



Trans Adriatic
Pipeline

TAP AG Project Title / Facility Name:
Trans Adriatic Pipeline Project

**RELAZIONE ILLUSTRATIVA
DELLE OPERAZIONI DI ESPIANTO
EFFETTUATE IN AREA 5 SU NUCLEI DI
BIOCOSTRUZIONI A CORALLIGENO**

-

DICEMBRE 2019 – GENNAIO 2020

**ALLEGATO 6
DATA SHEET DELLE ATTREZZATURE**

Documento TAP AG N°:

ALLEGATO 6 - OPL00-C30373-150-Y-TRS-0012

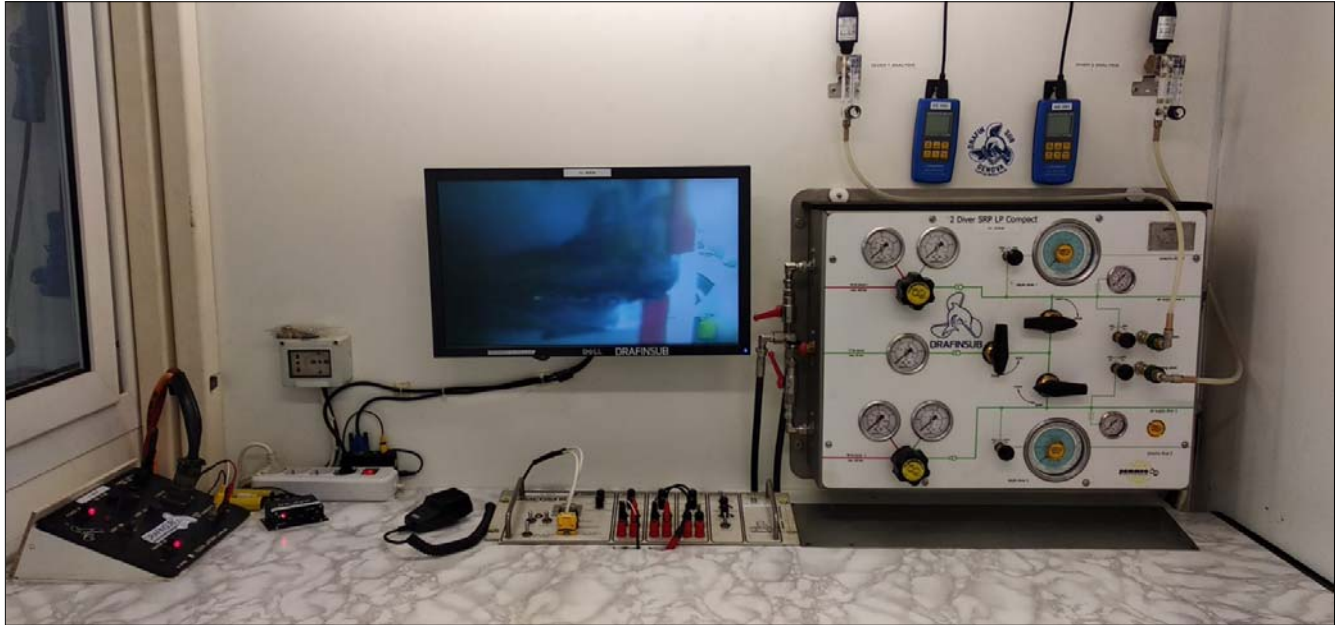
AIR CYLINDERS QUAD



SPECIFICATIONS

Manufacturer	BIEFFE SALDATURA srl
Serial	13/069/16
Weight	1500Kg
Number of Cylinders	16
Cylinder dimensions	Ø 203mm
Type of Gas	Air
Max working pressure	200bar
Test pressure	300bar
Max operating temperature	-20°C +65°C
Cylinder's serial numbers	12-160866, 12-160867, 12-160868, 12-160869, 12-160871, 12-160872, 12-160873, 12-160876, 12-160877, 12-160881, 12-160882, 12-160886, 12-160887, 12-160888, 12-160932, 12-160942

AIR DIVING CONTROL ROOM



EQUIPEMENT

AS273	Communication panel Nautech srl - Color 42
U926	Video control panel - Telesub Lanterna
U335	HP-LP Gas panel for 2 Divers plus 2 oxygen analysers
U316	Surface Diving Umbilical 110Mt
U321	Surface Diving Umbilical 120Mt
9966	CO2 Portable fire Extinguisher
U215	Gas pack, 6cylinder, 47L @ 200bar, 4 main cylinder + 2 emergency cylinder

AIR COMPRESSOR



SPECIFICATIONS

SPECIFICATIONS	
Manufacturer	BAUER
Model	Mariner 250E
Motor	Electrical 3 phase
Capacity	250Lt/min
Power	5,5Kw
Weight	135Kg
Filter System	P31
Serial Number	12-117250
Internal ID	AS180

BAUER VERTICUS 5 FOR AIR USAGE



SPECIFICATIONS

SPECIFICATIONS	
Manufacturer	BAUER
Model	PE 550 VE – F03
Motor	Electrical 3 phase
Capacity	550Lt/min
Power	11Kw
Weight	468Kg
Serial Number	13-134543
Internal ID	AS195

BAUER VERTICUS 5 *For Helium usage*



SPECIFICATIONS

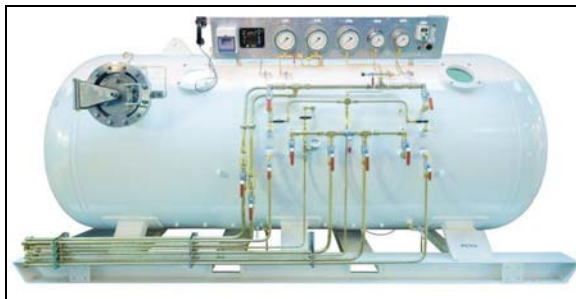
SPECIFICATIONS	
Manufacturer	BAUER
Model	I 15.1-7.5-5
Serial	12.12.4612
Max pressure	330bar
Capacity	370 l/min
Dimensions approx. cm.	114/148 x 83 x 152
Weight approx. Kg.	340/430
Internal ID	AS197



DDC DELTA

1.5mt. DECK DECOMPRESSION CHAMBER

Doc. N.
DRF-TDS-005



SPECIFICATIONS

Certifications	Lloyd's approved
Conformity	IMCA D018 – D023
Serial number	SMP.9420.00
Design	Containerized Twin-Lock deck decompression chamber
Container	ISO 20' freight container insulated
Drafinsub ID	AS019
Working pressure	10 bar
Test Pressure	14.3 bar
Viewports	3x ASME PVH0-1-2012 (2 into ML – 1 into EL)
Weight	7 tons
Total Chamber Volume	6,65m ³ (6650 Liters)
Entry Lock/Main Lock Volume	4,4m ³ (4400 Liters) + 2,25m ³ (2250 Liters)

EQUIPMENT

Control gas panel	1
O ₂ Analyser	1
CO ₂ Fire Extinguisher	1
Communications	1 main Radio + Emergency Sound powered phone
B.I.B.S.	2 connections in EL + 3 connections in ML
Access Doors	1
Air supply	1x 16 cylinders x40L @200bar

DIVER'S BAILOUT 15L CYLINDER



SPECIFICATIONS

SPECIFICATIONS	
Manufacturer	Cressi Sub
Capacity	15L @ 200bar
Fluid	Air - Mix
Requirement of Directive	97/23 CE
Serial number	12/0004/022
Internal ID	DE018

DIVER'S RECOVERY VEST



SPECIFICATIONS

Manufacturer	Various
Requirements	EN 250:2000
Internal ID	AS553 – AS554 – AS579 – AS580 – AS581 – AS583 – AS584

Storage/Use and Maintenance

The Divers Arvest Harnesses are manufactured from textiles that give the user maximum comfort and wear, suitable care and maintenance will give the harnesses a longer useful life.

As a safety of life item, the equipment should be stored so that accidental damage does not occur.

Storage

The Divers Arvest Harness is normally supplied in sealed plastic packaging which should be removed and disposed of sensibly.

After use the harness must be cleaned and thoroughly dried, then either

- Loosely folded and stored in a holdall type bag or similar container.
- Hung on a suitably sized hanger then stored in cool dry conditions away from direct sunlight.

In the case of accidental damage to the harness it is recommended that it is returned to your local distributor for inspection and repair.

The distributor will advise if the equipment is damaged beyond repair in which case it is recommended that it is replaced.

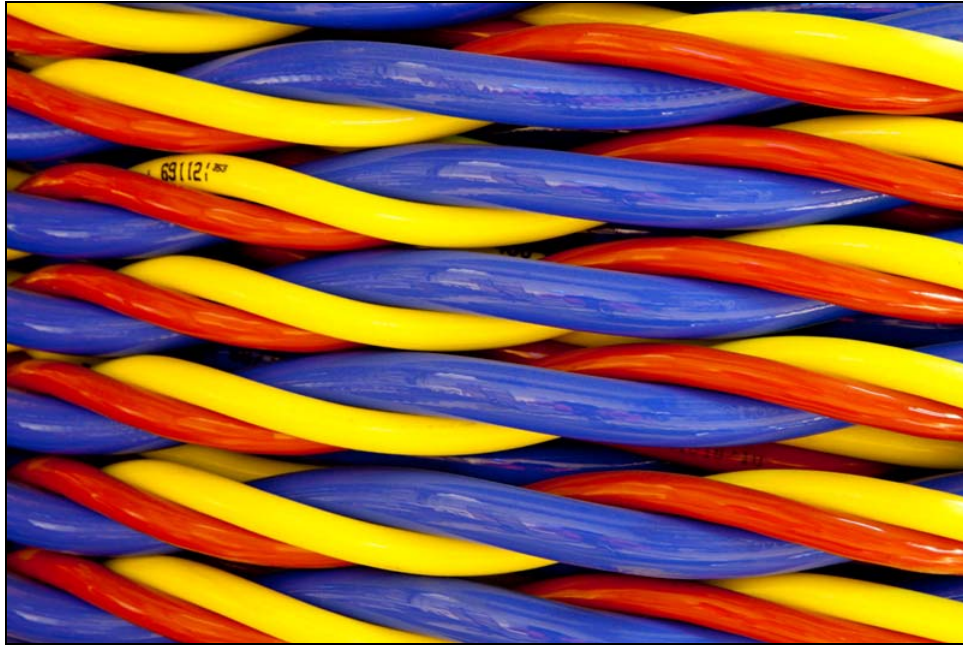
Washing

In the event of soiling it is recommended that, if necessary, they are washed in clean warm fresh water using mild detergents, rinsed and then air dried at around normal room temperature.

Note

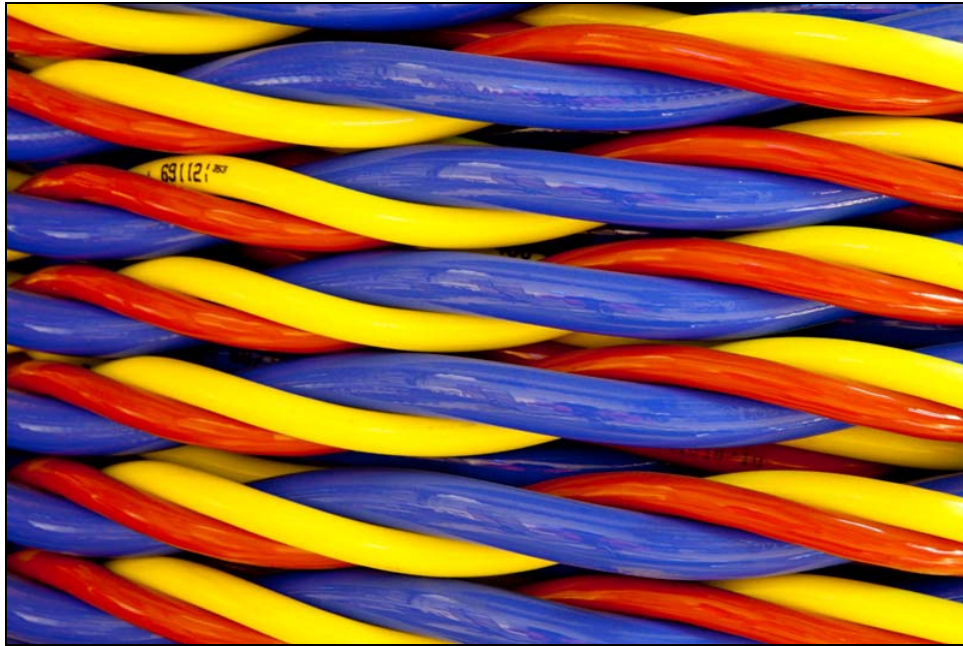
Do Not Tumble Dry. Ensure that the harness is thoroughly dry before storing.

DIVER'S UMBILICAL – 60MT



SPECIFICATIONS	
Manufacturer	Pommec
Serial number	286/00001
Length	60mt
Fittings & Hoses	1x 3/8" gas hose JIC-6 WP: 35bar 1x 1/4" pneumo hose JIC-4 WP: 35bar 1x 1/2" hot water hose JIC-8 WP: 21bar 1x Video & Comms cable

DIVER'S UMBILICAL – 65MT



SPECIFICATIONS

SPECIFICATIONS	
Manufacturer	Pommec
Serial number	287/00001
Internal ID	DU003
Length	65mt
Fittings & Hoses	1x 3/8" gas hose WP: 35bar 1x 1/4" pneumo hose WP: 35bar 1x 1/2" hot water hose WP: 21bar 1x Video & Comms cable

EMERGENCY BELL'S UMBILICAL – 200mt




SPECIFICATIONS

Manufacturer	Cortland Fibron BX
Serial number	DMU0133
Internal ID	DE012
Length	200mt
Fittings & Hoses	1x FDH08G – Fittings: FPBSF/M/08-08JIC (1/2") WP:69bar 1x FDH12H – Fittings: FPBS/M/12-12JIC (3/4") WP:69bar

EMERGENCY HYDRAULIC POWER UNIT



CMF di FOGLINO s.n.c. Regione Oltre Bormida 15019 STREVI (AL) ITALY			
DESIGNAZIONE	CENTRALINA IDRAULICA A TRE LINEE		
TIPO	CMF 616 DS	MASSA (kg)	1550
MATRICOLA	CMF616DS/2014	PRESS. (bar)	180
MOTORE (kW/rpm)	65/2300	Q max (l/min)	65
ANNO COSTRUZIONE	2014	SERB. OLIO (l)	150

SPECIFICATIONS

Manufacturer	CMF di Foglino.
Type	CMF 616 DS
Serial number	CMF616DS/2014
ID	DRF.024.01.02
Year of built	2014
Dimensions	2300mm x 1600mm x 1700mm
Weight (fully loaded)	1550 Kg ca.
Pressure	180bar
Flow	65 l/min.
Hydraulic oil tank capacity	150L
Fuel tank capacity	80L
Mwp	350bar

HOT WATER UNIT



SPECIFICATIONS

Manufacturer	Bay-Tech Industries, inc.
Model	HWUDR401
Dimensions	48" Length x 36" Width x 52" Height
Standard Specifications	Galvanized Frame
	8-10 GPM
	115VAC / 60Hz
	Aluminium fuel Tank
	Stainless Steel Coil Wrap
	1/2" Sch. 80 Stainless Steel Coil Assembly
	385,000 BTU Heating Capacity
	20 Gallon Mixing Tank
Safety Features	Burner cover
	NEMA 4 Electrical enclosure
	115VAC/20Amp Plug with built in GFI Included
Submersible Pump Assembly	Stainless steel submersible pump
P/N	BT-1012-ASSY
	Stainless Steel Housing
	50' hose with fittings
	50' power cable
Serial Number	0811004
Internal ID	M198

HOT WATER UNIT



SPECIFICATIONS

Manufacturer	Bay-Tech Industries, inc.
Model	HWUDR401
Dimensions	48" Length x 36" Width x 52" Height
Standard Specifications	Galvanized Frame
	8-10 GPM
	115VAC / 60Hz
	Aluminium fuel Tank
	Stainless Steel Coil Wrap
	1/2" Sch. 80 Stainless Steel Coil Assembly
	385,000 BTU Heating Capacity
	20 Gallon Mixing Tank
Safety Features	Burner cover
	NEMA 4 Electrical enclosure
	115VAC/20Amp Plug with built in GFI Included
Submersible Pump Assembly	Stainless steel submersible pump
P/N	BT-1012-ASSY
	Stainless Steel Housing
	50' hose with fittings
	50' power cable
Serial Number	0801041
Internal ID	M199

KIRBY MORGAN BAND MASK 18



SPECIFICATIONS

Manufacturer	Kirby Morgan
Model	Band Mask 18
Weight	6,2 kg
Helmet Shell	Fibreglas, polyester resin, polyester gel coat, and carbon fibres
Serial Number	1428
Internal ID	AS372

KIRBY MORGAN SL27



SPECIFICATIONS

Manufacturer	Kirby Morgan
Model	Super Light 27
Weight	12,9 kg
Helmet Shell	Fiberglass, polyester resin, polyester gel coat, and carbon fibres
Serial Number	8A369
Internal ID	AS357

DOUBLE DIVERS LITE LARS



SPECIFICATIONS

Dimensions stored	4000 x 2200 x 1300 mm
Dimensions operational	5300 x 2200 x 4270 mm (LxWxH)
Weight	3250 Kg (including clump weight and cage)
Pressure and volume	180 Bar - 42 lpm
Control box	Stainless steel - AISI 316L
Electronic control box	Stainless steel - AISI 316L (IP66)
Hydraulic cylinders	Offshore coated steel - FE 510 D, hard chrome rods
Double break man-riding winches	Stainless steel – AISI 316L
Cage Wire	Length 85mt. x 10mm
Clump weight Wire	Length 170mt. x 8mm
Remote control	15m armoured cable controlling
Certificates	Lloyd's Register of Shipping Design Approved
	Compliance with IMCA D023, D018
Motors 3 phase 11 Kw - two control panels	380-420V - 50 Hz
	440-480V - 60 Hz
Serial Number	0906221
Internal ID	AS020

DRAFINSUB DOUBLE LITE LARS



SPECIFICATIONS

Dimensions stored	4000 x 2200 x 1300 mm
Dimensions operational	5300 x 2200 x 4270 mm (LxWxH)
Weight	3250 Kg (including clump weight and cage)
Pressure and volume	180 Bar - 42 lpm
Control box	Stainless steel - AISI 316L
Electronic control box	Stainless steel - AISI 316L (IP66)
Hydraulic cylinders	Offshore coated steel - FE 510 D, hard chrome rods
Double break man-riding winches	Stainless steel – AISI 316L
Cage Wire	Length 85mt. x 10mm
Clump weight Wire	Length 170mt. x 8mm
Remote control	15m armoured cable controlling
Certificates	Lloyd's Register of Shipping Design Approved
	Compliance with IMCA D023, D018
Motors 3 phase 11 Kw - two control panels	380-420V - 50 Hz
	440-480V - 60 Hz
Serial Number	0906222
Internal ID	AS021



Dati identificativi
Identification data

U410 - Saab Seaeye Falcon 12445

Produttore
Manufacturer

Saab Seaeye

Modello
Model

Falcon

Numero di Serie
Serial Number

12445

ID Interno
Internal ID

U450

Descrizione
Description

300 mt. Rated with UT and CP NDT equipment

DRAFINSUB "RAFFAELLA" 4 MEN DIVING SATURATION SYSTEM



Specifications subject to change without notice. Last revised 2019.10.29

1. GENERAL DESCRIPTION OF THE DIVING SYSTEM

The Drafinsub "RAFFAELLA" portable saturation Diving System is a complete and containerized diving facility that is designed to be adaptable to many type of vessels. The system is 200msw rated and designed to operate in a temperature range between -10°C and 50°C.

It includes the following main components:

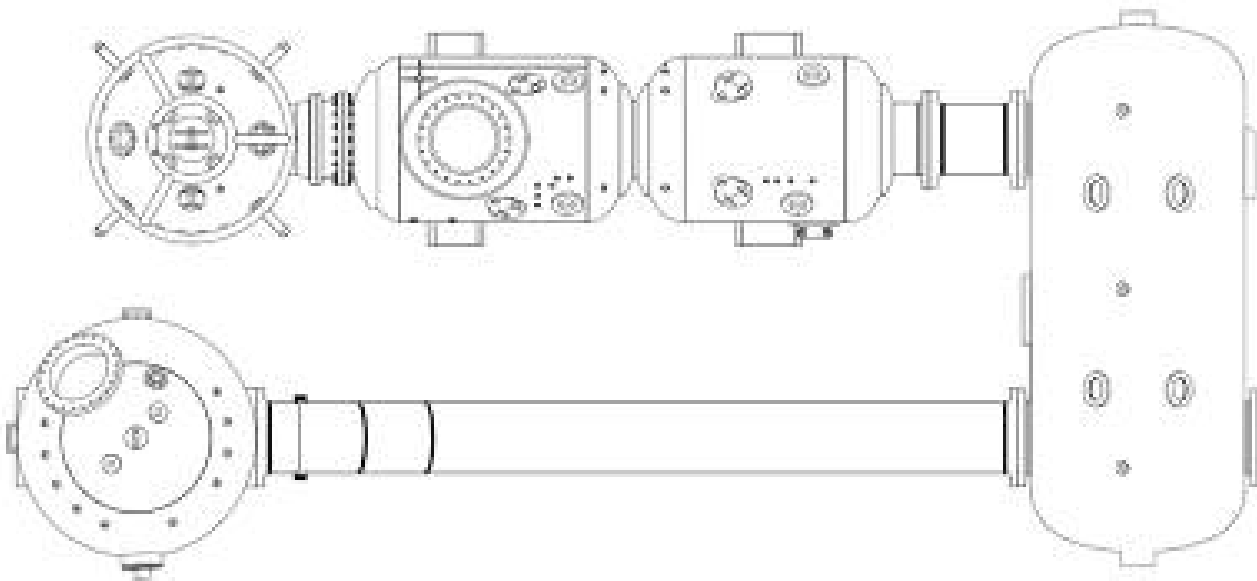
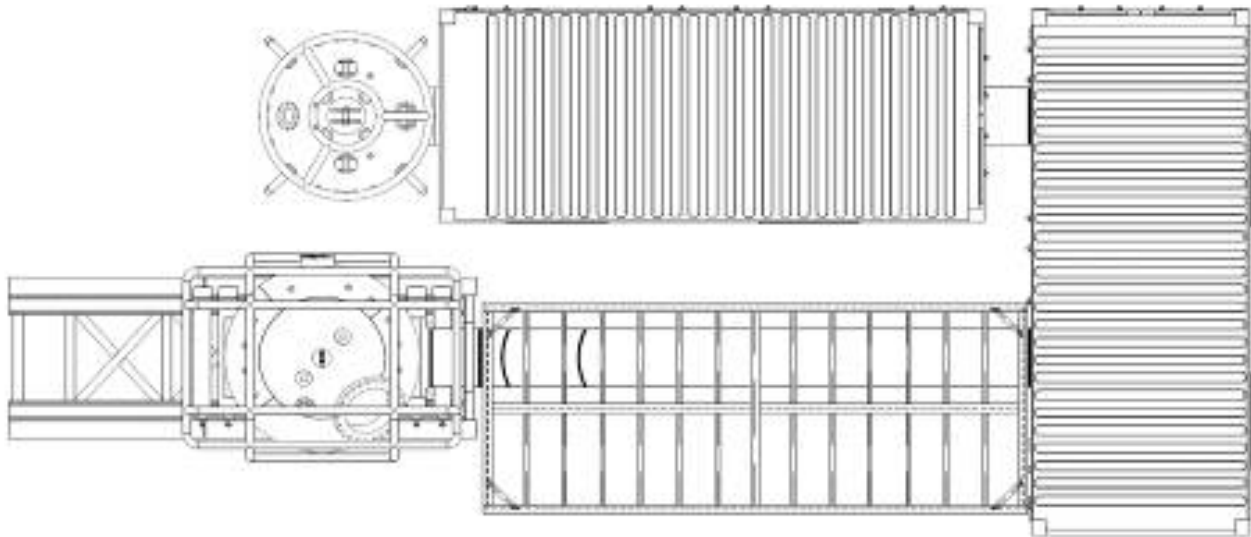
- 2 men Diving Bell
- A-Frame launch and recovery system with over the side or moon-pool launch options
- Winch skid including:
 1. Main bell winch (dual drive, dual braking system man-riding winch up to 8 tons).
 2. Main guide wire winch usable as primary emergency recovery winch.
 3. Secondary emergency winch.
 4. Integrated hydraulic power unit.
- Emergency hydraulic power unit for winch skid.
- 20" container with Transfer Under Pressure chamber equipped with sanitary facilities and an Entry Lock equipped with conditioning unit and a medical lock.
- 20" container with Main Lock chamber equipped with 4 bunks and material lock.
- 4 men Hyperbaric Rescue Chamber with medical lock (HRC).
- Dedicated launch system for HRC.
- 20" Dive and Saturation Control Room container.
- 20" flat rack with dedicated Fire Fighting system.
- 20" Divers heating system container with double hot water machines and integrated mechanical workshop
- 8" container with two independent life support units and supplied with fire and smoke detector.
- 10" fly away pack container for HRC with gas distribution and monitor.
- Air Diving System

RAFFAELLA has two different layouts depending on whether moon-pool or over side launching is elected and can optimize the deck space allocated to the diving system.

The system has a two levels "U" configuration with the main lock installed perpendicularly to the TUP and flat rack. The SDC mates the front side of the TUP and the HRC is placed after the flat rack at the end of the escape trunk. The HRC is installed on the dedicated emergency launch system designed to be used on the side of the vessel. The upper level is dedicated to the Dive and Saturation control room, the winch skid and the Life support units. All the system is equipped with a gangway that permit an easy access to all the areas of the system. The winches Skid is located on the TUP Container, the Dive & Saturation control room is located on top of main lock chamber and the Conditioning units are placed on the flat rack container.

The bell's umbilical winch is self spooling and is placed on the top of winches skid container; it guides the umbilical inside the basked located beside the TUP container. The Hot water container is independent from the system and can be placed accordingly to the vessel area.

Layout for over the side installation



2. DESCRIPTION OF DIVING SYSTEM COMPONENTS

2.1. Diving Bell (SDC)



The Bell has a volume of 4.65 m³ designed to bring 2 divers down to 200msw. It mates on the front side of the TUP chamber and take place on the dedicated A-Frame launch and recovery system. Since the system could be used with 6 divers under pressure, the SDC will be used as an additional evacuation unit.

The Diving Bell is equipped with the following:

- 1x 600mm side man-way for chamber access.
- 1x 700mm bottom man-way for in water operational passage.
- 4x 200mm Viewports in PMMA
- 2x 875 Kg quick release ballast weights.
- Gas distribution panel for 2 divers
- 2x Oxygen Analyzers
- 2x Bell CO₂ scrubbers
- 1x Bell Heater
- 1x Hot water distribution panel for 2 divers
- 1x Communication system for bell and Divers
- 1x Emergency through water communications
- 1x Sound powered phone
- 1x Emergency battery pack with 24h of autonomy
- Internal and external lighting equipment
- Internal and external life support gauges
- 7x Heliox emergency gas cylinders, 40L, 200bar = 56000m³
- 1x O₂ Emergency gas supply, 40L, 200bar = 8000 m³
- 1x 6L O₂ buffer tank
- 2x Diver's umbilical – one stored internally and one externally
- 1x Oil filled umbilical junction box

2.2. Main Bell Umbilical

The main umbilical is a 180 meters length hoses and cables assembly comprising of nine hoses and two multiple wire electrical conductor cables.

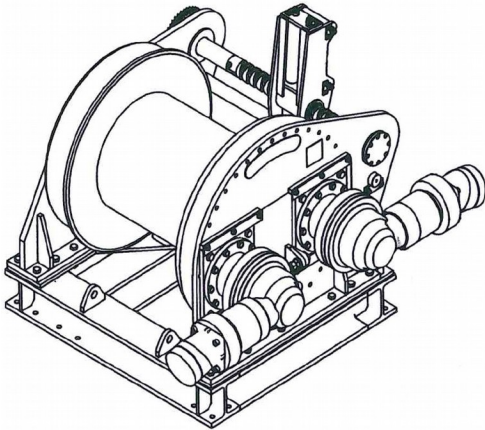
2.3. Bell Launch and Recovery System (LARS)

The Bell is launched over the side or through a moon-pool by using an A-Frame. This is equipped with pistons and a toggle that is used to clamp the bell to the TUP. The pistons and winches are moved by an hydraulic power unit installed in the winches skid. The A-Frame control panel is separated from the frame and can be moved in the proximity of the frame depending on client request.

The Launch and Recovery system is equipped with the following items:

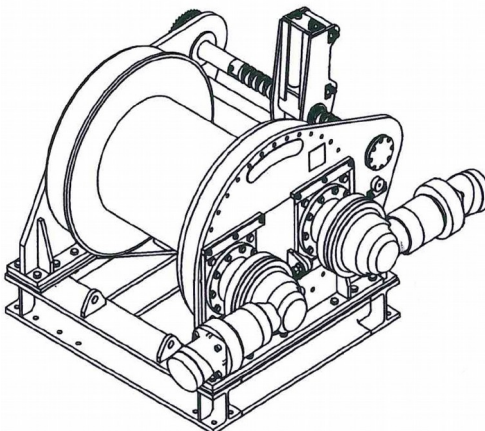
- Main bell winch
- Ballast winch also used as primary emergency
- Secondary ballast winch also used as secondary emergency winch
- Main hydraulic power unit
- Emergency hydraulic unit

Main Bell Winch



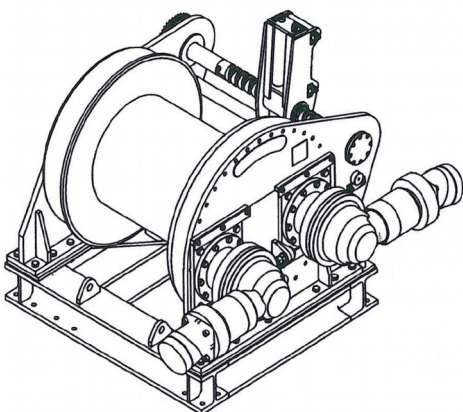
Serial Number	3895
Drum Capacity	270mt with a 26mm wire
Safe Working Load	8000 Kg
Max speed	560 turns/min.
Operating speed	15 mt/min.
Braking mechanism	Two independent braking systems, one each motor.
Drive system	2 independent transmissions with hydraulic motor
Wire rope	26mm non rotating steel wire
Weight	3100 Kg.
Design pressure	180 bar

Ballast Winch



Serial Number	CMF DS 25
Drum Capacity	450 mt of 16 mm steel wire
Safe Working Load	2500 Kg.
Max speed	26 mt/min.
Operating speed	20 mt/min.
Braking mechanism	Two independent braking system
Drive system	Hydraulic motor
Wire rope	16 mm non rotating steel wire
Weight	500 Kg ca.
Design pressure	175 bar

Secondary Emergency Winch



Serial Number	CMF DS 15
Drum Capacity	450 mt of 16 mm steel wire
Safe Working Load	1500 Kg.
Max speed	29 mt/min.
Operating speed	20 mt/min.
Braking mechanism	Two independent braking system
Drive system	Hydraulic motor
Wire rope	16 mm non rotating steel wire
Weight	600 Kg ca.
Design pressure	175 bar

2.4. Transfer Under Pressure and Entry Lock Chamber

The TUP-EL Chamber is a twin lock chamber with an internal diameter of 1500mm, a volume of 7,7m³ overall (4,1m³ + 3,6m³) and installed in a ISO20" container internally insulated. The TUP chamber is a transfer chamber used to transfer the divers from the diving bell to the Main Lock and equipped with sanitary facilities while the EL chamber is an antechamber used to pass into the main chamber without contaminating it

The TUP has the following equipment

- Shower, basin and toilet facilities
- 4x B.I.B.S.
- 1x CO₂ Scrubber
- 2x Caisson life support gauges
- Chamber lights
- Main communication system
- 1x Sound powered phone
- Emergency Heater
- Hyperbaric Extinguisher
- TV Camera monitoring
- 2x Acrylic viewports

The EL has the following equipment

- Internal conditioning unit
- 4x B.I.B.S.
- 2x caisson life support gauges
- 1x CO₂ Scrubber
- Chamber lights
- 1x O₂ Analyzer
- 1x Hyperbaric extinguisher
- Main communication system
- 1x Sound powered phone
- TV Camera monitoring
- 1x 250mm medical lock
- 2x Acrylic viewports

2.5. Main Lock Chamber

The ML Chamber is a chamber with an internal diameter of 1980 mm, a volume of 13,7m³ installed in a ISO 20" container internally insulated and it is used to accommodate the divers.

The ML has the following equipment

- 4x Bunks with personal lighting
- 5x B.I.B.S.
- 2x CO₂ Scrubber
- 1x Internal conditioning unit
- 2x caisson life support gauges
- 1x O₂ Analyzer
- 4x Chamber day and night lights
- 1x Communication system
- 1x sound powered phone
- 1x hyperbaric extinguisher
- 1x 600mm material lock
- 4x Acrylic viewports

2.6. Hyperbaric Rescue Chamber (HRC)

The HRC is a floating rescue facility with a fully equipped weight in air of 8900 Kg, an internal volume of 5,9m³ and an internal diameter of 2100mm. The unit has an onboard gas storage with 8 x 40L cylinders (6 x HeliOx and 2 x pure Oxygen) plus an external battery pack with an autonomy of 72h. It is installed on a launch system that permit to lower it into the water if it is placed aside of a vessel. In case of moon-pool installation the unit can be lowered into the water by using a dedicated crane. In case of evacuation the unit can be attached and controlled by a 8" container with a gas panel, communication devices and hot water machines installed in a pre-designated evacuation site.

The HRC has the following equipment:

- 5x B.I.B.S.
- 3x CO₂ Scrubber
- 1x Heaters
- 4x survival bags
- 4x medical emergency bags
- 1x hyperbaric extinguisher
- 2x O₂/CO₂ Analyzers
- Primary communication system
- 1x Caisson life support gauge
- 1x Medical lock
- 4x seats complete with safety harnesses and helmets

2.7. Dive and Saturation Control Room

The Control Room is an insulated ISO20" container designed to manage all the major ordinary operations of the system. It's divided in:

The transformer room

A chilled space where all the main electrical connections of the system are directed and where two uninterrupted power supplies (UPS) are automatically activated in case of electrical break giving a supplementary power (30mins) to life support emergency devices.

The HRC battery charger is fitted in this room where the overheating is avoided.

The Saturation/Diving room

Equipped with the control panel accessible from the rear for maintenance and divided in the dive section and saturation section

The Dive panel has the following equipment

- 2x CCTV monitors
- O₂ Analyzer
- CO₂ Analyzer
- Gauge for divers and bell
- 2x unscramble communication devices (Diver 1, diver 2, bell)
- Sound powered phone to the bell
- Through water communication receiver
- DP Status/alert system
- 2x Divers lights and camera monitors

The Saturation panel has the following equipment

- 5 x CCTV monitors with cameras covering all the plant and HRC
- 3 x O₂ Analyzer
- 2 x CO₂ Analyzer
- Gauge for chambers
- 1 x unscramble communication devices (ML-TUP-EL)
- 4 x Sound powered phone connected to all the locks
- System smoke/fire alarm monitor
- Control devices for the internal chambers conditioning units.
- 2 x BA supply points.

2.8. 20" Flat Rack with Fire Fighting System

This unit hosts the fixed fire fighting equipment used to extinguish fire inside and outside the chambers. The escape trunk is installed on a structure along the entire flat rack.

The unit is equipped with the following:

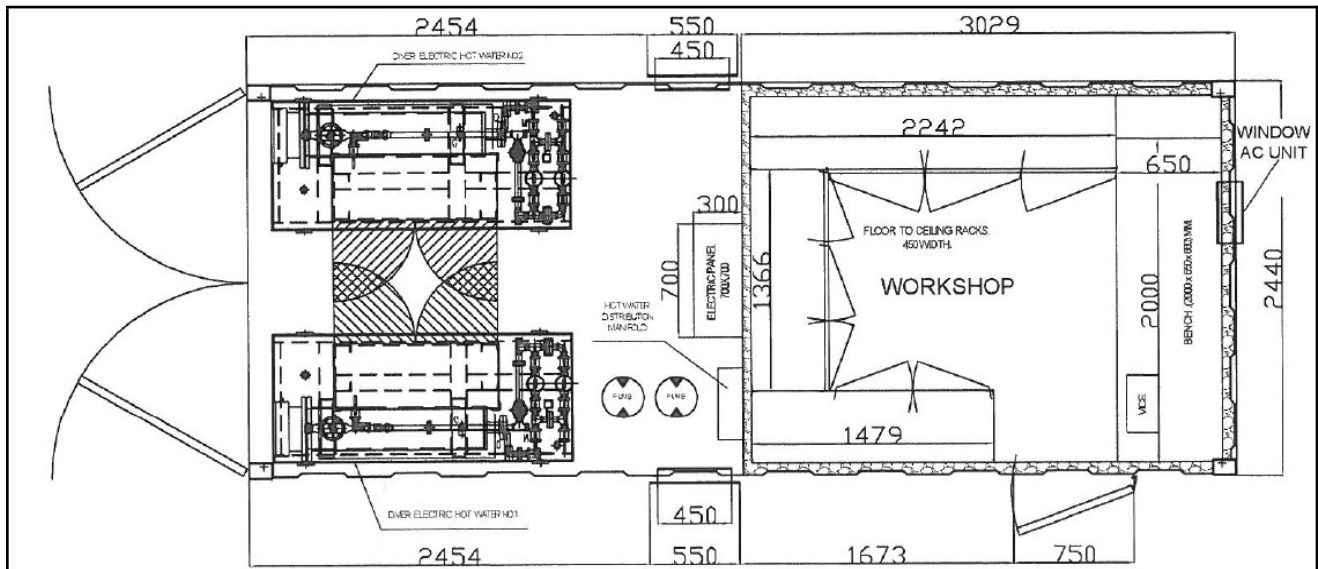
- 2 X Water Tanks
- Fire fighting electrical panel
- 4 hydraulic pumps
- Interlock system for the HRC
- HRC Escape Trunk

The external fire fighting system is designed to use an hydraulic pump to flow sea or fresh water around the plant; it could be activated manually or automatically from the Control Room.

The internal system is configured in such a way that the water is pumped into the tank at a pressure up to 60bar and then ducted inside the chambers.

All the saturation system is equipped with portable Hy-fex extinguishers for the pressurized areas and terrestrial CO2 and foam extinguishers for the external areas.

2.9. 20" Divers Heating System Container



This container is divided in two areas:

- Workshop
- Diver's Heating System

The workshop is a conditioned space where the ordinary maintenance can be performed and it's separate from the Divers Heating System (DHS) that provide hot water to the bell and to the diver's suite while underwater; it also supply hot water to the sanitary facilities into the TUP.

It is designed in such a way that both salt or onboard fresh water supplies can be used with a minimum inlet pressure of 2 bar.

The system has the following main equipment

- 2x Electrical panel
- 2x Hydraulic heaters
- 2x Hydraulic pumps

2.10. 8" Container with Life Support Units

It consists of a 8" container with the equipment used to manage automatically the temperature and humidity of the inner chamber's atmosphere.

It's equipped with:

- 2x Heater Chiller Skid (HCS)
- 2x Chamber Environmental Controller (CEC)
- Main lighting
- Emergency lighting
- Smoke detector
- Security camera

The Life Support Unit consists of:

- Heater Chiller Skid (HCS)
- Chamber Environmental Controller (CEC)
- Habitat Conditioning Unit (HCU)

The Heater Chiller Skid (HCS) is a self contained unit designed to provide supplies of heating and cooling fluids (water + glycol) to be used for the environmental conditioning of chambers, in order to create and maintain optimum living conditions for saturation diving personnel. This is achieved via the controlled distribution of heating and cooling fluids by a Chamber Environment Controller (CEC) unit to a Habitat Conditioning Unit (HCU) within the chambers.

The Chamber Environmental Controller (CEC) is designed to be used in conjunction with an HCS. The unit is specifically designed to provide control of the heating, cooling and dehumidification of a decompression chamber.

The system comprises of the following major components:

- Temperature and humidity transmitter and probe.
- Temperature and humidity controllers.
- Three way control valves set to direct hot and cold fluid.
- Remote temperature read out and set point control.

The Habitat Conditioning Unit has been designed for the use in hyperbaric environment to a depths of 300msw.

- When heating/cooling is required, temperature of primary fluid entering HCU increases/decreases. The heat from the fluid is so transferred to breathing gas as it flows through an heat exchanger. The blower circulates heated/cooled gas in the habitat.

When dehumidification is required, the secondary fluid is chilled and pumped into HCU. Chilled fluid enters dehumidification coil which causes moisture in the breathing gas to condense on the coil. Water drips into a water trap then in the chamber bilge where it can be passed manually out of habitat.

2.11. 10" Container with Fly Away Pack (FAP) for HRC

The FAP is a 10" container used to support the HRC and housing:

- 1 x Gas panel
- 1 x Communication system
- 1 x Sound powered phone
- 2 x Gas Analyzer
- 2 x Hot water unit.

2.12. Air Diving System

An air diving system could be supplied to support of the saturation system.

It consists in:

- A fully IMCA conformed 20" insulated container with a hyperbaric chamber.
- A certified Launch and Recovery System (LARS) with basket for 2 Divers.
- Hydraulic power pack for the LARS

3. MASSES AND DIMENSIONS OF MAJOR COMPONENTS

No.	Description	Dimensions (mt.)	Weight (Kg)
1	Diving Bell	2,5 x 2,5 x 2,7	7000
2	TUP - EL Container	6 x 2,5 x 2,6	13000
3	ML Container	6 x 2,5 x 2,6	13000
4	FLAT RACK Container with Fire Fighting	7,5 x 2,4 x 2,6	13000
5	HRC	3,1 x 2,4 x 2,8	9000
6	HRC Water Landing System	5,1 x 2 x 0,5	3000
7	Control Room Container	6 x 2,5 x 2,6	5000
8	Winches Room Container	6 x 2,5 x 2,6	10000
9	Divers Heating System Container	6 x 2,5 x 2,6	5000
10	Warehouse Container with HP/LP compressors	6 x 2,5 x 2,6	10000
11	Diving equipment Container	6 x 2,5 x 2,6	5000
12	Fly Away Pack for HRC Container	ISO 8"	2000
13	Life Support Unit Container	ISO 10"	2000
14	Launch and Recovery System for Diving Bell	3,5 x 2,5 x 1,0	2000
15	Emergency Hydraulic power unit for LARS	2,7 x 2,0 x 2,5	2800
16	Basket for Main Bell Umbilical	2,5 x 5 x 1,8	1000
17	Umbilical spooling device	1,6 x 1,0	1000
18	Diving Bell's emergency umbilical	2,0 x 2,0 x 1,5	2500
19	Air Diving Chamber Container	6 x 2,5 x 2,6	7000
20	Launch and Recovery System for basket (x2)	4,0 x 2,2 x 1,3	(2x) 3500
21	Hydraulic power pack for LARS (x 2)	0,9 x 1,2 x 1,4	(2x) 650
22	Bauer HP compressor	1,5 x 0,9 x 1,5	400

4. SERVICES REQUIRED OF DIVING SUPPORT VESSEL

4.1. Sea Water

The sea water supply for the saturation system must not be interrupted in case of fire situation and/or fire drills and/or isolated tests occurs onboard. It must guaranty a continuous supply of 100 l/min (40L/min for the Hot Water and 50 L/min for the Cooling System)

4.2. Fresh Water

Fresh water must be supplied with a pressure ≥ 5 bar with a flow rate average of 30-40 L/day for each diver.

4.3. Electrical Supply

The Sat System requires an uninterrupted power supply as following:

- Main power supply 380V – 50Hz – 100kW
- Diver's heating system 440V – 60Hz – 200kW
- Emergency power supply 380V – 50Hz – 20kW

5. COMPLIANCES

- RINA Rules for the Classification of Underwater Units
- IMCA D023 – D024
- ASME Safety Standards for Pressure Vessel for Human Occupancy -1-2007
- IMO Res. A.692 (17) Guidelines and Specifications for Hyperbaric Evacuation Systems
- ASME: Boiler and Pressure Vessel Code 2007, Part VIII Division 1
- UNI 11366: Sicurezza e tutela della salute nelle attività subacquee ed iperbariche professionali al servizio dell'industria (in vigore da Giugno 2010)

6. PHOTOGRAPHS



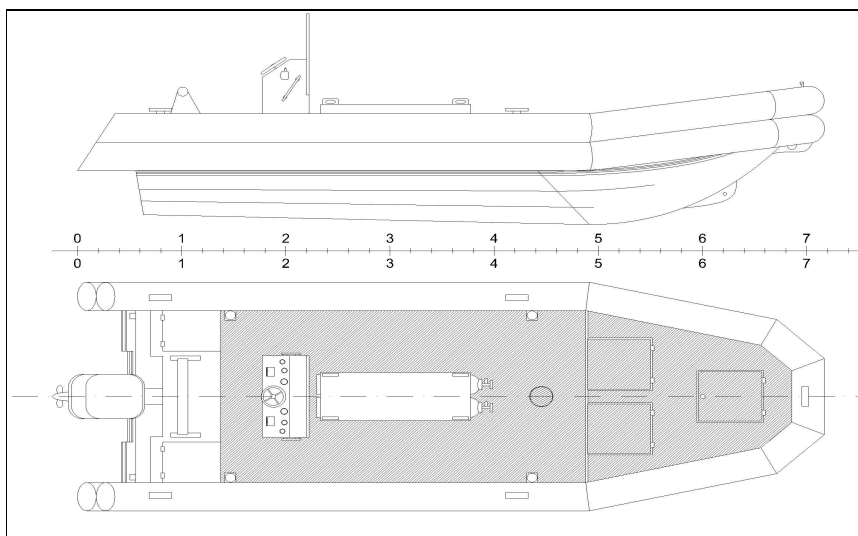
Drafinsub S.R.L. – Underwater Technology
Via al molo Giano 16128 – Genova, Italy
Tel. +39.010.261354
Fax: +39.010.8932710
Email: info@drafinsub.com

SCUBA REPLACEMENT BOAT



SPECIFICATIONS	
Builder	Polinautica 63 srl
Official number	GE8928
Name	M/V Luca
Material	Polyethylene PEAD
Length Overall	7,30 mt
Breadth Overall	2,52 mt.
Gross Tonnage	1000 Kg
Engine	1 x Mercury 110cv
Max Speed	15 knots
Safety Equipment	1x Lifebuoy – 6x lifejackets
Fuel Capacity	200L.
Fire Fighting Equipment	1x Dry Powder Extinguisher

EQUIPMENT
4x 40L air rack
1x Portable gas panel
1x AMRON Diving Comms
2x 50 mt Diving Umbilicals
2x Helmet Kirby Morgan KM18
2x Safety Harnesses



SPARE BELL UMBILICAL – 180mt



SPECIFICATIONS

SPECIFICATIONS	
Manufacturer	Cortland Fibron BX
Serial number	8674/2
ID	DRF.026.00.00
Length	180mt
Diameter	94mm±3mm
Minimum bend radius (Static)	600mm
Minimum bend radius (Dynamic)	900mm
Design Load	15kN
Minimum breaking load	60kN
Weight in air	1250Kg
Weight in water	170Kg
Fittings & Hoses	1x FDH08G 1/2" gas hose (Blue) 1x FXH12 3/4" reclaim hose (black) 1x FDH12H 3/4" hot water hose (Red) 1x FDH12G 3/4" gas hose (Blue) 5x FDH04P 1/4" pneumo hoses (Blue) 1x comm's & video cable 1x Power cable