

CINE SHOOTER

COMPLETE USER MANUAL

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Kessler
Innovative Tools for Filmmakers

USER GUIDE

TABLE OF CONTENTS
CINESHOOTER SYSTEM

ITEMS INCLUDED

- 1x CineShooter Pan & Tilt Head
- 1x Adjustable Arca-Swiss Mounting L-Bracket
- 1x Power Port Cover (Installed)
- 1x 12V 5A Power Supply with 5.5x2.1mm Barrel (Center Positive)
- 1x 3 ft. USB-C Cable
- 1x 1/4”-20 and 3/8”-16 Camera Screws
- 1x Allen Key
- 1x QuickStart Guide

OPTIONAL ACCESSORIES

- Heavy Duty Support Module
- Smart Handle Module
- Any Compatible Kessler Slider
- Slide Motor
- Pan/Turntable Motor
- FIZ Motor
- Camera Control Cable
- Bridge Cable
- Second Shooter Pro/Plus Controller (for bridging)
- External intervalometer
- CineShooter Remote App
- kOS Software
- Digital Control Center (Coming Soon)

NOTE: Not all features have been enabled in the firmware. The manual will not provide a walkthrough or setup of that particular feature until it is activated in the firmware.

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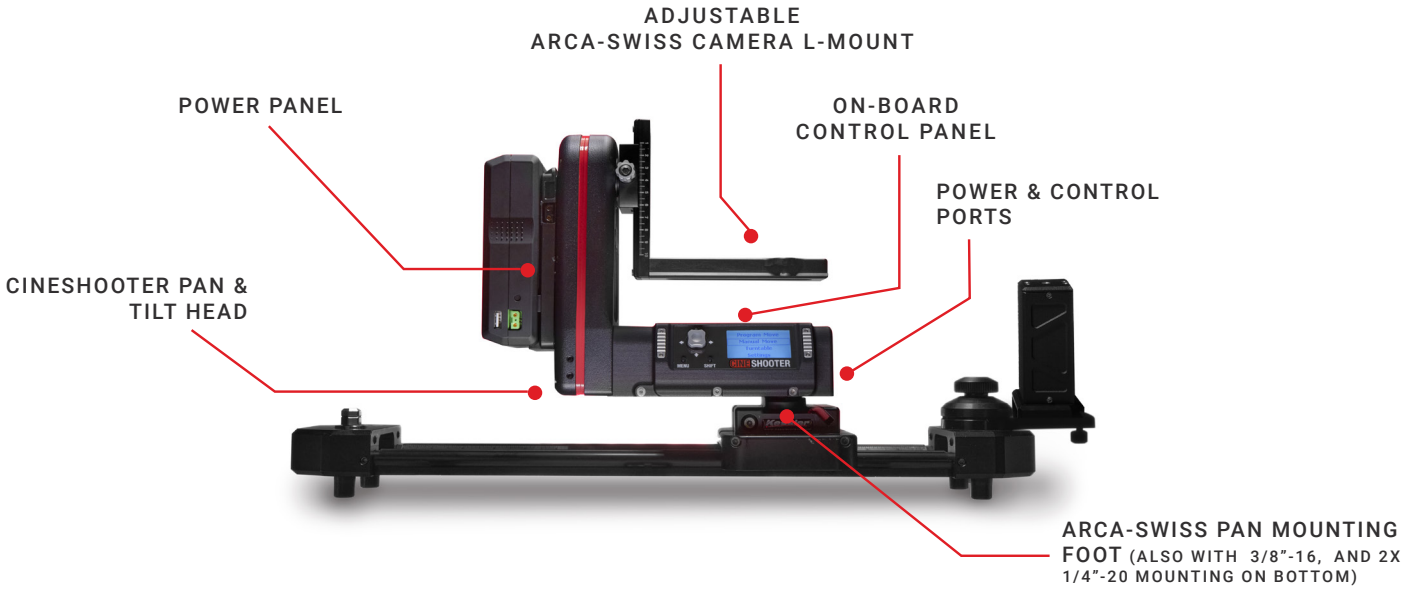
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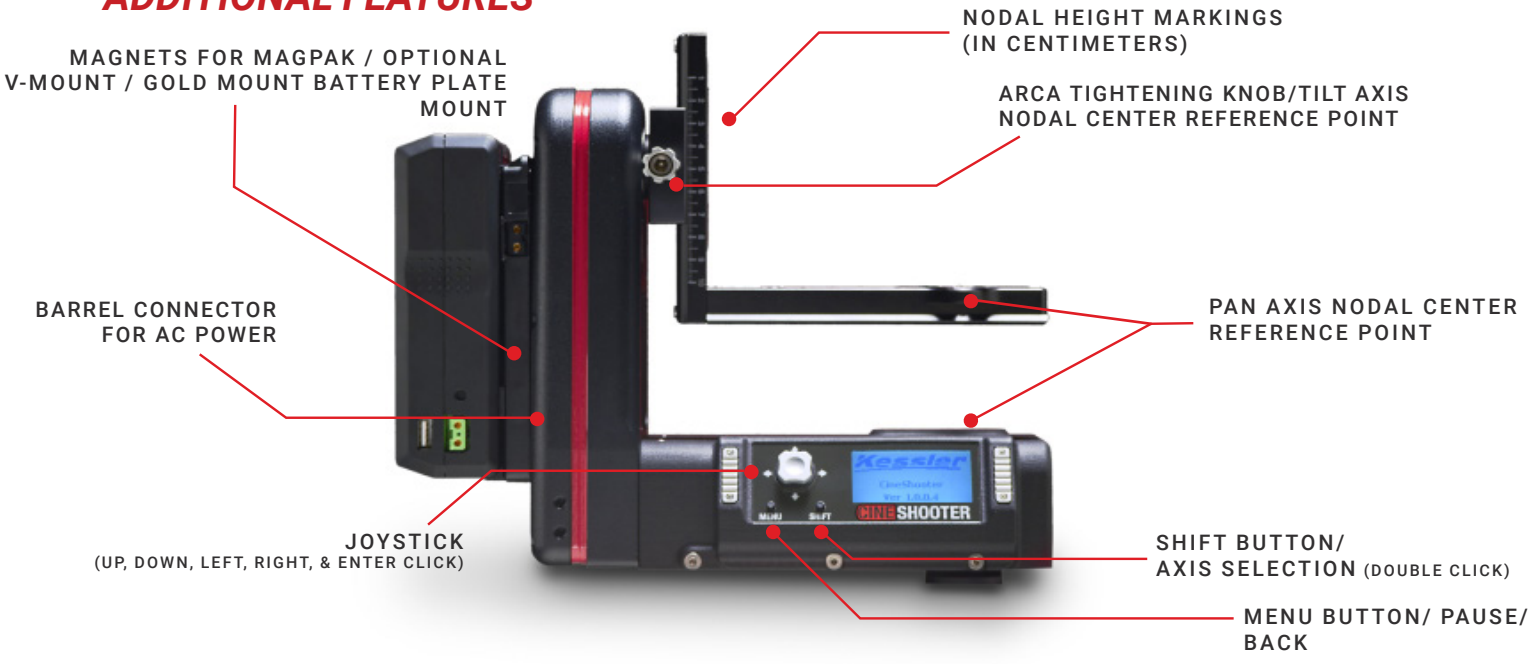
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MAIN COMPONENTS (IN 3-AXIS SETUP)



*System shown with optional slider, slide axis motor, and Kwik Release Receiver.
For additional Axis setup information, see Table of Contents, or visit support.kesslercrane.com

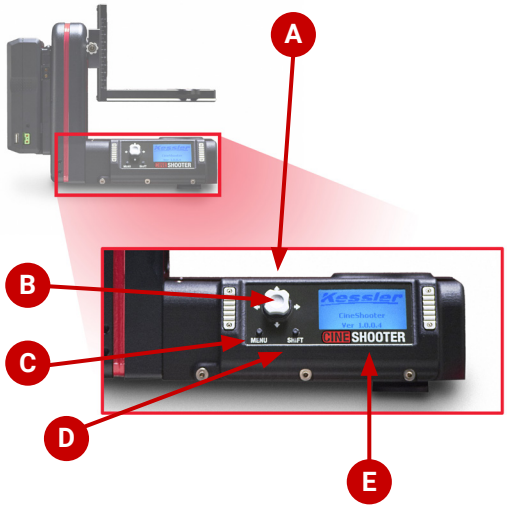
ADDITIONAL FEATURES



NOTE: This system is regularly maintained with firmware updates. It is recommended that users verify they are running the most current version of firmware before operating the CineShooter system for the first time.

Firmware can be downloaded and installed wirelessly via the CineShooter Remote mobile companion app, or it can be downloaded manually at kesslercrane.com/support and installed via the USB-C port located on the end of the Pan & Tilt Head.

ON-BOARD CONTROLS



A

Directional Joystick

For on-board programming and control, the directional joystick can be used to navigate through the menu system, and also control the Left/Right movement of the Slider motor, Left/Right movement of the pan motor, the Up/Down movement of the tilt motor, spin Left/Right if using a turntable, or rotate Left/Right if using a FIZ motor.

B

Enter/Select Button

Click the joystick to hit "enter" and make selections within the menu.

C

Menu Button

Navigate backwards to the previous menu page, or to return to the main menu

D

Shift Button

When used in conjunction with other buttons, this button allows for secondary controls, and secondary axes when utilizing motors driven through a bridged Second Shooter/Plus/Pro controller or wireless 2-axis expansion module.

Shift+ Directional arrows increases speed during set to allow moves to be programed faster. (NOTE: The head defaults to Quiet Mode. This option is only available when Quiet Mode is disabled.)

Double click Shift to cycle through axes.

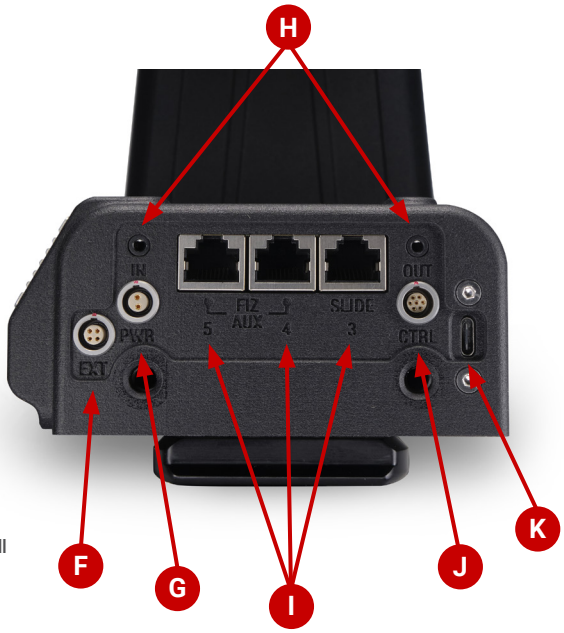
Shift toggles backlight on/off during time lapse move.

E

Backlit Display Screen

Easy-to-navigate display screen that permits onboard programming and operaiton

PORTS & POWER



F

EXT Port

This is the CANbus port, and is for wired bridging with accessories such as a Second Shooter Pro/Plus controller, and other control devices.

G

PWR Port

This is an industry-standard 2-pin Lemo power port, and is compatible with AC wall power, as well as a wide variety of third-party power solutions that use Pin-1 GND.

H

I/O Ports

Used to support our Smart Handle and FreeMotion feature, or for triggering cameras (with corresponding trigger cable), and connecting external intervalometers and bulb-ramping devices, such as Ramper Pro.

I

CAT5 Axis Ports

Allows for the CineShooter head to control up to 3 additional external motor axes (typically Slide, FIZ, or Turntable), or any other combination of motors available. Each axis connects to corresponding port via provided CAT5 cable.

J

CTRL Port

This is for I2C and UART support, and allows CineShooter to communicate with Dragonframe software, as well as hardwired ethernet for remote control via our dedicated web server.

K

USB-C Port

The USB-C Port is for hardwiring the system for use through Kessler kOS software, as well as hardwire option for firmware updates (firmware can also be wirelessly updated via the mobile app as well).

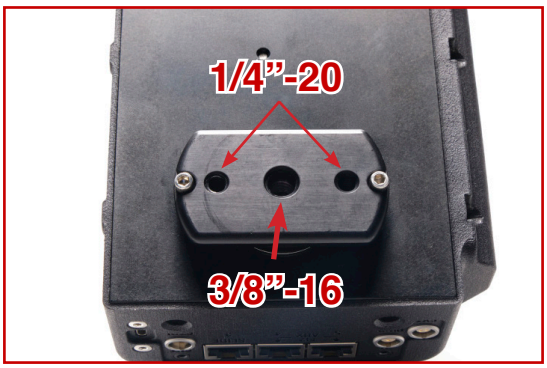
BEFORE YOU BEGIN

CineShooters ship with a protective screen covering on the LED screen. We suggest removing this protective film before using your CineShooter.

MOUNTING YOUR CINESHOOTER PAN & TILT HEAD

To set up your CineShooter Pan & Tilt Head, we recommend first mounting your CineShooter to a secure platform (A slider, a tripod, or some other camera mounting base).

The mounting foot of the CineShooter is an Arca-Swiss base that works with our Kwik Release Receiver, as well as a variety of other third party Arca-based mounts.



For those not using an Arca plate— on the bottom of the Arca foot is one on-center 3/8”-16 threaded hole, and two ¼”-20 threaded holes on either side to provide alternative ways to mount your equipment to non-Arca bases.

POWERING YOUR CINESHOOTER PAN & TILT HEAD

There are many ways to power your CineShooter. Depending on what options and accessories you’re using, you have the option of powering your system via:

- The provided 12v barrel connector AC power supply
- Kessler MagPak battery (w/ 12v barrel connector cable)
- V-Mount Battery (requires add-on Battery Plate option)
- Gold Mount/AB Mount Battery (requires add-on Battery Plate option)
- Batteries and power devices with Lemo 2-pin power cable (Pin-1 GND)

MOUNTING A CAMERA TO YOUR CINESHOOTER PAN & TILT HEAD

There are two main things to keep in mind when mounting your camera to the CineShooter:

- The balance/weight distribution of your camera
- The placement of your sensor on Nodal Center

BALANCING YOUR CAMERA

Before mounting your camera to the CineShooter, we strongly recommend balancing your camera. This ensures optimal performance of your system and avoids potential issues.

Balance becomes more crucial with higher weight payloads. Achieving perfect balance is ideal, however approximate balance will also help avoid issues on a higher weight payload.

For Standard Mode Shooting:



It is particularly important to achieve balance from front to back, as well as being mindful of the vertical center of gravity on your camera to avoid potential jitters, camera shake, axis "fault errors", or odd behavior in motion.

For Roll Mode Shooting:



It is suggested to be mindful of the left to right balance on your camera while making sure your lens and sensor align directly on the "tilt" nodal plane.

Also note the height and width of your camera build to ensure clearance when completing a full roll rotation.

TIPS ON BALANCING

There are several ways to balance your camera, here are three methods.

ON-BOARD TEST

Using an unpowered CineShooter Pan & Tilt Head, mount your camera to the L-Bracket or H-Frame and observe any movement along the tilt axis. When unpowered, the tilt motor has very little resistance and will help indicate whether your camera build is balanced enough. A balanced camera won't move the tilt axis. An unbalanced camera will tilt forward or backward.



If the camera tilts down, it is front heavy.
If the camera tilts up, it is back heavy.

Note: If your full camera build does not move the tilt axis upon mounting, you are likely within a safe balance and additional adjustment isn't necessary.

It is recommended to use an Arca-Swiss plate coupled with our Kwik Release Receiver. This allows for an additional range of adjustment, sliding forward or backward to help counter the balance of your camera. Otherwise, adjust your build by shifting accessories and adding counter weight to help offset the weight. Repeat the test on the CineShooter until the camera feels relatively balanced.

TIPS ON BALANCING (CONT'D)

TRIPOD TEST



Using a fluid head tripod, mount your built-up camera to the tripod head and loosen the tilt drag until you start to feel the head moving without resistance. Leveling the camera out, loosen your grip of the camera and see which direction the camera tilts.

If the camera tilts down, it is front heavy.
If the camera tilts up, it is back heavy.

Adjust your build by shifting accessories, adding counter weight, or simply shifting your mounting plate forward or back on your camera to help offset the weight. Repeat the test on the tripod until the camera feels relatively balanced.

Note the new measured balance point. Using that reference point, center your camera on the L-Bracket or H-Frame of the CineShooter.

SIMPLE FULCRUM TEST



A more rudimentary method is the use of a simple fulcrum on a flat, level surface (a pen, dowel rod, or spare 15mm camera rod will all work.) With a firm hand on your camera, align the ¼"-20 or 3/8"-16 mounting hole on the bottom of your camera to your fulcrum point.

Hold the camera level on the fulcrum and carefully loosen your grip. If the camera falls forward, you are front heavy. If it falls backward, you are back heavy.

Adjust your build by shifting accessories, adding counter weight, or simply shifting your mounting plate forward or back on your camera to help offset the weight. Repeat the test on the fulcrum until the camera feels relatively balanced.

Note the new measured balance point. Using that reference point, center your camera on the L-Bracket or H-Frame of the CineShooter.

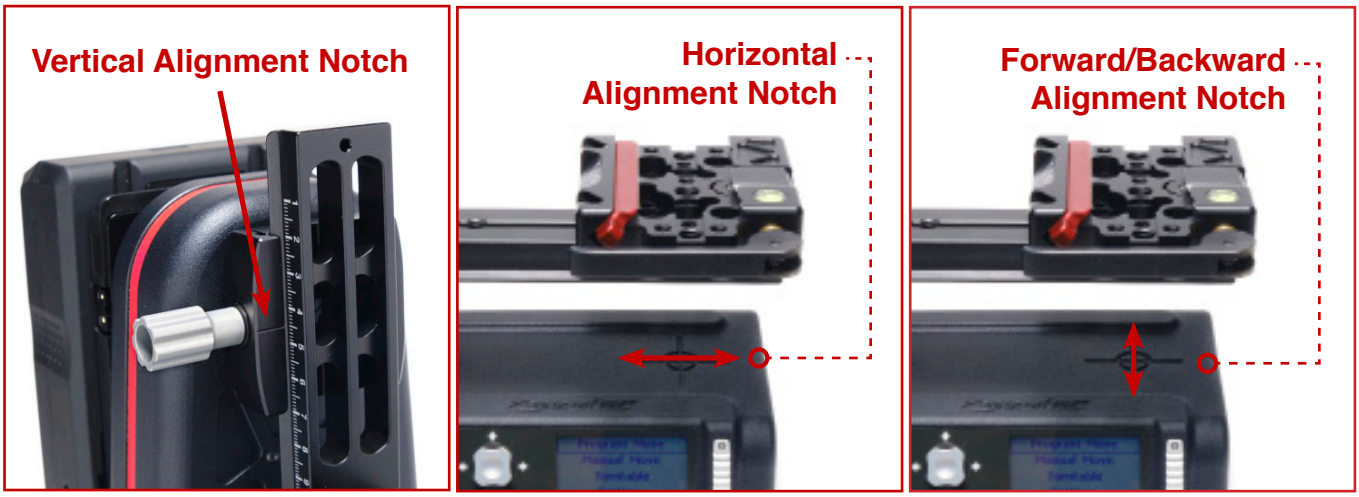
NOTE: Balancing the camera by shifting your mounting plate may cause you to move the camera off the nodal center point. For most shooting circumstances, it is better to have a balanced camera than a perfect nodal center.

FINDING NODAL CENTER

Nodal Center is achieved when the sensor is perfecty aligned with both the pan and tilt axes on your system (indicated with the cross marker on the top of the base of the CineShooter Head, and on the Tilt Axis knob.

Nodal Center is ideal for VFX shots, shots that required 3D Tracking, virtual production, and when doing more precise and measured camera movement, but is NOT necessary for regular operation. **Having a balanced rig is more important than placing your sensor directly on the nodal point**.

If achieving nodal center is crucial to your production, we recommend doing the fulcrum test from the point where your sensor plane is, as opposed to the mounting holes on the base of your camera. This well help you dial in the balance while still maintaining a nodal center point.



To achieve nodal center, there are 3 directions of adjustment to be mindful of:

- The vertical alignment (which is located by a notch marking on the L-Bracket Arca Mount)
- The horizontal alignment (Which is located by the perpendicular line in the crosshair marking on the top of the CineShooter Base as seen in the photo.) **Note:** This alignment can be automatically achieved when mounting a Kessler Kwik Release Receiver using the two 1/4”-20 tapped holes on the L-Bracket or H-Frame.
- The forward/back alignment. (Which is located by the horizontal line in the crosshair marking on the top of the CineShooter Base as seen in the photo.) **Note:** This alignment requires a Kessler Kwik Release plate, or some other Quick Release plate that allows for slide adjustment of your camera build.

Make sure your camera sensor is centered with all 3 marking points located on the CineShooter head. Depending on how you mount your camera, you may already be centered from left to right, but have adjustments from front and back or up and down.

NOTE: As an added reference point, an additional notch marking is engraved on the underside of the L-Bracket and H-Frame to better help align 1/4”-20 and 3/8”-16 mounting screws at the nodal center.

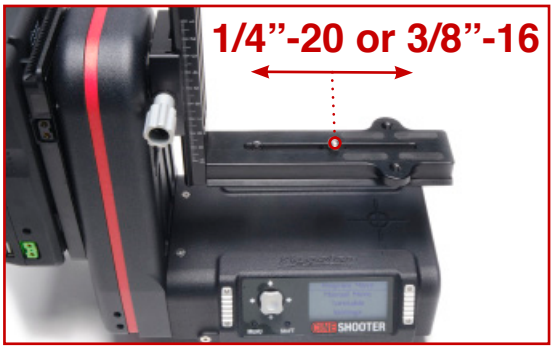
MOUNTING TO THE L-BRACKET OR H-FRAME

There are several ways to mount your camera to the CineShooter Pan & Tilt Head. We suggest first removing the L-Bracket or H-Frame and mounting your camera to the bracket first before installing onto the head.

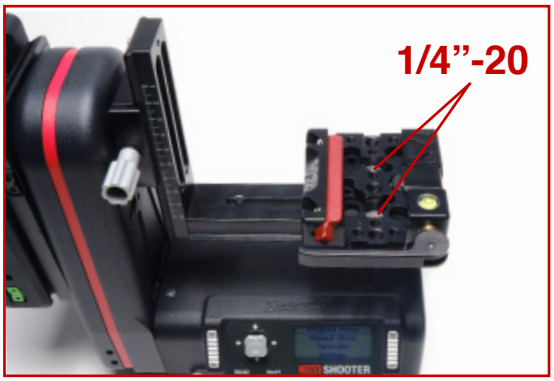
We also recommend powering your CineShooter Head before mounting your camera and L-Bracket or H-Frame into the Arca-Swiss receiver plate(s) built into the CineShooter. This will provide a level of resistance to the motors as you mount your camera to avoid any difficulties such as camera "crashing" on the tilt axis if the camera payload is too high or unbalanced.

For standard operation, you may:

- Mount directly to the horizontal slide slot available on both the standard L-Bracket bracket or H-Frame supplied in the Heavy Duty Mounting Module using the supplied ¼"-20 or 3/8"-16 camera screws.



- Mount a Kessler Kwik Release Receiver to the two centered-on-nodal tapped holes



- Mount a third-party quick release system using any of the available 3/8"-16 or ¼"-20 holes or slots located on the L-Bracket or H-Frame.
- Remove the provided L-Bracket or H-Frame and mount any third-party Arca-based L-Bracket such as L-Brackets offered by 3 Legged Thing, Really Right Stuff, or Kirk.

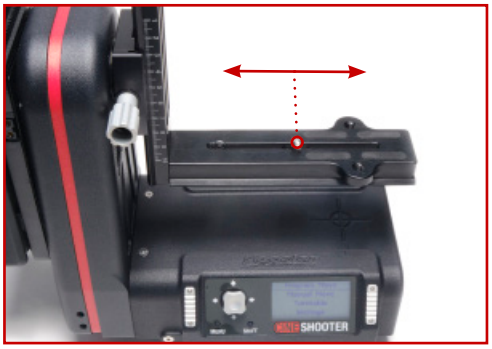
MOUNTING IN "ROLL MODE"

For Roll Mode operation, you may:

- Mount your camera using a Kwik Release Receiver oriented 90 degrees from standard mode mounted using the horizontal slide slot available on the standard L-Bracket using the supplied ¼"-20 or 3/8"-16 camera screws.



- Mount your camera directly to the horizontal slide slot available on the standard L-Bracket using the supplied ¼"-20 or 3/8"-16 camera screws. Just orient your camera 90 degrees so the lens is pointing toward the ports side.



- Keep your Kwik Release Receiver oriented normally, but instead orient your Arca-Swiss plate that's fastened to your camera 90 degrees so it's perpendicular to the direction of your lens.



NOTE: When shooting in Roll Mode, users are limited to using the standard L-Bracket and cannot have the Heavy Duty Mounting Module installed.

Also, for a perfect roll, make sure your sensor and lens are aligned to the nodal center "Tilt Axis" marking point, otherwise an undesirable wobble may occur.

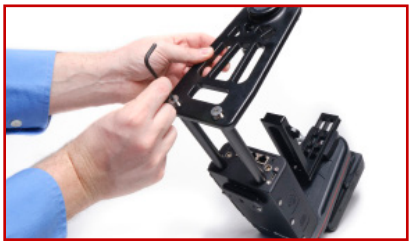
HEAVY DUTY SUPPORT MODULE

The Heavy Duty Support Module is designed to increase the max weight capacity from 15 lbs. to 25 lbs.

1. Screw in threaded rods into port end of CineShooter.



2. Screw in end plate to the newly installed rods using the provided screws and 5/32 allen wrench.



3. Remove the L-Bracket from the Mini Kwik Release Receiver located on the CineShooter.

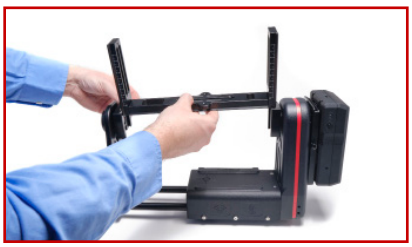


4. Loosen the Mini Kwik Release Receiver located on both the CineShooter head, and the end plate.



5. Take the H-Frame and slide into both Mini Kwik Release Receivers. Adjust the height and tighten down.

Mount camera.



Note: The center point for the H-Frame is slightly off-center to allow for cameras with a wider profile. The side with the larger hole on the horizontal plate should face outward, closer to the side of the heavy duty support end plate.

SMART HANDLE MODULE

The Smart Handle Module is intended to function as both a grab point for carrying and adjusting your CIneShooter Pan & Tilt Head, as well as an interface to enable and interract with the FreeMotion feature.

INSTALLATION

1. Using the provided screws and allen wrench, install the Smart Handle Module to the battery plate end of the CineShooter.



2. Run the coiled cable along the base of the CineShooter and plug the jack into the “In” port on the ports panel of the CineShooter Pan and Tilt Head



OPERATION

1. To operate, begin by programming a new camera move.

2. Once **SET 1ST KEY FRAME** is displayed on screen, press and hold the FreeMotion button on the Smart Handle with one hand, and position the camera mounted to the L-Bracket or H-Frame to desired position with the other hand, sliding along the slider (if using one).

3. Once the camera is in the desired position, let go of the FreeMotion button on the Smart Handle. Then hit **Enter** on the joystick to set your first position. Repeat step 2 until desired number of keyframes are set.

NOTE: The Smart Button only activates FreeMotion when programming a move, otherwise the function is disengaged and the Smart Button will not free up the motors.

ADDING AN ADDITIONAL AXIS

Currently, there are several motor axes available that can be installed in various combinations with your CineShooter system:

- **Slide Motor**
- **Pan/Turntable Motor**
- **Tilt Motor (for creative shooting)**
- **FIZ Motor**

SLIDE MOTOR AXIS

The most common pairing with the CineShooter Pan & Tilt Head, the Slide Motor axis allows for programmed slider motion that provides push-ins, pull-outs, pedastals up and down (when slider is mounted vertically), angled moves, parallel slides, and parallax movements.

PULLEY CONFIGURATION

Depending on your desired shot type, there are two different diameter pulleys provided with the slide motor that can be arranged in diferent configurations to provide three different gear ratios allowing for the adjustment of overall motor speed, operating volume, and torque.

Note: The metal pin on the Slider Motor stores the extra pulley when not in uses.

LARGE PULLEY



SMALL PULLEY

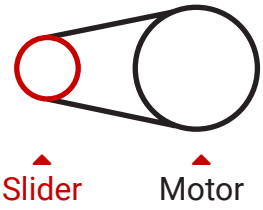


PULLEY STORAGE PIN

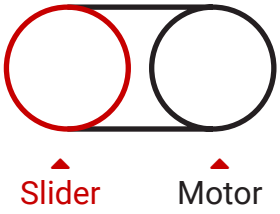


POSSIBLE PULLEY CONFIGURATIONS

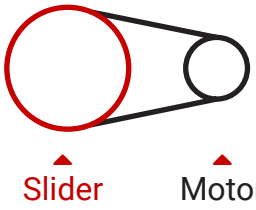
High Speed / Low Torque*
Interview configuration,
or when noise is a concern.



Standard Speed / Torque
Standard configuration for most shooting conditions.



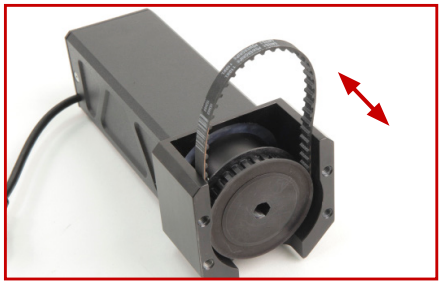
Low Speed / High Torque
Vertical configuration, or for heavy camera loads.

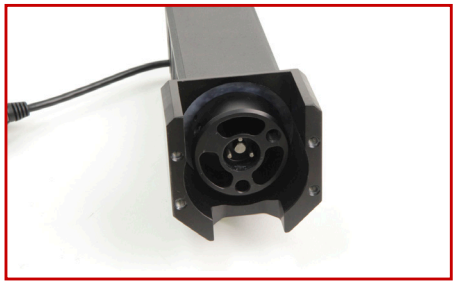


*High speed / low torque config is not compatible with Pocket Dolly, Shuttle Dolly, Shuttle Pod or Shuttle Pod Mini

1. PULLEY INSTALLATION

To adjust pulley ratios, begin by removing the pulley installed on the Slide motor and pull outward away from the motor.



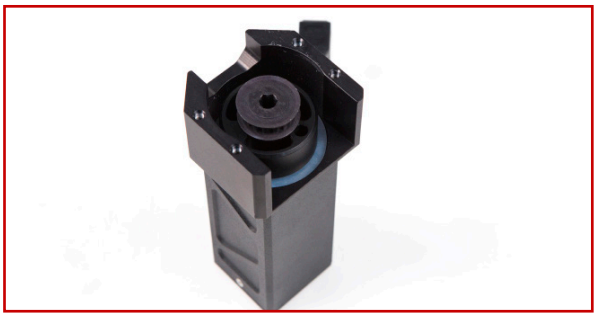


2. To install the pulley, simply push the pulley onto the motor shaft while aligning the holes. Be sure to hold the belt in place while installing.

3. Install the Small Pulley onto the Slider Motor.

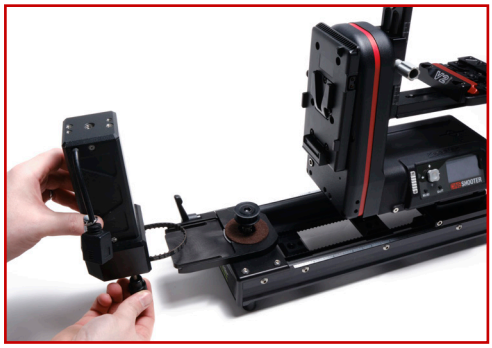
   The pre-installed belt (labled 110XL) on the Slider Motor is to be used in most applications. However, if using the Small Pulley in conjunction with the Shuttle Pod, Shuttle Pod Mini, Shuttle Dolly or Pocket Dolly v2.0 follow steps 5-6.

4. Place the smaller belt (labled 100XL) around the Small Pulley.





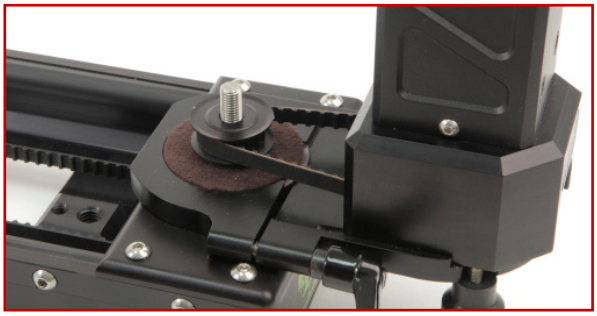
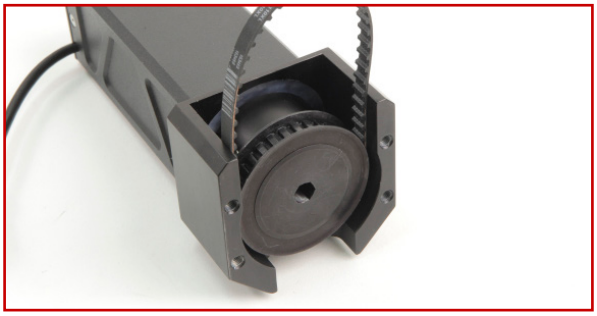
5. Mount the Slider Motor onto the Motor Mount utilizing the threaded holes nearest to the pulley on the back side of the motor.



6. Choose between the following pulley combinations: Fast, Normal and Slow.

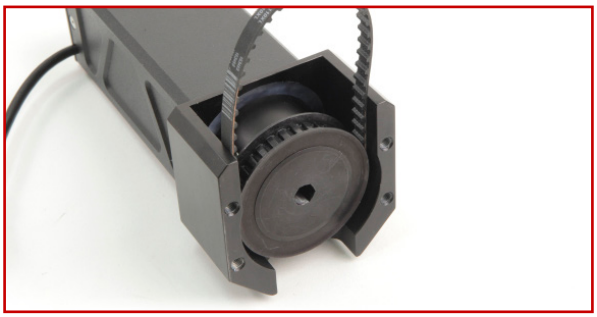
FAST (LOW TORQUE)

**This combination is only compatible with CineSlider and Stealth sliders.*

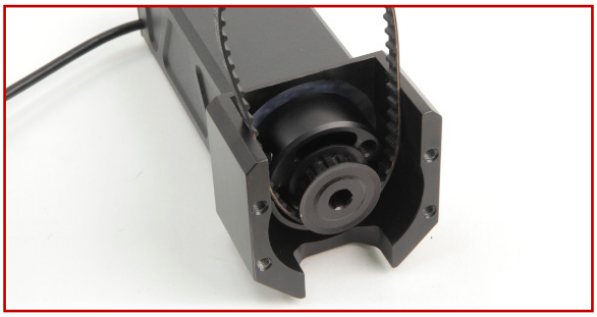



NORMAL

**This combination requires the pulley from the Motor Mount Kit to be used on the slider.*

SLOW (HIGH TORQUE)

7. Place screw cap back on slider pulley point. Push down pulley if needed and tighten. Avoid over-tightening.



8. Connect CAT5 cable from Slider motor to the SLIDE port on the CineShooter Pan & Tilt Head.





PAN & TILT MOTOR AXES

Because the CineShooter has Pan and Tilt motion built into the head, adding an additional Pan and/or Tilt Axis would most likely be used for some sort of special effect (i.e. using the pan base in a turntable configuration, using both pan and tilt axes to move an object being photographed for a more abstract camera motion, employing lighting queues, or some other creative application of these motors.)

1. The Pan/Turntable motor axis has 3/8”-16 and ¼”–20 holes on the underside to provide various mounting options.

The Tilt motor axis has 2 pass-through (non-threaded) 1/4” holes intended for mounting to the Pan motor but can be used on any third party cheeseplate, or home made rigging with correct spacing and accepts ¼”–20 threading.

To mount to a slider: We recommend using a Kessler Kwik Release Receiver mounted to your slider carriage, and a 3/8”-16 Kwik Short Plate mounted to the underside of your motor.

You may alternatively use our 3/8-16” Flat Mount adapter in lieu of the Kwik Release Receiver.

To mount the Tilt motor axis to the Pan motor: Simply align the two 1/4” pass-through holes on the Tilt motor to the correspnding threaded ¼”–20 holes on the pan motor (or third party mounting solution) and fasten together with the two provided screws and a 5/32 allen wrench.

When mounting for other applications: Simply utilize the 3/8”-16 and ¼”–20 holes on the base of the pan motor to attach to your desired setup.







2. Connect CAT5 cable to the Pan/Tilt Motor and to either of the AUX ports on the CineShooter.

3. Connect CAT5 cable from the Tilt axis to either of the AUX ports on the CineShooter.



4. Supply power to your CineShooter (See the “Powering Your CineShooter Pan & Tilt Head” section of this manual for more information.)

FIZ MOTOR AXIS

The Kesser FIZ Motor will allow you to program lens adjustments on either the Focus, Iris, or Zoom rings on your cinema (or any lens with a standard .8 pitched gearing).

1. To mount a FIZ Motor, your camera must be built on 15mm rods for the motor to attach to. Slide motor onto 15mm rod, orienting the motor so the gearing aligns with the desired gear ring (Focus, Iris, or Zoom) on your lens.

If the motor has trouble engaging with the gearing of your lens, you may either try mounting your motor with the second 15mm rod hole on the motor, or you may flip the FIZ motor to the opposite side of the motor mount. Adjust articulation until the lens and motor engage without obstruction.





2. Tighten down the FIZ Motor with the tightening nob so it is securely fastened to the 15mm rod.

3. Connect FIZ adapter cable to CAT-5 cable, and the other end of the CAT-5 cable to one of the FIZ ports on the CineShooter




CONNECTING AN INTERVALOMETER

For time lapse or stop motion, connect a Camera Control Cable to the “Out” port on the CineShooter Pan & Tilt Head to the proper port on your camera.





BATTERY PLATE INSTALLATION

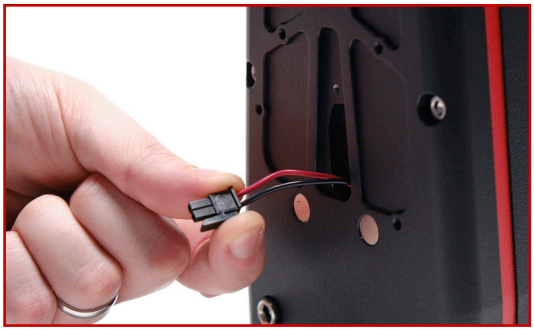
If you ordered a V-Mount or Gold Mount battery plate for your CineShooter, you will need to install it to your Pan & Tilt Head.

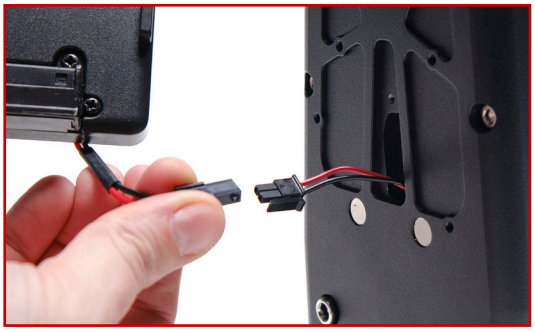
1. To install, begin by removing the power port cap with a 2mm (or 5/64”) allen wrench. Be sure to place the port cap and screw in a safe place.





2. Pull out the power cable from the port cap, and plug into lead of battery plate.
NOTE: Do not attach battery to plate while plugging in cable.





3. Align the battery plate to the 4 matching screw holes on the CineShooter Pan & Tilt Head, carefully tuck in the excess wire and connectors into the available cavities of the battery plate/ CineShooter to avoid pinching of wires, then fasten the plate to the CineShooter using a screwdriver.

NOTE: The CineShooter is magnetized and the plate will naturally attract to the head. This will help align screw holes and hold the plate in place until all 4 screws are installed.





USING KOS SOFTWARE

To use the CineShooter system with kOS software, you will need kOS for CineShooter installed on your Mac, Windows PC or iPad.

CONNECTING TO KOS VIA USB

1. Connect USB-C cable to computer and the CineShooter Pan & Tilt Head.



2. Open kOS and click connect. Your CineShooter will automatically connect to kOS.



CONNECTING TO KOS VIA WIFI

1. On the CineShooter, press the Menu button until the main version screen is displayed. Once the version is displayed, the Operation Mode menu will display.
2. If the WiFi menu option reads “WiFi Enabled”, the Wifi access point is active. Proceed to #4.
3. If the WiFi menu option reads “WiFi Disabled”, select it and press the Enter button, your CineShooter will reboot and will now say “WiFi Enabled”.



4. On your computer or tablet you will now see a WiFi network named **“CineShooter”**. Connect to that wireless network.
5. Once connected to the **“CineShooter”** network, open kOS and it will automatically connect to your CineShooter via WiFi.

PAIRING PHONE TO CINESHOOTER REMOTE

Connecting on iPhone

On iPhone, go to your settings>Wifi> and select “CineShooter”. Return to the CineShooter Remote app and the connection should automatically be made. For further support and troubleshooting, see CineShooter Remote manual.

Connecting on Android

On Android, open the Settings App>Network & internet> Select Hotspot & Tethering> Wi-Fi hotspot> and select “CineShooter”. Return to the CineShooter Remote app and the connection should automatically be made. For further support and troubleshooting, see CineShooter Remote manual.

PAIRING PS4/XBOX CONTROLLER TO CINESHOOTER REMOTE

PS4 Controller

Hold down the PS button and the Share button simultaneously for 5 seconds, or until the lights flash.

Open your phone settings, go to Bluetooth, and select **“DUALSHOCK 4 Wireless Controller”** from the list of new devices. Once connected, open the CineShooter Remote app and click the Controller icon to pair. For further instructions, support, and troubleshooting, see CineShooter Remote manual.

XBOX Controller

Hold down the Xbox One logo, located on the top center of the controller, until its backlight starts flashing.

Open your phone settings, go to Bluetooth, and select **“Xbox One Wireless Controller”** from the list of new devices. Once connected, open the CineShooter Remote app and click the Controller icon to pair. For further instructions, support, and troubleshooting, see CineShooter Remote manual.

USING BRIDGE MODE

NOTE: At this time, Bridge Mode has not been enabled in the firmware. This option will be available in coming firmware updates.

By utilizing one of the EXT. Port on your CineShooter, users can link either an additional Second Shooter Pro/Second Shooter Plus/Second Shooter Classic controller or a Wireless Expansion Module (coming soon) to increase the number of available axes simultaneously.

In order to get started with Bridge Mode, users will need to connect each of the controllers with a Bridge Cable.*

In addition to the Second Shooter Pro' Expansion Port being used to connect to controllers in Bridge Mode, it can also be utilized to connect to motion control accessories, such as the Digital Control Center.

SETTING UP BRIDGE MODE

1. Plug in the Bridge Cable* from the EXT. port on your CineShooter to one of the expansion ports on the bottom of your connecting controller.

2. Once the CineShooter/Controller are powered on, use your CineShooter and go to the **OPERATING MODE** menu. Set the CineShooter to "Master", and in your bridged Controller, go to the **OPERATING MODE** menu and select "Slave".

   You can now program a move or do a manual move like normal.

3. When "Master Active" is shown on the Master controller, the arrow buttons on each controller will control the motors connected to that controller.

   To be able to control the motors connected to the slave unit through the master unit, double tap the **SHIFT** button. The controller will now show "Slave Active" and pressing the arrow buttons on the master unit will control the motors connected to the slave unit.

**Although these cables are similar to other RJ-11 cables, DO NOT use any other cable for bridging CineShooter to other controllers/modules. Doing so may put your system at risk for damage.*

SHOOTING MODES

After powering up the system you will be presented with four options:

- **PROGRAM MOVE**
- **MANUAL MOVE**
- **TURNTABLE**
- **SETTINGS**

PROGRAM MOVE

1. Select **PROGRAM MOVE** to set the 1st (begin) and 2nd (end) key frames for the move. Be sure each axis is in the desired position before selecting **SET 1ST KEY FRAME** or **SET 2ND KEY FRAME**.

2. Position your Slider and Pan & Tilt head to desired beginning position and press ENTER to **SET 1ST KEY FRAME.**

3. Position your Slider and Pan & Tilt head to desired end position and then press ENTER to **SET 2ND KEY FRAME.**

Creating 3 key frames functions similarly to the way you create 2 key frames. Keep in mind that key frames are created consecutively, so **1ST KEY FRAME** is going to be the start point, **2ND KEY FRAME** is a middle point, and **3RD KEY FRAME** is the end point.

Once all 3 key frames are created, you are prompted with a “2nd KF time” request— this effectively sets the timing from **1ST KEY FRAME** to **2ND KEY FRAME**, and **2ND KEY FRAME** to **3RD KEY FRAME**.

The lower the percentage entered, the faster the movement will be from **1ST KEY FRAME** to **2ND KEY FRAME** and the slower the movement will be from **2ND KEY FRAME** to **3RD KEY FRAME**.

MANUAL MOVE

1. Select **MANUAL MOVE** to do a live move without programming.

The default speed of Manual Move mode is 50%. This selection will be blinking. If you’d like to adjust that speed up or down, you can do so using the Up or Down function on the joystick. Once you’ve adjusted that to the desired speed, press Enter.

2. The screen will now display **RUNNING** which allows you to manually move each axis by using the directional joystick.

3. The **SET CALIBRATION*** feature allows you to focus on the shot rather than worrying about running your motors into the end of the slider. It works by setting a minimum and maximum limit range of each axis to avoid collisions and event errors by exceeding the travel range of each motor.

**When setting your calibration limits, make sure you’ve set your range of every active axis before moving on to set the second limit range point.*

TURNTABLE

1. Select **TURNTABLE** for continuous panning.

The speed can be adjusted by pressing Up or Down on the joystick at any time.

2. With the proper AUX axis selected, Press Left or Right on the joystick to start/stop panning.*

**The turntable has a limitation to the number of rotations. Running the turntable for an extended period of time may cause turntable to eventually stop. Simply restart the move to continue desired motion.*

SETTINGS

This section allows you to select and adjust the following options:

- Operation Mode – *Standalone, Master/Slave, WiFi settings, Quiet Mode settings.*
- Control Options – *Inverts Controls depending on user preference.*
- Firmware Update – *See "Updating Firmware" section.*
- Lash Compensation* – *Set up a pre-move to remove any lash in the system due to a change in direction.*

  **Lash Compensation is a unique setting for each pan unit and is set from the factory if the controller and pan motor are purchased together. If wanting to change these settings, please take note of the factory setting to be able to reset it. The setting for all other motors should be set to zero.*

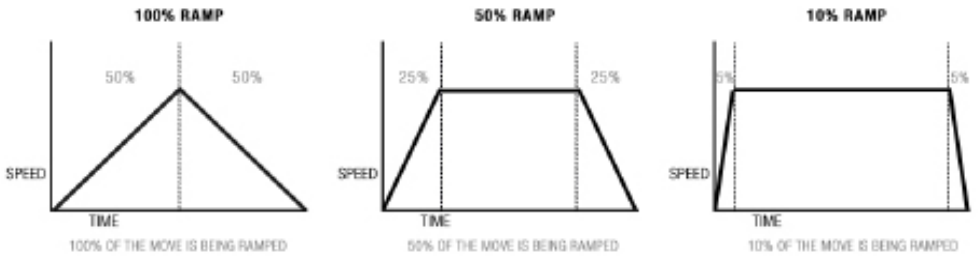
CAMERA MOVEMENT BEHAVIOR

Once a camera move has been programmed (either a **PROGRAM MOVE, MANUAL MOVE,** or **TURNTABLE MOVE**) choose one of the following shooting modes:

- **LOOP/SCRUB**
- **TIME LAPSE**
- **STOP MOTION**

LOOP/SCRUB

1. Set **TIME** and **RAMP** values by selecting with Enter and adjusting Up and Down on the joystick:
   - Time – *The amount of time it will take to complete an entire camera move.*
   - Ramp – *Percentage value indicates the change in speed of the movement over the entire move. Often described as an "ease in" and "ease out", the indicated time value shows how fast/slow the system gets up to the top speed or how fast/slow the camera comes to a stop.*
   - ***FIG. A***



2. Press ENTER to select **RUN**.
   - Scrubbing – *Press ENTER while Looping to enter SCRUB mode. This feature will allow you to manually advance the position of the Slide, Pan & Tilt axis within the programmed move by holding the LEFT or RIGHT arrow button.*

TIME LAPSE

1. Chose your mode— **SHOOT/MOVE/SHOOT** or **CONTINUOUS**:

- **SHOOT/MOVE/SHOOT*** – *Camera will only fire when not moving. That is, the camera will fire, move to next position, stop and fire.*
- **CONTINUOUS**** – *Camera will move without stopping and fire throughout the duration of the move.*

**Shoot/Move/Shoot mode is typically used for capturing "dragged shutter"/long exposures for shots like astro timelapses, or instances where clean still images are necessary. This also can introduce a "jitter" when a timelapse is played back similar to shooting video with a high shutter speed.*

***If using a 3rd party intervalometer, select Continuous and set the overall run time by increasing or decreasing the Photos value. The exposure, delay and photo values will not be used. This mode can introduce a subtle motion blur at slower shutter rates, create a less perfect image, but one that appears to play back smoother and less jittery.*

2. Set values for **EXPOSURE**, **DELAY** & **PHOTOS** by navigating Up and Down on the joystick.

3. Press Down on the joystick and select **NEXT**.

4. Set the **RAMP** value by selecting with Enter and adjusting Up and Down with the joystick:

- **RAMP** – *Percentage value indicates the change in speed of the movement over the entire move. Often described as an "ease in" and "ease out", the indicated value shows how many images will be captured until the system gets up to the top speed or how many images until the camera comes to a stop.*

5. Select **START** to begin the time lapse.

The motors will move into the start position (1st key frame) and the backlight will turn off. Press the Shift button to toggle the backlight on/off. Press the Enter button to Pause/Resume the time lapse move.

6. In Timelapse mode, there are 2 Advanced Settings to note: **PRE-MOVE DELAY** and **PRE/POST PHOTOS**.

- **PRE-MOVE DELAY** – Operator sets the amount of time before the move begins. This is helpful for long exposures where any camera movement has a chance to settle down, or the operator to clear the frame, or the operator is waiting for a specific time to begin the move.
- **PRE/POST PHOTOS** – Allows you to set the amount of frames captured before and after a camera movement to create timelapses with specifically cued camera movements.

STOP MOTION

1. Set values for **#PHOTOS** & **RAMP:**
   - **#PHOTOS** - Indicates the number of photographs taken during the entirety of the move
   - **RAMP** – *Percentage value indicates the change in speed of the movement over the entire move. The frame value to the right shows how many images until the system gets up to the top speed or how many images until the camera comes to a stop.*

2. Select **AUTO ADVANCE** or Manual **ADVANCE** by pressing Enter to toggle selections.
   - Auto Advance - In this mode, after the camera fires, the system will automatically advance to the next position in the movement.
   - Manual Advance - After firing the photo, move the joystick Left or Right to move the camera into the next/previous position in the move.

3. Select **NEXT** by pressing Enter on the joystick.

4a. Select **SNAP** to trigger the camera and repeat for auto advance.

4b. Select **SNAP** to trigger the camera. Press Left or Right on the joystick to move the camera into the next/previous position for manual advance. Repeat.

UPDATING FIRMWARE

Firmware can be updated in one of two ways. You may either automatically update using the CineShooter Remote App, or you may update your firmware manually.

WIRELESS UPDATE VIA CINESHOOTER REMOTE APP

1. Power up your CineShooter either using the provided 12v 5A Barrel AC power supply, or with a V-Mount/AB “Gold” Mount battery, or LEMO-based power supply.

   NOTE: When powering your CineShooter, make sure the batteries are charged so the unit can remain powered on through the completion of the installation process.

2. Make sure the CineShooter Remote App is installed on your Android or iOS device, and then launch the app.

3. If you’re already connected to the CineShooter WIFI before launching the CineShooter Remote App, the app will automatically check for firmware updates and you will be prompted with an update notification.

4. If you haven’t previously connected to your CineShooter WIFI network, you will need to go to your phone’s WIFI settings and select the CineShooter WIFI network, then return to the app.

5. Then ciick the Settings icon (⚙) in the bottom right corner of the app.

6. Under **DEVICE**, select **UPDATE DEVICE FIRMWARE**.

7. If your phone is connected to your CineShooter, **CURRENT FIRMWARE VERSION** will list the firmware installed on your hardware, and **REQUIRED FIRMWARE VERSION** will display the most current firmware available.

   If your unit is up to date, these two version numbers will match and no further action is required.

   If the **REQUIRED FIRMWARE VERSION** is newer than what is listed as the **CURRENT FIRMWARE VERSION**, select **UPDATE**.

   NOTE: Do not interrupt or disconnect power to either your computer or CineShooter while updating.

   If **CURRENT FIRMWARE VERSION** reads **OFFLINE**, see step 3 to ensure you are connected to the CineShooter WIFI network and repeat instructions 4 through 6.

MANUAL UPDATE VIA KESSLER SUPPORT PAGE

1. On your Mac or PC, begin by visiting **https://kesslercrane.com/support** and navigating to "**Firmware & Downloads**"

2. Under CineShooter Firmware, select the newest available firmware, then click "**Download**"

3. Once downloaded, extract the zip file. There are 2 files within the zip. The one you will need is **CINESHOOTER.IMG**.

4. Connect your CineShooter to your computer using the provided USB-C cable. NOTE: Depending on the available ports on your computer, you may need a USB-C to USB 3.0 adapter in order to connect to your machine.

5. Power up your CineShooter either using the provided 12v 5A Barrel AC power supply, or with a V-Mount/AB "Gold" Mount battery, or LEMO-based power supply.

   NOTE: When powering your CineShooter, make sure the batteries are charged so the unit can remain powered on through the completion of the installation process.

6. Once the CineShooter powers up, navigate to **SETTINGS**.

7. In **SETTINGS**, find and select **FIRMWARE UPDATE**. The Controller will display **FIRMWARE UPDATE READY**...

8. The Controller will show up as a USB device on your computer titled "CineShooter".

9. Go to the location where you extracted **CINESHOOTER.IMG**.

10. Select **CINESHOOTER.IMG** and drag to the USB device titled "CineShooter".

11. The CineShooter will begin updating, and the CineShooter screen will detail the update process. Do not remove or interrupt power to the controller during firmware update process. Doing so may damage your CineShooter.

12. Select **REBOOT** to restart the controller.

    MAC Users: *Once 'Reboot' is selected during the update firmware process, a 'Disk Not Ejected Properly' message appears on the Mac OS X desktop. Users may simply close this message without issue.*

13. As the system restarts, confirm the splash screen shows the latest firmware version across the bottom.

GETTING CREATIVE

While the CineShooter system offers several shooting modes that cover the majority of needs for everyday shooting, we also encourage users to think outside the box to utilize the CineShooter system to capture unique shots. Once you begin to think of your CineShooter and its external motor axes as something akin to a giant robotic Erector Set, the possibilities to configure, stack, and repurpose each component makes this an even more powerful system.

Note: Users should always adhere to the specifications and rating limitations of the hardware to avoid damaging your unit. Stressing the system beyond its rated weight capacity, balance, and intended use is done so at the owners' discretion. The end user therefore assumes any and all liability for damaging the unit and is responsible for all repair costs if the unit is damaged during unintended operation.

STANDARD MODE

Standard Mode is how the unit was intended to be used. With the camera mounted perpendicular to the Arca L or H-Bracket, this mode allows the greatest range of operation with the widest amount of camera configurations and balances.

However, the CineShooter head may also be used in Standard Mode to mount other utility items to the head such as small lights, flags, triggers and dump baskets for high speed photography, or any other rigging you can think of that may require an automated cue.

Additionally, the entire head can be mounted at 90 degress along a vertical axis, or completely inverted on devices such as cranes and jibs to operate more akin to a traditional PTZ (Pan/Tilt/Zoom) Head with remote operation.

ROLL MODE

Roll Mode requires the camera to be mounted parallel to the Arca L-Bracket. The Tilt Axis then becomes a functional Roll Axis. This mode performs best when the camera sensor is mounted on the nodal center of the Roll Axis to create a perfect free-spinning roll without wobble. This type of shot can create some energetic shots for music videos, dazzling abstract macro photography, a disorienting "Vertigo" type effect, can be synced with a rotating set to , or tracked with the motion of the milky way to create some interesting astro timelapses.



Note: The Heavy Duty Support Module and H-Bracket cannot be used in this mode. Also note that any cabling off the camera may get tangled or twisted if not dressed properly. This works best with a self-powered, wire-free

ARC MODE

This mode requires the camera to be mounted to the outside of the L-Bracket and oriented perpendicular to the head.

Note: This requires you to flip the horizontal plate using a 3/16" Allen Wrench.





This type of mode produces a "snorricam" type of effect or an interesting transition effect to "whip roll" out of a shot.

Note: The range of motion will be limited in this mode. Eventually the arc motion will cause your camera to "crash" into the head. Also, because the camera will be so far from nodal center, a light camera build will be required to avoid straining the motors. We recommend lightweight mirrorless cameras only for this type of setup.



Arc Mode Configuration



Rolling Arc Mode Configuration

ROLLING ARC MODE

This mode requires the camera to be mounted to the outside of the L-Bracket and oriented parallel to the head.

Similar to Arc Mode, this mode produces a more pronounced camera arc parallel to the plane of action. This type of shot could be used to track a rotating motion, or create a stylized kinetic transition or action match, or potentially tracking the sun or stars for a timelapse.



Note: The range of motion will be limited in this mode. Extreme movement will cause your camera to "crash" into the head. Also, because the camera will be so far from nodal center, a light camera build will be required to avoid straining the motors. We recommend lightweight mirrorless cameras only for this type of setup.

OUTSIDE THE BOX

There are countless ways to configure and use your system. We invite you to play and explore to see what other configurations you're able to come up with.

Discover a great new configuration? Share it with us at **ideas@kesslercrane.com**

MY SCREEN IS DISPLAYING A "FAULT ERROR"

This typically indicates one of 3 issues: A motor collision or strain, a failing CAT-5 or power cable that is interrupting data transmission, or a voltage problem from a low battery.

Possible Solutions:

- Check for obstructions or camera payload weight/balance to make sure nothing is preventing the motors to run freely.
- Make sure CAT-5 and power cables are fully plugged in, and test individual cables if problem persists.
- Check the charge of the battery in use. If low, try replacing with a fully charged battery

MY MOTORS RUN TOO SLOW/TOO FAST

By default, CineShooter boots up in quiet mode. This means the maximum motor speed is capped for both setup and playback.

Possible Solutions:

- You can enable or disable quiet mode to either increase, or slow your motor speed. Just go to SETTINGS>QUIET MODE and either ENABLE or DISABLE. This mode effects motor speeds for both setup and operation.
- If motor speed runs too slow when performing a move, first make sure quiet mode is disabled, and then during setup lower both the damping and duration to achieve a faster move.
- If running in kOS, your curves will also be influencing the motor speed. Adjust curves accordingly to achieve desired speed.

I CAN'T PROGRAM/CONTROL ANY MOTORS BESIDES PAN AND TILT

By default, the on-board Pan and Tilt axes are set to the left/right and up/down functions on the joystick. To select, program and operate additional motor axes, you need to change the motor selection.

Solution:

- Make sure CAT-5 cabling is properly installed between the desired motor and designated CAT-5 port on your CineShooter, then change your motor selection by double click SHIFT to select between the SLIDE and AUX 1 and AUX 2 external axes.

I CAN'T CONNECT MY PS4/XBOX CONTROLLER

Connecting a PS4 or XBOX controller requires the CineShooter Remote app (Available for both Android or iOS devices). The controller must then be paired via bluetooth.

Solution:

- Install the CineShooter Remote mobile companion app to your Android/iOS phone.
- Pair the controller to your phone. To pair a PS4 controller, hold down the PS button and the Share button simultaneously for 5 seconds, or until the lights flash. To pair an XBOX controller, hold down the Xbox One logo, located on the top center of the controller, until its backlight starts flashing. Once in pairing mode on your controller, open your phone settings, go to Bluetooth, and select the controller from the list of new devices. Once connected, open the CineShooter Remote app and click the Controller icon to pair.

THE CAMERA KEEPS FALLING FORWARD OR BACKWARD

The weight ratings for both the base CineShooter Pan & Tilt Head, and with the Heavy Duty Support Module, are determined by a balanced weight. Putting 15 lbs. on a base CineShooter should hold just fine when balanced and placed on nodal center, but mounting a 15 lb. camera build off-center, or off-balance is more likely to cause the camera to "droop".

Possible Solutions:

- Check that the system has power being provided to it before mounting your camera.
- Ensure that the camera is at or under the rated weight capacity (15 lbs. for the base CineShooter, or 25 lbs. if using the Heavy Duty Support Module.
- Check that your camera is balanced along the mounting point, and readjust your camera package until a better balance is achieved. See the balancing section of this manual if uncertain.

I CAN'T DO DIAGONAL MOVEMENTS ON THE JOYSTICK

The joystick is a single direction interface, meaning it won't register two commands at once. This is intentionally designed to provide more precise movement when programming moves without accidentally bumping or shifting one direction while trying to adjust the other.

Solution:

- This is an intentional choice made in the design of the on-board interface. If multi-directional/diagonal movement is desired, this may be achieved using the on-screen interface of CineShooter Remote, using a game controller, FreeMotion, or kOS.

THE LED SCREEN LOOKS FUZZY OR HAZY

The CineShooter Pan & Tilt Head ships with a protective film covering the LED screen.

Solution:

- While some may choose to keep the protective covering on to avoid scratching their screen, it is suggested that you remove the film before operating your CineShooter to provide the brightest, clearest screen possible.

TERM REFERENCE GUIDE

Nodal Center — *This is the centered point of motion where the pan and tilt motion pivots. For perfect camera motion (aligning your camera sensor to the nodal center is crucial for achieving accurate camera tracking and VFX shots.)*

CineShooter Remote — This is a mobile companion app that offers finer control over your CineShooter with features like remote operation controlled directly from your phone, PS4 and XBOX controller operation and automatic firmware updating.

kOS — This software (available for PC, MacOS and iPad) offers the most robust control for your CineShooter system with highly adjustable features, motion curves, additional key-frames, Event Mode, and a variety of other additional control options.

FreeMotion — This feature allows users to manually position the camera by hand into an exact position when programming a new move. (Requires Smart Handle Module to operate).

Smart Handle Module — This accesory provides a physical grab point to handle the CineShooter, and comes with a smart button to enable and control the FreeMotion feature.

Heavy Duty Support Module — This accesory upgrades the maximum weight payload from 15 lbs. to 25 lbs.

Exposure – *The length of time the camera's shutter is open when taking a photograph*

Delay – *Amount of time between photos*

Ramp – *Rate of change of acceleration/deceleration*

Damping – *Also referred to as "Dampening", this variable setting controls the magnitude of ramping to adjust "feathering" or "easing" in and out of motor movement.*

Lash Compensation – *A variable setting used to adjust internal belt tensions among all working axes to provide the most fluid and repeatable motion when operating multiple motor axes in concert. This setting is typically adjusted only for the Pan Axis. Lash Compensation is a factory setting and should only be adjusted after consulting a representatitve from the Kessler Support Team. When changing these settings, please take note of the factory setting to be able to reset it. The setting for all other motors should be set to zero by default.*

Pre-Move Delay – *A setting to adjust the amount of time before the move begins. This is helpful for long exposures where any camera shake induced by motor movement can settle down. This also is helpful for instances when the operator needs to clear the frame, or the operator is waiting for a specific time to begin the move.*

Pre/Post Photos – *Used during timelapse, this features allows users to set a dedicated number of frames to be captured before and after a camera movement to create timelapses with specifically cued camera movements.*



QUESTIONS?

If further support is needed, you can contact our Support Team directly via email at **support@kesslercrane.com**, or call us directly at **574-400-2251**.

You may also submit a support ticket through our website:

https://www.kesslercrane.com/contact

IDEAS?

For any feature requests, future product ideas, or suggestions, you can either call our support team directly at **574-400-2251**, or email us at **ideas@kesslercrane.com**

SHARE YOUR WORK

We always love to see both behind the scenes photos and video, as well as your final projects shot using Kessler equipment. If you have a project that was shot with the CineShooter system, feel free to share your work with us over social media and tag us in it. We might just share or feature your work on our page, or in future video content for Kessler.

Instagram: @kesslercrane

Facebook: https://www.facebook.com/KesslerCrane

Youtube: https://www.youtube.com/c/kesslercraneinc

Vimeo: https://vimeo.com/kesslercrane