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Welcome!

2002 GSI Service School

Fan & Heater Section

Presented by

Toby Hobson

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Safety and Liability

- Typical Hazard Decal
  - ANSI format
    - Colors
      - Orange "Warning"
    - Pictogram
    - Hazard Statement
      - Apparent Hazard
      - Consequences
      - Prevention Action
  - Located where hazard may exist or be accessible.

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Safety and Liability

- Typical Electrical Hazard Decal
  - ANSI format
    - Colors
      - Red “Danger”
    - Pictogram
    - Hazard Statement
      - Apparent Hazard
      - Consequences
      - Prevention Action
  - Located where electrical hazard may exist or be accessible.

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Safety and Liability

- All Safety and Hazard Decals are 100% ***FREE***!

- How to order:
  - Request by part number
    - All decals have a "DC" part number on them.
    - Decals for a product are in the front section of the owner's manuals.
  - Ask the Product Group

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Safety and Liability

- Decals
  - Install new decals if worn or missing.
- Guarding
  - Install before leaving jobsite
    - Applies to Belt and Chain Guards, Fan Guards, Control Box Covers, etc.
- Safeties
  - Do not leave bypassed
    - Applies to High Limits, Fuses, Breakers, Overloads, Thermostats, etc.
- Refusal
  - Do not work on an item if you know it has been modified or customer will not allow you to correct what is known to be dangerous.

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Vane Axial and Inline Centrifugal Fans

- Return to Ochre Scheme
- Larger Plastic Control Box
- Plastic Venturi
- Fan Covers

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Centrifugal Fans

- Return to Ochre Scheme
- Housing stiffeners
- Plastic Control Box
- Heavy duty motor mount
- Leveling legs
  - (including 3500 rpm fans)
- Continuous welded blades

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Top Fan Service Calls

- This fan won't run.
- This fan runs awhile and stops.
- This fan runs but never gets to speed.
- This fan motor starts but is making a lot of noise.
- This fan is vibrating like crazy.
- This fan makes a ticking noise.
- This fan's motor is really hot to the touch.
- This fan is pulling too many amps.
- This fan won't shut off.
- This fan's overload sometimes trips when it is hot outside.

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"Fan won't run"

A breakdown in the control circuit has occurred.

- Sources
  - Main power not turned on.
  - Blown fuse or tripped breaker.
  - Overload tripped.
  - Incorrect wire size.
  - Defective Motor or Capacitor (single phase only).
  - Defective Contactor.
  - Defective wiring.
  - Loose Connections.

Loose connections will be an endless cause of trouble.

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"Fan runs for a short time and shuts off."

A breakdown in the control circuit has occurred.

- Sources
  - Undersize wiring.
  - Low line voltage at installation.
  - Magnetic contactor malfunctioning
  - Defective start/stop switch.
  - Wrong heater strip.

Vibration

- Sources
  - Fan may not be securely mounted.
  - Fan may not be level and housing is in a “bind”.
  - Motor mounting bolts may be loose.
  - Fan may have dirt deposits on blade.
  - Motor shaft may be bent.
  - Blade may not be mounted correctly.
  - Blade may be out of balance.
  - Fan blade may be hitting housing (ticking noise).
  - Fan blade may be in a stall.

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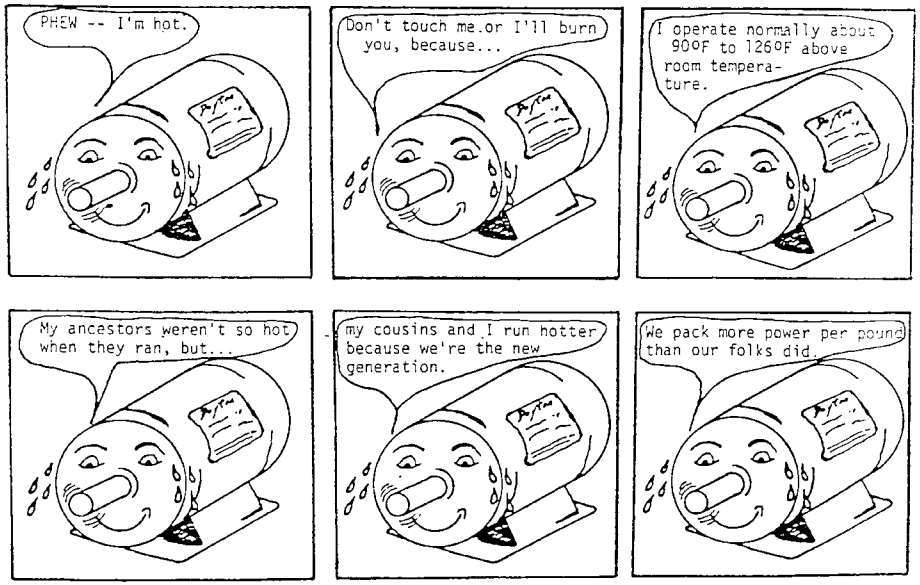
"My motor runs hot."

W.W. GRAINGER. INC. Distribution Group 5959 W. Howard St. Chicago, IL 60648



OBSERVE ALL SAFETY PRECAUTIONS DURING SERVICING. CONSULT OPERATING INSTRUCITONS AND PARTS MANUAL

Problem: My motor runs hot. When I touch it, it burns my hand. Is that normal?

Solution: Yes, a normally operating motor's surface temperature will be about 90°F (50°C surface rise) to 126°F (70°C surface rise) above room temperature. If the room temperature is 62°F, then the normal motor operating surface temperature will be between 152°F to 188°F: this is hot enough to burn skin, but yet the motor is operating normally.

Fan Installation

- Reminders on Fan Installation
  - Observe local safety, building, and electrical practices.
  - Provide a solid foundation.
  - Avoid binding or twisting of fan housing.
  - Provide sufficient clearances for proper airflow to fan.
  - Avoid installing fan where unit may be damaged by other equipment (tractor/mower).
  - Avoid installing fan where excess debris may be ingested.
  - Make sure all guarding is installed and secure.

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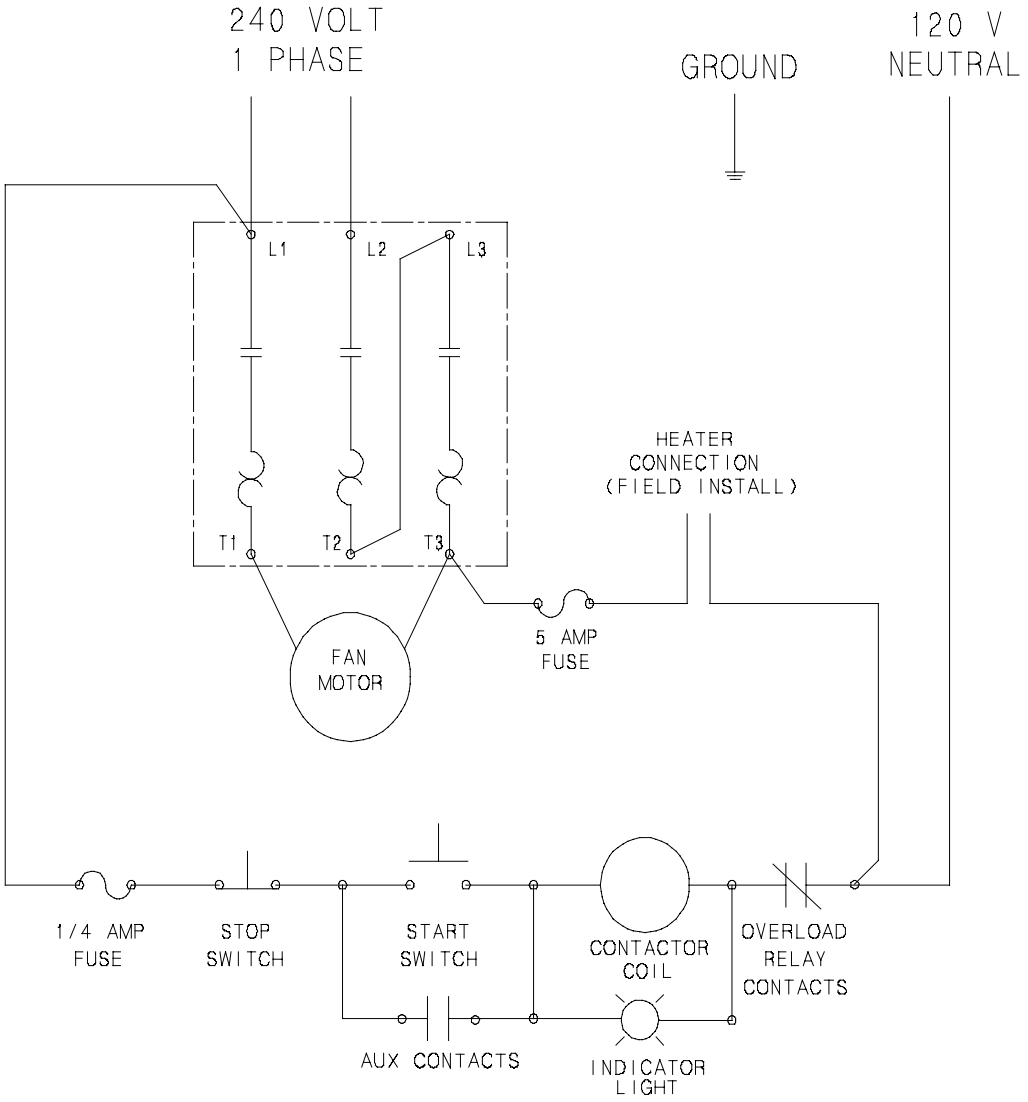
240 Volt 1 Phase Schematic



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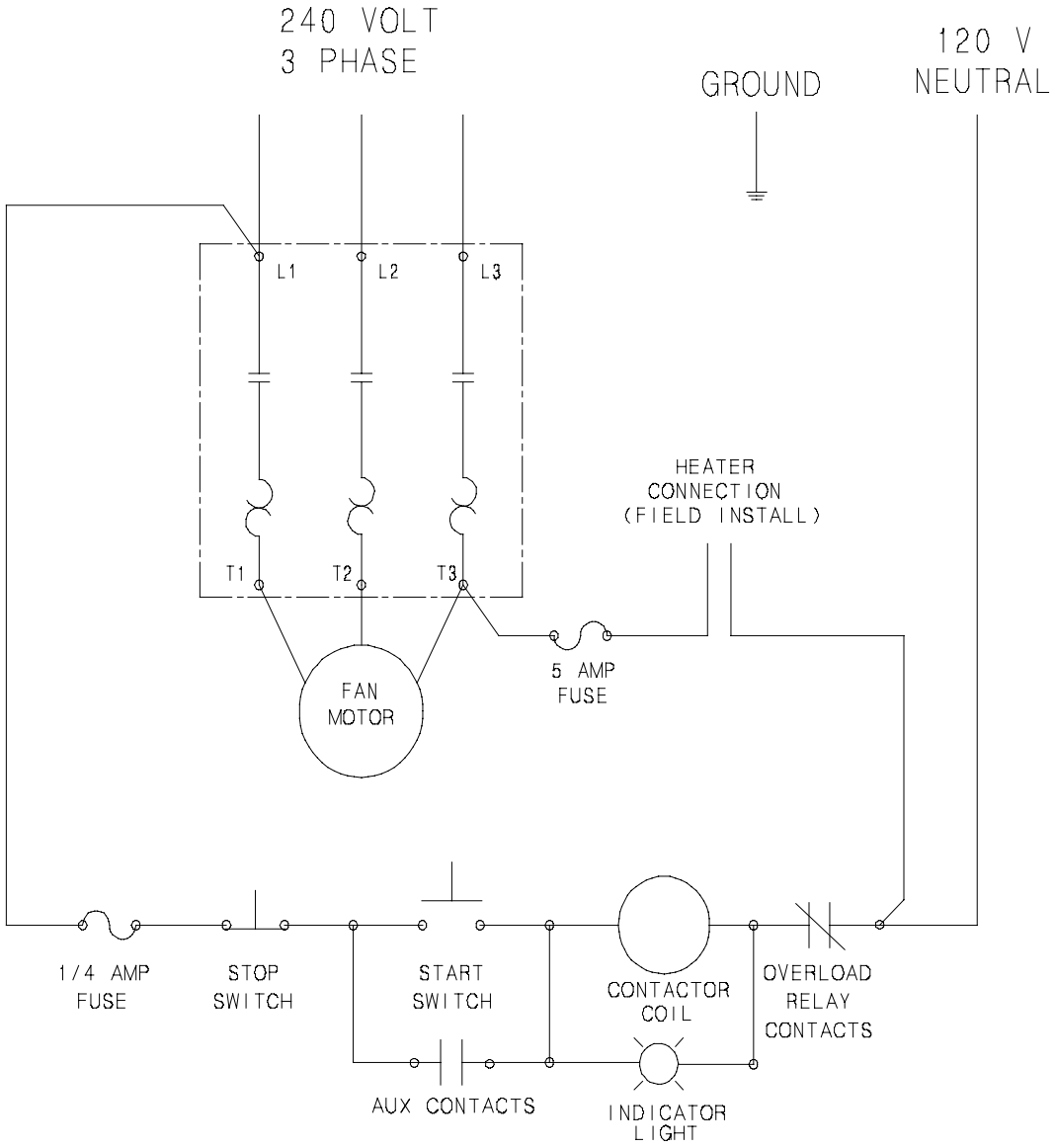
240 Volt 3 Phase Schematic



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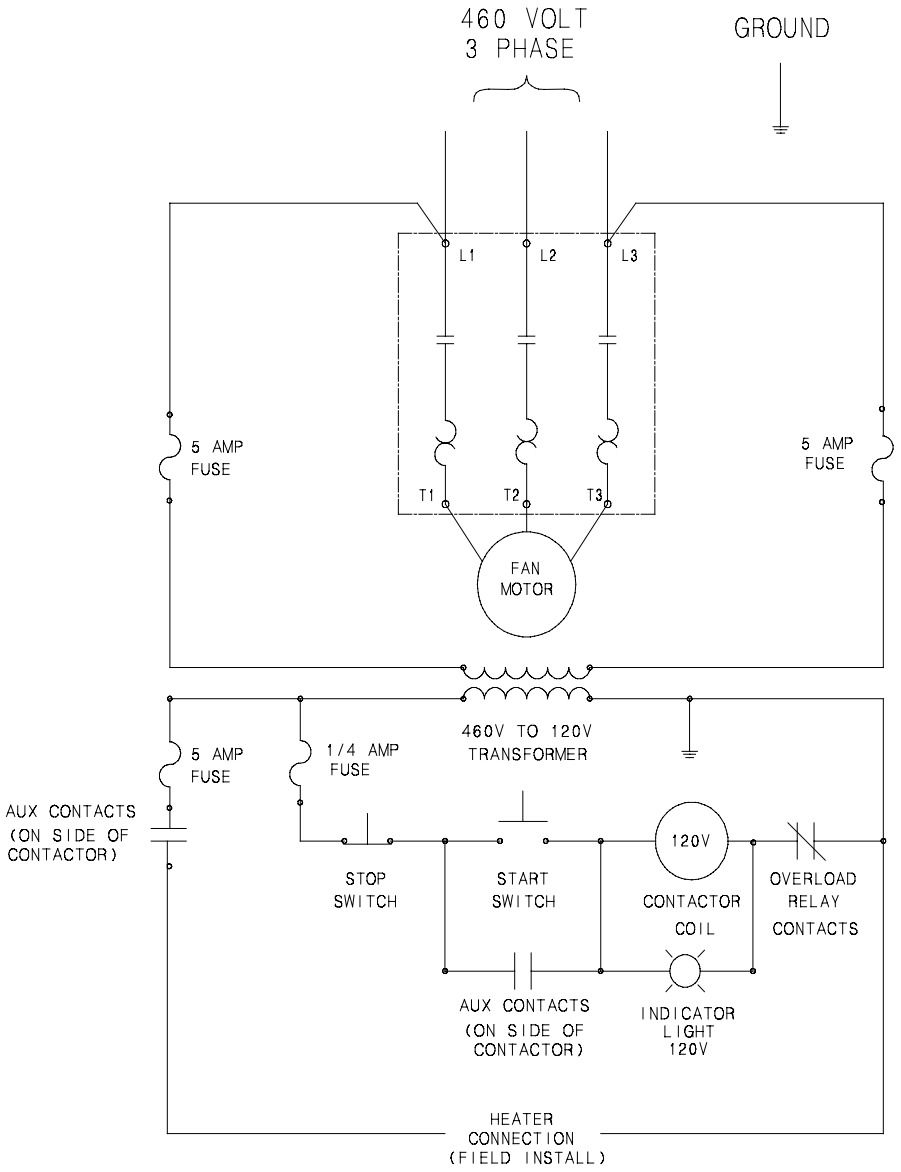
460 Volt 3 Phase Schematic



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Torque Specifications

- Vane Axial Torque Specs
  - Browning (all) 16 ft. lbs.
  - Trantorque
    - 14” 1 hp 50 ft. lbs.
    - 18” 1.5 hp 63 ft. lbs.
    - 24” 7 hp to 28” 15 hp 84 ft. lbs.
- Centrifugal Torque Specs
  - Browning
    - 3-15 hp 3500 rpm 16 ft. lbs.
    - 20-50 hp 3500 rpm 29 ft. lbs.
    - 3-50 hp 1750 rpm 29 ft. lbs.
  - Trantorque
    - 3-7.5 hp 1750 rpm 125 ft. lbs.
    - 10-20 hp 1750 rpm 160 ft. lbs.
    - 30-50 hp 1750 rpm 200 ft. lbs.

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Heaters

- Larger Plastic Control Box
- HF-7318 Smart Board
- Factory installed kits
  - modulating valves
  - hi-lo
- "Quad" pipetrains
  - where available

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Top Heater Service Calls

- This heater will not light.
- This heater lights and then goes out.
- This heater lights and shuts down with flame out even though flame is there.
- This heater flame pulses and the gas gauge jumps around.
- This heater shuts down in the middle of the night and everything looks ok.
- This heater is running ok but the temperature spread is uneven under the bin.
- This heater flames out when the heater cycles (usually LP).
- This heater will not reset.
- This heater's gas pressure must be set very high to light.
- This heater's gas pressure is very low or gauge reads zero.

"Heater will not light"

- Burner will not fire. No gas pressure and no ignition spark
  - No main power.
    - Fan not running, fan contactor must be engaged for heater to run.
    - Check fuse, on/off switch, & high limit switches
- Burner will not fire. No gas pressure and ignition spark is constant.
  - No gas supply.
    - Open all shutoff valves and check tank to see if empty..
- Burner will not fire. Gas pressure constant and no ignition spark
  - No power to transformer or transformer is bad.
  - Gas pressure set too low.
  - Spark Plug/Ignitor problem
    - Check gap and set to 1/16".
    - Check wiring.

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"This heater lights and then goes out."

- Burner goes out. Gas pressure and Ignition spark are constant.
  - Vapor high limit.
  - Flame sensor not sensing flame or illegal flame sense.
  - Gas pressure set too low.
  - Airswitch (if supplied).
  - Thermostat is at set point.
  - HiLo heater cycling, but valve is closed.

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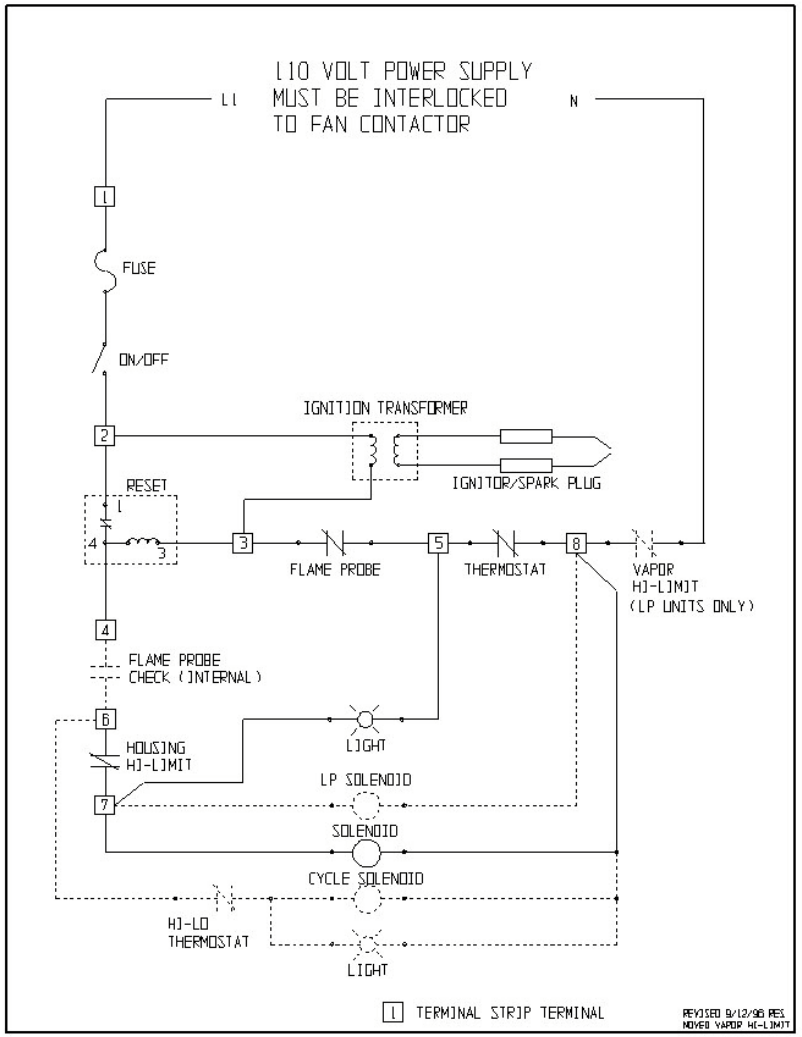
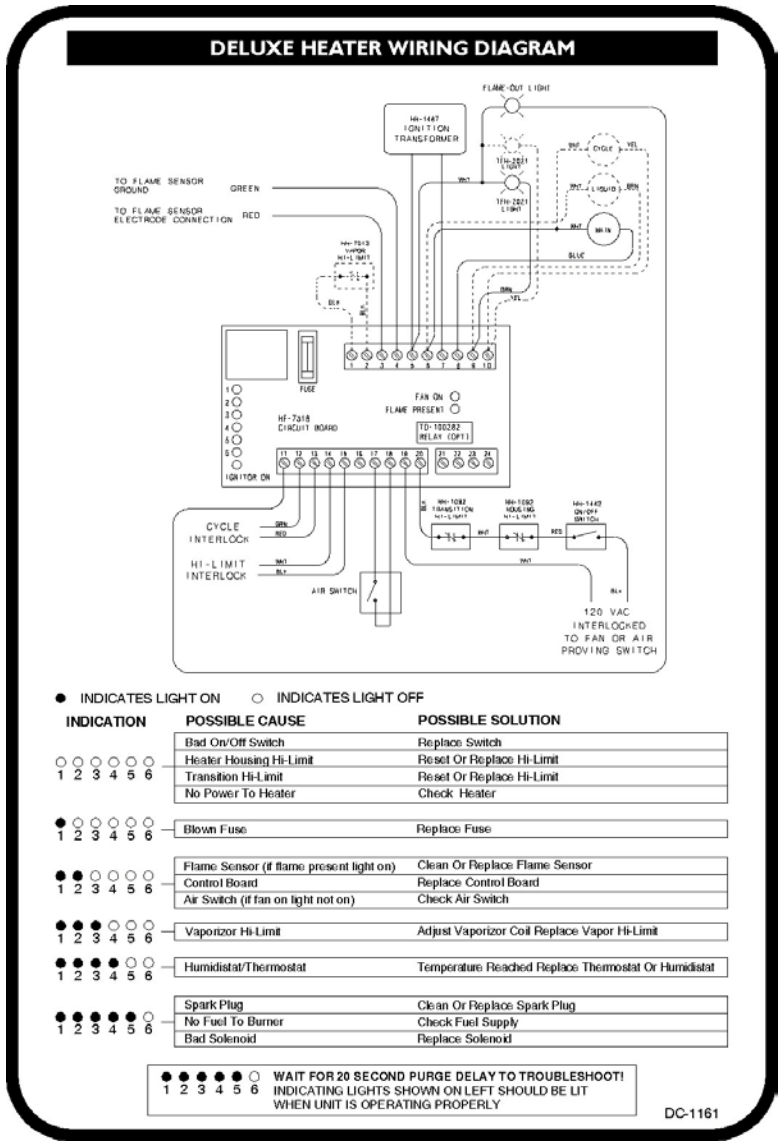
Standard Heater Schematic





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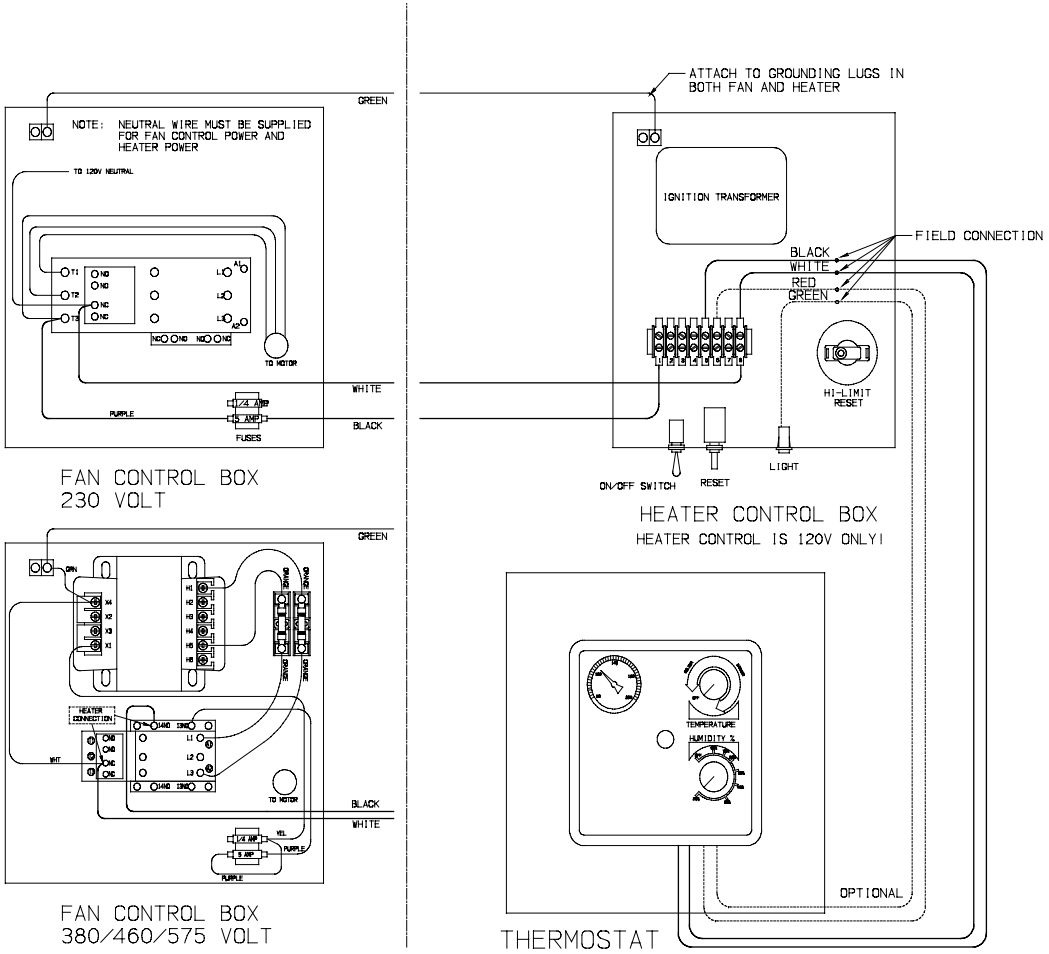
Fan / Heater Interconnect (Standard)



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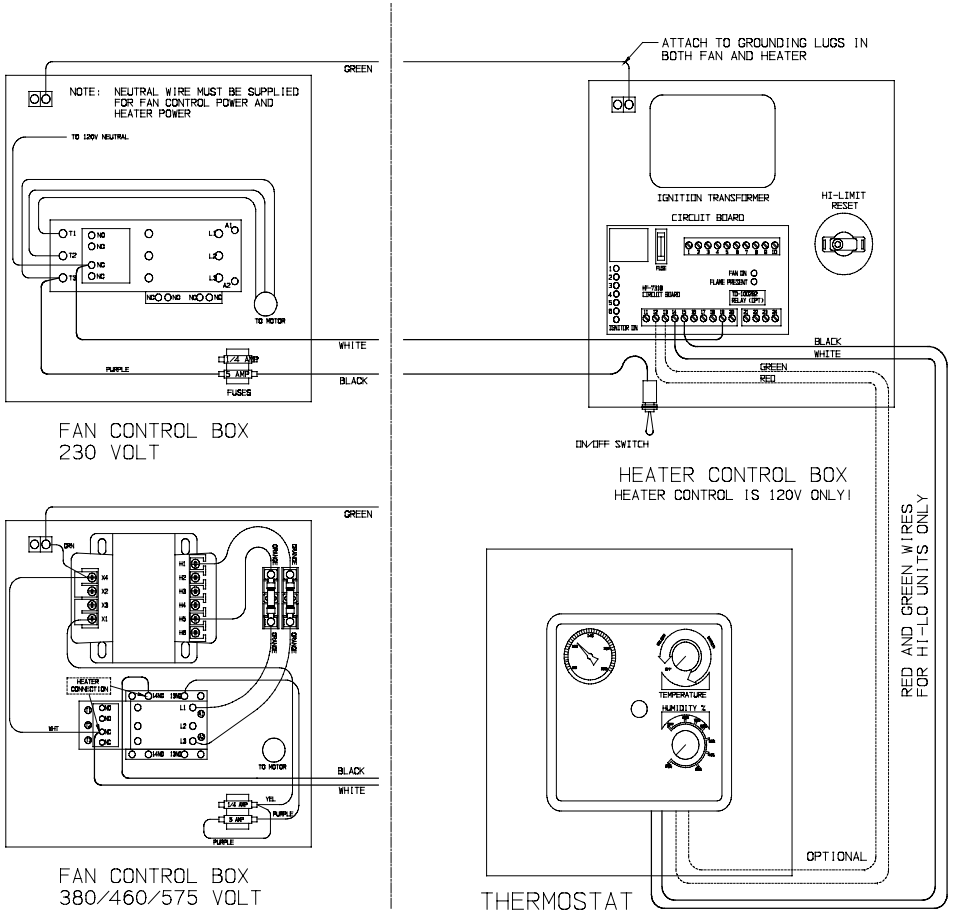
Fan/Heater Interconnect (Deluxe)



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Fan & Heater Manuals

Fans (6)
- PNEG-010 GSI Vane Axial
- PNEG-119 GSI Inline Centrifugal
- PNEG-163 GSI Centrifugal
- PNEG-697 DMC Centrifugal
- PNEG-699 DMC Vane Axial
- PNEG-793 DMC Inline Centrifugal

Roof Exhausters (3)
- PNEG-524 GSI Roof Exhauster
- PNEG-682 DMC Roof Exhauster
- PNEG-735 NECO Roof Exhauster

Spreaders (2)
- PNEG-258 GSI Power Spreader
- PNEG-267 GSI Super Spreader

Heaters (28)
- PNEG-012 GSI Deluxe Vane Axial
- PNEG-179 GSI Standard Downwind
- PNEG-236 GSI Humidistat-Thermostat
- PNEG-269 GSI Electric
- PNEG-297 GSI Chi-town
- PNEG-553 GSI Series 2000 Vane Axial
- PNEG-581 GSI Deluxe Vane Axial CGA
- PNEG-582 GSI Series 2000 Vane Axial CGA
- PNEG-583 NECO Downwind Series 1
- PNEG-584 NECO Downwind Series 2
- PNEG-585 NECO Standard Vane Axial
- PNEG-588 GSI Deluxe Downwind
- PNEG-591 GSI Series 2000 Downwind
- PNEG-592 GSI Standard Vane Axial
- PNEG-595 GSI LTD
- PNEG-698 DMC Standard Downwind
- PNEG-700 DMC Deluxe Vane Axial
- PNEG-703 DMC Standard Vane Axial
- PNEG-704 DMC Deluxe Downwind
- PNEG-705 DMC Ring Burner
- PNEG-734 DMC Humidistat-Thermostat
- PNEG-754 DMC Electric
- PNEG-816 NECO Deluxe Vane Axial
- PNEG-819 DMC Deluxe Vane Axial CGA
- PNEG-820 DMC Series 2000 Vane Axial CGA
- PNEG-821 DMC Deluxe Downwind CGA
- PNEG-822 DMC Series 2000 Downwind CGA
- PNEG-823 GSI Deluxe Downwind CGA
- PNEG-824 GSI Series 2000 Downwind CGA