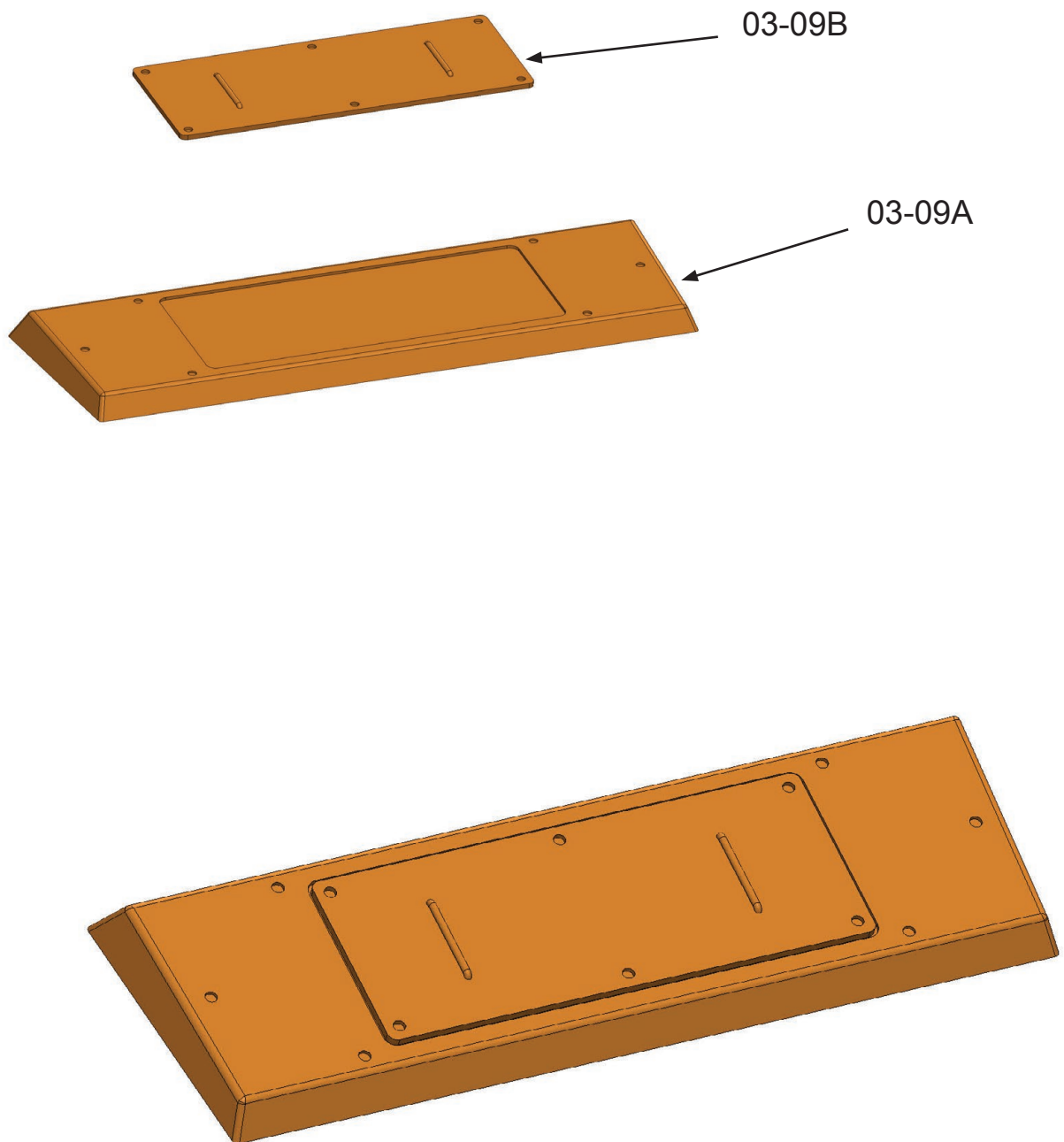
Attach part 03-05 and 03-06 to part 03-01. Use a wire with a diameter of 0.6 mm.
The length of the wire is 6 mm.
We recommend cutting the wire only after sliding it into the hinge.

Assembly 03 - Engine Cover



Attach part 03-03 and 03-04 to part 03-01. Use a wire with a diameter of 0.6 mm.
The length of the wire is 6 mm.
We recommend cutting the wire only after sliding it into the hinge.

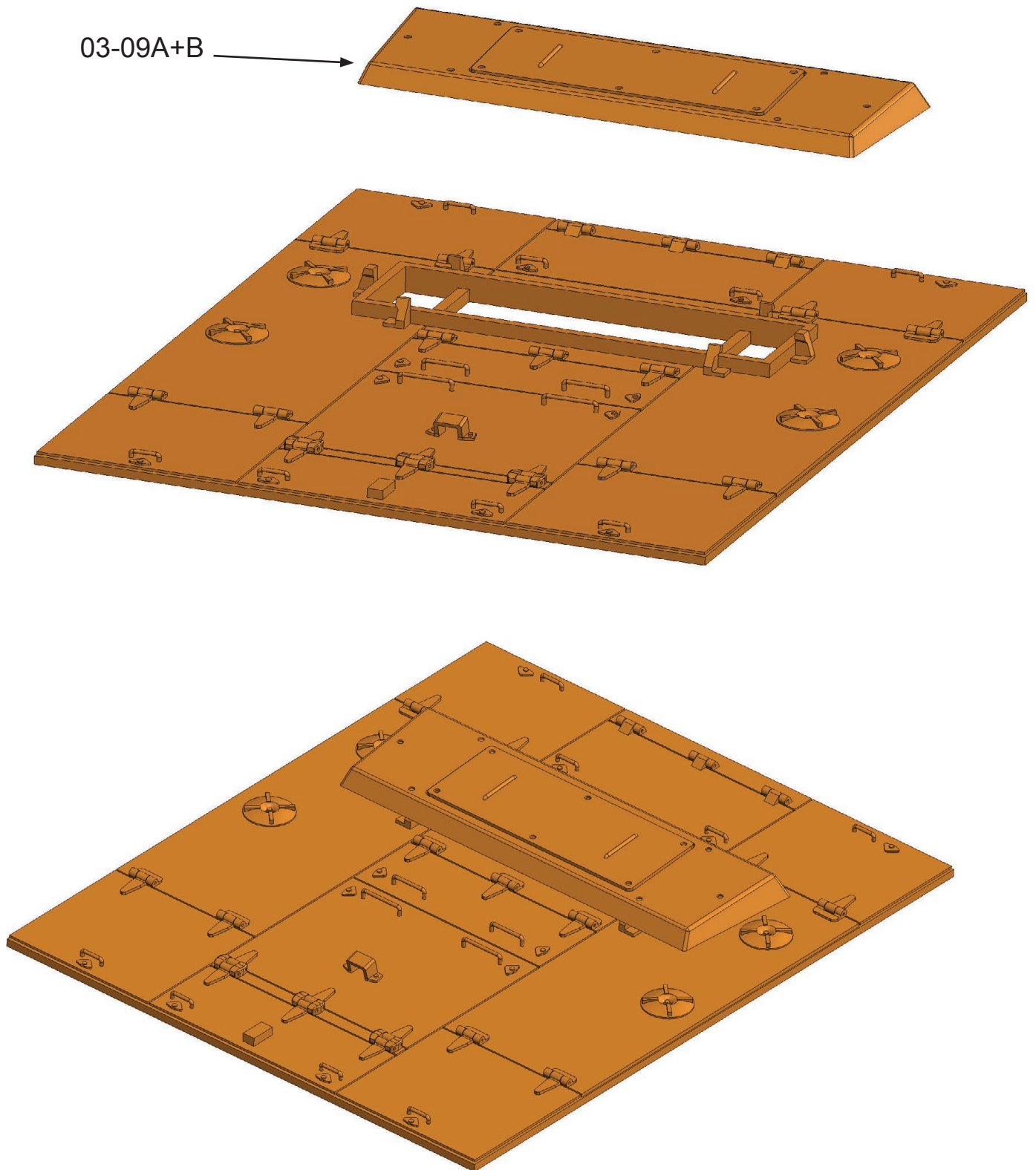
Assembly 03 - Engine Cover



Glue parts 03-09A and 03-09B together.
If you are printing part 03-09AB, you can skip this step.

Assembly 03 - Engine Cover

03-09A+B



Glue the parts assembly 03-09A and 03-09B.

Assembly 03 - Engine Cover



Auxiliary views of parts 03-09A and 03-09B.

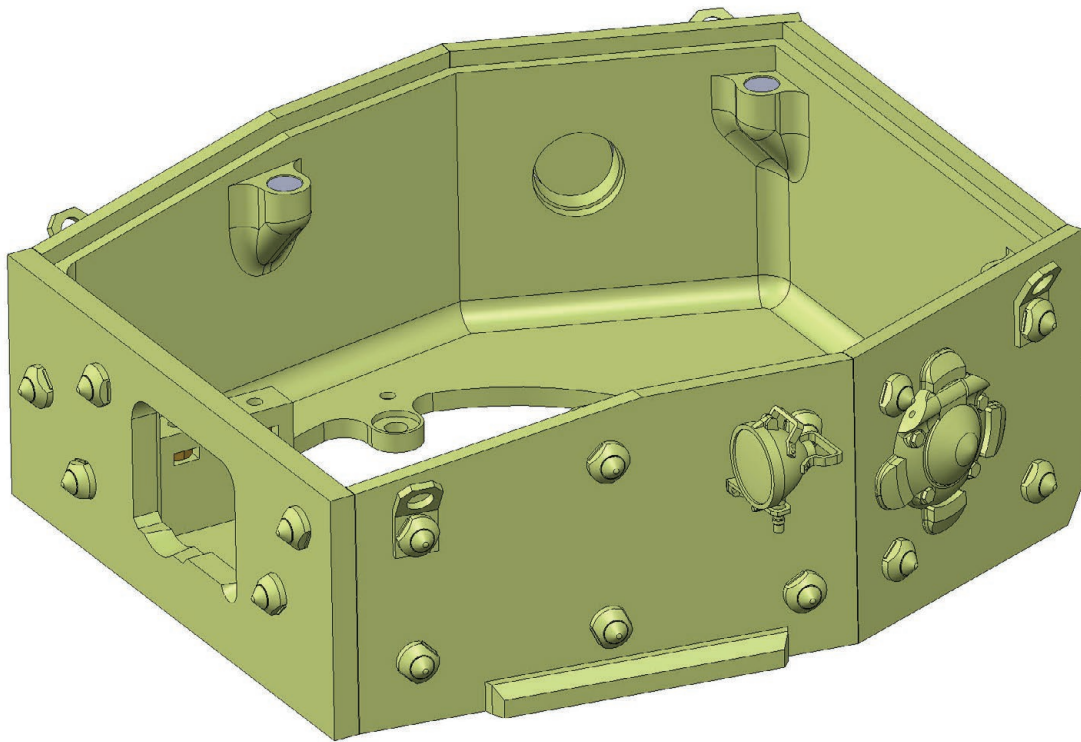
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Cromwell Mk.IV

Assembly guide

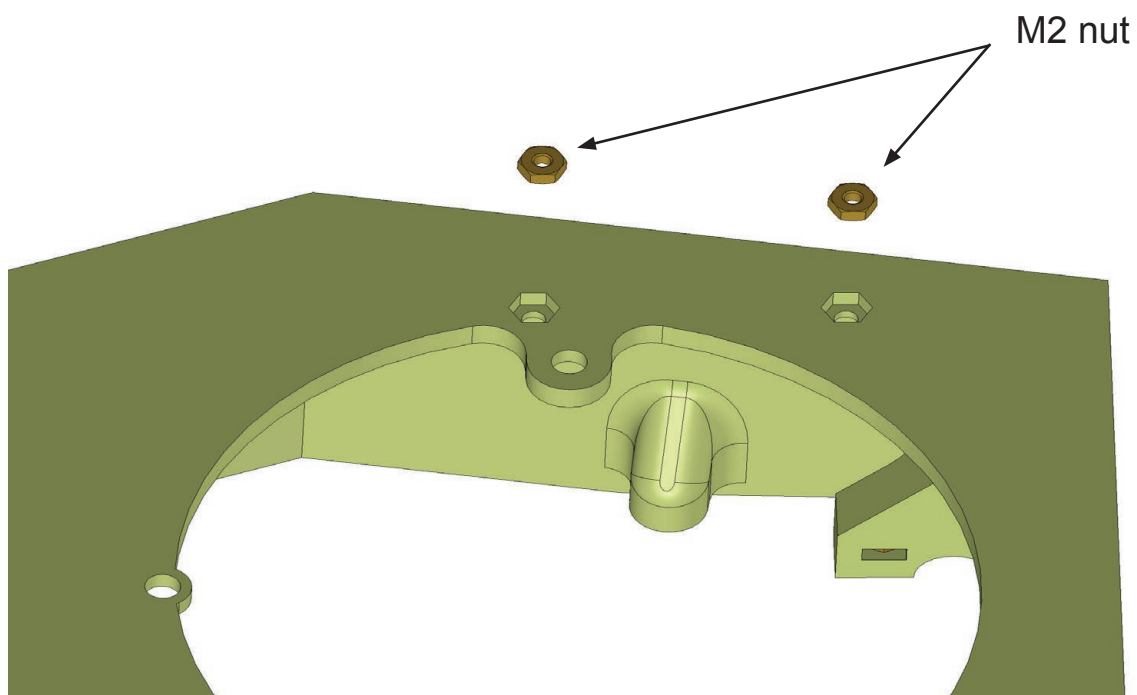
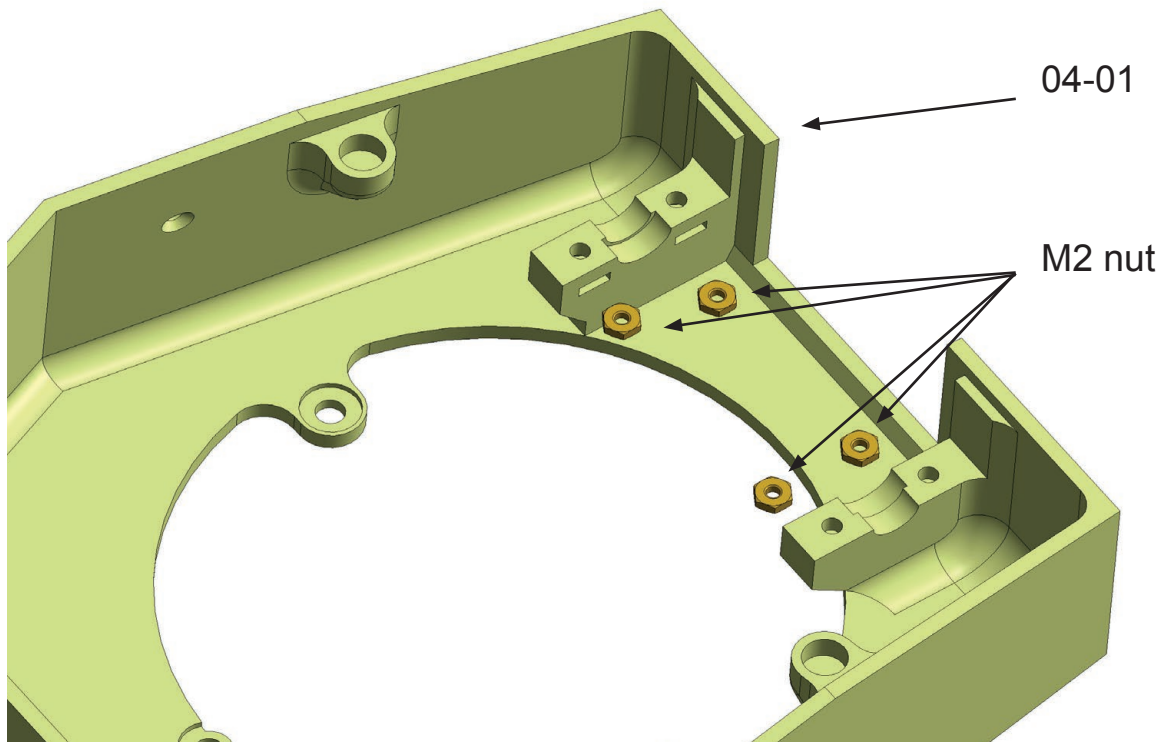
Assembly 03 - Engine Cover

Assembly 04 - Lower Turret



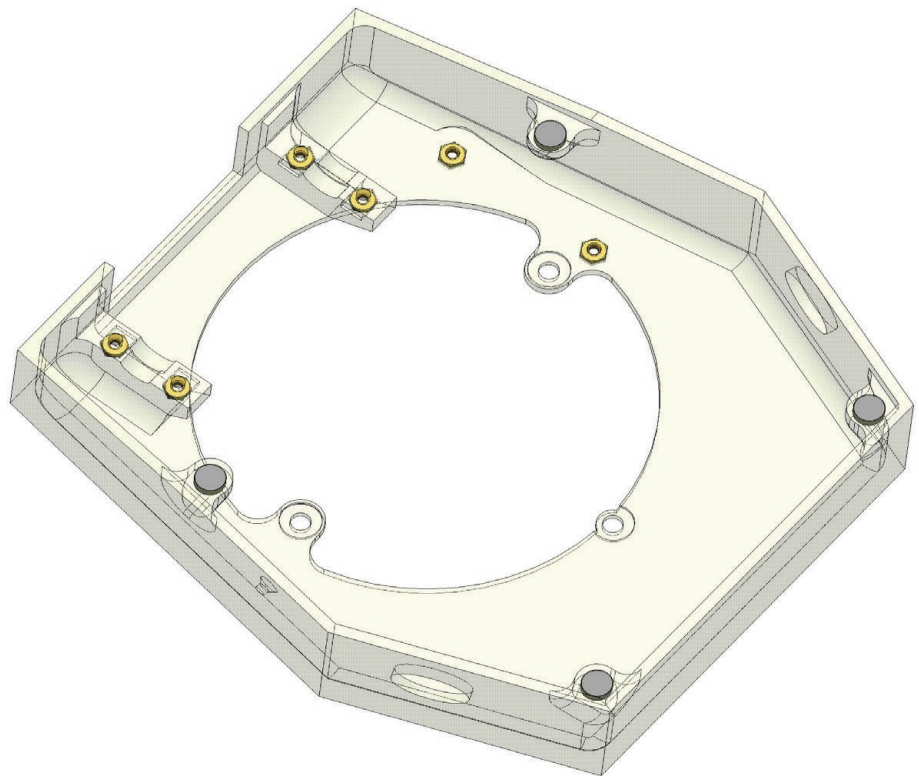
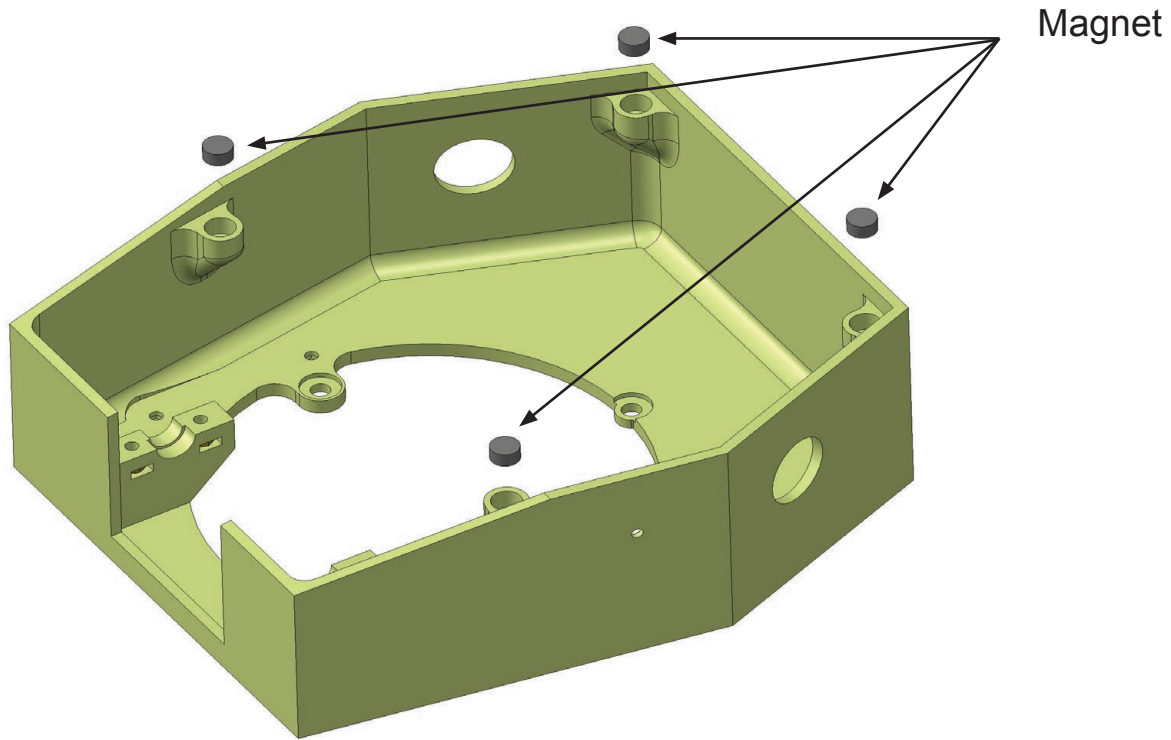
3D PRINTED PARTS:	04-01 (1x), 04-02A (1x), 04-02B (1x), 04-03A (1x), 04-03B (1x), 04-03C (1x), 04-04A (1x), 04-04B (1x), 04-05A (1x), 04-05B (1x), 04-05C (1x), 04-06 (1x), 04-07 (1x), 04-08A (1x), 04-08B (1x), 04-08C (1x), 04-08D (1x), 04-09 (1x).
OPTIONAL 3D PRINTED PARTS:	04-02AB, 04-03AB, 04-03ABC, 04-04AB, 04-05AB, 04-05ABC, 04-07_alt, 04-07_no_handles, 04-08ABC (SLA)
NON-PRINTED PARTS:	M2 nut (6x), magnets -diameter 5mm -length 3mm (4x), wire -diameter 0,6mm -length 12mm (2x), SMD LED - type 5630 with pre-soldered wires (1x),

Assembly 04 - Lower Turret



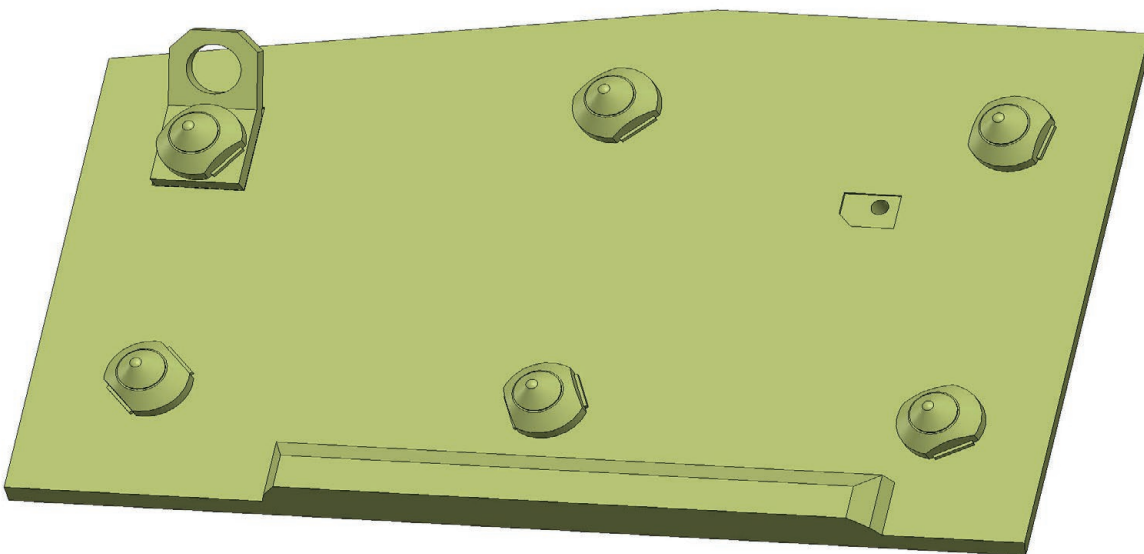
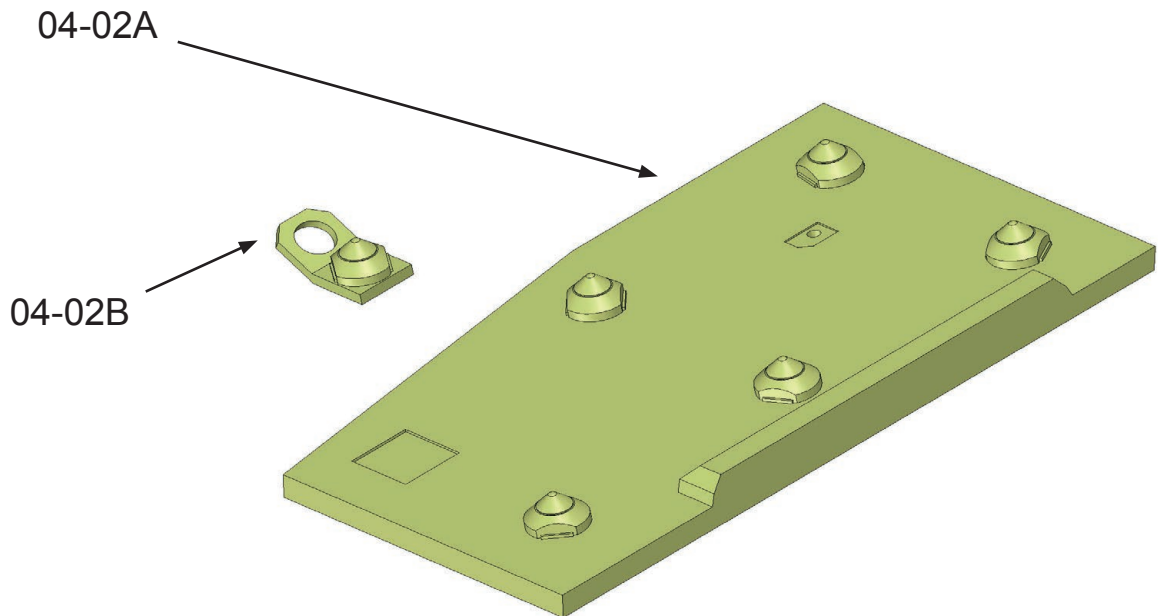
Insert 6 M2 nuts into part 04-01.

Assembly 04 - Lower Turret



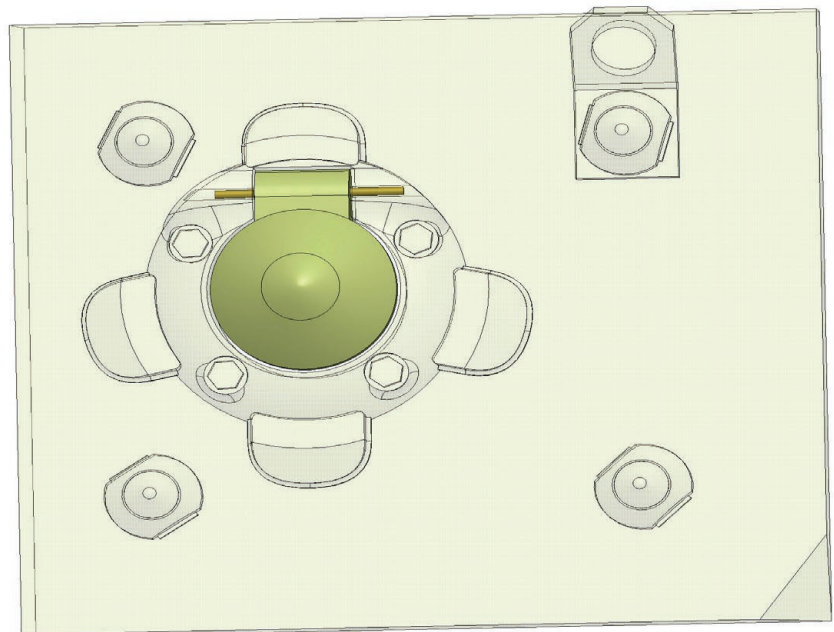
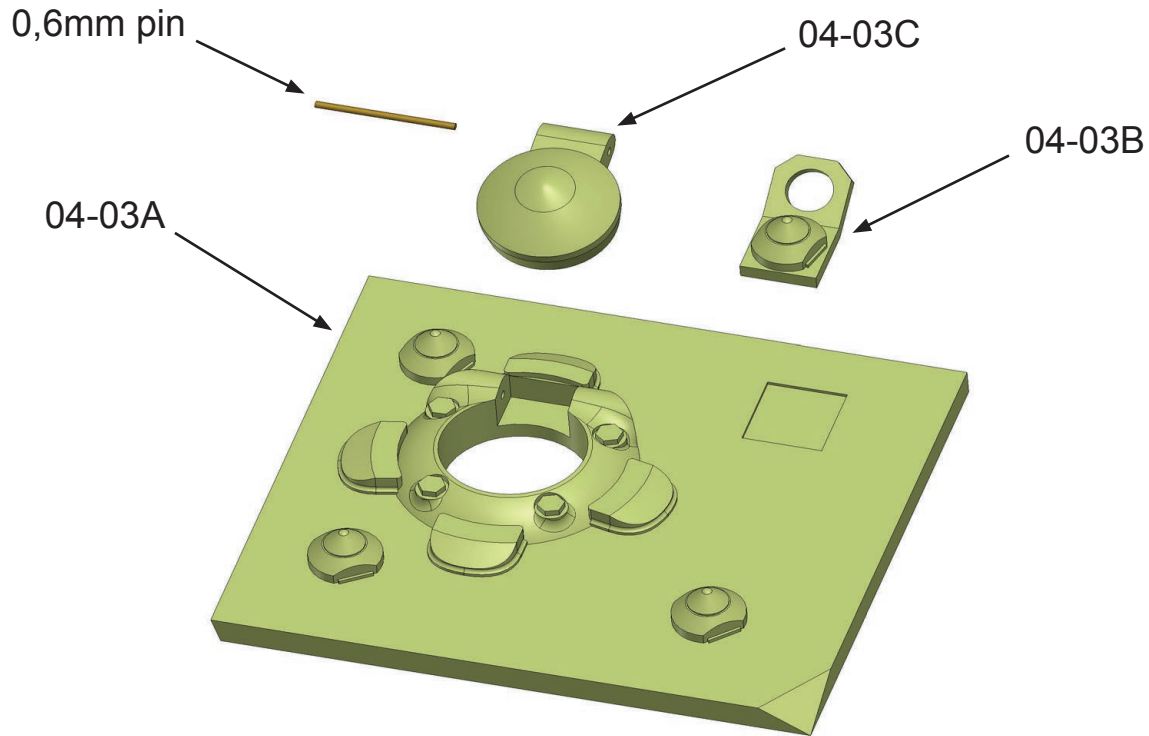
Glue 4 magnets with a diameter of 5mm and a length of 3mm.
In the figure below - a view of the installed magnets and nuts.

Assembly 04 - Lower Turret



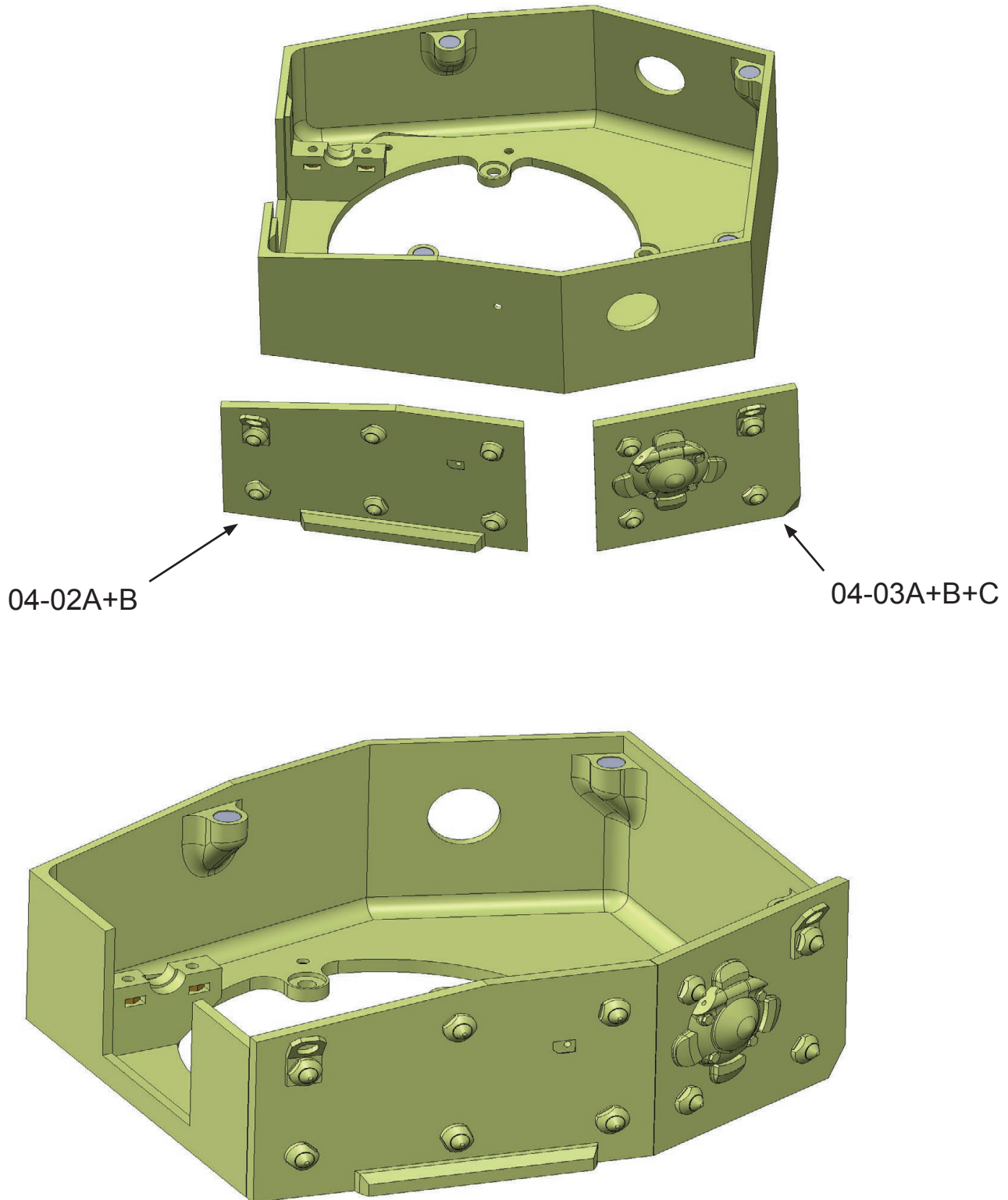
Glue parts 04-02A and 04-02B together.
You can skip the step if you are printing part 04-03AB.

Assembly 04 - Lower Turret



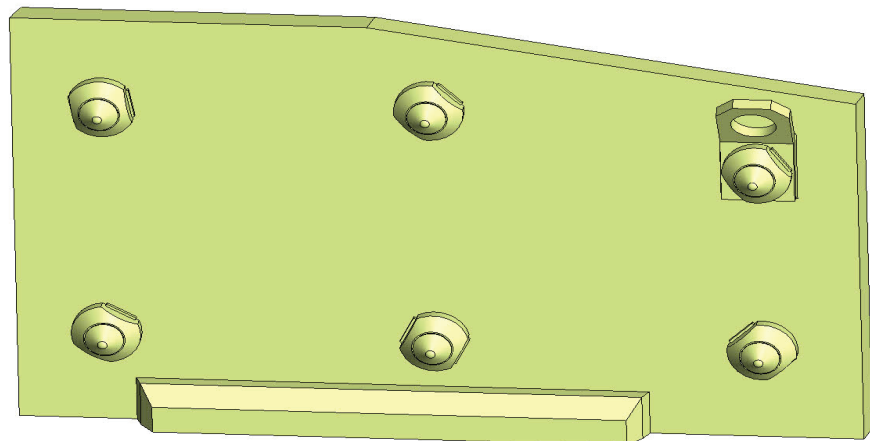
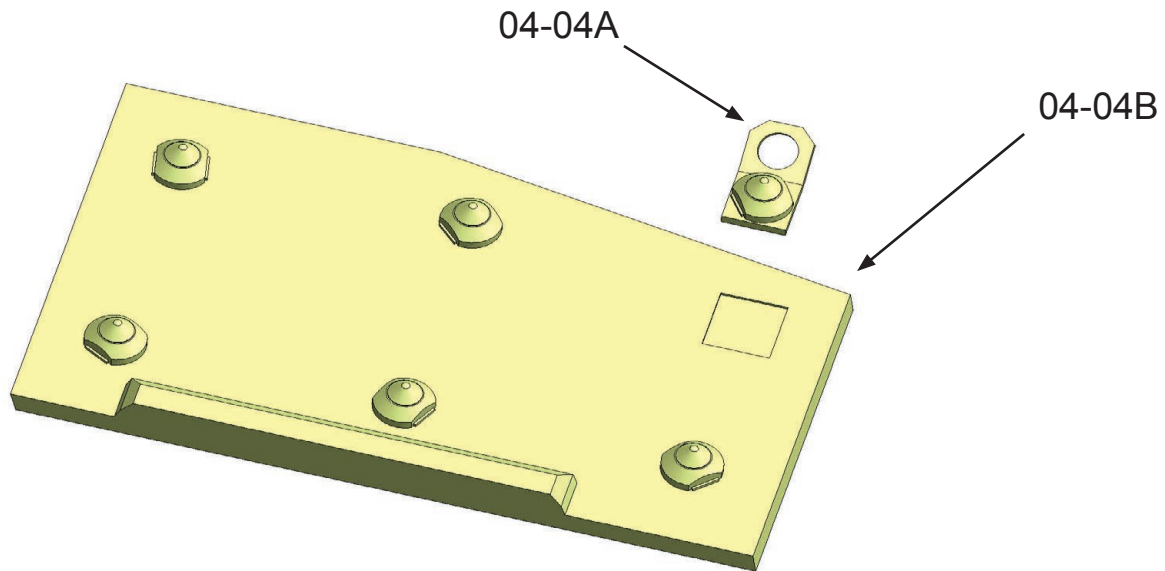
Glue parts 04-03A and 04-03B together.
You can skip the step if you are printing part 04-03AB.
Join parts 04-03A and 04-03C with a wire with
a diameter of 0.6mm and a length of 12mm.
You can also skip this step and print different versions of the part
(04-03ABC, 04-03AC).

Assembly 04 - Lower Turret



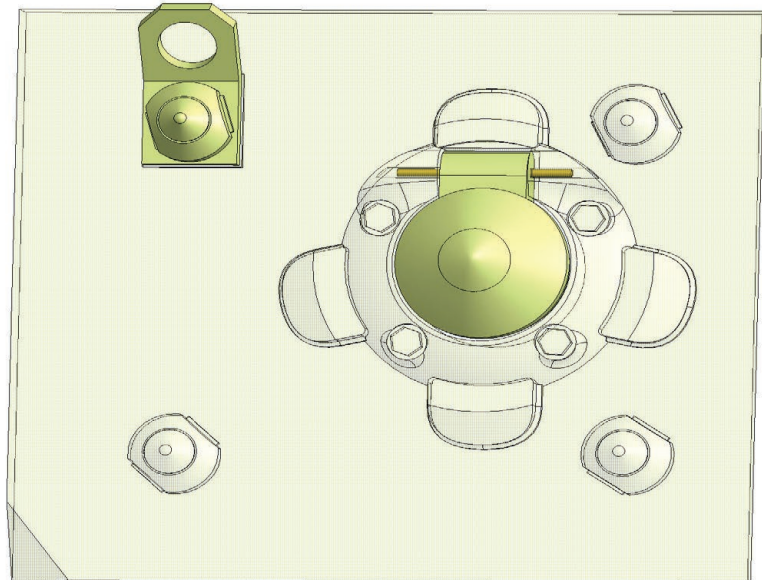
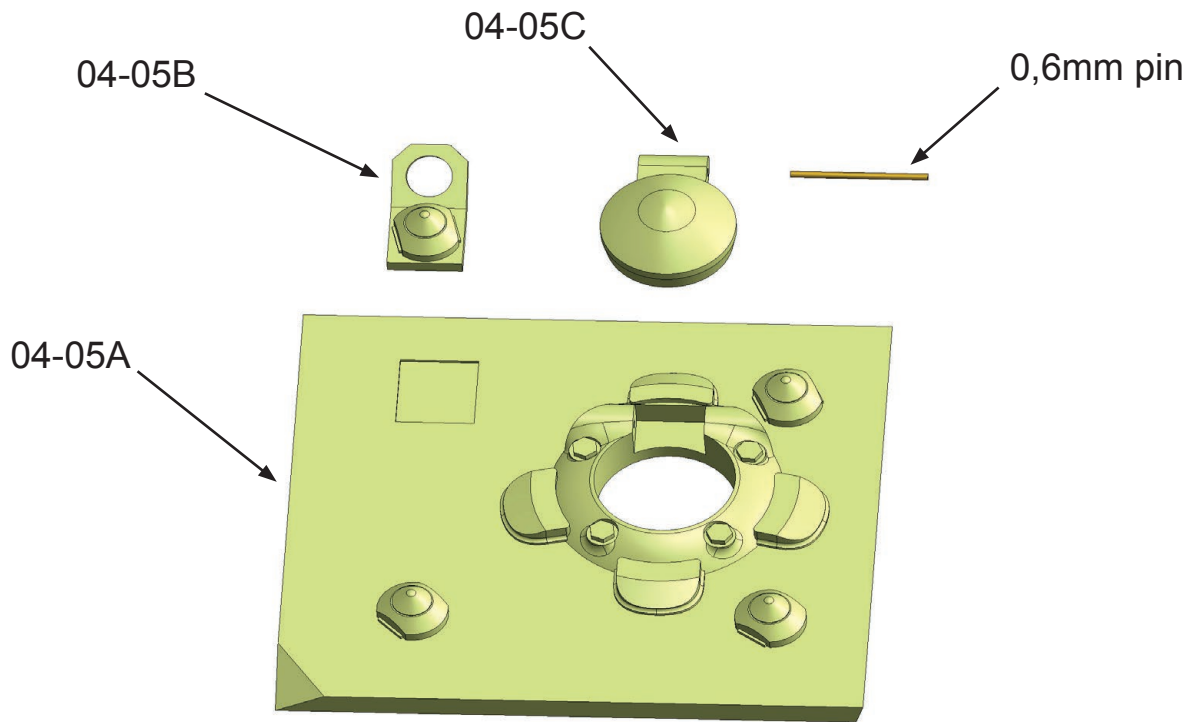
Glue parts 04-02A + B and 04-03A + B + C to part 04-01.
The edge of part 04-02A must be aligned with the front surface of part 04-01
(see lower figure on page 137).

Assembly 04 - Lower Turret



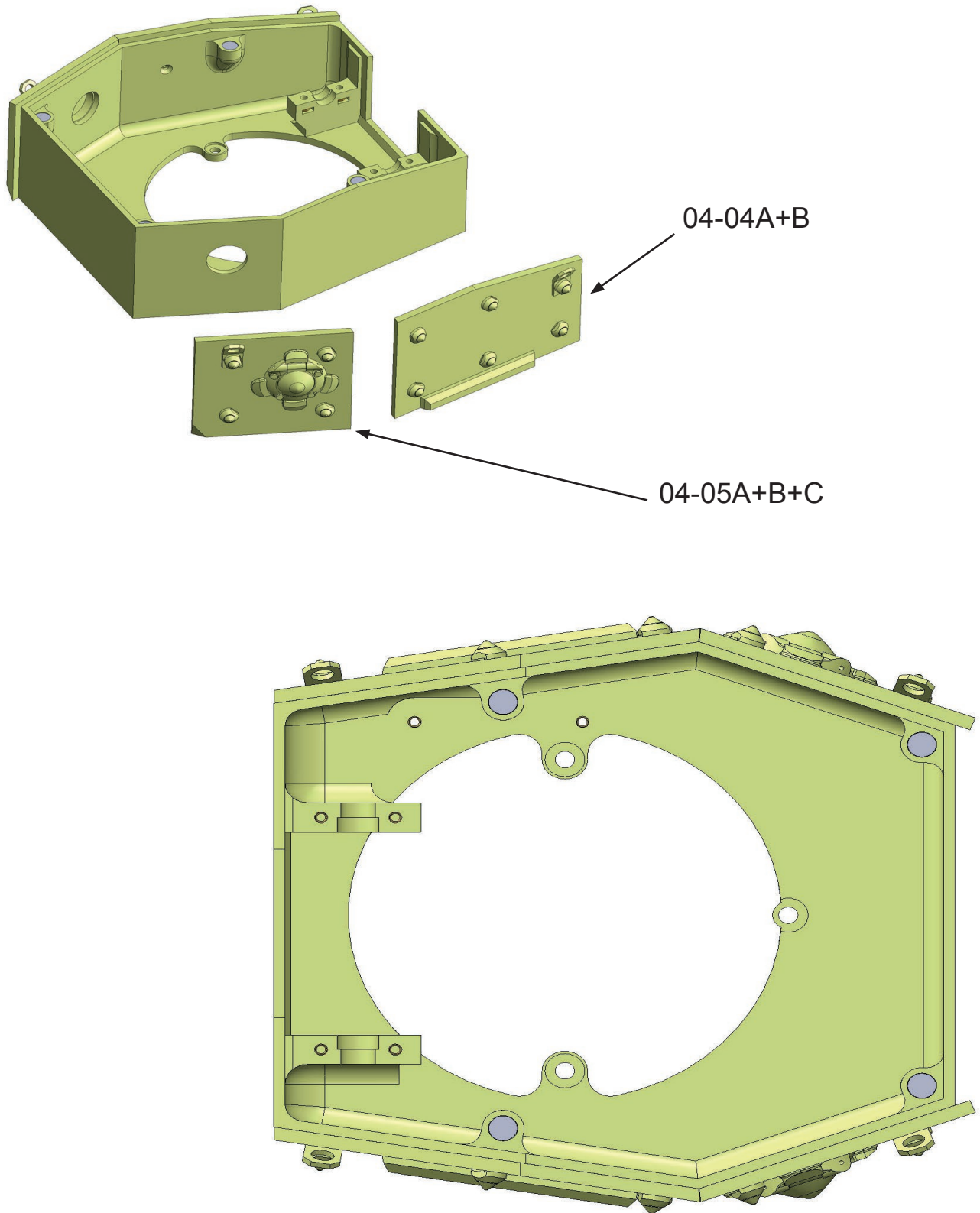
Glue parts 04-02A and 04-02B together.
You can skip the step if you are printing part 04-03AB.

Assembly 04 - Lower Turret



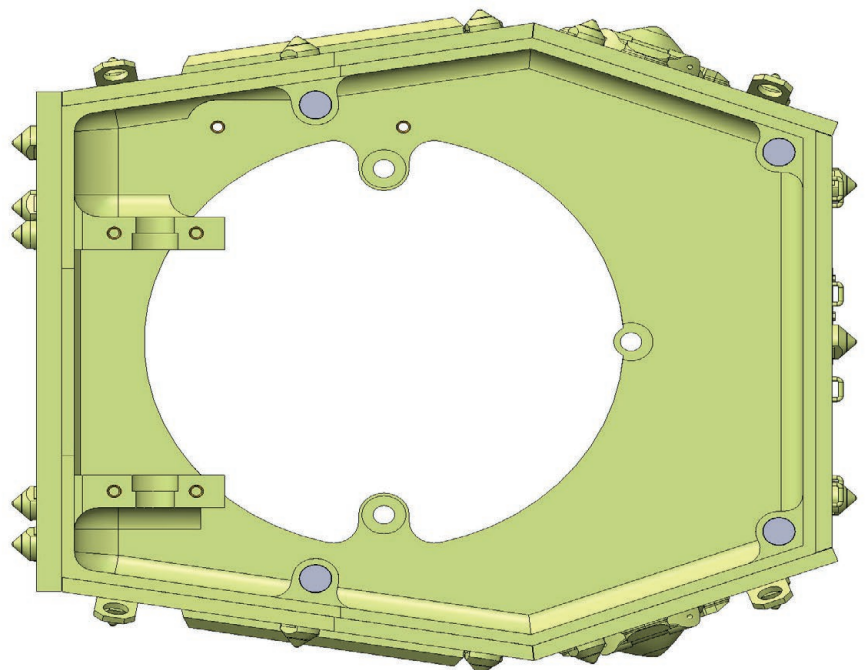
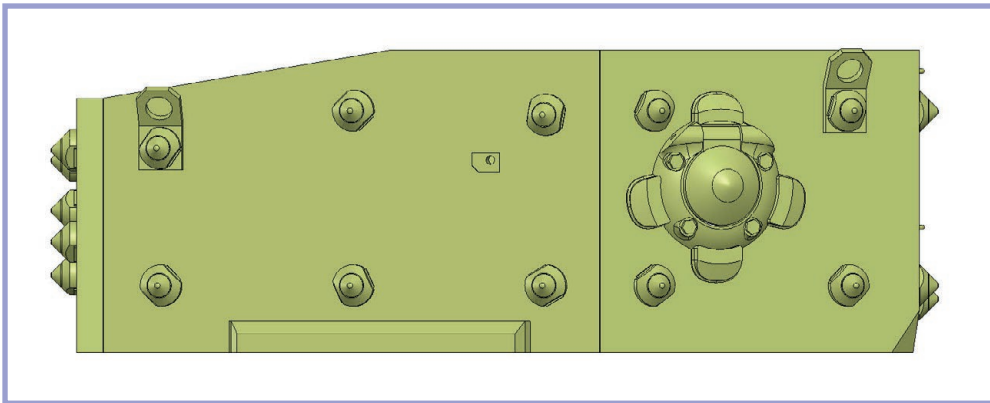
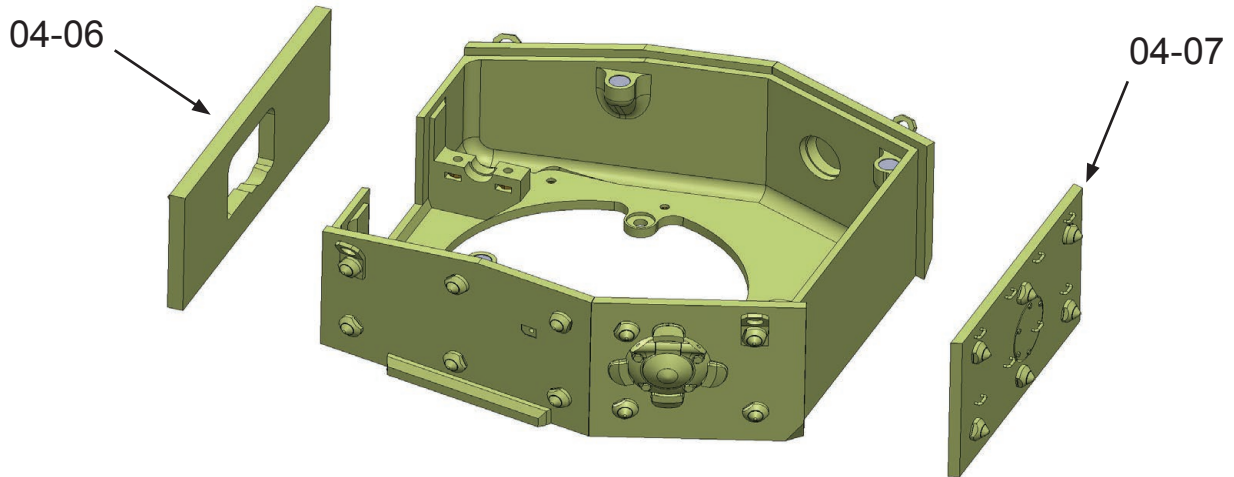
Glue parts 04-05A and 04-05B together.
You can skip the step if you are printing part 04-05AB.
Join parts 04-05A and 04-05C with a wire with
a diameter of 0.6mm and a length of 12mm.
You can also skip this step and print different versions of the part
(04-05ABC, 04-05AC).

Assembly 04 - Lower Turret



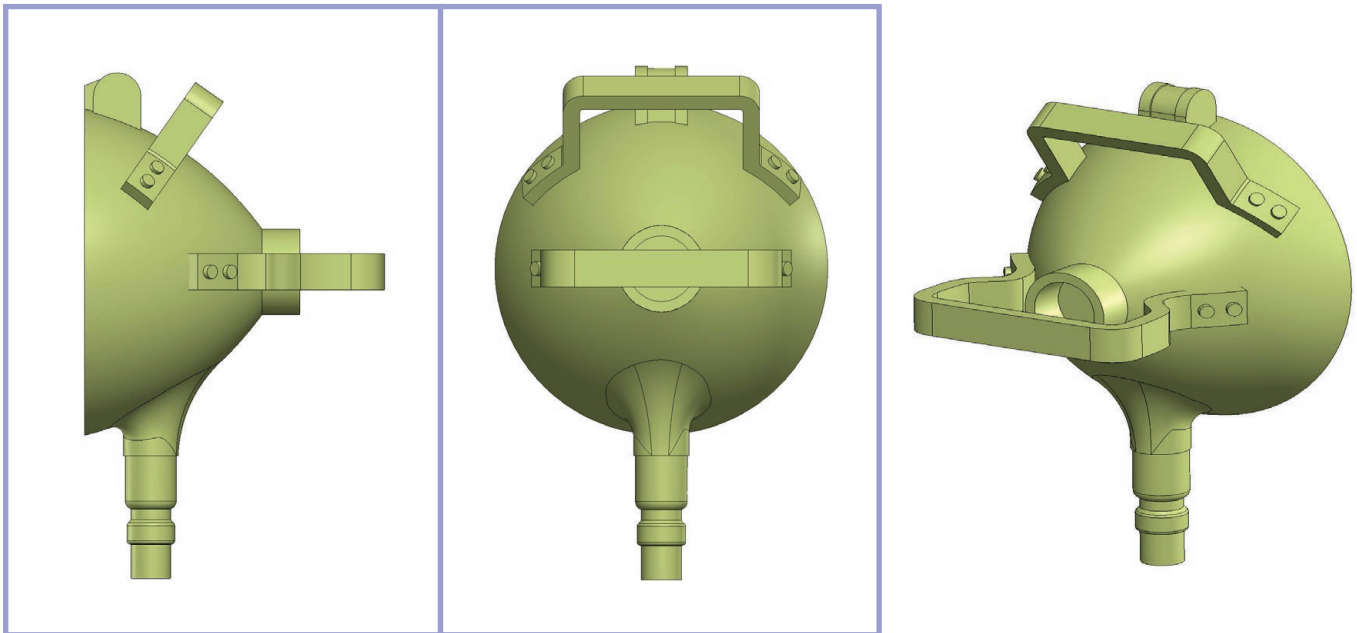
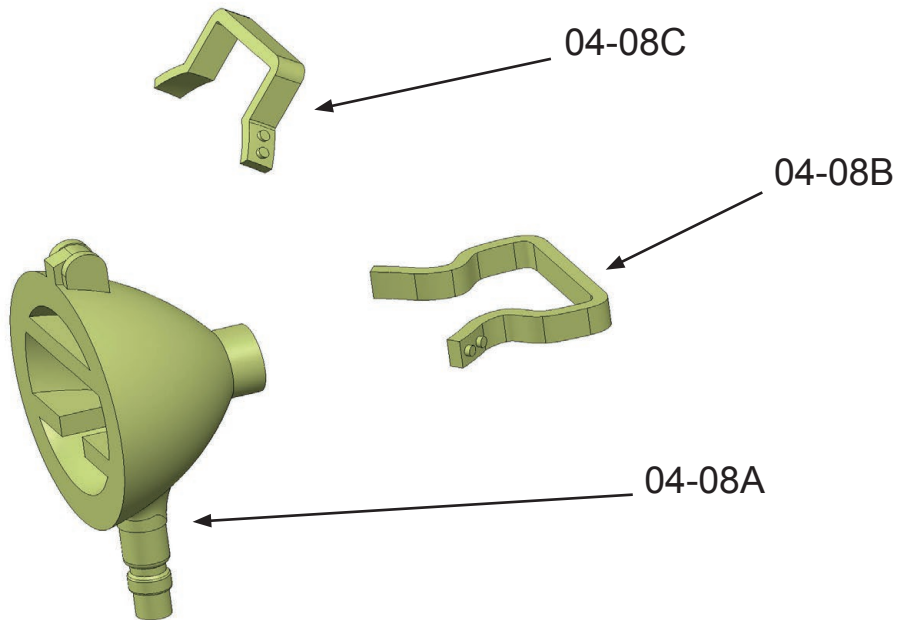
Glue parts 04-04A + B and 04-05A + B + C to part 04-01.
The edge of part 04-04A must be aligned with the front surface of part 04-01.

Assembly 04 - Lower Turret



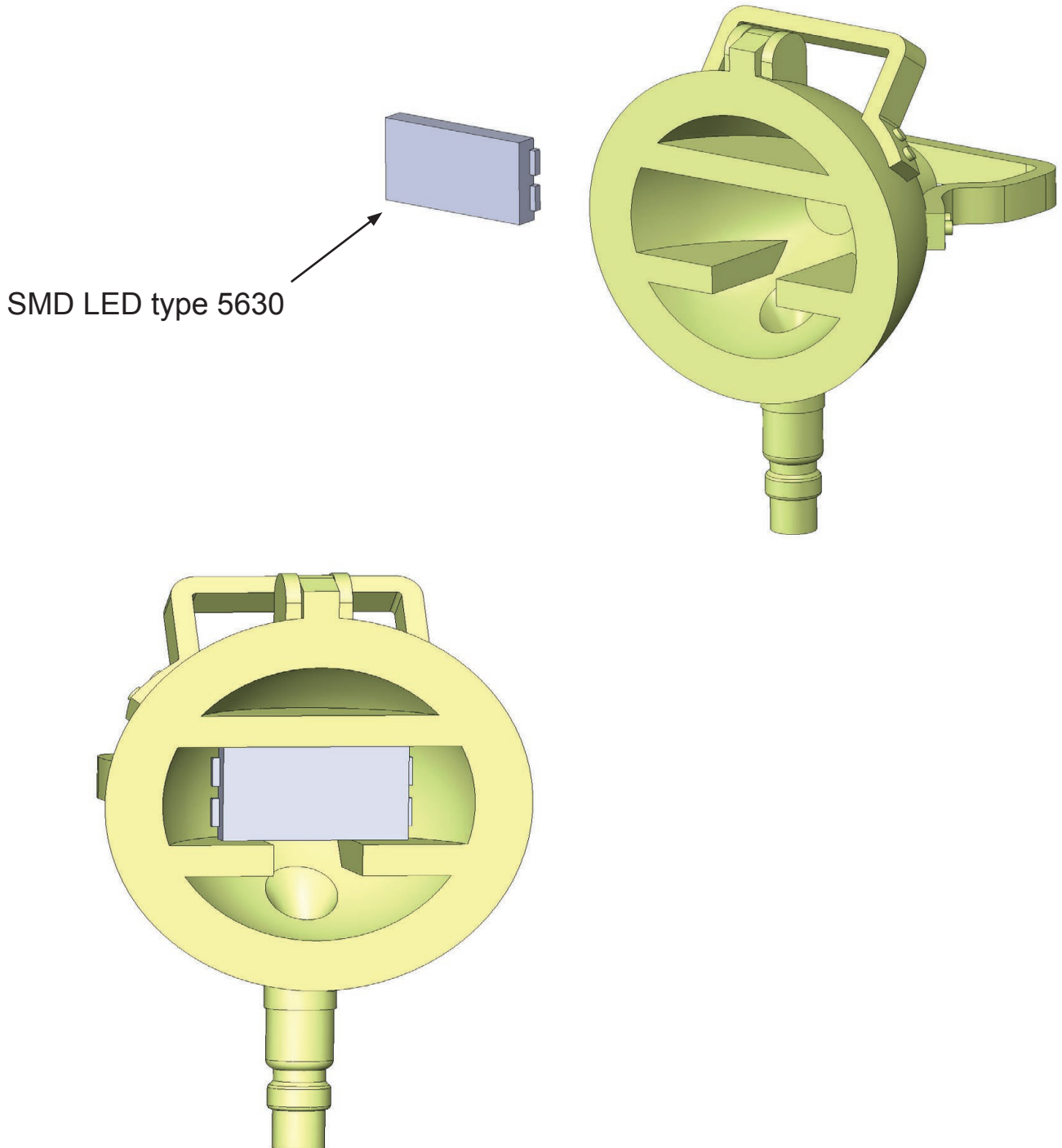
Glue parts 04-06 and 04-07 to part 04-01.

Assembly 04 - Lower Turret



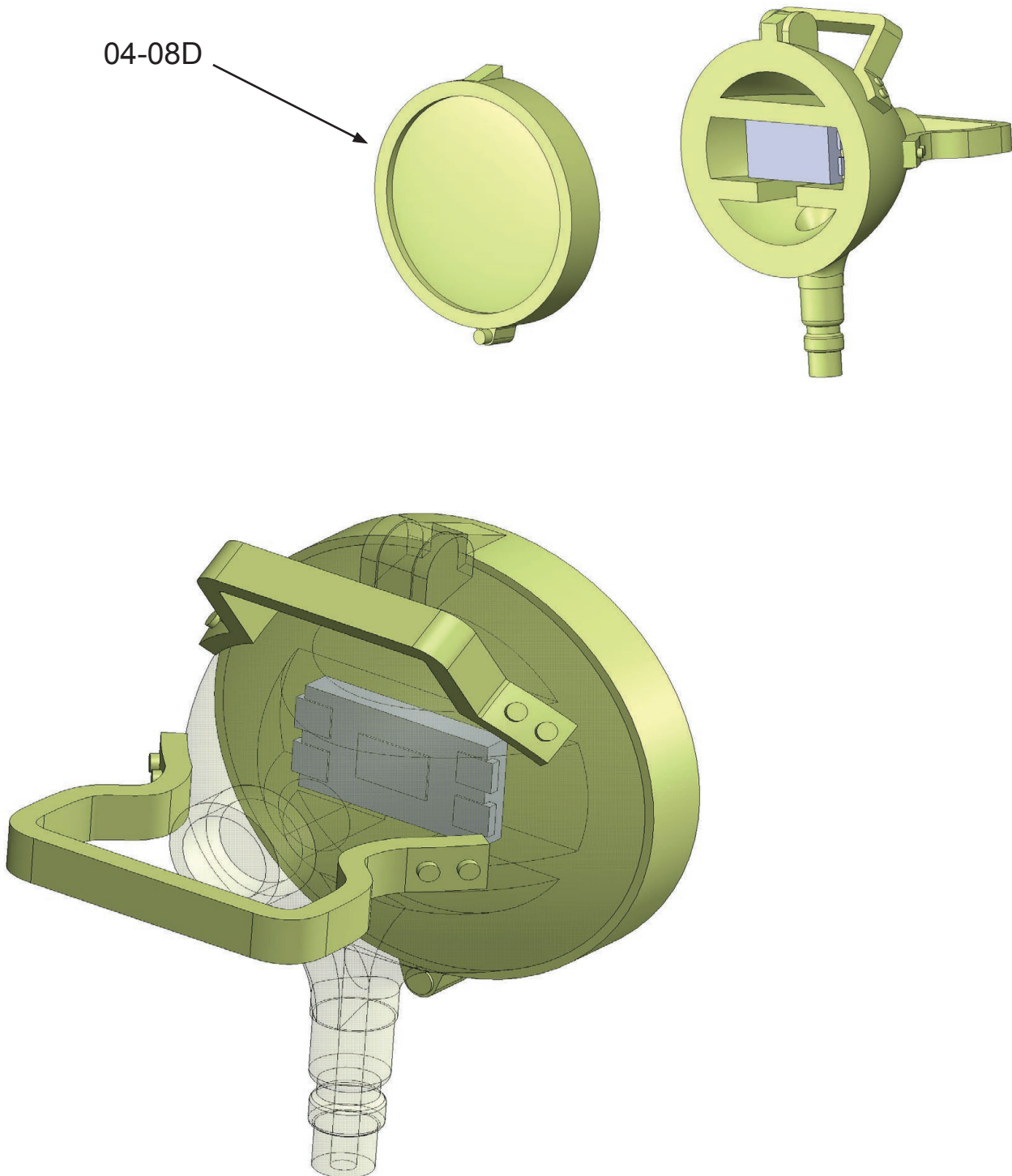
Glue parts 04-08A and 04-08B and 04-08C together.
You can skip this step if you are printing part 04-08ABC.

Assembly 04 - Lower Turret



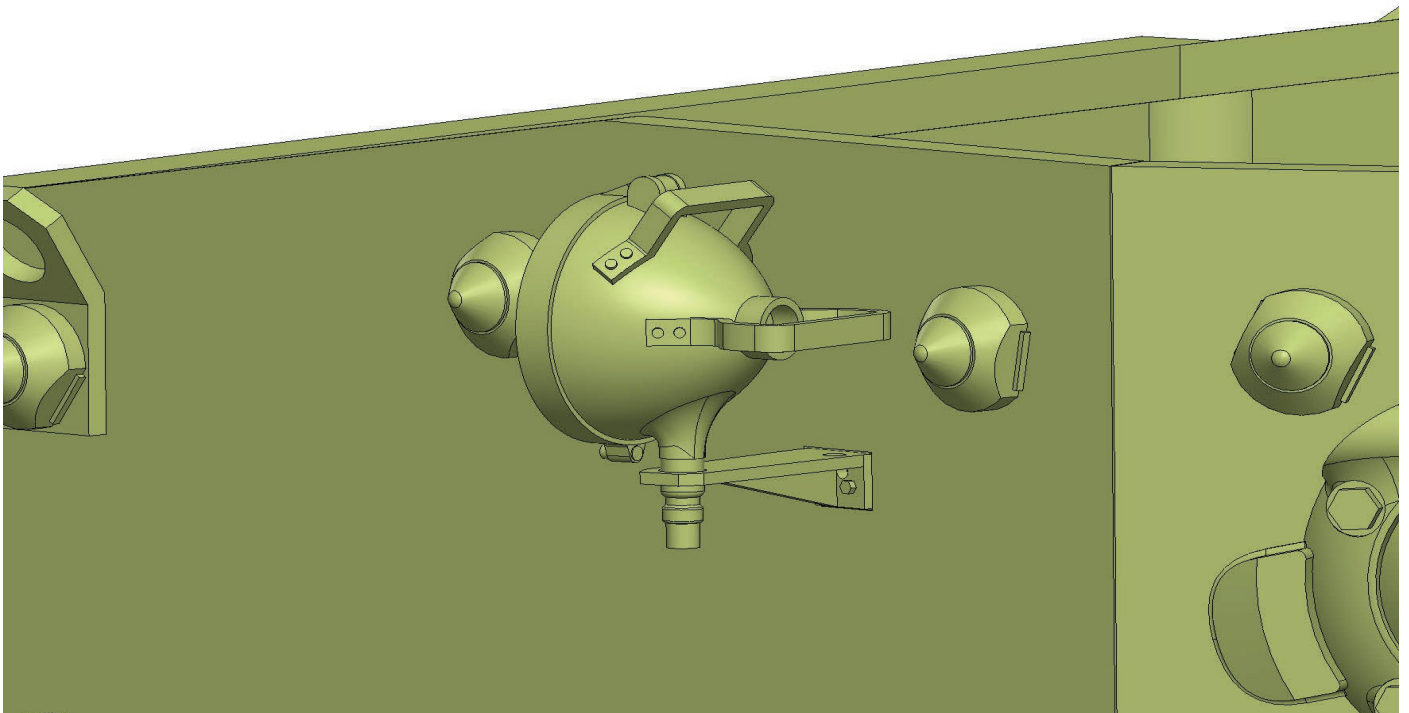
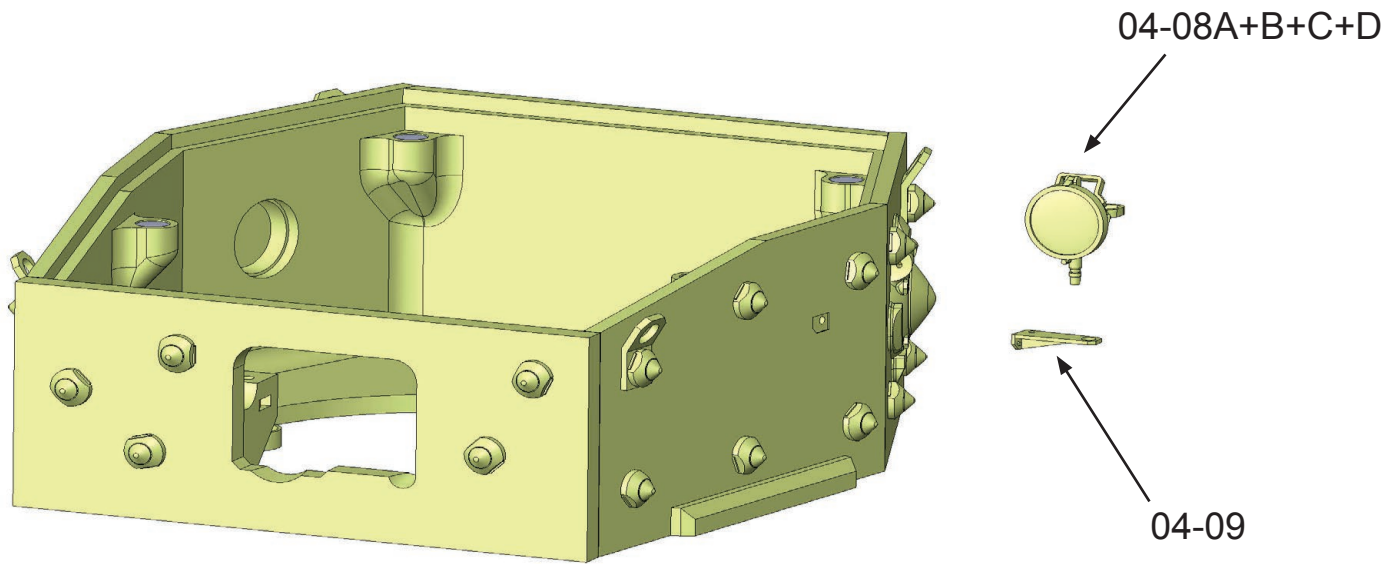
Prepare SMD LED type 5630.
Solder the wires to the diode according to the documentation.
We recommend wires with a maximum diameter of 0.25 mm.
The installation hole for the cables has a diameter of 0.6 mm.
Insert the prepared and tested diode into part 04-08A.
Route the wires through the installation hole.

Assembly 04 - Lower Turret



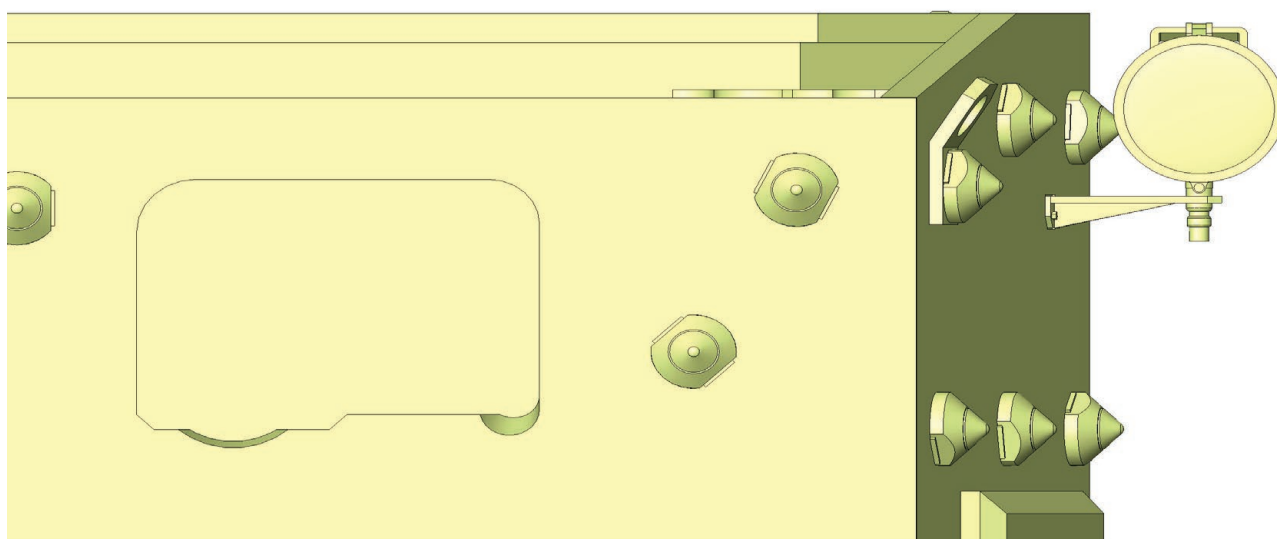
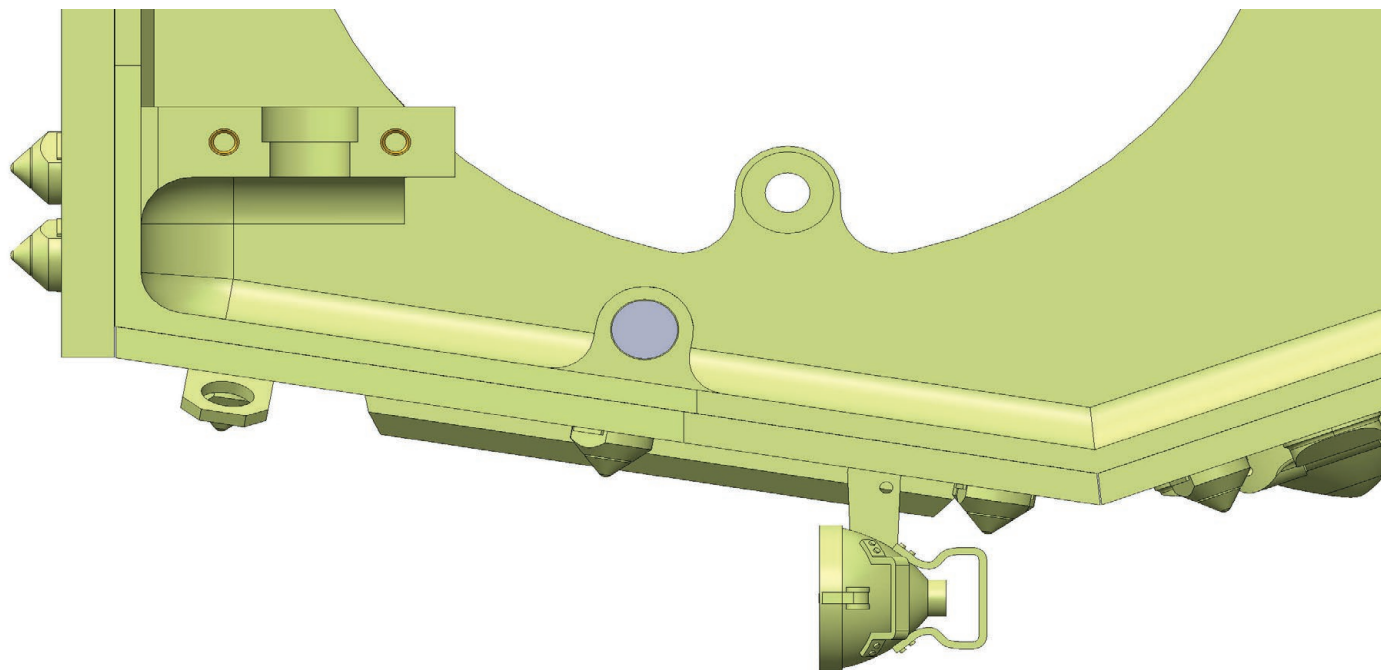
Finish the light by gluing part 04-08D. The part must be translucent.

Assembly 04 - Lower Turret



Glue the parts assembly 04-08A + B + C + D to the turret using part 04-09.
You can push the wire through the hole in the back of part 04-09.

Assembly 04 - Lower Turret



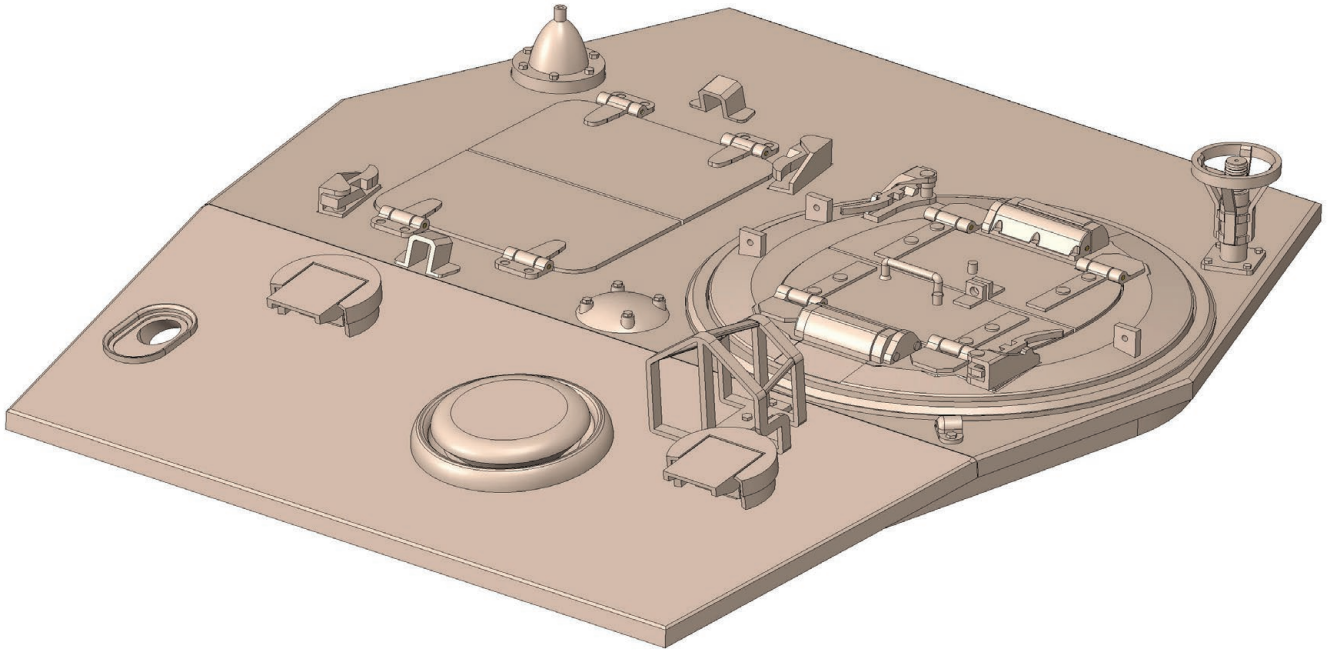
Auxiliary views for gluing parts 04-08A + B + C + D.

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Assembly guide

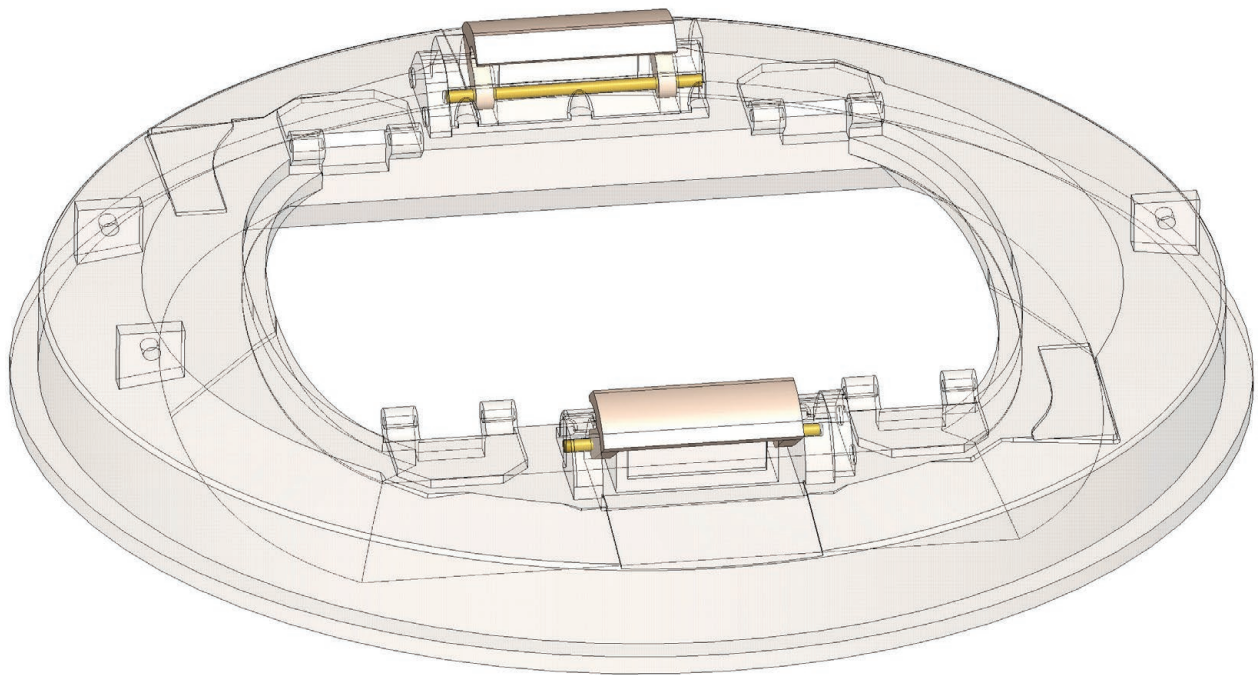
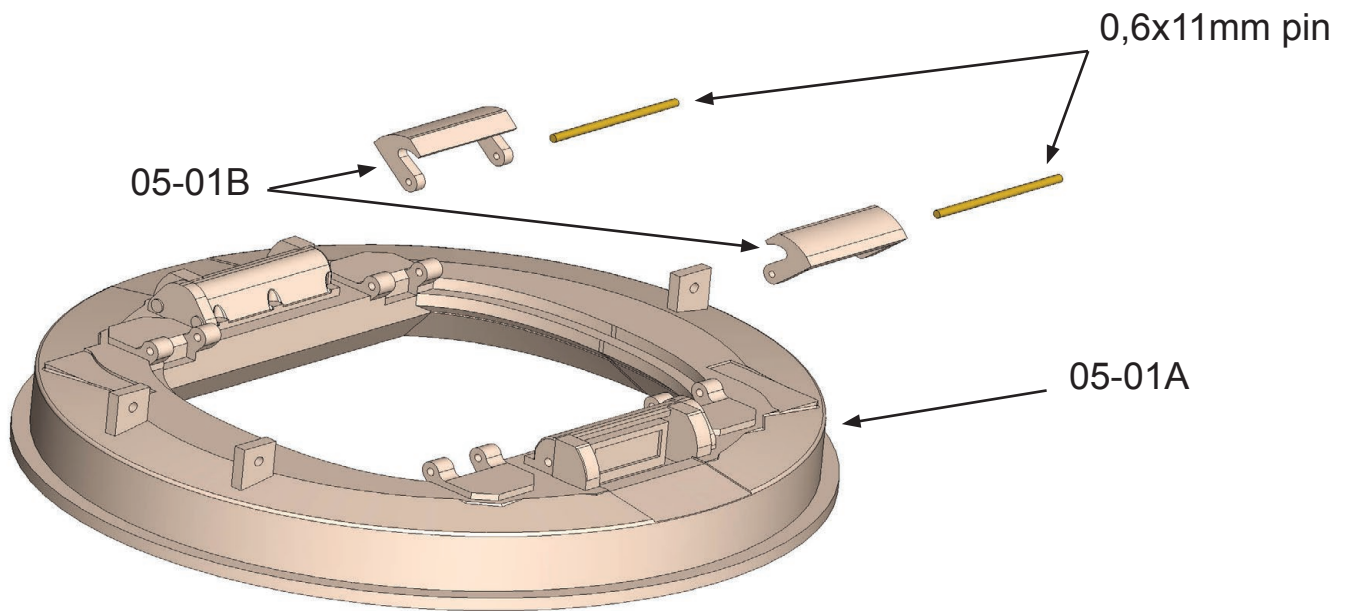
Assembly 04 - Lower Turret

Assembly 05 - Top of the Turret



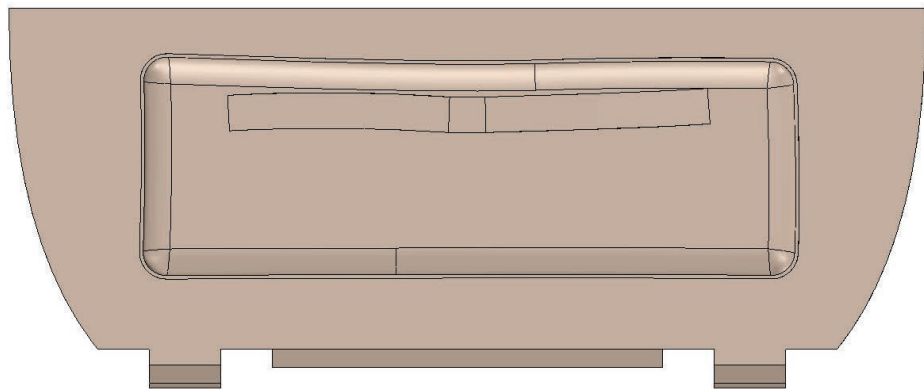
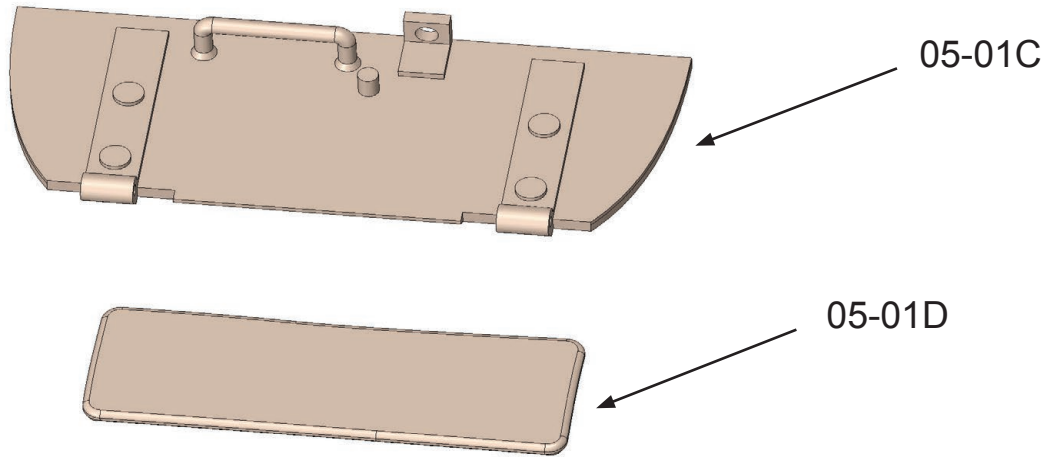
3D PRINTED PARTS:	05-01A (1x), 05-01B (2x), 05-01C (1x), 05-01D (1x), 05-01E (1x), 05-01F (1x), 05-01G (2x), 05-01H (2x), 05-02A (1x), 05-02B (2x), 05-03 (1x), 05-04 (1x), 05-05A (2x), 05-05B (2x), 05-06A (2x), 05-06B (2x), 05-07 (1x), 05-08 (1x), 05-09 (2x), 05-10A (1x), 05-10B (1x),
VOLITELNÉ 3D PRINTED PARTS::	05-01AB, 05-01ABCE, 05-01ABCE_no_handle, 05-01C_no_handle, 05-02AB (recommended), 05-10AB (SLA), 05-10AB_support (SLA)
NE-3D PRINTED PARTS:	M3 nut (4x), wire -diameter 0,6mm -lenght 11mm (2x), wire -diameter 0,6mm -lenght 5,5mm (8x),

Assembly 05 - Top of the Turret



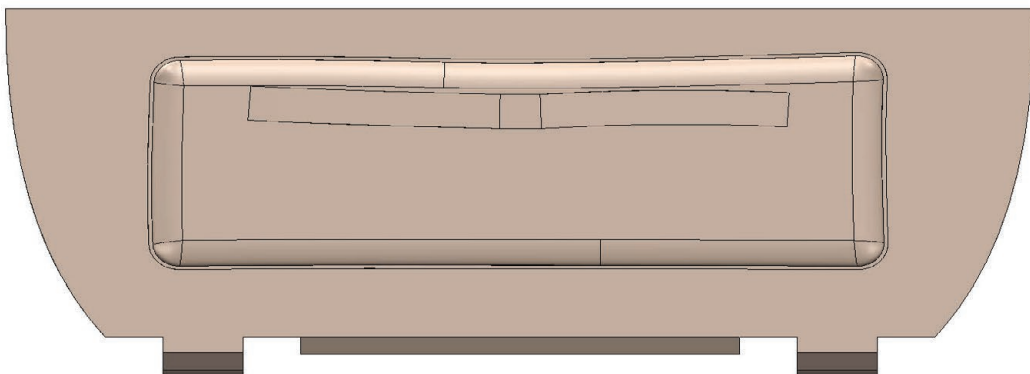
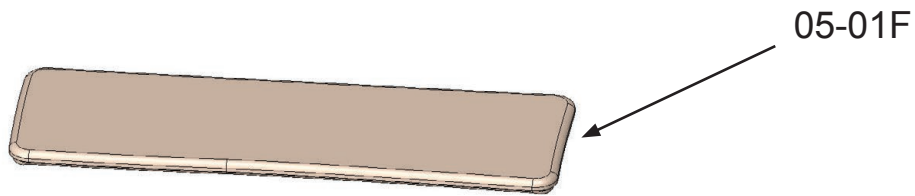
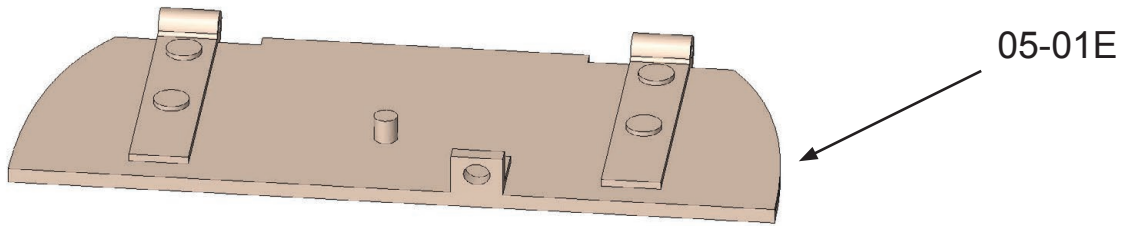
Attach two parts 05-01B to part 05-01A. Use a wire with a diameter of 0.6 mm.
The length of the wire is 11 mm.
We recommend cutting the wire only after sliding it into the hinge.

Assembly 05 - Top of the Turret



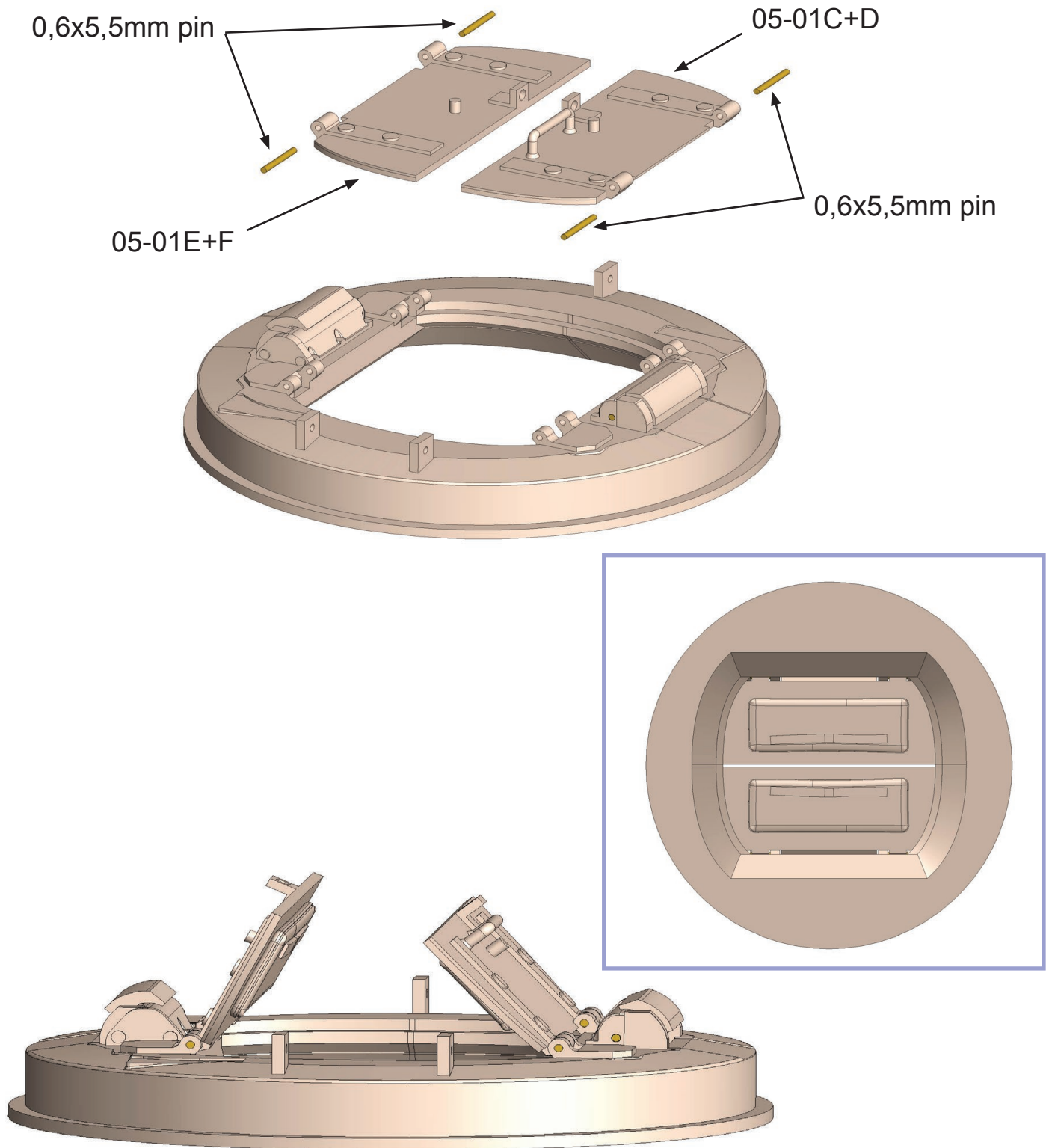
Glue parts 05-01C and 05-01D together.

Assembly 05 - Top of the Turret



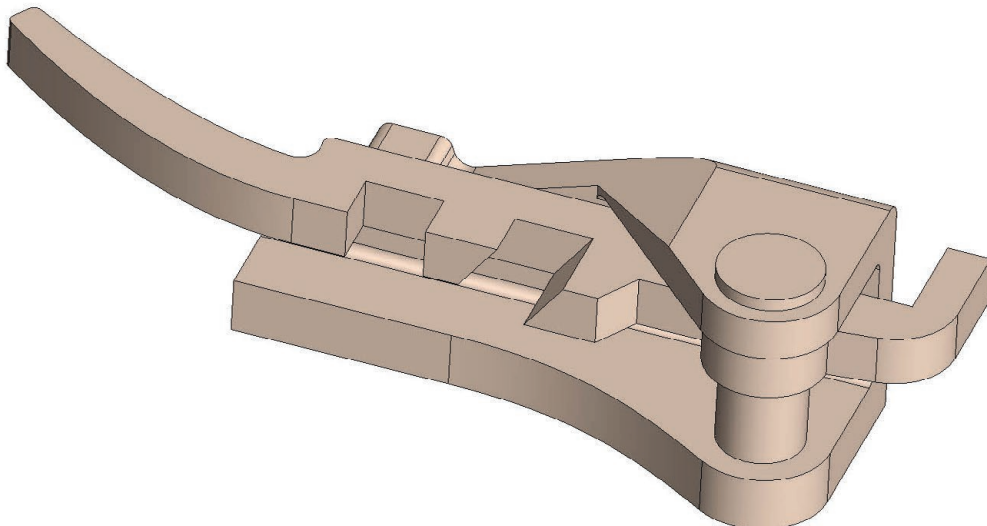
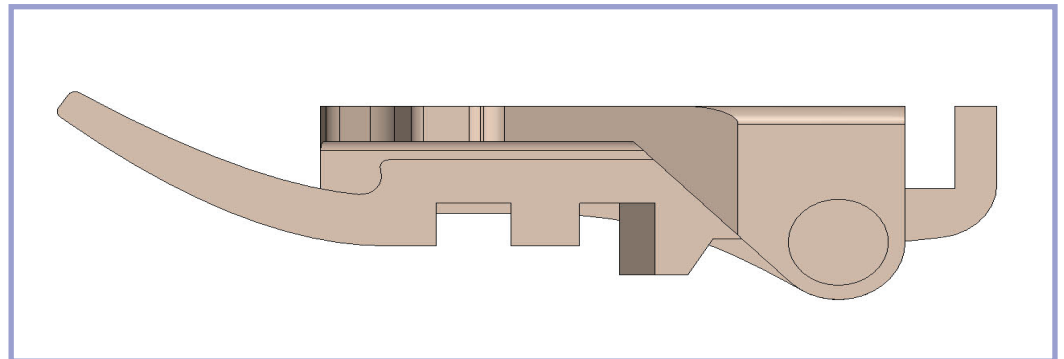
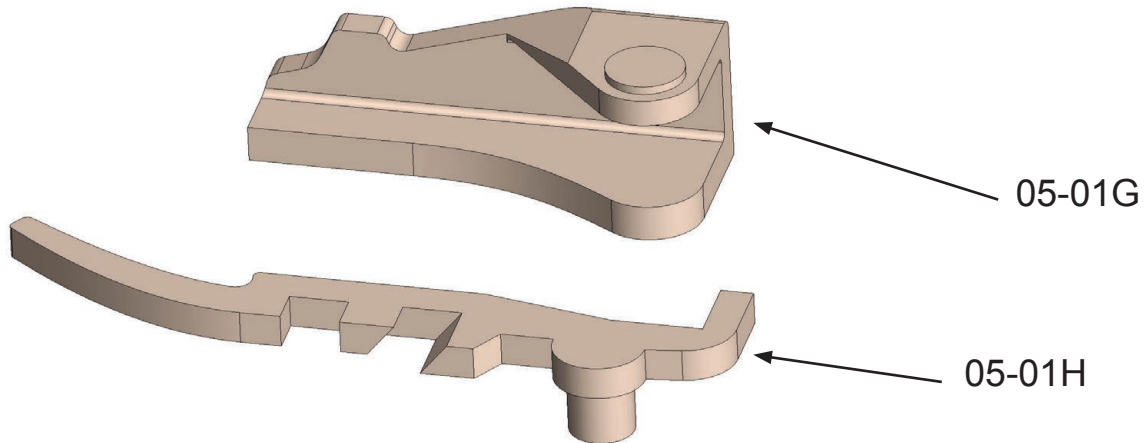
Glue parts 05-01E and 05-01F together.

Assembly 05 - Top of the Turret



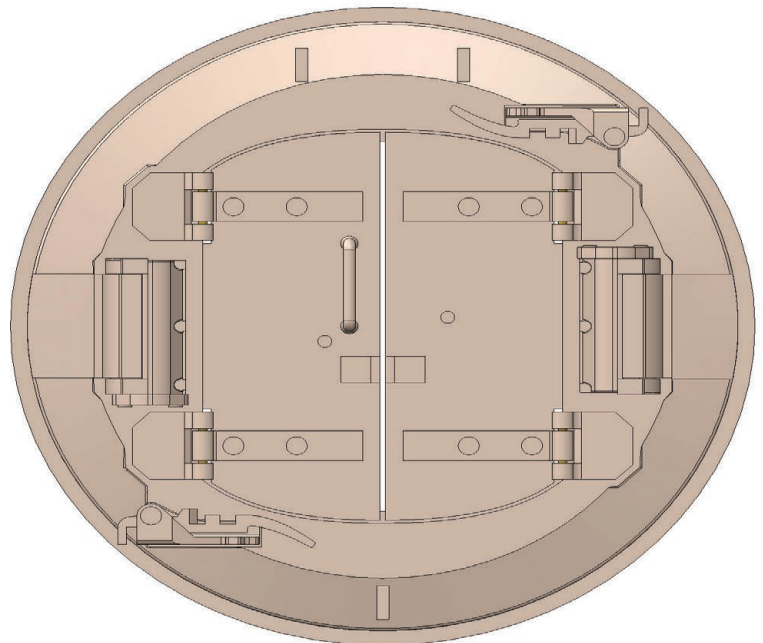
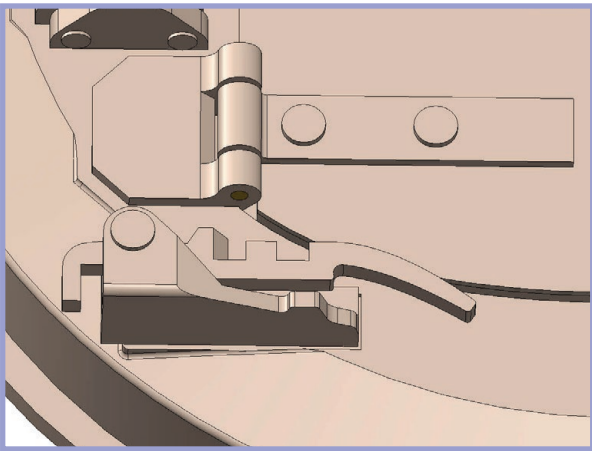
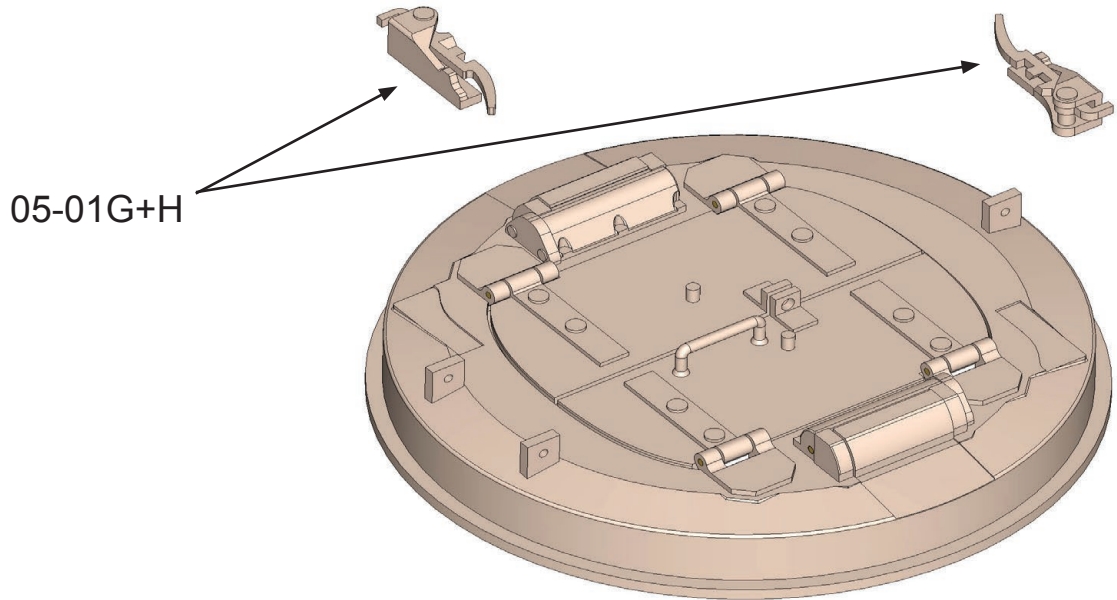
Attach the parts assemblies 05-01C + D and 05-01E + F to part 05-01A using a wire with a diameter of 0.6 mm and a length of 5.5 mm.
If you are not interested in such a complex construction, use simplified, alternative parts.

Assembly 05 - Top of the Turret

2x

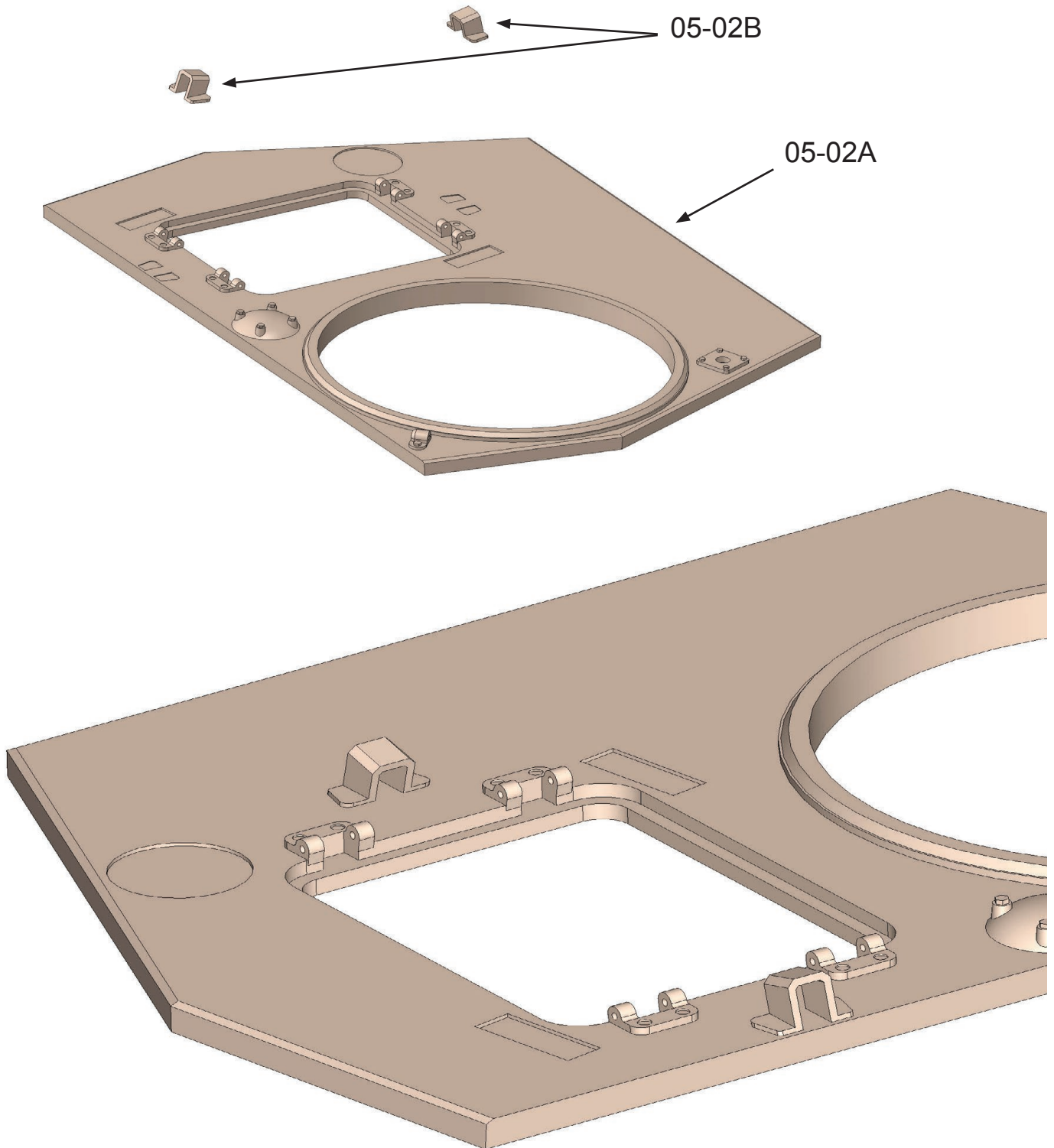
Glue parts 05-01G and 05-01H together. You will need two such units.

Assembly 05 - Top of the Turret



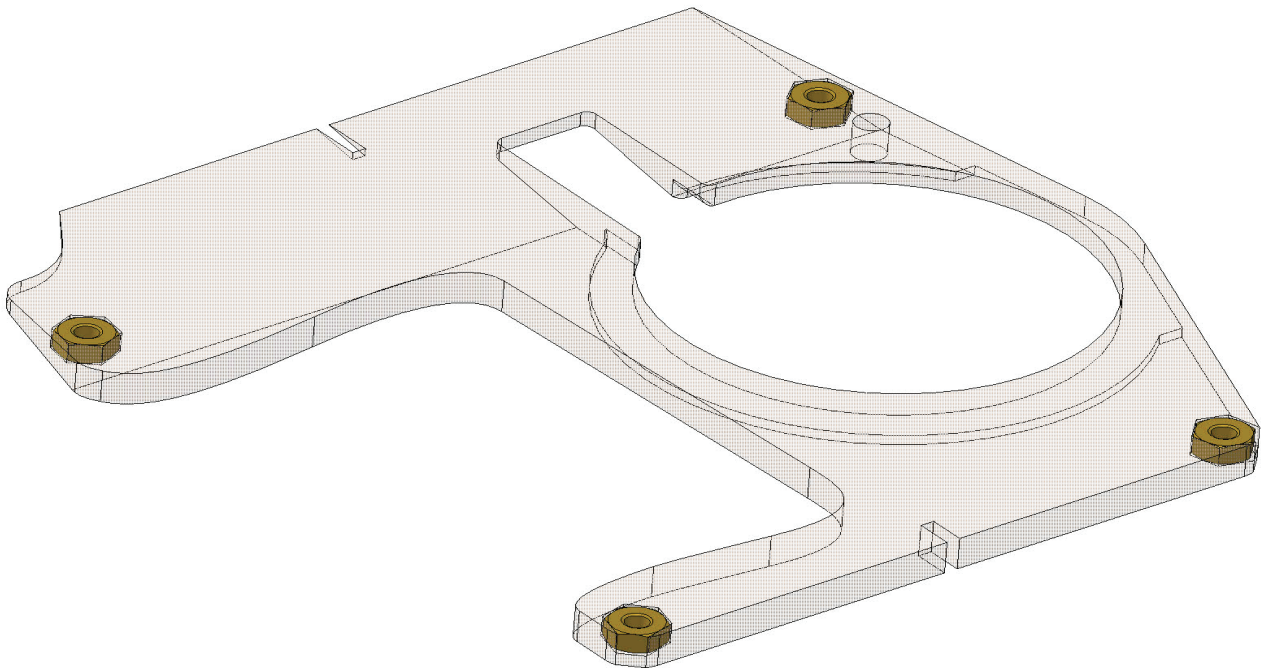
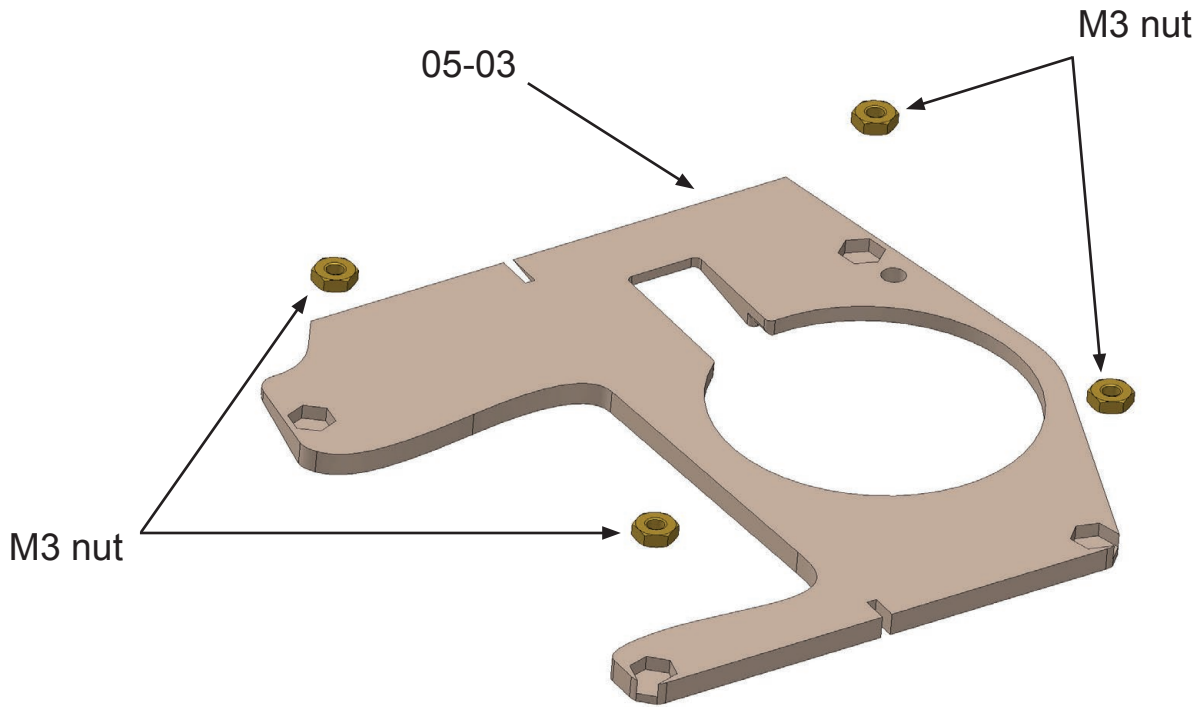
Glue the two assemblies of parts 05-01G + H to part 05-01A.

Assembly 05 - Top of the Turret



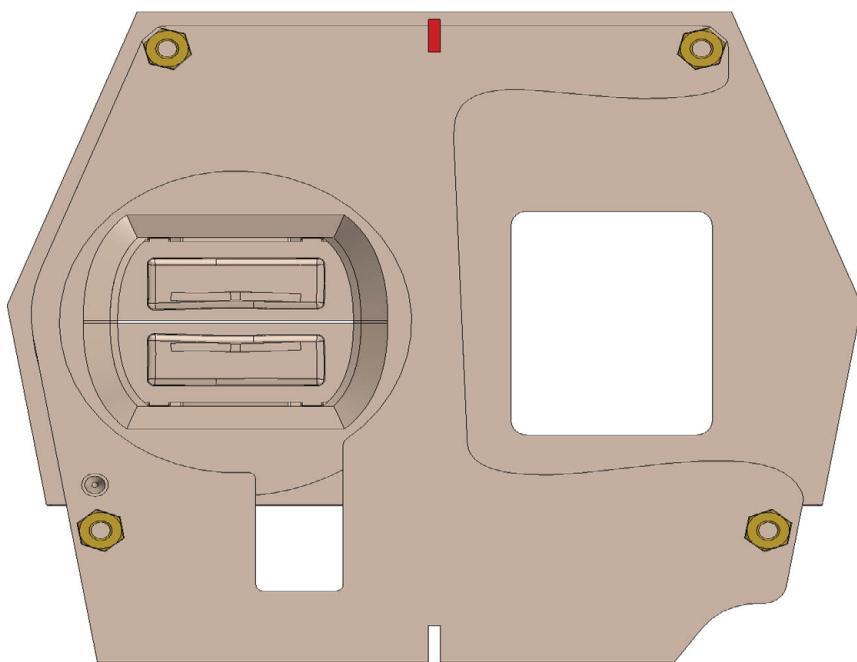
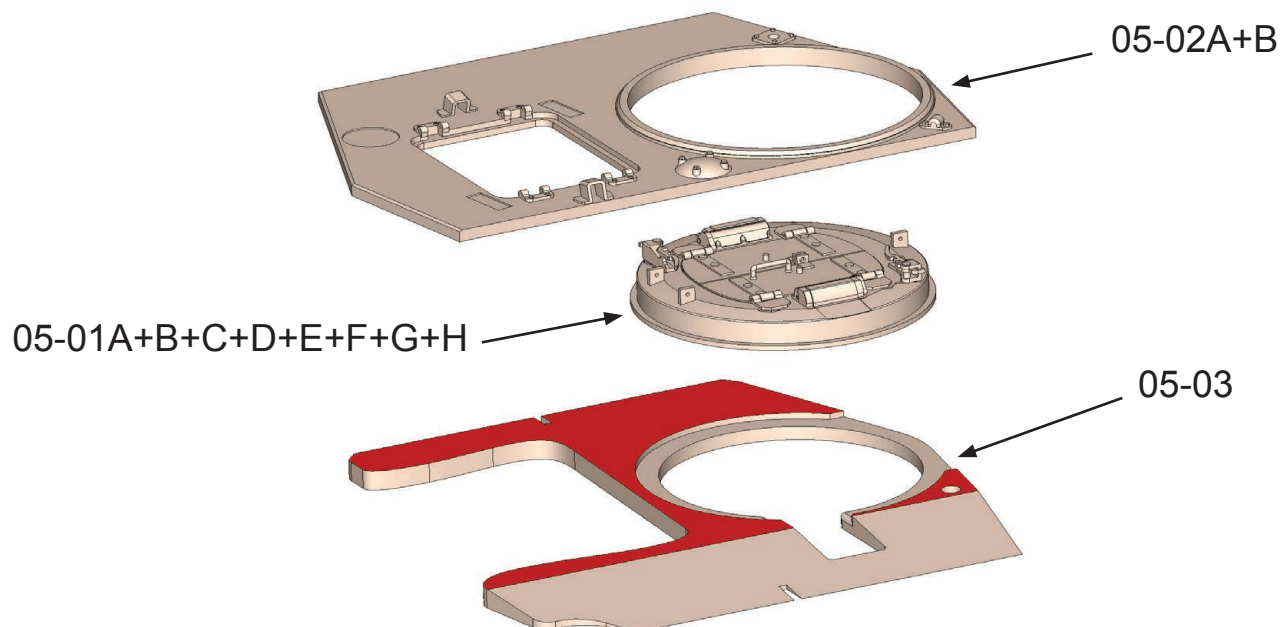
Glue two parts 05-02B to part 05-02A.
You can skip this step if you are printing part 05-02AB.

Assembly 05 - Top of the Turret



Glue four M3 nuts into part 05-03.

Assembly 05 - Top of the Turret



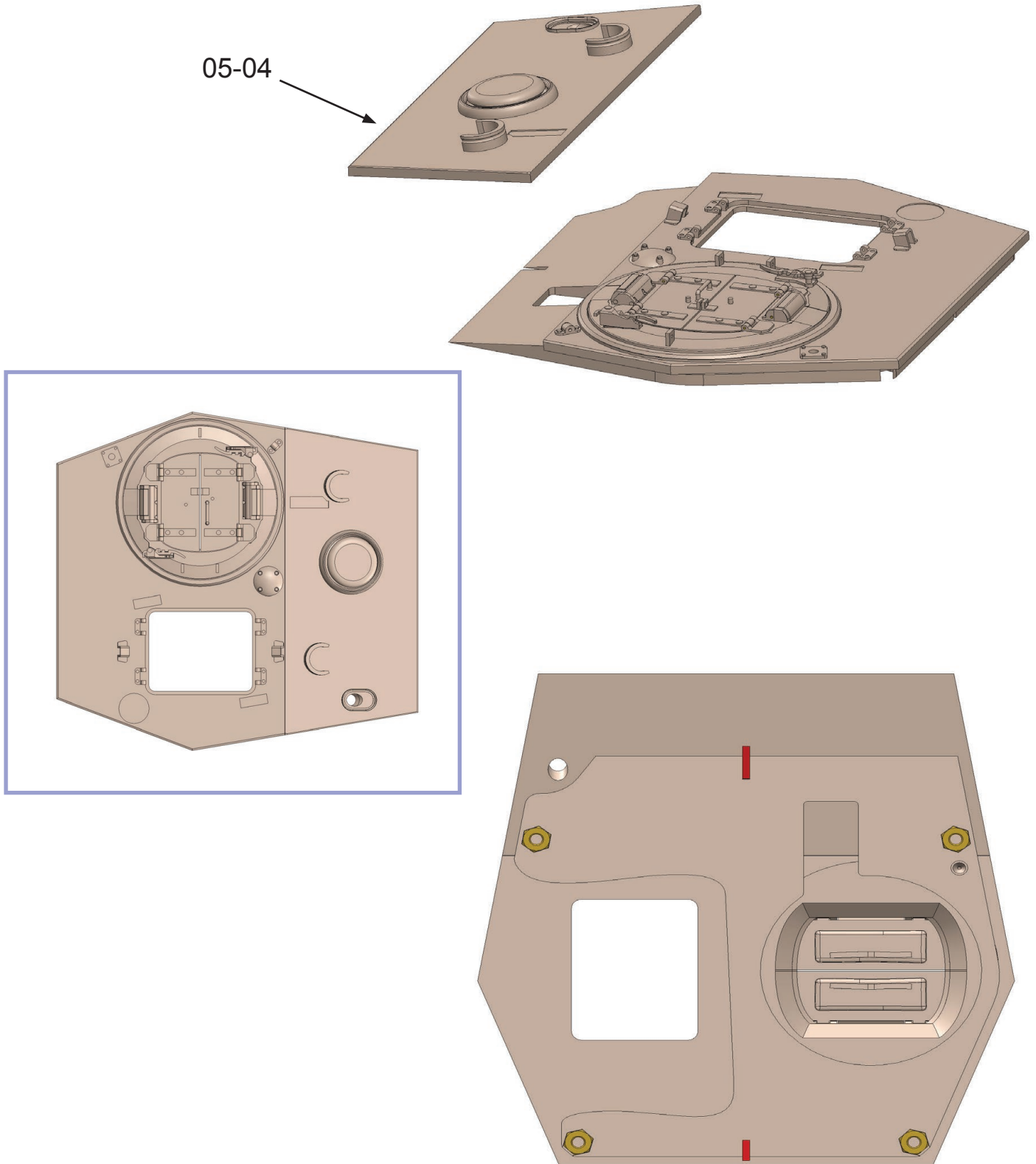
Insert the parts assembly 01-05A to 01-05H between parts 05-02A + B and 05-03.

Glue parts 05-02A and 05-03 together,
align according to the groove on the parts (bottom picture, red color).

Apply the adhesive only to the areas marked in red.

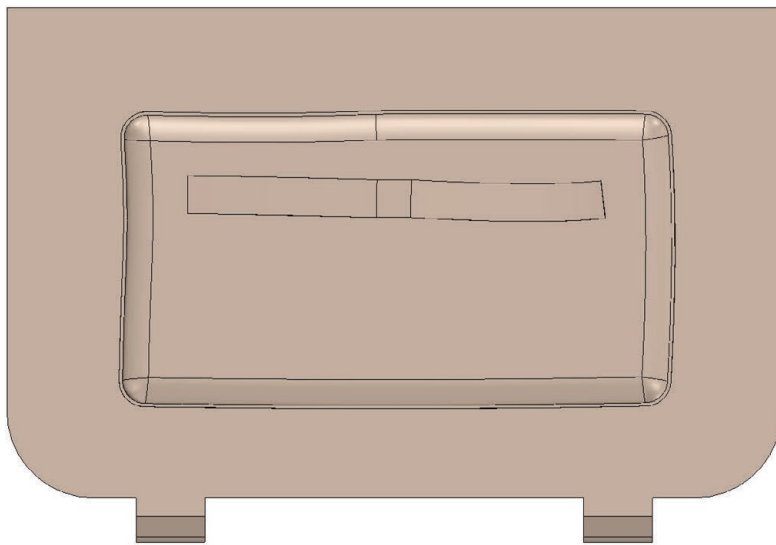
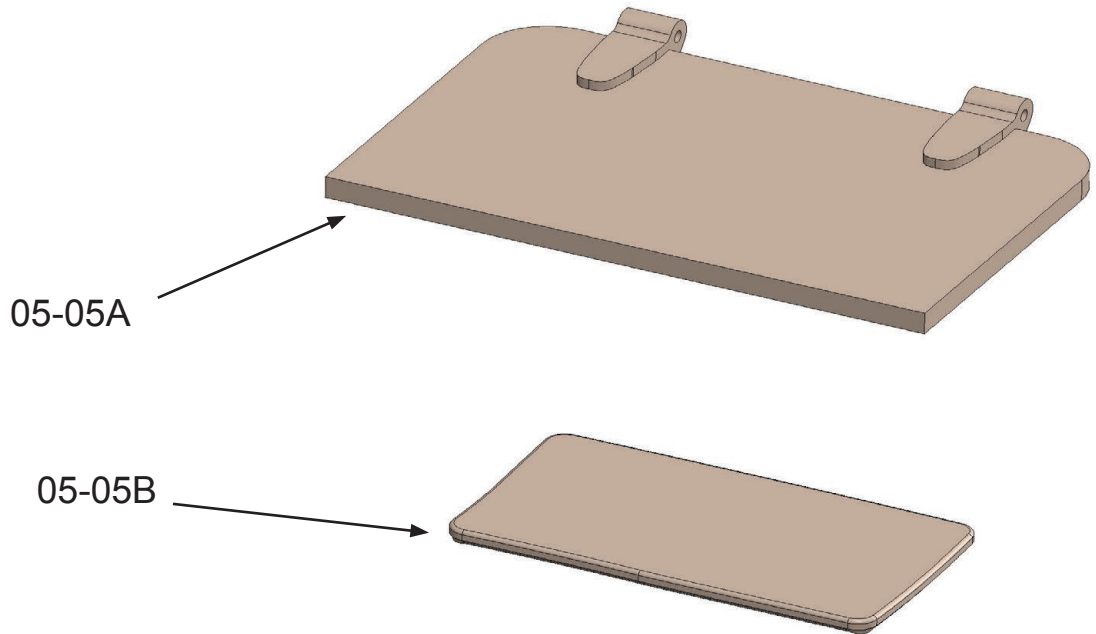
Part 01-05A must rotate freely.

Assembly 05 - Top of the Turret



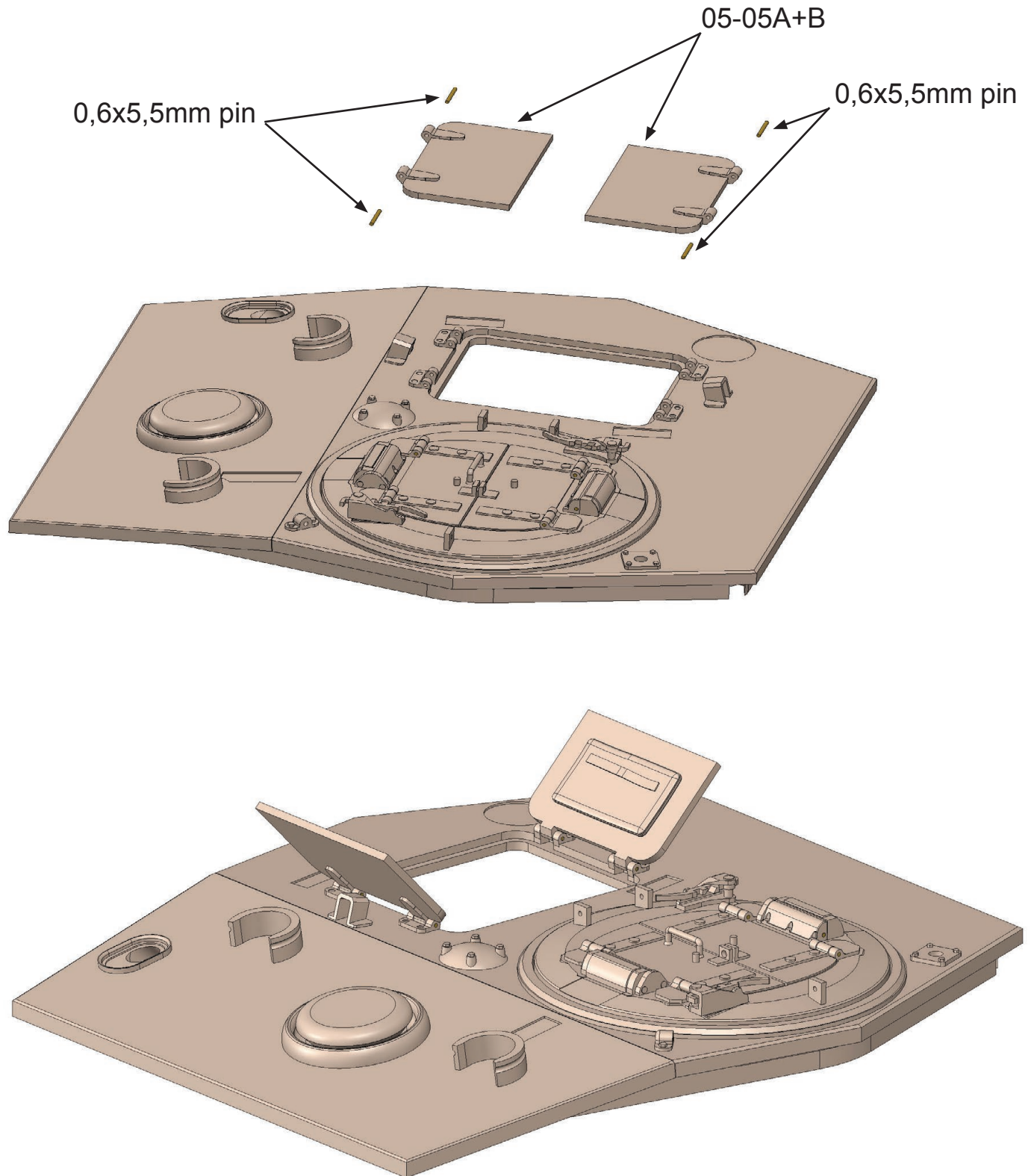
Glue part 05-04.
Align according to the groove on the parts (bottom picture, red color).

Assembly 05 - Top of the Turret

2x

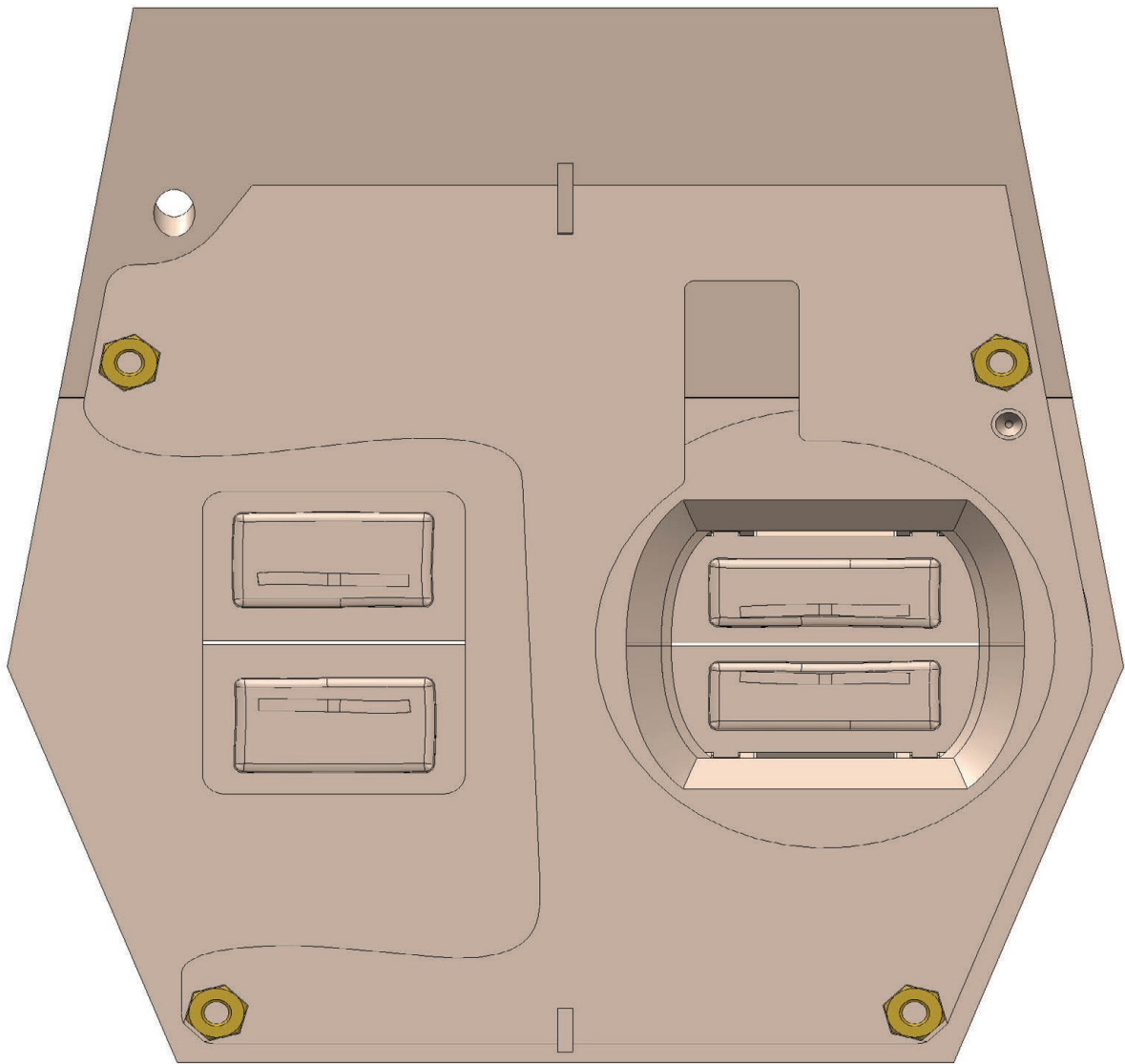
Glue part 05-05A and 05-05B together. You will need two such units.

Assembly 05 - Top of the Turret



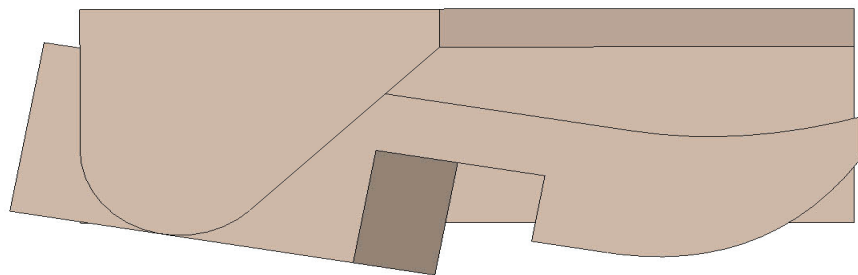
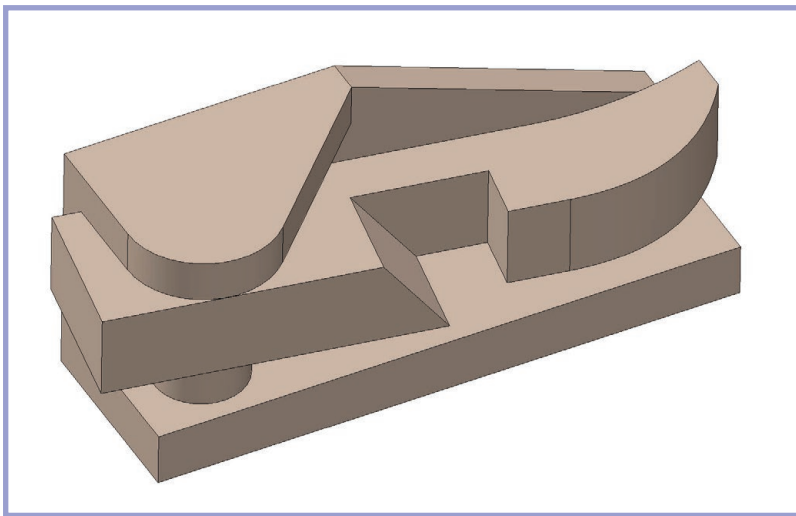
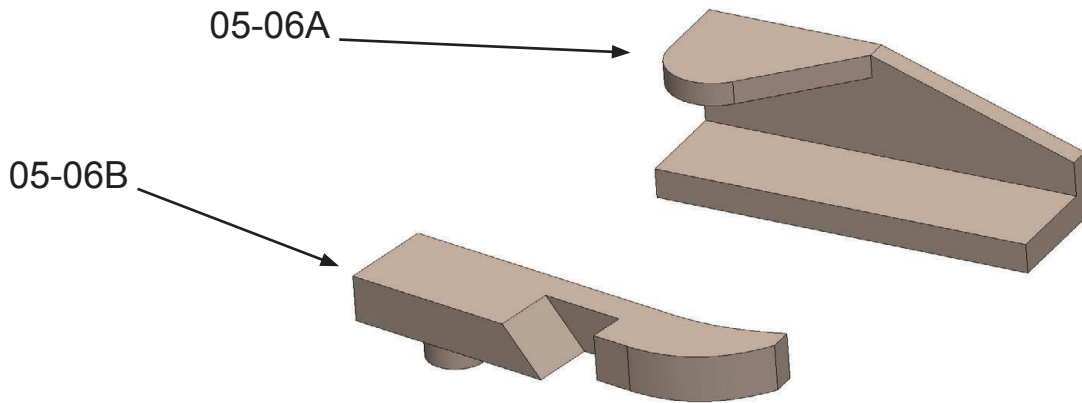
Attach the 05-05A and 05-05B part units using a 0.6mm diameter, 5.5mm long wire.

Assembly 05 - Top of the Turret



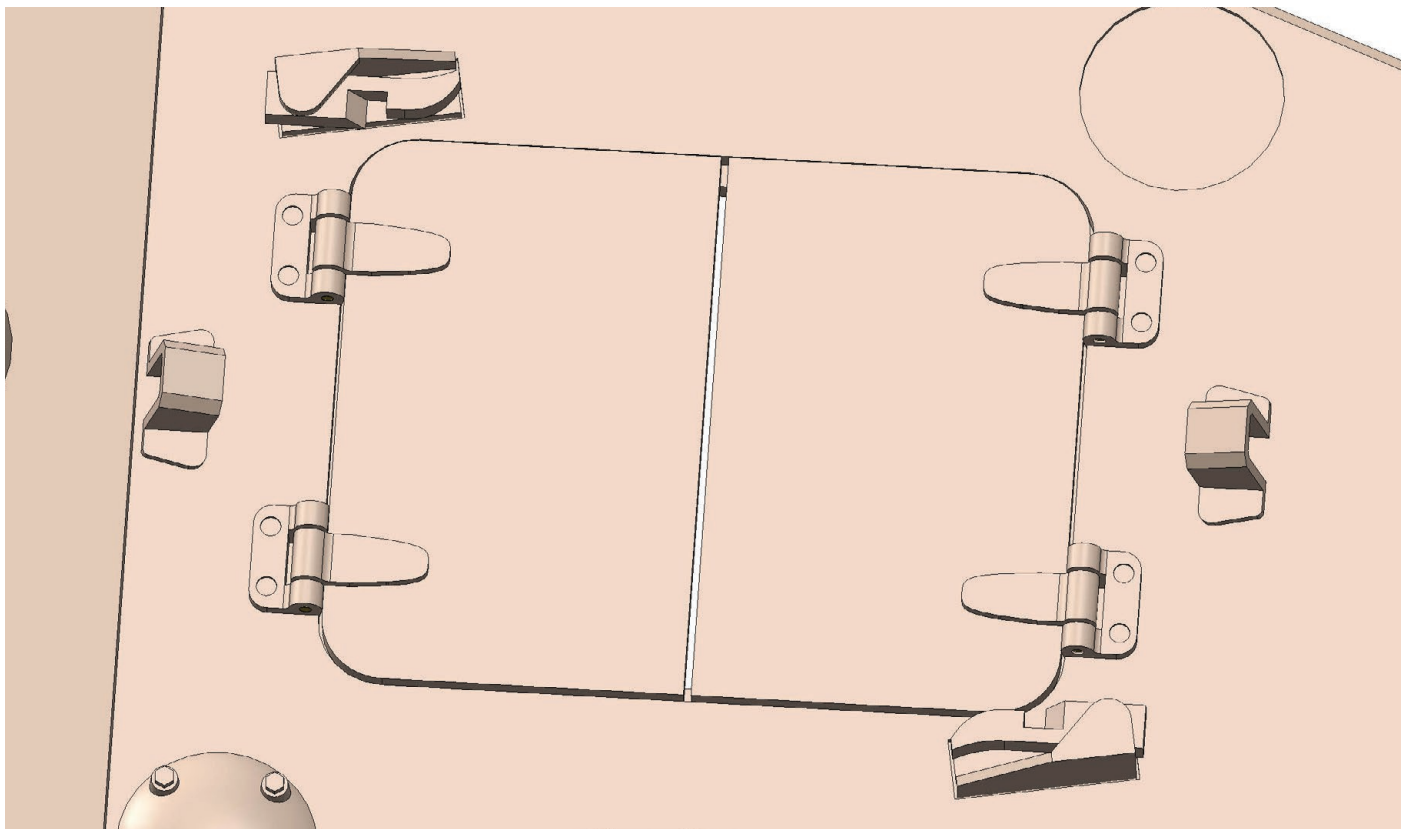
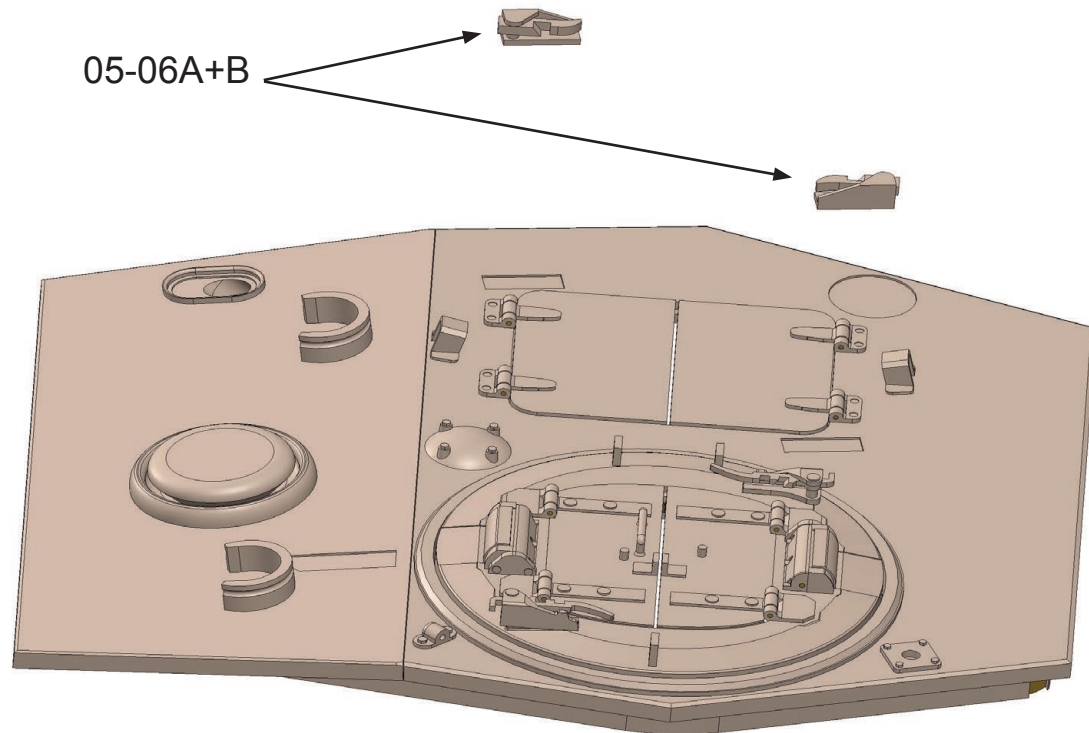
View of the hatches from the bottom.

Assembly 05 - Top of the Turret

2x

Glue part 05-06A and 05-06B together. You will need two such units.

Assembly 05 - Top of the Turret

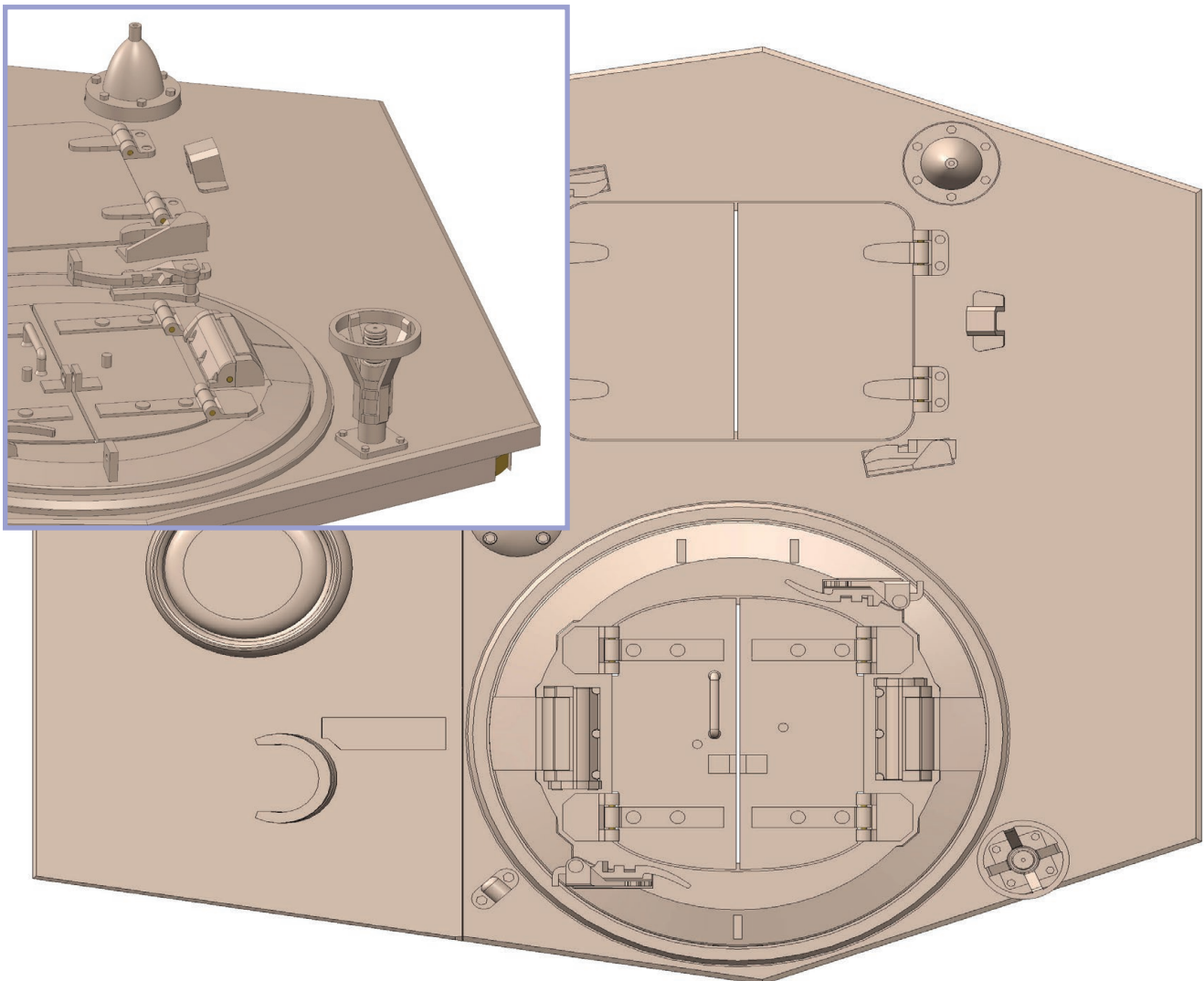
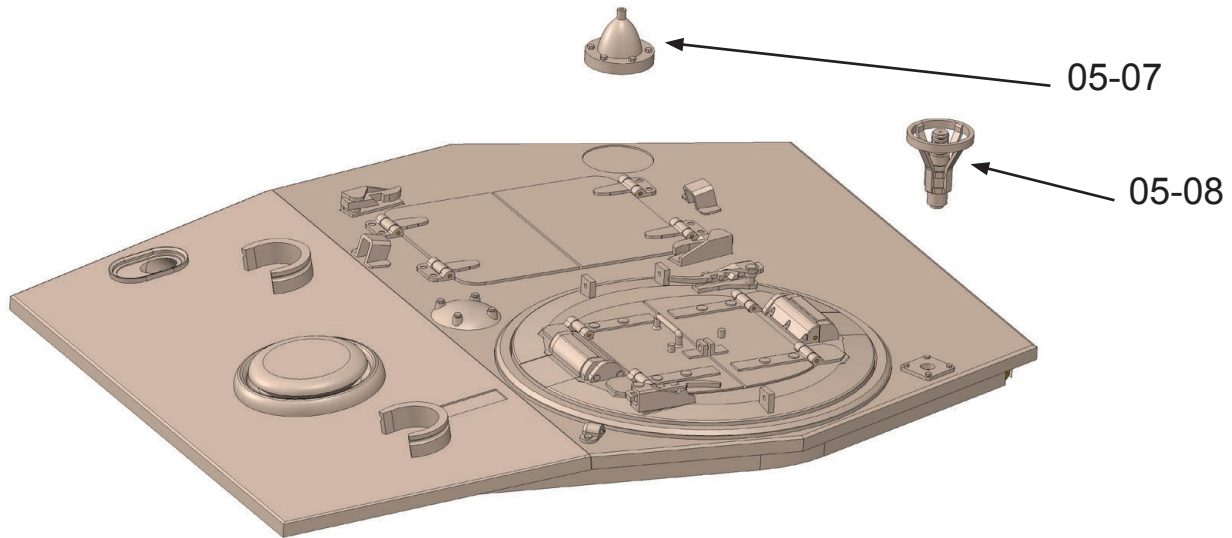


Glue the two assemblies of parts 05-06A and 05-06B to part 05-02A.

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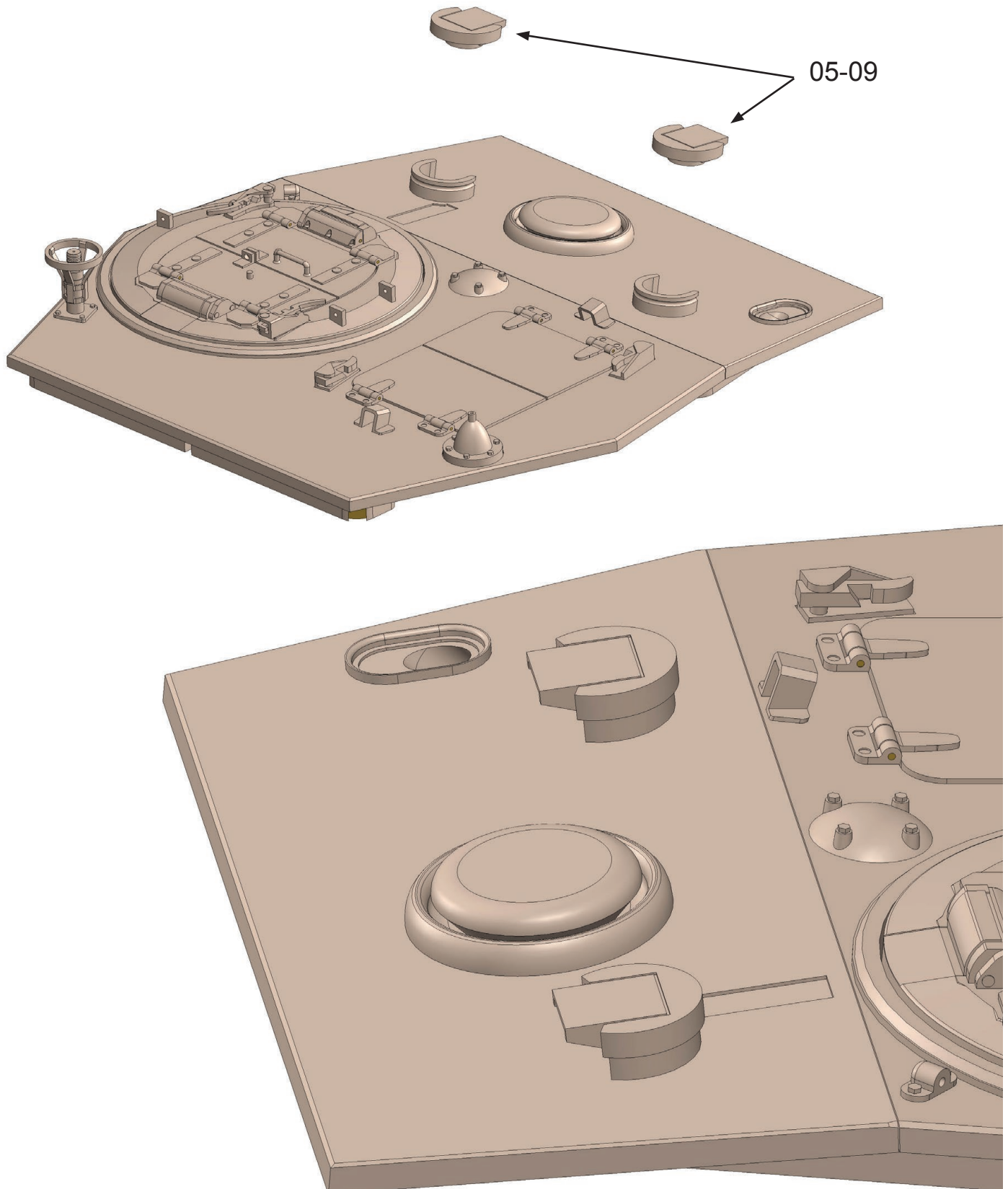
Assembly guide

Assembly 05 - Top of the Turret



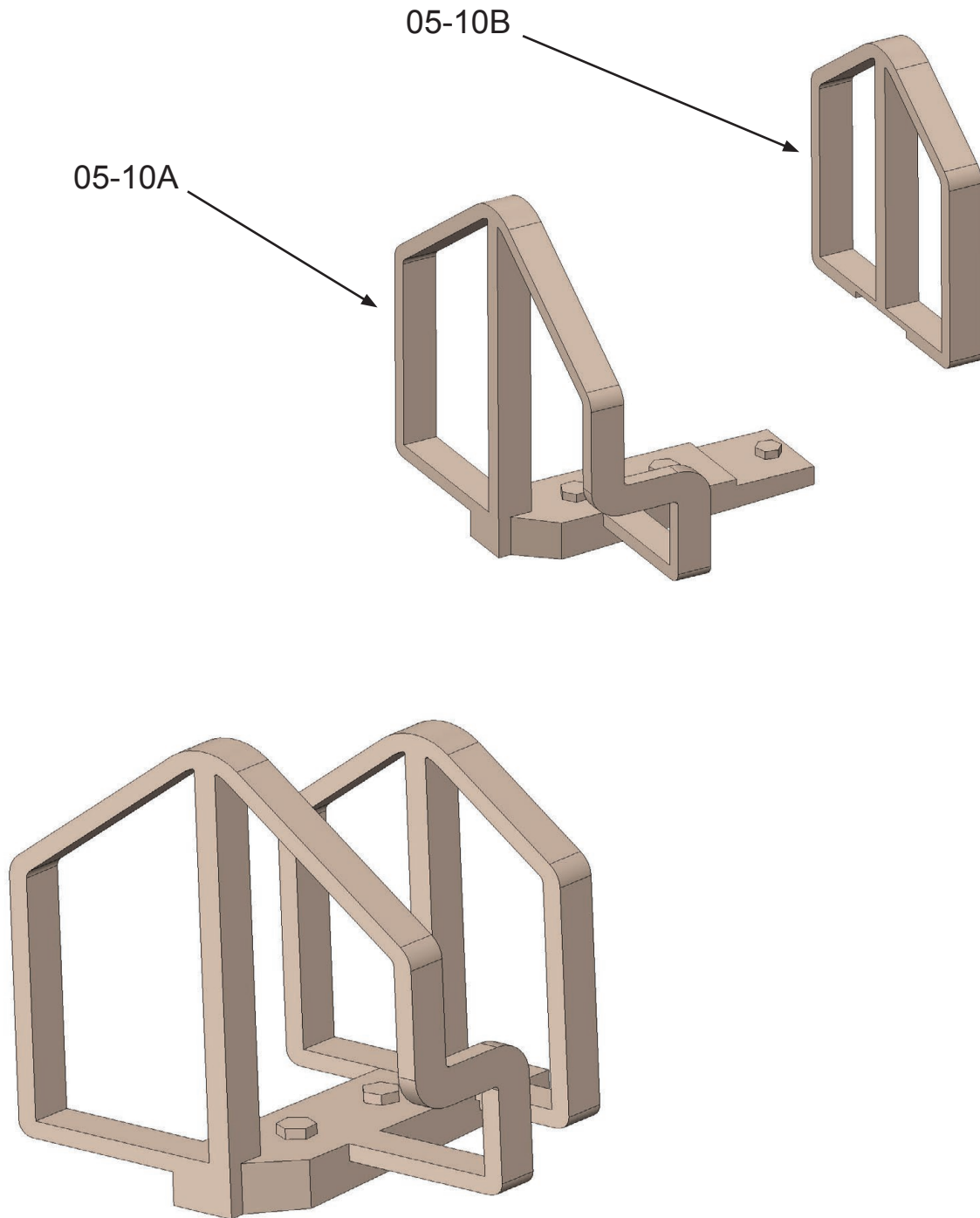
Glue parts 05-07 and 05-08.

Assembly 05 - Top of the Turret



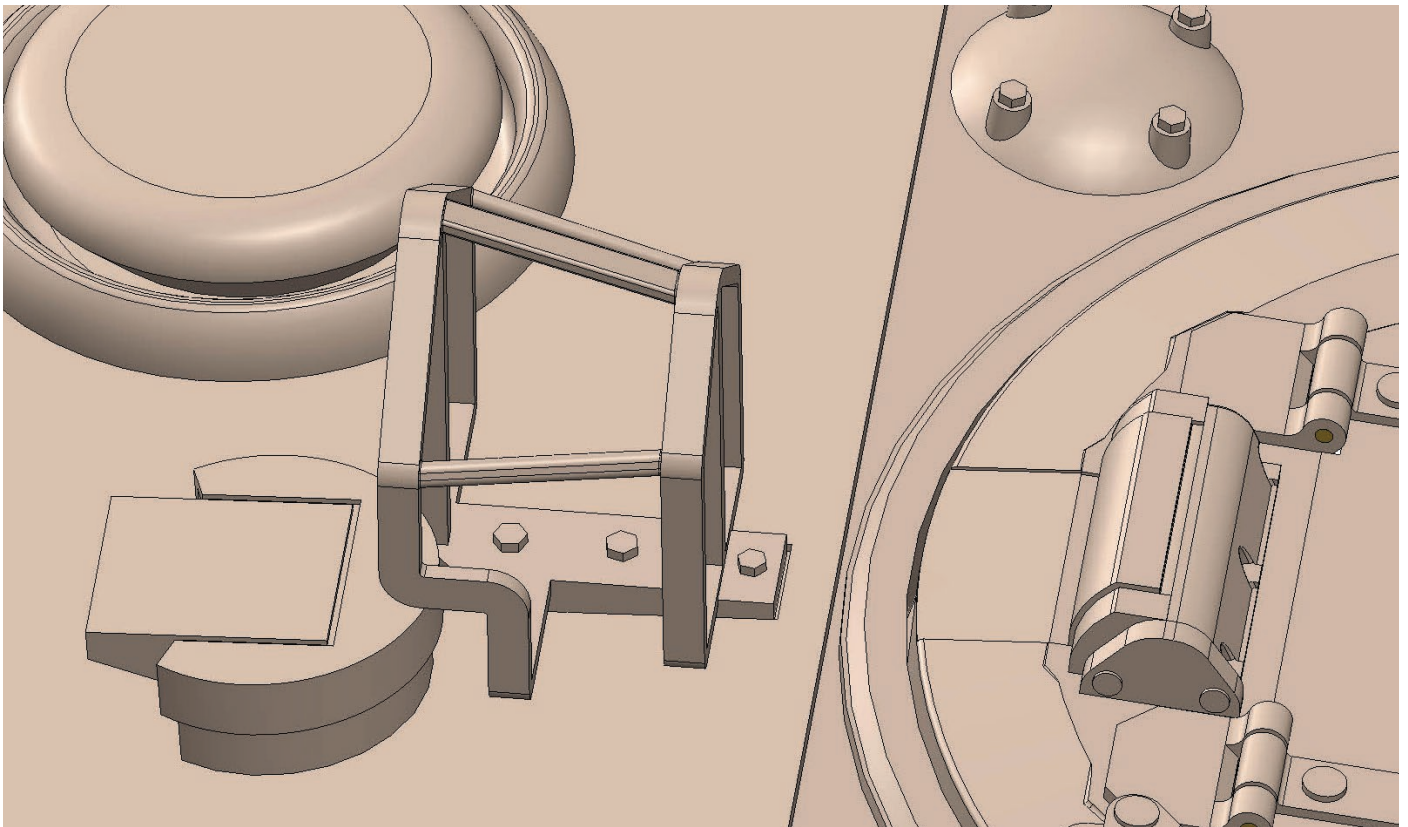
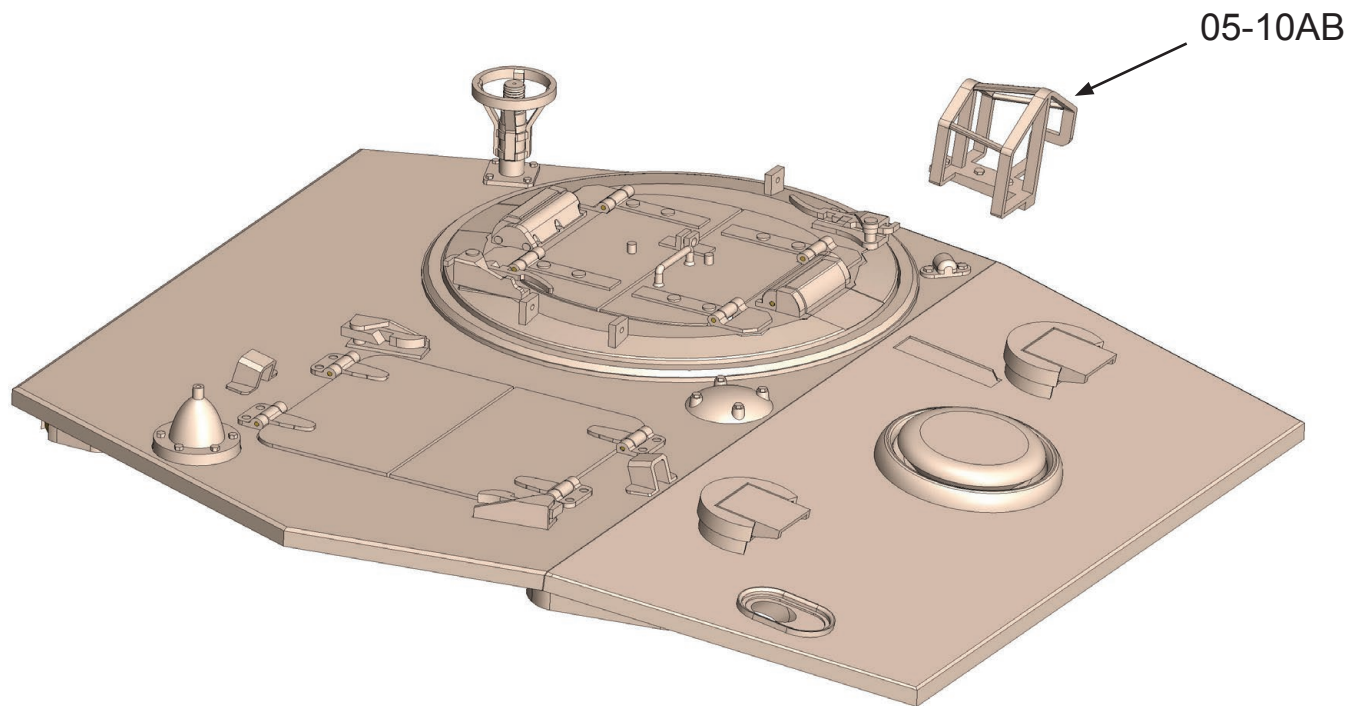
Add two parts 05-09. You don't have to glue the parts. They can be partially rotated.

Assembly 05 - Top of the Turret



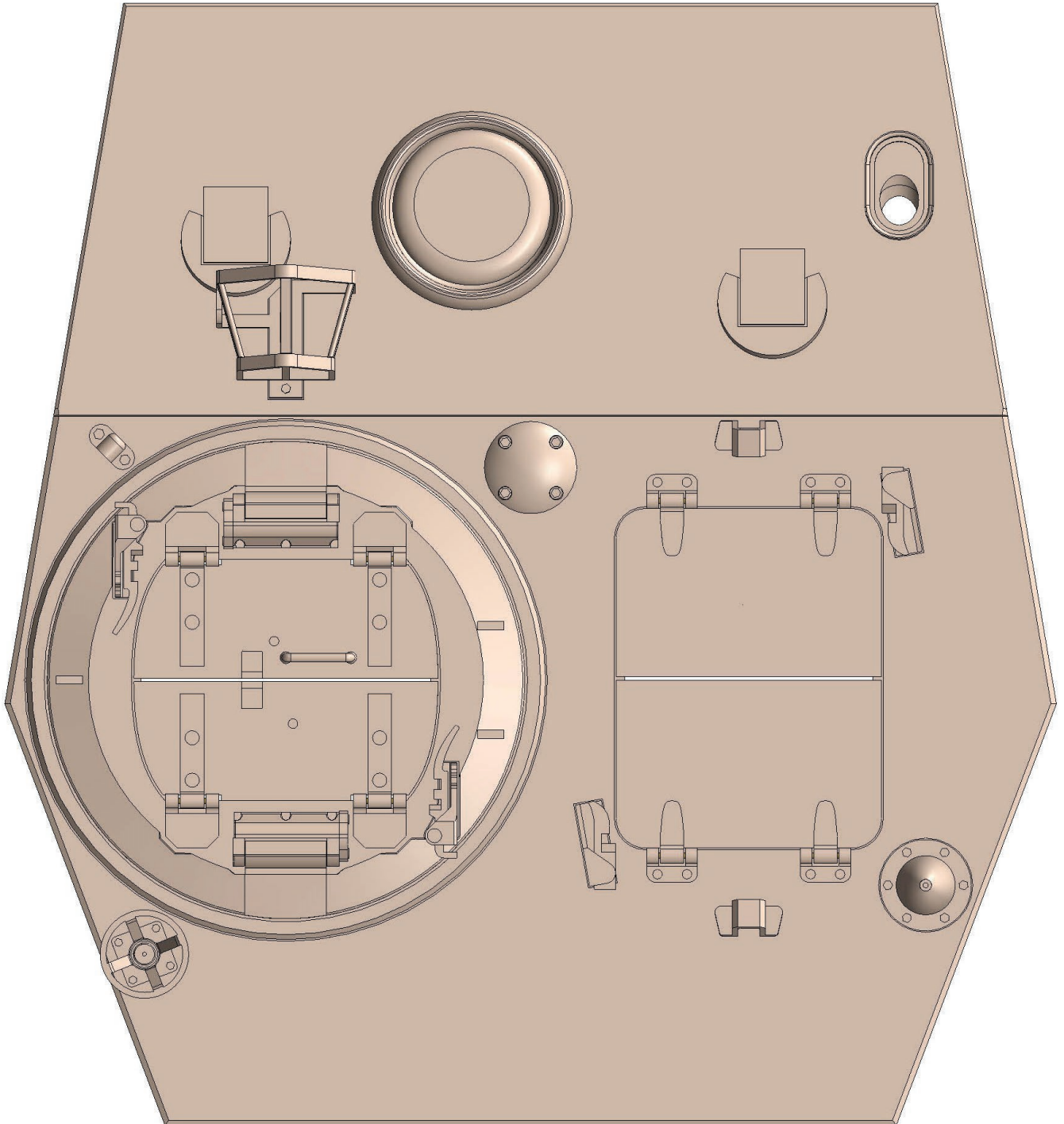
Glue parts 05-10A and 05-10B together.
We recommend using a more detailed part designed for SLA printers - 05-10AB.
You can skip this step when using part 05-10AB.

Assembly 05 - Top of the Turret



Glue part 05-10AB to part 05-04.

Assembly 05 - Top of the Turret



View of the finished set.

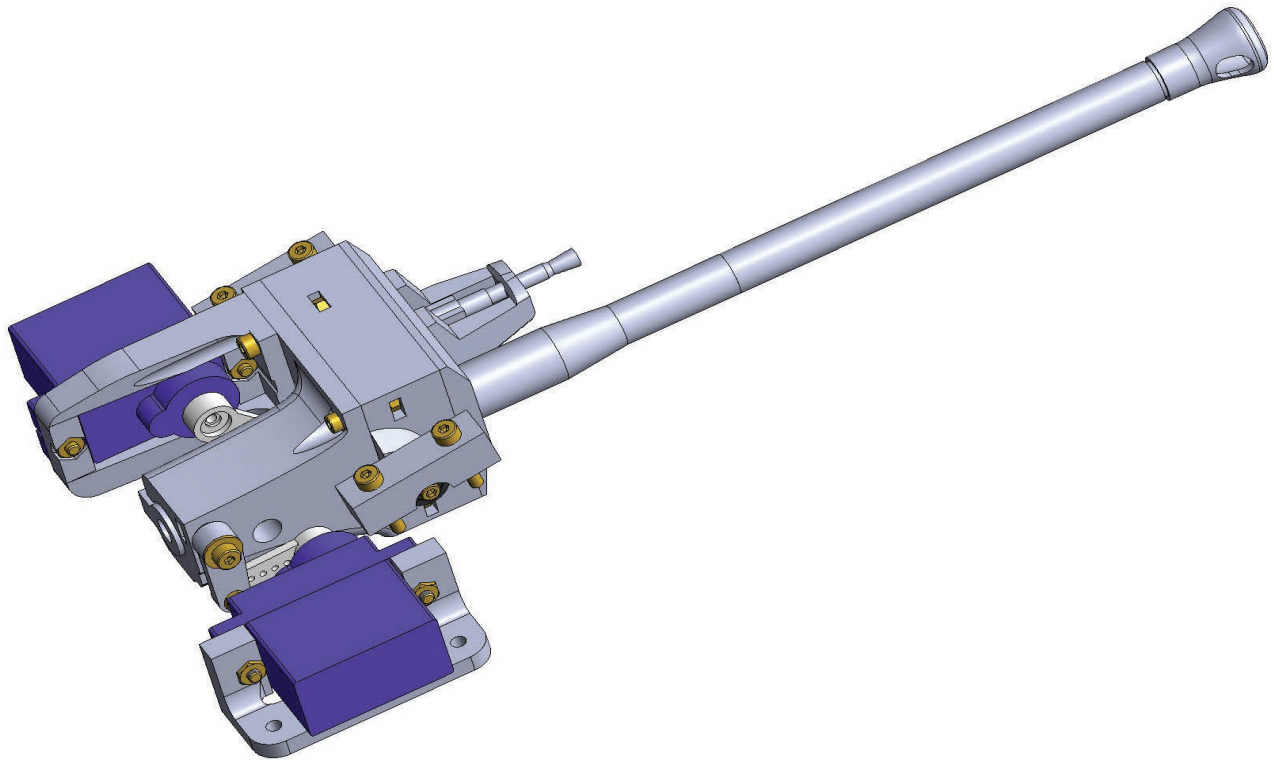
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Cromwell Mk.IV

Assembly guide

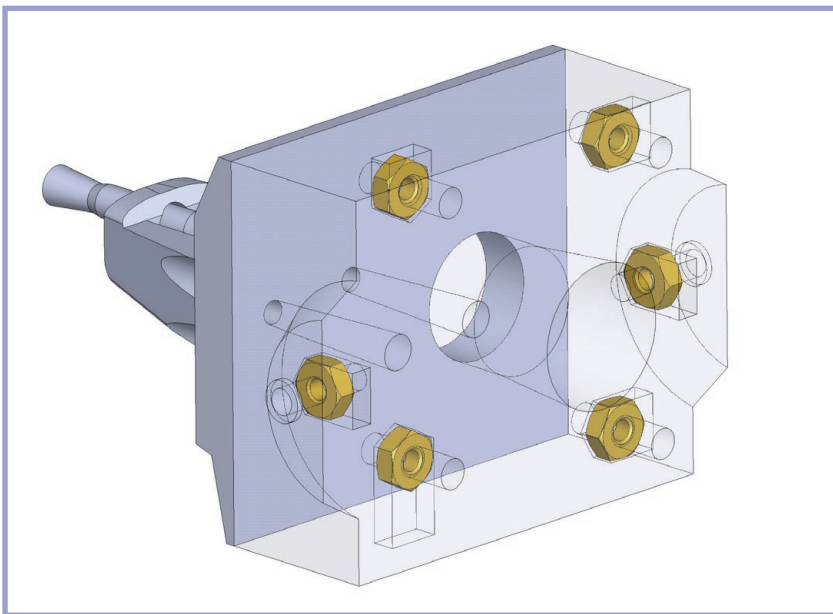
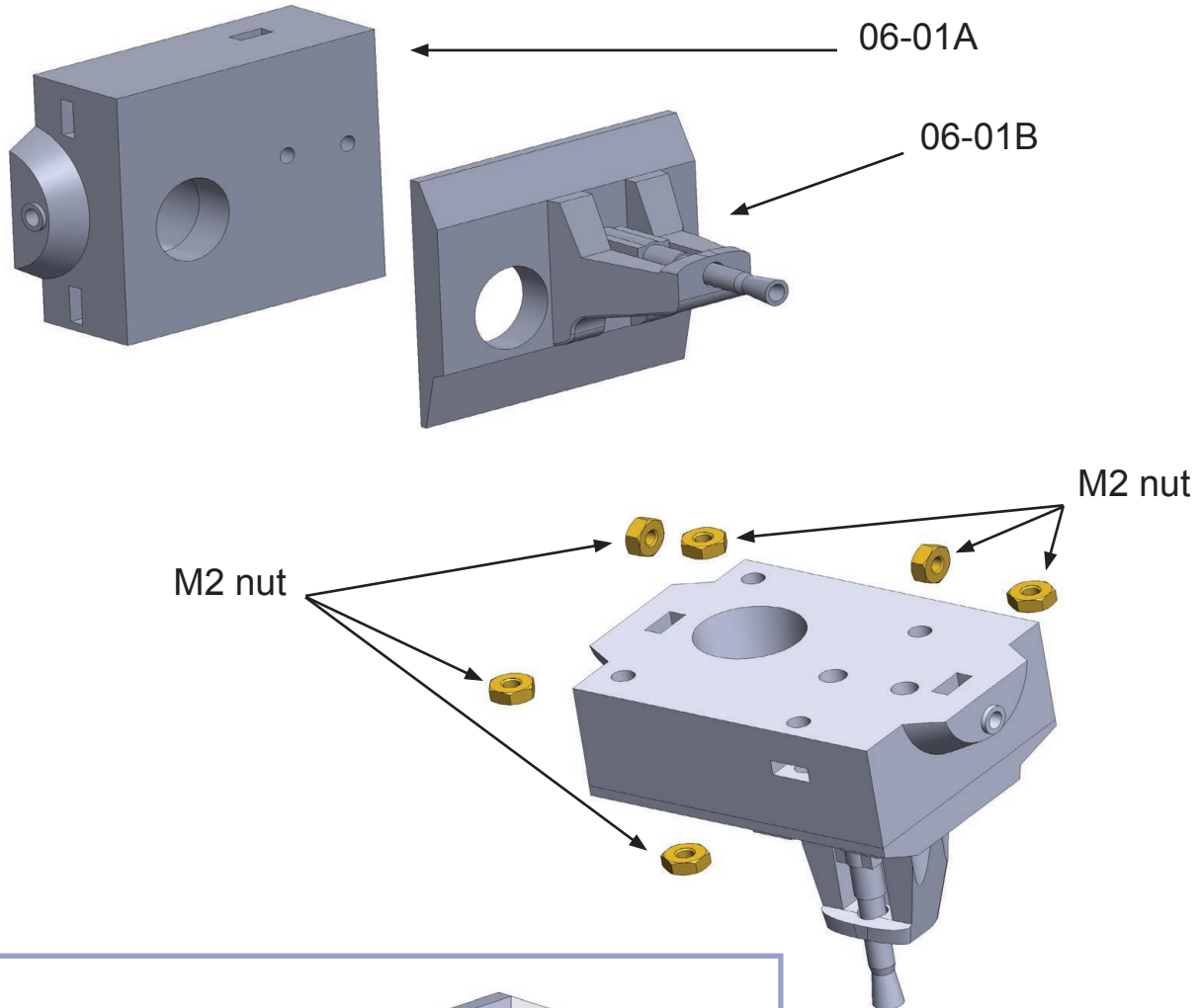
Assembly 05 - Top of the Turret

Assembly 06 - Cannon



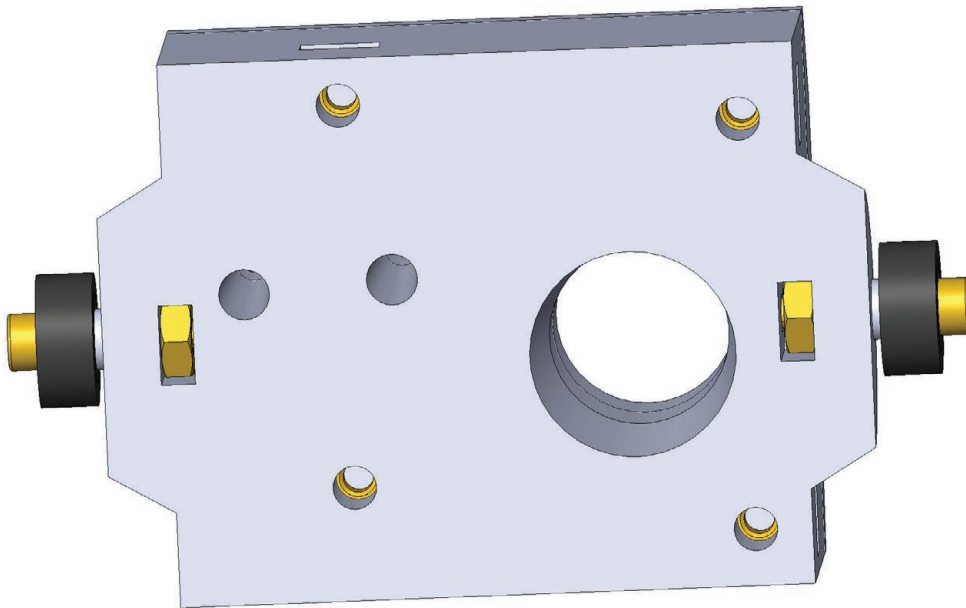
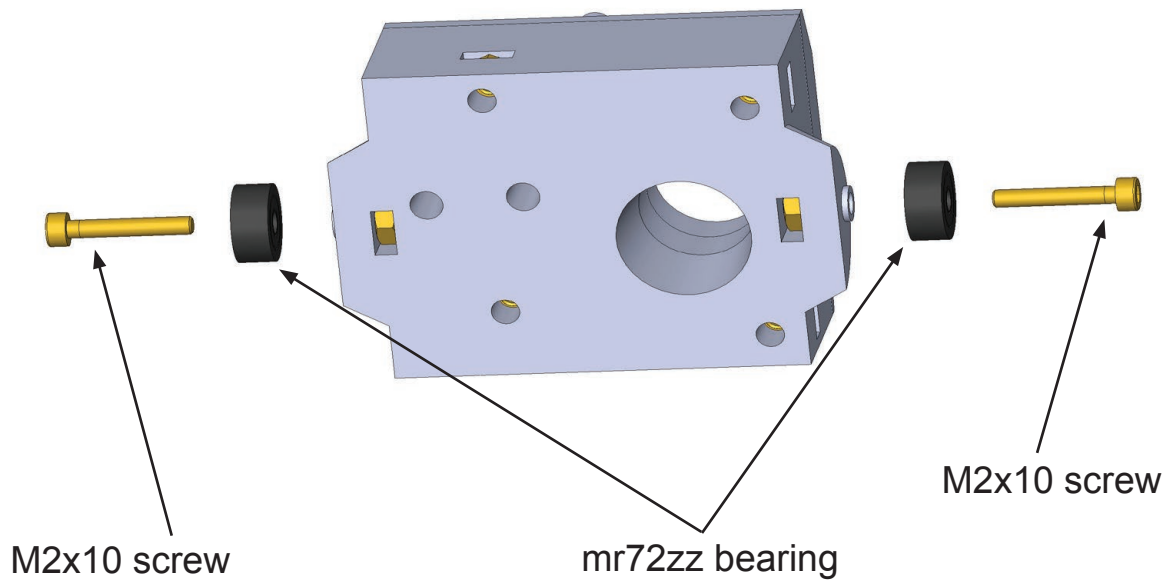
3D PRINTED PARTS:	06-01A (1x), 06-01B (1x), 06-02 (1x), 06-03 (1x), 06-04 (1x), 06-05 (1x), 06-06 (1x), 06-07 (1x), 06-08 (1x), 06-09 (1x), 06-10 (2x),
OPTIONAL 3D PRINTED PARTS:	06-01AB (recommended if you print with the FDM printer).
NON-PRINTED PARTS:	M2 nut (12x), M1,6 nut (2x), M2 washer (1x), M2x6mm screw (2x), M2x8mm screw (4x), M2x10mm screw (6x), M2x12mm screw (6x), M1,6x6mm screw (2x), SG90 servo with arm (2x), mr72zz or 602zz bearing (2x).

Assembly 06 - Cannon



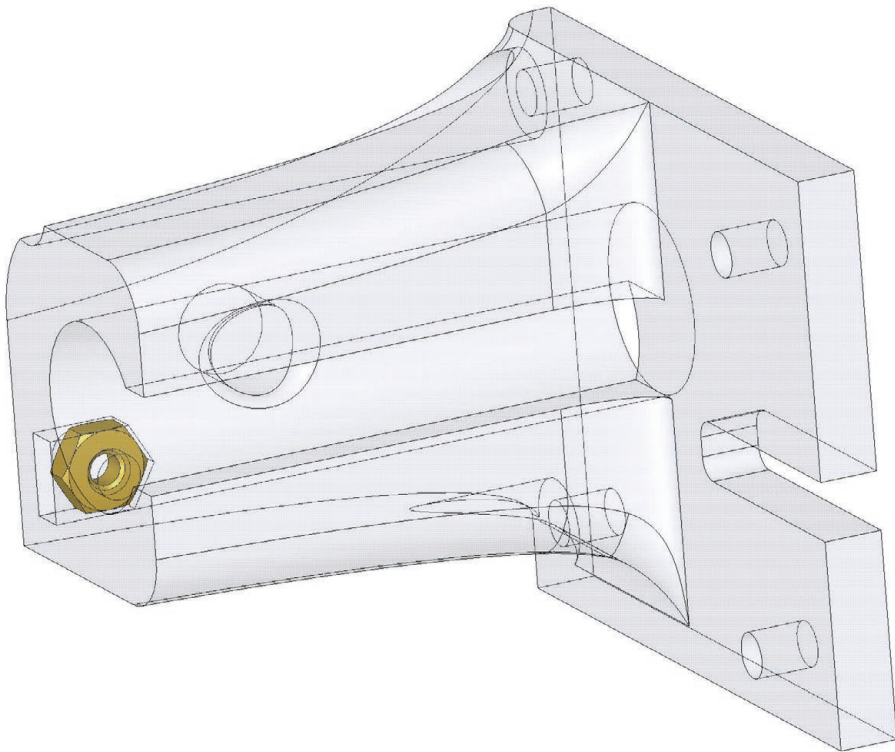
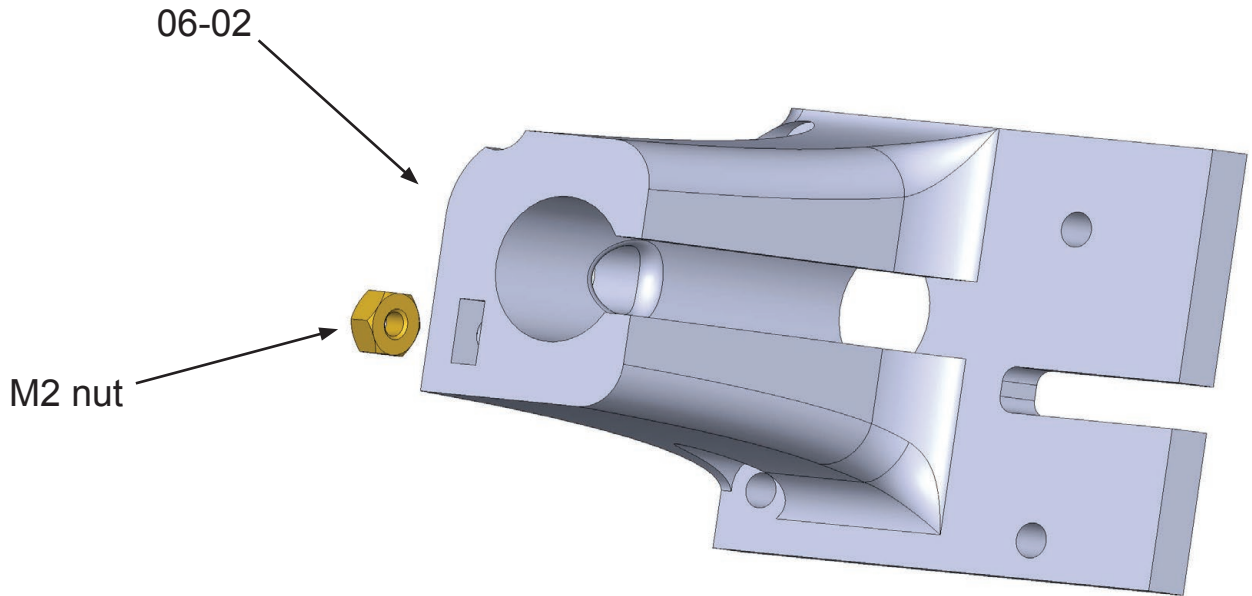
Glue parts 06-01A and 06-01B together.
You can skip this step if you are printing part 06-01A + B.
Insert six M2 nuts into the part.

Assembly 06 - Cannon



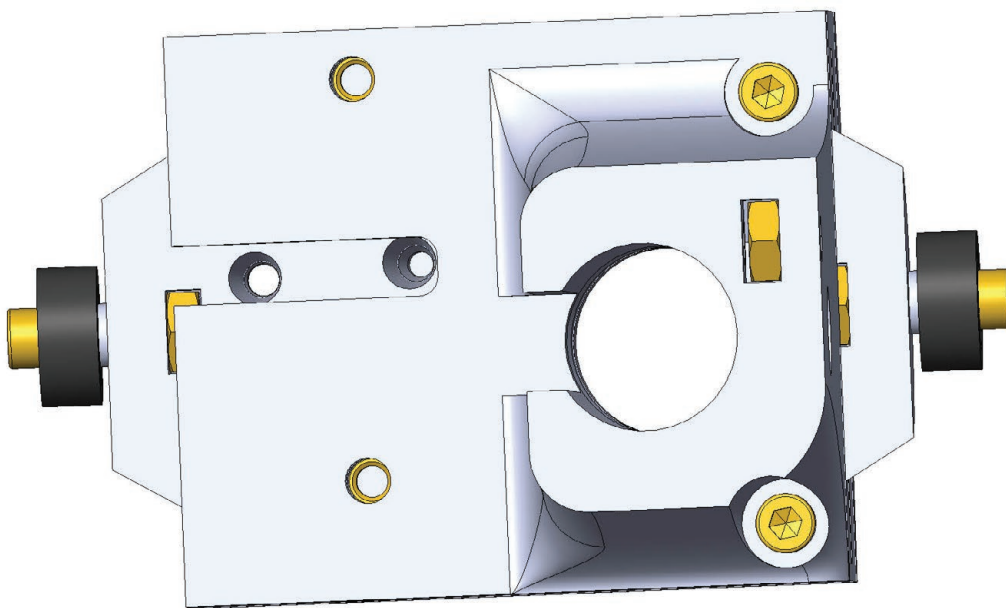
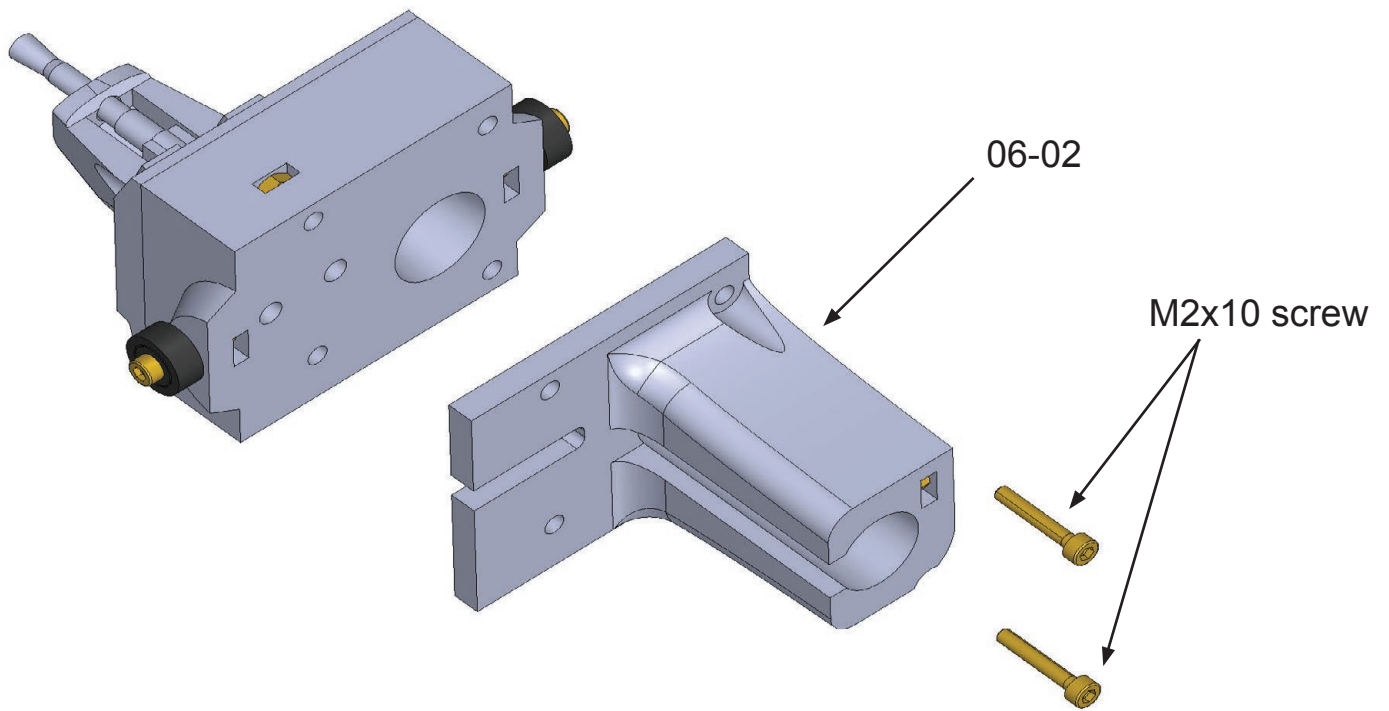
Attach two mr72zz or 602zz bearings with M2x10 screws.

Assembly 06 - Cannon



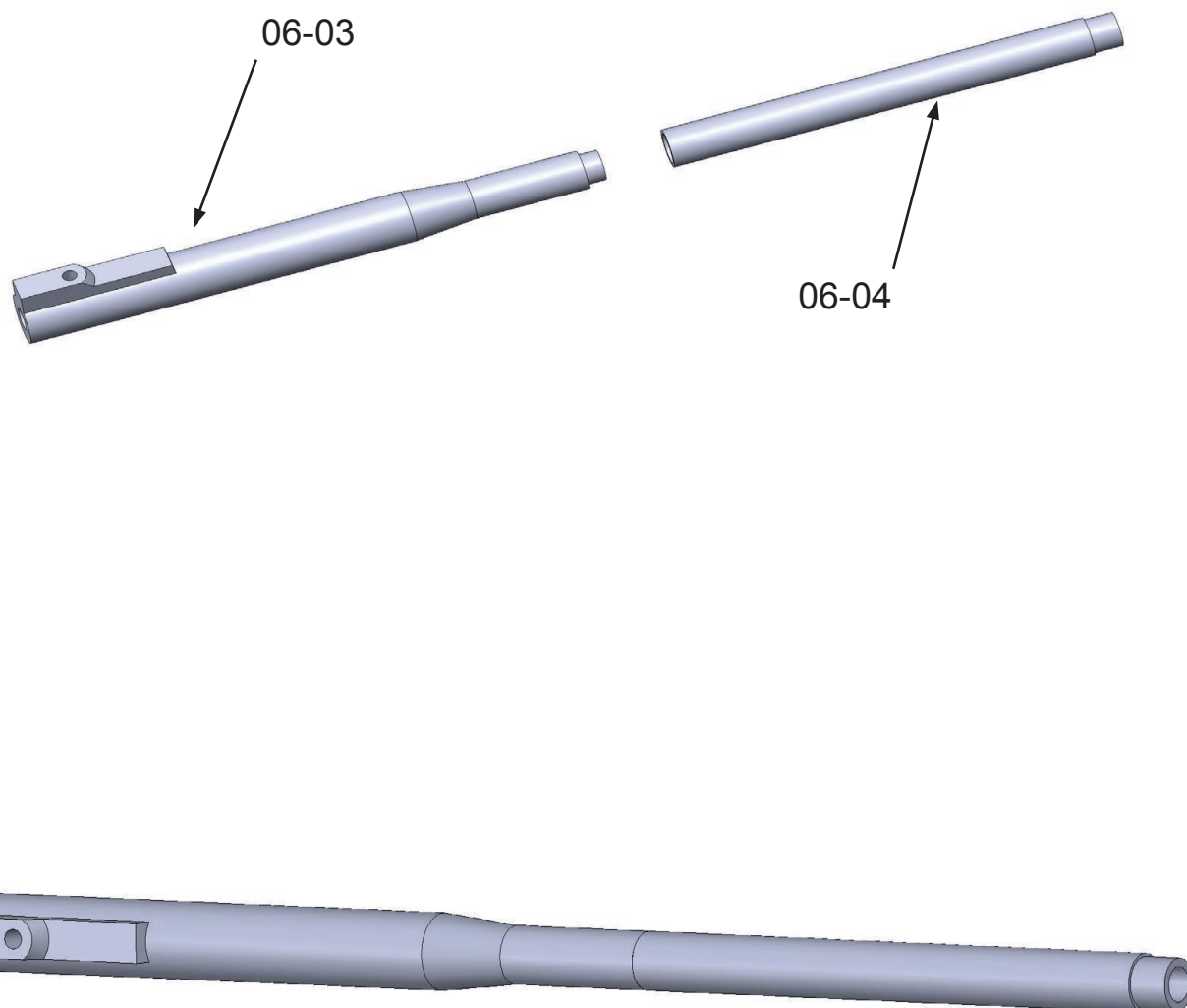
Insert M2 nut into part 06-02.

Assembly 06 - Cannon



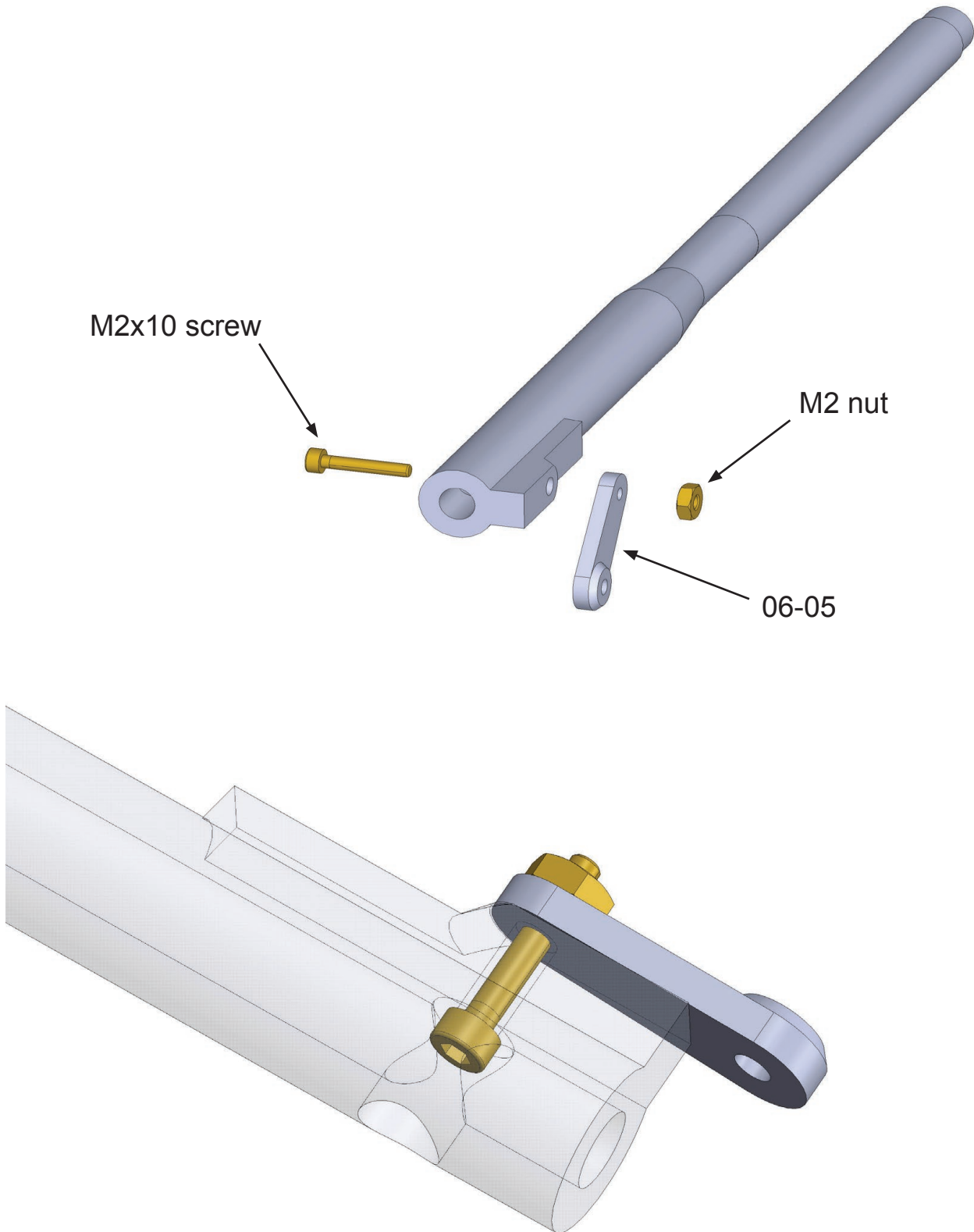
Join parts 06-01 and 06-02 with two M2x10 screws.

Assembly 06 - Cannon



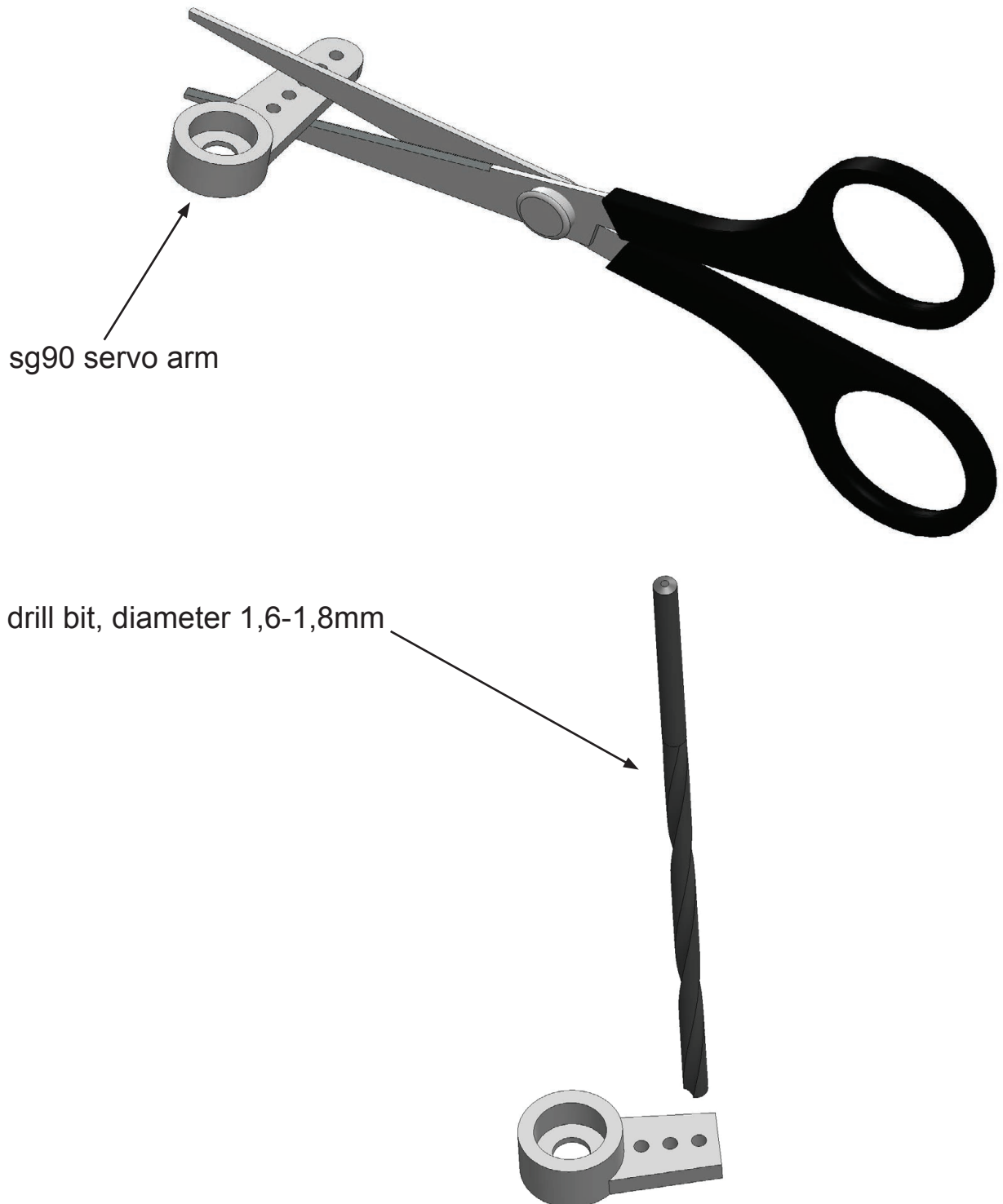
Glue parts 06-03 and 06-04 together.

Assembly 06 - Cannon



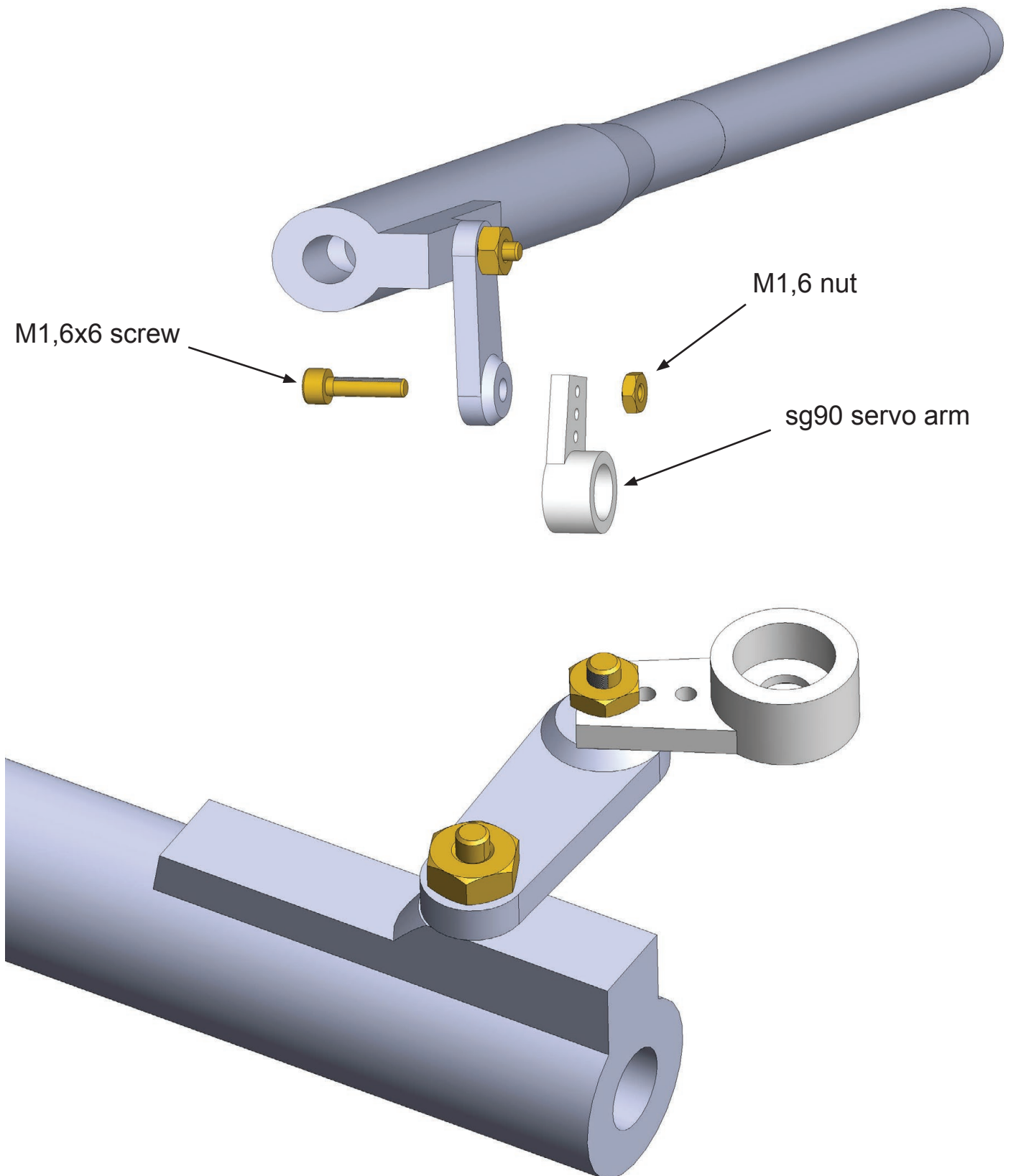
Attach part 06-05. Use M2x10 screw and M2 nut.
Part 06-05 must rotate freely. Secure the nut against falling out.

Assembly 06 - Cannon



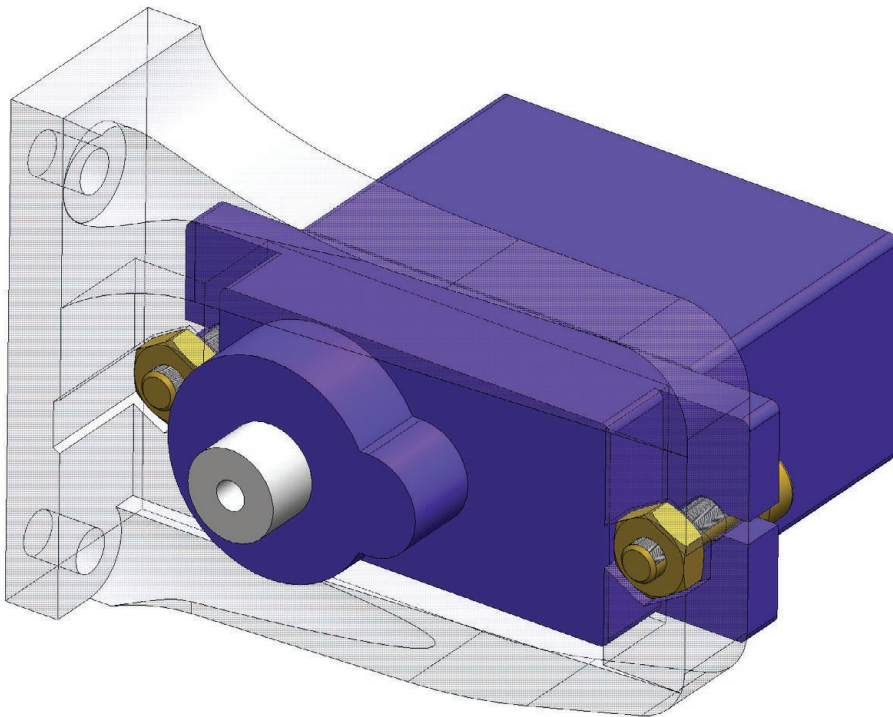
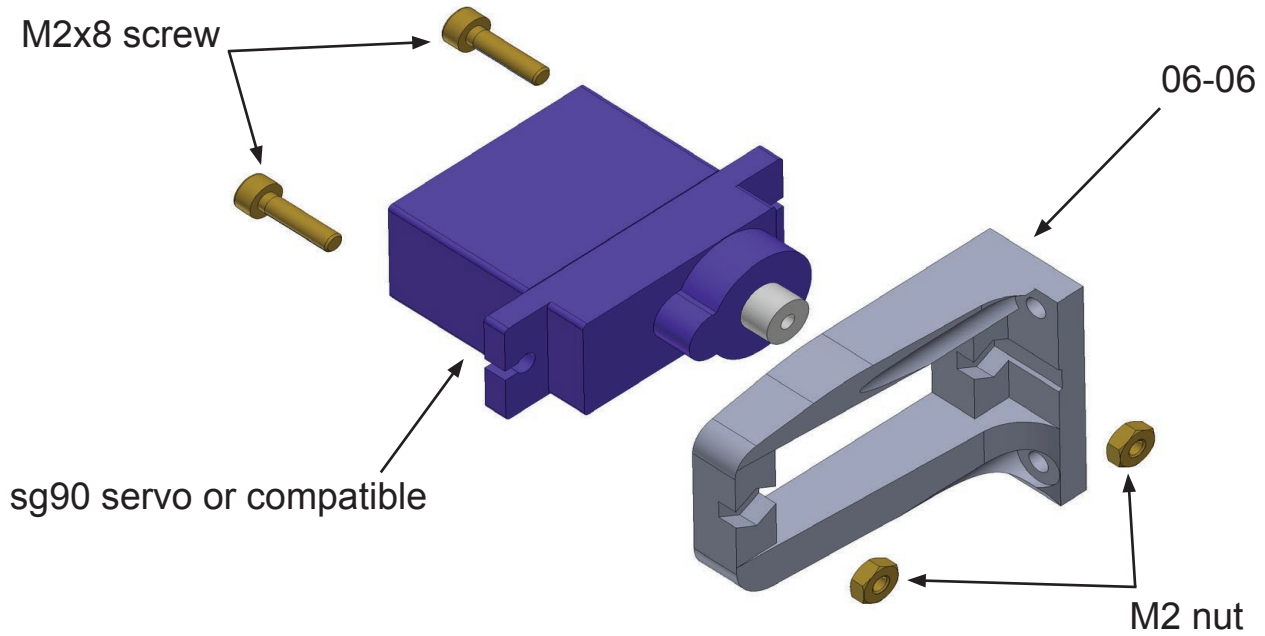
Shorten the servomotor arm. Widen the third hole with a drill for the M1.6 screw.

Assembly 06 - Cannon



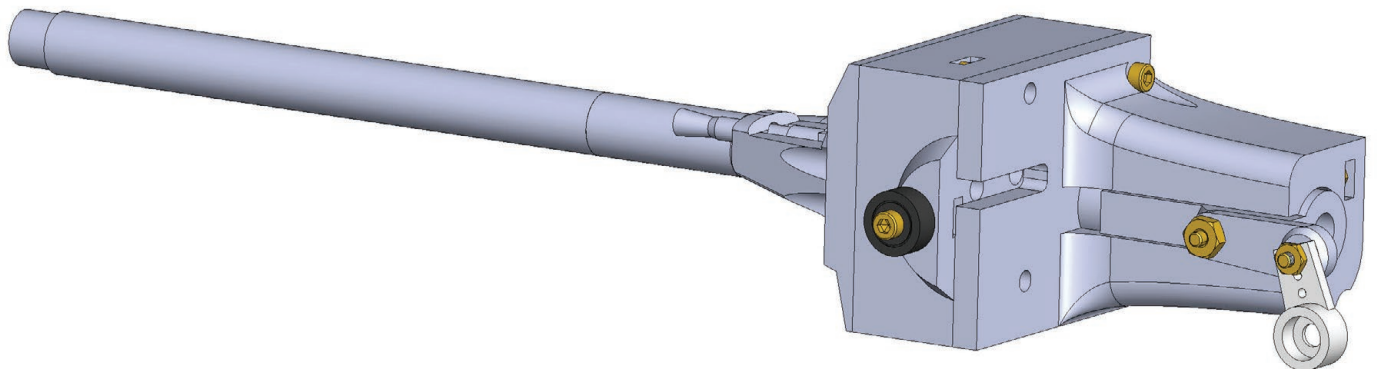
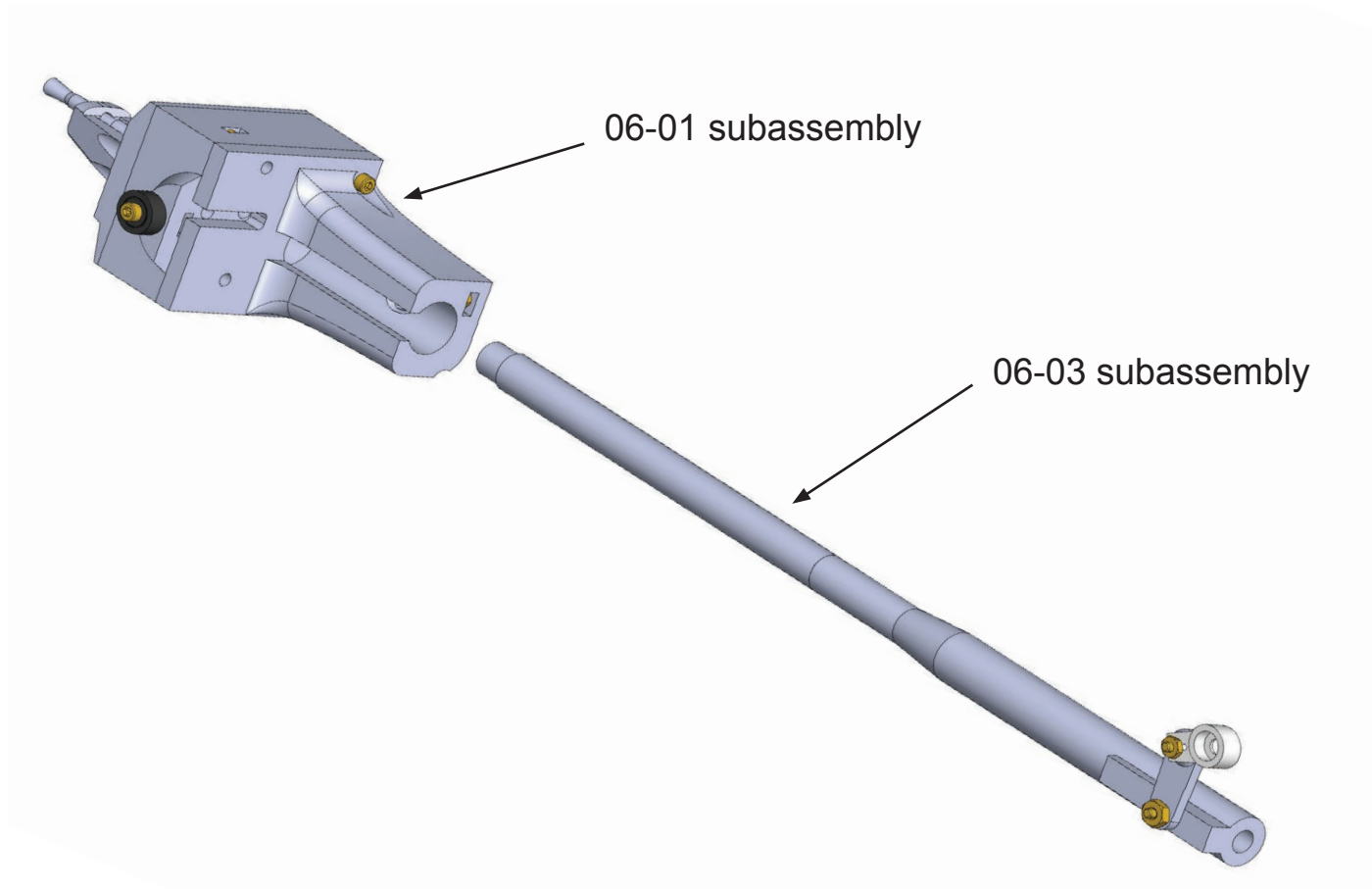
Attach the servo arm. Use the M1.6x6 screw and nut M1.6.
The arm must rotate freely. Secure the nut against falling out.

Assembly 06 - Cannon



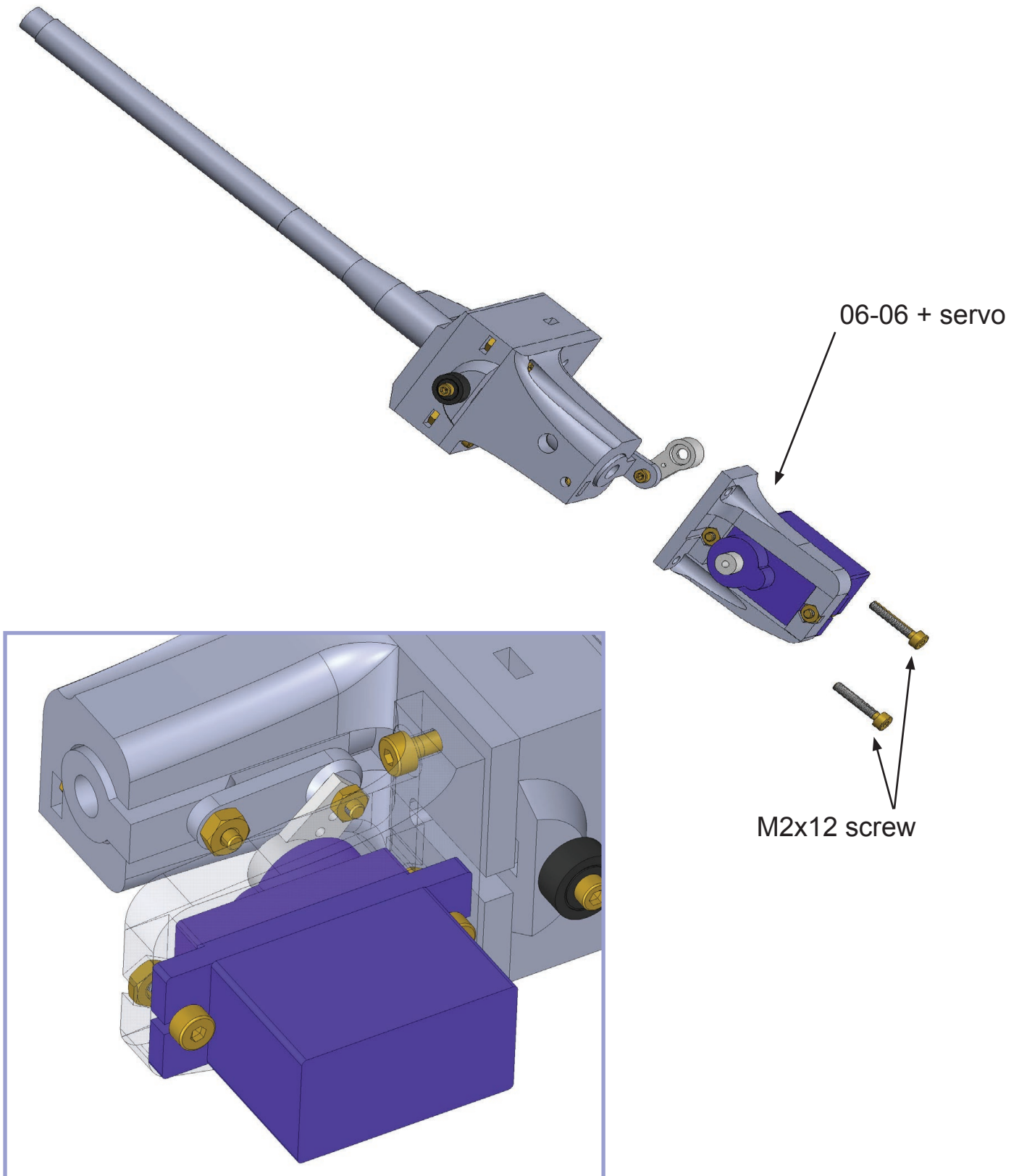
Attach servo sg90 or other compatible to part 06-06 using two M2x8 screws and M2 nuts.

Assembly 06 - Cannon



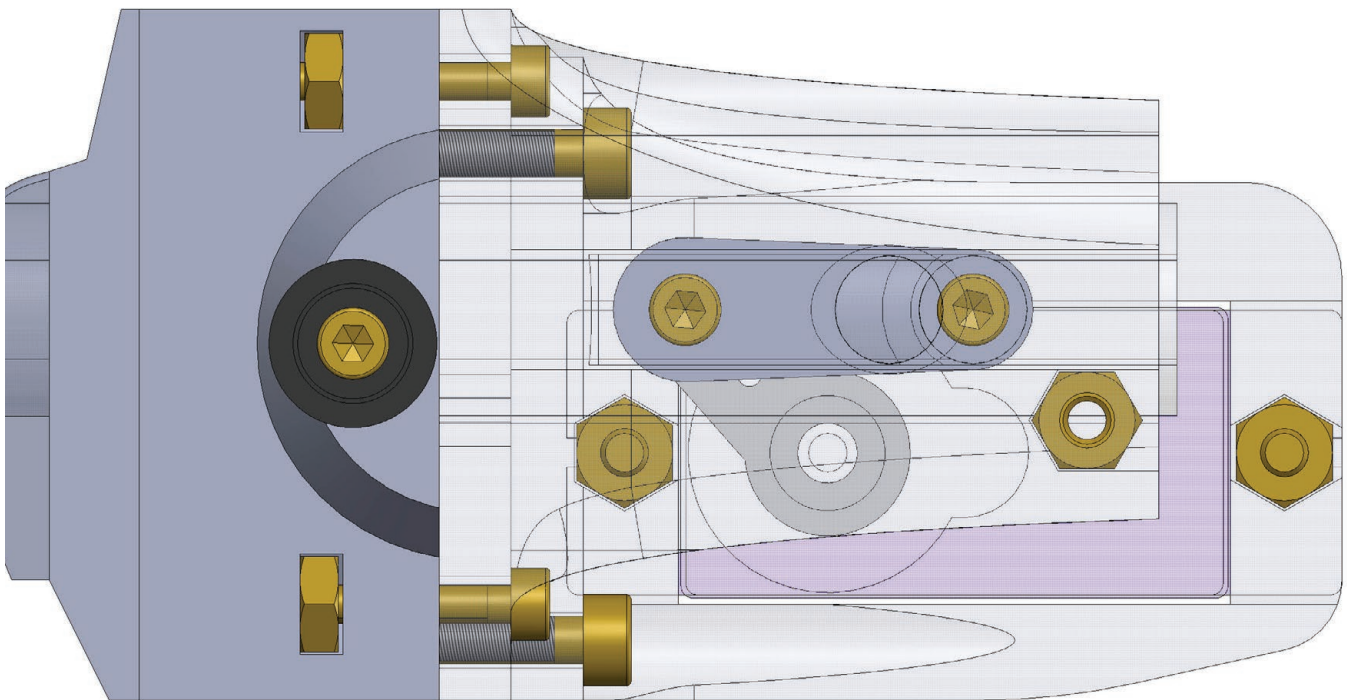
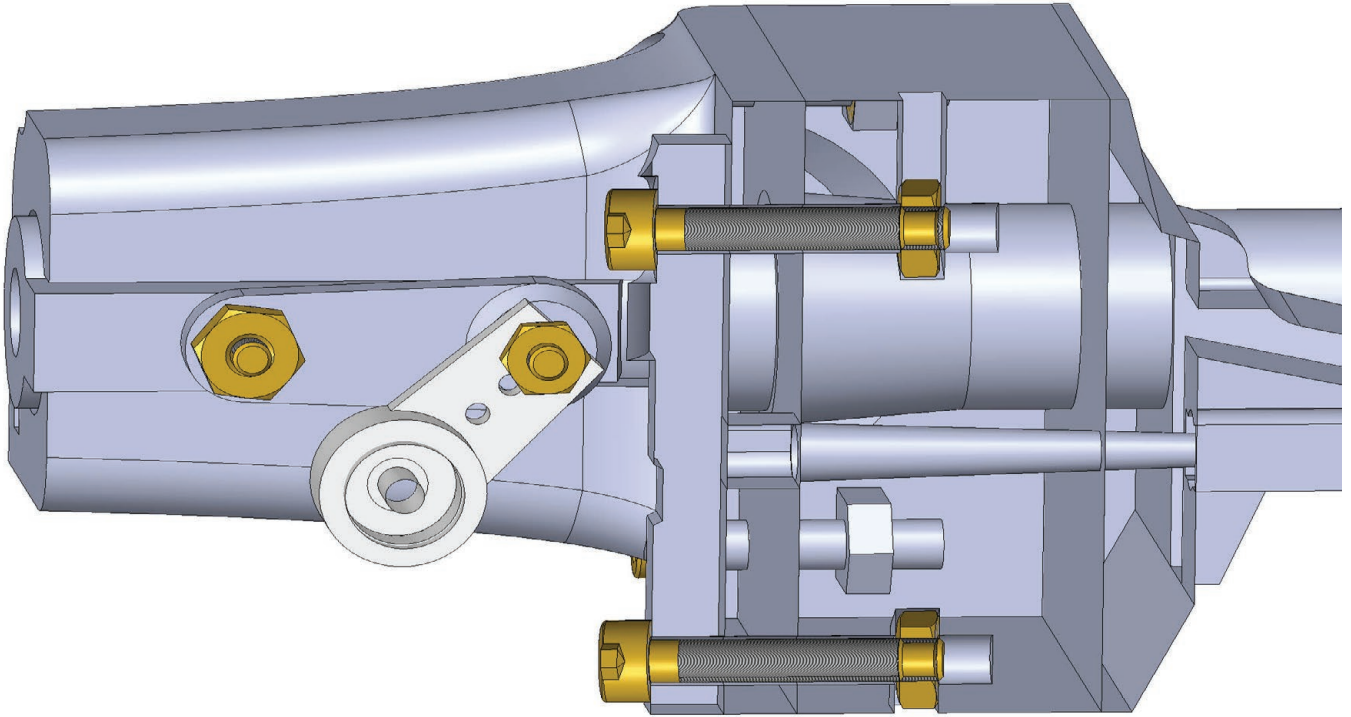
Insert subassembly 06-03. Do not glue the parts together.

Assembly 06 - Cannon



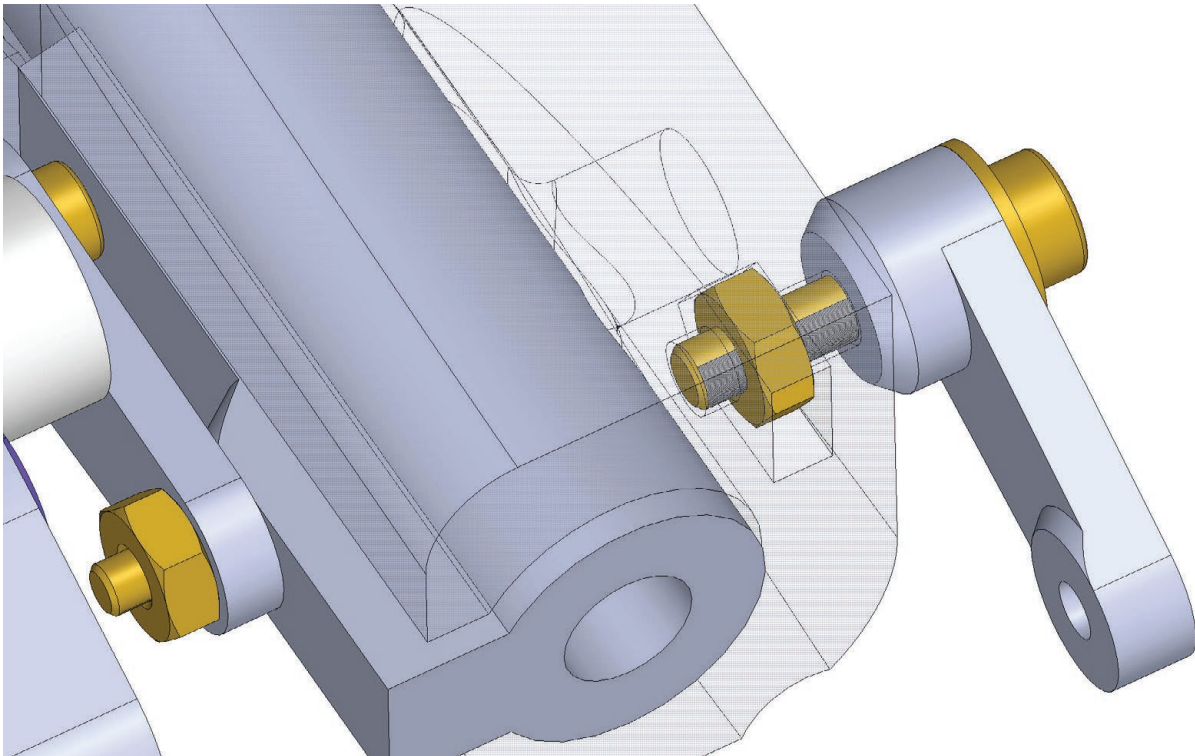
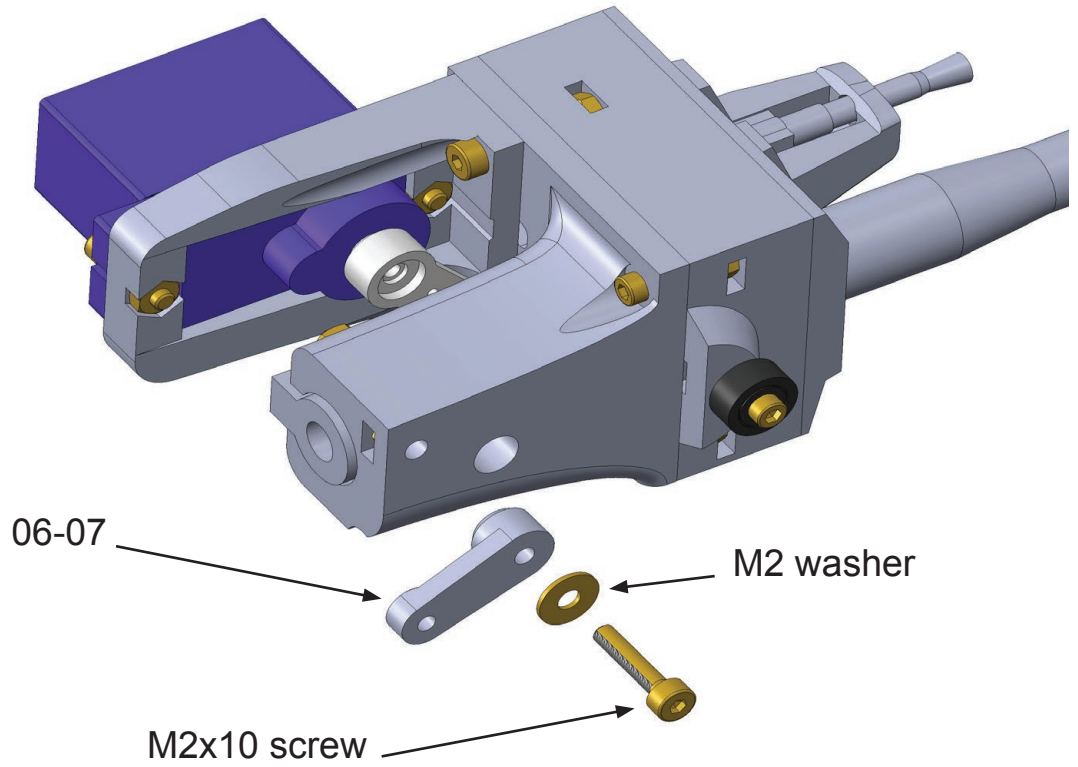
Fasten part 06-06 with two M2x12 screws.
Connect the arm to the servo.

Assembly 06 - Cannon



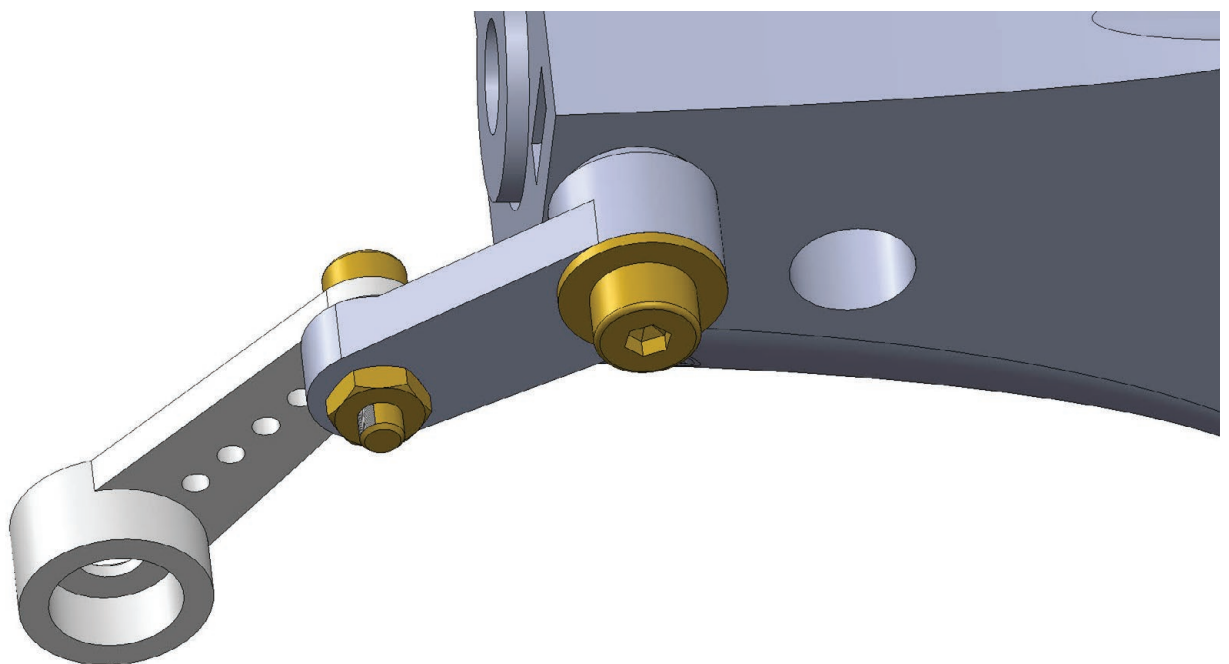
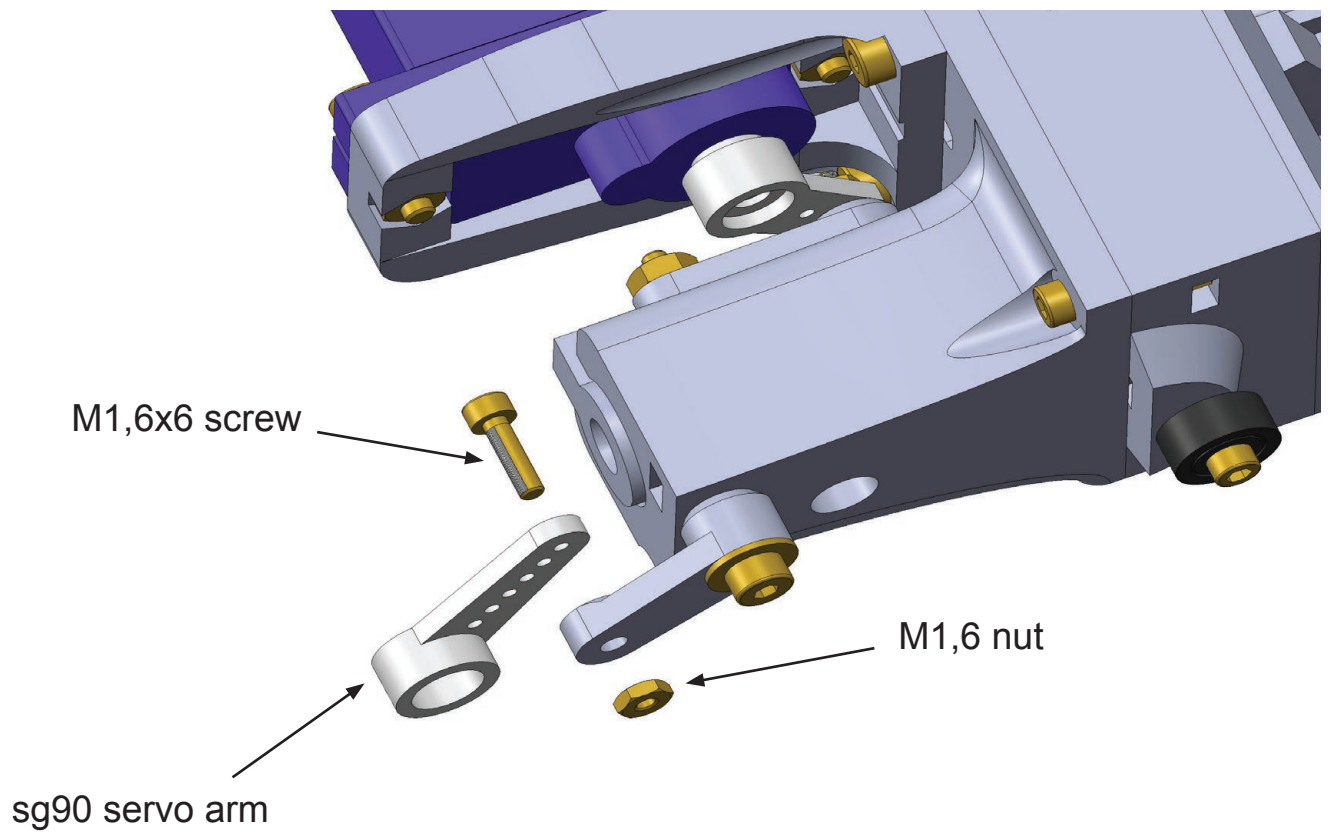
Correct position of the servo and arm in the zero/default position.
Part 06-05 is parallel to the cannon. The arm of the servo is at an angle of 45°.

Assembly 06 - Cannon



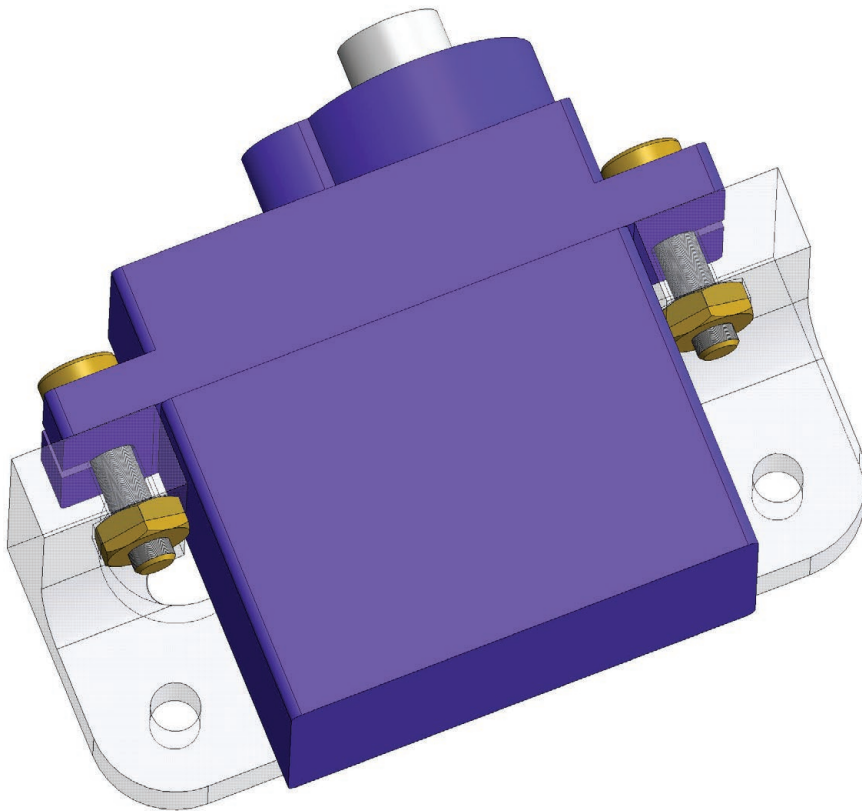
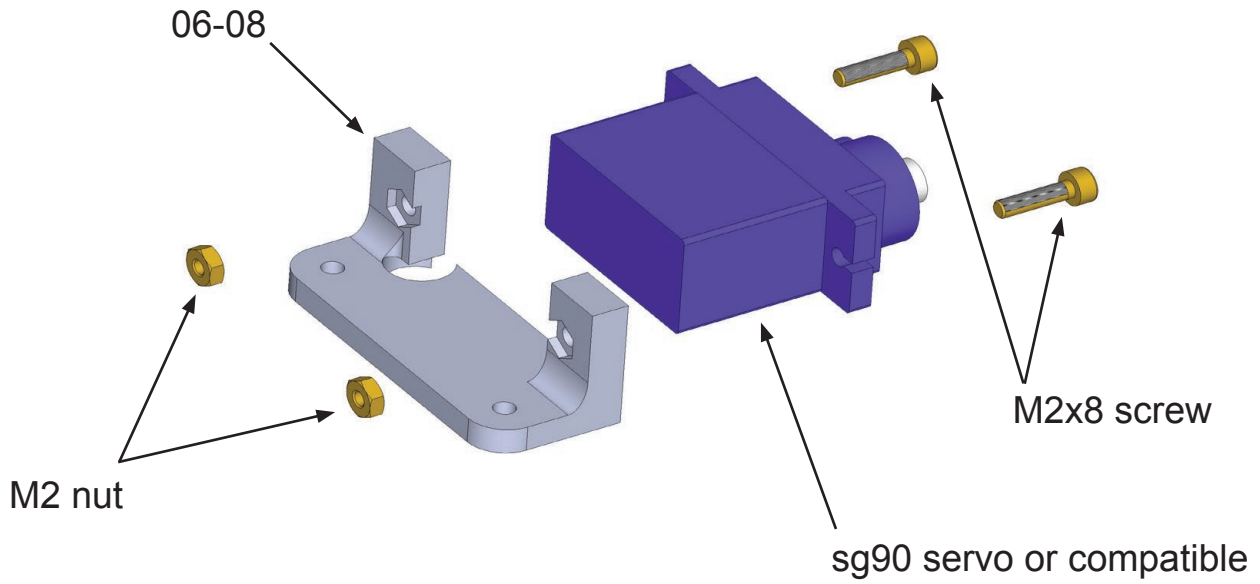
Attach part 06-07 to part 06-02
using two M2x8 screws and M2 nuts.

Assembly 06 - Cannon



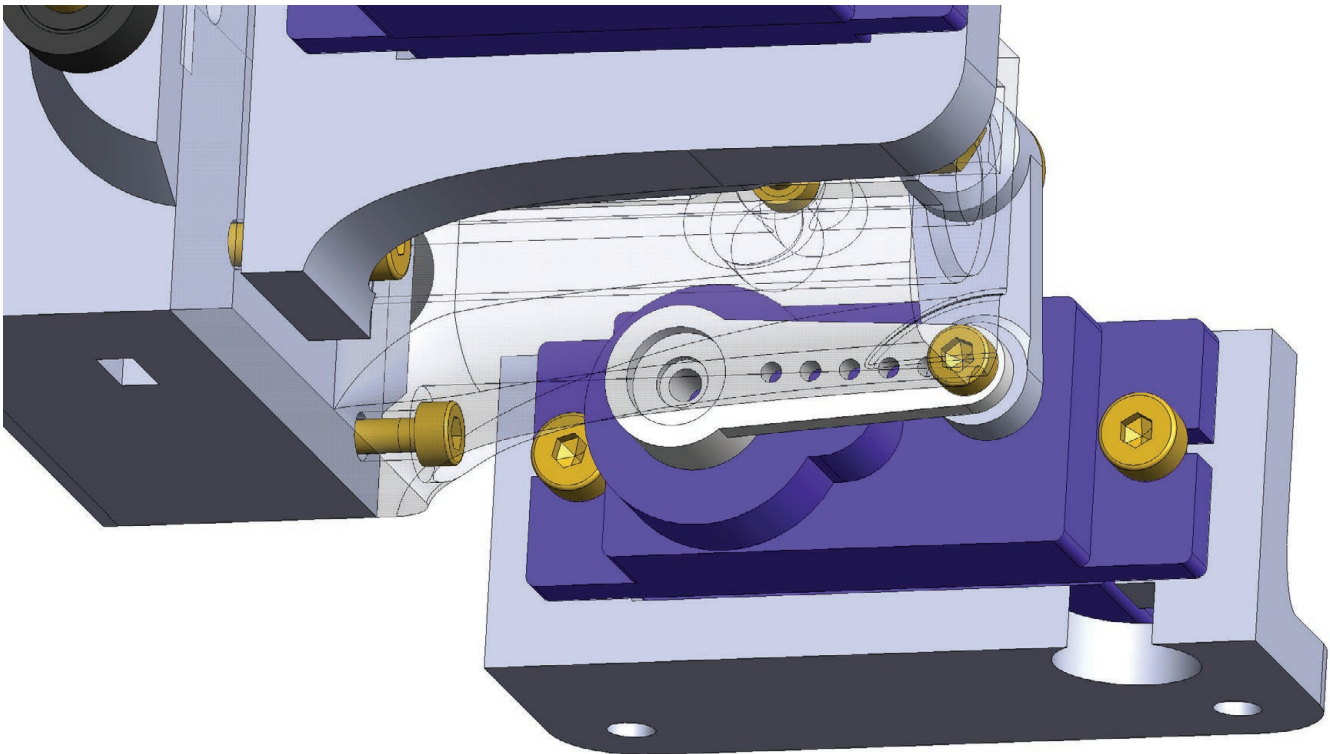
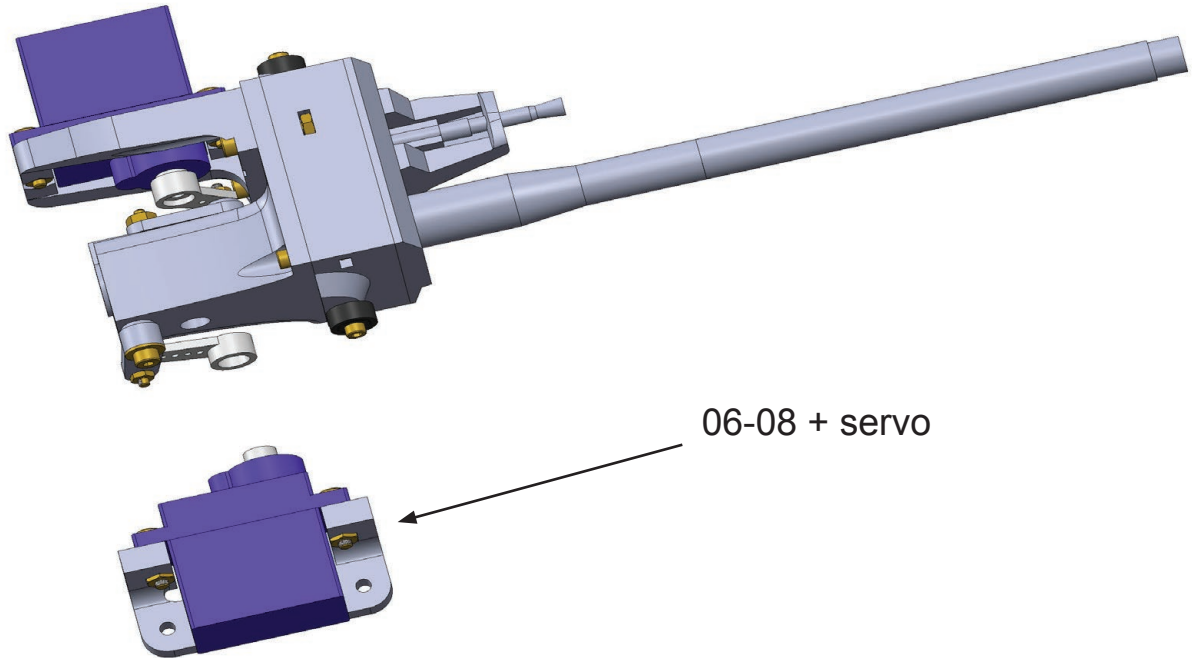
Attach the servo arm. Use the M1.6x6 screw and nut M1.6.
The arm must rotate freely. Secure the nut against falling out.

Assembly 06 - Cannon



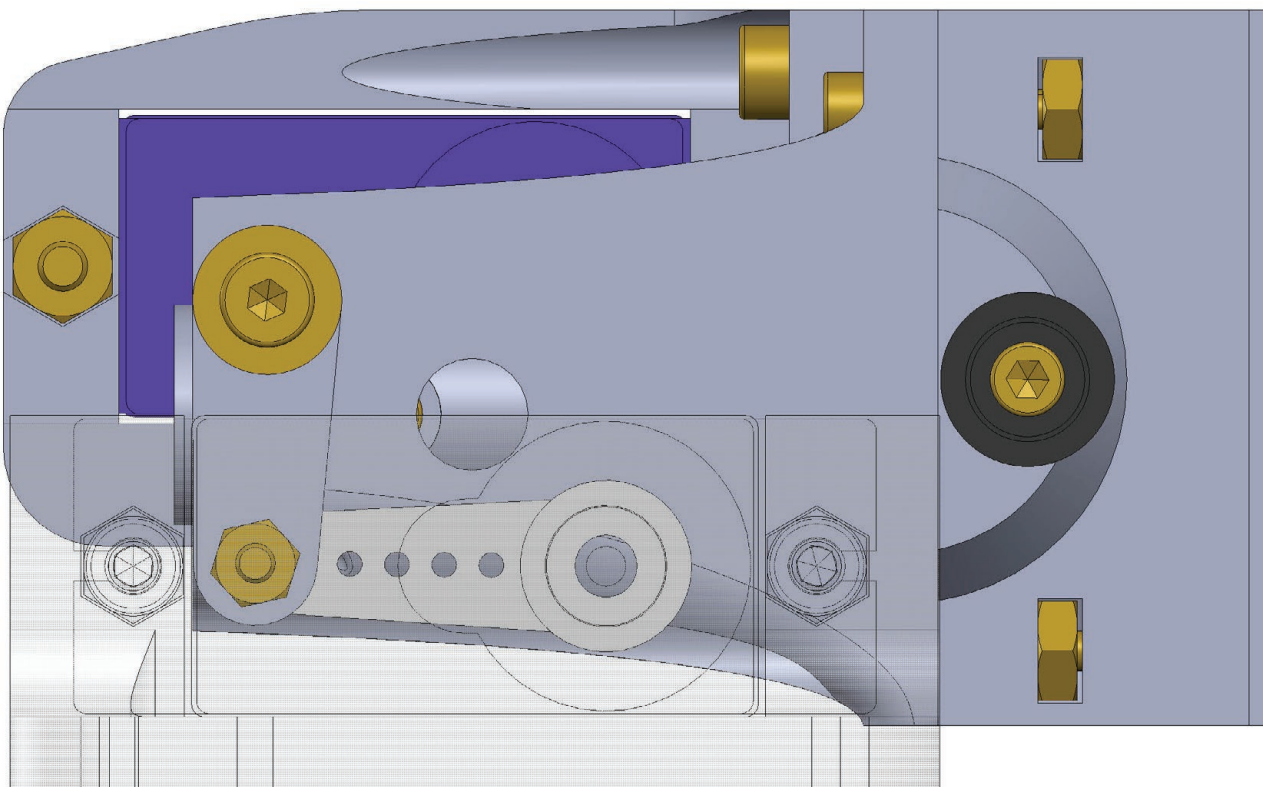
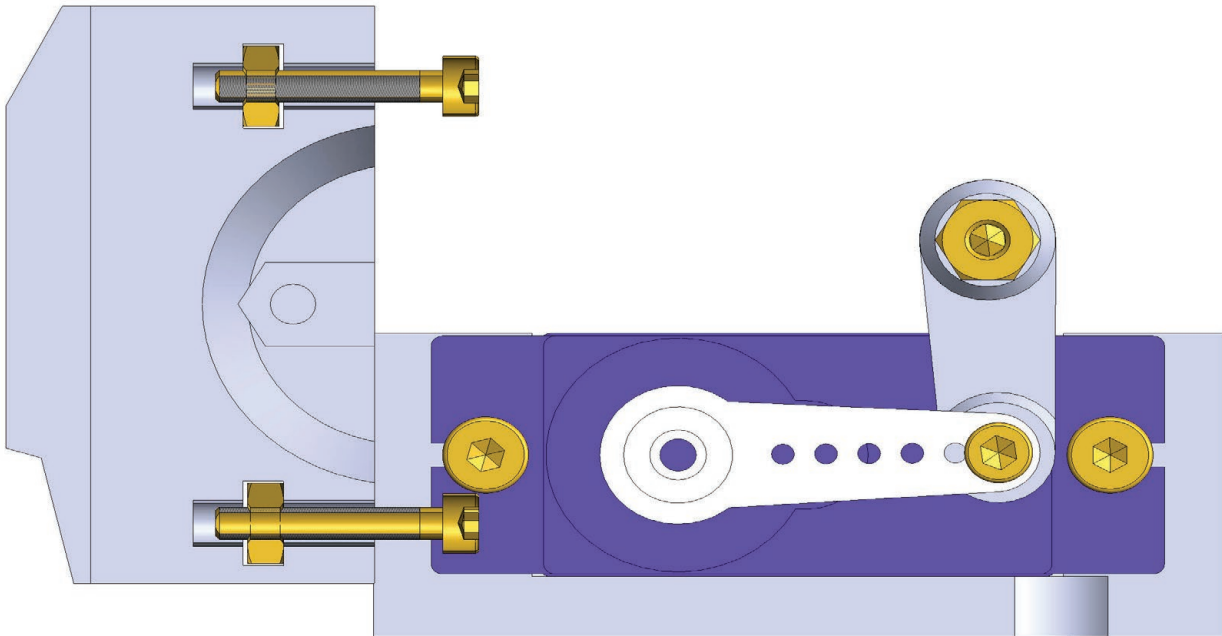
Attach servo sg90 or other compatible to part 06-08 using two M2x8 screws and M2 nuts.

Assembly 06 - Cannon



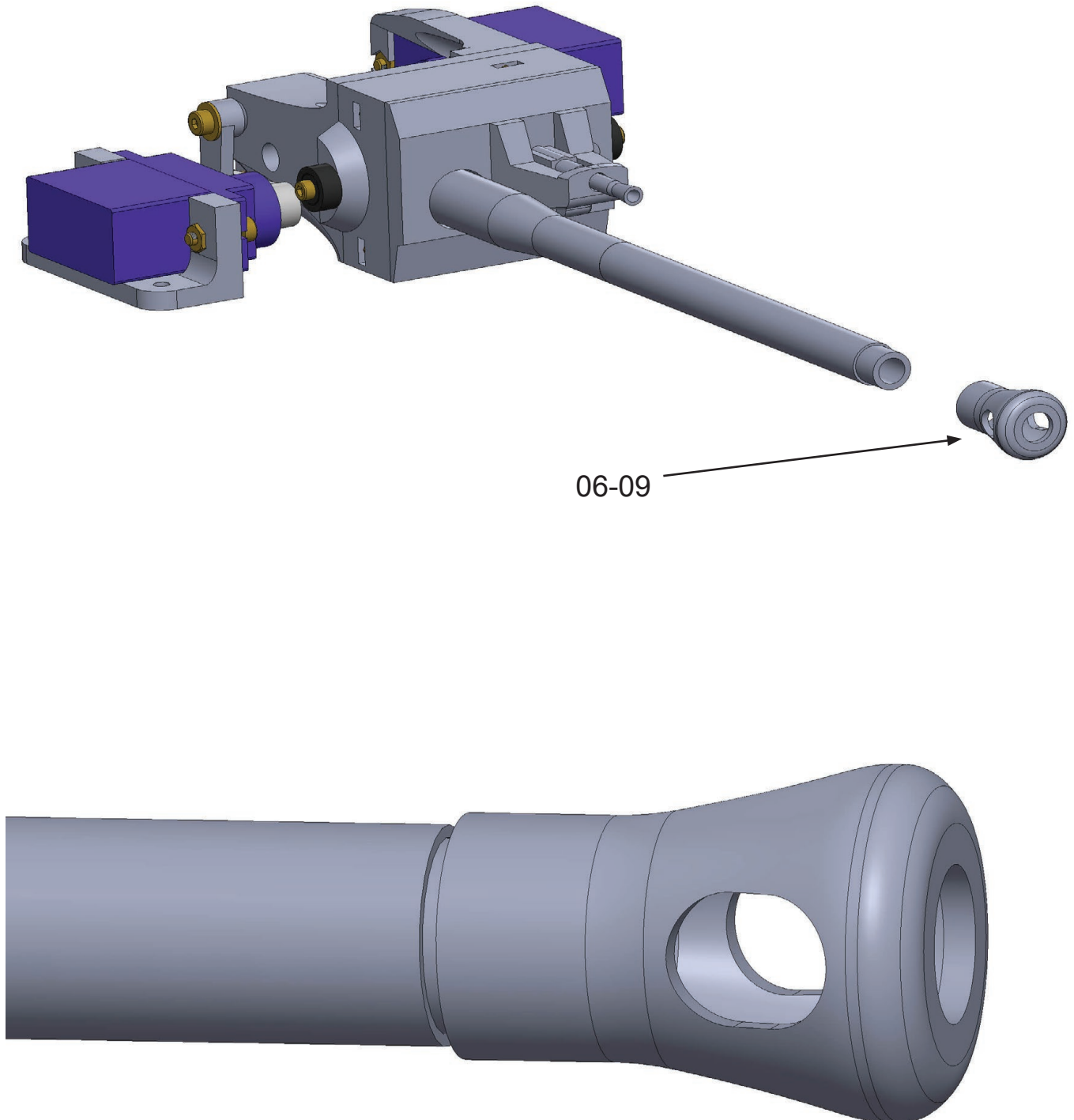
Prepare part 06-08 together with the servo. Connect the arm to the servo.

Assembly 06 - Cannon



Correct position of the servo and arm in the zero/default position.
Part 06-08 is perpendicular to the cannon.
The arm of the servo is parallel to the cannon.

Assembly 06 - Cannon



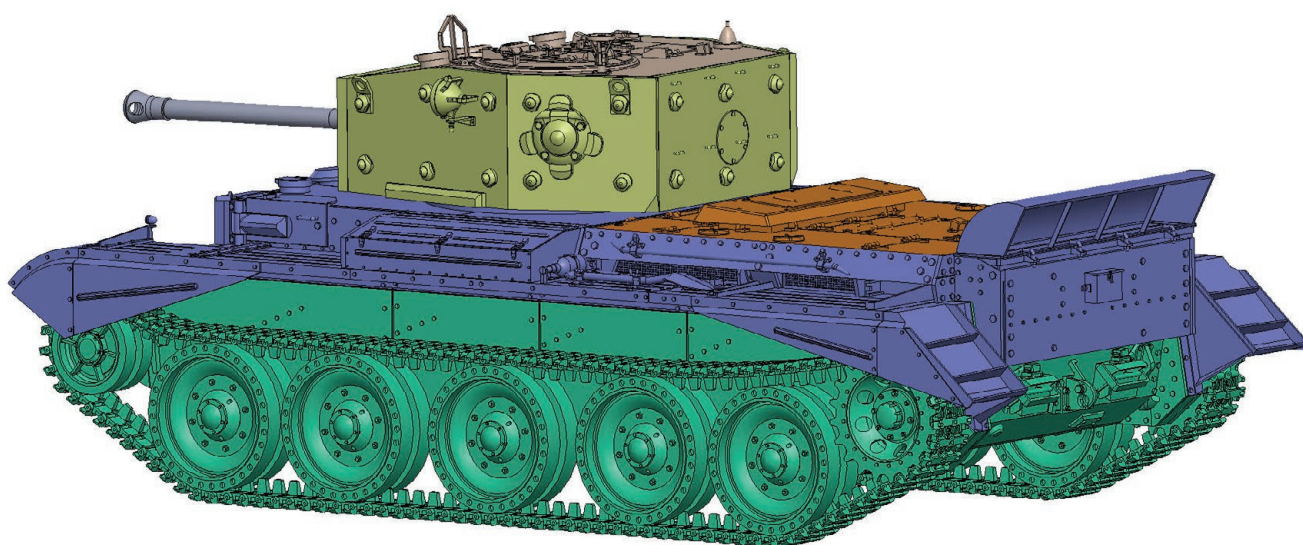
Complete the cannon by adding part 06-09.
Attach the part so that it can be detached in the future.
In case of service, the part will have to be detached.

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Assembly guide

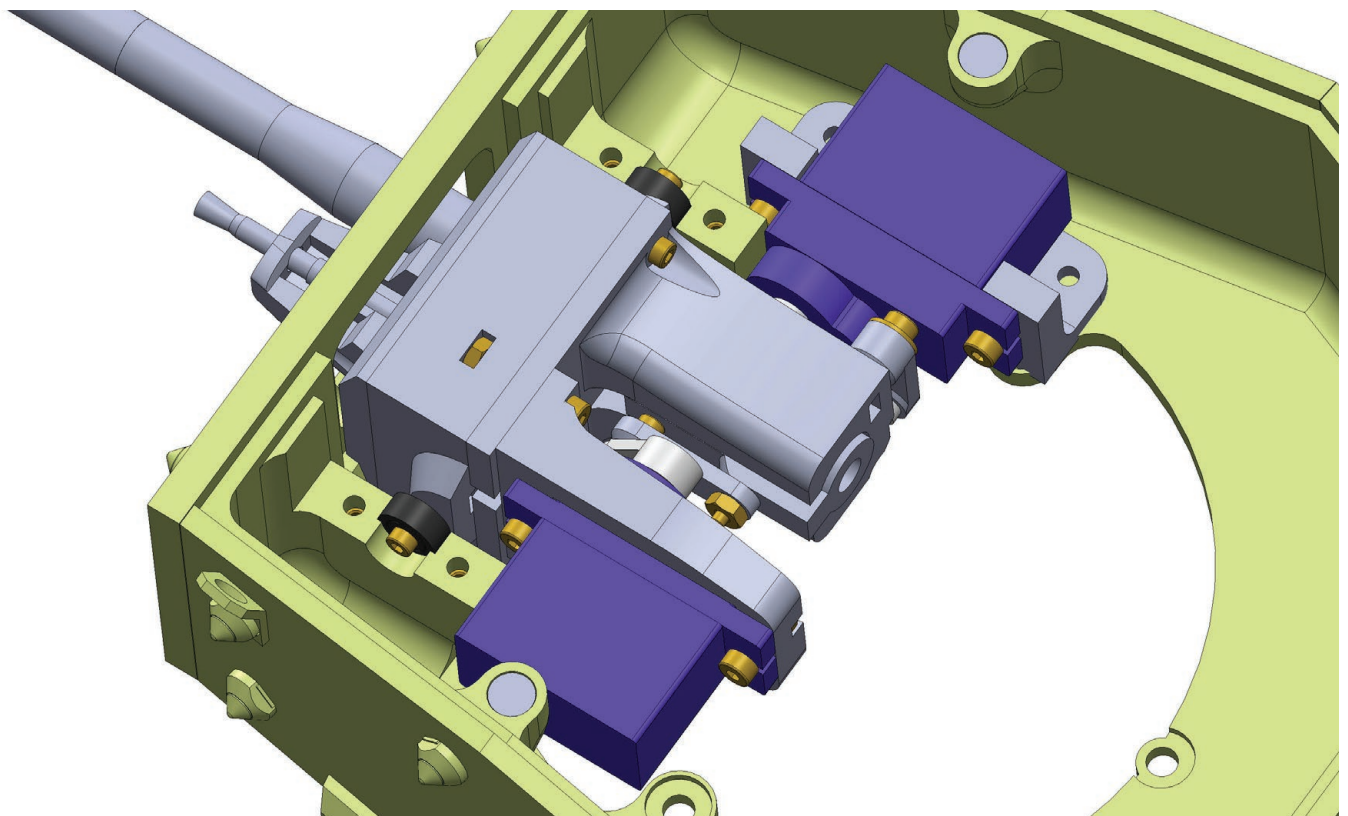
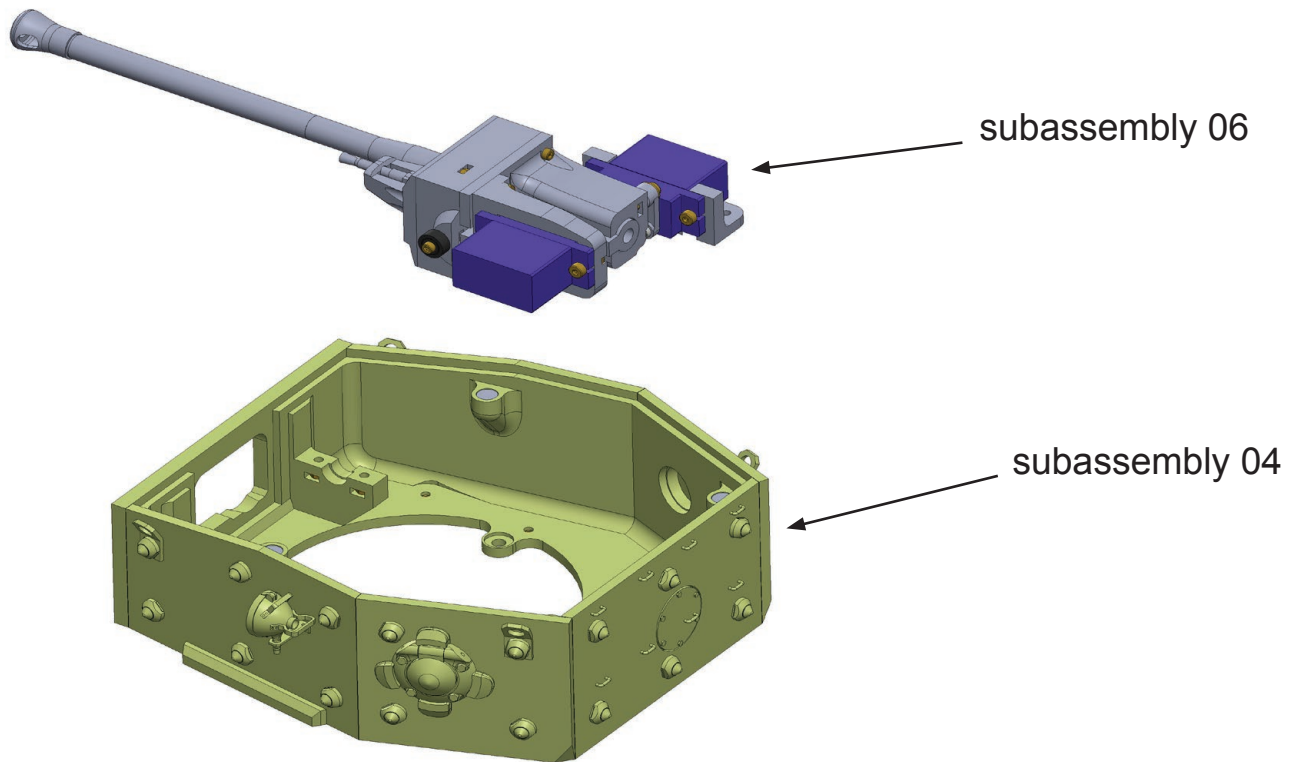
Assembly 06 - Cannon

Final Assembly



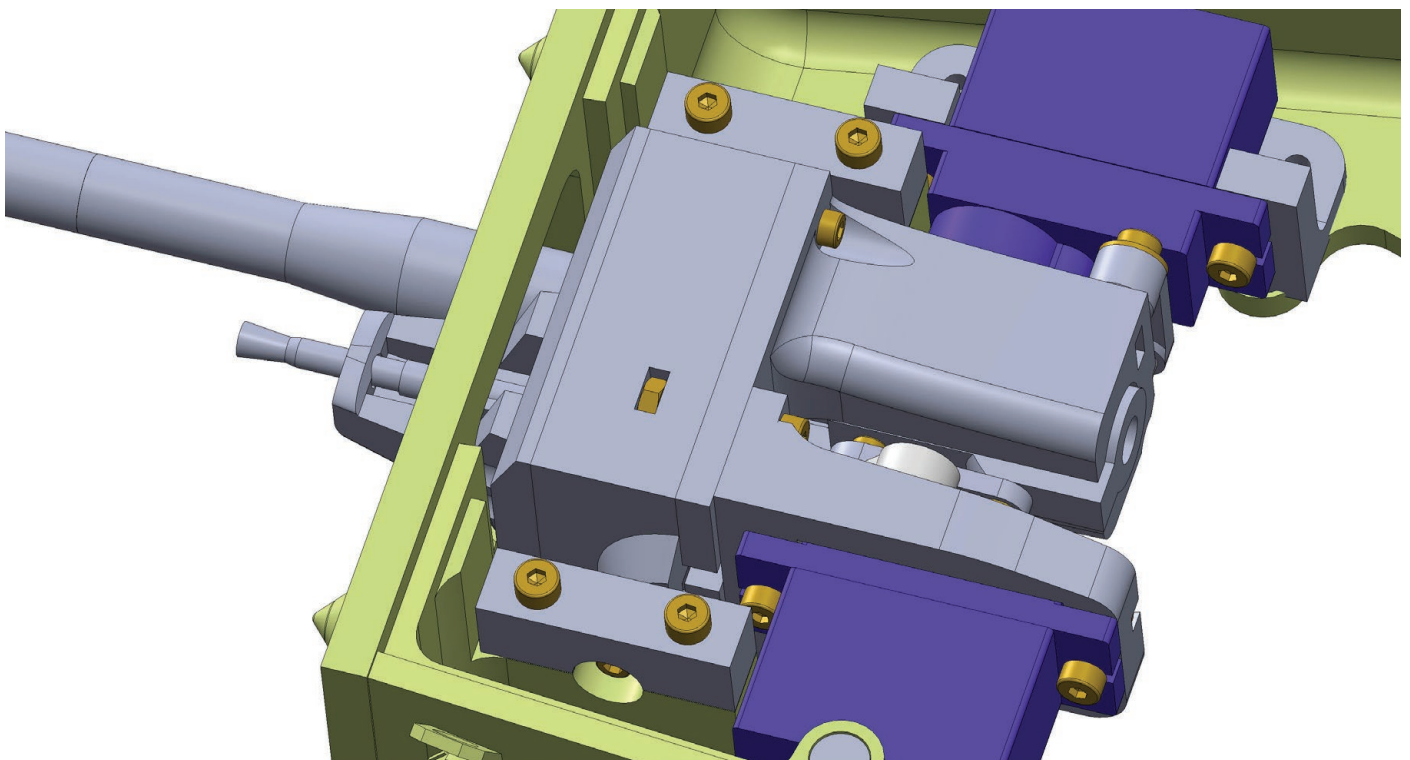
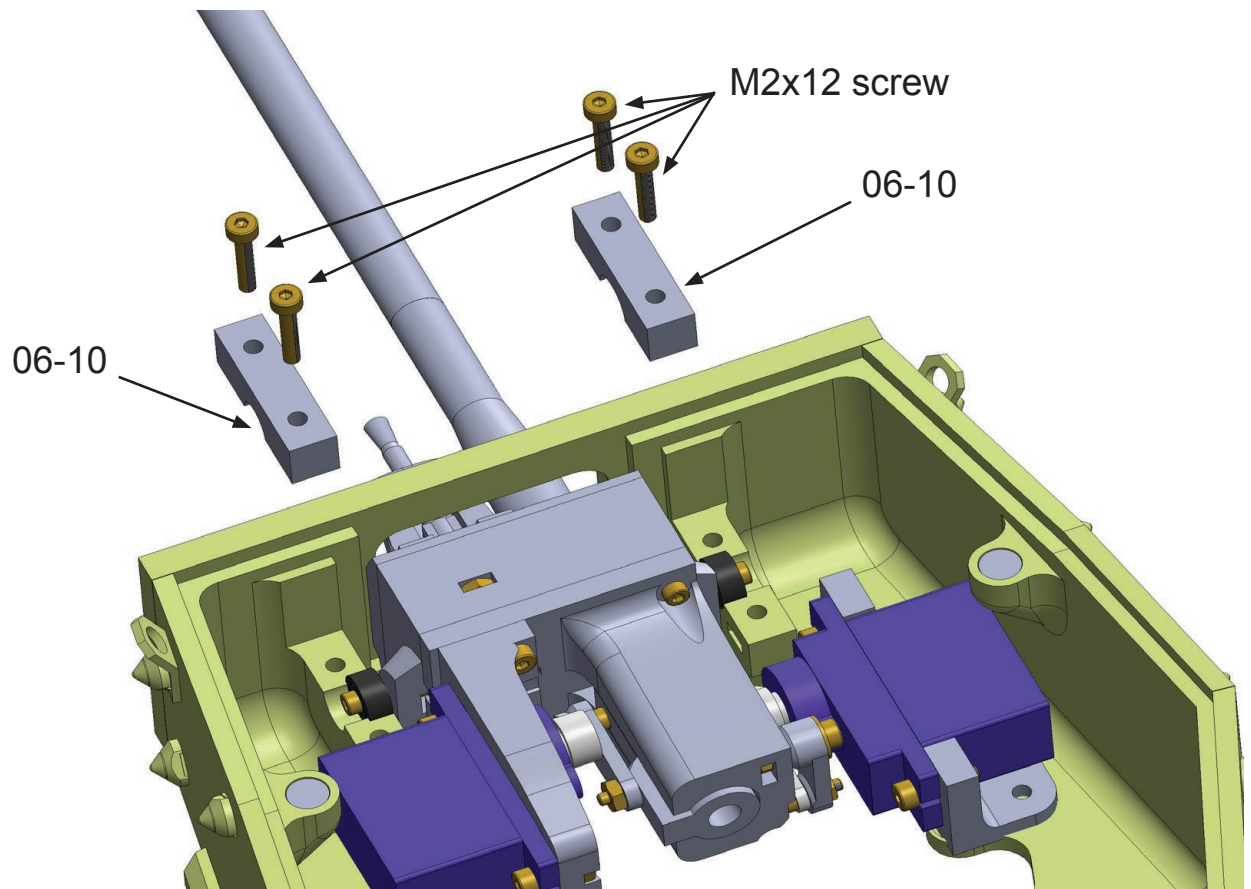
3D PRINTED PARTS:	Assembly 01, Assembly 02, Assembly 03, Assembly 04, Assembly 05, Assembly 06.
OPTIONAL 3D PRINTED PARTS:	
NON-PRINTED PARTS:	M3 nut (3x) , M3x25mm screw (3x).

Final Assembly



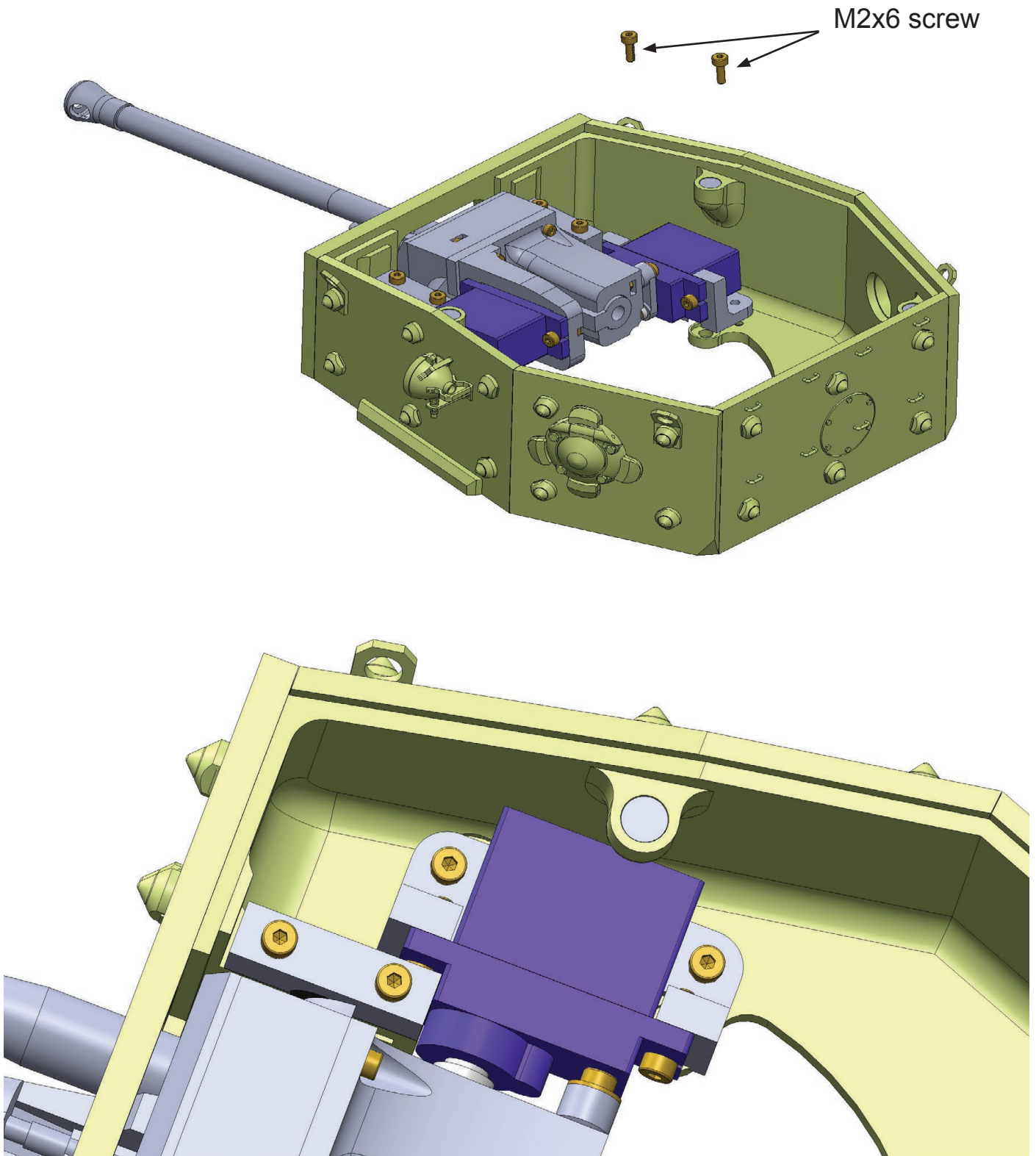
Insert the cannon into the turret.
We recommend installing the cannon only after mounting the turret on the model.

Final Assembly



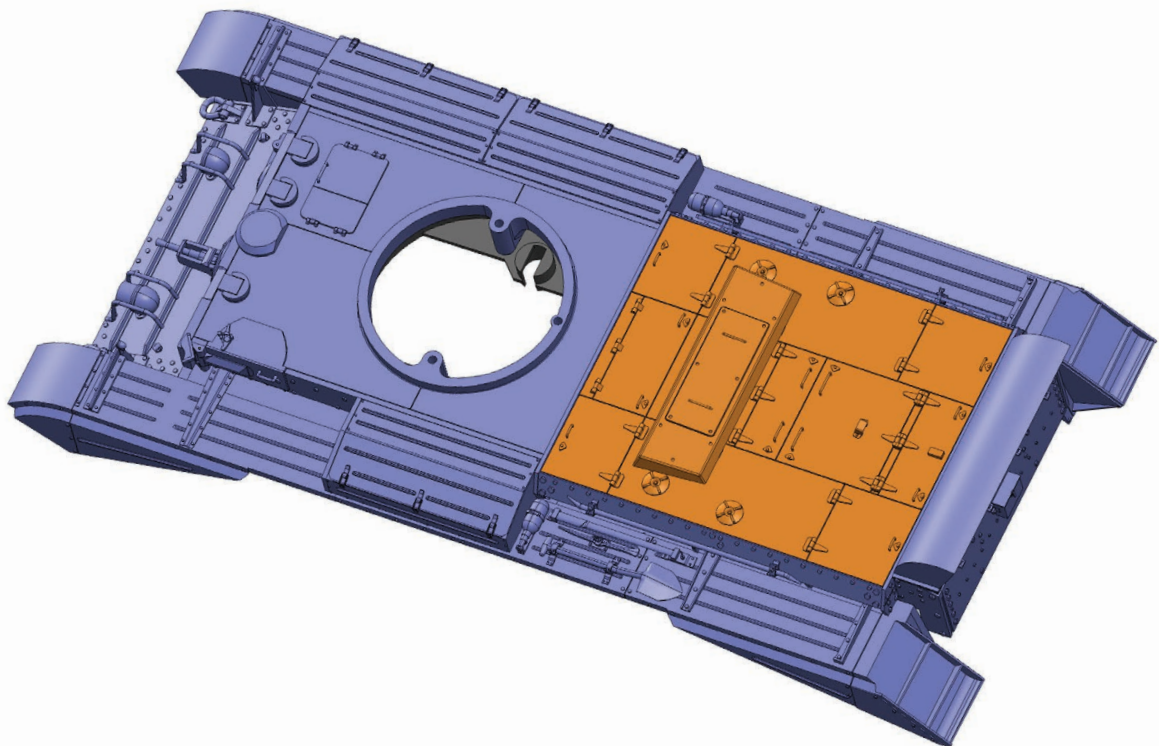
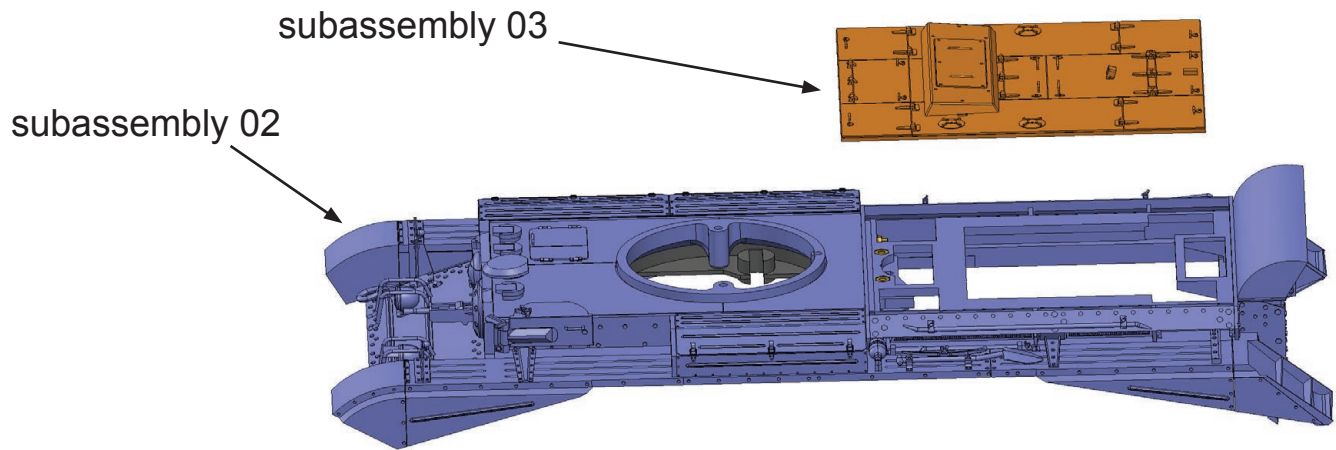
Fix the cannon with a pair of parts 06-10. Use 4 M2x12 screws.

Final Assembly



Secure the servo and part 06-08 with a pair of M2x6 screws.

Final Assembly

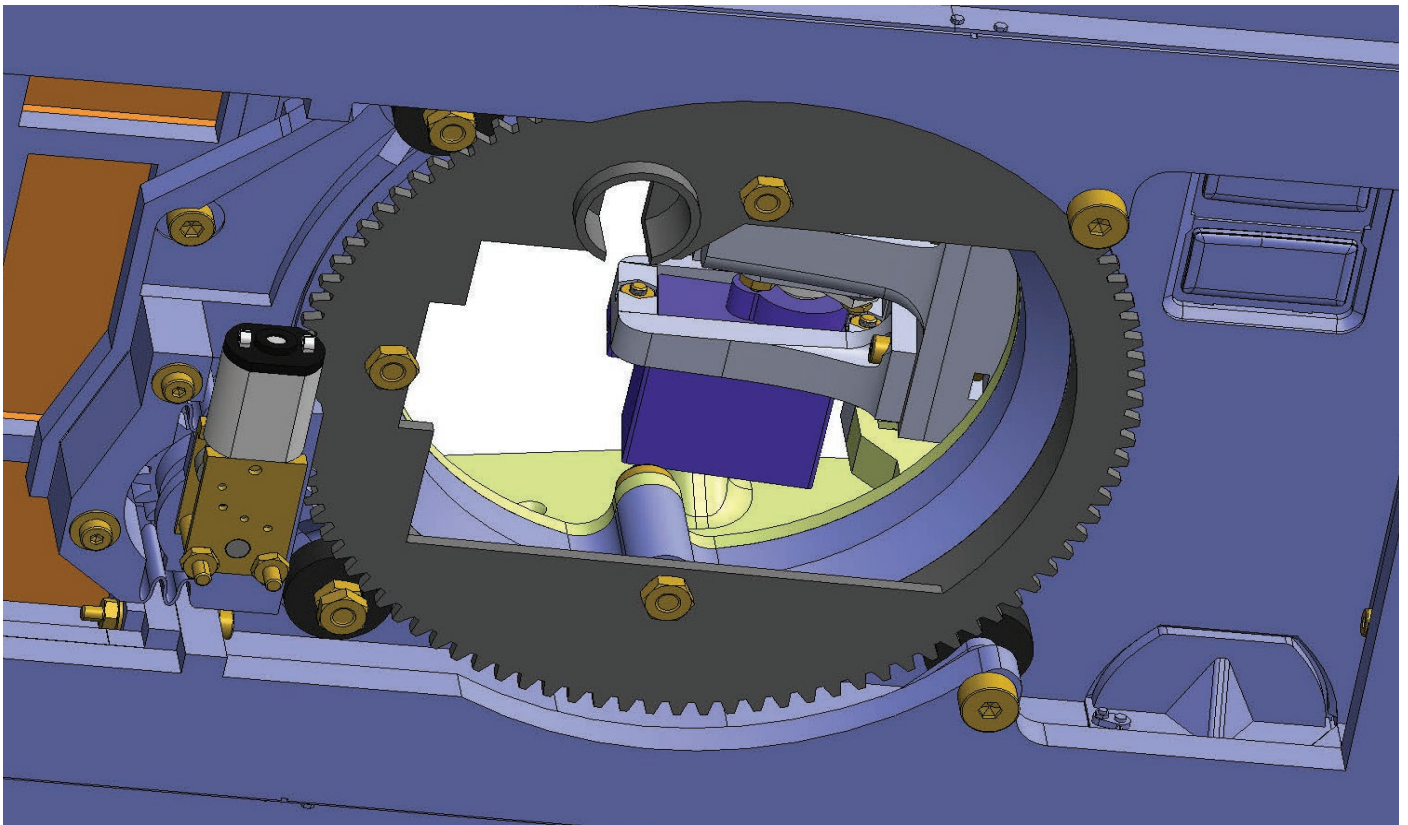
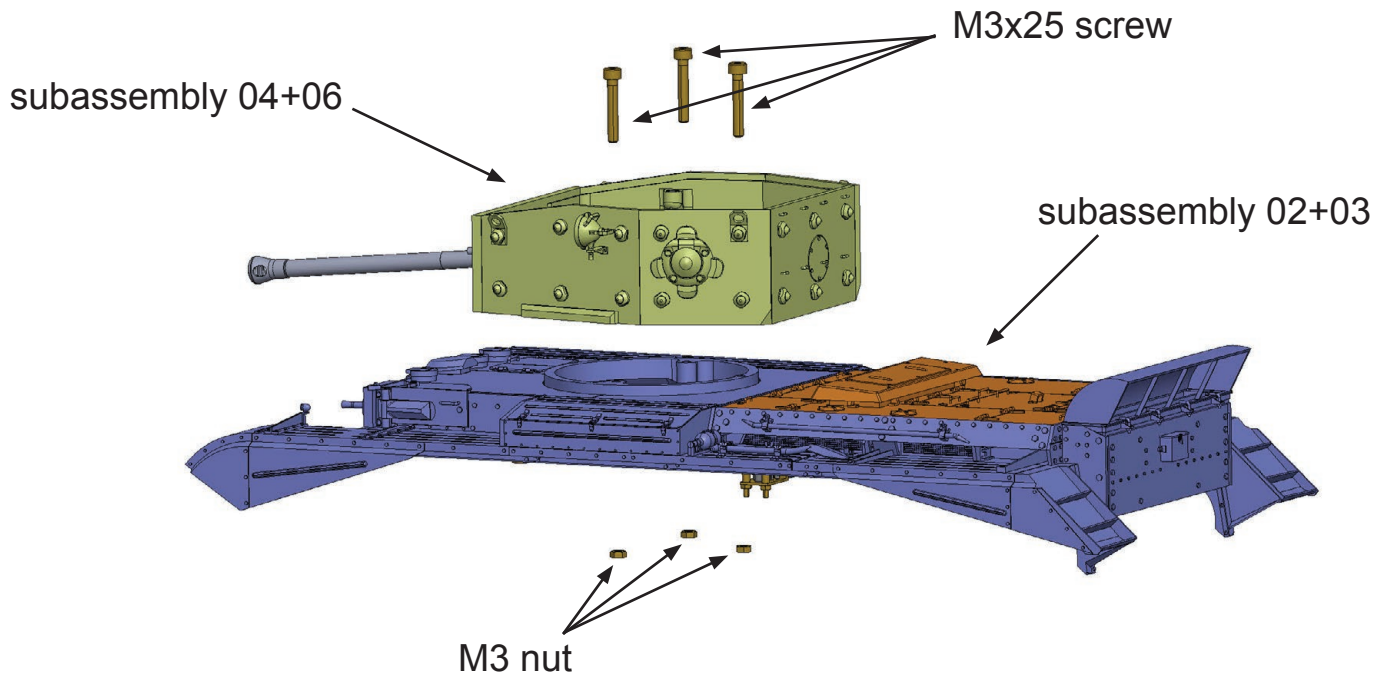


Insert assembly 03 into the upper part of the hull - into assembly 02.

Do not glue the parts together.

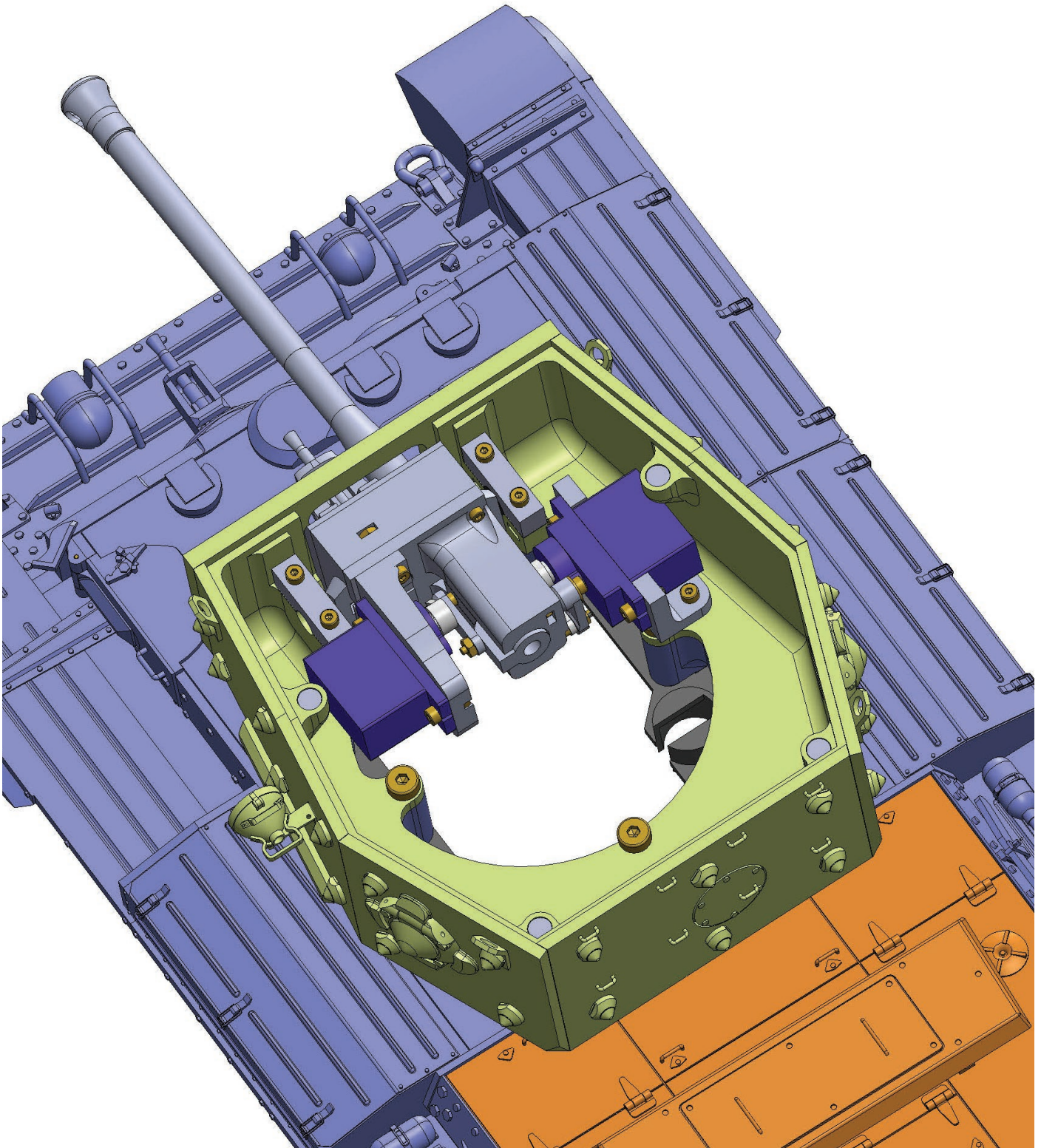
You will have quick and practical access to the inside of the tank.
The assembly 03 should slide into the hull and fit exactly into the hole.

Final Assembly



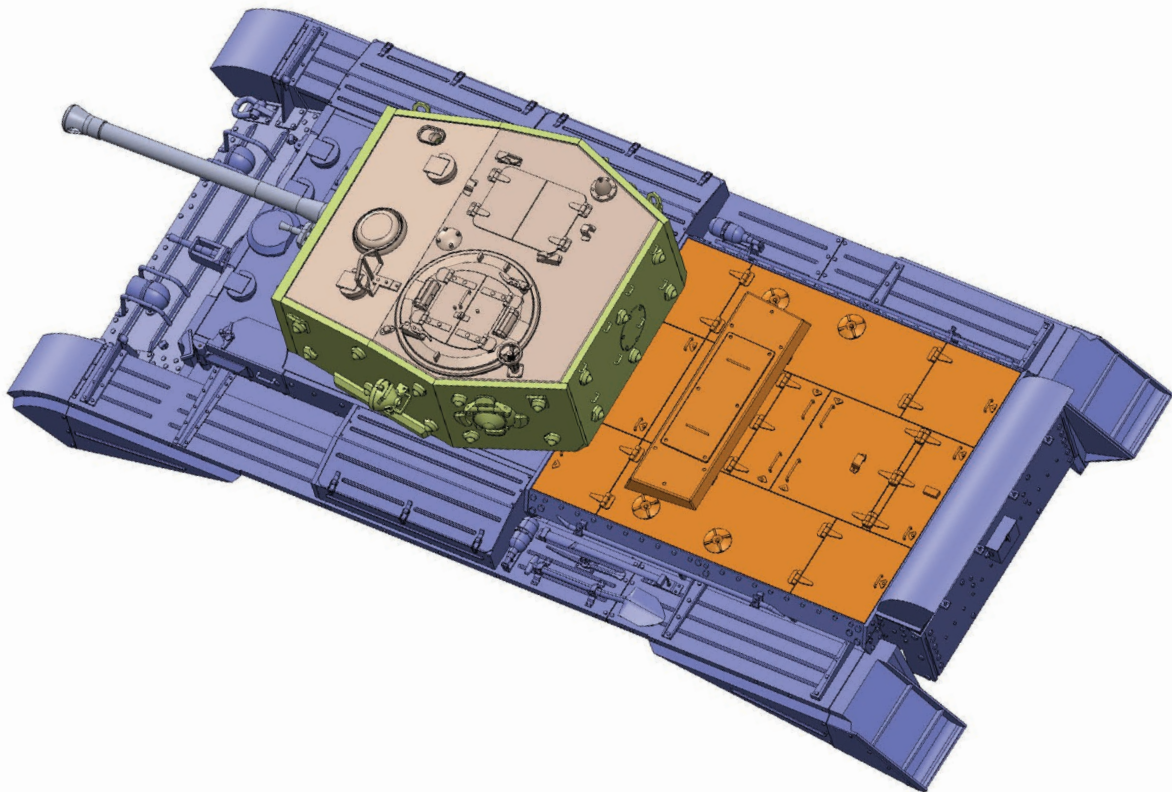
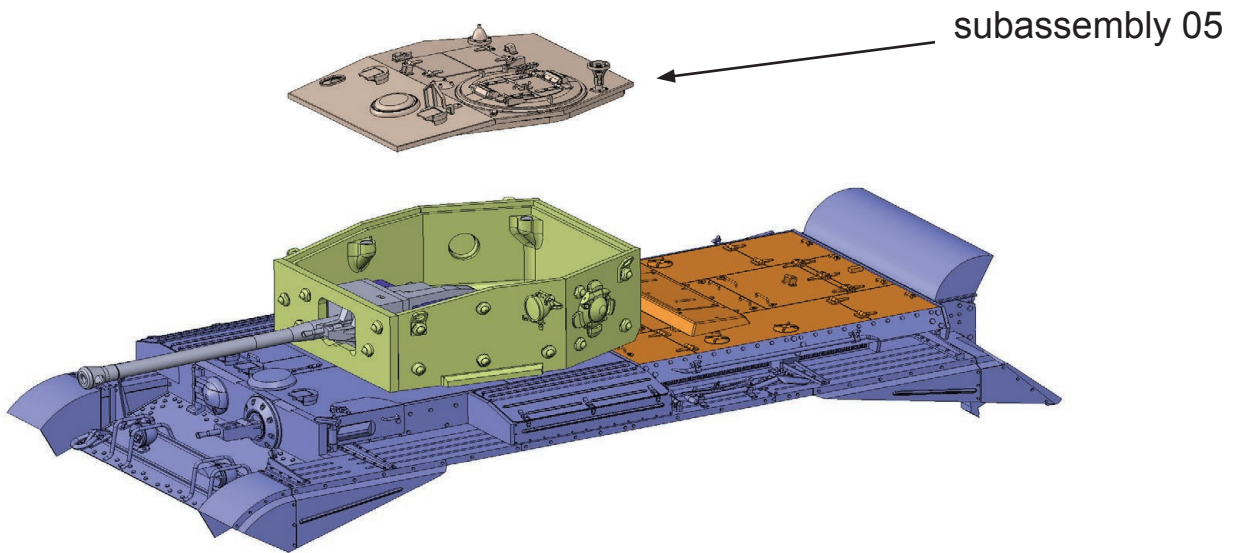
Connect the top of the hull and the turret with three M3x25mm screws and M3 nuts.

Final Assembly



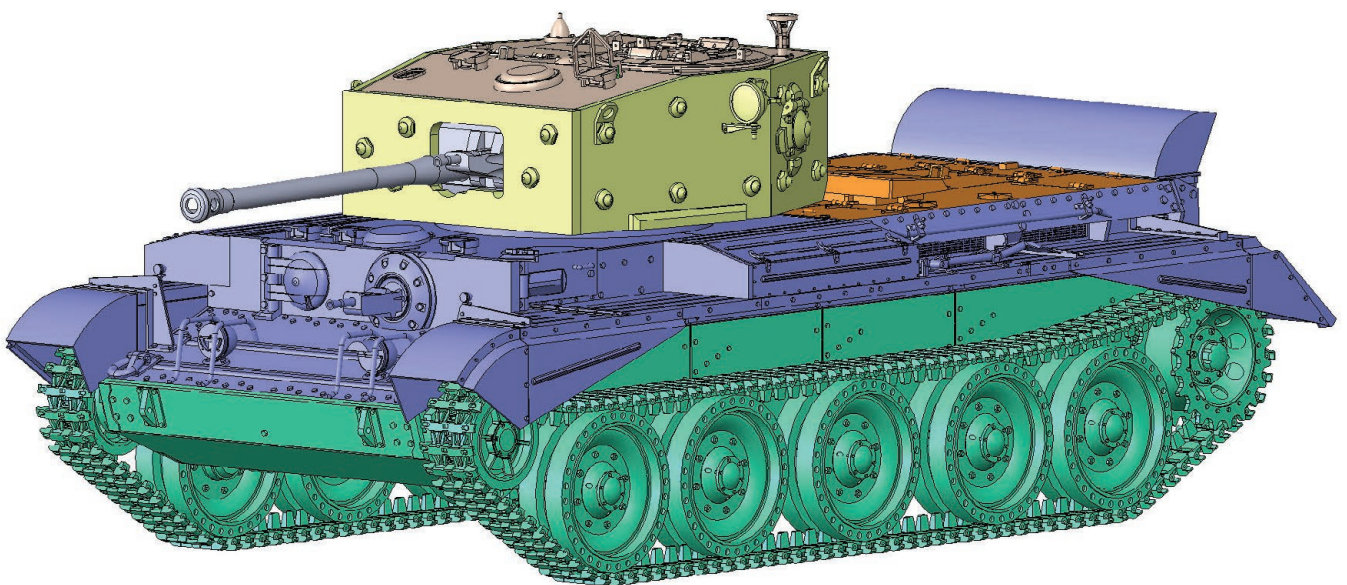
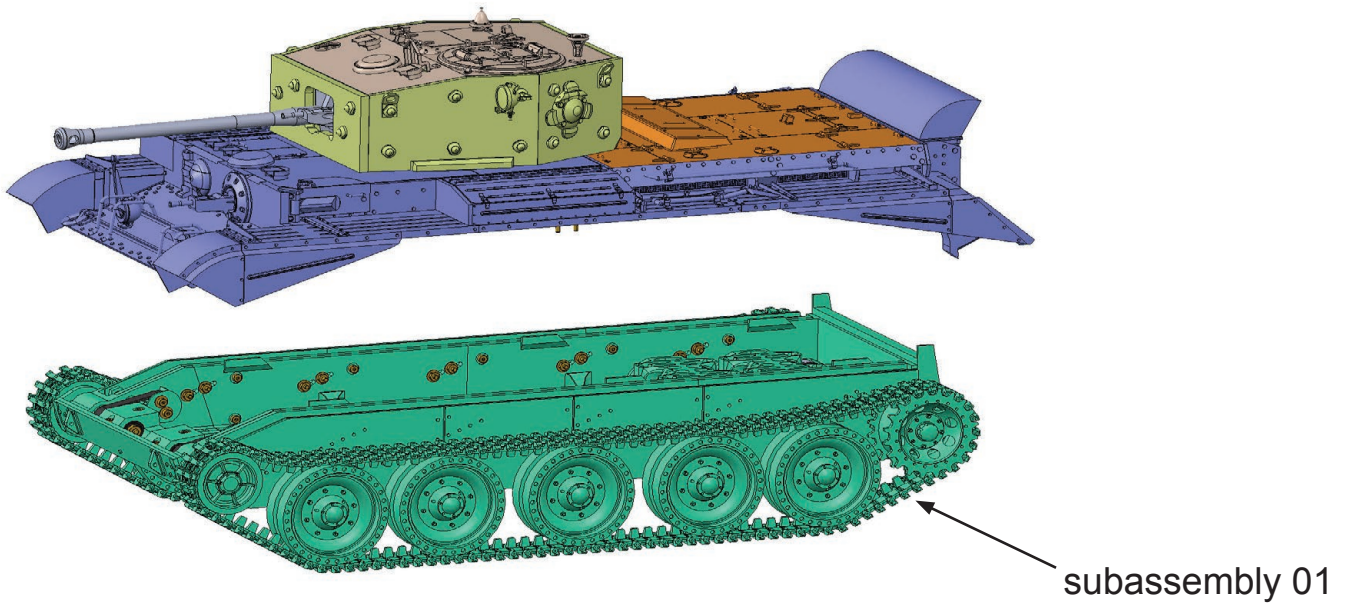
To access the hole for installing one of the screws, it is necessary to temporarily uninstall the cannon elevation servo. Specifically part 06-08.

Final Assembly



Attach the top of the turret - assembly 05.
The assembly is held in place by magnets.
Allows very practical access to the turret.

Final Assembly



The last step - connect the bottom and top of the hull - assemblies 01 and 02.
Do not glue the assemblies together under any circumstances.

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Final Assembly

Cromwell Mk.IV

Assembly guide

Congratulations on completing the model.
We hope the construction was fun and hassle-free.

Tips for connecting electronics, more information and tips for printing, common tips for operation and many other tools can be found on our forum:

<https://www.warprints.xyz/forum>

