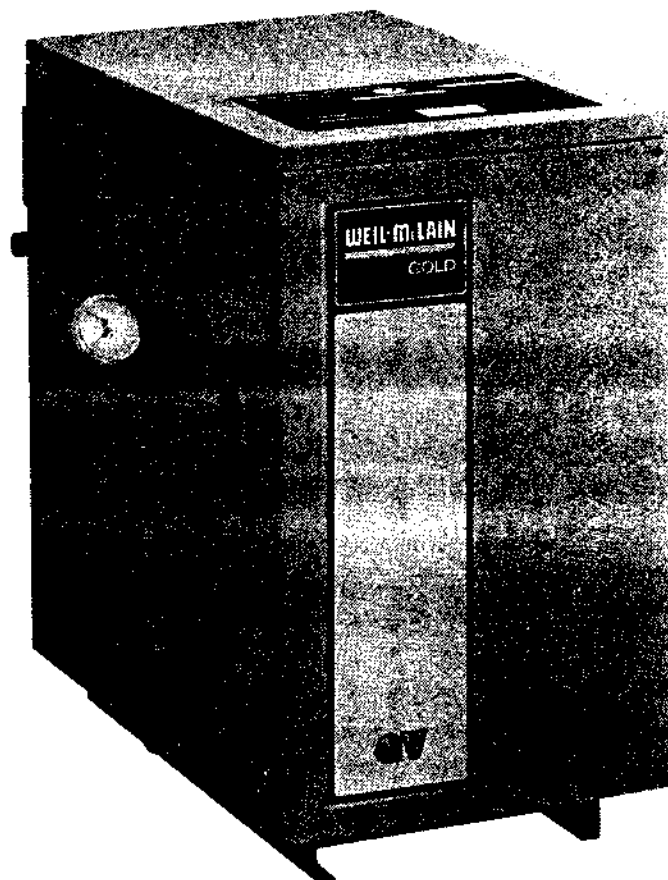
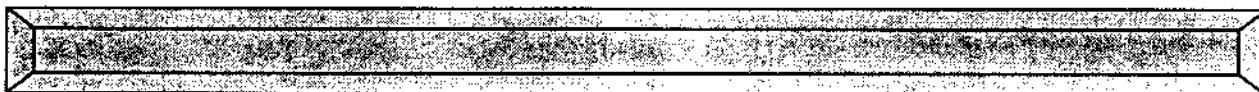


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WEIL-McLAIN



GOLD[®]

GV BOILER (SERIES 2)

BOILER MANUAL
INCLUDES:

- INSTALLATION
- START-UP
- MAINTENANCE
- BOILER PARTS

GAS-FIRED, POWER-VENTED, OPTIONAL OUTSIDE COMBUSTION AIR

- TO THE USER:**
- Boiler Manual is to be used and boiler installed by your qualified heating installer/service technician.
 - User's Information Manual is for your reference.
 - Regular service by a qualified service technician is recommended.

- TO THE INSTALLER:**
- WARNING** Read all instructions before installing. Follow all instructions in proper order to prevent personal injury or death.
- Also refer to Gas Control Supplement and other packaged instructions.
 - Consider piping and vent locations when determining boiler location.
 - Any claims for damage or shortage in shipment must be filed immediately against the transportation company by the consignee.



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PACKED WITH KITS.

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

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DANGER

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

To Install GV Boiler

1. READ:

Section A: Before Installing Boiler 4-5

2. SET UP:

Section B: Boiler Preparation 6

3. CONNECT (REFER TO FIGURE A):

Section C: Water Piping 7-10

1. relief valve
2. air vent/expansion tank
3. from system (return)
4. to system (supply)

Section D: Venting and Combustion Air ... 11-14

1. vent/air intake termination
2. optional outside air intake
3. vent
4. condensate drain

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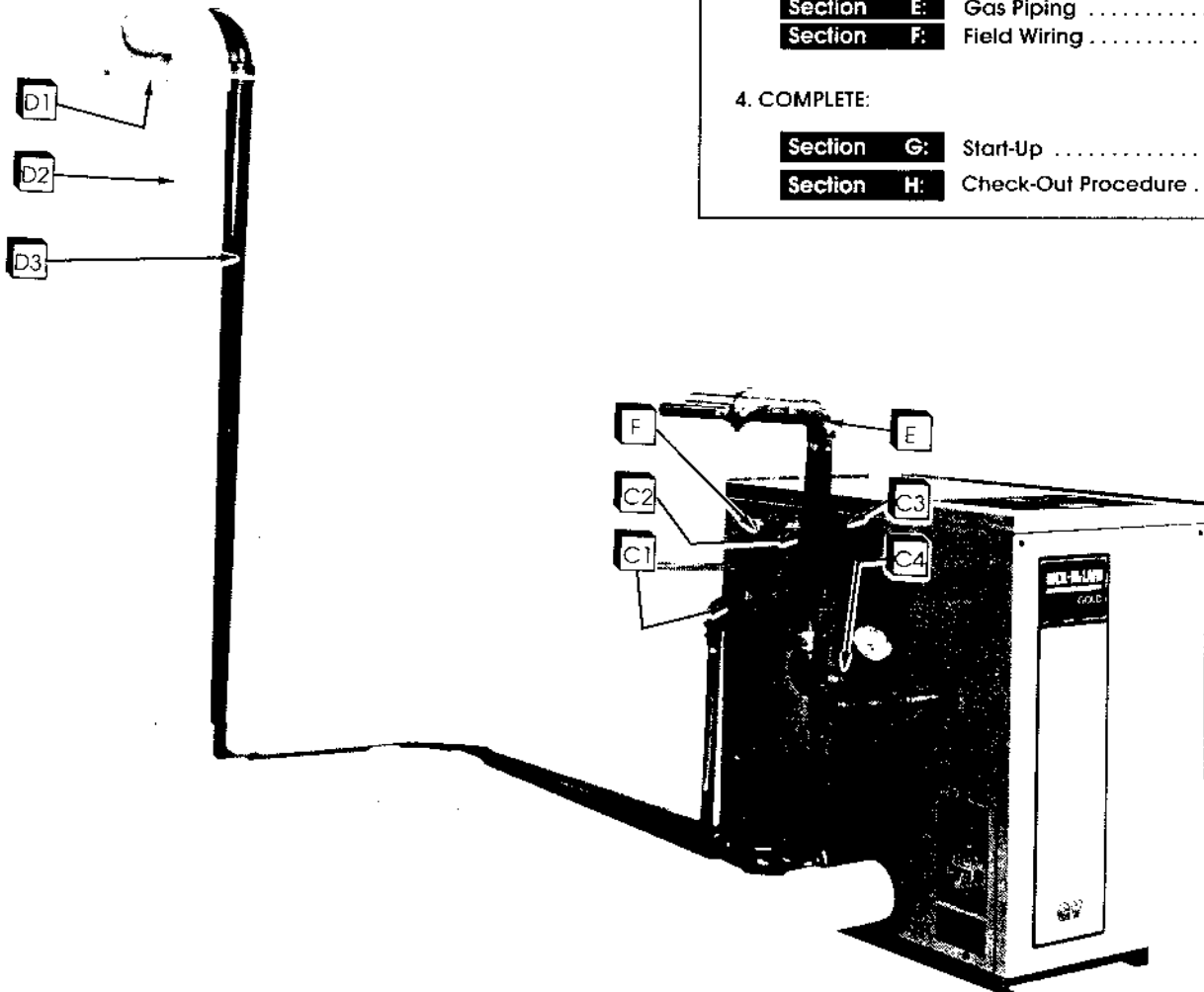


FIGURE A

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

DANGER

Indicates presence of hazard which will cause severe personal injury, death or substantial property damage if ignored.

CAUTION

Indicates presence of hazard which will or can cause minor personal injury or property damage if ignored.

WARNING

Indicates presence of hazard which can cause severe personal injury, death or substantial property damage if ignored.

NOTICE

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

Section A: Before Installing Boiler

INSTALLATIONS MUST FOLLOW THESE CODES:

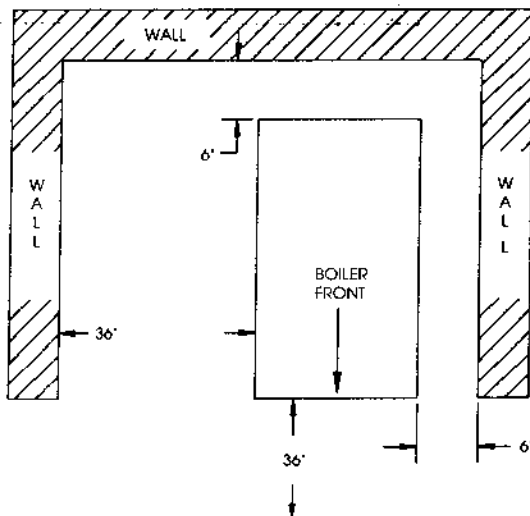
- Local, state, provincial, and national codes, laws, regulations and ordinances.
- National Fuel Gas Code, ANSI Z223.1- latest edition.
- Standard for Controls and Safety Devices for Automatically Fired Boilers, ANSI/ASME CSD-1, when required.
- National Electrical Code.
- For Canada only: CAN/CGA B149.1 or .2 Installation Code and C.S.A. C22.1 Canadian Electrical Code Part 1 and any local codes.

Gas manifold and controls met safe lighting and other performance criteria when boiler underwent tests specified in ANSI Z21.13- latest edition.

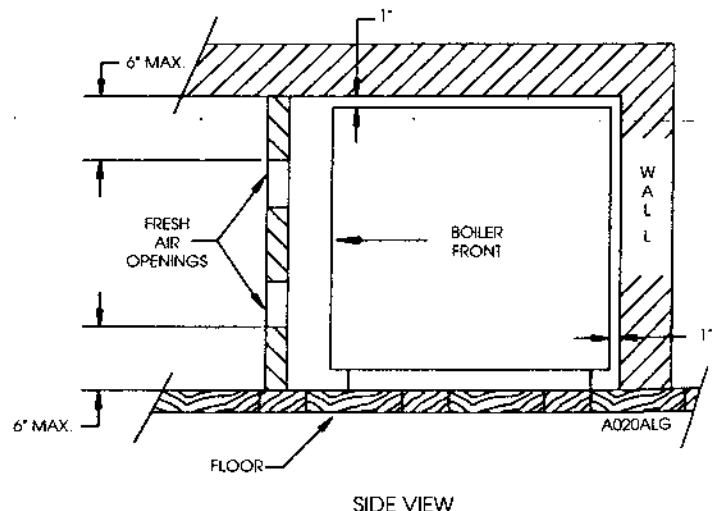
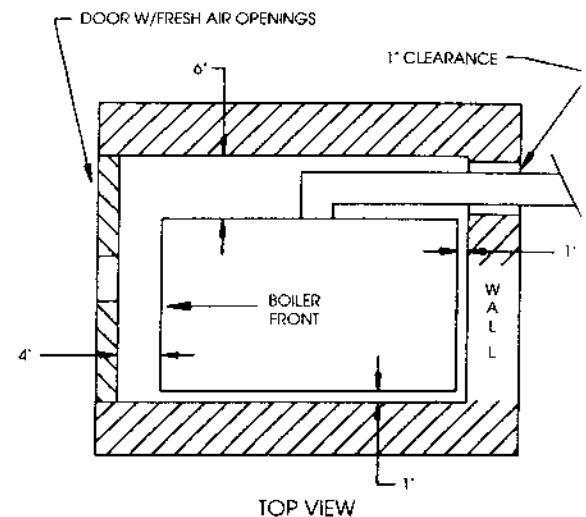
SELECT BOILER LOCATION:

Boiler must be installed so that gas control system components are protected from dripping or spraying water or rain during operation or service.

PROVIDE CLEARANCES AROUND BOILER:



CLEARANCES FOR TOP SERVICING – 36"
CLEARANCES FOR EASY SERVICING
FIGURE 1



MINIMUM CLEARANCES FOR TIGHT SPACES
FIGURE 2

1. Provide screwdriver clearance for removal of jacket screws
If not, unions and shut-off valves should be installed in
system so boiler can be moved for servicing.

PROPERLY LOCATE VENT TERMINATION:

WARNING

Follow instructions below when locating vent to avoid possibility of severe personal injury, death or substantial property damage.

General venting instructions:

1. Gases will form white plume in winter. Plume could obstruct window view.
2. Prevailing winds could cause freezing of condensate and water/ice build-up on building, plants or roof.
3. Locate or guard vent to prevent accidental contact by people or pets.
4. Do not terminate vent in window well, stairwell, alcove, courtyard, or other recessed area.
5. This vent must not be less than 7 feet above grade when located adjacent to public walkways.
6. Vent must terminate at least 4 feet horizontally, and in no case above or below unless a 4 ft. horizontal distance is maintained, from electric meters, gas meters, regulators, relief valves and other equipment.
7. Locate or guard vent to prevent condensate from damaging exterior finishes.
8. Do not extend exposed vent pipe outside of building. Condensate could freeze and block vent pipe.
9. Terminate vent at least 6 feet away from adjacent walls.
10. Do not terminate vent closer than 5 feet below roof overhang.
11. Terminate vent at least 1 foot above grade, including normal snowline.

Non-direct venting additional instructions:

1. Definition - uses inside combustion air or combustion air piping that is not sealed per direct vent instructions packed with kits.
2. Vent must terminate at least 4 feet below or 4 feet horizontally from any door, window or gravity air inlet to building. Do not terminate vent above any door or window. Condensate can freeze, causing ice formations.
3. Terminate vent at least 3 feet above any forced air inlet located within 10 feet. Canada - do not terminate vent less than 6 feet from another combustion air inlet or less than 3 feet from any other building opening or any gas service regulator.

Direct venting additional instructions:

Refer to separate instructions packed with kits.

SELECT COMBUSTION AIR SOURCE:

Outside or inside combustion air can be used. Outside air will maximize efficiency and minimize exposure to contaminants. Read Appendix, page 21 before using inside air.

1. If outside air is used:
 - a. outside air intake piping is all you need. See page 12 for instructions. For direct vent applications see separate instructions packed with kits.
 - b. provide for adequate ventilation when installed in tight spaces. See page 4.
2. If inside combustion air is used, 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 Code.

WARNING

Adequate combustion air and ventilation openings must be provided to assure proper combustion, prevent possibility of flue gas spillage and carbon monoxide emissions, resulting in severe personal injury or death.

- a. In conventional frame, masonry or metal construction, infiltration is normally adequate for boilers in unconfined rooms.
- b. In unusually tight construction, provide outside air as stated in #2d.
- c. For boilers in confined rooms, provide 2 permanent openings: one within 12 inches from ceiling and one within 12 inches from floor of room. Each opening must be at least 1 sq. inch per 1000 Btuh boiler input, but not less than 100 sq. inches. Openings must freely connect with areas having adequate air flow from outside.
- d. When outside air is needed, provide 2 openings as outlined above. Openings must connect directly or by ducts with outdoors or spaces (crawl or attic) that freely connect to outside. Size as listed below.
 - 1) 1 sq. inch per 4000 Btuh boiler input for direct outside air through outside wall or through vertical duct directly to outside.
 - 2) 1 sq. inch per 2000 Btuh boiler input for direct outside air through horizontal duct.
 - 3) All duct must be same size as connected opening, with minimum dimensions of 3" x 3" or 9 total sq. inches of area.
 - 4) Other size duct must comply with local codes.
- e. ANSI Z223.1 requires boiler combustion air opening at least 18" above the floor for garage installation.

LAY A FOUNDATION, IF NEEDED:

Table I - Minimum Boiler Foundation Size

| Foundation (in.) | Boiler Size | | | |
|------------------|-------------|--------|--------|--------|
| | GV-3 | GV-4 | GV-5 | GV-6 |
| Length | 27 1/4 | 30 3/4 | 34 1/4 | 37 3/4 |
| Width | 16 | 16 | 16 | 16 |
| Thickness (min.) | 2 | 2 | 2 | 2 |

1. Approved for use on combustible flooring, but must never be installed on carpeting.

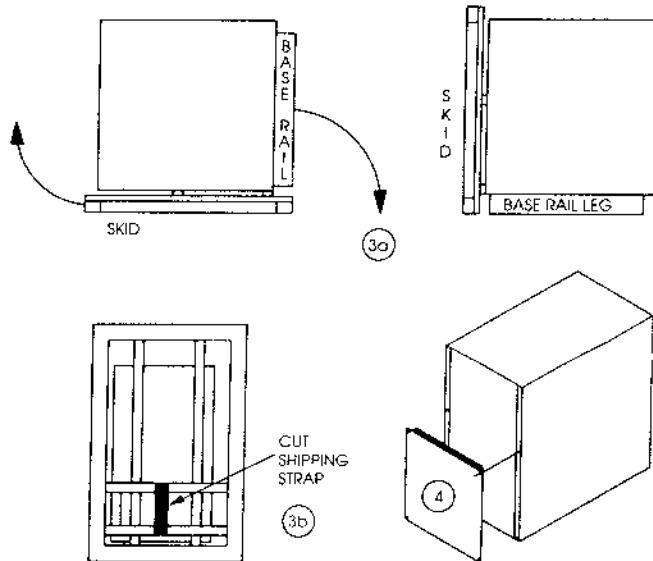
WARNING

Do not install boiler on carpeting even if foundation is used. Fire can result causing severe personal injury, death or substantial property damage.

2. Use level concrete slab or solid brick foundation if:
 - floor can become flooded.
 - non-level conditions exist.
 - high profile condensate pump is used (foundation thickness may vary depending on type of pump installed). See page 11 for details.

Section B: Boiler Preparation

HOW TO PLACE BOILER:



POSITIONING BOILER ON SITE
FIGURE 3

Leave boiler on skid until installation site is ready.

1. Verify that orifice plate stamping is proper size for boiler and is for proper fuel (red-propane gas, natural metal-natural gas). Boiler is shipped ready for natural gas hook-up. To convert boiler to propane, follow instructions included with propane orifice plate.

DANGER

Proper orifice plate must be used. Failure to do so will result in severe personal injury, death or substantial property damage.

2. Move boiler on skid next to installation site.

3. Position boiler on site as follows and as shown in Figure 3:

- (a) Carefully tip boiler over onto base rail legs.

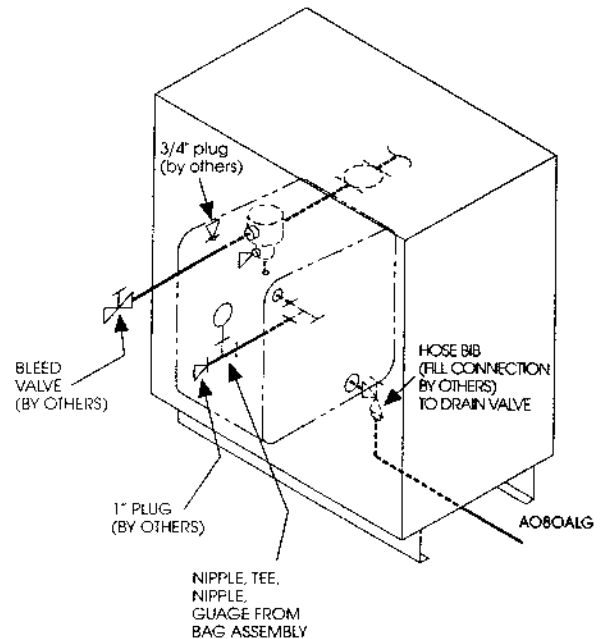
DANGER

Boiler is heavy. Failure to take proper precaution when moving will result in severe personal injury, death or substantial property damage.

- (b) Cut shipping strap and remove skid.

4. Install jacket back panel with 4 screws from trim bag assembly.

MAKE HYDROSTATIC PRESSURE TEST:



BOILER SET-UP FOR HYDROSTATIC PRESSURE TEST
FIGURE 4

Pressure test before attaching water or gas piping (except as noted below) or electrical supply.

1. Prepare boiler as shown in Figure 4.
2. Connect fill water supply through drain valve. Fill boiler with water (be sure bleed valve is open). When water flows from bleed valve, shut off water. Close bleed valve. Slowly re-open drain valve until test pressure of not more than 45 psi is reached on the pressure gauge. Test at no more than 45 psi for more than 10 minutes.

WARNING

Do not leave boiler unattended. A cold water fill could expand and cause excessive pressure, resulting in severe personal injury, death or substantial property damage.

3. Make sure constant gauge pressure has been maintained throughout test. Check for leaks. Repair if found.

WARNING

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

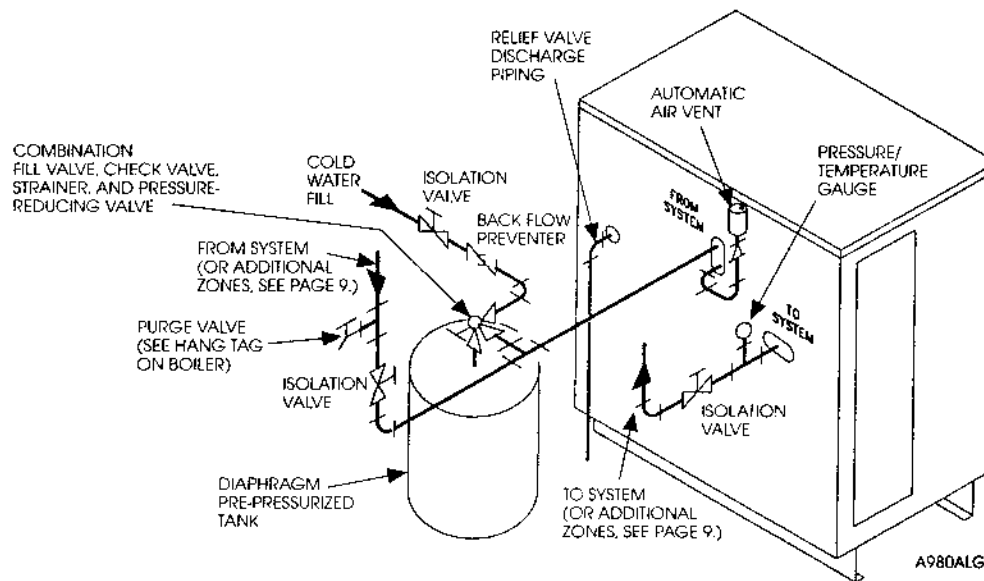
DANGER

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

4. Remove fill water supply from drain valve. Drain boiler.
5. Remove plugs from relief valve tapping, and water supply and return tapings.

Section C: Water Piping

PIPING SINGLE ZONE WITH DIAPHRAGM-TYPE TANK:



PIPING WITH DIAPHRAGM-TYPE EXPANSION TANK
FIGURE 5

1. Pipe properly (see Figure 5 to avoid improper operation and damage to boiler or building). For multiple boiler piping, see "Weil-McLain Primary/Secondary Piping Guide" and M-GV Multiple Boiler Manual.
2. If installation is to comply with ASME installation requirements, an additional high temperature limit is needed. Purchase and install in "To System" piping between boiler and isolation valve.
3. Install relief valve with spindle in vertical position in tapping on top of back section.

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. A low water cut-off device is required when boiler is installed above radiation level or by certain state or local codes or insurance companies. Use low water cut-off designed for water installations. Electrode probe-type is recommended. Purchase and install in tee in supply piping above boiler.
5. Ensure tank pressure and size will handle system fill and water volume. See Table II.
 - Fill pressure may be adjusted at tank.
 - Additional tanks may be connected to tees in system. See Table II for sizing.
6. Install automatic air vent as shown in Figure 5.

Table II - Expansion Tank Sizing*

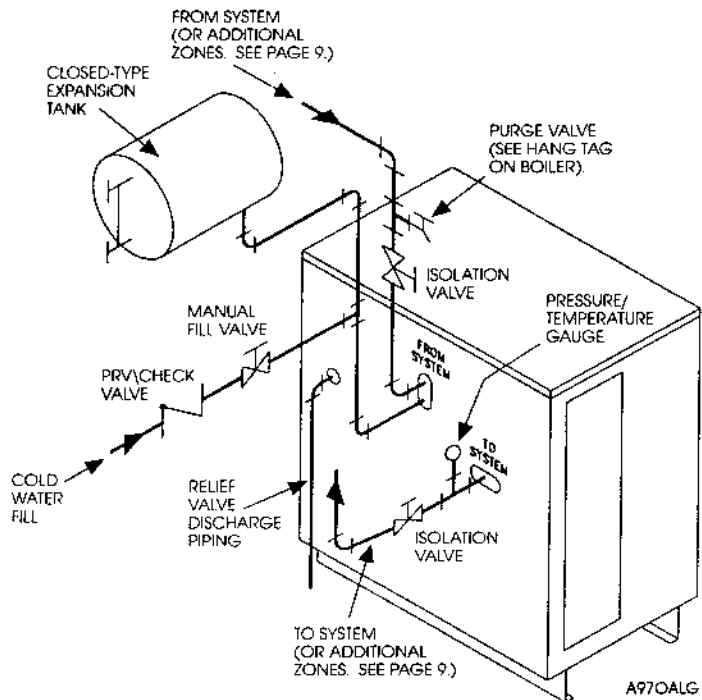
| Boiler Size | Standard Fill-Trol Tank-Adequate for Series Loop Piping Systems with Convector Baseboard | Additional Ex-Trol Tank Required for One Pipe Systems with Convector Baseboard | ** Additional Ex-Trol Tank(s) Required for Cast Iron Baseboard | Additional Ex-Trol Tank(s) Required for Cast Iron Radiators |
|-------------|--|--|--|---|
| GV-3 | No. 109 | — | No. 15 | No. 15 |
| GV-4 | No. 109 | No. 15 | No. 15 | No. 30 |
| GV-5 | No. 109 | No. 15 | No. 15 | No. 30 |
| GV-6 | No. 110 | — | No. 15 | No. 30 |

* Tank selections based on 220°F. average system water temperature.

** Systems with unusually large volumes of water may require additional expansion capability.



PIPING SINGLE ZONE WITH CLOSED-TYPE TANK:



PIPING WITH CLOSED-TYPE EXPANSION TANK
FIGURE 6

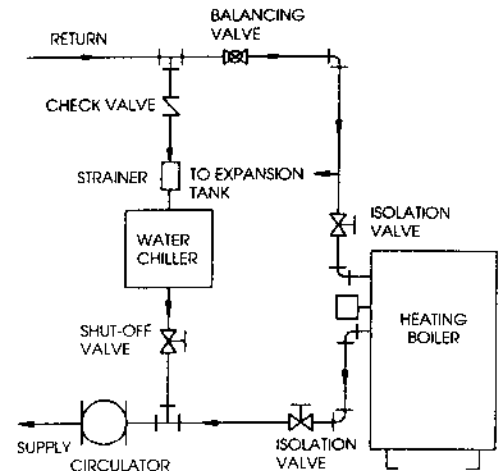
1. Pipe properly (see Figure 6 to avoid improper operation and damage to boiler or building). For multiple boiler piping, see "Weil-McLain Primary-Secondary Piping Guide" and M-GV Multiple Boiler Manual.
2. If installation is to comply with ASME installation requirements, an additional high temperature limit is needed. Purchase and install in "To System" piping between boiler and isolation valve.
3. Install relief valve with spindle in vertical position in tapping on top of back section.

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. A low water cut-off device is required when boiler is installed above radiation level or by certain state or local codes or insurance companies. Use low water cut-off designed for water installations. Electrode probe-type is recommended. Purchase and install in tee in supply piping above boiler.
5. Connect tank from $\frac{1}{2}$ " tapping shown in Figure 6 to expansion tank. Use $\frac{1}{2}$ " NPT piping. Pitch any horizontal piping up towards tank 1" per 5 feet of piping.
6. Use backflow check valve where required by local codes.

USE WITH REFRIGERATION SYSTEM:



USE WITH REFRIGERATION SYSTEM
FIGURE 7

1. Install boiler so that chilled medium is piped in parallel with heating boiler. Use appropriate valves to prevent chilled medium from entering boiler. Consult I=B=R Installation and Piping Guides.
2. If boiler is connected to heating coils located in air handling units where they can be exposed to refrigerated air, use flow control valves or other automatic means to prevent gravity circulation during cooling cycle.

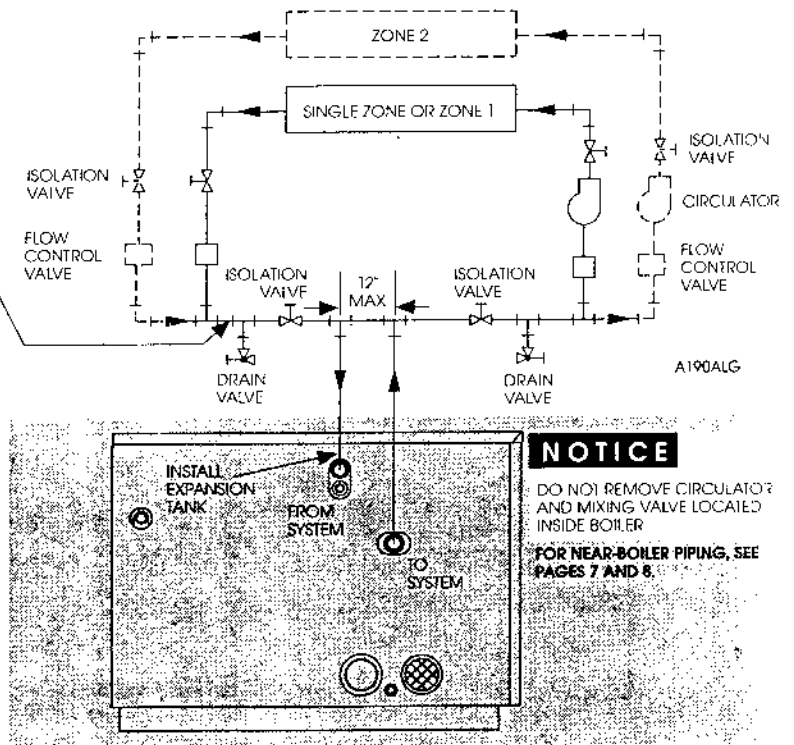
PIPING MULTIPLE ZONES:

PRIMARY MANIFOLD -
Area of primary manifold should be greater than the sum of the area of zone supply pipes or size primary manifold for total flow of all circulators. Maximum pressure drop .6 ft. W.C. Using smaller diameter manifold will cause heat migration into idle zones.

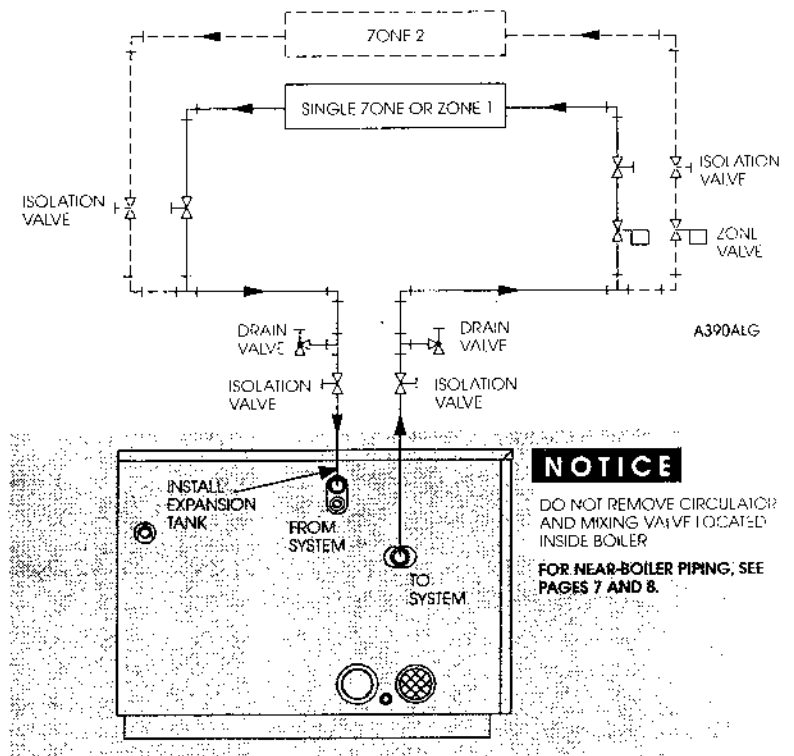
Alternate primary manifold sizing
(10 gpm/circulator max.)

| Number of Circulators | Pipe Size | Number of Circulators | Pipe Size |
|-----------------------|-----------|-----------------------|-----------|
| 1 | 1" | 4-5 | 2" |
| 2-3 | 1½" | 6-8 | 2½" |
| | | 9-12 | 3" |

MULTIPLE ZONING WITH CIRCULATORS
FIGURE 8



MULTIPLE ZONING WITH ZONE VALVES
FIGURE 9



1. Follow instructions on pages 7 and 8 to install piping near boiler.

2. See Figure 8 or 9 to complete installation.

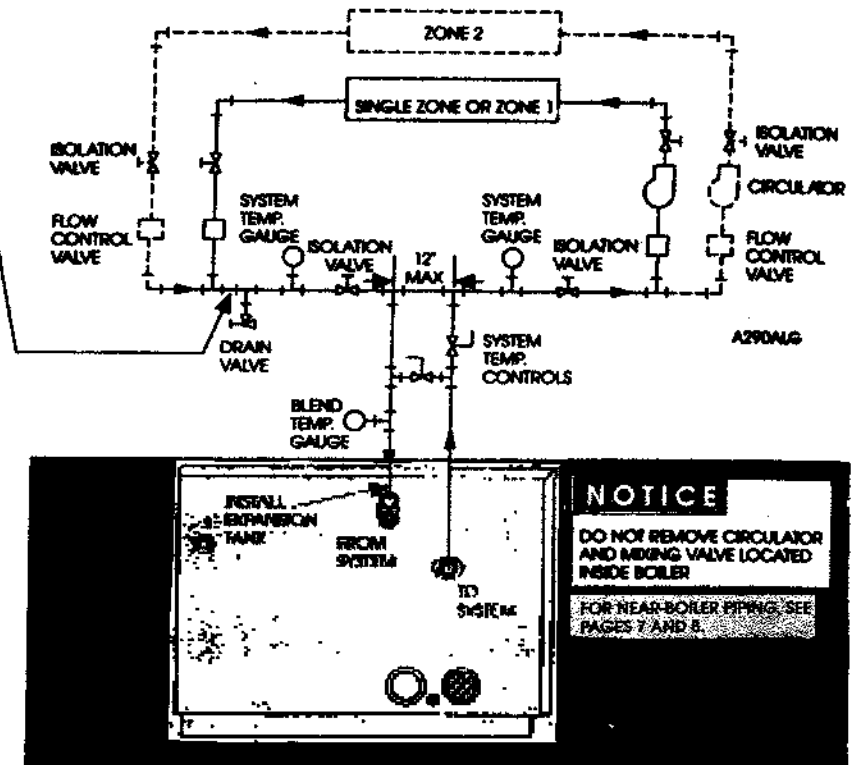
PIPING FOR SYSTEMS REQUIRING TEMPERATURES BELOW 140°F.:

PRIMARY MANIFOLD -
Area of primary manifold should be greater than the sum of the area of zone supply pipes or size primary manifold for total flow of all circulators. Maximum pressure drop .6 ft. W.C. Using smaller diameter manifold will cause heat migration into idle zones.

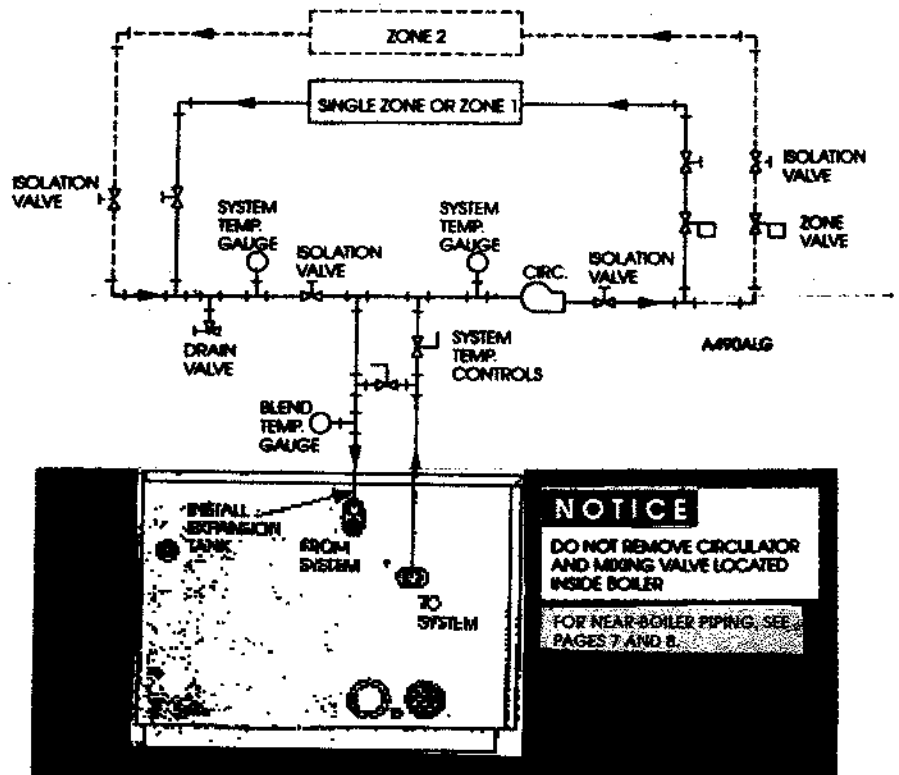
Alternate primary manifold sizing
(10 gpm/circulator max.)

| Number of Circulators | Pipe Size | Number of Circulators | Pipe Size |
|-----------------------|-----------|-----------------------|-----------|
| 1 | 1" | 4-5 | 2" |
| 2-3 | 1½" | 6-8 | 2½" |
| | | 9-12 | 3" |

PIPING WITH CIRCULATORS
FIGURE 10



PIPING WITH ZONE VALVES
FIGURE 11



1. In most systems, this type of piping is not required. If system water temperature requirements are less than 140°F., such as radiant panels or converted gravity systems, use piping as shown in Figure 10 or 11. If system piping is plastic without an oxygen barrier, a heat exchanger must be used.

Section D: Venting and Combustion Air Supply

SELECT VENTING MATERIALS:

AGA/CGA certified venting materials:

Plexco PLEXVENT®
Hart and Cooley ULTRAVENT™
AL29-4C® Stainless Steel

WARNING

Using other venting materials or failure to follow vent pipe manufacturer's instructions can result in personal injury, death or property damage. Mixing types of venting materials will void AGA/CGA certification.

SELECT COMBUSTION AIR MATERIALS:

Use suitable 3" material for outside combustion air, such as:

Dryer vent
Galvanized steel
PVC (3" I.D.)

FOLLOW VENTING REQUIREMENTS:

- DO NOT use existing chimney as raceway if another appliance or fireplace is vented into or thru chimney.
- See Appendix, page 21, when existing boiler is removed from common venting system.
- DO NOT connect:
 - any other appliance to vent piping.
 - multiple boilers to common vent.
- Do not wrap or insulate vent pipe and fittings.
- Refer to vent locations, page 5.

FOLLOW VENT/COMBUSTION AIR PROCEDURE:

- Choose vent/combustion air method:
 - thru sidewall with W-M termination - page 12. Uses either inside or outside combustion air. Direct vent installations, see separate instructions packed with kit.
 - thru sidewall with vent coupling termination - page 13. Uses inside combustion air only.
 - thru unused chimney as raceway - page 14. Non-direct vent installation uses inside combustion air only. Direct vent installation, see separate instructions packed with kit.
 - thru roof - page 14. Non-direct vent installation uses inside combustion air only. Direct vent installation, see separate instructions packed with kit.
- Do not exceed limits in Table III for piping lengths and number of elbows. Longer vent runs will slightly reduce boiler output. See Appendix, page 21.

Table III - Venting System Length

| Total No. of Elbows | 0 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---------------------|-----|----|----|----|----|----|----|----|
| Max. Length (Ft.) | | | | | | | | |
| GV-3 thru 5 | 100 | 80 | 70 | 60 | 50 | 40 | 30 | 20 |
| GV-6 | 80 | 60 | 50 | 40 | 30 | 20 | 10 | — |

Note: also use Table for outside air piping.

- Support piping:
 - horizontal runs - at least every 5 feet (Canada - every 3 feet).

b. vertical runs - use braces:

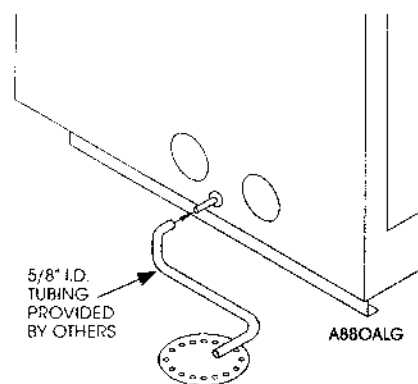
- under elbow or pipe near elbow. (Do not support with vent ell or air intake adapter.)
- every 5 feet (Canada - every 3 feet).

4. Non-metallic vent systems (PLEXVENT or ULTRAVENT):

Follow vent pipe manufacturer's instructions including use of their specified sealant.

5. Metallic vent systems (AL29-4C):

- Point crimped ends of pipe towards boiler for good condensate drainage back to boiler
- Do not install seams of vent pipe on bottom of runs.
- Seal all joints and seams using only the following sealants:
 - Dow Corning 700 or 732™, or
 - General Electric 108 or 808
- Secure joints with 3 stainless steel sheet metal screws or stainless steel pop rivets. Apply sealant to screws or rivets.



CONDENSATE TUBING INSTALLATION
FIGURE 12

- See Figure 12 to install condensate tubing (provided by others). Use condensate pump if floor drain is not lower than condensate drain on boiler. If required:
 - use a low-profile pump, OR
 - set boiler on foundation (see page 5) to allow gravity flow to pump.

Size pump in gal/hr (boiler model): 0.78 (GV-3), 1.17 (GV-4), 1.56 (GV-5), 1.95 (GV-6). Refer to pump manufacturer's instructions. Drain to non-freezing area.

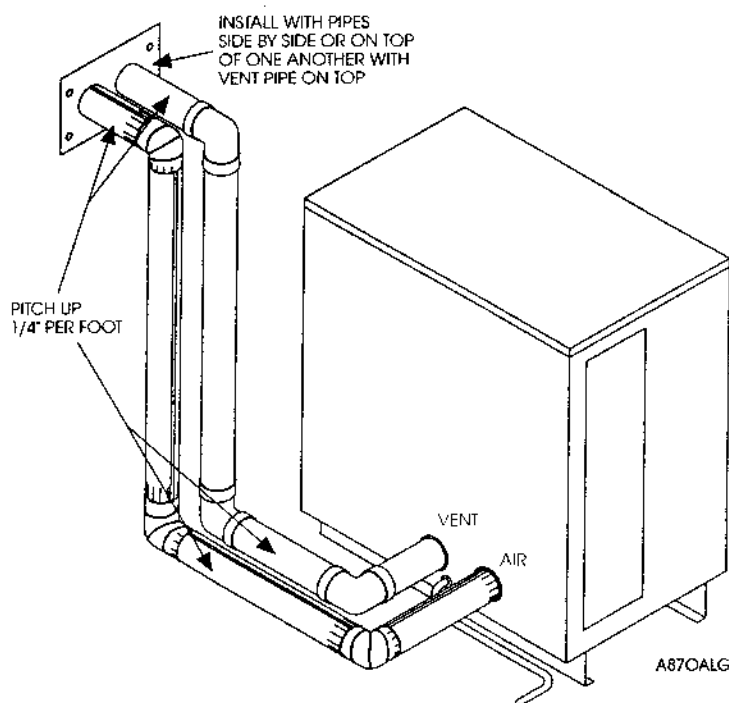
REASSEMBLY:

When vent/air intake is disconnected for any reason, it must be reassembled and resealed according to vent pipe manufacturer's instructions (for AL29-4C, follow step 5 above).

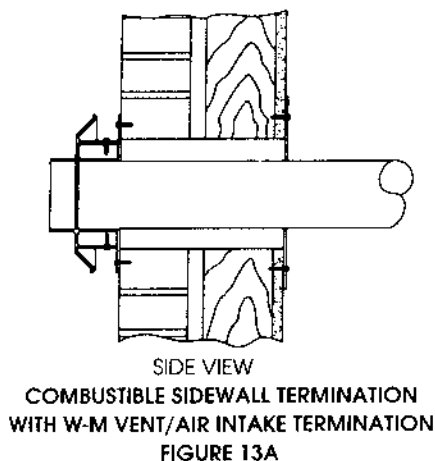
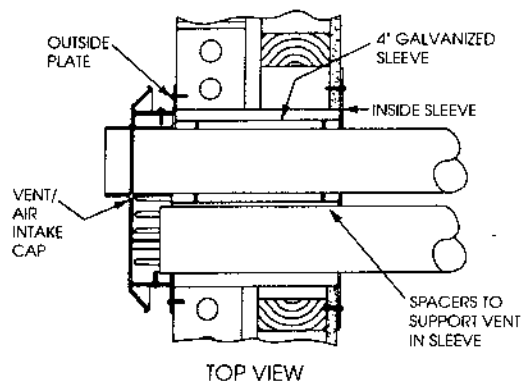
WARNING

Sealant recommended for use must be used as indicated. Vent/air intake system must be sealed gas-tight to prevent possibility of flue gas spillage and carbon monoxide emissions, resulting in severe personal injury or death.

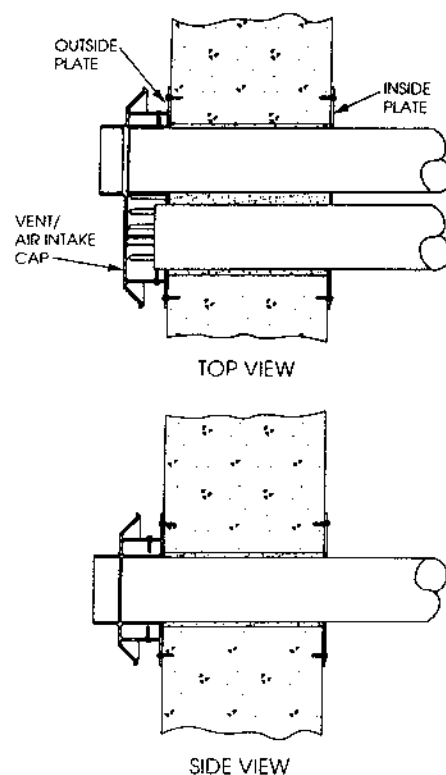
VENTING THROUGH SIDEWALL USING W-M VENT/AIR INTAKE TERMINATION:



VENTING THROUGH SIDEWALL
WITH W-M VENT/AIR INTAKE TERMINATION
FIGURE 13



COMBUSTIBLE SIDEWALL TERMINATION
WITH W-M VENT/AIR INTAKE TERMINATION
FIGURE 13A



NON-COMBUSTIBLE SIDEWALL TERMINATION
WITH W-M VENT/AIR INTAKE TERMINATION
FIGURE 13B

If direct-vent installation is required, be sure to follow instructions packed with kit.

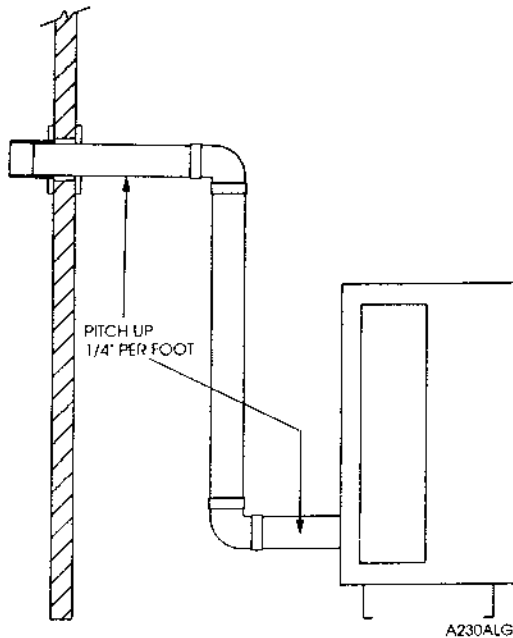
1. Instructions on page 11 must be followed. Also, refer to page 5 to review sidewall venting locations.
2. Use only W-M vent/air intake termination kit (W-M Sales Ref. No. 11B223), provided with boiler. Install per separate instructions packed with kit and Figures 13 and 13A or 13B. If inside combustion air will be used, do not remove knockout in plates. **Only** if inside combustion air is used, a turndown non-metallic termination elbow and nipple may be attached to vent outlet. Elbow must have screen as supplied by vent manufacturer.
3. Do not cover up outside cap and plate with any exterior building material, such as siding or wood.
4. Check all vent joints and seams for gas-tight seal. Repair, if leaking.

DANGER

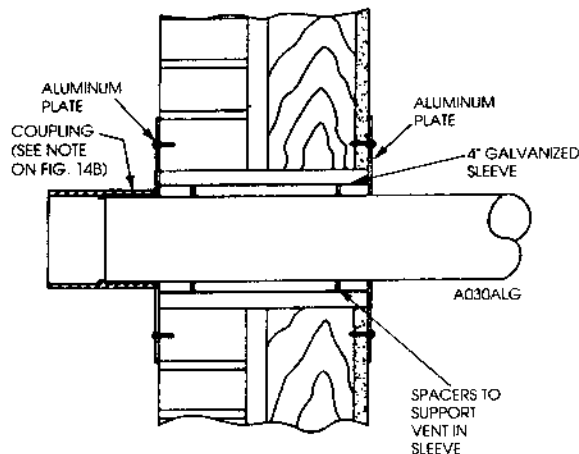
Failure to seal all vent joints and seams gas-tight will result in flue gas spillage and carbon monoxide emissions, causing severe personal injury or death.

5. Support piping:
 - a. horizontal runs - at least every 5 feet (Canada - every 3 feet).
 - b. vertical runs - use braces:
 - under elbow or pipe near elbow. (Do not support with vent ell or air intake adapter.)
 - every 5 feet (Canada - every 3 feet).
6. Maintain 1" minimum clearance from combustible materials to vent pipe. 0" clearance from sleeve to combustible material.

VENTING THROUGH SIDEWALL USING VENT COUPLING TERMINATION:



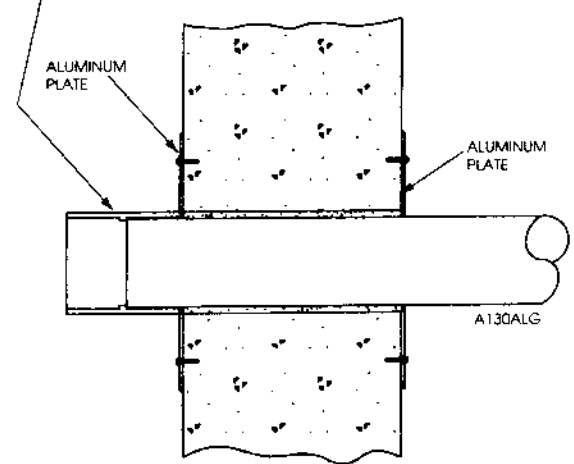
VENTING THROUGH SIDEWALL
WITH VENT COUPLING TERMINATION
FIGURE 14



PARTS PROVIDED BY OTHERS

COMBUSTIBLE SIDEWALL TERMINATION
WITH VENT COUPLING TERMINATION
FIGURE 14A

REQUIRED NON-METALLIC COUPLING OF CERTIFIED MATERIAL.
TURN-DOWN ELBOW AND NIPPLE MAY BE ATTACHED TO COUPLING.
FINAL TERMINATION MUST HAVE SCREEN AS SUPPLIED BY
VENT MANUFACTURER.



PARTS PROVIDED BY OTHERS

NON-COMBUSTIBLE SIDEWALL TERMINATION
WITH VENT COUPLING TERMINATION
FIGURE 14B

1. Instructions on page 11 must be followed. Also, refer to page 5 to review sidewall venting locations.
2. Construct as shown in Figures 14 and 14A or B.
3. Check all vent joints and seams for gas-tight seal. Repair, if leaking.

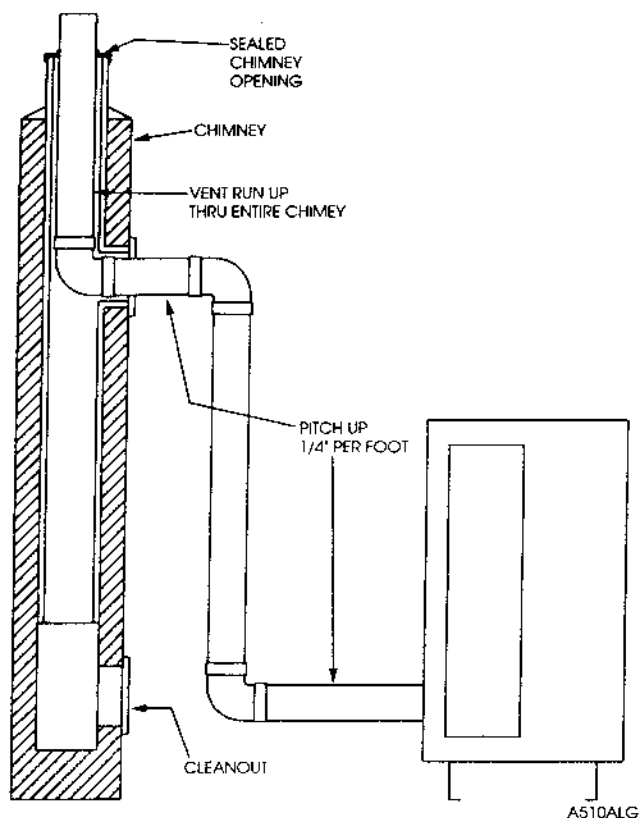
DANGER

Failure to seal all vent joints and seams gas-tight will result in flue gas spillage and carbon monoxide emissions, causing severe personal injury or death.

4. Support piping:
 - a. horizontal runs - at least every 5 feet (Canada - every 3 feet).
 - b. vertical runs - use braces:
 - under elbow or pipe near elbow. (Do not support with vent ell or air intake adapter.)
 - every 5 feet (Canada - every 3 feet).
5. Maintain 1" minimum clearance from combustible materials to vent pipe. 0" clearance from sleeve to combustible material.



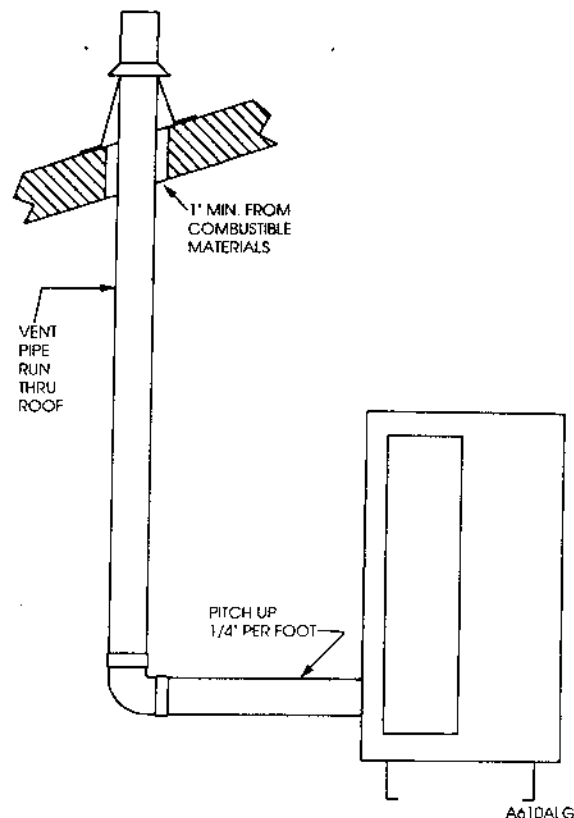
VENTING THROUGH ROOF OR UNUSED CHIMNEY:



VENTING THROUGH UNUSED CHIMNEY
FIGURE 15

If direct-vent thru-roof or thru-chimney installation is required, be sure to follow instructions supplied with kit.

1. Instructions on page 11 must be followed.
2. Vent pipe must extend:
 - a. through entire length of unused chimney. See Figure 15.
 - b. through roof flashing, jacket, or thimble. See Figure 16.
 - vent may pass through floor, inside wall or concealed space when installed according to vent manufacturer's instructions. An enclosure must be constructed of materials specified in those instructions.



TYPICAL VENTING THROUGH THE ROOF
FIGURE 16

3. Check all vent joints and seams for gas-tight seal. Repair, if leaking.

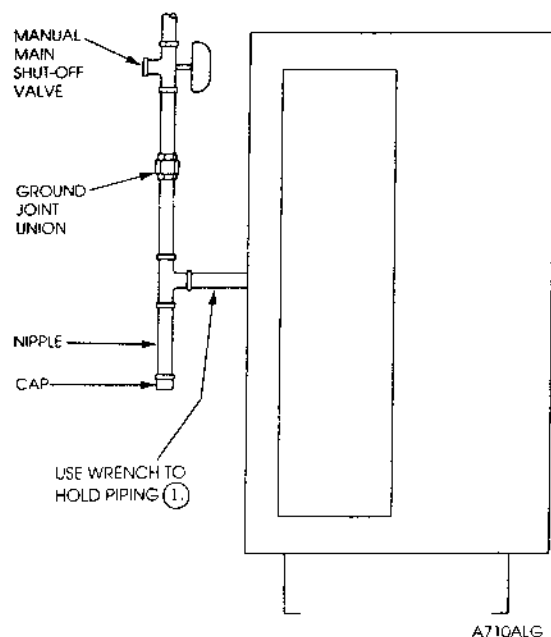
DANGER

Failure to seal all vent joints and seams gas-tight will result in flue gas spillage and carbon monoxide emissions, causing severe personal injury or death.

4. Support piping:
 - a. horizontal runs - at least every 5 feet (Canada - every 3 feet).
 - b. vertical runs - use braces:
 - under elbow or pipe near elbow. (Do not support with vent ell or air intake adapter.)
 - every 5 feet (Canada - every 3 feet).
5. Maintain 1" minimum clearance from combustible materials to vent pipe.

Section E: Gas Piping

GAS PIPING:



**GAS PIPING INSTALLATION
FIGURE 17**

- (1) Refer to Figure 17 to pipe gas. Use wrench to hold factory-installed gas piping nipple.
2. Support piping with hangers, not by boiler or its accessories.
3. Purge all air from gas supply piping.
4. 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 use bubble test or check for gas leaks 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" W.C.
- b. Disconnect boiler and gas valve from gas supply piping during any pressure testing greater than 13" W.C.

5. Use pipe dope compatible with propane gases. Apply sparingly only to male threads of pipe joints so that pipe dope does not block gas flow.

WARNING

Failure to apply pipe dope as detailed above can result in severe personal injury, death or substantial property damage.

Natural Gas:

Table IV - Pipe Delivery Schedule

| Length of Pipe in Feet | * Capacity of Pipe in Cubic Feet of Gas Per Hour | | | | |
|------------------------|--|------|-----|--------|--------|
| | 1/2" | 3/4" | 1" | 1 1/4" | 1 1/2" |
| 10 | 132 | 278 | 520 | 1050 | 1600 |
| 20 | 92 | 190 | 350 | 730 | 1100 |
| 30 | 73 | 152 | 285 | 590 | 860 |
| 40 | 63 | 130 | 245 | 500 | 760 |
| 50 | 56 | 115 | 215 | 440 | 670 |
| 75 | 45 | 93 | 175 | 360 | 545 |
| 100 | 38 | 79 | 150 | 305 | 460 |
| 150 | 31 | 64 | 120 | 250 | 380 |

*based on 0.60 Specific Gravity, 0.30" W.C. pressure drop.

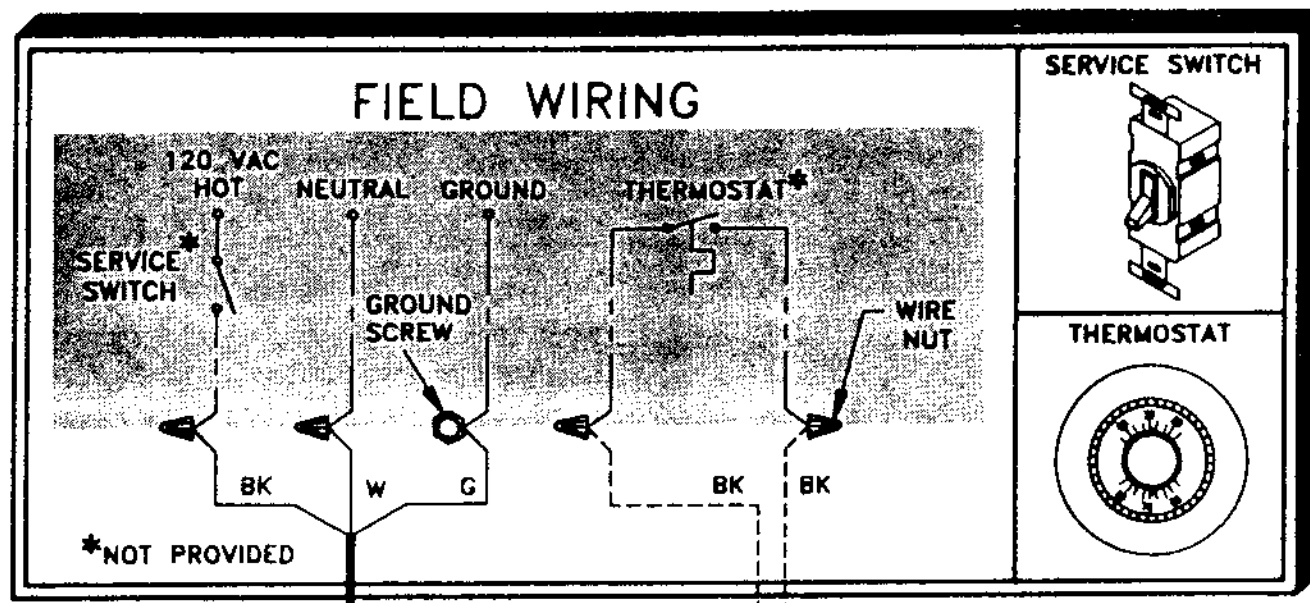
NOTE: For additional piping schedules, see ANSI Z223.1. Canadian installations must comply with CAN/CGA B149.1 or .2 Installation Code.

1. Refer to Table IV for pipe length and diameter. Base on rated boiler input (divided by 1000 to obtain cubic feet per hour).
2. Inlet pressure at gas valve inlet: maximum 13" W.C.
minimum 4" W.C.
3. Install 100% lock-up gas pressure regulator in supply line if inlet pressure exceeds 13" W.C. Adjust for 13" W.C. maximum.

Propane Gas:

1. Boiler can be converted easily with propane conversion kit supplied.
2. Contact gas supplier to size pipes, tanks and 100% lock-up gas pressure regulator.
3. Adjust regulator provided by gas supplier for 13" W.C. maximum pressure.
4. Inlet pressure at gas valve inlet: maximum 13" W.C.
minimum 4" W.C.

Section F: Field Wiring



HIGH VOLTAGE FACTORY WIRING _____
 LOW VOLTAGE FACTORY WIRING _____
 HIGH VOLTAGE FIELD WIRING _____
 LOW VOLTAGE FIELD WIRING _____

FIELD WIRING DIAGRAM
FIGURE 18

INSTALLATIONS MUST FOLLOW THESE CODES:

- National Electrical Code and any other national, state, provincial or local codes or regulations having jurisdiction.
- Wiring must be N.E.C. Class 1. If original wiring as supplied with boiler must be replaced, type 105°C wire or equivalent must be used.
- Boiler must be electrically grounded as required by National Electrical Code ANSI/NFPA 70-latest edition.
- In Canada, C.S.A. C22.1 Canadian Electrical Code Part I, and any local codes.

CONNECT WIRING:

WARNING

For your safety, turn off electrical power supply at service entrance panel before making any electrical connections to avoid possible electric shock hazard. Can cause severe personal injury or death.

Thermostat:

1. Install on inside wall away from influences of drafts, hot or cold water pipes, lighting fixtures, television, sunrays, or fireplaces.
2. Follow instructions with thermostat. If it has a heat anticipator, set heat anticipator in thermostat to match power requirements of equipment connected to it (ignition control and gas valve, zone valve contacts, etc.). Wiring diagram on boiler gives setting for standard equipment (ignition control and gas valve).
3. Thermostat wires are labeled "T-T" on boiler. Remove label before connecting as shown in Figure 18.

Junction Box (furnished):

1. Fused disconnect or service switch (15 amp, recommended) may be mounted on this box. Some local codes may prohibit installation of fused disconnect or service switch on boiler.
2. Connect as shown in Figure 18.

Section G: Start-Up

DETERMINE IF WATER TREATMENT IS NEEDED:

DANGER

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

1. Continual fresh makeup water will reduce boiler life. Minerals can build up in sections, reducing heat transfer, overheating cast iron, and causing section failure. Consult local water treatment companies for unusually hard water areas (above 7 grains hardness) or low pH water conditions (below 7.0).
2. Freeze protection (when used):
 - a. Use antifreeze made especially for hydronic systems. Inhibited propylene glycol is recommended.

WARNING

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

- b. Determine quantity according to system water content. Boiler water content is listed on page 27. Remember to add in expansion tank water content.
- c. Follow antifreeze manufacturer's instructions.
- d. 50% solution provides maximum protection to about -30°F.
- e. Local codes may require back flow preventer or actual disconnect from city water supply.

FILL THE SYSTEM:

1. Close manual and automatic air vents and drain cock.
2. Fill to correct system pressure. Correct pressure will vary with each application. Normal cold water fill pressure for residential system is 12 psi.
3. Open automatic air vent one turn.
4. Slowly feed water to boiler.
 - a. Starting on the 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.

PLACE IN OPERATION:

1. Verify boiler is filled with water.
2. Verify proper orifice plate installed. See page 6 to check size and fuel type.

DANGER

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

3. Follow operating instructions on boiler or in Gas Control Supplement for specific gas valve.
4. Check system piping for leaks. If found, repair immediately.

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 occur, resulting in substantial property damage.

5. Vent air from system. Repeat steps 4 and 5 under "Fill the System." Air in system can interfere with water circulation and cause improper heat distribution.
6. If boiler fails to start, check for:
 - a. Loose connections, blown fuse or service switch off?
 - b. High limit switch set below boiler water temperature?
 - c. Thermostat set below room temperature?
 - d. Gas not turned on at meter or boiler?
 - e. Incoming gas pressure less than 4" W.C.?
 - f. If above fails to correct problem, refer to Gas Control Supplement.

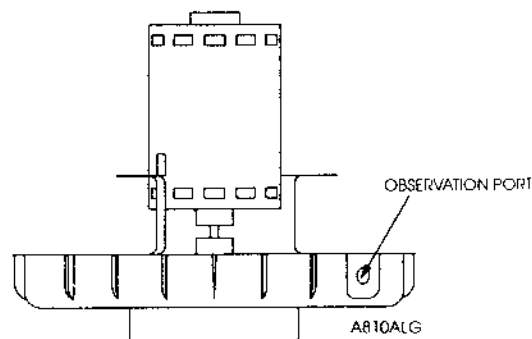
INSPECT VENTING SYSTEM:

1. Check for gas-tight seal at all vent pipe connections.

WARNING

Venting system must be sealed gas-tight to prevent flue gas spillage and carbon monoxide emissions which will result in severe personal injury or death.

CHECK IGNITOR GLOW:



SEEING IGNITOR GLOW
THROUGH OBSERVATION PORT
FIGURE 19

1. Look through observation port in blower housing to see ignitor glowing.

Section H: Check-Out Procedure

Check off steps as completed:

- ☐ 1. Boiler and heat distribution units filled with water?
- ☐ 2. Automatic air vent, if used, open one full turn?
- ☐ 3. Air purged from system?
- ☐ 4. Air purged from gas piping? Piping checked for leaks?
- ☐ 5. Is proper orifice plate installed? Refer to page 6 to check size and fuel type.

DANGER

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

- ☐ 6. Followed operating instructions on boiler or in Gas Control Supplement for proper start-up?
- ☐ 7. Is ignitor glow visible? Refer to "Check Ignitor Glow," p. 17.
- ☐ 8. Test limit control: While burner is operating, move indicator on limit control below actual boiler water temperature. Blower and burner should go off while circulator continues to operate. Raise setting on limit control above boiler water temperature and burner should reignite.
- ☐ 9. Test additional field-installed controls: If boiler has a low water cut-off, additional high limit or other controls, test for operation as outlined by manufacturer. Burner should be operating and should go off when controls are tested. When controls are restored, burners should reignite.
- ☐ 10. Test ignition system safety device:
 - a. Connect voltmeter to gas valve terminals.
 - b. Turn off manual gas valve.
 - c. Set thermostat to call for heat.
 - d. Ignitor will glow for approx. 20 seconds. Near end of 20 seconds, 24VAC will show at gas valve for approx. 6 seconds and then return to 0 VAC.
 - e. To restart system, follow operating instructions on boiler or in Gas Control Supplement.

- ☐ 11. Limit control set to system temperature requirements?
- ☐ 12. For multiple zones, flow adjusted so it is about the same in each zone?
- ☐ 13. Thermostat heat anticipator (if available) set properly? Refer to "Wiring," page 16.
- ☐ 14. Boiler cycled with thermostat? Raise to highest setting and verify boiler goes through normal start-up cycle. Lower to lowest setting and verify boiler goes off.
- ☐ 15. Measure natural gas input:
 - a. Operate boiler 10 minutes.
 - b. Turn off other appliances.
 - c. At natural gas meter, measure time (in seconds) required to use one cubic foot of gas.
 - d. Calculate gas input:

$$\frac{3600 \times 1000}{\text{number seconds from step C}} = \text{Btuh}$$
 - e. Btuh calculated should approximate input rating on rating label.
- ☐ 16. Observed several operating cycles for proper operation?
- ☐ 17. Set room thermostat to desired room temperature?
- ☐ 18. Completed Installation and Service Certificate below?
- ☐ 19. Reviewed all instructions shipped with this boiler with owner or maintenance person, returned to envelope and given to owner or placed in pocket inside front panel in boiler?

Installation and Service Certificate

BOILER MODEL _____ SERIES _____ CP NUMBER _____ DATE INSTALLED _____

MEASURED 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)

Section I: Maintenance

SUGGESTED MINIMUM MAINTENANCE SCHEDULE:

Regular service by a qualified service agency and maintenance must be performed to assure maximum boiler operating efficiency.

Beginning each heating season:

1. Annual service call by qualified service agency, including checking operation of mixing valve. On cold start-up, return piping between mixing valve and circulator inside boiler will feel warmer than return piping outside jacket from system.

WARNING

To avoid potential of severe burn, Do not rest hands on or grasp pipes. Use a light touch - return piping will heat up quickly.

If mixing valve does not seem to be working, the spring and thermostat may need to be replaced.

2. Visually check top of vent ell for soot. Call service man to clean. Some sediment at bottom of vent ell is normal.
3. Visually inspect venting system for blockage, deterioration or leakage.
4. Check that boiler area is free from combustible materials, gasoline, and other flammable vapors and liquids.
5. Check for and remove any obstruction to the flow of combustion or ventilation air to boiler.
6. Follow "Place in Operation," page 17.
7. Visually inspect ignitor glow, page 17.
8. Check operation of low water cut-off, if used, and additional field-installed controls. Refer to manufacturer's instructions.
9. Follow oil-lubricating instructions on circulator. Over-oiling will damage circulator. Water-lubricated circulators do not need oiling.
10. Visually inspect condensate drain hose(s) for proper operation or deterioration. Check for plugged condensate drain by checking for 1 or more inches of water in vent ell.
11. Open jacket top panel and check for piping leaks around circulator, mixing valve, relief valve and other fittings. 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 occur, resulting in substantial property damage.

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 the flow of combustion or ventilation air to boiler.

Monthly during heating season:

1. Open jacket top panel and check for piping leaks around circulator, mixing valve, relief valve, and other fittings. If found, repair at once.

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 occur, resulting in substantial property damage.

2. Visually inspect ignitor glow, page 17.
3. Visually inspect venting system for blockage, deterioration or leakage.
4. Check air vents for leakage.
5. Visually inspect condensate drain hose(s) for proper operation or deterioration. Check for plugged condensate drain by checking for 1 or more inches of water in vent ell.

Periodically during heating season:

1. Check relief valve. Refer to manufacturer's instructions on valve.
2. Test low water cut-off, if used and additional field-installed controls. Refer to manufacturer's instructions.
3. Visually inspect condensate drain hose for proper operation or deterioration. Check for plugged condensate drain by checking for 1 or more inches of water in vent ell.
4. Clean screen in vent termination and air intake.

Every 6 months:

1. Oil blower motor. With boiler power shut off, lift up control tray. Place a few drops of S.A.E. 20 motor oil in 2 blower motor oil cups. Replace control tray and restore power to boiler. Do not use common universal household oils.

End of each heating season - annual shut-down procedure:

1. Follow "To Turn Off Gas To Appliance" instructions, see Control Supplement.
2. Do not drain system unless exposure to freezing temperatures will occur. Do not drain system if antifreeze is used.

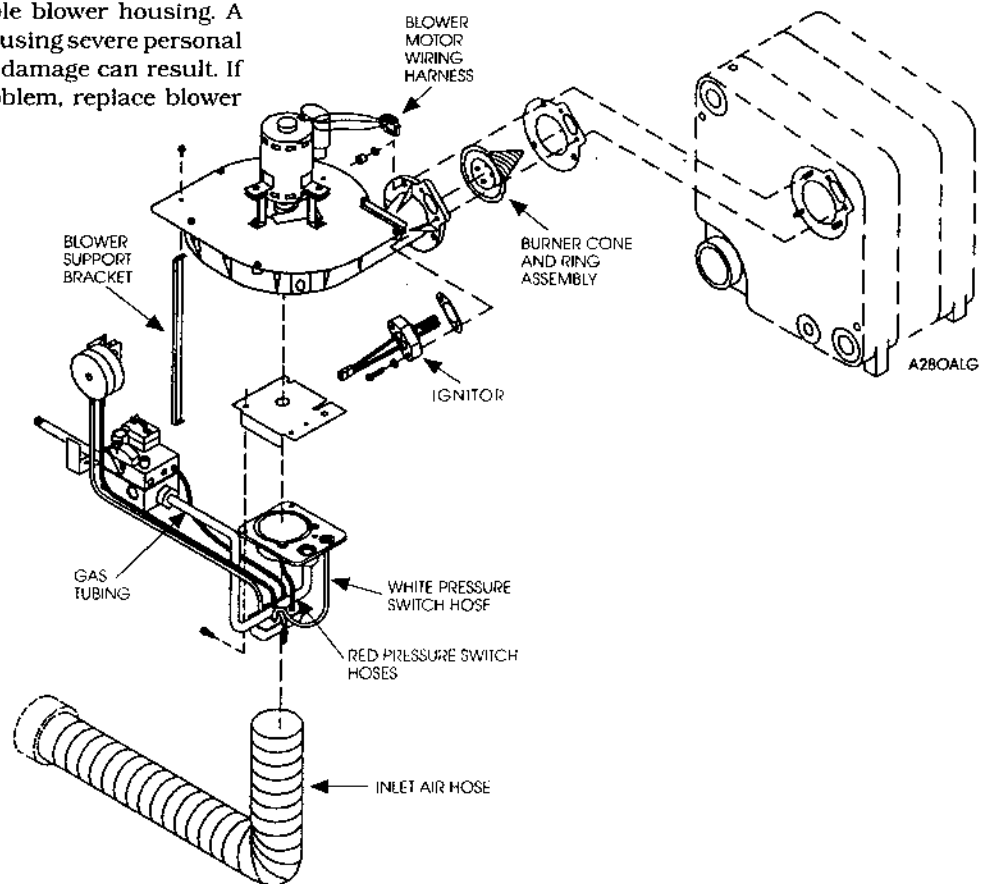
CLEANING BOILER HEATING SURFACES:

The following service procedures must be performed ONLY by a qualified service agency. Boiler owner should not attempt these procedures.

1. If you find soot in top of vent ell (some sediment in bottom of vent ell is normal) - remove blower assembly, and clean inside boiler by spraying water into chamber.

WARNING

Do not disassemble blower housing. A fire or explosion causing severe personal injury or property damage can result. If you suspect a problem, replace blower housing.



REMOVING/REPLACING BLOWER ASSEMBLY
FIGURE 20

Drain through condensate hose. Also check burner, replace if damaged; check gas valve operation and negative outlet pressure. replace if not okay - gas valve is not adjustable; check blower wheel operation.

2. If you find rust deposits in vent ell - check mixing valve and clean boiler as above.

To remove blower assembly:

DANGER

Wait several minutes until ignitor cools down before proceeding to avoid severe personal injury or death.

WARNING

Turn off power and gas to boiler. Failure to do so can cause severe personal injury, death and property damage.

1. Remove control tray.
2. Disconnect:
 - gas tubing from gas valve (left-hand thread)
 - pressure switch hoses
 - hose from gas valve to gas/air manifold
 - air inlet hose
 - blower motor wiring harness from control module
 - ignitor harness connected to ignitor plug
 - blower support bracket
 - ground wire
3. Remove 2 ignitor screws and washers. Carefully remove ignitor. Use care when handling ignitor - very brittle!
4. Remove nuts from studs at blower housing mounting bracket.

5. Grasp blower housing and pull free from studs. Turn clockwise until blower assembly can be removed safely from inside of boiler.
6. Burner cone and ring assembly can be removed for inspection.

To replace blower assembly:

1. Place blower housing gasket over studs at combustion chamber opening.
2. Re-install burner cone and ring assembly into combustion chamber opening.
3. Position blower assembly over studs. Install nuts and tighten.
4. Install ignitor gasket and ignitor. Fasten with screws and washers.
5. Connect :
 - gas tubing to gas valve (left-hand thread)
 - pressure switch hoses
 - hose from gas valve to gas/air manifold
 - air inlet hose (with new wire tie)
 - blower motor wiring harness to control module
 - ignitor harness connected to ignitor plug
 - blower support bracket
 - ground wire
6. Install control tray.
7. Be sure all wiring and hose connections are secure and correct.

Section J: Appendix

INSIDE COMBUSTION AIR CONTAMINATION:

All boilers experience some condensation in section assembly during start-up. Unlike most conventional boilers, condensation is minimized in GV by built-in mixing valve, maintaining boiler return water temperature above 140°F.

Flue gas condensate is slightly acidic. In most cases pH level is not harmful to vents or drains. When combustion air is contaminated by vapors from products and areas listed below, condensate acidic levels increase. Higher acidic levels attack many materials, including stainless steel commonly used in high efficiency systems.

GV boiler can use special corrosion-resistant non-metallic vent material. You may choose to use outside combustion air for any of these reasons:

- installation is in an area containing contaminants listed below which will induce acidic condensation.
 - you want to reduce infiltration into your home through openings around windows and doors.
 - you are using AL29-4C® stainless steel vent pipe, which is more corrosion-resistant than standard metallic vent pipe. In extremely contaminated areas, this may also experience deterioration.
1. Products causing contaminated combustion air:
 - a. spray cans containing chloro/fluorocarbons
 - b. permanent wave solutions
 - c. chlorinated waxes/cleaners
 - d. chlorine-based swimming pool chemicals
 - e. calcium chloride used for thawing
 - f. sodium chloride used for water softening
 - g. refrigerant leaks
 - h. paint or varnish removers
 - i. hydrochloric acid/muriatic acid
 - j. cements and glues
 - k. anti-static fabric softeners used in clothes dryers
 - l. chloride-type bleaches, detergents, and cleaning solvents found in household laundry rooms
 - m. adhesives used to fasten building products
 - ... and other similar products
 2. Areas causing contaminate combustion air:
 - a. dry cleaning/laundry areas and establishments
 - b. metal fabrication plants
 - c. beauty shops
 - d. refrigeration repair shops
 - e. photo processing plants
 - f. auto body shops
 - g. plastic manufacturing plants
 - h. furniture refinishing areas and establishments
 - i. new build construction
 - j. remodeling areas

WARNING

To prevent potential of severe personal injury or death, check for areas and products as listed above before installing boiler. If found:

- remove products permanently.
- OR
- provide outside combustion air.

WHEN REMOVING BOILER FROM COMMON VENTING SYSTEM:

WARNING

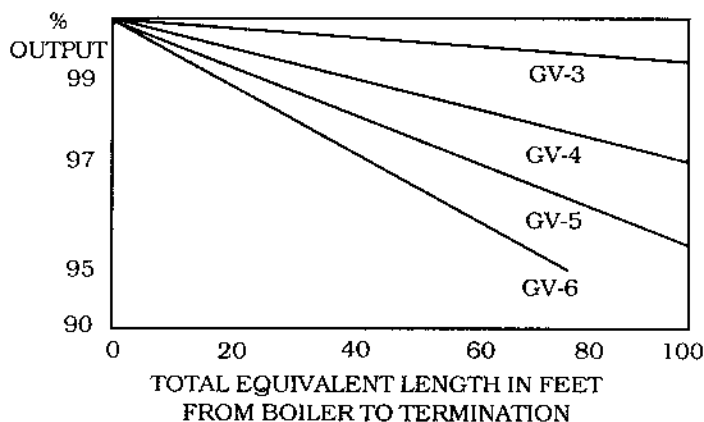
Failure to follow all instructions listed below can result in flue gas spillage and carbon monoxide emissions, causing severe personal injury or death.

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 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.

Any improper operation of common venting system should be corrected so the installation conforms with the National Fuel Gas Code, ANSI Z223.1 - latest edition. Correct by resizing to approach the minimum size as determined using the appropriate tables in Appendix G of that code. Canadian installations must comply with CAN/CGA B149.1 or .2 Installation Code.

REDUCED OUTPUT FOR VENT LENGTH:



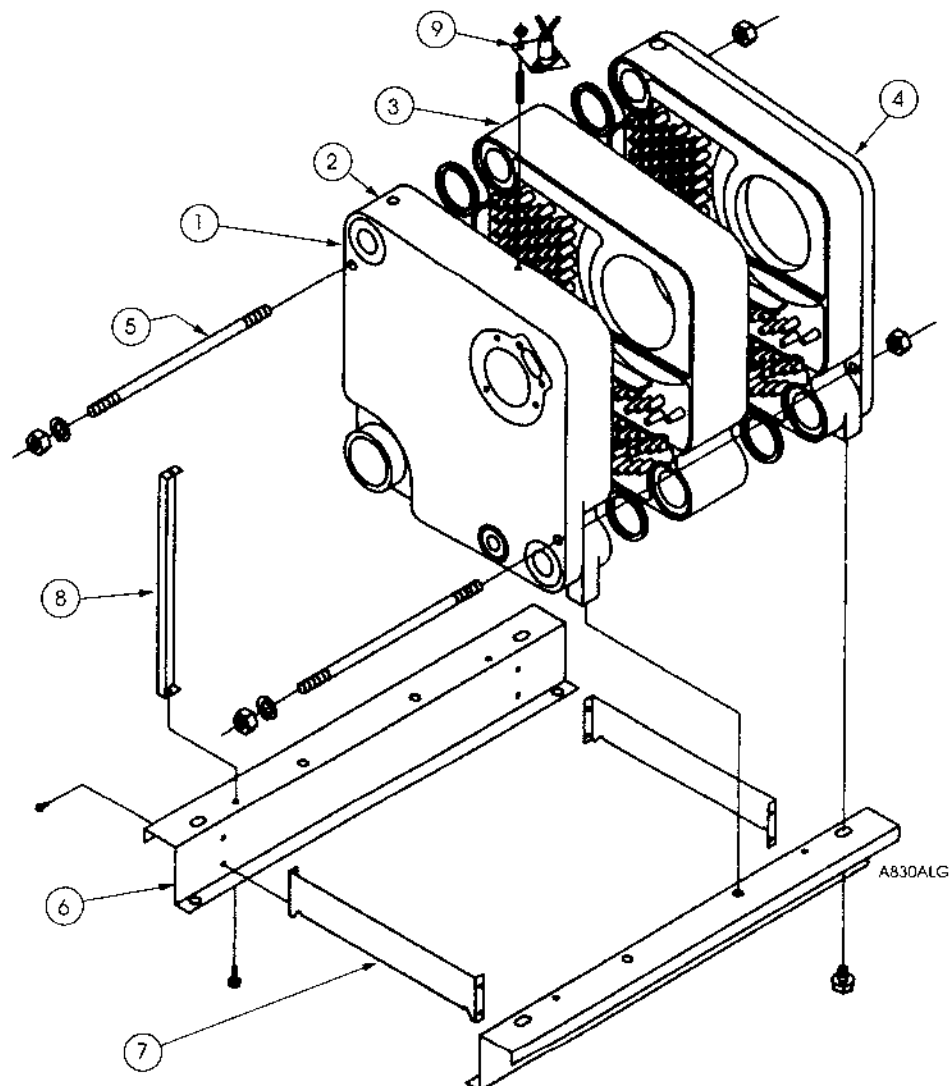
| | |
|----------------------------|----|
| Section Assembly | 23 |
| Jacket Assembly | 24 |
| Vent Parts | 24 |
| Blower Assembly | 25 |
| Boiler Trim Assembly | 26 |

REPLACEMENT INSTRUCTIONS

Refer to appropriate drawing on following pages for parts replacement.

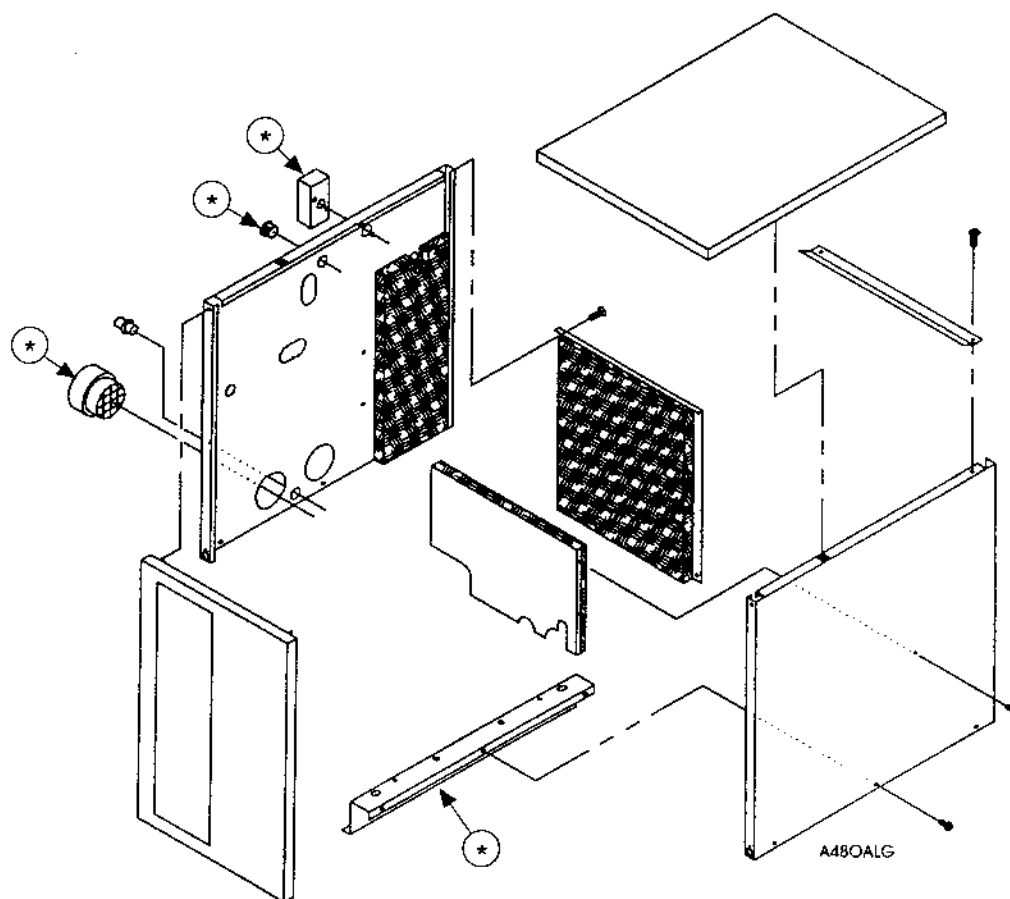
Replacement parts can be ordered or purchased through a local Weil-McLain distributor. When ordering, specify "GV Boiler" and include description and part number of replacement part. Some parts are stock items (■) and can be purchased from a local supply house.

Section Assembly



| Figure No. | Description | Weil-McLain Sales Ref. No. | | | |
|------------|--|----------------------------|--------|--------|--------|
| | | GV-3 | GV-4 | GV-5 | GV-6 |
| 1 | Block Assembly, Including: Front Section (3914); Int. Section (3915) (qty. for boiler size); Back Section (3918); Square Cut Seals, 2"; Silicone Sealant; Tie Rods; Tie Rod Nuts; Tie Rod Washers; Water Tubing Male Adapters, 1" N.P.T.; Water Tubing, Pump to Return; Blower Flange Gasket; Ignitor; Ignitor Gasket; Screws; Lock Washers; Studs; Nuts | 11B323 | 11B324 | 11B325 | 11B326 |
| 2 | Front Section (3914) (Repair Kit Required) | 11B328 | 11B328 | 11B328 | 11B328 |
| 3 | Int. Section (3915) (Repair Kit Required) | 11B205 | 11B205 | 11B205 | 11B205 |
| 4 | Back Section (3918) (Repair Kit Required) | 11B206 | 11B206 | 11B206 | 11B206 |
| NOT SHOWN | Repair Kit, Front Replacement Sections, Including: Square Cut Seals, 2"; Silicone Sealant; Tie Rod Nuts; Tie Rod Washers; Water Tubing Male Adapters, 1" N.P.T.; Water Tubing, Pump to Return; Blower Flange Gasket; Ignitor; Ignitor Gasket; Screws; Studs; Nuts; Lock Washers | 11B327 | 11B327 | 11B327 | 11B327 |
| NOT SHOWN | Repair Kit, Int/Back Replacement Sections, Including: Square Cut Seals, 2"; Silicone Sealant; Tie Rod Nuts; Tie Rod Washers | 11B208 | 11B208 | 11B208 | 11B208 |
| 5 | Tie Rod | 11B209 | 11B210 | 11B211 | 11B212 |
| 6 | Base Rail Leg | 11B213 | 11B214 | 11B215 | 11B216 |
| 7 | Base Rail Brace | 11B217 | 11B217 | 11B217 | 11B217 |
| 8 | Blower Housing Support | 11B218 | 11B218 | 11B218 | 11B218 |
| 9 | Thermo Disc Kit, Including: 3T Block Switch; Block Switch Clip; Wire Ties | 10C403 | 10C403 | 10C403 | 10C403 |

Jacket Assembly



| Description | Well-McLain Sales Ref. No. | | | |
|---|----------------------------|--------|--------|--------|
| | GV-3 | GV-4 | GV-5 | GV-6 |
| Jacket Replacement Carton, including: Left Side Jacket Panel; Right Side Jacket Panel; Back Jacket Panel; Jacket Cross Tie; Interior Jacket Panel; Pocket for Front Panel; Front Jacket Panel; Top Jacket Panel; Limit/Pressure Switch Bracket; Labels; Screws | 10J539 | 10J540 | 10J541 | 10J542 |

* For reference only - not included in jacket carton.

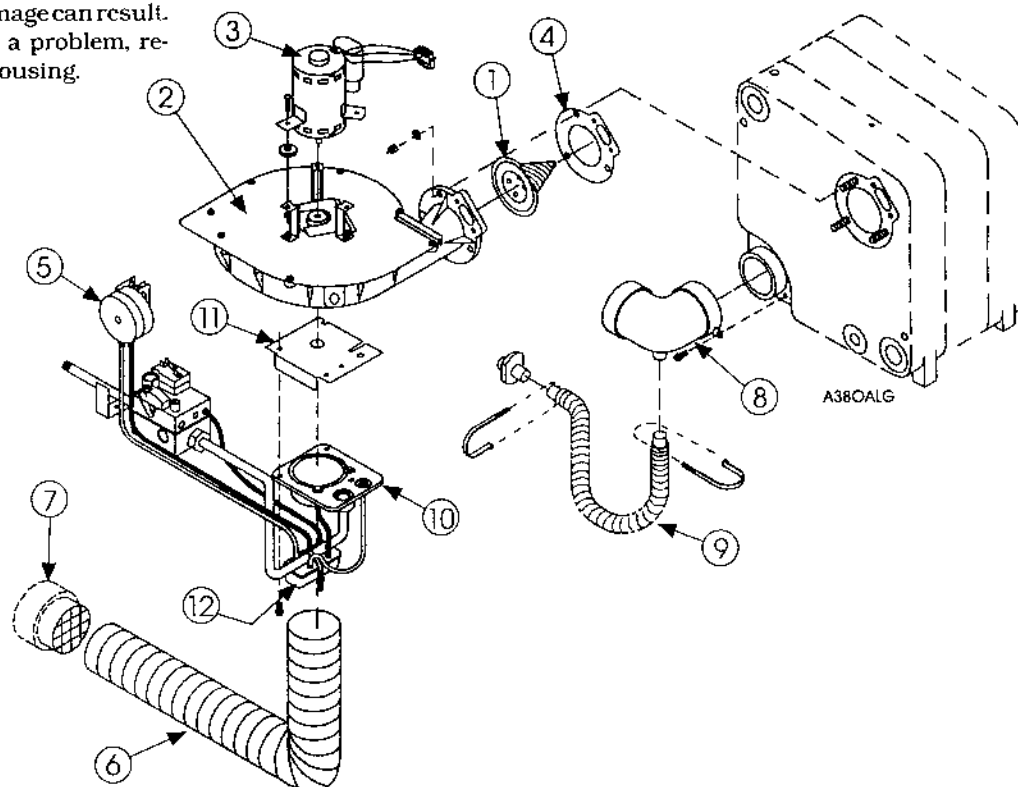
Vent Parts

| Plexco PLEXVENT® Description | Vendor Part Number | Hart & Cooley ULTRAVENT™ Description | Vendor Part Number |
|-------------------------------|--------------------|--------------------------------------|--------------------|
| Vent Pipe, 3' x 5' lengths | 901220 | Vent Pipe, 3' x 10' lengths | 3UP10 |
| 90° Sweep Elbow (long radius) | 902299 | 90° Sweep Elbow (long radius) | 3UES90 |
| 45° Elbow (long radius) | 903958 | 45° Elbow (long radius) | 3UE45 |
| Coupling | 901218 | Coupling | 3UC |

Blower Assembly

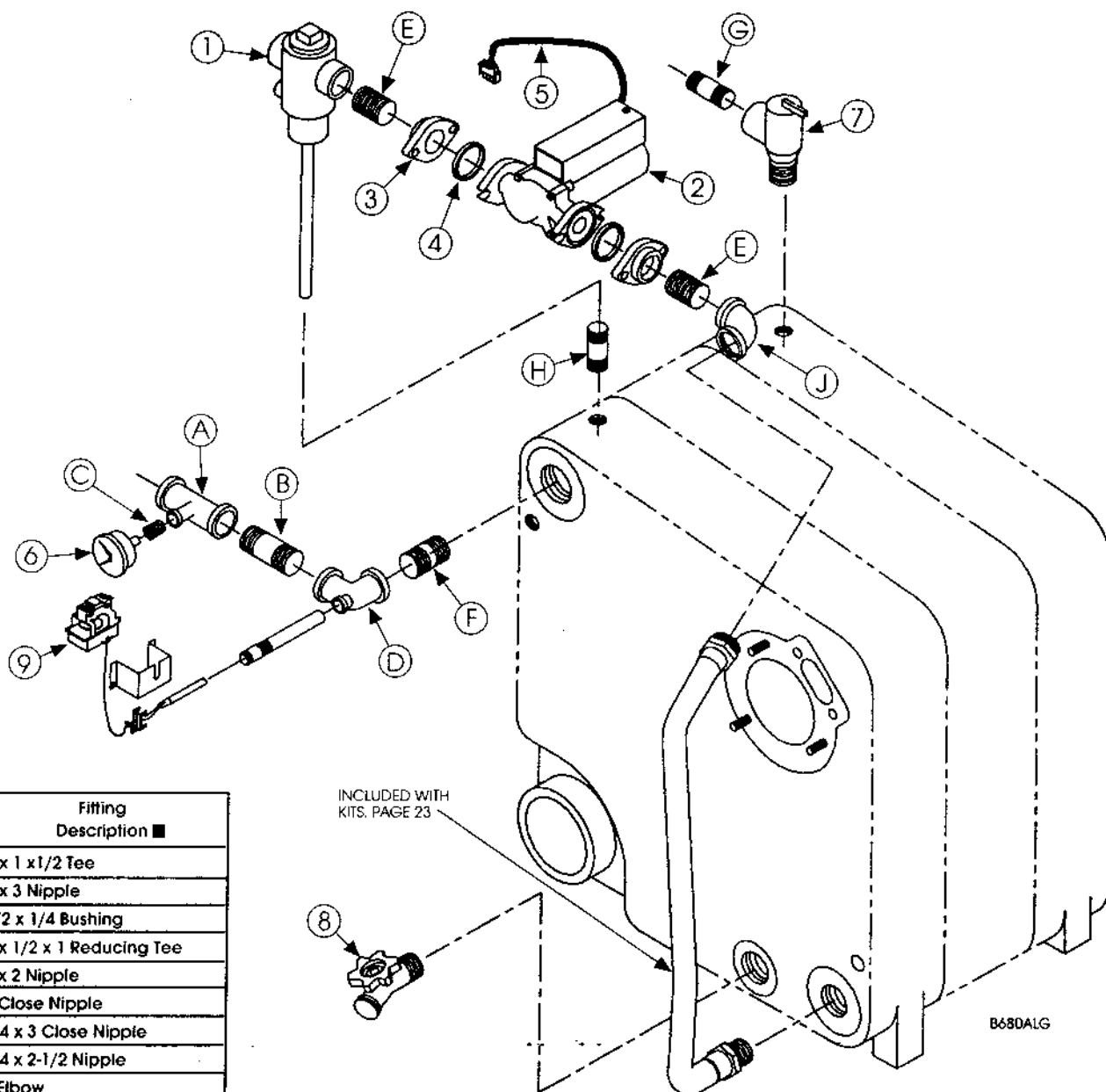
WARNING

Do not disassemble blower housing. A fire or explosion causing severe personal injury or property damage can result. If you suspect a problem, replace blower housing.



| Figure No. | Description | Weil-McLain Sales Ref. No. | | | |
|------------|--|----------------------------|--------|--------|--------|
| | | GV-3 | GV-4 | GV-5 | GV-6 |
| 1 | Burner Replacement Kit, Including: Burner Cone and Ring Assembly; Blower Flange Gasket; Ignitor; Ignitor Screws; Ignitor Washers; Ignitor Gasket | 10C375 | 10C376 | 10C377 | 10C378 |
| 2 | Blower Assembly, Including: Blower Housing; Observation Port Window; Blower Housing Cover Plate; Blower Motor Mounting Brackets; Washer Hold Down Bracket; Lock Nuts; Motor Mount Grommets; Blower Motor; Blower Wheel; Magnetic Washer; Silicone Sealant; Screws; Blower Flange Gasket; Ignitor; Ignitor Screws; Ignitor Washers; Ignitor Gasket | 10C379 | 10C379 | 10C379 | 10C379 |
| 3 | Blower Motor Replacement Kit, Including: Blower Motor; Motor Mount Grommets; Screws; Lock Nuts; 8" Allen Wrench | 10C380 | 10C380 | 10C380 | 10C380 |
| 4 | Blower Flange Gasket | 10C381 | 10C381 | 10C381 | 10C381 |
| 5 | Pressure Switch | 10C382 | 10C382 | 10C382 | 10C382 |
| 6 | Inlet Air Hose | 10C385 | 10C385 | 10C385 | 10C385 |
| 7 | Inlet Air Tube w/ Grill | 10C386 | 10C386 | 10C386 | 10C386 |
| 8 | Vent Ell Replacement Kit, Including: Vent Ell w/Drain; Silicone Sealant | 10C387 | 10C387 | 10C387 | 10C387 |
| 9 | Hose Trap | 10C388 | 10C388 | 10C388 | 10C388 |
| 10 | Gas/Air Manifold Assembly, Including: Gas/Air Manifold; Gas Tubing; Washers; Screws | 10C389 | 10C389 | 10C389 | 10C389 |
| 11 | Conversion Kit, Natural to Propane, Including: Propane Orifice Plate; Label | 10C390 | 10C391 | 10C392 | 10C393 |
| 11 | Conversion Kit, Propane to Natural, Including: Natural Orifice Plate; Label | 10C394 | 10C395 | 10C396 | 10C397 |
| 12 | Condensate Trap Kit, including: Condensate Trap; Hoses | 10C479 | 10C479 | 10C479 | 10C479 |

Boiler Trim Assembly



| Figure No. | Fitting Description ■ |
|------------|--------------------------|
| A | 1 x 1 x 1/2 Tee |
| B | 1 x 3 Nipple |
| C | 1/2 x 1/4 Bushing |
| D | 1 x 1/2 x 1 Reducing Tee |
| E | 1 x 2 Nipple |
| F | 1 Close Nipple |
| G | 3/4 x 3 Close Nipple |
| H | 3/4 x 2-1/2 Nipple |
| J | 1 Elbow |

| Figure No. | Description | Weil-McLain Sales Ref. No. | | | |
|------------|--|----------------------------|----------|----------|----------|
| | | GV-3 | GV-4 | GV-5 | GV-6 |
| 1 | Mixing Valve | 10C541 | 10C541 | 10C541 | 10C541 |
| 2 | Circulator, Taco 007 | 10C195 ■ | 10C195 ■ | 10C195 ■ | 10C195 ■ |
| | Circulator, Bell & Gossett SLC30 | 10C542 ■ | 10C542 ■ | 10C542 ■ | 10C542 ■ |
| | Circulator, Grundfos UP15 | 10C539 | 10C539 | 10C539 | 10C539 |
| 3 | Circulator Flange, 1" | 10C296 ■ | 10C296 ■ | 10C296 ■ | 10C296 ■ |
| 4 | Circulator Gasket, Taco | 10C307 ■ | 10C307 ■ | 10C307 ■ | 10C307 ■ |
| | Circulator Gasket, Bell & Gossett | 10C543 ■ | 10C543 ■ | 10C543 ■ | 10C543 ■ |
| | Circulator Gasket, Grundfos | 10C540 | 10C540 | 10C540 | 10C540 |
| 5 | Wiring Harness, Control Module to Circulator | 10C410 | 10C410 | 10C410 | 10C410 |
| 6 | Pressure Temperature Gauge 2-1/2" SSK | 10C034 ■ | 10C034 ■ | 10C034 ■ | 10C034 ■ |
| 7 | Relief Valve, 3/4", 30 PSI | 10C199 ■ | 10C199 ■ | 10C199 ■ | 10C199 ■ |
| 8 | Drain Valve, 3/4" | ■ | ■ | ■ | ■ |
| 9 | Limit Control w/ 1/2" Well | 10C411 | 10C411 | 10C411 | 10C411 |

■ Available from local supply house.

RATINGS:

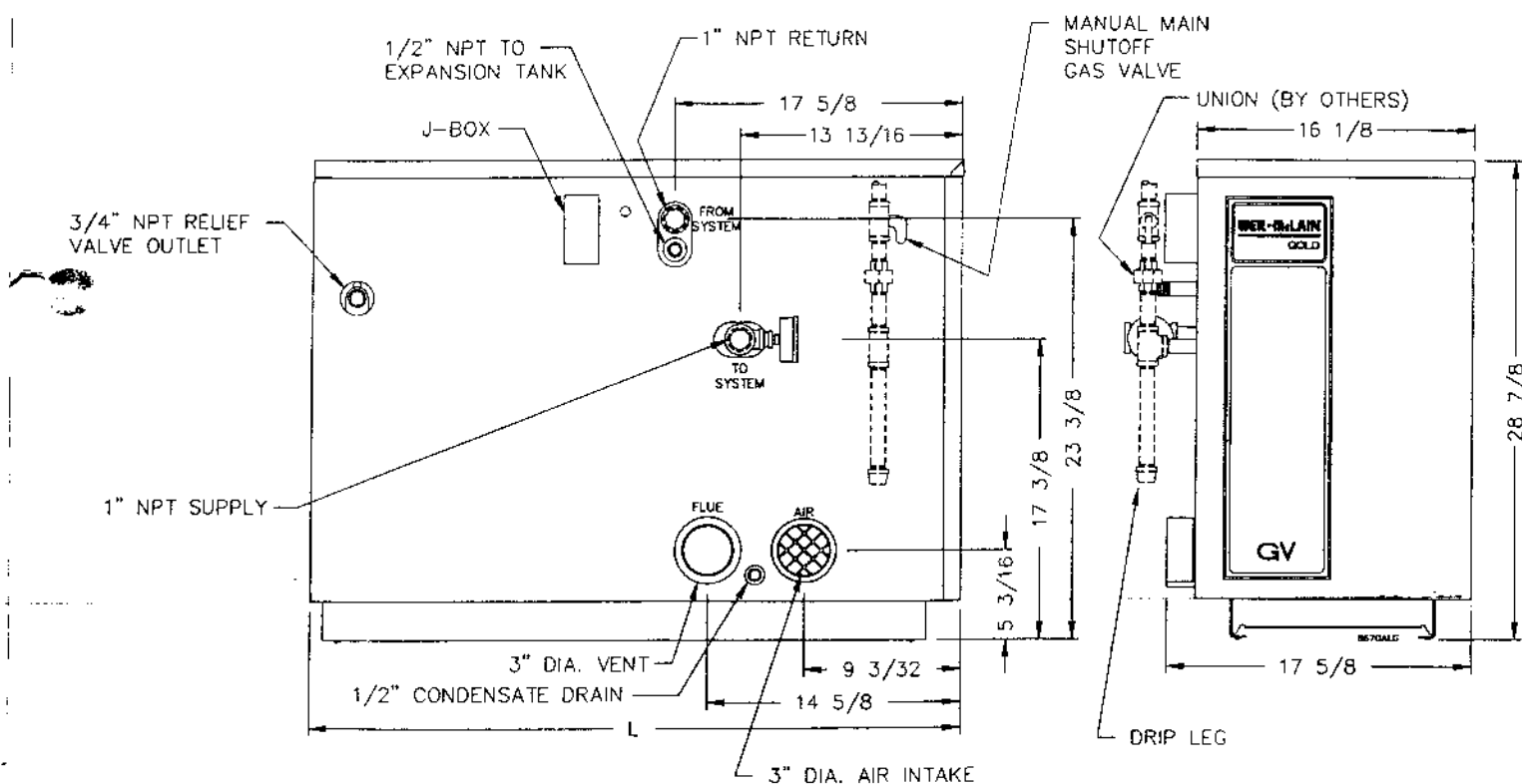
| BOILER MODEL | AGA INPUT BTUH | DOE HEATING CAPACITY BTUH ⁺ | NET I-B-R RATINGS BTUH ⁺ | DOE SEASONAL EFFICIENCY (%) | VENT/ COMBUSTION AIR DIAMETER (IN) | BOILER WATER CONTENT (GALS) |
|--------------|----------------|--|-------------------------------------|-----------------------------|------------------------------------|-----------------------------|
| GV-3 | 70,000 | 61,000 | 53,000 | 87.5 | 3 | 3.3 |
| GV-4 | 105,000 | 92,000 | 80,000 | 87.3 | 3 | 4.2 |
| GV-5 | 140,000 | 122,000 | 106,000 | 87.2 | 3 | 5.1 |
| GV-6 | 175,000 | 153,000 | 133,000 | 87.0 | 3 | 6.0 |

⁺ Based on standard test procedures prescribed by the United States Department of Energy. Ratings also referred to as AGA/CGA Output.

⁺ 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. Ratings are based on a piping and pick-up allowance of 1.15. An additional allowance should be made for unusual piping and pick-up loads.

Boilers are tested for 50 lbs. working pressure.
GV boilers are not available for millivolt systems.

DIMENSIONS:



| BOILER MODEL | SUPPLY (IN) | RETURN (IN) | BOILER LENGTH "L" (IN) | GAS CONNECTION SIZE (IN)■ | CRATE DIMENSIONS (OUTSIDE MEASUREMENTS - IN) | | | APPROX. SHIPPING WT. (LBS) |
|--------------|-------------|-------------|------------------------|---------------------------|--|-------|--------|----------------------------|
| | | | | | LENGTH | WIDTH | HEIGHT | |
| GV-3 | 1 | 1 | 27 1/4 | 1/2 | 32 | 22 | 37 | 270 |
| GV-4 | 1 | 1 | 30 3/4 | 1/2 | 32 | 22 | 37 | 320 |
| GV-5 | 1 | 1 | 34 1/4 | 1/2 | 32 | 22 | 44 | 355 |
| GV-6 | 1 | 1 | 37 3/4 | 1/2 | 32 | 22 | 44 | 410 |

■ Gas piping from meter to be sized according to local utility requirements.