

3.0 DEVICE CHANGES

The changes to the device that have not been reported previously are described below.

3.1 Attenuator Plate

An attenuator has been placed in the pathway of the excimer beam between the point of exit from the Lambda Physik COMPex 201 excimer laser engine and the first optic in the beam shaping arrangement for the Nevyas Excimer Laser. This attenuator consists of a partially reflecting quartz mirror (Lambda Research, which is set in a mounting that can orient it between perpendicular to the excimer beam (0°) and oblique to up to 50° . The attenuator removes (by reflection) approximately 11% of the power of the beam when it is in the perpendicular position and approximately 33% of the power of the beam when it is in the 45° position.

This attenuation allows the COMPex 201 laser to be run at a higher voltage than previously possible without delivering more energy than the ablation nomogram allows. Running at a higher energy yields a more homogeneous beam.

3.2 Fixation System for Optimal Centration

The previous fixation system consisted of a fiberoptic non-blinking illuminator with a variable brightness control that was mounted directly above the last turning mirror. A new fixation system was developed to optimize centration.

The new fixation system consists of a red diode laser which is used in conjunction with electronic circuitry to reduce its voltage so the power delivered to the patient's eye can be varied between 0.25 and 0.50 microwatts. The circuitry also flashes the laser at approximately 3 flashes/second. A small mirror is mounted centrally above the last turning mirror of the laser system to direct the red diode laser beam downward. The orientation of the small laser diode is adjustable in both the x-y coordinates direction and in angular inclination in any direction.

The fixation system is calibrated by first using the excimer laser to place a mark on a piece