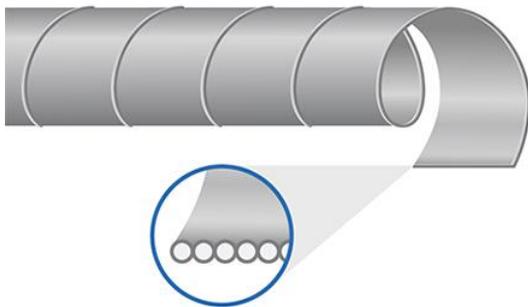


CTS is synonymous with leading edge, advanced rod design and technology.

We invest heavily in both product development and the continuous improvement of our design and manufacturing processes.

Computer Aided Engineering enables CTS to design precise blank ranges with perfectly progressive actions through the entire range. Below are some of our key design and manufacturing concepts and practices:



Carbon Helix Core

At the core of our blanks is a single carbon spiral, known as the 'carbon helix'. This type of structure is regarded as the most effective way of maintaining cross-section stability during bending. Our carbon helix core minimizes cross sectional deformation during loading, improving power and response.

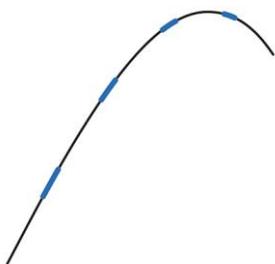
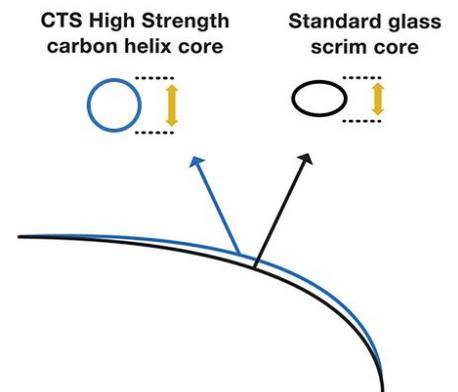
Through the use of the CTS carbon helix core, our blanks achieve a true 100% carbon construction. We

achieve optimal response and agility by utilizing the lightweight and high strength characteristics that only carbon can provide.

Superior Hoop Strength

When a rod blank is flexed and under load, the pressure exertion can cause what is called 'ovaling' (the blank can change from a round shape to a slightly oval shape, as shown below). If there is minimal ovaling under pressure, this indicates the blank has a high 'hoop strength'. CTS blanks maintain high hoop strength even with their lightweight design, as a result of the carbon helix core.

All our carbon helix core blanks use 100% non-woven fibre. A non-woven fibre can achieve 100% of its tensile and compressive loading, unlike woven based scrims which exhibit large amounts of fibre crimping – resulting in greatly reduced fibre loading potential.



Variable Fit Length

The joint lengths between each section within our multi-piece blanks are varied according to the load that they are designed to carry. This ensures flat spots and swing weights are minimized.

Modulus Replacement Technology (MRT)

This new type of construction enables us to place totally different modulus materials at each part of the blank. Unlike traditional multi-modulus systems which lay up materials of differing modulus materials



together, our new Modulus Replacement Technology is all together different, taking blank manufacture to a new level.

Tube Rolling

CTS uses a tube rolling process which involves placing material fibres around a circular mold, or 'part', to be heat cured and then removed. The process begins with the cutting of patterns, known as 'flags', from epoxy pre-impregnated carbon, glass or aramid cloth. Flags are expertly rolled around a steel or alloy mold (mandrel). It is vital to achieve a tight roll, ensuring minimal air entrapment and optimal fibre alignment.

Next, the part is pressure-wrapped with a plastic film. This process, known as debaulking, further compacts the part and purges any remaining air. Finally, the part is heat cured, then removed from its mandrel, leaving a hollow tube.

Key benefits of the tube rolling process are:

- The ability to place fibres along or around the part depending on load situations that the part is to be subjected to
- The ability to achieve a very thin wall, with fibre running in the zero degree (lengthwise) orientation – essential for stiffness-critical applications
- The ability to achieve very high fibre-to-resin ratios with near perfect fibre alignment, due to the high tech nature of pre-impregnated fabrics