Hoffman Controls

Installation & Operating Instructions

708-B13A and 708-C13A Series
Electronic Fan Speed Controllers

Initial Controller Installation

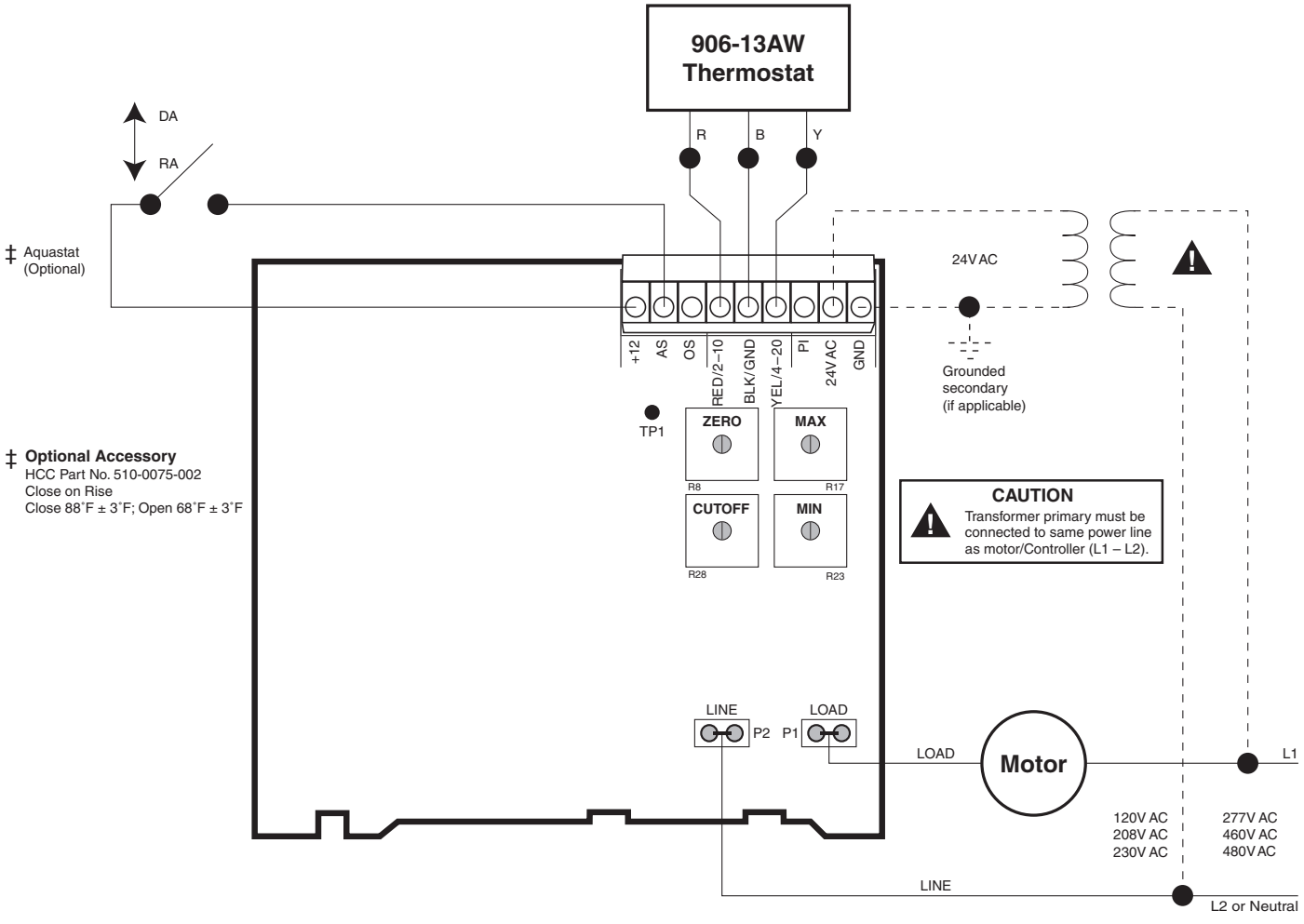
1. Remove the longer 708-B13A/708-C13A protective cover (4 screws). Mount Controller to a flat surface using two fasteners (not supplied). Surface or ambient temperature must not exceed 120°F (49°C).
2. De-energize power to Controller and Motor/Load.

Wiring

Attach 24VAC power, signal input & line voltage power wiring using industry approved methods.

Input Signal(s) Wiring

1. Connect "+24" terminal and "GND" terminal to 24VAC source. The primary of the 24VAC source must be powered from the same lines(s) (phases) as the Motor/Load.
2. **Option 1 –** 708-B13A/708-C13A using Aquastat and 906-13AW Thermostat. See Figure 1.
   - **A.** 0.9" W.G. is the maximum allowable static pressure in the duct system of a squirrel cage fan.
   - **B.** Controller has been designed and tested with a squirrel cage blower motor. Propeller (blade type) fan motors have also been successfully controlled and may be used.



Option 1 – 708-B13A/708-C13A with 906-13AW Thermostat and Aquastat
Figure 1

C. The Aquastat must furnish an isolated (dry) set of contacts.

D. +12 terminal to Aquastat is at +12V DC potential when Controller is powered up.

E. Aquastat program: Open Contact – DA (cooling)
Closed Contact – RA (heating)

F. Thermostat span is 2°F maximum from setpoint.

G. Ensure that the 24VAC transformer primary is connected to the identical power source (L1–Neut) or (L1–L2) as the motor.

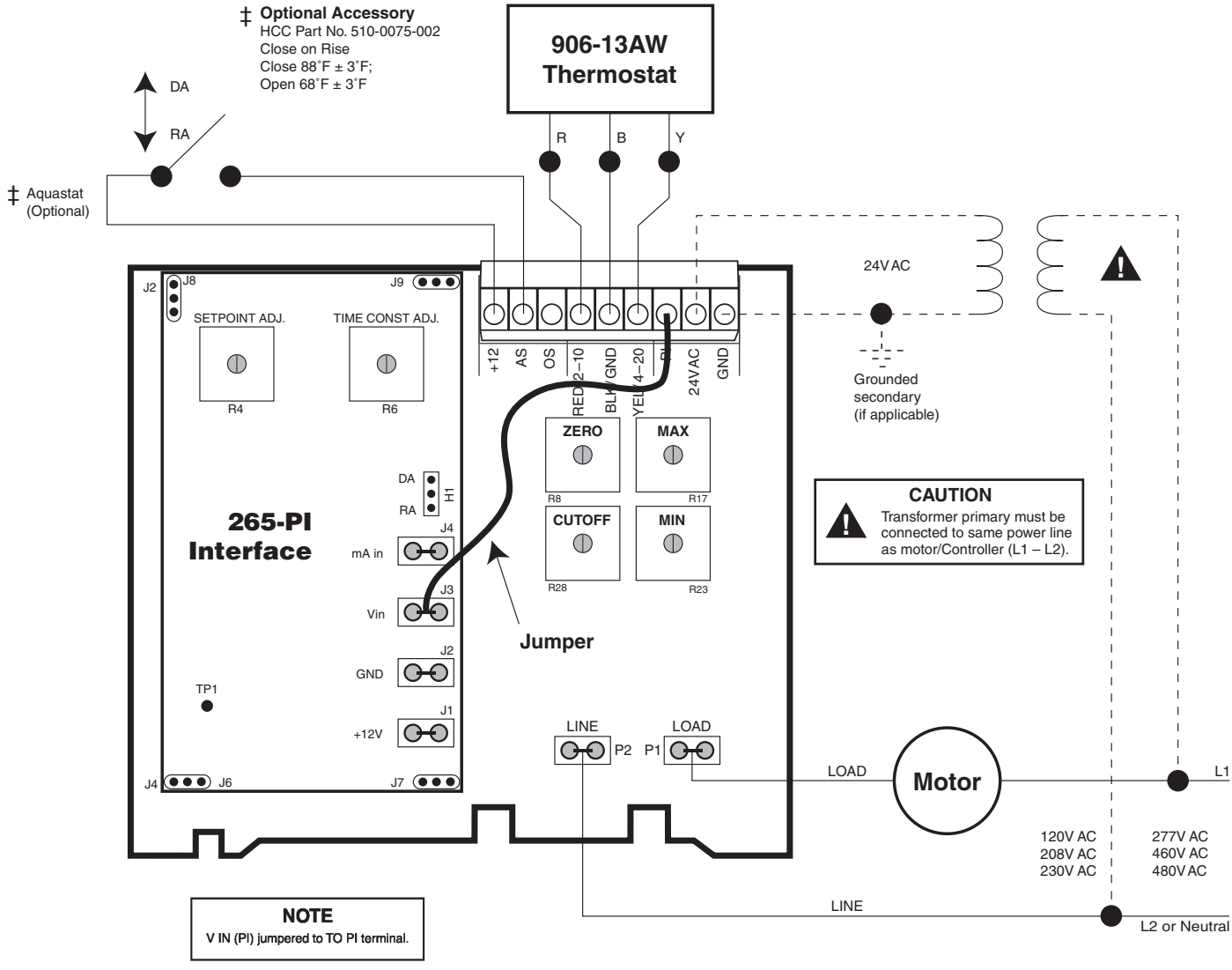
3. Option 2 – 708-B13A (PI)/708-C13A (PI) using Aquastat, 906-13AW Thermostat, and PI Interface. See Figure 2.

A. 0.9" W.G. is the maximum allowable static pressure in the duct system of a squirrel cage fan.

B. Controller has been designed and tested with a squirrel cage blower motor. Propeller (blade type) fan motors have also been successfully controlled and may be used.

C. The Aquastat must furnish an isolated (dry) set of contacts.

D. +12 terminal to Aquastat is at +12V DC potential when Controller is powered up.



Option 2 – 708-B13A (PI)/708-C13A (PI) using Aquastat, 906-13AW Thermostat, and 265-PI Interface
Figure 2

E. Aquastat program: Open Contact – DA (cooling)
Closed Contact – RA (heating)

F. Thermostat span is 2°F maximum from setpoint.

G. Ensure that the 24VAC transformer primary is connected to the identical power source (L1–Neut) or (L1–L2) as the motor/Controller.

H. The PI terminal must be jumpered to the "V in" (J3) terminal of the PI board.

I. Reference 265-PI Interface Product Data and Installation & Operating Instructions.

J. Ensure proper setpoint voltage level and RA/DA jumper (H1) selection on PI Interface board.

Power Wiring

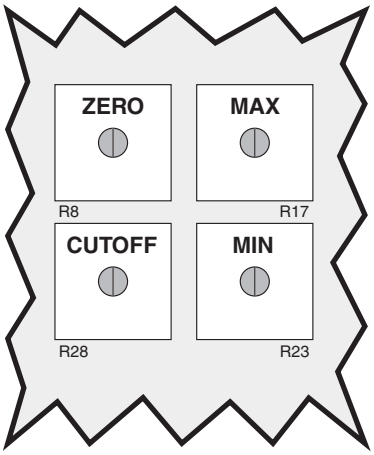
Motor to LOAD terminal. Line to LINE terminal.

CAUTION

Transformer primary MUST BE on the same lines (phases) as fan motor.

Minimum Fan Speed Adj.

1. Turn Fan Cut-Out Adj. Pot (R28) fully CCW.
2. Turn Maximum Speed Adj. Pot (R17) fully CW.
3. Set the input signal source to the MINIMUM input value required. Do not set value below 2V DC as measured at test point TP1 in reference to GND (–) terminal.
4. Connect power to 24VAC transformer. Check test point TP1 voltage level.
5. Adjust Minimum Speed Adj. Pot (R23) to the desired minimum RPM.



Adjustment Locations
Figure 3

Maximum Fan Speed Adj.

1. Set the input signal source to the maximum input value required.
2. Adjust Maximum Speed Adj. Pot (R17) to desired maximum RPM.

Zero Pot Adj. (if used)

Proper adjustment of the Zero pot (R8) determines the thermostatic deadband of the control.

First, determine the null position of the 906-13A Thermostat temperature setpoint. The thermostat's sensor must be allowed time to stabilize at a temperature within the "stat's" normal 65°F–85°F range. The null point is that point where the setpoint and sensed temperature match.

1. Measure the voltage from "stat" "Y" (yellow) input terminal to the GND (–) terminal.
2. Observe the voltage while shorting and opening Aquastat terminals.
3. Adjust the thermostat's setpoint as necessary so that no voltage fluctuation occurs when the Aquastat terminals are shorted and opened.

Next, divide the deadband temperature by two; e.g., if the desired deadband is 4°F, then 4° divided by 2 equals 2°F.

1. Change the thermostat's setpoint from null to +2°F.
2. Short the Aquastat input terminals.
3. Adjust the Zero pot (R8) to @+2.0V DC as measured between the GND (–) terminal and test point TP1.
4. Verify the –2.0°F by setting the thermostat's setpoint 2°F below null point, removing the short from the Aquastat terminals and reading the voltage (@+2.0V DC).

Test to ensure that motor start does not occur until either the temperature or the thermostat's setpoint are changed to the positive or negative by an amount equivalent to the desired deadband.

Deadband is factory adjusted to 2°F (±1°F of null setpoint).

Fan Cut Off Adj. (if used)

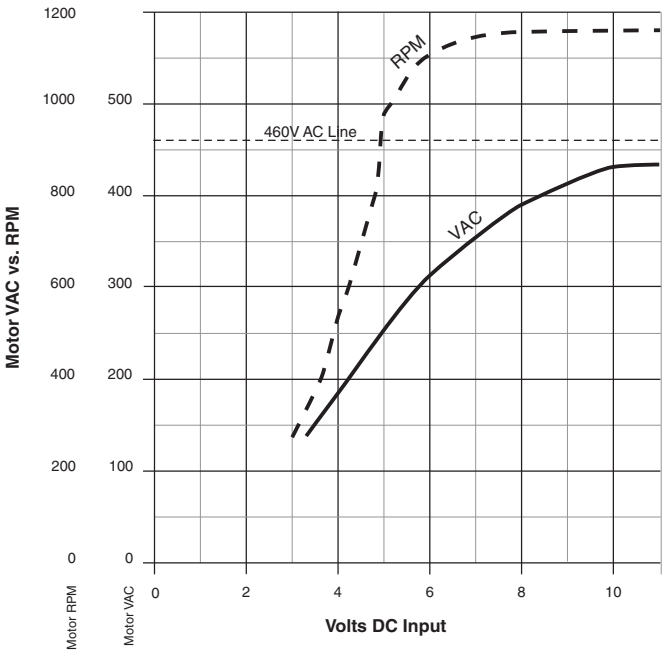
If not used, Fan Cut Off Adj. Pot (R28) must be fully CCW.

1. Set input signal to the desired value for Fan Cut Off. It must be set at a value HIGHER than Minimum Fan Speed Adjust value as measured at test point TP1. Fan Cut Off Adjust use negates use of Minimum Speed Adjust.
2. Verify Fan Speed Cut Off Pot (R28) is adjusted fully CCW. Motor should be operating.
3. Slowly adjust Fan Speed Cut Off Pot (R28) CW until motor cuts out.

Vary input source over selected Min./Max. and Cut Off values. Monitor fan operation and RPM. Repeat adjustments as necessary for desired operation.

Final Controller Installation

1. De-energize power to Controller and Motor/Load.
2. Fasten protective cover on Controller with four (4) screws provided.
3. Restore power to Controller and Motor/Load. Complete full operational testing as required.



Typical 460VAC Motor Performance
Figure 4