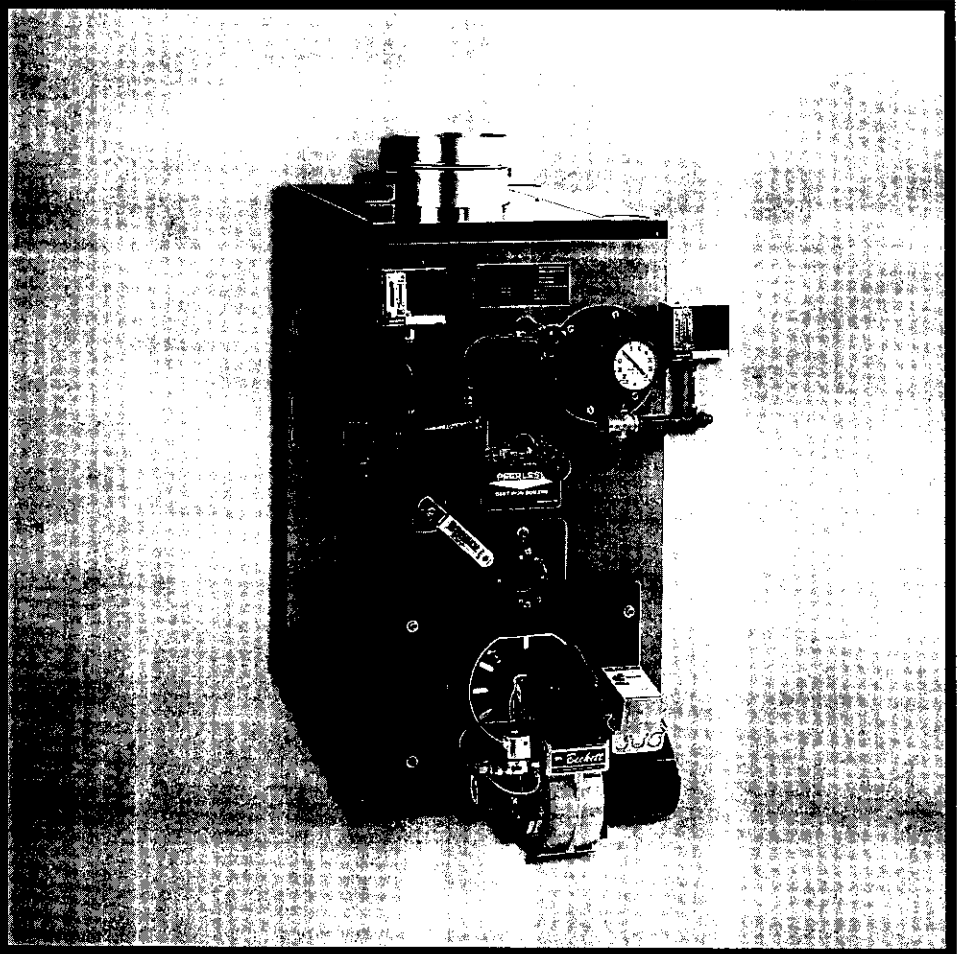


# **Series SC/SCT**

***Oil, Gas & Gas/Oil Boilers***



## **Installation, Operation & Maintenance Manual**

**PEERLESS®**  
  
**CAST IRON BOILERS**

# Peerless Heater Company SERIES SC/SCT

**Semi-Commercial Oil, Gas or Combination Gas/Oil Fired,  
Knockdown (Factory Assembled Split Block Sections)  
or Packaged Hot Water or Steam Boilers**

**6 Sizes 5-10 Sections 3.0 to 5.5 GPH Input Up to 83.7% Combustion Efficiency**

## Features:

### Forced Draft Venting

- Only Requires a Three Foot Vent Above the Roof

### High Efficiency Power Burners

- Choice of Beckett, Carlin, Gordon-Piatt, Power Flame or Webster

### Top Flue Outlet

- Includes Locking Damper

### Large Water Content, Wet Base Section Design

- Ideal for Steam and Large Volume Hot Water Jobs

### Steel Push Nipples

- Provide a Permanent Water Tight Seal Between Sections
- Unaffected by Petroleum and Other Contaminants

### Easy to Clean

- Flueways can be Cleaned from Either the Left Side or Top

### Safety Controls

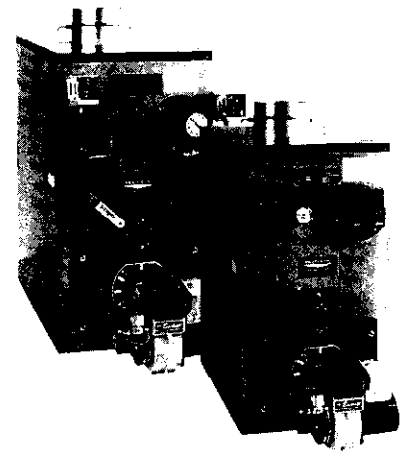
- Probe or Float Type Low Water Cut-Off Available

### Tankless Coils

- For Domestic Hot Water Production on Hot Water Boilers

### Deluxe Insulated Enameled Steel Jacket

- Reduces Boiler Heat Loss



## Standard Equipment:

- Honeywell Operating Controls
- Manual Reset High Limit Control
- LWCO on Packaged Boilers

## Optional Equipment:

- Tankless Coils
- Various Burner Options and Voltages
- FM and IRI Control Systems



Peerless Heater Company is pleased to offer one of the most comprehensive warranty programs in the industry. All Peerless commercial cast iron boilers include a full, one-year warranty. A limited, ten-year warranty on the cast iron sections is provided for all commercial hot water and steam boilers. Five and ten-year extended warranties on parts and labor are now available. Please consult Peerless Heater Company for complete warranty information.



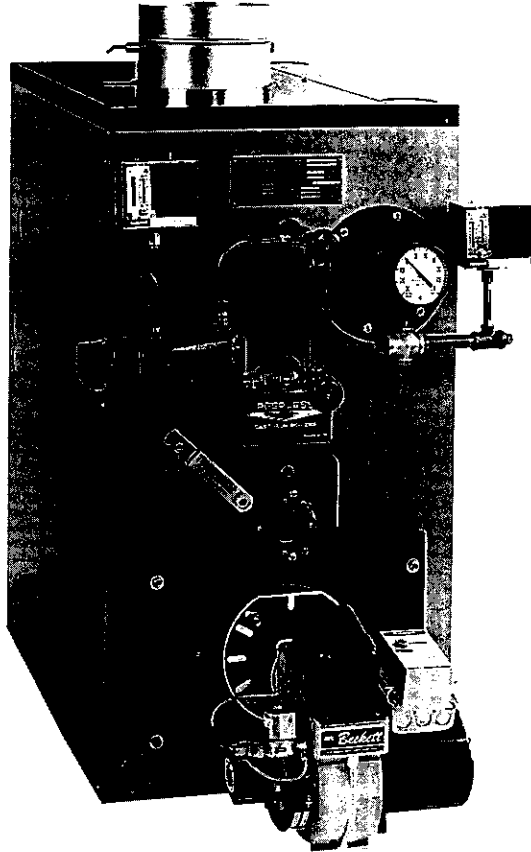
Peerless Heater Company • 231 North Walnut Street • Boyertown, PA 19512-1021 • 610-367-2153 • [www.peerless-heater.com](http://www.peerless-heater.com)

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Printed in U.S.A.

# PEERLESS®



## CAST IRON BOILERS



### Series SC/SCT

- **Semi-Commercial**
  - *Packaged or Knockdown*
- **Forced Draft Venting**
- **Power Burner**
  - *Oil, Gas, Gas/Oil*
- **Steam or Hot Water Boilers**
- **Optional Tankless Coils**

- Available from the factory as knockdown **split blocks** or **completely packaged** assembled units, with steel push nipples, for easy installation.
- The **top or side clean out features** allow for easier cleaning, maintaining highest operating efficiency.
- **Pressurized, forced draft firing** requires only a three foot vent above the roof, without the need for a chimney, for simple installations.
- The **SC** and the **SCT hot water boilers** provide optional tankless domestic hot water openings for versatility.
- The **SCT** designation indicates that an optional, larger, tankless domestic hot water coil can be installed in its specially designed rear section for **steam or hot water boilers, insuring ample domestic hot water production.**

### SERIES SC/SCT BOILER RATINGS

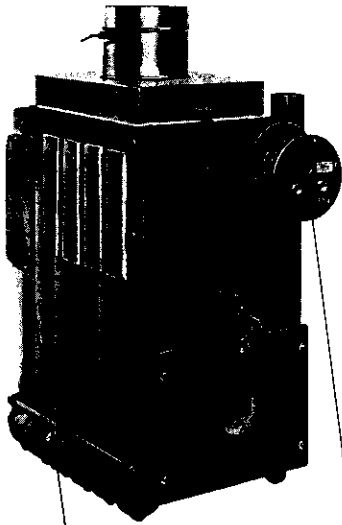
Boiler Model Number	Gross I=B=R Output MBH	Boiler H.P.	I=B=R Burner Capacity		Net I=B=R Ratings			Combustion Efficiency		Water Content (Gal.)	
			Oil Input GPH	Gas Input MBH	Steam Sq. Ft.	Steam MBH	Water MBH	Oil	Gas	Steam	Water
SC/SCT-05	343	10.2	3.00	433	1071	257	298	83.3	80.8	20.40	26.04
SC/SCT-06	405	12.1	3.50	505	1267	304	352	83.7	81.2	23.52	30.36
SC/SCT-07	462	13.8	4.00	577	1446	347	402	83.5	81.0	26.64	34.68
SC/SCT-08	519	15.5	4.50	649	1621	389	451	83.4	80.9	29.76	39.03
SC/SCT-09	575	17.2	5.00	722	1796	431	500	83.2	80.7	32.88	43.32
SC/SCT-10	632	18.9	5.50	794	1975	474	550	83.0	80.5	36.00	47.64

The above ratings are based on 12.5% CO<sub>2</sub> (oil) and +.10 in. W.C. at the vent. The Net I=B=R Ratings shown include allowance for normal piping and pickup load in accordance with Testing and Rating standard for Low Pressure Cast Iron Heating Boilers of The Hydronics Institute. Water ratings are based on a piping and pickup allowance factor of 1 to 15. Steam ratings based on an allowance factor of 1.33. The Peerless Heater Company should be consulted before selecting a boiler for gravity hot water installations and installations having unusual piping and pickup requirements such as extended piping systems, exposed piping, night set-back, etc. Ratings shown are for elevations up to 2,000 feet. For elevations above 2,000 feet ratings should be reduced at the rate of 4 percent for each 1,000 feet above sea level. I=B=R Burner Capacity is based on G.P.H. with a heating value of 140,000 BTU/gal. Burner input based on maximum altitude of 2,000 ft.—for other altitudes consult factory.

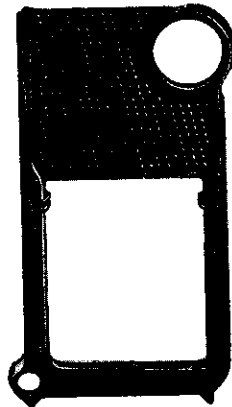
## TANKLESS WATER HEATER LOCATIONS

## CONTROL LOCATIONS

Cast Iron Block



Cast Iron Section

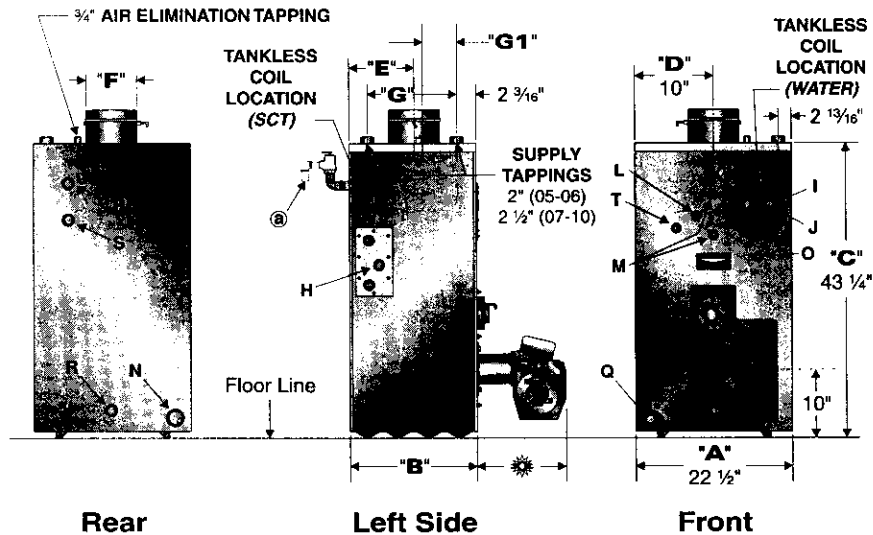


Tankless Copper Water Heater is located in the rear section when installed on a Steam Boiler.

Tankless Copper Water Heater is located in the upper front nipple port when installed on a Hot Water Boiler.

Both Heaters may be installed on a Water Boiler when a greater volume of Domestic Hot Water is desired.

Location	Size N.P.T.	Steam	Water
H	3/4"	Low Limit Control	N/A
I	3/4"	Press. Gauge, Oper. Cont. & Limit Cont.	N/A
J	3/4"	N/A	Operating Control
K	3/4"	N/A	Limit Control
L	1/4"	N/A	Theraltimeter
M	1/2"	Gauge Glass & Low Water Cutoff	N/A
N	2"	Return	Optional Return
O	3/4"	Secondary Probe Low Water Cutoff	Secondary Probe Low Water Cutoff
P	—	Safety Valve	Relief Valve
Q	1 1/4" (05-06) 1 1/2" (07-10)	Return	Return
R	3/4"	Drain Cock	Drain Cock
S	3/4"	N/A	Optional High Limit
T	3/4"	Primary Probe Low Water Cutoff	N/A



Ⓢ 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. No thread end out on angle.

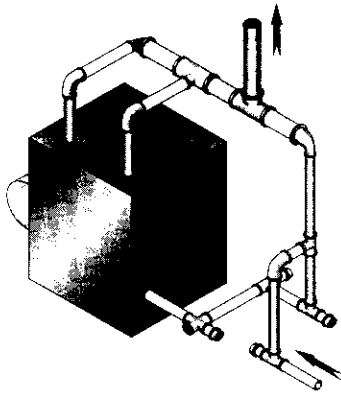
\*Note: Maximum burner length: Beckett = 13 1/2", Gordon Platt S-4 = 27", Gordon Platt R = 30", Power Flame C = 34", Power Flame J = 24", Webster JB-1 = 30".

Note: Water line on steam boilers - 32 1/4" from floor.

## BOILER DIMENSIONS

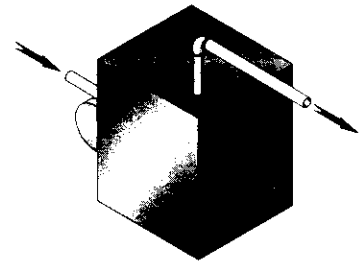
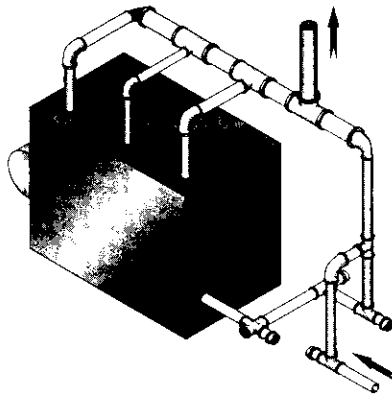
Boiler Model Number	Jacket			Left of Jacket to c/l of Flue "D"	Rear of Jacket to c/l of Flue "E"	Flue Size "F"	Distance Between Tappings "G"	Distance Bet. Front Tap. & Tapped Inter. "G1"
	Width "A"	Length "B"	Top to Floor "C"					
SC/SCT-05	22 1/2"	24 1/2"	43 1/4"	10"	13 1/4"	7"	17 3/8"	—
SC/SCT-06	22 1/2"	28 3/4"	43 1/4"	10"	15 3/8"	9"	21 5/8"	—
SC/SCT-07	22 1/2"	33"	43 1/4"	10"	17 1/2"	9"	25 7/8"	—
SC/SCT-08	22 1/2"	37 1/4"	43 1/4"	10"	19 5/8"	9"	30 1/8"	—
SC/SCT-09	22 1/2"	41 1/2"	43 1/4"	10"	21 3/4"	10"	34 3/8"	—
SC/SCT-10	22 1/2"	45 3/4"	43 1/4"	10"	23 3/8"	10"	38 5/8"	17 1/16"

## PIPING DIAGRAM



### STEAM PIPING

The return from the system should always enter equalizer through Hartford Loop, 2" to 4" below water line.



### WATER PIPING

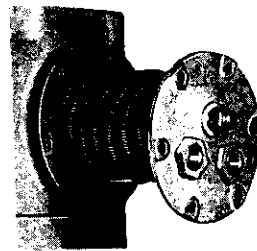
The supply and return connections should be sized to suit the system. The supply should be piped out of the top of the back section and the return piped to the bottom of the front section. There is a 3/4" tapping in the top of the back section for air elimination.

Boiler Model Number	Risers	Header	Equalizer
SC/SCT-05	2-2"	3"	1½"
SC/SCT-06	2-2"	4"	1½"
SC/SCT-07	2-2½"	4"	1½"
SC/SCT-08	2-2½"	4"	1½"
SC/SCT-09	2-2½"	4"	2"
SC/SCT-10	2-2½" and 1-2"	4"	2"

## OPTIONAL TANKLESS DOMESTIC HOT WATER HEATERS



Htr X-1082



Htr X-1020  
Htr X-1021  
Htr X-1022

#### Optional Tankless Domestic Water Heater Ratings:

Boiler Model No.	Htr. X-1020 GPM	Htr. X-1021 GPM	Htr. X-1022 GPM	Htr. X-1082* GPM (Steam)
SC-05	4.75	—	—	4.75
SC-06	5.00	6.00	—	5.00
SC-07	5.25	6.50	—	5.25
SC-08	5.50	7.00	10.00	5.50
SC-09	5.75	7.50	11.00	5.75
SC-10	6.00	8.00	12.00	6.00

\*Optional tankless coil available for the SCT boiler only.

Water heater ratings are based on intermittent demand—40° F to 140° F rise with 200° F boiler water.

# SERIES SC/SCT BOILER SPECS

## STANDARD EQUIPMENT

- Factory Assembled Split Block (5 & 6 Section 1 Block) (W, WU, S, SU Models)
- Hi-Temperature Rope Seal
- Deluxe Insulated Enameled Steel Jacket
- Aluminized Steel Flue Collector
- Front Coil Cover Plate
- Cerafelt Base Liner
- Drain Cock (WUP, SUP Models)
- Lock Type Damper
- High Limit-Operating Control
- Low Water Cutoff (Pkg. Boilers)

### Water

- Theraltimeter
- 30 PSI Pressure Relief Valve (50 PSI Optional)

### Steam

- Gauge Glass & Fittings
- Steam Gauge
- 15 PSI Safety Valve
- Rear Coil Cover Plate (SU, SUP Models)

## SHIPPING WEIGHTS – KNOCKDOWN BOILERS

Boiler Model Number	*Approx. Shipping Wt. (lbs.)
SC-05	815
SCT-05	
SC-06	910
SCT-06	
SC-07	1005
SCT-07	
SC-08	1100
SCT-08	
SC-09	1195
SCT-09	
SC-10	1280
SCT-10	

\*Based on Standard Oil Burner

## STANDARD BURNER SPECIFICATIONS

Number of Sections	OIL	GAS	GAS/OIL
	Beckett	GP	GP
	Model	Model	Model
SC/SCT-05	CF500	S4.2G	S4.2GO
SC/SCT-06	CF500	S4.2G	S4.2GO
SC/SCT-07	CF800	S4.2G	S4.2GO
SC/SCT-08	CF800	S4.2G	S4.2GO
SC/SCT-09	CF800	S4.2G	S4.2GO
SC/SCT-10	CF800	S4.2G	S4.2GO

## PRODUCT SELECTION GUIDE

### Example:

**O - SC - 06 - WU - STD - 30 PSI**

O = Oil  
 G = Gas  
 GO = Gas/Oil

Series Specify SC or SCT  
 Sects. STD, IRI, 15 PSI Steam (Std.)  
 30 PSI Water (Std.)  
 50 PSI

**Water** W = w/Burner & Controls  
**Steam** S = Less Burner  
 WU = w/Burner & Controls  
 WUP = Pkg. w/Burn. & Contr.  
 WP = Pkg. Less Burner

**NOTE: Special burners should be specified on order.**

## PEERLESS HEATER CO.

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ASME HI Division of gama



# SERIES EC/ECT/SC/SCT INSTALLATION, OPERATION & MAINTENANCE MANUAL ADDENDUM FOR INSTALLATION OF PRIMARY PROBE LOW WATER CUT OFF

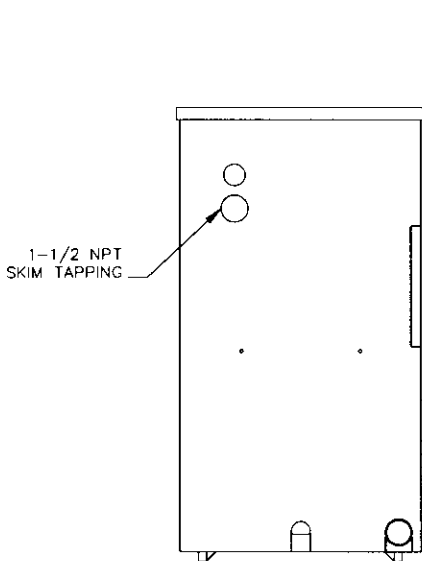


Figure 1: Rear View

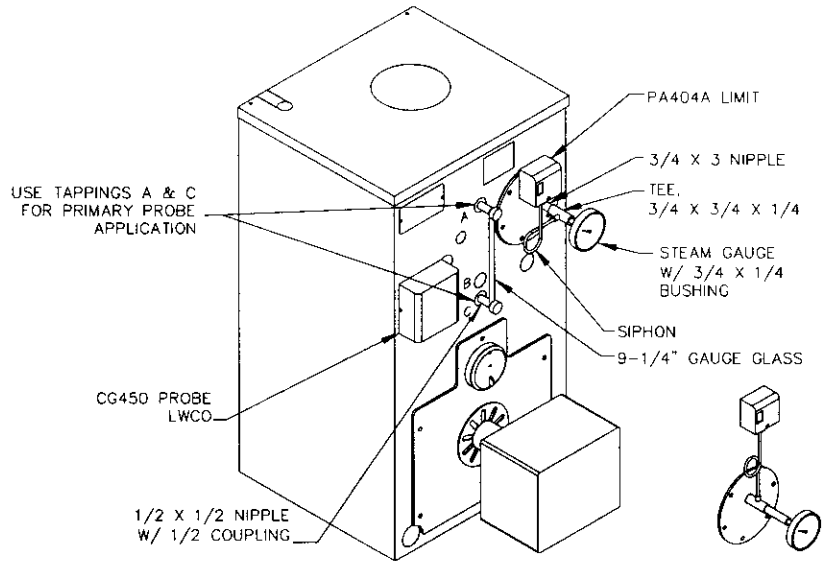
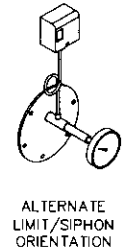


Figure 2: Primary Probe LWCO Control Location



**⚠ CAUTION**

Do not install a probe low water cut off in the boiler primary 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.

## A – Control Mounting Instructions

**NOTE:** Longer gauge glass and rods are required for use with the optional CG-450 Primary Probe Low Water Cut Off. The gauge glass carton, 22-162-10, is provided with a packaged boiler. For a KD boiler the longer gauge glass carton is located in a special Probe Low Water Cut Off Carton, 90759.

**Packaged Boilers:** The CG 450P LWCO, and PA404A limit are installed and wired at the factory. The boiler miscellaneous parts carton, located within the boiler crate, contains the longer gauge glass carton 22-162-10, Gauge Valves Carton 20-105-03, fittings and components.

**KD Boilers:** A separate Primary Probe Low Water Cut Off Carton, 90759 is required. This carton contains the CG450 LWCO, 22-162-10 longer glass/rods carton, 3/4" x 3" nipple, 3/4" x 3/4" x 1/4" tee, (2) 1/2" x 2" nipples and (2) 1/2" couplings. Use these components along with those from the Steam Trim Carton and install fittings and controls per Figure 2.

**NOTE:** The PA404A limit and siphon are not included as part of a standard KD boiler offering for ECT model boilers.

**NOTE:** For SCT model boilers, mount controls & steam gauge per Figure 8 in the SC/SCT Installation, Operation & Maintenance Manual. Install longer gauge glass & fittings per Figure 2 above.



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**THE PREFERRED HEATING CHOICE**

X8068 R0 (7/02-2.5M)  
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## B – Cleaning the Series EC/SC Steam Boiler with Skim Tapping

The following cleaning procedure shall be performed by a qualified service person. Refer to Figure 1 for location of skim tapping.

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.**

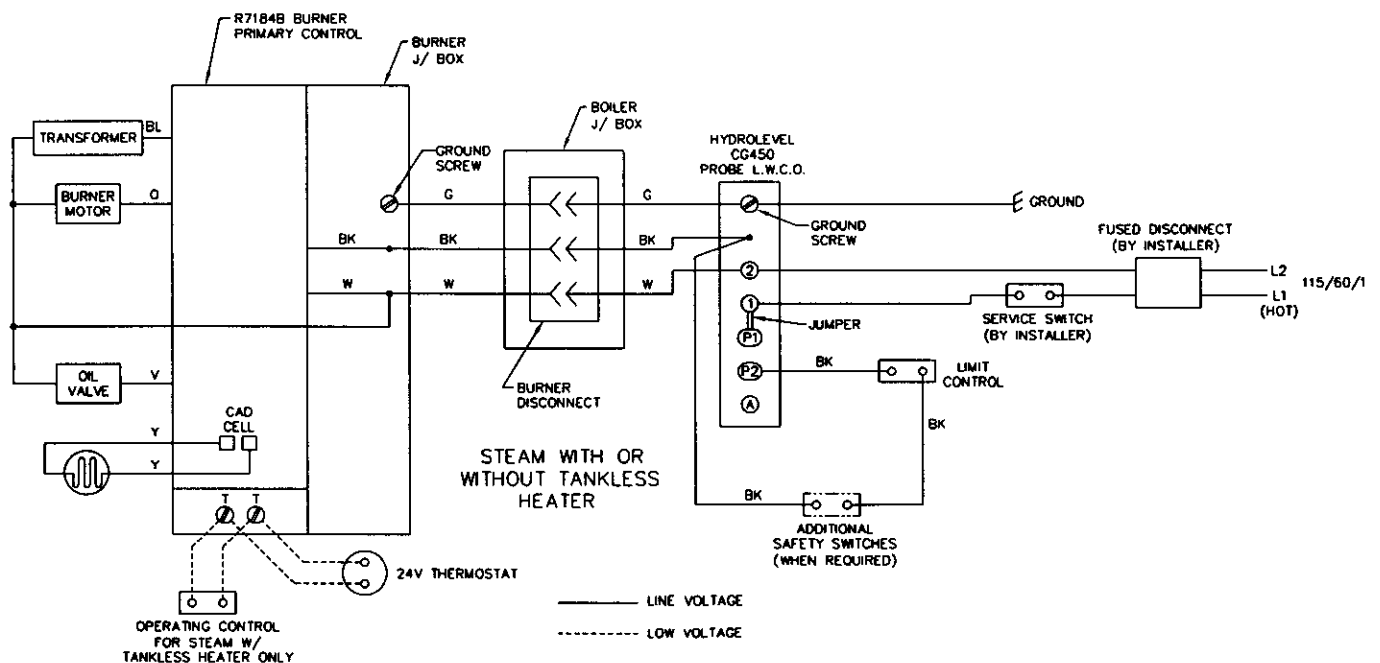
3. Connect a 1-1/2" pipe nipple and shut off valve to skim tapping.
4. Connect a 1-1/2" drain line off of the skim valve, run to a point of safe discharge.
5. Close all valves to the system. Provide a means of continuous fresh water to the boiler for the cleaning process.
6. Open the skim valve. Fill 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 burner on and allow the boiler water to heat up to just below steaming (180 to 200 degrees F). Cycle the burner 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.

## C – Wiring

**NOTE:** Burner disconnect is not applicable on Series SC/SCT.



**NOTE:** ALL WIRING MUST COMPLY WITH APPLIANCE CODES, ORDINANCES AND REGULATIONS.

# INSTALLATION INSTRUCTIONS – SERIES SC and SCT

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

The equipment shall 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 installations are made.

## A – ACCESSIBILITY CLEARANCES

- 1— To provide for reasonable conditions of accessibility for servicing, the following minimum clearances are recommended between the boiler and adjacent walls or other appliances—24" on the right side, 36" on the left side, and 30" in the front and rear of the boiler.

## B – 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 such as basements, the supply of air for combustion and ventilation can usually be considered adequate.
- 3— Appliance Located in Confined Spaces
  - a. If all air for combustion and ventilation is to come from within the building; two openings, one near the ceiling and one near the floor of the boiler room shall be provided with the minimum free area of each opening equal to 140 sq. in. per gallon of oil burned.
  - b. If all air for combustion and ventilation is to come from outside the building; two openings, one near the ceiling and one near the floor of the boiler room shall be provided with the minimum free area of each opening equal to 35 sq. in. per gallon of oil burned.  
If ducts are used to convey the air, areas of 35 sq. in. per gallon of oil burned for vertical ducts or 70 sq. in. per gallon of oil burned for horizontal ducts are to be provided. Ducts shall have the same area as the free area of the openings to which they are connected.

## C – SETTING UP BOILER

- 1— Models SC/SCT-05 and SC/SCT-06 are shipped in a single block. The boiler sections on models SC/SCT-07 thru SC/SCT-10 are shipped in two parts.
- 2— Provide a good level foundation, located as close as possible to the center of the heating system and to the chimney or vent system. The heating surface of the SC/SCT Series Boilers is designed to be cleaned from either the top or left of the unit. Allow adequate clearance on the left of unit if servicing is to be done from the side.  
**CAUTION: THIS BOILER IS NOT APPROVED FOR USE ON COMBUSTIBLE FLOORING.**
- 3— Place each block of sections on the foundation with nipple ports facing each other. Refer to Figure 1.
- 4— Clean nipple ports with an acceptable cleaning solvent to remove protective coating. Make certain there are no burrs around the outside edge of the ports.
- 5— Spread a thin coat of Peerless nipple sealer in the nipple ports. Never on nipples.
- 6— Insert the push nipples. Make certain they are clean and free from burrs.
- 7— Apply a thin coat of nipple sealer to the rope groove. Press the Hi Temp Rope into rope groove.
- 8— Arrange both blocks so that protruding nipples enter the open ports. Care must be taken to keep nipples straight and blocks aligned.
- 9— 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 Figure 1.
- 10— Before starting draw, oil the threads and between the nuts and washers.
- 11— Tighten the hex nuts and draw boiler evenly until the small pads on each section just touch.
- 12— After boiler is drawn, remove draw rods and cut 5" from 6 1/4" threaded end. Insert rod thru the lugs on each end section and tighten the hex nuts hand tight.
- 13— Make up water connection to boiler and fill. Check to make certain there is no leakage at the nipple port connection.
- 14— Remove flue collector and Hi Temp Rope (Items 8 and 9, Figure 4) from carton. Lay rope (Item 8) on top of boiler against bead provided. Place flue collector on top of rope and attach to boiler with 1/4"-20 x 1-3/4" studs and nuts. Draw down snugly. On Models 05 and 06, remove combustion chamber cover plate (Item 3) and attach flame observation assembly (Item 4) to Combustion Chamber Cover Plate (Item 3). Remove and discard round cast iron cover door X-1031 located on the inside of the cover plate.
- 15— Remove clean-out cover plates and insulation (7). Each clean-out cover plate is attached to the boiler by using two carriage bolts, nuts and washers (6). Install the carriage bolts into the notch at the top and bottom of each clean-out opening, then secure them with a flat washer and steel nut as shown in Figure 2 locking them into place. Press the clean-out plate with insulation over the protruding carriage bolts until the bolts punch through the insulation so a flat washer and brass nut can be installed. Tighten down nuts snugly compressing the insulation to form a good seal around the clean-out opening.

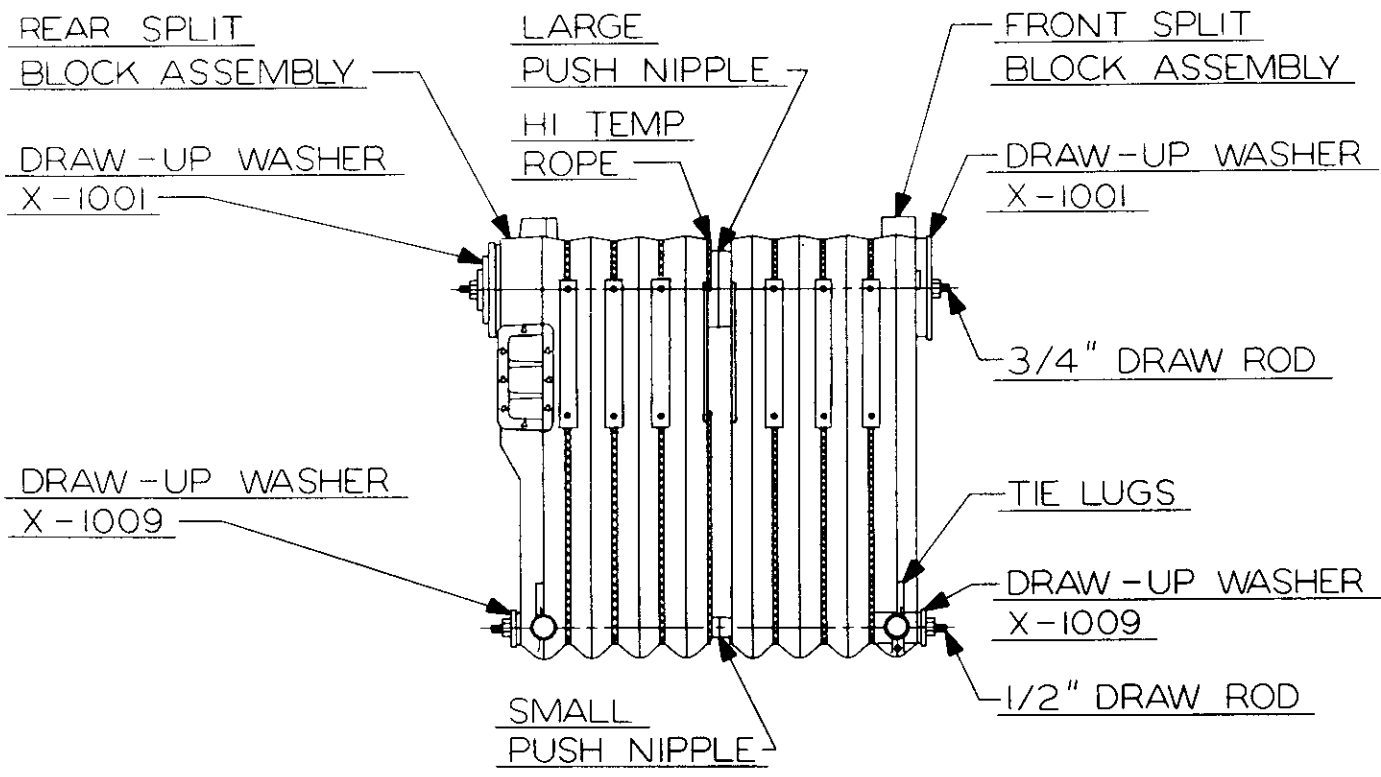


FIGURE 1

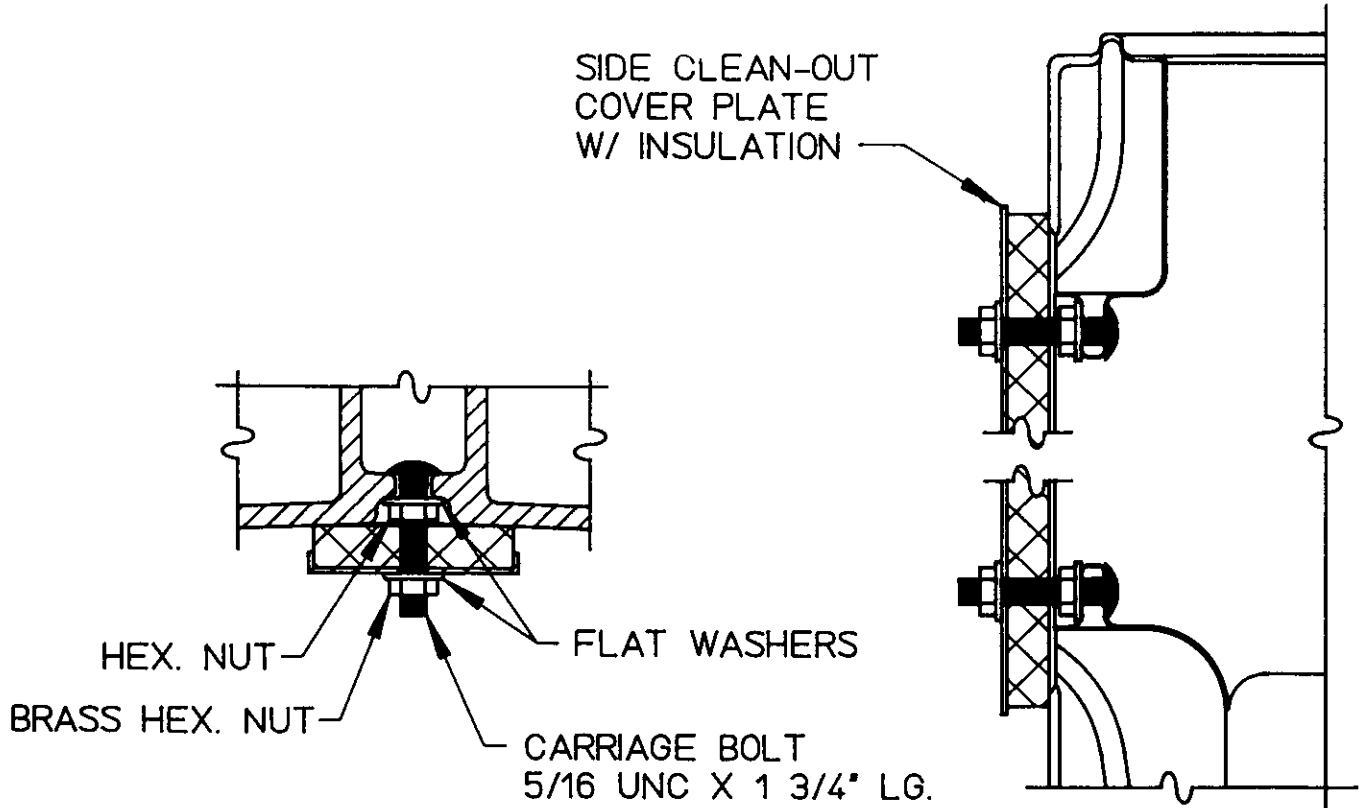


FIGURE 2

## D – JACKET ASSEMBLY

- 1— Refer to Page 4 for exploded view. Attach the back jacket panel (19) to bosses on middle of back section with two 1/4" x 3/8" truss head machine screws (20) provided. The back panel has two 5/16" dia. holes close to the center of the panel.
- 2— Locate ceramic blanket liner and install in combustion chamber floor, placing back edge of blanket against bottom edge of target wall.
- 3— Place the front jacket panel (23) on the block and attach the combustion chamber cover plate assembly (3).
- 4— Attach the right side jacket panel (22) to the front and back panels with sheet metal screws.

**NOTE:** ON SERIES SCT BOILERS, THE OPTIONAL WATER HEATER (17) MUST BE INSTALLED BEFORE THE LEFT SIDE JACKET PANEL IS ATTACHED.

- 5— If water heater is used, remove knock out piece in left side jacket panel (21) before installing. Attach left side jacket panel in the same manner as the right side panel.
- 6— Attach the top panel. The top is made in two pieces (24 & 25). Join the two pieces together with sheet metal screws. Secure top panel to front, back and sides with sheet metal screws.
- 7— Water Heater
  - a. Series SC Water Boilers – See chart below for ratings and usage.  
Install Water Heater (13) when required, in large opening in front of boiler. See Figure 3 for suggested piping.
  - b. Series SCT Steam Boilers – See chart below for ratings.  
Install Water Heater (17) when required in large opening in back section. See Figure 3A for suggested piping.

### Tankless Water Heater Ratings

BOILER MODEL NUMBER	HEATER NO.* X-1020 – G.P.M.	HEATER NO.* X-1021 – G.P.M.	HEATER NO.* X-1022 – G.P.M.	HEATER NO. X-1082 (Steam)
SC/SCT-05	4.75	—	—	4.75
SC/SCT-06	5.0	6.0	—	5.00
SC/SCT-07	5.25	6.5	—	5.25
SC/SCT-08	5.5	7.0	10.0	5.50
SC/SCT-09	5.75	7.5	11.0	5.75
SC/SCT-10	6.0	8.0	12.0	6.00

Water heater ratings are based on intermittent demand—40°F to 140°F with 200°F boiler water temperature.  
\* Used on water boilers only.

When water heater is not employed, cover the heater opening with cover plate (12) or (16).

**BE SURE RUBBER GASKET IS IN PLACE BETWEEN COVER PLATE OR WATER HEATER PLATE AND BOILER SECTION.**

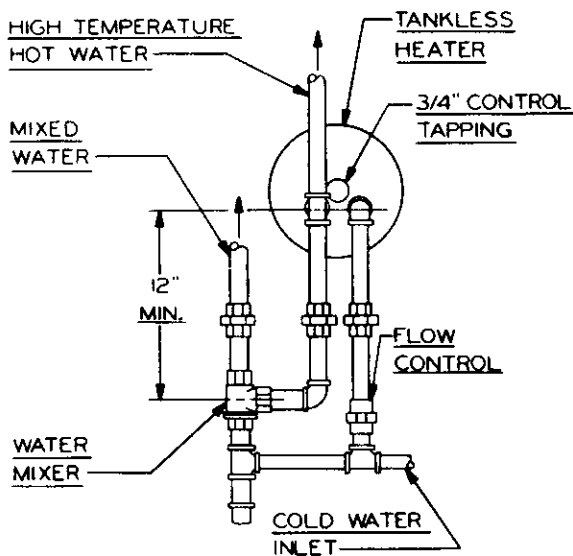


FIGURE 3

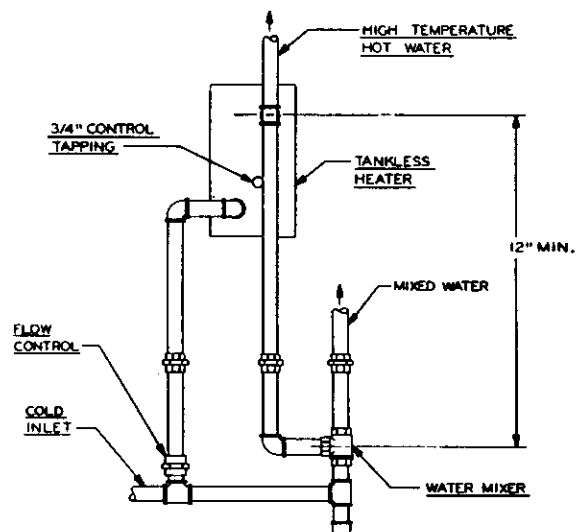


FIGURE 3A

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

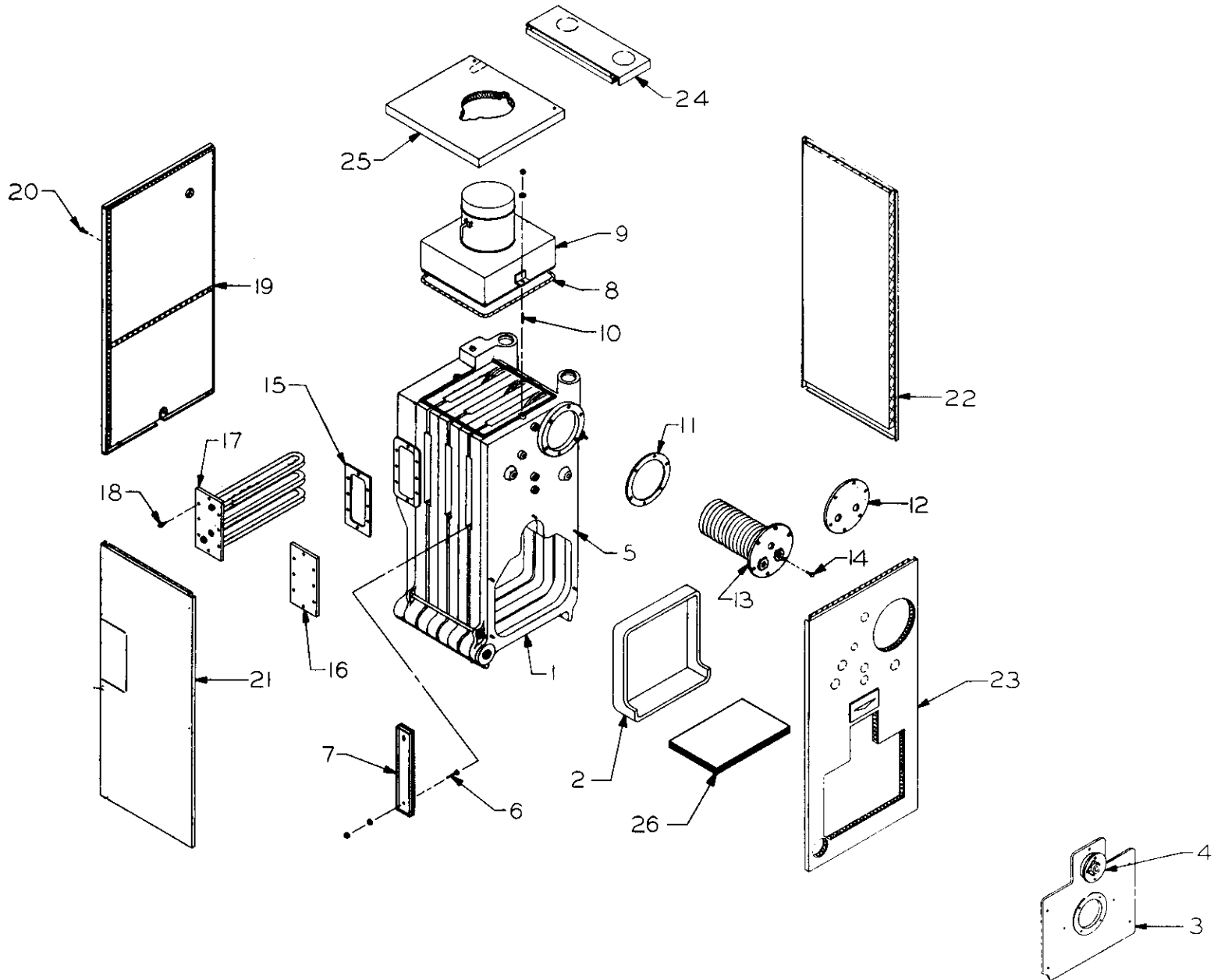


FIGURE 4

**SERIES SC/SCT**

Item No.	Description	Part No.	Model No.					
			SC/SCT-05	SC/SCT-06	SC/SCT-07	SC/SCT-08	SC/SCT-09	SC/SCT-10
1	Block Assembly – SC-05 Model Only	X-1096	X					
	Block Assembly – SC-06 Model Only	X-1096-1		X				
	Block Assembly – SCT-05 Model Only	X-1097	X					
	Block Assembly – SCT-06 Model Only	X-1097-1		X				
	Front Split Block Assembly	SC-1018			X	X	X	
	Front Split Block Assembly	SC-1018-1						X
	Back Split Block Assembly	SC-1019			X			
	Back Split Block Assembly	SC-1019-1				X		
	Back Split Block Assembly	SC-1019-2					X	X
	Back Split Block Assembly (SCT Model)	SC-1020			X			
	Back Split Block Assembly (SCT Model)	SC-1021-1				X		
	Back Split Block Assembly (SCT Model)	SC-1021-2					X	X
2	Target Wall	X-3019	X	X	X	X	X	X
3	Combustion Chamber Cover Plate	X-1060-1	X	X	X	X	X	X
4	Flame Observation Assembly	SC-1012	X	X	X	X	X	X
5	5/16"-18 x 2-1/4" Studs w/Nuts – 5 Req'd	X-1061	X	X	X	X	X	X
6	5/16"-18 x 1-3/4" Carriage Bolt w/Nut		X	X	X	X	X	X
7	Side Clean-Out Cover Plate	X-1085	X	X	X	X	X	X
8	High Temp. Rope 1/2" Dia. 64" Long		X					
	High Temp. Rope 1/2" Dia. 72" Long			X				
	High Temp. Rope 1/2" Dia. 80" Long				X			
	High Temp. Rope 1/2" Dia. 88" Long					X		
	High Temp. Rope 1/2" Dia. 96" Long						X	
	High Temp. Rope 1/2" Dia. 104" Long							X
9	Flue Collector and Damper Assembly	SC-5005-5	X					
	Flue Collector and Damper Assembly	SC-5005		X				
	Flue Collector and Damper Assembly	SC-5005-1			X			
	Flue Collector and Damper Assembly	SC-5005-2				X		
	Flue Collector and Damper Assembly	SC-5005-3					X	
	Flue Collector and Damper Assembly	SC-5005-4						X
10	1/4"-20 x 1-3/4" Studs w/Nuts – 2 Req'd	X-5000	X	X	X	X	X	X
11	Rubber Gasket	X-1023	X	X	X	X	X	X
12	Cover Plate	X-1059	X	X	X	X	X	X
13	Tankless Coil (Optional Water Only)	X-1020	X	X	X	X	X	X
	Tankless Coil (Optional Water Only)	X-1021		X	X	X	X	X
	Tankless Coil (Optional Water Only)	X-1022				X	X	X
14	3/8"-16 x 3/4" Hex Hd. Cap Screws – 6 Req'd		X	X	X	X	X	X
15	Rubber Gasket (SCT Models)	X-1083	X	X	X	X	X	X
16	Cover Plate (SCT Models)	X-1084	X	X	X	X	X	X
17	Tankless Heater (Optional SCT Models)	X-1082	X	X	X	X	X	X
18	3/8"-16 x 3/4" Hex Hd. Cap Screws (SCT Models) – 8 Req'd		X	X	X	X	X	X
19	Back Jacket Panel	SC-6003	X	X	X	X	X	X

**SERIES SC/SCT**

Item No.	Description	Part No.	Model No.					
			SC/SCT-05	SC/SCT-06	SC/SCT-07	SC/SCT-08	SC/SCT-09	SC/SCT-10
20	1/4"-20 x 3/8" Truss Hd. Mach. Screws – Cad. Plate – 2 Req'd		X	X	X	X	X	X
21	Left Side Jacket Panel	SC-6001-5	X					
	Left Side Jacket Panel	SC-6001		X				
	Left Side Jacket Panel	SC-6001-1			X			
	Left Side Jacket Panel	SC-6001-2				X		
	Left Side Jacket Panel	SC-6001-3					X	
	Left Side Jacket Panel	SC-6001-4						X
22	Right Side Jacket Panel	SC-6002-5	X					
	Right Side Jacket Panel	SC-6002		X				
	Right Side Jacket Panel	SC-6002-1			X			
	Right Side Jacket Panel	SC-6002-2				X		
	Right Side Jacket Panel	SC-6002-3					X	
	Right Side Jacket Panel	SC-6002-4						X
23	Front Jacket Panel	SC-6000	X	X	X	X	X	X
24	Right Top Jacket Panel	SC-6005-5	X					
	Right Top Jacket Panel	SC-6005		X				
	Right Top Jacket Panel	SC-6005-1			X			
	Right Top Jacket Panel	SC-6005-2				X		
	Right Top Jacket Panel	SC-6005-3					X	
	Right Top Jacket Panel	SC-6005-4						X
25	Left Top Jacket Panel	SC-6004-5	X					
	Left Top Jacket Panel	SC-6004		X				
	Left Top Jacket Panel	SC-6004-1			X			
	Left Top Jacket Panel	SC-6004-2				X		
	Left Top Jacket Panel	SC-6004-3					X	
	Left Top Jacket Panel	SC-6004-4						X
26	Ceramic Blanket Liner –	50846	14"x14½" *	14"x18¾"				
	Ceramic Blanket Liner – Sizes must be cut to fit.	51038			14"x23"	14"x27¼"	14"x31½"	14"x35¾"

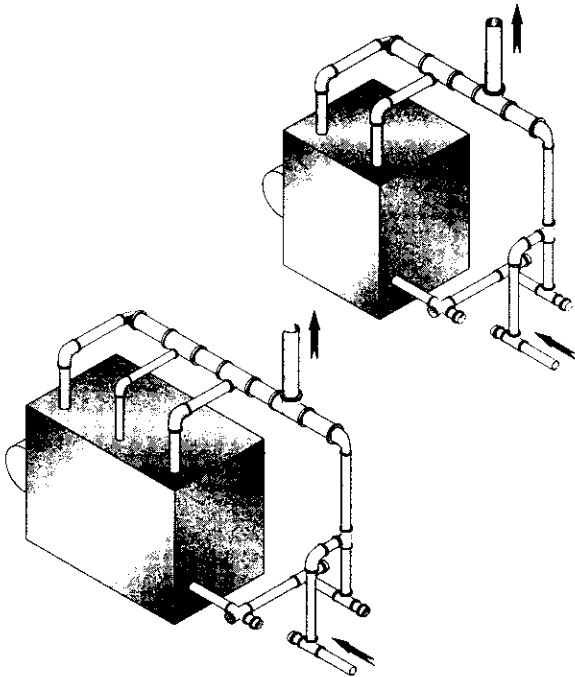
\* Size must be cut to fit.

## E – PIPING

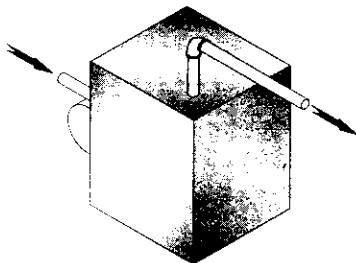
DO NOT PIPE BOILER UNTIL AFTER JACKET IS INSTALLED.

- 1— See Figures 5 and 6 for suggested piping to the boiler.
- 2— Make up cold water supply connection to the boiler.
- 3— Install pressure gauge or theraltimeter in tapping provided. See Figure 7.
- 4— Plug all open tapings in the boiler and fill with water. Pressurize boiler to 45 PSIG for 30 PSiG sections and 75 PSIG for 50 PSiG sections. Check to make certain that all joints and fittings are water tight.
- 5— After all joints and connections have been proven water tight, remove cold water supply and plugs from all tapings that are to be used. See Figure 7 for tapping locations.

**NOTE:** IF THIS BOILER AND DISTRIBUTING SYSTEM IS USED IN CONJUNCTION WITH A REFRIGERATION SYSTEM, THE CHILLED MEDIUM SHALL BE PIPED IN PARALLEL WITH THE BOILER AND THE PROPER VALVES APPLIED TO PREVENT THE CHILLED MEDIUM FROM ENTERING THE BOILER. WHEN THE BOILER IS CONNECTED TO HEATING COILS LOCATED IN AIR HANDLING UNITS 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.



**FIGURE 5**



**FIGURE 6**

Boiler Model No.	Risers	Header	Equalizer
SC/SCT-05	2-2"	3"	1½"
SC/SCT-06	2-2"	4"	1½"
SC/SCT-07	2-2½"	4"	1½"
SC/SCT-08	2-2½"	4"	1½"
SC/SCT-09	2-2½"	4"	2"
SC/SCT-10	2-2½" and 1-2"	4"	2"

The return from system should always enter equalizer through Hartford Loop, 2" to 4" below normal water line.

### STEAM

Pipe the supply and return in one of two ways:

1. Pipe the supply from the top of the rear section and return to the bottom of the front section. Use the ¾" tapping in the top of the back section for air elimination.
2. As an acceptable alternative, pipe the supply from the top of the front section and return to the bottom of the rear section. Provide an air elimination means within the supply piping.

### HOT WATER

## F – OIL BURNER INSTALLATION

- 1— The oil burner is supplied with a mounting flange fixed in position.
- 2— Mount the burner to the combustion chamber cover plate (3) with four 5/16"-18 x 1" studs and nuts provided. BE SURE HI TEMP GASKET IS BETWEEN THE BURNER MOUNTING FLANGE AND THE COMBUSTION CHAMBER COVER PLATE.
- 3— Oil Burner Specifications.

BECKETT BURNER				CARLIN BURNER			
Boiler Model No.	Burner Model No.	*Nozzle Size	Pressure Lbs.	Boiler Model No.	Burner Model No.	*Nozzle Size	Pressure Lbs.
SC/SCT-05	CF-500	2.50 60° B	140	SC/SCT-05	201 CRD	2.50 60° B	140
SC/SCT-06	CF-500	3.00 60° B	140	SC/SCT-06	201 CRD	3.00 60° B	140
SC/SCT-07	CF-800	3.25 45° P	150	SC/SCT-07	201 CRD	3.25 45° SS	150
SC/SCT-08	CF-800	3.75 45° P	140	SC/SCT-08	201 CRD	3.75 45° SS	140
SC/SCT-09	CF-800	4.00 30° P	150	SC/SCT-09	201 CRD	4.00 45° B	150
SC/SCT-10	CF-800	4.50 30° P	150	SC/SCT-10	301 CRD	4.50 45° B	150

GORDON-PIATT GAS OR COMB. GAS-OIL BURNERS					POWER FLAME GAS OR COMB. GAS-OIL BURNERS				
Boiler Model No.	Gas Burner Model No.	Gas-Oil Model No.	*Nozzle Size	Pressure Lbs.	Boiler Model No.	Gas Burner Model No.	Gas-Oil Model No.	*Nozzle Size	Pressure Lbs.
SC/SCT-05	S4.2-G-03	S4.2-GO-03	1.75 90° B	300	SC/SCT-05	CR1-G-10	CR1-GO-10	1.75 90° S	300
SC/SCT-06	S4.2-G-03	S4.2-GO-03	2.25 60° B	275	SC/SCT-06	CR1-G-10	CR1-GO-10	2.25 90° S	275
SC/SCT-07	S4.2-G-03	S4.2-GO-03	2.50 60° B	275	SC/SCT-07	CR1-G-10	CR1-GO-10	2.50 90° S	275
SC/SCT-08	S4.2-G-03	S4.2-GO-03	2.75 60° B	275	SC/SCT-08	CR1-G-10	CR1-GO-10	2.75 90° S	275
SC/SCT-09	S4.2-G-03	S4.2-GO-03 (2)	1.50 60° B	275	SC/SCT-09	CR1-G-10	CR1-GO-10	3.00 90° S	275
SC/SCT-10	S4.2-G-03	S4.2-GO-03 (2)	1.75 60° B	250	SC/SCT-10	CR1-G-10	CR1-GO-10	3.50 90° S	250

\*Nozzle Size: B = Delavan P/SS = Hago S = Steinen

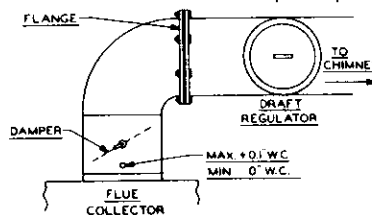
- 4— For other information pertinent to the oil burner installation, see the Installation Manual accompanying the burner.

## G – CONTROLS

- 1— Apply controls as follows:
    - a. **Water Boilers:** Install the limit or operating control, temperature & pressure gauge and the pressure relief valve. See Figure 7 for proper location.
    - b. **Steam Boilers:** Install pressure gauge, gauge glass trim and safety valve. See Figures 7 and 8. For application of low water cut-off see Figure 11. For pump control or feeder application see Figures 9 and 10.
- Caution:** Pipe the discharge of the pop safety valve or relief valve to prevent injury in the event of pressure relief. Suggest discharge to be piped to drain. Pipe full size of outlet.

## H – CHIMNEY AND BREECHING

- 1— The Series SC/SCT boilers are designed for forced draft firing only. The boiler and flue outlet sizes produce the required pressures in the combustion chamber when operating at boiler rating. The boiler breeching should be the full size of the flue collector outlet and may be attached to a conventional chimney or a short vent. A 3 ft. minimum height of vent above the roof is required. DO NOT SIDEWALL VENT BOILER.
- 2— When attached to a conventional chimney an excess draft may be available. If such is the case, a draft regulator should be installed and set to provide minimum draft. The damper supplied should then be set to provide a maximum pressure of +0.1" water column or minimum of 0" water column at the outlet of the flue collector. Lock damper in place by use of set screws.



If the boiler breeching is attached to a non-conventional chimney or short stack the breeching also will be pressurized. It should be pointed out that unsealed conventional smoke pipe must not be used as it will leak flue gases at the seams and joints.

When constructing a sealed or welded breeching for the Series SC/SCT boilers, it is obvious a means of disconnecting (Flange) must be provided to facilitate removal of the flue collector for vertical cleaning of the boiler and chimney.

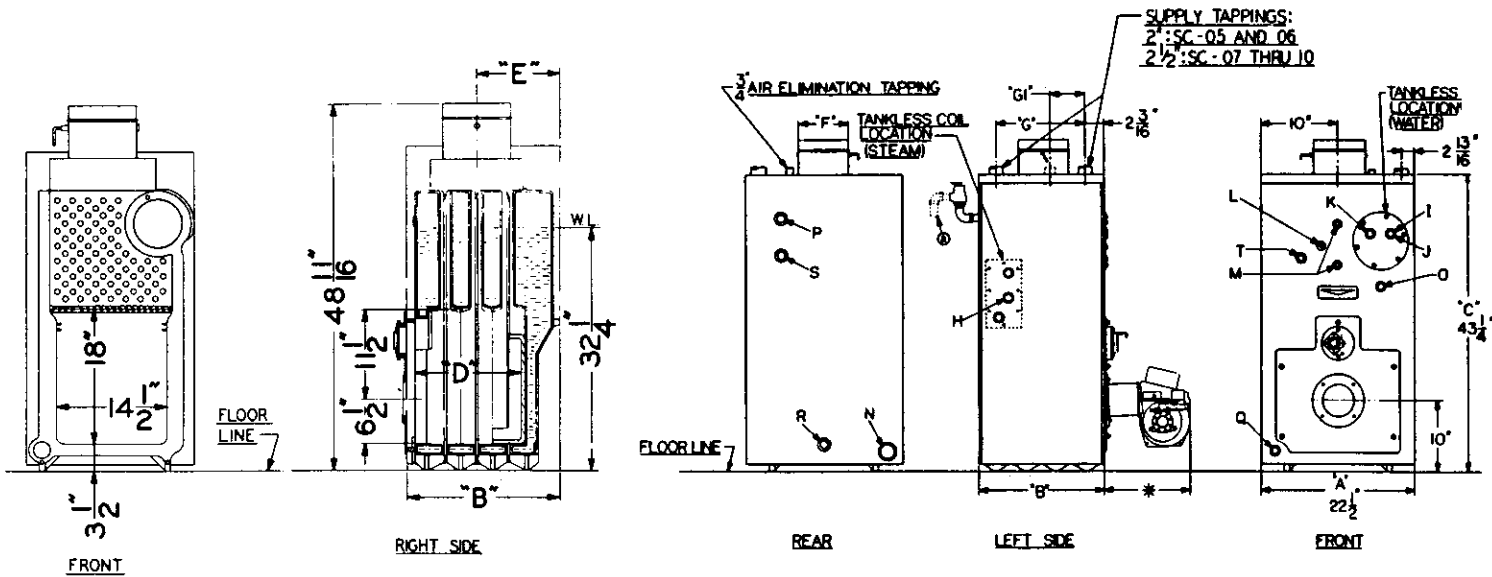


FIGURE 7

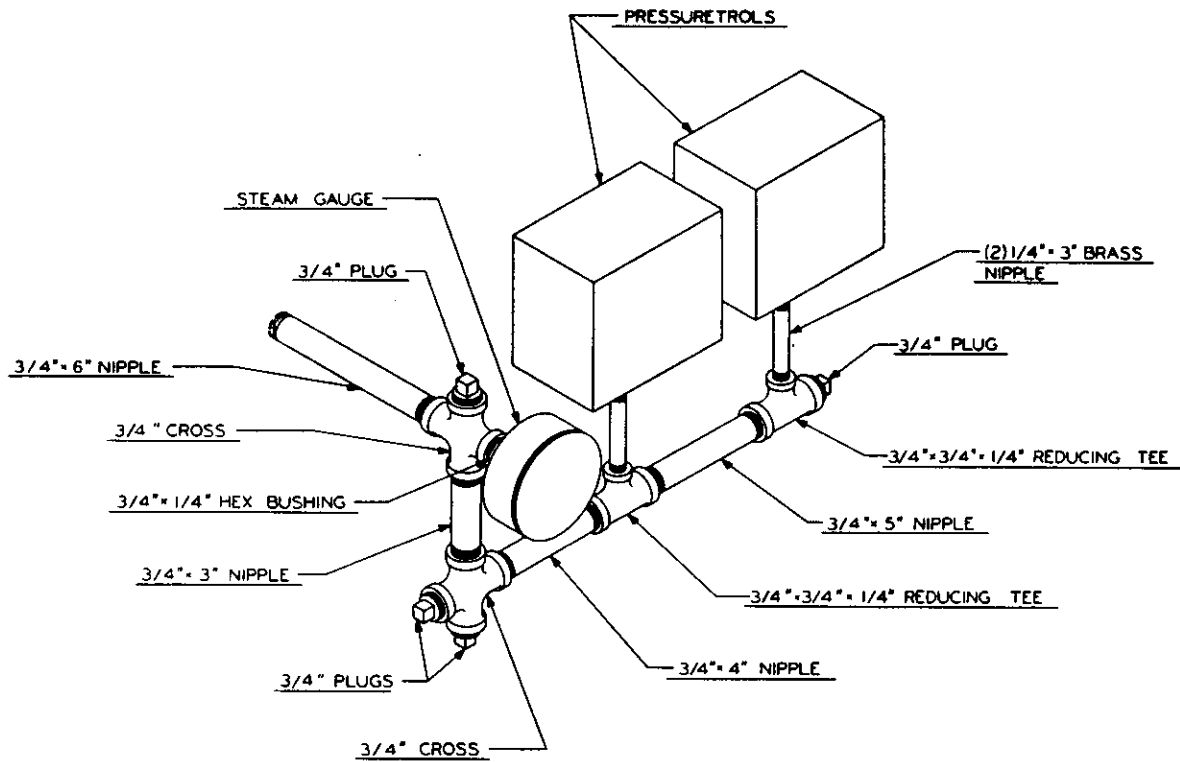
DIMENSIONS

Boiler Unit Number WU or SU	Burner Number of Sections	Jacket Width "A"	Jacket Length "B"	Top to Floor "C"	Length Fire Box "D"	Rear of Jacket to c/l of Flue "E"	Flue Size "F"	Distance Between Tappings "G"	Dist. Betw. Front Tap. & Tap. Inter. "G1"
SC/SCT-05	5	22 1/2"	24 1/2"	43 1/4"	18 3/8"	13 1/4"	7"	17 7/8"	—
SC/SCT-06	6	22 1/2"	28 5/8"	43 1/4"	22 9/16"	15 3/8"	9"	21 5/8"	—
SC/SCT-07	7	22 1/2"	32 7/8"	43 1/4"	26 3/4"	17 1/2"	9"	25 7/8"	—
SC/SCT-08	8	22 1/2"	37 1/8"	43 1/4"	30 15/16"	19 5/8"	9"	30 1/8"	—
SC/SCT-09	9	22 1/2"	41 3/8"	43 1/4"	35 1/8"	21 3/4"	10"	34 3/8"	—
SC/SCT-10	10	22 1/2"	45 5/8"	43 1/4"	39 5/16"	23 7/8"	10"	38 5/8"	17 1/16"

\*Note: Maximum burner length: Beckett = 13 1/2", Gordon Platt S-4 = 27", Gordon Platt R = 30", Power Flame C = 34", Power Flame J = 24", Webster JB-1 = 30".

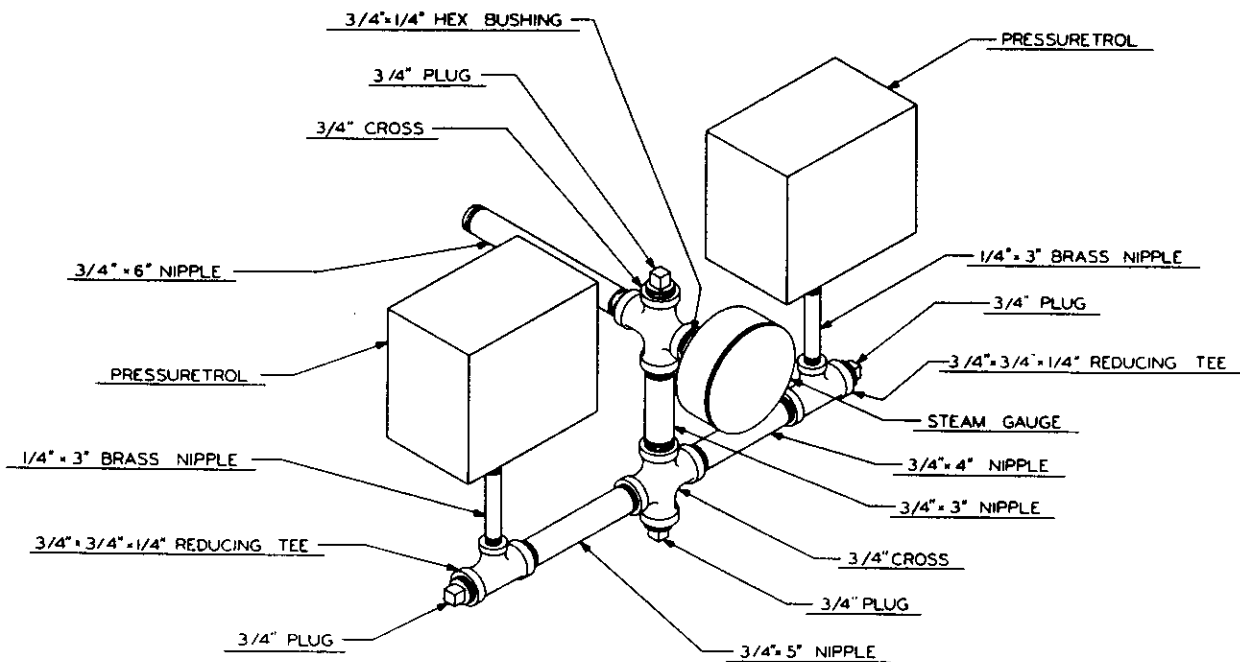
TAPPING LOCATIONS

Location	Size N.P.T.	Steam	Water
H	3/4"	Low Limit Control	N/A
I	3/4"	Press. Gauge, Oper. Cont. & Limit Cont.	N/A
J	3/4"	N/A	Operating Control
K	3/4"	N/A	Limit Control
L	1/4"	N/A	Theraltimeter
M	1/2"	Gauge Glass & Low Water Cutoff	N/A
N	2"	Return	Optional Return
O	3/4"	Secondary Probe Low Water Cutoff	Secondary Probe Low Water Cutoff
P	—	Safety Valve	Relief Valve
Q	1 1/4" on 05-06 1 1/2" on 07-10	Return	Return
R	3/4"	Drain Cock	Drain Cock
S	3/4"	N/A	Optional High Limit
T	3/4"	Primary Probe Low Water Cutoff	N/A



**NOTES:**  
RIGHT HAND SHOWN  
LEFT HAND OPPOSITE  
ALL FITTINGS MALLEABLE

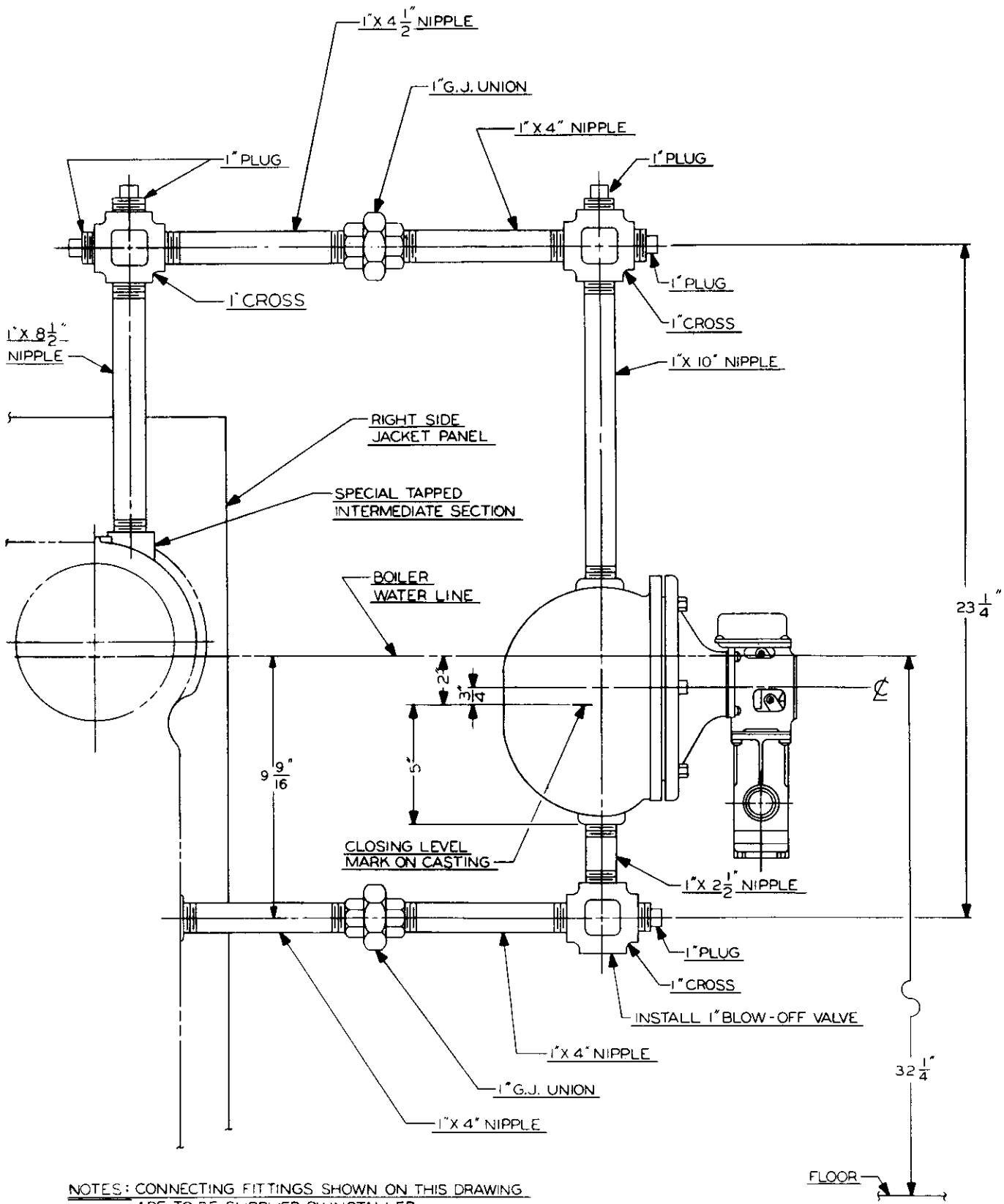
**STEAM GAUGE/PRESSURETROLS  
PIPING ARRANGEMENT**



**NOTE:**  
ALL FITTINGS MALLEABLE

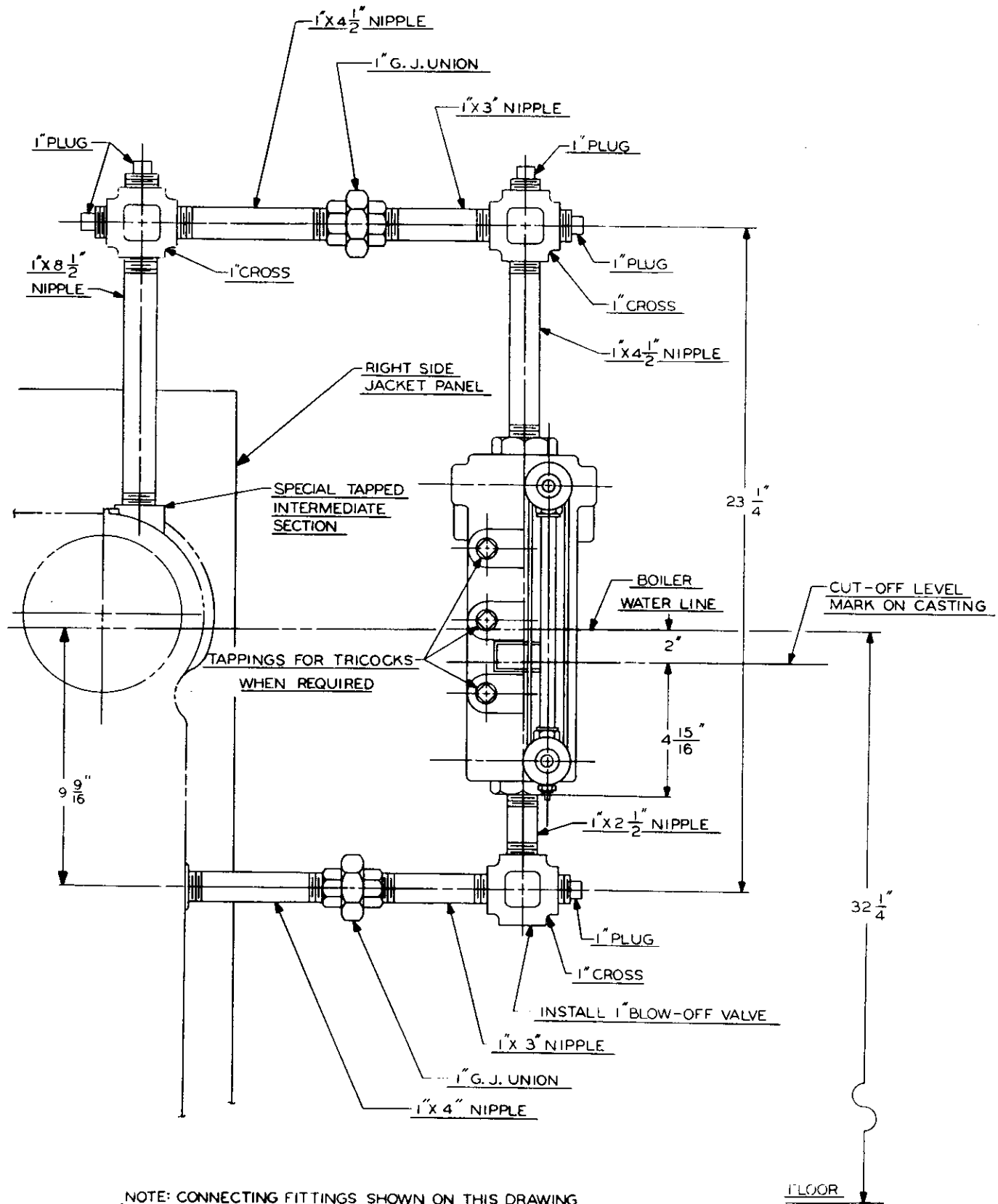
**STEAM GAUGE/PRESSURETROLS  
ALTERNATE PIPING ARRANGEMENT**

**FIGURE 8**



NOTES: CONNECTING FITTINGS SHOWN ON THIS DRAWING  
 ARE TO BE SUPPLIED BY INSTALLER  
 ON COMB FEEDER CUT-OFF MODELS THE BURNER CUT-OFF LEVEL  
 IS 2 3/4" BELOW NORMAL WATER LINE

FIGURE 9



NOTE: CONNECTING FITTINGS SHOWN ON THIS DRAWING ARE TO BE SUPPLIED BY INSTALLER

FIGURE 10

McD & M #67PE-2  
LOW WATER CUT-OFF

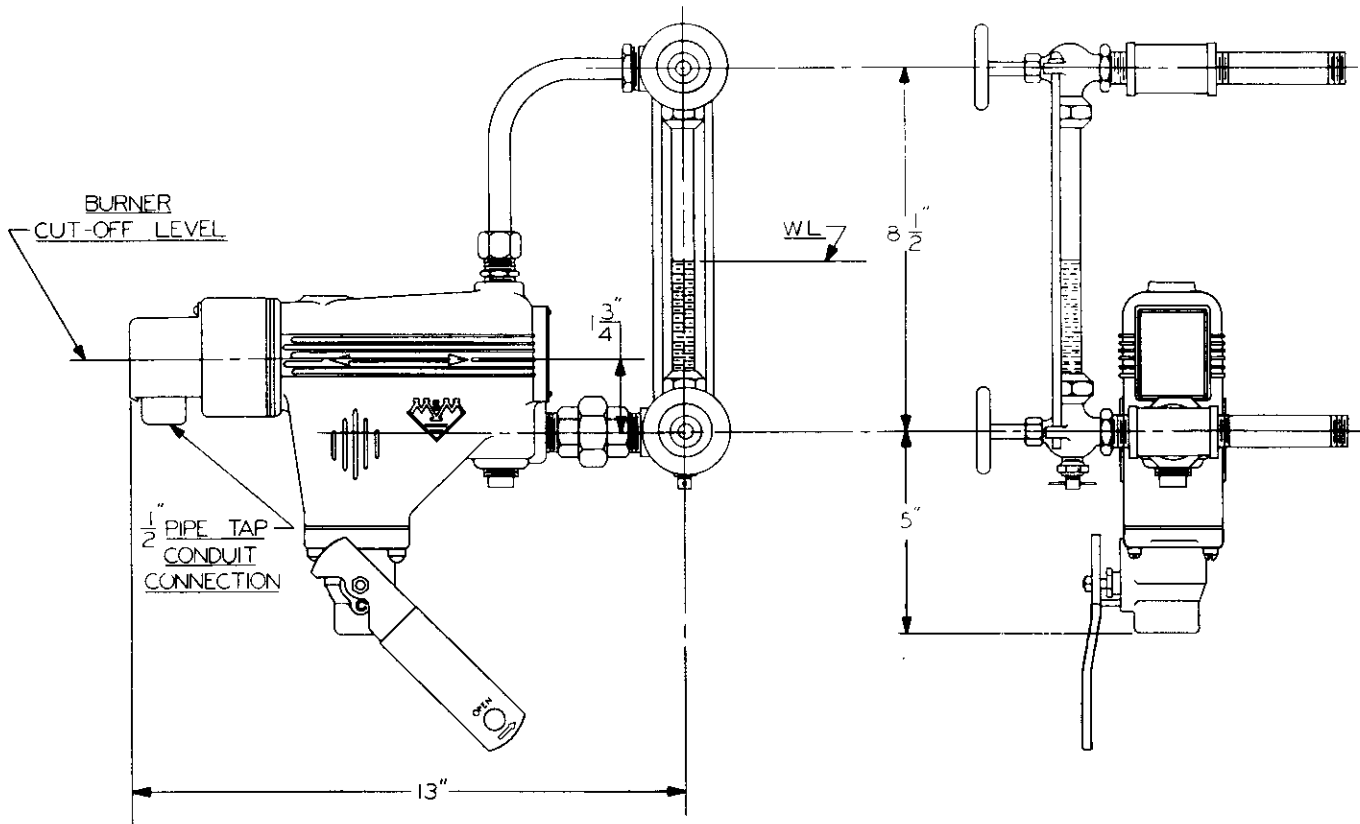


FIGURE 11

I - WIRING

- 1— All electrical wiring shall be done in accordance with the National Electrical Code and Local Requirements.
- 2— For recommended wiring, See Figures 12 and 13.
- 3— For complete information on servicing and adjustment of controls, refer to the attached control specification sheets.

**NOTE:** Single Pole Switches including those of Safety Controls or Protective Devices shall not be wired in a grounded line.

J - CLEANING HEATING SURFACES

**NOTE:** BOILER IS TO BE CLEANED AT LEAST ONCE A YEAR. THIS BOILER MAY BE CLEANED FROM THE LEFT SIDE OR TOP.

- 1— Turn off all electrical power to boiler before beginning cleaning operation.
- 2— If cleaning from the side, remove left jacket panel and side clean-out cover plates.
- 3— If cleaning from the top, remove flue pipe, left top jacket panel and flue collector.
- 4— Brush the flue passages with a wire brush to remove all scale or soot from these heating surfaces.
- 5— Remove any scale or soot from the fire box by means of vacuum cleaning or any other available means.

**NOTE:** THE OIL BURNER MUST BE REMOVED TO FACILITATE THIS OPERATION.

- 6— Install clean-out covers or flue collector, be sure the gasket or rope seal is in good condition, if not, replace.
- 7— Install jacket panels and flue pipe as required.

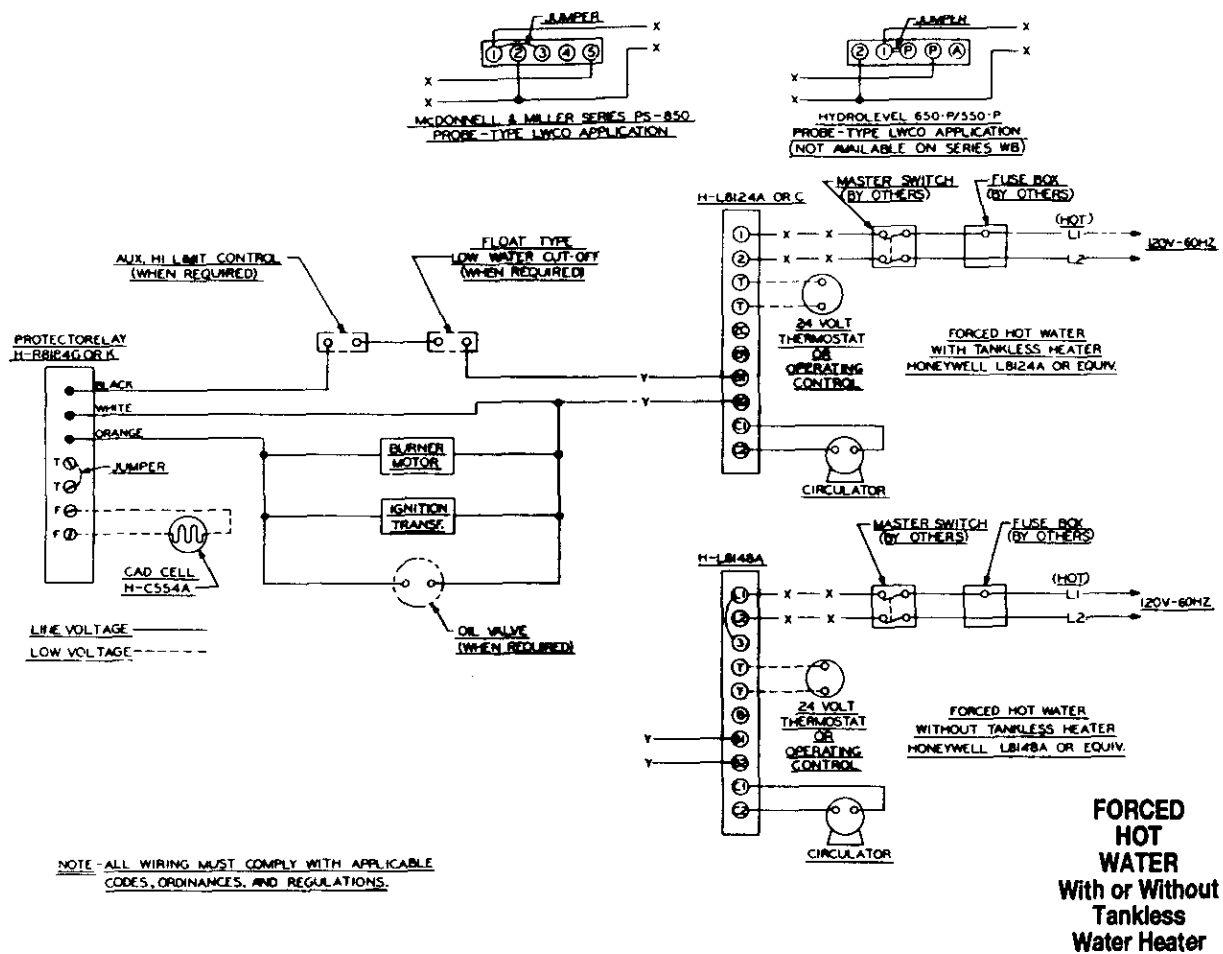


FIGURE 12

NOTE - ALL WIRING MUST COMPLY WITH APPLICABLE CODES, ORDINANCES, AND REGULATIONS.

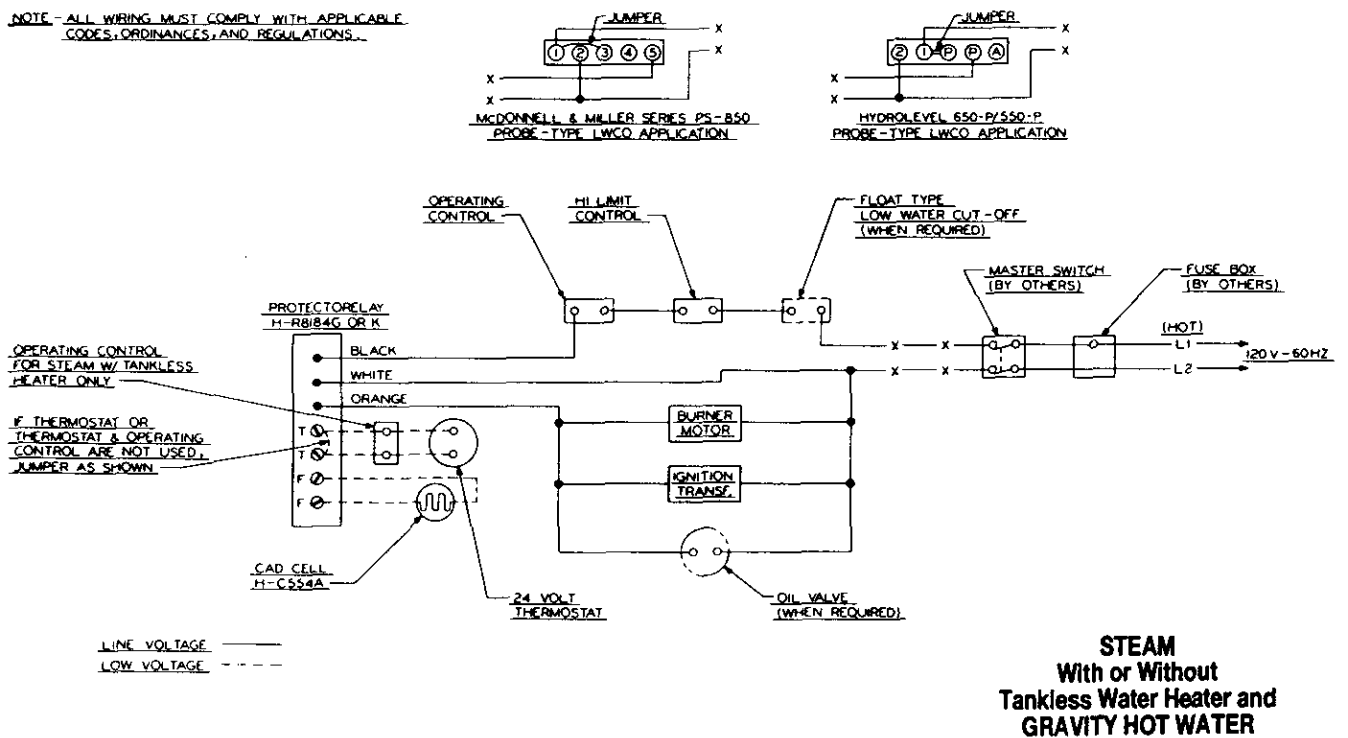


FIGURE 13

K - SERIES SC AND SCT RATINGS									
Unit Number Boiler Burner WU or SU	Gross I=B=R Output M.B.H.	Net I-B-R Ratings			I-B-R Burner Capacity <sup>4</sup>		Boiler HP	Vent <sup>5</sup>	
		Water <sup>2</sup> M.B.H.	Steam <sup>3</sup> M.B.H.	Steam Sq. Ft.	Oil G.P.H. Input <sup>1</sup>	Gas M.B.H. Input		Size Inches	Height Feet (Min.)
SC/SCT-05	343	298	257	1071	3.00	433	10.2	7	3
SC/SCT-06	405	352	304	1267	3.50	505	12.1	9	3
SC/SCT-07	462	402	347	1446	4.00	577	13.8	9	3
SC/SCT-08	519	451	389	1621	4.50	649	15.5	9	3
SC/SCT-09	575	500	431	1796	5.00	722	17.2	10	3
SC/SCT-10	632	550	474	1975	5.50	794	18.9	10	3

Apply Prefix "O" for Oil – "G" for Gas – "GO" for Gas-Oil

Ratings based on 12 ½% CO<sub>2</sub> Oil

- 1 Burner input based on No. 2 fuel oil with a heating value of 140,000 Btu per gallon.
- 2 Net I=B=R water ratings based on an allowance of 1.15.
- 3 Net I=B=R steam ratings based on an allowance of 1.333.
- 4 Consult factory before selecting a boiler for installations having unusual piping and pickup requirements, such as intermittent system operation, extensive piping systems, etc.
- 5 A 3 foot minimum height of vent above the roof is recommended. For any unusual venting conditions, consult your local building code or authority.



# Series SC/SCT

**Oil, Gas & Gas/Oil 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.*



**CAST IRON BOILERS**

### **PEERLESS HEATER COMPANY**

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[www.peerless-heater.com](http://www.peerless-heater.com)

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