Camera and Lens Testing Tips

by Robert Monaghan

Lens Faults Article (Editor's notes)
Lens and Prism Recoating FAQ
Quick Tests (Editor's notes)
What should I look out for? (from FAQ)

Related Links:
Lens Test Charts and Instructions
Pentax Lens Resolution
Bob Atkin's Doing Your Own Lens Testing
How to test your lens (William E. Sadler)
How to Buy a Hasselblad by Lance Karp, Mr500CM
Second Time Around - Buying Used Gear Guide by David Howard

Abstracted Articles:

Marty Forster's List of Camera Breakdown...
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Postings:

Cyber Ghost's posting on Testing New Equipment
Jeff Span's posting on Lens Testing
John Wall's Photo FAQ listing of Lens Testing Resources Online
Camera Repair FAQ
What to look for in a new/used camera
Doing You Own Lens Tests
Shutter Testing
Lens Testing Chart and How-to-use Info (2/1/98)
Lens Tips/Choosing
Manual Camera Budget Buys (added Sept 1999)

Related Photography and Camera Testing Links
Top Ten Myths of Photography (Robert Monaghan)
Tamron/Bronica's How to Buy a Lens Guide
Cleaning a Camera by Philip Greenspun
What to look for when buying a (Used) Rolleiflex by Harry Fleenor
Robert Atkin's Lens Testing Methodology
Where to get Test Targets
USAF test chart on CD
Testing Super Tele Lens
First Attempt at Lens Testing - It's Tricky!
David Ruether's article On Checking Lens/Film-Plane Parallelism
CALIBRATING YOUR SHUTTERS by Andrew Davidhazy
How to buy a Camera Article

Testing Bronica ETR lenses by Rick Rieger [10/2000]

Quick Tests:

Here are some suggestions on what you can test with a few rolls of slide film. Slide film is suggested for all the reasons highlighted by Cyber Ghost in his/her posting below.
Be sure to also review the many issues raised by postings and collected net-wisdom online.

- Check for light leakage. Unmounted slides are usually cheaper and can show you light streak problems at the edges of your film. Many possible causes including worn out film backs. Fast film and exposure to strong sunlight helps bring these problems out.
- Check for uniformity between exposures. A major problem with early Bronicas is worn film advancing gearing, either in the body or backs. If in the backs, the problem will get worse with one particular back. If it is the camera body's worn gearing, expect a major repair to fix.
- Shoot the northern sky in bright daylight at a variety of aperture and shutter speed combinations. This test will highlight problems with shutter speeds or slow response in closing down the lens with automatic diaphragm operation. If you use matching settings, you should get uniformly exposed and identically exposed slides. Problems might be due to either sticky lenses or shutter speed problems, among other issues. If it is the lens, then switching lenses should alleviate problem.
- Shoot with X-synch setting and strobe to ensure x-synch is working and properly timed. For a non-film based test, see X-synch Testing.
- Check focusing. Some earlier Bronicas had problems with lens focusing mount wear. Action should be smooth and accurate in both directions. Focus on a near object, focusing towards infinity. Focus in from infinity on the same object. Is the focus point the same in both cases? Repeat with different distances. The truly paranoid will want to break out tape measures or known accurate 35mm camera/lenses to cross-test their lenses. Generally speaking, the marked distances on camera lenses should be highly accurate, especially on the nikkors.
  A common problem in older cameras is focusing problems caused by deterioration of camera mirror foam (see postings and below). This problem is easier to fix than lens focusing mount problems.
- Test the lens(es). I like to shoot a well lighted brick wall using a tripod and look for lens problems. You can also find some test targets you can download and laserprint to create your own lens test setups. See John Wall's excellent Photo FAQ for a number of sources. For your convenience, the lens testing listing is below.
- On auto-aperture Bronicas (EC-TLII..), perform checks to ensure this feature is functioning properly. Similarly, check the electronic shutter and displays of the TTL meters on metering prisms and so on. Another camera or spotmeter can be used to double-check the internal or prism meters. Check the extremes of brightness and darkness for operation.
- Check overall operation, including:
  - removing the back and remounting
  - removing the waist-level finder and remounting
  - removing the lens(es) and remounting
  - removing the helical mount and remounting.
- Listen and feel carefully for gear binding or similar problems.
- Gently shake the camera, listening for rattling and loose screws.
- Remove the lens and watch the mirror flip up during several (non-film) exposures.
- Look carefully for scratches on the mirror, ground glass markings, or other distractions.

- Does the pop-up magnifier in the waist level finder work? Does it fold down properly?
- Are there any signs of dents or other blemishes that suggest dropping, scratches around screws or other evidence of amateur repairs, or other finish problems?
- Is there any sign of corrosion in battery compartments (EC series)?
- Examine the lens rear and lens mount carefully for signs of wear, missing or loose screws, and looseness when lens is fitted.
- Check the lens for smooth operation of aperture rings, focusing mechanism, and look for scratches or blemishes on front and especially rear of lens (worse optical effects at rear).
- Check the plug insert and back. Does the latch stay down? Can you switch from 12 to 24 and back easily (16/32 on model E)? Can you remove and replace the plug insert? Is it bent from loading film? Are the gears on the insert worn?
- Does the shutter locking ring work, or is it loose? Does a shutter release cable work smoothly? Does the shutter trip smoothly, or is it sudden or jerky?
- Don't forget to check for stripped or worn tripod mounting fixture.

From: jeffspan@webspan.net
Subject: nikon lens
Date: Sat, 27 Dec 1997
Newsgroups: rec.photo.equipment.35mm
Derek:
I am a camera tech. for 27 years with high experience on almost any camera and lenses.
To make sure your nikon lens is working properly, follow the following instructions.
1- turn focusing ring end to end with constant speed, if it moves freely with no noise, it is ok.
2- turn f stop ring end to end, it should feel clicking and no resistance.
3- leave f stop at highest setting (16-22-32 etc.); the diaphragm should close all the way. Look from both sides of the lens, the blades should be clean, with no oil or stain.
4- Actuate diaphragm lever with rapid speed. Lens aperture must open and close rapidly (no delay).
5- Mount lens on the camera and look at a long distance object while focusing it. If the image is focused at the infinity sign of the lens, then it is ok.
Any of the above is correct test for any kind of nikon lens.
jeff
From: "TravGlen" fuzzie@zeus.jersey.net
Newsgroups: rec.photo.equipment.35mm
Subject: Re: nikon lens
Date: Sun, 28 Dec 1997
This is great advice for anyone buying a lens. I would just add that you should look through the lens from both ends at a bright light, to check for internal dust, dirt, grime.
[Editor's note: Worry more about fungus or lens element separation around the edges. A small amount of dust will have minimal impact on image, but fungus damage is another more serious problem. Lens element separation can be serious, but is rarely reported in Bronicas.]

From: jf7wex@miyagi.prug.or.jp (SUZUKI Ryuji)
Date: 09 Jan 1998
Newsgroups: rec.photo.equipment.35mm
Subject: Inspecting lenses
In article "lotus" lotus@grin.net writes:

I bought not one, but two, XA's which later turned out to have mottling on the rear element, early mold growth caused by leaving the film in the camera (it is close to the rear element) in a damp area for a long time. (I got fooled because the front element looked fine.)
Inspecting lenses in general.
For checking fungus, cloudiness, scratches, deterioration in the balsam used to cement a group of lens elements, and most of the damage on photographic optics can be easily found if you look through the lens to which a flashlight is pointed from the opposite side. Try various combinations of direction to look and point the light into.
Of course, make sure you have a small flashlight in your bag when you look around for a lens. If your car has one and if you drive to the dealer, you know where you should bring it from.
--
Ryuji Suzuki
s11751rs@UMassD.Edu
North Dartmouth, MA

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rec.photo.misc #57641
From: planxan@aol.com (Planxan)
[1] Re: Fog in Lenses?What to do?
Date: Wed Jan 07
Fog does not belong in a lens! You didn't say how many years or what kind of camera, but one common thing in very old lenses is fungus. To the naked eye it can look like fog - you need magnification to see the filaments. The fungus usually grows on the glue used to cement elements together. If this is the case you won't fix it - use it "as is" or throw it out if it shows badly. It _will_ get worse.
If it's really water vapor, it's probably in-between elements which are not cemented. This would be simple for a knowledgable repairman to fix. An even cheaper fix (if it's water vapor) is to pack the camera in an air-tight back with a dessicant such as good photo supply stores sell (about $10 for a pouch). This stuff is intended as a first aid remedy for a camera that got rained on in a surprise shower. It sucks the moisture out of a camera fine, but the mineral deposits left on glass and mirrors still has to be tended to (at least the metal parts won't corrode). If it's only a tiny amount of moisture, there may not be enough mineral deposits to matter once the water is gone.

From: spirit@nonet.com (Cyber Ghost)
Newsgroups: rec.photo.equipment.35mm
Subject: Testing New Equipment ---- for Newbies! Listen up!
Date: Fri, 26 Dec 1997
Buying a new or second hand camera can be a traumatic time. The expense, trouble, and the choice is enough to drive one to distraction.
But one thing any new camera owner should do is test the camera.
Two ways to do this is to use a dummy film, buy the cheapest roll available and run it through the camera testing all the functions. Rewind and reload - one might need to use a cheap film extractor to retrieve the film leader to reload the film. The purpose is to see if the camera is operating, physically as it should. It might appear to work empty or at one particular DX setting, switching to auto from M (manual) often discovers a pup immediately. Many traders set the camera to M as this produces the best response to auto focus and motor drive - no waiting for focus confirmation etc, and many cameras will not use all their functions without the DX information from the film. Any camera you see set to M is suspect straight away, though it must be said in defense of traders that this setting also uses the least power and no trader want to show a camera that goes flat immediately because it was switched on in the showcase for the last week.
Next buy one roll of SLIDE FILM, otherwise known as transparency film.

Test all functions of the camera, auto exposure, compensation, flash dedication, focus - tracking, etc. Do not use all the film on one subject and use flash as well as available light, never mind the subject - try to avoid taking actual 'pictures' you want to be subjective of the camera at this point. Send the film away and get it back uncut or unmounted. You want to see what's going on throughout the role.
UNDER NO CIRCUMSTANCES DO YOU USE A COLOUR NEGATIVE FILM AND SEND IT TO YOUR LOCAL MINI LAB FOR TESTING PURPOSES!
Other than testing the actual lab -- it is useless in testing the camera. OK!
MINI LABS WILL;
*Compensate for:
* under or over exposure*
* filters*
* Colour Balance*
* latitude of the film*
Therefore a test film can be badly under exposed and produce useable prints. Filters will (largely) be ignored so will appear bad value and of little or no use --(not true as filter are very valuable!) Colour balance will be adjusted to suit the last film run of the machine. If you are unlucky enough to be the only Kodak film in a batch of Fuji then the Fuji filtration is used. Further the operators will judge the films balance which can be from blue for mauve to red for the same colour.
Mini labs produce negatives to suit their equipment and the faster ones use the film's latitude to produce flash capable thin negs. If your equipment is already under exposing then your negs are even thinner and you might think that you can only shoot in bright light - as film looses sensitivity the longer it is exposed (and needs more exposure to compensate) so your Opera or stage shots are totally ruined.
Slide film is not subject to the same variances and so produces the best set of 'masters' to be referred to for various situations. If your slides are dark then your camera is UNDER exposing. If light then the camera IS over exposing. If they are discoloured then the camera IS leaking light and further evidence should be detected in the slide border. Shots taken with filters will show their true worth --- worth one roll of film to se this alone! And the beautiful sunsets have colours never before seen. Night shots are unbelievable and available light can have beautiful orange colours < suitable for some subjects and can be filtered out with the appropriate filter --and you WILL see the results.
I am not selling slide film and they are not to every ones taste and are not the most suitable all round material.
But they show up camera and photographer technique like NOTHING else will.
If you want to know what your camera is doing, buy one roll of slide film and really look at the results. If you are testing a new or second hand piece of kit it is essential.
Buy!
Happy snapping!

Some additional tips from Bronica FAQ:
What should I look out for in buying a used Bronica classic camera?
Some vintage cameras get reputations for problems, both deserved and not. While only a small fraction of users may experience these "common" problems, you don't want to be one of them. If your camera does **not** have these problems when you buy it, you may experience years of trouble-free happy ownership with minimal camera care.
The last of the all-mechanical Bronica camera line, the S2A, replaced the earlier brass gearing of the S2/C and S series with a much more rugged and reliable steel gearing. This fact partially explains the S2A reputation for ruggedness, as well as its being the last of the all-mechanical cameras.

Be sure to carefully check the film advance, especially in the earlier pre-S2A cameras. Shoot some film, and look for problems with film advance (such as overlapping frames). Use a second film back to determine if a film advancing problem lies in the body or worn gearing in the back. Don't use TMAX or other thick film, according to some posters (see postings).
The lens focusing mounts on some of the early Bronicas were also problem points, so if you are buying an S or earlier camera, check this area out carefully too.
Over time, the mirror dampening foam on all cameras often deteriorates, although the foam can be readily replaced. This deterioration can cause shifts in focusing, but it may be readily fixed if this is the sole cause. See Replacing Deteriorating Foam article online. [Ed. note: site down as of 1/2001]
Be sure to check out X-synch framing with some strobe photographs too. See our X-synch test page for a simple way to test strobe synchronization using glow-in-the-dark darkroom tape.
The electronic EC models used a split mirror design that could be very difficult to get into and maintain in precise alignment (a particular problem with telephoto lens users). This split mirror design also requires a different bellows for EC models.
While not a mechanical or electrical problem, availability of regular and especially polaroid backs and prisms and similar accessories can be an issue with some models.
Finally, you should read through the Netwisdom Postings to learn more about various cameras, problems, and solutions from other users.
Refer to used camera purchasing guides online and from published sources such as Shutterbug Ads and photography magazines and books. Consider paying a local camera repairperson to check out your camera too during a warranty period or before buying.
If you need an experienced Bronica repairpersons, see our Bronica Repair Facilities page for a list. Be aware that parts availability is always an issue with older cameras. Moreover, Bronica mechanics are among the most difficult and challenging to repair in photography, so forget about do-it-yourself approaches or inexperienced repairpersons.

Marty Forscher's List of Camera Breakdowns..
(From March 1978 Popular Photography, extracts below)
Mr. Marty Forscher is a legend in the camera repair field, having honed his skills in military service and at Professional Cameras Repair in NYC.

1. Check battery
    - replace old or dead batteries with known-good new ones
    - check for corrosion
    - are batteries inserted right?
    - clean contacts with pencil eraser
    - keep battery clean (fingerprints can cause leakage currents)
    - remove batteries if storing camera
2. meter
    - is meter erratic? try moving aperture/shutter speed thru extremes
    - vigorous action in above may scrape away salts from ocean spray..
    - use sunny-16 rule to test meter, see if it is malfunctioning
3. automatic diaphragm
    - esp. a problem in cold weather
    - open camera back, trip shutter, does diaphragm stop down sluggishly?
    - try stopping down before you shoot, or use wide open with right shutter
4. focus
    - check focus at infinity when lens set on infinity
    - problem? is lens loose? shake lens.

- try another lens - trouble remains - it is body problem
- has ground glass or focusing screen slipped out of place?

5. shutter speed
    - does shutter sound right?
    - open camera back, point at light, trip shutter, can you see light?
    - if camera back can't be opened, white business card on film plane, can you see it all?
6. flash synch
    - test fire flash with camera back open, looking thru lens at wall
    - Can you see full frame lit up? if not, or if just partial, synch problem
    - can use slower shutter speed, may synch, but also more ambient light
    - be sure you aren't using M setting or other bulb setting, but X setting
7. know your controls
    - mirror lockup a favorite - no image
    - read manual, know controls
8. dropped camera
    - oops - check camera, focus, wind film, focuses at infinity? maybe okay
    - use moderate tele (100mm on 35mm) not wide angle
        some wide angle lenses set by factory to focus beyond infinity to pull edges into focus
    - falling on lens may be less damaging than falling on body
    - if out of adjustment, lens may still focus on groundglass okay
    - falling on back, push film plane forward, can't see or adjust it easily
9. camera dunked
    - if on surface only, carefully dry off, keep water out of camera guts
    - if inside, bad news, esp. electronic cameras, whether fresh or salt water
    - all mechanical cameras, chance to repair, no guarantees on what follows:
    - suggests if salt water dunking:
        - put in fresh water bath,
        - open up flooded camera,
        - take off lens, prism if removable
        - slosh camera in fresh water for half hour or so, constant water changes
        - vigorous sloshing, get salt out
        - try to operate shutter, controls, movement to flush out salt
        - now blow out camera with compressed air but be careful not to blow shutter out of position
        - dry camera, he suggests warm oven at 120 degrees until completely dry
        - try to operate the camera during process from time to time
        - again, no guarantees on any of this stuff, but its nice to know? ;-)
10. flash synch failure
    - check jacks on camera and flash, and cords for continuity
    - environment problems - wet, salty air, high humidity, cold to hot air?
    - try cleaning contacts with pencil eraser
11. shutter malfunction
    - sometimes exercising shutter helps, esp. if sticking or hanging up
    - if in doubt, use 1/60th or 1/125th, usually most reliable speeds, last to go
    - highest speeds are most vulnerable
12. film won't advance?

- is it really 20 exposure film and not 36 like you thought?
- if it locks at 21 exposure number, suspect above
- counter may malfunction, getting 36 shots but count says less
- to check, count carefully on a test roll

13. film won't rewind
    - some cameras hang up in mid-frame
    - changing bag is solution
14. erratic built-in meter
    - CdS cells have a memory side-effect after pointing at very bright light
    - wait a few minutes, try again, may return to stable function
15. auxiliary meter out of adjustment
    - block meter cell, is meter on zero?
    - try adjustment screw to re-zero with cell covered up (selenium cell)
    - could be coil problem -
        - check zero with meter held vertically
        - check horizontally to left
        - check holding horizontally to the right
        - not consistent? pick one position, and zero and use it that way only
    - if meter is consistently off, consider adjusting ASA to compensate
16. under-exposure with wide angle lens
    - backlighted subject is small size on wide angle, bright background predominates
    - move in and take and freeze meter reading, then back off
17. rain
    - protect camera
        - shoot thru plastic bag,
        - lens shade holds bag on,
        - cut away plastic for lens
        - opening for viewfinder, use tape
18. condensation
    - going from cold to warm air produces condensation
    - plastic bag to hold camera, squeeze out air, condensation on bag and not camera
    - if shooting right away, warm up lens with hand, shoot before condensation starts
    - Beware: if water condenses inside camera and go outside, it can freeze and damage camera!
19. dust on lens
    - blow off dust with ear syringe
    - dust off with clean lens brush (be wary of contamination on brush)
    - blow of any dust loosened by brush
    - clean with lens cleaning fluid and lens tissue
    - hint: keep lens tissue in plastic (zip lock) bag to keep out dirt
    - rear of lens needs to be clean too
    - fingerprint has more impact on lens rear than on lens front
    - caution: few drops of fluid is enough
20. dust in the lens
    - grit under lens flange?
    - business card corner under the edge of focusing mount
    - slide or turn mount, often this will get out sand or grit
21. dust on the camera

- half inch paint brush can clean off camera
- Qtip or lens tissue around stick moistened with lens cleaning fluid
- use above to clean metal, plastic, leather etc.
- use minimal cleaning fluid, not enough to run-off into camera guts

22. dust in the camera
    - small paint brush, half-inch size, to dust out interior
    - ear syringe to blow out dust in hard to reach places
    - ***never use compressed air on cameras, cools and condenses water in camera
    - ***compressed canned air may also leave oily residue from propellant
    - be careful and don't blow on shutter blades etc. as could mess up alignment
    - avoid mirror and viewfinder screen air blowing, except from ear syringe
    - dust on above won't impact film image, so ignore them
    - blow out film chamber, esp. if film chips debris in there
    - periodically clean camera film pressure plate
        - ordinary detergent and water, moisten fingertip, wipe off plat
        - wipe dry with clean tissue
        - reduces static charge (dust attractor) and deposits, less scratches
23. camera bags and cases
    - vacuum cleaner attachment and clean out regularly
24. loose screws
    - tighten screws periodically if they loosen up
    - especially common issue if you fly, due to plane vibration
    - screwdriver should just completely fill the slot (not too small)
    - tighten only finger tight
    - a speck of clear finger nail polish under the screw head will help keep them from loosening up again
    - use a tip of toothpick to apply tiny amount under screwhead
25. rewind mechanism
    - open camera back and rotate shaft with tip of finger
    - should be no resistance
    - caveat emptor: suggests if resistance, use speck of fine watch oil or silicant lubricant (Lubraplate)
    - put speck on shaft and rotate few times to distribute oil
26. flash and PC connections
    - suggest carefully bending PC center pin slightly off center so makes positive contact with hole insides
    - use needle nose pliers to reduce diameter of connector's outer rim
    - this will give PC cord of flash better contact, less slippage
27. frozen lens shade or accessory
    - don't force it if frozen, to avoid damaging focusing mount
    - apply 1-2 drops of penetrating oil to seam
    - tap gently to help oil penetrate threads
    - above may loosen up accessory
    - problems caused by grit/dirt or cross-threading
    - wipe threads clean and lubricate often
    - use minimal oil - just enought to fill tip of needle on one part of threads
    - screwing parts together distributes lubricant evenly
28. warning:!!

- DON'T BE HEAVY-HANDED!! cameras are delicate, use a light touch always!
- don't slosh cleaning fluids around, moisten lightly, rub gently
- don't use 3 in 1 oil or household lubricants, use fine watch oil or silicone lubricant (see above)
- a tiny speck of lubricant is all it takes
- above ideas will help preserve camera and gear, keep you shooting

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Body Focus Testing

Michael Neidich - Shutterbug Ads Feb. 1984 p.52 - abstracted below:

Body focus defects are hard to detect since we view through one optical path while taking picture through another path. Body focus problem occurs when the image in focus on SLR groundglass is not in focus on the film.

Depth of field may mask this problem, but it is most apparent when shooting closeups or wide open aperture shooting.

Here is a simple test using scotch brand magic tape and a 10x magnifier. Setup camera on tripod, open camera back, and stretch piece of magic tape across film guides vertically. Focus on well lighted high contrast object preferably with dark straight lines.

Look through viewfinder and focus. Use any aids such as waist-level magnifier or accessory magnifier.

Now look at tape, acting as ground glass, using magnifier. Move lens focusing ring back and forth. Determine if the most accurate viewfinder focus point matches that seen with the magnifier and tape.

If it doesn't match, recheck by focusing using magnifier to set precise focus. Now check through viewfinder. If the viewfinder (e.g., split prism image) is not in perfect focus, you may have a body focus problem. See your camera repair person.

SLRs can go out of adjustment, and this test can be performed periodically and especially on newly purchased cameras, new or used.

[Ed. comments: I am not sure that this test is completely accurate, especially using the vertical alignment approach to position the tape. On a Bronica, you might check with film insert removed, ground glass against the inside of the back. But even here, I think this test may be hard to execute with accuracy.

My personal suggestion is to get the narrowest depth of field possible (closeup, wide open, well lighted subject with crisp lines to focus on). If you have extension tubes, use them to get a very narrow depth of field and sharp focus point. Take photos, being very careful with focusing, using film magnifier. Look at resulting slides or negatives closely with magnifier loupe. Are they sharp? If not, you may have a focusing problem.

Another focusing test I have seen advocated uses a yardstick propped at a 45 degree angle against a wall. With camera on a tripod, focus carefully at or near the minimum focus distance, aperture wide open. Take a series of photographs. After each photo, de-focus and refocus, preferably from both directions on different photos. Examine the slides or negatives directly (not prints). Is the target marking on the ruler in sharp focus? If not, is focus point in front or behind the target marking? Is it consistently in front or behind? If it is inconsistent, you may have a problem with focusing, a surprisingly common problem amongst photographers. If the problem is consistent, you may have a focusing misalignment. If the problem is the same with different lenses, you would suspect a problem with the camera body. If only one lens shows the defect, the lens is presumably at fault.

Another trick from Cora Wright Kennedy's columns in Popular Photography uses a pencil in a similar shallow depth-of-field focusing effort. Carefully focus from a tripod. Mark focus with light pencil scratch. Turn lens to one side. Focus critically again. Check the pencil mark. Is it

centered or off? If it is off, you may need more practice focusing, rather than being a camera issue. Try it from both directions.
Another of her tricks is to learn to focus quickly, not slowly, relying on proper focus to snap out. This trick is especially helpful with wide angle lenses which are hard to focus. Slowly creeping up on focus point with wide angle lens is often harder to properly focus than the quick focus trick.
Check your eyes. With age, our eyes start to go. Consider getting adjustable magnifier hood (on Bronicas) or use of eyepiece correction lenses on other cameras. Some prisms (Nikon HP) are better for eyeglasses than others, but these same prisms may be worse for non-eyeglass users.]

Buy a Used Lens With Confidence

Mr. Bob Shell, Shutterbug Ads, December 1986, p.32, abstracted below
Shutterbug Ads is the **best** place to buy used equipment, but how can you buy a used lens with confidence?
Begin by calling seller, asking about lens condition, known problems, and what warranty or return privileges are offered.
Start by shooting some pictures with the lens.

- use varying conditions
- different f/stops
- different distances
- check closest focus point
- shoot backlighted subjects as test for flare
- do the photos meet with your satisfaction?

Check the lens mechanically.

- shake the lens
- slight soft diaphragm rattle is okay, anything more is trouble
- clunk sound is loose element - major repair required
- loose elements problem, sometimes right place and work okay, often not
- loose elements in the wrong place can produce fuzzy pictures

Look through the lens.

- look at light colored object, operate diaphragm (lever or pin usually)
- set to intermediate f/stop - operate diaphragm, does it go to same size every time?
- if size varys, so will exposures, and inconsistent results follow
- does it change size at each smaller setting, or bottom out at f/11 etc?
- if it bottoms out at f/11 or f/16 etc., it may need adjustment to work
- use magnifier or glasses if needed and carefully inspect outside of lens
- look at front and rear lens surfaces for scratches or marks
- hint: use bright light from the side
- few rub marks or scratches make little difference
- watch out for larger scratches which can scatter light
- hint: filling scratch on lens with black paint cuts down on scattering
- open diaphragm wide open, look toward light subject
- look for internal dust - few specks not a problem, but lots of dust can be
- look for tiny spidery lines - fungus!!
- fungus growth must be removed for lens to work properly
- fungus may etch lines on lens, can't remove without repolishing lens

Check for mechanical integrity:

- turn focus ring both ways several times
- should move smoothly, just a tiny bit of resistance
- rough spots, grinding, scraping, all bad signs obviously
- set lens to closest focus, hold rear of lens in one hand, front in other
- can you make the lens wobble? is there any play?
- wobbling is sign of excessive wear or loose screws and requires repair

Mr. Shell notes that as a working photographer, he has bought all but one of his lenses used through *Shutterbug Ads* and saved substantially.
[Note: These are very good guidelines, and you can tell that Mr. Shell was also a noted camera repairperson prior to becoming Editor of Shutterbug]

Lens Flare Testing
From Shutterbug *Lens Flare Definitions and Solutions* by Don Garbera, p. 38, March 1989 Mount lens on camera on tripod in darkened room and view candle or other small point source of light through lens. Use a multicoated prime lens with low flare levels for comparison. Change f/stops, and move the point of light around in the image area. Besides showing flare, you may also be able to see distortion of the light point into a *comet-like tail shape* near the edges of the field of view (called coma aberation)...

Abstracted From: To Buy or Not To Buy
by Frank Zemaitis from Oct. 1980 Shutterbug Ads p.4
[Ed. note: Mr. Zemaitis is a camera repair person with more than 55 years of experience, and still going at it! (see note below)]

Things to Look For:

- Important to know previous use pattern, hard professional user vs. amateur
- avoid hasty decisions - regret later
- perform examination
- look for excessive wear
    - smooth and worn spots in leather
    - brassing at body corners, wind knobs and levers
    - excessive film wear evidence on pressure plate and spool clips
    - Loose and sloppy fitting film rollers
- look for corrosion
    - watch for traces of rust and corrosion around screw heads
    - check creases and crevices for rust too
    - Corrosion damage to body chrome implies internal trouble too
- sand particles in viewfinder windows implies future trouble
- look for oil
    - oil stains or oil residue on shutter blades or diaphragm leaves
    - should be dry, if oil, needs cleaning
    - real chance of near future breakdown
- Check the shutter curtains:
    - are focal plane shutter curtains soft and supple
    - if hard and brittle, shutter fabric breaking down
    - look for little vertical cracks, or sticky and tacky surface
    - using strong light, look thru camera at light, looking for holes in shutter
    - sunburn spots or cracks or holes are all indications of needed repairs
- Listen:

    - listen to sounds, esp. slow speeds
    - self-timer - how does it sound? no hesitation is normal
    - chatter implies bearings may need lubrication (e.g., Leicas etc)
- Check shutter:
    - Look at plain, brightly lit background (cloudless sky)
    - any visible variation in background brightness implies problems
    - most noticeable at higher speed settings
    - if dark on one end, implies delays in shutter and needs adjustment
    - bad cases, maybe no opening at all at some speeds
- Check the lens:
    - remove lens, manually operate lens diaphragm lever; is it smooth, steady?
    - look in lens for dirt, paint chips, dust, cloudy looking condensation stains
    - rainbow rings or small star shaped flaws relate to faulty lens cementing
    - check lens front surface for digs, gouges, scratches
- Check X-synch
    - remove lens (or use largest aperture), connect up strobe, set to X (not M)
    - leaf shutter lenses - higher speed, for focal plane, X-sync setting
    - with leaf shutters, if in sync, bright round circle of light seen
    - any restriction, or star pattern, is an out-of-sync condition
    - any portion of focal plane that is dark also implies out-of-sync
- light meter checks:
    - compare to known good meter
    - use neutral evenly lighted scene
    - are batteries fresh in both cameras if CdS types?
    - selenium cells deteriorate after 5-10 years, producing overexposures
    - can adjust selenium cells 2-3 stops, but more requires new cell
- rangefinder and SLR tests:
    - test both ends of focus scale -closeup and 2-3 blocks away
    - split or super-imposed images should follow focusing smoothly
    - image should be bright, contrasty
    - if dark or weak, implied dirty beam splitter mirror or windows
    - check pentaprisms on SLRS - surface deterioration
    - cloudy or streaky viewfinder image (costly repairs)
- film tests:
    - expose a roll, fine grain film, tipod, various aperture settings, sharp target
    - is result sharp as expect?
- local repairman check:
    - can overview camera
    - test synch, camera meter
    - estimated tuneup or repair costs
    - reliable model? camera repairperson knows reputation, trouble spots
    - are parts available?
- No guarantees, but the above may help!

[Ed. note: I was pleased to receive the following note regarding Mr. Zemaitis' continuing involvement!]

Date: Thu, 22 Jul 1999
From: Frank Zemaitis fzemaitis@sabratek.com
Subject: My Dad's camera testing tips

Greetings!
My Dad was pleased to see his camera testing tips posted on your Camera and Lens Testing Tips page. I would like to point out that he has worked for 55 years in cameras and continues to work (part time). Old habits are hard to break :^) If you would be so kind and have to time please update the article.
Thank you,
Frank M. Zemaitis Jr.
(P.S. If you do update the site don't say "was". He still "is" :^)
[Ed. note: got it ;-) I've updated it to reflect his continuing involvement ;-) Congrats!... bobm]

Quick Zoom Check
Abstracted from: Aug 1988 Popular Photography p.60 article by the Editors

Check:

- How does it look?
  - dents or scratches?
  - dents imply rough handling, possibly out of alignment internal optics
  - check lens threads - try mounting a filter
  - scratches on barrel okay, but on glass will lower sharpness
  - brassing means heavy use - probably worn out internally?
  - shake it - does it rattle? if yes, that's bad
- check it on camera
  - fits securely?
  - all features work with your model that should work?
  - all exposure modes work too?
  - check to see aperture shuts down by looking thru camera back and lens and shooting
- is it mechanically sound?
  - move slowly all zoom controls - smooth? no scraping noises? no hesitation?
  - some older zooms had split cams, so may have a spot where more resistance
  - are barrel parts tight and not wiggly?
  - are all screws present? undamaged? unstripped? painted over to hide damage?
- does focus shift as you zoom?
  - longest focal length, focus on closest possible object
  - now zoom to minimal focal length - is it still sharp?
  - if not, that's focus shift - impacts some designs, so check another lens
  - if all lenses of that type shift, live with it or get different brand
- does the lens creep?
  - one touch (one collar does focus and zoom), pull collar out to maximum
  - point vertically upward, hold only camera body
  - better zooms don't creep or slip down, minor problem when shooting
- trial period?
  - ten days, in writing, recommended minimum.
  - use time to check zoom with film
- is the zoom sharp enough?
  - use ASA 25 to 100 slide film, tripod, medium distance, sunlighted day
  - focus carefully, use all zoom ranges, all apertures
  - do same with another lens you know how it works and like
  - compare results using 10x magnifier, esp. corner and center sharpness

        - at 10x virtually no difference should be visible in sharpness
- check linear distortion
    - find horizontal venetian blinds or straight lines (building roof)
    - shoot at minimum and maximum focal lengths on zoom
    - do lines bend in (pincushion distortion) or out (barrel distortion)
    - okay for nature, but maybe not architecture if distortion is bad
- proper exposure?
    - medium speed 36 exposure roll of black and white film
    - infinity focus, photos at close distance, subjects very close to lens, a few inches
    - pictures may be unsharp, that's okay
    - use different surfaces, light, dark, many colors, long and short focal settings, all apertures
    - should get 36 gray spots on the contact sheet, exactly equal
    - if not, test with second lens. Same results? could be camera meter
    - if not, and second lens does, you may have a lens problem
- check flare
    - zooms produce more flare, subjective call, can you live with it?
    - backlit picture, sun behind object but just behind or out of view
    - use a lens shade for test
    - compare against single focal length lens
    - zoom probably has more flare, but can you live with it?
    - subject should still be recognizable
- check vignetting:
    - wide ratio zooms may vignette, esp in corners at shortest focal length
    - shoot plain wall or sky at wide (28mm) setting
    - look for pronounced picture corner darkening
    - look under slide mount if mounted slides used
    - a little darkening under the mount may be okay

How to Test a Lens - and You Should

Abstracted from: Popular Photography Tech Section by Cora Kennedy p.38 Oct. 1965

How to test?

- charts (disfavor) vs. how we use the lens?
- but we need standards to compare
- recommends shoot in specific ways, controlled conditions, and compare
- learn how lens performs at various distances and apertures
- suggests four shooting distances:
    - closest focus setting
    - 10-12 feet (telephotos may need more)
    - 30 to 50 foot range setting
    - infinity
- use same test subject for each lens
- at closer distances, lens test charts useful tool
- easy to setup, flat, easily lighted, useful for comparisons
- for 30-50 foot, shoot outdoors, similarly infinity shots
- TRICK! turn camera diagonally from corner to corner of frame
- why? more useful than when sky occupies these areas (more info)

- check focusing problems with 45 degree angle test, using vertical focusing line down lens center
- lens wide open, 5-6 shots, focus at closest setting
- is depth of field and sharpest focus about equal on either side of line?
- if not, seek repairs for forefocusing or backfocusing problems
  [ed. note: I usually use a yardstick at 45 degrees for this test]
- humans can focus poorly too
- ensure film plane parallel to lens chart
- focus carefully
- tape fine graph paper over front of lens so it has a fine line aligned to focus point
- make equivalent exposures at all apertures at this distance first
- repeat, using wider apertures only, moving distance marker over 1 millimeter
- usually can shoot series at f/5.6 of f/8 except with long lenses
- use 1, 2 and 3 mm shifs on either side of the lens
- this provides you with the best focus, usually sharp, despite human focusing errors
- keep good record (can photo details on chart itself, use post notes etc)
- use light box, strong 20x or 30x magnifier, with slides or negatives
- watch details, standardize
  [Ed. note: this test also tells if you tend to focus ahead or behind the actual focus point, a common error many are not aware of but can learn to fix]
- your eye becomes educated over time, compare lens tests with many lenses, and with friends
- how does central sharpness vary from widest to smallest aperture?
- now look at edge sharpness with decreasing aperture
- how is image coverage (clearing of image edge to edge)
- compare different distances
- expect differences at wide apertures, with less density or contrast
- these disappear as you stop down usually
- these tests are very useful and informative, less subjective
- enables you to learn shooting strengths and weaknesses of lenses
- Chart:
    - sturdy tripod?
    - cable release
    - fine grain film (slow or medium speed)
    - even lighting
    - same lighting as for earlier tests?
    - film plane parallel with test object (small level helpful)
    - close distance, check distances with ruler
    - careful focusing?
    - note: with rangefinder split image, focus at center only
    - record/photography identifying data
    - equivalent exposures (match EV, close down aperture, open up shutter speed)
    - checked to ensure not fore-focusing or back-focusing (see above)
    - check to see if you fore-focus or back-focus (1,2,3mm offset tests above)
    - outdoors? is it a calm day? breezes can cause tripod vibration

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[Ed. note: A useful test tip from a noted camera repairperson]

Date: Mon, 26 Jan 1998
From: Richard Knoppow dickburk@ix.netcom.com
Subject: Re: [Rollei] Cleaning Tessars
The way to tell if the lens has gotten hazy is to open the shutter and shine a flashlight through the lens. Any haze or other crud in the lens will become immediately apparent. Also check the finder lens. Haze there will reduce the contrast of the finder image and make it harder to focus. Cleaning the finder lens requires actually more disassembly than the taking lens and will also require re-setting the correlation between finder and taking lens. The is perhaps better left to a repair type person.

Richard Knoppow
Los Angeles,Ca.
dickburk@ix.netcom.com

[Ed. About scratches in glass and coatings:]
Date: Wed, 28 Jan 1998
From: Bob Shell bob@bobshell.com
Subject: Re: [Rollei] Re: German Glass
Peter,
Most optical glass is pretty soft stuff, particularly in comparison with window glass and such. I don't think the German glass is necessarily any softer than the Japanese stuff. Coating has a lot to do with it. In many cases small scratches, which dealers like to call cleaning marks, really are not in the glass at all but in the coating. Modern coatings are much tougher than older ones.
Bob
[Ed. Bob Shell is an experienced camera repairperson and editor of Shutterbug magazine]

Date: Wed, 28 Jan 1998
From: Mark & Sue Hubbard hubbard@humboldt1.com
Subject: Re: [Rollei] Re: German Glass
Peter,
I experienced the same thing, even to the point that the taking lens on my old 2.8F Planar would scratch but the viewing lens did not. I agree with Bob, however, that I think it was the coating that got scratched, and I never noticed any effect on the pictures I took with that camera.
Mark Hubbard
Eureka CA

Date: Fri, 30 Jan 1998
From: Doug Braun dbraun@scdt.intel.com
Subject: [Rollei] More babble on coatings and cleaning
My humble observations:
I think coated lenses are more likely to remain in cood condition because any damage done by cleaning is very conspicuous, even if its effect on the image quality is minimal. But uncoated lenses can basically be ruined by cleaning and still look "shiny". It's only when you carefully shine light through them and look through them that you can seen the zillions of tiny cleaning scratches.
I was looking at an older 2.8 in a shop last weekend, and I noticed that the taking lens had too many cleaning marks to make it really worth using (especially for the asking price...), but the viewing lens was basically fine. Obviously the previous owners were very concerned that that they get the most out of their fine taking lens by always keeping it clean, and ended up ruining it in the process. Because they paid less attention to the taking lens, it survived...
Doug Braun

Date: Fri, 30 Jan 1998
From: Richard Knoppow dickburk@ix.netcom.com
Subject: Re: [Rollei] More babble on coatings and cleaning
Taking a pencil flashlight along when buying lenses or cameras is a good idea. when shined through a lens it will show up any scratches or haziness right away.

Richard Knoppow
Los Angeles,Ca.
dickburk@ix.netcom.com

Testing Camera Gasket Seals
Date: Wed, 21 Jan 1998
From: doregan@ibm.net
Reply-To: doregan@ibm.net
Next time you load a fresh roll of film, leave the lens cap on anf cover the eyepiece and then do a couple of exposures with a bright light shining on the camera back. Try 1/2 second or longer just to really test the seals. If the film is not exposed, you're O.K. for now.
Dennis

From: Tony Galt galta@gbms01.uwgb.edu
Newsgroups: rec.photo.equipment.35mm,rec.photo.misc
Subject: Re: Tips for buying used F3 ?
Date: Sat, 17 Jan 1998
One thing that I have noticed on many used F3s is that (looking at the camera front) the plastic ledge under the right side of the prism mounting platform (over the lens mounting button) is often broken out or cracked. This is the piece in which you will find a little translucent housing for the infamous f stop illuminator. I did not notice this when I bought mine.
I suspect this results from clipping the plastic corner with the lens mount when rapidly changing lenses. I fixed mine with a little black liquid rubber--just enough to keep dust out. In my case, there was no effect on camera performance, but this problem may indicate hard use.
Since then, I've been conscious of this problem and when inspecting F3 bodies found the same problem over and over again. Here's a place where Nikon should have used metal rather than plastic!
Tony Galt
On 17 Jan 1998, ERNEST TRENGGONO wrote:
2. What are the specific inspection need to be performed on a F3, knowing that it could have been used heavily?

From: Jean-David Beyer jdbeyer@exit109.com
Newsgroups: rec.photo.equipment.large-format
Subject: Re: Calibrating Weston Master II
Date: Fri, 06 Feb 1998
Richard Knoppow wrote (in part):
tlt@lexis-nexis.com (Troy Tanner) wrote:
I have a Weston Master II meter that appears to work however, I don't know if it is accurate. Anyone know where I can have it checked for accuracy or recalibrated? Best Regards,
Troy ----

Hi Troy, You might try Quality Light Metric 213 467 2275 They are in Hollywood and have a good reputation. However, you can check the meter by comparing it a known good meter. Either a self-contained meter or a camera with TTL metering can be used. All you need is an evenly illuminated surface which is large enough to fill the field of view of the two meters.
Bear in mind that if you have more than one meter, you can drive yourself crazy trying to compare them. This is because they may have very different color sensitivities. Selenium, cadmium sulfide, and the various silicon cell detectors all have different color sensitivities. My cameras (with meters) are pretty well calibrated, as are my hand-held meters. But comparing them can indicate up to about 2 stops difference in luminance when measuring the same target if you are not careful. I have found that the target should be a neutral color (a gray card, or a white card are fine) and they should be illuminated by sunlight (to get the response the meters are expecting). When I do that, the meters I have read within about 1/3 of a stop. But using incandescent, fluorescent, sky-light (with no sun), or measuring colored objects (pale blue wall in one of my rooms), the vast differences obtain.
--
Jean-David Beyer
Shrewsbury, New Jersey

Date: Tue, 10 Feb 1998
From: "Arno G. Weiss" weiss@sendai.astr.tohoku.ac.jp
Subject: Re: how to inspect a used body?
Bischoff bischoff@bora.dacom.co.kr wrote:
I am planning to buy a used body. By the way thanks to all those who advised me on the best choice. Can somebody tell me what are the basic things to check before buying, to make sure it is in good condition? (I am after a mechanical body).
Check foremost the following things:
1. accuracy of shutter times. If possible, get it timed using an electronic timing device (some dealers have that). Otherwise, shoot a roll of SLIDE FILM [not prints!], varying f-stop/time combination (keeping exposure constant), to see if there are any rough inconsistencies.
1a. accuracy of short times -- sometimes, on an old mechanical body, short times are not executed properly, resulting in a partially unexposed negative/slide. The film test above will check this.
2. accuracy of flash-sync. shoot a couple of frames (on film) using flash, at fastest sync speed and longer times. see if the flash really fires on time, and not too early or too late. (Of course, using a faster time than x-sync with flash will naturally result in a partially unexposed negative/slide...)
3. metering. Check that the metering is consitent with e.g. another camera or hand held meter (e.g. using a grey card) OVER A RANGE OF EXPOSURES (light levels) -- a consistent offset is ok (can be compensated for by adjusting ISO on the body), but every inconsistency over a range of luminosities will make you unhappy.
4. overall condition. Check for obvious damage external and internal (e.g. shutter curtain/blades), signs of battery leakage in the battery compartment, misalignments in the finder, etc. If you see any of this, reject.
Best to get some return policy (no questions asked) for a couple of weeks. Otherwise, include the risk of anything that you couldn't check for turning up later in the price.
Best regards,
Dr. Arno G. Weiss
Astronomical Institute, Tohoku University, Aoba, 980-77 Sendai, Japan

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From: Kerry Thalmann K.Thalmann@worldnet.att.net
Newsgroups: rec.photo.equipment.large-format
Subject: Re: Where find front standard screws?
Date: Thu, 15 Jan 1998

Hi David,
Funny you should ask. I have relied on two companies for parts for my do-it-myself camera projects, and I have received new catalogs from both this week. The first is Small Parts, Inc. (800-220-4242 or smlparts@smallparts.com). Among other things, they sell nickel plated brass thumb screws in sizes from 4-40 - 1/4-20 and nickel plated brass thumb nuts in the same sizes. The second company is Reid Tool Supply Company (800-253-0421). Their main catalog is chock full of great parts for do-it-yourselfers, but of even greater interest is the new Jan/Feb 1998 New Product Supplement that just arrived today. They have greatly expanded their already extensive line of knobs, thumb nuts and thumb screws. Many now come in stainless steel, brass and aluminum in a variety of styles. They also now come in many of the smaller sizes useful for camera projects. Thumb screws from 4-40 - 1/4-20, thumb nuts from 2-56 - 3/8-16 (also metric sizes). You should find something that not only fits, but even comes close to the finish and material of the original (not a perfect match, but passable). Of course, I have no affiliation with either company except as a very happy customer of both.
Kerry

SUMMARIES OF PUBLISHED TESTS AND CHARTS FOR DO-IT-YOURSELF TESTING
(from John Wall's Photo FAQ)
http://exc.com/Photography/
http://www.ferrario.com/ruether/articles.html
http://www.fcinet.com/ruether/slemn.html [old site?]
http://f-server.cs.hks.se/~nicke/private/photo/lenstest/
http://www.par.univie.ac.at/~bob/photo/
http://www.cmpsolv.com/photozone/
http://www.ai.sri.com/~luong/photography/35mm/
http://i31www.ira.uka.de/~klaus_s/LensSurvey.htm
http://ptolemy.eecs.berkeley.edu/~murthy/Canon.html
http://home.hkstar.com/~peteln/bobby/photo.html
http://www.phys.rug.nl/mk/people/aue/nikon/grover.html
http://i31www.ira.uka.de/~klaus_s/lenssurvey.htm
A postscript version of the USAF 1951 testchart is also available by anonymous ftp from butler.hpl.hp.com. See the directory jacobson/photo.

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rec.photo.marketplace
From: Walrik Walrik@freemail.nl
[1] Re: Nikkor Zoom-Best single, general purpose lens?
Date: Tue May 12 15:00:39 CDT 1998

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Marc G. Koenig, M.D. wrote:
>
> I think I have decided to buy the Nikon N70. If I only buy one lens
for
> general purpose, what is recommended? I would like to keep it under
$600
> and since it be my only lens for now, size and weight are important
> considerations. I was thinking about the 28-200mm. Is the 28-120mm a
> better choice? How do they compare on size/weight and quality? Are
there
> others you would recommend? Thank you very much.
> Marc Koenig
> marck@inetnebr.com
```

Hi
Maybe you get a little wiser from those links:
http://cameraquest.com/links.htm

http://home.ait.ac.nz/staff/rvink/photo.html

http://www.webnw.com/~camera/nikon-lens.html

http://www.zaiko.kyushu-u.ac.jp/~walter/nikon.html

http://math.amu.edu.pl/~modrzew/menuen.html

http://home.ait.ac.nz/staff/rvink/nikon.html

http://f-server.cs.hks.se/~nicke/private/photo/lenstest/lenstest.html

http://www.phys.rug.nl/mk/people/aue/nikon/grover.html

Bye bye walrik

From: vrae@hotmail.com
Newsgroups: rec.photo.misc
Subject: How do you test lens sharpness?
Date: Tue, 26 May 1998

> I would like to test the sharpness of my lenses. I've got a 17-35,
> 28-105, 70-200 and a 300mm. I read once that shooting the classified
> section of the newspaper was a good way.

There are many, many ways to test optical lens quality (so many that even those that do this kind of thing for a living can't always agree...). There are what I'd call comparative tests ("gee, my 28-105 is sharper at 80mm than my 70-200") and absolute tests ("at 50mm and f/4, my 28-105 zoom resolves 70 line pairs per millimeter at the center, and 52 lp/mm at the worst edge").

First, it helps to decide what you want to test. Resolving power is important (and is perhaps easiest to test). So is contrast, light fall-off (uniform edge to edge brightness), flare control and freedom from distortion. Each of these parameters will vary, depending on aperture, near focus/far focus - even things like temperature, type (and age) of film, etc...

Then, you'll need a set of test charts. I use the one from the Edmund Scientific company (609-573-6250, Resolving Power Chart, about $20). The Rochester Institute of Technology also makes a very good test chart that you'll see mentioned frequently. You might want to have a few of these charts depending on how seriously you plan on testing.

The next step is to setup your test environment. You'll need a temperature stable area where you can mount your camera and the target at standardized distances. Many people recommend a distance of 25x the lens focal length for longer lenses, or 50x focal length for shorter lenses. To the extent that you keep the image size constant, you'll find it easier to compare different lenses' performance.

It's very important that the camera (actually, the film plane) and the test chart be kept absolutely parallel to one another. If you get edge results that differ significantly, suspect parallelism problems.

Make sure you use the same film for all tests. Most people use a slow, fined grain slide film like Velvia. If you are comparing lots of lenses, try to shoot film from the same batch, and try to have your processing done together (all rolls in the same tank).

For lighting, I personally prefer electronic flash, since the short duration of the flash helps minimize any camera motion (of course, you're using the sturdiest tripod you can get your hands on for all this...). Plus, since I've calibrated my flashes quite closely, I can verify that f/4 is letting in twice the light of f/5.6, for instance.
Take multiple shots at every lens opening, being sure to focus very carefully.
Use your camera's mirror lock-up and self timers (if so equipped) to minimize camera motion.
Take off any filters. Some people include a color/gray scale so that you can verify exposure, too.
If the images of the test chart is too small, you can either move closer or use multiple test patterns. Make sure you keep track of all exposure/distance information so that you'll be able to correlate lens performance later on.
When you get the slides back, you'll need a microscope capable of somewhere around 150x magnification. Look at the slides under the microscope and you'll see that somewhere along the chart, the individual lines stop looking like individual lines, and sort of blur together. With this number in hand, you can easily compute lens resolution. You'll probably want to make yourself a chart at different lens openings, and at center versus corners. You may also want to try different distances (especially for macro lenses).
That's just a small introduction. To learn more, you might want to get copies of the procedures that the big photo magazines use, or pick up a few books on optics. As you can see, serious lens testing is a time-consuming, sometimes complex process.
Good Luck, and be sure to share the results of any tests you perform!

Date: Fri, 22 May 1998
From: "Roland Vink" roland.vink@ait.ac.nz
Subject: Re: More on dust (but this time in an FM2T)
> ... while travelling aroung Madagascar my FM2T picked up quite a bit
> of dust in the mirror box (my F90x seemed to fair better on this score).
> When I look through the finder there are all these really ugly black
> flecks. I have carefully dusted within the mirror box with a blower
> brush but with little success. Is it possible that dust can get within
> the prism? And if so, can I somehow open it up myself?
Neil,
The dust you see is on the surface of your viewfinder screen (dust sitting on the mirror would not be in focus and would not show up, except for a slight loss of brightness or contrast in the viewfinder). Use a clean brush to dust the lower surface of the viewfinder screen, at the roof of the mirror box. If that does not work, the dust is on the upper surface of the screen. To clean the upper surface you need to release the frame holding the screen in place so you can remove the screen. If you have ever changed a viewfinder screen, you will know what to do. If you haven't, either contact me directly, or take the camera to a nikon servicing agent, it should only be a 5 minute job.
Roland.

Date: Mon, 08 Jun 1998
From: raoul@olympus.net (Jeffrey E. Benedict)
Newsgroups: rec.photo.equipment.medium-format
Subject: Re: Do lens sometimes underexpose?
keithw@southwind.net wrote:
> >I just got some pictures back from the lab that were perhaps 2 stops
> >underexposed from what I thought they would be. I was using the 180 lens

> >for the Mamiya TLR. I normally use the 135 lens for my portrait work but
> >decided to use the 180 for a tighter head shot. I had the shutter
> >overhauled about 2 yrs ago and haven't used it a whole lot lately. I was
> >using shutter speeds 125 and 60 sec. Do the shutter speeds in this range
> >get stuck on the higher speeds?

Time to do a test! Load up a roll of film, stick the camera on a tripod and point it at something. Put the 135 (or another lens you are satisfied with) and shoot half of the roll at 1/15, 1/30, 1/60, 1/125 and 1/250. Put the 180 on and shoot the other half of the roll in the same manner. (Obviously, adjuct the f/stop for the correct exposure) Develop the roll and make a contact. Each of the photos should look exactly the same. If the 180 looks slow, work the shutter a whole bunch of times and make another test. If the 180 still looks funky, send it in...

Jeff

From: Lanier Benkard lanierb@econ.yale.edu
Subject: Response to What's the best way of testing a used lens?
Date: 1998-06-22

As far as inspecting the lens goes, someone mentioned holding the lens to the light, which is a start, but a *much* better test is to take a small flashlight and shine it through the lens. This will show ALL the lens's defects right away. In fact, after doing this the first time, you will probably find yourself going back to your other lenses and checking them out too because you will likely see a lot of crap that just doesn't show up any other way. If the lens has the slightest bit of cloudiness anywhere you will see it with the light. Of course real-world tests are also important. The light just helps with initial inspection.

From: Scott Eaton wseaton@mindsprin.com
Subject: Response to What's the best way of testing a used lens?
Date: 1998-06-19

One of the simpliest checks for any lens is to simply hold it up to the light and see how many defects are in the glass. You can also check for lens fungus that way.

One thing that most photogs NEVER check with older lenses is the functionality of the apeture diaphram. By default lenses are wide open but you rarely see then when the apeture is closed to a certain F-stop. 9x out of ten photographers blame their shutters for bad exposures when in fact it's the diaphram sticking open. While holding the lens in your hand close the apeture down all the way and then manually work the diaphram open and closed. The motion should be smooth and not stick.

As an example, about 50% of all 35mm off brand lenses (Tokina, Tamron, Vivitar) that I've used has severe diaphram problems. MF can be just as bad because the components are larger.

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rec.photo.misc
From: "Only Me..." dgreg@globalnet.co.uk
Newsgroups: uk.rec.photo.misc,rec.photo.misc
[1] Re: Lens Advice for a beginner
Date: Fri Jun 26 08:44:33 CDT 1998

K.C. Mushambi wrote in message ...
>Should I try to find a zoom lens, or a few fixed focal length ones? I
>found a ~80-200mm (Sigma) and a ~35-135mm the other day (I'm not sure what
>f-stop though...is that the right term, f-stop?). Would those be good

>buys? I don't have much money, and would probably be buying used. Should I
>look out for anything when checking them out? What brands should I avoid?
>
>I am mainly interested in portraiture, still life, close ups, and
>landscape in B&W.
>
>thanks
>
>kuda
Your choice of lens depends upon what you wish to photograph, and how important quality is to you. If you have a very form idea of what you want to shoot, buying separate (prime) lenses will give you better quality than a zoom lens generally, but modern zooms are good, and shouldn't cause you a problem, unless you are being very critical about quality.
Firstly, with the subject matter you have specified, you would not ordinarily want a long telephoto lens, or zoom, and the 35~135 sounds like it would do everything you want. Quite wide for landscape, and medium tele for portrait. However, try to find a lens that offers a macro (close focus) facility for your close up work. A better bet would be a zoom with a 28 mm wide setting though, as 35 is really a bit too restricting for landscape.
Fortunately, lenses for your camera aren't too expensive, as a quick look in this weeks AP has just informed me, e.g. second hand Vivitar 28~105 #80. That would be a good lens for you if quality isn't paramount. As for quality, try to stick to a reputable manufacturer, i.e Sigma, Tamron etc. and you shouldn't go far wrong. Also, try for the fastest lens you can afford (lowest F-stop number - yes you were right about that :-)) Personally, I would stick with these two (Sigma and Tamron) as they appear to be about the best third party lens manufacturers, and offer good value for money.
What to watch for? OK, if your buying zooms, avoid any with extreme slack, or play in the zoom mechanism, especially if it's a one touch design (single, combined zoom and focus ring) as this indicated heavy use, and/or possible damage. Focusing, and zooming (on a manual lens) should be firm, but silky smooth; if it's not, reject the lens. Check that the aperture diaphragm is working ok. remove both lens caps, and look through the lens. Then rotate the aperture ring to ensure that the diaphragm moves as you select each f-stop. Check (visually) that the lens elements aren't marked in any way. There's no reason for the glass to be damaged in any way, even if the lens has been used professionally, and if it is, again reject it. Most people take care of their gear, and will fit a UV or Skylight filter to their lenses, simply to protect the front element, so unless the lens is REALLY cheap, don't buy one that's marked. Cosmetic damage may not be indicative of a bed lens, and if the above checks are ok, it's purely a matter of choice, especially if there's a warranty with the lens - try to avoid a tatty looking lens though, as even if it works fine, it's a sign that it's had a hard life. Also look out for mould and fungal growth inside the lens, on the lens elements. Check that it focuses OK: That infinity can be focused, and that distances on the scale roughly correspond to the real distance, at all focal lengths.
Finally, check that it meters ok. To do this, point your camera at a wall in the shop your buying the lens from, and using your 50mm, take a light reading at various apertures (your 50mm will be much faster than the zoom, so start at the lowest that the zoom can be set to). Write down the readings (shutter speeds your camera suggests), and then try the zoom set at 50mm, or the nearest you can get to 50mm. If the zoom doesn't have a 50mm setting, move closer to, or further away from the wall to get the same amount of wall in frame etc. Your camera should suggest the same shutter speeds for each aperture with the zoom lens (remember to use the exact same part of the wall,and that the lighting hasn't changed). If there's any difference, and you're sure that you're sure 50mm is OK, then reject the lens.
If the lens passes all of the above, you shouldn't have too much to worry about.

David.

From: gmac@papercity.win-uk.net (Geoff Mackenzie)
Date: Mon Jun 29 11:12:59 CDT 1998
[1] Re: Russian cameras
DavidM (dmc@cyburban.com) writes:
>oricum@hotmail.com wrote:
>>
>>   mvictoriag@aol.com (MVictoriaG) wrote:
>> >
>> > I have a KIEV60, med format.
>> >
>> >
>>
>> any experiance usig it(TTL meter OK ? curtain shutters working ok?) becouse I
>> want to buy one for landscape pictures.Lenses are sharp?
>> Adrian Sorescu
>>
>Why do you assume that just because his lenses are sharp yours will be?
>Quality control varies from lens to lens.
I'm not familiar with the Kiev60, so I may be talking rubbish....but I assume it has interchangeable lenses? If so, the recommended procedure a good few years ago (when quality control in general, not just for Russian cameras, was nowhere near as good as it is today) was to take a body from the dealer out into the street, put it on a tripod, and run off a roll of film using a different lens for each exposure (making a note of the serial number of each lens, of course!). Then back to the darkroom, see which exposure was sharpest, then go back to the dealer and buy the corresponding lens.
Geoff

From Nikon Digest:
Date: Fri, 04 Sep 1998
From: Vera Britto fiatlux@umich.edu
Subject: what to check for when buying lenses
Someone had asked about what to check for when buying lenses, check out tamron's web site. there's a whole page listed of advice for how to examine a lens, test it, and what to look for.
http://www.tamron.com/tamhome.html

Vera

Subject: Re: How to test a lens
From: "Jim Williams" jlw@nospam.net
Date: Sat, 24 Oct 1998
>What is the best way to test or compare a lens (or lenses if we are >comparing)?
>
>I figure the best thing to do is to take the same picture with both lenses
>and then compare (duh!),
>but, is there anything in particular than makes the comparison process >easier?
>I mean, Is it better to shoot landscapes, portraits, architecture... to make

>the comparison?
>
>What elements (in the picture) should be present (and where) to make a goo
>assessment of a lens?

There is more B.S. on the 'net about "testing" lenses than probably any other photographic topic (except maybe Nikon vs. Canon, or the mythical supremacy of Leica.) Here's my take:

-- Start by thinking about the kinds of pictures you like to make. Decide in which ones lens quality would be most critical. For example, if you like to do family photos, sports, and portraits, I'd guess the portraits are the most lens-quality-intensive; people will forgive a bit of blur in your great shot of your kid sliding into home plate, but in a portrait you're really going to want to see those eyelashes sharp.

-- Think about all the ways you USE your pictures, and decide which uses put the greatest emphasis on lens quality. Again, if you mostly shoot print film and get 4x6s minilab prints, but occasionally "get serious" and burn through a roll of Kodachrome 25 with the hope of getting a shot worthy of an 11x14 Ilfochrome print, the slide film is the most critical. (In fact, slide film is better in general than color print film for lens evaluations, because its emulsion layers are thinner and capable of rendering more detail. Black-and-white film is also a good choice, but doesn't give you a chance to look for defects such as color fringing.)

-- Now, set up a repeatable test situation (or, more likely, several situations)incorporating your "most demanding" subject types. Take all the precautions you'd normally take when you're aiming to produce your very best results: sturdy tripod, good lighting, careful focusing, etc. Load up with the film you'd normally employ for your most critical use, as identified above (probably a slow-speed, fine-grain slide film.) Take a lot of shots with both lenses you're considering, making sure you cover both wide and stopped-down apertures; close and far distances, and any important special capabilities such as macro focusing.

-- Once you've gotten your film processed, examine it under conditions that *exceed* the most critical use you identified. For slides, that probably means examining them directly with a *high-quality* magnifier in the 10x-15x range... or more, if you've got it. Look for: crispness of high-contrast edges, such as eyelashes; good textural definition in low-contrast areas, such as skin and fabric; and absence of defects such as color fringing and flare (check some "specular highlights" such as the glint in eyes or jewelry.) If you're interested in photographing buildings and other architecture, your test pictures should include a suitable subject so you can check for linear distortion (straight lines should be straight.) If you often shoot against the light or into light sources (stage shows, for example) make sure your test shots include a similar situation, so you can check for ghost images and streaks. Also, pay attention not only to the sharp areas, but to the appearance of *out-of-focus* areas. The way they look -- something the Japanese call "bokeh," which has been discussed to death here on rec.photo -- can make a big difference between pleasing and mediocre results, especially in such "atmospheric" pictures as informal portraits and scenics.

This kind of evaluation won't tell you which lens will score the best numbers in a magazine test. But it will tell you which one will be more likely to "score" well in characteristics YOU care about, when used for the kinds of pictures YOU like to make.

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rec.photo.equipment.large-format
From: bg174@FreeNet.Carleton.CA (Michael Gudzinowicz)
[1] Re: Schneider 90mm f8
Date: Fri Nov 27 12:55:17 CST 1998

Tracy Hamby h820@pe.net writes:
>I have a Schneider Super Angulon 90mm f8 that I recently purchased a new
>shutter for from Schneider. All of a sudden it's not as sharp as

>before. I was told that the lens should be "centered". Is this
>something I can do myself?
Maybe. The term refers to the alignment of glass elements in each cell, and cell alignment. The centering is done at the factory when they finish the edges of the elements, glue elements together, machine the cell mounts and mount the glass. It is possible to create a centering problem by dropping the lens and damaging the shutter, in which case the optical axis of each cell is no longer in alignment with the other. If the lens isn't sharp in the new shutter, the shutter may have been damaged. Alternatively the spacing might be off, or there might be a fingerprint or residual oil on the inner/outer cell surfaces.
For a quick check on shutter condition, place a sheet of glass on a stable table and shim it with sheets of paper so it is level in every direction. Place the lens on the glass sheet, and place another glass sheet over the other cell, and check if it is parallel. If the shutter has been damaged, it won't be, and Schneider will replace it. If it passes that test, then check the front to rear cell spacing in the old and new shutter. You can just measure the distances from the outer edges of the cells with a machinist's caliper.
If you want to look for a centering problem directly, there are a couple of approaches which require an improvised optical bench. If the lens is focused on a small bulb filament covered with foil with a pinhole in it (star image), and the lens is rotated, if the image moves around in a small circle when viewed with a microscope, it is decentered. The degree may/may not affect performance. If the image shows coma on axis, you have a real centering problem. The direction and size will remain the same across the field unlike common coma which runs out radially from the lens axis. If the star image is placed off-axis and the lens is rotated, its orientation will vary and size will increase/decrease with rotation.
Note that the image wander may not be present if more than one surface is decentered permitting cancellation. However, decentration coma may still be marked.
Another problem which will arise if the cells/groups/elements are off axis, is that the plane of focus will no longer be perpendicular to the lens axis - it will be tilted with the camera in "neutral".
If you can't sort out the problem (hopefully, its a fingerprint), Steve Grimes might be able to resolve the problem and repair it.

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rec.photo.equipment.misc
From: rmonagha@news.smu.edu (Robert Monaghan)
[2] online Re: Macbeth color checker
Date: Sun Feb 07 04:10:51 CST 1999
see macbeth color checker URL in links page at:
http://www.smu.edu/~rmonagha/mf/links.html
both monitor calibration and printer versions are out there (assumes you havea access to a color printer)
for most general testing of films, the actual colors don't matter much as long as they are stable and over a broad enough range. I've used color sample brochure materials from paint stores as a no-cost substitute. A grey card (Kodak) some test charts downloads to laser printer (see links) and some color swatches, and a piece of posterboard and matte spray, and you are all set ;-) The extra color sample brochures make it easy to compare against slides or prints without pulling out the test chart
if you don't like that freebie approach, the links site to candela corp also has various RGB test color combinations you can print out instead, but the plastic paint samples are more stable colorwise esp in sunlight than most color ink or color laserprinter printouts IMHO ...
see http://www.smu.edu/~rmonagha/broncameratest.html for more on lens tests
HTH - regards bobm

From The Nikon Mailing List:
Date: Fri, 07 May 1999
From: Todd & Sharon Peach tpeach@gte.net
Subject: testing a used camera body
Xiang had questions about testing a used FE.
When I sold cameras retail (put myself through college), we had a five minute routine we'd do at the counter for SLR camera trade-ins:
* Look at camera externally for cosmetics, missing parts, bent pieces.
* Look at film chamber and mirror chamber for cosmetics, scratches, burrs, etc.
* Fire the camera at every shutter speed; listen to sound to see if each speed is half / twice the previous one.
* Mount a flash, open the camera back, point at white wall, fire at x-sync. Verify that the curtains are clear of the opening when flash fires. Bump the shutter speed up a notch, fire again. Verify that one shutter curtain casts a shadow when flash fires. (this pair of tests gives you a very crude calibration that the shutter speeds are accurate at that point in the scale.)
* With a known good lens, fire the camera with the back open at various apertures. Check to see that the aperture stops down crisply (rare but troublesome flaw)
* If the camera has / can take a motor drive, check it's function.
* Do a "sunny 16" check (this was Phoenix, it was always sunny). Sunny 16 rule says that the exposure for an average gray subject in sunny daylight is f/16 with shutter speed = to ISO. Check the reciprocity at this time: change aperture one stop and shutter speed indicated should change one stop as well; walk through a half dozen stops this way if you can. Change ISO setting several times and repeat. Change exposure compensation and verify effect.
* With a known good lens, verify focus in the viewfinder matches distance indicated on the lens barrel. Verify parallelism of the viewfinder path by focusing on a flat object like a wall. Check that the Left and Right, Top and Bottom of the focus screen are in focus at same time (this is subject to how "parallel" one can hold the camera to the wall). This will only catch gross errors.
* Actuate every other control on the camera at least once: self-timer, DOF preview, AE Lock, multi-exposure, etc.
All of the above can be accomplished in real time without film, using no test equipment. It assumes you have some knowledge of the camera in question and access to some known good lenses, etc. The "focus" shifts a bit if you're examining a lens, but the idea is the same.
Since you have 14 days, I guess I'd add:
* Repeat parallelism test more carefully with film. Shoot wide open with a known good lens.
* Verify exposure accuracy with slide film. Use a film that you are familiar with.
* For TTL flash systems (not on the FE), verify it's accuracy with slide film as well.
* Shoot some clear blue sky with slide film at various shutter / aperture combos. This should show any shutter bounce problems.
As I write this note, it occurs to me that there's probably some web pages out there with some of the same common "wisdom" (I hope it's wisdom). Robert Monaghan's page at:
http://www.smu.edu/~rmonagha/mf/index.html
probably has something, but I didn't read through all 100+ links just now.
-Todd--
Todd & Sharon Peach
Seattle, Washington (zone 7)
tpeach@gte.net
http://home1.gte.net/tpeach/NoPlaceLikeHome.htm

From Rollei Mailing List:
Date: Sun, 13 Feb 2000

From: Richard Knoppow dickburk@ix.netcom.com
Subject: Re: [Rollei] Leica acquisition question
At 09:24 AM 02/13/2000 -0000, you wrote:
>Be advised that you should view any older Leica lens through a bright
light
>source at wide open aperture to determine the degree of fogging. It is
>likely to have some. I understand that this resulted from the type of
>lubricant employed by Leitz.
>----- Original Message -----
>From: jerryleh@pacbell.net
>Sent: Sunday, February 13, 2000 4:08 AM
>Subject: Re: [Rollei] Leica acquisition question
>
This is a pretty common effect with all lenses. I am not sure of the source of the haze, it may be from the anti-reflection paint inside lens cells, or from lubricant. In any case, it comes off with ordinary lens cleaner. This haze seems to be nearly universal in sealed cells of lenses of some age. I think one reason some older lenses have a reputation for low contrast is more due to this haze than to lack of coatings or design. The internal haze can absolutely destroy contrast.
AFAIK, Leica lenses are not too difficult to get apart to clean. Pay attention to how the lens comes apart and put everything back as it came out. Don't worry about de-centering. Centering of elements in a mount are determined by the construction of the mount and the glass will be automatically centered if the reassembly is done carefully making sure the glass is seated before tightening.
Inspecting lenses with a flashlight as described here is a very good practice. It will show up not only haze but evidence of flaking paint and blemishes on the glass.

Richard Knoppow
Los Angeles,Ca.
dickburk@ix.netcom.com

From: "Q.G. de Bakker" qnu@worldonline.nl
Newsgroups: rec.photo.equipment.medium-format
Date: Fri, 2 Jun 2000
Subject: Re: Hasselblad "dream" rig...
.....
Buying lenses used can be a fine way to save money. There are some very good ones about. You will definitely have to shop around.
The usual caveats apply. Check the glass for marks. Hold the lens to the light and check for debris, or even fungus, inside the lens. (But don't worry about a little dust). Check the mount for excessive play. A little play will always be present. Extend the lens to its fullest to do this, and hold the lens by the front part (front bayonet region) in one hand, and the back (camera bayonet region) in the other, and twist (very) gently. Dont hold the lens by any of the moving parts (shutterspeed-, aperture- or focussing ring). Check the focussing action for eveness. Check the setting rings for play and smooth action. Engage the depth of field preview lever, and run through all apertures, whilst looking through the lens to see if the aperture will form a regular pattern when closing. And check the leafshutter. Put it on a body, and cycle through all shutterspeeds. Listen and look carefully. The final, and best, test would be to expose some film, running through all shutterspeed - aperture combinations. Have the film developed and check if of all negatives/slides show equal density.
....
Have fun!

From Contax Mailing List:
Date: Tue, 30 May 2000
From: "Bob Shell" bob@bobshell.com
Subject: Re: [CONTAX] Rx going to Hospital
It happens. You'd be amazed at how many brand new cameras come in to us for testing and turn out to have something serious wrong with them. As cameras get more and more complex it becomes more and more difficult to assure quality control. Cameras received with problems have come from the most expensive brands and from all the others. One very high priced SLR was never written up in Shutterbug because the manufacturer never could get us a sample on which everything worked!!!
Bob

From: "Neil Harrington" no.spam.wanted@thanks.net
Newsgroups: rec.photo.equipment.35mm
Date: Sat, 17 Jun 2000
Subject: Re: How do you test camera lens for quality
"Brian" bclark@es.co.nz wrote
> Lets face it Tony, all lens give reasonable result (they wouldn't
> sell if they didn't). What I'd like to know is how to tell the
> difference in a high quality lens and one that gives average results.
> What are the best subjects to photograph and how do I tell by looking
> at photos ?
Probably the best all-around test is to photograph a brick wall (apartment house, etc.) in direct sunlight. Slides are best for this, as they are easier to examine with a strong magnifier than any sort of negative, and will show any light fall-off best. Don't bother trying to examine prints as the results will be more or less meaningless.
Shoot from a tripod and make sure the wall is perpendicular to the lens axis. Shoot one frame wide open and one at each full f-stop, down to f/11 or so. Not much point in going to much smaller apertures as you probably won't see much if any difference beyond f/11.
If using a zoom lens, repeat at each marked focal length, or as many as you're interested in comparing. It's best to move the camera back as you go to longer focal lengths so as to keep the bricks about the same size; otherwise it can be hard to compare them in the final results.
Try to get all the shooting done as quickly as possible, so that the sun doesn't move too much between the beginning and end. If repeating the tests another day, try to do at at about the same time so that the sun will be in about the same position, preferably behind you and to one side, say about the 4 or 5 o'clock position, or 7 or 8 o'clock. Don't do it if the light is hazy as that will reduce contrast and make comparison difficult or impossible.
Examining the slides will show you how sharp and contrasty the lens is from corner to corner, how much this changes from one f-stop to another, how much distortion the lens has at various focal lengths, how much light fall-off there is wide open and at what aperture this clears up, etc. Obviously this is all relative, so it is useful if you have a lens known to be of excellent quality that you can use for comparison. If you have a 50mm standard or macro lens, that should serve well, as most of these are optically excellent.
You may also be able to find USAF lens resolution charts somewhere. Photographing these at some multiple of your lens's focal length (usually 50x the focal length) and examining the negatives (preferably B&W) with a powerful magnifier (preferably 20X or so) will allow you to read lens resolution in line pairs per millimeter. This is the same method that Pop Photo uses to test lenses which for one reason or another they cannot test with their standard MTF procedures. A problem with this is that the test is rather subjective, since determining which block of line pairs on the chart is the last to show them distinctly is not as easy as you might think. Also, it will tell you nothing about distortion or light fall-off. Really I think the brick-wall test is best.

Neil

[Ed. note: besides being a noted pro/glamour photographer, photo workshop instructor, and editor of shutterbug and author of various books, Mr. Shell is also a noted former repairperson...]
From Contax Mailing List:
Date: Fri, 21 Jul 2000
From: Bob Shell bob@bobshell.com
Subject: Re: R: [CONTAX] OT help needed for a gift

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> From: "Andrea Bracco" andibracco@tin.it
> Reply-To: contax@photo.cis.to
> Date: Sat, 22 Jul 2000
> Subject: R: [CONTAX] OT help needed for a gift
>
> I think you say "avoid the "lemon""...
> thanks
> andi
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Andi,
Open up the camera back and look at the pressure plate. You can tell how much film has been through a camera by how much wear shows on the plate. (Except on Contax with ceramic plate). Look at the shutter, both before and after cocking. On cloth shutters it should be smooth and tight, no wrinkles. Look at neck strap lugs for wear, an indication a camera has been carried a lot.
Take the lens off and set it to the smallest aperture (f/16 or f/22 usually) and on the Pentax push in the pin on the back with your finger and make sure the diaphragm closes quickly and to the same size opening every time. On the Minolta it is a lever which moves sideways and opens, rather than closes, the diaphragm.
Compare the light meter in the camera to one of known accuracy if you can. On both the Pentax and Minolta you set the ISO by lifting up on the shutter speed dial and turning until the correct speed shows in little windows on the top of the dial.
BTW, in spite of its name the Spotmatic does not have a spot meter. It is full area averaging, as is the Minolta. The Minolta, as I recall, is more center weighted than the Pentax.
Bob

[Ed.note: Mr. Erwin Putts is a noted Leica lens tester/reviewer...]
From Leica Mailing List:
Date: Mon, 14 Aug 2000
From: "Erwin Puts" imxputs@knoware.nl
Subject: [Leica] Re: Ultron decentring, was Re: 35mm Summicron, version differences
Some Luggers expressed interest in detecting decentered elements with a practical test. In fact only an optical bench or an interferogram can detect decentering, but there is one field test, that will show decentering, if done well. You need to take a night shot of a scene with a row of lights spanning the whole image from a reasonable distance, preferably 10 or more meters. The filmplane and the row of lights (a parking area or an industrial complex that has lights all over a building) must be aligned of course and that is the hard part, at least with an M. But you can use the frame lines to make sure the camera and line of lights are fully parallel to each other. If the lens has decentring, the left or right part of the picture should show the lights with a higher flare and a larger halo and a lower contrast. You need to expose correctly and enlarge a bit, but this test will show decentering if it is severe enough.
Erwin

Date: Mon, 04 Dec 2000
From: Anders Svensson anders.-.eivor.svensson@swipnet.se

Newsgroups: rec.photo.equipment.35mm
Subject: Re: Lens testing help
Blip skrev:
> Okay I buy a lens (Sigma 105 f/2.8 EX Macro) - after having looked at
> the MTF sites and the personal-opinion sites and seen that the lens
is
> excellently rated. How do I test it to check that it's not a dog? Are
> there any sites which will give me step by step info? Anyone here
> help?
>
> TIA

Well, a very superficial way of testing the lens could be to:
1. get slide film of a reasonably well known make that performs consistently well. I like Agfa and Kodak, some like Fuji very much. The film you are used to is the best, of course. Print *film* can be used, but most people can not judge color negatives very well. Paper prints are almost meaningless to judge.
2. Get a tripod (borrow a really good one, if you don't have a decent one already). Testing a 200 mm telephoto is meaningless unless you have a good, stable support.
Then, get some kind of large marker pen and some white material to write on - a small white board and a white board pen (brush off) is ideal. This is so you can add a label for every single shot, like "f5.6 - 200 mm". Without this documentation, careful notes still must be taken and there is still a risk of mixing up the images.
3. Find a brick wall and mark a aiming point (a "X" from masking tape is great) at the same height as the camera lens, when on the tripod. Then, walk away from the wall a suitable amount, I suggest as many feet as there are millimeters in the focal length for ordinary lenses. Now, yours is a macro lens and close range performance is probably what you are after - so you should really test your lens at close range and with a smaller test target. A "millimeter square" paper on a flat surface could be used as a "miniature brick wall" for macro lenses.
Make as sure as possible that the wall/target now is *at right angles* to the camera. Aim the camera so the "X" is perfectly in the middle. Put the white board with the test info below the X so it can be easily read.
This is a easy way of aligning the camera so it is square to the test target, and it is important that it is so - any alignment error, and edge sharpness can't be evaluated at all. If you want it to be "perfect" use a measuring tape and triangulation, however, eyeballing works well enough for me.
4. Take a reference image (or two) with a known, "good" lens, one you already know the capacity of. This is to make sure that there is nothing really wrong with the camera or the film developing. Mark these with date, f-stop, shutter speed and lens designation as well. Be methodic.
5. Start to shoot, methodically, boring images of the brick wall with the lens you want to test. Make sure you do your absolute best with manual sharpness setting, but you have to let the AF set focus as well - see below. Shoot at least nine images for a zoom. One each for shortest focal length, longest focal length and one in between. Then, use at least three f-stops, like fully open, f/8 and f/11. If you want to check AF (more of a camera check than a lens check, IMHO), do that on the largest possible aperture setting, you will want to minimize positive DOF effects for that test.
The more combinations you get, the better, but *make sure you annotate every shot* clearly on the white board or your notes. It might be a good idea to shoot a few images with the "reference lens" inside the test series as well but do mark *every shot* perfectly legible. There is no way you can be sure of what lens, f-stop and focal length setting (for zooms) otherwise.
You may also move the camera and shoot a image diagonally (at a acute angle, say 30 degrees or so) towards the tape "X". Use AF for that shot. This shot will verify that the lens and camera focuses spot on. If the X is sharp(est), all is well.
6. When finished, develop the film and wait for it to return.

Now, look at the images thoroughly. If you have followed my advice with using a board with image data in every shot, it would be easy to judge how sharp the image is for every focal length and f-stop. It will be a bad lens indeed if the text isn't legible :-). Otherwise, you will need to refer to the notes you took.
Use a good loupe, and if you don't own one, a 50 mm normal lens can be used. If you look at the image in a projector, be aware that you add any fault of the projector or screen setup.
Judging the lens's quality in absolute terms isn't possible, of course, but as you have a few (two, at least) known-to-be-good images on the film, I feel that you can use the images for a relative comparison. Note that if the "known-lens" images are sharp and well exposed, it is not likely that there is any other explanation than a bad lens if the real test images are bad. Optical performance isn't the only lens problem, BTW, aperture precision is also a possible fault. Any noticeable exposure density difference is likely to be a lens variation, if the "standard lens" works well.
Look for sharpness in the middle (expect that to be pretty good on every image) and then look at the extreme corners and compare sharpness there, both between themselves and the middle. It will be a little worse, usually and that is normal. If any corner is worse than another, it's more serious (You *did* square up the camera, didn't you?).
Then, take a look at the brick mortar lines, and see so they are parallel to the negative edges and isn't rounded. If they "bend" either way you have distortion. Distortion is not uncommon, but it has to be only a little of it if you intend to use the lens for shooting, say, brick walls (architecture) :-) Straight and level houses are really good 3D test targets, BTW.
Use the diagonal shot to test the AF. If the "X" is perfectly sharp and in focus, all is probably well. If it isn't, but some other part of the image is sharp, something may be less than satisfactorily with the AF mechanism.
***
This is not a "lens test", the way the testers do it, but I would suggest that it is a passable way of making a acceptance test of a new or used lens.
It is probably good enough method to help you win a warranty discussion a little easier than if you just show some less than perfect images and complain about the lens.
--
****
Anders Svensson
mail: anders.-.eivor.svensson@swipnet.se
****

Date: Wed, 10 Jan 2001
From: jgestar@my-deja.com
Newsgroups: rec.photo.equipment.35mm
Subject: Re: How to test second hand lens
> Hi friends!
>
> How do you test a lens when you buy an used one? What things do you look
> for?
First, twist the focusing ring of the lens. It should be smooth through the whole range of focus. Roughness throughout indicates the lubricant is drying up. An area of focus that is much tighter than the rest indicates the lens may have been dropped rather hard (don't buy it!).
Check the aperture blades for oil or grease (bad sign). Set the aperture ring to f16 and push the auto aperture lever until the blades close. Flick the auto aperture lever a few times. The blades should move freely and easily. If the lever or blades have a lot of resistance the lens may give poor exposures (don't buy it). Check the aperture setting ring for roughness or stickiness. Like the focus ring, it should be smooth through the whole range of motion.

Shine a small flashlight back through the lens toward your eyes (but not into your eyes). Any problems with the glass will show up - scratches, fungus, fungus that has been removed (looks like a chunk of spider web got in the lens), dust, lens coating flaws, etc. Shine the light through both ends of the lens. Make sure the outer lens surfaces are clean before you do this. This test shows up flaws that may not effect your pictures. Look at a few really good lenses to compare. Look for any indications that the lens has been disassembled by an amateur. Scratched bezels , burred screw heads, and scratches on the aperture blades are all bad signs (don't buy it). Look for wear on the moving parts of the lens, the auto aperture lever, the edges of the aperture blades, and the lens mount. Excessive wear indicates a lens that has seen a lot of use.
Finally, if you can get any return period from the buyer so you can test it with film do so. When checking the film for sharpness don't look at prints. Look at the negatives. If possible, shoot slide film and look for sharpness and contrast of the lens. Compare to a lens that you like on the same roll of film.
Finally, be patient. Another lens of better quality will eventually show up.
Tom Gould (jgestar@aol.com)

From Rollei Mailing List;
Date: Thu, 04 Jan 2001
From: imagineero imagineero@xv1100.com
Subject: [Rollei] testing focus by projection?
I've been trying to think of a way to test the lenses on my Rollei to be sure they are both focused at the same point. Previously I had done this by setting up the camera on a tripod with a target that is usually a piece of newspaper. The paper is taped to a wall and the camera set at an angle so that the distance from camera to the beginning of the paper and the distance from camera to end of paper is different. I'm sure this doesn't make much sense when I type it, but it is really very simple. I rack the camera out to it's closest focus then move the camera around until the center of the newspaper is in focus. I snap off a few shots with aperture wide open, then develop the (slide) film. The camera is left exactly where it was on the pod while I pop down to my lab that does 1 hour slides. I come back and then adjust the viewing lens so that whatever the focus point was in the slide is now the focus point in the view screen.
While this method works well it is time consuming. I recently thought that I might use the camera as a projector to project a slide onto a wall, and then adjust the viewing lens to be focused at that point. would this work, or do lenses focus at a different point when projected rather than when taking photo's?
Shaun
South Korea

From Rollei Mailing LIst:
Date: Thu, 04 Jan 2001
From: Richard Knoppow dickburk@ix.netcom.com
Subject: Re: [Rollei] testing focus by projection?
....(above posting quotes)
The easiest way to set coincidence is to cut a piece of ground glass to fit the film gate. YOu can see the image directly that way and compare it to the finder.
The depth of field method you describe is perfectly valid and may indicate if the actual film plane is not at the gate due to bowing of the film.

Richard Knoppow
Los Angeles,Ca.
dickburk@ix.netcom.com

POSTSCRIPT:

Snipping...
I forgot to mention this. I use the matt tape on clear glass. Run the tape to the edge of the glass so the whole thing is located by the film rails. You will need a fairly high-contrast image to see the optimum focus point easily.
You can also use clear glass. Make a mark at the center of the glass with either a thin marking pen or by scratching a cross on it. You then check focus by using a loupe focused on the scratch or mark and adjusting focus until the aerial image is in focus. Then move a little from side to side. When the image is exactly focused on the cross mark it will not move when when the angle is changed a little. This is an extremely accurate focusing method but must be done carefully. If your eyes still accomodate (mine don't) you must be careful to keep focused on the cross mark, otherwise your eyes will tend to pull the aerial image into focus regardless of where it is.
BTW, coincidence can be checked at any distance but you will need a very distant object (half a mile minimum) to check for the infinity position.

From Rollei Mailing List;
Date: Thu, 04 Jan 2001
From: Gene Johnson genej2@home.com
Subject: Re: [Rollei] testing focus by projection?
Hi Shaun,
I'll add a method I got from someone either on this list or on ZICG. Carefully put a couple pieces of matte scotch tape across the opening where the film would normally run. get it nice and flat, and be sure you have it across the same "rails" the film runs on. Use the tape like a ground glass. Works great, and costs nothing. I like to do this on a clear night on a tripod, with city lights way in the distance. I also use a magnifier to make sure the image on the tape is as clear as possible. It's kind of fun. Good luck.

From Rollei Mailing List;
Date: Fri, 5 Jan 2001
From: Richard Urmonas rurmonas@senet.com.au
Subject: Re: [Rollei] testing focus by projection?
> This has got me thinking..... to the best of my knowledge there is no
> different adjustment for coincidence between close focus and infinity (nor
> theoretically need there be). As long as the lenses are aligned at one
> point they should be aligned at all others, right? I've always adjusted
> mine at the closest focus point since there was least depth of field
> there. Am I doing something wrong (probably not since my photo's always
> have good focus after this adjustment). I am curious anyway.
Normal practice is to adjust the coincidence at infinity focus. This gives the best resolution for lens-film spacing. Look at the geometry and you will see. In practice infinity focus can be a problem as when you are checking the setting you cannot go past infinity to check it is really at the optimum focus. I generally adjust at 10 metres, this gives me the ability to check optimum focus and also check the focus knob calibration.
Best object to use for infinity check is Venus. It is near enough to infinity, reasonably bright, and a small circle. This gives a nice clear focus indication.
When doing the adjustments I use a 30x "pocket microscope" which gives enough magnification for good repeatability.

Richard.
Richard Urmonas
rurmonas@ieee.org

From Rollei Mailing List;
Date: Fri, 05 Jan 2001
From: Richard Knoppow dickburk@ix.netcom.com
Subject: Re: [Rollei] testing focus by projection?
you wrote:
>This has got me thinking..... to the best of my knowledge there is no
>different adjustment for coincidence between close focus and infinity
(nor
>theoretically need there be). As long as the lenses are aligned at
one
>point they should be aligned at all others, right? I've always
adjusted
>mine at the closest focus point since there was least depth of field
>there. Am I doing something wrong (probably not since my photo's
always
>have good focus after this adjustment). I am curious anyway.
>
>Shaun
>South Korea
Nothing wrong at all. If the lenses are properly matched they should b together at any distance and can be checked at any distance. Perhaps I wasn't completely clear that a distant object is needed only for checking the infinity stop position for both lenses.
I think for coincidence a distant object may be more sensitive since the amount the lens moves to change focus increases with distance. So, a small offset between the lenses will be more obvious for a distant object than for a close one.

Richard Knoppow
Los Angeles,Ca.
dickburk@ix.netcom.com

[Ed. note: thanks to Christer for sharing this tip!]
From Leica Mailing List:
Date: Sat, 10 Feb 2001
From: Christer Almqvist christer@almqvist.net
Subject: Re: [Leica] focus inaccuracies: my test results
snip
>: the point of focus is
>about 1-2 inches (2-3 inches on the slides, but the ruler is at
roughly a 45
>degree angle) closer than the target (the area in which the RF
perceived
snip
I have always found the method you use to determine if the camera focuses correctly (i.e. taking pictures of a ruler at 45 degrees angle) gives results that are difficult to interpret.
In my opinion it is better to draw a thick vertical line on a sheet of paper and stick the paper to the wall. With the camera on a tripod, at the distance you want to test, focus using the rangefinder and make one picture. Then make four more photos, each time turning the lens one sixteenth of an inch in the same direction. Then focus again and take one picture. Then make four more photos, each time turning the lens one sixteenth of an inch in the same direction, but the opposite

direction from the first row of pictures. Repeat the whole thing for infinity (no need to turn lens in both directions here!) and any other distance you want to check focusing for. Open up the lens as much as possible to get shallow dept of field. It helps to put small "post it" stickers on the lens with markings for 1/16th inch, and you may want to include something in the picture telling you which way you turned the lens, at least when you are photographing lines on paper. Then develop the film and look at the negatives with a good loupe. All my Leica lenses (21mm, 35mm and 90mm) focus percectly on both my M6s according to my test as per above.
Chris
- --
Christer Almqvist

From: spammenotydavis@hkg.odn.ne.jp (Jim Davis)
Newsgroups: rec.photo.equipment.35mm
Date: Sun, 25 Feb 2001
Subject: Re: How do you test a lens for misalignment?
"J. Russell" xibor@mail.com wrote:
```
>Ok, let's make this question simpler, since my last post didn't get
answered (grin).
>A lens was dropped on a rock.  The lens fell on the UV filter, but
there  is no
>external damage to the lens.   What is the accurate method of
determining  if the
>optics are misaligned?
>
>THANK you.
```
Shoot a grid using a tripod. If you get the grid squared in the viewfinder, it should be square on the neg. Do the test wide open, and check that it's sharp all over, corner to corner. If you can't find something grid like, just use a large rectangular piece of paper flat on a board or something like this. The main thing is you want to square it up in the finder and check sharpness all over.
webpage: http://www.kjsl.com/~jbdavis/

From: Kirk kirkdarling@mindspring.com
Newsgroups: rec.photo.equipment.35mm
Date: Sat, 24 Feb 2001
Subject: Re: How do you test a lens for misalignment?
xibor@mail.com says...
```
> Excellent, thank you.   So, if a lens was tilted on some axis
(misaligned), would that
> show up as a blur on the grid at the edges of the frame?  Would they
be symmetrical, or
> uniform?  I hope to not confuse aberrations that were caused by the
drop, and those
> inherant in the design of the lens (it's a zoom lens, by the way).
```
Aberrations in the lens will most likely be, so to speak, uniform...that is, the corners are likely to be uniformly unsharp for a given aperture. However, a misaligned element (either from the factory or from your drop) can appear to show the same problem if you can't measure whether the unsharpness in one corner is in the same direction as unsharpness in the opposite corner--or in the opposite direction.
--
Kirk

From: Kirk kirkdarling@mindspring.com
Newsgroups: rec.photo.equipment.35mm
Date: Sat, 24 Feb 2001
Subject: Re: How do you test a lens for misalignment?
....
You'd need equipment to check the element alignment, which not very many independent camera repairers even have.
You'd also have to dismantle the lens to locate any possible damage to threads, bearing races (if your lens has any), etc.
Or you can just do some careful transparency taking on a tripod of objects with detail from center to corners, like a brick wall, at various apertures and compare them under magnification.
--
Kirk

From Rollei Mailing List:
Date: Fri, 30 Mar 2001
From: Richard Knoppow dickburk@ix.netcom.com
Subject: Re: [Rollei] Another Optics question
you wrote:
>Darn, my camera did not have a problem with coma. I checked the test roll of
>film I took yesterday, and saw that all negs were unsharp at one end... So I
>guess the problem is the flatness of the film. Must check the camera.
>
>/Patric
Blurred at one end suggests the lens and film are not parallel rather than film flatness. Check to see that the front standard isn't cocked a little.

Richard Knoppow
Los Angeles,Ca.
dickburk@ix.netcom.com

From Kiev88 Mailing List;
Date: Thu, 24 May 2001
From: captaincog@netzero.com
Subject: How to tell uneven shutter
The most noticeable way is to shoot a bright outdoors skyline shot, or one that has scenery in it, but lots of sky. Then either, underexpose by one stop, or use a filter at high speed. You will then see vertical bands of color/exposure variations. The middle of the picture will be darker than the edges, with the left side usually being the lightest. I have been told that this is from the second curtain being slow to respond behind the first curtain.
Hope I have answered your question,
Jeff Meyer

---

rec.photo.equipment.35mm
From: Bill Tuthill ca_creekin@yahoo.com
Date: Tue May 29 12:09:55 CDT 2001
Subject: Testing barrel/pincushion, distance?

In a relatively recent photo.net pissing contest, I spent time testing the Yashica T4 Super for pincushion distortion. It had virtually none near infinity, but pincushion was quite bad at close distances.
What optical properties would cause a lens to have different distortion levels at different subject distances? Is it generally necessary to test only twice, near infinity and near closest focus, or is it necessary to test more than twice?
Also, how can I measure flatness of field?

From: ca_creekin@yahoo.com (Bill Tuthill)
Newsgroups: rec.photo.equipment.35mm
Date: 31 May 2001
Subject: Re: Testing barrel/pincushion, distance?
rmonagha@smu.edu (Robert Monaghan) wrote
> yep, sad but true ;-) - as y'all have discovered, it also varies by
> focusing and zoom settings etc. as well as inherent in lens design
etc.
For a great example of sample variation, see Jim Tardio's new review of the Nikon 24-85/2.8-4. He bought three (3) lenses before getting a good one!!! The first was unsharp at any aperture, the second better but still inferior to his 28-105/3.5-4.5, and the third one was acceptable.
http://www.jimtardio.com/24-85.html
> rigorous measurements require some rather expensive gear; the usual
> amateur tricks like projecting a slide of flat lines on a lens test
chart
> and measuring divergences from straight lines is problematic - most
slide
> projector lenses are way worse than the typical zoom or fixed lens ;-
(
My method for finding barrel or pincushion distortion is to scan a negative or slide. I very much doubt that a progressive patch scanner would introduce linear distortion. It's easy to use photo editing software to draw a line where distortion is evident. I suppose I could measure the number of pixels off straight and calculate percent distortion...

From Nikon MF Mailing List;
Date: Fri, 18 May 2001
From: Randy Holst mistervolvo@home.com
Subject: Re: Just got a F2 .. Meter testing?
laika@sputcorp.com wrote:
[snip]
> Now I'm wondering what you guys
> do as far as testing when you get a new body? Everything appears to
> be working as it should but I really want to give the meter (DP-1) a
> good test to see how accurate it is. I intend to run a roll of Provia
> 100F thru it over the weekend and do some bracketing. I'll do some
> testing off a gray card and some just from what I consider to be the
> scene average. Is there a better way or am I missing anything out?
Hi Laika,
If I'm checking a camera in a store before buying, there are a number of checks that can be performed very easily. Here are a few critical ones.
1. Mount a 50mm lens on the body and check for proper, consistent aperture stop down operation when you trip the shutter, at each aperture setting. Compare the aperture size to what you get when you operate the DOF lever at the same setting.

2. Check the slow shutter speeds (up to flash sync speed) visually and by listening to the sound of the shutter. There should be a noticeable difference between each speed. (Compare it to a know good camera.)
3. Check the fast speeds by attaching a flash to the camera, removing the lens and opening the camera back. Fire the camera/flash at a white wall while looking through the back of the camera. At sync speed, the entire film frame should be completely open when the flash goes off. At each successive faster speed, more of the film window will be covered by the closing curtain until only a narrow slit will be open at the fastest speeds. (This is another test that becomes easier with practice.)
4. Check for shutter bounce. Perform the same test as #3 above, but removed the flash and aim the camera at a bright light. Firing the shutter at each speed, check to see if the closing curtain bounces open a little (very briefly) after closing, allowing a little more exposure to that part of the film frame. Shutter bounce is bad and will require a technician to correct it. This also takes some practice to identify.
(All of the above are more important than the meter, since an accurate meter is worthless without a properly operating shutter.)
5. Check the general accuracy of the meter. If it's clear sunshine outside at about mid day, aim the camera at the North sky (darkest blue part, opposite the sun), and take a meter reading. The indication should be close to the Sunny f-16 rule.
6. Check meter accuracy at lower light levels with an 18% gray card, against either a known good camera with meter or a hand held meter. Consistency along the camera's metering range is important.
If all of the above checks out, shoot a test roll of ISO 100 speed transparency film, using meter readings off an 18% gray card for accuracy, maybe even bracketing a bit. Take accurate notes and have the film developed but not mounted, leaving it in a long strip, so you know for sure which frame is which. Evaluate the exposures on a light box, comparing the results to your notes. While you're at it, check the image frames for equal spacing. (On an F2, this should be pretty consistent.) Also check for any hint of light leaks on the film.
Randy Holst
Boise, Idaho

[Ed. note: chromatic aberration test tips...]
From Nikon Mailing List:
Date: Mon, 16 Apr 2001
From: "L Shepherd" Shepherdlen@btinternet.com
Subject: Re: [NIKON] AFS 28-70 2.8 scratch/quality control issue?
Hi everbody,
I have six AFS lenses and the 2 dedicated converters and all are fine examples so maybe I have been lucky. The 300 F2.8AFS did arrive with damage to the lense hood knob. However when I ordered mine Nikon UK were out of stock and had one shipped over from France to Nikon UK, then it was shipped to the dealer, who then shipped it to me so I put that down to a shipping problem. A new hood was promptly supplied.. I had a 105 macro D supplied with a small but obvious defect in the metal barrel and rejected it, and the black is starting to wear on the back of one aperture blade on a 35mm f2D after only 4 months so that will go back under warranty. Also the "new" black mat plastic around the front element of the 18-35 zoom marks very easily, whereas all other Nikpn plastics seem fine. The same plastic seems to be used on part of the 85 PC.
I know a lot of Canon users who have had quality control problems recently and Olympus standards dropped over the 25 or so years I used the system. Perhaps I am lucky in having a 25 year old lens test chart which measures resolution and astigmatism (if it is present near the centre of the image there is an off centre element). For those who do not know to test for chromatic

aberration you need black and white film and Wratten filters 25,47B and 58; available relatively cheaply in gelatine form. Set the lens at about 5.6, focus carefully and shoot using the red (25) filter and then without ajusting focus shoot through the other 2. If the second or third negative are not in sharp focus the lense has cromatic aberration. Touch wood but so far I have never had an opticaly poor Nikon lens. Even so I only use dealers I trust as, sooner or later, lemons get through.
Len Shepherd.

From Nikon MF Mailing List;
Date: Mon, 16 Apr 2001
From: Steve Bartlett sbartlett19@home.com
Subject: Re: re: variations in glass and lenses is very large/significant etc.
Andrew,
I'm far from an expert on the subject but I give it a shot. Perhaps someone more knowledgable will jump in to correct me if a am wrong.
To detect decentered elements take a test shot of a flat object with the lens wide open. In general, the corners will not be as sharp as the center but they should be uniformily less sharp. If one of the corners is significantly less sharp than the other corners that indicates the optical elements are not perfectly aligned. One or more elements are "decentered".
I am less sure of what Bjorn means by focus shifts but that won't stop me. ;) On a zoom lens like the AFS 17-35mm that Bjorn was talking about, if you focus at 5 meters with the zoom set to 17mm, you should be able to zoom to 35mm and everything at 5 meters should remain in focus. If it isn't in focus, then the focus has shifted.
Steve
andrew.simboli@dana.com wrote:

```
> All:
>
> A recent post contained this quote from Bjorn Rorslett's website:
> "it didn't take me long to detect this sample lens
> showed severe faults of focus shifts and decentered elements."
>
> How do you detect these quality control issues when looking at a
lens?
>
> thanks,
```

From Leica Mailing List;
Date: Fri, 15 Jun 2001
From: S Dimitrov sld@earthlink.net
Subject: Re: [Leica] is it possible for one M lens to misfocus?
On this particular model, I've had two bad lenses. The first had a helical system that was sloppy and was turned in for salvage, under the warranty. The second one had a couple of cemented elements separate. One quick way to check is to see if, when looking trough the rear elements and tilting the lens side to side, they are concentric circles. But definitely send it in to the Jersey folks.
Slobodan Dimitrov
...

Date: Sat, 21 Jul 2001
From: dickburk@ix.netcom.com (Richard Knoppow)
Newsgroups: rec.photo.equipment.large-format
Subject: Re: Testing sharpness of old extar
Patrick Caldon patc@computer.org wrote:

>I recently got myself a 4x5 speed graphic with a 127mm extar. The lens
>looks fine apart from some slight marks and the speed selection ring
>being quite stiff; this is freeing up as I'm using it however.
>
>I've taken a few exposures now, but noticed that the images prouced are
>a quite soft and not very contrasty; the few polariods (on 54 -100) I've
>done particularly so. I can't get a decent black and decent white out
>of the polaroid simulataneously. I have no idea whether the probem is
>the lens, the film, or my focussing technique.
>
>All of this is done at about f/16 -> f32 on a variety of shutter speeds.
>Currently I'm using a "make it up as I go along" technique for
>focussing, which involves picking an object I particularly want to be in
>focus, moving the lens back and forth until it is in focus in the ground
>glass, and then stopping down at least until something else in the
>foreground is also in focus.
>
>Is there any good easy quantitiative technque for testing the lens
>quality - particularly the focus/softness? My objective is to work out
>if I'm causing the problem or if it's the lens.
>
>Thanks,
>Patrick.

Ektars are very sharp lenses and quite consistent form one to another.

Check the lens itself by shining a flashlight through it. Look for haze and scratches. Check the surfaces for scratches by shining the light across the surface. A magnifying glass helps.

Scratches reduce contrast. If there are enough the diffusion they produce also affects sharpness.

Internal haze can ruin contrast but its easy to remove. You can do it yourself. If your lens is hazy post back and I will describe how to get the cell open without mutilating it.

Check the rear component by shining the light through it to see if the cement is hazy. I've seen this on a few Kodak lenses although its not common. The synthetic cement they used is generally trouble free but sometimes develops a haziness or even a slightly orange-peel look. Its possible to re-cement the lens but the cell must be machined open making it a job for a professional.

To check for lens performance the easiest thing is simply to examine the image on the ground glass. Good Ektars should "pop" into focus, even wide open, there is very little recidual spherical aberration, so there is no haziness of highlights when wide open. If the lens looks sharp on the ground glass the image on the film will also be sharp.

If you use the ground glass for focusing make sure that the GG is in the right position. I struggled mightly with my first Speed Graphic because I was getting what looked like sharp images on the GG but not on film. Plus, I couldn't get the rangefinder adjusted.

After changing lenses (the original Tessar turned out to be just fine) I discovered the GG was not being held in place by the clamps at the sides of the panel, so was moving around. Ugh! In any case, make sure the back fits right, and if its a Graflok back, make sure its complete, meaning the Ektalite field lens isn't missing.

If you use the rangefinder make sure its really aligned and matches the lens. Check this on the ground glass. The Kalard side mounted rangefinders may look crude but are actually very

accurate when adjusted properly. If it needs adjustment you will find a rather long post of mine on the Graflex.org site describing how to do it.
I may add to this since I've just set up three of them in a row and reminded myself of some things which can save your patience and temper. They are very tedious to set up but are quite stable once set. I've discovered some of the causes of instability which may affect some of these guys.
In short, you have what should be an outstanding lens and should be getting better results from it, if its not actually damaged.

Richard Knoppow
Los Angeles, Ca.
dickburk@ix.netcom.com

From: stuart_bobb@hp.com (Stuart Bobb)
Newsgroups: rec.photo.equipment.35mm
Subject: Re: Any tips on testing lens
Date: Mon, 01 Oct 2001

>
>Check that the diaphragm stops down instantly when the relevant linkage
>is operated. Excess oil can affect the operation of the iris diaphragm
>blades even before it becomes visible.

Good stuff! A few more in this space are:

a) Check that the aperture springs back open fully. I've seen lenses where
the blades looked fine but after stopping down to f16 or f22 they did not
spring 100% back open.

b) Make the the blades come in cleanly to form a hexagon (octagon, etc). If
some blades don't go in as far as others, the resulting polygon will be oddly
shaped. How odd does it need to be before you get problems? I don't know.

Two other simple tests.

Check the close focus. Does it focus as closely as the specifications for
the lens state? Check infinity -- find something that is quite a distance
off and make sure that your split image (or whatever focusing aid you have)
comes into alignment _before_ you run out of ability to turn the focus
barrel.

In other words, confirm that infinity is a bit further away than 90 or 100
feet. :-)

Look through the lens at a brightly lit white wall. Is the glass giving
everything a hue or tint that maybe isn't expected?

Stuart

From: Richard Fateman fateman@cs.berkeley.edu>
Newsgroups: rec.photo.equipment.medium-format
Subject: Re: Feedback on Fuji GS645 folder
Date: Wed, 17 Oct 2001

take a small flashlight and hold it inside the camera, point
it into all the corners of the bellows. Any light showing
means you need new bellows. $100 or more repair, if you can
get someone to do it.
  Some people find the rangefinder too small, viewfinder
hard to use with glasses.
   Somewhat delicate mechanically, excellent optics, great
  medium format for travel.
RJF

JessKramer wrote:

> Any feedback on the folder with the 75mm lens. Considering one for travel and
> street shooting

From Nikon Mailing List:
Date: Wed, 14 Nov 2001
From: tpeach@gte.net
Subject: Re: Buying Used Lenses

--- In NikonMF@y..., "fagun" fagun@h...> wrote:
> I live in Bombay, India. So www.keh.com and ebay are beyond my
snip>>>>>>>
> available is immediately picked up. So all that is normally
> available is much abused equipment of which as rookie I don't think
> that I am able to coorectly estimate a fair price. I greatly
> appreciate the various suggestions given to me and will incorporate
> those possible in my search for a good used MF lens.
snip>>>>>>>

Different markets, different challenge I guess. We may not make a
"confident shopper of used Nikon glass" out of you, but here are some
of my thoughts on the subject:

* Manual focus lenses made by Nikon are remarkably rugged and
durable. Some of the cheaper series E lenses had some structural
failures, but for the most part the AI and AIS lenses are very strong.

* Beat up paint finish on a lens only drives the price of the lens
down, it doesn't alter its usability.

* Even 'swirl marks' and other minor blemishes on the glass don't have as much affect on the image as many photographers think.

If I am offered a beater of a lens at an attractive price, here's what I check for:

* Does the lens not have any unusual looseness (e.g., can I make the front lens barrel point slightly off axis)?

* Does the lens focus smoothly throughout it's range (no rough spots)?

* Is the lens free from fungus (fungus looks like spider webs on the glass, and it can be on the internal elements; you might need a flashlight to check)?

* Does the aperture stop down quickly? With the lens off the camera and the aperture set very small (f/16), give the aperture tab on the lens mount a 'flick'. It should cycle very quickly from closed to open to closed again. Compare it to a "known good lens" if you're not sure about this. Also, the aperture blades should not have oil on them.

* With the lens on your camera, will it focus at infinity? Will it focus at its minimum marked distance?

If you can answer 'yes' to all those questions, the lens is most likely functional. If it has a 'nice price', say quite a bit below www.keh.com "bargain" grade, it's probably worth a test roll of film to find out. (Obviously, your local market may influence your opinion on pricing.)

If you're still stuck buying new AF lenses, I'll throw in a vote for the Nikon 35-70 f/2.8 AF or AFD. Not particularly cheap, but well-built, excellent performance optically, and pretty good MF feel as well. Is there anything comparable in say a Tokina ATX for less money that has a good MF feel?

-Todd Peach
tpeach@gte.net

Date: Fri, 23 Aug 2002
From: ww wardcheese@DIRECTVInternet.com
Newsgroups: rec.photo.equipment.medium-format
Subject: Re: Bronica S2A - Testing a second hand body (no lens, etc)

Tom--

Until I finally saved up enough money to buy my current medium format camera, I survived on the old Bronicas, and they have a very special place in my heart to this day. Anyone who tries to talk them down is simply predjudiced. Do your research, find the right unit, and use the

hell out of it! The S2A is rugged as hell, takes a wide range of really wonderful lenses, is entirely battery -free, and no thief worth his salt
will bother to steal it. You can get the Nikkor 75mm f2.8 for a song, and the helical also, so don't worry about that. Email me directly and I
can help you find one. (use wardcheese@netscape.net rather than the above address.) Backs usually go for a hundred or less too.

The most common problem is that the foam light seals will have deteriorated. Light leaks are usually not a problem, but it can leave foam particles all over the innards and it will need a good cleaning. It's also common for the pieces that determine the exact position of the
mirror and the exact position of the focus screen to wear slightly, affecting focus.

The S2A is more durable than the S2, S, C, and earlier, because they used all steel gearing in the S2A. With the S2A, the only loss was that they didn't put any mirror lock-up. It's loud enough that you won't want
to fire it in church, but I always liked the sound. Like slamming a car door.

Make sure the shutter fires reliably. Hold it up and look through the body as you fire it at a variety of speeds. You should be able to see a clear hole through the back and out the lens hole when you fire. Make sure the mirror goes all the way clear. The shutter should really slam across the opening with confidence, with no hesitation at all.

Hold the camera up at eye level with a bright scene behind the camera, so when you fire the shutter you will see bright light through the body.
Looking through the lens opening and straight through the camera, fire the shutter at each speed a couple or three times. At slow speeds (1/4 sec or more) your eyes and ears can tell you whether the speeds are anywhere close. When you get into 1/30, 1/60, etc, it's harder to judge the speed but your eye should still get a very clear square flash through the body. You are looking for any speeds where the curtains are not allowing an even exposure, perhaps one curtain drags a little. It's not too hard to see when one is messed up. You will just see a rectangular flash instead of the full square frame.

Make sure both shutter curtains (before and after winding) are in PERFECT shape. Bring a small flashlight and look CLOSELY for pinholes in
both curtains.

Check the entire mirror for scratches, especially along the bottom edge;
people often scratch the lower edge when they install lenses too quickly.

Shake it vigorously and turn it upside down and roll it around in your hands. It should NOT rattle.

Hopefully, you have done enough research that you know a good price for

a body. The whole system, body, finder, back, and 75mm lens, can be found pretty reliably for $400. I found one for $275 and bought it as a backup just because it was TOO cheap. Make sure that the seller is really giving you a deal; I would say that over $200 is a rip off, and $125 - 150 is fair, given you can't test it. (Right now on Ebay, there is a complete S2A system for a "buy it now" price of about $300. Someone
has a 75mm Nikkor lens at a starting price of $75 and NOBODY has bid. it
ends today.)

Again, feel free to email me if you need any more info or halp.

--ward
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