

RetroScan Universal Mark-II Instructions

Update 1-23-23

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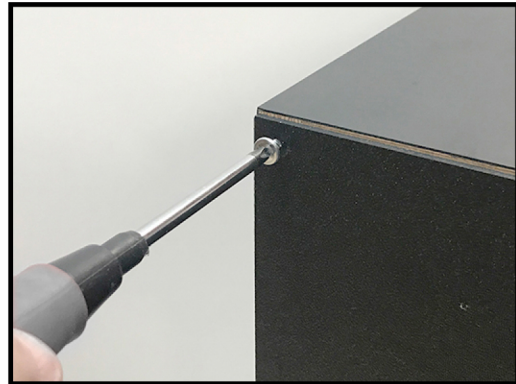
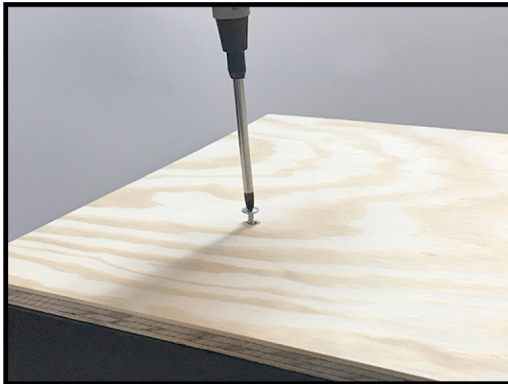
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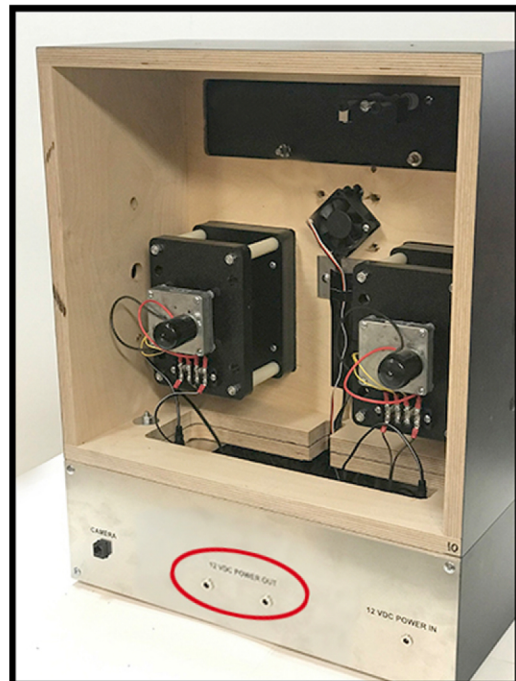
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You will need a medium
Phillips Screwdriver



Remove the topside wooden shipping panel and set aside. Also remove the back panel. Do not lose the screws as they will be required later on during assembly.



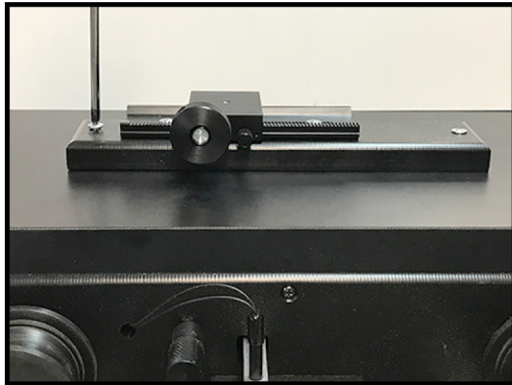
Remove the two accessory boxes from inside the unit. Please note the two power output jacks. These are for powering future accessories for the Mark-II unit. Do not plug any power supply into these center power output jacks.

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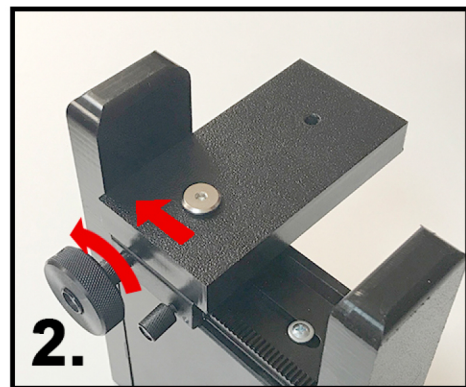
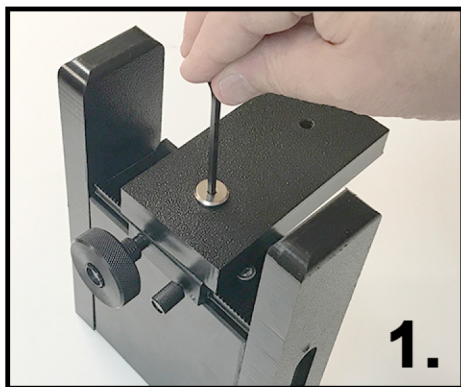
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Open both boxes and locate the above items. The Motor Test Cable is used to run the motors directly from the power supply when testing any motor issues. Please keep it and the hex wrenches in a safe, handy place for future use, if ever needed.



Locate the two screws that held the topside wooden shipping panel in place. Use those screws to attach the camera tower base to the top of the Mark-II. The tower base has holes that align with the existing holes on the top of the Mark-II. Tighten until snug. Do not overtighten or you risk stripping the threads in the cabinet wall.

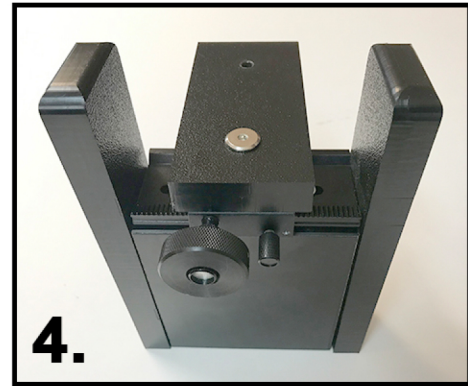
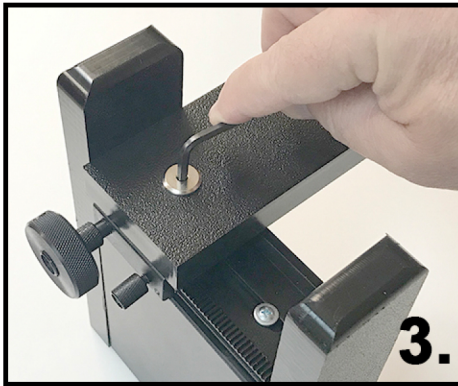


1. Attach the block to the bottom of the camera tower with one of the provided bolts but do not yet tighten the bolt completely. Leave it loose.

2. Turn the compound rail knob to slide the block over to the vertical support until the block touches the support. This will align the block so that it is 90 degrees to the compound rail.

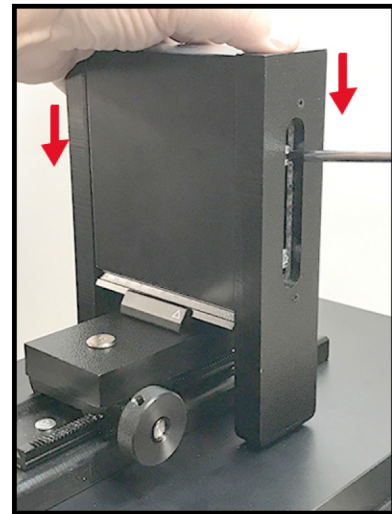
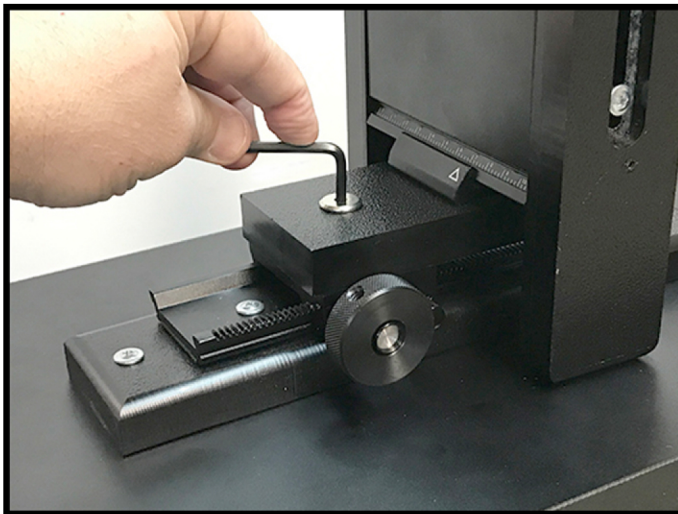
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3. With the block square against the vertical support, tighten the block securely in place using the 5/32 (4mm) hex wrench. The block should not swivel.

4. Rotate the compound knob so that the block is moved to the center position.

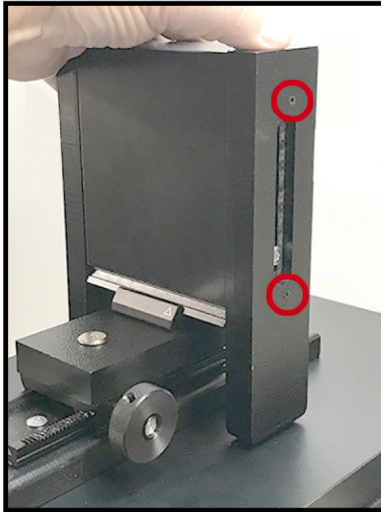


Attach the camera tower to the bottom rail as shown using the other provided bolt. This should be visually squared to the bottom rail and the bolt should be tightened securely so that the assembly does not pivot on the bolt.

Make sure the two mounting screws are loose on the back and front vertical supports. Use one hand to press down on the top of the tower while also pressing down on the back and front supports. Both the back and front vertical supports should fully contact the top surface of the Mark-II. Hold in position and firmly attach using the two provided phillips head screws. Once secure, the tower should not rock front to back. If so, then loosen the vertical supports and readjust. 3

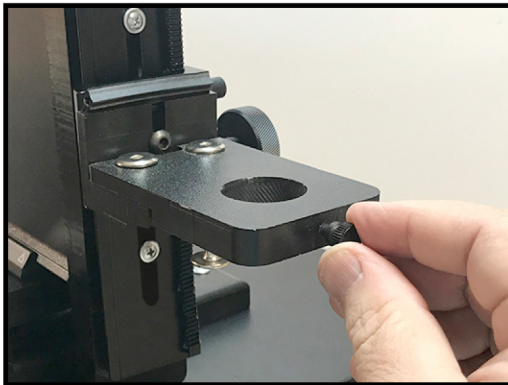
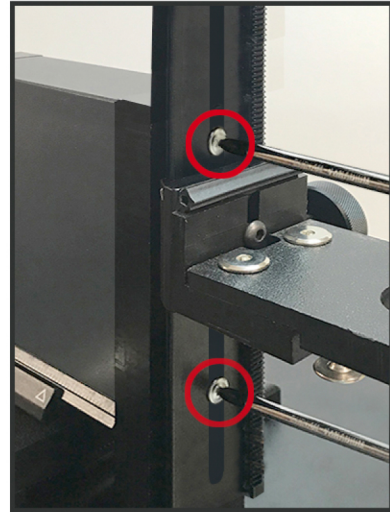
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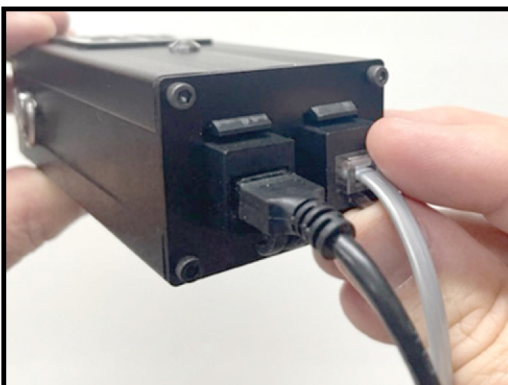


Locate the two pilot holes on the vertical support.

Attach the long camera rail as shown.



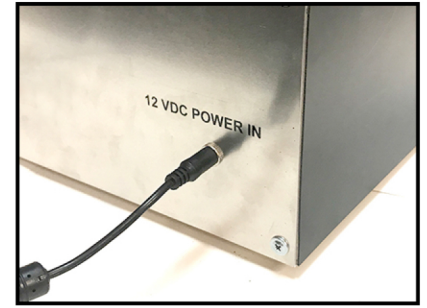
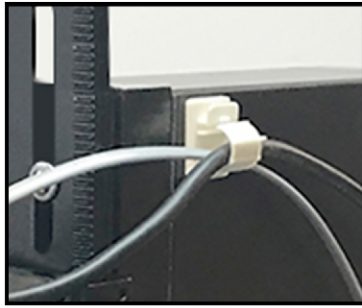
Loosen the black plastic thumb screw on the front of the camera platform. Locate the camera and remove the plastic cover from the tube. Please note that this tube is permanently attached to the camera and can not be removed.



Insert the Ethernet and trigger cables into the back of the camera. Insert the camera into the camera platform. Rotate camera until even and gently tighten the thumb screw. **Please note that this camera rotation is how you level the frame lines or horizon lines of the film frame.**

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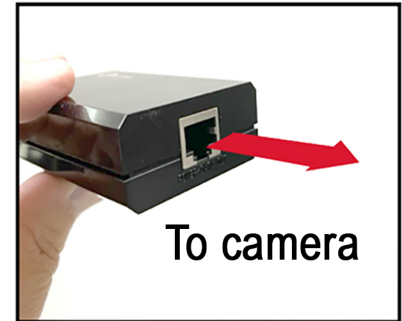
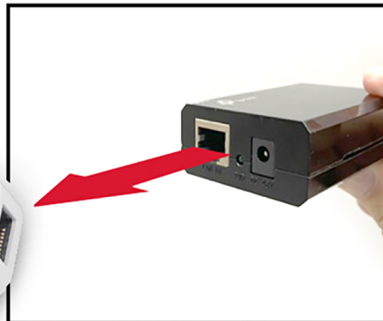


Attach adhesive cable restraint to the camera tower just behind the front vertical support. Do NOT attach to the vertical support as the adhesive will not stick. As shown in the picture, connect both the camera trigger cable and the power cable.

As noted in the PC specs, the camera in this scanner uses an Ethernet connection and not a more typical USB. However, we have found through experience that most PCs will not function properly if connection from the scanner to the PC is limited to just the Ethernet port. Therefore, you will need to purchase the following two items. They are commonly available on Amazon.com:

TP-Link USB to Ethernet Adapter (UE300) TP-Link 802.3af Gigabit PoE Injector

To your PC
USB3 port



The USB to Ethernet adapter plugs into an open USB3 port. (USB2 will not work)
The USB to Ethernet adapter is connected to the PoE Injector via a short Ethernet cable. The other end of the PoE Injector is connected to the camera via the 5 foot Ethernet cable provided with the scanner. Don't forget to check your network card settings on your PC and match them to the examples in the software instructions.

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Locate the green dome that covers the sync tally light on the Mark-II control panel. This light will flash when each sprocket hole is detected. Insert the green dome into the hole and push into place. Though the dome has threads on it, the dome is held in position by friction only.



The Universal Mark-II can transfer a wide variety of film, ranging from regular 8mm through 35mm film. To accommodate these formats, the Mark-II comes with a variety of extension tubes and rings. Because the Mark-II can scan in a variety of resolutions, it is impractical to list all the various tube and ring combinations here. Conceptually, the longer the tube, the more it will crop into a frame. The shorter the tube, the less it will crop into a frame. If scanning 35mm to full 2K, then you use just a single 5mm Lens ring. If you were scanning Regular 8mm to full 2K, then you would use all of the above rings and tubes together with the adjustable lens tube almost fully extended. Resolutions lower than 2K would then need something in between those two extremes. Experimentation is the best way to learn.

HD ZOOM MODE

If you are a shop that has little to no need for 2K and mainly output HD or SD files for customers, then you can simplify your workflow by using the HD ZOOM modes of the software. Set the adjustable tube to a length where a 16mm frame fills the 2K sensor of the camera in the full 2K mode. Then, in the HD ZOOM mode, any 16mm film is captured in 2K but stored as 1080p. The software will then allow you to zoom in on smaller formats like S8 and R8, which are captured using a true HD area of the camera sensor. These files are also stored as 1080p but can export as anything. (For more info, see page 5 of the software instructions)

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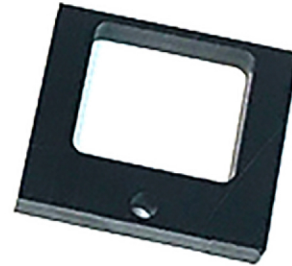
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**Small
Format**

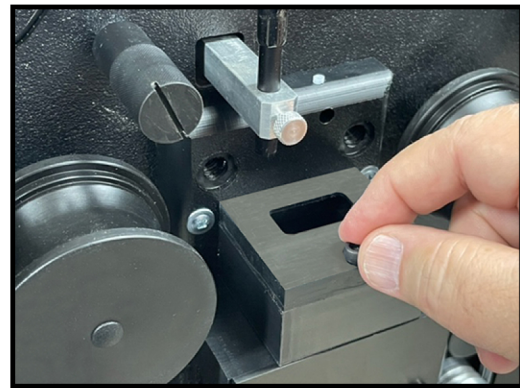
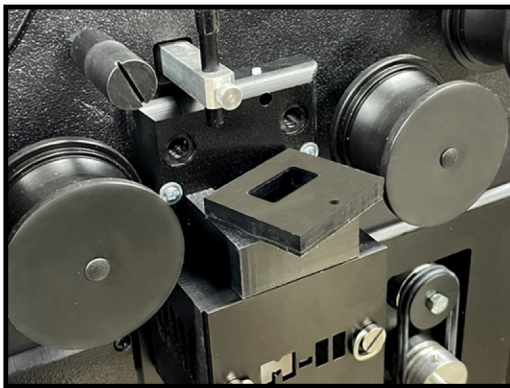


**Medium
Format**



**Large
Format**

The light in the Mark-II is very, very bright. To cut down on flare, both to the camera and to your eyes, the Mark-II has available three different masks. Which you get depends on the guides you ordered. Small formats would be 8mm and 9.5mm, medium formats would be 16mm and 17.5mm, and larger formats would be 28mm and 35mm. Extra masks are available for purchase if you want to tape off areas to create custom masking that can be put into place easily during format changes.

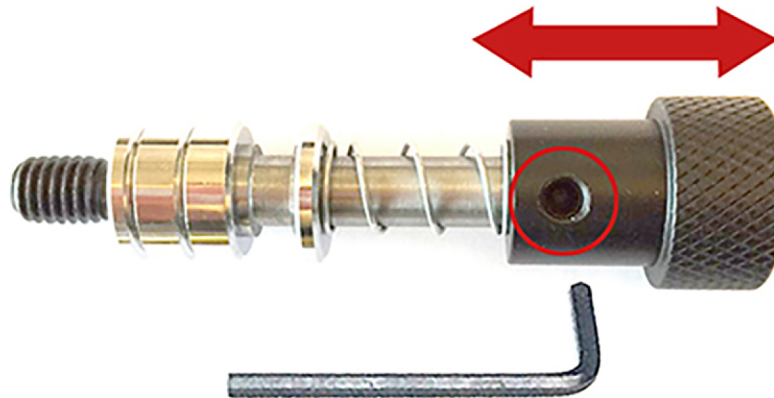


Select the desired mask and place on top of the light housing. There are two sides to the mask. Usually, the flat side goes up with the hollow part face down. This puts the edge of the mask closest to the film and also allows the user to employ tape to create custom masking. However, the mask will also work with the flat side down but the edge of the mask will be more out of focus and the light source more visible to the naked eye. Secure the mask in place using the provided thumbscrew. To prevent unwanted changes to the mask, the screw can be firmly tightened using the 1/8 inch (3mm) hex wrench.

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The Mark-II has a variety of film guides available and we are working on specialty guides all the time. Currently, the guides we offer are Dual-8 (R8/S8), 9.5mm, 16mm, 17.5mm, 22mm, 28mm as well as 35mm. These guides are polished and handle film only by the edges for maximum film safety.

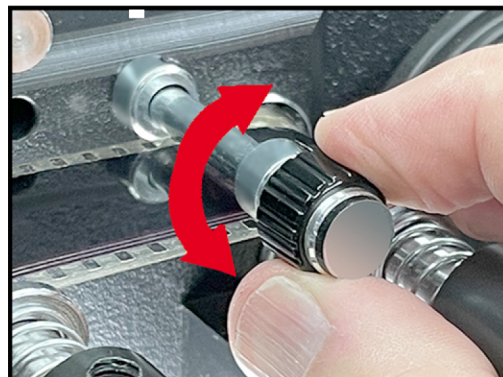


The Mark-II guides are designed to press all film against the sprocket hole edge of the film (factory edge). If necessary, it is possible to adjust the tension of the side springs by loosening the set screw in the handle using a 1/8 inch (3mm) hex wrench and then slide the handle in and out. For greater tension, remove the spring, stretch it a bit, then reassemble. **Guides should be routinely cleaned with liquid spray silicone lubricant and a soft cloth. 3-in-1 oil will work as well.**

Stabilization Cams for Warped or Wavy Film

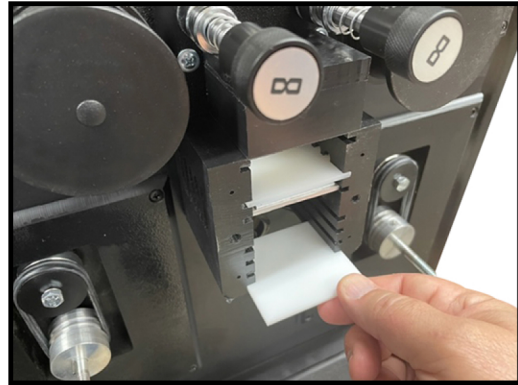
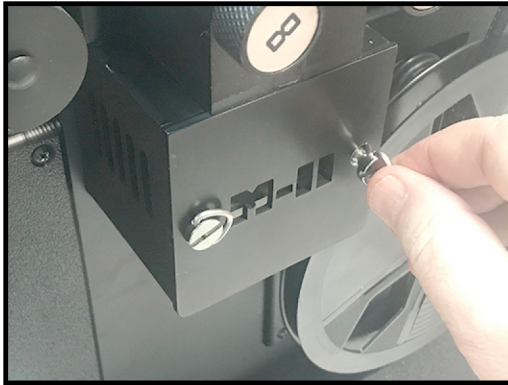


The 4K Mark-II comes with cams that can be positioned on the outer edges of the film. By turning the shaft until the cams make contact, wavy film can be made to run flatter and more stable. Extra shafts and cams are available.

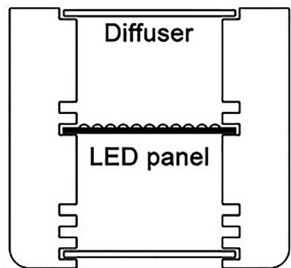


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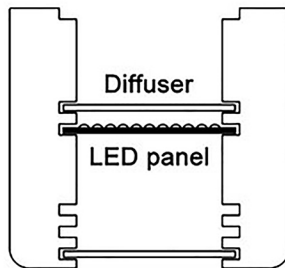
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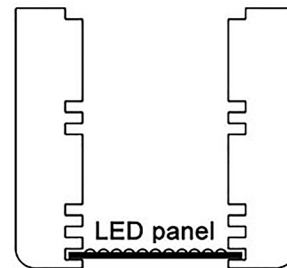
The Mark-II has a unique lamp house. Remove the the two thumb screws. Inside are two different diffusers; one above the light source and one stored in the bottom slot. One diffuser is slightly grey but offers the brightest light. The other diffuser is is more like opal glass and offers lower contrast but is not as bright.



Lower Contrast
Darker Image



Higher Contrast
Brighter Image



Highest Contrast
Brightest Image

The LED panel and diffusers can be easily repositioned. The normal position is shown in the middle drawing above and will work for most regularly exposed film. Raising the diffuser to the top position will allow the light to spread and will lower the contrast but produce a darker image. For some films that are super under exposed, remove the diffuser completely and position the LED panel at the bottom. This will produce a super bright picture but should be limited to small format films such as 8mm and Super 8 with the f-stop of the lens kept fairly wide open to keep the LED panel out of focus behind the film.

If the LED panel needs to be removed,
unplug it

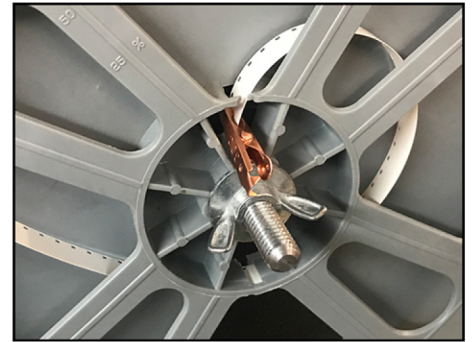


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Included with the Mark-II is a simple leader clip. This clip can be used to firmly secure the film to the take up reel as shown. The leader clip should always be removed before rewinding the film.



Source

Take Up



R8/S8



**9.5mm
16mm
17.5mm**



The Mark-II comes with hub adaptors for the source side and take up side. Regular 8 and Super 8 use the black adaptors. Medium formats like 9.5mm, 16mm and 17.5mm would use the silver adaptors. Large formats like 28mm and 35mm do not require adaptors. Please note that the source adaptors have no pin in them like the take up adaptors do. Do not lose or misplace these adaptors. You can not use the unit without them and they are expensive to replace.



Source



Take Up

The Mark-II comes with threaded reel retainers for the Source and Take Up sides. Please note that the Source retainer has reverse threads while the Take Up wing nut has normal threads (both are 5/16-18 coarse, American threads)

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To mount a small format reel (S8/R8) on the source (left) side of the Mark-II, note the alignment hole in the chosen adaptor and make sure it lines up with the pin on the aluminum hub. Once aligned, slide the adaptor into position. This is the same procedure you would use for medium format film adaptors, as well.

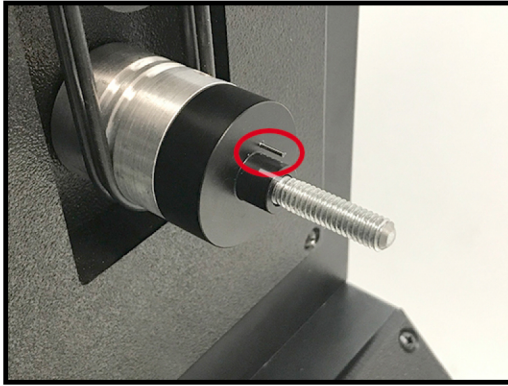


When mounting a small format reel on the source (left) side of the unit, be sure to note that the reel retainer has a Super 8 reel adaptor built into it. This is required because the center mounting hole on Regular 8 reels is small (around 5/16 of an inch) while the center mounting hole on Super 8 reels is larger (around 1/2 inch). To secure a Super 8 reel, turn the retainer so that the adaptor is facing in towards the Super 8 reel. For Regular 8 or any other reels that fit the bare spindle of the Mark-II, just turn the retainer so the Super 8 adaptor is facing out.

NOTE: The source retainer has reverse threads. To tighten, you must turn the black retainer knob to the left (counter clockwise). Make sure the knob is on tight as the source side has no pins to transfer the rotation of the spindle to the reel.

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Note that the take up hub adaptors for both small and medium formats have a pin in them. Simply align the pin with one of the three slots on the center hole of the take up reel then screw the wingnut into place. (Do not overtighten).



Thread as shown. You can rewind through the upper rollers slowly. If needing a rapid rewind, bypass the upper rollers as shown.



FORWARD and REVERSE have a center stop position. AUTO STOP will stop the unit after 15 seconds of no film movement. AUTO STOP must be turned off if you are bypassing the upper gate rollers. EXPOSURE manually controls the light level illuminating the film if not using AutoExposure in the software.

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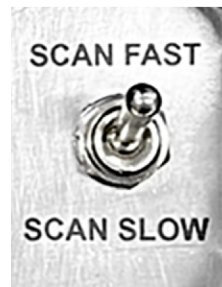
These are the normal switch positions unless changed as needed below.



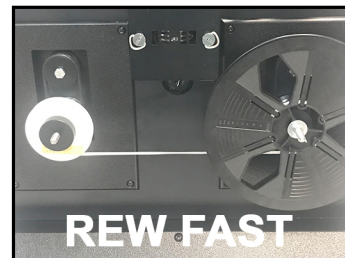
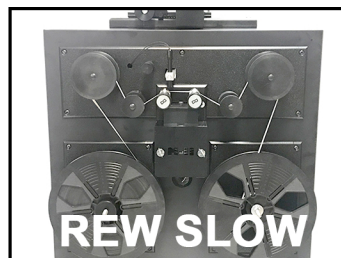
Registration can be affected by torn sprocket holes (perfs). Wear (if any) would be seen at the top of the sprocket hole ("GOOD PERFS"). If you have a jumpy image caused by wear at the bottom of the perf, you can simply change the switch to "BAD PERFS" and the system will use the top edge of the sprocket hole for registration, instead. Don't forget to change it back afterwards!



The backlight can be turned on and off as needed to facilitate focusing the LightPin Sensor or just to save on the life of the LED.



In the normal FAST position, the unit will scan at about 15fps. SLOW will run at about 10fps, which is handy for slower PCs or capturing uncompressed.

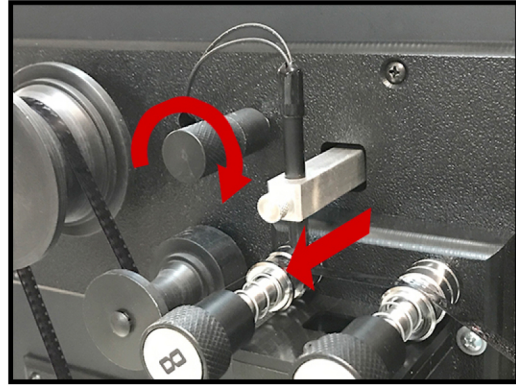
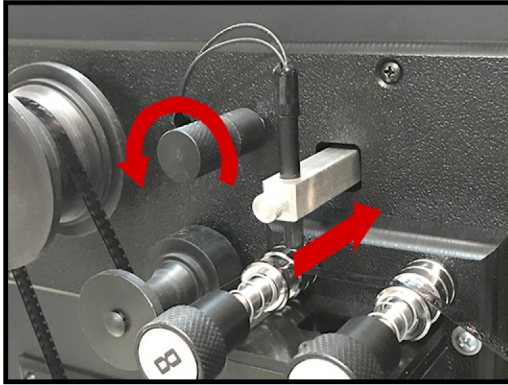


You have two REVERSE modes. If you have film threaded through the gate, you should keep the switch in REW SLOW. If you need to rewind between reels quickly after scanning is complete, start the REVERSE switch in REW SLOW and then, after it reaches speed, switch to REW FAST. After you have finished rewinding, switch to REW SLOW and then stop the REVERSE switch. **Do not REW FAST while in FOWARD or you will damage the film and the unit.**

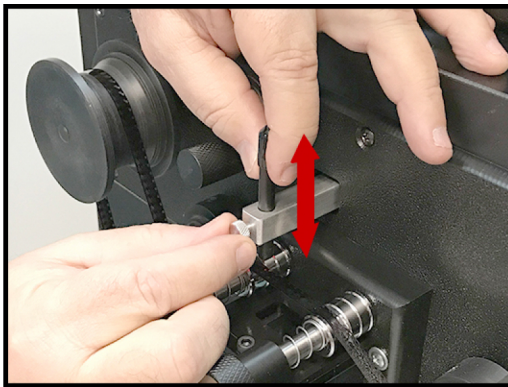
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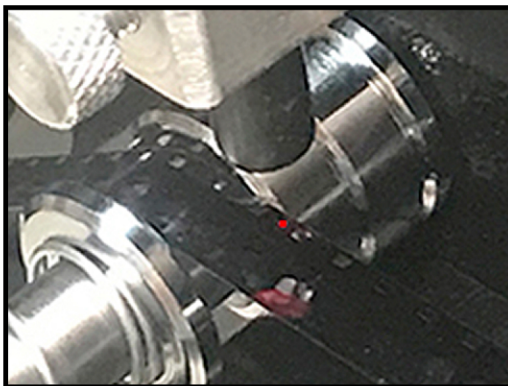
Power on. Load film with sprocket holes towards the inside edge. Move the film past the leader to imagery (not clear) and turn the exposure down to allow positioning the LightPin sensor. (Turn the exposure back up after sensor is set.)



Use the black knob to move the sensor into position on the film for focusing.



To focus the LightPin sensor, loosen the thumbscrew and slide the sensor up and down until a fine dot is formed on the surface of the film and then gently tighten the thumbscrew. Film should be fairly tight while focusing the LightPin sensor.



After focusing the LightPin sensor, move the sensor so the red dot is in the middle of the sprocket hole path. As the film passes, the red dot will be interrupted and that will trigger the camera to capture each frame. As the film is running, you will see the green tally light blink. If the green light is not blinking, then it is likely the LightPin sensor is not aligned with the sprocket hole path -or- the LightPin sensor is not focused properly. Keep the end of the sensor free of lint or dust.

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When first turned on, the camera's power indicator will flash red for a bit and then it will flash green. When scanning, the light will be solid green.

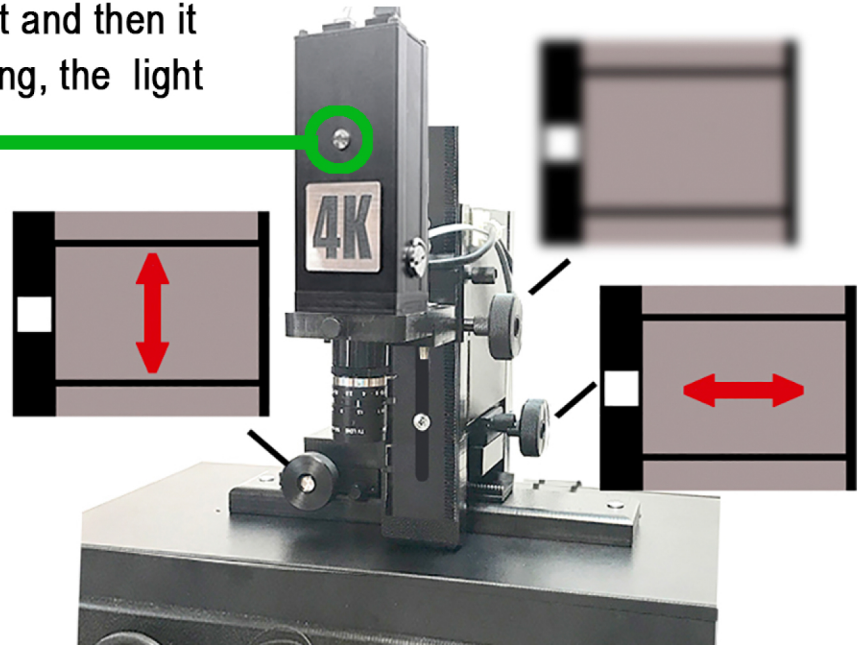
Note the functions of the three knobs on the camera tower:

Frame FOCUS

Framing VERTICAL

Framing HORIZONTAL.

Each knob has a small thumb screw to lock its rail into position or to provide tension.



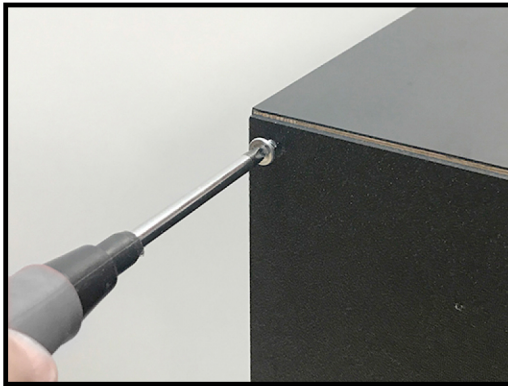
Please note: The knobs on the tower control the alignment and focus of the camera relative to the film frame. NONE of the knobs control the size of the image or the degree of cropping you see when scanning. Cropping (zooming) into or out of an image is controlled by the length of the extension tubes. The longer the tube, the more the image will be cropped in. The shorter the tube, the less the image will be cropped in. Therefore, you will need a long tube to capture small formats like 8mm and a shorter tube for larger formats like 16mm and 35mm.



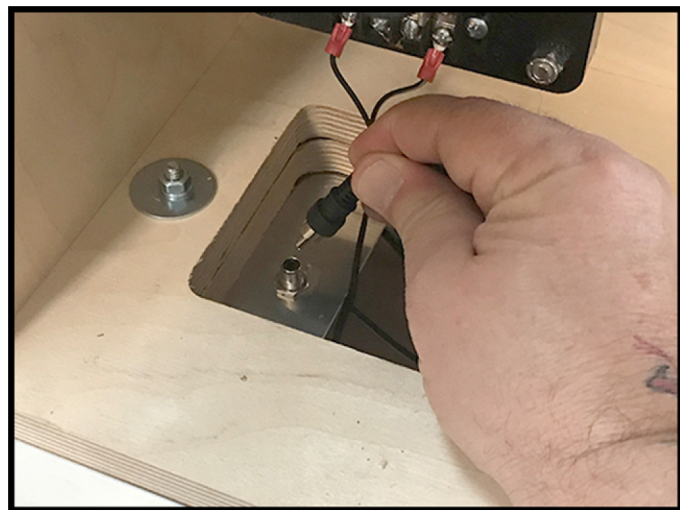
To ensure the film frame is in focus side to side, the camera must be parallel with the film. Use the hex wrench to make minor adjustments to the level of the camera by turning the bottom screw while viewing the image in the software. Using R8 or S8 film works best for this as focus is more critical in small formats but any format will do. This typically needs to be done only once during initial set up.

Motor Extension Kit Installation Instructions

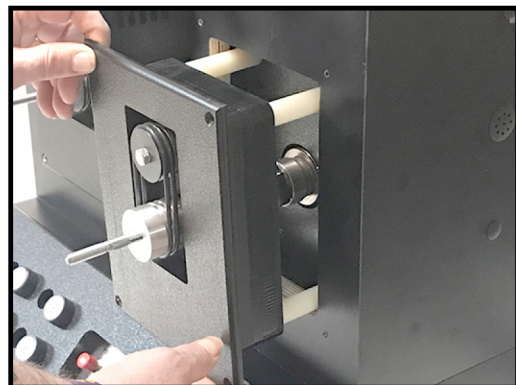
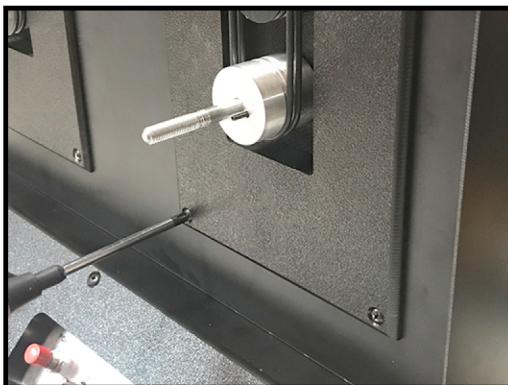
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Use a Phillips screwdriver to remove both the front and back panels of the motor boxes and the back panel of the unit. Use a 5/32 or 4mm hex wrench to remove the side bolts and washers from the boxes. Do not lose the bolts for use later.



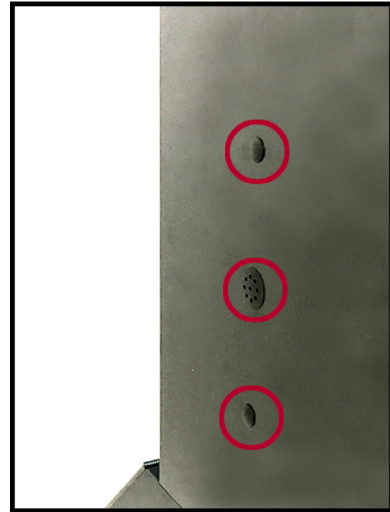
Locate the power cables for both motors and disconnect.



Remove the screws and carefully pull both motors from the unit. Please note that the motors are different and not interchangeable. So do not get them confused.

Motor Extension Kit Installation Instructions

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Install the cover panels over the motor openings. Next, locate the three plastic plugs on each side of the Universal Mark-II unit as circled in red on the photo.



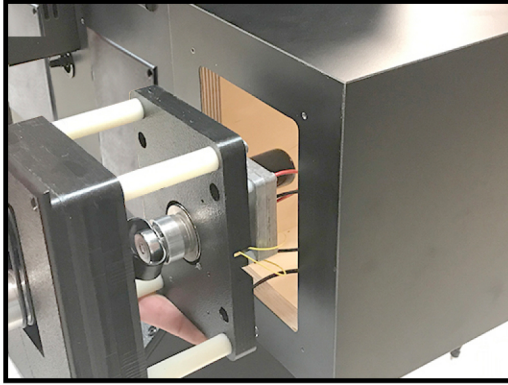
Use one of the tools to gently push the plastic plugs from their openings.



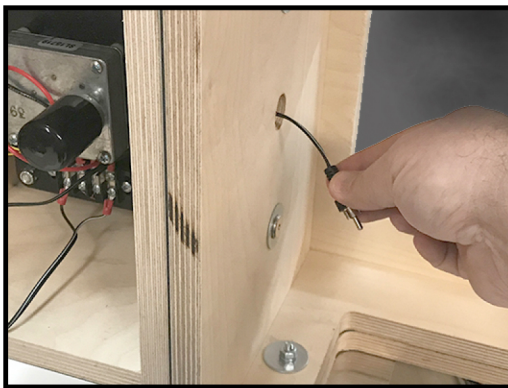
Carefully align the boxes so they are flush with the front of the unit. Use the provided bolts and washers to attach the boxes. Use the hex wrench to securely tighten the bolts so that the motor boxes are firmly attached to the side of the unit.

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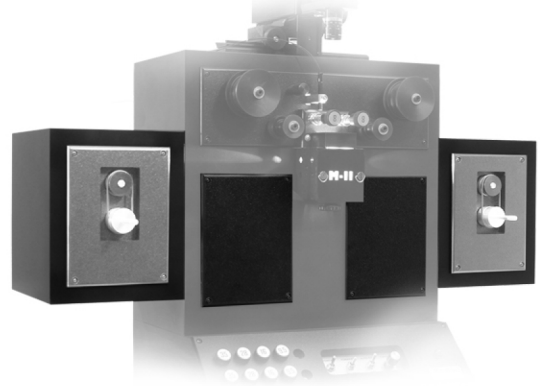
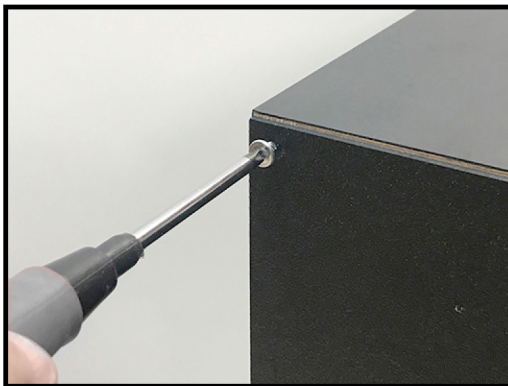
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Carefully slide the motors into place in each box and then secure with screws.



Thread motor power cable through the center opening and plug into power jack.



Test all motor functions and then replace back panels on both motor boxes as well as the back of the Mark-II. For any questions, please call 830-966-4664 or email us at retrofix@swtexas.net