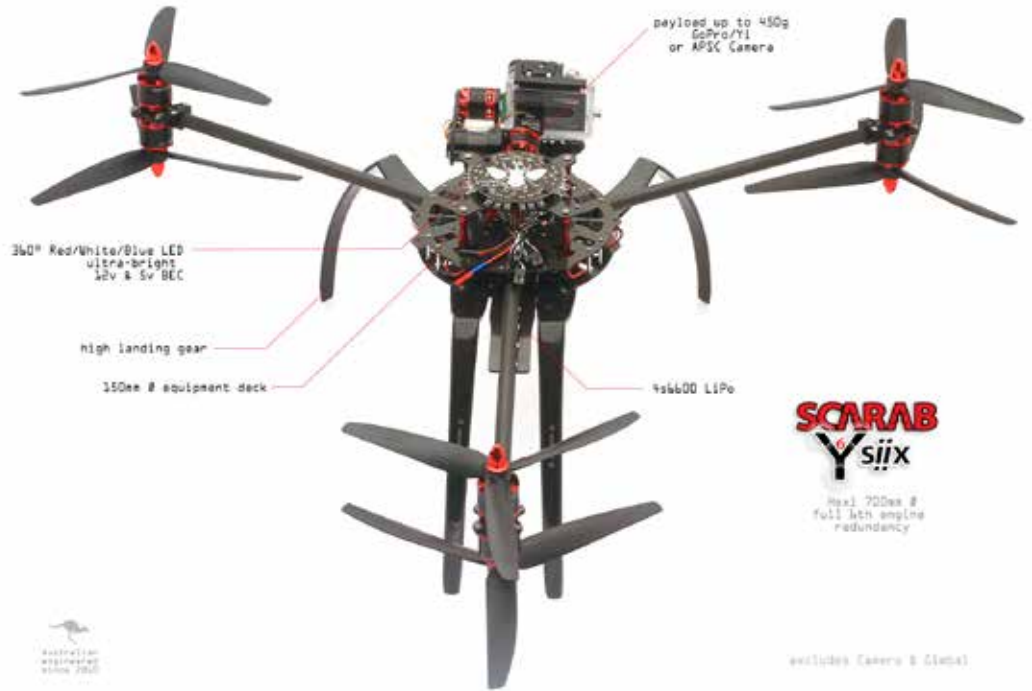


ScarabPilot.com
SCARAB
YSiix Y6
Airframe

Your Scarab Ysiix has been factory assembled - your motors test run - then it has been partially dis-assembled for shipping. The following is the sequence to re-assemble your Scarab YSiix.

Tech tips Y6
VERSION 3.0.1



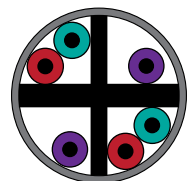
Safety & Tech-Tips - General info

Props OFF - the very last item, after all controllers, ESC, motors and setting are fully tested by you - is to install props -> last. **ALWAYS Wear eye protection ! For Drones, at all times !**

ESC - All ESCs are pre-calibrated / synchronised before shipping out - 1100-1900uSEC - can be altered with BLHeli UI 14.2 or later - but ESC are ready, when they arrive - recommend don't alter them.

Loctite ; upper/top screws - All the upper M2 bolts have been installed with permanent Loctite glue. It's important that you do not attempt to tighten or loosen these existing factory installed top-side bolts "cold" - the correct way to access the internals is via the bottom side bolts of the YSiix - the lower side is the access side of the aircraft. In the event that you ever wish to replace a factory screw you **MUST** first heat that part with a soldering iron tip (never use a hot air gun) - the solder iron tip needs to raise the part to 150°C which makes the glue soft again. then use the 1/16" 1.57mm pro-tool to slowly unscrew the M2

Carbon can cut & is 100% conductive to electricity - be aware that each boom contains 6 wires. These wires must never be accidentally shorted to GND - ie the carbon must not cut thru insulation at any time. Both ends of the CF tubes have been beveled to remove the inner cutting edge - however care must be taken with regard to wires and insulation. To mark one motor from another; one set of 3 connectors in each boom will have silver marks (the other 3 black) - dont mix these.



Tools & screws - screws should all be installed very light torque, as a group - then once all are in place - go around and tighten them (never install a screw by max force when others are not yet installed). If force is required - then something is incorrect ; stop and ask.





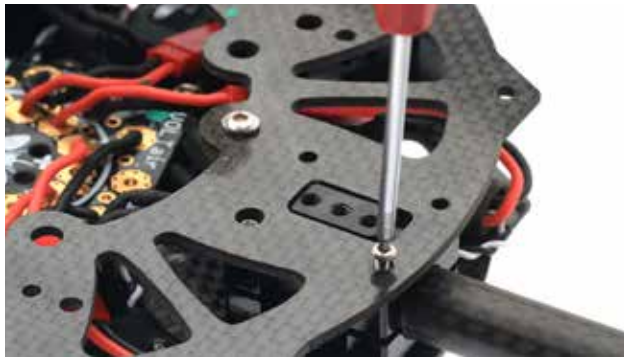
Installing 3 pre-made booms -

- Place the main core hub upside-down (inverted) on a clean work surface 750mm in size.
- make sure you are looking at the bottom of the YSiix (the top structure is completed and not used to access ESC or booms)
- observe that for each boom holder 3 screw holes are small and one is larger and has an M2 screw dropped down/recessed. This recessed screw is not removed... serves as a "holder" when the structure is open and the lower plate removed
- Remove the 3 protruding M2 screws which hold the lower plate (now at the top facing up) - and place the entire outer lower carbon ring to one side.
- Identify that each boom has 3 GBC (gold banana connectors) with silver dots - the other motor GBC are plain black.
- each Boom-Holder clamp is held by one screw (inside left) - do not alter this screw setting/depth.
- The rear boom holder has a YELLOW DOT
- The front of YSiix is marked by GREEN dots
- Raise the top half of the boom grip up.
- keep your finger either side to prevent the GBC from exiting to the side - and slowly push the boom into the holder
- the carbon should exit the other side - then push it back to be exactly flush
- use one M2*8 screw to hold the boom clamp closed
- install the other 2 booms & again use a M2*8 to hold the boom steady



Connecting 3 phase ESC wires

- use long-nose pliers to grip the GBC and then push the female over. The GBC have lanoline and will slide freely with no force. Be careful not to either pull the wires or to cut the insulation. there are 18 x GBC in all, to be connected.
- Props are OFF
- test run the motors (at idle) to check direction of rotation according to your flight controller - be aware that the top and bottom motor run opposite ways
- to alter the rotation of any motor you can either a) swap over any 2 wires (silver dot ; or black for black) provided you never mix black with silver dot as they are for the other motor or b) use the BLHeli UI to reverse a motor



Closing the bottom -

- Remove the 3 outer edge M2 you had whilst you connected and set up all motor directions. Be sure NOT to remove the inner-left M2 which ALWAYS stays in place
- then Place the CF lower outer ring over the boom holders - and align the yellow dots of the tail
- Install the 9 M2*8 boom holder screws and the 4 M2*8 to the naked posts
- before tightening these M2 make sure the 2 front booms are inclined forwards 3° ; the rear boom must be exactly vertical
- tighten all 9 M2
- remove the 4 M3 battercover screws and apply the battery cover to the lower side (facing up atm)

Landing Gear

- The 2 front landing gear are held by a single M3 and a penny-washer - and sit over the protruding M2 heads - exactly - and sit on the inside front of the front booms
- the Rear landing gear are held by 2 M3 bolts each - check the position compared to the photo then install both rear landing gear

Tail - LiPo tray

- The tail - used to brace the rear LiPo battery is held in place by 2 M3-bevelled screws (yellow dot)
- install the tail as shown

Locking the boom grub screws

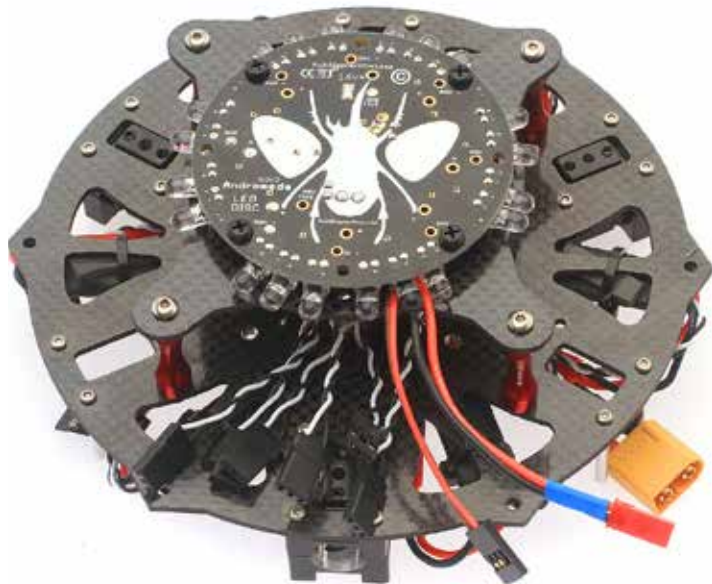
- Flip the YSiix over to stand on it's landing gear for the first time
- locate the 3 grub screws in the 3 metal upper boom holder outer slots - double check the tilt on booms = front 3° forward and rear true vertical - then tighten the 3 grubs carefully - if you over tighten them you risk cracking the carbon booms - the idea is to allow them to bite the carbon - not to crush their way thru the carbon

Velcro - Battery retention

- Apply loop velcro to the LiPo you use in the range 4s4200 to 4s6600mah
- Apply Hook side velcro to the battery tray and battery holder plate ; if a heavy front payload(camera) is used then you will need to move the battery further back ; the C of G for YSiix should be 5mm to one side LEFT and 10mm forward of the gemetric centre - ; this forces all motors to run at slightly different RPM in balanced flight ; preventing the amplification of harmnics or resonance getting to your IMU

Nip all lower screws screws tight

- Double check all lower screws are npped tightly



Connecting a Flight controller -

- The Andromeda v2r2 acts as both an upper PDB and also has LED and both 5v and 12v BEC in it
- the short male JST outputs = input voltage - so if you run a 4s - then it outputs 4s for other devices such as PMU's
- Connect 6 ESC leads as per your flight controller mapping - the white wires are signal PWM wires
- the 5v Red/Black JR RC servo plug - this supplies 500ma 5v clean power to your flight controller - (cannot be used for servos)
- the Blue tip JST 12v FPV to FPV camera/ Video Tx (converts 4s to steady 12v)
- Final checks - make sure all RED wires are connected to RED wires ; Black wires to Black - now is the time to prevent any forced errors with reversed polarity - Props off
- Connect 4s LiPo to XT60 - the Andromeda ring will illuminate (dont run it indoors on the bench for more than 5 mins as the heat will build up with out in-flight airflows - either use a desk fan or turn off to cool down
- Check 5v ; 12v connects with a DMM - remove the XT60 power - then connect your Flight controller and FPV gear - then re-power up - test again.

Clear Dome

- the dome can be fitted for rain - we recommend velcro as best - but it can also be held by 4 x M3*8 screws - the dome is a RAIN cover - and should not be used in full hot sun as temps can rise under the dome





Hand Maiden testing

- ensure you understand ARMING and DisArming before installing props - ensure props are not upside down or spinning backward
- ensure you know what mode you are in
- DANGER - props can cut ! **Wear eye protection !**
- ensure loose items like paper or fabric, clothing cannot be sucked into the props - YSiix will produce approx 5kg thrust a full throttle - grip tightly is safest - hold the craft securely by the core body - above your head or away from your body - level
- When first connect power - check throttle is off/low and do NOT move the drone for at least 10 secs after power iss connected - gyro will be self calibrating
- Arm - props may spin depending on your system - At 1/3 throttle all Gyro responses are normal - resists tipping in all directions
- drone responds correctly to control inputs - cyclic and yaw
- Learn the switch position for Acc LEVEL - ON/OFF - Some brand call this Atti/GPS-Atti
- In basic manual mode - gyros only - All motors start together to show all ESCs are programmed with THROTTLE LEARNING - see wiki
- ESC checks - motors spool up smoothly thru all RPM to 50% - hoverpower - Balance ALL props on a balancer if vibs are felt - shut down go home balance your props - it will pay off in spades later

Power integrity tests

- Motors spool up from 50% to 100% for 5secs at 100% WOT- ZERO vibration in the frame and props - then cut power
- All ESC and motors are cool/warm <40°C
- nothing has come / vibrated loose

Final Pre-Flight inspection

- If anything seems wrong, - then DON'T FLY. Aviation works on 100% perfect - not 98%
- Use a Flight simulator if you never tried RC before !
- double check the battery is fully charged - use a timer

SCARAB Maiden flight

- Take your tools with you.
- Take sunglasses and a hat - dont get caught looking into the sun
- rehearse in your mind your "bail-out" move - this involves quickly switching to self-level return home mode if fitted - dry run this a few times with all power off - practice the Bailout
- Choose a field with thick, lush and soft grass - for the first flights. Choose a calm day and get well away, 100m - from spectators and by standers - NEVER maiden in front of a crowd of people - anybody helping must waer EYE protection and remain 30m - Use GoPro/Yi HD head mounted cam to record the flight incase you need to study your performance later. Stand behind the SCARAB and take off directly to 2m.
- Most crashes come from impulsive spur of the moment moves, manouevres carried out before the pilot is orientated or the aircraft blows away downwind.

The objective of a maiden is to

- Trim the craft yaw - engine rotations by setting the motor angles if needed
- Check the craft hovers at 50% throttle - not overloaded with extra gear - monitor flight time on a timer - establish VLC
- Check the handling is smooth - PIDS not set too high - no oscillations -
- Check the ESCs run cool/warm
- Check the motors run cool/warm
- Check the LiPo runs cool/warm
- Land and shut down power before 3.3v per cell

Pilots often get over confident and crash on theie 2nd battery - small steps!