APEX
SPACE & DEFENSE SYSTEMS

Carbon Fiber Driveshafts

Strength That Protects

APEX Space & Defense Systems is an industry leader in lightweight, durable carbon fiber driveshafts, with prototype and high-volume manufacturing capabilities and an unmatched reputation for quality.

In extreme environments and when pushed to the limit, traditional metal driveshafts fracture, causing breakdowns, potential accidents and even injuries from the lethal force unleashed on the chassis and any passengers. Carbon fiber driveshafts simply disintegrate, providing added safety in addition to the many performance benefits.

APEX was the first to design and manufacture high-performance composite driveshafts for the motorsports industry. Since that time, we have grown our expertise and success across various racing platforms into specialized driveshaft solutions for Class 7/8 heavy duty trucks and military vehicles, including the Joint Light Tactical Vehicle (JLTV) and the Landing Craft Air Cushion (LCAC).

From design and development through final delivery, customers depend on our expertise in complex filament wound structures. They know our systems, equipment and capacity meet the needs of their most demanding projects and programs.

Carbon Fiber Driveshaft Advantages

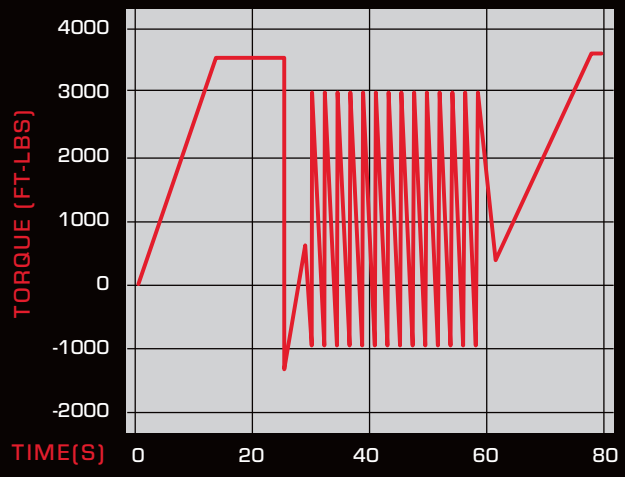
- Higher torque rating
- Higher operational rotating speeds (Higher Critical Speeds)
- Significantly lighter weight
- Superior fatigue and vibration dampening
- Reduced wear
- Extended life at 3-5x longer
- 1-piece solutions to replace multiple metal driveshafts
- Direct replacement with no modifications

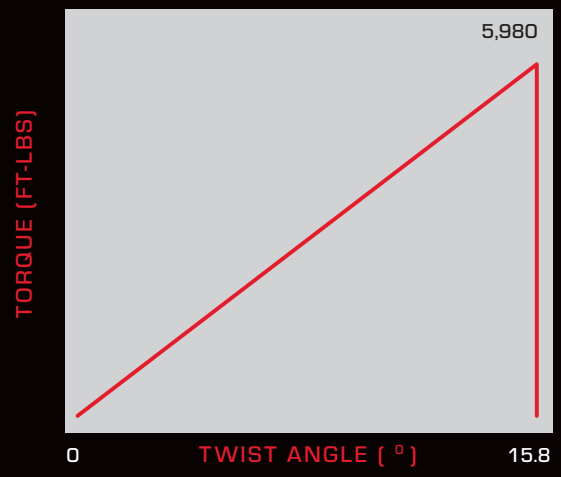
PROTECT. CONNECT. EXPLORE.

Proven Performance

APEX conducted a test to confirm that carbon fiber driveshafts meet the demanding requirements of military vehicles, in addition to heavy vehicles and racing cars. We tested a carbon drive shaft to 3,500 ft–lbs clockwise (CW), held for 15 seconds and then cycled it at 2 Hz between +3,000 ft–lbs CW and 1,500 ft-lbs counterclockwise (CCW). The drive shaft was then proof tested at 3,500 ft-lbs for 15 seconds without failure.

In a recent Design Qualification Test, APEX torque tested a carbon fiber driveshaft to its failure at 5,980 ft-lbs. This is well above the yield strength (2,260 ft-lbs) of the aluminum 1350 U-Joint and demonstrates that an APEX carbon fiber driveshaft and our carbon/metal bonds are the strongest components in the driveshaft system.





	CARBON FIBER	STEEL	ALUMINUM	TITANIUM
TUBE WEIGHT	100%	208%	136%	177%
ROTATIONAL INERTIA	100%	182%	114%	152%
LATERAL STIFFNESS	100%	110%	69%	76%
SPRING RATE	100%	207%	124%	158%
CRITICAL SPEED	100%	73%	71%	65%

** representative data for 50" light driveshafts*

APEX Capabilities

With APEX, you get a leader in advanced composite manufacturing and design engineering. We work with you from the beginning to ensure your unique design and production needs are met.

- Driveshaft material design
- CNC machining
- Patented bonding technology for best in industry metal/composite bonding interface
- Lengths up to 420" / 35'
- Diameters up to 54"
- Non-destructive inspection & proof testing
- 75,000 sq. ft. of manufacturing facilities between California and Wisconsin

About APEX

APEX delivers world-class solutions for the space, defense and mission-critical infrastructure industries. We excel at composite and lightweight material manufacturing from design through full-rate production. Our innovation, quality, integrity and partnership drive the products that protect our nation, connect our world and explore our universe.

Simon Shackelton
VP Business Development
sshackelton@apexsds.com
(206) 890-9515

Rob Barnett
Dirtector Business Development
rbarnett@apexsds.com
(316) 677-7169

APEXSDS.COM