
OWNER'S MANUAL

Digital High / Low Thermostat INSTALLATION AND OPERATION

PNEG-1499



Date: 10-05-07

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 _____

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SAFETY GUIDELINES

This manual contains information that is important for you, the owner/operator, to know and understand. This information relates to protecting **personal safety** and **preventing equipment problems**. It is the responsibility of the owner/operator to inform anyone operating or working in the area of this equipment of these safety guidelines. To help you recognize this information, we use the symbols that are defined below.

Please read the manual and pay attention to these sections. Failure to read this manual and it's safety instructions is a misuse of the equipment and may lead to serious injury or death.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.



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



WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.



CAUTION used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.



NOTE indicates information about the equipment that you should pay special attention to.

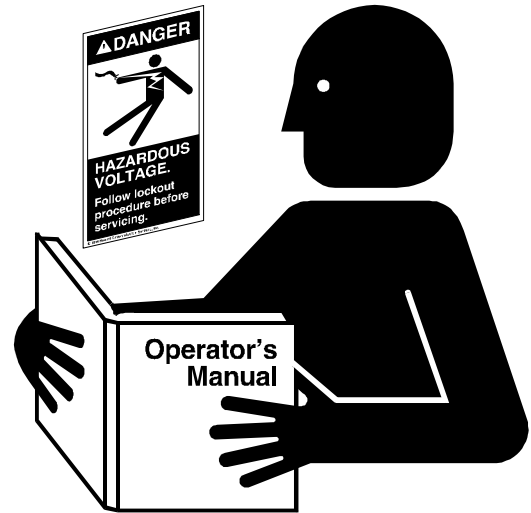
FOLLOW SAFETY INSTRUCTIONS

Carefully read all safety messages in this manual and safety signs on your equipment. 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.

Keep your machinery in proper working condition. Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.

If you do not understand any part of this manual and need assistance, contact your dealer.



PRACTICE SAFE MAINTENANCE

Understand service procedures before doing work. Keep area clean and dry.

Never lubricate, service, or adjust machine while it is in operation. Keep hands, feet, and clothing from rotating belt and idlers.

Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Remove any build up grease, oil, or debris.

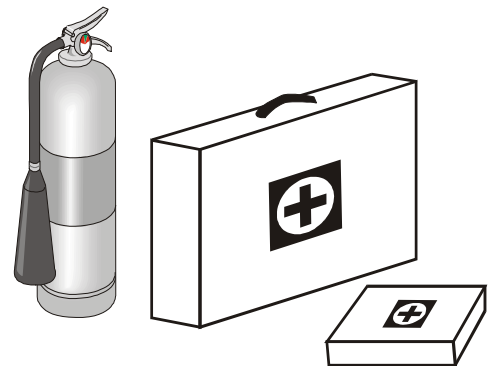


PREPARE FOR EMERGENCIES

Be prepared if fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.



SAFETY

WEAR PROTECTIVE CLOTHING

Wear close fitting clothing and safety equipment appropriate to the job.

Ear Plugs or Muffs should be worn at all times to protect ears from high noise levels.

Safety glasses should be worn at all times to protect eyes from debris.

Wear gloves to protect your hands from sharp edges on plastic or steel parts.

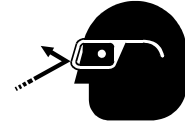
A respirator may be needed to prevent breathing potentially toxic fumes and dust.

Wear hard hat and steel toe boots to help protect your head and toes from falling debris.

Hearing Protection



Eye Protection



Gloves



Steel Toe Boots



Respirator



Hard Hat



INSTALL & OPERATE ELECTRICAL EQUIPMENT PROPERLY

Electrical controls should be installed by a qualified electrician and must meet the standards set by the national electrical code and all local and state codes.

Disconnect and lock out all power sources before installing wires/cables or servicing equipment .



INSTALL & OPERATE GAS-FIRED EQUIPMENT PROPERLY

Fuel supply should be installed by a qualified gas technician and must meet local and state codes for gaseous fuel supplies.

Disconnect and lock out all fuel sources before servicing equipment .



Safety decals should be read and understood by all people in the grain handling area. If a decal is damaged or is missing contact:


The GSI Group, Inc.
1004 E. Illinois St.
Assumption, IL 62510
217-226-4421

A free replacement will be sent to you.



Part Number: DC-889
Size: 2.813" x 1.375"
Located on side of thermostat.

Roof Damage Warning And Disclaimer

 <p>▲ CAUTION!</p> <p>Excessive vacuum (or pressure) may damage roof. Use positive aeration system. Make sure all roof vents are open and unobstructed. Start roof fans when supply fans are started. Do not operate when conditions exist that may cause roof vent icing.</p> <p>© 2004</p>	<p>GSI DOES NOT WARRANT ANY ROOF DAMAGE CAUSED BY EXCESSIVE VACUUM OR INTERNAL PRESSURE FROM FANS OR OTHER AIR MOVING SYSTEMS. ADEQUATE VENTILATION AND/OR "MAKEUP AIR" DEVICES SHOULD BE PROVIDED FOR ALL POWERED AIR HANDLING SYSTEMS. GSI DOES NOT RECOMMEND THE USE OF DOWNWARD FLOW SYSTEMS (SUCTION). SEVERE ROOF DAMAGE CAN RESULT FROM ANY BLOCKAGE OF AIR PASSAGES. RUNNING FANS DURING HIGH HUMIDITY/COLD WEATHER CONDITIONS CAN CAUSE AIR EXHAUST OR INTAKE PORTS TO FREEZE.</p>
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General Safety Statements

Thank you for choosing a GSI Group product. It is designed to give excellent performance and service for many years.

It is the plan of The GSI Group to improve its product whenever possible and practical to do so. We reserve the right to change, improve, and modify products at any time without obligation to make changes, improvements, and modifications on equipment sold previously.

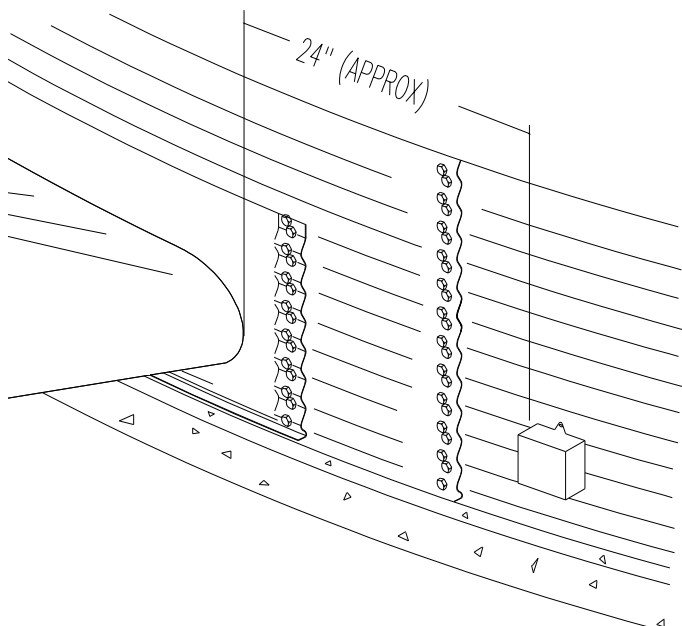
The principal concern of the The GSI Group Inc. ("GSI") is your safety and the safety of others associated with grain handling equipment. This manual is written to help you understand safe operating procedures, and some of the problems that may be encountered by the operator or other personnel.

As owner and/or operator, it is your responsibility to know what requirements, hazards and precautions exist, and to inform all personnel associated with the equipment, or who are in the dryer area. Avoid any alterations to the equipment. Such alterations may produce a very dangerous situation, where serious injury or death may occur.

THIS MANUAL DESCRIBES THE INSTALLATION AND OPERATION OF A DIGITAL HIGH/LOW THERMOSTAT. THIS PRODUCT IS AN IDEAL ACCESSORIY TO THE HEATERS USED FOR THE CONDITIONING OF CORN, SOYBEANS, AND OTHER SELECT GRAINS. ANY OTHER USE IS CONSIDERED A MISUSE OF THE PRODUCT.

Installation Instructions

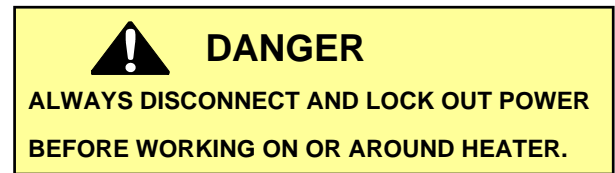
1. Mount the thermostat control on the right side of the fan transition. Locate a suitable location on the bin wall that will allow the power cord to reach the heater and the control to be at eye level for easy access.
2. Use the S-280 self-drilling screws provided in the packaging to mount the control.
3. Run the power cord to the heater control box and make the connections as shown in the electrical connection section of this manual.
4. Mount the thermostat sensor 24" to the RIGHT of the transition. Use the C-8058 Sensor Mounting Plate as a template. This part has holes to match the hills of a 2.66" and 4.00" bin sidewall.
5. Use the S-280 screws provided to mount the C-8058 plate 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 C-8057 Cord Connector. 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 reattach the mounting plate using the S-280 screws.
10. Caulk the area around the mounting plate to seal any openings.



Mount the Sensor approximately 24" to the RIGHT of the transition.

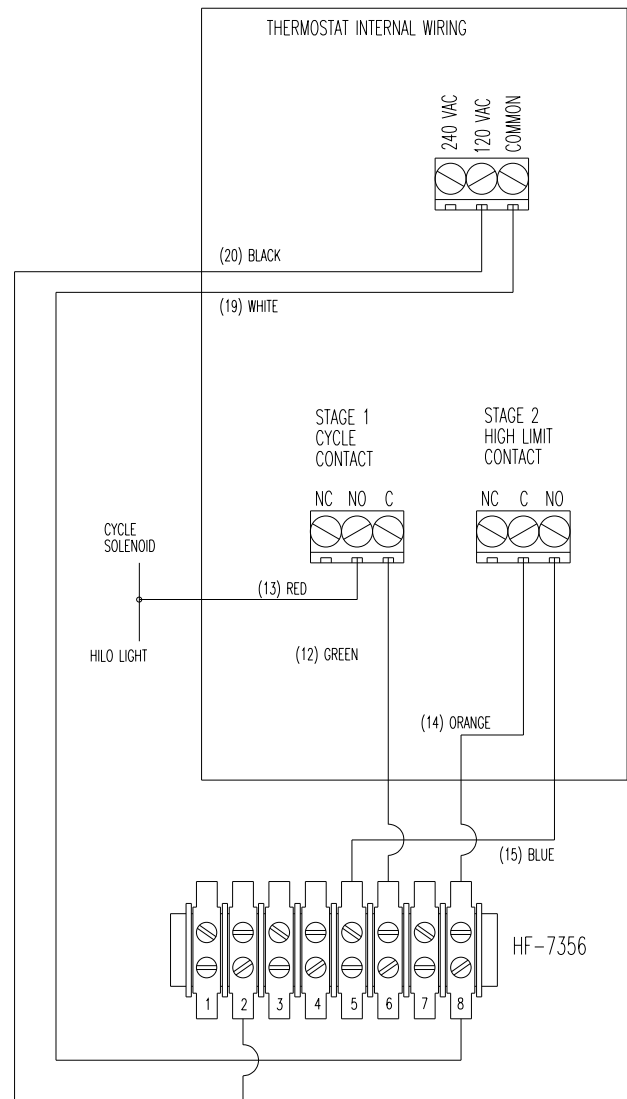
ELECTRICAL CONNECTION

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.*



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.



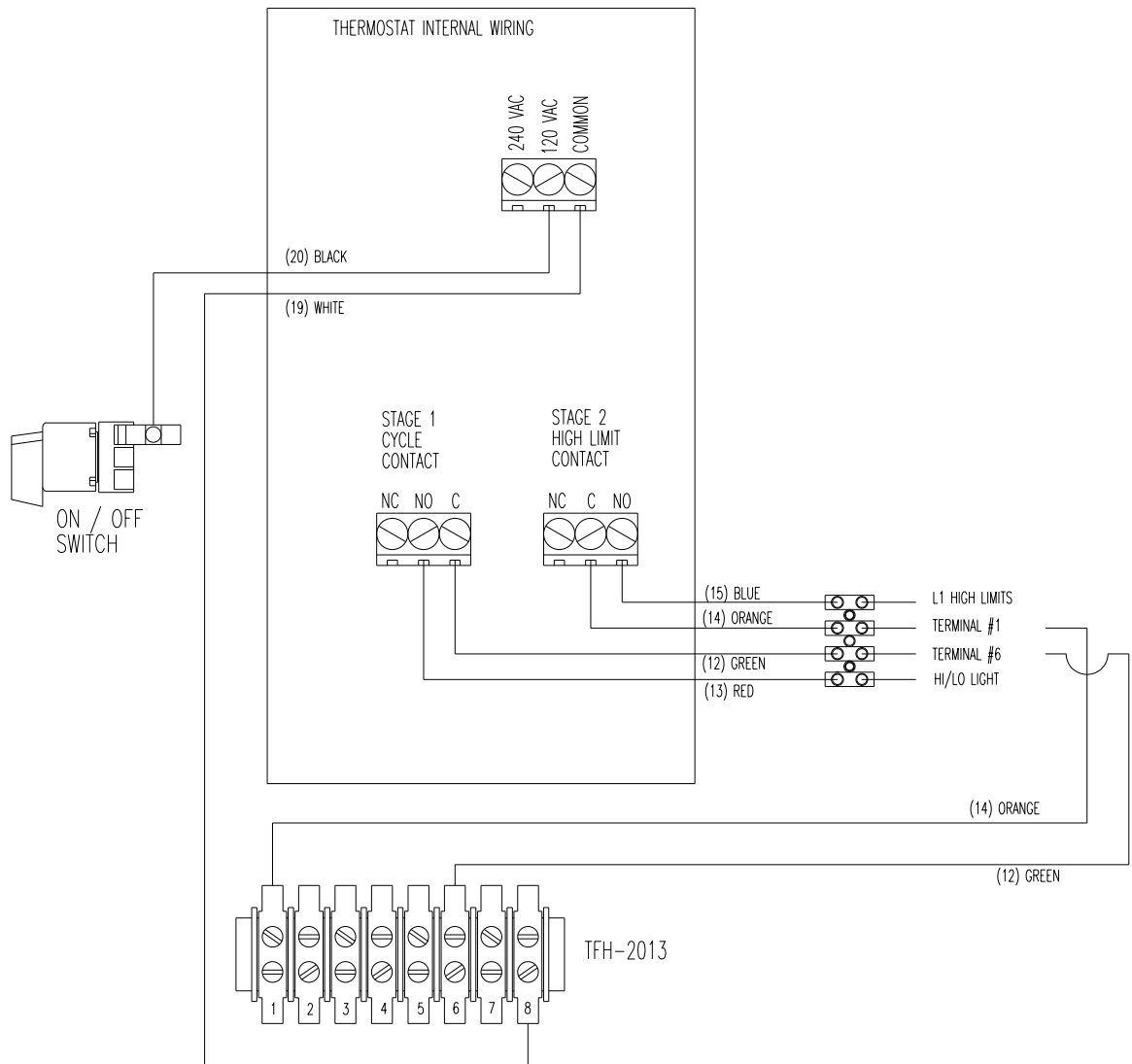
HEATERS BUILT BEFORE 2007
(HF-7356 FLAME PROBE CHECKING TERMINAL STRIP)

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 120VAC 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.

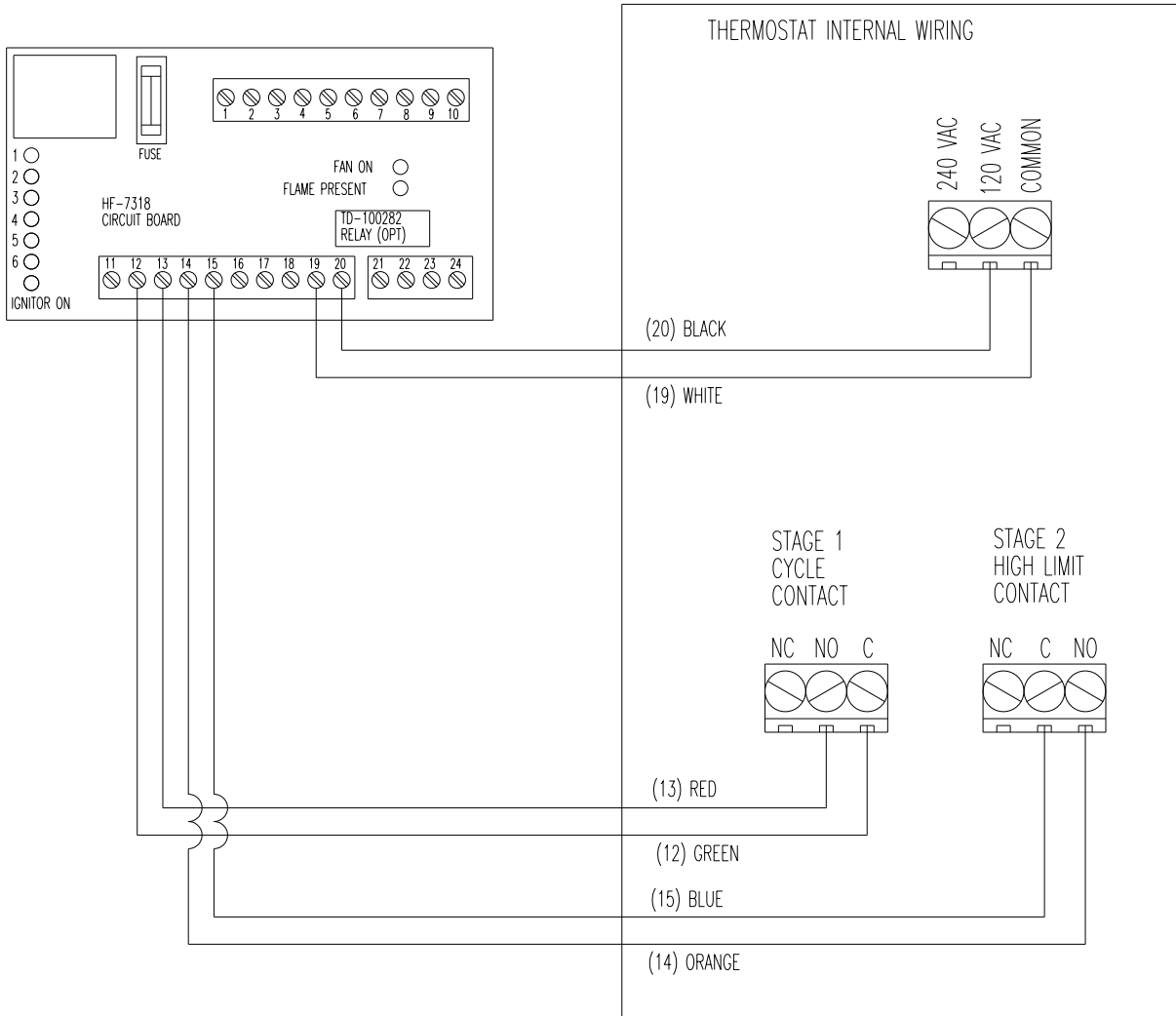


HEATERS BUILT IN 2007
USING HH-1089E TIME DELAY

ELECTRICAL CONNECTION

Thermostat Connection to HF-7318 Circuit Board

1. Connect power cord to fan control box.
2. Connect the BLACK 120VAC 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.



Programming Set Points

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. "S1" should now flash at the left side of the screen. Press the UP arrow to increase or the DOWN arrow to decrease the setpoint 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. "DIF1" should now flash at the left side of 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 the (Set Point minus Temperature Differential) for the flame to come back on. Heater will resume high flame operation.*

4. Press the SET key again. "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. "S2" should now flash at the left side of the screen. Press the UP arrow to increase or the DOWN arrow to decrease the setpoint 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. "DIF2" should now flash at the left side of 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 the (Set Point minus Temperature Differential) for the flame to come back on. Heater will resume low flame operation.*

7. Press the SET key again. "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".

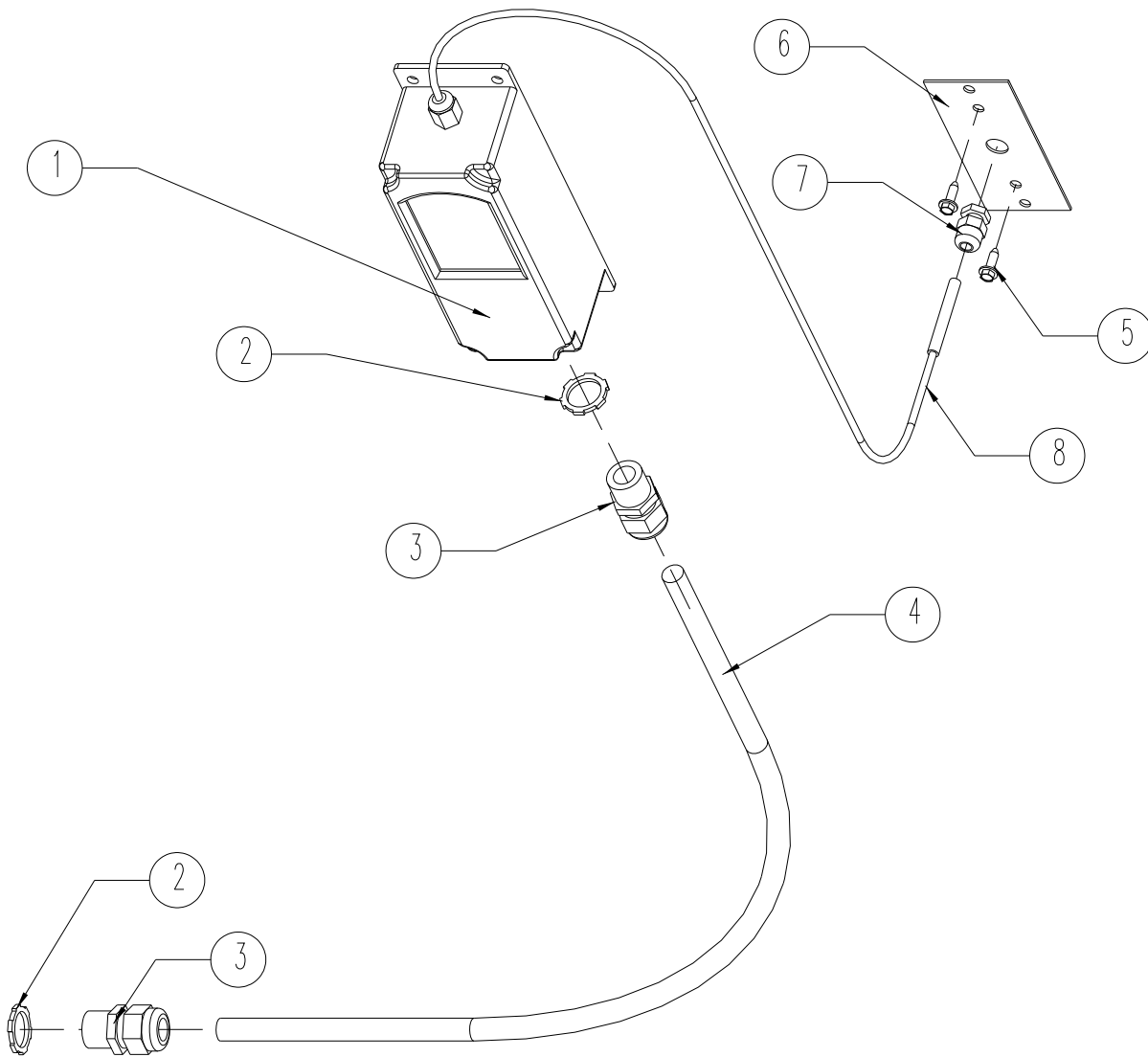
8. Press the SET key again.
This will end programming.

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 degrees. 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.

PARTS



HF-8056 THERMOSTAT ASY HI-LO 2-STAGE DIGITAL

Key	Qty	Part Number	Description
1	1	HF-8055	THERMOSTAT 2-STAGE DIGITAL
2	2	FH-1309	LOCK NUT 1/2" #401 ARL.
3	2	FH-1310	CONNECTOR 1/2"
4	12 ft	WR-186SEOW	WIRE CLM 18/6 SEOW CTRL CBL
5	6	S-280	SCREW SDS #10-16x5/8 HWH ZN
6	1	HF-8058	SENSOR MOUNTING PLATE-HILO T/S
7	1	HF-8057	CONNECTOR STRAIGHT CORDGRIP
8	1	HF-8117	THERMISTOR SENSOR - Replacement Only

NOTE:

Refer to Documentation provided by component manufacturer for troubleshooting and maintenance of the Thermostat Control including sensor data.

Form No. 7515006-001 Rev B.

Troubleshooting Error Messages.

- E1** Appears when either the up arrow or down arrow key is pressed when not in the programming mode.
To Correct: If the E1 message appears even when no keys are being pressed, replace the control.
- E2** Appears if the control settings are not properly stored in memory.
To Correct: Check all settings and correct if necessary.
- EP** Appears when the probe is open, shorted, or sensing a temperature that is out of range.
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.
- EE** Appears if the EEPROM data has been corrupted.
To Correct: This condition cannot be field repaired. Replace the control.
- CL** Appears if calibration mode has been entered.
To Correct: Remove power to the control for at least five seconds. Reapply power. If the **CL** message still appears, replace the control.





Limited Warranty

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 after sale to the original end-user or if a foreign sale, 14 months from arrival at port of discharge, whichever is earlier. The end-user's sole remedy (and GSI's only obligation) is to repair or replace, at GSI's option and expense, products that in GSI's judgment, contain a material defect in materials or workmanship. Expenses incurred by or on behalf of the end-user without prior written authorization from the GSI Warranty Group shall be the sole responsibility of the end-user.

Warranty Extensions: The Limited Warranty period is extended for the following products:

	Product	Warranty Period
AP Fans and Flooring	Performer Series Direct Drive Fan Motor	3 Years
	All Fiberglass Housings	Lifetime
	All Fiberglass Propellers	Lifetime
Cumberland Feeding/Watering Systems	Feeder System Pan Assemblies	5 Years **
	Feed Tubes (1.75" & 2.00")	10 Years *
	Centerless Augers	10 Years *
	Watering Nipples	10 Years *
Grain Systems	Grain Bin Structural Design	5 Years
Grain Systems Farm Fans Zimmerman	Portable & Tower Dryers	2 Years
	Portable & Tower Dryer Frames and Internal Infrastructure †	5 Years

* Warranty prorated from list price:
 0 to 3 years – no cost to end-user
 3 to 5 years – end-user pays 25%
 5 to 7 years – end-user pays 50%
 7 to 10 years – end user pays 75%

** Warranty prorated from list price:
 0 to 3 years – no cost to end-user
 3 to 5 years – end-user pays 50%

† Motors, burner components and moving parts not included. Portable Dryer screens included. Tower Dryer screens not included.

GSI further warrants that the portable and tower dryer frame and basket, excluding all auger and auger drive components, shall be free from defects in materials for a period of time beginning on the twelfth (12th) month from the date of purchase and continuing until the sixtieth (60th) month from the date of purchase (extended warranty period). During the extended warranty period, GSI will replace the frame or basket components that prove to be defective under normal conditions of use without charge, excluding the labor, transportation, and/or shipping costs incurred in the performance of this extended warranty.

Conditions and Limitations:

THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE LIMITED WARRANTY DESCRIPTION SET FORTH ABOVE. SPECIFICALLY, GSI MAKES NO FURTHER WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE IN CONNECTION WITH: (i) 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.

GSI shall not be liable for any direct, indirect, incidental or consequential damages, including, without limitation, loss of anticipated profits or benefits. The sole and exclusive remedy is set forth in the Limited Warranty, which shall not exceed the amount paid for the product purchased. 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.

GSI assumes no responsibility for claims resulting from construction defects or unauthorized modifications to products which it manufactured. Modifications to products not specifically delineated in the manual accompanying the equipment at initial sale will void the Limited Warranty.

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. This Limited Warranty extends solely to products manufactured by GSI.

Prior to installation, the end-user has the responsibility to comply with federal, state and local codes which apply to the location and installation of products manufactured or sold by GSI.

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 installation occurs.

Revisions:

10/05/07 Updated all drawings and instructions for wiring Stage 1 as Cycle and Stage 2 as High Limit. Included instructions for wiring to new heaters using HH-1089E Time Delay.

Revised: October 5, 2007