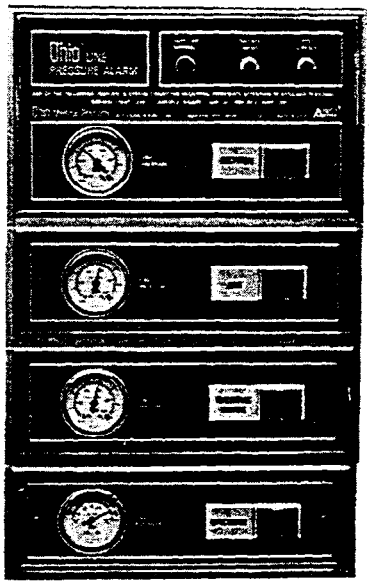
Ohmeda

Line Pressure Alarm

Service Manual



A BOC Health Care Company

Critical Care Worldwide

Important

The information contained in this service manual pertains only to those models of products which are marketed by Ohmeda as of the effective date of this manual or the latest revision thereof. This service manual was prepared for exclusive use by Ohmeda service personnel in light of their training and experience as well as the availability to them of proper tools and test equipment. Consequently, Ohmeda provides this service manual to its customers purely as a business convenience and for the customer's general information only without warranty of the results with respect to any application of such information. Furthermore, because of the wide variety of circumstances under which maintenance and repair activities may be performed and the unique nature of each individual's own experience, capacity, and qualifications, the fact that customer has received said information from Ohmeda does not imply in any way that Ohmeda deems said individual to be qualified to perform any such maintenance or repair service. Moreover, it should not be assumed that every acceptable test and safety procedure or method, precaution, tool, equipment or device is referred to within, or that abnormal or unusual circumstances may not warrant or suggest different or additional procedures or requirements.

This manual is subject to periodic review, update and revision. Customers are cautioned to obtain and consult the latest revision thereof before undertaking any service of the equipment. Comments and suggestions on this manual are invited from our customers. Please send your comments and suggestions to Communications Manager, Medical Engineering Systems, Ohmeda, 2775 Northwoods Parkway, Norcross, GA, 30091-4225.

Technical Competence

The procedures described in this service manual should be performed by trained and authorized personnel only. Maintenance should only be undertaken by competent individuals who have a general knowledge of and experience with devices of this nature.

Genuine replacement parts manufactured or sold by Ohmeda must be used for all repairs.

Read completely through each step in every procedure before starting the procedure; any exceptions may result in a failure to properly and safely complete the attempted procedure.

Repair Policy and Procedure

Do not use an improperly functioning unit until all necessary repairs are made and the unit is tested to ascertain that it is functioning in accordance with the manufacturer's published specifications.

To insure full reliability, it is recommended that all repairs be performed by an authorized Ohmeda Service Representative. However, if this cannot be done, replacement of those parts designated in the Service Manual may be undertaken by a competent individual having experience in the repair of devices of this nature.

CAUTION: No repair should ever be attempted by anyone not having experience in the repair of devices of this nature.

NOTE: Use only Ohmeda replacement parts.

Except for the operator maintenance indicated in the operation and maintenance manual, it is recommended that all other maintenance be made by an authorized Service Representative of Ohmeda. In the United States, contact the nearest Ohmeda Zone or Regional Service Office for assistance. Outside the United States, contact the nearest authorized Ohmeda Distributor for assistance.

Table of Contents

Precautions

Warnings

The system should be installed and tested in accordance with NFPA 99, "Health Care Facilities".

Before putting the Line Pressure Alarms into service, pressurize each line momentarily to energize each ABNORMAL light on the Line Pressure Alarm panel and check to see that the name of the gas on the energized light is the same as the gas service plumbed.

Before putting Auxiliary Alarms into service, pressurize each line momentarily to energize each ABNORMAL light on the Line Pressure Alarm and check to see that the name of the gas on the energized light of the auxiliary alarm is the same.

Hospital personnel must be notified before working on the alarm system. See Page 2-1.

ELECTRICAL SHOCK HAZARD. When performing service procedures with the power connected, extreme care must be taken to avoid direct or indirect contact with any of the electrical circuitry. See Pages 2-1 and 4-1.

After completing a repair of the alarm panel or any of its accessories the appropriate checkout procedure MUST be performed to make sure the alarm panel or accessory is in proper operating condition. See Page 4-1.

ELECTRICAL SHOCK HAZARD. Be absolutely sure that the supply voltage is off before replacing the transformer. See Page 4-8.

Cautions

No repair should ever be undertaken or attempted by anyone not having general experience in the repair of devices of this nature.

Servicing of this product in accordance with this service manual should never be undertaken in the absence of proper tools, test equipment and the most recent revision to this service manual which is clearly and thoroughly understood. See Page 4-1.

Replace electrical parts only with identical Ohmeda components and replacement parts. Check leakage, current and system functions after servicing. See Page 4-1.

1/Description

1.1 Specifications

Physical Characteristics:

Module Dimensions:
"A" Module (Main Unit) Cover Plate -
9¾ in. X 5⅞ in. (248 mm X 149 mm)
"Add-on" Module Cover Plate -
9¾ in. X 3¼ in. (248 mm X 83 mm)
Auxiliary Alarm Cover Plate -
9¾ in. X 5⅞ in. (248 mm X 149 mm)

Enclosures (Rough-In box):
Single Module (recessed mtg.) -
8⁷⁄₁₆ in. X 4⅝ in. X 3⅝ in. (214 mm X 117 mm X 92 mm)
Double Module (recessed mtg.) -
8⁷⁄₁₆ in. X 7⅝ in. X 3⅝ in. (214 mm X 194 mm X 92 mm)
Triple Module (recessed mtg.) -
8⁷⁄₁₆ in. X 11⅛ in. X 3⅝ in. (214 mm X 283 mm X 92 mm)
Quadruple Module (recessed mtg.) -
8⁷⁄₁₆ in. X 14⁷⁄₁₆ in. X 3⅝ in. (214 mm X 367 mm X 92 mm)
Single Module (exposed mtg.) -
10 in. X 6⅛ in. X 4½ in. (254 mm X 156 mm X 114 mm)
Auxiliary Alarm -
10 in. X 6⅛ in. X 4½ in. (254 mm X 156 mm X 114 mm)

Gas Service Connection:
Gas Inlet Tubing - 8 in. length of ¼ in. nominal I.D. Type K copper tubing.

Pressure Gauges: Gas Service	Range	**Pressure Switch Set Points:**
Oxygen, Nitrous Oxide, Air, Carbon Dioxide (50 psi line pressure)	0-100 psig	40 psig (decreasing pressure) & 60 psig (increasing pressure)
Nitrogen (200 psi line pressure)	0-300 psig	175 psig (decreasing pressure) & 225 psig (increasing pressure)
Vacuum, Evacuation 19 - 25 in. Hg line vacuum)	0-30 in. Hg	15 in. Hg (diminishing vacuum)

Electrical Characteristics:

Power Requirements (per alarm panel):
120 VAC, 60 Hz from Emergency Supply
220 VAC, 50 Hz from Emergency Supply-Export only

Transformer:
120 VAC primary/28.5 VAC secondary; 40 VA
220 VAC primary/28.5 VAC secondary; 40 VA-Export only

Circuitry:
Interconnecting wiring via Mate-N-Lok* Connectors
Solid-State; removable P.C. Boards
28.5 Vdc operating voltage

Alarm Indicators:
Visual: Indicating lamps (2500 hours at 28 volts)
Audible: Horn (70 db at 2200 hertz)

1.2 General Operation

When all systems are operating properly, the green NORMAL light glows and the gauge in each module indicates the actual line pressure. If a pressure change of more than plus or minus 20% occurs, the NORMAL light goes out, the horn sounds and a red LINE PRESSURE ABNORMAL light is activated.

The audio signal continues until the SILENCE AUDIO switch is depressed; the indicator light, however, remains on. When the system fault is corrected, the indicator light goes out and the NORMAL light is automatically activated.

To test the complete Line Pressure Alarm panel for proper operation, depress the TEST CIRCUIT switch. When depressed, all indicator lights are activated, the horn sounds and all internal circuitry is tested.

*Trademark of AMP, Inc., Harrisburg, PA.

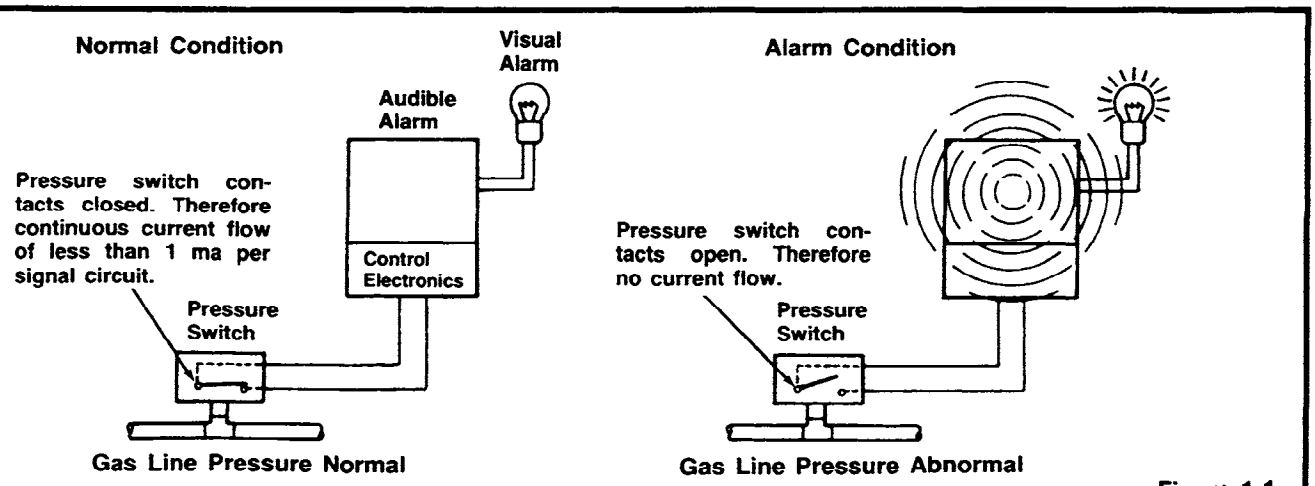


Figure 1-1
Simplified Operation Diagram for Line Pressure Alarm System

1/Description

1.3 Components

The following list and figures indicate the components of this system. The quadruple line pressure alarm system is shown in Figure 1-2 and its components are similar to those of smaller systems.

A. "A" Module

(See Figures 1-2 and 1-3) - An independent module capable of standing alone. Only oxygen or nitrous oxide may be connected and monitored by this module. The "A" module can drive from 1 to 3 Add-On modules. This module contains the following controls and indicators:

1. NORMAL light (green) - when lit indicates that the pressures in all monitored gas lines are within prescribed limits.

2. SILENCE AUDIO button - when depressed, deactivates the audible alarm.

3. TEST CIRCUIT button - when depressed, activates all indicator lights, sounds the audible alarm and tests all internal circuitry.

4. Line Pressure gauge - continuously indicates the actual gas line pressure.

5. LINE PRESSURE ABNORMAL light - when lit, indicates that the monitored gas line pressure is beyond prescribed limits.

6. Audible Alarm - when activated, indicates that one or more line pressures are abnormal.

7. Pressure Switches - The electrical contacts are closed when line pressures are within prescribed limits. The contacts open if the pressure changes beyond these limits.

8. 3-pin Mate-N-Lok connectors - distributes 28.5 volt supply to modules.

9. Gas Inlet Hose - provides quick connection/disconnection of modules from gas line.

B. Add-On Module

(See Figures 1-2 and 1-3) - A dependent module which expands "A" module's monitoring capacity. This module contains the following indicators:

1. LINE PRESSURE ABNORMAL light (red) - when lit, indicates that the monitored gas line pressure is beyond prescribed limits.

2. Line Pressure gauge - continuously indicates the actual gas line pressure.

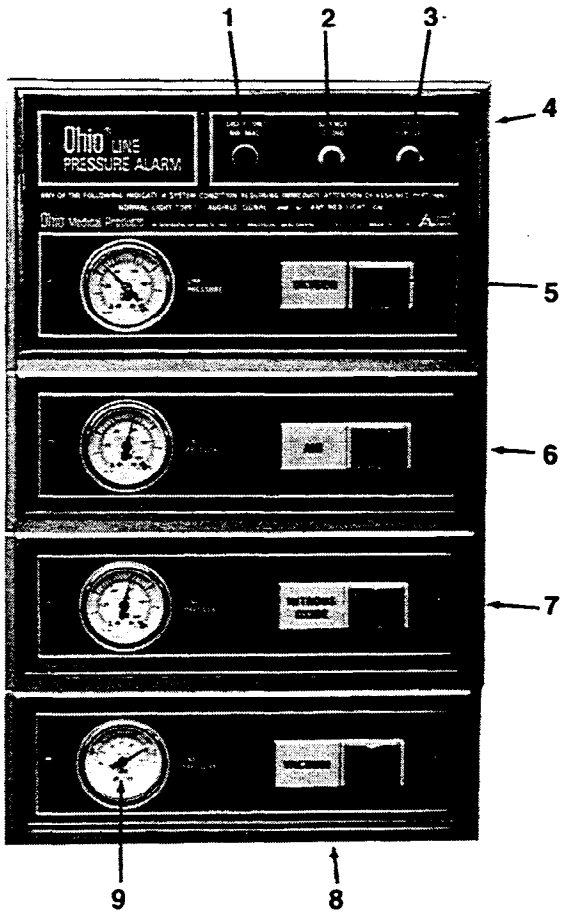
C. Rough-in box (Enclosure)

(See Figure 1-4) - provides protection for the modules and the auxiliary alarm panel. The monitored gas lines are piped to this enclosure. The 120 VAC power source is also connected in the enclosure. The enclosure size is dependent on the total number of modules. The enclosure contains the following components.

1. Transformer - primary connected to the 120 VAC; secondary output is 28.5 VAC.

2. 3-pin Mate-N-Lok receptacle distributes 28.5 VAC to the "A" Module.

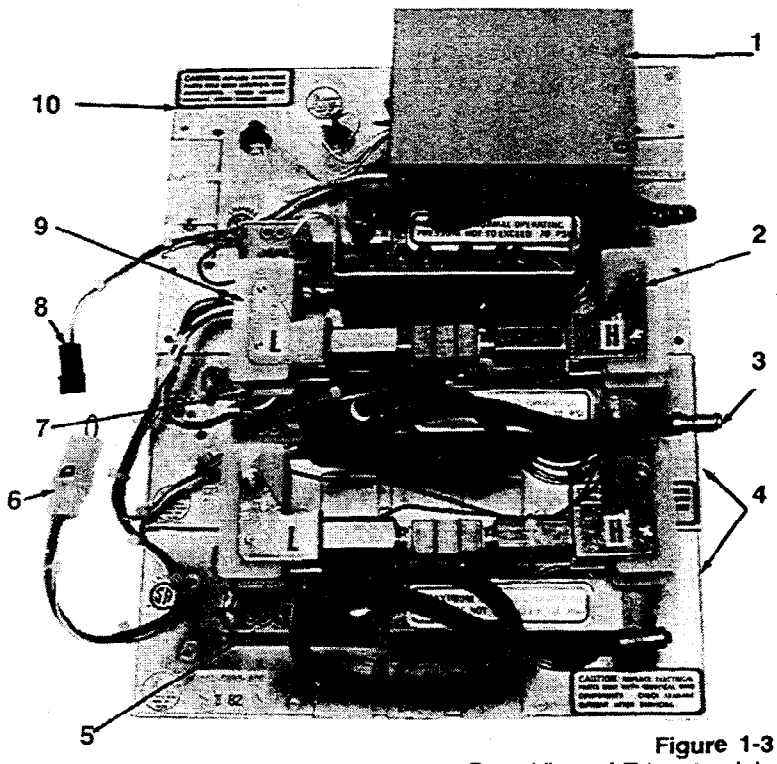
3. Gas Inlet socket - provides quick connection/disconnection of modules from the gas lines.



1. **NORMAL light (green)**
2. **SILENCE AUDIO button**
3. **TEST CIRCUIT button**
4. **"A" Module**
5. **ABNORMAL light (red)**
6. **"B" Add-On Module**
7. **"C" Add-On Module**
8. **"D" Add-On Module**
9. **Pressure or Vacuum Gauge**

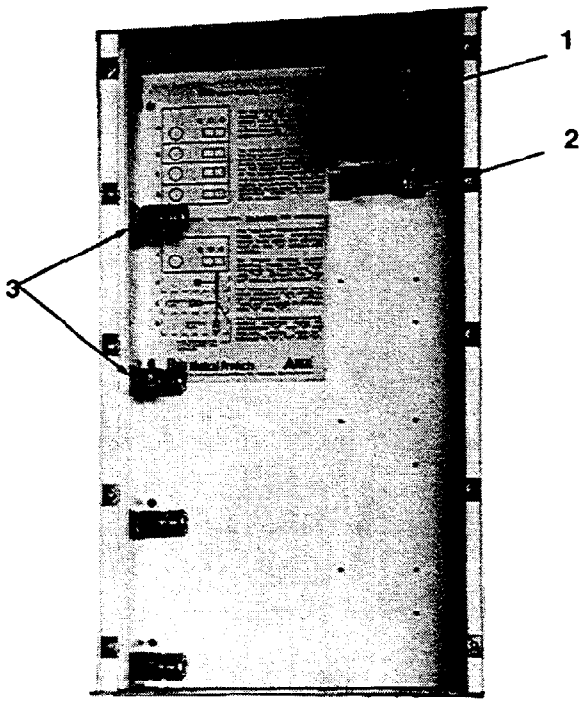
Figure 1-2
Line Pressure Alarm Panel
Front View of Quadruple Module

1/Description



1. Power Supply Board Guard Bracket
2. Pressure Switch, High
3. Gas Inlet Hose
4. Add-On Modules
5. Lamp Socket
6. Mate-N-Lok connector with shorting plug
7. White Mate-N-Lok Connector
8. Black Mate-N-Lok Connector
9. Pressure Switch, Low
10. "A" Module

Figure 1-3
Rear View of Triple Module



1. Transformer
2. 3-pin Mate-N-Lok connector
3. Gas Inlet Sockets

Figure 1-4
Rough-In Box for Quadruple Module

1/Description

1.4 Accessories

A. Auxiliary Alarm Panel

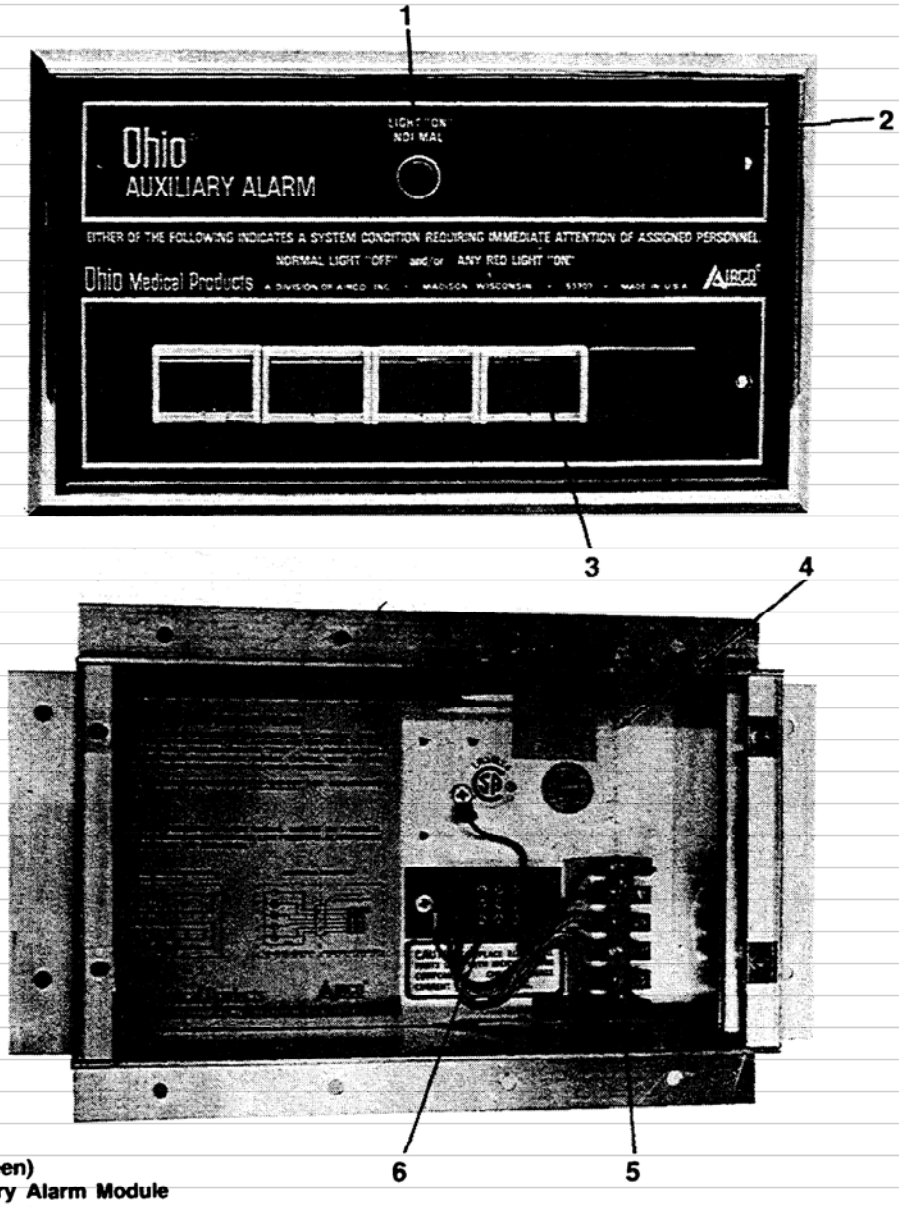
(See Figure 1-5)

The Auxiliary Alarm panel is a visual alarm that is dependent on the Line Pressure Alarm and is usually remotely located. Only one auxiliary alarm panel can be powered from each Line Pressure Alarm panel. The alarm panel visually duplicates the "A" and Add-On modules' condition. The Auxiliary Alarm panel contains the following indicators:

1. NORMAL light (green) - indicates that all monitored gas line pressures are within prescribed limits.

2. LINE PRESSURE ABNORMAL (red) - indicates that the monitored gas line pressure is beyond prescribed limits.

Signal lights in the Auxiliary Alarm are wired in parallel with the ABNORMAL signal lights of the Line Pressure Alarm.



1. NORMAL Light (green)
2. Four Signal Auxiliary Alarm Module
3. ABNORMAL Light (red)
4. Rough-In Box
5. Terminal Strip
6. Mate-N-Lok Receptacle

Figure 1-5
Auxiliary Alarm

2/Test Procedures

2.1 Check Out Procedure

WARNING: Hospital personnel must be notified before working on the alarm system.

WARNING: ELECTRICAL SHOCK HAZARD. When performing service procedures with the power connected extreme care must be taken to avoid direct or indirect contact with any of the electrical circuitry.

Use an alarm system test fixture (See Figure 2-1) to check out the Line Pressure Alarms. See the Appendix for the parts and assembly of the test fixture.

By using the test fixture to test the alarms, the line pressure can be increased or decreased at the test fixture instead of at the manifold.

NOTE: Since the Auxiliary Alarm provides a visual warning which duplicates the Line Pressure alarm panel, verify the operation of the Auxiliary Alarm while performing the following checkout procedure.

The following steps are for testing all modules, except vacuum and evacuation.

1. Check that the test cart oxygen cylinder has at least 500 pounds pressure, as indicated on the large gauge above the cylinder (cylinder pressure gauge).

2. Check that the gauge on the short hose assembly is at "0". If it is not, adjust it with the calibration screw on the face of the gauge.

3. Attach the short hose and gauge assembly to the test fixture.

4. Turn on the oxygen cylinder.

5. Adjust intermediate pressure to 100 pounds.

6. Adjust the line pressure regulator so that the gauge at the end of the short hose reads 50 psig.

7. Check the gauge reading on the "master" gauge. It should read 50 ± 1 psig.

8. Remove the short hose and the gauge from the test fixture. Remove completely from the wall the add-on module(s) which are to be tested. Leave the "A" module in the wall and test it last.

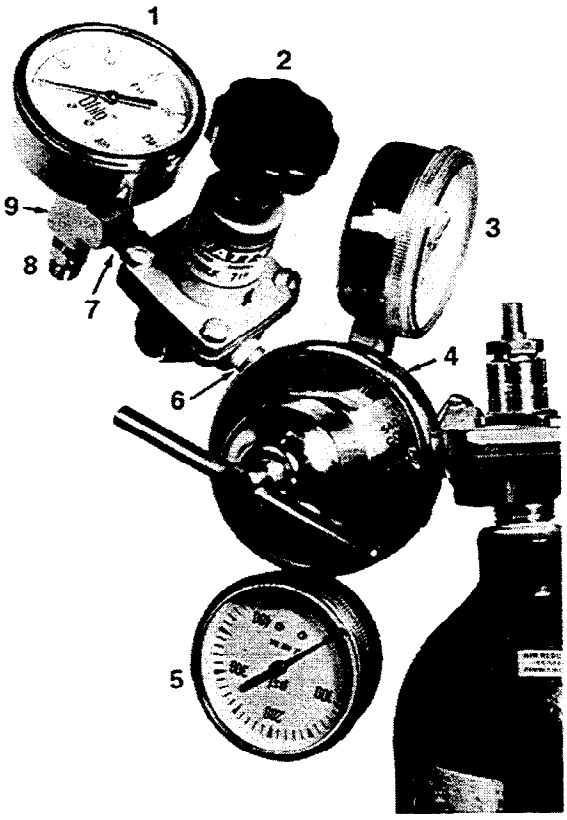
Follow Steps 9 through 18 to test the pressure modules (Steps 19-23 to test the vacuum and evacuation modules).

9. Attach the black hose from the test fixture to the module which is being tested.

10. Attach the male end of the extender cable to the module.

NOTE: When testing the "A" module, reverse the extender cable.

11. Attach the female end of the extender cable to the appropriate Mate-N-Lok connector in the rough-in box.



Description	Stock No.
1. Gauge	0205-8253-300
2. Line Pressure Regulator	0306-1115-300
3. Cylinder Pressure Gauge	
4. Regulator with Gauge	0806-9600-300
5. Intermediate Pressure Gauge	0205-8251-300
6. Nipple	0213-5018-535
7. Nipple	0213-5023-500
8. Adaptor	0204-0490-535
9. Branch "T"	0213-6115-335

Figure 2-1
Alarm System Test Fixture

2/Test Procedures

12. Turn the Tee handle on the large regulator of the test fixture until 100 psig is indicated on the intermediate pressure gauge which is hanging down next to the cylinder. Note: If you are checking a nitrogen pressure alarm, increase the pressure to 35 psig above the working pressure.

Nitrogen: Normal working pressure is 180-200 psig. Check with hospital personnel to determine desired working pressure. Set the low alarm 25 ± 1 psig lower than the working pressure, and the high alarm 25 ± 1 psig higher than the working pressure.

NOTE: Oxygen, nitrous oxide, air, and carbon dioxide are factory set to alarm at 60 ± 2 psig increasing and 40 ± 1 psig decreasing. Normal working pressure is 50 psig.

13. Turn the handle of the line pressure regulator clockwise, slowly increasing the pressure as read on the "master" gauge up to the high alarm set point for the module being tested. The alarm should activate, on pressure rise, at the set point ± 1 psig. If the alarm does not activate, adjust the knurled nut on the high pressure switch until it does activate. As the alarm activates, check the module gauge reading. It should match the "master" gauge at ± 1 psig. See Figure 2-2.

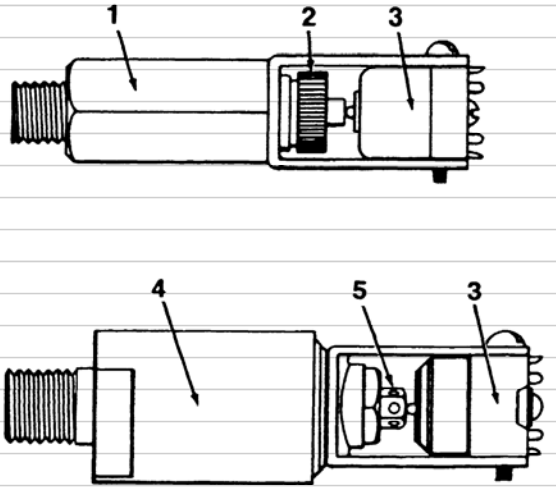
14. Decrease and increase the pressure several times, making sure that the high pressure alarm activates, **on pressure rise,** at the set point ± 1 psig as read on the "master" gauge.

15. Slowly decrease the pressure to the low alarm set point for the module being tested. The alarm should activate, **on pressure drop,** at the set point ± 1 psig. As the alarm activates check the reading on the module's gauge. It should match the "master" gauge at ± 1 psig. If the alarm does not activate, adjust the knurled nut on the low pressure switch until it does activate. See Figure 2-2.

To adjust the low pressure switch on the "A" Module, the back cover might have to be moved out of the way. Remove the four back plate mounting screws. Do not disconnect any wires, and be careful not to short any components on either printed circuit board. After adjusting the pressure switch, replace the four mounting screws and appropriate spacers.

16. Increase and decrease the pressure several times, making sure that the low pressure alarm activates, **on pressure drop,** at the set point ± 1 psig as read on the "master" gauge.

17. After the module has been tested, disconnect the hose and the extender cable from the module. Disconnect the female end of the extender cable from the Mate-N-Lok connector.



1. **Pressure Switch**
2. **Brass Knurled Ring**
3. **Snap Action Switch**
4. **Vacuum Switch**
5. **Brass Hexagon Nut**

Pressure switches are pre-set at the factory. The settings are:

Gas Service	Setting
Oxygen, Nitrous Oxide, Air, Carbon Dioxide	40 psig (decreasing pressure) & 60 psig (increasing pressure)
Nitrogen	175 psig (decreasing pressure) & 225 psig (increasing pressure)
Vacuum	15-16 in. Hg (diminishing vacuum)

1. To decrease the pressure trip point:
Rotate the brass knurled ring (brass hexagon nut on vacuum switch) in a direction that causes the ring or nut to move closer to the snap action switch.

2. To increase the pressure trip point, reverse the rotation described in step 1.

Figure 2-2
Pressure and Vacuum Switch Adjustment

18. Repeat Steps 9 through 18 to test each of the remaining pressure modules.

Follow Steps 19 through 23 to test the vacuum or evacuation alarm module

19. To test the vacuum or evacuation module, attach the male end of the extender cable to the module. Attach the female end of the extender cable to the appropriate Mate-N-Lok connector in the rough-in box.

20. Insert the module's gas inlet hose into the quick disconnect socket in the rough-in box. Keep the module away from the rough-in box so that you can work on the back of it. If the gas inlet hose is copper tubing, bend it gently.

21. While holding the module in your hand, create a leak by loosening the fitting where the vacuum pressure enters the module.

22. Watch the gauge in the module to see at what point the alarm activates as the vacuum gauge indicator drops.

NOTE: The alarm should be set for 15±1 in. Hg. If the alarm does not activate, adjust the knurled nut on the vacuum switch until it does activate.

23. After testing the vacuum or evacuation module, tighten the fitting loosened in Step 21, and remove the extender cable.

Follow Steps 24 through 27 when reinstalling the alarm modules.

24. Reinstall all modules. Verify gas identification when reinstalling add-on modules.

25. Push the **Test Circuit** button to check alarms.

26. Shut off the oxygen cylinder.

27. Relieve the pressure in the test fixture.

Auxiliary Alarm
Since the Auxiliary Alarm provides a visual warning which duplicates the Line Pressure Alarm panel, verify the operation of the Auxiliary Alarm while performing the checkout procedure in Section 2.0.

2.2 Leakage Current Test Procedure

(See Figure 2-3)

Required Equipment:
Leakage current tester, (Part No. 0170-5013-000)
Digital multimeter
Variable transformer

Procedure:

1. Visually check to see that all wire insulation is intact, that all wire terminations fully insulate the striped portion of the wire, and that the assembly is free of metal filings or other material that may short an exposed live terminal.

2. Check for continuity between the following points (less than 1.0 ohm):
a. Rough-in box to Mate-N-Lok pin #1 (GND).
b. Rough-in box to transformer core.

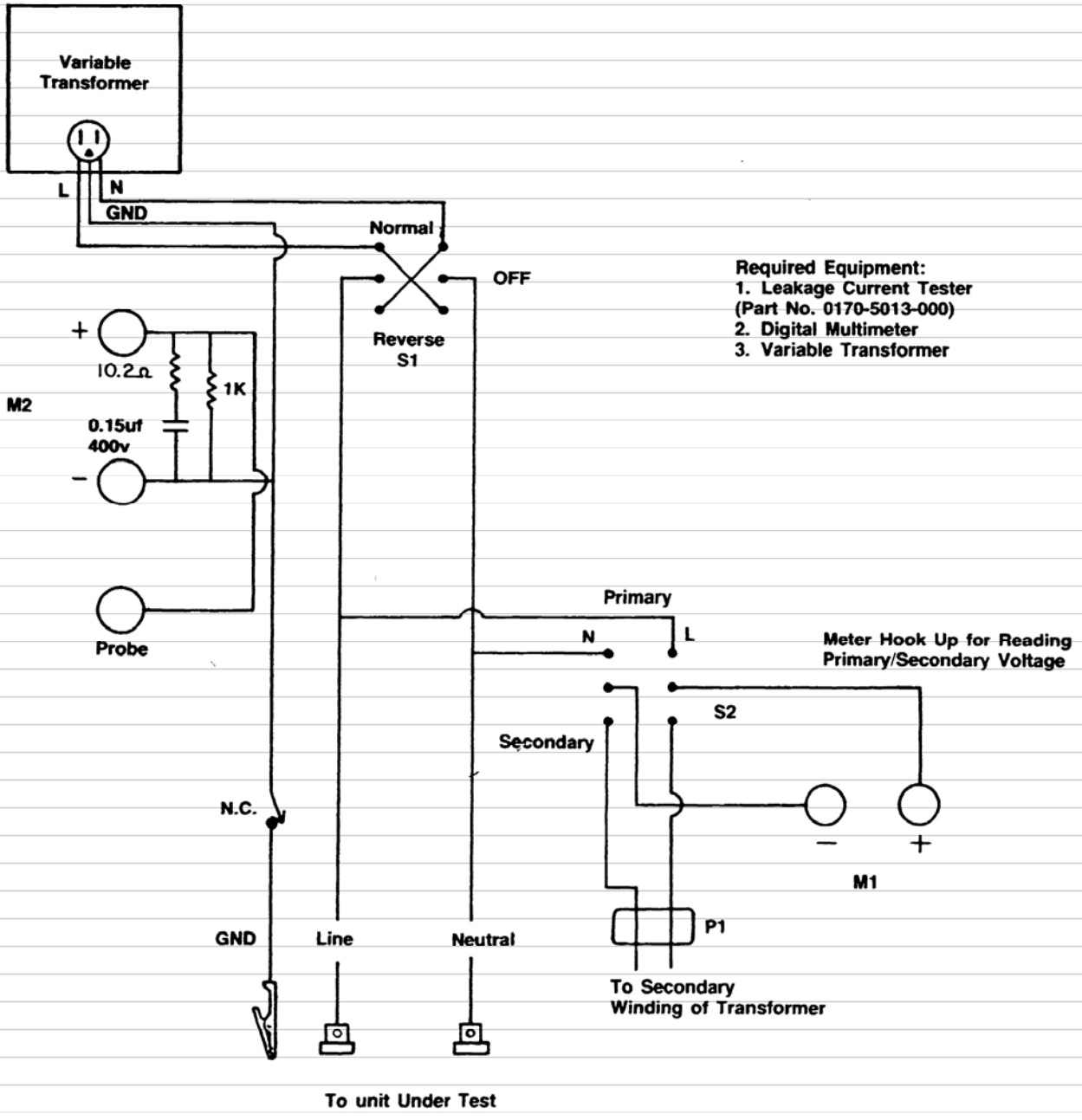
3. Make sure that the leakage current tester (Part No. 0170-5013-000) switch S1 is in the off position.
a. Connect the power cord of the leakage current tester to a variable transformer (See Figure 2-3).
b. Set Switch S2 to primary and connect digital multimeter (DMM) leads to M1. Set DMM to AC volts, 200V range.
c. Connect the transformer which is under test to the side terminals on the leakage current tester.
d. Connect ground lead to the rough-in box.
e. Connect P1 to Mate-N-Lok connector inside the rough-in box.
f. Set S1 to normal position.
g. Turn on the variable transformer and adjust to 120±1 VAC.
h. Set Switch S2 to secondary and measure the voltage. It must be 28.5±1 VAC

4. Current Leakage (Normal)
a. Set Switch S1 to off position and connect DMM leads to M2 jacks (positive lead to +M2 jack and negative lead to −M2 jack).
b. Set DMM to the millivolt scale.
c. Connect one end of the test cable to the external ground jack on the tester. Use other end of the test cable (needle probe tip) to contact the exposed conductive surface of the device under test.
d. Set Switch S1 to normal position (grounded mode).
e. Measure the voltage on the DMM in millivolts. The millivolt reading is directly related to the leakage current in microamps. (For example, 10 millivolts is equivalent to a leakage current of 10 microamps.) Leakage current shall not exceed 10 microamps.
f. Push ground disconnect switch and measure the ungrounded leakage current. Leakage current shall not exceed 10 microamps.

5. Reverse Current Leakage
a. Set Switch S1 to the reverse position (grounded mode).
b. Repeat steps 4e and 4f.

6. Power Off
a. Set Switch S1 to the off position.
b. Set the variable transformer to the off position.

2/Test Procedures



Required Equipment:
1. Leakage Current Tester (Part No. 0170-5013-000)
2. Digital Multimeter
3. Variable Transformer

Figure 2-3
Checking Leakage Current

3/Troubleshooting Guide

The following diagnosis and repair chart should be followed when any trouble with the unit occurs. Always look for broken, disconnected or shorted wires before more extensive troubleshooting is attempted. Refer to the Figures in Section 6 for the wiring diagrams and schematics.

Problem	Remedy
"A" Module	
NORMAL light (green) doesn't light after correction of an abnormality but when circuit test button is depressed, the light comes on.	Verify that shorting wires from unused terminals (in rough-in box) to ground are connected.
NORMAL light (green) is intermittent.	Verify that lamp housing contacts are firmly attached.
When TEST CIRCUIT button is depressed, one or more lights do not work.	Check for: Burned out bulbs Loose contacts Replace the control board.
One light continuously on.	Check for: Continuity in rough-in box. Pressure switch is closed. Replace the control board.
Entire panel inoperative.	Measure AC voltage in rough-in box. Pins 8 and 9 should measure 24-30 VAC. Measure DC voltage from pin number 9 in the white connector to ground. A measurement of 22-26 Vdc should be obtained. Replace the power supply board.
Two ABNORMAL lights come on simultaneously.	Check for a short in the rough-in box. Replace the control board.
NORMAL light (green) will not go out when abnormality occurs (alarm sounds).	Verify that the AC supply line is not routed in the same conduit as the signal wires.
Audio alarm doesn't operate.	Check for: Open in wiring. Defective alarm horn. Alarm horn not wired properly (Violet = minus and white/violet = plus). Defective SILENCE AUDIO switch. Replace the power supply board.
Audio alarm stays on.	Verify that the supply voltage is above 100 VAC. Verify that the SILENCE AUDIO switch is functioning. Replace the power supply board.
Audio alarm operates with some ABNORMAL lights but not with others.	Replace the control board.
Single Module Alarm	
Dead panel	Check for: 24.25 - 30 VAC on pins 8 and 9 in rough-in box. +23 Vdc between orange and green wires on module with module plugged in.
Audible tone doesn't always sound	Replace Hi-Lo alarm board.
Auxiliary Alarm	
Auxiliary alarm doesn't operate.	Verify main panel is operating properly. Verify that T-tap connections are electrically connected: Blue wire Black and White wire Green ground wire.
Neither auxiliary alarm nor main alarm work.	Check wiring thoroughly. Replace circuit boards in main alarm.

4/Repair Procedures

WARNING: After completing a repair of the alarm panel or any of its accessories, the Check Out Procedure MUST be performed to make sure that the alarm panel or accessories are in proper operating condition.

WARNING: ELECTRICAL SHOCK HAZARD. When performing service procedures with the power connected, extreme care must be taken to avoid direct or indirect contact with any of the electrical circuitry.

CAUTION: Servicing of this product in accordance with this service manual should never be undertaken in the absence of proper tools, test equipment and the most recent revision to this service manual which is clearly and thoroughly understood.

CAUTION: Replace electrical parts only with identical Ohmeda components and replacement parts. Check leakage current and system functions after servicing.

4.1 Alarm Modules

A. Module Replacement

(See Figure 4-1):

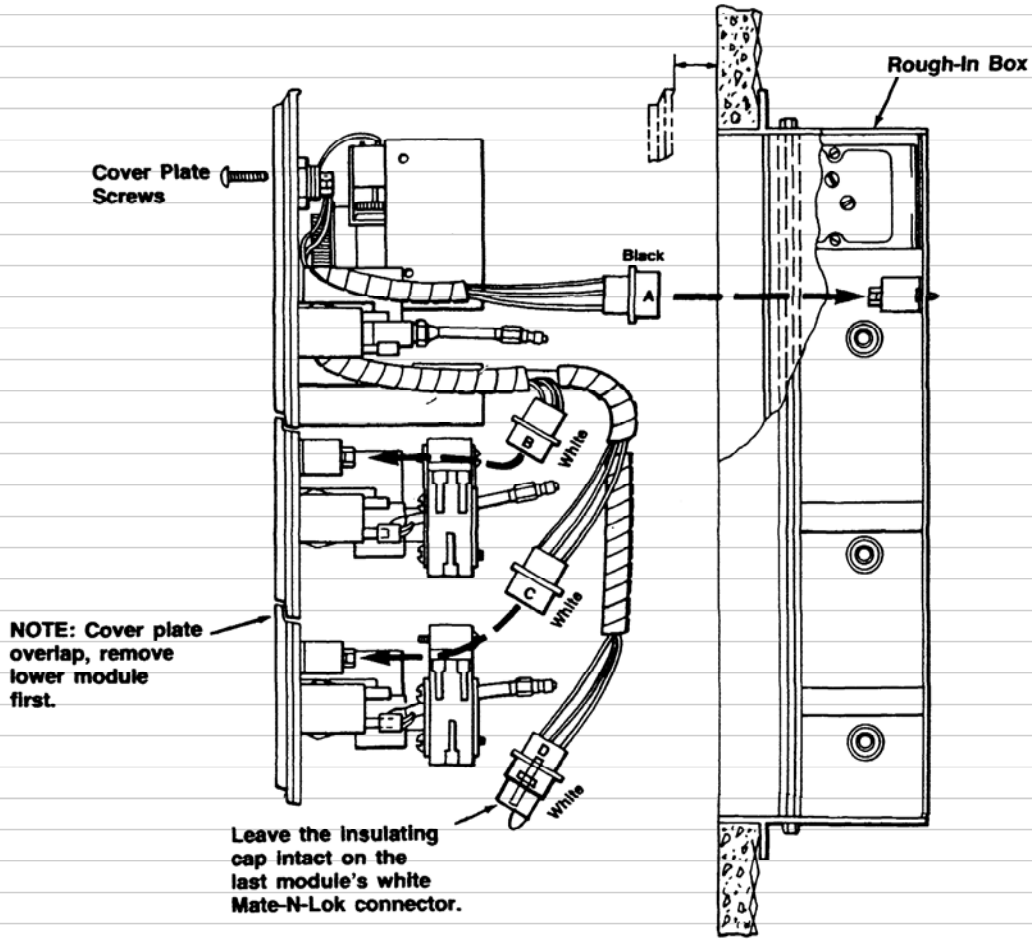
1. Because of the cover plate overlap, the sequence of module removal must be from the bottom up.

2. Remove the cover plate screws.

3. Pull out the alarm panel and disconnect the Mate-N-Lok connectors.

4. Disconnect the gas inlet hoses from the gas inlet sockets by sliding the knurled sleeve on the socket toward the side of the rough-in box and pulling out the gas inlet hose.

5. Install in reverse order. Be sure to connect the gas inlet hoses to the correct gas lines.



Insulating Cap consists of:

Plug	**0208-2005-300**
Terminals (2)	**0208-2212-300**
No. 22 wire	**(short pins 1 & 2)**

Figure 4-1
Side View

4/Repair Procedures

B. Lamp Socket Replacement

(See Figure 4-2):

1. Remove the alarm module from the rough-in box (Section A).

2. Mark all leads, then disconnect wires from lamp socket.

3. Squeeze metal retainer clips and slide lamp socket out through the cover plate.

4. Reverse the above procedure to install new component.

C. ABNORMAL Legend Replacement

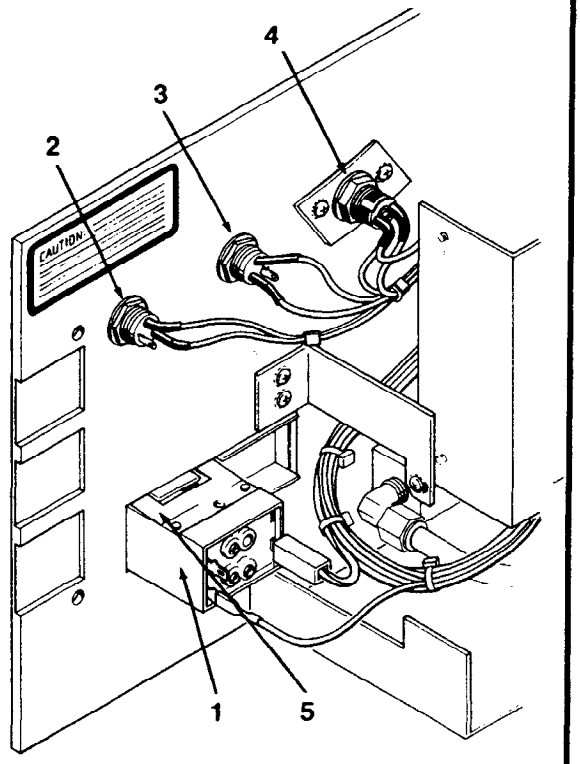
(See Figure 4-3):

1. Remove lamp housing from socket by pulling the tab forward and then gently prying the lamp housing out of its socket. Carefully note orientation of lamp housing in socket. Attempts to install the lamp housing upside down will damage the components.

2. Slide the red lens cap off of lens.

3. Slide the legend out from behind lens.

4. Reverse the above procedure to install new component.



1. Lamp Socket
2. TEST CIRCUIT Switch
3. SILENCE AUDIO Switch
4. NORMAL Light Socket
5. Metal Retainer Clips

Figure 4-2
"A" Module

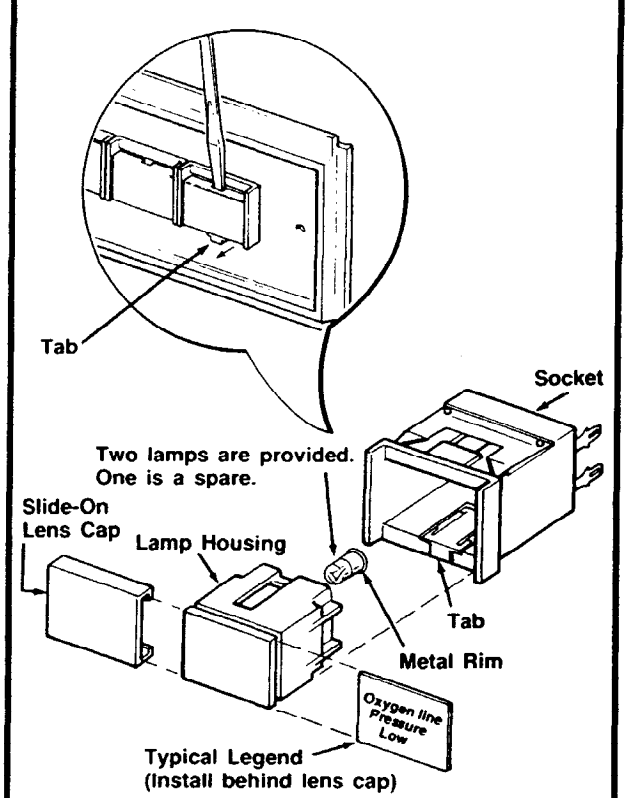


Figure 4-3
ABNORMAL Legend Replacement

4/Repair Procedures

D. Circuit Board Replacement

(See Figure 4-4):

1. Remove the "A" module completely from the rough-in box (Section A).

2. To replace the control board, unplug the old board and plug in the new board.

3. To replace the power supply board:
   a. Remove the Phillips screw and spacers at the lower right corner of the guard bracket.

   b. Unplug the old circuit board and plug in the new board.

   c. Replace the Phillips screw and spacers.

E. Gas Inlet Hose Replacement

(See Figure 4-4):

1. Remove module from the rough-in box (See Section A).

2. Use a 7/16 in. open end wrench to loosen nut which threads into elbow.

NOTE: Apply Teflon® tape around all pipe threads during reassembly. Wrap tape as shown in Figure 4-5.

3. If alarm module is equipped with a copper tube assembly, then follow steps 4-7.

If alarm module is equipped with a flexible braided tube assembly, then:
   a. Remove old tube assembly from the 90° pipe elbow and discard.
   b. Install new flexible braided tube into 90° pipe elbow.
   c. Disregard steps 4-7.

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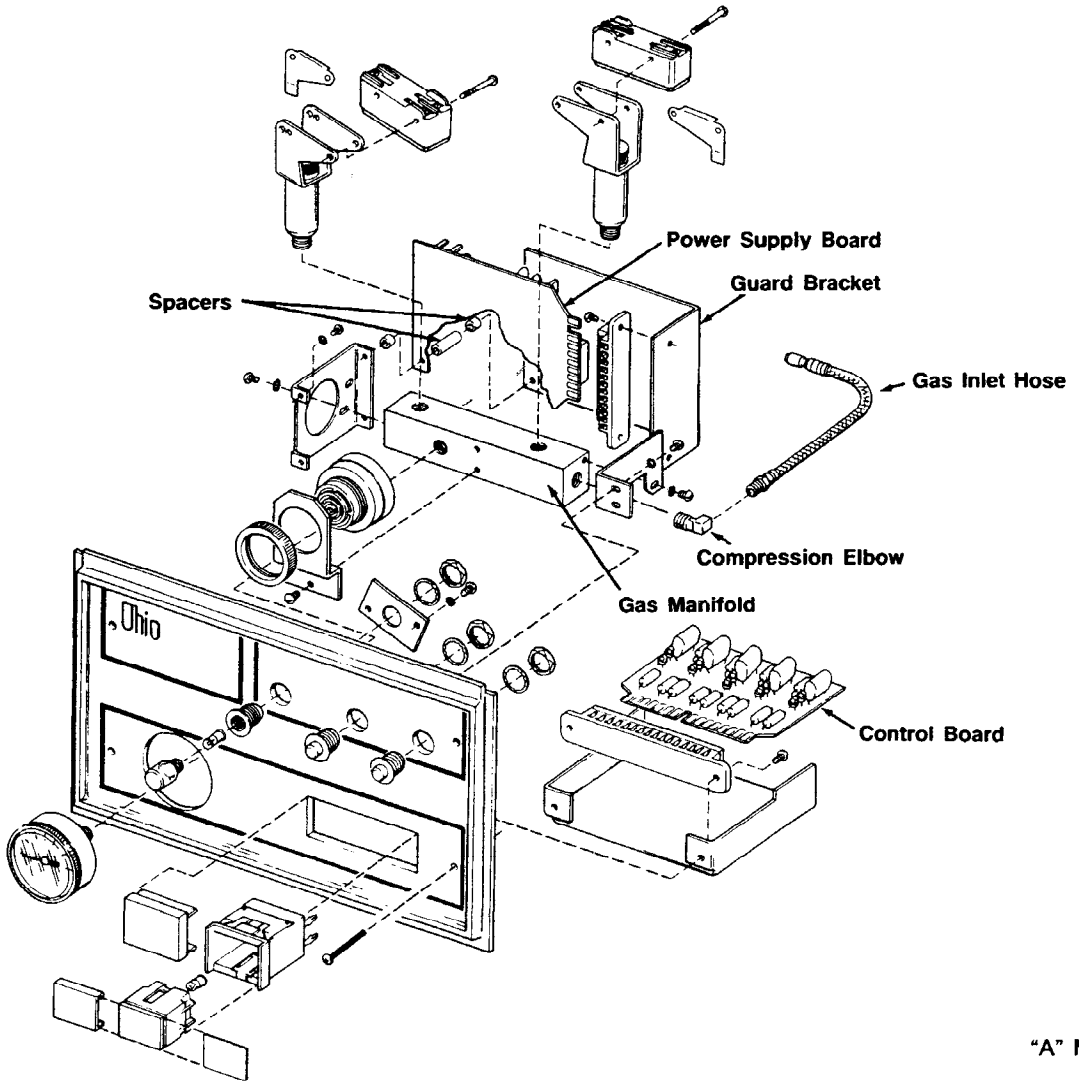


Figure 4-4
"A" Module (O_2)

4/Repair Procedures

1. Wrap tape clockwise, starting one thread up, as viewed from end of male fitting.
2. Apply enough pressure so tape just starts to follow contours of threads.
3. Wrap tape two layers thick.

NOTE: Apply Teflon® tape around all pipe threads during reassembly. Wrap tape as shown in Figure 4-5.

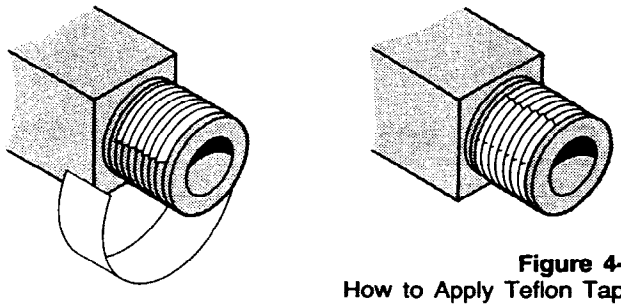


Figure 4-5
How to Apply Teflon Tape

4. Use a small crescent wrench to remove the compression elbow from the gas manifold.

5. Discard compression elbow and old hose.

6. Use a gas inlet hose kit (Part No. 0221-6838-811). The kit includes a pipe elbow and a flexible gas inlet hose with a quick disconnect fitting.

7. Thread the new pipe elbow into the manifold. Tighten with a crescent wrench, being careful not to damage the threads.

F. Alarm Horn Replacement:

1. Remove the "A" module completely from the rough-in box (See Section A).

2. Remove the four screws which hold the power supply board's guard bracket in place (See Figure 4-4).

3. Use a slotted screwdriver to disconnect the electrical connections to the alarm horn (white/violet wire to (+) terminal, violet wire to (-) terminal).

4. To remove alarm horn from the bracket, hold the ring in place and turn the body of the alarm horn counterclockwise (CCW) (See Figure 4-6).

5. Reverse the above procedure to replace the alarm horn.

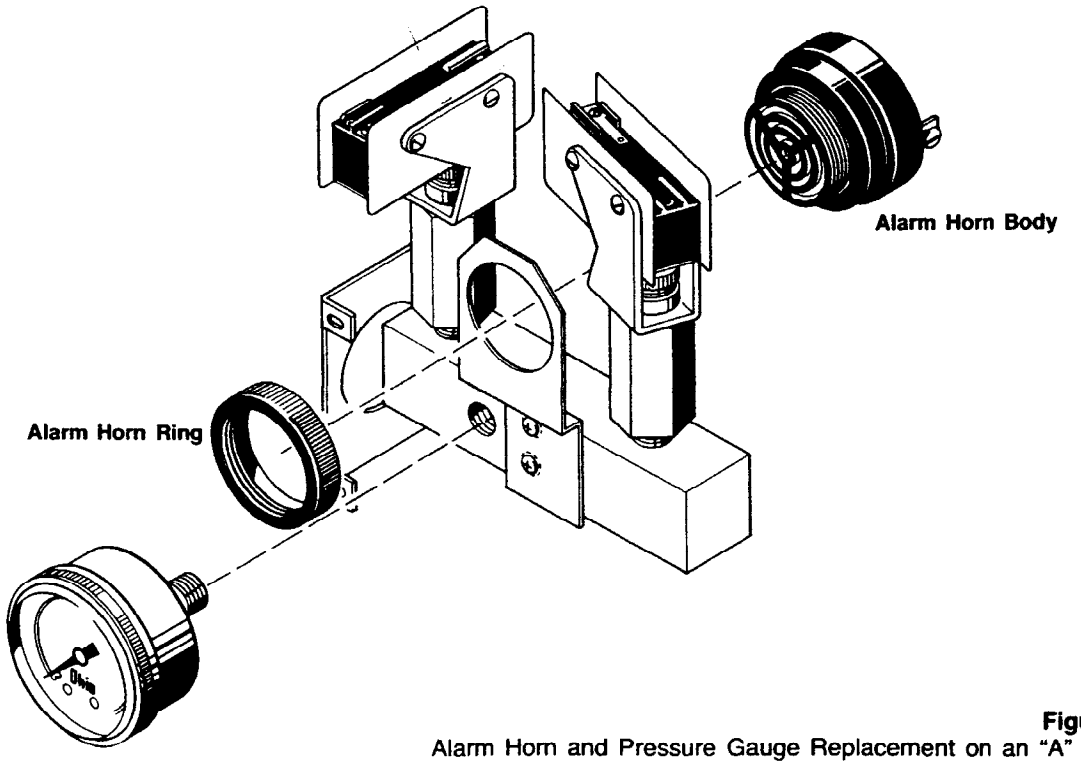


Figure 4-6
Alarm Horn and Pressure Gauge Replacement on an "A" Module

4/Repair Procedures

G. Pressure Switch Replacement in an "A" Module

(See Figure 4-7 and 4-8):

1. Remove the "A" module completely from the rough-in box (Section A).

2. Remove the screws which hold the power supply board's guard bracket in place (See Figure 4-4).

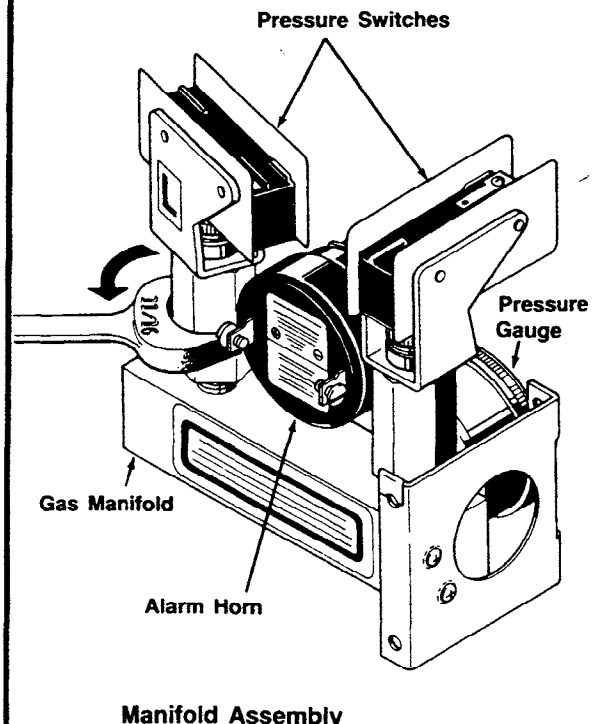
3. Use a slotted screwdriver to disconnect the electrical connections to the alarm horn (white/violet wire to (+) terminal, violet wire to (-) terminal).

4. To expose the pressure switches, rotate the bracket with the power supply board out of the way.

5. Label the wires. Remove the terminal strip from the pressure switch with a small slotted screwdriver (See Figure 4-8).

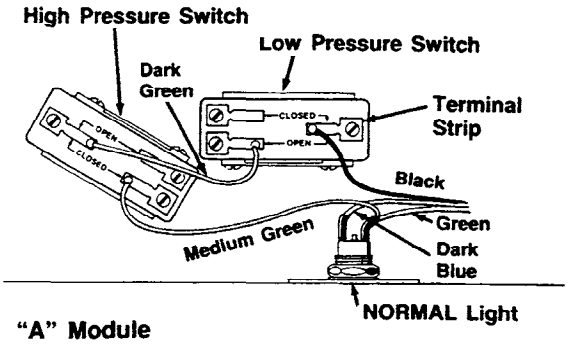
6. Use an 11/16 in. wrench to turn the pressure switch counterclockwise (CCW) to remove it from the manifold (See Figure 4-7). Never turn it by grasping the switch bracket.

7. Reverse the above procedure to replace the pressure switch. Use Teflon tape to seal the connection between the pressure switch and manifold. Be sure all connections are gastight.

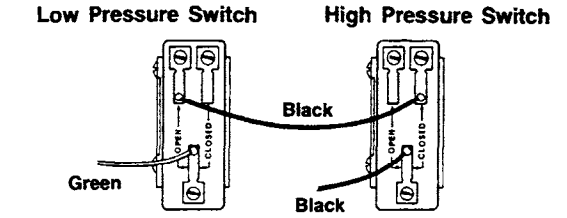


Manifold Assembly

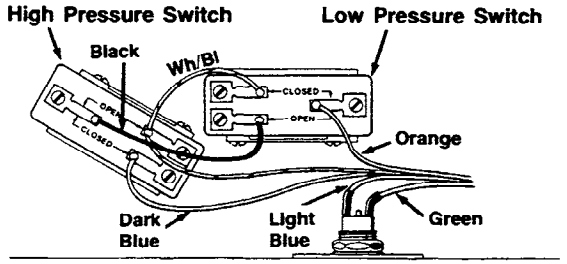
Figure 4-7
Removing Pressure Switch from "A" Module



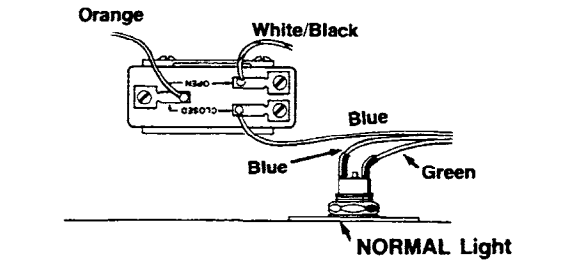
"A" Module



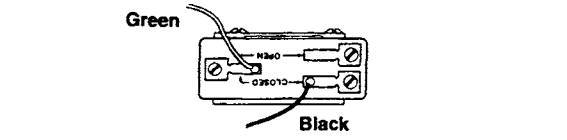
Add-On Module



Single Module



Single Module (Vac & Evac)



Add-On Module (Vac & Evac)

Figure 4-8
Pressure Switch-Wiring
(Top View)

4/Repair Procedures

H. Pressure Gauge Replacement in an "A" Module

(See Figure 4-6):

1. Remove the "A" module completely from the rough-in box (See Section A).

2. Remove the screws which hold the power supply board's guard bracket in place (See Figure 4-4).

3. Use a slotted screwdriver to disconnect the electrical connections to the alarm horn (white/violet wire to (+) terminal, violet wire to (-) terminal).

4. Remove the two screws which fasten the manifold bracket to the cover plate.

5. Being careful not to strain any wires, rotate the manifold assembly around to expose the pressure gauge. Use a 7/16 in. wrench to remove the pressure gauge from the manifold (See Figure 4-6).

6. Reverse the above procedure to replace the pressure gauge. Use Teflon tape to seal the connection between the pressure gauge and the manifold. Be sure connections are gastight.

I. Pressure Switch Replacement in an "Add-On Module"

(See Figures 4-8 and 4-9).

1. Remove module completely from the rough-in box (See Section A).

2. Label wires. Remove terminals from pressure switch with a narrow blade screwdriver (See Figure 4-8)

3. Use an 11/16 in. wrench to turn the pressure switch counterclockwise (CCW) to remove it from the tee (See Figure 4-9).

4. Reverse the above procedure to replace the pressure switch. Use Teflon tape to seal the connection between the pressure switch and the tee. Be sure all connections are gastight.

J. Pressure Gauge Replacement in an "Add-On" Module

(See Figure 4-9).

1. Remove the module completely from the rough-in box (See Section A).

2. Remove the four screws which fasten the manifold mounting bracket to the cover plate.

3. Being careful not to strain any wires, rotate the manifold assembly around to expose the pressure gauge.

4. Use a 7/16 in. wrench to remove the pressure gauge from the manifold.

5. Reverse the above procedure to replace the pressure gauge. Use Teflon tape to seal the connection between the pressure gauge and manifold. Be sure connections are gastight.

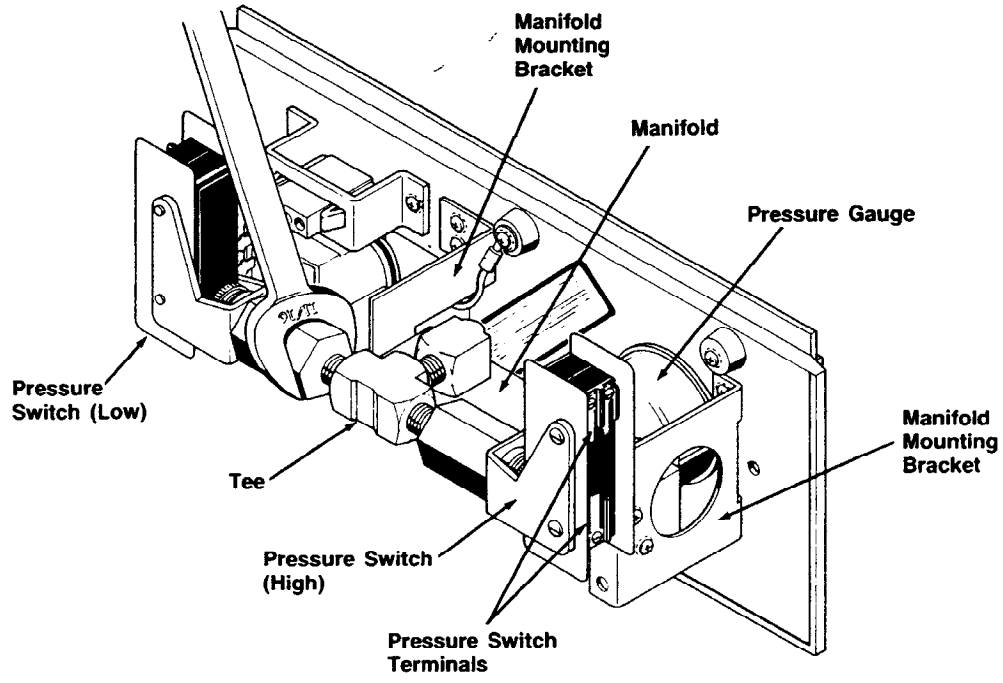


Figure 4-9
Removing Pressure Switch from Add-On Module

4/Repair Procedures

K. Vacuum Switch Replacement

(See Figure 4-10):

1. Remove the module completely from the rough-in box (See Section A).

2. Label the wires. Remove the terminal strips from the switch with a narrow slotted screwdriver (See Figure 4-8).

3. Use a 3/4 in. wrench to turn the vacuum switch counterclockwise (CCW) to remove from the ell (See Figure 4-10).

4. Reverse the above procedure to replace the vacuum switch. Use Teflon tape to seal the connection between the vacuum switch and ell. Be sure all connections are gastight.

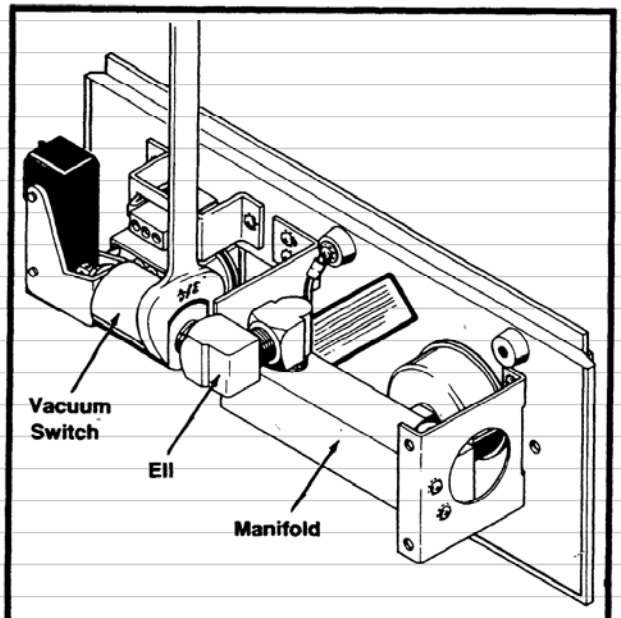


Figure 4-10
Vacuum Switch Replacement

L. Replacement of female Mate-N-Lok Connectors

(See Figure 4-11)

1. Label each wire according to location in the Mate-N-Lok connector.

2. Push forward on the wire.

3. Use a pin extractor tool (AMP no. 4656441-1; Ohmeda Part No. 0175-2351-000).

Slide the tool into the female Mate-N-Lok connector so that the tip is on the opposite side of the pin's seam.

4. While pressing-in the metal retainer clip, use the other hand to pull the wire out of the Mate-N-Lok connector.

5. Repeat the above procedure to remove each wire.

6. Examine each female pin. Replace if necessary.

7. Determine the correct socket for each wire and slide the wires in from the back side of the Mate-N-Lok connector until you hear the metal retainer clip snap into place. Pull back on each wire to make sure that the retainer clip is in place. Repeat this step until all wires are replaced.

M. Replacement of male Mate-N-Lok Connectors

(See Figure 4-11)

1. Label each wire according to location in the Mate-N-Lok connector.

2. Push forward on the wire.

3. Use a long needle-nose pliers to compress the metal retainer clip.

4. While compressing the metal retainer clip, use the other hand to pull the wire out of the Mate-N-Lok housing.

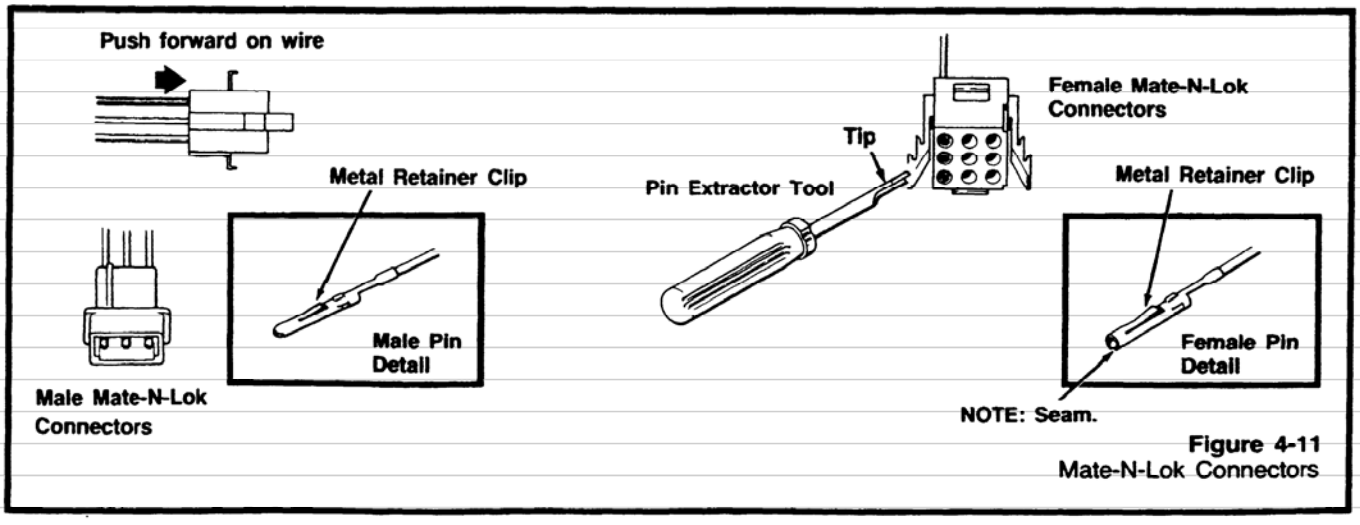


Figure 4-11
Mate-N-Lok Connectors

4/Repair Procedures

5. Repeat the above procedure to remove each wire.

6. Examine each male pin. Replace if necessary.

7. Determine the correct socket for each wire. Then slide the wires in from the back side of Mate-N-Lok housing until you hear the metal retainer clip snap into place. Pull back on the wire to make sure the retainer clip is in place. Repeat this step until all wires are replaced.

4.2 Rough-In Box

A. Socket Coupling Replacement

(See Figure 4-12):

1. Remove the modules completely from the rough-in box (See Section 4.1.A).

2. Use a 9/16 in. wrench to remove the coupling.

3. Apply Teflon tape around the threads and then thread new socket coupling into the bushing.

4. Make sure all connections are gastight.

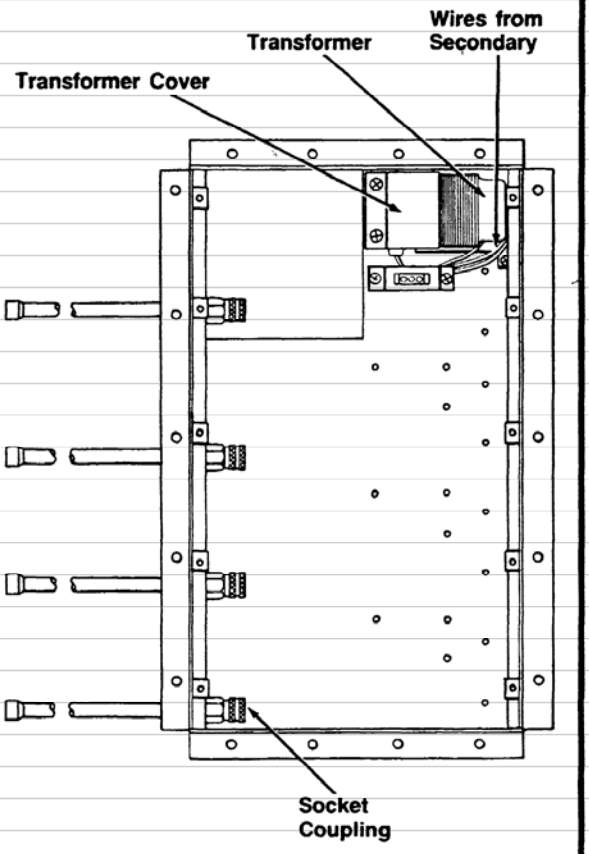


Figure 4-12
Rough-In Box for Quadruple Alarm Module

B. Transformer Replacement

(See Figure 4-12):

1. Remove modules completely from the rough-in box (See Section 4.1.A).

WARNING: ELECTRIC SHOCK HAZARD. Be absolutely sure that the supply voltage is off before replacing the transformer.

2. Remove the transformer cover.

3. Disconnect the transformer primary from the supply voltage.

4. Remove the screws which fasten the transformer to the rough-in box and mounting bracket.

5. Disconnect the wires from the transformer secondary.

6. Reverse the above procedure to replace transformer.

4.3 Auxiliary Alarm

A. Module Replacement

(See Figure 4-14)

1. Remove the cover plate screws.

2. Pull out the alarm panel and disconnect the Mate-N-Lok connector.

3. Reverse the above procedure to replace the module.

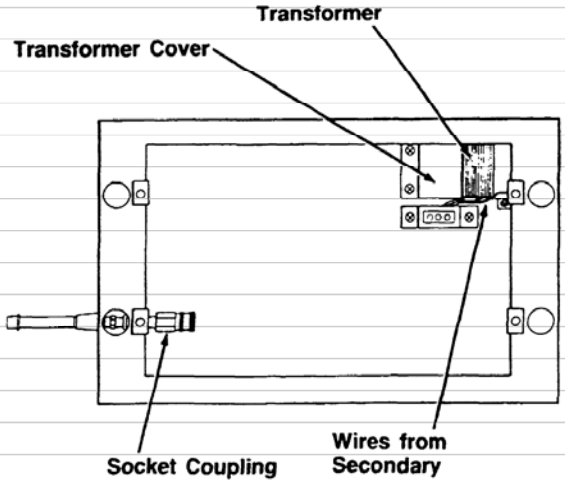


Figure 4-13
Rough-In Box for Exposed Single Module Alarm

B. Terminal Strip Replacement

(See Figure 4-15)

1. Remove the module from the rough-in box (See Section 4.3.A).
2. Detach the terminal strip from the rough-in box by removing the two Phillips mounting screws.
3. Label the wires. Use a narrow slotted screwdriver to loosen the set screws.
4. Pull the wires out of the terminal strip.
5. Reverse the above procedure to replace the terminal strip.

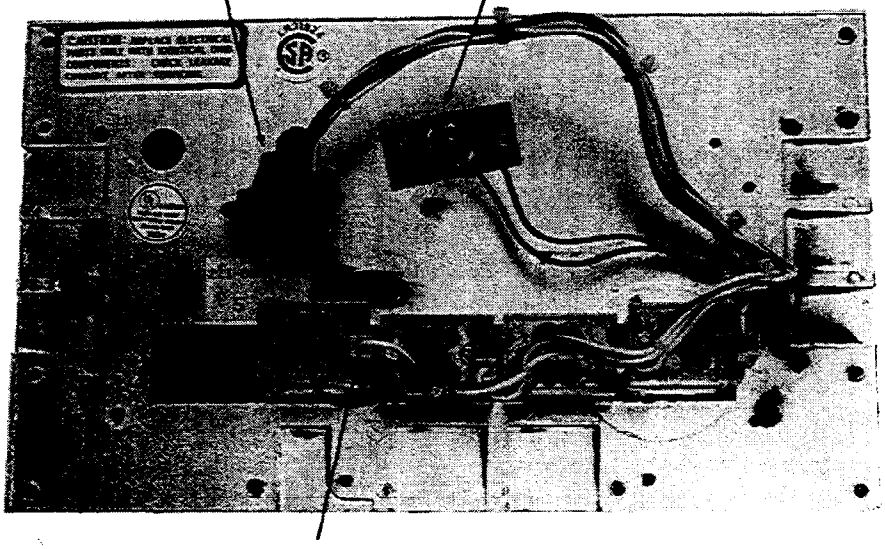


Figure 4-14
Auxiliary Alarm (Rear View)

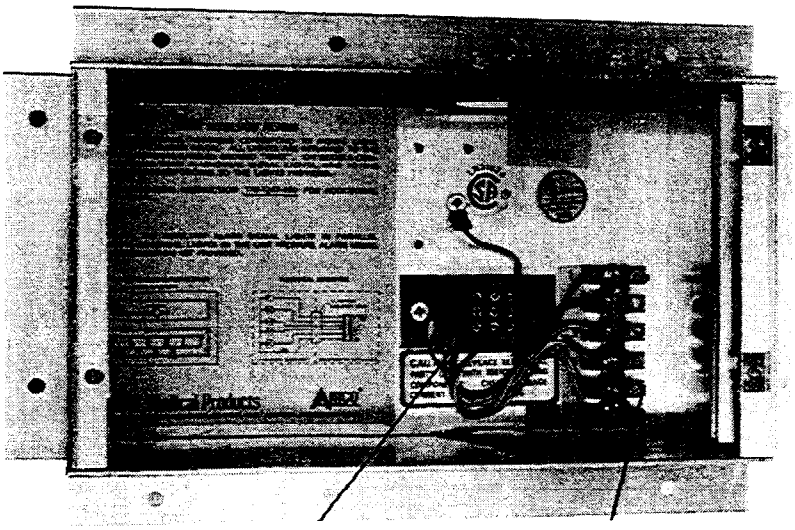
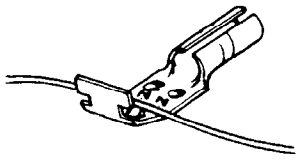


Figure 4-15
Rough-In Box for Auxiliary Alarm

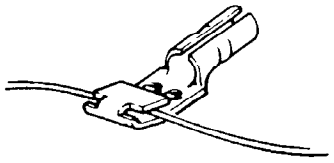
4/Repair Procedures

C. Replacement of Tee-Tap Connectors (Stock No. 0208-0189-300)

(See Figure 4-16):



1. Hold the connector so that the wire rests on the insulation piercing serrations. Squeeze the connector with pliers.



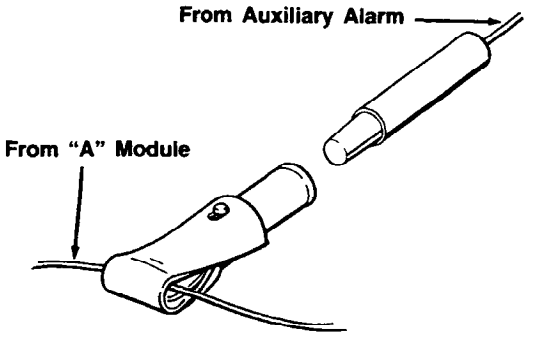
2. Be sure that the serrations have pierced the insulation giving a good electrical connection.

Attach connectors to the following wires on the "A" module:
Blue wire from the NORMAL light.
White/black wire from the LINE PRESSURE ABNORMAL light.
Green wire from the wire harness.

For Double, Triple and Quadruple Alarms only:
White/red wire from the wire harness.

For Triple and Quadruple Alarms only:
White/gray wire from the wire harness.

For Quadruple Alarms only:
White/brown wire from the wire harness.



3. Attach the insulating boot by sliding it over the barrel of the connector; wrap the remainder of the boot around the terminal and wire. Lock the tab as shown.

Plug each auxiliary alarm wire into its appropriate connector.

Figure 4-16
T-tap (female) Connector Installation

5/Illustrated Parts

Table 5-1
Line Pressure Alarm Component Reference Chart

Domestic Models, 120V

Alarm Panel Stock Number	Gas Services	Roughing-In Assembly Used						Finishing Assemblies Use								Legend Plug Used						
		0221-6860-800 Exposed Single Module	0221-6860-801 Recessed Single Module	0221-6860-802 Recessed Double Module	0221-6860-803 Recessed Triple Module	0221-6860-804 Recessed Quadruple Module		0221-6890-800 Single Module (50 psi)	0221-6890-801 Single Module (Nitrogen)	0221-6890-802 Single Module (Vacuum & Evac)	0221-6885-800 Modular Alarm (Oxygen)	0221-6885-801 Modular Alarm (N_2O)	0221-6895-800 Add-On Module (50 psi)	0221-6895-801 Add-On Module (Nitrogen)	0221-6895-802 Add-On Module (Vac & Evac)	0203-0149-100 Legend Plug (Evac)	0203-0150-100 Legend Plug (Oxygen)	0203-0151-100 Legend Plug (Nitrous Oxide)	0203-0152-100 Legend Plug (Vac)	0203-0153-100 Legend Plug (Air)	0203-0154-100 Legend Plug (N_2)	0203-0155-100 Legend Plug (CO_2)
Single Module-Recessed																						
0321-7660-980	O_2		1				1										1					
0321-7660-981	N_2O		1				1											1				
0321-7660-982	Vac		1							1									1			
0321-7660-983	Air		1				1													1		
0321-7660-984	CO_2		1				1															1
0321-7660-985	N_2		1					1													1	
0321-7660-986	Evac		1							1						1						
Single Module-Exposed																						
0321-7662-980	O_2	1					1										1					
0321-7662-981	N_2O	1					1											1				
0321-7662-982	Vac	1								1									1			
0321-7662-983	Air	1					1													1		
0321-7662-984	CO_2	1					1															1
0321-7662-985	N_2	1						1													1	
0321-7662-986	Evac	1								1						1						
Double Module-Recessed																						
0321-7665-980	O_2-N_2O			1							1		1					1				
0321-7665-981	O_2-Vac			1							1				1				1			
0321-7665-982	O_2-Air			1							1		1							1		
0321-7665-983	O_2-CO_2			1							1		1									1
0321-7665-984	O_2-N_2			1							1			1							1	
0321-7665-985	O_2-Evac			1							1				1	1						
0321-7665-986	N_2O-Evac			1								1			1	1						

5/Illustrated Parts

Table 5-2
Line Pressure Alarm Component Reference Chart

Domestic Models, 120V

Alarm Panel Stock Number — Gas Services	Roughing-In Assembly Used						Finishing Assemblies Use								Legend Plug Used						
	0221-6860-800 Exposed Single Module	0221-6860-801 Recessed Single Module	0221-6860-802 Recessed Double Module	0221-6860-803 Recessed Triple Module	0221-6860-804 Recessed Quadruple Module		0221-6890-800 Single Module (50 psi)	0221-6890-801 Single Module (Nitrogen)	0221-6890-802 Single Module (Vacuum & Evac)	0221-6885-800 Modular Alarm (O_2)	0221-6885-801 Modular Alarm (N_2O)	0221-6895-800 Add-On Module (50 psi)	0221-6895-801 Add-On Module (Nitrogen)	0221-6895-802 Add-On Module (Vac & Evac)	0203-0149-100 Legend Plug (Evac)	0203-0150-100 Legend Plug (Oxygen)	0203-0151-100 Legend Plug (Nitrous Oxide)	0203-0152-100 Legend Plug (Vac)	0203-0153-100 Legend Plug (Air)	0203-0154-100 Legend Plug (N_2)	0203-0155-100 Legend Plug (CO_2)
Triple Module-Recessed																					
0321-7670-980 O_2-N_2O-Vac				1						1		1		1			1	1			
0321-7670-981 O_2-N_2O-Air				1						1		2					1		1		
0321-7670-982 O_2-N_2O-CO_2				1						1		2					1				1
0321-7670-983 O_2-N_2O-N_2				1						1		1	1				1			1	
0321-7670-984 O_2-Vac-Air				1						1		1		1				1	1		
0321-7670-985 O_2-Vac-CO_2				1						1		1						1		1	1
0321-7670-986 O_2-Vac-N_2				1						1			1	1				1		1	
0321-7670-987 O_2-Air-CO_2				1						1		2							1		1
0321-7670-988 O_2-Air-N_2				1						1		1	1						1	1	
0321-7670-989 O_2-CO_2-N_2				1						1		1	1							1	1
0321-7671-980 O_2-Evac-Vac				1						1				2	1			1			
0321-7671-981 N_2O-Evac-N_2				1							1		1	1	1					1	
Quadruple Module-Recessed																					
0321-7675-980 O_2-N_2O-Vac-Air					1					1		2		1			1	1	1		
0321-7675-981 O_2-N_2O-Vac-CO_2					1					1		2		1			1	1			1
0321-7675-982 O_2-N_2O-Vac-N_2					1					1		1	1	1			1	1		1	
0321-7675-983 O_2-N_2O-Air-CO_2					1					1		3					1		1		1
0321-7675-984 O_2-N_2O-Air-N_2					1					1		2	1				1		1	1	
0321-7675-985 O_2-N_2O-CO_2-N_2					1					1		2	1				1			1	1
0321-7675-986 O_2-Vac-Air-CO_2					1					1		2		1				1	1		1
0321-7675-987 O_2-Vac-Air-N_2					1					1		1	1	1				1	1	1	
0321-7675-988 O_2-Vac-CO_2-N_2					1					1		1	1	1				1		1	1
0321-7675-989 O_2-Air-CO_2-N_2					1					1		2	1						1	1	1
0321-7676-980 O_2-Air-Evac-Vac					1					1		1		2	1				1		

5/Illustrated Parts

Table 5-3
Line Pressure Alarm Component Reference Chart

Export Models, 220V

Alarm Panel Stock Number	Gas Services	Roughing-In Assembly Used					Finishing Assemblies Use							Legend Plug Used						
		0221-6860-800 Exposed Single Module	0221-6860-801 Recessed Single Module	0221-6860-802 Recessed Double Module	0221-6860-803 Recessed Triple Module	0221-6860-804 Recessed Quadruple Module	0221-6891-800 Single Module (50 psi)	0221-6891-801 Single Module (Nitrogen)	0221-6891-802 Single Module (Vac & Evac)	0221-6886-800 "A" Module	0221-6895-800 Add-On Module (50 psi)	0221-6895-801 Add-On Module (Nitrogen)	0221-6895-802 Add-On Module (Vac & Evac)	0203-0149-100 Legend Plug (Evac)	0203-0150-100 Legend Plug (Oxygen)	0203-0151-100 Legend Plug (Nitrous Oxide)	0203-0152-100 Legend Plug (Vac)	0203-0153-100 Legend Plug (Air)	0203-0154-100 Legend Plug (N_2)	0203-0155-100 Legend Plug (CO_2)
Single Module-Recessed																				
0321-7661-910	O_2		1				1								1					
0321-7661-911	N_2O		1				1									1				
0321-7661-912	Vac		1						1								1			
0321-7661-913	Air		1				1											1		
0321-7661-914	CO_2		1				1													1
0321-7661-915	N_2		1					1											1	
0321-7661-916	Evac		1						1					1						
Single Module-Exposed																				
0321-7663-910	O_2	1					1								1					
0321-7663-911	N_2O	1					1									1				
0321-7663-912	Vac	1							1								1			
0321-7663-913	Air	1					1											1		
0321-7663-914	CO_2	1					1													1
0321-7663-915	N_2	1						1											1	
0321-7663-916	Evac	1							1					1						
Double Module-Recessed																				
0321-7666-910	O_2-N_2O			1						1	1					1				
0321-7666-911	O_2-Vac			1						1			1				1			
0321-7666-912	O_2-Air			1						1	1							1		
0321-7666-913	CO_2-Air			1						1	1							1		1
0321-7666-914	CO_2-N_2			1						1		1							1	1
0321-7666-915	Air-N_2			1						1		1						1	1	

5/Illustrated Parts

Table 5-4
Line Pressure Alarm Component Reference Chart

Export Models, 220V

Alarm Panel Stock Number / Gas Services	Roughing-In Assembly Used					Finishing Assemblies Use							Legend Plug Used						
	0221-6860-800 Exposed Single Module	0221-6860-801 Recessed Single Module	0221-6860-802 Recessed Double Module	0221-6860-803 Recessed Triple Module	0221-6860-804 Recessed Quadruple Module	0221-6891-800 Single Module (50 psi)	0221-6891-801 Single Module (Nitrogen)	0221-6891-802 Single Module (Vac & Evac)	0221-6886-800 "A" Module	0221-6895-800 Add-On Module (50 psi)	0221-6895-801 Add-On Module (Nitrogen)	0221-6895-802 Add-On Module (Vac & Evac)	0203-0149-100 Legend Plug (Evac)	0203-0150-100 Legend Plug (Oxygen)	0203-0151-100 Legend Plug (Nitrous Oxide)	0203-0152-100 Legend Plug (Vac)	0203-0153-100 Legend Plug (Air)	0203-0154-100 Legend Plug (N_2)	0203-0155-100 Legend Plug (CO_2)
Triple Module-Recessed																			
0321-7672-910 O_2-N_2O-Vac			1						1	1		1			1	1			
0321-7672-911 O_2-N_2O-Air			1						1	2					1		1		
0321-7672-912 O_2-N_2O-Evac			1						1	1		1	1		1				
0321-7672-913 CO_2-N_2-Evac			1							1		1	1	1				1	1
0321-7672-914 O_2-Vac-Air			1						1	1		1				1	1		
0321-7672-915 O_2-Vac-N_2			1						1		1	1				1		1	
Quadruple Module-Recessed																			
0321-7677-910 O_2-N_2O-Vac-Air				1					1	2		1			1	1	1		
0321-7677-911 O_2-N_2O-Vac-Evac				1					1	1		2	1		1	1			
0321-7677-912 O_2-N_2O-Vac-N_2				1					1	1	1	1			1	1		1	
0321-7677-913 O_2-N_2O-Vac-CO_2				1					1	2		1			1	1			1
0321-7677-914 O_2-N_2O-Air-N_2				1					1	2	1				1		1	1	
0321-7677-915 O_2-Vac-Air-N_2				1					1	1	1	1				1	1	1	

Table 5-5
Auxiliary Line Pressure Alarms

NOTE: Only one auxiliary alarm can be used with each Line Pressure Alarm.

For Recessed Mounting	Stock Number
1 Light	0321-7652-980
2 Light	0321-7652-981
3 Light	0321-7652-982
4 Light	0321-7652-983

For Surface Mounting	Stock Number
1 Light	0321-7650-980
2 Light	0321-7650-981
3 Light	0321-7650-982
4 Light	0321-7650-983

Description	Stock No.
1. Screw, 6-32 X 3/16	0140-9124-103
2. Bracket	0214-3851-511
3. Plug, 1/8 NPTM Hex	0213-6035-300
4. Manifold, Line Pressure	0221-6836-500*
5. ELL, 1/4 NPTF 1/8 NPTM	0413-3060-300
6. ELL, 1/4 NPTM to 1/4 NPTF	0213-6132-300
7. Bracket	0214-3854-511
8. Screw, 6-32 X 3/16	0140-9124-103
9. Switch, Vacuum	0208-5130-300
Gas Inlet Hose Kit (includes 10 & 11)	0221-6838-811
10. Flexible Tube Assembly	0211-6479-700
11. Ell, 1/8 NPTM X 1/8 NPTF	0213-6144-300
12. Screw, 6-32 X 3/16	0140-9124-103
13. Harness, wire	0208-6094-700
14. Screw, 6-32 X 3/16	0140-9124-103
15. Bracket, 3 Pin, Mate-N-Lok	0214-3860-511
16. Cover plate, Line Pressure Alarm	0221-6828-300
17. Finish Screw (4), Phillips 6-32 X 1-1/8	0400-1056-300
18. Label, Line Pressure Abnormal	0205-4308-300
19. Lamp Socket, 28V	0208-0585-300
20. Lens, Indicator (red)	0208-0586-300
21. Lamp, 28V	0208-0587-300
22. Plug, Vacuum	0203-0152-100
Plug, Evacuation	0203-0149-100
23. Gauge, Vacuum & Evac	0205-8675-300

NOTE: Part numbers which are followed by an asterisk (*) are not field replaceable. In the event of a malfunction of one of these parts, the entire unit should be returned to Ohmeda for servicing.

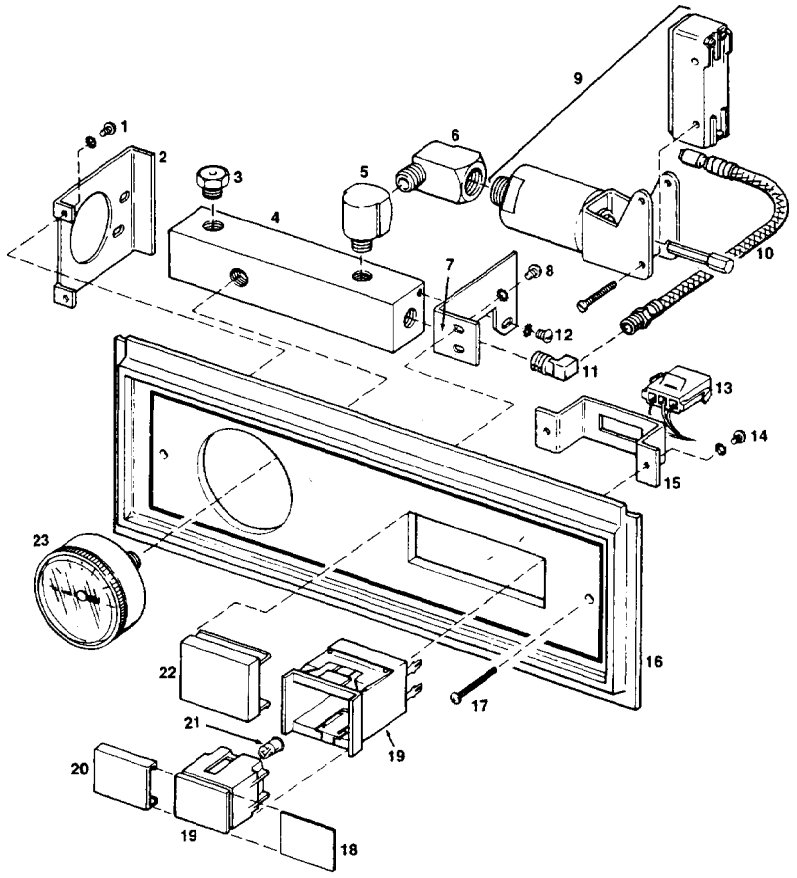


Figure 5-3
Add-On Module
Vacuum and Evacuation
0221-6895-802

5/Illustrated Parts

Description	Stock No.
1. Switch, Pressure O_2, N_2O, Air CO_2 & N_2	0208-5131-300
2. Manifold, Line Pressure	0221-6836-500*
3. ELL, 1/8 NPTM - 1/8 NPTF	0213-4005-300
4. Tee, 1/8 NPTF	0213-6114-300
5. Bracket	0214-3854-511
6. Screw, 6-32 X 3/16	0140-9124-103
Gas Inlet Hose Kit (includes 7 & 8)	0221-6838-810
7. Flexible Tube Assembly	0211-9479-700
8. Ell, 1/8 NPTM X 1/8 NPTF	0213-6144-300
9. Screw, 6-32 X 3/16	0140-9124-103
10. Harness, Wire	0208-6094-700
11. Screw, 6-32 X 3/16	0140-9124-103
12. Bracket, 3 Pin, Mate-N-Lok	0214-3860-511
13. Cover plate, Add-On Module	0221-6828-300
14. Finish Screw (4), Phillips 6-32 X 1-1/8	0400-1056-300
15. Label, Line Pressure Alarm	0205-4306-300
16. Lamp Socket, 28V	0208-0585-300
17. Lens, Indicator (red)	0208-0586-300
18. Lamp, 28V	0208-0587-300
19. Plug, O_2	0203-0150-100
Plug, N_2O	0203-0151-100
Plug, Air	0203-0153-100
Plug, N_2	0203-0154-100
Plug, CO_2	0203-0155-100
20. Gauge, Pressure O_2, N_2O, Air, CO_2	0205-8202-300
Gauge, N_2	0205-8251-300
21. Bracket	0214-3851-511
22. Screw, 6-32 X 3/16	0140-9124-103
23. Plug, 1/8 NPTM Hex	0213-6035-300

NOTE: Part numbers which are followed by an asterisk (*) are not field replaceable. In the event of a malfunction of one of these parts, the entire unit should be returned to Ohmeda for servicing.

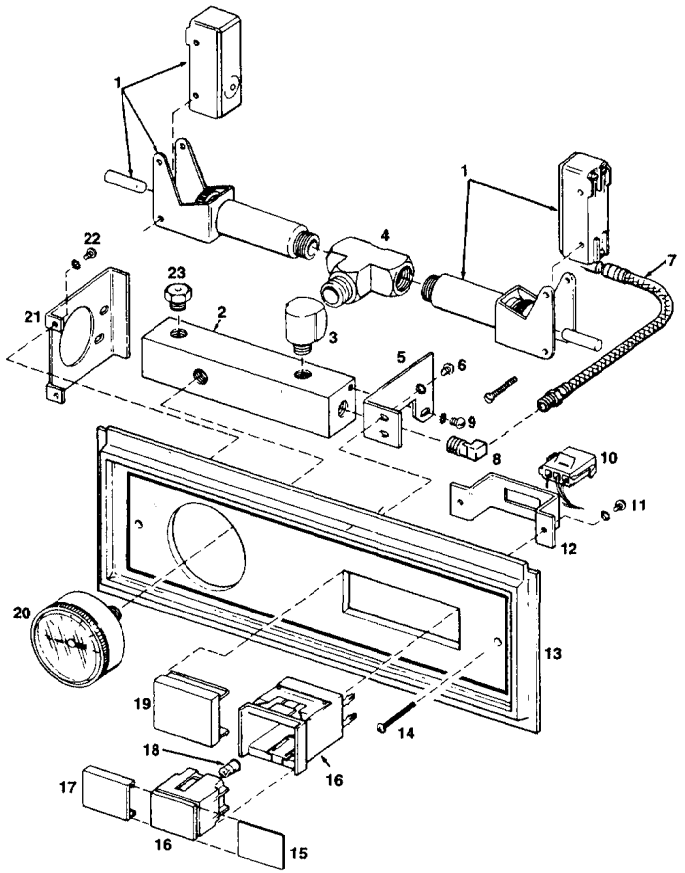


Figure 5-4
Add-On Module for O_2, N_2O, Air, N_2 and CO_2

5/Illustrated Parts

Description	Stock No.
1. Nut, Tinnerman Type U	0402-2004-300
2. Screw, #6 X 5/16	0142-2843-205
3. Guard	0214-3865-511
4. Transformer 120V/28.5V	0208-7513-300
5. Harness, Wire	0208-6092-700
6. Bracket, 3 pin Mate-N-Lok	0214-3860-511
7. Socket, Coupling, 1/8 NPTM	0221-0156-300
8. See Figure 5-7 for exposed model coupling components	

See Figure 5-7 for more detailed illustration of transformer and socket couplings.

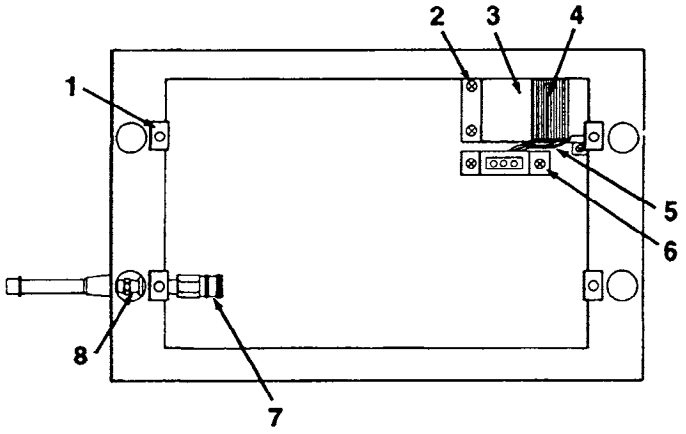
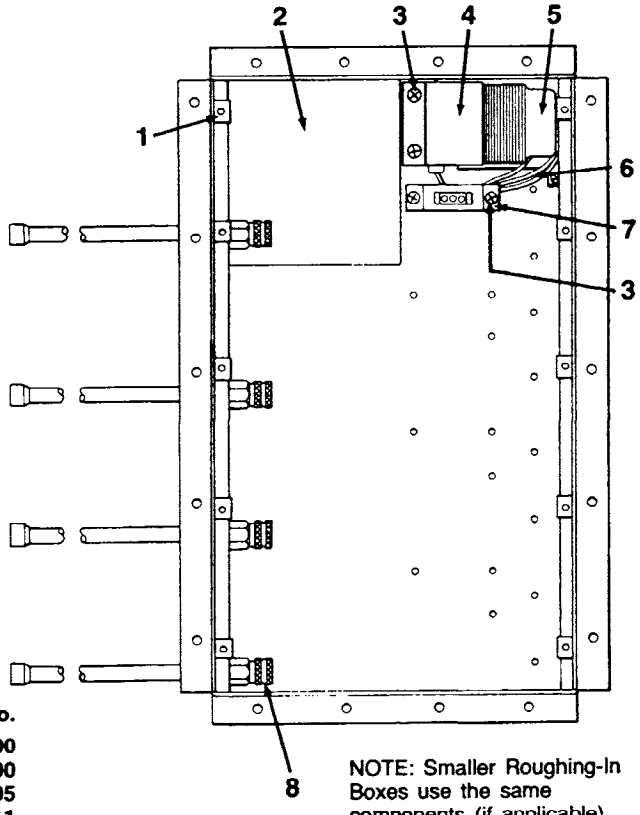


Figure 5-5
Rough-In Box for Single Exposed Module

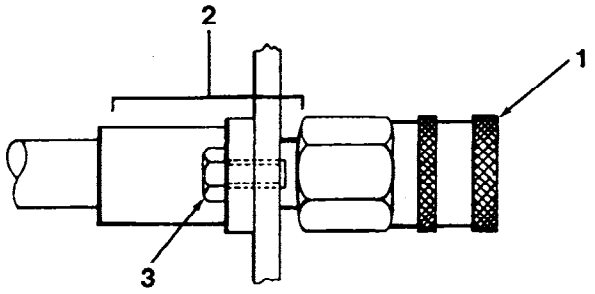
Description	Stock No.
1. Nut, Tinnerman Type U	0402-2013-300
2. Plate, Instruction	0205-4322-300
3. Screw, #6 X 5/16	0142-2843-205
4. Guard	0214-3865-511
5. Transformer 120V/28.5V	0208-7513-~~700~~ 300
6. Harness, Wire	0208-6092-700
7. Bracket, 3 pin Mate-N-Lok	0214-3860-511
8. Socket, Coupling, 1/8 NPTM	0221-0156-300

See Figure 5-7 for more detailed illustration of transformer and socket couplings.

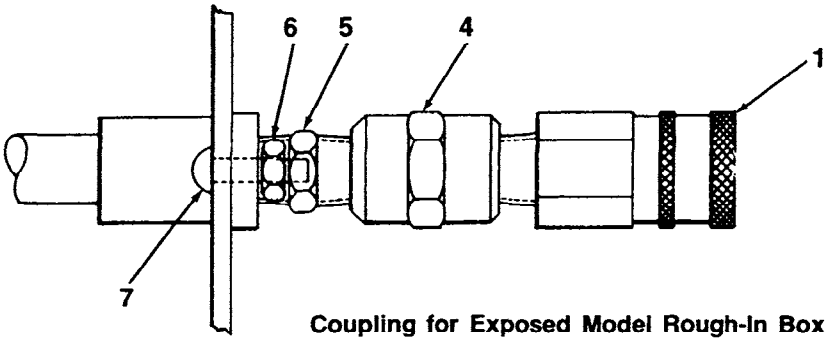


NOTE: Smaller Roughing-In Boxes use the same components (if applicable).

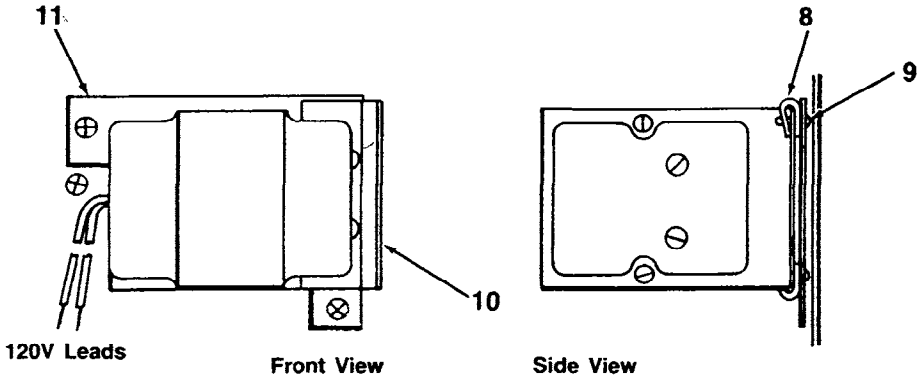
Figure 5-6
Rough-In Box for Quadruple Module



Coupling



Coupling for Exposed Model Rough-In Box

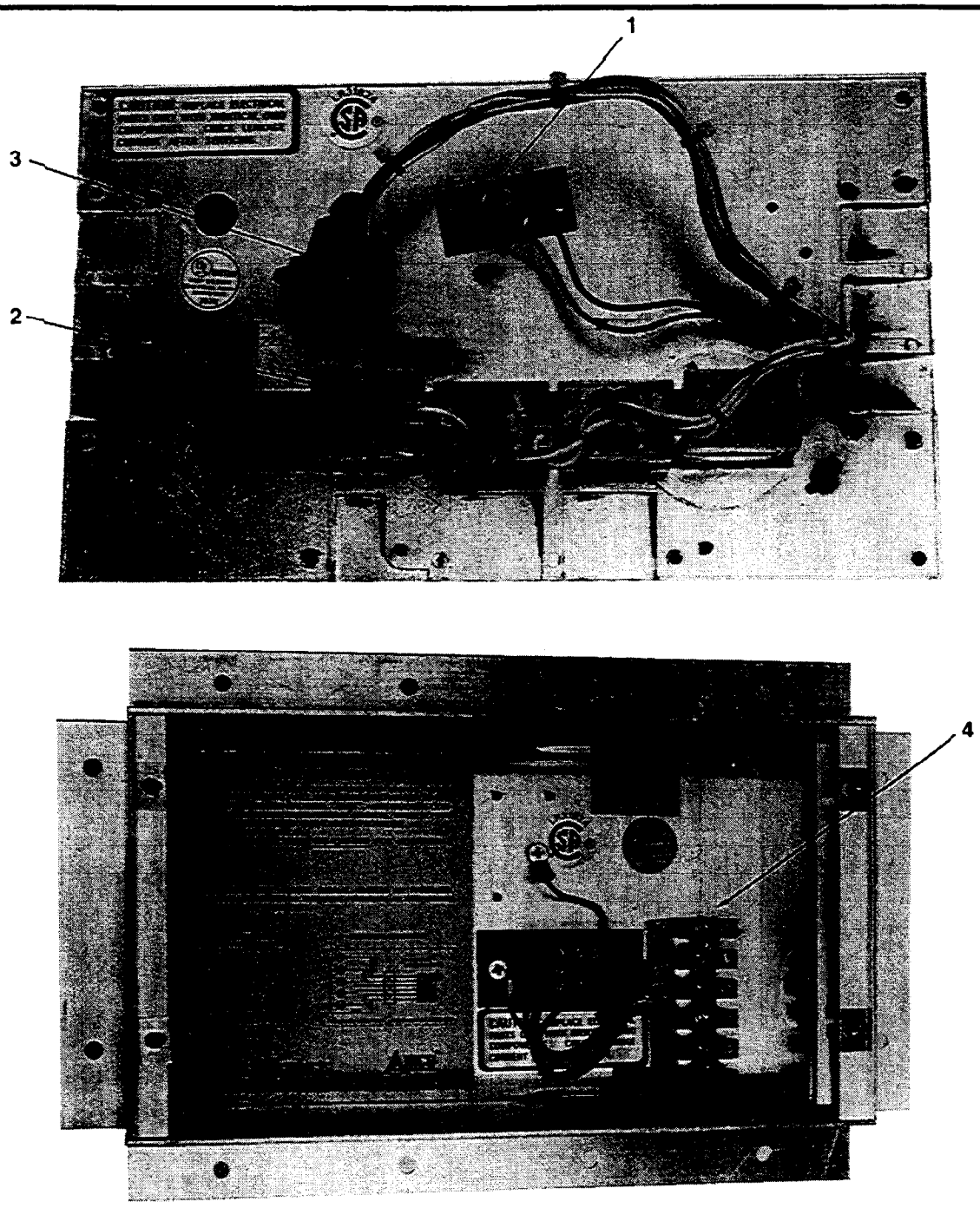


Transformer

Description	Stock No.
1. Socket, Coupling, 1/8 NPTM	0221-0156-300
2. Gas Inlet S.A.	0221-6834-701
3. Screw, #8 X 3/8 (2)	0142-1874-206
4. Coupling 1/8 NPTF 1/8 NPTF	0213-6178-300
5. Nipple, Hex 1/8 NPT	0213-5025-300
6. Nut, Hex 6-32	0144-3124-211
7. Screw, 6-32 X 1/2	0140-6124-108
8. Nut, Tinnerman Speed (2)	0402-2004-300
9. Screw, 6-32 X 1/4 (2)	0140-6624-104
10. Insulator	0210-8074-300
11. Bracket, Transformer	0214-3852-500

Figure 5-7
Transformer and Couplings

5/Illustrated Parts



Description	Stock No.
1. Lamp Housing (round/green)	0208-0584-300*
2. Lamp Socket, 28V	0208-0585-300
Label, Abnormal Legends	0205-4305-300
3. 9-Pin Mate-N-Lok Connector	0208-2037-300
4. Terminal Strip	0208-2110-300

NOTE: Part numbers which are followed by an asterisk (*) are not field replaceable. In the event of a malfunction of one of these parts, the entire unit should be returned to Ohmeda for servicing.

Figure 5-8
Auxiliary Alarm

6/Schematics–Wiring Diagrams

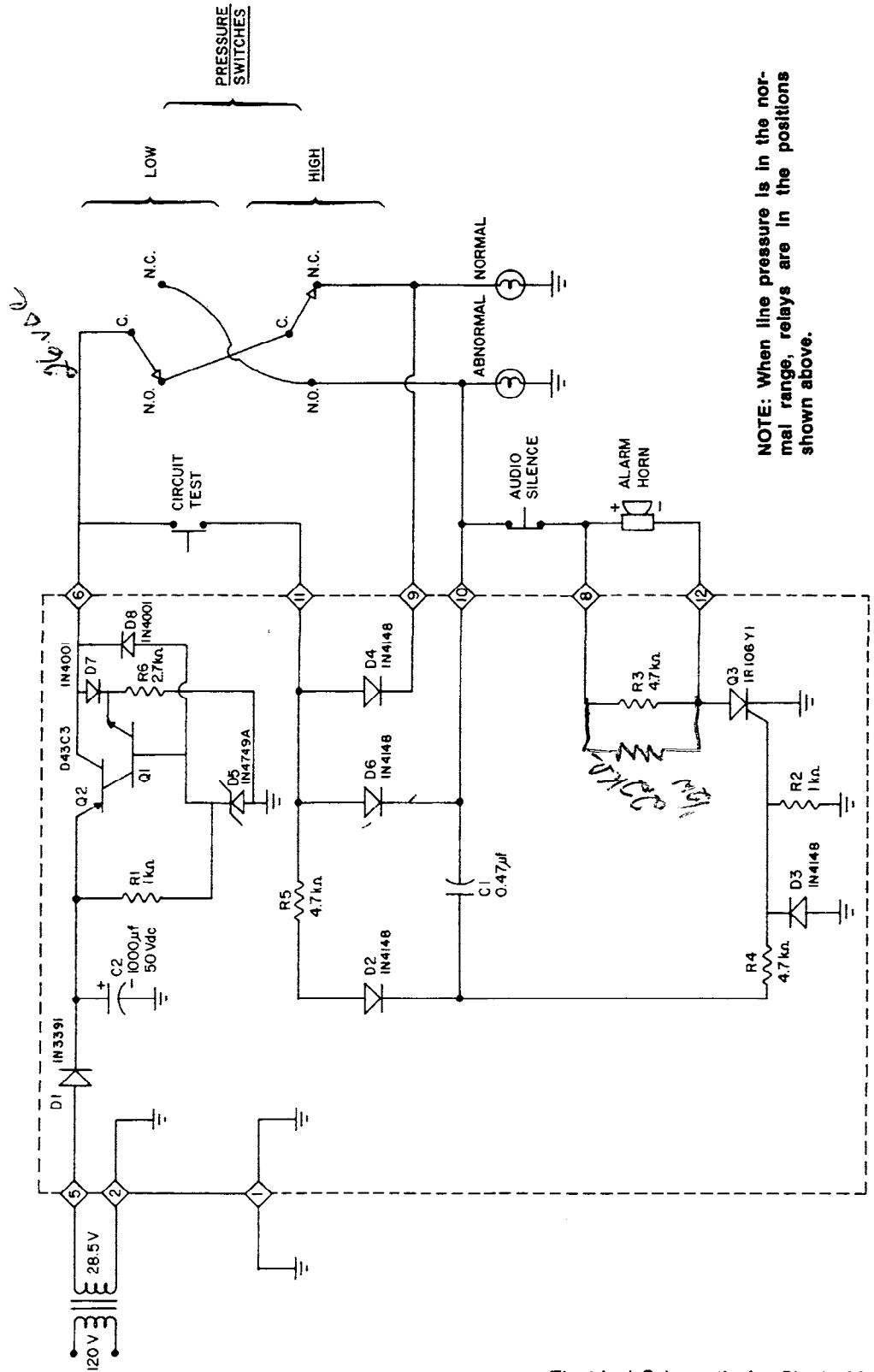


Figure 6-1
Electrical Schematic for Single Module Alarm

6/Schematics–Wiring Diagrams

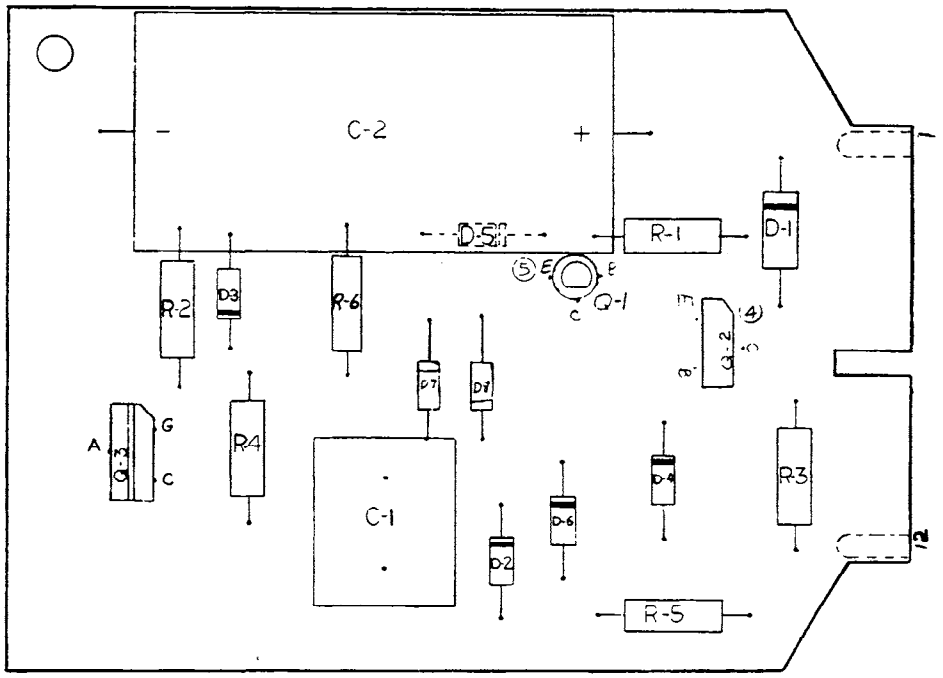


Figure 6-2
Circuit Board for Single Module Alarm
(Stock No. 0208-6077-300)

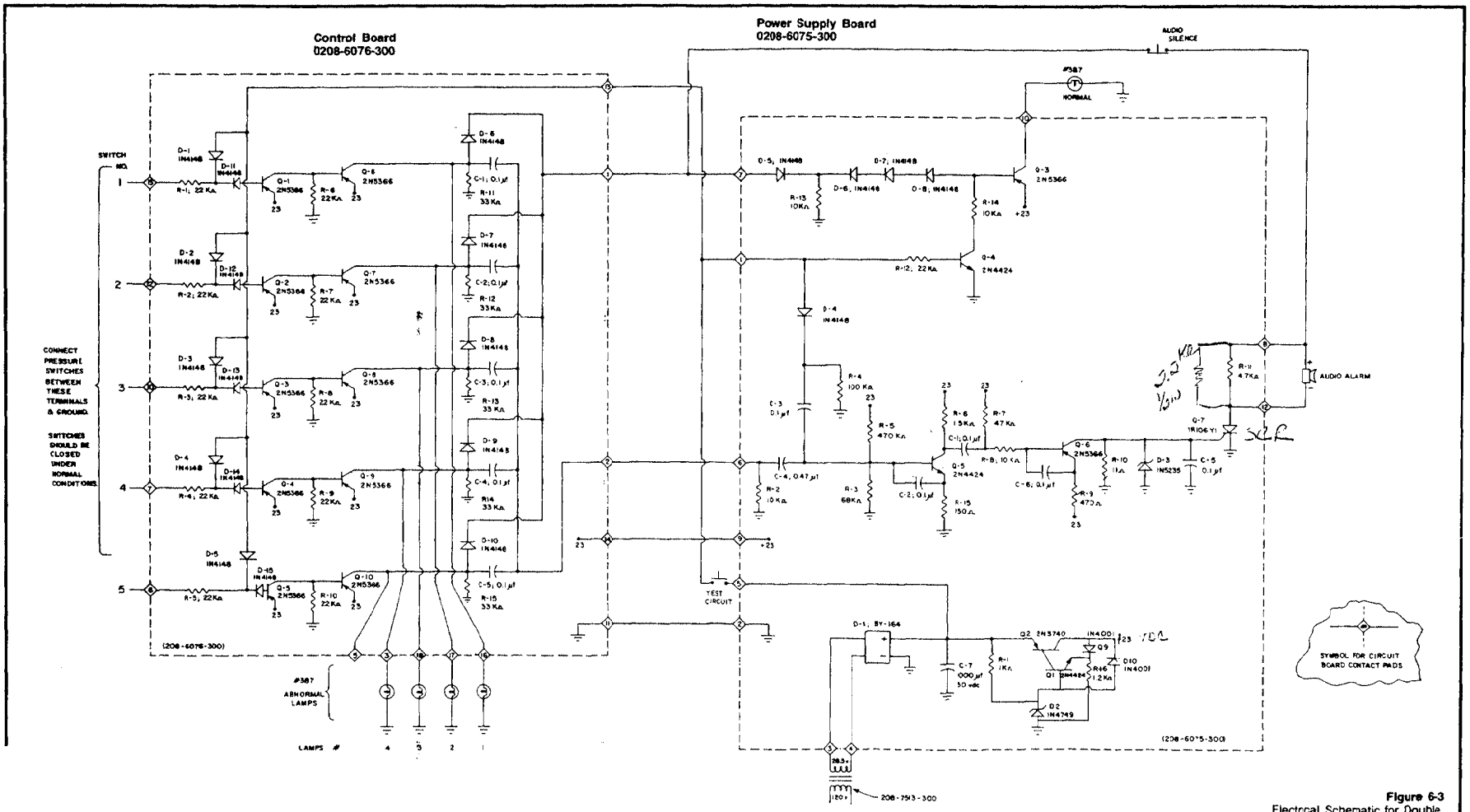
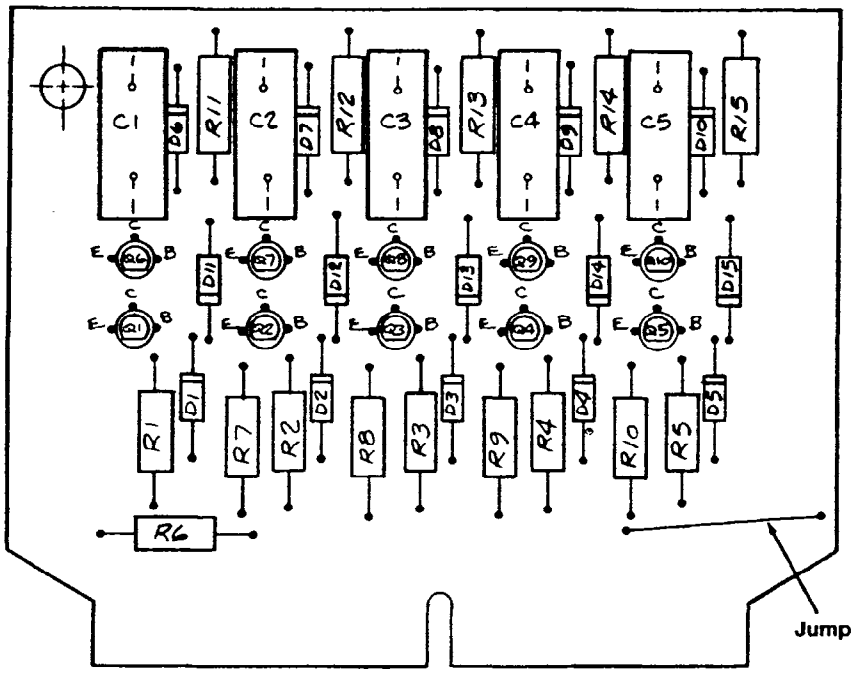
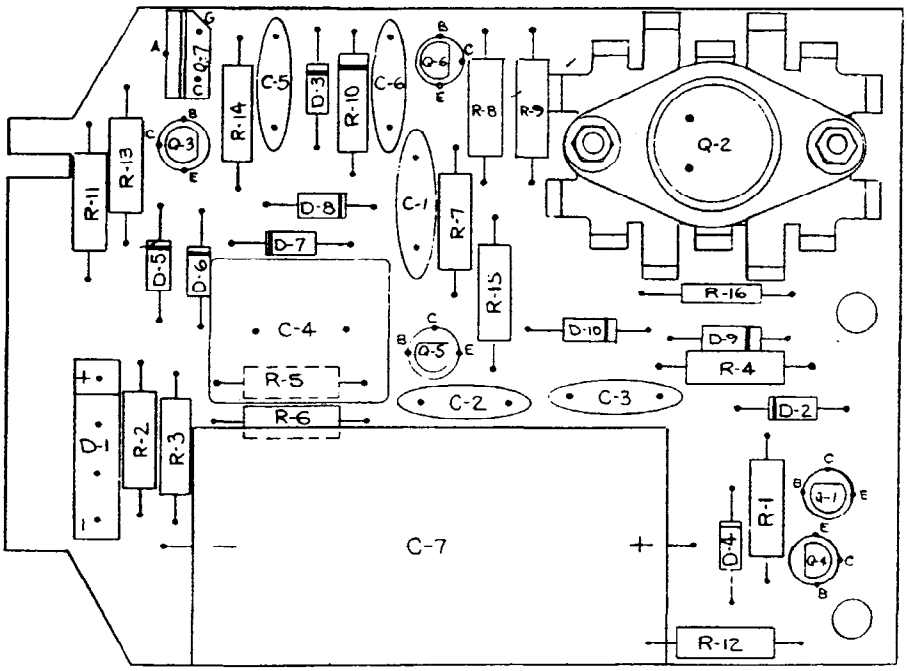


Figure 6-3
Electrical Schematic for Double, Triple or Quadruple Module Alarms

6/Schematics–Wiring Diagrams



Control Board
0208-6076-300



Power Supply Board
0208-6075-300

Figure 6-4
Circuit Boards for Double, Triple and Quadruple Module Alarms

6/Schematics–Wiring Diagrams

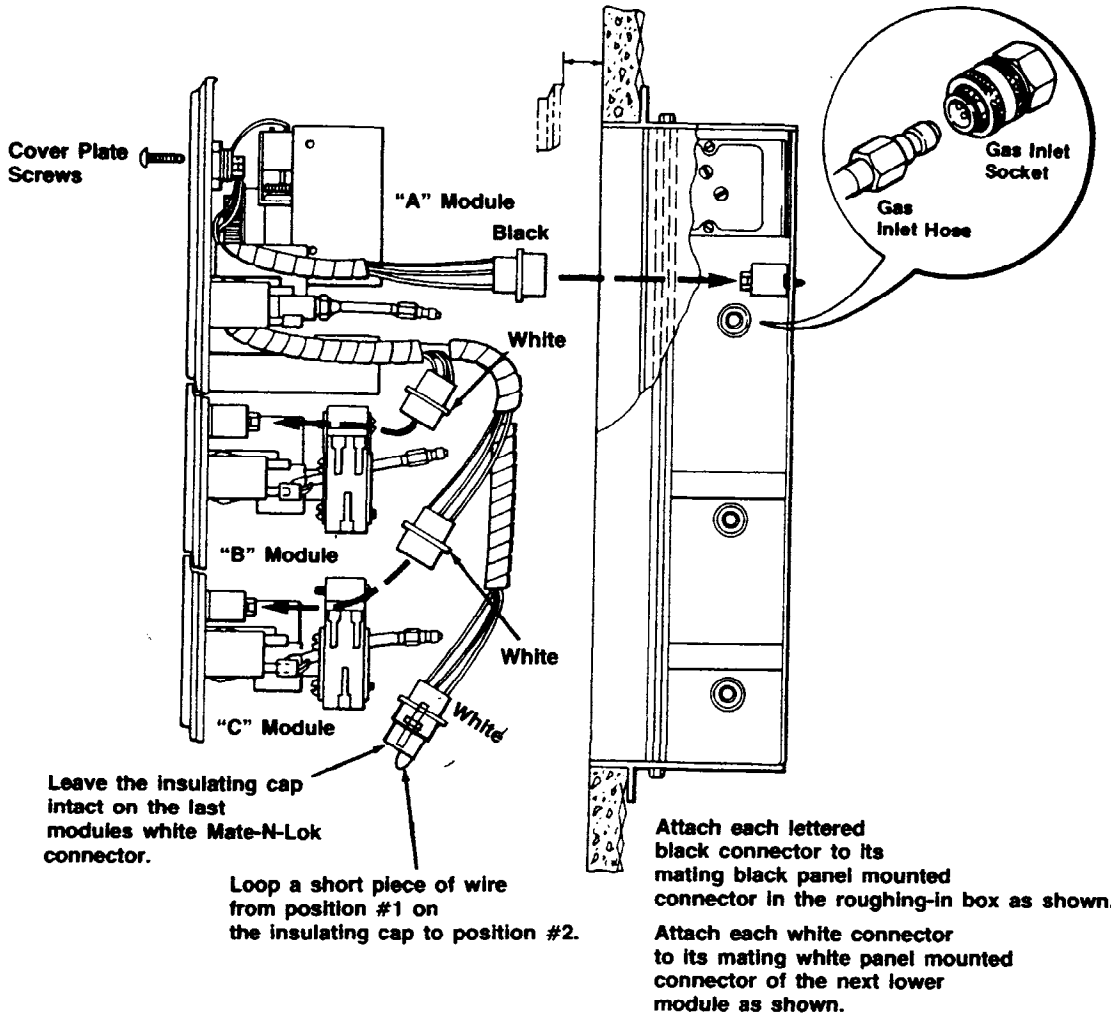
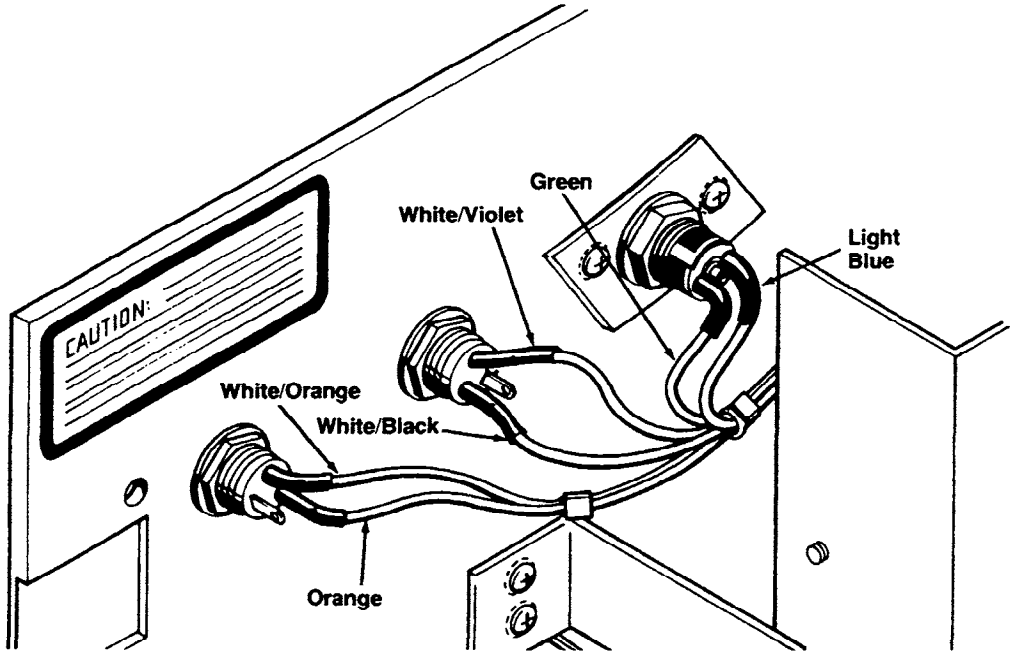
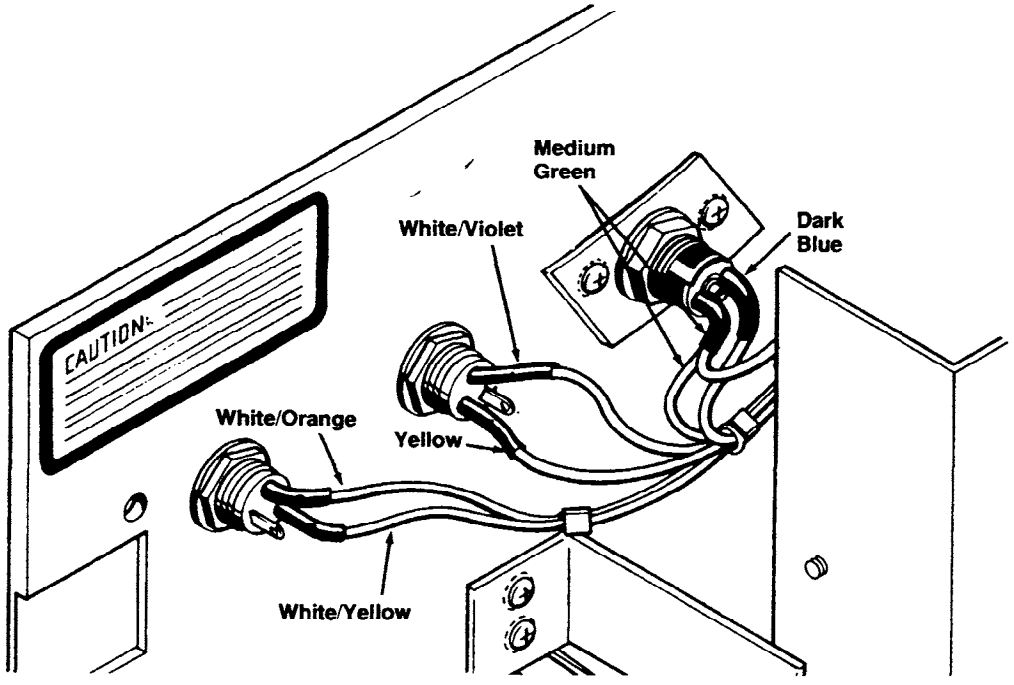


Figure 6-5
Wiring Detail – Shorting Plug

6/Schematics–Wiring Diagrams



Single Module Alarm



Multiple Module Alarm

Figure 6-6
Wiring Detail –
Back View of Coverplate

Appendix

Alarm Systems Test Fixture

Miscellaneous

0311-1012-600	Small cylinder truck	1
0219-3412-800	"T" wrench	1
0175-0584-000	Crimping tool	1

Hose Assembly (Long)

0995-6439-010	Hose	6 feet
0143-5500-140	Ferrule	2
0143-5525-140	Ferrule	2
0221-0156-300	Coupling Socket	1
0206-5120-300	Nipple 1/4" I.D. hose 1/8" NPT Female	1
0221-1002-880	Nut, Gland, O-ring	1

Assembly

1. Place a ferrule over each end of the hose.

NOTE: There are two (2) different sized ferrules to accommodate the hose size variations.

2. Insert nipple 0206-5120-300 in one end of the hose.

3. Crimp the ferrule with special tool 0175-0584-000.

4. Apply Teflon tape to the coupling socket threads (0221-0156-300) and assemble to the nipple installed in Step 2.

5. Insert 0221-1002-880 in the other end of the hose and crimp.

Hose Assembly (Short)

0995-6439-010	Hose	2 feet
0143-5500-140	Ferrule	2
0143-5525-140	Ferrule	2
0204-7972-535	Adapter	1
0204-6700-700	Nut	1
0204-7973-535	Gland	1
0210-0700-300	O-ring	1
0175-2290-000	Gauge	1

Wire Harness

0208-2005-300	AMP Socket Conn-Housing	1
0208-2004-300	AMP Pin Conn-Housing	1
0208-2212-300	Mate-N-Lok Socket Terminal	3
0208-2211-300	Mate-N-Lok Pin Terminal	3
0203-5915-300	Cable Ties	10

18 feet #20 stranded wire -- pick up locally

Assembly of Extender Cable

1. Cut wire to 6 foot lengths.

2. Strip each end of the wire 1/4".

3. Assemble three (3) socket pins, one on each wire.

4. Assemble three (3) pins, one on each wire.

5. Assemble the three (3) socket pins into the AMP female socket.

6. Assemble the three (3) pins into the AMP socket connector.

7. Check continuity of each wire.

8. Place cable ties at appropriate places around the harness to keep it neat.

Regulator Assembly

0806-9600-300	Regulator	1
0306-1115-300	Regulator	1
0205-8251-300	Gauge, 300#	1
0205-8253-300	Gauge, 300#	1
0304-5250-800	Yoke	1
0204-0490-535	1/8" DISS adapter	1
0213-5023-500	Nipple	1
0213-6115-335	Branch "T"	1

Assembly

NOTE: Use Teflon tape on all pipe threads.

Assemble regulators and gauges as shown in Figure 2-1.

Ohmeda

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Tel 708 364 7090

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