

Apex

Build Guide



Step 1 - Frame Kit Contents

Apex Base Frame Kit

The Apex Base kit includes the following items:

- Carbon fiber parts
- Full hardware kit
- Aluminium standoffs and SMA clamp
- Rubber battery pad and velcro battery pad
- Injection molded skids, bumper and Immortal-T mount
- Injection molded motor wire protection
- ImpulseRC battery strap
- Round and flat diamond files
- Warranty card



Apex HD Frame Kit

The Apex HD kit contains the same items as the Base kit with the following minor changes:

- The top, upper main and camera plates are modified to fit the DJI air unit and camera
- The aluminium SMA clamp is removed because it is no longer required
- TPU camera shims are included to adapt the DJI camera to the correct width

Mr Steele Apex Frame Kit

The Mr Steele Apex kit contains the same items as the Base kit, along with multiple extras including custom electronics and wiring harness.

See the [Steele Apex](#) section of this page for more details.

Mr Steele Apex Frame Kit - Light Weight

The Mr Steele Apex Light Weight kit contains the same items as the Mr Steele kit, along with upgraded 7075-T6 aluminium hardware to save weight.

See the [Steele Apex](#) section of this page for more details.

Step 2 - Arm Pressnuts

Install the pressnuts in to the four arms.

- Prepare an M3x6mm cap head bolt and a cone washer.
- Place a pressnut in to the hole at the end of the arm.
- Pull the pressnut in to the arm from the oppsite side using the bolt and washer.
- Repeat process for the remaining three arms.

Information

When fully installed the top of the pressnuts should sit just below the surface of the arm.

Warning

Pull the pressnuts in slowly and gently! Once you feel the shoulder of the pressnut reach the ridge inside the arm, stop immediately.

The pressnuts will become fully seated when securing the arms to the frame in [Step 7](#).





Step 3 - Upper Main Pressnuts

Install four pressnuts in to the Upper Main plate.

- Prepare an M3x6mm cap head bolt and a cone washer.
- Place a pressnut on one of the outer holes, on the opposite side of the plate to the countersinks.
- Pull the pressnut in to the plate using the bolt and washer.
- Repeat process for the remaining three pressnuts.

Information

When fully installed the shoulder of pressnut should sit flush with the plate.

Caution

Take care to install the pressnuts on the opposite side to the countersink holes.



Step 4 - Stack Mounting Bolts

Install flight electronics stack mounting bolts.

- Decide whether to use the 20x20 or 30x30 mounting holes.
- Decide whether to use the included M3 10mm, 16mm or 20mm countersink stack mounting bolts.
- Place the bolts in to the selected countersink holes and secure with an M3 nylock nut.
- Tighten the nylock nut sufficiently such that the bolt will not rotate when installing additional mounting hardware to secure your stack.

Please consider which length of bolt will best suit the electronics you wish to mount.

Once the frame is assembled the heads of the stack mounting bolts are not directly accessible.

Information

The Mr Steele Light Weight kit comes with only one size of stack mounting bolts, M3x10mm in 7075-T6 aluminium, as well as aluminium nylock nuts.

Step 5 - Arms and Key

Secure arms and key to lower main plate.

- Prepare an M3x8mm cap head bolt with threadlocker and a cone washer.
- Insert bolt with washer in to one of the inner arm mounting holes.
- Attach arm to lower main plate using the embedded pressnut, do not fully tighten.
- Repeat process to attach three arms.
- Rotate two arms such that they are correctly aligned and the tips are braced together. Rotate the third arm out to the side to create space to install the key.
- Install the key and rotate the third arm in to position.
- Attach the fourth arm to secure the key in place.

Information

Do not fully tighten the bolts, the arms should still be able to rotate.



Step 6 - Shoulder Bolts

Install shoulder bolts through lower main plate and arms.

- Prepare an M3 cap head shoulder bolt with threadlocker and a cone washer.
- Insert bolt with washer in to one of the outer arm mounting holes.
- Repeat process to install all four shoulder bolts.

The shoulder bolts should fit through the arms easily but without any lateral movement.

If one of the bolts begins to slide out when lifting the assembly, you can apply a light sideways force to that arm. This will create more friction to hold the bolt in place while you work.



Step 7 - Upper Main

Install upper main plate.

- Place upper main plate over the arms and align the pressnuts with the exposed threads of the shoulder bolts.
- Tighten each of the shoulder bolts one revolution at a time, working in a star pattern, until fully secured.
- Tighten the inner arm bolts installed in [Step 5](#), working in a star pattern, until fully secured.

Information

Working from the outer bolts to the inner bolts and following a star pattern will ensure all components are correctly seated and aligned.



Step 8 - SMA Mount

Install SMA mount to top plate.

- Place an M3x16mm button head bolt in to one of the rear three-quarter mounting holes.
- Place SMA mount over the bolt and secure with a 10mm hex standoff.
- Repeat process for the other side of SMA mount.

The SMA mount has slots on either side for a zip tie to secure your main battery leads.

This piece is optional and works best with a TBS SMA bulkhead mount as supplied with TBS Unify video transmitters. If you choose not to install this SMA mount we also include in the kit 20mm standoffs and M3x6mm button head bolts as replacements.

For TBS SMA bulkhead mounting instructions, please refer to the [Antennas](#) section of this page.



Step 9 - Immortal-T Clamp

Install Immortal-T clamp and rear standoffs to upper main plate.

- Place two 20mm hex standoffs in to the Immortal-T clamp.
- Secure the assembly to the upper main plate using two M3x6mm button head bolts.

This piece is optional, if you choose not to use an Immortal-T antenna or prefer another mounting method, simply install the standoffs to the upper main plate without the Immortal-T clamp in place.

For TBS Immortal-T mounting instructions, please refer to the [Antennas](#) section of this page.

Information

This part is not compatible with the HD Apex because the standoffs are spaced wider apart to fit the DJI Air Unit.



Step 10 - FPV Camera Mount

Install front bumper, camera plates and front standoffs to lower main plate.

- Place an M3x8mm button head bolt through the front bumper and lower main plate.
- Secure from above with a 28mm hex standoff, do not fully tighten.
- Repeat for the other side of the front bumper.
- Install the two further 28mm standoffs using M3x6mm button head bolts, do not fully tighten.
- Align the four 28mm hex standoffs and install the camera side plates into the slots in the lower main plates.
- Tighten all four bolts, taking care not to let the standoffs rotate out of alignment.
- Install your FPV camera in to the frame using the M2x4mm bolts provided with the camera, do not fully tighten.

Information

The standoffs must be aligned such that one of the flat faces is braced against the edge of the camera plate. This bracing provides extra strength and structural integrity to the front of the frame.



Step 11 - Top Plate

Install top plate and battery pad.

- Place top plate over the frame and align the slots with the tabs on the camera plates.
- Insert the tabs of the camera plates in to the slots of the top plate, adjusting the camera plate alignment as necessary.
- Secure the top plate to the front four standoffs using four M3x8mm button head bolts.
- Now the camera plates are held in place by the top plate, tighten the M2x4mm bolts holding the FPV camera.
- Secure the top plate to the rear two standoffs using two M3x6mm button head bolts.
- From below, secure the rear three-quarter standoffs to the upper main plate using two M3x6mm button head bolts.
- Choose whether you would like to use the rubber or velcro battery pad and install on the top plate.

The front four button head bolts are 8mm long to support installing an HD camera mount.

Step 12 - Motors

Install skids and motors to arms.

- Place an M3x10mm button head bolt through a skid and arm from below.
- Place a motor over the top of the arm and align mounting hole with exposed thread of the M3x10mm bolt.
- Attach the motor to the arm with the M3x10mm bolt, do not fully tighten.
- Repeat to install the further three motor bolts.
- Tighten the four motor bolts in a star pattern.
- Repeat with the remaining three skids and motors.

The skids and arms have both 16x16mm and 19x19mm mounting holes.

The motor skids are optional parts. We include both 8mm and 10mm button head bolts in the kit for securing the motors with or without the skids installed.

Information

The Mr Steele Light Weight kit comes with M3x8mm cap head bolts in 7075-T6 aluminium for mounting the motors without the skids. This is the preferred configuration of Mr Steele for the lightest possible build with a total weight saving of 25g over a build using steel hardware and skids.

We also include sixteen M3x10mm button head bolts in the Mr Steele Light Weight kit in case you do want to use the skids on your build.



Build Complete

Congratulations! You have completed the assembly of your Apex frame kit.

Now that the mechanical build is complete you can continue on to install your chosen flight electronics.



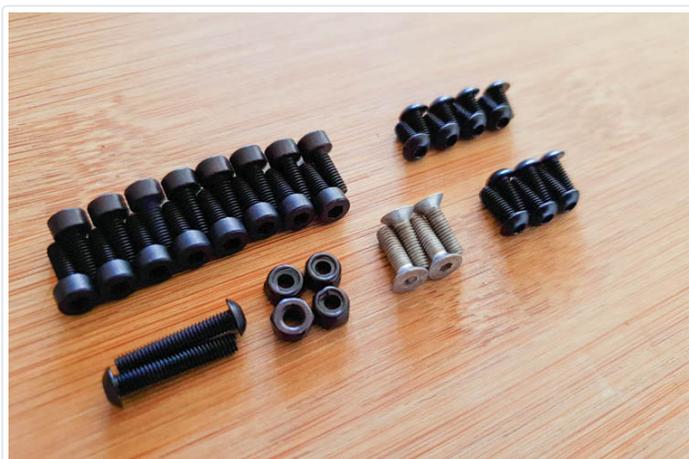
Mr Steele Apex Variants



Steele Apex

The Mr Steele Kit comes with an accessory pack which contains the following extras:

- Apex graphical OSD and AGC microphone board
- Apex regulator and LED signal distribution board
- Two RGB LED strips
- Wiring harness for KISS FC and KISS 4in1 ESC
- Four rubber soft-mount standoffs
- Two injection molded plastics kits in black and coyote brown
- Foam strip for landing pads, HD camera mounting foam wedge
- Additional ImpulseRC battery strap



Steele Apex Light Weight

The Mr Steele Light Weight kit comes with the same extras as the Mr Steele kit, along with upgraded hardware for a total weight saving of 12.5g in hardware alone.

This kit was intended to be used without the arm skids by using the provided M3x8mm cap head motor bolts in 7075-T6 aluminium. This saves another 12.5g in plastic for a total of 25g weight savings. We do however also provide 10mm motor bolts in steel if you do wish to run the skids on your build.

The Light Weight hardware kit changes the following parts from steel to 7075-T6 aluminium:

- Countersink stack mounting bolts and nylock nuts
- M3 6mm, 8mm and 16mm button head bolts for frame assembly
- M3x8mm cap head bolts for mounting motors without skids

Antennas

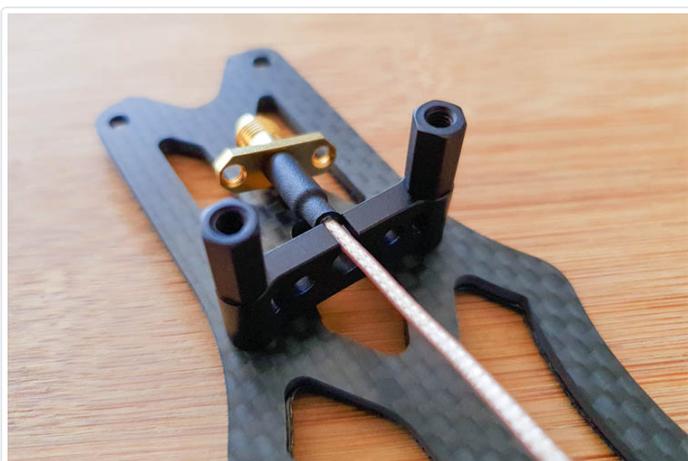


TBS Immortal-T

Install Immortal-T antenna in to clamp on upper main plate.

- Place Immortal-T coaxial cable in the channel between upper main plate and the antenna clamp.
- Install zip ties through upper main plate and antenna clamp, and around the plastic housing of the Immortal-T antenna.
- Push the Immortal-T up in to the channel while tightening the zip ties.
- Trim excess length from zip ties.

When the zip ties are fully tightened, the top edge of the cutout in the upper main plate should bite in to the plastic housing of the Immortal-T antenna. This results in a light weight and very secure mounting.



TBS SMA Bulkhead

Install TBS SMA bulkhead in to clamp on top plate.

- Insert the coaxial cable of the SMA bulkhead through the slot in the mount.
- Slide the SMA bulkhead back so that it is flush with the mount.
- Secure the SMA bulkhead to the mount using two M3x6mm button head bolts.

Warning

Once you install your video transmitter antenna, it is important to secure the coaxial cable to the rear of the top plate with a zip tie.

Fastening to the top plate ensures that the antenna can not be pulled downwards and lever the SMA connector against the bulkhead which is secured to the mount.

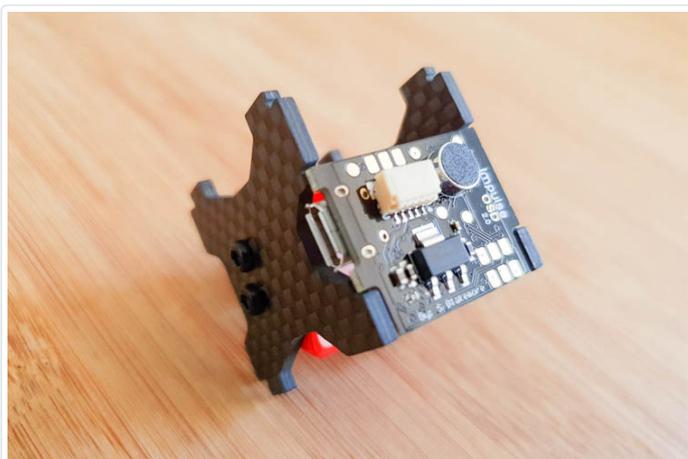
Electronics



Apex Regulators

Install Apex regulator board on upper main plate.

- Place an M2x10mm bolt in to one of the countersink holes on the upper main plate.
- Install a threaded M2 spacer to hold the bolt in place.
- Repeat process for the other three bolts.
- Install the Apex regulator board and secure with M2 nylock nuts.



Apex OSD

Install Apex OSD board to back of camera plates.

- Ensure camera and camera plates have been installed in the frame, as per [Step 10](#) of the build guide, so that they are aligned correctly.
- Remove camera and camera plate assembly from frame.
- Place the OSD on the rear of the camera plates, the wings of the OSD will fit between the notches on the camera plates.
- Holding the OSD board in place, reinstall the assembly in to the frame.



Copyright © 2019 ImpulseRC. All rights reserved.