

# OpeningLines

THE JACKSON CROSS-CYLINDER REFINES THE REFRACTION

## What is the JCC, and why do we use it?

By Sue Corwin, CO, COMT

The Jackson cross-cylinder (JCC) is used to refine both the cylinder axis and cylinder power and give a large change for the patient to give us better responses while keeping the focus on the retina. The lens is composed of two settings: one corresponding to a white dot setting and one corresponding to the red dot setting.

Let's look at an example of refining cylinder power at 80° with a JCC (see Figure 1).

When we place a JCC lens in front of the patient, we do not change the spherical equivalent (SE) — we keep the blur circle on their retina. The formula for SE is sphere + 1/2 cylinder power. So, the white dot setting of  $-0.25 +0.50 \times 80$  has an SE of  $-0.25 + 0.25 = \text{zero}$ ; the red dot setting of  $+0.25 -0.50 \times 80$  has an SE of  $+0.25 - 0.25 = \text{zero}$ .

We simply ask the patient if they want more cylinder power or less cylinder power, while keeping the focus on the retina. The difference between a  $+0.50$  cylinder power and  $-0.50$  cylinder power is one diopter (D). So, the fact that we keep the focus on the retina and show a large difference (1D) between the two choices makes this lens a powerful tool in refining both cylinder power and axis. This is why our doctors want us to use the JCC, and not ask the question "better one, better two" while changing the cylinder power knob on the refractor.

In our example, the patient has a starting prescription of  $-3.00 +1.00 \times 80$  in the refractor. After adjusting the sphere power to get the SE on the retina, we do the cylinder axis refinement then the cylinder power refinement. We have already determined the axis to be 80°. When we "drop down" the JCC in front of the



Figure 1. Left: White dot setting:  $-0.25 +0.50 \times 80$ . Right: Red dot setting:  $+0.25 -0.50 \times 80$ .

patient's eye, the  $-3.00 +1.00 \times 80$  is already in the refractor, and we add  $-0.25 +0.50 \times 80$  to the prescription as the patient looks through the white dot setting. The result is  $-3.25 +1.50 \times 80$ . Then, we "flip" the JCC to add the red dot setting of  $+0.25 -0.50 \times 80$ : this result is  $-2.75 +0.50 \times 80$ . The difference in the white dot cylinder power of  $+1.50$  and the red dot cylinder power of  $+0.50$  is 1D.

Sue Corwin, CO, COMT, is the director of training and education for Marco. Ms. Corwin also serves as an orthoptist and ophthalmic technologist for Jacksonville Eye Center in Jacksonville, FL.

## InBrief

### Luxturna approved by FDA

**Spark Therapeutics'** Luxturna (voretigene neparvovec-rzyl) is a one-time gene therapy product indicated for patients with confirmed biallelic RPE65 mutation-associated retinal dystrophy, a rare form of inherited vision loss. This product is the first and only pharmacologic treatment for an inherited retinal disease.

### Rhopressa receives FDA approval

**Aerie Pharmaceuticals'** Rhopressa (netarsudil ophthalmic solution 0.02%) is a once-daily eye drop designed to lower intraocular pressure (IOP) in patients with open-angle glaucoma or ocular hypertension. For more, see [page 14](#).

### PASCAL Laser to offer PSLT

**Topcon Medical Systems'** PASCAL Laser received FDA clearance to offer Pattern Scanning Laser Trabeculoplasty (PSLT) for the reduction of IOP

associated with glaucoma. PSLT provides a computer-guided treatment that applies a sequence of patterns onto the trabecular meshwork.

### New delivery system for AcrySof IQ

**Alcon's** new UltraSert delivery system is pre-loaded with the AcrySof IQ aspheric monofocal IOL. The design allows predictable delivery of the IOL, features a longer 3-mm nozzle tip with a proprietary depth guard, and is for incisions as small as 2.2 mm, the company says.