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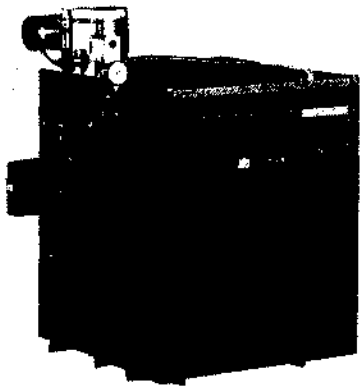
WEIL-McLAIN

WM

EG, PEG and EGH (Series 3) Boiler Manual



EG

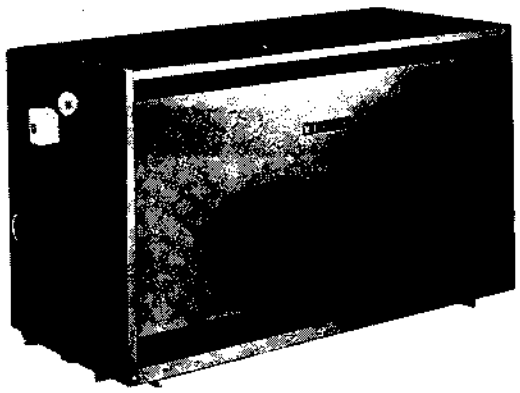
– for natural or propane gas

– with optional tankless heater application

– refer to Control Supplement for additional information and Gas Control Parts

Includes:

- Installation
- Operation
- Service
- Boiler Parts



EGH

To the owner: Regular service on this boiler is recommended and should be performed by a qualified heating contractor.

To the installer: Installation is not complete until all instructions shipped with this boiler are returned to their envelope and displayed near the boiler.

Read all instructions and warranty before starting

Any claims for damage or shortage in shipment must be filed immediately against the transportation company by the consignee.

Part No. 550-141-669/0392DCP

Table of Contents

IMPORTANT: When calling or writing about boiler, PLEASE GIVE MODEL and SERIES located on boiler rating label, AND C.P. NUMBER affixed next to rating label.

DANGER

Do not use petroleum-based cleaning or sealing compounds in boiler system.
Severe damage to boiler will result, causing substantial property damage.

IMPORTANT

EG and EGH boilers for tankless or storage heater application are available only on special order as factory-installed optional equipment. Standard boilers cannot be adapted for heater use.

The following defined terms are used throughout this manual to bring attention to the presence of hazards of various risk levels, or to important information concerning the life of the product.

DANGER Indicates presence of a hazard which will cause severe personal injury, death or substantial property damage if the warning is ignored.

WARNING Indicates presence of a hazard which can cause severe personal injury, death or substantial property damage if the warning is ignored.

CAUTION Indicates presence of a hazard which will or can cause minor personal injury or property damage if the warning is ignored.

NOTICE Indicates special instructions on installation, operation, or maintenance which are important but not related to personal injury hazards.

WARNING

Read all instructions before installing. Failure to follow all instructions in proper order can cause severe personal injury or death, or substantial property damage.

Section I: Installation

CODES

Installations must comply with all local codes, laws, regulations and ordinances. Also National Fuel Gas Code ANSI Z223.1-latest edition. When required, installations must conform to Standard for Controls and Safety Devices for Automatically Fired Boilers, ANSI/ASME CSD-1. Safe lighting and other performance criteria were met with the gas manifold and contrcl assembly provided on boiler when boiler underwent tests specified in ANSI Z21.13-latest edition.

Canadian installations must comply with CAN/CGA B149.1 or .2 Installation Codes. 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.

COMBUSTION AIR AND VENTILATION OPENINGS

Combustion air and ventilation openings must comply with Section 5.3, Air for Combustion and Ventilation, of National Fuel Gas Code ANSI-Z223.1-latest edition, or applicable building codes. Canadian installations must comply with CAN/CGA B149.1 or .2 Installation Codes.

WARNING Adequate combustion air and ventilation openings must be provided to assure proper combustion and prevent possibility of flue gas spillage.

Boiler installation must assure sufficient openings in building and boiler room to provide adequate combustion air and ventilation. Consider construction tightness of building when deciding whether additional outside openings may be needed.

Older buildings with single-pane windows, minimal weatherstripping and no vapor barrier often provide enough natural infiltration and ventilation without dedicated openings.

New construction or remodeled buildings are most often built tighter. Windows and doors are weatherstripped, vapor barriers are used and openings in walls are caulked. As a result, such tight construction is unlikely to allow proper natural air infiltration and ventilation.

Air from inside building (boiler in interior room):

- Tightly constructed buildings must be provided with openings to outside for combustion and ventilation air. These openings must be sized to handle all fuel burning appliances, exhaust and ventilation fans and fireplaces.
- When openings to boiler room are taken to interior spaces, provide two permanent openings: a combustion air opening within 12 inches of floor and a ventilation opening within 12 inches of ceiling. Each opening must provide a minimum free area of one square inch per 1,000 Btuh input of all appliances in room plus requirements for any exhaust fans in room. The interior space supplying combustion and ventilation air must have adequate infiltration from outside.

Air directly from outside to boiler room:

- Tightly constructed buildings must be provided with combustion air and ventilation openings to boiler room which are adequate to handle the boiler needs plus the needs of all other fuel-burning appliances, fireplaces and exhaust or ventilation fans.
- Combustion and ventilation openings connecting directly or by ducting to outside, or to attic or crawl spaces that freely connect with outside, must be sized as follows:
  1. Outside wall or vertical ducting – one square inch per 4,000 Btuh input of all appliances in room plus requirements for any exhaust fans or other appliances in room.
  2. Horizontal ducting – one square inch per 2,000 Btuh of all appliances in room plus requirements for any exhaust fans or other appliances in room.
  3. All ducting must be same size as permanent openings. Minimum area dimensions of ducting must be no less than 9 square inches.
  4. Other size ducting must comply with local codes.

CHIMNEY OR VENT REQUIREMENTS

Venting must be installed according to Part 7, Venting of Equipment, of National Fuel Gas Code ANSI Z223.1-latest edition and applicable building codes. Canadian installations must comply with CAN/CGA B149.1 or .2 Installation Codes.

Minimum chimney or vent sizes are on page 27 of these instructions. A chimney or vent should extend at least 3 feet above the highest point where it passes through a roof of a building and at least 2 feet higher than any portion of a building within a horizontal distance of 10 feet. A chimney or vent must not extend less than those distances stated above.

A lined chimney is preferred and must be used when required by federal, provincial, territorial, state, or local building codes. Vitreous tile linings with joints that prevent the retention of moisture and linings made of noncorrosive materials are best. Advice for flue connections and chimney linings can be obtained from local gas utility. Type "B" vent material or single wall vent pipe may be used.

DANGER Inspect existing chimney or vent before installing boiler. Failure to clean, or replace perforated pipe or tile lining, will cause severe injury or death.

DANGER Do not alter boiler draft hood or place any obstruction or non-approved damper in the breeching or vent system. A.G.A. and C.G.A. certifications will become void. Flue gas spillage and carbon monoxide emissions will occur causing severe personal injury or death.

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

WHEN REMOVING BOILER FROM COMMON VENTING SYSTEM:

WARNING Failure to follow all instructions listed below can cause flue gas spillage and carbon monoxide emissions, resulting in severe personal injury, death or substantial property damage.

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 openings 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 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 National Fuel Gas Code, ANSI Z223.1-latest edition. When resizing any portion of the common venting system, the common venting system should be resized to approach the minimum size as determined using the appropriate tables in Appendix G in the National Fuel Gas Code, ANSI Z223.1-latest edition.

Canadian installations must comply with CAN/CGA B149.1 or .2 Installation Codes.

SELECT THE BOILER LOCATION

- Consider all connections to the boiler before selecting a location.
- Boiler must be installed so that gas control system components are protected from dripping or spraying water or rain during operation or service.

WARNING To avoid personal injury, death or property damage, keep boiler area clear and free from combustible materials, gasoline and other flammable vapors and liquids.

INSTALLATION CLEARANCES

Suggested minimum clearances for servicing

24 inches for cleaning and servicing, left side.
18 inches for access to controls and components, front.
46 inches from top for cleaning flueways.
6 inches on remaining sides.

Required clearances to combustible material

Top 46" R. Side 4" Front Alcove
Rear 6" L. Side 4"
EGH 105–125 provide service clearances listed above and minimum 24" between jacket and any combustible wall(s) and ceiling. Install in space large in comparison to size of boiler.

Single wall vent pipe must be at least 6 inches from combustible material.

Double wall and B-vent pipe refer to vent manufacturer's recommendation for clearances to combustible material.

RESIDENTIAL GARAGE INSTALLATION

Install boiler so burners are at least 18 inches above the floor.

BOILER FOUNDATION

WARNING Fire hazard. Never install boiler on combustible flooring or carpeting, even if a concrete or aerated foundation is used.

1. Level concrete or brick foundation is required if:
   a) Water could flood area.
   b) Non-level conditions exist.
2. Use a foundation with airways when:
   a) Electrical wiring or telephone cables buried in the concrete floor of the boiler room.
   b) Concrete floor is "green."
   c) Water is channeled under the concrete.

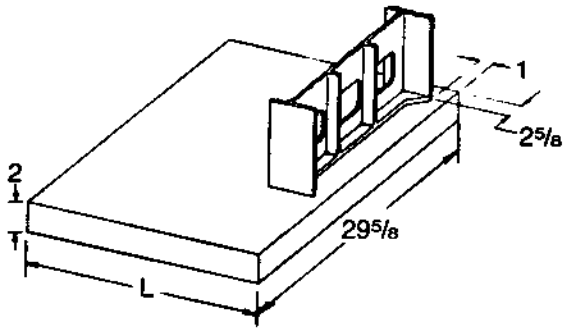


FIGURE 1

BOILER FOUNDATION SIZE – INCHES			
Boiler No.	L	Boiler No.	L
EG 30–35	19	EGH 85	40¼
EG 40–45	23¼	EGH 95	44½
EG 50–55	27½	EGH 105	48¾
EG 65	31¾	EGH 115	53
EG 75	36	EGH 125	57¼

PLACING THE BOILER

WARNING Block assembly is extremely heavy. Handle with caution to avoid personal injury.

Where the EGH block assembly is taken apart for handling:

1. Put a support under center of block. Support must be within ½ inch of block bottom.
2. Remove short center draw rods.
3. Tip half blocks on end as shown in Figure 2. Save elastomer sealing rings and cope seal between sections.
4. After moving half-blocks into desired location, clean port surfaces with clean, dry rag. Do not use oil. Place sealing rings in recessed ports. Place cope seal in section grooves.
5. Re-assemble block in reverse order. When drawing sections together, use 45 (±5) ft-lbs torque.

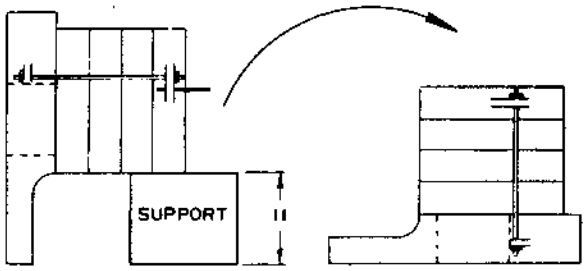


FIGURE 2

INSTALLATION OF OPTIONAL INDIRECT WATER HEATER

For a boiler ordered with internal type indirect water heater, remove heater opening cover plate (water boilers – round plate on left side; steam boilers – rectangular plate on front).

Install heater(s) as shown on pages 13 – 14. Do not overtighten studs and nuts – damage to the gasket can occur.

HYDROSTATIC PRESSURE TEST

Pressure test before attaching gas piping or electrical supply.

1. Plug tappings or openings.
2. Do not use gauge supplied with boiler for pressure testing. Install gauge with appropriate range.
3. Fill boiler with water. Vent all air. For more than 10 minutes, test steam boilers between 45 – 55 psi and water boilers at 75 – 85 psi for 50 psi working pressure.

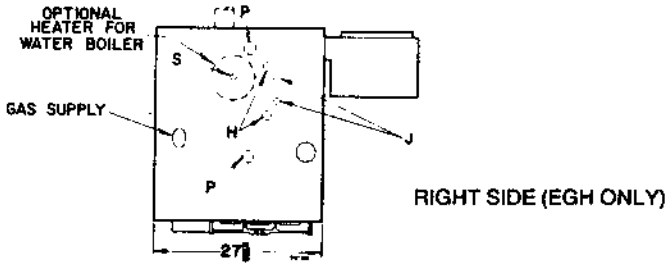
WARNING Do not leave boiler unattended. A cold water fill could expand and cause excessive pressure.

4. Check for maintained gauge pressure and leaks. Repair if found.

WARNING Leaks must be repaired at once. Failure to do so can damage boiler, resulting in substantial property damage.

DANGER Do not use petroleum based cleaning or sealing compounds in boiler system. Severe damage to boiler will result, causing substantial property damage.

5. Drain boiler and remove plugs from any tappings that will be used for controls and accessories. Refer to control tapping table and Figure 3.
6. On initial start-up check for leaks in the system piping. If found, repair at once.



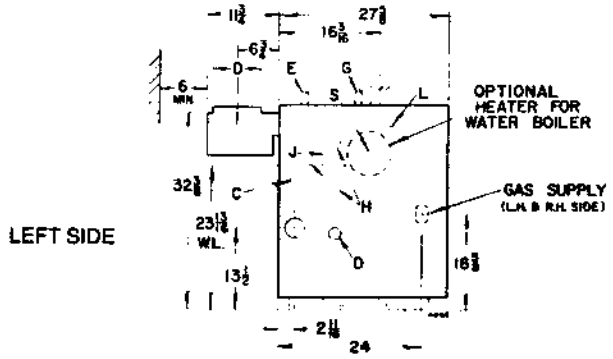


FIGURE 3

CONTROL TAPPING TABLE

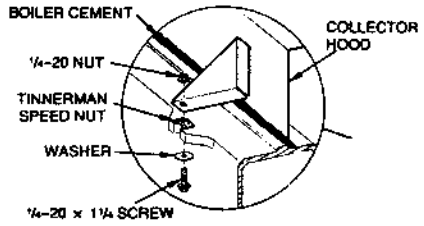
LOCATION	SIZE	STEAM	WATER
C	¾"	Probe Type Low Water Cutoff	Probe Type LWCO (when used)
D	¾"	Drain	Drain
E	¾"	Safety Valve	Safety Relief Valve
G	¾"	Plugged	Piping to Compression Tank or Auto Air Vent
H	½"	Gauge Glass and/or Optional Low Water Cut-off	Combination Pressure-Temperature Gauge
J*	⅜"	Try Cock Tappings	–
L	¼"	Syphon, Pressure Gauge, High Limit (EG Only)	Combination Pressure-Temperature Gauge
P (EGH Only)	1"	Float Type Low Water Cutoff, Pressure Limit Control and Pressure Gauge; or Low Water Cutoff and Feeder Combination; or Low Water Cutoff and Pump Control	Float Type Low Water Cutoff; or Low Water Cutoff and Feeder Combination; or Low Water Cutoff and Pump Control
S	1½"	Skim Tapping	Limit Control
	¾"* (w/tankless heater)	–	Limit Control

*Available only on special request.
NOTE: Limit Control and Supply Piping must be on the same end of the EGH boiler.
NOTE: When an internal type water heater is installed, use the tapping in the heater for an additional operating control.

INSTALLATION OF FLUE COLLECTOR HOOD (Factory installed on PEG boilers)

Set flue collector hood on boiler as shown in Figures 4 and 5. Use boiler cement furnished to provide gas tight seal.

WARNING Hood must be sealed gas tight to prevent possibility of flue gas spillage and carbon monoxide emissions, causing severe personal injury or death.

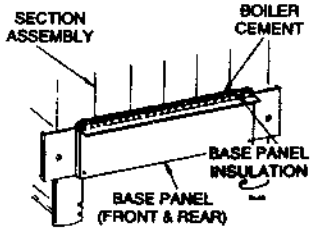


FLUE COLLECTOR HOOD FIGURE 4

INSTALLATION OF FRONT AND BACK BASE PANELS (Factory installed on PEG boilers)

See Figure 5 for installation. Fasten front (6⅛ inch) and back (7⅝ inch) base panels to sections. Seal with boiler cement along top of insulation panels.

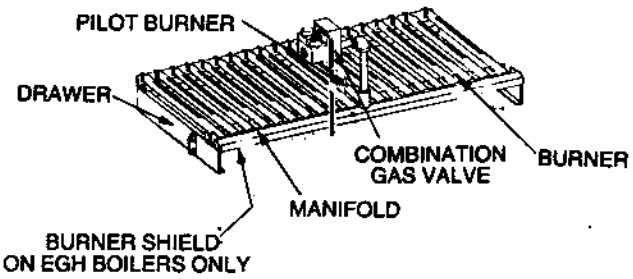
WARNING Front and rear base panels are insulated and must be sealed gas tight at top to assure proper combustion, prevent possibility of flue gas spillage and carbon monoxide emissions, causing severe personal injury or death.



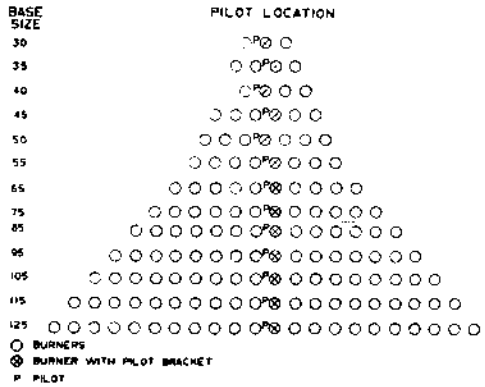
FRONT AND BACK BASE PANELS FIGURE 5

INSTALLATION OF DRAWER ASSEMBLY AND FRONT ACCESS PANEL AND BACK BASE CHANNEL (Factory installed on PEG boilers – follow steps 2 and 3)

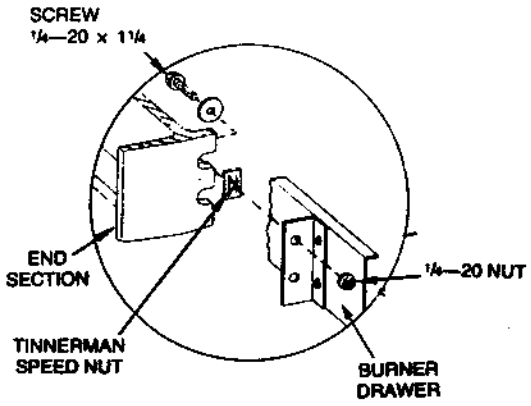
1. The drawer assembly consists of the burner drawer, main burners, gas manifold, pilot burner, etc. See Figures 6, 7 and 8 for installation.



BURNER DRAWER ASSEMBLY FIGURE 6



PILOT BURNER LOCATION FIGURE 7



BURNER DRAWER INSTALLATION FIGURE 8

2. Check for proper orifice sizing from chart below.

DANGER

Proper orifices must be used. Failure to do so will cause severe personal injury, death or substantial property damage.

ORIFICE DRILL SIZES		
Type of Gas	Heating Value, BTU/cu. ft.	Standard Orifice Drill Size
Natural	1,000	No. 41
Propane	2,500	No. 54

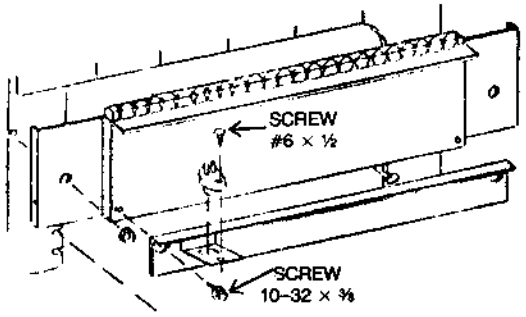
ORIFICE DRILL SIZE – EG – CANADA ONLY		
Elevation	Natural	Propane
0 – 2000 ft.	No. 41	No. 54
2000 – 4500 ft.	No. 43	No. 55

3. Level and straighten burners.

DANGER

Burners must be properly seated in slots in back burner support with openings facing up. Gas orifices must inject down center of burner. Failure to properly seat burners will result in severe personal injury, death or substantial property damage.

4. Install front access panel and back base channel. See Figure 9.



ACCESS PANEL FIGURE 9

5. Install rollout thermal fuse element with wire terminals facing up on front access panel of EG 30–75 boilers only as shown in Figure 9. Wire per Control Supplement.

JACKET INSTALLATION (Factory installed on PEG boilers)

1. Remove the proper knockout discs from panels as shown in tapping table, page 6.

NOTICE

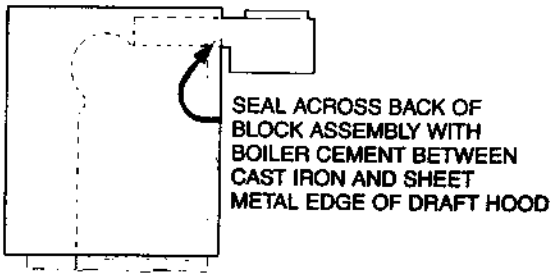
Tankless and storage heater knockouts must be removed for EG and EGH boilers with optional tankless heaters prior to jacket installation.

2. Follow Jacket Instructions in jacket carton.

DRAFT HOOD INSTALLATION

Attach draft hood to flue collector hood using #10 × ½" sheet metal screws provided. Use boiler cement furnished to provide gas tight seal.

DANGER Do not alter boiler draft hood or place any obstruction or non-approved damper in the breeching or vent system. A.G.A. and C.G.A. certifications will become void. Flue gas spillage and carbon monoxide emissions will occur causing severe personal injury or death.



DRAFT HOOD
FIGURE 10

SPILL SWITCH INSTALLATION

On EG 30–75 boilers only, fasten spill switch to draft hood as shown on page 22, Drawing Ref. No. 24. Connect wires as shown in Control Supplement.

DAMPER INSTALLATION

If damper will be installed, see Control Supplement for information.

BREECHING ERECTION

Connect from draft hood or damper outlet to chimney or vent with same size breeching. Where possible, vertical venting to the outside from draft hood or damper outlet will offer best performance. Where horizontal breeching is used, slope upward at least ¼ inch per lineal foot toward chimney or vent and support with hangers to prevent sagging.

WARNING 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 draft hood on EGH-95 thru -125 boilers (not restricted on any EG or EGH-85). Long horizontal breechings, excessive numbers of elbows or tees, or other obstructions which restrict the flow of combustion gases should be avoided.

Breeching must not be connected to any portion of a mechanical draft system operating under positive pressure.

Section II: Piping Connections

Pipe before installing controls. Connect return piping after jacket is attached. Connect supply piping before or after jacket is attached.

CAUTION Failure to properly pipe the boiler may result in improper operation and damage to the boiler or building.

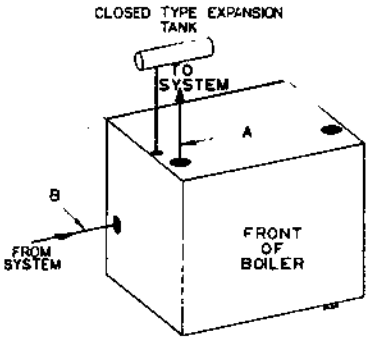
FORCED HOT WATER BOILERS AND GRAVITY HOT WATER BOILERS (EG ONLY)

Refer to table and Figures 11a and 11b.

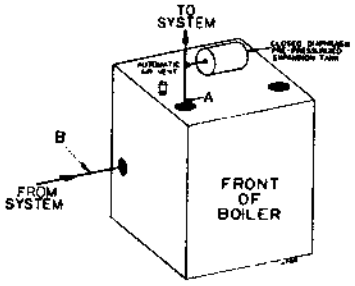
1. Circulator must be selected and sized according to the design requirements of the system. Size expansion tank to handle the volume of water in the system.
2. Small expansion tanks cause system water to be lost from relief valve. Make-up water is then added through fill valve. Eventual section failure can result. Expansion tank installation:

   a) Closed type expansion tank – connect from the ¾" N.P.T. tapping on left end section to expansion tank using ¾" N.P.T. piping. Any horizontal piping must pitch upward toward tank at least 1 inch per 5 feet of piping.

   b) Diaphragm type expansion tank – may be located anywhere in the system, preferably near the boiler. Install automatic air vent as shown in Figure 11b.



RECOMMENDED PIPING CONNECTIONS FORCED HOT WATER BOILERS WITH CLOSED TYPE EXPANSION TANK FIGURE 11a



RECOMMENDED PIPING CONNECTIONS FORCED HOT WATER BOILERS WITH DIAPHRAGM TYPE EXPANSION TANK FIGURE 11b

***FORCED HOT WATER MINIMUM RECOMMENDED PIPE SIZES**

Boiler Number	Supply "A"	Return "B"
EG-30, 35	1"	1"
EG-40, 45 & 50	1¼"	1¼"
EG-55 & 65	1½"	1½"
EG-75	2"	2"
EGH-85–95	2"	2"
EGH-105–125	2½"	2½"

* All supply and return pipe sizes are based upon a 20°F temperature rise through the boiler.

GRAVITY HOT WATER MINIMUM RECOMMENDED PIPE SIZES

Boiler Number	Supply	Return
EG-30, 35	1½"	1½"
EG-40, 45, 50	2"	2"
EG-55, 65, 75	2½"	2½"

3. Install water relief valve vertically in "E" tapping.

WARNING Relief valve discharge piping must be piped near floor close to floor drain to eliminate potential of severe burns. Do not pipe to any area where freezing could occur. Do not plug valve or place any obstruction in discharge line.

4. Connect system return piping to left end for EG – right or left for EGH. Supply and return must be on same end of EGH boiler.
5. Installer must provide drain cock(s).
6. Connect cold water fill supply piping close to boiler.
7. Plug all unused tappings.
8. Multiple Zoning
   a) Zone valves:
   Refer to zone valve manufacturer's literature for wiring and application. A separate transformer is required to power zone valves.

   Provide balancing valves to adjust the flow so it is about the same in each zone.

   b) Circulators:
   Zoning with circulators requires a relay for each circulator.

   Install flow control valves to prevent gravity circulation. Provide balancing valves to adjust the flow so it is about the same in each zone.
9. If system is to be ASME inspected and approved, an additional high temperature limit is needed. Purchase and install the control in supply outlet piping from boiler.

BYPASS PIPING

BYPASS PIPING IS NOT NORMALLY REQUIRED ON TYPICAL BASEBOARD SYSTEM.

Bypass piping should be used for the following installations. Bypass, supply, and return piping should be same size.

1. See Figure 12 to protect:
   - radiant panels, plaster, etc. from high temperature water supplied from boiler, or
   - boiler from condensation caused by low temperature water returned from system.

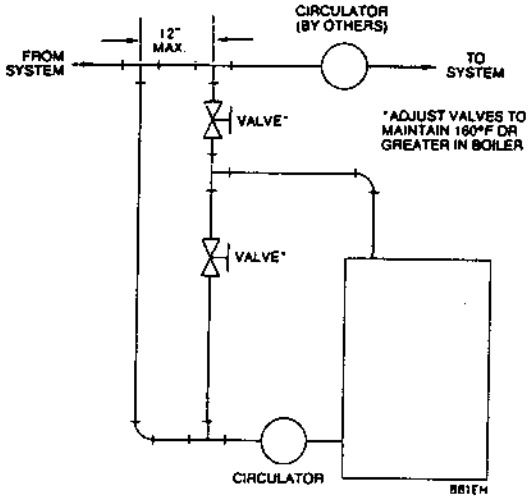


FIGURE 12

2. See Figure 13 to protect boiler from condensation formed by low water temperature returned from large water content converted gravity systems, etc.

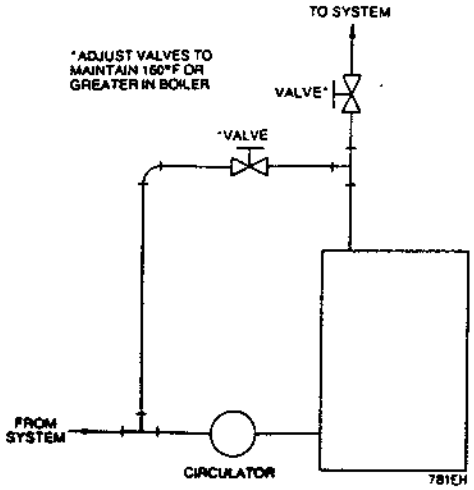
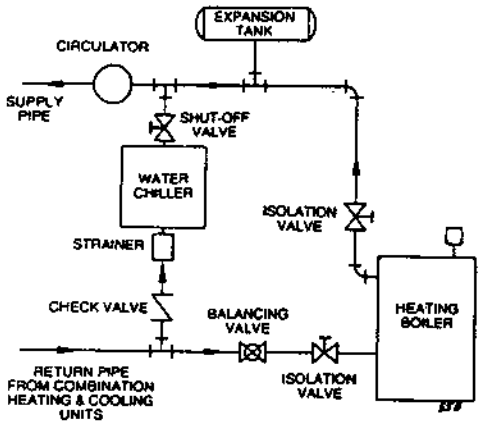


FIGURE 13

USE WITH REFRIGERATION SYSTEMS

The boiler must be installed so that chilled medium is piped in parallel with the heating boiler with appropriate valves to prevent the chilled medium from entering the boiler. See Fig. 14. Consult I = B = R Installation and Piping Guides.

If boiler is connected to heating coils located in air handling units where they can be exposed to refrigerated air, gravity circulation during the cooling cycle must be prevented with flow control valves or other automatic means.



RECOMMENDED PIPING FOR COMBINATION HEATING & COOLING (REFRIGERATION) SYSTEMS
FIGURE 14

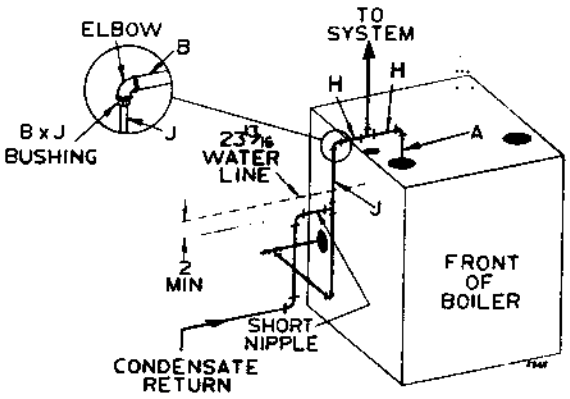
STEAM BOILERS

1. Refer to table and Figures 15 or 16. Pipe exactly as shown.

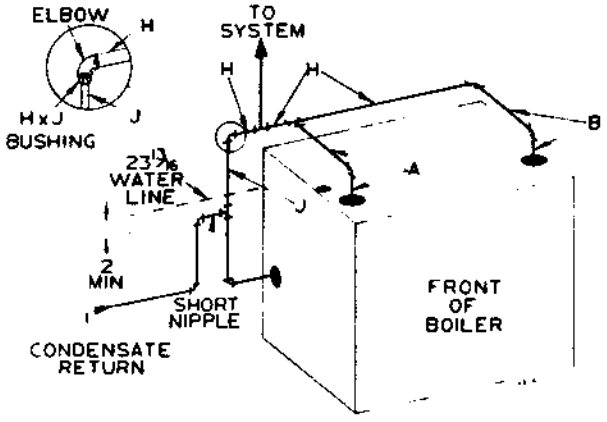
   Satisfactory operation of a steam heating system depends on adequate condensate return to boiler to maintain a steady water level. Avoid adding raw make-up water. Where condensate return is not adequate, install low water cut-off and pump control, condensate receiver, and condensate boiler feed pump. Refer to Figure 17 for sizing.

2. Install steam relief valve vertically in "E" tapping.

WARNING Relief valve discharge piping must be piped near floor close to floor drain to eliminate potential or severe burns. Do not pipe to any area where freezing could occur. Do not plug, valve or place any obstruction in discharge line.



RECOMMENDED PIPING CONNECTIONS EG STEAM BOILERS FIGURE 15



RECOMMENDED PIPING CONNECTIONS EGH STEAM BOILERS FIGURE 16

STEAM BOILER PIPING MINIMUM RECOMMENDED PIPE SIZES

Steam Boiler Size	Riser Pipe Size A	Riser Pipe Size B	Header* H	Equalizer J
EG-30, 35	2"	–	2"	1½"
EG-40, 45, 50	2½"	–	2½"	1½"
EG-55, 65, 75	3"	–	3"	1½"
EGH-85, 95	2"	2"	3"	1½"
EGH-105	2½"	2½"	3"	1½"
EGH-115, 125	2½"	2½"	4"	1½"

* 24" minimum from waterline to header.

Boiler Model	AGA Gross Output # Steam Per Hour	Gallons Condensate Per Hour	Minimum Condensate Receiver Capacity (Gal.) 15 Minute Boiler Operation	30 Minute Boiler Operation	45 Minute Boiler Operation	60 Minute Boiler Operation	Recommended Maximum Condensate Feed Pump Capacity GPM*
EG-30	63	8	2	4	6	8	0.2
EG-35	81	10	3	6	9	12	0.3
EG-40	102	12	4	7	11	14	0.4
EG-45	122	15	5	9	14	18	0.5
EG-50	142	17	5	10	15	20	0.6
EG-55	163	20	6	12	18	24	0.7
EG-65	203	24	7	14	22	29	0.8
EG-75	240	29	9	17	26	35	1.0
EGH-85	280	34	10	20	31	41	1.1
EGH-95	320	38	11	23	34	46	1.3
EGH-105	360	43	13	26	39	52	1.4
EGH-115	400	48	14	29	43	58	1.6
EGH-125	440	53	16	32	48	64	1.8

* If pump capacity exceeds capacity shown, pump can be throttled with globe or ball valve.

CONDENSATE RECEIVER CAPACITY FIGURE 17

WARNING Failure to properly install, pipe and wire boiler controls may result in severe damage to the boiler, building and personnel.

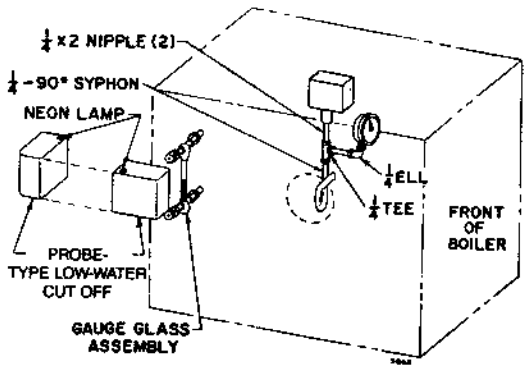
WATER BOILER

1. Install controls as shown on Control Tapping Table and Figure 3, page 6. Limit control and supply piping must be on the same end of EGH boiler.
2. Low water cut off for water boilers:
   a) Must be installed if boiler is located above radiation level.
   b) Must be installed on all EGH 105–125 water boilers to meet ASME specifications (low water cut-off not supplied by Weil-McLain).
   c) May be required on water boilers by certain state, local or territorial codes or insurance companies.

   If a low water cut-off is used on a water boiler, use a control designed especially for water installations. An electrode probe type may be located in a tee in the supply line above boiler, also see Control Tapping Table, page 6.
3. If system is to be ASME inspected and approved, an additional high temperature limit is needed. Purchase and install in supply line above boiler.

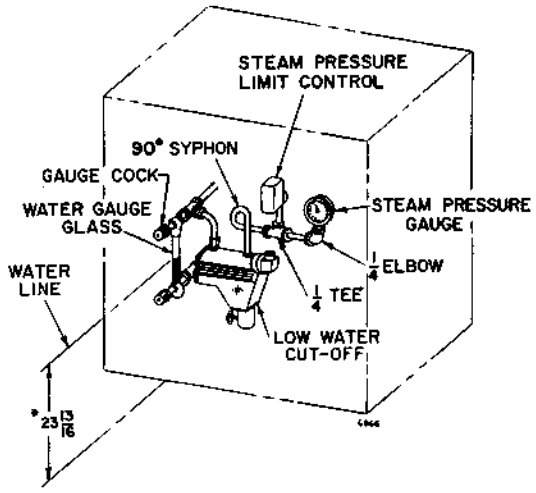
STEAM BOILER

1. For steam boilers furnished with probe-type low water cut-offs, install as shown in Figure 18.



PROBE-TYPE LOW WATER CUT-OFF
FIGURE 18

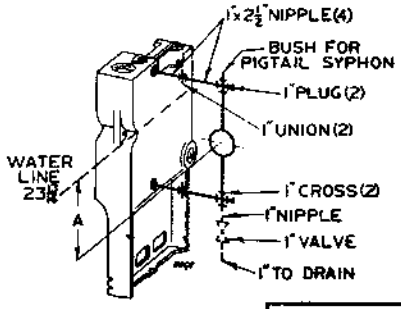
2. For steam boilers furnished with float type low water cut-off, install controls as illustrated in Figure 19.



* Water Line Dimension measured from bottom of boiler section leg where it rests on the boiler room floor or boiler foundation.

FLOAT-TYPE LOW WATER CUT-OFF
FIGURE 19

   a) Other float-type water-level controls for EGH steam boilers are shown in Figure 20. (Use 1 inch I.P.S. connections).
   b) Water feeders are not recommended for primary control. A low-water cut-off with pump controller is recommended with a condensate receiver and feed pump.
3. Install remaining controls as shown in Control Tapping Table and Figure 3, page 6.



L.W.C.O.	DIM A.
No. 247-2	1 3/16"
No. 61	2 5/8"
No. 63	2 5/8"
No. 51-2, 51-S-2	1 1/2"
No. 150, 157	2 1/4"
No. 93, 94	2 5/8"

PIPING FOR OPTIONAL FLOAT TYPE WATER LEVEL CONTROLLERS FOR STEAM BOILERS
FIGURE 20

NOTICE EG and EGH boilers for tankless or storage heater application are available only on special order as factory-installed optional equipment. Standard boilers cannot be adapted for heater use.

TANKLESS HEATER HOOK-UP (forced hot water or steam boilers)

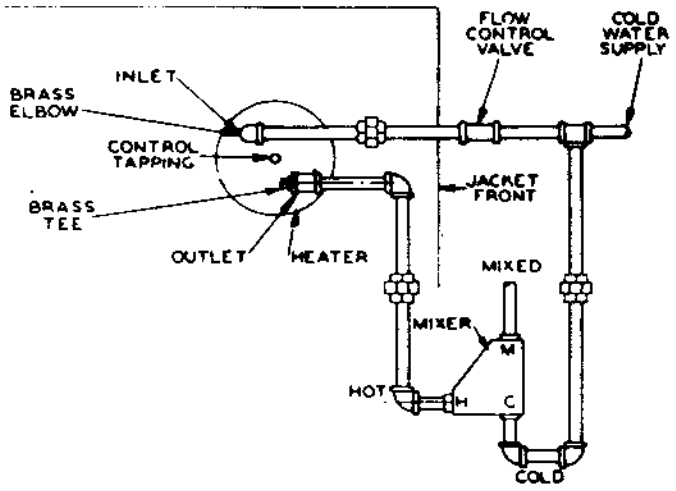
For correct operation, install as shown in Figure 21 (water boilers) or Figure 22 (steam boilers).

1. Automatic mixing valve must be installed per mixing valve manufacturer's instructions.
2. Flow regulating valve must be installed. Size according to intermittent draw of heater as shown in following table.
3. Operating control with a small differential scale is recommended. Install in temperature control tapping in heater plate.
4. In hard water areas, it is advisable to soften cold domestic supply water to the tankless heater to prevent lime build-up.

STEAM AND FORCED HOT WATER BOILER TANKLESS HEATER RATINGS

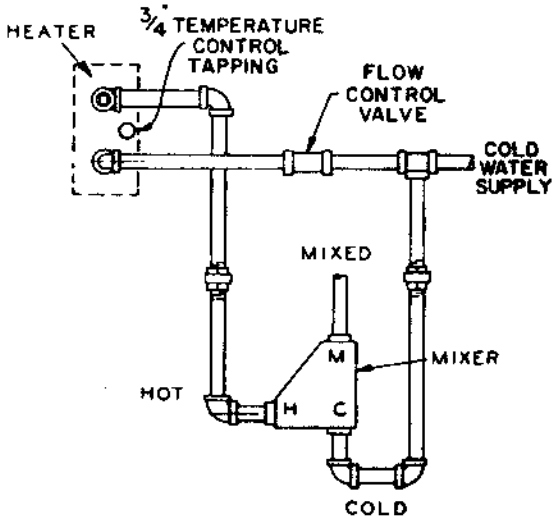
Boiler Number	▲ Heater Number	Intermittent Draw GPM* 100°F. Av. Temp. Rise	Continuous Draw GPM** 100°F. Av. Temp. Rise	Inlet and Outlet Tappings	Temp. Control Tapping
Water					
EG-35	E-624	3.00	1.60	½"	¾"
EG-40	E-624	3.00	2.00	½"	¾"
EG-45	E-624	3.25	2.40	½"	¾"
EG-50	E-626	4.00	2.80	½"	¾"
EG-55	E-626	4.25	3.20	½"	¾"
EG-65	E-632	5.00	4.00	½"	¾"
Steam					
EG-35	35-S-29	3.00	1.60	¾"	¾"
EG-40	35-S-29	3.00	2.00	¾"	¾"
EG-45	35-S-29	3.25	2.40	¾"	¾"
EG-50	35-S-29	3.25	2.80	¾"	¾"
EG-55	35-S-29	3.50	3.20	¾"	¾"
EG-65	35-S-29	3.75	4.00	¾"	¾"
EG-75	35-S-29	4.00	4.80	¾"	¾"
Water					
EGH-85■	E632	5.50	5.60	½"	¾"
EGH-95	E632	5.50	5.55	½"	¾"
EGH-105	E632	5.75	5.75	½"	¾"
EGH-115	E632	6.00	6.00	½"	¾"
EGH-125	E632	6.00	6.00	½"	¾"
Steam					
EGH-85	35-S-29	4.00	5.00	¾"	¾"
EGH-95	35-S-29	4.00	5.00	¾"	¾"
EGH-105	35-S-29	4.00	5.00	¾"	¾"
EGH-115	35-S-29	4.00	5.00	¾"	¾"
EGH-125	35-S-29	4.00	5.00	¾"	¾"

■Note: EGH 85 Water – use one heater only.
Weil-McLain ratings based on 60 PSIG domestic water pressure at heater.
* Gallons of water per minute heated from 40° to 140°F. with 200°F. boiler water temperature.
** Continuous draw – no recovery period.
▲ These single wall heat exchangers comply with National Standard Plumbing Code provided that:
- boiler water (including additives) is practically non-toxic, having a toxicity rating or class of 1, as listed in *Clinical Toxicology of Commercial Products*, and
- boiler water pressure is limited to max. 30 psig by approved water or steam relief valve.



Note: Piping Connections not furnished. Use brass plugs in tees and crosses to facilitate cleaning in hard water areas.

TANKLESS HEATER PIPING (WATER BOILER) FIGURE 21



Note: Piping Connections not furnished. Use brass plugs in tees and crosses to facilitate cleaning in hard water areas.

TANKLESS HEATER PIPING (STEAM BOILER) FIGURE 22

STORAGE HEATER HOOK-UP
(forced hot water boiler only)

NOTICE

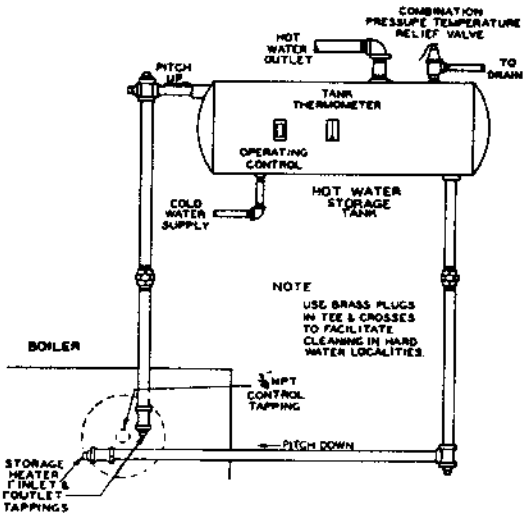
The 62-2-E Storage Heater cannot be used with Type EG-30, EG-35, EG-40 or EG-45 forced hot water boilers or any size Steam EG or EGH boiler.

1. Locate as high as possible above boiler.
2. Vertical type storage tank can be used if the bottom of the tank can be located above top of boiler.
3. To provide gravity circulation:
   a) Horizontal supply from heater to tank must pitch upward 1 inch for each 10 feet of piping.
   b) Horizontal return from tank to heater must pitch downward 1 inch for each 10 feet of piping.
4. Locate return piping above heater.
5. Use as few elbows and pipe fittings as possible.

STORAGE HEATER RATINGS

Water Boiler Size	Storage Heater No. ▲	180° Boiler Water Heater Cap. Gals. 40° – 140° Rise	212° Boiler Water Heater Cap. Gals. 40° – 140° Rise
EG-50 thru EG-75 and EGH-85 thru EGH-125	62-2-E	50 in 3 hours	70 in 3 hours
Recommended Storage Tank		50 Gallons	75 Gallons

▲ These single wall heat exchangers comply with National Standard Plumbing Code provided that:
- boiler water (including additives) is practically non-toxic, having a toxicity rating or class of 1, as listed in *Clinical Toxicology of Commercial Products*, and
- boiler water pressure is limited to max. 30 psig by approved water or steam relief valve.



SCHEMATIC STORAGE HEATER PIPING
FIGURE 23

Section V: Gas Piping

Size gas piping considering:

a. Diameter and length of gas supplying piping.

b. Number of fittings.

c. Maximum gas consumption (including any possible future expansion).

d. Allowable loss in gas pressure from gas meter outlet to boiler. For pressure drops, see ANSI Z223.1. Canadian installations must comply with CAN/CGA B149.1 or .2 Installation Codes.

1. For natural gas:
   a) Refer to following tables. To obtain cubic feet per hour, divide the input by 1000.
   b) Size for rated boiler input.
   c) Inlet gas pressure: 5" W.C. minimum
      13" W.C. maximum
   d) Manifold gas pressure: 3½" W.C.
   e) Install 100% lock-up gas pressure regulator in supply line if inlet pressure exceeds 13" W.C. Adjust for 13" W.C. maximum.
2. For propane gas:
   a) Inlet gas pressure: 11" W.C. minimum
      13" W.C. maximum
   b) Manifold gas pressure: 10" W.C.
   c) Gas pressure regulator provided by gas supplier must be adjusted for maximum pressure of 13" W.C.
   d) Contact gas supplier to size pipes, tanks and regulator.

PIPE DELIVERY SCHEDULE TABLE

*Adjusted Length of Gas Supply Piping in Feet	†Capacity of Pipe Sizes In Cubic Feet of Gas Per Hour					
	½"	¾"	1"	1¼"	1½"	2"
10	132	278	520	1,050	1,600	3,050
20	92	190	350	730	1,100	2,100
30	73	152	285	590	890	1,650
40	63	130	245	500	760	1,450
50	56	115	215	440	670	1,270
75	45	93	175	360	545	1,020
100	38	79	150	305	460	870
150	31	64	120	250	380	710

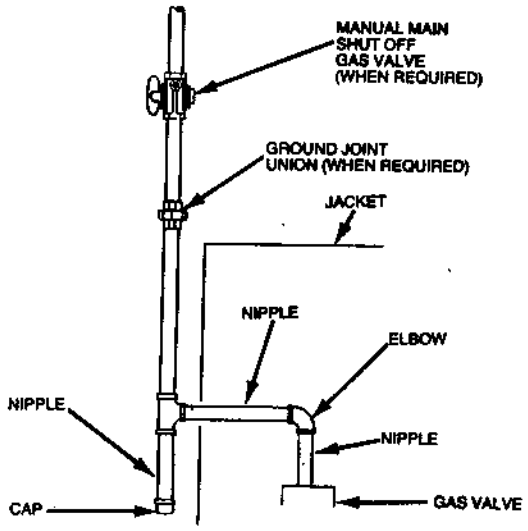
* Include measured length of gas supply piping and allowance in feet for number and size of fittings.
† Specific Gravity – 0.60; Pressure Loss – 0.30" W.C.

3. Remove knock-out disc from jacket panel which gas supply is to be piped.
4. Follow good piping practices.
5. Pipe joint compound (pipe dope) must be resistant to corrosive action of liquified petroleum gases. Apply sparingly only to male threads of pipe joints.
6. Install drip leg at inlet of gas connection to boiler. Where local utility requires, extend drip leg to floor.
7. Install ground joint union when required for servicing. See Figure 24.
8. Install manual shut-off valve outside boiler jacket as shown in Figure 24 when required by local codes.
9. Support piping by hangers, not by boiler or its accessories.
10. In Canada only, the manual main shut off valve (when used) must be identified by the installer.
11. Purge all air from piping.
12. Before placing boiler in operation, check boiler and its gas connection for leaks.

WARNING Do not check for gas leaks with an open flame – use bubble test. Failure to do so can cause severe personal injury, death or substantial property damage.

a) Close manual main shut-off valve during any pressure testing at less than 13 inches water column.

b) Disconnect boiler and gas valve from gas supply piping during any pressure test greater than 13 inches water column.



GAS SUPPLY PIPING
FIGURE 24

Section VI: Wiring

REFER TO CONTROL SUPPLEMENT FOR ADDITIONAL INFORMATION

WARNING For your safety, turn off electrical power supply before making any electrical connections to avoid possible electrical shock hazard.

All wiring must be installed in accordance with requirements of National Electrical Code and any additional national, state, or local code requirements having jurisdiction. All wiring must be N.E.C. Class 1. Boiler must be electrically grounded in accordance with National Electrical Code, ANSI/NFPA No. 70-latest edition.

In Canada, installation must conform to CSA C22.1 Canadian Electrical Code Part 1 and any local codes.

If original rollout thermal fuse element wire as supplied with boiler must be replaced, type 200°C wire or equivalent must be used. If other original wiring as supplied with boiler must be replaced, type 105°C wire or equivalent must be used.

Installer must select correct wiring diagram to use with controls on individual installation. Attach wiring diagram inside jacket door.

A separate electrical circuit with a fused disconnect switch (15 amp. recommended) should be used for the boiler.

A strain relief bushing and adapter must be used at each point where wiring passes through control case (see Figure 25) to protect wiring insulation.

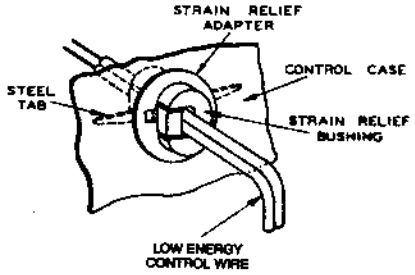


FIGURE 25
WIRING MULTIPLE ZONES

Refer to zone valve manufacturer's literature for wiring and application. A separate transformer is required to power zone valves. Zoning with circulators requires a relay for each circuit.

INSTALL ROOM THERMOSTAT

Install room thermostat on an inside wall. Never install where it will be influenced by drafts, hot or cold water pipes, lighting fixtures, television, rays of the sun or near a fireplace.

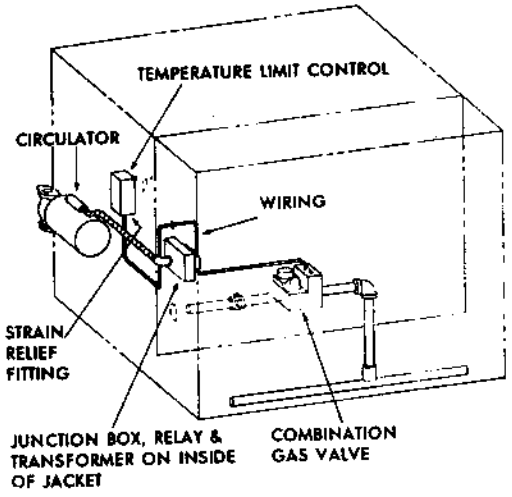
Refer to Control Supplement or correct wiring diagram for recommended heat anticipator setting with Standard equipment. Wire thermostat as shown.

EG-75 AND EGH 24-VOLT SYSTEMS
(see Figures 26a, b, and c)

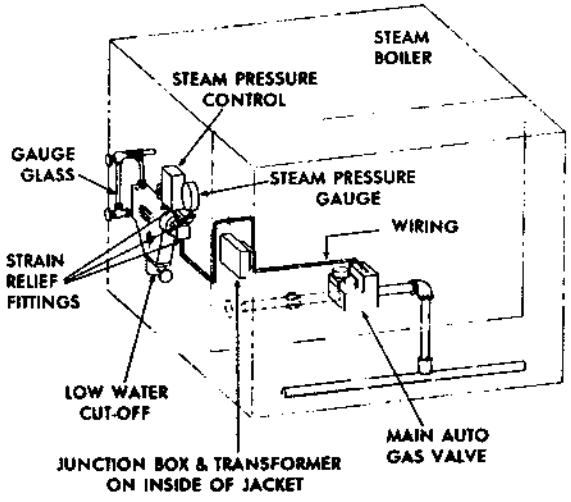
For boilers without a combination limit control and relay:

1. Attach electrical junction box to inside of jacket left end panel. #8–32 × ½" machine screws and nuts are provided.
2. Attach control transformer to junction box.
3. Bring supply wiring to boiler.
4. Forced hot water boilers only – a transformer with receptacle for plug-in circulator relay is furnished.
5. Carefully uncoil pilot thermal element lead and attach to connection on gas valve body. Refer to enclosed instructions from gas valve manufacturer for pilot thermal element lead connections.

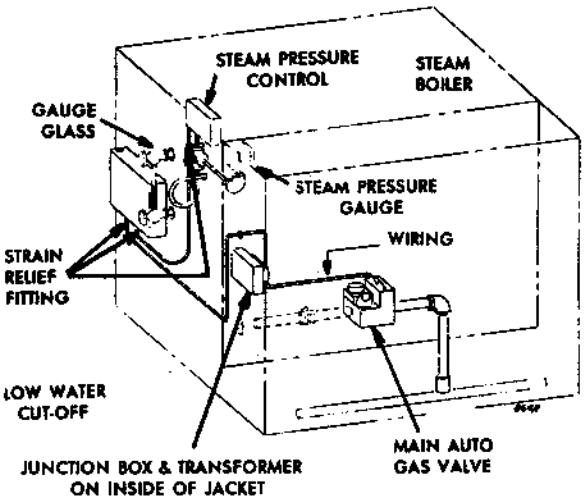
Supply wiring to the boiler must be No. 14 gauge or heavier. Install in conduit. Boiler wiring must be No. 18 gauge or heavier. Wire per correct wiring diagram.



24-VOLT SYSTEM
FORCED HOT WATER WIRING
FIGURE 26a



24-VOLT SYSTEM
STEAM BOILER WIRING
FLOAT TYPE LOW WATER CUT-OFF
FIGURE 26b



24-VOLT SYSTEM STEAM BOILER WIRING
WITH ELECTRODE TYPE LOW WATER CUT-OFF
FIGURE 26c

EG-75 MILLIVOLT SYSTEMS

1. Attach electrical junction box and cover to inside of left jacket end panel. #8–32 × ½" machine screws and nuts are provided.
2. Use solid wire to provide the least possible resistance. Determine wire length. Refer to table for recommended minimum wire size.

MILLIVOLT CONTROL SYSTEMS
RECOMMENDED WIRE SIZES

Recommended Minimum Wire Sizes According to to Wire Lengths	
Wire Length	Wire Size
16 Feet	22 Gauge
25 Feet	20 Gauge
40 Feet	18 Gauge
64 Feet	16 Gauge
100 Feet	14 Gauge

WATER TREATMENT

DANGER Do not use petroleum-based cleaning or sealing compounds in boiler system. Severe boiler damage will occur.

Continual fresh make-up water will reduce boiler life. Minerals can build up in sections, reducing heat transfer, overheating cast iron, and causing section failure.

In hard water areas or low pH conditions (less than 7.0) consult local water treatment company.

Freeze protection (when used):

Use antifreeze especially made for hydronic systems. Inhibited propylene glycol is recommended.

WARNING Do not use automotive, ethylene glycol or undiluted antifreeze. Severe personal injury, death or substantial property damage can result.

50% solution provides protection to about −30°F.

Local codes may require a back-flow preventer or actual disconnect from city water supply.

Determine quantity according to system water content. Boiler water content is listed on page 27. Remember to add in expansion tank water content.

Follow antifreeze manufacturer's instructions.

FILLING WATER SYSTEMS

1. Close manual air vents, drain cock, and automatic air vent, if used.
2. Fill to correct system pressure. Correct pressure will vary with each application. Residential systems are often designed for 12 pounds of cold fill pressure.
3. Open automatic air vent one turn, if used.
4. Open manual water feed valve.
   a) Starting on lowest floor, open air vents one at a time until water squirts out. Close vent.
   b) Repeat with remaining vents.
5. Close manual water feed valve when correct boiler pressure is reached.
6. If purge valve is used – located in the return piping above isolation valve:
   a) Connect hose to purge valve.
   b) Close isolation valve. Open purge valve.
   c) Open hand water feed valve and allow system to purge all air. If system has more than one circuit, purge each circuit separately by opening each balancing valve one at a time.
   d) Close purge valve and water feed valve cock.
   e) Open isolation valve.
   f) Fill system to correct pressure.

FILLING STEAM BOILERS

1. Do not fill (except for leakage tests) until boiler is ready to be fired.
2. Fill to normal waterline, halfway up gauge glass.
3. Boiler water pH 7.0 to 8.5 is recommended.
4. Follow skimming procedure.

SKIMMING STEAM BOILERS

NOTICE Clean all newly installed steam boilers to remove oil and grease. Failure to properly clean can result in violent fluctuations of water level, water passing into steam mains, or high maintenance costs on strainers, traps and vents.

DANGER Do not use petroleum-based cleaning or sealing compounds in boiler system. Severe boiler damage will occur.

1. Provide 1½" piping from skim tapping to floor drain.
2. Adjust water line to midpoint of skim tapping.
3. Fire boiler to maintain temperature below steaming rate.
4. Feed in water to maintain water level. Cycle burners to prevent rise in steam pressure.
5. Continue skimming until discharge is clear. May take several hours.
6. Drain boiler. While boiler is WARM, BUT NOT HOT, flush all interior surfaces under full pressure until drain water runs clear.
7. Remove skim piping. Plug tapping.
8. Close drain cock. Fill with fresh water to waterline. Start burners and steam for 15 minutes to remove dissolved gases. Stop burners.
9. Check traps and air vents for proper operation.

INSPECT BASE INSULATION

Make sure base insulation is secure against base panels.

WARNING If base insulation material is damaged or displaced, call serviceman immediately. Do not operate boiler.

WARNING Ceramic fiber material used in base insulation and gaskets can cause temporary skin, eye and upper respiratory infection.

Use NIOSH or MSHA approved protection when installing or removing this material.

TO PLACE IN OPERATION

1. Be sure boiler has been correctly filled with water.
2. Follow lighting/operating instructions on boiler.
3. If boiler starts, go to Step 5.
   If boiler fails to start, go to Step 4.
4. If boiler fails to start, check:
   a) Loose connection or blown fuse?
   b) Limit setting below boiler water temperature or pressure?
   c) Thermostat below room temperature?
   d) Gas not turned on at meter and boiler?
   e) Incoming natural gas pressure less than 5" W.C. or propane less than 11" W.C.?
   f) If above fails to eliminate the trouble, refer to Control Supplement.
5. Make sure boiler goes through several normal operating cycles.
6. Turn thermostat or operating control to desired setting.

Section VIII: Check-out Procedure

CHECK-OUT PROCEDURE

Check-off steps as completed.

☐ 1. System properly filled with water?

☐ 2. Automatic air vent, if used, open one turn (water boilers only)?

☐ 3. Air purged from system (water boilers only)?

☐ 4. Steam boilers properly skimmed?

☐ 5. Air purged from gas piping? Piping checked for leaks?

☐ 6. Are proper orifices installed? Check page 7 for proper size.

DANGER Proper orifices must be used. Failure to do so will cause severe personal injury, death or substantial property damage.

☐ 7. Follow operating instruction label on boiler for proper start-up. Also refer to "To Place in Operation," page 17.

☐ 8. Proper burner flame? Refer to "Check Main Burner Flames" and "Check Pilot Burner Flame," page 20.

☐ 9. Test limit control: While burners are operating, move limit control indicator below actual boiler water temperature or pressure. Burners should go off. Circulator should continue to operate (water boilers only). Raise indicator above boiler water temperature or pressure and burners should reignite.

☐ 10. Test any additional field-installed controls: If boiler has low water cut-off, additional high limit or other controls, test for operation as outlined by manufacturer. Burners should be operating and should go off when controls are tested. When controls are restored, burners should reignite.

☐ 11. EG only – button on spill switch pushed in?

☐ 12. To test ignition system shut-off device:

a. For boilers with electronic ignition systems: Connect manometer to outlet side of gas valve. Start boiler, allowing for normal start-up cycle to occur and main burners to ignite. With main burners on, manually shut off gas supply at manual main shut-off gas valve. Burners should go off. Open manual main shut-off gas valve. Manometer should confirm there is no gas flow. Pilot will relight, flame sensing element will sense pilot flame and main burners reignite.

b. For standing pilot – Turn gas cock knob to PILOT position and extinguish pilot flame. Pilot gas flow should stop in less than 3 minutes. Put system back into operation (see page 17).

☐ 13. Limit control set to design temperature or pressure requirements of system? Maximum limit setting – 240°F. (water boilers) – 15# (steam boilers).

☐ 14. For multiple zones, flow adjusted so it is about the same in each zone (water boilers only)?

☐ 15. Thermostat heat anticipator set properly? Refer to "Room Thermostat," page 15 and correct wiring diagram.

☐ 16. Boiler cycled with the thermostat? Raise to highest setting. Boiler should go through normal start-up cycle. Lower to lowest setting. Boiler should go off.

☐ 17. Measure gas input (natural gas only):

a. Operate boiler 10 minutes.

b. Turn off other appliances.

c. At the natural gas meter, measure time (in seconds) required to use one cubic foot of gas.

d. Calculate gas input:

$$\frac{3600 \times 1000}{\text{number of seconds from step C}} = \text{Btuh}$$

e. Btuh calculated should approximate input rating on rating label.

☐ 18. Check manifold gas pressure by connecting a manometer to the downstream test tapping on main gas valve.

	NAT.	L.P.
MANIFOLD GAS PRESSURE	3.5" W.C.	10.0" W.C.

☐ 19. Several operating cycles observed for proper operation? If damper is provided, see Control Supplement for check-out procedure.

☐ 20. Room thermostat set to desired temperature?

☐ 21. Installation and Service Certificate on this page completed?

☐ 22. All instructions shipped with this boiler reviewed with owner or maintenance person, returned to envelope and given to owner or displayed near boiler?

Installation and Service Certificate

BOILER MODEL _____ SERIES _____ CP NUMBER _____ DATE INSTALLED _____

BTU INPUT _____

☐ Installation instructions have been followed.

☐ Check-out sequence has been performed.

☐ Above information is certified to be correct.

☐ Information received and left with owner/maintenance person.

Installer _____ _____ _____ _____

(Company) (Address) (Phone) (Installer's Signature)

Also Refer to Additional Instructions Shipped With The Boiler For Specific Control Operation and Troubleshooting

NOTICE Your boiler should be inspected, cleaned and, if necessary, adjusted once a year. A qualified service agency should be called.

WARNING To avoid personal injury, before servicing:
1. Disconnect electrical supply.
2. Shut-off gas supply.
3. Allow boiler to cool.

WARNING To avoid personal injury, death or property damage, keep boiler area clear and free from combustible materials, gasoline and other flammable vapors and liquids.

Do not block flow of air to boiler. Incomplete combustion and flue gas spillage can occur.

Do not store sources of hydrocarbons (i.e., bleaches, cleaners, chemicals, sprays, paint removers, fabric softeners, etc.) in boiler area. This can contribute to shortened boiler/vent system life.

Suggested Minimum Maintenance Schedule

Beginning of each heating season:

1. Annual service call by a qualified service agency.
2. Check burners and flueways and clean if necessary. Reference "Clean Boiler Heating Surfaces" and "Cleaning Main Burners," page 20.
3. Visually inspect base insulation. Reference "Inspect Base Insulation," page 17.
4. Follow procedure "To Place in Operation," page 17.
5. Visually inspect pilot and burner flames. Reference "Check Main Burner Flames" and "Check Pilot Burner Flame," page 20.
6. Visually inspect venting system for blockage, deterioration or leakage. Reference "Inspect Venting System," page 20.
7. Check operation of low-water cut-off, if used, and additional field-installed controls. Refer to manufacturer's instructions.
8. Check that boiler area is free from combustible materials, gasoline and other flammable vapors and liquids.
9. Check for and remove any obstruction to flow of combustion or ventilation air.
10. Follow instructions on circulator to oil, if oil lubricated. Over-oiling will damage the circulator. Water lubricated circulators do not need oiling.

Daily during heating season:

1. Check that boiler area is free from combustible materials, gasoline and other flammable vapors and liquids.
2. Check for and remove any obstruction to flow of combustion or ventilation air.

Periodically during heating season:

1. Check relief valve. Reference manufacturer's instructions on relief valve tag.
2. Test low water cut-off, if used. Blowdown if low water cut-off is float type. Reference manufacturer's instructions.

Monthly during heating season:

1. Check for leaks in boiler and piping. If found, repair at once.

   DANGER Continuous use of make-up water can damage boiler sections due to addition of minerals. Do not use petroleum based stop-leak compounds – leakage between the sections will occur.
2. Check any gaskets for leakage. Tighten or replace, if needed. Do not overtighten bolts – gasket damage can occur.
3. Visually inspect pilot and burner flames. Reference "Check Main Burner Flames" and "Check Pilot Burner Flame," page 20.
4. Visually inspect venting system for blockage, deterioration or leakage. Reference "Inspect Venting System," page 20.
5. Check automatic air vent for leakage. If leaking, remove vent cap and push valve core in to wash off sediment that may have accumulated on the valve seat. Release valve, replace cap and open one turn.

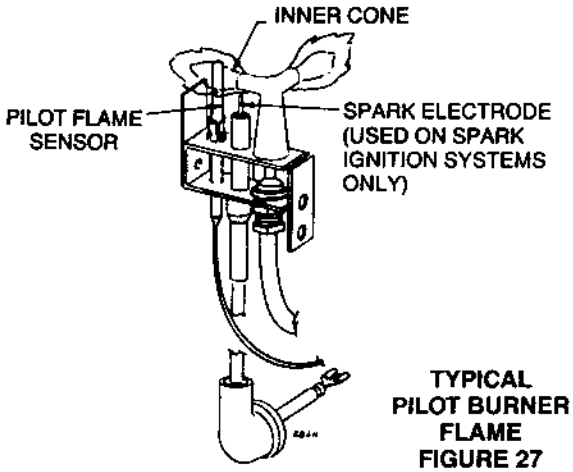
End of each heating season:

1. Follow "Annual Shutdown Procedure," page 20.

Detailed Maintenance Instructions

Check pilot burner flames:

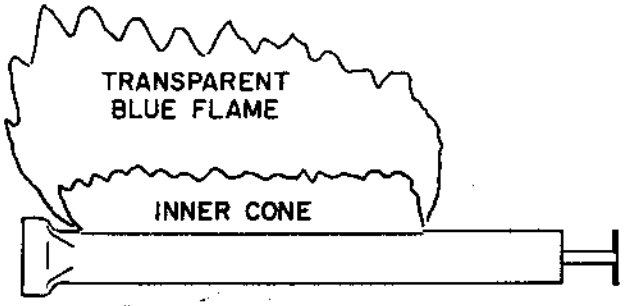
1. Proper pilot flame
   a) Blue flame.
   b) Inner cone engulfing pilot flame sensor.
   c) Pilot flame sensor glows cherry red.
2. Improper pilot flame
   a) Overfired – flames large and lifting or blowing past pilot flame sensor.
   b) Underfired – flame small; pilot flame sensor not engulfed by inner cone.
   c) Lack of primary air – flame tip yellow.
   d) Pilot flame sensor not heated properly.



TYPICAL PILOT BURNER FLAME FIGURE 27

Check main burner flames:

1. Proper burner flame – Yellow-orange streaks may appear – caused by dust.
2. Improper flame.
   a) Overfired – Flames large.
   b) Underfired – Flames small.
   c) Lack of primary air – Yellow tipping on flames; sooting will occur.



TYPICAL MAIN BURNER FLAME FIGURE 28

Inspect venting system:

1. Check venting system at least once a month during heating season. With boiler firing, hold candle or match below lower edge of draft hood "skirt." If flame does not blow out, but burns undisturbed, vent system is functioning properly. If flame blows out or flickers drastically, vent system must be checked for obstructions or other causes of improper venting.
2. Inspect all parts of venting systems for deterioration from corrosion, physical damage, sagging, etc. Correct all conditions found.
3. Verify damper is open when burner ignites. For additional information, see Control Supplement.

Clean boiler heating surfaces:

1. Follow shut-down procedure.
2. Disconnect breeching and remove damper (if used) and draft hood.
3. Remove upper rear jacket panel. Turn back jacket insulation to expose collector hood.
4. Remove collector hood. Clean excess boiler cement from collector hood and cast iron sections.
5. Remove burners from base of boiler. Follow "Cleaning main burners," page 20, to thoroughly clean burners. Place newspaper in base of boiler to collect soot that will fall.
6. With a wire flue brush, clean between the sections.
7. Remove paper and soot. Vacuum or brush base and surrounding area.
8. Replace collector hood. Seal with boiler cement.
9. Replace draft hood, damper (if used) and breeching.
10. Replace insulation and jacket panel.
11. Replace main burners.

DANGER When replacing, burner tubes must be seated in slots in back burner support with openings face up. Gas orifices must inject down center of burner. Failure to properly seat burners will result in severe personal injury, death or substantial property damage.

12. Follow "To Place in Operation" procedure.

NOTE: Excessive sooting indicates improper gas combustion. Call a qualified service agency or your local gas utility to check for proper combustion and make any necessary adjustments.

Cleaning main burners

1. Vacuum or brush burners to remove dust and lint.

DANGER When replacing, burner tubes must be seated in slots in the back with openings face up. Gas orifices must inject down center of burner. Failure to properly seat burners will result in severe personal injury, death or substantial property damage.

Annual shut-down procedure:

1. Follow correct lighting/operating instructions on boiler.
2. Do not drain system unless exposure to freezing temperatures will occur. If antifreeze is used with system, do not drain.
3. If complete boiler and piping system must be drained to avoid freezing, provide method to drain water from both ends of boiler at or below return tapping level.

Parts Lists
Component-Assemblies Replacement
(Refer to Control Supplement for control replacement)

COMPONENT REPLACEMENT INSTRUCTIONS

Before replacing any parts on the boiler:

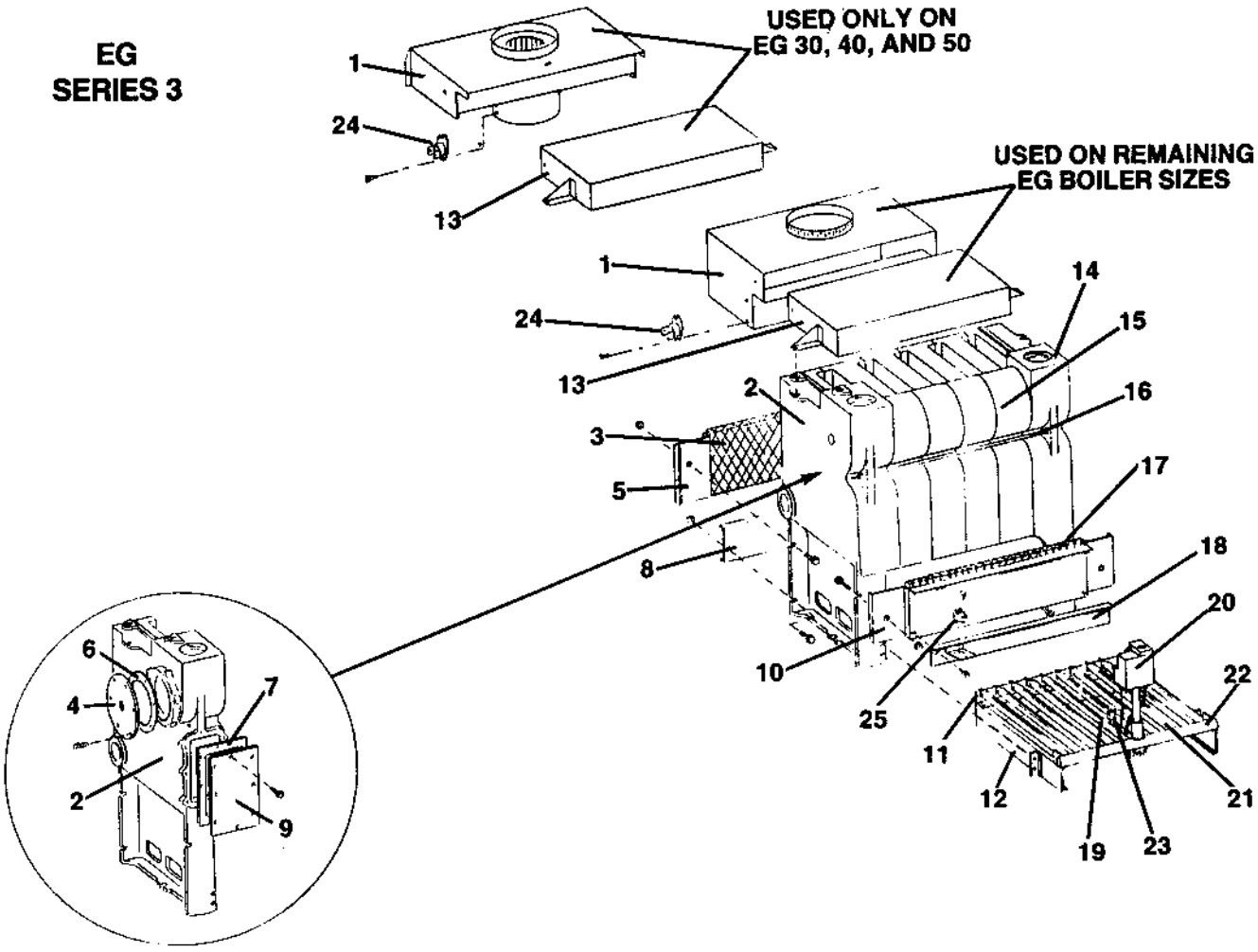
1. **Turn off power**
2. **Shut off gas supply**

Refer to the appropriate diagram for parts replacement.

Replacement parts can be ordered or purchased through a local Weil-McLain distributor. When ordering, specify boiler model and series and include description and number of replacement part.

Weil-McLain Sales Ref. No. are found in Weil-McLain Boilers and Controls Repair Parts Book.

EG
SERIES 3


USED ONLY ON
EG 30, 40, AND 50
USED ON REMAINING
EG BOILER SIZES
1
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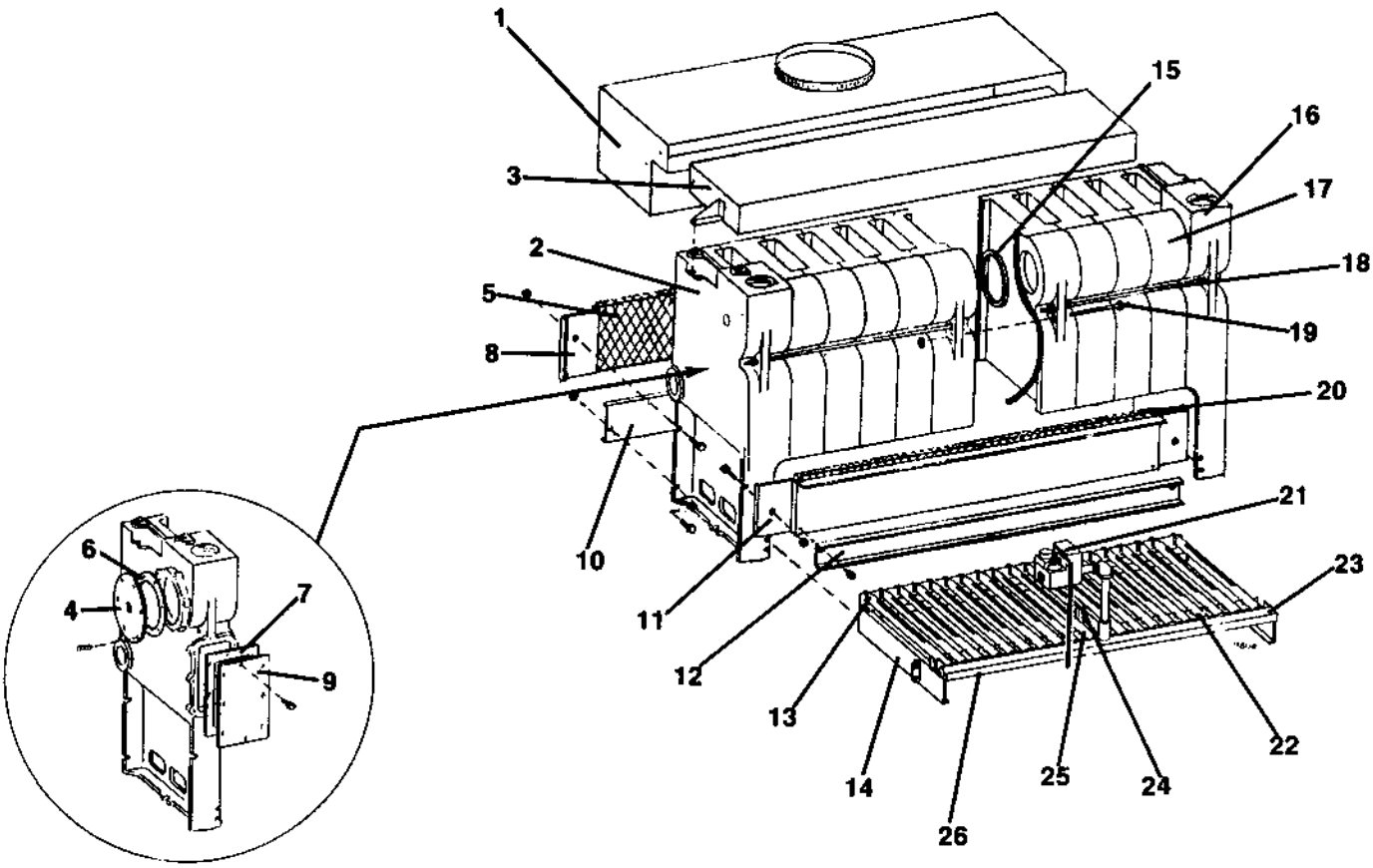
EG REPLACEMENT PARTS LIST

Ref. No.	Description	Weil-McLain Sales Ref. Number
1.	Draft Hood – 30	11B294
	– 35	11B267
	– 40	11B268
	– 45	11B269
	– 50	11B270
	– 55	11B271
	– 65	11B272
	– 75	11B273
2.	Left End Section w/o Tkls. Opening (1813)	10B011
	Left End Section w/Tkls. Opening (1814)	10B013
	Square Cut Seal – 6"	11B161
	Square Cut Seal – 3"	11B164
3.	Back Base Panel Insulation – 30/35	11B109
	– 40/45	11B110
	– 50/55	11B111
	– 65	11B112
	– 75	11B113
4.	Round Heater Cover Plate	11B155
	Round Tankless Heater –E624	590-921-670*
	– E626	590-921-675*
	– E632	590-921-658*
	Round Storage Heater 62-E-2	590-921-665*
5.	Back Base Panel – 30/35	10B722
	– 40/45	10B723
	– 50/55	10B724
	– 65	10B725
	– 75	10B726
6.	Round Heater Cover Plate Gasket	10B965
7.	Rectangular Htr. Cover Plt. Gasket	10B974
8.	Back Base Channel – 30/35	10B732
	– 40/45	10B733
	– 50/55	10B734
	– 65	10B735
	– 75	10B736
9.	Rectangular Heater Cov. Plt.	10B691
	Steam Tankless Heater – 35-S-29	590-921-666*
10.	Front Base Panel – 30/35	10B712
	– 40/45	10B713
	– 50/55	10B714
	– 65	10B715
	– 75	10B716
11.	Back Burner Support – 30	10B754
	– 35	10B755
	– 40	10B756
	– 45	10B757
	– 50	10B758
	– 55	10B759
	– 65	10B760
	– 75	10B761

Ref. No.	Description	Weil-McLain Sales Ref. Number
12.	Burner Pan Side Rail w/Bracket	10B752
13.	Collector Hood – 30/35	10B551
	– 40/45	10B552
	– 50/55	10B553
	– 65	10B554
	– 75	10B555
14.	Right End Section (1818)	10B016
15.	Intermediate Section (1815)	10B012
16.	Tie Rod (½" × 14) – 30/35	10B905
	(½" × 18½) – 40/45	10B910
	(½" × 22¾) – 50/55	10B915
	(½" × 27) – 60	10B917
	(½" × 31¼) – 75	10B918
17.	Front Base Panel Insulation – 30/35	11B099
	– 40/45	11B100
	– 50/55	11B101
	– 65	11B102
	– 75	11B103
18.	Access Panel – 30/35	10B742
	– 40/45	10B743
	– 50	11B279
	– 55	10B744
	– 65	10B745
	– 75	10B746
19.	Burner w/Pilot Bracket	▶
20.	Gas Valve	▶
21.	Main Burner	10B864
	Main Burner Orifice – Natural Gas – No. 41 Drill	10B932
	Main Burner Orifice – Propane Gas – No. 54 Drill	10B933
22.	Burner Manifold – 30	10B993
	– 35	10B996
	– 40	10B994
	– 45	10B997
	– 50	10B995
	– 55	10B998
	– 65	10B999
	– 75	11B000
23.	Pilot Burner Assembly	▶
24.	Spill Switch – SPD and PID	10C437
	– MV (EG-75 only)	10C438
25.	Rollout Thermal Fuse Element	10C257

▶ see Supplement for control information.
* Weil-McLain nine digit part number.

EGH
SERIES 3



EGH REPLACEMENT PARTS LIST

Ref. No.	Description	Weil-McLain Sales Ref. Number
1.	Draft Hood – 85	10B707
	– 95	10B708
	– 105	10B709
	– 115	10B710
	– 125	10B711
2.	Left End Section w/o Tkls. Opening (1813)	10B011
	Left End Section w/Tkls. Opening (1814)	10B013
3.	Collector Hood – 85	10B561
	– 95	10B562
	– 105	10B563
	– 115	10B564
	– 125	10B565
4.	Round Heater Cover Plate	11B155
	Tankless Heater E-626	590-921-675*
	E-632	590-921-658*
	Storage Heater 62-E-2	590-921-665*
5.	Back Base Panel Insulation – 85 ■	11B280
	– 95 ■	11B281
	– 105 ■	11B282
	– 115 ■	11B283
	– 125 ■	11B284
6.	Round Heater Cover Plate Gasket	10B965
7.	Rectangular Heater Cov. Plt. Gasket	10B974
8.	Back Base Panel – 85	11B280
	– 95	11B281
	– 105	11B282
	– 115	11B283
	– 125	11B284
9.	Rectangular Htr. Cov. Plt.	10B691
	Steam Tankless Heater – 35-S-29	590-921-666*
10.	Back Base Channel – 85 ■	11B280
	– 95 ■	11B281
	– 105 ■	11B282
	– 115 ■	11B283
	– 125 ■	11B284
11.	Front Base Panel – 85 ■	11B280
	– 95 ■	11B281
	– 105 ■	11B282
	– 115 ■	11B283
	– 125 ■	11B284

Ref. No.	Description	Weil-McLain Sales Ref. Number
12.	Access Panel – 85 ■	11B280
	– 95 ■	11B281
	– 105 ■	11B282
	– 115 ■	11B283
	– 125 ■	11B284
13.	Burner Back Support – 85	10B762
	– 95	10B763
	– 105	10B764
	– 115	10B765
	– 125	10B766
14.	Side Rail for Burner Pan w/Bracket	10B752
15.	Elastomer Seal – 6"	11B161
	Elastomer Seal – 3"	11B164
16.	Right End Section w/o Tkls. Opening (1818)	10B017
	Right End Section w/Tkls. Opening (1819)	10B014
17.	Intermediate Section (1815)	10B012
	Intermediate Section w/Tie Rod Lugs (1817)	10B015
18.	Draw Rod (½" × 17) – 85, 95	10B907
	(½" × 21¼) – 95,105,115	10B912
	(½" × 25¼) – 115,125	10B916
19.	Tie Rod (For 1817 Section Only) (½" × 7")	10B900
20.	Front Base Panel Insulation – 85 ■	11B280
	– 95 ■	11B281
	– 105 ■	11B282
	– 115 ■	11B283
	– 125 ■	11B284
21.	Combination Gas Valve	▶
22.	Main Burner	10B864
	Main Burner Orifice	
	– Natural Gas – No. 41 Drill	10B932
	– Propane Gas – No. 54 Drill	10B933
23.	Burner Manifold – 85	11B001
	– 95	11B002
	– 105	11B003
	– 115	11B004
	– 125	11B005
24.	Pilot Burner Assembly	▶
25.	Burner with Pilot Mtg. Bracket	10B861
26.	Burner Shield – 85	11B274
	– 95	11B275
	– 105	11B276
	– 115	11B277
	– 125	11B278

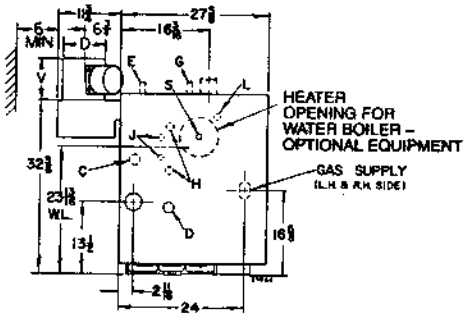
▶ See Supplement for control information.
* Weil-McLain nine digit part number.
■ Items shipped as part of complete base panel carton.

Data

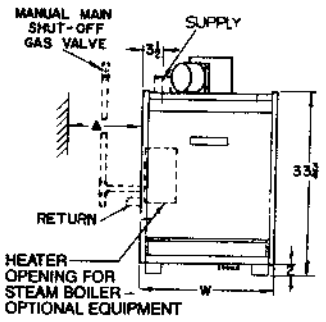
Boiler Number	Supply EG/EGH	Return EG/EGH	Dimensions D	W	V	Gas Connection Size – Natural & Propane*	Draft Hood Outlet Size	Dimensions of P-EG Crate Outside Measurements in Inches Length	Width	Height	Approx. Shipping Weight (Lbs.)
EG & P-EG-30 & 35	1 – 3"	1 – 2½"	5"	17"	6"	½"	5"	35"	30"	39"	430
EG & P-EG-40 & 45	1 – 3"	1 – 2½"	6"	21¼"	6½"	½"	6"	35"	30"	39"	505
EG & P-EG-50 & 55	1 – 3"	1 – 2½"	7"	25½"	9"	½"	7"	35"	30"	39"	585
EG-65	1 – 3"	1 – 2½"	8"	29¾"	9½"	¾"	8"	–	–	–	660
EG-75	1 – 3"	1 – 2½"	8"	34"	–	¾"	8"	–	–	–	735
EGH-85	2 – 3"	2 – 2½"	9"	38¼"	–	¾"	9"	–	–	–	825
EGH-95	2 – 3"	2 – 2½"	10"	42½"	–	¾"	10"	–	–	–	915
EGH-105	2 – 3"	2 – 2½"	10"	46¾"	–	1"	10"	–	–	–	1005
EGH-115	2 – 3"	2 – 2½"	12"	51"	–	1"	12"	–	–	–	1095
EGH-125	2 – 3"	2 – 2½"	12"	55¼"	–	1"	12"	–	–	–	1185

* Sizes shown are gas connection sizes. Gas piping from meter to boiler to be sized according to local utility requirements.
■ Damper dimension for EG-30-65 only. EG-75 and EGH damper are additional equipment.

DIMENSIONS – EG



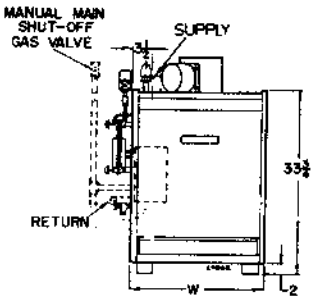
LEFT SIDE



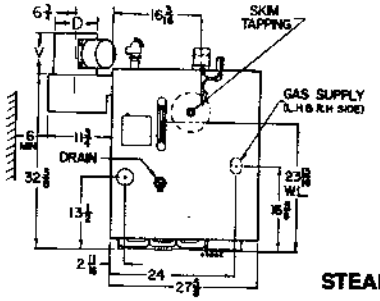
FRONT

▲ Heater clearance:
E-624-14"
E-626-19"
E-632-22"

DIMENSIONS – P-EG

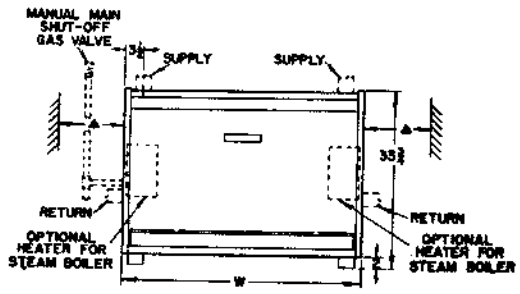


STEAM – FRONT



STEAM – LEFT SIDE

DIMENSIONS – EGH



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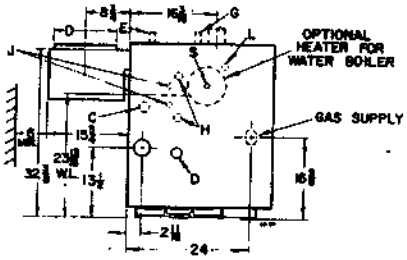

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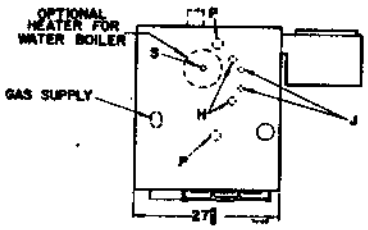

RIGHT SIDE

Ratings

DOE

Boiler Number	A.G.A. (United States) Input MBH**	A.G.A. (United States) D.O.E. Heating Capacity MBH**	C.G.A. (Canada) 0 – 2000 Ft. Input MBH**	C.G.A. (Canada) 0 – 2000 Ft. Output MBH**	C.G.A. (Canada) 2000 – 4500 Ft. Input MBH**	C.G.A. (Canada) 2000 – 4500 Ft. Output MBH**	Net I=B=R Ratings*** Sq. Ft. Steam	Net I=B=R Ratings*** Steam MBH**	Net I=B=R Ratings*** Water MBH**	Chimney Size‡	Boiler Water Content (gallons) Water Blr.	Boiler Water Content (gallons) Steam Blr. (to waterline)
+ EG-30-*	75	61	75	60	67.5	54	192	46	53	5"×20'	12.3	8.4
+ EG-35-*	100	81	100	80	90	72	254	61	70	5"×20'	12.3	8.4
+ EG-40-*	125	101	125	100	112.5	90	317	76	88	6"×20'	14.8	9.8
+ EG-45-*	150	122	150	120	135	108	383	92	106	6"×20'	14.8	9.8
+ EG-50-*	175	142	175	140	157.5	126	446	107	123	7"×20'	17.3	11.2
+ EG-55-*	200	163	200	160	180	144	508	122	142	7"×20'	17.3	11.2
EG-65-*	250	203	250	200	225	180	633	152	177	8"×20'	19.8	12.6
EG-75-▲	300	240■	300	240	270	216	750	180	209	8"×20'	22.3	14.0
EGH-85-▲	350	280■	350	280	315	252	875	210	243	9"×20'	24.8	15.4
EGH-95-▲	400	320■	400	320	360	288	1000	240	278	10"×20'	27.3	16.8
EGH-105-▲▲	450	360■	450	†	‡	‡	1125	270	313	10"×20'	29.8	18.2
EGH-115-▲▲	500	400■	500	†	‡	‡	1250	300	348	12"×20'	32.3	19.6
EGH-125-▲▲	550	440■	550	†	‡	‡	1375	330	383	12"×20'	34.8	21.0

\+ Add "P" for package boiler completely assembled and wired with jacket and controls (PEG-35-S through PEG-55-S only). Canada only – add "A" for high altitude.

* Add "SPD" or "SP" for standing pilot; add "PID" or "PI" for electronic ignition; add "N" for natural; add "L" for propane; add "W" for water; add "S" for steam; add "T" for tankless heater; add "P" for provisional tankless heater.

▲ Add "SP" for standing pilot; add "PI" for electronic ignition; add "N" for natural; add "L" for propane; add "W" for water; add "S" for steam; add "T" for tankless heater; add "P" for provisional tankless heater; EGH only – add "HS" for storage heater.

▲▲ Add "PI" for electronic ignition; add "W" for water; add "S" for steam; add "T" for tankless heater; add "HS" for storage heater.

† Sq. Ft. Heating Surface: EGH105 – 66.15; EGH115 – 73.50; EGH125 – 80.85.

‡ EGH105 thru 125 may be installed at altitudes of 2000 – 4500 feet subject to acceptance by Provincial Inspection Authority based on field tests of individual installations.

** MBH refers to thousands of BTU/Hr.

■ A.G.A. Gross Output – BTU/Hr.

*** 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. Water ratings are based on a piping and pick-up allowance of 1.15; steam ratings on an allowance of 1.333. An additional allowance should be made for unusual piping and pick-up loads. Consult local Weil-McLain area sales office.

NOTE: EGH Water boilers tested for 50 P.S.I. working pressure.

Boiler Number	D.O.E. Seasonal Efficiency (AFUE) Water SPDN	Water SPDL	Water PIDN	Steam SPDN	Steam SPDL	Steam PIDN
EG-30	80.7	81.3	83.4	79.5	79.5	81.6
EG-35	80.3	81.2	82.2	79.1	79.7	82.0
EG-40	80.8	81.8	82.8	79.8	80.3	81.3
EG-45	80.6	81.6	82.2	79.2	80.3	81.4
EG-50	81.0	82.4	82.2	80.1	81.1	81.1
EG-55	80.8	82.0	82.3	79.3	81.0	80.9
EG-65	81.0	82.5	82.3	79.4	81.6	80.4

Standard Equipment

Factory-Assembled Section Block
Insulated Extended Jacket
Draft Hood
Aluminized Steel Burners
Non-Linting Pilot Burner
Heater Cover Plates (for boilers with tankless heater openings)
Control Wire
Electrical Junction Box

EG BOILERS ADD:
Combination Gas Valve for 24 volt Thermocouple (high efficiency models)
Rollout Thermal Fuse Element
Spill Switch
Highest Efficiency Models, PID
Intermittent Electronic Ignition System and Automatic Vent Damper
High Efficiency Models, SPD
Constant Burning, Thermally Supervised Pilot System and Automatic Vent Damper
Millivolt Control System MV (EG-75 only)
100% Shutoff Furnished with Dual Limit Controls (in place of redundant gas valve) and Float Type Low-Water Cutoff (in place of probe type)

FOR EG WATER BOILERS
Built-In Air Eliminator
30 P.S.I. Relief Valve
Combination Pressure-Temperature Gauge
High-Limit Control
40 VA Transformer with Receptacle for Circulator Relay
Circulator Relay

FOR EG STEAM BOILERS
Relief Valve
Steam Pressure Gauge
High-Limit Pressure Control
Syphon
Gauge Cocks
Gauge Glass
Low-Water Cutoff
40 VA Transformer

EG ADDITIONAL EQUIPMENT
Tankless Water Heater – EG-35–65
With tankless heater:
Combination High Limit, Low Limit, Circulator Control, and Relay with 40 VA Transformer
Tankless Steam Heater – EG35–75
With Tankless Heater:
Operating Control
Tankless Heater 35-S-29 for All Units
Storage Heater

EGH BOILERS ADD:
Combination Gas Control Valve (includes main gas valve with redundant seat, PI and PI with damper models; main gas valve with single seat, 24V models; pressure regulator, gas cock, pilot filter, pilot adjustment)
Highest Efficiency Models, PI
Intermittent Electronic Ignition System
High Efficiency Models, SP
Constant Burning, Thermally Supervised Pilot System, Thermocouple
100% Shutoff
40 VA Transformer with Receptacle for Circulator Relay

FOR EGH WATER BOILERS
Built-In Air Eliminator
30 P.S.I. Relief Valve
Combination Pressure-Temperature Gauge
High-Limit Control for PI and PI with Damper Models
Dual-Limit Control for Standard Efficiency Models
Circulator Relay

FOR EGH STEAM BOILERS
Relief Valve
Steam Pressure Gauge
High-Limit Pressure Control (two limit controls on EGH-85 and 95 SP)
Syphon
Gauge Cocks
Gauge Glass
Low-Water Cutoff – Probe Type

EGH ADDITIONAL EQUIPMENT
Tankless Heaters – for water or steam
With Tankless Heater(s):
Operating Control
Storage Heater
Automatic Vent Damper

WEIL-McLAIN
A United Dominion Company

Weil-McLain
500 Blaine Street
Michigan City, IN 46360-2388