

PT Model Operation and Maintenance Manual

PT56, PT125, PT200 Gas Booster Heaters



Factory Authorized Start Up Required

Installer must call 800-647-3165 to initiate factory authorized startup. Failure to contact factory may result in the cancellation of the warranty.

Warning: If the information in this service pack is not followed exactly, a fire or explosion may result causing property damage, personal injury, or death.

Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

IF YOU SMELL GAS:

- Do not try to light any appliance.
- Do not turn any electrical switch on or off
- Do not use the phone in your building
- Immediately call your gas supplier from a neighbor's phone
- If you cannot reach your gas supplier, contact the fire department.

Installation and service must be performed by a qualified installer, service agency or gas supplier.

Should overheating occur or the gas supply fails to shut off, turn off the manual gas control valve at the appliance.

Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control that has been under water.

Hubbell PT Series Gas Booster Operation and Maintenance Manual

Table of Contents

PT56 Installation.....	3
PT56 Service and Troubleshooting Guide.....	11
PT56 Electrical and Plumbing Schematics.	20
PT56 Service Bulletins.	24
PT125/200 Installation.....	44
PT125/200 Service and Troubleshooting Guide.....	51
PT125/200 Electrical and Plumbing Schematic.	60
PT125/200 Service Bulletins.	64
Parts List.	84
Warranty.....	86

PT56 Installation



PT56 GAS BOOSTER WATER HEATER INSTALLATION

Warning: If the information in these instructions is not followed exactly, a fire or explosion may result causing property damage, personal injury or death.

Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

WHAT TO DO IF YOU SMELL GAS

- * **Do not try to light any appliance**
- * **Do not touch any electrical switch; do not use any phone in your building.**
- * **Immediately call you gas supplier from your neighbor's phone. Follow the gas supplier's instructions.**
- * **If you can not reach your gas supplier, call the fire department.**

- * **Installation and service must be performed by a qualified installer, service agency or the gassupplier.**

- * **Should overheating occur or the gas supply fail to shut off, turn off the manual gas control valve to the appliance.**

- * **Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control that has been under water.**



**ANSI Z21.10.3
CAN 1-4.3-M85
NSF 5 – 1992**

HUBBELL PT56 GAS BOOSTER WATER HEATER INSTALLATION GUIDE

NOTE: Dry firing the PT56 will damage the Pump and Heat Exchanger. This will VOID the Warranty.

The Hubbell Model PT56 is a ventless gas booster heater. Please remember that incoming water temperature and water pressure are important for proper operation and should be monitored. The preferred method of installation is wall mounting using the PT56 wall mounting bracket. Wall mounting will alleviate most kitchen abuse and extend the life of the booster. Contact your Hubbell representative for wall mounting information.

GENERAL INSTRUCTIONS

The Hubbell Gas Booster Water Heater operates on 115VAC line voltage. All internal electrical connections have been made at the factory. For units supplied with three pronged 115 VAC plug, no other wiring is required. Plug into GFI circuit rated at 15 amps. For other units supply wire size, fuse, breaker and conduit recommendations are listed later. This appliance is designed for indoor installation only.

1. Locating Installation

The Hubbell Gas Booster Water Heater is designed to provide 180°F sanitizing rinse water for commercial dishmachines. Health codes, NFS Standard #5 and local plumbing codes require that the rinse water be 180°F at the rinse nozzle. For this reason, the Hubbell gas booster heater should be installed as close as possible to the dishwasher, preferably within 5 feet. If the distance is between 5 and 10 feet, use 1/2" pipe and extra insulation on the outlet. PT boosters are not recommended to be installed more than 10 feet from the dishwasher.

IMPORTANT - The booster heater must be installed in a horizontal position (base parallel to the floor, level by adjusting legs) with the inlet connection at the lowest point.

The Hubbell Gas Booster Heater must be installed in a well ventilated area in conformance with local codes or in the absence of local codes, the National Fuel Gas Code, ANSI Z 223.1. Proper clearances should be observed. Always maintain at least 6 inches of space behind the unit, 10 inches on either side and 10 inches above the unit when installing. Sufficient clearance should be allowed in front of the unit to remove the front cover for servicing. The unit should be mounted so that the air vents on the bottom and top of the unit will never be blocked. Never remove the six inch legs from the bottom of the unit when making a floor installation. All combustion air enters through the bottom. Provisions for adequate combustion and ventilation air should be made following the provisions of the National Fuel Gas Code, ANSI Z 223.1. Part 7. The unit should not be mounted where flue gasses can accumulate such as close to underside of a sink or overhang. Concentration of flue gasses can have a corrosive effect on those surfaces.

When installing the appliance on a carpeted floor, the appliance should be installed on a metal or wood panel extending beyond the full width and depth of the appliance by at least 3 inches (76.2 mm) in any direction.

This appliance must not be mounted in a closet. NEVER mount in a small, unventilated area. Never use the top of this unit as a shelf. The heater should be installed in an area where leakage of the tank or connections will not result in damage to the adjacent area or to lower floors of the structure. When such locations can not be avoided, it is recommended that a suitable drain pan, adequately drained, be installed under the appliance. The pan must not restrict combustion air flow. Never install heater directly over a floor drain or floor sink where steam from drain can be ingested into the booster heater air intake.

The gas used with this unit must be the type specified on the specification plate on this unit. Never use any other than the specified gas.

2. Access

To remove front panel, raise panel until bottom releases, tilt bottom out and remove.

3. Electrical Connection Instructions

CAUTION: DO NOT TURN ON THE POWER SWITCH. The servicing technician performing the Startup will make the booster operational. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN DAMAGE TO THE BOOSTER HEATER WHICH WILL VOID THE BOOSTER WARRANTY.

The Hubbell Gas Booster Heater operates on 115 VAC, 15 amp, single phase current. All internal electrical connections have been made at the factory. Follow local codes when installing, specifying wire size breaker and conduit or in the absence of local codes observe the National Electrical Code, ANSI/NFPA 70.

Power should be on its own 115 VAC 15 amp single phase GFI circuit. Local electrical codes should be observed. A three prong plug is supplied on unit. Plug into a 115 VAC 15 amp GFI circuit. Be sure to route wire in a way that it is protected from damage.

NOTE: Dry firing the PT56 will damage the Pump and Heat Exchanger. This will VOID the Warranty.

4. Plumbing

General instructions

The Hubbell Gas Booster Heater is designed to boost the rinse temperature in a commercial dishwasher from the available hot water, in the range of 110°- 140°F, up to a 180°F sanitizing rinse. Health codes, NSF Standard #5 and local plumbing codes require that rinse water be 180°F. at the rinse nozzle.

For protection against excessive pressure and/or temperature, the temperature and pressure relief valve equipment supplied by Hubbell must be installed.

For proper performance of the dishwasher and booster heater, install a pressure reducing valve ahead of the booster heater with a maximum pressure setting of 25 PSI.

IMPORTANT. If there is a functional pressure reducing valve already installed on the warewasher, please make sure it's installed before the inlet to the PT booster. Having two PRV's installed will cause variations in pressure and malfunctions in the water system.

Installation

1. The booster heater should be installed as close as possible to the dishwasher, preferably within 5 feet. If the distance is between 5 and 10 feet, use 1/2" pipe with extra insulation on the outlet. PT boosters are not recommended to be installed more than 10 feet from the dishmachine.

IMPORTANT - The booster heater must be installed in a horizontal position (base parallel to the floor, level by adjusting legs) with the inlet connection at the lowest point.

2. The inlet water to the booster heater must come from a regular water heater. **DO NOT RUN A COLD WATER LINE TO THE BOOSTER HEATER.**

3. A shut-off valve (a full open gate or ball type) should be installed in the inlet water line, together with a pressure reducing valve (when the supply pressure is over 25 psi). A union fitting and a drain valve should be installed for easy servicing.

4. Hubbell recommends the installation of a shock absorber on the inlet of the booster heater to eliminate water hammer caused by the quick closing of the solenoid valve of the dishwasher.

5. Hubbell requires the installation of a temperature and pressure gauge in both the inlet and outlet lines to the booster heater. These two gauges will help eliminate unnecessary customer service calls.

6. Proper operation of the rinse nozzles in the dishwasher requires the water pressure available at the nozzle is between 15 and 25 psi when the nozzles are spraying. If the water pressure is over 25 psi, a pressure reducing valve is required. It should be mounted in the hot water supply to the booster heater. It is important that the water flow through the valve in the proper direction.

Check the directional arrows. The pressure reducing valve must have a high pressure by-pass to avoid nuisance opening of the pressure relief valve when the unit is heating.

IMPORTANT. If there is a functional pressure reducing valve already installed on the warewasher, please make sure it's installed before the inlet to the PT booster. Having two PRV's installed will cause variations in pressure and malfunctions in the water system.

5. Relief Valve

The supplied pressure and temperature relief valve with extension thermostat must be installed so that the temperature sensing element is immersed in the water within the top 6" of the tank. It must be installed directly in either of the marked tank tappings/pipe plug.

American National Standard Z-21.22 and U.L. Standard 1453 require that a temperature / pressure relief valve with extension thermostat must be installed so that the temperature sensing element is immersed in the water within the top 6" of the tank. It must be installed directly in either of the marked tank tappings/pipe plug.

To avoid damage or scalding due to valve operation, a drain pipe must be connected to the valve outlet and run to a safe place of disposal. The drain pipe must be as short as possible and the same size as the valve discharge connection throughout its entire length. The drain pipe must be pitched downward from the valve and terminate at least 6" above a floor drain to make any discharge clearly visible. The drain line shall terminate plain, not threaded made of a material for temperatures up to 250°F. The valve lever must be tripped periodically to insure that waterways are clear.

This device is designed for emergency safety relief and should not be used as an operating control.

6. Plumbing Connections

When connecting the booster heater to the dishwasher, use 3/4" piping to supply the sanitizing rinse water to the dishwasher. Be certain that the connection is made to the final sanitizing rinse of the dishwasher and NOT THE WASH TANK OF THE DISHWASHER

Check carefully for proper plumbing installation. Observe the following cautions:

- A. Do not back up or loosen any pipe fittings, as a leak will develop.
- B. Do not connect the heater directly to a boiler or furnace coil or any other uncontrolled temperature source.

10. Fill booster with water to test for installation leaks. Leave the water in booster to prevent pump damage in the event the electrician should apply power.

7. Gas Line Installation

It is very important that the type and inlet pressure of the gas used corresponds to the specification plate on the booster heater case. This unit is equipped with a 1/2" female pipe fitting on natural gas unit and 3/8" female pipe fitting on propane units. The fitting is accessed through the bottom of the base.

Gas line should be of the approved type for use with Natural Gas or Propane. A gas line of at least 3/8" NPT or equivalent ID. A manual gas shut-off valve must be installed in the gas line, located within an accessible area of the booster heater. The gas line should be kept as short as possible and installed in a way to protect it from damage.

When making pipe connections use an approved pipe dope, taking care not to use excessive amounts as to foul the gas valve. When tightening gas line always support the gas valve to avoid damage to the gas train.

* In a propane installation gas must be supplied from a regulated source and pressure to the booster heater must not exceed 15 water column inches (wci). In a natural gas installation pressure must be minimum 7wci. maximum 10.5 wci.

When making the connection to the booster unit, take care to start the gas line fitting by hand and tighten by hand to avoid cross-threading. Then tighten with a wrench, taking care not to damage any internal components of the unit.

After making the final connection of gas, with power to the unit turned off, check all gas line fittings for leaks, using a liquid test solution. NEVER use a flame to test for leaks. Observe all local codes regarding gas line installation and specifications.

NOTE: The appliance and its individual shutoff valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 psig (3.5 kPa).

8. Factory Authorized Startup (Required).

Once installation is completed, start-up and testing must be done in accordance with the Factory Authorized Start-Up Procedure by a qualified Service Technician.

The service technician must call 1-800-647-3165 to initiate factory authorized startup. Failure to contact the factory can result in cancellation of the warranty.

NOTE: Dry firing the PT56 will damage the Pump and Heat Exchanger. This will VOID the warranty.

Maintenance

Be sure the area around heater is clear of debris and flammable materials. Do not use as a storage shelf and do not block air intakes or vents.

At least once a month check and clean air inlet holes on bottom of unit and vent on top of unit.

If water outlet temperature is too high or low, contact Hubbell or your authorized service representative.

The front cover should be removed at least twice a year and a visual inspection of all the components should be performed. There should be no evidence of chafing or heat damage to any wiring or components. There should be no sign of water leakage around any of the plumbing fittings or heat exchanger.

Visually observe the burner flame. It should be steady and blue in color. If any problems are apparent, do not use the heater and contact your Hubbell service representative at once.

The relief valve should be manually operated at least once a year to assure proper operation.

CAUTION: Before performing this operation, care should be taken that any of the discharged water does not come into contact with the operator or the surrounding surfaces. It is extremely hot and can cause severe scalding and damage to property. If relief valve discharges periodically, do not plug it. If replacing the valve does not stop the discharge, contact the local water supplier.

PT56 Service and Troubleshooting Guide



IMPORTANT! Verify which software version you have before completing any service! You can verify this by looking at the software version label on the green electronic board inside the electronic drawer. When using this service manual, ensure you are using the correct software version. Check the software version label on the microprocessor with the list below:

PT56 Software versions: 9098-A, 9098-B, 9098-C, 9098-D, 9098-E, 9098-F, 9098-G, 9098-H, 9098-I, 9098-J, 9098-K, 9098-L, 9098-M, 9098-N, 9098-O

Type:	Gas fired, pilotless, instantaneous booster heater with accumulator for use with door type dishwashers. Unit is direct vent and can be floor or wall mounted.
Capacity:	Input: 55,000 BTUs / hour Output: 44,000 = 12.9 KW Efficiency: 80%
Fuel:	Ng 7" WC-10.5"WC Pro 11"WC-14"WC
Operating Pressure:	125 PSI . Relief valve set at 150 PSI, 210°F
Power:	115VAC, 1 amp, 15 amp breaker. Pump powered by 115 VAC, 1.3 amps, heater ignition and controls powered by 12 VDC, 1.5 amps from internal power supply. 3 amp internal breaker.
Ignition:	Pilotless, electronic
Temperature Control:	Patented Variflame technology. Factory set at 190°max.
Safety systems:	Pilotless. Instant flame proofing by rectification. High temperature limit controlled - mid-line thermistor. Energy cut-off temperature lockout - bi-metal switch independent of microprocessor. Temperature and pressure relief valve. Redundant gas solenoid with integral regulator. Modulating gas valve shuts with pressure surge.
Fluing:	Direct (ventless)- combustion air enters bottom flue gasses exit sides of top of unit.
Location	Floor or wall mounted
Pump:	Recirculating.
Connections:	Natural Gas - 1/2" NPT, Propane - 3/8" NPT Water - 3/4" NPT, Electric - 110 VAC cord or direct wire
Dimensions:	26" wide, 18" deep, 17" high with legs.
Weight:	96.4 pounds, dry.

Due to continuous product improvement and review, Hubbell reserves the right to change specifications at any time.

IMPORTANT NOTICE TO REPAIR TECHNICIAN

Repair Technician must call Hubbell **PRIOR** to starting **WARRANTY** repairs to obtain a **warranty authorization number**. Please call the factory at **800-647-3165**

No reimbursements will be made without an authorization number.

NO additional time reimbursements will be made without prior authorization. All warranty parts must be returned within 30 days of completing repair. All warranty invoices must be accompanied by a copy of the technician worksheet detailing the customer complaint, correction and product serial number. **NO Facility** issues are covered by Hubbell's warranty.

CALL BEFORE SERVICING

**M-F 9am-5:00pm EST
(203) 378-2659
(800) 647-3165**

PT56 Gas Booster Heater Sequence of Operation

Rev 3/2020

The PT56 is an unvented gas booster heater designed to supply 180° final rinse water to a single rack door warewasher. The sequence of operation is as follows:

- Power is on, the **power switch glows** and the **green LED** flashes. The **re-circulating pump** draws cooler water from the bottom of the **stainless tank** and pumps it through the **copper heat exchanger**.
- The water from the **copper heat exchanger** returns to the **stainless tank** via the **tee fitting** in the top of the **stainless tank**.

Note: The next 5 steps take place in 3-5 seconds.

- If the **T-Mid thermistor** senses the water temperature is below set temperature, it sends a signal to the **green control board**.
- The **green control board**, which is powered by the **12 VDC converter**, sends 12 VDC through the black wire to the **spark ignition module**.
- The **Ignition module** simultaneously effects a spark through the **heavy yellow wire** to the **spark ignition probe** over the **burner** and sends 12 VDC to the **combination gas valve** via the blue and white wire. (Up to three ignition attempts lasting up to 5.5 seconds max each).
- Ignition of the burner's center element is effected and the flame is proofed and monitored through the same **yellow wire** to the **ignition module**.
- The **green control board** sends 12 VDC via the back & white wire to the **modulating gas valve** for one second to effect flame cross-over.
- The micro-processor on the **green control board** monitors water temperature **T-** with the **Mid thermistor** twice / second and varies voltage 0 to 12 VDC **gas** to the **modulating valve** in order to maintain constant temperature output.
- As the water in the **stainless tank** approaches set temperature, the gas flow is cut back by the **modulating gas valve** by reducing the DC voltage to the valve down to 0 volts. This is by-pass (low) gas flow.
- **Burner** remains lit until set temperature of the circulating water is reached. This is sensed by the **T-Mid thermistor** and the burner is shut off. Note: If the flame is extinguished for any reason, the **combination gas valve** will shut off is less than 1 second and re-ignition will be attempted.
- When the rinse solenoid of the warewasher opens, rinse water flows from the **tee fitting** in the top of the **stainless tank** through the fitting on the bottom of the heater to the warewasher. Cooler make-up water enters through the bottom tank fitting.
- Burner will cycle on and off as the warewasher draws hot rinse water from the **stainless tank**.

Preventive Maintenance for PT56 Booster

- 1) **Inspect and clean all cabinet louvers and interior of cabinet of dust and debris.****
- 2) **Remove blower hood, clean all dust and debris from baffles. Inspect top of heat exchanger for carbon build up. Clean debris from blower squirrel cage ******
- 3) **Inspect for burnt or brittle wiring and any heat damage to interior components. Inspect for any water damage or corrosion to electrical components and connections.*****
- 4) **Check overall operation, making sure final rinse temperature of 180 degrees reached. Incoming water temperature should be 110-140 degrees.**
- 5) **Inspect for clean combustion, viewed through sight glass; blue flame not yellow.*****
- 6) **Inspect exterior of copper heat exchanger for dark discoloration, solder melted from front support tube and silver ash on floor of cabinet. Call Hubbell if any of these symptoms are observed.*****
- 7) **Inspect for internal water leaks.****
- 8) **Inspect overall conditions surrounding booster for excessive water abuse, cleanliness and items stacked around booster restricting air flow.****
- 9) **Check expansion tank pressure. Pressure should be maintained at approximately 40-80 psi depending on water pressure.*****
- 10) **Inspect and or clean all water filters, chemical disbursing equipment, etc. to avoid restricting water flow to dish machine. ****
- 11) **Perform dish machine maintenance, clean strainer screen, rinse nozzles and inspect rinse arm gaskets if applicable. *** = Weekly ** = Monthly *** = Quarterly ***** = Annual**

PT56 Service Codes

The following service codes are shown by the red and green flashing LED located on the front of the electronics drawer behind the front access door. These codes indicate the type of malfunction.

Alternating green and red flash

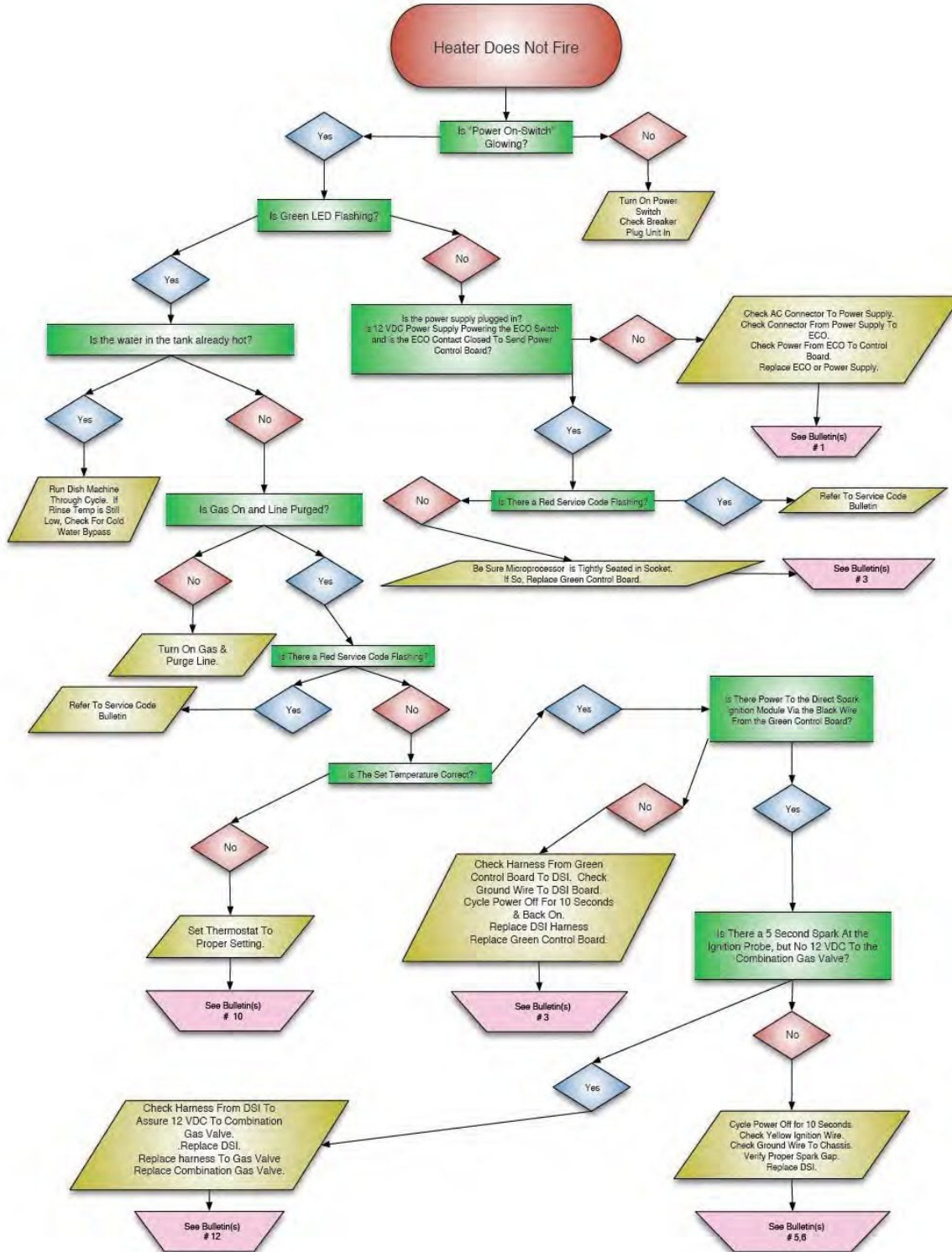
Lost auto calibration or no auto calibration displays. See **SB-7-RC (pg. 32)**

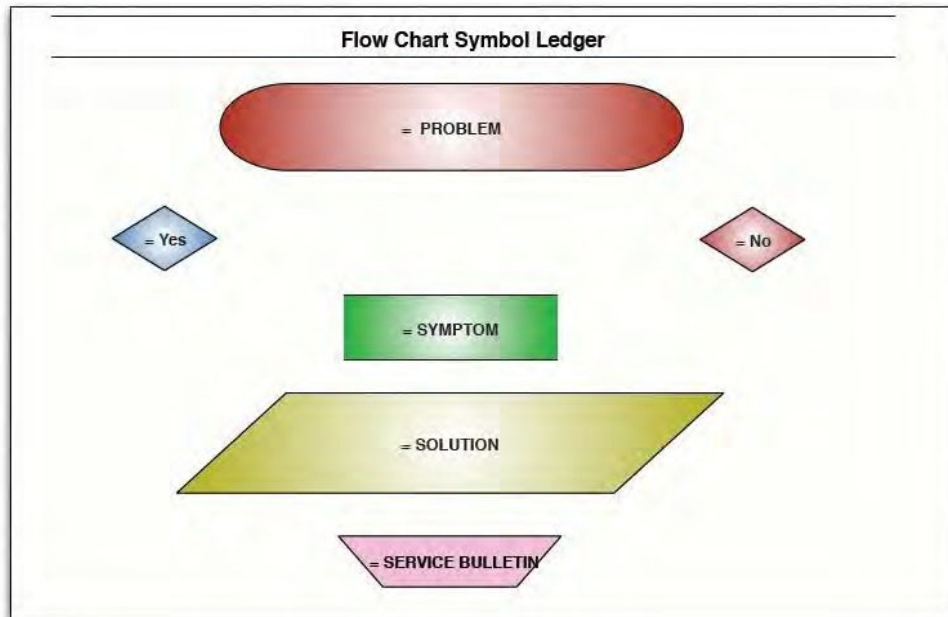
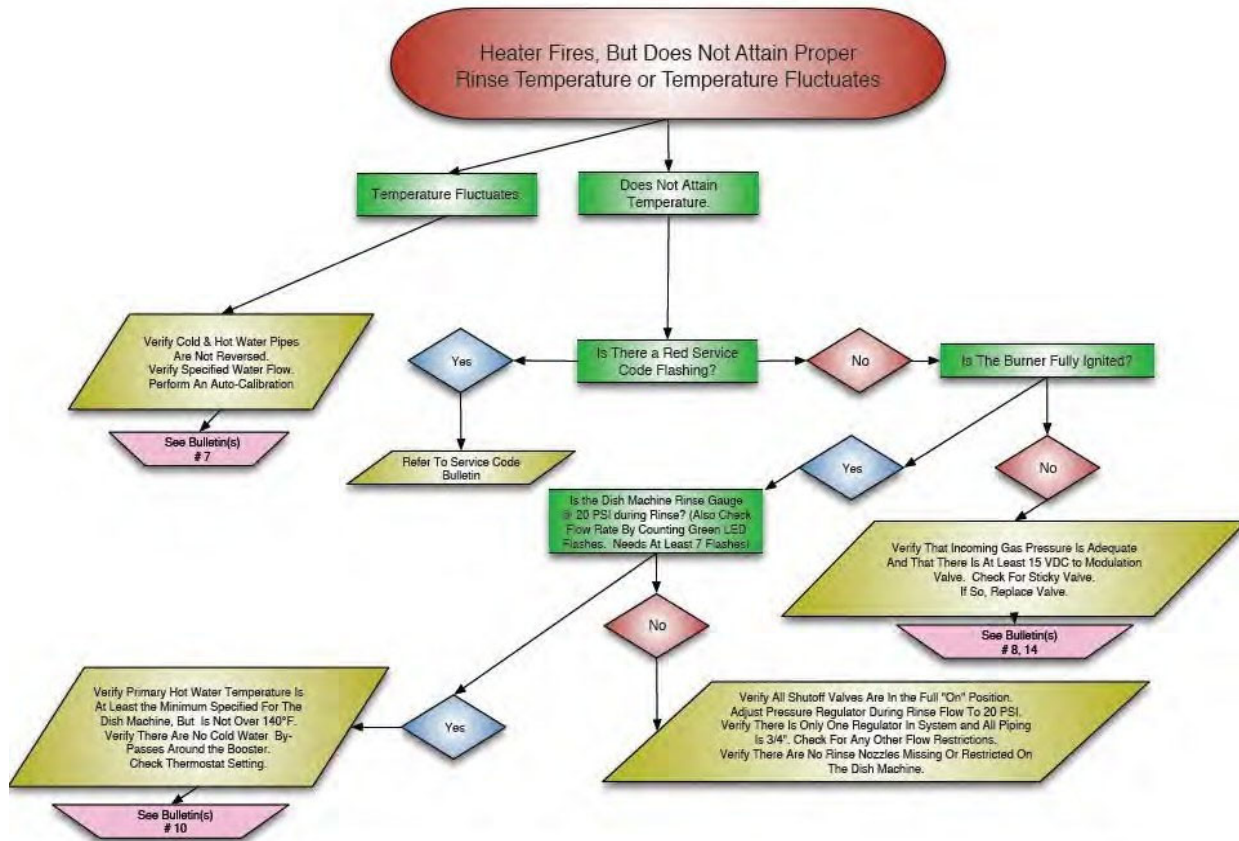
Steady red and flashing green LED

T-Mid or T-Out Thermistor failure. See **SB-15 and SB-17 (pg. 37 & pg. 39)**

Red and green LEDs flashing together

Lock out after 10 ignition attempts. Turn booster power switch off, wait 15 seconds and turn back on.





Service Time Replacement Guide for PT56

Part Number	Component Description	Diagnostic Time	Replace	Test
3646	Ignition Probe	0.3	0.2	0.1
1024	Modulating Valve	0.50	0.5	0.2
1119	3 Amp Circuit Breaker	0.20	0.2	—
1436	T-In Assy	0.20	0.2	0.1
1854	T-Mid Assy	0.2	0.2	0.1
1437	T-Out Assy	0.2	0.2	0.1
1570	Solenoid Valve (Maxitrol)	0.50	0.5	0.1
1496	Wire Harness 12v DC to Board	0.20	0.2	—
1897	12v DC Power Supply	0.2	0.3	—
1613	24v DC Power Supply	0.30	0.3	—
1615	Relay 12v DC Control	0.30	0.2	—
2937	Pressure Switch	0.30	0.2	0.2
1634	Pressure Reducing Valve	—	Parts Only	—
1749	ECO	0.2	0.2	0.1
1473	Temperature & Pressure Relief Valve	—	Parts Only	—
1765	Ignition Wiring Harness	0.3	0.3	0.1
1496	Power Wire Harness /Cont Bd.	0.20	0.2	—
3616	Blower Assy	0.30	0.5	—
1896	Dual Temp Dig. Display	0.20	0.3	—
1933	Heat Exchanger w/ass't parts	—	—	—
2004	Switch on/off	0.20	0.1	—
2066	T-In Assy, temp display	0.2	0.2	—
2067	T-Out Assy, temp display	0.2	0.2	—
3226	Flowmeter Assy	0.30	0.3	—
3158	DSI Board	0.3	0.2	0.1
2416	Flow Meter Gaskets	0.20	0.3	—
1836	Control Bd. & Microprocessor	0.50	0.2	—
1465	3 Gallon Stainless Steel Tank	0.20	2.3	0.50
1489-AF	PT56 Grundfos Pump	0.20	0.7	0.10
ACAL	Automatic Calibration	—	0.5	—

PT56

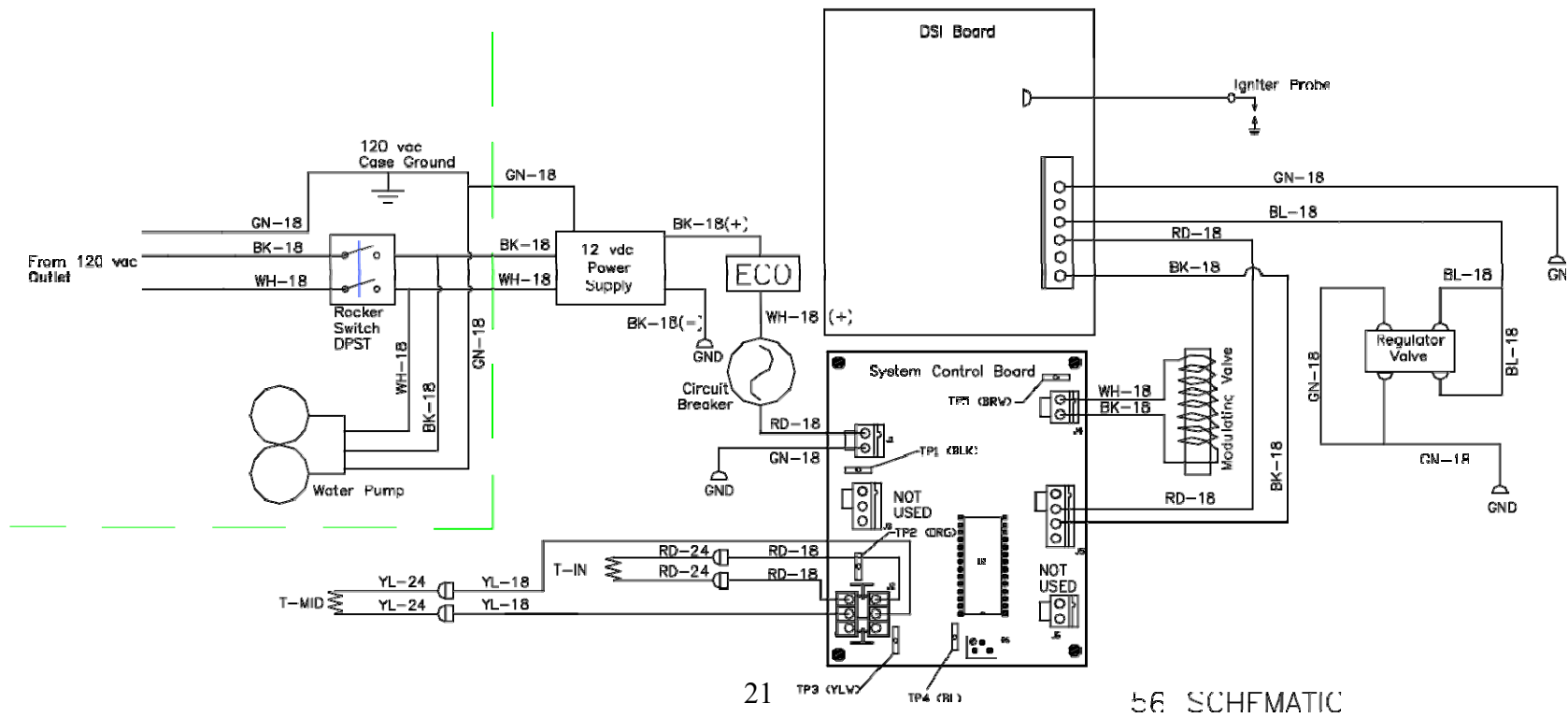
Electrical and Plumbing

Schematics

120 VAC

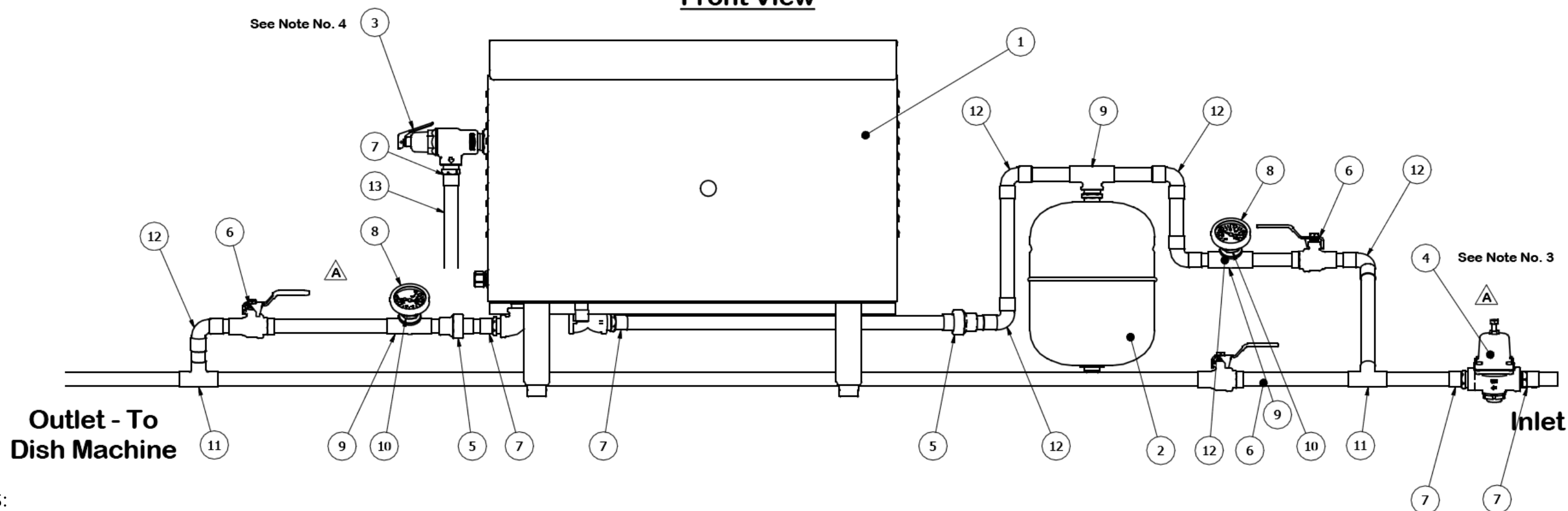
12 VDC

PT56 Wiring Diagram



PT56 Plumbing Connection

Front View



NOTES:

1. SEE SHEET NO. 1 OF THIS DRAWING FOR GAS SUPPLY CONNECTION. THOSE CONNECTIONS ARE NOT SHOWN ON THIS VIEW.
2. THE DIAGRAM ABOVE SHOWS THE CORRECT POSITION OF ACCESSORY COMPONENTS IN THE PLUMBING LAYOUT. HOWEVER, THE DIAGRAM SHOWN SHOULD BE USED AS A REFERENCE AND MAY VARY DUE TO SITE LOCATION AND REQUIREMENTS.
3. THE PRESSURE REDUCING VALVE MAY NOT BE REQUIRED. REFER TO THE INSTALLATION MANUAL FOR MORE DETAILS.
4. THE TEMPERATURE AND PRESSURE RELIEF VALVE MAY BE MOUNTED ON THE REAR SIDE OF THE BOOSTER HEATER. REFER TO THE INSTALLATION MANUAL FOR MORE DETAILS.
5. ITEMS IN PARTS LIST ARE NOT INCLUDED UNLESS OTHERWISE SPECIFIED
6. ADDITIONAL COPPER CONNECTORS (ELBOWS AND TEES) MAY BE REQUIRED DEPENDING ON THE COMPONENT LOCATIONS AND COPPER TUBE ROUTING AS REQUIRED BY THE INDIVIDUAL APPLICATION.

** CONSULT LOCAL CODES **

PARTS LIST			
ITEM	QTY	DESCRIPTION	SUPPLIED WITH UNIT
1	1	PT-56 BOOSTER HEATER	
2	1	THERMAL EXPANSION TANK	X
3	1	TEMP AND PRESSURE RELIEF VALVE	X
4	1	PRESSURE REDUCING VALVE, 3/4" NPT	X
5	2	UNION, 3/4" C-C	
6	3	BALL VALVE, 3/4" C-C	
7	5	3/4" F C X 3/4" M NPT ADAPTER, COPPER	
8	2	TEMPREATURE GAUGE, 32 DEG F - 250 DEG F	X
9	3	3/4" TEE C-C F NPT	
10	2	REDUCER, 3/4" F NPT - 1/2" F NPT, BRASS	
11	2	TEE, COPPER, 3/4" F C-C-C	
12	6	ELBOW, 3/4" COPPER SWEAT	
13	TO SUIT	PIPE, COPPER, 3/4" ID X 6.0" LONG	

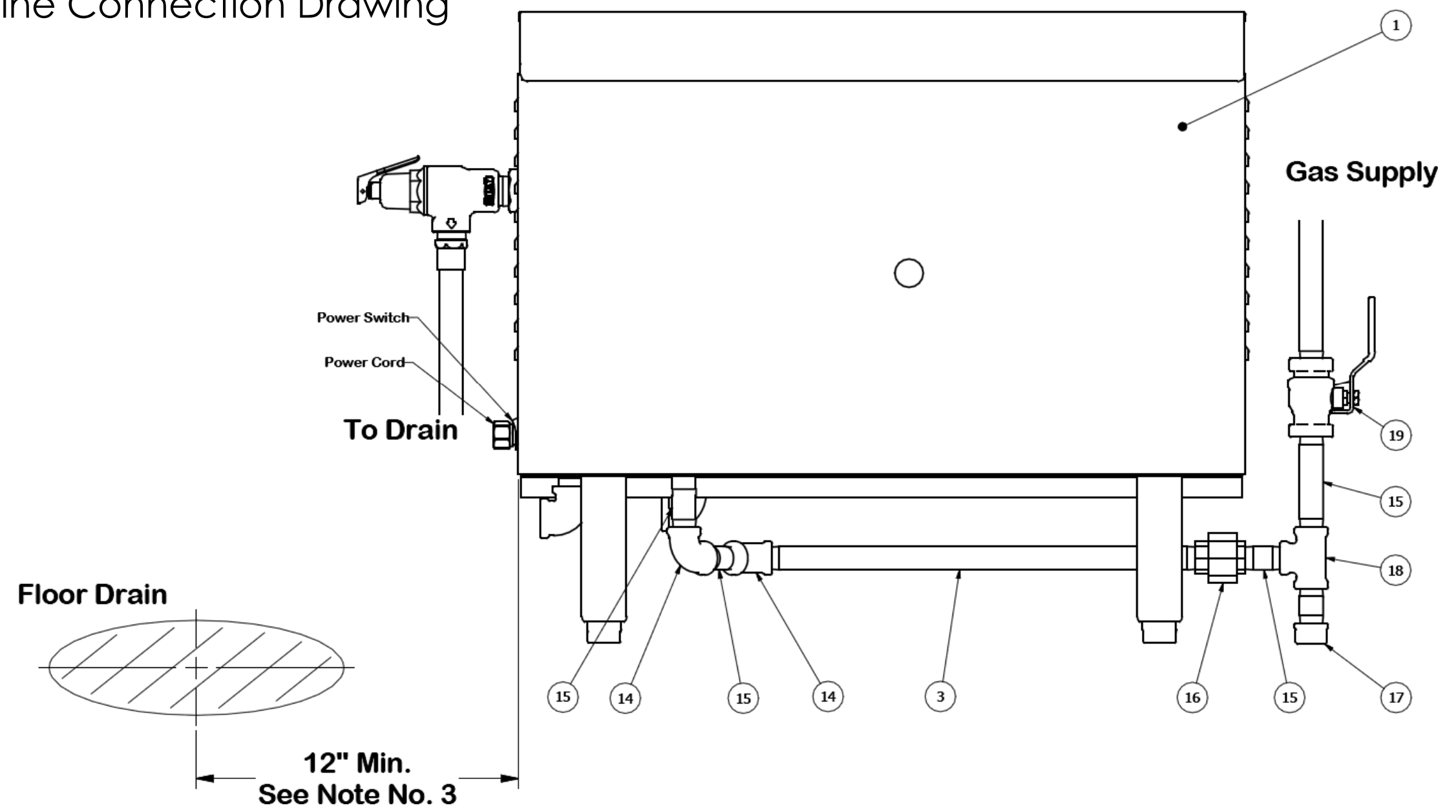
ZONE	REV.	DESCRIPTION	DATE APPROVED
REVISIONS			
DATE	NAME	Stratford, CT 06615 (203) 378-2659 The Electric Heater Company	
1/20/17	DRM		
CHECKED			
ENG APPR.			
MFG APPR.		Customer:	
		Description:	INSTALLATION DRAWING PT-56 BOOSTER HEATER PLUMBING CONNECTION
SIZE	DWG. NO.	REV	
B	DS0012	--	
SCALE: 1:1	FSCM: 19857	SHEET 2 OF 2	

PROPRIETARY AND CONFIDENTIAL
 THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF THE ELECTRIC HEATER COMPANY. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF THE ELECTRIC HEATER COMPANY IS PROHIBITED.

DIMENSIONS ARE IN INCHES
 TOLERANCES:
 (UNLESS OTHERWISE SPECIFIED)
 FRACTIONAL ±1/4
 ANGULAR: MACH ±1/2° BEND ±1°
 TWO PLACE DECIMAL ±0.01
 THREE PLACE DECIMAL ±0.005

PT56 Gas Line Connection Drawing

Front View




NOTE:

1. **SEE SHEET 2 FOR A DETAILED LIST AND DIAGRAM OF PARTS SUPPLIED WITH THE INSTALLATION KIT. ITEMS IN PART LIST ARE NOT INCLUDED UNLESS OTHERWISE SPECIFIED.**
2. **GAS LINE CONNECTION:** THE PARTS SHOWN (ITEMS #14 - #19) ABOVE ARE RECOMENDED FOR PROPER CONNECTION TO THE GAS SUPPLY. THESE PARTS WILL NEED TO BE SUPPLIED BY OTHERS
3. **FLOOR DRAIN** MUST NOT BE LOCATED AS TO ALLOW STEAM FROM THE DRAIN TO ENTER THE BOTTOM OF THE BOOSTER HEATER. A MINIMUM OF 12 INCHES FROM ALL FOUR SIDES IS RECOMMENDED TO INSURE PROPER OPERATION.

**** CONSULT LOCAL CODES****

PARTS LIST		
ITEM	QTY	DESCRIPTION
1	1	PT-56 BOOSTER HEATER
14	2	ELBOW 45 DEG, 1/2" NPT
15	6	NIPPLE, 1/2" NPT
16	1	UNION, 1/2" NPT
17	1	DRIP LEG, 1/2" NPT NIPPLE (4" LONG MIN.) W/ CAP
18	1	TEE, 1/2" NPT F-F-F
19	1	MANUAL GAS SHUT-OFF

ZONE	REV.	DESCRIPTION	DATE	APPROVED
REVISIONS				

DRAWN	DATE	NAME	 Stratford, CT 06615 (203) 378-2659 The Electric Heater Company
CHECKED	1/20/17	DRM	
ENG APPR.			
MFG APPR.			
Customer:			Description: INSTALLATION DRAWING PT-56 BOOSTER HEATER GAS LINE CONNECTION
SIZE	DWG. NO.	REV	
B	DS0012	--	
SCALE: 1:1	FSCM: 19857	SHEET 1 OF 2	

PROPRIETARY AND CONFIDENTIAL
 THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF THE ELECTRIC HEATER COMPANY. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF THE ELECTRIC HEATER COMPANY IS PROHIBITED.

DIMENSIONS ARE IN INCHES
 TOLERANCES:
 (UNLESS OTHERWISE SPECIFIED)
 FRACTIONAL ±1/4
 ANGULAR: MACH ±1/2° BEND ±1°
 TWO PLACE DECIMAL ±0.01
 THREE PLACE DECIMAL ±0.005

PT56 SERVICE BULLETINS

Table of Contents

	<u>Page</u>
SB-1 12 Volt Power Supply Change Procedure	25
SB-3 Circuit Board Replacement.....	26
SB-3 Circuit Board Replacement Software Reference	27
SB-5 Igniter Change Procedure & Spark Gap Adjustment.....	30
SB-6 Direct Spark Ignition (DSI) Board Change	31
SB-7 RC Auto-Calibration Procedure.....	32
SB-8 Modulating Valve Replacement	33
SB-10 Changing Outlet Temperature Setting	34
SB-12 Combination Gas Valve Replacement.....	35
SB-14 Burner Manifold Pressure Check & Adjustment.....	36
SB-15 T-Mid Thermistor Change Procedure.....	37
SB-16 T-Out/T-In Thermistor Change Procedure	38
SB-17 Thermistor Reading Procedure	39
SB-18 PT56 Tank Assembly Change Procedure	41
SB-19 PT56 Pump Change Procedure	42
SB-20 Testing the PT56.....	43

SB-1 12 Volt Power Supply Change Procedure

Model: PT56, PT125, PT200

Software version: All

Tools Required: Phillips screwdriver

Process:

1. Turn booster heater power switch off, unplug the unit from the 110v AC wall outlet and remove front cover.
2. Ensure that the power supply you are replacing is for 12 Volts and not 24 Volts. If you attempt to install the incorrect power supply, it will damage the unit and void any warranty.
3. Remove the 4 screws holding the power supply bracket and remove the power supply.
4. On the new power supply find the wire that has the white printing (+). Attach this lead to the circuit breaker located in the control drawer. The plain black lead (-) connects to the ground terminal.
5. Place the power supply in the bracket and re-attach.
6. Plug 110v AC into outlet and turn booster heater power.
7. Verify that the green LED is flashing; ensure proper operation by running several racks through the dish machine.

Parts List:

1897 - 12v DC Power supply assembly

SB-3 Circuit Board Replacement

Model: PT56, PT125, PT200 **Software version:** All

Tools Required: Needle-nose pliers
SB-7 Auto-calibration service bulletin (match software version)

Process:

1. Turn booster heater power switch off.
2. Disconnect all electrical connectors at the circuit board.
3. Remove the circuit board. Needle-nose pliers can be used to remove the circuit board nylon standoffs.
4. Install the new board with the LED's located at the front of the drawer and aligned with LED sockets on drawer.
5. Reconnect all connectors to the board. CAUTION: there are three two-pin connectors. Be sure that the power supply connector (red and green wire) goes to upper right corner (red connector) and the modulating valve connector (black wire) goes to lower right (blue connector). The third two-pin connector is not used.
6. The booster heater outlet temperature has been preset to 4.20 VDC (192°F). Refer to manual if a further adjustment is needed. See SB-10.
7. Perform auto-calibration per SB-7. Be sure to refer to present software version for auto-calibration bulletin.

Kit Parts List:

2926-X - Micro-controller chip-already installed in board (2926-RC is for PT56
2926-125 is for the PT125, and 2926-200 is for the PT200) 1325 - Standoffs (already
installed in board)
T1836- Control board

SB-3 Circuit Board Replacement Software Reference

Model: PT56, PT125, PT200

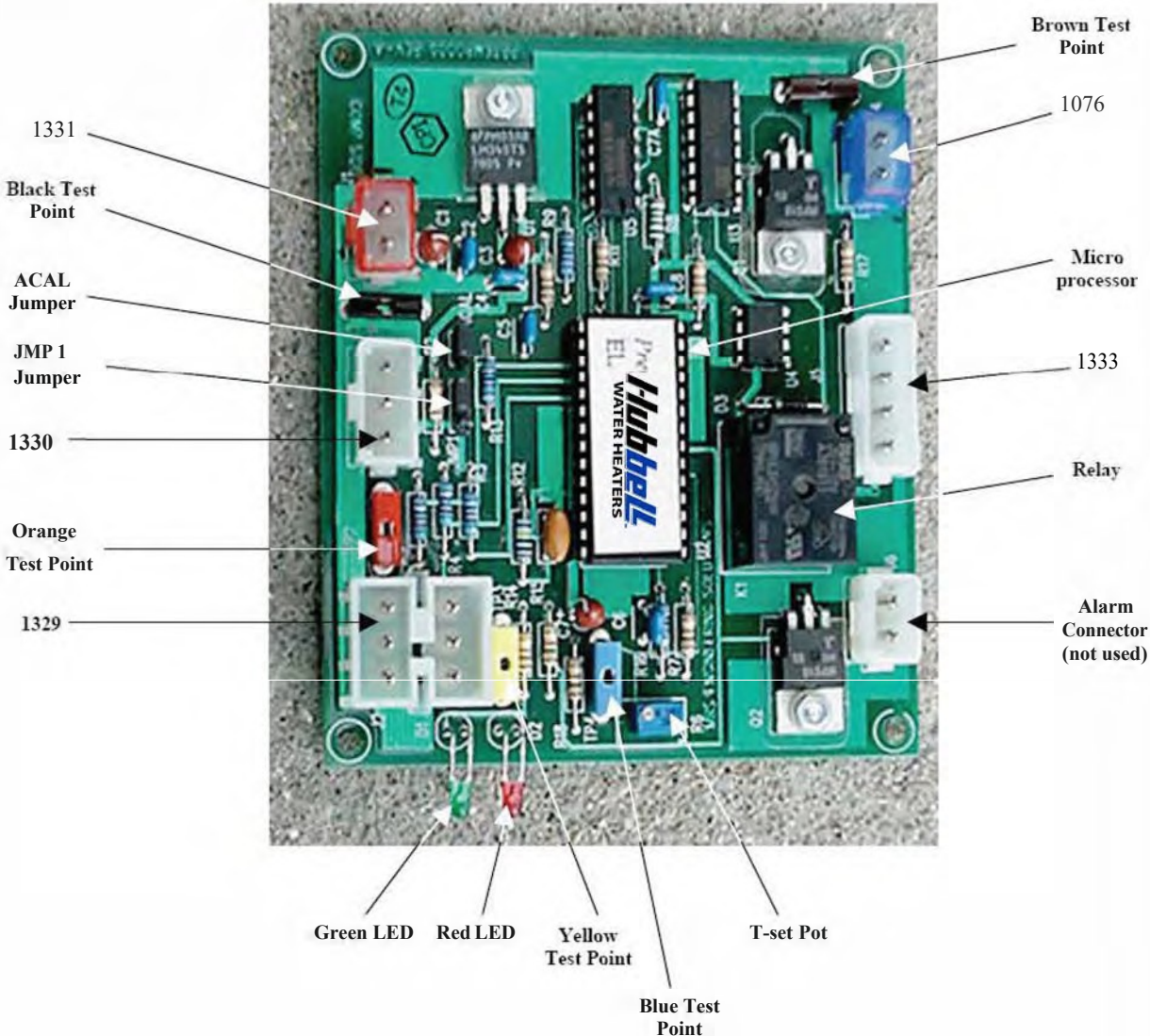
Software versions:

2926-RC software PT56 (Previous PN: 9098) 2926-125

software PT125 (Previous PN: 9099)

2926-200 software PT200 (Previous PN: 9097)

Electronic Control Board



1076	Modulating GasValve Connection
1329	Thermistor Wiring Harness Connector
1330	Flowmeter Connection
1331	Power Supply Wiring Harness Connector
1333	DSI Wiring Harness Connector
Alarm	Alarm Connector Not Used (in this application)
ACAL Jumper	Jumper for Auto-Cal
JMP 1 Jumper	Board Function Jumper
Orange Test Point	Test Point for T- Out Thermistor
Yellow Test Point	Test Point for T- Mid Thermistor
Blue Test Point	Test Point for Setting Temperature
BrownTest Point	Test Point for Modulating Valve
Black Test Point	Test Point for Ground (common)

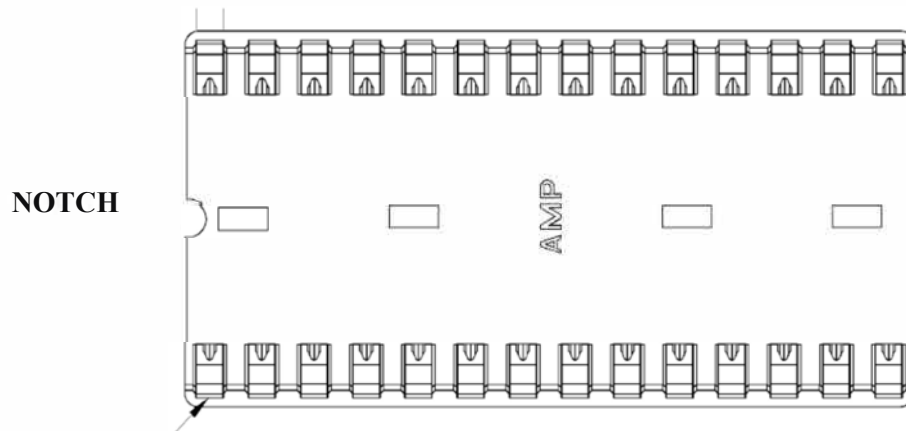
Micro-processor replacement procedure

This procedure should be followed when placing the software micro-processor on the control board. Before proceeding be sure the software is the proper version for your application. Before taking the micro-processor out of the package ground yourself by touching the metal chassis of the heater or any other grounded metal object to ground you from static electricity.

- Remove the old micro-processor with a chip puller or gently pry it from the end of the socket using a small blade screw driver.
- Take the new micro from the package and locate the half-moon notch on the end of the top of the micro.
- This notch must align with the notch on the socket, (See Illustration). This notch is always toward the LEDs on the board.
- Tilt the micro to insert one row on pins into the socket.
- Once this row is inserted, rock the micro to insert the other row of pins.

IMPORTANT: Care must be taken to insure proper alignment so that the pins aren't crushed or do not insert in the socket. If the pins are spread too widely to properly insert, remove the micro and place it on its side on a flat surface to bend the pins in toward the center. Re-insert into board.

- Push micro tightly into socket and inspect to be sure all pins are in the sockets and not bent. Correct if necessary.



Micro Socket on Control Board

SB-5 Igniter Change Procedure & Spark Gap Adjustment

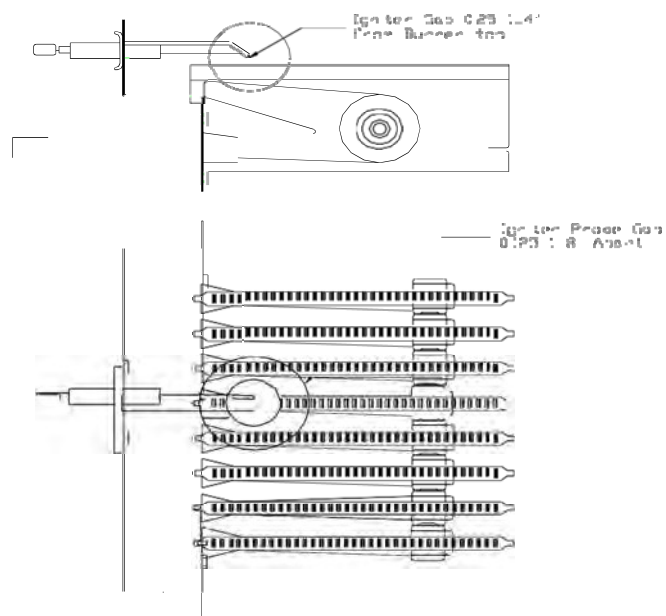
Model: PT56, PT125 & PT200

Software version: All

Tools Required: Phillips screwdriver
Needle Nose Pliers (to adjust probes)

Process:

1. Turn power to booster heater OFF and close the gas supply valve to the booster heater.
2. Remove the front door and locate the igniter.
3. Disconnect the ignition wire from the igniter.
4. Using a Phillips screwdriver remove the two screws attaching the igniter to burner and remove.
5. Install the new igniter and check that the igniter probes are 0.125 - 0.250" above the center burner blade as shown in figure below. Gap between two probes should be about 0.125".
6. Turn gas ON and check for leaks with AGA approved leak detector solution (if the burner was removed).
7. Turn power ON and verify that the unit ignites properly and that spark is affected for maximum of 5 seconds.



Parts List:

3158 – DSI Board
1765 – Ignition Cable 3646 –
Spark Ignition Probe

SB-6 Direct Spark Ignition (DSI) Board Change

Model: PT56, PT125 & PT200

Software version: All

Tools Required: Screwdriver

Process:

1. Turn booster power switch off and remove front cover.
2. Open the electrical drawer and pull all the way out from its saddle.
3. Remove the DSIboard.
4. Install the new DSI board and re-attach the wire harnesses. Be sure to route the yellow or black ignition wire separate from the other control harnesses. (If a new harness is supplied, use it and discard the old harness.)
5. Replace front cover and turn booster power switch on.
6. Ensure proper operation of the booster heater by running several racks through the dish machine and ensuring that proper rinse water temperature is reached.

Parts List:

3158 – Direct Spark Ignition (DSI) board (#3266 bracket if required)

SB-7-RC Auto-Calibration Procedure

Model: PT56

Software version: 2926-RC

Tools Required: Needle Nose Pliers

Process:

1. Turn booster heater power switch off and remove front cover. Open the electronic drawer. Ensure that the software version on the microprocessor matches one listed above.
2. From the control circuit board remove the 2-pin (rear) jumper cap from terminal marked **ACAL** using pliers or fingers. Be sure water in recirculating system is cooler than set temperature on booster (under 192°F). If unable to verify, keep booster heater power off and run the dishmachine rinse.
3. Turn booster heater power switch on. The unit will ignite and then stay in high burn. Over the next 1 minute the gas flow will change slightly as the computer determines the proper voltage for minimum flow. After the computer completes auto-calibration the burner will automatically shut off.
4. Turn power to heater off for a minimum of 20 seconds.
5. Replace the jumper on the circuit board.
6. Turn power to heater back on. To check the unit for normal operation, run several racks through the dish machine and ensure proper rinse temperature is reached.

SB-8 Modulating Valve Replacement

Model: PT56, PT125 & PT200

Software version: All

Tools Required: Pipe wrench
12" Adjustable wrench

Process:

1. Turn off power switch on booster and shut gas off at valve outside booster case.
2. Unplug the modulating valve 2-pin connector. It is the 2-pin black and white wire connection just in front of the gas train assembly.
3. Place adjustable wrench on the union (located in front of the burner manifold) in front of the modulating valve and loosen to remove. Unscrew modulating valve from the gas solenoid using pipe wrench.
4. **IMPORTANT! USE AGA-APPROVED SEALANT ON ALL GAS THREAD CONNECTIONS BEING VERY CAREFUL NOT TO ALLOW ANY TO PENETRATE THE MODULATING VALVE CAVITY. IF THIS IS NOT STRICTLY FOLLOWED IT WILL CAUSE THE MODULATING VALVE TO BECOME STICKY AND MALFUNCTION AND HEATER WILL NOT CORRECTLY OPERATE.**
5. Re-assemble the heater reversing the procedure. **Ensure that the gas is flowing in the direction of the arrow on the collar of the valve.**
6. Reconnect wire connector and retighten union.
7. Turn on gas supply. Check for gas leaks.
8. Power up unit.
9. An Auto Calibration (see SB-7) procedure must be completed. Be sure to use the AutoCalibration procedure specific to your type of unit and software version. Strictly follow the instructions. Failure of this process will cause system malfunction.
10. After completing Auto Calibration procedure, lock the dish machine into rinse mode and check for normal operation.

Parts List:

1024 PT56 Modulating Valve Assembly
2957 PT125 Modulating Valve Assembly
1092 PT200 Modulating Valve Assembly

SB-10 Changing Outlet Temperature Setting

Model: PT56, PT125 & PT200

Software version: All

Tools Required: Small flat blade screwdriver
Digital Multimeter/Voltmeter

Process:

NOTE: The temperature on the booster heater has been factory set to approximately 192°F. It is not recommended that you change this setting. Doing so could result in water temperature too low to sanitize dishware or high enough to bake food matter onto dishes, or cause booster heater to overheat water and shut down. If it is necessary to change the setting it can be done as follows:

1. Open access door of heater. Open the electronic drawer. The adjustment screw is located on a small blue block on the left side of the electronics board under the LEDs.
2. Use a voltmeter and insert the black lead in black test point and the red lead in blue test point. A reading of 4.20 VDC from the voltmeter will set the temperature control at 192°F. A small blade screwdriver should be used to adjust the temperature screw. To decrease temperature, turn screw counterclockwise. To increase temperature, turn screw clockwise. Each full turn will change the water temperature approximately 7°F.
3. Check the water temperature on digital display of booster heater or at temperature gauge on dish machine and adjust as necessary.

SB-12 Combination Gas Valve Replacement

Model: PT56, PT125 & PT200

Software version: All

Tools required: Pipe wrench
12" adjustable wrench
Pipe sealant

Process:

1. Disconnect the power to the boosterheater.
2. Disconnect the blue & white wires connected to the combination gas valve.
3. Turn off the gas supply to the booster heater.
4. Separate the closest gas union outside of the booster heater.
5. Remove all gas line plumbing between the gas valve and half union.
6. Separate the union to the left of the modulating gas valve.
7. Remove the combination gas valve and modulating gas valve from the remaining gas train.
8. Install new combination gas valve in reverse order using approved pipe sealant, ensuring that sealant does not get into the modulating gas valve.
9. Pressurize the gas line.

Be sure to check all gas fittings with an approved leak test solution before restarting the gas booster heater.

Note:

It may take several ignition attempts to purge all the air from the refitted gas line.

Parts List:

1570 PT56 Solenoid Valve 1463
PT125/200 Solenoid Valve

SB-14 Burner Manifold Pressure Check and Adjustment

Model: PT56, PT125 & PT200

Software version: All

Tools required: DC Multimeter
Manometer

Process:

1. Disconnect the power to the Model PT Booster and turn the gas supply off at the manual valve outside of the booster heater.
2. Remove the 1/8" brass plug on the left side of the burner manifold.
3. Once you have removed the 1/8" plug, connect the manometer.
4. Locate the two pin connector coming from the gas modulating valve (2957 for PT125, 1092 from PT200).
5. Switch multi-meter to 20v DC scale.
6. Slide the probes behind the two wires of the 2-pin connector coming from the gas modulating valve. Red probe to the white wire and black probe to black wire.
7. Turn on the gas supply at the manual valve and turn power to booster heater back on.
8. With your manometer and multi-meter connected, lock the dish machine into a rinse mode, reconnect electrical power to the booster heater and turn the Model PT Booster on.
9. At ignition, there should be 0v DC going to the gas modulating valve coil, the manometer should read approximately 0.25 - 0.50 WCI.
10. If all conditions are correct, once the flame is detected you should have approximately 22v DC (12vDC PT56) and 2.85 WCI - 3.70WCI @ full burn **depending on model year & type gas**, refer to product label on access door.
11. Remove manometer and replace 1/8" plug using approved pipe dope.

Adjusting Manifold Pressure

1. Remove cap from combination gas valve regulator. (ILL. 200-9)
2. Turn screw under cap clockwise to increase manifold pressure and counter-clockwise to reduce pressure to the correct reading.
3. Replace cap on the combination gas valve.

Be sure to check all gas fittings with approved leak test solution before restarting the PT Booster.

Parts List:

2957 PT125 Modulating Gas Valve
1092 PT200 Modulating Gas Valve

SB-15 T-Mid Thermistor Change Procedure

Model: PT56, PT125 & PT200

Software version: All

Tools required: 9/16" Open end wrench
Adjustable wrench

Process:

1. Turn power off and turn off water supply at shut off valve outside of the booster heater.
2. Remove old thermistor and disconnect from harness. **CAUTION:** Use two wrenches, one on the hex (9/16") of the thermistor and an adjustable wrench on the hex located on the heat exchanger fitting. Failure to do so may damage the heat exchanger.
3. Insert the end of the thermistor without electrical leads into the heat exchanger until the heat shrink (black) on the thermistor touches the fitting and tighten the fitting finger-tight. The final tightening should be done using two wrenches as described in step 1.
4. Connect the thermistor to the wiring harness.
5. After installing the mid thermistor lock the dish machine into rinse mode and check for normal operation. If the booster outgoing temperature fluctuates more than 5 degrees from the set temperature perform the Auto Calibration procedure.
6. If the Auto Calibration (see SB-7) procedure is needed be sure to use the AutoCal specific to your model, check for correct software version.

Parts List:

1854 - T-Mid Thermistor CPI Assembly

SB-16 T-Out/ T-In Thermistor Change Procedure

Model: PT56, PT125 & PT200

Software version: All

Tools Required: Scissors (or other cutting tool)

Process:

1. Disconnect power to the booster.
2. Remove the wire ties, metal tape, and old thermistor. Clean off the old heat sink and be sure copper is wiped clean.
3. Place a pea size amount of heat sink compound on the pipe where the thermistor will be located.
4. Place the thermistor into the heat sink with the wire leads pointing down along the tube.
5. Wrap metal tape around the tube and thermistor.
6. Attach the wire tie. Wrap the wire tie about 1/2" away from the thermistor head to hold the thermistor against the tube. **CAUTION:** 1) Do not place the tie wrap over the thermistor tip as this may damage the thermistor, do not over-tighten the wire tie.
7. Connect the thermistor to the wiring harness.
8. Replace front cover of booster heater and turn power switch backon.
9. Perform test of the unit by running several racks through the dish machine to ensure that proper rinse temperature is reached.

Parts List:

1436 - T-In Thermistor Assembly Kit

1437 - T-Out Thermistor Assembly Kit

SB-17 Thermistor Reading Procedure

Model: PT56, PT125 & PT200

Software version: All

Tools required: DC Multimeter

The precise temperature of the water in the heater can be determined by reading thermistor DC voltages at the colored test points on the green control board with a multimeter and referring to the "Thermistor Calibration" table.

The **black multimeter probe** should go into the **black test point** and the red probe should go into the following test points:

Orange/Red Test Point = Outlet temperature (T-Out)

Yellow Test Point = Mid temperature (T-Mid)

Inlet temperature (T-In) is read from inboard blue wire on connector #1329
(thermistor harness plug) of the green control board.

Power must be on for the booster to take the readings. Refer to the DC voltage reading in the "volts" column on the "Thermistor Calibration" chart. The corresponding temperature is the column to the left of the volt reading.

Parts List:

None

Thermistor Calibration

Check @ colored test point

Yellow = T-Mid

Black = Common Inboard

Orange = T-Out

Blue wire = T-In

K-OHMS	°F	Volts	K-OHMS	°F	Volts	K-OHMS	°F	Volts	K-OHMS	°F	Volts
2.500	41.19	4.1514	0.273	135.06	1.7411	0.179	156.54	1.2971	0.107	184.70	0.8657
2.400	42.68	4.1223	0.271	135.42	1.7327	0.177	157.13	1.2863	0.106	185.24	0.8590
2.300	44.25	4.0911	0.269	135.79	1.7244	0.175	157.73	1.2755	0.105	185.78	0.8523
2.200	45.89	4.0575	0.267	136.16	1.7159	0.173	158.34	1.2646	0.104	186.33	0.8455
2.100	47.62	4.0214	0.265	136.53	1.7075	0.171	158.95	1.2537	0.103	186.88	0.8388
2.000	49.45	3.9825	0.263	136.91	1.6990	0.169	159.58	1.2426	0.102	187.44	0.8320
1.900	51.38	3.9403	0.261	137.28	1.6904	0.167	160.21	1.2316	0.101	188.01	0.8252
1.800	53.43	3.8944	0.259	137.67	1.6818	0.165	160.85	1.2204	0.100	188.58	0.8183
1.700	55.62	3.8444	0.257	138.05	1.6732	0.163	161.50	1.2092	0.099	189.16	0.8115
1.600	57.95	3.7897	0.255	138.44	1.6645	0.161	162.16	1.1979	0.098	189.75	0.8046
1.500	60.45	3.7295	0.253	138.83	1.6558	0.159	162.82	1.1866	0.097	190.34	0.7977
1.400	63.15	3.6630	0.251	139.23	1.6470	0.157	163.50	1.1751	0.096	190.95	0.7908
1.300	66.08	3.5892	0.249	139.63	1.6382	0.155	164.19	1.1637	0.095	191.55	0.7838
1.200	69.27	3.5067	0.247	140.03	1.6293	0.153	164.89	1.1521	0.094	192.17	0.7769
1.100	72.78	3.4140	0.245	140.44	1.6204	0.151	165.60	1.1405	0.093	192.79	0.7699
1.000	76.67	3.3091	0.243	140.85	1.6114	0.149	166.32	1.1288	0.092	193.42	0.7629
0.900	81.03	3.1892	0.241	141.26	1.6024	0.147	167.05	1.1170	0.091	194.06	0.7558
0.800	85.97	3.0511	0.239	141.68	1.5933	0.145	167.79	1.1052	0.090	194.71	0.7488
0.700	91.67	2.8902	0.237	142.11	1.5842	0.143	168.55	1.0933	0.089	195.37	0.7417
0.600	98.39	2.7003	0.235	142.53	1.5751	0.141	169.32	1.0813	0.088	196.03	0.7346
0.580	99.88	2.6581	0.233	142.96	1.5659	0.139	170.10	1.0692	0.087	196.71	0.7274
0.560	101.44	2.6144	0.231	143.40	1.5566	0.137	170.89	1.0571	0.086	197.39	0.7203
0.540	103.06	2.5690	0.229	143.84	1.5473	0.135	171.70	1.0449	0.085	198.08	0.7131
0.520	104.75	2.5218	0.227	144.28	1.5379	0.133	172.52	1.0326	0.084	198.78	0.7059
0.500	106.52	2.4728	0.225	144.73	1.5285	0.131	173.35	1.0202	0.083	199.49	0.6987
0.480	108.36	2.4218	0.223	145.18	1.5191	0.129	174.20	1.0078	0.082	200.21	0.6914
0.460	110.30	2.3687	0.221	145.64	1.5096	0.128	174.63	1.0016	0.081	200.95	0.6841
0.440	112.34	2.3134	0.219	146.11	1.5000	0.127	175.07	0.9953	0.080	201.69	0.6768
0.420	114.49	2.2556	0.217	146.57	1.4904	0.126	175.51	0.9890	0.079	202.44	0.6695
0.400	116.75	2.1954	0.215	147.05	1.4807	0.125	175.95	0.9827	0.078	203.21	0.6621
0.380	119.15	2.1324	0.213	147.52	1.4710	0.124	176.40	0.9764	0.077	203.98	0.6548
0.360	121.70	2.0666	0.211	148.01	1.4612	0.123	176.85	0.9700	0.076	204.77	0.6474
0.350	123.04	2.0325	0.209	148.50	1.4514	0.122	177.30	0.9637	0.075	205.57	0.6399
0.340	124.42	1.9976	0.207	148.99	1.4415	0.121	177.76	0.9573	0.074	206.38	0.6325
0.335	125.13	1.9799	0.205	149.49	1.4316	0.120	178.23	0.9509	0.073	207.21	0.6250
0.330	125.85	1.9620	0.203	149.99	1.4216	0.119	178.70	0.9444	0.072	208.05	0.6175
0.325	126.58	1.9438	0.201	150.50	1.4115	0.118	179.17	0.9380	0.071	208.90	0.6100
0.320	127.32	1.9254	0.199	151.02	1.4014	0.117	179.65	0.9315	0.070	209.77	0.6024
0.315	128.08	1.9068	0.197	151.54	1.3912	0.116	180.13	0.9250	0.069	210.65	0.5948
0.310	128.86	1.8879	0.195	152.07	1.3810	0.115	180.62	0.9185	0.068	211.54	0.5872
0.305	129.64	1.8689	0.193	152.61	1.3707	0.114	181.11	0.9120	0.067	212.46	0.5796
0.300	130.45	1.8496	0.191	153.15	1.3604	0.113	181.61	0.9054	0.066	213.38	0.5719
0.295	131.26	1.8300	0.189	153.70	1.3500	0.112	182.11	0.8989	0.065	214.33	0.5642
0.290	132.10	1.8102	0.187	154.25	1.3395	0.111	182.62	0.8923	0.064	215.29	0.5565
0.285	132.95	1.7902	0.185	154.81	1.3290	0.110	183.13	0.8857	0.063	216.27	0.5488
0.280	133.82	1.7699	0.183	155.38	1.3184	0.109	183.65	0.8790	0.062	217.27	0.5410
0.275	134.70	1.7494	0.181	155.96	1.3078	0.108	184.17	0.8724	0.061	218.29	0.5332

SB-18 PT56 Tank Assembly Change Procedure

Model: PT56

Other Service documents required: SM56-13 Testing the PT56

Tools Required:

- Small adjustable wrench
- Large adjustable wrench
- Phillips screwdriver
- 13/16" open-end wrench
- 11/16" open-end wrench
- 3/4" open end wrench
- 2 pipe wrenches
- 11/32" socket
- Needle nose pliers

1. Turn off the water supply to the booster water inlet.
2. Now drain the water from the booster heater. Before proceeding provide a method of draining about 3.5 gallons of water. Loosen a connection at the booster inlet. Very little water will drain until the next step. Loosen the two compression fittings PF 1547 and the booster will drain from the loose fitting at the booster inlet.
3. Remove the T&P valve, including the extension fitting.
4. Disconnect the inlet and outlet water lines. Remove the inlet and outlet pipes from the bottom of the unit leading to the tank.
5. Remove the one screw holding the power supply bracket BK 1457 to the left side of shroud AS 1462 using the Phillips screwdriver. Remove the ten (10) screws attaching the case shroud AS 1462 to the base CS 1455. Remove the shroud.
6. Open the two compression fittings PF 1547 from the step above.
7. Using an 11/32" socket remove the three nuts FS 1492 holding the tank to the base and lift the tank and pump assembly from the base. The pump electrical cord will still be connected to the power supply bracket.
8. Open the pump electrical cover by removing the one cover screw. Inside remove the two wire nut screws and separate the wires. Unscrew and remove the green ground wire. Use needle nose pliers to remove the strain relief for the harness.
9. Put a pipe wrench on the hex at the tank fitting going to the pump and unscrew the tank from the pump and piping. If the 3/4" close nipple remains in the tank use the supplied part in the new tank.
10. Install the new tank assembly AS 1679 reversing steps 9, 8, 7, 6, 5, 4, and 3 and tighten the fittings at the booster inlet and outlet. Remember to clean all NPT fittings and apply teflon tape to all water threaded fittings.
11. Turn water ON and open the booster outlet to fill the booster and remove air. Also, check for water leaks. If necessary, prime the pump (see SM56-12).
12. Perform a test of the unit using steps 3, 5, and 6 of SM56-13 "Testing the PT56".

SB-19 PT56 Pump Change Procedure

Model: PT56

Tools Required: Needle nose pliers, screwdriver, 5/8"hex wrench & 5/8" swivel socket

1. Turn off the power and water supply to the booster water inlet.
2. Before proceeding provide a method of draining about 3.5 gallons of water from the tank. Now drain the water from the booster heater. Loosening a connection at the booster water inlet will aid in draining.
3. Open the pump electrical cover by removing the one cover screw. Inside remove the two wire nut screws and separate the wires. Unscrew and remove the green ground wire.
4. Remove the pump's electrical strain relief using needle nose pliers.
5. Remove upper screw on the Power supply bracket and bend forward to help access pump flange bolts.
6. Using a 5/8" wrench remove the four bolts from the two pump flanges. Remove the pump.
7. Install the new pump using the new flange o-ring seals provided with the replacement pump and reinstall the four bolts.
8. Open the new pump electrical cover by removing the one cover screw. Use the wire nut screws to attach the black supply lead to the bottom wire in the pump and the white supply lead to the top wire in the pump. The green ground wire attaches to the ground screw.
9. Re-install the pump electrical cover.
10. Turn water ON and open the booster outlet to fill the booster and remove air. Also, check for water leaks. Run 2-3 racks through dish machine with power off to purge air from system. Refer to the installation instructions if needed, regarding filling and turning on power.
11. Turn on power and check for proper operation.

SB-20 Testing the PT56**Model: PT56****Other service documents required:**

Thermistor Reading – T-Mid/T-Out

Tools Required:

Screwdriver

Gas supply pressure (to regulator) = 7.0 – 10.5 wci for natural gas (NG) 11.0 – 14.0 wci for propane (LPG) Water supply pressure to booster = 25 psig normal (60 psig maximum) Instrumentation:

T-Mid Circuit board thermistor reading (yellow test connector)
T-Out Circuit board thermistor reading (orange test connector)
T-Set Circuit board thermistor reading (blue test connector)

Test Data :

1. Turn power ON and verify that the green LED flashes.
2. Is the red LED flashing? If yes, refer to Section 5 in trouble-shooting manual.
3. Verify unit lights off at ignition burn (0.19 – 0.35 wci) and ramps to maximum burn (3.15 – 3.80 wci).
4. While the unit is heating to the stabilization temperature set the T-Set as described in the owner's manual. Find the booster output temperature in the table below and then go to the column that specifies the T-Set voltage. Refer to section 4.11 'Thermistor Checkout – T-Mid/T-Out' for a description on how to read T-Set:

Outlet Temperature	Stabilization Temperature	T_Set Voltage, vdc
140	158 (1.27 vdc)	1.75
150	168 (1.10 vdc)	2.38
160	178 (0.95 vdc)	3.00
170	188 (0.82 vdc)	3.62
180	198 (0.71 vdc)	4.25

5. Verify that the burner modulates down as the stabilization temperature is reached. The minimum burn is 0.90 – 1.50 wci).
6. Verify that the unit cycles ON and OFF at the stabilization temperature to control and hold the temperature.
7. Let the unit reach stabilization. When burner is OFF and right before a re-light read T-out voltage. Refer to SB-17 on pages 40 & 41 for a description on how to read the thermistors. This should be within ± 0.02 vdc ($\pm 2^\circ\text{F}$) of the stabilization temperature listed in the table above.
8. Run several dishwasher cycles that the PT56 responds by igniting to maintain temperature.
9. Fail T-Mid thermistor by disconnecting the 2-pin connector. Verify that gas flow is shutoff and the maintenance code is one on the red LED.
10. Verify that the unit does not leak water.

PT125/200 Installation



**PT125/200 GAS BOOSTER WATER
HEATER INSTALLATION**

Warning: If the information in these instructions is not followed exactly, a fire or explosion may result causing property damage, personal injury or death.

Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

WHAT TO DO IF YOU SMELL GAS

- * **Do not try to light any appliance**
- * **Do not touch any electrical switch; do not use any phone in your building.**
- * **Immediately call you gas supplier from your neighbor's phone. Follow the gas supplier's instructions.**
- * **If you can not reach your gas supplier, call the fire department.**

- * **Installation and service must be performed by a qualified installer, service agency or the gassupplier.**

- * **Should overheating occur or the gas supply fail to shut off, turn off the manual gas control valve to the appliance.**

- * **Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control that has been under water.**



**ANSI Z21.10.3
CAN 1-4.3-M85 NSF 5 – 1992**

HUBBELL PT125/200 GAS BOOSTER WATER HEATER INSTALLATION GUIDE

Note: Dry firing the PT125/200 will damage the Heat Exchanger. This will VOID the Warranty.

The Hubbell Model PT125/200 is a tankless and pumpless instantaneous gas booster heater. Because of the unique design it is a highly reliable, efficient, and effective unit. Since the PT125/200 heats water as it flows through, incoming water temperatures and water flows (pressure) are important. The preferred method of installation is wall mounting using the PT125/200 wall mounting bracket. Wall mounting will alleviate most kitchen abuse and extend the life of the booster. Contact your Hubbell representative for wall mounting information.

GENERAL INSTRUCTIONS

The Hubbell Gas Booster Water Heater operates on 115v AC line voltage. All internal electrical connections have been made at the factory. For units supplied with a three-pronged 115v AC plug, no other wiring is required. Plug into a GFI circuit rated at 15 amps. This appliance is designed for indoor installation only. Refer to the PT125/200 plumbing installation diagram for proper placement of components.

1. Locating the Installation

The Hubbell Gas Booster Water Heater is designed to boost the rinse temperature in a commercial dishwasher from the available hot water, ranging from 110°F to 140°F (depending on flow rate), up to a 180°F sanitizing rinse. Health codes, NSF Standard #5 and local plumbing codes require that the rinse water be 180°F at the rinse nozzle. For this reason, the Hubbell booster heater should be installed as close as possible to the dishwasher, preferably within 5 feet. If the distance is between 5 and 10 feet, use 1/2" pipe and extra insulation on the outlet. PT boosters are not recommended to be installed more than 10 feet from the dishmachine.

IMPORTANT - The booster heater must be installed in a horizontal position (level booster by adjusting legs) with the inlet connection at the lowest point.

The Hubbell Gas Booster Heater must be installed in a well-ventilated area in conformance with local codes or in the absence of local codes, the National Fuel Gas Code, ANSI Z 223.1. Proper clearances should be observed.

Always maintain at least 6 inches of space behind the unit and 10 inches on either side when installing. The top is zero clearance. Sufficient clearance should be allowed in front of the unit to remove the front cover for servicing.

Never remove the 6" legs from the bottom of the unit when making a floor installation. Provisions for adequate combustion and ventilation air should be made following the provisions of the National Fuel Gas Code, ANSI Z 223.1, Part 7.

When installing the appliance on a carpeted floor, the appliance should be installed on a metal or wood panel extending beyond the full width and depth of the appliance by at least 3 inches (76.2 mm) in any direction.

NEVER install the booster without a vent or not conforming to the National Flue Gas Code or local codes. Never use the top of this unit as a shelf.

The booster heater should be installed in an area where leakage of the heat exchanger or connections will not result in damage to the adjacent area or to lower floors of the structure.

When such locations can not be avoided, it is recommended that a suitable drain pan, adequately drained, be installed under the appliance. The pan must not restrict combustion airflow. Never install the booster heater directly over a floor drain or floor sink where steam from drain can be ingested into the booster heater air intake.

The gas used with this unit **must** be of the type specified on the specification plate on this unit. Never use any other than the specified gas.

2. Access

To remove front panel, raise panel until bottom releases, tilt the bottom out and remove.

3. Electrical Connection Instructions

CAUTION: DO NOT TURN ON THE POWER SWITCH. The servicing technician performing the Startup will make the booster operational. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN DAMAGE TO THE BOOSTER HEATER WHICH WILL VOID THE BOOSTER WARRANTY.

The Hubbell Gas Booster Heater operates on 115v AC, 15 amp, single phase current. All internal electrical connections have been made at the factory. Follow local codes when installing, specifying wire size breaker and conduit. In the absence of local codes observe the National Electrical Code, ANSI/NFPA 70. Power for the booster heater should be on its own 115v AC 15-amp single-phase GFI circuit. Local electrical codes should be observed. The booster is equipped with a three-prong plug. Plug into a 115v AC 15 amp GFI circuit. Be sure to route wire in a way that it is protected from damage.

Note: Dry firing the PT125/200 will damage the Heat Exchanger. This will VOID the Warranty.

4. Plumbing

The Hubbell Gas Booster Heater is designed to boost the rinse temperature in a commercial dishwasher from the available hot water, ranging from 110°F to 140°F up to a 180°F sanitizing rinse. Health codes, NSF Standard #5 and local plumbing codes require that rinse water be 180°F at the rinse nozzle. The rate of the rinse flow will determine optimum temperature of incoming water supply.

For protection against excessive water pressure in the booster heater, the pressure protection equipment supplied by Hubbell must remain installed. This relief valve, installed on this booster heater, is constructed for commercial use and is designed for high temperature operation. This valve is installed on a ¾" pipe tee close to the hot water outlet fitting of the booster (See installation diagram).

For proper performance of the dishwasher and booster heater, install a pressure reducing valve ahead of the dish machine with a pressure setting of 20 PSI during the rinse operation. See number 5 below. **IMPORTANT.** If there is already a functioning pressure reducer installed on the warewasher, do not install another at the booster. This will cause variations in pressure and improper water flow.

Plumbing Installation

A. The booster heater should be installed as close as possible to the dishwasher. In installations where the booster heater is between five and ten feet from the dishwasher, 1/2" pipe should be plumbed in with extra insulation on the outlet. **IMPORTANT** -The booster heater must be installed in a horizontal position (base parallel to the floor, level unit by adjusting legs).

B. The inlet water to the booster heater must come from a primary water heater. **DO NOT RUN A COLD WATER LINE TO THE BOOSTER HEATER.**

C. A shut-off valve (a full open gate or ball type) should be installed in the inlet water line. A union fitting and a drain valve should be installed for easy servicing.

D. Hubbell recommends the installation of the supplied shock absorber in the outlet of the booster heater to eliminate water hammer caused by the quick closing of the solenoid valve of the dishwasher. Install this as close as possible to the dishwasher.

Proper operation of the rinse nozzles in the dishwasher requires the water pressure available at the nozzle to be between 15 and 25 PSI when the nozzles are spraying. If the water pressure is over 25 PSI, a pressure reducing valve is required. It should be installed in the hot water supply to the dish machine. It is important that the water flow through the valve is in the proper direction. Check the directional arrows.

IMPORTANT- If there is already a functioning pressure reducer installed on the warewasher, do not install another at the booster. This will cause variations in pressure and malfunctions in the water system.

5. Relief Valve

A pressure relief valve is installed in a ¾" tee and installed in the hot water outlet. To avoid damage or scalding due to valve operation, a drainpipe must be connected to the valve outlet and run to a safe place of disposal. The drainpipe must be as short as possible and the same size as the valve discharge connection throughout its entire length. The drainpipe must be pitched downward from the valve and terminate at least 6" above a floor drain to make any discharge clearly visible. The drain line should terminate plain, not threaded, and be made of a material capable of withstanding temperatures up to 250°F. The valve lever must be tripped periodically to insure that waterways are clear. This device is designed for emergency safety relief and should not be used as an operating control.

6. Plumbing Connections

In connecting the booster heater to the dishwasher, use ¾" piping to supply the sanitizing rinse spray on the dishwasher. Be certain that the connection is made to the final sanitizing rinse of the dishwasher and **NOT TO THE WASH TANK OF THE DISHWASHER.**

Check carefully for proper plumbing installation. Observe the following cautions:

- Do not back up or loosen any pipe fittings, as a leak will develop.
- Do not connect the booster heater directly to a boiler or furnace coil or any other uncontrolled temperature source.

Fill the booster heater with water to test for installation leaks. Leave the water in the booster to prevent damage in the event the electrician should apply power.

7. Gas Line Installation

It is very important that the type and inlet pressure of the gas used corresponds to the specification plate on the booster heater case. This unit is equipped with a ¾" male pipe. The fitting is on the lower right back of the base.

The gas line should be of the approved type for use with Natural Gas or Propane. The gas line must be of adequate diameter to accommodate the flow of 199,000 BTU per hour. It must be a gas line of at least ¾" NPT or equivalent ID. A manual gas shut-off valve must be installed in the gas line, located within an accessible area of the booster heater. The gas line should be kept as short as possible and installed in a way to protect it from damage.

When making pipe connections use an approved pipe dope, taking care not to use excessive amounts as to foul the gas valve. When tightening the gas line always support the gas valve to avoid damage to the gas train.

Please Note *In a propane installation

In a natural gas installation, pressure must be minimum 7wci., maximum 10.5 wci.

When making connection to the booster unit, take care to start the gas line fitting by hand and tighten by hand to avoid cross threading. Then tighten with a wrench, taking care not to damage any internal components of the unit.

After making the final connection of gas, with power to the unit turned off, check all gas line fittings for leaks using a liquid test solution. NEVER use a flame to test for leaks. Observe all local codes regarding gas line installation and specifications.

NOTE: The appliance and its individual shutoff valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 PSI (3.5 kPa). All air should be purged from gas line prior to startup.

8. Flue Installation

The Hubbell Gas Booster Heater must be installed in conformance with local codes or in the absence of local codes, the National FuelGas Code, ANSI Z 223.1.

The unit is delivered from the factory to be flued from the right side of the case with combustion air being brought in from the louvers on the cabinet.

A 4" stainless rigid type vent pipe such as category 3, Z-Vent-II or equivalent is recommended for the flue. Flue pipe can be run up to 70' with 4" pipe from the unit to a proper roof or wall flue terminus. If using optional 3" rear flue, the maximum flue pipe run should be 40' (**each 90° elbow adds 10" to pipe length**). **If code permits, flue should be run into the dish hood installed over dish machine to help reduce effects of negative air. Verify proper ventilation for make up air in the general area of the booster.** If fluing into the dish hood is done, provisions must be made to secure its installation and electrical interlock must be provided in some jurisdictions to assure the booster does not operate unless the dish hood is operating. It is recommended to check local codes.

9. Factory Authorized Startup (Required)

Once installation is completed Start-Up and testing must be done in accordance with the Factory Authorized Start-Up Procedure by a qualified Service Technician.

Call 1-800-647-3165 to initiate factory authorized startup. Failure to contact the factory may result in the cancellation of the warranty.

Hubbell Model PT125/200 Instantaneous Gas Booster Heater

Type: Gas fired, tankless, fully gas modulating, power vented water heater designed as a dish washer booster heater for conveyor and flight type machines.

PT200: Used with higher flow warewashers (typically over 3 GPM) and is located near the machine.

PT125: Used with lower flow warewashers (typically under 3 GPM) and is located near the machine.

Contact Hubbell for assistance in determining proper specification.

Capacity: PT200:480 GPH @ 40°F ΔT or 274 GPH @ 70°F ΔT.

PT125: 325 GPH at a 40°F ΔT or 180 GPH at a 70°F ΔT.

Fuel: Ng 7" WC-10.5" WC Pro 11" WC-14" WC

Input: PT200: 199,000 BTU/ H, natural gas or propane

PT125: 130,000 BTU/H, natural gas or propane

Efficiency: 98%

Power: 115 VAC at 3 Amp

Input Water Temperature: 110°F to 140°F to maintain 180°F rinse temperature.

Installation: 6" NSF legs standard for floor installation under counter or recommended optional wall bracket.

Flue: 4" with power venting from the right side of the case or 3" from rear can be vented into hood in most locations.

Construction Features: Stainless case and digital temperature display standard

Safety Features: Pilot-less with electronic ignition with flame rectification proofing.

(Gas valve shuts off in .8 of a second if there is a flame outage.)

Redundant gas solenoid. Electronic high temperature shut off (two). ECO

high temperature shut off @ 210°F with auto reset

Pressure relief valve @ 125 PSI

Approvals: U.S. - ANSI Z21.10.3 Sanitation – NSF 5

Dimensions: 30.75" Wide x 15.25" Deep x 30.5" High. Weight: 105 lbs.

Due to continuous product improvement, and review, Hubbell reserves the right to change specifications at any time.

PT125/200 SERVICE AND TROUBLESHOOTING GUIDE



IMPORTANT! Verify which software version you have before completing any service! You can verify this by looking at the software version label on the green electronic board inside the electronic drawer. When using this service manual, ensure you are using the correct software version. Check the software version label on the microprocessor with the list below:

PT125 Software versions: 9099-A, 9099-B, 9099-C, 9099-D, 9099-T

PT200 Software versions: 9097-A, 9097-B, 9097-C, 9097-D, 9097-E, 9097-F,
9097-G, 9097-H, 9097-I, 9097-J, 9097-T

IMPORTANT NOTICE TO REPAIR TECHNICIAN

Repair Technician must call Hubbell PRIOR to starting WARRANTY repairs to obtain a warranty authorization number. Please call the factory at **(800) 647-3165**

No reimbursements will be made without an authorization number.

NO additional time reimbursements will be made without prior authorization. All warranty parts must be returned within 30 days of completing repair. All warranty invoices must be accompanied by a copy of the technician worksheet detailing the customer complaint, correction and product serial number. **NO Facility** issues are covered by Hubbell's warranty.

CALL BEFORE SERVICING

M-F 9am-5:00pm ET

(203) 378-2659

(800) 647-3165

Hubbell PT125/200 Booster Operational Guide **Prior to calling for service please check the following:**

Booster not reaching 180 degree rinse temperature.

1. Check for fault codes, red led flashing call Hubbell or your local service company. Flashing green is normal operation.
2. Check incoming water temperature by pushing white button on temperature display while illuminated, should be 120-140 degrees. Incoming temperature is controlled at hot water heater.
3. Count GPM passing through booster by monitoring the number of green light flashes between pauses through the site glass when the booster is operating. The PT200 models should have 12-15 flashes between pauses and the PT125 should have 6-11 flashes between pauses. GPM (flow) is controlled by the dish machine. If flashes are not within above specs, call Hubbell tech support.

Booster reaching 195+ degree rinse temperature.

1. Count GPM passing through booster by monitoring the number of green light flashes between pauses through the sight glass when the booster is operating. The PT200 should have 12-15 flashes between pauses and the PT125 should have 6-11 flashes between pauses. GPM (flow) is controlled by the dish machine. If flashes are not within the above specs, have the dish machine rinse pressure adjusted by your local service company or filters and strainers serviced.

Booster not coming on during rinse.

1. Open pressure relief valve for 5-10 seconds to call for ignition; if booster ignites, check steps 2 and 3. If booster does not ignite, call Hubbell or your local service company.
2. Check bypass valve position diverting water from booster.
3. Check for dish machine malfunction related to the rinse cycle.

PT125/200 Design and Sequence of Operation

The PT125/200 tankless gas booster heater is designed as an on-demand water heater that ignites the burner when the ware washer rinse solenoid opens and water flows through the booster.

The PT125/200 is designed to be installed close to the dishmachine, preferably within 5 feet. If the distance is between 5 and 10 feet, use 1/2" pipe and extra insulation on the outlet. PT boosters are not recommended to be installed more than 10 feet from the dishwasher.

The sequence of operation is as follows:

- Power is on, the power switch glows, and green LED on the control board flashes. The digital temperature readout is not displaying.
- The rinse solenoid of the warewasher opens and water flows through booster heater.

Note:

- The next steps take place in 3-5 seconds.
- The flow meter senses the water flow & sends a flow signal to the green control board.
- The green control board sends 12v DC through the brown wire to the pressure differential switch and on to the black solid-state relay that powers the power vent blower.
- The relay closes the 110v AC contacts to start the blower.
Fluing is proofed by the clear vacuum tube that runs from the blower to the pressure differential switch.
- The pressure differential switch contacts close, sending 12v DC to the spark ignition module via the gray wire.
- The ignition module simultaneously affects a spark through the heavy yellow wire to the spark ignition probe over the burner and sends 12v DC to the combination gas valve via the blue wire. Ignition attempts lasts up to 5.5 seconds. The digital temperature read-out displays the outlet temperature.
- Ignition of the burner's center element is effected and the flame is proofed and monitored through the same yellow wire by the spark ignition module.
- The green control board sends DC voltage to the modulating gas valve for one second to effect flame cross-over to all burners.
- The micro-processor on the green control board monitors water flow with the flow meter and temperature with the three thermistors twice per second and varies voltage 0to22v DC to the gas modulating valve, varying gas flow to burner in order to maintain constant temperature output.
- Burner remains lit as long as the rinse solenoid is open, but if flame is extinguished for any reason, the gas valve will shut off in less than 1 second. Re-ignition will be attempted.
- When warewasher rinse solenoid closes and booster heater no longer senses flow, the booster heater reverts to standby mode and digital temperature readout turns off.

Preventive Maintenance for PT125/200 Booster Heater

- 1) Inspect and clean all cabinet louvers and interior of cabinet of dust and debris. **
- 2) Remove blower hood, clean all dust and debris from baffles.
- 3) Inspect top of heat exchanger for carbon build up. Clean debris from blower squirrel cage ****
- 4) Inspect for burnt or brittle wiring and any heat damage to interior components. Inspect for any water damage or corrosion to electrical components and connections.***
- 5) Check overall operation of flow through and recirculation models making sure final rinse temperature of 180 degrees reached. Incoming water temperature should be 120-140 degrees. Check water flow rate, approximately 12-15 flashes (4-5gpm) for PT200 standard flow through booster and 6-9 flashes (2-3gpm) for a PT125 low flow booster during the dish machine rinse cycle. **
- 6) Inspect for clean combustion, viewed through sight glass; blue flame not yellow.***
- 7) Inspect exterior of copper heat exchanger for dark discoloration
- 8) Solder melted from front support tube (PT125/200) and silver ash on floor of cabinet. Call Hubbell if any of these symptoms are observed. ***
- 9) Inspect for internal water leaks.**
- 10) Inspect for excessive positive or negative air; Exhaust Blower cage will turn counter clockwise, with booster power off. Call Hubbell with questions. ***
- 11) Inspect overall conditions surrounding booster for excessive water abuse, cleanliness and items stacked around booster restricting airflow.**
- 12) Check expansion tank pressure. Pressure should be maintained at approximately 40-80 psi depending on water pressure.***
- 13) Inspect and or clean all water filters, chemical disbursing equipment, etc. to avoid restricting water flow to dish machine. **
- 14) Perform dish machine maintenance, clean strainer screen, rinse nozzles and inspect rinse arm gaskets if applicable.

*** = Weekly ** = Monthly *** = Quarterly **** = Annual

PT125/200 Service Codes

The following service codes are shown by the red flashing LED located on the front of the electronics drawer behind the front access door. These codes indicate the type of malfunction. Consult the corresponding service bulletin in the service manual or call Hubbell at 1-800-934-9690 for corrective action. Prior to calling, ensure that you have the booster heater serial number and software version on hand.

For all codes except the single red flash, heater will continue to operate, but the problem should be addressed to ensure optimum performance and temperature control. Codes will flash each second followed by a three second pause. A green flashing LED without any red flashing LED indicates normal operation. If the green LED flashes while the red LED flashes, ignore the green LED and only count the red flashes. NOTE: You may want to physically cover the green LED with your finger, so as not to confuse the flashes.

Note: Service codes will continue to flash after the problem has been corrected. To ensure that problem has been corrected, the power switch on the booster should be turned off, wait 10 seconds, and then turned back on.

Single red flash- * pause * pause * pause

Indicates T-Mid thermistor (yellow wire) has failed or is unplugged. Booster heater will not operate correctly until problem is corrected. Consult SB-15 or SB-17 to correct. (page)

Two red flashes- ** pause ** pause ** pause

Indicates T-Out thermistor (red wire) has failed or is unplugged. Booster heater will not operate correctly until problem is corrected. Consult SB-16 or SB-17 to correct. (page)

Three red flashes- * pause *** pause *** pause**

Indicates T-In thermistor (blue wire) has failed or is unplugged. Booster heater will not operate correctly until problem is corrected. Consult SB-16 or SB-17 to correct. (page)

Four red flashes- ** pause **** pause **** pause**

Indicates T-Out is not in normal operating range, but the booster heater will continue to operate; user may notice temperature shift. Consult SB-16 or SB-17 to correct. (page)

Five red flashes- *** pause ***** pause ***** pause**

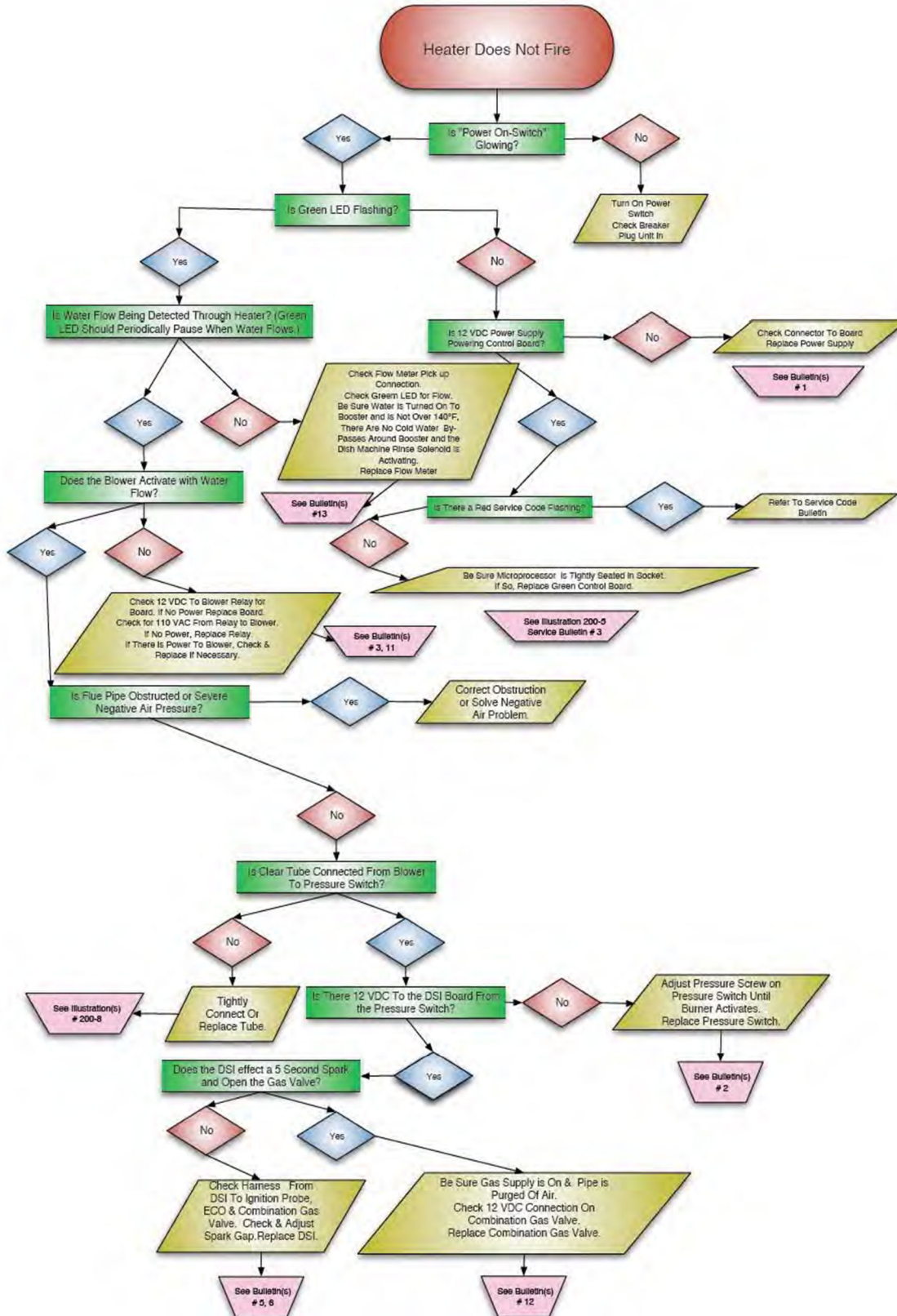
Indicates T-In is not in normal operating range, but the booster heater will continue to operate; user may notice temperature shift. Consult SB-16 or SB-17 to correct. (page)

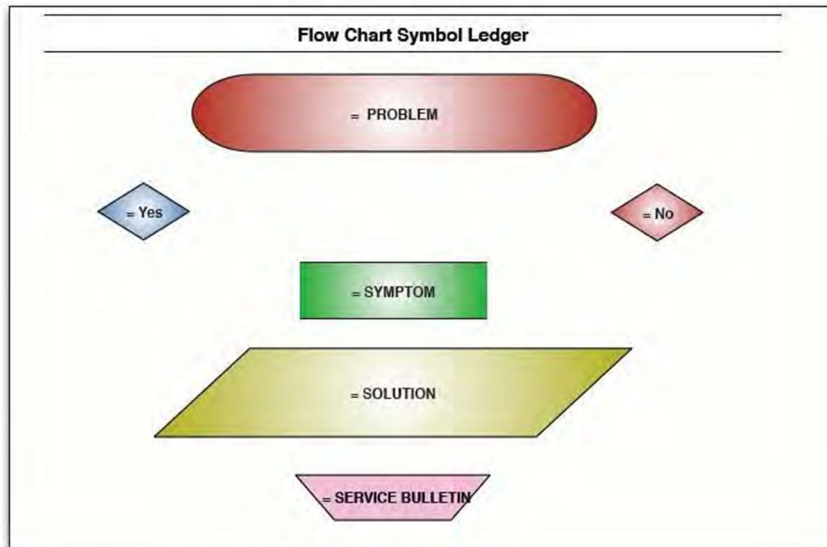
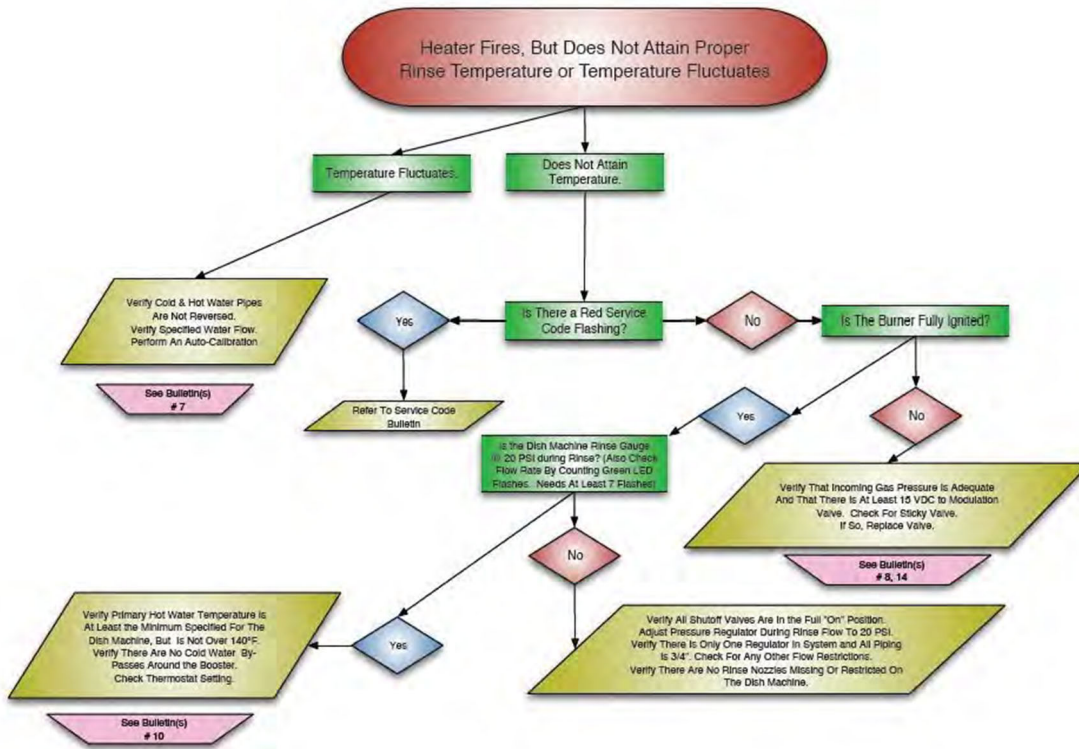
Six red flashes- *** pause ***** pause ***** pause**

Indicates the booster hot water outlet and cold water inlet lines are connected in reverse. Temperature will be too low or will fluctuate radically. Reverse connections to correct. (page)

Seven red flashes- *** pause ***** pause ***** pause**

The direct spark ignition board (DSI) has locked out. The DSI will automatically reset within 45 seconds, but LED will continue to flash. Booster heater can be manually reset immediately by turning power switch off, wait 10 seconds, and turn back on.





Service Time Replacement Guide for PT125/200

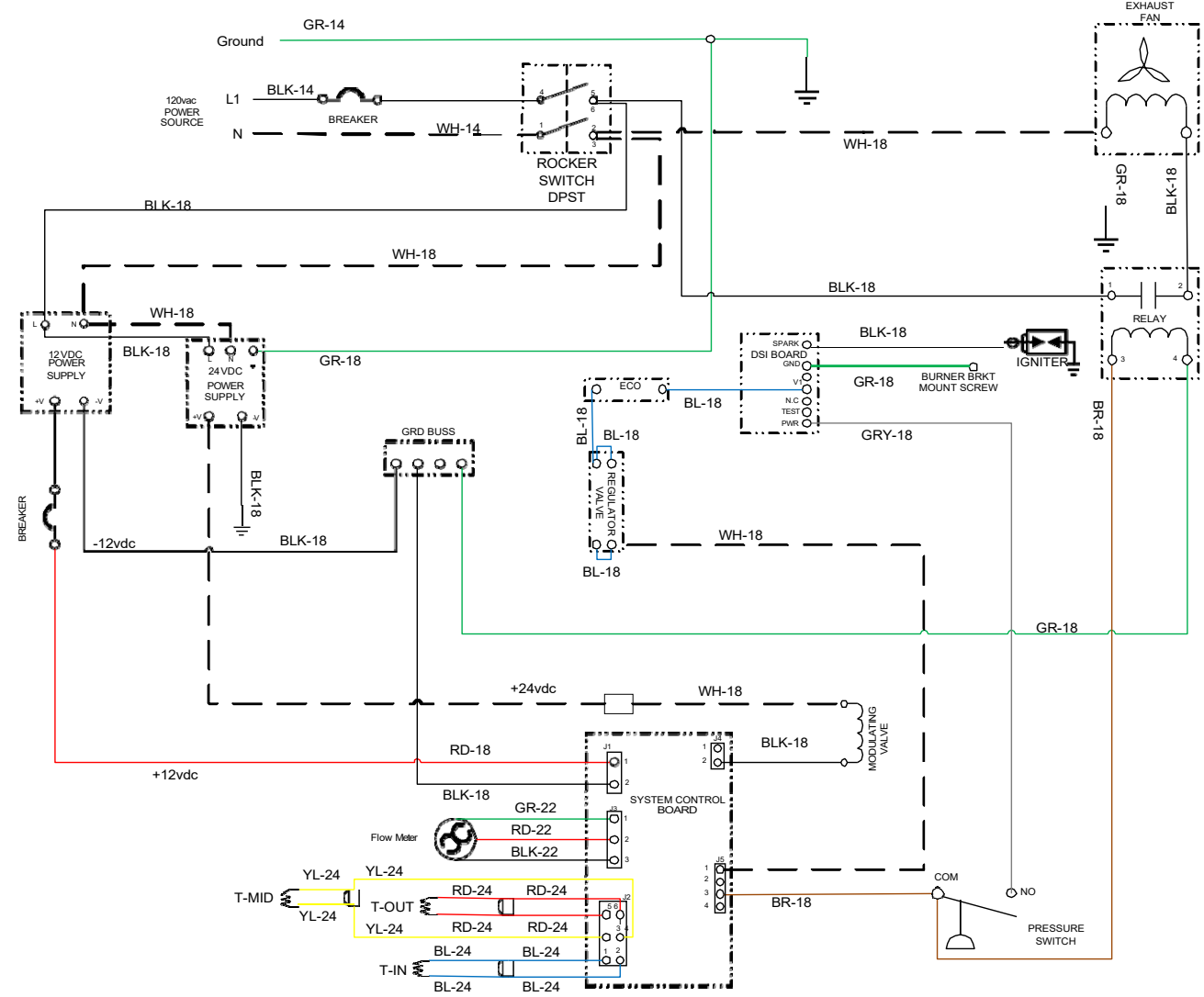
Rev 3/2020

Part Number	Component Description	Diagnostic Time	Replace	Test
3646	Ignition Probe	0.3	0.2	0.1
1092	Modulating Valve	0.50	0.5	0.2
1119	3 Amp Circuit Breaker	0.20	0.2	—
1436	T-In Assy	0.20	0.2	0.1
1437	T-Out Assy	0.2	0.2	0.1
1463	Solenoid Valve NG Robertshaw	0.50	0.5	0.1
1496	Wire Harness 12v DC to Board	0.20	0.2	—
1613	24v DC Power Supply	0.30	0.3	—
1615	Relay 12v DC Control	0.30	0.2	—
2937	Pressure Switch	0.30	0.2	0.2
1634	Pressure Reducing Valve	—	Parts Only	—
1749	ECO	0.2	0.2	0.1
1752	Pressure Relief Valve	—	Parts Only	—
1765	Ignition Wiring Harness	0.3	0.3	0.1
1496	Power Wire Harness /Cont Bd.	0.20	0.2	—
1854	T-Mid Assy	0.2	0.2	0.1
3616	Blower Assy	0.30	0.5	—
1896	Dual Temp Dig.Display	0.20	0.3	—
1897	12v DC Power Supply	0.2	0.3	—
1994	Heat Exchanger w/ass't parts	—	—	—
2004	Switch on/off	0.20	0.1	—
2066	T-In Assy, temp display	0.2	0.2	—
2067	T-Out Assy, temp display	0.2	0.2	—
3226	Flowmeter Assy	0.30	0.3	—
3158	DSI Board	0.3	0.2	0.1
2416	Flow Meter Gaskets	0.20	0.3	—
1841	Control Bd. & Microprocessor	0.50	0.2	—
ACAL	Automatic Calibration	—	0.5	—

PT125/200
Electrical and Plumbing
Schematics

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED

PT125/200 WIRING DIAGRAM



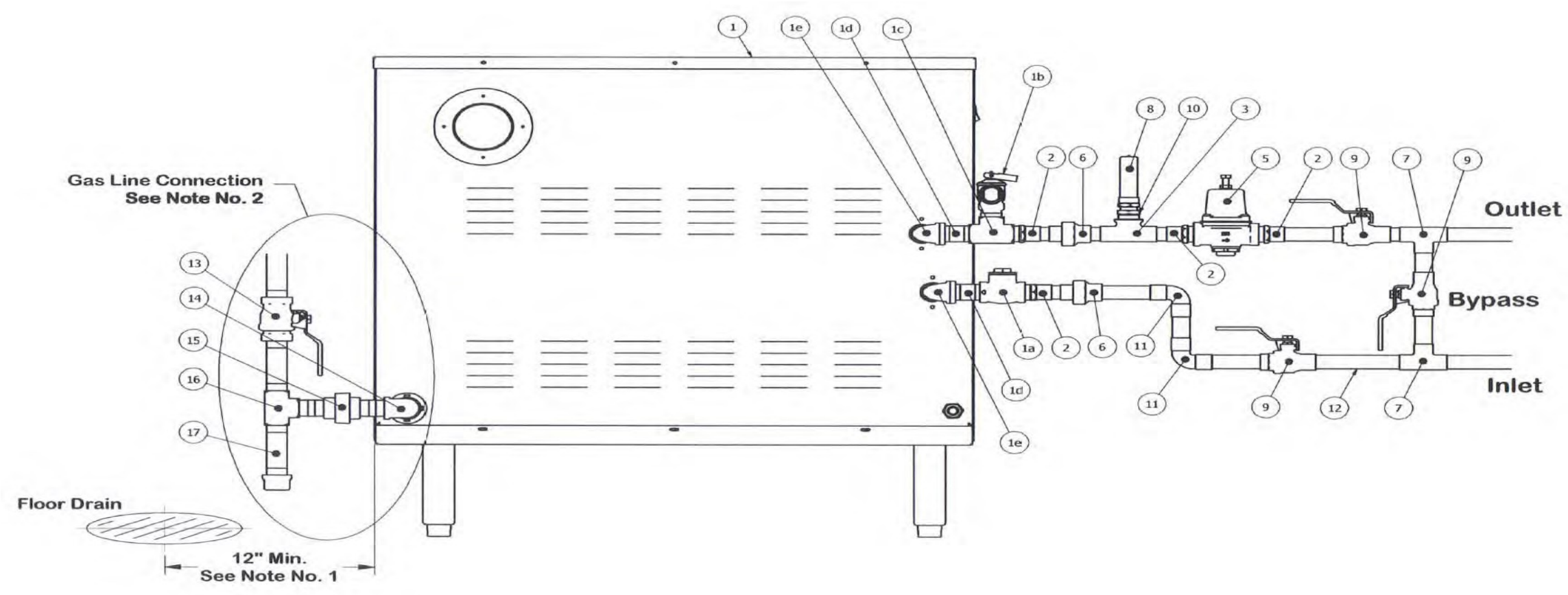
DRAWN	DATE	NAME	Hubbell	Stratford, CT 06615
CHECKED	3/22/19	JAA	The Electric Heater Company	(203) 378-2659
ENG APPR.			Customer:	
MFG APPR.			Description: PT125/200 Wiring diagram	

PROPRIETARY AND CONFIDENTIAL
 THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF THE ELECTRIC HEATER COMPANY. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF THE ELECTRIC HEATER COMPANY IS PROHIBITED.

DIMENSIONS ARE IN INCHES
 TOLERANCES:
 (UNLESS OTHERWISE SPECIFIED)
 FRACTIONAL ±1/
 ANGULAR ±0.0315° BEND ±1°
 TWO PLACE DECIMAL ±0.01
 THREE PLACE DECIMAL ±0.005

SIZE	DWG. NO.	REV
C	PT 125-200 WIRING DIAGRAM	
SCALE: 1:3	FSCM: 19857	SHEET 1 OF 1

PT125/200 Plumbing and Gas Line Connection



PARTS LIST			
ITEM	QTY	DESCRIPTION	SUPPLIED WITH UNIT
1	1	PT-200 / PT-125	
1A	1	CHECK VALVE, 3/4" NPT	X
1B	1	PRESSURE RELIEF VALVE	X
1C	1	TEE, 3/4" NPT F-F-F	X
1D	2	NIPPLE, 3/4" NPT X 2"	X
1E	2	ELBOW, 3/4" NPT F-F	X
2	4	ADAPTER, 3/4" FM C ISX3/4" NPT, COPPER	
3	1	TEE, 3/4" C-C F NPT, BRASS	
5	1	PRESSURE REDUCING VALVE, 3/4" NPT, 25 PSI @ 8 GPM	X
6	2	UNION, 3/4" C-C, COPPER	
7	2	TEE, 3/4" F C-C-C, COPPER (SEE NOTE 3)	
8	1	SHOCK ABSORBER, WATER 250 PSI MAX	
9	3	BALL VALVE, 3/4" C-C	
10	1	REDUCER BUSHING, 3/4" F NPT - 1/2" F NPT, BRASS	
11	2	ELBOW, 3/4" COPPER SWEAT (SEE NOTE 3)	
12	TO SUIT	COPPER PIPE, 3/4" ID TYPE "L"	
13	1	MANUAL GASS SHUT-OFF	
14	1	ELBOW, 3/4" NPT	
15	1	UNION, 3/4" NPT	
16	1	TEE, 3/4" NPT	
17	1	DRIP LEG, 3/4" NPT NIPPLE (4" LONG MIN.) W/ CAP	

NOTES:

- FLOOR DRAIN** MUST NOT BE LOCATED AS TO ALLOW STEAM FROM THE DRAIN TO ENTER THE BOTTOM OF THE BOOSTER HEATER. A MINIMUM OF 12 INCHES FROM ALL FOUR SIDES IS RECOMENDED TO INSURE PROPER OPERATION.
- GAS LINE CONNECTION:** THE PARTS SHOWN (ITEMS #13-#17) ABOVE ARE RECOMENDED FOR PROPER CONNECTION TO THE GAS SUPPLY. THESE PARTS WILL NEED TO BE SUPPLIED BY OTHERS.
- ADDITIONAL COPPER CONNECTORS (ELBOWS AND TEES) MAY BE REQUIRED DEPENDING ON THE COMPONENT LOCATIONS AND COPPER TUBE ROUTING AS DICTATED BY THE INDIVIDUAL APPLICATION.
- PARTS LIST IS NOT INCLUDED UNLESS OTHERWISE SPECIFIED

**** CONSULT LOCAL CODES ****

ZONE	REV.	DESCRIPTION	DATE APPROVED
REVISIONS			

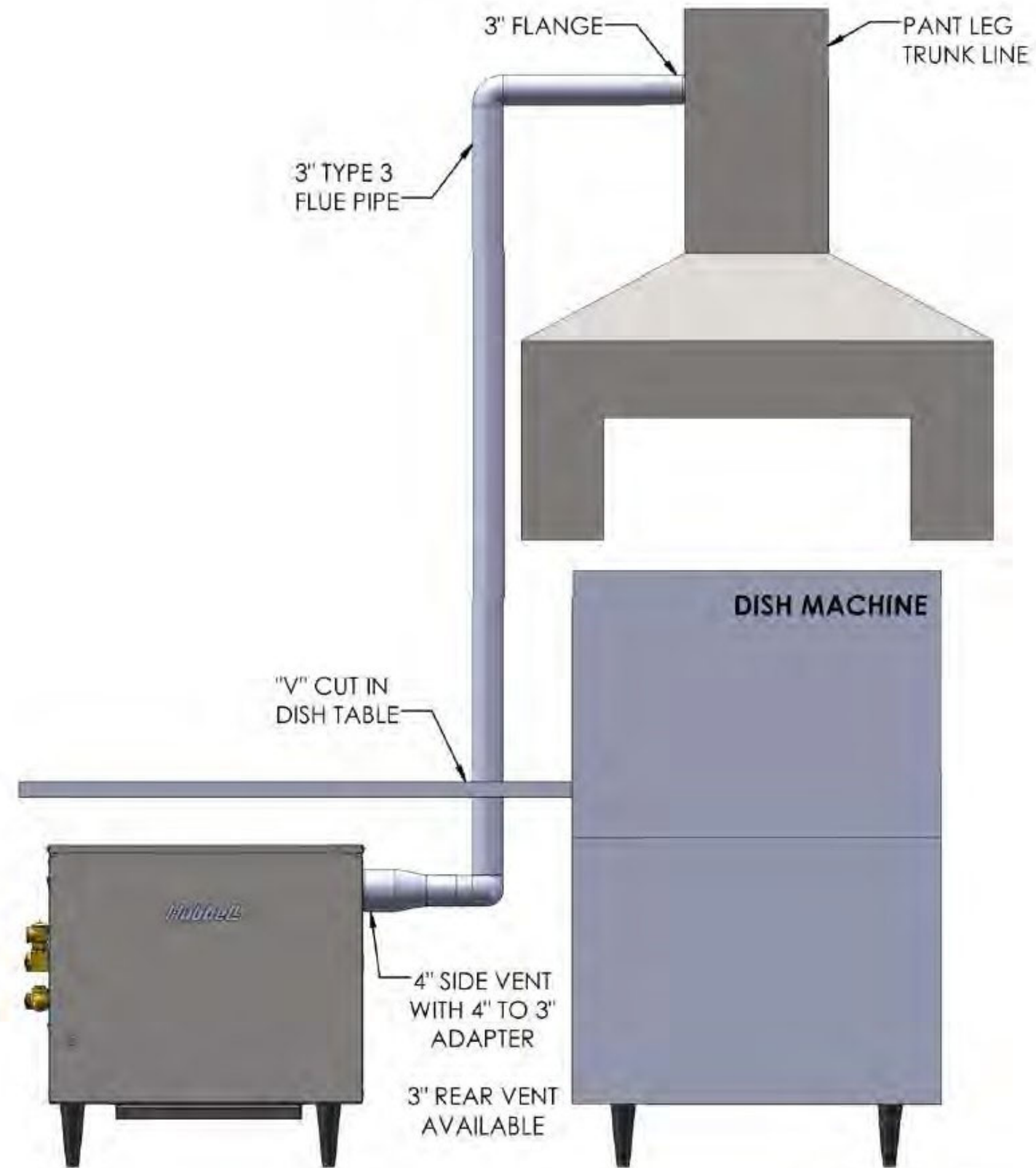
DATE	NAME	 Stratford, CT 06615 (203) 378-2659
1/20/17	DRM	
DRAWN		The Electric Heater Company Customer: _____ Description: INSTALLATION DRAWING PT-200/125 PIPING DIAGRAM
CHECKED		
ENG APPR.		
MFG APPR.		

PROPRIETARY AND CONFIDENTIAL
 THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF THE ELECTRIC HEATER COMPANY. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF THE ELECTRIC HEATER COMPANY IS PROHIBITED.

DIMENSIONS ARE IN INCHES
 TOLERANCES:
 (UNLESS OTHERWISE SPECIFIED)
 FRACTIONAL ±1/4
 ANGULAR: MACH ±1/2° BEND ±1°
 TWO PLACE DECIMAL ±0.01
 THREE PLACE DECIMAL ±0.005

SIZE	DWG. NO.	REV
B	DS0007	--
SCALE: 1:1	FSCM: 19857	SHEET 1 OF 1

PT125/200 Venting Diagram



PT125/200 SERVICE BULLETINS

Table of Contents

	<u>Page</u>
SB-1 12 Volt Power Supply Change Procedure	65
SB-1A 24 Volt Power Supply Change Procedure	66
SB-2 Pressure Switch Adjustment	67
SB-3 Circuit Board Replacement	68
SB-3 Circuit Board Replacement Software Reference	69
SB-5 Igniter Change Procedure & Spark Gap Adjustment	71
SB-6 Direct Spark Ignition (DSI) Board Change	72
SB-7 Automatic Calibration (Auto Cal) Procedure	73
SB-8 Modulating Valve Replacement	74
SB-10 Changing Outlet Temperature Setting	75
SB-11 Fan Relay Test Procedure	76
SB-12 Combination Gas Valve Replacement	77
SB-13 Flow Meter Check & Replacement	78
SB-14 Burner Manifold Pressure Check & Adjustment.....	79
SB-15 T-Mid Thermistor Change Procedure	80
SB-16 T-Out/T-In Thermistor Change Procedure.....	81
SB-17 Thermistor Reading Procedure	82

SB-1 12 Volt Power Supply Change Procedure

Model: PT56, PT125, PT200

Software version: All

Tools Required: Phillips screwdriver

Process:

1. Turn booster heater power switch off, unplug the unit from the 110v AC wall outlet and remove front cover.
2. Ensure that the power supply you are replacing is for 12 Volts and not 24 Volts. If you attempt to install the incorrect power supply, it will damage the unit and void any warranty.
3. Remove the 4 screws holding the power supply bracket and remove the power supply.
4. On the new power supply find the wire that has the white printing (+). Attach this lead to the circuit breaker located in the control drawer. The plain black lead (-) connects to the ground terminal.
5. Place the power supply in the bracket and re-attach.
6. Plug 110v AC into outlet and turn booster heater power.
7. Verify that the green LED is flashing; ensure proper operation by running several racks through the dish machine.

Parts List:

1897 - 12v DC Power supply assembly

SB-1A 24 Volt Power Supply Change Procedure**Model:** PT125/200**Software version:** All**Tools Required:** Phillips screwdriver**Process:**

1. Turn booster heater power switch off and unplug the unit from the 110 VAC wall outlet.
2. Remove the front cover. Remove the 4 screws holding the power supply bracket and remove the power supply.
3. On the new power supply find the wire that has the Female socket (+). Attach this lead to the Molex connector supplying the white power wire to the gas modulating valve. The plain black lead (-) with the ring connector, connects to the ground screw located below the control drawer on the burner saddle.
4. Place the power supply in the bracket and re-attach it.
5. Plug the 110v AC power cable tightly into the back of the 24 volt power supply, and plug the power cable back into the wall outlet.
6. Lock the dish machine into a rinse mode and turn power ON, verify that the PT125/200 ignites and the modulating gas valve ramps up to high fire.

Parts List:

1613 - 24v DC Power supply assembly

SB-2 Pressure Switch Adjustment

Model: PT125/200

Software version: All

Tools Required: Flat blade screwdriver or 5/64" Allen wrench

Process:

1. Lock the dish machine into a rinse mode.
2. Turn the booster heater power switch on.
3. With the dish machine rinse running and the booster heater blower running, turn the adjustment screw on the pressure switch (type may vary) counter-clockwise until the burner ignites.
4. Disconnect the exhaust flue at the first joint outside the booster heater case. Block flue exiting the booster heater and verify burner extinguishes. If it does not, turn screw clockwise until it does extinguish.
5. Unblock flue and verify burner ignites. If booster ignites, reconnect the exhaust flue.
6. After adjusting the pressure switch, replace front cover and run several racks through the dish machine to verify proper adjustment of the pressure switch.

SB-3 Circuit Board Replacement

Model: PT56, PT125, PT200

Software version: All

Tools Required: Needle-nose pliers

SB-7 Auto-calibration service bulletin (match software version)

Process:

1. Turn booster heater power switch off.
2. Disconnect all electrical connectors at the circuit board.
3. Remove the circuit board. Needle-nose pliers can be used to remove the circuit board nylon standoffs.
4. Install the new board with the LED's located at the front of the drawer and aligned with LED sockets on drawer.
5. Reconnect all connectors to the board. CAUTION: there are three two-pin connectors. Be sure that the power supply connector (red and green wire) goes to upper right corner (red connector) and the modulating valve connector (black wire) goes to lower right (blue connector). The third two-pin connector is not used.
6. The booster heater outlet temperature has been preset to 4.20 VDC (192°F). Refer to manual if a further adjustment is needed. See SB-10.
7. Perform auto-calibration per SB-7. Be sure to refer to present software version for auto-calibration bulletin.

Parts List:

2926-X - Micro-controller chip-already installed in board (2926-RC is for PT56,
2926-125 is for the PT125, and 2926-200 is for the PT200)
1325 - Standoffs (already installed in board)
T1836- Control board

SB-3 Circuit Board Replacement Software Reference

Model: PT56, PT125, PT200

Software versions:

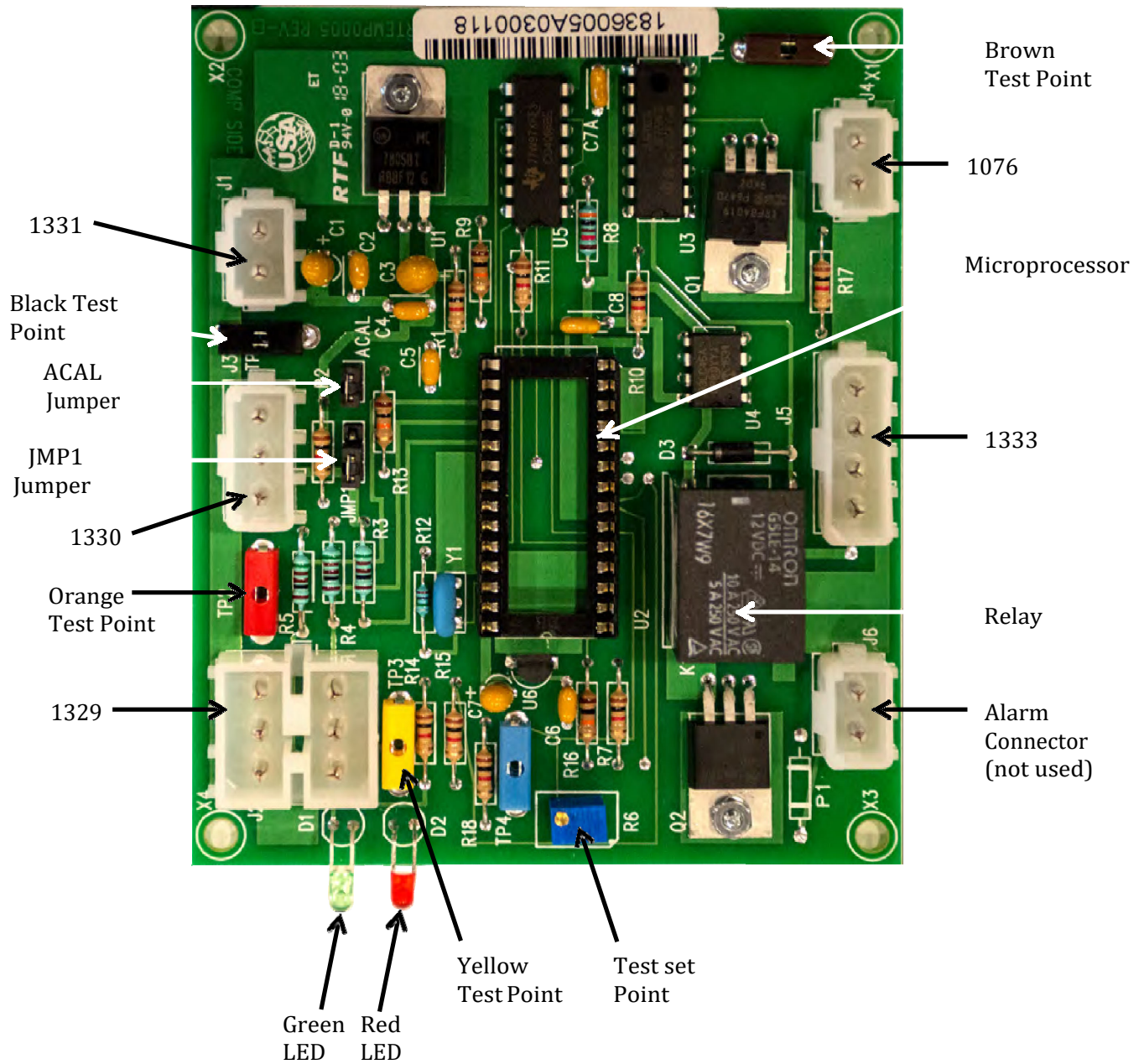
2926-RC software PT56 (Previous PN-9098) 2926-125

software PT125 (Previous PN-9099)

2926-200 software PT200 (Previous PN-9097)

Electronic Control Board

Rev 3/2020



1076	Modulating Gas Valve Connection
1329	Thermistor Wiring Harness Connector
1330	Flowmeter Connection
1331	Power Supply Wiring Harness
1333	Connector DSI Wiring Harness
Alarm	Alarm Connector Not Used (in this application)
ACAL Jumper	Jumper for Auto-Cal
JMP 1 Jumper	Board Function Jumper
Orange Test Point	Test Point for T-out Thermistor
Yellow Test Point	Test Point for T-mid Thermistor
Blue Test Point	Test Point for Setting Temperature
Brown Test Point	Test Point for Modulating Valve
Black Test Point	Test Point for Ground (common)

SB-5 Igniter Change Procedure & Spark Gap Adjustment

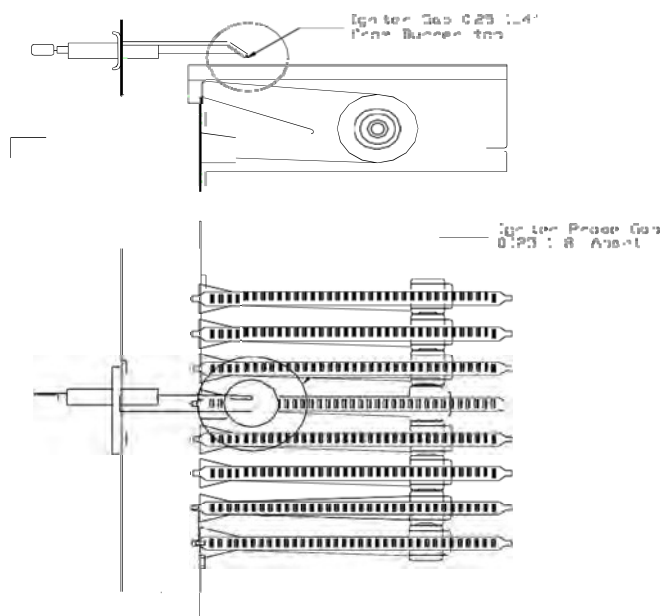
Model: PT56, PT125 & PT200

Software version: All

Tools Required: Phillips screwdriver
Needle Nose Pliers (to adjust probes)

Process:

1. Turn power to booster heater OFF and close the gas supply valve to the booster heater.
2. Remove the front door and locate the igniter.
3. Disconnect the ignition wire from the igniter.
4. Using a Phillips screwdriver remove the two screws attaching the igniter to burner and remove.
5. Install the new igniter and check that the igniter probes are 0.125 - 0.250" above the center burner blade as shown in figure below. Gap between two probes should be about 0.125".
6. Turn gas ON and check for leaks with AGA approved leak detector solution (if the burner was removed).
7. Turn power ON and verify that the unit ignites properly and that spark is affected for maximum of 5 seconds.



Parts List:

3158 – DSI Board
1765 – Ignition Cable
3646 – Spark Ignition Probe

SB-6 Direct Spark Ignition (DSI) Board Change

Model: PT56, PT125 & PT200

Software version: All

Tools Required: Screwdriver

Process:

1. Turn booster power switch off and remove front cover.
2. Open the electrical drawer and pull all the way out from its saddle.
3. Remove the DSIboard.
4. Install the new DSI board and re-attach the wire harnesses. Be sure to route the yellow or black ignition wire separate from the other control harnesses. (If a new harness is supplied, use it and discard the old harness.)
5. Replace front cover and turn booster power switch on.
6. Ensure proper operation of the booster heater by running several racks through the dish machine and ensuring that proper rinse water temperature is reached.

Parts List:

3158 – Direct Spark Ignition (DSI) board (#3266 bracket if required)

SB-7 Automatic Calibration (AutoCal) Procedure

Model: PT125/200

Software version: 2926-125 and 2926-200

Tools Required: Needle-nose pliers

CAUTION: During this test the unit will be performing several self-tests. Do not attempt to use dish machine. The booster heater will increase the gas flow from minimum to maximum over 8 minutes. Be sure to monitor the unit for safe operation.

Process:

1. Turn power off and remove front cover. Open electronic drawer. Ensure that the software version on the microprocessor is one that is listed above. From the front circuit board, remove the 2-pin jumper cap from ACAL (back jumper) using pliers or fingers.
2. Lock the dish machine in rinse mode. (**Rinse MUST stay on for the entire procedure**).
3. Turn heater power on. Green LED should flash and burner comes on to high burn and immediately drops back to low burn. If red light flashes there is a problem that must be corrected first, and then restart this entire procedure. See PT125/PT200 service codes for what each code means.
4. Over the next 8 minutes the unit will increase the gas flow to calibrate the valve. The unit will run the test by itself and only requires monitoring for safety. When the test is ended the red LED will flash rapidly and the burner will shut off.
5. Replace the 2-pin jumper cap on the board.
6. Turn power OFF, wait 20 seconds and turn power backon.
7. Check the unit for normal operation. If operation appears normal the procedure is complete. If the unit does not operate correctly or gas flow varies excessively repeat the procedure.

SB-8 Modulating Valve Replacement

Model: PT56, PT125 & PT200

Software version: All

Tools Required: Pipe wrench
12" Adjustable wrench

Process:

1. Turn off power switch on booster and shut gas off at valve outside booster case.
2. Unplug the modulating valve 2-pin connector. It is the 2-pin black and white wire connection just in front of the gas train assembly.
3. Place adjustable wrench on the union (located in front of the burner manifold) in front of the modulating valve and loosen to remove. Unscrew modulating valve from the gas solenoid using pipe wrench.
4. **IMPORTANT! USE AGA-APPROVED SEALANT ON ALL GAS THREAD CONNECTIONS BEING VERY CAREFUL NOT TO ALLOW ANY TO PENETRATE THE MODULATING VALVE CAVITY. IF THIS IS NOT STRICTLY FOLLOWED IT WILL CAUSE THE MODULATING VALVE TO BECOME STICKY AND MALFUNCTION AND HEATER WILL NOT CORRECTLY OPERATE.**
5. Re-assemble the heater reversing the procedure. **Ensure that the gas is flowing in the direction of the arrow on the collar of the valve.**
6. Reconnect wire connector and re-tighten union.
7. Turn on gas supply. Check for gas leaks.
8. Power up unit.
9. An Auto Calibration (see SB-7) procedure must be completed. Be sure to use the Auto Calibration procedure specific to your type of unit and software version. Strictly follow the instructions. Failure of this process will cause system malfunction.
10. After completing Auto Calibration procedure, lock the dish machine into rinse mode and check for normal operation.

Parts List:

1024 PT56 Modulating Valve Assembly
2957 PT125 Modulating Valve Assembly
1092 PT200 Modulating Valve Assembly

SB-10 Changing Outlet Temperature Setting

Model: PT56, PT125 & PT200

Software version: All

Tools Required: Small flat blade screwdriver
Digital Multimeter/Voltmeter

Process:

NOTE: The temperature on the booster heater has been factory set to approximately 192°F. It is not recommended that you change this setting. Doing so could result in water temperature too low to sanitize dishware or high enough to bake food matter onto dishes, or cause booster heater to overheat water and shut down. If it is necessary to change the setting it can be done as follows:

1. Open access door of heater. Open the electronic drawer. The adjustment screw is located on a small blue block on the left side of the electronics board, under the LEDs.
2. Use a voltmeter and insert the black lead in black test point and the red lead in blue test point. A reading of 4.20 VDC from the voltmeter will set the temperature control at 192°F. A small blade screwdriver should be used to adjust the temperature screw. To decrease temperature, turn screw counterclockwise. To increase temperature, turn screw clockwise. Each full turn will change the water temperature approximately 7°F.
3. Check the water temperature on digital display of booster heater or at temperature gauge on dish machine and adjust as necessary.

SB-11 Fan Relay Test Procedure

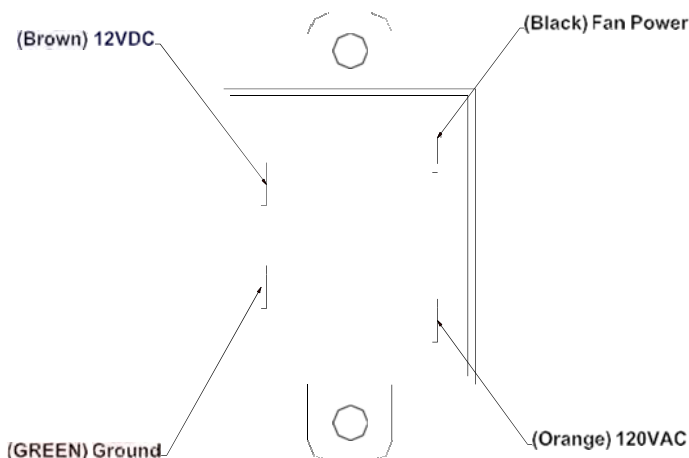
Model: PT125/200

Software version: All

Tools Required: DC Multimeter
Needle-nose pliers

Process:

1. Turn heater power switch off and remove front cover. Locate the fan relay.
2. Set your multimeter to volts DC. Using the illustration below, connect your meter to the 12v DC side of the relay.
3. Turn the power on to the booster heater and verify you have 12v DC on the relay (the relay will only be energized for 8 seconds after power is turned on).
4. If power is present, continue to next step. If not, please refer back to the troubleshooting guide.
5. Switch your multimeter to 120v AC. Turn the booster heater off.
6. Using the illustration below, connect your meter to the 120v AC side of the relay.
7. Turn booster heater power switch on and verify you have 120v AC on the relay.
8. If 120v AC is present, turn to booster heater off and connect the orange and black wire.
9. Turn the power on to the booster heater. If the fan comes on, replace the relay. If the fan does not come on, replace the blower fan.



SB-12 Combination Gas Valve Replacement**Model:** PT56, PT125 & PT200**Software version:** All**Tools required:** Pipe wrench
12" adjustable wrench
Pipe sealant**Process:**

1. Disconnect the power to the boosterheater.
2. Disconnect the blue & white wires connected to the combination gas valve.
3. Turn off the gas supply to the booster heater.
4. Separate the closest gas union outside of the booster heater.
5. Remove all gas line plumbing between the gas valve and halfunion.
6. Separate the union to the left of the modulating gas valve.
7. Remove the combination gas valve and modulating gas valve from the remaining gas train.
8. Install new combination gas valve in reverse order using approved pipe sealant, ensuring that sealant does not get into the modulating gas valve.
9. Pressurize the gas line.

Be sure to check all gas fittings with an approved leak test solution before restarting the gas booster heater.

Note:

It may take several ignition attempts to purge all the air from the refitted gas line.

Parts List:

1570 PT56 Solenoid Valve 1463
PT125/200 Solenoid Valve

SB-13 Flow Meter Check and Replacement

Model: PT125/PT200

Software version: All

Tools required: 2 adjustable wrenches or slip joint pliers

Phillips screwdriver

Process:

Check Operation

1. Lock the dish machine into the rinsemode.
2. Turn the power to the PT125/200 on.
3. Check for a plumbing bypass (if there is, make sure it is closed to assure flow of rinse water through the booster.)
4. Watch the flashing green LED on the green control board. Once you see a pause, start counting the green flashes until the next pause. Verify the count twice.
5. Divide the number of flashes between pauses by 3. This resulting number will be the flow rate in gallons per minute. Example - 15 flashes between pauses divided by 3 = 5GPM.
6. If you do not see a pause in the green LED with the rinse running, the flow meter is not sensing flow or no water is passing through booster or you have a recirculating booster heater (See PT125 troubleshooting diagram).

Adjustment or Replacement

1. Be sure the pick-up wire on top of flow meter (Part # 3226) is tight.
2. Check flow meter connector to control board.
3. Replace flow meter by the following procedure:
 - a. Turn off water at shut off valve outside of booster.
 - b. Remove 4 Phillips screws from side access panel (digital display) & let panel hang from side. Take care not to damage digital display wiring.
 - c. Ensure that the water in the pipe is cool. Using 2 wrenches or slip joint pliers loosen the union nuts on either side of the flow meter and remove the flow meter and gaskets (3226 Flowmeter only).
 - d. Verifying flow direction, install new meter with 2 new gaskets (3226 Flowmeter only) and tighten union nuts (do not over tighten 3648 Flowmeter union nuts).
 - e. Replace access panel.
 - f. Test

Parts List:

3226 PT125/200 Turbine Flowmeter

3648 PT125/200 Turbine Flowmeter Union Nut Far End Fitting

SB-14 Burner Manifold Pressure Check and Adjustment

Model: PT56, PT125 & PT200

Software version: All

Tools required: DC Multimeter
Manometer

Process:

1. Disconnect the power to the Model PT Booster and turn the gas supply off at the manual valve outside of the booster heater.
2. Remove the 1/8" brass plug on the left side of the burner manifold.
3. Once you have removed the 1/8" plug, connect the manometer.
4. Locate the two pin connector coming from the gas modulating valve (2957 for PT125, 1092 from PT200).
5. Switch multi-meter to 20v DC scale.
6. Slide the probes behind the two wires of the 2-pin connector coming from the gas modulating valve. Red probe to the white wire and black probe to black wire.
7. Turn on the gas supply at the manual valve and turn power to booster heater back on.
8. With your manometer and multi-meter connected, lock the dish machine into a rinse mode, reconnect electrical power to the booster heater and turn the Model PT Booster on.
9. At ignition, there should be 0v DC going to the gas modulating valve coil, the manometer should read approximately 0.25 - 0.50 WCI.
10. If all conditions are correct, once the flame is detected you should have approximately 22v DC (12vDC PT56) and 2.85 WCI - 3.70WCI @ full burn **depending on model year & type gas**, refer to product label on access door.
11. Remove manometer and replace 1/8" plug using approved pipe dope.

Adjusting Manifold Pressure

1. Remove cap from combination gas valve regulator. (ILL. 200-9)
2. Turn screw under cap clockwise to increase manifold pressure and counter-clockwise to reduce pressure to the correct reading.
3. Replace cap on the combination gas valve.

Be sure to check all gas fittings with approved leak test solution before restarting the PT Booster.

Parts List:

2957	PT125	Modulating Gas Valve
1092	PT200	Modulating Gas Valve

SB-15 T-Mid Thermistor Change Procedure

Model: PT56, PT125 & PT200

Software version: All

Tools required: 9/16" Open end wrench
Adjustable wrench

Process:

1. Turn power off and turn off water supply at shut off valve outside of the booster heater.
2. Remove old thermistor and disconnect from harness. **CAUTION:** Use two wrenches, one on the hex (9/16") of the thermistor and an adjustable wrench on the hex located on the heat exchanger fitting. Failure to do so may damage the heat exchanger.
3. Insert the end of the thermistor without electrical leads into the heat exchanger until the heat shrink (black) on the thermistor touches the fitting and tighten the fitting finger-tight. The final tightening should be done using two wrenches as described in step 1.
4. Connect the thermistor to the wiring harness.
5. After installing the mid thermistor lock the dish machine into rinse mode and check for normal operation. If the booster outgoing temperature fluctuates more than 5 degrees from the set temperature perform the Auto Calibration procedure.
6. If the Auto Calibration (see SB-7) procedure is needed be sure to use the AutoCal specific to your model (Recirculating or Flow Through), check for correct software version.

Parts List:

1854 - T-Mid Thermistor CPI Assembly

SB-16 T-Out/ T-In Thermistor Change Procedure

Model: PT56, PT125 & PT200

Software version: All

Tools Required: Scissors (or other cutting tool)

Process:

1. Disconnect power to the booster.
2. Remove the wire ties, metal tape, and old thermistor. Clean off the old heat sink and be sure copper is wiped clean.
3. Place a pea size amount of heat sink compound on the pipe where the thermistor will be located.
4. Place the thermistor into the heat sink with the wire leads pointing down along the tube.
5. Wrap metal tape around the tube and thermistor.
6. Attach the wire tie. Wrap the wire tie about 1/2" away from the thermistor head to hold the thermistor against the tube. **CAUTION:** 1) Do not place the tie wrap over the thermistor tip as this may damage the thermistor, do not over-tighten the wire tie.
7. Connect the thermistor to the wiring harness.
8. Replace front cover of booster heater and turn power switch back on.
9. Perform test of the unit by running several racks through the dish machine to ensure that proper rinse temperature is reached.

Parts List:

1436 - T-In Thermistor Assembly Kit

1437 - T-Out Thermistor Assembly Kit

SB-17 Thermistor Reading Procedure

Model: PT56, PT125 & PT200

Software version: All

Tools required: DC Multimeter

The precise temperature of the water in the heater can be determined by reading thermistor DC voltages at the colored test points on the green control board with a multimeter and referring to the "Thermistor Calibration" table.

The **black multimeter probe** should go into the **black test point** and the red probe should go into the following test points:

Orange/Red Test Point = Outlet temperature (T-Out)

Yellow Test Point = Mid temperature (T-Mid)

Inlet temperature (T-In) is read from inboard blue wire on connector #1329
(thermistor harness plug) of the green control board.

Power must be on for the booster to take the readings. Refer to the DC voltage reading in the "volts" column on the "Thermistor Calibration" chart. The corresponding temperature is the column to the left of the volt reading.

Thermistor Calibration

Check @ colored test point

Yellow = T-Mid

Black = Common Inboard

Orange = T-

Blue wire = T-In

Out

K-OHMS	°F	Volts	K-OHMS	°F	Volts	K-OHMS	°F	Volts	K-OHMS	°F	Volts
2.500	41.19	4.1514	0.273	135.06	1.7411	0.179	156.54	1.2971	0.107	184.70	0.8657
2.400	42.68	4.1223	0.271	135.42	1.7327	0.177	157.13	1.2863	0.106	185.24	0.8590
2.300	44.25	4.0911	0.269	135.79	1.7244	0.175	157.73	1.2755	0.105	185.78	0.8523
2.200	45.89	4.0575	0.267	136.16	1.7159	0.173	158.34	1.2646	0.104	186.33	0.8455
2.100	47.62	4.0214	0.265	136.53	1.7075	0.171	158.95	1.2537	0.103	186.88	0.8388
2.000	49.45	3.9825	0.263	136.91	1.6990	0.169	159.58	1.2426	0.102	187.44	0.8320
1.900	51.38	3.9403	0.261	137.28	1.6904	0.167	160.21	1.2316	0.101	188.01	0.8252
1.800	53.43	3.8944	0.259	137.67	1.6818	0.165	160.85	1.2204	0.100	188.58	0.8183
1.700	55.62	3.8444	0.257	138.05	1.6732	0.163	161.50	1.2092	0.099	189.16	0.8115
1.600	57.95	3.7897	0.255	138.44	1.6645	0.161	162.16	1.1979	0.098	189.75	0.8046
1.500	60.45	3.7295	0.253	138.83	1.6558	0.159	162.82	1.1866	0.097	190.34	0.7977
1.400	63.15	3.6630	0.251	139.23	1.6470	0.157	163.50	1.1751	0.096	190.95	0.7908
1.300	66.08	3.5892	0.249	139.63	1.6382	0.155	164.19	1.1637	0.095	191.55	0.7838
1.200	69.27	3.5067	0.247	140.03	1.6293	0.153	164.89	1.1521	0.094	192.17	0.7769
1.100	72.78	3.4140	0.245	140.44	1.6204	0.151	165.60	1.1405	0.093	192.79	0.7699
1.000	76.67	3.3091	0.243	140.85	1.6114	0.149	166.32	1.1288	0.092	193.42	0.7629
0.900	81.03	3.1892	0.241	141.26	1.6024	0.147	167.05	1.1170	0.091	194.06	0.7558
0.800	85.97	3.0511	0.239	141.68	1.5933	0.145	167.79	1.1052	0.090	194.71	0.7488
0.700	91.67	2.8902	0.237	142.11	1.5842	0.143	168.55	1.0933	0.089	195.37	0.7417
0.600	98.39	2.7003	0.235	142.53	1.5751	0.141	169.32	1.0813	0.088	196.03	0.7346
0.580	99.88	2.6581	0.233	142.96	1.5659	0.139	170.10	1.0692	0.087	196.71	0.7274
0.560	101.44	2.6144	0.231	143.40	1.5566	0.137	170.89	1.0571	0.086	197.39	0.7203
0.540	103.06	2.5690	0.229	143.84	1.5473	0.135	171.70	1.0449	0.085	198.08	0.7131
0.520	104.75	2.5218	0.227	144.28	1.5379	0.133	172.52	1.0326	0.084	198.78	0.7059
0.500	106.52	2.4728	0.225	144.73	1.5285	0.131	173.35	1.0202	0.083	199.49	0.6987
0.480	108.36	2.4218	0.223	145.18	1.5191	0.129	174.20	1.0078	0.082	200.21	0.6914
0.460	110.30	2.3687	0.221	145.64	1.5096	0.128	174.63	1.0016	0.081	200.95	0.6841
0.440	112.34	2.3134	0.219	146.11	1.5000	0.127	175.07	0.9953	0.080	201.69	0.6768
0.420	114.49	2.2556	0.217	146.57	1.4904	0.126	175.51	0.9890	0.079	202.44	0.6695
0.400	116.75	2.1954	0.215	147.05	1.4807	0.125	175.95	0.9827	0.078	203.21	0.6621
0.380	119.15	2.1324	0.213	147.52	1.4710	0.124	176.40	0.9764	0.077	203.98	0.6548
0.360	121.70	2.0666	0.211	148.01	1.4612	0.123	176.85	0.9700	0.076	204.77	0.6474
0.350	123.04	2.0325	0.209	148.50	1.4514	0.122	177.30	0.9637	0.075	205.57	0.6399
0.340	124.42	1.9976	0.207	148.99	1.4415	0.121	177.76	0.9573	0.074	206.38	0.6325
0.335	125.13	1.9799	0.205	149.49	1.4316	0.120	178.23	0.9509	0.073	207.21	0.6250
0.330	125.85	1.9620	0.203	149.99	1.4216	0.119	178.70	0.9444	0.072	208.05	0.6175
0.325	126.58	1.9438	0.201	150.50	1.4115	0.118	179.17	0.9380	0.071	208.90	0.6100
0.320	127.32	1.9254	0.199	151.02	1.4014	0.117	179.65	0.9315	0.070	209.77	0.6024
0.315	128.08	1.9068	0.197	151.54	1.3912	0.116	180.13	0.9250	0.069	210.65	0.5948
0.310	128.86	1.8879	0.195	152.07	1.3810	0.115	180.62	0.9185	0.068	211.54	0.5872
0.305	129.64	1.8689	0.193	152.61	1.3707	0.114	181.11	0.9120	0.067	212.46	0.5796
0.300	130.45	1.8496	0.191	153.15	1.3604	0.113	181.61	0.9054	0.066	213.38	0.5719
0.295	131.26	1.8300	0.189	153.70	1.3500	0.112	182.11	0.8989	0.065	214.33	0.5642
0.290	132.10	1.8102	0.187	154.25	1.3395	0.111	182.62	0.8923	0.064	215.29	0.5565
0.285	132.95	1.7902	0.185	154.81	1.3290	0.110	183.13	0.8857	0.063	216.27	0.5488
0.280	133.82	1.7699	0.183	155.38	1.3184	0.109	183.65	0.8790	0.062	217.27	0.5410
0.275	134.70	1.7494	0.181	155.96	1.3078	0.108	184.17	0.8724	0.061	218.29	0.5332

PT Parts List

Hubbell Model PT Booster Heater Service Parts List

Category	Hubbell P/N	Description	
Accessories	01049INUBIN014	Plastic Legs (Fits each, 4 Req'd.)	
	AE014002-C	Nickel Plated Legs (Fits each, 4 Req'd.)	
	ASU-0040-C	Stainless Steel Adjustable Legs (Fits each, 4 Req'd.)	
	ASU-0000-C	1000 Mount Legs (Fits each, 4 Req'd.)	
	1044	1000 Vent Mount Bracket	
	0100	1120/200 Vent Mount Bracket	
	1004	Diagnose Pressure Reducing Valve	
	110400	Temp. and Pressure Gauge	
	1410	1000 Temperature & Pressure Relief Valve 3/4", 210F, 100 PSI	
	1102	1120/200 Pressure Relief Valve, 3/4" x 3/4", Pressure Only 100 PSI	
	01000A000000010	Shower Assembly	
	PDW-CLEAR	Water Treatment System (permeate pursp.)	
	KSC-10	Replacement cartridge for water treatment	
	Gas Valves and Lines	1024	PT56 3/8" Modulating Gas Valve
		1570	PT56 Solenoid Valve (Maxitrol)
0000 (Assembly)		PT56 3/8" Gas Line Assembly	
2957 (Assembly)		PT125 3/4" Modulating Gas Valve Assembly	
1463		PT125/200 Solenoid Valve Robertsshaw	
1092 (Assembly)		PT200 NG 3/4" Modulating Gas Valve Assembly	
1102		3/4" Modulating Gas Valve Coil	
6007 (Assembly)		PT125/200 3/4" Gas Line Assembly (Specify model in notes)	
Thermistors	1430 (Assembly)	1-in Thermistor (blue wires) Assembly Kit	
	1401 (Assembly)	1-in Thermistor (red wires) Assembly Kit	
	1004 (Assembly)	1000 Thermistor and Or' Assembly Kit	
	1400	1000 Thermistor Wire Harness (2 wires)	
	1020	1120/200 Thermistor Wire Harness (3 pin connector, 3 wires)	
	2000	1120/200 1-in Digital Read-Out	
Control Board	1830	PT Control Board w/o Microprocessor/Software Chip	
	1496	Power Wire Harness to Control Board	
	2926-125	PT125 Microprocessor/Software Chip	
	2926-200	PT200 Microprocessor/Software Chip	
Ignition and Heating	1933 (Assembly)	PT56 Heat Exchanger Assembly, ECO/1-mid/ 1-in	
	1930 (Assembly)	PT125/200 Heat Exchanger Assembly, ECO/1-mid/ 1-in/1-out	
	3158	DSI Board	
	1827	DSI wiring harness	
	0040	Spark Ignition Probe	
	1765	Ignition Cable	
Flow Meter and Turbines	3220	PT125/200 Turbine Flowmeter	
	0041	PT125/200 Turbine Flowmeter Union End Fitting/Flange (Brass)	
	0040	PT125/200 Turbine Flowmeter Union Nut for End Fitting (Brass)	
	2416	PT125/200 Flow Meter Gaskets	
Electrical	1010	Power Supply, 110 VAC to 24 VDC (regulated, 40 watt, 1.7 A)	
	1897	Switching Power Supply 12 VDC	
	1119	3 Amp Circuit Breaker	
	1140	High Limit Control Thermal ECO 100 NF1 @ 220 F +/- 1 auto reset at 170 F	
	2004	Illuminated Power Switch ON/OFF OFF, 110 VAC	
	2000	Splash Guard for #2004 Rocker Switch	
Miscellaneous	1400	1000 3 Gallon Internal Stainless Steel Accumulator Tank	
	1400-OR	1000 3 Gallon External Stainless Steel Accumulator Tank	
	0000 (Assembly)	1120/200 Power Vent Blower Assembly	
	1010	Delay, 3000 State Switch Delay 110 VAC ON/OFF, 12 VDC ON/OFF	
	1110	High Limit Control Thermal ECO 100 NF1 @ 220 F +/- 1 auto reset at 170 F	
	2937	Pressure Switch - Normally Open 12VDC	

Old to New Part Number Conversion Chart

Old P/N	New P/N	Description
1019	3646	Spark Ignition Probe
1073	1570	PT56 Solenoid Valve
1101	2957	PT125 LP 3/4" Modulating Gas Valve Assembly
1467	1024	PT56 3/8" Modulating Gas Valve
1616	2937	Pressure Switch - Normally Open 12VDC
1662	1092	PT200 LP 3/4" Modulating Gas Valve Assembly
1663	1463	PT125/200 Solenoid Valve
1826	1496	Power Wire Harness to Control Board
1841-56	1836 & 2926-RC	PT56 Control Board & Microprocessor 9098O
1841-200	1836 & 2926-200	PT200 Control Board & Microprocessor 9097J
1841-OR	1836 & 2926-125	PT125 Control Board & Microprocessor 9099C
1841-RC	1836 & 2926-RC	PT125RC/200RC Control Board & Microprocessor 9098O
1875	3616 (Assembly)	PT125/200 Power Vent Blower Assembly
1985	1933 (Assembly)	PT56 Heat Exchanger Assembly, ECO/T-mid/ T-in
1994	1936 (Assembly)	PT125/200 Heat Exchanger Assembly, ECO/T-mid/ T-in/T-out
2354	3226	PT125/200 Turbine Flowmeter
2412	3158	DSI Board
2957	1092 (Assembly)	PT200 NG 3/4" Modulating Gas Valve Assembly
3444	3641	PT125/200 Turbine Flowmeter Union End Fitting/Flange (Brass)
3445	3648	PT125/200 Turbine Flowmeter Union Nut for End Fitting (Brass)
9097-x	2926-200	PT200 Software Chip **provide booster serial number
9098-x	2926-RC	PT56/PT125RC/PT200RC Software Chip **provide booster serial number
9099-x	2926-125	PT125 Software Chip **provide booster serial number

PT Warranty

MANUFACTURER'S LIMITED PARTS AND LABOR WARRANTY/GAS BOOSTER HEATER Rev. 3/2020

Hubbell, also called the 'Company' hereafter, warrants the products it manufactures to be free of defects in both material and workmanship, under normal use and service, when installed and maintained in accordance with Hubbell's written instructions, subject to the time periods, terms, and conditions stated below:

The warranty period is twelve (12) months parts and twelve (12) months labor from the date of in-service or Factory Authorized Start-Up. The burner, heat exchanger and accumulator tank are warranted for four (4) additional years (parts only). Defective parts will be repaired or replaced at the manufacturer's sole discretion.*

This warranty does not cover failure in any water components including tank, heat exchanger or pump due to freezing, chemical attack, sediment buildup, liming, or scaling due to hard water. Labor charges will be paid by the Company based on Hubbell service labor rate schedule on work performed during regular business hours. Overtime premiums will not be paid by Hubbell. The length of the warranty on any warranty replacement item will be the lesser of ninety (90) days or unexpired portion of the original warranty. Outside the United States and Canada, the Company liability is limited to the replacement of the warranted part as specified by the time periods and conditions above.

The Company limits warranty travel time to a maximum total of two (2) hours and one hundred (100) miles. The Company will not pay travel time or mileage that exceeds this without prior authorization. All warranty service must be completed by the Company or its authorized agencies. The Company does not authorize any other person or company to perform warranty service on the Product.

IN ALL EVENTS, NO WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED, SHALL EXTEND BEYOND THE RESPECTIVE TIME PERIODS OR TERMS DESCRIBED ABOVE. IN NO EVENT WILL HUBBELL BE LIABLE FOR INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES SUCH AS LOSS OF USE OR INJURY TO OTHER PROPERTY, LABOR COSTS, OR LOST PROFITS RESULTING FROM USE OR INABILITY TO USE PRODUCT.

IN ORDER TO ACTIVATE THE TERMS OF THIS WARRANTY, THE PURCHASER MUST CONTACT HUBBELL AND PERFORM A FACTORY AUTHORIZED START-UP.

* Accessory components supplied by Hubbell carry a one-year parts only warranty. Accessory components include, but are not limited to: temperature gauges, expansion tank, pressure reducing valve, and relief valve. Labor to replace these components is not covered by the warranty.

LIMITED WARRANTY PROVISIONS

This warranty is intended to provide you with protection against abnormal failure due to faulty materials or workmanship. It does not cover adjustment or replacements due to normal wear. This warranty shall not cover:

1. The cost of labor for stopping leaks that may be corrected by tightening.
2. Damage resulting from hard water conditions resulting in liming or scaling, clogging of valves preventing proper operation, object such as dirt, sand, chemical build-up or debris, or broken parts caused by solder or other debris passing through this unit.
3. Transportation, installation or removal costs are not covered by this warranty. This warranty does not cover any failures or operating problems due to abuse, accident, alteration of equipment, improper installation, negligence, application of improper voltage, or recalibration of thermostats or limit switches.
4. Damage caused by over-voltage or use with utility service other than designated on the machine's rating plate or improper connection to utility service. Failure to comply with local building codes, inadequate wiring or plumbing.
5. Damage caused by excessive water pressure.
6. Regular maintenance is owner's responsibility.
7. Any additional time required to gain access to service the equipment. Additional charges will be billed to the customer.
8. Incidental, special, or consequential damages such as loss of use or injury to other property, labor cost, or lost profits resulting from use or inability to use product.

This warranty is void if defect is due to damage from shipment handling, fire, water, accident, abuse, misuse, acts of God, attempted repairs or improper installation by unauthorized persons, if serial numbers or identifying marks have been removed or altered, or if equipment is used for purposes other than that for which it is intended.

Manufacturer's Limited Parts and Labor Warranty

Limited Warranty Provisions

This warranty is intended to provide you with adequate protection against abnormal failure due to faulty materials or workmanship, but it does not cover adjustment or replacements due to normal wear.

This warranty shall not cover:

1. The cost of labor for stopping leaks that may be corrected by tightening.
2. Damage resulting from untreated hard water conditions resulting in liming or scaling, clogging of valves preventing proper operation, objects such as dirt, sand, chemical buildup or debris, or broken parts caused by solder or other debris passing through this unit.
3. Transportation, installation or removal costs are not covered by this warranty. This warranty does not cover any failures or operating problems due to abuse, accident, alteration of equipment, improper installation, negligence, application of improper voltage, or recalibration of thermostats or limit switches.
4. Damage caused by over-voltage or use with utility service other than designated on the machine's rating plate or improper connection to utility service. Failure to comply with local building codes, inadequate wiring or plumbing.
5. Damage caused by excessive water pressure.
6. Regular maintenance is owner's responsibility.
7. Any additional time required to gain access to service the equipment. Additional charges will be billed to the customer.

This warranty is void if defect is due to damage from shipment handling, fire, water, accident, abuse, misuse, acts of God, attempted repairs or improper installation by unauthorized persons, if serial numbers or identifying marks have been removed or altered, or if equipment is used for purposes other than that for which it is intended.

Hubbell Warranty Procedure

The following procedure must be followed to implement the Hubbell “Manufacturer’s Limited Warranty”. Please refer to the “Manufacturer’s Limited Warranty” for full terms.

To Make a Warranty Claim

1) Contact Hubbell prior to going to the service site. When the technician arrives at the service location, he must call Hubbell @ 203-378-2659 or 800-647-3165. **NO work should be performed prior to calling Hubbell for a work authorization number.** This work will be considered unbillable time and could void the warranty.

If it is known in advance that warranty work must be performed on Hubbell equipment outside of Hubbell’s normal business hours (8:00 AM – 5:00 PM Eastern time), call one of the above numbers in advance for the phone number of a Hubbell technician to assist you after-hours.

- 2) If it is known in advance that a part is needed for the service, the service call must not be made until part is on-site.
- 3) The equipment serial number, work authorization number and installation location **MUST** be on all paper work.
- 4) Parts replaced under warranty **must be returned to Hubbell within 15 (fifteen) days of claim.**
- 5) Hourly rate and travel expense must be approved in advance of work being performed. **Under no circumstances will Hubbell pay overtime fees.**
- 6) All warranty invoices must be accompanied by copies of the technician’s work sheet detailing the service performed and hours worked.
- 7) Accessory components supplied but not installed by our factory carry a one-year **parts only** warranty. Labor to replace these components is not included. The length of the warranty on any replacement item will be the lesser of (90) days or unexpired portion of the original Warranty.

Hubbell will cover warranty work performed only on Hubbell products for defects in material or workmanship, not problems related to the facility, installation or related equipment issues such as:

- Y Improper water pressure.
Tripped circuit breaker.
Improper installation including blocked access to heater access panel.
Improper primary hot water temperature or water pressure issue.
- Y Cold water bypass or negative air pressure in facility.
- Y Improper power hookup or power turned off.
- Y Undersized gas line or low gas pressure.
- Y Water flow problems caused by the ware washer such as liming or defective solenoid valves.
- Y Excessively long recirculation loops or undersized plumbing components.
- Y Any problem that is a result of any of the above situations that occur due to misrepresentation of the facilities to Hubbell, consultants or installers prior to or after equipment installation.

Warranty coverage is based on Hubbell's warranty policy. Hubbell may, at times, arrange service as a courtesy to the customer. This does not imply that Hubbell guarantees the performance of this service or is responsible for the charges. Hubbell will not pay for additional time required to gain access to its equipment or for the technician not being given access to equipment in a reasonable time-frame. Hubbell reserves the right to accept or deny warranty claims based on the above policy.

Hubbell Replacement Parts Warranty Policy:

All replacement parts are covered for a period of 90 days from the time of installation. Parts replaced under the terms of basic product warranty are covered through the product warranty period or 90 days whichever is greater. Parts replaced on units not covered by basic product warranty have a parts only warranty with NO labor coverage for a period of 90 days from the date of installation.