



FAQ's

General Operating FAQ's

- 1) If the gimbal is not centered with the VOLT attached, how can I operate with an out of center gimbal?

Answer: An out of center gimbal does not necessarily mean that that the rig cannot be balanced dynamically, or that it will hinder operating. When it comes to the balancing of the sled and gimbal there are 3 types of balancing that come into play.

(a) Center Balancing:

- (i) Center balancing of the gimbal is performed at the factory with the VOLT removed. This is a process whereas the gimbal yoke is shimmed/adjusted left or right in increments of .001" to .002" to mechanically align the pan axis to the roll axis of the gimbal such that they intersect. This procedure is akin to static balancing in that the rig is being panned 180° and adjusted until the rig remains level in both orientations.

(b) Static Balancing:

- (i) The STEADICAM Operators Handbook states "A Steadicam is in static balance when, at rest, it hangs with the central post vertical, regardless of the position of the gimbal on the central post."
- (ii) Static balancing of the gimbal also entails panning the rig 180° and adjusting for level in both orientations by moving the stage or major masses to try and best achieve level. If the masses are asymmetrical along the roll axis on the gimbal, static balance may however not be achievable. This can sometimes be the case when a VOLT is added to the gimbal. So long as these asymmetrical masses are small, they will have a negligible effect on the ability to dynamically balance the sled.

(c) Dynamic Balancing:

- (i) The STEADICAM Operators Handbook states "A Steadicam is in dynamic equilibrium if, when rotated about the central post, it pans consistently on that axis. A Steadicam is in dynamic balance when it is in dynamic equilibrium and also in static balance. Both conditions must be met for dynamic balance."
- (ii) The above statement still holds true however, one must ensure the gimbal is properly center balanced also in order for dynamic balance to be achievable with or without a VOLT added.

Link: https://www.youtube.com/watch?v=2Nyd_1goZ7I&feature=youtu.be

Link: <https://www.jerryholway.com/manuals#>

- 2) Can I still operate with the VOLT turned off or if the VOLT fails?

Answer: Yes, you can operate with the VOLT turned off, just make sure to remove the belts and tape down the motors so that they do not move during use. You could also remove the VOLT all together, it is only a 5-minute process.

Link: <https://www.youtube.com/watch?v=bo32k9vk98E>

Link: https://www.youtube.com/watch?v=WFuKf_sVhgc&feature=youtu.be

3) How often do I need to recalibrate?

Answer: No periodic recalibration is needed on the VOLT unless the mounting of the VOLT Control box has physically shifted. If re-calibration is needed, SHORT-press the trim button on the control box and position the sled to the new level position while the LEDs blink for 5 seconds. When LED blinking stops, your new horizon position (or Dutch angle!) is now stored in memory.

Note: Trim can be set independently in low mode and in high modes.

Link: <https://www.youtube.com/watch?v=XS4DJE66OJs&t=1s>

4) How do I do a factory reset?

Answer: To reset the roll horizon to default, LONG-press the trim button on the control box for 6 seconds until both LEDs on the control box turn off and pulse back on.

5) Which way do I point the sled when powering up the VOLT?

Answer: There are a few options here all depending on the type of VOLT you have and how it is installed.

(a) If the VOLT is inside a M2 stage, the VOLT is always powered up with the stage in-line with the gimbal handle and the front of the stage pointing away from the gimbal handle.

(b) If the VOLT is a separate control box mounted to the front of a stage, and the Switches of the Control Box are on the Right side of the stage when looking at it from the rear, the VOLT is powered up with the stage in-line with the gimbal handle and pointing away from the gimbal handle.

(c) If the VOLT is a separate control box mounted to the front of a stage, and the Switches of the Control Box are on the Left side of the stage when looking at it from the rear, the VOLT is powered up with the stage in-line with the gimbal handle and pointing towards the gimbal handle.

6) Why does my VOLT not correct the horizon when I shoot at a Dutch angle?

Answer: The VOLT is designed to control the roll axis of the sled up to a $\pm 25^\circ$ roll angle, with reduced power being applied to the Roll motor beyond $\pm 5^\circ$.

7) What is the operating temperature range?

Answer: Maximum recommended operating temperature of the VOLT is between -10 and $+60^\circ\text{C}$.

Note: Lower operating temperatures may result in increasingly sluggish response times for the VOLT so it is a good idea to let the VOLT warm up a bit before operating in cold temperatures.

8) Why is my VOLT not instantaneously going to a perfect level when transitioning from high to low mode?

Answer: The normal response time for the VOLT to obtain a stable level when transitioning between high and low modes is dependent on the operating temperature and a few other factors. This is normal and should take the VOLT a maximum of 20-seconds or less to stabilize.

Note: Low TILT and ROLL strength settings may increase the time it takes the VOLT to obtain level as more motor power equates to a faster response. In addition, a rig that is not neutrally balanced may take longer to achieve level because the motors now need to work harder to move the sled.

9) Will I be able to update the VOLT myself in the future?

Answer: Software updates are currently limited to our worldwide dealer network and Steadicam repair facilities. Please contact your nearest dealer for information on the latest updates.

10) How do I remove the VOLT to clean the bearing?

Answer: Refer to the VOLT user manual for removal of the VOLT.

Link: https://www.youtube.com/watch?v=WFuKf_sVhgc&feature=youtu.be

11) Is the VOLT weatherproof?

Answer: If the VOLT is being exposed to water or other contaminants, it is always good to protect it as much as possible.

Note: A VOLT Rain Cover for the drive unit is available to help protect the VOLT. Please contact your Steadicam representative and ask for part number "VOLTRC".

12) How do I clean the VOLT?

Answer: Simply just wipe it down with a damp lint free cloth. A small brush can be used to get into any tight to reach places. Avoid any use of cleaning fluids or oils.

Balance FAQ's

1) Why is the gimbal unbalanced with the VOLT fitted?

Answer: Center balancing of the gimbal is a very precise procedure that requires calibration of the gimbal to within the thickness of a human hair or less. A gimbal with a VOLT fitted is difficult to center balance to this level of precision, nor is it necessary. The good news is that with the VOLT turned on and operating, a slightly out of balance or slightly un-dynamically balanced sled will have little to no effect on the operation. See General Operating FAQ's Question 1 for more details.

Note: The balance weight that is installed on the pulley side of the VOLT Motor Drive is used to help put the gimbal into static balance with a VOLT installed.

2) Why do I need to have neutral balance?

Answer: Two things: One, when a sled is neutrally balanced, it requires very little force for the sled to be moved in any direction. This allows the VOLT motors to move the sled with very little applied force. This translates into quicker response times for the VOLT and a smaller power draw by the motors to adjust the sled position. Two, a neutrally balanced sled does not pendulate as it is accelerated or decelerated. Therefore, the VOLT motors have even less work to do to hold the sled at the right attitude as the sled moves and stops.

3) Why do I need to dynamic balance?

Answer: A sled in dynamic balance pans flat without any input from the operator or the VOLT. The less work the VOLT motors must do, the better the response and the lower the power draw. Faster pans, and whip pans in particular, generate a lot of force. The better the dynamic balance, the less compensating force needs to be applied by the operator or the motors.

Issues and Problems FAQ's

- 1) I feel friction when I'm panning, what could be causing that?

Answer: For VOLT units fitted to M1, Archer, Shadow or other manufacturer gimbals, ensure that the VOLT pan encoder is spaced the thickness of a folded piece of paper away from the magnetic encoder ring, as it may be making contact. For M2 VOLT units, ensure that encoder mounting screws or the 2 x setscrews filling unused pulley position mounting holes are not excessively tight, as they may be causing a slight deformation of the gimbal bearing and adding drag. Also ensure that the pulley mounting bracket is secure. If these quick steps do not help, a gimbal or gimbal bearing service may be required.

- 2) How tight should the belts be?

Answer: To check belt tension, grasp the belt halfway between the motor and pulley with a firm pinch, and twist the belt 45-deg. If it goes beyond 45-deg the belt is too loose.

Note: Precise belt tension is not critical for operation

- 3) Control Box will not hold level, regardless of factory reset via Trim?

Answer: There are a few things that can be checked before calling for service:

- (a) Ensure that the VOLT Box is securely mounted to the stage and is not shifting.
- (b) Ensure that the ROLL and TILT controls are adjusted high enough.
- (c) Ensure that the sled is neutrally balanced.
- (d) Ensure that the VOLT Motor Drive is securely mounted, and the belts are tight.
- (e) Ensure that Power LED's are on both on the Control Box and Motor drive.

- 4) What did you do to repair my VOLT when I sent the control box back?

Answer: Please refer to the service details you receive when your VOLT ships back to you.

- 5) How do I tighten the top gimbal ring or encoder ring?

Answer: For M1, Archer, Shadow and PRO sleds, the magnetic encoder ring will first need to be gently pried up with a small flathead screwdriver. Once the encoder is lifted, the supplied Blue Whale tool or spanner wrench can be used to tighten the gimbal top ring. The magnetic encoder ring can then be re-mounted to the top gimbal ring. Be sure to align the index pins to the spanner holes before firmly pressing it down.

Note: Cleaning of the top ring surface with isopropyl alcohol will help with adhesion of the encoder to the ring. The encoder ring's orientation is not important.

Note: Check to see that the VOLT pan encoder is spaced the thickness of a folded piece of paper away from the magnetic encoder ring also after installation to avoid any potential gimbal friction.

- 6) Why is my rig vibrating or making a digital grinding noise?

Answer: When the VOLT is operating, vibration of the sled is typically caused by:

- (a) VOLT Control Box not being rigidly attached to the stage.
- (b) TILT or ROLL gain adjustments have been set too high.
- (c) Tilt and/or roll pulley mounting screws are loose, VOLT motor drive is loose on the gimbal yoke, gimbal handle is loose, belts are loose.
- (d) Vibration from loose monitor/batteries/accessories/camera or other mechanical components mounted on the sled. Any small vibration from a loose component on the sled has the potential of sending vibrations back to the VOLT, causing it to try and correct for the slight weight shift of the component.
- (e) Avoid mounting components to the Control Box if possible as this may be a cause for introducing vibration into the system.

Link: <https://www.youtube.com/watch?v=IStXtrjfqIc>

- 7) Why does the VOLT vibrate when turning up power beyond 50% - resonance from control box?
Answer: Not all sleds will vibrate when the power is turned up. It all depends on the payload weight and mass/rigidity of the sled and secure mounting of the VOLT Control box. If a light camera weight and a lightweight rig are being used, a high TILT or ROLL setting may cause the motors to be too strong for the setup. This may cause the VOLT to overshoot the amount of correction it needs to apply to stabilize the sled, resulting in vibration. Also, for those sleds other than the M2, if the VOLT Control box is not rigidly mounted to the stage, vibration can be introduced into the box which will result in vibration of the motors.
- 8) Why does my VOLT vibrate when in sticky mode?
Answer: Vibrations of the VOLT at high TILT strength settings are currently a limitation of the VOLT. To solve the issue, simply reduce the gain on the TILT.
- 9) Why is my horizon drifting or VOLT not maintaining a horizon or tilt??
Answer: Typically, this can be attributed to the tilt and/or roll pulley mounting screws being loose, VOLT motor drive is loose on the gimbal yoke, gimbal handle is loose, belts are loose, or VOLT Control box is loose. If the problem persists after checking all these items, contact your nearest service center for assistance.
- 10) Why is my rig swinging (fish bowling) all over the place?
Answer: There are 2 typical causes for a seemingly uncontrollable sled.
(a) The GOOFY/NORMAL setting of the VOLT motor drive has not been properly set. This can be corrected by powering up the VOLT in PAUSE mode, removing the plastic plug in the Motor Drive unit, and using a small plastic or wooden object, depress the pushbutton just under the plug and holding it until the LED inside the Motor Drive starts to blink at a different rate (for about 6 seconds). Holding the button down for any less than 6-seconds will result in the setting not being maintained in memory.
(b) The pan encoder is unplugged or defective.
- 11) Bad Pan Encoder? How to test for a bad sensor?
Answer: Power up the VOLT normally and lock in a tilt angle without panning the sled. Next pan the sled left or right 90°. If the tilt angle remains unchanged and the sled is operating normally, the Pan Encoder is OK. Otherwise replace the encoder or contact your service center for assistance.
- 12) Why do I see the rig pan left and right when I am at a lock off?
Answer: The VOLT is a system that only controls 2 of the 3-primary rotational axes of movement, tilt and roll. The Pan access is still in full control of the operator and governed by inertial mass of the sled. This axis is not compensated for or controlled by the VOLT so it may tend to drift while operating. To help combat this, the inertial mass of the sled can be increased by moving the battery and monitor masses further out. This will result in added stability and reduction if not elimination of an unwanted left-right panning of the sled.
- 13) Why do I need more Pan Inertia with the VOLT?
Answer: Pan inertia helps to dampen the panning motion of the sled as this axis is not controlled by the VOLT. Spreading out the battery and monitor rods to full extension will help to add pan inertia.
- 14) Why is the rig panning when I tilt?
Answer: Since the VOLT is only in control of the tilt and roll axis and not the pan axis, this axis is free to rotate. Any slight left-right imbalance or shift of balance when tilting of the sled will cause it to pan left or right. Fortunately, this artifact can be overcome or nulled out by simply adjusting the stage balance left or right until the sled does not pan anymore. The addition of more pan inertia on the sled will also help by spreading out the battery and monitor rods to full extension.

15) Why does my VOLT not hold level when switching to low mode?

Answer: The VOLT has independent settings for level in low mode and in high mode. This has been implemented to help compensate for VOLT units that are not mounted 100% level with the dovetail plate. Also, when switching from low to high modes, or vice-versa, allow approximately 20-seconds for the horizon to stabilize.

Note: If horizon re-calibration is needed, SHORT-press the trim button on the control box and hold the sled in the new level position while the LEDs blink for 5 seconds. When LED blinking stops, your new horizon position (or Dutch angle!) is now stored in memory. To set for low mode, simply invert the sled and repeat the above process.

Link: <https://www.youtube.com/watch?v=XS4DJE66OJs&t=1s>

16) Why is the VOLT less effective with a “close/tight” build – monitor and batteries close to post?

Answer: The VOLT system relies on pan inertia of the sled to maintain pan stability. Tightly built rigs sometimes will not have enough pan inertia to adequately compensate for rotation of this axis.

17) When turning on the VOLT, the LED’s turn on, then fade off. What is wrong?

Answer: The most likely cause is low battery voltage. The batteries need to be changed.

18) I don’t like using TILT input control as I need to dynamically operate for fast adjustments for headroom. Does this affect the other axis?

Answer: No, once the rig pan angle has been set at power-up, the TILT and ROLL controls adjust motor feedback directly aligned with the camera's tilt and roll axes, independent of the pan orientation of the rig.

19) The lights are on but no one home: VOLT turns on, LED’s lit on both drive and Control, but no power to/from VOLT motors. VOLT not working. What is wrong?

Answer: There are a few things that can be checked before calling for service:

- (a) Are the ROLL and TILT adjustments adequately turned up?
- (b) Is the battery voltage stable and above 12V?
- (c) Is the VOLT cable undamaged?

20) Control box has the blue LED lit, but none are lit on the Drive unit. What is wrong?

Answer: There are a few things that can be checked before calling for service:

- (a) Is the battery voltage stable and above 12V? (See Issues and Problems FAQ item #23).
- (b) The Control Box or VOLT PCB may be damaged.
- (c) The VOLT cable may be damaged.
- (d) The Motor Drive may be damaged.

Note: Replace one component at a time until the problem has been resolved or the faulty component identified.

21) When I use certain cameras that have a high current drain why does the Volt vibrate and then start swinging around?

Answer: Most likely the camera is robbing power from the batteries and the VOLT cannot get enough voltage to operate properly. The solution on a 12V rig is to set the batteries to parallel, use a third battery mount, or use a dedicated battery to power the VOLT.

22) No LED’s lit, no seeming power to either. What is wrong?

Answer: There are a few things that can be checked before calling for service:

- (a) Is the Control Box plugged into power?
- (b) Is the VOLT cable plugged in at both ends?
- (c) Is the Power switch turned on for the VOLT and sled?

23) Why do the LED's on my motor drive go off and on and the VOLT operate erratically?

Answer: The VOLT is designed to operate from 12Vdc to 17Vdc. Any voltage below 12V will start to affect the motor power of the VOLT and its ability to operate reliably. If the applied voltage to the VOLT drops too low, motor systems will be turned off. The LED's on the motor drive will go off, but LED's on Control Box may stay on. Once the voltage to the VOLT recovers to a sufficient level, motor power will automatically be turned on again. The best way to overcome this issue is to ensure fresh batteries are being used with the VOLT, or for those setups that require a heavy power draw, accessory power cables can be used for the VOLT that will connect it to an independent battery via a D-tap connector.

24) Where can I find the VOLT manual?

Answer: All Steadicam manuals can be found at the link listed below.

Link: <https://showcase.dropbox.com/s/Steadicam-Manuals-UnK9Y2IG5yfjPE91qRPXi>

25) How can I contact Customer Service?

Answer: You can either contact your immediate STEADICAM dealer, or Tiffen Steadicam at:

In the USA

Contact Us: <https://tiffen.com/pages/contact>

818-567-7917 or 818 843 4600 ext 7917

In Europe

Technical Assistance: flysteadicam@tiffen.com

+44 (0)1753 783 960