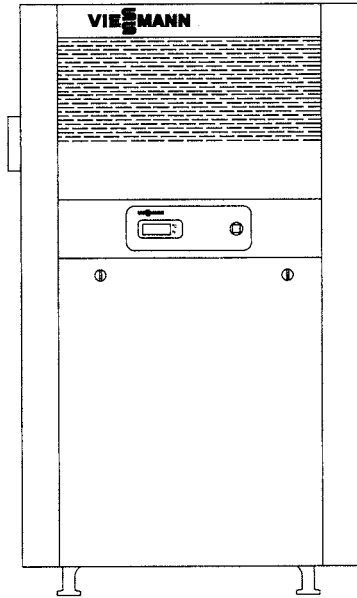


Installation / Service Manual  
 for Atola Cast-Iron Gas-Fired  
 Hot Water Boiler Series ECV – Side Wall Vented  
 65,000 to 200,000 Btu/h



**IMPORTANT: READ AND SAVE THESE INSTRUCTIONS FOR FUTURE REFERENCE**



**Warning: If the information in this manual is not followed exactly, a fire or explosion may result causing property damage, personal injury or loss of life.**

**Do not store or use gasoline or other flammable liquids in the vicinity of this or any other appliance.**

**WHAT TO DO IF YOU SMELL GAS**

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


**Installation and service must be performed by a qualified installer, service agency or the gas supplier.**


**WARNING**

**Should overheating occur or the gas supply fail to shut off, do not disconnect the electrical supply to the pump. Instead, shut off the gas supply at a location external to the appliance.**

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 This "Attention" symbol is located beside all important safety recommendations. Please follow the instructions in detail to avoid property damage, personal injury, or loss of life.

 **Warning:**

The installation, adjustment, service, and maintenance of this boiler must be done by a professional service technician who is qualified and experienced in the installation, service, and maintenance of gas-fired hot water boilers. There are no user serviceable parts on the boiler, burner, or control. Failure to heed this warning can cause property damage, severe personal injury, or loss of life.

 **Warning:**

Improper installation, adjustment, service, or maintenance can cause flue products to flow into living space. Flue products contain poisonous carbon monoxide gas which can cause nausea or asphyxiation resulting in severe personal injury or loss of life.

 **Warning:**

If flame roll-out switch trips during start-up or normal operation, it indicates a hazardous condition to be corrected immediately. Do not attempt to put boiler in operation. Immediately contact a qualified service professional to locate source of problem and correct. Failure to heed this warning could result in property damage, severe personal injury, or loss of life.

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

Do not store chemicals containing chlorine or other corrosive materials near the boiler, such as bleach, cleaning solvents, detergents, acids, hair spray, spray cans, paint thinners, paint, water softener salt, refrigerants.

 **Warning:**

Before each heating season begins, have the following service and maintenance done by a professional service technician:

- 1) Boiler heat exchanger inspected and cleaned.
- 2) Vent system inspected for deterioration, leaks, corrosion, proper draft, and proper operation. Check vent system for compliance with local and national code requirements. Repair or replace as required.
- 3) Burners inspected and if necessary cleaned to ensure proper combustion and operation. Check for adequate supply of fresh outside combustion and ventilation air.

Neglecting to perform necessary maintenance can cause unsafe operation.

 **Warning:**

Never operate the boiler without an installed venting system which safely vents all products of combustion to the outdoors. The vent system must comply with all applicable local and/or national codes.

Improper, incomplete, obstructed, or deteriorated vent systems can present a serious risk of flue gases leaking into living space which could cause carbon monoxide poisoning. Failure to heed this warning can cause severe personal injury or loss of life.

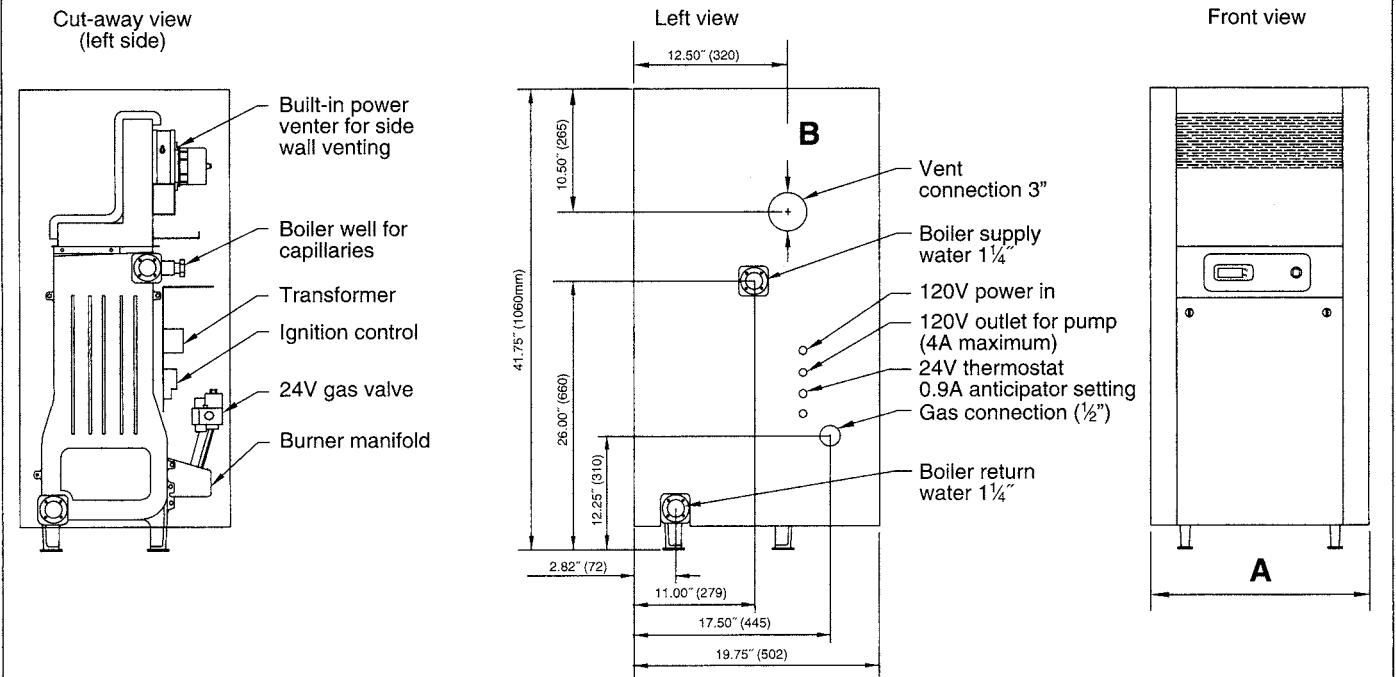
 **Warning:**

Never operate the boiler without an adequate supply of fresh combustion air. This boiler needs fresh air for safe operation and must be installed so there are provisions for adequate combustion and ventilation air. All combustion and ventilation air must be supplied from the outside. Failure to heed this warning can cause severe personal injury or loss of life.

 **Warning:**

Shut off all electrical power and turn off gas supply to boiler before performing any service or maintenance on the boiler, burner, or control. Failure to heed this warning could result in electrical shock, severe personal injury, or loss of life.

## Atola-ECV Technical Data



**Note:** The ECV boiler has a positive vent pressure. Do not common vent with any other equipment.  
 The ECV boiler is a Category III boiler. Refer to venting instructions. Special vent system required.  
 Electrical requirements: 120V, 60Hz, less than 12 Amps. Maximum supply gas pressure: 14" w.c. (1/2 psig)

| Model ECV | AGA input<br>CGA input | DOE heating<br>capacity<br>CGA output | Width<br>"A"      | Vent<br>Conn.<br>"BØ" | Gas<br>Conn. | Water<br>Conn. | Cast<br>Iron<br>Sections | Burners | Water<br>Content    | Weight<br>(dry)   | AFUE* | Steady<br>State<br>Efficiency |
|-----------|------------------------|---------------------------------------|-------------------|-----------------------|--------------|----------------|--------------------------|---------|---------------------|-------------------|-------|-------------------------------|
| ECV-65    | 65,000 Btu/h<br>19 kW  | 54,900 Btu/h<br>16 kW                 | 350 mm<br>14"     | 3"                    | 1/2"         | 1 1/4"         | 3                        | 2       | 9.9 ltr<br>2.6 USG  | 110 kg<br>243 lbs | 83.1% | 84.5%                         |
| ECV-80    | 80,000 Btu/h<br>23 kW  | 67,400 Btu/h<br>19 kW                 | 350 mm<br>14"     | 3"                    | 1/2"         | 1 1/4"         | 3                        | 2       | 9.9 ltr<br>2.6 USG  | 110 kg<br>243 lbs | 83.1% | 84.3%                         |
| ECV-100   | 100,000 Btu/h<br>29 kW | 84,200 Btu/h<br>24 kW                 | 450 mm<br>17 3/4" | 3"                    | 1/2"         | 1 1/4"         | 4                        | 3       | 13.2 ltr<br>3.5 USG | 133 kg<br>295 lbs | 83.1% | 84.2%                         |
| ECV-115   | 115,000 Btu/h<br>34 kW | 97,100 Btu/h<br>28 kW                 | 450 mm<br>17 3/4" | 3"                    | 1/2"         | 1 1/4"         | 4                        | 3       | 13.2 ltr<br>3.5 USG | 133 kg<br>295 lbs | 83.1% | 84.5%                         |
| ECV-140   | 140,000 Btu/h<br>41 kW | 118,300 Btu/h<br>34 kW                | 550 mm<br>21 3/4" | 3"                    | 1/2"         | 1 1/4"         | 5                        | 4       | 16.5 ltr<br>4.3 USG | 165 kg<br>365 lbs | 83.1% | 84.5%                         |
| ECV-155   | 155,000 Btu/h<br>45 kW | 131,000 Btu/h<br>38 kW                | 550 mm<br>21 3/4" | 3"                    | 1/2"         | 1 1/4"         | 5                        | 4       | 16.5 ltr<br>4.3 USG | 165 kg<br>365 lbs | 83.1% | 84.5%                         |
| ECV-180   | 180,000 Btu/h<br>53 kW | 151,000 Btu/h<br>44 kW                | 654 mm<br>25 3/4" | 3"                    | 1/2"         | 1 1/4"         | 6                        | 5       | 26.8 ltr<br>7.1 USG | 195 kg<br>432 lbs | 83.1% | 84.0%                         |
| ECV-200   | 200,000 Btu/h<br>58 kW | 168,000 Btu/h<br>49 kW                | 654 mm<br>25 3/4" | 3"                    | 1/2"         | 1 1/4"         | 6                        | 5       | 26.8 ltr<br>7.1 USG | 195 kg<br>432 lbs | 83.1% | 84.0%                         |

For use with natural gas 1000 Btu/ft<sup>3</sup>.  
 KW figures are approximate.

All sizes available with Propane Gas.  
 For Net IBR rating divide output by 1.15.

\* Annual fuel utilization  
 efficiency

### To owner:

Before operating this boiler/burner unit, make sure you fully understand its method of operation. Your heating contractor must always perform the initial start-up and explain the system and also the need for regular service and inspection.

### To installer:

Make sure you fully explain the boiler's operation to the owner/user. Advise the owner of the Lighting and Operating Instructions on page 14 and the separate User's Information manual. Locate the boiler so that the vent length is as short and as direct as possible with a minimum number of elbows.

The installation must conform to the requirements of the authority having jurisdiction or, in the absence of such requirements, to the National Fuel Gas Code, ANSI Z223.1 (latest edition). In Canada follow CAN/CGA-B149.1 or .2 Installation Codes.

The ECV boiler is for use in closed loop forced circulation hot water systems only. Maximum water pressure of 50 psi and maximum water temperature of 194°F.

The boiler model selected should be based on an accurate heat loss calculation of the building.

**Boiler location**

Do not install boilers on carpeting. The Atola-ECV boiler is for indoor use only. The boiler must be in a heated space not subject to freezing temperatures. The boiler must be installed on a solid level non-combustible floor capable of supporting the boiler and piping when filled with water. Pour a concrete pad if necessary. Wherever possible locate boiler near a floor drain.

Locate boiler such that vent pipe length is as short and as direct as possible (see venting section). The boiler must be located in a well ventilated area such that it is easy to supply fresh combustion air free of contaminants (dust, high humidity, corrosive vapours or chemicals).

Fig. 1 shows typical gas and water piping.

The preferred and safest location for the Atola-ECV boiler is in a separate mechanical room isolated from the living space and other occupied areas such as a laundry room. An adequate supply of fresh combustion and ventilation air from the outside must be supplied to the mechanical room. It is recommended that during the early stages of new home design proper consideration be given to constructing a separate mechanical room dedicated for gas-fired heating boilers and domestic hot water storage tank(s).

**Closest installation** (see Figs. 1a, 1b)

Models ECV- (65-155) are approved for closet installation. Models ECV- (180, 200) are approved for alcove installation. Do not use models ECV-(180, 200) for closet installations.

**Boiler handling**

The boiler is shipped on a wood pallet in a cardboard crate. Remove crating and pallet.

**Recommendation**

If boiler is located in a confined space, install main gas shut-off valve (gas cock) and main power supply switch in easily accessible location outside the confined space.

**Minimum clearances to combustibles**

(all measurements from boiler enclosure)

- Left side: 150 mm (6")
- Right side: 25 mm (1")
- Front: 150 mm (6")
- Top: 150 mm (6")
- Rear: 25 mm (1")
- Floor: Non-combustible.

**Recommended minimum service clearances:**

- Left side: 610 mm (24")
- Right side: 610 mm (24")
- Front: 1220 mm (48")
- Top: 610 mm (24")
- Rear: 610 mm (24")

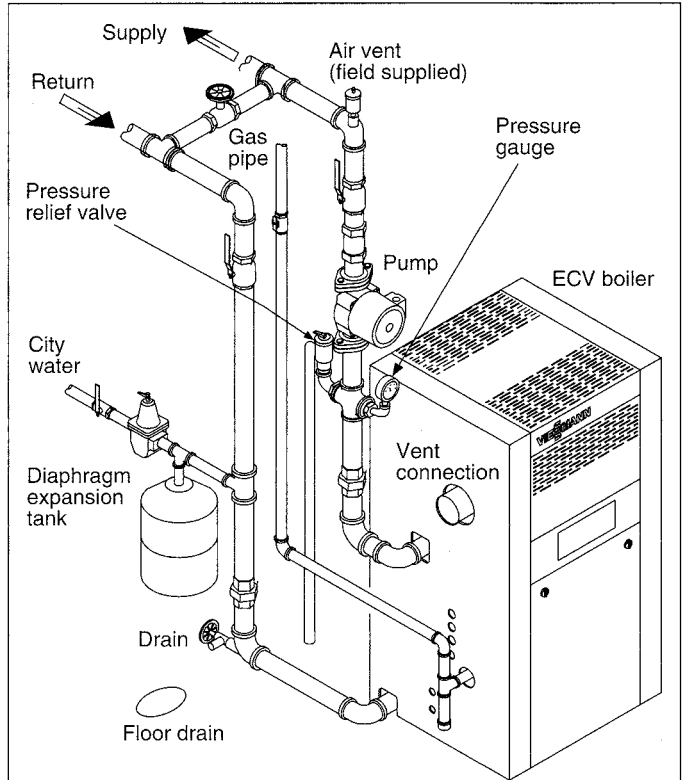
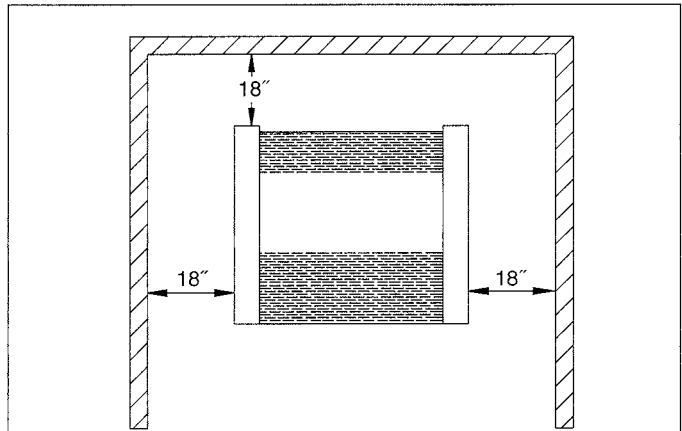


Fig. 1  
Typical hot water piping system



Top view  
Fig. 1a  
Alcove installation for ECV-(180, 200) boiler

**ATTENTION**

Permits from local authorities should be obtained before installing the boiler.

Installation must be made in accordance with local ordinances which may differ from this Installation Manual.

**Combustion air supply** (see Fig. 2)

This boiler needs fresh air for safe operation and must be installed so that there are provisions for adequate combustion and ventilation air.

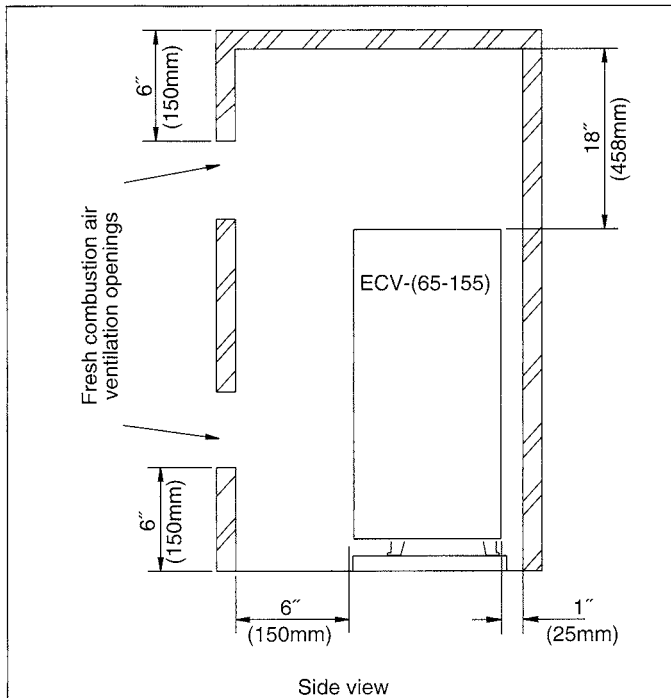


Fig. 1b  
ECV-(65-155) Closet installation minimum clearances

Provisions for combustion and ventilation air must be made in accordance with section 5.3, Air for Combustion and Ventilation, of the National Fuel Gas Code, ANSI Z223.1 (latest edition) or applicable provisions of the local codes. In Canada follow CAN/CGA-B149.1 or .2 Natural Gas Installation Codes (latest edition) for combustion and ventilation air requirements.

Whenever possible install boiler near an outside wall so that it is easy to duct fresh air directly to the boiler area. See example in Fig. 2. Refer to national codes for duct sizing. Round ducts can be used.

**Warning:**

**Failure to provide an adequate supply of fresh combustion air can cause poisonous flue gases to enter living space which can cause severe personal injury or loss of life.**

The boiler location should never be under negative pressure. Exhaust fans, attic fans, or dryer fans may cause air to be exhausted at a rate higher than air can enter the structure for safe combustion. Corrective action must be taken to ensure enough air is available. Never cover the boiler or store debris or other materials near the boiler, or in any way block the flow of adequate fresh combustion air to the boiler.

If boiler is installed in a confined space (a space with a volume of less than 50 cubic feet per 1000 Btu/h of gas input for all fuel burning equipment) or building construction is unusually tight, adequate air for combustion must be provided by two openings: one located about 6" below the ceiling, the other about 6" above the floor. When communicating directly with the outside, each opening must have a minimum free area of one square inch per 2000 Btu/h of gas input. When all combustion air is provided by openings in doors, etc. to adjoining spaces having adequate infiltration, each opening

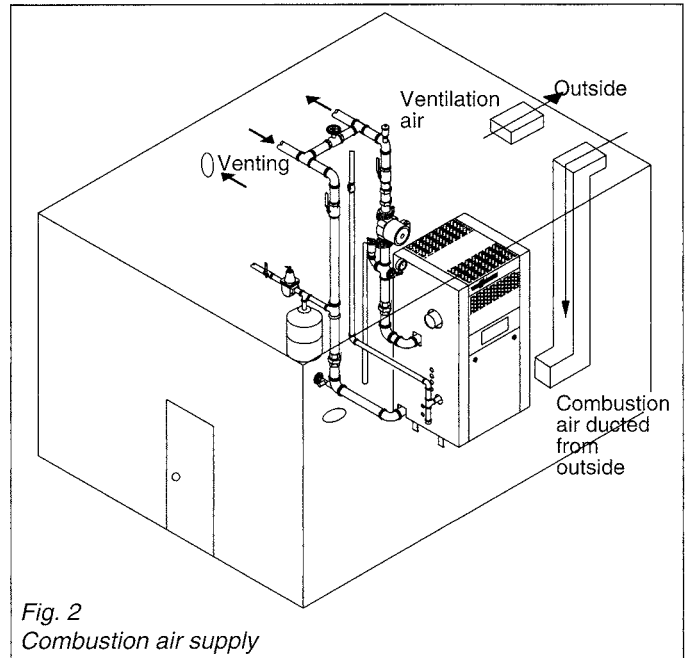


Fig. 2  
Combustion air supply

Table 1

| Boiler size    | Recommended combustion and ventilation air openings for closet installation |
|----------------|---|
| ECV-(65, 80)   | 14" x 6" open or 14" x 10" for metal louvers                                |
| ECV-(100, 115) | 18" x 6" open or 18" x 10" for metal louvers                                |
| ECV-(140, 155) | 22" x 7" open or 22" x 10" for metal louvers                                |

must have a minimum free area of one square inch per 1000 Btu/h of gas input. See Table 1.

You must know the free area of louvers used to cover up the combustion and ventilation openings in closet installations. If you do not know the free area, assume 20% for wood louvers and 60-75% free area for metal louvers. When using louvers the openings have to be made larger. For example, a free 14" x 6" opening becomes a 14" x 10" opening for a grill containing metal louvers.

**Caution:**

Do not store chemicals containing chlorine or other corrosive materials near the boiler, such as bleach, cleaning solvents, detergents, acids, hair spray, spray cans, paint thinners, paint, water softener salt, perchloroethylene, or carbon tetra chloride.

Exposure to corrosive materials can cause heat exchanger corrosion and failure.

Do not locate boiler in areas where high dust levels or high humidity levels are present.

Do not install boiler during construction involving drywall or heavy dust of any kind. Dust can accumulate in the burners and cause sooting. Install boiler after all heavy dust construction is completed.

If the boiler has been exposed to high dust levels then all burners and the heat exchanger must be cleaned prior to use.

If above criteria are not properly observed and boiler damage results, any warranty on the complete boiler and related components will be null and void.

Boiler standard equipped with 30 psi ASME-rated pressure relief valve. This 30 psi pressure relief valve may be exchanged at the job site with a 50 psi ASME-rated pressure relief valve only by strictly observing the minimum relief valve capacity in lb/h marked on the nameplate. The maximum allowable working pressure is 50 psi.

Be aware that best overall system performance is achieved when all components are properly sized. Sizing of the required circulation pump according to the pipe layout and calculation of a proper volume expansion tank is vital to obtain the system's peak performance.

**Excerpt from our warranty terms**

Boiler is not covered under any warranty terms for damages resulting from the following:

Improper application and installation, installation by unqualified personnel, ignorance of instructions, improper service and maintenance work, incorrect replacement component selection or application, incorrect field wiring. Full warranty applies only when boiler is installed and operated according to instructions and used only with the proper gas and the applicable gas pressures.

Please read boiler warranty card.

**Caution:**

This boiler is not for use in systems where water is constantly or frequently replenished. Minerals such as calcium in make-up water can deposit on heat exchanger causing overheating and eventually the boiler will leak. This type of failure is not covered by warranty. Water must not be drained from system for use by cleaning personnel. Do not draw water from boiler for any purpose.

**Caution:**

The boiler warranty does not cover leaks resulting from corrosion caused by the use of underfloor plastic tubing without an oxygen diffusion barrier. Such systems must have the non-oxygen diffusion barrier tubing separated from the boiler with a heat exchanger. Viessmann recommends the use of underfloor plastic tubing with an oxygen diffusion barrier.

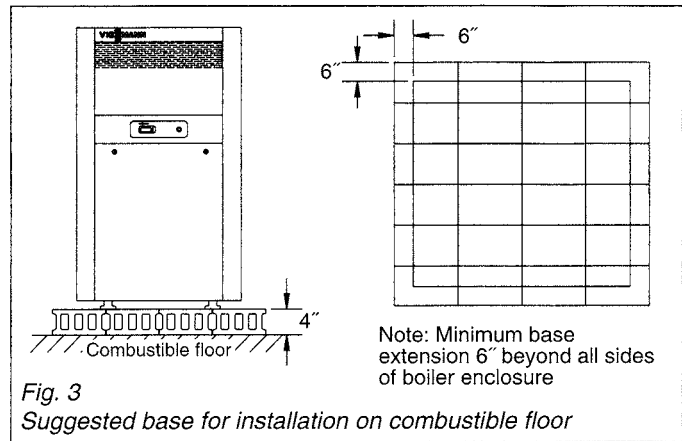
**Standard equipment**

- Wet base sectional cast-iron heat exchanger with stainless steel burners
- Induced draft blower and pressure switch
- Electronic ignition
- 24 VAC redundant seat gas valve
- Boiler fully insulated with 1½" fiberglass wrap-around blanket
- Boiler control panel with adjustable operating limit (122°F - 194°F), fixed high limit (248°F) and temperature gauge
- Pump aquastat to turn pump on at 116°F
- One 120/24 VAC transformer
- 30 psi pressure relief valve, pressure gauge and fittings
- One cleaning brush

**Installation of concrete base for boiler installation on combustible floor**

**Placement of boiler**

1. Check the base with your local codes.



2. Locate the base so that the minimum clearances of boiler to combustible materials are maintained.
3. Base must be constructed of hollow concrete blocks, minimum height 100 mm (4"), covered with sheet metal at least 24 ga. thick.
4. The base must extend beyond the boiler enclosure by at least 150 mm (6") on all sides.
5. The blocks must be placed to provide an unbroken concrete surface under the boiler, with the hollows running continuously and horizontally to allow air circulation.

**Flushing of existing piping**

Before boiler is connected to a piping/heating system which has previously been in service (the ECV is a replacement boiler), the piping system should be flushed thoroughly with water in order to remove sludge or other contaminants, especially in large piping systems such as old gravity pipe systems. Flush from the top of the system with city water pressure. Failure to flush out system can lead to deposits in boiler resulting in boiler failure. This type of failure is not covered under warranty.

The following lists typical water flow rates for the ECV boiler series:

| Model   | Flow rate (GPM) for 20°F rise | Flow rate (GPM) for 30°F rise |
|---------|-------------------------------|-------------------------------|
| ECV-65  | 5.3                           | 3.5                           |
| ECV-80  | 6.6                           | 4.4                           |
| ECV-100 | 8.3                           | 5.5                           |
| ECV-115 | 9.5                           | 6.3                           |
| ECV-140 | 11.6                          | 7.7                           |
| ECV-155 | 12.8                          | 8.5                           |
| ECV-180 | 14.9                          | 9.9                           |
| ECV-200 | 16.6                          | 11.0                          |

The water pressure drop for ECV-(180, 200) is:

| GPM | Pressure drop (ft. of water) |
|-----|------------------------------|
| 10  | .33                          |
| 15  | .60                          |
| 20  | 1.20                         |

**Boiler piping in heating/cooling application**

The boiler, when used in connection with a refrigeration system, must be installed so the chilled medium is piped in parallel to the boiler with appropriate valves to prevent the chilled medium from entering the boiler (see Fig. 4).

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

Check installation instructions of chiller manufacturer carefully for additional requirements.

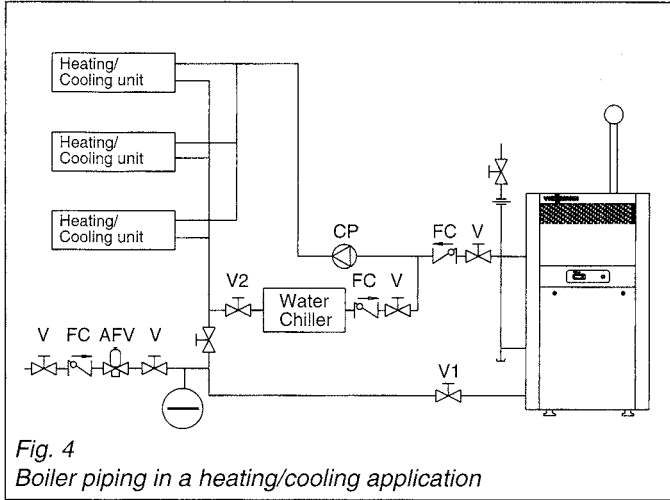


Fig. 4  
Boiler piping in a heating/cooling application

Cooling season starts: Close valve V1 and open valve V2.  
Heating season starts: Close valve V2 and open valve V1.

A metal tag should be attached to these valves as to purpose.

**Low water cut-off**

If the ECV boiler is installed above radiation level then a low water cut-off device must be installed. See Figs. 5a, 5b for location of low water cut-off device. Note: Flow direction must be as shown in Fig. 5a. Low water cut-off supplied by others.

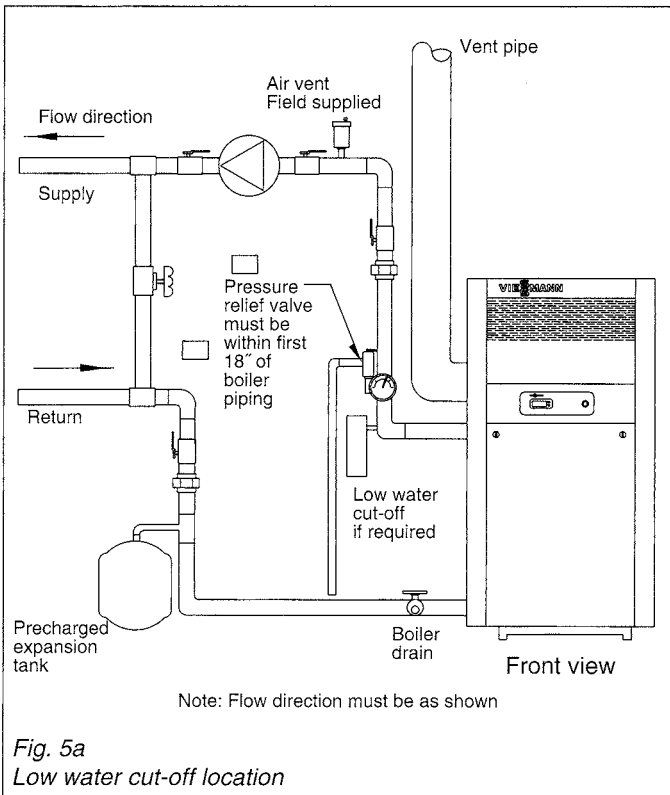


Fig. 5a  
Low water cut-off location

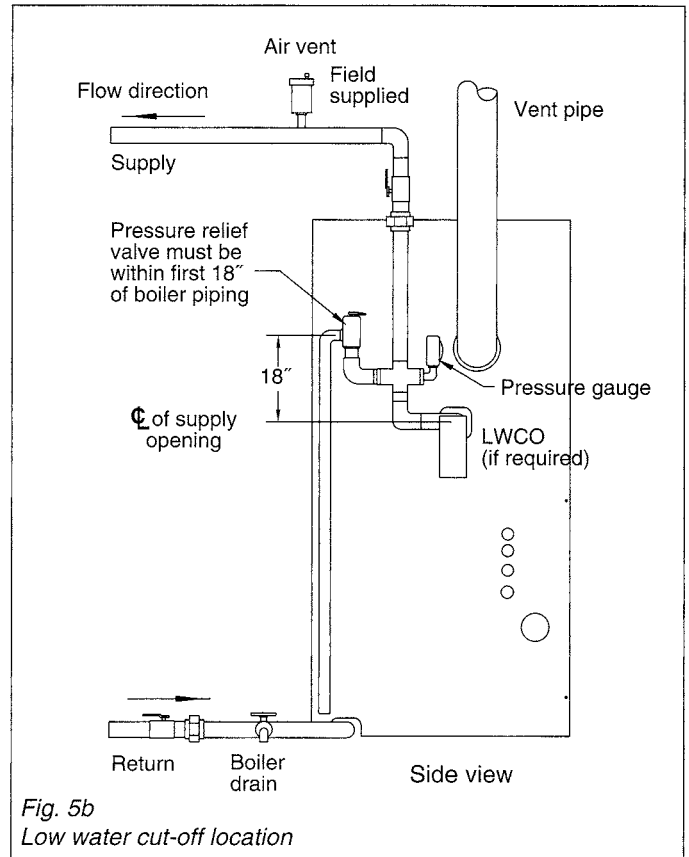


Fig. 5b  
Low water cut-off location

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

**Initial system fill**

Treatment for boiler feed water should be considered in areas of known problems, such as high mineral content and hardness. In areas where freezing might occur, an antifreeze may be added to the system water to protect the system. Please adhere to the specifications given by the antifreeze manufacturer. Do not use silicate based automotive anti-freeze solutions.

Please observe that an antifreeze/water mixture may require a backflow preventer within the automatic water feed and influence components such as diaphragm expansion tanks, radiation etc. A 40% antifreeze content will give freeze-up protection to -25°C (-31°F). Do not use antifreeze other than specific brands made for hot water heating systems. System also may contain components which might be negatively affected by antifreeze. Check total system frequently when filled with antifreeze.

A field supplied pressure reducing valve (or "fill" valve) is required to reduce the incoming water pressure to 12 psi (see Figs. 1, 4).

**Removal of existing boiler**

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

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

1. Seal any unused openings in the common venting system.
2. Visually inspect the venting system for proper size and horizontal pitch and determine there is no blockage or restriction, leakage, corrosion or other deficiency which would cause an unsafe condition.
3. Insofar as is practical, close all building doors and windows and all doors between the space in which the appliances remaining connected to the common venting system are located and other spaces of the building. Turn on any 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.
4. Place in operation the appliance being inspected. Follow the lighting instructions. Adjust thermostat so appliance will operate continuously.
5. Test for spillage at the draft hood relief opening after 5 minutes of main burner operation. Use the flame of a match or a candle, or smoke from a cigarette, cigar or pipe.
6. 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 condition of use.
7. 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 should be resized to approach the minimum size as determined using the appropriate tables in Appendix G in the National Fuel Gas Code Z223.1 – latest edition.

**Warning:**

**The Atola-ECV boiler has a positive vent pressure when vented vertically or horizontally with 3" pipe. Do not common vent with any other appliance. Failure to heed this warning can cause carbon monoxide poisoning which can result in severe personal injury or loss of life.**

The gas ignition system and components must be protected from water (dripping, spraying, rain etc.) during appliance operation and service (circulator replacement, control replacement, etc.)

**Pressure relief valve**

The 30 psi ASME-rated relief valve supplied with the boiler must be installed. Do not install valve between relief valve and boiler. When installing a discharge pipe from relief valve to drain adhere to the following excerpt from ASME Boiler and Pressure Vessel Code, Section IV (see Figs. 1, 5c). Use fittings supplied in accessory pack to install pressure relief valve.

1. When a discharge pipe is used, its internal cross-sectional area shall be not less than the full area of the valve outlet or of the total of the valve outlets discharging

thereinto and shall be as short and straight as possible and so arranged as to avoid undue stress on the valve or valves. When an elbow is placed on a safety relief valve discharge pipe, it shall be located close to the valve outlet.

2. The discharge from safety or safety relief valves shall be so arranged that there will be no danger of scalding attendants. When the safety or safety relief valve discharge is piped away from the boiler to the point of discharge, there shall be provisions made for properly draining the piping. The size and arrangement of discharge piping shall be such that any pressure that may exist or develop will not reduce the relieving capacity of the relieving devices below that required to protect the boiler.

The pressure relief valve must not be removed or plugged. Do not pipe discharge to outdoors.

**Boiler – gas piping**

Before connecting gas boiler to gas line, install main gas shut-off valve, union, and capped drip leg (see Fig. 6).

Size gas supply piping to boiler according to local utility requirements.

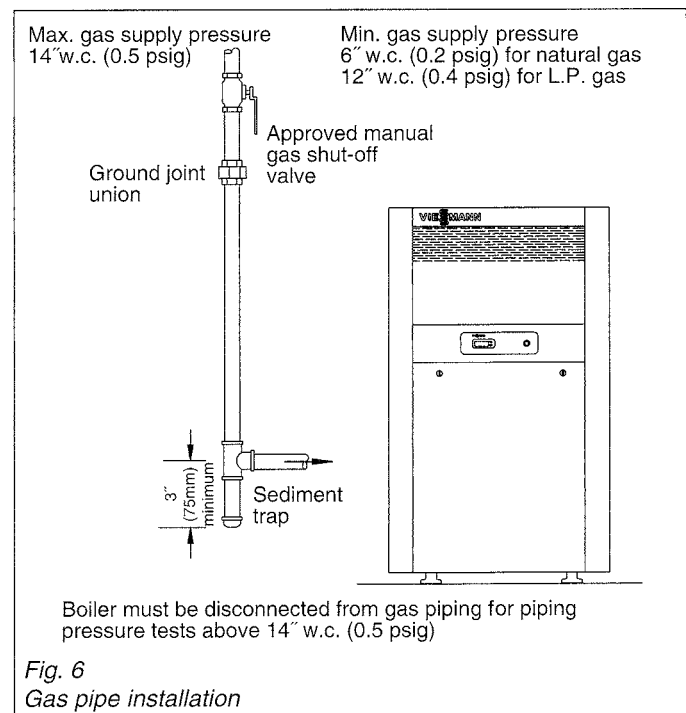
Identify the main shut-off valve as such with a tag and familiarize owner of boiler with this valve.

Support piping by proper suspension method. Piping must not rest on or be supported by boiler.

**Testing – gas pipe**

The boiler and its individual shut-off valve must be disconnected from the gas supply piping system during any pressure testing of that system at pressures in excess of 0.5 psig (3.5 kPa).

The boiler must be isolated from the gas supply piping system by closing its individual manual shut-off valve during any pressure testing of the gas supply piping system at a test pressure equal to or less than 0.5 psig (3.5 kPa).





Unions and manifold have been factory-tested. Leak test must be repeated during initial trial operation of burner by mechanical contractor.

Never check for gas leaks with an open flame. Use approved spray liquid or soap water solution for bubble test.

### Gas pressure – Orifice sizes

#### Natural Gas

Minimum gas valve inlet pressure 6" w.c.  
 Maximum gas valve inlet pressure 14" w.c.

#### Propane Gas

Minimum gas valve inlet pressure 12" w.c.  
 Maximum gas valve inlet pressure 14" w.c.

### Manifold orifices – natural gas (1,000 Btu/cu. ft.)

| Boiler size ECV | Orifices required | Low Altitude                            | High Altitude                                 | Gas valve/manifold pressure "w.c. |
|-----------------|-------------------|---|---|-----------------------------------|
|                 |                   | 0-610m<br>0-2000ft.<br>Orifice size Ømm | 610-1370m<br>2000-4500ft.<br>Orifice size Ømm |                                   |
| 65              | 2                 | 2.65                                    | 2.55  | 3.5                               |
| 80              | 2                 | 2.95                                    | 2.80  | 3.5                               |
| 100             | 3                 | 2.70                                    | 2.60  | 3.5                               |
| 115             | 3                 | 2.85                                    | 2.75  | 3.5                               |
| 140             | 4                 | 2.75                                    | 2.65  | 3.5                               |
| 155             | 4                 | 2.95                                    | 2.80  | 3.5                               |
| 180             | 5                 | 2.80                                    | 2.65  | 3.5                               |
| 200             | 5                 | 2.95                                    | 2.80  | 3.5                               |

### Manifold orifices – propane (2,500 Btu/cu. ft.)

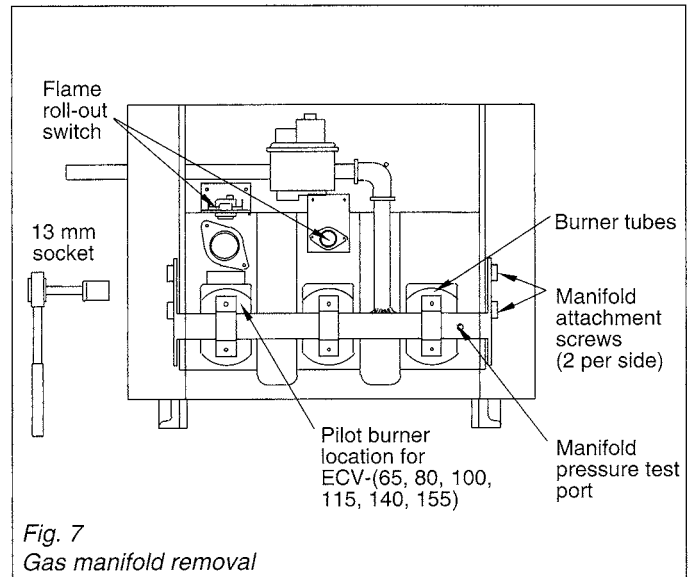
| Boiler size ECV | Orifices required | Orifice size (mm) | Low Altitude   | High Altitude  |
|-----------------|-------------------|-------------------|--|--|
|                 |                   |                   | 0-610m<br>0-2000ft.<br>Gas valve/manifold pressure "w.c. | 610-1370m<br>2000-4500ft.<br>Gas valve/manifold pressure "w.c. |
| 65              | 2                 | 1.60              | 10"  | 8"   |
| 80              | 2                 | 1.80              | 10"  | 8"   |
| 100             | 3                 | 1.65              | 10"  | 8"   |
| 115             | 3                 | 1.75              | 10"  | 8"   |
| 140             | 4                 | 1.70              | 10"  | 8"   |
| 155             | 4                 | 1.75              | 10"  | 8"   |
| 180             | 5                 | 1.70              | 10"  | 8"   |
| 200             | 5                 | 1.80              | 10"  | 8"   |

All orifice sizes given in mm! Orifice size is stamped onto each orifice for identification. When ordering orifices, state boiler size, type of gas, number of orifices required and orifice size.

### Gas burner removal (see Fig. 7)

The main gas burner manifold with the individual stainless steel burners mounted may be easily removed from the boiler by:

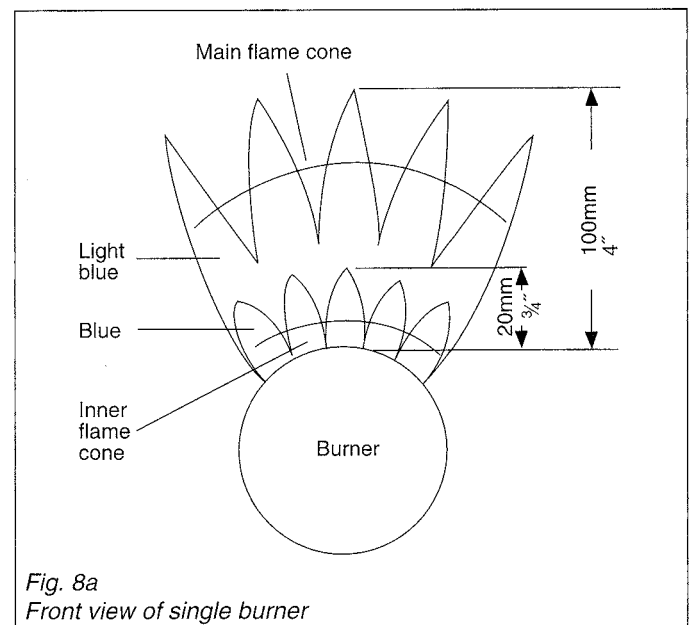
1. Closing the main gas shut-off valve external to boiler.
2. Disconnecting all power to boiler.
3. Removing front cover panel from boiler.
4. Breaking ground joint union before gas valve, remove gas pipe.
5. Disconnecting wiring to gas valve. Disconnect wiring from igniter sensor and ground connection.
6. Loosening manifold bolts. (Do not remove, only loosen). Use socket with extension to access bolts through holes in side panel.
7. Removing burners once manifold is loose.
8. Sliding manifold out on an angle once burners are removed.



### Gas input – CAUTION

Do not exceed input rating stamped on name plate of boiler.

1. Close main gas shut-off valve.
2. Disconnect main power supply to boiler.
3. Close main gas shut-off valve.
4. Remove plug (1/8") on manifold. Install test plug and connect U-tube manometer.
5. Place boiler/burner in operation (see page 10).
6. Read manifold gas pressure and compare with stamped rating on nameplate. If necessary, adjust pressure on gas valve. Also clock input using gas meter. When using meter clocking method: Ensure there is no gas flow through the meter other than to the boiler being checked. Other appliances must remain off, including their pilot burners.
7. Deactivate boiler, reinstall 1/8" plug, place boiler in operation again.
8. Repeat gas leak test at plug (1/8") and ensure tightness.



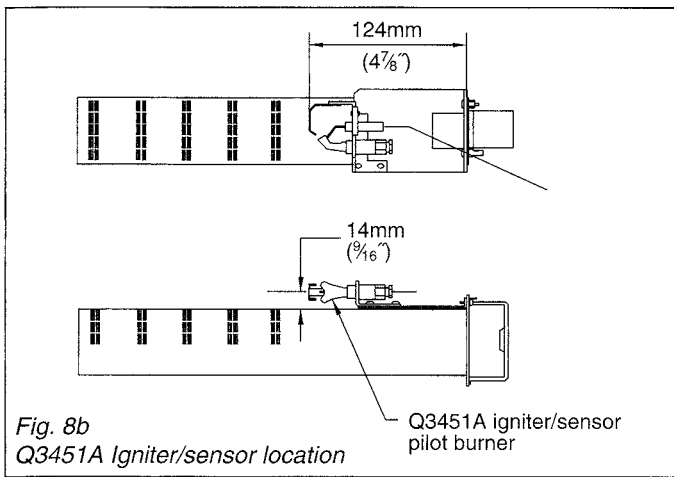


Fig. 8b  
Q3451A Igniter/sensor location

### Main burner (see Fig. 8a)

- Proper flame: Upper main flame cone with light orange coloring, sharply defined individual flames (Fig. 8a).
- Underfired: Lazy-burning main flame cone, mushy flame appearance throughout, smaller flame sizes than in Fig. 8a.
- Overfired: Increased burner noise, higher flame sizes than in Fig. 8a.

### Boiler wiring

Refer to wiring diagram. All wiring must be properly grounded! Before attempting to wire unit, disconnect power supply at main service panel first. For pumps exceeding 4 Amp. refer to Fig. 9 and wiring diagrams on pages 16, 17.

In the United States all electrical wiring must be in accordance with the National Electrical Code ANSI/NFPA 70 (latest edition.) In Canada all electrical connections must be in accordance with Canadian Electrical Code C22.1 Part 1 (latest edition.)

If an external electrical source is utilized, the boiler, when installed, must be electrically grounded in accordance with the requirements of the authority having jurisdiction or, in the absence of such requirements, with the National Electrical Code, ANSI/NFPA 70.

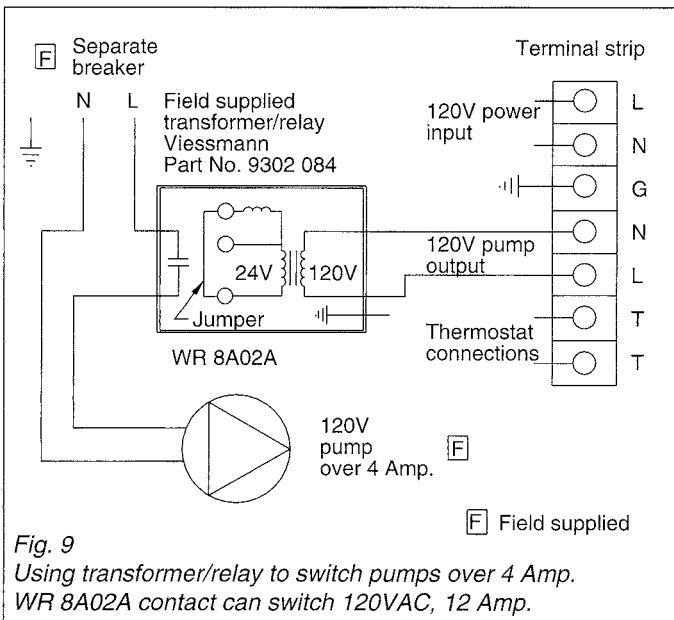


Fig. 9  
Using transformer/relay to switch pumps over 4 Amp.  
WR 8A02A contact can switch 120VAC, 12 Amp.

Pumps under 4 Amp. can be connected directly to boiler terminal strip. Pumps over 4 Amp. must be switched by an external relay or transformer/relay to prevent failure of the pump aquastat (see Fig. 9).

Pump will not activate until boiler water temperature reaches 116°F. Refer to pump aquastat shown on wiring diagrams.

If boiler has been underwater, all electrical parts must be replaced. All other parts must be inspected by a qualified service agency for acceptability before being used.

### Electronic thermostat connection

For those installations where an electronic set-back thermostat is used, an isolation relay may be necessary. Any electronic thermostat that normally requires current from the boiler transformer will require an isolation relay. For example when installing a Honeywell Chronotherm, use an isolation relay (as shown in Fig. 10).

### System start-up procedure (see Fig. 12, page 14)

The boiler, piping and radiation must be full of water and purged of all air before boiler can be fired. Pressure relief valve must be installed as described on page 7. All installation requirements as described in this manual must be completed.

Follow lighting instructions in Fig. 12, page 14.

If the system was shut down for an extended period of time, have a qualified service technician restart and recondition your system.

1. Check if all national and/or local rules and regulations have been adhered to on this installation. Do not attempt to start the boiler if you smell gas. If you smell gas, open windows. Do not touch electrical switches, extinguish any open flame, close all gas valves immediately. Call your gas supplier immediately from a neighbor's phone (see Fig. 12).
2. Check system for proper water fill (cold fill pressure). Make sure that complete system is properly vented. Adjust automatic feed valve to proper desired fill pressure. Do not tamper with the unit or controls. Never burn garbage or paper in the unit or leave combustible materials around it.

### Additional attention must be given to the following paragraphs

1. Once system water is heated, deactivate circulating pump/boiler and vent system of any remaining air within piping, radiation and boiler.
2. Check for proper boiler circulation, pump, zone valve, thermostat or operating control functions.
3. Check high limit aquastat by dialing it to a setting below the water temperature in the boiler. The gas burner must be deactivated. Turning the dial back to a setting higher than the present boiler water temperature must result in reactivation of gas burner.
4. Cycle boiler on and off with the room thermostat (or other operating control) to verify that the burner shuts down when the room thermostat is adjusted below room temperature.

### Annual shut-down

If boiler is used for comfort heating only and not used with an indirectly heated VertiCell or HoriCell domestic hot water storage tank, the boiler/heating system should be shut down during the summer time.

1. Turn down operating control (thermostat).

2. Disconnect main power switch.
3. Close main gas shut-off valve and turn knob on gas valve to "off" (see Figs. 6 and 12).

The Viessmann indirectly heated stainless steel VertiCell or HoriCell tank may be used with the ECV boiler for domestic hot water requirements. Consult Viessmann representative for assistance.

### ATTENTION

If system is subject to freezing temperatures and is not filled with antifreeze for protection, the system including the boiler must be drained of water. Valve before automatic feed valve (if installed) must be closed; any other valves, air vents and drain valves must stay open.

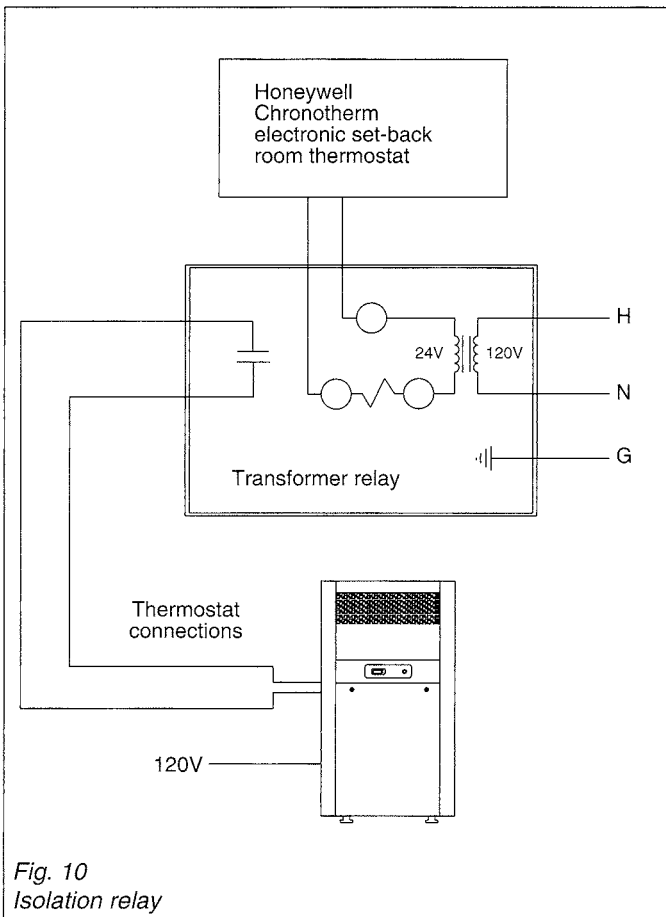


Fig. 10  
Isolation relay

### Contractor must advise the operator/ultimate owner

1. Of the proper system operation sequence.
2. Explain the equipment as well as the need for combustion air.
3. Demonstrate an emergency shut-down, what to do and what not. See Lighting and Operating Instructions on page 14.
4. Explain the need for regular service and inspection.

### Before leaving jobsite

Read boiler warranty card and hand over to owner for record keeping.

## Maintenance

### Inspections during heating season

#### Attention Owner

Please read the boiler warranty card.

You have purchased a heating boiler of top quality – Congratulations!

In order to ensure that the boiler continues to operate at its peak performance, safety and efficiency, observe and follow the recommendations for maintenance, inspection and service routine. Early detection of problems and their immediate repair will usually result in less damage, lower repair cost and continued safe operation.

#### By owner – frequently

- Check pressure gauge for correct system (water) pressure. Check for water on floor from discharge pipe of the pressure relief valve or any other pipe, pipe joint, valve or air vent.
- Check for moisture, water, or appearance of rust on flue gas pipes or their joints.
- Ensure that nothing is obstructing the flow of combustion ventilation air and no chemicals, garbage, gasoline, combustible materials, flammable vapors and liquids are stored (not even temporarily) in the vicinity of the boiler.

#### Periodically

- Inspect low water cut-offs, including flushing of float types (if used).
- Inspect flow switch (if used).
- Inspect main burner flame and pilot burner (see Figs. 8a, 8b).

#### Service agency – annually

#### Boiler servicing – heat exchanger cleaning

A service/inspection of the boiler and the system is recommended once per year.

Before heating season starts, boiler/burner should be serviced by a qualified service agency.

#### Cleaning heat exchanger (flue gas passageways)

(see exploded view on page 23)

1. Disconnect power supply to boiler and all heating related components.
2. Close main gas shut-off valve. Allow boiler to cool if necessary.
3. Remove top panel and upper front panel.
4. Unscrew collector box lower panel.
5. Unscrew fan assembly and position towards front of boiler.
6. Remove rear panel.
7. Remove right side panel (3 screws).
8. Remove or loosen left hand side panel.
9. Remove collector box.
10. Remove gas burner assembly from boiler (refer to gas burner removal procedure on page 9).
11. Remove screws securing collector box to side brackets (4 screws). Remove collector box.
12. Clean fins by brushing diagonally through sections.

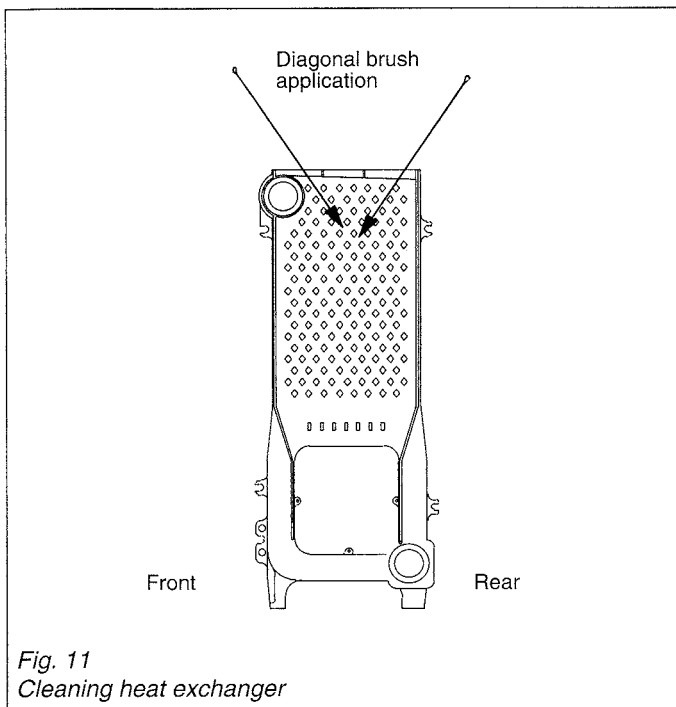


Fig. 11  
Cleaning heat exchanger

13. Inspect combustion chamber by using a flashlight between front section legs.
14. Before reinserting burner manifold, clean stainless steel burners with a soft brush. Vacuum or sweep away particles.
15. Inspect ignition system. Check igniter for deterioration.
16. Inspect all parts which come into contact with flue gas for corrosion, deterioration, leaks, and proper operation. Replace parts as necessary with replacement parts obtained from a Viessmann distributor.
17. Reverse steps 3 through 11 to reassemble boiler. Seal collector box to side brackets using adhesive backed ½" fiberglass gasket Viessmann Part No. 9302 286 and high temperature RTV silicone sealant (500°F temperature rating).

#### Additional check points of annual service inspection

Check system pressure and verify proper operation of automatic feed if installed. Check heating pipe joints, valves, air vents, etc. System leaks must be corrected immediately to avoid further defects. The cause of any system defect must also be determined and corrected in order to prevent property damage, severe personal injury, or loss of life.

Check for proper combustion air supply and ventilation air for the boiler.

Ensure that combustible material or chemicals are not stored near the boiler. Operate high limits by dialing lower settings, switching burner on/off to verify function of same. If low water cut-off is installed, check and verify proper function according to manufacturer's instructions. If oil lubricated circulating pump is used, check for proper lubrication.

Check for gas-tight connection of gas piping, unions, gas valve and manifold.

Check proper ignition and gas burner operation.

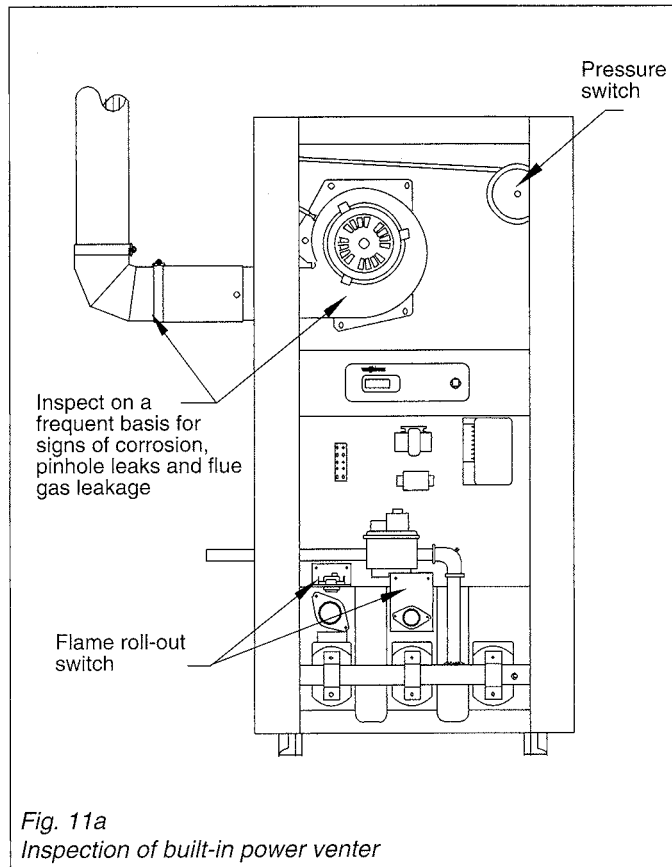


Fig. 11a  
Inspection of built-in power venter

Combustion test must be performed by a competent service technician.

#### Warning:

**The built-in power venter and vent system should be inspected annually to ensure that all products of combustion are being safely vented to the outdoors and that there is no leakage from corroded parts or joints. Failure to perform periodic inspections and replacement of damaged, corroded, or worn parts can cause property damage, severe personal injury, or loss of life (see Fig. 11a).**

The area around the outside side wall vent terminal must be inspected frequently when severe weather conditions prevail, otherwise on a weekly basis to ensure that the vent terminal is not blocked by snow, ice, or debris.

## Troubleshooting Guide

|  |  |
|--|--|
| <p><b>Fan does not start</b></p> <ul style="list-style-type: none"> <li>- Thermostat not calling for heat</li> <li>- No 120V power</li> <li>- Fuse or breaker blown</li> <li>- Fan relay defective</li> <li>- Defective 24V transformer</li> <li>- Thermostat defective</li> <li>- Thermostat wires defective</li> <li>- Check wires in 120V AMP quick connect plug</li> <li>- Fan motor defective</li> <li>- Manual reset aquastat activated</li> </ul> | <p><b>Remedy</b></p> <ul style="list-style-type: none"> <li>- Turn up room thermostat</li> <li>- Check 120V power with voltmeter</li> <li>- Replace fuse or breaker</li> <li>- Replace 24V fan relay</li> <li>- Replace 24V transformer</li> <li>- Replace 24V thermostat</li> <li>- Check continuity of wires; if necessary, replace wires</li> <li>- Push wire terminals in housing</li> <li>- Replace built-in power venter assembly</li> <li>- Reset green button, prevent water from reaching 248°F</li> </ul>  |
| <p><b>Fan runs, pilot does not spark, no pilot gas</b></p> <ul style="list-style-type: none"> <li>- Pressure switch contacts not closing</li> </ul> <p>- Flame roll-out switch activated</p> <ul style="list-style-type: none"> <li>- 24V sequencer defective</li> <li>- Ignition module defective</li> </ul>  | <p><b>Remedy</b></p> <ul style="list-style-type: none"> <li>- Pressure switch defective, replace switch</li> <li>- Lack of air flow, defective blower (replace blower) or blocked vent (remove blockage, clean heat exchanger)</li> <li>- Flame roll-out switch may have activated because of vibration during shipping. Repeated activation of switch indicates a hazardous condition which must be corrected by cleaning heat exchanger and/or replacing deteriorated power venter</li> <li>- Replace 24V sequencer</li> <li>- Replace S8600 module with same model</li> </ul> |
| <p><b>Fan runs, pilot sparks but does not light</b></p> <ul style="list-style-type: none"> <li>- Air in gas line</li> <li>- Gas valve turned off</li> <li>- Debris in pilot orifice</li> <li>- Pilot orifice defective</li> <li>- Pilot shield missing</li> <li>- Faulty ground connection at pilot burner</li> <li>- Gas supply has been interrupted</li> <li>- Pilot valve on gas valve not opening</li> <li>- Ignition module defective</li> </ul>    | <p><b>Remedy</b></p> <ul style="list-style-type: none"> <li>- Purge air from gas line</li> <li>- Turn gas valve on</li> <li>- Clean pilot orifice</li> <li>- Replace pilot orifice</li> <li>- Install pilot shield Part No. 5400 042</li> <li>- Replace ground wire</li> <li>- Check incoming gas pressure</li> <li>- Defective gas valve</li> <li>- Replace ignition control</li> </ul>   |
| <p><b>Fan runs, pilot lights, burner short cycles</b></p> <ul style="list-style-type: none"> <li>- Thermostat anticipator too low</li> <li>- No ground or weak ground connection on pilot</li> <li>- Pilot on wrong burner</li> <li>- Lack of proper air flow</li> </ul> <ul style="list-style-type: none"> <li>- Excessive wind</li> <li>- Ignition module defective</li> </ul>   | <p><b>Remedy</b></p> <ul style="list-style-type: none"> <li>- Set anticipator to 0.9A on mercury bulb thermostats</li> <li>- Replace ground wire on pilot burner</li> <li>- Ensure five-port burner is used (see Fig. 13).</li> <li>- Remove any obstruction from vent or vent terminal, replace power venter if deteriorated, clean heat exchanger</li> <li>- Relocate vent terminal, protect from wind with fence or shrub</li> <li>- Replace ignition control module</li> </ul>   |

**Table 2 Parts list for Honeywell Intermittent Pilot Ignition System**

| GAS CONTROL LIST | NATURAL GAS                         |                   | PROPANE GAS                          |                   |
|------------------|-------------------------------------|-------------------|--------------------------------------|-------------------|
|                  | HONEYWELL PART NO.                  | VISSMANN PART NO. | HONEYWELL PART NO.                   | VISSMANN PART NO. |
| Gas Valve        | VR8204M1133                         | 9302 714          | VR8204M1133                          | 9302 714          |
| Ignition Control | S8600M                              | 9302 278          | S8600H                               | 9302 278          |
| Ignition Cable   | 394801-20                           | 9302 074          | 394801-20                            | 9302 074          |
| Pilot Burner     | Q3451A2012                          | 9302 451          | Q3451A2012                           | 9302 451          |
| Pilot Orifice    | .018 inches dia.<br>390686-4 BCR 18 | 9504 142          | .014 inches dia.<br>390696-24 BBR 14 | 9504 143          |

Note: Do not use S8600M control (continuous trial for ignition) on propane gas.

## Lighting Instructions for Intermittent Pilot (Spark to Pilot)

### FOR YOUR SAFETY READ BEFORE OPERATING

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

- A. This appliance is equipped with an ignition device which automatically lights the pilot. Do not try to light the pilot by hand.
- B. BEFORE OPERATING smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.

#### WHAT TO DO IF YOU SMELL GAS

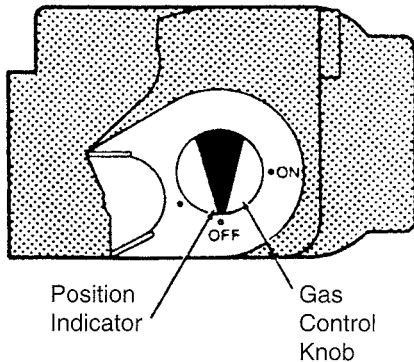
- Do not try to light any appliance.
- Do not touch any electrical switch; do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.



- If you cannot reach your gas supplier, call the fire department.

- C. Use only your hand to push in or turn the gas control knob. Never use tools. If the knob will not push in or turn by hand, don't try to repair it; call a qualified service technician. Force or attempted repair may result in fire or explosion.
- D. Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

### OPERATING INSTRUCTIONS

1. STOP! Read the safety information above on this page.
2. Set the thermostat to the lowest setting.
3. Turn off all electric power to the appliance.
4. This appliance is equipped with an ignition device which automatically lights the pilot. Do not try to light the pilot by hand.



5. Remove control access panel.
6. Turn gas control knob clockwise  to "OFF".
7. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you smell gas, STOP! Follow "B" in the safety information above. If you don't smell gas, go to the next step.
8. Turn gas control knob counterclockwise  to "ON".
9. Replace control access panel.
10. Turn on all electric power to the appliance.
11. Set thermostat to desired setting.
12. If the appliance will not operate, follow the instructions "To Turn Off Gas To Appliance" and call your service technician or gas supplier.

### TO TURN OFF GAS TO APPLIANCE


1. Set the thermostat to lowest setting.
2. Turn off all electric power to the appliance if service is to be performed.
3. Remove control access panel.
4. Turn gas control knob clockwise  to "OFF". Do not force.
5. Replace control access panel.

Fig. 12

**Caution:**

**Gas burner positioning**

For ECV boiler with Honeywell Intermittent Pilot (Spark) Ignition the main burner for mounting the Q3451A pilot assembly contains one less group of main burner ports (main burner Part No. 7302 089). If the burners are disassembled or replaced for any reason they must be reassembled as shown

in the diagram below. If the Q3451A pilot assembly is accidentally assembled into burner 9507 642 it will be exposed to the flames from the first row of ports and will overheat and become defective. Defective pilot will prevent boiler from operating which could cause property damage.

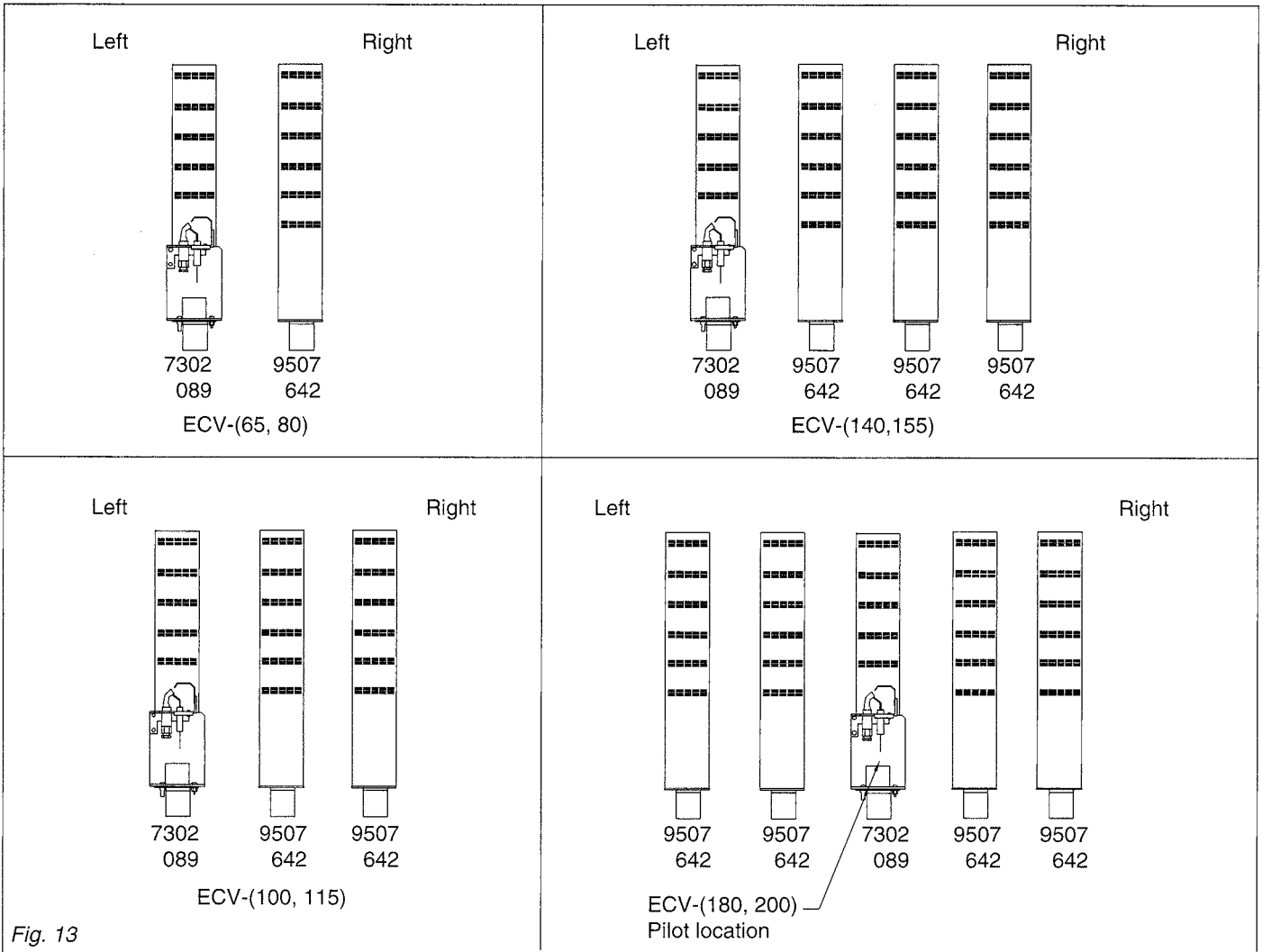


Fig. 13

Every ECV boiler will have a flame roll-out switch (Part No. 9302 246 set at 140°F) located in the burner area (see Fig. 7).



**Warning:**

If flame roll-out switch trips during start-up or operation, it indicates a hazardous condition to be corrected immediately. Do not attempt to put boiler in operation. Immediately contact a qualified service professional to locate source of problem and correct. Failure to heed this warning could result in property damage, severe personal injury, or loss of life.

**Note:**

Figure 14 shows pilot burner flame with proper flame adjustment.

| PILOT PRESSURE FOR Q3451B PILOT |            |
|---------------------------------|------------|
| Natural Gas                     | 5-7" w.c.  |
| Propane Gas                     | 8-10" w.c. |

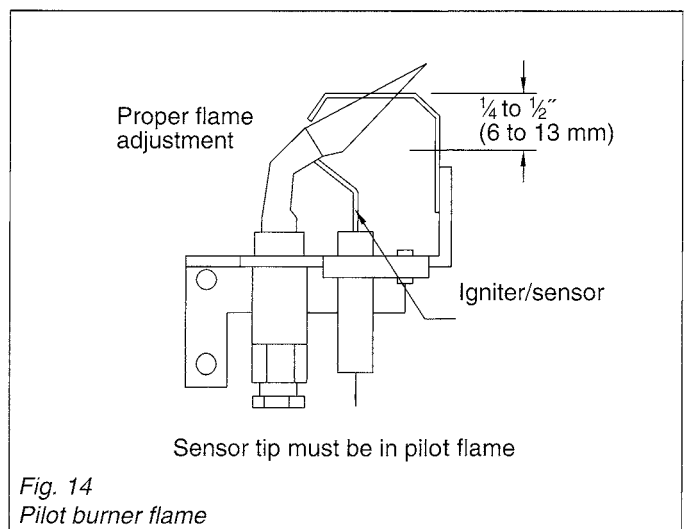
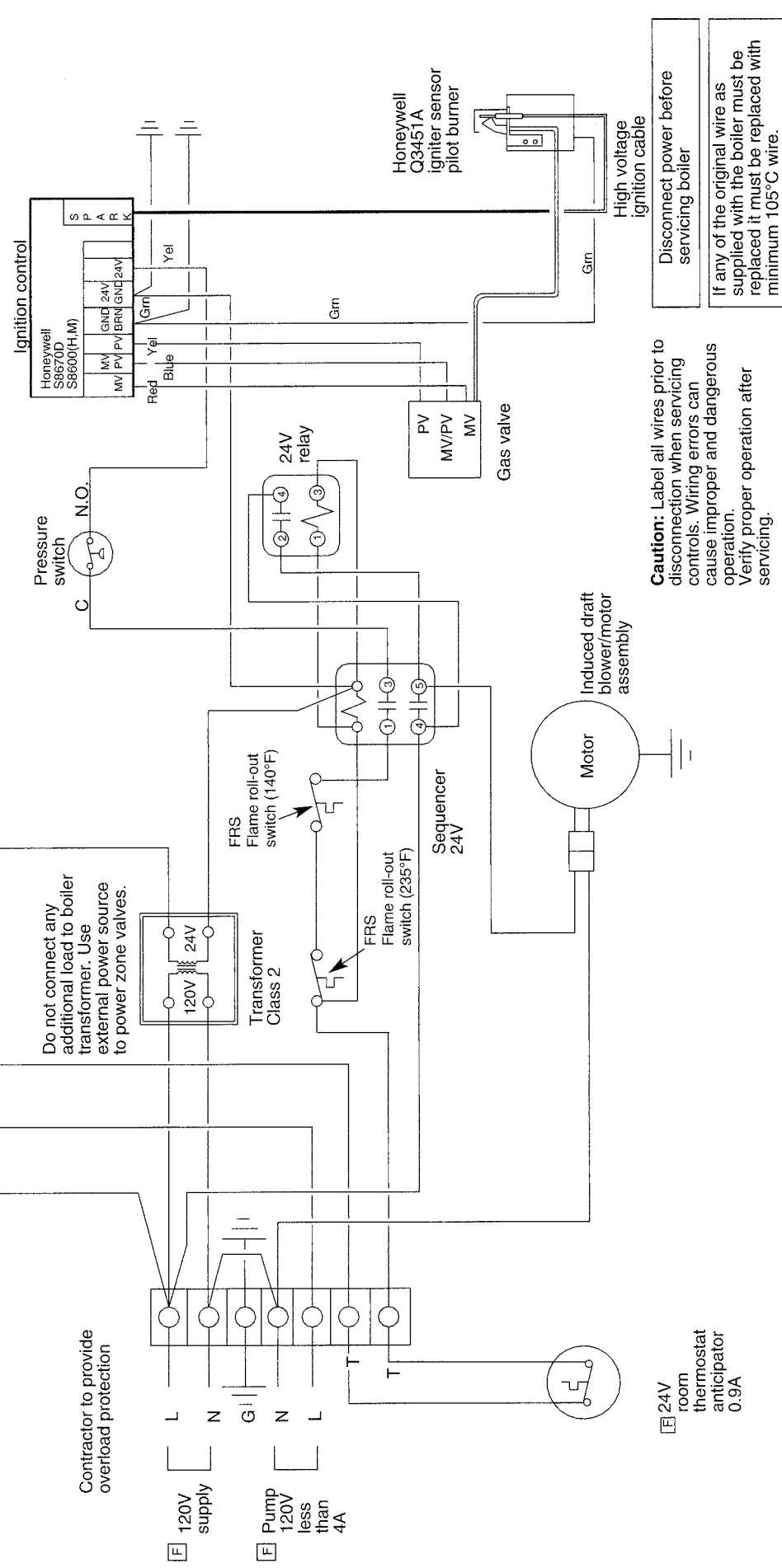
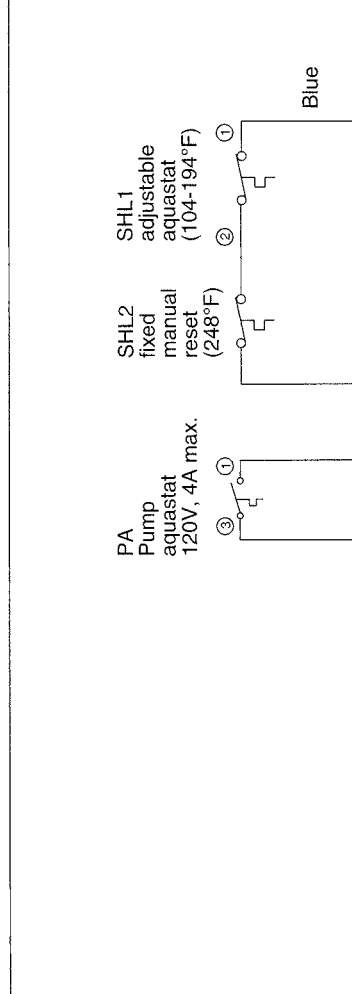
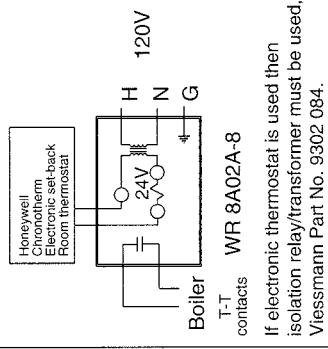


Fig. 14  
Pilot burner flame

# Atola-ECV with Honeywell Intermittent Pilot – Connection Diagram

- [E]** – Field supplied
- SHL1 – Adjustable high limit aquastat (Maximum setting 194°F)
  - SHL2 – Safety high limit aquastat (120°C (248°F) fixed, manual reset)
  - L – Hot 120V
  - N – Neutral
  - G – Ground
  - PA – Pump aquastat control with fixed settings 120V, 4A max.
- Pump on at 47°C (116°F)  
 Pump off at 41°C (105°F)  
 For pumps exceeding 4A use separate relay and breaker. See Fig. 9.



**Caution:** Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.

Disconnect power before servicing boiler

If any of the original wire as supplied with the boiler must be replaced it must be replaced with minimum 105°C wire.

Contractor to provide overload protection

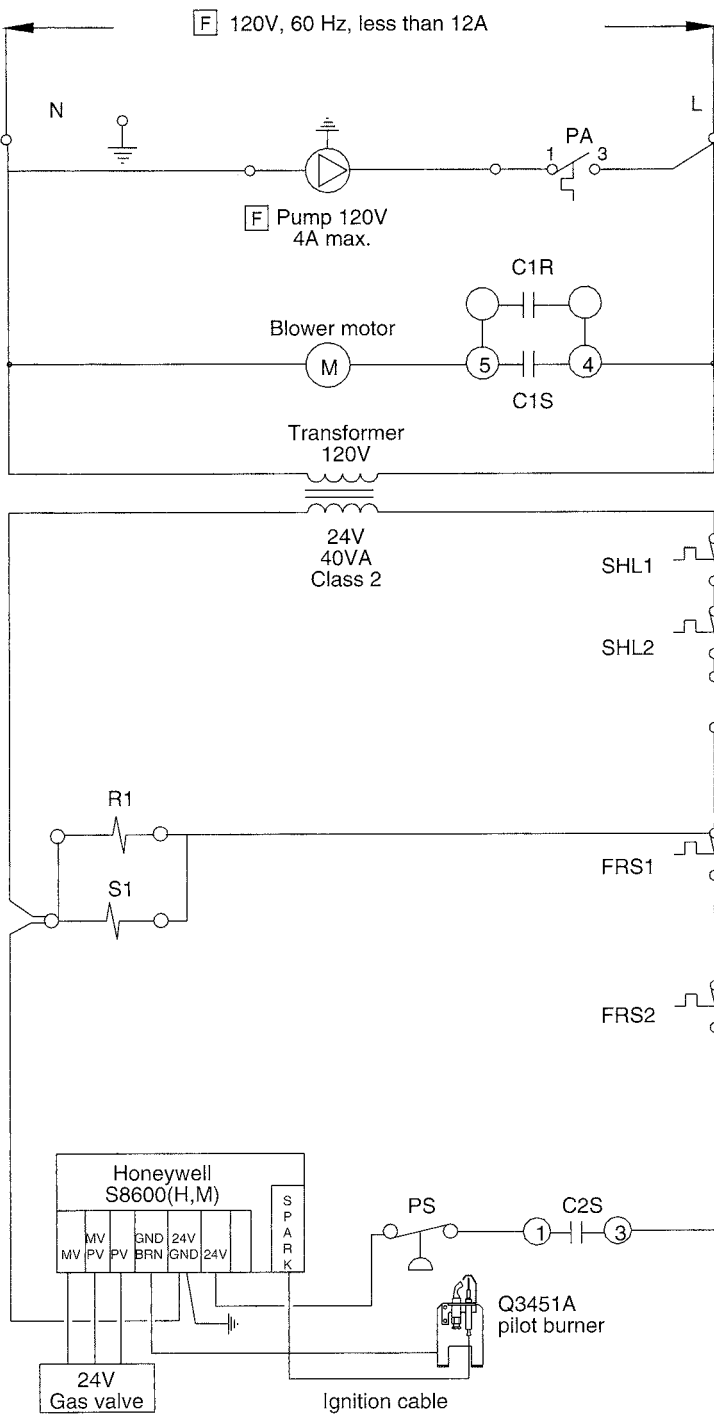
**[E]** 120V supply

**[E]** Pump 120V less than 4A

**[E]** 24V room thermostat anticipator 0.9A



# Atola-ECV with Honeywell Intermittent Pilot – Ladder Diagram



- [F] – Field supplied
  - SHL1 – Adjustable high limit aquastat (Maximum setting 194°F)
  - SHL2 – Manual reset aquastat (Fixed setting 248°F)
  - PA – Pump aquastat  
Pump on at 47°C (116°F)  
Pump off at 41°C (105°F)
  - FRS – Flame roll-out switch (140°F setting)
  - R1 – 24V Relay 1
  - C1R – N.O. contact of relay 1
  - S1 – Sequencer 24V
  - C1S – N.O. contact, upper stage marked 4,5 – delay on break and make
  - C2S – N.O. contact, lower stage marked 1,3 – delay on make and break
  - PS – Pressure switch 24V
  - M – Induced draft blower motor assembly
  - Field wiring
  - Factory wiring
- Use external relay if pump exceeds 4A (see Fig. 9)

24V [F] Room Thermostat or other operating control  
Anticipator Setting: 0.9A

**Caution:** Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.

**NOTE:** Burner should not activate if pressure tube is disconnected from pressure switch.

Refer to wiring label affixed to boiler access panel. Viessmann reserves the right to substitute components or wiring methods. Boiler wiring label takes precedence.

Do not connect any external load to the boiler 24V transformer. Use external power source to power zone valves.

Do not operate boiler without high limit aquastats wired in control circuit.

## Sequence of operation

1. Thermostat calls for heat. SHL1, SHL2 are closed.
2. Relay and sequencer are energized with 24V.
3. Relay contacts C1R close.
4. Blower is energized with 120V.
5. Blower develops sufficient negative pressure to close pressure switch.
6. After approximately 30 second prepurge, contacts 1,3 of sequencer close allowing 24V to ignition system.
7. Provided FRS is closed (not activated) and pressure switch has remained closed, pilot will spark, light and prove flame allowing main burner to operate.
8. Pilot and main burner will cycle off SHL1 aquastat setting until thermostat or other operating control is satisfied.
9. After thermostat is satisfied there is a blower post purge of approximately 50 seconds through contacts 4,5 of sequencer.

## Venting (Location)

The Atola-ECV boiler **must** be located so that the vent length is as short and direct as possible. All products of combustion must be safely vented to the outdoors. Do **not** common vent with any other appliance. The Atola-ECV vents under positive pressure and is a Category III boiler.

### Warning:

**Failure to ensure that all flue gases have been safely vented to the outdoors can cause property damage, severe personal injury, or loss of life. Flue gases contain deadly carbon monoxide.**

The boiler was certified by an independent testing agency to withstand 40 mph winds. Areas with frequent winds above 40 mph may not be suitable for the ECV boiler. The vent termination should be located on a wall that is least affected by prevailing winds. High winds may affect the boiler operation and/or degrade the exterior finish of the wall. If wind is a problem then steps should be considered to protect the vent terminal from high winds, such as a fence or shrub. Ensure that the total equivalent length is not exceeded.

All parts of the vent system must be accessible for inspection, repair, service, or replacement. Do not enclose the vent pipe such that the vent is not accessible for inspection, service, and replacement.

## Z-FLEX 29-4C special stainless steel venting system

The 29-4C stainless steel venting system is completely sealed when fully assembled. Locking bands are used to reinforce the joints between pipe and fittings. Every fitting requires an application of high temperature silicone (see Fig. 16).

Do not use any other venting material. Do not use galvanized pipe. Do not use plastic pipe of any kind.

### Warning:

**Use of vent material other than Z-Flex 29-4C stainless steel, positive pressure vent pipe and fittings can cause property damage, severe personal injury, or loss of life.**

### Contents of vent kit

| Component                 | Part No. | Quantity |
|---------------------------|----------|----------|
| 5 ft. length of pipe      | 5400 088 | 3        |
| High temperature silicone | 5400 109 | 1        |
| 90° elbow                 | 5400 089 | 3        |
| Grey wall terminal box    | 5400 097 | 1        |
| Vent termination (square) | 5400 114 | 1        |
| Stainless # 8 screws      | 9302 360 | 6        |
| Locking band              | 5400 113 | 8        |

The contractor may substitute 45° elbows where needed. Additional parts for vertical venting such as rain cap and roof flashing as available from FLEXMASTER. The total equivalent length of all parts in the vent kit is 24 ft. which exceeds 20 ft. of

equivalent length. The lengths of pipe and number of elbows have been chosen for installation flexibility. You should have at least 4 ft. of equivalent length left unused.

## Maximum vent length

Maximum equivalent length (all models) 20 ft. for 3" pipe. Do not exceed maximum vent length.

Example of maximum vent length calculation:

|                               | Equivalent length |
|-------------------------------|-------------------|
| 12 ft. of pipe length 3" dia. | 12 ft.            |
| 2 90° elbows 3" dia.          | 6 ft.             |
|                               | <hr/>             |
| Total equivalent length       | 18 ft.            |

Vent termination not included in vent length calculation.

| Fitting   | Equivalent Length |
|-----------|-------------------|
| 90° elbow | 3 ft.             |
| 45° elbow | 2 ft.             |

The minimum equivalent length for all models is 10 ft.

## Installing Z-FLEX pipe and fittings

Use a hacksaw or sheet metal snips to cut the pipe to size. Use a file to smooth rough edges. Pipe must be round and not bent into an oval shape. All joints must be made with high temperature silicone.

The connection to the boiler is made with a short length (e.g. 8½") of pipe (male end on each side). Apply a bead of silicone to the fan adaptor and screw the short length of pipe to the fan adaptor with the #8 self-drilling stainless screws provided (see Fig. 15).

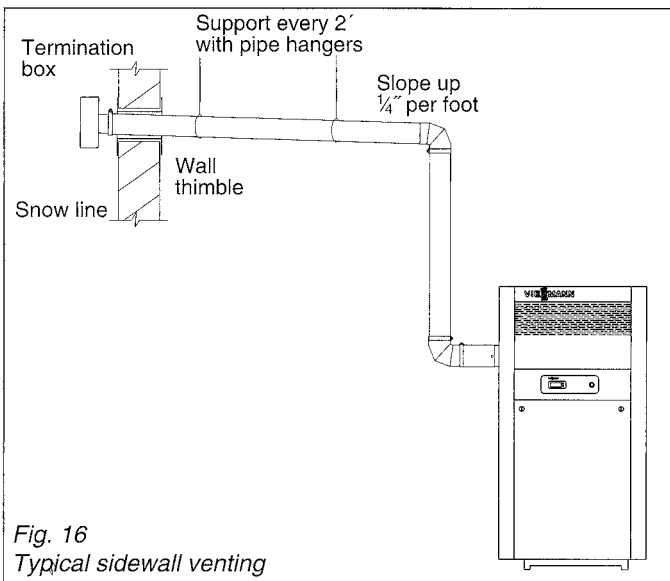
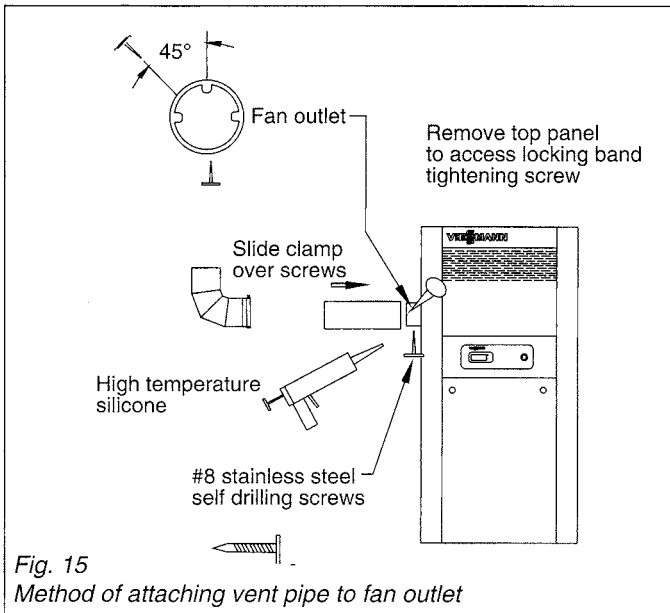
Continue on from the short piece with the rest of the venting. Do not install vent pipe such that flue gases flow downwards. The direction of flue gas flow must be vertically upwards or horizontal with an upwards slope (see Fig. 17). There must be NO leakage of flue gas into the space. Check for leaks with gas turned off and fan running. Use a soapy solution to check for vent leaks.

FLEXMASTER has drain fittings available for condensate drainage from the vent system. Experience has shown not enough condensate forms to keep a drain tap primed. In vertical installations condensate is more likely to form. If condensate is observed to form in sufficient quantity to keep a drain trap primed, purchase and install a drain trap and FLEXMASTER condensate drain fitting.

Use the following figures (Figs.15 – 16) to install the venting system together with the Z-Flex Model SVE, Series II Installation Instructions.

### Warning:

**Annual inspection of the vent system, fan and wheel for corrosion, leaks and damage must be done by a qualified technician to ensure safe operation. Failure to perform periodic inspections and repair or replacement can cause property damage, severe personal injury, or loss of life. Birdscreen must be intact at all times to prevent dangerous blockage of vent gases by birds' nests.**



### ATTENTION

- Use liberal beads of silicone to seal joints.
- Use pipe hangers or metal strapping to support vent pipe.
- Vent length should be as short and as direct as possible.
- Clearance to combustibles must be maintained at 3". Fiberglass insulation sleeve material may be installed over pipe to reduce clearance to 1" from combustibles. Tape sharp edge of pipe to allow insulation to slide over. Remove tape when finished. Do not enclose vent in combustible material.
- Do not install vent pipe in joist space closed in by drywall or other ceiling materials which prevent accessibility.
- Do not install vent pipe in an unheated space where freezing temperatures occur.
- Do not use screws to secure the vent pipe except at the boiler fan adaptor connection (see Fig. 15).

### Vent terminal location

The vent must be installed observing local regulations in addition to National Codes, CAN/CGA-B149.1 or 2, or ANSI-Z223.1. A vent shall not terminate:

1. directly above a paved sidewalk or paved driveway which is located between two single-family dwellings and serves both dwellings;
2. less than 7 ft. (2.13m) above a paved sidewalk or a paved driveway located on public property;
3. within 6 ft. (1.8m) of a mechanical air supply inlet to any building (clothes dryer vents and non-sealed combustion furnace and hot water heater vents should be considered to be mechanical air inlets);
4. above a meter/regulator assembly within 3 ft. (900mm) horizontally of the vertical center-line of the regulator;
5. within 6 ft. (1.8m) of any gas service regulator vent outlet;
6. less than 1 ft. (300mm) above grade level or anticipated snow level (consult local building authorities or local weather office). Locate the vent terminal so that it cannot be blocked by snow;
7. within the following distances of a window or door which can be opened in any building, any non-mechanical air supply inlet to any building or the combustion inlet of any other appliance:
  - i) 12 inches (300mm) (CGA) for inputs up to and including 100,000 Btu/h (30 kW). Note ANSI requires 4 ft. (1.22m);
  - ii) 3 ft. (1m) (CGA) for inputs exceeding 100,000 Btu/h (30 kW). Note ANSI requires 4 ft.;
8. underneath a veranda, porch or deck;
9. within 6 ft. (1.8m) of an inside corner formed by 2 exterior walls, 10 ft. (3.0m) or greater is recommended where possible;
10. within 29" (74mm) horizontally or vertically from any soffit not containing an air intake opening;
11. in areas where condensation may cause problems, such as above planters, patios, or adjacent to windows where flue gases may cause fogging;
12. within 3 ft. (1m) to the property line (advisable, not mandatory - check with local building authorities and municipal bylaws);
13. at a location where ice formation on the ground can present a hazard;
14. so that the flue gases are directed towards brickwork, siding, or other construction, in such a manner that may cause damage from heat or condensate from the flue gases;
15. where discharging hot flue gases may cause property damage or personal injury.

## Riser box

If unable to find sufficient clearance above grade at the point where the vent passes through the outside wall, a vent riser box may be used.

If a vent riser box is being considered, remember to include the equivalent lengths of two elbows (6 ft.) plus the height of the riser in the vent length calculations. Do not exceed the total equivalent length of 20 ft. Also, the termination tee must be ordered.

The vent pipe enclosed in the riser box must be insulated to resist condensate freeze-up. The riser box must be sealed to prevent moisture entering and soaking insulation. If the exterior wall finish is a combustible material, the vent riser box should be constructed to provide sufficient clearance to combustibles.

### Warning:

**The induced draft blower cannot compensate for inadequate combustion air. The blower is for the venting system only. Failure to provide adequate fresh combustion air can cause property damage, severe personal injury, or loss of life.**

### Check list for proper installation

Prior to and after the installation, use the following check list to ensure proper installation. Improper installation could create a hazard, resulting in property damage, severe personal injury, or loss of life. The correct answer is "yes" to all of the following questions.

- |  |                              |                             |
|--|------------------------------|-----------------------------|
| a) Is the flow direction correct?<br>Water flows in at bottom connection and out at top 1¼" connection?  | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| b) Is the pump electrically connected to the pump aquastat?  | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| c) Is the boiler located so that the vent pipe length is minimized?  | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| d) Is the outside vent terminal at least 1 ft. above the usual snow level for your area?   | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| e) Are all joints in the vent system siliconed and clamped tight so that there are no leaks? Is the vent pipe properly supported?                              | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| f) If the ECV boiler has been installed in an older piping system, has it been flushed out to ensure debris, scale, rust and sludge will not settle in boiler? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| g) Is the ECV vent pipe properly supported every 2 ft. with metal strapping?   | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| h) Is there an adequate supply of fresh combustion air?  | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| i) Is the outside vent terminal located on a wall away from prevailing winds?  | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

### Caution:

Condensation can occur in the heat exchanger if boiler is operated for long periods of time with low return water temperatures (e.g. 120°F or less). Significant condensation in the boiler will cause corrosion and premature failure. This type of failure is not covered under warranty.

For boilers connected to large water content systems, such as a previous gravity system with large free-standing column type radiators, a bypass line from supply pipe to the return pipe can be used. A minimum return water temperature of 120°F can be achieved by diverting some of the flow of heated supply water into the flow of return water to the boiler. Valves suitable for balancing, such as globe valves, shall be used and a thermometer installed in the return line.

For boilers connected to underfloor heating systems utilizing plastic tubing with an oxygen diffusion barrier, a 4-way mixing valve with external control or other suitable alternative must be installed to prevent condensation and keep boiler return water a minimum of 120°F.

Manufacturer can be contacted to help resolve doubts and technical aspects of boiler installation.

# Atola-ECV

Cast-Iron Gas-Fired Boiler

(exploded view of ECV -140 / ECV -155)

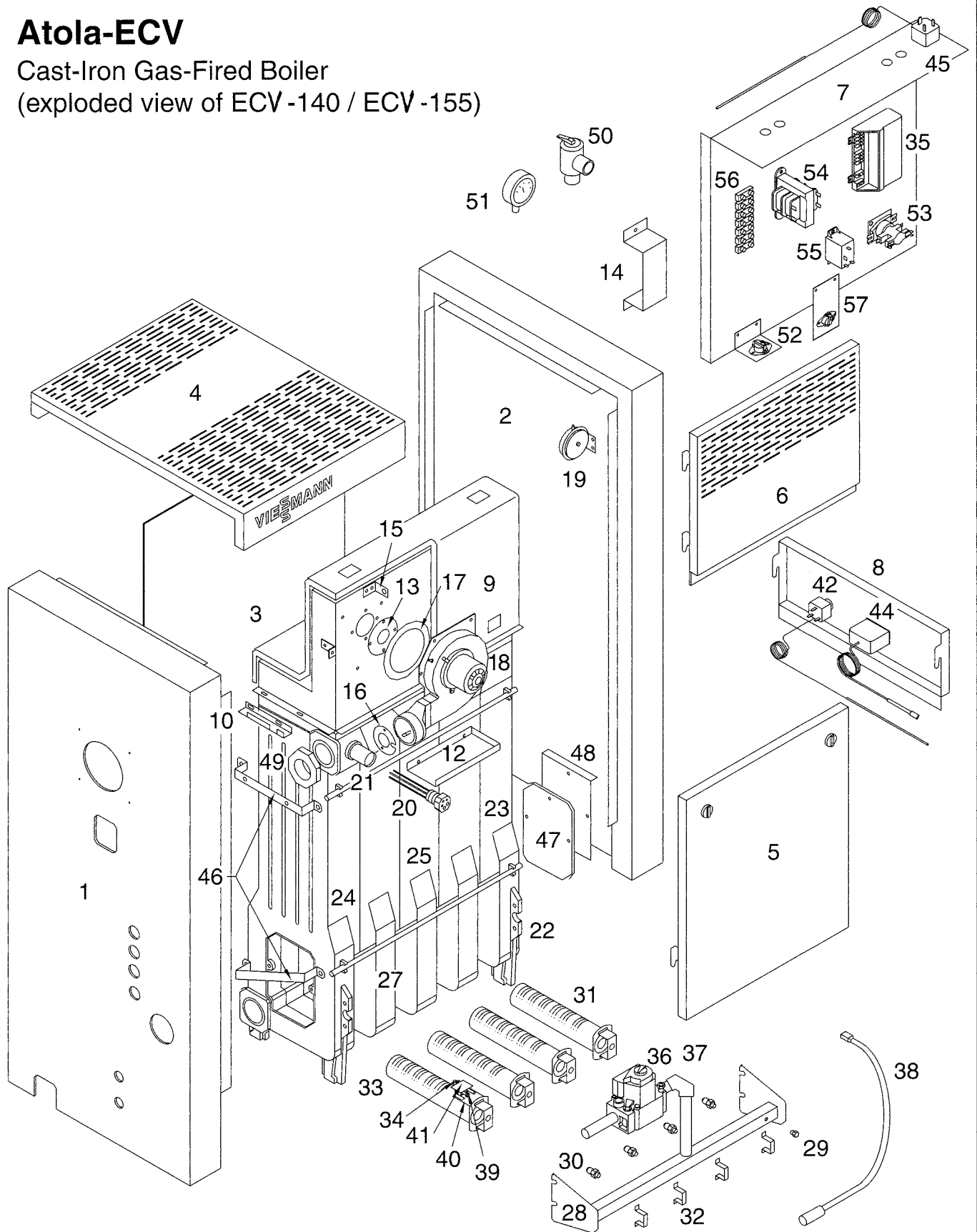


Fig. 17

Note: Ref. No. 26 not shown, as only applicable to ECV -180 / ECV -200

| Ref No. | Name of Part               | Part No.   | ECV-65 | ECV-80 | ECV-100 | ECV-115 | ECV-140 | ECV-155 | ECV-180 | ECV-200 |
|---------|----------------------------|--|--------|--------|---------|---------|---------|---------|---------|---------|
| 1       | Left panel                 | 5400 005   | 1      | 1      | 1       | 1       | 1       | 1       | 1       | 1       |
| 2       | Right panel                | 5400 006   | 1      | 1      | 1       | 1       | 1       | 1       | 1       | 1       |
| 3       | Back panel                 | 5400 023<br>5400 024<br>5400 025<br>5400 026             | 1      | 1      | 1       | 1       | 1       | 1       | 1       | 1       |
| 4       | Top panel                  | 5400 007<br>5400 008<br>5400 009<br>5400 010             | 1      | 1      | 1       | 1       | 1       | 1       | 1       | 1       |
| 5       | Front access panel         | 5400 015<br>5400 016<br>5400 017<br>5400 018             | 1      | 1      | 1       | 1       | 1       | 1       | 1       | 1       |
| 6       | Front upper panel          | 5400 011<br>5400 012<br>5400 013<br>5400 014             | 1      | 1      | 1       | 1       | 1       | 1       | 1       | 1       |
| 7       | Mid panel                  | 5302 125<br>5302 126<br>5302 127<br>5302 128             | 1      | 1      | 1       | 1       | 1       | 1       | 1       | 1       |
| 8       | Control panel              | 5400 019<br>5400 020<br>5400 021<br>5400 022             | 1      | 1      | 1       | 1       | 1       | 1       | 1       | 1       |
| 9       | Collector box              | 5400 027<br>5400 028<br>5400 029<br>5400 030             | 1      | 1      | 1       | 1       | 1       | 1       | 1       | 1       |
| 10      | Collector box brackets     | 5400 031<br>5400 032                                     | 1<br>1 | 1<br>1 | 1<br>1  | 1<br>1  | 1<br>1  | 1<br>1  | 1<br>1  | 1<br>1  |
| 11      | Baffle plate               | 5400 065   |        |        |         |         |         |         | 1       | 1       |
| 12      | Collector box lower cover  | 5400 064   | 1      | 1      | 1       | 1       | 1       | 1       | 1       | 1       |
| 13      | Fan inlet restrictor plate | 5400 066<br>5400 067<br>5400 068<br>5400 069<br>5400 070 | 1      | 1      | 1       | 1       | 1       | 1       |         |         |
| 14      | Terminal strip cover       | 5400 072   | 1      | 1      | 1       | 1       | 1       | 1       | 1       | 1       |
| 15      | Pressure tube bracket      | 5400 071   | 1      | 1      | 1       | 1       | 1       | 1       | 1       | 1       |

Replacement parts are available from your Viessmann dealer.

| Ref No. | Name of Part   | Part No.                                     | ECV-65   | ECV-80   | ECV-100  | ECV-115  | ECV-140  | ECV-155  | ECV-180  | ECV-200  |
|---------|--|--|--|--|--|--|--|--|--|--|
| 16      | Fan outlet restrictor plate  | 5400 073<br>5400 074                         | 1  | 1  |  |  |  |  |  |  |
| 17      | Venter gasket  | 5400 037                                     | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| 18      | Magnetek blower  | 9302 271                                     | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| 19      | Pressure switch  | 9302 324<br>9302 273                         | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| 20      | Thermowell   | 7255 283                                     | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| 21      | Thermowell nipple  | 7250 121                                     | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| 22      | Assembled cast-iron heat exchanger   | 7250 387<br>7250 388<br>7250 389<br>7250 390 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| 23      | Section - right side*  | 9507 593                                     | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| 24      | Section - left side*   | 9507 592                                     | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| 25      | Section intermediate*  | 9507 596                                     |  |  | 1  | 1  | 1  | 1  | 2  | 2  |
| 26      | Section int. with pilot opening on right*  | 9507 595                                     |  |  |  |  |  |  | 1  | 1  |
| 27      | Section int. with pilot opening on left*   | 9507 594                                     | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| 28      | Manifold   | 7255 277<br>7255 278<br>7255 279<br>7255 280 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| 29      | Pipe plug 1/8"   | 9503 394                                     | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| 30      | Manifold orifices<br>Natural gas<br>0-2000 ft.<br>2000-4500 ft.<br>4500-7000 ft.<br>LP<br>0-2000 ft.<br>2000-4500 ft.<br>4500-7000 ft. |  | 9507 072<br>9507 071<br>9507 070<br>9507 652<br>9507 652<br>9507 652 | 9507 327<br>9507 075<br>9507 073<br>9537 208<br>9537 208<br>9507 653 | 9507 073<br>9507 614<br>9507 071<br>9507 640<br>9507 640<br>9507 652 | 9507 615<br>9507 074<br>9507 073<br>9507 653<br>9507 653<br>9507 641 | 9507 074<br>9507 072<br>9507 071<br>9507 641<br>9507 641<br>9507 640 | 9507 615<br>9507 075<br>9507 072<br>9507 653<br>9507 653<br>9507 641 | 9507 075<br>9507 072<br>9507 614<br>9507 641<br>9507 641<br>9507 640 | 9507 327<br>9507 075<br>9507 073<br>9537 208<br>9537 208<br>9507 653 |
| 31      | Stainless steel burner tube  | 9507 642                                     | 1  | 1  | 2  | 2  | 3  | 3  | 4  | 4  |
| 32      | Burner mounting saddle   | 9507 051                                     | 2  | 2  | 3  | 3  | 4  | 4  | 5  | 5  |
| 33      | Burner tube for pilot mounting   | 7302 089                                     | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| 34      | Pilot igniter assembly Q3451A2012  | 9302 451                                     | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| 35      | Ignition control module S8600M   | 9302 278                                     | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |

| Ref No. | Name of Part   | Part No. | ECV-65 | ECV-80 | ECV-100 | ECV-115 | ECV-140 | ECV-155 | ECV-180 | ECV-200 |
|---------|--|----------|--------|--------|---------|---------|---------|---------|---------|---------|
| 37      | Gas valve<br>VR8204M                                 | 9302 714 | 1      | 1      | 1       | 1       | 1       | 1       | 1       | 1       |
| 38      | Ignition cable                                       | 9302 074 | 1      | 1      | 1       | 1       | 1       | 1       | 1       | 1       |
| 39      | Pilot orifice<br>NG .018"<br>LP .014"                | 9504 142 | 1      | 1      | 1       | 1       | 1       | 1       | 1       | 1       |
|         |  | 9504 143 | 1      | 1      | 1       | 1       | 1       | 1       | 1       | 1       |
| 40      | Pilot bracket for<br>Q3451A2012                      | 9302 452 | 1      | 1      | 1       | 1       | 1       | 1       | 1       | 1       |
| 41      | Pilot shield   | 5400 042 | 1      | 1      | 1       | 1       | 1       | 1       | 1       | 1       |
| 42      | Manual reset<br>safety high limit<br>control (248°F) | 9509 899 | 1      | 1      | 1       | 1       | 1       | 1       | 1       | 1       |
| 44      | Thermometer  | 9506 884 | 1      | 1      | 1       | 1       | 1       | 1       | 1       | 1       |
| 45      | Pump aquastat  | 9519 214 | 1      | 1      | 1       | 1       | 1       | 1       | 1       | 1       |
| 46      | Support bracket<br>upper<br>lower                    | 5302 112 | 2      | 2      | 2       | 2       | 2       | 2       | 2       | 2       |
|         |  | 5302 113 | 2      | 2      | 2       | 2       | 2       | 2       | 2       | 2       |
| 47      | Insulation cover<br>left side<br>right side          | 5130 822 | 1      | 1      | 1       | 1       | 1       | 1       | 1       | 1       |
|         |  | 5130 825 | 1      | 1      | 1       | 1       | 1       | 1       | 1       | 1       |
| 48      | Insulation plate<br>left side<br>right side          | 7205 515 | 1      | 1      | 1       | 1       | 1       | 1       | 1       | 1       |
|         |  | 7205 514 | 1      | 1      | 1       | 1       | 1       | 1       | 1       | 1       |
| 49      | Hex bushing<br>1½" x 1¼"                             | 9302 218 | 2      | 2      | 2       | 2       | 2       | 2       | 2       | 2       |
| 50      | Pressure relief<br>valve ¾"<br>30 psi<br>Watts M335  | 9302 054 | 1      | 1      | 1       | 1       | 1       | 1       | 1       | 1       |
| 51      | Pressure gauge<br>0-100 psi                          | 9302 022 | 1      | 1      | 1       | 1       | 1       | 1       | 1       | 1       |
| 52      | Flame roll-out switch<br>60T14 140F (140°F)          | 9302 246 | 1      | 1      | 1       | 1       | 1       | 1       | 1       | 1       |
| 53      | Sequence timer<br>14S22                              | 9302 284 | 1      | 1      | 1       | 1       | 1       | 1       | 1       | 1       |
| 54      | Transformer<br>120/24V 40VA                          | 9302 287 | 1      | 1      | 1       | 1       | 1       | 1       | 1       | 1       |
| 55      | Switching relay                                      | 9302 279 | 1      | 1      | 1       | 1       | 1       | 1       | 1       | 1       |
| 56      | Terminal strip                                       | 9302 292 | 1      | 1      | 1       | 1       | 1       | 1       | 1       | 1       |
| 57      | Flame roll-out switch<br>60T15 235F (235°F)          | 9302 613 | 1      | 1      | 1       | 1       | 1       | 1       | 1       | 1       |

**Note:**

\*When ordering replacement boiler sections, order 4 push nipples per intermediate section and 2 push nipples per side section.










**Viessmann Manufacturing Company (U.S.) Inc.**  
83 Vermont Ave., Building 3  
Warwick, Rhode Island • 02888 • USA  
Tel. (401) 732-0667 • Fax (401) 732-0590

**Viessmann Manufacturing Company Inc.**  
750 McMurray Road  
Waterloo, Ontario • N2V 2G5 • Canada  
Tel. (519) 885-6300 • Fax (519) 885-0887

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