Jupiter-3
Zeiss Standard
Travel from 0.9m to Inf
Is 3.239mm

$1/52.4=1/(inf)+1/b$
$b=52.4$ at Inf
$1/52.4=1/900+1/b$
$b=55.639$
Travel: 3.239
All measurements in millimeters

$1/51.6=1/(inf)+1/b$
$b=51.6$ at Inf
$1/51.6=1/900+1/b$
$b=54.738$
Travel: 3.138
All measurements in millimeters

Leica RF Calibration
Travel from 0.9m to Inf
Is 3.138mm

Subject
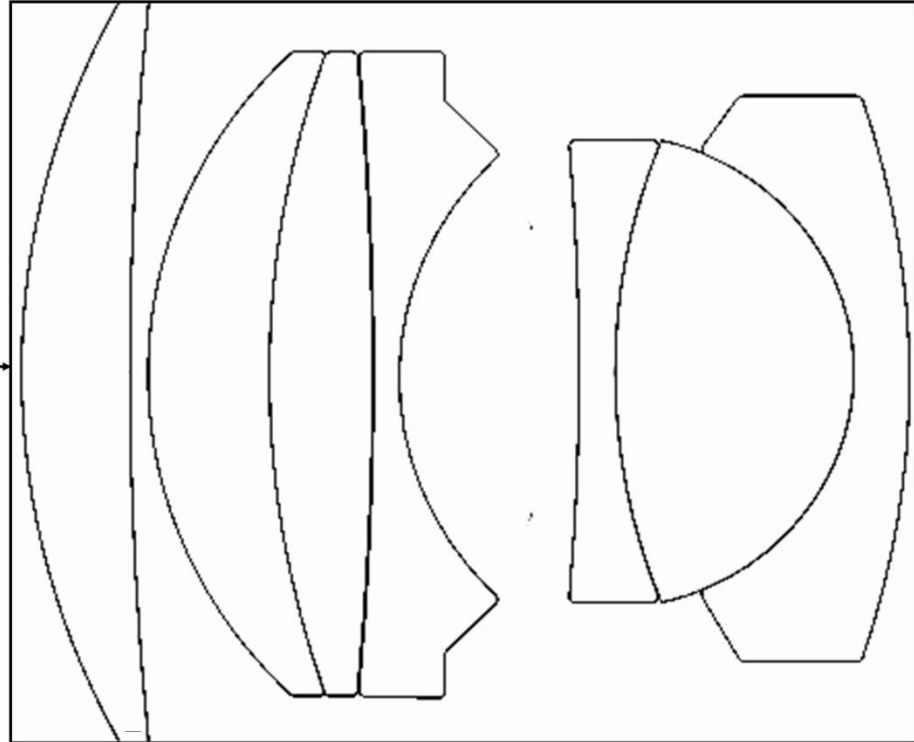
3.239mm-3.138mm,
0.1mm
Increase Main Shim

d

b

Back Focus
$1/f= 1/d+1/b$
$1/b=1/f-1/d$
$b=1/(1/f-1/d)$

formed
Image

Telephoto, Focal Length
approximately 2.5x the
focal length of the complete lens

Standard, Focal Length
approximately the same
as complete lens

Carl Zeiss Jena 5cm F1.5 Sonnar Contax to Leica Conversion

Equipment List:
Jupiter-3 Leica Thread Mount
Carl Zeiss Jena 5cm F1.5 Sonnar, Serial Number range from 160xxxx through to 285xxxx
Jeweler Screwdrivers (1mm), Rubber Mat (such as a mousepad) or Cork
Paper, Aluminum Foil, material to make a Shim
Hand-Drill, Pick, any tool to make a Set Screw Tap

Pre-War
Carl Zeiss Jena
5cm F1.5 lens,
Contax Mount

Jupiter-3
Leica Thread Mount

Focus Mount   Shim   Optics Module

The Jupiter-3 Optics Module simply unscrews from the focus mount. Look for the shims, these will be used later to set the focus on the transplanted Zeiss module.

Separating the Sonnar from the Contax mount

The Optics Module of the Pre-War Carl Zeiss Jena 5cm F1.5 lens is held in place by a single set screw.

Take the set screw out, save it. Once the screw is out, the optics Module unscrews from the mount Just like the J-3.

Shims

You will typically find a set of Shims, some are very thin and fragile. Try to keep them together to keep the thinnest ones from tangling. The Shims measure in thickness from 3mm down to 0.01mm.

Fitting the Zeiss Module into the Jupiter Focus Mount

Variable Stand-off Ring

The first step is to make sure the Zeiss Optics module can be screwed far enough into the Jupiter mount to achieve infinity focus. If it does not, the variable stand-off ring must be thinned down. The Ring from J-3's made before 1963 can be substituted in this case. The J-3 ring is typically ~0.75mm thinner than the one on the Zeiss.

The Zeiss module should screw in easily. If it hangs up, or feels like it is scraping, check the Set Screws of the variable retaining ring. All set screws must be flush for the optics to screw in. The F-Stop numbers will be misaligned with respect to the index mark.

Setting the Shim

This step involves picking or making a shim or stacked set of shims in order that the actual focus of the lens agrees with the rangefinder of the camera. The process is identical to the Jupiter-3, covered in a separate tutorial, "Jupiter Shim Adjustment".

Repair Technician's Tool: Good for first cut. Set an object at a known distance, I use a table lamp at 5m. Put the lens on your camera, set the focus using the camera's Rangefinder. Mark the distance, use the Through the Lens viewer to choose a shim that allows the actual focus to agree with the distance scale.

Digital Camera: Use a Ruler at close-distance, minimum focus. Use the camera Rangefinder to focus the lens. Check the image on the screen. If actual focus is behind the RF, increase thickness. If it is in front of the RF, decrease thickness. See the instructions for setting the shim on the J-3 for the calculations.

Re-Indexing the Aperture Ring

Index Dot   **Make a Mark**

Since the Optics Module screws in, changing the shim usually means the Aperture Ring does not properly line up with the Index Mark. Make a Mark on the optics module for the new alignment.

Unscrew the optics module from the focus mount. Best to leave the shims in the mount. Remove the three set screws from the aperture ring. Save them. The ring is screwed in tightly, often stuck with grease. Set the aperture to F1.5 and screw the Aperture ring to line up with the mark that you made.

Aperture Ring Set Screws
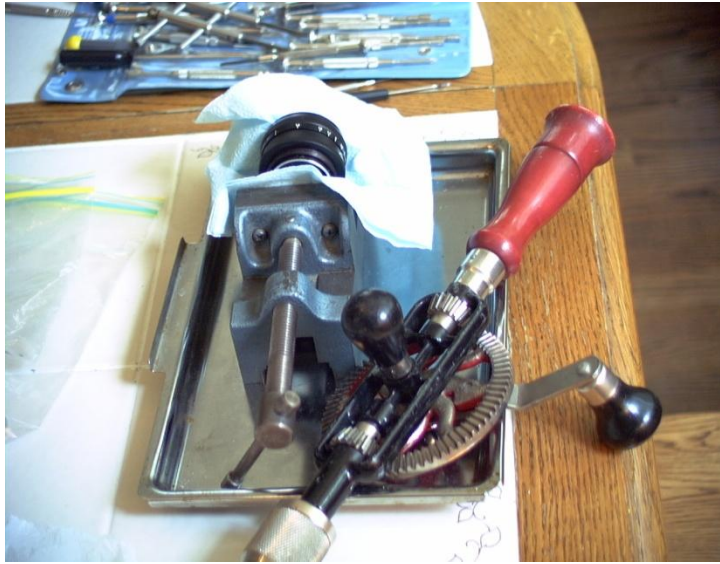
Once the aperture ring is properly indexed, the set screws need to go back in. New Holes must be drilled out in order that the heads of the screws are flush with the aperture ring. If they are not flush, the lens will not screw back into place.

The screw on this lens is flush with the aperture ring, it will screw back into the J-3 mount, and the movement is smooth. Note that this lens moves past the F11 mark: this is normal for a lens in this serial number range. Zeiss added F16 and F22 to their lenses at about the 2M SN range, but did not engrave the aperture ring for the new stops until about the 2.6M range.

All Done, Put on the Camera and Take Some Pictures