

Ultra Deep Water Suction Pump / Lift Tool

SAPS-008

SPT Offshore



SPT Offshore operates an ultra deep water high-volume suction pump unit (SAPS-008) for installing suction piles in water depths up to 3000m. The SAPS-008 is operated using hydraulic power from a ROV, which is transferred with a hotstab to the pump unit. Venting of the air and water within the suction pile is accomplished through a single hydraulically operated vent valve in the pump unit. Hydraulic operated pins accommodate latching of the pump unit to the pile for lifting and pumping purposes and allow for quick release and subsea mating of the pump unit and the suction pile..

The SAPS-008 can be configured for installation of both single suction piles and suction pile clusters. The suction system incorporates two parallel configured water pumps, allowing for pumping at either high flow rate or at high pressures with limited hydraulic power input. The result is a flexible and fully redundant system for installing suction anchors and foundations.

The SAPS-008 main purpose is to combine suction and lifting services within one system. Sensors and mechanical systems are part of the pump unit and are therefore not an integral part of the suction pile structure. In general the SAPS-008 pump system allows for the following operational activities:

- Suction pile installations
- Suction pile removals
- Suction pile upending
- Horizontal and vertical remote (in air) mating with suction pile
- Subsea mating with suction pile

The SAPS-008 is standardly equipped with instruments for monitoring the suction process with the ROV camera. Additionally a logging unit can be added for recording the suction data. Standard monitoring instruments included are to measure the following parameters:

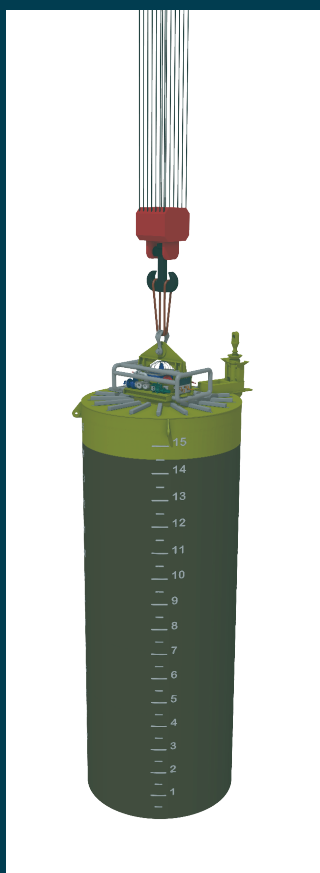
- Differential water pressure
- Pile inclination (bullseye)
- Hydraulic pressure
- Internal soil plug distance (echo sounder)

Optional instruments can be added to measure additional parameters. For example: water depth, pumping rate, heading (gyro), etc.

The SAPS-008 suction system and its support frame will be transported in a standard offshore container, fully equipped with workshop, tools and spare parts to perform maintenance .

Advantages of the SAPS-008 system over ROV mounted systems are:

- The pump is a suction system and lifting tool combined. The hydraulic operated pins reduces rigging/releasing time offshore
- No instruments are needed on each suction pile these are incorporated in the suction system
- Fast installations with high capacity pumps and reduced rigging and handling time
- Pump flow easily reversible in case of penetration failure
- Internal soil plug measurement built in pump system
- Venting is included into the pump system and additional valves are therefore not required on each pile
- More contingencies available as the full suction system can be recovered if needed.



Specifications Suction Pump Spread SAPS-008

Suction Pump

- | | | |
|--------------------------------|-------------------------------|---------------------------------|
| ▪ Weight: | 6.5 mT | |
| ▪ Dimensions: | 3.3 x 2.2 x 2.1 m | |
| ▪ Pumping rate: | Centrifugal pump | 600m ³ /h @ 1.5 bar |
| | Lobe pump | 125 m ³ /h @ 5.0 bar |
| | Differential pressure range | 8.0 bar (50 m ³ /h) |
| ▪ Internal soil plug | Altimeter | 0 - 50 m |
| ▪ Inclination | Subsea bullseye | 5 deg |
| ▪ Power consumption | Single centrifugal pump | 30 kW @ 1.5 bar |
| | Single lobe pump | 30 kW @ 5.0 bar |
| ▪ Required hydraulic input ROV | Bi-directional hydraulic flow | 90 l / min |
| ▪ Vent valve | Pressure | 200 bar |
| | No. | 1 |
| | diameter | 997 mm (40 inch) |
| ▪ Maximum water depth | | 3000 m |
| ▪ Pile interface | Flange | 40 inch |
| | Minimum height | 250 mm |
| ▪ Docking | Surface/submerged | |
| ▪ Lift capacity | SWL | 300 mT |

Open top 20' Offshore container (workshop + pump equipment)

- Weight 15 mT
- Dimensions 6.1 x 2.4 x 2.6 m

Pump Support frame

- Weight 1.0 mT
- Dimensions 2.2 x 3.2 x 1.5 m