Models
CHB/CCB

APPLICATION GUIDE

WALL MOUNTED
GAS BOILER

This manual has been prepared for use with the appropriate Installation, Operation and Maintenance Manual.
For use with CCB/CHB Boilers ONLY.
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1. General
Boiler installation shall be completed by qualified agency. See Installation, Operation & Maintenance Manual for additional information.

**WARNING**
Fire, explosion, asphyxiation and electrical shock hazard. Improper installation could result in death or serious injury. Read this manual and understand all requirements before beginning installation.

2. Become familiar with symbols identifying potential hazards.

This is the safety alert symbol. Symbol alerts you to potential personal injury hazards. Obey all safety messages following this symbol to avoid possible injury or death.

**DANGER**
Indicates a hazardous situation which, if not avoided, WILL result in death or serious injury.

**WARNING**
Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

**CAUTION**
Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

**NOTICE**
Used to address practices not related to personal injury.

3. Installation shall conform to requirements of authority having jurisdiction or in absence of such requirements:
- United States
  - National Electrical Code, NFPA 70.
- Canada
  - Natural Gas and Propane Installation Code, CAN/CSA B149.1.
  - Canadian Electrical Code, Part I, Safety Standard for Electrical Installations, CSA C22.1

Additional manual reset low water cutoff may be required.

5. Requirements for Commonwealth of Massachusetts:
Boiler installation must conform to Commonwealth of Massachusetts code 248 CMR which includes but is not limited to:
- Installation by licensed plumber or gas fitter.
Manufacturer recommends installation of Pressure Relief Valve to Manifold before connecting manifold to boiler.
CHB - HYDRONIC PIPING

NOTICE

Illustrations are meant to show system piping concept only. Installer is responsible for all equipment and detailing required by authority having jurisdiction.

NOTICE

Arrange piping to prevent water dripping onto boiler.

Piping installation, materials, and joining methods shall conform to requirements of authority having jurisdiction or in absence of such requirements:
- USA - National Fuel Gas Code, ANSI Z223.1/NFPA 54
- Canada - Natural Gas and Propane Installation Code, CAN/CSA B149.1

Manufacturer requires all domestic hot water (DHW) installations use an anti-scald valve. Local codes may require additional equipment (expansion tank, relief valves, etc.) select and size equipment to suit installation and meet code requirements.

Quick Reference Chart - CHB Boiler

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CHB - Wiring Description

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FIGURE 1 - CHB - Single Boiler Primary/Secondary Series Loop Zoned System WITH ZONE VALVES and Optional Indirect Tank

CHB - HYDRONIC PIPING

CH/System Pump

Cold Water Supply

BOILER

Optional Indirect DHW Tank

Cold Water Supply

*Hot Water Supply (Tempered)

T & P Relief Valve to Drain

Cold Water Supply

12" (305mm) Maximum Separation

Limit combined supply and return pipe lengths to maximum total linear length of 20 ft. (6.1 m) between boiler and closely spaced tees, when minimum 1" NPT pipe size is used. Linear length may be increased if supply and return pipe size is increased to limit pressure drop

* Manufacturer requires all domestic hot water (DHW) installations use an anti-scald valve. Local codes may require additional equipment (expansion tank, relief valves, etc.) Select and size equipment to suit installation and meet code requirements.

For indirect tank applications using boiler’s on-board pump refer to Applications Tables for flow rate and available pump head. Consult indirect tank manufacturer for indirect tank performance.
FIGURE 2 - CHB - Single Boiler Primary/Secondary Series Loop Zoned WITH ZONE PUMPS and Optional Indirect Tank

Note

1. 12" (305mm) Maximum Separation

Note

2. Limit combined supply and return pipe lengths to maximum total linear length of 20 ft. (6.1 m) between boiler and closely spaced tees, when minimum 1" NPT pipe size is used. Linear length may be increased if supply and return pipe size is increased to limit pressure drop.

Note

* Manufacturer requires all domestic hot water (DHW) installations use an anti-scald valve. Local codes may require additional equipment (expansion tank, relief valves, etc.) Select and size equipment to suit installation and meet code requirements.

For indirect tank applications using boiler’s on-board pump refer to Applications Tables for flow rate and available pump head. Consult indirect tank manufacturer for indirect tank performance.
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Limit combined supply and return pipe lengths to maximum total linear length of 20 ft. (6.1 m) between boiler and closely spaced tees, when minimum 1” NPT pipe size is used. Linear length may be increased if supply and return pipe size is increased to limit pressure drop.

* Hot Water Supply

Optional Indirect DHW Tank

Tank Sensor or Thermostat

T & P Relief Valve to Drain

Cold Water Supply

CH System Pump

Note 1
12” (305mm) Maximum Separation

Note 2

Cold Water Supply

BOILER

Cold Water Supply

* Manufacturer requires all domestic hot water (DHW) installations use an anti-scald valve. Local codes may require additional equipment (expansion tank, relief valves, etc.) Select and size equipment to suit installation and meet code requirements.
CHB Boiler Wiring Diagrams
All field wiring shall conform to the authority having jurisdiction or, in the absence of such requirements to:

**USA**: National Electrical Code, ANSI/NFPA 70,

A. CHB Single Zone Indirect Storage Tank is NOT used:

- Terminals 7 and 8 (Key 155) on CHB terminal strip, shall have two (2) factory supplied resistors wired in parallel.
- Single room thermostat (Key 72) control internal pump and boiler operation. Remove jumper when connecting thermostat or zone equipment.
- See Wiring Figure 4.

B. When System Supply Pump is needed:

- External supply system pump connection terminals (Key 307) are being added to the rear of the control box and will be limited to an additional 1 Amp pump operation. Internal control fusing will prevent higher pump operation.
- If control IS NOT equipped with these terminals, or larger pump capacity is required. Install an external pump/relay controller circuit. See Instructions and wiring diagram for adding external pump (615000137) provided with this manual.
- If control IS equipped with (Key 307) contacts and larger than 1 Amp circulating pump is required, use an isolation relay 120 VAC and separate 120 VAC power supply. See wiring Figure 6. Manufacture recommends use of isolation relay (240011284) or equivalent.

C. Use of Indirect Storage Tank (DHW)/Single Zone:

Terminals 7 and 8 (#155 in Key) resistors are removed. Attach Indirect Tank Sensor element to terminals #7 and #8 (Key 155) on CHB terminal strip. See Figure 5.

**NOTICE**

Important:
- Before connecting the room thermostat, remove jumper on terminal block. (Key 72)
- Before connecting optional Indirect Tank Sensor, remove two (2) resistors. (Key 155)
- Before connecting Low Water Cutoff remove jumper on terminal block. (Key 370)

---

**Wiring Legend CHB/CCB**

- Pump - Zone
- Thermostat
- Indirect Tank (DHW Sensor)
- Resistor
- Valve - Zone
- DHW Flow Switch (CCB only)

---

N.O.
FIGURE 4 - CHB Boiler with Optional Supply System Pump Single Zone - No Indirect Tank (DHW)

CHB Boiler

Low Voltage Room Thermostat

Remove Jumper if used

KEY 72

KEY 370

Key 155

10K

1.8K

Resistors (Factory wired)

System Supply Pump Connection

POWER SUPPLY Cord

120 VAC

FIGURE 5 - CHB Boiler Single Zone with DHW Indirect Tank and Sensor

CHB Boiler

Low Voltage Room Thermostat

Remove Jumper if used

Key 370

Key 155

Remove two (2) factory installed Resistors when using Indirect Tank Sensor on Key 155.
[Use kit 550002958]
FIGURE 6 - Isolation Relay - Pump Circuit Using System Pump Connections

If larger than 1 amp system supply pump is required, use an isolation relay 120 VAC and separate 120 VAC power supply. Manufacturer requires use of isolation relay (240011284) or equivalent.

Wire nut unused wiring; Relay coil (24 V) - WHT/BLU; Relay contact (N.C.) - Blue, to prevent shorting.
D. Multi-Zoned Valve System:

1. If only Central Heating is required on multi-zone valve application - use factory supplied resistors on Key 155 terminal strip:
   • Boiler call for heat contacts (key 72) are wired to Argo Zone control X-X terminals.
   • Zone thermostats and valves are wired to Argo Control.
   • See wiring Figure 7.

2. If DHW tank is applied to Multi-Zone Valve application - use Indirect Tank Sensor:
   • Attach sensor to boiler control (Key 155) terminals 7 & 8. Boiler control will set priority for DHW operation.
   • Boiler call for heat contacts (Key 72) are wired to Argo Zone control X-X Terminals.
   • Zone thermostats and valves are wired to Argo Control.
   • See wiring Figure 8.

**NOTICE**

Set Argo Priority switch to OFF position.

**NOTICE**

Important:
• Before connecting to Key 72 terminals, remove jumper on terminal block. (Key 72)
• Before connecting optional Indirect Tank Sensor, remove two (2) resistors. (Key 155)
• Before connecting Low Water Cutoff remove jumper on terminal block. (Key 370)
FIGURE 7 - CHB - Boiler Zoned System with Multiple ZONE VALVES WITHOUT Indirect Tank

- Low Volt Room Thermostats
- CHB BOILER
- Argo AZ-4CP
- System Pump Connection
- Set Priority Switch "OFF" For Central Heating Only
- Remove Jumper if used
- Factory Supplied Resistors
- POWER SUPPLY CORD 120V/60HZ
FIGURE 8 - CHB - Boiler Zoned System with Multiple ZONE VALVES WITH Indirect Tank

Remove two (2) factory installed resistors when using Indirect Tank Sensor on Key 155. [Use kit 550002958]
E. Multi-Zone Pump System Using Argo ARM Controller:

1 - If Indirect Storage Tank **IS NOT** applied to a multi-zoned piping system:
   - Boiler thermostat contacts (Key 72) are wired to Argo ARM Zone Pump Control Terminals (X-X)
   - Zone thermostats and zone pumps are wired to ARGO Controller
   - Priority Switch OFF
   - CH Heating only
   - See Wiring Figure 9

2 - If Indirect Storage Tank **IS** applied to multi-zoned pump piping assembly:
   A. Tank sensing element is applied to boiler terminal strip 7 & 8 (Key 155).
      - Set Argo priority switch “OFF” if Zone 1 Priority **IS NOT** used.
        Set Argo priority switch “ON” if Zone 1 Priority **IS** used.
      - See wiring Figure 10
      - DHW circuit is controlled by boiler control and is Priority heat demand.
   B. Storage tank mechanical thermostat is wired across zone 1 Priority contacts of Argo Control (Tw/Tr).
      - Apply Resistor Kit (550003082). Resistor Kit includes resistor wire harness and isolation relay (24 Vac).
      - Set Argo priority switch ON - DO NOT operate in “OFF” position.
      - See wiring Figure 11
      - DHW circuit is Priority heat demand and is controlled by Argo ARM Zone Control.

**NOTICE**

Important:
- Before connecting to Key 72 Terminals, remove jumper on terminal block.
- Before connecting Low Water Cutoff remove jumper on terminal block. (Key 370)
FIGURE 9 - CHB Boiler WITH MULTIPLE ZONE PUMPS WITHOUT Indirect Tank (DHW)

- Low Volt Room Thermostats
- Transformer 24VAC
- Argo ARM Zone Pump Control
- CHB BOILER
- Set Priority Switch “OFF”
- CH Heating Only
- High Voltage Power Supply 120V/60Hz
- Remove Jumper if used
- System Pump Connection
- CH System Pump (If used)
- POWER SUPPLY CORD 120V/60HZ
FIGURE 10 - CHB Boiler WITH MULTIPLE ZONE PUMPS WITH Indirect Tank (DHW)

Low Volt Room Thermostats

Set Priority Switch "OFF"

Argo ARM Zone Pump Control

CH System Pump (If used)
WITH DHW INDIRECT TANK

Power Supply CORD
120V/60Hz

System Pump Connection
L1
GND
NEU
120 VAC

CHB BOILER

Remove Jumper if used
INDIRECT TANK DHW SENSOR

120 V/60Hz

High Voltage Power Supply

Zone Pumps

Transformer 24VAC

FIGURE 10 - CHB Boiler WITH MULTIPLE ZONE PUMPS WITH Indirect Tank (DHW)
**NOTICE**

Important:
- Before connecting to Argo Control remove jumper on terminal block. (Key 72)
- Before connecting Low Water Cutoff remove jumper on terminal block. (Key 370)

**FIGURE 11 - CHB Boiler WITH SECONDARY ZONE PUMPS AND DHW THERMOSTAT, WITH DHW RESISTOR KIT**

**NOTE: ZONE PUMPS WILL SHUTOFF DURING DHW PRIORITY W/ PRIORITY SWITCH ON**

*Isolation Relay

**Argo ARM Zone Pump Control**

*SUPPLIED IN RESISTOR KIT 550003082

Optional: Connect indirect tank pump to Priority Zone 1 terminals (if used).

**CHB BOILER**

*RESISTOR WIRE HARNESS

---

**KEY 72**

**KEY 370**

**KEY 155**

**KEY 307**

**KEY 107**

**GND**

**NEU**

**L1**

**120 VAC**

**POWER SUPPLY CORD 120V/60HZ**
Arrange piping to prevent water dripping onto boiler.

A. Piping installation, materials, and joining methods shall conform to requirements of authority having jurisdiction or in absence of such requirements:
   - USA - National Fuel Gas Code, ANSI Z223.1/NFPA 54
   - Canada - Natural Gas and Propane Installation Code, CAN/CSA B149.1

B. Manufacturer requires all domestic hot water (DHW) installations use an anti-scald valve. Local codes may require additional equipment (expansion tank, relief valves, etc.) select and size equipment to suit installation and meet code requirements.

Illustrations are meant to show system piping concept only. Installer is responsible for all equipment and detailing required by authority having jurisdiction.

Quick Reference Chart - CCB Boiler

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WARNING

Burn and scald hazard! Manufacturer requires installation of field supplied anti-scald valve. Failure to follow these instructions could result in death or serious injury.

CCB-150 DHW ANTI-SCALD PIPING

Piping Legend

- Boiler
- Cold Water Supply
- DHW Outlet
- DHW Inlet
- CH Supply
- CH Return
- Hot Water Supply (Tempered)

Legend:
- Circulator
- Zone Valve
- Siphon Valve
- Air Separator
- Indirect DHW Tank
- Expansion Tank
- Flat Plate Heat Exchanger
- Tempering Valve
Note

Limit combined supply and return pipe lengths to maximum total linear length of 20 ft. (6.1 m) between boiler and closely spaced tees, when minimum 1” NPT pipe size is used. Linear length may be increased if supply and return pipe size is increased to limit pressure drop.

Manufacturer requires all domestic hot water (DHW) installations use an anti-scald valve. Local codes may require additional equipment (expansion tank, relief valves, etc.). Select and size equipment to suit installation and meet code requirements.

FIGURE 12 - CCB Single Boiler Primary/Secondary Series Loop Zoned System WITH ZONE VALVES

CCB - HYDRONIC PIPING

CH/System Pump

Cold Water Supply

DHW - Cold Inlet

DHW - Hot Outlet [See page 19]
Note 1. 12" (305mm) Maximum Separation

Note 2. Limit combined supply and return pipe lengths to maximum total linear length of 20 ft. (6.1 m) between boiler and closely spaced tees, when minimum 1" NPT pipe size is used. Linear length may be increased if supply and return pipe size is increased to limit pressure drop.

* Manufacturer requires all domestic hot water (DHW) installations use an anti-scald valve. Local codes may require additional equipment (expansion tank, relief valves, etc.) Select and size equipment to suit installation and meet code requirements.
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* Manufacturer requires all domestic hot water (DHW) installations use an anti-scald valve. Local codes may require additional equipment (expansion tank, relief valves, etc.) Select and size equipment to suit installation and meet code requirements.
1. CCB Boiler Wiring Diagrams
All field wiring shall conform to the authority having jurisdiction or, in the absence of such requirements to:

**USA**: National Electrical Code, ANSI/NFPA 70,

2. CCB/Single Zone
Single room thermostat (Key 72) will control the internal pump and boiler operation. Remove jumper when connecting the thermostat or zone equipment.

See Figure 15.

3. CCB When System Supply Pump is Needed:
- External system supply pump connection terminals (Key 307) are being added to the rear of the control box and will be limited to an additional 1 AMP pump operation. Internal fusing will prevent higher pump operation. If a larger system pump is required use an isolation relay. See Wiring Figure 6.
- If the Controller is not equipped with these terminals, or a larger pump capacity is required. You will need to install an external pump/relay controller circuit. See Instructions And Wiring Diagram For Adding External Pump (615000137) provided with this manual.

**NOTICE**
Important:
- Before connecting to Key 72 Terminals remove jumper on terminal block.
- Before connecting Low Water Cutoff, remove jumper on terminal block. (Key 370)

**FIGURE 15 - CCB Boiler with Optional Supply System Pump**

---

**Wiring Legend CHB/CCB**

- **Pump - Zone**
- **Thermostat**
- **Indirect Tank (DHW Sensor)**
  (CHB ONLY)
- **Resistor**
- **Valve - Zone**
- **DHW Flow Switch (CCB only)**
- **N.O.**

---

**SYSTEM PUMP CONNECTION**

- L1 (Hot)
- GND
- NEU

**120 VAC**

---

**POWER SUPPLY CORD**

- 120V/60HZ
4. CCB - Using Multi-Zone Valve System

Boiler call for heat contacts (Key 72) are wired to Argo Zone Control (x-x) terminals. Zone thermostats and zone valves are to be wired to the Argo Zone Controller. See Figure 16.

Set Argo Priority Switch to OFF position. This disables priority operation and all zone valves will operate independently. Refer to Argo Controller instructions for switch setting and operation information.

**NOTICE**

**Important:**
- Before connecting to Key 72 Terminals, remove jumper on terminal block. (Key 72)
- Before connecting Low Water Cutoff, remove jumper on terminal block. (Key 370)

**FIGURE 16 - CCB Boiler with Multiple Zone Valves**
5. CCB Using Multi-Zone Pump System

Wiring of Argo Control may include Priority Zone Control.

Boiler thermostat contacts (Key 72) are wired to Argo ARM Zone Pump Control terminals (x-x). Use Argo ARM Zone Pump Controller and wire as shown in Figure 17 or 18.

1. When priority zone control is **not** desired. Wire zone pumps and thermostats as shown in Figure 17. Set Priority to OFF. Secondary zone pumps **Will Not** shutoff during DHW call for heat.

2. When priority zone control **is** desired, wire zone pumps and thermostats as shown in Figure 18. Wire priority flow controller (not supplied) across Zone 1 (Priority) thermostat connections. Zone 1 pump terminals are not used, unless a Priority Pump if being applied. Set the Argo Priority switch to ON, secondary pumps **Will** shutoff during DHW call for heat.

**NOTICE**

Important:
- Before connecting to room Key 72 Terminals, remove jumper on terminal block.
- Before connecting Low Water Cutoff, remove jumper on terminal block. (Key 370)
FIGURE 17 - CCB Boiler with Multiple Zone Pumps WITHOUT DHW Interface

LOW VOLTAGE ROOM THERMOSTATS

Argo ARM Zone Pump Control

SET PRIORITY SWITCH TO “OFF”

CCB BOILER
SECONDARY PUMPS WILL NOT SHUTOFF DURING DHW PRIORITY WHEN ARGO PRIORITY SWITCH IS “OFF”

NOTICE

Important:
• Before connecting to Argo Control remove jumper on terminal block. (Key 72)
• Before connecting Low Water Cutoff remove jumper on terminal block. (Key 370)
**FIGURE 18 - CCB Boiler with Multiple Zone Pumps WITH DHW Interface**

**NOTICE**

Important:
- Before connecting to Argo Control remove jumper on terminal block. (Key 72)
- Before connecting Low Water Cutoff remove jumper on terminal block. (Key 370)

---

**CCB BOILER**

SECONDARY PUMPS WILL SHUTOFF DURING DHW PRIORITY WHEN ARGO PRIORITY SWITCH IS ON.

---

**CCB BOILER - WIRING DIAGRAMS**
## APPLICATION TABLES FOR: CHB - INDIRECT HOT WATER TANK

### 3/4" PIPE

<table>
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<tr>
<th>EQUIV. PIPE LENGTH (FEET)</th>
<th>INTERNAL PUMP (GPM)</th>
<th>PRESS. HEAD FROM BOILER (FT - H2O)</th>
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</thead>
<tbody>
<tr>
<td>10 FT.</td>
<td>7.4</td>
<td>3.0</td>
</tr>
<tr>
<td>30 FT.</td>
<td>6.9</td>
<td>5.2</td>
</tr>
<tr>
<td>50 FT.</td>
<td>6.5</td>
<td>6.8</td>
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### 1" PIPE

<table>
<thead>
<tr>
<th>EQUIV. PIPE LENGTH (FEET)</th>
<th>INTERNAL PUMP (GPM)</th>
<th>PRESS. HEAD FROM BOILER (FT - H2O)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 FT.</td>
<td>7.5</td>
<td>2.5</td>
</tr>
<tr>
<td>50 FT.</td>
<td>7.3</td>
<td>3.6</td>
</tr>
<tr>
<td>100 FT.</td>
<td>6.9</td>
<td>5.2</td>
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### 1- 1/4" PIPE

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<thead>
<tr>
<th>EQUIV. PIPE LENGTH (FEET)</th>
<th>INTERNAL PUMP (GPM)</th>
<th>PRESS. HEAD FROM BOILER (FT - H2O)</th>
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<tr>
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<td>2.6</td>
</tr>
<tr>
<td>100 FT.</td>
<td>7.4</td>
<td>3.0</td>
</tr>
<tr>
<td>200 FT.</td>
<td>7.3</td>
<td>3.5</td>
</tr>
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### CONTINUOUS RATING @ MAXIMUM INPUT (GAL/HR.)

**INDIRECT TANK - H2O30 / H2O40 / H2O40 L / H2O50**

**H2O60 / H2O60 L / H2O80 / H2O115**

<table>
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<th>GPM</th>
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<th>CHB-100 115 °F</th>
<th>CHB-130 140 °F</th>
<th>CHB-130 115 °F</th>
<th>CHB-150 140 °F</th>
<th>CHB-150 115 °F</th>
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<td>156</td>
<td>146</td>
<td>202</td>
<td>151 / 169</td>
<td>209 / 234</td>
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<td>7.3</td>
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<td>197</td>
<td>147 / 164</td>
<td>203 / 228</td>
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<td>141 / 158</td>
<td>195 / 218</td>
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<td>175</td>
<td>131 / 146</td>
<td>181 / 203</td>
</tr>
</tbody>
</table>
### Application Tables for CHB - Indirect Hot Water Tank

#### Table Based on Boiler Flow Rate = 7.5 GPM

<table>
<thead>
<tr>
<th>CHB-100 Boiler (100,000 BTUH Maximum Input Rate)</th>
<th>CHB-130 Boiler (130,000 BTUH Maximum Input Rate)</th>
<th>CHB-150 Boiler (150,000 BTUH Maximum Input Rate)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BOILER OUTPUT (BTUH/HR)</strong></td>
<td><strong>MAX.</strong></td>
<td><strong>BOILER OUTPUT (BTUH/HR)</strong></td>
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<tr>
<td>50,000</td>
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<td>94,107</td>
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<td>173,173</td>
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<td><strong>CONTINUOUS</strong></td>
<td><strong>RATING (GAL/HR)</strong></td>
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<td><strong>1st HOUR RATING</strong></td>
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**NOTES:**
- 160 °F Boiler Supply Water Temperature
- AHRI Rating Conditions - 50 °F Inlet Water
- CHB-100 Boiler (100,000 BTUH Maximum Input Rate)
- CHB-130 Boiler (130,000 BTUH Maximum Input Rate)
- CHB-150 Boiler (150,000 BTUH Maximum Input Rate)
VENTING OPTIONS

TYPE I - VENTING (ACCEPTABLE)

TYPE I- VENTING (ACCEPTABLE)

TYPE I - VENTING (NON-ACCEPTABLE)

TYPE I- VENTING (NON-ACCEPTABLE)
Optional Equipment

1. Outdoor Air Sensor, if used.
   A. See Chart 1 for sensor data. Sensor part number FE013018X0.
   B. Locate outdoor sensor to protect against wind and direct sunlight. Mounting instructions provided with sensor.
   C. Maximum wire length is 100 ft (30m) for 22 ga. wire, or 150 ft (45m) for 18 ga. wire.
   D. Connect wires to OUTDOOR SENSOR terminals. Wires are interchangeable.

2. NTC Sensor for DHW tank, if used.
   A. Recommend part number - FE043005X0
      See Chart 1 for sensor data.

<table>
<thead>
<tr>
<th>°F</th>
<th>R Ω</th>
<th>°F</th>
<th>R Ω</th>
<th>°F</th>
<th>R Ω</th>
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Manufacturer Recommendation

A strainer filtering potable water before entering the boiler is highly recommended to prevent errors and lockouts. The strainer prevents any sedimentation and debris from your water supply piping from entering the boiler. Debris carried from the water supply will clog DHW water flow sensor resulting in error codes and causing boiler to lockout.

Locate the strainer as close to the boiler as possible and place on DHW (domestic hot water) inlet connection located at bottom of the boiler.
Low Water Cut Off - Heating Only and Combi Boilers

These guidelines are supplied when necessary to install an additional Low Water Cut Off (LWCO), for sensing a low water level condition in a boiler, as required by the Authority Having Jurisdiction.

Follow LWCO manufacturer installation instructions for type of LWCO selected in addition to these instructions.

LWCO shall be 120V/60HZ and dry contacts sized for load being connected. Wire LWCO to boiler. See Page 35, LWCO Wiring Diagram, Key 370.

Connect LWCO device to the system ground. Ground in accordance with the requirements of the authority having jurisdiction or, in the absence of such requirements, with the National Electrical Code (NEC) or Canadian Electrical Code CEC.

- Locate LWCO sensing device in the supply piping, above the minimum height of boiler. See page 36, LWCO Piping Diagram.
- Position control in HORIZONTAL piping to assure proper boiler protection (upright or 90° rotation).
- For proper operation, sensing element of the LWCO control shall be positioned in the tee to sense the main water stream. Maintain minimum 1/4” spacing from pipe walls. Element shall NOT contact the rear, or side walls of the tee. See Page 37, LWCO Detail.
- Install an air vent using a tee to avoid nuisance shutdowns.
- Apply small amount of pipe sealant to threaded connections.
- Arrange piping to prevent water dripping onto boiler.
- DO NOT install water shutoff valve between boiler and LWCO sensing device.
NOTICE

*IMPORTANT:
- Before connecting the room thermostat, remove jumper on terminal block. (Key 72)
- Before connecting optional Indirect Tank Sensor, remove two resistors, (Key 155)
- Before connecting the Low Water Cutoff, remove the jumper on terminal block. (Key 370)

Key

16 Modulating fan
32 Heating circulating pump
42 DHW temperature sensor (see kit)
44 Gas valve
47 Modulation Regulator (24V)
72 Room thermostat (field sourced)
81 Ignition/detection electrode
114 Water pressure switch
138 External probe (not fitted)
155 Hot water tank temperature probe (field sourced)
278 Double sensor (Safety + Heating)
297 Air pressure transducer
370 Low Water Cutoff (LWCO) (field sourced)
Piping Diagram - LWCO Location

Low Water Cutoff (LWCO)

Air Vent

Supply

Position LWCO Above Top of Boiler

Safety Relief Valve

* Check Local Codes for Maximum Distance to Floor.

* To Drain

Return

DO NOT PLACE ISOLATION VALVE BEFORE TEE OR LWCO.

Note: Arrange piping to prevent water dripping onto boiler.

Note: Illustrations are meant to show system piping concept only. Installer is responsible for all equipment and detailing required by authority having jurisdiction.

Note: DO NOT PLACE ISOLATION VALVE BEFORE TEE OR LWCO.
Addendum - Instructions

Following Section Includes: Page #(s)

Domestic Hot Water Sensor Kit Instruction (240010745).....................................................39-42
Instructions And Wiring Diagram For Adding External Pump (615000137).................................43-44
Sealed Combustion Kit Instructions (37711601) - For Kit #5612601..............................................45
Control Board Replacement Kit Instructions (615000134).......................................................46-47
Retaining Clip Removal Caution (615000136)..............................................................................48-49
Altitude Affects on CHB-100, CHB-130, CHB-150 and CCB-150................................................50
LP Conversion Kit Instructions........................................................................................................51-53
DHW Resistor Harness and Relay Kit (550003082)........................................................................54-57
Combustion Cover Replacement Kit Instructions (55000xxxx).....................................................58
DOMESTIC HOT WATER SENSOR KIT
INSTRUCTIONS FOR CHB-100, CHB-130, CHB-150
Kit #550002958

Kit installation shall be completed by qualified agency.

⚠️ WARNING

Fire, explosion, asphyxiation and electrical shock hazard. Improper installation could result in death or serious injury. Read this instruction and understand all requirements, including requirements of authority having jurisdiction, before beginning installation. Installation not complete until appliance operation verified per Installation, Operation & Maintenance Manual provided with boiler.

Sensor can be used on a standard Indirect Hot Water tank. When it is connected to the boiler, sensor will control Indirect Tank temperature.

1. Follow instructions To TURN OFF GAS TO APPLIANCE found on Operating Instructions label on boiler or in Installation, Operation & Maintenance Manual. Verify all electrical power to boiler is turned off.

⚠️ WARNING

Electrical shock hazard. Turn OFF electrical power supply at service panel.

2. Remove front jacket.

⚠️ WARNING

Burn hazard. Verify heat exchanger has cooled or use appropriate personal protection equipment.

3. Before inserting sensor into Indirect tank well, thoroughly coat sensor with Thermopaste supplied with sensor kit.

4. Slide sensor into well until it bottoms out. See Figure 1.

5. Secure sensor wire to well with included clip. See Figures 1, 2 and 3.

6. Route sensor wire to boiler low voltage terminal block. Remove the two resistors on terminals 7 & 8 of 8-pin terminal strip, key #155. See Figure 4 - wiring diagram.


8. Secure sensor wire, provide adequate strain relief and anti-shorting protection.
9. Restore power to boiler. Boiler will automatically recognize the sensor.


13. Install front cover.

DOMESTIC HOT WATER SENSOR KIT

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>PART #</th>
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</tr>
<tr>
<td>Clip</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Thermopaste</td>
<td>-</td>
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<tr>
<td>Instructions</td>
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<td>1</td>
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</table>
**DOMESTIC HOT WATER SENSOR KIT**

**Figure 4 - Wiring Diagram**

If Key 155 is used remove both resistors and wire Indirect Tank Sensor to terminals 7 and 8.

**Key**

16  Modulating fan
32  Heating circulating pump
42  DHW temperature sensor (see kit)
44  Gas valve
47  Modulation Regulator (24V)
*72  Room thermostat (field sourced)
81  Ignition/detection electrode
114  Water pressure switch
*138  Optional Outdoor Sensor (field sourced)
*155  Optional Indirect Tank Sensor (See parts list)
278  Double sensor (Safety + Heating)
297  Air pressure transducer
*307  CH System Pump - (if applicable)
*370  Low Water Cutoff (LWCO) - (field sourced)

**NOTICE**

*Important:*

- Before connecting the room thermostat, remove jumper on terminal block. (Key 72)
- Before connecting optional Indirect Tank Sensor, remove two resistors. (Key 155)
- Before connecting the Low Water Cutoff, remove the jumper on terminal block. (Key 370)
Figure 5 - Low Voltage Terminal Strip, CHB-130 Shown

Figure 6 - Low Voltage Terminal Strip Removed from Boiler, CHB-130 Shown

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<tr>
<th>Temperature Deg F</th>
<th>Resistance in Ohms</th>
</tr>
</thead>
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<td>3748</td>
</tr>
<tr>
<td>130</td>
<td>3104</td>
</tr>
</tbody>
</table>

Check our website frequently for updates: www.ecrinternational.com
INSTRUCTIONS AND WIRING DIAGRAM
FOR ADDING EXTERNAL PUMP TO
CHB/CCB BOILERS
(Without Factory Pump Terminals)

Installation shall be completed by qualified agency.

⚠️ WARNING
Fire, explosion, asphyxiation and electrical shock hazard. Improper installation could result in death or serious injury. Read this instruction and understand all requirements, including requirements of authority having jurisdiction, before beginning installation. Installation not complete until appliance operation verified per Installation, Operation & Maintenance Manual provided with boiler.

An external pump is necessary for the following conditions:
- The central heating circuit exceeds 8 ft of total head loss.
- When using an indirect tank with a high head loss.

1. Follow instructions to TURN OFF GAS TO APPLIANCE found on Operation Instructions label on boiler or in Installation, Operation & Maintenance Manual. Verify all electrical power to boiler is turned off.

⚠️ WARNING
Electric shock hazard. Turn OFF electrical power supply at service panel.

2. Verify all power to boiler is turned OFF at service panel.
3. Follow Installation, Operation & Maintenance manual to remove front jacket panel(s).

⚠️ WARNING
Burn hazard. Verify heat exchanger has cooled or use appropriate personal protection equipment.

4. Inspect combustion chamber through sight glass. Verify flame is not present.
5. See wiring as shown in Figure 1.
6. Resume operation using OPERATING INSTRUCTIONS found on Operating Instructions label on boiler or in Installation, Operation & Maintenance Manual.
8. Follow Installation, Operation & Maintenance manual to install front jacket panel(s).
Figure 1 - Optional External Pump/Relay Wiring

**Important:** Before connecting the Argo Controller, remove supplied jumper on terminal block.

Arigo contact rating = 7 Amp Maximum
Sealed Combustion Termination
Kit # 5612601
Installation Instructions

Kit installation shall be completed by qualified agency.

**WARNING**
Fire, explosion, asphyxiation and electrical shock hazard. Improper installation could result in death or serious injury. Read this instruction and understand all requirements, including requirements of authority having jurisdiction, before beginning installation. Installation not complete until appliance operation is verified per Installation, Operation & Maintenance Manual provided with boiler.

**Horizontal (Category III) venting systems**
Installation shall conform to the requirements of the authority having jurisdiction or, in the absence of such requirements:

- National Fuel Gas Code, ANSI Z223.1/NFPA 54, and/or
- Natural Gas and Propane Installation Code, CAN/CSA B149.1

**NOTICE**
If installing through non-combustible wall, remove termination thimble. Make two (2) 3½” ±1” holes on center through the wall.

**Installation Instructions:**
1. Use supplied template to cut a hole through the wall. Secure template to inside wall.

**Figure 1 - Sealed Combustion Termination**

- Termination Thimble
- Termination Assembly
- Termination Deflector
- Draw Collar
- #10-24 Hex Nut
- 3” Stainless Steel Vent Pipe (Purchased Separately)
- (8” X 12”) Template
- 3” PVC Pipe Air Intake (Purchased Separately)
- Wall
- 3” Termination Tee (Purchased Separately)
- 4 Screws #10 x½ HX HD
- Screw #10-24x1½” RH
Kit installation shall be completed by qualified agency.

**WARNING**

Fire, explosion, asphyxiation and electrical shock hazard. Improper installation could result in death or serious injury. Read this instruction and understand all requirements, including requirements of authority having jurisdiction, before beginning installation. Installation not complete until appliance operation verified per Installation, Operation & Maintenance Manual provided with boiler.

1. Follow instructions TO TURN OFF GAS TO APPLIANCE found on Operating Instructions label on boiler or in Installation, Operation & Maintenance Manual. Verify all electrical power to boiler is turned off.

**WARNING**

Electrical shock hazard. Turn OFF electrical power supply at service panel.

2. Remove front jacket casing per instructions found in Installation, Operation & Maintenance Manual.

**WARNING**

Burn hazard. Verify heat exchanger has cooled or use appropriate personal protection equipment.

3. Remove (2) screws on lower part of control housing. See Figure 1.

4. Slide control housing forward. Control housing will fold down on the built in hinge. See Figure 2.

5. Remove two back cover screws.

6. Disconnect all wiring connectors

7. Remove two (2) screws holding board in place. Slide board out. See Figure 3.

8. Replace board and wiring connectors.

9. Replace back cover.

10. Fold control housing up. Slide control housing back into position. Secure with screw.

11. Remove any call for heat or hot water.

12. Turn gas to appliance On following procedure found on boiler or in Installation, Operation & Maintenance Manual.

13. Apply power to boiler.

14. Configure control for proper boiler size and type.
CONTROL BOARD REPLACEMENT INSTRUCTIONS

To access to “tS” parameter:
A. Press and hold Reset button for 10 seconds. Display will read “tS”. Release button.
B. Press Reset button for 1 second. Display will read “P01”.
C. Press Heating buttons to scroll parameter list. Press DHW buttons to view or change a parameter. Set three (3) parameters “P01”, “P02” and “P23” as shown in Table 1 below and Figure 4.

<table>
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</table>

To access Configuration menu:
A. Press (DHW) + and -, hold both buttons for 10 seconds; “b01” appears and flashes.
B. Press Heating buttons to scroll Configuration list. Press DHW buttons to view or change a setting.
C. Change only the Configuration “b01” per Table 2. Remaining parameters are factory defaulted to the correct value, verify value. See Table 3.
D. Select proper size, press and hold (DHW) + and -, both buttons for 10 seconds to exit, or turn power off then on, or wait two (2) minutes for auto exit.

15. Replace jacket casing.

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<tbody>
<tr>
<td><strong>b01</strong></td>
<td>Power Selection</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td><strong>b02</strong></td>
<td>Offset max. setpoint air signal</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>b03</strong></td>
<td>Burner selection</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>b04</strong></td>
<td>Offset min. setpoint air signal</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
</tbody>
</table>
CAUTION

- DO NOT remove retaining clips on field installed water fittings. Removed fittings CANNOT be reinstalled.

- DO NOT solder on threaded joints. Heating the fitting will cause O-ring joint failure causing leaks.

See reverse page for manufacturer recommended piping method.
Manufacturer recommended piping method:

1. Use piping accessories as shown in diagram below.
2. Do any necessary soldering away from the boiler, then thread soldered assembly to Boiler connections.

**PIPING DIAGRAMS**

- Female Copper Fitting
- Copper Pipe (6" min. length manufacturer recommended)
- Union
- Union
- Copper Pipe
Above curves show affect altitude will have on boiler delivery.

Manufacturer has tested this boiler at altitude (sea level to 8,000 ft.) and determined that standard (ANSI) derate input practices of re-orificing are not required for these models.
GAS CONVERSION KIT FOR CCB - CHB BOILER SERIES

⚠️ WARNING

Fire, explosion, asphyxiation and electrical shock hazard. Improper installation could result in death or serious injury. Read this instruction and understand all requirements, including requirements of authority having jurisdiction, before beginning installation. Installation not complete until appliance operation verified per Installation, Operation & Maintenance Manual provided with boiler.

GAS CONVERSION KIT CODES AND CONTENT

<table>
<thead>
<tr>
<th>Conversion to gas type</th>
<th>Kit code</th>
<th>For boiler model</th>
<th>Parts provided in the Kit</th>
<th>Orifice size</th>
</tr>
</thead>
<tbody>
<tr>
<td>NG</td>
<td>FE3980C280</td>
<td>CHB-100</td>
<td>11 x injectors 1.35 11 x aluminum gaskets 1 x conversion label</td>
<td>1.35 mm</td>
</tr>
<tr>
<td>LP</td>
<td>FE3980C300</td>
<td>CHB-100</td>
<td>11 x injectors 0.85 11x aluminum gaskets 1 x conversion label</td>
<td>0.85 mm</td>
</tr>
<tr>
<td>NG</td>
<td>FE3980C290</td>
<td>CHB-130</td>
<td>15 x injectors 1.35 15 x aluminum gaskets 1 x conversion label</td>
<td>1.35 mm</td>
</tr>
<tr>
<td>LP</td>
<td>FE3980B950</td>
<td>CHB-130</td>
<td>15 x injectors 0.85 15x aluminum gaskets 1 x conversion label</td>
<td>0.85 mm</td>
</tr>
<tr>
<td>NG</td>
<td>FE3980C140</td>
<td>CHB-150</td>
<td>17 x injectors 1.35 17 x aluminum gaskets 1 x conversion label</td>
<td>1.35 mm</td>
</tr>
<tr>
<td>LP</td>
<td>FE3980C150</td>
<td>CHB-150</td>
<td>17 x injectors 0.85 17x aluminum gaskets 1 x conversion label</td>
<td>0.85 mm</td>
</tr>
</tbody>
</table>

CCB-CHB can operate with Natural Gas or LP gas and are factory-set for the use with Natural Gas.

To convert boiler to operate with a different type of gas, it is necessary to use the appropriate conversion kit listed in table below and install it as described in this instruction.

INSTRUCTIONS FOR CONVERTING THE BOILER

Follow instructions To TURN OFF GAS TO APPLIANCE found on Operating Instructions label on boiler or in Installation, Operation & Maintenance Manual. Verify all electrical power to boiler is turned off.

1. Close the gas cock ahead of the boiler and disconnect the power supply.
2. Remove boiler jacket and room sealed cover.
3. Remove burner. IMPORTANT: do not disconnect gas collector or gas valve.
4. Remove injectors from gas collector.
5. Verify the proper size of injectors in the conversion kit (ref. table 1) and mount on gas collector, interposing aluminum gaskets. Assure a complete seat of injectors on gaskets.

6. Re-mount burner, room sealed cover and jacket.

7. Connect the power supply ahead of the boiler and open the gas cock; Verify that no gas leakage is occurring.

8. Modify the parameter for the type of gas:
   - Put the boiler in standby mode
   - Press the RESET button for 10 seconds: the display shows “IS” flashing
   - Press the RESET button: the display shows “P01”.
   - Press the DHW buttons to set parameter 0 (for natural gas) or 1 (for LP).
   - Press the CH button: the display shows “P02”.
   - Press the RESET button for 10 seconds.
   - The boiler will return to standby mode

9. Adjust the correct minimum and maximum burner pressure specified in the table at the end of this document as following:
   **TEST mode activation**
   - Press the heating buttons together for 5 seconds to activate the TEST mode. The boiler lights at the maximum heating power set as described following section.
   - The heating and DHW symbols flash on the display; the heating power will appear alongside. (Min.=0%, Max.=100%).
   - If the TEST mode is activated and enough hot water is drawn to activate the DHW mode, the boiler remains in TEST mode but the 3-way DHW.
   - To deactivate the TEST mode, press the heating buttons together for 5 seconds.
   - The TEST mode is automatically deactivated in any case after 15 minutes or on stopping of hot water drawing (if enough hot water has been drawn).

   **Adjustment of pressure at the burner**
   - Since this unit has flame modulation, there are two fixed pressure values: the minimum and maximum, which must be those given in the table according to the type of gas.
   - Connect a suitable pressure gauge to pressure point “B” located downstream of the gas valve
   - Remove the protection cap “D” undoing screw “A”.
   - Operate the boiler in TEST mode.
   - Adjust the power to the max. value.
   - Adjust the max. pressure with screw “G”, clockwise to increase the pressure and anticlockwise to decrease it.
   - Disconnect one of the two Faston connectors from the modureg “C” on the gas valve.
   - Adjust the min. pressure with screw “E”, clockwise to decrease the pressure and anticlockwise to increase it.
   - Reconnect the Faston connector detached from the modureg on the gas valve.
   - Check that the maximum pressure has not changed.
   - Refit protection cap “D”.
   - To end the TEST mode repeat the activation sequence or wait 15 minutes.

10. Fill the label contained in the conversion kit and apply near the dataplate as proof of the conversion.

After checking or adjusting the pressure, make sure to seal the adjustment screw with paint or a specific seal.
<table>
<thead>
<tr>
<th>BOILER MODEL</th>
<th>CHB-100</th>
<th>CHB-130</th>
<th>CHB-150</th>
<th>CCB-150</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orifice Natural Gas</td>
<td>n*xØ mm</td>
<td>11 x 1.35</td>
<td>15 x 1.35</td>
<td>17 x 1.35</td>
</tr>
<tr>
<td>Min - Max Burner pressure Natural Gas</td>
<td>w.c.</td>
<td>0.6 - 5.22</td>
<td>0.6 - 4.82</td>
<td>0.6 - 5.22</td>
</tr>
<tr>
<td>Nominal Supply pressure Natural Gas</td>
<td>w.c.</td>
<td>7.9</td>
<td>7.9</td>
<td>7.9</td>
</tr>
<tr>
<td>Orifice Propane</td>
<td>n*xØ mm</td>
<td>11 x 0.85</td>
<td>15 x 0.85</td>
<td>17 x 0.85</td>
</tr>
<tr>
<td>Min - Max Burner pressure propane</td>
<td>w.c.</td>
<td>1.6 - 10</td>
<td>1.6 - 10</td>
<td>1.6 - 10</td>
</tr>
<tr>
<td>Nominal Supply pressure propane</td>
<td>w.c.</td>
<td>11</td>
<td>11</td>
<td>11</td>
</tr>
</tbody>
</table>
Kit installation shall be completed by qualified agency.

⚠️ WARNING ⚠️

Fire, explosion, asphyxiation and electrical shock hazard. Improper installation could result in death or serious injury. Read this instruction and understand all requirements, including requirements of authority having jurisdiction, before beginning installation. Installation not complete until appliance operation verified per Installation, Operation & Maintenance Manual provided with boiler.

1. Follow instructions TO TURN OFF GAS TO APPLIANCE found on Operating Instructions label on boiler or in Installation, Operation & Maintenance Manual. Verify all electrical power to boiler is turned off.

⚠️ WARNING ⚠️

Electrical shock hazard. Turn OFF electrical power supply at service panel.

2. Verify all power to boiler is turned OFF at service panel.

3. Follow Installation, Operation & Maintenance manual to remove front jacket panel

⚠️ WARNING ⚠️

Burn hazard. Verify heat exchanger has cooled or use appropriate personal protection equipment.

4. Inspect combustion chamber through sight glass. Verify flame is not present.

5. See wiring shown in figures 2 and 3.
**Multi-Zone Pump System with DHW Tank Thermostat and Isolation Relay**

If DHW tank thermostat is applied to multi-zoned pump application secondary pump operation is controlled by Argo priority switch position.

### NOTICE

**Important:**
- Before connecting to Key72 terminals, remove jumper on terminal block.
- Before connecting Low Water Cut-off remove jumper on terminal block. (Key 370)

1. Boiler thermostat contacts (KEY 72) are wired to Argo ARM Zone Pump Control terminals (x-x). Zone thermostats and zone pumps are also wired to Argo Controller as shown on wiring diagram. See figure 2.

2. Important - Remove factory installed resistors, Terminal 7 and 8 on terminal strip (KEY 155).

3. Attach resistor kit wire harness to terminal strip (White wire to #7 / Red wire to #8). See figures 2 and 3.

### NOTICE

Failure to observe wire coding will result in improper boiler operation. See wiring diagram figure 2.

4. Attach isolation relay provided to Argo Zone Control using an electrical knockout. Secure using conduit nut. See figure 1.

5. Extend brown and blue wires of wire harness to normally closed (N.C.) contacts on isolation relay (blue and yellow wires). Secure unused wire end of relay contact (ORG-N.O.) using provided wire nut.

6. Attach isolation relay coil wiring (24 VAC) to Argo Controller. Connect White/Blue wire to Argo zone 1 (Tw) and white/yellow wire to Argo "Common". see figure 2. Secure unused wire end of relay coil, 120V-white/black using wire nut provided.

7. Wire DHW mechanical tank thermostat to Priority Zone (Tw/Tr) contacts on Argo Zone Control.

8. Important: Set Argo Priority Switch to:
   - **ON** position - CH pumps **WILL** shutoff during DHW priority.
   - **Do not operate** this system with the Argo Priority Switch in **OFF** position.

### NOTICE

If Indirect Tank pump is used connect to Priority Zone terminals (L1/N1) on Argo Controller.

9. Restore gas service and electrical power.
   Follow lighting and operating instructions.
   Restart boiler.
   Verify proper operation by following START UP Procedure found in boiler’s Installation, Operation and Maintenance Manual.
CHB BOILER - DHW RESISTOR HARNESS KIT

FIGURE 2 - CHB Boiler WITH SECONDARY ZONE PUMPS and DHW THERMOSTAT

NOTE: ZONE PUMPS WILL SHUTOFF DURING DHW PRIORITY W/ PRIORITY SWITCH ON

Important: Priority Switch must be ON. See step 8.

Optional: Connect indirect tank pump to Priority Zone 1 terminals (if used).

FIGURE 3 - Resistor Wire Kit Harness (DHW)

TERMINAL 7
KEY 155
WHITE WIRE

TERMINAL 8
KEY 155
RED WIRE

TO RELAY CONTACTS (NORMALLY CLOSED)
FIGURE 4 - CHB - Single Boiler Primary/Secondary Series Loop Zoned WITH ZONE PUMPS and Optional Indirect Tank

**Note**

1. 12" (305mm) Maximum Separation

2. Limit combined supply and return pipe lengths to maximum total linear length of 20 ft. (6.1 m) between boiler and closely spaced tees, when minimum 1" NPT pipe size is used. Linear length may be increased if supply and return pipe size is increased to limit pressure drop.

* Manufacturer requires all domestic hot water (DHW) installations use an anti-scald valve. Local codes may require additional equipment (expansion tank, relief valves, etc.) Select and size equipment to suit installation and meet code requirements.

See CHB/CCB Applications Guide located on the web at [www.ecrinternational.com](http://www.ecrinternational.com) for indirect tank applications using boiler's on-board pump refer to flow rate and available pump head curves. Refer to Boiler's Installation, Operation and Maintenance Manual for operational requirements. Consult indirect tank manufacturer for indirect tank performance.
CCB/CHB REPLACEMENT
COMBUSTION COVER KIT INSTRUCTIONS
550003447 - CCB/CHB 150
550003448 - CHB 100
550003449 - CHB 130

Kit installation shall be completed by qualified agency.

⚠️ WARNING
Fire, explosion, asphyxiation and electrical shock hazard. Improper installation could result in death or serious injury. Read these instructions and understand all requirements, including requirements of authority having jurisdiction, before beginning installation. Installation not complete until appliance operation is verified per Installation, Operation & Maintenance Manual provided with boiler.

⚠️ CAUTION
Laceration, burn hazard. Metal edges and parts may have sharp edges and/or may be hot. Use appropriate personal protection equipment to include safety glasses and gloves when installing or servicing this appliance. Failure to follow these instructions could result in minor or moderate injury.

Combustion Cover Replacement
1. Follow instructions To TURN OFF GAS TO APPLIANCE found on Operating Instructions label on boiler or in Installation, Operation & Maintenance Manual. Verify all electrical power to boiler is turned off.

2. Verify all power to boiler is turned OFF at service panel.

3. Follow Installation, Operation & Maintenance manual to remove front jacket panel.

4. Inspect combustion chamber through sight glass. Verify flame is not present.

5. Verify unit has cooled before servicing.

6. Remove (4) four screws from external heat exchanger cover. See Figure 1. Lift cover up from bottom and pull forward.

7. Remove (4) four screws holding inner combustion cover with insulation.

8. Install new inner combustion cover and insulation in place. Secure with 4 screws.

9. Install new outer combustion cover in place. Take care to ensure left and right sides are tucked behind the vertical rails. Secure with 4 screws.

10. Turn Gas and Electric to boiler on.

11. Resume operation using OPERATING INSTRUCTIONS found on Operating Instructions label on boiler or in Installation, Operation & Maintenance Manual.

12. Install front panel. Secure in place with removed screws.

13. Verify proper operation.

Figure 1 - Heat Exchanger Covers

Illustrations are a depiction of the boiler for general location of parts and are subject to change without notice.