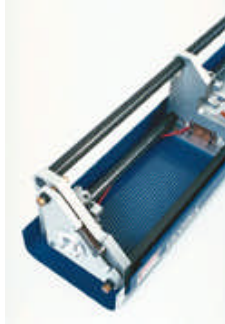


Unique, Large Diameter Carbon Fiber Composite Alignment Rod for Lasers



As lasers become more commonly used in industrial applications and the entertainment industry, professionals are demanding higher standards in portability, reliability and efficiency. Manufacturers of ion lasers are meeting these demands brought on by the broader use and acceptance of their products by integrating composite materials into their designs.

Carbon fiber reinforced rods are an essential part of this system. The mirrors and laser are mounted and precision located on parallel carbon fiber alignment rods. The lasers must perform consistently and efficiently over a broad range of temperatures without modification or adjustment to the mirrors and lenses that focus and control the laser.

Traditional materials expand and contract with temperature variations. A change in length of rods will displace mirrors and lenses that focus the laser's light energy. Inversely to most materials, carbon shrinks as temperature increases and expands with decreases. When combined in a volumetrically controlled thermoset resin that expands with temperature increases, the result is a dimensionally stable, extremely stiff and lightweight rod that has almost a zero coefficient of linear expansion over a broad temperature range. In fact, coefficient of linear expansion is so low that it is immeasurable by conventional thermal analysis equipment. Furthermore, the carbon fiber alignment rods are one-fifth the weight of the alternative low expansion metal rods resulting in a weight savings in excess of 10 pounds on a typical laser.

Process: Pultrusion

Materials: Unidirectional carbon fiber reinforcement in a vinyl ester resin

Properties: Low coefficient of linear expansion, high stiffness, 16 Msi modulus and light weight

Size: .50" to .875" diameter, .056 lb/in³ density

For additional information write or call:

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