



Standard Pneumatic Products

31 Shepard Hill Rd • Newtown, CT • 06470 • 203-270-1400 • 203-270-3881 Fax

www.stdpneumatics.com

Universal AutoSync AS-2 Compressor Sequencer Installation and Operating Instructions (ALL 110 & 220VAC Models)

Overview

Congratulations on your purchase of the Universal AutoSync Compressor Sequencer. This sequencer is designed to work with any 2 Automatic Dual Control equipped rotary compressors with **POWERED** pressure switches currently controlling and delivering voltage to the Starter coils, or can directly interface to the existing low voltage logic controls on your compressor. When properly installed, the Universal AutoSync will operate both compressors in manual or automatic Lead/lag control and provide efficient operation and lead/lag cycling of both compressors. Please read the entire instruction sheet prior to installation of the controller.

The concept and operation of the AutoSync is simple: The AutoSync serves as a timed switch that “flip-flops” the Compressor 1 and Compressor 2 pressure switch settings (or logic board signal) back and forth between compressors at a predetermined (and user adjustable) period of time for efficient and equal cycling time operation of both compressors. The lag compressor always comes on if the lead compressor is unable to meet shop air requirements. Unlike other sequencers, the Universal AutoSync maintains identical operating cycle hours for both compressors, regardless of pumping time, and monitors usage hours for correct Compressor maintenance.

Installation

The following electrical procedures must be followed when stopping the compressor for the **AUTOSYNC** installation.

Per O.S.H.A. regulation 1910.147: The Control of Hazardous Energy Source (Lockout/Tagout), disconnect and lockout the main power source for both compressors. Display a sign in clear view at the main power switch stating that the compressor is being serviced.

Make sure the front panel “Power” switch is in the “off” position. Mount the **AUTOSYNC** unit on compressor frame, wall, or other suitable location. Note labeling on side panels for proper wire connections.

The AutoSync is normally supplied with a ½” conduit connection for a customer supplied external junction box. The connections to the compressors are the same for both units. Additionally 110VAC (or 240 VAC if factory ordered) power wires for powering the AutoSync is provided to operate the internal relay and automatic timer inside the AutoSync. The power to the starter coils must be provided by YOUR pressure switch, or some other external power source, such as a logic control circuit or control voltage. **The AutoSync power wires DO NOT supply power to the pigtail wires for either the coils or the pressure switches. MAX 240V.** The drawings included in the manual show the proper wire routing of the pigtail wires to the individual compressor components, and a general arrangement diagram. It is recommended that the Compressor 2 pressure switch be set approximately 10PSI LOWER than the Compressor 1 Pressure switch to facilitate proper lag pickup during cycling.

Wiring Connections

Please follow the instructions below for successful completion and operation of the Autodual, and your compressors. Wiring diagrams are shown on the back of this Installation manual.

Verify existing functionality of all compressors before beginning the Autodual installation. Verify proper turn on/ shutoff for both compressors, and identify which compressor will be COMPRESSOR 1. The compressor 1 pressure switch should ALWAYS be set for a higher shutoff pressure than the Compressor 2 for the Autosync to operate correctly

If the above is successful, and the compressors work fine without the Autosync, follow this procedure:

Compressor 1:

1) Remove the 2 existing wires currently leading to the starter coil. One wire is typically connected to the A1 OR A2 terminals on the starter coil, and the other wire is typically connected to the 95 OR 96 terminal on the starter thermal/heater contact. The single wire running between the Coil terminals (A1 or A2) to the heater/thermal (95 or 96 N.C) should remain in place. The wires you want are the 2 wires leading from the pressure switch or the control system that lead to the starter coil. See attached drawings for some typical wire routing configurations to the starter.

2) Reconnect the 2 wires you just removed from the starter coil in step 1 to the **ORANGE AND BLUE** wires on the **Autosync Compressor 1 wire bundle**. You can use wire nuts for this attachment.

3) Now that the EXISTING wires have been removed from the Comp 1 Coil terminals and connected to the **ORANGE AND BLUE wires on the Autosync**, connect the **RED and BLACK** wires on the **Autosync Comp 1 wire bundle to the now empty starter wire terminals**. These wires go where the previous existing coil wires were removed on the starter coil in step 1.

Repeat this same procedure using the Orange, Blue, Red, and Black wires on the Compressor 2 wire bundle.

Installation for single wire (single loop) pressure switch systems

If your compressor does not use both output power terminals on your pressure switch (single wire loop system) Use **ONLY the BLUE & BLACK** wires for the pressure switch/coil connection. **BLACK** to the COIL terminal and **BLUE** to the wire removed from the coil in step 1. **TAPE OR CAP OFF** each ORANGE wire separately, then connect the remaining 2 RED Autosync wires to a 110VAC common Neutral wire. The front panel timers will not function if the RED wire is not attached to a neutral on single wire loop systems. If your AUTOSYNC controller was delivered without hour meters, use **ONLY the BLACK and BLUE** leads for your connections, while taping or capping off the RED and ORANGE wires.

Connect 110VAC or 220VAC power to the Power wires and ground the controller using the GREEN ground wire. **DO NOT CONNECT 220VAC TO THE CONTROLLER POWER WIRES UNLESS YOU HAVE ORDERED A 220VAC AUTODUAL. It will permanently damage the coil on the controllers internal relay, void the warranty, and require replacement.**

CONTROLLER OPTIONS

OPTIONAL POWER WIRES

The AutoDual can be ordered with additional wiring to supply power to your pressure switches. These wires are 3 conductor (Red, Blk, White) and provide 120 VAC to the pressure switches. Connect to power side of pressure switches. Refer to drawing in this manual to connect these wires to the power side of the Pressure switches. Please note these power wires are fused by the internal fuse on the Autosync.

5 SECOND UNLOAD DELAY

The AutoDual can be ordered (110v, 220v optional) with a 5-second electrically activated initial unload delay for “soft starts” With this option two electrically activated pneumatic solenoids and mufflers are included with the AS-2 controller. The pneumatic solenoid should be installed on the 1st stage compressor head, the high pressure cylinder head, or on the intercooler. In most of these locations, there is already a safety relief valve installed. By using a ¼” NPT “tee” between the existing relief valve and the cylinder head hole, the pneumatic solenoid can be installed sharing that port. NEVER eliminate or defeat the overpressure relief valve. The solenoid valve is a 1/4NPT Female thread. After mechanical connection of the solenoid to the compressor head or intercooler, connect the pneumatic solenoid leads to the terminal block inside the AUTODUAL controller labeled COMP 1 and COMP 2 solenoid. When the AS-2 controller sees a demand for air from either pressure switch, the unloader solenoid will dump the air from the compressor cylinder head or the intercooler for 5 seconds, close, then allow the compressor to load and generate pressure. This 5 second delay repeats for every pumping cycle. The unload delay timers MUST match the coil voltage of the starter, and should have been ordered as such.

AutoSync Operation Lead/Lag Control

The **ON/OFF** switch on the front panel turns the internal timer off, and also insures that the controller remains in LEAD1/LAG2 mode. It does not turn the compressors off. Switching controller to OFF prevents control voltage, (or pressure switch voltage) from Compressor 1 from reaching the other compressor, which is always the case when the Autosync timer is performing the LEAD2/LAG1 switching cycle.

IMPORTANT NOTE: When servicing either compressor ALWAYS turn the Front panel POWER switch to OFF to prevent control voltage or pressure switch voltage from reaching the other compressor. This occurs when the Autosync is in Lead2/Lag1 mode, either manually or in Automatic mode. Servicing either compressor when Autosync is “ON” can cause electrocution.

The **LEAD/LAG** switch of the AutoSync Controller is for controlling compressor lead/lag functionality. When switched to the “auto” or “up” position, the AutoSync begins its sequencing cycle beginning with **Compressor 1 as the Lead machine**. Comp 2 maintains its Lag pumping cycle for the time assigned by the Lead/Lag timer (see below for Lead/Lag time adjustment). When the Lead/Lag timer reaches its “swap cycle time”, **Compressor 2** now serves as the lead machine. The center and down position on the Lead/Lag switch override lock the compressors in Lead or Lag mode, overriding the automatic swap cycle. It is recommended that the compressor 2 pressure switch be set approximately 10PSI Min BELOW the Compressor 1 pressure switch. This setting will result in well balanced machine swapping when operating the AutoSync in AUTO mode.

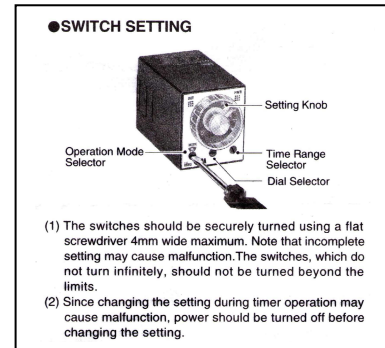
The **digital hour meter** (not included on some models) for each compressor will blink the egg timer symbol on the left side of each LCD display when its coil is energized and the compressor motor is operating. The standard operating voltage for the AutoSync timers is 5-277 Volts AC/DC. It receives its power from the RED and BLACK wires on the Autosync wire bundle, so it will function with most control voltages.

IMPORTANT NOTE: Pressure adjustments to both Compressors MUST BE PERFORMED with the POWER SWITCH on the front panel set in the OFF Position. This setting forces the Compressor 1 pressure switch and the Compressor 1 Coil to be connected, as well as the Compressor 2 Connections.

Lead/Lag Timer Adjustment

IMPORTANT NOTE: No matter what adjustment mode is selected on the IDEC timer, the main adjustment dial on the face of the IDEC timer should NEVER be turned all the way down to the “0” (Zero) setting. This causes the Lead/Lag timer into infinite mode, causing the internal relay to “chatter” very quickly, and will damage the starters OR the motors due to extremely fast cycling of the AutoSync relay. Standard Pneumatic Products assumes NO responsibility for damaged starters or motors due to placing the IDEC time into the “Zero” or infinite cycling mode. Any setting above the Zero setting is acceptable.

LEAD/LAG TIMER SETTING CHART		
RANGE (USE TIME RANGE SELECTOR)	DIAL SETTING (USE DIAL RANGE SELECTOR) 0-1 AND 0-3 SETTING NOT USED	
	0-6	0-18
1S	NOT USED	NOT USED
10S	NOT USED	NOT USED
10M	36 SEC 60 MIN	108 SEC- 180 MIN
10H	36 MIN – 60 HRS	108 MIN – 180 HRS



The AutoSync comes preset from the factory to switch the compressors between Lead/Lag mode every 2 hours. However, there are various ways to set the timer for different Lead/Lag switching time using the settings on the chart above. In addition to the dial adjustment, there is a Dial Selector, a time range selector, and a operation mode selector. **The operation mode selector should remain in mode “C or D” for proper operation.** The dial selector and the time range selector may be set by the installer/end user to achieve the desired Lead/Lad switching. When the front panel selector is NOT set to “auto” mode, the timer is bypassed, and locks the compressors in the desired Lead/Lag mod for compressor 1 & 2.

Initial Unloader Option (UA-US-110 or 230)

The initial unloader option of the AutoSync has an additional initial unload feature. This option gives a 5 second (Factory setting, User adjustable) unload when starting a reciprocating compressor. The Unloader unit contains 2 solenoid valves that tap into the intercooler using a ¼ NPT connection on each compressor. These solenoids are included with this option. The solenoids are driven by the Autosync, and are rated at 110VAC. Power to the starter coils are provided by the pressure switches themselves, and require 220V by the customer. A 110V option is also available from the factory.

The pressure switch/starter wiring is the same as the Autosync without initial unload delay. Refer to Fig 1-3 for solenoid attachment to the intercooler. Typically there are several locations where the intercooler has plugged ¼”NPT connections that can be used for the solenoid attachment.

The function of the solenoid is to unload the intercooler BACK pressure every time the compressor starts for an unloaded start. After 5 seconds the solenoid closes and allows the compressor to pump air normally. To extend the 5 second delay time, turn the timer potentiometers inside the console clockwise to delay the unload time beyond 5 seconds.

WARRANTY

General Provisions

Standard Pneumatic Products, Inc. (the Seller) warrants to each Purchaser products of the Seller's own manufacture against defects in material and workmanship. With respect to products not manufactured by the Seller, the Seller will, if practical, pass along the warranty of the original manufacturer.

The Seller's sole obligation under this warranty shall be, at its option, to repair, replace, or refund the purchase price of any product or part thereof which is deemed to be defective, provided the Purchaser meets all of the applicable requirements of this warranty and none of the limitations apply.

Warranty Periods

Units

The Models AD, ADS, and AutoSync controllers are warranted for one (1) year from date of manufacture or 15 months from shipment.

Replacement Parts

Seller warrants repaired or replaced parts against defects in material and workmanship under normal use and service for ninety (90) days, or for the remainder of the warranty on the product being repaired, whichever is longer.

Normal maintenance items and procedures are not warranted unless found to be defective in material or workmanship, e.g., a clogged 3-way valve.

Limitations

Notice of the alleged defect must be given to the Seller in writing with all identifying details, including serial number, model number, type of equipment and date of purchase within thirty (30) days of discovery of same during the warranty period. If requested by Seller, such product or product thereof must be promptly returned to Seller, freight collect for inspection. No models are eligible for travel expense.

The above warranties shall not apply and Seller shall not be responsible or liable for:

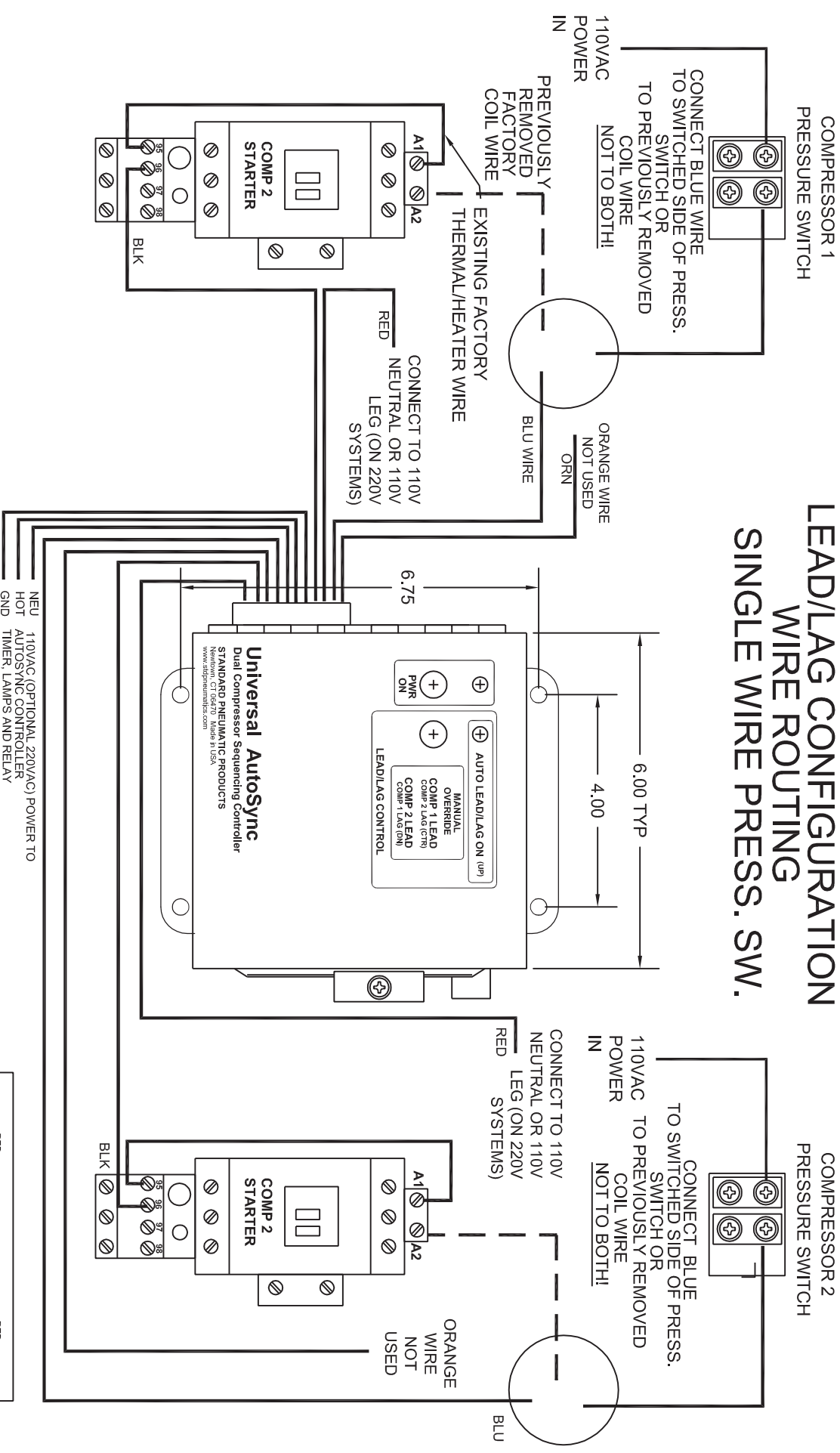
- a. Consequential, collateral or special losses or damages.
- b. Equipment conditions caused by fair wear and tear, abnormal conditions, accident, neglect or misuse of equipment, improper storage or damages resulting during shipment.
- c. Deviation from operating instructions, specifications or other terms of sales.
- d. Labor charges, loss or damage resulting from improper operation, maintenance or repairs made by person(s) other than Seller or Seller's authorized service station.
- e. Improper application or installation of product.

Disclaimer

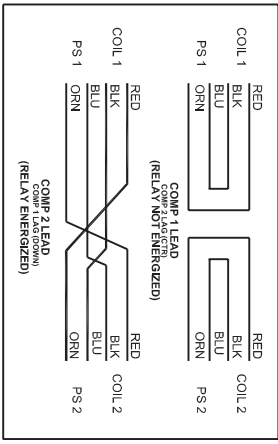
In no event shall Seller be liable for any claims, whether arising from breach of contract or warranty or claims of negligence or negligent manufacture, in excess of the purchase price.

This warranty is the sole warranty of Seller and any other warranties, express, implied in law or implied in fact, including any warranties of merchantability and fitness for particular use, are hereby specifically excluded.

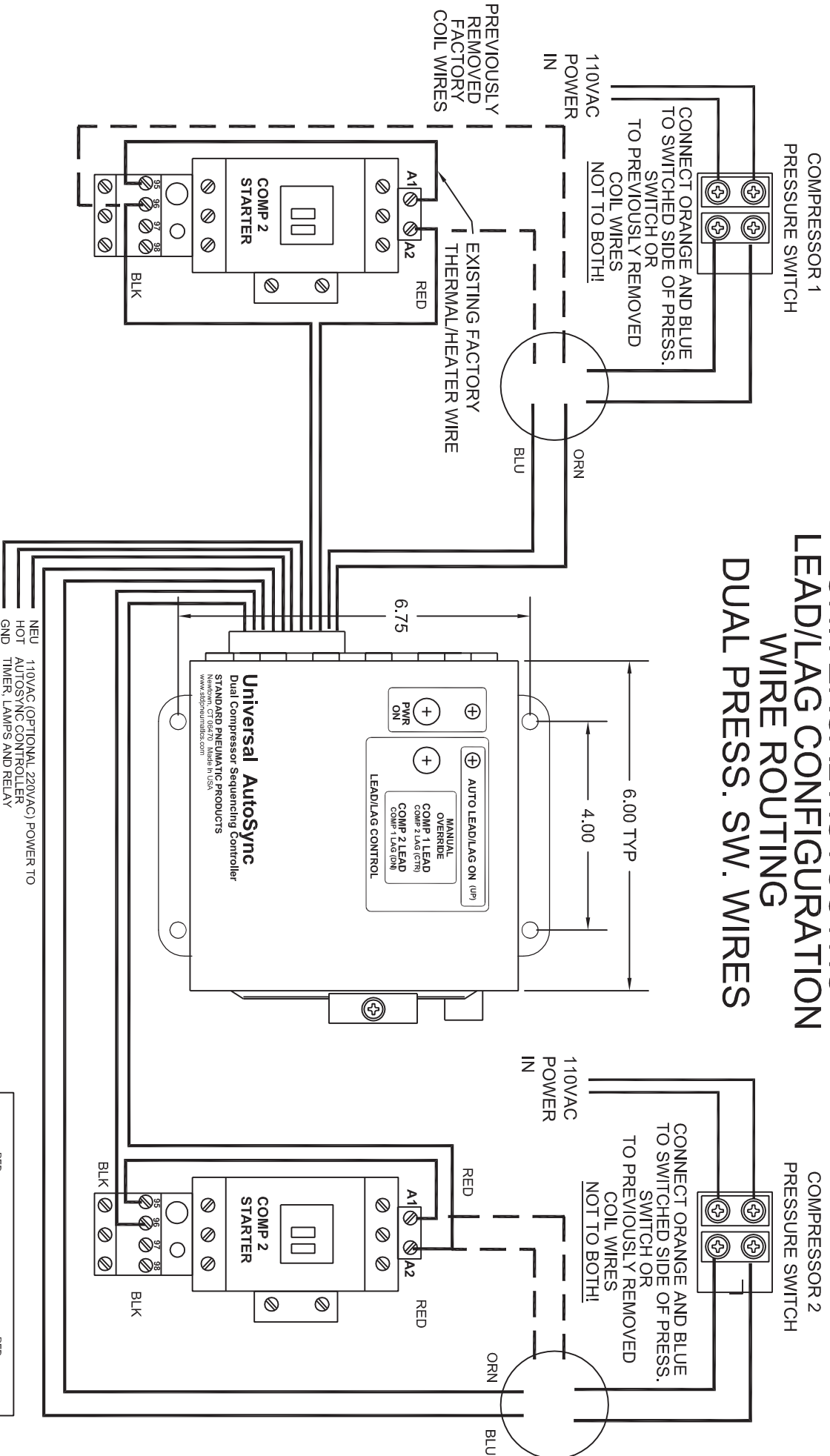
UNIVERSAL AUTOSYNC LEAD/LAG CONFIGURATION WIRE ROUTING SINGLE WIRE PRESS. SW.



REV 1 INITIAL RELEASE 1/30/2011
 REV 2 CHG WIRE COLOR/ROUTING 8/1/15

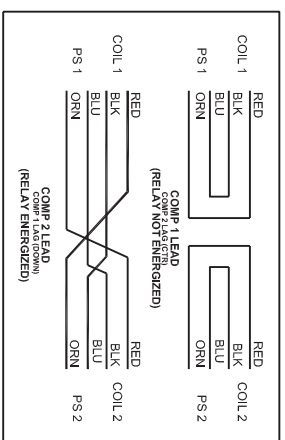


UNIVERSAL AUTOSYNC LEAD/LAG CONFIGURATION WIRE ROUTING DUAL PRESS. SW. WIRES

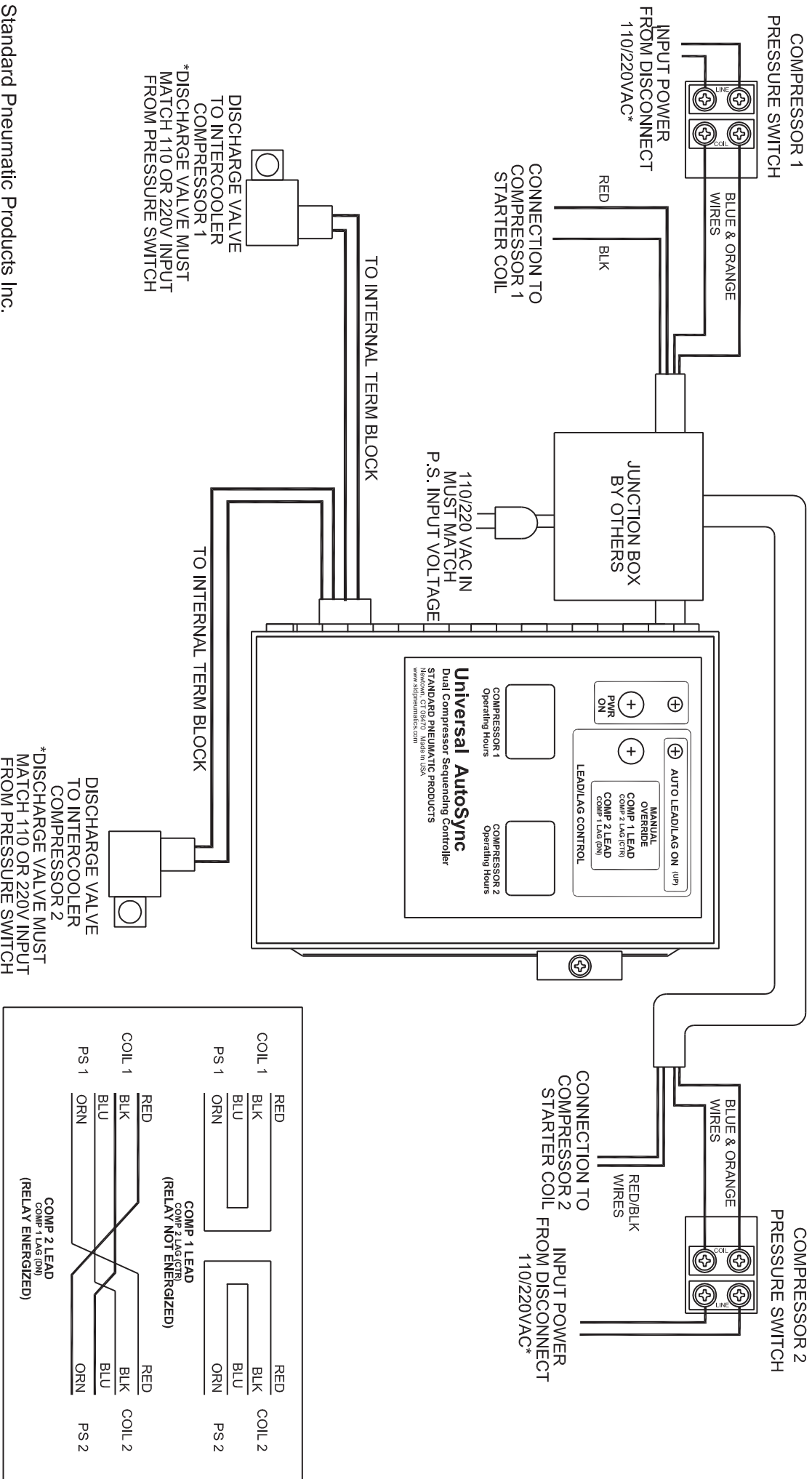


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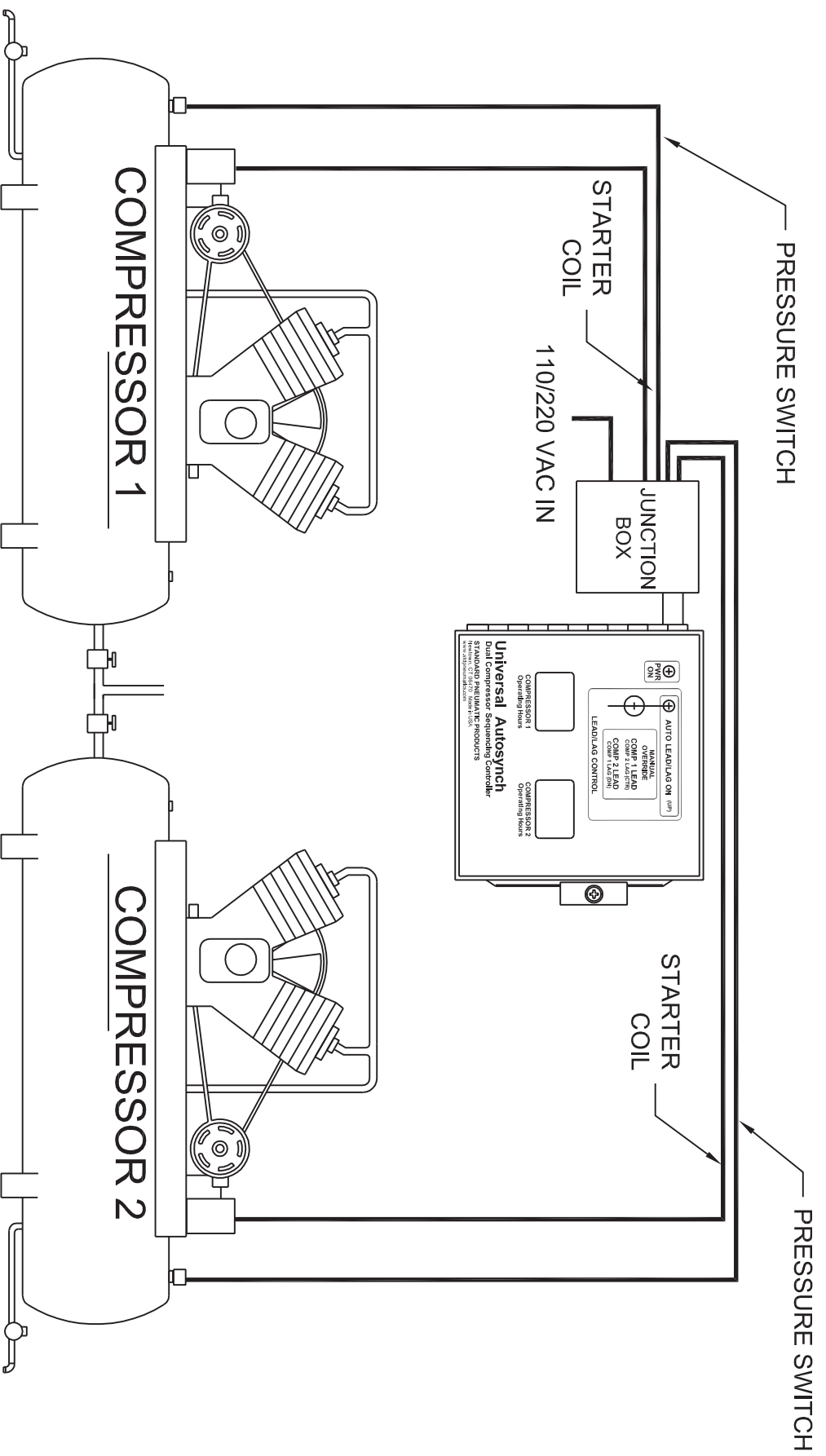
NEU 110VAC (OPTIONAL 220VAC) POWER TO
 HOT AUTOSYNC CONTROLLER
 TIMER, LAMPS AND RELAY
 GND



UNIVERSAL AUTOSYNC W/INITIAL UNLOAD STARTUP DELAY INSTALLATION CONFIGURATION



UNIVERSAL AUTOSYNC LEAD/LAG CONFIGURATION WIRE ROUTING



Standard Pneumatic Products Inc.
31 Shepard Hill Rd., Newtown CT 06470
www.stdpneumatics.com