

HUMIDISTAT-THERMOSTAT

MODEL # HF- _ _ _ _

OWNER'S MANUAL

PNEG-236



a division of

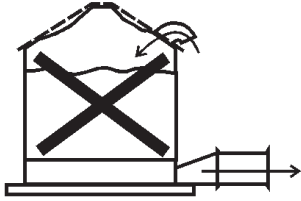
THE GSI GROUP



Safety First.....	4
Safety Alert Decals.....	5
General Installation.....	6
Installation Of Top Dry Hi-Lo Thermostat.....	7
Operation.....	8
Operation & Service.....	9
Humidistat-Thermostat Parts.....	10
Lo-Temp Humidistat-Thermostat Parts.....	11
Hi-Lo Humidistat-Thermostat Parts.....	12
Humidistat-Thermostat Wiring.....	13
Thermostat Wiring.....	14
Humidistat Wiring.....	15
Hi-Lo Thermostat Wiring.....	16
Mounting Template.....	17
Notes.....	18
Warranty.....	19

ROOF DAMAGE WARNING AND DISCLAIMER

⚠ CAUTION!



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.

DC-969

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.

Humidistat-Thermostat Operation


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

The principal concern of 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.

Safety Alert Symbol

The symbol shown is used to call your attention to instructions concerning your personal safety. Watch for this symbol; it points out important safety precautions. It means "ATTENTION", "WARNING", "CAUTION", and "DANGER". Read the message and be cautious to the possibility of personal injury or death.



WARNING! BE ALERT!

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

The GSI Group, Inc. recommends contacting your local power company, and having a representative survey your installation so the wiring is compatible with their system, and adequate power is supplied to your unit.

Safety decals should be read and understood by all people in the grain handling area. The bottom right decal should be present on the inside bin door cover of the two ring door, 24" porthole door cover and the roof manway cover.

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.

! DANGER

Disconnect electricity before inspecting or servicing.
 Keep guards and screens on exposed areas.

MAY CAUSE SERIOUS INJURY OR DEATH

DC-466 1992 GRAIN SYSTEMS INC.

! DANGER

Do not operate with service door removed.

MAY CAUSE SERIOUS INJURY OR DEATH

DC-465 1989 GRAIN SYSTEMS INC.

! DANGER

Rotating flighting can kill or dismember.
 Flowing material can trap and suffocate.
 Crusted material can collapse and suffocate.

Keep clear of all augers. DO NOT ENTER this bin!

If you must enter this bin:

1. Shut off and lock out all power.
2. Use safety harness and safety line.
3. Station another person outside the bin.
4. Avoid the center of the bin.
5. Wear proper breathing equipment or respirator.

Failure to heed these warnings will result in serious injury or death.

DC-552

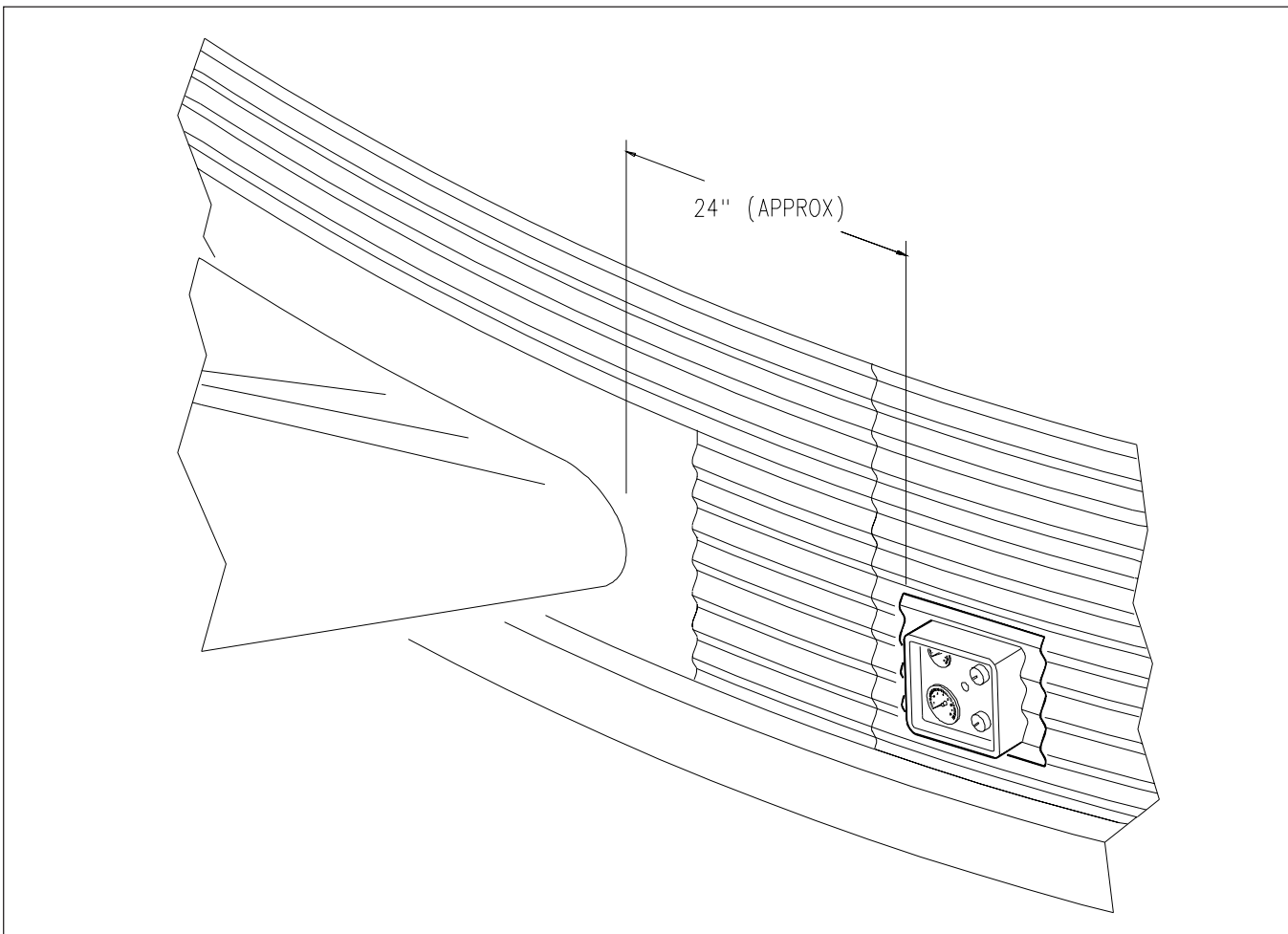


Figure 1: 24" is the approximate distance from the edge of the transition to the edge of the humidistat installation.

INSTALLATION INSTRUCTIONS

Standard electrical safety practices and codes should be used when installing the Humidistat-Thermostat. 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



1. The Humidistat-Thermostat should be mounted on the side of the bin wall between the foundation and the drying floor. It should be installed approximately 24" from the right side of the transition as shown.

2. Use the template on page 17. With these instructions, drill only the holes necessary for your particular model. (Note: For humidistat to operate properly optional cutout must be used.)
3. Caulk the top and sides of the plastic housing using roll caulking supplied with the unit. Do not caulk the bottom side of housing so moisture can escape.
4. Carefully insert sensing probes through bin wall and secure housing to wall using self-drilling screws provided. Be careful not to overtighten screws. Damage to housing could result.
5. Make wiring connections to heater as shown in heater owners manual.

The Hi-Lo Thermostat is designed for use with the GSI Top Dry Crop Dryer units. It comes with one thermostat which is adjustable and cycles the heater from high to low flame. The Hi-Lo Thermostat also comes with a thermometer for monitoring the plenum temperature.

INSTALLATION INSTRUCTIONS

1. Locate the mounting position of the thermostat as shown in the diagram below.
2. Use the template on page 17. With these instructions, drill only the holes necessary for your particular model.
3. Apply rope caulk to sides and top of plastic housing. Leave bottom open to let moisture escape.
4. Secure housing to sidewall using self-drilling screws supplied. Be careful not to overtighten. Overtightening may cause the housing to crack.
5. Connect the black and white wires to the terminals marked bin hi-limit (3rd and 4th terminal bottom left hand terminal strip) on fan and heater safety circuit board.
6. Connect the green and red wires to the terminals marked cycle (8th and 6th terminal bottom left hand terminal strip) on fan and heater safety circuit board.

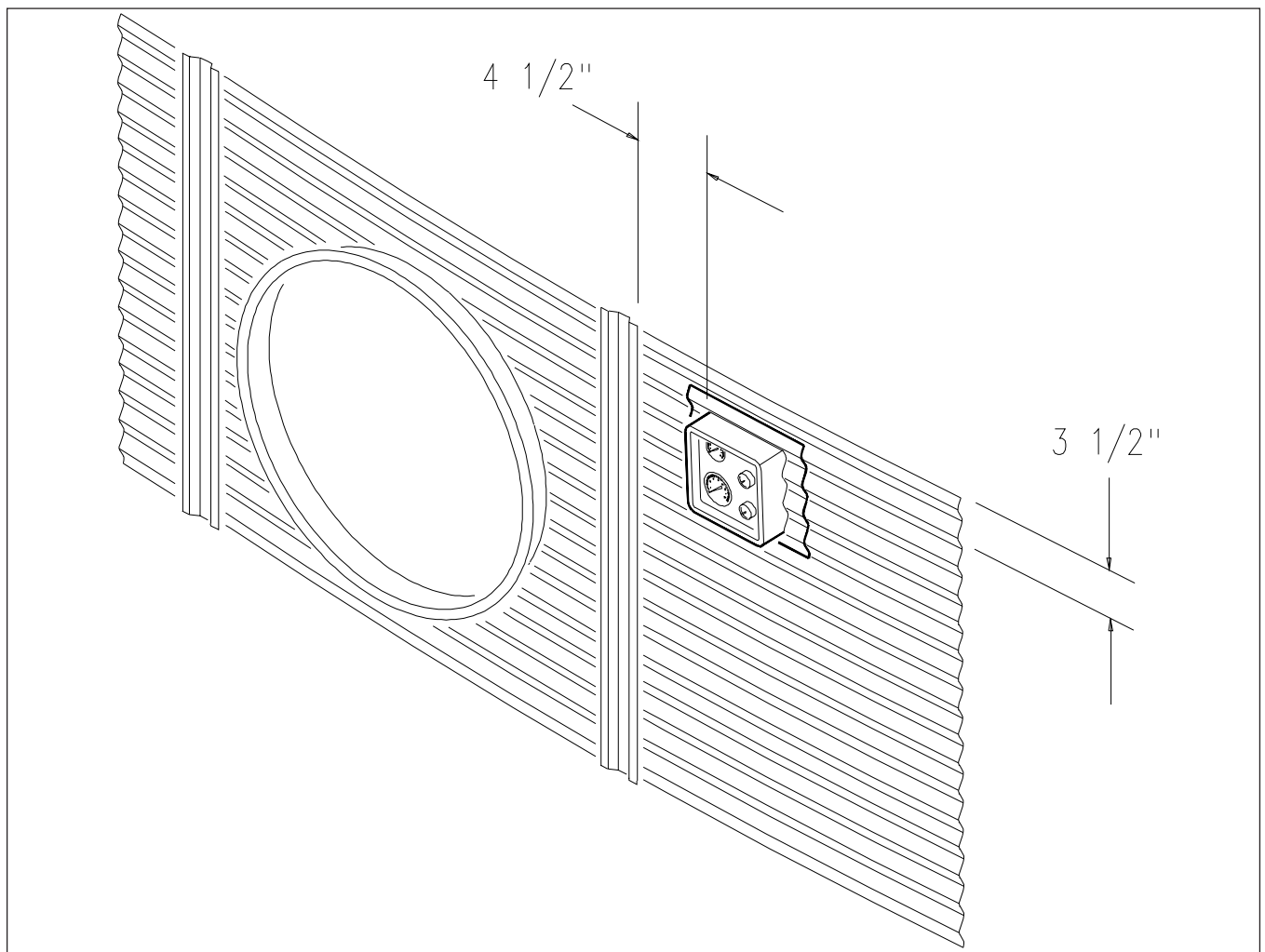


Figure 2: Placement of the Top Dry Hi-Lo Thermostat.

TEMPERATURE CONTROL

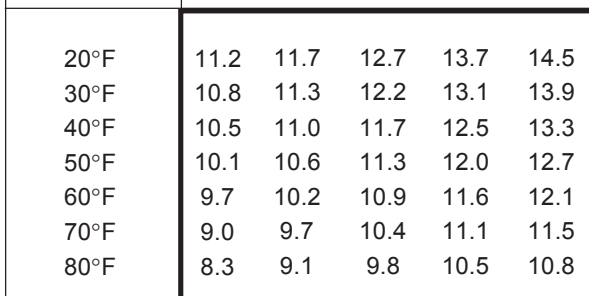
1. Turn the fan unit on and let it run 3 to 5 minutes to equalize temperature under the bin.
2. Set bypass switch to the "HUMIDISTAT OFF" position. This setting allows the unit to run based on temperature only.
3. Rotate the thermostat knob clockwise to the warmest position.
4. Open the gas valves to the heater, and turn the heater on. Set heater gas pressure to a moderately high setting (5 to 10 PSI).
5. Monitor the thermometer on the thermostat housing. When the thermometer comes up to the desired temperature, slowly turn the thermostat knob counter-clock-wise until the heater cycles off.
6. If the unit does not reach the desired temperature, gradually increase the gas pressure until the temperature rises to the desired level.
7. Watch the unit run through several cycles and make any final adjustments. (Note: The unit should be on approximately 80% of the time. If not adjust gas pressure).
8. Significant changes in outside air temperature may require readjustment of gas pressure.

HUMIDITY CONTROL

1. Set bypass switch to the "HUMIDISTAT ON" position. This setting allows the unit to run based on temperature and humidity.
2. Set the thermostat (Humidistat-Thermostat units only) to the maximum temperature desired. This allows the thermostat to function as a high limit control only. See the above temperature control for setting the thermostat.
3. Set the humidistat to the desired relative humidity level you want to maintain under your drying floor. The heater will cycle on above this relative humidity, and off when this level is reached.
4. Use the equilibrium moisture chart below as a guide for setting the humidistat.

EQUILIBRIUM MOISTURE CHART (SHELLED CORN)

Air Temperature	Relative Humidity—Percentage													
	35	40	45	50	55	60	65	70	75	80	85	90	95	100
20°F	11.2	11.7	12.7	13.7	14.5	15.1	16.2	17.1	18.0	19.6	21.2	23.5	25.8	29.1
30°F	10.8	11.3	12.2	13.1	13.9	14.6	15.5	16.4	17.4	18.7	20.2	22.5	25.0	28.3
40°F	10.5	11.0	11.7	12.5	13.3	14.0	14.8	15.5	16.6	17.8	19.4	21.5	24.2	27.5
50°F	10.1	10.6	11.3	12.0	12.7	13.3	14.1	14.8	15.8	16.9	18.6	20.5	23.4	26.7
60°F	9.7	10.2	10.9	11.6	12.1	12.7	13.4	14.2	15.0	16.0	17.8	19.5	22.6	25.9
70°F	9.0	9.7	10.4	11.1	11.5	12.0	12.8	13.5	14.5	15.4	16.8	18.5	21.3	24.5
80°F	8.3	9.1	9.8	10.5	10.8	11.2	12.1	13.0	13.9	14.8	15.8	17.4	20.0	22.8

 Boxed area indicates safe moisture for normal winter storage of shelled corn at 15%. Grain to be stored through the summer or long term, needs to be 1 to 3 points dryer.

HI-LO TEMPERATURE CONTROL

1. Turn fan unit on and let it run 3 to 5 minutes to equalize temperature under the bin.
2. Rotate the thermostat knob clockwise to warmest position.
3. Open gas valves (including lo-fire valve) to the heater and turn the heater on. Set heater gas pressure to a moderately high setting. (5 to 10 PSI)
4. Monitor the thermometer on the thermostat housing. When the thermostat comes up to desired temperature, slowly turn the most at knob counter-clockwise until heater cycles to lo-flame.
5. If the unit does not reach desired temperature, gradually increase the gas pressure until the temperature rises to desired level.
6. Adjust the lo-fire valve so that the temperature drops until the unit cycles back to hi-flame.
7. Watch the unit run through several cycles and make any final adjustments. (Note: The unit should cycle approximately two times per minute. If not adjust gas pressure).
8. Significant changes in outside air temperature may require readjustment of gas pressure.

Note: If temperature of lo-flame exceeds thermostat settings (above normal outside temperatures) unit will cycle from lo-flame to off. (Top Dry units will shut down completely)

HUMIDISTAT-THERMOSTAT SERVICE

GSI Thermostats are designed and built to withstand the harsh conditions usually found in drying bins. A yearly preventative maintenance inspection may extend the life of your heating controls many years.



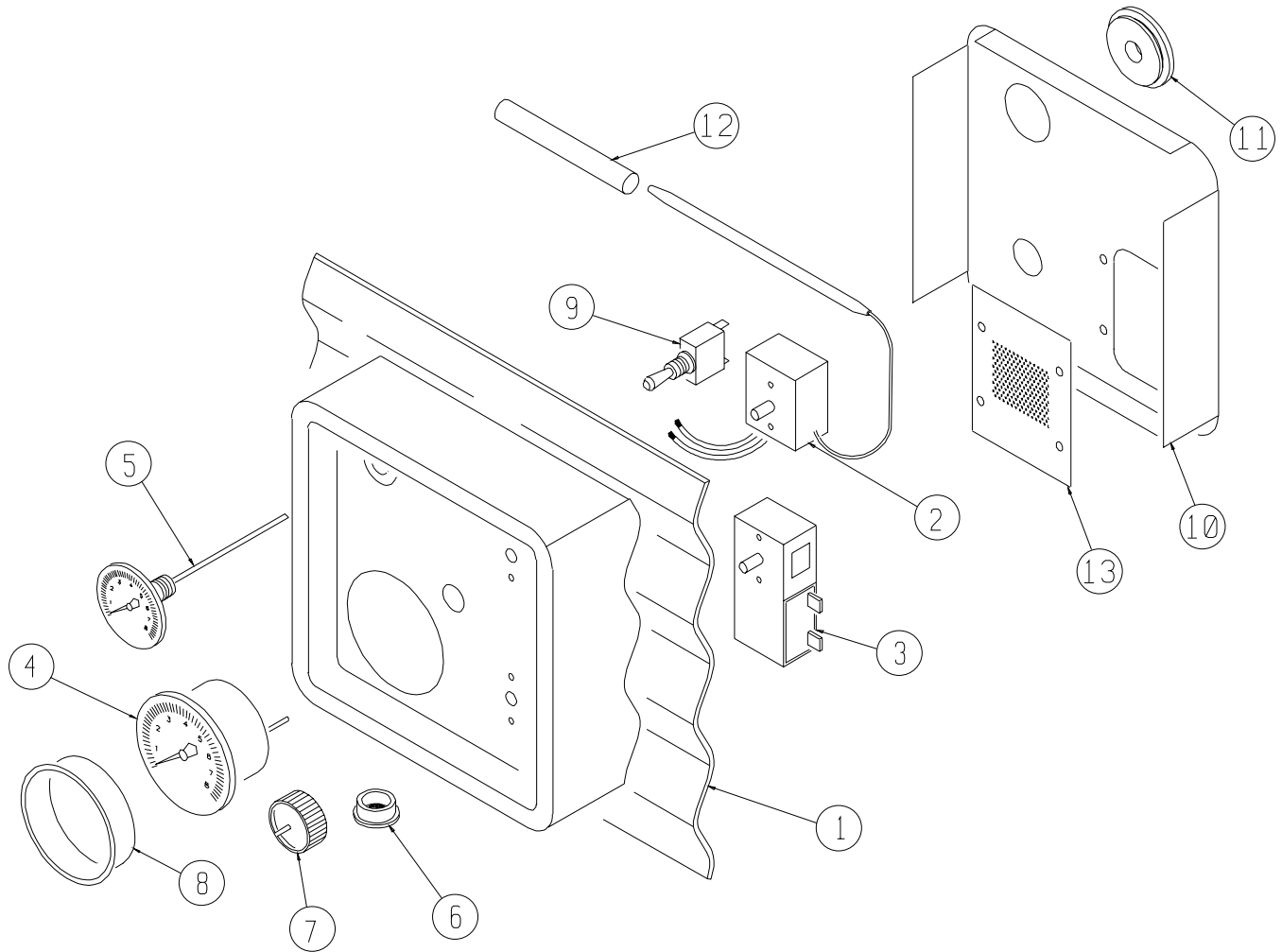
**ALWAYS DISCONNECT
AND LOCK OUT POWER
BEFORE WORKING ON OR
AROUND HEATER**

1. Remove mounting screws from the thermostat housing and remove the housing from the bin wall.
2. Carefully remove the back panel from the housing. (It may be necessary to cut caulking).
3. Blow out any dust or dirt that may have collected inside the housing.

4. Inspect the wiring for any loose connections, or rodent and insect damage.
5. Replace the back panel and caulk the corners to help seal the unit.
6. Reinstall the unit on the bin wall.

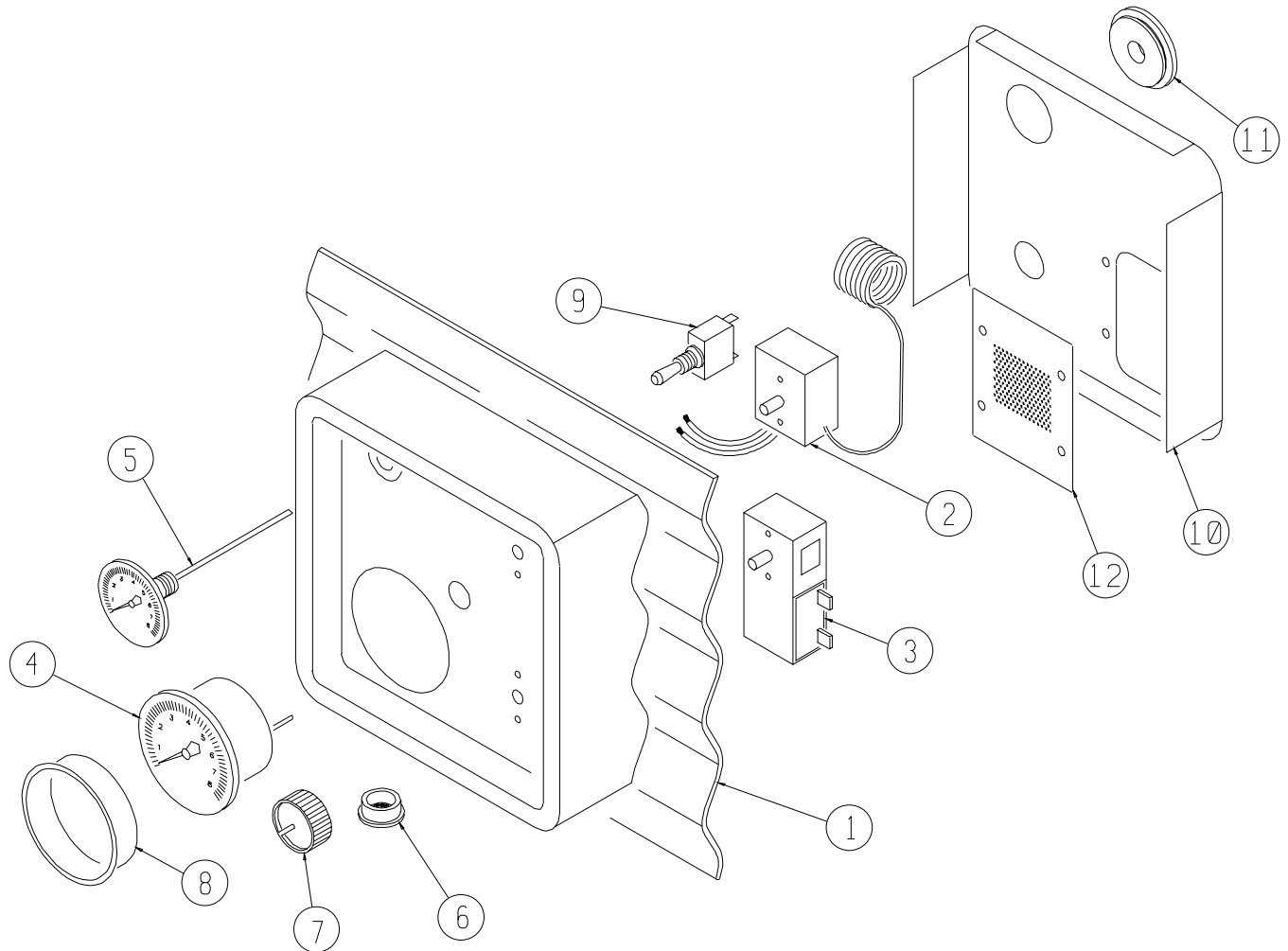
The Airstream Humidistat- Thermostat is mounted on the lower right side of the grain bin's transition. This allows for easy service and operation.



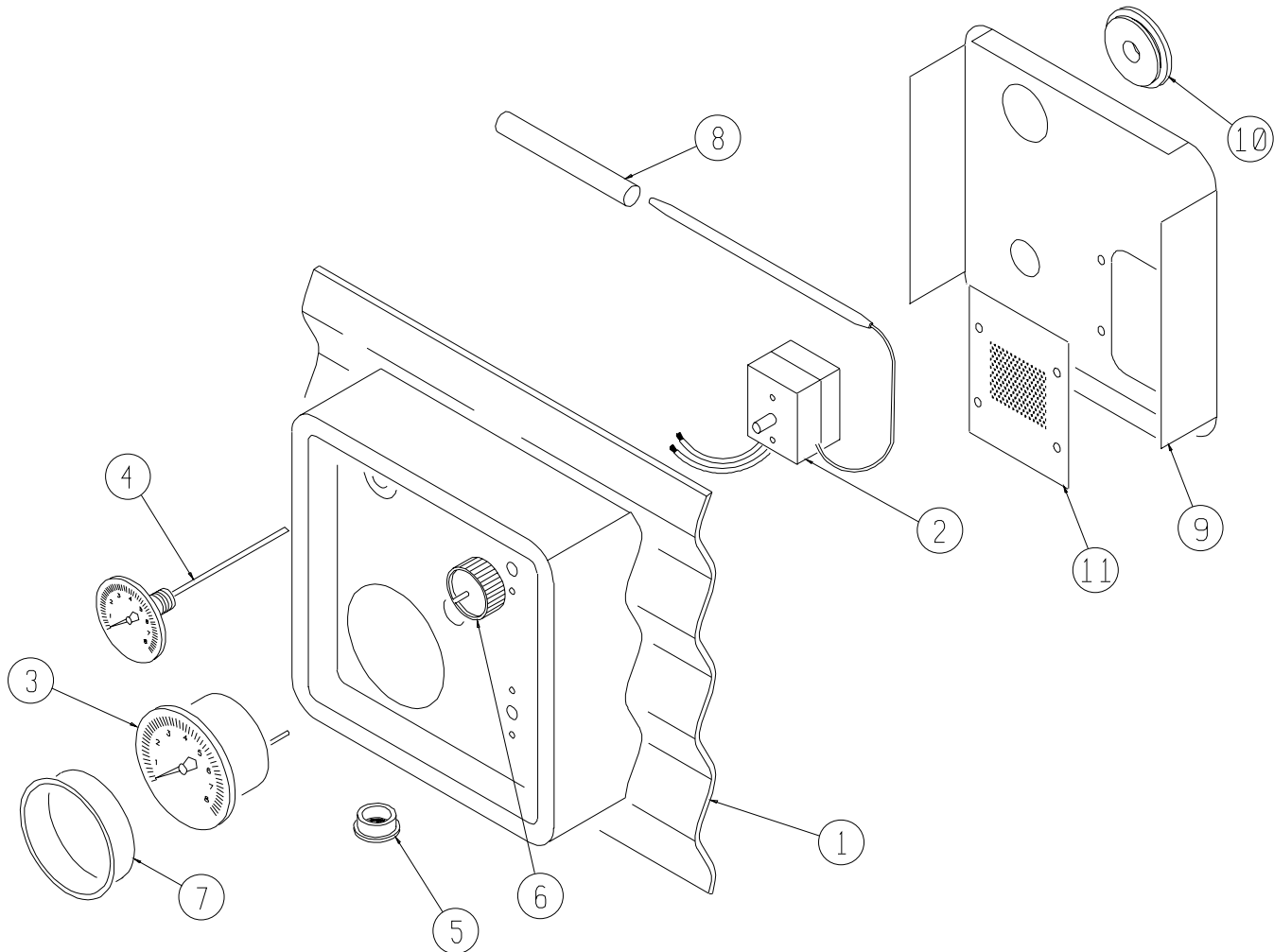


Key	Part Number	Description
1	HF-1431	2.66" Plastic Housing
1	HF-1446	4.00" Plastic Housing
2	HF-1432	Thermostat
3	HF-1433	Humidistat
4	HF-1434	Static Pressure Gauge
5	HH-1435	220 Degree Thermometer
6	HH-1436	Screen Plug
7	HH-1970	Plastic Knob
8	HH-2089	Large Red Plastic Plug
9	HH-1442	Toggle Switch
10	HF-7108	Thermostat Cover
11	HH-7032	Rubber Grommet
12	HH-7029	Heat Shrink Tube 1/2"
13	HF-7110	Humidistat Cover

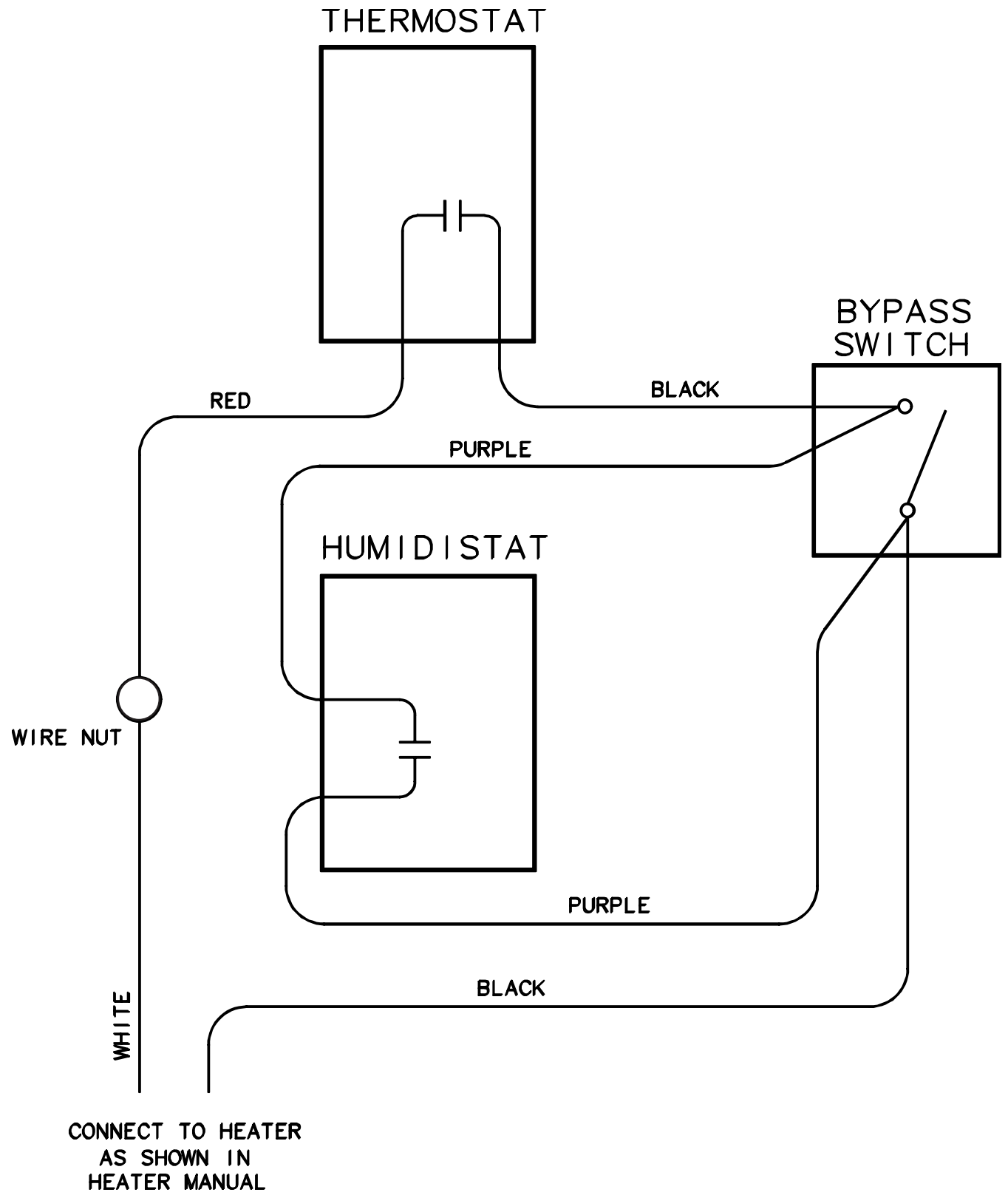
Humidistat-Thermostat LO-TEMP HUMIDISTAT-THERMOSTAT PARTS

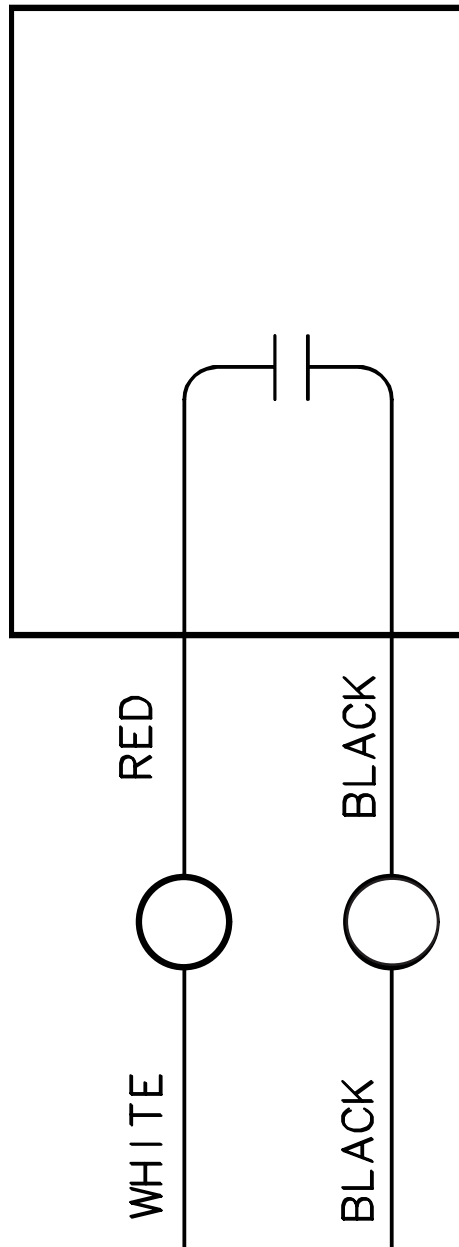


Key	Part Number	Description
1	HF-1431	2.66" Plastic Housing
1	HF-1446	4.00" Plastic Housing
2	HF-3974	Lo-Temp Thermostat
3	HF-1433	Humidistat
4	HF-1434	Static Pressure Gauge
5	HH-3973	140 Degree Thermometer
6	HH-1436	Screen Plug
7	HH-1970	Plastic Knob
8	HH-2089	Large Red Plastic Plug
9	HH-1442	Toggle Switch
10	HF-7108	Thermostat Cover
11	HH-7032	Rubber Grommet
12	HF-7110	Humidistat Cover

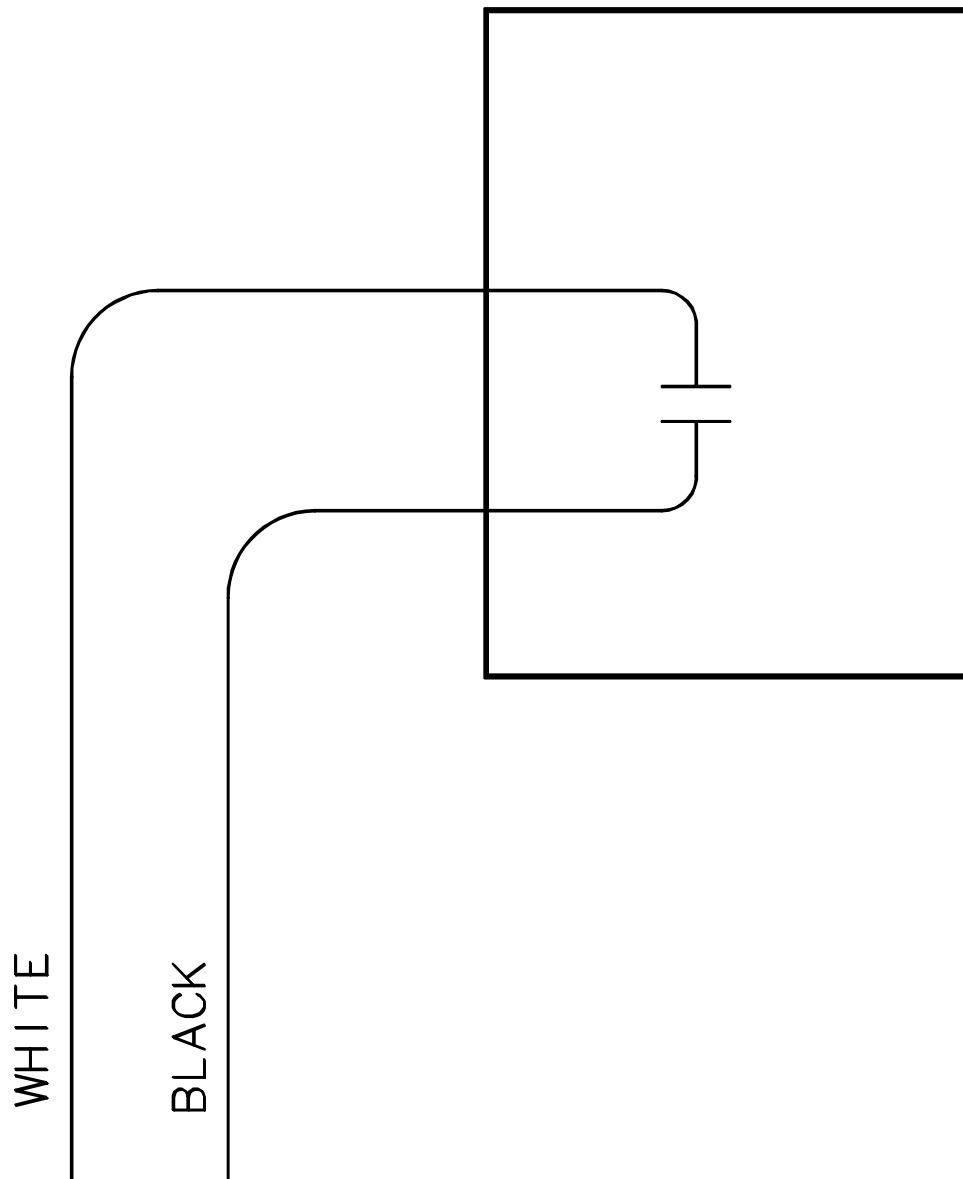


Key	Part Number	Description
1	HF-1431	2.66" Plastic Housing
1	HF-1446	4.00" Plastic Housing
2	HF-7028	Lo-Temp Thermostat
3	HF-1434	Static Pressure Gauge
4	HF-1435	220 Degree Thermometer
5	HH-1436	Screen Plug
6	HH-1970	Plastic Knob
7	HH-2089	Large Red Plastic Plug
8	HH-7029	Heat Shrink Tube 1/2"
9	HH-7108	Thermostat Cover
10	HF-7032	Rubber Grommet
11	HH-7110	Humidistat Cover

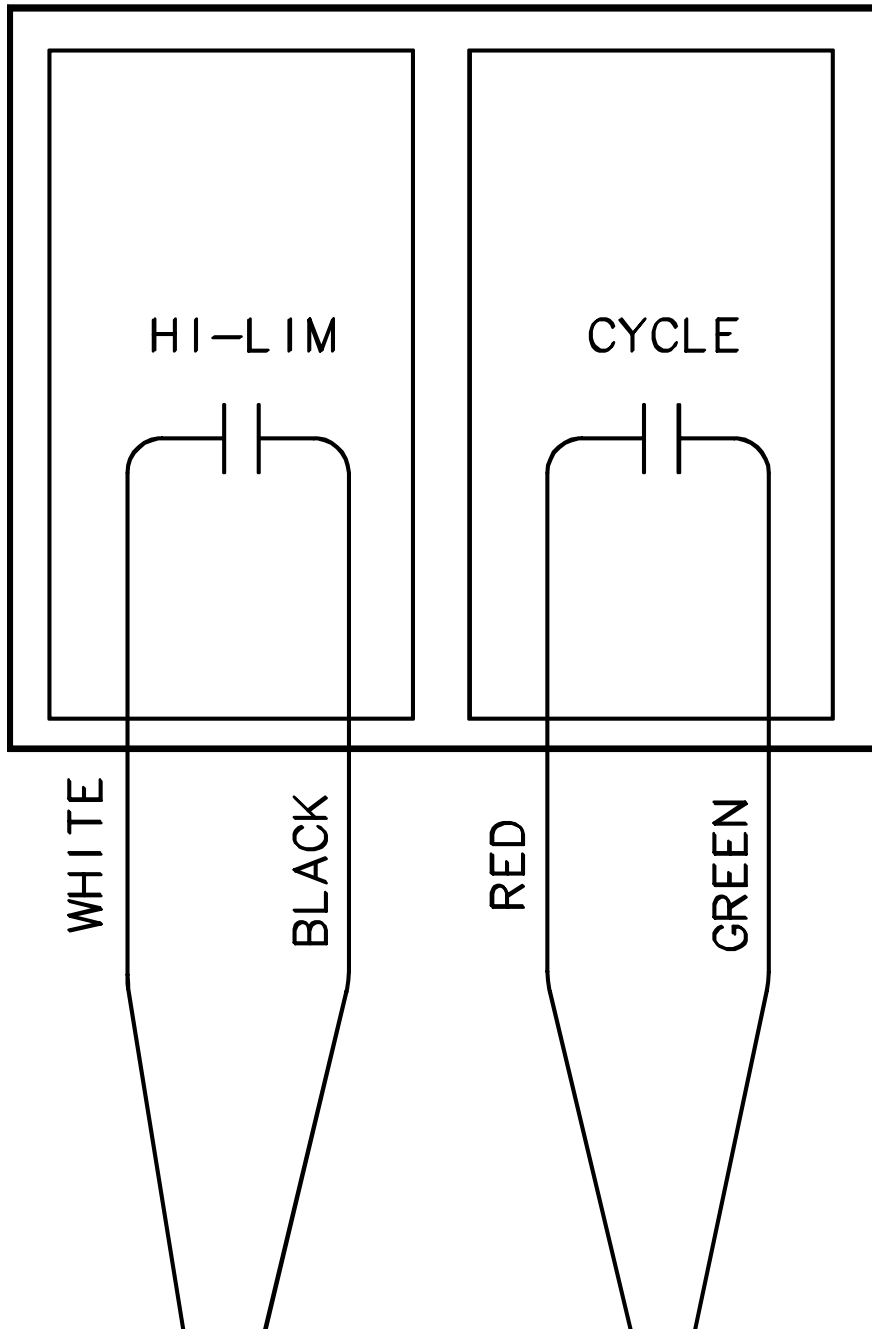




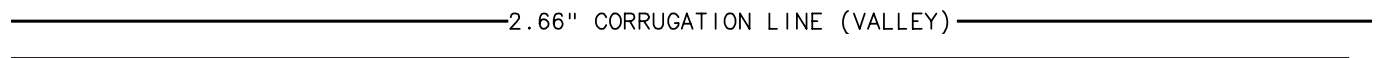
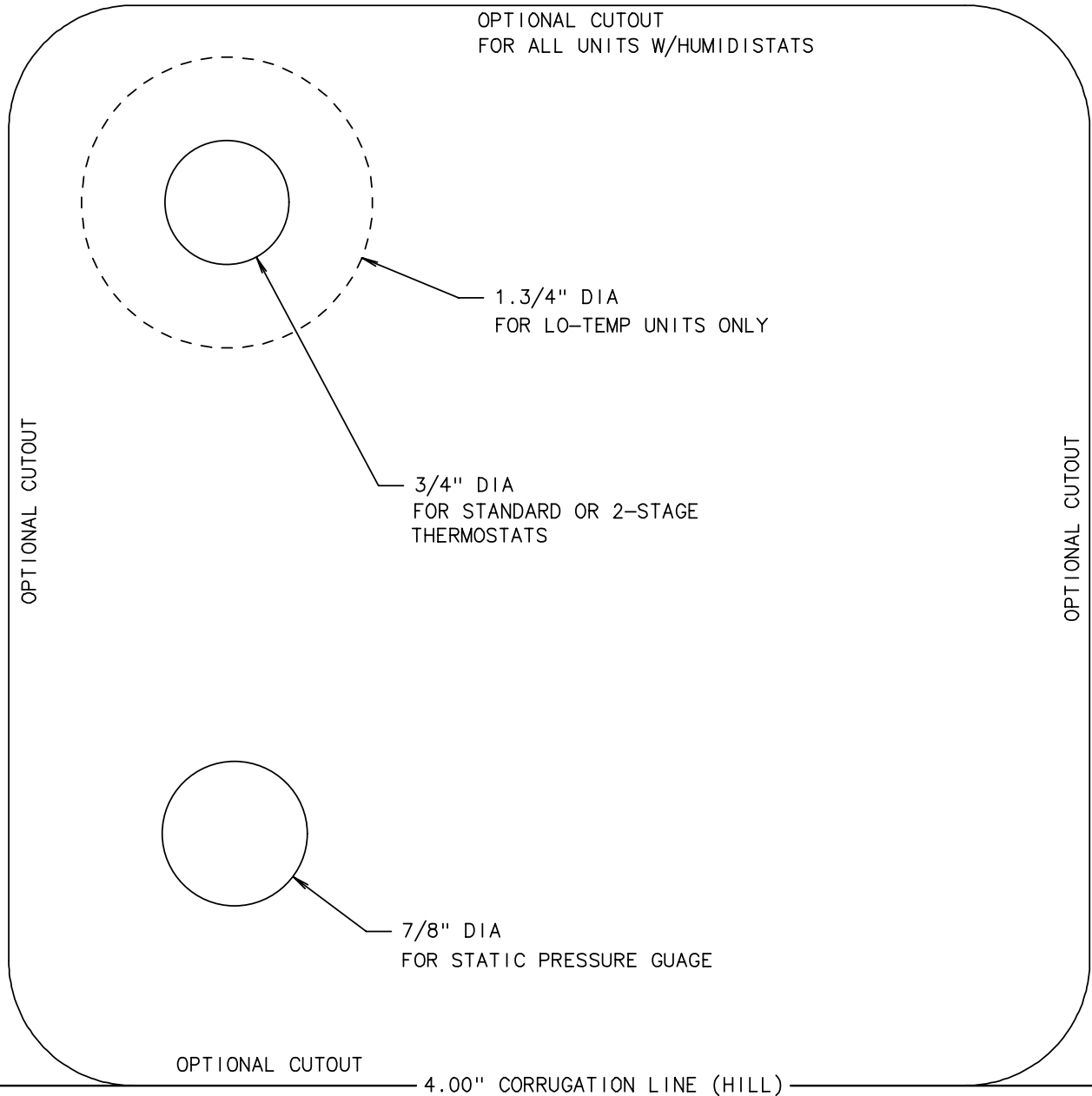
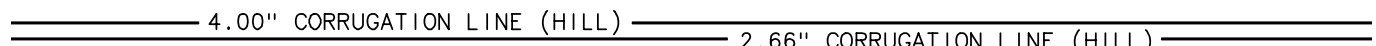
CONNECT TO HEATER
AS SHOWN IN
HEATER MANUAL



CONNECT TO HEATER
AS SHOWN IN
HEATER MANUAL



CONNECT TO HEATER
AS SHOWN IN
HEATER MANUAL



THE GSI GROUP, INC. ("GSI") WARRANTS ALL PRODUCTS MANUFACTURED BY GSI TO BE FREE OF DEFECTS IN MATERIAL AND WORKMANSHIP UNDER NORMAL USAGE AND CONDITIONS FOR A PERIOD OF 12 MONTHS AFTER RETAIL SALE TO THE ORIGINAL END USER OF SUCH PRODUCTS. GSI'S ONLY OBLIGATION IS, AND PURCHASER'S SOLE REMEDY SHALL BE FOR GSI, TO REPAIR OR REPLACE, AT GSI'S OPTION AND EXPENSE, PRODUCTS THAT, IN GSI'S SOLE JUDGMENT, CONTAIN A MATERIAL DEFECT DUE TO MATERIALS OR WORKMANSHIP. ALL DELIVERY AND SHIPMENT CHARGES TO AND FROM GSI'S FACTORY WILL BE PURCHASER'S RESPONSIBILITY. EXPENSES INCURRED BY OR ON BEHALF OF THE PURCHASER WITHOUT PRIOR WRITTEN AUTHORIZATION FROM AN AUTHORIZED EMPLOYEE OF GSI SHALL BE THE SOLE RESPONSIBILITY OF THE PURCHASER.

EXCEPT FOR THE ABOVE STATED EXPRESS LIMITED WARRANTIES, GSI MAKES NO WARRANTY OF ANY KIND, EXPRESSED 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 PRODUCT OR PRODUCTS.

IN NO EVENT SHALL GSI BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOSS OF ANTICIPATED PROFITS OR BENEFITS. PURCHASER'S SOLE AND EXCLUSIVE REMEDY SHALL BE LIMITED TO THAT STATED ABOVE, WHICH SHALL NOT EXCEED THE AMOUNT PAID FOR THE PRODUCT PURCHASED. THIS WARRANTY IS NOT TRANSFERABLE AND APPLIES ONLY TO THE ORIGINAL PURCHASER. GSI SHALL HAVE NO OBLIGATION OR RESPONSIBILITY FOR ANY REPRESENTATIVE OR WARRANTIES MADE BY OR ON BEHALF OF ANY DEALER, AGENT OR DISTRIBUTOR OF GSI.

GSI ASSUMES NO RESPONSIBILITY FOR FIELD MODIFICATIONS OR ERECTION DEFECTS WHICH CREATE STRUCTURAL OR STORAGE QUALITY PROBLEMS. MODIFICATIONS TO THE PRODUCT NOT SPECIFICALLY COVERED BY THE CONTENTS OF THIS MANUAL WILL NULLIFY ANY PRODUCT WARRANTY THAT MIGHT HAVE BEEN OTHERWISE AVAILABLE.

THE FOREGOING WARRANTY SHALL NOT COVER PRODUCTS OR PARTS WHICH HAVE BEEN DAMAGED BY NEGLIGENT USE, MISUSE, ALTERATION OR ACCIDENT. THIS WARRANTY COVERS ONLY PRODUCTS MANUFACTURED BY GSI. THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED. GSI RESERVES THE RIGHT TO MAKE DESIGN OR SPECIFICATION CHANGES AT ANY TIME.

PRIOR TO INSTALLATION, PURCHASER HAS THE RESPONSIBILITY TO RESEARCH AND COMPLY WITH ALL FEDERAL, STATE AND LOCAL CODES WHICH MAY APPLY TO THE LOCATION AND INSTALLATION.



a division of

THE GSI GROUP



1004 E. Illinois St.
Assumption, IL 62510
Phone 217-226-4421
Fax 217-226-4498

June 1998