



HABITAT 02 ELEPHANT FEET

GENERAL INFO

Creating a dry space underwater can be done with several technics. One of these technics is by means of a so-called habitat. A habitat is a confined space underwater in which the air pressure in the chamber is slightly higher than the water pressure outside the chamber. Because of the difference in pressure the chamber will stay dry and personnel and material can be locked in by means of a pressure chamber on the surface.

The habitat weighs approximately 82 metric tons, but can differ as a result of project specific configuration. The high weight of the habitat is necessary to compensate the positive buoyancy of the air chamber underwater. The habitat is not a pressure vessel, because it is open at the bottom. Therefore, only minimal amount of static pressure is acting on the walls of the chamber. The DCN Welding Habitat 02 has been designed to allow diving operations to a water depth of 300 msw, either in fullsaturation, mixed gas or air diving range.

General limitations

Max. Hs during offshore lift

3.0 m (Does not apply to subsea lifting)

Max. Hs during subsea lift

3.0 m (Tp= 4.3 sec, Vhook= 0.5 m/s,
DAF ≤ 2.5

Max. Gross Weight

82 597 kg

Payload (max.)

0 kg

Tare (max.)

82 597 kg

POU type

C

Operational class

R30

Subsea class

530

Minimum design temperature

-20 °C

Number of sling legs

4 (6300 mm)

Sling angle (max.)

25 ° from vertical

Operational limitations

Transit

G-forces horizontal

1g

G-forces vertical

1.3g / -1.3g

Maximum wind pressure

1 kN/m²

Offshore lifting

Maximum wave height

3 m

Design factor in air

1.8

Design factor subsea

2.5

Total mass

82.6 mT

Installation on seabed

Sea current

2 kts

Seabed strength

65 kN/m²

Air volume habitat

4.7 m³

Operation on seabed

Sea current

2 kts

Seabed strength

50 kN/m²

Air volume habitat

46.7 m³

Survival on seabed

Sea current

5.6 kts

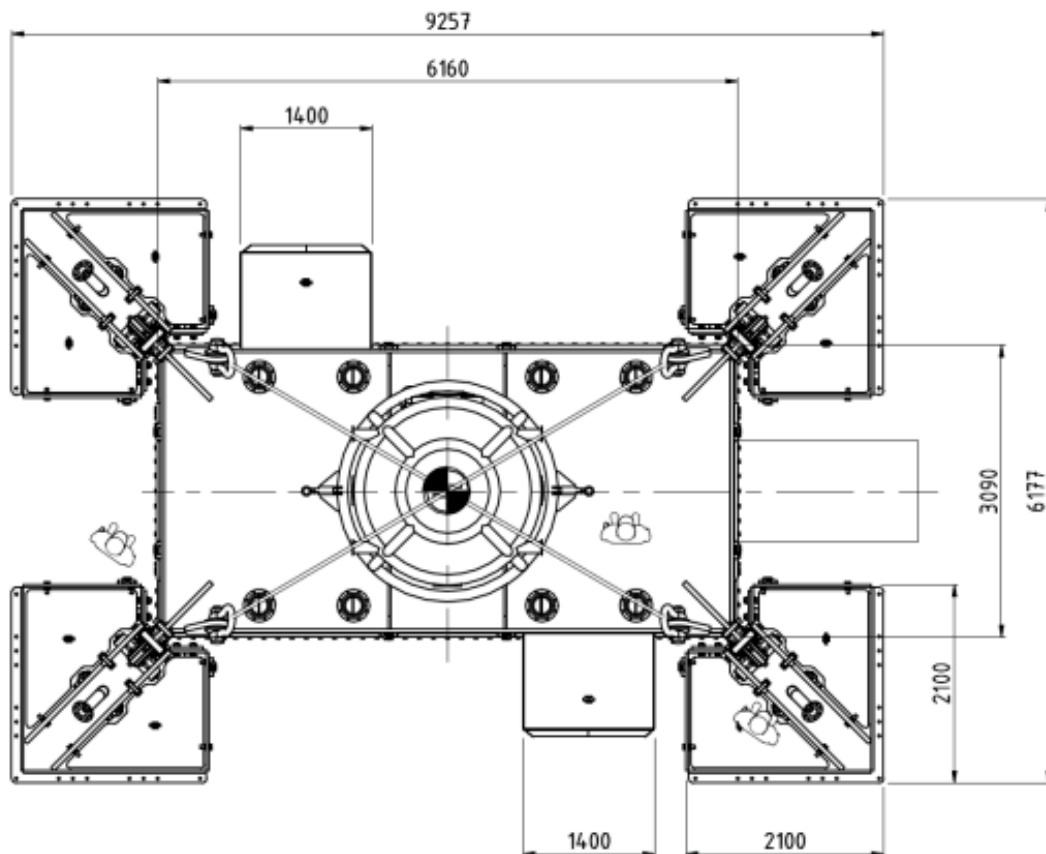
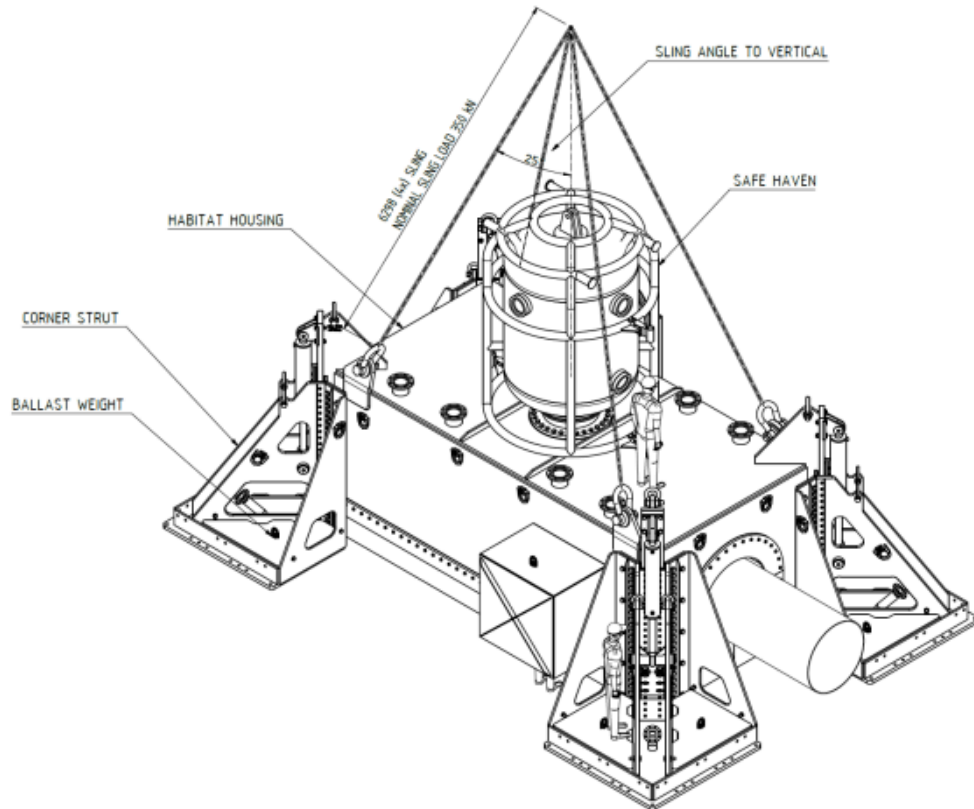
Seabed strength

80 kN/m²

Air volume habitat

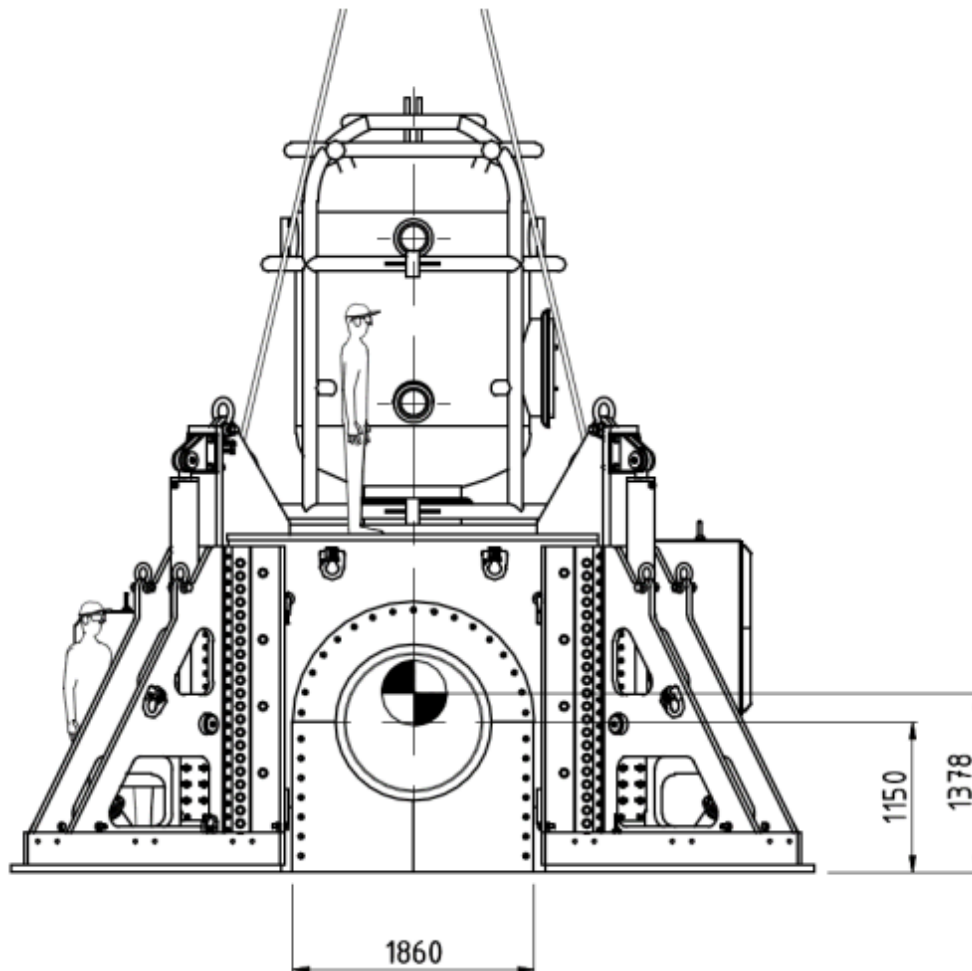
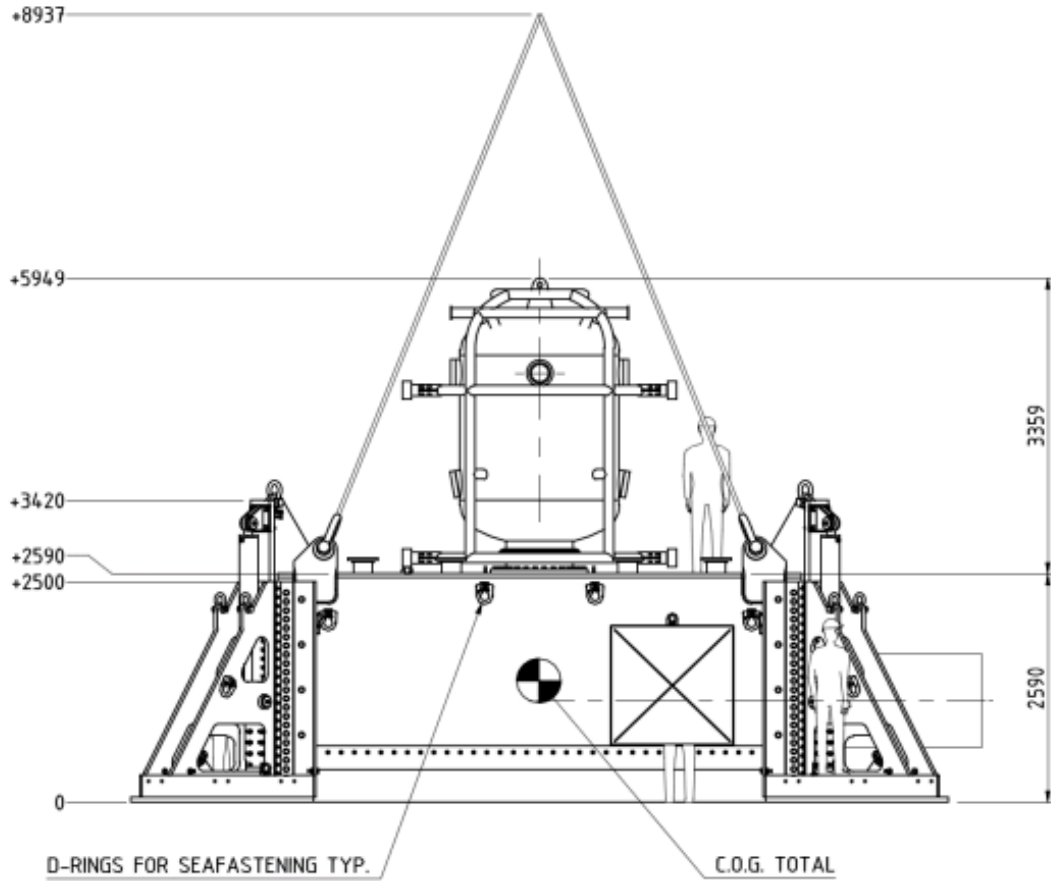
4.7 m³

The habitat & Safe haven layout



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Habitat

The habitat, including safe haven, will be positioned on the seabed. After the positioning has been completed and stability has been proven, the superintendent will give the go ahead for dewatering the habitat. Diving gas is blown into the habitat until the water level is below the flooring in the habitat and the seals of the habitat are checked for gas leakages. After the gas bubble in the habitat has been secured, the underwater works can be commenced.



Safe Haven

The safe haven is a steel chamber at the top of the habitat that is not floodable. The safe haven acts as a diver emergency shelter in the case that the safety of the divers in the habitat cannot be guaranteed. For instance, when the vessel is separated from the Habitat. The chamber is equipped with survival suits, battery powered scrubbers and lighting, through water communications, on board breathing gas, food and water.



Corner struts

The habitat is supported by 4 corner struts. Each corner strut has a footprint of approximately 2 m², which provides enough support for medium clay or harder seabed. In the case that the seabed has less strength additional mud-mats can be attached to the corner struts to increase the support surface area.

All 4 corner struts are attached to hydraulic cylinders. These cylinders are operated by the diver from the controls on the habitat. Each hydraulic cylinder has a stroke of 900mm.

Furthermore, every corner strut has 2 triangular pockets at the bottom. In these pockets the ballast weights are placed, which have all together a total weight of 16 mT.

Wet entry/exit door

Divers can enter or leave the habitat through the side door. A steel box structure is attached to the outside of the habitat surrounding the diver door. The purpose of this box is to maintain the gas bubble in the habitat while the divers enter or exit the habitat, and thus to prevent partial flooding of the habitat.



Gas filtration system

The habitat is equipped with a 3-stage gas filtration system. The filtration system removes the undesired gasses and fumes, formed by welding and breathing of the divers, from the gas bubble in the habitat. By application of the gas filtration system safe breathing gas is maintained in the habitat in a cost-efficient manner, because lower gas losses can be achieved.

Hydraulic Power unit

The habitat is equipped with 4 corner struts, of which the vertical position can be adjusted with the attached hydraulic cylinders. The habitat has a dedicated hydraulic power unit that supplies hydraulic power to control the hydraulic cylinders. The hydraulic power unit is equipped with 2 hydraulic pumps. Each pump provides enough flow to operate 2 hydraulic cylinders at the same time.

HPU specification

Electric motor

2x 22kW

Power supply

440 V / 4P / 3PH / 60Hz / IP55 / Class F

Working pressure

250 bar

Flow rate

2x 49 LPM

Tank capacity

400 liters

Starting mode

Star delta starter

Hydraulic oil type

Panolin VG32 oil

wet weight

1500 kg



Habitat Control

A Habitat Supervisor will be located in Habitat control as long as Divers are inside the Habitat. They shall be able to communicate with Dive Control through a minimum of two different communication systems. A Habitat Supervisor can be relieved and/or supported as required by:

- Another Habitat Supervisor
- A Diving Supervisor
- The Diving Superintendent



Habitat welding container



Workshop container

