Digicanical S8 User's manual

LOGMAR CAMERA SOLUTIONS IVS

Abstract

This is the user's manual for the Logmar S8 camera that describes how to operate it as well as providing technical information on the both the firmware, hardware and mechanical aspects of the camera as well as giving best practices information.

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Sprocket wheel:

The sprocket wheel pulls the film out of the cassette, together with the Take-up wheel. It is responsible for all of the actual pulling from the cassette whereas the claw has an easier task as it only pulls film from the Latham loop – this is a fundamental change from a regular Super8 camera, in which only the Claw pulls and hence there is no active stability elements.

Take-up wheel:

The wheel that actually turns/cranks the cassette/cartridge forward providing simultaneous wind-up and unwinding of the film onto the sprocket wheel and into the cassette/cartridge.

Sprocket rollers:

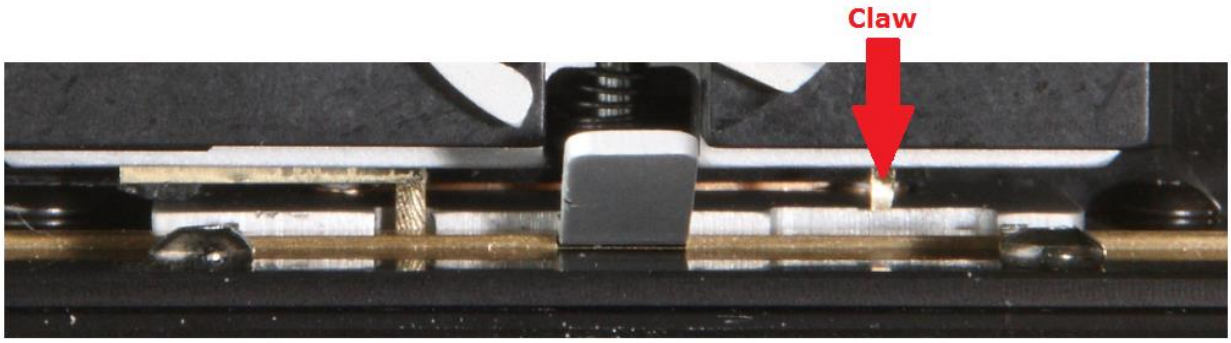
The sprocket rollers fixate the film against the sprocket wheel and ensure that the film is running correctly in and out of the cassette.

Cassette springs:

Ensures a snug fit of the film cartridge/cassette inside the camera body.

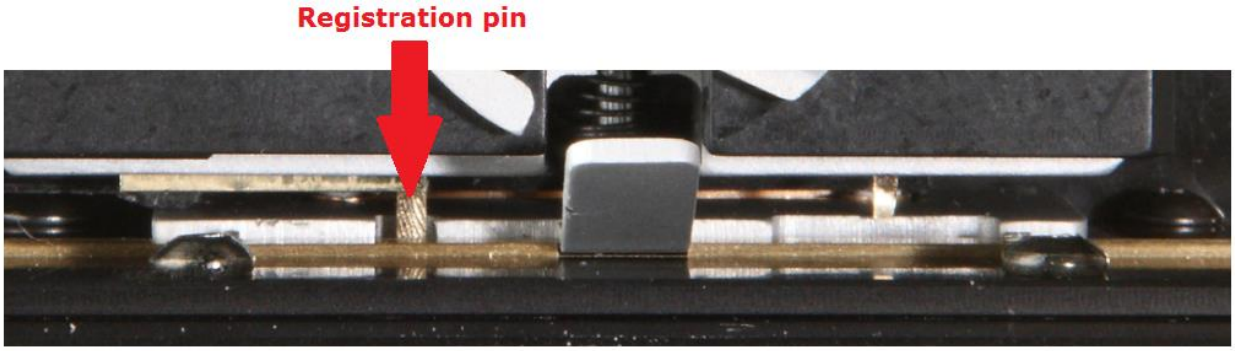
Claw:

The claw pin is responsible for dragging/pulling each frame down in front of the gate in combination with the sprocket wheel.



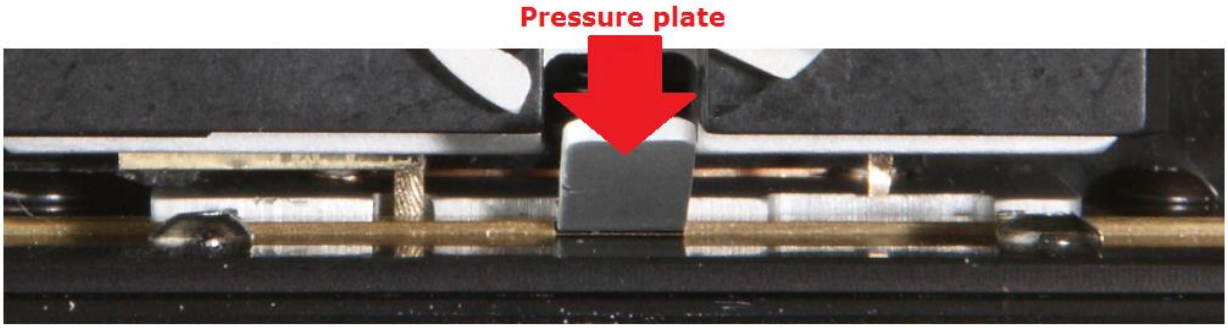
Registration pin:

The registration pin locks each frame inside the gate vertically/horizontally to ensure stability while the film is exposing. When the pin retracts after exposing of the film, the shutter closes simultaneously while the claw pulls another frame down into the gate after which the registration pin will re-engage and the shutter opens for exposing.



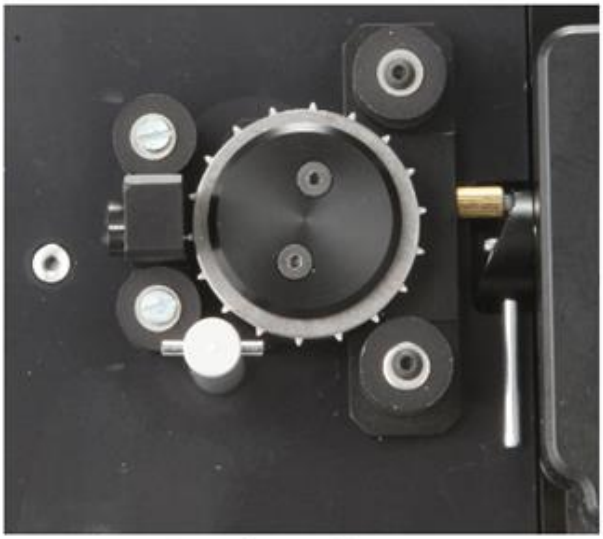
Pressure plate:

The pressure plate stabilizes the film inside the gate and eliminates weave, which is a typical super8 phenomena whereby the film is gliding through the gate and blur is seen shifting across the image or one-half of the image being sharper than the other.

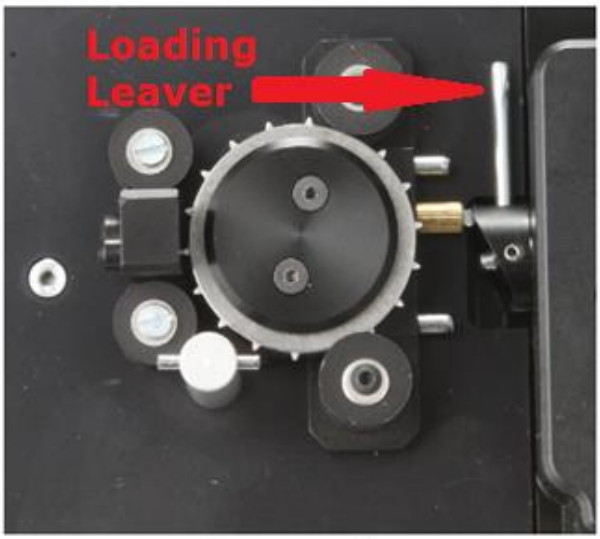


Loading lever:

This lever engages or disengages the sprocket wheels onto the film and allows the user to load film.



Load mode

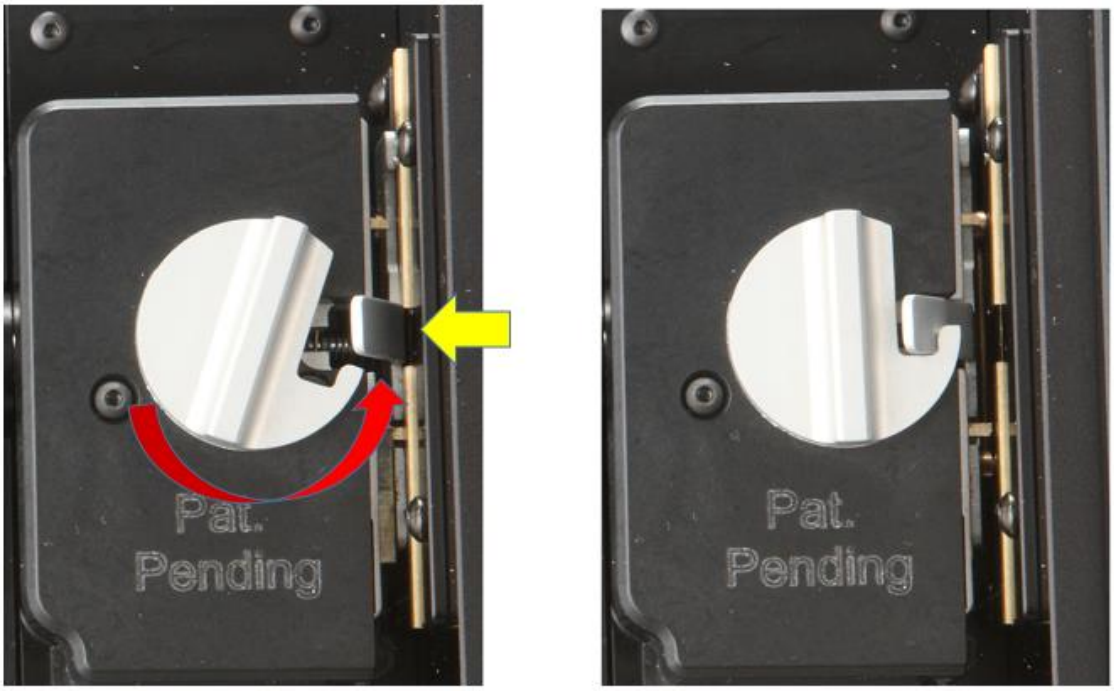


Run mode

DANGER 	*You should <u>never</u> engage the loading lever to "Load mode" without having put the camera into the "Eject film cassette" stage in the menu system.*
DANGER 	*You should not pull the pressure plate and/or engage the snap lock without having put the camera in "Load mode" first and observed the above warning.*
DANGER 	***<u>NEVER</u>** run the camera with the lever in "Load mode" or halfway between "Load mode" and "Run mode" doing so will cause permanent damage to the camera body which is not covered by warranty.*
NOTICE 	*Do not "play" with the lever or leave it halfway between locations.* *Always move it from one position to the other in a full motion and leave it there.*

Pressure plate snap lock:

In order to make loading of the film easier a pressure plate snap lock is provided, that locks the pressure plate handle when turned in an anti-clockwise rotation while pulling the pressure plate towards the film cassette.



Open position **Locked position**

DANGER 	*NEVER turn on or run the camera while the pressure plate lock is holding the pressure plate, doing so WILL damage the pin registration mechanism.* *Therefore, you should ONLY load film and engage the pressure plate lock with the battery REMOVED.*
DANGER 	*NEVER engage the pressure plate lock without having first put the camera into "Eject film cassette mode" within the menu system, doing so WILL damage the pin registration mechanism.*
DANGER 	*NEVER engage the pressure plate lock while the loading lever is in "RUN MODE"*

C-Mount:

The Logmar S8 Adjustable C-Mount provides an easy way to interface all standard C-mount flange focal depth *(17,526mm)* lenses to the camera.

The flange depth can be adjusted for collimation with a hex key *(Allen key)* – the adjustment is primarily meant for factory use.

NOTICE 	*The camera is collimated to 17,526mm from the factory.* *Do <u>not</u> adjust the mount unless you know what you are doing – the ground glass is **fixed** at 17,526mm without possibility of adjustment meaning that if you attach a lens that is not collimated and try to re-collimate the mount the viewfinder can no longer be trusted for focus adjust. Re-collimation is <u>not</u> covered by the warranty.*
DANGER 	*NEVER put your hand or other body parts into the lens mount receptacle or inside the camera whilst it's running or serious bodily injury could occur and/or mechanical defect which would void warranty*

SERVICE	
	*The lens mount is a mechanical part that exhibits wear-out and shift from regular use (lens exchange). The mount can withstand at least 25 exchanges before re-collimation is required.*

Wi-Fi:

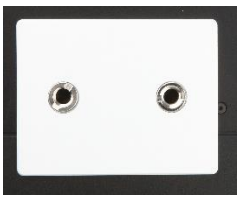
The camera is designed with an 802.11b/g enabled Wi-Fi hotspot without any security applied, making it easier to connect to mobile phones, PC's or Logmar Wi-Fi accessories.
The Wi-Fi is certified for both FCC, IC, CE, KCC and R&TTE for use in Australia, New Zealand, Korea, Europe, USA, Canada and Taiwan.

NOTICE	
	*You should <u>always</u> have the supplied Wi-Fi antenna connected on the camera when the camera is turned on. Using the camera without the antenna will violate the regulation laws and one must <u>only</u> use an antenna with zero gain such as the original type.*

Accessory holder:

The accessory holder is a standard camera mount that hold microphones, flashes, lights etc.

Tripot mount:



The camera features a standard tripod mount underneath on its mount plate.

Loading gauge:

The loading gauge tool helps to determine the correct Latham loop length by inserting it into the cassette and dragging the film over it. *(See loading instructions section)*

Viewfinder:

The viewfinder allows focusing and menu adjustments.

On the back of the monitor it possible to adjust the brightness and contrast via three buttons.

DANGER 	*Never tilt or swivel the monitor further than +|- 45° degrees as shown above, even though it can be twisted further, as the cable inside the monitor will break and void warranty.*

Battery charger:

The camera is supplied with a battery charger that can charge the supplied battery either via a wall outlet or with a cigarette plug in a car.

Once connected to a power source and you attach the battery, it will start to glow RED indicating that it is charging the battery – if it remains GREEN and doesn't turn RED this means that the battery is already fully charged.

Once charge is complete, the charger will switch to green.

Please note that it typically takes 13 hours to charge the battery due to its high capacity.

Electrical features of the camera:

The camera is equipped with several electrical interfaces

A) WiFi port
B) XLR connector
C) Service port
D) USB type B device port
E) Stereo headphone jack
F) Stereo line input jack
G) Mono microphone jack
H) Battery terminals
I) CVBS composite PAL video output
J) Auxillary power port
K) SD-CARD interface

A) Wi-Fi Connector:

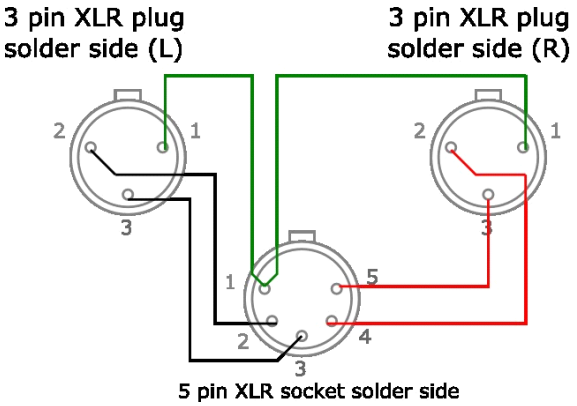
The Wi-Fi connector is a standard 50-ohm SMA port.

Always have the antenna connected to this port and refrain from using an antenna with gain as this will violate the regulatory compliances.

B) XLR Connector:

The camera is equipped with a 5-pin stereo XLR or a 3-pin mono XLR depending on purchase option.

(3-pin XLR was made obsolete as of January 2015)



Below is a connection diagram that explains how to wire the full stereo 5-pin XLR into two 3-pin XLR's:

5pin XLR	3pin XLR	Description
1	1	Common Ground
2	2	Hot Left
3	3	Cold Left
4		Hot Right
5		Cold Right

C) Service port:

This is a service port on the camera meant for factory programming, validation and upgrading.

Refrain from connecting into this connector as it could break the camera and always use approved Logmar accessories with it.

8pin DIN pinout:

Pin	Description	Notice
1	Multiplexer output A	Maximum voltage: 3V, Maximum current: 1mA
2	Multiplexer output B	Maximum voltage: 3V, Maximum current: 1mA
3	Open drain trigger output	Maximum drain voltage: 13V, Maximum current: 1mA
4	SiM3U167 – RESET	***Never*** *connect to this pin!* – Reset
5	SiM3U167 – SWO	***Never*** *connect to this pin!* – Serial wire output
6	SiM3U167 – SWC	***Never*** *connect to this pin!* – Serial wire clock
7	SiM3U167 - SWD	***Never*** *connect to this pin!* – Serial wire data
8	Ground	System and battery ground.

Multiplexer setting:

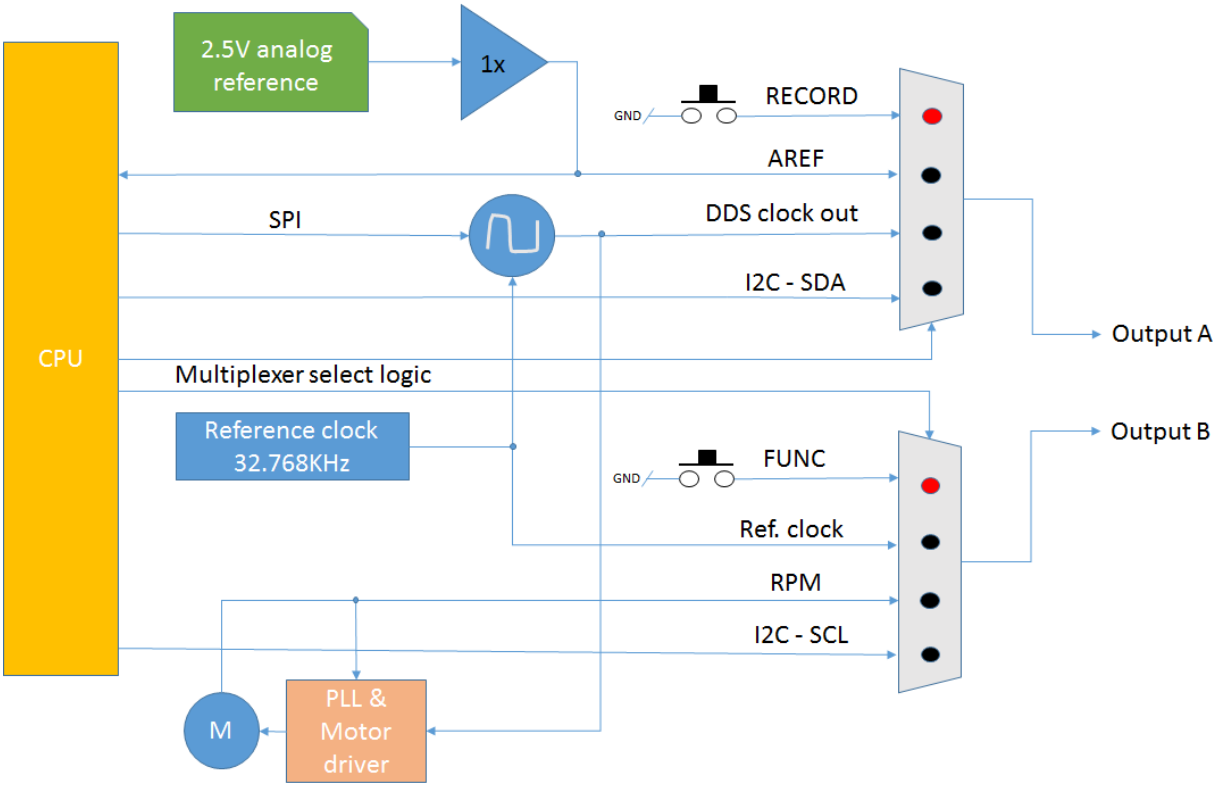
Mux	Description	Notice
0	Multiplexer output A = RECORD Button	Open Drain – Provide external pull up 10KΩ (max 3V)
	Multiplexer output B = FUNC Button	Open Drain – Provide external pull up 10KΩ (max 3V)
1	Factory use only	Analog Voltage reference 2.5V
	Factory use only	DDS reference clock 32.768KHz
2	Factory use only	DDS Output clock (PLL Reference)
	Factory use only	RPM (PLL train signal)
3	Multiplexer output A = I2C SDA	Open Drain – Provide external pull up 4K7Ω (max 3V)
	Multiplexer output B = I2C SCL	Open Drain – Provide external pull up 4K7Ω (max 3V)

The default multiplexer setting is "0" whereby it's possible to override the camera's FUNC and RECORD button externally.

Multiplexer settings 1 and 2 are for factory use only and cannot be user invoked.

Multiplexer setting 3 is used for the Logmar accessory protocol.

Multiplexer block diagram:



D) USB Type B port:

The USB type B port is for firmware upgrading of the camera via the build-in boot loader.

Refer to application note – "AN001 Firmware upgrading"

When not inside the boot loader the camera assumes a USB CDC pass-through role for factory debugging, tests and calibration, which cannot currently be utilized by the end-user.

E) Stereo headphone jack:

The headphone jack is an industry standard headphone 3.5mm jack.

F) Stereo line input jack:

The line input jack is an industry standard line input 3.5mm jack.

G) Mono Microphone jack:

The microphone jack is an industry standard 3.5mm microphone jack

H) Battery Terminals

The battery terminals connects to a NP-F970 type battery.

NOTICE 	*Be advised that NOT ALL NP-F970 type batteries can be use, with the camera due to its high operating current. For example, the original Sony NP-F970 type does not work with the Logmar S8.* *If the battery is not adequate, what you will find is that you cannot turn the camera on from a "cold start condition", meaning that the camera has been sitting idle without power for a few days. Turning the camera on with an inadequate battery will collapse the battery which is observed as a scenario whereby the camera doesn't turn on. Attaching the battery to the charger shortly and then reapplying the battery to the camera body usually fixes this issue.* *Be advised that even though a particular brand of NP-F970 does work there is battery-to-battery variation, which can mean that while some might work, some might not.* *We are currently investigating the possibility of having a custom battery made that will meet our high requirements of in-rush current etc.* *If a battery does collapse (meaning that you cannot turn it on even though the battery was fully charged) please attached it shortly to the charger and reapply it to the camera body and then turn it on again – this should reset the battery's protection circuit and make it work.* *The DSTE batteries supplied with the camera are known to work and will last more than two cartridges (typically more than five in succession) when fully charged with the supplied charger for at least 12 hours.*

I) CVBS PAL output

Viewfinder video tab output with standard RCA/Phono output in standard definition.

J) Auxiliary power port

The auxiliary power port allows the external cassette to function as well as providing a means to charge the camera battery “on-board” or provide a +12V output for an external monitor or accessory.

Approx. 1.0 Watt can be provided through the +12V output.

Pin	Description
1	+7.4V direct battery connection
2	PWM open drain for cassette
3	+12V direct drive for cassette
4	Ground
Shield	Ground

DANGER 	*ONLY connect Logmar certified accessories to this port, failure to do so could potentially break the camera and void the warranty.* *NEVER exceed 9 volts on pin 1 or insert power into pin 2 or 3 in respect to Ground (pin 4), doing so will break the camera and void warranty.*

K) SD-CARD

The SD-CARD interface allows any SD-CARD to be used with a capacity from 128MB to 32GB.

The SD-CARD top side must be facing the logo on the camera and you should never use force to insert the card. Gently push it again once inside to pop it out.

Users interface:

The camera is equipped with navigation buttons, a power button, RUN and FUNC buttons as well as two potentiometers.

Power button:

Turning on the camera:

The camera is turned on by attaching the fully charged battery to the camera body and pressing the power button for more than a second.

Turning off the camera:

The camera is turned off by pressing *(and holding)* the power button for more than three seconds.

Navigational buttons:

The navigational buttons are:

Up, Down and Enter *(OK)* these are the buttons used throughout the menu system.

Pressing "arrow left" invokes the menu system.

Pressing "arrow right" exits the current screen

Rec level / AGC max potentiometer:

The "Rec level / AGC max" potentiometer adjusts the recording gain of an external source *(if the AGC is disabled).*

If the AGC is enabled the potentiometer set's the maximum AGC amplification.

This potentiometer can be adjusted during run time if needed. However, changing it in AGC mode can lead to "pumping" in the audio as the processor dynamically tries to scale the input signal according to the potentiometer hence it is better to find the correct level before starting the recording session if possible.

INFO 	*The best audio quality is achieved with the Line input, AGC turned off and recording gain is set to "1x"* *AGC = Automatic Gain Control is an automated system that tries to maintain a constant audio level throughout a recording session. This is useful for recording monologue.*

Monitor level potentiometer:

The monitor level potentiometer adjusts the headphone output level and has nothing to do with the input signal level or the above-mentioned recording gain or AGC level.

FUNC button:

The function button can be used, for several purposes depending on how it is configured in the settings menu.

The two main functions of the FUNC button is: ***Alternate speed*** and ***Phase Advance***

Alternate Speed mode:
In alternate speed mode, you can engage the alternate speed while recording by simply pressing *(and holding)* the FUNC button. Once you let go of the FUNC button, the camera switches back to the primary speed.

When **not** recording you can press the FUNC button while **not** being inside the menu system.
This will show you the light meter setting at the alternate speed.

Phase Advance mode:
In phase advance mode, you can advance the speed of the camera by 0.1fps while holding the FUNC button – this is useful if shooting in a florescent light scenario or if you are filming an old tube TV and want to get rid of the horizontal synchronization lines.

RUN button:

The run button has two different functional modes depending on the settings inside the settings menu which are: ***Latched mode*** *and* ***Momentary mode***

Latched mode:

In latched mode the run button functions similar to that of a video camera whereby pressing it once starts the camera and it continues to run until you press it again.

Momentary mode:

In momentary mode the run button functions similar to that of an old Super-8 camera whereby you must hold the button in order to record and releasing it stops the recording.

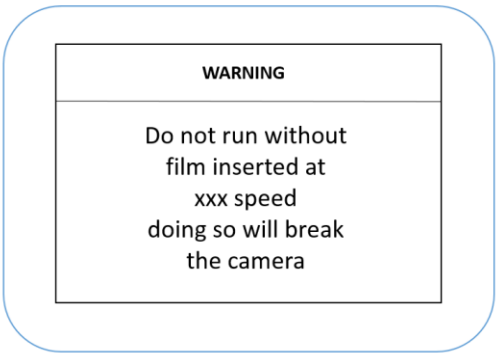
Menu system:

The menu system is enabled, by pressing the options button *(arrow left) a*nd it can only be engaged, when the camera is not recording.

You can exit the menu system by pressing the exit button *(arrow right) with the exception* that you cannot exit from “clean gate position” and “eject film position” modes once they have been activated, as they both require a power cycle of the camera.

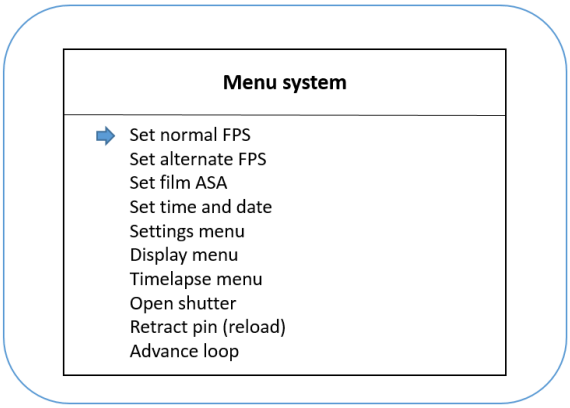
You can remove the “on screen display” by pressing *(arrow up)* at any time while you’re not inside the menu system.

Pre-boot warning screen:



In case you have selected either a primary or alternate speed greater than 25fps the camera will display a warning informing you that you **must not** start the camera without film as doing so will permanently damage it.

Main screen:

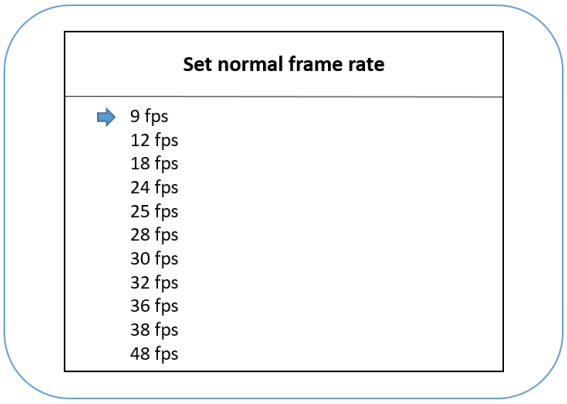


Once inside the menu you can move up and down using *(arrow up / arrow down)* and select a menu item by pressing the “OK” button

You can also exit the menu again by pressing the Exit button *(arrow right)*

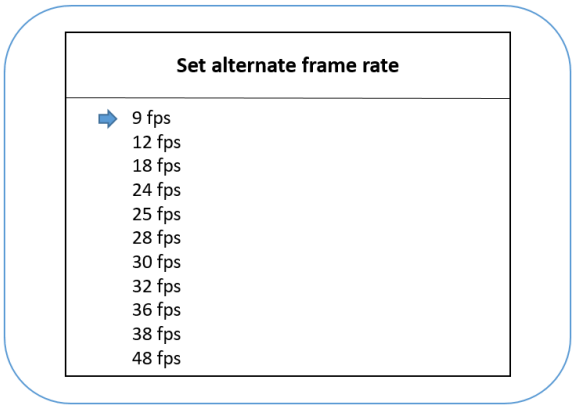
Notice that if the snap lock is engaged or the film has run out you will not be able to access the last three menu options.

Set normal FPS:



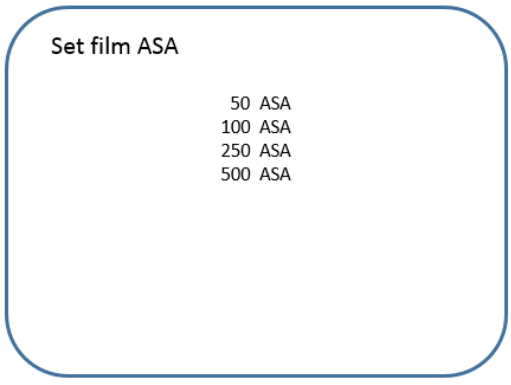
Once inside the “Set normal frame rate” menu you can find a suitable frame rate and simply press OK to select it, after which the camera will return to the main menu.

Set alternate FPS:



Once inside the “Set alternate frame rate” menu you can find a suitable frame rate and simply press OK to select it, after which the camera will return to the main menu.

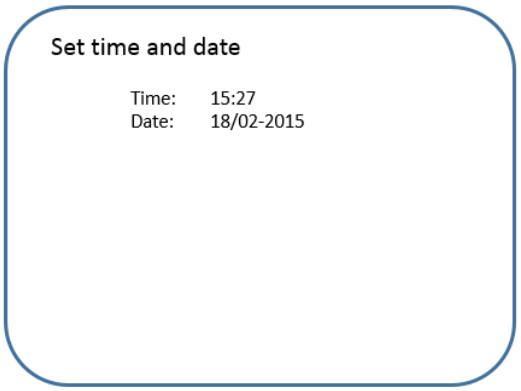
Set film ASA:



In order for the build-in light meter to operate correctly you will need to set the film ASA.

It is done in the same way as setting the frame rates by simply navigating to the wanted ASA setting and pressing “OK” after which the camera returns to the main menu.

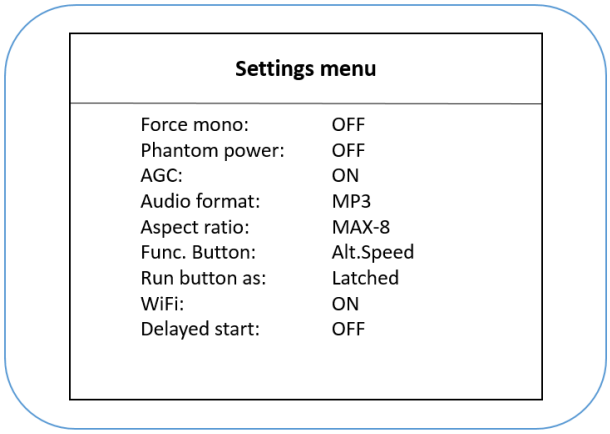
Set time and date:



When setting the time and date the camera starts off at the “Hour” which you set using arrow up/down and then when pressing “OK” it moves to “Minutes” which are programmed in the same fashion followed by “Year”, “Month” and finally “Date”

After setting the correct date pressing “OK” automatically stores the new value and exits back to the main menu.

Settings menu:



Inside the settings menu a multitude of options can be enabled or disabled.

Again you navigate up and down using *“arrow up/down”* and select an item by pressing *“OK”*

Pressing Exit goes out of the menu and any setting that you might have altered is now stored into memory.

Force mono:

This menu item forces the digital signal processor to make the stereo recording into a mono recording.

Note: This is useful when using the Stereo XLR with just one microphone as it evenly distributes sound to both channels instead of just having one channel with audio.

Phantom power:

This menu item turns on/off the +48V true phantom power onto the XLR connector.

WARNING 	***Turning on phantom power:*** *It takes 30 seconds to turn on the Phantom power. The microphone should always be connected prior to turning it on as this allows the microphone to "charge" up to the voltage together with the camera limiting the in-rush current.* ***Turning off phantom power:*** *It takes 11 seconds to turn off the Phantom power. Do not connect a non-powered microphone to the camera before the 11 seconds have elapsed.*

AGC:

The **A**utomatic **G**ain **C**ontrol (*AGC)* is an automated system that maintains a constant audio level throughout a recording session by automatically adjusting the Gain *(volume)* up and down dynamically to fit a set target via the AGC potentiometer.

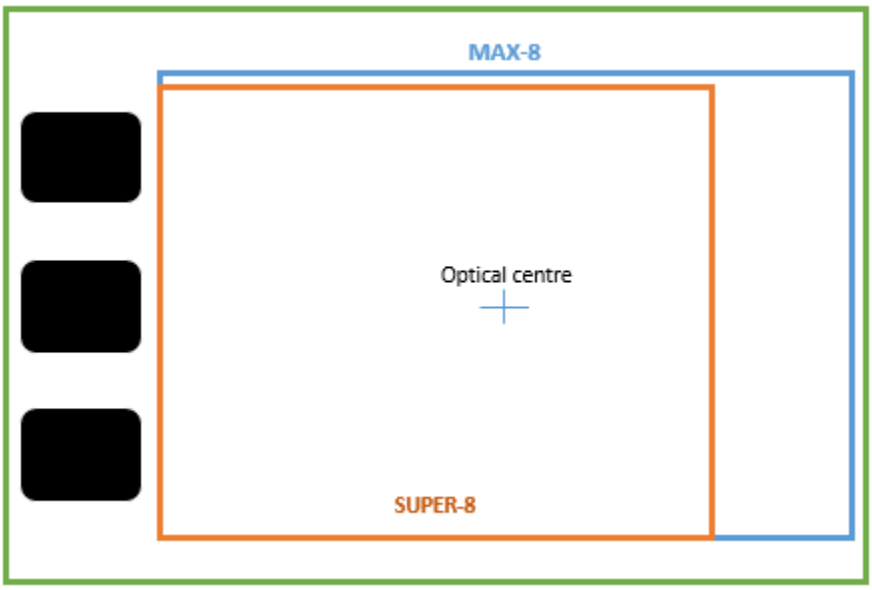
Audio Format:

The camera supports two different audio formats that are user selectable:

1. OGG VORBIS
2. MPEG LAYER-3 (MP3)

Aspect ratio:

The camera is natively born with a MAX-8 gate, which is wider than a regular Super-8 gate and therefore exposes much more of the film than a typical Super-8 camera as it can be seen on the illustration below:



Since normal projectors are not equipped with a MAX-8 gate they will only show the smaller SUPER-8 frame above even though the film has been fully exposed to MAX-8 and hence if you plan to project your footage it's important to know how much of the image you'll be able to see.

For this exact reason, the menu has the option to choose either MAX-8 or SUPER-8.

When choosing MAX-8 the frame line in the LCD is shown as MAX-8 and when SUPER-8 is chosen the smaller frame line is shown.

INFO 	*The optical film centre is aligned to fit the MAX-8 gate and **not** the SUPER-8 format.* *The gate is fixed as MAX-8 regardless of the menu setting as this only changes the LCD framing guide.*

Func. button:

See function button description on chapter 1.

Run button as:

See run button description in chapter 1.

Wi-Fi:

It is possible to enable/disable the Wi-Fi option of the camera.

Once enabled the camera creates a hotspot called Logmar S8 which you can connect to via your mobile phone or tablet *(there's no password on the hotspot)*

Once connected open your web browser (for example Safari on an iPhone) and navigate to:

192.168.1.1

Following which you will see a button called "Start" pressing this starts the camera and the button changes to "Stop" – pressing it again stops the camera.

Delayed start:

The delayed start function is only available when:

A) The run button is configured as "Latched"
B) Time-lapse is off

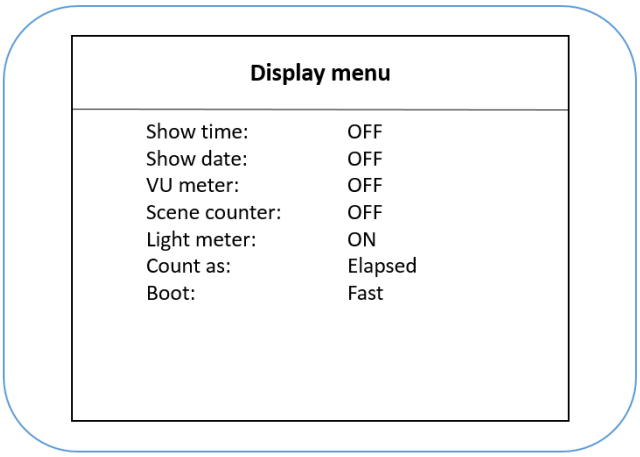
If you have turned on delayed start and then enable either feature A or B above the delayed start feature will turn off automatically.

Delayed start does not work when starting the camera over Wi-Fi.

Once enabled the delayed start will take effect when the user pushes the RUN button and impose a one-minute count down before actually starting the camera.

The user can cancel this count down and pending recording at any time by holding the exit button down for longer than one second *(arrow right)*.

Display menu:



Inside the display menu a multitude of options can be enabled or disabled.

Again you navigate up and down using *"arrow up/down"* and select an item by pressing *"OK"*

Pressing Exit goes out of the menu and any setting that you might have altered is now stored into memory.

Show time:

The camera has the ability to show the current time when enabled on the main screen.

Show date:

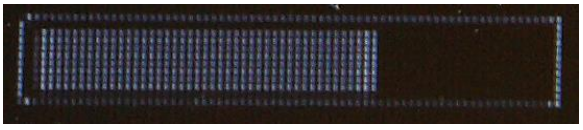
The camera has the ability to show the current date when enabled on the main screen.

Show VU meter:

The camera has a build in VU meter that shows the audio recording level.

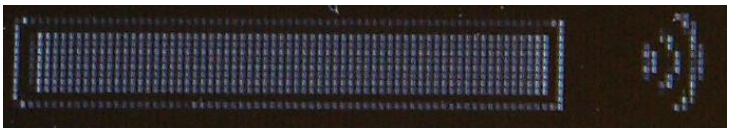
In order to get the best recording it is important to have as high a signal as possible but without ever overdriving the audio processor.

Turn the "Rec Level" potentiometer clockwise to increase the recording gain until a suitable signal level is obtained that does not cause clipping/overdriving.



Whenever the signal is overdriven, clipping occurs.

A symbol next to the VU meter indicates that the current recording level is overdriven and that you need to lower the recording gain manually by turning the Rec Level potentiometer anti-clockwise.



The recording gain is shown underneath the VU meter as "REC.XY" where XY represents the gain.

INFO 	*The audio level is only useful when the AGC is turned off as the AGC maintains a constant recording level that is always below the clipping point.* *The optimum gain setting for any signal is 01 meaning no amplification is done however; in many instances, this is not feasible.*

Scene counter:

The scene counter allows you to see the length of the previous recorded scene In the LCD.

This is useful if you are aiming at changing scene every X seconds as you then have a counter that's counting how many seconds you've been recording this current scene.

Light meter:

The light meter can be enabled or disabled via this option. When the sliding arrow is in the centre position of the scale the lighting scenario is correct for the selected speed and ISO.

INFO 	*The light meter is not calibrated at 48fps and follows the same parameters as for 38fps, so if you need this speed you should verify your lighting environment with an external light meter or open the aperture slightly more than the light meter tells you is necessary.*

Count as:

The camera can either count as elapsed meaning that it counts how many frames, feet and meters the camera has currently shot on the film cartridge since the last eject film procedure got executed.

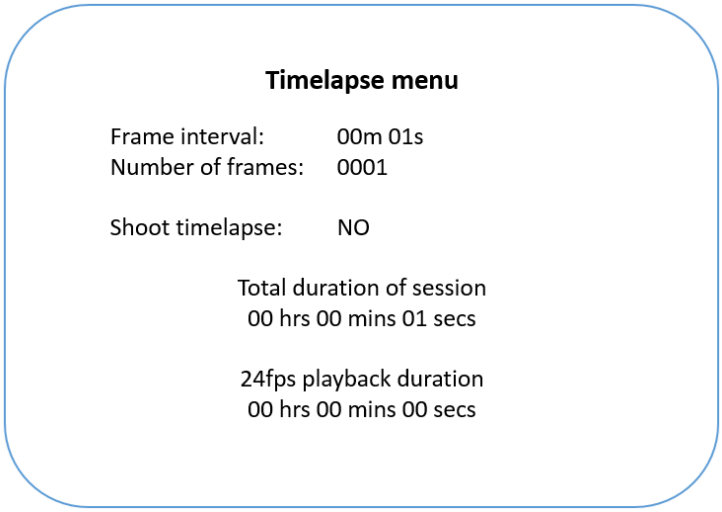
The other option is remaining where the camera assumes that a cartridge has 3.600 frames in it and then counts backwards from that showing you how many feet, meters and frames is estimated to be remaining on the cartridge.

INFO 	Once the counter hits 3.600 frames in elapsed or 0 in remaining the camera stops automatically as a safety precaution and no further filming is possible. The only way to reset the frame counter is by doing an eject film procedure via the menu system.

Boot:

The boot option can either be set to "FAST" which boots the camera straight into viewfinder mode or "NORMAL" which displays owner and camera information.

Timelapse:



Once inside the timelapse menu you navigate by pressing the "OK" button to move onto the next item of interest.

After setting your desired condition you exit by pressing *(arrow right)*

When timelapse is enabled by setting the "Shoot timelapse" to "YES" you can start it by exiting the menu (press arrow right) and press the RUN button.

To stop a timelapse program running simply press RUN again.

INFO 	The timelapse only works when the run button is programmed in "LATCHED" mode and NO audio will be recorded during a timelapse session.
INFO 	The timelapse menu and functionality is untested and completely experimental. The light meter is not functional in timelapse mode.
DANGER 	The timelapse system invokes mechanical stress and wear on the internal drivetrain and hence you should use it with caution as there's a potential risk it may damage your camera.

Open shutter:

The "open shutter" position allows the user to clean the gate of the camera and perform collimation in case you have an auto collimator.

When the shutter is open the viewfinder is disabled and the camera will display a message saying that you need to invoke engage pin in order to enable the viewfinder again.

Retract pin (reload):

Invoking “Retract pin” means that the pin registration is removed from the perforation so that you can easily remove the film.

Invoking “Retract pin” also creates a new SD CARD folder on the SD CARD *(if it is inserted)* so that you can keep track of the different films you have shot as each time you will invoke “Retract pin” a new folder dubbed FILM00x is created where x is an incremental number from 001 to 999 each one representing a cartridge.

If the film has run out to completion and tightly wound itself up around the lock switch shown to the left you cannot invoke the “retract pin” feature in the menu system and the camera displays a warning saying:

”Pressure plate is locked or film has ended”

When this happens you will then have to manually cut the film free with a scissors so that the lock switch to the left is free again prior to being able to engaging the retract pin feature.

Engage pin to perf.:

The “Engage pin to perf” menu option is available AFTER you have EITHER engaged “Retract pin” OR “Open Shutter” and it’s function is to reengage the pin registration system and enable the viewfinder feed.

Advance loop:

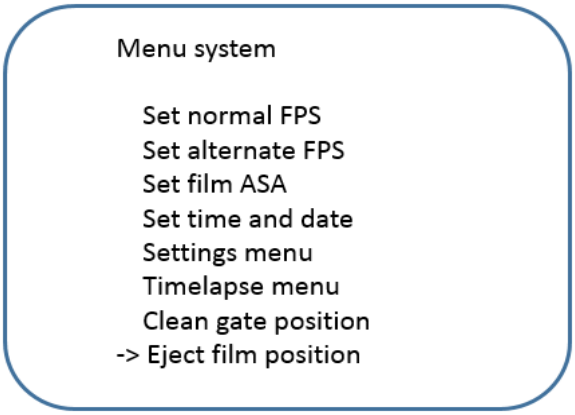
The advance loop function advances 60 frames of loop into the cartridge effectively removing the badly over exposed Latham loop you have created when threading the camera.

Use this feature to “Prime” the camera before you start shooting film to make sure you don’t have garbled frames after first inserting a new cartridge to the camera.

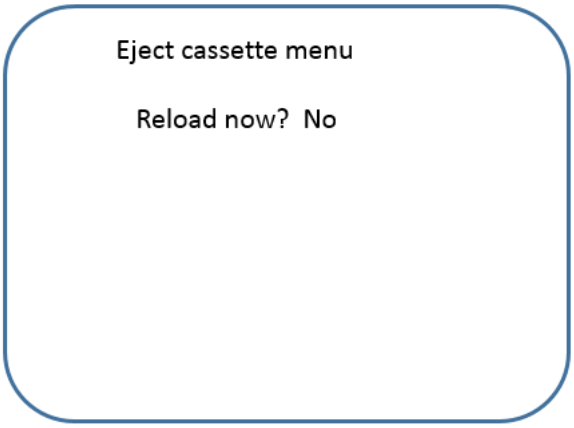
Loading procedure:

In order to load the S8 camera correctly there is a few steps one must do beforehand.

1. Turn the camera on by pressing the power button for more than one second
2. Goto the menu by pressing "Arrow Left".
3. Press "Arrow down" until you reach the item "Eject film position" and press "OK"



4. Once inside the Eject film menu press "Arrow down" until it says "Yes" and press "OK"



5. You'll hear that the camera is turning the pin and claw into position after which it tells you that you can safely turn the camera off. Do so by pressing and holding the power button until the camera turns off.

Turn off the camera now
and reload the film

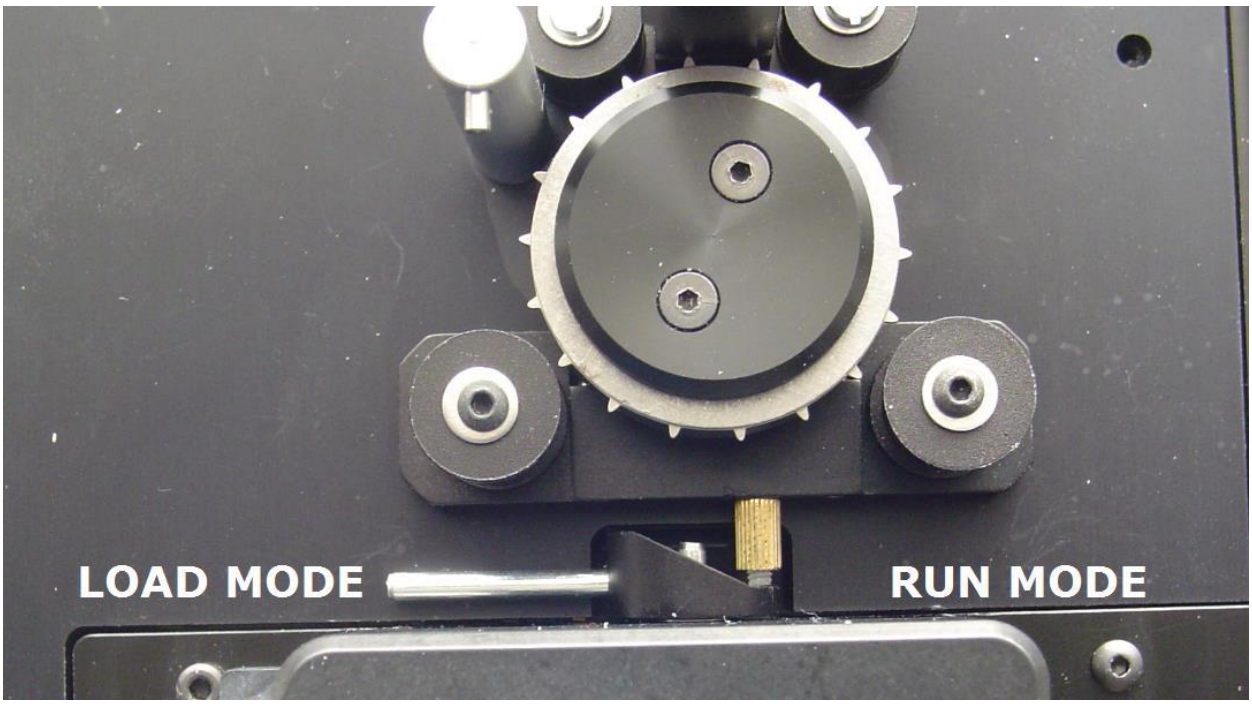
The shutter will close again
when you turn the camera on

6. Remove the battery from the camera to prevent inadvertently turning it on.

7. Put the camera in your lap so that the battery holder faces your stomach

8. Turn the lid lock clockwise until it stops naturally and you can now lift the lid off.

9. Flip the loading lever from “RUN MODE” into “LOAD MODE” as shown in the picture below *(do not pull the sprocket rollers by hand – they are only designed to be moved via the lever)*



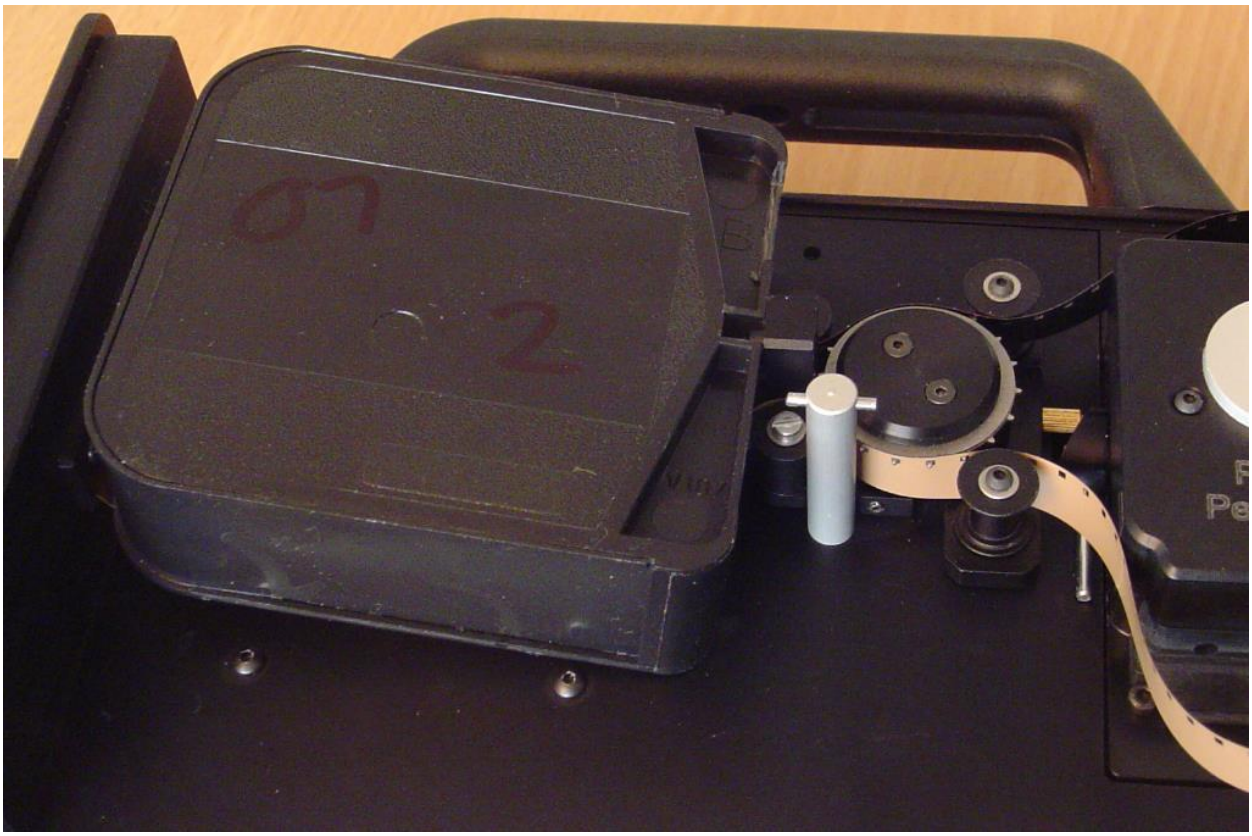
10. Insert the gauge tool into the film cassette's pressure plate and gently press down on the pressure plate while dragging the film over the gauge tool

Once the film is threaded over the gauge tool you now have the "perfect" Latham loop length and you can safely remove the gauge tool

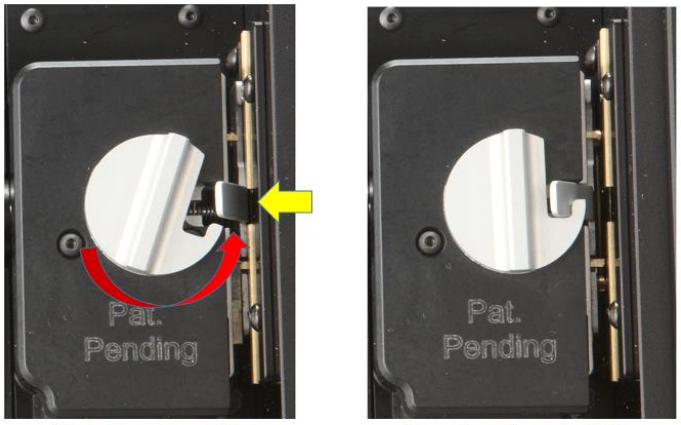
11. Put the cartridge into the camera as shown below. Do not “click” the cartridge into place but rather let it rest on top of the springs at the back for now and thread the film on the inside of the first two rollers.

12. Thread the film over the sprocket wheel *(make sure the perforations go into the teeth)*

13. This is how it should look when viewed from the side.



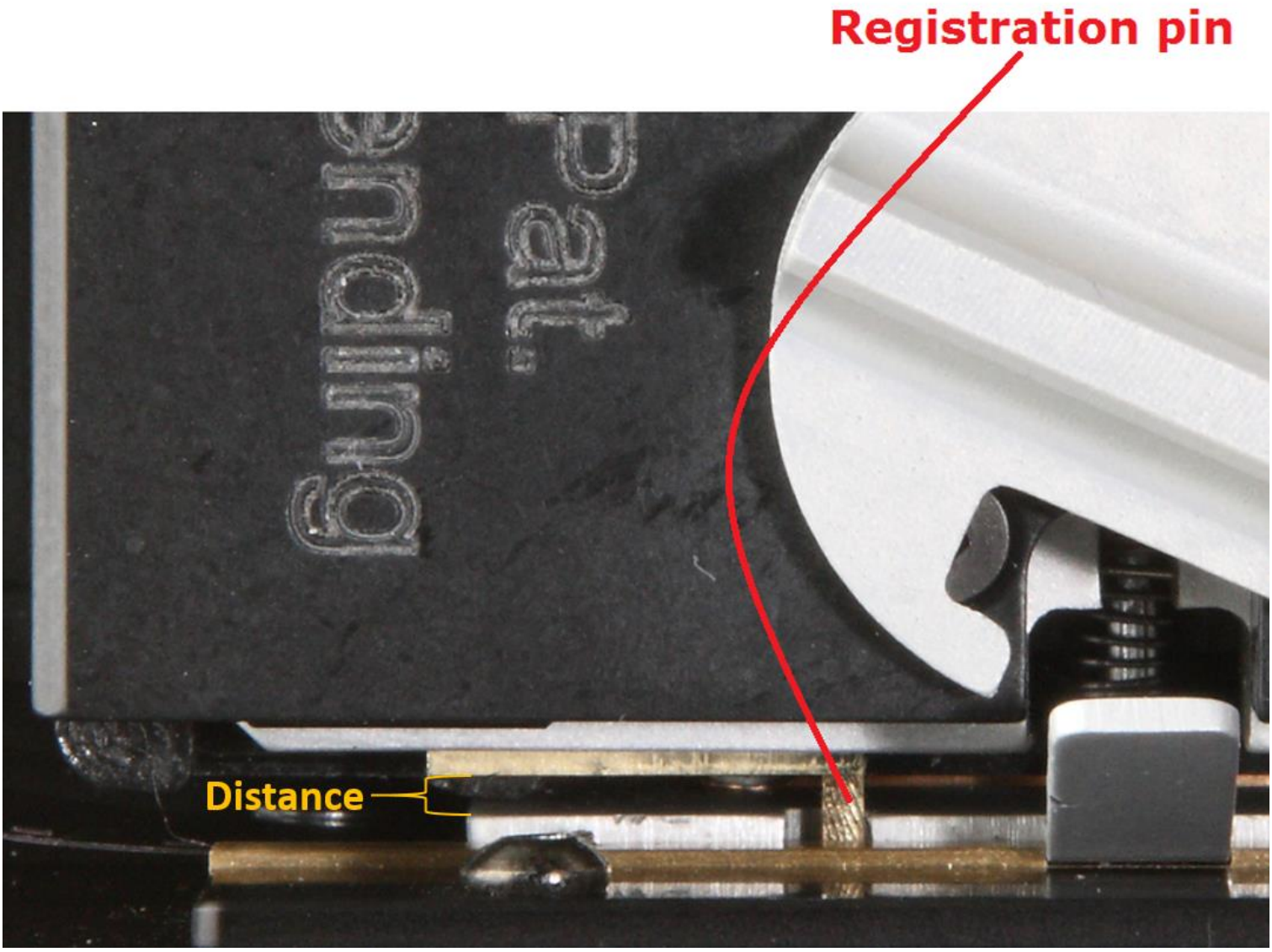
14. Set the pressure plate lock into locked position and make sure the Latham loop is laid out like on the picture on the next page



Open position **Locked position**

15. Once the film is in place. Open the pressure plate snap lock and let the pressure plate secure the film against the gate.

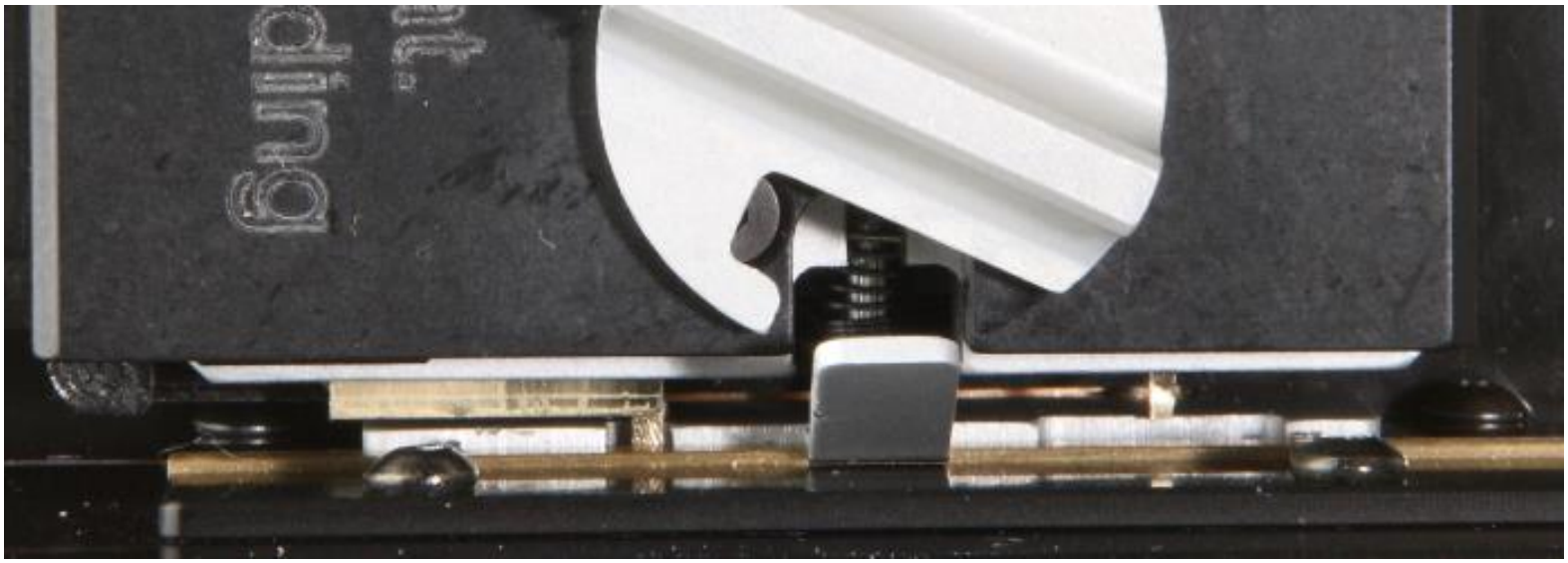
16. Looking carefully at the picture from above. You will notice that the registration pin is resting on the film and it has not fallen into a perforation hole yet (you can see this, as there is a distance between the gate surface and the registration pin shown below in yellow.



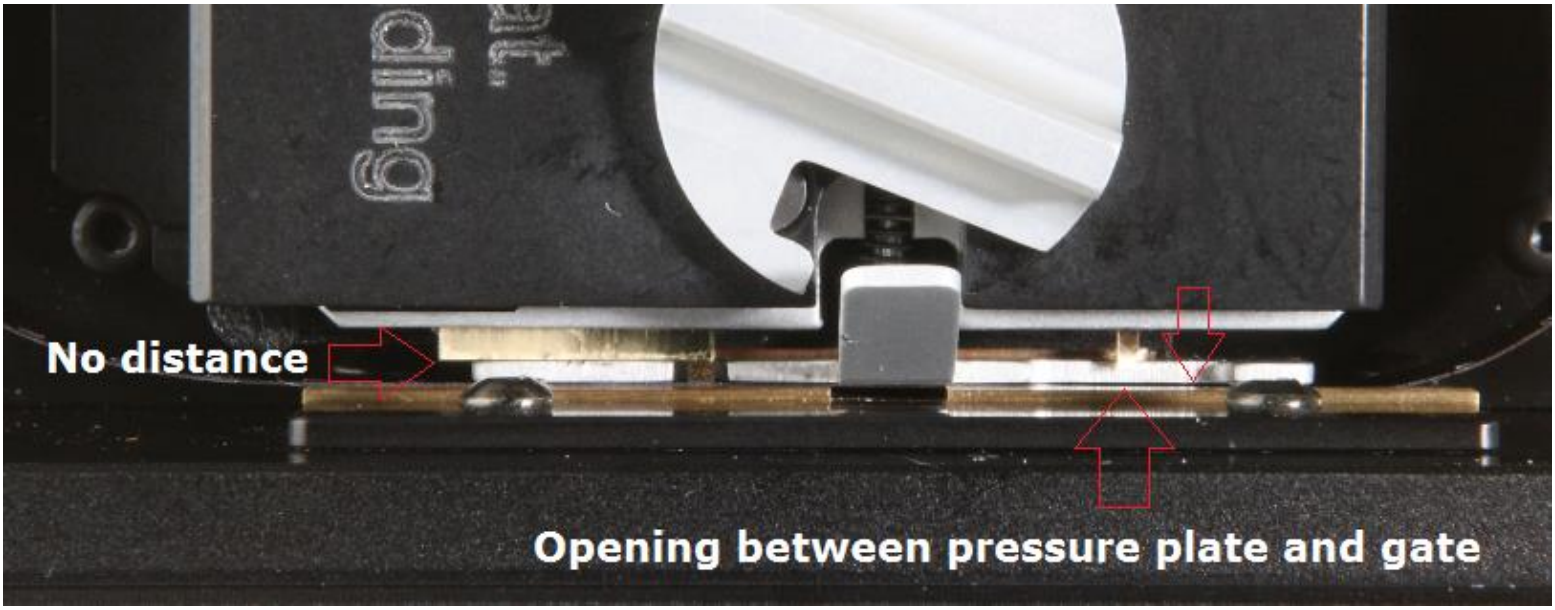
17. Gently pull the film downwards *(towards the left on the photo below)* until the registration pin falls into a perforation hole and you cannot drag it further.

You will clearly notice how it goes in and the distance shown on the previous page is now much smaller.

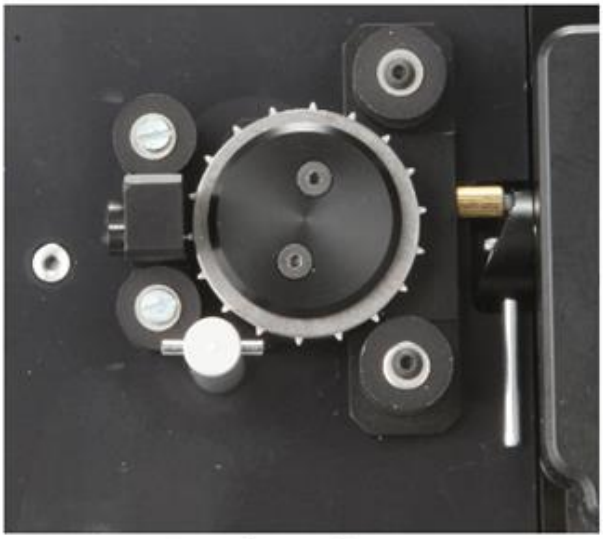
You will also notice that the gate is completely flat against the pressure plate.



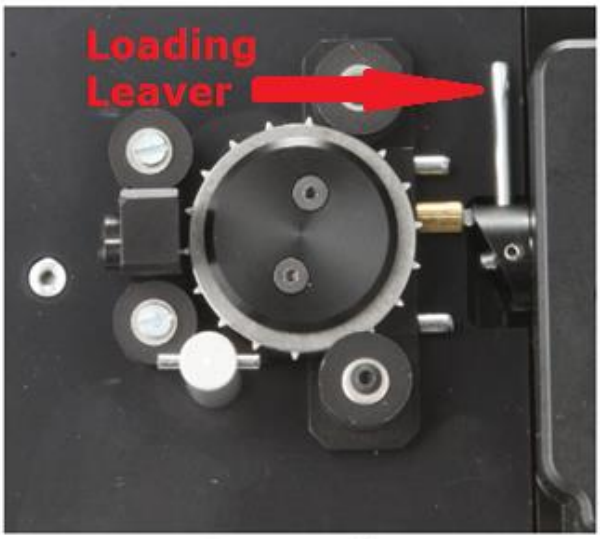
If the loading is wrong, you will find that the registration pin is completely flat against the pressure plate and/or openings can be observed between the gate and the pressure plate. If this happens, you will need to push the film further down into the gate and try loading it again.



18. Move the loading lever to RUN mode as shown below



Load mode



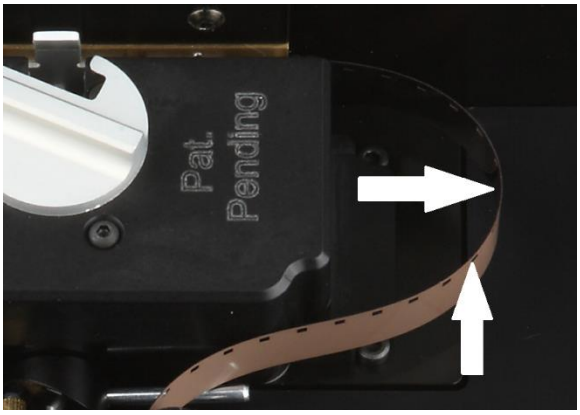
Run mode

19. Insert the battery and double check that the loading lever is in “Run mode” as above and that the pressure plate lock is in “Open position”

20. Turn the camera on *(without putting the lid on yet)* you will hear that the camera advances the film a little to close the shutter and allow the viewfinder to see.

21. Set the frame rate to 18fps and run the camera for a few seconds while observing that the Latham loop remains intact.

22. Turn the camera off *(for safety)* and run your fingers along the film perforations. Feel if there is any burrs or dents in the perforations if that’s the case or If the film does not feel completely smooth, you have not loaded the camera correctly.



Make sure to feel the perforations on both sides of the film and run your fingers along the film – this makes it easier to determine if the loading was correct or not.

If the film is not loaded correctly, the camera can punch new perforations or tear the film so be sure to check it toughly.

23. Attach the lid to the camera body by sliding it gently in *(DO NOT engage the lid lock yet)*
Observe that there is **no** distance between the body and the lid edge by looking at the insertion point shown by the arrows below

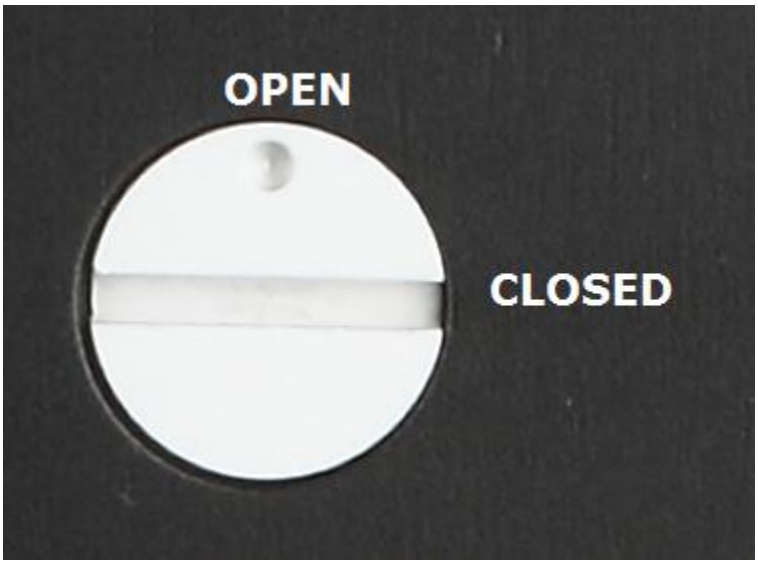
Correct lid position (top):
Below you can see that the lid is fully engaged into the camera body.

Incorrect lid position (top):
Below you can see that the lid is not, correctly put onto the camera body.

Correct lid position (bottom):

Incorrect lid position (bottom):
Below you can see that the lid is not fully engaged into the camera body.

24. **Only** once the Lid has been correctly positioned turn the lid lock clockwise from open position until it rests in the closed position



DANGER 	*NEVER brute force the lid lock. It is designed to slide easily between open and closed position. If it does not this would indicate that the lid is not correctly positioned.*