

DLB-2000

Carbon Fiber Core Shafts

Maximize your Equipment Productivity

***All the strength of steel at only
a fraction of the weight***



***From the pioneer and leader in
carbon fiber shaft technology***

DLB-2000 Carbon Fiber vs. Metal

Carbon fiber offers astounding “strength-to-weight” and “stiffness-to-weight” ratios as well as exceptional fatigue life.

With few exceptions, any shaft currently made of steel, aluminum, or even titanium, can be replaced with a much lighter carbon fiber alternative with enhanced performance.

Weight reduction reduces handling injuries and allows companies to comply with safety regulations.

The DLB-2000 Line

Double E introduced carbon fiber shafts to the paper, film, and foil converting industries in 1986.

Since then, we have manufactured more lightweight composite shafts, for more applications, than all other shaft producers combined.

How DLB-2000 Shafts Are Made

Strands of carbon filament are impregnated with a thermo-set epoxy resin, wound at a precise helix angle in overlapping layers on a mandrel, and then cured.

Resulting tubes are a fraction of the weight of the equivalent volume of steel, but equally as strong or even stronger.

Double E winds and cures its own tubes in a state-of-the-art facility for strict quality control and fast lead times.

Available in both lug and through shaft designs.



IMPORTANT FEATURES OF DOUBLE E

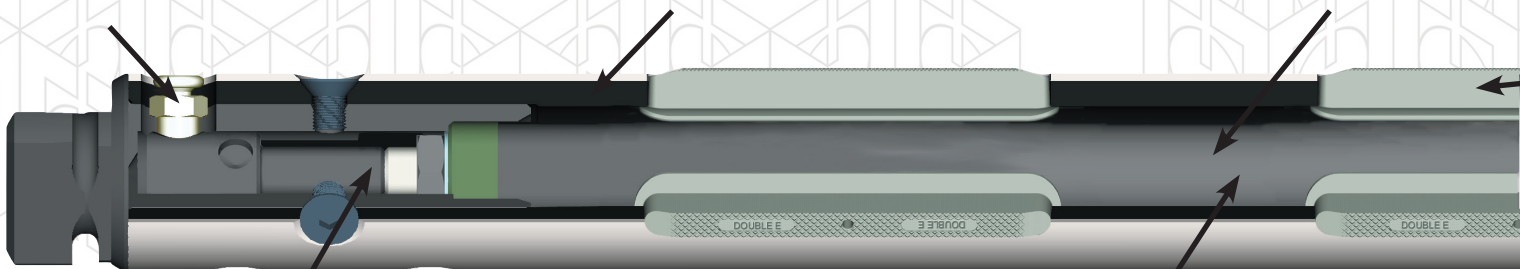
**RUST-PROOF
STAINLESS STEEL
AIR VALVE**

**CARBON FIBER HOUSING PROVIDES EXCEPTIONAL
STRENGTH AT A FRACTION OF THE WEIGHT OF
STEEL**

**SPECIALLY FORMULATED POLYURETHANE
ENSURES DEPENDABLE LUG
EASY REMOVAL OF SHAFT FROM**

**UNIQUE BLADDER
ASSEMBLY ALLOWS QUICK & EASY
BLADDER REPLACEMENT**

**ULTRA-DURABLE POLYURETHANE BLADDER RESISTS ABRASION
AND PUNCTURE, LEADING TO INCREASED BLADDER LIFE AND
REDUCED MAINTENANCE**



COMPARISON OF SHAFT HOUSING MATERIALS

MATERIAL	TUBE MODULUS OF ELASTICITY (E)		ULTIMATE STRENGTH TUBULAR FORM		DENSITY		ENDURANCE RATING	STIFFNESS TO DENSITY RATIO
	10 ⁶ PSI	[GPa]	10 ³ PSI	[MPa]	lb/in ³	[g/cm ³]		
FIBERGLASS	2	[13.7]	50	[344]	0.09	[2.5]	GOOD	23
ALUMINUM (6061-T4)	10	[68.95]	35	[241]	0.1	[2.76]	POOR	100
ALUMINUM (7075-T6)	10	[68.95]	83	[572]	0.1	[2.76]	POOR	100
TITANIUM (6 AL-4V)	16	[110.30]	140	[965]	0.16	[4.43]	GOOD	100
STEEL – 4130 (COLD WORKED)	30	[207]	110	[758]	0.28	[7.75]	GOOD	107
STEEL – 4140 (HARDENED & TEMPERED)	30	[207]	160	[1103]	0.28	[7.75]	VERY GOOD	107
CARBON FIBER COMPOSITE (33 X 10 ⁶ FIBER FILAMENT MODULUS)	17	[117]	250	[1723]	0.06	[1.66]	EXCELLENT	283
CARBON FIBER COMPOSITE (56 X 10 ⁶ FIBER FILAMENT MODULUS)	30	[206]	263	[1813]	0.06	[1.66]	EXCELLENT	500

DLB-2000 CARBON FIBER SHAFTS (available in sizes from 70mm up)

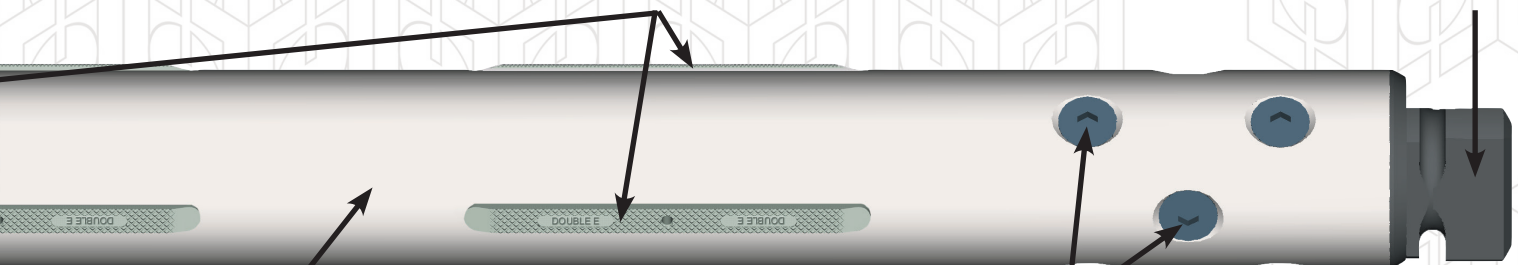
FEATURE	ADVANTAGE	BENEFIT
Carbon Fiber Housing <u>Moduli:</u> Medium (33 million) Ultra-High (56 million)	Low weight.	Fewer handling injuries lower worker's compensation expenses and non-productive time.
		Meet regulations for single person lifting.
	Less deflection.	Reduced vibration and less roll bounce.
		Heavier roll weights.
	High critical speed.	More throughput.
Sleeving	Protects carbon fiber from abrasion.	Long shaft life.
Polyprene Bladder	Stretches far less than traditional rubber.	Dependable lug collapse ensures consistent, easy removal of shaft from spent cores.
	More resistant to heat, puncture, and abrasion.	Far less bladder failure.
Springless Lugs	No springs to break and puncture bladder.	Longer bladder life.
	Diamond plate gripping surface.	Better grip with less slipping.
	Large surface area.	
Journal Fastening	No press fit facilitates journal removal.	Bladder replacement is quick and easy.

E CARBON FIBER BLADDER SHAFTS

POLYPRENE BLADDER MATERIAL
G COLLAPSE AND CONSISTENT,
FROM CORES

DIE-CAST ALUMINUM LUGS, MANUFACTURED
WITH AN EXCLUSIVE DIAMOND PLATE
GRIPPING SURFACE (STEEL LUGS OPTIONAL)

EASILY REMOVED HEAT
TREATED, ALLOY STEEL
JOURNALS



SLEEVE
PROTECTS CARBON FIBER
HOUSING FROM ABRASION

PROPRIETARY FASTENING SYSTEM DOES NOT REQUIRE A PRESS FIT –
CLOSE TOLERANCE, DEEP INSERTION OF JOURNALS, AND FLATHEAD
SCREWS ENSURE STRONG CONNECTION AND EASY MAINTENANCE

COMPOSITE SHAFTS - CUSTOMER SPECIFICATIONS

Company: _____ Date: _____
Name: _____ Title: _____
Address: _____ City: _____
State: _____ Zip: _____ Country: _____
Telephone: _____ Fax: _____
Email: _____

GENERAL SPECIFICATIONS

Actual Shaft Diameter: _____
Nominal Core I.D.: _____
Core Material: _____ Wall Thickness: _____
Core Manufacturer & Grade: _____
Steel-Capped Cores: All ☐ None ☐ Some ☐
Shaft Overall Length: _____
Support Separation: _____
Bearing Material / Type: _____
Max. Roll Weight: _____
Max. Roll Width: _____ Diameter: _____
Other Roll Weight(s): _____
Other Roll Width(s): _____
Other Roll Diameter(s): _____
Min. Roll Weight: _____
Min. Roll Width: _____ Diameter: _____
Roll Position on Shaft: Left ☐ Right ☐ Center ☐
Web Speed: _____ Tension (P.L.I.): _____

PRESENT APPLICATION

Equipment Manufacturer: _____
Machine Type: _____
Web Material: _____
Used On:
Unwind ☐ Rewind ☐
Center Brake or Drive ☐ Surface Brake or Drive ☐
Drum Supported ☐ Hoisted ☐ Slit Rewind ☐
Max. # of Slit Rolls: _____ Min. Slit Width: _____
Min. Air Line Pressure Available: _____

PRESENT SHAFT(S)

Manufacturer: _____
Material: _____ Wall Thickness: _____
Weight: _____ Quantity Required: _____

PROBLEMS WITH PRESENT SHAFT(S)

Weight ☐ Deflection ☐ Maintenance ☐
Other _____

Sketch shaft details (include all envelope dimensions). Please send shaft drawing if available.



DOUBLE E

319 Manley Street • West Bridgewater, MA 02379
(508) 588-8099 • (508) 580-2915 fax
ee-co.com • info@ee-co.com

