



HIRED-HAND®



Evolution Variable Output

With Override Pot

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1. Warranty

All products are warranted to be free from defects in material and workmanship for a period of one year from the date of purchase if installed and used in strict accordance with the installation instructions. Liability is limited to the sale price of any products proved to be defective or, at manufacturers option, to the replacement of such products upon their return. No products are to be returned to the manufacturer, until there is an inspection and/or a return-goods authorization (RGA) number is issued.

All complaints should be directed first to the authorized distributor who sold the product. If satisfaction is not obtained or the name of the distributor is not known, write the manufacturer that appears below, directed to the attention of Customer Service Manager.

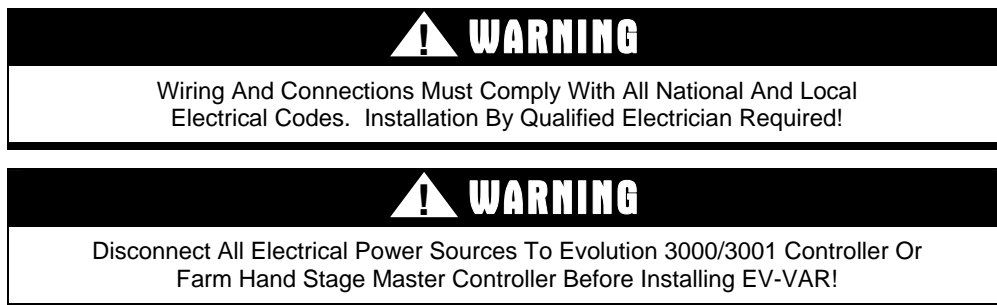
This limited warranty is expressly in lieu of any and all representations and warranties expressed or implied, including any implied warranty of merchantability or fitness for a particular purpose. The remedy set forth in this limited warranty shall be the exclusive remedy available to any person. No person has authority to bind the manufacturer to any representation or warranty other than this limited warranty. The manufacturer shall not be liable for any consequential damages resulting from the use of our products or caused by any defect, failure or malfunction of our products. (Some areas do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.)

This warranty gives you specific legal rights and you may also have other rights that vary from area to area.

Warrantor:

Hired-Hand, Inc.
1733 Co. Rd. 68
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2. Warnings



3. Introduction

The Evolution Variable Output models with Override Pot are Hired-Hand's latest addition to the electronic controller product line. These additional models have the same operational features as the previous models except the latest models contain the Intensity Control Pot. This Intensity Control Pot allows additional functionality over the previous versions, including the ability to override the main control system or the ability to use these units in conjunction with more primitive systems such as 24 hour time clocks for lights or thermostats for fans. The Evolution Variable Output w/Override Pot is available in two versions: The 4KW/4HP model and the 8KW/8HP model.

The Evolution Variable Output models can be used in conjunction with Evolution 3000/3001 Control Systems, Farm Hand Control Systems (Stage Master, etc.), alternative manufacturers, 24 hour Time Clocks as a stand-alone unit, or to any dry contact control output for variable operation of lights or fans.

4. Specifications

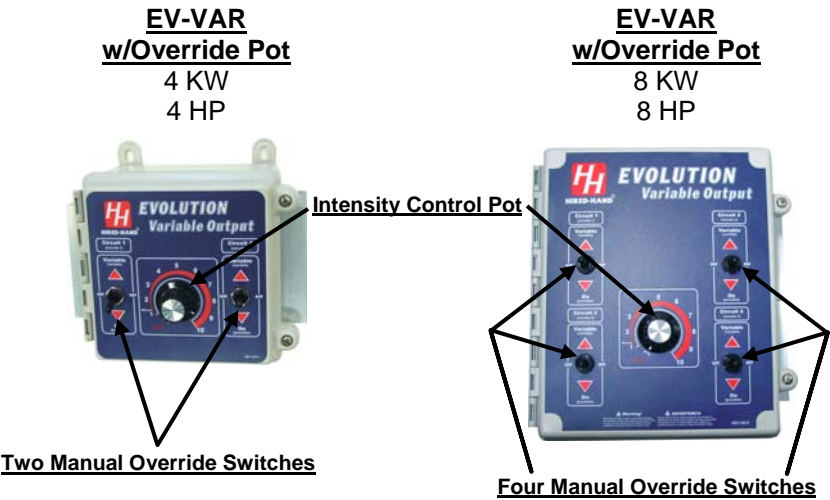
4.1 Part Numbers and Electrical Ratings

Part No.	Model	No. Outputs
6607-8033	EV-VAR w/Override Pot 4KW / 4HP	2
6607-8034	EV-VAR w/Override Pot 8KW / 8HP	4

DEVICE RATINGS		
Input		Max Current (A)
PCB 174	1 A @ 120 VAC	Fused At 1 A
Outputs for Each Circuit		
Lights	2 KW @ 120 VAC	Fused @ 20 A
Fans	2 h.p. @ 240 VAC	Fused @ 20 A

4.2 Features

EV-VAR 4KW / 4HP	EV-VAR 8KW / 8HP
1 Intensity Control Pot (Controls the two output devices)	1 Intensity Control Pot (Controls the four output devices)
2 Manual Override Switches (3 positions: Variable – Off – On)	4 Manual Override Switches (3 positions: Variable – Off – On)



5. Front Panel Features

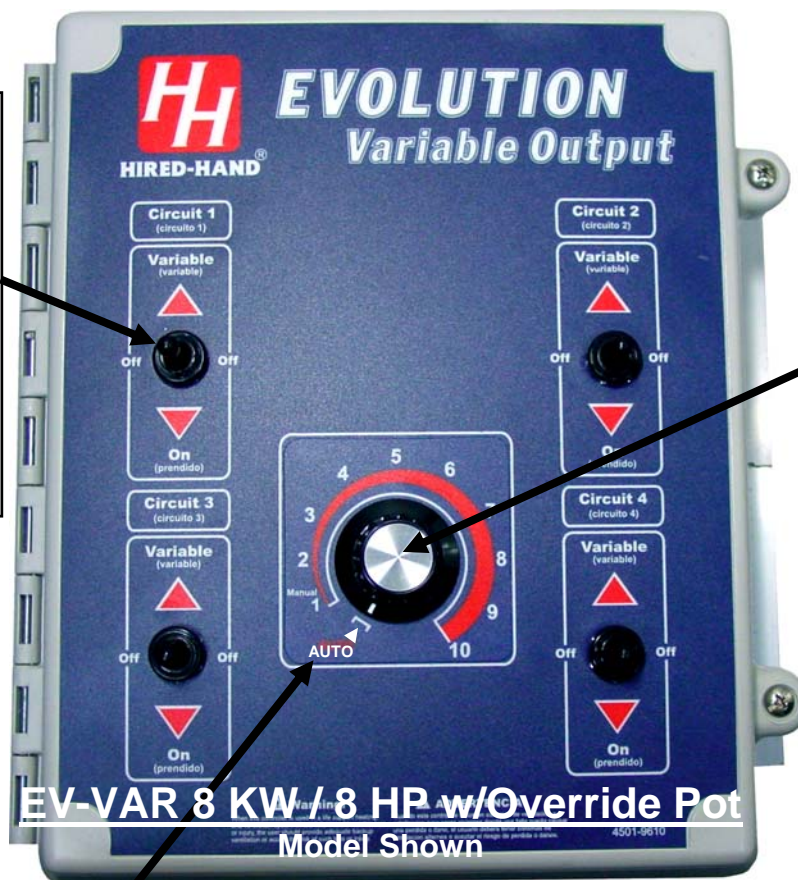
Evolution Variable Output (EV-VAR) is used to vary the speed of fans or to vary light luminosity. To control the EV-VAR output, connect EV-VAR to a Hired Hand Evolution 3000/3001 controller, to a Farm Hand Stage Master Controller, or to an alternative manufacturers' controller. See wiring diagrams for proper connections. The EV-VAR models with manual control can also work as a stand-alone unit with a customer supplied 24 hour time signal, timer clock, thermostat, or any other dry contact device.

Manual Override Switch

Variable allows light dimming or fan speed control.

Off completely disables item operation.

ON manually connects full AC power to equipment.



Intensity / Speed Control Pot

Allows user to vary the light intensity or fan speed depending on installation.

**EV-VAR 8 KW / 8 HP w/Override Pot
Model Shown**

NOTE: Operation is the same for the 4 KW / HP model.

NOTE:

While the knob is in "AUTO" position, control of the lights or fans is returned to the main control system (ex. Evolution 3000). If the unit is not connected to a control system, i.e. stand-alone operation, this would simply turn the equipment OFF.

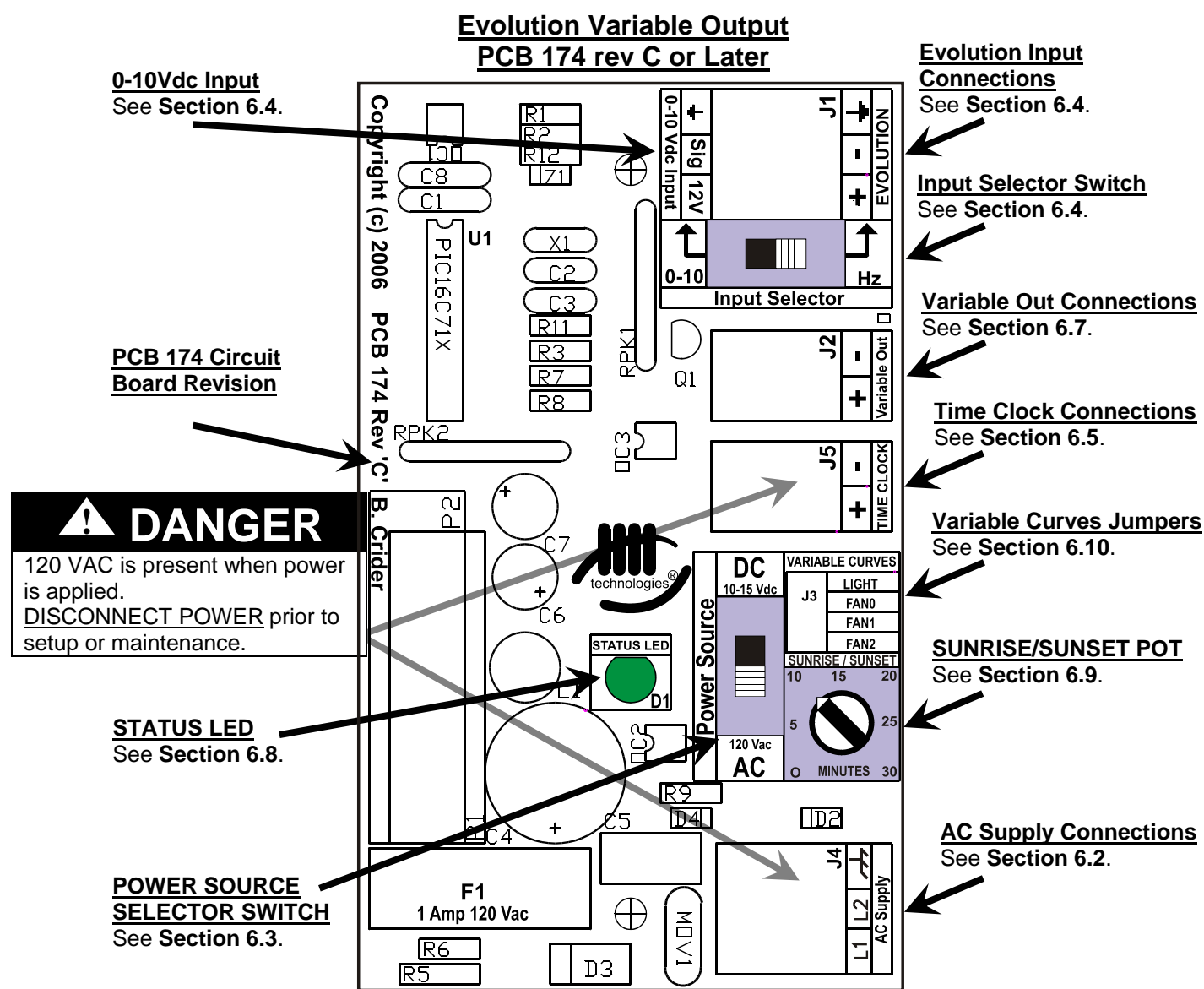
6. Initial Setup of Variable Output Control Board (PCB 174 rev C or later)

The following sub-sections describe the usage and settings of each connection, jumper, and switch included on the EV-VAR PCB #174 revision C or later. The board layout with wiring/setting location references are shown in **Section 6.1**. The latest PCB174 revision C or later include the following product enhancements:

- Sunset light control functionality is now provided along with the Sunrise feature which was available on the previous version EV Variable Output controls. The Sunrise and Sunset features can now be used with less sophisticated systems.
- The Evolution Variable Output controller is now capable of accepting a 0-10 Vdc input signal from alternative control systems and use that voltage to dim the lights or vary the fans. This function was previously achieved only with Hired-Hand Environmental Control Systems.

The Evolution Variable Output models can be used in conjunction with several different control devices such as the Evolution 3000/3001 Control Systems, Farm Hand Control Systems (Stage Master, etc.), alternative manufacturers, 24 hour Time Clocks as a stand-alone unit, or to any dry contact control output for variable operation of lights or fans. Use the PCB 174 Board Layout and Setting Locations along with the table listed in **Section 6.1** as a quick reference to help direct the specific application to the appropriate switch settings and wiring diagrams on the following pages.

6.1 EV-VAR PCB 174 Board (PCB rev C or later) Layout and Setting Locations



Controller Used	EV3000 or EV3001	Stage Master	Stand Alone	Alternative Manufacturers
AC Supply Connections	120 VAC REQUIRED	120 VAC REQUIRED	120 VAC REQUIRED	120 VAC REQUIRED
Power Source Switch Setting	AC Required	AC Required	AC Required	AC Required
Input Selector Switch Setting	Hz - Evolution	Hz - Evolution	Switch Setting Doesn't Matter	0-10 Vdc Input
Time Clock Connection	Jumper Connection	Jumper Connection	Connected	Jumper Connection
Wiring Diag Reference Section	6.11	6.12	6.13	6.14

6.2 AC Supply Connections

Always connect to a 120 VAC Power Supply. DO NOT connect any other voltage except 120 VAC.

DANGER: 120 VAC is present when power is applied. DISCONNECT POWER prior to setup or maintenance.

6.3 Power Source Selector Switch

The **Power Source** selector switch sets the option for either Local “**120 Vac AC**” or Remote “**DC 10-15Vdc**” powering of the Variable Output control circuitry. Select “**120 Vac AC**” for control circuit local powering from the 120 VAC “**AC Supply**” J4 connection. Select “**DC 10-15Vdc**” for control circuit remote powering from a nearby Evolution or alternative manufacturer’s controller supplying the required 10-15 Vdc supply voltage to the J1 connection.

NOTE: Even if Remote “**DC 10-15Vdc**” Power Source is selected, the 120 VAC “**AC Supply**” must also be connected for monitoring the AC frequency.

6.4 Input Selector Switch

The **Input Selector** switch sets the option for either “**Hz-Evolution**” (Hired-Hand manufacturer) or “**0-10Vdc Input**” (alternative manufacturers) control of the Variable Output light or fan operations. Select “**Hz-Evolution**” at the “**Input Selector**” switch for connections to a Hired-Hand variable module. Select “**0-10Vdc Input**” for connections to an alternative manufacturer’s control.

NOTE: If “**0-10Vdc Input**” is selected, ensure the “Sig” connection to J1 is a 0-10Vdc variable input and “12V” is a constant 10-15Vdc input from the alternative manufacturer’s equipment.

6.5 Time Clock Connections (Time Signal or Dry Contact Switch)

This connection must be used when an Electronic Controller (Evolution 3000/3001 or Stage Master) is NOT connected. The switch can be any normally open dry contact, such as a thermostat or a relay output from another control system.

DANGER: 120 VAC is present when power is applied. DISCONNECT POWER prior to setup or maintenance.

6.6 Evolution Connections

The Evolution connections must be wired to the electronic controller (Evolution 3000/3001 or Stage Master) unless an electronic controller is not used. Observe polarity connections (+ to +; - to -) when an electronic controller is used. This connection is not used if a 24 hour Time Signal or Dry Contact Switch is connected to the Time Clock connections. See wiring diagrams for more specific information.

6.7 Variable Out Connections

The Variable Out connection is FACTORY WIRED to EV-VAR PCB #172. (EV-VAR w/Override Pot models only.)

6.8 Status LED

GREEN – Indicates the Power Supply is OK.
ORANGE – Flashing Indicates “Heart-Beat”; The PCB is functional.

6.9 Sunrise/Sunset Pot (Light Control Only)

The Sunrise/Sunset Pot is used to allow the lights to gradually come ON when a 24 hour timer or dry contact switch is closed and gradually turn OFF when a 24 hour timer or dry contact switch is opened.

The Sunrise/Sunset Pot is for lights only and will function only in a stand-alone application with a normally open timer or dry contact switch connected. See wiring diagrams for more specific information.

NOTE: The timer or dry contact switch for a stand-alone application is not included with the Variable Output unit.

The Sunrise/Sunset Pot allows settings from 0 to 30 minutes. If 0 is selected, the lights will turn ON immediately when the timer/contact switch is closed and will turn OFF immediately when the timer/contact switch is opened. If any other interval is selected, the lights will take the selected amount of minutes to go from low intensity to full light intensity after the contact is closed and from full intensity to low light intensity after the contact is opened.

6.10 Variable Curves Jumpers

The Variable Curve jumpers are for selecting the light setting or fan motor curves. The jumper must be placed in the appropriate position based on the equipment being varied.

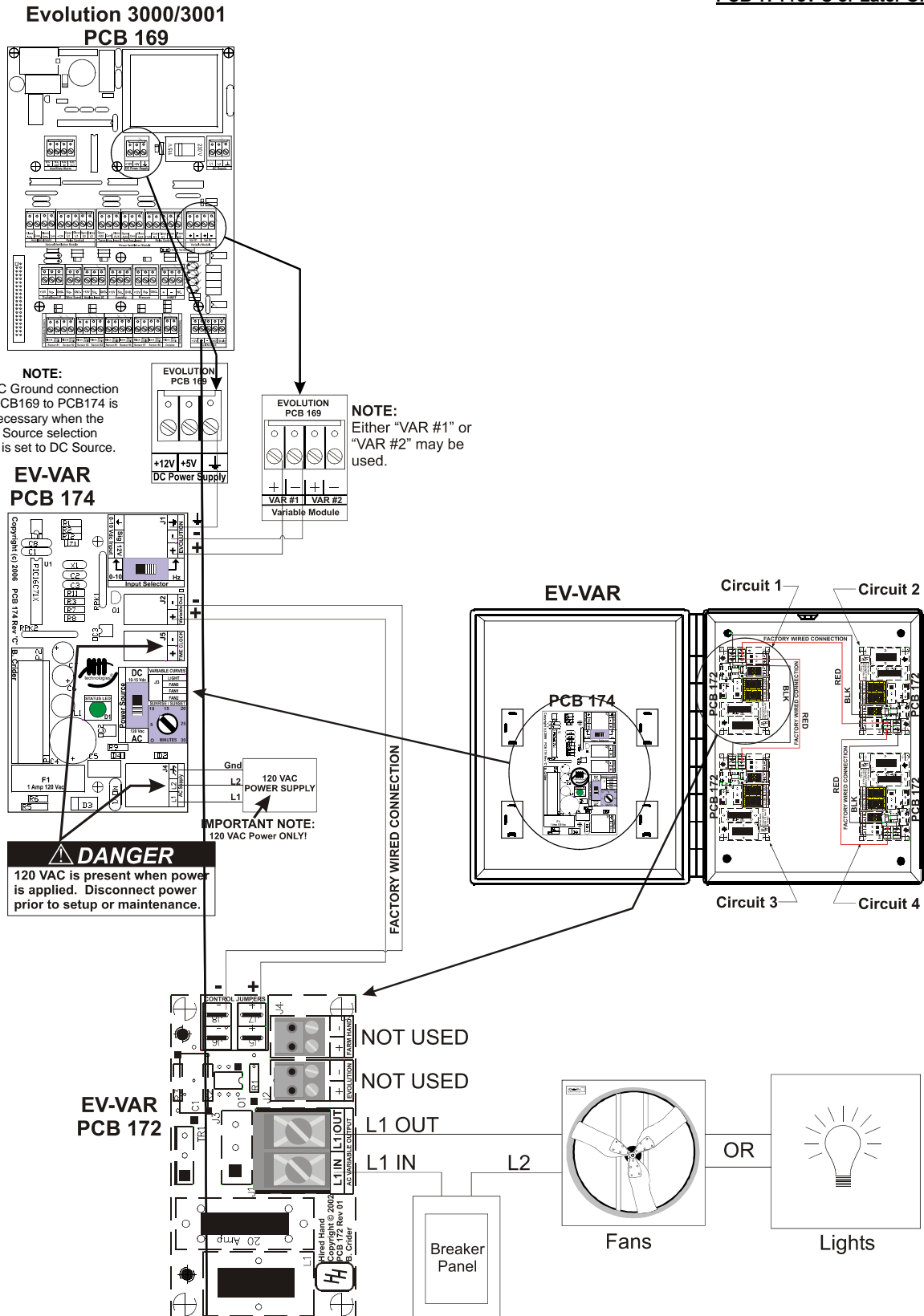
See **Curve and Condition Table** below for each jumper setting and description.

Curve	Condition
LIGHT	For use with incandescent light bulbs.
FAN0	This curve is optimized for use with Hired-Hand's line of Funnel Flow Fans that are 24" or less. Also, the line voltage must be Single Phase.
FAN1	This curve lends itself better to operation of 36" fans. The power distributed at each percentage is somewhat greater than that of curve 0 . Therefore, the speed will be a little greater than that of Curve 0 .
FAN2	This curve is for 3-phase systems. Its purpose is to shift the voltage curve to give a much higher power from the varied phase. Conditions that would warrant the use of this curve is a variable speed fan that varies a great deal from 100% speed to 95% speed.

6.11 EV-VAR To Evolution 3000/3001 Wiring Connections

To control the EV-VAR output using an Evolution 3000/3001 controller, connect EV-VAR using the wiring diagrams below for proper connections.

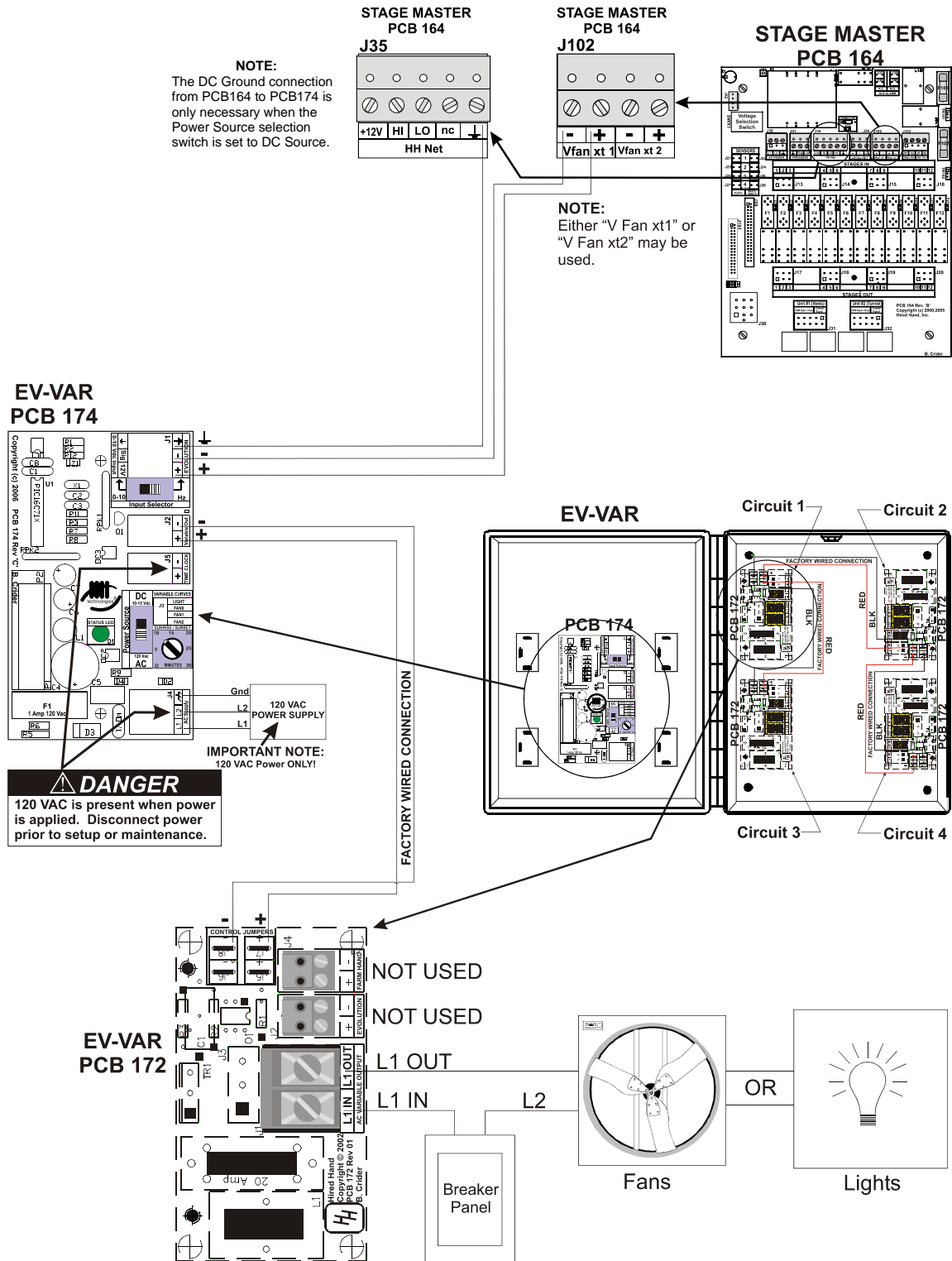
PCB 174 rev C or Later ONLY



6.12 EV-VAR To Farm Hand Stage Master Wiring Connections

To control the EV-VAR output using a Farm Hand Stage Master controller, connect EV-VAR using the wiring diagrams below for proper connections.

PCB 174 rev C or Later ONLY

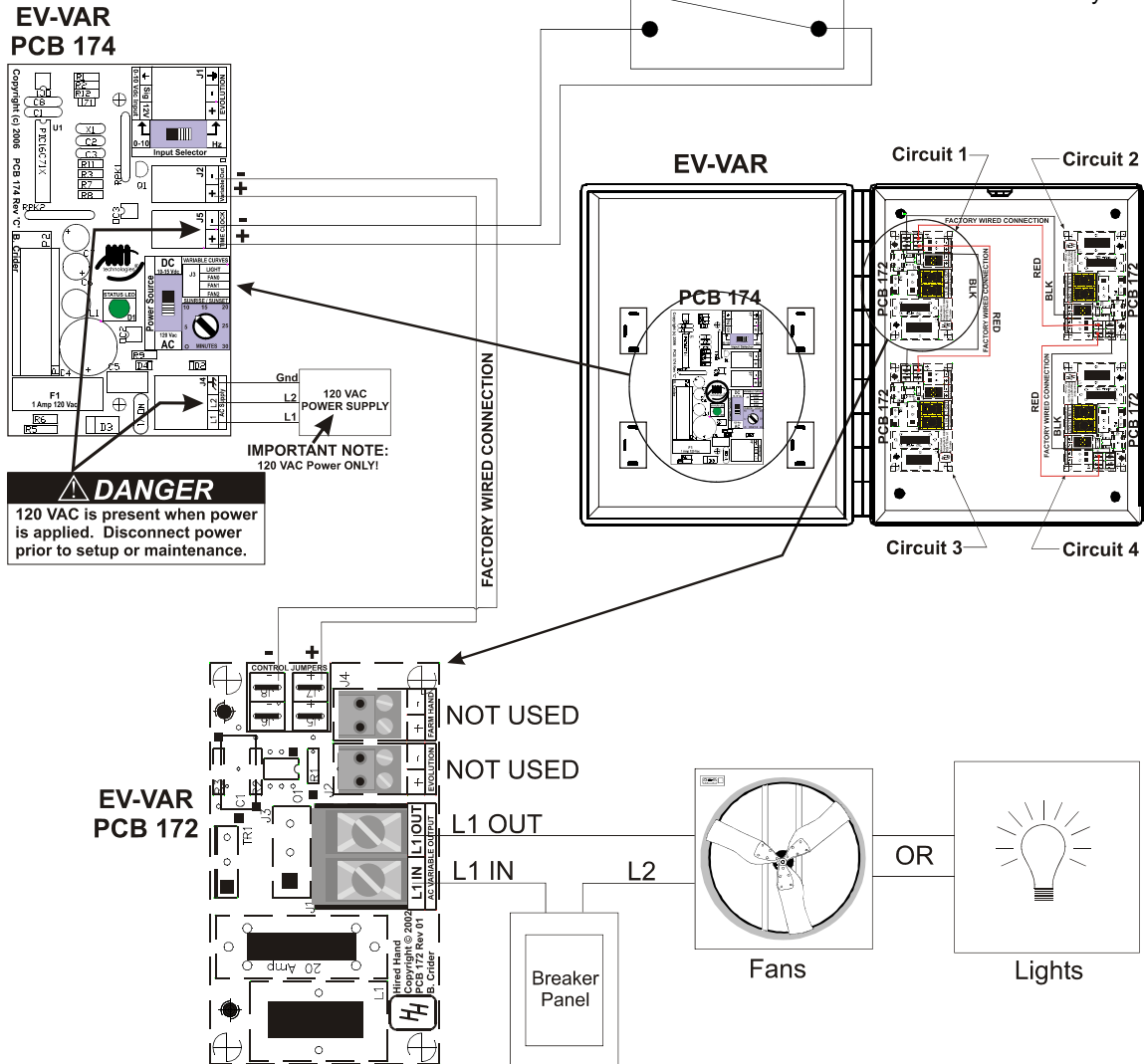


6.13 EV-VAR To Time Clock or Switch (Stand-Alone) Wiring Connections

To control the EV-VAR output using a 24 hour timer or dry contact normally open contact switch (stand alone application), connect EV-VAR using the wiring diagrams below for proper connections.

PCB 174 rev C or Later ONLY

NOTE: This can be any normally open dry contact, such as a thermostat or a relay output from another control system.



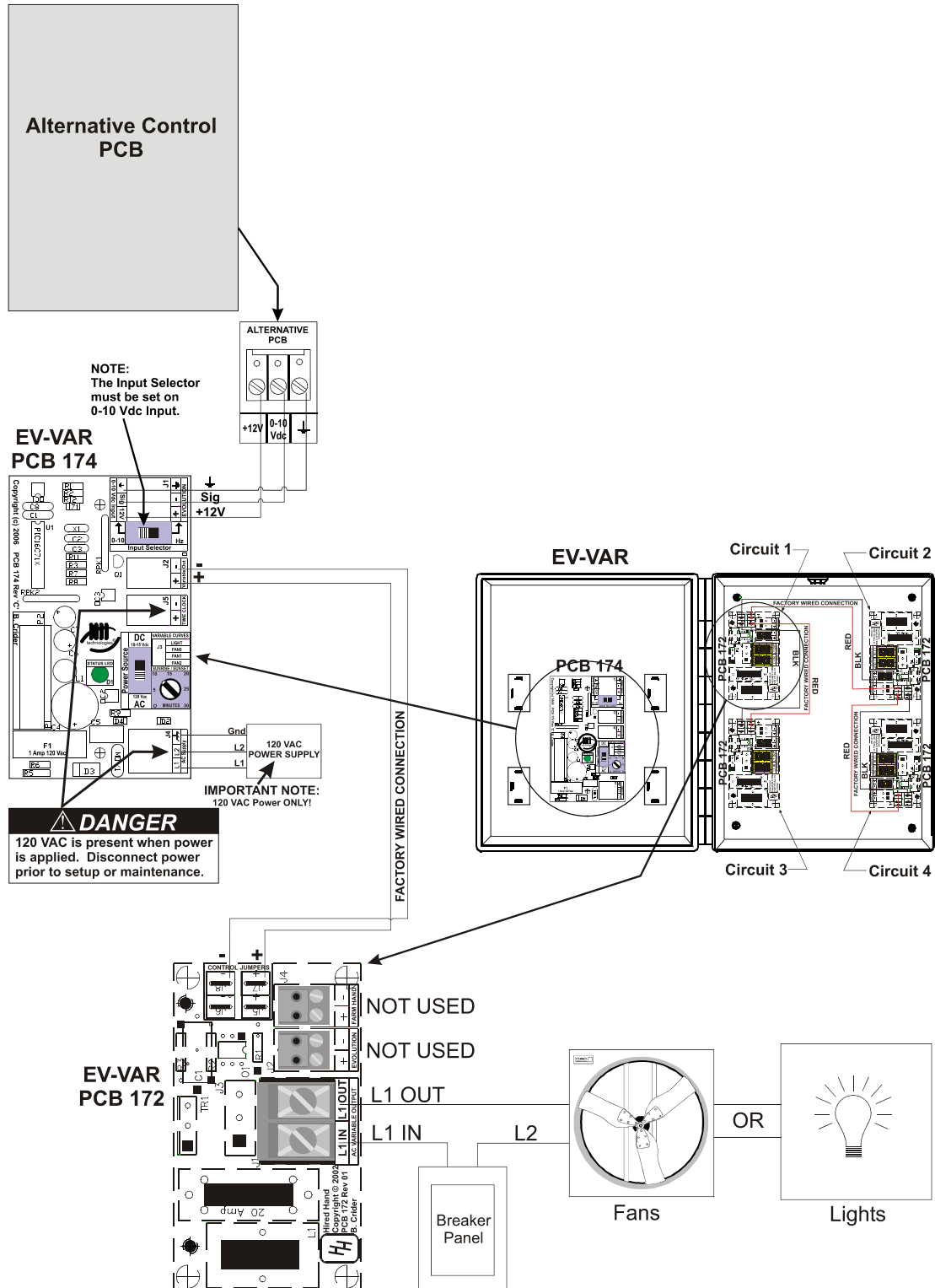
6.14 EV-VAR To Alternative Manufacturer's Controller Wiring Connections

The EV-VAR has the capability to be controlled through a 1-10 Vdc output on any control system. If used in this manner, the **"Input Selector"** switch must be set to **"0-10"**.

The EV-VAR can be powered from the control systems DC Supply as long as it is between 10-15 Vdc. If this EV-VAR powering method is desired, the **"Power Source"** switch must be set to **"DC"**.

NOTE: A connection must still be made to a 120 VAC source on the **"AC Supply"** terminal. This allows the EV-VAR to monitor the AC frequency to adequately vary the equipment.

PCB 174 rev C or Later ONLY

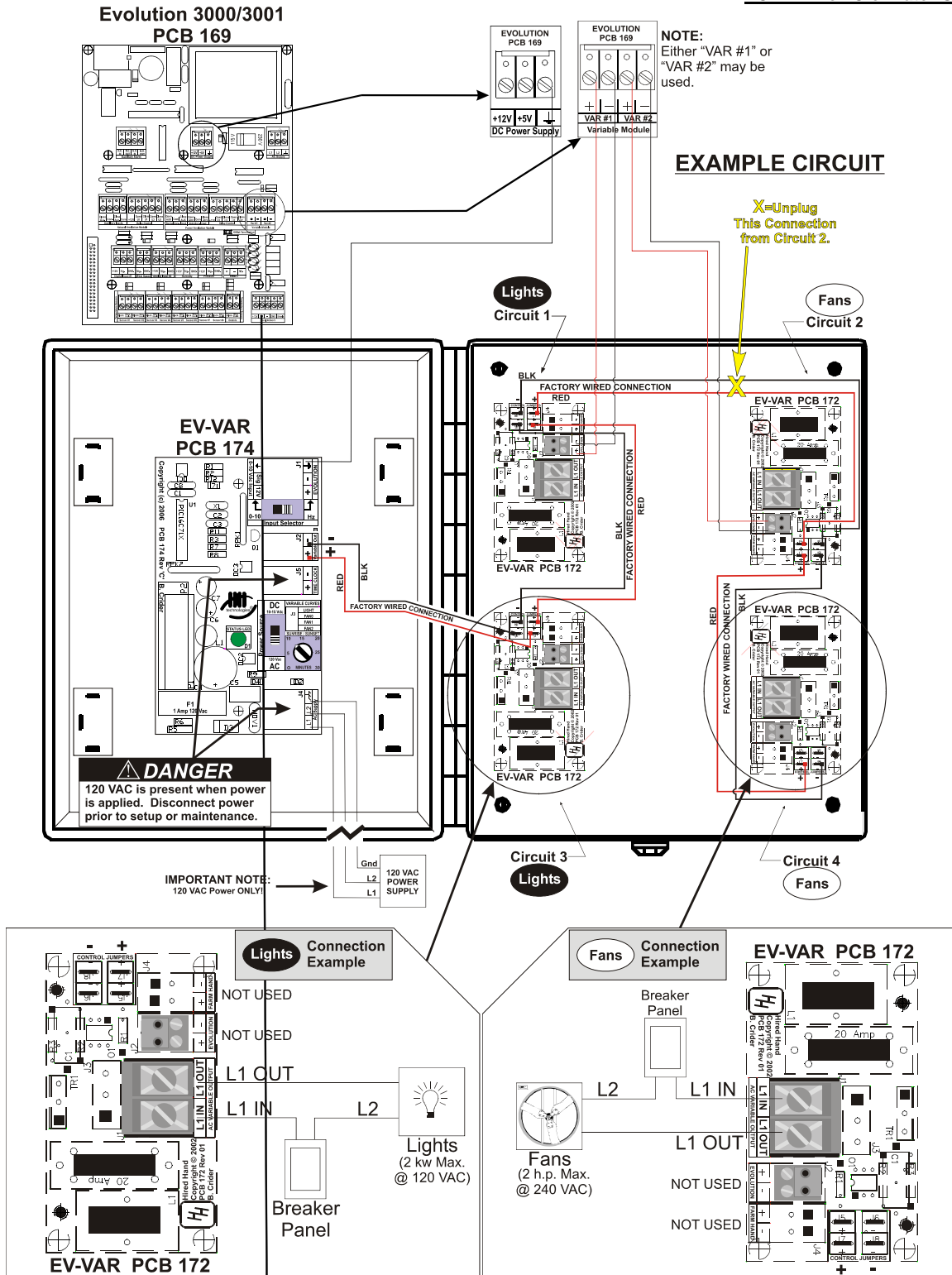


6.15 Separating Circuits to Operate Different Equipment

In some cases, you may want to operate a combination of lights and fans. This may be accomplished but only one can be operated using the manual override pot. The following is an example of how one would wire two circuits for lights and then two circuits for fans while integrated into the Evolution 3000.

NOTE: In this example, Manual Override using the Intensity Control Pot is only associated with the light circuit.

PCB 174 rev C or Later ONLY



7. Replacement Parts

Part No.	Description
6407-1536	/PCB 172 EV-VAR w/QA
3010-2540	Fuse 20A Time Delay
3001-2869	Switch SPDT 2 HP w/tabs
6407-1538	/PCB 174 Dimmer M/A w/QA

