

This hand held circular pupillometer device is used for measuring different size pupils. It was developed and researched by Dr. Jack Richman, O.D., as part of the Massachusetts Drug Evaluation and Classification Program (MDEP). This pupil measurement device is used by law enforcement officers across the country to assist in determining whether people are possibly impaired and/or under the influence of drugs. The reverse side has expected pupil sizes in different lighting conditions for non-impaired people.

Estimation of Pupil Size:

A device called a pupillometer is used to estimate the size of the subject's pupil. The MDEP pupillometer has a series of circles or semi-circles, with diameters ranging from 1.0 mm to 10.5mm, in half millimeter increments.

Estimation of Pupil Size under Room Light:

Pupils are examined in room light prior to darkening the room. Room Light (Figure 1)

- Hold the pupillometer alongside the subject's eye.
- Instruct the subject to focus on a specific point behind the examiner and slightly above the subject's eye level.
- Use the same point for the dark room examinations. Make sure the pupillometer is even with the eyeball (neither closer to your nor farther from you than is the subject's eyeball).
- Rotate the pupillometer clockwise or counterclockwise until you find the white semicircle that appears to be approximately the same size as the subject's pupil.
- Check the left eye, and then the right eye.

Estimation of Pupil Size under Near Total Darkness:

Pupils are examined in a dark room light. Near Total Darkness (Figure 2)

- After you have completed the pupil size estimations in room light, darked the room, wait 90 seconds, then proceed with the measuring of the pupil size in the dark room examination.
- For the test of the pupil size under near-total darkness, hold your finger of the tip of the penlight, so that only a reddish glow emerges.
- Record the pupil size to the nearest 0.5 mm for each eye.

Estimation of Pupil Size under Direct Light:

The final step is to examine the Pupil size in **Direct Light** (Figure 3)

- For the check under direct light, bring the light from the side of the subject's face, directly into the eye.
- Assessment of the pupil's reaction to the light takes place immediately before the check of the pupil size under direct light.
- Once again, start by bringing the uncovered light from the side of the subject's face directly into his or her left eye. As you bring the beam of light directly into the subject's eye, note how the pupil reacts.
- **The penlight should be positioned so that the beam just "fits" the eye socket.** Under ordinary conditions, the pupil should react quickly, and constrict it noticeably when the light beam strikes the eye.
- **Hold the direct light on the subject's eye for 15 seconds** to assess pupil reaction sustainability.
- When you have completed this process for the left eye, repeat it for the right eye and record the initial pupil reaction and the **pupil size to the nearest 0.5 mm at the end of the 15 seconds for each eye.**

Normal Sizes for the Pupil:

Since we estimate pupil size under three different lighting conditions (Room Light, Near Total Darkness, and Direct Light) the range of the pupil sizes will vary. The mean value and range for pupil size under three different lighting conditions is shown in the table below.

Light Test	Mean Value	Average Range
Room Light	4.0 mm	2.5 mm to 5.0 mm
Near Total Darkness	6.5 mm	5.0 mm to 8.5 mm
Direct Light	3.0mm	2.0 mm to 4.5 mm



(Figure 1)



(Figure 2)



(Figure 3)

REFERENCE: "An Evaluation of Pupil Size Standards Used by Police Officers for Detecting Drug Impairment" JAOA, March 2004, Richman, McAndrew, Decker, & Mullaney.