

Premium Subsea Vent Caps (“Hatch Covers”) are used in the oil and gas E&P industry for deployment of suction piles for foundation, mooring, and hold-down on the ocean floor.

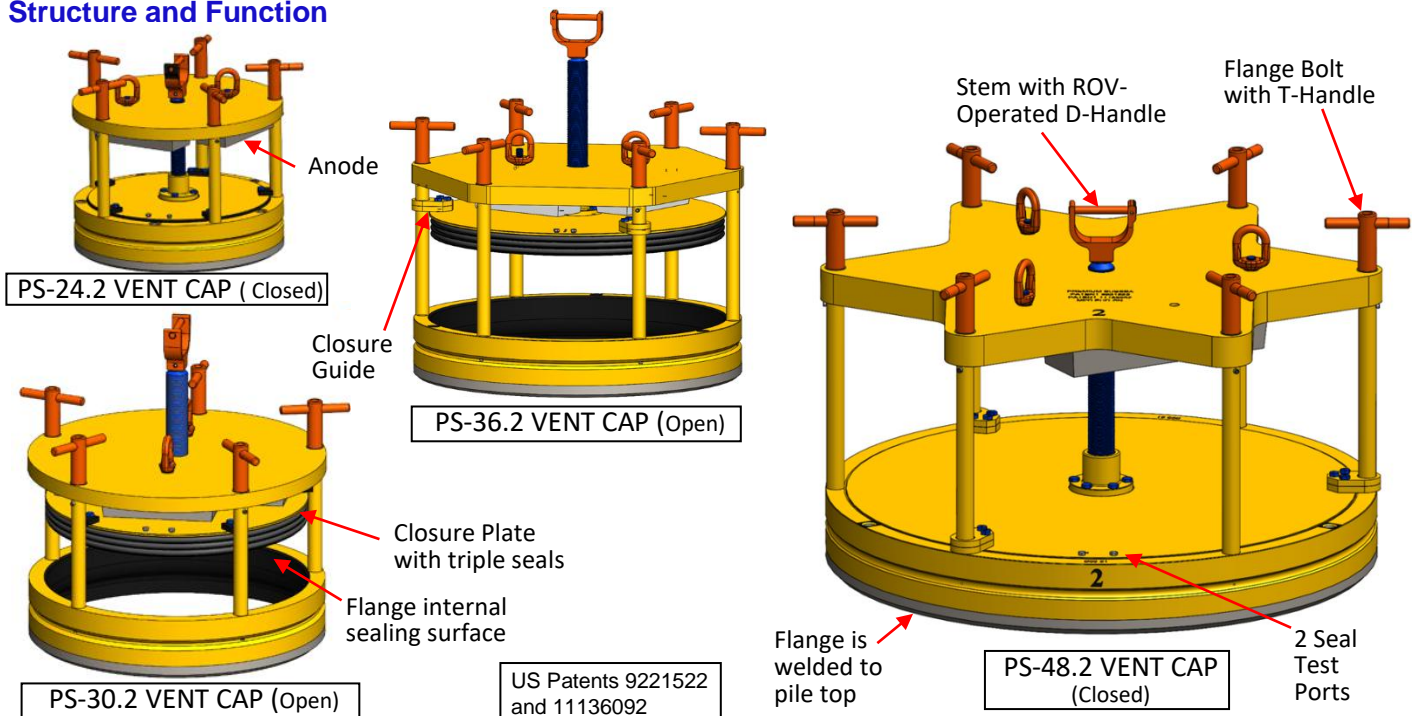
These products are available in bore sizes 12” through 52”

-- Have DNV and ABS Type Approval – Are Easily Operated and Reliable (0 Failures)--

Features

Design Specification:	Design per DNVGL-OS-C101 Material per DNVGL-OS-B101
Function:	Allow seawater venting through suction pile. Once the pile is lowered, the Vent Cap closes to seal the suction pile.
Operating Interface:	Direct ROV-Manipulator drive: D-Handle for Stem and T-Handle for Flange Bolts
Turning Direction	Open: Counter-clockwise / Close: Clockwise
Vent Hatch Orientation:	Can be installed and operated in vertical or horizontal orientation.
Stem Position Indication:	Visual: Position determined from ROV camera. Hard stop in both full open and full closed position.
Closing Mechanism:	Threaded Stem: Tightened by ROV.
Field Testing:	Seal Test Ports allow seal testing anytime / anywhere prior to launch.
Welding:	None. All components are manufactured without welding. Flange is welded to Pile Top by Pile Fabricator.

Structure and Function



Open Position – As suction pile is lowered to sea floor, water flows upwards through the pile and out the opened Vent Cap.

Closed Position – When pile has been lowered to the sea floor and self-penetrated to stability, an ROV rotates the center Stem to move the Closure Plate down into the Flange, perfecting the seal.

Once the Vent Cap is closed, water is pumped from inside the pile through a Suction Port, sinking the pile to the required depth in the sea floor. Premium also offers the Suction Port System (Port Tube, Parking Receptacle, Plug, and Stinger) to complete suction pile top installation.

Specifications of Representative Sizes

Vent Cap	PS-24.2	PS-30.2	PS-36.2	PS-48.2
Weight	1,078 lbs (490 kg)	1,408 lbs (640 kg)	2,082 lbs (4,580 kg)	2,897 lbs (1,317 kg)
Flow ID	25.12" (638 mm)	30.00" (762 mm)	36.00" (914 mm)	48.00" (1,219 mm)
Pile Hole ID	27.75" (704 mm)	32.68" (830 mm)	38.68" (982 mm)	50.50" (1,283 mm)
Max. Height	36.42" (925 mm)	37.60" (955 mm)	44.64" (1,134 mm)	49.98" (1,269 mm)
Outside Diameter	35.16" (893 mm)	40.04" (1,017 mm)	46.12" (1,172 mm)	58.12" (1,476 mm)
Max. Stem Torque	100 ft-lb (135 Nm)	125 ft-lb (170 Nm)	135 ft-lb (183 Nm)	150 ft-lb (200 Nm)

Design Requirements

Type Service:	Untreated seawater and low-density concentrations of fine seabed clay.
Pressure Rating:	145 psi [10 bar] - Internal and external
Design Life:	30 years
Water Depth Range:	No limit

Design Operating Conditions

Max. Ambient Temperature:	75°C [167°F]
Min. Ambient Temperature:	0°C [-32°F] Limited by Freezing Water

Materials

Plate (Closure and Top):	50 ksi [343 MPa] Yield Strength Plate – Grade: ASTM A572-50
Stem:	95 ksi [650 MPa] Yield Strength Bar – Grade: ASTM A193-B7
Flange and Other Bolting:	105 ksi [720 MPa] Yield Strength Bar – Grade: ASTM A193-B7
Flange:	40 ksi [275 MPa] Yield Strength Forging – Grade: ASTM A350 LF2 Cl 1
Seals:	Buna - 3 O-ring Seal Set

Above materials are the same for all 4 sizes. For additional component materials, see Vent Cap Bill of Material.

Coating

General Coating System:	Norsok M-501 System 7, Cycloaliphatic Epoxy
Supplier Paint Reference:	Carboguard 890
Bolting and Sealing Surface Coating:	Xylan 1010

Other coating options are available.

Testing – Design Validation

Design Validation Test:	Performed on prototype to validate design. Includes Hydrostatic Pressure Test at 175 psi (12 bar) [10 bar * 1.2 per DNV] and Operational Test
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Testing – Factory Acceptance Test (FAT)

FAT Seal Test	145 psi [10 bar] (minimum). Duration: 5-minute (minimum)
Operational (Function) Test:	Operate complete cycle: Open and close
	Verify running torque below specified torque value
Electrical Continuity Test :	Verify continuity between Vent Cap components and Anodes

FAT is performed on 100% of completed product.