

Improvised DSLR Lenses --- Too Much Time on My Hands

Please note that all instructions are AT YOUR OWN RISK! I tested all on a dead 35mm body (careful with those fragile mirrors) before letting them touch my K20D. Idiosyncratic results were desired - all measuring was by thumb and some things (like the author) are a touch off centre. You'll probably need to improvise as you use your own "found" materials to make similar lenses. (Note, resolution of sample images has been greatly reduced in order to make the .pdf fast to download.)

Pentax Point and Shoot 35mm Lens

1. Brutally rip the front and rear lens elements from the carcass of an ESPIO 90MC 35mm point-and-shoot (\$3.00 from Goodwill.) Other cameras would likely be as good - but it's nice to have a Pentax lens. If your DSLR is Canon or Nikon - you could look for a point-and-shoot of the same brand.
2. Fit rear element into hole drilled in PK body cap.
3. Fit front element onto accordion hose from dollar store funnel.
4. Adjust hose to desired length (5cm seemed about right) - you need to almost be touching the front element to the rear element for infinity focus. You can temporarily mount the lens and check the focus range.
5. Glue everything with contact cement and leave to dry.

Optional: I modified body cap so that it "locks" but this lens is so light that I wouldn't bother doing that. I made a very similar lens to this (shown last) using a an old Meopta Belar 4.5/75MM enlarger lens. The only difference in the construction was that there was no separate lens element to attach directly to the body cap. Results were sharper - and you end up with control of aperture. I found the dreamy results of the Pentax lens more pleasing. This lens is lightweight and convenient.



Results for the Pentax Point and Shoot 35mm Lens

Results have a gentle dreamy softness to them - although fairly decent focus can be achieved. By tilting the lens you can "anonymize" people who would normally be in focus or get blurry areas where you want them. The lens is probably around f8 - focus is easy to achieve. Leave the accordion hose longer for closer macro. I've cropped the samples and adjusted brightness/contrast.



Schneider-Kreuznach Componon 1:4/50

1. Enlarger lenses are cheap, sharp, and readily available. I am fond of my old enlarger and wanted a way to continue to use part of it now that I have gone digital. (I did turn my enlarger into a projection digital clock... and may later turn it into a photo projector using the guts of a LCD photo keychain... but that's another story.)
2. An 75mm (and up) enlarger lens can easily be made into a DSLR lens using the method shown for the Pentax lens (See the Meopta lens at the end.) Just leave an empty hole in the body cap.
3. I had a nice Schneider-Kreuznach Componon 1:4/50 lens that I wanted to use. Unfortunately, the 50mm lens needs to be too close to the sensor (or the film) and I could not use the design for the Pentax lens. (The rear lens element would have to extend behind the body cap --- not impossible but I'm not taking the risk that the mirror would nick it.) My lens came with the threaded ring to lock the lens onto a board. You'll have to improvise if you don't have one.
4. I realized that adding an inexpensive old Vivitar 2X converter would allow me to safely use this lens to use on my camera. This build is very easy. No glue - just scissors and an exacto knife. There is a risk that the enlarger lens may scratch the front element of the 2X converter. I've added a plastic ring to help reduce that risk.
5. Get a scrap of mountain bike inner-tube from your local bike shop. Stretch it vigorously, scrub and wash it. Dry it. Then cut out the biggest square that you can make.
6. Cut a small hole in the centre of the inner-tube square. Stretch it and pull it over the threaded base of the lens.
7. Cut a hole in the end of a black film can so that it fits fairly snugly over the threaded base of the lens. Fit it over the lens.
8. Put the 2X converter on the test camera. Hold the film can/inner-tube/lens combination up to the camera. You want to trim away the film can until it fits against the 2X front element giving you infinity focus (while still keeping a plastic rim to prevent the back of the enlarger lens from scratching up the front element of the 2X converter.)
9. Lock the lens/inner-tube/film can in place with the threaded ring. (Try a small cable tie perhaps if you don't have a ring.)
10. Centre the lens over the 2X converter. Stretch the inner-tube around. Tie it all down tightly with a long cable tie (I used 2 ties together because mine weren't long enough.)
11. Trim off the excess inner-tube.
12. Take pictures. Adjust the aperture. Twist and stretch. Pretty cool!



Results for the Schneider-Kreuznach Componon 1:4/50

Like the Pentax lens you tilt to distort and push and pull to focus. Unlike the other lens, you can have full control of aperture and you can have very sharp results when you desire them. My shots using this lens aren't very impressive - but show the potential for better results. The truck photo shows how you can radically blur parts of the image. Other images taken with this lens look like shots from a half-decent 100mm.



The Nippon Lens

1. This lens comes from a toy camera that has broken many hearts. Apparently the "Nippon" has often been sold by con-men who convince people that it is a much more expensive camera. I remember that my uncle had one in the 80s and paid more for his than he was willing to admit. Anyway - mine came from Goodwill - cost \$2.
2. I trimmed the lens out using tin-snips but really you can probably be more brutal with it. I discarded the attempt at an iris that comes with this lens. I'd estimate that it's about f4 wide open. (I've kept the screw-on flash mount - may use it on something else.)
3. The lens comes with a goofy filter cover - worth reading the info around the rim. I left this on to add to the blur.
4. The inverted cone inside the lens reminded me of the old screw mount macro lenses --- and not surprisingly -- the final product is a very near-sighted lens indeed!
5. By the way -- my camera came with a nice hunk of lead in it to add to the weight - please dispose of that safely and keep out of the hands of children. (Yeah... made in China --- but back then we also had lead in our gas...)
6. I had a M42 to K mount adaptor that I purchased online - not realizing that the locking flange would also prevent infinity focus. (Only buy the adaptor that fits completely inside the body - unless you want the adaptor for macro or bellows and you don't need infinity focus.) You can also use a regular body cap instead - and you'll get even closer focus. I wanted to get this lens a little closer to the sensor --- this lens can be in "focus" if the object is about a foot away. If you use a thicker material (body cap) to connect it to the camera - the maximum focus will be less than 1 foot.
7. Discard the outer layer of the lens (see stacking cups in photo.) They are just decoration and using them would hold the lens a bit too far away from the body.
8. Glue the lens to the K mount (body cap or adaptor ring.) I used glue gun glue than can later be pulled off the metal adaptor ring if I choose to use it for something else.
10. Enjoy your Holga-ish macro Magoo ! (Yes it is absurd that I've made my K20D a focus-assist, aperture-priority, image-stabilized, Holga....) If you don't want this lens to be macro - try using it in front of a 2x converter.



Results for the Nippon Lens

I've boosted the contrast a touch. Moody myopic macro.





The Meopta 4.5/75 Enlarger Lens

Built with basically the same steps as the Pentax lens, the use of the 75MM Meopta enlarger lens gives you control of aperture. However, this lens is heavier and needs to be used with greater care or it could easily break. Be careful that using the contact cement does not gum up the aperture ring, when gluing the lens to the accordion hose. Wider section from funnel was used as lens-hood. I glued a garden-hose washer onto the rear of the enlarger lens - so that there would be more gluing surface when affixing the lens to the end of the hose. You can run around with the other lenses I made -- but you need to treat this one more gently. (If modifying a DSLR for UV photography, I've heard that shooting with an enlarger lens is great as it is unlikely to have any anti-UV coating.)



Above shot shows deliberate blurring of left side of image.



Focus and let go - lens springs outwards blurring time exposure.