



The Air Diving Spread consists of a 60" diameters Twin Compartment DDC in a Air Conditioned Container. The Diving Panel is designed for 3 Divers to work at Depths between 0-50 mtr using Surface Oriented Air Diving Technique.

The Equipment includes a :

- DDC – Deck Decompression Chamber - Rated to 5 Bar SWP.
- A-frame for Divers LAR (Launch and Recovery).
- A Office Container equipped with a Computer and a Copy Machine.
- In addition the Air Spread has a HP Compressor, LP Compressor and HP Gas Storage Banks / Quads. (Either in 10ft, standard container or loose unit outside).

The Air Diving System can be very easily and rapidly installed on board ships or rigs.



## **SPECIFICATION**

### **DCV**

The Dive Control Van Incorporates all the Safety Features as recommended by the IMCA DESIGN Document for Air Diving Spreads for DCV.

- DDC : The DDC is Containerized hence the Occupants / Operator of the DDC are in comfortable ambient environment.
- Communications : The Diving Supervisor has access to Audio and Visual Links to the Deck, the Diver and the Bridge with an option for the Same for any other active Station.
- SAFETY Features : All Safety features are Incorporated in the DCV viz . Fire Extinguishers, Ships Alarm can be connected to the DCV alarm. The DCV also has a Comprehensive Medical First Aid in accordance to the PT. Advanced Offshore Services. Requirements in addition to a DECOMPRESSION ILLNESS TREATMENT KIT as recommended by DMAC 015 including an Oxygen resuscitator.

### **DIVER TRANSPORT**

Divers Entry and Exit into the Medium is using a LARS – Divers Launch and Recovery Basket and Winch.

LARS. : Is in accordance to the IMCA recommendations.

- The Entire Component LARS is certified for a SWL of 1.5 ton as an Integral Component.
- Complete Engineering Structural Analysis of the Diving LARS AND Basket has be conducted using Structural Analysis and Design Software (STAAD III) for Offshore Conditions considering Dynamic Loading in accordance with API RP 2A WSD 2000.
- The Basket is Big enough to accommodate 2 Divers, with a Emergency Air Cylinder, a chain across the frame to prevent accidental falling, Overhead grating for Protection from dropped objects, 2 lifting points that are certified to the SWL of 1.5 ton.



- The Basket has a Primary Lifting Winch and the Secondary Lifting Winch wire lifts a Ballast weight under the Basket and Guided through Sleeve attached to the side of the Basket , this prevents the Basket from spinning at greater depths and the basket can be lifted on the Ballast weight in the event of Primary Lift Mechanism Failure.
- The Winches are Man Riding Winches and The Wire's are destructive Tested annually to a Certified Breaking Strain to ensure a Safety factor of 1: 8. The Length of the Wire Permits the Basket to be lowered to the Working Depth.

### **COMPRESSION AND DECOMPRESSION**

Internal working pressure of chamber is 05 bar. The decompression chamber is equipped with two separate control panels (one for the main chamber and one for the lock) for the gas, power and communications systems.

#### **Main Features of the DDC.**

- Twin Lock – Main Lock and Entry Lock. Both the Lock can be isolated and controlled Independently.
- The DDC is fitted with an Over Pressure Relief Valve.
- The DDC has Pressure Sealing doors which can be Opened from Either Side.
- All the Penetrators are fitted with NRV to prevent accidental De-pressurization in the event of Plumbing failure.
- The DDC has Main Power Supply and Back-Up Battery Power supply for Communications and Lighting.
- The DDC is Equipped with Hyperbaric Fire Extinguisher using Non Toxic Emulsifier.
- Main Mode of Communication is Powered Communications in addition Both The Lock are Equipped with a Sound Powered Phone.
- The Main lock has 3 x BIBS and the Entry Lock has 2 BIBS.
- The Main Lock is Equipped with 2 Bunks – for the (Patient) Diver and the attendant.



- The Main Lock and the Entry Lock can be Isolated or Equalized as required.
- Appropriate (Fine and Coarse incremental) Range depth Gauges are Fitted both Internally and Externally to Monitor the Depth of the Lock independently.
- The Ambient atmosphere of the DDC can be monitored using a online Oxygen Analyzer with HI / LO Alarm.
- The DDC has a Complete Chamber Kit as defined in DMAC 015.
- The Main Lock of the DDC has a Medical Lock that can be operated from both the sides and is fitted with a Pneumatic Interlock that prevents the Med Lock from accidental de-pressurization.
- 3 ea Lung Powered Scrubbers are present in the Main Lock and the Entry Lock.

### **COMPRESSORS & HP AIR BANKS**

The Air Spread comes complete with a HP Compressor and a LP Compressor. Air from The HP Banks is used as primary supply for Diving operations and the LP Compressor is used for Back Up supply. The HP Compressor can deliver up to 300 bar but for safety reason the Delivery Pressure has been pre set at 150 bar at low CFM. The relief valve prevents over pressurizing above 150 Bar. Similarly the LP Compressor is capable of delivering output pressure of 15 Bar at medium CFM flow rate and is fitted with a relief valve that prevents over pressurizing. The Air from the Compressor is periodically tested to conform to British Standard for Divers Breathing Air – BS 4001.

The Air Bank Cylinder are Hydrostatic tested in accordance to the IMCA recommendation and are rated to SWP of 150 bar. The Pipeline manifold for the Quads is fitted with a relief valve / burst disc as appropriate.

### **DIMENSIONS AND POWER REQUIREMENTS.**

The Dimension / Power Requirements and Weights for the various Components of the Air Diving System are as follows:

<b>Description</b>	<b>Unit</b>	<b>Dimensions</b>	<b>Weight</b>	<b>Power Requirement / Remarks</b>
DCV & DDC	1	7.3m x 3.4m x 3.0m	11 tons	5 Kva / 220v / 50-60 Hz
Office Container	1	3.0m x 2.5m x 3.1m	3.00 tons	5 Kva / 220v / 50-60 Hz



LARS	1	5.0m x 3.0m x 3.0m	3.00 tons	22 Kva / 440 – 380 v / 50-60 Hz , 3 Phase , Air Supply 400cfm / 20-25 bars.
HP Compressor	1*	1.5m x 1.0m x 1.5m	0.50 tons	18 Kva / 440 – 380 v / 50-60 Hz , 3 Phase
LP Compressor	1*	2.5m x 1.5m x 1.6m	2.25 tons	Diesel Powered
HP Gas Quads	3*	1.1m x 1.1m x 1.9m	1.50 tons/ea	-
Hydraulic Power Pack	1*	1.5m x 1.0m x 1.5m	1.25 tons/ea	18 Kva / 440 – 380 v / 50-60 Hz , 3 Phase

\* can be in 10ft or 20ft container, total weight 10-14 tons

The system comes complete with a color video system with video overlay, full analysis capability, a complete array of Helle radios for diving as well as a full range of tools and spares for the system. KMB Spares / Repair kit. Other Equipment such as Bailout Cylinder, Regulators and Divers Personnel accessories are stored in the DDC Container.

### **ADDITIONAL EQUIPMENT**

Additional equipment normally mobilized with the system as per project requirement consists of the following but not limited to, Hydraulic tools , Air Lift or as per the Clients Request. Scuba Replacement Diving Gear that comprises of a portable 2 Diver Panel and Umbilical's for remote – shallow depth Diving Operations.

### **POWER REQUIREMENTS**

The system has a minimum requirement of 45 Kva at 380V - 440V 50-60 Hz 3 Phase and 15Kva at 220v 50-60Hz Single Phase. The emergency requirement is for 25 Kva.

380V - 440V 50-60 Hz 3 Phase and 5 Kva at 220v 50-60Hz Single Phase The system comes with main and emergency power leads. In the event of a breakdown of the main switchboard the individual machinery vans have been designed and built to be able to be wired direct from a power source.

### **SERVICES**

The system only requires fresh water supplies on the Deck for Divers utility purpose.



## Pictures of Surface Supplied Air / Mixed Gas Diving System

Major Component For An Air and Mixed Gas Spread

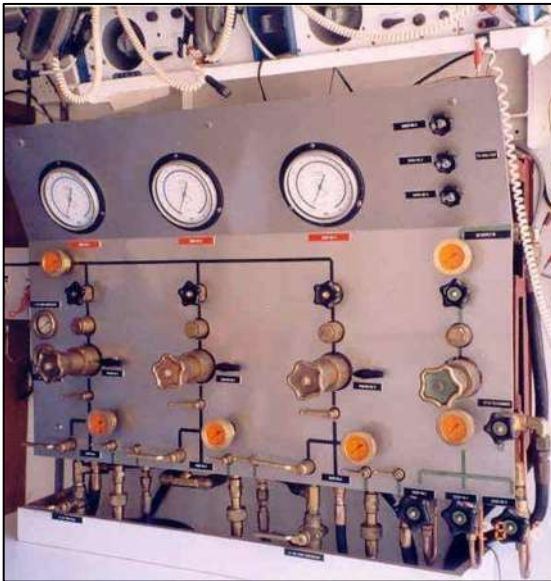
1. Double Lock Decompressor Chamber in side an air conditioned contains with 3 divers air/mixed gas, dive panel, underwater color TV system, UHF marine radio.
2. Skid Mounted 'A' Frame, Divers Basket, c/w Emergency Gas Supply Cylinders Man Riding Winch.
3. Low Pressure Diving Air Compressor.
4. High Pressure Diving Air Compressor.
5. Hydraulic Power packs.
6. Containerized Office with computer, printer, photocopy machine (PMS record keeping).



Advanced Offshore – has fully operational surface supplied Air Mixed Gas Diving Spread. DDC and Dive Control with underwater color TV system installed in side an air conditioned 20 ft (6 mtr) standard container. System fully comply with IMCA D.E.S.I.G.N. D023.



Each spread is designed and installed as an modular component are therefore easy to transport and giving flexibility for configuration on various barges and marine supply vessel to support offshore construction, inspection and repair project.



**Dive Control Panel**

3 Diver Panel Support Air/Mixed Gas Diving Technique



**LARS**

1. Equipped with 2 X Hydraulic Man Riding Winch. \*
2. Tested and certified to SWC 1.5 tons.

**Note:**

- \* Some A frames have 1 X Hydraulic and 1 X Pneumatic man riding winch.



**LP Compressor**

1. In compliance with IMCA D023
2. Gas analysis on accordance to BS 4007



**HP Compressor**

- \* Electrical Driven High Pressure Air Compressor.





**Diver Communication**

\* Amron and Helle Dive Radio.




**Diver Band Mask**

\* KMB 18 Diving Band Mask



**Diver Breathing Helmet**

\* KMB 17/37 Diving Helmet

	<b>ADVANCED OFFSHORE</b>	3 <sup>rd</sup> June 2020
SURFACE SUPPLIED AIR / MIXED GAS DIVING SYSTEM		Page 10 of 10

## NDT INSPECTION EQUIPMENT



**CP METER KIT**



**UT METER KIT**



**UNDER WATER  
HAT MOUNTED CAMERA**

Advanced Offshore owns several sets of U/W NDT Equipment, such as but not limited to CP Meter, UT Meter, U/W TV System, STILL Photographic Camera, Digital Photographic Camera, Dry Grit Blasting Pots, Permanent Magnet and coil system M.P.I. equipment, etc, which can be mobilized on a short notice to suit the client requirement.



**NIKONOS STILL  
CAMERA**



**GRIT BLASTING  
UNIT**



**MPI UNIT**