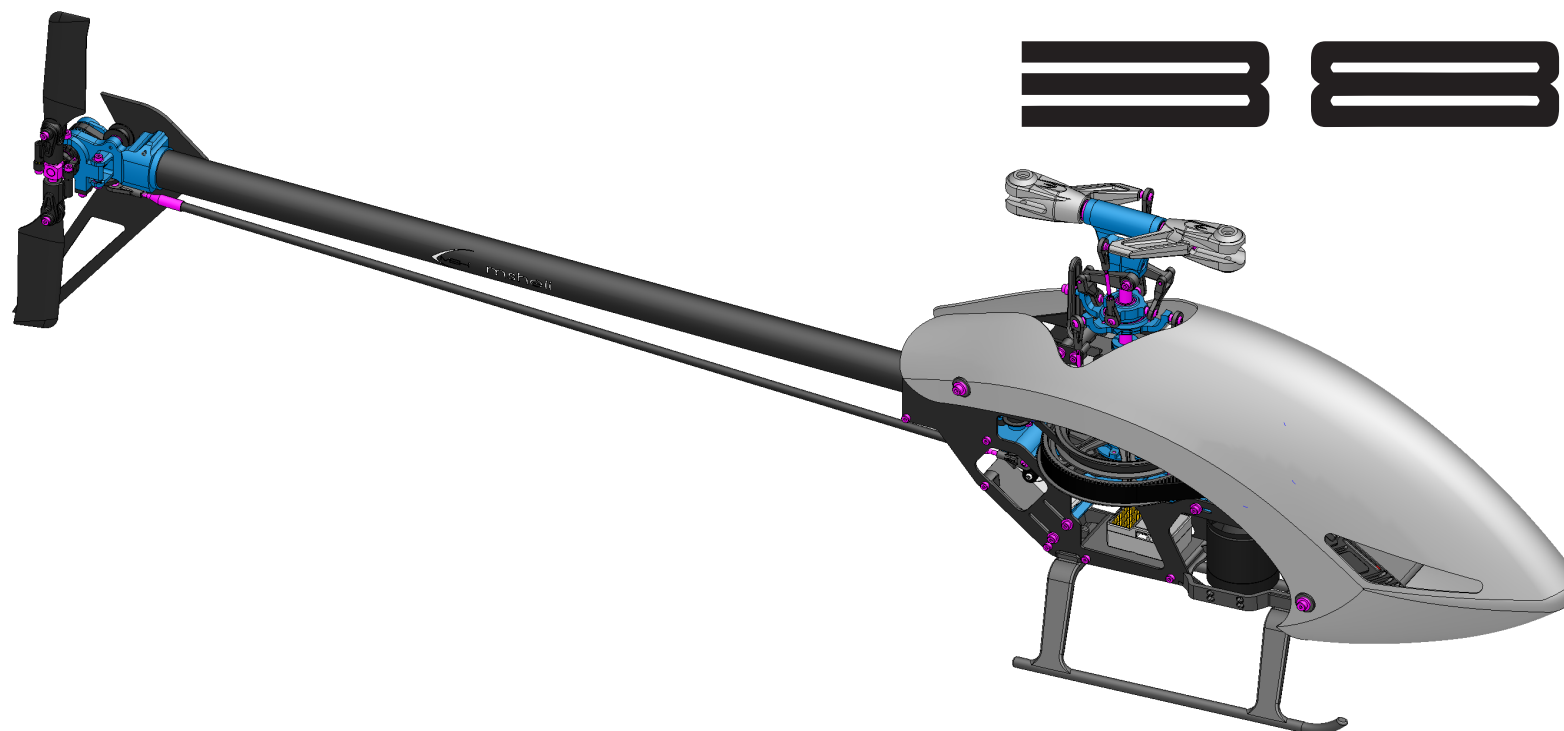


# PRÔTOS

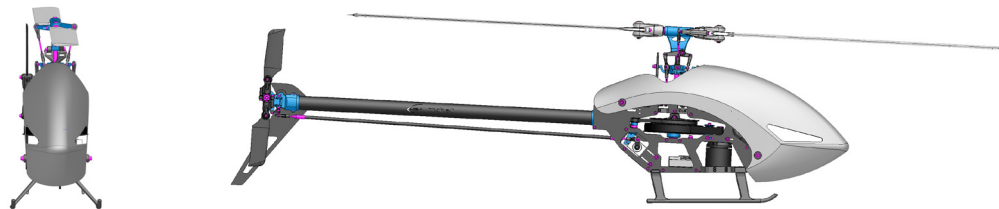



Main rotor diameter.....	864mm (380mm blades)
Tail rotor diameter.....	181mm (67mm tail blades)
Length without main blades.....	800mm
Length with main blades.....	1003mm (380mm blades)
Overall height.....	235mm
Tail rotor-Main rotor ratio.....	4,27
Main pulley.....	120T
Autorotation pulley.....	94T
Tail pulley.....	22T

Release 1.3

Always check on [www.msheli.com](http://www.msheli.com) for a more recent version of this manual

Pages	Content
3	safety rules
4	tools required for assembly
5	R/C equipment required to complete
6	how to read this manual
7	motor pinion teeth choice
8-30	main frame assembly
31-40	head assembly
41-55	tail assembly
56	ESC, BEC
57 - 61	canopy installation
62	battery installation
63	Brain installation
64	Alu main blade holder set (optional)





# Always follow these rules for safety



Operate the helicopter in open areas with no people nearby.

Do NOT operate the helicopter in the following places and situations (or else you risk severe accidents):

- in places where children gather or people pass through
- in residential areas and parks
- indoors and in limited space
- in windy weather or when there is rain, snow, fog or other precipitation

If you do not observe these instructions you may be held liable for personal injury or property damage!

Always check the R/C system prior to operating your helicopter.

When the R/C system batteries get weaker, the operational range of the R/C system decreases.

Note that you may lose control of your model when operating it under such conditions.

Keep in mind that other people around you might also be operating a R/C model.

Never use a frequency which someone else is using at the same time.

Radio signals will be mixed and you will lose control of your model.

If the model shows irregular behavior, bring the model to a halt immediately and disconnect the batteries.

Investigate the reason and fix the problem.

Do not operate the model again as long as the problem is not solved, as this may lead to further trouble and unforeseen accidents.

In order to prevent accidents and personal injury, be sure to observe the following:

Before flying the helicopter, ensure that all screws are tightened.

A single loose screw may cause a major accident.

Replace all broken or defective parts with new ones, as damaged parts lead to crashes.

Never approach a spinning rotor. Keep at least 10 meters/yards away from a spinning rotor blades.

Do not touch the motor immediately after use. It may be hot enough to cause burns.

Perform all necessary maintenance.

**PRIOR TO ADJUSTING AND OPERATING YOUR MODEL, OBSERVE THE FOLLOWING**

Operate the helicopter only outdoors and out of people's reach as the main rotor operates at high rpm!

While adjusting, stand at least 10 meters

Novice R/C helicopter pilots should always seek advice from experienced pilots to obtain hints with assembly and for pre-flight adjustments.

Note that a badly assembled or insufficiently adjusted helicopter is a safety hazard!

In the beginning, novice R/C helicopter pilots should always be assisted by an experienced pilot and never fly alone!

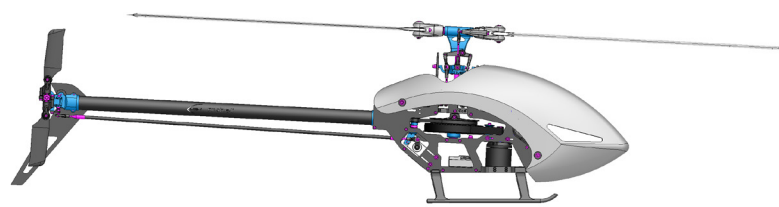
MSHeli Srl

Italy

# Tools required for assembly



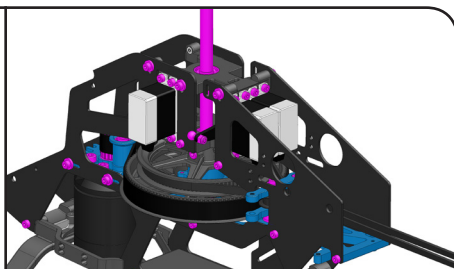
 <p>Hexagon screw drivers : 1,5mm 2,0mm two 2,5mm (spindle)</p>	 <p>Thrust bearing grease</p>
 <p>where indicated use Thread lock MEDIUM</p> 	 <p>Slow curing EPOXY</p>



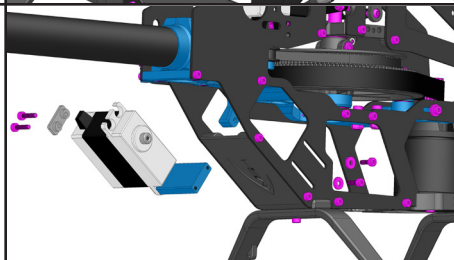
# Tools required for assembly



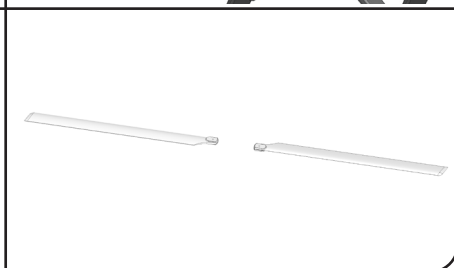
Swashplate servos supported:  
all micro servos (qnty. 3)



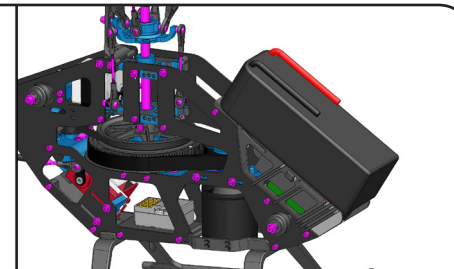
Tail servo supported:  
all micro and mini servos (qnty. 1)



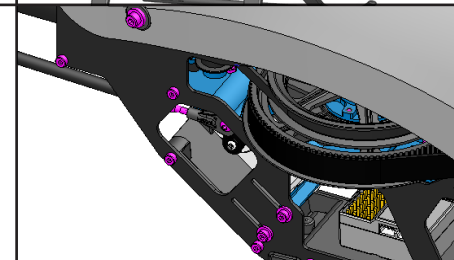
Main blades:  
standard full carbon blades  
380mm



Battery pack:  
LiPo 6s 1800mAh

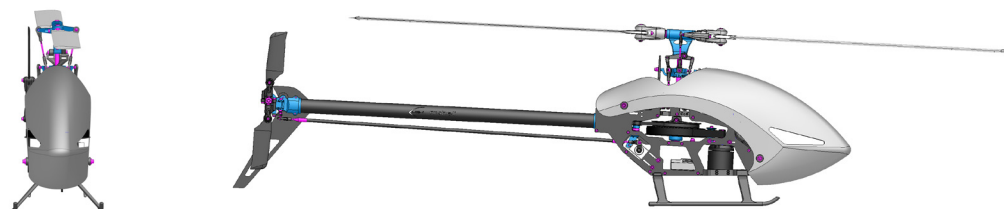
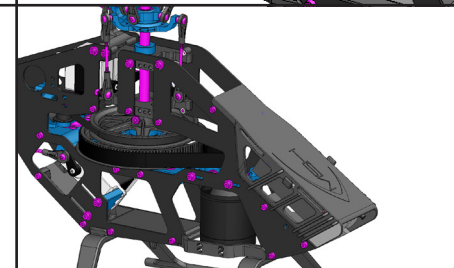


Trasmitter / Receiver:  
Satellites:  
Spektrum : DSM 2 - DSM X  
Futaba : S-Bus - S-Bus 2  
HOTT SumD  
MPX Srxl - Hudi



Standard receiver: all

ESC :  
at least  
50A



# How to read this manual

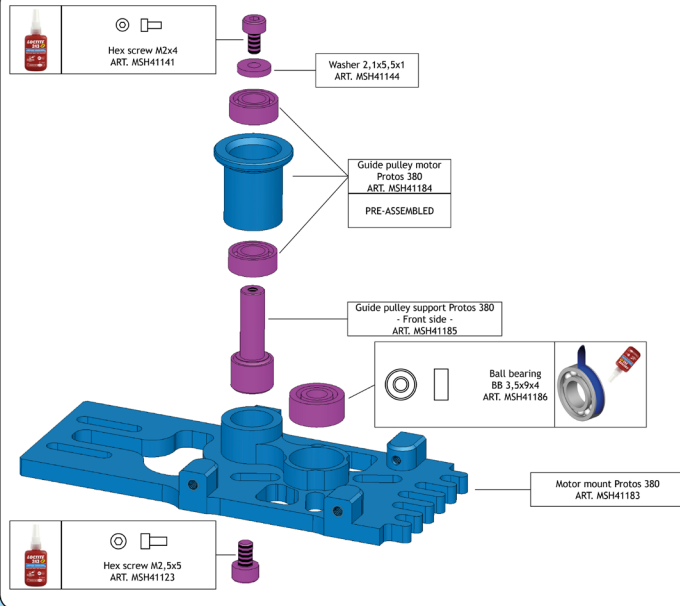


1

Box and bag where you can find washers, bearings, screws and parts

Instructions Manual

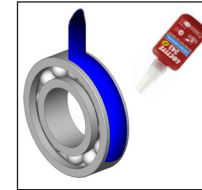
**Bag 1 + Bag 13**  
where I can find the parts



9

Instructions Manual PRÔTOS

3



Apply a thin layer of threadlock on the external part of the ball bearing

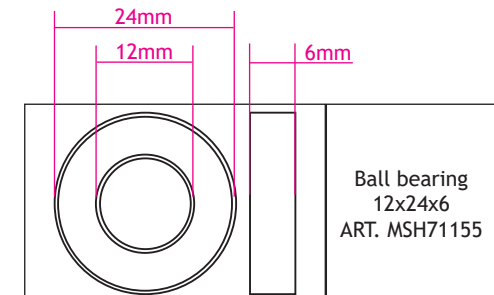
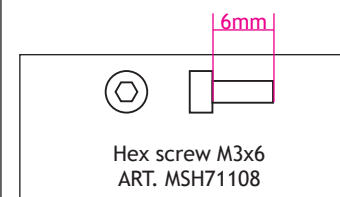
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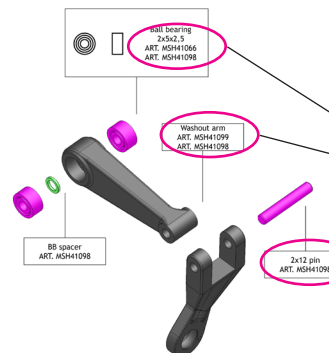
Pay attention to the instruction step behind this icon

5

1:1

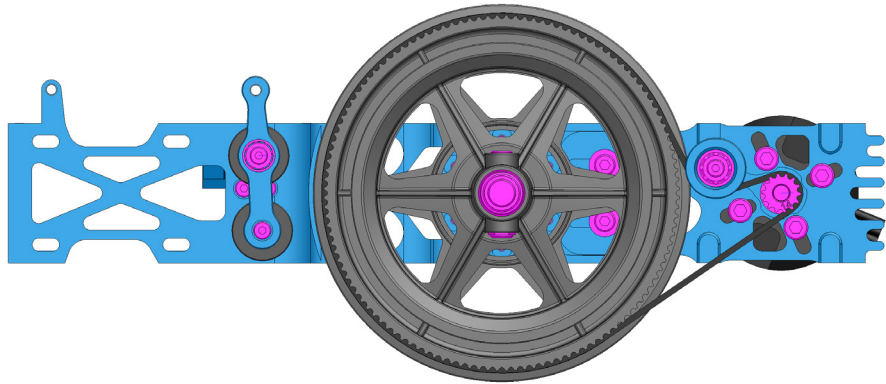


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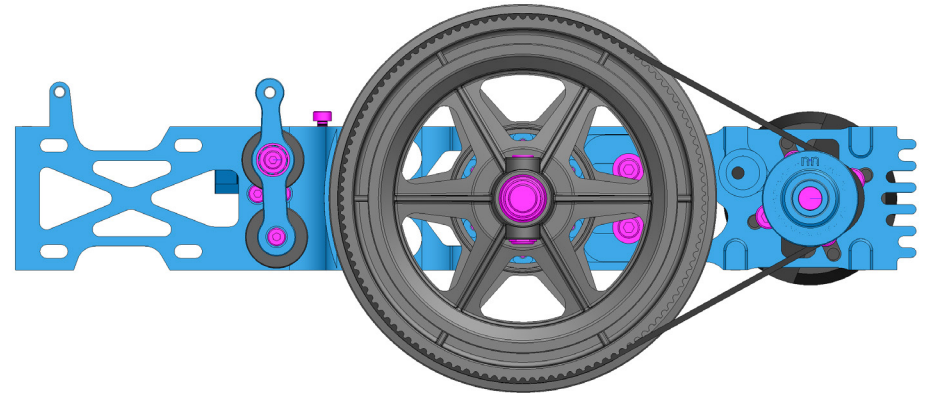


MSH spare part code

# Motor pinion teeth choice

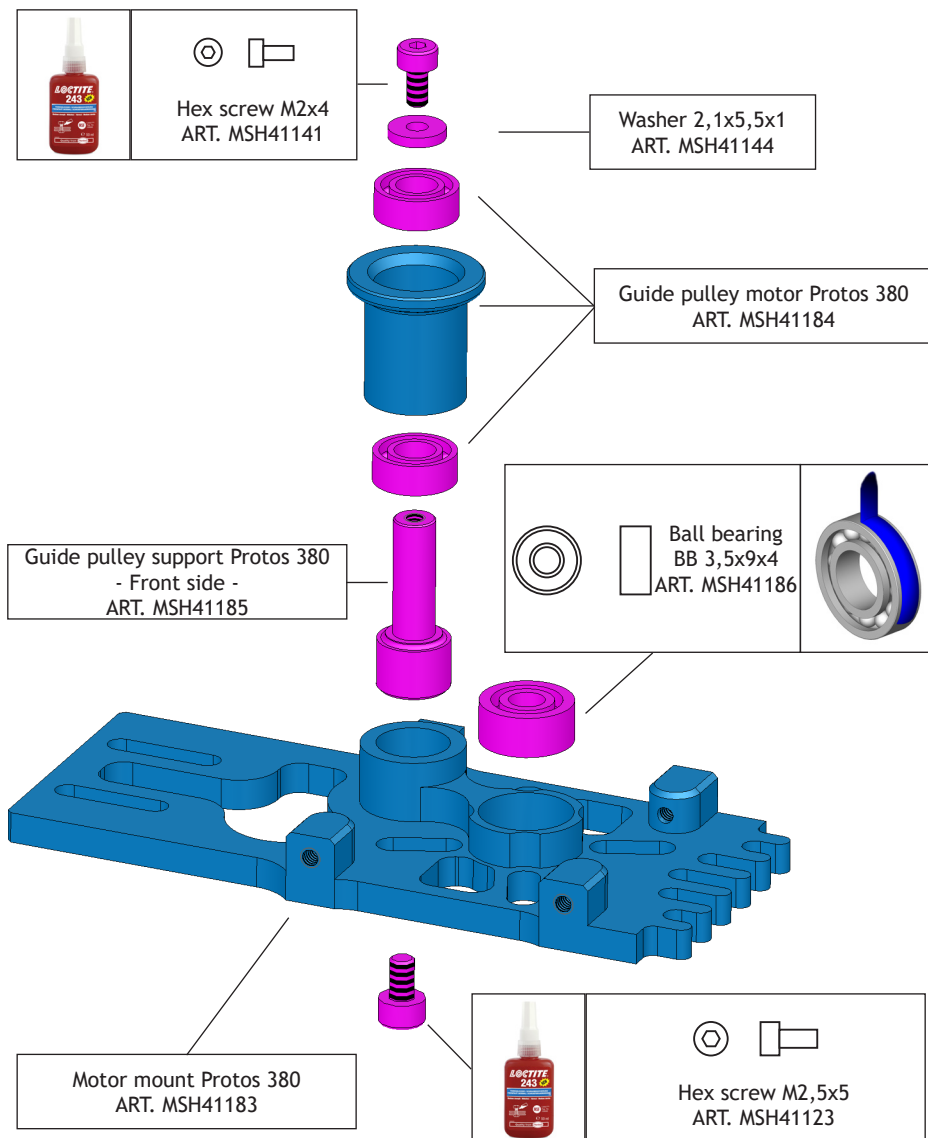


	Sport	3D	Hard 3D
1360 Kv ø 3,5mm	14T	15T	16T

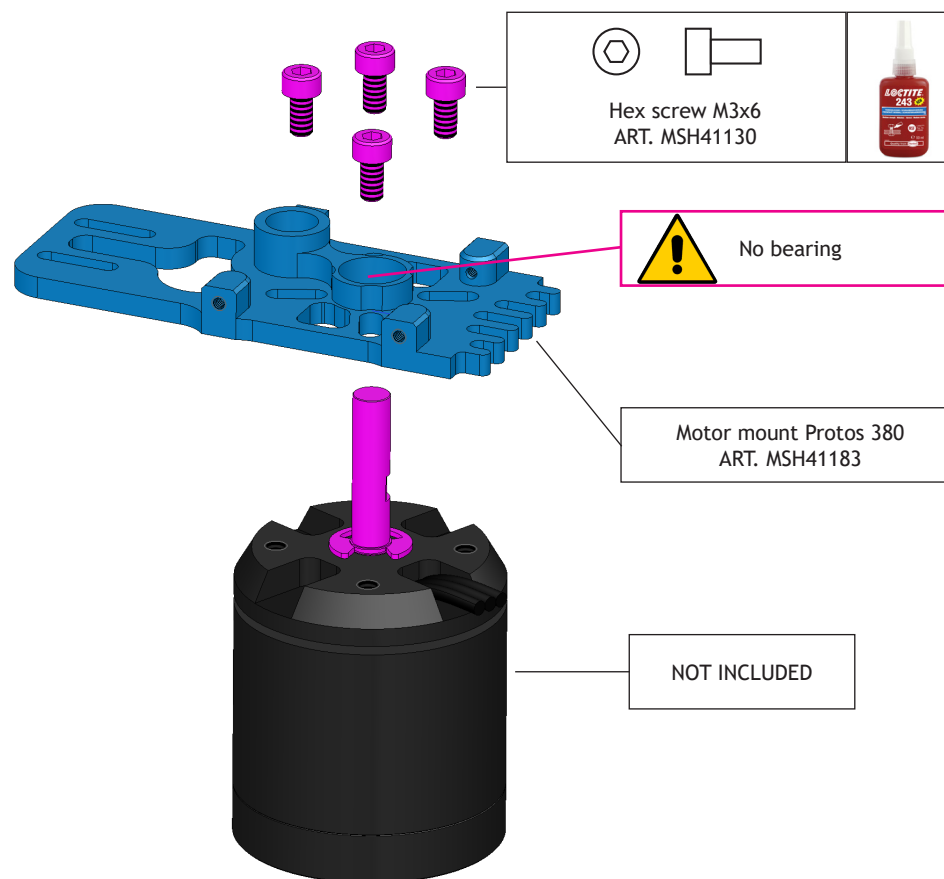


	Sport	3D	Hard 3D
890 Kv ø 5mm	22T	22T	24T

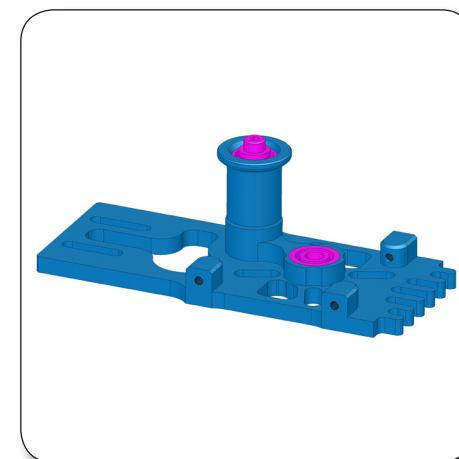
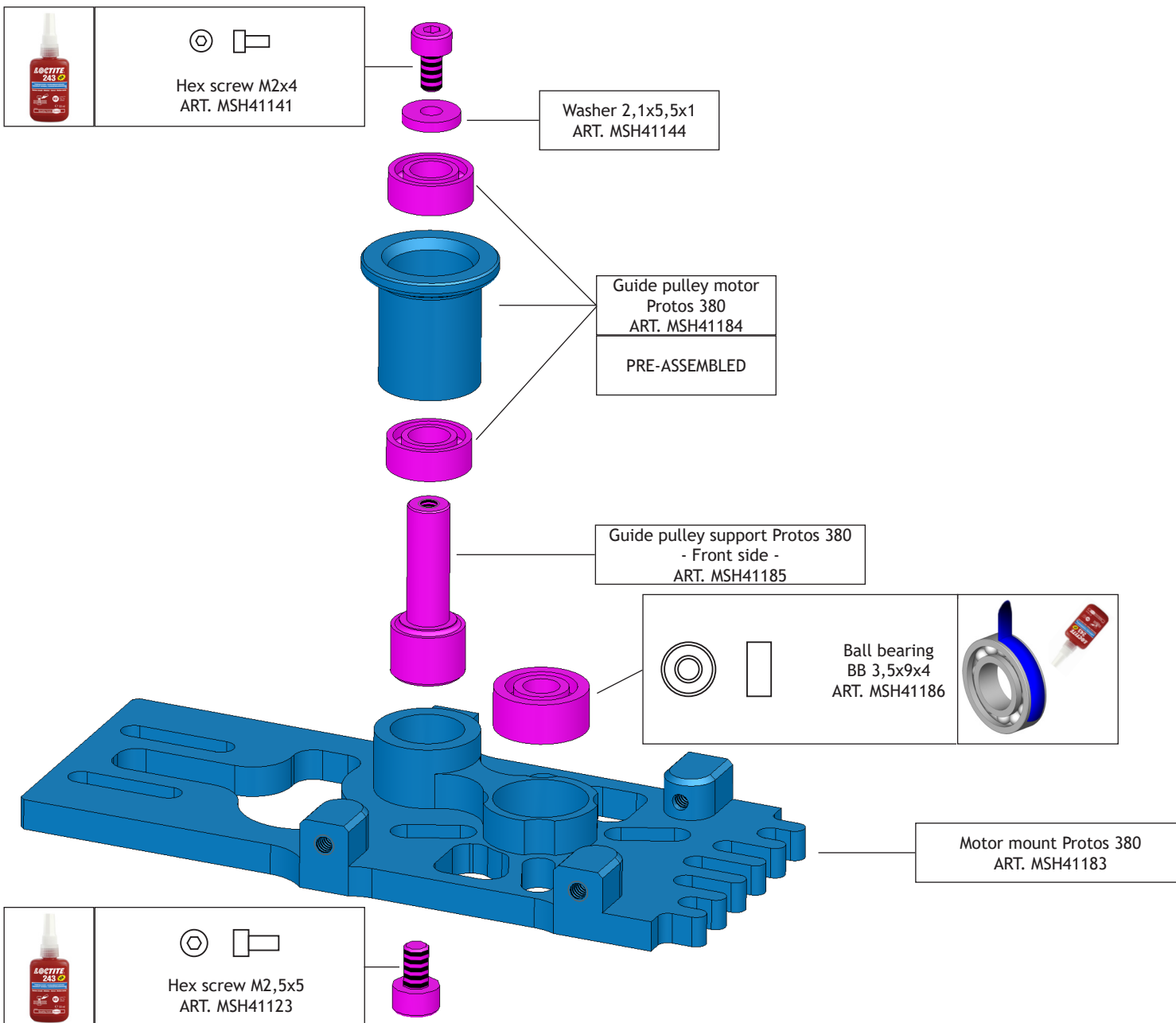
## Pinion from 14T to 20T

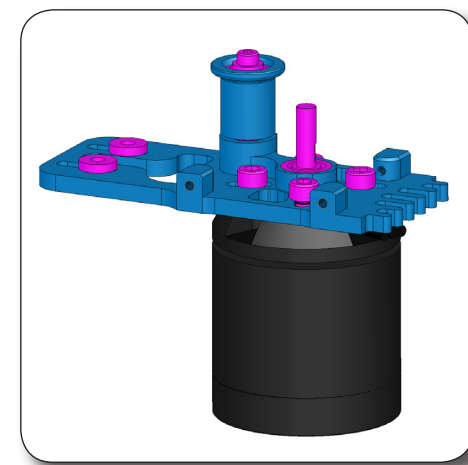
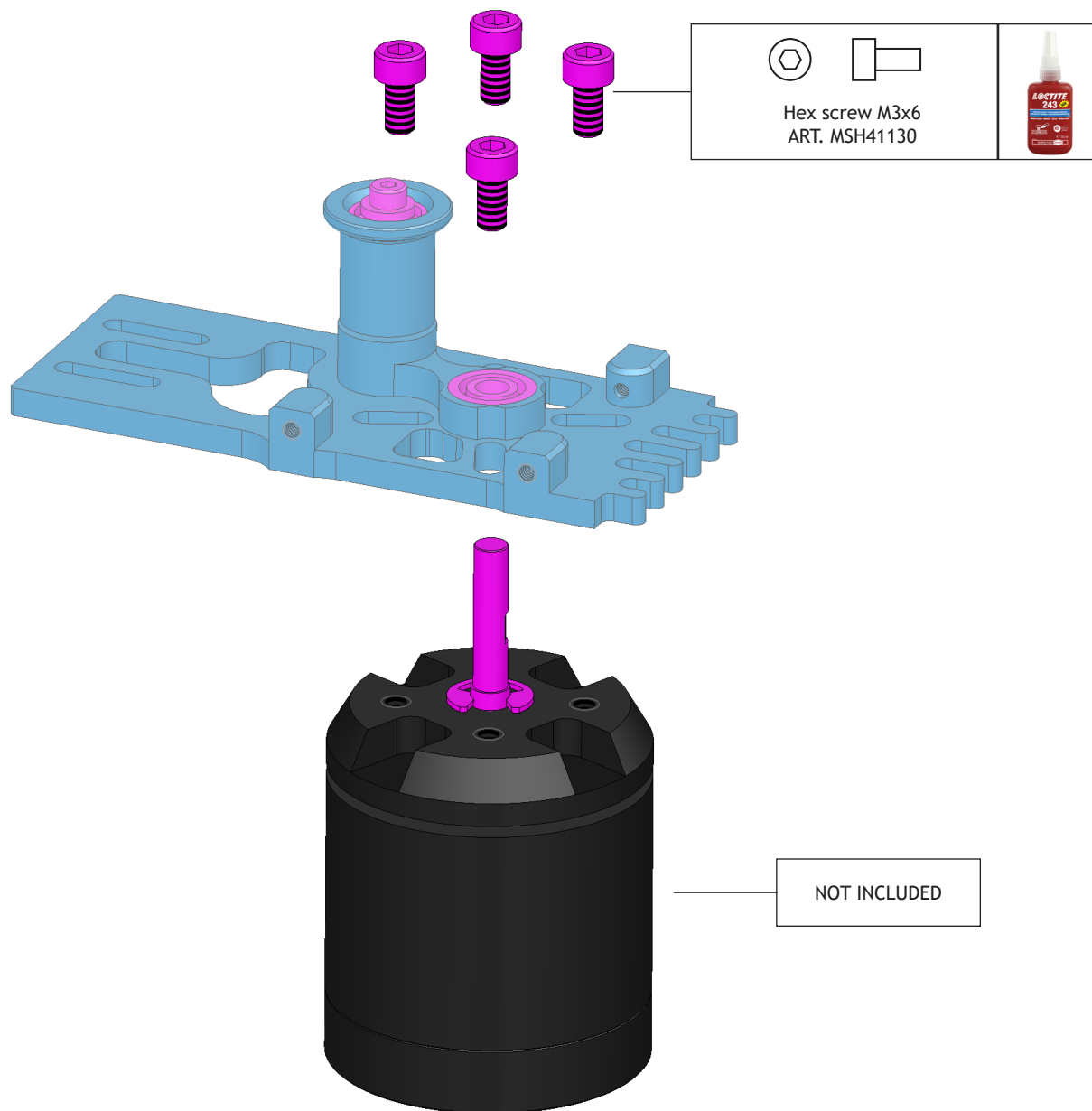


## Pinion from 21T to 25T

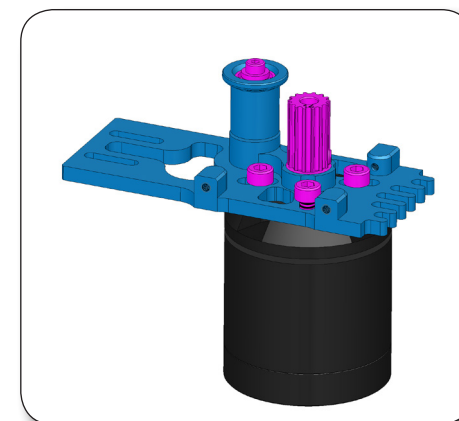
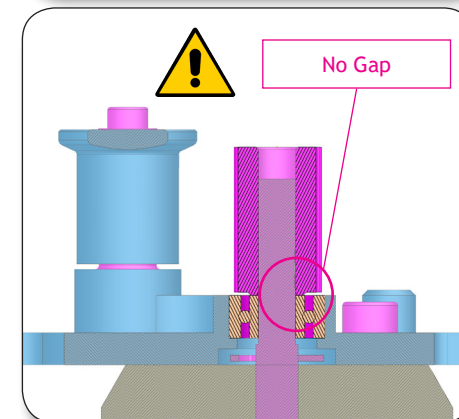
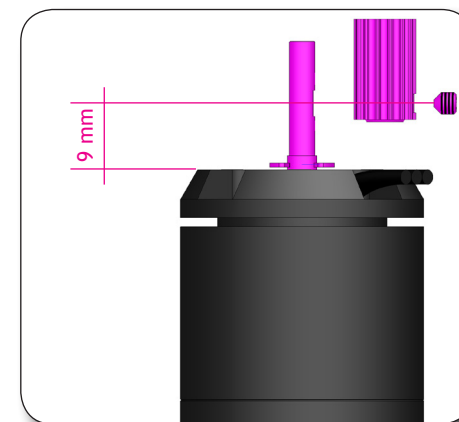
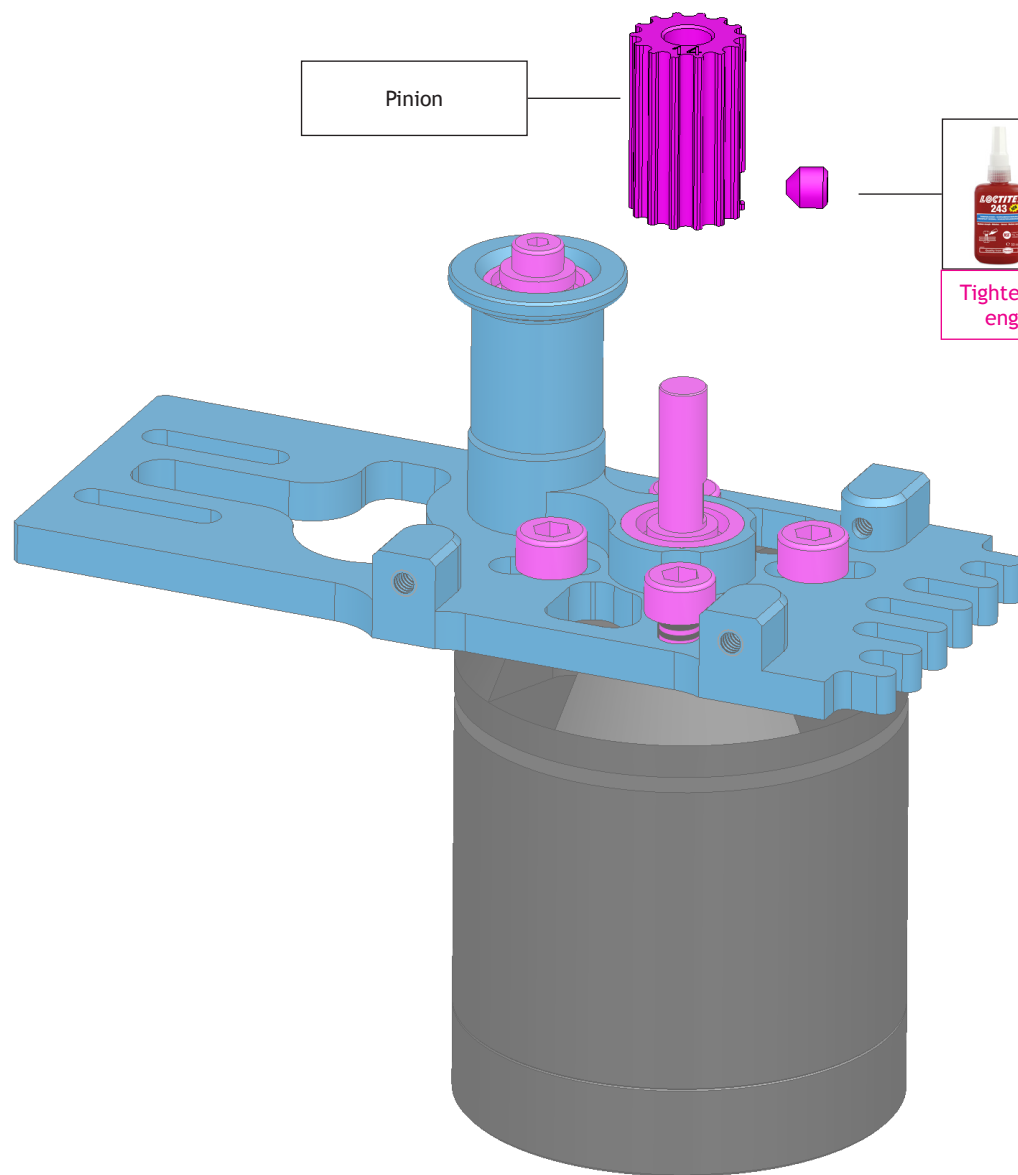


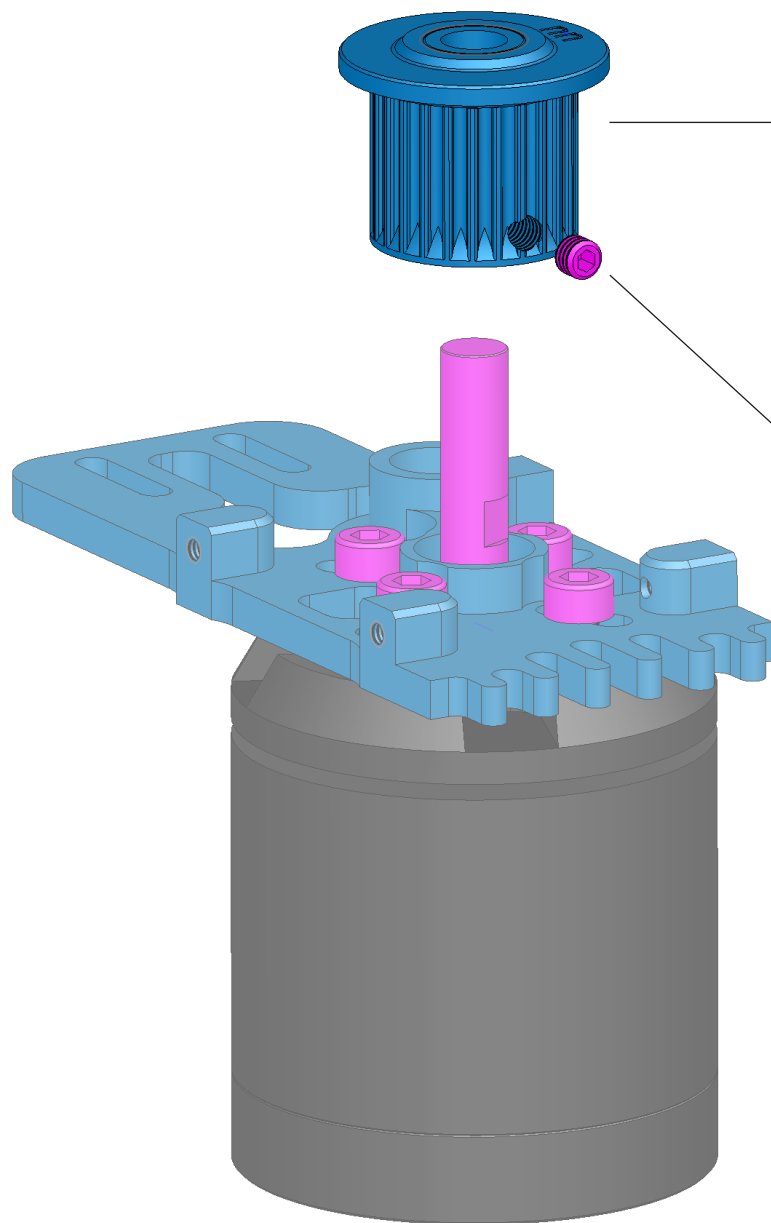
Skip to page 12











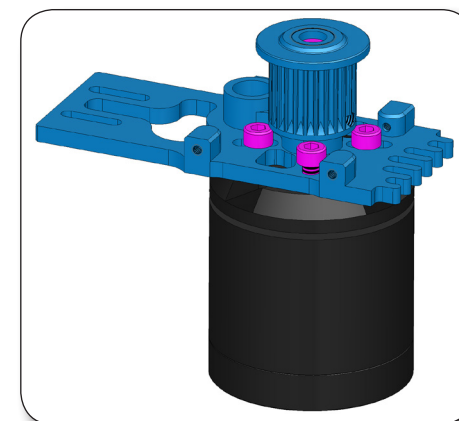
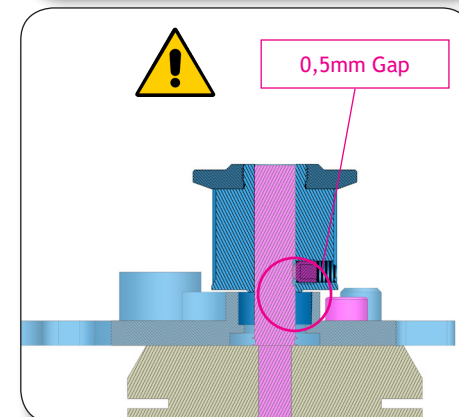
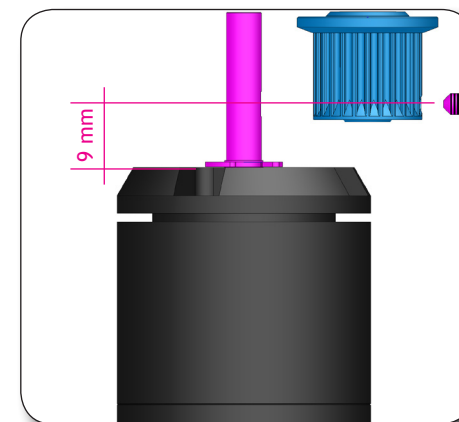
(optional)  
Pinion ø5 22T  
ART. MSH41192  
Pinion ø5 24T  
ART. MSH41193  
Pinion ø5 25T  
ART. MSH41194

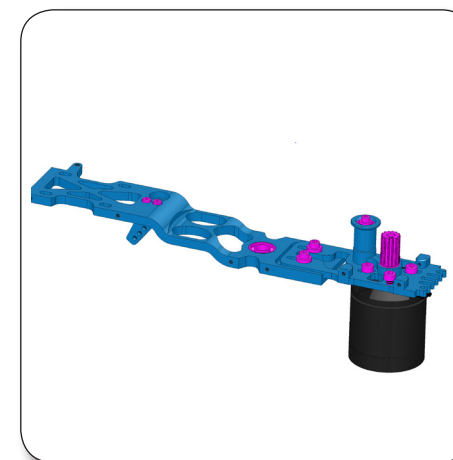
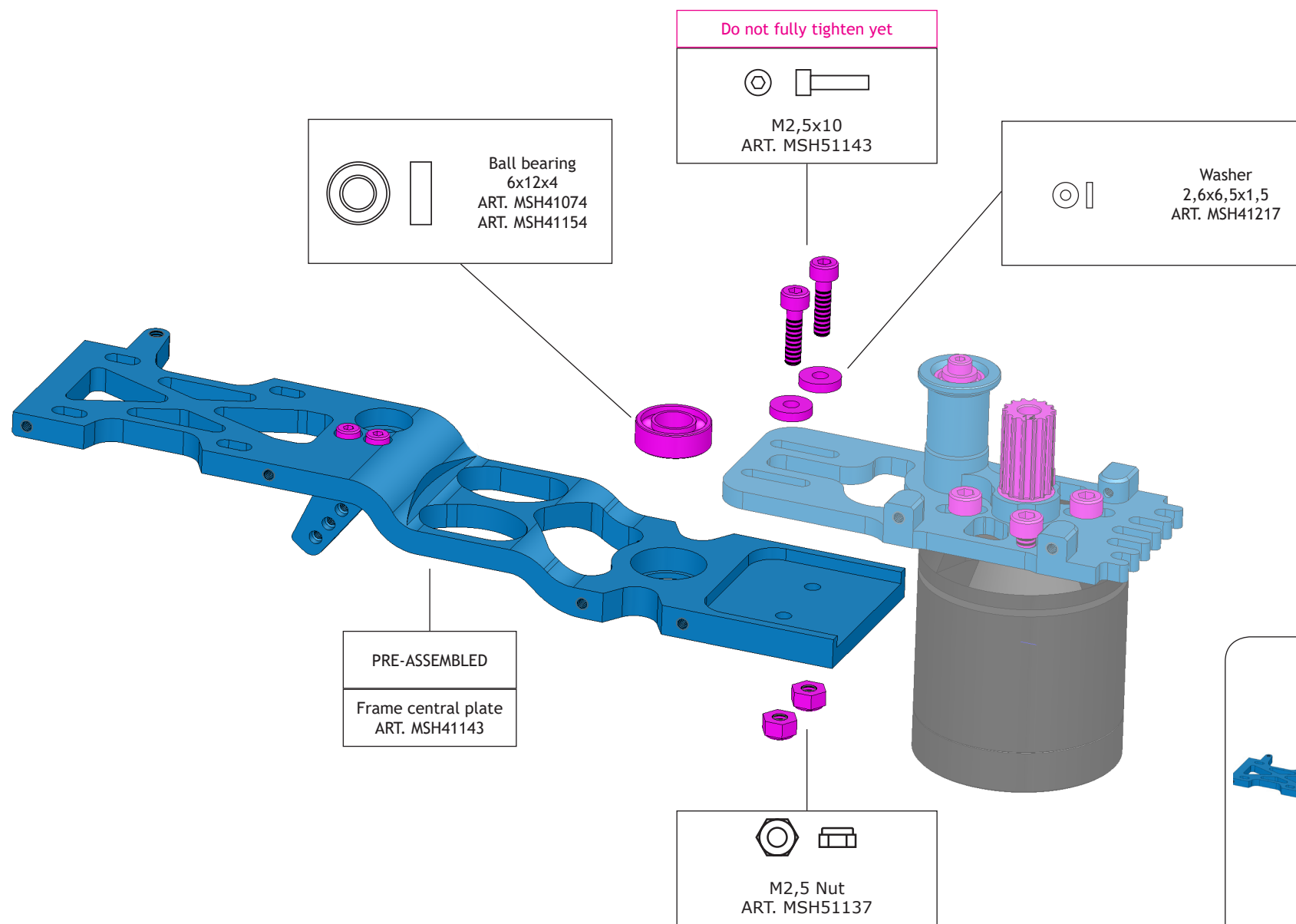


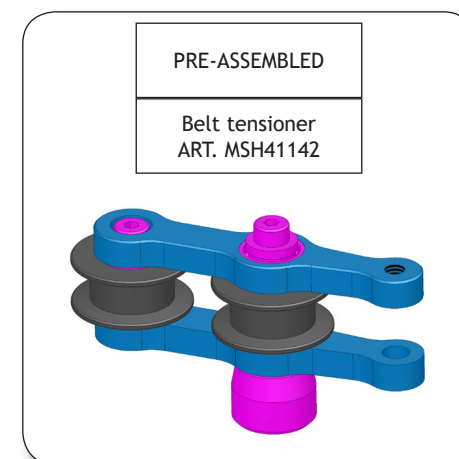
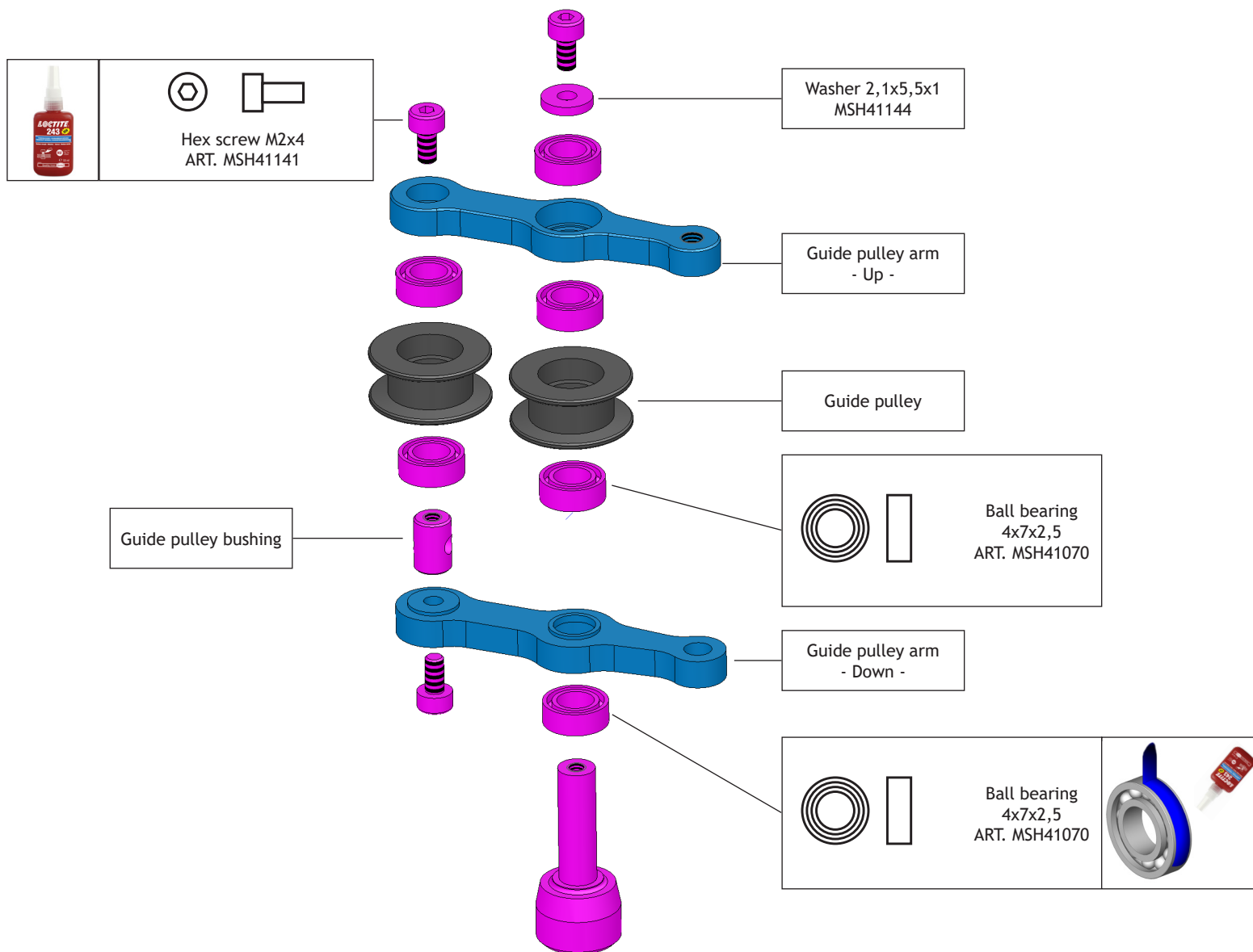
Hex grub screw M3x3  
ART. MSH41133

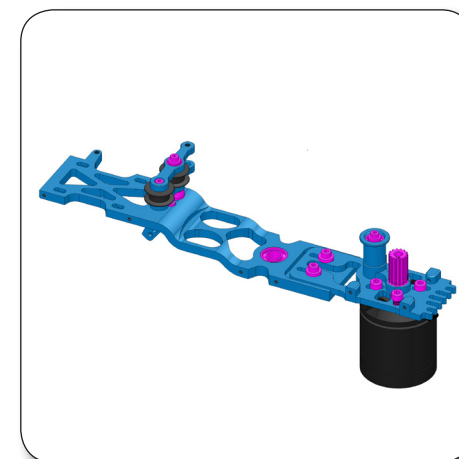
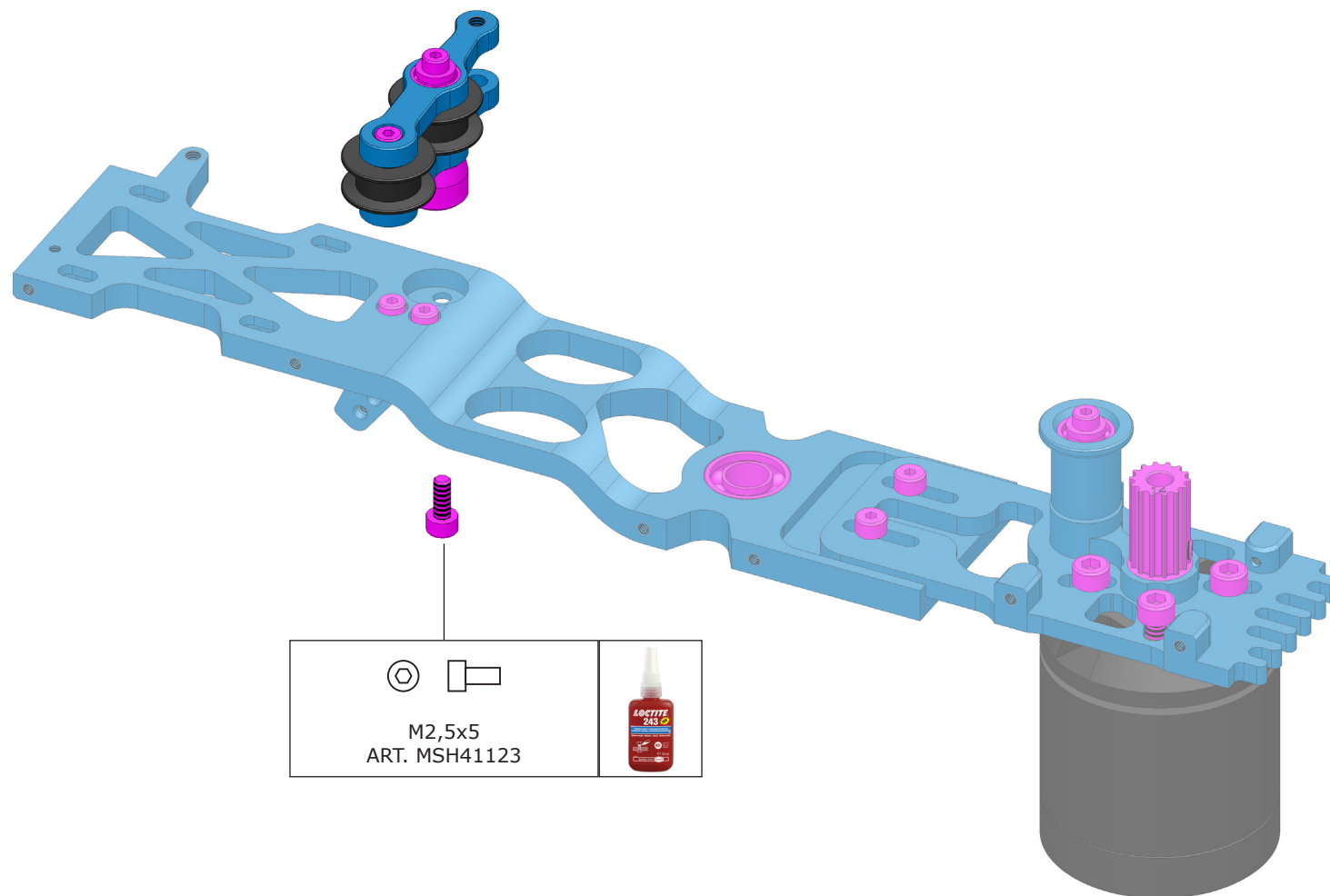


Tighten hard and make sure the grub screw engages in the recess when tightening









where I can find the parts

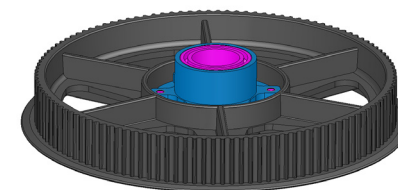
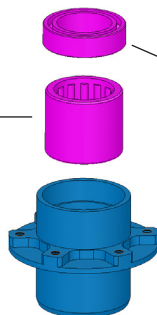
Oneway hub

Oneway hub

Main pulley  
ART. MSH41146

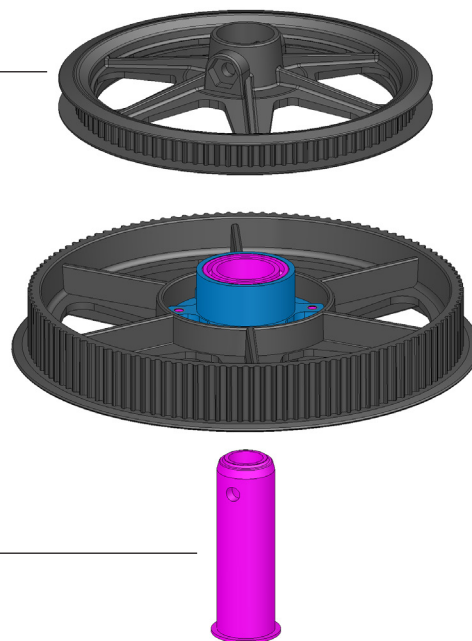
Hex screw M2x4  
ART. MSH41141

Ball bearing  
10x15x4



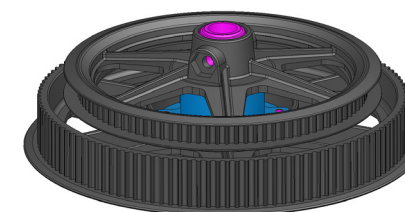
Autorotation pulley  
ART. MSH41147

Oneway shaft



PRE-ASSEMBLED

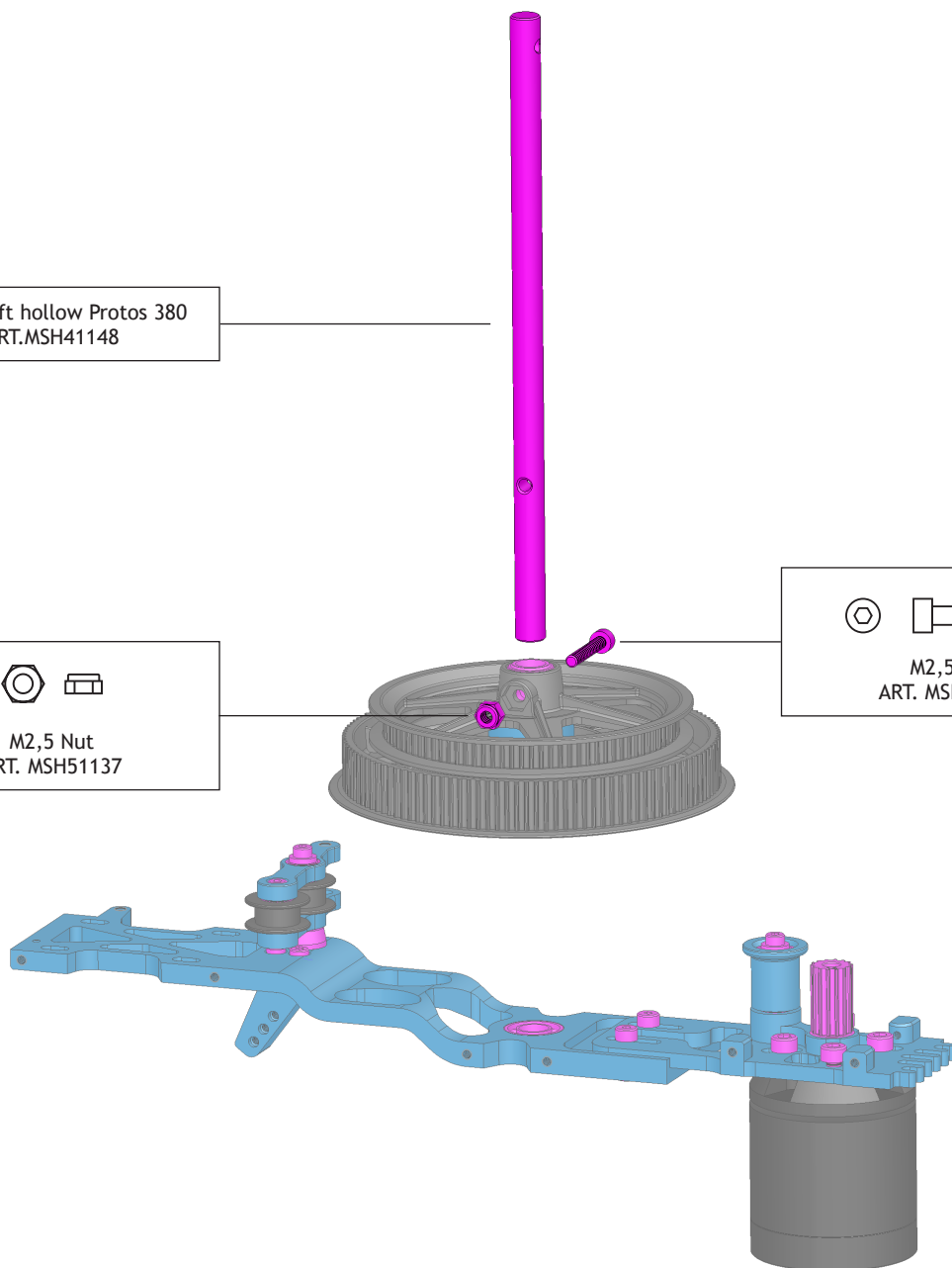
Main pulley assembly  
ART. MSH41145



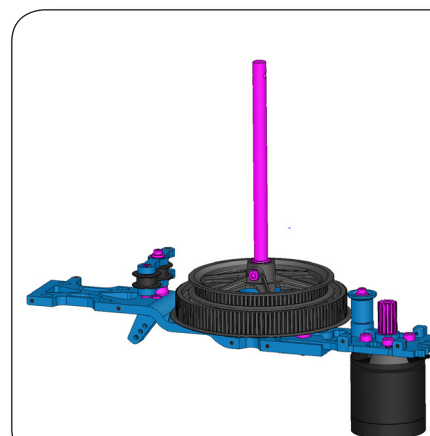
Main shaft hollow Protos 380  
ART.MSH41148

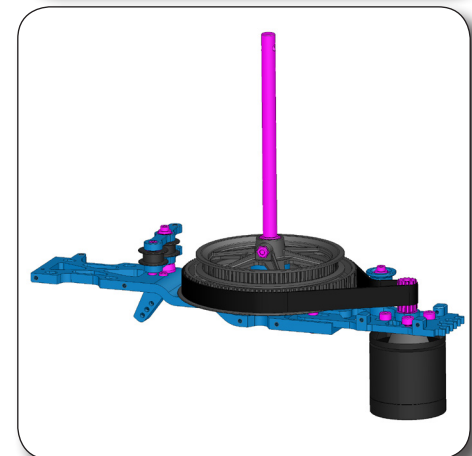
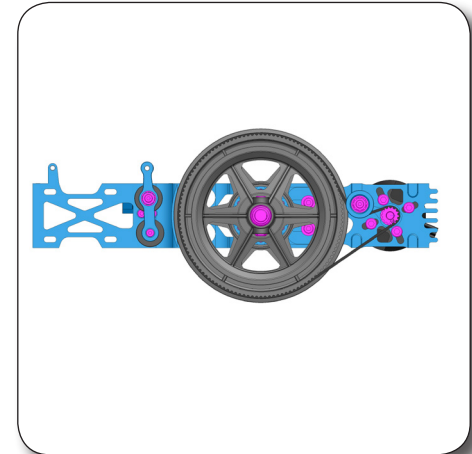
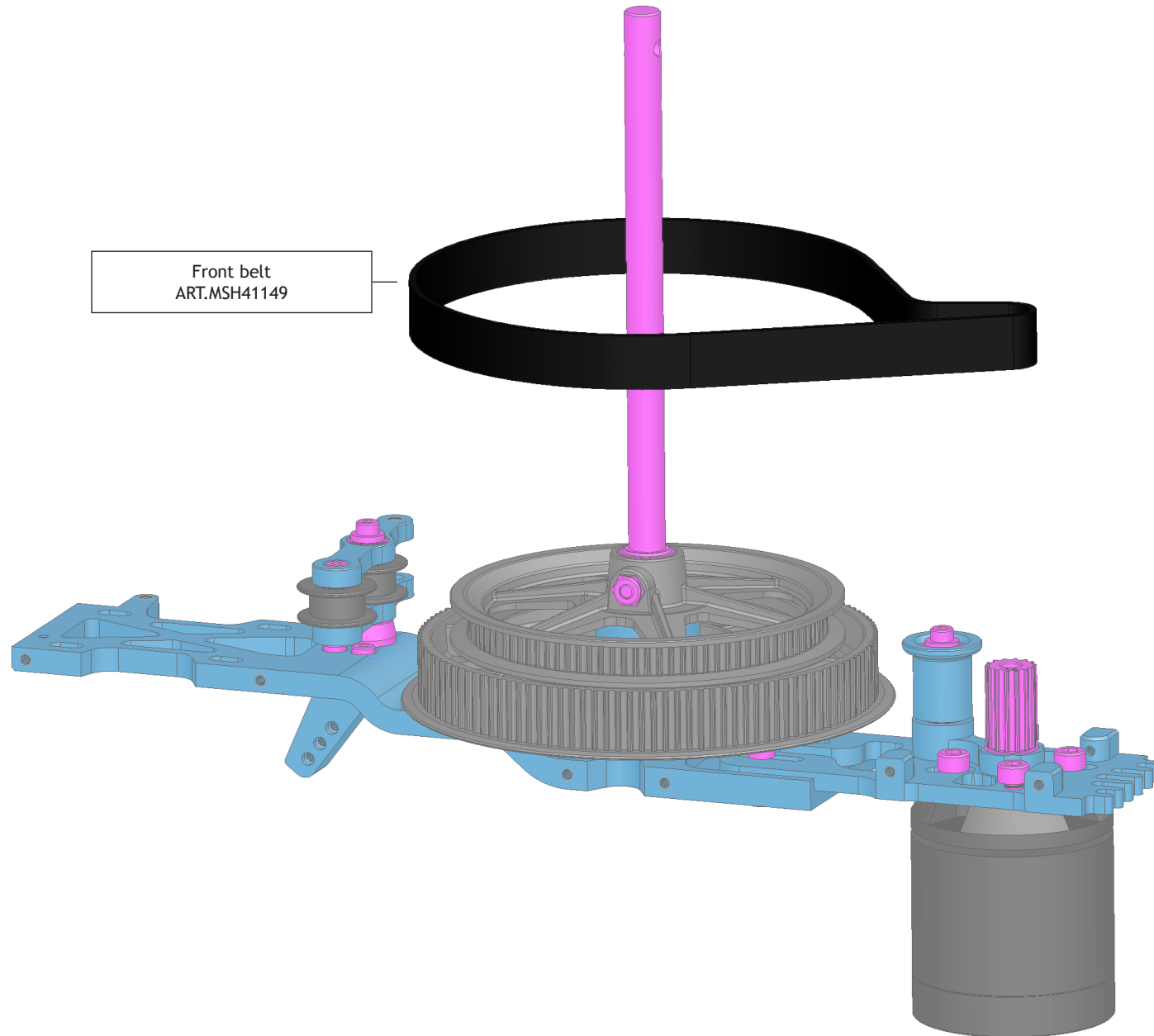
M2,5 Nut  
ART. MSH51137

M2,5x16  
ART. MSH51145

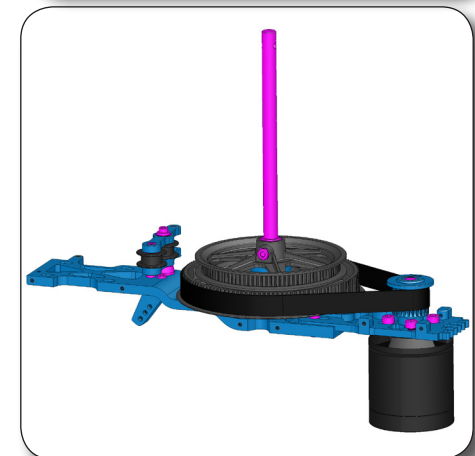
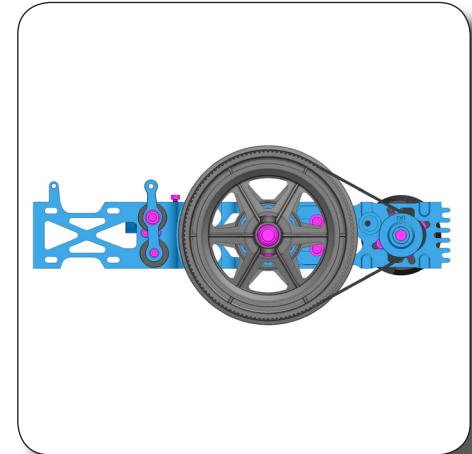
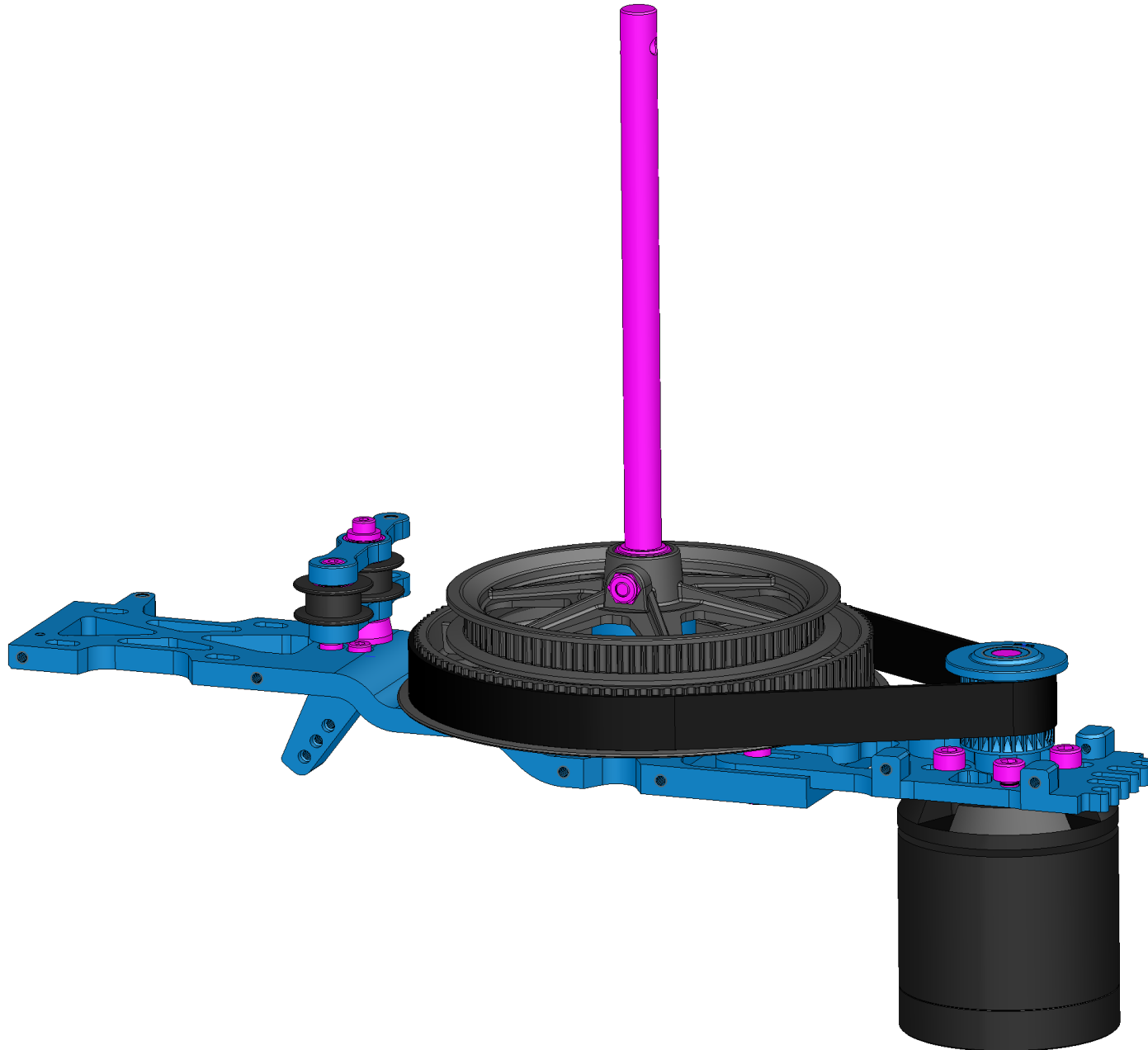


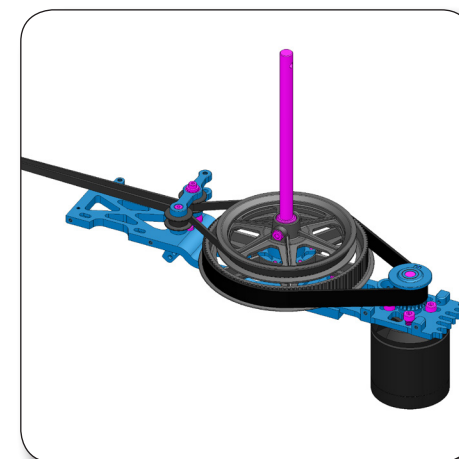
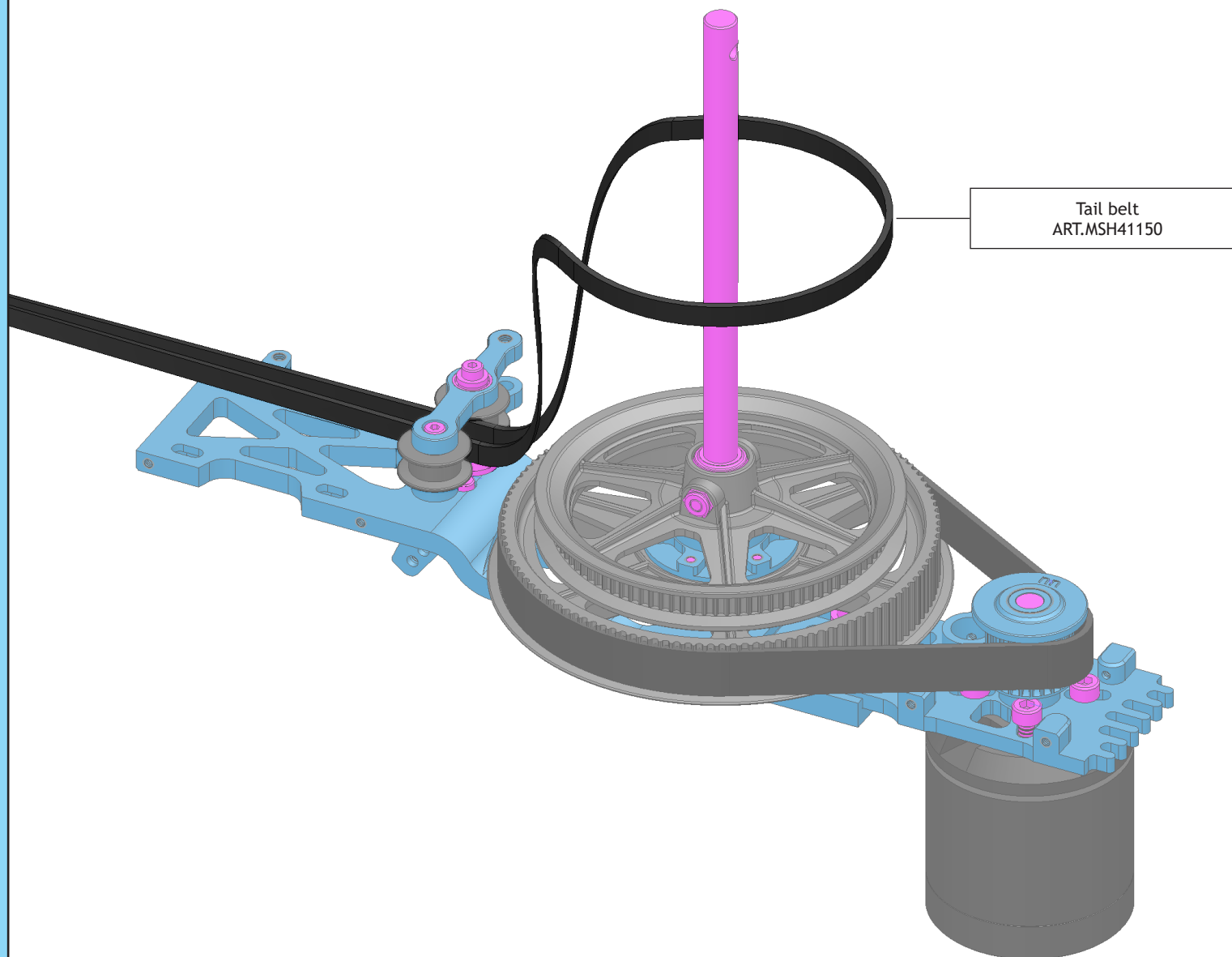
This side up











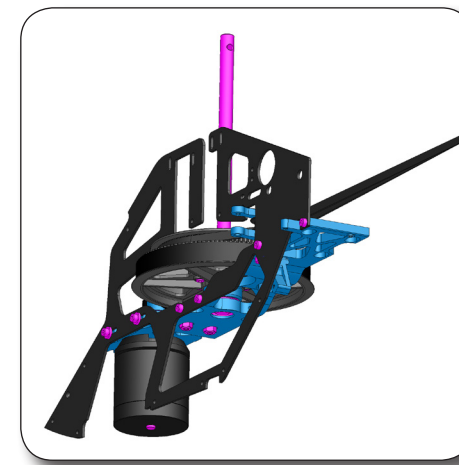
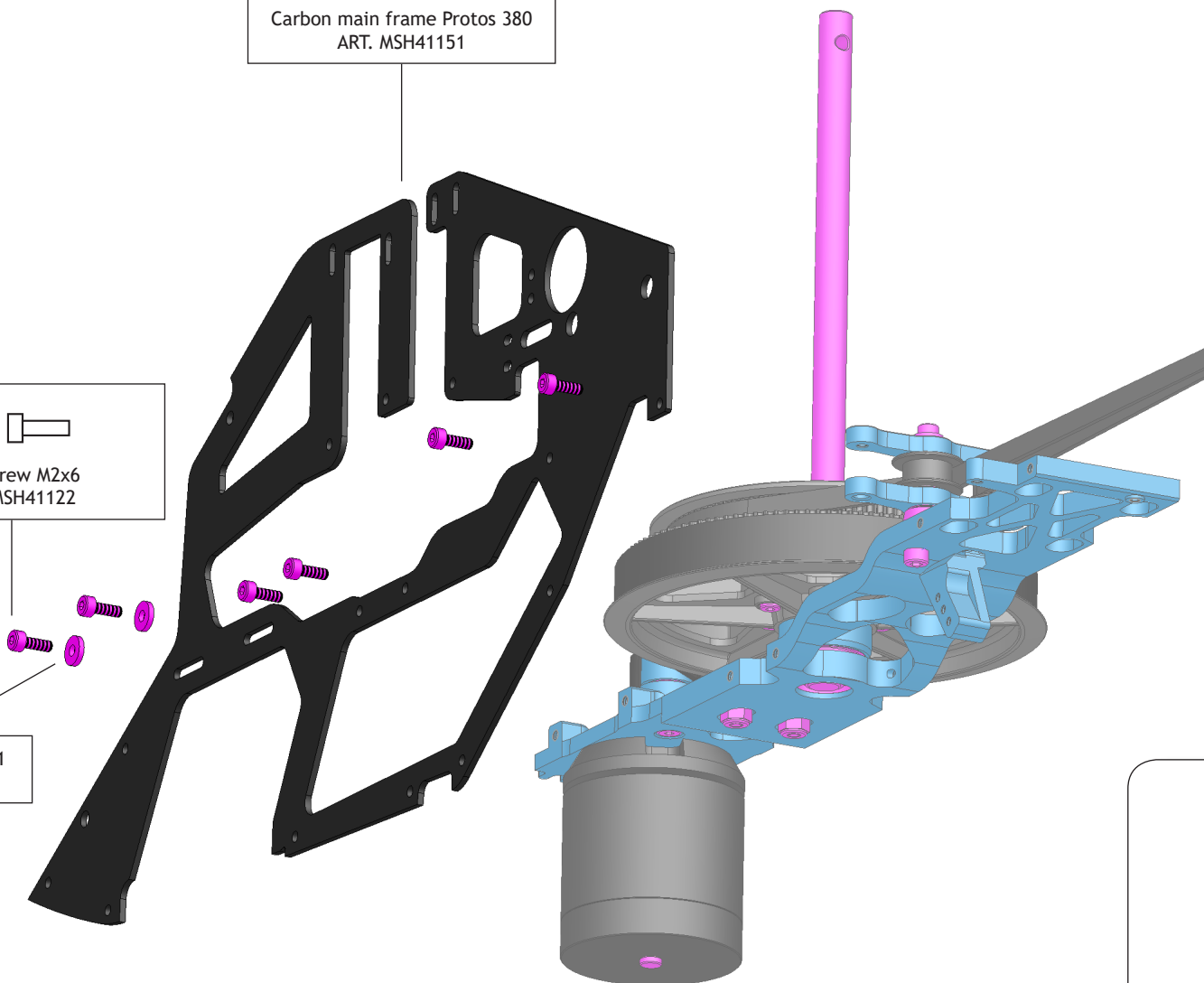


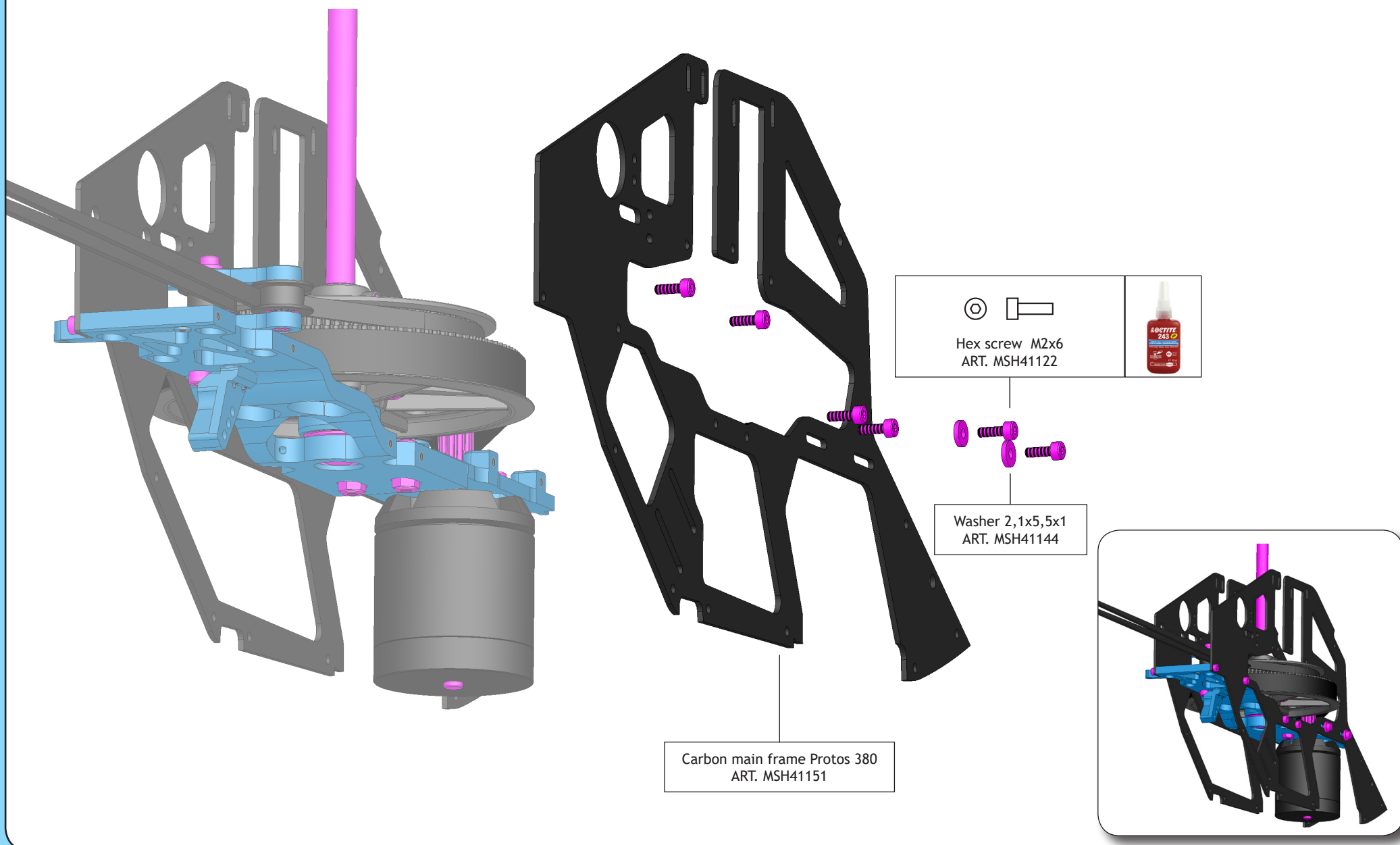
Carbon main frame Protos 380  
ART. MSH41151

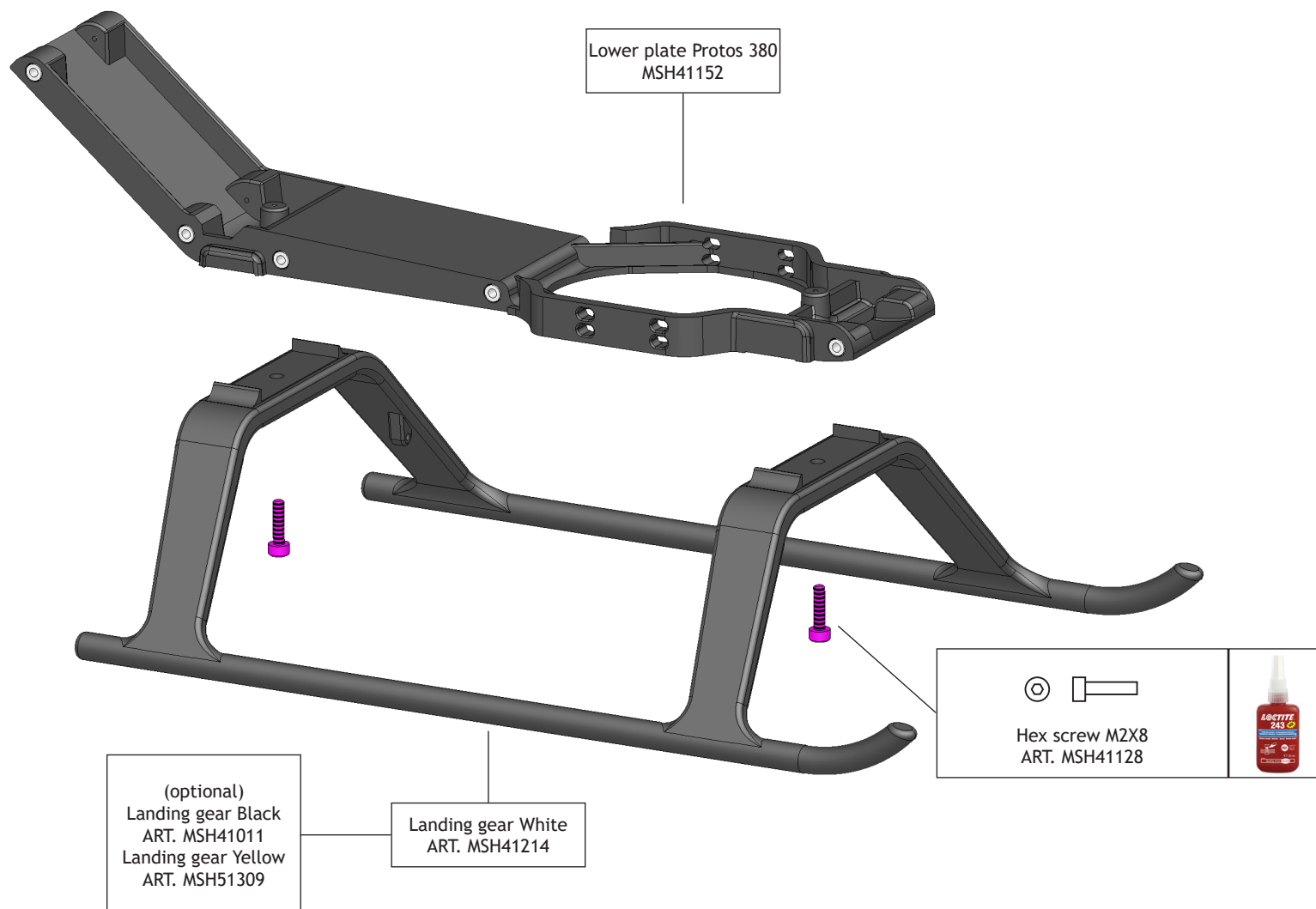


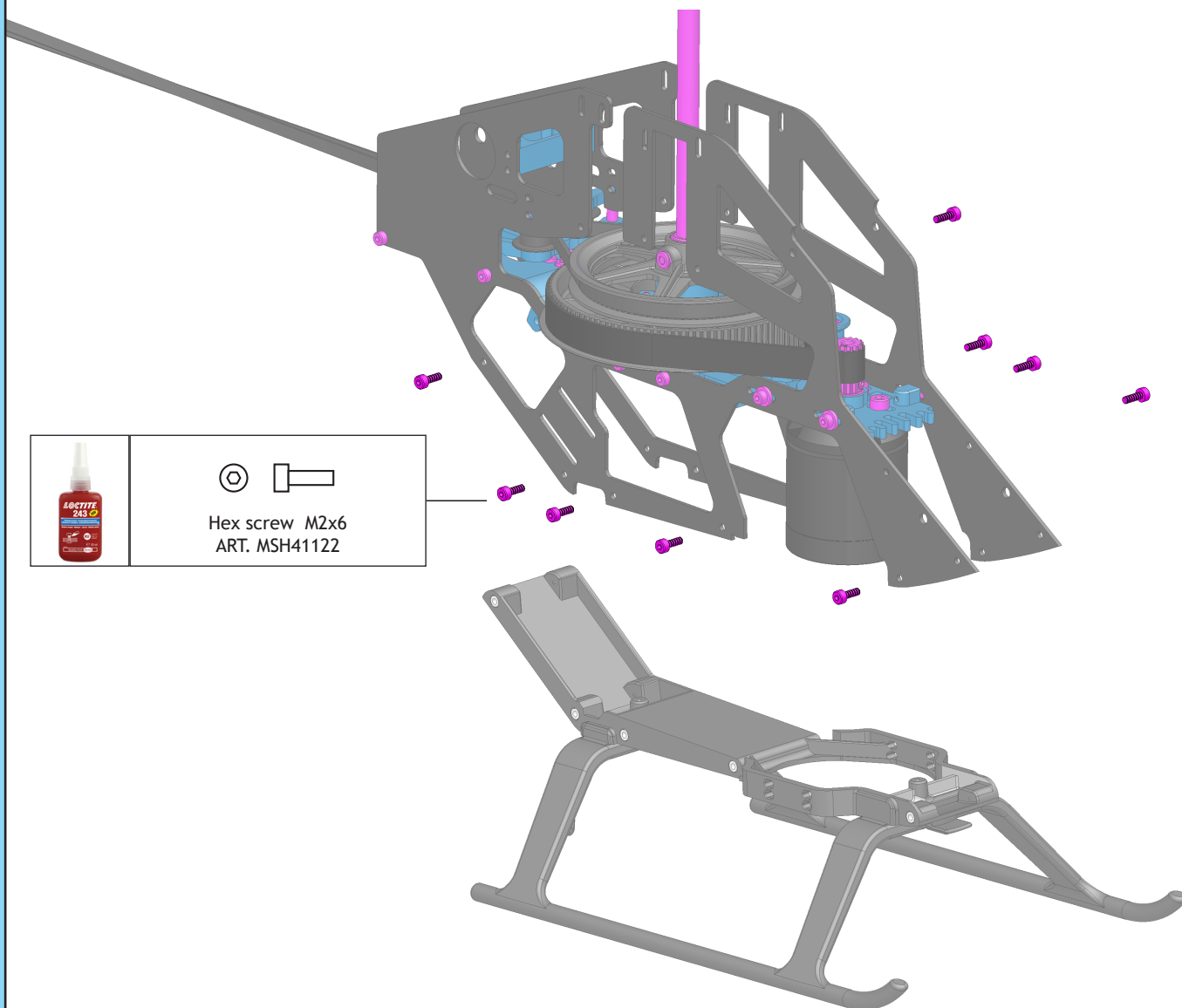
Hex screw M2x6  
ART. MSH41122

Washer 2,1x5,5x1  
ART. MSH41144

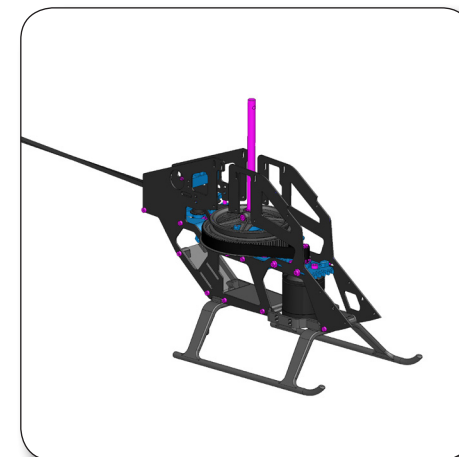




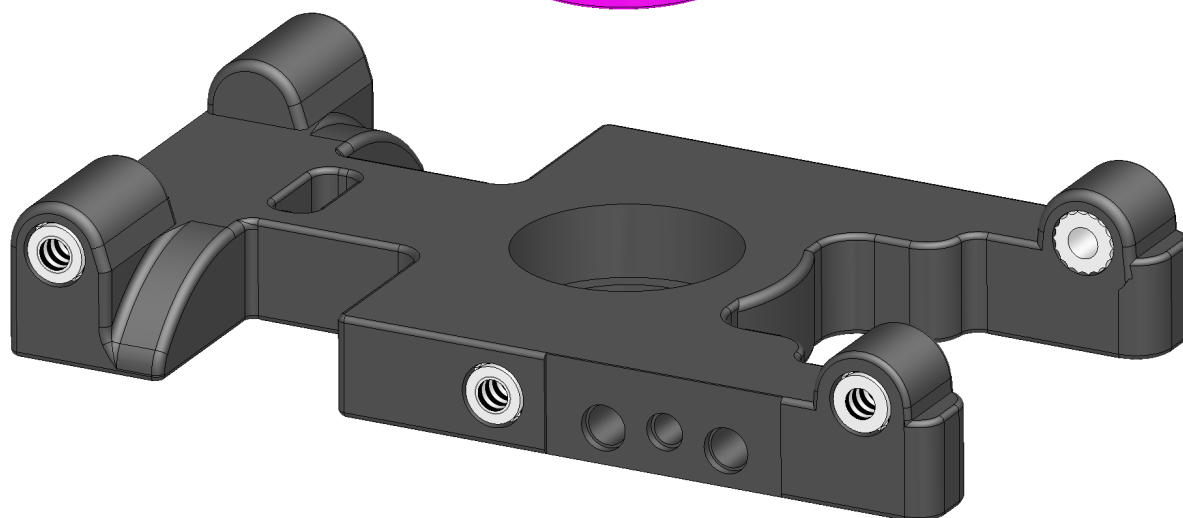
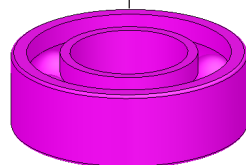
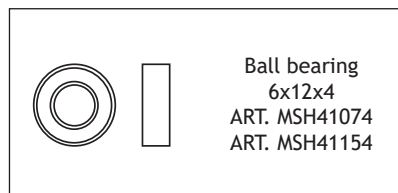




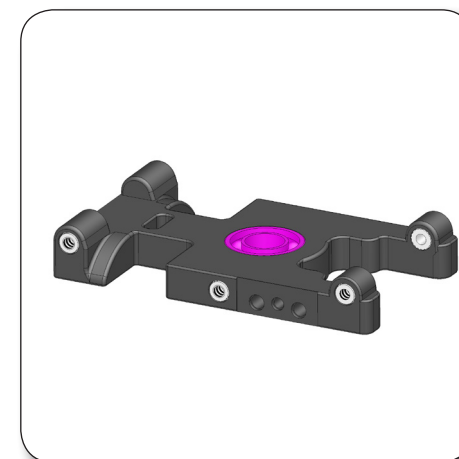
Hex screw M2x6  
ART. MSH41122



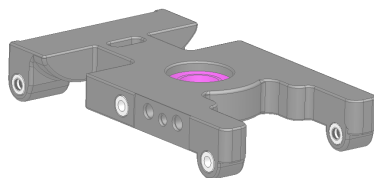
**2X**



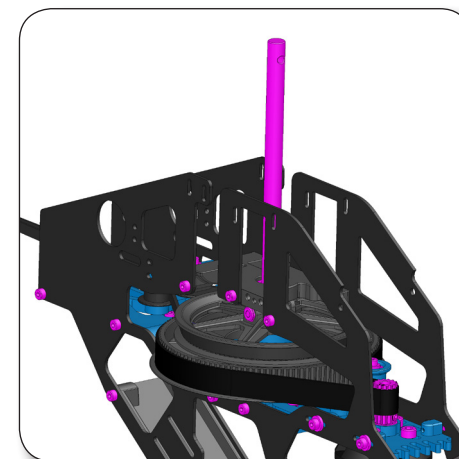
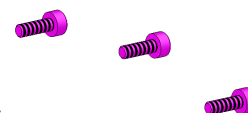
Servo frame Protos 380  
ART. MSH41154



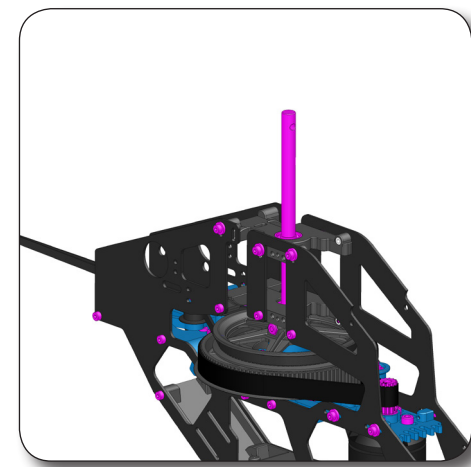
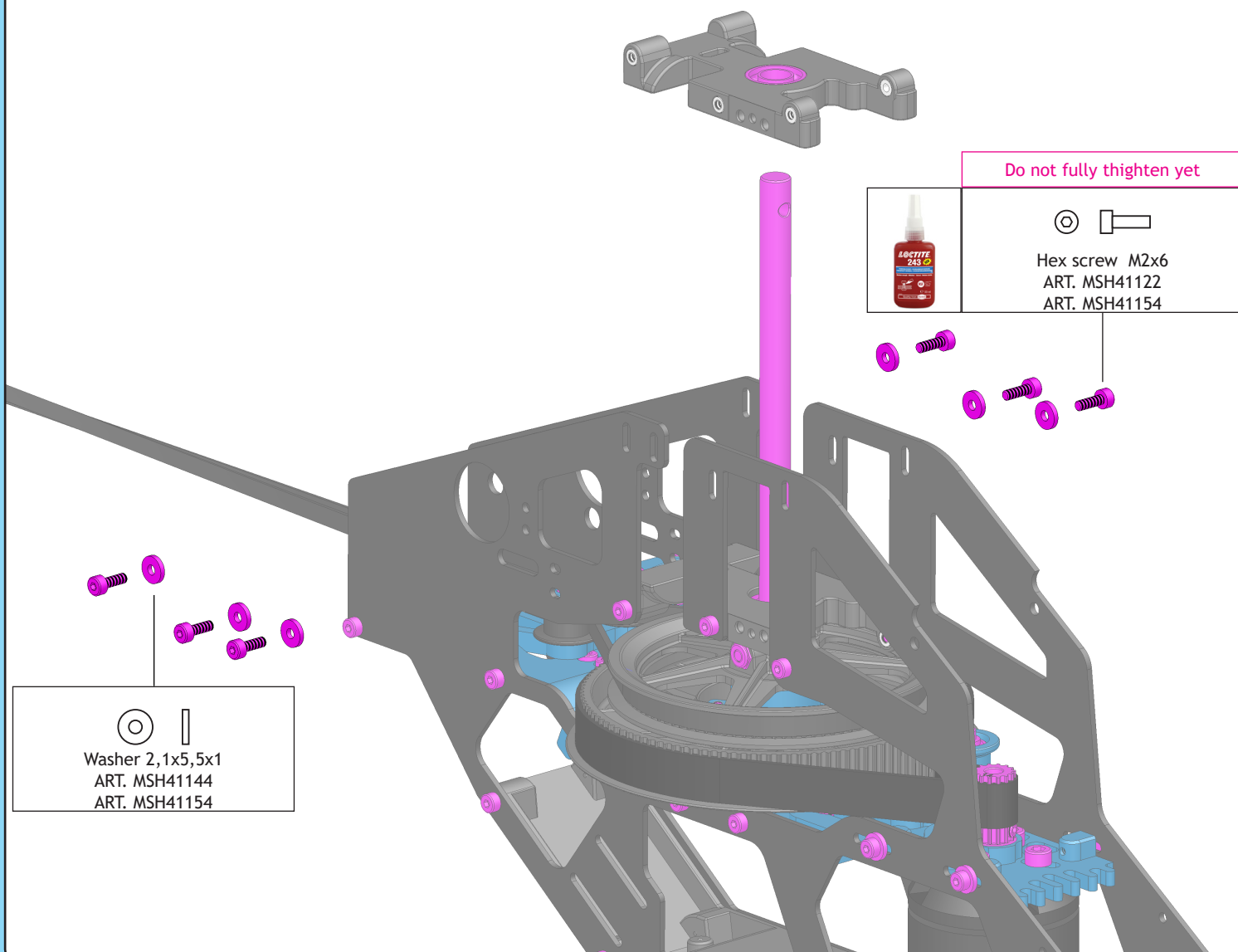
Servo frame Protos 380  
ART. MSH41154

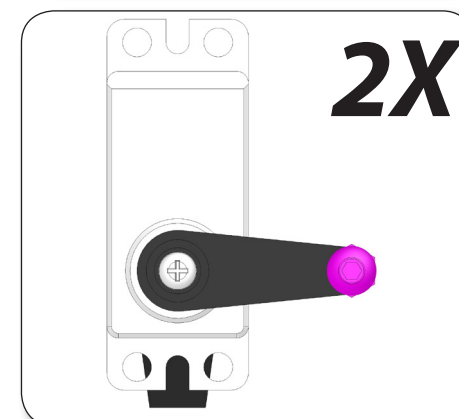
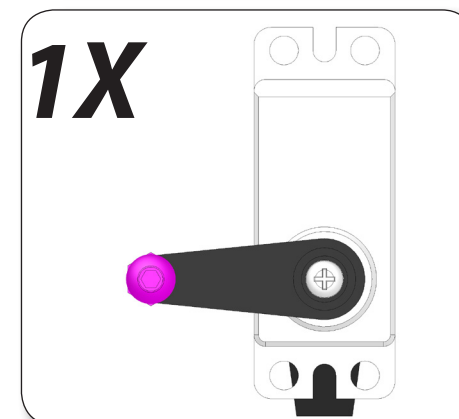
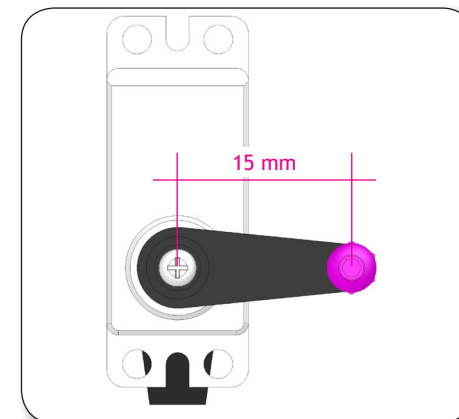
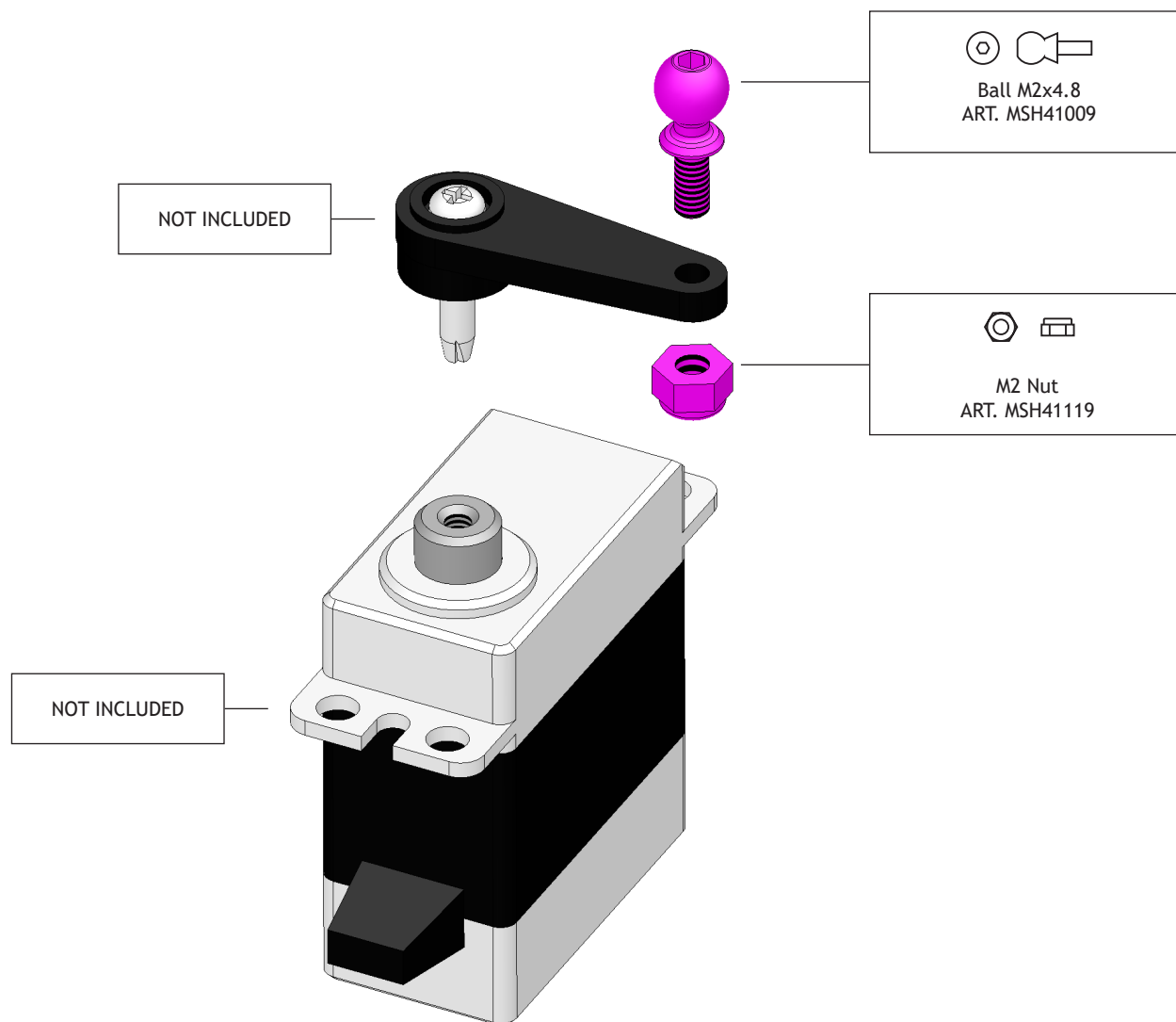


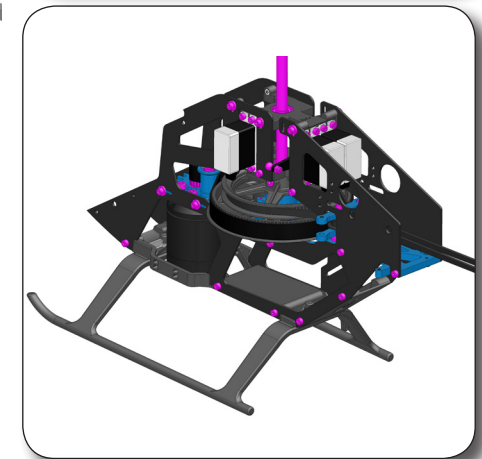
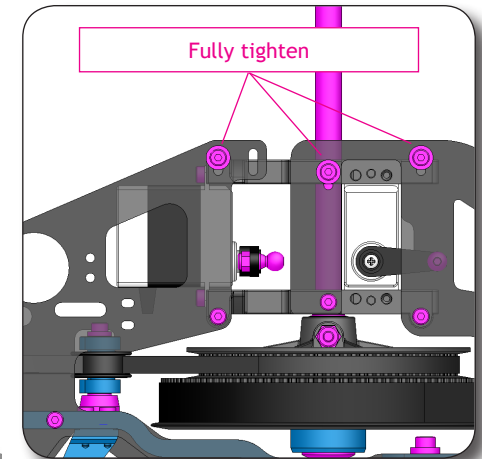
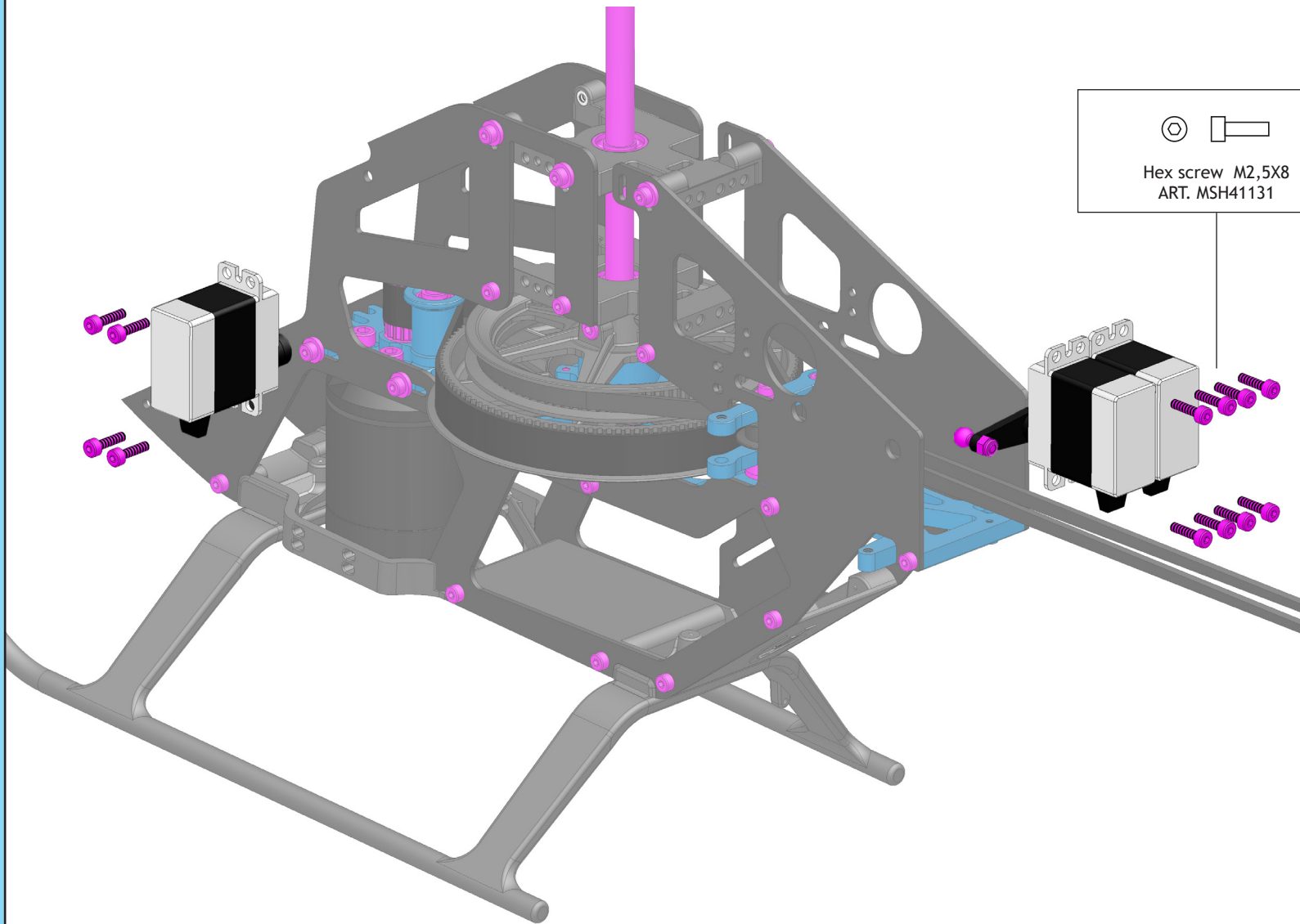
Hex screw M2x6  
ART. MSH41122  
ART. MSH41154



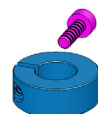






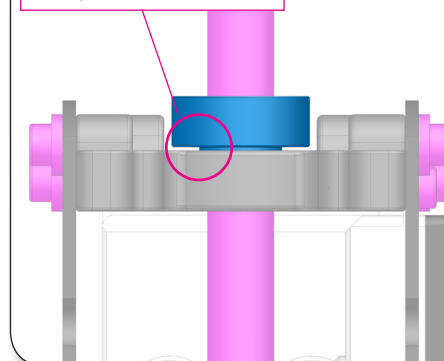


Main shaft lock  
ART. MSH41005

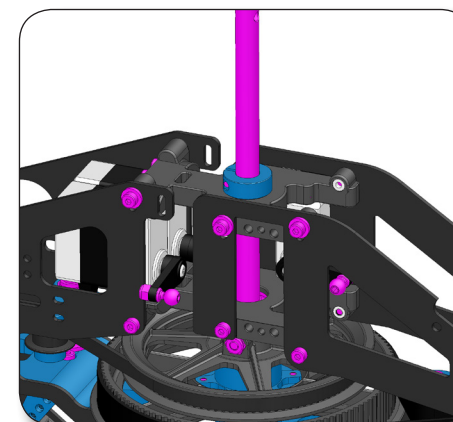
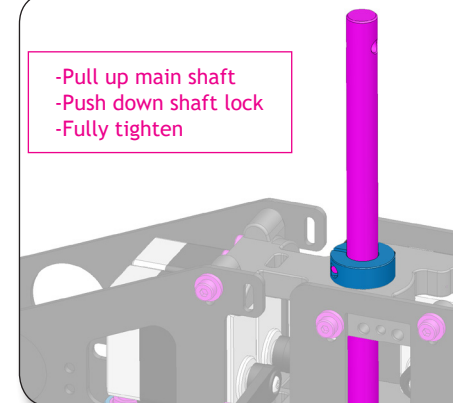


M2x6  
ART. MSH41122

-Step down



-Pull up main shaft  
-Push down shaft lock  
-Fully tighten

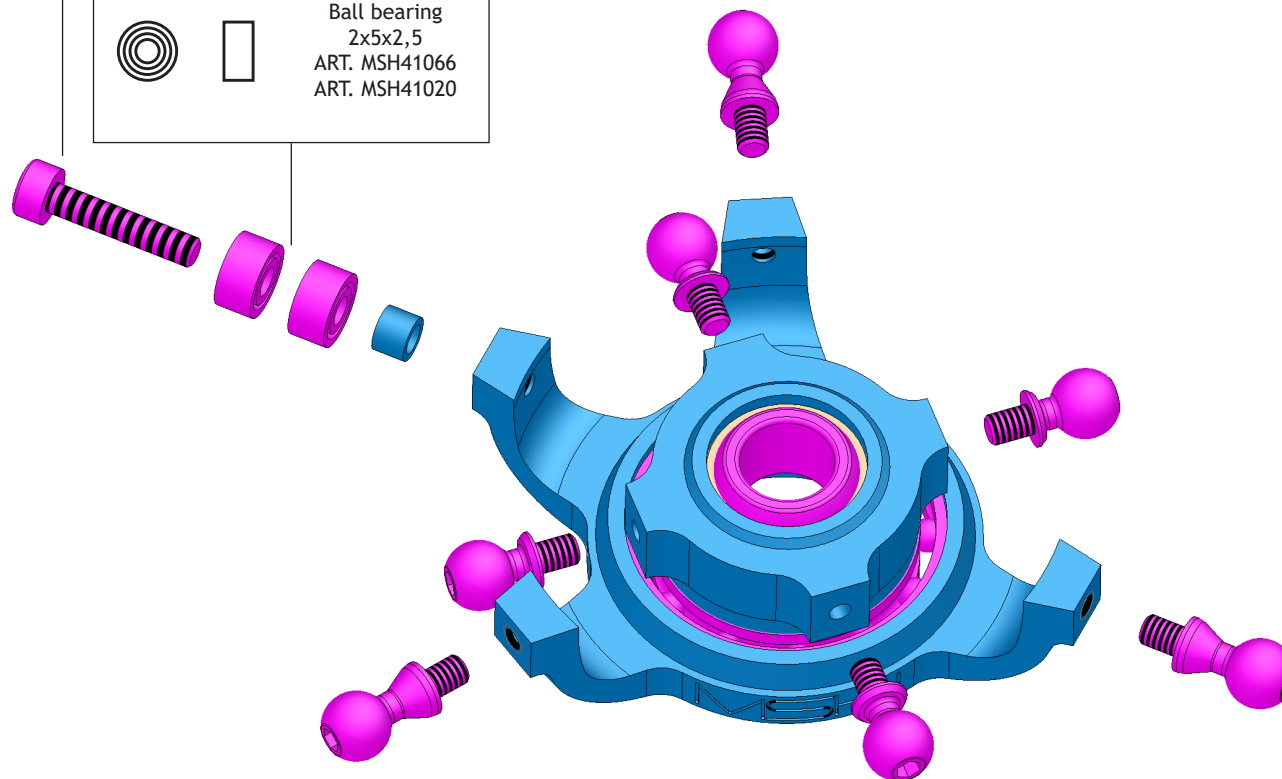




M2x10  
ART. MSH41121  
ART. MSH41020



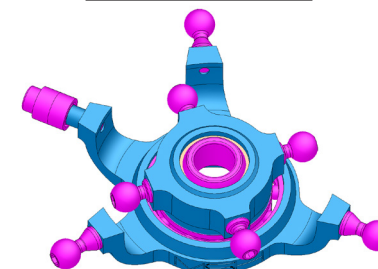
Ball bearing  
2x5x2,5  
ART. MSH41066  
ART. MSH41020

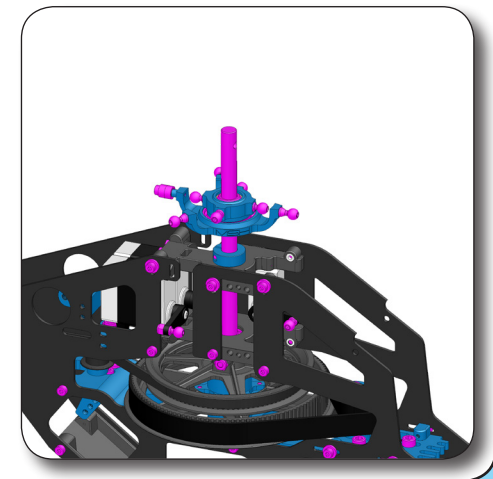
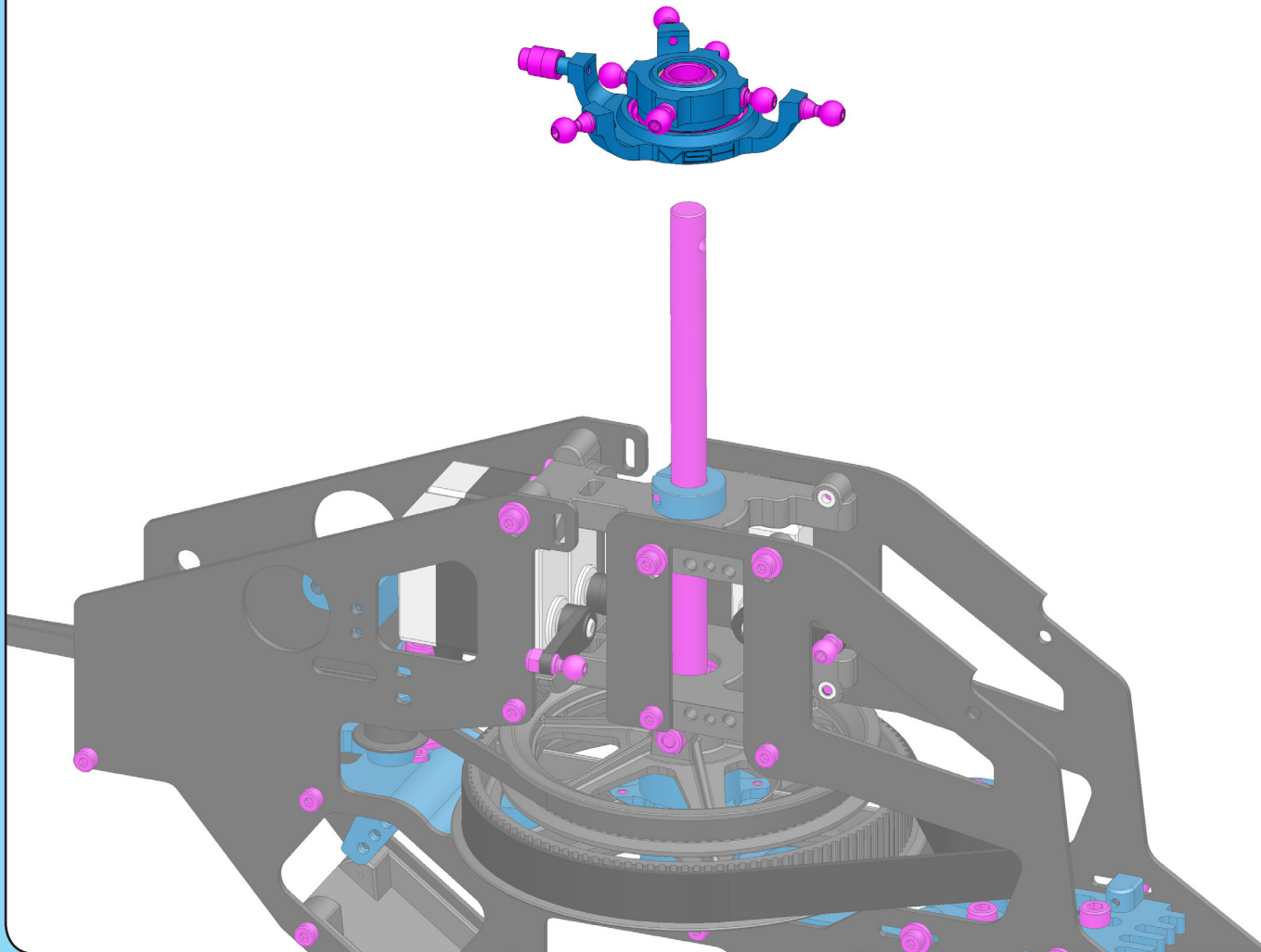


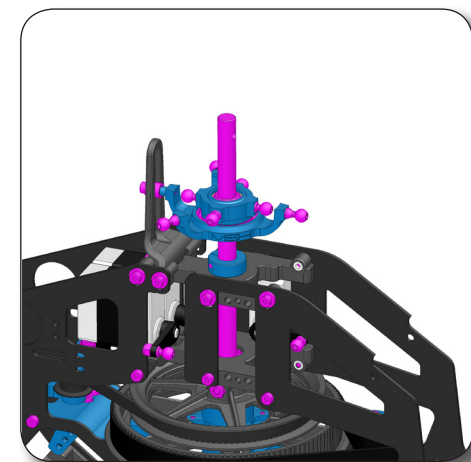
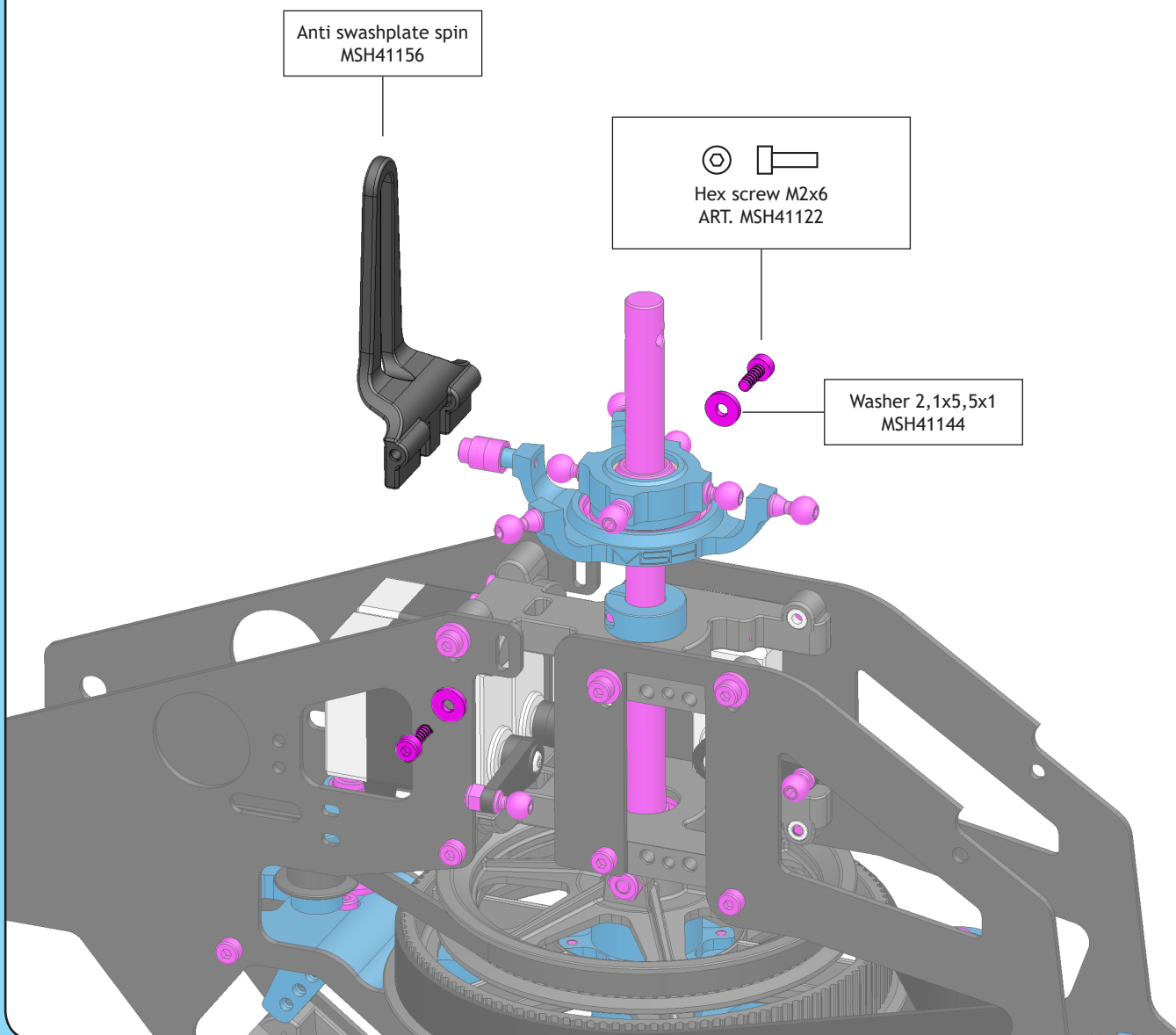
Ball M2x2.8  
ART. MSH41010  
ART. MSH41020

PRE-ASSEMBLED

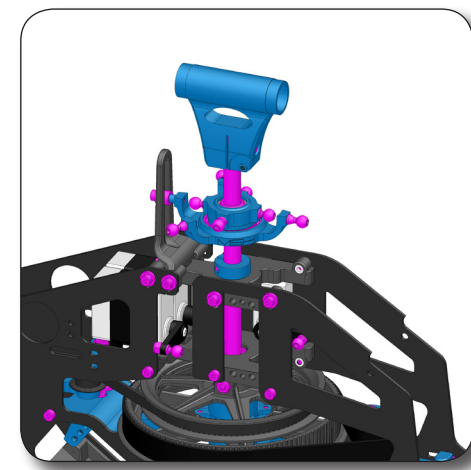
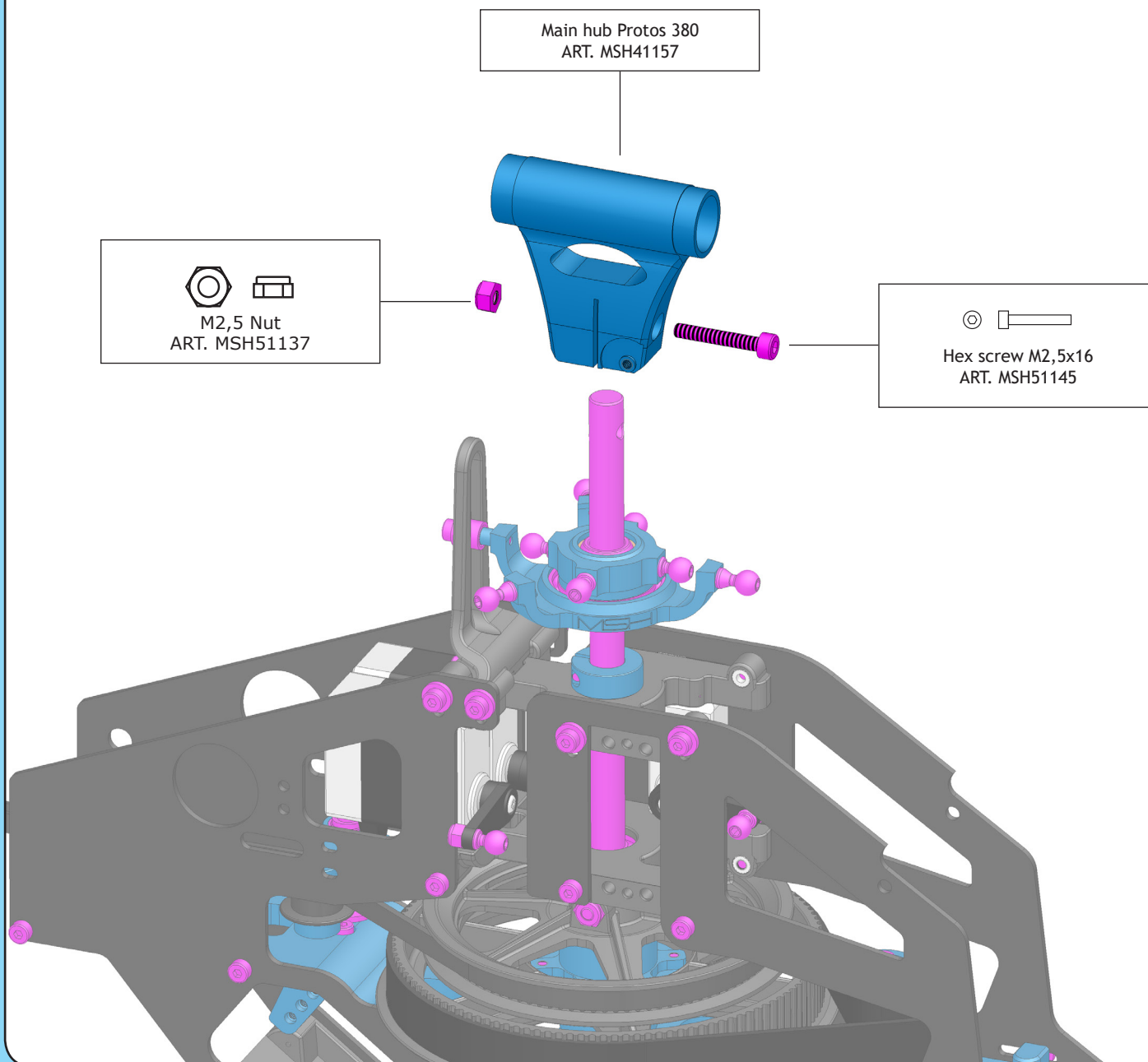
Swashplate  
ART. MSH41020





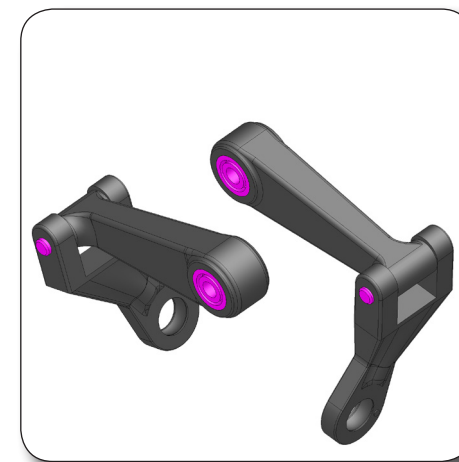
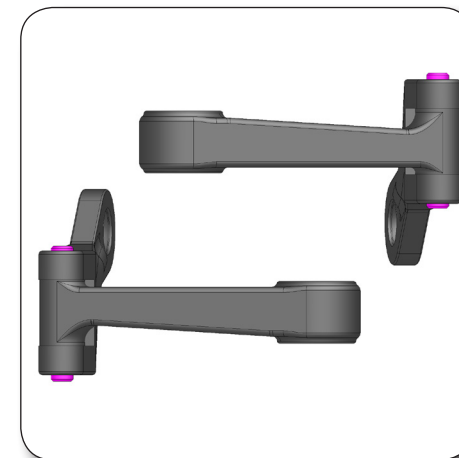
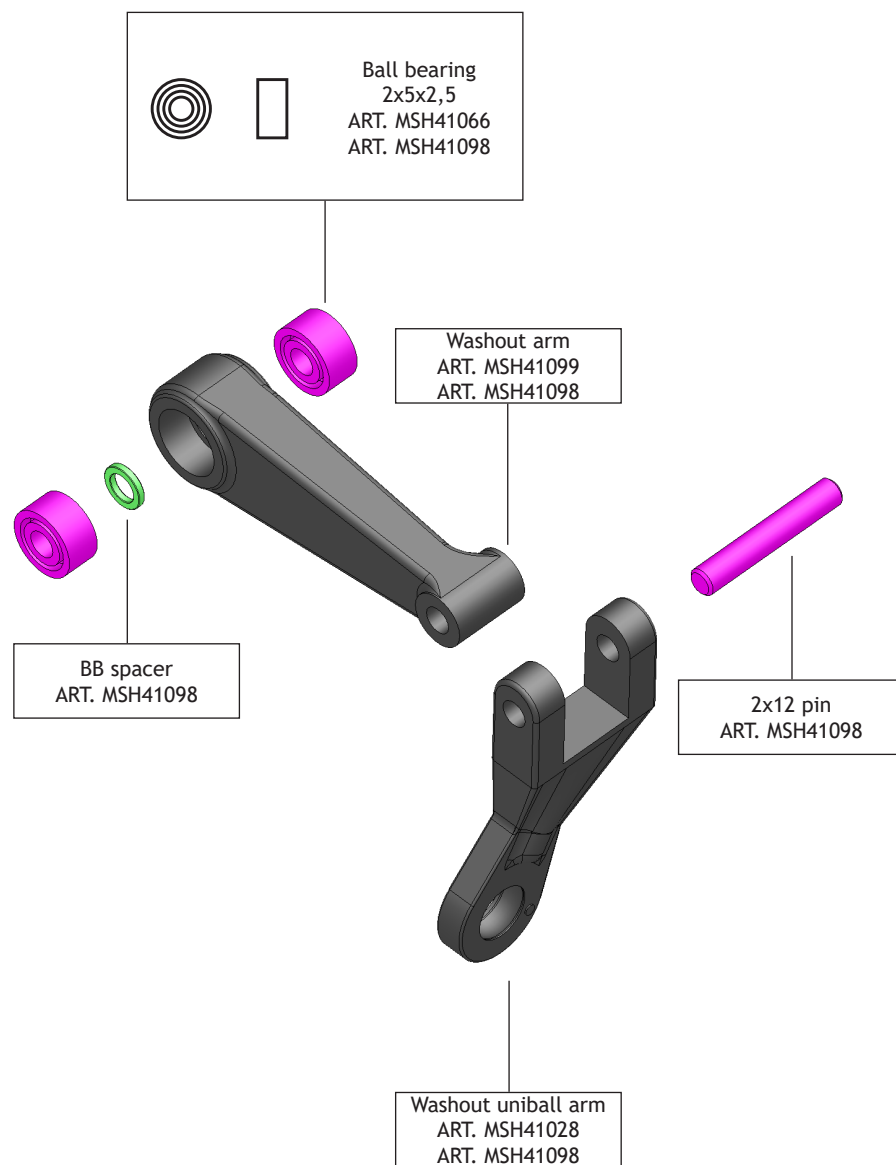


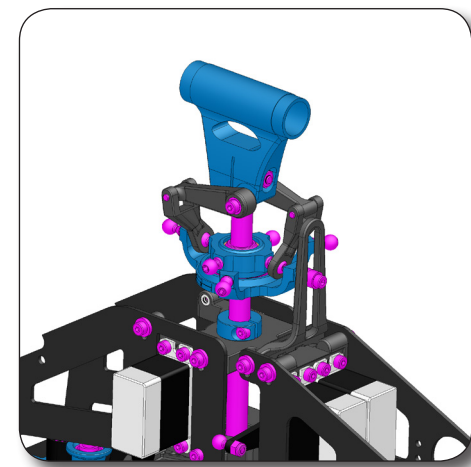
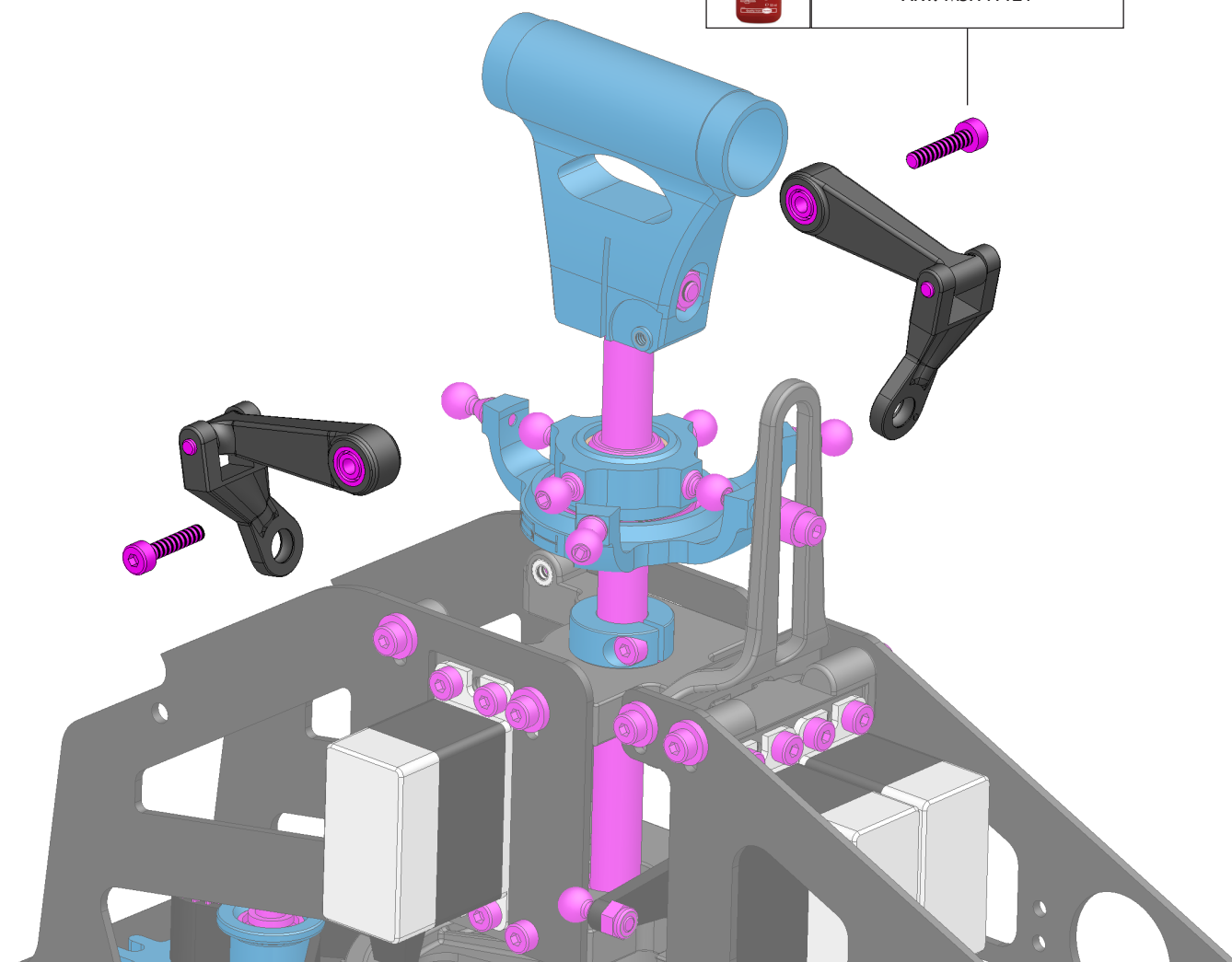
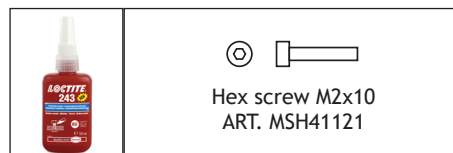


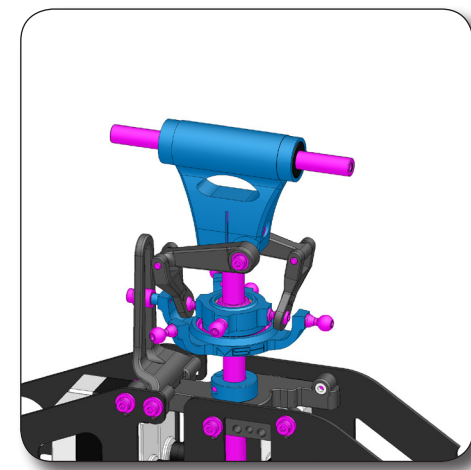
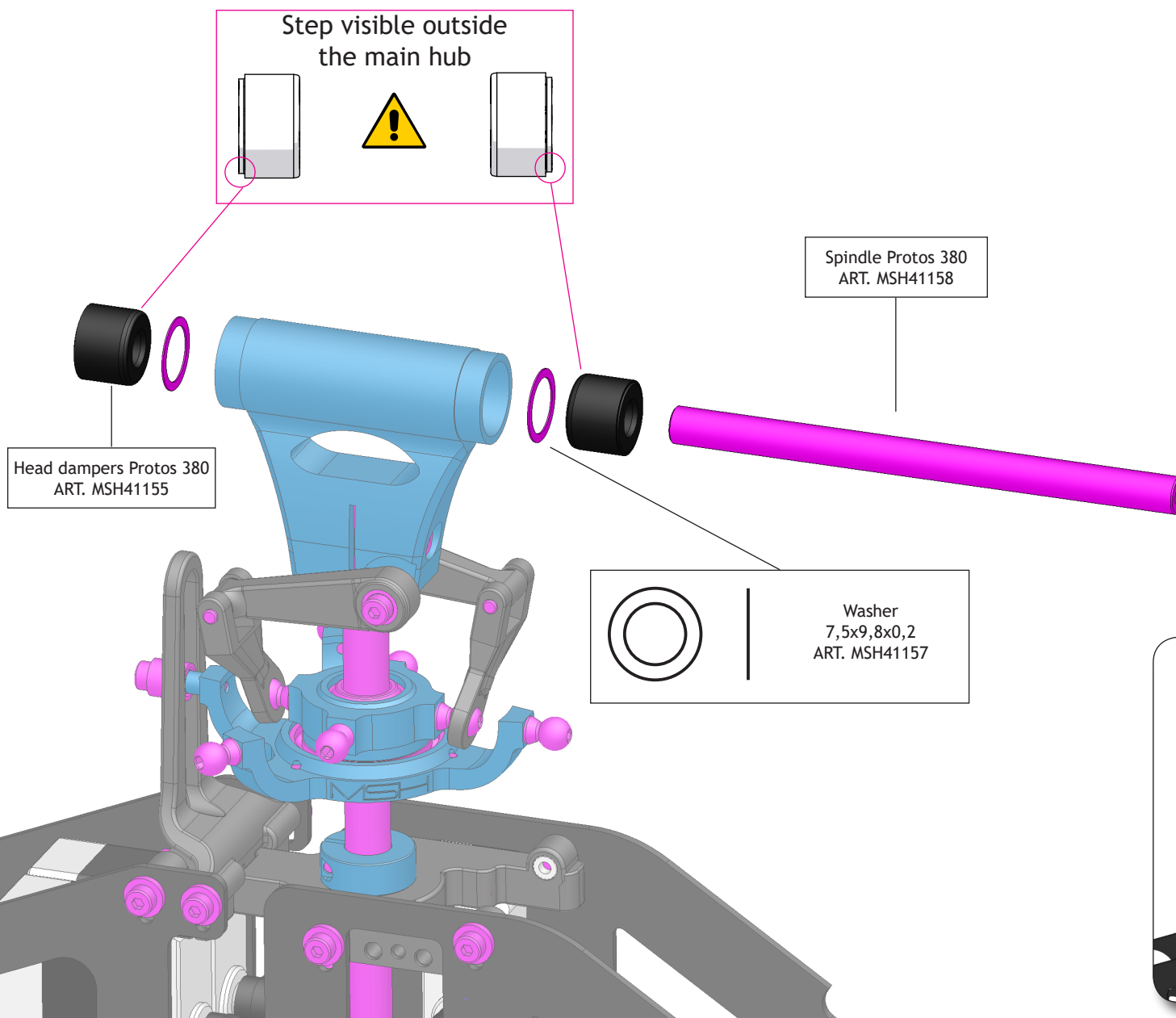




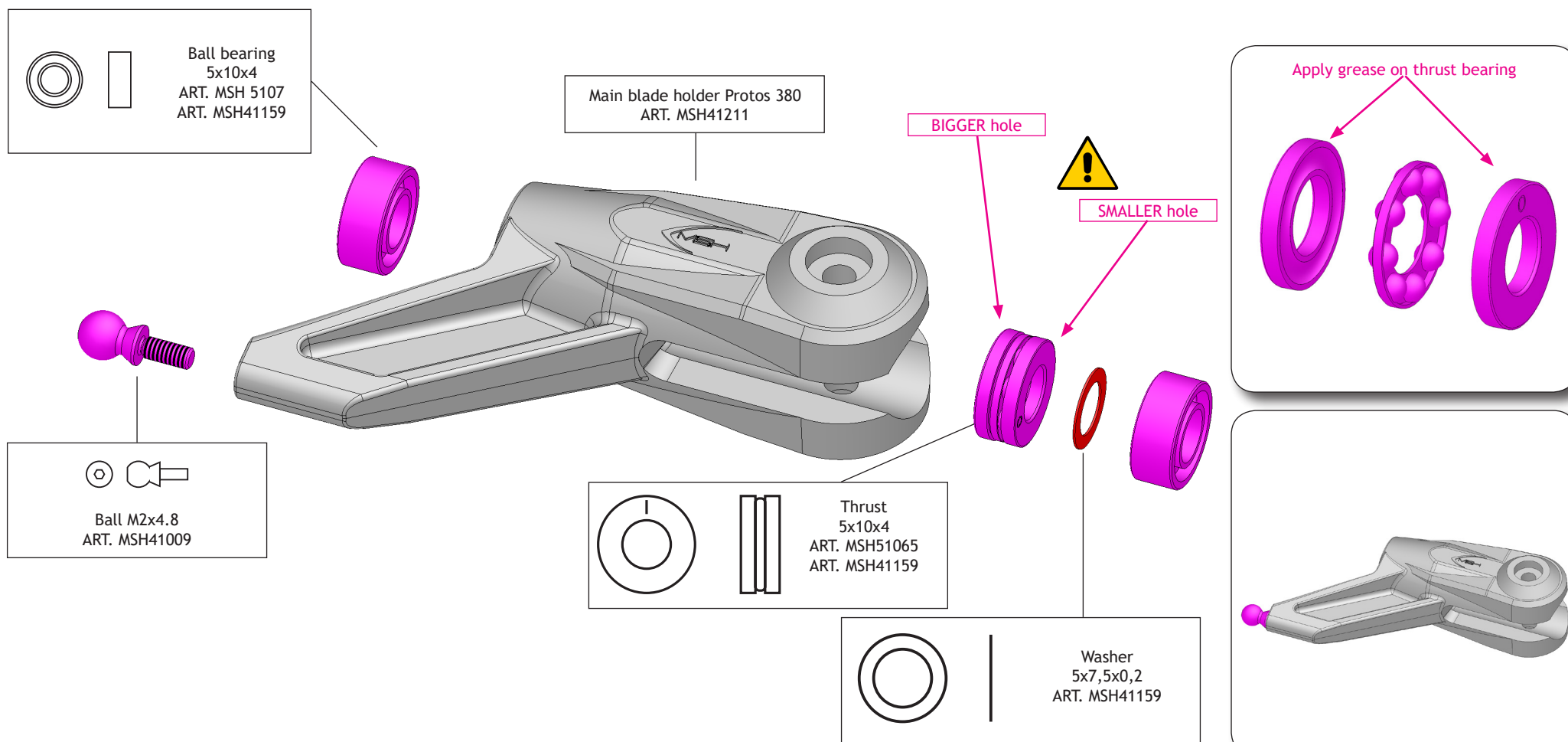
2X

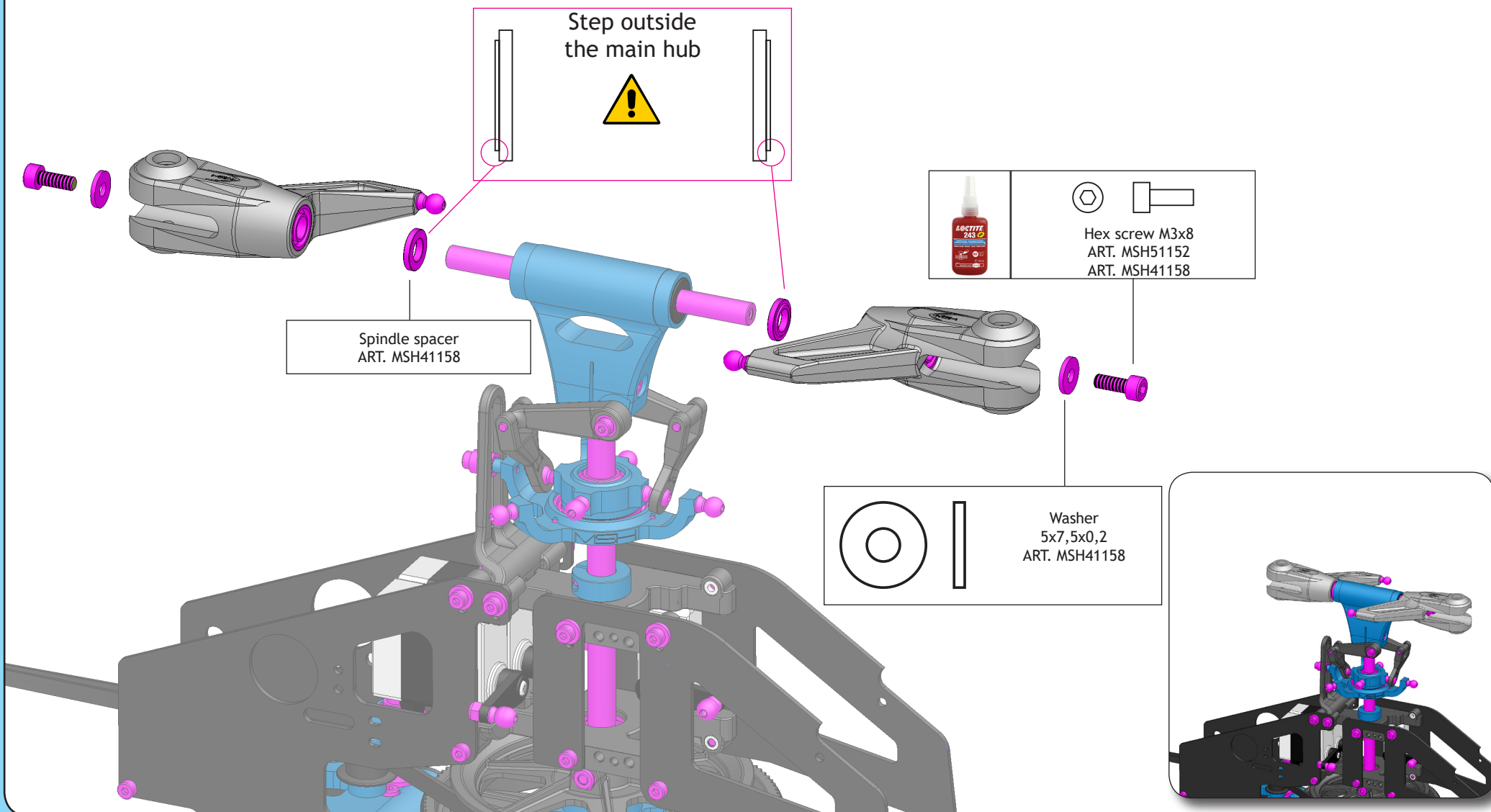


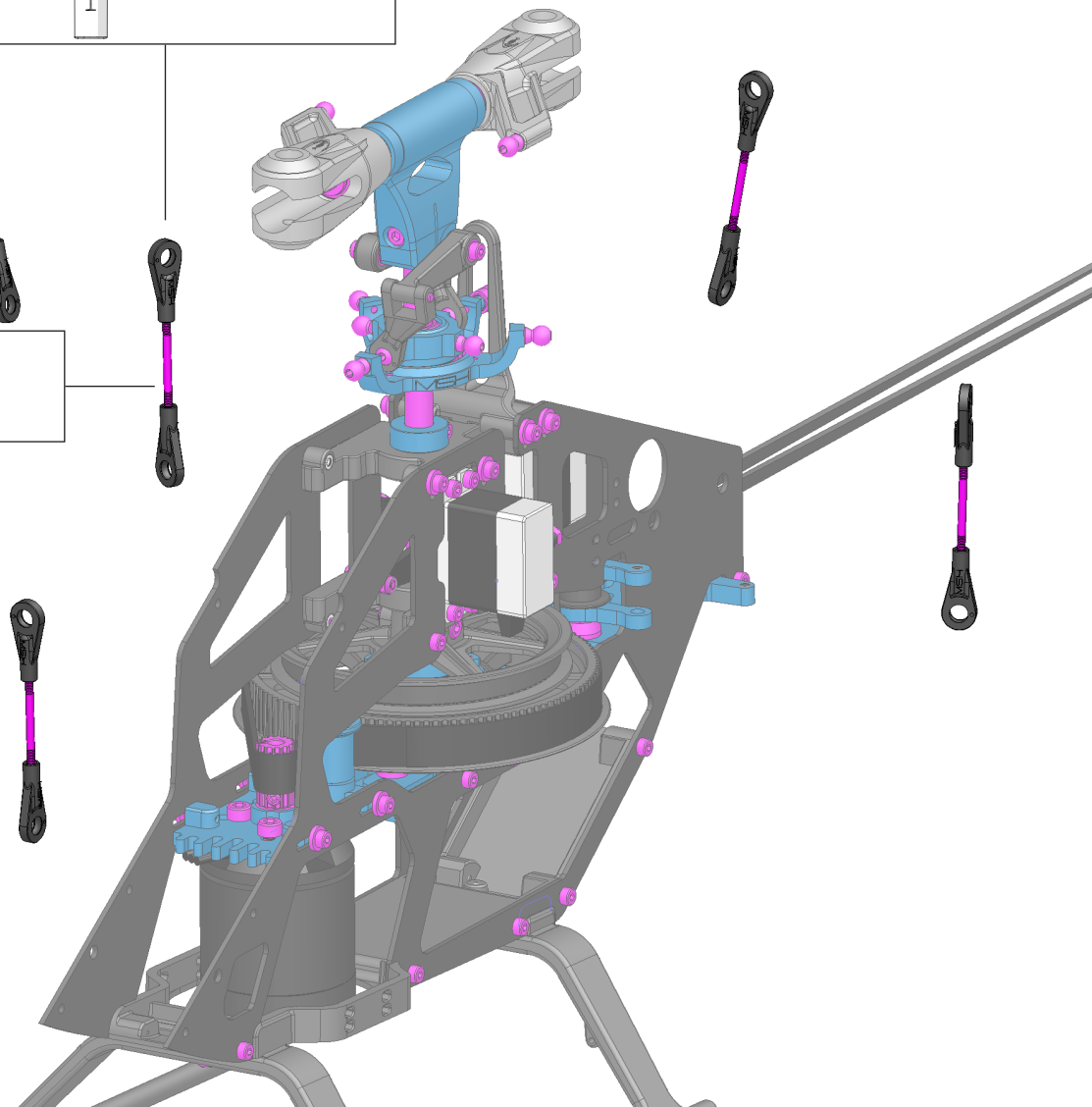
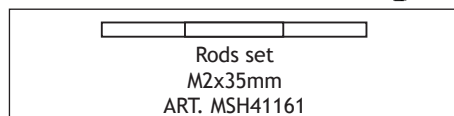
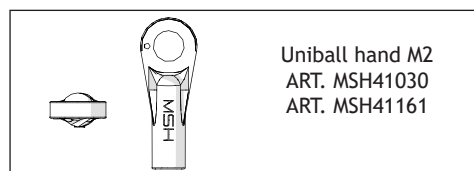




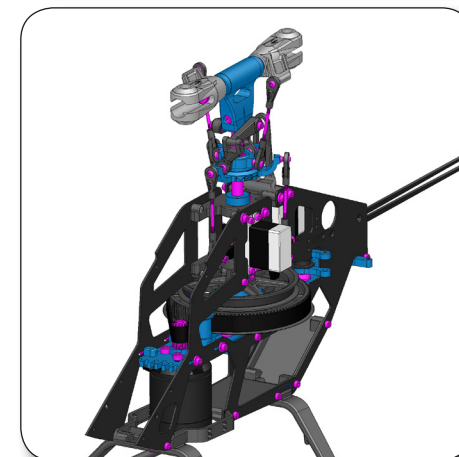
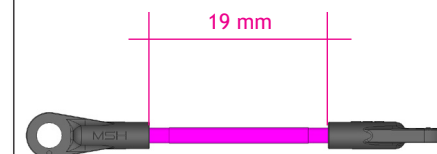
# 2X





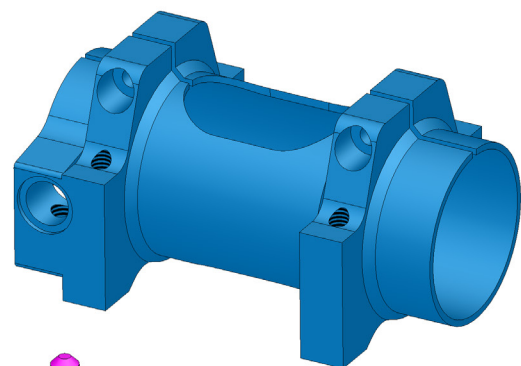


**5X**





Only MSH41506 - MSH41507



Tail clamp frame side  
ART. MSH41169



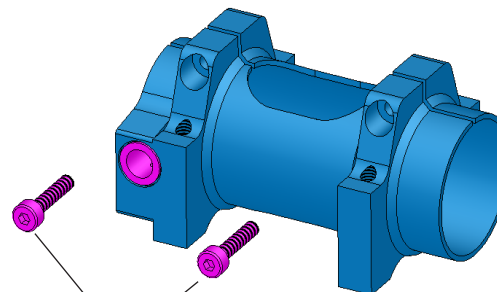
Pin antirotation frame  
ART. MSH41170



Hex grub screw  
M3x5  
ART. MSH51160



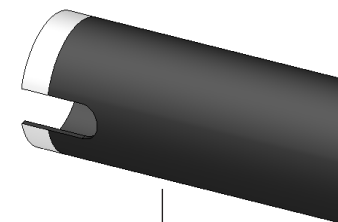
Do not overtighten.



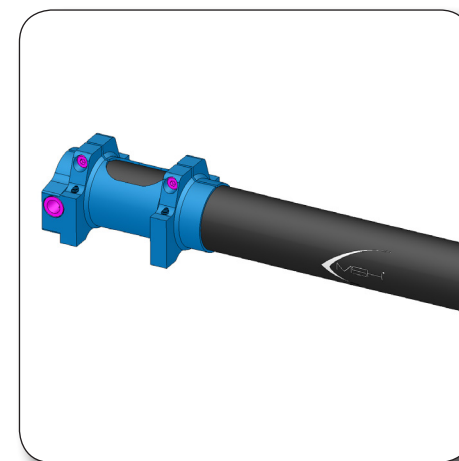
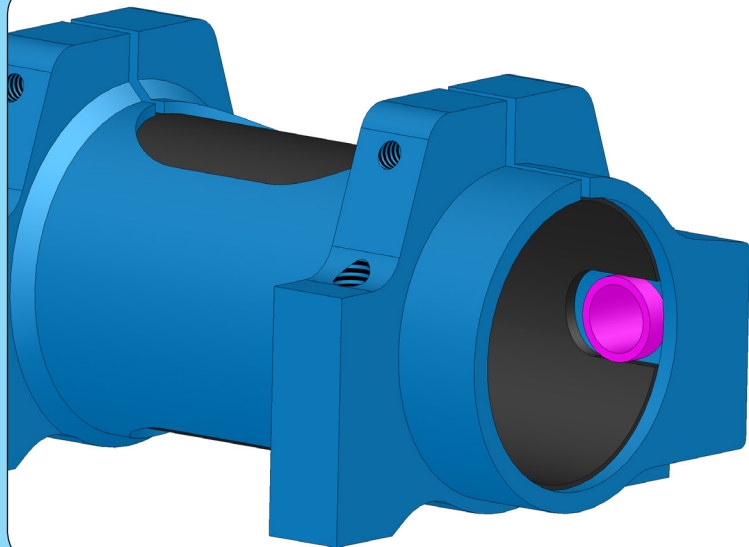
Hex screw M2x10  
ART. MSH41121



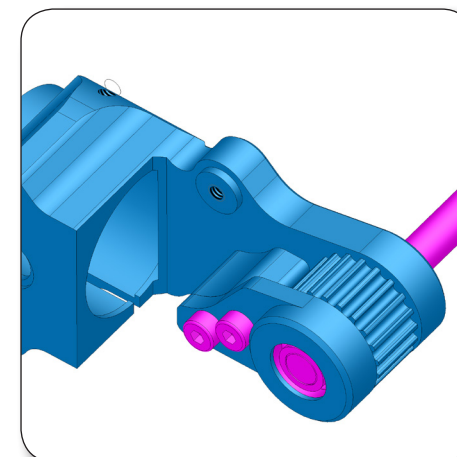
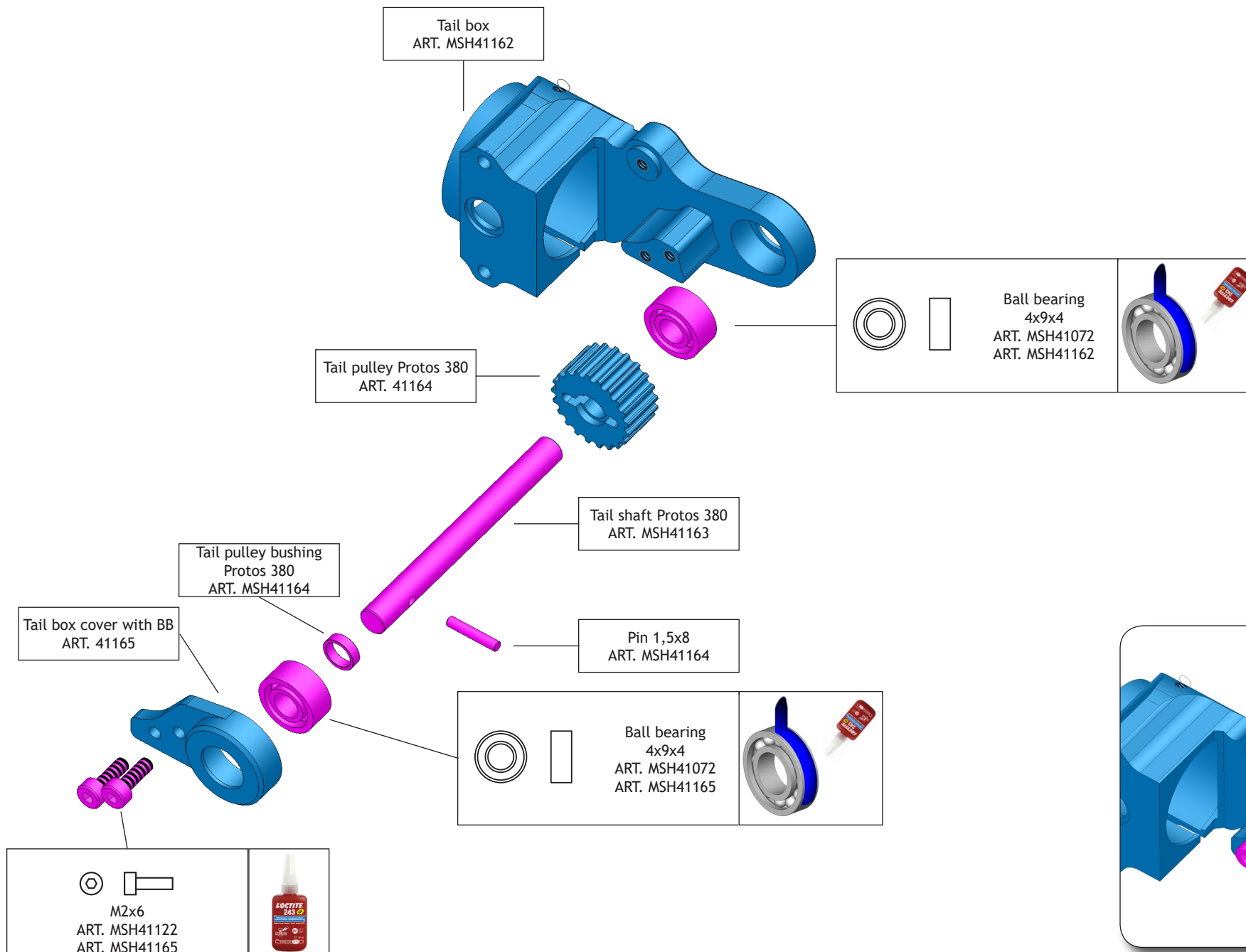
Do not fully tighten yet



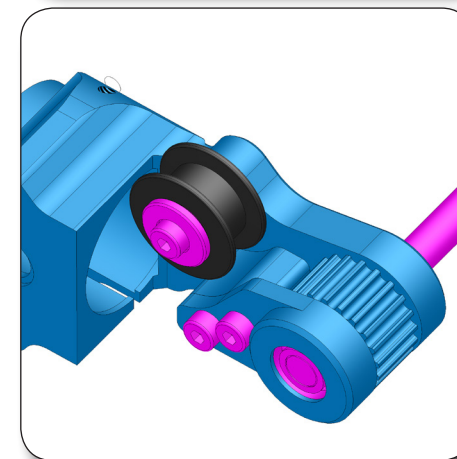
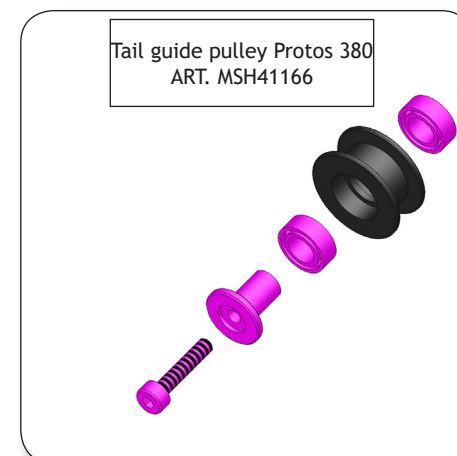
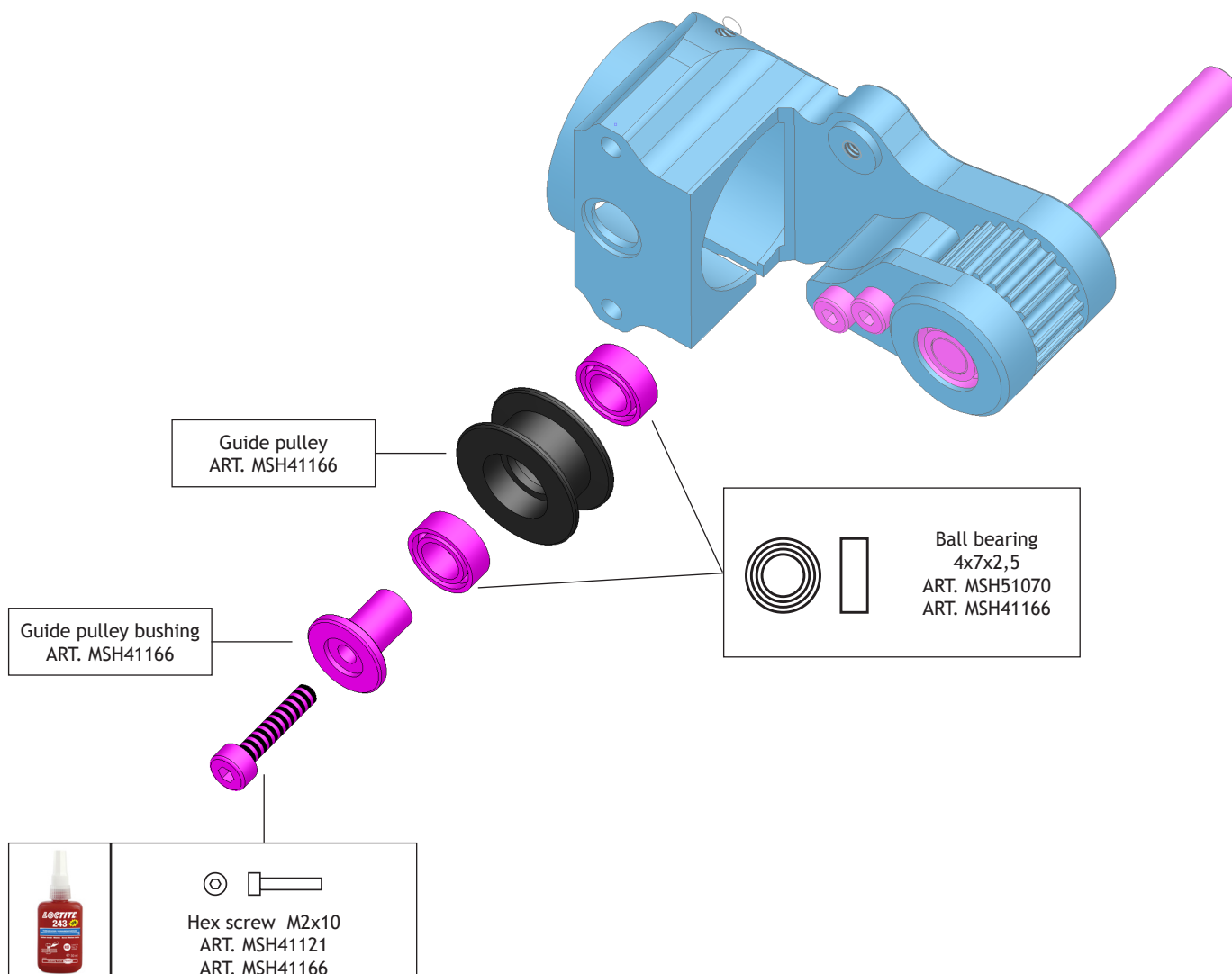
Boom Protos 380  
ART. MSH41171

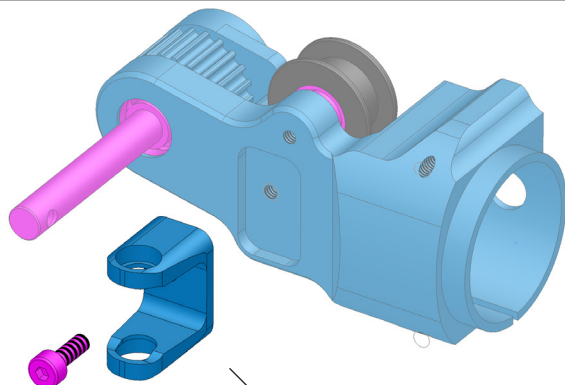








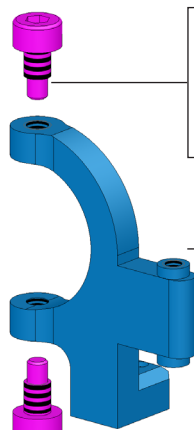
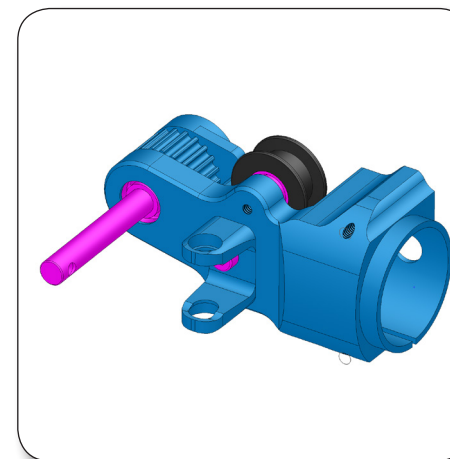




Tail pitch support  
ART. MSH41167



Hex screw M2x6  
ART. MSH41122  
ART. MSH41167



Tail pitch lever screw M2,5x5  
ART. MSH41135  
ART. MSH41168



Tail pitch lever  
ART. MSH41168

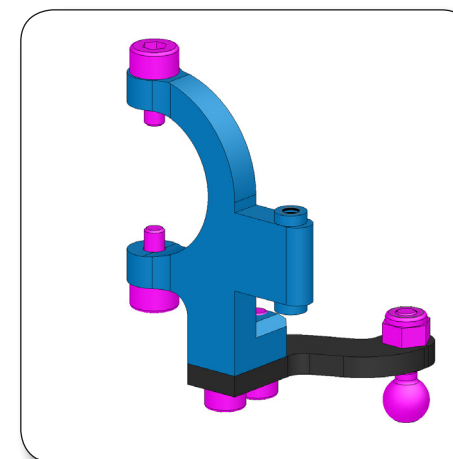
Tail pitch lever carbon  
ART. MSH41168

M2 Nut  
ART. MSH41119  
ART. MSH41168

Ball M2x4,8  
ART. MSH41009  
ART. MSH41168



Hex screw M2x6  
ART. MSH41122  
ART. MSH41168

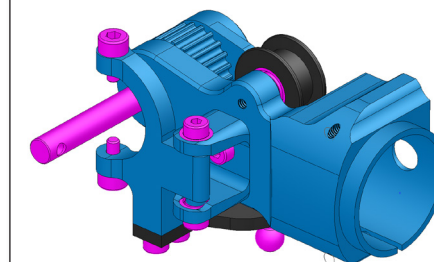
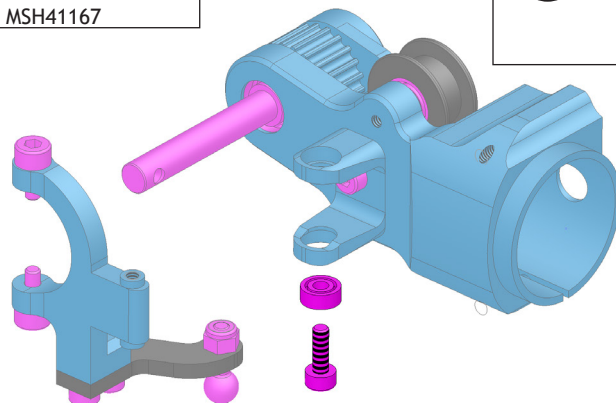
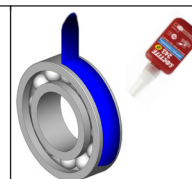




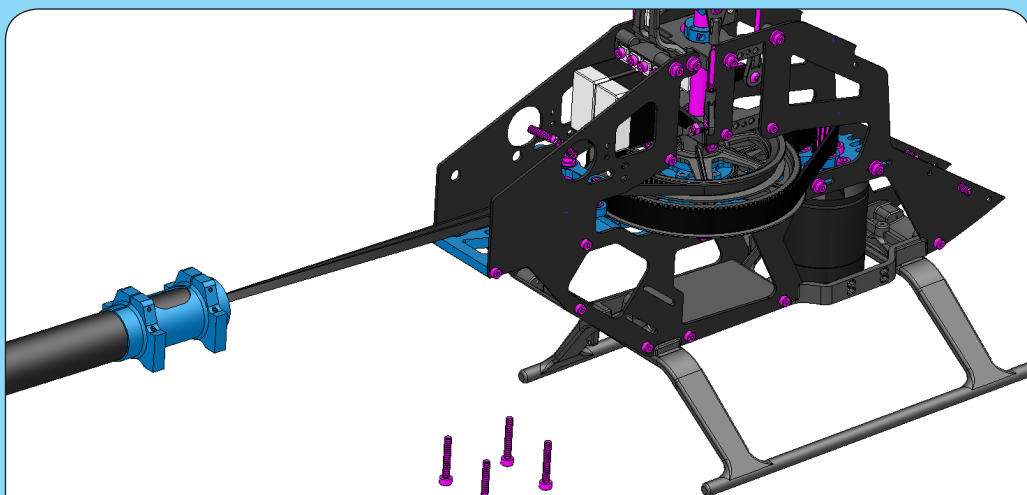
Hex screw M2x6  
ART. MSH41122  
ART. MSH41167



Ball bearing  
2x5x2  
ART. MSH41066  
ART. MSH41167



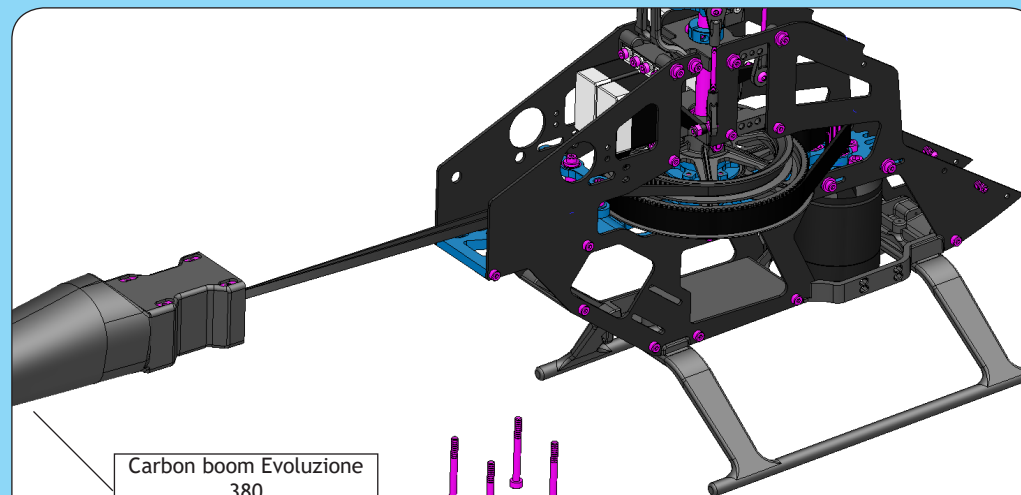
### MSH41506 - MSH41507



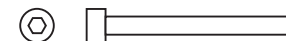
Hex screw M2,5x16  
ART. MSH51145



### MSH41508 - MSH41509

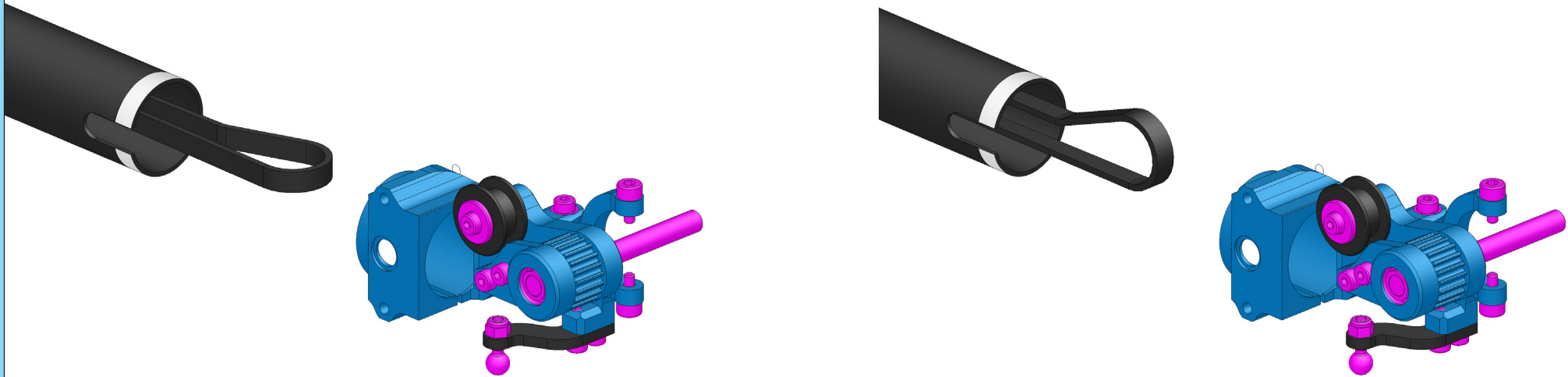


Carbon boom Evoluzione  
380  
ART. MSH41200

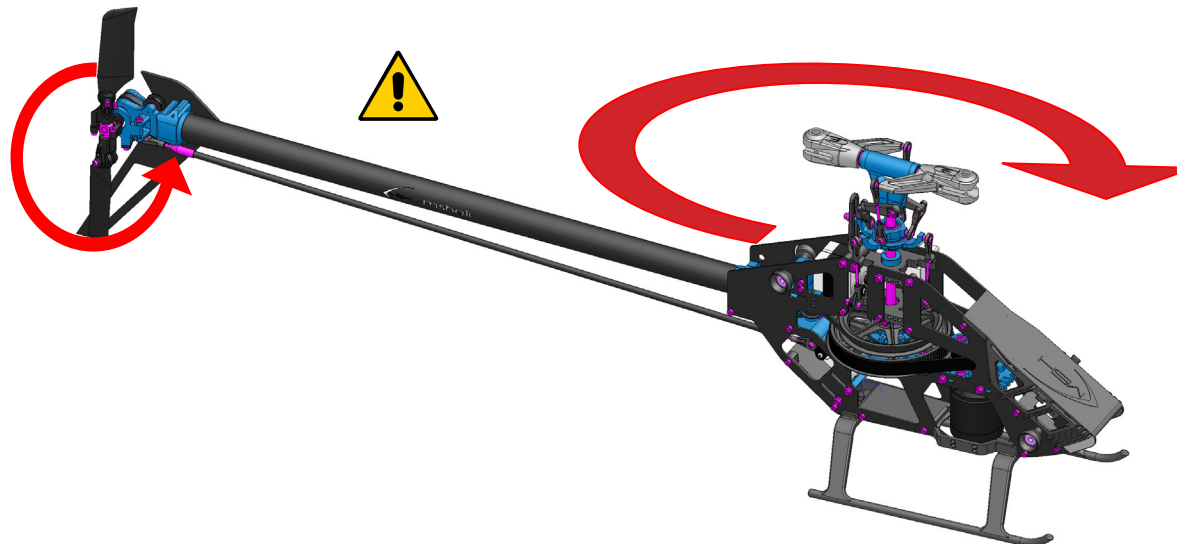


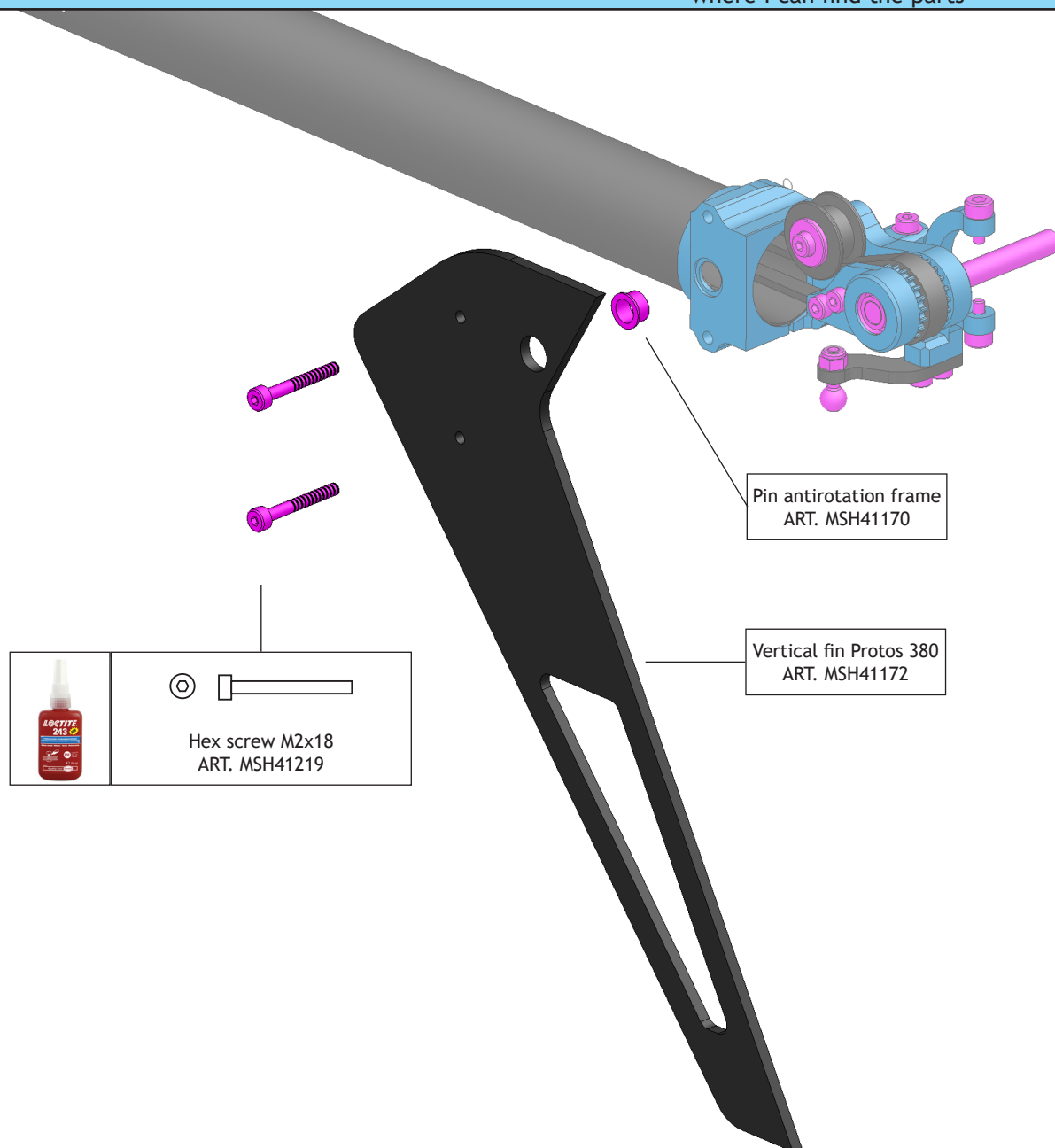
Hex screw M2,5x25  
ART. MSH51145





Check the rotation direction during the installation of the belt



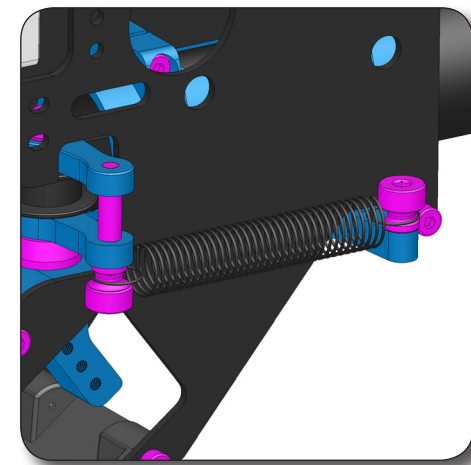
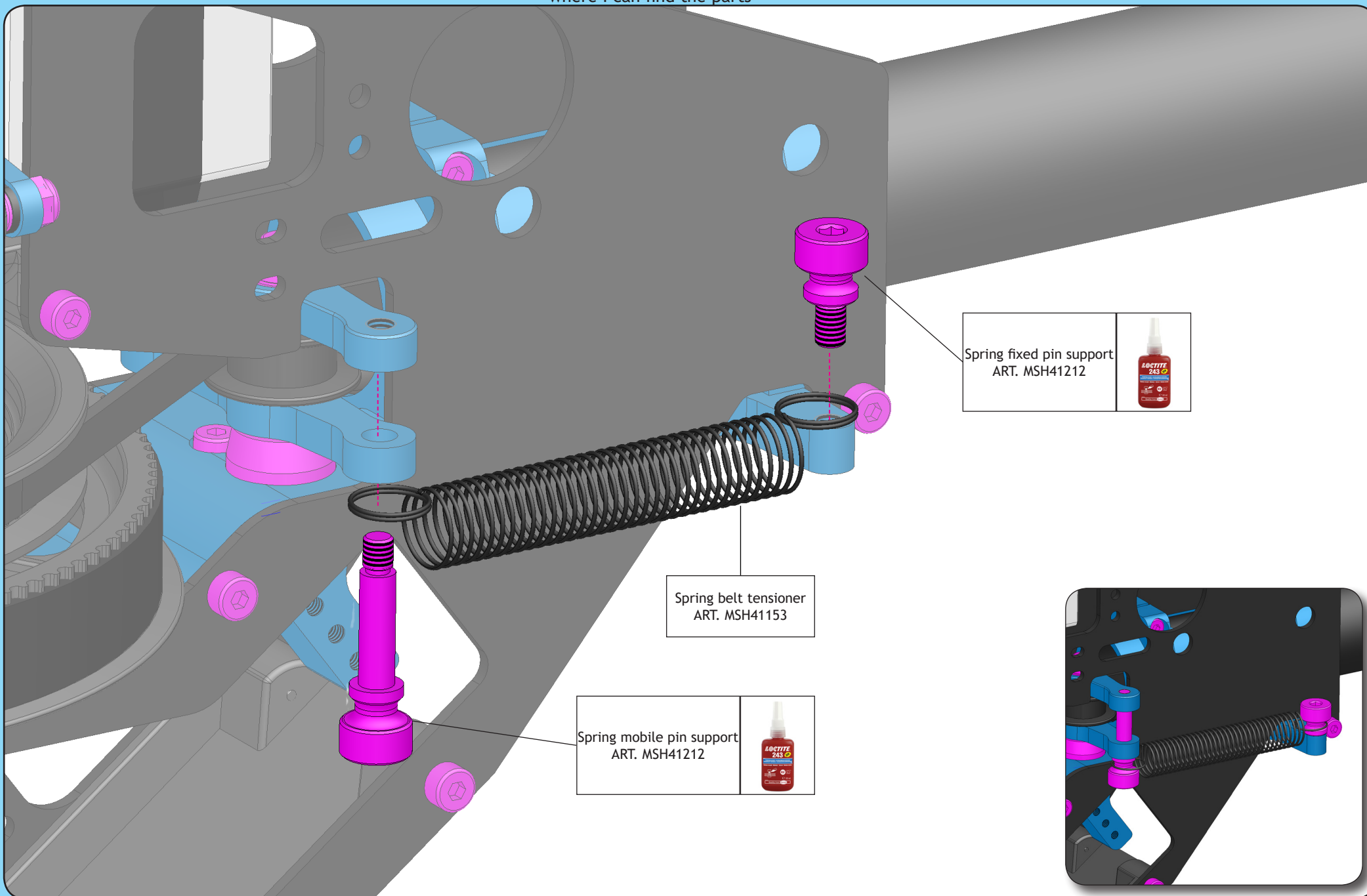


Pin antirotation frame  
ART. MSH41170

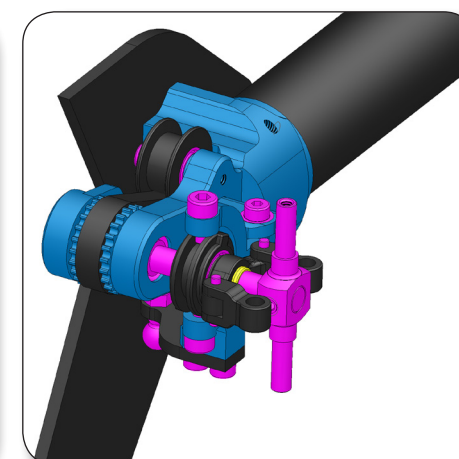
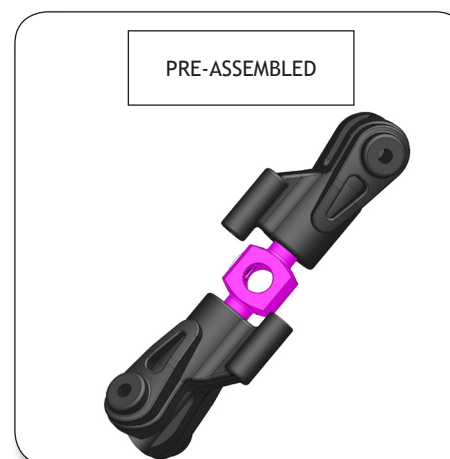
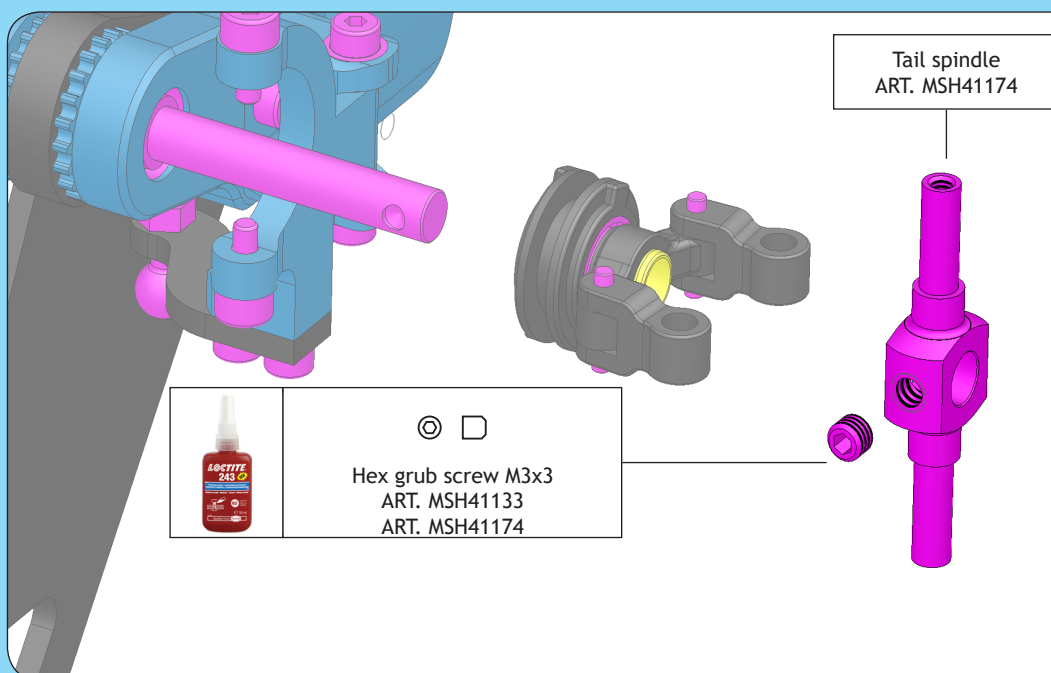
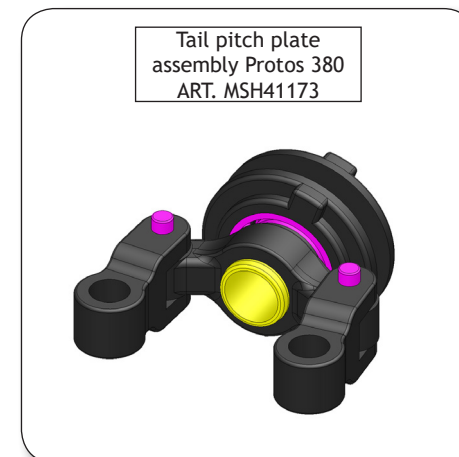
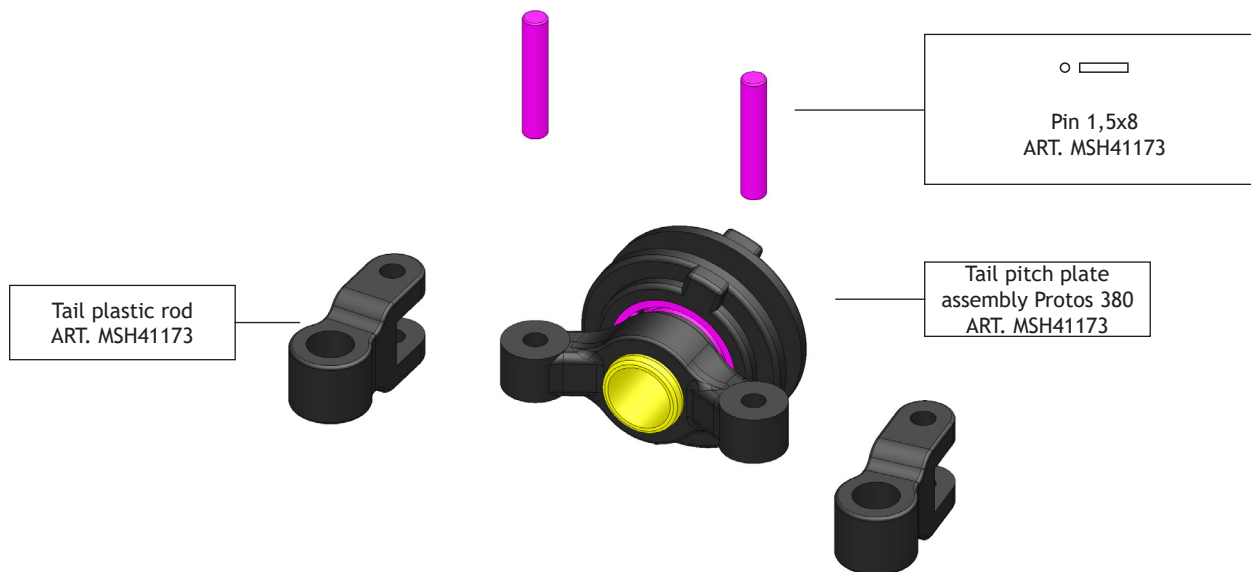
Vertical fin Protos 380  
ART. MSH41172

Hex screw M2x18  
ART. MSH41219

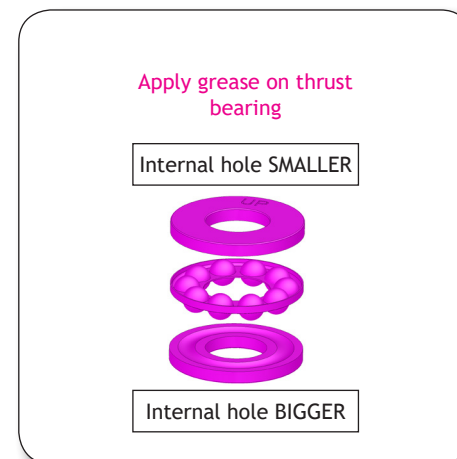
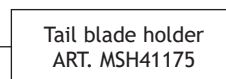
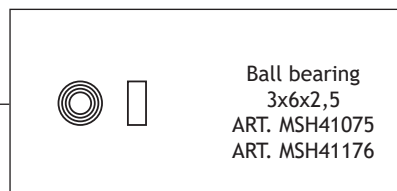
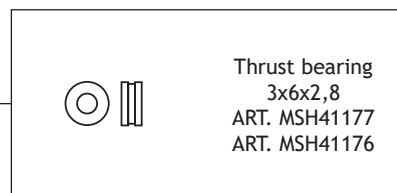
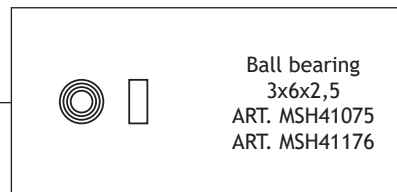
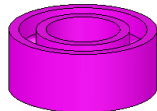
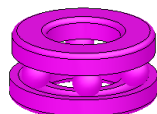
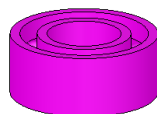
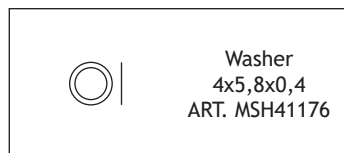
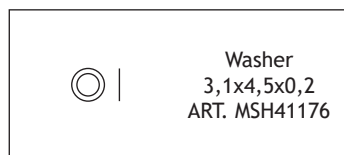








# 2X







Hex screw M2x4  
ART. MSH41141



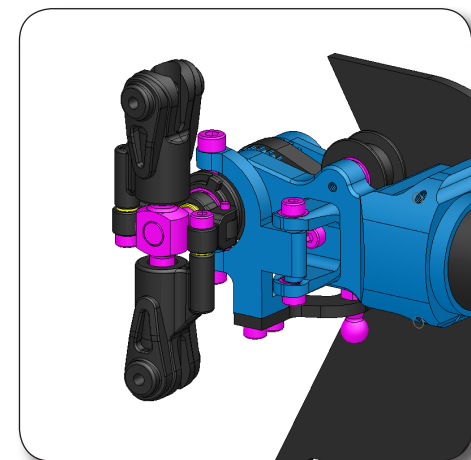
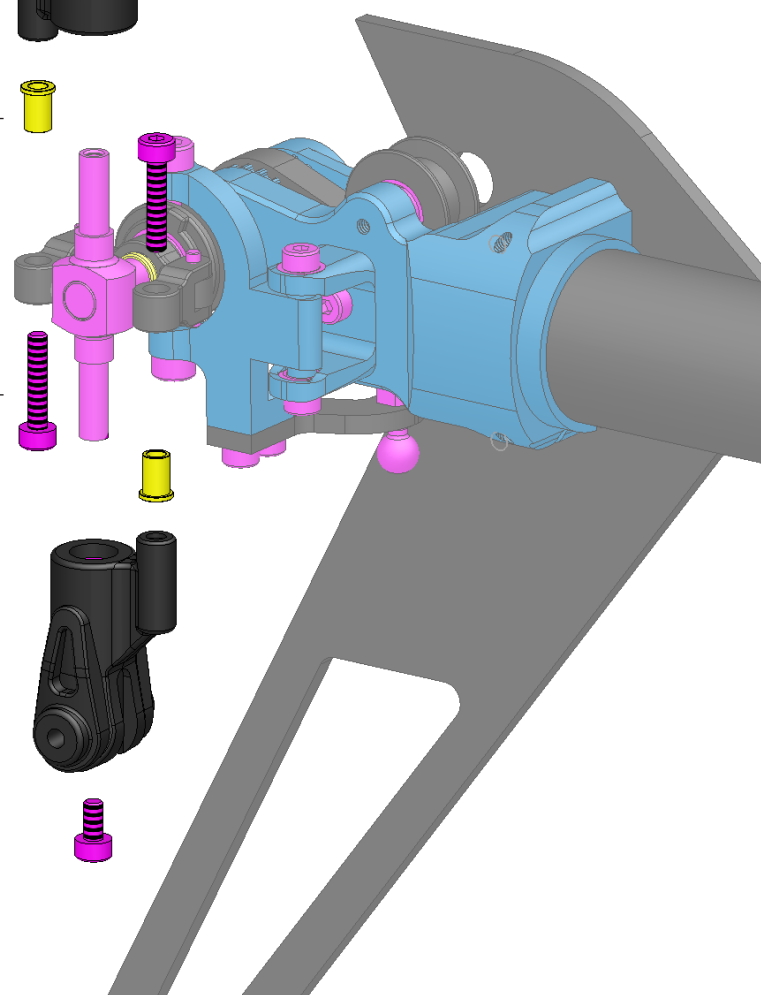
Tail pitch bushing  
ART. MSH41176

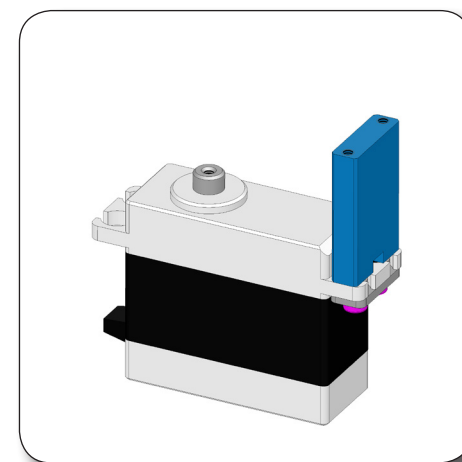
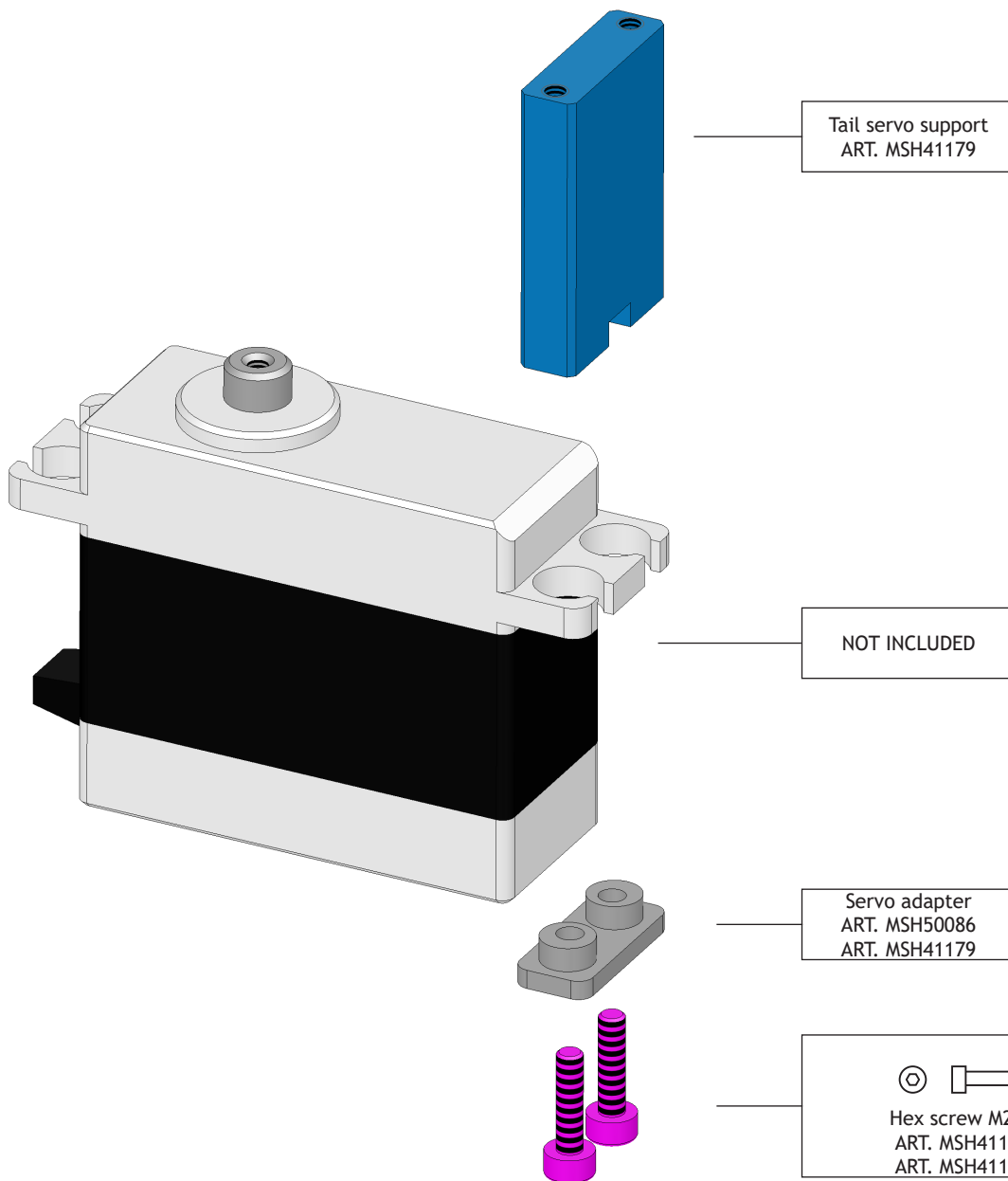


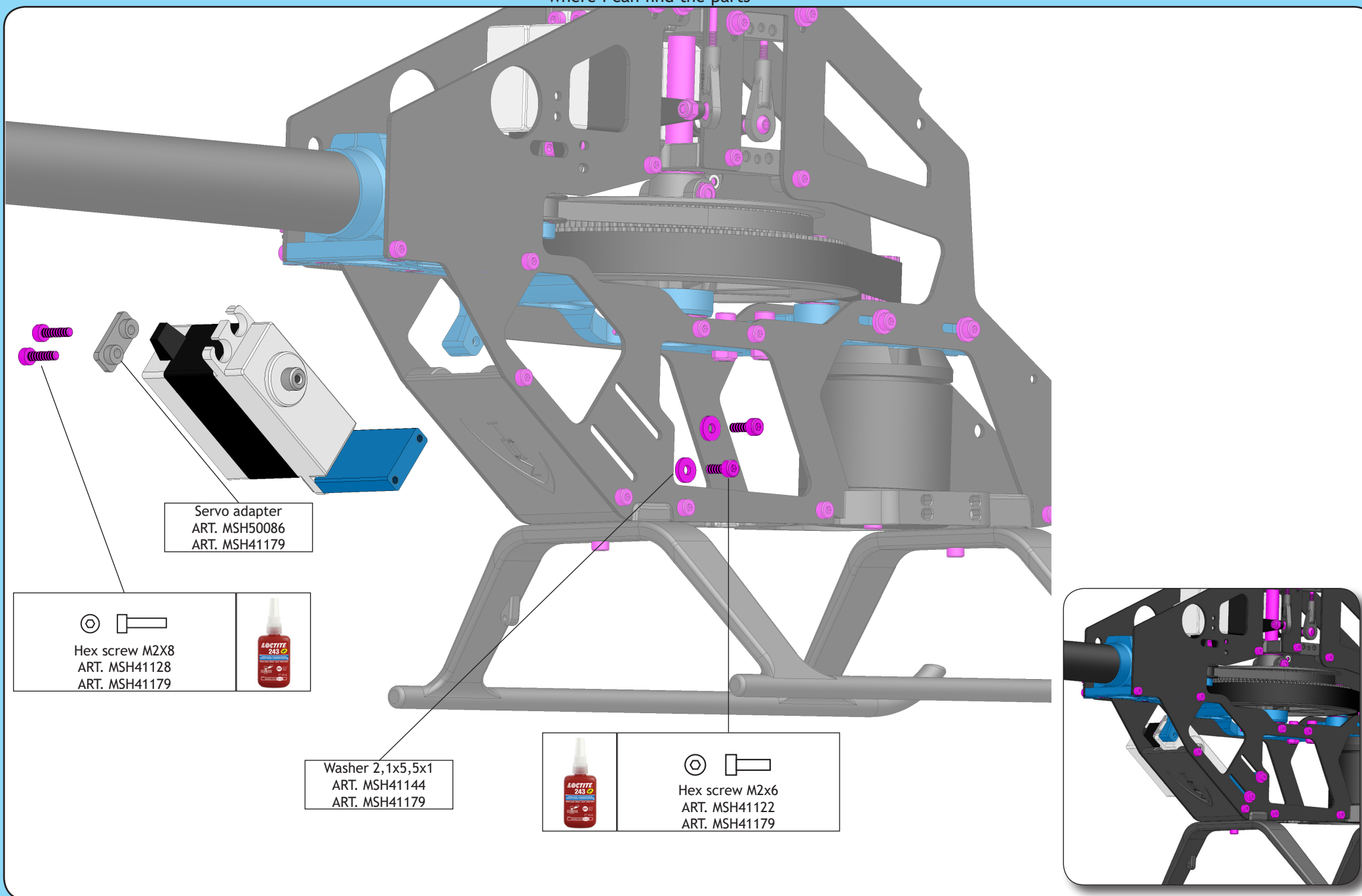
**VERY IMPORTANT**  
Do not overtighten.



Hex screw M2x10  
ART. MSH41121  
ART. MSH41176





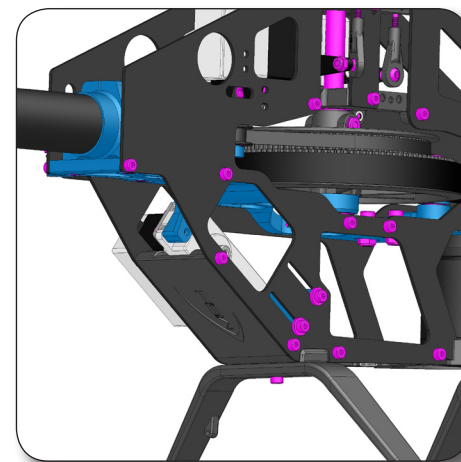


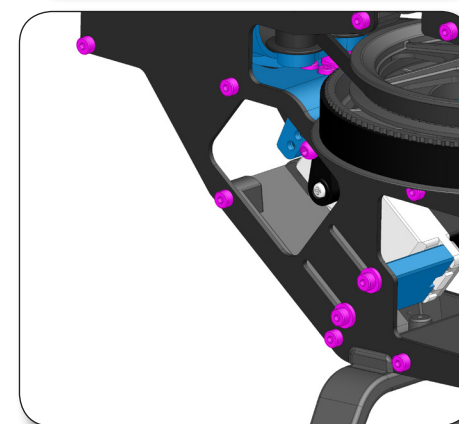
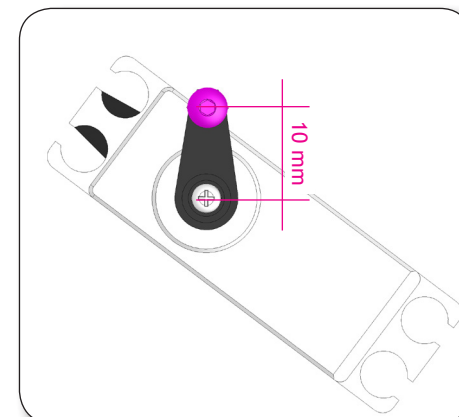
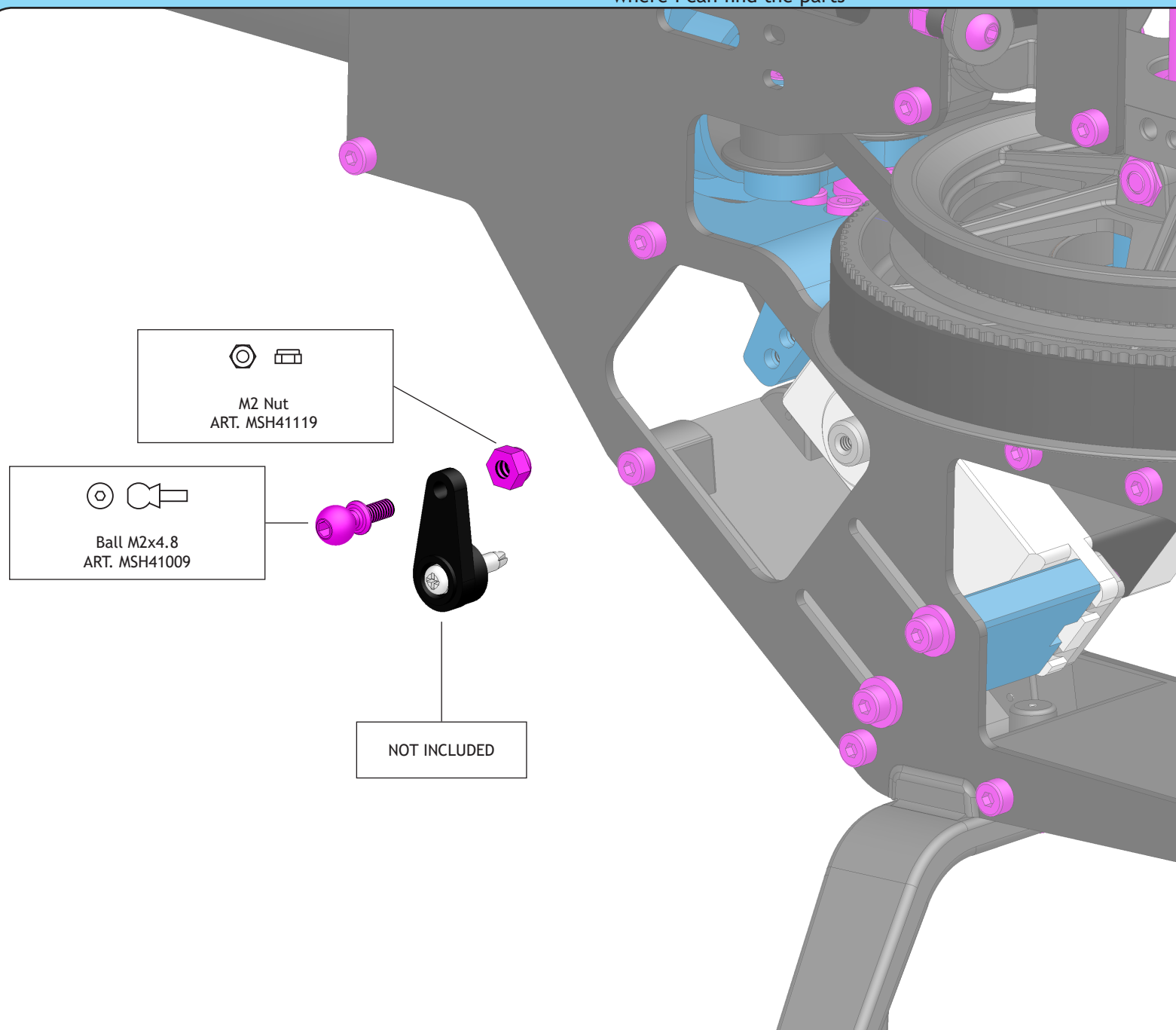
Servo adapter  
ART. MSH50086  
ART. MSH41179

Hex screw M2X8  
ART. MSH41128  
ART. MSH41179

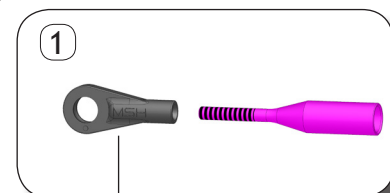
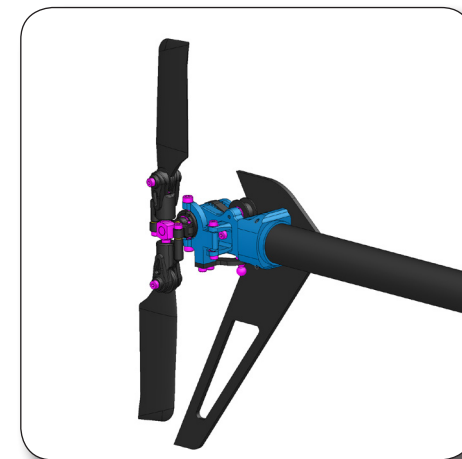
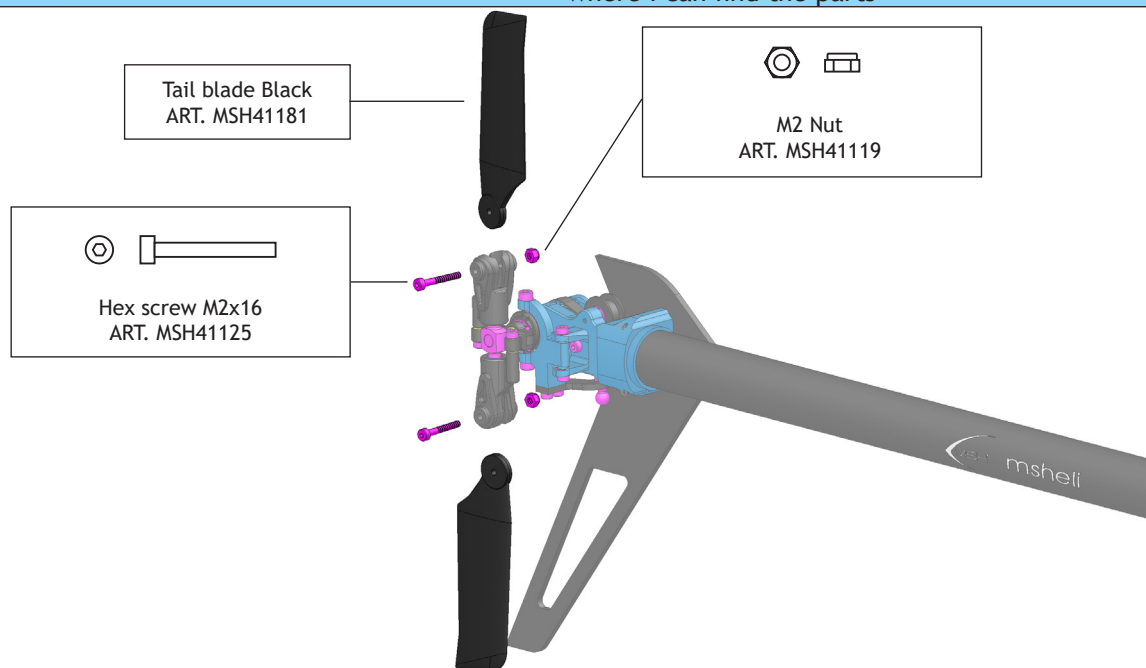
Washer 2,1x5,5x1  
ART. MSH41144  
ART. MSH41179

Hex screw M2x6  
ART. MSH41122  
ART. MSH41179

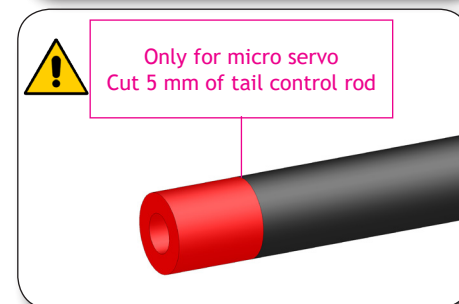
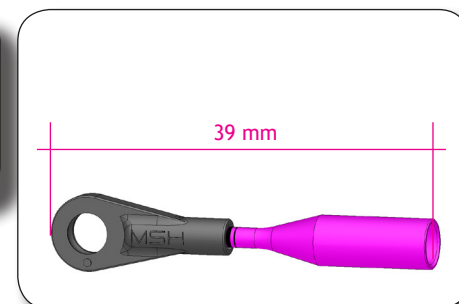
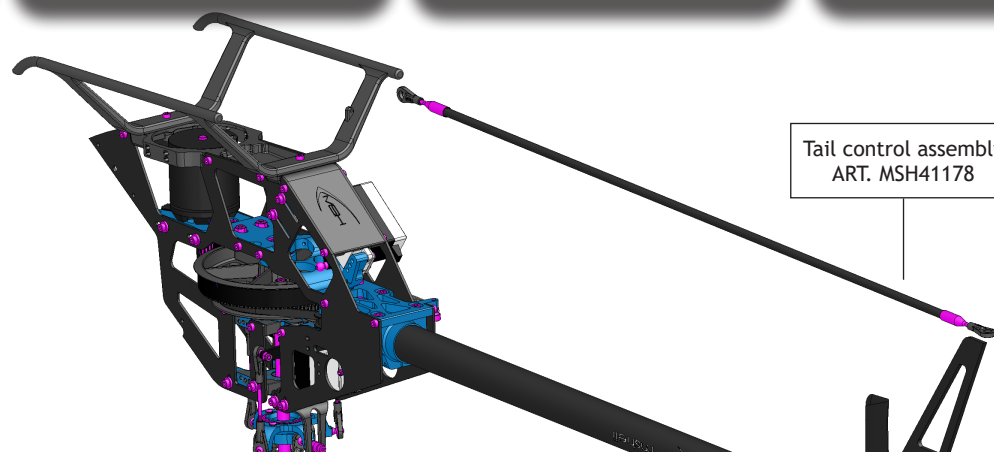
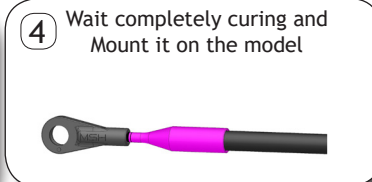
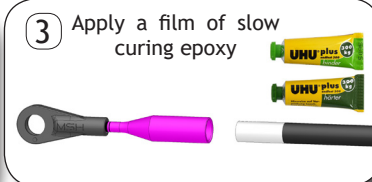
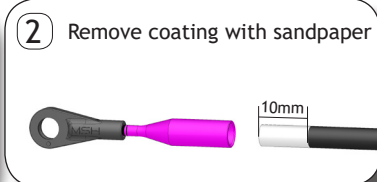


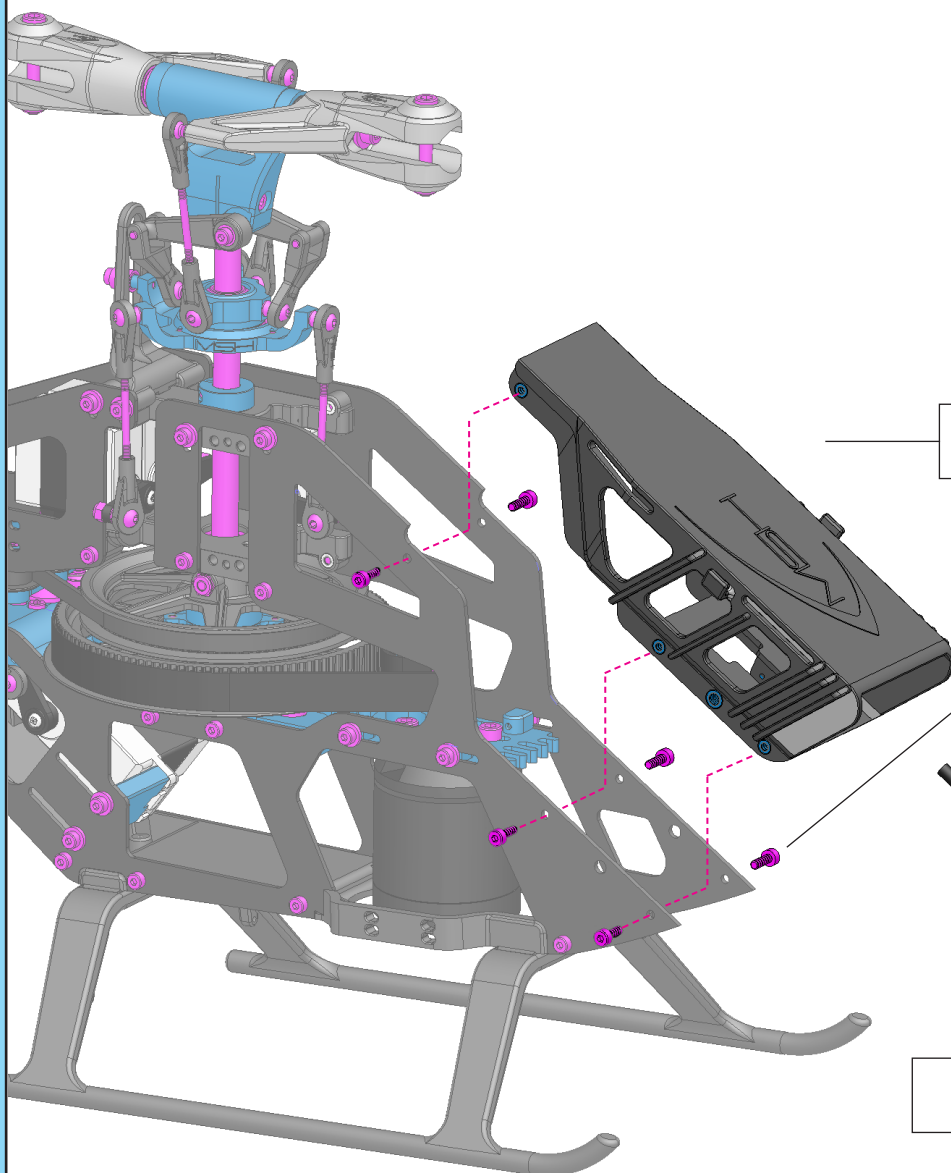


where I can find the parts

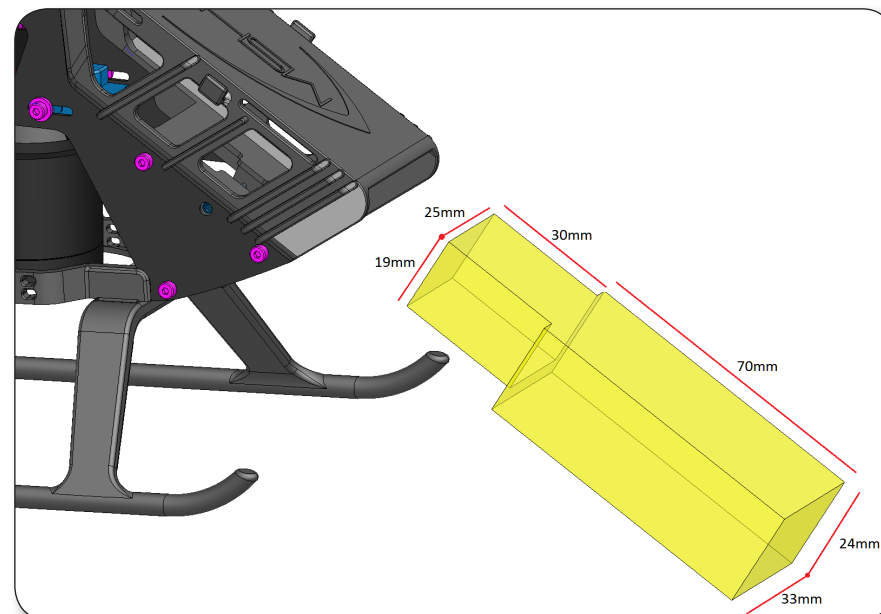


Uniball Link L  
ART. MSH41030





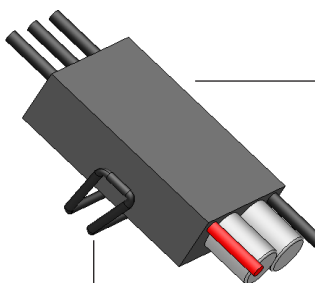
Battery and ESC  
support Protos 380  
ART. MSH41180



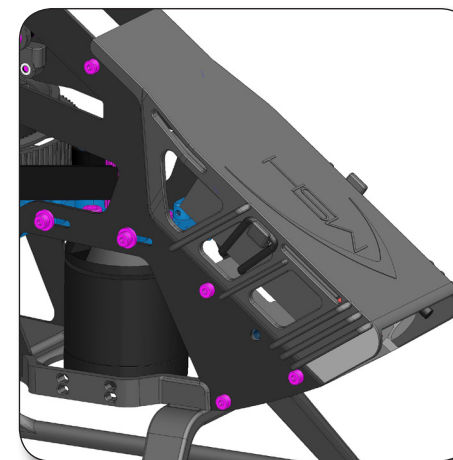
Hex screw M2x6  
ART. MSH41122  
ART. MSH41180

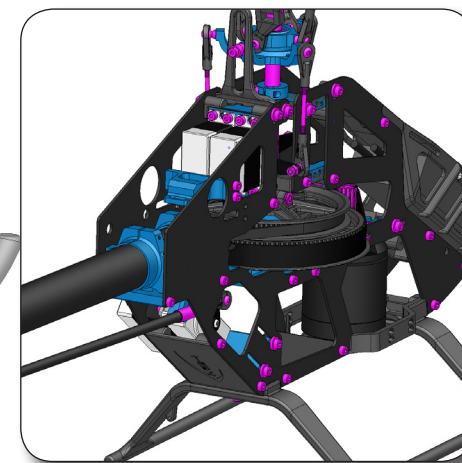
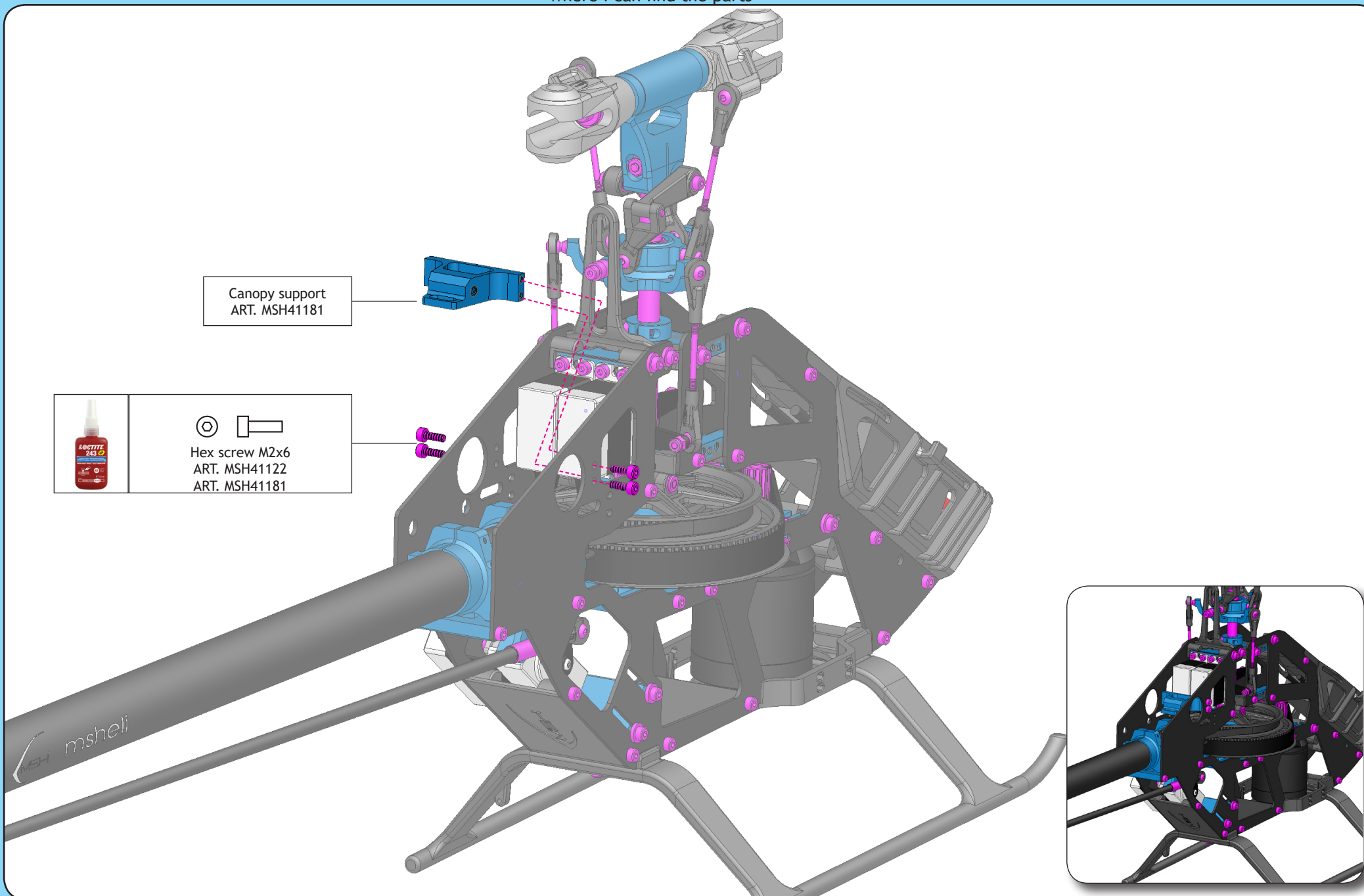


NOT INCLUDED



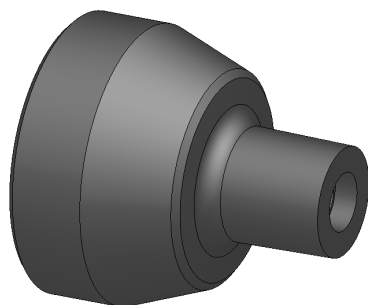
ESC O-ring  
ART. MSH41227



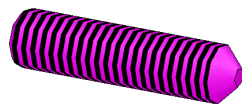




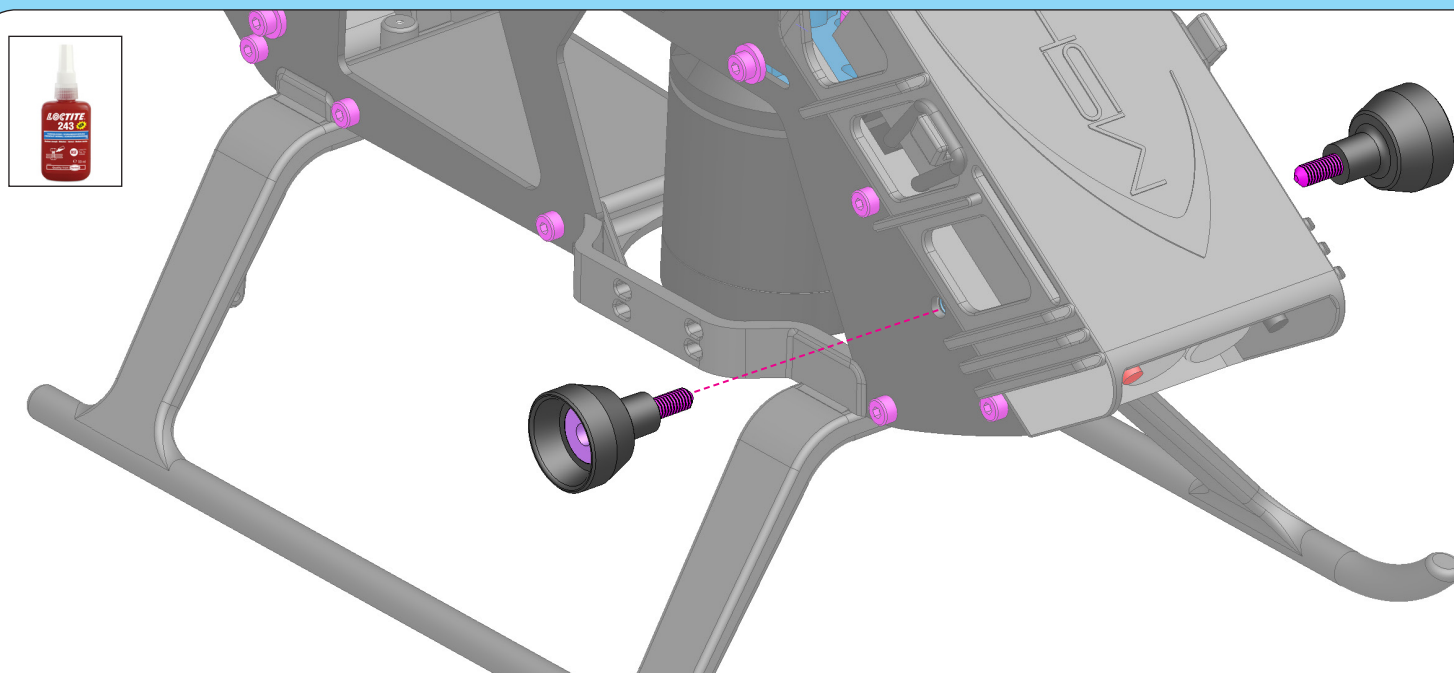
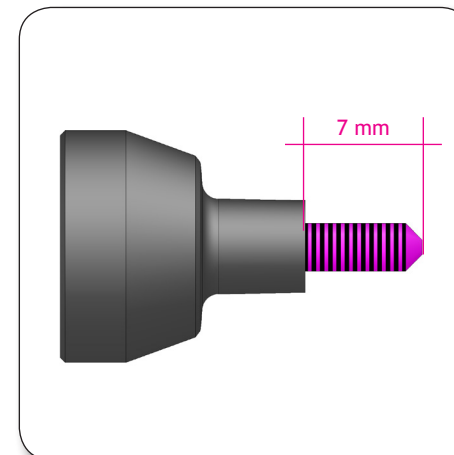
## 2X



Magnet canopy support  
Protos 380  
ART. MSH41182



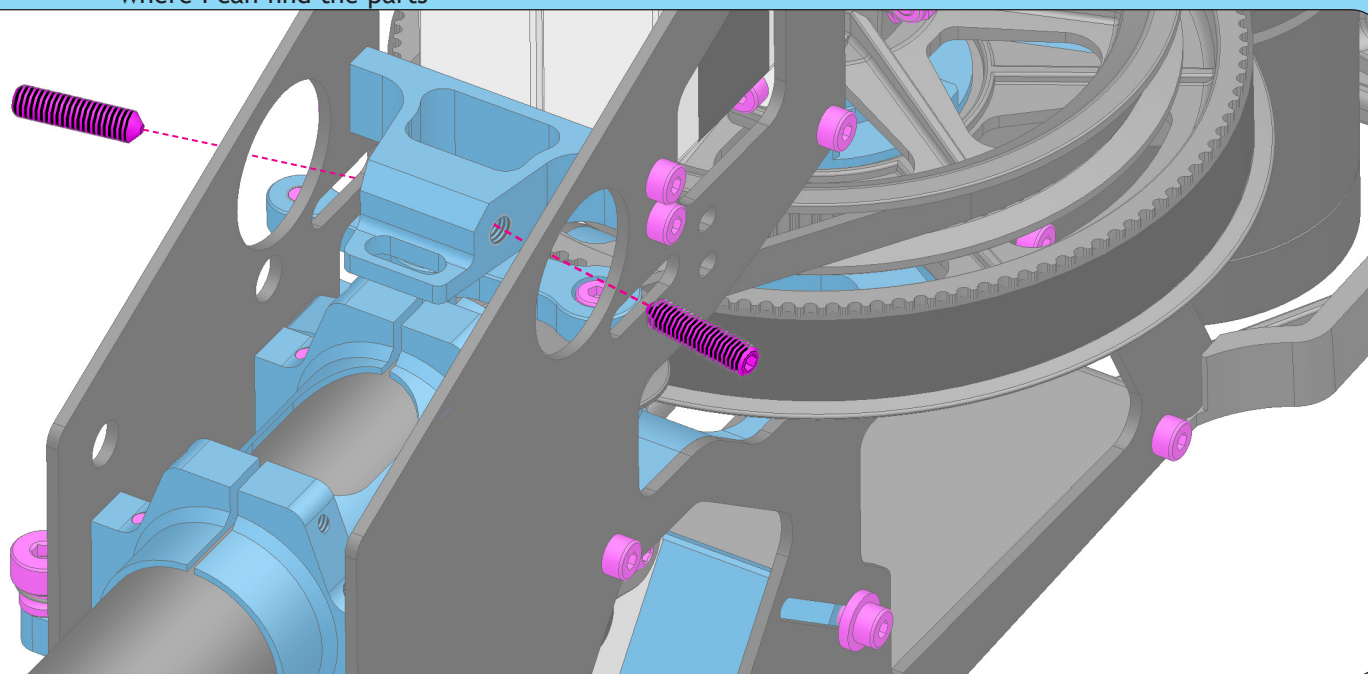
Grub screw M3x14  
ART. MSH41218  
ART. MSH41182



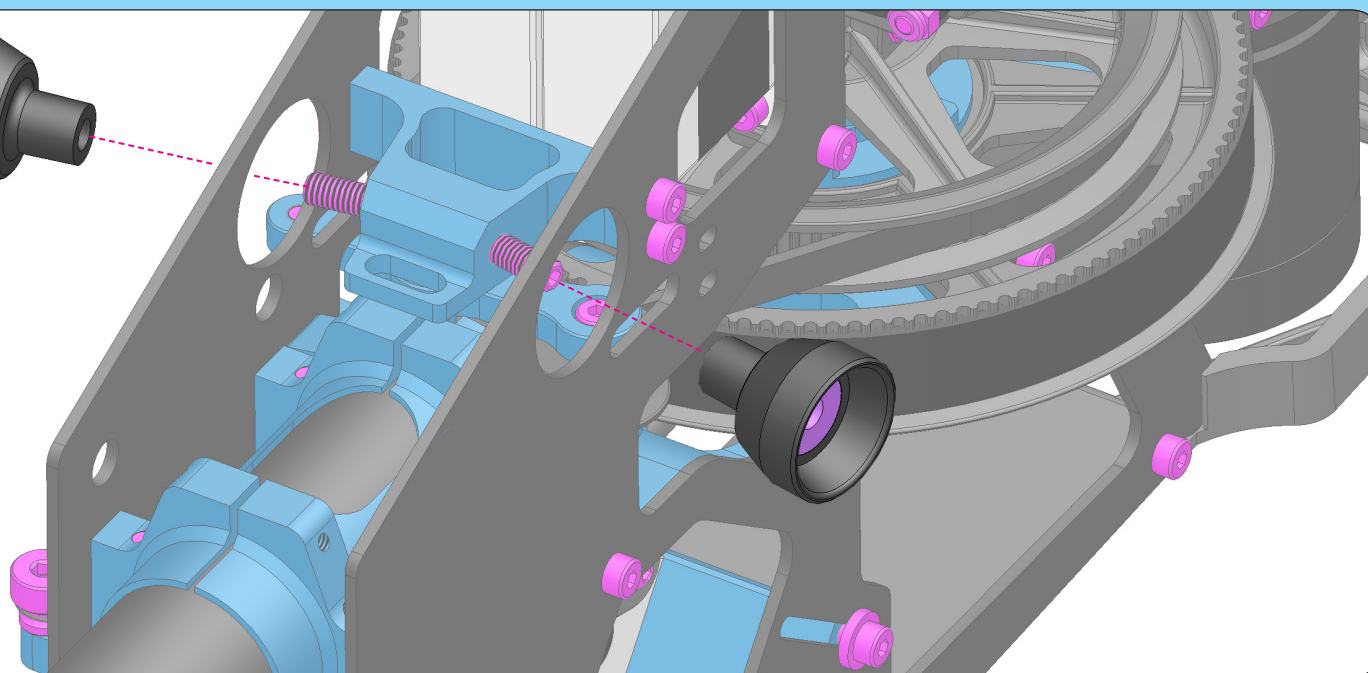
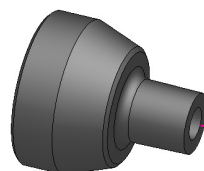




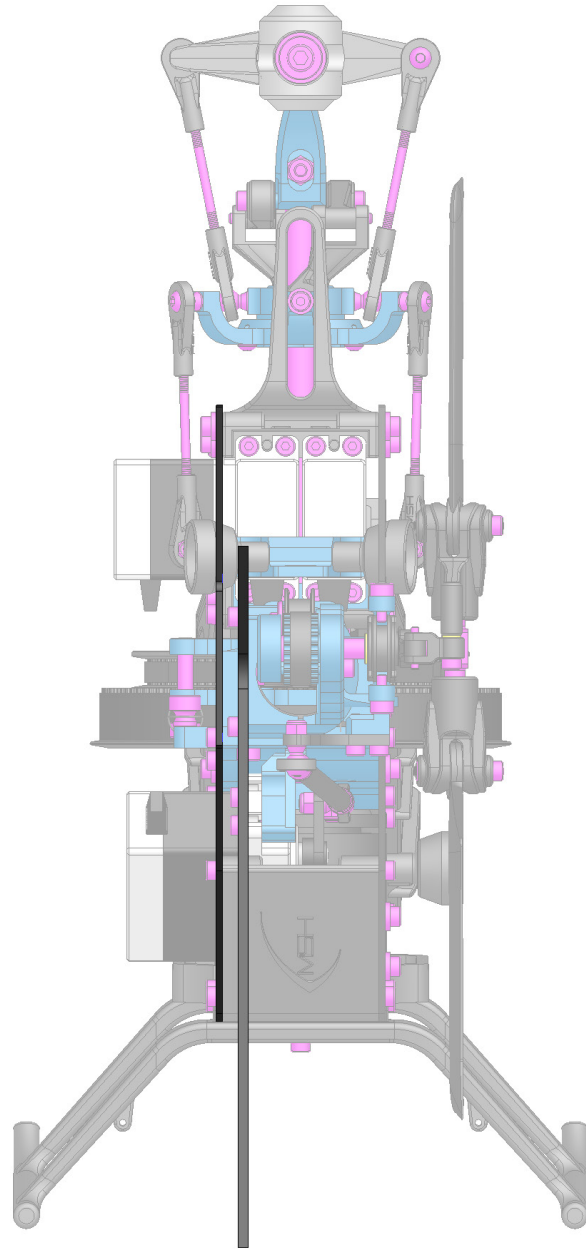
Grub screw M3x14  
ART. MSH41218  
ART. MSH41182



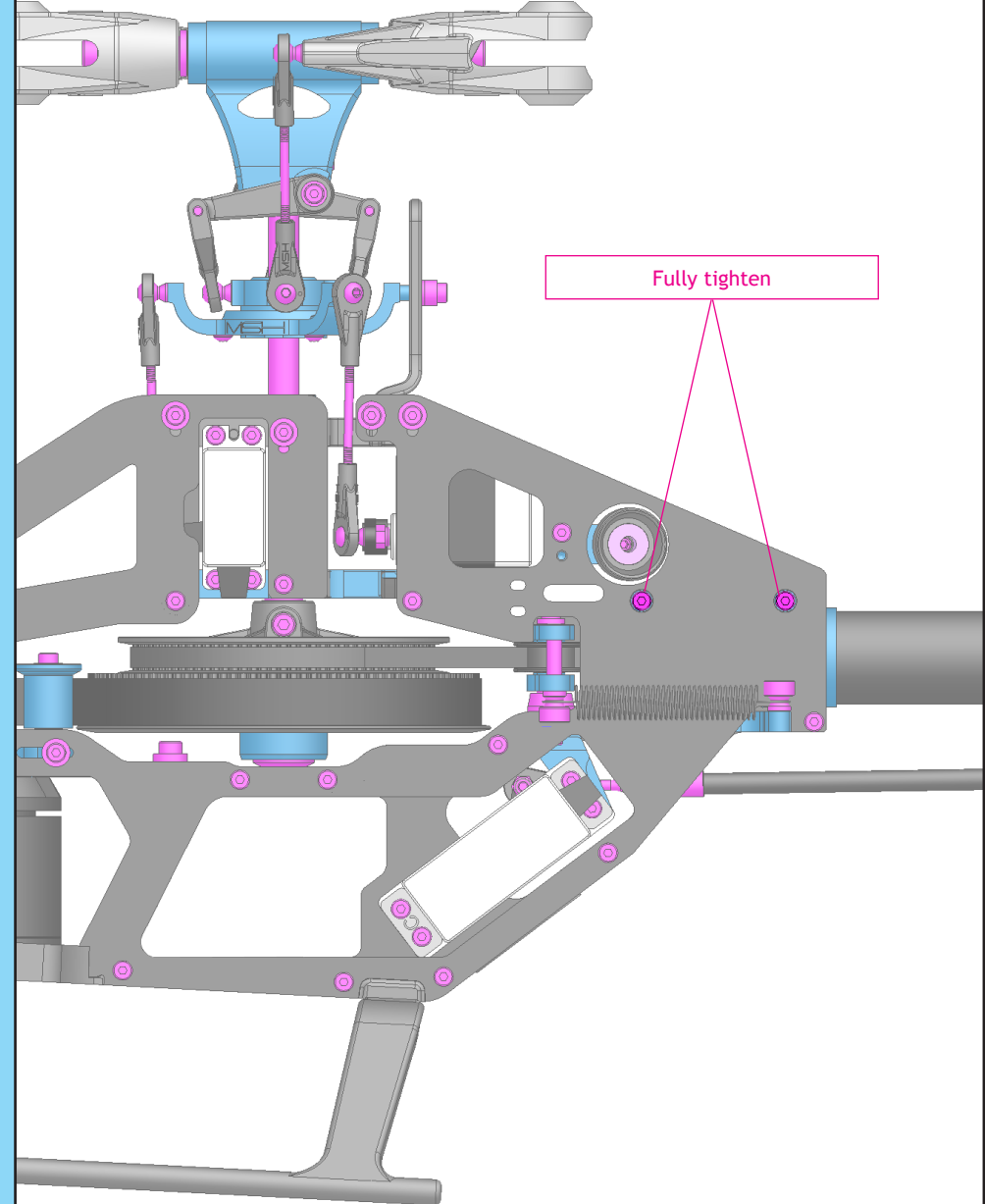
Magnet canopy support  
Protos 380  
ART. MSH41182

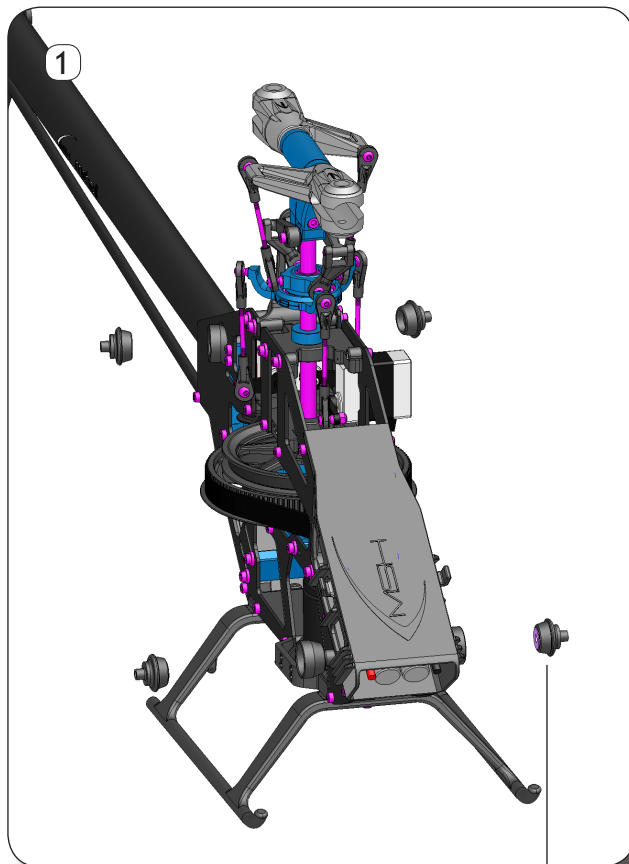


①

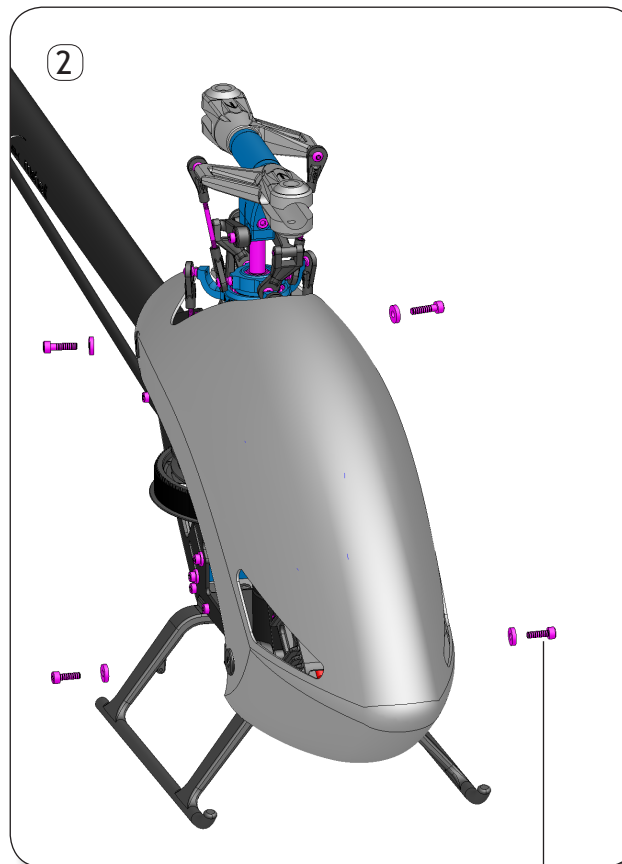


②




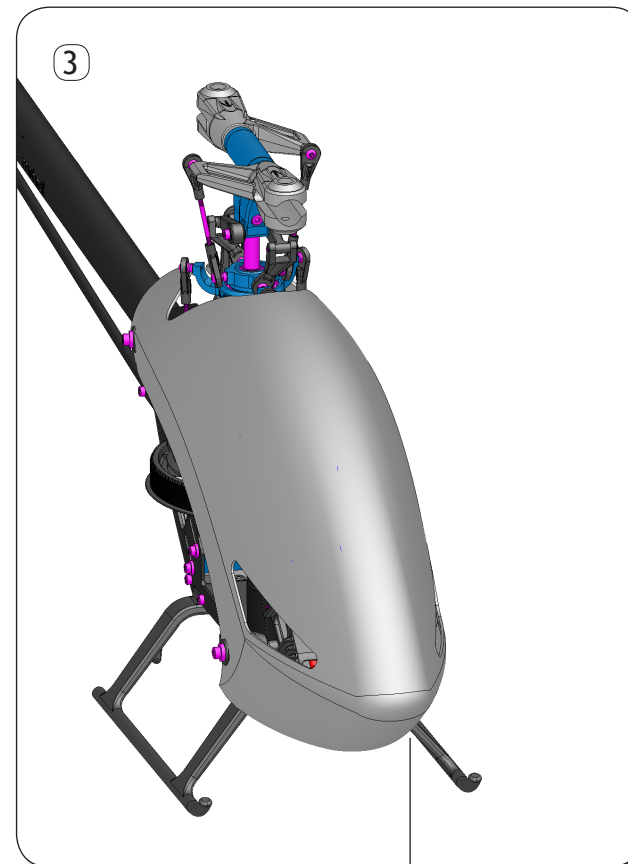


Magnet canopy support  
Protos 380  
ART. MSH41182

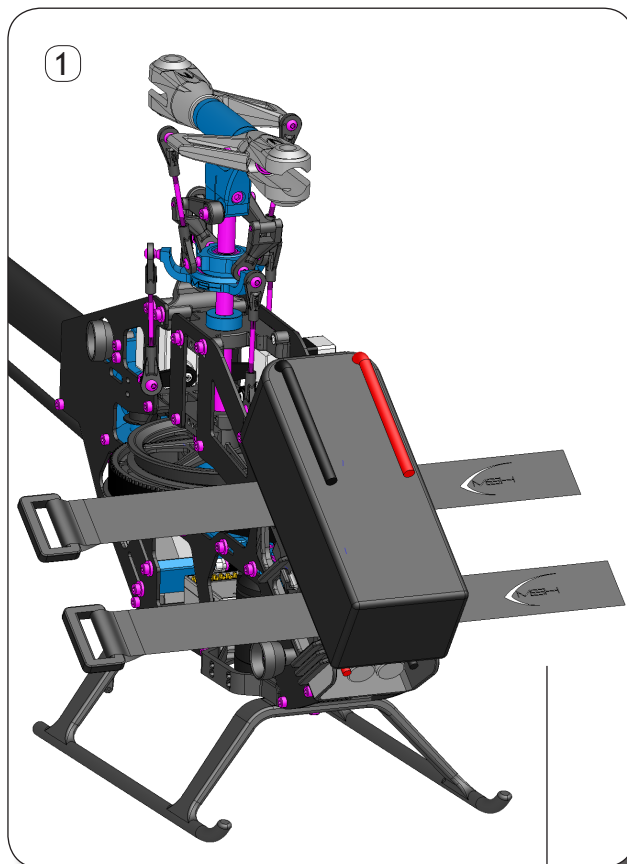


  
Washer 2,6x6,5x1,5  
ART. MSH41217

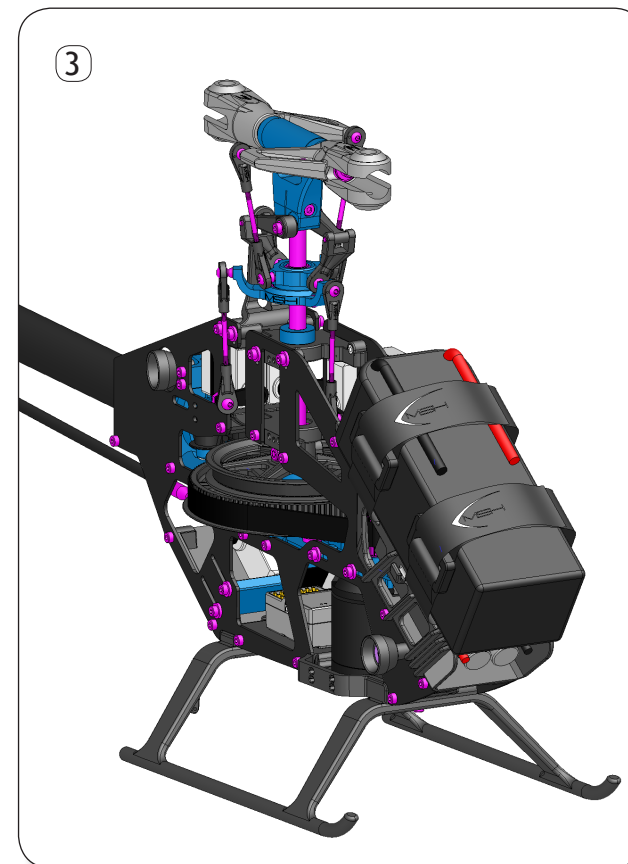
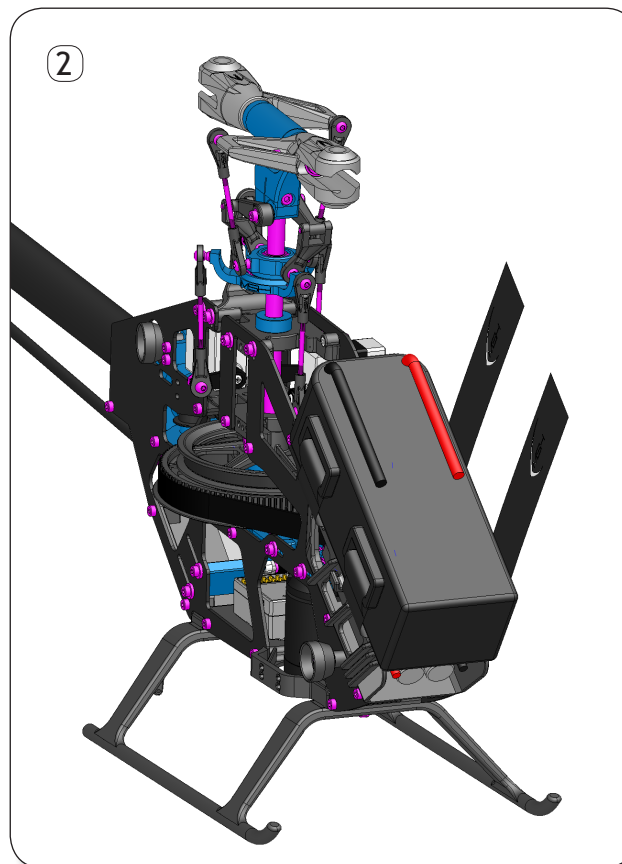
  
Hex screw M2,5x10  
ART. MSH51143

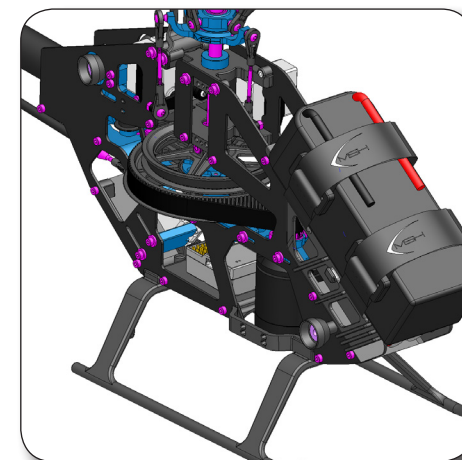
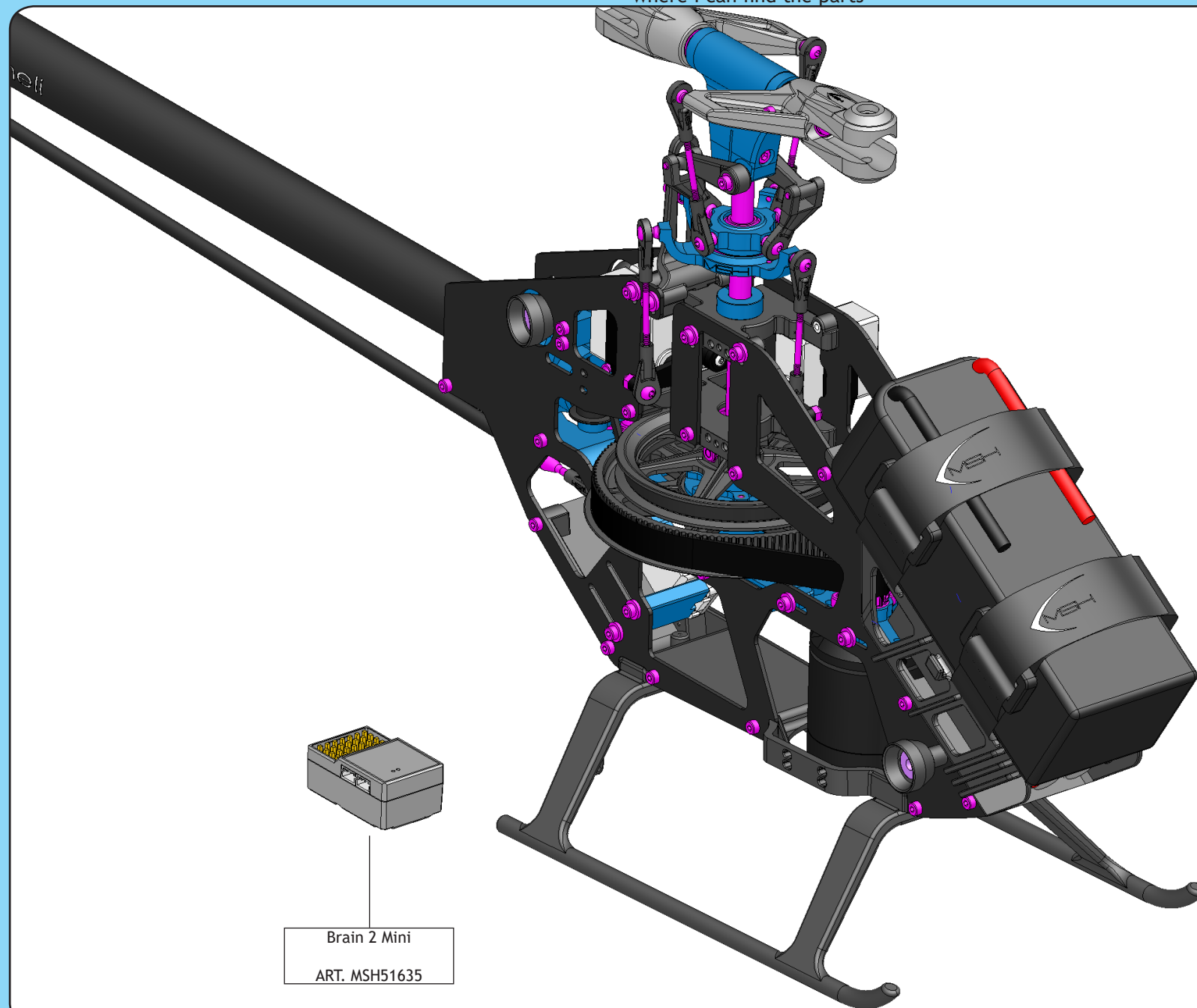


Painted canopy FG

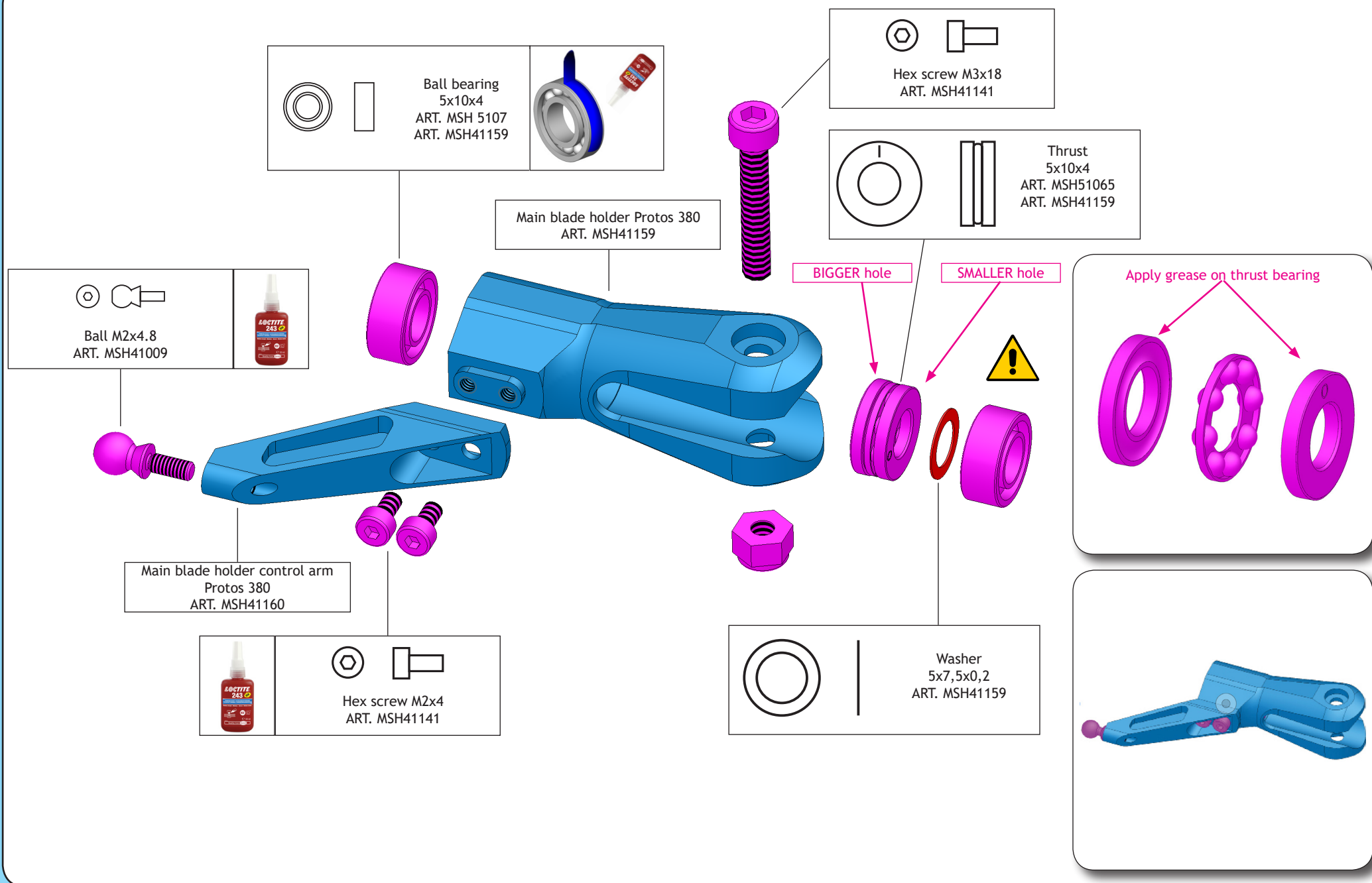


Velcro loop  
380  
ART. MSH41209









specification and design are subject to change without notice

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