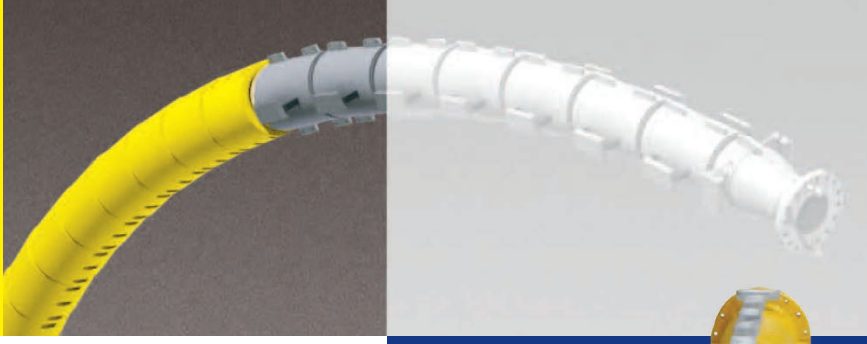
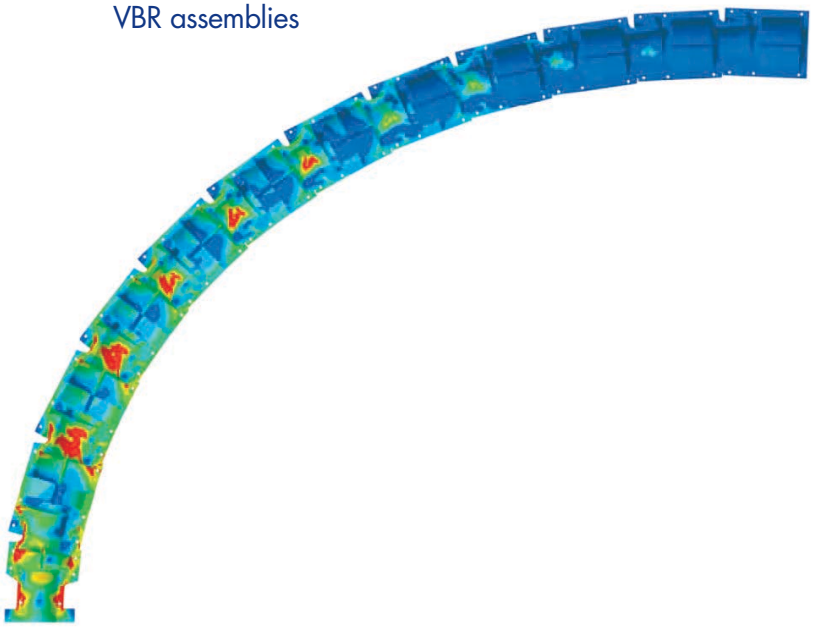
HYBRID VERTEBRAE BEND RESTRICTOR



ABCO Subsea has expanded its industry-leading Vertebrae Bend Restrictor (VBR) product line to include Hybrid VBRs – VBR assemblies made with both steel and polyurethane segments to capitalize on the benefits of both materials in deep water, high load applications. Hybrid VBRs utilize a steel flange and steel segments near the VBR assembly's structural support interface, where most loading occurs. Farther from the VBR assembly's interface, polyurethane segments are used to take advantage of the near neutral buoyancy of the polyurethane.

Advantages:

- Hybrid VBRs are lighter and easier to handle and assemble than Steel VBR assemblies
- Hybrid VBRs accommodate bigger, longer, heavier umbilicals used in deep water
- Cost savings of 5-30% when compared to Steel VBR assemblies



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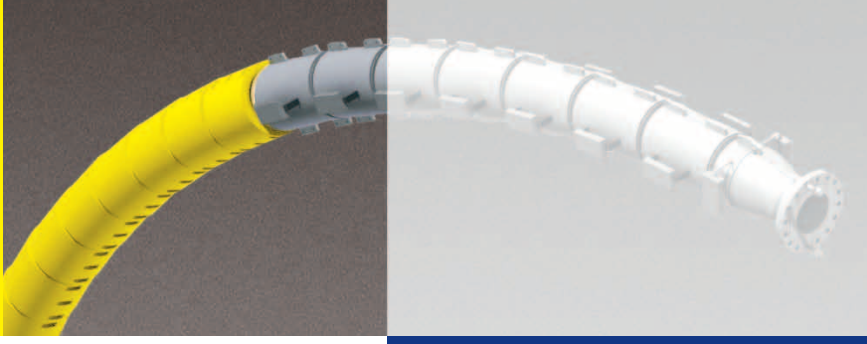
HYBRID VERTEBRAE BEND RESTRICTOR Technical Data

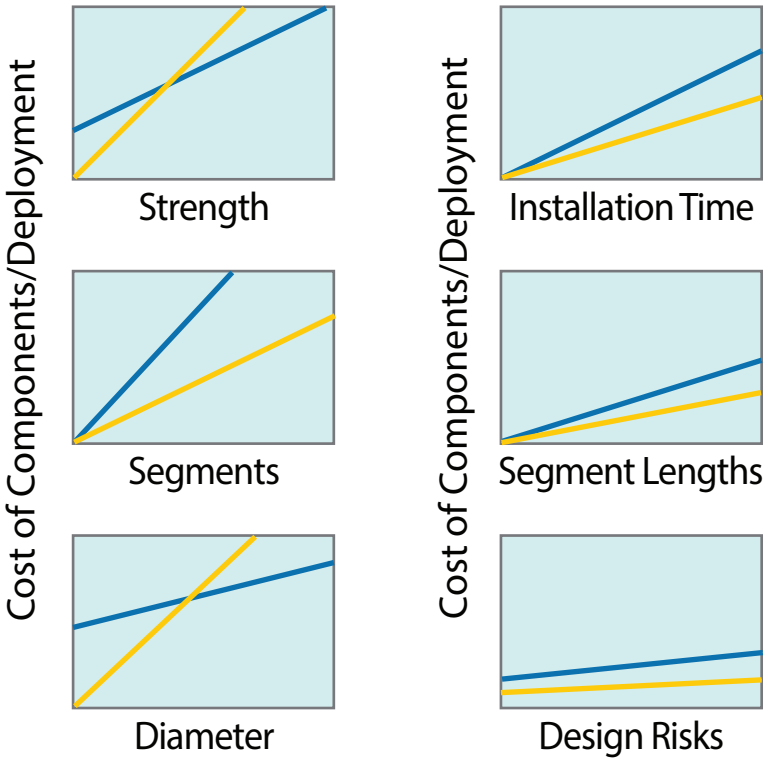


Material Specs:

STEEL VBR SEGMENTS	
Steel Strength	36 – 70 ksi yield
Anode	Aluminum Alloy
Subsea Epoxy Coating	3-part
Stress Wafer	70-D Ether-based polyurethane

POLYURETHANE VBR SEGMENTS	
Material Designation	70-D or 85-D, Ether-based Polyurethane
Manufacturing Process	Atmospheric Cast
Specific Gravity	1.16 – 1.20

Cost Performance of Hybrid VBRs vs. Steel VBRs



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