Manual

Mikado
Model Helicopters
www.mikado-heli.de

LOGO 400 SE

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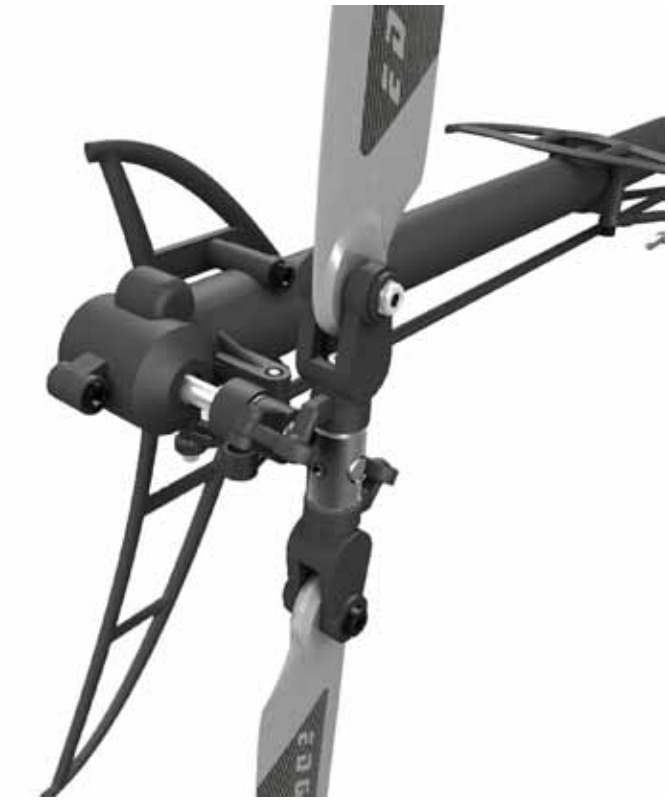
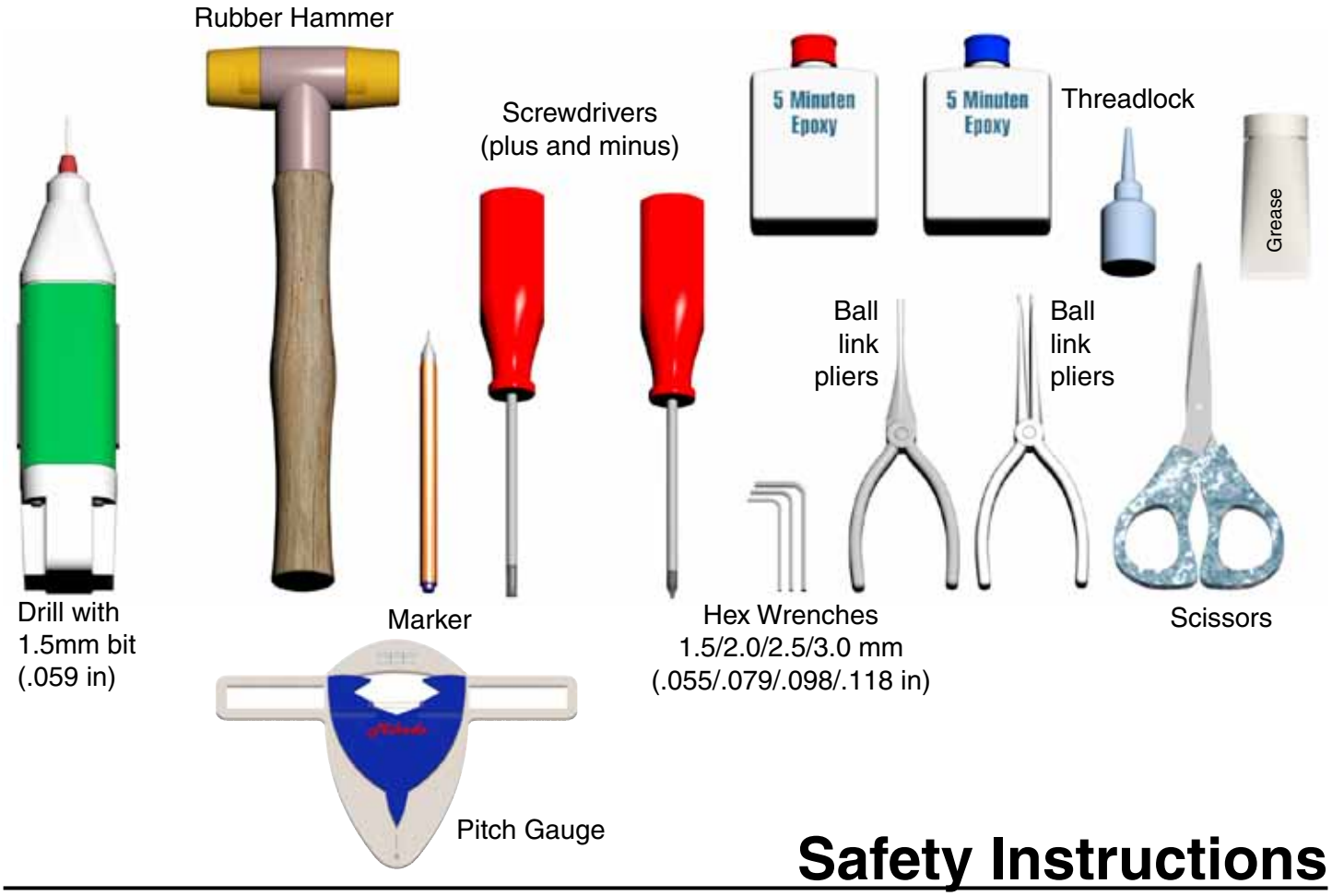


Tools for Assembly & R/C Equipment



Safety Instructions

OPERATING YOUR MODEL SAFELY

Operate the helicopter in spacious areas with no people nearby. !Warning: 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 any rain, snow, fog or other precipitation
If you do not observe these instructions you may be held reliable 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. Turn off all power switches 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.

! Warning: 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

! Warning: Operate the helicopter only outdoors and out of people's reach as the main rotor operates at high rpm!
! Warning: While adjusting, stand at least 10 meters/yards away from the helicopter!

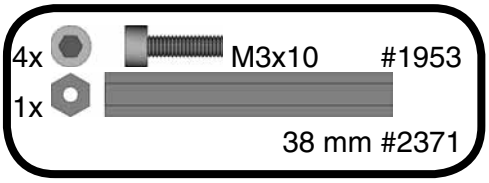
Novice R/C helicopter pilots should always seek advice from experienced pilots to obtain hints with assembly and for pre-flight adjustments. Note that a badly assembled or insufficiently adjusted helicopter is a safety hazard! In the beginning, novice R/C helicopter pilots should always be assisted by an experienced pilot and never fly alone! Throttle channel should be in motor OFF position while powering up. When switching the R/C system ON or OFF, always proceed in the following order:

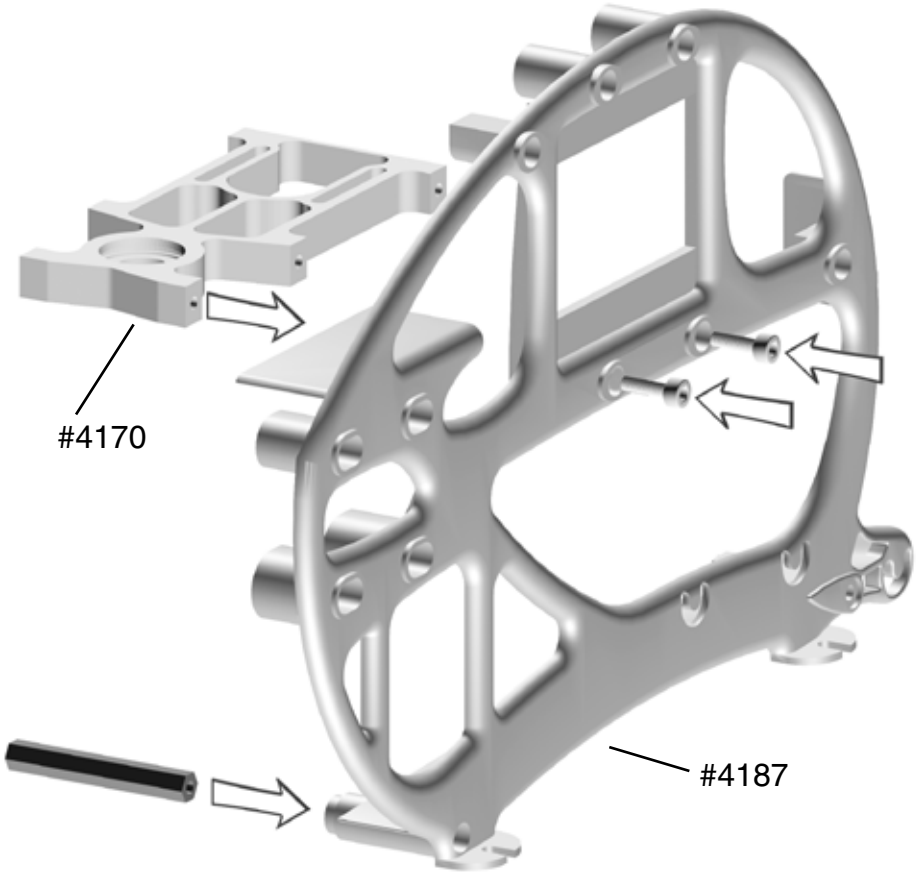
When switching ON:
Position the throttle control stick (on transmitter) to a position where the LOGO 10 motor does not operate.
• Turn on the transmitter.
• Turn on the receiver.
• Connect the motor battery.
• Operate your model.

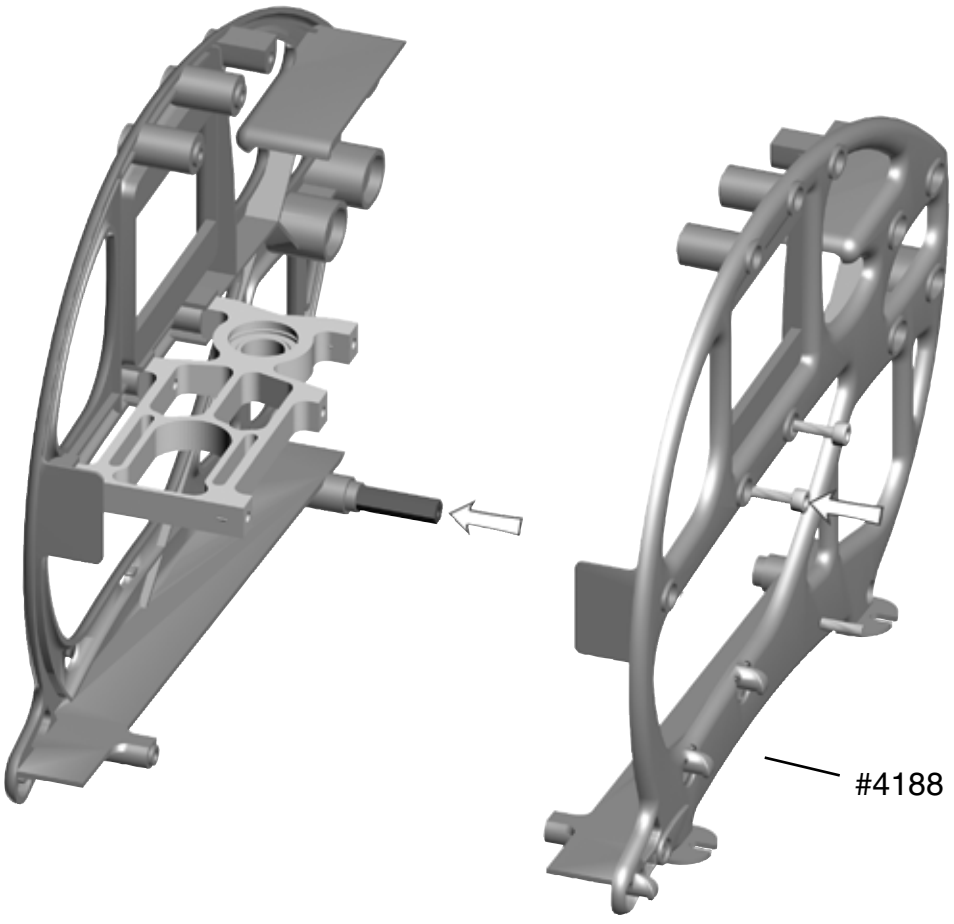
When switching OFF:
• Turn off the motor (move throttle control to a position where motor does not operate).
• Wait until the rotor head has stopped spinning.
• Disconnect the motor battery.
• Turn off receiver.
• Turn off transmitter.

1.1 Main Frame

Bag 1 • Bag 12

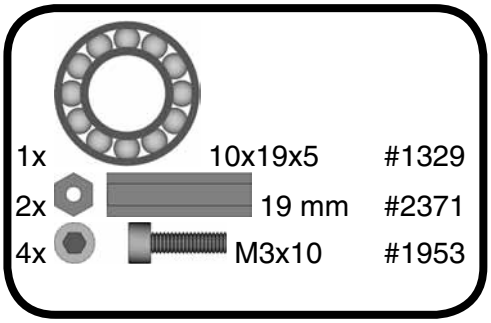


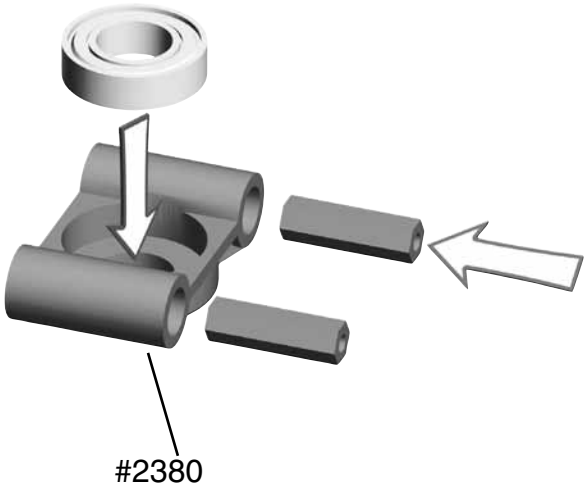


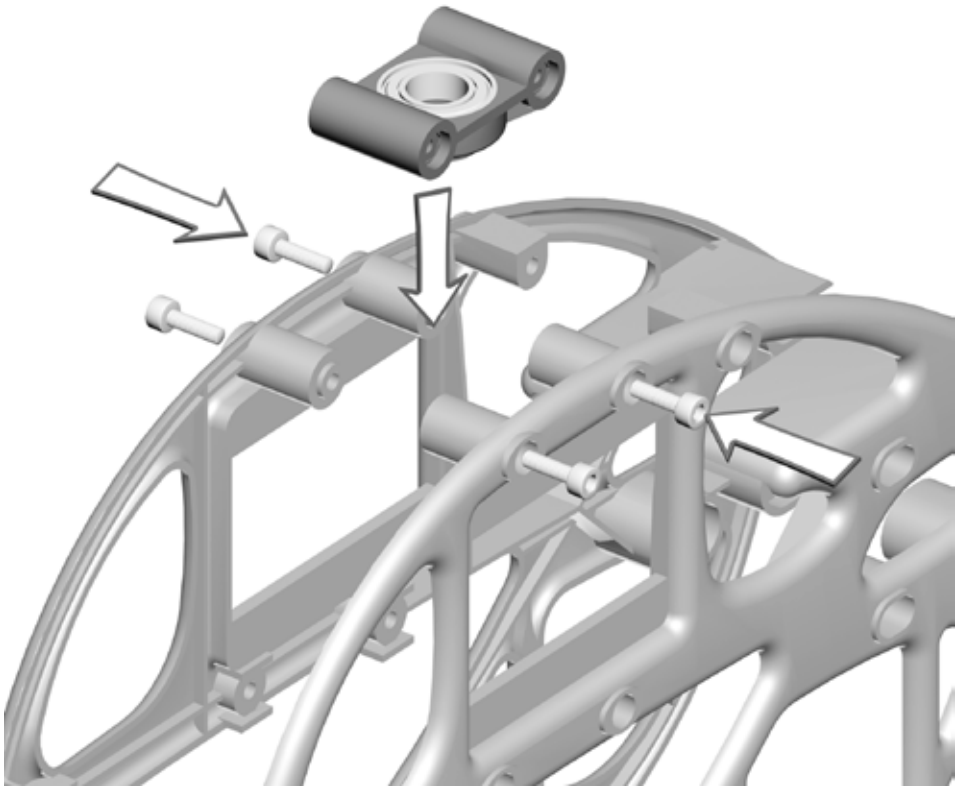


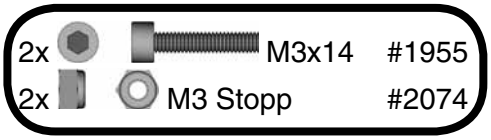
1.2 Bearing Case

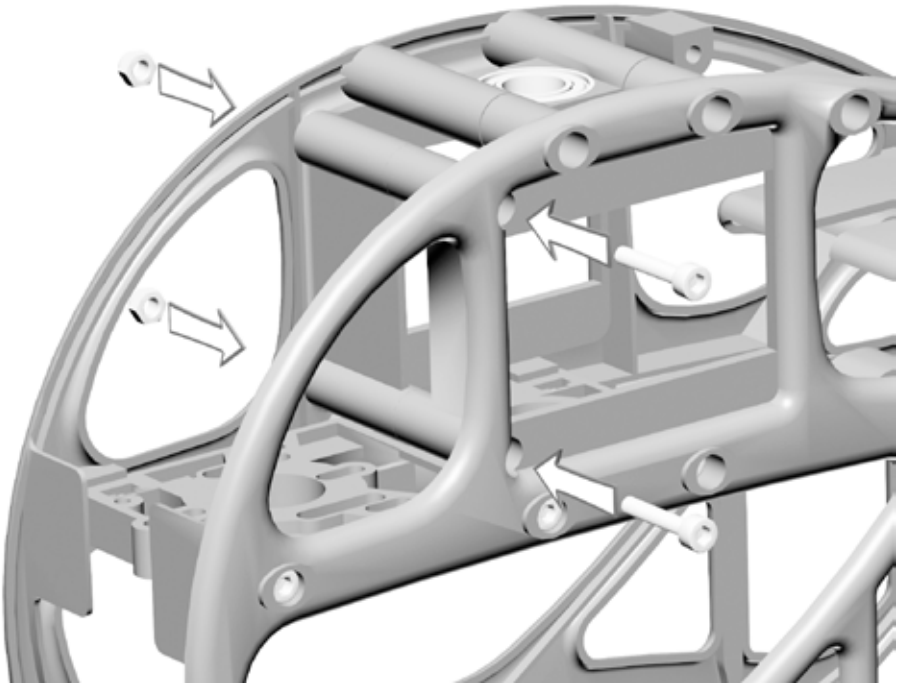
Bag 1 • Bag 10 • Bag 12





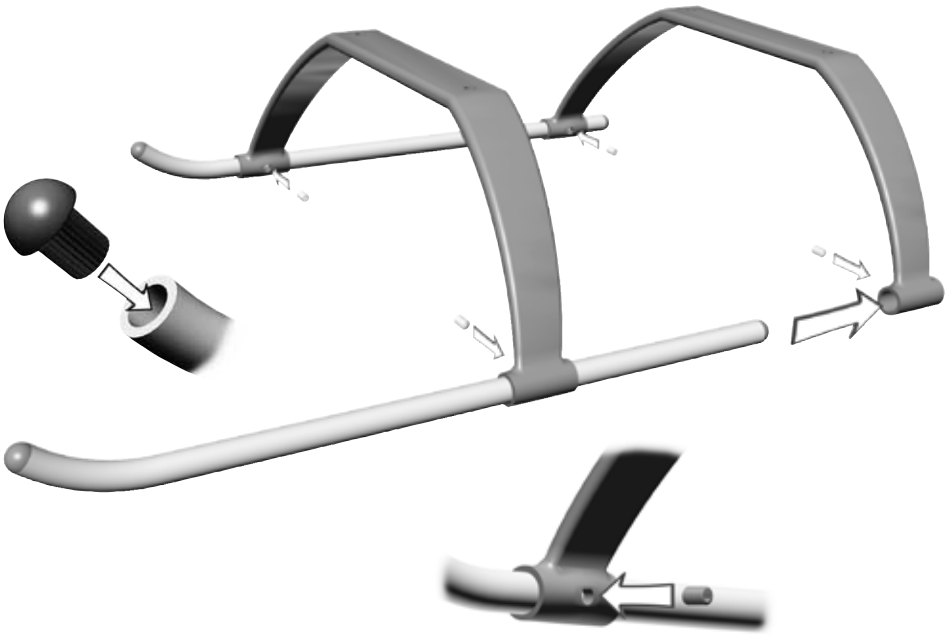


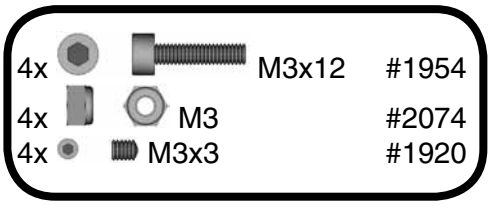


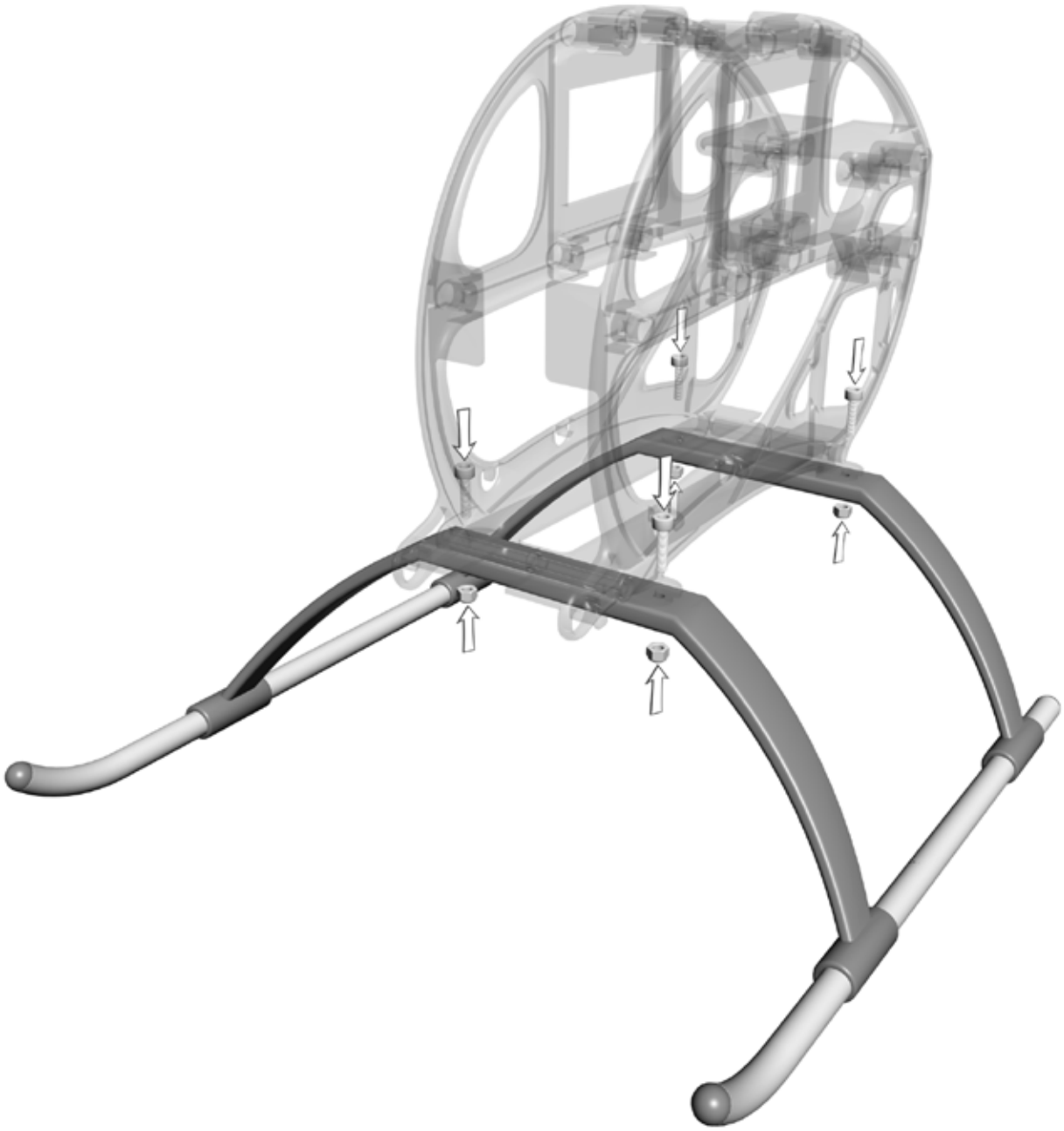


2 Landing Gear

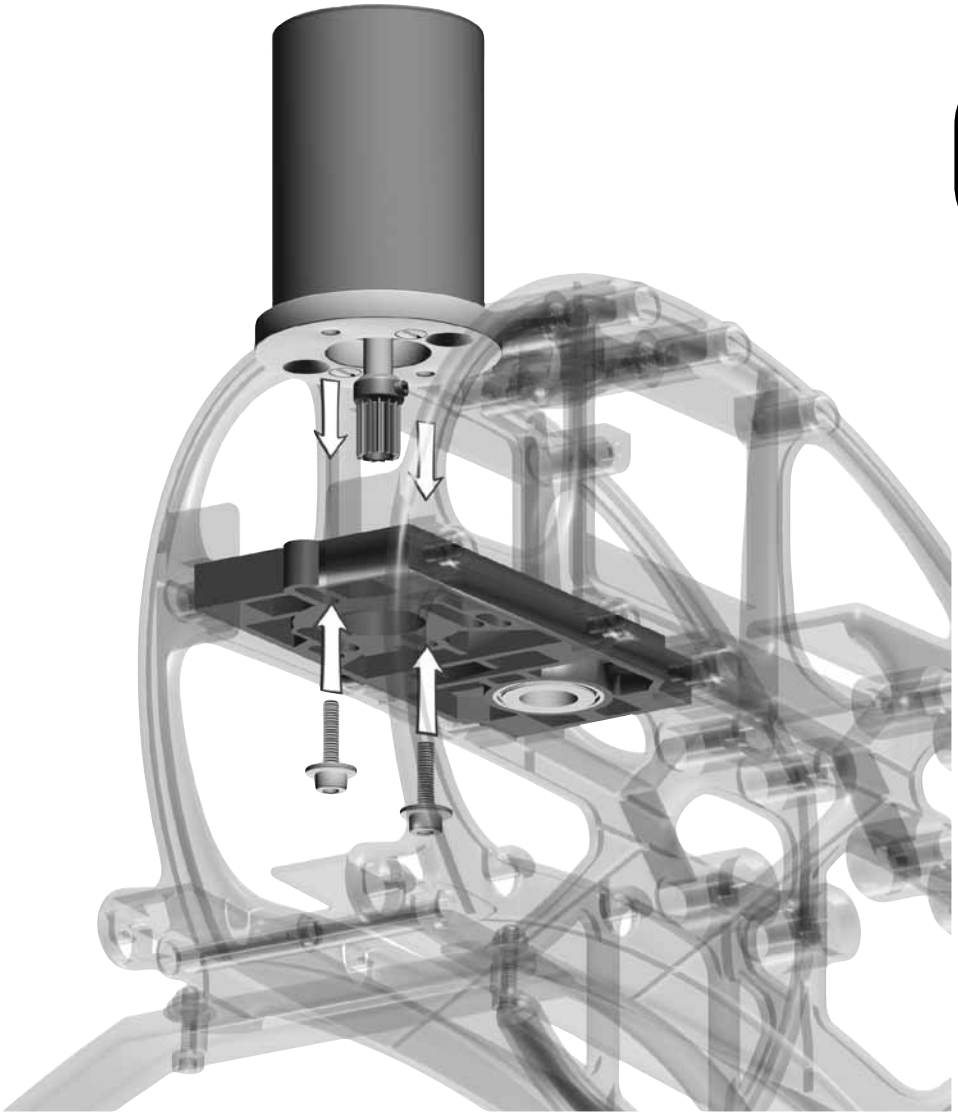
Bag 8 • Bag 12







3 Motor Installation

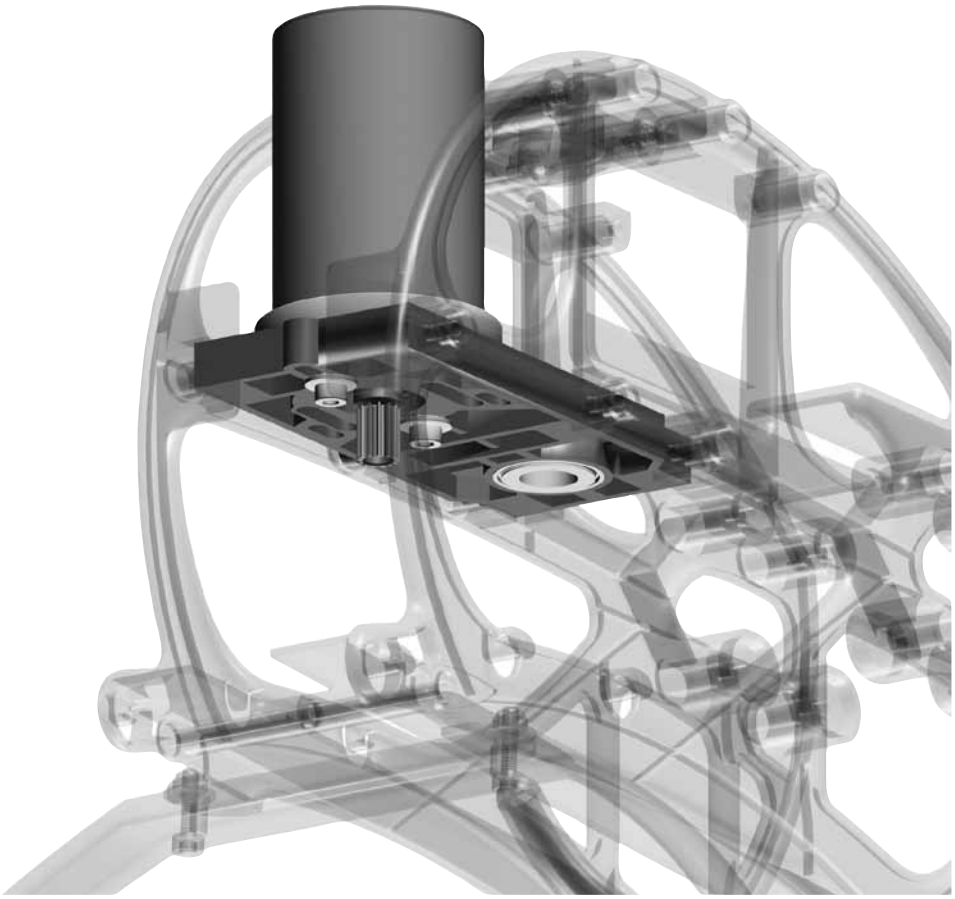


3.1 Motor Attachment

Bag 1 • Bag 12

2x	M3x12	#1954
2x	3x9x1	#2011

When installing the motor, tighten the socket head cap screws only slightly, making sure that the motor can still be moved on the motor plate.



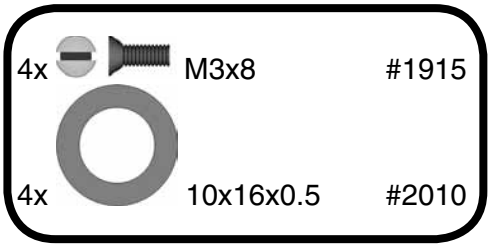
Do not tighten the set screw fully until the final position of the pinion on the motor shaft is determined. This is done after installing the main gear. There are two options for attaching the pinion:

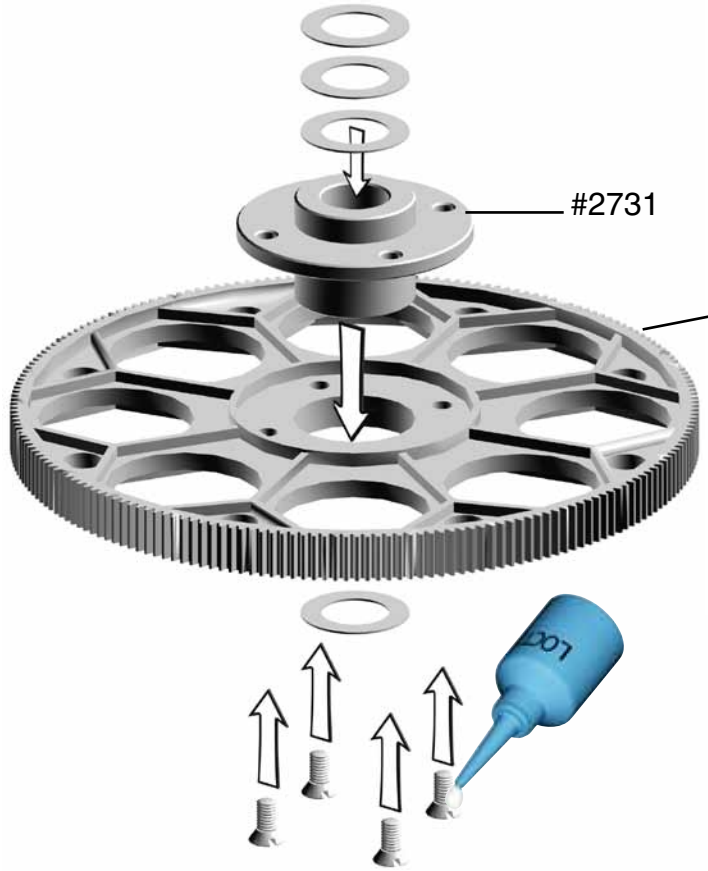
1. For securing the pinion, you may flatten the motor shaft where the set screw meets the motor shaft - without making a flat surface on the motor shaft.

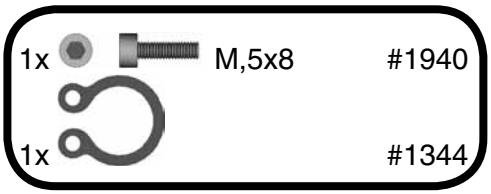
2. Alternatively, you may screw the set screw directly onto the motor shaft. For this it is required that the set screw has an appropriate rim for engaging the motorshaft (all Mikado pinions have this rim). Note, however, that after attaching the set screw once, the rim becomes blunt and may not be used again.

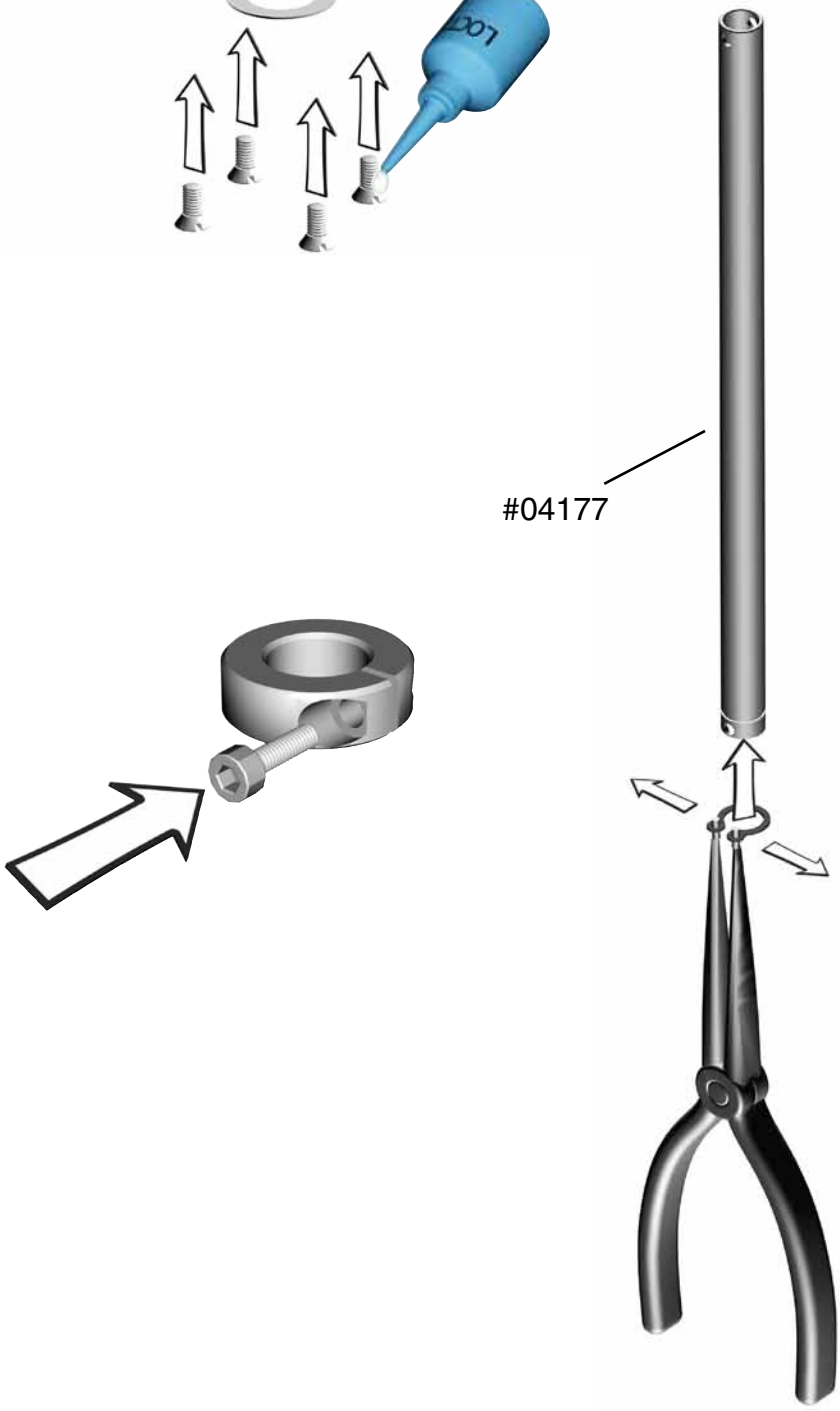
4.1 Hub

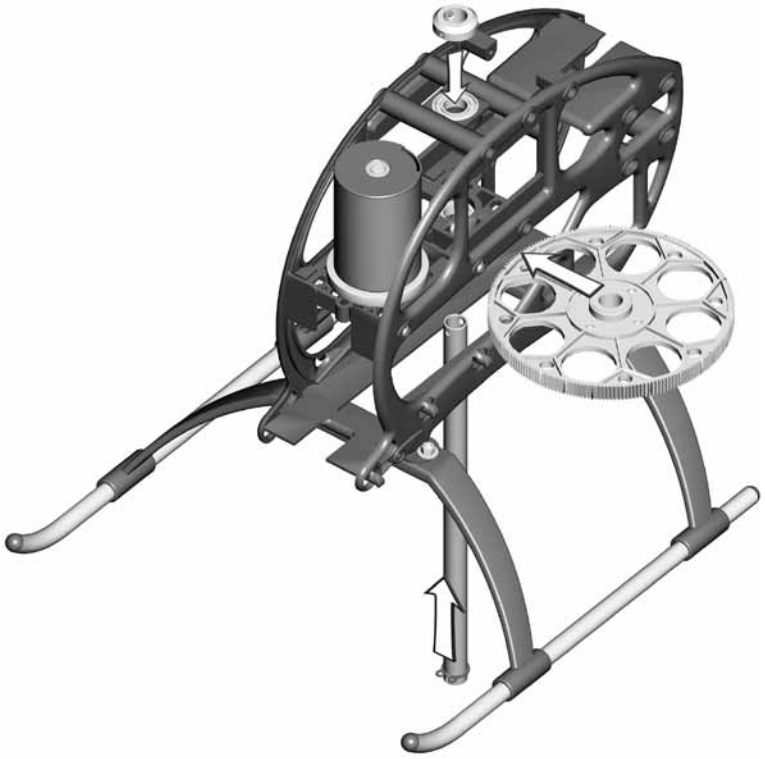
Bag 2


4x
M3x8
#1915
4x
10x16x0.5
#2010


#2731
#2725

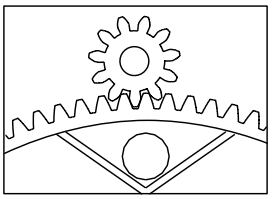

1x
M,5x8
#1940
1x
#1344


#04177

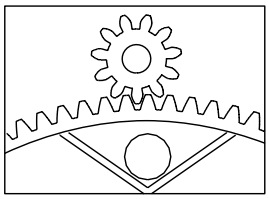


After having attached the freeway hub of the main gear to the rotor shaft, pull the rotor shaft slightly upward and simultaneously push the main shaft collar down onto ball bearing. Next tighten the set screws. The rotor shaft should turn easily and it should not have any axial play.

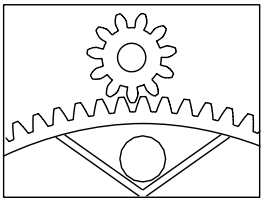
4.2 Adjusting Gear Backlash



too much backlash

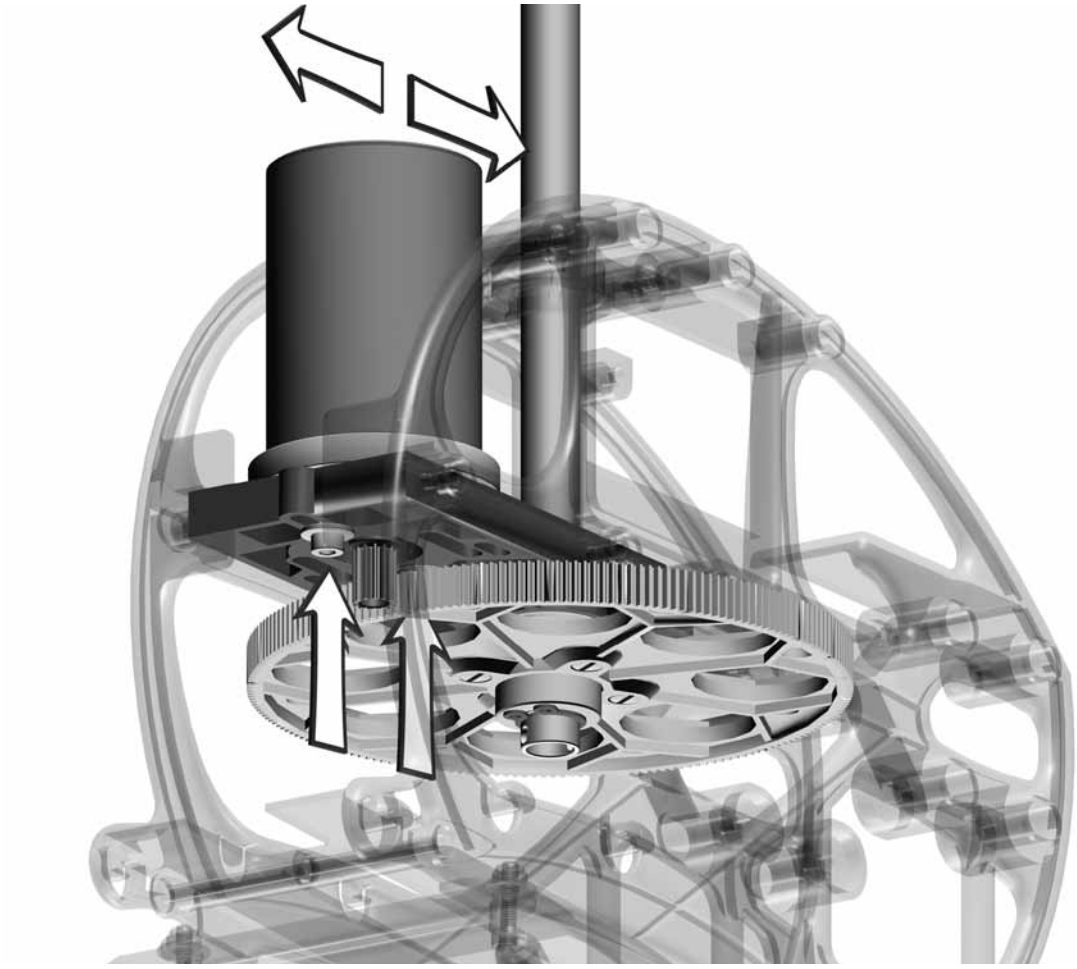


correct backlash



too little backlash

The gear backlash must be adjusted (see drawings). Excess backlash can cause premature wear of the main gear and will lead to shorter flight times.

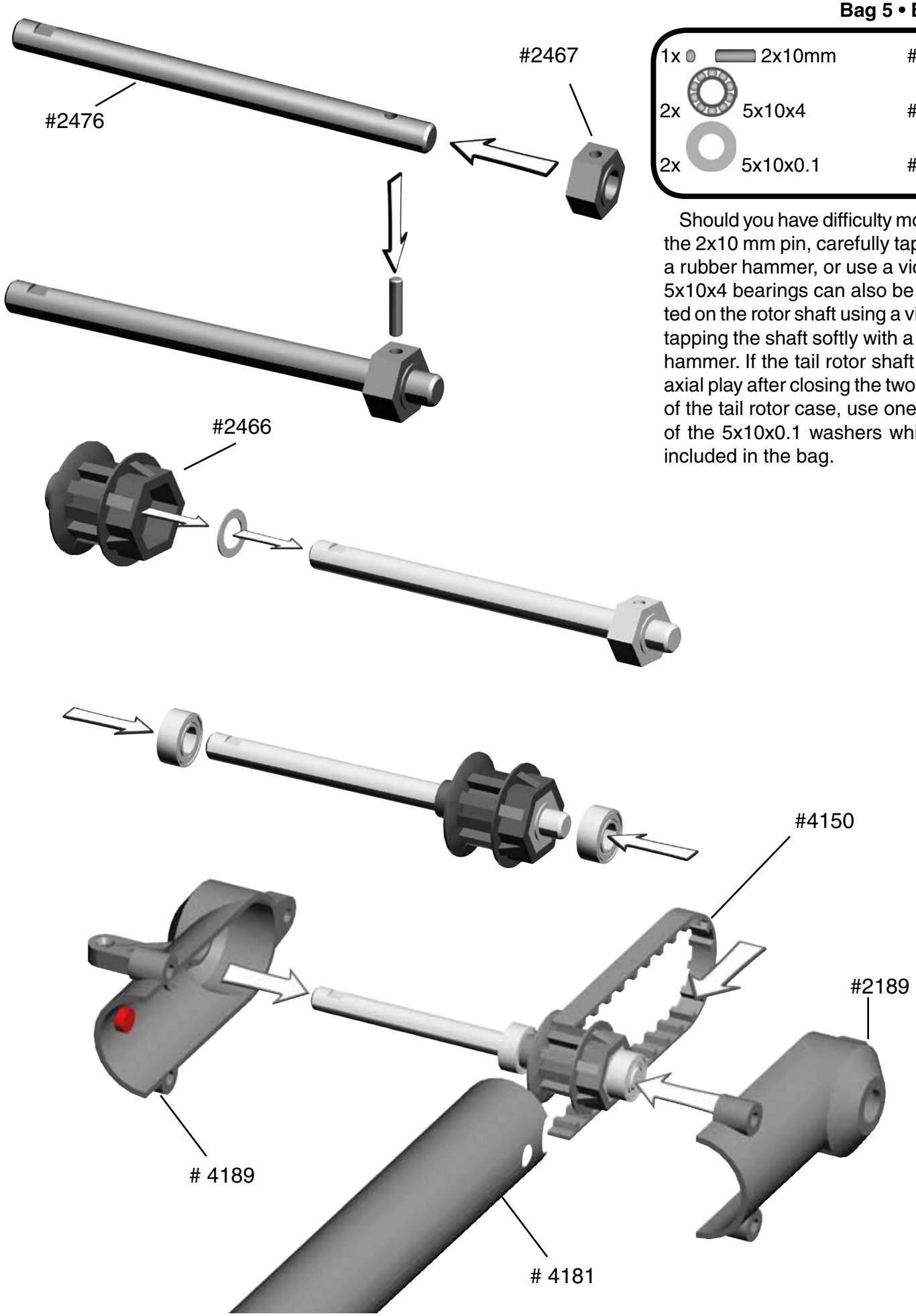


5.1 Tail Rotor Shaft

Bag 5 • Bag 10

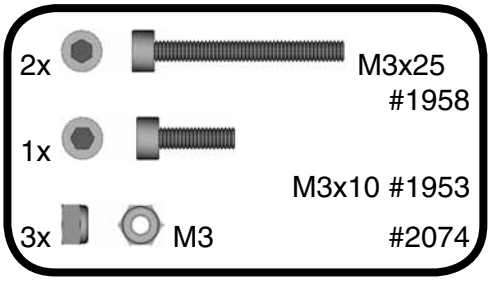
1x	2x10mm	#2469
2x	5x10x4	#2470
2x	5x10x0.1	#2004

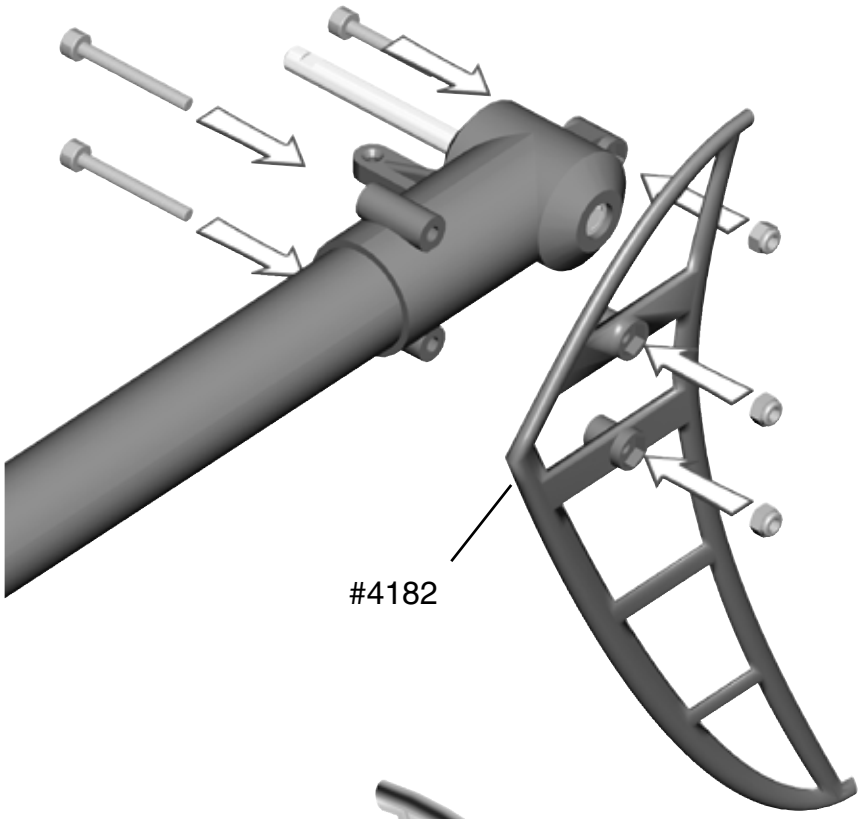
Should you have difficulty mounting the 2x10 mm pin, carefully tap it with a rubber hammer, or use a vice. The 5x10x4 bearings can also be mounted on the rotor shaft using a vice and tapping the shaft softly with a rubber hammer. If the tail rotor shaft shows axial play after closing the two halves of the tail rotor case, use one or two of the 5x10x0.1 washers which are included in the bag.



5.2 Vertical Fin

Bag 5 • Bag 12





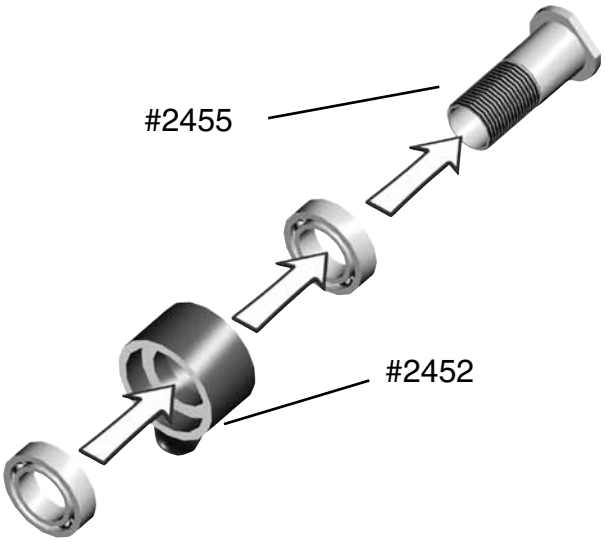
5.3 Pitch Slider

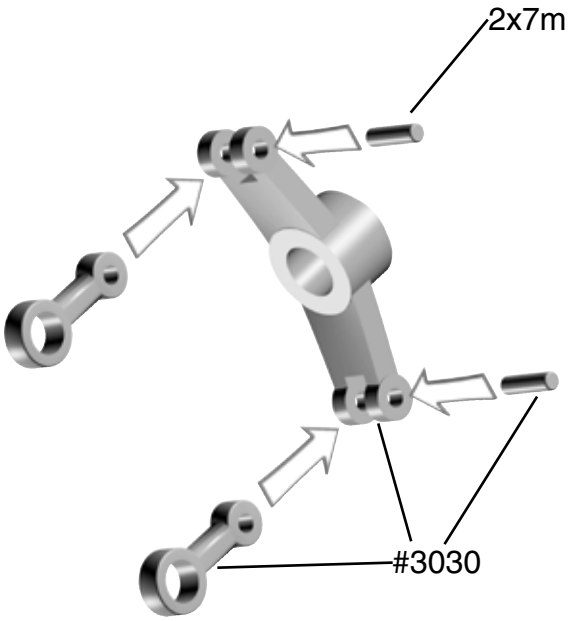
Bag 5 • Bag 10

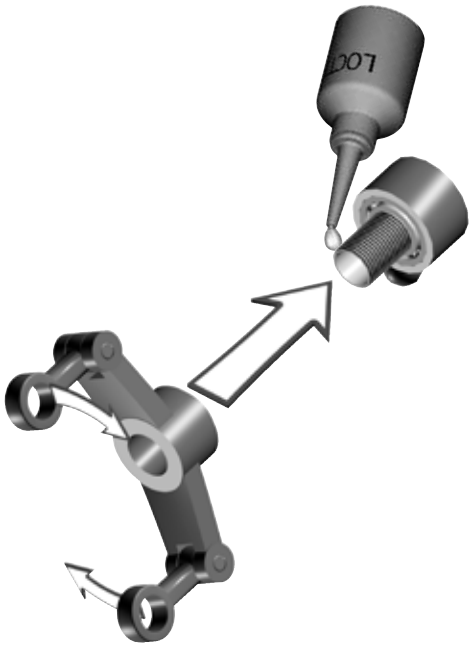
2x	6x10x2,5	#1440

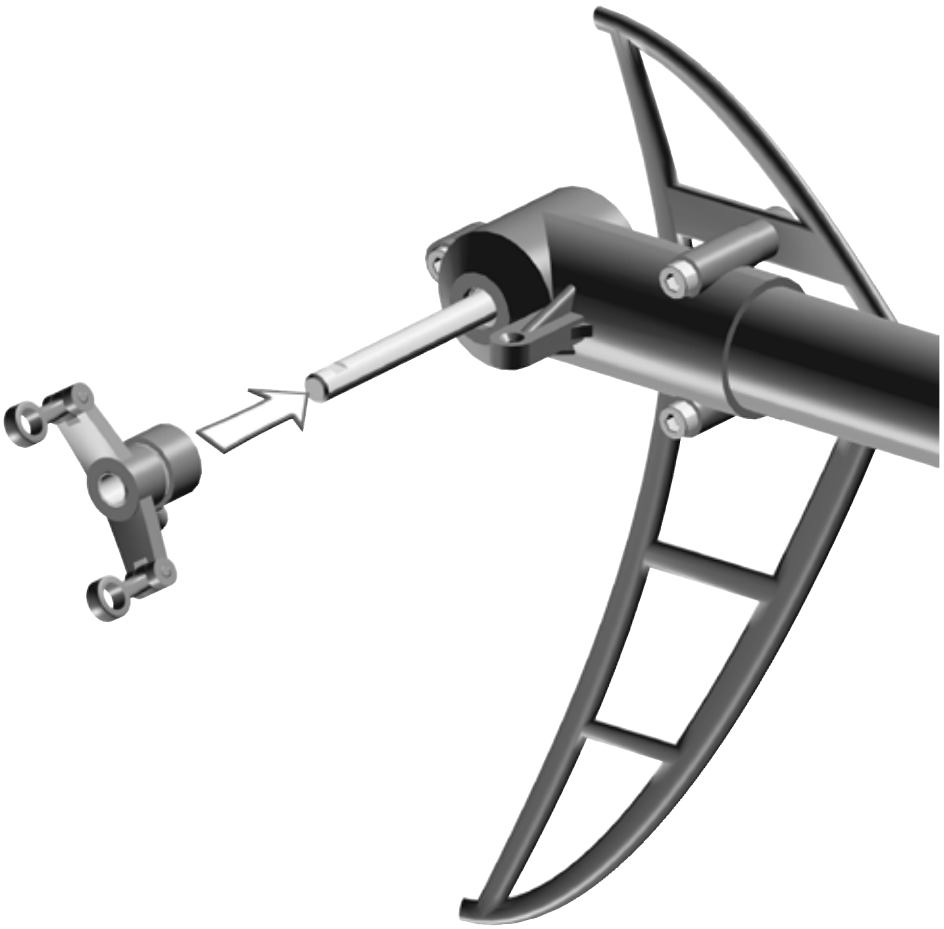
It is important that the tail pitch plate #3030 is aligned properly on the control sleeve #2455. In the case of misalignment, the control sleeve may become deformed.

The mounted tail pitch plate should be able to move on the tail rotor shaft with little resistance.







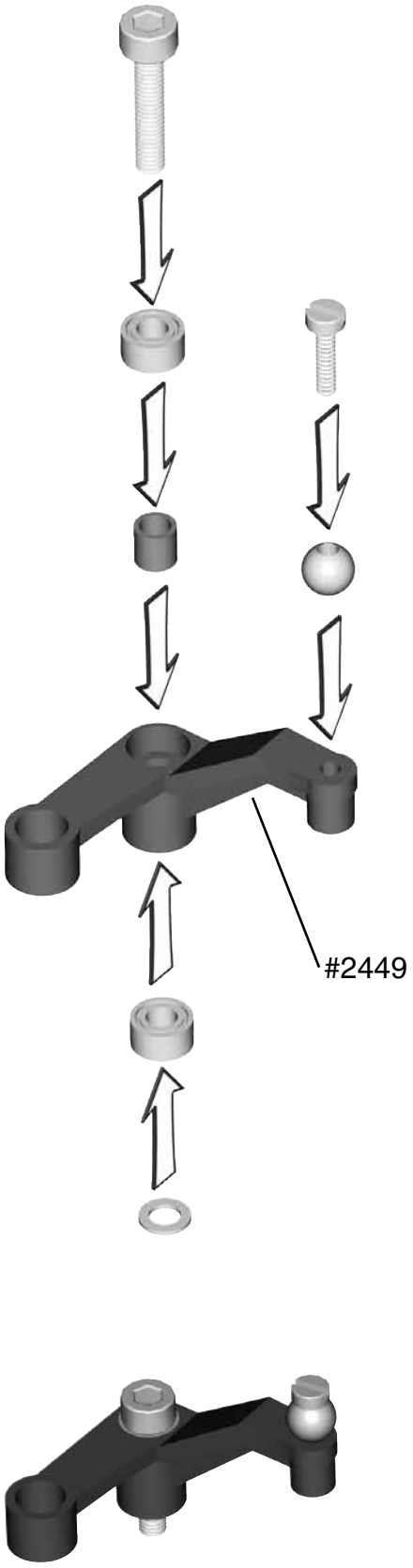


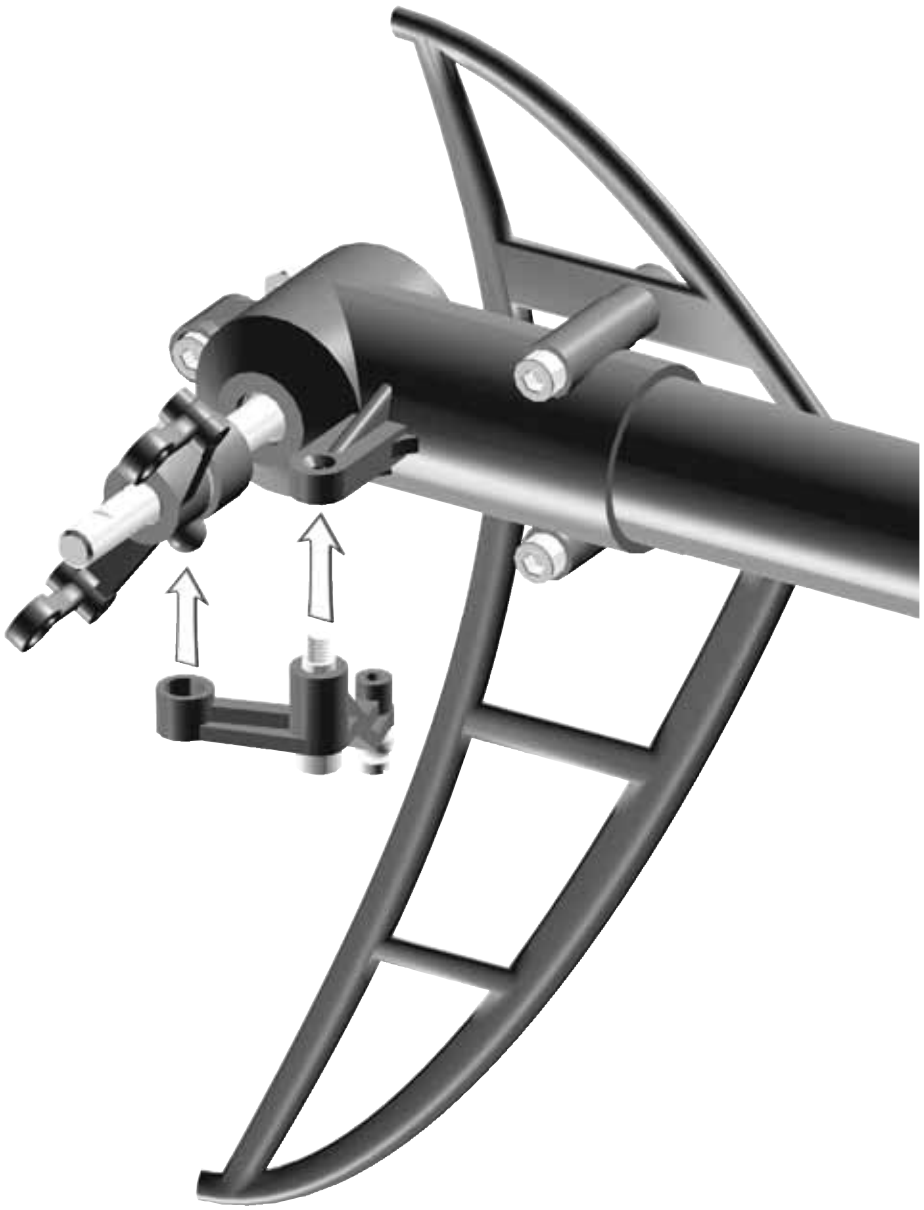
5.4 Tail Rotor Lever

Bag 5 • Bag 12

2x	3x6x2,5	#2330
1x	M3x14	#1955
1x	M2x8	#1902
1x		#1570
1x	3x5x5	#2448
1x	3x5x0,5	#2002

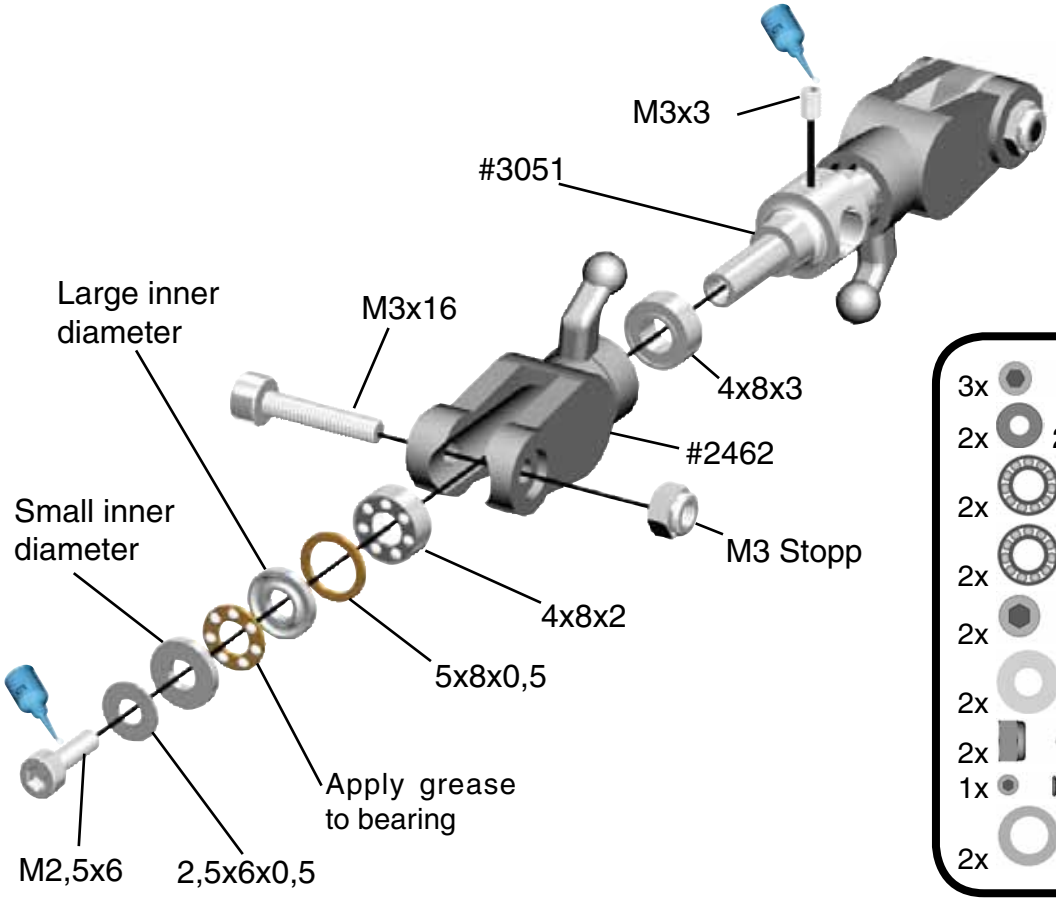
The mounted tail rotor lever should be able to move with little resistance.



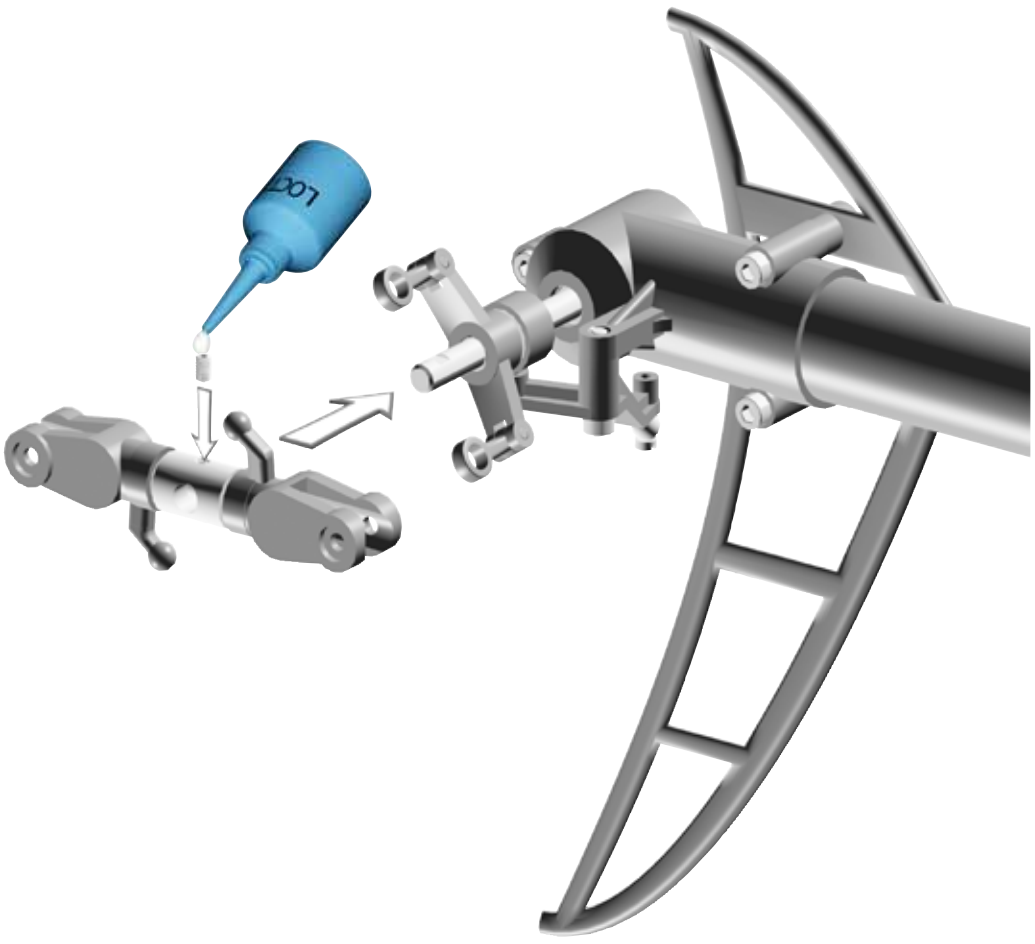


5.5 Tail Rotor Hub

Bag 5 • Bag 10

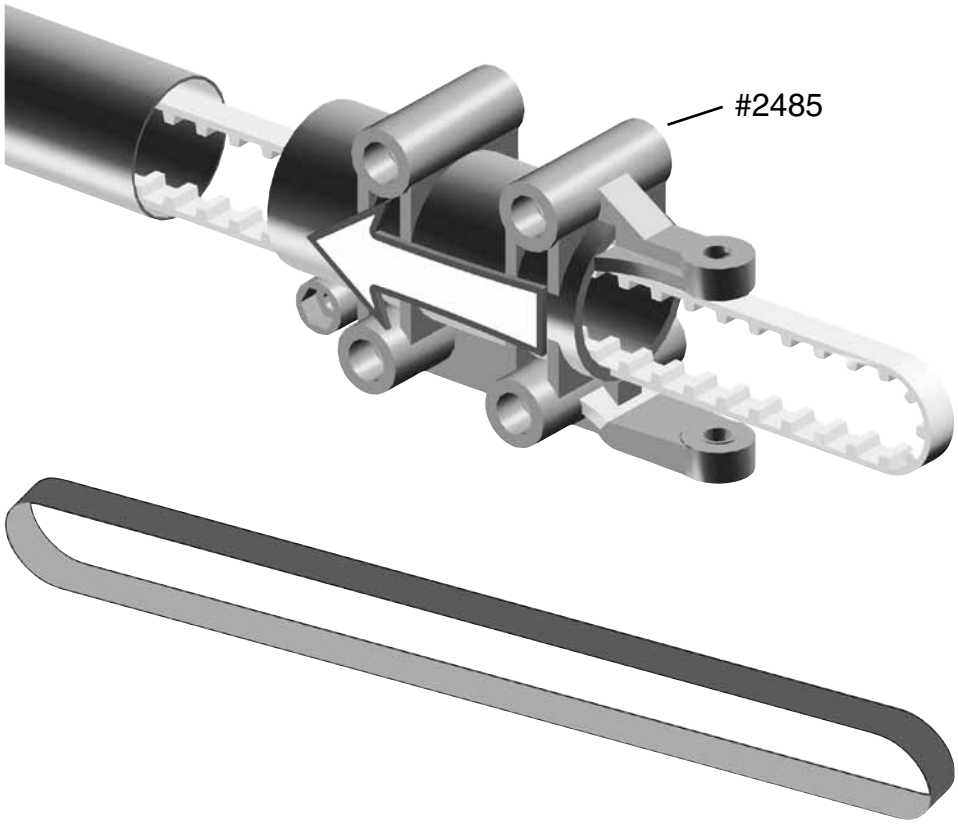


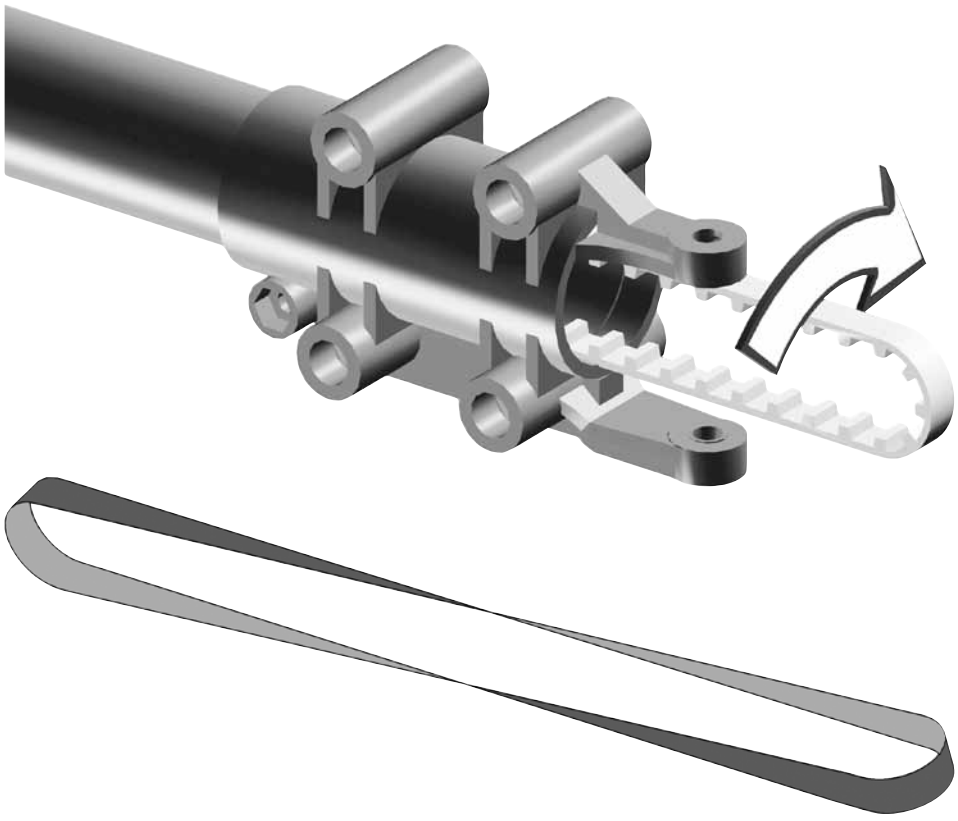
3x		M2,5x6
2x		2,5x6x0,5
2x		4x8x3
2x		4x8x2
2x		M3x16
2x		4x8x3,5
2x		M3
1x		M3x3
2x		5x8x0,5



6.1 Tail Boom Holder

Bag 6



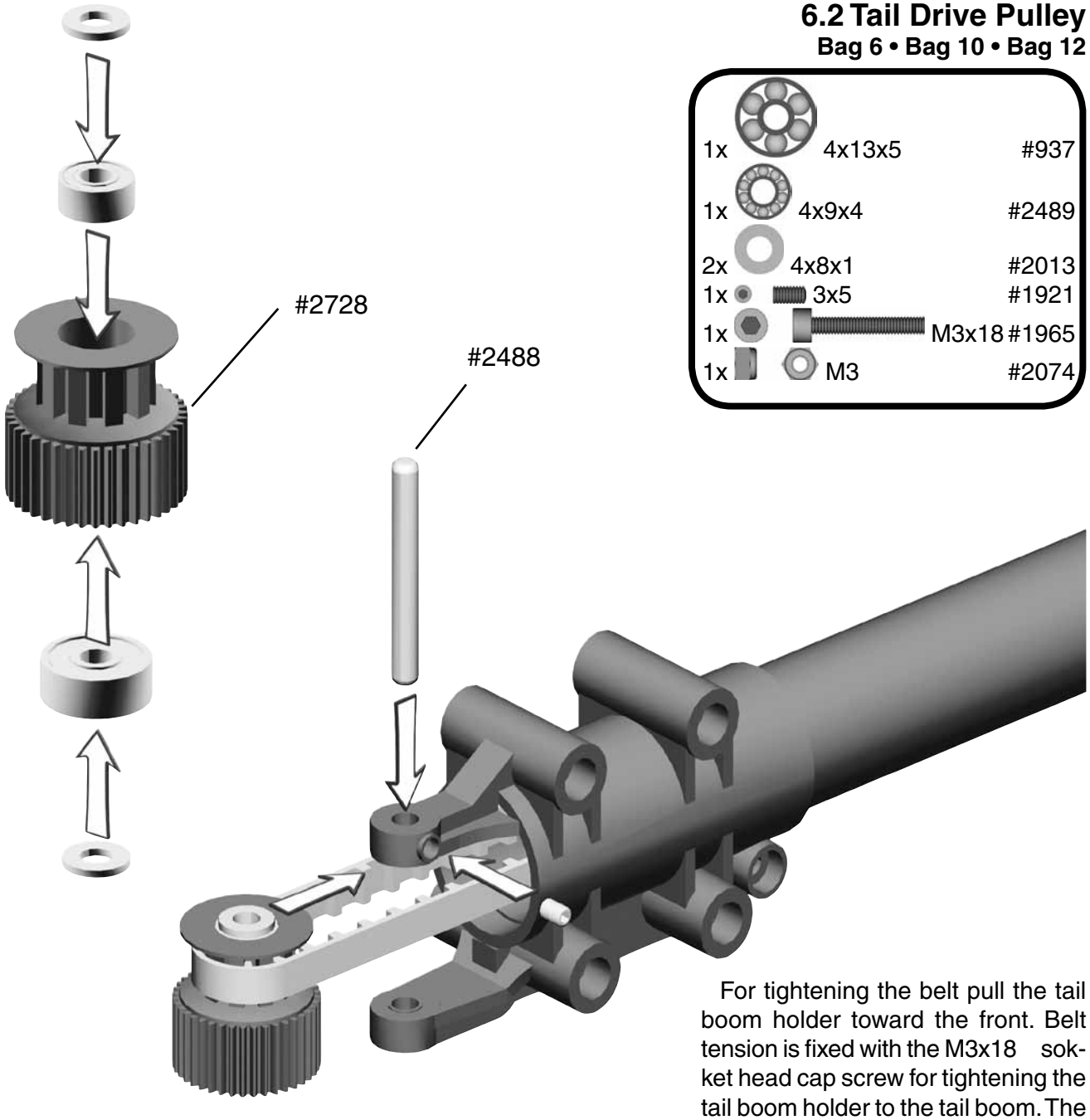


Turn the tail drive belt 90° degrees (clockwise).

6.2 Tail Drive Pulley

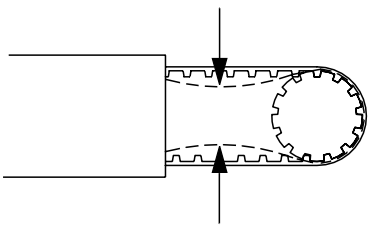
Bag 6 • Bag 10 • Bag 12

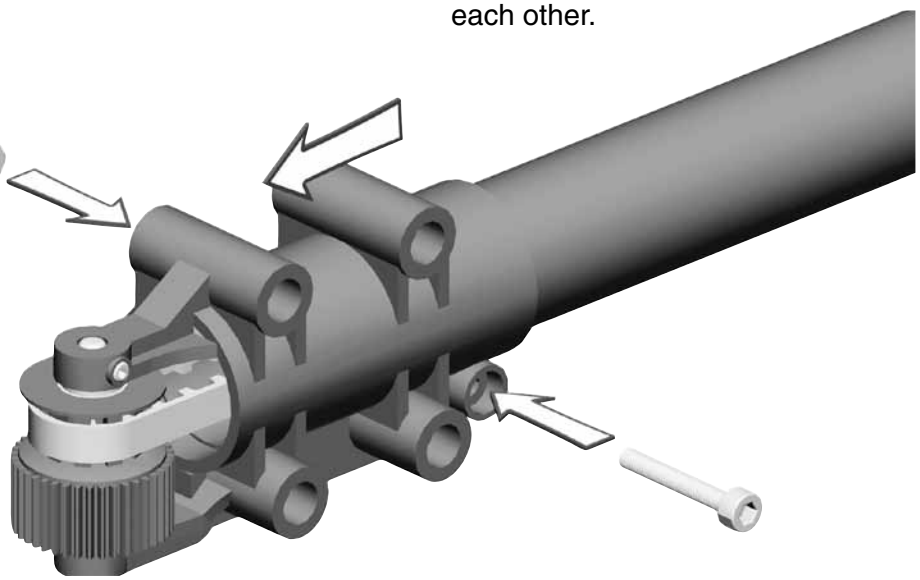
1x	4x13x5	#937
1x	4x9x4	#2489
2x	4x8x1	#2013
1x	3x5	#1921
1x	M3x18	#1965
1x	M3	#2074



For tightening the belt pull the tail boom holder toward the front. Belt tension is fixed with the M3x18 socket head cap screw for tightening the tail boom holder to the tail boom. The belt should be tight. When pressing with your fingers, both sides of the belt should not come in contact with each other.

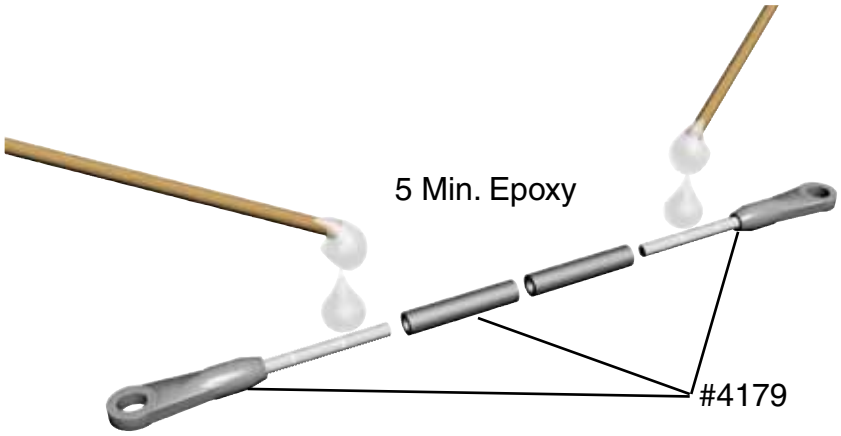
Important: Check belt tension prior to every flight. Incorrect belt tension can cause disturbances for your model R/C system. Incorrect belt tension can lead to a situation where you lose control of the tail rotor of your helicopter.



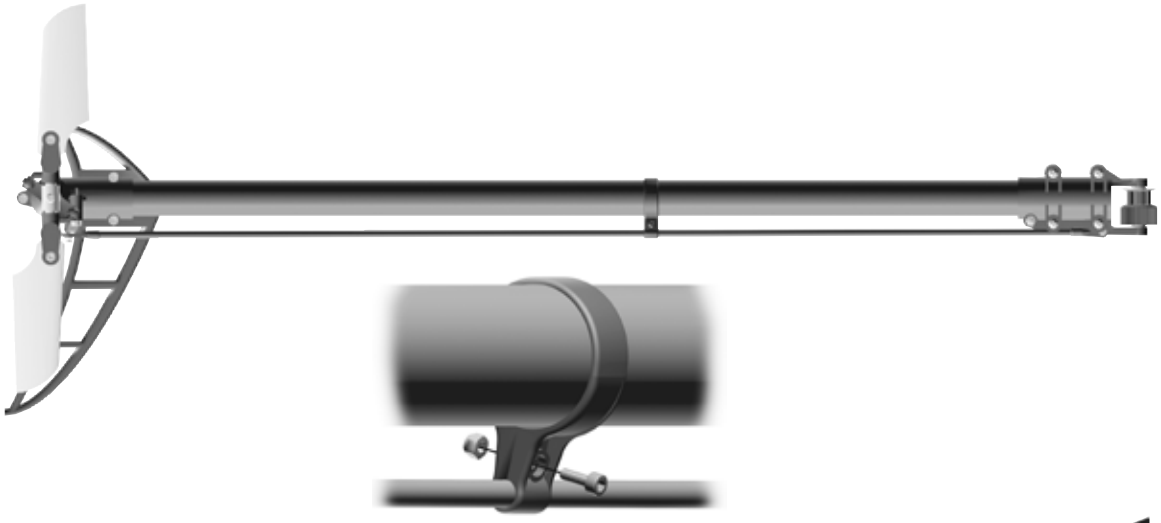


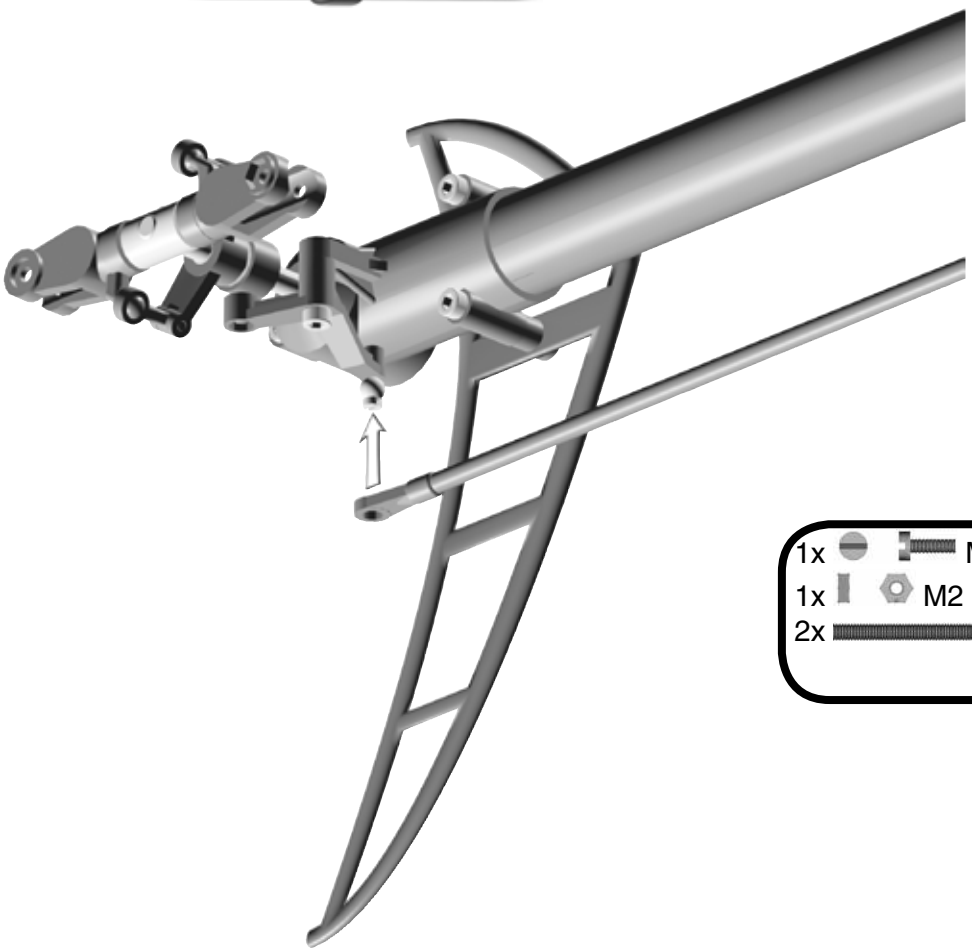
6.3 Tail Control Rod

Bag 6



Screw the two 2 mm ball links onto the control rods. Their exact positions are of no importance at this point. The ball ends are attached to the balls more easily when the text on them is pointed away from the helicopter.



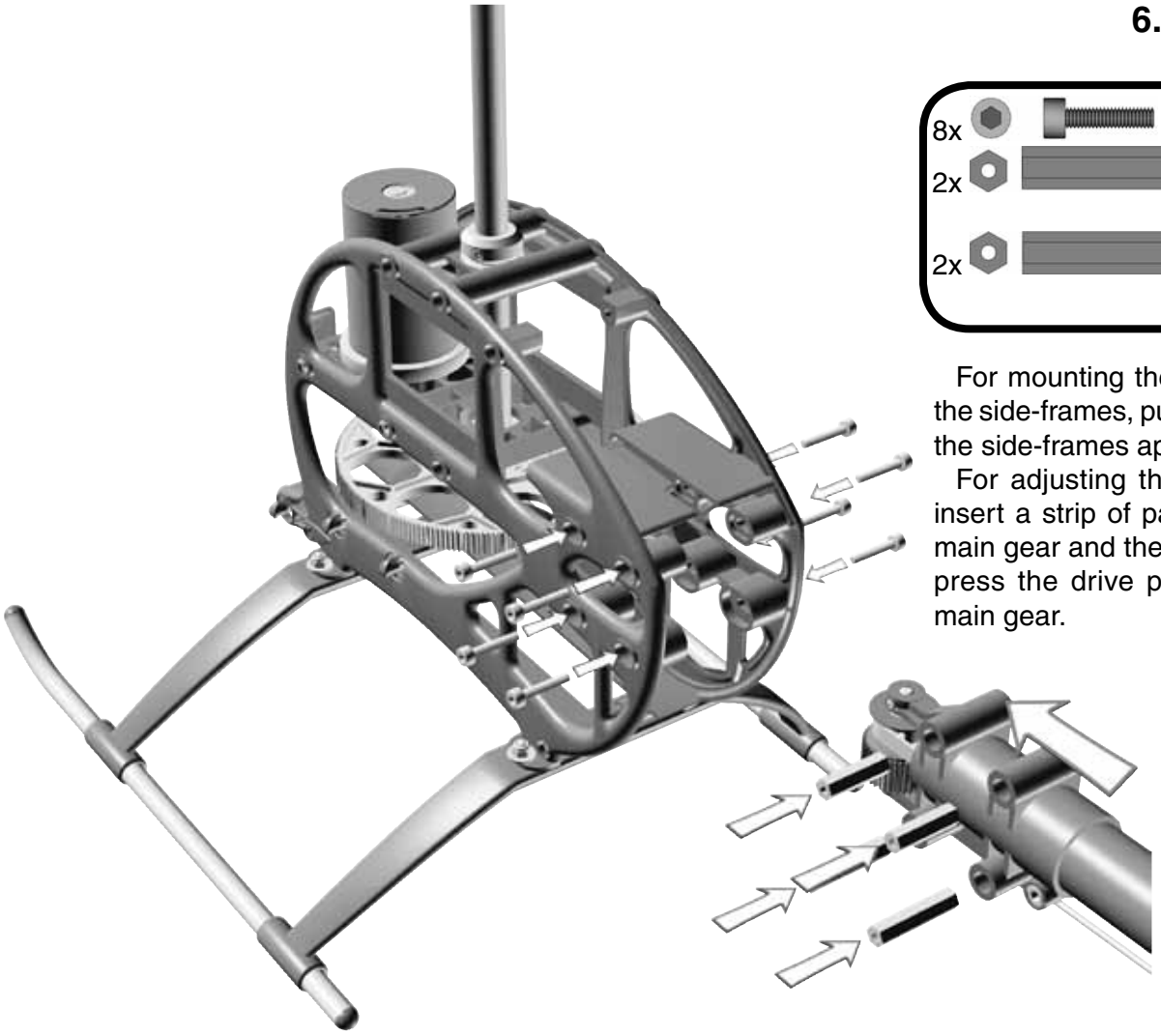


1x M2x6 #1901
1x M2 #2070
2x M2,5x30#2770

6.4 Installation

Bag 6 • Bag 12

8x	M3 x12	#1954
2x	27,5 mm	#2371
2x	23 mm	#2371



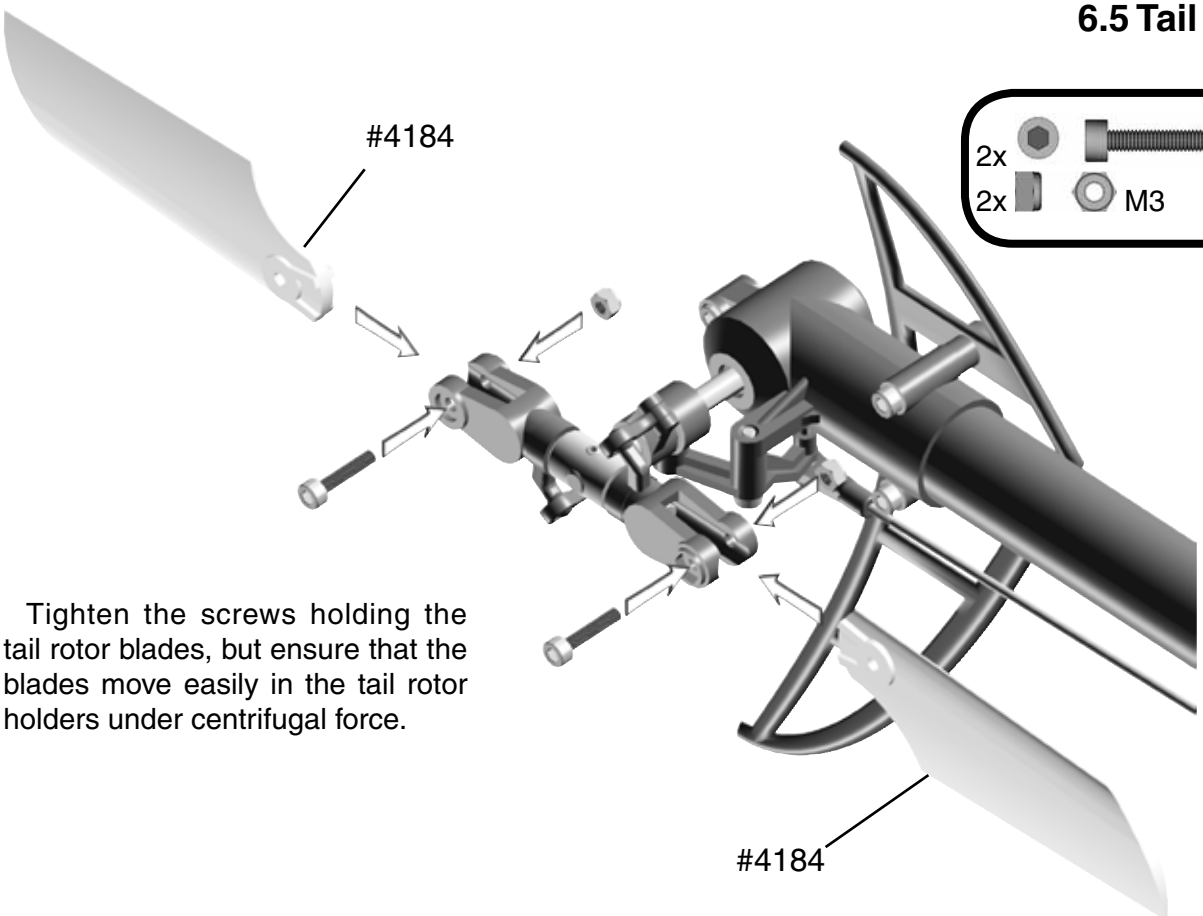
For mounting the tail assembly in the side-frames, pull the rear ends of the side-frames apart.

For adjusting the gear backlash, insert a strip of paper between the main gear and the drive pulley, then press the drive pulley against the main gear.

6.5 Tail Rotor Blades

Bag 5

2x	M3x16	#1956
2x	M3	#2074

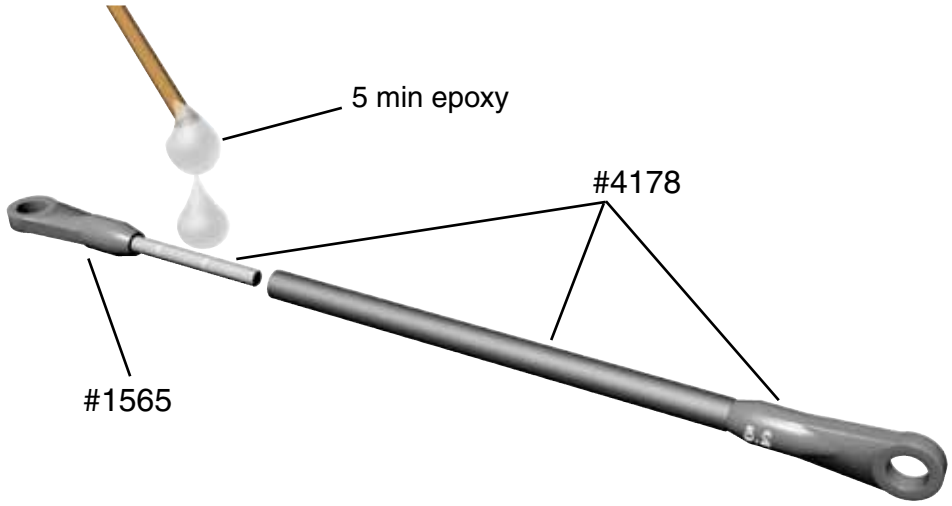


Tighten the screws holding the tail rotor blades, but ensure that the blades move easily in the tail rotor holders under centrifugal force.

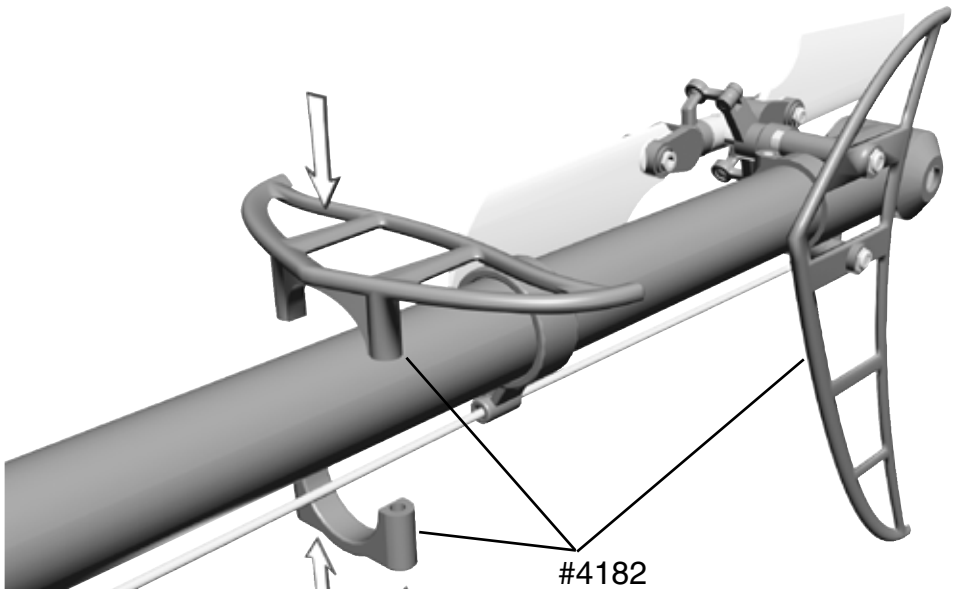
6.6 Tail Boom Brace

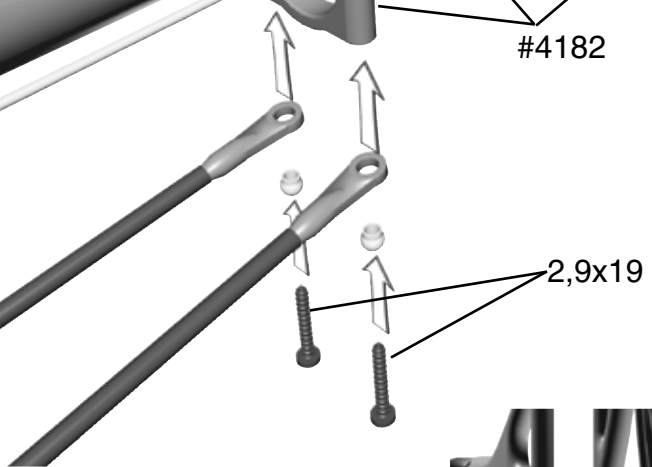
Bag 1 • Bag 6 • Bag 9

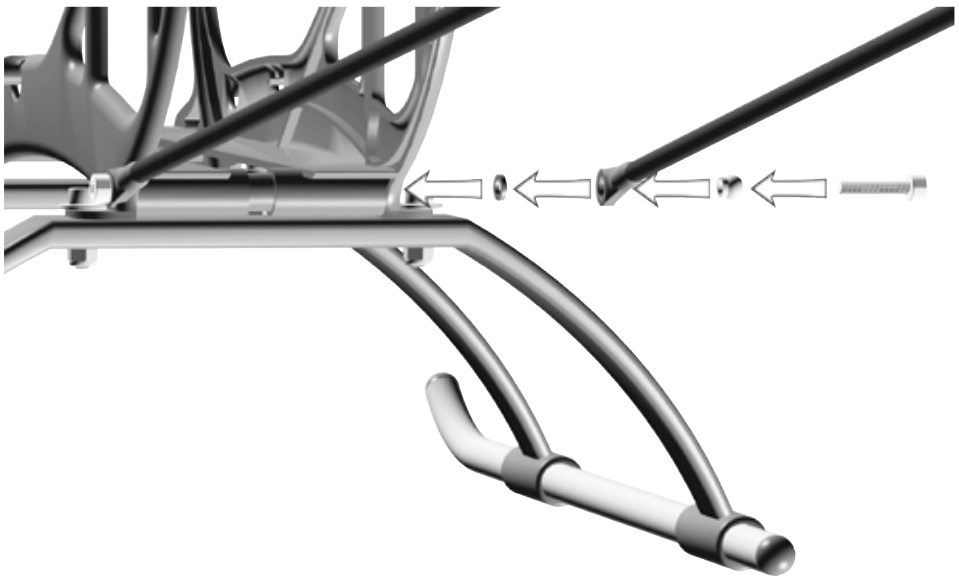
2x		2,9x19
2x	M3	#2074
4x	4,8 mm	#1574
4x		M2,5x30 #2770
2x		M3x20 #1957
2x	3x5x2	#2463



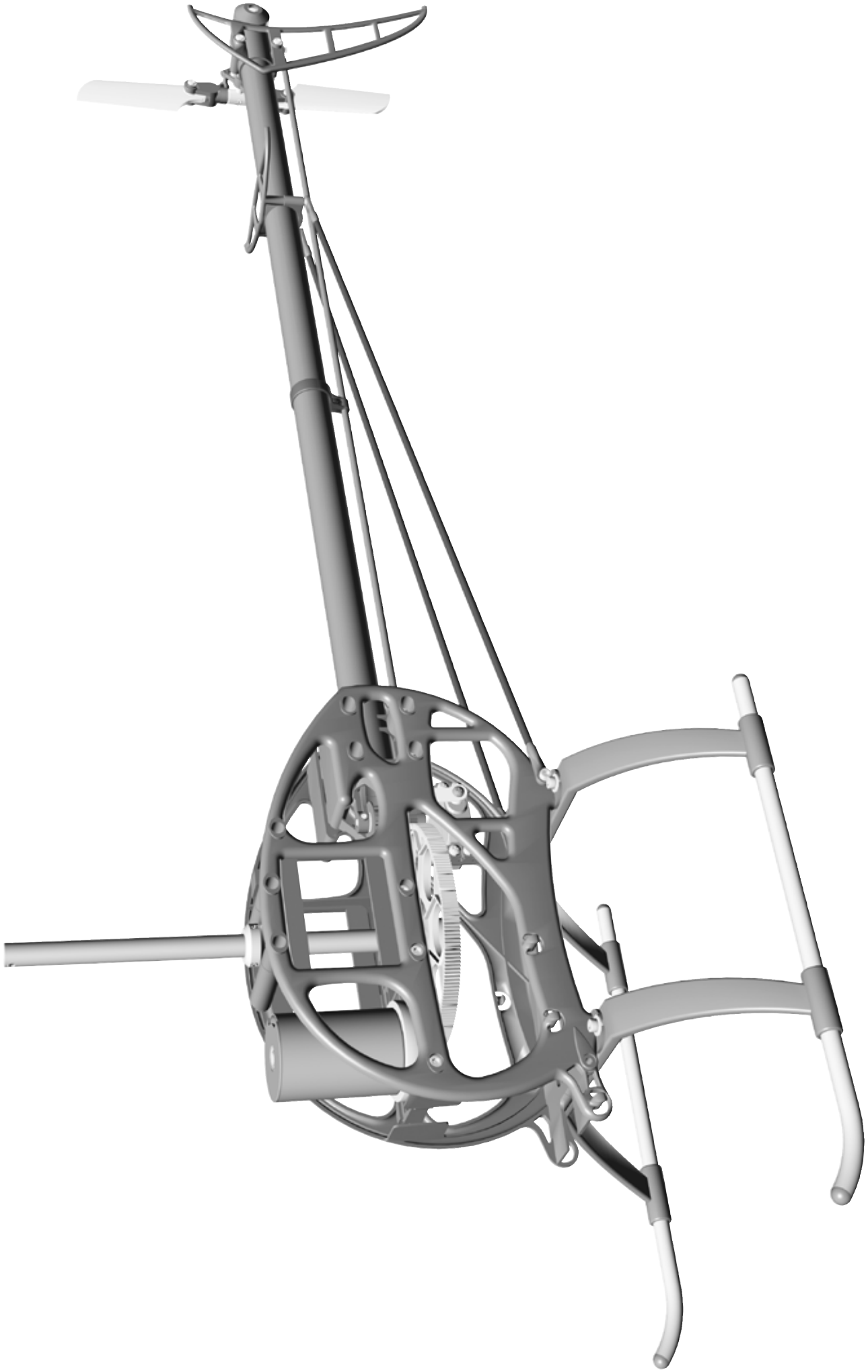
The ball links should be screwed onto the control rod such that one is turned at 90 degrees with respect to the other.





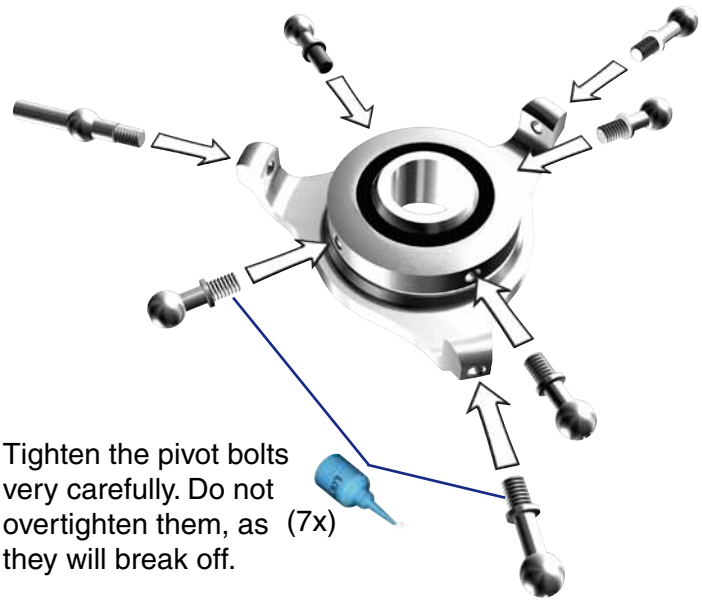


7 Finished Main Frame & Tail Boom



8 Swashplate

Bag 3

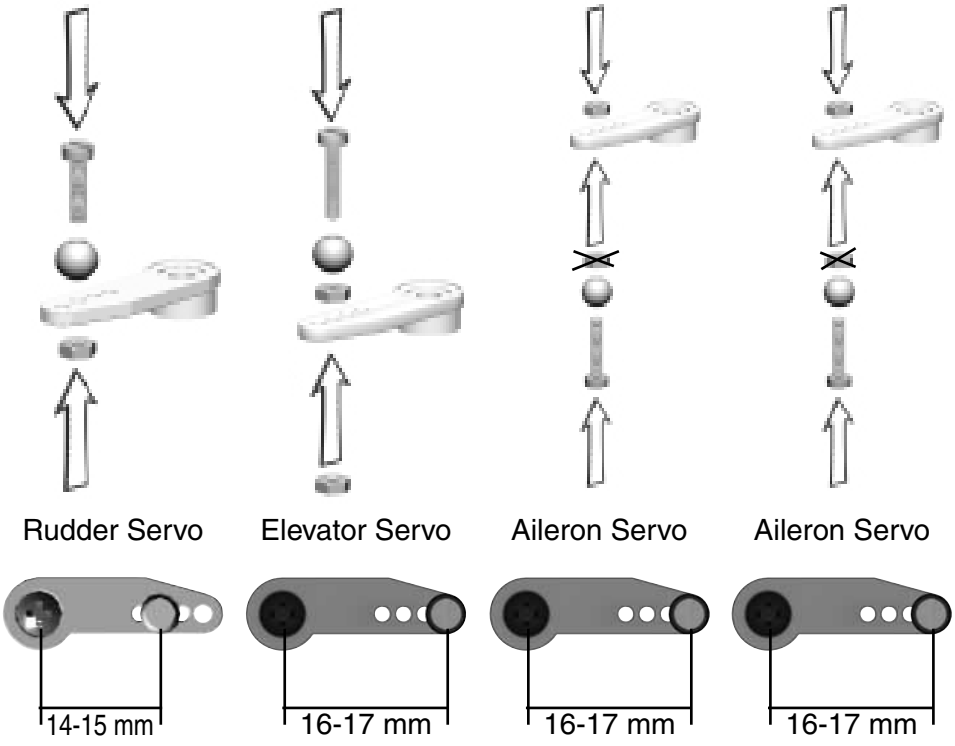


Tighten the pivot bolts very carefully. Do not overtighten them, as they will break off. (7x)

9 Servo Arms

Bag 9

2x	M2x8	#1902
2x	M2x10	#1903
6x	M2	#2070
4x	4,8	#1570



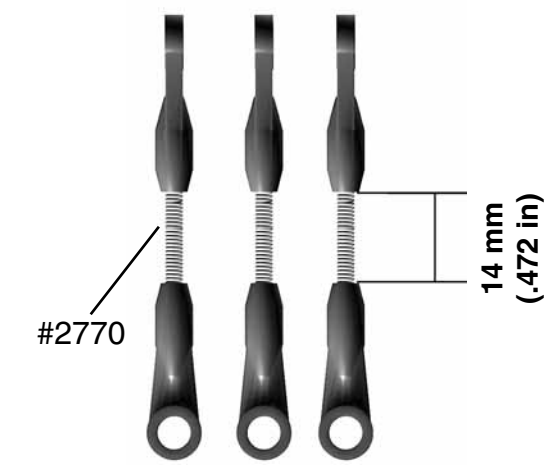
Rudder Servo | Elevator Servo | Aileron Servo | Aileron Servo

120° CCPM

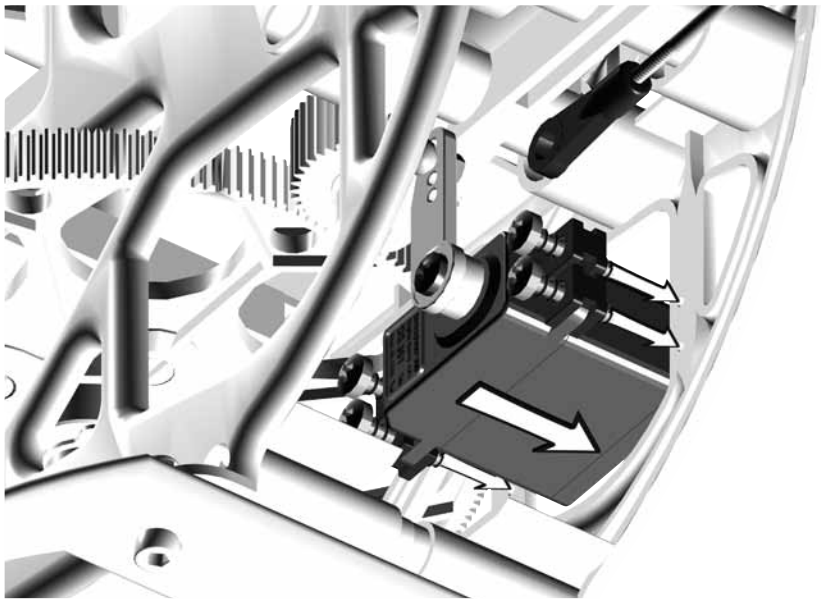
Rudder Servo | Elevator Servo | Aileron Servo left | Aileron Servo right

10.1 Linkage

Bag 9



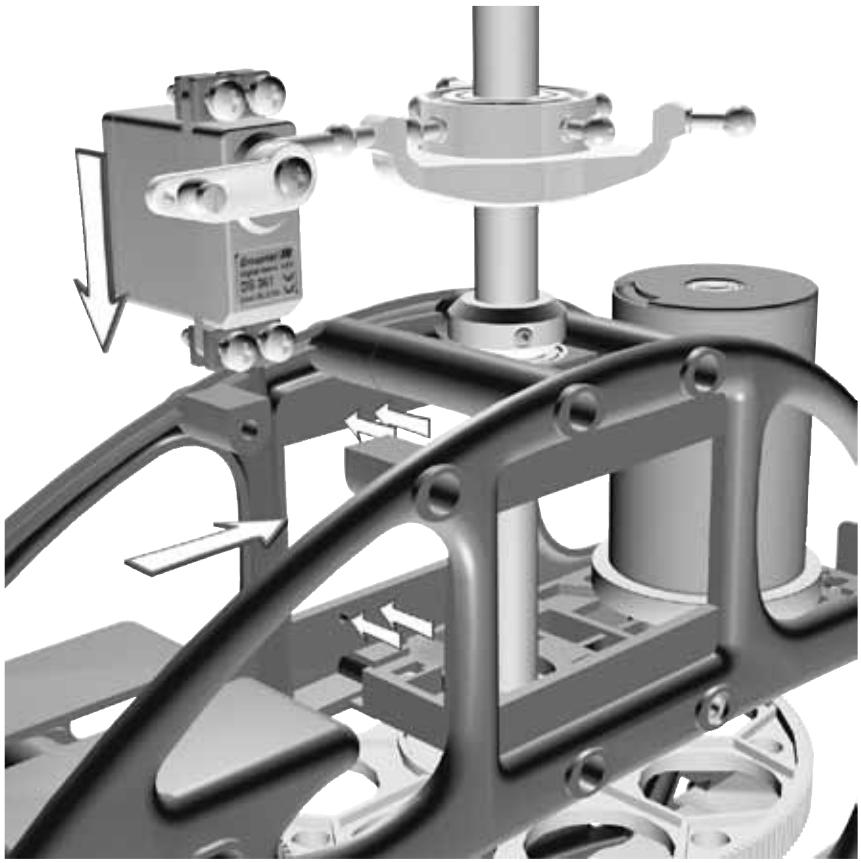
Linkage measurements for 3D pitch range (-12° to +12°)



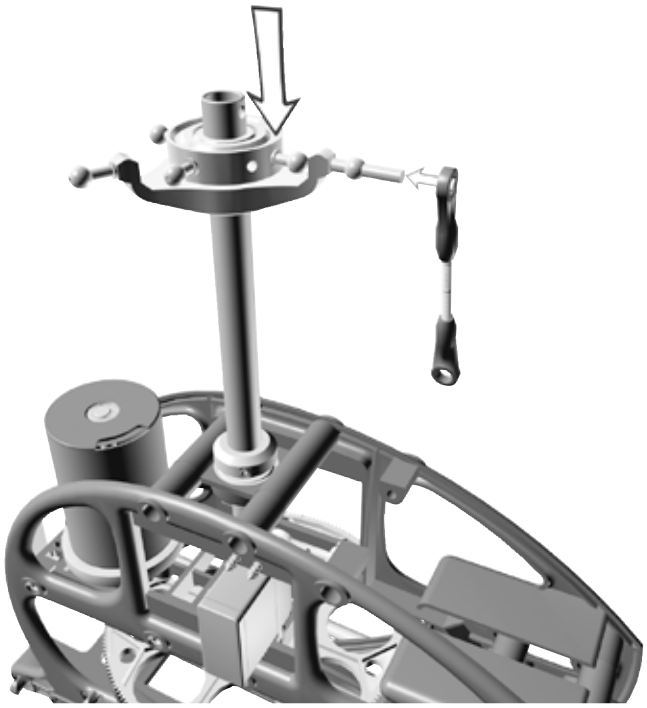
10.2 Tail Rotor Servo

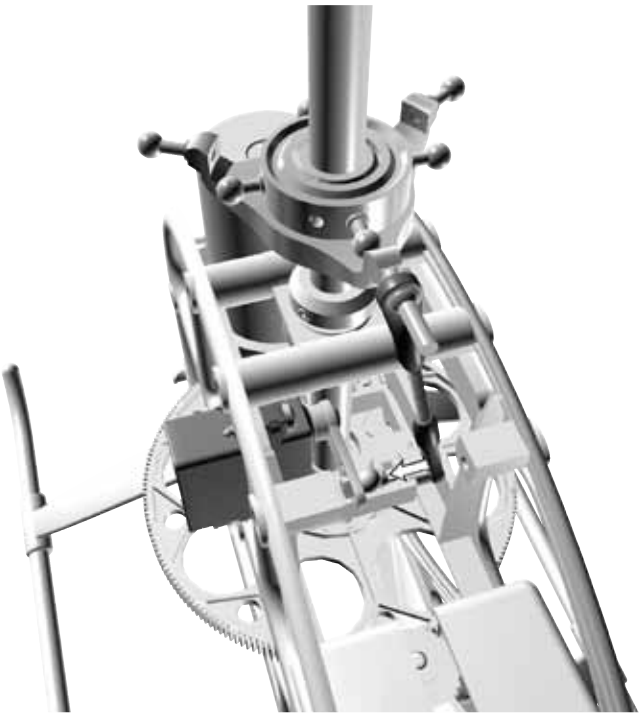
With LOGO 400 side-frames you can use two different sizes of tail rotor servos. A larger standard-size tail rotor servo can be mounted to the left side-frame, a smaller mini servo is mounted to right side-frame.

10.3 Elevator Servo



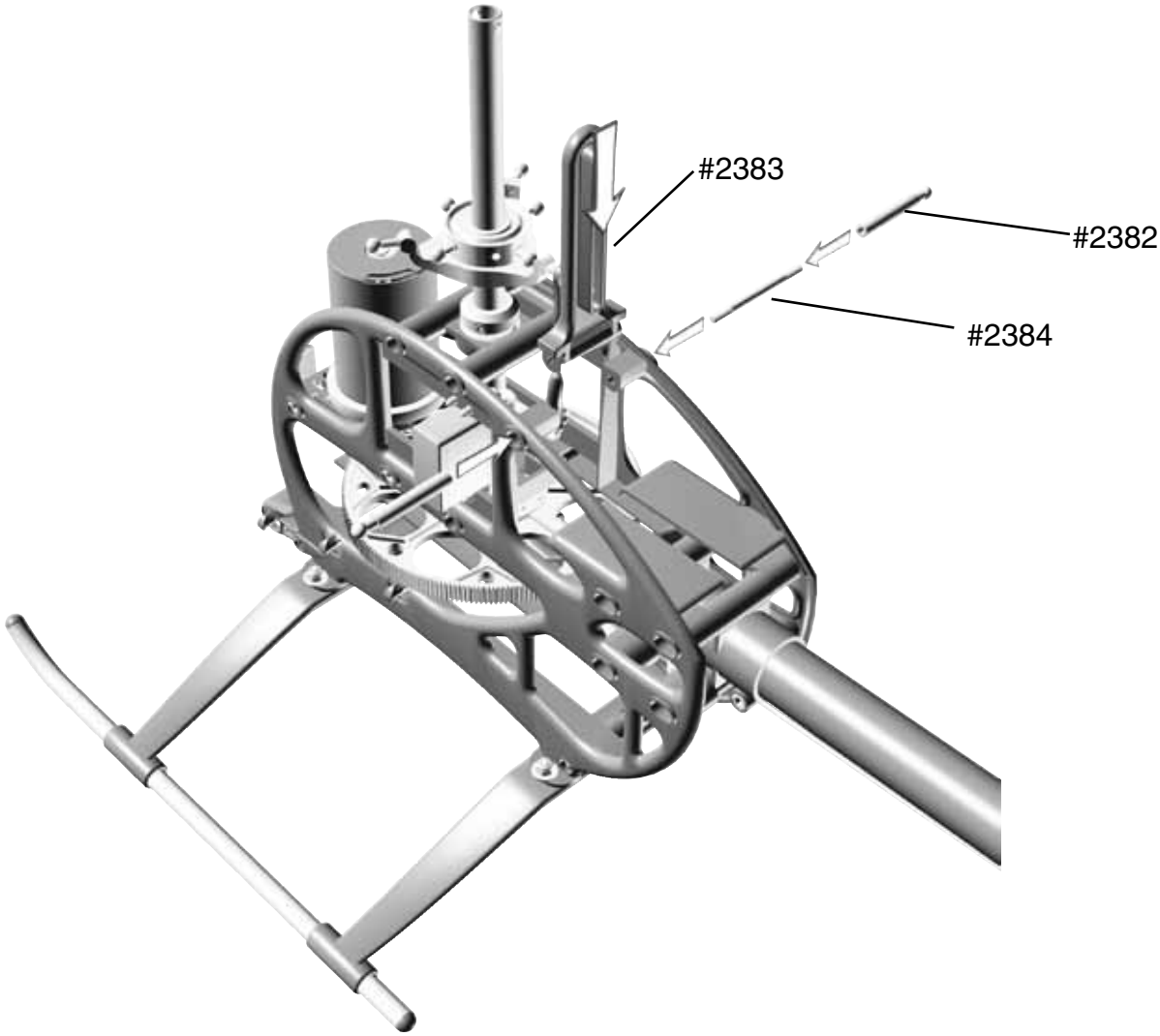
10.4 Elevator Linkage/Swashplate



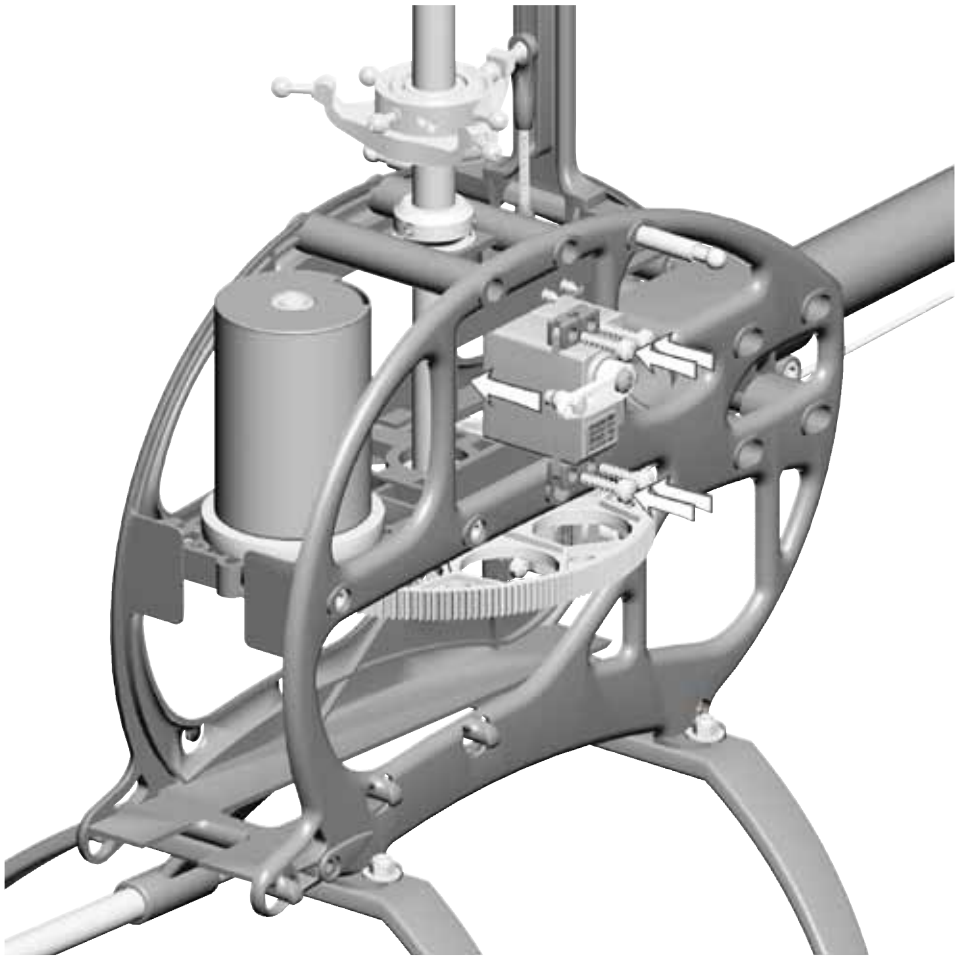


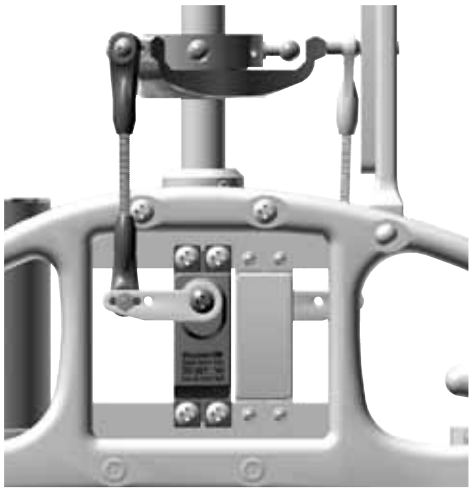
10.5 Canopy Fixing Bolts

Bag 1

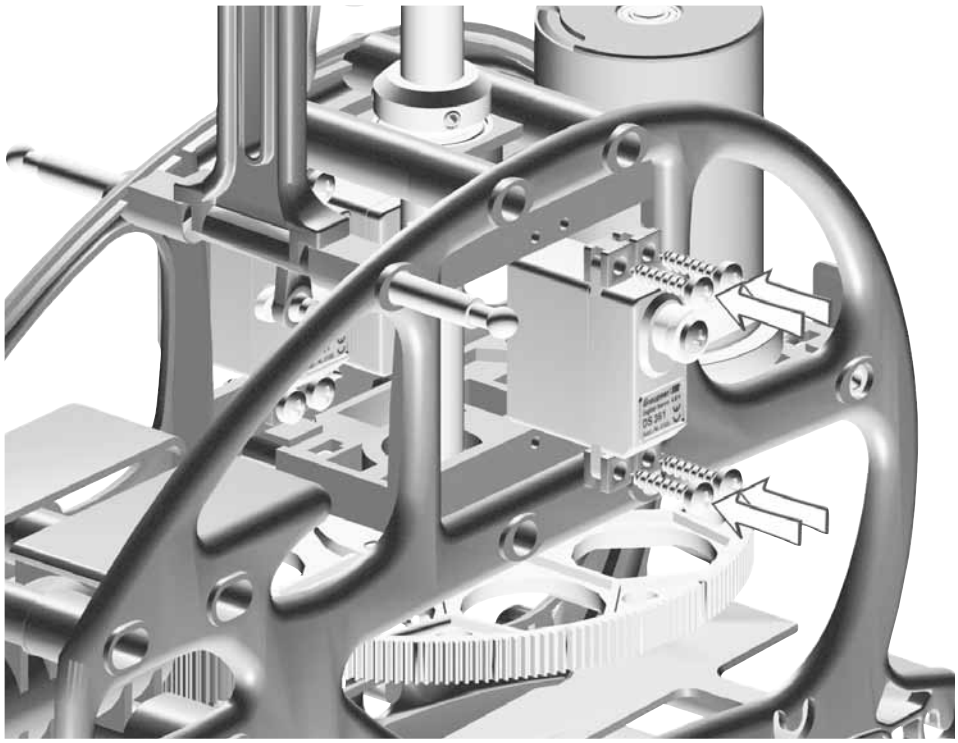


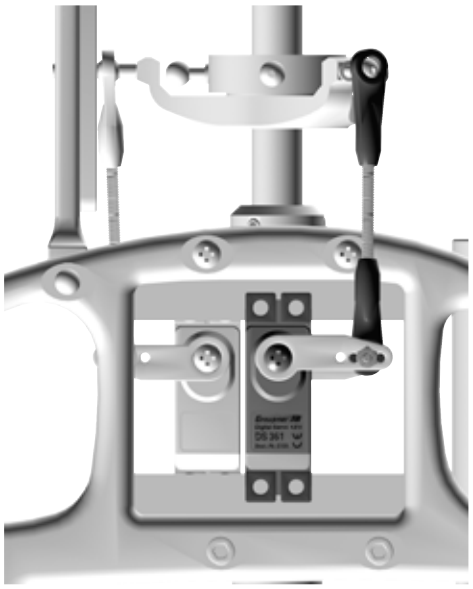
10.6 Aileron Servo left



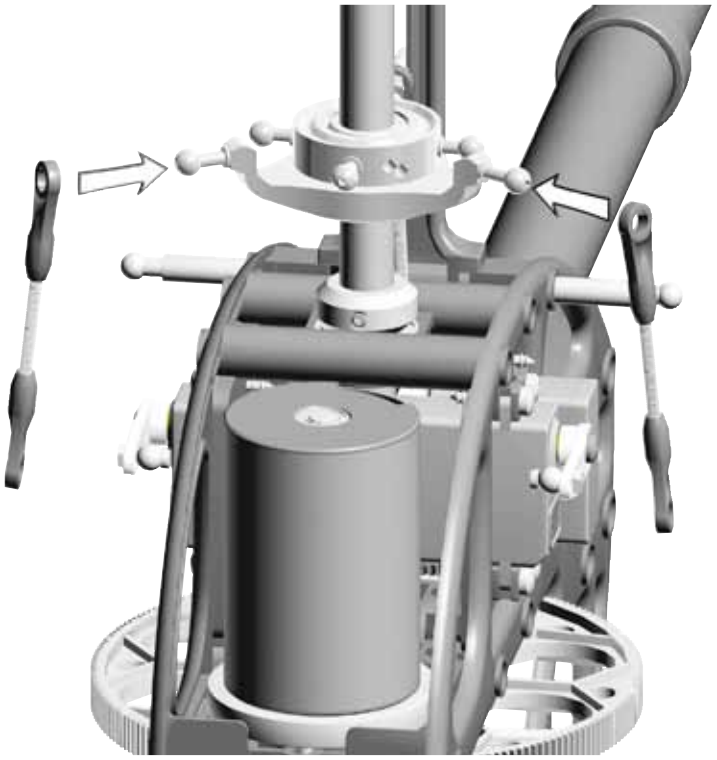


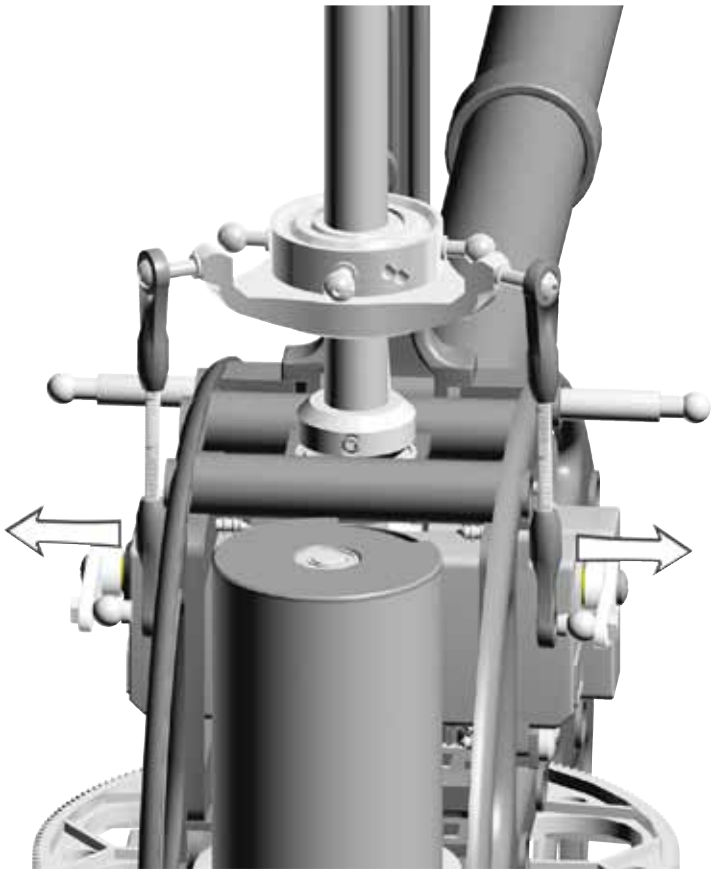
10.7 Aileron Servo right

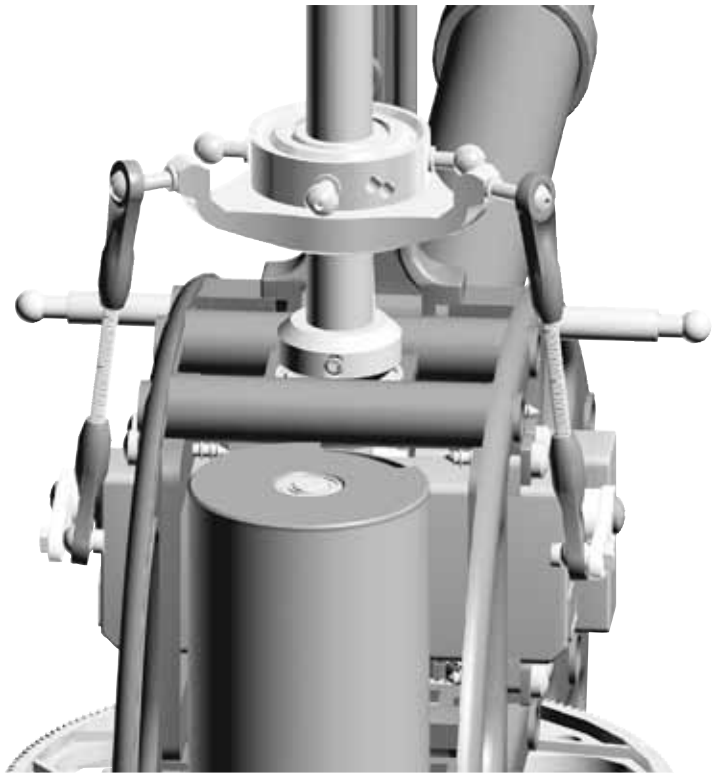




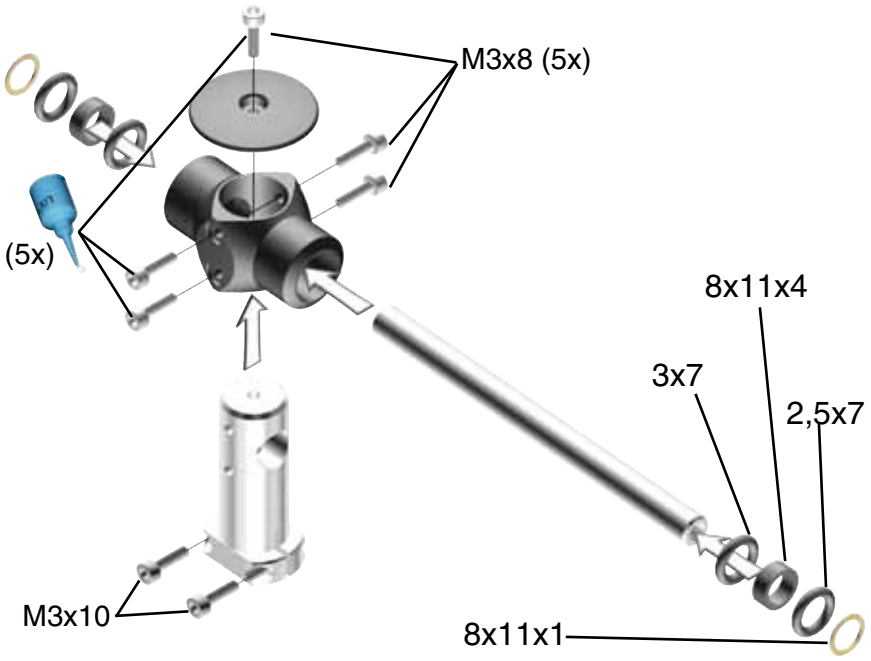
10.8 Aileron Linkage

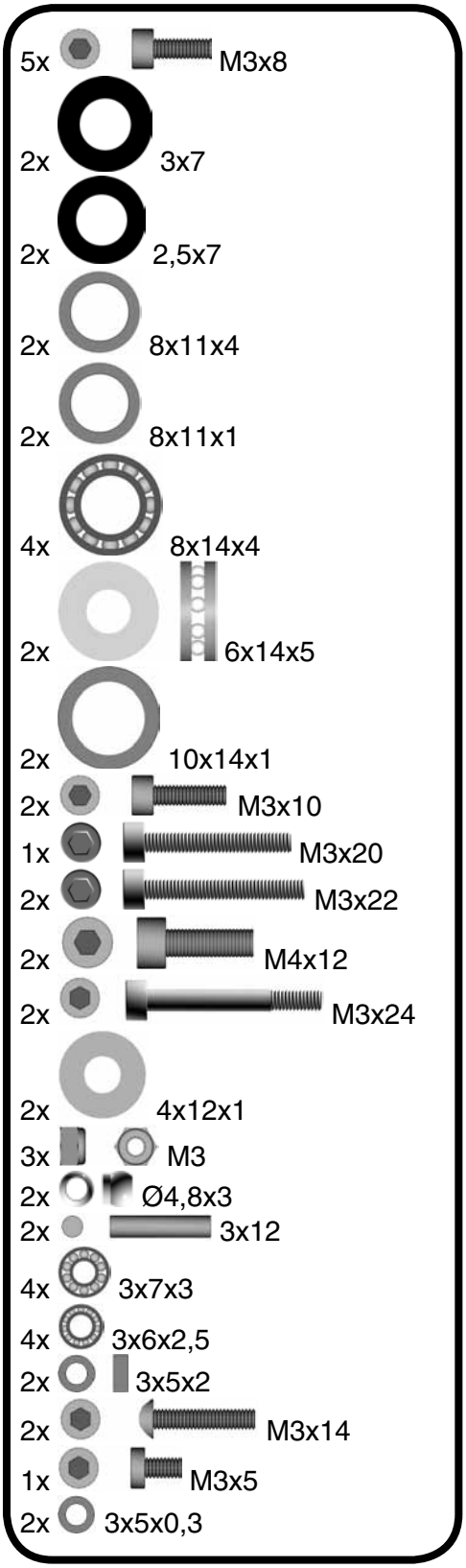


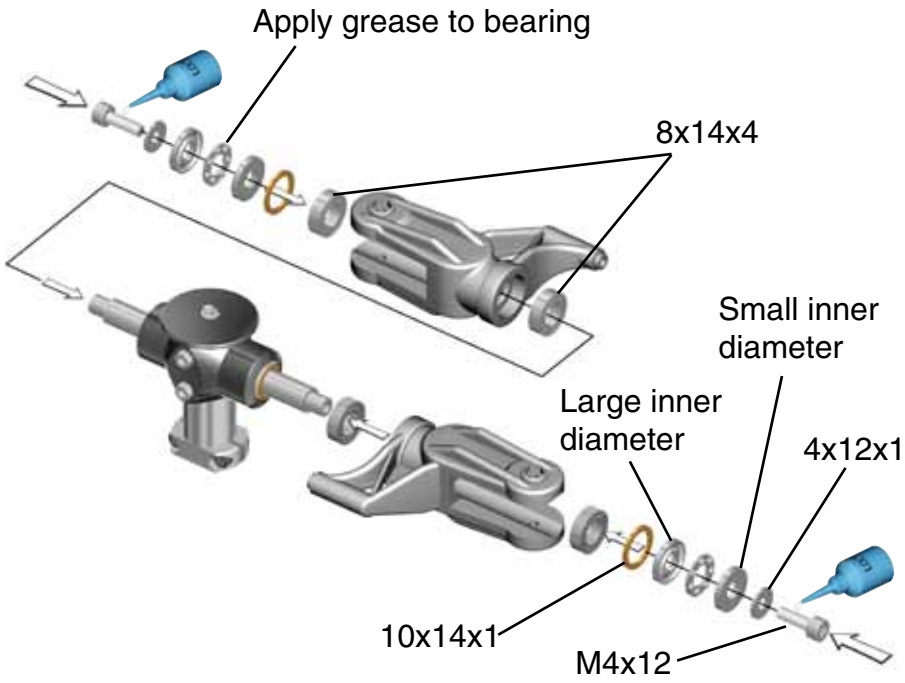


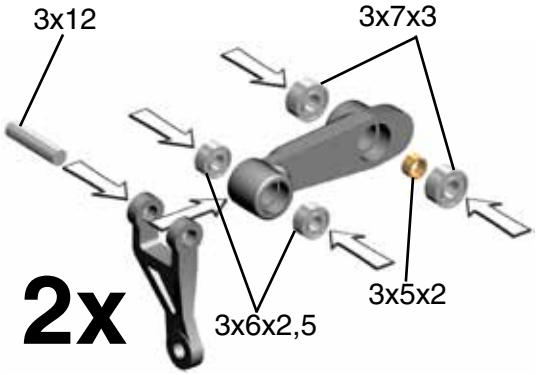


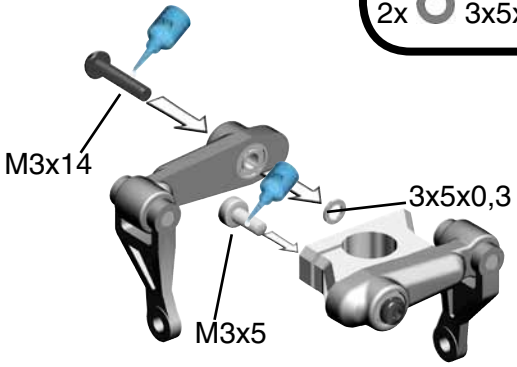
Bag 7

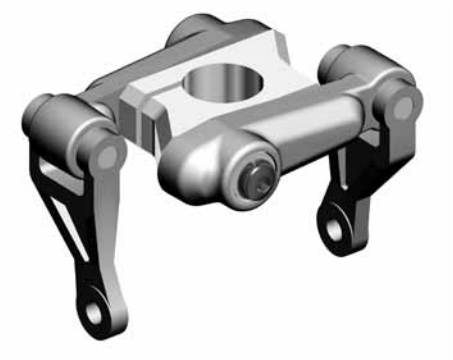

M3x8 (5x)
(5x)
8x11x4
3x7
2,5x7
M3x10
8x11x1

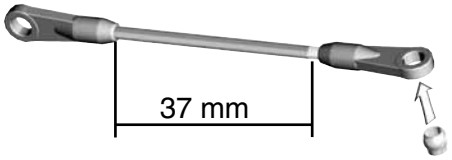

5x M3x8
2x 3x7
2x 2,5x7
2x 8x11x4
2x 8x11x1
4x 8x14x4
2x 6x14x5
2x 10x14x1
2x M3x10
1x M3x20
2x M3x22
2x M4x12
2x M3x24
2x 4x12x1
3x M3
2x Ø4,8x3
2x 3x12
4x 3x7x3
4x 3x6x2,5
2x 3x5x2
2x M3x14
1x M3x5
2x 3x5x0,3

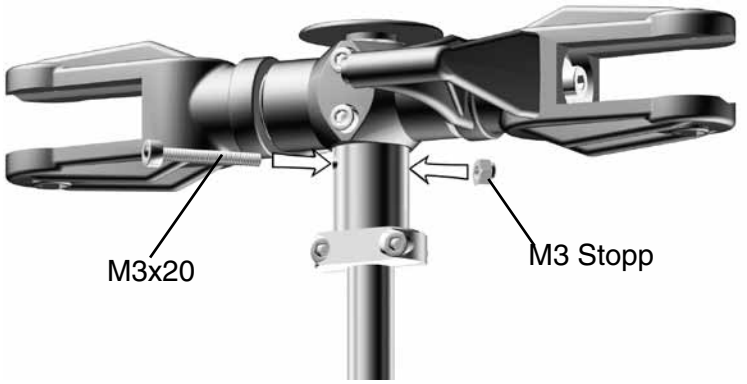

Apply grease to bearing
8x14x4
Small inner diameter
Large inner diameter
4x12x1
10x14x1
M4x12

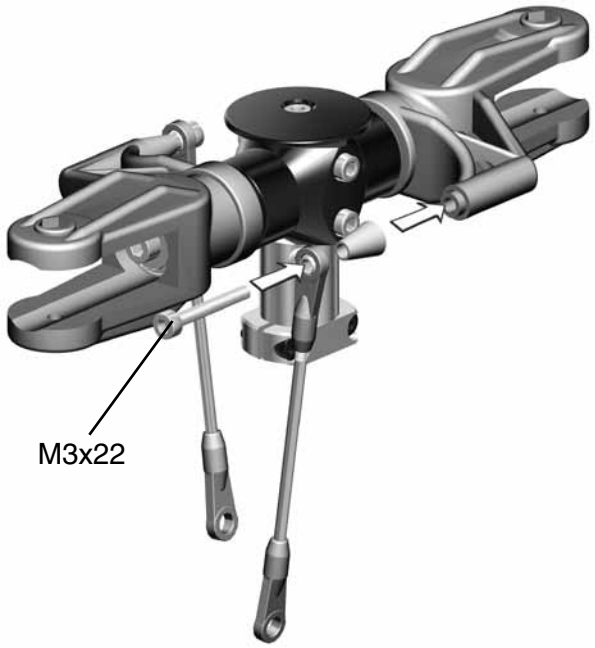

3x12
3x7x3
2x
3x6x2,5
3x5x2

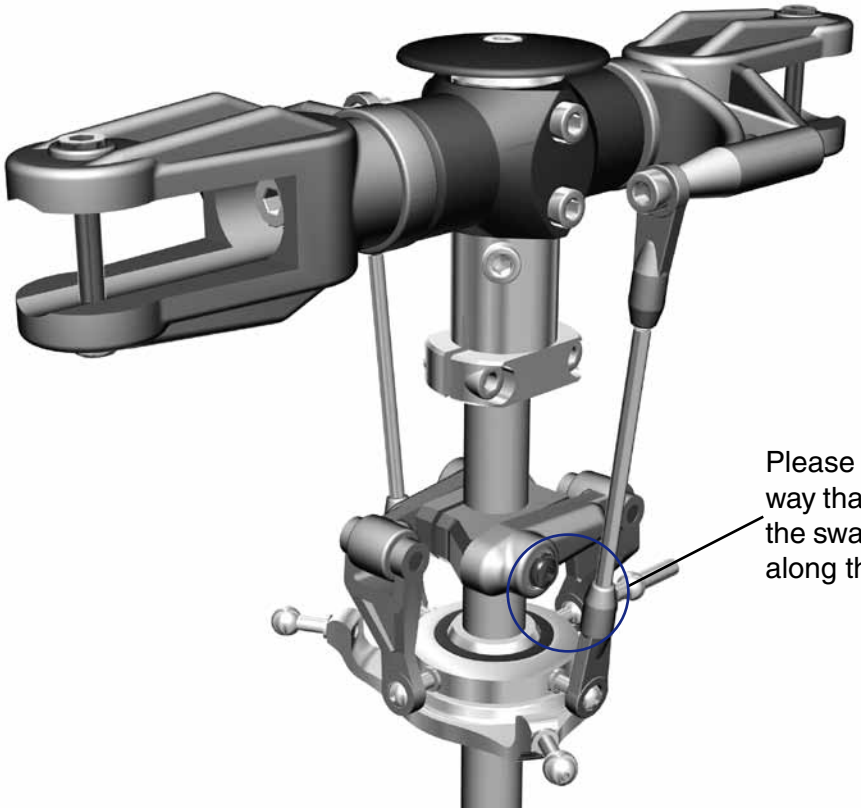

M3x14
3x5x0,3
M3x5







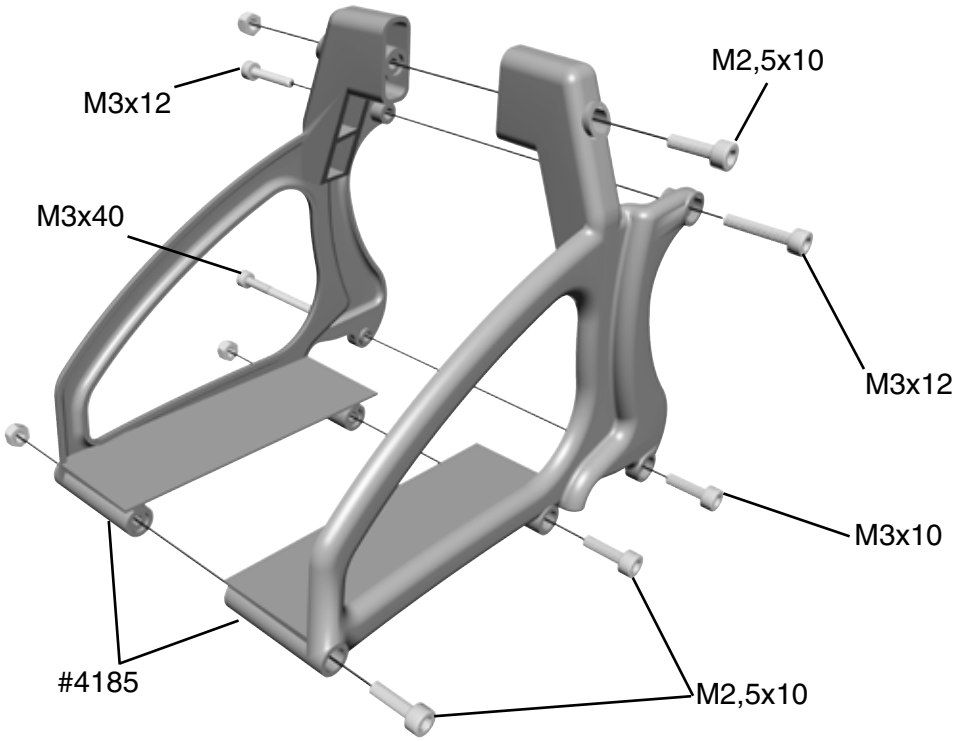




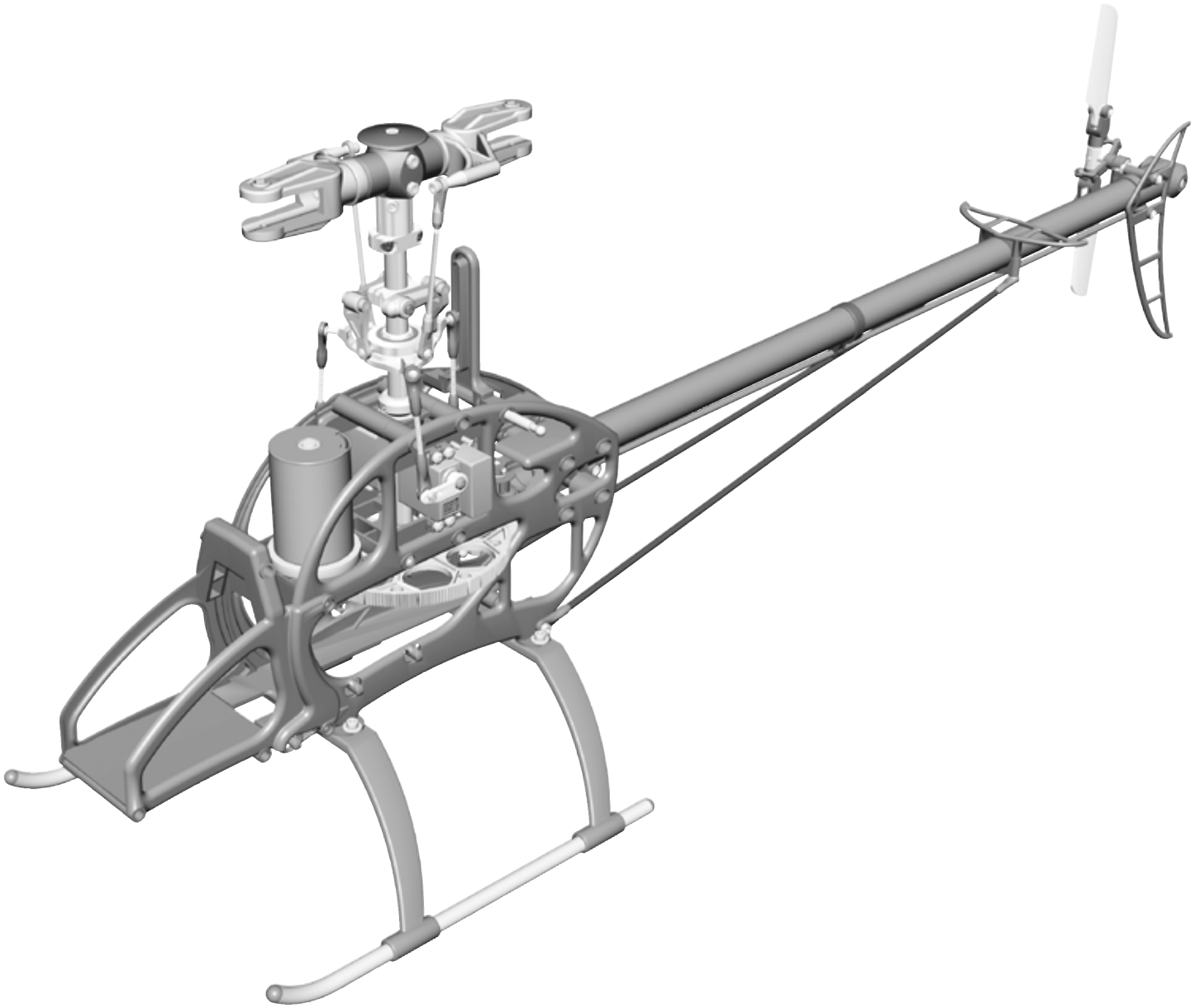
Please adjust the swashplate driver in such a way that the balls on the inner and outer ring of the swashplate are positioned exactly on a line along the longitudinal axis of the heli.

12 Battery Support

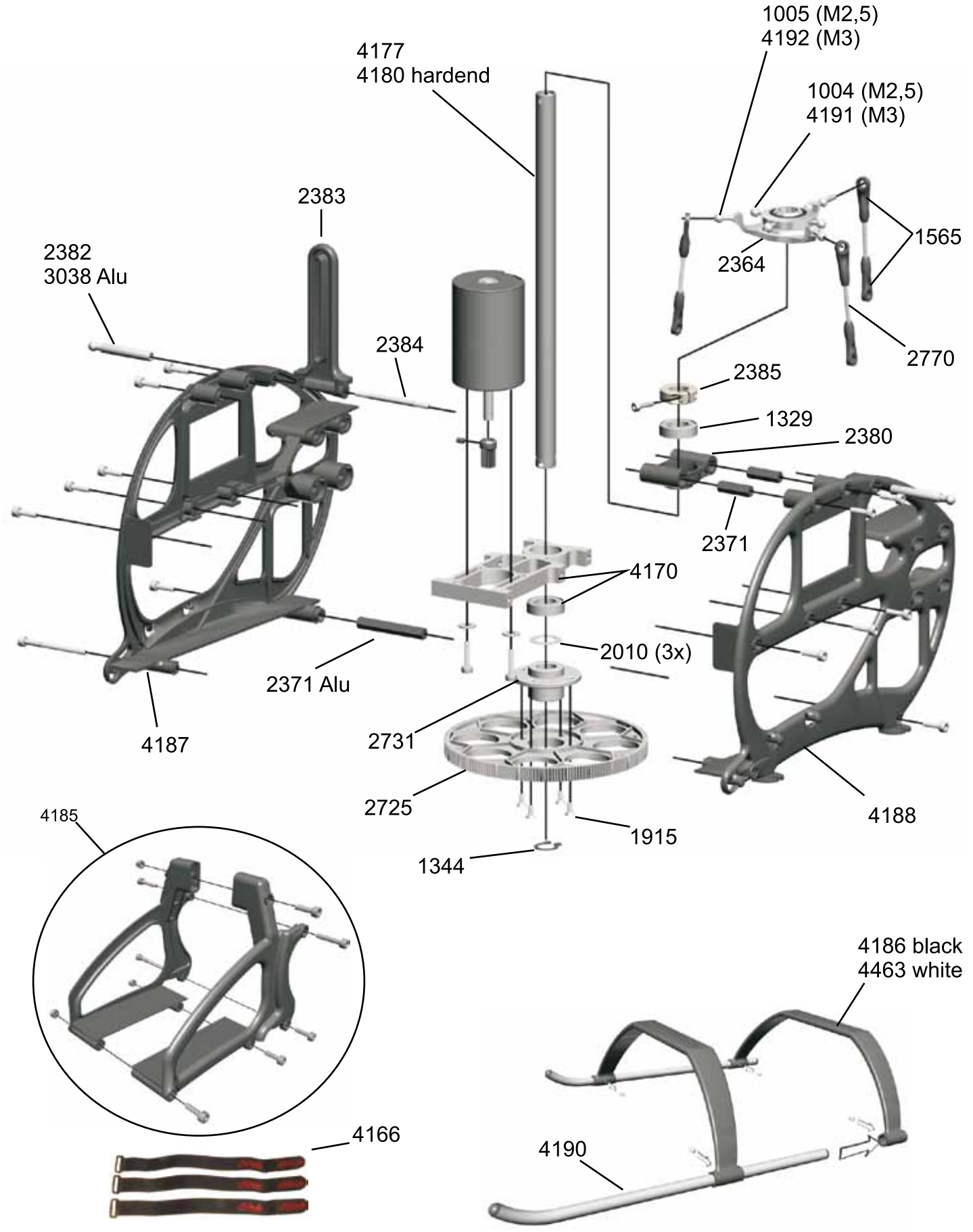
Bag 1 • Bag 12



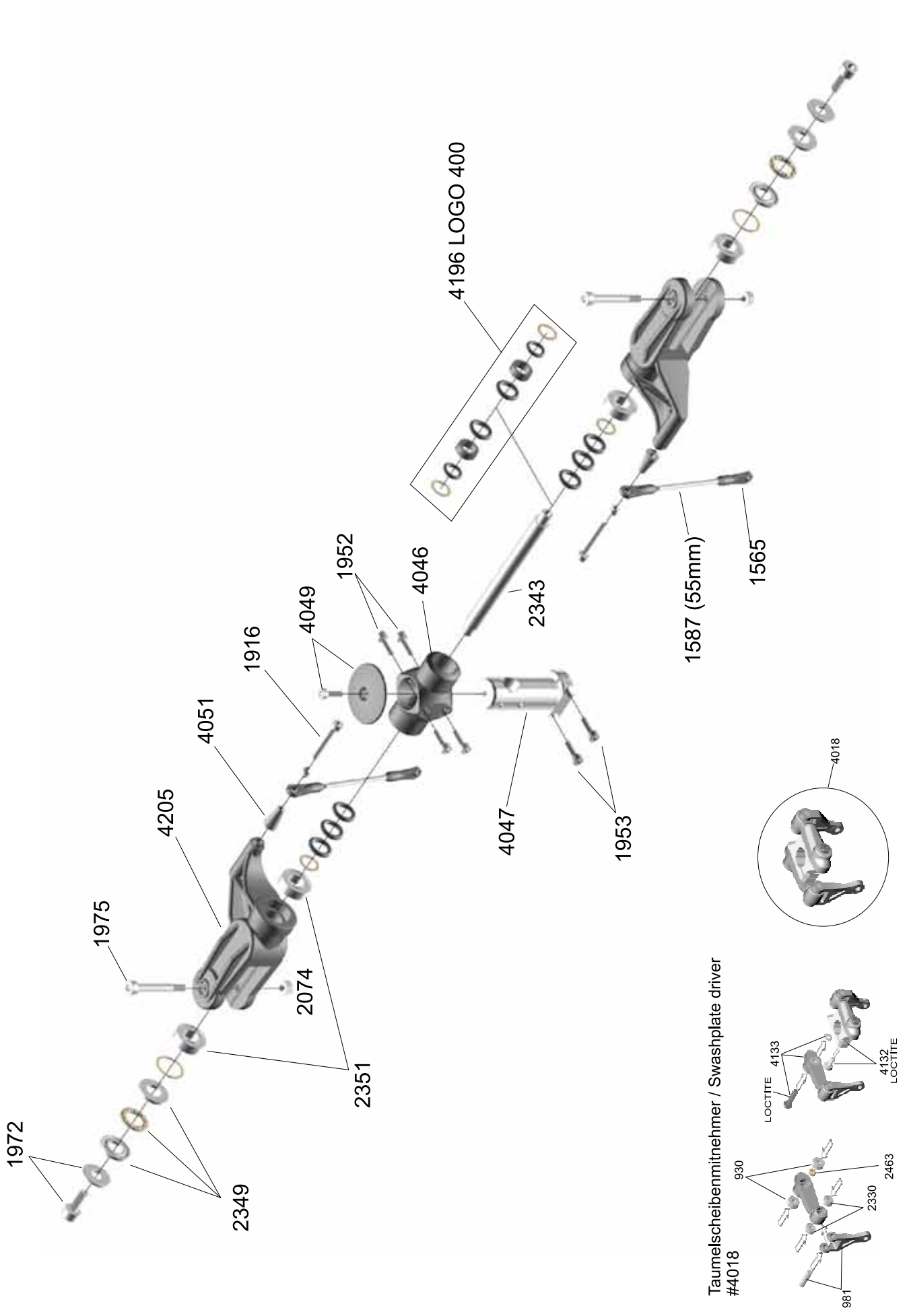
1x		M3x40
2x		M3x12 #1954
1x		M3x10 #1953
3x		M2,5x10 #1938
3x	M2,5	#2071



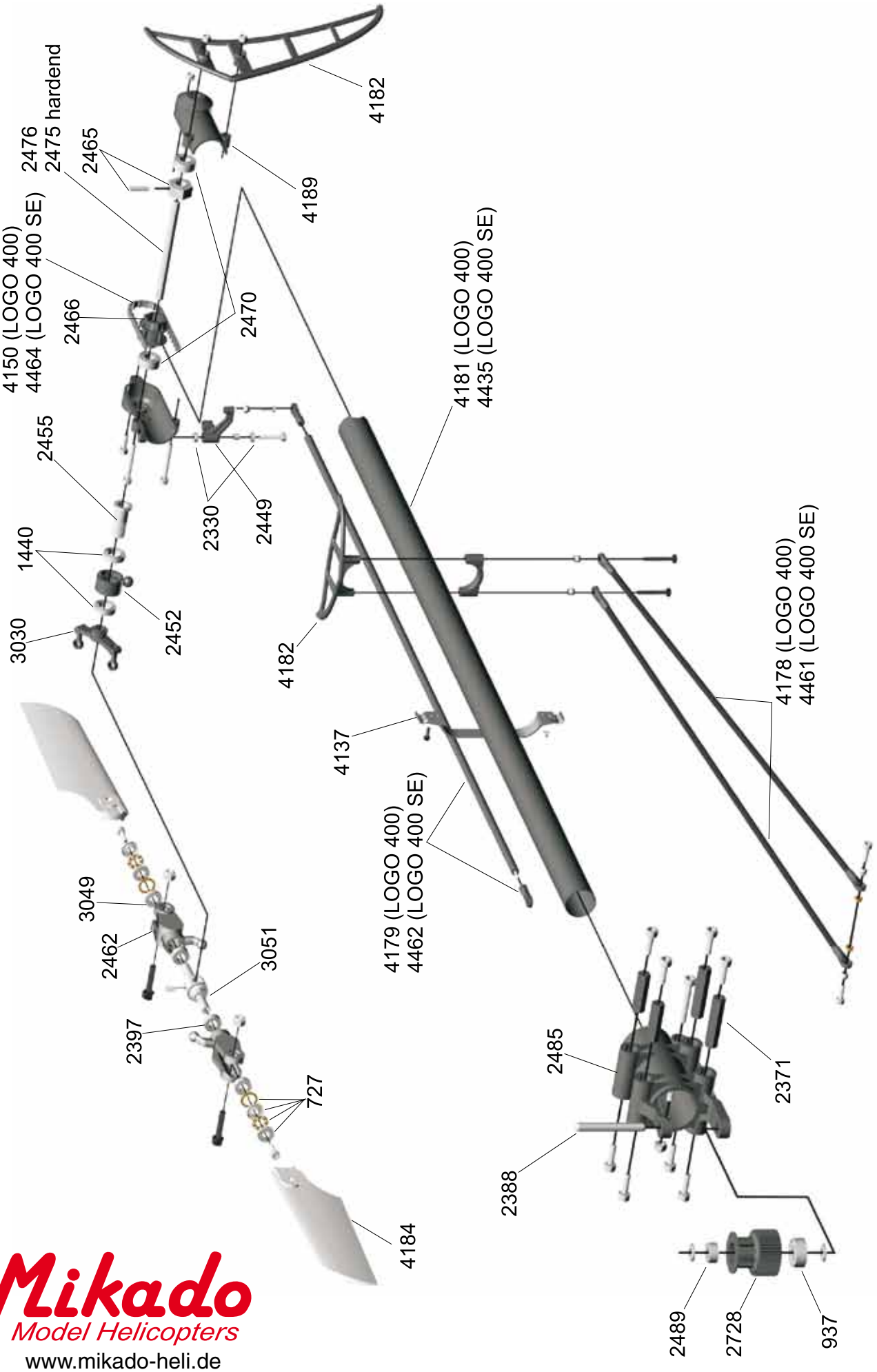
13.1 Chassis


1005 (M2,5)
4192 (M3)
4177
4180 hardend
1004 (M2,5)
4191 (M3)
2383
1565
2382
3038 Alu
2364
2384
2770
2385
1329
2380
2371
4170
2010 (3x)
2371 Alu
4187
2731
2725
1915
4188
1344
4185
4186 black
4463 white
4166
4190

13.2 Rotor Head



13.3 Tail Boom/Tail Rotor



Mikado Model Helicopters
www.mikado-heli.de

Construction & Rendering: Mehran Mahinpour Tirooni • Layout & Realisation: CDT-Berlin