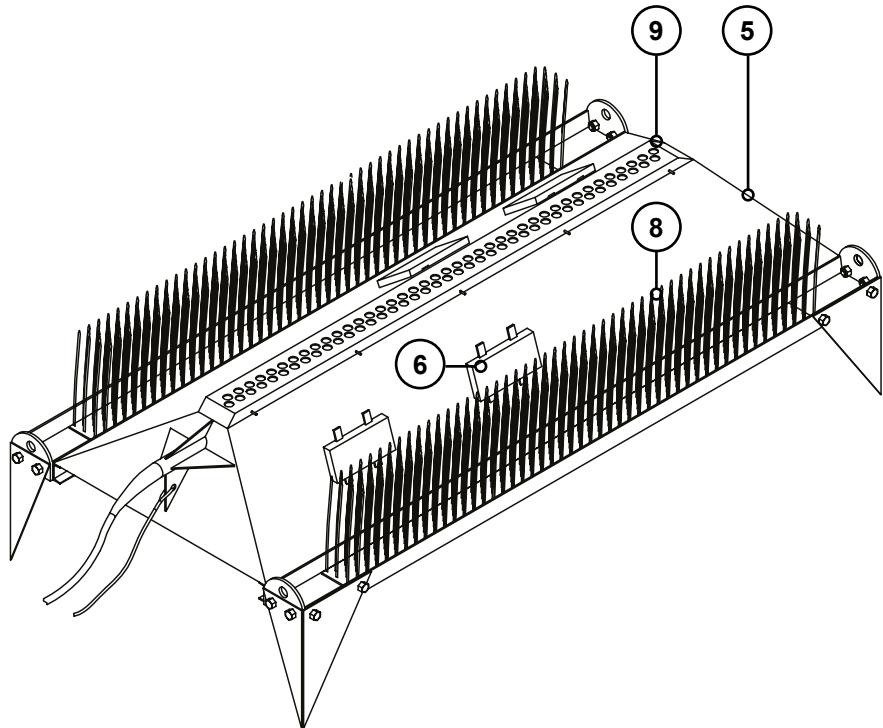


# DEEPWATER

## 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

**Titanium substrate (Item 1)** STM338 Gr.2 - 1.25" Tube 0.035" WT 48" long  
2 tubes used at 48" and 1 at 42"

**Coating** Ir<sub>2</sub> / Ta<sub>2</sub>O<sub>5</sub> Tri-coat mixed metal oxide

**Center connection** Internal tin compression connector, resistance  $\leq 0.001$  Ohm sealed with proprietary resins, tested for integrity with helium gas

**Interconnect** Cable #2 AWG Exane insulated with Teflon over sheath  
Main supply cable - 600/1000V rated for direct burial

**Conductor (Item 2)** 4/0 AWG

**Insulation bedding** HMWPE PVC type 9  
1.6 mm galvanized steel wire

**Outer sheath** HMWPE

**Minimum bend radius** 18" [450 mm]

**Anode tether (Item 3)** 3/4" [20 mm] Wire rope dry galvanized with hot dip galvanized clips and thimbles

**Bend stiffener (Item 4)** Steel-reinforced heavy-duty rubber

**Anode vault material (Item 5)** ASTM A36 steel - welded construction

**Coating** 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**

**Rest of vault (internal)** Coating: Vault external  
Shop primer / zinc anodes

**Cathodic protection (Item 6)** 2 x 48 lb and 2 x 24 lb zinc hull anodes external, 2 x 24 lb zinc hull anodes internal

**Vault primary shield (Item 7)** Teflon-faced CPVC composite

**Anti-scour fronds (Item 8)** Nylon 17" 63 fronds / sq. ft.

**Filters: Footprint (Item 9)** 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

