Series 61/62

Gas Boilers

Installation, Operation & Maintenance Manual

Read carefully before beginning work. It will save time. Study the included drawings.

The equipment shall be installed in accordance with those installation requirements of the authority having jurisdiction or, in the absence of such requirements, to the current edition of the National Fuel Gas Code Z223.1/NFPA54.

Where required by the authority having jurisdiction, the installation must conform to the standard for Controls and Safety Devices for Automatically Fired Boilers, ANSI/ASME CSD-1.

A - ACCESSIBILITY CLEARANCES

1. To provide for reasonable conditions of accessibility, the following minimum clearances are recommended.
   a. 24" between the sides, top, back and front of the boiler and adjacent wall or other appliance, when access is required for servicing.

B - CLEARANCE FROM COMBUSTIBLE CONSTRUCTION

1. The design of this boiler is certified for the following clearances from combustible construction:

MODELS 61-03 thru 61-08; 62-09 thru 62-11	MODELS 62-12 thru 62-15
18" from rear	24" from sides and rear
6" from right and left sides	55" from top
30" from top - front alcove	6" from flue connector
6" from flue connector	6" from steam and hot water pipes
6" from steam and hot water pipes	

2. **CAUTION:** This boiler is **NOT DESIGN CERTIFIED** for installation on carpeting or combustible flooring.

C - AIR FOR COMBUSTION AND VENTILATION

1. Be certain adequate facilities are available to provide air for satisfactory combustion and ventilation.
2. Appliances Located in Unconfined Spaces:
   a. Installations in unconfined spaces with conventional construction and large areas: the supply of air for combustion and ventilation can usually be considered adequate.
3. Appliances Located on Confined Spaces:
   a. If all air for combustion and ventilation is to come from within the building: two openings shall be provided with one opening commencing within 12 inches of the top and one opening within 12 inches of the bottom of the enclosure. These openings shall not be located closer than 3 inches from either the top or bottom of the enclosure and shall be open into areas communicating freely with the outdoors. The area of each opening shall be equal to one square inch per 1000 BTU/HR of total input rating of all appliances within the enclosure, with a minimum of 100 square inches for each opening.
   b. If all air for combustion and ventilation is to come from outside the building: two openings shall be provided with one opening commencing within 12 inches of the top and one opening commencing within 12 inches of the bottom of the enclosure. These openings shall not be located closer than 3 inches from either the top or bottom of the enclosure and shall communicate directly or by ducts with the outdoors. The area of each opening shall be equal to one square inch per 4000 BTU/HR of total input rating. If ducts are used to convey the air, vertical ducts require areas of one square inch per 4000 BTU/HR: horizontal ducts require one square inch per 2000 BTU/HR. Ducts shall have the same cross sectional area as the full area of the openings to which they connect.
   c. The upper openings are essential for maintenance of proper circulation of air with the boiler room and reasonable ambient temperature in order to maintain proper control temperatures.

D - SETTING UP BOILER - PACKAGED UNITS

1. A Packaged Boiler is factory assembled before being crated. All controls and accessories necessary for operation of the boiler are attached and electrically wired.
2. The draft hood is packed in a separate carton.
3. When boiler is removed from the crate, careful inspection should be made and the carrier notified of any damage found.
4. Provide a good level foundation.
5. Place the boiler on the foundation near and in proper position with relation to the chimney, and as centralized with respect to the heating system as practical.
6. The openings in the base sides are provided for admitting secondary air and must never be closed.
7. Remove jacket top and attach draft hood to flue collector with two #10 x 1/2" sheet metal screws provided. Replace jacket top.
8. The burners are installed in the boiler. They are secured in place for shipment by wood strips wired to the Burner mixing tube. Cut the wires and remove the wood strips.
9. The gas manifold and control assembly are made up gas tight, completely factory assembled and installed as integral components of the base assembly. See Figure 12.

D - SETTING UP BOILER - UNASSEMBLED UNITS

I — ASSEMBLED BLOCKS

1—The boiler sections and base, Models 61-03 thru 61-07 are factory assembled. Remove shipping skid from the boiler base. If boiler is a 61-08, or 62-09 thru 62-15 begin assembly as noted in Part II "Split Block Assembly".

2—Provide a good level foundation. The Boiler should be located as near to the chimney and centralized with respect to the heating system as possible.

3—Open control box. Remove control and manifold assembly. Refer to Figure 6 and attach manifold to boiler with four 1/4-20 x 1" machine screws and nuts provided. Figures 43 thru 45 show the standard control assemblies used on Models 61-08 thru 62-15.

4—Open flue collector carton. Remove flue collector and Hi Temp rope and lay rope on top of boiler against bead provided. See Figure 7.

5—Place flue collector on top of rope and attach to boiler with two 1/4"-20 studs, washers and hex nuts provided, through flue collector brackets into the tapped lugs provided on top of the boiler end sections. Draw bolts down snugly. See Figure 8.

6—Attach cast iron clean-out plate to clean-out opening on left side of the boiler. This plate, Hi Temp rope and mounting hardware may be found in the control box referred to previously.

7—Remove the burners from the control box and install. Install each burner by slipping the opening in the venturi over the orifice spud. Insert the pin on the bottom of the burner into the hole provided in the flange on the base back plate. See Figure 9. The Burners with pilots attached must be installed as follows: **Note:** Hook bolt is provided on models 62-11 through 62-15.

Model No.	No. Pilots	Location of Pilot
61-03	1	Between 2nd and 3rd Burner from Left
61-04	1	Between 4th and 5th Burner from Left
61-05	1	Between 4th and 5th Burner from Left
61-06	1	Between 4th and 5th Burner from Left
61-07	1	Between 4th and 5th Burner from Left
61-08	2	Between 4th and 5th Burner from Left and 4th and 5th from Right
62-09	2	Between 4th and 5th Burner from Left and 4th and 5th from Right
62-10	2	Between 4th and 5th Burner from Left and 4th and 5th from Right
62-11	2	Between 4th and 5th Burner from Left and 4th and 5th from Right
62-12	2	Between 4th and 5th Burner from Left and 4th and 5th from Right
62-13	2	Between 4th and 5th Burner from Left and 4th and 5th from Right
62-14	2	Between 4th and 5th Burner from Left and 6th and 7th from Right
62-15	2	Between 6th and 7th Burner from Left and 6th and 7th from Right

8—Remove pilot tubing from control box and install between gas valve and pilot. Refer to figures 43 through 45.

9—If boiler is to incorporate a tankless heater for domestic hot water, install in opening provided in the right side of the boiler. Six mounting bolts (3/8"-16 x 3/4") are provided. Be sure rubber gasket is between cover plate and the boiler. If boiler does not incorporate a tankless heater, a blank cover plate is provided with rubber gasket and bolts. One 3/4" pipe opening is provided in the plate for the operating and/or limit control. This 3/4" tapping is also used for the pressure gauge on the steam boiler.

10—For suggested piping to tankless heater refer to Figure 23.

DANGER: Install mixing valve in hot water supply piping. Water temperature over 125°F can cause severe burns instantly or death from scalds.

Figure A

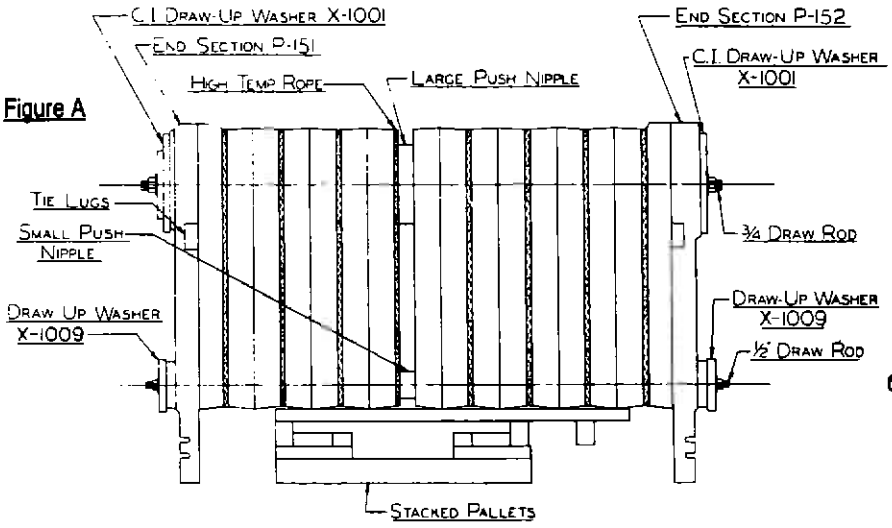
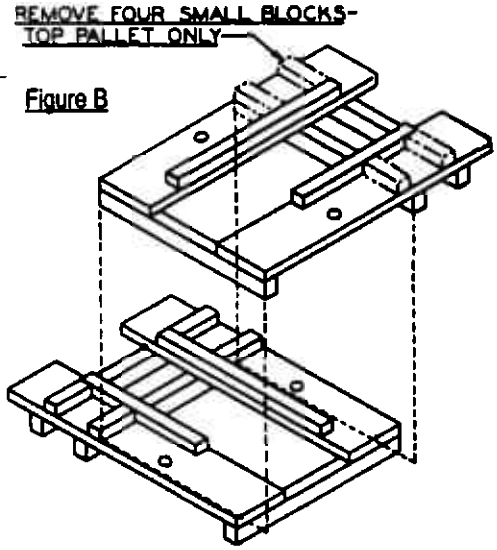


Figure B



PROCEDURE FOR STACKING PALLETS

II — SPLIT BLOCK ASSEMBLY

1—Boiler sections for Models 61-08, 62-09 thru 62-15 are shipped in two parts. Remove skid from each block of sections.

2—Place each block of sections on the stacked skids. See Fig. A. Be certain to remove the small blocks on the top skid. See Fig. B.

3—To clean nipple ports and remove protective coating, use a wire brush and mineral spirits or lacquer thinner. Make certain there are no burrs around the outside edge of the ports.

4—Spread a thin coat of Peerless Nipple Sealer in the nipple ports, **NEVER ON NIPPLES.**

5—Insert the push nipples, with the chamfered edge out. Make certain they are clean and free of burrs.

6—Apply a thin coat of Peerless Nipple Sealer to the rope groove. Press 5/8" Dia. rope into the groove. The nipple sealer acts as an adhesive to hold the rope in place until the sections are drawn up.

7—Arrange both blocks so that protruding nipple enters the open port. Care must be taken to keep nipples straight and blocks aligned.

8—Insert draw rods through the nipple ports. Make certain that the 3/4" draw rod is used on the large nipple. Pay particular attention to the placement of the draw washers. See Fig. A.

9—Before starting draw, oil the threads and between the nuts and washers.

10—Tighten the hex nuts and draw boiler evenly until the small pads on each section just touch.

11—After boiler is drawn, remove the draw rods and cut 5" from the 6 1/4" threaded end. Insert the rod through the lugs on each end section and tighten the hex nuts hand tight.

12—Attach 3/8" Dia. rope to base back plate by laying rope across top of back plate flange and in rope groove on each end of back plate. Use nipple sealer to hold rope in place. Refer to figures 9 & 12. Attach base back plate by means of 1/4"-20 x 1 1/2" machine screws and nuts furnished. The base back plate is attached to back of boiler. See Figure 8. Be certain that the flange portion of plate is towards the inside of the boiler. **Note:** hook bolt is provided on models 62-11 through 62-15 only.

13—Install pressure gage, drain valve, water supply line with shutoff valve, and means to vent air. Plug unused tappings.

14—Fill boiler with water, venting air as water level rises. Pressurize boiler to 75-85 psig. Do not exceed 85 psig.

15—Verify pressure is maintained. Check all joints and fittings for leaks.

16—Drain boiler. Remove pressure gage, drain valve, water supply and air vent. Continue with Step 2 under D-1.

E - JACKET ASSEMBLY

A. Wrap-Around Rear Jacket Panel Style for Models 61-03 thru 61-06

This style jacket design incorporates a Back Jacket Panel as part of each Right and Left Side Jacket Panel. The Back Jacket Panel is formed when a portion of each Side Panel is bent at perforations to rear of boiler.

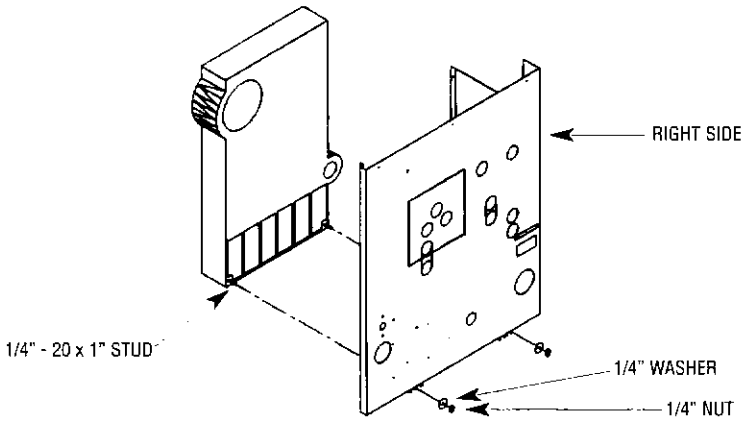
1. Insert two (2) 1/4-20 x 1" studs in tapped holes at bottom of Right End Section. See Figure 1.
2. Place the Right Side Panel along right side of boiler block and align the slots of the mounting brackets, (at bottom of jacket panel), with the 1/4-20 x 1" studs. Attach jacket panel to boiler section with two (2) 1/4" nuts and washers. See Figure 1.
3. Place the Left Side Panel along left side of boiler block and attach to boiler section in same manner as performed for Right Side Panel.
4. Bend at the perforations of the Right Side Panel to form half of the Back Jacket Panel. Do the same at perforations of the Left Side Panel. At the center joint overlap of the Back Panel, attach panels with three (3) #10 x 1/2" sheet metal screws. See Figure 2.
5. Position the Inner Front Panel between the Left and Right Side Panels. Align the two (2) mounting holes, on each side flange of the Inner Front Panel, with the clearance holes in each Side Panel and attach with four (4) #10 x 1/2" sheet metal screws. See Figure 4.

6. Place the Secondary Air Cover Door at bottom of Inner Front Panel. The top bend of the Cover Door slips over the top reverse bend at cut out opening of the Inner Front Panel. Refer to Figure 11.
7. Attach Draft Hood to Flue Collector with two (2) #10 x 1/2" sheet metal screws. Refer to Figure 10.
8. Attach the Lower Front Panel to the bottom front of the Left and Right Side Panels with two (2) #10 x 1" sheet metal screws. See Figure 4.
9. Position Top Jacket Panel so the flanges overlap Side Jacket Panels and air louvers are at the front of the boiler. Secure with six (6) #10 x 1/2" sheet metal screws. See Figure 4.
10. Attach the Clean Out Cover Plate Panel over opening in Left Side Jacket Panel, with four (4) #10 x 1/2" jacket screws. See Figure 4.
11. The manila envelope that contains the Installation Manual also contains the boiler rating label, clearance to combustibles plate, Lighting/Operating instruction plate or label and wiring diagram label. See Figure 5 for location of plates and labels. Attach plates with #6 x 3/8" screws provided.
12. Position the Removable Front Panel in place by sliding the Panel under the front flange of the Top Panel and then down until it rests on Lower Front Panel.

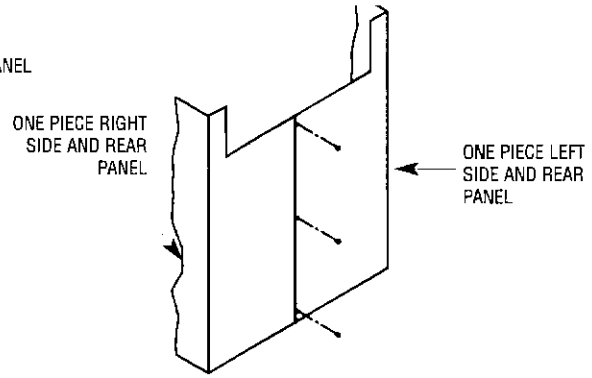
B. Individual Back Jacket Panel Style for Models 61-07 thru 62-15

This jacket style has a separate Back Jacket Panel that is attached to individual Right and Left Side Panels.

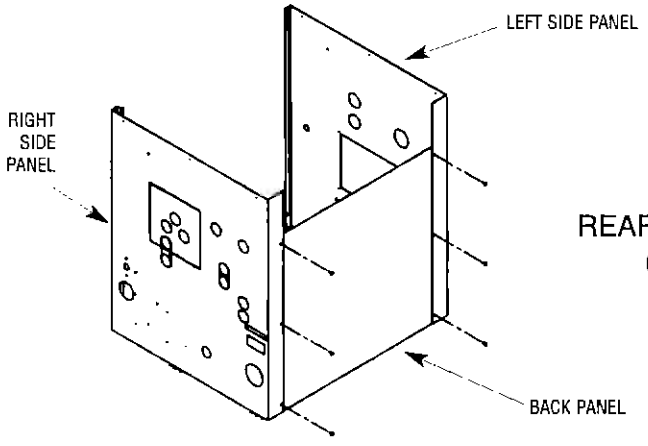
1. Attach Side Panels per instructions in #1 thru 3 above. See Figure 1.
2. Position the Back Jacket Panel on the inside of the Left and Right Panel flanges and attach with six (6) #10 x 1/2" sheet metal screws. See Figure 3.
3. Follow instructions above per #5 thru 12 for assembly of remaining jacket panels.



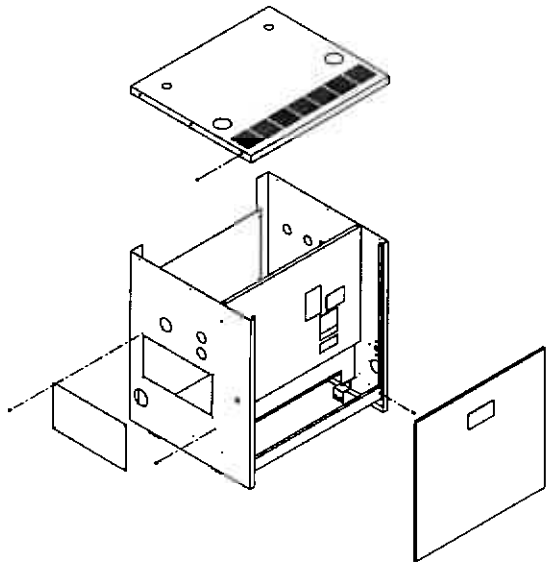
SIDE PANEL ATTACHMENT
FIGURE 1



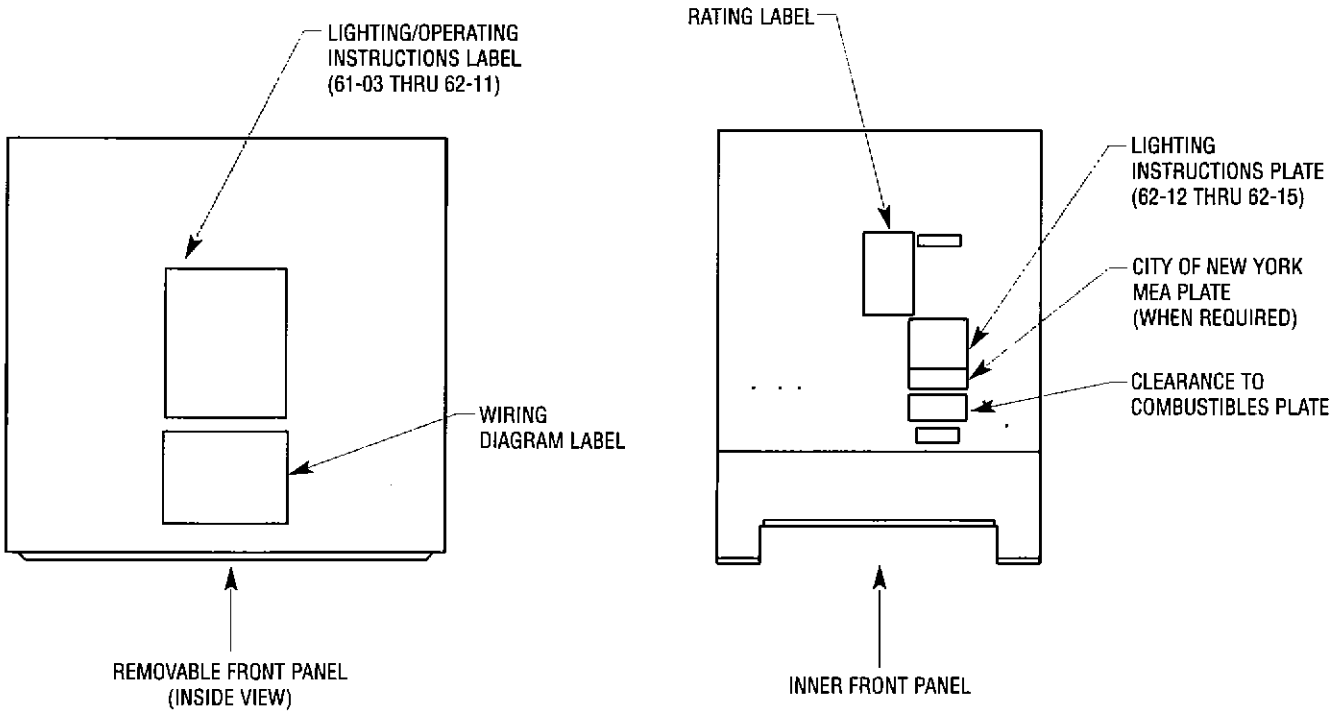
REAR VIEW WRAPPER
STYLE JACKET
(61-03 THRU 61-06)
FIGURE 2



REAR VIEW OF BACK PANEL
(61-07 THRU 62-15)
FIGURE 3



JACKET ASSEMBLY
FIGURE 4



AGENCY LABEL & PLATE LOCATIONS
FIGURE 5

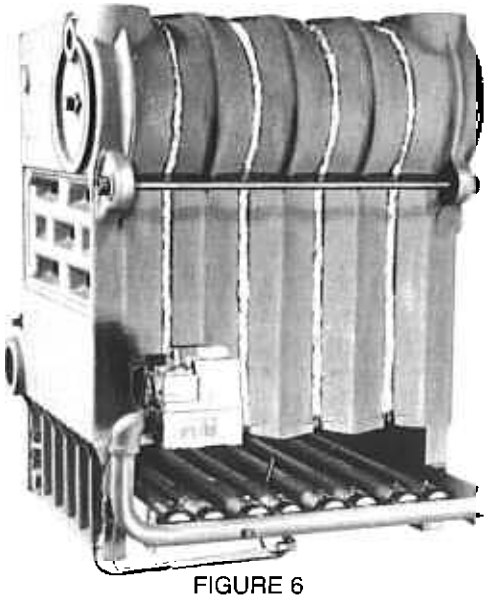


FIGURE 6
FRONT BOILER VIEW

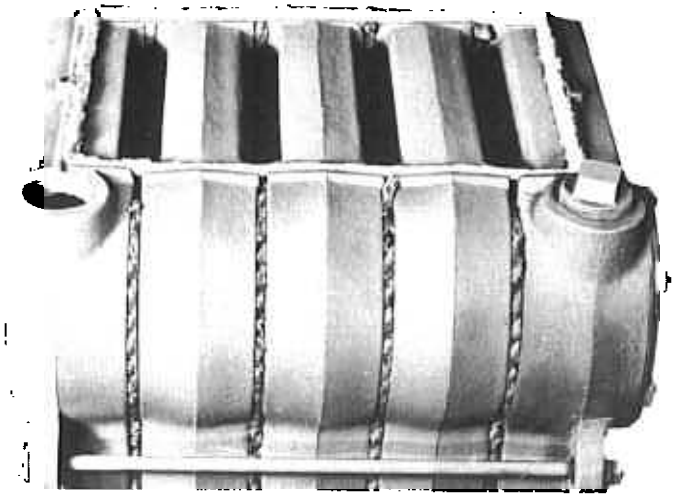


FIGURE 7
FRONT TOP BOILER VIEW

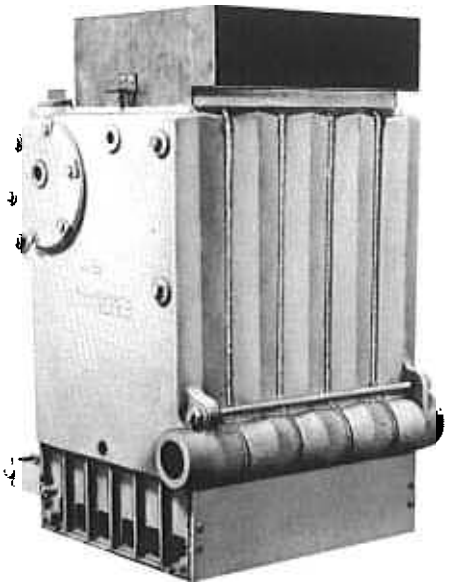


FIGURE 8
REAR BOILER VIEW

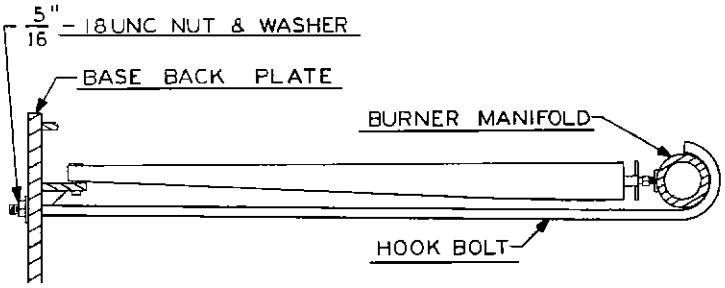


FIGURE 9
HOOK BOLT ASSEMBLY

FIGURE 10
FLUE COLLECTOR/DRAFT HOOD

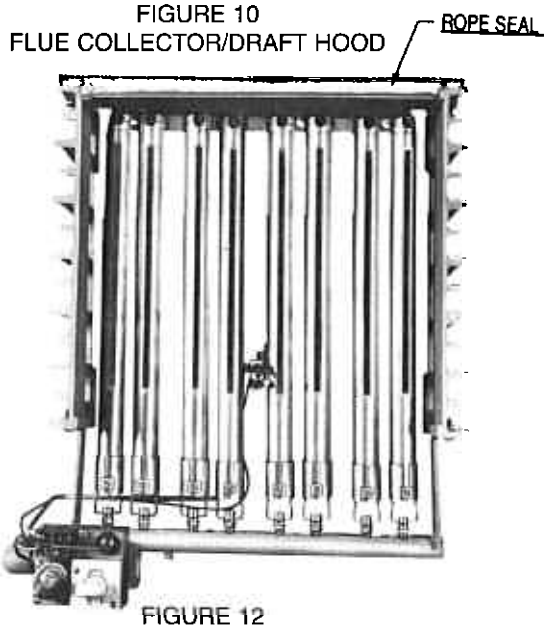


FIGURE 12
TOP CUT VIEW OF MANIFOLD
BURNER AND BASE BACK PLATE

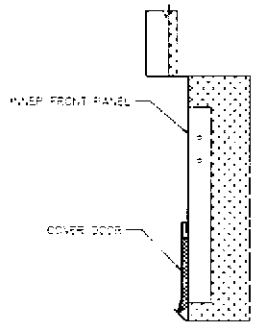


FIGURE 11
SIDE VIEW OF INNER FRONT
AND COVER DOOR

F - VENTING

A. General

1—For connection to gas vents or chimneys, vent installation shall be in accordance with Part 7, Venting of Equipment, of the current edition of the National Fuel Gas Code, ANSI Z223.1/NFPA54, or applicable provisions of the local building codes.

2—Draft: Sufficient draft must be available for removal of products of combustion. If draft is not adequate, spillage of the products of combustion will occur at the bottom outlet of the draft hood. If such a condition should exist check the flue and chimney to determine cause of insufficient draft. It is also important that ample air is available in the boiler room to facilitate draft.

3—Vent connector should slope upward at least 1/4" per lineal foot between the draft hood outlet and the chimney.

4—Flue or vent connector must be inserted into but not beyond the inside wall of the chimney flue.

5—Vent connectors serving appliances vented by natural draft shall not be connected into any portion of mechanical draft systems operating under positive pressure.

6—Horizontal portions of the venting systems shall be supported to prevent sagging by use of metal strapping or equivalent means and be located at no more than 12 ft. intervals.

7—When an existing boiler is removed from a common venting system, the common venting system is likely to be too large for proper venting of the appliances remaining connected to it.

At the time of removal of an existing boiler, the following steps shall be followed with each appliance remaining connected to the common venting system placed in operation, while the other appliances remaining connected to the common venting system are not in operation.

a. Seal any unused opening in the common venting system.

b. Visually inspect the venting system for proper size and horizontal pitch and determine there is no blockage or restriction, leakage, corrosion and other deficiencies which could cause an unsafe condition.

c. Insofar as is practical, close all building doors and windows and all doors between the space in which the appliances remaining connected to the common venting system are located and other spaces of the building. Turn on any clothes dryers and any appliance not connected to the common venting system. Turn on any exhaust fans, such as range hoods and bathroom exhausts, so they will operate at maximum speed. Do not operate a summer exhaust fan. Close fireplace dampers.

d. Place in operation the appliance being inspected. Follow the lighting instructions. Adjust thermostat so appliance will operate continuously.

e. Test for spillage at the draft hood relief opening after 5 minutes of main burner operation. Use the flame of a match or candle, or smoke from a cigarette, cigar or pipe.

f. After it has been determined that each appliance remaining connected to the common venting system properly vents when tested as outlined above, return doors, windows, exhaust fans, fireplace dampers and any other gas-burning appliance to their previous conditions of use.

g. Any improper operation of the common venting system should be corrected so the installation conforms with the current edition of the National Fuel Gas Code, ANSI Z223.1/NFPA54. When resizing any portion of the common venting system, the common venting system should be resized to approach minimum size as determined using the appropriate tables located in the chapter "Sizing of Category I Venting Systems", in the current edition of the National Fuel Gas Code, ANSI Z223.1/NFPA54.

8—Single Wall Type Vent Pipe should be furnished between the draft hood and chimney. If the vent connector shall be located in or pass through a cold area, the vent connector shall be of listed double-wall Type B or L material.

B. Vent Damper Installation

1—Vent dampers are provided on models 61-03 through 61-08 as standard equipment.

2—Unpack the vent damper and follow these instructions and the installation instructions in the vent damper carton. Observe the cautions and warning that accompany all instructions. Do not modify vent damper or boiler draft hood.

3—The vent damper can be mounted directly onto the draft hood outlet collar, or in the vent piping close to the boiler. See figures 14 and 15. Be sure direction of flow arrow located on damper collar, is pointing away from draft hood collar and damper position indicator is visible after installation. For installation with damper mounted in the horizontal position, mount the damper as shown in figure 15 to avoid excessive heat and possible condensation drips on the damper operating control.

4—Do not use one vent damper to control two or more heating appliances. See figure 13.

5—Make certain that the minimum clearances provided in the vent damper manufacturers instructions are maintained and that adequate space is provided for damper access and service.

6—A wiring harness is packed with the vent damper with plug in connections at each end of the harness. Connect smaller end into damper motor receptacle and connect other end to boiler aquastat relay limit (on water boiler models equipped an L8148E or L8124E limit control), or boiler junction box (on steam boiler models).

7—Damper must be in the open position when appliance main burners are operating.

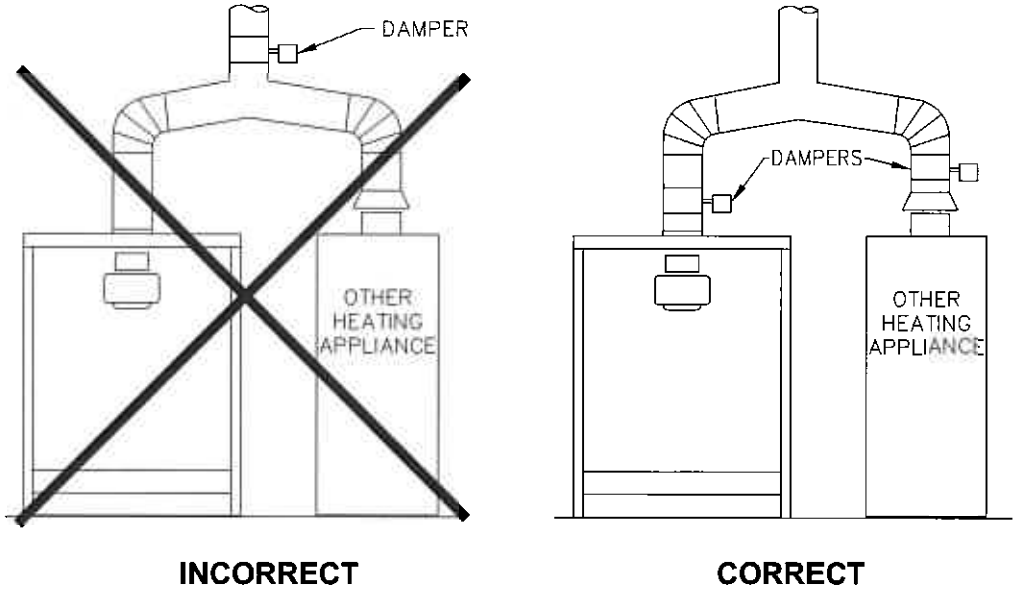


Figure 13: Venting Multiple Appliances

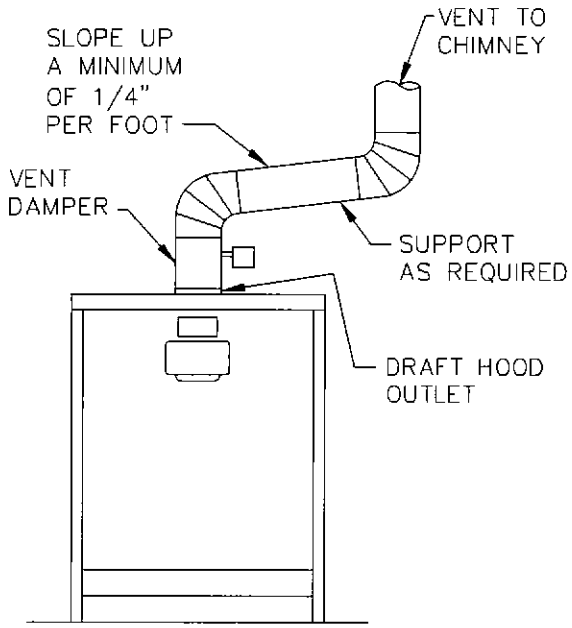


Figure 14: Venting with Vent Damper in Vertical Position

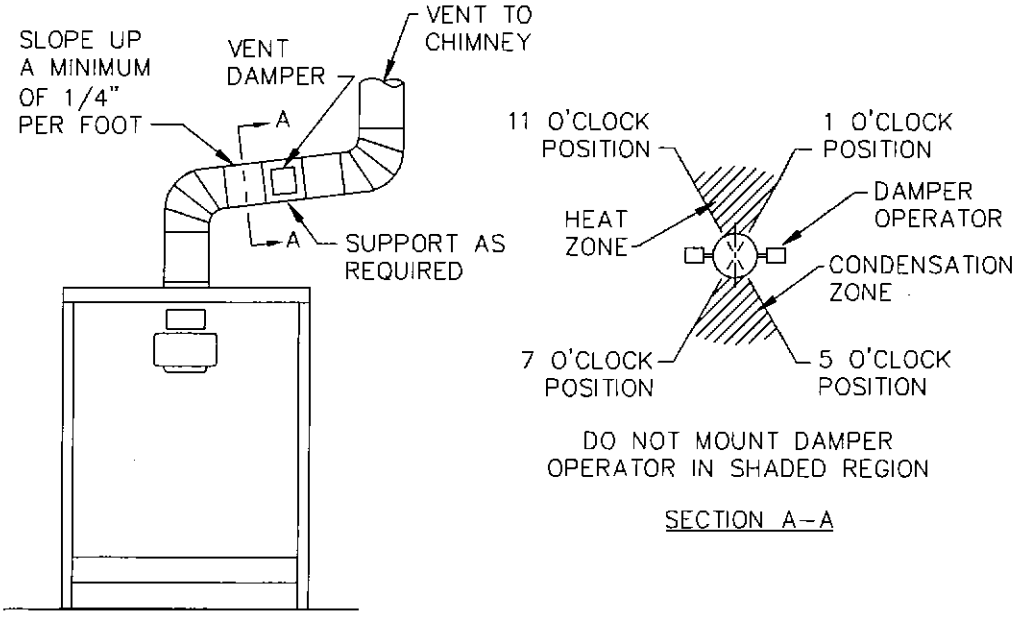


Figure 15: Venting with Vent Damper in Horizontal Position

G - PIPING

1—Hot Water:

a. The recommended piping hook-up is shown in Figure 17. Also refer to Peerless Water Survey.

2—Steam:

a. The recommended piping hook-up is shown in Figure 16. Please note that a Hartford return loop is recommended to be used on all steam boilers. Also refer to Peerless Steam Survey.

3—The relief valve and pop safety valve shall be installed by using the 3/4" x 3" nipple and 3/4" elbow supplied with the boiler. Refer to illustrations located in Section R - "Ratings, Tappings and Dimensional Data". Large NPT size valves may be installed in supply piping.

NOTE: IF THIS BOILER AND DISTRIBUTION SYSTEM IS USED IN CONJUNCTION WITH A REFRIGERATION SYSTEM, THE CHILLED MEDIUM SHALL BE PIPED IN PARALLEL WITH THE BOILER AND THE PROPER VALVE APPLIED TO PREVENT THE CHILLED MEDIUM FROM ENTERING THE BOILER. A DRAWING ILLUSTRATING THIS HOOK-UP IS PROVIDED IN FIGURE 18.

WHEN THE BOILER IS CONNECTED TO HEATING COILS LOCATED IN AIR HANDLING UNIT WHERE THEY MAY BE EXPOSED TO REFRIGERATED AIR CIRCULATION, THE BOILER PIPING SYSTEM MUST BE EQUIPPED WITH FLOW CONTROL VALVES OR OTHER AUTOMATIC MEANS TO PREVENT GRAVITY CIRCULATION OF THE BOILER WATER DURING THE COOLING CYCLE.

CAUTION: PIPE THE DISCHARGE OF RELIEF VALVE TO PREVENT INJURY IN THE EVENT OF PRESSURE RELIEF. SUGGEST DISCHARGE TO BE PIPED TO DRAIN. PIPE FULL SIZE OF OUTLET.

H - GAS PIPING

1—Gas supply piping is to be sized and installed properly in order to provide supply of gas sufficient to meet the maximum demand without undue loss of pressure between the meter and the boiler.

2—Consult the following table for proper sizing of gas piping for various lengths and diameters.

CAPACITY OF PIPE OF DIFFERENT DIAMETERS AND LENGTHS IN CU. FT. PER HOUR WITH PRESSURE DROP OF 0.3 IN. AND SPECIFIC GRAVITY OF 0.60. NO ALLOWANCE FOR AN ORDINARY NUMBER OF FITTINGS IS REQUIRED.

Pipe Length Feet	3/4" Pipe	1" Pipe	1 1/4" Pipe	1 1/2" Pipe
10	278	520	1,050	1,600
20	190	350	730	1,100
30	152	285	590	890
40	130	245	500	760
50	115	215	440	670
60	105	195	400	610

MULTIPLIERS TO BE USED WITH ABOVE TABLE, WHEN THE SPECIFIC GRAVITY OF THE GAS IS OTHER THAN 0.60

Specific Gravity	0.5	0.55	0.60	0.65	0.70
Multiplier	1.10	1.04	1.00	0.962	0.926

3—Locate the drop pipe adjacent to, but not in front of the boiler.

4—Locate a tee in the drop pipe at same elevation as the gas inlet connection to the boiler. Extend the drop pipe to a pipe cap as shown in Figure 19 to form a sediment trap.

5—Install a ground joint union ahead of the gas control assembly to permit servicing of the equipment. See Figure 19. Some local codes require an additional shut-off valve. If your code requires such a valve, a suggested location is shown in Figure 19.

6—**NOTE:** When installing boiler be sure a pipe compound resistant to the action of liquefied petroleum is used.

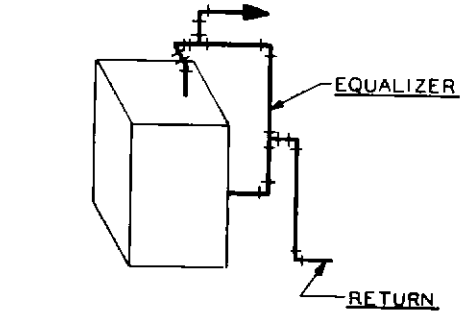
7—Check piping for leaks. Always check leaks with a water and soap solution or equal. DO NOT USE A FLAME FOR CHECKING GAS LEAKS.

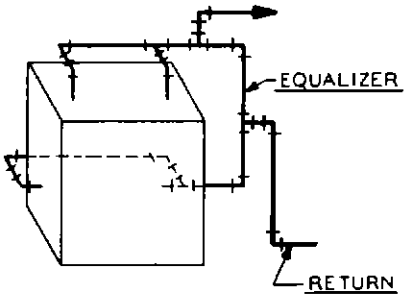
8—The boiler and its individual shut-off valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 psig (3.5 kPa).

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

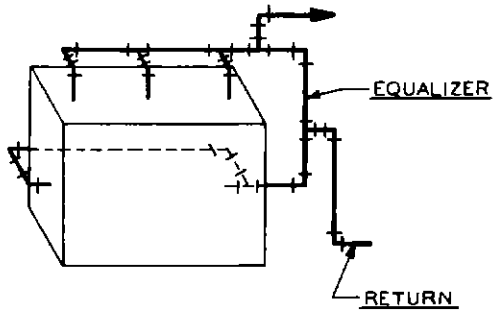
Table 1: Steam Header, Risers and Equalizer Sizing

Model No.	No. Supply Outlets	Size of Outlets	Header Supply	Equalizer Size
61-03	1	2″	—	1¼″
61-04	1	2″	—	1¼″
61-05	1	2″	—	1¼″
61-06	2	2″	2½″	1¼″
61-07	2	2″	2½″	1¼″
61-08	2	2″	3″	1¼″
62-09	2	2″	3″	1¼″
62-10	2	2″	3″	1¼″
62-11	2	2″	3″	1½″
62-12	3	2″	3½″	1½″
62-13	3	2″	3½″	1½″
62-14	3	2″	3½″	1½″
62-15	3	2″	3½″	1½″





SUGGESTED PIPING
STEAM BOILER



NOTE: The return from system should always enter equalizer through Hartford Loop, approximately 2″– 4″ below normal water line.

Steam header should be 24″ min. above boiler normal water line.

Figure 16: Steam Supply and Return Piping

SUGGESTED PIPING
HOT WATER BOILER

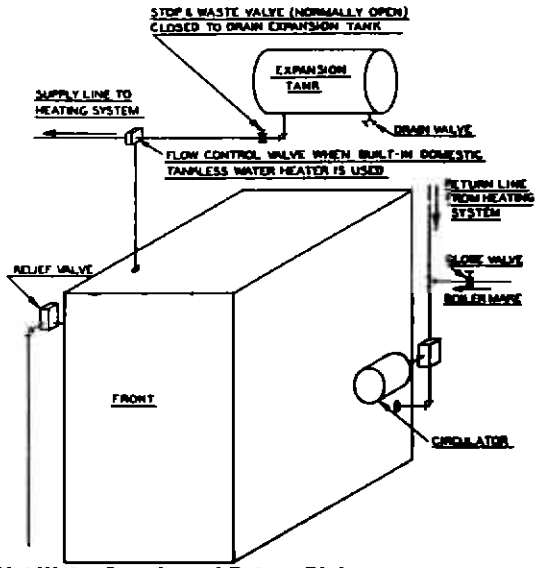


Figure 17: Hot Water Supply and Return Piping

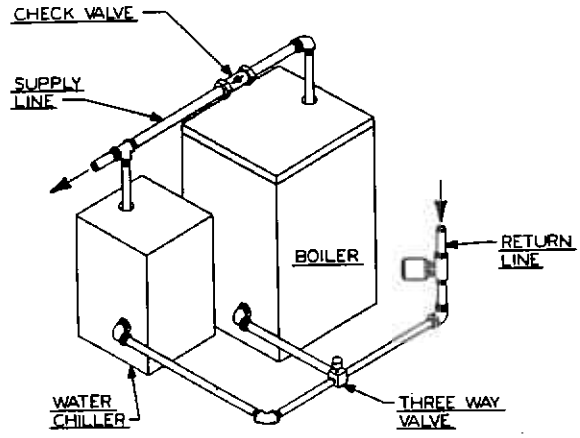


Figure 18: Parallel Hook-Up with Water Chiller

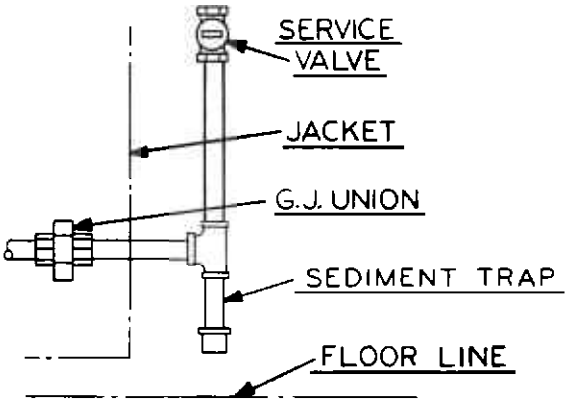


Figure 19: Gas Connection to Boiler

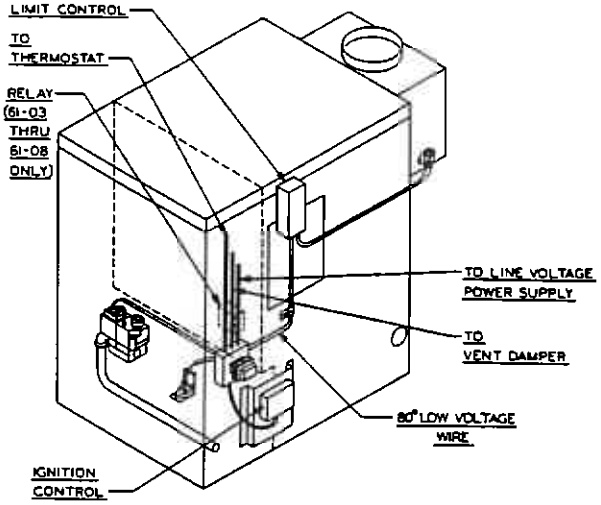


Figure 20: Gravity Hot Water

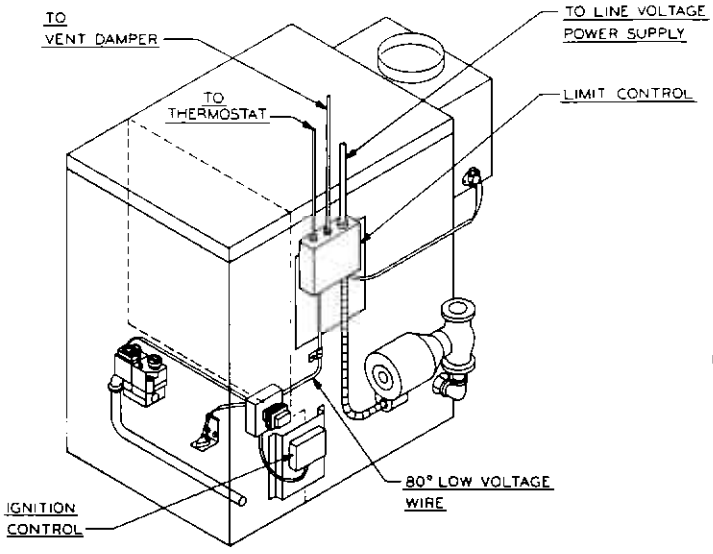


Figure 21: Forced Hot Water

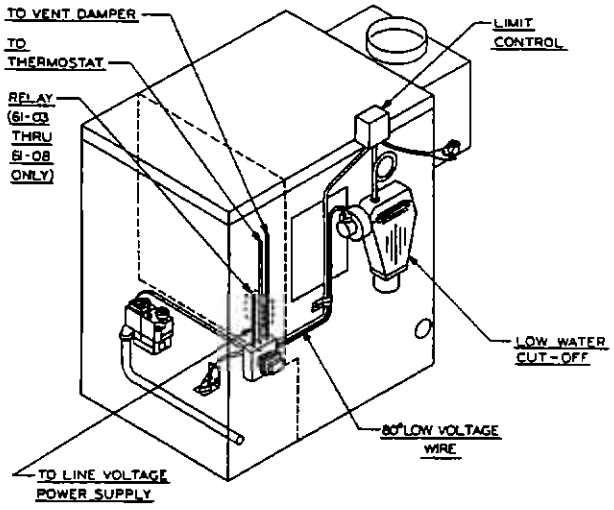


Figure 22: Steam W/Float LWCO

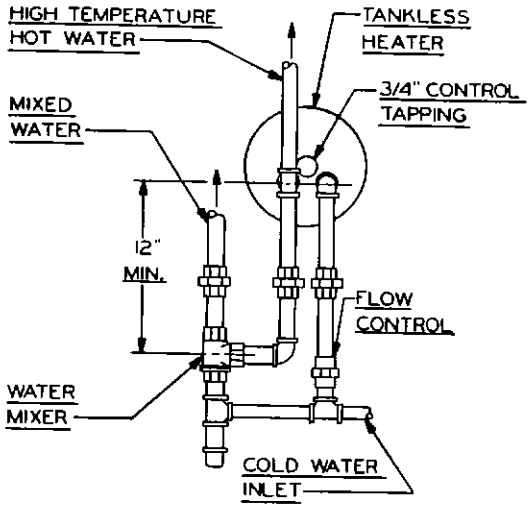
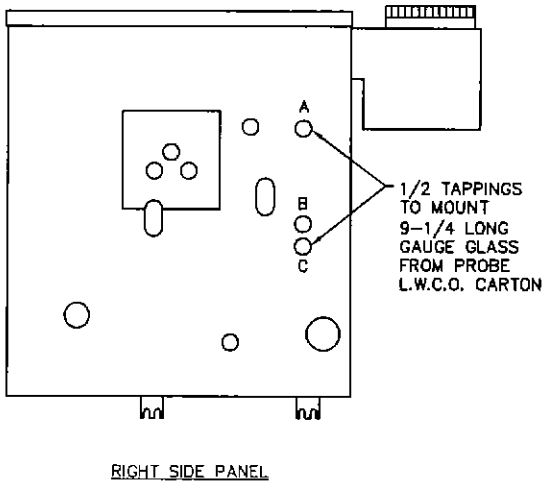


Figure 23: Suggested Piping For Tankless Heater



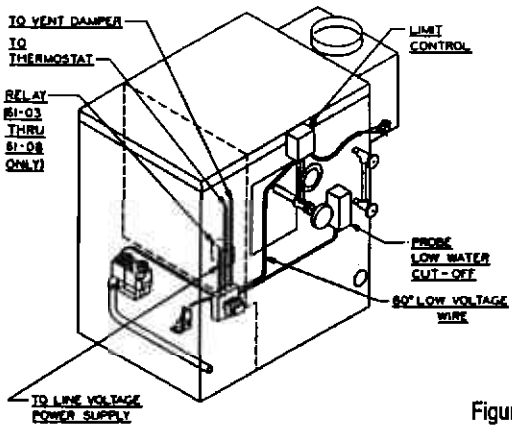


Figure 21A

Figure 24: Steam: Primary Probe LWCO, Hydrolevel CG400P

IMPORTANT

1. Inspect Probe Electrode **annually** for scale and build-up and clean if necessary.
2. For proper maintenance, recommended water feeder applications and operation, refer to the Hydrolevel Probe LWCO Installation Instructions.

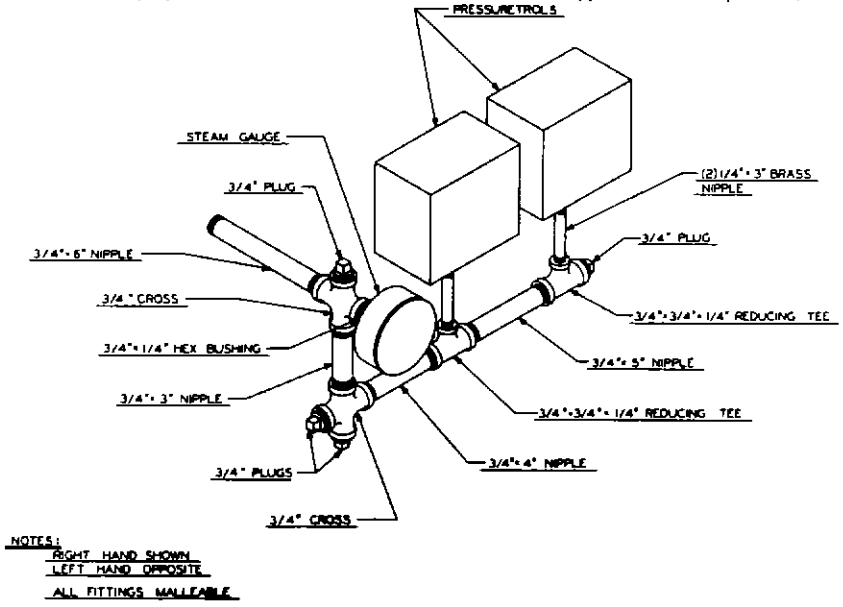


Figure 25: Steam: Gauge/Pressuretrols Piping Arrangement

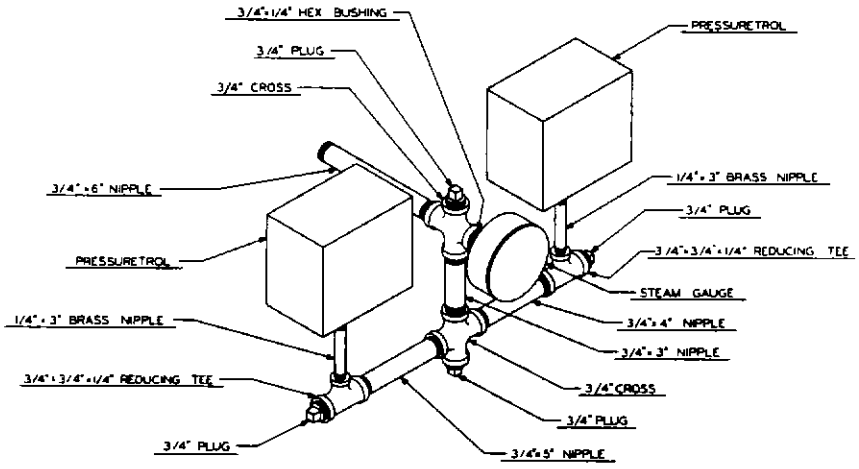


Figure 26: Steam: Gauge/Pressuretrols Alternate Piping Arrangement

1—Steam:

a. For proper location of controls and accessories refer to Section R "Ratings, Tapping Locations and Dimensional Data".

b. The McDonnell & Miller #67PE-2 LWCO is furnished as a standard with all steam boilers. The Hydrolevel CG 400-P Primary Probe LWCO is optional. This control provides a 10 minute on cycle followed by a 90 second off cycle. This feature allows the water level in boiler to settle so that the probe can sense a true water level.

c. The Hydrolevel CG 550-P Probe LWCO may be used in combination with a Primary Float LWCO and is to be mounted in the secondary probe location.

1. The CG550P LWCO incorporates a 10 minute on cycle followed by a 90 second off cycle.

d. When a 67PE-2 Float LWCO is supplied, the pressuretrol and brass siphon are mounted on top of the 67PE-2. This is standard for models 61-03 thru 62-11. Refer to figure 22. The 67PE-2 is provided with fittings to attach directly to tappings A and B, as shown in figure 24. The 20-105-10 gauge glass set is installed as part of the 67PE-2 quick hook up fittings.

e. When a Hydrolevel CG400-P Primary Probe LWCO is supplied, the pressuretrol, brass siphon and gauge are mounted as shown in figure 24. The fittings required for mounting these three components are found in the Probe LWCO Carton and the Steam Trim Carton.

A longer gauge glass w/rods, (22-162-10 carton), are required for use with the Hydrolevel CG-400-P probe. Two 1/2" x 3" nipples, two 1/2" couplers, longer gauge glass w/rods and gauge valves are mounted into Tappings A and C as shown in figure 24. For Packaged Boilers, these parts are supplies in the Misc. Parts Carton, located in boiler crate. For Knockdown Boilers, use the gauge valves found in 20-105-10 Water Gauge Carton, which is packed in the Steam Trim Carton.The longer gauge glass w/rods and fittings are in Primary Probe LWCO Carton.

NOTE: REFER TO FIGURE 25 AND 26 FOR MOUNTING OF DUAL PRESSURETROLS, FOR MODELS 62-12 THRU 62-15

CAUTION: If using chemical additives to prevent foaming and surging, such as "Squick", watch the gauge glass and shut down boiler if water disappears from glass. Then cycle the boiler a few times until the water stabilizes.

2—Hot Water:

a. For proper location of controls and accessories refer to Section R "Ratings, Tapping Locations and Dimensional Data".

NOTE: A HOT WATER BOILER INSTALLED ABOVE RADIATION LEVEL MUST BE PROVIDED WITH A LOW WATER CUTOFF DEVICE EITHER AS A PART OF THE BOILER OR AT THE TIME OF BOILER INSTALLATION.

b. When a probe LWCO is provided, install probe LWCO in supply piping.

Supply Piping (left or right).

Note: This mounting method does not require a probe with a timed on/off feature.

1. Install a 2" x 10" inch or longer nipple in the boiler supply tapping. Install a 2" x 2" x 3/4" tee on the nipple. See figure 27.

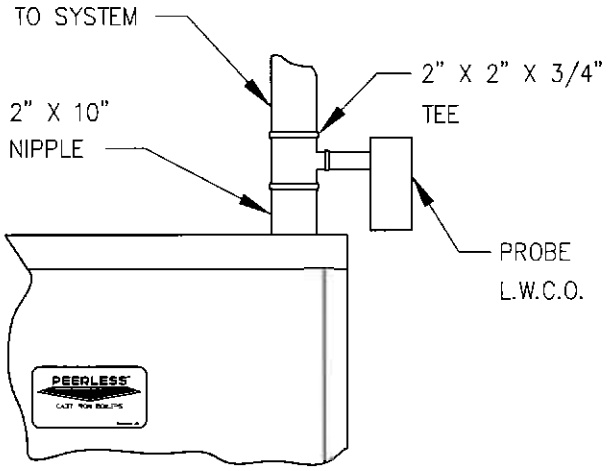


Figure 27: Probe LWCO Location for Hot Water Boiler

2. Install the remainder of the boiler supply piping. Pipe size may be reduced as required. Refer to low water cut off manufacturer's instructions for installation and maintenance procedures.

⚠ CAUTION

Do not install a probe low water cut off in the boiler primary or secondary probe tapping unless the low water cut off is equipped with a timed on and off feature. The cycled off time will allow the probe low water cut off to sense the true water level in the boiler and eliminate a false reading caused from sensing a foaming or surging water condition. Failure to use a timed low water cut off could result in a failed heat exchanger.

3—Specific details regarding the installation of the various controls are given in the control sheets attached.

4—In the event of a control failure the replacement shall be identical with the original equipment.

5—On certain models a separate pilot switch must be used. The switch shall be mounted on the left side of the inner front jacket panel. Use the two 1/8" holes provided, if holes are not provided, drill accordingly as shown in Figure 45.

6—For Models 61-08, 62-09 thru 62-15 the spark ignition control box when supplied, must be mounted on the outer left side jacket panel as shown in Figure 43. If additional spark ignition control box is supplied, this must be mounted to the outer right side jacket panel.

7—For Models 61-03 thru 61-07 the spark ignition control and mounting bracket, when supplied, can be mounted to the right or left outer jacket panel as required for ease of wiring.

8—This boiler may be supplied with safety limits in addition to the high limit aquastat and pressuretrol. The following is a description of these limits and how they work in conjunction with the safe operation of the boiler.

a. FLAME ROLL-OUT SAFETY SHUT OFF SWITCH—For Models 61-03 thru 61-08 ONLY, this is a thermally activated switch that is located on the burner access cover plate. The flame roll-out safety shut off switch will sense excessive temperature caused by continued flame roll-out and shut down main burner gas. This is a non-recycling switch that must be replaced once it has been activated and the cause of the roll-out eliminated.

b. VENT SAFETY SHUT OFF SWITCH—For Models 61-03 thru 61-08 ONLY, this is a thermally activated, manually resetable switch, located in the draft hood relief opening. If venting system becomes partially or totally blocked, the vent safety shut off switch will sense excessive temperature caused by flue products exiting the draft hood relief opening and shut down main burner gas.

NOTE: REFER TO SECTION Q FOR INSTRUCTIONS WHEN BOILER IS SHUT DOWN BY THE ACTIVATION OF EITHER OF THE ABOVE SWITCHES.

9—Water & Steam Models 62-12 thru 62-15 are supplied with 2 limit controls. The manual reset limit must be set for a higher cut out point than the operating limit control. If a Thermostat is used as an operating control, it should be used in addition to and not in lieu of the operating limit control.

NOTE: THIS BOILER SHALL BE INSTALLED SO THAT THE GAS IGNITION SYSTEM COMPONENTS ARE PROTECTED FROM WATER (DRIPPING, SPRAYING, ETC.) DURING APPLIANCE OPERATION AND SERVICE (CIRCULATOR REPLACEMENT, CONDENSATE TRAP, CONTROL REPLACEMENTS, ETC.).

J - WIRING

NOTE: THIS UNIT WHEN INSTALLED MUST BE ELECTRICALLY GROUNDED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION OR, IN THE ABSENCE OF SUCH REQUIREMENTS, WITH THE CURRENT EDITION OF THE NATIONAL ELECTRICAL CODE, ANSI/NFPA NO. 70, IF AN EXTERNAL ELECTRICAL SOURCE IS UTILIZED.

1—All electrical wiring shall be done in accordance with The National Electric Code ANSI/NFPA70 and local requirements.

2—For recommended wiring of controls, refer to Figures 28 thru 42. See Figures 20, 21, 22 and 24 for location of wiring and controls.

3—A length of 150° C low voltage wire is provided.

4—The boiler should be connected by a separate, permanently live electrical supply line with a fused switch.

5—Thermostat Anticipator Settings: (note: settings may need to be adjusted up or down from set points noted below)

a. Set to .4 amp when a 8222A-1002 Isolation Relay is applied.

b. All other systems, match anticipator setting to amp load of 24 volt control circuit.

NOTE: Single pole switches including those of safety controls or protective devices shall not be wired in a grounded line.

CAUTION: LABEL ALL WIRES PRIOR TO DISCONNECTION WHEN SERVICING CONTROLS. WIRING ERRORS CAN CAUSE IMPROPER AND DANGEROUS OPERATION. VERIFY PROPER OPERATION AFTER SERVICING.

K - STARTING BOILER

1—Refer to INSTRUCTIONS FOR OPERATION and the lighting/operating label which is mounted to jacket panel.

2—The boiler and its gas connection must be leak tested before placing the boiler in operation. Check gas connections with soap solution.

L1 - ADJUSTMENT TO GAS PRESSURE REGULATOR

1—Set manifold pressure as follows for various gases.

a. Natural Gas. . . . . 3½" Water Column b. Liquefied Petroleum Gas . . . . . 10" Water Column

2—To adjust gas pressure, turn adjusting screw of gas pressure regulator, out to decrease pressure, turn in to increase pressure. Refer to control sheets supplied with boiler for location of gas pressure regulator.

3—In no case should the final manifold pressure vary more than plus or minus 0.3 inches water column from the above specified pressures. Any necessary major changes in the flow should be made by changing the size of the burner orifice.

Minimum Permissible Supply Pressure for Purpose of Input Adjustment . . . . 5.0" W.C. Natural Gas 11.0" W.C. Liquefied Petroleum Gas

Maximum Permissible Supply Pressure to the Boiler . . . . . 13.5" W.C. Natural Gas 13.5" W.C. Liquefied Petroleum Gas

NOTE: MINIMUM RATE AS SHOWN ON THE RATING PLATE IS OBTAINED BY A FIXED ORIFICE LOCATED IN THE GAS TRAIN AND IS NOT ADJUSTABLE.

L2 - ADJUSTMENT OF PILOT GAS FLOW WITH VR8200 AND VR8300 COMBINATION GAS VALVES

To maximize thermocouple life, particularly on natural gas installations with gas supply pressures above 9" W.C., reduce the pilot gas flow.

WARNING: TURN OFF ALL ELECTRIC POWER TO THE APPLIANCE. TURN GAS CONTROL KNOB TO "PILOT" POSITION.

1—Locate and remove the pilot adjustment cap screw, which is adjacent to the pilot tube connection on top of gas valve.

2—Remove pilot observation cover door. See Figure 11.

3—Turn the pilot adjustment screw clockwise until the pilot flame extinguishes. Then increase the pilot flow just to the point that the gas valve holds in when relighting the pilot per steps 9 and 10 of Lighting Instructions on page 25 (turn screw no more than a 1/8 turn).

NOTICE: THE FIRST FEW TURNS OF THE ADJUSTMENT SCREW MAY NOT CAUSE ANY CHANGE IN THE PILOT FLOW. SUBSEQUENT PARTIAL TURNS OF THE ADJUSTMENT SCREW MAY HAVE A GREAT IMPACT ON PILOT FLOW.

4—Turn on electric power to the appliance.

5—Turn Gas Control Knob to "On" position per the Lighting Instructions on page 25.

6—Verify pilot remains lit after shutdown from a boiler "ON" cycle of at least ten minutes. If pilot extinguishes, follow Lighting Instructions on page 25 and again slightly increase pilot flow.

7—Make a final slight increase in the size of the pilot to ensure sufficient pilot signal under all operating conditions, just to the point that you observe a slight increase in the size of the flame (no more than an 1/8 turn).

8—Replace adjustment cap screw and observation cover door.

M - BURNER INPUT

1—Refer to rating label mounted on the jacket inner-front panel to obtain the required BTU per hour input. In no case shall the input to the boiler exceed that shown on the rating label.

2—Check input by use of the following formula: Suggest reading meter for 2 Cu.Ft.

$$\frac{3600 \times F \times H}{T} = \text{BTU/Hr. Input}$$

3600 — Seconds per hour
F — Cu.Ft. Gas Registered on Meter
H — Heat Value of Gas in BTU/Cu.Ft.
T — Time in Seconds of Meter is Read

NUMBER OF ORIFICE SPUDS REQUIRED

MODEL NUMBER—	61-03	61-04	61-05	61-06	61-07	61-08	62-09	62-10	62-11	62-12	62-13	62-14	62-15
ORIFICE SPUDS—	4	6	8	10	12	14	16	18	20	22	24	26	28

HONEYWELL 24V STANDING PILOT - STEAM w/DAMPER, FLOAT LWCO AND ISOLATION RELAY

Models 61-03 thru 61-08

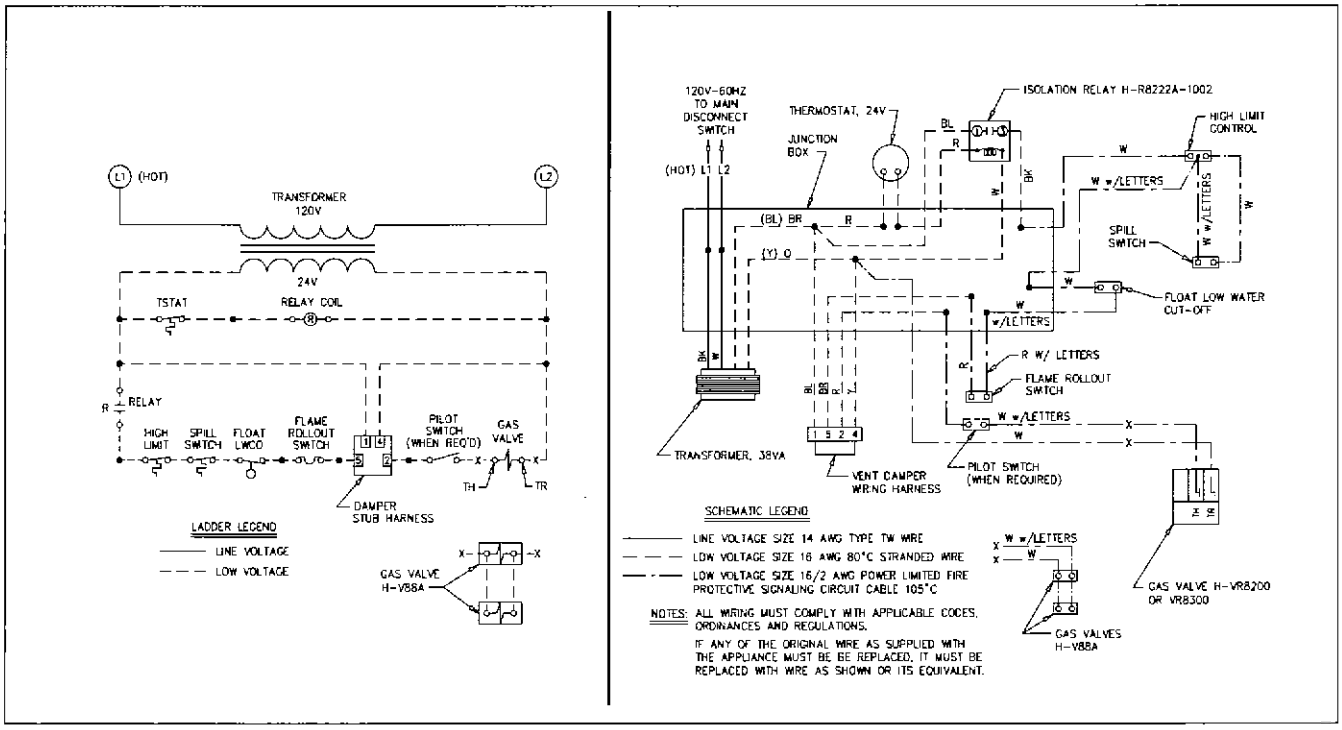


Figure 28

HONEYWELL 24V STANDING PILOT - STEAM OR GRAVITY HOT WATER

Models 62-09 thru 62-11

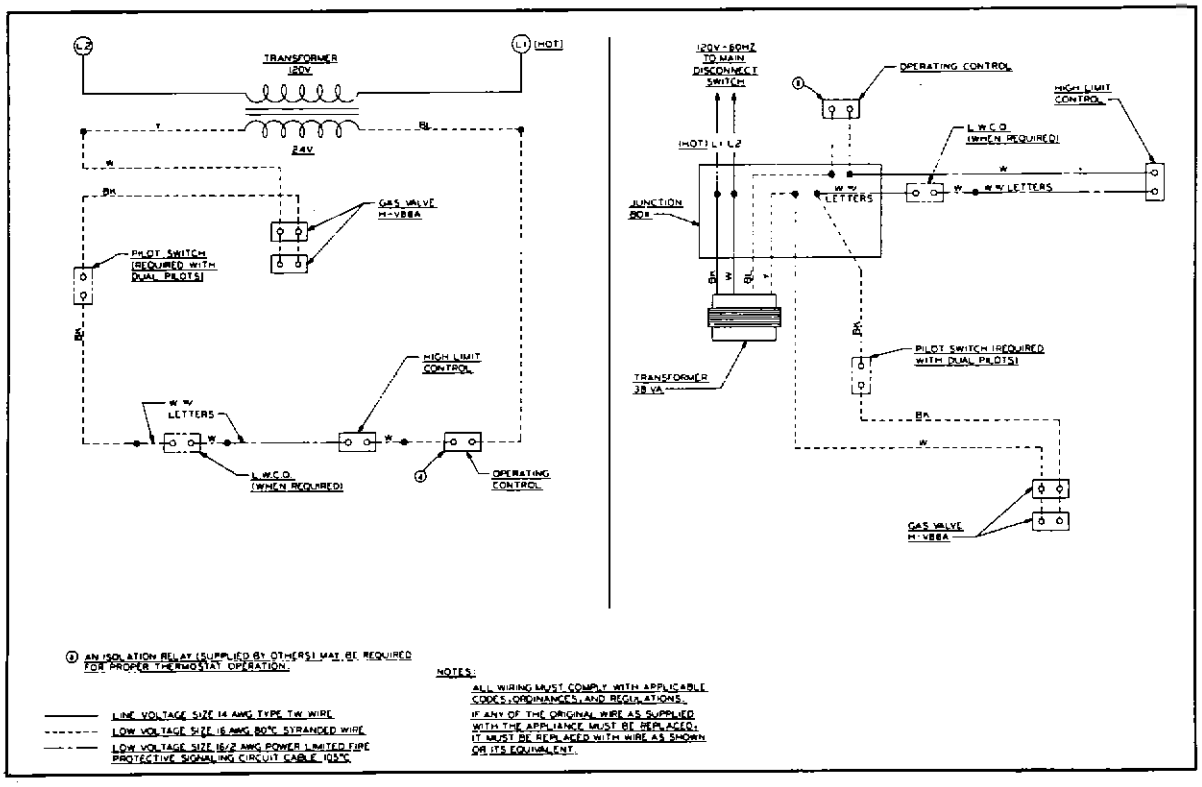


Figure 29

HONEYWELL SPARK IGNITION (HSP) - GRAVITY OR STEAM w/DAMPER, FLOAT LWCO AND ISOLATION RELAY

Models 61-03 thru 61-07

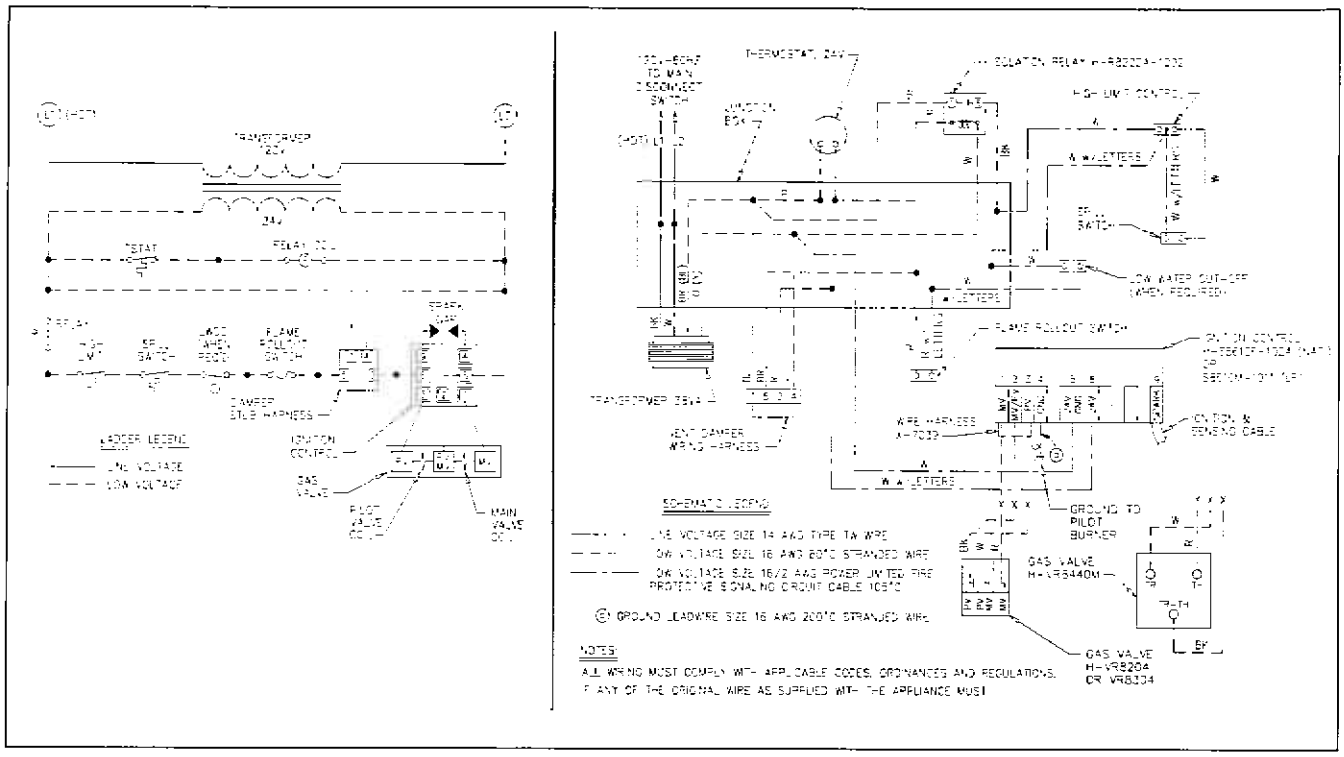


Figure 30

HONEYWELL SPARK IGNITION (HSP) - FORCED HOT WATER w/DAMPER

Models 61-03 thru 61-07

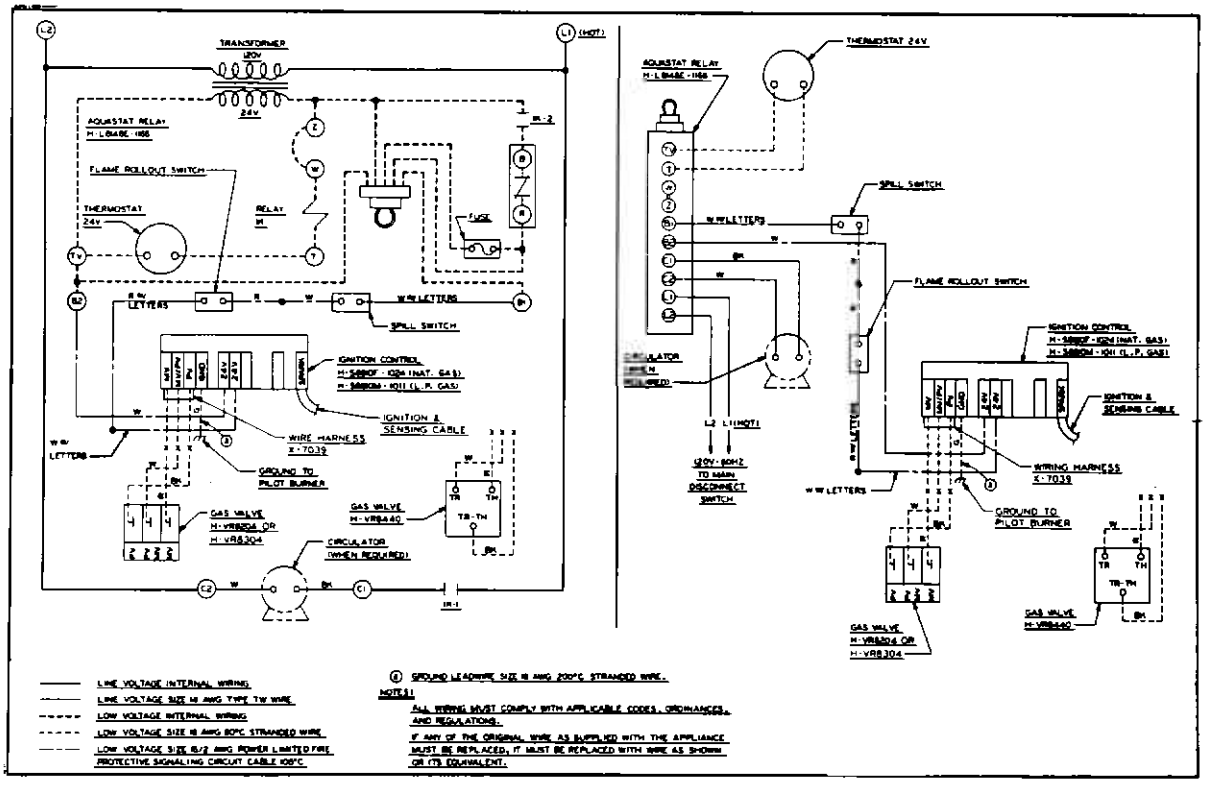


Figure 31

HONEYWELL SPARK IGNITION (HSP) - FORCED HOT WATER w/COIL AND DAMPER

Models 61-03 thru 61-07

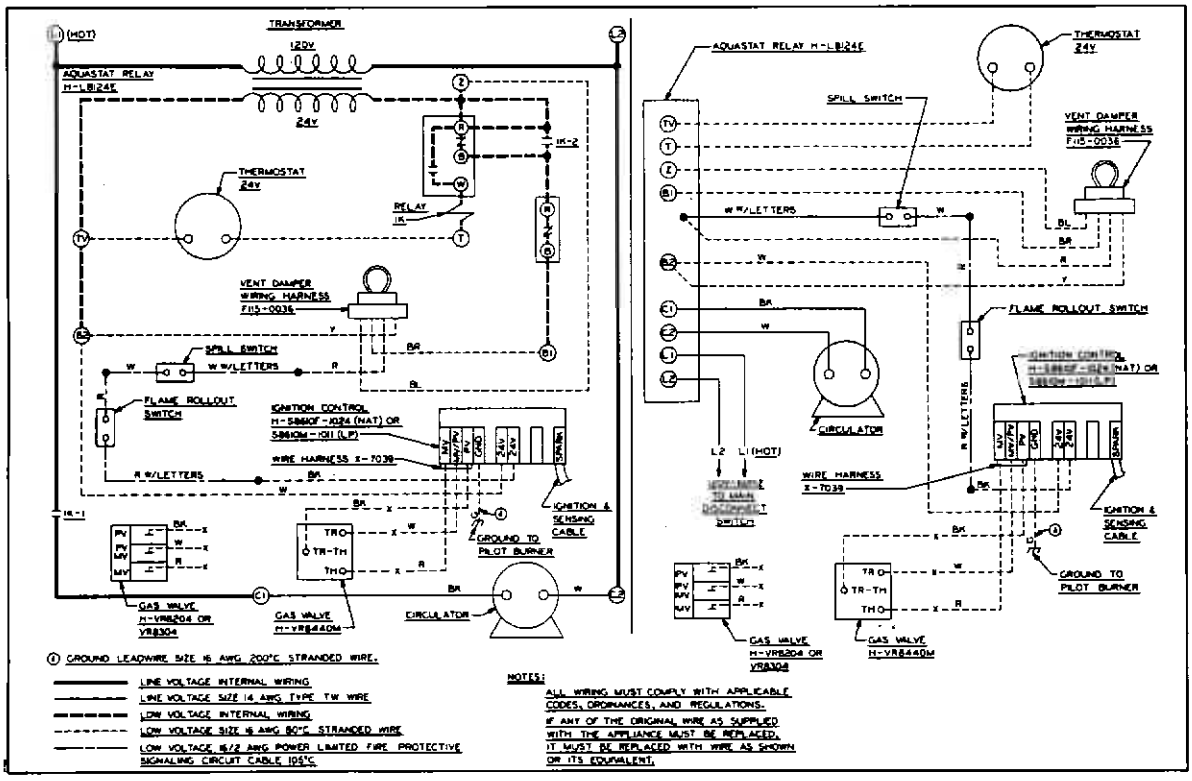


Figure 32

HONEYWELL SPARK IGNITION (HSP-2) - GRAVITY OR STEAM w/DAMPER, FLOAT LWCO AND ISOLATION RELAY

Model 61-08 only

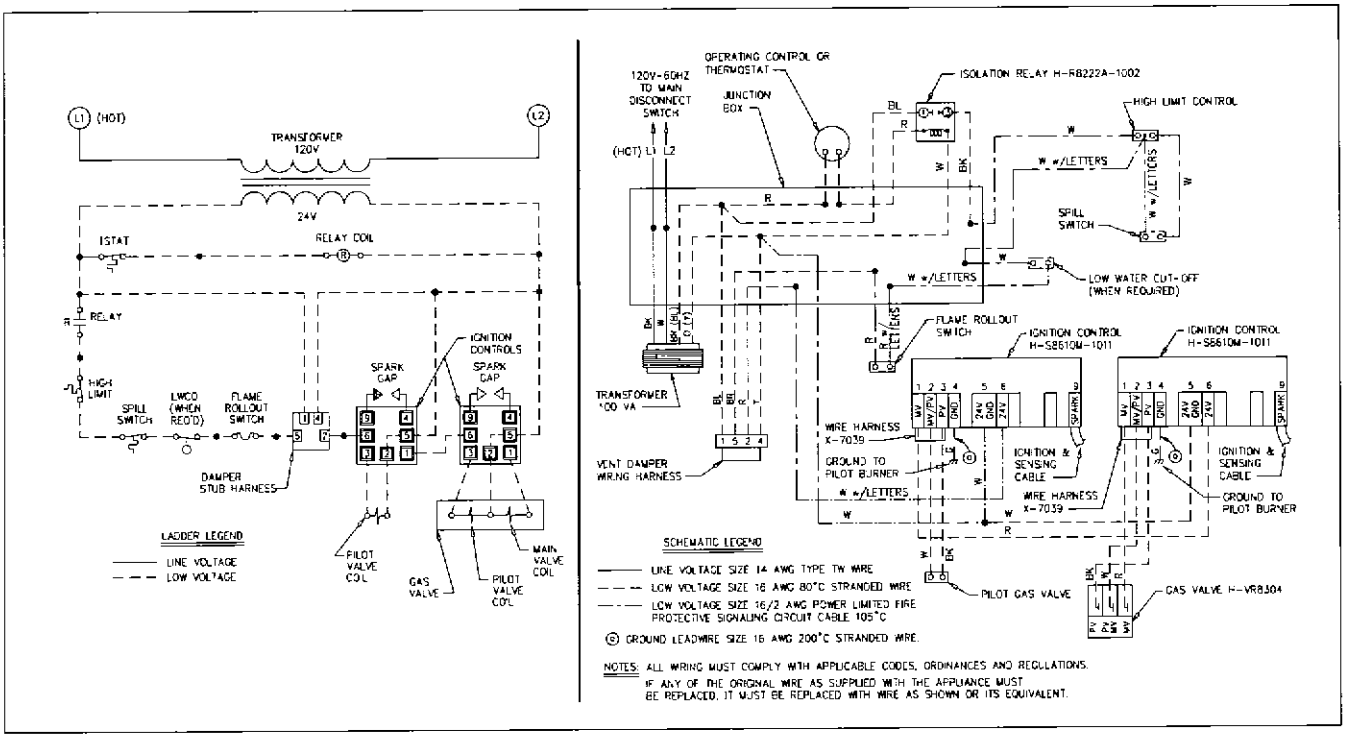


Figure 33

HONEYWELL SPARK IGNITION (HSP-1) - w/DUAL 24V MAIN GAS VALVES

Models 62-09 thru 62-15

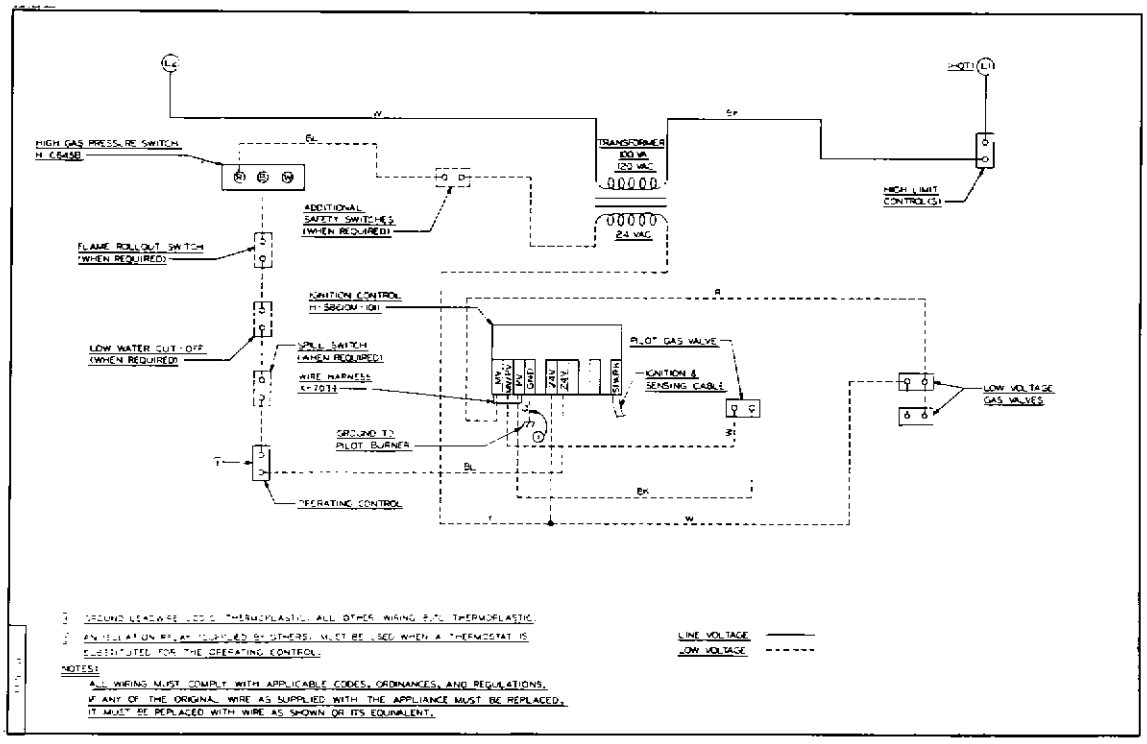


Figure 34

HONEYWELL SPARK IGNITION (HSP-1) - w/ DUAL 120V MAIN GAS VALVES

Models 62-09 Thru 62-15

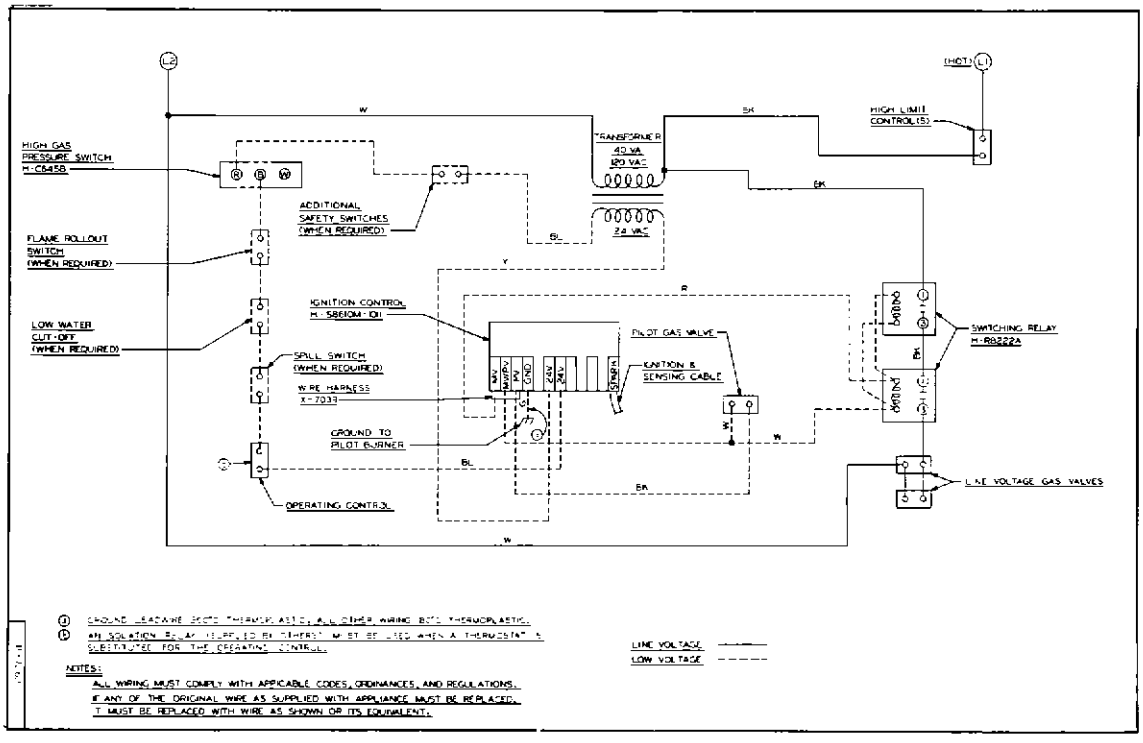
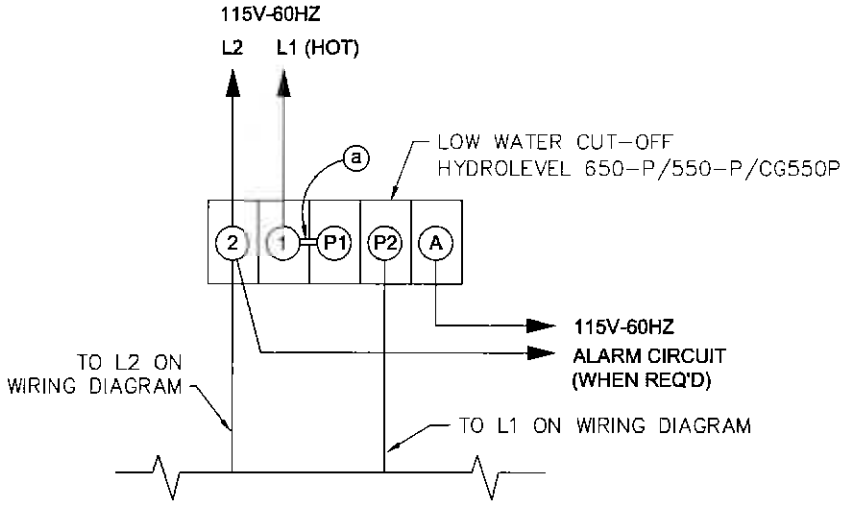


Figure 35

WIRING APPLICATION OF HYDROLEVEL PROBE LOW WATER CUTOFFS

Models 550P, 650P and CG550P

Refer to Section I - Controls of this manual for mounting location and instructions.



NOTES:
ALL WIRING MUST COMPLY WITH APPLIANCE CODES, ORDINANCES, AND REGULATIONS

(a) – PLACE JUMPER

Figure 36: Wiring of Probe LWCO

The following wiring diagrams, figures 37 thru 42, are for use with a Hydrolevel CG 400-P Probe LWCO

HONEYWELL 24V STANDING PILOT - STEAM w/DAMPER AND HYDROLEVEL PROBE LWCO

Models 61-03 thru 61-08

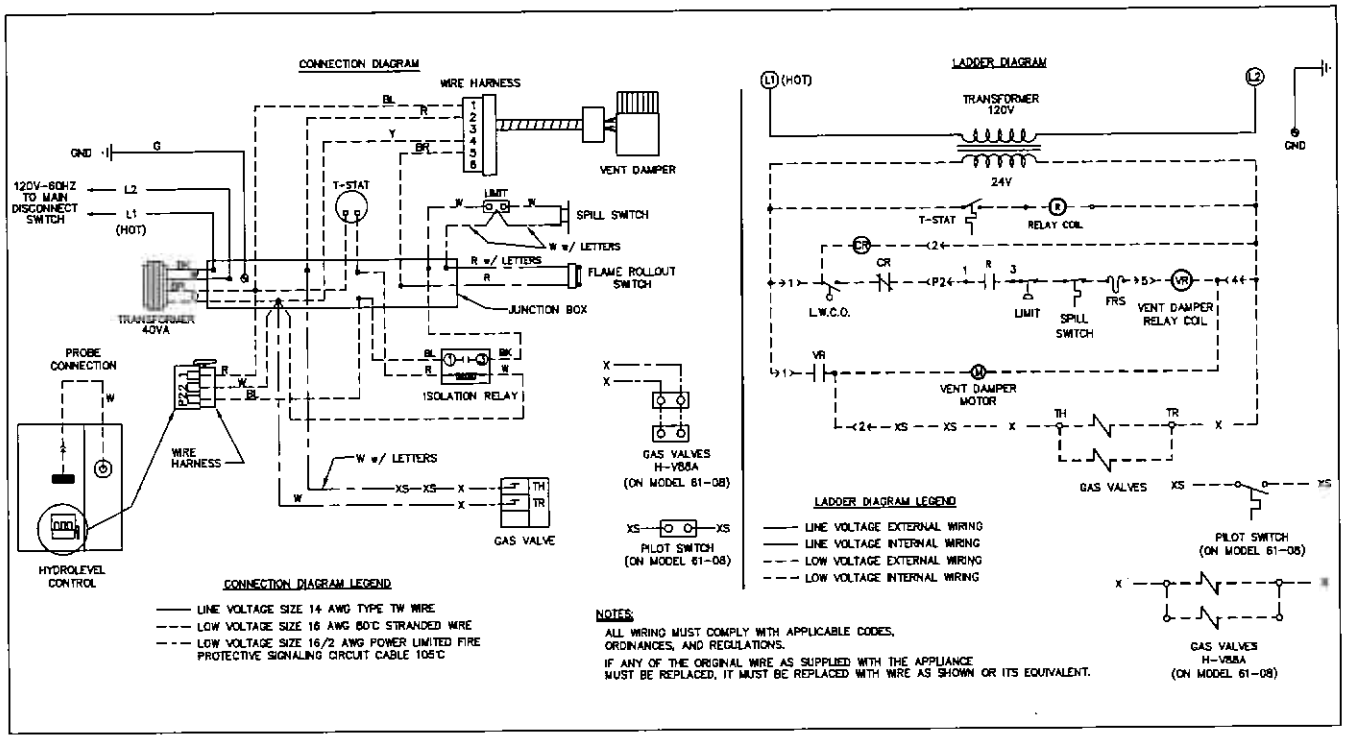


Figure 37

HONEYWELL 24V STANDING PILOT- STEAM AND HYDROLEVEL PROBE LWCO

Models 62-09 Thru 62-11

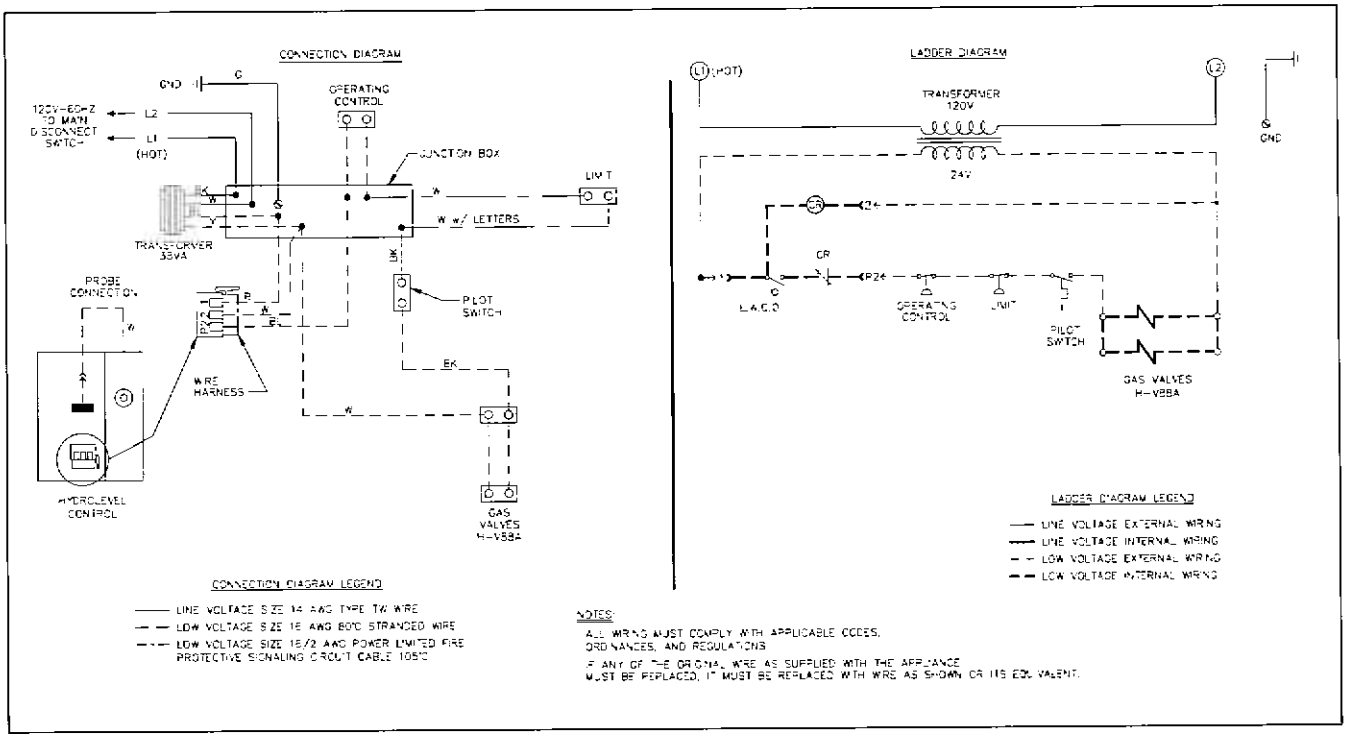


Figure 38

HONEYWELL SPARK IGNITION (HSP) - STEAM w/DAMPER AND HYDROLEVEL PROBE LWCO

Models 61-03 thru 61-07

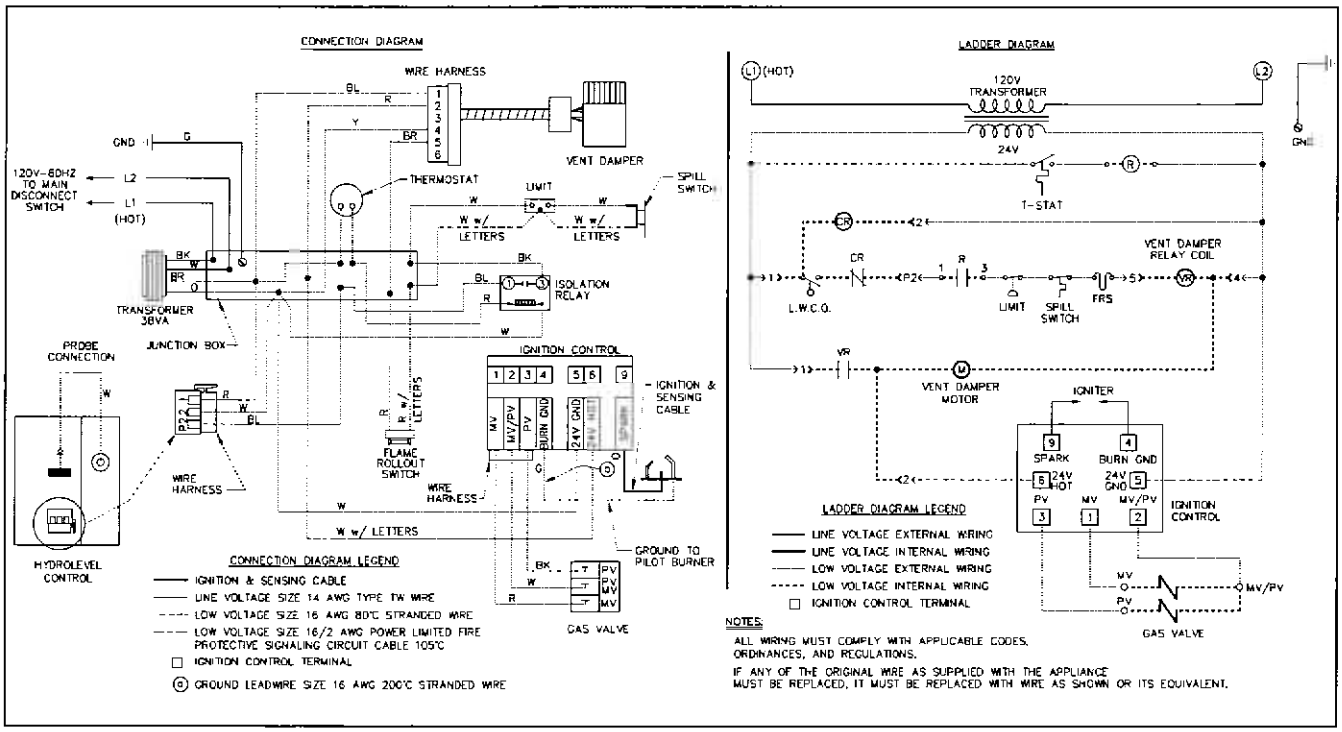


Figure 39

HONEYWELL SPARK IGNITION (HSP-2) - STEAM w/DAMPER AND HYDROLEVEL PROBE LWCO

Model 61-08 only

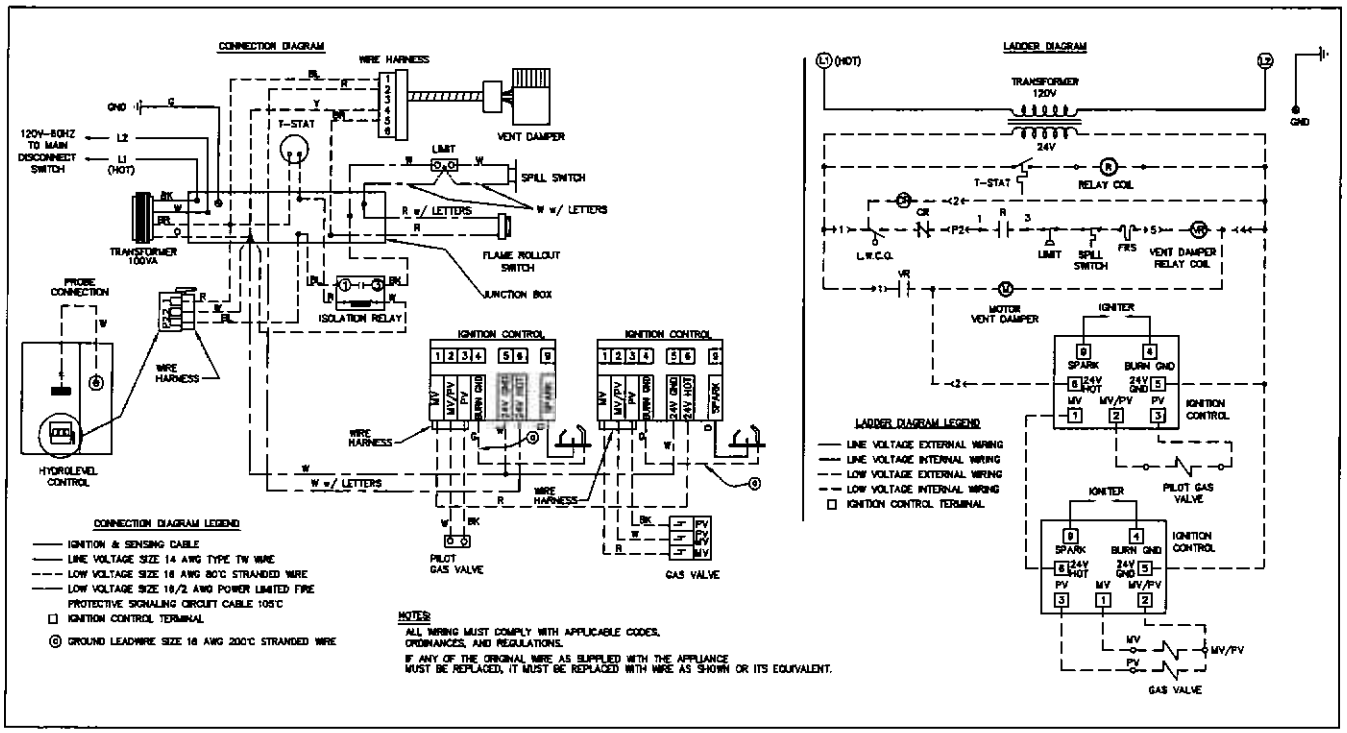


Figure 40

HONEYWELL SPARK IGNITION (HSP-1) - w/DUAL 24V MAIN GAS VALVES AND HYDROLEVEL PROBE LWCO

Models 62-09 thru 62-15

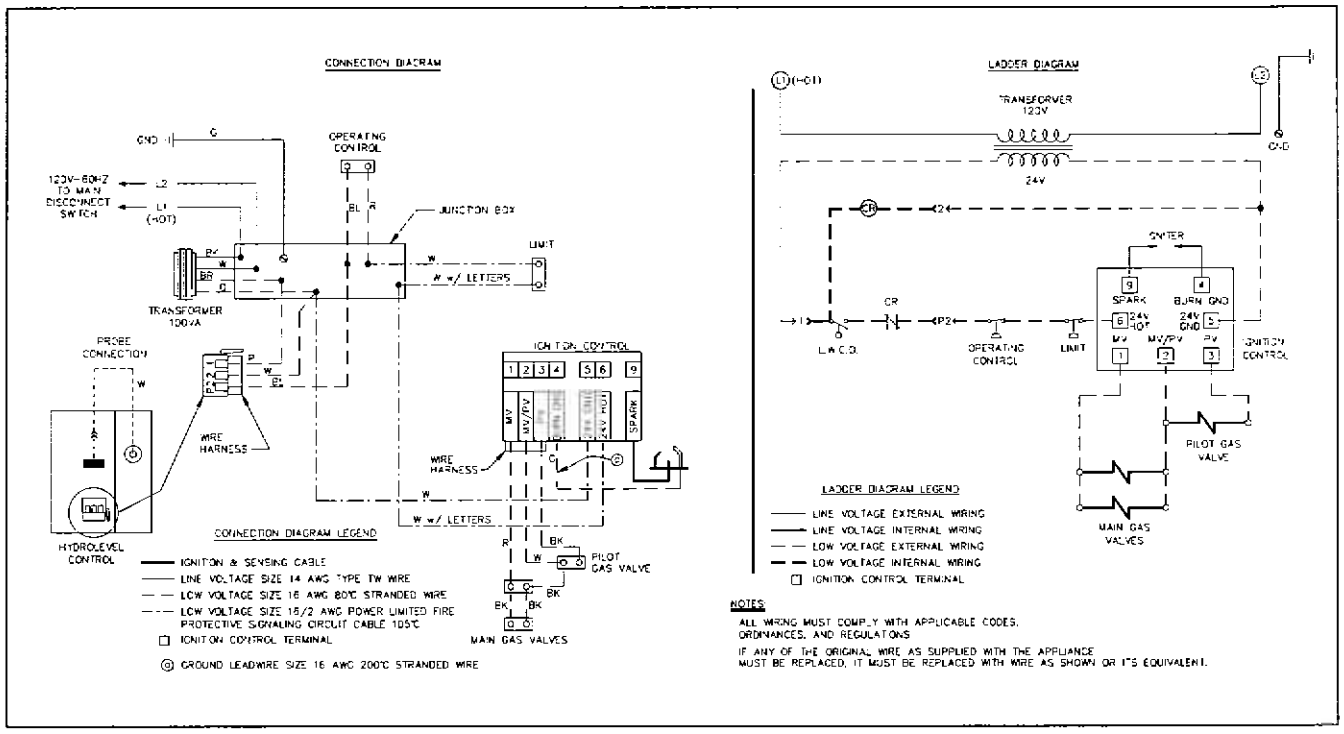


Figure 41

HONEYWELL SPARK IGNITION (HSP-1) - w/DUAL 120V MAIN GAS VALVES AND HYDROLEVEL PROBE LWCO

Models 62-09 thru 62-15

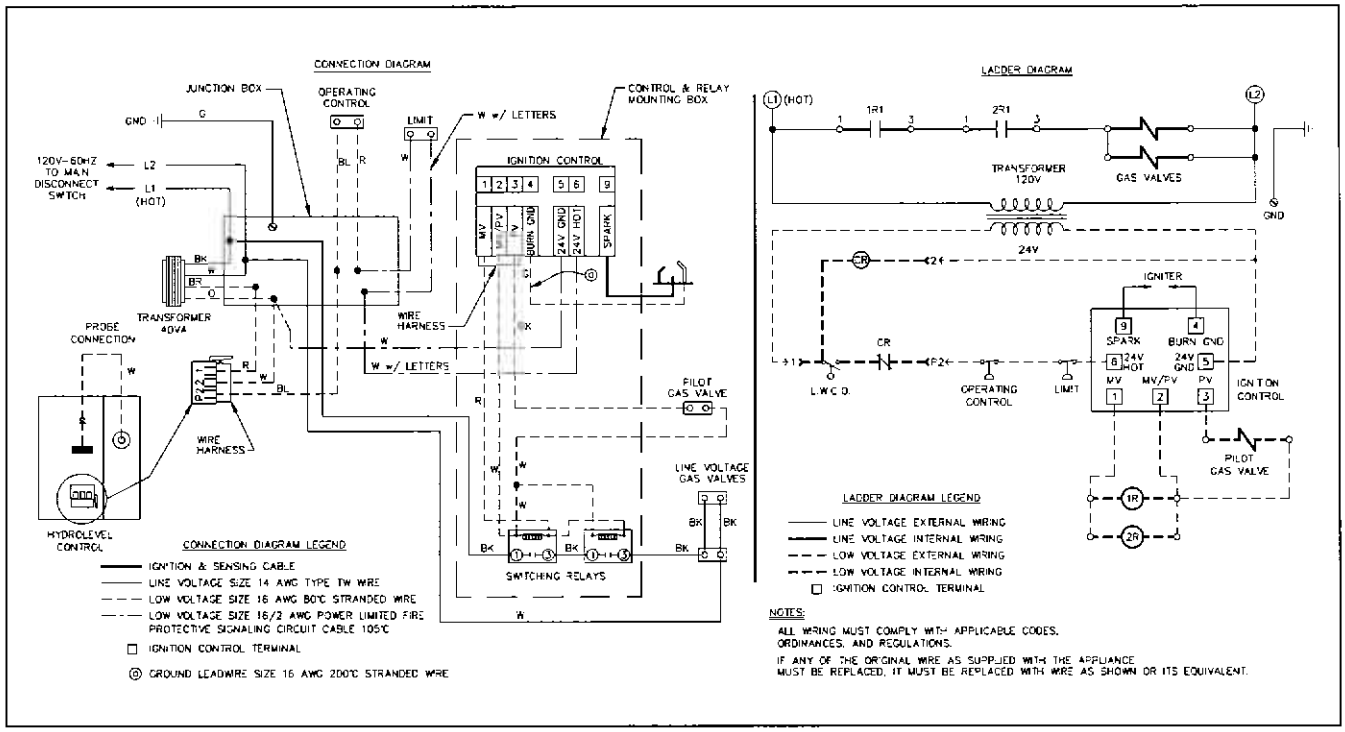


Figure 42

BOILERS EQUIPPED WITH CONSTANT BURNING PILOT

HONEYWELL GAS VALVE LIGHTING INSTRUCTIONS

NOTE: CHECK WATER LINE OF STEAM BOILER, OR BE CERTAIN SYSTEM IS FULL FOR WATER BOILER, BEFORE PROCEEDING WITH THESE INSTRUCTIONS.

FOR YOUR SAFETY READ BEFORE LIGHTING

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

A. This appliance has a pilot which must be lighted by hand. When lighting the pilot, follow these instructions exactly.

B. 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

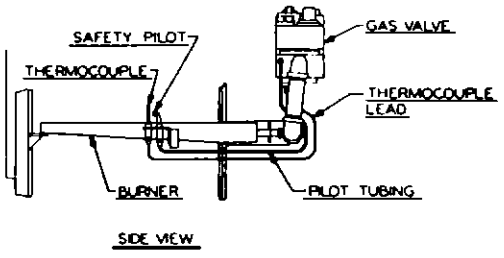
- Do not try to light any appliance.
- Do not touch any electric switch; do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

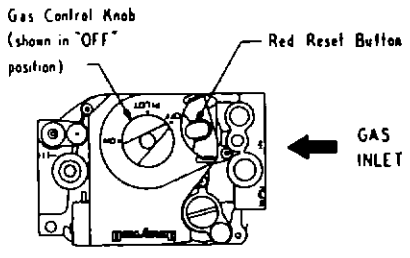
C. Use only your hand to push in or turn the gas control knob. Never use tools. If the knob will not push in or turn by hand, don't try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.

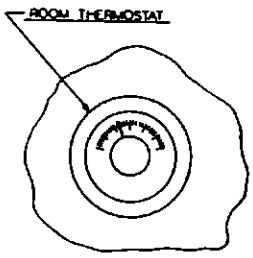
D. Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

LIGHTING INSTRUCTIONS

1. STOP! Read the safety information above on this page.
2. Set the thermostat to lowest setting.
3. Turn off all electric power to the appliance.
4. If the gas valve is not visible, remove control access panel.
5. If the gas control knob is not in the "OFF" position, turn the knob clockwise ↷ to "OFF."
6. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you then smell gas, STOP! Follow "B" in the safety information above on this page. If you don't smell gas, go to the next step.
7. Remove the pilot access panel, if supplied, located below and behind the gas valve directly above burner tubes.
8. Find pilot — follow metal tube from gas valve. The pilot is between two burner tubes.
9. Turn the gas control knob counterclockwise ↶ to "PILOT."
10. Push in red reset button all the way and hold in. Immediately light the pilot with a match. Continue to hold the reset button in for about one (1) minute after the pilot is lit. Release button and it will pop back up. Pilot should remain lit. If it goes out, repeat steps 5 through 10.
    - If button does not pop up when released, stop and immediately call your service technician or gas supplier.
    - If the pilot will not stay lit after several tries, turn the gas control knob to "OFF and call your service technician or gas supplier.
11. Replace pilot access panel, if applicable.
12. Turn the gas control knob counterclockwise ↶ to "ON."
13. Replace control access panel, if applicable.
14. Turn on all electric power to the appliance.
15. Set the thermostat to desired setting.







TO TURN OFF GAS TO APPLIANCE

1. Set the thermostat to lowest setting.
2. Turn off all electric power to the appliance if service is to be performed.
3. If the gas valve is not visible, remove control access panel.
4. Turn the gas control knob clockwise ↷ to "OFF."
5. Replace control access panel, if applicable.

BOILERS EQUIPPED WITH ELECTRIC IGNITION AND A COMBINATION GAS VALVE

OPERATING INSTRUCTIONS

NOTE: CHECK WATER LINE OF STEAM BOILER, OR BE CERTAIN SYSTEM IS FULL FOR WATER BOILER, BEFORE PROCEEDING WITH THESE INSTRUCTIONS.

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.

A. This appliance is equipped with an ignition device which automatically lights the pilot. Do **not** try to light the pilot by hand.

B. 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

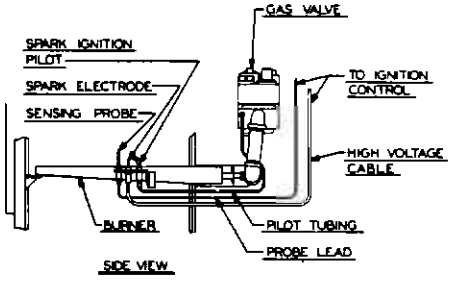
- Do not try to light any appliance.
- Do not touch any electric switch; do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

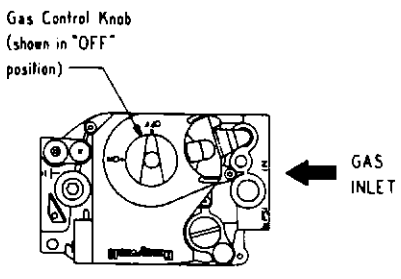
C. Use only your hand to push in or turn the gas control knob. Never use tools. If the knob will not push in or turn by hand, don't try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.

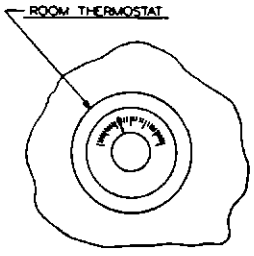
D. Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

OPERATING INSTRUCTIONS

1. STOP! Read the safety information above on this page.
2. Set the thermostat to lowest setting.
3. Turn off all electric power to the appliance.
4. This appliance is equipped with an ignition device which automatically lights the pilot. Do **not** try to light the pilot by hand.
5. If the gas valve is not visible, remove control access panel.
6. If the gas control knob is not in the "OFF" position, turn the knob clockwise ↷ to "OFF."
7. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you smell gas, STOP! Follow "B" in the safety information above on this page. If you don't smell gas, go to the next step.
8. Turn the gas control knob counterclockwise ↶ to "ON."
9. Replace control access panel, if applicable.
10. Turn on all electric power to the appliance.
11. Set the thermostat to desired setting.
12. If the appliance will not operate, follow the instructions "To Turn Off Gas To Appliance" and call your service technician or gas supplier.







TO TURN OFF GAS TO APPLIANCE

1. Set the thermostat to lowest setting.
2. Turn off all electric power to the appliance if service is to be performed.
3. If the gas valve is not visible, remove control access panel.
4. Turn the gas control knob clockwise ↷ to "OFF."
5. Replace control access panel, if applicable.

Refer to Figure 43 with the following instructions

BOILERS EQUIPPED WITH ELECTRIC IGNITION AND DUAL GAS VALVE LIGHTING INSTRUCTIONS

NOTE: CHECK WATER LINE OF STEAM BOILER, OR BE CERTAIN SYSTEM IS FULL FOR WATER BOILER, BEFORE PROCEEDING WITH THESE INSTRUCTIONS.

FOR YOUR SAFETY READ BEFORE LIGHTING

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

A. This appliance is equipped with both a secondary pilot which must be lighted by hand, and an ignition device which automatically lights the main pilot. Light **only** the secondary pilot by hand following these instructions exactly.

B. 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

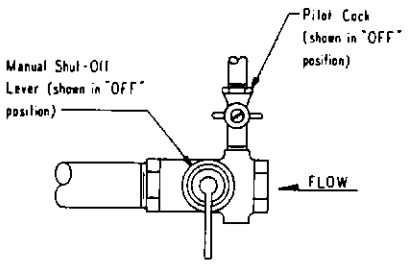
- Do not try to light any appliance.
- Do not touch any electric switch; do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

C. 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.

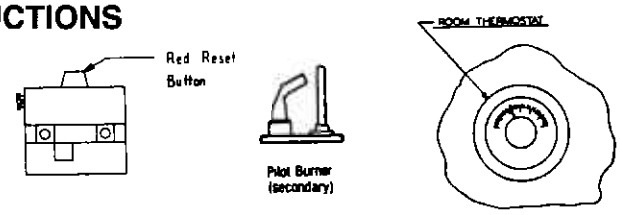
D. Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

LIGHTING INSTRUCTIONS

1. STOP! Read the safety information above on this page.
2. Set the thermostat to lowest setting.
3. Turn off all electric power to the appliance.
4. If the gas control assembly is not visible, remove control access panel. Refer to control assembly on following page.
5. If the manual shut-off lever and pilot cock are not in the "OFF" position, turn both clockwise ↷ to "OFF."



6. Wait five (5) minutes to clear out any gas. If you smell gas, STOP! Follow "B" in the safety information above on this page. If you don't smell gas, go to the next step.
7. Remove the pilot access panel, if supplied, located below and behind the gas valve directly above burner tubes.
8. Find secondary pilot — follow metal tube from gas valve. Pilot is between two burner tubes.



9. Turn the pilot cock handle counterclockwise ↶ to "ON."
10. Push in red reset button on pilot valve all the way and hold in. Immediately light the pilot with a match. Continue to hold the reset button in for about one (1) minute after the pilot is lit. Release button and it will pop back up. Pilot should remain lit. If it goes out, repeat steps 5 through 10.
    - If reset button does not pop up when released, stop and immediately call your service technician or gas supplier.
    - If the pilot will not stay lit after several tries, turn the pilot cock handle to "OFF" and call your service technician or gas supplier.
11. Replace pilot access panel, if applicable.
12. Turn manual shut-off lever counterclockwise ↶ to "ON."
13. Replace control access panel, if applicable.
14. Turn on all electric power to the appliance.
15. Set thermostat to desired setting.
16. If the appliance will not operate, follow the instructions "To Turn Off Gas To Appliance" and call your service technician or gas supplier.

TO TURN OFF GAS TO APPLIANCE

1. Set the thermostat to lowest setting.
2. Turn off all electric power to the appliance if service is to be performed.
3. If the gas control assembly is not visible, remove control access panel.
4. Turn the pilot cock and the manual shut-off lever clockwise ↷ to "OFF."
5. Replace control access panel, if applicable.

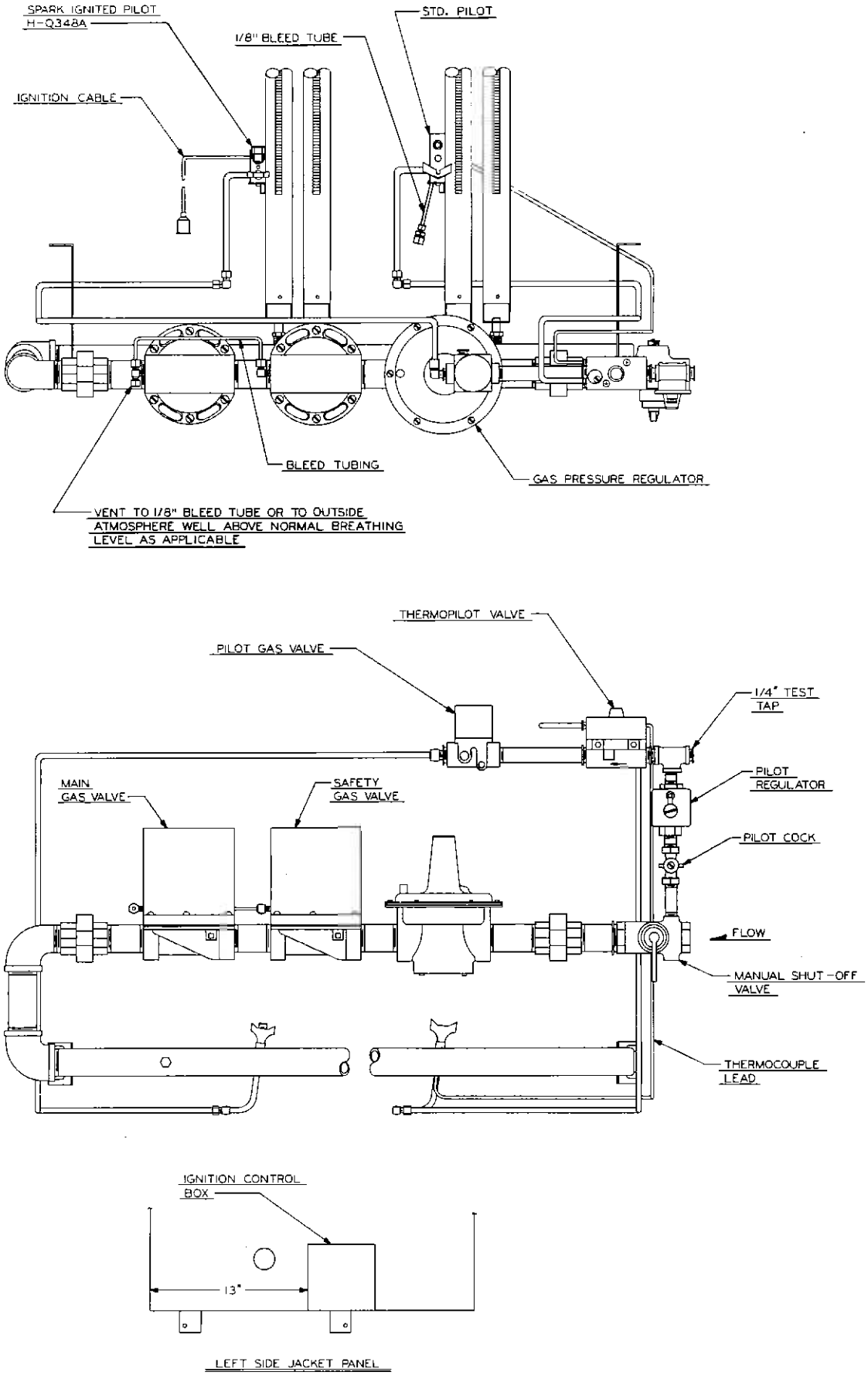


Figure 43: HSP Control System and Ignition Control Box Location
Models 62-09 thru 62-15

Refer to Figure 44 with the following instructions

BOILERS EQUIPPED WITH ELECTRIC IGNITION AND A COMBINATION GAS VALVE OPERATING INSTRUCTIONS

NOTE: CHECK WATER LINE OF STEAM BOILER, OR BE CERTAIN SYSTEM IS FULL FOR WATER BOILER, BEFORE PROCEEDING WITH THESE INSTRUCTIONS.

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.

A. This appliance is equipped with an ignition device which automatically lights the pilots. Do **not** try to light the pilots by hand.

B. 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

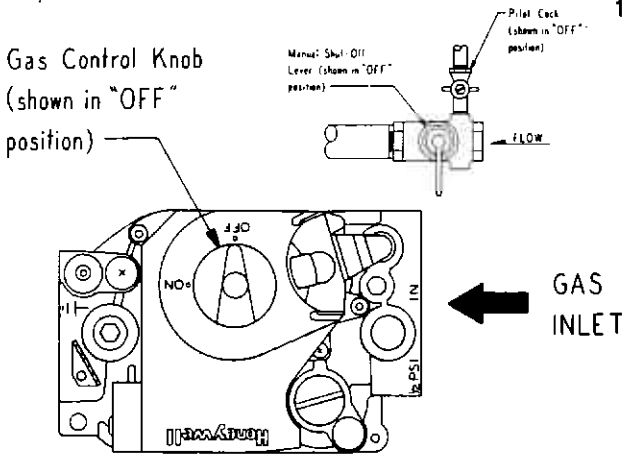
- Do not try to light any appliance.
- Do not touch any electric switch; do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

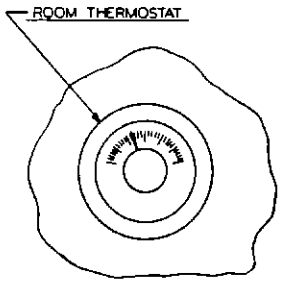
C. Use only your hand to push in or turn the gas control knob. Never use tools. If the knob will not push in or turn by hand, don't try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.

D. 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

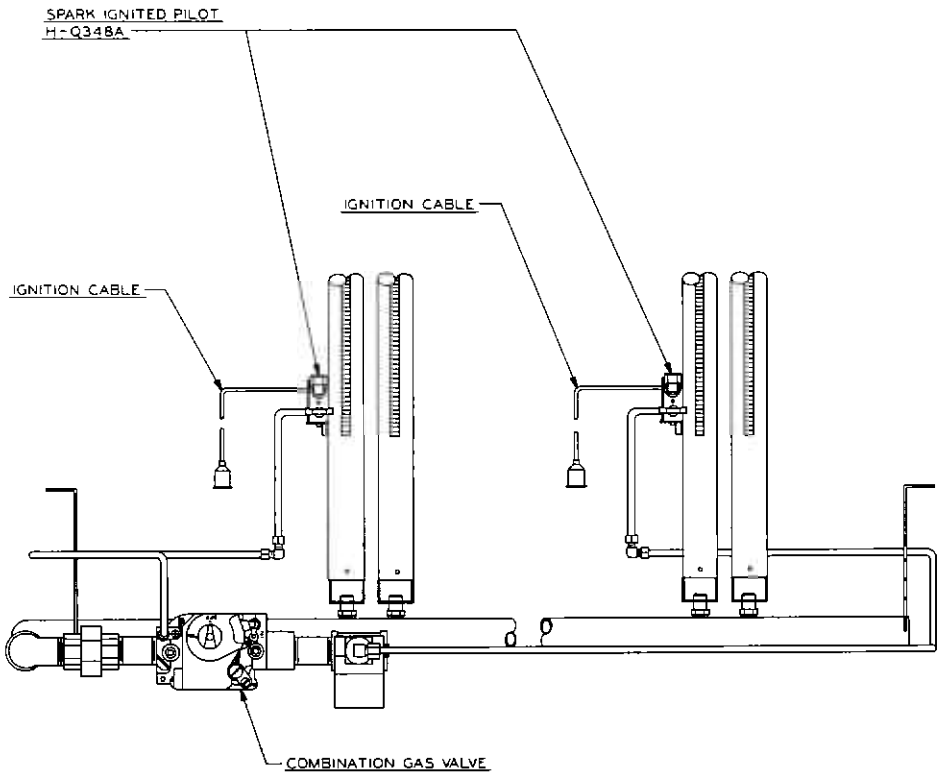
1. STOP! Read the safety information above on this page.
2. Set the thermostat to lowest setting.
3. Turn off all electric power to the appliance.
4. This appliance is equipped with an ignition device which automatically lights the pilots. Do **not** try to light the pilots by hand.
5. If the gas valve is not visible, remove control access panel. Refer to control assembly on following page.
6. If the gas control knob and pilot cock are not in the "OFF" position, turn both clockwise ↷ to "OFF."
7. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you smell gas, STOP! Follow "B" in the safety information above on this page. If you don't smell gas, go to the next step.
8. Turn the gas control knob and pilot cock counterclockwise ↶ to "ON."
9. Replace control access panel, if applicable.
10. Turn on all electric power to the appliance.
11. Set the thermostat to desired setting.
12. If the appliance will not operate, follow the instructions "To Turn Off Gas To Appliance" and call your service technician or gas supplier.





TO TURN OFF GAS TO APPLIANCE

1. Set the thermostat to lowest setting.
2. Turn off all electric power to the appliance if service is to be performed.
3. If the gas valve is not visible, remove control access panel.
4. Turn the gas control knob and pilot cock clockwise ↷ to "OFF."
5. Replace control access panel, if applicable.



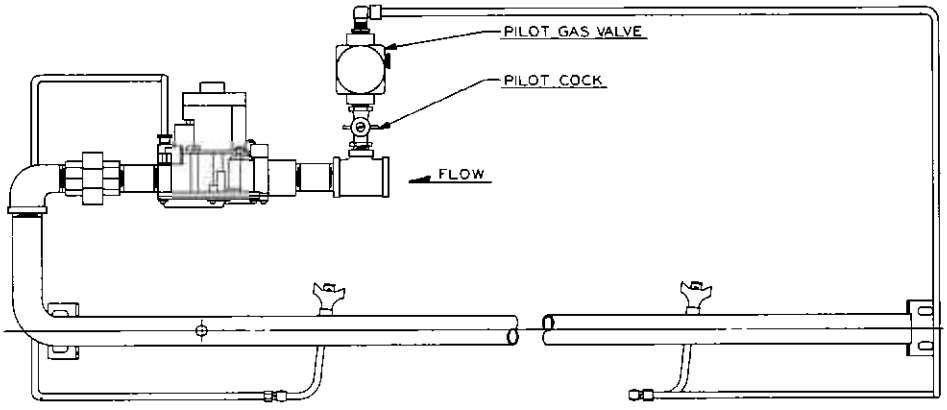


Figure 44: HSP-2 Control System
Model 61-08

Refer to Figure 45 with the following instructions

BOILERS EQUIPPED WITH CONSTANT BURNING PILOT(S) LIGHTING INSTRUCTIONS

NOTE: CHECK WATER LINE OF STEAM BOILER, OR BE CERTAIN SYSTEM IS FULL FOR WATER BOILER, BEFORE PROCEEDING WITH THESE INSTRUCTIONS.

FOR YOUR SAFETY READ BEFORE LIGHTING

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

A. This appliance has pilots which must be lighted by hand. When lighting the pilots, follow these instructions exactly.

B. 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

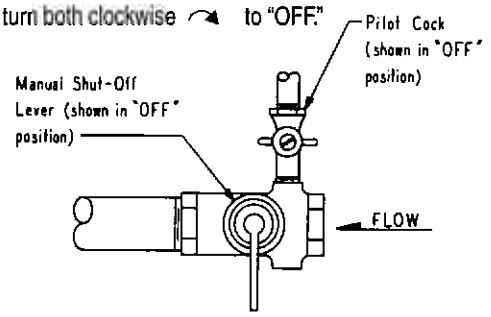
- Do not try to light any appliance.
- Do not touch any electric switch; do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

C. 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.

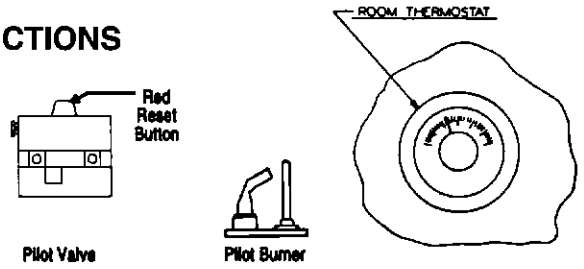
D. Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

LIGHTING INSTRUCTIONS

1. STOP! Read the safety information above on this page.
2. Set the thermostat to lowest setting.
3. Turn off all electric power to the appliance.
4. If the gas control assembly is not visible, remove control access panel.
5. If the manual shut-off lever and pilot cock are not in the "OFF" position, turn both clockwise ↷ to "OFF."



6. Wait five (5) minutes to clear out any gas. If you smell gas, including near the floor. If you smell gas, STOP! Follow "B" in the safety information above on this page. If you don't smell gas, go to the next step.
7. Remove the pilot access panel, if supplied, located below and behind the gas valve directly above burner tubes.
8. Find pilots — follow metal tube from each pilot valve. Each pilot is between two burner tubes.



9. Turn the pilot cock handle counterclockwise ↶ to "ON."
10. Push in red reset button on right hand pilot valve all the way and hold in. Immediately light the right hand pilot with a match. Continue to hold the reset button in for about one (1) minute after the pilot is lit. Release button and it will pop back up. Pilot should remain lit. If it goes out, repeat steps 5 through 10.
11. Repeat above lighting procedure with left hand pilot valve and left hand pilot.
    - If either button does not pop up when released, stop and immediately call your service technician or gas supplier.
    - If the pilots will not stay lit after several tries, turn the pilot cock handle to "OFF" and call your service technician or gas supplier.
12. Replace pilot access panel, if applicable.
13. Turn manual shut-off lever counterclockwise ↶ to "ON."
14. Replace control access panel, if applicable.
15. Turn on all electric power to the appliance.
16. Set thermostat to desired setting.

TO TURN OFF GAS TO APPLIANCE

1. Set the thermostat to lowest setting.
2. Turn off all electric power to the appliance if service is to be performed.
3. If the gas control assembly is not visible, remove control access panel.
4. Turn the pilot cock and the manual shut-off lever clockwise ↷ to "OFF."
5. Replace control access panel, if applicable.

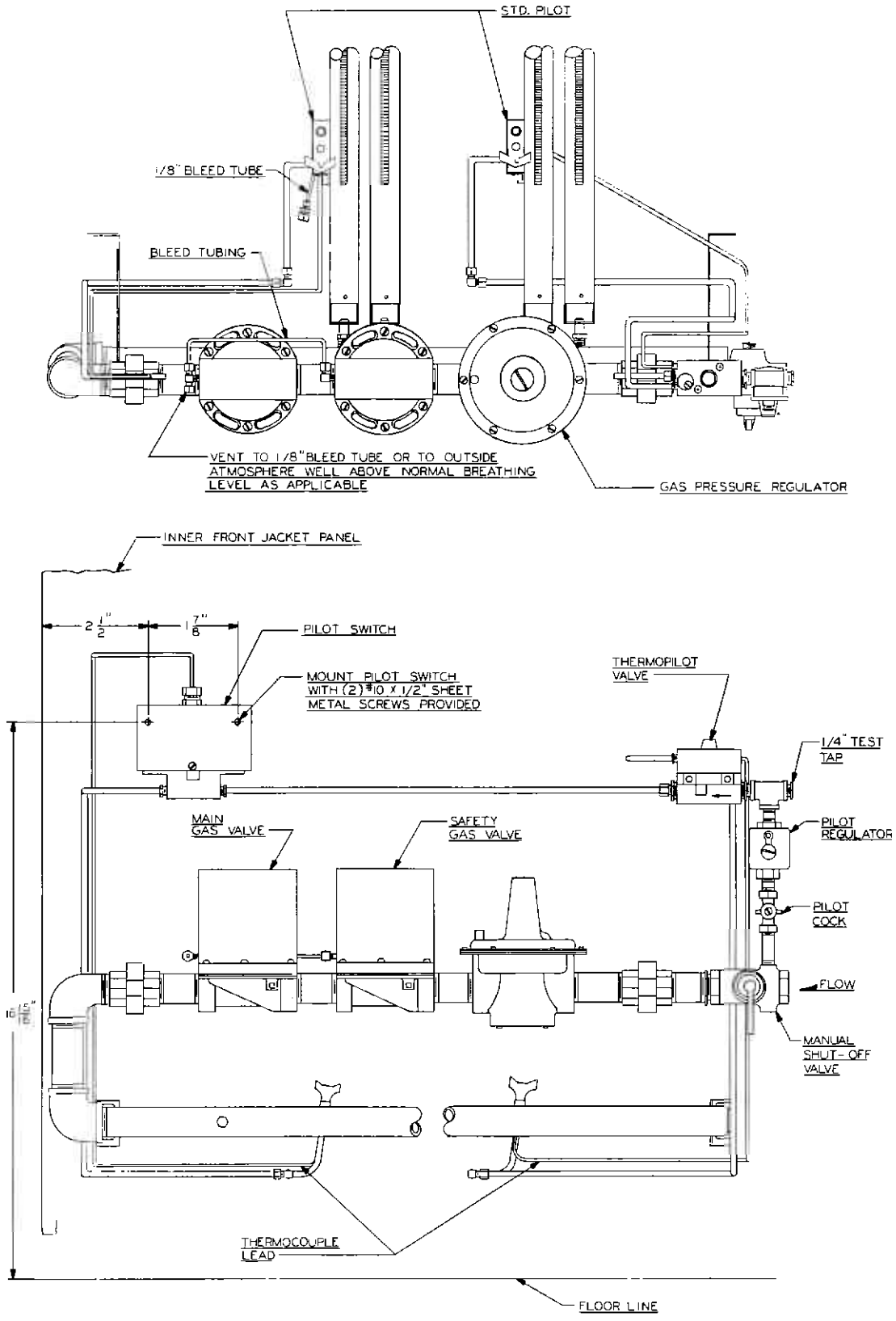


Figure 45: 24 Volt Control System w/Dual Valves
Models 61-08, 62-09 thru 62-11

O - INSTRUCTIONS FOR OPERATION

1—The installation is not complete until Rating and Lighting Plates are on the boiler and the "Users Information Manual" and "Installation Instructions" are hung near the boiler.

2—System should be maintained in good repair. Radiators, baseboard units and/or convectors must be kept clean.

3—If a radiator does not heat all over, air has probably accumulated and should be vented.

P - CHECK OUT PROCEDURE

1—After starting boiler, be certain all controls are working properly before leaving it unattended. Check to be sure that the temperature limit control will shut off the boiler in the event of excessive temperature, by lowering limit set point until main burners shut down. Return limit to desired set point.

2—Check gas tightness of main gas valve when closed to be certain there is no leakage to the burners. Check all joints periodically for gas leakage. Use soap solution to check leakage.

3—Check the operation of the ignition system safety shut-off device using the following method:

a. Constant Burning Pilot: With the gas cock knob in the pilot position, extinguish pilot flame and make certain the gas valve shuts off gas flow to the pilot within two (2) minutes. To relight follow "Lighting Instructions".

b. Spark Ignition Systems: With the unit operating, turn off the gas at the inlet shut-off valve upstream from the boiler. The unit will spark attempt to relight. If pilot lock-out is provided, the spark will stop within ninety (90) seconds. To relight follow "Operating Instructions".

Q - SHUT-DOWN CAUSED BY PILOT OUTAGE, VENT SAFETY SHUT OFF SWITCH OR FLAME ROLL-OUT SAFETY SHUT OFF SWITCH

1—In the event of a shut-down caused by a pilot outage, action of the vent safety shut off switch or flame roll-out safety shut-off switch effecting a shut-down of the main burners:

a. Turn off all electric power to the boiler.

b. Refer to "Lighting or Operating Instructions" and turn gas cock knob to "off" position.

c. Call a qualified heating service organization or local gas company and have the cause of the shut-down investigated and corrected.

d. Refer to "Lighting or Operating Instructions" to re-start boiler.

- NOTE: -

SHOULD OVERHEATING OCCUR OR THE GAS SUPPLY FAIL TO SHUT OFF, DO NOT TURN OFF OR DISCONNECT THE ELECTRICAL SUPPLY TO THE PUMP, INSTEAD, SHUT OFF THE GAS SUPPLY AT A LOCATION EXTERNAL TO THE APPLIANCE.

DO NOT USE THIS APPLIANCE IF ANY PART HAS BEEN UNDER WATER. IMMEDIATELY CALL A QUALIFIED SERVICE TECHNICIAN TO INSPECT THE BOILER AND TO REPLACE ANY PART OF THE CONTROL SYSTEM AND ANY GAS CONTROL WHICH AS BEEN UNDER WATER.

Cleaning the Series 61/62 Steam Boiler with Skim Tapping

The following cleaning procedure shall be performed by a qualified service person.

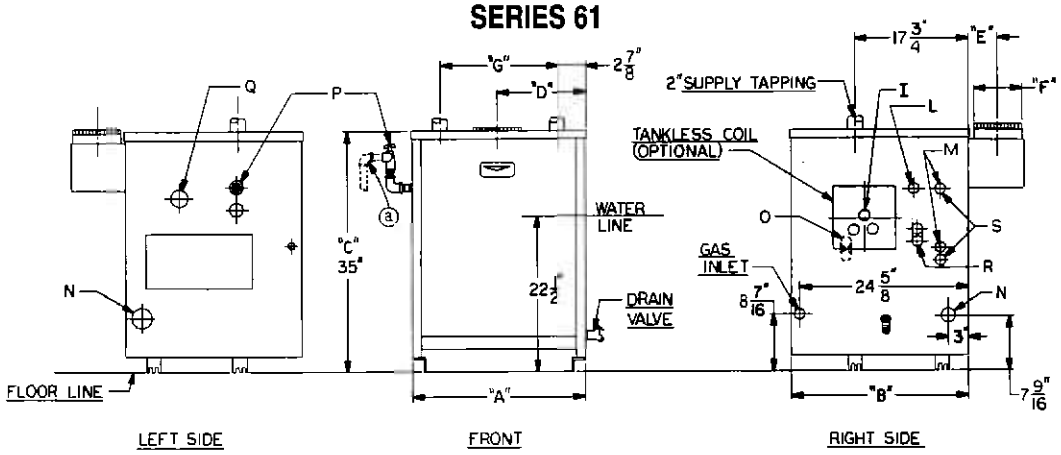
1. Clean the boiler as described below no later than one week after the initial start up. Cleaning will be more effective if the boiler operates a day or two to loosen sediment and impurities in the system.
2. The boiler must be cleaned to remove any accumulation of oil, grease, sludge, etc. that may be in the system. These substances can cause foaming and surging of the boiler water, producing an unstable water line and water carryover to the system.

   WARNING: CLEANING THE BOILER REQUIRES THE USE OF VERY HOT WATER AND CORROSIVE CHEMICALS. USE CARE WHEN HANDLING TO PREVENT INJURY.
3. Connect a 1 1/2" pipe nipple and shut off valve to skim tapping.
4. Connect a 1 1/2" drain line off of the skim valve, run to a point of safe discharge.
5. Close all valves to the system. Provide a means of continuous fresh water to the boiler for the cleaning process.
6. Open the skim valve. Fill the boiler until water begins to flow out of the valve. Shut off fill valve.
7. Use common washing soda (such as Arm and Hammer Super Washing Soda). Mix the soda with water in a 10 quart pail and pour into the boiler through the safety valve tapping. Mix a proportion of one (1) pound of washing soda for each 800 square feet EDR net boiler rating.

   CAUTION: DO NOT LEAVE THE BOILER UNATTENDED WHILE FIRING. TAKE GREAT CARE NOT TO ALLOW THE WATER LEVEL TO DROP BELOW THE BOTTOM OF THE GAUGE GLASS OR TO ALLOW FRESH WATER MAKEUP TO FLOW IN TOO FAST. THIS WILL AVOID THE POSSIBILITY OF CAUSING THE BOILER SECTIONS TO FRACTURE.
8. Turn burners on and allow the boiler water to heat up to just below steaming (180 to 200 degrees F). Cycle the burners to maintain temperature during skimming. Do not allow the boiler to steam. Steaming mixes up the contaminants in the water instead of floating them at the surface.
9. Open the make-up water valve to continuously feed water to the boiler. Allow water to flow out of the skim tapping.
10. Continue skimming the boiler until the water flowing from the skim tapping flows clear. This will take some time, possibly several hours for a dirty system.
11. After skimming is complete, close the skim valve and turn off the boiler.
12. Close the make-up water valve and open the boiler drain valve.
13. Drain the boiler completely. Refill and drain again one or two times to make sure all of the soda has been washed out.
14. Restore piping to normal. Pipe a nipple and cap in the skim valve.
15. **Note:** If the gauge glass becomes dirty again, this indicates more contaminants have worked loose in the system. Repeat the cleaning and skimming process as needed to clean the system.

R - RATINGS, TAPPING LOCATIONS AND DIMENSIONAL DATA

SERIES 61



SERIES 61 TAPPING LOCATIONS

Location	Size N.P.T.	Steam	Water
I	3/4"	Pressure Gauge*	Limit Control
L	1/2"	N/A	Theraltimeter
M	1/2"	Gauge Glass and Float Low Water Cut-Off	N/A
N	2"	Return	Return
O	3/4"	Secondary Probe Low Water Cut-Off	N/A
P	3/4"	Safety Valve	Relief Valve
Q	1 1/2"	Skim Tapping	N/A
R	3/4"	Primary Probe Low Water Cut-Off	N/A
S	1/2"	Gauge Glass for Primary Probe LWCO	N/A

*Mount Gauge using 3/4" nipple, coupler and 3/4" x 1/4" bushing when a float low water cut-off is used.

SERIES 61 BOILER RATINGS

Boiler Model Number	Input MBH	DOE Heating Capacity MBH[4]		Net I=B=R Ratings[2]			Spark Ign. w/Damper Seasonal Efficiency (AFUE)[4]		Water Content Gallons	
		Water	Steam	Steam Sq.Ft.	Steam[2] MBH	Water[1] MBH	Water	Steam	Water	Steam
61-03	90	73	72	225	54	63	80.5	80.6	8.16	4.80
61-04	120	98	97	304	73	85	81.7	80.7	10.32	5.88
61-05	160	130	129	404	97	113	81.3	80.6	12.48	6.96
61-06	200	161	161	504	121	140	81.0	80.6	14.64	8.04
61-07	240	193	193	604	145	168	80.6	80.6	16.80	9.12
61-08	280	225	225	704	169	196	80.3	80.6	18.96	10.20

SERIES 61 BOILER DIMENSIONS

Boiler Model Number	Jacket			Right of Jacket to c/l of Flue "D"	Rear of Jacket to c/l or Flue "E"	Flue Size "F"	Distance Between Tappings "G"	Flue to Chimney Diameter	Chimney Size
	Width "A"	Depth "B"	Top to Floor "C"						
61-03	14 3/4"	27 1/4"	35"	7 3/8"	3 9/16"	5"	9"	5"	5" x 20'
61-04	18 7/8"	27 1/4"	35"	9 7/16"	4 1/16"	5"	13 1/8"	5"	5" x 20'
61-05	23"	27 1/4"	35"	11 1/2"	4 9/16"	6"	17 1/4"	6"	6" x 20'
61-06	27 1/8"	27 1/4"	35"	13 9/16"	4 9/16"	7"	21 3/8"	7"	7" x 20'
61-07	31 1/4"	27 1/4"	35"	15 5/8"	6 1/16"	8"	25 1/2"	8"	8" x 20'
61-08	35 3/8"	30 1/4"	35"	17 11/16"	6 1/16"	8"	29 5/8"	8"	8" x 20'

1 Net I=B=R water ratings based on an allowance of 1.15.

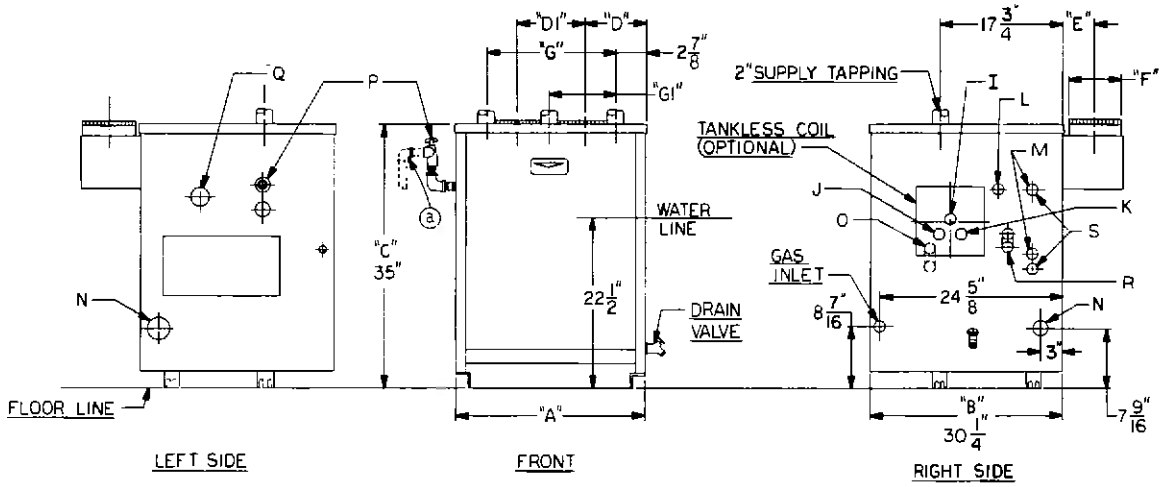
2 Net I=B=R steam ratings based on an allowance of 1.333.

3 Consult factory before selecting a boiler for installations having unusual piping and pickup requirements, such as intermittent system operation, extensive piping systems, etc.

4 Heating Capacity and Annual Fuel Utilization Efficiency (AFUE) ratings are based on U.S. Government test. Before purchasing this appliance, read important information about its estimated annual energy consumptions or energy efficiency rating that is available from your retailer.

R - RATINGS, TAPPING LOCATIONS AND DIMENSIONAL DATA

SERIES 62



SERIES 62 TAPPING LOCATIONS			
Location	**Size N.P.T.**	**Steam**	**Water**
I	3/4"	Pressure Gauge*	Limit Control (Models 09-11)
J	3/4"	N/A	Operating Control (Models 12-15)
K	3/4"	N/A	Limit Control (Models 12-15)
L	1/2"	N/A	Theraltimeter
M	1/2"	Gauge Glass and Float Low Water Cut-Off	N/A
N	2"	Return	Return
O	3/4"	Secondary Probe Low Water Cut-Off	N/A
P	3/4"	Safety Valve	Relief Valve
Q	1 1/2"	Skim Tapping	N/A
R	3/4"	Primary Probe Low Water Cut-Off	N/A
S	1/2"	Gauge Glass for Primary Probe LWCO	N/A

*Pressure Gauge, Operating and Limit Control on Models 12-15

SERIES 62 BOILER RATINGS										
		I=B=R Gross Output MBH		Net I=B=R Ratings			Combustion Efficiency		Water Content Gallons	
Boiler Model Number	**Input MBH**	**Water**	**Steam**	**Steam Sq.Ft.**	**Steam MBH**	**Water MBH**	**Water**	**Steam**	**Water**	**Steam**
62-09	320.0	256	256	800	192	223	80.0	80.0	21.12	11.28
62-10	360.0	288	288	900	216	250	80.0	80.0	23.18	12.36
62-11	400.0	320	320	1000	240	278	80.0	80.0	25.34	13.44
62-12	440.0	352	352	1100	264	306	80.0	80.0	27.50	14.52
62-13	480.0	384	384	1200	288	334	80.0	80.0	29.66	15.60
62-14	520.0	416	416	1300	312	362	80.0	80.0	31.82	16.68
62-15	560.0	448	448	1400	336	390	80.0	80.0	33.98	17.76

SERIES 62 BOILER DIMENSIONS											
	Jacket			Right of Jacket to c/l of Flue	Distance Betw. Two Flue c/l's	Rear of Jacket to c/l of Flue	Flue Size "F" (Each of 2)	Distance Between Tappings	Distance Betw. Rt. Sup. & Tap. Inter.	Flue to Chimney Diameter	Chimney Size
Boiler Model Number	**Width "A"**	**Depth "B"**	**Top to Floor "C"**	**"D"**	**"D1"**	**"E"**		**"G"**	**"G1"**		
62-09	39 1/2"	30 1/4"	35"	14"	11 9/16"	4 9/16"	6"	33 3/4"	N/A	9"	9" x 20'
62-10	43 5/8"	30 1/4"	35"	15"	13 11/16"	4 9/16"	7"	37 7/8"	N/A	9"	9" x 20'
62-11	47 13/16"	30 1/4"	35"	16"	15 13/16"	4 9/16"	7"	42 1/16"	N/A	9"	9" x 20'
62-12	52"	30 1/4"	35"	18"	15 15/16"	6 1/16"	8"	46 1/4"	21 1/16"	10"	10" x 20'
62-13	56 1/8"	30 1/4"	35"	19"	18 1/16"	6 1/16"	8"	50 3/8"	25 3/16"	10"	10" x 20'
62-14	60 5/16"	30 1/4"	35"	20 1/16"	20 3/16"	6 1/16"	8"	54 9/16"	25 3/16"	10"	10" x 20'
62-15	64 7/16"	30 1/4"	35"	22 1/8"	20 3/16"	6 1/16"	8"	58 11/16"	29 5/16"	10"	10" x 20'

S - MAINTENANCE AND INSPECTION

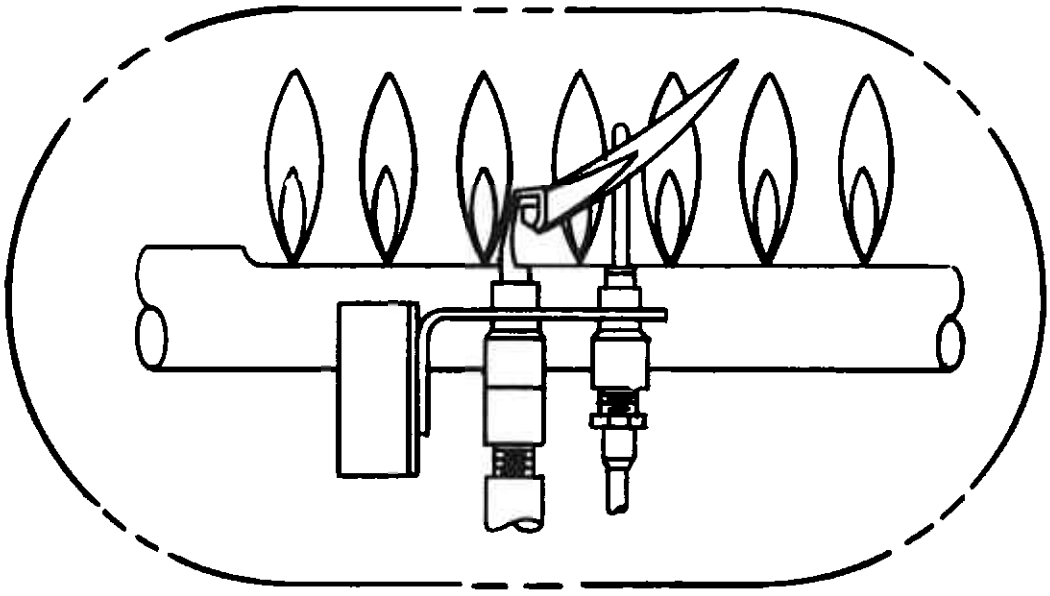
1—This boiler must be disconnected from the gas supply piping during any pressure testing of the system. Refer to Section H - "GAS PIPING", Note 8 for details.

2—The gas vent used on this boiler is of the horizontal to vertical type. The vent and venting system should be inspected thoroughly at the beginning of each heating system.

3—The area where the boiler is contained should be clear and free from combustible materials, gasoline and other flammable vapors and liquids. The boiler area should have ample air for combustion and ventilation and there should be no obstructions preventing a free flow of air.

4—All low water cut-offs should be tested and inspected per manufacturer's instructions, any float types should be flushed on a weekly basis to remove any sediment from the float bowl.

5—A visual check of burner and pilot flame should be conducted at least once a year. The flame intercone should be approximately $1\frac{1}{2}$ inches high and should have a very sharp, blue color characteristic. See Figure below.



6—At the beginning of each heating season, flueways and burners should be checked for cleanliness and cleaned if necessary. Following procedure would apply if cleaning is required.

a. Turn off all electrical power to boiler before beginning cleaning operation. Follow Lighting/Operating Instructions for shutting off main gas to appliance.

b. Remove the flue pipe, draft hood, top jacket panels and flue collector.

c. Brush flueways with wire brush.

d. Replace flue collector. When replacing the flue collector, be certain that the sealing rope between the flue collector and top section makes a tight seal to prevent leakage of the products of combustion.

e. Replace the top of jacket, draft hood and flue pipe.

f. Remove the jacket clean-out cover plate. See Figure 4.

g. Remove cast iron cover plate by removing four (4) cap screws at the corners of the plate.

h. Brush tubes with wire brush.

i. Replace cover plates. Make sure Hi Temp rope gasket is in place.

j. Remove front jacket panel (Figure 4), and burner access cover door (Figure 11).

k. Remove burners and brush gas outlet ports lightly using soft bristle brush.

l. Replace burners (See Figure 12) and all jacket panels.

m. Follow Lighting/Operating Instructions for putting boiler into operation.

REPAIR PARTS
SERIES 61/62 GAS BOILERS

REPAIR PARTS ARE AVAILABLE FROM YOUR INSTALLER OR BY CONTACTING PEERLESS HEATER COMPANY, BOYERTOWN, PA 19512-0855

NOTE: REMEMBER TO INCLUDE BOILER MODEL NUMBER AND SERIAL NUMBER WHEN ORDERING PARTS.

Item No.	Part No.	Description	Additional Information
1	P-150	Intermediate Section	50 lb. Working Pressure
2	P-151	Left Hand End Section	50 lb. Working Pressure
3	P-152 P-152C	Right Hand End Section	w/Coil Opening w/ Cast Closed Coil Opening
4	P-154	Tapped Intermediate Section	50 lb. Working Pressure
5	12-EF	Push Nipple	1 Required Per Flueway
6	64	Push Nipple	1 Required Per Flueway
7		5/8" High Temperature Rope	42" Required Per Flueway
8	P-162	Complete Block Assembly	Specify Boiler Model
9	P-161	Left Hand Block Assembly	Specify Boiler Model
10	P-158	Right Hand Block Assembly	Specify Boiler Model
11	P-120	Draw Rods w/nuts and washers	Specify Boiler Model
12	P-106	Clean Out Cover Plate	
		1/4" High Temperature Rope	44" Required For P-106
13	X-1037	Tankless Heater Flange w/screws	
14	X-1023	Rubber Gasket	
15	X-1034	Cover Plate w/screws	
16	P-155	Base Back	Specify Boiler Model
17	P-156	Base Back	Specify Boiler Model and Right or Left Side
18	X-1009	Draw-Up Washer	2 Required
19	X-1001	Draw-Up Washer	2 Required
20	P-4208	3/4" Gas Manifold	Specify Boiler Model
21	P-4209	1" Gas Manifold	Specify Boiler Model
22	P-4210	1 1/4" Gas Manifold for 62-15	
23	X-4003	Orifice Spud	Specify Quantity, Type of Gas, Boiler Model and Altitude
24		Steel Burner w/pilot bracket	Specify Control System
25	X-3005	Steel Burner	Specify Quantity
26		Throttling Pilot Cock	
27	P-503	Flue Collector	Specify Boiler Model
28	P-504	Draft Hood	Specify Boiler Model

Item No.	Part No.	Description	Additional Information
29		Jacket Assembly	Specify Boiler Model
		Theraltimeter Gauge	
		Steam Gauge	
		Gauge Glass Set	
		3/4" Drain Cock	
		Lighting Instruction Plate	Specify Control System
		Lighting/Operating Instructions Label	Specify Control System
		High Temperature Sealing Cement	Specify Quantity of Containers
		1/2" Pint Can Nipple Sealer	Specify Quantity
		1/4" Aluminum Tubing	Specify Quantity in Feet
		Water Trim	
		Steam Trim w/LWCO	
		Gas Valve	Specify Boiler Model, Control System, Type of Gas
		Pilot	Specify Control System and Type of Gas
		Ignition Control	Specify Model
		Limit Control	Specify Boiler Model and Control System
		Gas Control Assembly	Specify Control System

Series 61/62

Gas Boilers

Installation, Operation & Maintenance Manual

TO THE INSTALLER:

This manual is the property of the owner and must be affixed near the boiler for future reference.

TO THE OWNER:

This boiler should be inspected annually by a Qualified Service Agency.

HI Division of gama

ASME

PB HEAT, LLC

9TH & ROTHERMEL DRIVE • P.O. BOX 447 • NEW BERLINVILLE, PA 19545-0447

PeerlessBoilers.com

P8207 R24 (8/03-2.5M)

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