

Re: Surgeons Magnifying Glasses

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- *From:* Charles <ckraft@xxxxxxxxxxxxxxxxxxxx>
 - *Date:* Wed, 16 Jan 2008 19:55:12 GMT
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On Wed, 16 Jan 2008 19:52:41 +0000 (UTC), davem@xxxxxxxx (Dave Martindale) wrote:

"amdx" <amdx@xxxxxxxx> writes:

<http://www.sheervision.com/index.asp?PageAction=VIEWCATS&Category=3&gclid=CJCWx-Tk-Z>

Yes, aren't those cool? and expensive!
So what type lenses are used to make these?

My dentist uses something like this, except that the two telescopes are permanently mounted on the lenses of his regular glasses, instead of having an external frame clamped to the glasses. Probably reduces weight quite a bit.

The optics appear to be Galilean telescopes – a positive lens at the front, a negative lens near the eye. The focal lengths used determine magnification and size of the assembly. If you just want to experiment, plain lenses from some place like Edmund might be good enough. But for quality equivalent to the commercial ones, you'll probably need to make each "lens" an achromat, and be anti-reflection coated. Or find a good-quality pair of "opera glasses" and dismantle them for the optical parts.

If you want to build the mechanical assembly yourself, you're going to need access to a machine shop. The individual telescope barrels need to hold the lenses in alignment, probably with some means of changing spacing for focusing. Then the mounting frame has to hold the barrels with exactly the correct spacing to match the user's eyes, with exactly correct horizontal convergence and minimal vertical aim error in order to get the two images to fuse properly into a stereo pair. You'll need some amount of adjustability for this – either in the final mechanics, or in a jig that you use to measure your particular eyes (whose measurements are then used to make a non-adjustable framework

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that is customized for you).

Essentially, you're building a specialized pair of binoculars that are focused and converged at a specific distance instead of infinity.

Dave

I wonder what's the field of view for those.

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