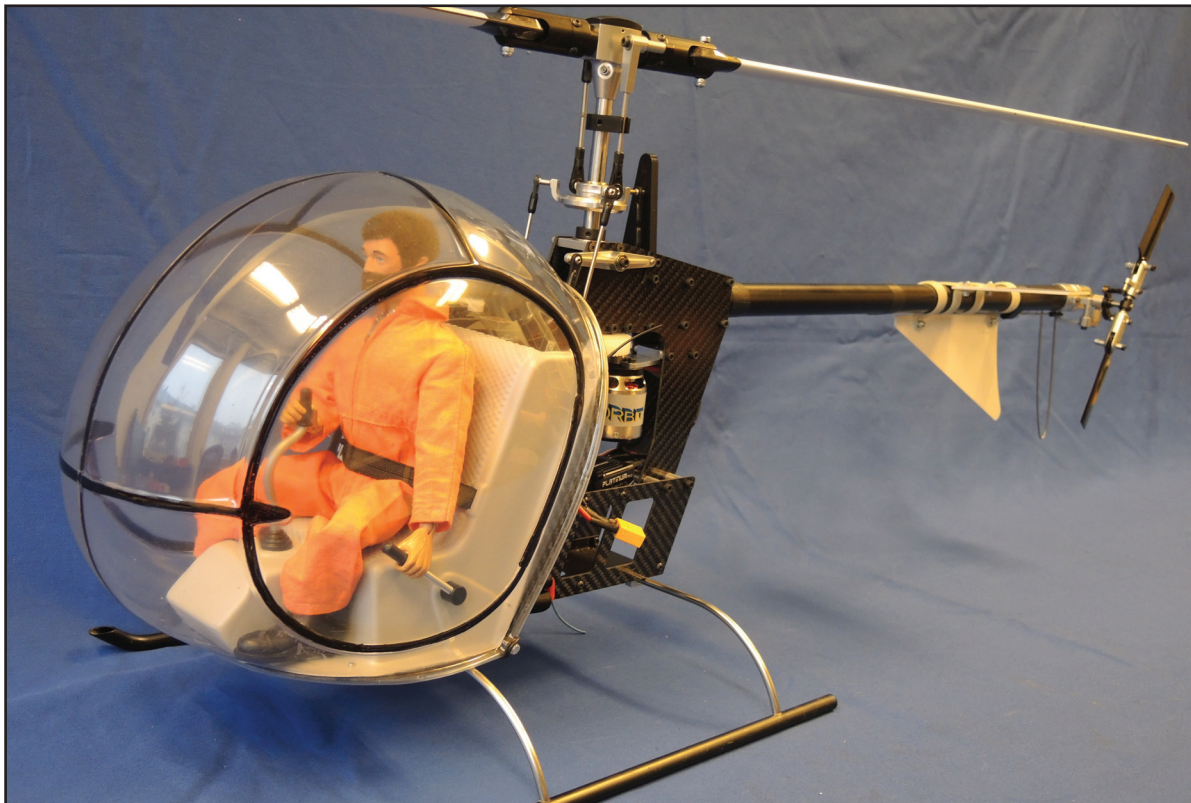


*minicopter*

# ***Heli-Baby NT***

***Ord.-No. 5100***

***Manual***



***minicopter***

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apr 24th 2016

Congratulations on your new Heli-Baby NT. In celebration of the 40th anniversary of the legendary Schluter Heli-Baby, the forefather of all current model helicopters, we have decided to make a unique limited edition modern version of the Heli-Baby to provide you with a fantastic fun flying experience with a twist. The model includes the pilot, seat and canopy as in the original design. The Heli-Baby NT is designed now to be used with flybarless systems. It is equipped with a freewheel unit for autorotations and a modern tailrotor. The aim was, however, to keep the original Heli-Baby design as far as possible. So the gear ratios are almost the same and the side view of the frame design is identical. It also includes the Schluter tail rotor control push pull system.

The Heli-Baby NT is again a very unusual model to see on the flying field and its presence in the air will make you a proud owner.

We hope you have lots of fun assembling and flying your new Heli-Baby NT.

Gerd Guzicki & The Minicopter Team

## Recommended Equipment:

Motor: Plettenberg Orbit „Heli-Baby“ Ord.- No. 5110  
ESC: Hobbywing 50A V3 Ord.-No. 6090  
Servos: f.e. Graupner DES 708 Ord.-No. 6081 (set of 3)  
flybarless system: Microbeast or similar  
Receiver: 2,4 GHz  
telemetry: f.e. lisi TXE50 Ord.-No. 1751  
flight battery: 6s/25-30C upto 4400 mAh  
Mainblades: NHP 500 Ord.-No. 1023  
Tailblades: Zeal 80mm Ord.-No. 1052-1054

These are reliable components that were carefully tested by us. Of course you can also use other manufacturers equipment. The Heli-Baby has been designed, set up and tested with the above parts. It is therefore recommended that you at least use the motor and mainrotor blades listed above.

## Tools:

Hex wrench in size 1.5, 2.0, 2.5 and 3 mm  
Open wrench or socket wrench 4, 5.5 und 7mm  
Loctite 243  
Pliers  
Ball joint pliers



## Maintenance and Security

A radio controlled model helicopter is not a toy. Bad maintenance and flying can result in serious accidents and injuries.

IT IS YOUR RESPONSIBILITY TO READ AND UNDERSTAND THE INSTRUCTIONS BEFORE YOU BUILD AND FLY THE HELI BABY NT.

Always keep the following rules in mind:

- During motor tests on the workbench, remove main and tailrotor blades and take care that nothing can get caught in the rotating parts of the model.
- With electric helicopters unintentional starting of the motor is all too easily done. Once you have connected the flight battery keep well clear of the arc of the main and tailrotors!
- If you need to make adjustments, change or program any settings of the helicopter, ESC or flybar system, remove two of the three motor cables to eliminate the risk of a sudden motor start.
- Keep your distance from the model, at least 5m (15ft.) during hovering.
- Never aim your helicopter at people or property. Always keep the model at least 20 metres (60ft) from people or property.
- Remove all Lipo batteries from the model when not in use and store them in a fireproof container or on a fire resistant floor.
- It is important that for the first flights of the model not to over discharge the Lipo batteries. If possible use a telemetry system to advise of the remaining capacity/flight time.
- If possible always fly at an organised model flying club. If you are unable to fly at a flying club it is YOUR responsibility to get the land owners permission to fly and fly in a safe manner not putting people or property at risk.

In the event of a crash, always remember to activate throttle hold to turn off the motor and disconnect the flight battery to make the model safe.

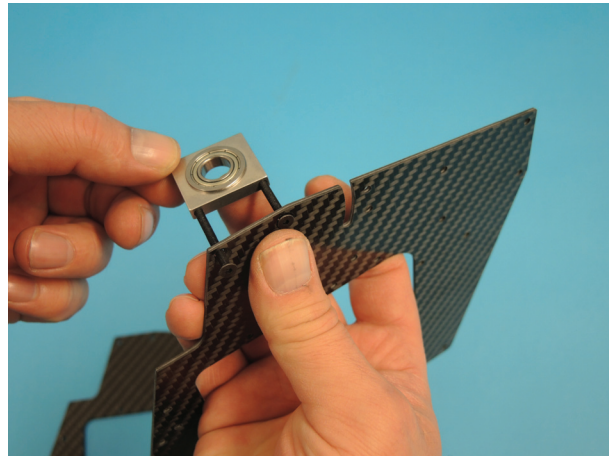
Vellmar, in April 2016

Start with the assembly of the upper frame. Join the frames H1 and H2, the bearing blocks H3 (2x) and H4 with hex screws M3x35 D338, countersunk screws M3x35 D324 and lock nuts M3 008 together.

It is not necessary to sand chamfers on the edges of the frames as they are already smooth and it may result in scratches on the surface of the carbon.

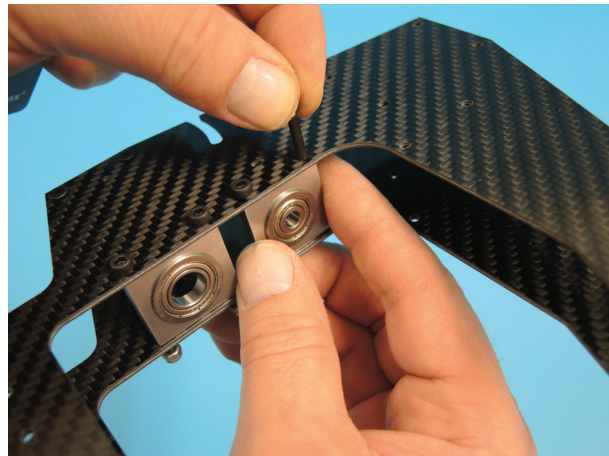


Two countersunk screws M3x35 D324 are inserted through the upper two holes of the left frame and the bearing block H03 and with bearing flange upwards slide onto the screws. Also fit the two hex screws M3x35 D338 and the lower bearing block H03 with bearing flange downwards and slide onto screws. Then place the right frame H02 on to the screws and loosely fit the 4 lock nuts.

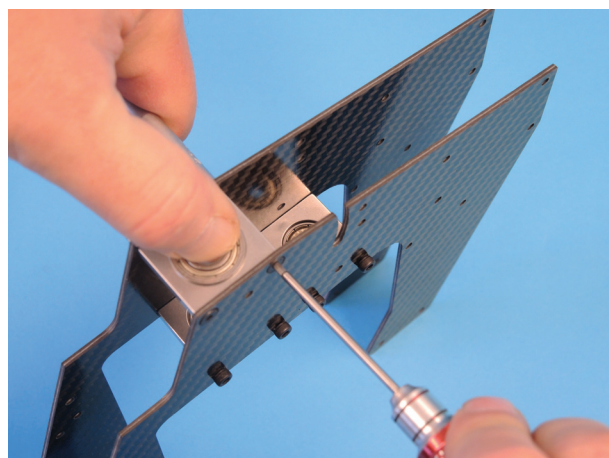


Put the motor shaft bearing block H04 between the frames and secure it with two screws M3x35 D338 and loosely fit lock nuts M3 008.

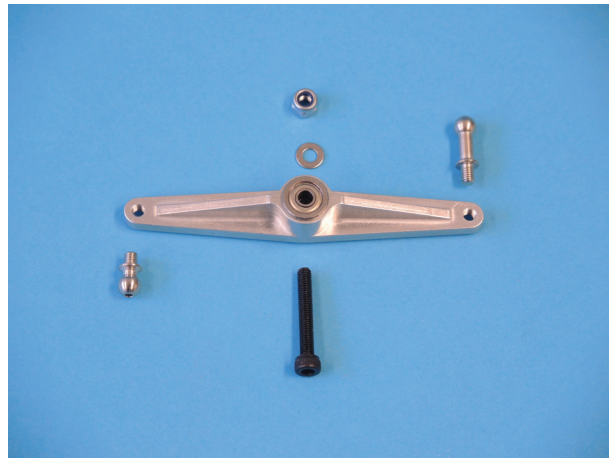
Loose means that the nut will be tightened to be in contact with the frame so that the frames are still movable for final alignment.



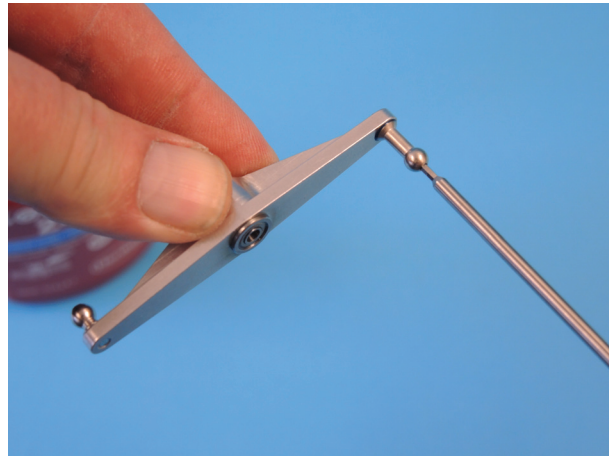
For a perfect fit of the three bearing blocks, press the two mainshaft bearings downwards/upwards during tightening of the screws. When all screws are tightened check the alignment of the frame edges, especially the lower edges.



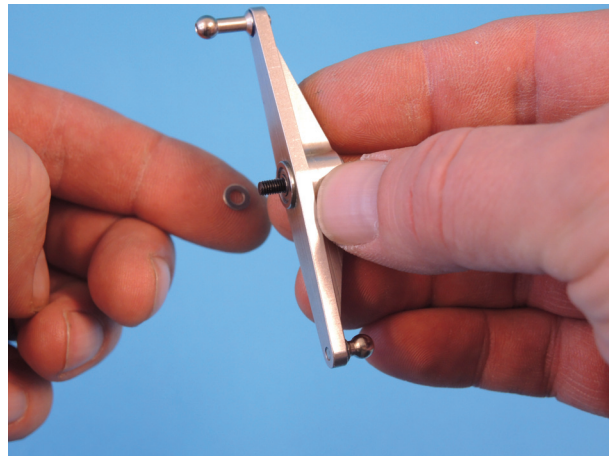
## Overview of the elevator bellcrank components



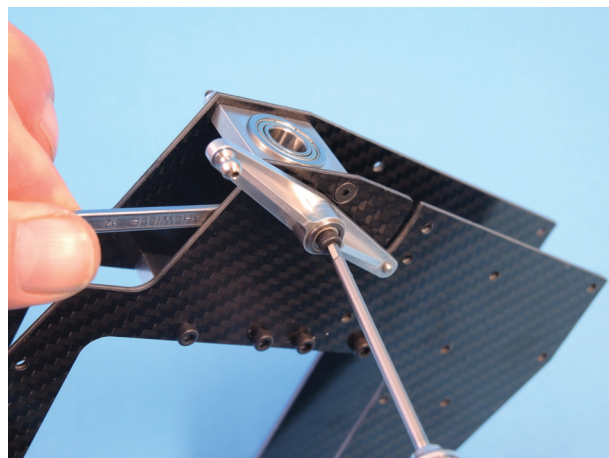
The ball link bolt M3x9 078 is attached to the flat side of the bellcrank S956 with Loctite. The ball link bolt M3x4 076 is attached to the opposite side with the ribbed flange using Loctite.



Push a hex screw M3x20 D331 through the center bearings of the bellcrank. If the spacer between the bearings is not concentric, use a needle to align it with the bearings. Add a washer 3x6x0,5 D312 on to the back.

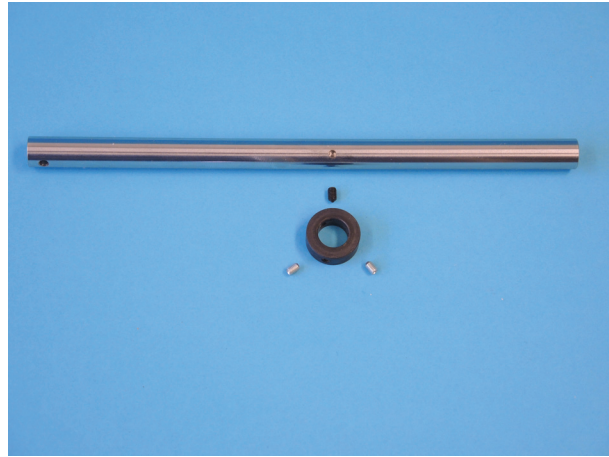


Attach the bell crank assembly through the hole in the left side frame and tighten using lock nut M3 008. An open spanner #707 is recommended to hold the nut.

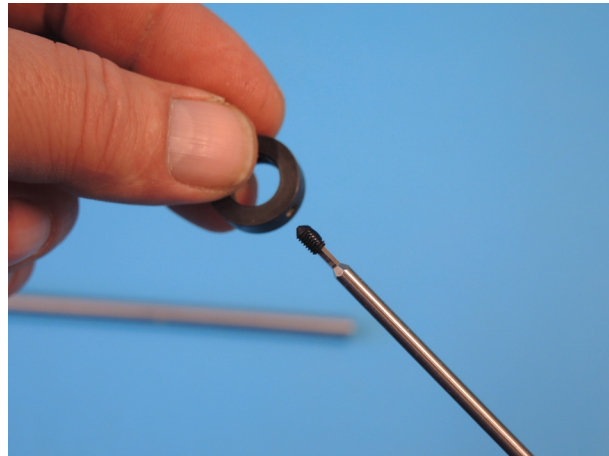




Overview of the mainshaft components.



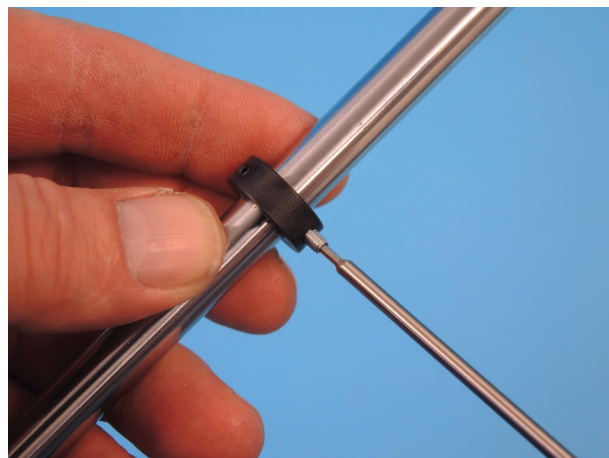
Screw a black grub screw with pointed tip M3x4 D314 in the hole in the collar ring H06. Use Loctite.



There is a small positioning hole in the mainshaft that must align with the tip of the grub screw. When the tip is in line with the hole tighten the screw.

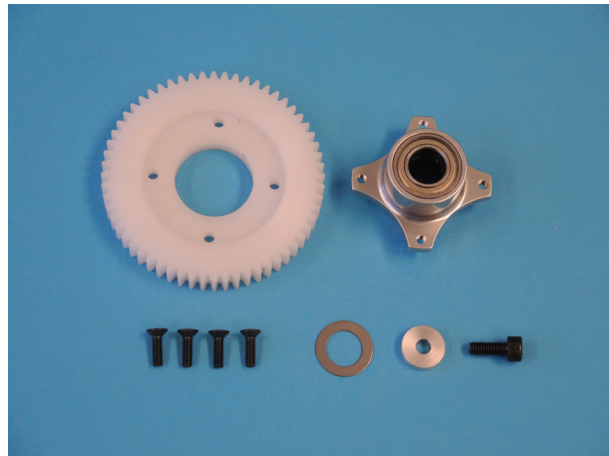


Two additional silver grub screws M3x4 081 need to be fitted into the collar ring and tightened, Use Loctite





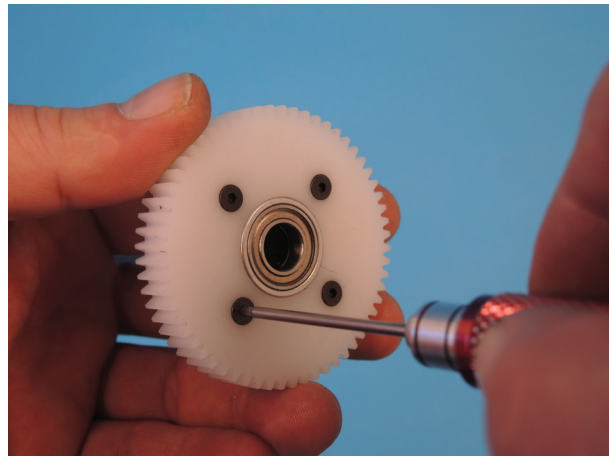
Overview of the main gear wheel unit components.



Press the freewheel unit H08 into the centre part of the main wheel H07 and take care that the holes in both parts are lined up.



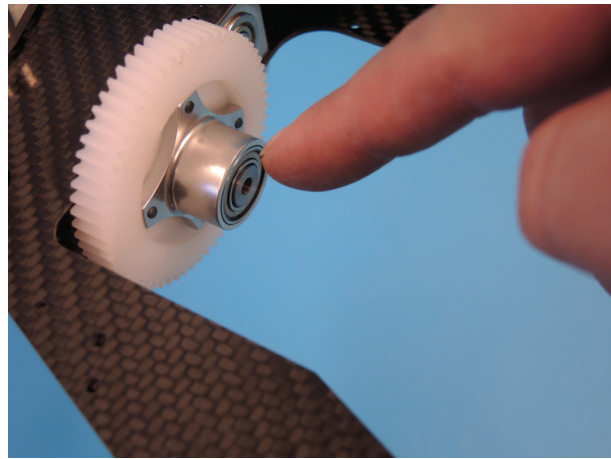
Four countersunk screws M3x8 025 are fitted loosely at first and then tightened in a cross pattern (3,9,12,6 o'clock). Use Loctite.



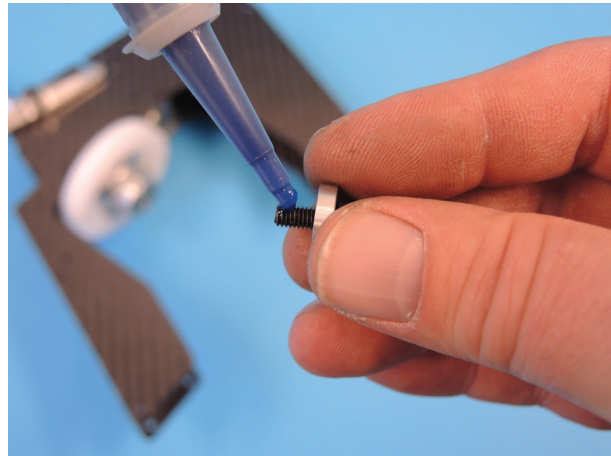
Push the prepared mainshaft assembly from above through the mainshaft bearings and from below fit a shim washer 0x16x0,5 757.



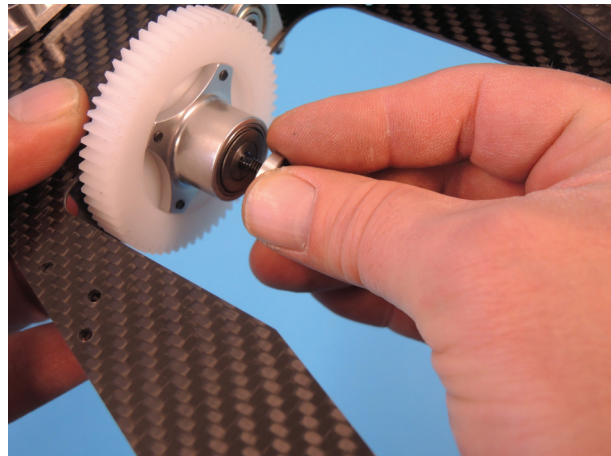
Fit the main gear assembly and check the clearance of the unit. The mainshaft must protrude a small distance from the bottom of the unit. If the clearance is too large then add washers 10x16x0.1 046 or 0.2 033. If the clearance is too small then add washers 5x10x0.1 044.



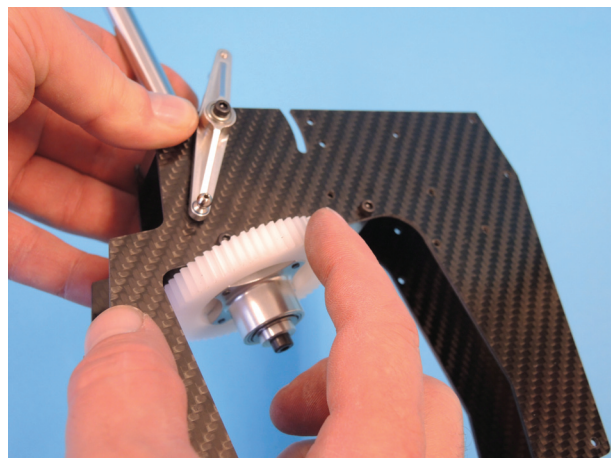
Fit the aluminium main shaft lock H09 with hex screw M5x12 034 and add Loctite to the thread.



Screw in screw finger-tight and check the clearance. If necessary add or remove washers. If everything is slop and bind free, tighten the screw carefully. Use a long screw through the upper hole in the shaft so that the screw can be tightened properly.

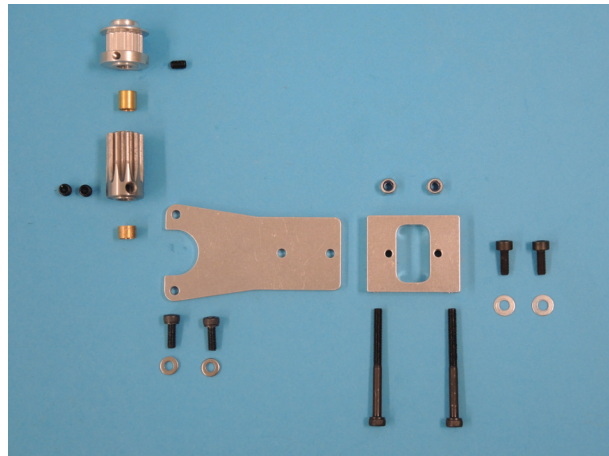


Finally check clearance of freewheel assembly and that there is no play or binding of the gearwheel.





Overview of the motor mount and drive unit components.



The brass spacer bush H12 is pushed onto the motor shaft. Then fit the pinion gear S974.



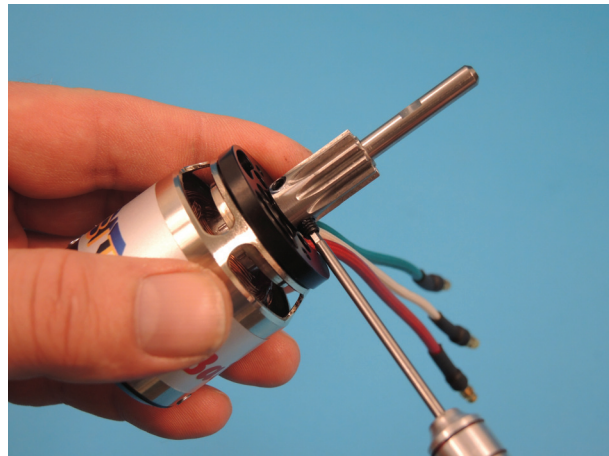
The grub screw hole in the pinion is positioned so that it lines up with the flat spot on the motor shaft.



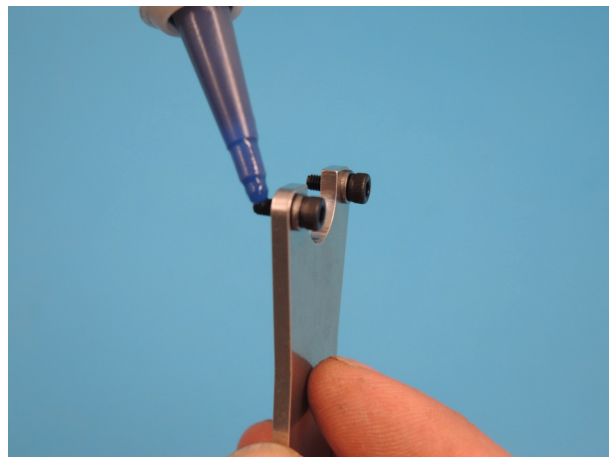
Then put some Loctite on the thread of the grub screw M4x4 573 and screw it into the pinion. Check before tightening that you are really on the flat spot. Therefore leave the screw slightly loose and feel the endpoints of the flat spot while turning the pinion back and forth on the shaft. When this is achieved tighten the screw with 1.7 Nm torque.



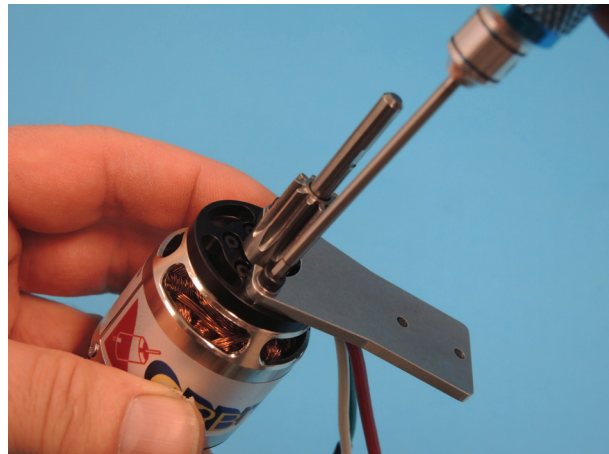
1. Fit the second grub screw M4x4 573 with Loctite and screw into the second hole of the pinion and tighten (1.7Nm).



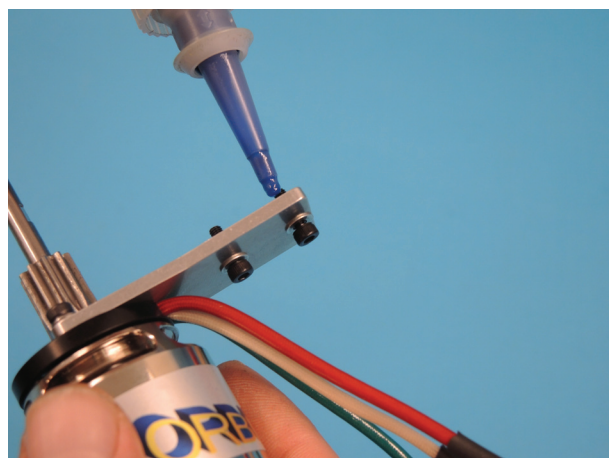
Put two washers 3x6x1 051 onto the hex screws M3x8 D197 and fit through the motor carrier H10. Finally add Loctite to the screws.



Fit the screws to the motor so that the motor cables are under the motor carrier and tighten the screws.

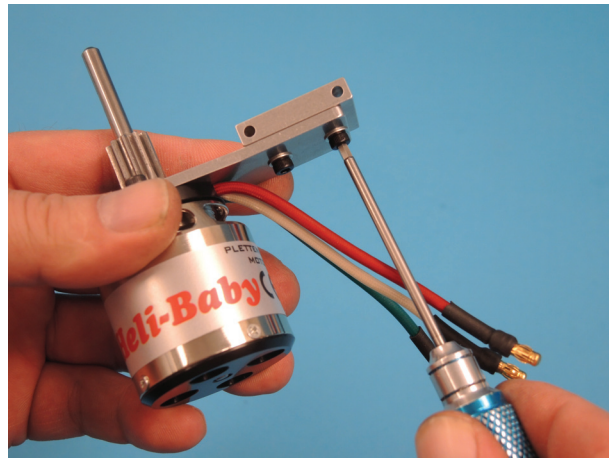


Fit two washers 002 onto hex screws M3x10 D328, fit them from below into the motor carrier and add Loctite to the threads.





Screw the assembly to the motor carrier holder H11.



The motor unit is pushed from below into the upper frame.



The holes in the frame should align with the holes of the motor carrier without being forced. Otherwise adjust the height of the pinion or add washers.



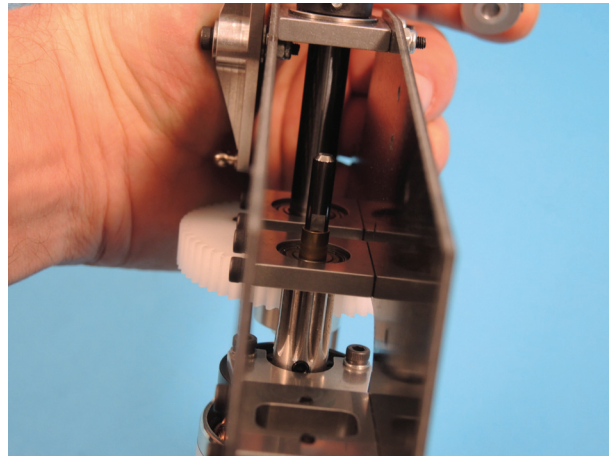
Tighten the assembly with two hex screws M3x35 D338 and lock nuts M3 008.



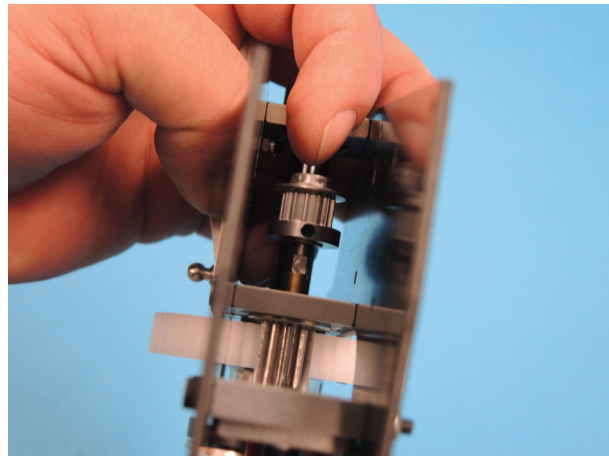
Check the gear mesh by moving the main gear wheel slightly in both directions. A small amount of play should be noticeable. If the gear mesh is too tight, loosen the hex screws holding the mainshaft bearing blocks and press the blocks to the front. If the gear play is too much loosen the hex screws of the motor carrier and the bearing blocks and press both together.



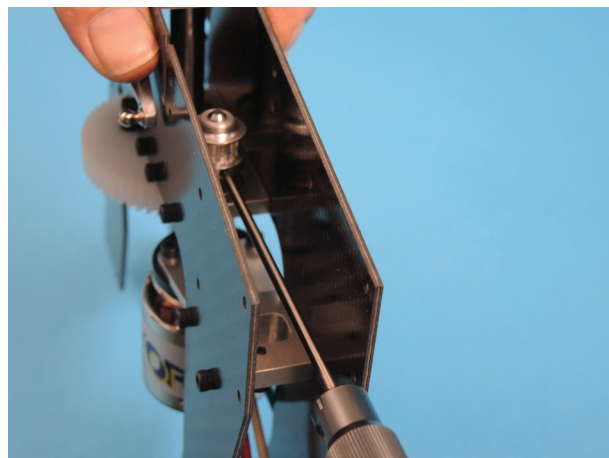
Push brass bush S988 onto the end of the motor shaft



Adjust the motor shaft so that the flat spot is at the rear. Push the belt wheel S981 on the shaft and fit a grub screw M3x5 737 with Loctite.

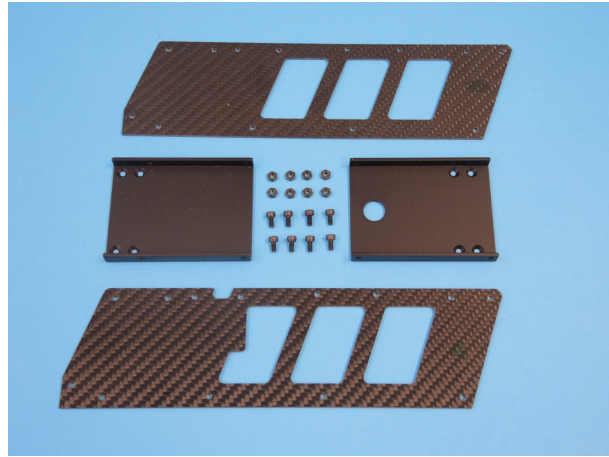


Tighten the belt wheel. Take care that the grub screw is really on the flat spot. Therefore leave the screw slightly loose and feel the endpoints of the flat spot while turning the motor back and forth slightly. When this is achieved tighten the screw.

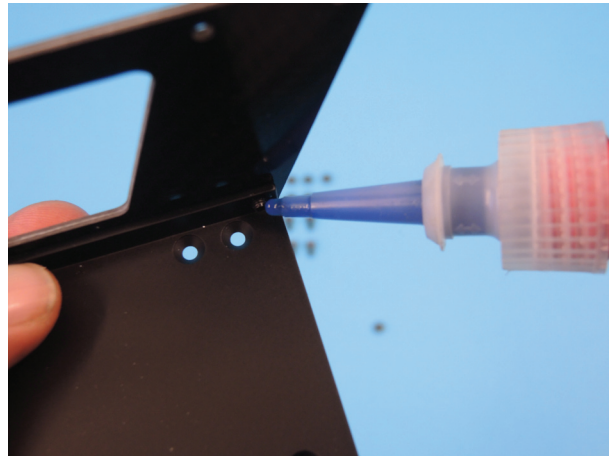




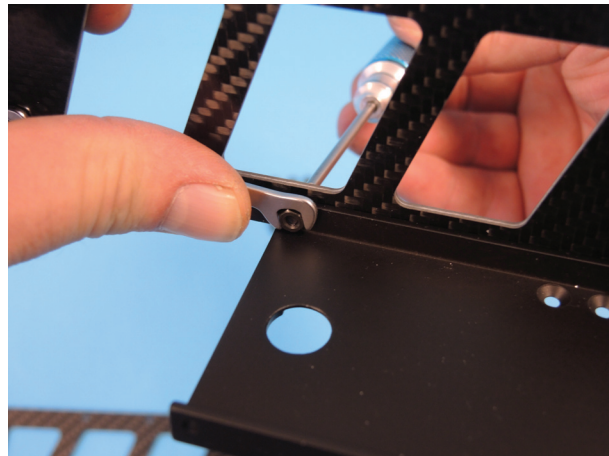
Overview of the lower frame components.



Attach the rear U-profile H16 and the front U-profile H15 with two hex screws M3x6 and nuts D547 with Loctite on the right lower side frame H14 (with three cutouts of the same contour).



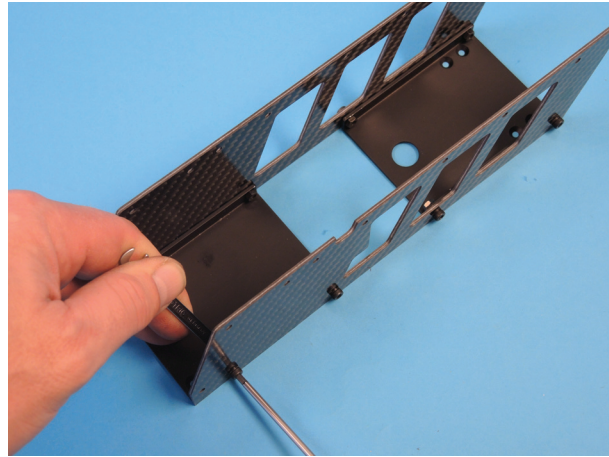
Hold the nuts with an open wrench (f.e. #707)



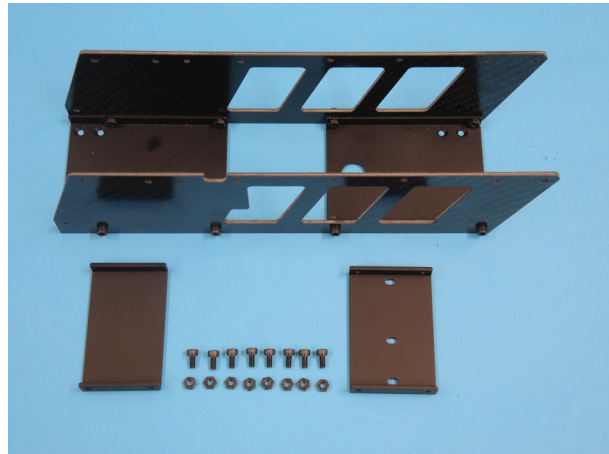
It is recommended that assembly is done on a flat surface while tightening the screws so that the U-profiles are parallel with each other.



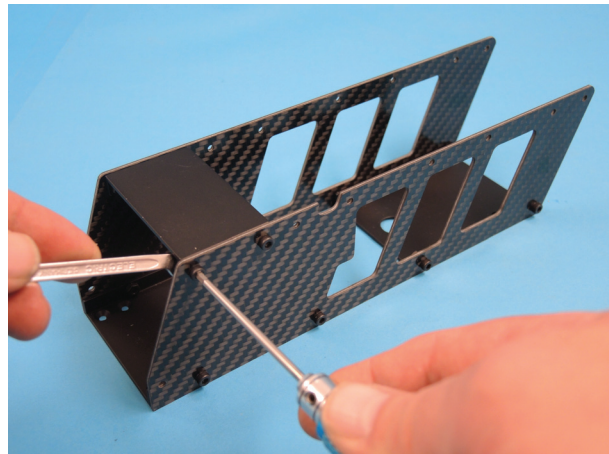
Mount the left lower side frame H13 in the same way with four hex screws M3x6 D196 und nuts M3 D547.



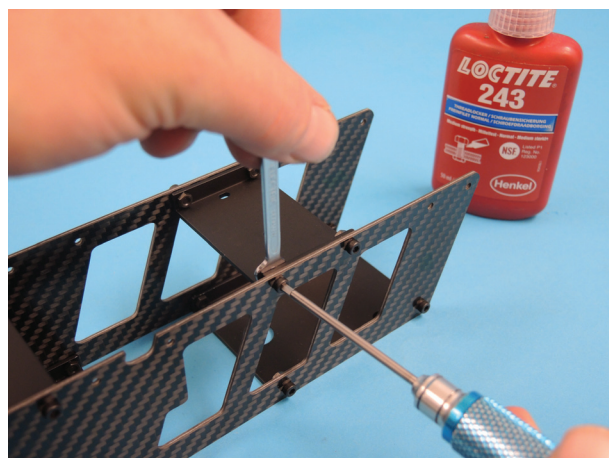
Overview of the upper U-profiles components



The gyro platform H17 is attached to the frame with four hex screws M3x6 D196 and nuts D547 with the arms pointing downwards.



The controller platform H18 is also attached to the frame with four hex screws M3x6 D196 und nuts D547 with the arms pointing upwards.

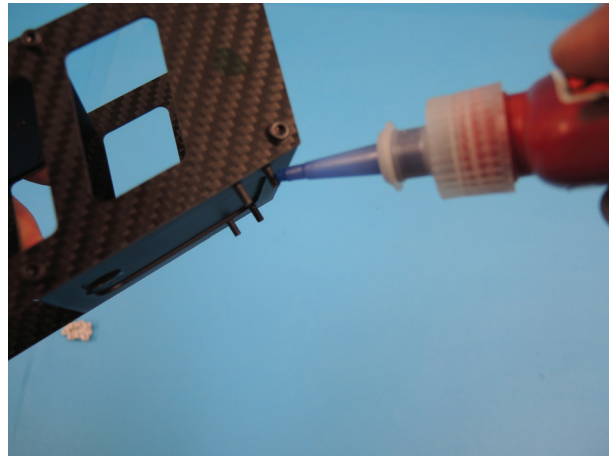




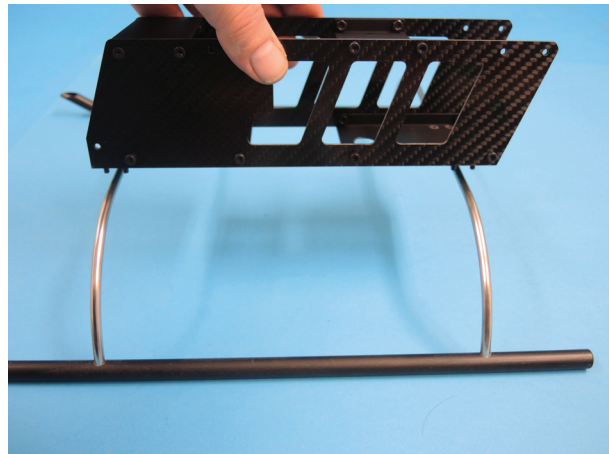
Overview of the landing gear.



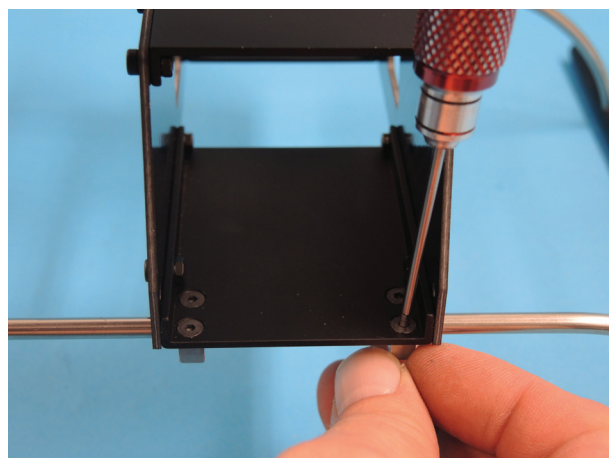
Attach four countersunk screws M3x8 025 to the front and rear bottom U-profile and Loctite each thread.



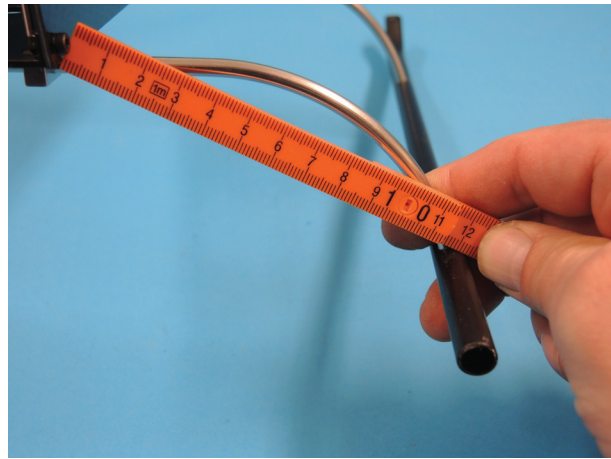
Place the frames onto the landing gear H50 (onto landing bows H19 and skids H20).



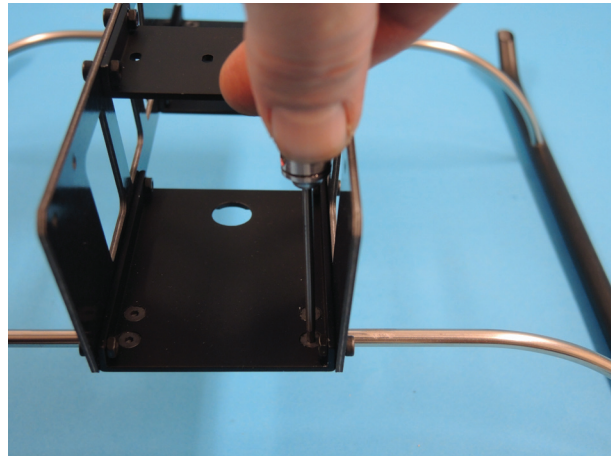
Loosely fit the landing gear with four clamping bow holders H21. Do not tighten at this stage.



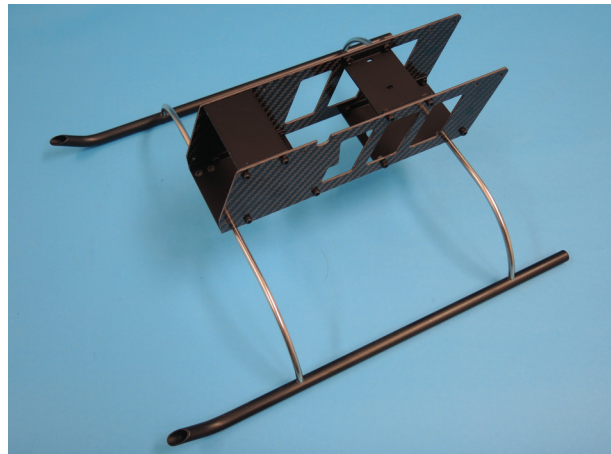
Check for symmetry on both sides with a ruler.



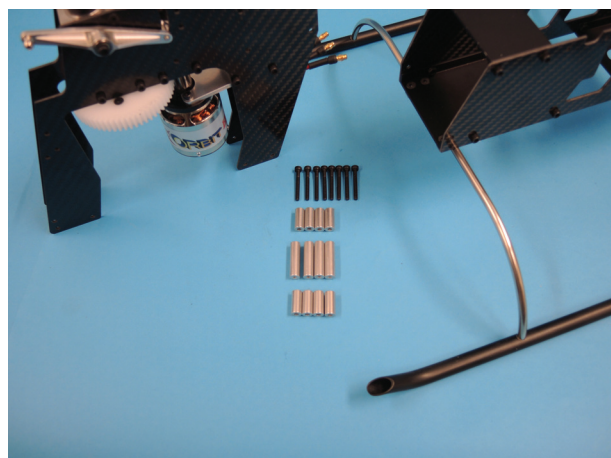
Now tighten the countersunk screws.



Overview of the assembled unit.

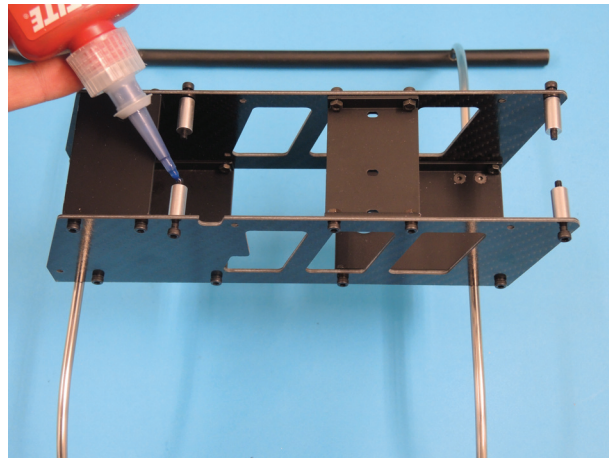


Overview of frame connection components.

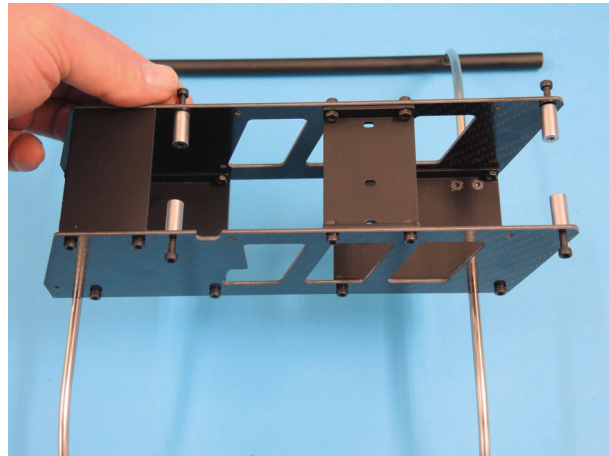




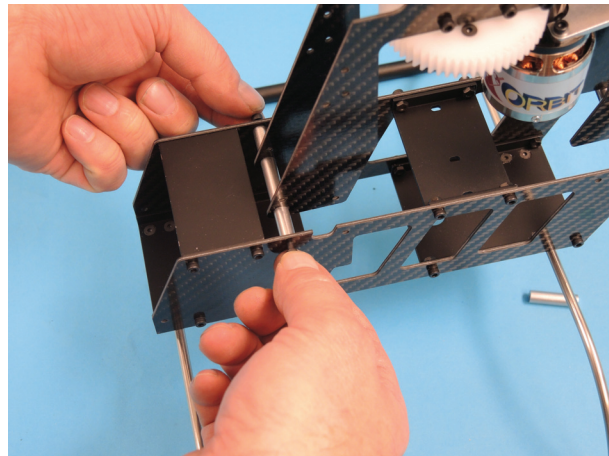
Fit the outer four frame connectors H23 with four hex screws M3x25 D336 on the lower frame and add Loctite to the threads.



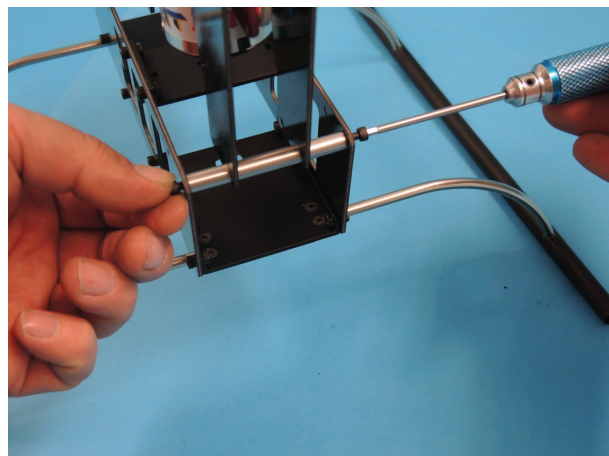
Next pull the hex screws out so they just disappear into the connectors.



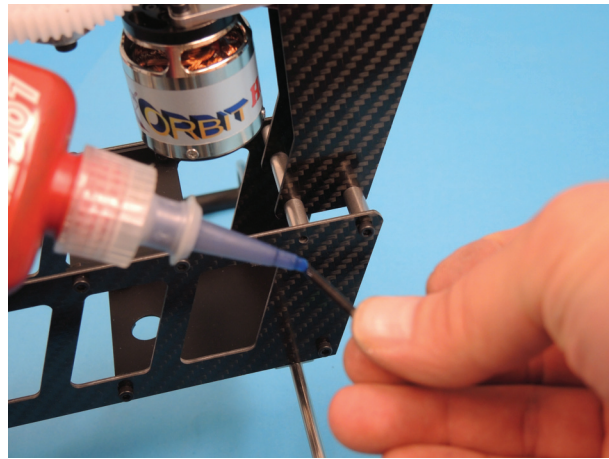
Push two inner connectors H22 between the outer ends of the upper frame. Then slide the upper frame between the connectors of the lower frame so that the screws are in line and push the hex screws into the holes. Do not tighten the screws at this stage.



As soon as the rear connector is assembled the hex screws can be tightened. You will probably need a second 2.5mm hex driver for this.



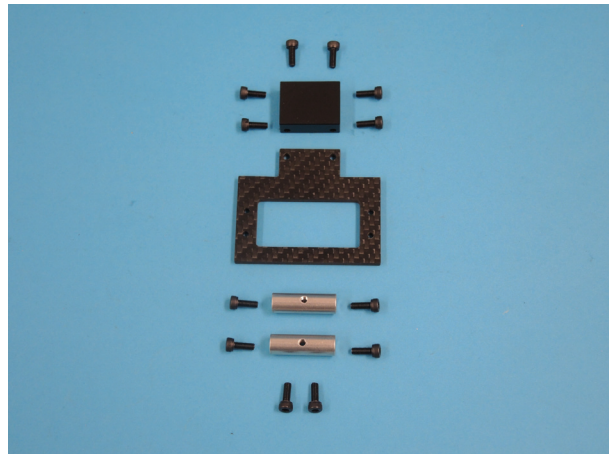
Now add the inner two connection parts using two more inner connectors H22 and outer connectors H23 and four hex screws M3x25 D336.



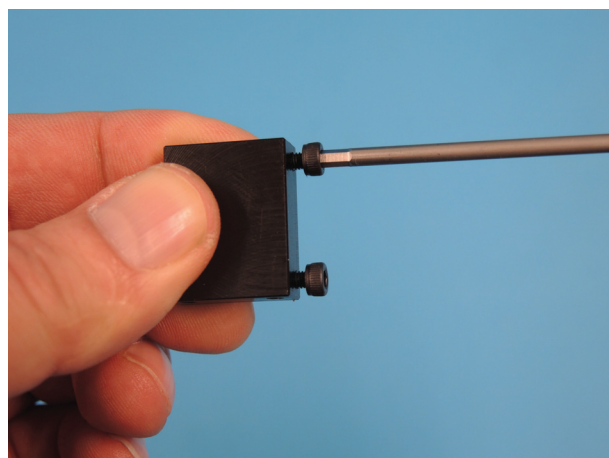
Overview of the assembled unit.



Overview of the rear canopy plate mount and the tail servo mount components.

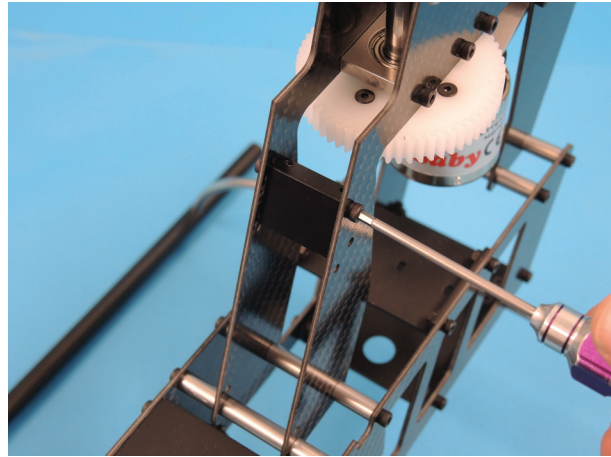


Prepare the tail servo holder mounting block H25. Before mounting, screw two hex screw M3x8 D197 into the upper face to make mounting of the tail servo holder in it's final position easier.





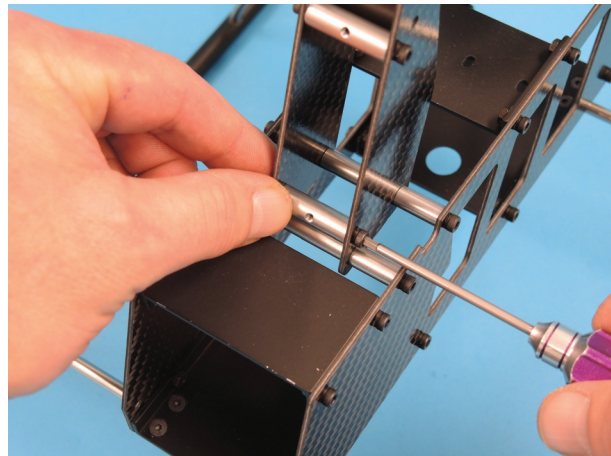
First mount the block using only the upper two holes in the frame. This is so it can be tilted later to tighten the screws more easily for the tailservo holder.



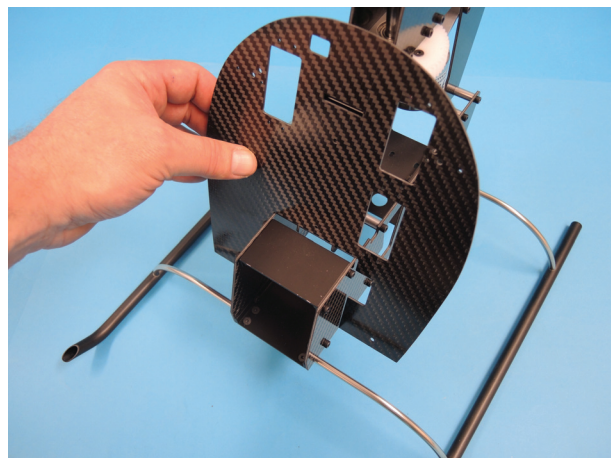
Mount the upper rear plate connector H24 with two hex screws M3x8 D197 and Loctite, but leave loose.



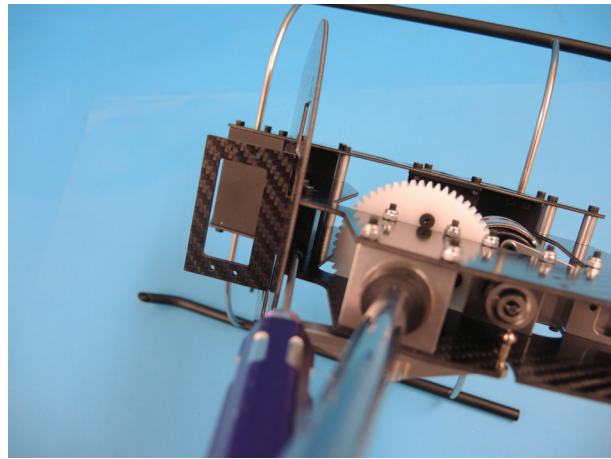
Fit the lower rear plate connector H24 in the same way with two hex screws M3x8 D197 using Loctite, but leave loose.



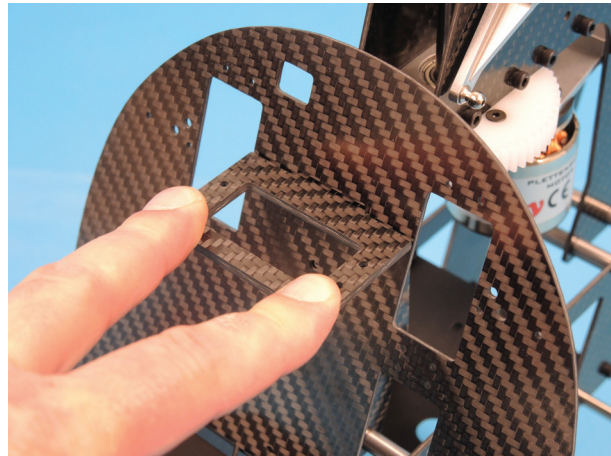
Attach the rear canopy plate H26.



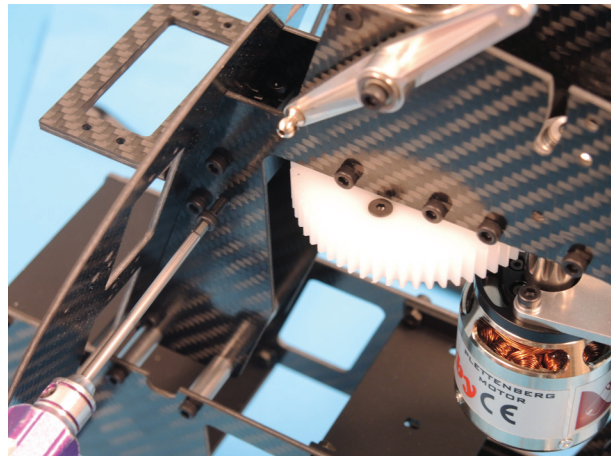
Add the tailservo holder H27. You may have to file the corners of the slot in the rear plate, but only a small amount. The holder should fit in the plate snugly. As soon as the holder fits into the slot (note it is slightly angled) as shown in the picture it should be secured with two hex screws M3x10 D328 on the mounting block H25. For this a ball wrench is useful but not essential.



After tightening press the tailservo holder downwards so that the lower holes of the mounting block line up with the holes in the frame.



Now attach two hex screws M3x8 D197 in the holes and tighten all four screws carefully, do not over tighten as this part is plastic.

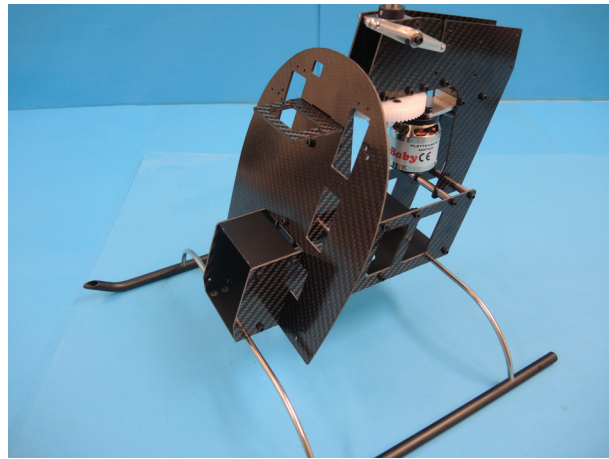


Fit the rear canopy plate with two hex screws M3x8 D197 and Loctite. After tightening you can also tighten the outer screws of the plate connectors.

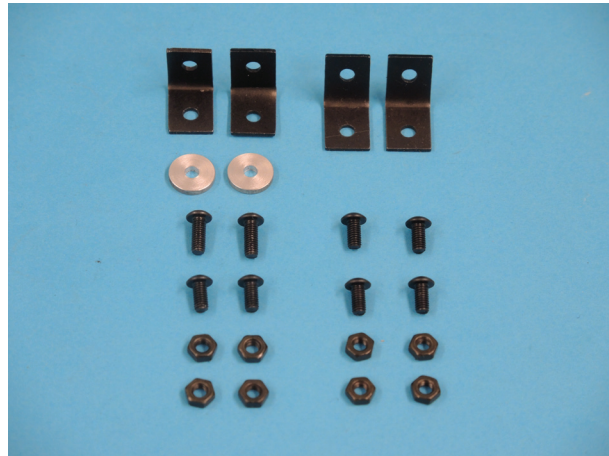




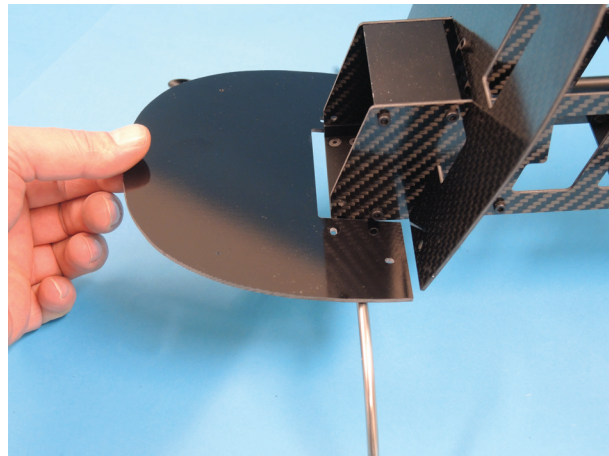
Overview of assembly.



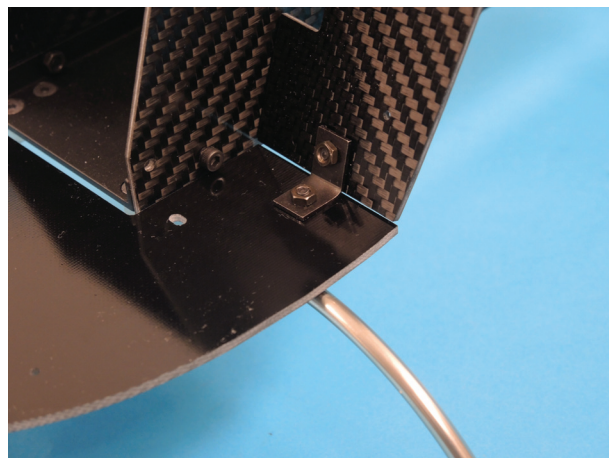
Overview for the bottom plate mount components.



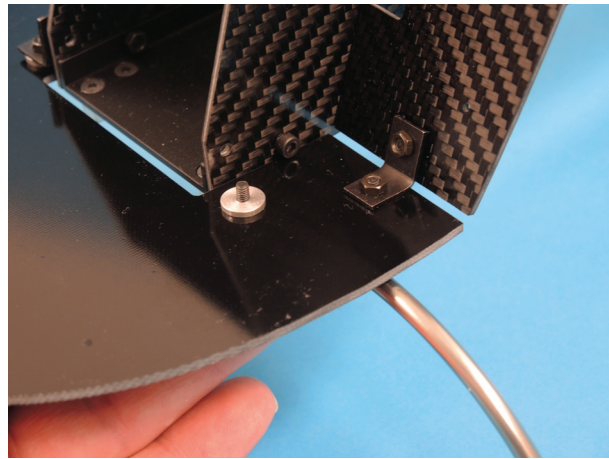
Add the bottom plate H28.



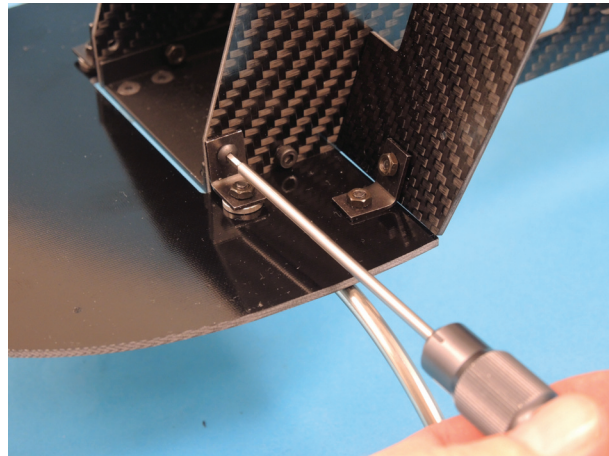
Mount the two outer sides of the canopy plates with the two 110 degree angle brackets H31 with four lens screws M3x6 D199 and nuts D547. Loctite is not necessary at this time, the flybarless system is mounted on the bottom plate and loctite is used later.



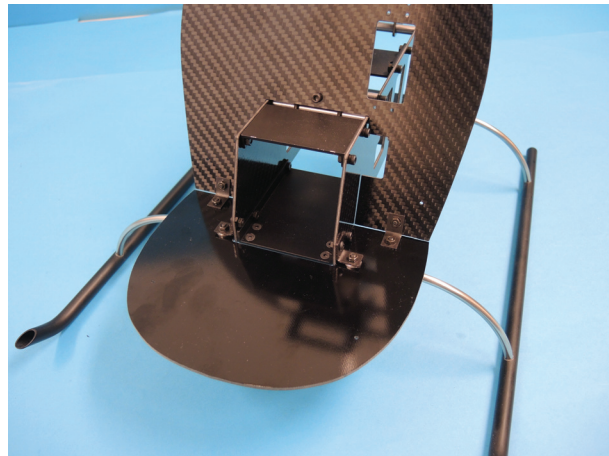
Fit the inner bottom plate holders. First push two lens screws M3x8 024 from underside through the bottom plate and fit from above the two aluminum spacer shims H30.



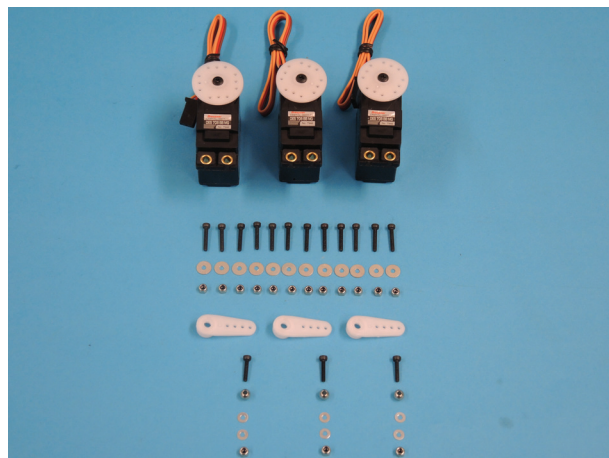
Then add the two 90 degree angle brackets H29 and attach with two lens screws M3x6 D199 and four nuts D547.



Adjust the bottom plate to be parallel to the lower edge of the lower frame. If not, adjust the connecting brackets by moving their position in slotted holes. A perfect fit for the canopy can be set later.

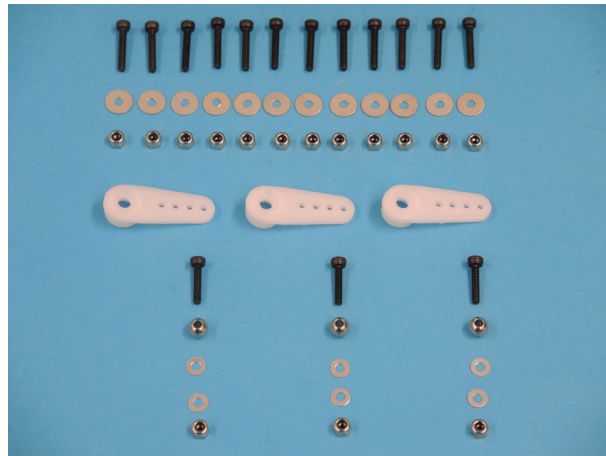


Standard servos are good enough for the Heli Baby, there is no advantage to using expensive servos in this model. Prepare the servo arms as single arms (remove any additional arms from the horn with side cutters or a sanding disc).





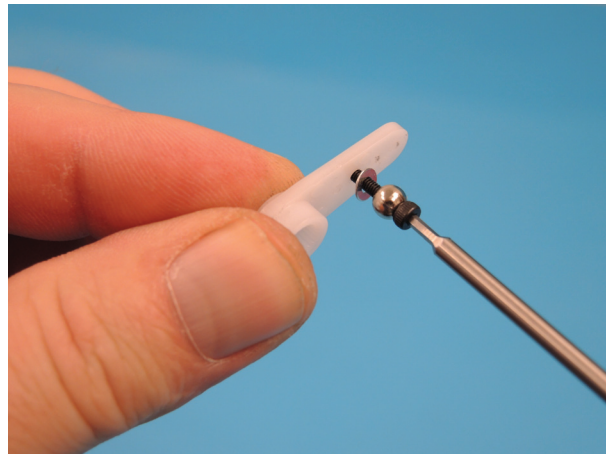
Overview of the servo mounting, servo arms and balls.



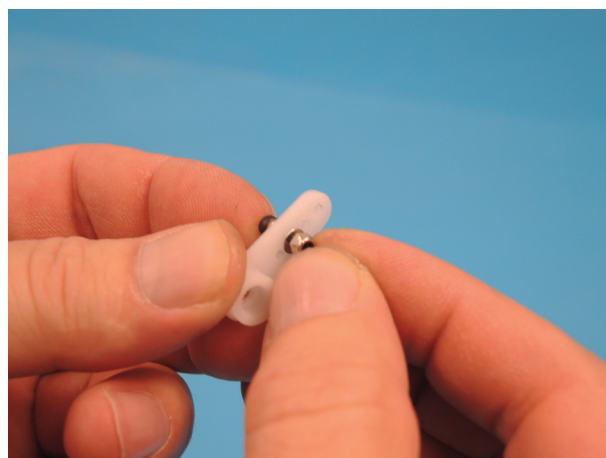
If using Graupner servos the recommended hole is the second inner hole, distance of 12.5mm. Enlarge the holes with a Ø1,8mm drill at low rpm.



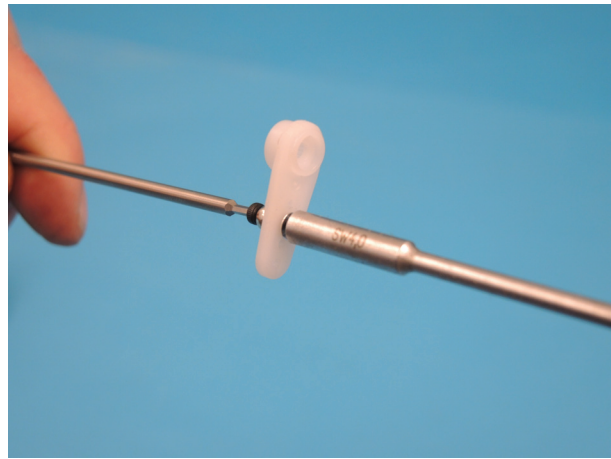
For the elevator servo (lower servo) the ball D118 must be fitted from „below“ using a hex screw M2x10 D296 and a washer M2 001.



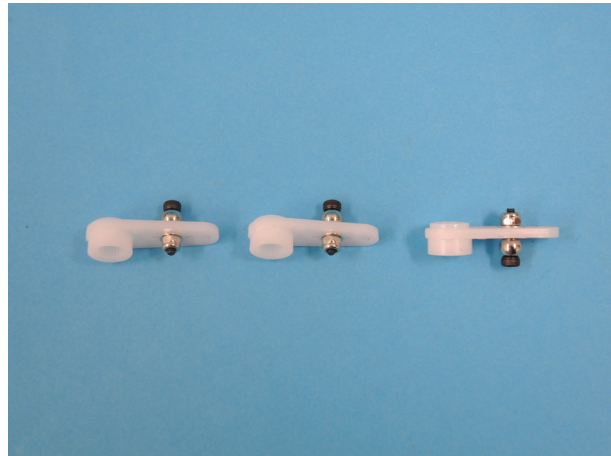
Tighten the screws with an additional washer M2 001 and a lock nut M2 007.



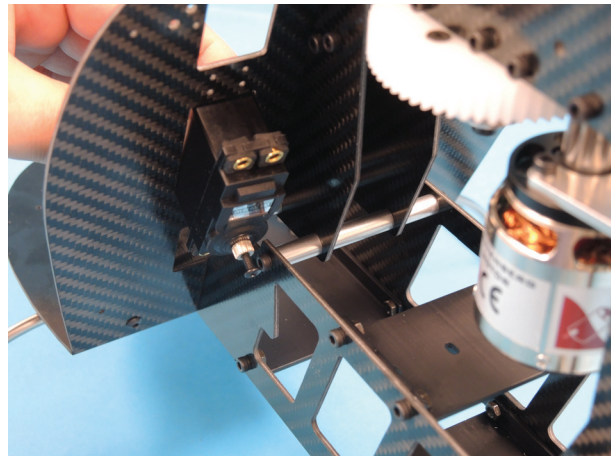
The hex screw is best tightened with a 4mm socket driver and a 1.5mm hex wrench. Tighten the nut careful do not over tighten.



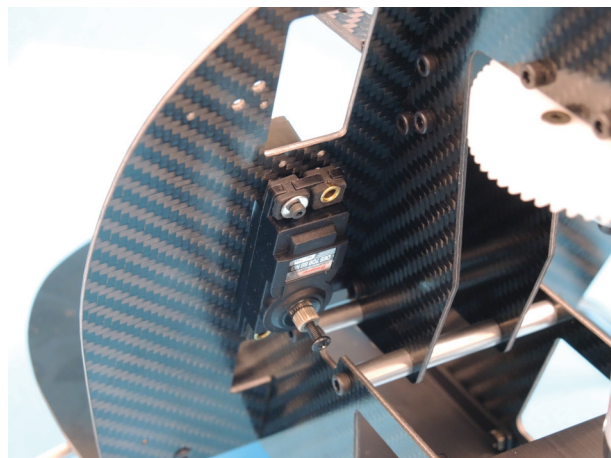
Overview of assembled servo arms. Note the position of the balls for the roll servo arms and pitch arm.



First fit the elevator servo in the lower left servo slot. Mount the roll servos after the tail servo. To make fitting the tail servo easier hold nuts with a pair of pliers.

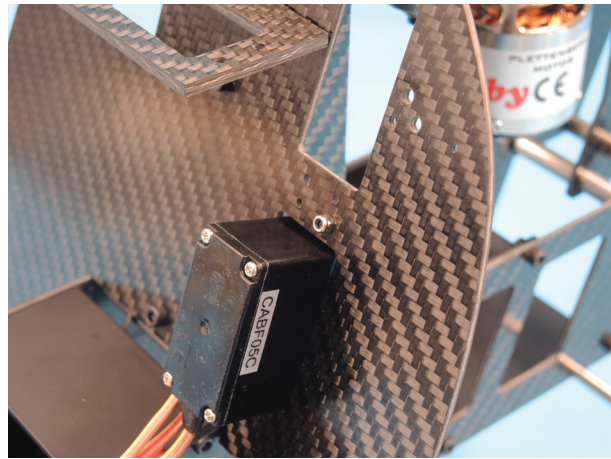


All servos are attached with four hex screws M2x12 099 and large washers M2 D517 to the rear canopy plate. These screws are small enough to give a small degree of adjustment for mounting of different servos.

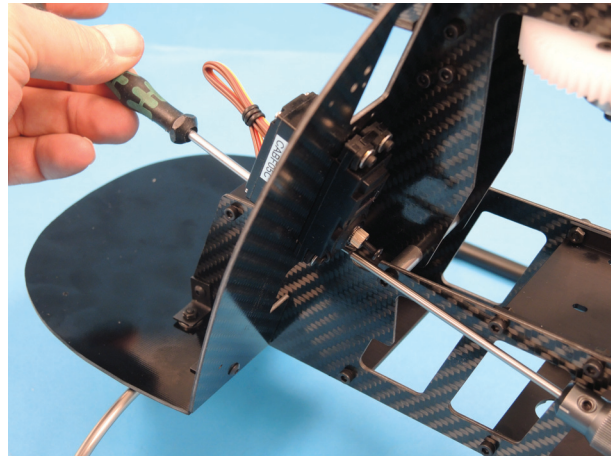




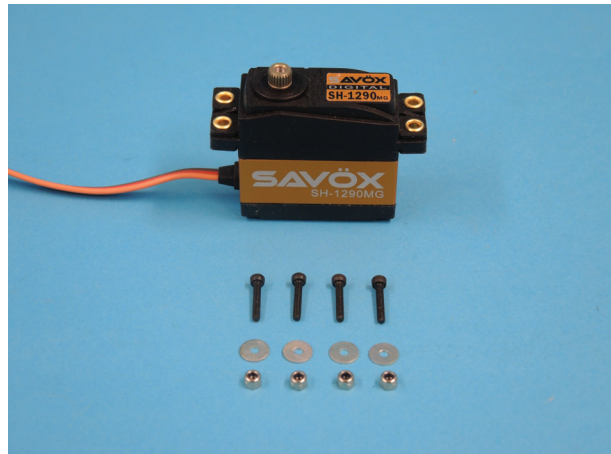
Tighten the screws with lock nuts M2 007.



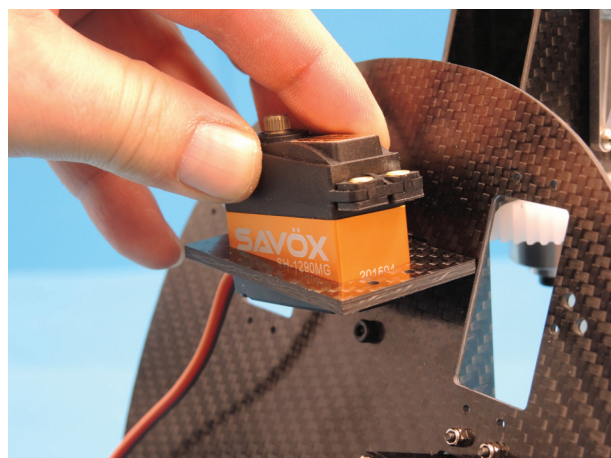
For mounting, long socket drivers are recommended.



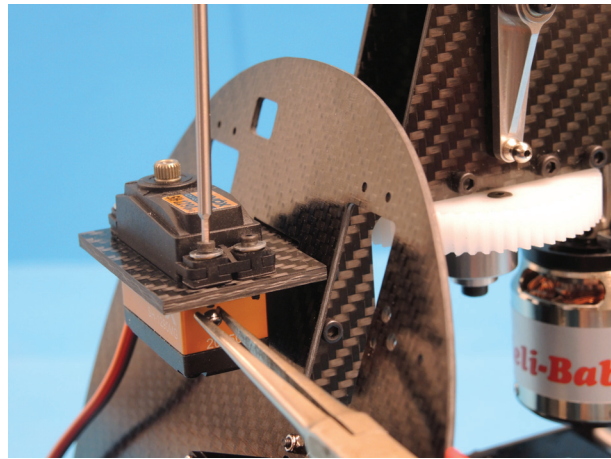
The tail servo with mounting screws, nuts and washers



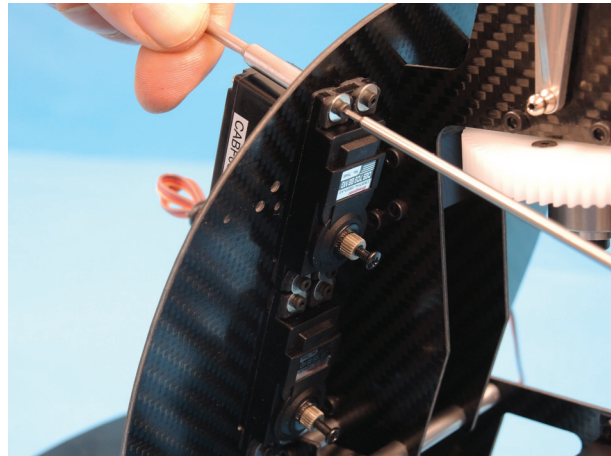
The cutout in the tail servo holder is designed to fit most tail servo types. Some servos may require a little more effort to fit.



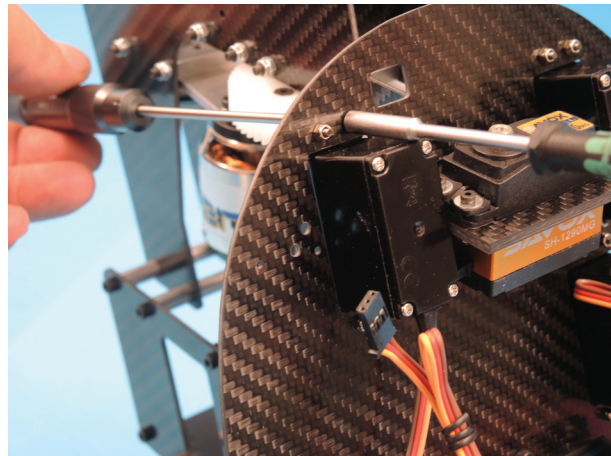
For easy mounting of the tailrotor servo use small pliers to hold the M2 lock nuts and after nut is in place use a 4mm open end spanner to tighten.



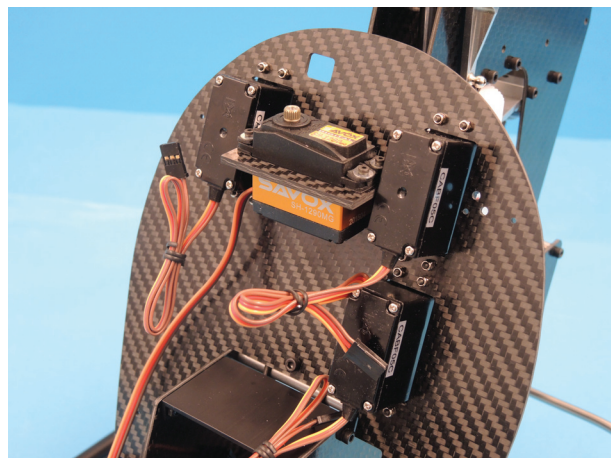
Now mount the two roll servos. Tighten the hex screws on all servos making sure the rubber blocks are compressed slightly so that the servo is held securely and does not move during operation.



Mounting of the right roll servo.

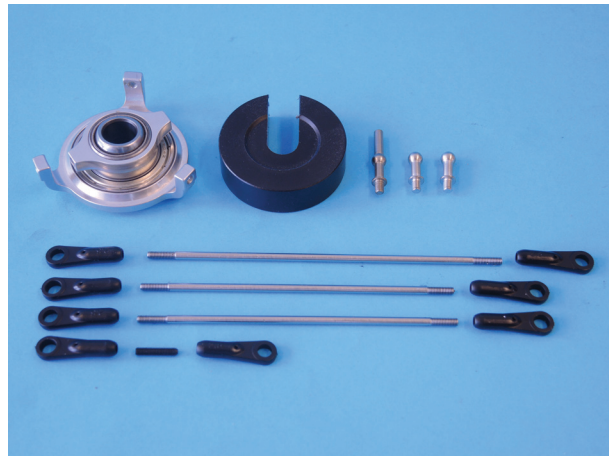


Overview of completed servo installation. The pilot's seat is cut out to fit later. The top of the seat is cut so that it gives additional support to the tail servo.





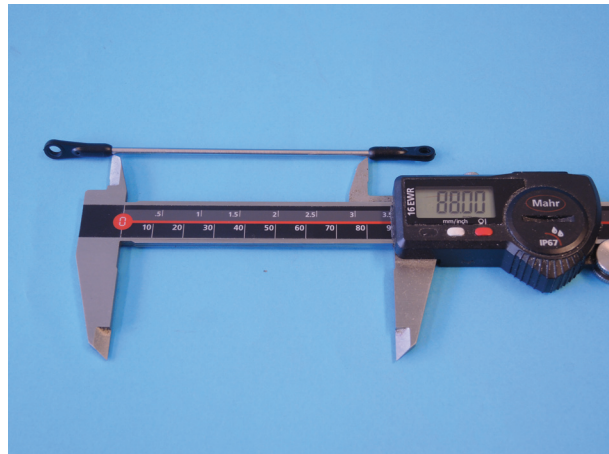
Overview of the swashplate linkage components.



Screw two balls M3x9 078 and a guidance ball bolt D530 with Loctite into the outer ring of the swashplate D528.



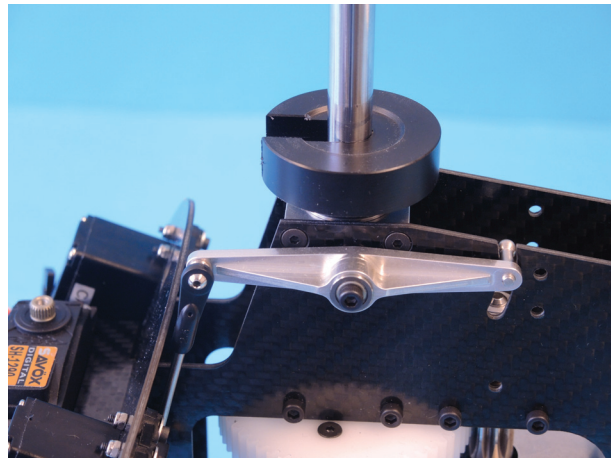
Assemble the elevator rod 106mm H33 with two ball links 2.5 041. The length between the links is 88mm. Turn the ball links so that the number „2.5“ is always to the outside when you press the link on to the ball.



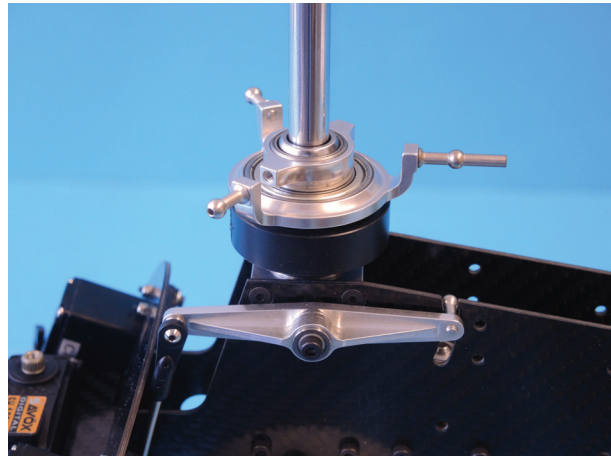
Fitting of the elevator servo rod. Connect the servo arm without retaining screw at this stage to allow for position adjustment when setting up the flybar system. This applies to all servos.



Attach the swash plate leveller D529 with the small recess to the top.



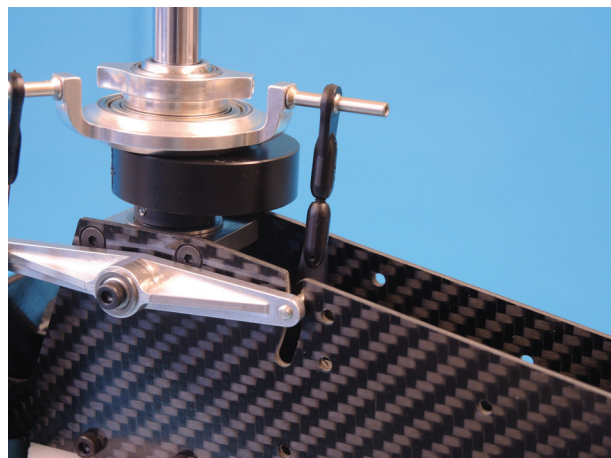
Place the swashplate on the leveller. This height is now the zero degree position used for adjusting the correct length of all rods.



Screw the H32 ball links to the two roll servo rods 92mm 2.5 041. The internal length between the links is 74mm.



The rear elevator linkage is made from a grub screw M2.5x12 520 and two ball links 2.5 041. Mount the ball links as shown so that the swashplate is horizontal in neutral position. Usually the rod will have approximately 1mm free space between the links.





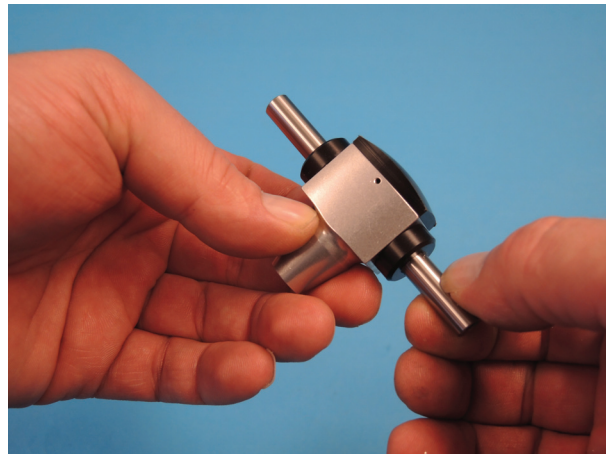
The swash plate holder H34 is provisionally fitted with two hex screws M3x35 D338 and lock nuts M3.  
When mounting the tailboom the swash plate holder will be removed to make fitting the toothed belt easier.



Overview of components of the rotorhub and feathering spindle.  
To identify the individual components see the drawing on the next page.

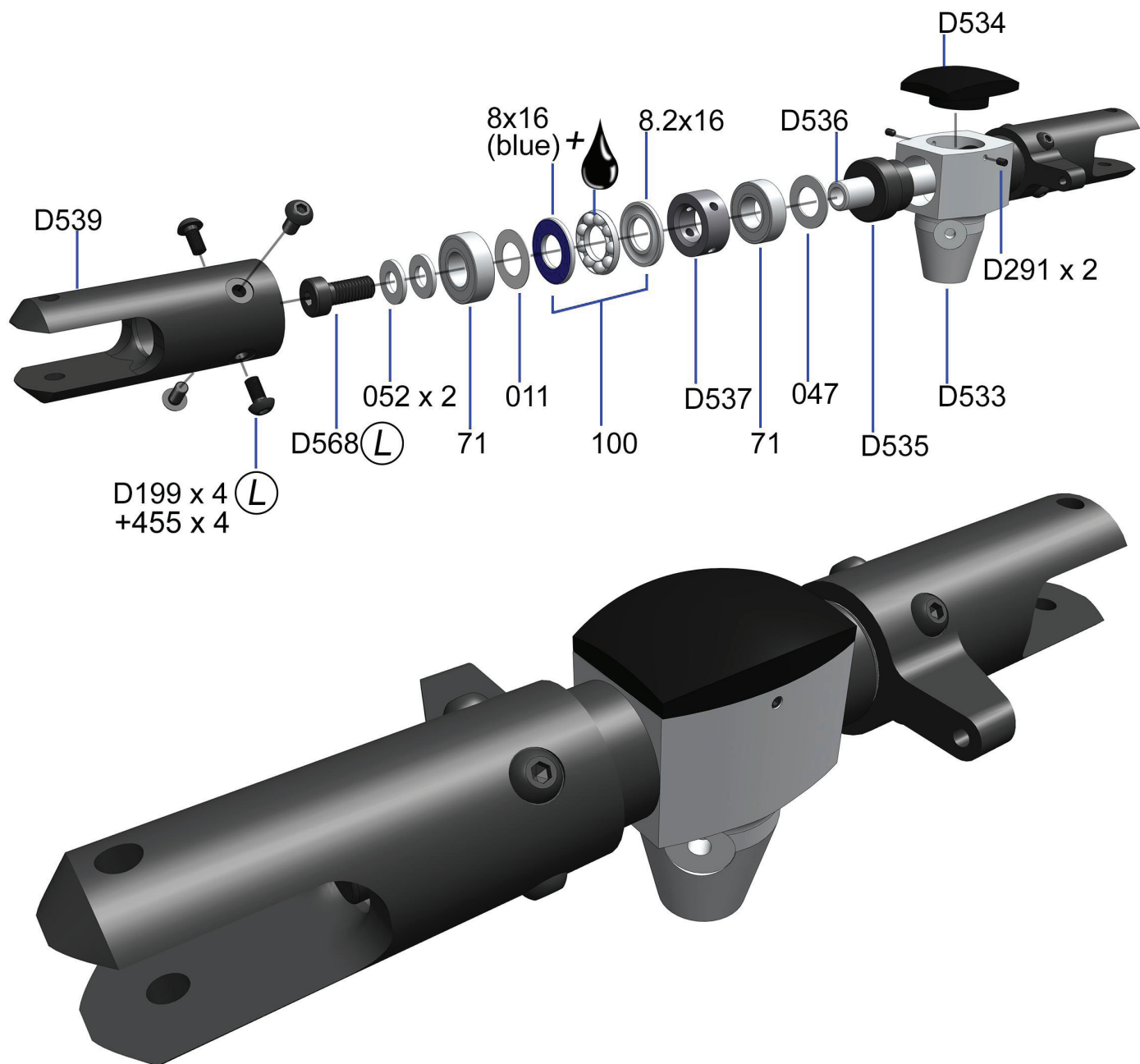


Push the feathering spindle D536 through the plastic bushes of the rotor hub D553 and adjust so it is centred.



Now assemble all parts as shown in the picture. The inner washer is 0.5mm thick, the outer washer is 0.2mm. Lightly tighten the spindle screws M5 D568 to check clearance of the bearings. If the end play is too large, then add one 0.1mm washer to the 0.2mm shim. If it too tight then replace the 0.2mm shim with a 0.1mm shim. When clearance is correct there will be a small amount of movement and the bearings will turn freely, now tighten the spindle screws with Loctite.





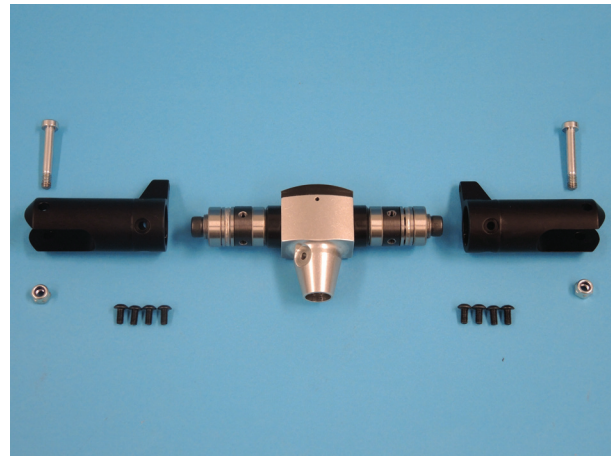
(L) = Loctite 243

**minicopter**

**Heli-Baby NT**



Overview of components for the blade grip assembly.



Push the blade grips onto the mounting ring and align the four holes. If the blade grips are tight, warm them up with a hair dryer. Fit 4 hex lens screws M3x6 D199 and shim washer 3x6x0,2 455 and mount them loosely with Loctite. Before tightening pull both blade grips with force outwards to eliminate endplay. This can be done by fitting the blade bolts and looping a rope through them to create the required pulling force. When done tighten the 4 screws on each blade holder.



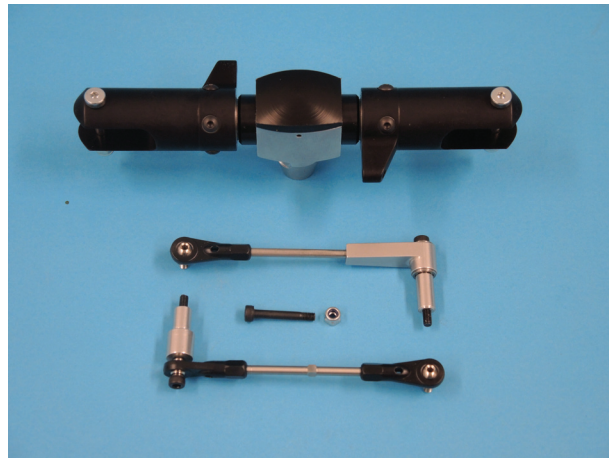
Assemble the left and right roll rods H35 with a large ball link D72 and a ball link with bolt D324. The ball link with ball is placed on the end with the left hand thread (with turned ring). When fitted, the length can be adjusted by turning the rod clockwise to reduce the blade angle and counter clockwise to increase blade angle.



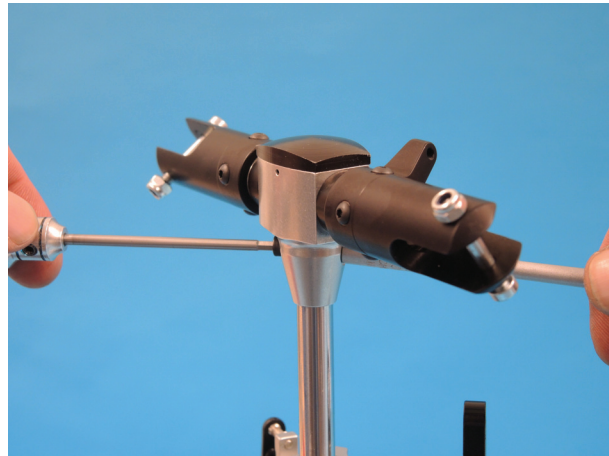
Fully screw in the 52mm H37 rod into the SRC arm H36 with Loctite, so that no thread is visible outside the unit (this is to avoid the risk of breakage in the threaded area). On the other end add a ball link with bolt D324. This rod has standard threads (clockwise turning).



Overview of rotorhead components before assembly.

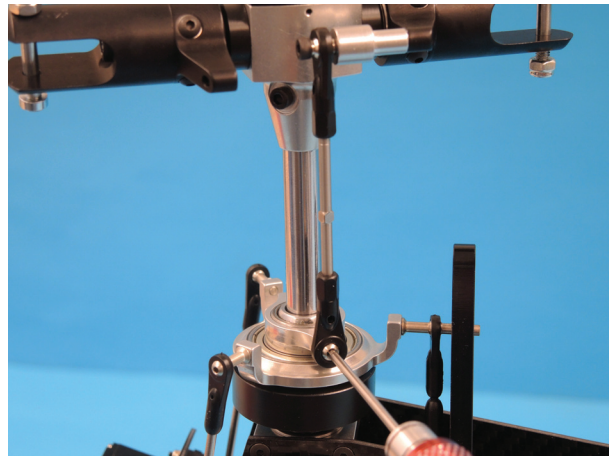


For mounting of the head, it is recommended to add a drop of oil into the shaft hole of the hub. Carefully push the head onto the shaft straight down, never turn the hub on the shaft (risk of seizing). When the bolt holes are aligned fit the Jesus bolt D538 and tighten with a lock nut M3 008.



The rod with two ball links is attached to the blade grip with a hex screw M3x30 D337 and the stepped bush D540 using Loctite.

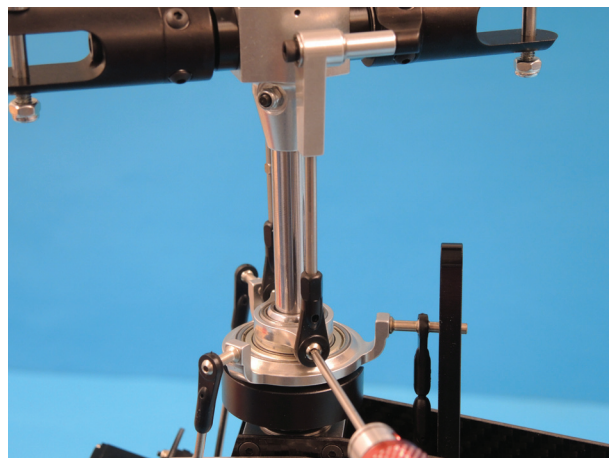
Screw the ball link at the other end to the swash plate with Loctite on both threads (outer and inner thread.)



The SRC rod is attached to the bladegrip with a hex screw M3x30 D337 and a bush D542 using Loctite.

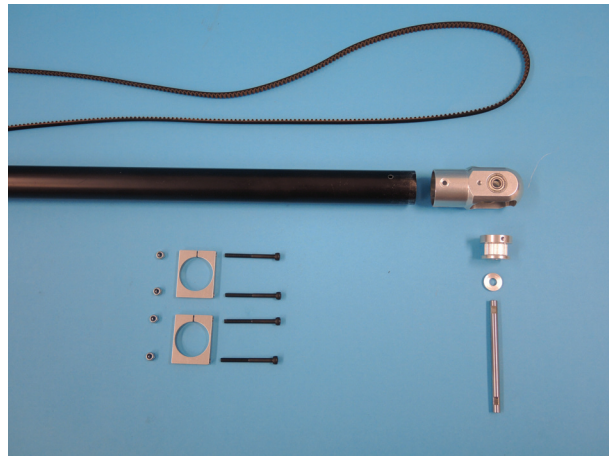
Screw the ball link at the other end to the swash plate with Loctite on both threads (outer and inner threads.)

Check the length of both rods so that the angle of the blades are about zero degree pitch. The final adjustment will be done during setting up of the flybarless system.

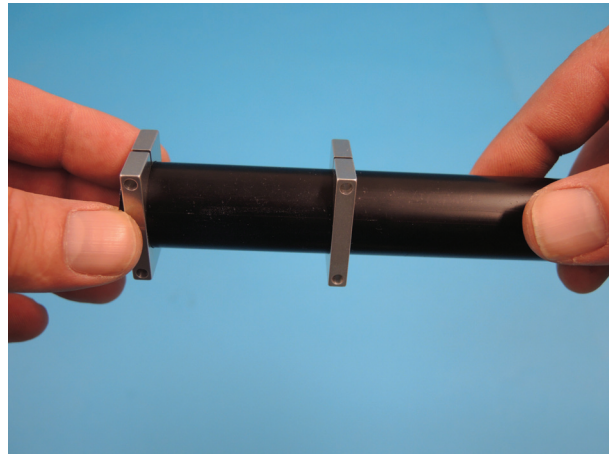




Overview of the tailboom components.



Slide the two tailboom clamps H39 on to the tailboom H38 on the end without the holes in the boom. This is easier if you open the slots in the clamps a little during fitting with a small flat screwdriver.



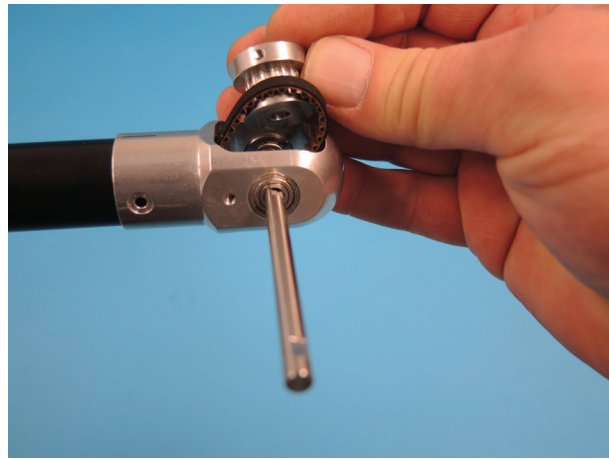
Push the toothed belt H40 through the tailboom or pull it with a long hooked wire.



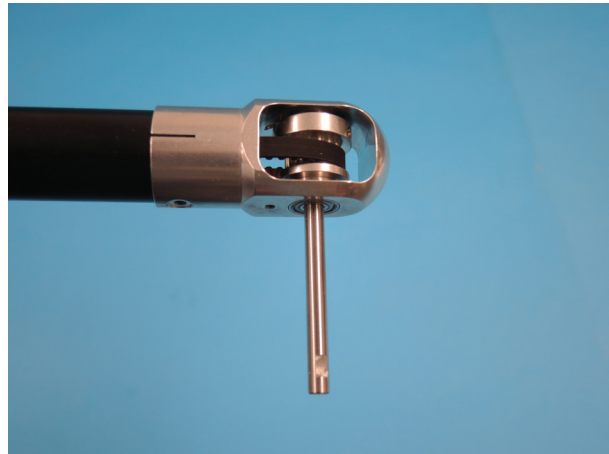
Push the tailrotor shaft D556 through the tailrotor housing D555 and add the spacer shim D558 inside with the chamfer to the ball bearing.



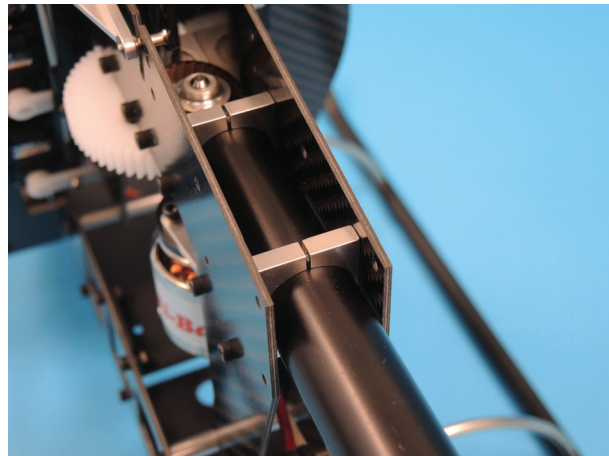
Push the tailrotor housing onto the tailboom and pull the belt as shown through the housing. Next insert the pulley wheel D579 into the belt and push it into the housing. Check that the spacer is on the correct side (where the pulley flange is smaller). Finally push the tailrotor shaft completely through.



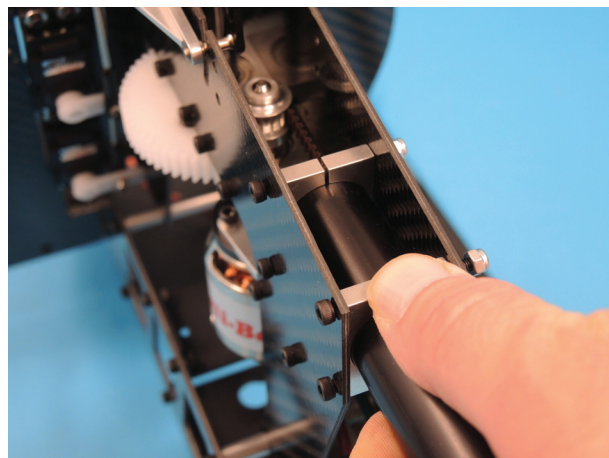
Overview of the mounted tailrotor housing.



Remove the swashplate holder to fit the belt over the front pulley. This is possible without removing the holder, but easier with it removed. Place the two tailboom clamps with the cut slot uppermost. Make sure that the belt is turned a 1/4 turn the correct way, so that when the motor is turned anti clockwise the tail blade at the front side of the disk moves up towards the rotor disk.

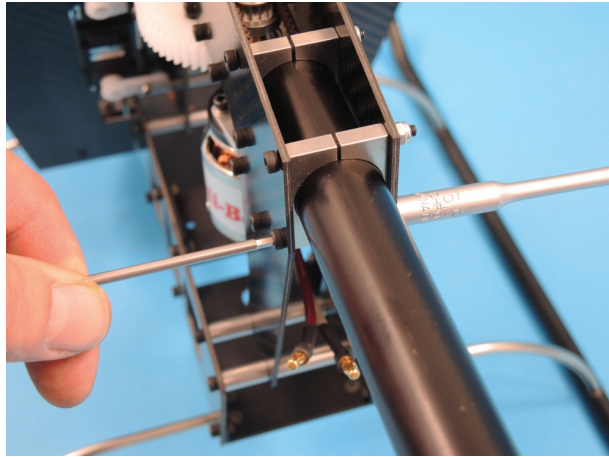


Push four hex screws M3x35 D338 through the clamps and fit four lock nuts M3 008. Do not tighten at this stage.

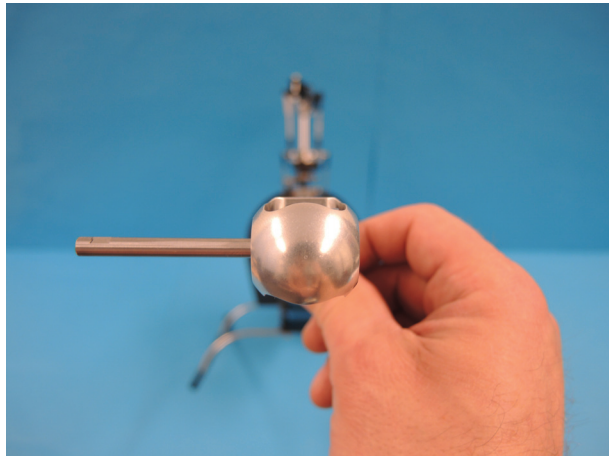




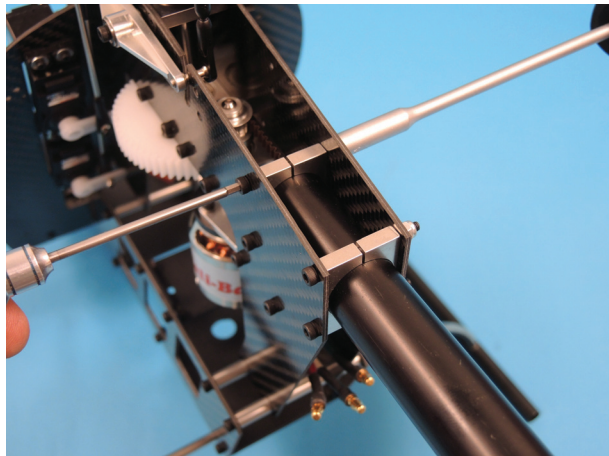
Tighten the lower two screws on the boom clamps and then tighten the belt by pulling the tailboom out.  
The belt should be tightened so that it has no slack but not so tight that it will twang like a guitar.



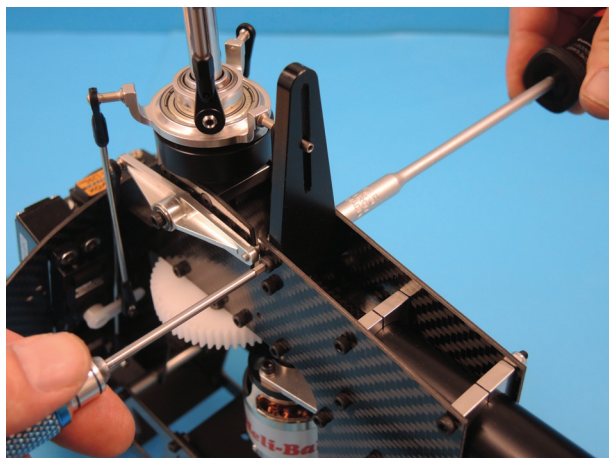
Adjust the tail output shaft to be right angles to the main shaft.



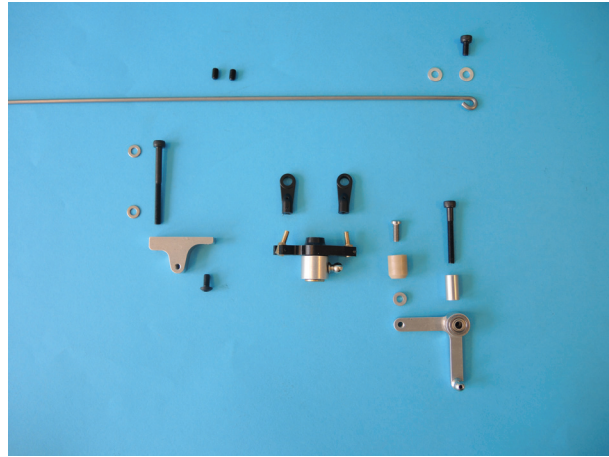
When the tailbelt is tightened correctly tighten the upper two screws.  
Note do not over tighten the clamps, there must be a gap in the slot when tightened.



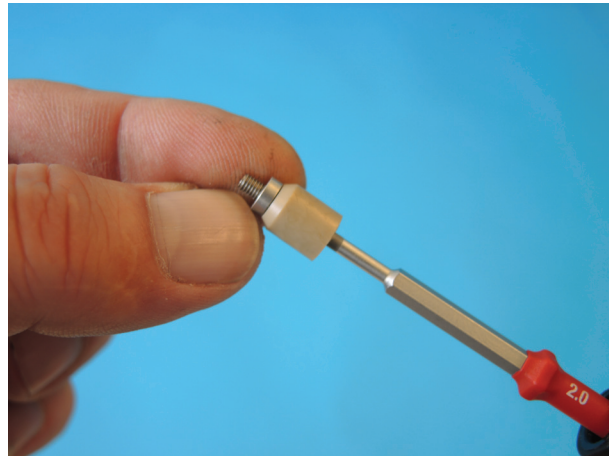
Finally mount the swashplate holder again and tighten the two screws.



Overview of the tailrotor linkage.



Push the small head screw 092 into the slider ball housing and add an aluminium washer D79.



Attach this unit using Loctite to the tail bellcrank H41.

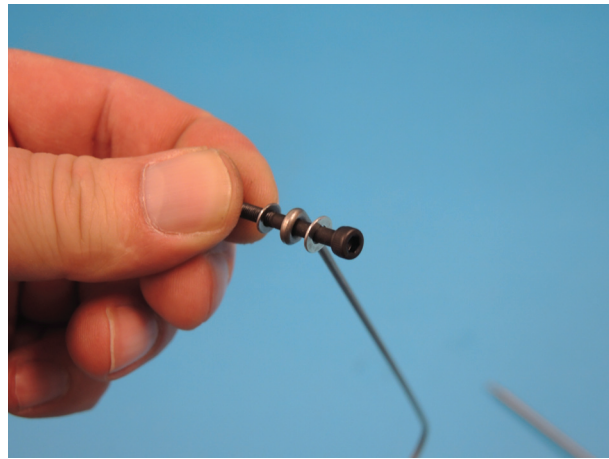


Fix the tail pulley on the tailshaft using two grub screws M3x5 0737 and Loctite. Take care that one grub screw is on the flat spot of the shaft and tighten first, Before tightening the second screw check that the shaft is level with the end of the bearing.

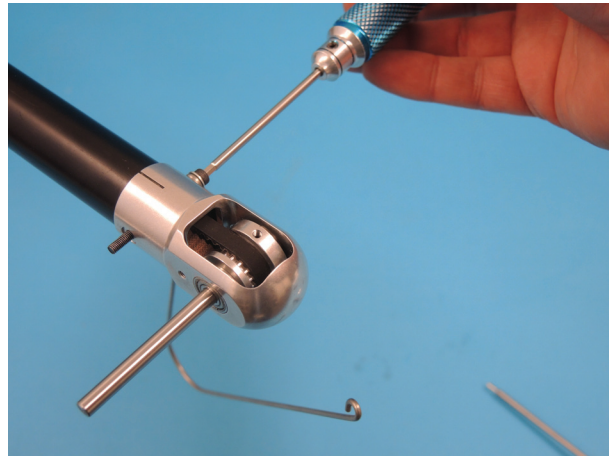




Bend the tail protection wire S868 over a one inch round bar and to an angle of about 150 degrees. Before bending the wire make sure that the eyelets are in line with the bend so that there are no alignment problems when fitted later. Fit the wire over hex screw M3x35 D338 with washer M3 002 under the screw head and shim washer 3x6x0,5 D312 on the other side of the eyelet.



Now push the screw through the tail rotor housing.



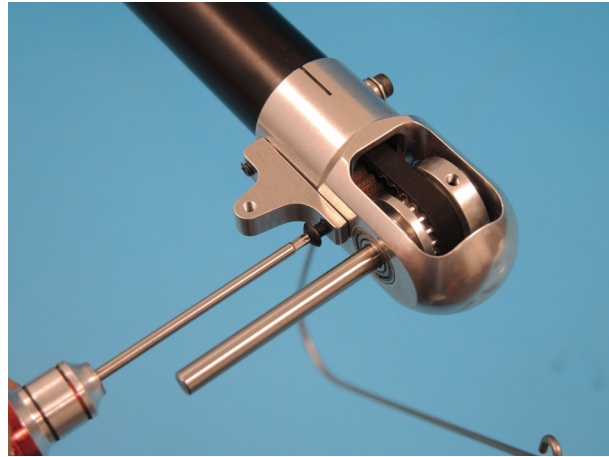
Add a shim washer 3x6x0,5 D312 to the other side and add Loctite to the screw thread.



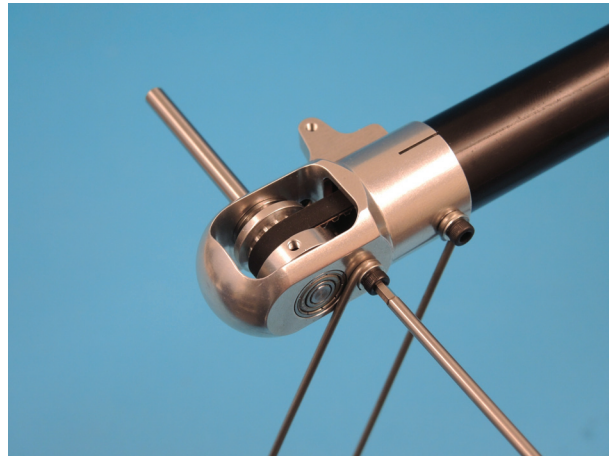
Fit the bellcrank holder D560 .



The rear end of the holder is attached with a lens screw M3x6 D199 and Loctite on the thread.



The unattached end of the protection wire is fixed in place with a hex screw M3x6 D196 and shim washer M3 002 under the screw head.



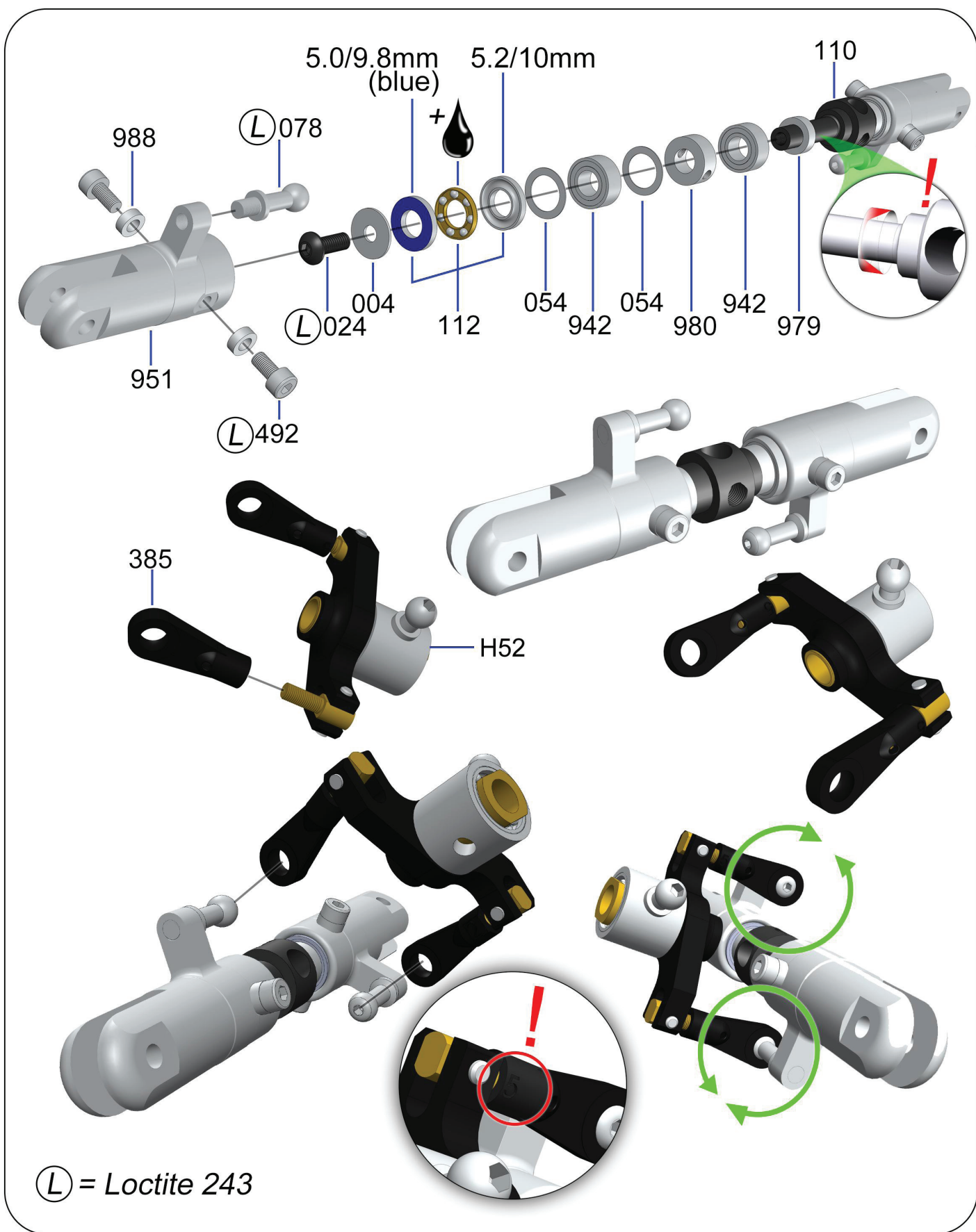
Two ball links 385 are screwed on the tailslider H52. Then slide the unit on to the tailrotor shaft and check for smooth movement on the shaft.



Mount the bellcrank with hex screw M3x25 D336 and spacer bush H42 on to the bellcrank holder and check that the ball bush on the bellcrank is located in the slider ball. Note do not use Loctite at this stage.  
Now assemble the tailrotor as shown on the next page.



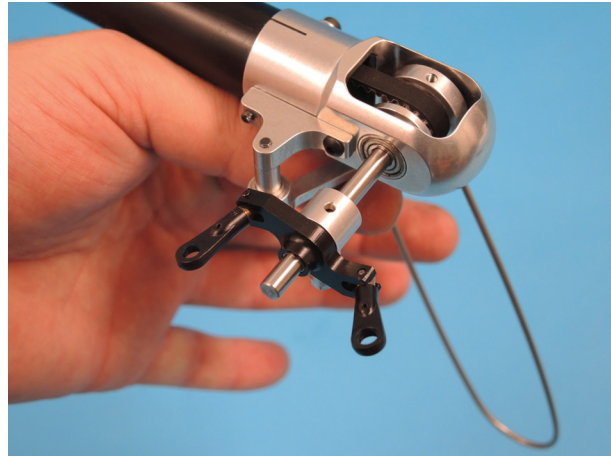




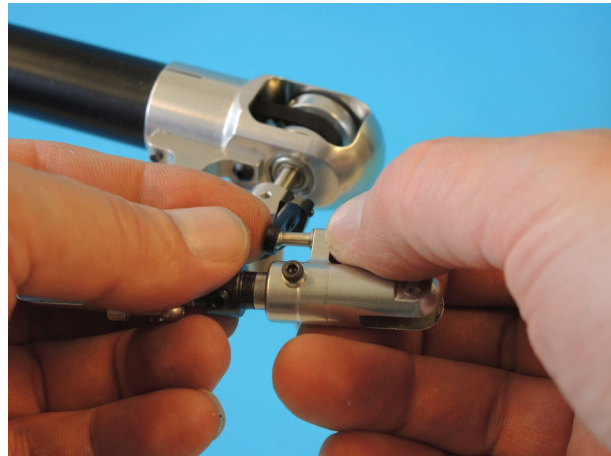
***minicopter***

***Heli-Baby NT***

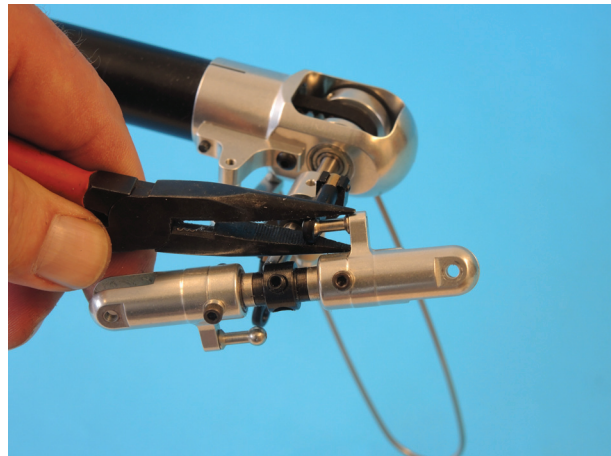
Check that there is full and free movement of tail slider assembly.  
The slider must move on the shaft without noticeable force.



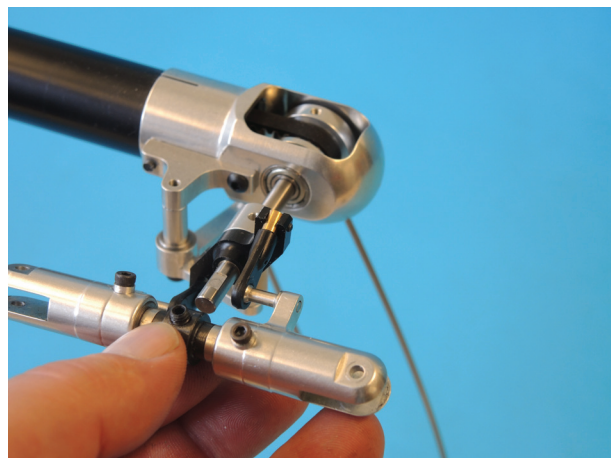
Now push one ball link onto the ball of a tail blade grip and check for bind free movement.  
Minicopter ball links are traditionally a tight fit, this can be corrected, where as a slack fit cannot be corrected.  
One joint should be mounted at a time so that full and free movement of the tail slider can be achieved.



If a ball link is too tight then gently squeeze with a pair of pliers on the outside of the link until free movement is achieved.  
This can be repeated several times until the desired movement is achieved rather than one big squeeze and over doing the adjustment and ending up with a slack link.  
When happy remove the ball link and connect the second link to the other blade holder and repeat this procedure. Note once the tail links are set up they should not be disassembled without rechecking.



Now push the tail rotor with connected links on to the tailshaft. Note that the bladeholder joint bolts are located on the trailing edge.

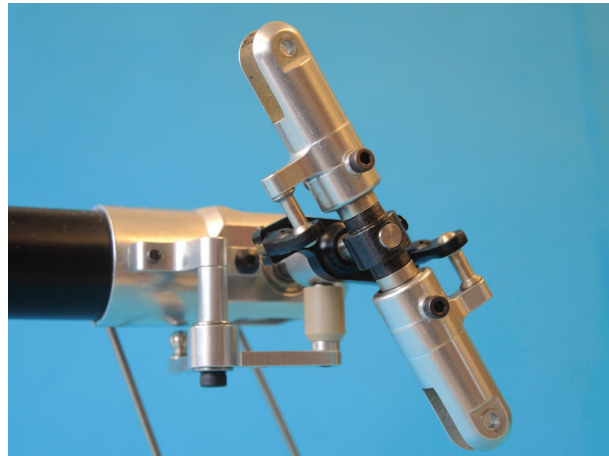




Tighten the tail rotor with a grub screw M4x5 035 locating it on the flat spot of the tail rotor shaft, apply Loctite to the screw.



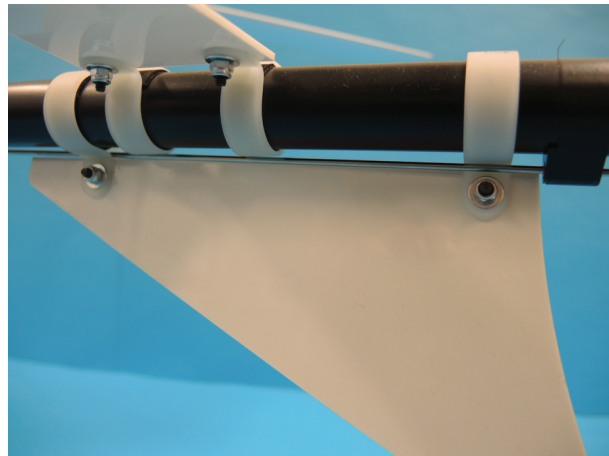
Overview of the complete tailrotor assembly.



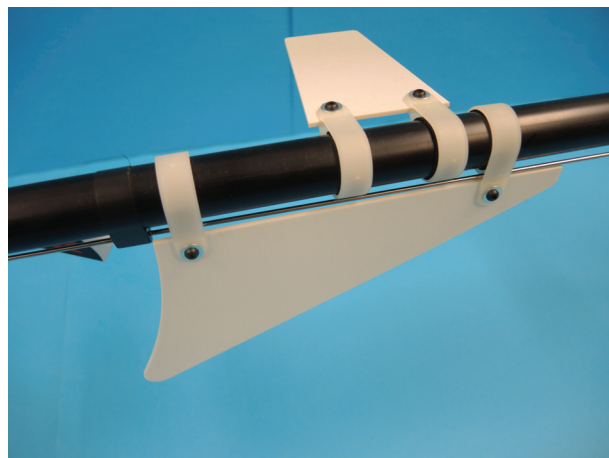
The rudder fin S870a and the elevator fin S870b are attached with two clamps H43 each and hex screws D197, large M3 washers 004 and lock nuts M3 008 onto the tailboom.

The distances of the rear clamp to the front of the tail rotor housing is 100mm, the remaining clamps are then positioned at 160, 200 and 225mm.

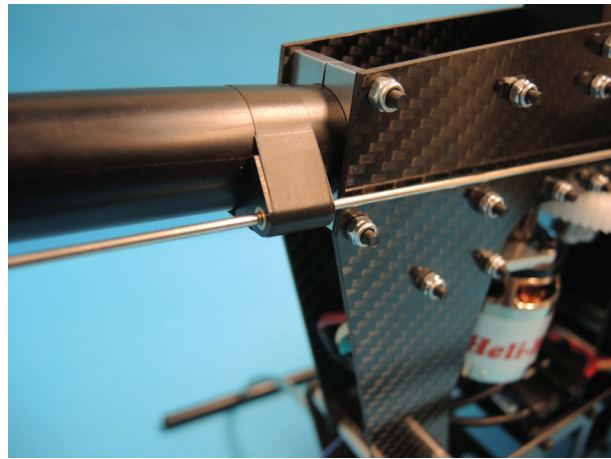
Place a piece of foam tape H44 under each clamp to stop the fins rotating in flight.



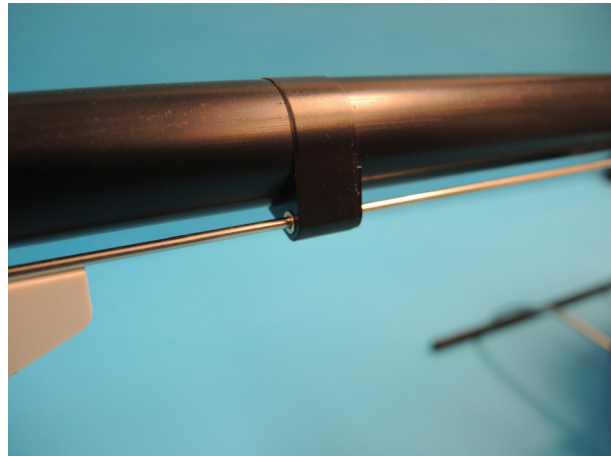
After mounting adjust the rudder fin to vertical and the elevator fin to horizontal.



The tail control rod H49 is supported through two small mounts H46 and one large mount H45 at the front. Slide the wire through the three mounts. The distance of the front mount to the frame is 6-8mm. Use the supplied insulation tape to fix the mounts to the tail boom. It is important that the wire is mounted as straight as possible to prevent binding.



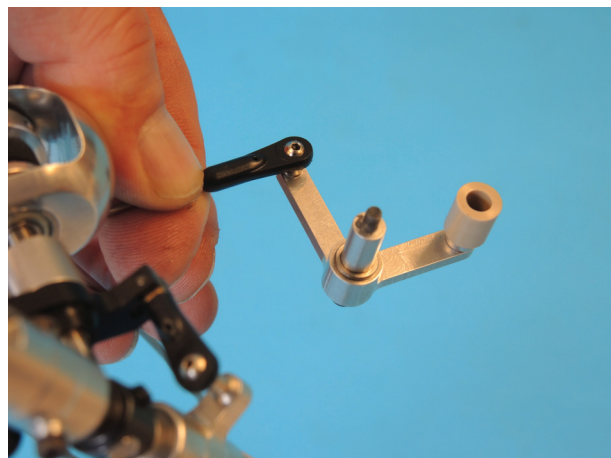
The distance between the rear of the center block and the front edge of the tail rotor housing is 295mm.



The distance between the rear of the rear block to the front edge of the tail rotor housing is 80mm.

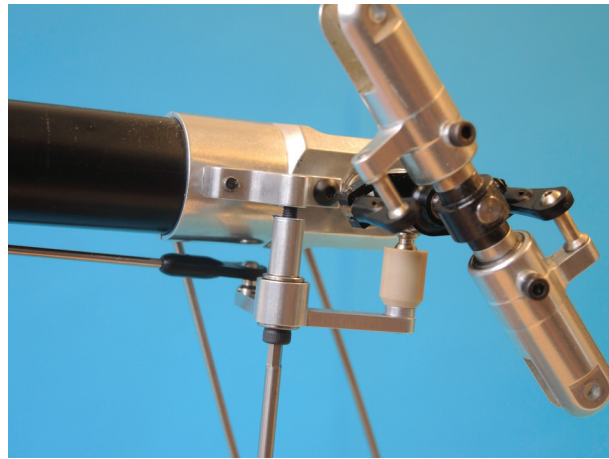


Screw two ball links S996 onto the tailrod. Make sure the the tailrod is fully screwed in with no threads showing especially at the rear end as vibration can fracture the rod. Remove the tail bellcrank from the holder to fit the ball link. Then check that there is smooth and free operation of the link. If not, as before use a pair of pliers to gently squeeze the link.

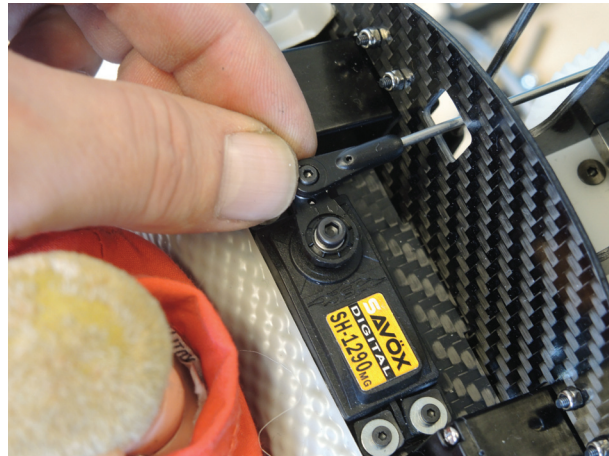




Screw the bellcrank with Loctite onto the holder. Make sure that the slider ball is located in the ball housing before tightening.



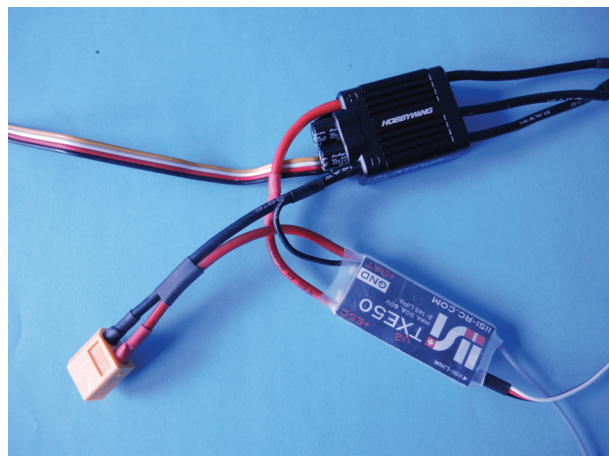
Check that the tail control rod is right angles to the tail bell crank and the servo arm, if not adjust the link at the servo until this is achieved.



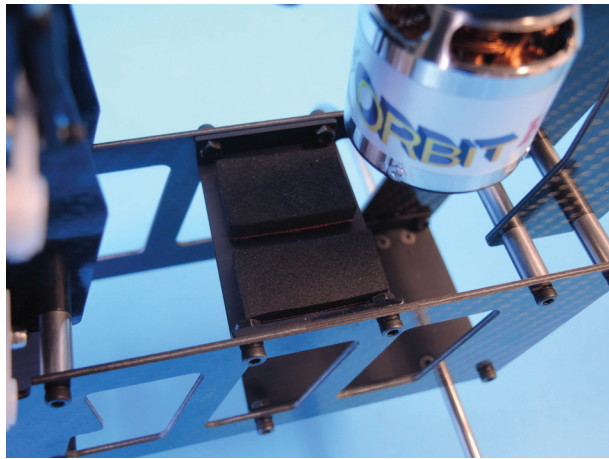
Overview of the tail rotor with 80 mm Zeal blades #1052, two hex screws M3x25 D336, four chinese weights 952 and two lock nuts M3 008.



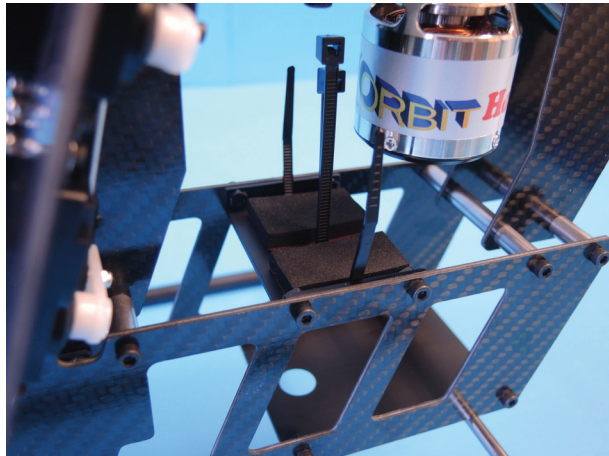
Overview of the already assembled speed controller (Hobbywing 50A V3) with Lisi Telemetry unit (TXE50). XT60 is the recommended connector. Note the wiring layout for the TXE sensor.



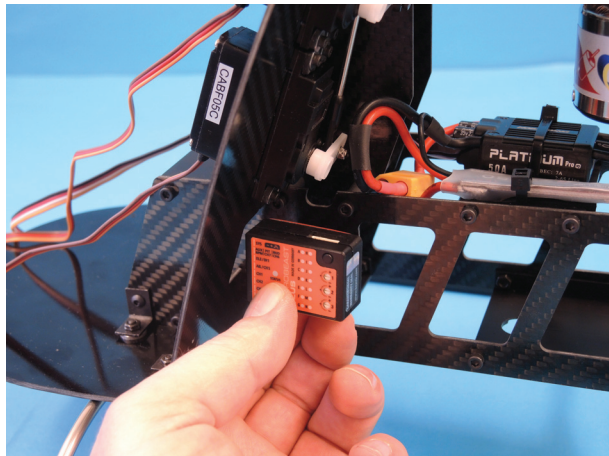
Place two pieces of foam on the controller platform for ESC and telemetry sensor.  
Tip: If later you use a P-Clip D348 for holding the battery cable remove the left front screw from the controller platform.



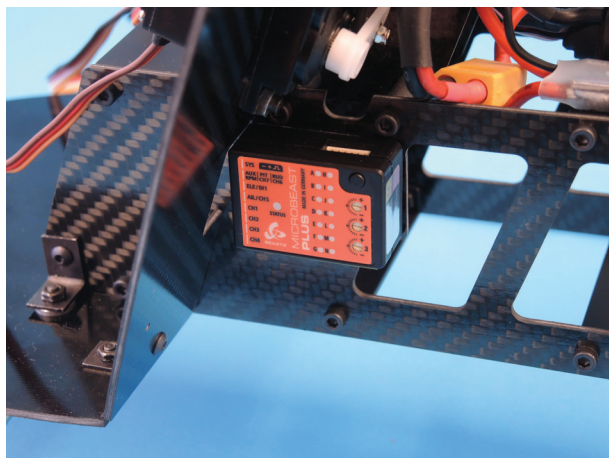
Place cable-ties D112 as shown. The ties must be pushed through the slots in the platform.  
Mount the telemetry module after mounting the P-clip mentioned above.



Use flybarless system either the Microbeast or systems that can be set up with USB connector for programming. Place under the seat on the gyro platform.  
For the Microbeast there is a special position on the lower left frame corresponding with a cutout in the rear plate. Place the Microbeast there with the original self-adhesive pad.

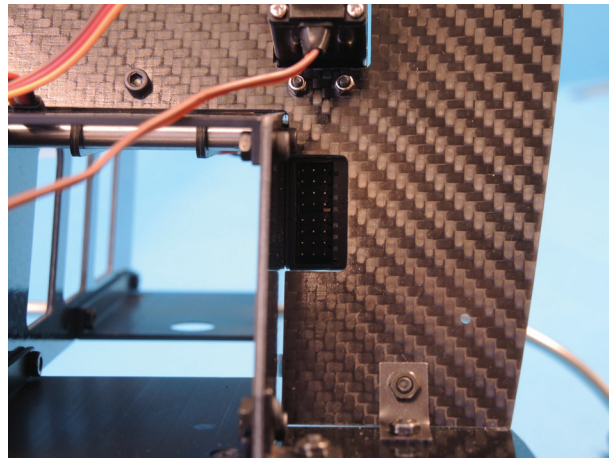


View of the mounted Microbeast Plus.  
For the position as shown it is necessary to purchase the Microbeast with the „Governor“ function so the optional mounting positions feature is available for mounting as shown.

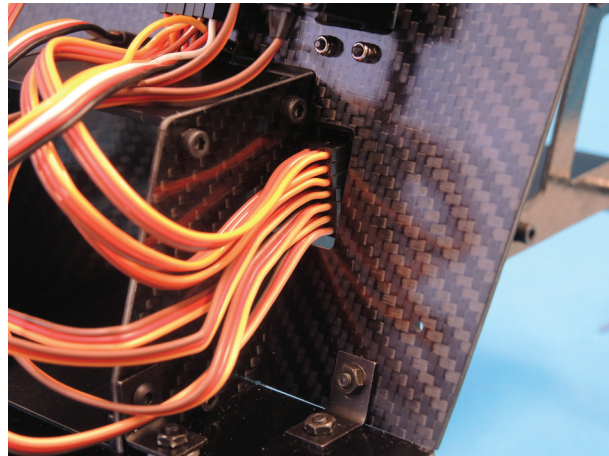




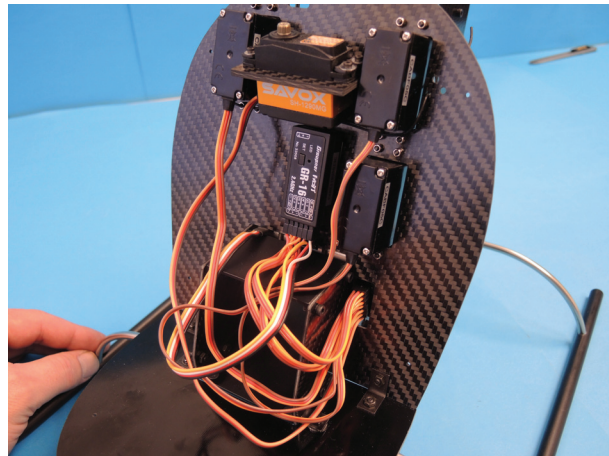
View of the wiring slot in the rear frame and the sockets of the Microbeast.



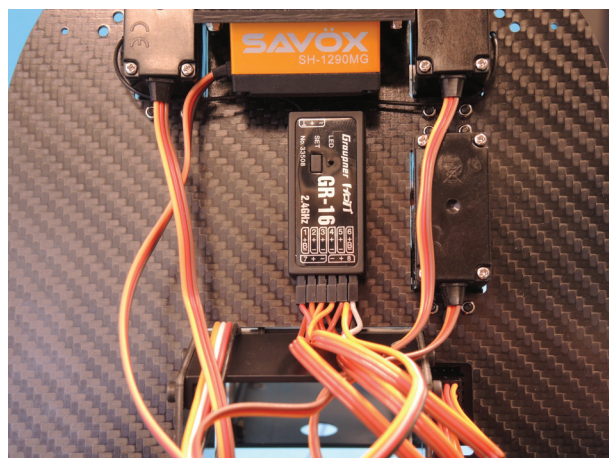
Wiring of the Microbeast.  
For maximum safety hot melt glue can be applied to the plugs. This should not be done until after the first test of the Microbeast to make sure that all the connectors are plugged in correctly.



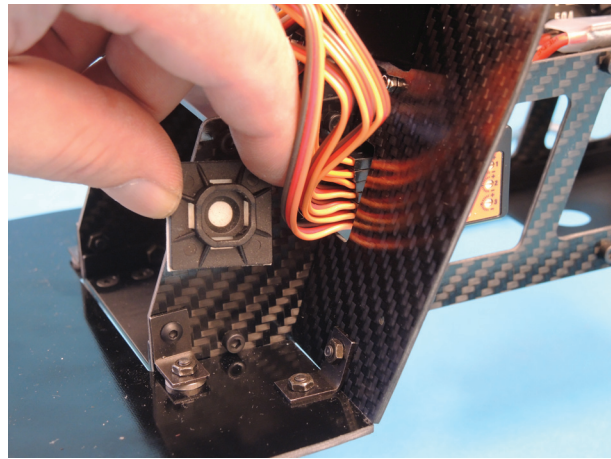
Overview of the still unsorted servo wires.



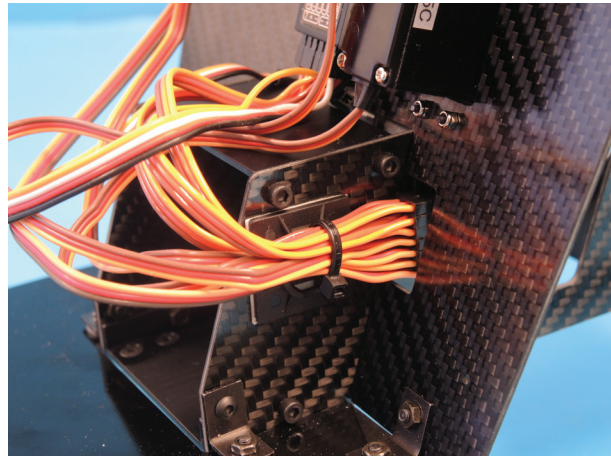
Placement of the receiver. A Graupner GR16 is shown here.  
It is important that the receiver is positioned to give good reception for the antennas.



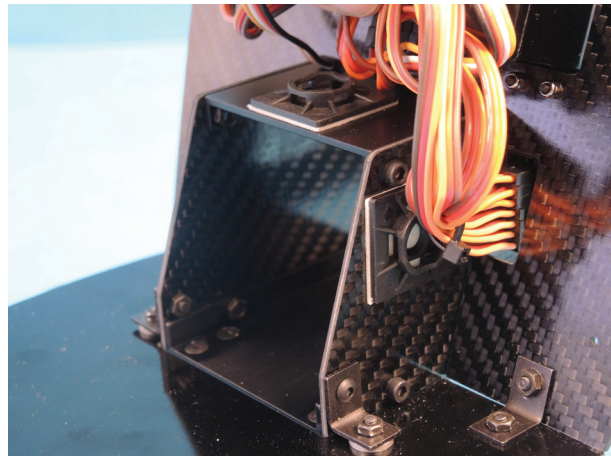
For a clean wiring installation fit a cable pad D342 on the left frame side as shown.



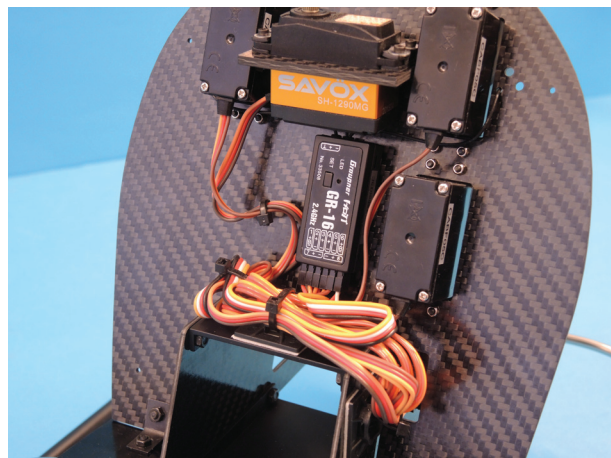
Bunch the wires together over the pad with a short cable tie D316. Lightly tie the wires together. Do not apply too much tension to cable tie.



Place a second cable pad D342 on the gyro platform [if using the Microbeast].



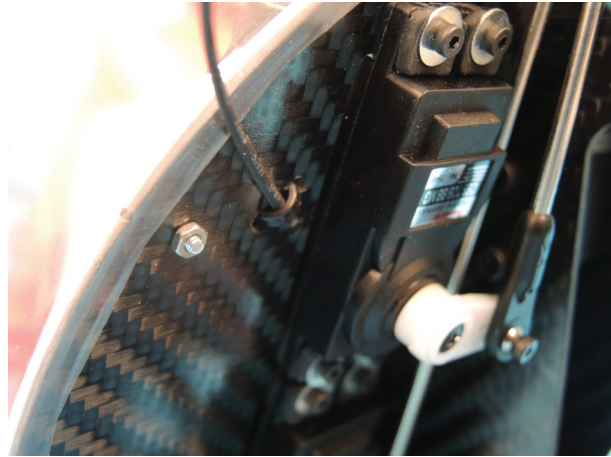
View of the completed cable installation.



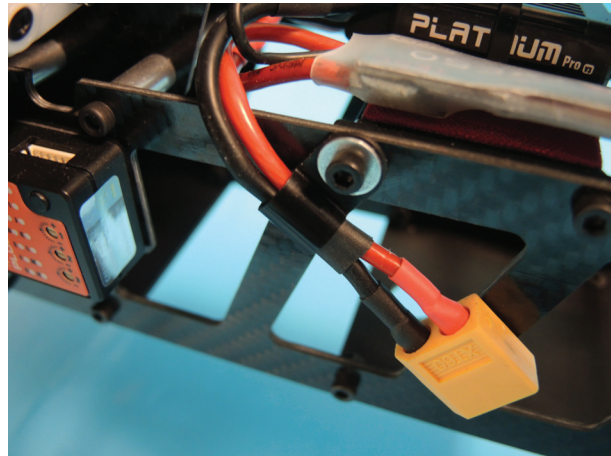


Position both antennas symmetrically over the rear plate.

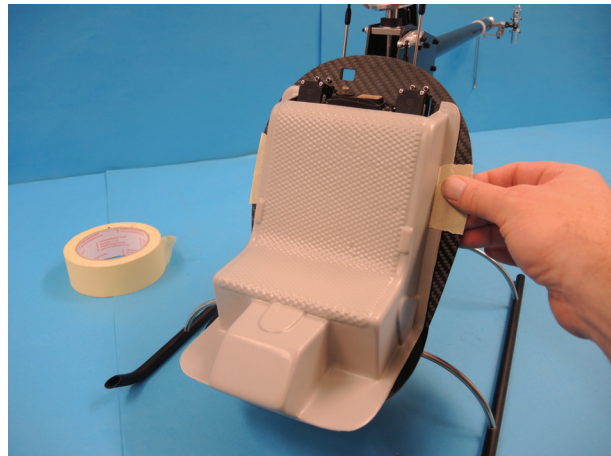
This position is very important on the Heli-Baby because the CF rear plate will shield the receiver from receiving the control signal.



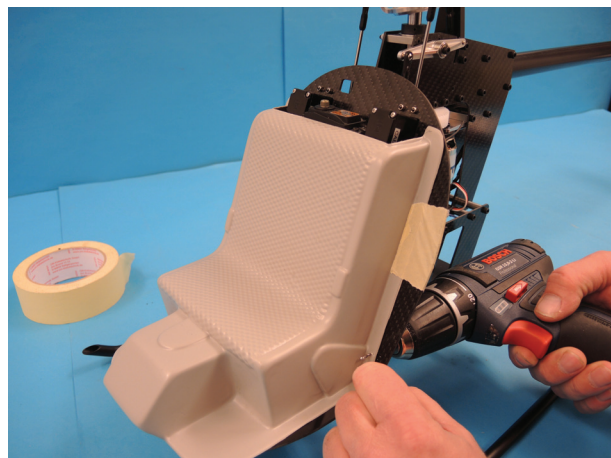
Now place the P-clip D348 on the left front hole of the receiver plate as shown, with hex screw M3x8 D197 and a large washer M3 004



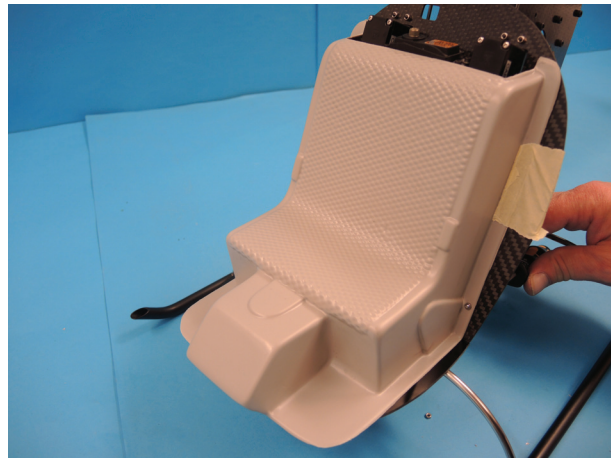
After cutting out the seat with rounded Dubro-scissors and a small Dremel, position the seat exactly in the middle and provisionally tape into position making sure that the seat is in contact with the bottom and rear canopy plate.



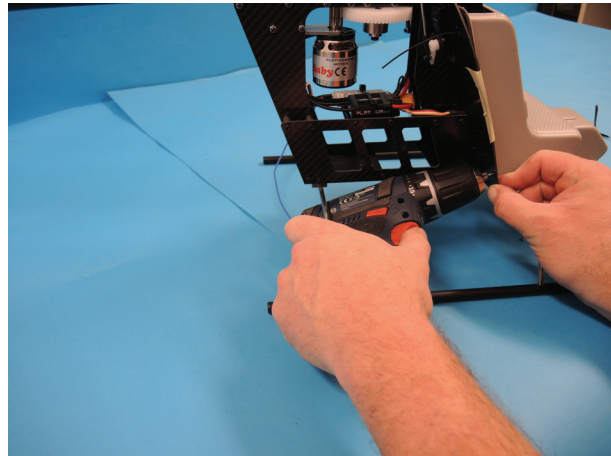
Now drill a hole with a 2mm drill in the lower left edge. Run the drill very slowly and watch for the drill coming through in the correct position in the seat. This hole is very important, if this is not drilled in the correct place all the other mounting holes will be wrong.



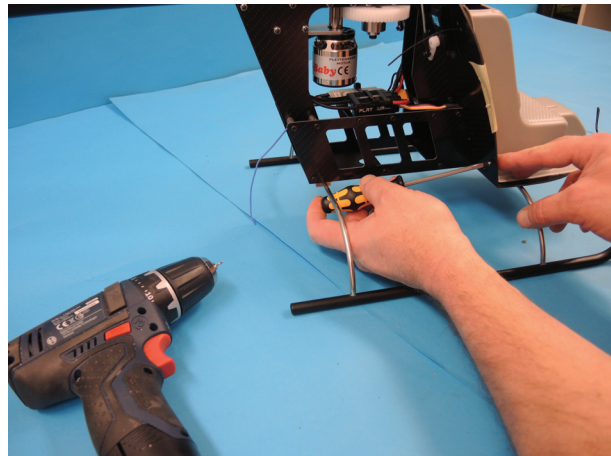
Screw the seat to the rear plate with a slotted screw D343 and a nut M2 S010 by hand without Loctite.  
Do not use Loctite on the six seat screws as access is required to the radio system.



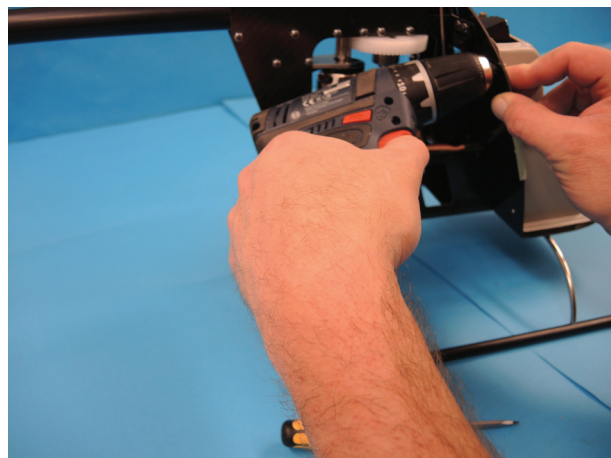
Next drill the hole on the lower right side...



... and fix the seat with another slot screw and nut.

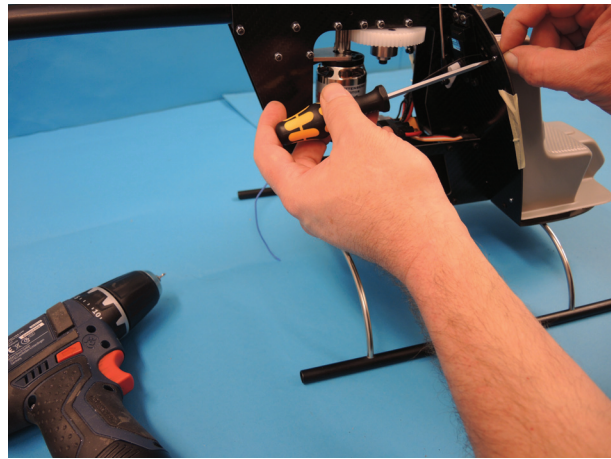


Then drill the upper right hole...





... and fix the seat here with slotted screw and nut.



Then drill the upper left hole and fix the seat with slotted screw and nut.

The procedure of mounting the seat is shown in great detail. If it is not done properly poor results will look bad on the finished model.



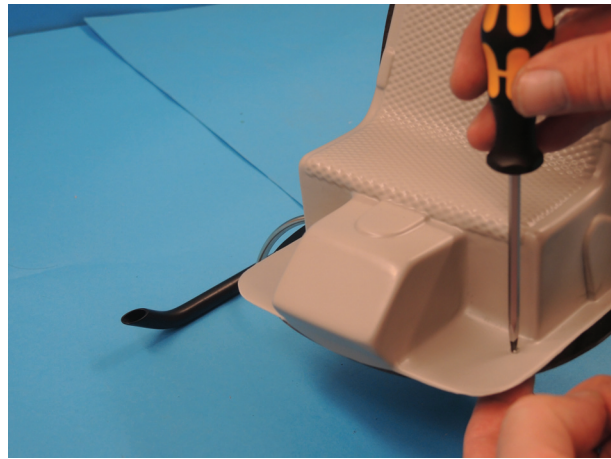
View of the mounted seat.



Then drill the two holes for the bottom plate...



... and fix with hex screws and nuts.



With a felt tip pen mark from the under side the edges of the seat that are over hanging the bottom plate.  
Remove the seat from the model and carefully cut and file along the lines.  
For best results use a pair of Dubro rounded scissors.



To fit the pilots seat belt, drill a series of 2.5mm holes in a row and then use a flat needle file to join the holes into a slot.



To mount the pilot use the elastic strip supplied in the kit. First, the band should be fitted flat over the seat without the pilot. Depending on which pilot is used a trial fitting is necessary. When happy, the elastic strip can be sewn together at the back of the seat.





Pilot shown here is John Steel from the "Action Team" (Hasbro). Alternative 1:6 scale pilots will probably require some work on the legs, for instance Barbie. The seat is fitted with optional collective pitch lever set. Part S977.



Paint the canopy S872 from inside with the supplied edding 3200 black felt tip pen. First line in the outer edges of the frame turning the pen regularly to avoid a dry tip.



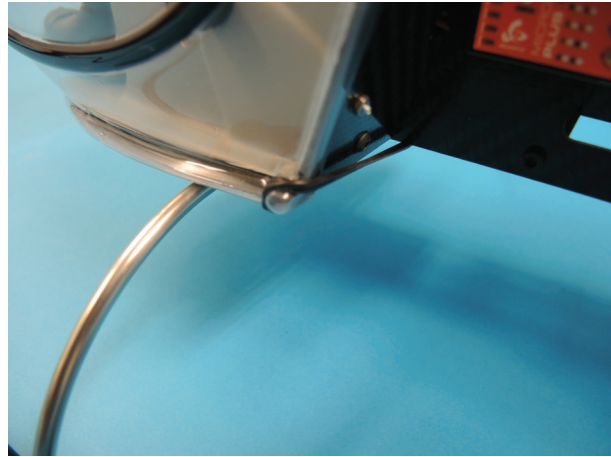
When the edges are fully blacked out, fill in between the lines to complete the canopy frame. If the lines are not dark enough from the first application try a second time applying lots of dots.



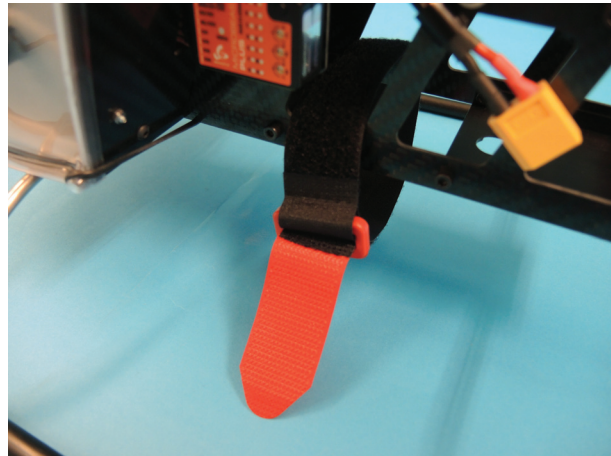
View of the completed canopy. Filling in the frame takes 30-40 minutes.



The canopy is held in place with two O-Rings D66.



View of the Velcro-strap for fixing the flight battery.



View of a mounted NHP rotor blade with blade grip screw D567 and lock nut M4.



Ready!

Now the flybarless sytem must be set up and, after the neutral points of the servos are found, the servoarms must be fitted on the servos with servo screws. Tighten these screws using Loctite if your servos have a metal gear.

The Heli-Baby NT is ready for takeoff!

