

Agri-Aide Ventilation Model CV5 Multistage Controller

Operating Instruction Supplement

WIRING THE CV5 WITH THREE PHASE POWER

The CV5 operates on three phase power properly only if the installer complies with the following rule.

RULE — THE CV5 POWER INPUT (120/240 Connection, see page 7, Operating Instructions) **MUST HAVE THE SAME VOLTAGE AND PHASE CONNECTION AS THAT OF COOLING STAGE 1 AND COOLING STAGE 2.**

EXAMPLE 1 — A CV5 control is powered by 120 volts and is connected from *phase A to Neutral*. This means that the fans connected to COOLING STAGE ONE and COOLING STAGE TWO must also be wired for 120 volts and must be connected from *phase A to Neutral*.

EXAMPLE 2 — A CV5 control is powered by 208 volts and is connected from *phase A to phase C*. This means that the fans connected to COOLING STAGE ONE and COOLING STAGE TWO must also be wired for 208 volts and must be connected from *phase A to phase C*.

The CV5 control derives timing pulses from its power input terminals. These timing pulses control the speed of COOLING STAGE ONE and COOLING STAGE TWO. For three-phase systems, *phases A, B and C* are out of time with each other by 120 degrees. This means that a fixed time delay occurs between the starting point of each phase. If the CV5's power terminals are connected to a different phase from those connected to COOLING STAGE ONE or COOLING STAGE TWO, then the CV5 cannot properly time the speed of these stages due to the time difference between the phases and its own timing pulse.

NOTE 1: This connection rule is only required when connecting a CV5 to three-phase systems.

NOTE 2: COOLING STAGE THREE, COOLING STAGE FOUR and the HEATING STAGE may be connected to any voltage (up to 240 VAC) or phase in a three-phase system because timing is not needed for these stages.

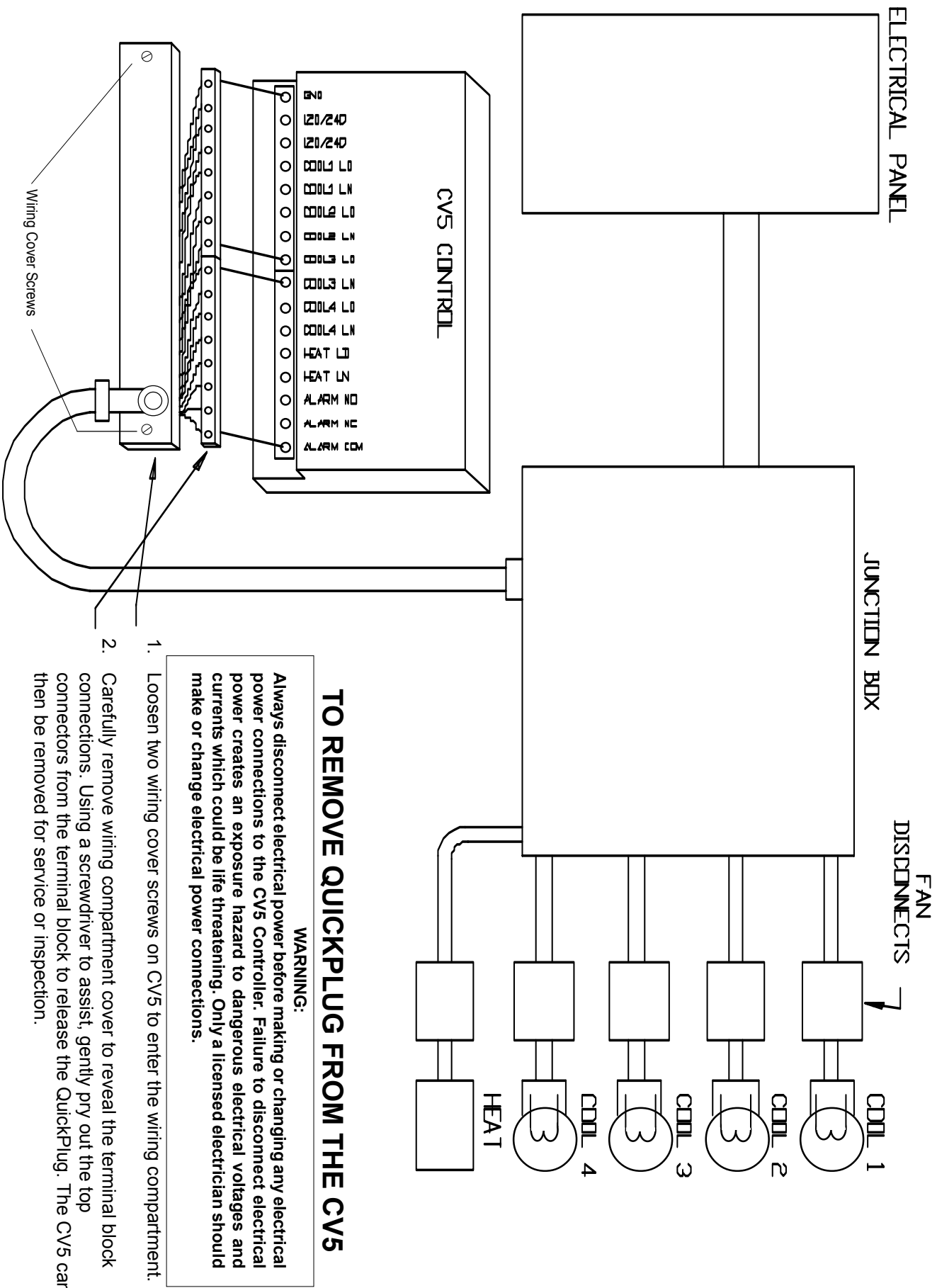
QUICK PLUG COLOR CODE

WARNING:

SET VOLTAGE SELECT SWITCH FOR PROPER LINE VOLTAGE BEFORE ENERGIZING (CV5 OPERATING INSTRUCTIONS).

COLOR	SIZE	LN/LD	NAME
GREEN	#12	GND	CONTROL GND
WHITE	#16	L2	CONTROL L2
BLACK	#16	L1	CONTROL L1
WHITE/ORANGE	#14	LOAD	COOL 1
ORANGE	#14	LINE	COOL 1
WHITE/YELLOW	#14	LOAD	COOL 2
YELLOW	#14	LINE	COOL 2
WHITE/BLUE	#14	LOAD	COOL 3
BLUE	#14	LINE	COOL 3
WHITE/PURPLE	#14	LOAD	COOL 4
PURPLE	#14	LINE	COOL 4
WHITE/RED	#14	LOAD	HEAT
RED	#14	LINE	HEAT
BROWN/BLACK	#16	NO	ALARM
BROWN	#16	NC	ALARM
BROWN/YELLOW	#16	COM	ALARM

Suggested Conduit Layout for Using CV5 QuickPlug



TO REMOVE QUICKPLUG FROM THE CV5

WARNING:

Always disconnect electrical power before making or changing any electrical power connections to the CV5 Controller. Failure to disconnect electrical power creates an exposure hazard to dangerous electrical voltages and currents which could be life threatening. Only a licensed electrician should make or change electrical power connections.

1. Loosen two wiring cover screws on CV5 to enter the wiring compartment.
2. Carefully remove wiring compartment cover to reveal the terminal block connections. Using a screwdriver to assist, gently pry out the top connectors from the terminal block to release the QuickPlug. The CV5 can then be removed for service or inspection.

Suggested Set-up for CV5 Control

Customer	_____
Address	_____
City	_____ State _____ Zip Code _____
Serial Number:	_____ Installation Date _____
Installed By:	_____

Voltage Selector Switch _____

Initial Set-Up for DIP Switch Positions		
VENT/COOL	8	
VENT/COOL	7	
TEMP F/C	6	
SENS 1/2	5	
NORM/LOCK	4	
NORM/CAL	3	
NOT USED	2	ON
NOT USED	1	ON

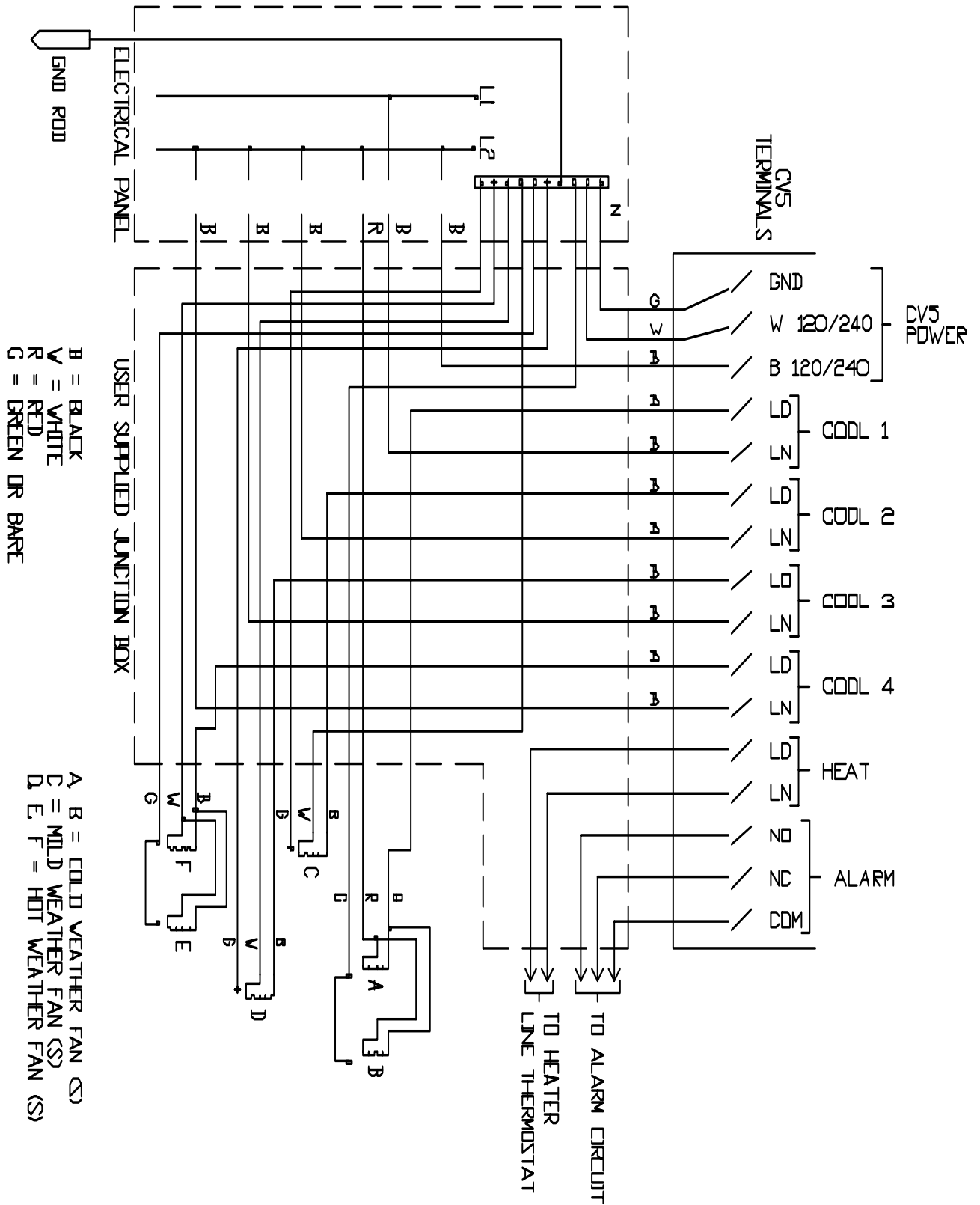
Initial Set-Up Value Settings	
SP SETPOINT	
iD1 COOLING 1 IDLE SPEED	
iD2 COOLING 2 IDLE SPEED	
C1 COOLING 1 SETPOINT	
C2 COOLING 2 SETPOINT	
C3 COOLING 3 SETPOINT	
C4 COOLING 4 SETPOINT	
H1 HEATING SETPOINT	
P1 COOLING 1 RANGE	
P2 COOLING 2 RANGE	
ALo LOW TEMP. ALARM	
AHi HIGH TEMP. ALARM	
Ao1 COOLING 1 AUTO-OFF	
Ao2 COOLING 2 AUTO OFF	
SLP SERIAL PORT ADDRESS	

Common Installation and Service Problems for CV5 Controller

Trouble	Possible Cause/Cure
<p>1. No display or display shows only one digit or part of a digit.</p>	<p>Line voltage select switch is set for 240V, but control is powered by 120V. Set switch to 120V. See pg 6, paragraph 2 of the CV5 Operating Instructions for details.</p> <p>Control fuse F3 is blown. Fuse F3 is located just to the right of the voltage select switch on the Bottom Control Board.</p>
	<p>WARNING: Disconnect power before attempting to replace this fuse to avoid shock hazard.</p>
<p>2. The CV5 control interrupts current ventilation operations and repeats its start-up sequence occasionally when any stage changes from OFF to ON.</p>	<p>Note that F3 can be replaced only at the factory for some early CV5 models. Replace with 0.5 amp slow-blow fuse, Osborne Part #RED-9050.</p>
<p>3. The CV5 control displays temperature and the Indicator Lights (pg 4, Fig. 1, CV5 Operating Instructions) show some stages are ON, but no fans are running.</p>	<p>The CV5 must have a separate power supply connection to provide power to its control board. This power connection should be separate from any cooling or heating stage circuit. If the supply of power to the CV5 control board is shared with a cooling or heating stage, the momentary drop in voltage that can occur when a fan motor starts may cause the CV5 to go through its start-up sequence. See pg 7, Section 2.2, CV5 Operating Instructions.</p>
<p>4. Fans on Cooling 1 or 2 start at full speed and then stall or slow to impractical speeds. This behavior (start at full speed and then stall) may repeat several times and may cause the CV5 to repeat its start-up sequence.</p>	<p>Each stage of the CV5 requires a power circuit separate from the control circuit. Check electrical wiring. Reread Section 2.2, pgs 6-7, CV5 that Operating Instructions and see example wiring diagram in Appendix A, pg 26.</p>
<p>5. Fans on Cooling 1 or 2 start at full speed and then stall or slow to impractical speeds. This behavior (start at full speed and then stall) may repeat several times and may cause the CV5 to repeat its start-up sequence.</p>	<p>The idle speed, Id1 or Id2, is set too low. The fans start at full speed due to the Power-up feature, but then slow down and stall, because the idle speed is set too low to maintain adequate power to the motor. Set Id1 or Id2 to a higher setting. If the CV5 is repeating its start-up sequence, disconnecting power to Cooling 1 and 2 may be necessary before this adjustment is successful.</p>
<p>6. Indicator lights show that Cooling 1 or 2 is ON, but fan (s) do not run.</p>	<p>Fuse F1 or F2 is blown. See pg 4, Fig. 1 and pgs 6-7 section 2.2, CV5 Operating Instructions. Replace with MDA 15 Amp fuse, Osborne Part # KE-AV1102 according to CV5 Operating Instructions.</p>
<p>7. The CV5 works, but indicated temperature is incorrect and/or fixed at one value between 32 and 112 deg F.</p>	<p>The sensor (s) needs to be re-calibrated. See pg 21, Sections 5.1.2 and pg 24 Section 5.2.1, of CV5 Operating Instructions. Note: Anytime a new sensor is installed or a sensor is extended, the CV5 must be calibrated to the new or extended sensor, as discussed in paragraph 15, pg 23, CV5 Operating Instructions.</p>
<p>8. Indicated temperature is stuck at 32 deg F.</p>	<p>Sensor is internally open or there is a loose wire at the sensor terminals. Replace sensor and/or check wiring at sensor terminals.</p>
<p>9. Indicated temperature is stuck at 112 deg F.</p>	<p>Sensor is internally shorted or there is a short at the sensor terminals. Replace sensor and/or check wiring at sensor terminals.</p>
<p>10. Indicated temperature is erratic.</p>	<p>Sensor cable is routed along AC power cables or conduits. Always maintain at least a two foot separation between AC power cables or conduits. See Section 5.1, pg 21, CV5 Operating Instructions for this and other causes of erratic behavior.</p>

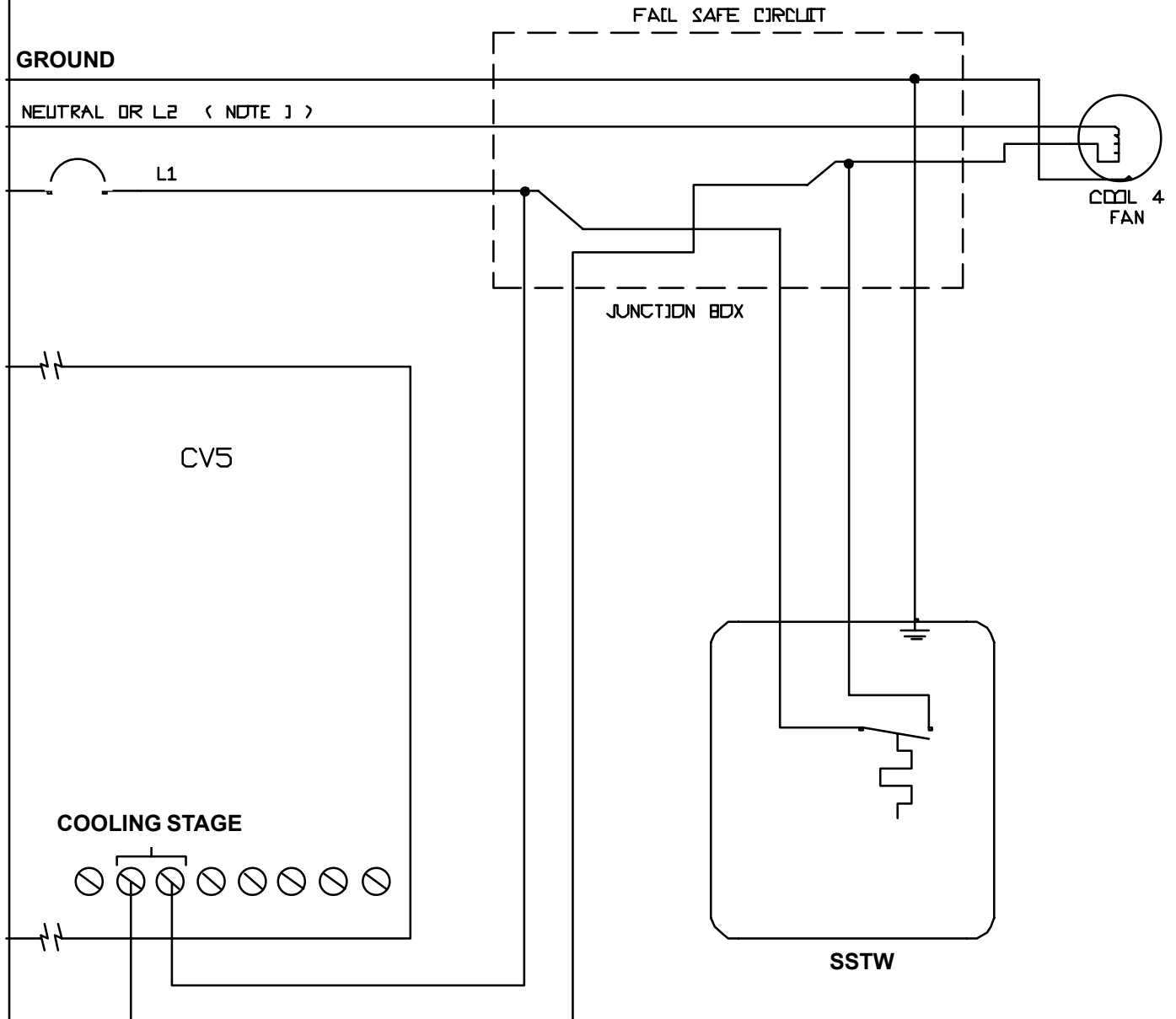
APPENDIX A

CV5 Example Wiring Diagram



APPENDIX B

Fail Safe Circuit for Any Cooling Stage



NOTE 1: One of the supply lines is either neutral or L2 depending on cooling fan supply voltage.

NOTE 2: The SSTW or similar thermostatic control is set several degrees higher than the cooling stage on the CV5. In the event that the CV5 fails, the SSTW turns on the cooling stage fan as the temperature increases above its cooling range.

NOTE 3: A fail-safe circuit may be desirable for both minimum winter and maximum summer fan protection. Suggested set point is 5 to 10 °F above Cooling Stage Set Point.