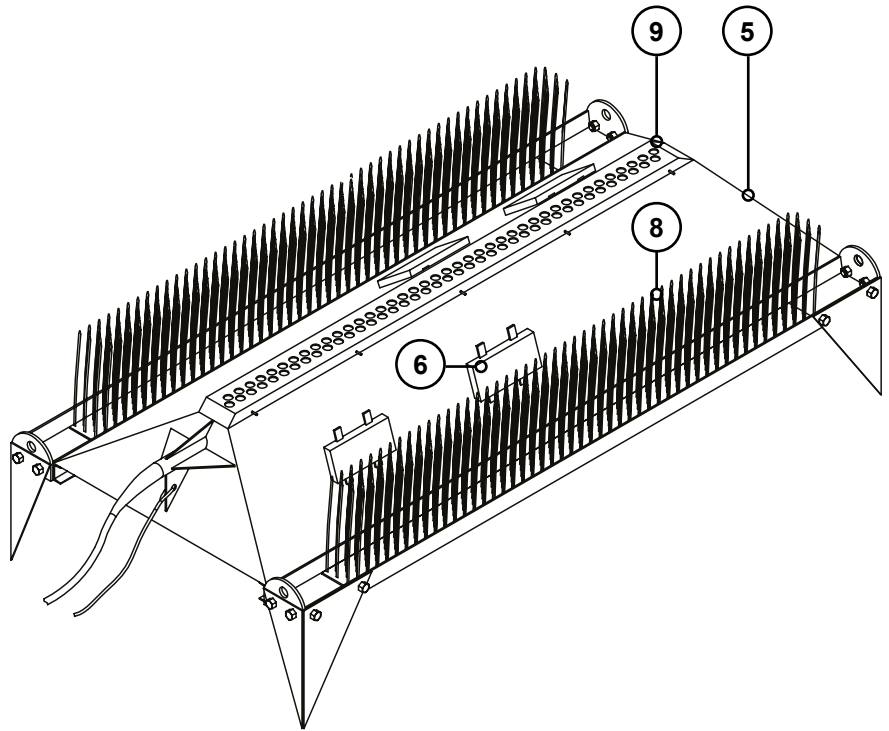


# DEEPWATER

## VSE™ ANODE

### General

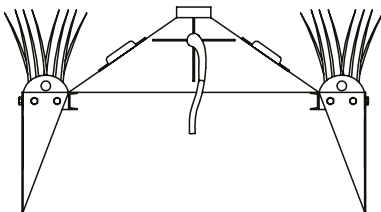
The VSE buries itself below the seabed to protect assets in shallow water, and creates a small pocket of water inside the anode frame during the natural self-burying phenomenon. This undisturbed electrolyte allows the impressed-current anodes to deliver consistent cathodic-protection current through the mud on the sea floor even if the tide goes completely out. That way, mixed metal oxide titanium anodes are always in contact with a uniform and stable electrolyte and provide full, undisturbed performance in difficult conditions.



### Anode elements

Anode elements are titanium tubes with triple-coated MMO coating

<b>Titanium substrate (Item 1)</b>	STM338 Gr.2 - 1.25" Tube 0.035" WT 48" long 2 tubes used at 48" and 1 at 42"
<b>Coating</b>	IrO <sub>2</sub> / Ta <sub>2</sub> O <sub>5</sub> Tri-coat mixed metal oxide
<b>Center connection</b>	Internal tin compression connector, resistance ≤0.001 Ohm sealed with proprietary resins, tested for integrity with helium gas
<b>Interconnect</b>	Cable #2 AWG Exane insulated with Teflon over sheath Main supply cable - 600/1000V rated for direct burial
<b>Conductor (Item 2)</b>	4/0 AWG
<b>Insulation bedding</b>	HMWPE PVC type 9
<b>Armor</b>	1.6 mm galvanized steel wire



### Outer sheath HMWPE

<b>Minimum bend radius</b>	18" [450 mm]
<b>Anode tether (Item 3)</b>	3/4" [20 mm] Wire rope dry galvanized with hot dip galvanized clips and thimbles
<b>Bend stiffener (Item 4)</b>	Steel-reinforced heavy-duty rubber
<b>Anode vault material (Item 5)</b>	ASTM A36 steel - welded construction
<b>Coating</b>	Seawater envelope Teflon loaded vinyl ester, one coat 35-45 mils DFT  Surface prep SSPC SP5 or NACE 1 white metal Anchor profile 4 mils minimum

### Bare steel/zinc anodes

<b>Rest of vault (internal)</b>	Coating: Vault external Shop primer / zinc anodes
<b>Cathodic protection (Item 6)</b>	2 x 48 lb and 2 x 24 lb zinc hull anodes external, 2 x 24 lb zinc hull anodes internal
<b>Vault primary shield (Item 7)</b>	Teflon-faced CPVC composite
<b>Anti-scour fronds (Item 8)</b>	Nylon 17" 63 fronds / sq. ft.
<b>Filters: Footprint (Item 9)</b>	6" x 41" x 3" Vinyl ester grating with 12 oz polypropylene felt filter. Filters: Gas vent 96" x 5" x 1.5" Vinyl ester grating with 12 oz Teflon felt filter. Sacrificial base plate ASTM A36 steel plate 40" x 96" x 0.25" Side ballast 80 lb concrete

