



PRECISION BOILERS

*Installation and
Operating Instructions*

INDIRECT FIRED

WATER HEATERS / STEAM BOILERS



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FOR YOUR SAFETY

This manual supplies information on the application, installation and operation of Precision Electric Hot Water & Steam Boilers. Review all application and installation procedures completely before proceeding with the installation. A complete understanding of this manual is required before attempting to operate or maintain the equipment. Improper installation, adjustment, alteration, service, or maintenance can cause injury or property damage. The equipment should be operated and maintained only by personnel who have read this manual and who have a working knowledge and understanding of the equipment. Consult the Precision Boilers' Factory or local Factory Representative with any problems or questions regarding this equipment. Experience has shown that improper installation causes most operation problems.

WARNING

Improper installation, adjustment, alteration, service or maintenance can cause injury or property damage. **Read this manual thoroughly and follow the instructions herein.** The Precision Boilers shall be installed according to the procedures detailed in this manual, or the Precision Boilers Limited Warranty may be voided. The installation must conform to the requirements of the local jurisdiction having authority, and to the latest edition of the National Fuel Gas Code, ANSI Z223.1. Any modifications to the boiler or its gas / oil controls may void the warranty. If field installation requires modifications, consult either the local Precision Boilers' Representative or the Factory.

RETAIN THESE INSTRUCTIONS NEAR THE EQUIPMENT FOR READY REFERENCE



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 your gas supplier from a neighbor's
phone. Follow the gas supplier's instructions.**

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1.0 GENERAL INFORMATION

1.1 Introduction

PRECISION BOILERS has made a commitment to product improvement and follows a continuing quest for the highest standards of product performance. In pursuing this policy of continuous development of products, the manufacturer reserves the right to vary any details in this manual without notice.

The instructions contained in this manual are intended as a guide only and do not supplant any National, State or Local Codes.

This unit must be installed in accordance with those installation regulations in force in the local area where the installation is to be made. These shall be carefully followed in all cases. Authorities having jurisdiction shall be consulted before installation is made. This Electric Hot Water / Steam Boiler and Water Heater Operation and Maintenance Manual present information that will help to properly operate and care for the equipment. Study the contents carefully. The unit will provide good service and continued operation if proper operating and maintenance instructions are followed. The standard Limited Warranty is not applicable with equipment not installed or operated in accordance with these procedures.

The boilers are designed and engineered to provide excellent service and to give long life on the job. Although the unit and its components afford a high degree of protection and safety, operation of the equipment is not to be considered free from hazards inherent in the handling of electricity and pressurized hot water or steam.

Pay close attention to WARNINGS and CAUTIONS as these present situations of potential hazard. And remember no amount of written instruction can replace intelligent thinking and reasoning.

1.2 Local Regulations

Consult local building and safety codes before proceeding with work. The operation of this equipment by the owner and his operating personnel must comply with all requirements or regulations of the authorities having jurisdiction.

In the absence of such authorities, the installation must conform to the safety codes set forth by both the American (ASME) and the National Electric Code (NEC).

2.0 INSTALLATION

IMPORTANT: Provide sufficient clearance at the head of the unit (heat exchange end) to permit removal of the tube bundle from the shell.

2.1 Provide valves and by-passes in the piping system to facilitate removal of the tube bundle for inspection and repair.

2.2 Provide thermometer wells and pressure gauge connections in all piping close to the exchanger inlet and outlet.

2.3 Provide thermometer wells and pressure gauge connections in all piping close to the exchanger inlet and outlet.

2.4 Provide air vent cocks for the unit to allow purging of non-condensable gases (air, etc.).

2.5 Foundations must be adequate so that the unit will not settle and cause piping strains on the heat exchanger.

2.6 Loosen foundation bolts at one end of the unit to allow free expansion of the shell.

2.7 Set the unit level and square so that pipe connections may be made without force.

2.8 Inspect all openings in the exchanger for foreign materials. Do not expose the units to the elements with covers removed from the nozzles since rain water may enter the unit and cause severe damage due to freezing.

2.9 Be sure the entire system is clean before starting operation to prevent plugging tubes with sand or refuse.

3.0 OPERATION

3.1 When placing the unit in operation, first fill the shell to the proper water level, then open the steam supply to the heat exchanger coil gradually.

3.2 If a vent is provided on the heat exchanger header, open the vent valve gradually to enable air trapped in the coil to escape.

3.3 Start operation gradually. Do not admit hot fluid to the unit suddenly when empty or cold. Do not shock the unit with cold fluid when the unit is hot.

3.4 In shutting down, the flow of steam should be shut off first.

3.5 Drain all fluids when shutting down to eliminate the possibility of freezing and corrosion. To guard against water hammer, condensate should be drained from the steam heaters and similar apparatus both when starting up and when shutting down.

IMPORTANT: Do not use traps to lift condensate. A condensate return un should be provided if the condensate must it be lifted.

4.0 MAINTENANCE

4.1 Provide the means for frequent cleaning of the heat exchanger as suggested below:

4.1.1 Some cleaning compounds on the market may be used for removing sludge or coke.

4.1.2 If the above described method is ineffective for the removal of hard scale, a mechanical means may be used.

4.2 At regular intervals, inspect interior and exterior condition of all tubes and keep them clean. Failure to keep all tubes clean may result in complete stoppage of the flow through some tubes, with consequent over- heating of these tubes as compared to surrounding tubes, resulting in leaking tube joints.

4.3 Do not attempt to clean the tubes by blowing steam through the individual tubes.

4.4 An exchanger subject to fouling should be cleaned periodically. A marked increase in pressure drop and / or the reduction in performance usually indicates that cleaning is necessary. Frequent cleaning are recommended since the greater the build-up of scale, the more difficult it is to remove.

4.5 In cleaning a tube bundle, tubes should not be hammered with any metallic tool and, in case necessary to use scrapers, care should be exercised that the scraper is not sharp enough to cut the metal of the tubes.

4.6 When removing tube bundles from the exchangers for inspection or cleaning, care should be taken that they are not damaged by improper handling. Tube bundles are often of great weight, yet the tubes are small and of relatively thin metal. Once removed, tube bundles should be properly supported with cradles located under the baffles. Bundles should be moved on cradles or skids.

4.7 If the tube bundle has been in service for a considerable length of time without being removed, it may be necessary to use a hydraulic jack on the rear tube sheet to start removal. A good sized steel bearing plate should be inserted between the jack and tube sheet, and the tube ends should be protected by means of filler board.

5.0 WARRANTY & RETURNS

5.1 Warranty

Warranty will be provided after all documents have been processed.

5.2 Assistance

5.2.1 Furnish Complete Information

Before calling the PRECISION Agent or the Factory with questions concerning boiler or water heater operation, needed parts, or warranty, please be sure to have the information readily available that is stamped on your unit's Data Plate (see Data Plate details below Figure 1).

All files are maintained by Serial Number, so please have this number available when corresponding about your unit. All order(s) should state the Manufacturer's part number (if known), and the name and description of the part required. Also, state the quantity desired and specify the method of shipment.