

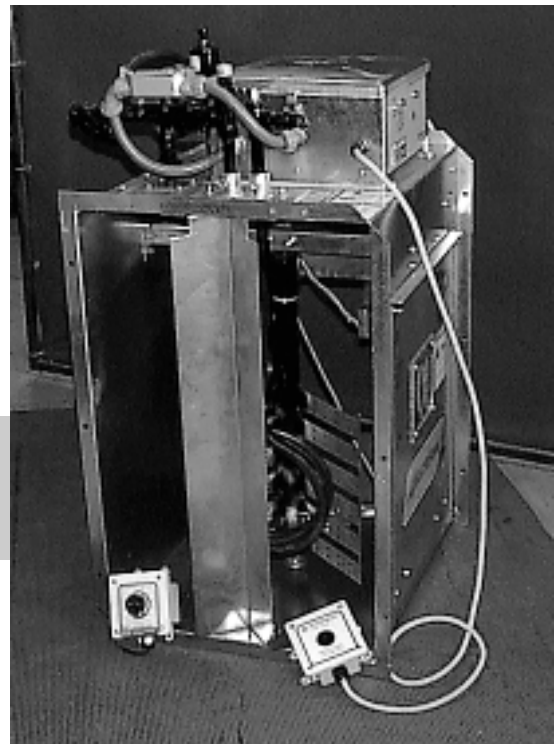
Deluxe Downwind Centrifugal Heater Installation And Operating Instructions

MODEL # CH - _ _ - _ _ - D (HIGH)

MODEL # CL - _ _ - _ _ - D (LOW)

Owner's Manual

MANUAL # PNEG-588



a division of
THE GSI GROUP



- _____ 1. All wire connections
- _____ 2. Spark plug gap - .125
- _____ 3. Pipetrain tightness and gas leaks
- _____ 4. Flame sensor tight
- _____ 5. Fuse in place, extra fuse provided
- _____ 6. Flame out light
- _____ 7. Indicator light
- _____ 8. Pressure gauge
- _____ 9. Regulator adjusted
- _____ 10. Shut off valve operates correctly
- _____ 11. Vapor high limit
- _____ 12. Unit cycles ON to OFF
- _____ 13. Heat rise even across transition
- _____ 14. Unit cycles HI to LO (HI-LO only)
- _____ 15. Mod valve holds temp within 1 degree (mod units only)
- _____ 16. All decals and serial number tag
- _____ 17. Aesthetic appearance
- _____ 18. Manual

Tester Signature _____

Date _____

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Roof Damage Warning And Disclaimer



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.

Heater Operation

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

This manual describes the operation of the Deluxe Downwind Centrifugal Heater. It is designed for low to medium temperature grain conditioning, and is ideal for the aeration of rice, popcorn or other select grains. It is available in both propane vapor and natural gas models.

The principal concern of 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 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.

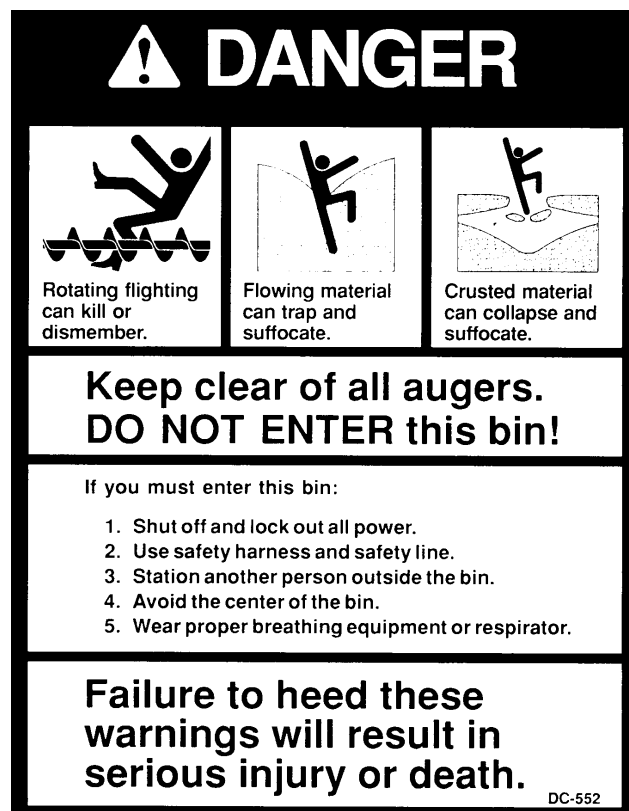
The GSI Group Inc. recommends contacting your local power company, and having a representative survey your installation so the wiring is compatible with their system, and adequate power is supplied to your unit.

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.



Fuel Connection



Important! Do not use propane tanks which have previously been used for ammonia unless they have been purged according to procedures of the National L. P. Association.

Be sure fuel supply system complies with all local codes for L. P. gas installations.

Liquid Propane Models

1. LP models are designed to run on liquid propane, with liquid draw from the propane tank. Avoid using propane supply tanks that have been used for vapor draw for long periods of time. When using liquid draw systems any moisture that may be present in tank or lines may freeze when system is used in cold weather. To avoid this, the usual precaution is to purge the system with methanol.
2. Run proper size line (see specifications) to liquid pipetrain on heater. Have a qualified gas service man inspect installation to be sure that everything is installed according to local codes and ordinances.
3. After installation is complete check all connections for leaks with liquid detergent or comparable. Wear rubber gloves and eye protection. Avoid contact with liquid propane. **DO NOT USE FLAME FOR LEAK TESTING.**

Propane Vapor Models

1. Propane vapor models are designed to run directly off of supply tank or from a separate external vaporizer.

2. Run proper size line (see specifications) to pipetrain on heater. Have a qualified gas service person inspect installation to be sure everything is installed according to local codes and ordinances.
3. After installation is complete check all connections for leaks.

DO NOT USE FLAME FOR LEAK TESTING.
(See above for other precautions.)

Natural Gas Models

1. Natural gas models are similar to vapor models, but have a larger orifice to accommodate lower pressure sometimes found with natural gas.
2. Run proper size line (see specifications) to pipetrain on heater. Have a qualified gas service man inspect installation to be sure everything is installed according to local codes and ordinances.
3. After installation is complete check all connections for leaks. **DO NOT USE FLAME FOR LEAK TESTING.** (See above for other precautions.)

Electrical Installation (230v Fans)

1. Connect power cord to fan control box.
2. Make field connections of wires in fan box as shown in Figure 1.
3. Connect deluxe thermostat control (optional) in heater box as shown in Figure 1.

IMPORTANT! HEATER MUST BE INTER-
LOCKED WITH FAN FOR SAFE OPERATION.

**IMPORTANT! THERMOSTAT MUST
BE INSTALLED FOR SAFE OPERATION.**

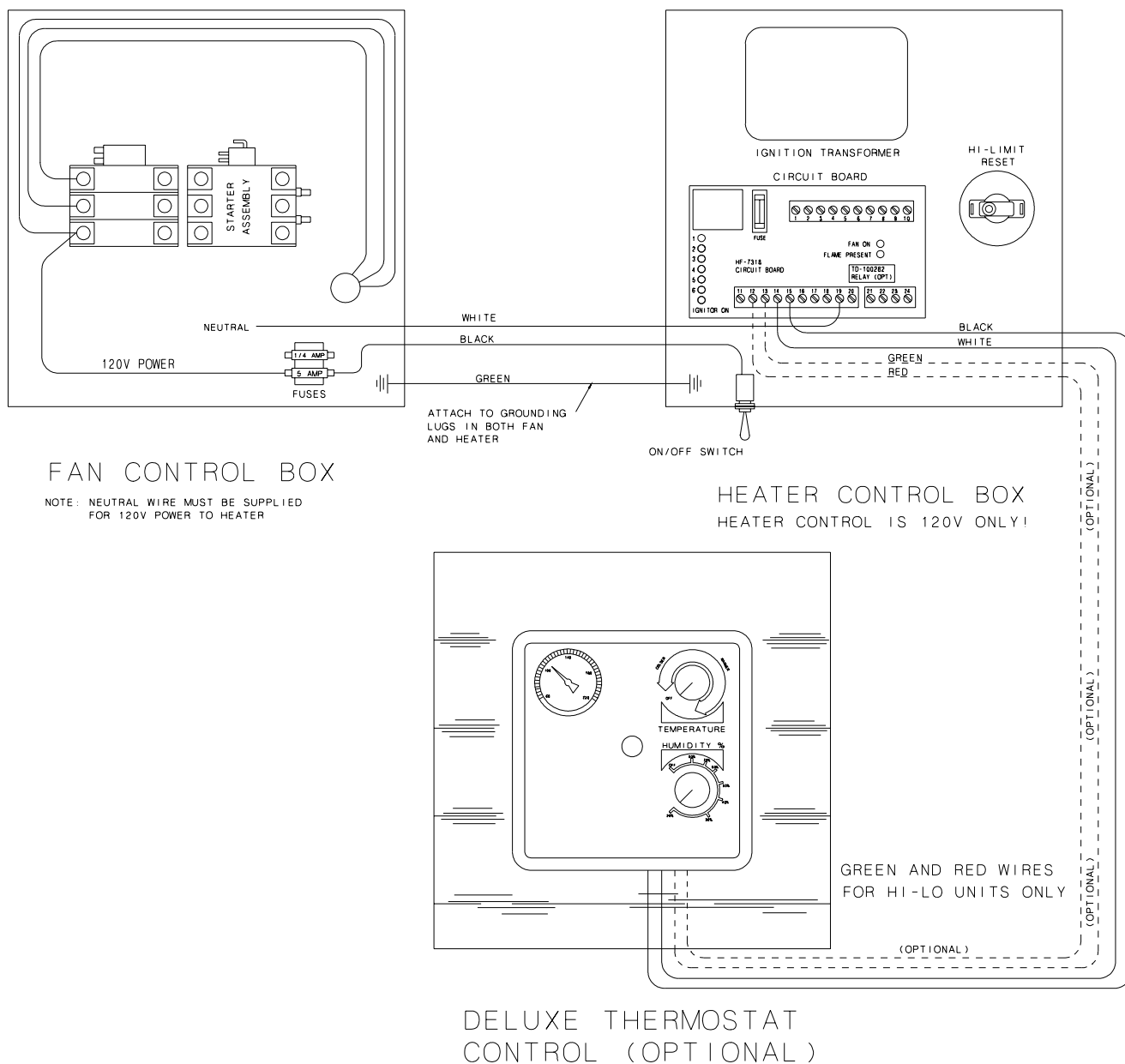


Figure 1: 230 volt fan control box.

Electrical Installation (460v Fans)

1. Connect power cord to fan control box.
2. Make field connections of wires in fan box as shown in Figure 2. 110V power supply or .5KVA 460V to 110V transformer must be used to supply power for heater.

IMPORTANT! HEATER MUST BE INTER-

LOCKED WITH FAN FOR SAFE OPERATION.

3. Connect deluxe thermostat control (optional) as shown in Figure 2. IMPORTANT! THERMOSTAT MUST BE INSTALLED FOR SAFE OPERATION.

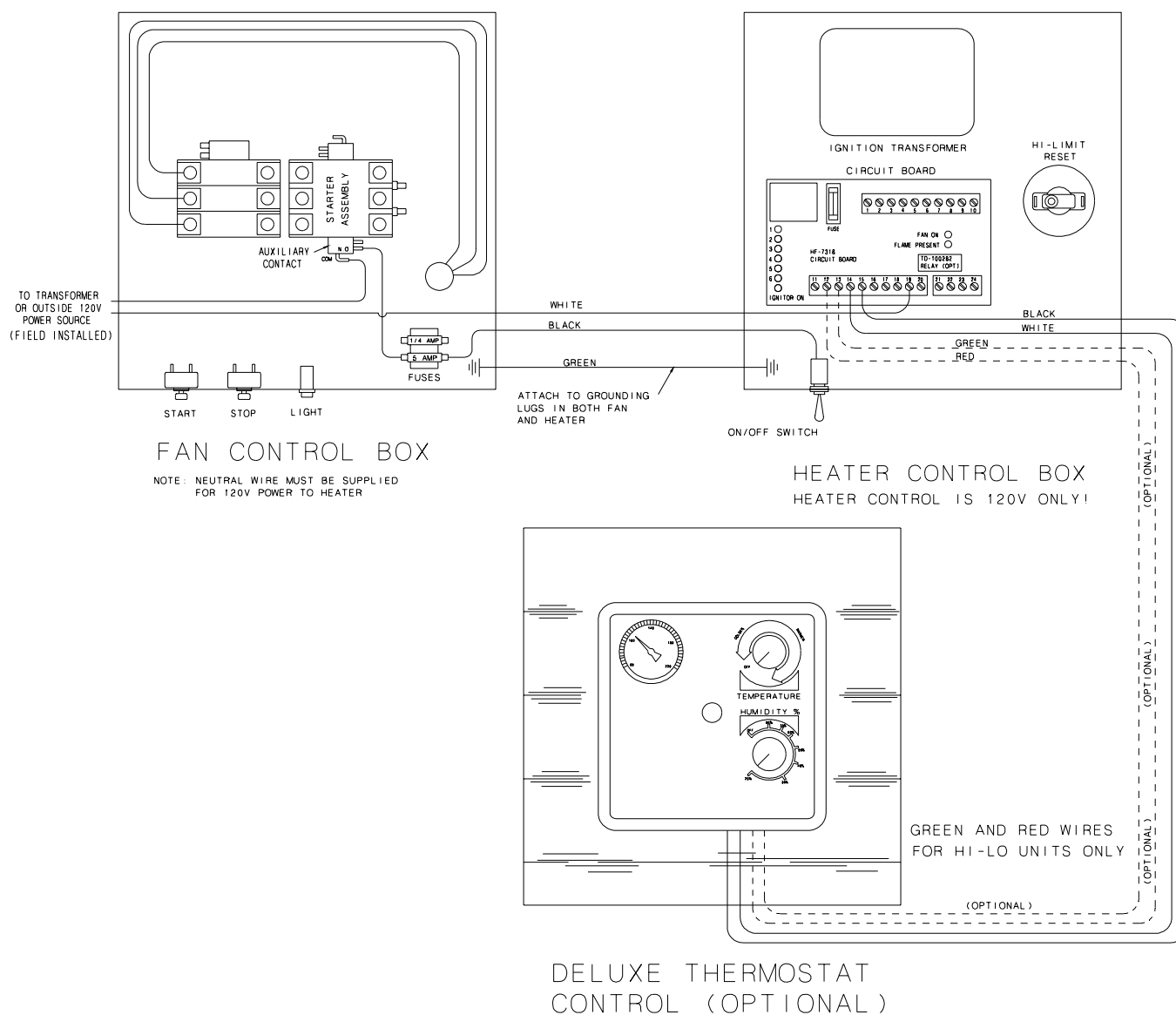
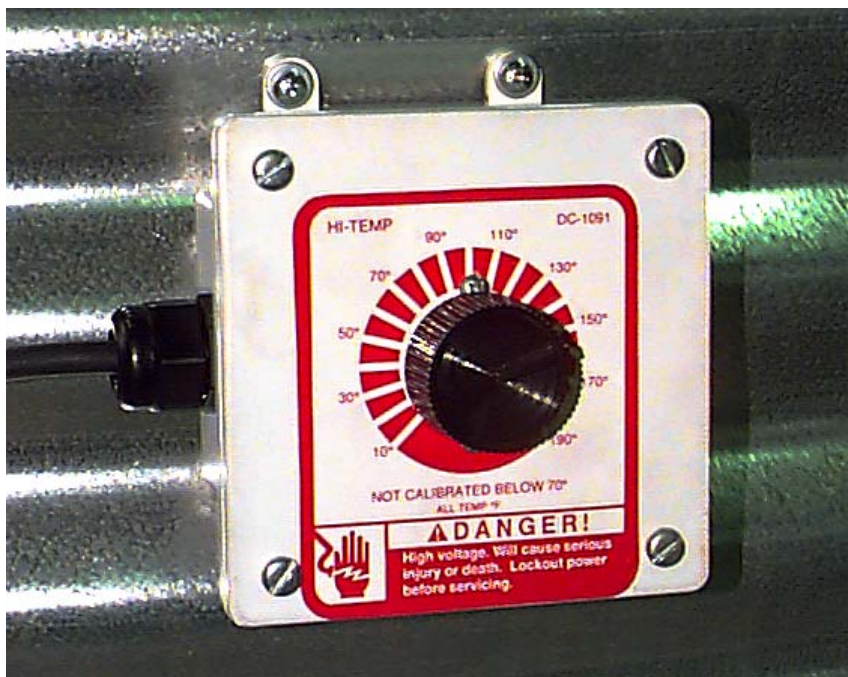


Figure 2: 460 volt fan control box.

Plenum Thermostat Mounting

The plenum thermostat is the 4 x 4 white box with knob that is preconnected to heater when heater is ordered with thermostat.

1. 24" to the right side of the transition, drill one $\frac{3}{8}$ " hole (high temp) or $1\frac{1}{2}$ " hole (low temp) in the center of the plenum in a valley (4.00" corrugation) or hill (2.66" corrugation) on bin sidewall.
2. Insert the probe through the hole.
3. Position the housing so that the tabs are vertical, and the cord exits the housing horizontally.



Plenum thermostat mounting on bin wall.

4. Use 4 self drilling screws to mount the housing to the bin sidewall.
5. Caulk between the housing and the sidewall to seal.

Transition Hi-limit Installation

1. Mark location on transition one (1) foot up from the bottom (entrance collar) and centered in the transition.
2. Drill or knock out $\frac{7}{8}$ " diameter hole on marked location.
3. Install transition hi-limit using supplied self drilling screws.

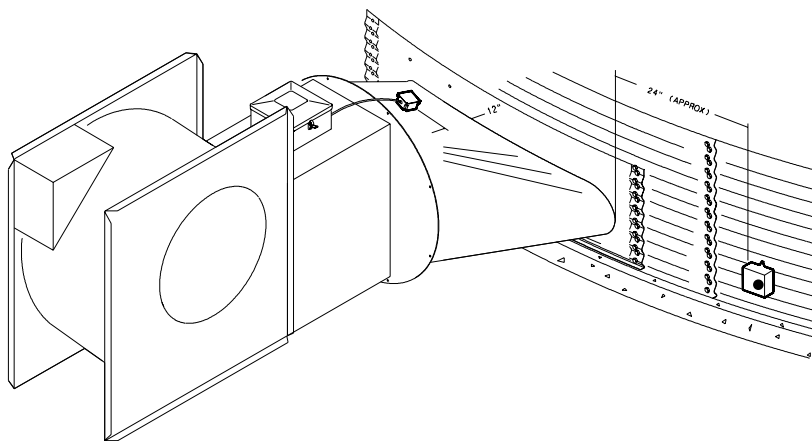
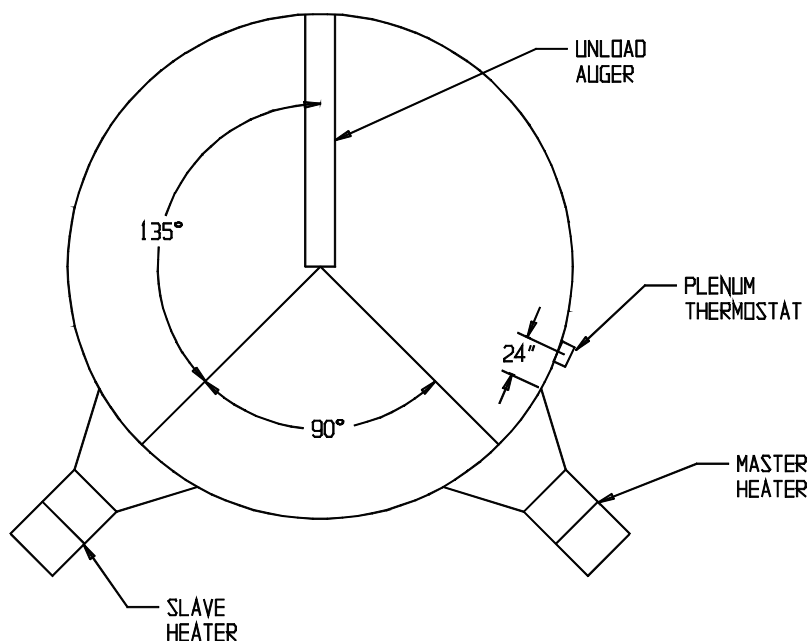


Figure 3: The transition connecting the heater to the bin with the plenum thermostat in place.

**IMPORTANT!**

When mounting (2) heaters on a bin it is imperative that they be situated as in above drawing. Plenum thermostat must be to the right of master heater and master heater must be to the right of slave heater.

Operating Temperature Table

	LO-TEMP BATCH	HIGH- TEMP BATCH DRY NO STIRRING	HIGH- TEMP WITH STIRRING	CONTINUOUS FLOW (RECIRCULATING)
CORN	5-20° ABOVE AMBIENT TEMP	120°	140°	160°
RICE	5-10° ABOVE AMBIENT TEMP	100°	100°	NOT RECOMMENDED
BEANS & WHEAT	5-20° ABOVE AMBIENT TEMP	110°	120°	NOT RECOMMENDED

**IMPORTANT!
DO NOT EXCEED
PLENUM
TEMPERATURES
LISTED IN TABLE**

**THIS TABLE IS NOT INTENDED AS A DRYING GUIDE.
IT SHOULD BE USED AS A REFERENCE FOR SETTING MAXIMUM PLENUM
TEMPERATURE FOR SAFE OPERATION.**

For Units Using HF-7318 Control Board

2 Deluxe heaters may be connected to one grain drying system and wired so they cycle together. One of the heaters should have a thermostat connected to it as per the installation instructions. That heater will be referred to as the master. The other heater (without the thermostat) will be referred to as the slave.

Installation For Standard Units

1. Install relay base (TD-100283) in master heater control box.
2. Connect wire between term 6 on circuit board and terminals 14 on relay base in master heater.
3. Connect wire between term 13 on relay base and terminals 8 on circuit board in master heater.
4. Run 2 wires (18 gage) between master and slave heaters.

5. Connect wires to terminal 5 and 9 (points A and B) on relay base in master heater.
6. Connect wire from terminal 9 in master to terminal 14 (point F) in slave unit.
7. Connect wire from terminal 5 in master to terminal 15 (point E) in slave unit.
8. Install relay (TD-100282) in relay base.

Additional Steps For Hi-Lo Units

1. Run 2 wires (18 gage) between master and slave unit.
2. Connect wires to terminals 21 and 22 (points C and D) on circuit board in main heater.
3. Connect wire from terminal 21 in master to terminal 12 (point H) in slave unit.
4. Connect wire from terminal 22 in master to terminal 13 (point G) in slave unit.
5. Install relay (TD-100282) in relay base.

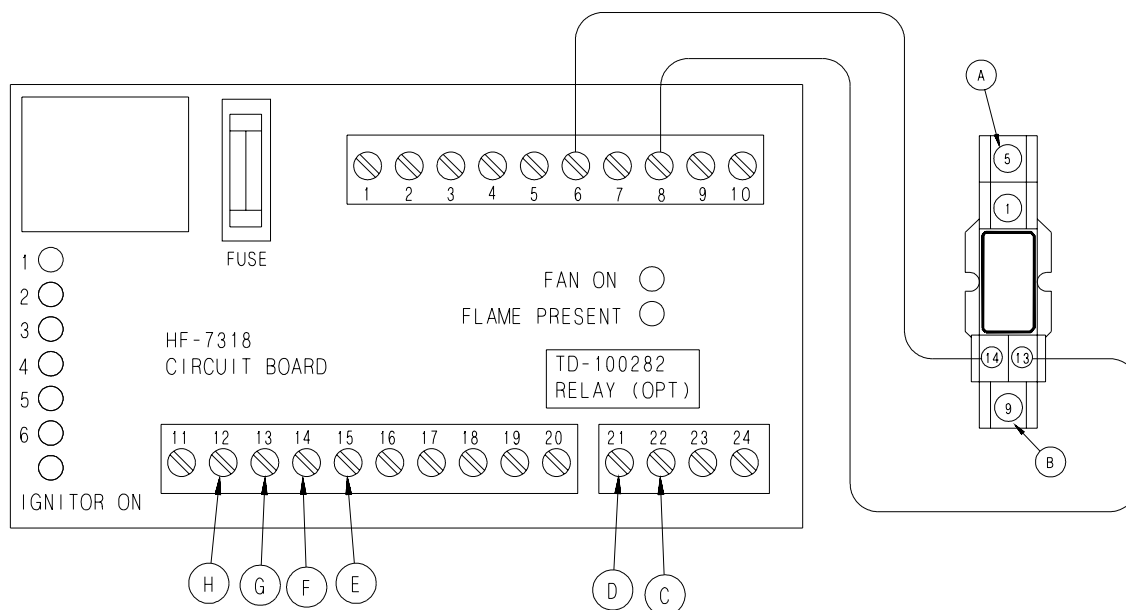


Figure 4: The HF-7318 control board.

Centrifugal Heater Specifications

		Hi-Temp Model	Lo-Temp Model
All models	BTU rating Weight	4000000 145	500000 135
Liquid models	Maximum fuel flow (GPH) Orifice size Minimum operating pressure Maximum operating pressure Minimum line size	43 .25 3 30 3/8"	N/A N/A N/A N/A N/A
Vapor models	Maximum fuel flow (CFH) Orifice size Minimum operating pressure Maximum operating pressure Minimum line size	1590 .25 2 30 1"	210 .109 1 15 1/2"
Natural gas models	Maximum fuel flow (CFH) Orifice size Minimum operating pressure Maximum operating pressure Minimum line size	4200 .375 1 15 1.1/4"	500 .156 1 7 1"

Heater Dimensional Specifications

Heater Size	10-15	20-30	40
Inside Height	30.1/4"	33.1/4"	33.1/4"
Inside Width	19.1/2"	21.3/4"	23.11/16"
Inside length	24"	24"	24"

Standard Heater Operation

1. Thermostat must be wired into heater control box for heater to operate.
2. Open all manual shut-off valves to heater unit.
3. Start fan. This will supply power to heater.
4. Turn thermostat dial to its highest setting.
5. Turn toggle switch on.
6. Heater should now be lit. If not check to see that all gas is on.
7. Set thermostat to desired setting (see deluxe thermostat manual for adjusting deluxe thermostat control).
8. Gas pressure should be adjusted so burner is on 75 per cent of the time.
9. Watch as burner goes through a few cycles, to be sure that it is operating properly.
3. Start fan. This will supply power to heater.
4. Turn thermostat dial to its highest setting.
5. Turn toggle switch on.
6. After 20 seconds both red lights should light up indicating power to the control circuit.
7. Heater should now be lit. If not, check to see that all gas is on.
8. Open low-fire ball valve all the way.
9. Turn thermostat dial back slowly until heater cycles to low flame.
10. Adjust ball valve so that low flame pressure is at desired setting.
11. Turn thermostat dial to desired setting and wait for bin plenum to come up to temperature. Heater should cycle to low flame after a few minutes. If heater does not cycle to low flame increase hi-flame gas pressure.

Hi-lo Heater Operation

1. Thermostat must be wired into heater control box for heater to operate.
2. Open all manual shut-off valves to heater unit.
12. Low-flame should be adjusted so that temperature drops slowly until burner goes back to high flame.
13. Watch as burner goes through a few cycles, to be sure that it is operating properly.

Modulating Valve Operation

1. The modulating valve regulates gas flow through the heater based on sensing unit in the plenum, and maintains a constant drying air temperature.
2. The sensing bulb of the modulating valve should be mounted through the bin wall with the side reading "top" up. The bulb reacts to temperature. It changes the amount of gas (increase or decrease), burning warmer or cooler depending on the position of the valve SET POINT. If the bulb is cooler than it was at the SET POINT, the bulb senses the cooler temperature and opens the valve further so more heat is applied to the drying air. If the bulb is warmer than it was at the SET POINT, the valve closes further and reduces the temperature until the air is at the valve SET POINT.
3. It is important that the pressure regulator be set high enough to allow the modulating valve to deliver enough gas to maintain the plenum temperature necessary. The regulator is normally factory set at 15 psi (propane units). To set the regulator, run the heater and turn the modulating valve T-handle in. This gets full line pressure to the burner. Then adjust regulator to read 15 psi (depending on the plenum temperature needed).
4. Turn the fan and heater on. To set the modulating valve, turn the T-handle out (counterclockwise) until loose and wait a few minutes for the plenum temperature to equalize. When the temperature under the bin has equalized, gradually turn T-handle in (clockwise) about 1/2 turn at a time.

Wait until temperature under bin has equalized as before. If temperature under bin is less than the desired temperature, continue turning T-handle in, increasing gas flow and waiting for plenum-temperature to equalize until the desired temperature is the stable temperature of the plenum. If temperature under bin is the same 10 minutes after you last made any adjustments to the T-handle you can be certain that the temperature under the bin is the SET POINT of the valve. **1 turn of the T-handle equals approximately 7 degrees F of temperature.**
5. The valve will now keep the plenum temperature at the set point regardless of ambient conditions as long as humidistat or thermostat do not shut down the heater. A bypass orifice is used to maintain a small flame when outside temperature is near or above the set point of the valve. The bypass insures steady application of heat at minimum gas flow operation. Bypass orifice will only operate correctly if pressure regulator is set correctly.
6. To observe how the modulating valve increases the efficiency of bin drying, check the gas pressure of the unit in the morning and compare to the pressure read mid-afternoon. If the ambient (outside) temperature is significantly greater later in the day (as normal), the gas pressure will be less. Since less heat is required to maintain the same temperature in the plenum, the modulating valve will have reduced the amount of gas used by the heater.

Btu's Per Gauge Pressure (Psi) Propane Models (Approximate)**High Temperature**

	Operating Pressure (PSI)									
	2	4	6	8	10	14	18	22	26	30
All Models	1064880	1502800	1842610	2129770	2383430	2811780	3180300	3510530	3828320	4123130

Low Temperature

	Operating Pressure (PSI)						
	2	4	6	8	10	12	14
All Models	203405	287160	351770	409200	457060	497740	555180

**Gauge Pressure (Psi) Required To Maintain Temperature (Approximate)
(High Temp Units Only)**

Fan Model	Static Pressure	Heat Rise Degrees F						
		60	80	100	120	140	160	180
10HP	2"	1	2	4	5	7	8	10
	4"	1	2	3	4	6	8	9
	6"	1	1	2	3	4	5	6
15HP	2"	2	4	6	8	10	13	17
	4"	2	3	4	6	8	10	13
	6"	1	2	3	4	6	8	9
20HP	2"	3	5	8	11	15	20	24
	4"	3	4	7	9	13	17	21
	6"	2	4	7	8	11	14	18
25HP	2"	4	8	12	17	22	28	
	4"	4	6	10	14	19	24	30
	6"	3	5	8	11	15	20	24
30HP	2"	5	9	14	21	28		
	4"	5	8	12	18	23	30	
	6"	4	6	10	14	19	24	30
40HP	2"	8	14	20	29			
	4"	7	12	19	26			
	6"	6	10	16	22	30		

Btu's Per Gauge Pressure (Psi) Natural Gas Models (Approximate)

High Temperature

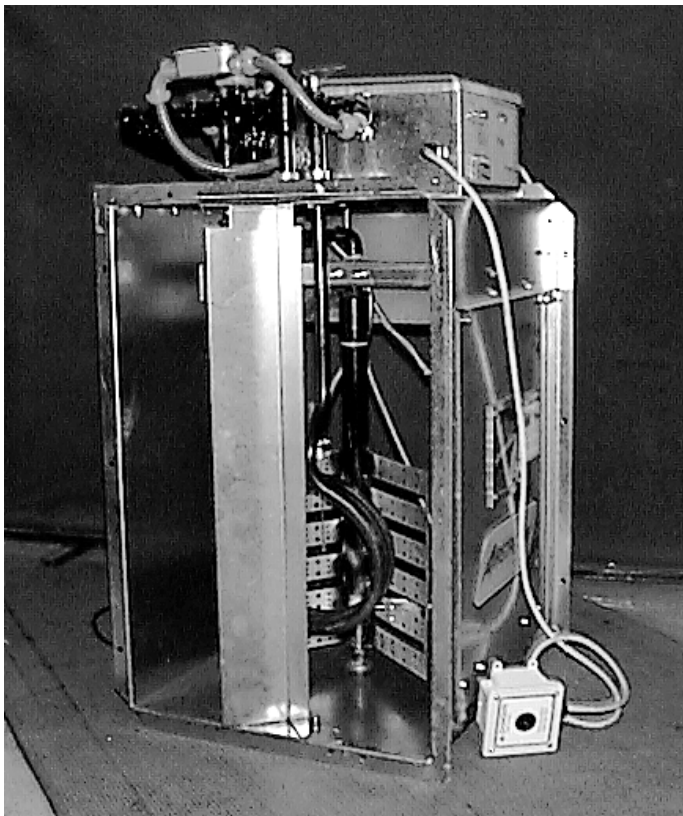
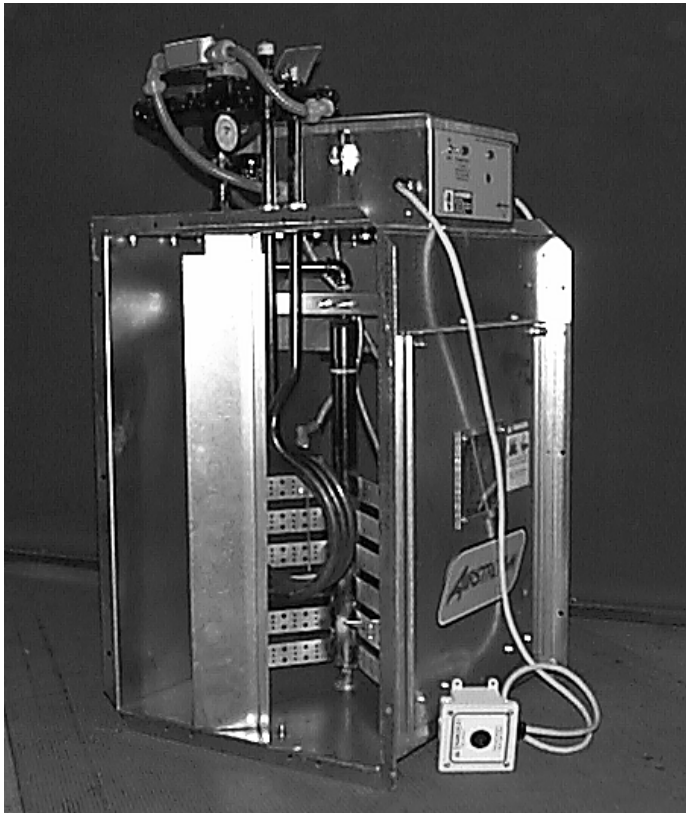
	Operating Pressure (PSI)						
	2	4	6	8	10	12	14
All Models	1590000	2375000	2749000	3180000	3555000	3886000	4195000

Low Temperature

	Operating Pressure (PSI)						
	1	2	3	4	5	6	7
All Models	195000	276000	338000	390000	436000	478000	500000

Gauge Pressure (Psi) Required To Maintain Temperature (Approximate) (High Temp Units Only)

Fan Model	Static Pressure	Heat Rise Degrees F						
		60	80	100	120	140	160	180
10HP	2"	1	1.5	2	2.5	3	3.5	4
	4"	1	1.5	1.75	2	2.5	3	3.5
	6"	.75	1.25	1.5	1.75	2	2.25	2.5
15HP	2"	1	1.75	2.5	3.25	4	5	7
	4"	1	1.5	2	2.5	3.25	4	5.5
	6"	1	1.25	1.5	1.75	2.25	3	3.75
20HP	2"	1.75	2.5	3.5	5	7	9.5	12
	4"	1.25	2	3	4	5	7	9
	6"	1	1.75	2.5	3.25	4	5	7
25HP	2"	2	3.25	5	7.5	10	13	
	4"	2	3	4	6	8.5	11	14
	6"	1.75	2.5	3.5	5	7	9.5	12
30HP	2"	2.5	4	6.5	9	13		
	4"	2	3.5	5	8	11	14	
	6"	2	3	4	6	8.5	11	14
40HP	2"	3	6	10	14			
	4"	2.75	5	8	11	15		
	6"	2.5	4	6.5	9	13		

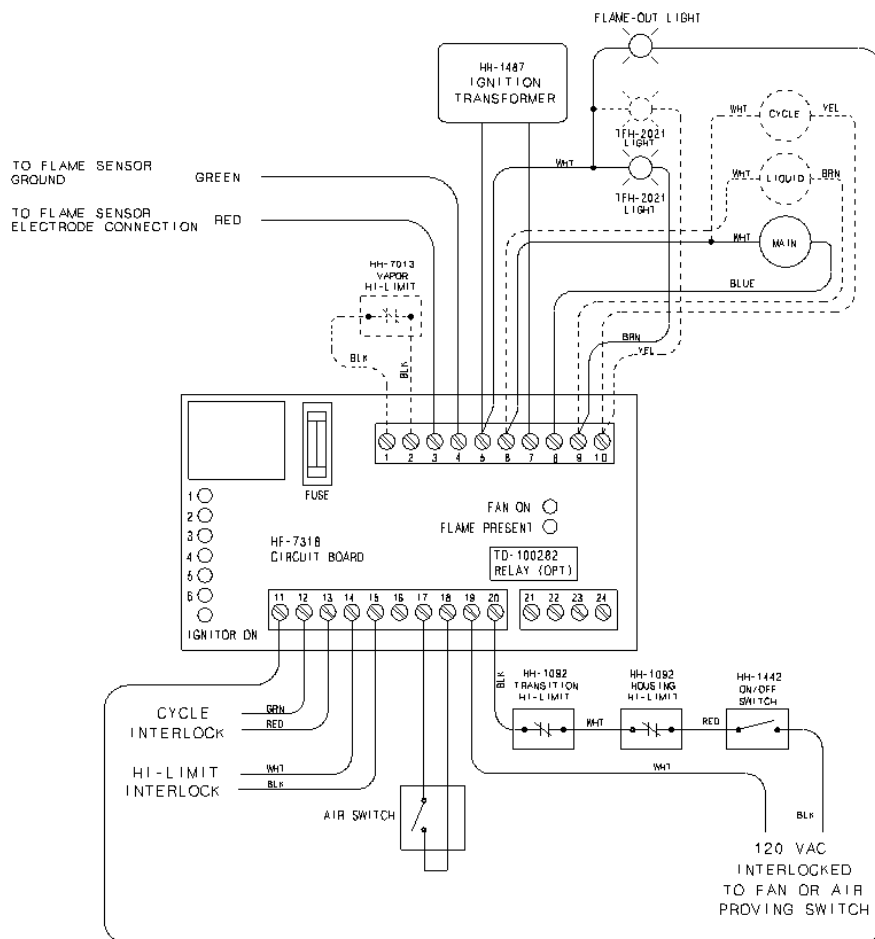


Adjusting the vaporizer coil on a liquid propane model.
The top photo shows the setting up (cool),
and the bottom photo shows the coil down (hot).

Adjusting The Vaporizer

1. Vaporizer should be adjusted so the vapor pipe train runs warm to the touch (100°-120°F).
2. Loosen 5/16" bolts on adjustment bracket.
3. Raise vaporizer if running too hot, lower if too cold.
4. Move vaporizer only 1" at a time and allow a few minutes for temperature to equalize.
5. Tighten 5/16" bolts and watch heater run for several minutes to verify adjustment.

DELUXE HEATER WIRING DIAGRAM

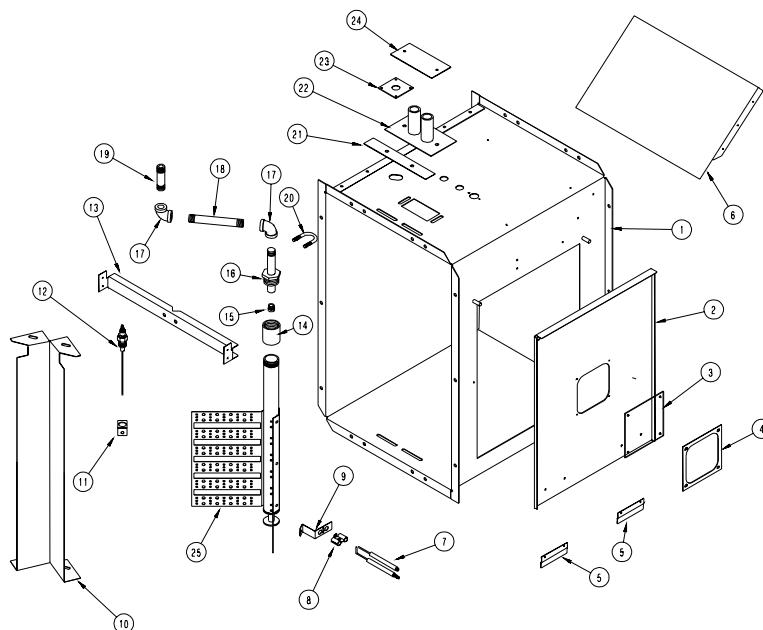


● INDICATES LIGHT ON ○ INDICATES LIGHT OFF

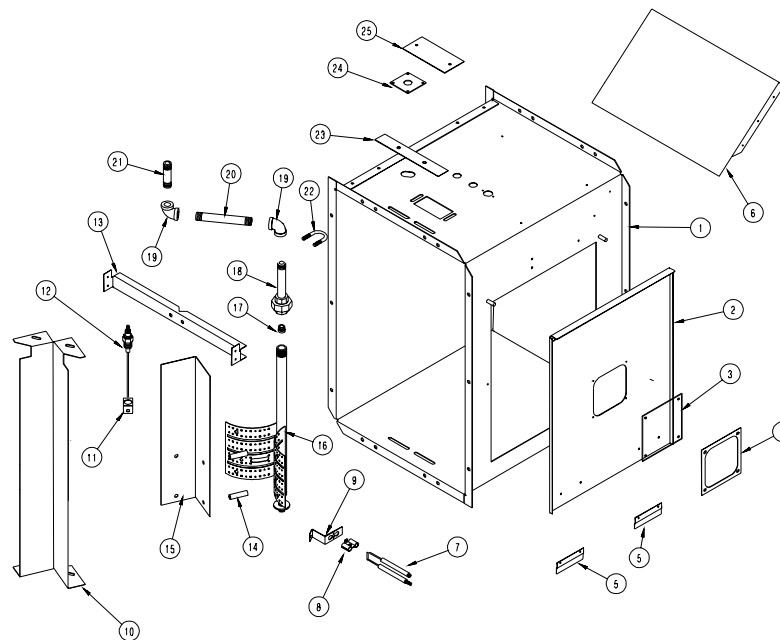
INDICATION	POSSIBLE CAUSE	POSSIBLE SOLUTION
○ ○ ○ ○ ○ ○	Bad On/Off Switch	Replace Switch
1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○	Heater Housing Hi-Limit	Reset Or Replace Hi-Limit
	Transition Hi-Limit	Reset Or Replace Hi-Limit
	No Power To Heater	Check Heater
● ○ ○ ○ ○ ○	Blown Fuse	Replace Fuse
● ● ○ ○ ○ ○	Flame Sensor (if flame present light on)	Clean Or Replace Flame Sensor
1 ● 2 ● 3 ○ 4 ○ 5 ○ 6 ○	Control Board	Replace Control Board
	Air Switch (if fan on light not on)	Check Air Switch
● ● ● ○ ○ ○	Vaporizer Hi-Limit	Adjust Vaporizer Coil Replace Vapor Hi-Limit
● ● ● ● ○ ○	Humidistat/Thermostat	Temperature Reached Replace Thermostat Or Humidistat
● ● ● ● ● ○	Spark Plug	Clean Or Replace Spark Plug
1 ● 2 ● 3 ● 4 ● 5 ● 6 ○	No Fuel To Burner	Check Fuel Supply
	Bad Solenoid	Replace Solenoid

● ● ● ● ● ○ WAIT FOR 20 SECOND PURGE DELAY TO TROUBLESHOOT!
1 2 3 4 5 6 INDICATING LIGHTS SHOWN ON LEFT SHOULD BE LIT
WHEN UNIT IS OPERATING PROPERLY

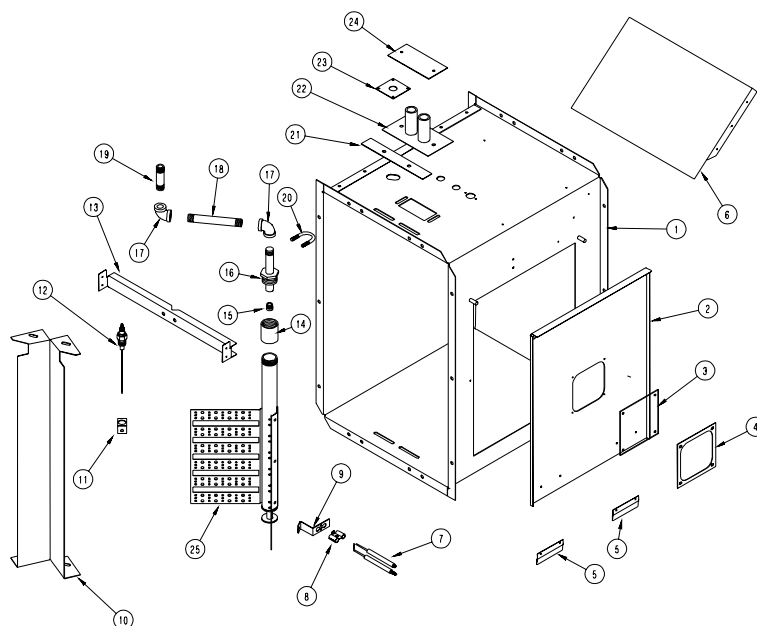
DC-1161

10-15 Dw High Temp Heater Parts

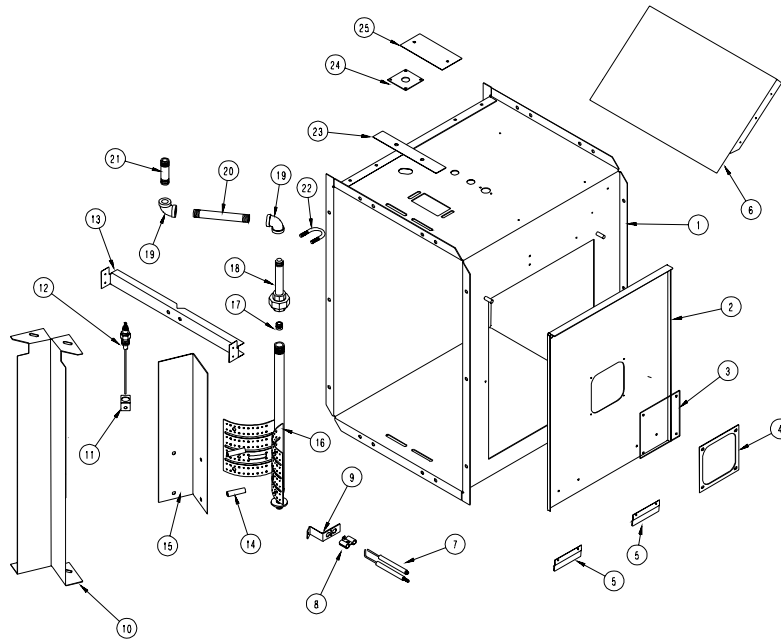
1	HF-7076	10-15 HP Housing Assembly
2	HF-7288	Access Side Cover
3	HF-7380	Plastic View Window
4	HF-7379	Access Panel Cover Plate
5	HF-7287	Access Panel Holders
6	HF-7063	10-15 Diverter Plate
7	CD-0238	Ignitor (2 Required)
8	HF-7201	Ignitor Clamp Half (2 Required)
9	HF-7204	Ignitor Bracket
10	HF-7101	10-15 Diverter Angle
11	CD-0187	Flame Sensor Bracket (Deluxe, Sr 2000)
12	*THH-4179	Flame Sensor (Deluxe, Sr 2000)
13	HF-7290	10-15 Burner Brace
14	HH-7035	1 1/4" Coupling
15	HF-7083	1/4" Orifice (Propane)
15	HF-7034	3/8" Orifice (Natural Gas)
16	HF-7027	Orifice Tube Weldment
17	THH-4071	1/2" Elbow
18	HH-3854	1/2" x 6" Nipple
19	HH-3670	1/2" x 2.1/2" Nipple
20	S-7259	5/16" U-Bolt
21	HF-7079	Diverter Angle Cover
22	HF-7020	Vaporizer Support Weldment
23	HF-7297	Burner Support Plate
24	HF-7032	Vapor Cover Plate
25	HF-7023	HI-Fire Burner Assembly
NS	HF-7261	10-40HP Spark Plug Wire
NS	HF-7263	10-40HP Flame Probe Wire

10-15 Dw Low Temp Heater Parts

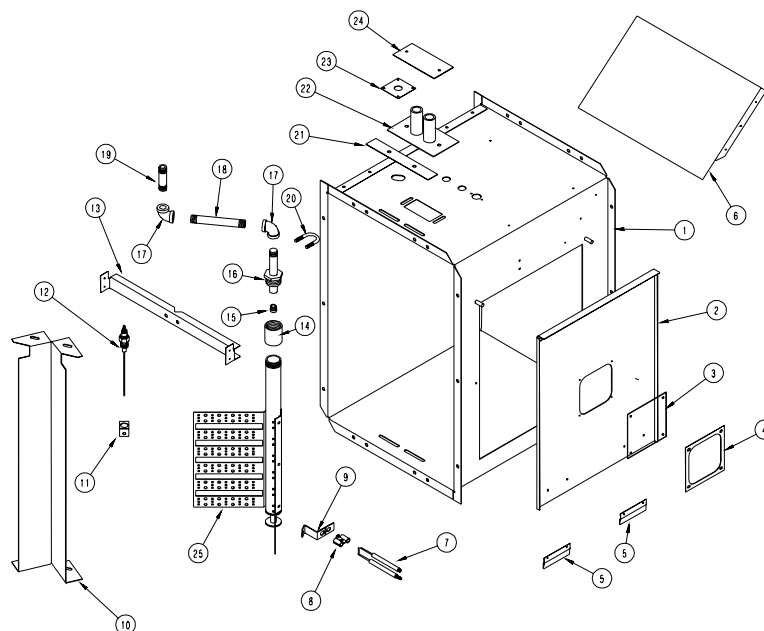
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9	HF-7204	Ignitor Bracket
10	HF-7101	10-15 Diverter Angle
11	CD-0187	Flame Sensor Bracket (Deluxe, Sr 2000)
12	*THH-4179	Flame Sensor (Deluxe, Sr 2000)
13	HF-7290	10-15 Burner Brace
14	HF-7072	LO-Fire Diverter Spacer
15	HF-7071	LO-Fire Diverter
16	HF-7070	LO-Fire Burner Assembly
17	HF-7035	7/64" Orifice (Propane)
17	HF-7036	5/32" Orifice (Natural Gas)
18	HF-7069	LO-fire Orifice Weldment
19	THH-4071	1/2" Elbow
20	HH-3854	1/2" x 6" Nipple
21	HH-3670	1/2" x 2.1/2" Nipple
22	S-7259	5/16" U-Bolt
23	HF-7079	Diverter Angle Cover
24	HF-7297	Burner Support Plate
25	HF-7032	Vapor Cover Plate
NS	HF-7261	10-40HP Spark Plug Wire
NS	HF-7263	10-40HP Flame Probe Wire

20-30 Dw High Temp Heater Parts

1	HF-7077	20-30 HP Housing Assembly
2	HF-7288	Access Side Cover
3	HF-7380	Plastic View Window
4	HF-7379	Access Panel Cover Plate
5	HF-7287	Access Panel Holders
6	HF-7064	20-30 Diverter Plate
7	CD-0238	Ignitor (2 Required)
8	HF-7201	Ignitor Clamp Half (2 Required)
9	HF-7204	Ignitor Bracket
10	HF-7102	20-30 Diverter Angle
11	CD-0187	Flame Sensor Bracket (Deluxe, Sr 2000)
12	*THH-4179	Flame Sensor (Deluxe, Sr 2000)
13	HF-7300	20-30 Burner Brace
14	HH-7035	1 1/4" Coupling
15	HF-7083	1/4" Orifice (Propane)
15	HF-7034	3/8" Orifice (Natural Gas)
16	HF-7027	Orifice Tube Weldment
17	THH-4071	1/2" Elbow
18	HH-3854	1/2" x 6" Nipple
19	HH-3670	1/2" x 2.1/2" Nipple
20	S-7259	5/16" U-Bolt
21	HF-7079	Diverter Angle Cover
22	HF-7020	Vaporizer Support Weldment
23	HF-7297	Burner Support Plate
24	HF-7032	Vapor Cover Plate
25	HF-7023	HI-Fire Burner Assembly
NS	HF-7261	10-40HP Spark Plug Wire
NS	HF-7263	10-40HP Flame Probe Wire

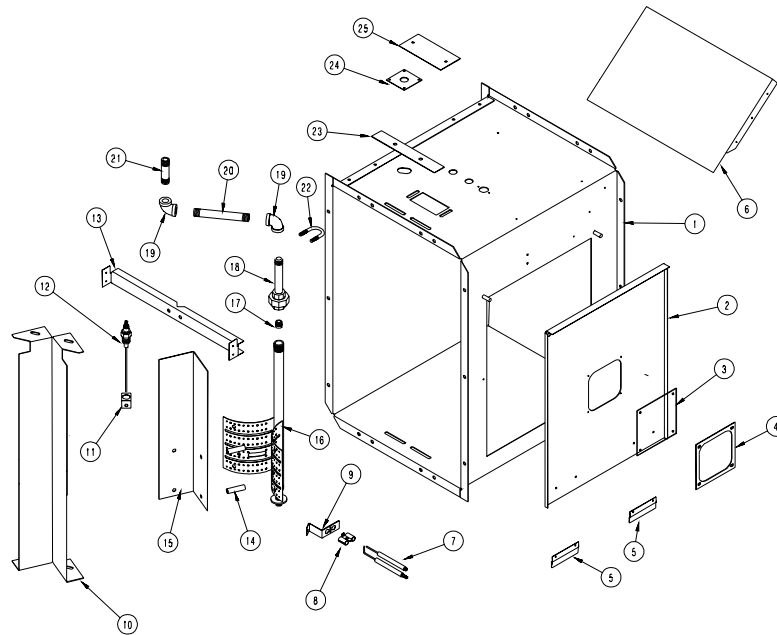
20-30 Dw Low Temp Heater Parts

1	HF-7077	20-30 HP Housing Assembly
2	HF-7288	Access Side Cover
3	HH-2020	Plastic View Window
4	HF-6914	Access Cover Plate
5	HF-7287	Access Panel Holders
6	HF-7064	20-30 Diverter Plate
7	CD-0238	Ignitor (2 Required)
8	HF-7201	Ignitor Clamp Half (2 Required)
9	HF-7204	Ignitor Bracket
10	HF-7102	20-30 Diverter Angle
11	CD-0187	Flame Sensor Bracket (Deluxe, Sr 2000)
12	*THH-4179	Flame Sensor (Deluxe, Sr 2000)
13	HF-7300	20-30 Burner Brace
14	HF-7072	LO-Fire Diverter Spacer
15	HF-7071	LO-Fire Diverter
16	HF-7070	LO-Fire Burner Assembly
17	HF-7035	7/64" Orifice (Propane)
17	HF-7036	5/32" Orifice (Natural Gas)
18	HF-7069	LO-fire Orifice Weldment
19	THH-4071	1/2" Elbow
20	HH-3854	1/2" x 6" Nipple
21	HH-3670	1/2" x 2.1/2" Nipple
22	S-7259	5/16" U-Bolt
23	HF-7079	Diverter Angle Cover
24	HF-7297	Burner Support Plate
25	HF-7032	Vapor Cover Plate
NS	HF-7261	10-40HP Spark Plug Wire
NS	HF-7263	10-40HP Flame Probe Wire

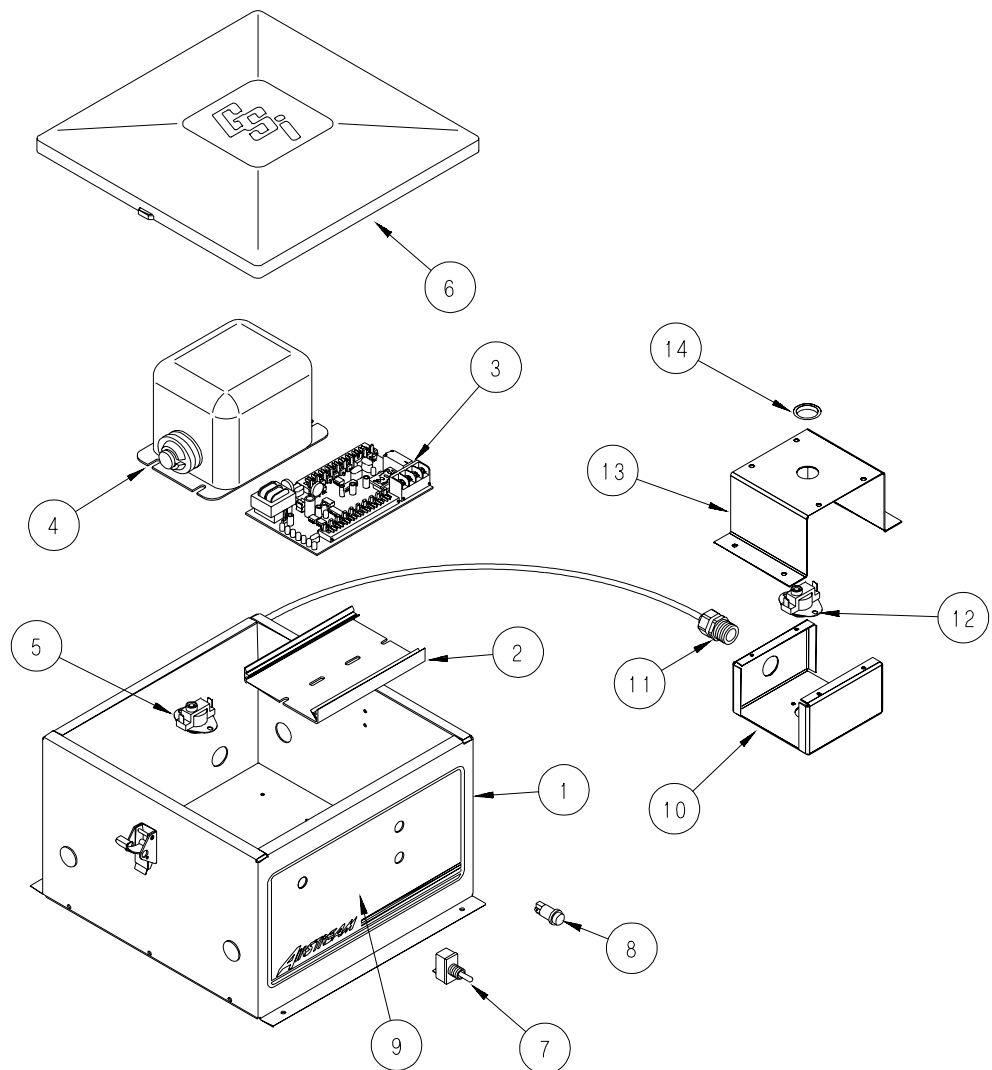
40hp Dw High Temp Heater Parts

1	HF-7472	40 HP Housing Assembly
2	HF-7288	Access Side Cover
3	HF-7380	Plastic View Window
4	HF-7379	Access Panel Cover Plate
5	HF-7287	Access Panel Holders
6	HF-7140	40 HP Diverter Plate
7	CD-0238	Ignitor (2 Required)
8	HF-7201	Ignitor Clamp Half (2 Required)
9	HF-7204	Ignitor Bracket
10	HF-7102	20-40 Diverter Angle
11	CD-0187	Flame Sensor Bracket (Deluxe, Sr 2000)
12	*THH-4179	Flame Sensor (Deluxe, Sr 2000)
13	HF-7304	40 Burner Brace
14	HH-7035	1 1/4" Coupling
15	HF-7083	1/4" Orifice (Propane)
15	HF-7034	3/8" Orifice (Natural Gas)
16	HF-7027	Orifice Tube Weldment
17	THH-4071	1/2" Elbow
18	HH-3854	1/2" x 6" Nipple
19	HH-3670	1/2" x 2.1/2" Nipple
20	S-7259	5/16" U-Bolt
21	HF-7079	Diverter Angle Cover
22	HF-7020	Vaporizer Support Weldment
23	HF-7297	Burner Support Plate
24	HF-7032	Vapor Cover Plate
25	HF-7023	HI-Fire Burner Assembly
NS	HF-7261	10-40HP Spark Plug Wire
NS	HF-7263	10-40HP Flame Probe Wire

40hp Dw Low Temp Heater Parts

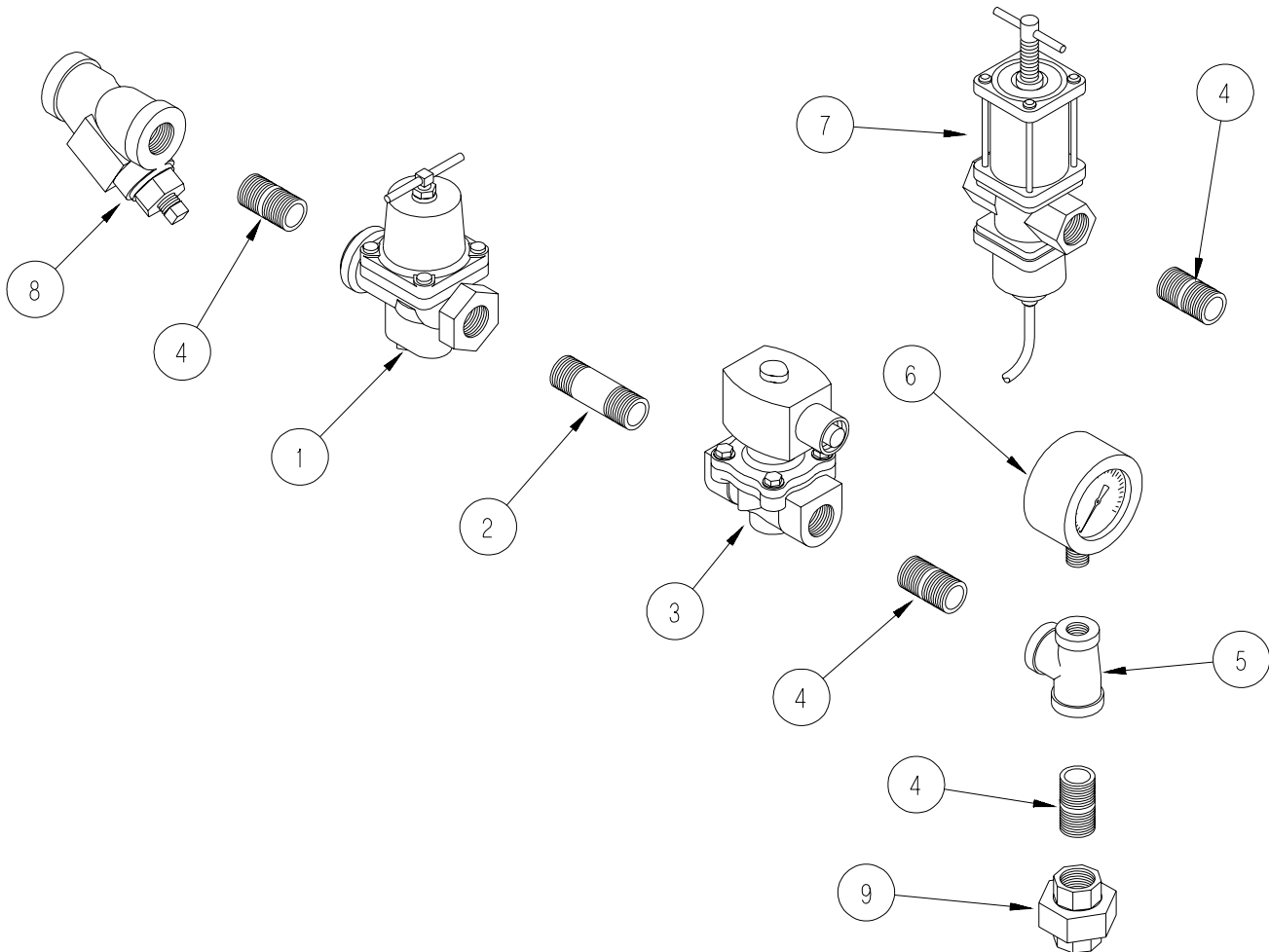


1	HF-7472	40 HP Housing Assembly
2	HF-7288	Access Side Cover
3	HH-2020	Plastic View Window
4	HF-6914	Access Cover Plate
5	HF-7287	Access Panel Holders
6	HF-7140	40 Diverter Plate
7	CD-0238	Ignitor (2 Required)
8	HF-7201	Ignitor Clamp Half (2 Required)
9	HF-7204	Ignitor Bracket
10	HF-7102	20-40 Diverter Angle
11	CD-0187	Flame Sensor Bracket (Deluxe, Sr 2000)
12	*THH-4179	Flame Sensor (Deluxe, Sr 2000)
13	HF-7304	40 Burner Brace
14	HF-7072	LO-Fire Diverter Spacer
15	HF-7071	LO-Fire Diverter
16	HF-7070	LO-Fire Burner Assembly
17	HF-7035	7/64" Orifice (Propane)
17	HF-7036	5/32" Orifice (Natural Gas)
18	HF-7069	LO-fire Orifice Weldment
19	THH-4071	1/2" Elbow
20	HH-3854	1/2" x 6" Nipple
21	HH-3670	1/2" x 2.1/2" Nipple
22	S-7259	5/16" U-Bolt
23	HF-7079	Diverter Angle Cover
24	HF-7297	Burner Support Plate
25	HF-7032	Vapor Cover Plate
NS	HF-7261	10-40HP Spark Plug Wire
NS	HF-7263	10-40HP Flame Probe Wire

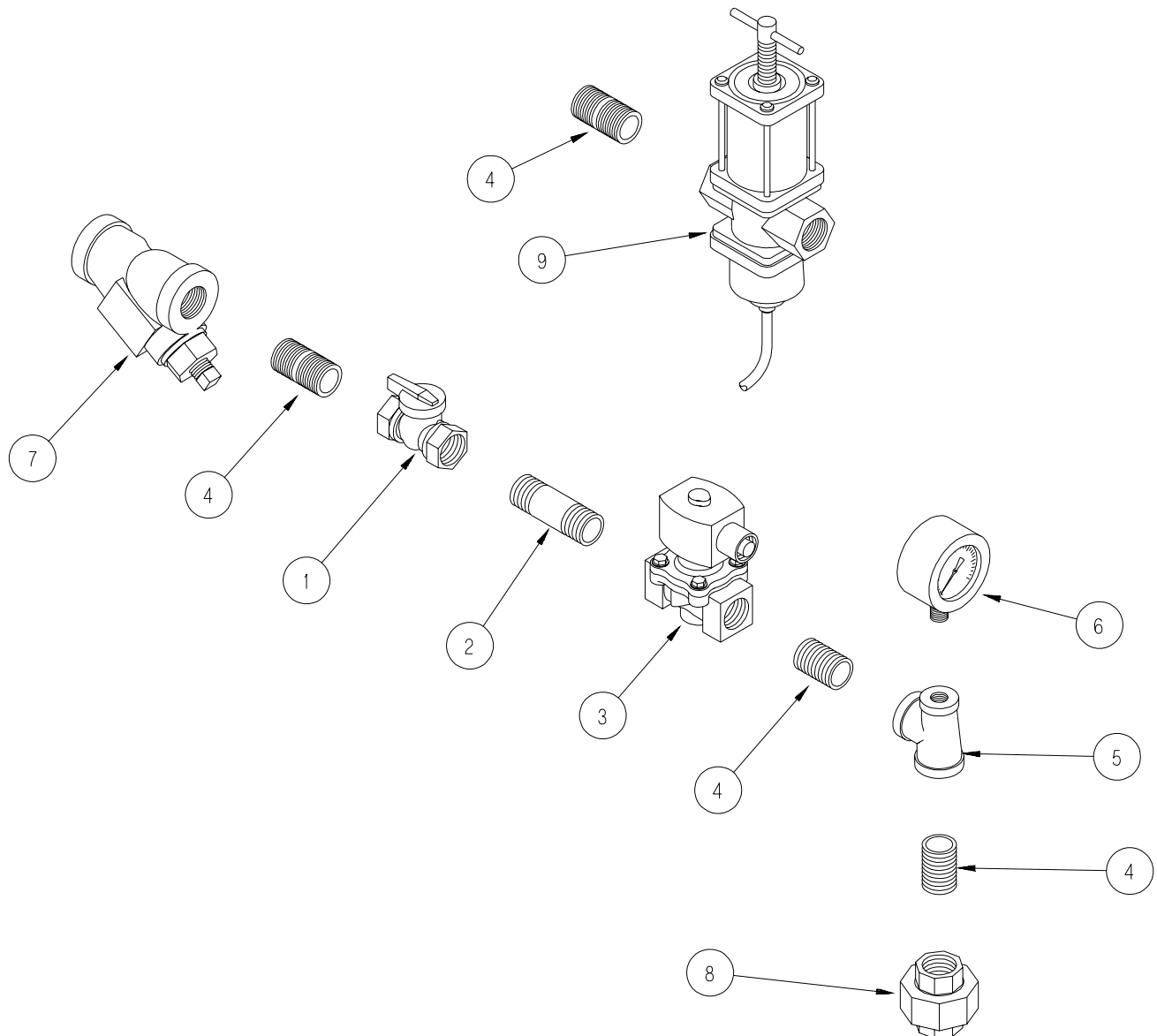
Dw Gas Heater Control Box Parts

Key	Part Number	Description
1	HF-7315	Control Box Housing
2	HH-7015	Snap trak
3	HF-7318	Circuit Board Assembly
4	HH-1487	Ignitor Transformer
5	HH-1092	High Limit Switch 180 Degree
6	F-942	Control Box Lid
7	HH-1442	Toggle Switch
8	TFH-2021	Red Light (110V)
9	DC-1166	Decal Deluxe Heater Front Panel
10	HF-7455	High Limit Switch Box Bottom
11	FH-1310	Cord Connector
12	HF-7439	High Limit Switch 250 Degree
13	HF-7454	High Limit Switch Box Top
14	HF-7414	Recessed Plastic Plug

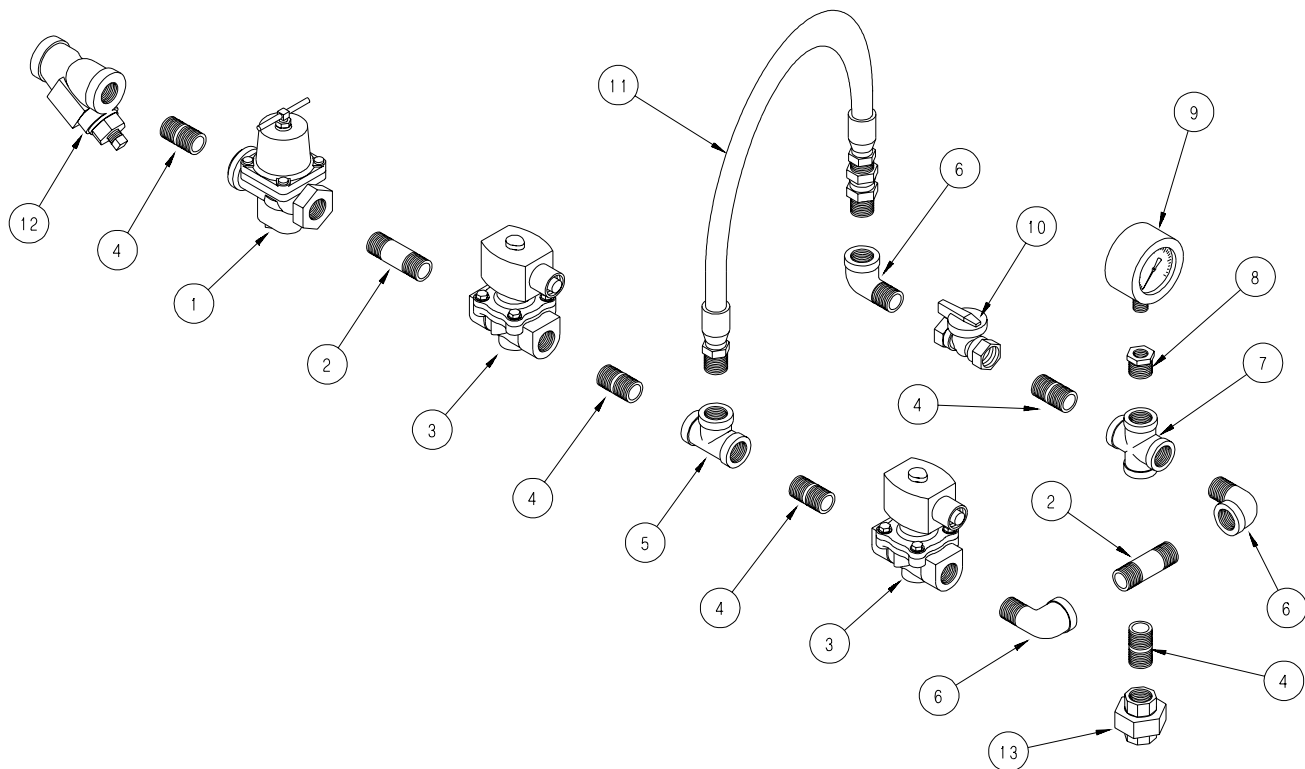
Revised 2/4/98

Dw Propane Vapor Pipetrain Parts

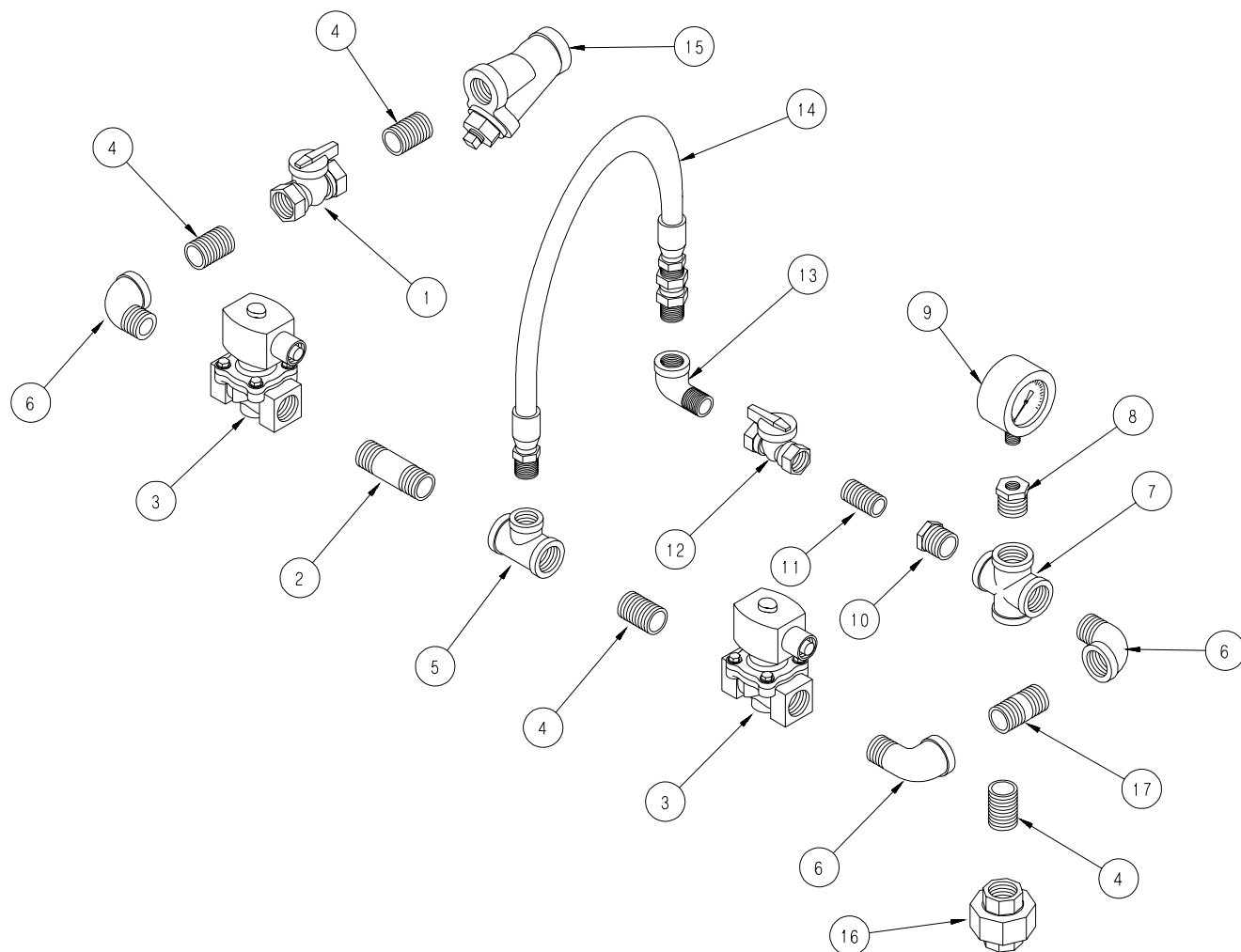
1	TFC-0023	1/2" 0-30 PSI Regulator (Deluxe, Sr 2000)
2	HH-3670	1/2" x 2 1/2" Nipple
3	TFC-0032	1/2" Solenoid (Deluxe, Sr. 2000)
4	HH-2029	1/2" x 1 1/2" Nipple
5	S-3853	1/2" x 1/4" x 1/2" Tee
6	HH-2984	30 PSI gauge
7	HH-2653	Modulating Valve
8	HH-1251	1/2" Strainer
9	HH-2028	1/2" Female Union

Dw Natural Gas Vapor Pipetrain Parts

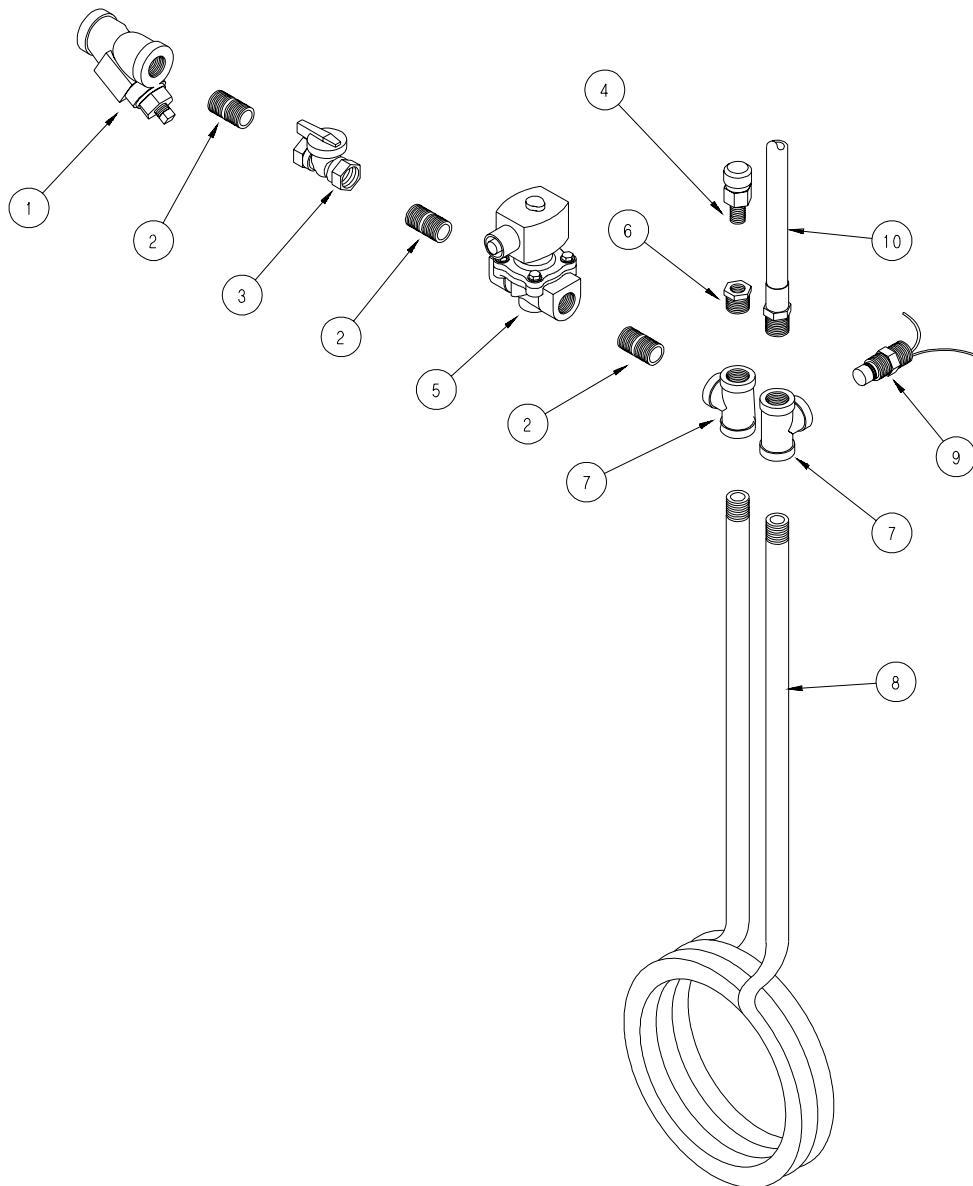
1	TFC-0051	3/4" Ball Valve
2	THH-4136	3/4" x 3" Nipple
3	TFC-0081	3/4" Solenoid (Deluxe, Sr 2000)
4	THH-4121	3/4" Close Nipple
5	THH-4158	3/4" x 1/4" x 3/4" Tee
6	D08-0022	15 PSI Gauge
7	D67-0008	3/4" Strainer
8	HF-7230	3/4" Female Union
9	HH-7064	3/4" Modulating Valve (Optional)

Dw Propane Vapor Hi-lo Pipetrain Parts

1	TFC-0023	1/2" 0-30 PSI Regulator (Deluxe, Sr 2000)
2	HH-3670	1/2" x 2 1/2" Nipple
3	TFC-0032	1/2" Solenoid (Deluxe, Sr 2000)
4	HH-2029	1/2" x 1 1/2" Nipple
5	HH-1453	1/2" x 1/2" x 1/2" Tee
6	THH-4067	1/2" Street Elbow
7	THH-4127	1/2" Cross
8	THH-4032	1/2" x 1/4" Reducer Bushing
9	HH-2984	30 PSI gauge
10	TFC-0030	1/2" Ball Valve
11	HH-7019	1/2" Gas Hose
12	HH-1251	1/2" Strainer
13	HH-2028	1/2" Female Union

Dw Natural Gas Hi-lo Pipetrain Parts

1	TFC-0051	3/4" Ball Valve
2	THH-4136	3/4" x 3" Nipple
3	TFC-0081	3/4" Solenoid (Deluxe, Sr 2000)
4	THH-4121	3/4" Close Nipple
5	THH-4174	3/4" x 3/4" x 1/2" Tee
6	THH-4066	3/4" Street Elbow
7	THH-4068	3/4" Cross
8	THH-4042	3/4" x 1/4" Reducer Bushing
9	D08-0022	15 PSI Gauge
10	D07-0028	3/4" x 1/2" Reducer Bushing
11	HH-2029	1/2" x 1 1/2" Nipple
12	TFC-0030	1/2" Ball Valve
13	THH-4067	1/2" Street Elbow
14	HH-7019	1/2" Gas Hose
15	D67-0008	3/4" Strainer
16	HF-7230	3/4" Female Union
17	THH-4125	3/4" x 2" Nipple

Dw Lp Pipetrain Parts

1	HH-1251	1/2" Strainer
2	D07-0019	1/2" x 1 1/2" Nipple Sh. 80
3	TFC-0030	1/2" Ball Valve
4	HH-4845	1/4" Relief Valve
5	TFC-0092	1/2" Solenoid Valve 300 PSI
6	THH-4023	1/2" x 1/4" Reducer Bushing
7	THH-4058	1/2" x 1/2" x 1/2" Tee Sh. 80
8	CD-0197	Vaporizer Coil
9	HH-7013	200 Degree Vapor High Limit
10	D07-0009	5/16" x 24" LP Gas Hose

Revised 2/4/98

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THE GSI GROUP



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

April 1998