

### Introduction.

This document provides the instructions necessary to install three or four AirStar compressors to one facility using AirStar Multiple Compressor Installation Kit, PN 85695. Make sure to read this entire document before proceeding with the installation.



Installations and repairs above and beyond normal maintenance may only be carried out by a trained and approved specialist or one of our service technicians.

Always observe the Installation and Operating Instructions for important information on Safety Instructions, Set-up, Electrical Connections, Disinfection and Cleaning.

### Kit Components Supplied.

- Multiple AirStar Relay Control Box, P/N 85697
- Remote Pressure Switch, P/N 86436
- 24-Volt Transformer, P/N 53188
- Safety Relief Valve (Qty 4), P/N 60510

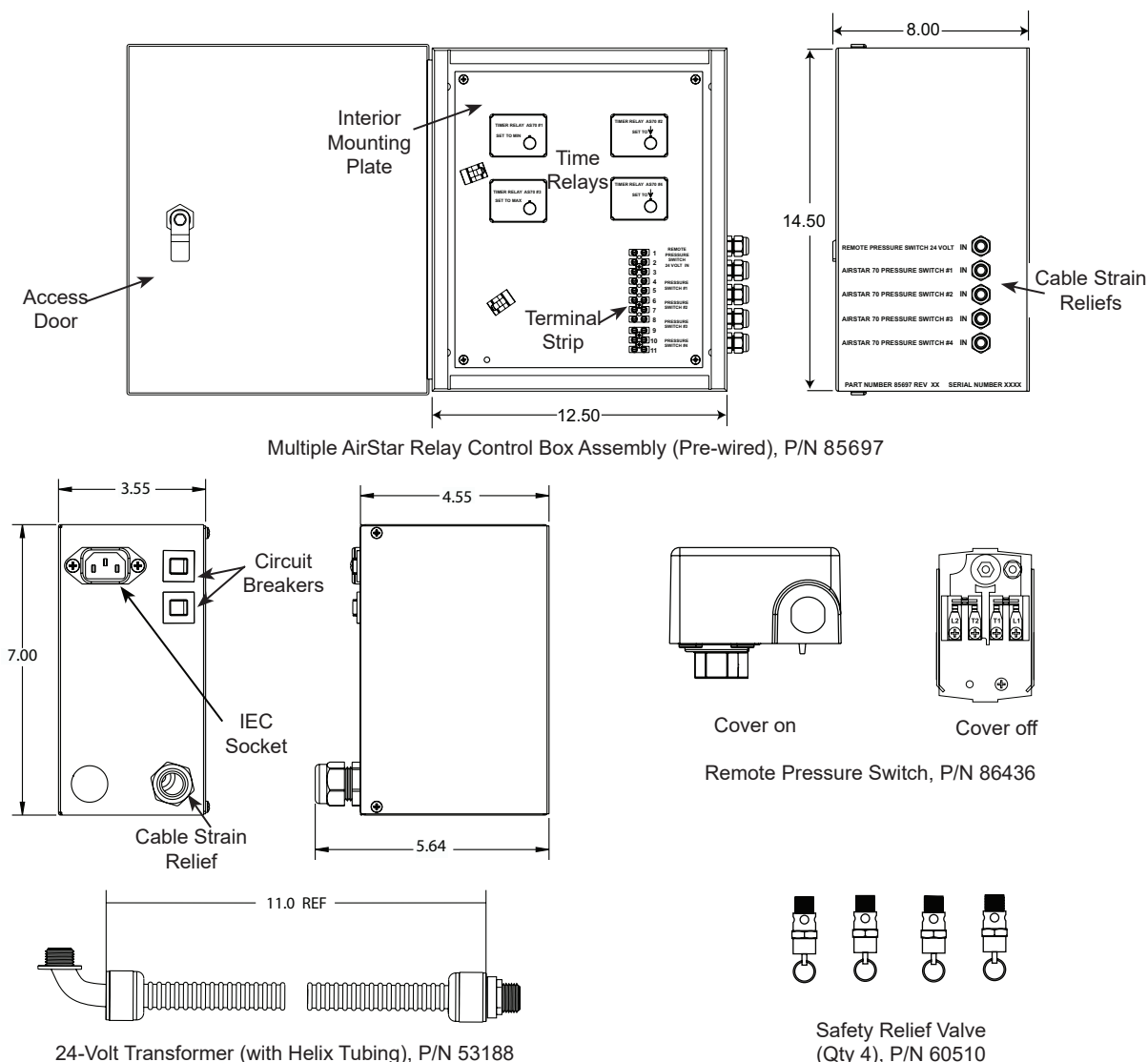
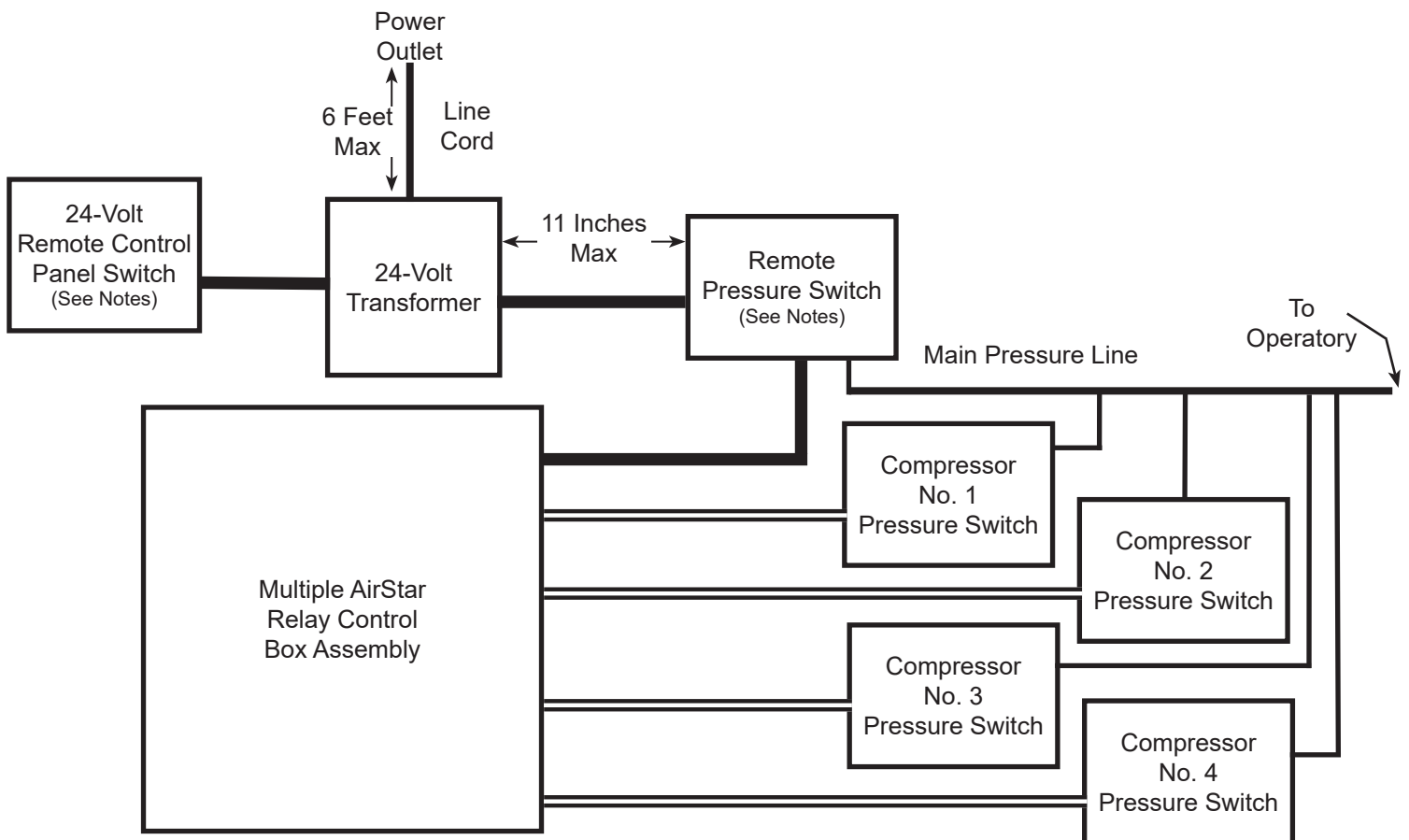


Figure 1. Kit Components Supplied

**Installation Overview.**

Figure 2 provides an overview for the installation of the kit. Notice that the control box, transformer and pressure switch are located near each other due to line cord and other wiring length requirements. The installation plan should also allow for easy access for maintenance and servicing. The safety control valve replaces the existing valve installed on the outlet manifold of each compressor tank. The 24-Volt Remote Control Panel Switch is not supplied with the kit and is shown because a control switch is necessary to start and stop the system and the switch panel is the most commonly used. Refer to the following for a brief description of each component supplied in the kit.

24-Volt Transformer	Provides the low voltage power (24-volt) necessary to operate the control circuits. Unit must be located no more than 6 feet from a power outlet for connection of line cord.
Remote Pressure Switch.	Provides central pressure control of all connected compressors by turning all compressors ON/OFF at the same time with staggering starts. Operates system in the pressure range of 85 to 115 psi. The remote pressure switch must be located no more that 11 inches from the 24-Volt Transformer for the installation of Helix Tubing over the connecting wires.
Relay Control Box	Provides the central timing point connection of all system compressors allowing staggered starts of each compressor by setting distinct wait times for the operation after shutdown. This control make sure that the compressors are working together to build pressure smoothly.
Safety Relief Valve	Allows each compressor to operate at a higher pressure (140 psi) since the pressure range has been increased at the individual compressor pressure switches to the 115 to 130 psi range.



- Notes:**
- The 24-Volt Remote Control Panel Switch is not supplied with this installation kit.
  - All wiring is #18 Gauge low voltage wire provided by electrician while final connections are made by dealer service technician.
  - The Remote Pressure Switch must be connected into the pressure line in series with all system pressure switches

Figure 2. Kit Installation Overview

## Installation Procedure.

This procedure provides the steps necessary to install up to four AirStar compressors at one facility. Perform the procedures to the extent necessary to complete the kit installation.

**Pre- Installation.** Make sure to do the following prior to installing the kit:

1. Verify that all power is turned off. This included Main power and low voltage to all the compressors and utility equipment.
2. Verify that the 24-Volt Remote Control Panel Switch (or other control switch) is properly installed according to the site installation plan.
3. Mount the control box, transformer and remote pressure switch on the wall in accordance with the site plan.
4. Connect the remote pressure switch to the main pressure line in series with the system compressors.

## Electrical Connections.

1. Connect the three #18 Gauge Low Voltage wires from the remote switch panel to the 24-Volt transformer. As shown by View 1, connect the Yellow wire to terminal 2 the Orange wire to terminal 3 and the Brown wire to terminal 4.
2. Connect the two #18 Gauge black and white Low Voltage wires between the 24-Volt transformer terminals 2 and 4 to the remote pressure switch terminals L2 and T2 as shown by Views 1 and 2.
3. Refer to View 3 and connect two #18 Gauge Low Voltage black and white wires from Remote Pressure Switch terminals L2 and T2 to terminals 1 and 2 inside the Timer Relay Control Box. Connect the white wire to terminal 1 and the black wire to terminal 2.
4. Connect each #18 Gauge Low Voltage Orange and Yellow wire pair from the associated compressor into the Timer Relay Control Box as shown by the table below.

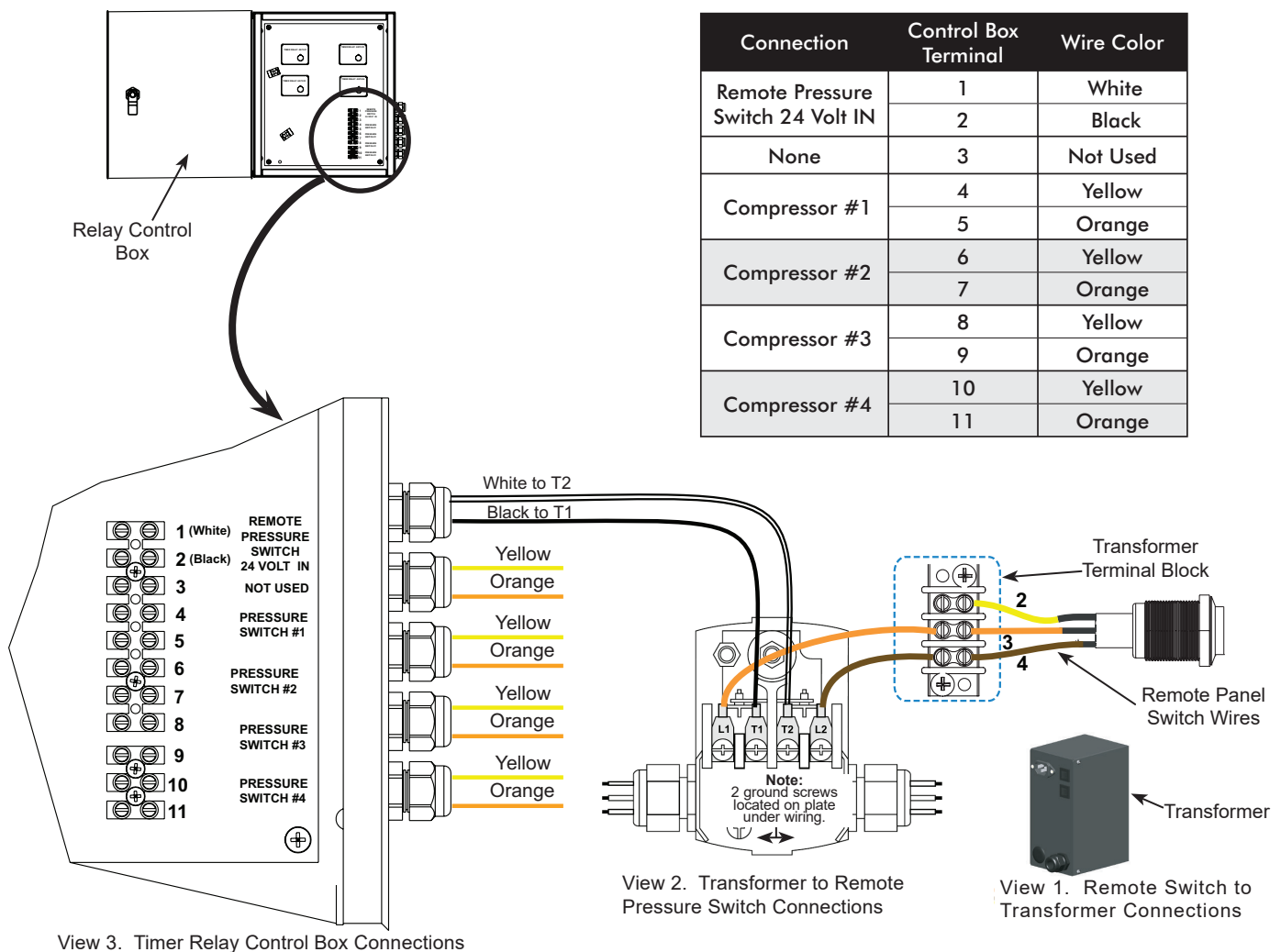


Figure 3. Electrical Connections

**Caution:** To avoid damage and/or harm to personnel, make sure that all pressure is evacuated out of all compressor tanks.

### Safety Relief Valve Replacement.

Refer to Figure 4 and replace the existing 125 psi safety relief valve installed on the outlet manifold of each compressor tank with the 140 psi safety relief valves provided in the kit. Use care not to strip the threading and make sure not to over tighten.

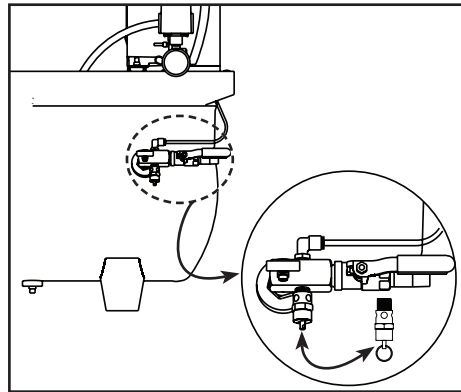


Figure 4. 140 psi Safety Relief Valve Replacement

**Caution:** To avoid damage, do not exceed maximum allowable system pressure. Always check switch operation after re-setting.

### Resetting the Pressure Switches.

#### Pressure Adjustment

Adjusting the operating pressure range of the Pressure Switch is accomplished by the Range and Differential spring nuts located under the pressure switch cover. The Range spring nut controls the cut-in or turn on pressure set point, while the Differential spring nut sets the operation cut-out or turn off pressure set point. Since the range adjustment changes both the high and low operating points, it is recommended to always adjust the Range spring nut first.

#### Adjusting Pressure Switch on the AirStar.

The Pressure Switches are preset to 85 to 115 +/- 4 psi range. Each pressure switch on the AirStar units must be set to operate at a higher-pressure level when configured in a multiple compressor system. Refer to Figure 5 and reset the pressure. Turn the range nut clockwise and make sure the cut-out pressure falls within 125 to 130 psi on each AirStar pressure switch.

**Caution:** Do not over tighten the nut or the cut -out pressure will exceed the 140-psi safety relief valve.

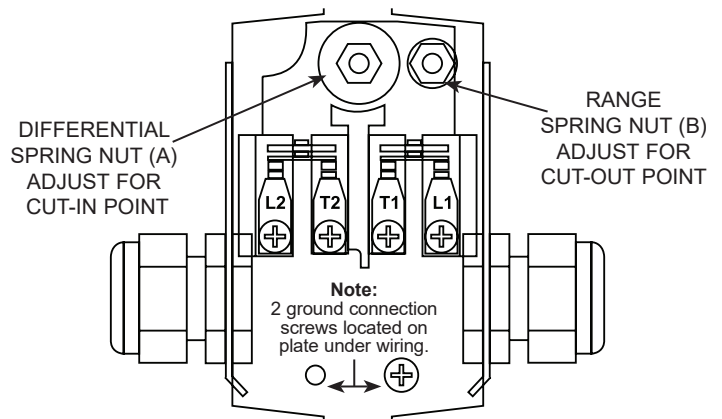
**Remote Pressure Switch.** Make sure that the cut in pressure is 85 +/- 4 psi and the cut off pressure is 115 +/- 4 psi. If adjustment is necessary,

**Range –** Adjust Range spring nut (A) until the desired operating point (cut-in) of 85 psi (5.8 bar) on falling pressure is obtained.

Turning the Range nut (A) clockwise will increase the setting.

Keep in mind the range adjustment changes both the high and low operating points but should always be adjusted for the low operating point.

**Differential –** Set the operating point (cut-out) on rising pressure to maximum by adjusting the Differential spring nut (B). Turning the nut (B) clockwise increases the pressure difference between the high and low operating points by increasing the high operating point only.



#### Adjust Sequence:

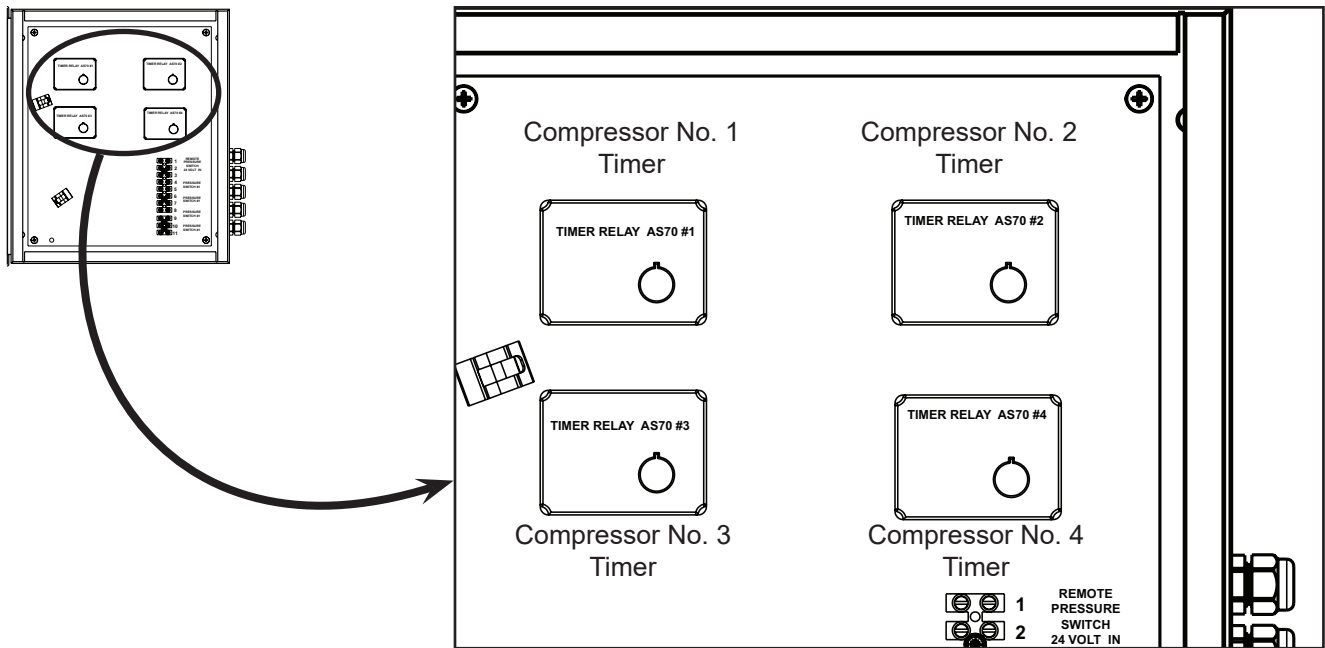
1. **CUT-IN:** Turn Range nut (A) clockwise for higher cut-in pressure. Turn counter-clockwise for lower cut-in.
2. **CUT-OUT:** Turn Differential nut (B) clockwise for higher cut-out pressure. Turn counter-clockwise for lower cut-out.

Figure 5. Pressure Switch Adjustment (Switch with Cover Removed)

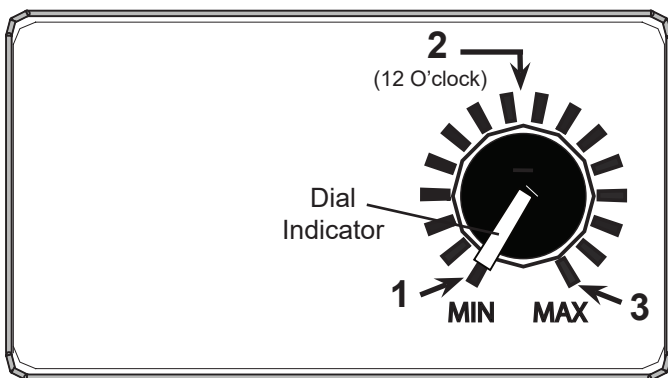
### Timer Relay Setting.

1. Refer to Figure 6 and set the timer relays as shown below for each compressor and compressor system.
2. Turn Main power on to each compressor and Low Voltage transformer.
3. Depress Air Switch on remote control panel and test system.

Because there is no pressure in the compressor tanks, compressor 1 should start first while the other system compressors start one after the other as set by the timer relays. All compressors shutdown after the remote pressure switch reaches the cut-out or turn off pressure set point of 115 psi. The system compressors should initiate a staggered restart once the pressure returns to the turn on set point of 85 psi. As long as the main system and low voltage power is present this turn on/off action continues to provide air pressure between 85 and 115 psi.

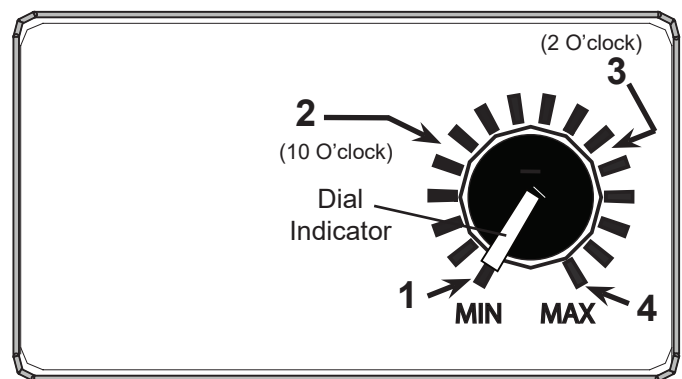


Timer Relay Locations in Control Box



Timer Relay Setting for Three Compressor Systems

Compressor	Timer Relay Setting
#1	1 MIN
#2	2 12 O'clock
#3	3 MAX



Timer Relay Setting for Four Compressor Systems

Compressor	Timer Relay Setting
#1	1 MIN
#2	2 10 O'clock
#3	3 2 O'clock
#4	4 MAX

Figure 6. Timer Relay Settings





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**Corporate Headquarters**

1295 Walt Whitman Road | Melville, New York 11747- 3062 | Phone: 800-247-8324 | Fax: 888-247-8481

[www.airtechniques.com](http://www.airtechniques.com)

