

## SECTION THREE: CONFIGURATION AND USE

### Rapid Deployment Air Control Console:

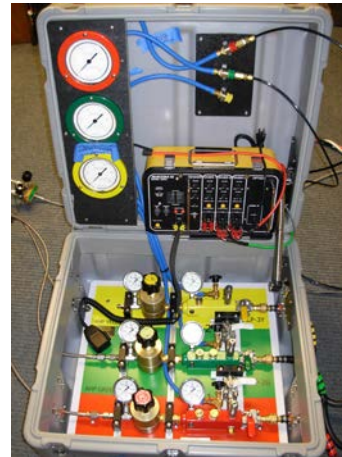
The breathing gas control console regulates and controls the divers breathing air supplies and pneumofathometer air for depth sensing. Both the two diver (XLDS-RDC-2) and three diver Console (XLDS-RDC-3) have one complete circuit for each diver laid out in a simple fashion and the components used in each console are the same. The Supply to each divers circuit starts with a VCO O-ring fitting or # 4 37° JIC fitting attached to a stainless steel Street "T" connected to each divers pressure regulator. The regulator is rated for a maximum inlet supply pressure of 5000 PSIG and a maximum outlet pressure of 400 PSIG. Reduced air pressure passes through a one-way valve allowing air to only travel into the Manifold. Each manifold assembly contains a 0-600 PSIG reduced pressure gauge, Pneumofathometer supply valve, relief valve (set to relieve between 390-400 psig), and diver supply valve. Each manifold also has a 1/2" as well as a 1/2"-20 and 3/8"-28 straight thread gauge calibration port, and a main supply cross connect, which allows intermediate air from either circuit to be lined up to the other divers reduced pressure circuit(s). Each diver low-pressure (ALP) supply valves) are quick acting quarter turn valves. The manifold is the foundation that holds all gas train components and secures to a 1/2" thick high density polyethylene plastic foundation plate through bolted to the console box, making the piping system secure.

The pneumofathometer gauges on the 2 and 3 diver console are mounted in the console lid along with or without an installed diver intercom (Optional). The 3 diver console can be equipped with several different diver intercom units (optional) but does not have a diver intercom integrated into box. Both 2 and 3 RDC's are normally equipped with index locking quick connect fittings for attaching the pneumofathometer and breathing air supply Umbilicals

### XLDS System Restrictions:

The XLDS with 1/4" umbilicals and diver worn manifold compensating system, umbilical length is restricted to a maximum length of 330' (100 meters).

When RDC-2 or 3 is used as a standard control console with 3/8" umbilicals, umbilical length should be restricted to 600' (200 meters) or less and a maximum diving depth of 220 fsw. The system must only be operated and used within the guidelines of this user guide and the operation specifications described in this guide.



XLDS RDC-3 DIVER



XLDS RDC-2 DIVER

Ultra Light Umbilicals:

The XLDS umbilicals have been specially designed for use with the manifold compensating system and RDC-2 or RDC-3 and are not intended to be used for conventional surface supplied diving. The umbilical assembly is comprised of four major components that are twisted together to form the complete umbilical assembly, breathing gas hose, communications /strength member, pneumofathometer hose, and 20' grab Line. The divers end has a "D" ring with snap shackle that is attached to the communication/strength and grab line for securing to the diver worn harness.

The 1/4" I.D. supply umbilical has a design pressure of 1500 psig and is rated for a normal maximum system working pressure of 400 psig. Both ends have SS swaged 1/4" MPT fittings that connect to a 6" adapter hose that has 1/4" FNPT on one end and 9/16 O<sub>2</sub> strait thread on the other. The topside end connects to a 9/16" O<sub>2</sub> fitting on the outlet of each divers control valve ALP1R, ALP2G, ALP-3Y on the RDC. At the divers end the umbilical to ICS interface hose attaches to a 9/16" CGA O<sub>2</sub> male fitting on the ICS one way valve.



Pneumo hook-up



Standard XLDS Umbilical 300 ft

Communication Strength Member:

The communication / strength member contains four (4) wires for communications and a polyester strength member. The assembly is encased in a polyurethane jacket. The strength member has a safe lifting capacity of 800 LBS and a minimum breaking strain of 2200 LBS.

Pneumofathometer Hose:

The Pneumofathometer Hose is made from black nylon plastic, 3/16" I.D. rated for a maximum internal pressure of 200 PSIG.

Grab Line:

The Grab Line is twisted into with the first 20 feet of Umbilical at the divers end to allow for easier handling by the tenders and to aid in lifting if necessary. The Line is standard 3/8" or 1/2" braided nylon.

Diver Worn Harness and Manifold Compensating System:

The diver worn intermediate compensating system (ICS) was designed to allow 1/4" I.D. air supply umbilicals to be used with standard demand mode helmets and masks. The system allows divers the ability to dive to depths previously only attainable when using heavy 3/8" Umbilicals and large support systems. The ICS system with accumulator attaches to the right side of the modified Atlantic Diving Equipment or Miller Bell Harness, and fits securely behind the right arm in a specially fitted holster. The umbilical attaches to the ICS which reduces the normal umbilical supply of 350 PSIG to between 150-170 psig over ambient pressure to the demand mode helmet or mask being used. Because the manifold volume tank receives medium pressure high velocity air from the umbilical, the system is capable of providing the necessary peak flows required to attain respiratory work rates (RMV), as high as 75 RMV, with specified helmets and masks to depths of 130 FSW.



ICS/EGS Manifold Compensating System



ICS Regulator with 6 cu. Ft. surge bottle



Harness Assembly and ICS Assembly

### XLDS-RDC-3 Specifications:

- Box Weight 87 Lbs.
- Outer Dimensions Length 28 inches.
- Width 27 inches.
- Height 15 inches.
- Number Diver Circuits 3, Red, Green, Yellow.
- Max Depth: Using 1/4" I.D. Umbilical one continuous length up to 330' long, 165 fsw.
- Maximum High Pressure Supply 3000-5000 PSIG
- Minimum Console Supply Pressure 375 PSIG
- Maximum Low Pressure Outlet Pressure: 375-400 PSIG
- Low Pressure Relief Setting: 400-420 PSIG
- High Pressure Gauges: 3, 0-5000 PSIG
- Low pressure Gauges: 3, 0-600 PSIG
- Pneumofathometer Gauges: 3, 0-250 FSW

### Surface Supply Console Flow Capability with 300 foot long 1/4" umbilicals and ICS :

- Minimum Flow: with 800 psig HP supply and reducer set static to 350 psig 700 slpm ( scfm).
- Minimum Flow: 400 psig HP supply, reducer set static to 350 psig, 550 slpm ( scfm).

### Work of Breathing Performance:

Work of breathing performance data is based on one diver breathing from a HP supply of 400 PSIG with the SCC regulator set static at 350 PSIG. The I.P. of the ICS set between 150-170 PSIG. Umbilical length, 300'.

### High Pressure Air System:

The standard high-pressure air attachment to SCUBA cylinders are either DIN or SCUBA "A" Yokes, rated for a maximum supply pressure of (4350 psig DIN) (3500 PSIG A-Yoke). All standard RDC-2 and RDC-3 Whips are rated for a maximum working pressure of 5000 psig or as marked on the whip. Other Whips up to 25 feet in length can be used, providing they have a minimum I.D. of .112".whips over 25 feet in length should have a minimum I.D. of .160



**Warning:** The HP whips supplied are rated for 5000 PSIG service but should not be used at pressures greater than 3500 PSIG unless the Yokes are replaced with supply fittings rated for the increased pressure (DIN).

Proper rated DIN fittings, as well as CGA fittings can be used to their appropriate working pressure up to the systems maximum supply pressure of 5000 PSIG.

**Caution:** Ensure the Cylinder Valve Outlet opening is pointing away in a safe direction, then slightly crack open and shut each Cylinder Valve momentarily to dispel any dust or dirt that may be present in the Valve Orifice.

Each divers' circuit comes standard with two cylinder attachment whips and yokes that attach to a routing block and shut-off valves. Each supply system allows attachment to two single SCUBA cylinders or two sets of twin SCUBA cylinders, if twin cylinders are being used. Each divers' circuit should always be set-up with each yoke attached to a fully charged cylinder, and only one cylinder supply should be on line at a time so that when the gas supply reaches 380 psig it can be secured and the other supply opened. By keeping the system set-up in this manner, the depleted cylinder(s) can then be changed out, and a full cylinder placed in the ready without interruption of breathing air. Prior to attaching the cylinders, each HP circuit should be inspected for signs of damage.



HP Whip Assembly – 3 Diver

Diver Intermediate Compensating Manifold Gas Flow:

The divers umbilical snap shackle attaches to D ring on the left side of the harness. The Umbilical connects to the male CGA O2 fitting on the compensating manifold one way valve. The one way valve allows the umbilical gas to supply the manifold regulator and accumulator. The manifold regulator reduces the umbilical supply to a normal supply pressure between 150-170 PSIG over ambient. Air then travels up a 5/16" intermediate whip to the helmet or mask being used. The manifold is also equipped with a multi-turn EGS Valve for interface with the emergency air system.

**WARNING:**  
Under no circumstance should the XLDS diving system EVER be used without a fully functioning man worn emergency gas system

Emergency Gas System:

The emergency gas system is attached to the modified harness. The emergency gas system is made up of a good quality first stage SCUBA regulator and high-pressure cylinder. Cylinder capacity must be selected based on the depth and potential hazards that may be encountered. It is strongly recommended that the cylinder capacity be sufficient to allow a normal ascent to the surface or to a place of safety where breathing gas can be restored. The regulator used with the cylinder should be equipped with a relief / bleed valve. The bleed valve allows excess pressure to vent from the EGS supply whip in the event the first stage develops a minor leak. Without the bleed valve a minor first stage leak could cause the pressure within the EGS to rise above the maximum safe working pressure (>250 PSIG) causing the Whip to rupture resulting in loss of the EGS system.



EGS Assembly and ICS Manifold Compensating Sys.