



POWERMITE® GAS BOOSTER HEATER
INSTALLATION, OPERATING, SERVICE AND PARTS MANUAL
MODEL: PMG-100 & PMG-200

I&W #07.05.055.00



WATER HEATERS FOR OTHER THAN RECREATIONAL VEHICLE INSTALLATION
ONLY
CHAUFFE-EAU POUR INSTALLATION AUTRE QUE DANS DES VÉHICULES DE
LOISIR UNIQUEMENT

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

AVERTISSEMENT: Assurez-vous de bien suivre les instructions données dans cette notice pour réduire au minimum le risque d'incendie ou d'explosion ou pour éviter tout dommage matériel, toute blessure ou la mort.

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

- Ne pas entreposer ni utiliser d'essence ou ni d'autres vapeurs ou liquides inflammables à proximité de cet appareil ou de tout autre appareil.

- **WHAT TO DO IF YOU SMELL GAS:**

- **QUE FAIRE SI VOUS SENTEZ UNE ODEUR DE GAZ:**

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

- Ne pas tenter d'allumer d'appareil.
- Ne touchez à aucun interrupteur; ne pas vous servir des téléphones se trouvant dans le bâtiment.
- Appelez immédiatement votre fournisseur de gaz depuis un voisin. Suivez les instructions du fournisseur.
- Si vous ne pouvez rejoindre le fournisseur, appelez le service des incendies.

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

- L'installation et l'entretien doivent être assurés par un installateur ou un service d'entretien qualifié ou par le fournisseur de gaz.

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IMPORTANT OWNER INFORMATION

Record the model number, serial number (identification plate located on the lower right hand side, front corner of the unit), voltage and purchase date of your Powermite® Gas Booster Heater in the spaces below. Please have this information available when calling Hatco for service assistance.

Model No. _____

Serial No. _____

Voltage _____

Date of Purchase _____

Business Hours: 8:00 a.m. to 5:00 p.m.
Central Standard Time

(Summer Hours: June to September –
8:00 a.m. to 5:00 p.m. C.D.T.
Monday through Thursday
8:00 a.m. to 2:30 p.m. C.D.T. Friday)

Telephone: (800) 558-0607; (414) 671-6350

Fax: (800) 690-2966 (Parts & Service)
(414) 671-3976 (International)



24-Hour 7-Day Parts & Service
Assistance available in the
United States and Canada
by calling (800) 558-0607.

Additional information can be found by visiting our
web site at www.hatcocorp.com.

INTRODUCTION

Hatco Powermite Gas Booster Heaters are instantaneous fin tube type heaters designed to boost the temperature of regularly available hot water, usually 110°F to 150°F (43°C to 66°C) up to 180°F (82°C). Water at 180°F (82°C) can be used as sanitizing rinse water in commercial dishwashers in accordance with Health Codes and National Sanitation Foundation Standard #5.

The Hatco Gas Booster Heater is design certified by CSA International and tested under the requirements of the American National Standard, **ANS Z21.10.3*CSA 4.3-2001, Current Edition**.

All Hatco Gas Booster Heaters are factory pre-plumbed and pre-wired to allow for easy installation. The control compartment area is accessible from the front, which permits easy installation, even when near other equipment.

Hatco Gas Booster Heaters are quality built for long life and rugged dependability. Dependability of the booster heater is preserved through proper, safe installation and operation.

This manual provides the installation, safety and operating instructions for the Powermite Gas Booster Heater. We recommend all installation, operating and safety instructions appearing in this manual be read prior to installation or operation of your Hatco PMG-100 or PMG-200 Gas Booster Heater. Safety instructions that appear in this manual after a warning symbol  and the words **WARNING** or **CAUTION** printed in bold face are very important.  **WARNING** means there is the possibility of serious injury or death to yourself or others.  **CAUTION** means there is the possibility of minor or moderate injury. **CAUTION** without the symbol signifies the possibility of equipment or property damage only.

Hatco Gas Booster Heaters are a product of extensive research and field testing. The materials used were selected for maximum durability, attractive appearance and optimum performance. Every unit is thoroughly inspected and tested prior to shipment.

MODEL DESCRIPTION

ALL MODELS

Water enters the booster heater at the inlet water connection and flows into the stainless steel tank. It then is pumped through the finned tube heat exchanger where it is heated to the proper temperature. The heated water then returns back to the top half of the stainless steel tank for supply to the dishwashing machine. Water that is not immediately used by the dishwashing machine is recirculated through the heat exchanger by the water pump.

This system is designed to assure the availability of the proper temperature water at the heater outlet.

All Hatco booster heaters are warranted to be free of defects in material and workmanship under normal use and service, and when installed in accordance with factory recommendations.

NOTE: Hatco Booster Water Heaters are approved for use with commercial dishwashers only.

SYSTEM OVERVIEW

The Hatco Powermite Gas Booster Heater is designed to maintain a temperature of 180°F (82°C) water required for the rinse cycle of a commercial dishwasher. An inlet water temperature of at least 110°F (43°C) will produce optimum results (See Capacity Chart and Booster Heater Sizing Chart in *SPECIFICATIONS*).

After the necessary power, water and gas connections are completed, start the unit by turning on the toggle switch located on the lower front base. The water circulating pump will start at this time. Providing the operating and safety controls are satisfied, the ignition module will begin a 20 second safety pre purge, next it will energize the spark igniter and turn on the gas for the pilot. The igniter will spark for about 90 seconds or until proof of fire. If there is a confirmed pilot fire, and the water temperature is below the setpoint, the unit will go into full burn. The unit will stay in full burn until the desired setpoint temperature is met, then the burner will shut off. During standby periods of limited use, the burner will cycle on only to replace standby water temperature loss. If for some reason the unit did not ignite there is an automatic 5 minute delay before the unit attempts to ignite again.

If the unit overheats above the setpoint temperature, the safety high limit will open, shutting down the burner, locking out the controller, and turning on the alarm pilot light. In order to reset the unit, turn the unit off and depress the reset button on the appropriate high limit switch, the tank high limit is located behind front panel on the left hand side of the vertical control panel. The heat exchanger high limit is located on the front of the heat exchanger. The switches will not reset until the temperature has dropped to a safe level. This unit must remain off for at least 10 seconds before it can be restarted.

NOTE: The operating thermostat control is factory preset at 190°F (88°C).

NOTE: The circulator pump will stay on as long as the toggle switch is in the ON position.

SPECIFICATIONS

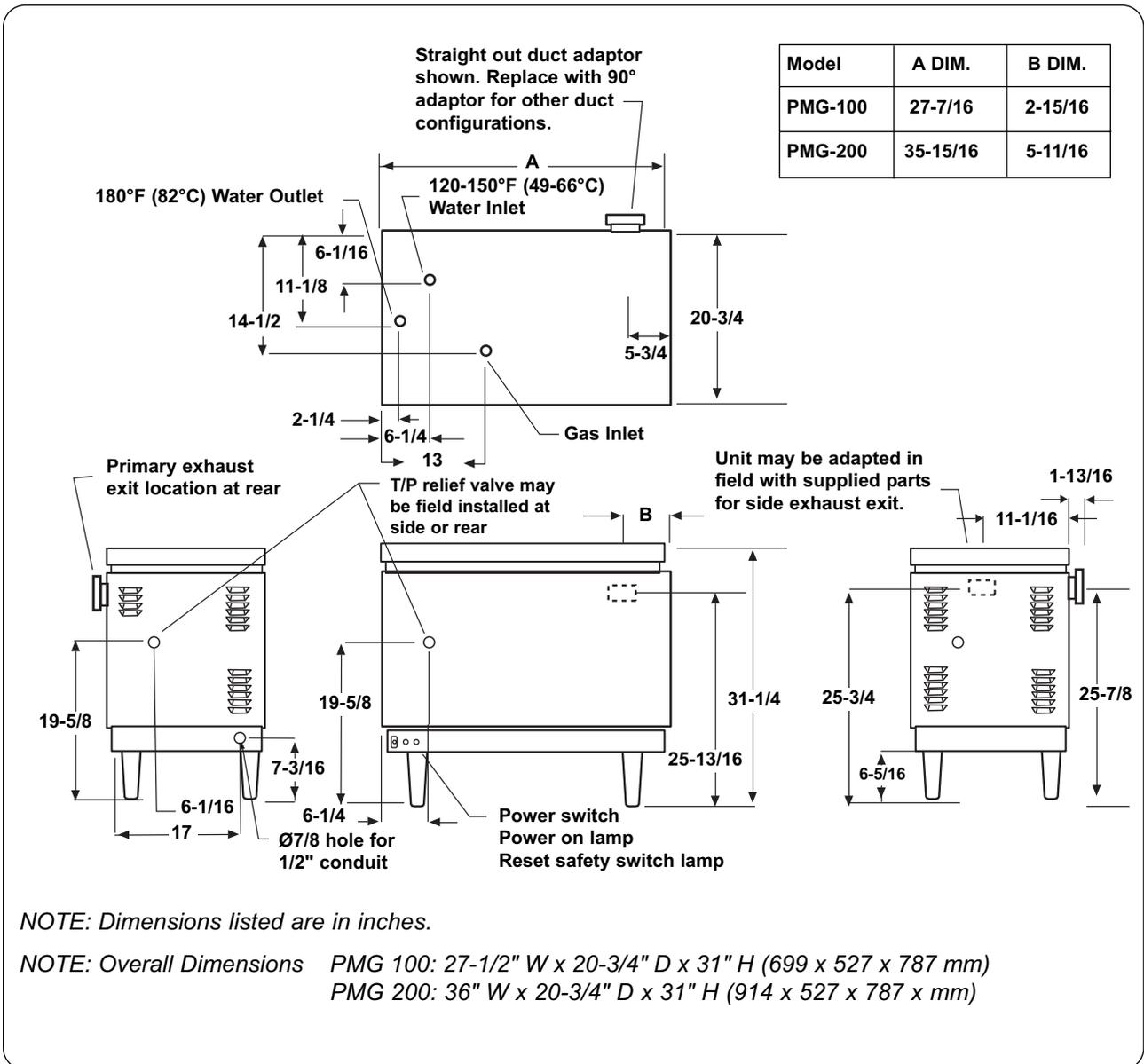
| | |
|----------------------------------|--|
| Type: | Gas-fired, instantaneous recirculating booster heater with accumulator for use with door type dishwashers. Unit is floor mounted. |
| Capacity: | PMG-100: Input 105,000 BTUs/Hour. Output 84,800 BTUs/Hour = 24.8 kW PMG-200: Input 195,000 BTUs/Hour. Output 156,000 BTUs/Hour = 45.7 kW |
| Fuel: | Natural gas @ 5 iwc or Propane @ 11 iwc – minimum inlet gas pressure. |
| Operating Water Pressure: | 150 PSI max. Relief valve set at 150 PSI, 210°F (99°C). |
| Power: | Supply 120 VAC, 15 amp service (unit uses 3.0 amps @ 120 volts). |
| Ignition: | Electronic spark pilot with flame proofing by rectification. |
| Temperature Control: | Electronic, temperature control probe/microprocessor based. Factory preset at 190°F (88°C). |
| Safety Systems: | Energy cut off devices include manual reset heat exchanger high limit and manually reset tank high limit. Redundant gas solenoid valve with integral regulator. Temperature/Pressure relief valve on tank. |
| Fluing: | Direct – combustion air enters bottom, flue gases exit right side or back at top of unit. |
| Vent: | Forced draft system with 4" (102 mm) diameter vent pipe adapter. |
| Pump: | Recirculating with bronze housing. |
| Connections: | Gas – 3/4" NPT, Water – 3/4" NPT, Electric – 120 VAC, 15 Amp. |
| Ship Weight: | PMG-100: 155 pounds (70 kg) dry. PMG-200: 195 pounds (89 kg) dry. |

| WATER TEMPERATURE RECOVERY TABLE - FAHRENHEIT | | | | | | |
|---|-----------------------------|---|-----|-----|-----|-----|
| MODEL | INPUT MBH (1,000 BTU/HR) | Gallons per Hour (GPH) at Indicated Temperature Rise (F°) | | | | |
| | | 30° | 40° | 50° | 60° | 70° |
| PMG-100 | 105 | 321 | 241 | 193 | 161 | 138 |
| PMG-200 | 195 | 602 | 452 | 361 | 301 | 258 |

NOTE: Capacity is reduced @ altitudes above 2000 feet (610 m). See HIGH ALTITUDE INSTALLATION & OPERATION section for sizing considerations.

SPECIFICATIONS

DIMENSIONS



NOTE: Dimensions listed are in inches.

NOTE: Overall Dimensions PMG 100: 27-1/2" W x 20-3/4" D x 31" H (699 x 527 x 787 mm)
 PMG 200: 36" W x 20-3/4" D x 31" H (914 x 527 x 787 mm)

Figure 1. Top View

SPECIFICATIONS

BOOSTER HEATER SIZING CHART

| Dishwasher Model Number | GAS POWERMITE® BOOSTER† Temperature Rise | |
|---|--|-------------|
| | 40°F (22°C) | 70°F (39°C) |
| | | |
| ADAMATION CSL-1390, CA-2, CA-3, CA-4, SLAP 44, CA, CA-1 | PMG-200 | (2)PMG-200 |
| BLAKESLEE Series "R & "F"-CC, -EE, -LL, -MM, -LLL, -MMM, -PCC, -PEE, -PLL, -PMM (multi-tank) with suffix "LC" | PMG-200 | PMG-200/100 |
| Series XF-LL, XF-PLL, XF-MM, XF-PMM, XF-EEE, XF-LLL, XF-MMM, (Multi-tank) with suffix "LC" | PMG-200 | --- |
| DD-8 | PMG-100 | PMG-200 |
| Series R-L, R-PL, R-M, R-PM, F-L, F-PL, F-M, F-PM (single tank) | PMG-200 | (2)PMG-200 |
| Series XF-PEE, XF-PLL, XF-PMM, XF-EEE, XF-LLL, XF-MMM (multi-tank) | PMG-200 | (2)PMG-200 |
| FA (Flight-A-Round) and RA (Rack-A-Round) use comparable "F" listing. | | |
| CHAMPION D-H1C, D-H1TC | --- | PMG-100 |
| 66 WSPW, 44-WS, 66-WS | --- | PMG-100 |
| UC-CW6-WS, US-CW8-WS | PMG-100 | PMG-200 |
| 44, 66 PW, 70FFPW, 80HDPW, 54, 76PW, 80FFPW, 90HDPW 64, 90FFPW, 100HDPW, 86 PW | PMG-100 | PMG-200 |
| 40-KB, 40-KB-2-2, 40-KFWB, 40-KPRB, 40-KPRB-2-2, 40KPRB-2-3, 60-KB, 60-KB-2-2, 60-KFWB, 60-KFWB-2-2, 60-KPRB, 60-KPRB-2-3, 64KB, 64-KB Corner, 64-KPRB, 64-KPRB Corner, 64 Modular, 86 Modular | PMG-200 | PMG-200/100 |
| 44-KB, 44-KB Corner, 44-KPRB, 44-KPRB Corner, 54-KB, 54-KB Corner, 54-KPRB, 54-KPRB Corner, 44 Modular, 66 PW Modular, UC** Series 6' Center, UC-C4 | PMG-200 | PMG-200/100 |
| UC-CW4, UC-C | PMG-200 | PMG-200/100 |
| UC**CW Series 6' Center | PMG-200 | (2)PMG-200 |
| W-6-WS | PMG-200 | (2)PMG-200 |
| CMA DISHMACHINES | | |
| CMA-44H with tank heater, CMA-66H | PMG-100 | PMG-200 |
| HOBART AM-12, AM-12C*, AM-14, AM-14C | --- | PMG-100 |
| Opti-RinSe C44A, CRS-66A, CCS-66A, CPW-80A, C54A, CRS-76A, CCS-76A, CPW-90A, C64A, CRS-86A, CCS-86A, CPW-100A, C-88A, CRS-110A, CCS-110A, CPW-124A | PMG-100 | PMG-200 |
| C-54A, CRS-76A, CPW-90A, CCS-76A | PMG-200 | PMG-200/100 |
| C-44A, CRS-66A, CCS-66A, CPW-80A, C-64A, CRS-86A, CCS-86A, CPW-100A | PMG-200 | PMG-200/100 |
| C-88A, CRS-110A, CPW-124A, CCS-110A | PMG-200 | PMG-200/100 |
| Opti-RinSe C44AW, CRS-66AW, CCS-66AW, CPW-80AW | --- | PMG-100 |
| C-44AW, CRS-66AW, CPW-80AW, CCS-66AW | PMG-100 | PMG-100 |
| C-44, CRS-66, CPW-80 | PMG-200 | PMG-200/100 |
| C-54, CRS-76, CPW-90 | PMG-200/100 | (2)PMG-200 |
| C-64W, CRS-86W, CPW-100W, C-88W, CRS-100W, CPW-124W, CCS-86W | PMG-100 | PMG-200 |
| C-64, CRS-86, CPW-100C | PMG-200 | PMG-200/100 |
| FT800W, FT-900W | PMG-200 | PMG-200 |
| FT-600, FT-700 | PMG-200/100 | (2)PMG-200 |
| FT800 | PMG-200 | (2)PMG-200 |
| FT-900, FT800S, FT-900S | PMG-200 | PMG-200/100 |
| FRC and FR (Fast Rack Series) use comparable "C" line listing. | | |

SPECIFICATIONS

BOOSTER HEATER SIZING CHART (CONTINUED)

| Dishwasher Model Number | GAS POWERMITE® BOOSTER† Temperature Rise | |
|-------------------------|--|---------------------------|
| | 40°F (22°C) | 70°F (39°C) |
| | | |
| INSINGER | Commander 18-5, 18-5H, Ensign 40-2 | ---PMG-100 |
| | Admiral 44-4, 66-4 | .PMG-100PMG-200 |
| | Speeder 64, 86-3, Century (all) | .PMG-100PMG-200 |
| | Trac 321, Trac 321-2/RPW | .PMG-100PMG-200 |
| | Trac 878 | .PMG-100PMG-200 |
| | Clipper (all), R106-2, Super 106-2 | .PMG-100PMG-200 |
| | Defender | .PMG-200--- |
| | Master (all) | .PMG-200--- |
| | CA-3 | .PMG-200--- |
| | For outdated models, consult factory for correct booster. | |
| JACKSON | 44CE*, 66 CERPW | .PMG-200--- |
| | 54CE, 76 CERPW | .PMG-200--- |
| | 64CE, 86 CERPW | .PMG-200--- |
| | 100 | .PMG-100--- |
| | 150 | ---PMG-100 |
| | AJ-44, AJ-66, AJ-80, WH-44, ES-4400, ES-6600 (ECOLAB/JACKSON) | .PMG-100PMG-200 |
| | AJ-54, AJ-76, AJ-90 | .PMG-200--- |
| | AJ-64, AJ-86, AJ-100 | .PMG-100PMG-200 |
| | *Model #44CE w/SN1999 or below requires larger booster than listed. | |
| MEIKO | K-44, K-66, K-80 | .PMG-100PMG-200 |
| | K-54, K-76, K-90, K-64, K-86, K-100 | .PMG-100PMG-200 |
| METALWASH/INTEDGE | FW4 | ---PMG-100 |

SPECIFICATIONS

BOOSTER HEATER SIZING CHART (CONTINUED)

| Dishwasher | Model Number | GAS POWERMITE® BOOSTER† Temperature Rise | |
|------------|--|--|--------------|
| | | 40°F (22°C) | 70°F (39°C) |
| STERO | SCT-44-10-LW, SCT-44-LW, SCT-66S-LW, SCT-76S-LW, SCT-90S-LW | --- | .PMG-100 |
| | SC-1-2-4-LW, SC 1-6-4-LW, SC-2-4-LW, SC-5-2-4-LW, SC-5-6-4-LW, SC-6-4-LW | .PMG-100 | .PMG-200 |
| | SCT-64, SCT-86S, SCT-94S, SCT-94SC | .PMG-100 | .PMG-200 |
| | SCT-108S, SCT-108SC, SCT-76, SCT-94SM | .PMG-200 | .PMG-200/100 |
| | SC-6-4, SCT-44, SCT-44-10, SCT-66S, SCT-76S, SCT-76SC, SCT-90S | .PMG-200 | .PMG-200/100 |
| | SCT-120S, SCT-120SC, SCT-120SM, SCT-150SM | .PMG-200 | .PMG-200/100 |
| | STW-110, SC-1-2-7-4, SC-1-6-3-4, SC-1-6-7-4, SC-2-7-4, SC-5-2-7-4, SC-5-6-3-4, SC-5-6-7-4, SC-6-3-4, SC-6-7-4 | .PMG-200 | .PMG-200/100 |
| | SC-1-2-4, SC-1-6-4, SC-2-4, SC-5-2-4, SC-5-6-4 | .PMG-200 | (2)PMG-200 |
| | SCT-44-10-SC-1-3-4, SCT-44-10-3-4, SCT-44-SC-1-3-4, SCT-44-SC-3-4, SCT-54-SC-1-3-4, SCT-54-SC-3-4, SCT-76S-SC-3-4 | .PMG-200 | (2)PMG-200 |
| | STPC (Four Tank) | .PMG-100 | .PMG-200 |
| | STPCW (Four tank) | .PMG-100 | .PMG-200 |
| | STPC | .PMG-200 | .PMG-200/100 |
| | STPCW | .PMG-200 | .PMG-200/100 |
| | SCBT | .PMG-200 | .PMG-200/100 |
| | SF-2RA, SF-2DRA, SD-2RA, SDRA, SDRA-PACK | --- | .PMG-100 |
| | SCT-54, SCT-76SM | .PMG-200 | (2)PMG-200 |
| | SCT-76, SCT-80, SCT-94, SCT-108, SCT-120 | .PMG-200 | (2)PMG-200 |
| | U-31-A, U-31-AC | .PMG-100 | .PMG-200 |
| | U-31-A2 | .PMG-200 | (2)PMG-200 |
| | SC-2-3-4, SC-5-2-3-4 | .PMG-200 | --- |
| | SC20-2 | --- | .PMG-100 |
| | SC-2-8, SC-2-9, SC-1-2-8, SC-5-6-8, SC-6-8, SC-6-9, SC-1-6-8, SC-5-6-9, SC-5-2-9, SC-1-6-9, SC-5-2-8 | .PMG-100 | .PMG-200 |

* Hobart Model AM-12 with serial no. 12-067-357 or below and model AM-12C with serial no. 12-067-537 or below require slightly larger booster than listed. Or C Models with serial no. 85-1041605 or greater use Opti-RinSe.

Shaded area indicates older models prior to Opti-RinSe.

† Powermite installations above 2,000 ft. (610 m) will reduce the above capacities and may require change of pressure and/or orifices in certain models at time of install to meet IAS safety compliance. These modifications are the responsibility of the installer. Consult "Installation and Operating Manual" for sizing adjustments and orifice changes.

This selector chart is based on 40°F (22°C) and 70°F (39°C) temperature rises, 20 psi flow pressure, and minimum rinse cycle timer setting in NSF listing.

All booster heaters are rated at 100% of the capacity of the dishwashers as recommended by the National Sanitation Foundation. Where make-up water for wash tank is provided from final rinse supply, chart recommendations are based upon this additional demand (not over 2 GPM) as required by NSF.

All sizings shown are that of the dishwasher manufacturers. Hatco Corporation is not responsible for incorrect sizing applications.

INSTALLATION

GENERAL

Code Requirements

Installation must be in accordance with local codes, or in the absence of local codes, with the latest edition of the National Fuel Gas Code, ANSI Z223.1, the National Electrical Code, ANSI/NFPA 70. Canadian installations should conform with CSA-B149.1, Natural Gas and Propane Installation Code, and CSA-C22.1 Electrical Code, and/or local installation codes. *{Les installations canadiennes doivent se conformer aux CODES D'INSTALLATION CSA-B149.1, Natural Gas and Propane Installation Code, et CSA-C22.1 Electrical Code, et/ou aux codes locaux d'installation.}*

NOTE: In the Commonwealth of Massachusetts, Hatco Booster Heaters shall be installed by a licensed plumber and gasfitter.

NOTE: The Commonwealth of Massachusetts requires that if a water treatment system is installed in line with the Hatco Booster Heaters, a water backflow protector shall also be installed.

NOTE: If a check valve or water backflow protector is installed and cannot be removed install a back pressure relief valve, Hatco part number 03.02.039.00, set at 125 psi (862 kPa) on the incoming line between the pressure reducing valve and the inlet to the booster heater. Discharge must be to open site drain.

For the most effective operation, install the Hatco Gas Booster Heater as close as possible to the dishwashing machine.

NOTE: Employ external recirculation if distance between booster and dishwasher exceeds the National Sanitation Foundation specifications of five (5) feet (1.5 m).

CAUTION

Unit is not weatherproof. For safe and proper operation the unit must be located indoors where the ambient air temperature is constant and is a minimum of 70°F (21°C).

WARNING

To assure proper operation and avoid a possible unsafe condition, the booster heater must be installed in a horizontal position with the base parallel to the floor and the inlet connection at the lowest point.

The Booster Heater must not be installed directly on carpeting, but on top of a metal, wood (or equivalent) panel extending beyond the full width and depth of the booster heater by at least 3" (76 mm) in any direction or, if the heater is installed in an alcove, the entire floor must be covered by the panel. The panel must be strong enough to carry the weight of the heater when full of water.

Adequate front clearance is required to allow for accessibility to the control compartment.

The booster heater should be located in an area where leakage of the tank or connections will not result in damage to the area adjacent to the heater or to lower floors of the structure. When such locations cannot be avoided, it is recommended that a suitable drain pan, adequately drained, be installed under the booster heater. The pan must not restrict combustion air flow.

INSTALLATION

Combustion/Ventilation Air

The booster heater must be located in an area which allows for an adequate supply of air for proper combustion and ventilation in accordance with Section 5.3 and 7.2.2 of the National Fuel Gas Code NFPA54/ANSI Z223.1 or applicable provisions of the local building codes. Only a single booster appliance may be installed in this manner.

Installations under the jurisdiction of Canadian CSA-B149.1, Natural Gas and Propane Installation Code, require a gas interlock tied into the ventilation hood system. {Les installations sous la juridiction des CODES D'INSTALLATION canadiens CSA-B149.1, Natural Gas and Propane Installation code, nécessitent un verrouillage réciproque de gaz raccordé au système de capot de ventilation.}

⚠ WARNING/CAUTION

The flow of air to the heater for combustion and ventilation **must not** be obstructed. Air vents on the bottom and side of the unit should never be blocked. All panels should be in place during normal operation for optimal performance and safety.

⚠ WARNING/CAUTION

This unit is designed to vent to the outside or into an open Equipment Hood, and is intended for commercial food service water heating only. **IT IS NOT FOR RESIDENTIAL USE.** See **VENT** section of this manual.

⚠ WARNING/CAUTION

Flue gases exit top side or back of this unit and must not be obstructed, specified clearances must be maintained for safe operation. See **VENT** section for vent piping alternatives.

INSTALLATION

Minimum Clearance Requirements: {Exigences quant au dégagement minimum:}

| Floor {Sol} | Top {Dessus} | Left Side {Côté gauche} | Right Side {Côté droit} | Front {Devant} | Back {Derrière} |
|----------------|-----------------|----------------------------|----------------------------|-------------------|--------------------|
| 6"* (152 mm) | 1" (25 mm) | 2" (51 mm) | 2" (51 mm) | 20" (508 mm) | 2" (51 mm)† |

* Includes legs supplied with booster heater {Comprend pieds fournis avec appareil de chauffage auxiliaire}.

† Minimum clearance of 8" (203 mm) from the side of the appliance where the vent is installed.

High Altitude Installation and Operation

Atmospheric conditions at elevations above 2000 ft. (610 m) have an effect on the performance of most gas fired products. For this reason, historical models for altitude de-rating were developed for gas appliances with atmospheric burners. The National Fuel Gas Code, ANSI Z223.1 is an accepted model which requires a de-rating of 4% per 1000 ft. (305 m) elevation when no testing to the contrary exists for that product. This could require modifying the equipment and adjusting settings in the field to achieve de-rating. Testing has shown this to be a very conservative approach.

Manufacturers discourage unnecessary field adjustments in order to maintain a level of performance and quality designed into the product. For these and other reasons, testing was underwritten through CSA International to verify an improved satisfactory performance with little or no modification to effect input rate or control. The following text and charts are a result of this testing and should be used during application sizing and installation.

- The **PMG-100** can operate at better levels than ANSI Z223.1 without manifold pressure setting adjustments or orifice changes up to the 8500 ft. (2593 m) elevation for *both natural gas and liquid propane gas units*. Above this level only a slight decrease in manifold pressure may be needed to meet the approved BTU rate. This is shown in the Altitude Summary chart. Also, note that GPH capacity will be reduced and a guideline is given as to the percent of sea level capacity expected.

For Canadian installations between 2000-4500 feet (610-1370 m) de-rate unit by 10% to 94,500 BTU.

{Pour les installations au Canada entre 610 et 1370 m (2000 et 4500 pi) reclassifier l'appareil de 10% à 94 500 BTU.}

- **PMG-200** will require orifice changes at levels shown in the Altitude Summary chart. This follows the 4% de-rating scheme outlined in ANSI Z223.1 for *both natural gas and liquid propane gas*. Also note that the GPH capacity will be reduced and a guideline is given as to the percent of sea level capacity expected.

For Canadian installations between 2000-4500 feet (610-1370 m) de-rate unit by 10% to 175,500 BTU.

{Pour les installations au Canada entre 610 et 1370 m (2000 et 4500 pi) reclassifier l'appareil de 10% à 175 500 BTU}

Orifice Kits for altitude installations may be ordered through Hatco Customer Service. Please call for orifice sizing information.

INSTALLATION

Altitude Summary Publication Data for PMG Boosters

NATURAL GAS

| Altitude: <i>Ft. Above Sea Level (Meters)</i> | 0-2000 (0-610) | 2001-3000 (610-915) | 3001-4000 (915-1220) | 4001-5000 (1220-1525) | 5001-6000 (1525-1830) | 6001-7000 (1830-2135) | 7001-8000 (2135-2440) | 8001-8500 (2440-2593) | 8501-9500 (2593-2898) | 9501-10500 (2898-3203) |
|---|---------------------------------|--------------------------------------|---------------------------------------|--|--|--|--|--|--|---|
| PMG-100 Approved Input Rate* | 105000 | 103363 | 101726 | 100089 | 98452 | 96815 | 95178 | 94360 | 90585 | 86811 |
| Suggested Orifice Size† | #34DMS | #34DMS | #34DMS | #34DMS | #34DMS | #34DMS | #34DMS | #34DMS | #34DMS | #34DMS |
| GPH Capacity De-Rate• | 1 | 0.98 | 0.97 | 0.95 | 0.94 | 0.92 | 0.91 | 0.90 | 0.86 | 0.83 |
| PMG-200 Approved Input Rate* | 195000 | 171600 | 163800 | 156000 | 148200 | 140400 | 132600 | 128700 | 123552 | 118404 |
| Suggested Orifice Size† | #35DMS | #36DMS | #36DMS | #37DMS | #37DMS | #38DMS | #39DMS | #40DMS | #41DMS | #42DMS |
| GPH Capacity De-rate• | 1 | 0.88 | 0.84 | 0.80 | 0.76 | 0.72 | 0.68 | 0.66 | 0.63 | 0.61 |

LIQUID PROPANE GAS

| Altitude: <i>Ft. Above Sea Level (Meters)</i> | 0-2000 (0-610) | 2001-3000 (610-915) | 3001-4000 (915-1220) | 4001-5000 (1220-1525) | 5001-6000 (1525-1830) | 6001-7000 (1830-2135) | 7001-8000 (2135-2440) | 8001-8500 (2440-2593) | 8501-9500 (2593-2898) | 9501-10500 (2898-3203) |
|---|---------------------------------|--------------------------------------|---------------------------------------|--|--|--|--|--|--|---|
| PMG-100 LPG Approved Input Rate* | 105000 | 102937 | 100874 | 98810 | 96747 | 94684 | 92621 | 91589 | 87925 | 84262 |
| Suggested Orifice Size† | #50DMS | #50DMS | #50DMS | #50DMS | #50DMS | #50DMS | #50DMS | #50DMS | #50DMS | #50DMS |
| GPH Capacity De-Rate• | 1 | 0.98 | 0.96 | 0.94 | 0.92 | 0.90 | 0.88 | 0.87 | 0.84 | 0.80 |
| PMG-200 LPG Approved Input Rate* | 195000 | 171600 | 163800 | 156000 | 148200 | 140400 | 132600 | 128700 | 123552 | 118404 |
| Suggested Orifice Size† | #50DMS | #51DMS | #51DMS | #51DMS | #51DMS | #52DMS | #52DMS | #52DMS | #53DMS | #53DMS |
| GPH Capacity De-rate• | 1 | 0.88 | 0.84 | 0.80 | 0.76 | 0.72 | 0.68 | 0.66 | 0.63 | 0.61 |

Notes:

* This is the maximum allowable BTU rate certified by CSA. These are to be verified by the qualified gas installer on site. *Check Heat Value with local Gas Utility*

† The first orifice size is the factory built unit.

The next sizes are shown at the altitudes where a change is required to allow pressure adjustments to the approved input rates.

• This is a de-rate multiplier to use when sizing a gas booster for a given application.

Take this value and multiply it by the GPH found on the Hatco sizing chart to ensure it will provide the capacity you need.

You can also use this value by dividing it into your capacity needs and take the resulting *adjusted GPH* to the sizing chart to select a gas booster.

INSTALLATION

PLUMBING

Components

| SUPPLIED WITH UNIT | OPTIONAL WITH UNIT | SUPPLIED BY INSTALLER |
|--|--|--|
| <ul style="list-style-type: none"> • Temperature/Pressure Relief Valve • Blended Phosphate Water Treatment System • Pressure Reducing Valve • Temperature/Pressure Gauges (2) • Shock Absorber • 3/4" Plug (installed) | <ul style="list-style-type: none"> • Back Pressure Relief Valve | <ul style="list-style-type: none"> • 3/4" Gate or Ball Valve • Drain Valve • 3/4" Unions • 3/4" Piping |

Pressure And Temperature Relief Valves

For protection against excessive pressures and temperatures in the booster heater, install temperature and pressure protective equipment by local codes. Hatco supplies valves constructed with brass working parts and heat resistant silicone seat discs for all booster heater models.

WARNING

Valves supplied by Hatco are designed for high temperature commercial operation. Do not substitute Hatco valves with valves designed for domestic water heaters.

Temperature/pressure protective equipment should not be less than a combination temperature/pressure relief valve certified by a nationally recognized testing laboratory that maintains periodic inspection of the production of this equipment and meets the requirements for Relief Valves and Automatic Shutoff Devices for Hot Water Supply Systems, ANSI Z21.22*CSA 4.4. The temperature/pressure relief valve must be marked with a minimum set pressure not to exceed the marked maximum working pressure of the booster heater.

CAUTION

Do not use an anti-siphon or check valve on the incoming water line.

NOTE: If a check valve or water backflow protector is installed and cannot be removed install a back pressure relief valve, Hatco part number 03.02.039.00, set at 125 psi (862 kPa) on the incoming line between the pressure reducing valve and the inlet to the booster heater. Discharge must be to open site drain.

CAUTION

FOR INSTALLING PRESSURE AND TEMPERATURE RELIEF VALVES IN ACCORDANCE WITH ANSI Z21.22*CSA 4.4. Combination pressure and temperature relief valves with extension thermostats must be installed so that the temperature-sensing element is immersed in the water within the top 6" (152 mm) of the tank. They must be installed either in the hot outlet service line or directly in a tank tapping. Combination pressure and temperature relief valves that do not have extension elements must be mounted directly in a tank tapping located within the top 6" (152 mm) of the tank, and shall be adequately insulated and located so as to assure isolation from flue gas heat or other ambient conditions that are not indicative of stored water temperature. **TO AVOID WATER DAMAGE OR SCALDING DUE TO VALVE OPERATION, DRAIN PIPE MUST BE CONNECTED TO VALVE OUTLET AND RUN TO A SAFE PLACE OF DISPOSAL.** Drain pipe must be as short as possible and be the same size as the valve discharge connection throughout its entire length. Drain line must pitch downward from the valve and terminate at least 6" (152 mm) above the floor drain where any discharge will be clearly visible. The drain line shall terminate plain, not threaded, with a material serviceable for temperatures up to 250°F (121°C) or greater. Excessive length, over 15' (4.57 m), or use of more than two elbows can cause a restriction and reduce the discharge capacity of the valve. No shut-off valve shall be installed between the relief valve and tank, or in the drain line. Valve lever must be tripped periodically to ensure that waterways are clear. This device is designated for emergency safety relief and shall not be used as an operating control. The valves are set to relieve at 150 pounds pressure or when water temperature reaches 210°F (99°C). Read tag on valve for additional information.

INSTALLATION

Temperature/Pressure Gauges

Hatco requires a temperature/pressure gauge be installed in both the inlet and outlet lines to the booster heater. These gauges provide an instant visual check of the water temperature and pressure entering and leaving the booster heater. The visual check is helpful in eliminating unnecessary service calls.

Install the temperature sensing bulb in the water system. See **Figures 2 and 3** for methods of installation.

Pressure Reducing Valve

Proper operation of most dishwasher rinse nozzles require available water flow pressure at the nozzle to be 20 PSI.

If water pressure available to the booster heater inlet is over 20 PSI, a pressure reducing valve with bypass must be installed in the hot water supply line to the booster heater.

The valve supplied by Hatco has a built-in high pressure bypass which prevents excessive pressure build-up as the booster heats up.

CAUTION

Pressure regulating valve must have a built-in high pressure bypass.

Blended Phosphate Water Treatment System

Hatco requires that the Blended Phosphate Water Treatment System supplied be installed with unions on the incoming 3/4" water supply line after the pressure reducing valve and before the booster heater.

Cartridges supplied have a usage rating of 100,000 gallons of water. To ensure proper operation the cartridges must be replaced when expired.

NOTE: Product failure caused by liming or sediment buildup is not covered under warranty.

NOTE: The Commonwealth of Massachusetts requires that if a water treatment system is installed in line with the Hatco Booster Heaters, a water backflow protector shall also be installed.

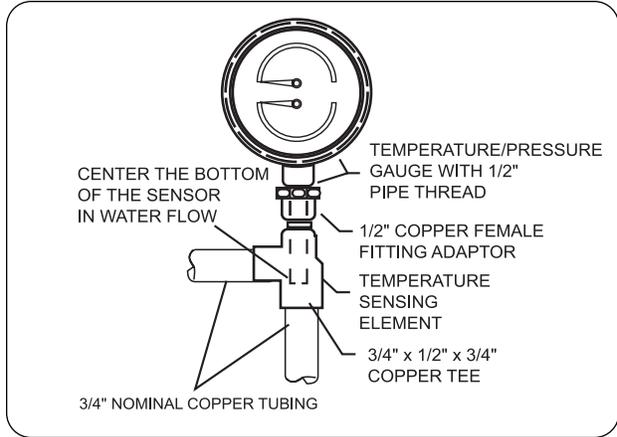


Figure 2. Installation Temperature/Pressure Gauge

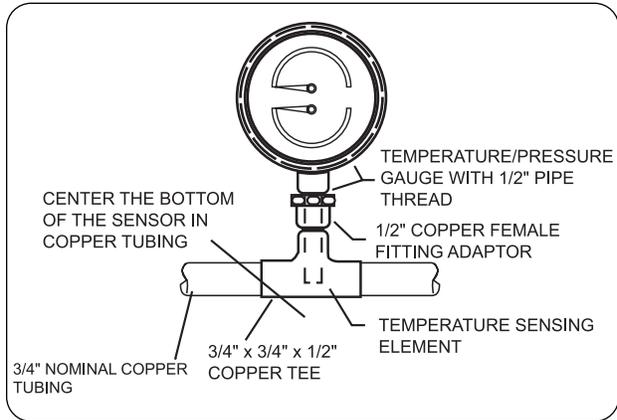


Figure 3. Installation Temperature/Pressure Gauge

NOTE: If a check valve or water backflow protector is installed and cannot be removed install a back pressure relief valve, Hatco part number 03.02.039.00, set at 125 psi (862 kPa) on the incoming line between the pressure reducing valve and the inlet to the booster heater. Discharge must be to open site drain.

INSTALLATION

PLUMBING CONNECTIONS (See Figure 4)

Inlet

Hatco Booster Heaters are designed to be connected with 3/4" pipe at the inlet pipe from the primary water heater. Water temperature from the primary water heater must be at least 110°F (43°C) and should not exceed 160°F (71°C). Minimum temperature differential between the inlet and outlet temperature must never be less than 20°F (11°C).

NOTE: Refer to BOOSTER HEATER SIZING CHART for application information.

Inlet line **must** be installed with a shut-off valve, a full open gate or ball type valve, a 3/4" union, together with the blended phosphate water treatment system, pressure reducing valve set at 20 PSI (1.4 kg/cm²) flow pressure and a temperature/pressure gauge supplied by Hatco.

NOTE: Do not run a cold ground water line to the Booster Heater.

CAUTION

To avoid development of a leak, do not back up or loosen any water pipe fittings.

WARNING

Do not connect the heater directly to a boiler or furnace coil or any other uncontrolled temperature source. Such hook-up could cause the thermostat to lose control and the unit could overheat.

CAUTION

Incoming water supply in excess of 3 grains of hardness per gallon ([GPG] .75 grains of hardness per liter [GPL]) must be treated/softened before being supplied to booster heater(s). Water that contains over 3 GPG or .75 GPL will decrease efficiency and reduce the operating life of the unit. *NOTE: Product failure caused by liming or sediment buildup is not covered under warranty.*

CAUTION

Incoming water supply to booster heater **must** be a minimum of 20 psi, (1.4 kg/cm²) water pressure less than 20 psi (1.4 kg/cm²) will decrease the operating life of the recirculating pump and the unit. *NOTE: Product failure caused by incoming water pressure less than 20 psi (1.4 kg/cm²) is not covered under warranty.*

INSTALLATION

NOTE: Be sure water flows through the pressure reducing valve in the proper direction. Check the directional arrow. Valve will reduce pressure only during flow conditions.

A 3/4" union fitting and a drain valve must also be installed to allow for easy servicing.

The temperature/pressure relief valve must be installed into one of two locations on the heater: either the right side or the back of the unit. See Figure 4 for exact locations.

To prevent water leakage and damage to the unit, the location for the temperature/pressure relief valve that is **not used** must be plugged. (One plug is supplied by Hatco with the heater.) Both temperature/pressure fittings **MUST NOT** be plugged.

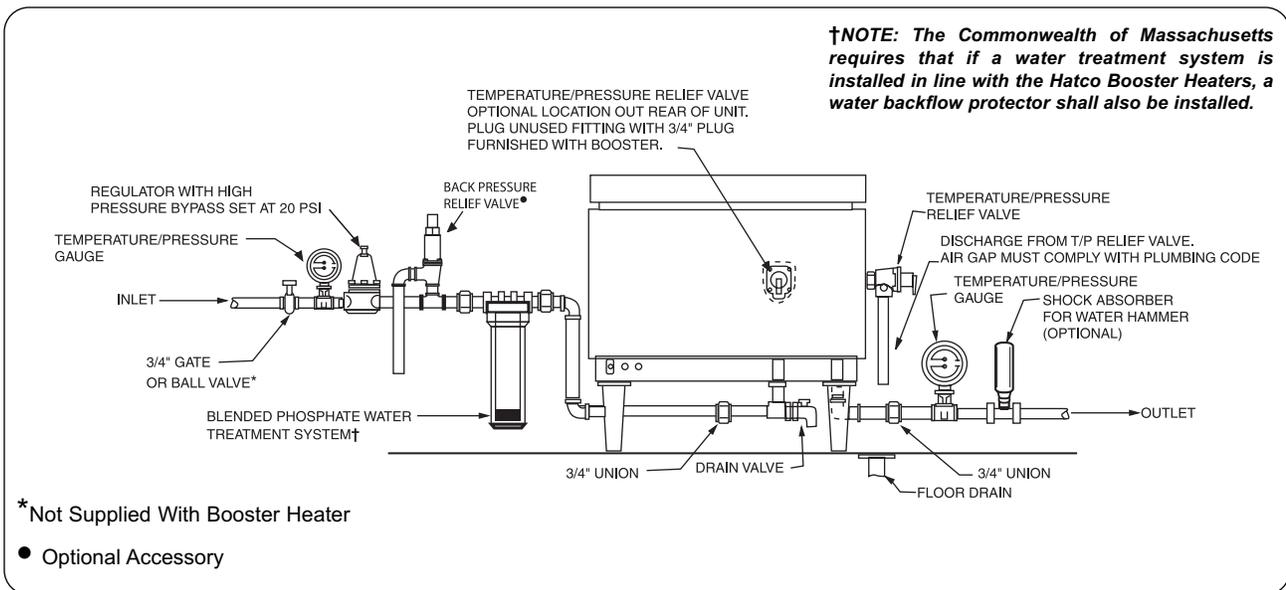


Figure 4. Plumbing Connections – PMG-100/200 Gas Booster Heaters

INSTALLATION

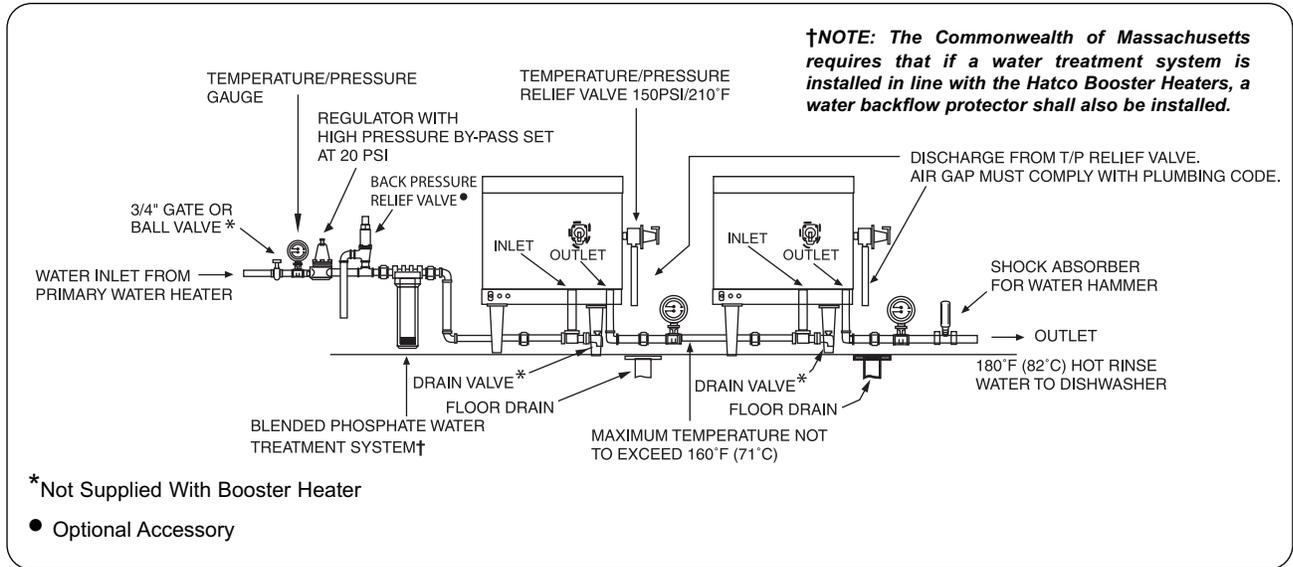


Figure 5. PMG-100/200 Gas Booster Heaters Connected in Series

Outlet

Using a 3/4" union and piping, connect the booster heater water outlet to the dishwasher sanitizing rinse pipe connection.

NOTE: Be certain the connection is made to the final rinse and not to the wash tank.

Install a temperature/pressure gauge in outlet line. Water temperature at outlet should be 180°F (82°C).

NOTE: The temperature sensing element must be in water stream. (See Figures 2 and 3.)

Shock Absorber

In areas of high water pressure, Hatco recommends a shock absorber be installed in the outlet line as close as possible to the dishwasher. The shock absorber softens the water hammer caused by automatic dishwasher valves. (See Figure 4.)

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

GAS

Components

| SUPPLIED WITH UNIT | OPTIONAL WITH UNIT | SUPPLIED BY INSTALLER |
|--|--------------------|--|
| <ul style="list-style-type: none"> Internal Gas Valve (installed) External Gas Shutoff Valve (loose) | None | <ul style="list-style-type: none"> Gas Supply Line Sediment Trap Union Vent System |

INSTALLATION

Gas Piping

The gas inlet pipe size is 3/4" NPT pipe thread fitting to the gas valve. Provide an adequate size gas supply line. The line should never be smaller than 3/4" NPT and should follow according to the gas piping diagram below. The fitting is accessed through the bottom of the case. (See Figure 6.)

NOTE: Gas line should be of the approved type for use with natural gas or propane.

Gas line should be kept as short as possible, sized to furnish the rated BTU, and installed in a way to protect it from damage. Gas piping must be installed in accordance with local plumbing codes including a sediment trap, ahead of the heater gas controls and a manual shut-off valve located outside the jacket.

NOTE: The internal gas valve is supplied with the heater, the external manual gas valve supplied with unit must be plumbed in by the installer. See Figure 6 for gas piping diagram.

CAUTION

Do not use Teflon tape on gas line pipe threads. A flexible sealant suitable for use with applied gas is recommended.

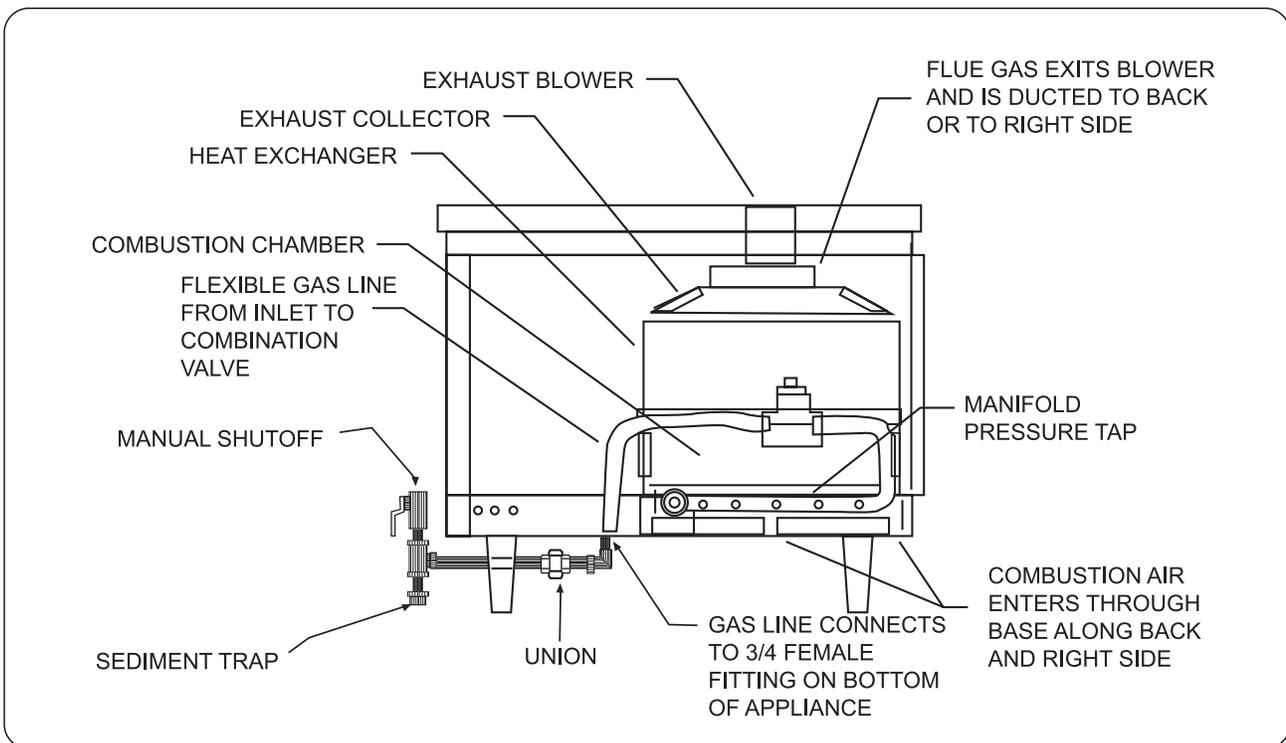


Figure 6. Gas Hook-up and Pressure Tap Location and Piping Diagram.

INSTALLATION

WARNING/CAUTION

The gas used with this unit **must** be the type specified on the spec plate on this unit. To avoid personal injury or damage to the unit, never use any other than the specified gas.

The heater and its gas connection must be leak tested before placing the booster heater in operation.

The booster heater and its individual shut-off valve must be disconnected and isolated from the gas supply piping system during any pressure testing of the system at test pressures in excess of 1/2 PSI (3.5 kPa.).

This appliance must be isolated from the gas supply piping system by closing its individual manual shutoff valve during any pressure testing of the gas supply piping system at test pressures equal to or less than 1/2 psig (3.5 kPa).

Dissipate test pressure from the gas supply line before re-connecting the heater and its manual shut-off cock to the gas supply line. **FAILURE TO FOLLOW THIS PROCEDURE MAY DAMAGE THE GAS VALVE. OVER PRESSURED GAS VALVES ARE NOT COVERED BY THE WARRANTY.**

The heater and its gas connections shall be leak tested before placing the appliance in operation. Use soapy water or commercially available fluid for leak test. **DO NOT** use open flame to test for leaks.

Incoming Gas Pressure Specifications

| Gas Type | Inches Water Column | |
|------------|---------------------|---------|
| | Minimum | Maximum |
| Natural | 5.0 | 10.5 |
| Propane/LP | 11.0 | 13.0 |

The maximum inlet gas pressure must not exceed the values shown above. The minimum gas pressure listed is for the purposes of input adjustment.

The manifold inside the heater is provided with a pressure tap to measure the gas pressure. The chart below lists the proper pressure amounts at the manifold pressure tap when testing.

Operating Pressure Specifications at Manifold

| Gas Type | Inches Water Column At Pressure Tap |
|------------|-------------------------------------|
| Natural | High Burn 3.5 |
| Propane/LP | 10.0 |

See Figure 6 for hook-up location and pressure tap location.

INSTALLATION

ELECTRICAL

Components

| SUPPLIED WITH UNIT | OPTIONAL WITH UNIT | SUPPLIED BY INSTALLER |
|---|--------------------|---|
| <ul style="list-style-type: none">• 7/8" Hole Plugs | None | <ul style="list-style-type: none">• 120 VAC, 60 Hz, 15 Amp Single Phase Service• Electrical Ground |

The Hatco Gas Booster Heater operates on 120 VAC, 60 Hz, 15 amp, single phase service. All internal electrical connections have been made at the factory.

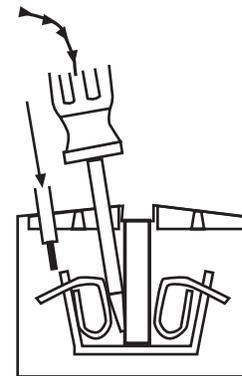
WARNING

If an external electrical source is utilized, the appliance, when installed, must be electrically grounded in accordance with local codes, or, in the absence of local codes, with the National Electrical Code, ANSI/NFPA 70, and CSA C22.1, Electrical Code.

Electrical Connections

To connect the field wiring to the booster heater:

1. Remove the front access panel from the unit by lifting up on the front panel and pulling upper edge away from unit until it clears the lower edge.
2. Open electrical enclosure at the lower left corner of the base by removing two screws.
3. Bring power leads from a properly sized fused disconnect switch or circuit breaker through 7/8" hole provided on lower left hand side or bottom of base. Connect supply lines to terminal block provided. (See Figure 7.) **Use copper wire only.**
4. A green grounding terminal is provided internally. An equipment grounding conductor must be properly connected to the green terminal block. (See Figure 7.)



1. Rotate Screwdriver into top opening.
2. Insert 3/8" Stripped Wire Lead.
3. Remove Screwdriver.

Figure 7. Terminal Block Wiring Instructions.

CAUTION

To avoid damage to both the pump and heater assembly, do not turn on the power switch to the heater until the installation is complete and the booster water tank is filled with water and all air in the system has been vented through the dishwasher rinse nozzles.

INSTALLATION

VENTING

The PMG-100 and PMG-200 may be vented by two methods, both of which have been tested for compliance with national safety standards for gas water heaters. Whichever method is used must comply with local codes. The installation of the venting system must comply with local codes and in the absence of local codes, in accordance with the National Fuel Gas Code and the guidelines in this manual. **Before installing any method of venting you should contact the local code authority of your gas supplier to make sure that the final installation will be acceptable to the authorities having jurisdiction.**

The proper method of venting a power vented gas appliance is too complicated to cover in this manual and is explained in detail in the National Fuel Gas Code. Before installing the venting system the person or agency making the installation must be familiar and experienced with the guidelines of the National Fuel Gas Code.

The temperature of the flue gases from this booster water heater operates at approximately 225°F to 275°F (107°C to 135°C).

The two methods that have been tested for compliance with the national safety standards are:

1. The first method of venting permits the connection of 4" (102 mm) diameter, AL 29-4C¹ stainless steel vent pipe. Use only the specific types of materials currently listed by a nationally recognized testing agency for category III venting. **The maximum combined horizontal vent length must not exceed a length of 40 feet (12 m) [each sweep elbow is the equivalent of 5' (1.5 m) of straight pipe and a standard right elbow is the equivalent of 10 feet (3 m)].** The venting may be done in such a way that the exhaust products are:

- a. Conveyed to another area in the kitchen such as under a ventilator or near an exhaust fan (both of which exhaust outdoors). (See Figure 8.)

When using this method the booster water heater must be electrically interlocked with the vent hood to prevent operation if the vent hood is not operating.

The termination end must be placed so that it vents above the bottom of the hood skirt. Do not penetrate the filter with the vent.

- b. Horizontally vented through an outside wall directly to the outdoors. See additional instructions below. (See Figure 9.)
- c. Exhausted into a vertical masonry chimney that has a listed steel liner installed in the chimney. Locate appliance as close as practicable to a chimney or gas vent. Because of the low flue gas temperature, do not vent into an unlined or masonry lined chimney. Note that all venting into a vertical chimney of any type must comply with the horizontal and vertical ratios and sizing requirements that are detailed in the National Fuel Gas Code.
- d. Vented vertically using type B vent pipe that is 5" (127 mm) in diameter provided the termination above the roof uses a listed wind cap.

¹AL 29-4C is a Registered Trademark of Allegheny Ludlum Corp.

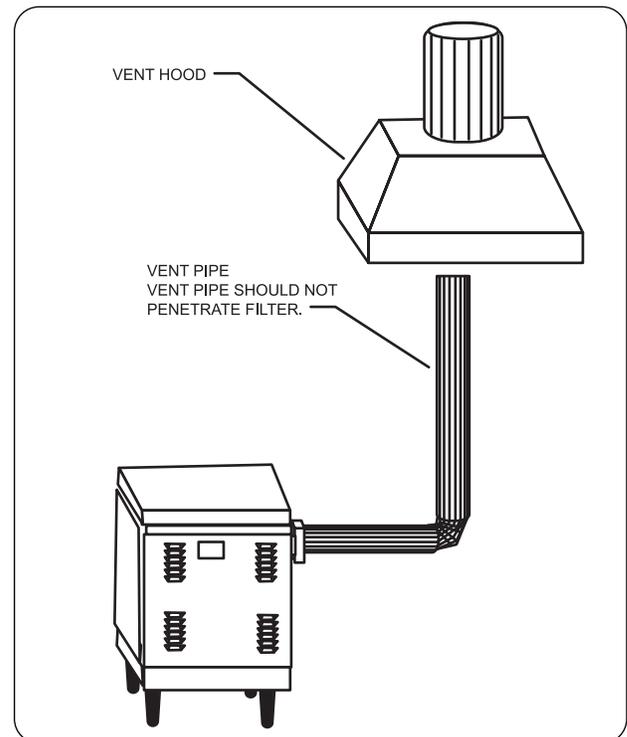


Figure 8. Venting Through Typical Exhaust System.

INSTALLATION

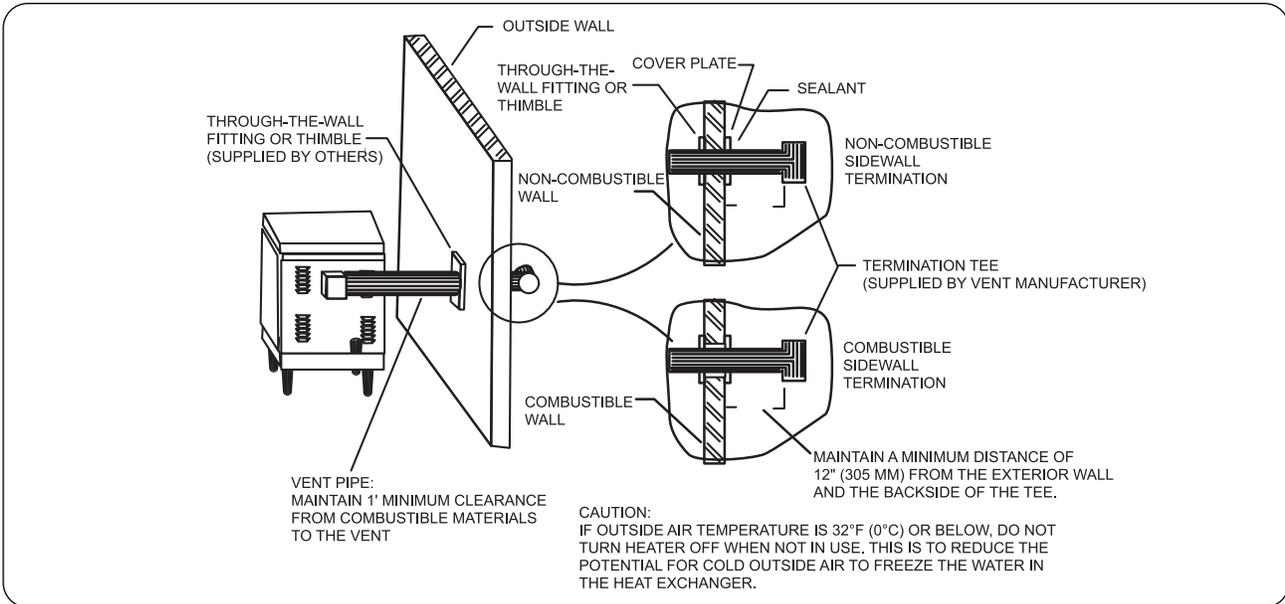


Figure 9. Typical Through-the-Wall Venting

- The second method of venting is to directly exhaust the flue products into the kitchen work area provided the size and installation of the open room meet the requirements of the National Fuel Gas Code [ANSI Z223.1 or NFPA bulletin #54]. A portion of the 1996 code is as follows.

EXCERPT FROM ANSIZ223.1/NFPA #54

7.2.1 Connection To Venting Systems. Excerpt as permitted in 7.2.2 through 7.2.6, all gas utilization equipment shall be connected to venting systems.

7.2.2 Equipment Not Required To Be Vented. A single booster-type [automatic instantaneous] water heater, when designed and used solely for the sanitizing rinse requirements of a dishwashing machine, provided that the equipment is installed, with the draft hood in place and unaltered, if a draft hood is required in a commercial kitchen having a mechanical exhaust system. Where installed in this manner, the draft hood shall not be less than 36 inches (91 cm) vertically and 6 inches (15 cm) horizontally from any surface other than the equipment.

Where any or all of this equipment is installed so the aggregate input rating exceeds 20 Btu per hr per cu ft (207 watts per m³) of room space in which it is installed, one or more shall be provided with venting systems or other approved means for removing the vent gases to the outside atmosphere so the aggregate input rating of the remaining unvented equipment does not exceed the 20 Btu per hr per cu ft (207 watts per m³) figure. Where the room or space in which the equipment is installed is directly connected to another room or space by a doorway, archway, or other opening of comparable size that cannot be closed, the volume of adjacent room or space shall be permitted to be included in the calculation.

General Notes On Venting:

- Whenever a vent pipe goes through a combustible wall, the clearance between the vent material and the combustible material must be in accordance with the listing requirements of the vent system chosen. See the vent manufacturer's instructions.
- All horizontal runs of vent pipe must be supported at every elbow and every 3 feet (1 m).
- All horizontals must have an upward pitch of at least 1/4" per foot.
- When venting through a side wall to the outdoors the following must be observed:
 - A vent termination [Tee Fitting] must be used that is positioned with the backside of the TEE at least 12" (305 mm) from the exterior wall.
 - The vent termination must be away from areas where the general public will walk or vehicle may damage the vent cap.
 - The cap must be at least 3 feet (1 m) above any forced inlet openings [into the building] that are within 10 feet (3 m) of the cap.
 - The cap must be one foot above any windows, doors or other openings into the building.

INSTALLATION

- The cap must be 4 feet (1.2 m) horizontally from any doors, windows, etc.
- The cap must be at least 7 feet (2 m) above any public walkway.
- The bottom of the cap must be at least 1 foot (.3 m) above ground and possibly higher if the snow accumulation normally exceeds 1 foot (.3 m).
- The cap should be positioned such that any condensate that drips from the cap will not damage plants, shrubs or onto other equipment located on the outside of the restaurant.
- The cap should be positioned so that condensate that drips from the cap will not allow the water to accumulate on walkways or other areas, which may freeze and cause an accident.
- Right angle adapter is provided to minimize radius of initial bend toward flue piping required for tight quarters. See Figure 10 for direction options.

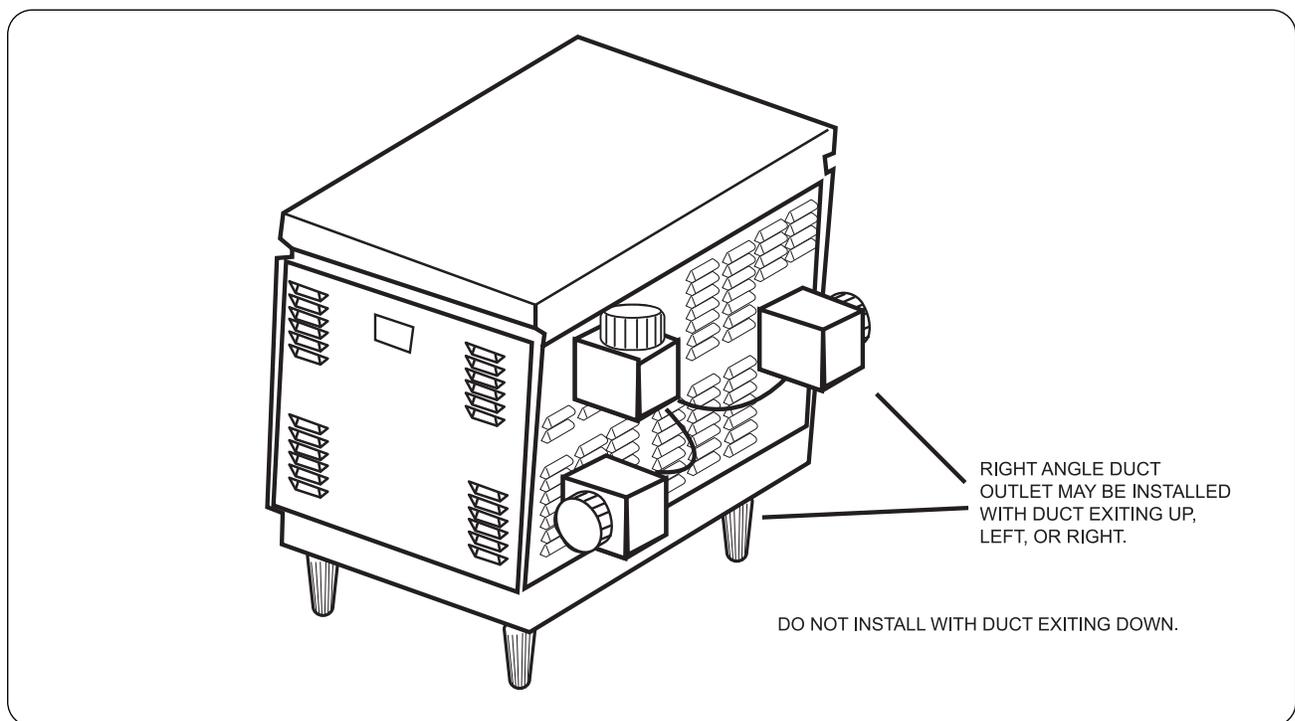


Figure 10. Right Angle Adapter Mounting Options.

NOTE: The standard Vent Outlet is shown in Figure 10 exiting from the rear. To adjust the outlet exit to the right side see the COMPONENT-ADJUSTMENT/REPLACEMENT section of this manual.

CAUTION

To avoid FREEZING WATER DAMAGE to the booster heater when the outside temperature is below 32°F (0°C) the unit must be left ON and the venting must be protected from migrating cold air.

OPERATION

START UP PROCEDURES

NOTE: Remove the front access panel during start up.

Filling The System With Water

1. **With the external gas supply and electric supply turned off**, close the drain pipe valve.

NOTE: Water temperature at the inlet should be between 110°F (43°C) and 150°F (66°C) and should never exceed 160°F (71°C) for the unit to operate properly and meet the demands of the dishwashing machine. Minimum temperature differential between inlet and outlet temperatures should never be less than 20°F (11°C).

NOTE: Do not run a cold ground water line to the Booster Heater(s).

CAUTION

Incoming water supply in excess of 3 grains of hardness per gallon ([GPG] .75 grains of hardness per liter [GPL]) must be treated/softened before being supplied to booster heater(s). Water that contains over 3 GPG or .75 GPL will decrease efficiency and reduce the operating life of the unit. NOTE: Product failure caused by liming or sediment buildup is not covered under warranty.

2. When the water tank is full, turn on the electric supply and the power switch to allow the circulator pump to purge air from it. The circulator pump should start immediately. Additional air in the tank can be vented through the dishwasher rinse nozzle.

NOTE: Dishwasher should be cycled a minimum of three times before the gas supply to the booster is turned on.

3. **After all the air has been vented out of the system, turn off the power to the booster heater.**

CAUTION

Product failure caused by dry firing is not covered under warranty.

Lighting The Heater

FOR YOUR SAFETY, READ BEFORE OPERATING:

WARNING

If you do not follow these instructions exactly, a fire or explosion may result, causing property damage, personal injury or loss of life.

AVERTISSEMENT: Assurez-vous de bien suivre les instructions données dans cette notice pour réduire au minimum le risque d'incendie ou d'explosion ou pour éviter tout dommage matériel, toute blessure ou la mort.

1. This appliance is equipped with an ignition device which automatically lights the pilot. **DO NOT TRY TO LIGHT THE PILOT BY HAND.**

2. **BEFORE OPERATING** smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.

What To Do If You Smell Gas:

- Do not try to light any appliance.
 - Do not touch any electric switch; do not use any phone in your building.
 - Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
 - If you cannot reach your gas supplier, call the fire department.
3. Use only your hand to push in or turn the gas control knob. Never use tools. If the knob will not push in or turn by hand, don't try to repair it - call a qualified service technician. Force or attempted repair may result in a fire or explosion.
 4. 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 which has been under water.

Operating Instructions:

Les Instructions quant a la mise en service de ce chauffe-eau se trouvent sur la surface interieure du panneau avant. Pour retirer le panneau, saisir les cotes avant interieurs du panneau avant et soulever vers le haut, tirer le bord inferieur vers l'exterieur et laisser le bord superieur tomber.

WARNING/CAUTION

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

En cas de surchauffe ou si l'alimentation en gaz ne s'arrête pas, fermez manuellement le robinet d'arrêt de l'admission de gaz.

OPERATION

1. **STOP!** Read the safety information on the appliance label or in this manual.
 2. Turn off all electric power to the appliance.
 3. This booster heater is equipped with an ignition device which automatically lights the pilot. **DO NOT try to light the pilot by hand.**
 4. To gain access to controls remove front panel by sliding it up and pulling lower edge out and down away from the appliance.
 5. Turn gas control knob clockwise to OFF. (See Figure 11.)
 6. Wait five (5) minutes to clear out any gas. If you smell gas **STOP!** Follow "B" in the safety information under Start Up Procedures. If you do not smell gas, continue to the next step.
 7. Turn gas control knob counterclockwise to ON.
 8. Replace front access panel.
 9. Turn on all electric power to the appliance.
 10. Turn on power switch and:
 - a. After approximately 20 seconds the ignition sequence should begin and light the pilot. If the water temperature is below the setpoint the heating process will start.
 - b. Allow the booster heater to run until the burner shuts down. The booster heater is now at its setpoint, stabilized working temperature.
 - c. Run the dishwashing machine through at least two rinse cycles. After the first rinse cycle the burner should re-light and remain lit until the water maintains 180°-185°F (82°-85°C) output @ 20 psi through the second cycle.
- NOTE: If this test does not proceed as described, contact the Hatco Corporation or your authorized service agent for technical assistance.*
11. If the appliance will not operate, follow the instructions "To Turn Off Gas To Appliance" and call your service technician or gas supplier.

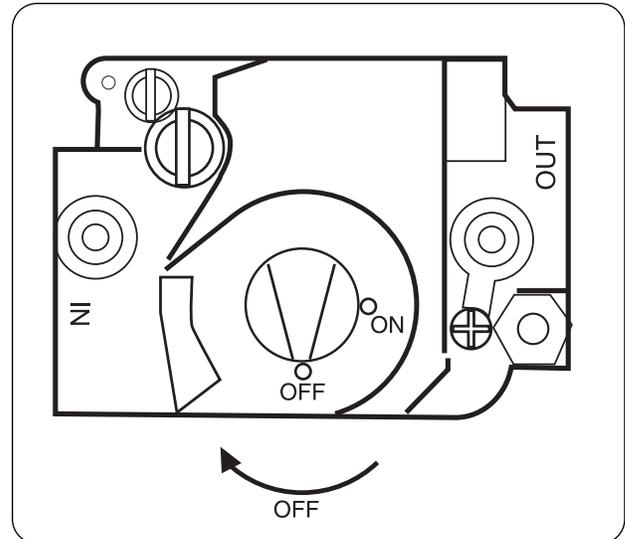


Figure 11. Gas Valve - Top View

To Turn Off Gas To Appliance:

1. Turn off power switch on heater.
2. Turn off all electric power to the appliance if service is to be performed.
3. Shut off external manual gas valve.
4. Remove front cover of heater for access to the control compartment.
5. Turn gas control knob clockwise to OFF. Do not force.
6. Replace front access panel.

CAUTION

To avoid FREEZING WATER DAMAGE to the booster heater when the outside temperature is below 32°F (0°C) the unit must be left ON and the venting must be protected from migrating cold air.

MAINTENANCE

CAUTION

Using or storing chlorine based products on or near the booster heater may shorten the life of the unit and void the product warranty.

NOTE: Refer to the REPLACEMENT PARTS LIST for exploded views, part identification and location.

NOTE: Refer to the WIRING DIAGRAM for specific electrical information.

GENERAL

1. Keep the area around the heater free and clear of debris and flammable materials. Do not block air intakes or vents.
2. The recirculating water pump motor is permanently lubricated and requires no other maintenance.
3. Visually observe and inspect the burner and pilot flame every six months. When the burner is operating properly a clean blue flame will be visible. (See Figures 12 and 13.) Depending on the condition of the kitchen environment, the burner may need to be cleaned of lint or grease-laden dust. If any problems are apparent, discontinue use of the heater and contact the Hatco Corporation or your authorized service agent.
4. Visually observe and inspect the heat exchanger and exhaust blower fan. Depending on the condition of the kitchen environment, the heat exchanger and fan may need to be cleaned of lint or grease laden dust. If any problems are apparent, discontinue use of the heater and contact the Hatco Corporation or your authorized service agent.
5. Once a month check and clean (if necessary) all air inlet holes on the side or back of the unit.



- The flame during full burn is a broad blue color. An inner cone slightly lighter in color will also be visible.
- The flame should not be rising off of the face of the burner element.
- Yellow tipped flames suggest a need for adjustment or cleaning of the burner assembly.

Figure 12. Gas Flame.

6. The front access panel should be removed and all components visually inspected at least twice a year. Check for evidence of chafing or heat damage to any wiring or components. Check also for any signs of water leakage at any of the plumbing connections. If there are signs of any damage or leakage contact the Hatco Corporation or your authorized service agent.
7. The relief valve should be manually operated at least once a year to ensure proper operation.

⚠ WARNING

Before performing this operation, care should be taken that any of the discharged water does not come into contact with the operator or surrounding surfaces. The water can be extremely hot and can cause severe scalding and damage to the property.

If the relief valve discharges periodically, do not plug it. If replacing the valve does not stop the discharge, contact your local authorized service agent or the Hatco Corporation.

8. Visually observe and inspect the Blended Phosphate Water Treatment System weekly: To ensure proper operation replace depleted cartridges immediately.

BURNER REMOVAL/INSPECTION (TO BE PERFORMED BY YOUR AUTHORIZED SERVICE AGENCY)

1. Shut-off the electrical power and gas supply to the heater.
2. Disconnect the internal flexible gas supply line connector at the gas regulator valve.
3. Disconnect the ignition module spark cable.
4. Remove two nuts holding the burner tray to the base.
5. Remove four screws from the front cover of the combustion chamber and remove the cover.

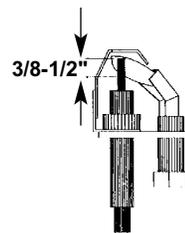


Figure 13. Pilot Flame.

MAINTENANCE

6. Lift and slide burner assembly out.
7. Disconnect spark electrode wire from pilot igniter.
8. Perform intended service.
9. Reverse above procedure to re-install, checking burner assembly and seal to prevent gas leakage.

DRAINING THE HEAT EXCHANGER

1. Shut-off the electrical power, gas and water supply to the heater.
2. Allow unit to cool down to room temperature.
3. Open the drain valve under the booster heater to remove water from the tank and pump assembly.
4. Remove the drain plug located on the front of the heat exchanger and allow the water to drain from the heat exchanger into a pan or pail. Approximately 16 oz. (498 g) of water will drain from the unit.
5. Reverse above procedure using a food grade thread sealant to seal the plug threads and prevent leakage.

CAUTION

Failure to drain the heat exchanger prior to exposing it to freezing conditions will damage the heat exchanger and void the warranty.

NOTE: Freeze damage to the heat exchanger and unit can be avoided by doing the following:

- After draining heat exchanger, blow 30 psi of air into the heat exchanger drain opening which will purge the exchanger of any residual water.
- Leaving drain valves open until performing start-up procedures.
- Stop migrating cold air from entering the unit from the vent.

COMPONENT - ADJUSTMENTS/REPLACEMENTS

⚠ WARNING/CAUTION

Always disconnect the power and shut off gas supply prior to performing any maintenance on the booster heater to avoid possible personal injury or damage to the booster heater.

⚠ WARNING

Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.

ATTENTION

Au moment de l'entretien des commandes, étiquetez tous les fils avant de les débrancher. Des erreurs de câblage peuvent entraîner un fonctionnement inadéquat et dangereux.

S'assurer que l'appareil fonctionne adéquatement une fois l'entretien terminé.

1. Gas Valve Replacement

- a. Shut off electrical power and gas supply to the heater.
- b. Remove front panel.
- c. Remove flexible gas piping to gas valve inlet.
- d. Disconnect wiring connections to gas valve.
- e. Remove burner tray assembly as outlined above.
- f. Remove valve from manifold pipe.
- g. Reverse above procedure to re-install, checking burner and seals to prevent gas leakage.

2. Ignition Module Replacement

- a. Shut off electrical power to the booster.
- b. Disconnect spark plug igniter wire.
- c. Remove mounting screws holding module.
- d. Remove module.
- e. Reverse above procedure to re-install.

3. Transformer Replacement

- a. Shut off electrical power to the heater.
- b. Remove screws from electrical box and lift off.
- c. Disconnect wire leads from transformer at the power supply. (See Figure 9.)
- d. Remove mounting screws that hold transformer in place.
- e. Remove transformer from unit and replace with new one.
- f. Reverse above procedure to re-install.

MAINTENANCE

4. Temperature Control Probe Replacement.
 - a. Shut off electrical power to the heater.
 - b. Shut off water supply to the heater and open drain valve to remove water below the temperature control probe level.
 - c. Remove the front panel cover.
 - d. Disconnect temperature control probe wire leads from thermostat body.
 - e. Remove temperature control probe from tank.
 - f. Reverse above procedure to re-install.
5. Recirculating Pump Replacement
 - a. Shut off gas supply.
 - b. Shut off electrical supply.
 - c. Shut off water supply and allow unit to cool sufficiently.
 - d. Open the drain valve under the booster heater to remove water from the tank and pump assembly.
 - e. Remove front cover and left side panel for access to pump.
 - f. Remove two (2) screws from the electrical box cover and lift off.
 - g. Remove pump motor cover and disconnect wiring connections to the pump motor.
 - h. Remove bolts and nuts holding pump assembly to flanges (save bolts and nuts).
 - i. Install new pump assembly using new O-rings (supplied with pump assembly) starting with lower bolts first (FLOW ARROW MUST POINT UPWARD).
 - j. Close the drain valve under the booster heater and turn the water supply ON checking for leaks at all fittings.
 - k. Connect wiring to new pump motor and install wiring compartment cover.
 - l. Purge the air from the system. Turn on the electrical supply and allow pump to displace air out of the heat exchanger and holding tank by running several rinse cycles on the dishwashing machine. Test all connections for tightness.
 - m. Turn on gas supply (CHECK ALL FITTINGS FOR LEAKS) and follow start-up procedures.
6. Temperature/Pressure Gauge Replacement
 - a. Shut off electrical power to the heater.
 - b. Shut off water supply and open drain valve to remove water in the piping.
 - c. Remove temperature/pressure gauge from pipe fitting connection.
 - d. Reverse above procedure to re-install.
7. Temperature/Pressure Relief Valve Replacement
 - a. Shut off electrical power to the heater.
 - b. Shut off water supply and open drain valve to remove water in the tank below the relief valve level.
 - c. Disconnect drain pipe from valve.
 - d. Remove temperature/pressure relief valve.
 - e. Reverse above procedure to re-install.
8. Low Water Cut Off Replacement
 - a. Shut off electrical power to the heater.
 - b. Remove screws for electronics cover and lift off.
 - c. Mark wires and disconnect from old module.
 - d. Reverse above procedure to re-install.
9. Tank High Limit Replacement
 - a. Shut off electrical power to the heater.
 - b. Shut off water supply and open drain valve to remove water in the piping and pump.
 - c. Remove limit from mounting panel, disconnecting leads.
 - d. Loosen 3/8" (9.5 mm) tank fitting packing nut then remove fitting.
 - e. Reverse above procedure to re-install.
10. Orifice Replacement (for High Altitude Orifice Size Change or Orifice Repair)
 - a. Shut off electrical power and gas supply to the heater.
 - b. Remove front panel.
 - c. Remove flexible gas line connector from gas regulator valve inlet.
 - d. Remove burner tray assembly as outlined above.
 - e. Loosen two (2) nuts on each burner bracket and lift burners out of the tray.
 - f. Unscrew brass orifices from the black distribution manifold.
 - g. Install new orifices as required.
NOTE: If this is a high altitude change, refer to the tables in the HIGH ALTITUDE INSTALLATION & OPERATION section for the appropriate diameter to drill the orifice blanks for your elevation.
 - h. Reverse the procedure above to re-install, checking burners and seals to prevent gas leaks.
11. Vent Outlet Adjustment to Right Side
 - a. Shut off electrical power to the heater.
 - b. Remove front panel.
 - c. Remove both side panels by removing two screws on each panel from inside the cabinet. (Save these screws.)
 - d. Remove five (5) screws holding the top of the back panel and two (2) nuts from below the front supports. (Save fasteners.)
 - e. Clear wires from raceway clips and lift the top off the heater.

MAINTENANCE

- f. Remove three (3) screws holding the straight 90° elbow duct to the exhaust blower and pull duct out.
 - g. Remove three (3) screws holding the straight duct to the 90° elbow duct and separate. (Save the screws.)
 - h. Attach the straight duct to the discharge of the exhaust blower using the three (3) screws from Step g. Retain the 90° elbow duct for future relocation or discard.
 - i. Reassemble top and side panels in reverse order from above.
 - j. Remove vent hole cover from right side panel and place on back panel before reinstalling side duct letting exhaust duct protrude.
12. Heat Exchanger Replacement
- a. Shut off gas supply.
 - b. Shut off electrical supply.
 - c. Shut off water supply.
 - d. ALLOW UNIT TO COOL DOWN TO ROOM TEMPERATURE.
 - e. Open the drain valve under the booster heater to remove water from the tank and pump assembly.
 - f. Disconnect water, gas, and relief valve plumbing as needed to access the booster.
 - g. Remove front cover, sides, top and rear panel to access the heat exchanger.
 - h. Remove the drain plug located on the front of the heat exchanger (do not discard) and allow the water to drain from the heat exchanger into a pan or receptacle. Exchanger holds approximately 16 oz. (498 g).
 - i. Mark and remove the two (2) water fittings and discard old gaskets (new ones are provided), then position flexible lines away from harm.
 - j. Carefully remove insulation from around the heat exchanger and set aside.
 - k. Remove the perimeter screws from flue vent collection hood and carefully lift fan with vent collector hood off of the top of the heat exchanger. Disconnect fan wires if you cannot set the hood in a secure nearby location.
 - l. Remove wires from high limit switch and then remove two (2) screws that hold switch to exchanger.
 - m. Remove screws that hold the heat exchanger to combustion chamber and lift exchanger away. Discard old gasket between exchanger and combustion chamber (new part provided).
 - n. Place new gasket on combustion chamber and position new heat exchanger on top. Fasten exchanger to combustion chamber with screws removed earlier.
 - o. Place new gasket on top flange of heat exchanger and replace vent collector with power vent fan on top of new exchanger (reconnect wires if needed) securing with original screws.
 - p. Replace insulation around the heat exchanger and fasten in place with high temperature aluminum tape.
 - q. Attach high limit switch to exchanger with screws previously removed, and then attach wire leads to switch.
 - r. Place new gaskets (provided) onto water fittings and carefully tighten flexible lines making sure they are oriented for proper flow.
 - s. Seal threads of drain plug with a food grade sealant to prevent leakage and install in new exchanger.
 - t. Reconnect water and gas lines and relief valve plumbing.
 - u. Close drain valve under booster heater and turn on water supply to booster, then turn on electrical supply and allow pump to displace trapped air out of the new heat exchanger, then purge this air out of the booster by running several rinse cycles on the dishwashing machine. CHECK ALL FITTINGS FOR LEAKS.
 - v. Turn on gas supply (CHECK ALL FITTINGS FOR LEAKS) and follow start-up procedures.
13. Blended Phosphate Water Treatment Cartridge Replacement
- a. Shut off electrical power to the heater.
 - b. Shut off water supply and open drain valve to remove water in piping.
 - c. Loosen canister using wrench attached.
 - d. Remove canister and discard depleted cartridge.
 - e. Use a clean damp cloth, wipe interior of canister clean.
- NOTE: Make sure O-ring seal is properly placed in canister.*
- f. Reverse above procedure to reinstall.

MAINTENANCE

 **WARNING**

Genuine Hatco Replacement Parts are specified to operate safely in the environments in which they are used. Some aftermarket or generic replacement parts do not have the characteristics that will allow them to operate safely in Hatco equipment. It is essential to use Hatco Replacement Parts when repairing Hatco equipment. Failure to use Hatco Replacement Parts may subject operators of the equipment to hazardous electrical voltage, resulting in electrical shock or burn.

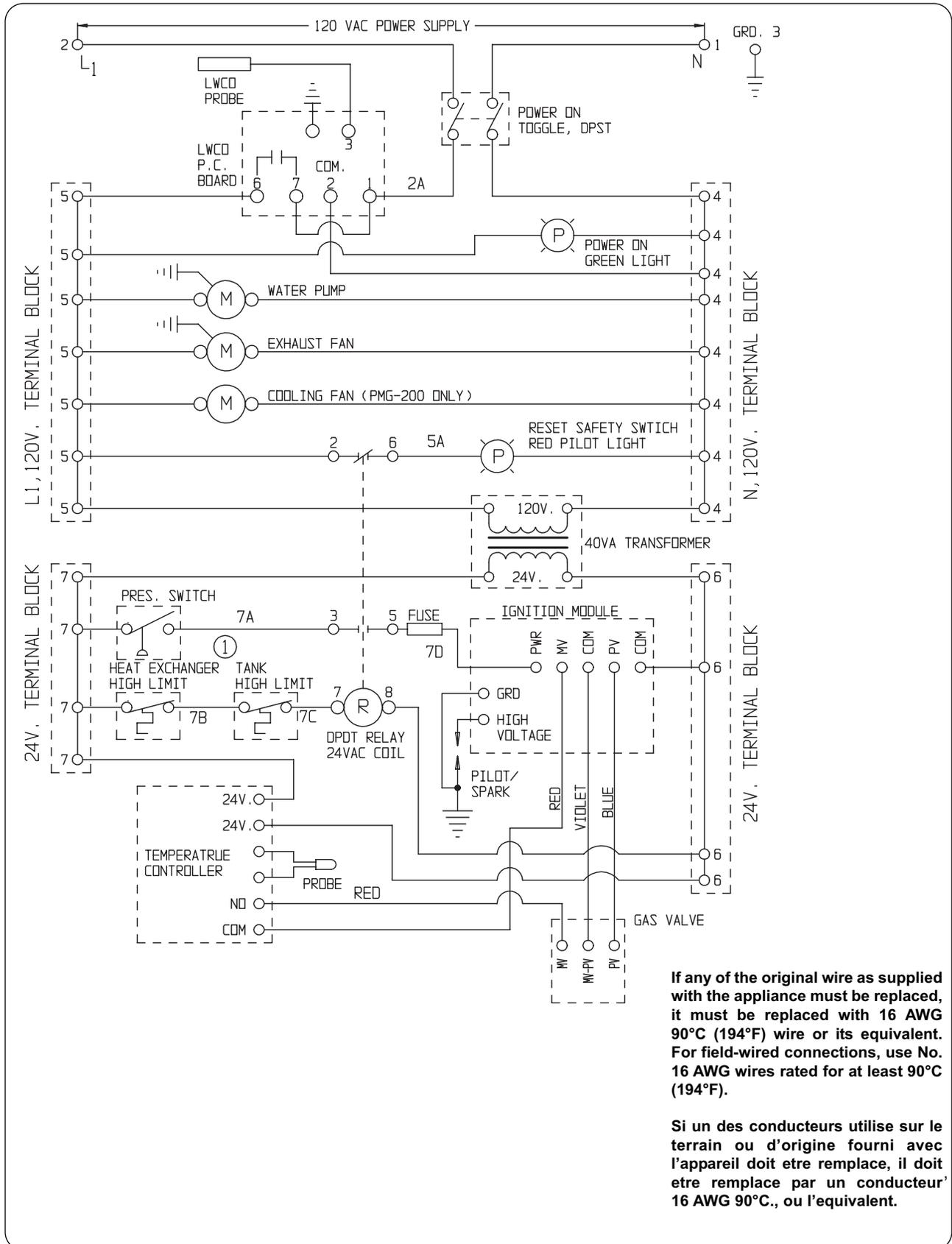
 **WARNING**

This product has no “user” serviceable parts. To avoid damage to the unit or injury to personnel, use only Authorized Hatco Service Agents and Genuine Hatco Parts when service is required.

 **WARNING**

If service is required on this unit, contact your Authorized Hatco Service Agent, or contact the Hatco Service Department at 800-558-0607 or 414-671-6350; fax 800-690-2966 or International fax 414-671-3976.

WIRING DIAGRAM



If any of the original wire as supplied with the appliance must be replaced, it must be replaced with 16 AWG 90°C (194°F) wire or its equivalent. For field-wired connections, use No. 16 AWG wires rated for at least 90°C (194°F).

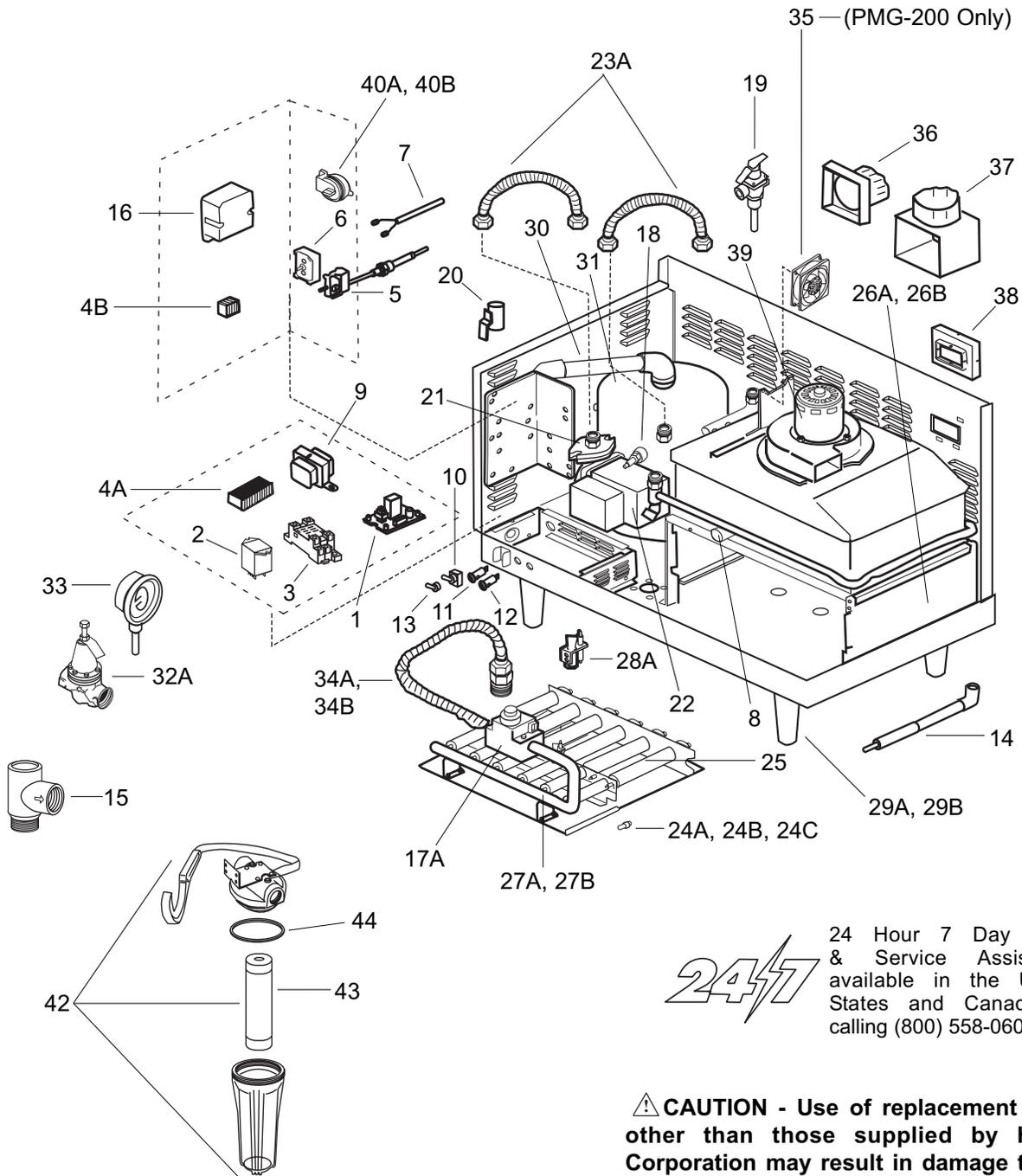
Si un des conducteurs utilise sur le terrain ou d'origine fourni avec l'appareil doit être remplacé, il doit être remplacé par un conducteur 16 AWG 90°C., ou l'équivalent.

REPLACEMENT PARTS LIST

HATCO POWERMITE® PMG-100 and PMG-200 GAS BOOSTER HEATER

Model Designation

| | |
|---------|--------------------------------------|
| PMG-XXX | P = Power |
| | M = Mite |
| | G = Gas |
| | X = Input BTUs/Hour (Approximate) |



24 Hour 7 Day Parts
& Service Assistance
available in the United
States and Canada by
calling (800) 558-0607.

⚠ CAUTION - Use of replacement parts other than those supplied by Hatco Corporation may result in damage to the unit or injury to personnel.

REPLACEMENT PARTS LIST

PARTS COMMON TO ALL PMG-100 & PMG-200 MODELS

| ITEM | DESCRIPTION | PART NO. | QTY. | ITEM | DESCRIPTION | PART NO. | QTY. |
|------|--|----------------|------|------|--|----------------|------|
| 1 | Low Water Cut Off Board 120V | R02.01.210.00 | 1 | 26B | Heat Exchanger (PMG-200) | R03.12.017B.00 | 1 |
| 2 | Relay 24VAC Relay DPDT | 02.01.116.00 | 1 | 27A | Gas Manifold (PMG-100) | 03.12.015.00 | 1 |
| 3 | Socket for Mini Relay | 02.01.125.00 | 1 | 27B | Gas Manifold (PMG-200) | 03.12.019.00 | 1 |
| 4A | Sectional T-Block 30P Control | 02.15.032.00 | 1 | 28A | NAT Gas Pilot Assembly with Orifice | 03.12.010.00 | 1 |
| 4B | Sectional T-Block 8P Distribution | 02.15.033.00 | 1 | 28B | LP Pilot Conversion Orifice* | 03.12.011.00 | 1 |
| 5 | Tank High Limit, Manual Reset | 02.16.116.00 | 1 | 29A | 6" (152 mm) Plastic Legs★ | 05.30.069.00 | 4 |
| 6 | Control Thermostat with Probe | R02.16.068.00 | 1 | 29B | 6" (152 mm) Stainless Legs★ | 05.30.070.00 | 4 |
| 7 | Temperature Control Probe | R02.16.069.00 | 1 | 30 | Heat Trap Assembly | AS.141.00 | 1 |
| 8 | Heat Exchanger High Limit | 02.16.106.00 | 1 | 31 | Tempering Tank | 01.05.005.00 | 1 |
| 9 | Transformer 120/24V (40VA) | 02.17.034.00 | 1 | 32A | Pressure Reducing Valve, Iron | 03.02.004.00 | 1 |
| 10 | Toggle Switch DPST | R02.19.008A.00 | 1 | 32B | Pressure Reducing Valve, Brass* (Optional) | 03.02.015.00 | 1 |
| 11 | Indicator Light, Green 120 Volt | 02.19.070G.00 | 1 | 33 | Temperature Pressure Gauge | 03.01.003.00 | 2 |
| 12 | Indicator Light, Red 120 Volt | 02.19.070R.00 | 1 | 34A | Flexible Gas Line (PMG-100) | 03.12.014.00 | 1 |
| 13 | Boot Cover, Toggle Switch | 02.20.040.00 | 1 | 34B | Flexible Gas Line (PMG-200) | 03.12.018.00 | 1 |
| 14 | Pilot Spark Cable, High Voltage | 02.21.026.00 | 1 | 35 | Cooling Fan (PMG-200 Only) | 02.12.008A.00 | 1 |
| 15 | Back Pressure Relief Valve (Optional) | 03.02.039.00 | 1 | 36 | Straight Exhaust Adapter | 04.28.052.00 | 1 |
| 16 | Ignition Module | R02.21.022.00 | 1 | 37 | Right Angle Exhaust Adapter | 04.28.053.00 | 1 |
| 17A | Natural Gas Combination Valve | 02.21.025.00 | 1 | 38 | Exhaust Outlet Box | R04.28.077.00 | 1 |
| 17B | LP Gas Conversion Kit* | 02.21.024.00 | 1 | 39 | Exhaust Blower | R02.12.052.00 | 1 |
| 18 | Low Water Cut Off Probe | 02.40.001.00 | 1 | 40A | Pressure Switch (PMG-100) | 02.21.027.00 | 1 |
| 19 | T/P Relief Valve | 03.02.022.00 | 1 | 40B | Pressure Switch (PMG-200) | 02.21.028.00 | 1 |
| 20 | Manual Shut Off Valve | 03.02.027.00 | 1 | 41 | LP Gas Conversion Kit (Includes LP Gas Valve, Orifices and Pilot)* | R00.02.0005.00 | 1 |
| 21 | Pump Flange Kit with Bolts | 03.05.026.00 | 1 | 42 | Water Treatment Canister and Cartridge | 03.05.061.00 | 1 |
| 22 | Recirculating Pump | R03.05.052.00 | 1 | 43 | Cartridge Only | 03.05.061A.00 | 1 |
| 23A | Flexible Water Lines† | 03.05.049.00 | 2 | 44 | O-Ring Gasket | 03.05.061B.00 | 1 |
| 23B | Water Line Gasket* | 05.06.066.00 | 4 | | | | |
| 24A | NAT Gas Orifice #34 (PMG-100) | 03.12.016.00 | 3 | | | | |
| 24B | NAT Gas Orifice #35 (PMG-200) | 03.12.020.00 | 6 | | | | |
| 24C | LP Gas Orifice #50 (PMG 100/200) | 03.12.021.00 | 3/6 | | | | |
| 24D | High Altitude Blank Orifice Kit* | R03.12.023.00 | 1 | | | | |
| 25 | Burner Tube (PMG-100/200) | 03.12.012.00 | 3/6 | | | | |
| 26A | Heat Exchanger (PMG-100) | R03.12.013B.00 | 1 | | | | |

* Not Shown

★ Units manufactured in the month of July 1999 or before use part number 04.01.013.00 for the replacement leg.

† Gasket should be replaced at each joint being serviced using Item #22B.
Order Kit Item 41 when converting units to LP gas.

NOTE: Consult factory if replacing Orifices or Burner Assembly to ensure proper sizing.

NOTE: When calling for parts/service, please supply altitude of installation location and fuel type.

NOTE: The last four digits in a ten digit numerical serial number is the manufacturing date code.

Example: Serial number 1021059907 has a date code of 9907 which indicates the following: 9907

┌── Year 1999
 └── Month seven,
 July

Please also note, effective January 2001 the serial number date code was changed to reflect the year and week of manufacture.

Example: xxxxxx 0124

┌── Year 2001
 └── Week twenty-four

HATCO LIMITED WARRANTY

1. PRODUCT WARRANTY

Hatco warrants the products that it manufactures (the "Products") to be free from defects in materials and workmanship, under normal use and service, for a period of one (1) year from the date of purchase when installed and maintained in accordance with Hatco's written instructions or 18 months from the date of shipment from Hatco. Buyer must establish the product's purchase date by returning Hatco's Warranty Registration Card or by other means satisfactory to Hatco in its sole discretion.

Hatco warrants the following Product components to be free from defects in materials and workmanship from the date of purchase (subject to the foregoing conditions) for the period(s) of time and on the conditions listed below:

- a) **One (1) Year Parts and Labor PLUS One (1) Additional Year Parts-Only Warranty:**
 - Toaster Elements (metal sheathed)
 - Drawer Warmer Elements (metal sheathed)
 - Drawer Warmer Drawer Rollers and Slides
 - Food Warmer Elements (metal sheathed)
 - Display Warmer Elements (metal sheathed air heating)
 - Holding Cabinet Elements (metal sheathed air heating)

- b) **One (1) Year Parts and Labor PLUS Four (4) Years Parts-Only Warranty on pro-rated terms that Hatco will explain at Buyer's request:**
 - 3CS and FR Tanks

- c) **One (1) Year Parts and Labor PLUS Nine (9) Years Parts-Only Warranty on:**
 - Electric Booster Heater Tanks
 - Gas Booster Heater Tanks

THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR PATENT OR OTHER INTELLECTUAL PROPERTY RIGHT INFRINGEMENT. Without limiting the generality of the foregoing, SUCH WARRANTIES DO NOT COVER: Coated incandescent light bulbs, fluorescent lights, lamp warmer heat bulbs, glass components, Product failure in booster tank, fin tube heat exchanger, or other water heating equipment, caused by liming, sediment buildup, chemical attack or freezing, Product misuse, tampering or misapplication, improper installation or application of improper voltage.

2. LIMITATION OF REMEDIES AND DAMAGES

Hatco's liability and Buyer's exclusive remedy hereunder will be limited solely, at Hatco's option, to repair or replacement by a Hatco-authorized service agency (other than where Buyer is located outside of the United States, Canada, United Kingdom or Australia in which case Hatco's liability and Buyer's exclusive remedy hereunder will be limited solely to replacement of part under warranty) with respect to any claim made within the applicable warranty period referred to above. Hatco reserves the right to accept or reject any such claim in whole or in part. Hatco will not accept the return of any Product without prior written approval from Hatco, and all such approved returns shall be made at Buyer's sole expense. HATCO WILL NOT BE LIABLE, UNDER ANY CIRCUMSTANCES, FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, INCLUDING BUT NOT LIMITED TO LABOR COSTS OR LOST PROFITS RESULTING FROM THE USE OF OR INABILITY TO USE THE PRODUCTS OR FROM THE PRODUCTS BEING INCORPORATED IN OR BECOMING A COMPONENT OF ANY OTHER PRODUCT OR GOODS.

HATCO AUTHORIZED PARTS DISTRIBUTORS

ALABAMA

Jones McLeod Appl. Svc.
Birmingham 205-251-0159

ARIZONA

Auth. Comm. Food Equip.
Phoenix 602-234-2443
Byassee Equipment Co.
Phoenix 602-252-0402

CALIFORNIA

Industrial Electric
Huntington Beach 714-379-7100
Chapman Appl. Service
San Diego 619-298-7106
P & D Appliance
S. San Francisco 650-635-1900

COLORADO

Hawkins Commercial Appliance
Englewood 303-781-5548

DELAWARE

Food Equipment Service
Wilmington 302-996-9363

FLORIDA

Whaley Foodservice Repair
Jacksonville 904-725-7800
Universal Restaurant Services
Miami 305-593-5488
Nass Service Co., Inc.
Orlando 407-425-2681
B.G.S.I.
Pompano Beach 954-971-0456
Comm. Appliance Service
Tampa 813-663-0313

GEORGIA

TWC Services
Smyrna 770-438-9797
Heritage Service Group
Norcross 866-388-9838
Southeastern Rest. Svc.
Norcross 770-446-6177

HAWAII

Burney's Comm. Service, Inc.
Honolulu 808-848-1466
Food Equip Parts & Service
Honolulu 808-847-4871

ILLINOIS

Parts Town
Lombard 708-865-7278
Eichenauer Elec. Service
Decatur 217-429-4229
Midwest Elec. Appl. Service
Elmhurst 630-279-8000
Cone's Repair Service
Moline 309-797-5323

INDIANA

GCS Service
Indianapolis 317-545-9655

IOWA

Electric Motor Service Co.
Davenport 319-323-1823
Goodwin Tucker Group
Des Moines 515-262-9308

KENTUCKY

GCS Service
Louisville 502-367-1788

LOUISIANA

Chandlers Parts & Service
Baton Rouge 225-272-6620

MARYLAND

Electric Motor Service
Baltimore 410-467-8080

GCS Service
Silver Spring 301-585-7550

MASSACHUSETTS

Ace Service Co., Inc.
Needham 781-449-4220

MICHIGAN

Commercial Kitchen Service
Bay City 517-893-4561
Bildons Appliance Service
Detroit 248-478-3320
Midwest Food Equip. Service
Grandville 616-261-2000

MINNESOTA

GCS Service
Minneapolis 612-546-4221

MISSOURI

General Parts
Kansas City 816-421-5400
Commercial Kitchen Services
St. Louis 314-890-0700
Kaemmerlen Parts & Service
St. Louis 314-535-2222

NEBRASKA

Anderson Electric
Omaha 402-341-1414

NEVADA

Burney's Commercial
Las Vegas 702-736-0006
Hi. Tech Commercial Service
N. Las Vegas 702-649-4616

NEW JERSEY

Jay Hill Repair
Fairfield 973-575-9145
Service Plus
Flanders 973-691-6300

NEW YORK

Acme American Repairs, Inc.
Brooklyn 718-456-6544
Alpro Service Co.
Brooklyn 718-386-2515
Appliance Installation
Buffalo 716-884-7425
Northern Parts Dist.
Plattsburgh 518-563-3200
J.B. Brady, Inc.
Syracuse 315-422-9271

NORTH CAROLINA

Authorized Appliance
Charlotte 704-377-4501

OHIO

Akron/Canton Comm. Svc. Inc.
Akron 330-753-6635
Certified Service Center
Cincinnati 513-772-6600
Commercial Parts and Service
Columbus 614-221-0057
Electrical Appl. Repair Service
Independence 216-459-8700
E. A. Wichman Co.
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