

Operator' s Manual

GLARE TESTER

**High Beamer™
Glare Machine**

Mimics On-Coming Cars

**Document & Demonstrate
Disabling Glare**

For Timely Surgical Intervention

Hand-Held Glare Test

~ Measure with Confidence ~

U.S. Patents 7,857,450 & 8,038,297



The Disability of Glare

BAM™

Floodlight Glare



Normal



Cataract
simulated

AMA Optics, Inc.
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MIAMI BEACH, FL
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High-Beamer™

Spotlight Glare



Normal



Cataract
simulated

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INTRODUCTION

AMA Optics' High-Beamer™ Glare tester mimics on-coming headlights. The main applications of the High-Beamer™ are demonstration, documentation, and monitoring disabling glare, information that can assist in timing of cataract surgery or capsulotomy.

Medicare Guideline for Timely Invention

“Coverage for cataract extraction is indicated when there is a glare component; when glare testing reduces visual acuity to less than 20/40.” Check with your insurance provider for specifics rules in your region.

AMA Optics, Inc. Glare Testers

1. BAM™ (*Brightness Acuity Meter*)

Floodlight Glare Tester and Macular Photo-Stress Tester

2. High Beamer™ Glare Machine

Why test for Glare? How do the testers work?

Glare can be very disabling for those having cataract, posterior capsular opacity, or corneal opacities. In many cases early cataract surgery or capsulotomy cures the problem. The most common complaint patients have due to glare is the fear of having an accident at night because of the blinding glare from on-coming automobiles. Accidents occur because pedestrians, animals or cars in-front or on the-side-of-the-road are invisible due to blinding glare from car headlights.

If glare standards were established for driver's license, nighttime accidents may become less frequent.

While driving or residing indoors, bright sunshine is another common source of Glare complaints. Sunshine flooding through the window makes working or social activities annoying or impossible for those suffering from glare.

Key to diagnosing the cause and documenting the severity of disabling glare is Glare Testing. AMA Optics markets two Hand-Held Glare Testers, the BAM™ and the High Beamer™. The BAM™ generates floodlight glare and the High-Beamer™ generates spotlight glare.

The principle behind both the BAM™ and the High-Beamer™ is: In a light scattering medium, the brighter the light the more light scatters and the more visual acuity degrades. In an eye with no disease and no light scatter, glare testing does not significantly reduce vision. However, in an eye with light scattering cataract, posterior capsule, or corneal disease even a slight increase in brightness can cause drastic vision loss. The test is simple: (1) test the Snellen acuity under normal lighting, (2) test the Snellen acuity while viewing through the Glare Tester, and (3) compare the results. In USA, if glare testing reduced the vision to less than 20/40, glare is significant.

The BAM displays a uniform bright field of light produced by a single LED bulb illuminating a white reflective bowl. The BAM has three brightness settings (Low, Medium, High) controlled by a single push-button switch. The BAM™ may also be used as a Photo-stress Test for macular disease.

The High-Beamer™ Glare Machine displays two lights, one on either side of the line of sight that mimics on-coming headlight. The lights are two side-side 2 mm LED bulbs. A potentiometer with a digital readout allows dial-in precise illumination anywhere on the scale of Low to High brightness. The chart on page 6 shows the linear relationship between voltage and brightness (LUX).

Both the BAM™ and High-Beamer™ are effective, lightweight, easy to use Glare Testers where the BAM™ mimics floodlight glare and the High-Beamer mimics spotlight glare.

GLARE TEST

An illumination source can adversely reduce visual acuity by degrading image resolution when a light scattering eye condition exists. The adverse effect of glare on visual acuity is measured with the BAM™ and Hi-Beamer™

Conditions causing glare:

- ◆ Corneal opacities or corneal edema
- ◆ Cataract
- ◆ Clouding of the posterior lens capsule
- ◆ Opacities in the vitreous
- ◆ Scratched or dirty glasses or contact lenses

Brightness Setting

The High-Beamer™ brightness level is adjustable using a potentiometer switch. A linear relationship exists between voltage and brightness in LUX. Each unit is calibrated. A conversion chart is provided for easy selection of desired testing brightness as seen on page 6.

Vision Chart

High contrast or graded contrast images may be used as test targets. Any vision chart can be used but it is important that the chart luminance be of standard brightness, 85 cd/m². **A bright chart may give false negative glare testing results.**

Vision Chart for Glare Testing

- ◆ Any Snellen Chart with 85 cd/m² brightness
- ◆ RAM™ DL with Standard Reading Chart at 85 cd/m²

- ◆ Do not dilate the pupil prior to testing.
- ◆ Inspect the patient's glasses or contact lenses for debris or scratches that could interfere with glare testing and give a false positive result.
- ◆ Instruct the patient to hold the High-Beamer™ near to their eye, their glasses or the Carrier Frames.
- ◆ Set the slide switch to 2 (medium).
- ◆ With the light switched off, allow the patient to view the vision chart through the High-Beamer™.
- ◆ Prior to switching on the High-Beamer™, warn the patient to expect a bright light.
- ◆ The Off-On switch is both momentary and latching, gentle pressure on the switch turns on the light for a momentary view, deep pressure on the switch locks it ON. The momentary mode provides the patient a quick comparison of glare vs. no glare.
- ◆ Testing can be individualized depending upon the patient's acuity and diagnosis. One method for testing eyes with cataract or posterior capsular opacities is to set the Snellen Chart at 2 lines larger than BCVA and the Brightness Switch to 1 (Low), if the patient is able to read that line, advance to the next smaller letter size. Repeat the above with the switch set to 2 (medium), and if able to read to BCVA, repeat with switch set to 3 (high). Some examiners prefer to start testing at setting 2 or 3. The recommend starting setting is 2 (medium).

Technical Data

Weight 6 ounces

Power: 9 Volt battery,

Digital voltmeter shows power status

Digital voltmeter equates to light brightness

Two 2 mm L.E.D bulbs

Illumination

Adjustable Low to High brightness with precise slide potentiometer switch and digital voltmeter readout, see page 6.

Glare Testing

400 to 800 Lux adjustable, measurements taken 15 mm from viewing port

Battery Power Level

Change or charge the battery when the voltmeter reading nears 7.2 volts

Warranty: One Year, parts and labor

Replace the battery when voltmeter reads 7.2 Volts or less

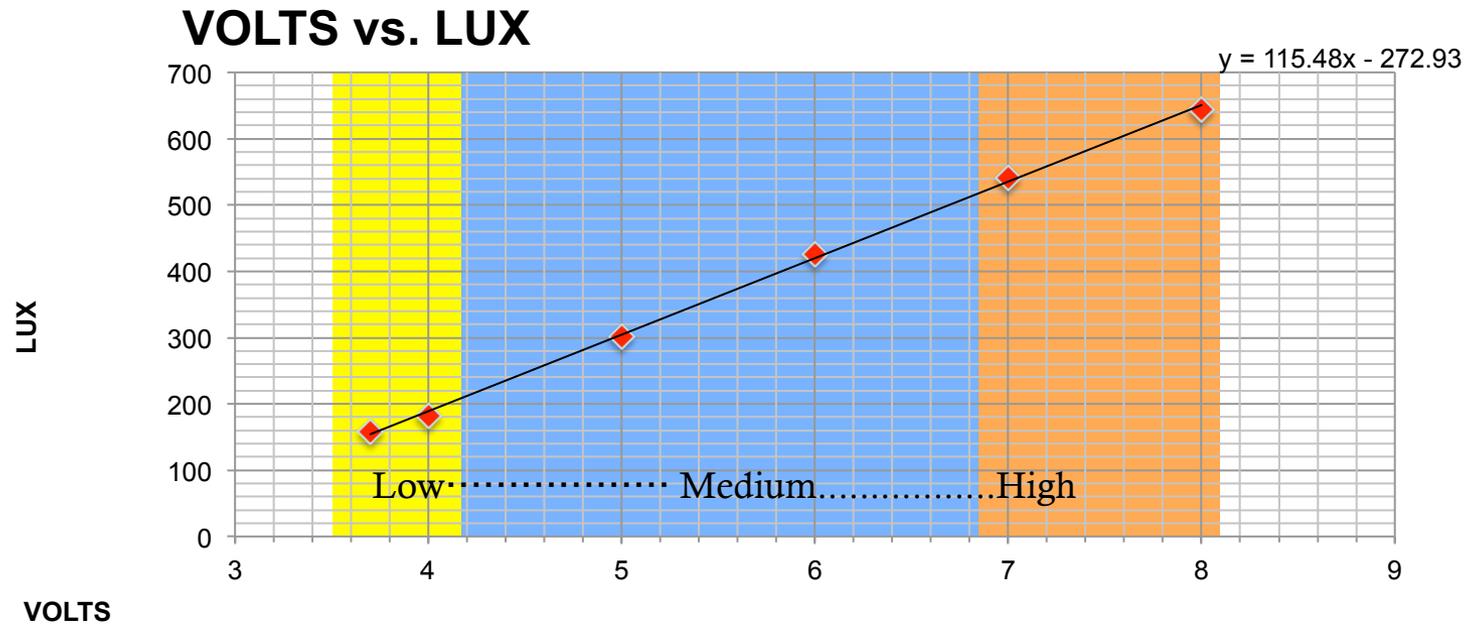
1. Place fingernail below battery box clip, depress and pullout
2. Slide tray completely out
3. Press through the bottom tray opening to eject the battery
4. Replace with new 9 Volt battery
5. Connect battery to terminals before putting in the tray
6. Slide battery into tray with connectors aligned with slots
7. Insert tray into High-Beamer™

Optional Trial Lens Holder

The lens holder attaches to the BAM by four tiny magnets and is held securely in place. The spherical and cylindrical lenses snap into place and can be easily rotated to the desired axis. Lenses attach distal to the glare light and do not artificially increase glare. Lenses may represent full refraction, over-refraction, or near add. Trial lenses are not included with the glare tester.



- ◆ Record the voltmeter reading when glare reduces BCVA to 20/40 or 2 lines worse than BCVA.
- ◆ On sequential testing compare the recorded voltmeter reading to document progression.



Linear relationship exists between Volts and LUX.

If desired, one can convert reading in volts to LUX by extrapolating from the chart by entering the volt reading into the formula,
 $LUX = (115 \times VOLTS) - 272$



The RAM® DL fitted with the reading chart and the brightness set at 85 cd/m² (dim) can be used as the vision chart for BAM testing. Any vision chart may be used, remember too bright of a chart will nullify the glare effect.

High Beamer Acuity Meter

Packing List

1. "HIGH BEAMER™"
2. Battery included, 9 V battery
4. Lens Cloth
5. Operating Instructions

Optional item:

Lens Holder for refractive lenses

Slots for (1) sphere and (2) cylinder

Marked in degrees