



# Maintenance

## **⚠ WARNING DO NOT SERVICE THE BOILER WITHOUT A Evergreen® MAINTENANCE KIT AVAILABLE**

The maintenance kit includes components that may have to be replaced when accessing or disassembling parts of the boiler.

Failure to replace damaged components and to use only the parts specifically intended for the boiler can result in severe personal injury, death or substantial property damage.

See Figure 110, page 127 for part number.

## **Disconnect power**

**⚠ WARNING** Electrical shock hazard — Disconnect all electrical power to the boiler before attempting maintenance procedures. Failure to complete could result in severe personal injury, death or substantial property damage.

## **Re-install boiler jacket door after startup or servicing**

**⚠ WARNING** Reinstall boiler jacket door after start-up or servicing. The boiler jacket door must be securely fastened to the boiler to prevent boiler from drawing air from inside the boiler room. This is particularly important if the boiler is located in the same room as other appliances.

Inspect boiler jacket door gaskets on front of cabinet. Gaskets must be in good condition, with no tears or gaps. Replace if necessary.

Failure to keep the jacket door securely sealed and fastened could result in severe personal injury or death.

## **Start-up and check/out**

**⚠ WARNING** Removing and reinstalling components can change boiler behavior. After any maintenance procedure, you must prove the boiler is operating correctly. To do so, follow the complete procedure for boiler and system start-up, beginning on page 91. Failure to comply could result in severe personal injury, death or substantial property damage.

## **Oiled bearing circulators**

1. Check circulators in the system. Oil any circulators requiring oil, following circulator manufacturer's instructions. Over-oiling will damage the circulator.

## **Cleaning the heat exchanger WATER SIDE, when required**

1. Isolate the boiler from the heating system.
2. Obtain Sentinel X400 cleaner from Weil-McLain. Follow instructions supplied with the cleaner to clean the boiler heat exchanger.

**⚠ WARNING** Use ONLY the cleaning product available from Weil-McLain, Sentinel X400. See the Repair Parts section at the end of this manual for ordering information.

Using other cleaning materials or methods could cause permanent damage to the boiler heat exchanger.

**⚠ WARNING** Inspect the heating system water. If there is evidence of sediment or corrosion, the boiler must be isolated from the system. The system must then be thoroughly cleaned to remove all sediment.

Isolated the cause of the system corrosion and correct the problem(s) before placing the boiler back in service.

Failure to comply could result in severe personal injury, death or substantial property damage.

## This image shows a full page of blank graph paper. The grid consists of thin, light gray horizontal and vertical lines that intersect to form small squares across the entire surface. There are no margins, text, or other markings on the paper.



# Cleaning heat exchanger flue side, 70

## Cleaning the EVG 70 heat exchanger FLUE SIDE or accessing the burner, if required

**⚠ WARNING** The boiler contains ceramic fiber materials. Use care when handling these materials per instructions on page 101 of this manual. Failure to comply could result in severe personal injury.

### Tools required

- Long-handled Torx driver, #20
- Phillips head screwdriver, #2
- Nut driver, 5/16"
- Torque wrench
- Putty knife
- Wrench or socket, 10mm
- 3mm Allen wrench
- (2) Large Crescent wrenches

### Before proceeding:

1. Shut down the boiler:
  - a. Follow "To Turn Off Gas to Appliance" instructions on boiler and Operating instructions.
  - b. Close the boiler manual gas valve.
2. Allow time for the boiler to cool to room temperature if it has been firing.
3. Remove jacket door by removing top retaining screw and undoing the two (2) latches on each side.
4. Rotate and lift the jacket door away from the boiler to remove.

### Remove components to allow access

1. See Figure 104, page 118 part A to locate components referenced in the following.
2. Disconnect the communication board terminal strip and 4-pin connector from communication board and lift up and remove display bracket.
3. Remove the air baffle (item 28, page 3) by removing the two (2) hex head screws in front of the air intake adapter (item 16 page 3). Set aside.
4. See Figure 104, page 118 part B.
  - a. Pull the silencer straight forward until it snaps free of the blower housing. Set the air silencer aside. Rotate the air inlet silencer if needed to clear as it is removed.
  - b. Remove the gas valve retainer clip (item 4) and set aside. Pull the gas valve slightly to the right until it disengages from the venturi (item 5).

**⚠ WARNING** Support the gas valve. DO NOT allow it to hang from the gas valve flex line. Make sure the gas valve-to-venturi O-ring (item 5, Figure 12, page 16) remains on the gas valve sleeve.

- c. Disconnect the blower end of the gas valve sense line (item 8).
- d. Remove the blower retainer clip (item 15). Set aside.
- e. Remove the blower by pulling down. Disconnect the two blower wiring harnesses on the back side of the blower.

**Figure 101** Legend for Figure 104, page 118

<b>A</b> Boiler interior	<b>6</b> Heat exchanger cover plate
<b>B</b> Boiler interior, with components disconnected to allow removal of combustion chamber cover plate	<b>7</b> Ignitor assembly
<b>C</b> Combustion chamber cover plate and components removed from boiler	<b>8</b> Gas valve sense line
<b>D</b> Disassembling to access the burner	<b>9</b> Combustion chamber cover plate retainer nuts (4)
<b>E</b> Heat exchanger interior	<b>10</b> Burner
<b>1</b> Inlet air silencer	<b>11</b> Putty knife
<b>2</b> Blower assembly	<b>12</b> Refractory
<b>3</b> Gas valve	<b>13</b> Burner gasket
<b>4</b> Gas valve retainer clip	<b>14</b> (3) Burner retainer screws
<b>5</b> Venturi assembly	<b>15</b> Blower retainer clip
	<b>16</b> Control module

**⚠ CAUTION** Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation.

- f. Remove the four (4) 10mm hex nuts (item 9) that secure the heat exchanger cover plate (item 6).
- g. Disconnect the ground wire and ignition cable from the igniter (item 7).
- h. Lift the cover plate/burner assembly vertically until the refractory (part C, item 12) clears the heat exchanger.
- i. Tilt the cover plate/burner assembly slightly forward. Then pull the assembly forward and out of the jacket.
- j. Remove the igniter by removing the two (2) Socket head Allen igniter bolts. Set the igniter, its gasket and screws aside. Be careful when handling the igniter not to damage the igniter ceramic.
- k. Inspect the igniter ceramic and electrodes. Clean the electrodes carefully with steel wool. If the igniter ceramic is cracked or damaged, replace the igniter with a new one.

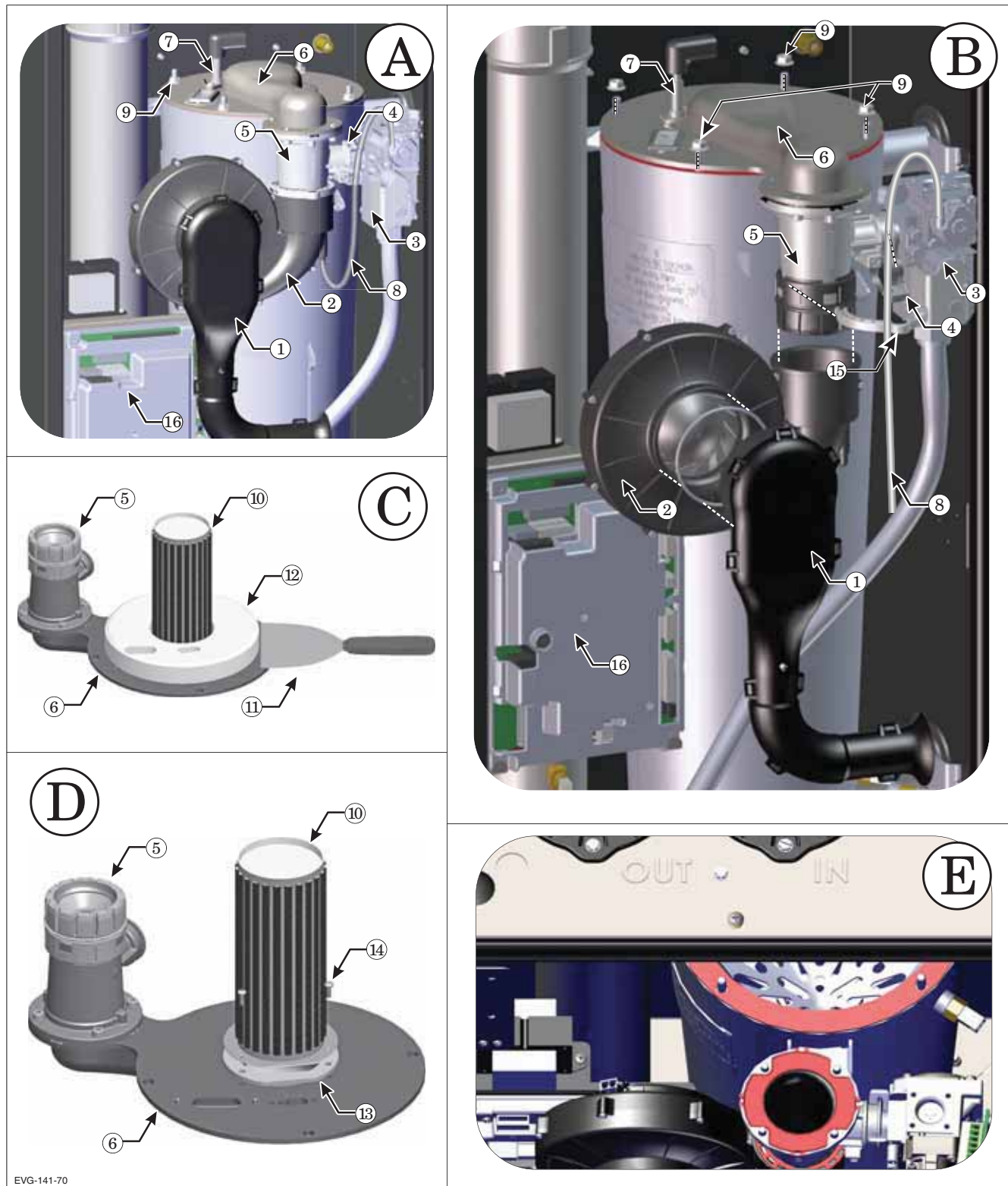
**⚠ WARNING** Handle the cover plate/venturi/burner assembly carefully to avoid damage to the igniter or refractory. Place the assembly on a clean, flat surface with the assembly upside down, as shown in Figure 104, page 118 part C and part D.

4. See Figure 104, page 118 part C.
  - a. Use a wide-blade putty knife (item 11) to gently pry the refractory from the heat exchanger cover plate. The refractory is attached with silicone adhesive and should separate with a little pressure on the putty knife.

**⚠ WARNING** DO NOT gouge or crack the refractory. The refractory is made of ceramic fiber materials. Read the ceramic fiber WARNING on page 101 before handling or disposing of ceramic fiber materials.

## Cleaning heat exchanger flue side, 70 *(continued)*

**Figure 102** Accessing the burner or heat exchanger (see Legend on page 117)





## Cleaning heat exchanger flue side, 70 *(continued)*

### Inspect and clean the burner

1. See Figure 104, page 118 part D.
  - a. Slide the refractory (item 12) over the burner and off. Set the refractory aside where it will be kept clean and protected from damage. If the refractory is damaged, it must be discarded and replaced with a new one.
  - b. Remove the three (3) #20 Torx screws (item 14) securing the burner (item 10) to the cover plate. Set aside.
  - c. Remove the burner and its gasket (item 13).
  - d. Inspect the interior of the burner. Brush and vacuum the interior if needed to remove lint or sediment. Alternative cleaning methods: • blow air from the inside out; • clean with a water spray from inside the burner; • swirl the burner thoroughly in a bucket of mild liquid laundry detergent water, then rinse thoroughly.
  - e. Inspect the burner exterior. It must be in good condition, with no visible damage.
  - f. Inspect the burner gasket. If the gasket is damaged, obtain a new gasket before re-installing the burner.

### Inspect and clean the heat exchanger

1. Access the heat exchanger interior by following the previous instructions.
2. See Figure 104, page 118 part E.
3. Before using water to clean the heat exchanger, remove the control module (item 16). Label wires if they are not labeled. Set aside. Remove all connectors and wire harnesses from the control module and then remove the two (2) screws securing it to the bracket.
4. Use a strong light to visually inspect the interior of the heat exchanger. Make sure the flueways (tubes) are clear and unobstructed.
5. Use a vacuum cleaner to remove any accumulation on the heating surfaces. This includes removing any pieces of refractory that may have dropped into the exchanger.

**⚠ WARNING** DO NOT use any solvent when cleaning the exchanger.

6. If the vacuum cleaner is unable to clean completely, wash the heating surfaces with clean, warm water.
  - a. Place a shallow pan under the boiler condensate drain connection.
  - b. Loosen and move the condensate bracket, then loosen the condensate trap upper nut and slide the trap off of the drain connection. (See Figure 56, page 52 for reference.)
  - c. Spray fresh water into the heat exchanger and tubes to remove sediment. Collect water in the pan below.
7. Inspect the heat exchanger cover plate refractory. Replace if insulation is damaged.

### Reinstall components

1. See Figure 104, page 118 for reference.
2. Reinstall the control module (item 16) to the control bracket and reconnect all connectors and wire harnesses.

3. Reinstall the burner (item 10) and burner gasket (item 13) on the cover plate (item 6). Tighten the burner screws (item 14) using a torque wrench. The screws must be secure, but the torque must not exceed 20 inch-pounds.
4. Apply a ring of silicone adhesive on the cover plate (to secure the refractory).
5. Slide the refractory (item 12) over the burner. Align the refractory and press in place.
6. **Before** handling the assembly, allow the adhesive to set enough that the refractory is firmly held in place.
7. Reinstall the igniter assembly (item 7).
  - a. The igniter gasket must be intact and in good condition. Replace with a new gasket if necessary.
  - b. Insert the igniter into the cover plate opening, with the gasket in position.
  - c. Reinstall the two (2) Socket head Allen bolts finger tight.
  - d. Use a torque wrench to tighten the igniter bolts. DO NOT exceed 20 inch-pounds torque.
8. Reinstall the venturi/cover plate assembly (items 5 and 6) and secure the cover plate with 10mm hex nuts (item 9).

**⚠ WARNING** You must gradually tighten the cover plate nuts using a torque wrench. The final torque **MUST** NOT exceed 45 inch-pounds. Alternate tightening until all nuts reach 45 inch-pounds.

9. Reconnect the ignition cable and the igniter ground wire.
10. Reinstall the blower (items 2).
  - a. Reconnect the two (2) blower wiring harnesses.
  - b. Slide the blower up onto the venturi sleeve.
  - c. Reinstall the blower retainer clip, item 15.
11. Reinstall the air inlet silencer (item 1) by pressing onto the air inlet adapter. Rotate into the normal vertical position (see part A) of Figure 104, page 118.
12. Slide the gas valve (item 3) outlet collar into the venturi (item 5) opening. Make sure the gas valve-to-venturi O-ring (item 5, Figure 12, page 16) is in place and in good condition. Inspect the gas valve flex line, making sure there are no signs of wear or damage. Replace if necessary.
13. Slide the gas valve retainer clip (item 4) into position to secure the gas valve.
14. Reinstall the condensate trap and bracket on the boiler condensate drain connection, if removed. (See Figure 56, page 52 for reference).

**⚠ WARNING** Perform a complete start-up procedure when putting the boiler back into service. See page 91 and all instructions for start-up and verification. Include a soap suds leak test on all interior and exterior gas piping after starting the boiler.





# Cleaning heat exchanger flue side, 110

## Cleaning the EVG 110 heat exchanger FLUE SIDE or accessing the burner, if required

**⚠ WARNING** The boiler contains ceramic fiber materials. Use care when handling these materials per instructions on page 101 of this manual. Failure to comply could result in severe personal injury.

### Tools required

- Long-handled Torx driver, #20
- T25 Torx Bit
- 3mm Allen wrench
- Phillips head screwdriver, #2
- Nut driver, 5/16"
- Torque wrench
- Putty knife
- Wrench or socket, 10mm
- (2) Large Crescent wrenches

### Before proceeding:

1. Shut down the boiler:
  - a. Follow "To Turn Off Gas to Appliance" instructions on boiler and Operating instructions.
  - b. Close the boiler manual gas valve.
2. Allow time for the boiler to cool to room temperature if it has been firing.
3. Remove jacket door by removing top retaining screw and undoing the two (2) latches on each side. Rotate and lift the jacket door away from the boiler to remove.

### Remove components to allow access

1. See Figure 106, page 121 part A to locate components referenced in the following.
2. Disconnect the communication board terminal strip and 4-pin connector from communication board and lift up and remove display bracket.
3. Remove the air baffle (item 28, page 3) by removing the two (2) hex head screws in front of the air intake adapter (item 16 page 3). Set aside.
4. See Figure 106, page 121 part B.
  - a. Release the air silencer bracket free from gas line.
  - b. Remove the air silencer from the venturi by sliding it away from the blower/venturi assembly. Set the air silencer aside.
  - c. Remove the two (2) electrical connectors from the blower and one connector from the gas valve.
  - d. By using two wrenches, loosen the union fitting between the flexible gas line and the gas valve flare adapter. Gently set the flex line aside, where it is out of the way and free from damage.
  - e. Remove the blower/venturi/gas valve assembly by removing the two (2) nuts connecting the blower to the cover plate.
  - f. Remove the four (4) 10mm hex nuts (item 8) that secure the heat exchanger cover plate (item 6).
  - g. Disconnect the ground wire and ignition cable from the igniter (item 7).

**Figure 103** Legend for Figure 106, page 107

<b>A</b> Boiler interior	<b>4</b> Venturi gas line clip
<b>B</b> Boiler interior, with components disconnected to allow removal of combustion chamber cover plate	<b>5</b> Venturi assembly
<b>C</b> Combustion chamber cover plate and components removed from boiler	<b>6</b> Heat exchanger cover plate
<b>D</b> Disassembling to access the burner	<b>7</b> Ignitor assembly
<b>E</b> Heat exchanger interior	<b>8</b> Combustion chamber cover plate retainer nuts (4)
<b>1</b> Inlet air silencer	<b>9</b> Burner
<b>2</b> Blower assembly	<b>10</b> Putty knife
<b>3</b> Gas valve	<b>11</b> Refractory
	<b>12</b> Burner gasket
	<b>13</b> (3) Burner retainer screws
	<b>14</b> Control module

**⚠ CAUTION** Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation.

- h. Lift the cover plate/burner assembly vertically until the refractory (part C, item 11) clears the heat exchanger.
- i. Tilt the cover plate/burner assembly slightly forward. Then pull the assembly forward and out of the jacket.
- j. Remove the igniter by removing the two (2) Socket head Allen igniter bolts. Set the igniter, its gasket and screws aside. Be careful when handling the igniter not to damage the igniter ceramic.
- k. Inspect the igniter ceramic and electrodes. Clean the electrodes carefully with steel wool. If the igniter ceramic is cracked or damaged, replace the igniter with a new one.

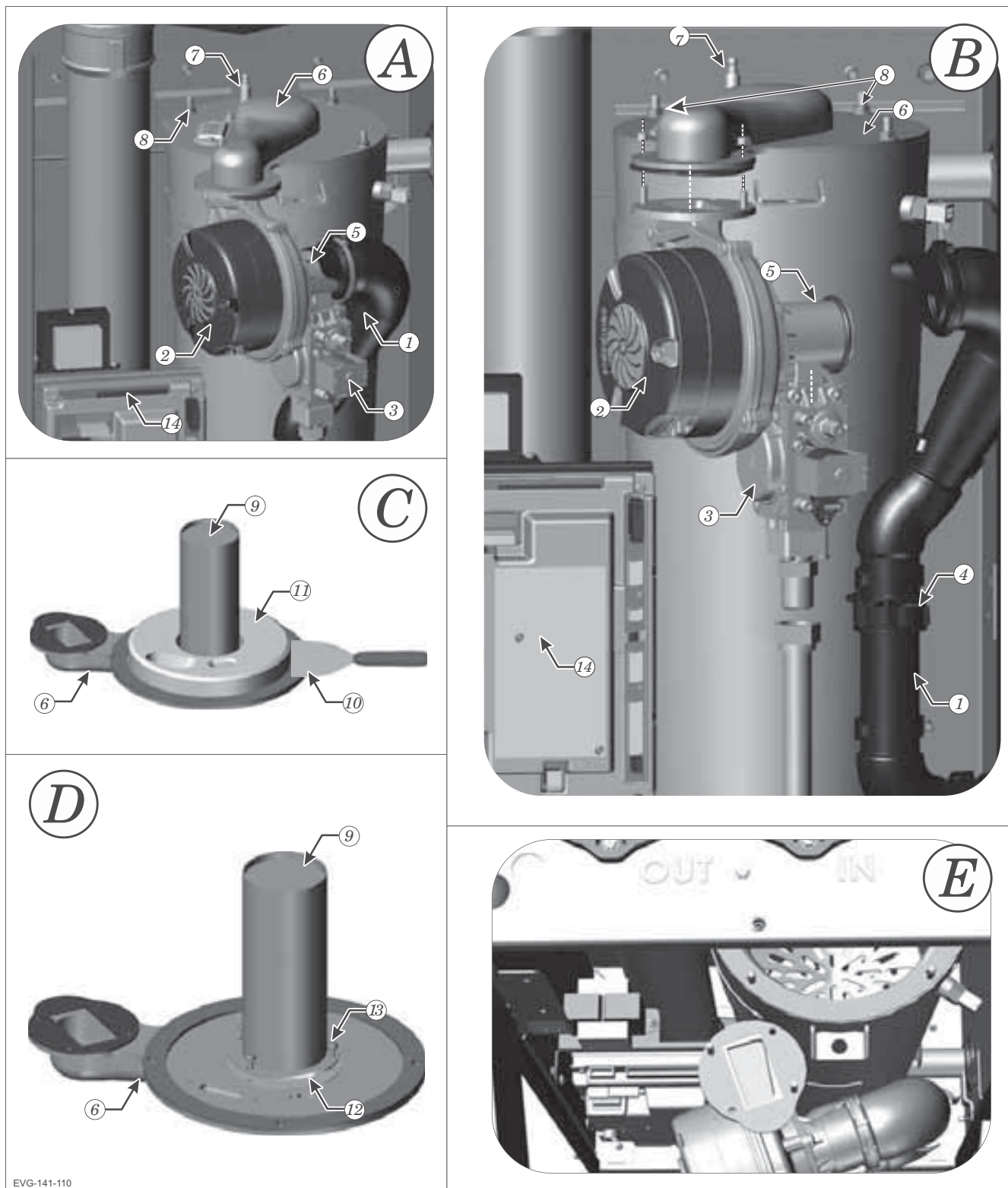
**⚠ WARNING** Handle the cover plate/burner assembly carefully to avoid damage to the igniter or refractory. Place the assembly on a clean, flat surface with the assembly upside down, as shown in Figure 106, page 121 part C and part D.

4. See Figure 106, page 121 part C.
  - a. Use a wide-blade putty knife (item 10) to gently pry the refractory from the heat exchanger cover plate. The refractory is attached with silicone adhesive and should separate with a little pressure on the putty knife.

**⚠ WARNING** DO NOT gouge or crack the refractory. The refractory is made of ceramic fiber materials. Read the ceramic fiber WARNING on page 101 before handling or disposing of ceramic fiber materials.

## Cleaning heat exchanger flue side, 110 (continued)

**Figure 104** Accessing the burner or heat exchanger (see Legend on page 120)





## Cleaning heat exchanger flue side, 110 *(continued)*

### Inspect and clean the burner

1. See Figure 106, page 121 part D.
  - a. Slide the refractory (item 11) over the burner and off. Set the refractory aside where it will be kept clean and protected from damage. If the refractory is damaged, it must be discarded and replaced with a new one.
  - b. Remove the four (4) #20 Torx screws (item 13) securing the burner (item 9) to the cover plate. Set aside.
  - c. Remove the burner and its gasket (item 12).
  - d. Inspect the interior of the burner. Brush and vacuum the interior if needed to remove lint or sediment. Alternative cleaning methods: • blow air from the inside out; • clean with a water spray from inside the burner; • swirl the burner thoroughly in a bucket of mild liquid laundry detergent water, then rinse thoroughly.
  - e. Inspect the burner exterior. It must be in good condition, with no visible damage.
  - f. Obtain a new burner gasket before re-installing the burner.
4. Apply a ring of silicone adhesive on the cover plate (to secure the refractory).
5. Slide the refractory (item 11) over the burner. Align the refractory and press in place.
6. **Before** handling the assembly, allow the adhesive to set enough that the refractory is firmly held in place.
7. Reinstall the igniter assembly (item 7).
  - a. The igniter gasket must be intact and in good condition. Replace with a new gasket if necessary.
  - b. Insert the igniter into the cover plate opening, with the gasket in position.
  - c. Reinstall the two (2) Socket head Allen bolts finger tight.
  - d. Use a torque wrench to tighten the igniter screws. DO NOT exceed 20 inch-pounds torque.
8. Reinstall the cover plate assembly (items 5 and 6) and secure the cover plate with 10mm hex nuts (item 8).

#### **WARNING**

You must gradually tighten the cover plate nuts using a torque wrench. The final torque **MUST NOT** exceed 45 inch-pounds. Alternate tightening until all nuts reach 45 inch-pounds.

### Inspect and clean the heat exchanger

1. Access the heat exchanger interior by following the previous instructions.
  2. See Figure 106, page 121 part E.
  3. Before using water to clean the heat exchanger, remove the control module (item 14). Label wires if they are not labeled. Set aside. Remove all connectors and wire harnesses from the control module and then remove the two (2) screws securing it to the bracket.
  4. Use a strong light to visually inspect the interior of the heat exchanger. Make sure the flueways (tubes) are clear and unobstructed.
  5. Use a vacuum cleaner to remove any accumulation on the heating surfaces. This includes removing any pieces of refractory that may have dropped into the exchanger.
- WARNING** DO NOT use any solvent when cleaning the exchanger.
6. If the vacuum cleaner is unable to clean completely, wash the heating surfaces with clean, warm water.
    - a. Place a bucket under the boiler condensate drain connection.
    - b. Loosen and move the condensate bracket, then loosen the condensate trap upper nut and slide the trap off of the drain connection. (See Figure 56, page 52 for reference.)
    - c. Spray fresh water into the heat exchanger and tubes to remove sediment. Collect water in the bucket below.
  7. Inspect the heat exchanger cover plate refractory. Replace if insulation is damaged.
  9. Reconnect the ignition cable and the igniter ground wire.
  10. Reinstall the blower, venturi, gas valve assembly.
    - a. Inspect the blower to cover plate gasket, replace if gasket is damaged or has taken a set.
    - b. Slide the blower assembly up to the cover plate, passing the two (2) blower studs up through the cover plate holes. Use the two locking nuts to secure the assembly, torx locking nuts to 20 inch-pounds.
    - c. Reinstall the flexible gas line by using two wrenches to tighten the union fitting between the gas line and the gas valve flare adapter.
  11. Reinstall the air silencer (item 1).
  12. Reinstall the two (2) electrical connectors from the blower and one connector from the gas valve.
  13. Reinstall the condensate trap and bracket on the boiler condensate drain connection, if removed. (See Figure 56, page 52 for reference.)

#### **WARNING**

Perform a complete start-up procedure when putting the boiler back into service. See page 91 and all instructions for start-up and verification. Include a soap suds leak test on all interior and exterior gas piping after starting the boiler.

### Reinstall components

1. See Figure 106, page 121 for reference.
2. Reinstall the control module (item 14) to the control bracket and reconnect all connectors and wire harnesses.
3. Reinstall the burner (item 9) and burner gasket (item 12) on the cover plate (item 6). Tighten the burner screws (item 13) using a torque wrench. The screws must be secure, but the torque must not exceed 20 inch-pounds.





# Cleaning heat exchanger flue side, 155

## Cleaning the EVG 155 heat exchanger FLUE SIDE or accessing the burner, when required

**⚠ WARNING** The boiler contains ceramic fiber materials. Use care when handling these materials per instructions on page 101 of this manual. Failure to comply could result in severe personal injury.

### Tools required

- Metric wrench or socket, 10mm
- Phillips head screwdriver, #2
- Socket with 8" extension, 5/16"
- Torque wrench
- Putty knife
- 3mm Allen wrench
- (2) Large Crescent wrenches

### Before proceeding:

1. Shut down the boiler:
  - a. Follow "To Turn Off Gas to Appliance" instructions on boiler and Operating instructions.
  - b. Close the boiler manual gas valve.
2. Allow time for the boiler to cool to room temperature if it has been firing.
3. Remove jacket door by removing top retaining screw and undoing the two (2) latches on each side.
4. Rotate and lift the jacket door away from the boiler to remove.

### Remove and inspect the igniter assembly

1. See Figure 108, page 125 part A.
2. Disconnect the ground wire and ignition cable from the igniter (item 7).

**⚠ CAUTION** Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation.

3. Remove the two (2) Socket head Allen bolts securing the igniter to the heat exchanger cover plate (item 6).
4. Carefully slide the igniter out of its mounting slot.
5. Remove and inspect the igniter gasket. Replace with a new gasket if necessary.
6. Inspect the igniter ceramic and electrodes. Clean the electrodes carefully with steel wool. If the igniter ceramic is cracked or damaged, replace the igniter with a new one.

### Remove components to allow access

1. See Figure 108, page 125 part A to locate components referenced in the following.
2. Disconnect the communication board terminal strip and 4-pin connector from communication board and lift up and remove display bracket.
3. Remove the air silencer and disconnect gas line:
  - a. See Figure 108, page 125 part A.
  - b. Locate the air silencer clip, item 8. Pull on the right side of the clip until it rotates forward as shown in part A inset.
  - c. Slide the air silencer (item 1) down and off of the venturi (item 5). Set the air silencer aside.
  - d. Disconnect the flexible gas line where it connects just below the gas valve (item 3). Lay the free end of the flexible gas line to the side.

**⚠ WARNING** Use two wrenches when disconnecting the flexible gas line to prevent damage to the gas valve and other gas line components.

- e. Disconnect the two wire harnesses connected to the blower and the wire harness connected to the gas valve.
3. It is RECOMMENDED to remove the blower/gas valve venturi assembly (item 2) from the cover plate (item 6) by removing the two 5/16" locknuts attaching them. This will make removing the cover plate significantly easier.
4. Remove the heat exchanger cover plate assembly:
  - a. See Figure 108, page 125 part A, part C and part D.
  - b. Use a 10mm wrench to remove the five (5) M6 nuts (item 9) that secure the heat exchanger cover plate (item 6) to the heat exchanger.
  - c. Lift the cover plate assembly vertically until the refractory (part D, item 16) clears the heat exchanger.
  - d. Slide the cover plate forward as you tilt the front downward until the rear lip clears the cabinet. Avoid gouging the refractory on the heat exchanger studs.

**⚠ WARNING** DO NOT gouge or crack the refractory. The refractory is made of ceramic fiber materials. Read the ceramic fiber WARNING on page 101 before handling or disposing of ceramic fiber materials.

- e. Carefully place the cover plate assembly aside.

**⚠ WARNING** Handle the cover plate assembly carefully to avoid damage to the components or refractory. Place the assembly on a clean, flat surface.

### Inspect and clean the burner

1. See Figure 108, page 125 part C and part D.
2. Use a Phillips screwdriver to remove the three (3) M4 screws and flat washers (item 10) that secure the burner access cover (item 4) to the heat exchanger cover plate (item 6).
3. Remove the burner cover plate (item 4) and the burner (item 11).
4. Remove the burner gasket (item 12) from the heat exchanger cover plate if still in place. This gasket is graphite and may pull apart or stick to the burner on removal. Replace the gasket with a new one during reassembly.
5. Inspect the burner access cover seal (item 13). Discard and use a new seal during re-assembly if the seal is damaged in any way.
6. Inspect the interior of the burner. Brush and vacuum the interior if needed to remove lint or sediment. Alternative cleaning methods: • blow air from the inside out; • clean with a water spray from inside the burner; • swirl the burner thoroughly in a bucket of mild liquid laundry detergent water, then rinse thoroughly.
7. Inspect the burner exterior. It must be in good condition, with no visible damage.
8. Clean the underside of the burner flange (see item 14) with a soft brush to remove any gasket fragments remaining.

### Inspect refractory and replace burner gasket

1. See Figure 108, page 125 part B.
  - a. Inspect the refractory (item 15) to make sure it is intact, with no visible damage.
  - b. If the refractory must be replaced, use a wide-blade putty knife to gently pry the refractory from the heat exchanger cover plate. The refractory is attached with silicone adhesive and should separate with a little pressure on the putty knife.



## Cleaning heat exchanger flue side, 155 *(continued)*

**▲WARNING** DO NOT gouge or crack the refractory. The refractory is made of ceramic fiber materials. Read the ceramic fiber WARNING on page 101 before handling or disposing of ceramic fiber materials.

- c. When replacing the refractory, apply a ring of silicone adhesive on the cover plate. Place the refractory onto the cover plate. Before handling the assembly, allow the adhesive to set enough that the refractory is firmly held in place.
2. Clean the burner gasket surface inside the heat exchanger cover plate (item 6) with a soft brush to remove any gasket residue.
3. The burner gasket must be replaced with a new one when the boiler is re-assembled after servicing.

### Inspect and clean the heat exchanger

1. Access the heat exchanger interior by following the previous instructions. Remove and inspect the heat exchanger cover plate gasket. Replace if necessary.
2. See Figure 108, page 125 part E.
3. Before using water to clean the heat exchanger, remove the control module (item 17). Label wires if they are not labeled. Set aside. Remove all connectors and wire harnesses from the control module and then remove the two screws securing it to the bracket.
4. Use a strong light to visually inspect the interior of the heat exchanger. Make sure the flue ways (tubes) are clear and unobstructed.
5. Use a vacuum cleaner to remove any accumulation on the heating surfaces. This includes removing any pieces of refractory that may have dropped into the exchanger.

**▲WARNING** DO NOT use any solvent when cleaning the exchanger.

6. If the vacuum cleaner is unable to clean completely, wash the heating surfaces with clean, warm water.
  - a. Place a bucket under the boiler condensate drain connection.
  - b. Loosen and move the condensate bracket, then loosen the condensate trap upper nut and slide the trap off of the drain connection. (See Figure 56, page 52 for reference.)
  - c. Spray fresh water into the heat exchanger and tubes to remove sediment. Collect water in the bucket below.
7. Inspect the heat exchanger cover plate gasket (item 18). Replace if it is damaged in any way.

### Reinstall components

1. See Figure 108, page 125 for reference.
2. Reinstall the control module (item 20) to the control bracket and reconnect all connectors and wire harnesses.
3. Reinstall the burner (item 11), burner gasket (item 12) and burner access cover seal (item 13) on the heat exchanger cover plate (item 6).
  - a. Insert and tighten the burner cover plate screws and washers (item 10) using a Phillips screwdriver. The screws must be secure, with torque no more than 20 inch-pounds.
4. Reinstall the heat exchanger cover plate assembly on the heat exchanger.
  - a. Seat the heat exchanger cover plate gasket on the heat exchanger sealing surface.
  - b. Tilt heat exchanger cover plate front lip downward until back lip clears cabinet and burner can slide inside combustion chamber. Slide cover plate back and rotate until seated flat on the heat

**Figure 105** Legend for Figure 108, page 125

<b>A</b> Boiler interior	<b>8</b> Air silencer clip
<b>B</b> Assembled heat exchanger cover plate (item 6), burner (item 11), showing refractory (item 15)	<b>9</b> Heat exchanger cover plate retainer nuts, (5)
<b>C</b> Disassembly of heat exchanger cover plate, burner and other components	<b>10</b> Burner cover retainer (3) screws, M4 Phillips plus flat washers
<b>D</b> Burner assembly	<b>11</b> Burner
<b>E</b> Heat exchanger interior	<b>12</b> Burner gasket
<b>1</b> Inlet air silencer	<b>13</b> Burner access cover seal
<b>2</b> Blower assembly	<b>14</b> Burner sealing surface (lower surface of burner flange)
<b>3</b> Gas valve	<b>15</b> Refractory
<b>4</b> Burner access cover	<b>16</b> Cover plate gasket
<b>5</b> Venturi assembly	<b>17</b> Control module
<b>6</b> Heat exchanger cover plate	<b>18</b> Heat exchanger tube sheet
<b>7</b> Igniter assembly	<b>19</b> Heat exchanger outer shell

exchanger sealing surface. Avoid gouging the refractory on the heat exchanger studs.

- c. Secure the heat exchanger cover plate (item 6) to the heat exchanger with the five (5) M6 nuts using a 10mm wrench.

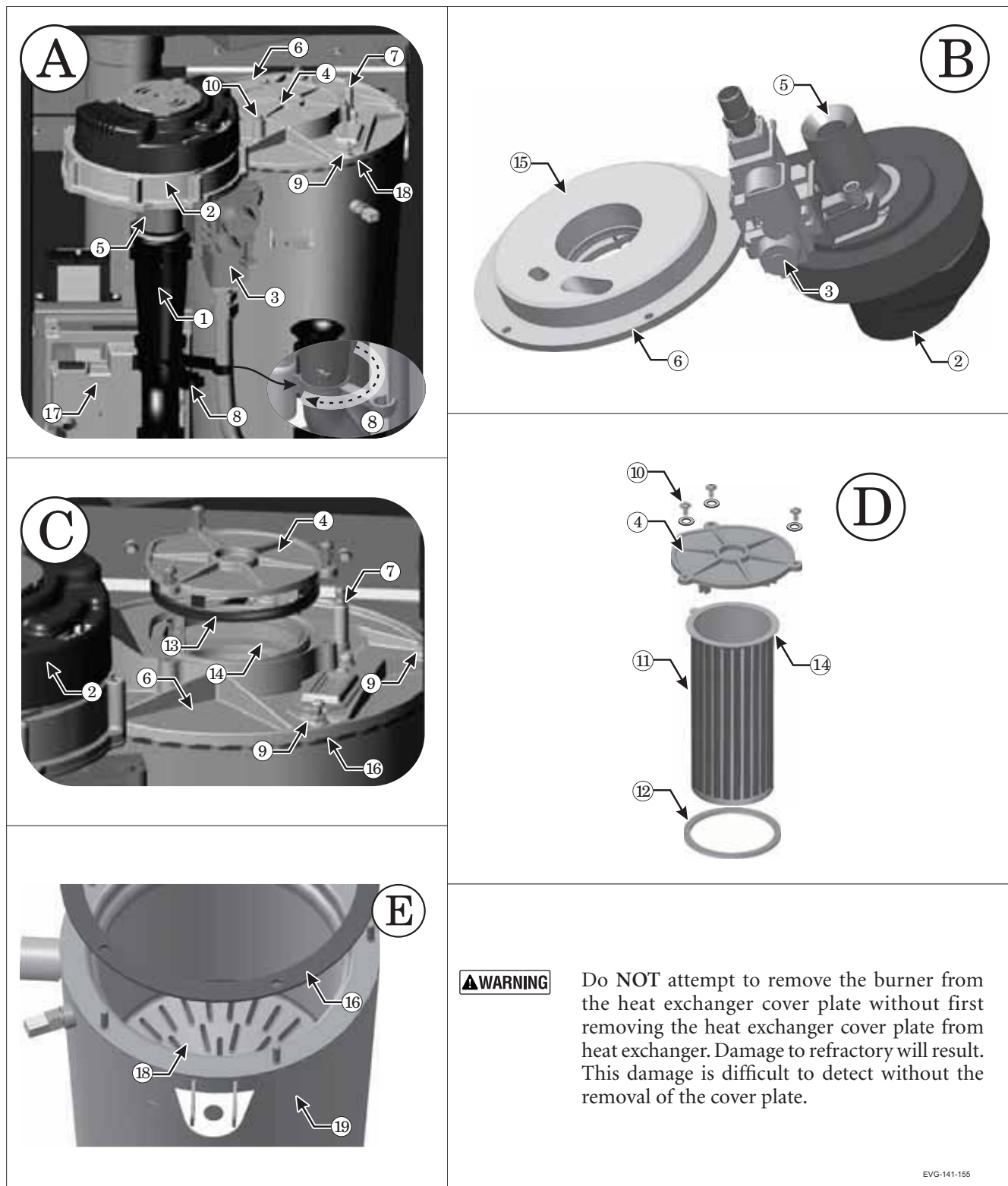
**▲WARNING** You must gradually tighten the cover plate nuts using a torque wrench. The final torque MUST NOT exceed 45 inch-pounds. Alternate tightening until all nuts reach 45 inch-pounds.

5. Reinstall the blower/gas valve/venturi assembly (items 2, 3, and 5).
  - a. Place blower flange on to studs protruding from cover plate.
  - b. Reinstall the two (2) 5/16" locknuts using a socket with extension.
  - c. Do not over tighten (torque no more than 20 inch-pounds).
6. Reinstall the igniter assembly (item 7).
  - a. The igniter gasket must be intact and in good condition. Replace with a new gasket if necessary.
  - b. Insert the igniter into the cover plate opening, with the gasket in position.
  - c. Reinstall the two (2) Socket head Allen bolts finger tight.
  - d. Use a torque wrench to tighten the igniter screws. DO NOT exceed 25 inch-pounds torque.
  - e. Reconnect the ignition cable and the igniter ground wire.
7. Reconnect the flexible gas line to the gas valve using two wrenches.
8. Reinstall the air inlet silencer (item 1) by pressing up onto the venturi (item 5). Rotate the air silencer clip (item 8) and snap it onto the gas line.
9. Reconnect the two (2) wire harnesses to the blower and gas valve.
10. Reinstall the condensate trap and bracket on the boiler condensate drain connection. (See Figure 56, page 52 for reference.)

**▲WARNING** Perform a complete start-up procedure when putting the boiler back into service. See page 91 and all instructions for start-up and verification. Include a soap suds leak test on all interior and exterior gas piping after starting the boiler.

## Cleaning heat exchanger flue side, 155 (continued)

**Figure 106** Accessing the burner or heat exchanger (see Legend on page 124)



EVG-141-155



## Replacement parts

**⚠ WARNING DO NOT SERVICE THE BOILER WITHOUT A MAINTENANCE KIT EVG AVAILABLE**

The maintenance kit includes components that may have to be replaced when accessing or disassembling parts of the boiler. Failure to replace damaged components and to use only the parts specifically intended for the boiler can result in severe personal injury, death or substantial property damage. See Figure 110, page 127 for part number.

### REPLACEMENT PART NUMBERS

Weil-McLain part numbers are found in this manual and in *Weil-McLain Boilers and Controls Repair Parts Lists*.

### WHEN OPERATING THE BOILER ON PROPANE GAS

**⚠ WARNING ALL Evergreen® boilers must be converted in order to operate with propane gas.**

**Figure 107** Propane conversion kits and instructions

Boiler model	Kit part number	Kit location	Installation instructions
EVG 70	540-202-837	Shipped loose with boiler	See page 15
EVG 110	540-131-088	Shipped loose with boiler	See page 17
EVG 155	540-202-839	Shipped loose with boiler	See page 19

**⚠ WARNING** Failure to adhere to these guidelines can result in severe personal injury, death or substantial property damage.

### OBTAIN PARTS ONLY THROUGH WEIL-McLAIN

Replacement parts must be purchased through a local Weil-McLain distributor. When ordering, specify boiler model and size and include description and part number of replacement part. Results from using modified or other manufactured parts will not be covered by warranty and may damage boiler or impair operation.

### THE BOILER CONTAINS CERAMIC FIBER MATERIALS

The boiler contains ceramic fiber materials. Use care when handling these materials per instructions on page 101 of this manual. Failure to comply could result in severe personal injury.

### REINSTALL Jacket door

Inspect boiler jacket door gaskets on front of cabinet and reinstall boiler jacket door after start or servicing. The boiler jacket door must be securely fastened to the boiler to prevent boiler from drawing air from inside the boiler room. This is particularly important if the boiler is located in the same room as other appliances. Failure to keep the jacket door securely fastened could result in severe personal injury or death.

### BEFORE SERVICING or MAKING CONNECTIONS —

**ALWAYS TURN POWER OFF TO THE BOILER TO PREVENT ELECTRICAL SURGES, WHICH CAN DAMAGE BOILER COMPONENTS.**

### LABEL WIRES BEFORE REMOVING

**⚠ CAUTION** Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation.



## Replacement parts *(continued)*

**Figure 108** Miscellaneous parts and kits

Description	Part Number	Description	Part Number
<b>CHEMICALS</b>			
Antifreeze, Sentinel X500, 1 Gallon . . . . .	592-900-029	PVC concentric vent kit — horizontal or vertical (includes components for concentric assembly) Kit for 2" PVC vent and air pipes. . . . .	383-700-167
Corrosion inhibitor, Sentinel X100 . . . . .	592-900-002	Kit for 3" PVC vent and air pipes. . . . .	383-500-350
Sentinel X100 Quick Test Kit. . . . .	592-900-005		
Cleaner, Sentinel X400 . . . . .	592-900-003	Bird screens (1 screen each)	
		For 2" PVC vent and air pipes . . . . .	560-907-728
		For 3" PVC vent and air pipes . . . . .	383-500-105
<b>BOILER ACCESSORIES</b>		<b>VENT/AIR PARTS AND KITS (POLYPROPYLENE PIPE) available from M&amp;G Simpson-Duravent ONLY</b>	
EVG 70 maintenance kit — igniter, igniter gasket, venturi gasket, cover plate gasket, venturi-gas valve o-ring, refractory, silicone, inhibitor test kit, clips and manuals	383-700-165	M&G Simpson-Duravent PolyPro SIDEWALL concentric vent/air kit (color: white)	
EVG 110 maintenance kit — igniter, igniter gasket, venturi gasket, cover plate gasket, venturi-gas valve o-ring, refractory, silicone, inhibitor test kit, clips and manuals	383-700-243	2" polypropylene pipe . . . . .	2PPS-HK
EVG 155 maintenance kit — igniter, igniter gasket, venturi gasket, cover plate gasket, venturi-gas valve o-ring, refractory, silicone, inhibitor test kit, clips and manuals	383-700-200	3" polypropylene pipe . . . . .	3PPS-HK
Condensate trap kit (supplied with boiler) — condensate trap assembly and flexible line	560-907-722	M&G Simpson-Duravent PolyPro VERTICAL concentric vent/air kit; color = black (part number shown) or terra cotta (add -TC suffix)	
		2" polypropylene pipe . . . . .	2PPS-VK
		3" polypropylene pipe . . . . .	3PPS-VK
		M&G Simpson-Duravent PolyPro SIDEWALL separate air and vent pipes	
		2" polypropylene pipe . . . . .	2PPS-HTP
		3" polypropylene pipe . . . . .	3PPS-HTP
		M&G Simpson-Duravent PolyPro Polypropylene pipe appliance adapter 3"	3PPS-C3PVC-M-3PPF
<b>CONDENSATE HANDLING ACCESSORIES</b>		<b>VENT/AIR PARTS AND KITS (POLYPROPYLENE PIPE) available from Centrotherm Eco Systems ONLY</b>	
Condensate neutralizer kit	383-500-631	Centrotherm INNOFLUE SIDEWALL concentric vent/air kit	
		3" polypropylene pipe . . . . .	ICWT352
		2" stainless steel/pp pipe . . . . .	ICWS2413
		3" stainless steel/pp pipe . . . . .	ICWS3513
		Centrotherm INNOFLUE VERTICAL concentric vent/air kit	
		2" polypropylene pipe . . . . .	ICRT2439
		3" polypropylene pipe . . . . .	ICRT3539
		Centrotherm INNOFLUE Polypropylene pipe appliance adapter 3" . .	ISAAL0303
<b>VENT/AIR PARTS AND KITS (PVC or STAINLESS STEEL) available from Weil-McLain</b>			
Weil-McLain sidewall vent/air cap termination kit for PVC vent and air pipes	383-500-397		
Includes sidewall vent/air termination cap, inside and outside cover plates, and mounting hardware; openings are sized for 3" PVC pipe (requires field-installed 3 x 2 adapter if using 2" vent/air pipes)			
Weil-McLain sidewall vent/air cap termination kit for AL29-4C vent pipe and PVC air pipe	382-200-430		
Includes sidewall vent/air termination cap, inside and outside cover plates, and mounting hardware; openings are sized for 3" SS vent pipe and 3" PVC air pipe (requires field-installed 3 x 2 adapter if using 2" vent/air pipes)			
Sidewall separate pipes vent/air termination kits (includes two cover plates)			
Kit for 2" PVC vent and air pipes. . . . .	383-700-171		
Kit for 3" PVC vent and air pipes. . . . .	383-500-100		
Kit for 3" AL29-4C SS vent pipe and PVC air pipe	383-700-172		

Go to [www.weil-mclain.com](http://www.weil-mclain.com) to locate Weil-McLain distributors





## Replacement parts *(continued)*

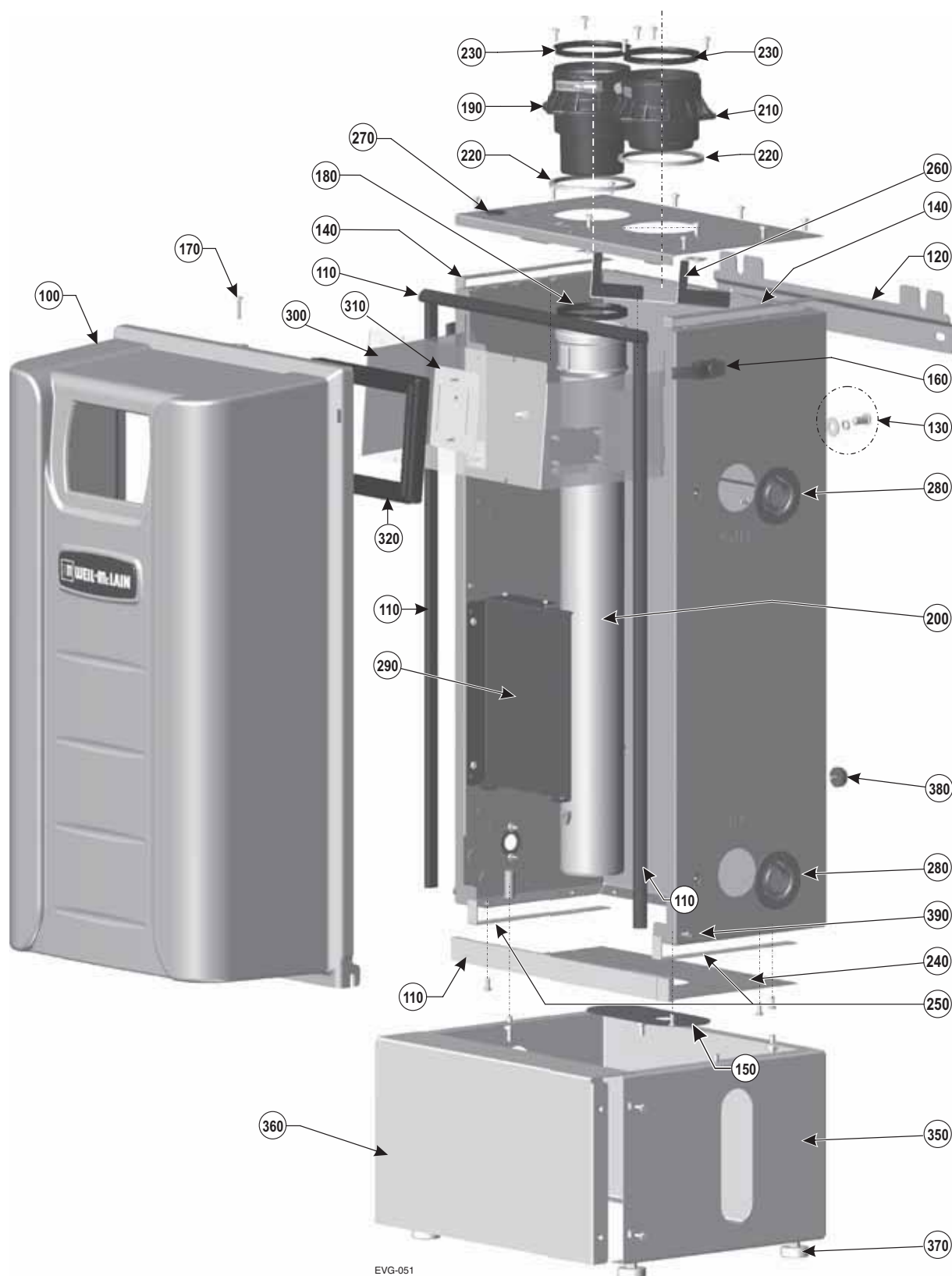
**Figure 109** Jacket parts — **EVG 70/110/155** (see Figure 112, page 129 for illustration)

Item	Name	Description / contents	Part Number
100	Jacket door	Jacket door and labels	383-900-101
110	Seals – jacket door to cabinet	Seals for front face of cabinet	383-900-102
120	Wall-mount bracket (wall side)	Bracket and hardware	383-800-218
130	Wall-mount hardware (boiler side)	Boiler mounting studs (bolts, washers, and spacers, 2 each)	383-800-219
140	Gaskets - upper panel to cabinet	Gaskets - upper panel to cabinet	383-800-220
150	Gasket - heat exchanger to bottom panel	Gasket - condensate trap to bottom panel	590-318-071
160	Door latch (2 required)	Includes rivets	383-700-122
170	Door retention screw	Screw Truss Head #10-24	562-150-290
180	Gasket - internal flue pipe to adapter	Gasket fits inner diameter of boiler flue pipe	590-318-051
190	Flue pipe adapter	Top flue adapter with internal gasket	560-907-719
200	Boiler flue pipe	Internal flue pipe and gasket	560-907-720
210	Air inlet adapter	Top air inlet adapter with internal gasket	560-907-718
220	Gasket - pipe adapter to cabinet	Gasket - pipe adapter to cabinet (applies to air and vent adapters)	590-300-031
230	Gasket - pipe adapter to system pipe	Gasket fits inner diameter of top adapter	590-318-052
240	Jacket bottom panel kit	Jacket bottom panel, gasket (items 150 and 240) and screws	383-900-103
250	Gaskets - bottom panel to cabinet	Gaskets - bottom panel to cabinet	383-900-104
260	Air baffle and screws	Air baffle and screws	383-800-223
270	Hole plug	Hole plug, 7/8", for sealing electrical knockouts	561-444-186
280	Pipe grommet	Seals water pipes to cabinet	562-248-740
290	Control/transformer bracket	Bracket to mount control module and transformer	383-800-228
300	Display board bracket	Mounting for the display to inside of cabinet	383-900-105
310	Display/bracket gasket		590-318-125
320	Display/door gasket		590-318-121
330	Condensate bracket 70/110 (not shown)	Bracket and plastic rivets	383-700-238
340	Condensate bracket 155 (not shown)	Bracket and plastic rivets	383-700-239
350	Floor stand assembly		383-900-106
360	Floor stand front panel		383-900-107
370	Boiler leg kit	Includes (4) leg leveling glides 5/16-18 nickel plated steel with polyethylene base	383-500-065
380	Bumpers	Stand-off .5 inches threaded #10-24	563-039-984
390	Shoulder screw	Screw shoulder 1/4" x 5/16 10-24 x 3/8 thread stainless steel	562-150-305

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## Replacement parts *(continued)*

**Figure 110** Jacket assembly — **EVG 70/110/155** (see Figure 111, page 128 for part numbers)



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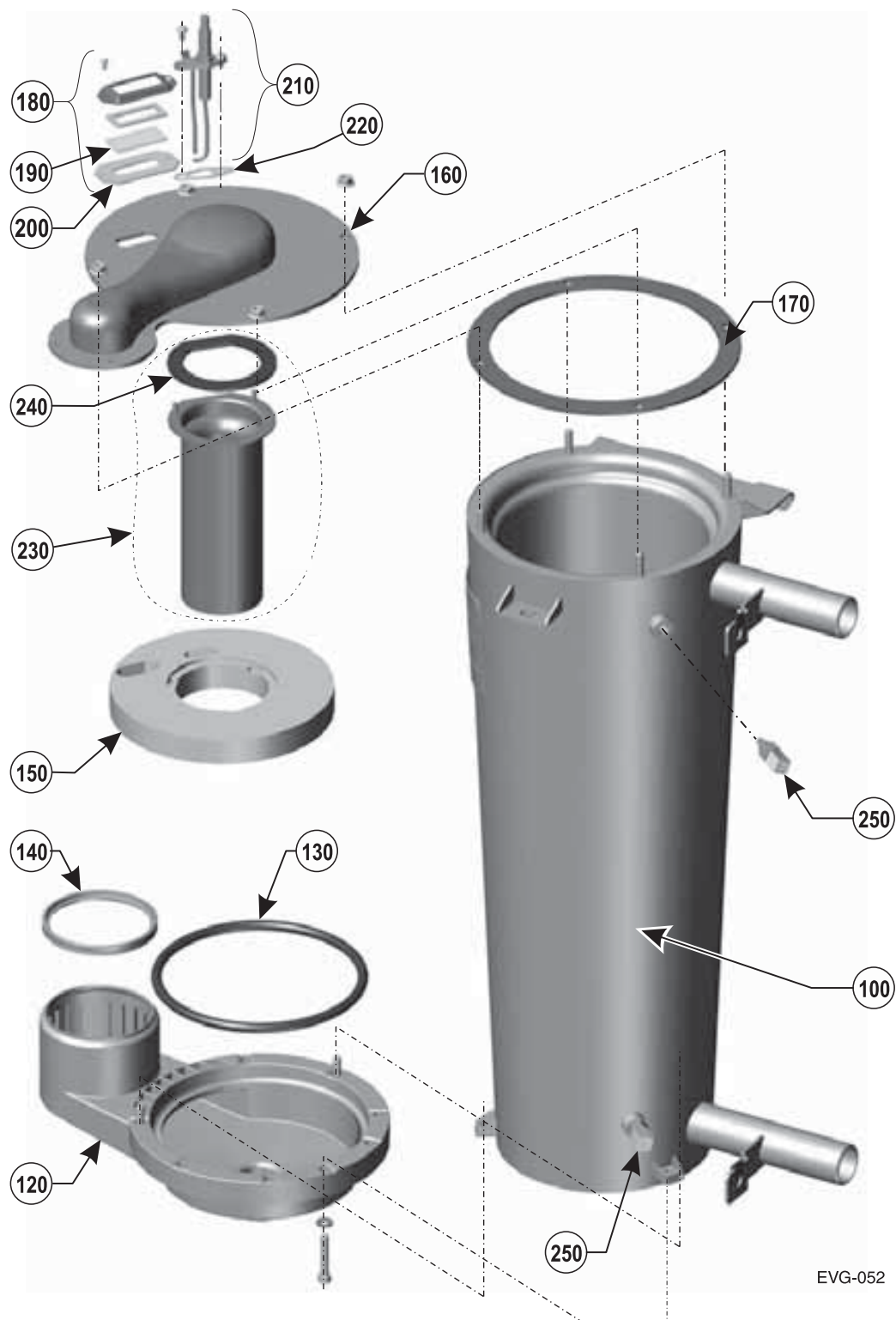
## Replacement parts *(continued)*

**Figure 111** Heat exchanger parts **EVG 70/110** (see Figure 114, page 131 for illustration)

Item	Name	Part Number	Model 70	Model 110
100	Heat exchanger	383-800-234	●	—
		383-800-238	—	●
110	Heat exchanger, condensate dish, cover plate, burner, igniter, sight glass, refractory, water sensors, gaskets, silicone, and hardware (includes items 100, 120, 130, 140, 160, 180, 210, 240, and 260)	383-800-236	●	—
		383-800-239	—	●
120	Condensate dish, gaskets, and hardware	383-700-102	●	●
130	Gasket to seal heat exchanger to condensate dish	383-700-103	●	●
140	Gasket to seal condensate dish to internal flue pipe	383-700-104	●	●
150	Refractory insulation & silicone sealant	383-700-105	●	—
		383-700-244	—	●
160	Heat exchanger cover plate, refractory, silicone, and gaskets (includes items 150, 170, 200, 220, and 250)	383-700-108	●	—
		383-800-240	—	●
170	Cover plate gasket (exchanger to gasket)	383-700-109	●	●
180	Sight glass kit (bracket, glass, gaskets, and hardware) (includes items 190 and 200)	383-700-185	●	●
190	Sight glass	591-419-202	●	●
200	Sight glass gaskets, upper and lower	383-700-112	●	●
210	Igniter kit (igniter, gasket and screws)	383-700-113	●	—
		383-700-245	—	●
220	Igniter to cover plate gasket	590-300-034	●	●
230	Burner, gasket, and hardware (includes item 250)	383-700-106	●	—
		383-700-246	—	●
240	Burner gasket	383-700-107	●	—
		383-700-247	—	●
250	Heat exchanger water temperature sensor (one sensor for either boiler inlet or outlet water temperature)	511-724-296	●	●

## Replacement parts *(continued)*

**Figure 112** Heat exchanger assembly **EVG 70/110** (see Figure 113, page 130 for part numbers)





## Replacement parts *(continued)*

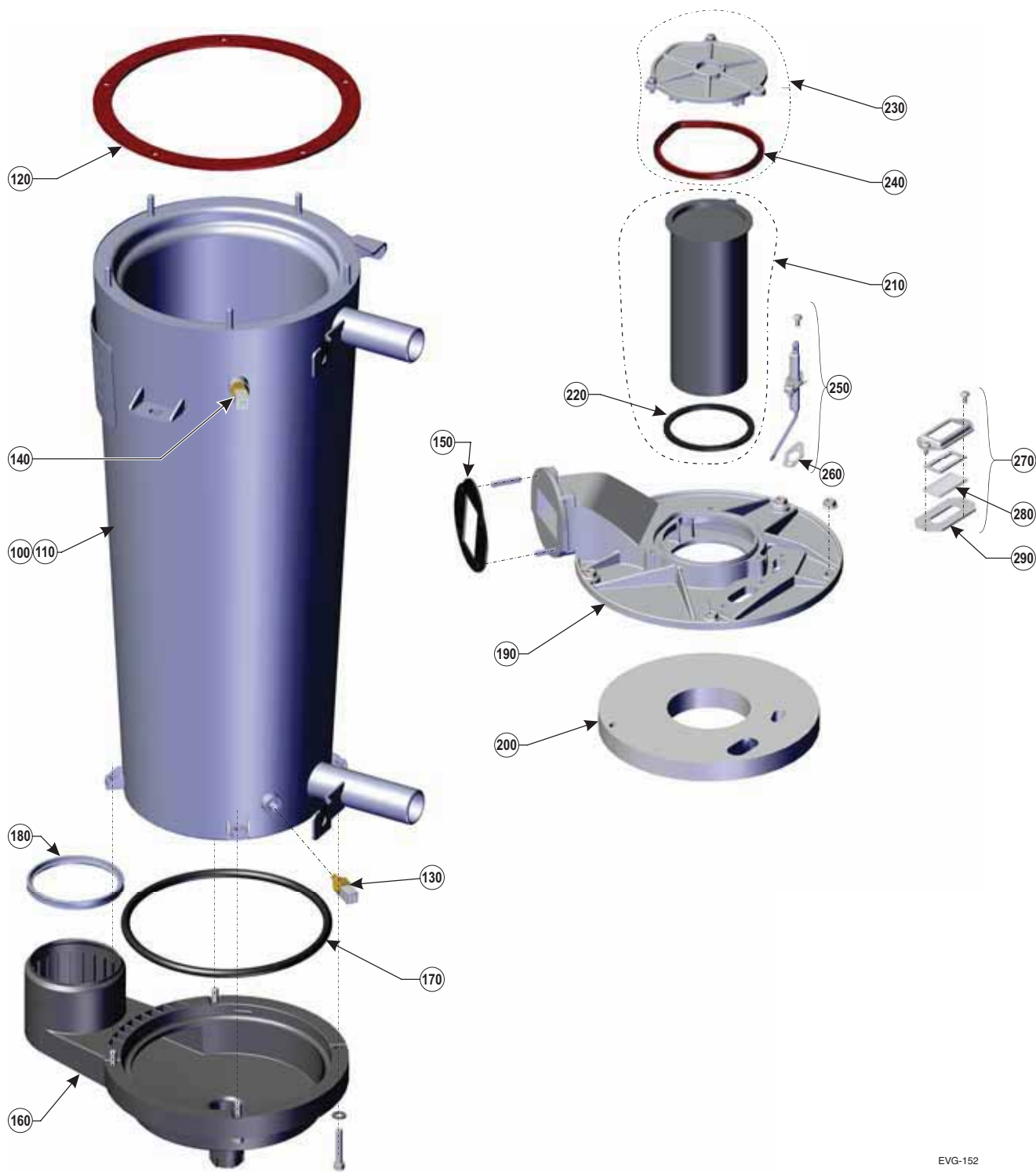
**Figure 113** Heat exchanger parts **EVG 155** (see Figure 116, page 133 for illustration)

Item	Name	Part Number
100	Heat exchanger	383-800-231
110	Heat exchanger, condensate dish, cover plate, burner, igniter, sight glass, refractory, water sensors, gaskets, silicone, and hardware (includes items 100, 130, 140, 160, 170, 180, 190, 200, 210, and 270)	383-800-233
120	Cover plate/heat exchanger gasket	590-318-054
130	Boiler inlet temperature sensor	511-724-296
140	Boiler outlet temperature sensor (same as item 130)	
150	Blower gasket	590-318-006
160	Condensate dish, gaskets, and hardware	383-700-181
170	Gasket to seal heat exchanger to condensate dish	383-700-205
180	Gasket to seal condensate dish to internal flue pipe	383-700-104
190	Heat exchanger cover plate, refractory and gaskets (includes items 200, 230, 260, and 290)	383-700-184
200	Refractory insulation & silicone sealant	383-700-182
210	Burner, gasket, and hardware (includes item 220)	383-700-183
220	Burner gasket	383-700-208
230	Burner access cover, gasket and hardware (includes item 240)	383-700-202
240	Burner access cover gasket	383-700-206
250	Igniter kit (igniter, gasket and screws) (includes item 260)	383-700-187
260	Igniter gasket	590-300-034
270	Sight glass kit (bracket, glass, gaskets, and hardware) (includes items 280 and 290)	383-700-185
280	Sight glass	591-419-202
290	Sight glass gaskets, upper and lower	383-700-112
300	Heat exchanger cover plate gasket set (includes items 120, 150, 220, 240 and 260)	383-700-207



## Replacement parts *(continued)*

**Figure 114** Heat exchanger assembly **EVG 155** (see Figure 115, page 132 for part numbers)



EVG-152

## Replacement parts *(continued)*

**Figure 115** Combustion components for **EVG 70/110** (see Figure 119, page 135 for illustration)

Item	Name	Description / contents	Part Number	Model 70	Model 110
100	Relief valve	30 PSIG relief valve — shipped loose for field installation	383-500-095	●	●
110	Pressure & temperature gauge	Shipped loose for field installation	380-000-000	●	●
200	Air inlet silencer	Silencer	383-700-155	●	—
			383-700-248	—	●
210	Silencer o-ring	O-ring	590-318-049	●	—
220	Blower	Blower, clip and gasket	383-700-157	●	
	Blower, venturi & gas valve assembly	Blower, venturi, gas valve and blower gasket	383-700-249	—	●
225	Blower & venturi assembly	Blower, venturi and blower gasket	383-700-260	—	●
230	Blower retainer clip	Clip	562-650-115	●	—
240	Reference tube	Tube to connect blower to gas valve	590-300-001	●	—
250	Gas valve/venturi assembly	Gas valve, venturi, gasket, o-ring, clip, and screws	383-700-159	●	—
	Gas valve	Gas valve, rubber boot, and screws	383-700-259	—	●
255	Rubber boot - gas valve/venturi	Gasket between gas valve and venturi	383-700-261	—	●
260	Gas valve retainer clip	Clip	562-650-116	●	—
270	Gas valve adapter block	Threaded block, o-ring, and screws	563-910-031	●	●
271	Gas flex line adapter	NPT to flare adapter	562-302-576	●	●
273	Adapter block O-ring	(10 O-rings) (not shown)	383-600-009	●	●
275	Gas valve outlet o-ring	O-ring	590-318-045	●	—
280	Propane orifice — boilers converted to propane ONLY — available only with propane conversion kit — see Figure 109, page 126 for information		—	—	—
290	Gas flex line	Gas line, seal, and hardware	383-800-224	●	—
			383-800-241	—	●
295	Gas pipe flange gasket	Gasket gas flex line to cabinet	590-300-027	●	●

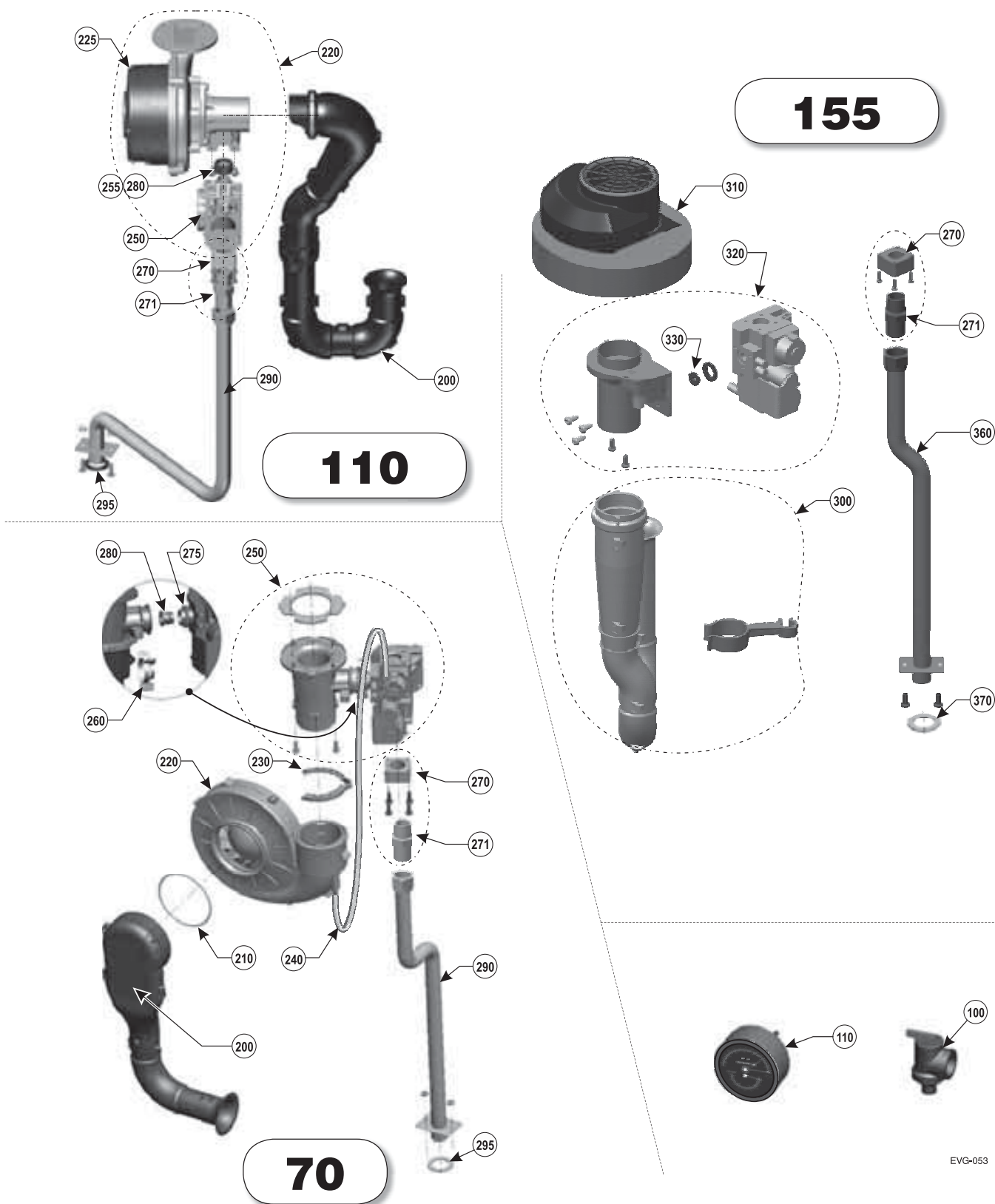
**Figure 116** Combustion components for **EVG 155** (see Figure 119, page 135 for illustration)

Item	Name	Description / contents	Part Number
100	Relief valve	30 PSIG relief valve — shipped loose for field installation	383-500-095
110	Pressure & temperature gauge	Shipped loose for field installation	380-000-000
270	Gas valve adapter block	Threaded block, o-ring, and screws	563-910-031
271	Gas flex line adapter	NPT to flare adapter	562-302-576
273	Adapter block O-ring	(10 O-rings) (not shown)	383-600-009
300	Air inlet silencer	Silencer with gasket and clip	383-700-203
310	Blower	Blower	383-700-195
320	Gas valve/venturi assembly	Gas valve, venturi, gasket and hardware	383-700-196
330	Propane orifice — boilers converted to propane ONLY — available only with propane conversion kit — see Figure 109, page 126 for information		—
360	Gas flex line	Gas pipe and hardware	383-800-241
370	Gas pipe flange gasket	Gasket, gas flex line to cabinet	590-300-027

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## Replacement parts *(continued)*

**Figure 117** Combustion components for **EVG 70/110/155**(see Figure 117, page 134 for part numbers)



EVG-053

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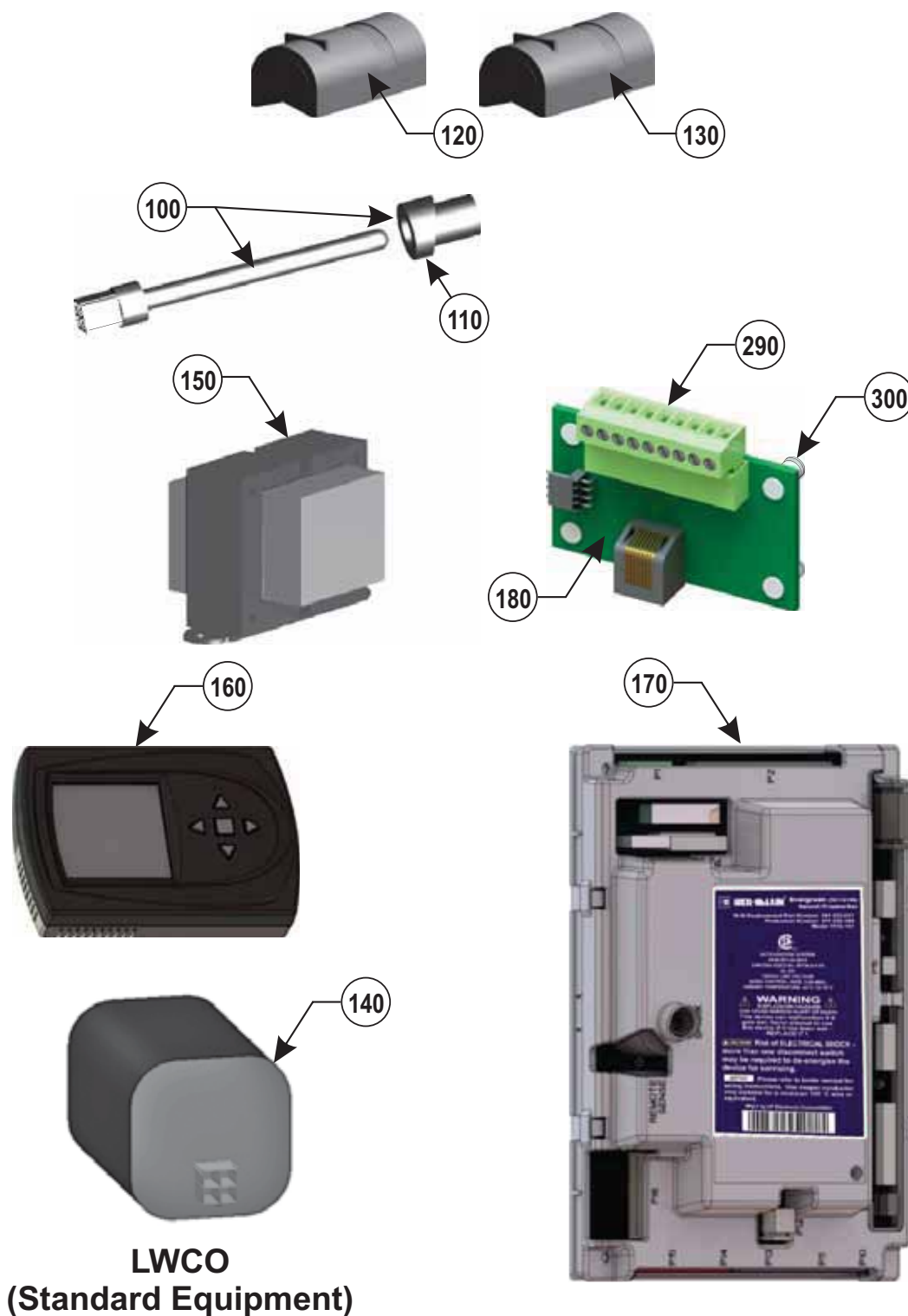
## Replacement parts *(continued)*

**Figure 118** Controls and electrical components — **EVG 70/110/155** (see Figure 121, page 137 for illustration)

Item	Name	Description / contents	Part Number
100	Flue temperature sensor & grommet	One sensor & grommet	383-500-600
110	Grommet - Flue temperature sensor	One grommet	590-318-011
120	Outdoor temperature sensor	One sensor	510-312-218
130	System temperature sensor	One sensor	383-500-601
140	Low water cut-off		511-100-005
150	Transformer 120V/24V	50 VA transformer	383-500-628
160	Display board assembly	Includes circuit board and plastic housing	383-900-108
170	Control module assembly	Control module and housing	381-330-037
180	Communication board	One board	383-900-110
190	Wire harness — line voltage (not shown)	Wire harness (EVG 70)	591-392-047
		Wire harness (EVG 110)	591-392-044
		Wire harness (EVG 155)	591-392-043
200	Wire harness — low voltage (not shown)	Wire harness (EVG 70 )	591-392-048
		Wire harness (EVG 110)	591-392-045
		Wire harness (EVG 155)	591-392-046
210	Wire harness — Low voltage communication board (not shown)	Connects communication board to control module	591-392-004
220	Wire harness — Communication Ethernet (not shown)		591-392-009
230	Ignition cable (not shown)	Ignition cable	591-392-012
240	F1 - 3 amp, fast blow ato (5 fuses) (not shown here — see Figure 93, page 108)	Five Fuses	383-500-603
250	F2 - 12 amp, fast-blow ag (5 fuses) (not shown here — see Figure 93, page 108)	Five Fuses	383-500-604
260	Jumper for low voltage terminal blocks (not shown)	Five Jumpers	383-500-641
270	Connector electrical control (not shown)	Includes 8 connectors	383-900-111
280	Low voltage sealed wire grommet (not shown)	Seals thermostat wire at entrance to cabinet	562-248-771
290	Communication board terminal block		512-050-248
300	Communication board standoffs	Includes 4 stand offs	383-900-112

## Replacement parts *(continued)*

**Figure 119** Controls and electrical assemblies — **EVG 70/110/155** (see Figure 120, page 136 for part numbers)

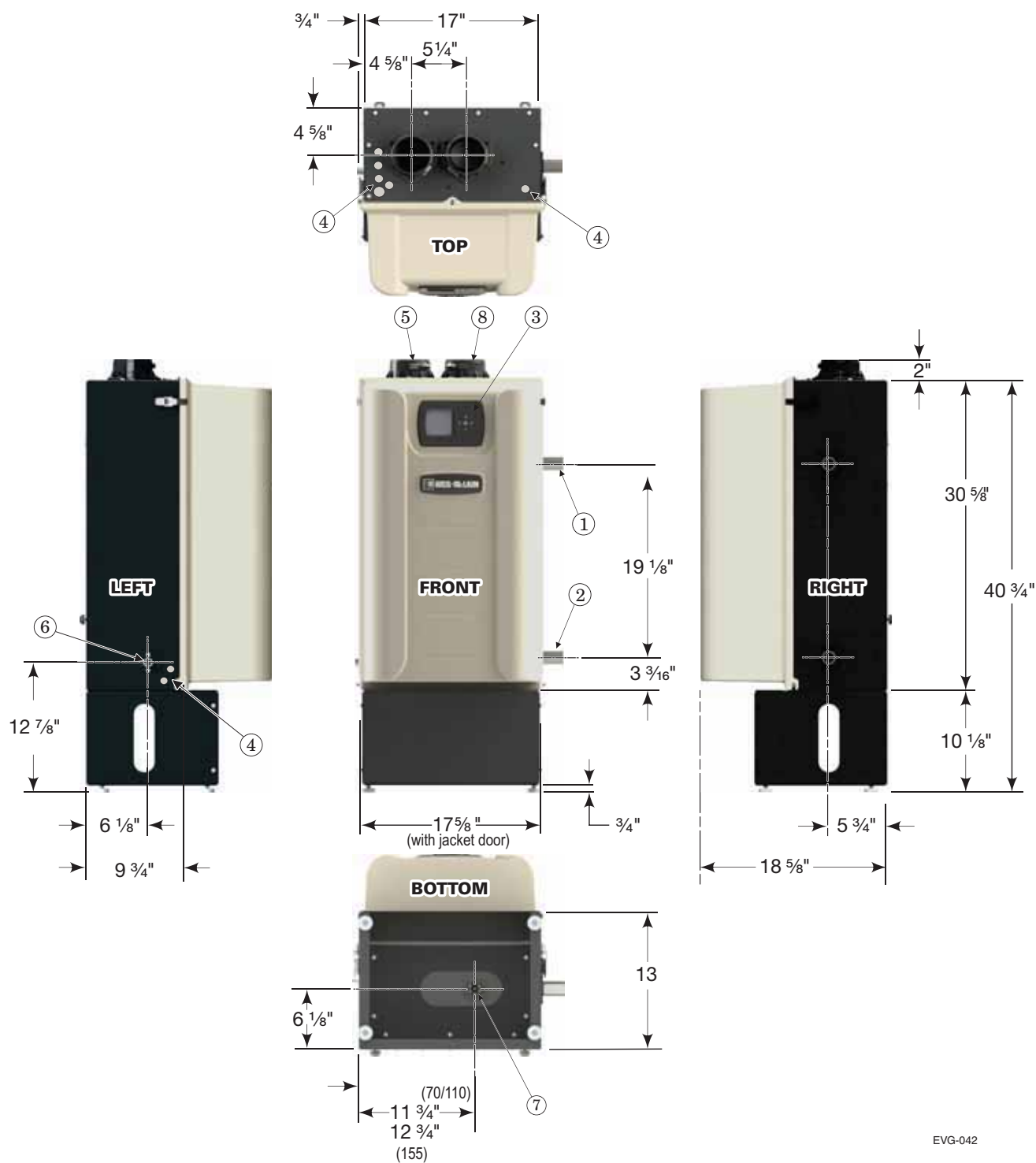


EVG-154



## Dimensions

**Figure 120** Dimensional data — **Evergreen® 70/110/155** (all dimensions in inches)

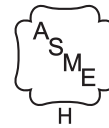


EVG-042



# Ratings — Evergreen® boilers

Figure 121 Ratings and engineering data — Evergreen® 70/110/155



Boiler Model EVG	CSA Input	CSA Output / DOE Heating Capacity	Net AHRI Water Rating	DOE Seasonal Efficiency	Boiler Water Content	Vent/ Comb. Air Connection Diameter	% Input derate vs vent length (Values shown are at MAX vent/air pipe length — See Note 6) Direct Vent Venting ONLY			
							Natural gas		Propane	
							2" Vent/air piping	3" Vent/air piping	2" Vent/air piping	3" Vent/air piping
70	70,000	65,000	57	95.2	2.54	3" PVC	12 %	5 %	12 %	5 %
110	110,000	101,000	88	95.0	2.54	3" PVC	N/A	5 %	N/A	5 %
155	155,000	143,000	124	95.1	3.22	3" PVC	N/A	5 %	N/A	5 %

## Notes

- As an Energy Star Partner, Weil-McLain has determined that Evergreen® 70, 110 and 155 boilers meet the Energy Star guidelines for energy efficiency. NOTE: Adjusting boiler firing rate will affect AFUE rating.
- Based on standard test procedures prescribed by the United States Department of Energy. Ratings also referred to as CSA Output. NOTE that only DOE Heating Capacity and AFUE are certified by AHRI. AFUE is also known as Annual Fuel Utilization Efficiency or Seasonal Efficiency.
- Net AHRI 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 pickup. Ratings are based on a piping and pickup allowance of 1.15. An additional allowance should be made for unusual piping and pickup loads.
- Evergreen® boilers must be direct-vented. Evergreen® boilers require special venting, consistent with Category IV boiler. Use only the vent materials and methods specified in this manual. Evergreen® 70 vent/air pipes can be either 2" or 3". Evergreen® 110 or 155 vent/air pipes must be 3".
- Ratings shown are for sea level applications only. For altitudes from sea level to 5,500 feet above sea level, the Evergreen® boiler requires no modifications and automatically derates itself by approximately 4% per 1000 feet above sea level.
- All of the boilers will automatically de-rate as vent/air pipe length increases, due to the pressure loss through the piping. For vent/air pipe lengths less than the maximum, the derate equals the value above (% Input derate vs. vent length) times vent length ÷ 100.

THE OUTDOOR SENSOR SUPPLIED WITH THE BOILER MUST BE INSTALLED UNLESS EXEMPTED BELOW:

## IMPORTANT

In accordance with **Section 303 of the 2007 Energy Act**, this boiler is equipped with a feature that saves energy by reducing the boiler water temperature as the heating load decreases. This feature is equipped with an override which is provided primarily to permit the use of an external energy management system that serves the same function.

**THIS OVERRIDE MUST NOT BE USED UNLESS AT LEAST ONE OF THE FOLLOWING CONDITIONS IS TRUE:**

- An external energy management system is installed that reduces the boiler water temperature as the heating load decreases.
- This boiler is not used for any space heating.
- This boiler is part of a modular or multiple boiler system having a total input of 300,000 BTU/hr or greater.
- This boiler is equipped with a tankless coil (not applicable to Evergreen®).



# Ratings — Multiple Evergreen® boilers

**Figure 122** Ratings and engineering data — multiple Evergreen® boilers

Boilers in system Model EVG			Total Input	Output / Heating capacity	Boiler H.P.	Net water ratings	Manifolded combustion air duct size
			Input, MBH	Output, MBH	-	MBH	Square inches
<b>70</b>	<b>110</b>	<b>155</b>	-	Note 1	-	Note 2	
2			140	130	3.9	114	70
	2		220	202	6.0	176	110
		2	310	286	8.5	248	155
3			210	195	5.8	171	105
	3		330	303	9.1	264	165
		3	465	429	12.8	372	233
4			280	260	7.8	228	140
	4		440	404	12.1	352	220
		4	620	572	17.1	496	310
5			350	325	9.7	285	175
	5		550	505	15.1	440	275
		5	775	715	21.4	620	388
6			420	390	11.7	342	210
	6		660	606	18.1	528	330
		6	930	858	25.6	744	465
7			490	455	13.6	399	245
	7		770	707	21.1	616	385
		7	1085	1001	29.9	868	543
8			560	520	15.5	456	280
	8		880	808	24.1	704	440
		8	1240	1144	34.2	992	620

Notes	
<b>1</b>	Based on standard test procedures outlined by DOE for individual boilers.
<b>2</b>	Net AHRI ratings are based on piping and pickup allowance of 1.15. Consult Weil-McLain Technical Services for other allowances.
<b>3</b>	Total amp requirement includes up to four circulators, not exceeding 2.2 amps per circulator.
<b>4</b>	Operating weight is the total weight of the boiler, including water.
<b>5</b>	<p>EVG 70 vent/air pipes can be either 2" or 3" pipe.</p> <p>EVG 110 and 155 vent/air pipes must be 3".</p> <p>All of the boilers will automatically de-rate as vent/air pipe length increases, due to the pressure loss through the piping. See Figure 123, page 139 for details.</p> <p>All EVG installations require a separate vent pipe and termination for each boiler. <b>Vent piping cannot be manifolded.</b> Install and terminate vents as described in vent/air installation instructions in this manual.</p> <p>Combustion air piping can be individually piped or manifolded. See the Advanced Manual for manifolded air piping.</p>

Boiler Model	Shipping weight	Operating weight	Water content	Water flow rate per boiler		Vent/air pipe size: (Provide a separate vent for each boiler)	Electrical service required
EVG	Pounds per boiler	Pounds per boiler	Gallons per boiler	GPM @ 20°F rise	GPM @ 40°F rise		Amps per boiler
		Note 4				Note 5	Note 3
<b>70</b>	125	112	2.54	6.5	3.3	2" or 3"	15.0
<b>110</b>	120	107	2.54	10.0	5.0	3"	15.0
<b>155</b>	142	129	3.22	14.3	7.2	3"	15.0



# Installation and Service Certificate

Boiler Data		
Boiler Model / Series Evergreen _____ / Series _____		Date installed _____
CP Number _____	FUEL: Natural _____ LP _____	Btu Input _____
<b>CERTIFIED THAT:</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Installation instructions have been followed.</li> <li><input type="checkbox"/> Check-out sequence has been performed.</li> <li><input type="checkbox"/> Information on next two pages is certified to be correct.</li> <li><input type="checkbox"/> Information received and left with owner/maintenance person.</li> </ul>		
Installer _____ _____ <div style="display: flex; justify-content: space-between;"> <span>(Company) (Address)</span> <span>(Phone) (Installer's Signature)</span> </div>		



# Installation and Gas Boiler Data Collection Sheet

Boiler Model / Series EVG _____ / Series _____		Date Installed: _____	
CP Number: _____	Fuel Type: Natural___ LP___	BTU Input: _____	
Flame signal on control display at HIGH fire: _____		Flame signal on control display at LOW fire: _____	
Was venturi changed? YES___ NO___	Was gas valve throttle adjusted? YES___ NO___	Was gas valve offset adjusted? YES___ NO___	
Boiler Settings		Network Settings	
Boiler Model: EVG _____		Boiler Address: _____	
Control Type: _____		System Type: _____	
Altitude: _____ Feet		Net Max On Time: _____ Min	
LP Gas: YES___ NO___		Net Min On Time: _____ Min	
ODT Sensor Exempt: YES___ NO___		Max Rate On Net: _____ %	
Manual Reset High Limit Temp: _____ °F		Min Rate On Net: _____ %	
WWSD Temp: _____ °F		Rotation & Sequence	
Adjust Outdoor: _____ °F		Sequence Type: _____	
Circulator Exercising		Base Rate High: _____ %	
Circulator 1: ON___ OFF___		Base Rate Low: _____ %	
Circulator 2: ON___ OFF___		Boiler Rotation Type: _____	
Circulator 3: ON___ OFF___		Rotate Frequency: _____ Days	
Boiler Circ: ON___ OFF___		Force Lead Rotation: YES or NO	
Freeze Protection		Modbus Settings	
Circulator 1: ON___ OFF___		Enable: YES___ NO___	
Circulator 2: ON___ OFF___		Address: _____	
Circulator 3: ON___ OFF___		Parity Bit: _____	
Boiler Circ: ON___ OFF___		Baud Rate: _____ bps	
Assign Inputs		Stop Bit: YES___ NO___	
Input 1: Priority___ Aux___ OFF___		Max BLR Temp: _____ °F	
Source: TT1___ OR 0-10V___		Boiler On Diff: _____ °F	
Input 2: Priority___ Aux___ OFF___		Boiler Off Diff: _____ °F	
Input 3: Priority___ Aux___ OFF___		Max On Time: _____ Mins	
		Run Boiler Pump: YES___ NO___	
		Run Aux Pump/Output: YES___ NO___	
		Pre Pump: _____ Sec	
		Post Pump: _____ Sec	
		Max Rate: _____ %	
		Min Rate: _____ %	
		Max System BTUs: _____ MBUTs	
		Min Boilers On: _____	
		Additional Heat Demand: 1st___ 2nd___ OFF___	
		Response Time: _____ Mins	





# Installation and Gas Boiler Data Collection Sheet

CO2 @: High Fire _____ % Low Fire _____ %					
CO@: High Fire _____ ppm Low Fire _____ ppm					
Natural Gas / LP input rate measured: HIGH _____ CFH / LOW _____ CFH					
Priority 2 Settings		Priority 3 Settings		Priority 4 Settings (Multi Blr Sys Only)	
System Type:	_____	System Type:	_____	System Type:	_____
Target Mod Sensor:	_____	Target Mod Sensor:	_____	Target Mod Sensor:	_____
Target Adjust:	_____	Target Adjust:	_____	Target Adjust:	_____
Supply Max:	_____ °F	Supply Max:	_____ °F	Supply Max:	_____ °F
Supply Min:	_____ °F	Supply Min:	_____ °F	Supply Min:	_____ °F
OD Reset Max:	_____ °F	OD Reset Max:	_____ °F	OD Reset Max:	_____ °F
OD Reset Min:	_____ °F	OD Reset Min:	_____ °F	OD Reset Min:	_____ °F
Volts For Max:	_____ V	Volts For Max:	_____ V	Volts For Max:	_____ V
Volts For Min:	_____ V	Volts For Min:	_____ V	Volts For Min:	_____ V
Boost Time:	_____ Mins	Boost Time:	_____ Mins	Boost Time:	_____ Mins
System Off Diff:	_____ °F	System Off Diff:	_____ °F	System Off Diff:	_____ °F
System On Diff:	_____ °F	System On Diff:	_____ °F	System On Diff:	_____ °F
Add BLR Diff:	_____ °F	Add BLR Diff:	_____ °F	Add BLR Diff:	_____ °F
Drop BLR Diff:	_____ °F	Drop BLR Diff:	_____ °F	Drop BLR Diff:	_____ °F
Mod Delay Time:	_____ Mins	Mod Delay Time:	_____ Mins	Mod Delay Time:	_____ Mins
Stabilization Time:	_____ Mins	Stabilization Time:	_____ Mins	Stabilization Time:	_____ Mins
Add Delay Time:	_____ Sec	Add Delay Time:	_____ Sec	Add Delay Time:	_____ Sec
Drop Delay Time:	_____ Sec	Drop Delay Time:	_____ Sec	Drop Delay Time:	_____ Sec
Max BLR Temp:	_____ °F	Max BLR Temp:	_____ °F	Max BLR Temp:	_____ °F
Boiler On Diff:	_____ °F	Boiler On Diff:	_____ °F	Boiler On Diff:	_____ °F
Boiler Off Diff:	_____ °F	Boiler Off Diff:	_____ °F	Boiler Off Diff:	_____ °F
Max On Time:	_____ Mins	Max On Time:	_____ Mins	Min On Time:	_____ Mins
Min On Time:	_____ Mins	Run Boiler Pump:	YES___ NO___	Run Boiler Pump:	YES___ NO___
Run Boiler Pump:	YES___ NO___	Run Aux Pump/Output:	YES___ NO___	Run Aux Pump/Output:	YES___ NO___
Run Aux Pump/Output:	YES___ NO___	Pre Pump:	_____ Sec	Pre Pump:	_____ Sec
Pre Pump:	_____ Sec	Post Pump:	_____ Sec	Post Pump:	_____ Sec
Post Pump:	_____ Sec	Max Rate:	_____ %	Max Rate:	_____ %
Max Rate:	_____ %	Min Rate:	_____ %	Min Rate:	_____ %
Min Rate:	_____ %	Max System BTUs:	_____ MBUTs	Max System BTUs:	_____ MBUTs
Max System BTUs:	_____ MBUTs	Min Boilers On:	_____	Min Boilers On:	_____
Min Boilers On:	_____	Additional Heat Demand:	1st___ 2nd___ OFF___	Additional Heat Demand:	1st___ 2nd___ OFF___
Additional Heat Demand:	1st___ 2nd___ OFF___	Response Time:	_____ Mins	Response Time:	_____ Mins
Response Time:	_____ Mins				



# Evergreen® Gas Boiler Data Collection Sheet

<b>Customer Info:</b>		<b>Maintenance Info:</b>	
Contact:		Name:	
Contractor:		Phone:	
Job name:		Model:	
City, state:		CP#:	
Distributor:		Installed:	

<b>System Components:</b>		<b>Boiler/System Piping Details (Please Sketch)</b>	
Near boiler pipe size:			
DHW tank (yes/no):			
DHW direct/system:			
DHW model:			
DHW pipe size:			
DHW circulator model:			
Is there air in system?:			
<b>Diagnostic Errors:</b>			
Control fault:			
Ignition retries:			
Manual reset CNT:			
Auto reset CNT:			
<b>Software Versions:</b>			
Display:			
Main micro:			
Second micro:			

<b>Lockout History #1</b>		<b>Lockout History #2</b>		<b>Lockout History #3</b>	
Fault Name:		Fault Name:		Fault Name:	
Fault Type:		Fault Type:		Fault Type:	
Fault Time:		Fault Time:		Fault Time:	
Fault Date:		Fault Date:		Fault Date:	
Status:		Status:		Status:	
<b>Temperatures:</b>		<b>Temperatures:</b>		<b>Temperatures:</b>	
Status:		Status:		Status:	
Boiler out 1:		Boiler out 1:		Boiler out 1:	
Boiler out 2:		Boiler out 2:		Boiler out 2:	
Boiler in:		Boiler in:		Boiler in:	
Flue 1:		Flue 1:		Flue 1:	
Flue 2:		Flue 2:		Flue 2:	
Outdoor:		Outdoor:		Outdoor:	
<b>Inputs:</b>		<b>Inputs:</b>		<b>Inputs:</b>	
Status:		Status:		Status:	
Input 1:		Input 1:		Input 1:	
Input 2:		Input 2:		Input 2:	
Input 3:		Input 3:		Input 3:	
Manual limit:		Manual limit:		Manual limit:	
Auto limit:		Auto limit:		Auto limit:	
Low WTR Cutoff:		Low WTR Cutoff:		Low WTR Cutoff:	
Blower Speed:		Blower Speed:		Blower Speed:	
Flame signal:		Flame signal:		Flame signal:	
<b>Outputs:</b>		<b>Outputs:</b>		<b>Outputs:</b>	
Status:		Status:		Status:	
Gas valve:		Gas valve:		Gas valve:	
Output 1:		Output 1:		Output 1:	
Output 2:		Output 2:		Output 2:	
Output 3:		Output 3:		Output 3:	
Blower signal:		Blower signal:		Blower signal:	