User Manual for
Amron International, Inc.

Model 8211-01, 8211-02, and 8211-03
2-Diver Air Control System

1380 Aspen Way, Vista California 92081-8349
United States of America
Phone: (760) 208-6500
Fax (760) 599-3857
Email: sales@amronintl.com
Web: www.amronintl.com

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1 INTRODUCTION AND SPECIFICATIONS

1.1 INTRODUCTION

The Model 8211-01 is a portable self-contained compact two diver Surface Command Unit (SCU) Air Control System. The unit consists of both high and low pressure air control, pneumo and communication system. The 8211-01 is housed in a durable co-polymer composite case. This user manual is applicable to three 8211 series air controls, the 8211-01, 8211-02 (with heating option), and the 8211-03 (with low pressure alarm). All operations and specifications are identical for all three models except for the specific options included on the 8211-02 and 8211-03.

1.1.1 AIR CONTROL

The air control section consists of two high pressure inputs, a single low pressure input, and a single diver air output connection.

- Standard 3000 PSI MAX Input - Model 8211-01 comes standard with 2 each CGA850 yokes attached to 6 foot long HP hoses. The CGA850 yoke limits the maximum input pressure to 3000 PSI
- Optional 4500 PSI MAX Input - Installing the 300 Bar DIN Adapters, Amron Part No. SAA-5300, will increase the 8211-01 maximum input pressure limit to 4500 PSI. Simply remove CGA850 yoke nut and yoke from the bleeder body, screw on the 300 Bar DIN adapters, and tighten with a wrench. Each input has a shut-off valve and 0-5000 psi gauge.

The high pressure inputs include two scuba bottle yokes with 6 foot hose whips. Each input has a shut off valve and 0-6000 psi gauge, input pressure range is 500 to 4500 PSI.

Check valves provide protection against back flow of air from a full bottle to an empty, when switching HP bottles. High pressure air is reduced to desired low pressure via an adjustable regulator. The input to the regulator is protected against contamination by a 50 micron filter. Regulator output pressure is adjustable over the range of 0 to 285 psi; a 2 1/2" 0-600 psi gauge monitors the output pressure. The unit has an over pressurization relief valve, factory set to 285 psi.

The low pressure input is #6 JIC (3/8), and has a check valve to permit simple switch over from low pressure air to high pressure air.

Divers air hose connections are O2 fittings, control is via 1/4 turn ball valves permitting unrestricted flow.

The diver’s pneumo connections are O2 type fittings; pneumo valves are regulating type. Pneumo gauges are 4.5" high, precision 0.25% of full-scale accuracy, dual scale 0-250 FSW/0-76 MSW with one foot increments.

1.1.2 DEPTH MONITORING

The diver's pneumo connection is an O2 type fitting; pneumo valves are regulating type. Pneumo gauges are 6" high, precision 0.25% of full-scale accuracy, dual scale 0-250 FSW/0-76 MSW with one foot increments.

1.1.3 COMMUNICATIONS

The diver communication system is based on the field proven AMRON Series 2825A. The 2825A-07 comes standard with a built-in medical grade internal power supply and can be operated from either a 90-264 VAC, internal 12 VDC battery, or an external 12 VDC power source.

Operating time from fully charged battery is approximately 45 hours. Unit can also be operated from an external 12 VDC source, via charger jacks on the front panel. The communicator has a unique battery condition indicator. Steady GREEN light indicates battery voltage level is good. Blinking GREEN light indicates battery voltage is approaching a low level (approx. 3 hours of operation remain). Steady RED light indicates battery voltage is below the level necessary to guarantee proper operation.

WARNING: When Battery Condition indicator is steady RED light, communication will stop. The battery condition indicator also functions in the same manner when operating from an external power source.

Possibly the most useful feature of the communicator is the ability to operate the unit remotely. This feature allows the use of a hand-held, push-to-talk microphone (included), or a walk and talk type module (optional). This allows the tender (operator) to move about and still maintain contact with the divers.

The use of the push-to-talk microphone automatically disconnects the speaker when talking to the divers, cutting out background noise from the speaker and greatly improving the intelligibility of communications.

The communicator provides ample voice power. This power level provides the volume necessary to communicate clearly even under difficult conditions. Standard controls include: power on/off, tender volume, diver volume, speaker on/off, 5-way binding post diver input, push-to-talk switch, headset/microphone jack, and remote push-to-talk jacks.

1.2 AIR CONTROL SPECIFICATIONS

1.2.1 HIGH PRESSURE INPUT

Input Pressure Range..... 500-3000 PSI with standard CGA850 Yoke Connections
Input Pressure Range (optional) ... 500-4500 PSI with optional 300 Bar DIN Adapters*
Inlet Valve (Source Select) 2
Gauge - 0-6000 PSI.....Accuracy +/- 1.5%
Check Valve, prevents reverse inlet flow 2
Input Filter, In Line Pre Regulator ..... 50 Micron
*Available with optional 300 Bar DIN Adapters, Amron Part No. SAA-5300

1.2.2 HIGH PRESSURE REGULATOR

Outlet Pressure Range ..... 0-400 PSI
High Flow ..... Cv = 0.8
Max Pressure ..... 6000 PSI

1.2.3 LOW PRESSURE INPUT, WITH CHECK VALVE

Max Pressure ..... 285 PSI
Diver Outlet Connection, (O2 Fitting) 2
Diver Outlet Valve 2
Air Pressure Gauge, 0-400 PSI ..... Accuracy +/- 1.5% of Full Scale
Over Pressure Relief Valve Set Pressure ..... 285 PSI

1.2.4 PANEL

Material ..... Stainless Steel
Powder Coating ..... Black Textured Semi-Gloss Polyester
Silkscreen Graphics ..... Red, White & Blue

1.3 SPECIFICATIONS DEPTH MONITORING (PNEUMO)

1.3.1 PNEUMO GAUGE, 3-D PRECISION

Mirrored Scale, 4.5 Inch 2
Range ..... Dual Scale 0-250 FSW/0-76 MSW
Divisions ..... 1 Foot
Accuracy ..... 0.25% of Full Scale

1.3.2 PNEUMO VALVE

Regulating Valve, KEL-F Seat 2

1.3.3 OUTLET CONNECTION

O2 Fitting Chrome Plated Brass 2

1.4 SPECIFICATIONS COMMUNICATIONS (8211-01 MODEL)

1.4.1 AMCOM II, MODEL 2825A-07 COMPACT 2-DIVER SCU COMMUNICATOR

Input Impedance (Each Input) ..... 250 Ohms
Frequency Response ..... 300 - 10000 Hz
Common Mode Rejection ..... 40 dB Minimum
Current Drain Maximum Full Volume ..... 3 Amps
Minimum Quiescent ..... 0.190 Amps
Output Impedance ..... 4 Ohm
Power Supply Voltage ..... 12 VDC Nominal (9 VDC Min - 16 VDC Max)
AC Power Operating Range ..... 90-264 VAC, 50-60 Hz
Sensitivity (Input) ..... 0.5 mV
Output Power (RMS @ 4 Ohm Load, 12 VDC) ..... 10 Watts Audio
Panel..... Black Powder Coat over Stainless Steel with White Silkscreen Graphics
Battery Life ..... 45 Hours

1.5 SPECIFICATIONS ENCLOSURE

1.5.1 CASE MATERIAL

Co-polymer composite material including carrying handle & latches with stainless steel hardware.

1.5.2 YOKE STORAGE

HP hoses and yokes remain attached to unit and are stored on inside of lid.

1.5.3 CASE

Lid closed..... 24-1/2" W x 19-1/2" D x 8-1/2" H
Lid open ..... 24-1/2" W x 21-1/2" D x 26" H
Color: ..... International Yellow
Weight: ..... Approximately 60 lbs.

AVAILABLE MODELS & OPTIONS:

- **8211-01** Two-Diver Air Control System & 2825A-07 Communicator (shown above).
- **8211-02** Two-Diver Air Control System with Heating Element & 2825A-07 Communicator.
- **8211-03** Two-Diver Air Control System with Low Pressure Alarm & 2825A-07 Communicator.

2 ACCESSORIES

The following accessories are available for the AMCOM communicator.

2.1 MODEL 2460-28 AMRON STANDARD HEADSET (DUAL EAR MUFF)

The Model 2460-28 is a light and comfortable headset designed for extended wear at an economical price. It comes equipped with color-coded, dual banana plugs that mate directly to AMCOM diver communicators as well as a spiral cord that can be extended up to 8 feet (2.4 meters).

2.2 MODEL 2401-28 AMRON HEAVY-DUTY HEADSET (DUAL EAR MUFF)

The Model 2401-28 is a heavy-duty headset with boom microphone. It comes equipped with color-coded, dual banana plugs that mate directly to AMCOM diver communicators. It includes a 6 ft. straight cord (1.8 meters).

2.3 MODEL 2401SM-28 AMRON HEAVY DUTY HEADSET (SINGLE EAR MUFF)

The Model 2401SM-28 is a high-quality heavy-duty Telex headset with a single ear muff and boom microphone. It has superior sound quality and comes equipped with color-coded dual banana plugs, 6-foot (1.8-meter) cord, and mates directly to communicator.

2.4 MODEL 2405-28 AMRON PUSH-TO-TALK MICROPHONE

The Model 2405-28 is a hand-held, push-to-talk microphone that provides excellent sound quality to the diver. It comes equipped with a spiral cord that can be extended up to 6 feet (1.8 meters).

2.5 MODEL 2405NC-28 AMRON NOISE CANCELLING PUSH-TO-TALK MICROPHONE

The Model 2405NC-28 is a hand-held, noise cancelling, push-to-talk microphone that provides excellent sound quality to the diver. It comes equipped with a spiral cord that can be extended up to 6 feet (1.8 meters).

2.6 MODEL 2821-28 AMRON REMOTE PUSH-TO-TALK MODULE

Designed for 2-Wire applications, the Model 2821-28 provides the tender with mobility around the dive site while maintaining communications with the diver. It comes equipped with a small clip-on belt module that contains a Push-to-Talk switch, connector for the headset, and 25 feet (7.6 meters) of lightweight flexible cable. Custom cable lengths are available.

2.7 MODEL 2822-28 AMRON REMOTE WALK-AND-TALK MODULE

Designed for Full Duplex (4-Wire) applications, the Model 2822-28 provides the tender with mobility around the dive site while maintaining communications with the diver. It comes equipped with a small clip-on belt module that contains the connectors for the headset, and 25 feet (7.6 meters) of lightweight flexible cable. Custom cable lengths are available.

2.8 AMRON PART NUMBER SAA-5300 – DIN ADAPTER 300 BAR

Converts a standard Amron CGA850 yoke (3000 PSI) to 300 Bar DIN (4500 PSI) use.

2.9 HEATING ELEMENT OPTION (MODEL 8211-02)

Optional heating cable is 18 ft. long and is wrapped around the high pressure input and regulator section located on the backside of manifold panel; the standard plug connection 120 VAC heater is located on the front panel for ease of use; lower case is insulated with closed cell foam to help protect against severe weather conditions as an added safety feature, a GFCI in-line cord set is supplied.

2.10 LOW PRESSURE ALARM OPTION (MODEL 8211-03)

An optional low pressure alarm is installed on the low pressure side of the manifold, after the regulator, and is powered by the radio. The alarm can be turned on or off using a switch on the front panel of the air control. The low pressure alarm alerts the tender or dive supervisor with a 90 dB, 2900 Hz pulsing tone when the regulated supply air pressure to the divers decreases below 100 PSI.

3 SAFETY AND REGULATIONS

Safe diving does not happen by accident. There are few occupations in the world which require such a broad range of knowledge and training as diving. There are many diverse factors which can affect diving safety, i.e. planning, weather, equipment, location, water conditions, as well as the type of work being done. The single most important factor in eliminating accidents is planning and attention to detail. Diving knowledge, training and experience are fundamental elements needed to execute a safe dive.

The following reference materials are recommended as sources of information for running a safe diving operation:

1. U.S. Department of Labor, OSHA Regulations 1910.401 Sub-part T–Commercial Diving Operations.
2. U.S. Navy Diving Manual.
3. Divers Handbook of Underwater Calculations.

3.1 DIVING SAFETY AND REGULATIONS

3.1.1 DIVING REGULATIONS

Several codes and regulations cover diving operations and procedures. In the United States most commercial diving operations are covered by the OSHA (Occupational Safety and Health Administration) regulations, or individual state regulations, which are adopted from the federal regulations, and made a part of the civil code.

While government agencies are exempt from OSHA regulations, they generally fall under other regulations, which are similar or stricter than OSHA. If they are completely exempt, they must still abide by the procedures for operating a safe dive.

While no agency (within the U.S., for commercial diving operations) tests or approves equipment for use, they do establish minimum standards which should be followed. The suitability of a given piece of equipment for a particular task is left to the supervisor of the dive. The following information is extracted from the OSHA regulations for commercial diving operations.

NOTE: The information is not presented as a direct or complete quotation, but rather as our interpretation of the regulations. Each diving supervisor should obtain a copy of these regulations for their own use.

WARNING: DO NOT USE THE MODEL 8211-01 FOR THE FOLLOWING:

- Mixed gas diving operations with an oxygen level greater than 25%.
- Oxygen or oxygen enriched breathing mixtures above 25%.

MODELS 8211-01, 8211-02 and 8211-03 are not designed or intended for the above applications.

3.2 PERSONNEL REQUIREMENTS

1. Each dive team member shall have the experience or training necessary to perform assigned tasks in a safe and healthful manner. The person operating the Model 8211-01 must be trained in the proper operating procedures and emergency operating procedures.

2. It is the responsibility of the designated person in charge of the diving operation to be on-site at all times. He is responsible for all aspects of the diving operation affecting the health and safety of dive team members.

3. The dive shall be terminated when:

   - A diver requests termination.
   - A diver fails to respond to instructions.
   - Diver communications are lost and cannot be re-established quickly.
   - A diver begins to use diver carried back-up breathing air or location reserve breathing air.
   - Operational conditions deteriorate to a point where safe diving cannot be guaranteed.

3.3 AIR SUPPLY REQUIREMENTS

WARNING

Regardless of the type of air supply being used for surface supplied diving; the diver must always have a back-up supply of air. Generally, this is in the form of a bailout bottle. The back-up air supply must be adequate to return the diver to the surface; if the dive requires in-water decompression, this must be accounted for also.

1. The diver's air supply may originate from a low-pressure air compressor, high-pressure air cylinders, or a combination of both. Regardless of the source, the air must meet certain established standards of purity and must be supplied in an adequate volume for breathing.

2. The air supply requirements depend upon the specific factors of each dive such as depth, duration, level of exertion, and type of diving system (helmet/hat) being used. It is the dive supervisor's responsibility to ensure that an adequate supply of air is available and on site for the planned dive. This includes sufficient back up air to safely return the diver to the surface in the event the primary supply of air is lost.

3. Low-pressure compressors used for breathing air should be specifically designed for diving. Compressors used to supply air to the divers shall be equipped with a volume tank which has a check valve on the inlet side, a pressure gauge, relief valve, drain valve, and a proper filtration system. The output of the air compressor system shall be tested for air purity every 6 months by means of an air sample.

4. Air compressor intakes shall be located away from and up wind of areas containing exhaust or other contaminants.

5. **NOTE: OSHA regulations require** a decompression chamber capable of recompressing the diver at the surface to a minimum of 165 FSW (6 ATA) shall be available at the dive location for a surface supplied air diving to depths deeper than 100 FSW.

3.4 CALIBRATION, SERVICE, AND INSPECTION

1. Each depth gauge shall be dead weight tested or calibrated against a master reference gauge every 6 months or if there is a discrepancy greater than two percent (2%) between any two equivalent gauges.

2. Each equipment modification, repair, test, calibration, or maintenance service shall be recorded by means of a tagging or logging system, and include the date and nature of work performed, and the name of the person performing the work. For your convenience a repair service log is provided at the end of this manual.

3. Equipment Inspection; Prior to each dive, the equipment shall be inspected and checked to ensure that it is in proper working order.

4 CONTROLS AND CONNECTIONS

Before using the Model 8211-01, familiarize yourself with its operating controls and connections. For simplicity, the controls and connections are divided into three categories. The categories are Air Control, Pneumo, and Communications.

4.1 AIR CONTROL

The Air Control section consists of a high-pressure section and a low-pressure section. The system is designed to supply breathing air to a diver through an umbilical. This is known as surface supplied diving. The air the divers are breathing is supplied from the surface.

4.1.1 STANDARD 3000 PSI MAX INPUT

All models come standard with 2 each Amron CGA850 yokes attached to 6 foot long HP hoses. The CGA850 yoke limits the maximum input pressure to 3000 PSI.

4.1.2 OPTIONAL 4500 PSI MAX INPUT

Installing the 300 Bar DIN Adapters: Amron Part No. SAA-5300 will increase the 8211-01 to a maximum input pressure limit to 4500 PSI. Simply remove Amron CGA850 yoke nut and yoke from bleeder body, screw on 300 Bar DIN adapter and tighten with a wrench

4.1.3 HIGH-PRESSURE

The 8211-01 accepts breathing air from SCUBA bottles or any other suitable source, i.e. high-pressure flasks. The pressure is reduced to a level suitable to the needs of the diver via a pressure-reducing regulator. The pressure required by the diver is determined by the type of helmet / hat being used and the depth the diver is working at. The general rule of thumb is bottom pressure plus over-bottom pressure required for a given type of diving helmet / hat. Consult your diving helmet / hat manufacturer's manual for the requirement of the helmet / hat you are using.

The High-Pressure section has two inputs, complete with high-pressure hose whips, CGA850 SCUBA bottles yokes, and pressure reducing regulator.

1. Source select inlet valve handles are color coded Red and Blue to correspond to the hose whips which are also color-coded Red and Blue. This helps the operator identify which valve controls which tank. For maximum airflow, turn handle counter clockwise four (4) full turns. To shut-off valve, turn handle clockwise until it stops.

2. Inlet gauge reads actual input pressure of air source. Gauge pressure range is 0-6000 psi; accuracy is 1-1/2% of full scale.

3. Check valves(HP section) prevent input air from one source flowing into a second lower pressure source when both source valves are open. This simplifies the switch over from one SCUBA bottle to another. **NOTE:** If both source valves are left open with full bottles the bottles will be drawn from equally.

4. The Amron CGA850 input yokes are standard with bleed valves and color-coded 6-ft. high-pressure hose whips. The CGA850 input yokes are limited to maximum pressures of 3000 PSI and fit standard SCUBA bottle valves.

5. A pre-regulator filter prevents debris from contaminating the regulator. Filter element is 50 micron.

6. High pressure regulator reduce pressure of incoming air from high-pressure bottles to a level required by diver's helmet / hat. To increase the diver's air pressure, turn knob clockwise to desired setting. To decrease the diver's air pressure, turn knob counter clock-wise. **NOTE:** Regulator is a non-venting type; in order to reduce the set pressure, air must be flowing through the regulator.

4.1.4 LOW-PRESSURE

The Low-Pressure section consists of an LP input, low pressure output of regulator, LP gauge, and diver connections. A small portion of the LP air is also used when diver depth measurements are made.

The LP input accepts breathing air from a low-pressure source such as a low pressure diving air compressor. **NOTE:** The low-pressure section does not regulate the air pressure to the diver. The compressor must be set to provide the proper pressure to the diver.

Breathing air from the low-pressure side of the regulator or the low-pressure input is routed to the diver's breathing air connections. A portion of the low-pressure air is used by the pneumo section for diver depth measurements.

1. Low-pressure input, #6 JIC type fitting. (O_2 type fitting available).

2. Low-pressure check valve prevents the back flow of air from the HP regulator output into the LP air source. This also permits simple switch over from LP to HP air.

3. 1/4 Turn ball valve controls flow of air to diver. Ball valve permits unrestricted flow.

4. Divers air supply gauge reads air pressure to divers, 0-400 PSI.

5. Diver's air supply outlet connection, O2 (oxygen) type fitting. (37° JIC optional).

6. Pressure relief valve, factory set for 285 PSI, vents excess pressure to atmosphere. Vent is located between diver output connections.

The Low-Pressure Run for each diver consists of an LP input connection with a controlling 1/4 Turn Ball Valve, a low pressure output from the regulator with a controlling 1/4 Turn Ball Valve, Gauge, Outlet 1/4 Turn Ball Valve and Diver Connection. A small portion of the LP air is also used when diver depth measurements are made.

Accepts breathing air from a low-pressure source i.e., a low pressure diving air compressor. **NOTE:** The low-pressure section does not regulate the air pressure to the diver. The compressor must be set to provide the proper pressure to the diver.

Breathing air from the low-pressure side of the regulator or the low-pressure input is routed to the diver's breathing air connections. A portion of the low-pressure air is used by the pneumo section for diver depth measurements.

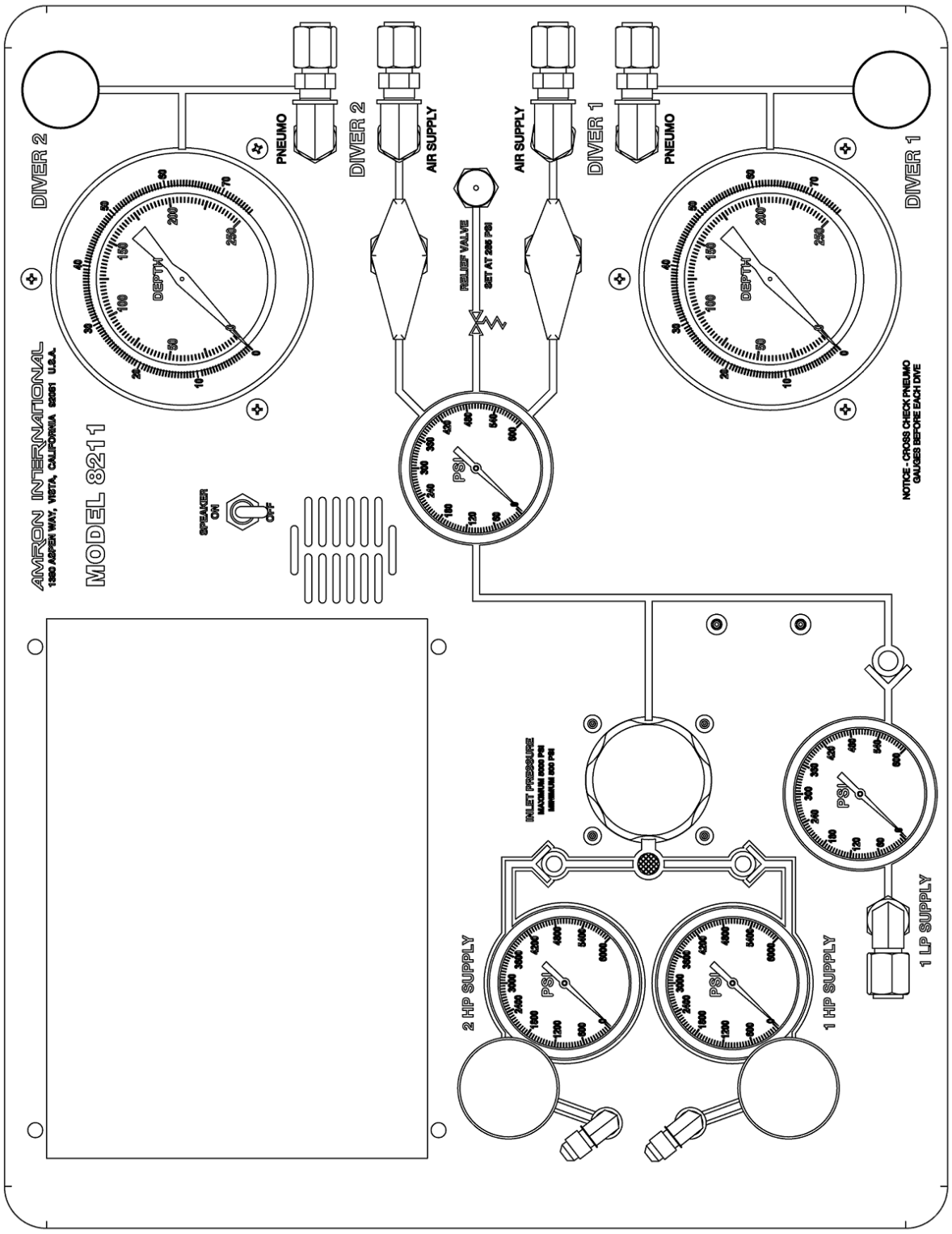
1. Low-pressure input, #6 JIC type fitting. (O2 type fitting available).
2. Low-pressure check valves prevent the back flow of air from the HP regulator outputs into the LP air sources. This also permits simple switch over from LP to HP air
3. 1/4 Turn Ball Valves controls flow of air to divers. Ball valves permits unrestricted flow.
4. Divers air supply gauges reads air pressure to divers, 0-600 PSI.
5. Divers air supply outlet connections, O2 (oxygen) type fitting. (37° JIC optional).
6. Pressure relief valve, factory set for 350 PSI, vents excess pressure to atmosphere. Vent is located in the upper right hand corner.

4.2 PNEUMO DEPTH MONITORING

The Pneumo Fathometer section is used to measure the diver's depth. Pneumo readings are made by pressurizing the diver's pneumo hose. Air is forced through the pneumo hose until all water is displaced. The air is then shut off and the pressure is read on a high accuracy gauge calibrated in FSW (feet of seawater). The system components are:

1. Diver pneumo valve (yellow handle) controls the air supply to the pneumo Fathometer system.
2. Pneumo gauge, dual scale 0-250 FSW/0-76 MSW, mirrored scale, 4.5 inch, high precision, 0.25% of full scale accuracy.
3. Diver pneumo outlet connections are O2 (oxygen) type fittings. (37° JIC fitting optional).

4.3 AIR CONTROL FRONT PANEL, MODEL 8211-01



4.4 COMMUNICATIONS

Before using the 8211-01 diver communicator, the operator should be familiar with all the controls and connections. While reading this manual, you will find capitalized words such as PANEL SPEAKER. These words are to remind the reader that additional information can be found in this section of the manual. Refer to section 4.5 Communicator Front Panel, Model 2825A-07.

4.4.1 TENDER CONTROLS

The following controls are located on the front panel of the 2825A-07 communicator Tender section.

1. **POWER SWITCH** - The power on/off control.
2. **SPEAKER SWITCH** - This switch allows the tender to turn off the speaker. If the tender is using a headset, it may be necessary to turn off the speaker to prevent acoustic feedback.
3. **PUSH-TO-TALK ALL BUTTON** - This push button allows the tender to talk to all the divers when operating in 2-Wire mode. It is not necessary to use this control in the Full Duplex (4-Wire) mode. When using Full Duplex mode, this control allows the tender to interrupt the diver by forcing the diver into listen only mode.
4. **EARPHONE VOLUME** - This control sets the volume for the tender's earphone and/or PANEL SPEAKER. Rotate this knob clockwise to increase the volume from all the divers.
5. **MICROPHONE VOLUME** - This control sets the level for the tender's microphone and/or PANEL MICROPHONE. Rotate this knob clockwise to increase the tender’s volume to all the divers.
6. **PANEL SPEAKER** - A waterproof, acoustic speaker that allows the tender to monitor communication to the diver and act as a microphone by using the PUSH-TO-TALK BUTTON. The volume level is controlled by the EARPHONE VOLUME control and it can be turned off using the SPEAKER SWITCH.
7. **PANEL MICROPHONE** - A water resistant, condenser microphone that allows the tender to talk to the divers. The volume level is controlled by the MICROPHONE VOLUME control and is turned off when the SPEAKER SWITCH is off.
8. **BATTERY CONDITION INDICATOR** – Steady GREEN light indicates battery voltage level is good. Blinking GREEN light indicates battery voltage is approaching a low level (approx. 2-4 hours of operation remain). Steady RED light indicates battery voltage is below the level necessary to guarantee proper operation. WARNING: When Battery Condition indicator is steady RED light, communication will stop. The battery condition indicator also functions in the same manner when operating from an external power source.

4.4.2 TENDER CONNECTIONS

1. **TENDER HEADSET** - This is the dual banana jack (color-coded black) that functions as both an output (earphone) and input (microphone) for the tender as controlled by the PUSH-TO-TALK BUTTON and PUSH-TO-TALK JACK. Using this connection, the tender can be wired in either 2-Wire or Full Duplex (4-Wire) mode regardless of the mode used for the diver.

   To connect the tender in the Full Duplex (4-Wire) mode, connect the earphone (black) banana plug of the headset to this jack and the microphone (red) to the TENDER MICROPHONE jack (red). In this mode, the tender does not have to use the PUSH-TO-TALK BUTTON to communicate with a diver who is also connected in the Full Duplex (4-Wire) mode. This configuration can be used even if the diver is connected in 2-Wire mode. In that situation, the tender is required to use the PUSH-TO-TALK BUTTON or PUSH-TO-TALK JACK.

   The headset microphone is always active which means that there can be acoustic feedback between the PANEL SPEAKER and the microphone if the tender is near the communicator. To prevent this, the PANEL SPEAKER can be turned off using the SPEAKER SWITCH. Another option is to move the tender away from the communicator by using the Amron Model 2822-28 Walk-and-Talk Module accessory. This allows the tender to communicate while other members of the surface crew listen using the PANEL SPEAKER. This module comes with 25 feet (7.6 meters) of cable (custom cable lengths are available).

   The tender can also be connected in 2-Wire mode by stacking both the earphone (black) and microphone (red) banana plugs into this jack. The diver does not have to be connected in 2-Wire mode if the tender is in 2-Wire mode. To talk to the diver, the tender must use either the PUSH-TO-TALK BUTTON or PUSH-TO-TALK JACK. Since the headset microphone is not active until one of the push-to-talk methods is used, there is no chance for acoustic feedback to occur and surface conversation or noise is not transmitted to diver and the PANEL SPEAKER can be left on. This may, for some situations, make for a better overall diving experience. If the tender requires more mobility at the dive site, the Amron Model 2821-28 Remote Push-to-Talk Module can be used to extend the headset cable. It includes a push-to-talk button on a clip-on belt module and comes standard with 25 feet (7.6 meters) of cable (custom cable lengths are available).

   The tender may also use the Amron Model 2405-28 Push-to-Talk Microphone. This microphone comes with two color-coded banana plugs. The black plug goes into the TENDER HEADSET jack and the yellow plug goes in the PUSH-TO-TALK JACK. To communicate with the diver, the tender presses the button on the side of the microphone. There is no chance of acoustic feedback since the PANEL SPEAKER is cut-off when the tender uses the microphone. When using the Push-to-Talk Microphone, the SPEAKER SWITCH must be turned on to hear the diver.

2. **TENDER MICROPHONE** - This is a dual banana jack (color-coded red) that functions as the microphone input from the tender's headset. It is only used if the tender is in Full Duplex (4-Wire) mode.

3. **PUSH-TO-TALK JACK** - This is a dual banana jack (color-coded yellow) that allows for remote keying of the push-to-talk function of the communicator. The difference between using the PUSH-TO-TALK JACK and PUSH-TO-TALK BUTTON is that the button allows the tender to communicate using the PANEL SPEAKER as a microphone. If both are used at the same time, the PANEL SPEAKER is active as a microphone. This allows a crew member to talk to the diver using the PANEL SPEAKER even if the tender is away from the communicator using the Remote Push-to-Talk Module in 2-Wire mode.

4. **EXTERNAL BATTERY JACK** - The communicator can be powered using an external battery or power supply via the two color coded TIP jacks. The red TIP jack is the positive power input and the black is the negative power input. The input voltage must be between 9 and 18 VDC and must be able to supply a peak current of 3 Amps for proper operation. The following warnings need to be heeded when using the EXTERNAL BATTERY JACK. A minimum wire size of 18 AWG and maximum wire run of 3 feet (1 meter) is recommended.

5. **RECORDER OUTPUT** - This is a single RCA Phono jack (color-coded black) that provides a transformer isolated of both the diver and tender communications. It is designed to drive the standard line-level inputs of audio or video recorders with input impedances as low as 600 Ohms.

4.4.3 DIVER CONTROLS

The following controls are located on the front panel in the individual diver sections.

1. **DIVER MICROPHONE VOLUME** – This control adjusts the level from the diver's microphone to the tender and other diver.

2. **DIVER EARPHONE VOLUME** – This control adjusts the level to the diver's earphone.

3. **PUSH-TO-TALK DIVER** – This control allows the tender to communicate to a single diver without the other divers hearing. The diver will hear the tender and the other diver speaking.

4.4.4 DIVER CONNECTIONS

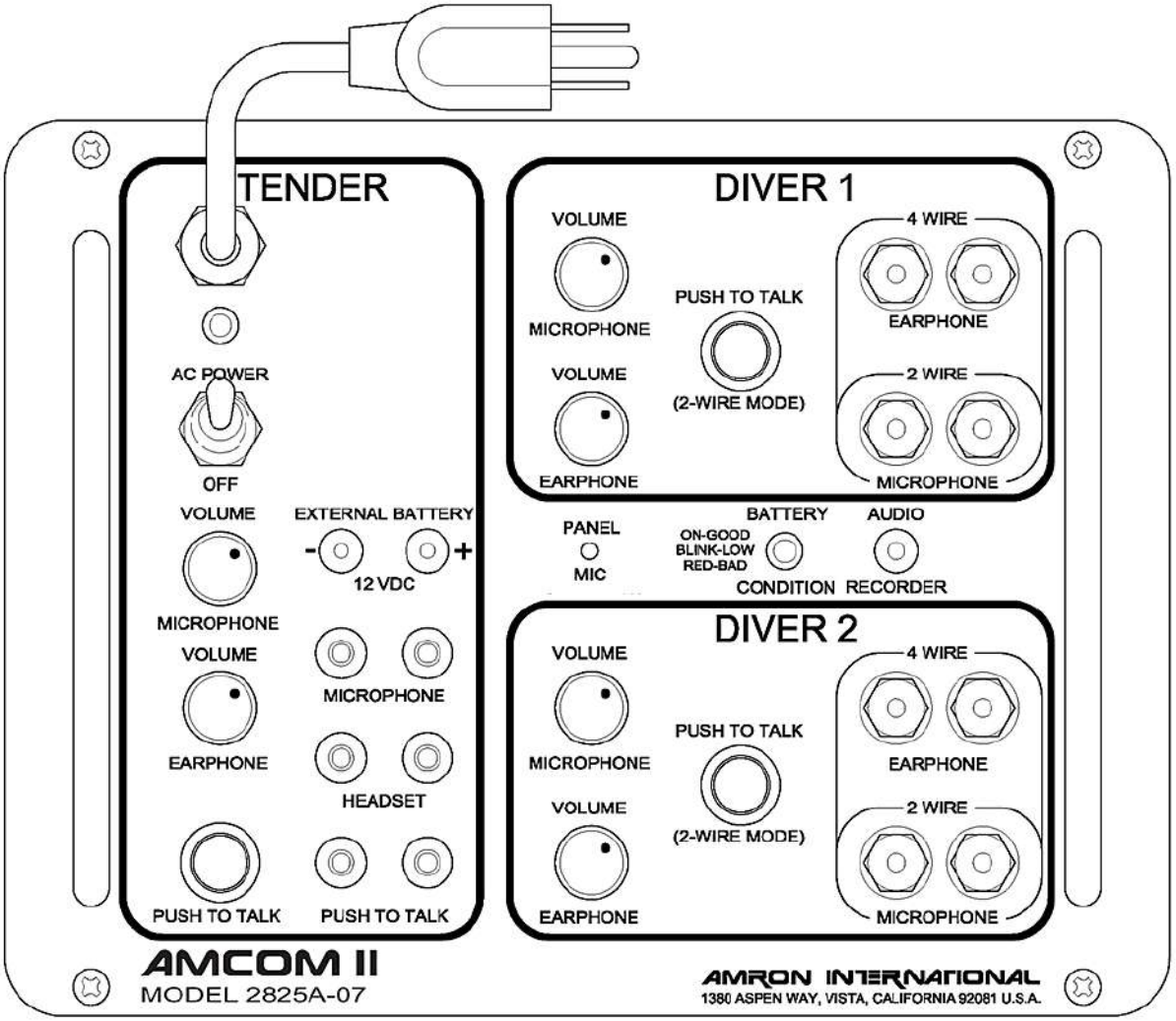
1. **DIVER MICROPHONE** - This is a dual 5-way binding post jack (color-coded red) that functions as both an output (earphone) and input (microphone) for the diver as controlled by the PUSH-TO-TALK BUTTON and PUSH-TO-TALK JACK. Using this connection, the diver can be wired in either 2-Wire or Full Duplex (4-Wire) mode regardless of the mode used for the diver.

   To connect the diver in Full Duplex (4-Wire) mode, connect the diver microphone to this jack and the diver earphone to the DIVER EARPHONE jack. The diver can use this mode even if the tender is wired in 2-Wire mode.

   To connect the diver in 2-Wire mode, connect both the diver microphone and earphone to this jack. If the diver umbilical uses banana plugs, simply stack both plugs into this jack. In this mode, the diver microphone will be active and heard on tender headset and/or PANEL SPEAKER unless the PUSH-TO-TALK BUTTON or PUSH-TO-TALK JACK is activated.

2. **DIVER EARPHONE** - This is a dual 5-way binding post jack (color-coded black) that functions as the output for the diver's earphone. It is only used when the diver is in Full Duplex (4-Wire) mode.

4.5 COMMUNICATOR FRONT PANEL, MODEL 2825A-07



5 PRE-DIVE PROCEDURES

5.1 PRE-DIVE SET-UP

1. Place Model 8211-01 on flat surface that can support the unit. Select a working area which is secure, stable, convenient, and suitable for use during the period of the dive.

2. Open unit and remove both yokes and color coded high pressure hose whips from the storage position. Conduct a visual inspection of unit to insure no damage has occurred during transportation to the job site, or since the last time the unit was used.

3. Attach each yoke to a scuba cylinder by screwing down until finger tight. **NOTE:** be sure the bleeder valve on each yoke is in the closed position. (**NOTE:** Do not turn the cylinder's air on at this time).

4. If available, a low pressure compressor should be used as the primary air supply and HP cylinders used as a back-up air source.

   NOTE: Low pressure compressors used for breathing air should be specifically designed for diving.

5. All customer supplied hose whips should be clear of debris and have their open ends taped, capped or plugged when not in use.

6. Flush out low pressure hose whip before connecting to the Model 8211-01 to prevent debris from entering system.

7. Attach hose whip to Diver 1 LP supply inlet fitting.

   NOTE: When tightening hoses, USE TWO WRENCHES place one wrench on inlet fitting and hold, turn hose fitting with a second wrench making sure not to over tighten.

5.2 PRE-DIVE CHECK OUT

1. Be sure both the high pressure valve, pneumo valve, and air supply valve are in the 'off' (closed) position.

2. Regulator should be set to a low pressure, turn knob counter clockwise until the knob stops.

3. Turn the Diver output valve and pneumo valve to 'off' position.

4. With the yoke bleeder valve in closed position, turn on high pressure air at both SCUBA or breathing air cylinders.

   NOTE: Always open high pressure valves slowly, allow system to fill slowly before opening valves for maximum flow. Check the pressure level of both HP supplies.

5. Turn on 1 HP supply valve by turning counter clockwise four (4) full turns.

   NOTE: 2 HP supply valve should be in the off position and used as a back-up.

CAUTION: If both HP valves are opened at the same time, both air supplies will be used simultaneously. This will result in both bottles being empty at the same time. The purpose of the two supplies is to alternate between the two bottles. Use one of the bottles until it reaches 500 PSI, and then switch to the second bottle. With a full bottle on line, you can then replace the first bottle with a full unit.

6. Note the cylinders air pressure by reading the HP supply gauge.
7. Adjust regulator to desired setting by turning knob while monitoring the diver air supply gauge. Clockwise increases the set pressure.

   NOTE: Regulator setting is determined by: required over-bottom pressure for manufacturer's helmet or mask plus the bottom pressure relating to the diver's depth. See section 9.4 for gauge pressure verses depth chart. Repeat section 5.1 and section 5.2 for Diver 2

5.3 PRE-DIVE PNEUMO TEST

A pneumo gauge with a range of 250 FSW/76 MSW has an equivalent full-scale pressure rating of 111.25 PSI. If you exceed this pressure by a significant amount, you will cause a permanent change in the calibration of the gauge. If you exceed 111 PSI by 100% you will destroy the gauge.

Procedure for checking the pneumo gauges:

1. Pressurize the LP section of the 8211-01; reduce the output pressure of the regulator to a pressure less than 100 PSI.
2. Open the diver output valve momentarily to reduce the pressure and check the action of the regulator. Check to see that the output of the regulator stays at less than 100 PSI.
3. Open Pneumo valve slowly, while watching the depth gauge, check that the gauge needle is slowly rising and that air is exhausting through the diver's pneumo connection (or diver's pneumo hose if connected).
4. Close valve; check depth gauge to see that it reads zero. The gauge should be within +/- 10 feet of zero. Zero will be affected by changes in atmospheric pressure and/or changes in altitude. If zero is off by more than 10 feet and there has not been a significant change in either atmospheric pressure or altitude, suspect that the gauge has been subjected to over-pressurization and may have suffered damage. Cross-check the gauge or have the gauge calibrated before using.
5. Seal the output of the pneumo section. This can be done by capping off the Pneumo output, or preferable sealing the end of the pneumo hose. Pressurize the Pneumo to 200 FSW and close the blow-down valve. This reading should hold, without a decrease in reading. If the reading decreases you have a leak in the system, correct before proceeding.

6. Cross-checking the pneumo gauges. Either connect the pneumo outputs together, or connect the pneumo hoses together and pressurize the system, both gauges should read the same. If the gauges differ by more than 2%, have the defective gauge calibrated. Gauge calibration should be compared at several points over the range of the gauge, with both increasing and decreasing pressure. As a minimum check the gauges over the range which the gauge will be used

5.4 PRE-DIVE TESTING COMMUNICATIONS

1. Always test the communications between the AMCOM II and divers before each dive. Connect the diver's umbilical to the diver communicator, and the helmet / hat to the umbilical.
2. Turn power to "ON" position.
3. Set "Tenders Volume" at mid scale. While diver is speaking, adjust to a comfortable level.
4. Set "Divers Volume" at mid scale. Talk to diver and adjust until diver can hear tender at a comfortable level. If you are using a 2-wire system you must use the "Push-to-talk" switch, or the push-to-talk "Hand-Held Microphone".
5. Become familiar with the "Push-to-Talk" switch by pushing the switch when talking to the diver.

   NOTE: If switch is depressed, tender cannot hear diver. Diver cannot hear tender if tender does not actuate the "Push-to-Talk" switch.
6. Check Diver 2 or the standby diver communication.

5.5 CONNECTING DIVER UMBILICAL

1. Remove protective caps and attach diver air supply and diver pneumo hose fittings to corresponding outlets.

   NOTE: When tightening, place one wrench on outlet fitting and one wrench on hose fitting. Tighten hose fitting, making sure not to over tighten.
2. Blow out diver's air supply hose to ensure no debris is in the line before connecting to a helmet or mask.
3. Connect the communication cable (surface end) to the two binding posts located on the right side of radio. Wires should be well fastened to the binding posts and not touching each other (bare wire). We strongly recommend the use of dual banana plugs attached to the top side end of the umbilical. This ensures a good connection and reduces the possibility of shorts and/or intermittent connections. Attach diver's end to helmet or mask.
4. Test the operation of the system.

5.6 LOW PRESSURE SUPPLY

1. Test LP supply with low pressure compressor.

   NOTE: Adjust diver air supply pressure at compressor. The 8211-01 LP supply system by-passes the regulator, therefore, cannot control air pressure entering system, or the pressure to the diver.

6 OPERATING PROCEDURES

6.1 LOW PRESSURE BREATHING AIR (PRIMARY SUPPLY)

Low Pressure Compressor (Primary supply), High Pressure (Backup). In this mode of operation, the divers' breathing air is being supplied by an LP compressor, the HP Supply is use as a back-up supply. Having the HP supply as a backup does not eliminate the requirement for a bailout source of air.

In the event the LP air source fails, it is a simple matter to switch over to HP Air. Turn "ON" the HP source by opening the HP valve. Check the diver's air supply pressure.

6.2 HIGH PRESSURE BREATHING AIR (PRIMARY SUPPLY)

In this mode of operation, the divers' breathing air is being supplied by via high pressure breathing air source. This could include high pressure storage cylinders, or a bank of high-pressure storage cylinders.

CAUTION!

Maximum Input Pressure 3000 PSI using Standard CGA850 Yokes

Maximum Input Pressure 4500 PSI using Optional 300 Bar DIN Adapters

The high pressure breathing system is designed to allow the rotation of bottles as they are consumed. Operate the system using a single bottle until the bottle pressure has dropped to approximately 500 PSI, then switch to the next bottle. Repeat this procedure alternating between HP-1 and HP-2, changing bottles as they are used. The HP input system has check valves, which prevent back-flow between the bottles. This facilitates switching between bottles.

EXAMPLE:

If you have two bottles connected to the system and you are using bottle HP-1, bottle HP-2 is "OFF", when HP-1 reaches 500 PSI, you may switch to HP-2 by opening the valve for HP-2. The system will draw air from the higher of the two sources, HP-2. You can then turn HP-1 "OFF", and change the bottle connected to source HP-1. This procedure ensures an uninterrupted supply of air to the diver.

After turning HP-1 off, turn the bottle valve off, open bleed-valve on the yoke and bleed the pressure. Release the yoke and replace the empty bottle with a full bottle. Close the bleed-valve and turn SCUBA cylinder on and verify the bottle is full.

Another method of changing bottles is to leave both valves on the system in the "ON" position. Use the SCUBA bottle valves as the ON/OFF control for selecting which bottle is in use. This

reduces the number of valves, which must be open and closed for each change of bottles. If you use this procedure, you should periodically open the new bottle and check the gauge to ensure the bottle is full, then close bottle to prevent the system from using air from both bottles at the same time.

1. When planning your dive, you must take into consideration the amount of time a given bottle will last and the number of bottles, which will be necessary during the dive. There are two options that can be used to accommodate dives that will have a high consumption of air.

2. Use twin tanks instead of singles.

3. Use a high volume cylinder (250 - 300 cubic feet) of breathing air; these can generally be rented from a welding gas supplier, or supplier of industrial gases. Make sure you specify breathing air, and request certification. These cylinders can be also be manifolded quite easily. Generally, the charge for rental is very competitive in cost and usually includes delivery to the job site.

   NOTE: When using high-pressure cylinders, care must be exercised in the handling, transport, and storage of it. Make sure all personnel involved are instructed in the proper procedures. If you have any questions regarding the proper procedures contact your supplier.

6.3 PRE-OPERATION CHECKLIST

1. Diver dressed and ready except helmet / hat.
2. Diver's umbilical organized.
3. LP Compressor running and at pressure.
4. HP source connected and ready, HP-1 and HP-2 valves "OFF".
5. Zero pneumo gauges.
6. Diver air ON, purge diver helmet / hat.
7. Diver dons helmet / hat.
8. Diver communicator ON, comm check.
9. Diver air check.
10. Diver enters water.
11. Record the starting time of the dive.

During the dive, the tender shall maintain voice communication with the diver at all times. The tender shall monitor the diver's air pressure and breathing rate.

6.4 PNEUMO READINGS

During the dive, the tender shall monitor the diver's depth, recording the depth and time at depth. The procedure for measuring depth is as follows.

1. Advise the diver that a pneumo reading is to be taken.
2. The diver will place the end of the pneumo hose at the point at which the measurement shall be taken. Diver will advise the tender he is ready for the pneumo reading.
3. Slowly open the pneumo valve corresponding to the diver whose depth is being measured. The pneumo gauge reading will increase and stabilize at a value greater than the depth of the diver. The value will depend upon the flow rate, and pressure drop over the length of the pneumo hose. The diver will advise the tender of bubbles coming from the end of the hose.
4. Close the pneumo valve, the reading will begin to decrease to the value of the diver's depth. Once the reading has stabilized, this is the depth at the end of the pneumo hose.

NOTE: Pneumo readings can be used for several purposes i.e., measuring the diver's depth, depth to a particular point under water, vertical distance from one underwater object to another. The accuracy of the measurement is plus or minus 0.625 feet of seawater, (+/- 7.5 inches). This represents an overall accuracy of +/-1/4 of 1% of the full-scale value of the depth gauge. To maintain this accuracy the gauges must be calibrated every 6 months.

6.5 COMMUNICATOR AC POWER

6.5.1 AC POWER

When the unit is connected to AC power the LED power indicator on the STATUS section of the front panel will illuminate, confirming the presence of AC power.

The AMCOM II is designed to operate from AC voltage (90-264 V_{RMS} 50-60 Hz) with a 12 VDC gel cell battery for backup operation in the event of loss of AC power. The switch over to battery operation is completely automatic, and occurs whenever AC power is interrupted. The internal rechargeable battery is maintained at full charge while the unit is operating from AC power. AC power indicator on the optional panel confirms the presence of AC power.

CAUTION: ALWAYS exercise extreme caution when operating AC powered equipment, especially when outdoors, where conditions are damp or wet, or when around other equipment. Never operate unit without earth-ground or without a working ground fault interrupter. When in doubt discontinue use immediately and have a qualified electrician inspect your equipment before using.

WARNING: All AC powered equipment should be used with a ground fault interrupter. All ground fault interrupters have a built-in test circuit, check for proper operation before using.

6.6 COMMUNICATOR DC POWER

6.6.1 BATTERY CHARGING

The AMCOM II communicator is supplied with a sealed lead acid battery. To charge the battery, plug the AC power cord of the radio into an AC outlet. The internal battery charger can operate on AC input voltages from 90-264 VAC with a frequency 50-60 Hz without the user having to make any adjustments.

The internal battery charger is designed to charge the battery in float mode so the charger can be left on indefinitely, without damage, to ensure the battery is fully charged and the unit is ready to use. A fully discharged battery will take approximately 10 hours to reach full charge (depending on the age of the battery and the surrounding temperature). To ensure maximum service life, the battery should be fully charged at least once every six months.

The operating time for a fully charged battery is approximately 45 hours. The exact operating time depends on the age of the battery and the ambient temperature. The sealed lead acid battery used in the communicator has a service life of 300 full charge/discharge cycles or 3 years. The BATTERY CONDITION INDICATOR will start to blink when the battery has approximately 3 hours operating time remaining. To maximize the service life, the battery should be recharged as soon as possible after the indicator starts to blink. When the battery reaches the full discharge state, the BATTERY CONDITION INDICATOR will turn off and the communicator will shut down.

6.7 DIVER COMMUNICATIONS

The AMCOM II can operate in either 2-Wire or Full Duplex (4-Wire). Both the diver and tender can be connected in either mode and a combination of modes can be used. If either the diver or the tender is wired in 2-Wire mode, the tender must use a push-to-talk, either the PUSH-TO-TALK ALL SWITCH or PUSH-TO-TALK JACK, when talking to the diver.

2-Wire communication is defined as a single communication path, normally the diver is the priority signal path – tender listens to diver. Signal reversing is accomplished by pushing the PUSH-TO-TALK BUTTON – diver hears tender. Often a 4-conductor communication cable is used with two wires tied together as a pair for redundancy, this is still a 2-Wire system. Since only one person can talk at a time, there is a level of discipline that goes with using 2-Wire mode to obtain clear communication. One advantage of 2-Wire is that the tender's microphone is not active unless one of the two push-to-talk controls, PUSH-TO-TALK BUTTON or PUSH-TO-TALK JACK, are active. This eliminates any possible acoustic feedback between the tender's microphone and the PANEL SPEAKER. It also prevents noise from the surface reaching the diver and allows the tender to communicate with other members of the surface crew without involving the diver.

Full Duplex (4-Wire) communication is defined as a dual communication path, a signal path (a pair of wires) for up-link and a signal path (a pair of wires) for down link. A common example of Full Duplex communication is the telephone. Full Duplex (4-Wire) has the advantage of natural communication without having to use the PUSH-TO-TALK BUTTON. This keeps the tender's hands free to perform other tasks. It does not require the same level of discipline to

achieve clear communications that 2-Wire does. It has the advantage that neither the diver nor the tender is cut off when the other is talking. Because the diver's microphone is not connected in parallel with the earphone, the diver is louder and potentially clearer in Full Duplex (4-Wire) mode.

6.7.1 2-WIRE OPERATION

To connect the diver in 2-Wire mode, connect the communication umbilical wires to the DIVER MICROPHONE binding post jack on the communicator as shown in the wiring drawing in section 6.12. If the umbilical uses a banana plug, simply insert the plug into the binding post jack. Verify that it is firmly and completely seated. This may require that the external plastic nut be tightened down. If the umbilical uses bare wires, loosen the external plastic nut of the binding post jack. Either insert the bare end of the wire into the hole in the metal shaft of the binding post or firmly wrap the wire around the shaft. Tighten the nut until the bare wire is firmly fastened by the nut. The nut should not be fastened on the insulation of the wire nor should any of the bare wires touch.

The earphone connection is not used by the divers. The earphone jacks can be used to operate a remote speaker. Both diver and tender conversations will be heard.

When the tender uses a headset or push-to-talk microphone, follow the connection instruction in section 6.7 and in the wiring diagram in sections 6.12 and 6.14. When using the Amron Model 2405-28 Push-to-Talk Microphone, the tender presses the push-to-talk button on the side of the microphone and speaks clearly from a distance of 1 to 2 inches (25 to 51 mm). When done speaking, the tender releases the push-to-talk button to allow the diver to communicate.

In 2-wire mode the tender must press the Push-to-talk Switch to be heard. If you are using the Amron Remote Push-to-Talk, Model 2821-28, the tender may press the push-to-talk switch on the belt module.

6.7.2 4-WIRE OPERATION

To connect the diver in Full Duplex (4-Wire) mode, connect the communication umbilical wires to the DIVER MICROPHONE and DIVER EARPHONE jacks as shown in wiring diagram in section 6.13. If the umbilical uses a banana plug, simply insert the plug into the correct binding post jack. Verify that it is firmly and completely seated. This may require that the external plastic nut be tightened. If the umbilical uses bare wire ends, loosen the external plastic nut of the binding post jack. Either insert the bare end of the wire into the hole in the metal shaft of the binding post or firmly wrap the wire around the shaft. Tighten the nut until the bare wire is firmly fastened by the nut. The nut should not be fastened on the insulation of the wire nor should any of the bare wires touch. The diver microphone will be louder in Full Duplex (4-Wire) mode than in 2-Wire mode. This can be a significant advantage when using longer dive umbilical cables.

To use Full Duplex (4-Wire) mode, the tender must use a headset and connect per the instructions in 4.4.2. The tender will have to use the PUSH-TO-TALK BUTTON to communicate if the diver is in 2-Wire mode. When the tender uses a headset, the

SPEAKER SWITCH should be turned off to prevent acoustic feedback. Acoustic feedback can also be avoided by moving the tender away from the 2825A-07 by using the Amron Model 2822-28 Remote Walk-and-Talk Module. In this way, the PANEL SPEAKER can allow other members of the diving crew to monitor the dive operation or to communicate to the diver by pressing the PUSH-TO-TALK BUTTON and talking into the speaker.

NOTE:

- Diver microphones are louder in 4-wire than in 2-wire operation.
- Tender earphone is louder than diver earphones for 2-wire and 4-wire.
- Tender earphone is about four times louder than diver earphones.

6.8 VOLUME CONTROLS (2-WIRE)

Turn power switch to ON, turn speaker switch to ON, and adjust both volume controls to mid-scale. Tender must depress the PUSH-TO-TALK BUTTON to talk to a diver. Tender and Diver talk to each other during Tender adjusting volume controls as below:

NOTE: The upper row of volume controls set the microphone volume. The lower row of volume controls set the earphone volume. Tender controls are considered master controls. The optimum settings are when controls are closely matched, with differences compensating for differences in diver levels.

6.8.1 TENDER TO DIVER

While tender is talking into the panel speaker and depressing PTT switch, tender adjusts this volume control to a comfortable diver hearing level.

6.8.2 DIVER TO TENDER

While diver is talking, tender adjust the diver volume control to a comfortable level.

6.9 OTHER DIVER CONTROLS (2-WIRE)

6.9.1 PTT ALL DIVERS SWITCH

Push-to-talk to All Divers switch is located on the left bottom corner below Power ON/OFF switch. This switch allows all divers to hear the Tender, it changes all divers to be listening and tender in talking mode.

6.9.2 DIVER PUSH TO TALK (PTT) SWITCHES

Depressing the divers individual push-to-talk switch will engage the diver's microphone and earphone as long as it is depressed.

6.10 VOLUME CONTROLS (4-WIRE)

Turn power switch to ON; turn speaker switch to OFF; adjust both volume controls to mid-scale. Tender to use headset. Tender and Diver talk to each other during Tender adjusting volume controls as below:

NOTE: The upper row of volume controls set the microphone volume. The lower row of volume controls set the earphone volume. Tender controls are considered master controls. The optimum settings are when controls are closely matched, with differences compensating for differences in diver levels.

6.10.1 TENDER TO DIVER

Tender talks and divers determine a comfortable listening level, having the tender adjust as needed.

6.10.2 DIVER TO TENDER

While diver is talking, tender adjusts this volume control to a comfortable level.

Connect diver 1's umbilical to the Diver 1 input. Repeat for diver 2.

Connect tender headset earphones to Headset (input), and headset microphone to Tender Microphone (input). Turn speaker off to avoid acoustic feedback. Operation with speaker is possible by extending tender's headset away from the speaker. Use Amron Model 2822-28 headset extension cable (25 foot).

Operating the PTT (push-to-talk) switch will establish a priority channel for communication. PTT cuts out the diver's microphone and prevents divers from talking.

This allows an important conversation to be carried on without interruption, or the ability to establish a clear channel of communication.

NOTE: When operating with a standby diver who does not have his hat / helmet on, acoustic feedback may occur. This can be avoided by turning his volume down Diver to Tender, which cuts off his microphone, yet will enable him to monitor the diver / tender conversation.

6.11 OTHER TENDER CONTROLS

6.11.1 PUSH-TO-TALK SWITCH

Activation of this switch connects the tender to the diver, necessary for two wire conversations, optional for Full Duplex (4-wire) conversations. Always used when using the PANEL MICROPHONE for talking to the divers.

6.11.2 MICROPHONE JACKS (RED)

Connection for headset microphone: plug red banana plug into these jacks when operating in the Full Duplex mode.

6.11.3 HEADSET JACKS (BLACK)

Connection for headset earphones, external speaker: plug both headset banana plugs (red & black) into the black headset jacks, red & black when operating in the two-wire mode. Plug in only the black headset banana plug when operating in the Full Duplex mode. Plug handheld microphone black banana plug into the black headset jacks.

6.11.4 PUSH-TO-TALK JACKS (YELLOW)

Connection for remote control of the push-to-talk function: plug the handheld microphone yellow banana plug into this jack. Operation of the handheld microphone is simple and straight forward, hold the microphone in your hand, place the microphone within one half inch of your mouth, depress lever on side of microphone and speak clearly and distinctly into the microphone.

The communicator has an automatic speaker disconnect relay which disconnects the front panel speaker when using the handheld microphone. This greatly reduces the background noise during transmissions to the divers. This feature is also functional when using an AMRON headset, and headset extender (Model 2821-28).

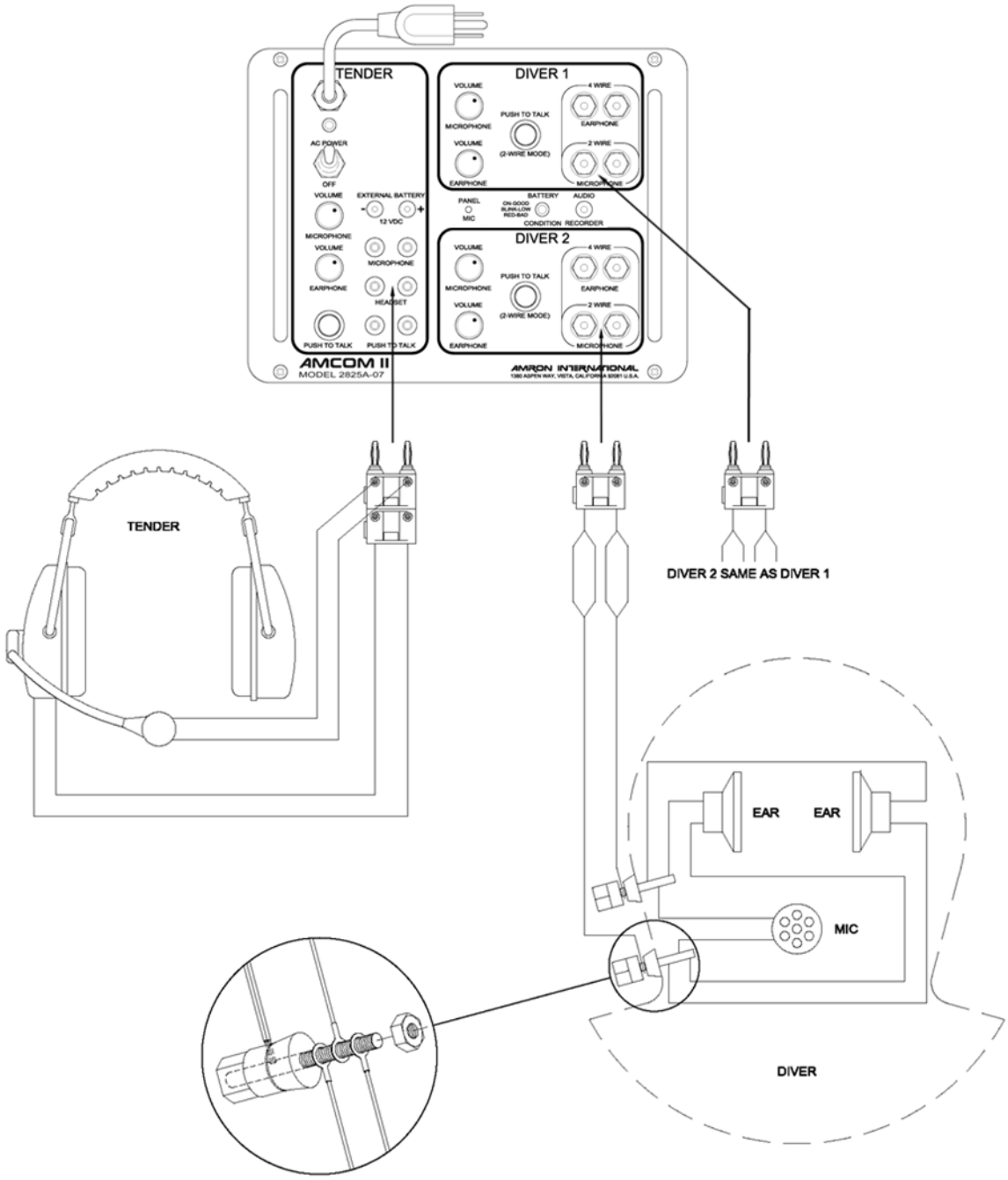
6.11.5 SPEAKER ON/OFF SWITCH

For normal operation the speaker switch is left on. When operating in noisy conditions, it may be advantageous to use a headset to cut out the background noise. In this case it will be desirable to shut off the speaker. There are other conditions when turning off the speaker is desirable, situations where the nature of the work requires a confidential handling of communications.

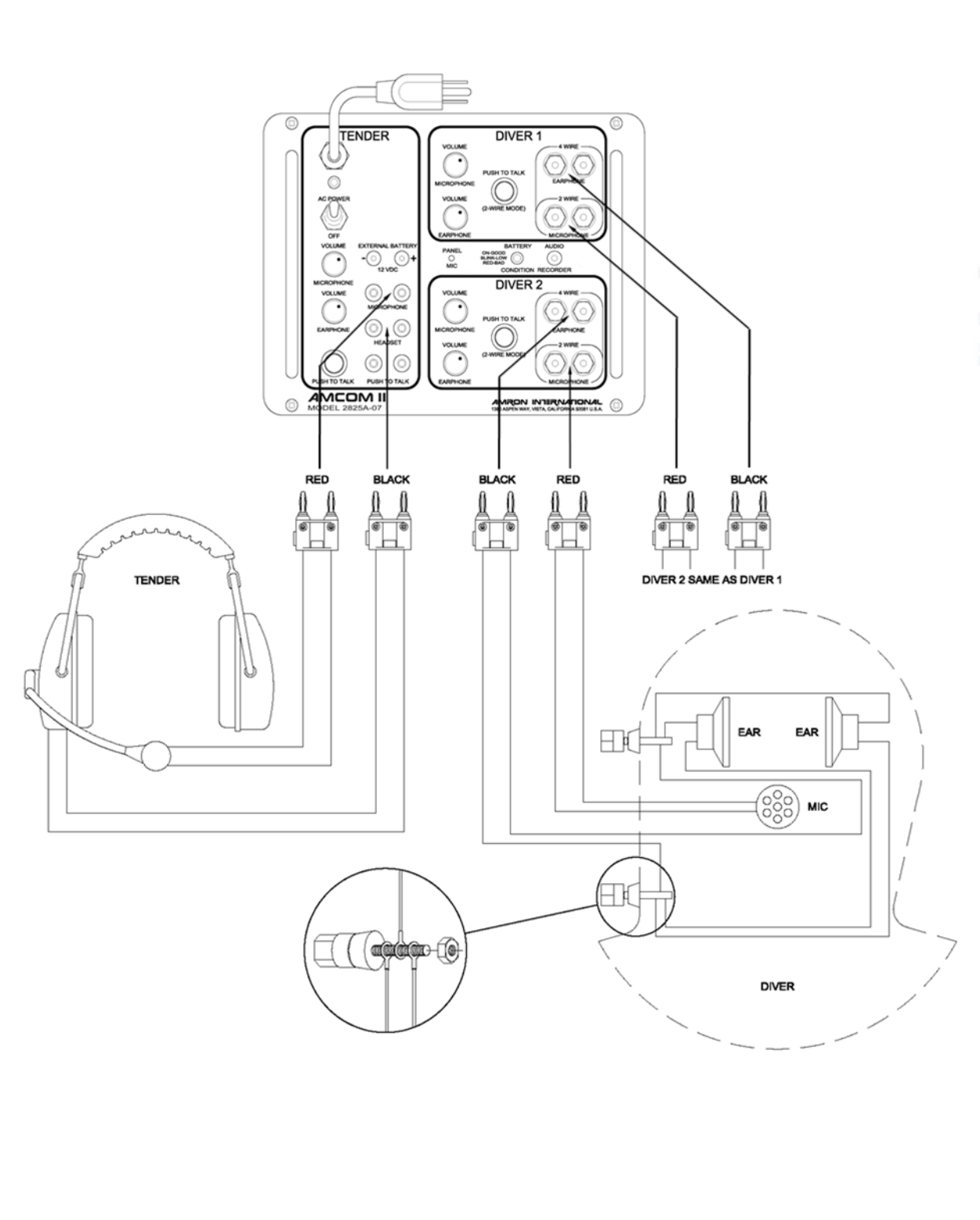
6.11.6 AUDIO RECORD JACK

Isolated audio output to drive a recorder. Use standard RCA type audio cable to connect the diver radio to the audio recorder. Test record audio, checking both tender to diver conversation and diver to tender conversation for proper record levels.

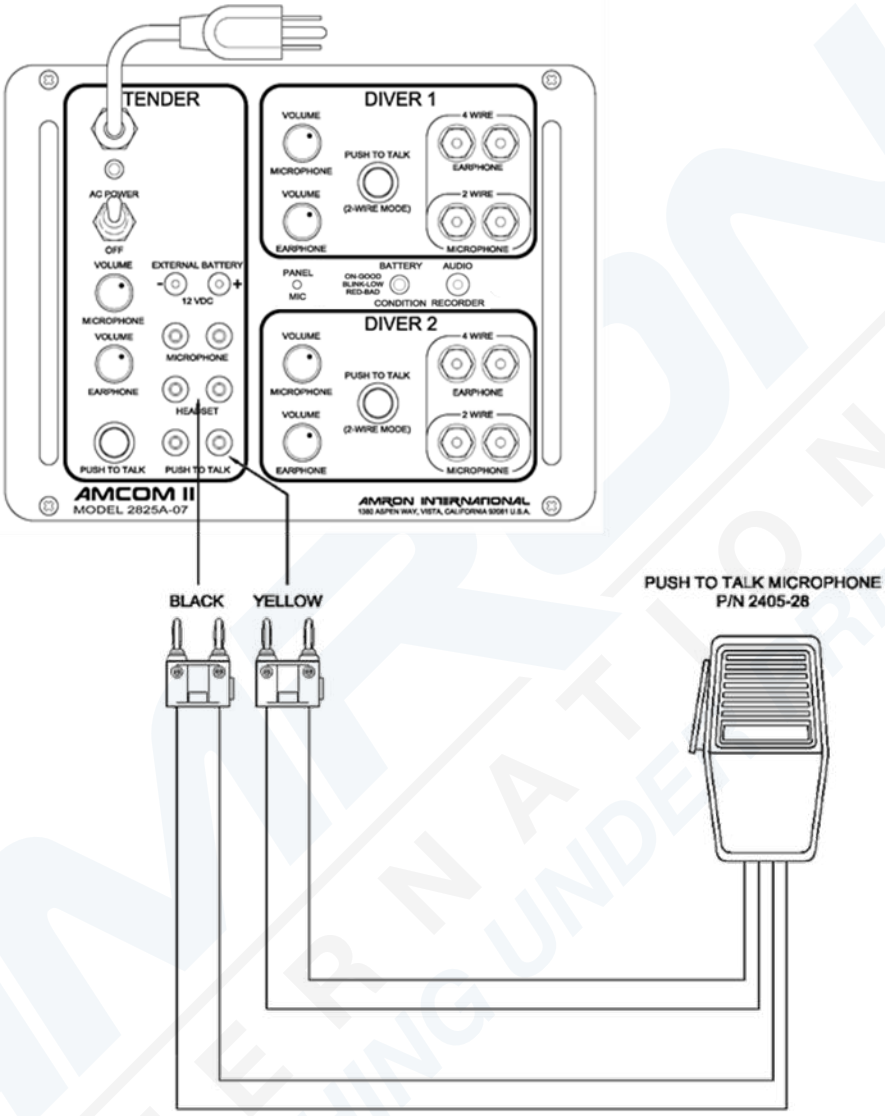
6.12 DIAGRAM, 2-WIRE CONNECTIONS



6.13 DIAGRAM, FULL DUPLEX 4-WIRE CONNECTIONS



6.14 DIAGRAM, HANDHELD PUSH TO TALK MICROPHONE



7 MAINTENANCE

7.1 REVIEW OF SCHEDULED MAINTENANCE

The inherent quality of your Model 8211-01 will provide years of continuous failure-free service if properly used and maintained.

1. Before and after each dive: do functional test, clean and inspect for damage.
2. Every 6 months: calibrate, functional test, clean and inspect for damage.
3. Every 12 months: in addition to the normal 6-month maintenance, service filter, leak test and check adjustments.
4. Every 36 months: in addition to the normal annual service replace all seals, gaskets, soft goods, and batteries.

In addition to the above scheduled maintenance, there are three important areas of user care that will determine the length of service you can expect from your equipment.

1. Take care of your equipment, protect it, and handle it with care during transportation to the job site. Ensure the equipment is protected. Select a work area where the equipment will be out of everyone's way, so that it doesn't get knocked over.
2. Clean your equipment. After the work is done at the job site, clean up the equipment. If you are on an extended work program, have the equipment operators clean the equipment during slow work periods. Cleaning involves wiping off the dirt with hot soapy water and a soft cloth.
3. Charge the batteries after each use; preferably leave the unit on charge when the equipment is not in use.

7.2 AIR CONTROL SCHEDULED MAINTENANCE

7.2.1 BEFORE AND AFTER EACH DIVE:

Inspect for any damaged parts, broken gauges, condition of high-pressure hose whip (inspect for cuts, abrasion, or general deterioration). Functional test of unit prior to dive, after dive record operator comments regarding maintenance required.

7.2.2 EVERY 6 MONTHS:

Complete the "Before and after each dive" inspection. Each diver pneumo gauge must be calibrated. Calibrate against dead weight tester or reference gauge. Pressure test PNEUMO section and repair any and all leaks. Record the results of inspection and gauge calibration.

7.2.3 EVERY 12 MONTHS: COMPLETE THE ABOVE TESTS PLUS THE FOLLOWING:

1. Remove high-pressure valve stems, inspect, clean, lubricate (use Christolube grease, Amron part No. MCG-111-20Z) and install. Check valve seat, threads, packing material for signs of wear or deterioration, replace if necessary.
2. Remove filter element and inspect. If filter element is dirty, attempt to determine the source of the contamination. Check the air source being used to determine where contamination originated and correct. If filter is contaminated, remove high pressure section and clean all valves, inspect for signs of wear and deterioration, replace those parts which show signs of deterioration, and clean and reassemble.
3. Check regulator action, check regulator maximum pressure which should be greater than 300 PSI.
4. Check relief valve actuation and shut off. Should vent at 350 PSI, close at 345 PSI sealing bubble tight.
5. Check all valves for bubble tight shut off. Replace seats as needed.
6. Leak test all fittings, pressure test PNEUMO section.
7. Check accuracy of all gauges.
8. Record the results of the above tests.

7.2.4 EVERY THREE YEARS, IN ADDITION TO THE ABOVE TEST:

1. Replace all soft goods, seals, gaskets and batteries.
2. Record the results of the above tests.

7.3 COMMUNICATOR MAINTENANCE

The AMCOM II communicator is designed to provide years of continuous, failure-free service when properly used and maintained. There are a few important things that the user can do to extend the life of their equipment.

- Handle the diver communicator with care. Do not throw it around or drop it. Select a work area where the communicator and wire connecting to it are out of everyone's way so it does not get knocked over.
- Clean the communicator after use or when needed. If the equipment is on an extended work program, have the tender clean the equipment during slow work periods. Rinse off salt deposits with fresh water. Clean corrosion from diver connections with a mild vinegar and water solution using a soft brush. Rinse off connectors with fresh water after cleaning.
- When using a rechargeable battery, the battery should be recharged after use or as soon as possible when the BATTERY CONDITION INDICATOR starts blinking.

7.4 RECOMMENDED MAINTENANCE SCHEDULE

The following sections outline the recommended scheduled maintenance for the 2825A-07.

7.4.1 DAILY MAINTENANCE

Wipe off any accumulated dirt and dust on the front panel or connectors using a clean, damp cloth. Pay particular attention to where the various front panel components attach to the panel.

7.4.2 WEEKLY MAINTENANCE

Wipe off any accumulated dirt and dust on the front panel or connectors using a clean, damp cloth. Pay particular attention to where the various front panel components attach to the panel. Inspect the switches, binding posts and volume controls for smooth operation.

7.4.3 6-MONTH CHECK

Wipe off any accumulated dirt and dust on the front panel or connectors using a clean, damp cloth. Pay particular attention to where the various front panel components attach to the panel.

1 Inspect the switches, binding posts and volume controls for smooth operation.

2 Connect to AC power to recharge the battery

3 Perform the 2-Wire and Full Duplex (4-Wire) system checks as described in section 8.4.

7.4.4 YEARLY CHECK

For maximum service life, it is recommended that the diver communicator be sent back to Amron for a yearly check.

7.4.5 LONG TERM STORAGE

If the diver communicator is to be stored for a period greater than 30 days, it is recommended that it be stored in a cool dry location. Make sure that the POWER SWITCH is turned off during storage. The 2825A-07 communicator should be stored connected to AC power. This ensures that the communicator will be fully charged and ready to use when needed.

8 TROUBLESHOOTING

8.1 GENERAL INFORMATION

Normal shop tools and procedures apply for all repairs.

During this section when you are instructed to remove a part or make an adjustment, you are first to remove all pressure from the system, or as a minimum from the section you are working on.

8.1.1 TUBING AND TUBE FITTINGS

Repair, assembly, and inspection procedures. The common cause of leaks on tube fittings are debris, cracks, and deformed tube flares. Tube fittings, on initial make up tighten 1-1/4 turns from finger tight. To remake tube fittings, tighten finger tight plus 1/8 turn. Care must be used when disassembling tube fittings to ensure the fitting is held while the tube nut is turned.

8.1.2 PIPE FITTINGS

An over tightened pipe fitting is the most common cause of leaks. Before installing pipe fittings, remove all old Teflon tape, use stiff bristle brush. Replace Teflon tape by wrapping 1-1/2 turns of 1/2 inch tape, counter-clockwise on the threaded portion of the fitting. Use care when installing Teflon tape, leave one full turn of thread exposed and uncovered. This ensures that a piece of tape does not get cut off and enter the system during the installation of the fitting.

8.1.3 TO REMOVE THE LOWER PANEL

You will need to first remove the air hoses connected to the panel. Loosen the fittings on the lower panel and disconnect the hoses. You also need to remove the four screws on the front panel of the communicator. Disconnect the communicator cables and remove communicator from the panel and set aside. Remove the lower panel by removing the screws from around the perimeter of the panel.

8.1.4 RE-INSTALLING THE LOWER PANEL

To re-install the panel back into the case, install each screw loosely before tightening any screws. This allows the panel to be shifted to align each screw hole to the panel, then tighten all screws once they are all aligned and inserted. Re-install the radio and finally re-install the hoses.

8.2 AIR CONTROL

8.2.1 HP GAUGES

Inspect for leaks. Any leak other than the input fitting is cause to replace the gauge. Internal leaks may cause the gauge face to bulge, if this occurs replace gauge. Inspect gauge blow-out plug for damage. Check accuracy of gauge against reference gauge. Gauges are not repairable, nor can they be adjusted. Discard and replace if problems are encountered.

8.2.2 HP VALVES

These are repairable. Remove stem by removing handle and stem packing nut, unscrew stem. Inspect stem, stem screw threads, valve body screw threads, brass packing washer, Viton O-ring, and stem seat (KEL-F). Repair kits are available and include a complete stem assembly. Lubricate stem screw threads and Viton O-ring with Chris-o-lube grease, install stem assembly, and permanently tighten packing nut.

8.2.3 HP CHECK VALVES

These are repairable. The Maintenance Kit is available from Amron and contains Viton seat and spring. When checking for leaks, be sure to check valve body to end of fitting.

8.2.4 HP FILTER

This is a replaceable element. The Maintenance Kit is available from Amron and contains the element, body gasket, and retainer spring. Check with soap and water to ensure filter is not leaking.

8.2.5 HP REGULATOR

If regulator shows signs of continuous venting or regulator creep, suspect damaged or dirty main valve seat, discontinue use of regulator immediately and switch over to a secondary air source. Refer to Section 8.2.6.

8.2.6 REGULATOR REPAIR KIT

Repair kit 979-400 includes items 1, 5, 14, 15, 16, and 17.

8.2.7 DISASSEMBLY AND ASSEMBLY OF THE REGULATOR

1. Turn CONTROL KNOB and ADJUSTING SCREW (items 9 & 10) counter-clockwise and remove.

2. Unscrew Mounting Nut (Item 20) and Remove Regulator from the System.

3. Place CAP (Item 3) in vise with CAP (Item 7) facing down. Components will want to fall out of CAP (item 7) when removed, so unscrew and Remove CAP (Item 7) out the bottom.

4. Remove from CAP (Item 7) and maintain order since they will need to be installed in reverse order. Remove SPRING GUIDE (Item 6), SPRING (Item 13), 2nd BEARING PLATE (Item 11), BEARING (Item 12), 1st BEARING PLATE (Item 11) and finally the SPRING GUIDE (Item 8)

5. With CAP (Item 3) still in Vise, Remove BODY (Item 2) with Strap Wrench and set aside.

6. Remove from CAP (Item 3) and maintain order since they will need to be installed in reverse order. Remove SEAL and STOP RING (Item 17 & 19), Remove VENT SEAT (Item 5), Remove SEAL (Item 15), Remove PISTON & SEAL (Item 4 & 14).

7. Remove POPPET ASSY & SEAL (Item 1 &16) from BODY (Item 2)

The above steps provide the disassembly procedures. To reassemble, simply reverse these procedures.

1. Torque POPPET ASSY & SEAL (Item 1 &16) to BODY (Item 2) @ 10 to 20 ft. lbs.

2. When reassembling, pack SEAL (Item 14) on PISTON (Item 4) heavily with Cristo-lube.

3. Torque CAP (Item 3) to BODY (Item 2) @ 10 to 20 ft. lbs. using a Strap Wrench or by Hand.

4. Use ample Slick 50 EP Grease or Equivalent on the bearings. Silicone spray can be used to coat and preserve parts.

5. Torque CAP (Item 7) to CAP (item 3) @ about 20 ft. lbs.

8.2.8 RELIEF VALVE

Check the operation of the vent valve by pressurizing the system until the vent begins to relieve the pressure. Decrease the pressure to stop the venting action, valve should stop bubble tight. If the relief valve does not operate correctly remove and disassemble, inspect. Replace any defective parts or clean, lubricate and reassemble.

To disassemble the relief valve, remove valve from system. In the output side of the valve there is a set screw, remove it. There is a second set screw under the first screw. The second set screw is the actual adjustment for the set point. The first screw is a locking screw that locks the adjusting screw at the set point.

There is another set screw at the other end of the valve, removing this allows the valve to be completely disassembled. When taking the valve apart be sure to lay the parts out in the order in which they were removed to facilitate assembly. Reverse the order to assemble. Pressurize the valve to check the setting of the valve. Remove the pressure and adjust as necessary to set the pressure. Turning the screw clockwise increases the pressure at which the valve will relieve.

8.2.9 LP INPUT CHECK VALVE

These are repairable. The Maintenance Kit is available from Amron and contains Viton seat and spring. When checking for leaks, be sure to check valve body to end of fitting. During test, ensure that the valve is not leaking by pressurizing the HP section and check the LP input for air leaking out of the input.

8.2.10 DIVER'S PRESSURE GAUGE

Same as HP pressure gauges.

8.2.11 DIVER'S OUTPUT VALVES

1/4 turn ball valves, to test, pressurize the input and turn the valves off, check that no air is leaking past the valve. The valves are repairable. They use Teflon seats which can be replaced. A maintenance kit 802065-4 is available from Amron. To replace, remove valve from system. Remove end pieces from valve, remove valve stem packing nut and remove stem. Teflon ball seal and stem packing can now be removed and replaced. To assemble, reverse the process.

8.3 DEPTH MONITORING

8.3.1 PNEUMO VALVES

Pneumo Valves are repairable. Remove stem by removing handle and step packing nut. Unscrew stem. Inspect stem, stem screw threads, valve body screw threads, brass and Teflon packing washer, and stem seat (KEL-F). Repair kits are available and include a complete stem assembly. Lubricate stem screw threads with Christolube grease, install stem assembly and permanently tighten packing nut.

8.3.2 PNEUMO GAUGES

Pneumo gauges are not field repairable nor are there any adjustments which can be made in the field. Check to make sure the blow-out plugs are in place. Calibrate every 6 months. Check the zero position of the gauge; a displaced zero is evidence of a gauge that has been subjected to over-pressurization.

NOTE: Check the gauge before using. If there is any question about the gauge's integrity, have the gauge calibrated. Normal variations in zero are caused by variations in barometric pressure or changes in altitude. These variations normally will not exceed 10 feet.

8.4 COMMUNICATOR CHECK PROCEDURES

The following are a series of step-by-step procedures to perform a functional check of your AMCOM II communicator using only a headset. These steps check all communication functions in both 2-Wire and Full Duplex (4-Wire) mode. If the communicator checks out using these procedures, then any communication problems are probably located somewhere else in the system setup.

8.4.1 2-WIRE CHECK

This procedure checks the communicator functions in the 2-Wire mode.

1. Set all the volume controls to the mid-scale (halfway) position.
2. Turn the SPEAKER SWITCH off to avoid acoustic feedback.
3. Turn on the communicator and verify the BATTERY CONDITION INDICATOR is on or blinking. If the LED does not come on at all, then replace or recharge the battery. If that does not resolve the problem, then go to the troubleshooting section to determine the cause.
4. Identify the microphone and headset leads. When using an Amron headset, the microphone is the red banana plug and the headset is the black banana plug.
5. Plug the microphone lead into the TENDER HEADSET (black) jack and the headset lead into the DIVER MICROPHONE (red) jack.
6. Don the headset. Talk into the microphone while pressing the PUSH-TO-TALK BUTTON. You should be able to hear yourself in the headset. Adjust the TENDER TO DIVER VOLUME control and verify that the level can be adjusted to a comfortable level.
7. Unplug the microphone lead. Turn on the SPEAKER SWITCH. Press the PUSH-TO-TALK BUTTON while speaking into the PANEL SPEAKER. You should be able to hear yourself in the headset. Adjust the TENDER TO DIVER VOLUME if necessary and verify that the level can be adjusted to a comfortable level.
8. Plug the microphone lead into the TENDER HEADSET (black) jack. Short the PUSH-TO-TALK JACK (yellow) with a short piece of wire. Talk into the microphone and verify that you hear yourself in the headset. Remove the short. Turn off the SPEAKER SWITCH.
9. Move the microphone lead to the DIVER MICROPHONE (red) jack and move the headset lead to the TENDER HEADSET jack.
10. Talk into the microphone and verify you can hear yourself in the headset. The PUSH-TO-TALK BUTTON should not be pressed. Adjust the DIVER TO TENDER VOLUME control and verify that the level can be adjusted to a comfortable level.

8.4.2 FULL DUPLEX (4-WIRE) CHECK

This procedure checks the communicator functions in the Full Duplex (4-Wire) mode.

1. Set all volume controls to the mid-scale (halfway) position.

2. Turn the SPEAKER SWITCH off to avoid acoustic feedback.

3. Turn on the communicator and verify the BATTERY CONDITION INDICATOR is on or blinking. If the LED does not come on at all, then replace or recharge the battery. If that does not resolve the problem, then go to the troubleshooting section to determine the cause.

4. Identify the microphone and headset leads. When using an Amron headset, the microphone is the red banana plug and the headset is the black banana plug.

5. Plug the microphone lead into the TENDER MICROPHONE (red) jack and the headset lead into the TENDER HEADSET (black) jack.

6. Don the headset and talk into the microphone. You should be able to hear yourself in the headset. Adjust the DIVER TO TENDER VOLUME control and verify the level can be adjusted to a comfortable level.

7. Move the headset microphone lead to the DIVER MICROPHONE (red) jack. Talk into the microphone. You should be able to hear yourself in the headset. Adjust the DIVER TO TENDER VOLUME control and verify that the level can be adjusted to a comfortable level.

8. Move the headset lead to the DIVER EARPHONE (black) jack. Talk into the microphone. You should be able to hear yourself in the headset.

This completes the check of the Full Duplex (4-Wire) function of the communicator. If at any point in the test you were not able to hear yourself in the headset as indicated by the test, refer to the troubleshooting section to determine the cause.

8.5 COMMUNICATOR TROUBLESHOOTING AND BATTERY CHECK

Most problems are usually simple issues that can often be found by careful inspection of the diver communicator, diving umbilical, and diver helmet wiring. The following section will describe the troubleshooting procedure for several common issues. If these sections do not cover your specific issue, it is recommended that the diving umbilical be disconnected from the diver communicator and the check-out procedures in section 8.4 be conducted. If the diver communicator passes the check-out procedures, then the issue is most likely in the umbilical connections, the umbilical itself, or the wiring of the diver's hat/helmet

8.5.1 CONNECTION ISSUES

Most diver communicator problems are caused by bad connections. Making good connection ns will result in years of good communications. For longer life, all connections should be soldered and copper wire must be tinned. It is strongly suggested that dual banana plugs be used topside to provide convenient and secure connections.

All cable splices must be soldered. Splices should be staggered and covered with shrink tubing (preferably shrink tubing with an adhesive sealant) and a general splice cover to protect the connections. Potting the splices to create a reliable splice is

preferred but not necessary to create a reliable splice. A great number of problems are very simple failures and can often be found by a very careful and close inspection of the unit or system. Logical deductions and equipment familiarity can often reduce the suspected area to just one component or circuit. Often upon examination, clues are revealed which can also aid in locating and correcting the problem. Visual inspections should include checking all screws for tightness, all solder joints for correctness, broken parts, corrosion, electrolysis, foreign material, check connectors for proper insertion and alignment. Check to see that unit is turned on, speaker on.

8.5.2 LOW BATTERY INDICATION

The BATTERY CONDITION INDICATOR indicates the battery level or state-of-charge by monitoring the battery voltage. It is recommended that the 2825A-07 be recharged for at least 10 hours if the BATTERY CONDITION INDICATOR is low or bad. If the BATTERY CONDITION INDICATOR indicates a low (blinking LED) or bad (off LED) after charging, then either the battery is bad and needs to be replaced or the charger has malfunctioned.

8.5.3 CHECK BATTERY CONDITION

NOTE: YOU MUST DISCONNECT THE AC POWER CORD FROM AC POWER BEFORE CHECKING THE BATTERY CONDITION.

1. Disconnect AC power cord (located on front of communicator) from AC power.
2. Turn communicator power switch “ON” and observe the battery condition indicator. The battery indicator will display the condition of the battery.
    - “STEADY GREEN” light indicates the battery has sufficient voltage to operate the unit.
    - “BLINKING GREEN” light indicates the battery is low and will need charging shortly, three hours of operating time remain.
    - “STEADY RED” light indicates the battery voltage is too low to operate the unit. Communication should stop.

NOTE: A battery unused for a period of time will typically display a higher voltage when initially powered on, but; will dissipate rapidly. This condition known as “surface charge” is the result of a load placed on the battery causing the voltage to drop quickly. It is a good idea to leave the unit on for five minutes before relying upon the Battery Condition indicator.

3. Reconnect AC power cord (located on front of communicator) to AC power.

8.5.4 CHECK BATTERY VOLTAGE

1. Disconnect AC power cord (located on front of communicator) from AC power.
2. Remove communicator from air control panel – see section of 8.5.5 steps 1 thru 8 for details (next section).
3. Connect multimeter leads directly to the 12V battery and select DC Voltage.

4. Turn communicator Power Switch “ON” and read voltage on multimeter. If voltage reads 11.5V or less, charge the battery. If the battery’s voltage continues to drop quickly, replacing the battery may be necessary.
5. Re-install communicator to air control panel – see section of 8.5.5 steps 13 thru 19 for details (next section).

8.5.5 BATTERY INSTALLATION

The AMCOM II series communicators are supplied with a single 12VDC gel-cell, sealed lead-acid battery. To remove and install the battery:

1. Turn off communicator.
2. Disconnect AC power cord (located on front of communicator) from AC power.
3. Disconnect all cables.
4. Disconnect HP yoke hose assembly from the supply inlets.
5. Remove (4) each 8-32 socket head cap screws from the front panel to remove the communicator from air control panel.
6. Lift out communicator just far enough to move onto the air control panel and disconnect remote speaker harness located on side of unit.
7. Lift out communicator from air control panel and place on a flat clean surface.
8. On the communicator, remove (4) each 8-32 Phillips pan head screws with lock washers from rear chassis (2 each on top and bottom of chassis adjacent to the rear of front panel).
9. Slowly separate rear chassis from battery box.
10. Disconnect the two slide terminals from battery (Black terminal from negative and red terminal from positive).
11. Lift out battery noting the position of battery.
12. Replace with new battery placing it in the same position as the old battery.
13. Reconnect the two slide terminals to battery (Red terminal to positive first and then black terminal to negative).
14. Place rear chassis on top of battery box being careful not to pinch or damage any wires.
15. Reinstall the (4) each 8-32 Phillips pan head screws with lock washers to chassis with 2 each on top and bottom of chassis and hand tighten.
16. Perform Power On - Battery Check (see section 8.5.3 for details).
17. Reconnect remote speaker harness located on side of unit.
18. Reinstall communicator into air control panel with (4) each 8-32 socket head cap screws and hand tighten..

19. Reconnect AC power cord (located on front of communicator) to AC power and allow battery to charge for 4 hours (charging time may vary depending on the age of the battery and the surrounding temperature).

8.5.6 UNIT NOT OPERATING

The most common reason that a diver communicator appears to be dead when the POWER SWITCH and SPEAKER SWITCH are turned on is a bad or loose battery. Check the battery per section 8.5.3. If the battery is good, then disconnect any diving umbilical and perform the communicator check out procedure per section 8.4.

If the battery and battery connections appear good and the communicator fails the check-out procedure, then remove the screws holding the communicators front panel. Lift the front panel up carefully as the panel components are connected to a Printed Circuit Assembly (PCA) by a wire harness. Verify that the connectors on the PCA are firmly seated. Check that the wire harnesses are soldered to the various connectors, controls, and speaker. There should be no loose wires in the system. Remove the fuse from the PCA. It is marked FH1 and is a cylindrical component. Verify that the fuse is good by checking the continuity with a multi-meter. If the fuse is open, replace with the same type: 3.15 Amp, 250V, Fast Acting. Close the front panel; re-install the screws and re-test the communicator. If the communicator still appears dead, contact Amron for further assistance.

8.5.7 LOW VOLUME

Check the volume control settings and adjust if necessary. Check the diver connections and verify that the diver and tender are connected as intended. Verify the wires and connector are clean and tight Check the BATTERY CONDITION INDICATOR and test the battery if necessary. If the problem persists, disconnect the diver umbilical and perform the communicator check out procedure per section 8.4. If the communicator fails the check-out procedure, contact Amron for further assistance.

If the communicator checks out, then the problem is likely in either the diver umbilical communication cable, the wiring of the diving hat/helmet, or the diver's microphone/earphone.

8.5.8 GARBLED VOICE TO THE DIVERS

The TENDER TO DIVER VOLUME control is set too high. Reduce this control until the voice signal clears. If this does not solve the problem, check the diver's earphone for corrosion or other defects. Replace if necessary. If the tender is using a headset, remove the headset and communicate to the diver by pressing the PUSH-TO-TALK BUTTON and talking into the PANEL SPEAKER. If this solves the problem then the tender headset may be wet or defective. If the tender is using the PANEL SPEAKER to talk to the diver, check the speaker for any accumulated water. Drain the speaker if necessary. If these steps do not solve the problem, then disconnect the diver umbilical and perform the communicator check out procedure per section 8.4. If the communicator fails the check-out procedure, contact Amron for further assistance. If the communicator checks out, then the problem is likely in the diver umbilical communication cable. If possible, substitute a known good cable to verify.

8.5.9 GARBLED VOICE TO THE TENDER

The DIVER TO TENDER VOLUME control is set too high. Reduce this control until the voice signal clears. If this does not solve the problem, check the diver's microphone for corrosion or other defects. Replace if necessary. If the tender is using a headset, remove the headset and listen to the diver using the PANEL SPEAKER. If this solves the problem then the tender headset may be wet or defective. If the tender is using the PANEL SPEAKER to talk to the diver, check the speaker for any accumulated water. Drain the speaker if necessary. If these steps have not solved the problem, then disconnect the diver umbilical and perform the communicator check out procedure per section 8.4. If the communicator fails the check-out procedure, contact Amron for further assistance. If the communicator checks out, then the problem is likely in the diver umbilical communication cable. If possible, substitute a known good cable to verify.

8.5.10 DIVER CUTS OFF

This is usually caused by an intermittent connection between either the umbilical and the diver communicator or the umbilical and the diver's hat/helmet. The intermittent connection could also be inside the diver's hat/helmet. Check all connections to verify that they are clean and tight. If the problem continues, substitute the communication cable with a known good cable. If this solves the issue, then the communication cable in the original umbilical is damaged and needs to be replaced or repaired. If none of these solutions fixes the problem, contact Amron for further assistance.

8.5.11 FEEDBACK – FULL DUPLEX (4-WIRE) MODE

There are two forms of feedback that can affect the communicator: acoustic feedback or cable crosstalk. Acoustic feedback occurs when an active microphone is close enough to pick up and amplify the signal from a speaker or earphone. The required distance between the microphone and speaker/earphone is dependent on the volume setting and the amount of acoustic isolation. For example, a tender headset left sitting on a work table may cause acoustic feedback. When the tender dons the headset at the same volume level, the acoustic feedback will no longer occur. The tender's head provides acoustic isolation between the microphone and earphone of the headset. The same is true for the diver's microphone and earphone.

To troubleshoot acoustic feedback issues first determine the source. One way to quickly determine the source of the acoustic feedback is to cover each active microphone with your hand, one at a time. Another method is to adjust the volume controls one at a time. The volume control that stops the feedback indicates the source. For example, if the TENDER TO DIVER VOLUME control stops the feedback, then the problem is likely in the diver's hat/helmet. Common sources are feedback between the tender's headset microphone and the PANEL SPEAKER of the communicator. If the tender wants to operate with the headset and leave the PANEL SPEAKER on, Amron recommends the tender move away from the communicator by using the Amron Model 2822-28 Remote Walk-and-Talk Module. This module provides an "extension" cord for the tender headset.

Crosstalk is caused by signal leakage between the microphone and earphone wires in the umbilical cable. In a good cable with all the wires open (not connected) the resistance between any two wires should be greater than 10 Meg-Ohms. Over time, the cable can be damaged and this resistance drops to the point that crosstalk can occur. When this occurs, the communication cable in the umbilical should be replaced. For a temporary solution, you can try swapping the position of the diver earphone wires on the DIVER EARPHONE jack. If you are using a banana plug, simply unplug the diver earphone and rotate by 180 degrees before reconnecting. If this does not solve the problem and the umbilical cannot be immediately replaced, then operate in 2-Wire mode until a replacement umbilical can be used. Amron strongly recommends the use of the Amron CC1 communication cable. It has been specially designed for clear communications and long service life.

8.5.12 PUSH-TO-TALK DOES NOT WORK

If used, check the connection to the hand-held microphone. A common issue is that the yellow banana plug is not properly seated in the PUSH-TO-TALK JACK. If the tender is using the PANEL SPEAKER as the microphone with the PUSH-TO-TALK BUTTON, make sure the SPEAKER SWITCH is turned on. If neither of these solves the problem, there could be a broken wire inside the diver communicator. Open the front panel and inspect. If that does not resolve the problem then contact Amron for further assistance.

9 REFERENCE MATERIAL

9.1 DIVING LOG, U.S. NAVY (CHART)

DIVING CHART - AIR

Date

NAME OF DIVER 1	DIVING APPARATUS	TYPE DRESS	EGS (PSIG)
NAME OF DIVER 2	DIVING APPARATUS	TYPE DRESS	EGS (PSIG)

TENDERS (DIVER 1) AND		TENDERS (DIVER 2) AND	
LEFT SURFACE (LS)	DEPTH (fsw)	REACHED BOTTOM (RB)	DESCENT TIME
LEFT BOTTOM (LB)	TOTAL BOTTOM TIME (TBT)	TABLE & SCHEDULE USED	TIME TO FIRST STOP
REACHED SURFACE (RS)	TOTAL DECOMPRESSION TIME (TDT)	TOTAL TIME OF DIVE (TTD)	REPETITIVE GROUP

DESCENT	ASCENT	DEPTH OF STOPS	DECOMPRESSION TIME WATER	DECOMPRESSION TIME CHAMBER	TIME WATER	TIME CHAMBER
		10			L / R	
		20			L / R	
		30			L / R	
		40			L / R	
		50			L / R	
		60			L / R	
		70			L / R	
		80			L / R	
		90			L / R	
		100			L / R	
		110			L / R	
		120			L / R	
		130			L / R	

PURPOSE OF DIVE	REMARKS
DIVER'S CONDITION	DIVING SUPERVISOR

9.2 REPETITIVE DIVE WORKSHEET

REPETITIVE DIVE WORKSHEET

I. PREVIOUS DIVE:

_____ minutes ☐ Standard Air Table

_____ feet ☐ No-Decompression Table

_____ repetitive group designation

II. SURFACE INTERVAL:

_____ hours _____ minutes on surface.

Repetitive group from I _____

New repetitive group from surface

Residual Nitrogen Timetable _____

III. RESIDUAL NITROGEN TIME:

_____ feet (depth of repetitive dive)

New repetitive group from II. _____

Residual nitrogen time from

Residual Nitrogen Timetable _____

IV. EQUIVALENT SINGLE DIVE TIME:

_____ minutes, residual nitrogen time from III.

+_____ minutes, actual bottom time of repetitive dive.

=_____ minutes, equivalent single dive time.

V. DECOMPRESSION FOR REPETITIVE DIVE:

_____ minutes, equivalent single dive time from IV.

_____ feet, depth of repetitive dive

Decompression from (check one):
☐ Standard Air Table ☐ No-Decompression Table
☐ Surface Table Using Oxygen ☐ Surface Table Using Air
☐ No decompression required

Decompression Stops: _____ feet _____ minutes
_____ feet _____ minutes
_____ feet _____ minutes
_____ feet _____ minutes
_____ feet _____ minutes

Scheduled used _____

Repetitive group _____

9.3 NO DECOMPRESSION LIMITS

(Non-repetitive Dives Only) U.S. Navy Diving Manual (Air Decompression)

DEPTH FSW	BOTTOM TIME
40	200
50	100
60	60
70	50
80	40
90	30
100	25
110	20
120	15
130	10
140	10
150	5
160	5
170	5
180	5
190	5

NOTE: OSHA Regulations Require: A decompression chamber capable of recompressing the diver at the surface to a minimum of 165 FSW (6 ATA) and shall be available at the dive location for: A) surface supplied air-diving to depths deeper than 100 FSW.

9.4 GAUGE PRESSURE FOR DEPTH OF SEAWATER & FRESH WATER

DEPTH (FEET)	FRESH WATER PRESSURE (PSI)	SEAWATER PRESSURE (PSI)
10	4.33	4.45
20	8.66	8.90
30	12.99	13.35
40	17.32	17.80
50	21.65	22.25
60	25.98	26.70
70	30.31	31.10
80	34.64	35.60
90	38.97	40.05
100	43.30	44.50
110	47.63	48.95
120	51.96	53.40
130	56.29	57.85
140	60.62	62.30
150	64.95	66.75
160	69.28	71.20
170	73.61	75.65
180	77.94	80.10
190	82.27	84.55
200	86.60	89.00

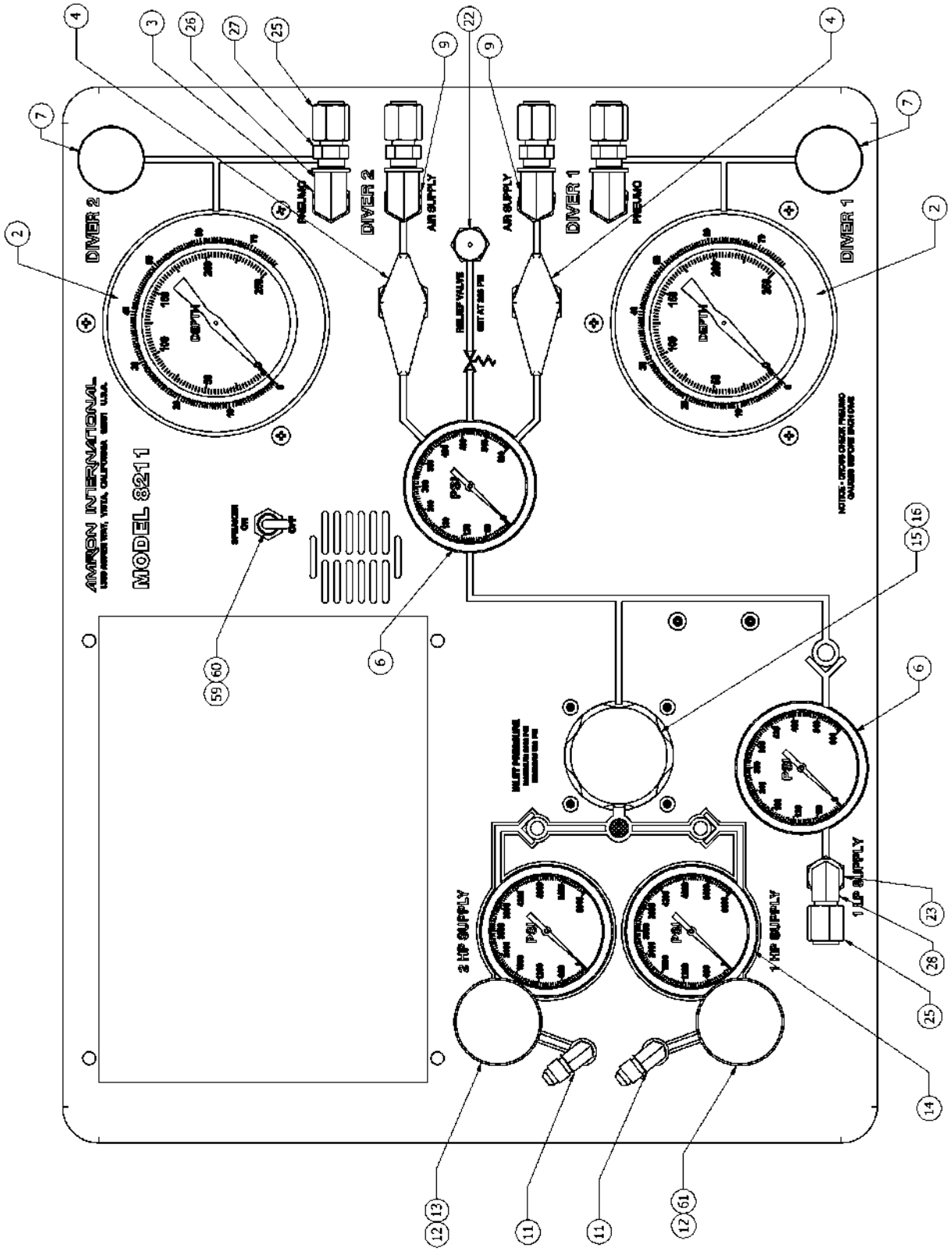
9.5 EQUIVALENT DEPTHS OF SEAWATER & FRESHWATER

DEPTH	EQUIVALENT DEPTH
FEET OF SEAWATER	FEET OF FRESH WATER
10	10.30
20	20.30
30	30.90
40	41.20
50	51.50
60	61.80
70	72.10
80	82.40
90	92.70
100	103.00
110	113.30
120	123.60
130	133.90
140	144.20
150	154.50
160	164.80
170	175.10
180	185.40
190	195.70
200	206.00

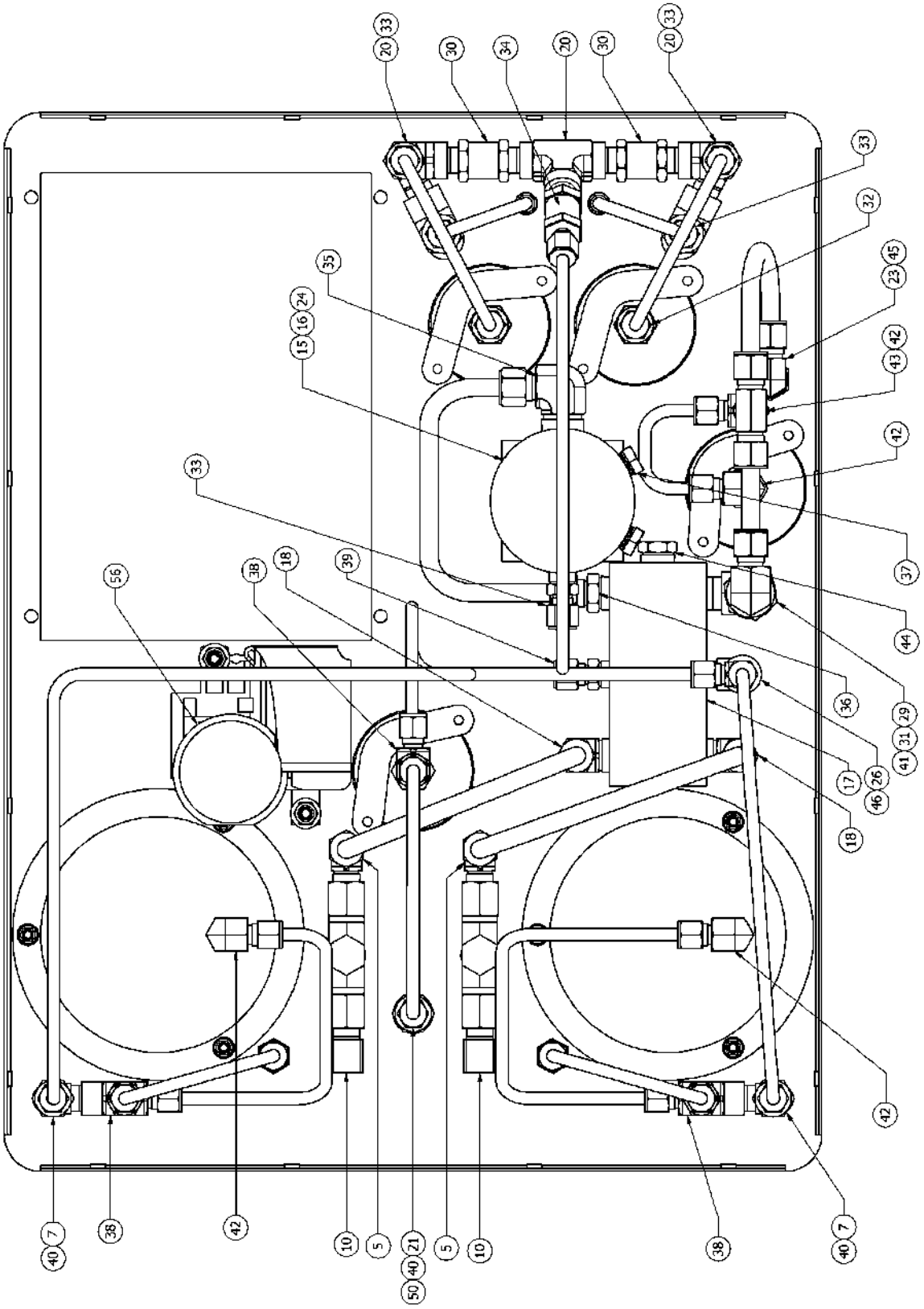
10 DRAWINGS

The following drawings illustrate the electrical and mechanical details of the diver communication unit. The corresponding parts lists for each drawing are detailed in the parts lists section.

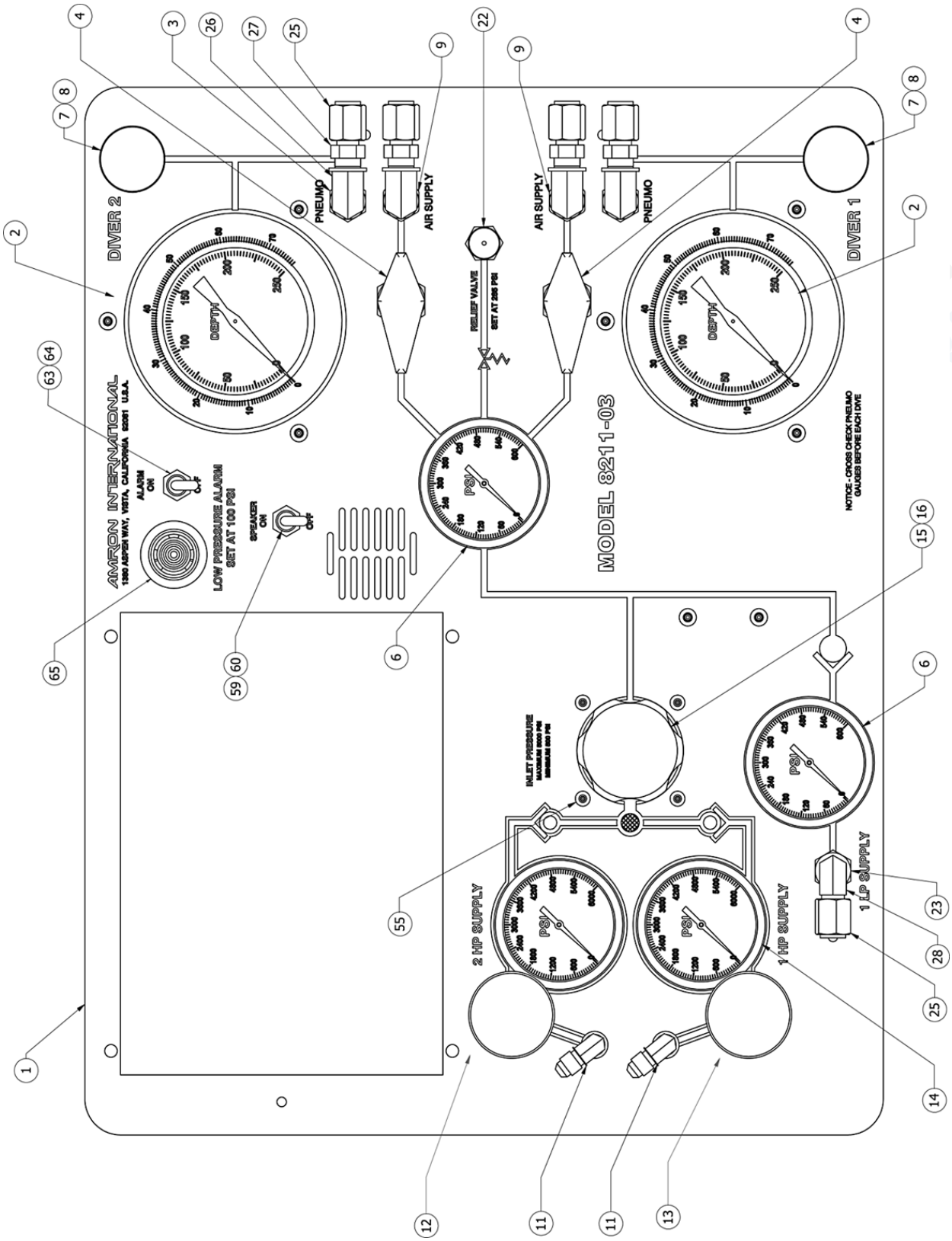
10.1 PARTS LOCATOR, MODEL 8211-400 (FRONT PANEL)



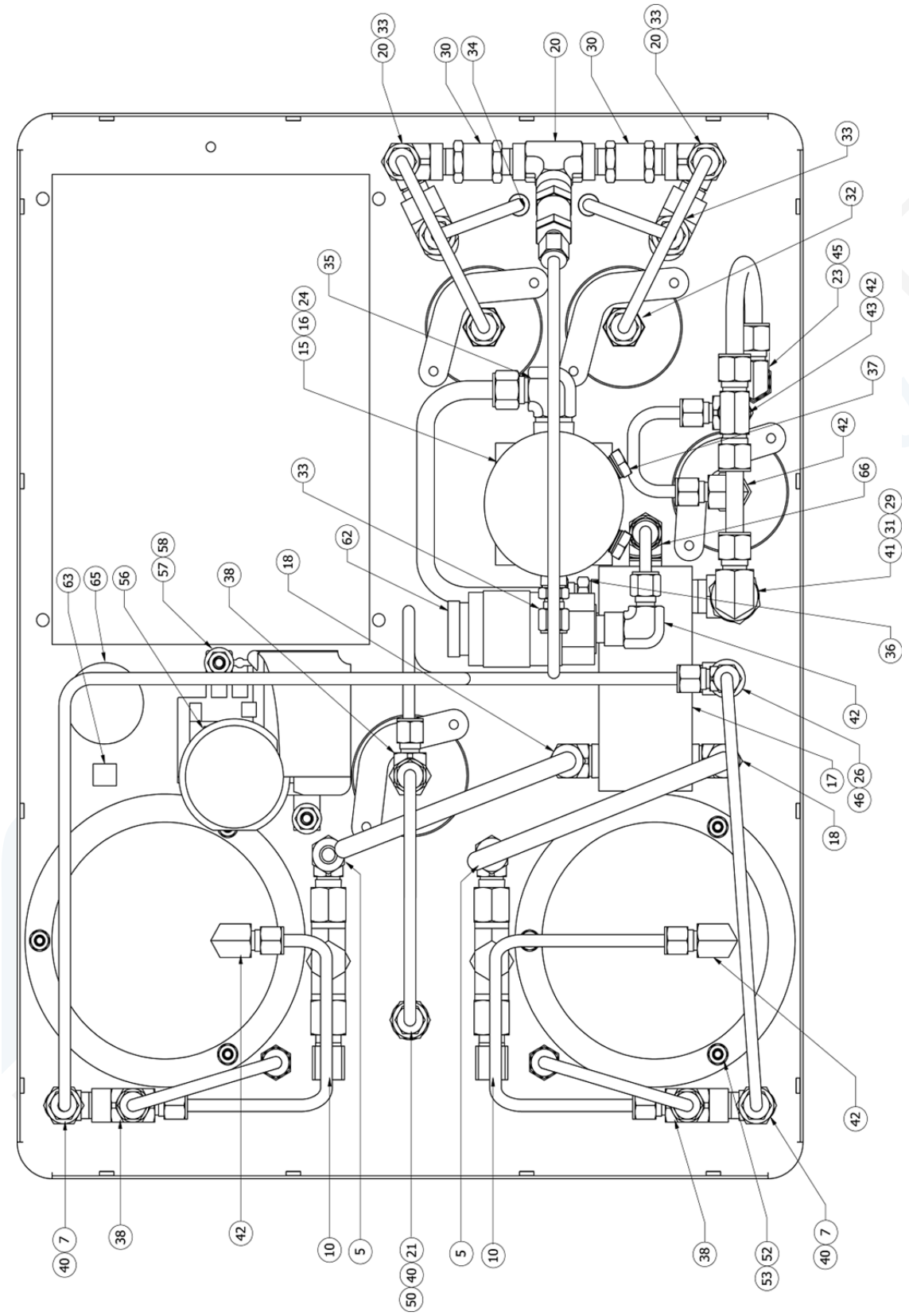
10.2 PARTS LOCATOR, MODEL 8211-400 (BACK PANEL)



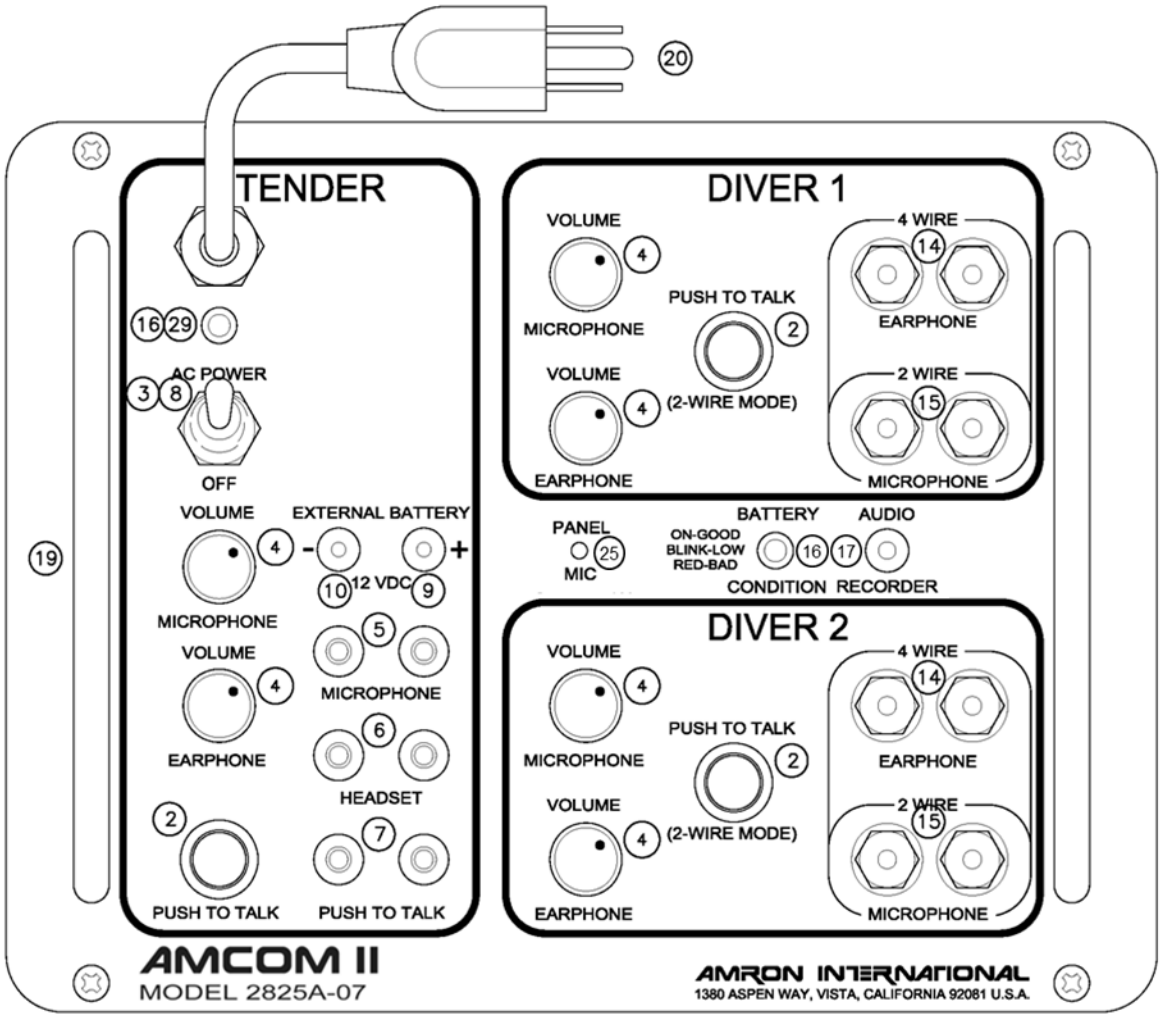
10.3 PARTS LOCATOR, MODEL 8211-400-03 (FRONT PANEL)



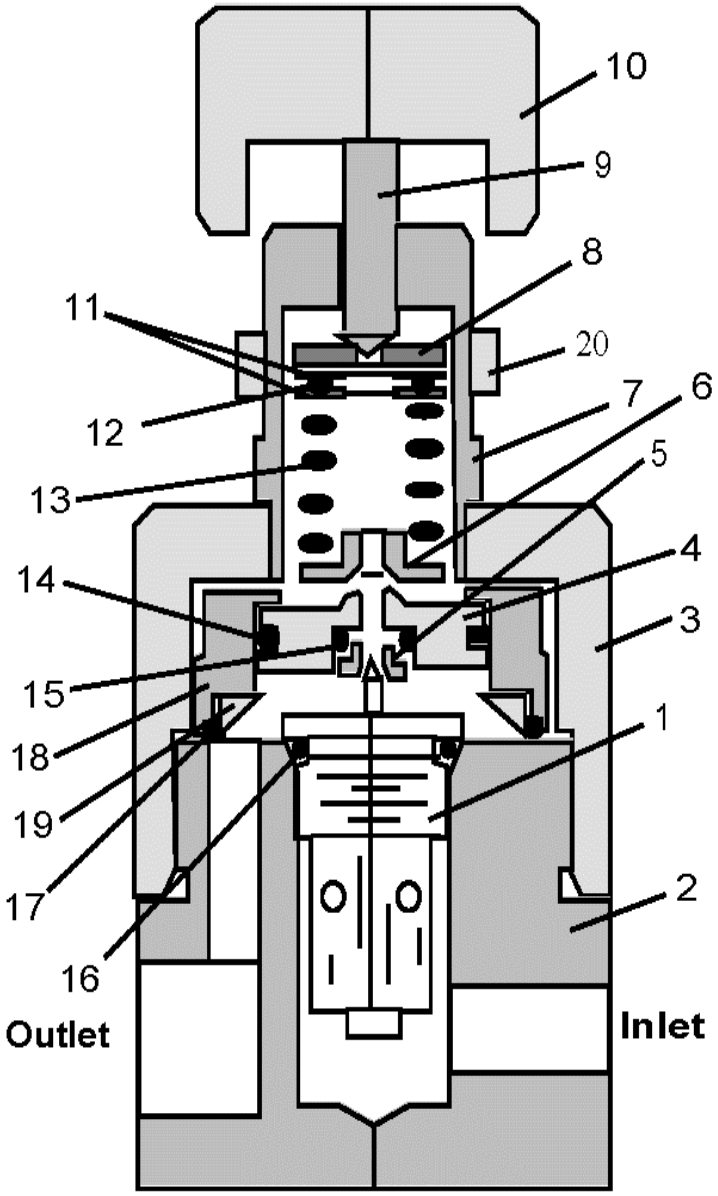
10.4 PARTS LOCATOR, MODEL 8211-400-03 (BACK PANEL)



10.5 PARTS LOCATOR, MODEL 2825A-07 (DIVER COMMUNICATIONS)



10.6 PARTS LOCATOR, MODEL 873-400-NV (REGULATOR)



11 PARTS LISTS

The parts lists include both mechanical and electrical parts. The following information will be useful in interpreting data which is not self-explanatory.

REVISIONS

The parts lists in this manual are for the current model of diver communicator as of the printing date.

To Order Replacement Parts Contact:

Amron International, Inc.
1380 Aspen Way, Vista, California, 92081 U.S.A.
Telephone: (760) 208-6500 Fax: (760) 599-3857
Email: sales@amronintl.com
Web: www.amronintl.com

When ordering replacement parts, you should give as much information as possible to enable us to supply the correct part. This information should include the part number, description, reference designator, value, radio model number, and serial number. Failure to provide sufficient information may hinder our ability to fill your parts orders promptly and correctly.

11.1 AIR CONTROL SYSTEM, MODEL 8211-01

REF	PART NO.	DESCRIPTION
1	8211-300	CASE ASSEMBLY
2	8211-400	PANEL ASSEMBLY
3	8225-500	HOSE & YOKE ASSEMBLY
4	2825A-07	RADIO ASSEMBLY
5	2405-28	HANDHELD MICROPHONE PTT

11.1 AIR CONTROL SYSTEM, MODEL 8211-03

REF	PART NO.	DESCRIPTION
1	8211-300	CASE ASSEMBLY
2	8211-400-03	PANEL ASSEMBLY
3	8225-500	HOSE & YOKE ASSEMBLY
4	2825A-07	RADIO ASSEMBLY
5	2405-28	HANDHELD MICROPHONE PTT

11.2 8211-400 AIR CONTROL PANEL ASSEMBLY, MODEL 8211-01

REF	PART NO.	DESCRIPTION
2	PER-201FTM88A01 (MFG PN: 201FTM88A01)	4.5 IN. DEPTH GAUGE
3	CBFC4-4N-BRAS	CONNECTOR FEMALE BULKHEAD
4	HB2F-4N-BRAS	BALL VALVE BRASS 1/4IN FNPT
5	CLMA6-4N-BRAS	ELBOW MALE 3/8 X 1/4

REF	PART NO.	DESCRIPTION
6	71172520600 (MFG PN: PB254B-600)	PRESSURE GAUGE 2.5 IN 1/4 NPT 0-600 PSI/BAR
7	NV2MA-4N-S-BRAS	VALVE NEEDLE V4A BLACK HANDLE
9	222P-4-4	STRAIGHT; BRASS; 1/4 NPT TO
10	340-0085-01	STREET ELBOW; 1/4 INCH NPT; SHORT; BRASS
11	AFBL-4T-BRAS	BULKHEAD UNION ELBOW
12	NV3FA-4N-S-OS-S316	VALVE ANGLE 1/4 FNPT S/S KEL-F
14	711725206000 (MFG PN: PB254B-K06)	PRESSURE GAUGE 2.5 IN 0-6000 PSI/BAR1/4 NPT
15	873-400-NV	REGULATOR
16	952	REGULATOR NUT
17	8225-005	MANIFOLD BLOCK
18	CLMA6-6N-BRAS	MALE ELBOW BRASS
19	CR-SS-1/4	MALE ELBOW, SS
20	MMO-SS-1/4	FEMALE TEE, SS
21	CVA-M4N-C-BRAS	RELIEF VALVE 150 PSI
22	8600-014	VENT CAP
23	CBFC6-4N-BRAS	CONNECTOR FEMALE BULKHEAD
24	8110-002	REGULATOR BRACKET
25	8200-016	DUST CAP W/ RETAINER
26	1202P-4-4	STREET ELBOW, 1/4” MNPT, BRASS
27	340-0087-01	ADAPTER, O2 X 1/4" MNPT, BRASS
28	XFLM6T-02N-BRAS	BRASS MALE 90 DEGREE ELBOW
29	CV2-M-6N-1-BRAS	VALVE CHECK; 3/8 MNPT 1 PSI CR
30	CVH1-M-4N-1/3-S316	VALVE CHECK; 1/3 PSI CRACKING
31	1202P-6-6	STREET ELBOW
32	CFC4-4N-S316	FEMALE CONNECTOR 1/4X1/4S/S
33	CMC4-4N-S316	MALE CONNECTOR S/S 1/4IN
34	FTMH-4N4T-50-S316	FILTER INLINE 50 MICRON S/S
35	CLMA6-8N-BRAS	MALE ELBOW BRASS 3/8 X 1/2
36	CMC6-6N-BRAS	MALE CONNECTOR 3/8IN BRASS
37	HP-B-1/4	PLUG, BRASS
38	CRTF4-4N-BRAS	FEMALE RUN TEE BRASS 1/4IN
39	CMC4-4N-BRAS	CONNECTOR MALE 1/4 X 1/4 NPT
40	CFC4-4N-BRAS	FEMALE CONNECTOR 1/4 IN BRASS
41	CLF6-6N-BRAS	ELBOW FEMALE 3/8 X 3/8
42	CLF4-4N-BRAS	ELBOW FEMALE 1/4IN BRASS
43	CBTM6-4N-BRAS	MALE BRANCH TEE 3/8IN X 1/4IN
44	HP-B-3/8	PLUG, BRASS
45	CLA-6-BRAS	UNION ELBOW-3/8IN BRASS
46	CRTM4-4N-BRAS	MALE RUN TEE 1/4

REF	PART NO.	DESCRIPTION
56	SA818	SPEAKER
59	SW-201	TOGGLE SWITCH
60	SWB-0001	SWITCH BOOT
N/S	320-0096-01 (MFG PN: PGUC-250)	GAUGE BRACKET; 2.5 IN. U-CLAMP
N/S = Not Shown		

11.3 8211-400-03 AIR CONTROL PANEL ASSEMBLY, MODEL 8211-03

REF	PART NO.	DESCRIPTION
2	PER-201FTM88A01 (MFG PN: 201FTM88A01)	4.5 IN. DEPTH GAUGE
3	CBFC4-4N-BRAS	CONNECTOR FEMALE BULKHEAD
4	HB2F-4N-BRAS	BALL VALVE BRASS 1/4IN FNPT
5	CLMA6-4N-BRAS	ELBOW MALE 3/8 X 1/4
6	71172520600 (MFG PN: PB254B-600)	2.5 IN 1/4 NPT 0-600 PSI/BAR
7	NV2MA-4N-S-BRAS	VALVE NEEDLE V4A BLACK HANDLE
9	222P-4-4	1/4” STRAIGHT, BRASS
10	340-0085-01	1/4” STREET ELBOW
11	AFBL-4T-BRAS	BULKHEAD UNION ELBOW
12	NV3FA-4N-S-OS-S316	VALVE ANGLE 1/4 FNPT S/S KEL-F
14	711725206000 (MFG PN: PB254B-K06)	2.5 IN 0-6000 PSI/BAR1/4 NPT
15	873-400-NV	REGULATOR
16	952	REGULATOR NUT
17	8225-005	MANIFOLD BLOCK
18	CLMA6-6N-BRAS	MALE ELBOW BRASS
19	CR-SS-1/4	MALE ELBOW, SS
20	MMO-SS-1/4	FEMALE TEE, SS
21	CVA-M4N-C-BRAS	RELIEF VALVE 150 PSI
22	8600-014	VENT CAP
23	CBFC6-4N-BRAS	CONNECTOR FEMALE BULKHEAD
24	8110-002	REGULATOR BRACKET
25	8200-016	DUST CAP W/ RETAINER
26	1202P-4-4	STREET ELBOW, 1/4” MNPT, BRASS
27	340-0087-01	ADAPTER, O2 X 1/4" MNPT, BRASS
28	XFLM6T-02N-BRAS	BRASS MALE 90 DEGREE ELBOW
29	CV2-M-6N-1-BRAS	VALVE CHECK; 3/8 MNPT 1 PSI CR
30	CVH1-M-4N-1/3-S316	VALVE CHECK; 1/3 PSI CRACKING
31	1202P-6-6	STREET ELBOW
32	CFC4-4N-S316	FEMALE CONNECTOR 1/4X1/4S/S
33	CMC4-4N-S316	MALE CONNECTOR S/S 1/4IN

REF	PART NO.	DESCRIPTION
34	FTMH-4N4T-50-S316	FILTER INLINE 50 MICRON S/S
35	CLMA6-8N-BRAS	MALE ELBOW BRASS 3/8 X 1/2
36	CMC6-6N-BRAS	MALE CONNECTOR 3/8IN BRASS
38	CRTF4-4N-BRAS	FEMALE RUN TEE BRASS 1/4IN
40	CFC4-4N-BRAS	FEMALE CONNECTOR 1/4 IN BRASS
41	CLF6-6N-BRAS	ELBOW FEMALE 3/8 X 3/8
42	CLF4-4N-BRAS	ELBOW FEMALE 1/4IN BRASS
43	CBTM6-4N-BRAS	MALE BRANCH TEE 3/8IN X 1/4IN
44	HP-B-3/8	PLUG, BRASS
45	CLA-6-BRAS	UNION ELBOW-3/8IN BRASS
46	CRTM4-4N-BRAS	MALE RUN TEE 1/4
56	SA818	SPEAKER
59	SW-201	TOGGLE SWITCH
60	SWB-0001	SWITCH BOOT
61	320-0096-01	GAUGE BRACKET; 2.5 IN. U-CLAMP
62	96211-BB4	PRESSURE SWITCH 125 RNG/1000PF
63	7580K6	SWITCH TOGGLE SPST
64	5168	SEAL HALF BOOT TOGGLE GREY
65	273-068	SONALERT 24 VDC 2900 HZ;
66	CLMA4-6N-BRAS	MALE ELBOW BRASS 1/4NPT X 6NPT

11.4 REGULATOR, PRESSURE REDUCING

REF	PART NO.	DESCRIPTION
1	895	POPPET ASSY
2	893	BODY
3	879	CAP
4	744	PISTON
5	1035-1	SEAT (NON-VENTED)
6	849	SPRING GUIDE
7	903	CAP
8	410	SPRING GUIDE
9	378-2	ADJUSTING SCREW
10	379-30	KNOB
11	379-37	BEARING PLATE
12	379-38	BEARING
13	379-5	SPRING
14	876-24	SEAL
15	876-15	SEAL
16	876-16	SEAL
17	876-27	SEAL
18	944	PISTON HOUSING

REF	PART NO.	DESCRIPTION
19	945	STOP RING
20	952	MOUNT NUT - OPTIONAL
21	979-400	REPAIR KIT - INCLUDES ITEMS 1, 5, 14, 15, 16, 17

11.5 2825A-07-400M FRONT PANEL ASSEMBLY

REF	PART NO.	DESCRIPTION
02	PBSWITCH	SWITCH, PUSH BUTTON SPST (MOM)
03	7580K6	SWITCH, TOGGLE SPST
04	P16NP-10K	POTENTIOMETER, 10K OHMS WITH KNOBS
05	1498-102	JACK, BANANA RED
06	1498-103	JACK, BANANA BLACK
07	1498-107	JACK, BANANA YELLOW
08	5168	SEAL, HALF BOOT, TOGGLE
09	105-0602-001	JACK, TIP RED
10	105-0603-001	JACK, TIP BLACK
11	ME161-2003	RCA PHONO JACK
14	14002B	BINDING POST, BLACK
15	14002R	BINDING POST, RED
16	LEDHOLDER-BLK.25	MOUNTING CLIP, FOR 5MM LED
17	LT2462-24-D51	LED, BATTERY CONDITION
19	492	HANDLE, ROUND 1.5X5.5X5/16
20	P-2392	AC POWER CORD
25	24XX-MIC	PANEL MICROPHONE ASSEMBLY
29	LEDGREEN	LED, GREEN AC POWER

11.6 RECOMMENDED SPARE PARTS

REF	PART NO.	DESCRIPTION
N/S	KIT-CV1-1/3-RE-BRAS	REPAIR KIT, FOR P/N CVH1-M-4N-1/3-S316
N/S	KIT-HB2-SET-S316	REPAIR KIT, FOR P/N HB2MF-4N-BRAS
N/S	KIT-FT-50-SPARE-S316	REPAIR KIT, FOR P/N FTMH-4N4T-50-S316
N/S	KIT-CV2-1-RE-BRAS	REPAIR KIT, FOR P/N CV2-M-6N-1-BRAS
N/S	979-400	REPAIR KIT FOR 873-400-NV REGULATOR
14	14002B	BINDING POST, BLACK
15	14002R	BINDING POST, RED
5	1498-102	JACK, BANANA RED
6	1498-103	JACK, BANANA BLACK
7	1498-107	JACK, BANANA YELLOW
8	5168	SWITCH, SEAL TOGGLE SHAFT
3	7580K6	SWITCH, TOGGLE SPST
2	PBSWITCH	SWITCH, PUSH BUTTON SPST (MOM)
N/S	2890-05	BATTERY, 6 VOLT, 7 AH, RECHARGEABLE
N/S	14001B	PLUG, DUAL BANANA BLACK
N/S	14001Y	PLUG, DUAL BANANA YELLOW
N/S	14001R	PLUG, DUAL BANANA RED
N/S	0034.6019	FUSE, COMMUNICATOR AMPLIFIER CARD
N/S	570-1008-20	AMPLIFIER CARD ASSEMBLY
N/S	2405-28	HAND-HELD MICROPHONE PTT
N/S	2825A-07-400	RADIO FRONT PANEL ASSEMBLY W/ HARNESS
N/S = Not Shown		

12 REPAIR & CALIBRATION LOGS

12.1 REPAIR AND MAINTENANCE LOG FOR MODEL 8211-XX

Serial Number: _____

Date unit was placed in service: _____

Date of Service	Description of Service	Serviced By

12.2 CALIBRATION LOG FOR PN 520-0013-01 6 IN. SEAWATER PNEUMO GAUGE

Serial Number: _____

Date unit was place in service: _____

Calibration Date	Serial Number Comments	Calibrated By

13 LIMITED WARRANTY AND SERVICE POLICY

Amron International, Inc.

LIMITED WARRANTY & SERVICE POLICY

LIMITED WARRANTY

AMRON INTERNATIONAL, INC., (Amron) warrants that its manufactured products are free from defects in material and workmanship under normal use and service for a period of one year from date of shipment as described in Amron's literature covering this product. Oxygen Treatment Hoods and accessories are excluded and limited to 90 days. Amron's obligation under this warranty is limited to the repair of or replacement, at Amron's option, of defective material. This warranty shall not cover defects which are the result of misuse, negligence, accident, repair or alterations.

SERVICE POLICY

For technical assistance or to request a repair, please complete one of the following:

- *Amron Communicator Repair*: https://www.amronintl.com/communicator-repair-form
- *Repair Request* (all other products): https://www.amronintl.com/repair-form
- Call (760) 208-6500, Monday – Friday, 8 a.m. to 5 p.m. PST.

Both MODEL NO. and SERIAL NO. are required fields to be entered on the *Amron Communicator Repair Request* form and can be found on the products identification label as shown below.

"Sample" Product Identification Label

Do not return any product without obtaining a RMR (Return Materials Request). Detailed return instructions will be provided at the time of request.

1380 Aspen Way, Vista California 92081-8349 U.S.A
Phone: (760) 208-6500 Fax (760) 599-3857
Email: sales@amronintl.com Web: www.amronintl.com