GENERAL INSTRUCTIONS

The side of the boiler to your left as you face the front of the boiler will be referred to in these instructions as the Left End (LE); the side to your right will be referred to as the Right End.

Locate the boiler as close as possible to the chimney and be sure to provide ample clearance for access to the piping. It is required that a minimum clearance of 24 inches be allowed at sides where servicing and cleaning will occur and 18 inches at a side where passage is necessary to another side requiring servicing or cleaning. Minimum clearance on any remaining side should not be less than 6 inches. For permissible minimum clearances for alcove installations, see Page 3.

Note: Installations must conform with the requirements of local utilities, or any local, state, or insurance requirements or codes having jurisdiction.

CHIMNEY OR FLUE

(also refer to Breeching Erection)

The masonry chimney or vent to which the boiler is to be connected should not be smaller than the size recommended on the last page of these instructions under Ratings–Dimensions–Engineering Data. The chimney or vent should extend high enough above the building or any other obstructions so that wind from any direction will not strike the chimney or vent from an angle above horizontal and thus produce down drafts. Unless the obstruction is of great magnitude, it is the usual experience that a chimney or vent extended at least 2 feet above flat roofs or 2 feet above the highest part of wall parapets and peaked roofs which are within 30 feet will be reasonably free from down drafts.

A lined chimney is preferred and must be used when required by federal, state, or local building codes. Vitreous tile linings with joints which prevent the retention of moisture and linings made of noncorrosive materials are advantageous. Advice regarding recommended practice and material for flue connections and chimney linings can usually be obtained from the local gas utility and should be given careful consideration. If a Type B or Type C vent is acceptable and is used, the instructions relative to the size and height contained in the A.G.A. Guide for Installers of Gas Central Heating Systems should be followed. The chimney should be examined before the gas boiler is installed to be certain that it is properly constructed, clear, and will freely conduct the products of combustion to the atmosphere.

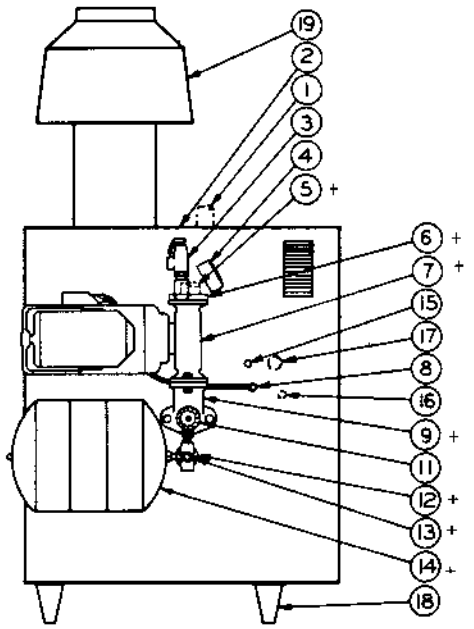
In entering the chimney, the breeching connection must be above the extreme bottom of the chimney to avoid stoppage. The breeching must not enter the chimney so far as to unduly restrict the space between the end of the breeching and the opposite wall of the chimney. A thimble or slip joint should be used where the breeching enters the chimney to facilitate removal of the breeching for cleaning. Do not place a damper or any other obstruction in the breeching. The breeching should slope upward toward the chimney at least ¼ inch per lineal foot of breeching; the breeching should not be smaller than the size shown on the last page of these instructions under column heading Chimney and Breeching Size.

Where two or more gas appliances vent into a common chimney or flue, the equivalent area of the common chimney or flue should be at least equal to the equivalent area of the vent outlet on the largest appliance plus 50 percent of the equivalent area of the vent outlet on the additional appliance.

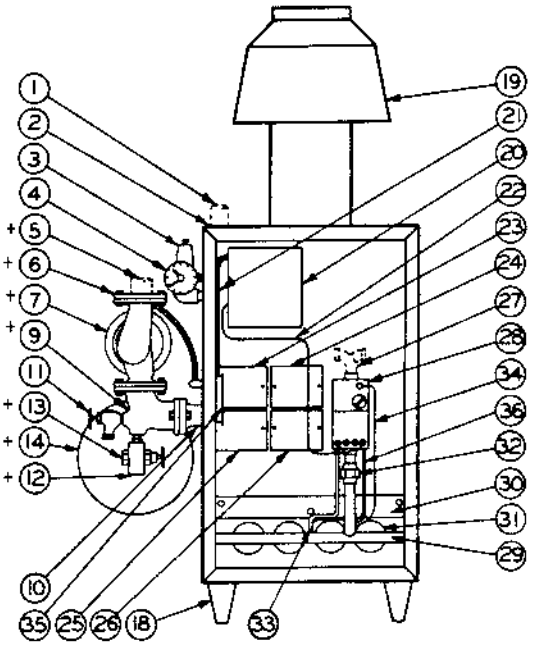
AIR SUPPLY FOR BOILER ROOM

Provisions must be made to supply sufficient clean air to the boiler room at all times for combustion, for ventilation, and for dilution of the combustion gases at the draft hood. If there is a lack of oxygen in the boiler room, the burner flames will be yellow and formation of soot will occur on the boiler flue passages. In buildings of conventional frame, brick, or stone construction without enclosed utility rooms, basement storm windows, or tight stair doors, infiltration is normally adequate to provide air for combustion and for draft hood dilution.

For installations in an enclosed utility room or boiler room without an outside wall, two fresh air openings are required (one near the top and one near the bottom of the room). When all the air comes from inside of the building, each opening should have a minimum free cross sectional area of at least 1 square inch for **each** 1,000 BTU per hour of boiler input. When all the air comes from outside and is directly connected to the boiler room or is connected to the boiler room with **vertical** ducts of equal area, each opening should have a minimum free cross sectional area of at least 1 square inch for **each** 4,000 BTU per hour of boiler input. When all the air comes from outside and is connected to the boiler room with **horizontal** ducts of equal area, each opening should have a minimum free cross sectional area of at least 1 square inch for **each** 2,000 BTU per hour of boiler input.



LEFT END



FRONT

FIGURE 1

1. Supply Outlet
2. Air Collector Chamber and Manual Air Vent (located beneath jacket top panel)
3. ASME Pressure Relief Valve
4. Combination Pressure-Temperature-Altitude Gauge
5. Return Inlet (for P-CG Boilers)
6. Circulator Counter Flange
+7. Circulator
8. Circulator Wiring Harness
+9. Angle Circulator Flange
10. Straight Circulator Flange (Return Inlet for CG Boilers)
11. Drain (not shown for CG boilers, locate in tee in return piping where the piping enters the boiler, or remove knockout disc at right end of boiler and install drain in the tapping)
+12. Combination Automatic Fill Valve and Manual Shut-Off Valve
+13. Cold Water Fill Connection
+14. Air Cushion Tank
15. Thermostat Wiring Inlet
16. Electrical Supply Inlet
17. Knockout for Gas Supply (jacket right end and left end panels)
18. Adjustable Boiler Leg (four used)
19. Draft Hood
20. Combination High Limit Control and Relay
21. Relay Wiring Harness
22. Gas Valve Wiring
23. AGA Rating Plate
24. Operating Instruction Plate
25. Alcove Clearance Plate
26. Wiring Diagram Plate
27. Street Elbow or Elbow and Close Nipple (not furnished)
28. *Combination Manual Main Shut-Off Gas Valve, Main Gas Valve, and Pressure Regulator; or Combination Main Gas Valve and Pressure Regulator
29. Gas Manifold
30. Access Panel
31. Burner Mixer Tube(s)
32. Union
33. Safety Pilot Burner Gas Supply Tubing
34. Thermocouple
35. Wiring Junction Box
36. *Bleed Line Tubing (required only for diaphragm gas valves)
37. *Manual Main Shut-Off Gas Valve (not shown, required for Combination Main Gas Valve and Pressure Regulator, must be located in gas supply piping outside the boiler jacket)

+ Not furnished with CG boilers.

* For 3 through 6 section and 10 section boilers to be used with natural or propane gases, and for 3 through 5 section and 9 and 10 section boilers to be used with mixed gases, the Combination Manual Main Shut-Off Gas Valve, Main Gas Valve, and Pressure Regulator is furnished and a bleed line is connected from the gas valve body to the bleed burner located next to the safety pilot burner. For 7 through 9 section boilers to be used with natural or propane gases, and for 6 through 8 section boilers to be used with mixed gases, the Combination Main Gas Valve and Pressure Regulator is furnished and a bleed line is not required; the Manual Main Shut-Off Gas Valve must be located in the gas supply piping as required by the local utility.

IMPORTANT PRECAUTIONS

Proper installation and wiring of the control equipment and proper adjustment of the gas burners is necessary for the successful operation of the gas-fired boiler. Follow the proper wiring diagram furnished with the boiler or the wiring diagram plate located on the jacket interior panel for connecting the electrical supply wiring and for wiring any additional controls. The operating instruction plate is located on the jacket interior panel and should be carefully followed. Be sure to read and carefully follow these instructions.

The Type P-CG and CG boilers are approved for natural, propane, mixed, and manufactured gases. For natural and mixed gases, the inlet gas pressure to the boiler hand valve should be 7 inches to 10 inches water column. If the inlet gas pressure exceeds 10 inches water column, a pressure regulator of adequate size should be installed upstream of the boiler hand valve; the pressure regulator should be of the 100 per cent lock-up type and should not permit gas pressures in excess of 10 inches water column. For propane gas, the inlet gas pressure to the boiler hand valve should be 11 inches to 13 inches water column; the gas pressure regulator (furnished by the gas-supplier) must provide lock-up pressures not exceeding 14 inches water column. For manufactured gases, the inlet gas pressure to the boiler hand valve should be 3.5 inches to 5 inches water column.

The gas orifices are assembled into the orifice spuds on the gas manifold at the factory and the

orifices supplied are for the type of gas specified on the boiler order. See the chart below for the Type P-CG and CG boiler standard orifice sizes for natural, propane, and mixed gases.

Type Gas	Heating Value BTU/cu. ft.	Standard Orifice Size
Natural	1050	38
Propane	2500	52
Mixed	800	32
Manufactured	525	*

* For orifice sizes for manufactured gases, consult Weil-McLain Technical Services Department.

BOILER FOUNDATION

If a boiler foundation is necessary, it should be located to provide proper clearances around the boiler (as indicated under General Instructions) for the installation of the piping, draft hood, and breeching. A level concrete, brick, or wood boiler foundation is recommended and may be from 2 inches to 6 inches higher than the boiler room floor if head room permits and should be constructed according to the dimensions shown in the chart below; these dimensions allow about 1 inch clearance all around the boiler. If the boiler is to be located in an alcove or confined space, also refer to Figure 2 for minimum clearances.

BOILER FOUNDATION SIZES

Number of Boiler Sections	Foundation Width	Foundation Length
3	12"	25¼"
4	15"	25¼"
5	18"	25¼"
6	21"	25¼"
7	24"	25¼"
8	27"	25¼"
9	30"	25¼"
10	33"	25¼"

COMPRESSION TANK SIZING

For Type CG boilers, size the compression tank according to the requirements of the heating system. The No. 109 Fill-Trol (combination automatic fill valve, pressure reducing valve, and expansion tank) is furnished with P-CG-3 through P-CG-5 boilers, the No. 110 Fill-Trol is furnished with P-CG-6 and P-CG-10 boilers. The expansion volume is suitable for a series loop piping system installed in a one-story or two-story house with non-ferrous (convector) type heat distributing units for forced hot water circulation. **For series loop piping systems with cast-iron heat distributing units or for other piping systems for forced hot water circulation where higher system water contents are encountered, additional compression tank capacity must be provided.** When additional compression tank capacity is required, do not replace the tank furnished with the boiler with a larger sized tank; instead, an additional Ex-Trol tank should be connected to a tee in the supply or return piping close to the boiler. Refer to the table below to determine if an additional Ex-Trol will be required.

P-CG COMPRESSION TANK SIZING*

For Type CG boilers, size the compression tank according to the requirements of the heating system.

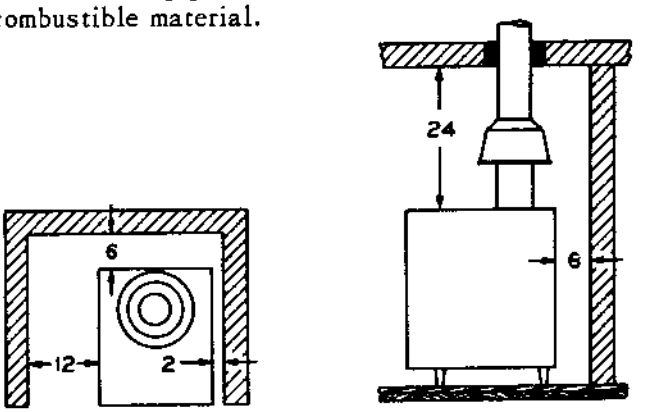
Boiler Number	Standard Fill-Trol Tank—Adequate for Series Loop Piping Systems with Convector Baseboard	Additional Ex-Trol Tank Required for One Pipe Systems with Convector Baseboard	Additional Ex-Trol Tank Required for Cast-Iron Radiators	Additional Ex-Trol Tank Required for Cast-Iron Baseboard
P-CG-3	No. 109	—	—	—
P-CG-4	No. 109	—	No. 12	No. 12
P-CG-5	No. 109	—	No. 15	No. 15
P-CG-6	No. 110	—	No. 15	No. 30
P-CG-7	No. 110	—	—	No. 12
P-CG-8	No. 110	—	No. 12	No. 15
P-CG-9	No. 110	—	No. 15	No. 30
P-CG-10	No. 110	—	No. 30	No. 30

* Tank selection based on 210°F average system water temperature.

NOTE: Converted gravity hot water circulation systems may require additional compression tank capacity.

ALCOVE INSTALLATIONS

Where the boiler is to be located in an alcove or confined space, **minimum clearances must be provided all around the boiler as illustrated in Figure 2.** The vent pipe must be at least 6 inches from combustible material.



TOP VIEW — SIDE ELEVATION

MINIMUM CLEARANCE FOR ALCOVE INSTALLATIONS
FIGURE 2

LOCATING THE BOILER

Position the boiler near the chimney and be sure to provide minimum clearances around the boiler as indicated under General Instructions or Figure 2. The boiler is A.G.A. approved for installation on a combustible floor. Be sure to remove the wood blocking from the boiler legs as directed on the envelope containing these instructions, after the boiler has been removed from the shipping pallet and moved to the desired installed position. **Do not alter or remove the legs from the boiler.** After the boiler is positioned in the desired location, be sure the unit is setting level so that air can be thoroughly separated from the circulating water. To level the unit, slightly tip the boiler toward the high side and turn the leg leveler screws located at the bottom of the adjustable boiler legs

to the position required. Open the jacket door and remove the access panel by loosening the screws and discard the washers which are required to hold the access panel in position during shipment; remove the wood hold down block attached to the access panel. **Level and straighten the burners, with equal space between each burner, and make sure the gas orifices will inject gas down the centerline of the burner mixer tubes.** Rethread the screws into the same holes in the base, hand tight only. Reinstall the access panel by slipping the screw heads through the holes in the panel; this will permit removal of the access panel without removing the screws. Re-install the jacket door.

HYDROSTATIC PRESSURE TEST OF BOILER

The boiler has been pressure tested at the factory; however, the boiler should be pressure tested at the job location to insure that the water-tight seal was maintained during shipment.

1. Remove the shipping nipple in the supply outlet tapping at the top of the boiler and plug any necessary boiler tappings or openings.
2. Test the boiler with water pressure not exceeding 30 pounds per square inch.
3. Inspect the boiler for leaks.
4. Drain the boiler and remove plugs from the tappings that will be used.

SUGGESTED BOILER PIPING CONNECTIONS TO THE HEATING SYSTEM

The Type P-CG and CG boilers are provided with a built-in air elimination system and an air collector chamber and manual air vent is furnished and installed in the proper tapping at the top of the boiler next to the supply outlet tapping; no additional boiler air eliminating device will be required. For proper venting of the air collector chamber, open the manual air vent until water starts to flow; then close the vent. This procedure may have to be repeated periodically during the first few weeks of operation after the initial fill of the system.

1. Connect the system supply piping to the supply outlet tapping at the left end of the boiler.
2. For Type CG boilers, connect the circulator to the Straight Circulator Flange located at the left side of the boiler and connect the return piping to the circulator or remove the knockout disc in the jacket right end panel and connect the return piping to the 2 inch tapping in the right end section.
3. For Type P-CG boilers, connect the system return piping to the circulator counter flange (see Figure 1). The watertight seal between the circulator flange and circulator counter flange is maintained by a rubber "O" ring; where solder type fittings are used, be sure the "O" ring is not between the flanges while the solder connection is made. It is recommended that a separate float type automatic air vent be installed in a tee located in the return piping at the drop to the circulator.
5. For Type CG boilers, connect the cold water fill supply piping close to the boiler in the system supply piping.

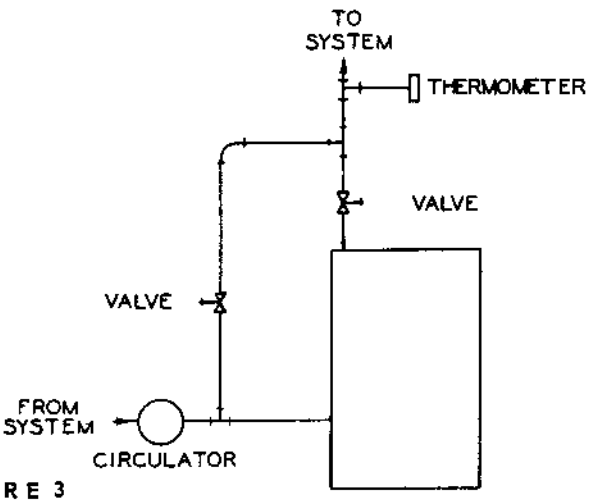


FIGURE 3

6. For Type P-CG boilers, connect the cold water fill supply piping to the union on the combination automatic fill valve and manual shut-off valve. **Before making this connection, refer to the separate instructions on the tag attached to the handle of the valve.**
7. For P-CG-6 through P-CG-10 boilers, attach the No. 110 Fill-Trol Tank to the Combination Fill Valve and Manual Shut-Off Valve. The watertight seal between the tank and the combination valve is accomplished by a rubber "O" ring. For P-CG-3 through P-CG-5 boilers, the No.109 Fill-Trol Tank is shipped attached to the Combination Valve. **Where the boiler is to be used with a radiant panel system or other low water temperature applications (i.e. converted gravity systems, etc.) a boiler bypass piping arrangement should be used to assure higher boiler water temperature for optimum boiler operation. If a boiler bypass piping arrangement is required, locate a tee in the return piping between the circulator and the boiler and another tee in the supply piping as illustrated in Figure 3. Use the same size bypass piping as the supply and return piping. Locate a valve in the bypass piping and in the supply piping between the supply outlet tapping and the tee as illustrated in Figure 3 so the water flow rate through the boiler and through the bypass can be regulated to maintain a higher boiler water temperature. Adjust the valves to provide 200° to 220°F. boiler water temperature when the system water temperature is at the maximum desired.**

DRAFT HOOD INSTALLATION

Secure the draft hood to the outlet of the flue collector hood at the top of the boiler with sheet metal screws. The draft hood must be installed as it is received without any modifications or alterations. For proper combustion, it is imperative that the bottom of the draft hood "skirt" has the proper clearance dimension above the jacket top panel, as indicated on the last page of these instructions under Ratings—Dimensions. **If the draft hood is altered, the A.G.A. approval is violated.**

BREECHING ERECTION
(also refer to Chimney or Flue)

Connect from the draft hood outlet to the chimney or vent with full-sized (same diameter as draft hood outlet) breeching. Where the installation permits, vertical venting of the combustion gases to the outside from the draft hood outlet will afford best performance at lowest total cost. Where the boiler must be connected to a chimney or vent with horizontal breeching, the horizontal breeching must be the same diameter as the draft hood outlet and should slope upward at least ¼ inch per lineal foot toward the chimney or vent. **A vertical height of 3 feet to 5 feet of breeching before any elbow or horizontal breeching is recommended to reduce chances of flue gas spillage at the draft hood.** Long horizontal breechings, excessive numbers of elbows or tees, or other obstructions which restrict the flow of combustion gases should be avoided.

CONNECT THE BOILER TO THE GAS SUPPLY

Determine whether the gas supply is to be piped to the Right Side or Left Side of the boiler. If the gas supply piping is to be located at the right side of the boiler, remove the knockout disc from the Jacket Right Side Panel; if the gas supply piping is to be located at the left side of the boiler, remove the knockout disc from the Jacket Left Side Panel. To remove the knockout disc, bend one side inward until it can be grasped with a pair of pliers; then, bend the disc back and forth until it breaks loose.

1. Remove the Jacket Door and connect from the gas valve to the gas meter (see Size of Piping to Gas Boilers). Use a street elbow or an elbow and close nipple at the inlet connection of the gas valve so the gas piping will properly pass through the opening in the Jacket Side Panel. If the boiler was ordered for propane gas, make sure the pin is located under the cap in the pressure regulator housing on the main gas valve to block off gas regulation.

   a. For 3 through 6 section and 10 section boilers to be used with natural or propane gases, and for 3 through 5 section and 9 and 10 section boilers to be used with mixed gases, the Combination Manual Main Shut-Off Gas Valve, Main (Automatic) Gas Valve, and Pressure Regulator is furnished. If an additional manual main shut-off gas valve (not supplied) is required by the local utility, it should be installed in the gas supply piping close to the boiler according to the local utility requirements.

   b. For 7 through 9 section boilers to be used with natural or propane gases and for 6 through 8 section boilers to be used with mixed gases, the Combination Main (Automatic) Gas Valve and Pressure Regulator is furnished. **The Manual Main Shut-Off Gas Valve must be located in the gas supply piping according to the local utility requirements.**

2. **A drip leg must be installed at the inlet of the gas connection to the boiler to comply with A.G.A. requirements.** Where the local utility requires that the drip leg be extended all the way to the floor, place an appropriate length of pipe between the cap and tee. Gas supply piping must be supported by external hangers; do not permit gas supply piping weight to be supported by the boiler or its accessories.
3. Purge all air from the gas supply piping.
4. Check all gas connections for leaks; use a soapy solution, do not use a flame. Liability for damage done through the use of a flame can not be assumed by the manufacturer.

SIZE OF PIPING TO GAS BOILER

In determining the size of the gas supply piping to the boiler, the following factors should be considered:

a. Diameter and length of the gas supply piping and number of fittings.
b. Maximum gas consumption (including any possible future expansion)
c. Allowable loss in gas pressure from the gas meter outlet to the boiler. This is specified as three-tenths of an inch water column.

The volume of gas to be used (in cubic feet per hour) should be determined, whenever possible, directly from the A.G.A. input rating (in BTU per hour) of the boiler to be installed and the heating value of the gas to be used. To obtain the cubic feet per hour to be used, divide the A.G.A. input

PIPE DELIVERY SCHEDULE

Length of Pipe in Feet	*CAPACITY OF PIPE IN CUBIC FEET OF GAS PER HOUR		
	½"	¾"	1"
10	132	278	520
20	92	190	350
30	73	152	285
40	63	130	245
50	56	115	215
75	45	93	175
100	38	79	150
150	31	64	120

*Flow determined by Dr. Pole's Formula - Specific Gravity: .60 Pressure Loss: 3/10" water.

ADDITIONAL LENGTH OF PIPE TO BE ADDED FOR EACH ELBOW OR TEE BEND IN THE LINE

Pipe Size, Inches	Additional Length, Feet
1/2	1.3
3/4	1.7
1	2.2

(in BTU per hour) of the boiler by the BTU heating value per cubic foot of gas.

For mixed gases, allow 1.7 cubic feet for each 1,000 BTU per hour of boiler input; for natural gas, allow .96 cubic feet for each 1,000 BTU per hour of boiler input.

WIRING THE BOILER

The boiler is shipped with the combination relay and limit control, circulator (for P-CG boilers) and main (automatic) gas valve completely wired. Bring the electrical supply through the proper opening in the jacket left side panel (see Figure 1) and into the junction box; wire the electrical supply as shown on the wiring diagram plate. Bring the thermostat wiring through the proper opening in the jacket left side panel (see Figure 1) and wire the thermostat across the proper terminals on the combination relay as shown on the wiring diagram. For CG boilers, connect the circulator to the circulator wiring harness. All safety circuit wiring should be N.E.C. Class - 1 and should be installed in compliance with any local or state codes or requirements having jurisdiction.

When using multiple zone valves with the boiler, follow the separate wiring diagram packaged with the control for proper wiring application.

OPERATING AND SAFETY CHECK OUT SEQUENCE

1. Be sure the boiler and the heat distributing units are filled with water (see Filling Steam and Water Boilers on the operating instruction card). Purge all air from the air collector chamber by opening the manual air vent until water starts to flow, then, close the vent.
2. Be sure all the air is purged from the gas supply piping and that the piping has been checked for gas leaks.
3. **Caution: Make sure that the manual main shut-off gas valve and/or the manual gas cock knob on the main (automatic) gas valve have been closed for at least five minutes before attempting to light the safety pilot burner.**
4. Move the indicator on the room thermostat to the lowest temperature setting so there is **no call for heat** and turn the main electric switch in the boiler electrical circuit to the **off** position.
5. Remove the Jacket Door and Access Panel.
6. Open the manual main shut-off gas valve and/or turn the manual gas cock knob on the main (automatic) gas valve to the pilot position.
7. Hold a burning match or taper over the safety pilot burner and depress or turn the manual reset button or knob on the main (automatic) gas valve; the safety pilot burner should then ignite. Continue to hold in the manual reset button or knob for at least 60 seconds, then release. The pilot flame should remain burning.
8. Wait at least two minutes then, turn the main electric switch in the boiler electrical circuit to the **on** position. If the main (automatic) gas valve is provided with a manual gas cock knob, turn the knob to the on position.
9. Move the indicator on the room thermostat so there is a call for heat. The main (automatic) gas valve should open and the gas burners should ignite. **Refer to Adjusting The Burners and adjust the primary air shutters to obtain the proper main burner flame.**
10. While the burners are operating, move the indicator on the limit control below the actual boiler water temperature, the main (automatic) gas valve should close and the gas burners should go out. Move the indicator on the limit control to the normal setting and the gas valve should open and the burners ignite.
11. Replace the Access Panel and the Jacket Door.
12. Set thermostat to desired room temperature.

ADJUSTING THE BURNERS

While the boiler is operating, adjust each primary air shutter to give a primary cone so that the points of the cone are between ¾ and 1 inch above the face of the main burner. At this point the main burner flame should be light blue in color. If the main burner flame has a yellow tip, open the Primary Air Shutter until the correct flame is secured.

For natural and propane gases, the primary air shutters should be approximately three-quarters open; for manufactured gases, the air shutters should be approximately one-quarter open. If the main burner flame is too hard, close the air shutter until the proper flame is secured. **Be sure the main burner heads are level and that the gas orifices will inject gas down the centerline of the burner mixer tubes.**

Measure the gas input to the boiler by reading the gas meter. Be sure all other appliances connected to the same meter are shut-off. Rate of gas flow (cubic feet per hour) multiplied by the BTU value (per cubic foot) of the gas used should check with the A.G.A. input shown on the rating plate of the boiler. If the actual input is within 5 per cent of the rated boiler input, adjust the pressure regulator to obtain the desired gas flow (the stem for adjustment is located under the cap at the top of the regulator). Turn the stem clockwise to increase the gas flow rate and counter-clockwise to decrease the rate. If the actual input is more than 5 per cent off the rated boiler input, change orifice sizes. Check the main burners again and readjust the

burner flame if necessary.

Note: For proper aspiration, the Manifold Gas Pressure should be at least 2½ inches water column, for manufactured gases, 3½ inches water column for natural gases, 11 inches water column for propane gas.

WATER BOILER CONTROLS

Air Collector Chamber and Manual Air Vent: Periodically, during the first few weeks of operation, the air collector chamber should be purged of all air by opening the manual air vent until water starts to flow, then closing the vent.

Circulator Care: Never operate the circulator without water. Follow lubricating instructions on circulators that are provided with oil cups or oil holes. Follow venting instructions on circulators with water lubricated bearings which require no oil.

Boiler Pressure: The initial fill pressure of a hot water heating system is generally to 12 pounds per square inch. When the system is heated to the limit control setting, the pressure may range up to 30 pounds per square inch. Normal system pressure will fluctuate between the fill pressure, when the system is cold, and up to 20 to 28 pounds per square inch when the system is hot.

Boiler Water Temperature: Modern hot water heating systems with **closed** type expansion tanks may operate at water temperatures up to 250°F. The high limit control should be set according to the requirements of the heating system; during severe weather this temperature setting may have to be raised or lowered, depending upon the characteristics of the heating system.

THERMOSTAT HEATER SETTING

The Thermostat Heater Setting must be adjusted to match the current requirements of the primary control used. It may be necessary to raise the Thermostat Heater Setting to provide a minimum **on** period of 2 minutes in mild weather to assure optimum system operation. To lengthen operation, move the heater indicator to a higher setting as indicated by the direction of the arrow on the heater indicator scale.

SHUT DOWN OF BOILER

1. Turn off the main electric switch in the boiler electrical circuit.
2. Close the manual main shut-off gas valve and/or the manual gas cock knob on the main (automatic) gas valve.
3. Open the boiler drain cock to remove impurities that may have settled to the bottom of the boiler; it may be necessary to drain one half to one gallon of water or until traces of sediment are gone. Refill the system to the proper pressure. The boiler water does not have to be crystal clear for proper operation, but should be free of any heavy sludge or sediment.
4. During severe winter weather have the heating system operation checked periodically or thoroughly drain the heating and plumbing systems.

ADDITIONAL INSTRUCTIONS

Before leaving the job, make sure the unit checks electrically. Be sure the room thermostat is set to the desired room temperature and that the limit control is set according to the requirements of the heating system. Make sure that the proper main burner flame is secured and that the primary air shutters are securely tightened in a fixed position so that they will not be subject to an accidental change in position. **For additional information on controls, refer to the manufacturer's instructions supplied with the controls.**

BOILER SERVICE AND MAINTENANCE

The boiler Operating Instructions contain information for the owner. Review this information with the owner and be sure he receives all instructions.

WHEN BOILER IS USED WITH REFRIGERATION SYSTEM

When boiler is used in connection with refrigeration systems, it shall be installed so that the chilled medium is piped in parallel with the heating boiler and with appropriate valves to prevent the chilled medium from entering the heating boiler.

When hot water heating boilers are connected to heating coils located in air handling units where they may be exposed to refrigerated air circulation, the boiler piping system shall be equipped with flow control valves or other automatic means to prevent gravity circulation of the boiler water during the cooling cycle.

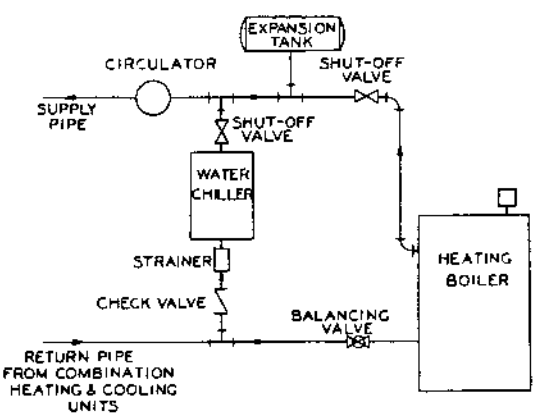
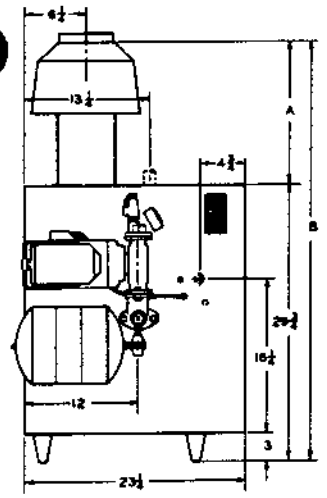


FIGURE 4

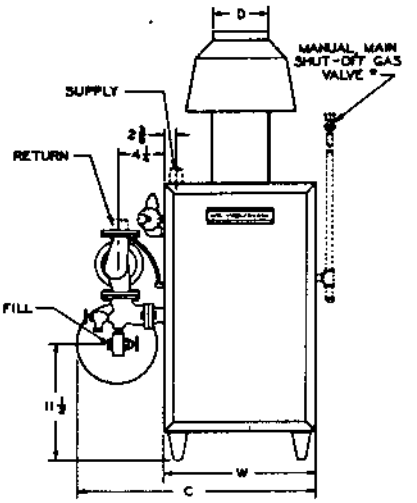
Installation Instructions

TYPE P-CG AND CG GAS BOILERS

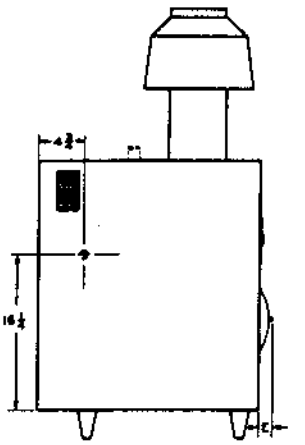
Weil-McLain Company, Inc.



LEFT SIDE



FRONT



RIGHT SIDE

* Locate manual main Shut-Off Gas Valve (where required) according to local utility requirements. Gas Supply Piping may be located at the left side or right side of the boiler.

Approved by American Gas Association

Net ratings approved by Institute of Boiler and Radiator Mfrs.

Built to ASME specifications

RATINGS — DIMENSIONS

Boiler Number	A. G. A. Input BTU/Hr.	A. G. A. Gross Output BTU/Hr.	Net I-B-R Ratings BTU/Hr.*	Net Square Feet of Water**	Dimensions in Inches					
					A	B	C	D	E	W
◆P-CG-3	60,000	48,000	36,000	240	12 5/8	42 3/8	18 1/4	4	1 1/2	10
◆P-CG-4	90,000	72,000	54,000	360	13 3/4	43 1/2	21 1/4	5	1 1/2	13
◆P-CG-5	120,000	96,000	72,000	480	14 7/8	44 5/8	24 1/4	6	1 1/2	16
◆P-CG-6	150,000	120,000	90,000	600	14 7/8	44 5/8	30 7/8	6	4	19
◆P-CG-7	180,000	144,000	108,000	720	16 13/16	46 9/16	33 7/8	7	4	22
◆P-CG-8	210,000	168,000	126,000	840	16 13/16	46 9/16	36 7/8	7	4	25
◆P-CG-9	240,000	192,000	144,000	960	18 13/16	48 9/16	39 7/8	8	4	28
◆P-CG-10	270,000	216,000	162,000	1,080	18 13/16	48 9/16	42 7/8	8	4	31

ENGINEERING DATA

Boiler Number	Supply Outlet		Return Inlet (In Circulator)+		Boiler Water Content Gallons	Maximum System Water Content Gallons▲	◈Gas Connection Pipe Size			Gas Manifold Pipe Size All Gases	Chimney and Breeching Size●
	No.	Pipe Size	No.	Pipe Size			Natural Gas	Mixed Gas	Propane Gas		
◆P-CG-3	1	1¼"	1	1"	1.54	6.94	½"	½"	½"	½"	4" I.D.
◆P-CG-4	1	1¼"	1	1"	2.11	10.21	½"	½"	½"	½"	5" I.D.
◆P-CG-5	1	1¼"	1	1"	2.69	13.49	½"	½"	½"	½"	6" I.D.
◆P-CG-6	1	1¼"	1	1"	3.26	16.76	½"	¾"	½"	½"	6" I.D.
◆P-CG-7	1	1¼"	1	1¼"	3.84	20.04	¾"	¾"	¾"	¾"	7" I.D.
◆P-CG-8	1	1¼"	1	1¼"	4.42	23.32	¾"	¾"	¾"	¾"	7" I.D.
◆P-CG-9	1	1½"	1	1½"	5.00	26.60	¾"	¾"	¾"	¾"	8" I.D.
◆P-CG-10	1	1½"	1	1½"	5.58	29.30	¾"	¾"	¾"	¾"	8" I.D.

◆ Delete "P" for assembled boiler without circulator and Fill-Trol.

* Net I-B-R Ratings are based on net installed radiation of sufficient quantity for the requirements of the building and nothing need be added for normal piping and pick-up.
Exception: An additional allowance should be made for unusual piping and pick-up loads.

** Based upon average water temperature of 170°F. in heat distributing units.

\+ For CG boilers, there is one 2 inch tapped return connection at the right side of the boiler and one 1¼ inch flanged return connection at the left side of the boiler.

▲ Includes boiler water volume. Based upon series loop piping system with non-ferrous (convector) type heat distributing units. For series loop piping systems with cast-iron heat distributing units or for other piping systems which have a higher water content, additional compression tank capacity must be provided (see table in text).

◈ For gas connection size for manufactured gases, consult factory.

● In special cases where surrounding conditions permit, chimney height may be 10 feet.