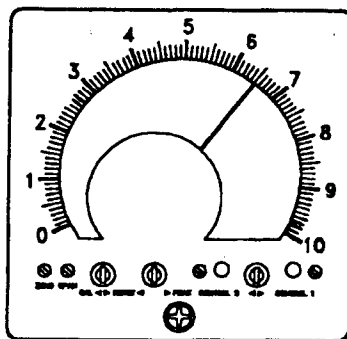
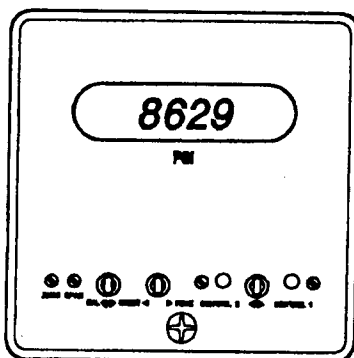


# DP409 / DP409A and DP434 / DP434A

 Analog Melt Pressure Indicator  
&  
 Digital Melt Pressure Indicator



DP409/DP409A



DP434/DP434A



Operator's Manual  
M1628/0493

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- ☑ Heating Cable
- ☑ Cartridge & Strip Heaters
- ☑ Immersion & Band Heaters
- ☑ Flexible Heaters
- ☑ Laboratory Heaters

## TABLE OF CONTENTS

**DP409    ANALOG MELT PRESSURE INDICATOR**  
**DP434    DIGITAL MELT PRESSURE INDICATOR**

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<b>DP409    ANALOG MELT PRESSURE INDICATOR</b>	
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<b>SECTION</b>	<b>PAGE</b>
<b>SECTION 1 DESCRIPTION .....</b>	<b>1</b>
<b>SECTION 2 UNPACKING .....</b>	<b>1</b>
<b>SECTION 3 PARTS OF THE PRESSURE TRANSDUCER .....</b>	<b>1</b>
3.1      Front .....	1
3.2      Rear .....	2
<b>SECTION 4 INSTALLATION .....</b>	<b>3</b>
4.1      Installation Wiring .....	3
<b>SECTION 5 ADJUSTMENTS - ZERO AND SPAN .....</b>	<b>5</b>
5.1      Description .....	5
5.2      Procedure .....	5
5.3      Adjustments - DP409A Control Setpoints .....	6
<b>SECTION 6 OPTION SWITCH SETTINGS .....</b>	<b>6</b>
6.1      Amplifier Board on DP409/DP409A .....	6
6.1.1    Transducer Sensitivity, Amp Board .....	7
6.1.2    Calibration Shunt Resistor, Amp Board .....	7
6.1.3    Filter (Damping Circuit), Amp Board .....	8
6.1.4    Recorder Output Select, Amp Board .....	8
6.2      Logic Option Board on DP409A .....	8
6.2.1    Setting of Control 1 and/or 2 Setpoints .....	8
6.2.2    Reset (Automatic/Manual), Logic Option Board .....	10
<b>SECTION 7 TROUBLESHOOTING .....</b>	<b>10</b>
<b>SECTION 8 SPECIFICATIONS .....</b>	<b>11</b>
<b>SECTION 9 OPTION WORKSHEETS AND SUMMARY .....</b>	<b>12</b>

## TABLE OF CONTENTS (CONT'D)

DP409 ANALOG MELT PRESSURE INDICATOR  
DP434 DIGITAL MELT PRESSURE INDICATOR

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### DP434 DIGITAL MELT PRESSURE INDICATOR

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SECTION	PAGE
SECTION 10 DESCRIPTION .....	15
SECTION 11 UNPACKING .....	15
SECTION 12 PARTS OF THE PRESSURE TRANSDUCER .....	15
12.1 Front .....	15
12.2 Rear .....	16
SECTION 13 INSTALLATION .....	17
13.1 Installation Wiring .....	17
SECTION 14 ADJUSTMENTS - ZERO AND SPAN .....	19
14.1 Description .....	19
14.2 Procedure .....	19
SECTION 15 OPTION SWITCH SETTINGS .....	20
15.1 Amplifier Board on DP434/DP434A .....	20
15.1.1 Transducer Sensitivity, Amp Board .....	20
15.1.2 Calibration Shunt Resistor .....	21
15.1.3 Filter (Damping Circuit), Amp Board .....	21
15.1.4 Recorder Output Select, Amp Board .....	22
15.2 Display and Logic Option Boards .....	22
15.2.1 Decimal Point, Display Board .....	22
15.2.2 Range Select, Logic Option & Display Boards .....	23
15.3 Adjustments - DP434A Control Setpoints .....	23
15.4 Logic Option Board on DP434A.....	24
15.4.1 Setting of Control 1 and/or 2 Setpoints .....	24
15.4.2 Reset (Automatic/Manual), Logic Option Board .....	25
SECTION 16 TROUBLESHOOTING .....	26
SECTION 17 SPECIFICATIONS .....	26
SECTION 18 OPTION WORKSHEETS AND SUMMARY .	28

## SECTION 1 DESCRIPTION

The OMEGA DP409 Analog Melt Pressure Transducer is a combination transducer power supply, indicator and signal conditioner. The DP409 ½ DIN standard size case of extruded aluminum protects against EMI and RFI noise, heat dispersion and physical damage. The 6", 240 degree meter is styled for ease of reading and incorporates an international face.

The DP409 is designed for use with an OMEGA pressure transducer or any 4-leg, 350 ohm wheatstone bridge strain gage transducer. A calibration push-button allows for span adjustment while you adjust zero at zero pressure. The complete electronic assembly can be removed and/or replaced from the front panel for convenient service and option selection. Options include dual setpoints and auxiliary outputs for recorders, remote indicators or a computer interface. The dual setpoint option, designated by the letter "A" (DP409A), can be used to give a warning before an actual shutdown sequence is initiated, thereby reducing or avoiding downtime. To prevent accidental shutdown, the act of setting of the setpoint or calibration will not actuate the alarm relays.

## SECTION 2 UNPACKING

Remove the Packing List and verify that all equipment has been received. If there are any questions about the shipment, please call the OMEGA Customer Service Department at 1-800-622-2378 or (203) 359-1660.

Upon receipt of shipment, inspect the container and equipment for any signs of damage. Take particular note of any evidence of rough handling in transit. Immediately report any damage to the shipping agent.

### NOTE

The carrier will not honor any claims unless all shipping material is saved for their examination. After examining and removing contents, save packing material and carton in the event reshipment is necessary.

## SECTION 3 PARTS OF THE MELT PRESSURE TRANSDUCER

### 3.1 FRONT

Figure 3-1 shows the front of the indicator.

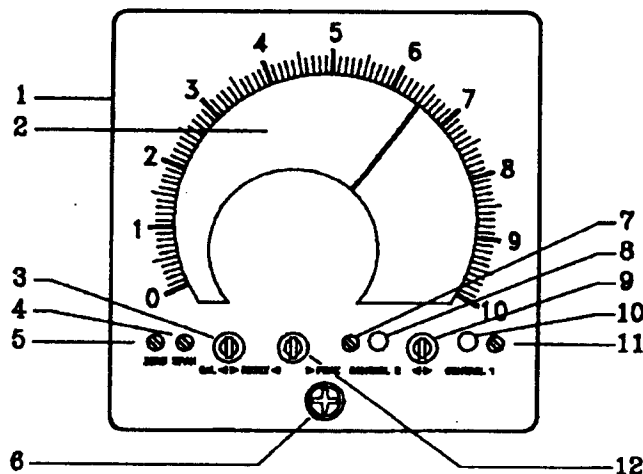


Figure 3-1. Front of the indicator

KEY	DESCRIPTION
1	<b>1/4 DIN Enclosure.</b> Outer case dimensions
2	<b>Large Analog Display with 240° dial indication.</b> Indicates operating pressure and control alarm setpoints. Shows relation of operating pressure to full-scale range.
3	<b>Calibration Selector/Reset Toggle Switch.</b> Used to display and adjust span for calibration pressure of transducer and to reset control alarms when configured for manual reset.
4	<b>Span Potentiometer.</b> Used to raise/lower calibration pressure in conjunction with calibration/reset switch.
5	<b>Zero Potentiometer.</b> Used to raise/lower zero calibration point on display.
6	<b>Access Screw.</b> Unscrew to remove indicator from enclosure to gain access to internal DIP switches.
7	<b>Control 2 Potentiometer.</b> Used to raise/lower Control 2 alarm setpoint.
8	<b>Control 2 Alarm Indication LED.</b> Lights when Control 2 setpoint is reached.
9	<b>Control 1/Control 2 Selector Toggle Switch.</b> Used to display and adjust Control 1 and Control 2 setpoints.
10	<b>Control 1 Alarm Indication LED.</b> Lights when Control 1 setpoint is reached.
11	<b>Control Potentiometer.</b> Used to raise/lower Control 1 alarm setpoint.

### 3.2 REAR

Figure 3-2 shows the rear of the indicator. Section 4.1 gives the description of the terminals located on the rear.

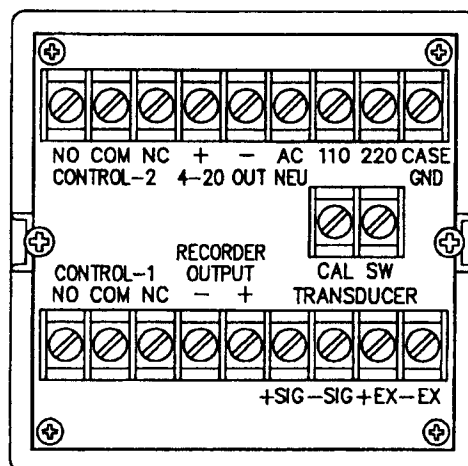


Figure 3-2. Rear of the Indicator

## SECTION 4 INSTALLATION

The DP409 would normally be mounted in a control panel or other sheet metal structure. High heat or humid locations should be avoided. The outer case is designed for a 1/4 DIN panel cutout. Refer to Figure 4-1. To mount, slide the unit through the opening until it is flush against the front panel. Slide the two bars through the slots on the side of the unit until they are tight against the back of the panel. Secure bars with the two screws provided.

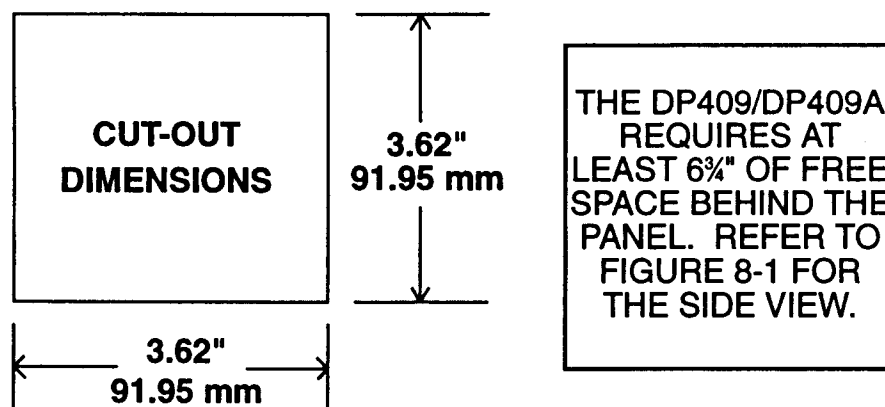
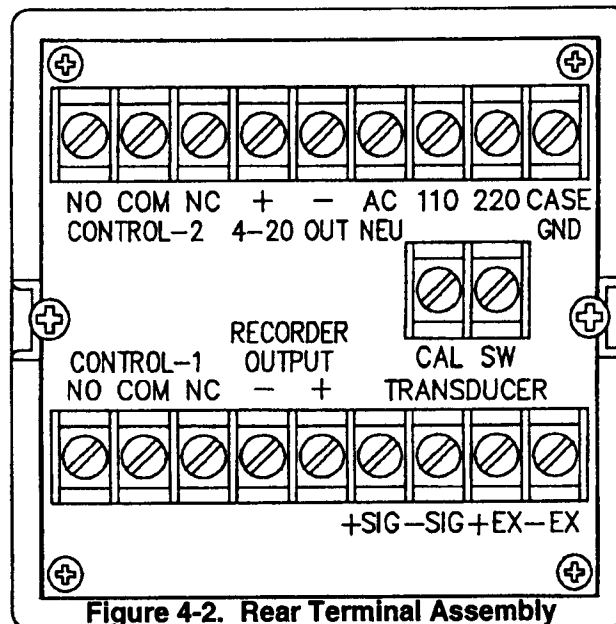


Figure 4-1. Cutout Dimensions

### 4.1 INSTALLATION WIRING

Compliance with local and national codes is recommended. Wiring should be double checked before applying power. Power and signal leads should be run separately, if possible, to prevent electrical interference. The recorder output, except for the "R" (4-20mA output) option, is connected to the "+" and "-" Recorder Output Terminals. The "R" (4-20mA output) is wired to the "+" and "-" terminals marked "4-20 OUT".

Figure 4-2 shows the rear of the indicator and the table following explains the terminals.



**Figure 4-2. Rear Terminal Assembly**

---

### DESCRIPTION

#### **UPPER TERMINALS (from left to right)**

Control 2 Relay - normally open  
Control 2 Relay - common  
Control 2 Relay - normally closed  
4-20mA Recorder Output - positive (+) signal  
4-20mA Recorder Output - negative (-) signal  
Power Supply - AC neutral  
Power Supply - 110V AC input  
Power Supply - 220V AC input  
Case Ground

#### **MIDDLE TERMINALS (from left to right)**

Calibration Switch - for use with internal shunt transducers  
Calibration Switch - for use with internal shunt transducers

CONTINUED ON NEXT PAGE



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**DESCRIPTION**

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***LOWER TERMINALS (from left to right)***

Control 1 Relay - normally open  
Control 1 Relay - common  
Control 1 Relay - normally closed  
Voltage Recorder Output - negative (-) signal  
Voltage Recorder Output - positive (+) signal  
Transducer - positive (+) signal connection (green)  
Transducer - negative (-) signal connection (white)  
Transducer - positive (+) excitation (red)  
Transducer - negative (-) excitation (black)

**SECTION 5 ADJUSTMENTS - ZERO AND SPAN****5.1 DESCRIPTION**

All Wheatstone bridge type strain gages have some zero imbalance. This small error can be virtually eliminated by using the zero adjustment potentiometer on the front panel. The zero should only be reset when zero pressure is being applied to the transducer. The zero adjustment changes the offset or starting point for the indicator to correspond to zero pressure on the transducer. The span adjustment changes the gain or slope of the amplifier to match the output curve of the transducer. A pressure standard or dead-weight tester can be used to check calibration. The span would then be adjusted to give the desired output at a particular pressure. Most transducers are calibrated against an external shunt resistor. This shunt resistor simulates an actual pressure input value. The value is normally marked on the transducer itself. It would look like this: 30.1 k ohms, 8123 PSIG. This means that if an external resistor of 30.1 k ohms resistance were placed between the excitation positive (+) wire and signal positive (+) wire an input signal equivalent to 8123 PSIG will be simulated between the signal positive (+) and the signal negative (-) wires.

**5.2 PROCEDURE**

The following is a typical adjustment procedure:

**ALL CALIBRATION ADJUSTMENTS SHOULD BE PERFORMED WITH THE TRANSDUCERS UNDER NO LOAD AND AT OPERATING TEMPERATURE.**

1. Power the instrument.
2. With zero pressure on the transducer, adjust the zero potentiometer to obtain a zero reading.
3. Push and hold the calibration selector switch to the left while adjusting the span potentiometer until the correct calibration pressure is obtained.
4. Release the calibration switch and recheck the zero reading. If incorrect, repeat Steps 2 through 4.

5. The electrical zero may be checked any time the transducer is at zero pressure. This may be necessary after heat-up to correct any thermal zero shift of the transducer.

### NOTE

**DO NOT CHANGE THE SPAN CALIBRATION WHEN THERE IS PRESSURE ON THE TRANSDUCER. IF THIS IS DONE, THE PRESSURE READING MAY BE IN ERROR.**

### 5.3 ADJUSTMENTS - DP409A CONTROL SETPOINTS

The DP409A provides two separate setpoints circuits and relays. By using one relay to trigger an auxiliary alarm, corrective action can be taken before mandatory shut-down is reached. The second relay circuit can then be used for mandatory shut-down.

#### CONTROL 1

1. Push and hold the control selector switch to the right.
2. Adjust the Control 1 potentiometer until the desired control pressure is displayed on the indicator.
3. Release the selector toggle switch.

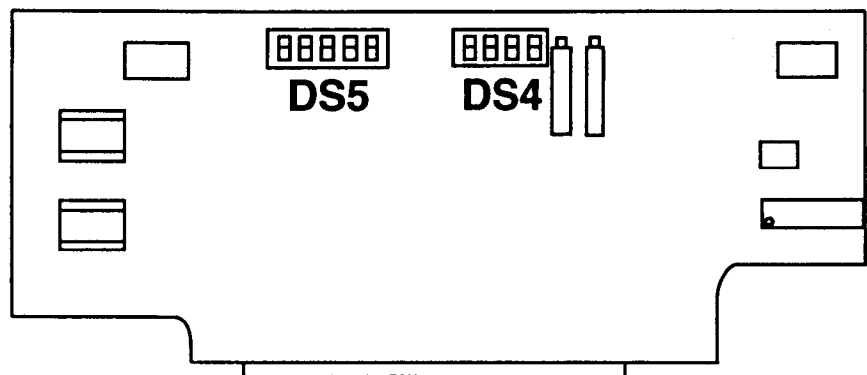
#### CONTROL 2

1. Push and hold the control selector switch to the right.
2. Adjust the Control 2 potentiometer until the desired control pressure is displayed on the indicator.
3. Release the selector toggle switch.

## SECTION 6 OPTION SWITCH SETTINGS

### 6.1 AMPLIFIER BOARD ON DP409/DP409A

Figure 6-1 shows the location of DS4 and DS5 on the Amplifier Board.



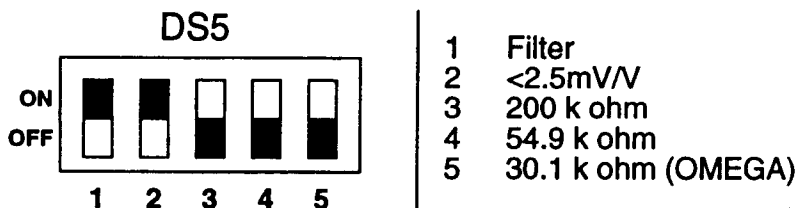
**Figure 6-1. Amplifier Board**

### 6.1.1 Transducer Sensitivity (mV/V) Switch DS5 (on Amplifier Board)

Controlled by Switch 2 of DS5-->  $<2.5 \text{ mV/V}$  - ON or  $>2.5 \text{ mV/V}$  - OFF

Example: Damped output, Filter ON; Transducer output less than 2.5 mV/V

Therefore, Switch 1 is ON for Filter ON and Switch 2 is ON for  $<2.5 \text{ mV/V}$  and all the rest are OFF. Refer to the figure below.



### 6.1.2 Calibration Shunt Resistor Switch DS5 (on Amplifier Board)

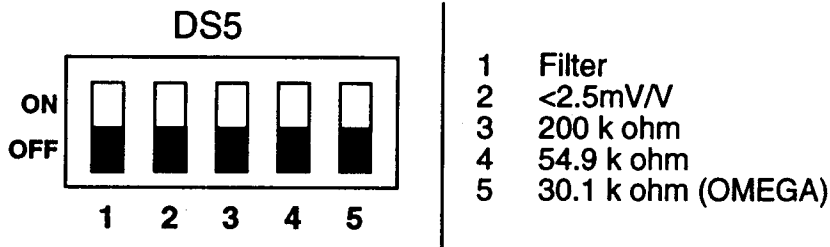
Controlled by Switch 3 of DS5--> 200 k Cal

Controlled by Switch 4 of DS5--> 54.9 k Cal

Controlled by Switch 5 of DS5--> 30.1 k Cal

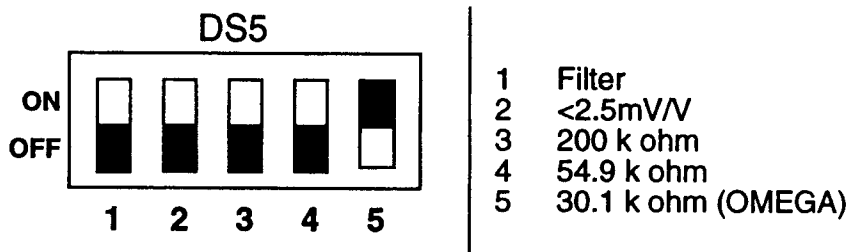
Example A: Dynisco compatible shunt calibration

All switches are in the OFF position. Refer to the figure below.



Example B: OMEGA/Gentran Shunt Calibration Resistor 30.1 k Cal

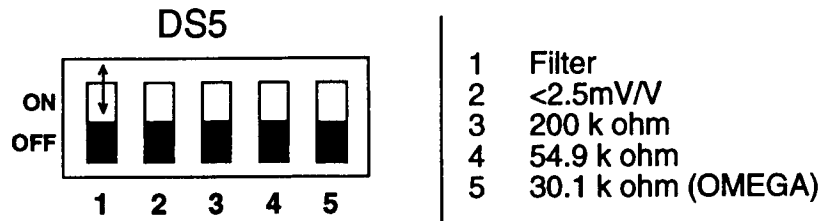
Therefore, Switch 5 is ON for 30.1 k ohm. Refer to the figure below.



**ON POSITION IS UP --- OFF POSITION IS DOWN**

## 6.1.3 Filter (Damping Circuit) Switch DS5 (on Amplifier Board)

Controlled by Switch 1 of DS5--> Filter ON, slower response, 5 seconds  
 or Filter OFF, fast response, 1/3 second

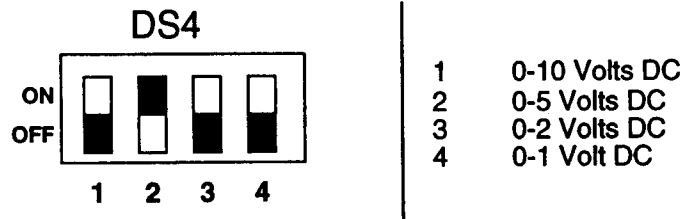


## 6.1.4 Recorder Output Select Switch DS4 (on Amplifier Board)

Controlled by Switch 1 of DS4--> 0-10 Volts DC  
 Controlled by Switch 2 of DS4--> 0-5 Volts DC  
 Controlled by Switch 3 of DS4--> 0-2 Volts DC  
 Controlled by Switch 4 of DS4--> 0-1 Volt DC

Example: Five (5) Volt DC required

Therefore, Switch 2 is ON for 5 Volts DC and all the rest are OFF. Refer to the figure below.



## 6.2 LOGIC OPTION BOARD ON DP409A ONLY

### 6.2.1 Setting of Control 1 and/or 2 Setpoints Switch DS1 (on Logic Bd)

Figure 6-2 shows the location of DS1 and DS2 on the Logic Option Board.

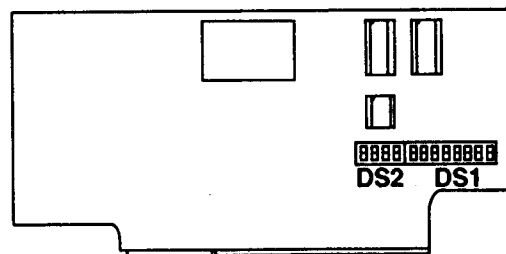


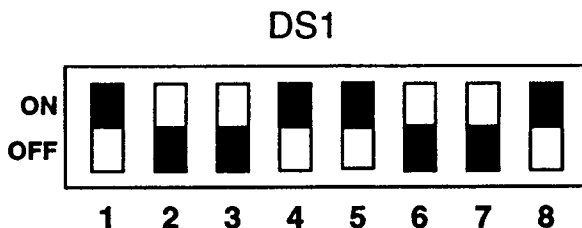
Figure 6-2. Logic Option Board

**ON POSITION IS UP --- OFF POSITION IS DOWN**

Controlled by Switches 1 and 4 of DS1-->	Control 2 for above setpoint
Controlled by Switches 2 and 3 of DS1-->	Control 2 for below setpoint
Controlled by Switches 5 and 8 of DS1-->	Control 1 for above setpoint
Controlled by Switches 6 and 7 of DS1-->	Control 1 for below setpoint

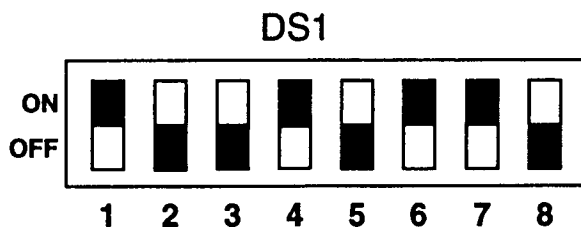
Example A: Controls 1 and 2 ON "above" setpoints.

Therefore, Switches 1, 4, 5, and 8 are ON and the rest are OFF. Refer to the figure below.



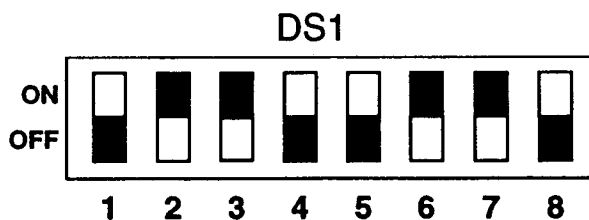
Example B: Control 1 ON "below" setpoint and Control 2 ON "above" setpoint.

Therefore, Switches 1, 4, 6, and 7 are ON and the rest are OFF. Refer to the figure below.



Example C: Controls 1 and 2 ON "below" setpoint.

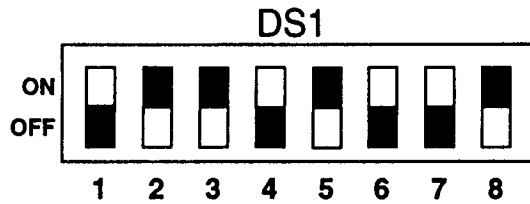
Therefore, Switches 2, 3, 6, and 7 are ON and the rest are OFF. Refer to the figure below.



**ON POSITION IS UP --- OFF POSITION IS DOWN**

Example D: Control 1 ON "above" setpoint and Control 2 ON "below" setpoint.

Therefore, Switches 2, 3, 5, and 8 are ON and the rest are OFF. Refer to the figure below.



## 6.2.2 Reset (Auto/Manual Reset) Switch DS2 (on Logic Option Board)

Controlled by Switch 1 of DS2--> Control 1 Auto Reset

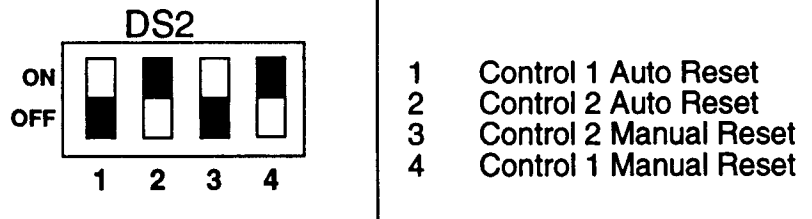
Controlled by Switch 2 of DS2--> Control 2 Auto Reset

Controlled by Switch 3 of DS2--> Control 2 Manual Reset

Controlled by Switch 4 of DS2--> Control 1 Manual Reset

Example: Manual Reset on Control 1 and Auto Reset on Control 2.

Therefore, Switches 2 and 4 are ON for and all the rest are OFF. Refer to the figure below.



**NOTE: CONTROL LOGIC CANNOT OCCUPY TWO STATES AT ONCE. WHEN DESIRED RESET MODE IS SWITCHED ON, ALTERNATE CORRESPONDING MODE SHOULD BE SWITCHED OFF. (I.E.; IF CONTROL 1 AUTO RESET IS SWITCHED ON, CONTROL 1 MANUAL RESET SHOULD BE SWITCHED OFF.)**

## SECTION 7 TROUBLESHOOTING

PROBLEM	SOLUTION
Indicator pegs full scale.	Opening in wiring between indicator and transducer. (NOTE: will occur when transducer cable is removed from transducer.)
Cannot adjust zero low enough.	Transducer over-pressured. Check transducer.

**ON POSITION IS UP --- OFF POSITION IS DOWN**

## SECTION 8 SPECIFICATIONS

<b>POWER:</b>	106-125VAC or 200-250VAC, 50/60 Hz, 1/8 A max.
<b>OPERATING TEMP. RANGE:</b>	0° to 140°F (-17.8° to 60°C)
<b>DISPLAY:</b>	6" long scale, 240 degree angle
<b>ACCURACY:</b>	Within $\pm 2.0\%$ full scale
<b>TRANSDUCER POWER SUPPLY:</b>	8.2VDC $\pm 5\%$
<b>TRANSDUCER BRIDGE CIRCUIT:</b>	4 leg, 350 ohm nominal resistance
<b>SHUNT CALIBRATION RESISTOR:</b>	Selectable 30.1k ohm, 54.9k ohm, 200k ohm
<b>INPUT SENSITIVITIES:</b>	0-1 to 0-0.25 mV/V and 0-2.5 to 0-5 mV/V DIP-switch selectable
<b>ZERO BALANCE:</b>	$\pm 35\%$ adjustable with the front panel potentiometer
<b>RESPONSE TIME:</b>	1/3 second or 5 seconds selectable
<b>RECORDER OUTPUTS:</b>	0-1VDC, 0-2VDC, 0-5VDC, 0-10VDC DIP-switch selectable, min. load 5000 ohms "R" option -- 0-20mA or 4-20mA factory set, min. load 15 ohms, max load 600 ohms
<b>RECORDER OUTPUT ACCURACY:</b>	$\pm 0.1\%$ full scale
<b>RECORDER OUTPUT REPEATABILITY:</b>	within $\pm 0.1\%$ full scale
<b>RECORDER OUTPUT LINEARITY:</b>	within $\pm 0.1\%$ full scale
<b>RECORDER OUTPUT STABILITY:</b>	within $\pm 0.1\%$ full scale
<b>DIMENSIONS:</b>	Refer to Figure 8-1
<b>WEIGHT:</b>	2.5 pounds (1.134 kg)

**DP409A CONTROL SPECIFICATIONS**

<b>RELAYS:</b>	2 SPDT (single pole double throw)
<b>RELAY RATING:</b>	8 amps at 125/250VAC or 5 amps at 30VDC
<b>SETPOINT RANGE:</b>	1-100% of full scale
<b>ACCURACY:</b>	within $\pm 0.3\%$ of full scale
<b>HYSTERESIS:</b>	within $\pm 0.5\%$ of full scale
<b>INDICATION:</b>	Front panel LEDs
<b>MODE:</b>	Above or below setpoint, switch selectable
<b>RESET:</b>	Automatic or manual, switch selectable

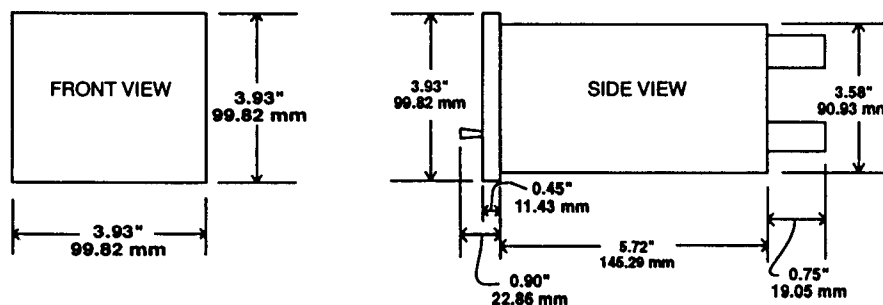
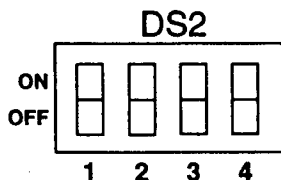


Figure 8-1. Dimensions

## SECTION 9 OPTION WORKSHEETS AND SUMMARY OF DIP SWITCH POSITIONS

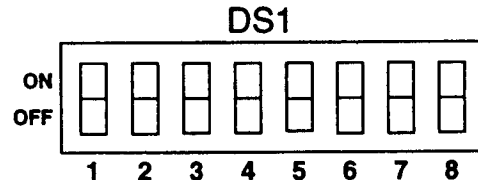
INSTRUCTIONS: Fill in this page, if desired, with the indicator positions of the switches (either ON or OFF) within DS1 and DS2. Refer to this sheet when calling OMEGA for technical assistance.

### LOGIC OPTION BOARD -- DP409A ONLY



Reset Logic -- DS2

- 1 Control 1, Auto Reset
- 2 Control 2, Auto Reset
- 3 Control 2, Manual Reset
- 4 Control 1, Manual Reset



Control Logic -- DS1

- 1 Control 2, Above Setpoint
- 2 Control 2, Below Setpoint
- 3 Control 2, Below Setpoint
- 4 Control 2, Above Setpoint
- 5 Control 1, Above Setpoint
- 6 Control 1, Below Setpoint
- 7 Control 1, Below Setpoint
- 8 Control 1, Above Setpoint

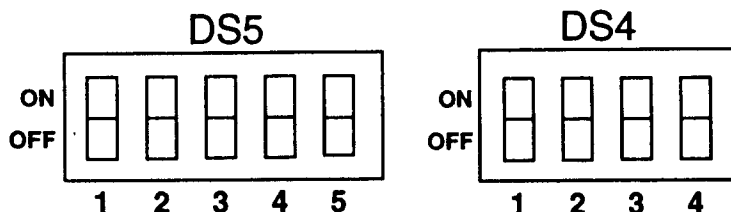
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NOTES



INSTRUCTIONS: Fill in this page, if desired, with the indicator positions of the switches (either ON or OFF) within DS4 and DS5. Refer to this sheet when calling OMEGA for technical assistance.

## AMP BOARD -- DP409 & DP409A



<u>Filter.</u>	1	Filter (Damping)
<u>Transducer Sensitivity.</u>	2	<2.5 mV/V Transducer Output
<u>Shunt Calibration - DS5</u>	3	200 k Cal
	4	54.9 k Cal
	5	30.1 k Cal

<u>Recorder Output - DS4</u>	1	0-10 Volts DC
	2	0-5 Volts DC
	3	0-2 Volts DC
	4	0-1 Volt DC

---

NOTES

**NOTES**

## SECTION 10 DESCRIPTION

The OMEGA DP434 Digital Melt Pressure Transducer is a combination transducer power supply, indicator and signal conditioner. The DP434 ¼ DIN standard size case of extruded aluminum protects against EMI and RFI noise, heat dispersion and physical damage. The 0.3" LED display gives a clear indication, readable even from a distance.

The DP434 is designed for use with an OMEGA pressure transducer or any 4-leg, 350 ohm wheatstone bridge strain gage transducer. A calibration push-button allows for span adjustment while you adjust zero at zero pressure. The complete electronic assembly can be removed and/or replaced from the front panel for convenient service and option selection. Options include dual setpoints and auxiliary outputs for recorders, remote indicators or a computer interface. The dual setpoint option, designated by the letter "A" (DP434A), can be used to give a warning before an actual shutdown sequence is initiated, thereby reducing or avoiding downtime. To prevent accidental shutdown, the act of setting of the setpoint or calibration will not actuate the alarm relays.

## SECTION 11 UNPACKING

Remove the Packing List and verify that all equipment has been received. If there are any questions about the shipment, please call the OMEGA Customer Service Department at 1-800-622-2378 or (203) 359-1660.

Upon receipt of shipment, inspect the container and equipment for any signs of damage. Take particular note of any evidence of rough handling in transit. Immediately report any damage to the shipping agent.

### NOTE

The carrier will not honor any claims unless all shipping material is saved for their examination. After examining and removing contents, save packing material and carton in the event reshipment is necessary.

## SECTION 12 PARTS OF THE MELT PRESSURE TRANSDUCER

### 12.1 FRONT

Figure 12-1 shows the front of the indicator.

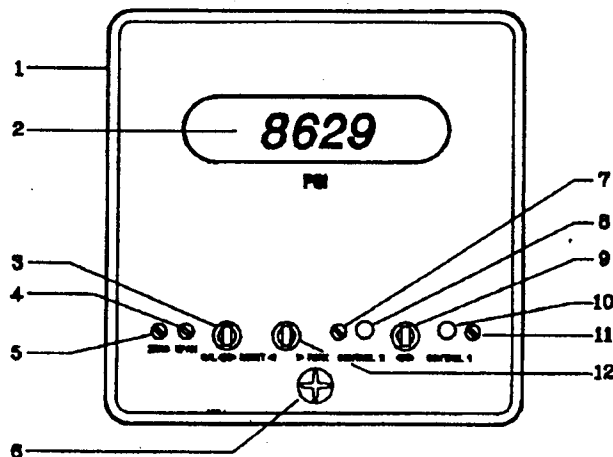


Figure 12-1. Front of the indicator

KEY	DESCRIPTION
1	<b>1/4 DIN Enclosure.</b> Outer case dimensions.
2	<b>Large Digital Display with high efficiency LEDs.</b> Indicates operating pressure and control alarm setpoints.
3	<b>Calibration Selector/Reset Toggle Switch.</b> Used to display and adjust span for calibration pressure of transducer and to reset control alarms when configured for manual reset.
4	<b>Span Potentiometer.</b> Used to raise/lower calibration pressure in conjunction with calibration/reset switch.
5	<b>Zero Potentiometer.</b> Used to raise/lower zero calibration point on display.
6	<b>Access Screw.</b> Unscrew to remove indicator from enclosure to gain access to internal DIP switches.
7	<b>Control 2 Potentiometer.</b> Used to raise/lower Control 2 alarm setpoint.
8	<b>Control 2 Alarm Indication LED.</b> Lights when Control 2 setpoint is reached.
9	<b>Control 1/Control 2 Selector Toggle Switch.</b> Used to display and adjust Control 1 and Control 2 setpoints.
10	<b>Control 1 Alarm Indication LED.</b> Lights when Control 1 setpoint is reached.
11	<b>Control Potentiometer.</b> Used to raise/lower Control 1 alarm setpoint.
12	<b>Peak Hold/Peak Reset Toggle Switch.</b> Used to switch unit into peak hold mode and to reset the peak pressure.

## 12.2 REAR

Figure 12-2 shows the rear of the indicator. Section 13.1 gives the description of the terminals located on the rear.

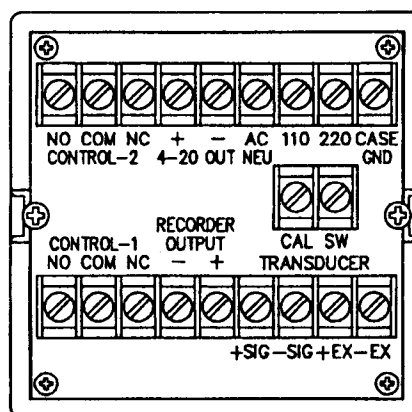


Figure 12-2. Rear of the Indicator

## SECTION 13 INSTALLATION

The DP434 would normally be mounted in a control panel or other sheet metal structure. High heat or humid locations should be avoided. The outer case is designed for a 1/4 DIN panel cutout. Refer to Figure 13-1. To mount, first remove the screws holding in the slide retainer on the side of the case. Remove the slide retainers by sliding them toward the rear of the unit. Install the indicator into the panel cutout. Slide the slide retainers back into their slots. Install the screws and tighten enough to hold the indicator in place.

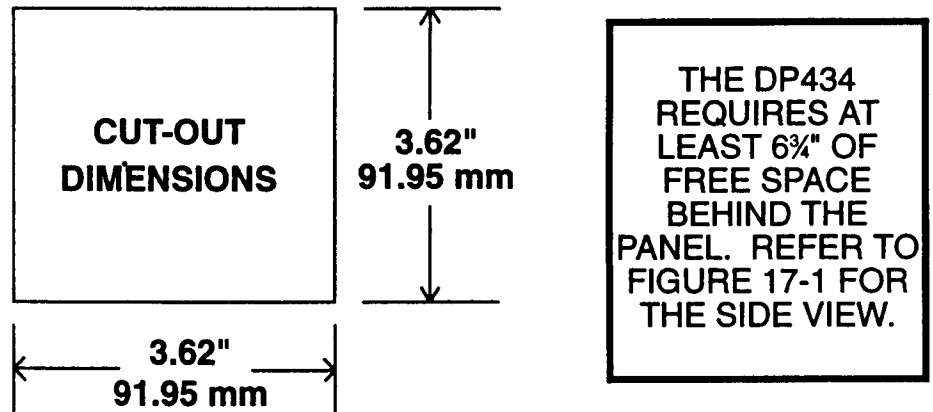
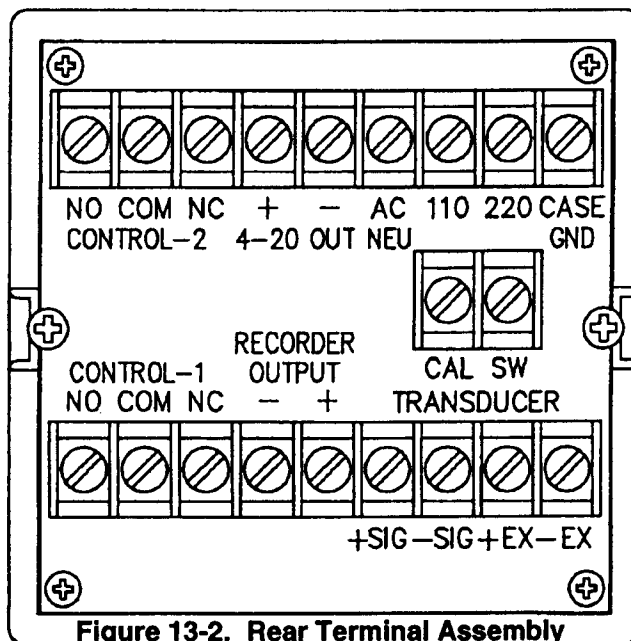


Figure 13-1. Cutout Dimensions

### 13.1 INSTALLATION WIRING

Compliance with local and national codes is recommended. Wiring should be double checked before applying power. Power and signal leads should be run separately, if possible, to prevent electrical interference. The recorder output, except for the "R" (4-20mA output) option, is connected to the "+" and "-" Recorder Output Terminals. The "R" (4-20mA output) is wired to the "+" and "-" terminals marked "4-20 OUT".

Figure 13-2 shows the rear of the indicator and the table following explains the terminals.



## DESCRIPTION

### UPPER TERMINALS (from left to right)

Control 2 Relay - normally open  
 Control 2 Relay - common  
 Control 2 Relay - normally closed  
 4-20mA Recorder Output - positive (+) signal  
 4-20mA Recorder Output - negative (-) signal  
 Power Supply - AC neutral  
 Power Supply - 110V AC input  
 Power Supply - 220V AC input  
 Case Ground

### MIDDLE TERMINALS (from left to right)

Calibration Switch - for use with internal shunt transducers  
 Calibration Switch - for use with internal shunt transducers

CONTINUED ON NEXT PAGE

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**DESCRIPTION**

---

***LOWER TERMINALS (from left to right)***

Control 1 Relay - normally open  
Control 1 Relay - common  
Control 1 Relay - normally closed  
Voltage Recorder Output - negative (-) signal  
Voltage Recorder Output - positive (+) signal  
Transducer - positive (+) signal connection (green)  
Transducer - negative (-) signal connection (white)  
Transducer - positive (+) excitation (red)  
Transducer - negative (-) excitation (black)

**SECTION 14 ADJUSTMENTS - ZERO AND SPAN****14.1 DESCRIPTION**

All Wheatstone bridge type strain gages have some zero imbalance. This small error can be virtually eliminated by using the zero adjustment potentiometer on the front panel. The zero should only be reset when zero pressure is being applied to the transducer. The zero adjustment changes the offset or starting point for the indicator to correspond to zero pressure on the transducer. The span adjustment changes the gain or slope of the amplifier to match the output curve of the transducer. A pressure standard or dead-weight tester can be used to check calibration. The span would then be adjusted to give the desired output at a particular pressure. Most transducers are calibrated against an external shunt resistor. This shunt resistor simulates an actual pressure input value. The value is normally marked on the transducer itself. It would look like this: 30.1 k ohms, 8123 PSIG. This means that if an external resistor of 30.1 k ohms resistance were placed between the excitation positive (+) wire and signal positive (+) wire an input signal equivalent to 8123 PSIG will be simulated between the signal positive (+) and the signal negative (-) wires.

**14.2 PROCEDURE**

The following is a typical adjustment procedure:

**ALL CALIBRATION ADJUSTMENTS SHOULD BE PERFORMED WITH THE TRANSDUCERS UNDER NO LOAD AND AT OPERATING TEMPERATURE.**

1. Power the instrument.
2. With zero pressure on the transducer, adjust the zero potentiometer to obtain a zero reading.
3. Push and hold the calibration selector switch to the left while adjusting the span potentiometer until the correct calibration pressure is obtained.

4. Release the calibration switch and recheck the zero reading. If incorrect, repeat Steps 2 through 4.
5. The electrical zero may be checked any time the transducer is at zero pressure. This may be necessary after heat-up to correct any thermal zero shift of the transducer.

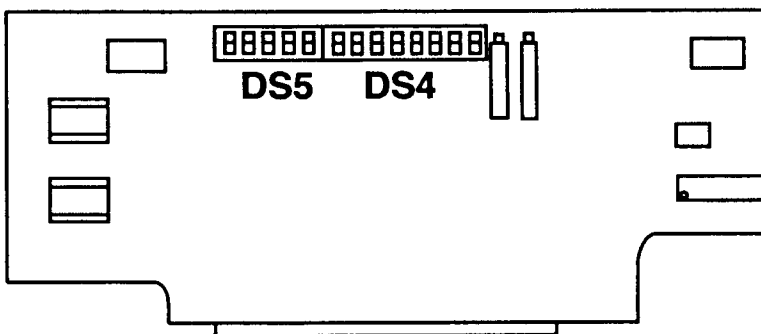
## NOTE

**DO NOT CHANGE THE SPAN CALIBRATION WHEN THERE IS PRESSURE ON THE TRANSDUCER. IF THIS IS DONE, THE PRESSURE READING MAY BE IN ERROR.**

## SECTION 15 OPTION SWITCH SETTINGS

### 15.1 AMPLIFIER BOARD ON DP434/DP434A

Figure 15-1 shows the location of DS4 and DS5 on the Amplifier Board.



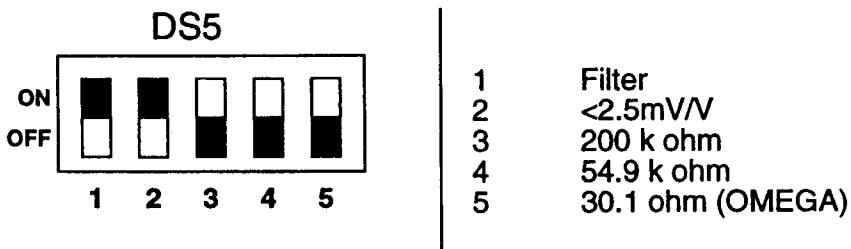
**Figure 15-1. Amplifier Board**

#### 15.1.1 Transducer Sensitivity (mV/V) Switch DS5 (on Amplifier Board)

Controlled by Switch 2 of DS5-->  $<2.5 \text{ mV/V}$  - ON or  $>2.5 \text{ mV/V}$  - OFF

Example: Damped output, Filter ON; Transducer output less than 2.5 mV/V

Therefore, Switch 1 is ON for Filter ON and Switch 2 is ON for  $<2.5 \text{ mV/V}$  and all the rest are OFF. Refer to the figure below.



**ON POSITION IS UP --- OFF POSITION IS DOWN**



### 15.1.2 Calibration Shunt Resistor Switch DS5 (on Amplifier Board)

Controlled by Switch 3 of DS5--> 200 k Cal

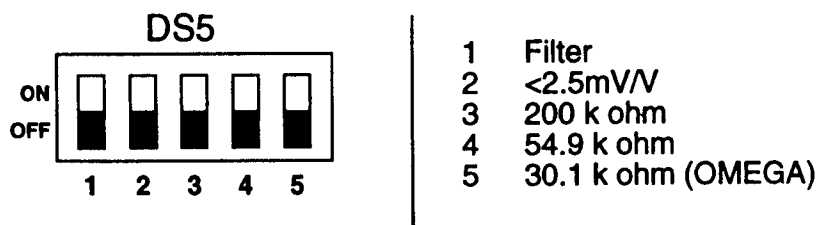
Controlled by Switch 4 of DS5--> 54.9 k Cal

Controlled by Switch 5 of DS5--> 30.1 k Cal

NOTE: Turn Switches 3, 4, and 5 OFF for internal shunt transducers (i.e. Dynisco). Use CAL SW terminals on the back of the indicator for shunting wiring.

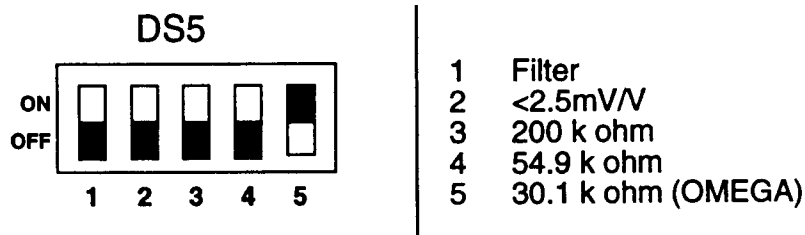
#### Example A: Dynisco compatible shunt calibration

All switches are in the OFF position. Refer to the figure below.



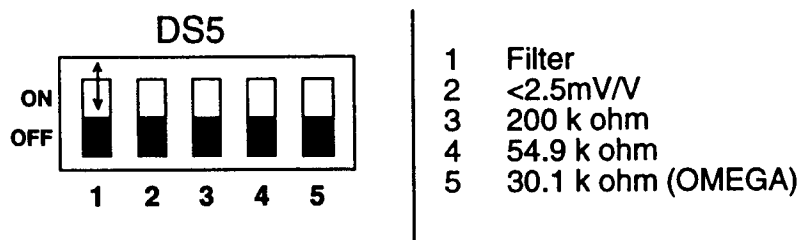
#### Example B: OMEGA/Gentran Shunt Calibration Resistor 30.1 k Cal

Therefore, Switch 5 is ON for 30.1 k ohm. Refer to the figure below.



### 15.1.3 Filter (Damping Circuit) Switch DS5 (on Amplifier Board)

Controlled by Switch 1 of DS5--> Filter ON, slower response, 5 seconds  
 or Filter OFF, fast response, 1/3 second



**ON POSITION IS UP --- OFF POSITION IS DOWN**

## 15.1.4 Recorder Output Select Switch DS4 (on Amplifier Board)

Controlled by Switch 5 of DS4--> 0-10 Volts DC

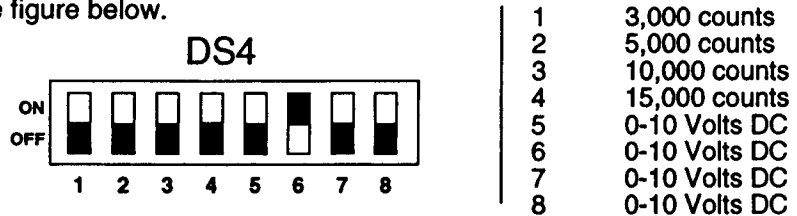
Controlled by Switch 6 of DS4--> 0-5 Volts DC

Controlled by Switch 7 of DS4--> 0-2 Volts DC

Controlled by Switch 8 of DS4--> 0-1 Volt DC

Example: Five (5) Volt DC required

Therefore, Switch 6 is ON for 5 Volts DC and all the rest are OFF. Refer to the figure below.

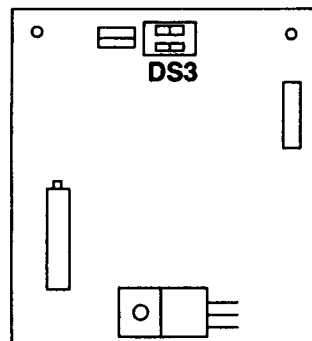


## 15.2 DISPLAY AND LOGIC OPTION BOARDS

*(NOTE: The Logic Option Board can be found only in the DP434A.)*

### 15.2.1 Decimal Point (Display Board) - Switch DS3

Figure 15-2 shows the location of DS3 on the Display Board.

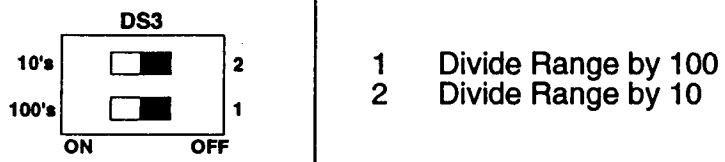


**Figure 15-2. Display Board**

Controlled by Switch 1 of DS3--> Divide Range by 100

Controlled by Switch 2 of DS3--> Divide Range by 10

Refer to Section 15.2.2 for examples of how to set DS3.

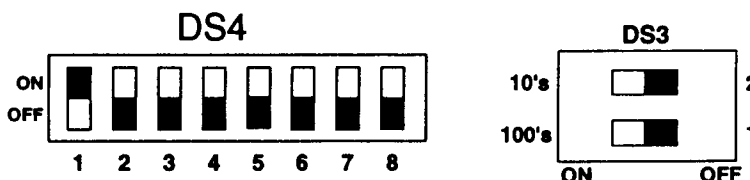


**ON POSITION IS UP — OFF POSITION IS DOWN**  
**ON POSITION IS TO THE LEFT — OFF POSITION IS TO THE RIGHT**

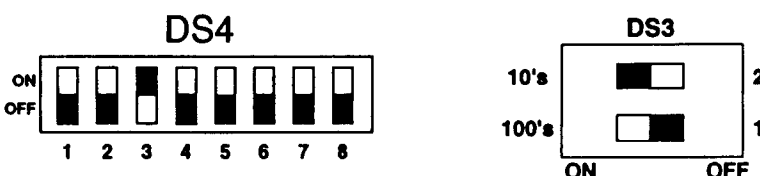
### 15.2.2 Range Select Switches DS3 & DS4 (Logic Option & Display Boards)

Controlled by Switch 1 of DS4--> 0-3,000, 0-300 or 0-30 readout  
 Controlled by Switch 2 of DS4--> 0-5,000, 0-500 or 0-50 readout  
 Controlled by Switch 3 of DS4--> 0-10,000, 0-1,000 or 0-100 readout  
 Controlled by Switch 4 of DS4--> 0-15,000, 0-1,500 or 0-150 readout

Example A: 3,000 PSIG range



Example B: 1,000 PSIG range



### 15.3 ADJUSTMENTS – DP434A CONTROL SETPOINTS

The DP434A provides two separate setpoint circuits and relays. By using one relay to trigger an auxiliary alarm, corrective action can be taken before mandatory shut-down is reached. The second relay circuit can then be used for mandatory shut-down.

#### CONTROL 1

1. Push and hold the control selector switch to the right.
2. Adjust the Control 1 potentiometer until the desired control pressure is displayed on the indicator.
3. Release the selector toggle switch.

#### CONTROL 2

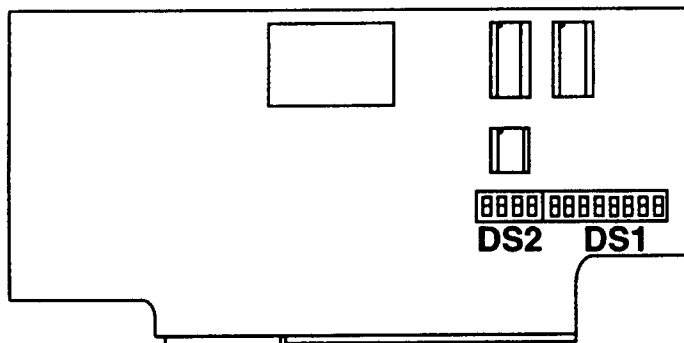
1. Push and hold the control selector switch to the right.
2. Adjust the Control 2 potentiometer until the desired control pressure is displayed on the indicator.
3. Release the selector toggle switch.

**ON POSITION IS UP — OFF POSITION IS DOWN**  
**ON POSITION IS TO THE LEFT — OFF POSITION IS TO THE RIGHT**

## 15.4 LOGIC OPTION BOARD ON DP434A

### 15.4.1 Setting of Control 1 and/or 2 Setpoints Switch DS1 (on Logic Bd)

Figure 15-3 shows the location of DS1 and DS2 on the Logic Option Board.

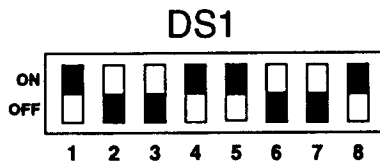


**Figure 15-3. Logic Option Board**

Controlled by Switches 1 and 4 of DS1-->Control 2 for above setpoint  
 Controlled by Switches 2 and 3 of DS1-->Control 2 for below setpoint  
 Controlled by Switches 5 and 8 of DS1-->Control 1 for above setpoint  
 Controlled by Switches 6 and 7 of DS1-->Control 1 for below setpoint

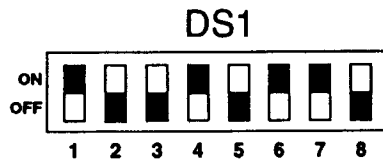
Example A: Controls 1 and 2 ON "above" setpoints.

Therefore, Switches 1, 4, 5, and 8 are ON and the rest are OFF. Refer to the figure below.



Example B: Control 1 ON "below" setpoint and Control 2 ON "above" setpoint.

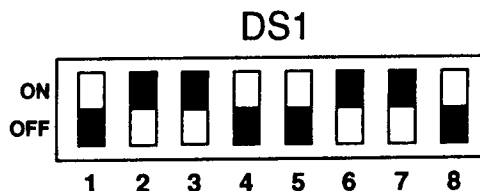
Therefore, Switches 1, 4, 6, and 7 are ON and the rest are OFF. Refer to the figure below.



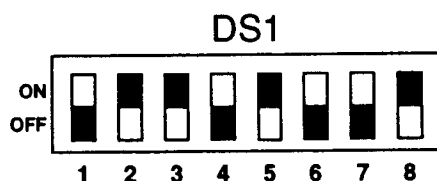
**[ ON POSITION IS UP --- OFF POSITION IS DOWN ]**

**Example C: Controls 1 and 2 ON "below" setpoint.**

Therefore, Switches 2, 3, 6, and 7 are ON and the rest are OFF. Refer to the figure below.

**Example D: Control 1 ON "above" setpoint and Control 2 ON "below" setpoint.**

Therefore, Switches 2, 3, 5, and 8 are ON and the rest are OFF. Refer to the figure below.

**15.4.2 Reset (Auto/Manual Reset) Switch DS2 (on Logic Option Board)**

Controlled by Switch 1 of DS2--> Control 1 Auto Reset

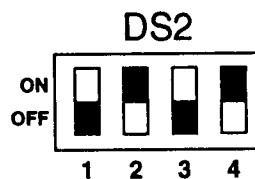
Controlled by Switch 2 of DS2--> Control 2 Auto Reset

Controlled by Switch 3 of DS2--> Control 2 Manual Reset

Controlled by Switch 4 of DS2--> Control 1 Manual Reset

**Example: Manual Reset on Control 1 and Auto Reset on Control 2.**

Therefore, Switches 2 and 4 are ON for and all the rest are OFF. Refer to the figure below.



**NOTE: CONTROL LOGIC CANNOT OCCUPY TWO STATES AT ONCE. WHEN DESIRED RESET MODE IS SWITCHED ON, ALTERNATE CORRESPONDING MODE SHOULD BE SWITCHED OFF. (I.E.; IF CONTROL 1 AUTO RESET IS SWITCHED ON, CONTROL 1 MANUAL RESET SHOULD BE SWITCHED OFF.)**

**[ ON POSITION IS UP --- OFF POSITION IS DOWN ]**

## SECTION 16 TROUBLESHOOTING

PROBLEM	SOLUTION
Indicator shows "1 0" if overscale or "-1 0" if the display goes negative.	Opening in wiring between indicator and transducer (NOTE: will occur when transducer cable is removed from transducer) or improper wiring - Check wiring (refer to Section 13.1).
Cannot adjust zero low enough	Transducer over-pressured. Check transducer.

## SECTION 17 SPECIFICATIONS

<b>POWER:</b>	106-125VAC or 200-250VAC, 50/60 Hz, 1/8 A max.
<b>OPERATING TEMP. RANGE:</b>	0° to 140°F (-17.8° to 60°C)
<b>DISPLAY:</b>	4½ digit high efficiency LED display, 0.3" in height with last digit fixed at zero, selectable decimal point
<b>ACCURACY:</b>	Within ±0.1% full scale, ±1 digit
<b>TRANSDUCER POWER SUPPLY:</b>	8.2VDC ± 5%
<b>TRANSDUCER BRIDGE CIRCUIT:</b>	4 leg, 350 ohm nominal resistance
<b>SHUNT CALIBRATION RESISTOR:</b>	Selectable 30.1k ohm, 54.9k ohm, 200k ohm
<b>INPUT SENSITIVITIES:</b>	0-1 to 0-0.25 mV/V and 0-2.5 to 0-5 mV/V DIP-switch selectable and adjustable from the front panel
<b>ZERO BALANCE:</b>	±35% adjustable with the front panel potentiometer
<b>RESPONSE TIME:</b>	1/3 second or 5 seconds selectable
<b>RECORDER OUTPUTS:</b>	0-1VDC, 0-2VDC, 0-5VDC, 0-10VDC DIP-switch selectable, min. load 5000 ohms "R" option -- 4-20mA factory set, min. load 15 ohms, max load 600 ohms
<b>RECORDER OUTPUT ACCURACY:</b>	within ±0.1% full scale ± 1 digit
<b>RECORDER OUTPUT REPEATABILITY:</b>	within ±0.1% full scale ± 1 digit
<b>RECORDER OUTPUT LINEARITY:</b>	within ±0.1% full scale ± 1 digit
<b>RECORDER OUTPUT STABILITY:</b>	within ±0.1% full scale ± 1 digit
<b>DIMENSIONS:</b>	Refer to Figure 17-1
<b>WEIGHT:</b>	2.5 pounds (1.134 kg)

### DP434A CONTROL SPECIFICATIONS

<b>RELAYS:</b>	2 SPDT (single pole double throw)
<b>RELAY RATING:</b>	8 amps at 125/250VAC or 5 amps at 30VDC
<b>SETPOINT RANGE:</b>	1-100% of full scale
<b>ACCURACY:</b>	within ±0.3% of full scale
<b>HYSTERESIS:</b>	within ±0.5% of full scale
<b>INDICATION:</b>	Front panel LEDs
<b>MODE:</b>	Above or below setpoint, switch selectable
<b>RESET:</b>	Automatic or manual, switch selectable

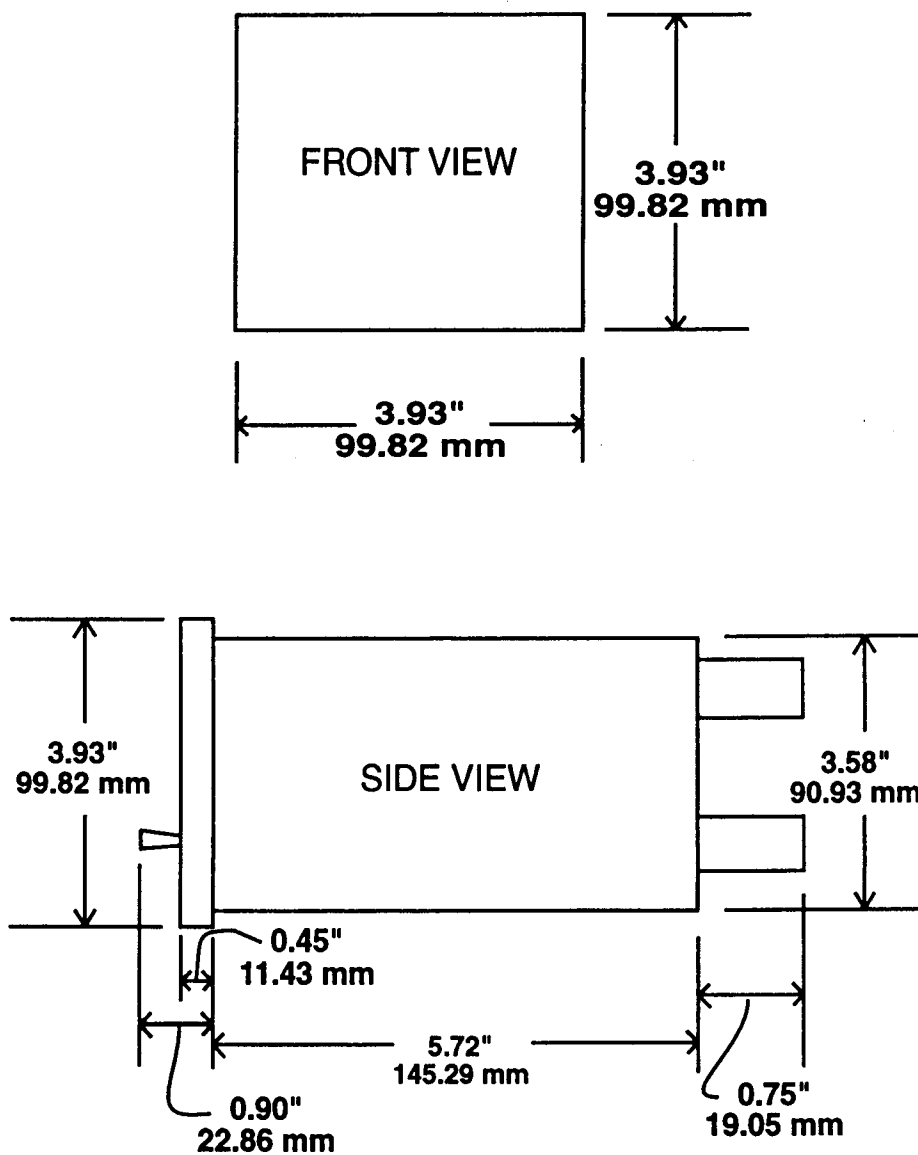
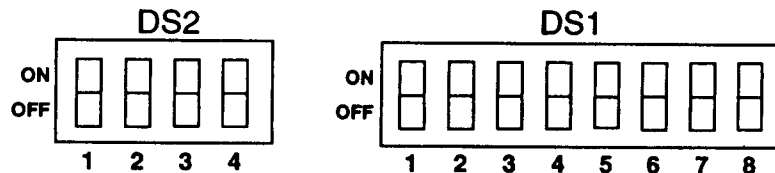


Figure 17-1. Dimensions

**SECTION 18 OPTION WORKSHEETS AND SUMMARY OF DIP SWITCH POSITIONS**

INSTRUCTIONS: Fill in this page, if desired, with the indicator positions of the switches (either ON or OFF) within DS1 and DS2. Refer to this sheet when calling OMEGA for technical assistance.

**OPTION BOARD -- DP434A ONLY****Reset Logic-- DS2**

- |   |                         |
|---|-------------------------|
| 1 | Control 1, Auto Reset   |
| 2 | Control 2, Auto Reset   |
| 3 | Control 2, Manual Reset |
| 4 | Control 1, Manual Reset |

**Control Logic -- DS1**

- |   |                           |
|---|---------------------------|
| 1 | Control 2, Above Setpoint |
| 2 | Control 2, Below Setpoint |
| 3 | Control 2, Below Setpoint |
| 4 | Control 2, Above Setpoint |
| 5 | Control 1, Above Setpoint |
| 6 | Control 1, Below Setpoint |
| 7 | Control 1, Below Setpoint |
| 8 | Control 1, Above Setpoint |

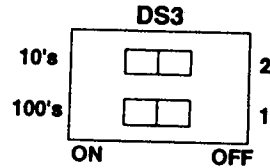
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NOTES



INSTRUCTIONS: Fill in this page, if desired, with the indicator positions of the switches (either ON or OFF) within DS3, DS4 and DS5. Refer to this sheet when calling OMEGA for technical assistance.

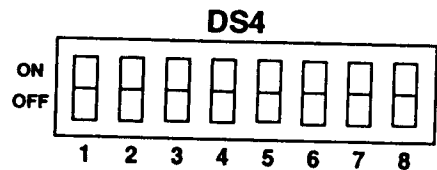
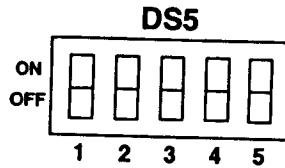
## DISPLAY BOARD -- DP434 & DP434A



### Decimal Point Logic - DS3

- 1 Divide Range By 100
- 2 Divide Range by 10

## AMP BOARD -- DP434 & DP434A



- |                                |   |                             |
|--------------------------------|---|-----------------------------|
| <u>Filter.</u>                 | 1 | Filter (Damping)            |
| <u>Transducer Sensitivity.</u> | 2 | <2.5 mV/V Transducer Output |
| <u>Shunt Calibration - DS5</u> | 3 | 200 k Cal                   |
|                                | 4 | 54.9 k Cal                  |
|                                | 5 | 30.1 k Cal                  |

- |                              |   |                 |   |               |
|------------------------------|---|-----------------|---|---------------|
| <u>Recorder Output - DS4</u> | 1 | 0-3,000 counts  | 5 | 0-10 Volts DC |
|                              | 2 | 0-5,000 counts  | 6 | 0-5 Volts DC  |
|                              | 3 | 0-10,000 counts | 7 | 0-2 Volts DC  |
|                              | 4 | 0-15,000 counts | 8 | 0-1 Volt DC   |

NOTES

**NOTES**



## WARRANTY

OMEGA warrants this unit to be free of defects in materials and workmanship and to give satisfactory service for a period of 13 months from date of purchase. OMEGA Warranty adds an additional one (1) month grace period to the normal one (1) year product warranty to cover handling and shipping time. This ensures that our customers receive maximum coverage on each product. If the unit should malfunction, it must be returned to the factory for evaluation. Our Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective it will be repaired or replaced at no charge. However, this WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of being damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components which wear or which are damaged by misuse are not warranted. These include contact points, fuses, and triacs.

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## RETURN REQUESTS / INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA ENGINEERING Customer Service Department. Call toll free in the USA and Canada: 1-800-622-2378, FAX: 203-359-7811; International: 203-359-1660, FAX: 203-359-7807.

**BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, YOU MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OUR CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS).** The assigned AR number should then be marked on the outside of the return package and on any correspondence. Please have the following information available BEFORE contacting OMEGA:

1. P.O. number under which the product was PURCHASED,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems you are having with the product.

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