

Mercury CB-70/72 Back Conversions; Assembly Instructions

Table of Contents

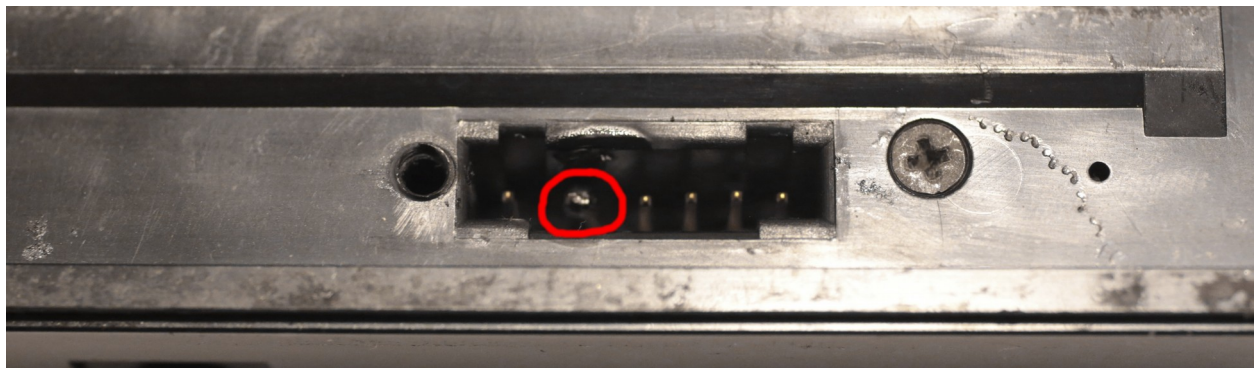
CB-70 BACK ADAPTER ASSEMBLY (for Integrated Camera Kit).....	1
Using your camera.....	9
CB-70 GRAFLOK 45 CONVERSION.....	10
Using your Graflok 45 Back.....	14
Converting between standalone camera and Graflok 45 back configurations.....	15
Battery Pack Option.....	15

CB-70 BACK ADAPTER ASSEMBLY (for Integrated Camera Kit)

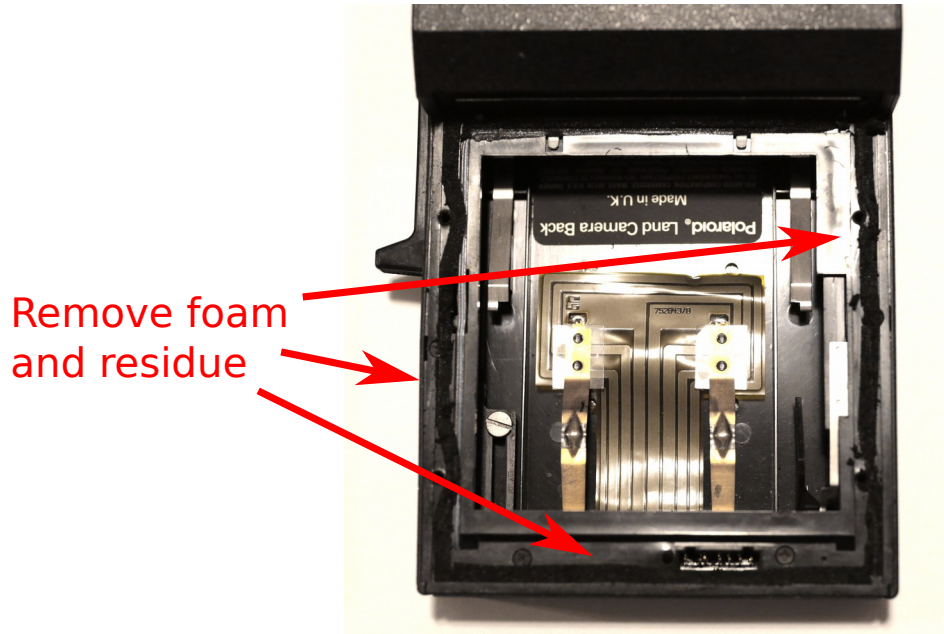
Note: This kit modifies either a CB-70 or CB-72 model Polaroid back. This back was designed for professional medical imagery, and was attached to certain retinal scan cameras (i.e., the Fundus). Throughout these instructions, "CB-70" should also be taken to mean "CB-72".

1. For your CB-70 back to function autonomously (without being attached to its original medical camera) you need to connect two pins from its multi-connector together. Sometimes these backs will come with the pins already connected, in which case you can skip this step. Sometimes they come with a cable stub that makes the connection for you. This won't work with the Mercury kit, so you'll have to discard the stub and connect the pins.

You need to connect pins #2 and #3 as in the photo below. To do this, carefully bend them together with a needlenose pliers. If you have a soldering iron, simply solder the two pins together. Otherwise you can wrap some conducting wire (such as copper) around them and glue it in place with some hot glue or other adhesive. You'll know when you've succeeded if, when you insert a fresh pack of Polaroid/Impossible 600 film and hold down the big red/blue/green button for a couple of seconds, it ejects a photo. If the back doesn't respond, the pins aren't properly connected, the film pack's battery is dead, or there is something wrong with the back's electronics.



2. Remove any plates or screws from the mounting surface of your CB-70. Carefully but completely remove all traces of the adhesive foam from your CB-70. This material decomposes over time into a tar-like gummy substance. It is very difficult to remove and can make quite a mess. You'll probably have the best luck using a small flathead screwdriver to scrape it out of the channel. Then use Q-tips soaked with rubbing alcohol to vigorously scrub until all traces of it are gone. Expect this to take 20 minutes or more. It is a slow process.

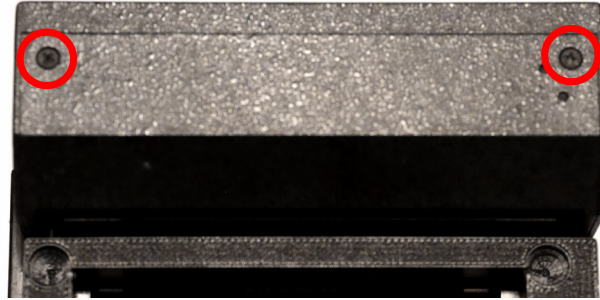


3. Place the Mercury "mating plate" face-down into the grooves of your CB-70. If your CB-70 came with its original mounting screws, use those to attach the mating plate to it. If not, use the four black screws that came with your Mercury kit for this purpose. Note that the original mating method utilized a fifth screw in the bottom channel. Our kit doesn't utilize this, but you should check to make sure that the plastic area around the screw hole isn't raised up far enough to obstruct the mating plate. If it is, trim it down with an X-acto knife or grind it.



4. Attach the side cold shoe to the side of the mating plate, as shown. Use the two short silver screws. You will need either a T6 Torx driver or a properly size flathead screwdriver to drive these screws.

5. Remove the two black screws on the top front of the CB-70 back (circled in red in the image below).

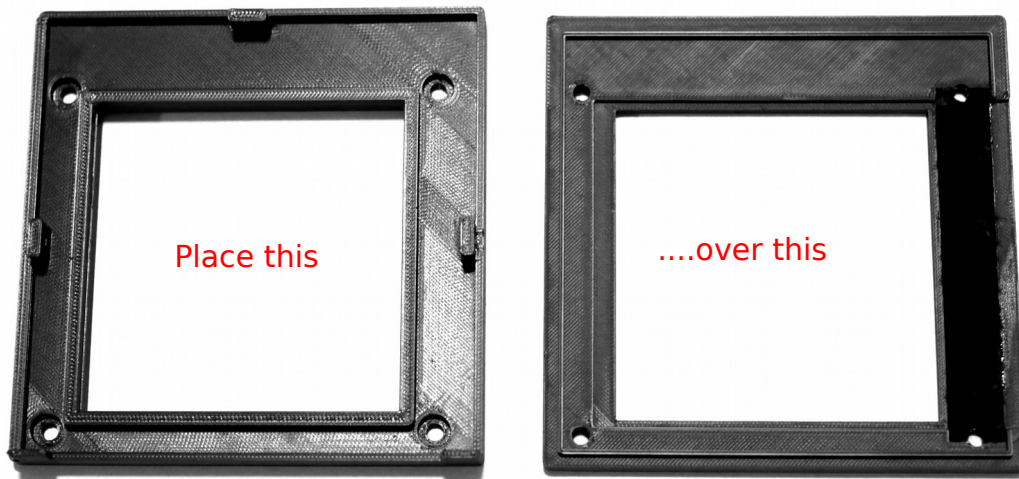


6. Snap the Mercury top cold shoe rack onto the top of the CB-70 as shown: line up the screw holes between the Mercury part and the CB-70 (which you revealed in Step 5).

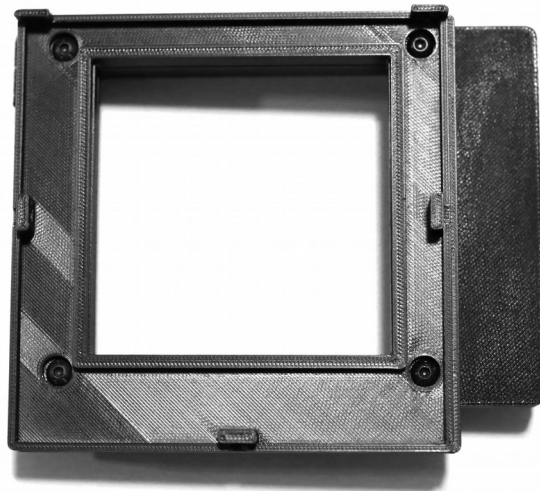
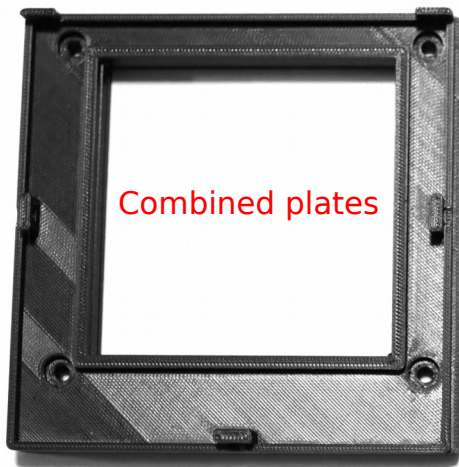


This concludes the modification of the CB-70. The following steps detail how to mount this back on a Mercury. The parts described here are, strictly speaking, the back adapter that accepts this modified CB-70 as a back. Note that if you purchased your Polaroid 600 kit as a full camera package, it may come from Mercury Works with the following steps already completed and your back adapter already integrated with your front panel. In this case, you can skip to Step 9.

7. Locate the Mercury "bottom plate." This is the thin one that has a strip of velvet-like material glued to it (this is done in advance by Mercury Works). Then find the "middle plate." This one has five "tabs" that stick up on top of it. Notice that the top of the bottom plate has a ridge running around it; this fits within a matching groove on the bottom of the middle plate. Place the middle plate over the bottom plate so that the two loosely snap together.



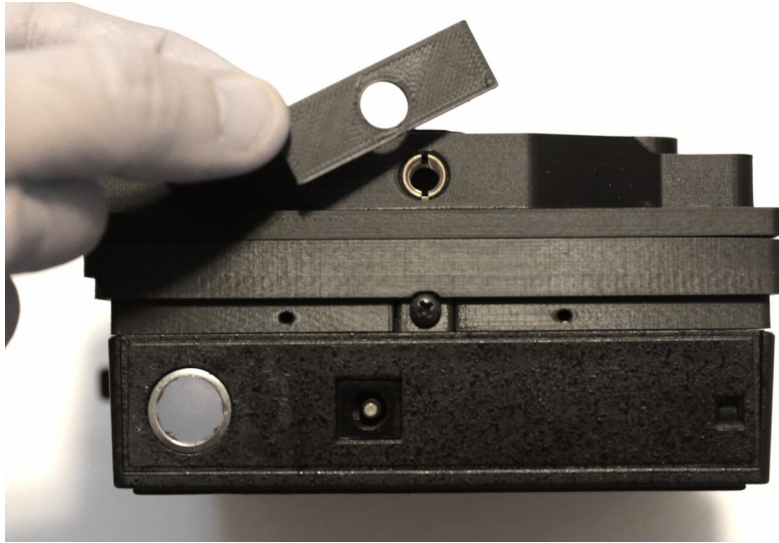
8. This combined unit forms the back adapter. It can now be placed on the back of a Front Panel (with the front panel's light ring between them). Attach these together by inserting the four black M4 x 12mm bolts through the combined back adapter plates and then threading them into the back of the Front Panel. Tighten them using the provided allen wrench. Always tightly pinch together the three plates with your fingers while tightening, and never tighten past the point when the brass threaded inserts in the Front Panel begin to show signs of being pulled inward. You now have an integrated Mercury body.



9. To mount the CB-70 back to your Mercury, snap it in place, being careful to line up the back adapter's tabs with the back's slots.

10. Lock the two parts together by inserting three of the smaller black screws (phillips head) on the sides and bottom. Tighten, but do not overtighten, or you may crack or break the tabs on your back adapter.

11. Place the thin rectangular spacer with a hole in the middle over the tripod insert on the bottom of the front panel.



12. Place the QR plate over the spacer, lining up the holes. Use the large 1/4-20 black screw to tighten the QR plate and spacer piece down into the front panel.



13. Use two small silver screws to screw the wings of the QR plate down into the guide holes.

14. Insert your darkslide. Your Merc config is ready to shoot!

Using your camera

The Mercury CB-70 kit is meant to remain more or less permanently attached to your camera. We suggest that if you dedicate a Mercury Front Panel to it (though you can share your lens stack components with other configs of course). To remove this back adapter requires multiple steps: you'd have to remove the QR plate from the bottom, then remove the three main screws (on the sides and bottom) holding the two parts of the kit together, remove the CB-70 half, then remove the four M4 integrating bolts. It isn't worth doing unless you are trouble-shooting a problem with the CB-70.

For the same reason, the Mercury CB-70 config is not meant to be used with a ground glass.

The Mercury CB-70 config is RS-10. Because this is an unusual RS-value, you can simply calculate lens formulas at RS-0 and subtract 10mm of front spacing to make any lens work with this back.

To shoot, simply pull the darkslide out to the red line, expose your frame, and replace the darkslide. When you are ready to develop your photo, press and hold the big (green, blue, or red depending on model) button on the bottom of the CB-70. It takes about 1-2 seconds of holding the button to trigger the processing cycle. This will eject the photo and begin the developing. Impossible Project films should be developed out of the sunlight.

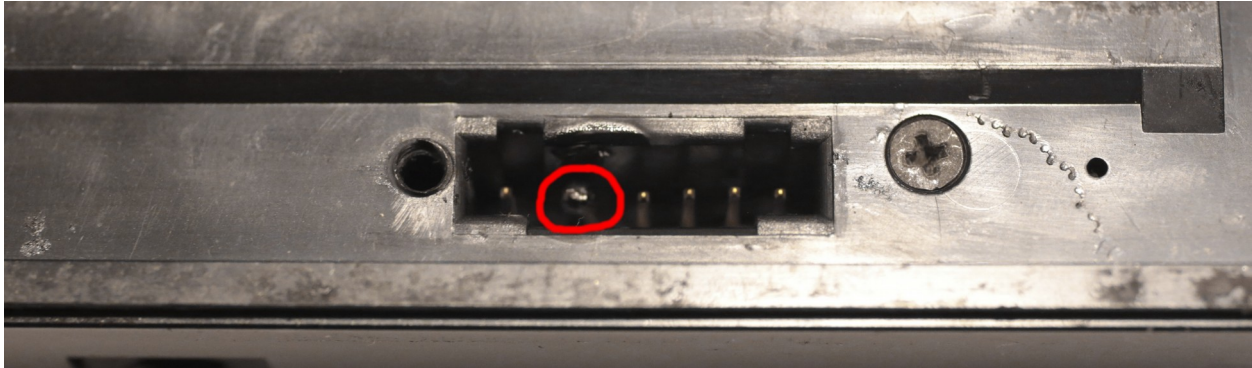
If you find that the thin protective film on top of the back is broken or missing (a common occurrence on these backs at this point, as it was made of a fragile material that easily cracks with age), you should consider placing a light-tight strip of black gaffer tape across the slot on the top of the back to prevent any possible light leaks. When you process, you should place the back in shade/shadow/darkness, remove the tape, and then press the button. Replace the tape after the photo is ejected.

If you find yourself attempting to shoot with a very old pack of film that has a dead battery, you can still power the back through an AC-to-DC adapter that outputs 6V.

CB-70 GRAFLOK 45 CONVERSION

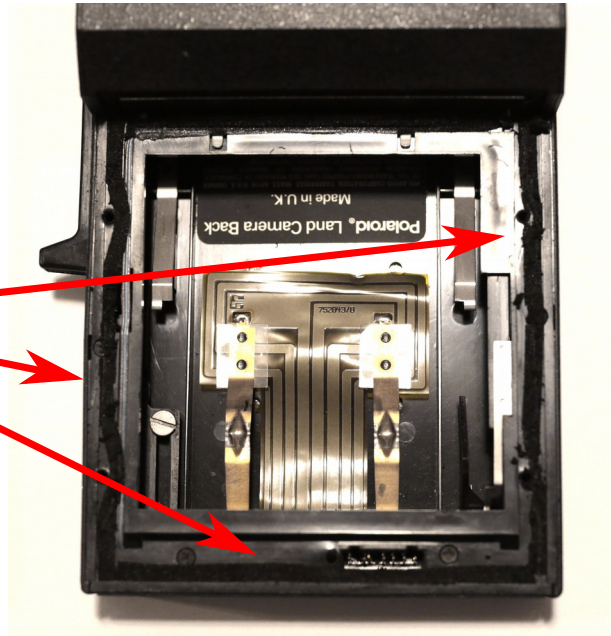
1. For your CB-70 back to function autonomously (without being attached to its original medical camera) you need to connect two pins from its multi-connector together. Sometimes these backs will come with the pins already connected, in which case you can skip this step. Sometimes they come with a cable stub that makes the connection for you. This won't work with the Mercury kit, so you'll have to discard the stub and connect the pins.

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2. Remove any plates or screws from the mounting surface of your CB-70. Carefully but completely remove all traces of the adhesive foam from your CB-70. This material decomposes over time into a tar-like gummy substance. It is very difficult to remove and can make quite a mess. You'll probably have the best luck using a small flathead screwdriver to scrape it out of the channel. Then use Q-tips soaked with rubbing alcohol to vigorously scrub until all traces of it are gone. Expect this to take 20 minutes or more. It is a slow process.

Remove foam
and residue



3. Place the Mercury "mating plate" face-down into the grooves of your CB-70. If your CB-70 came with its original mounting screws, use those to attach the mating plate to it. If not, use the four black screws that came with your Mercury kit for this purpose. Note that the original mating method utilized a fifth screw in the bottom channel. Our kit doesn't utilize this, but you should check to make sure that the plastic area around the screw hole isn't raised up far enough to obstruct the mating plate. If it is, trim it down with an X-acto knife or grind it.





4. To secure the CB-70 back to your Graflok assembly (pictured directly above), press the two parts firmly together, then screw in three #4-20 x 3/8" black pan head thread rolling screws in the holes on the sides and bottom.

5. Insert the darkslide into the right side of the back.

6. In this configuration, the CB-70 side cold shoe and top cold shoe rack are optional, and typically not very useful unless you also plan to convert this configuration to the CB-70 Standalone Camera config, or need to mount particular accessories on your back. You may want to use the left side open for a battery pack, as described below. Refer to the CB-70 Back Adapter assembly instructions if you wish to attach any cold shoes.

Using your Graflok 45 Back

This back can be used just like any other Graflok 45 back, except that it will move your film plane back 40mm. You will need to compensate by moving your front standard back by 40mm (if using a bellows camera) or removing 40mm from your lens stack (if using a Mercury camera).

Mercury Works also has available a special ground glass back that matches this back. It too mounts via the Graflok system, matching this 40mm film plane shift as well as the precise framing of the Polaroid 600 style film that you will be shooting.

Converting between standalone camera and Graflok 45 back configurations

If you have both Mercury kits, you can easily convert your back between these two configurations. The advantage of the Standalone Camera configuration is that it becomes a Mercury RS-10 body, with much greater lens compatibility than the removable Graflok 45 back version. It also allows for a much more compact and mobile camera configuration.

To convert between these two configurations, you only need to remove the QR Plate (if converting from the Standalone configuration), then the three screws on the sides and bottom that hold the two halves together. Then carefully separate the two halves. The back, CB-70 part does not need to be disassembled in any way; this section perfectly intersects with the Standalone camera front. Just press it into place and reattach the three screws on the sides and bottom. Add the QR Plate if necessary.

Both configurations use the same darkslide, though it switches sides.

Battery Pack Option

The CB-70 series of backs from Polaroid are equipped with DC sockets. While typically this back was and is powered by a battery in the film pack itself, if your film pack's battery is depleted, or you are using one of the new “i-series” film packs from the Impossible Project, designed to be used with a battery powered camera and thus lacking an internal battery (and therefore less expensive to purchase), you may wish to power your CB-70 system via its own battery pack or (in studio situations) with an AC Adapter. These are the specs for external power:

2.5mm x 5.5mm input jack, center pin negative
Requires at least 5.5V.

Note that because this uses a 2.5mm center pin instead of the more common 2.1mm, and because it is center-negative, unlike 99% of power adapters in existence, there is unlikely to be an off-the-shelf product that can power the CB-70 without modification. The voltage requirement also rules out most USB-power devices (which typically hover around 5V).

If you wish to use an AC adapter, you will need a 6V adapter with a 2.5mm x 5.5mm connector. You will then need to cut the cable reverse the two wires, and re-solder them.

Mercury can make a custom battery pack to these specifications that takes four AAA batteries in a low-profile design and attaches with a right-angle plug. This battery pack can be attached with adhesive-backed velcro to either the left side or the back surface of your CB-70 config.