

## CABLE PRESSURE SYSTEMS SUPERSEDED METER-PANELS

	CONTENTS	PAGE
1.	<b>GENERAL</b> . . . . .	1
2.	<b>B METER-PANEL</b> . . . . .	1
	Description . . . . .	1
	Procedures for Installing Indicator Bank . . . . .	5
	Replacement Parts . . . . .	5
3.	<b>8541-A and 8541 PIPE ALARM METER-PANELS (PUREGAS EQUIPMENT CORPORATION)</b> . . . . .	5
	Description . . . . .	5
	Alarm Setting . . . . .	11
	Analysis of Alarm Condition . . . . .	11
	Posting Data . . . . .	12
	Wiring Diagrams . . . . .	12

are used in conjunction with air dryers or compressor-dehydrators at central offices (COs), community dial offices (CDOs), or repeater stations.

**1.02** This section includes information formerly contained in Sections 637-225-200 and 637-225-210. This section is issued for maintenance purposes only, since there are considerable B meter-panels and 8541-A and 8541 pipe alarm meter-panels in plant. Also included is the improved method of supplying dry air to the B meter-panel, using CA-3131 air feeder pipe.

**1.03** For detailed information concerning the C and D meter-panels which supersede the B meter-panel and the 8541-A pipe alarm meter-panel, refer to Section 637-225-201.

**1. GENERAL**

**1.01** This section covers the description and arrangement of the *superseded* B meter-panel and the Puregas Equipment Corporation 8541-A and 8541 pipe alarm meter-panels. These panels

**2. B METER-PANEL**

**Description**

**2.01** The B meter-panel (Fig. 1) is designed for use with nonpipe pressure systems. It consists of a main shutoff valve, a standard air meter, plastic tubing connections, and one or two banks of five air rate indicators mounted on a three-sided, enameled sheet steel chassis.

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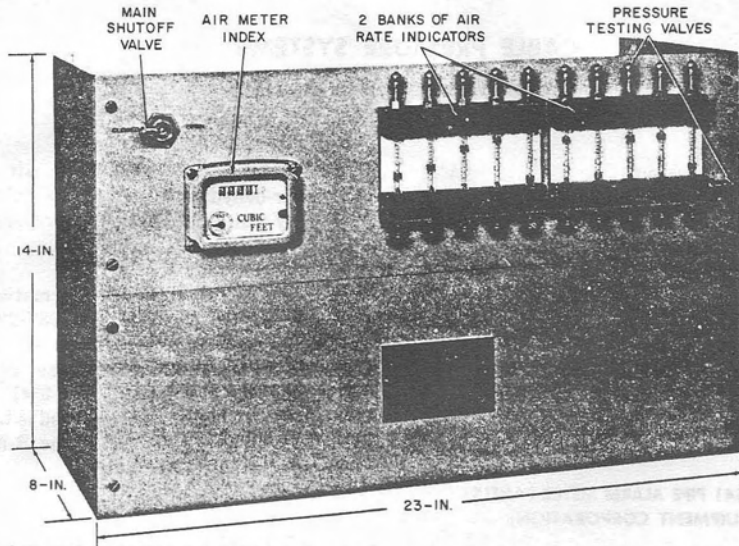


Fig. 1—B Meter-Panel

2.02 Each bank of five air rate indicators utilizes dual scale calibrated tubes. A separate shutoff valve, pressure testing valve, marker, and plastic tubing fittings for 1/4-inch tubing are associated with each calibrated tube.

2.03 Four mounting holes are provided on the rear of the side plates for securing the panel to a wall, plywood backboard, or metal framework.

2.04 The CA-3131 air pipe from the air dryer is terminated on an E or F plastic pipe fitting [type fitting(s) depends on the number of meter-panels installed]. A short length (approximately 14 inches) of 3/8-inch plastic tubing is connected between a B plastic tubing fitting installed in the plastic pipe fitting and the plastic tubing fitting provided on the main shutoff valve of the meter-panel.

2.05 Panels may be stacked vertically and/or banked horizontally to best utilize the available space in the CO. Adjoining meter-panels are structurally connected with stacking straps, as shown in Fig. 2. Where the panels are stacked

vertically, as illustrated in Fig. 2 and 3, removal of the lower front cover plate provides ample access for connecting or disconnecting plastic tubing from the next lower panel.

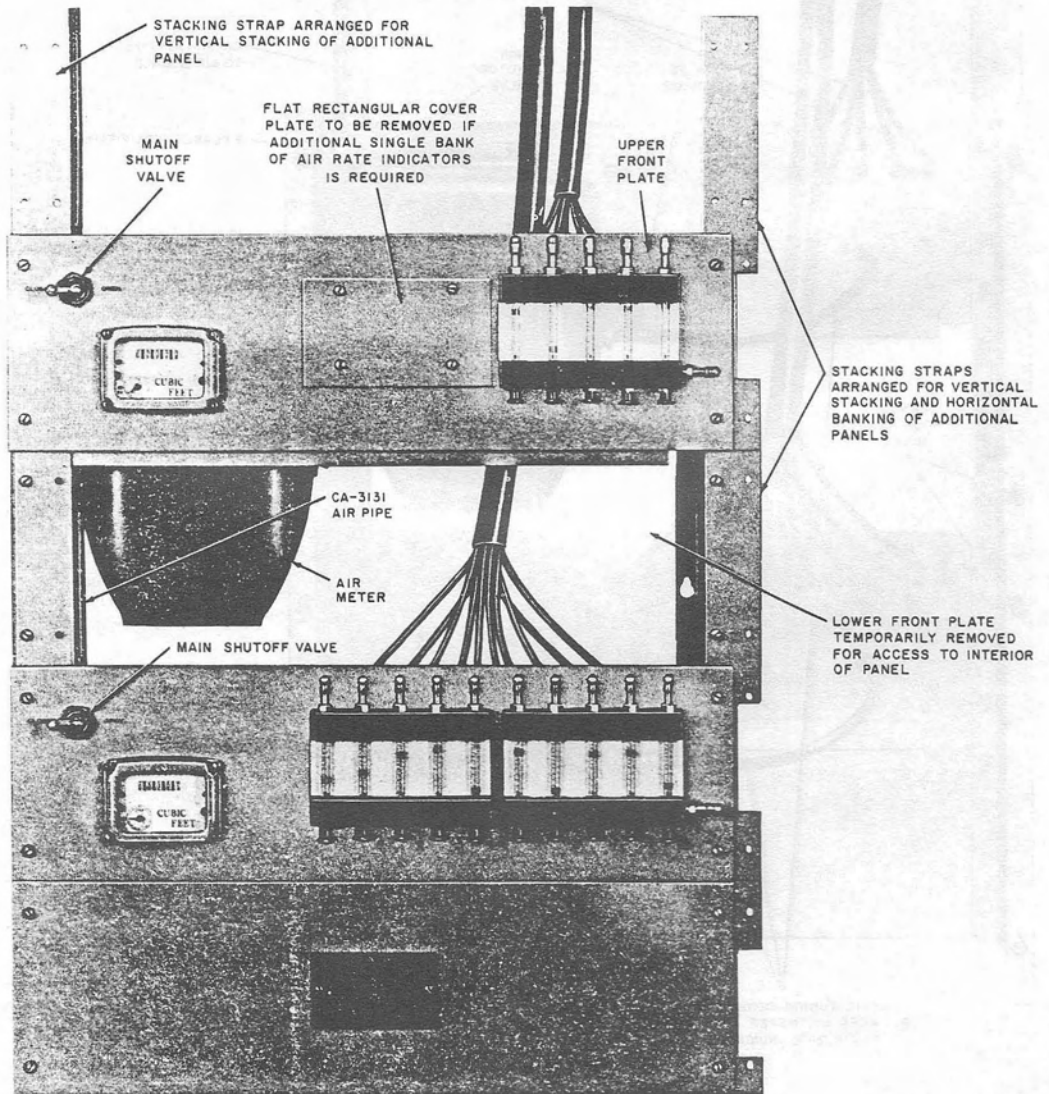


Fig. 2—Front View of Stacked B Meter-Panels

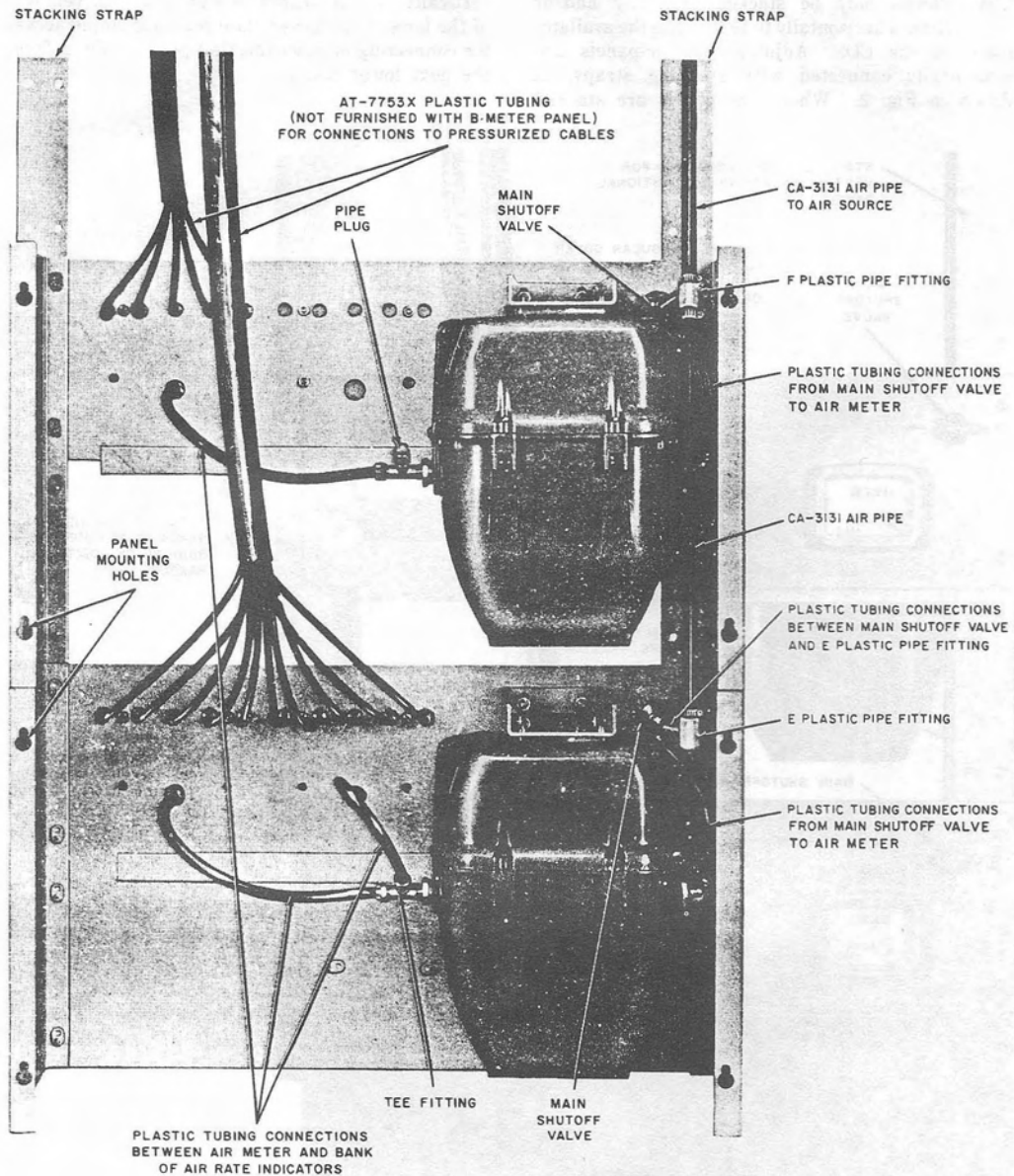


Fig. 3—Rear View of Stacked B Meter-Panels

**Procedures for Installing Indicator Bank**

**2.06** Meter-panels having one bank of indicators can be readily converted to the two-bank arrangement as follows:

- (1) Place the main shutoff valve to the *closed* position (Fig. 1).
- (2) Remove the rectangular cover plate from the top section of the meter-panel.
- (3) Install the second indicator bank in the top section, using the four 1/2-20 by 3/8-inch long cadmium-plated RHMS which are provided with the indicator bank.
- (4) Replace the pipe plug from the tee fitting at the air meter with the 3/8-inch connector, which also is furnished. Install a length of 3/8-inch plastic tubing between the tee fitting and the new bank of indicators.
- (5) Install plastic tubing from the cable connection to each individual indicator, making sure that each ferrule is seated properly within the connector. Figure 3 illustrates the arrangement for a meter-panel, with a single indicator bank installed above a panel with two indicator banks.
- (6) Place the main shutoff valve to the *open* position.

**Replacement Parts**

**2.07** Optional or replacement parts for the B meter-panel should be ordered as follows:

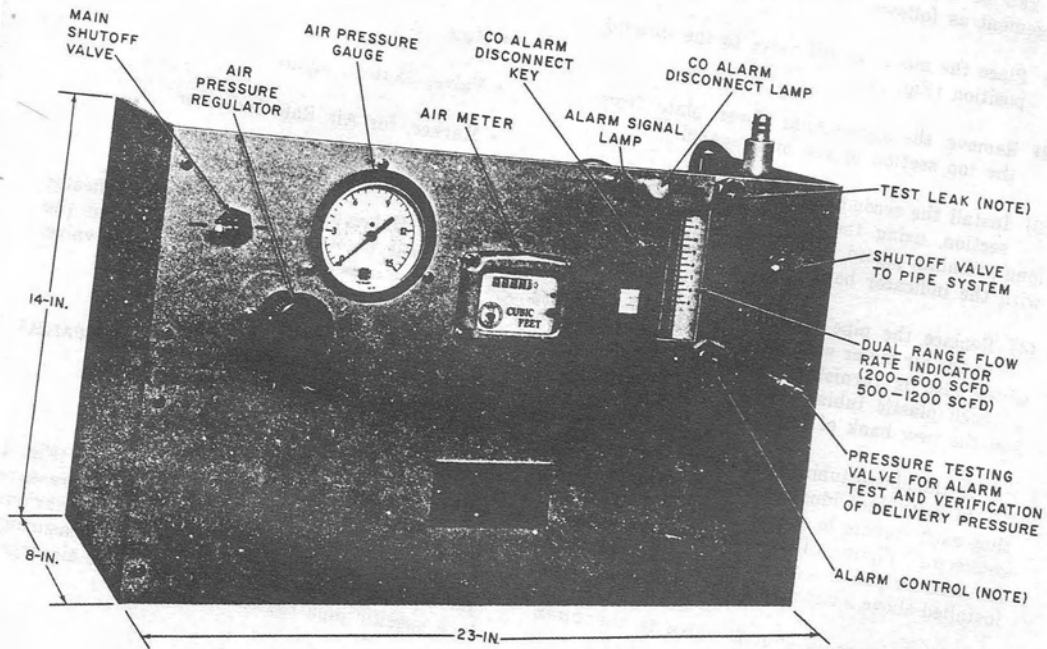
- Bank, Indicator, for B Meter-Panel (see note)
- Meter, Air
- Valve, Shutoff, Main
- Marker, for Air Rate Indicator
- Tube, for Air Rate Indicator.

**Note:** Unless otherwise specified, the indicator bank will be furnished with a plug on the right side in lieu of the pressure testing valve.

**3. 8541-A AND 8541 PIPE ALARM METER-PANELS  
(PUREGAS EQUIPMENT CORPORATION)**

**Description**

**3.01** The 8541-A pipe alarm meter-panel (Fig. 4 and 5) is designed for use with pipe pressure systems. This panel is an assembly of the various components necessary for regulating, measuring, and monitoring the flow of air from the air dryer to a specific pipe route.



NOTE:  
SET WITH 1/8-IN.  
ALLEN WRENCH PROVIDED

Fig. 4—8541-A Pipe Alarm Meter-Panel—Puregas Equipment Corporation—Front View

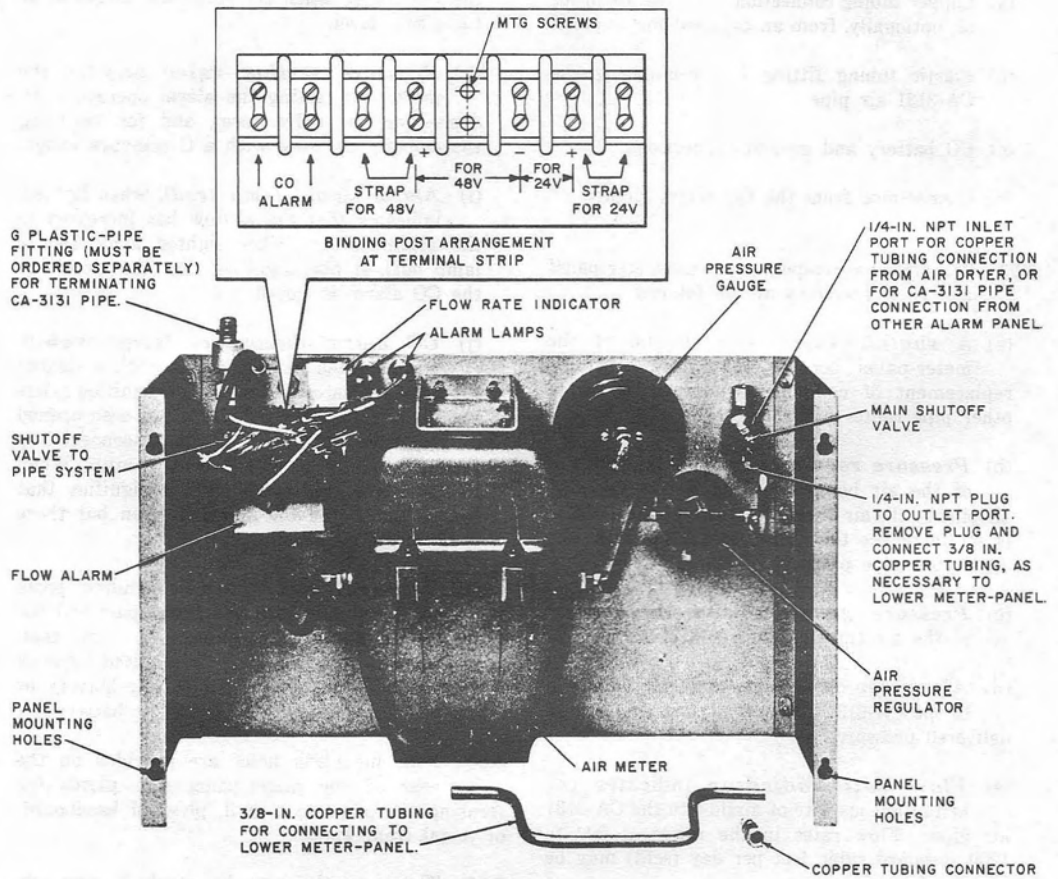


Fig. 5—8541-A Pipe Alarm Meter-Panel—Rear View

3.02 The pipe alarm meter-panel is arranged to receive:

- (a) Copper tubing connection from the air dryer or, optionally, from an adjacent meter-panel
- (b) Plastic tubing fitting for terminating the CA-3131 air pipe
- (c) CO battery and ground connections
- (d) Connections from the CO alarm circuit.

3.03 The principal components of the meter-panel and their functions are as follows:

- (a) A **shutoff valve** at each end of the meter-panel permits rearrangements and replacement of components without affecting other pipe routes or cables.
- (b) **Pressure regulator** controls the pressure of the air being delivered to the CA-3131 air pipe by the air dryer. Normally, the regulator is set to reduce the high-pressure air from the dryer to a pipe pressure of 10 psi.
- (c) **Pressure gauge** indicates the pressure of the air entering the CA-3131 air pipe.
- (d) **Air meter** displays the total air delivered to the CA-3131 air pipe in cubic feet at the delivered pressure.
- (e) **Flow rate indicator** indicates the instantaneous rate of airflow to the CA-3131 air pipe. Flow rates in the range of 200 to 1200 standard cubic feet per day (scfd) may be measured.
- (f) **Test leak** provides a means of temporarily increasing the flow through the meter-panel to simulate an alarm condition.

(g) **Alarm control** provides the facility for operating the **alarm condition** signal lamp, and the relay which closes the circuit to the CO alarm, when the flow rate increases to the alarm level.

(h) **Pressure testing valve** provides the means for testing the alarm operation (by depressing the valve core), and for verifying the delivery pressure with a C pressure gauge.

(i) **Alarm signal lamp (red)**, when lighted, indicates that the airflow has increased to the alarm level. When lighted alone (white lamp out), it also signifies that the circuit to the CO alarm is closed.

(j) **CO alarm disconnect lamp (white)**, when lighted in conjunction with a lighted red lamp, indicates that an alarm condition exists but the circuit to the CO alarm has been opened by operation of the CO alarm disconnect key (located directly below the white lamp). When lighted alone (red lamp out), it signifies that the circuit to the CO alarm is open but there is no alarm condition.

(k) **Terminal strip** provides binding posts for terminating the CO alarm pair and the CO battery and ground connections. Note that, as shown in Fig. 5, a strap is required between binding posts 3 and 4 with 48-volt battery or between posts 6 and 7 with 24-volt battery.

3.04 Four mounting holes are provided on the rear of the meter-panel side plates for securing the panel to a wall, plywood backboard, or metal framework.

3.05 These panels may be stacked vertically and/or banked horizontally to best utilize the space available in the CO. Adjoining panels are structurally connected with stacking straps, as shown in Fig. 6 and 7.



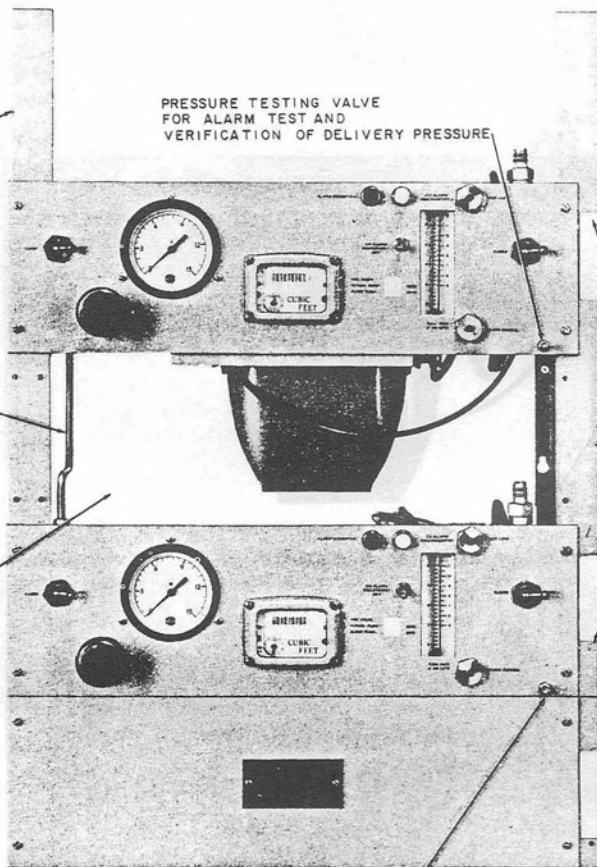
STACKING STRAP  
ARRANGED FOR  
VERTICAL STACKING  
OF ADDITIONAL PANEL

PRESSURE TESTING VALVE  
FOR ALARM TEST AND  
VERIFICATION OF DELIVERY PRESSURE

3/8 IN.  
COPPER PIPE  
CONNECTION  
BETWEEN PANELS

LOWER FRONT PLATE  
TEMPORARILY  
REMOVED FOR  
ACCESS TO  
INTERIOR OF PANEL

STACKING STRAPS  
ARRANGED FOR  
VERTICAL STACKING,  
AND HORIZONTAL  
BANKING OF  
ADDITIONAL PANELS



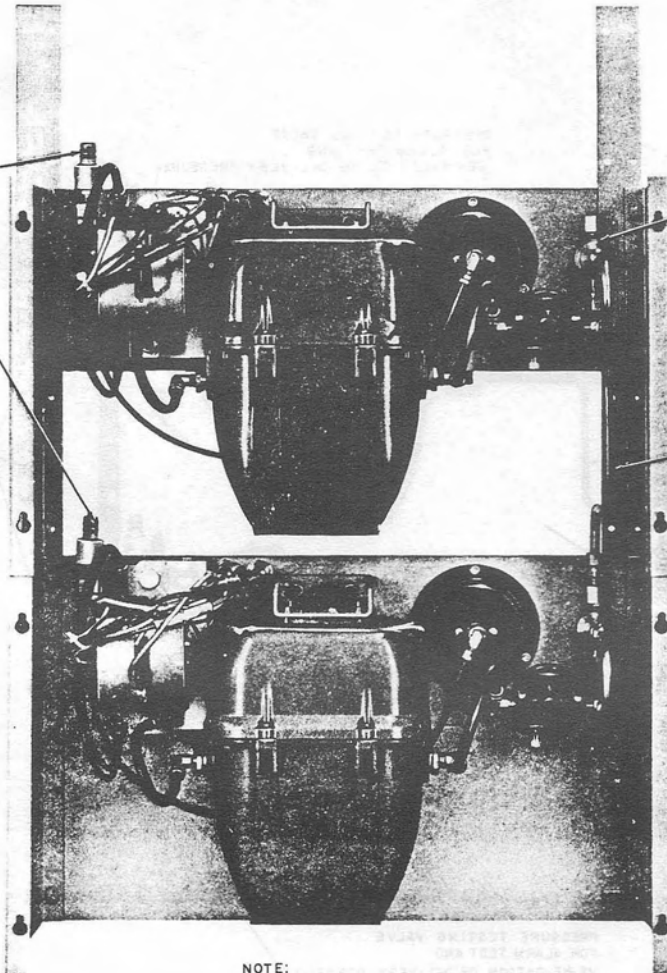
PRESSURE TESTING VALVE  
FOR ALARM TEST AND  
VERIFICATION OF DELIVERY PRESSURE

Fig. 6—Front View of Stacked Pipe Alarm Meter-Panels

6 PLASTIC-  
PIPE FITTINGS  
FOR JOINING TO  
CA-3131 PIPE  
(NOTE)

COPPER TUBING  
CONNECTOR FOR  
JOINING TO  
COPPER TUBING  
FROM AIR DRYER  
(NOTE)

3/8-IN.  
COPPER TUBING  
CONNECTION  
PROVIDED WITH  
PANEL



NOTE:  
MUST BE ORDERED SEPARATELY

Fig. 7—Rear View of Stacked Pipe Alarm Meter-Panels

**3.06** The 8541 pipe alarm meter-panel differs from the 8541-A essentially in that it has only a single (red) alarm lamp and has no CO alarm disconnect key. Early 8541 models were arranged only for 24-volt operation.

#### Alarm Setting

**3.07** Changes in the initial alarm setting should be made only with the concurrence of the outside plant maintenance supervisor. The alarm should be set to operate at a flow increase of about 75 scfd above the stabilized rate.

**3.08** The following procedure is recommended for setting the alarm:

- (a) Disconnect the CO alarm pair from the binding posts marked **CO ALARM** on the terminal strip. This will allow setting the alarm without activating the CO alarm.
- (b) Close the Test Leak by turning it clockwise, using a 1/8-inch Allen wrench.
- (c) Fully open the Alarm Control by turning it counterclockwise with the 1/8-inch Allen wrench.

**Note:** Avoid overtightening the Alarm Control and Test Leak.

- (d) Note the stabilized flow rate on the flow rate indicator and record it on the face of the panel in the designation **NORMAL FLOW**  SCFD.
- (e) Open the Test Leak slowly by turning it counterclockwise until the flow rate increases by the desired amount (75 scfd or as specified) as shown on the indicator. Record the measured flow rate on the face of the panel in the designation **ALARM FLOW**  SCFD.
- (f) Wait a few minutes until the flow stabilizes.
- (g) Close the Alarm Control by turning it slowly clockwise until the red signal lamp on the meter-panel operates. Recheck the alarm setting, slowly open the Alarm Control until the light goes out, then slowly close the Alarm Control until the lamp operates.

- (h) Wait a few minutes until the flow stabilizes.
- (i) Fully close the Test Leak by turning it clockwise. Note that airflow, as shown on the indicator, returns to the stabilized flow rate. If the red alarm light does not go out, close the main shutoff valve until the red alarm light goes out. Then reopen the main shutoff valve.
- (j) Check for alarm operation by depressing the core of the pressure testing valve at the right end of the panel.
- (k) Reconnect the CO alarm pair to the binding posts marked **CO ALARM** on the terminal strip.

#### Analysis of Alarm Condition

**3.09** Operation of the **alarm signal lamp** can have major or minor significance. By observing the operation of the flow rate indicator, the following analysis can be made:

- (a) A great increase in flow rate (maximum flow) may indicate a break in the pipe.
- (b) An increase of several hundred scfd may indicate a break in the tubing at a manifold manhole location.
- (c) A flow increase of 50 or more scfd may indicate a leak in an underground cable, a large leak in an aerial cable close to the underground, or a break in a tubing at a high-valve manhole.
- (d) A flow increasing gradually over a period of time may indicate a number of small leaks.

**3.10** In view of the foregoing, it is recommended that when an **alarm** occurs on a pipe alarm meter-panel, the following data be furnished when referring the condition:

- (a) Normal and alarm flow as posted on face of meter-panel \*
- (b) Present flow rate as read on indicator
- (c) Stabilized daily air usage and recent daily air usage as posted on daily log record.

**SECTION 637-225-050**

**Posting Data**

**3.11** The following forms are available for posting pipe alarm meter-panel data. These forms are illustrated in Section 637-050-300:

Form E-5403      Air Usage Log

Form E-5404      Pipe Alarm Log.

**Wiring Diagrams**

**3.12** Figures 8 and 9 illustrate the wiring diagram of the various electrical components in the Puregas Equipment Corporation 8541-A and 8541 pipe alarm meter-panels, respectively.

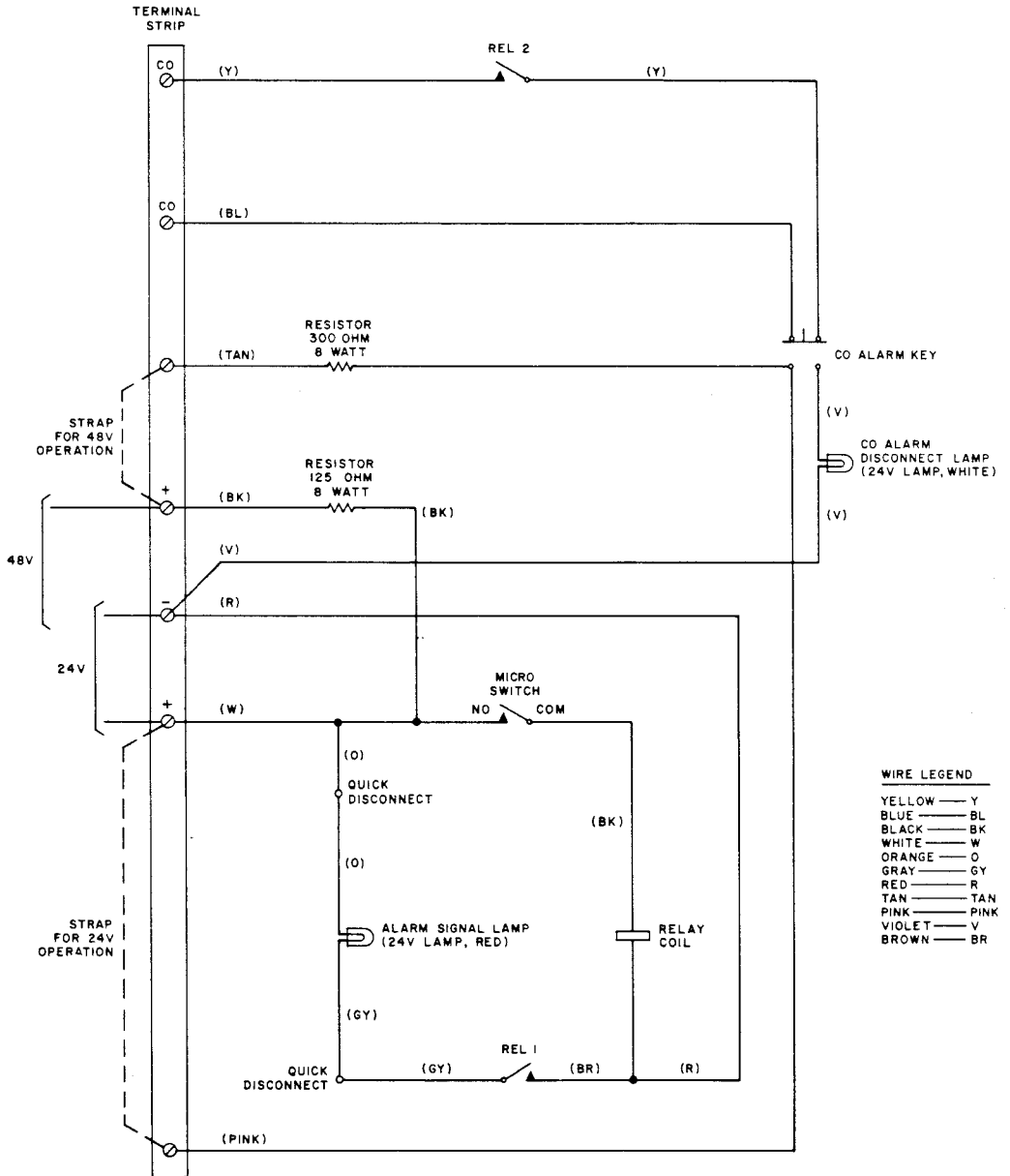


Fig. 8—8541-A Pipe Alarm Meter-Panel—Wiring Diagram

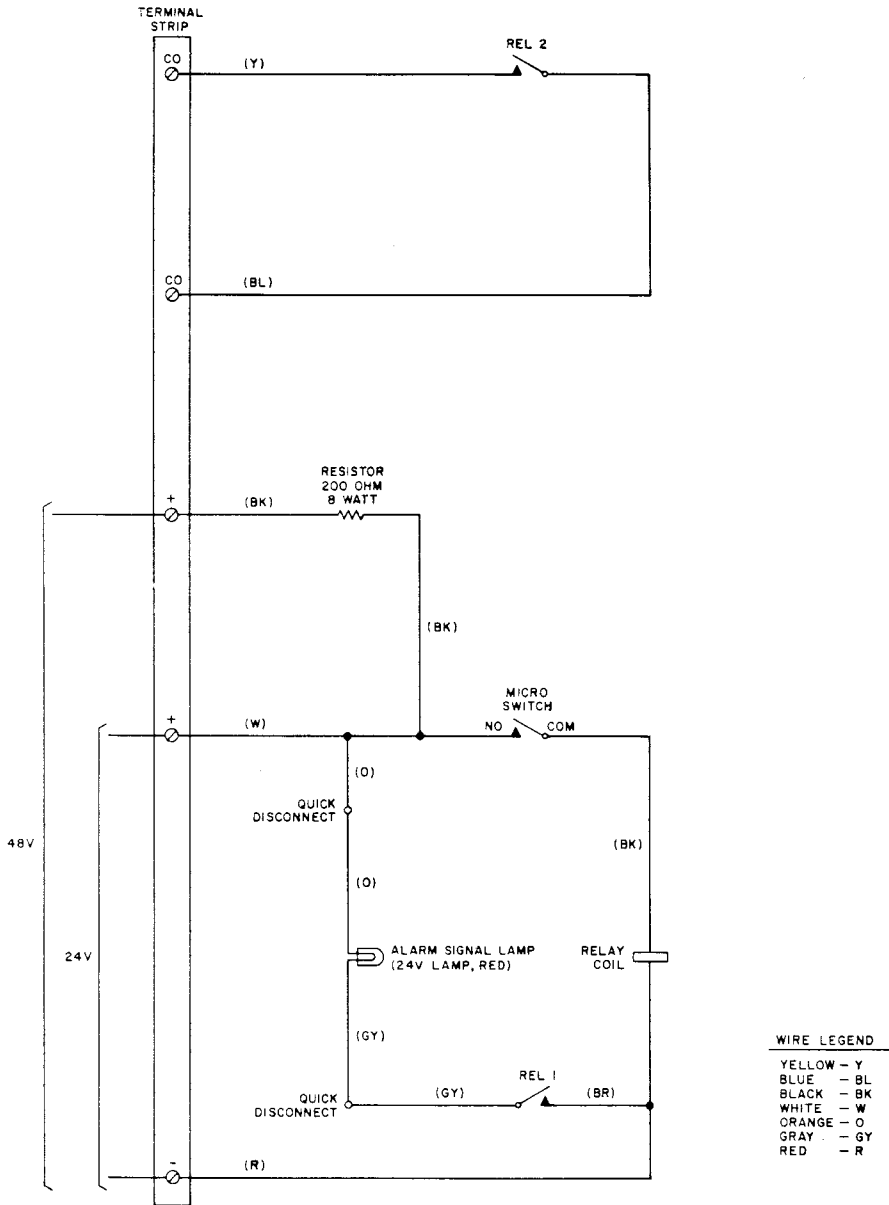


Fig. 9—8541 Pipe Alarm Meter-Panel—Wiring Diagram