

SUCTION PILE TECHNOLOGY



Ultra Deep Water Suction Pump / Lift Tool
SAPS-003

SPT Offshore



SPT Offshore operates ultra deepwater high-volume suction pump skid SAPS-003(s) for installing suction piles in water depths up to 3000m.

The pump skid is operating using the hydraulic power of an ROV, which is transferred by the ROV's hot stab, thus eliminating the requirement for a separate umbilical. Venting of the air and water within the suction pile is accomplished through two large hydraulic operated vent valves built in the pump itself. Hydraulic operated pins accommodate the connection between the suction pump and the suction pile. This connection enables easy release of the pump from the pile after the suction operation.

The pump skid is suitable for installation of both single suction piles and suction pile clusters. It incorporates two water pumps in a parallel configuration, allowing pumping at either high flows (with centrifugal pump) or at high pressures (with lobe pump). The result is a flexible and fully redundant system.

The pump skid is equipped with the following instrumentation which can be monitored by the ROV camera during the installation operation:

- Differential pressure gauge - Suction pressure.
- Bullseye – inclination of the pile.
- Hydraulic pressure gauge - hydraulic pressure in the pump system.
- Altimeter - Internal soil plug.

The pump skid and its support frame will be transported in a 20" container which is fully outfitted with spare parts and a workshop for repair and maintenance.

Advantages of the pump skid over the usual ROV zip pump:

- No large vent valves needed on each suction pile, as venting is accomplished through the pump itself using two No. 20" vent valves, hence reducing fabrication cost.
- The pump is a lifting tool as well with hydraulically operated lifting pins which reduces rigging/releasing time offshore.

- No bullseye needed on each suction pile, as the bullseye is built in the pump.
- No transponder holder required on each pile, as the transponder holder is built in the pump.
- Fast installation as there is no weight limitation on the pump, which enables the use of high volume suction pumps delivering continuous 300m³/hr flow (max. flow) or at a differential pressures of up to 5 bar (max pressure).
- Pump flow proportionally controlled to avoid uncontrolled soil heave inside the suction pile.
- Pump flow is reversible at any time in case of penetration failure.
- Internal soil plug is measured using altimeter built in the pump.
- No surprises subsea as the pump is connected on the suction pile top at the surface and recovered on completion of penetration.

Specifications Suction Pump Spread SAPS-003(s)

Pump skid

- Weight: 5mT
- Dimensions: 2.5 x 2.2 x 2.0m
- max. water depth: 3000m
- max. water flow
 - Centrifugal pump 300m³/hr
 - Lobe pump 43 m³ /hr
- max. diff. pressure: 0 - 5bar
- vent valves: 2 no's x 20"
- Pile interface
 - Flange 30"
 - Minimum height 250mm
- Lift capacity SWL 90mT

Sensors

- Internal soil plug Altimeter 0 - 10m
- Inclination Subsea bullseye +/- 5 deg

Power requirements

- Power consumption
 - Single centrifugal pump 15kW @ 300m³/hr
 - Single lobe pump 15kW @ 5.0 bar
- Required hydraulic input ROV
 - Bi-directional hydr. flow 40l/min
 - Pressure 200 bar

