



Digital High/Low Thermostat

Owner's Manual

Model: HF-8056

PNEG-1499

Version: **2.2**

Date: **09-20-20**



Check List

1. All wire connections
2. Factory values programmed
 - a. Value 1 set to (F)
 - b. Value 2 or "S1" set to (100)
 - c. Value 3 or "DIF1" set to (5)
 - d. Value 4 set to (H1)
 - e. Value 5 or "S2" set to (130)
 - f. Value 6 or "DIF2" set to (5)
 - g. Value 7 set to (H2)
3. All items included in packaging.
4. Safety decal installed on side of thermostat
5. Aesthetic appearance
6. Manual
7. Vendor Instruction Sheet

Tester Signature: _____

Date: _____

All information, illustrations, photos and specifications in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

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Safety Guidelines

Safety guidelines are general-to-specific safety rules that must be followed at all times. This manual is written to help you understand safe operating procedures and problems that can be encountered by the operator and other personnel when using this equipment. Save these safety guidelines for future reference.

As owner or operator, you are responsible for understanding the requirements, hazards, and precautions that exist and to inform others as required. Unqualified persons must stay out of the work area at all times.

Alterations must not be made to the equipment. Alterations can produce dangerous situations resulting in **SERIOUS INJURY or DEATH**.

This equipment must be installed in accordance with the current installation codes and applicable regulations, which must be carefully followed in all cases. Authorities having jurisdiction must be consulted before installations are made.

When necessary, you must consider the installation location relative to electrical, fuel and water utilities.

Personnel operating or working around equipment must read this manual. This manual must be delivered with equipment to its owner. Failure to read this manual and its safety instructions is a misuse of the equipment.

ST-0001-3

Cautionary Symbols Definitions

Cautionary symbols appear in this manual and on product decals. The symbols alert the user of potential safety hazards, prohibited activities and mandatory actions. To help you recognize this information, we use the symbols that are defined below.



This symbol indicates an imminently hazardous situation which, if not avoided, **will result in serious injury or death.**



This symbol indicates a potentially hazardous situation which, if not avoided, **can result in serious injury or death.**



This symbol indicates a potentially hazardous situation which, if not avoided, **can result in minor or moderate injury.**



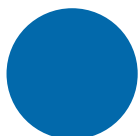
This symbol is used to address practices not related to personal injury.



This symbol indicates a general hazard.



This symbol indicates a prohibited activity.



This symbol indicates a mandatory action.

ST-0005-2

Safety Cautions

Use Personal Protective Equipment

- Use appropriate personal protective equipment:

Eye Protection



Respiratory Protection



Foot Protection



Hearing Protection



Head Protection



Fall Protection



Hand Protection



- Wear clothing appropriate to the job.
- Remove all jewelry.
- Tie long hair up and back.

ST-0004-1

Follow Safety Instructions

- **Warning:** If the information in the manual is not followed exactly, a fire or explosion can result, causing property damage, personal injury or loss of life.
- Carefully read all safety messages in this manual and safety signs on your machine. Keep signs in good condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety signs. Replacement safety signs are available from the manufacturer.
- Learn how to operate the machine and how to use controls properly. Do not let anyone operate without instruction.
- If you do not understand any part of this manual or need assistance, contact your dealer.
- Retain these instructions for future reference.



ST-0025-3

Install and Operate Electrical Equipment Properly

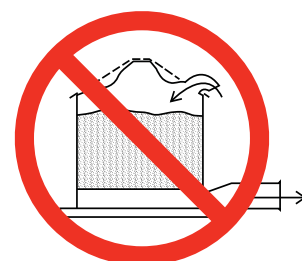
- Electrical controls must be installed by a qualified electrician and must meet the standards set by the National Electric Code, Canadian Electrical Code, and all local and state codes.
- Lock-out power source before making adjustments, cleaning, or maintaining equipment.
- Heater must be interlocked with an appropriately sized fan and a thermostat must be installed for safe operation.



ST-0026-2

Prevent Roof Damage Due to Vacuum Pressure

- Roof damage can result from excessive vacuum or internal pressure from fans or other air moving systems. The manufacturer does not warrant this type of roof damage.
- Adequate ventilation or “makeup air” devices must be provided for all powered air handling systems.
- The manufacturer does not recommend the use of downward flow systems (suction).
- Severe roof damage can result from any blockage of air passages.
- Operating fans during high humidity or cold weather conditions can cause air exhaust or intake ports to freeze.



ST-0028-2

Exercise Caution When Drying Flammable Grains

- Be aware that some grains are highly flammable including but not limited to rapeseed, canola, linseed, sunflower and milo.
- All grain and seed must be whole (minimal cracking or crushing), clean, and dust free before drying.
- Avoid dust and chaff from being drawn into the fan and heater.
- To reduce risk of fire, keep the fan, heater, drying plenum and ducts clean at all times.
- In the event of a fire (or suspected fire):
 1. Shut down the entire dryer.
 2. Turn OFF the fuel at the tank or supply valve.
 3. Shut off and lock electrical power.
 4. Evacuate the area.
 5. Call the fire department.



ST-0032-1

The safety decals on your equipment are safety indicators which must be carefully read and understood by all personnel involved in the installation, operation, service and maintenance of the equipment.

To replace a damaged or missing decal, contact us to receive a free replacement.

GSI Decals

1004 E. Illinois St.
Assumption, IL 62510
Tel: 1-217-226-4421

Location	Decal No.	Decal	Description
Thermostat	DC-889	 <p>The decal features a yellow triangular warning symbol with a black border, containing a hand being struck by a lightning bolt. To the right of the symbol is a red rectangular box with a white exclamation mark and the word 'DANGER' in white. Below this, the text reads: 'HIGH VOLTAGE Will cause injury or death. Lockout power before servicing.' The decal number 'DC-889' is printed vertically on the right side. At the bottom left, it says 'GSI Group Inc. 217-226-4421'.</p>	High Voltage Danger Decal

3. Installation Instructions

1. Mount the thermostat control on the right side of the fan transition. Locate a suitable location on the bin wall that will allow the power cord to reach the heater and the control to be at eye level for easy access.
2. Use the self-drilling screws (S-280) provided in the packaging to mount the control.
3. Run the power cord to the heater control box and make the connections as shown in the electrical connection section on pages of this manual.
4. Mount the thermostat sensor 24" to the RIGHT of the transition. Use the sensor mounting plate (HF-8058) as a template. This part has holes to match the hills of a 2.66" and 4.00" bin sidewall.
5. Use the screws (S-280) provided to mount the plate (HF-8058) on the sidewall. The large hole on the plate should be centered on a valley of the bin corrugations. The plate should be mounted approximately in the center of the plenum at the closest valley.
6. Use the hole in the mounting plate as a guide and drill a pilot hole. Once the pilot hole is drilled in the sidewall, remove the mounting plate.
7. With the plate removed, enlarge the pilot hole to 1/2" diameter.
8. Attach the sensor of the thermostat to the mounting plate using the cord connector (HF-8057). The sensor should extend approximately 3.00" beyond the plate. If not, then adjust the sensor length by loosening the cord connector and moving the Sensor.
9. Insert the sensor into the 1/2" hole and re-attach the mounting plate using the screws (S-280).
10. Caulk the area around the mounting plate to seal any openings.

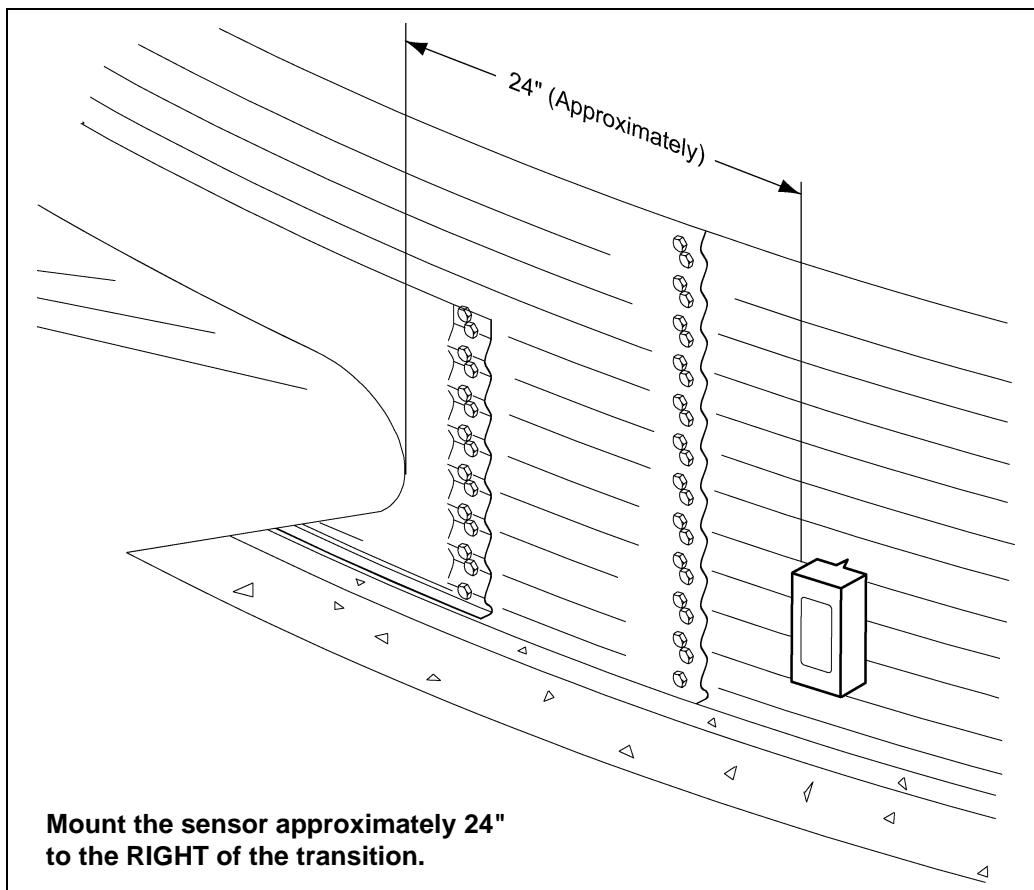


Figure 3A

Standard electrical safety practices and codes should be used when working with a heater. Refer to the National Electric Code Standard Handbook by the National Fire Protection Association. *A qualified electrician should make all wiring installations.*



Always disconnect and lock out power before working on or around heater.

Thermostat Connection to Standard Heater Control

Thermostat Connection to Standard Terminal Strip on Heaters Built Prior to 2007.

1. Connect power cord to fan control box.
2. Connect the BLACK 120VAC power wire to terminal 2.
3. Connect the WHITE Neutral wire to terminal 8.
4. Connect the GREEN Stage 1 Common wire to terminal 6.
5. Connect the RED Stage 1 N.O. wire to the high/low light and cycle solenoid.
6. Connect the ORANGE Stage 2 Common wire to terminal 8.
7. Connect the BLUE Stage 2 N.O. wire to terminal 5.

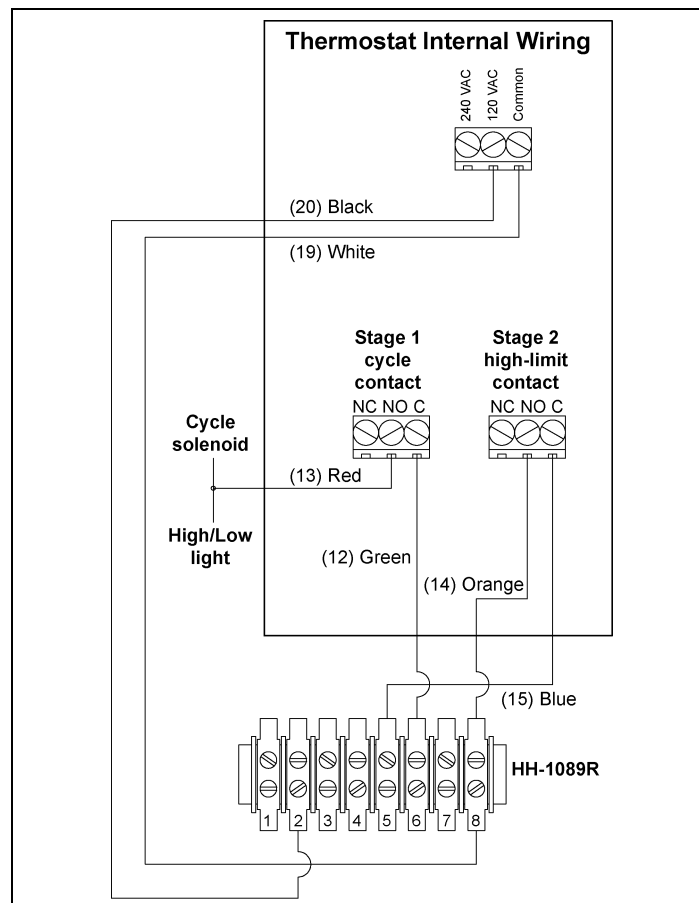


Figure 4A Heaters Built Before 2007 (HF-7356 Flame Probe Checking Terminal Strip)

4. Electrical Connection

Thermostat Connection to Standard Terminal Strip on Heaters Built in 2007 to Present

1. Connect power cord to fan control box.
2. Connect the BLACK 120 VAC power wire to the ON/OFF switch. Make this connection so this switch will also control the thermostat power.
3. Connect the WHITE Neutral wire to terminal 8.
4. Connect the GREEN Stage 1 Common wire to terminal 6.
5. Connect the RED Stage 1 N.O. wire to the high/low light and cycle solenoid.
6. Connect the ORANGE Stage 2 Common wire to terminal 1.
7. Connect the BLUE Stage 2 N.O. wire to high limit circuit on the incoming L1 power.

NOTE: Terminal strip may or may not be present in heater to connect wires in thermostat circuits.

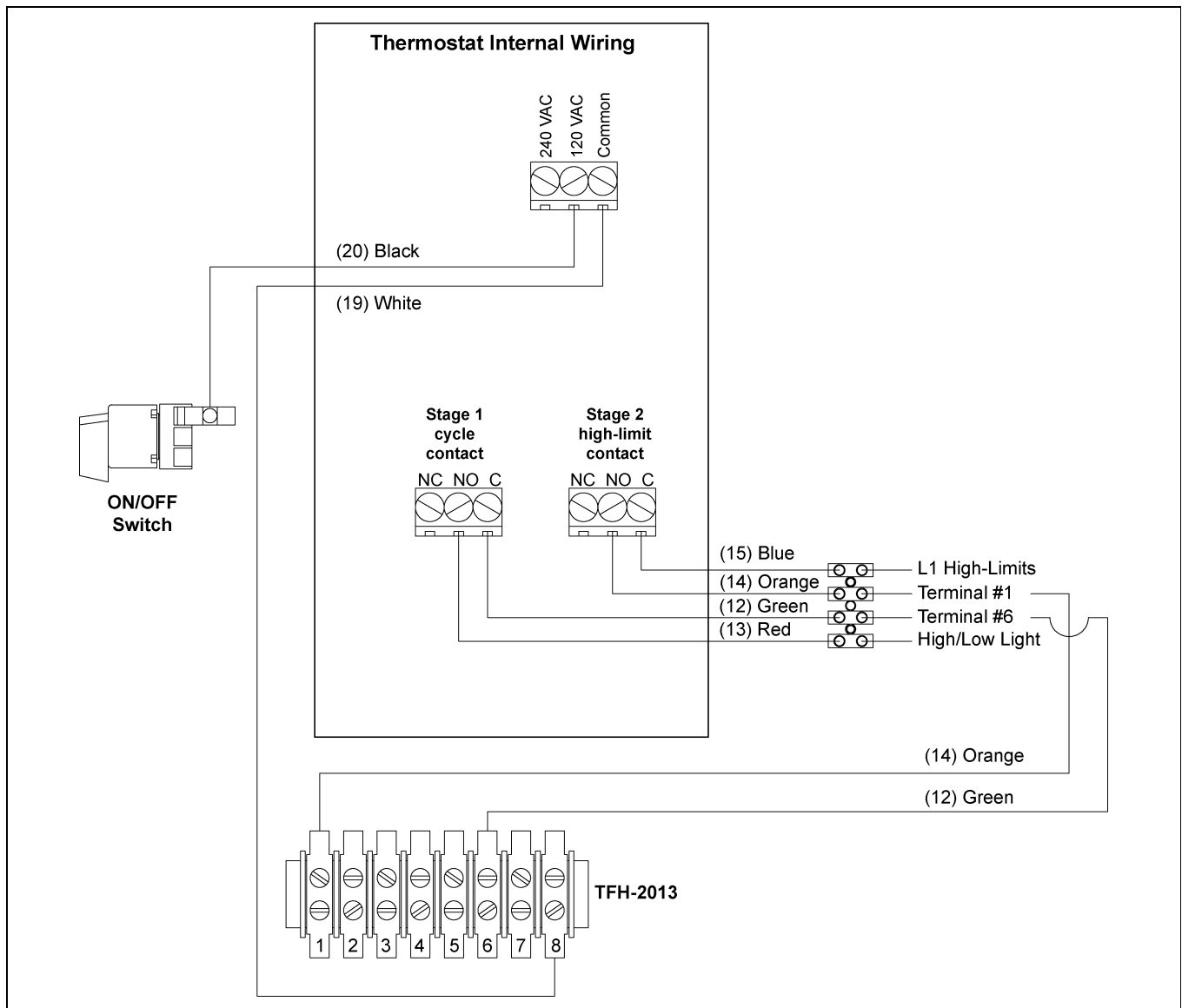


Figure 4B Heaters Built in 2007 using HH-1089E Time Delay

Thermostat Connection to Deluxe Heater Control

Thermostat Connection to HF-7318-1 Circuit Board

1. Connect power cord to fan control box.
2. Connect the BLACK 120 VAC power wire to terminal 20.
3. Connect the WHITE Neutral wire to terminal 19.
4. Connect the BLUE Stage 2 Common wire to terminal 15.
5. Connect the ORANGE Stage 2 N.O. wire to terminal 14.
6. Connect the RED Stage 1 N.O. wire to terminal 13.
7. Connect the GREEN Stage 1 Common wire to terminal 12.

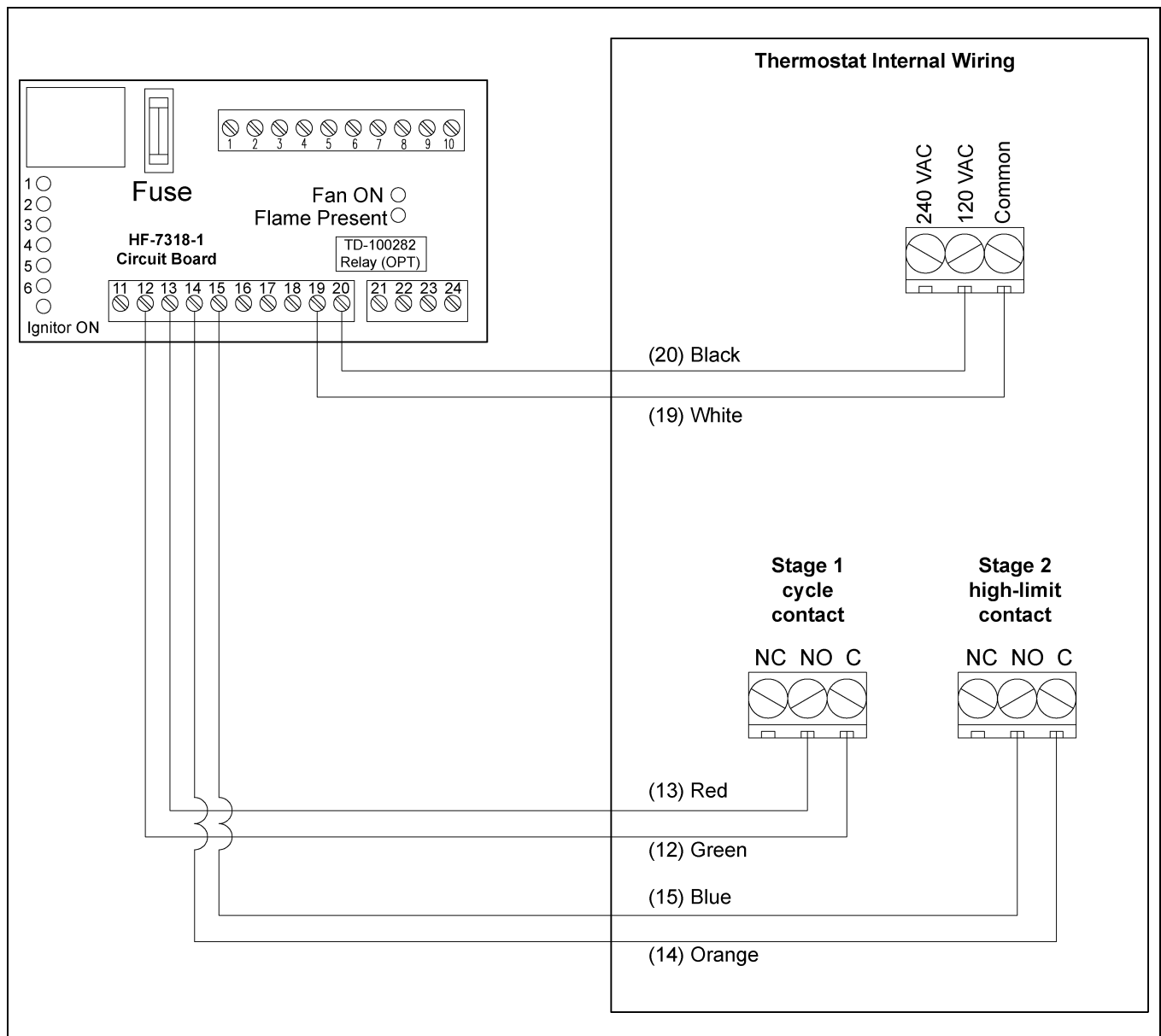


Figure 4C

4. Electrical Connection

Thermostat Connection to Canadian Certified Bin Heaters

1. Connect power cord to fan control box.
2. Connect BLACK 120 VAC power wire to Common on the Stage 2.
3. Connect the WHITE neutral to top side of terminal 8 coming from the white L2 neutral of the fenwal (35-755216-111) burner control unit.
4. Connect the BLUE Stage 2 Common wire to one side of the bin thermostat connection terminal.
5. Connect the ORANGE Stage 2 N.O. wire to the other side of the thermostat connection terminal.
6. Connect the RED Stage 1 N.O. wire to one side of the high-low thermostat connection terminal.
7. Connect the GREEN Stage 1 Common wire to the other side of the high-low thermostat connection terminal.

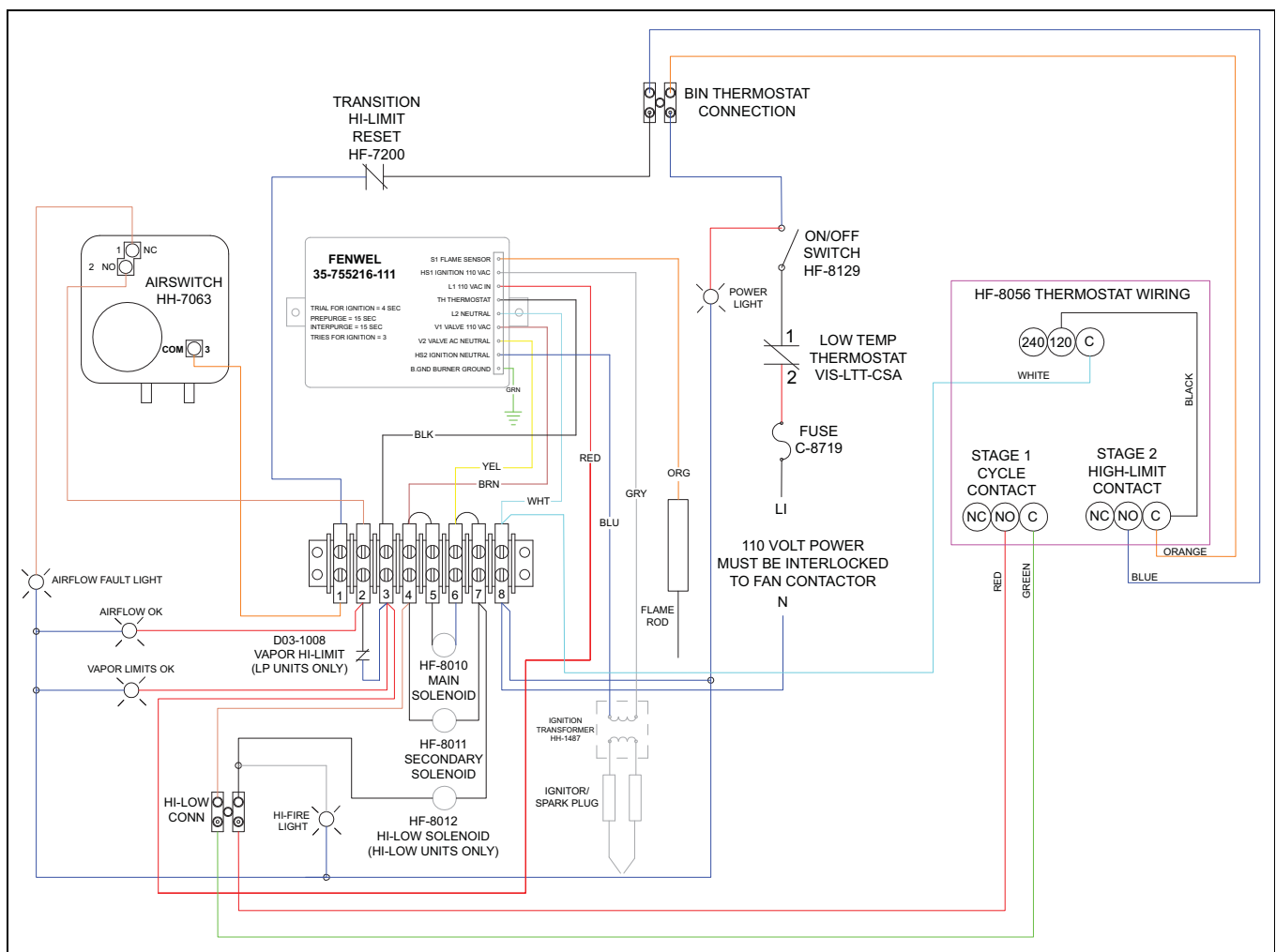


Figure 4D Thermostat Connection to Canadian Certified Bin Heaters

Programming Set Point Values

Programming can be done anytime that the thermostat control is receiving power, even when the heater is in operation.

1. Press the SET key once to set temperature scale mode. Use the UP or DOWN arrow key to toggle between F for degrees Fahrenheit or C for degrees Celsius.
2. Press the SET key again to access the Stage 1 set point. "S1" will blink on the screen. Press the UP arrow to increase or the DOWN arrow to decrease the set point to the desired temperature.

Cycle Set Point - *If the plenum temperature increases above this point, the flame is reduced to "Low Flame".*

3. Press the SET key again to access the Stage 1 differential. "DIF1" will blink on the screen. Press the UP arrow to increase or the DOWN arrow to decrease the differential to the desired setting.

Temperature Differential 1 - *If the flame shuts off because the temperature is greater than the Cycle Set Point, then the temperature must fall below (Set Point minus Temperature Differential) for the flame to come back ON. Heater will resume high flame operation.*

4. Press the SET key again to access the Stage 1 heating. "H1" should appear on the screen. This must read "H1" for the heater to operate correctly. If not, use the arrow keys to scroll through the values until the screen reads "H1".

5. Press the SET key again to access the Stage 2 setpoint. "S2" will blink on the screen. Press the UP arrow to increase or the DOWN arrow to decrease the set point to the desired temperature.

High Limit Set Point - *If the plenum temperature increases above this point, the flame is shut off - "OFF Cycle".*

6. Press the SET key again to access Stage 2 differential. "DIF2" will flash on the screen. Press the UP arrow to increase or the DOWN arrow to decrease the differential to the desired setting.

Temperature Differential 2 - *If the flame shuts off because the temperature is greater than the High Limit Set Point, then the temperature must fall below (Set Point minus Temperature Differential) for the flame to come back ON. Heater will resume low flame operation.*

7. Press the SET key again to access Stage 2 heating. "H2" should appear on the screen. This must read "H2" for the heater to operate correctly. If not, use the arrow keys to scroll through the values until the screen reads "H2".

8. Press the SET key again. This will end programming.

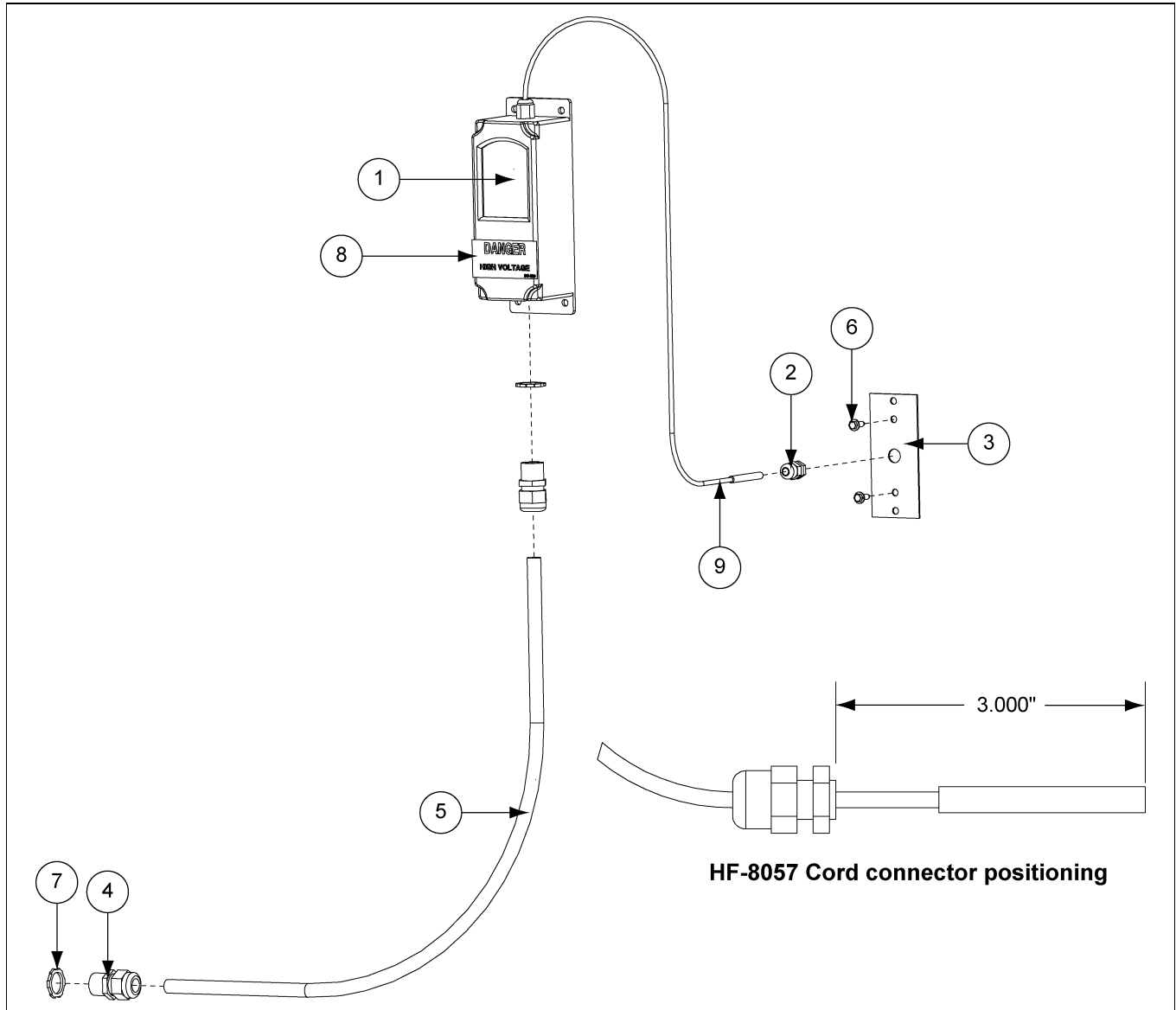
The Thermostat Control will automatically end programming if no keys are pressed for a period of 30 seconds. Any settings that have been input to the control will be accepted at that point.

All control settings are retained in memory. Re-programming is not necessary after power outages or disconnects unless different control settings are required.

The temperature differentials can be set from 1-30°. It is recommended that these temperature differentials be set in the range of 10-15 °F for high temperature units and 1-5 °F for low temperature units.

6. Parts List

Thermostat Assembly High-Low 2 Stage Digital (HF-8056)



Ref #	Part #	Description	Qty
1	HF-8055	Thermostat, 2 Stage Digital	1
2	HF-8057	Connector, Straight Cord Grip Heyco #M3444 with Nylon Nut	1
3	HF-8058	Sensor Mounting Plate	1
4	FH-1310	Connector, Cord Heyco #3231	2
5	WR-186SEOW	Cable, Wire CLM 18/6 SEOW Control	1
6	S-280	Screw, SDS #10-16 x 5/8" Hardware ZN	6
7	FH-1309	Nut, Lock 1/2" with Pipe Threads	2
8	DC-889	Decal, Danger High Voltage	1
9	HF-8117	Thermistor Sensor - Replacement Only	1

NOTE: Refer to Documentation provided by component manufacturer for troubleshooting and maintenance of the Thermostat Control including sensor data.
Form No. 7515006-001 Rev A.

Troubleshooting Error Messages

E1	<p>Appears when either the up arrow or down arrow key is pressed when not in the programming mode.</p> <p>To Correct: If the E1 message appears even when no keys are being pressed, replace the control.</p>
E2	<p>Appears if the control settings are not properly stored in memory.</p> <p>To Correct: Check all settings and correct if necessary.</p>
EP	<p>Appears when the probe is open, shorted or sensing a temperature that is out of range.</p> <p>To Correct: Check to see if the temperature is out of range. If not, check the probe for damage by comparing it to a known ambient temperature between -30°F and 220°F. Replace the probe if necessary.</p>
EE	<p>Appears if the EEPROM data has been corrupted.</p> <p>To Correct: This condition cannot be field repaired. Replace the control.</p>
CL	<p>Appears if calibration mode has been entered.</p> <p>To Correct: Remove power to the control for at least 5 seconds. Re-apply power. If the CL message still appears, replace the control.</p>

NOTES

Limited Warranty — N.A. Grain Products

The GSI Group, LLC. (“GSI”) warrants products which it manufactures, to be free of defects in materials and workmanship under normal usage and conditions for a period of 12 months from the date of shipment (or, if shipped by vessel, 14 months from the date of arrival at the port of discharge). If, in GSI’s sole judgment, a product is found to have a defect in materials and/or workmanship, GSI will, at its own option and expense, repair or replace the product or refund the purchase price. This Limited Warranty is subject to extension and other terms as set forth below.

Warranty Enhancements: The warranty period for the following products is enhanced as shown below and is in lieu of (and not in addition to) the above stated warranty period. (Warranty Period is from date of shipment.)

	Product	Warranty Period
Storage	Grain Bin Structural Design • Sidewall, roof, doors, platforms and walkarounds • Flooring (when installed using GSI specified floor support system for that floor) • Hopper tanks (BFT, GHT, NCHT, and FCHT)	5 Years
Conditioning	Dryer Structural Design – (Tower, Portable and TopDry) • Includes (frame, portable dryer screens, ladders, access doors and platforms)	5 Years
	All other Dryer parts including: • Electrical (controls, sensors, switches and internal wiring)	2 Years
	All Non-PTO Driven Centrifugal and Axial Fans	3 Years
	Bullseye Controllers	2 Years
Material Handling	Bucket Elevators Structural Design	5 Years
	Towers Structural Design	5 Years
	Catwalks Structural Design	5 Years
	Accessories (stairs, ladders and platforms) Structural Design	5 Years

Conditions and Limitations:

THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE LIMITED WARRANTY DESCRIPTION SET FORTH HEREIN; SPECIFICALLY, GSI DISCLAIMS ANY AND ALL OTHER WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE IN CONNECTION WITH: (I) ANY PRODUCT MANUFACTURED OR SOLD BY GSI, OR (II) ANY ADVICE, INSTRUCTION, RECOMMENDATION OR SUGGESTION PROVIDED BY AN AGENT, REPRESENTATIVE OR EMPLOYEE OF GSI REGARDING OR RELATED TO THE CONFIGURATION, INSTALLATION, LAYOUT, SUITABILITY FOR A PARTICULAR PURPOSE, OR DESIGN OF SUCH PRODUCTS.

The sole and exclusive remedy for any claimant is set forth in this Limited Warranty and shall not exceed the amount paid for the product purchased. This Warranty only covers the value of the warranted parts and equipment, and does not cover labor charges for removing or installing defective parts, shipping charges with respect to such parts, any applicable sales or other taxes, or any other charges or expenses not specified in this Warranty. GSI shall not be liable for any other direct, indirect, incidental or consequential damages, including, without limitation, loss of anticipated profits or benefits. Expenses incurred by or on behalf of a claimant without prior written authorization from the GSI warranty department shall not be reimbursed. This warranty is not transferable and applies only to the original end-user. GSI shall have no obligation or responsibility for any representations or warranties made by or on behalf of any dealer, agent or distributor. Prior to installation, the end-user bears all responsibility to comply with federal, state and local codes which apply to the location and installation of the products.

This Limited Warranty extends solely to products sold by GSI and does not cover any parts, components or materials used in conjunction with the product, that are not sold by GSI. GSI assumes no responsibility for claims resulting from construction defects, unauthorized modifications, corrosion or other cosmetic issues caused by storage, application or environmental conditions. Modifications to products not specifically delineated in the manual accompanying the product at initial sale will void all warranties. This Limited Warranty shall not extend to products or parts which have been damaged by negligent use, misuse, alteration, accident or which have been improperly/inadequately maintained.

Notice Procedure:

In order to make a valid warranty claim a written notice of the claim must be submitted, using the RMA form, within 60 days of discovery of a warrantable nonconformance. The RMA form is found on the OneGSI portal.

Service Parts:

GSI warrants, subject to all other conditions described in this Warranty, Service Parts which it manufactures for a period of 12 months from the date of purchase unless specified in Enhancements above.

This equipment shall be installed in accordance with the current installation codes and applicable regulations, which should be carefully followed in all cases. Authorities having jurisdiction should be consulted before installations are made.



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