Kenmore

Models
DCC-150/205
DCB-125/165

INSTALLATION • OPERATION

DCC-150/205 COMBI DCB-125/165 HEATING ONLY

CONDENSING WALL MOUNTED GAS BOILER

CAUTION

Read all instructions carefully before starting the installation.

Save this manual for reference.

⚠ WARNING

Improper installation, adjustment, alteration, service, or maintenance can cause injury or property damage. Refer to this manual. For assistance or additional information consult a qualified installer, service agency, or the gas supplier.

These instructions must be affixed on or adjacent to the boiler.

P/N 240012199 Rev. B [03/31/2018]

Sears, Roebuck and Co.,
Hoffman Estates, IL 60179 U.S.A.

VERIFY CONTENTS RECEIVED

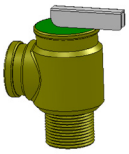
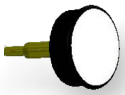
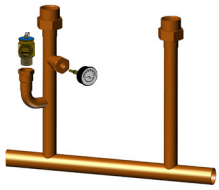
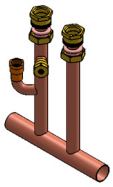
			
Fully Assembled Boiler	**Metal Wall Bracket w/ 4 ea Wall Screws and Plugs**	**30 PSI Safety Relief Valve**	**Temperature Pressure Gauge**
		4 ea - 17x24x2 Gaskets	Includes Essential Documents and Warranty 11x17 Wire Diagrams
Drain Valve	***5 GPM Flow Restrictor 205 Combi Only**	**Used for Valve Connections**	**Document Package**
		Wall Mount Template	
***Manifold**	***Manifold 165 Heat-Only**	**Template**	

TABLE OF CONTENTS

Dimensions

	DIMENSIONS	125 & 150	205 & 165
A	Height	30" [763 mm]	30 " [763 mm]
B	Width	17 ¾ " [450 mm]	17 ¾ " [450 mm]
C	Depth	13 9/16" [345 mm]	21 ½" [571 mm]
D	Condensate Trap Connection	13/16" [21mm] ID Hose	3/4" [19.1 mm] NPT
E	System Supply	3/4" [19.1 mm]	1" [25.4 mm]
F	DHW Outlet (125 Optional)	1/2" [15.9 mm]	3/4" [19.1 mm]
G	Gas Connection	3/4" [19.1 mm]	3/4" [19.1 mm]
H	DHW (Cold Water) Inlet	1/2" [15.9 mm]	3/4" [19.1 mm]
I	System Return	3/4" [19.1 mm]	1" [25.4 mm]
J	Boiler Filling Connection	1/2" [15.9mm]	External to Boiler
	Primary Water Content	1 gal [3.60 L]	1¼ gal [4.73 L]

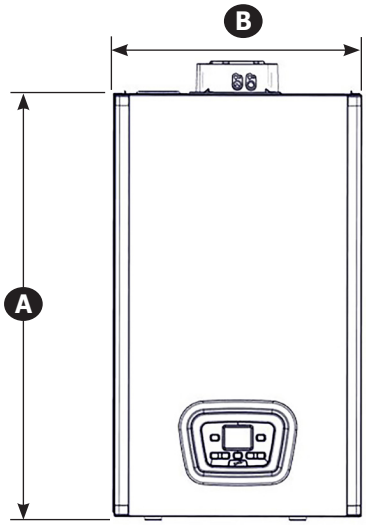
SYSTEM

Central Heating (Sealed System)	125 / 150	165/ 205
Heat Exchanger Max Allowable Working Pressure	50 psi [3.45 bar]	50 psi [3.45 bar]
Max System Pressure	43.00 psi [2.96 bar]	43.00 psi [2.96 bar]
Min System Pressure	7.25 psi [0.50 bar]	7.25 psi [0.50 bar]
Max System temperature	176°F [80°C]	176°F [80°C]
Pressure Relief Valve Setting	30.00 psi [2.11 bar]	30.00 psi [2.11 bar]
Expansion Tank Minimum Size (pre-charge press.)	2.2 gal at 11.6 psi [10.0 L at 0.8 bar]	2.2 gal at 11.6 psi [10.0 L at 0.8 bar]
Recommended System Pressure (cold)	21.7 psi [1.5 bar]	21.7 psi [1.5 bar]

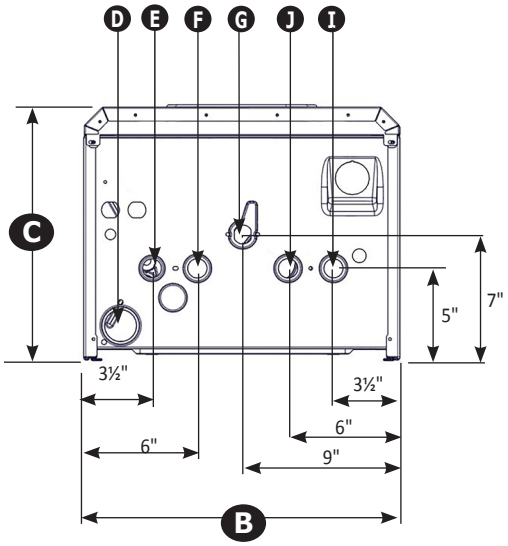
Domestic Hot Water (Sealed System)	150	205
Max Inlet Water Pressure	116 psi [8 bar]	116 psi [8 bar]
Min Inlet Water Pressure	2.9 psi [0.2 bar]	2.9 psi [0.2 bar]
Min DHW Flow Rate	0.55 gpm [2.50 L/min]	0.55 gpm [2.50 L/min]
Max DHW Temperature	140°F [60°C]	140°F [60° C]
DHW Water Content	0.05 gal [0.23 L]	0.10 gal [0.37 L]

When boiler is operating at maximum operating temperature, providing heating with all heat emitters operating, pressure gauge should not indicate more than 26.11 psi / 1.80 bar. If reading exceeds this figure larger expansion tank is required.

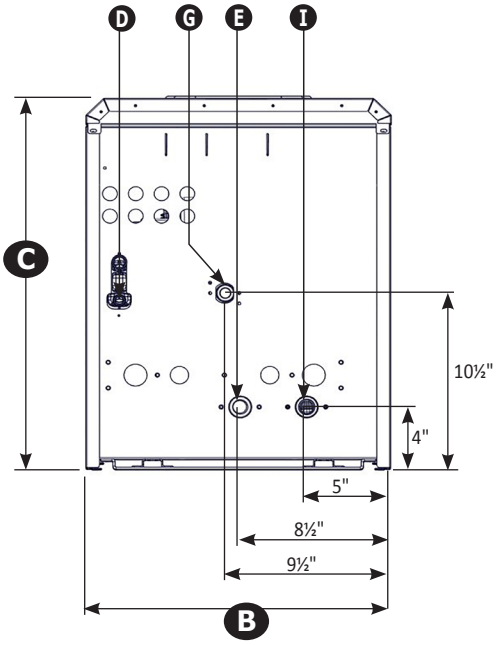
Front View All Models



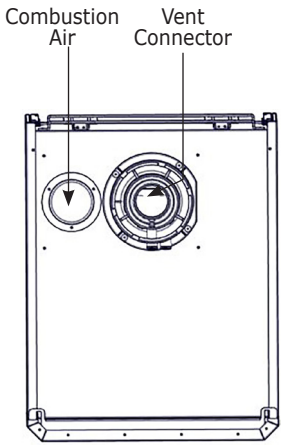
125 HEAT ONLY Bottom View Dimensions



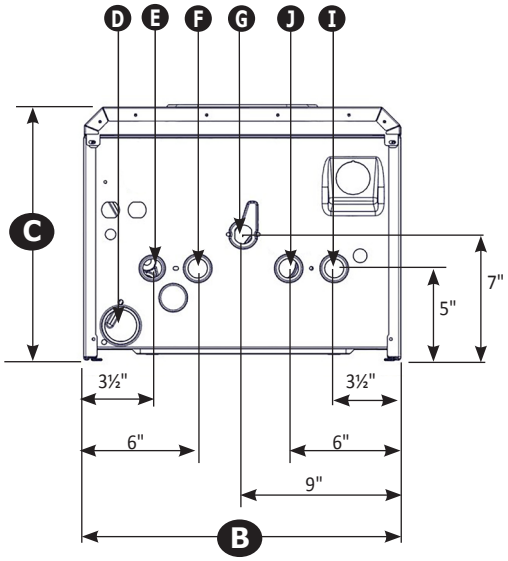
165 HEAT ONLY Bottom View Dimensions



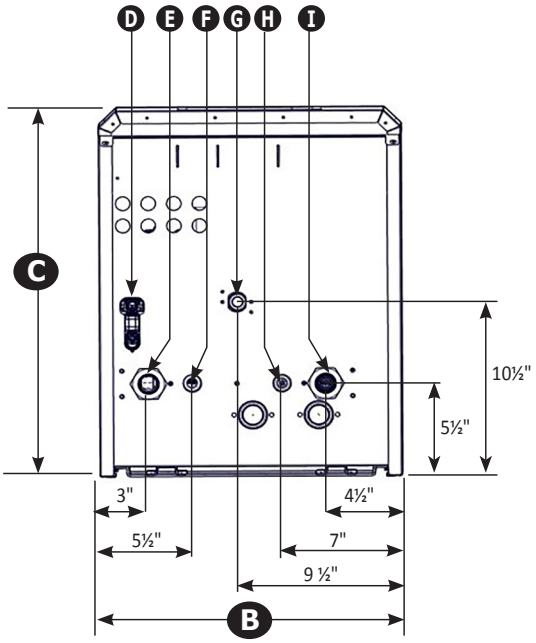
Top View All Models



150 COMBI Bottom View Dimensions



205 COMBI Bottom View Dimensions



1. Safety Information

Boiler installation shall be completed by qualified agency. See glossary 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.

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.

⚠ WARNING

Do not tamper with or use this boiler for any purpose other than its intended use. Failure to follow these instructions could result in death or serious injury. Use only manufacturer recommended parts and accessories.

⚠ 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 boiler. Failure to follow these instructions could result in minor or moderate injury.

2 - Introduction

2.1 Installation shall conform to requirements of authority having jurisdiction or in absence of such requirements:

UNITED STATES

- National Fuel Gas Code, ANSI Z223.1/NFPA 54**.**
- National Electrical Code, NFPA 70.

2.2 Where required by authority having jurisdiction, installation shall conform to Standard for Controls and Safety Devices for Automatically Fired Boilers, ANSI/ASME CSD-1. Additional manual reset low water cutoff may be required.

2.3 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.

2.4 Manufacturer recommends use of Carbon Monoxide monitor may be requirement of local jurisdiction.

2.5 Designated Use

- DCC-150 and DCC-205 provide both central heating and domestic hot water.
- DCB-125 and DCB-165 central heating only.
- Indoor installation.
- Closet or alcove installation. Direct Vent Boiler does not require air vents when installed in closet or room.
- Direct vent boiler.
- For use with natural gas or liquefied petroleum gases (LP/propane).

2.6 The unit MUST NOT:

- Directly heat potable water. Indirect heating is acceptable.
- Heat water with non-hydronic heating system chemicals present (example, swimming pool water).
- Toxic chemicals, such as those used for boiler treatment, shall not be introduced into potable water used for space heating.
- Exceed 43 psig (2.96bar) maximum allowable working pressure, or drop below minimum system pressure 7.25 psig (.50 bar)
- Exceed 176°F (80°C) system design temperature.

2.7 Operational Features

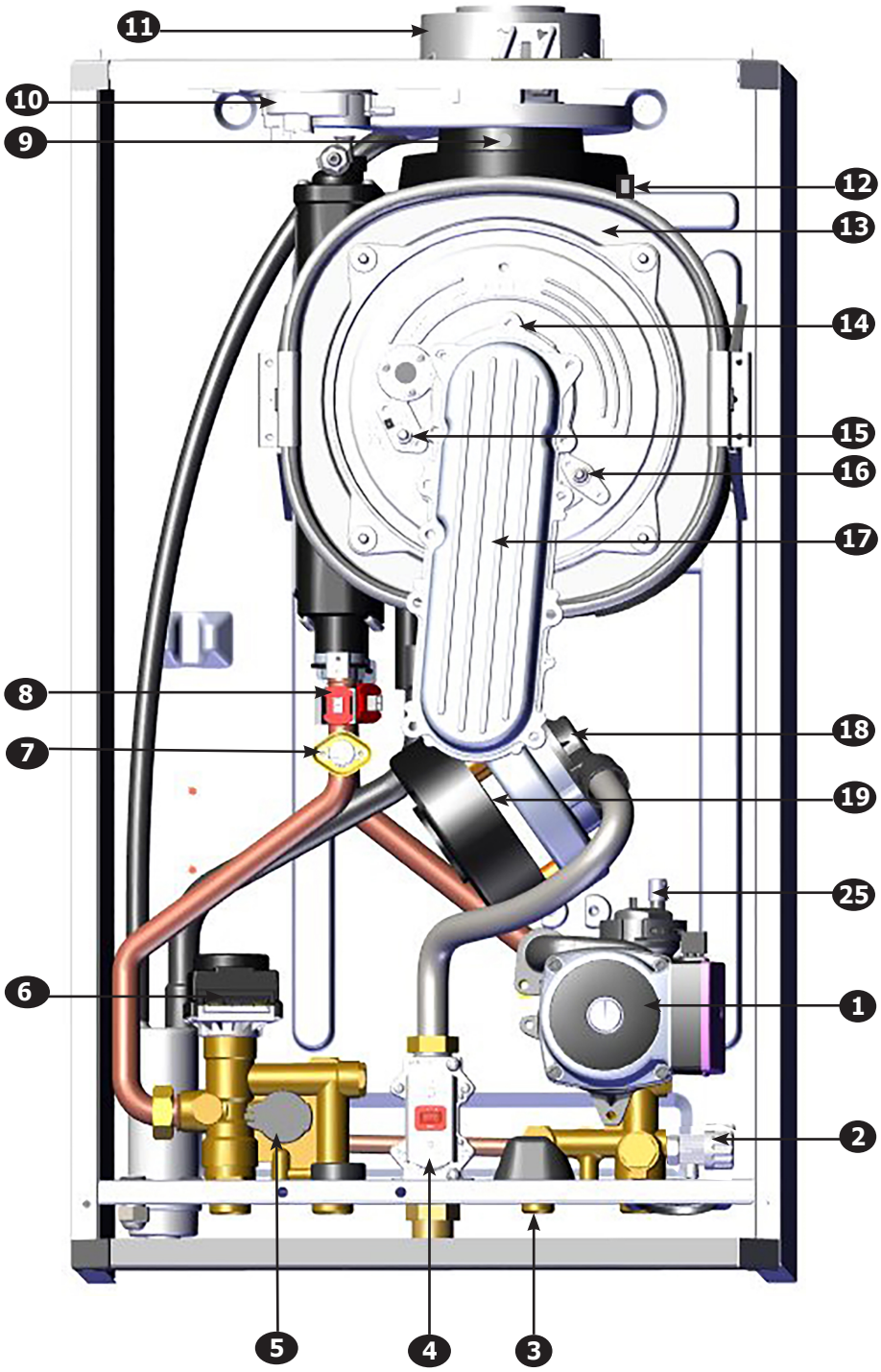
- Modulates to provide CH Turndown 5.5:1, DHW Turndown 7:1.
- Maximum output available for domestic hot water:

  DCC-150 - 136,000 btu/h (40 kW), capable of providing 3.5 (U.S.) gpm (13.2 liters/min) with a temperature rise of 70°F/39°C.

  DCC-205 - 180,000 btu/h (53 kW), capable of providing 5.0 (U.S.) gpm (18.9 litres/min) with temperature rise of 70°F/39°C.
- Integral Low Water Pressure Cutoff.
- Optional Outdoor Temperature Reset.
- Heat exchanger over heat protection.
- Boiler operating at maximum operating temperature, providing heat, pressure gauge should not indicate more than 26.11 psi / 1.80 bar. If reading exceeds this figure larger expansion tank is required.

Check our website frequently for updates: www.ecrinternational.com

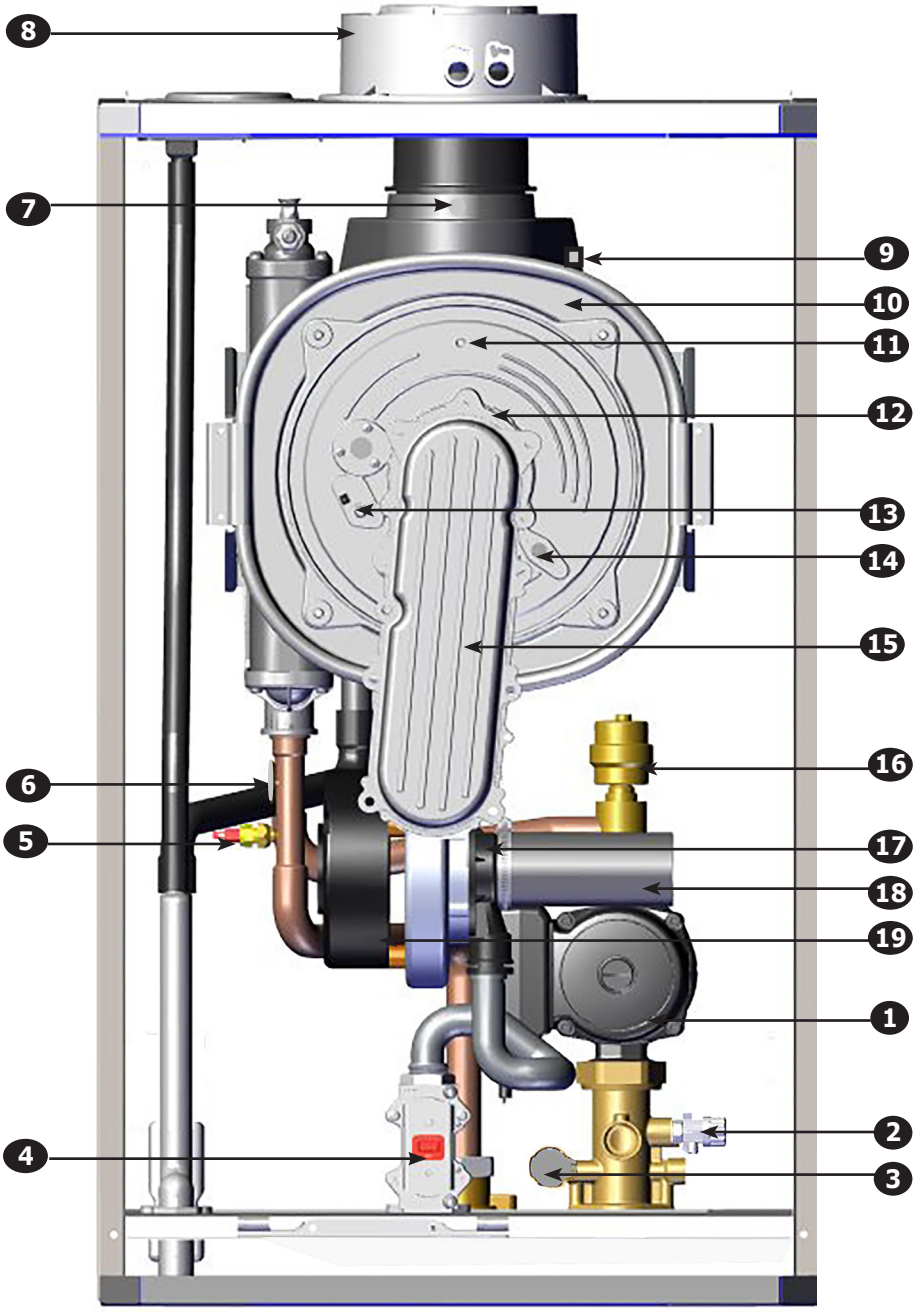
DUNKIRK - DCB 125



ITEM NO.	**Dunkirk DCB 125**
1	Pump with Air Separator
2	Boiler Drain Tap
3	Boiler Filling Tap
4	Gas Valve
5	Low Water Pressure Cutoff
6	3-Way Valve with Motor
7	Water Safety Thermostat
8	NTC Heating sensor (Flow/Return) QTY 2, (1 Shown for clarity)
9	Flue Sensor
10	Pressure Switch
11	Coaxial Flue Connector
12	Heat Exchanger Temperature Sensor
13	Heat Exchanger
14	Burner (not shown)
15	Ignition electrode
16	Flame Detection Electrode
17	Air/Gas Manifold
18	Venturi
19	Fan

Illustrations are a depiction of the boiler for general location of parts and may vary depending on model.

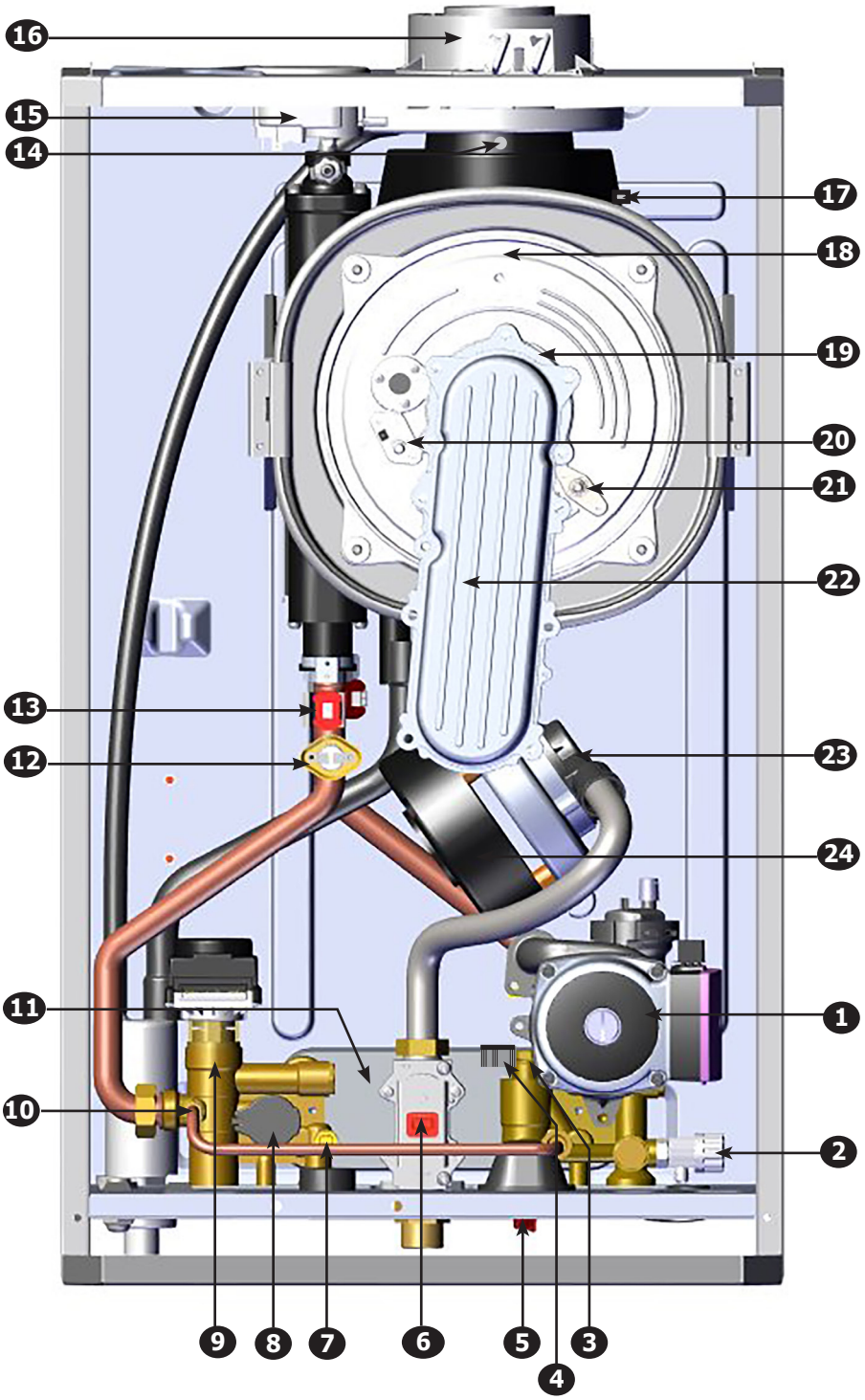
DUNKIRK - DCB 165



ITEM NO.	Dunkirk DCB 165
1	Pump
2	Boiler Drain Tap
3	Low Water Pressure Cutoff
4	Gas Valve
5	NTC Heating sensor (Flow/Return) QTY 2, (1 Shown for clarity)
6	Water Safety Thermostat
7	Flue Sensor
8	Coaxial Connector
9	Heat Exchanger Termperature Sensor
10	Heat Exchanger
11	Burner Door Termperature Sensor
12	Burner (not shown)
13	Ignition Electrode
14	Flame Detection Electrode
15	Air/Gas Blend Manifold
16	Air Purge
17	Venturi
18	Silencer
19	Fan

Illustrations are a depiction of the boiler for general location of parts and may vary depending on model.

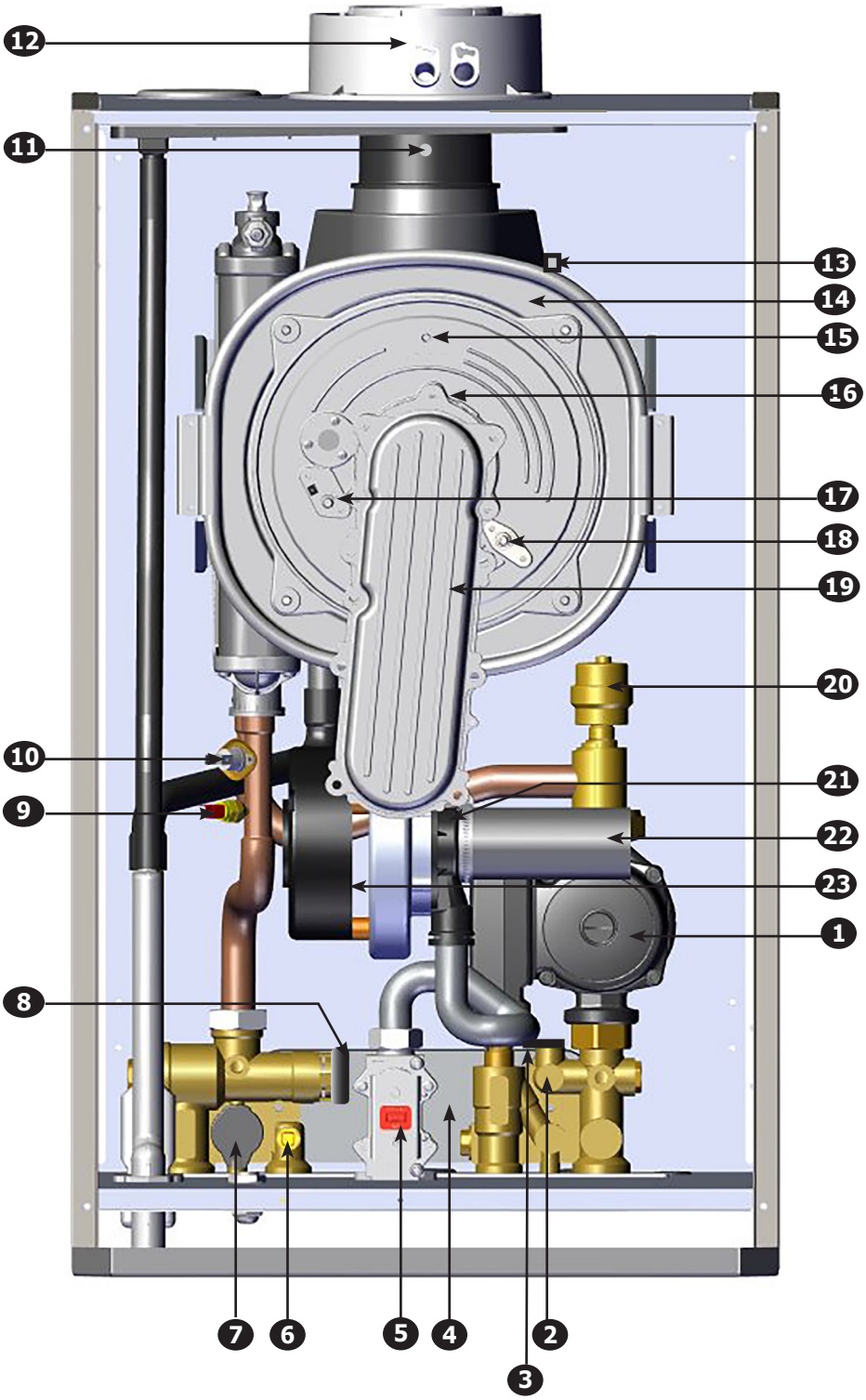
DUNKIRK DCC-150



ITEM NO.	Dunkirk DCC
1	Pump with Air Separator
2	Boiler Drain Tap
3	Flow Sensor with Water Filter and Flow Restrictor
4	DHW Priority Sensor
5	Boiler Filling Tap
6	Gas Valve
7	NTC DHW Sensor
8	Low Water Pressure Cutoff
9	3-Way Valve with Motor
10	Check Valve
11	DHW Heat Exchanger
12	Water Safety Thermostat
13	NTC Heating sensor (Flow/Return) QTY 2, (1 Shown for clarity)
14	Flue Sensor
15	Pressure Switch
16	Coaxial Connector
17	Heat Exchanger Temperature Sensor
18	Heat Exchanger
19	Burner (not shown)
20	Ignition Electrode
21	Flame Detection Electrode
22	Air/Gas Blend Manifold
23	Venturi
24	Fan

Illustrations are a depiction of the boiler for general location of parts and may vary depending on model.

DUNKIRK DCC-205



ITEM NO.	Dunkirk DCC-205
1	Pump
2	Flow Sensor
3	DHW Priority Sensor
4	DHW Heat Exchanger
5	Gas Valve
6	NTC DHW Sensor
7	Low Water Pressure Cutoff
8	3-Way Valve with Motor
9	NTC Heating sensor (Flow/Return) QTY 2, (1 Shown for clarity)
10	Water Safety Thermostat
11	Flue Sensor
12	Coaxial Connector
13	Heat Exchanger Temperature Sensor
14	Heat Exchanger
15	Burner Door Temperature Sensor
16	Burner (not shown)
17	Ignition Electrode
18	Flame Detection Electrode
19	Air/Gas Manifold
20	Air Purge
21	Venturi
22	Silencer
23	Fan

Illustrations are a depiction of the boiler for general location of parts and may vary depending on model.

⚠ WARNING

Fire Hazard! Do not install on carpeting. Failure to follow these instructions could result in death or serious injury.

4.1 Boiler Location Considerations

- Ambient room temperature always above 32°F (0°C) to prevent freezing of liquid condensate.
- Approved for installation in closets or alcove provided it is correctly designed for that purpose and minimum clearances are met.
- Protect gas ignition system components from water (dripping, spraying, rain, etc.) during operation and service (circulator replacement, condensate trap, control replacement, etc.).
- Access to outdoors to meet minimum and maximum pipe lengths for combustion air and vent piping. See section 6.
- Disposal of condensate. See section 6.
- Drainage of water (or water - antifreeze solution) during boiler service or from safety relief valve discharge. See section 5.
- Access to system water piping, gas supply, and electrical service. See sections 5, 7 and 8.
- Clearances to combustible materials and service clearances. See Table 1 and Figures pg. 11.
- Boiler shall be installed on flat vertical wall which is capable of supporting the weight of the boiler.
- Room-sealed boiler installed in a room containing bath or shower shall be installed so person using bath or shower cannot touch any electrical switch or boiler control utilizing line voltage electricity.
- Multiple Boilers can be wall mounted, placed side by side, or back to back.
- Observe service clearances in all installations.
- For Direct Vent installations, air vents are not required in room boiler is installed in, or when installed in closet or compartment.

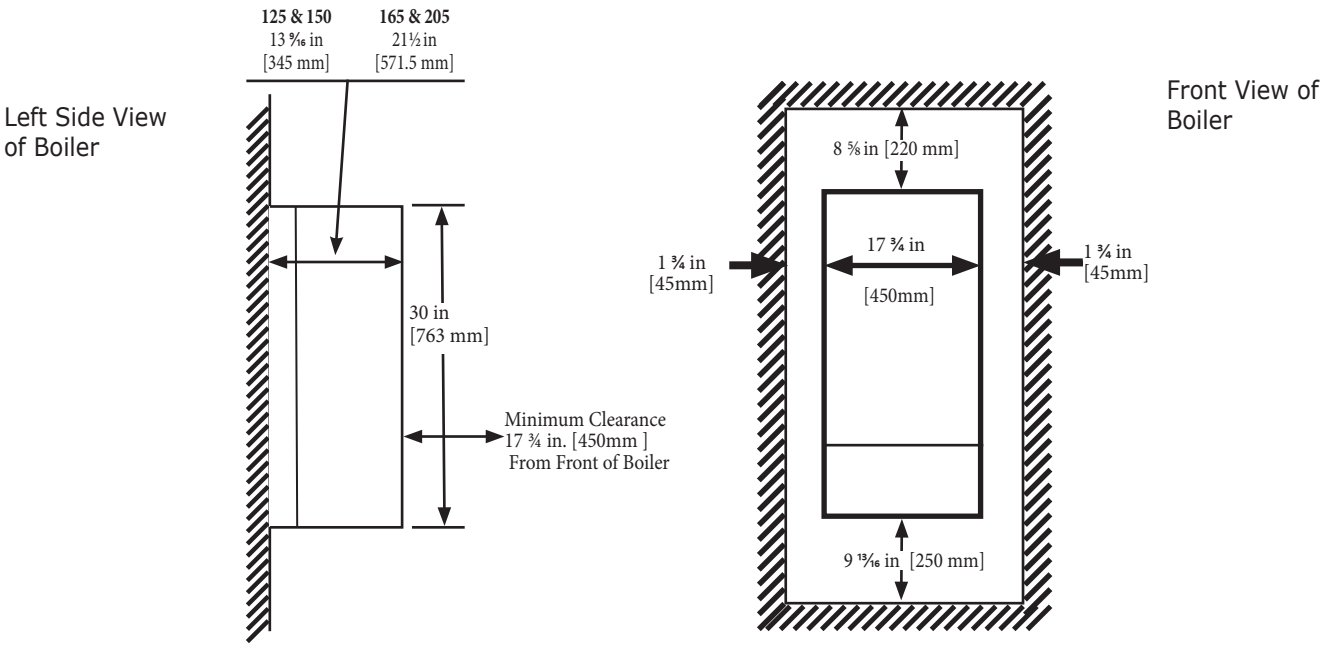
TABLE 1: BOILER CLEARANCES

Dimension	Combustible Materials [1]	Manufacturer Recommended for Service[1][2]
Top	0" (0 cm)	8-5/8" (220 mm)
Left Side	1-3/4" (45 mm)	1-3/4" (45 mm)
Right Side	1-3/4" (45 mm)	1-3/4" (45 mm)
Front	0" (0 cm)	17-3/4"(450mm)
Back	0" (0 cm)	0" (0 cm)
Bottom	0" (0 cm)	*9-13/16" (250 mm)
Combustion Air/ Vent piping	0" (0 cm)	6" (160 mm)

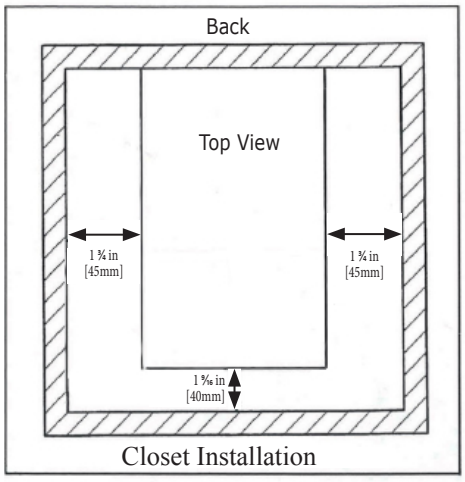
[1] *Required distances measured from boiler jacket.*
[2] *Service, proper operation clearance recommendation.*
** Allowance for piping at the bottom of boiler not included.*

NOTE: Greater clearances for access should supersede fire protection clearances.

4.2 Service and Combustible Clearances

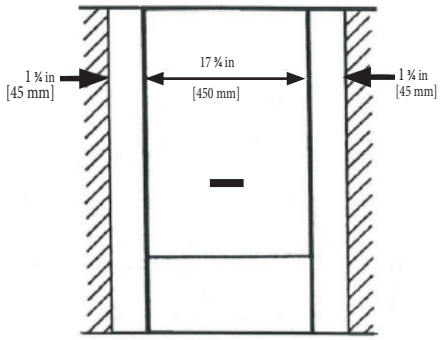


CLEARANCES REQUIRED FOR CLOSET INSTALLATION



0 in /0 mm between Back of Unit and wall

CLEARANCES FOR COMBUSTIBLES



Front View of
Boiler

⚠ CAUTION

Boiler weight exceeds 140 pounds (63.5 kg). Do not lift boiler onto wall without assistance.

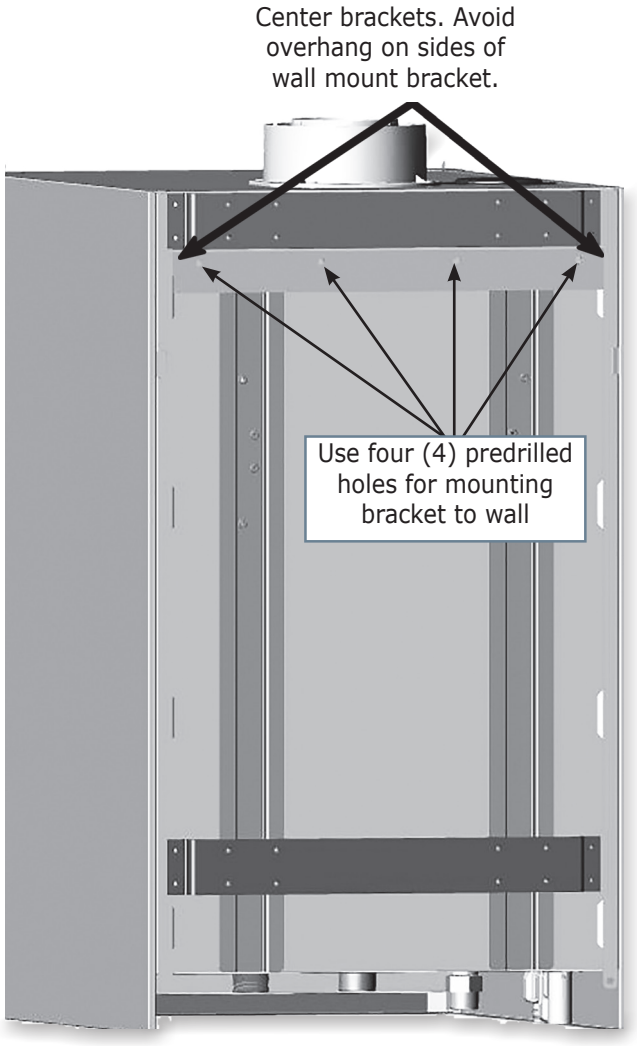
Note Lift boiler using chassis. Do not use front jacket, vent piping, water or gas fittings to lift boiler as it may cause damage to the boiler.

Note Use two (2) wrenches when tightening and fitting to pipe boiler's threaded fittings. Boiler's internal piping can be damaged if subjected to excessive torque.

4.2 Wall Mounting

1. Decide position of boiler on the wall allowing for all required clearances and flue terminal position.
2. Tape template to the wall. Ensure template is level and upright. Mark position of holes for boiler mounting bracket and plumbing connections.
3. Rear exit flue - mark position of hole for flue.
4. Side exit flue - mark horizontal center line of flue across the wall to side wall, then along side wall (ensure lines are parallel and sloped properly towards the boiler, refer to section 6. This will give position of center of hole for flue.
5. Cut hole in wall for coaxial flue. See sizing below:
   - 125 & 150 - 4 ⅜" [110 mm] diameter
   - 165 & 205 - 5 ⁵⁄₁₆" [135 mm] diameter
6. Pre-pipe supply and return water connections with factory fittings before wall mounting.
7. Mount boiler on wall using wall mounting bracket included with unit.
8. Adjust the position of the boiler verify it is level.

FIGURE 4-2 Wall Mount Bracket (Included)

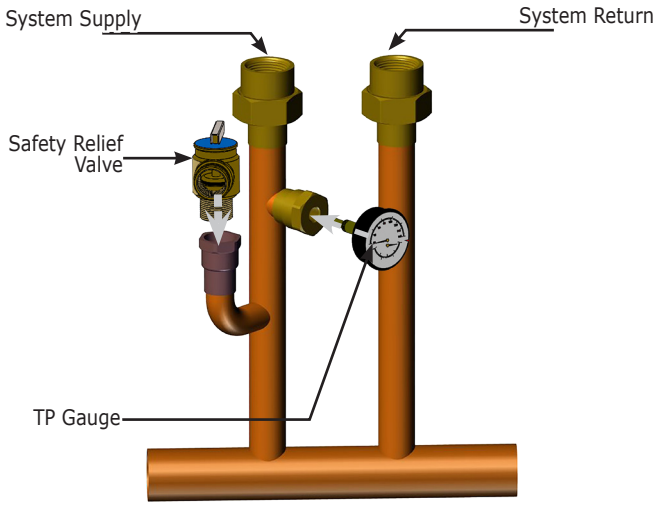


Note Boiler rated at 50 psig (345 kPa) maximum allowable working pressure. Boiler provided with 30 psig (206 kPa) safety relief valve.

Note When installing safety relief valve it must be installed in a vertical position with spindle at top.

Note System pressure above 43 psi [2.96 bar] **WILL** result in boiler shutting down.

FIGURE 5-1 Safety Relief Valve



⚠ WARNING

- Poison hazard. Ethylene glycol is toxic. Do not use ethylene glycol.
- Never use automotive or standard glycol antifreeze, even ethylene glycol made for hydronic systems.
- Ethylene glycol can attack gaskets and seals used in hydronic systems.
- Do not use petroleum based cleaning or sealing compounds boiler system.
- Do not fill boiler or boiler system with softened water.
- Use only inhibited propylene glycol solutions certified by fluid manufacturer as acceptable for use with closed water heating system.
- Thoroughly clean and flush any system that used glycol before installing new Boiler.
- Provide user with Material Safety Data Sheet (MSDS) on fluid used.

⚠ WARNING

Boiler and its individual shutoff valve shall be disconnected from gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 psi (3.40 kPa - 34.47 mbar).
Boiler shall be isolated from the gas supply piping system by closing its individual manual shutoff valve during any pressure testing of gas supply piping system at test pressures equal to or less than 1/2 psi (3.5 kPa).
Install boiler so that gas ignition system components are protected from water (dripping, spraying,rain, etc.) during appliance operation and service (circulator replacement, condensate trap, control replacement, etc.).

5.1 General

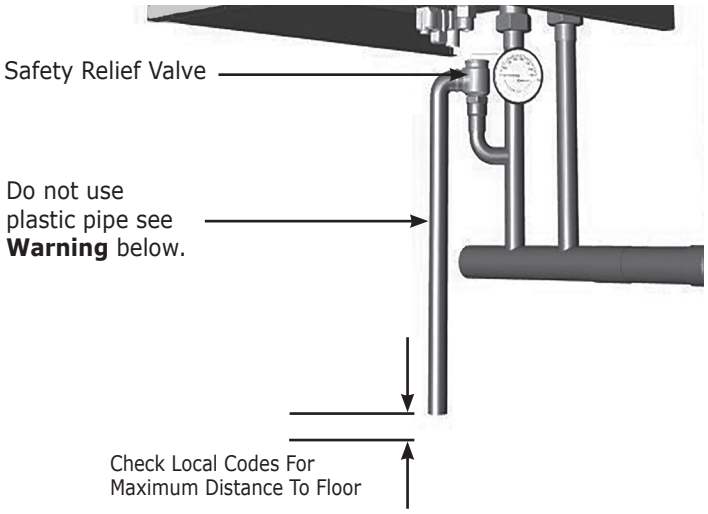
- Primary/Secondary piping required.
- Install piping in accordance with authority having jurisdiction.
- Support system piping and safety relief valve discharge piping. Boiler's internal piping and wall mount bracket can be damaged if subjected to excessive weight.

NOTICE

The intended use of the internal heat exchanger pump is a boiler loop. Do not use as a primary system pump.

- Size central heating pump (and domestic hot water pump, if used) for system requirements only. Internal heat exchanger pump compensates for pressure drop through boiler internal piping and heat exchanger.
- Thoroughly clean and flush system before connecting to boiler.
- If oil is present in system water, use approved detergent to wash system.
- It is necessary to semi-annually check the water quality of central heating systems.
- Flush system to remove any solid objects such as metal chips, fibers, or Teflon tape, etc.
- Flush system until water runs clean and piping is free of sediment.
- Use purge valve to flush zoned systems, each zone separately. If purge valves and isolation valves are not installed, install them to properly clean the system.
- When purging installations that include standing iron radiators and systems with manual vents at high points, start with nearest manual air vent. Open the vent until water flows out, then close vent. Repeat this procedure, working toward furthest air vent.
- Install a basket strainer if large amounts of sediment is present. Keep basket clear of sediment build up.
- Manufacturer recommends a water treatment product be used for sediment removal.
- Ensure piping in the heating system has an oxygen barrier.

FIGURE 5-2 Safety Relief Valve Discharge Piping



⚠ WARNING

Burn and scald hazard. Safety relief valve could discharge steam or hot water during operation. Use pipe suitable for temperatures of 375°F (191°C) or greater. DO NOT use plastic pipe.

5.2 Special Conditions

Note Do not expose boiler and condensate piping to freezing temperatures.

- System piping exposed to freezing conditions: Use inhibited propylene glycol solutions certified by fluid manufacturer for use with closed water heating system. Do not use automotive or ethylene glycol.
- Boiler installed above radiation level (or as required by authority having jurisdiction). Integral low water pressure switch is provided in boiler.
- Boiler used in connection with refrigeration system. Install piping in parallel with boiler, with appropriate valves to prevent chilled medium from entering boiler.
- System piping connected to heating coils located in air handling unit exposed to refrigerated air circulation. Install flow control valves or other automatic means to prevent gravity circulation of boiler water during cooling cycle.

⚠ WARNING

Burn and scald hazard. Safety relief valve could discharge steam or hot water during operation. Install discharge piping per these instructions.

5.3 Safety Relief Valve and Air Vent

- Install safety relief valve using pipe fitting provided with boiler. See Figure 5-2.
- Install safety relief valve with spindle in vertical position.
- Do not install shutoff valve between boiler and safety relief valve.
- Install discharge piping from safety relief valve. Do not use plastic pipe.
- Use ¾" or larger pipe.
- Use pipe suitable for temperatures of 375°F (191°C) or greater. Do not use plastic pipe on safety relief valve.
- Individual boiler discharge piping shall be independent of other discharge piping.
- Size and arrange discharge piping to avoid reducing safety relief valve relieving capacity below minimum relief valve capacity stated on rating plate.
- Run pipe as short and straight as possible to location protecting user from scalding and properly drain piping.
- Install union, if used, close to safety relief valve outlet.
- Install elbow(s), if used, close to safety relief valve outlet and downstream of union (if used).
- Terminate pipe with plain end (not threaded).

5.4 Trim Piping

- Temperature - Pressure Gauge. Install temperature pressure gauge using piping provided with boiler. See Figure 5-1.
- Some boiler models may have integral drain valve located inside jacket directly underneath pump. Install provided external drain valve as required.

5.5 System Piping

- Ensure caps are removed from boiler water connections.
- See Figure 5-9 for basic system piping configurations.
- Systems with automatic fill valves require back flow prevention device.
- Single boiler system. See Figures 5-4, 5-5, for general guidance. Additional considerations:
  - Boiler control is designed for single central heating pump. Installer responsible for integration of multiple central heating pumps.
  - Boiler control allows domestic hot water prioritization. Function could be lost if central heating pump is not directly connected to control system.
- Multiple boiler system. Considerations:
  - Control system requires equivalent water temperatures entering each boiler to properly sequence and adjust system supply temperature.

⚠ WARNING

Burn and scald hazard. Verify all plastic caps are removed from boiler connections. Failure to follow these instructions could result in death or serious injury.

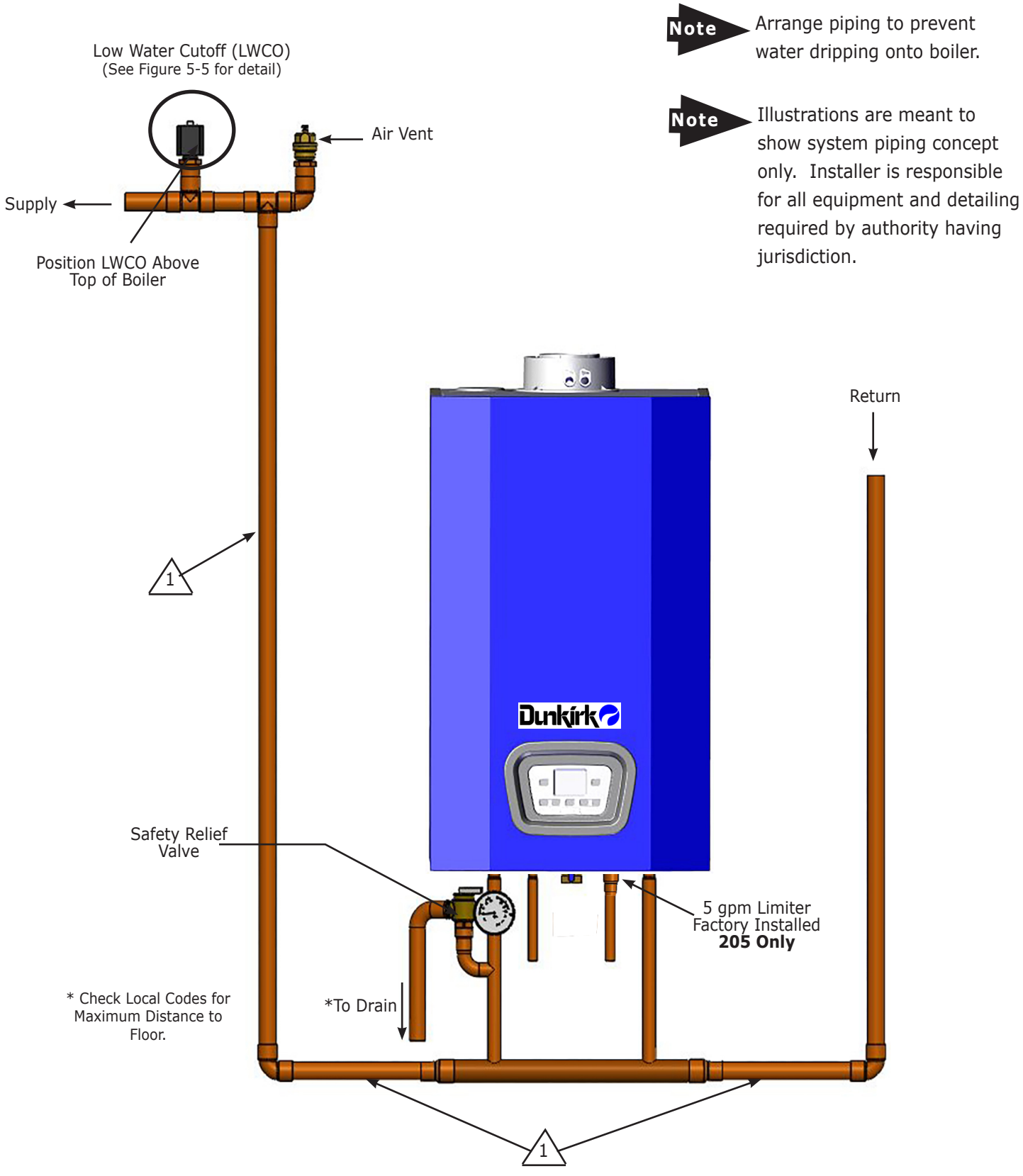
- Thoroughly flush all hydronic piping.
- Secure all valves/fittings to boiler.
- Ensure washers supplied are utilized.
- Face valves and fittings to rear wall.
- Fit union bends to valves.

  A. If soldering to boiler union bends, ensure bends are not connected to the valves, otherwise internal seals may be damaged.

  B. Verify 3/4" [22.2 mm] isolating valve with filter is fitted to heating return connection.

  C. Fit pressure relief valve connection vertically before heating isolating valve.
- Connect system valve pipe work to the boiler.
- Route pressure relief valve discharge piping to the floor. Follow local code with respect to necessary distance to the floor. See Figure 5-2.
- Verify all valves are closed.

FIGURE 5-3 - Piping Diagram - LWCO Location



5.6 External Optional Low Water Cut Off

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 control and dry contacts sized for load being connected. Wire control to boiler. See Figure 5-4.

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 Figure 5-3, 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 Figure 5-5.
- 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.

FIGURE 5-5 - Low Water Cutoff - Detail

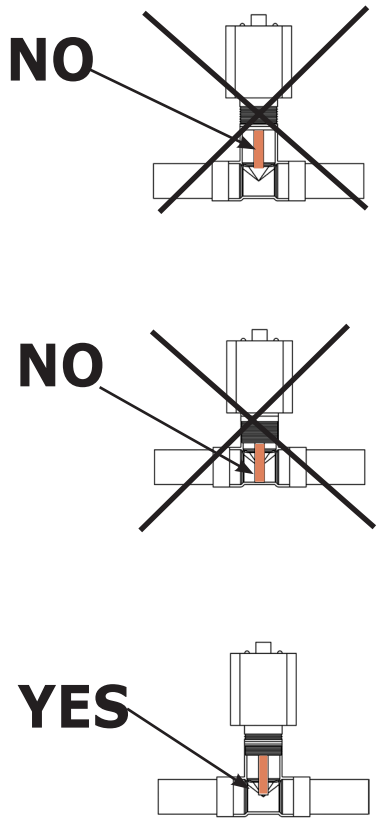
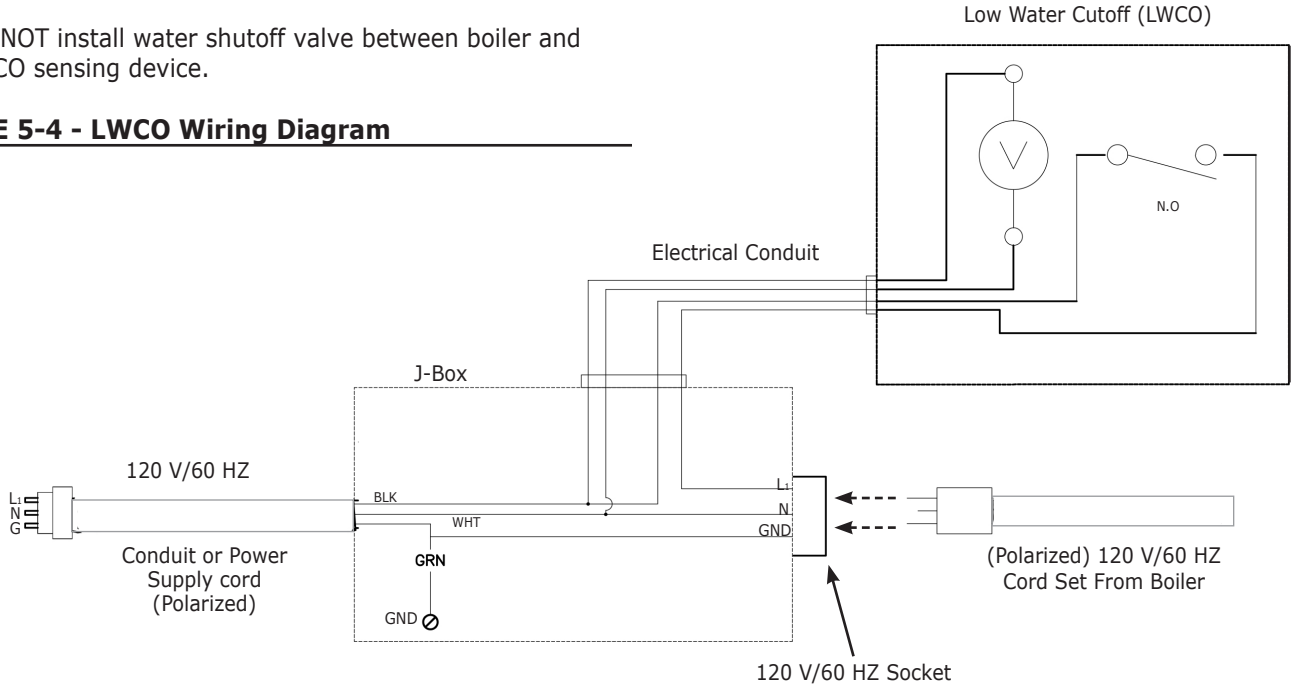
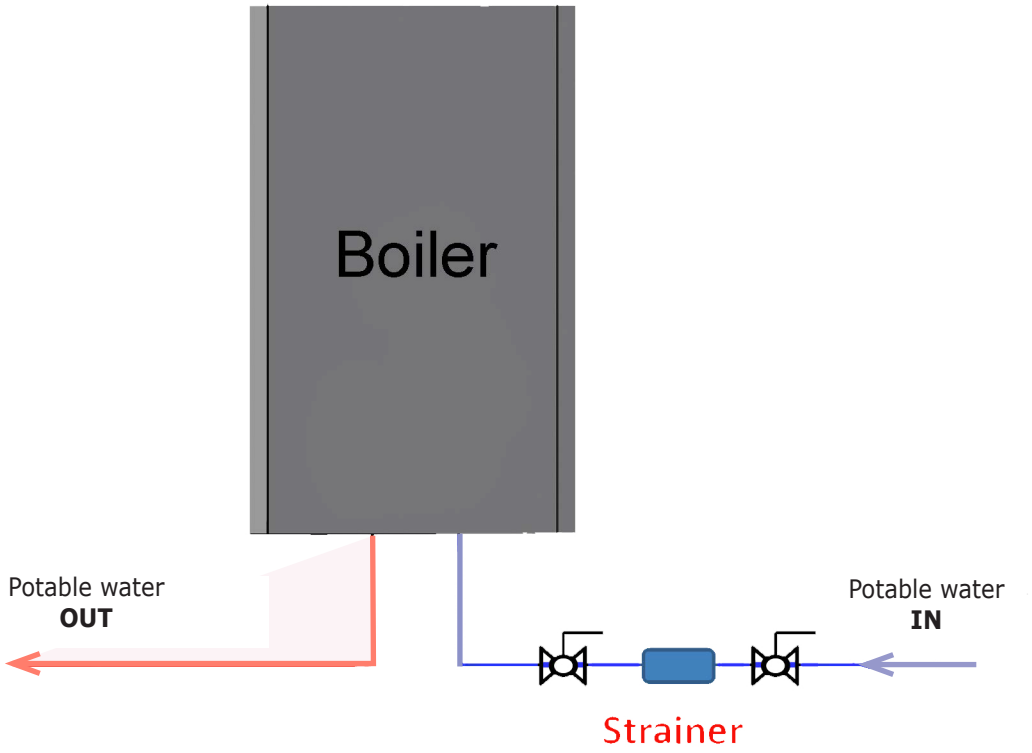


FIGURE 5-4 - LWCO Wiring Diagram



5.7 Manufacturer Recommendation - Strainer



Manufacturer Recommendation

A strainer filtering potable water before entering the boiler is highly recommended to prevent errors and lockouts. The stainer 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 stainer as close to the boiler as possible and place on DHW (domestic hot water) inlet connection located at bottom of the boiler.

5.8 Central Heating System

Boiler is designed for use in a sealed central heating system. Design the system to operate with flow temperatures of up to 176°F (80° C), take pump head, expansion tank size, mean radiator temperature, etc. into account.

Boiler is supplied with the following components: Pressure relief valve - 30.0 psi (2.1 bar). Boiler internal pressure switch will shut boiler off at 43.5 psi /3.0 bar.

Pressure gauge - to indicate the system pressure to be maintained.
By-pass - Boiler incorporates an automatic by-pass, However, where all radiators are fitted with thermostatic radiator valves, an external by-pass must be fitted.

5.9 Domestic Hot Water Mode
Dunkirk DCC-150 & 205 and DCB 125 & 165 with indirect tank

⚠ WARNING

Burn, Scald Hazard! Water temperature over 125°F (51°C) can cause severe burns and scalding. See User's Manual before setting water temperature. Failure to follow these instructions could result in death or serious injury.

- Priority is given to the domestic hot water supply. Demand at tap or shower will override any central heating requirement.
- Flow of water will operate the DHW flow switch which requests the 3 way valve to change position. This will allow the pump to circulate the primary water through the DHW plate heat exchanger. (DCC 150 & 205 only)
- Combustion fan will then come on and begin to run at ignition speed.
- Once the fan reaches ignition speed the control board will allow power to flow to the spark generator and gas valve creating ignition in the combustion chamber. The flame sensor will acknowledge the presence of the flame in the combustion chamber and send a signal to the control board.
- Temperature sensors will send a signal to the control board allowing the control board to increase/ decrease the speed of the fan. The combustion fan will in turn modulate the gas rate accordingly.
- When the domestic hot water demand ceases the burner will extinguish, unless there is a demand for central heating.

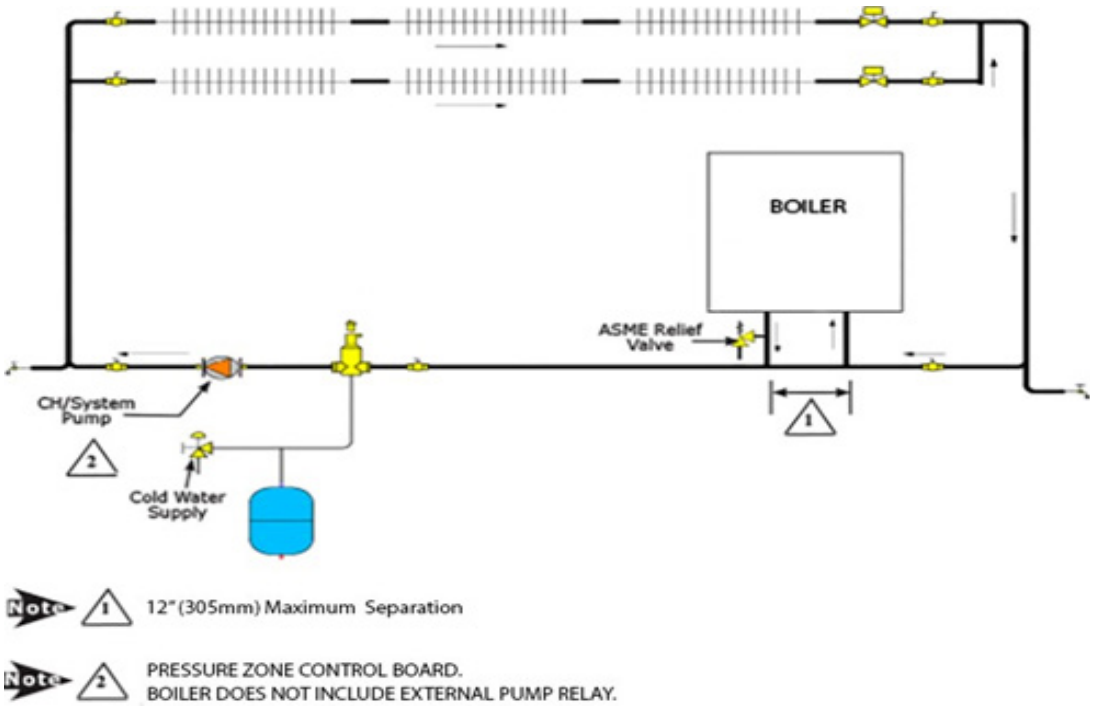
5.10 Frost Protection Mode

Frost protection mode is integrated into the appliance when left in domestic hot water or central heating position. If the temperature falls below 41°F / 5° C boiler will fire on its minimum setting until flow temperature of 86°F / 30° C is reached.

5.11 Pump Protection

Pump will automatically operate for 1 minute in every 24 hours to prevent seizing.

FIGURE 5-7



⚠WARNING

Fire, explosion, and asphyxiation hazard. Improper installation could result in death or serious injury. Read these instructions and understand all requirements before beginning installation.

⚠WARNING

ABS/PVC venting shall not to be used this product.
Use of DWV plumbing pipes to vent this boiler shall be prohibited.
Use of cellular core PVC (ASTM F891), cellular core CPVC, or Radel® (polyphenolsulfone) in venting systems shall be prohibited.
Covering non-metallic vent pipe and fittings with thermal insulation shall be prohibited.
Failure to follow these instructions could result in death or serious injury.

Note *Follow venting manufacturer's equivalent lengths for specialty fittings.*

6.1 General

- Installations shall comply with Authority having jurisdiction and in absence of such with:
  - » U.S. ANSI Z223.1 /NFPA 54 in the United States
  - » CSA B149.1 in Canada.
- This boiler requires a dedicated direct vent system.
- Vent connections serving appliances vented by natural draft shall not be connected into any portion of mechanical draft systems operating under positive pressure.
- Materials used in the U.S. shall comply with Authority having jurisdiction and in absence of such with: ANSI/ ASTM D1785, ANSI/ASTM F441, ANSI/ASTF493, UL1738 or ULS636.
- Venting system must be free to expand and contract.
- Vent system must have unrestricted movement through walls, ceilings and roof penetrations.
- Check for proper joint construction when joining pipe to fittings.
- If vent is penetrating ceilings and floors, openings must have means of fire stopping in joist areas and proper firestop spacer assemblies installed.
- Standard roof flashing methods must be used to install roof flashing.
- Frame wall and roof openings to provide support for attachment of termination assemblies.
- Support piping in accordance with pipe manufacturer's instruction and authority having jurisdiction. In absence of manufacturer's instruction use pipe hooks, pipe straps, brackets, or hangers of adequate and strength located at intervals of 4 ft (1.2m) or less. Allow for expansion/ contraction of pipe.
- Support horizontal sections of vent pipe to prevent sags capable of accumulating condensate.
- Assemble vent materials in accordance with venting manufacturer’s instructions.
- Slope exhaust pipe minimum of 1/4” per foot, or vent manufacturer’s recommendation, whichever is greater; back toward the boiler.
- Any "in line" elbows in flue system must be taken into consideration. First elbow on the top of the boiler is included in equivalent length calculations.

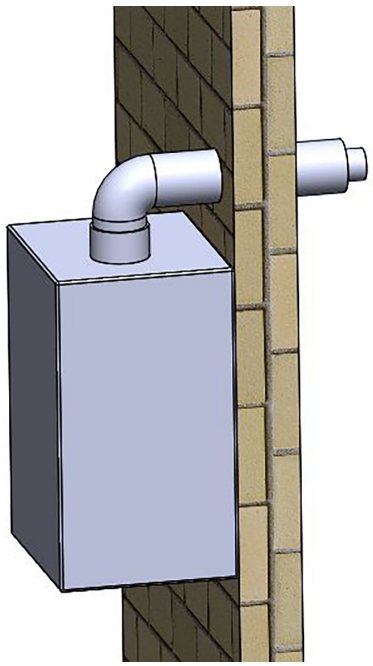
6.2 Removal of Existing Boiler From Common Vent System

When existing boiler is removed from common venting system, common venting system is likely to be too large for proper venting of appliances remaining connected to it. After removal of existing boiler, following steps shall be followed with each appliance remaining connected to common venting system placed in operation, while other appliances remaining connected to common venting system are not in operation:

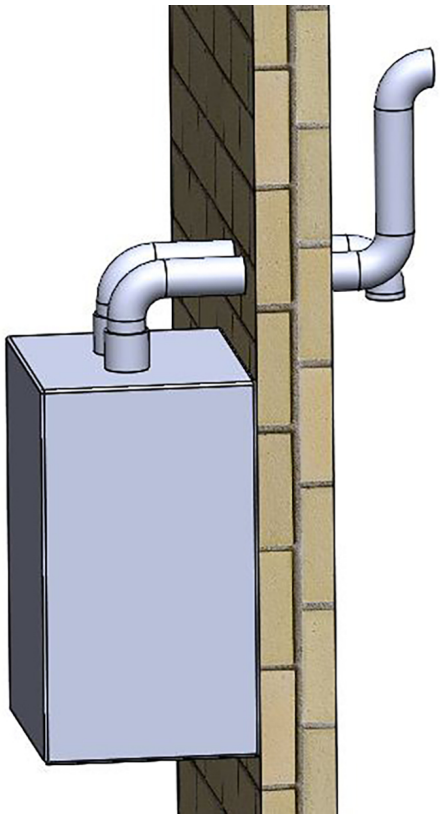
- Seal any unused openings in common venting system.
- Visually inspect venting system for proper size and horizontal pitch. Determine there is no blockage or restrictions, leakage, corrosion and other deficiencies which could cause an unsafe condition.
- When practical, close all building doors, windows, and all doors between space in which appliances remaining connected to common venting system are located and other spaces of building. Turn on clothes dryer and any appliance not connected to common venting system. Turn on exhaust fans, such as range hoods and bathroom exhaust so they will operate at maximum speed. Do not operate summer exhaust fan. Close fireplace dampers.
- Turn on appliance being inspected. Follow lighting instructions. Adjust thermostat so appliances will operate continuously.
- Test for spillage at draft hood relief opening after 5 minutes of main burner operation. Use flame of match or candle, smoke from cigarette, cigar or pipe.
- Determine each appliance remaining connected to common venting system properly vents when tested as outlined above. Then return doors, windows, exhaust fans and any other gas-burning appliance to their previous condition of use.
- Any improper operation of common venting system should be corrected so installation conforms with National Fuel Code, ANSI Z223.1/NFPA 54 and/or Natural Gas and Propane Installation Code, CAN/CSA B149.1. When re-sizing any portion of common venting system, common venting system should be re-sized to approach minimum size as determined using appropriate tables in Chapter 13 of the National Fuel Gas Code, ANSI Z223.1/NFPA 54 and/ or Natural Gas and Propane Installation Code, CAN/CSA B149.1.

6.3 Definitions

1. ***Coaxial piping*** – Figure 6-1 exhaust and air intake pipe have a common axis.



2. ***Twin Pipe –*** Figure 6-2 Exhaust and intake air are separate pipes, can be terminated using single wall terminals from the vent manufacturer or field built configuration using elbows or tees.



6.4 Securing Twin Pipe Polypropylene Venting

Note

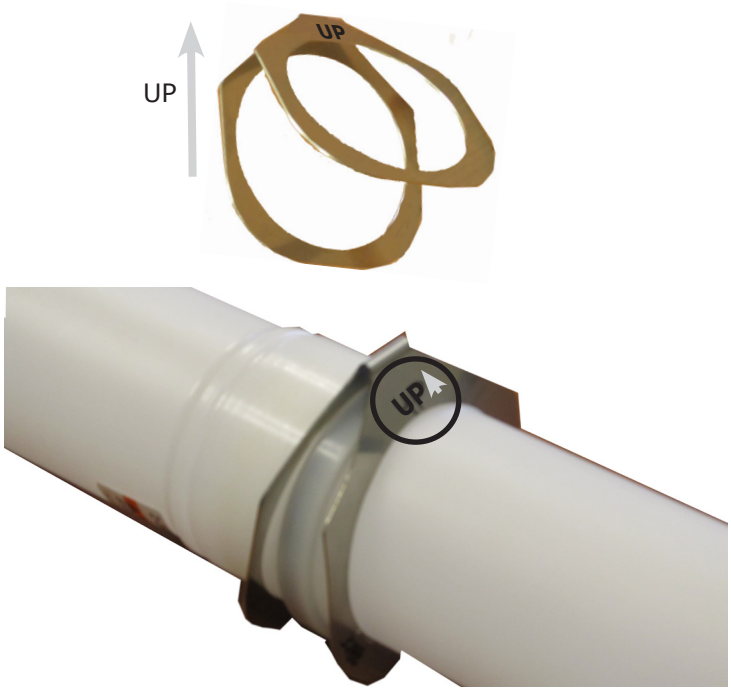
Venting manufacturer's use a device to secure single wall twin pipe polypropylene vent pieces to each other. Proper application of the securing mechanism is necessary for any use of twin pipe polypropylene venting on exhaust or air intake. Securing mechanism is for indoor use only and should not be used in outdoor applications. Follow venting manufacturer's instructions for applying the securing mechanism on twin pipe polypropylene venting.

Example for Natalini venting system.

(For other venting system suppliers see their instructions.)

1. Place clamp so etched "UP" is facing up.
2. Open clamp slightly by separating circular areas from each other.
3. Slide male end of first pipe through open clamp so the shoulder of the female end of the pipe stops the clamp from sliding off the pipe.
4. Insert the male end of of the second pipe into the clamp on the "up" etched side. Force the two pipes together.
5. Verify the two pipes are secure together with clamp in place.

Figure 6-3 - Natalini Clamp



6.5 Approved Venting Materials

⚠WARNING

Manufacturer recommends this condensing boiler be vented with approved polypropylene venting material. Use only materials listed below for vent pipe, intake air pipe, and fittings. Failure to comply could result in death or serious injury.

⚠ WARNING

- Covering non-metallic vent pipe and fittings with thermal insulation shall be prohibited.
- Use of cellular core PVC for venting flue gas could result in death, or serious injury.
- Coaxial venting shall be fastened with screws. Dual flue venting is NOT fastened with screws.

⚠WARNING

Do not use cellular core pipe. Only specified sized pipes are to be used. When using venting material other than boiler manufacturer's venting, note the correct installation procedure. Failure to follow these instructions could result in death, or serious injury.

Installation shall conform to requirements of authority having jurisdiction or in absence of such requirements:

- USA - National Fuel Gas Code, ANSI Z223.1/NFPA 54.

1. Venting shall be properly supported.
2. Boiler shall not support any type of vent system.
3. All piping, glue, solvents, cleaners, fittings and components must conform to ASTM and ANSI standards. In Canada ULC S636 and in the USA UL 1738 schedule 40 CPVC are the only approved vent system to be used as an alternative to polypropylene venting for the exhaust pipe
4. Manufacturer requires use of a spring clamp at every push-fit gasket connection when using a single wall polypropylene vent system.

6.6 Vent Termination

- Terminate combustion air and vent pipes with fittings or coaxial vent kit.

  Use horizontal pipe for vent and 90° elbow for combustion air termination when using fittings.
- Separate vent terminal from air inlet terminal to prevent flue gas recirculation. If T-Terminal is used on flue pipe at sidewall, air inlet terminal shall be at least 36" or more away from vent terminal.
- Locate combustion air termination as far as possible from swimming pool, swimming pool pump house, and other sources of airborne chlorine.
- Locate combustion air and vent terminals as required by authority having jurisdiction.

Approved Polypropylene Manufacturers

* Natalini
* DuraVent®
*Centrotherm
* Z-Flex®

Note: Maximum equivalent length may vary between manufacturers.

Vent Material Options

125 & 150		165 & 205	
1	4" / 2" [100 mm / 50 mm] polypropylene coaxial.	1	5"/3" [125mm/80m] polypropylene coaxial.
2	3" [80mm] polypropylene twin pipe. Shall be polypropylene on BOTH intake and exhaust.	2	3" [80mm] polypropylene twin pipe. Shall be polypropylene on BOTH intake and exhaust.
3	3" [80mm] flexible polypropylene for chimney exhaust vent, shall have rigid 3" [80mm] polypropylene on air intake.	3	2" [50mm] polypropylene twin pipe. Shall be polypropylene on BOTH intake and exhaust.
4	3" [80mm] Twin pipe CPVC. PVC optional on intake ONLY.	4	3" [80mm] flexible polypropylene for chimney exhaust vent, shall have rigid 3" [80mm] polypropylene on air intake.
		5	3" [80mm] Twin pipe CPVC. PVC optional on intake ONLY.

* Note: Adapters and fittings used with all vent systems shall be from same manufacturer and compatible with the vent pipe. See list for approved Manufacturers.

6.7 Coaxial Venting Instructions

Maximum equivalent flue lengths for Coaxial venting are:

Coaxial Pipe Maximum Vent Lengths		
Boiler Size	**125/150**	**165/205**
Vent Size	4"/2" [100mm/60mm]	5"/3" [128mm/80mm]
Natalini	32.80 ft [10m]	32.80 ft [10m]
DuraVent®	27.88 ft [8.5m]	32.80 ft [10m]
Centrotherm	24.60 ft [7.5m]	32.80 ft [10m]

Coaxial Elbows - Equivalent length	
4"/2" [100mm/60mm]	
45°	1.64 ft. [0.5m]
90°	3.28 ft. [1.0m]
5" / 3" [128mm/80mm]	
45°	1.64 ft. [0.5m]
90°	3.28 ft. [1.0m]

NOTE: Coaxial venting can run horizontal or vertical.

- Connect flue elbow to top of boiler and adjust direction of elbow to desired orientation (rear, right or left).
- Measure distance from outside wall face to elbow, this dimension will be known as 'X", add distance "Y" + 2" (50mm) to "X" this is the total dimension of the vents. See Figure 6.4.
- Mark dimension from above on outer aluminum intake vent. Measure length of waste material, and transfer dimension to inner grey flue pipe.
- Remove waste from both vents (flue and air). Verify cut ends are square and free from burrs. Insert flue back into intake air vent and pass them through hole in wall.
- Check all measurements before cutting. Clearance to combustible materials is zero when using coaxial vent system.
- After installing venting use calibrated analyzer to verify there is no recirculation of combustion.

FIGURE 6-3 - Coaxial Vertical Exhaust

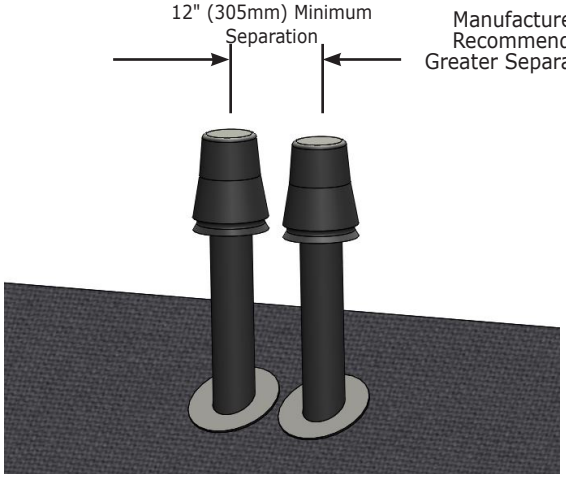


FIGURE 6-4 - Coaxial Venting Horizontal or Vertical

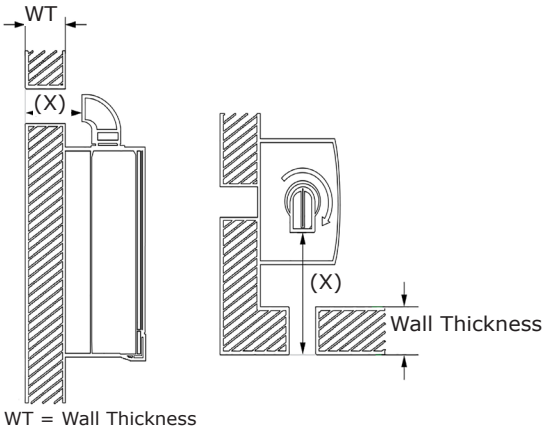


FIGURE 6-5 Side Wall Coaxial Venting

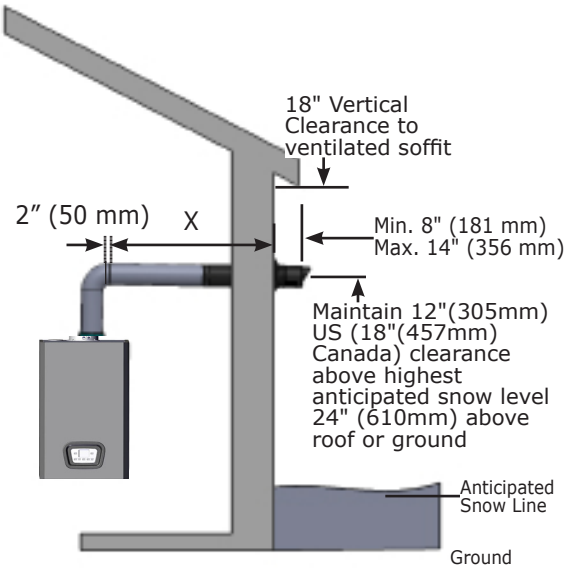
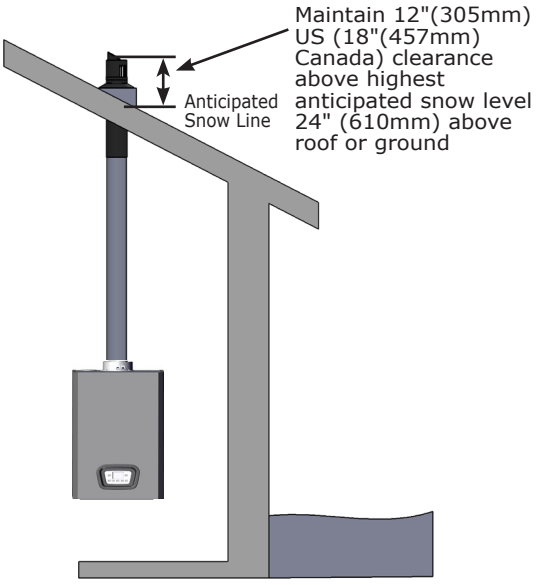


FIGURE 6-6 Roof Mount Coaxial Venting



6.8 Twin Pipe Systems

Twin pipe venting allows exhaust flue and intake flue to be separated from each other. Fresh air is drawn in at a different area from the flue terminal location.

A. *Twin Pipe CPVC System*

CPVC is approved for boiler exhaust. CPVC or PVC are both approved for air intake.
To transition from Coaxial at the top of the boiler to Twin Pipe CPVC/PVC a kit is available.

B. *Twin Pipe Polypropylene System*

Single wall polypropylene is used for both exhaust and air intake piping.
To transition from Coaxial at the top of the boiler to Twin Pipe polypropylene venting an adapter kit is available.

C. *Twin Pipe Separated Flue*

Exhaust and combustion air intake are not located in same general location.

D. *Twin Pipe - Common Atmospheric Zone Termination*

Twin Pipe Maximum Vent Lengths

		125/150	165/205	
		3" [80 mm]	3" [80 mm]	2" [50 mm]
Intake Vent	L1	49 ft	100 ft	85 ft
Exhaust Vent	L2	51 ft	100 ft	85 ft
Combined Vent	L1+L2	100 ft	200 ft	170 ft

Single Wall Elbows - Equivalent Length

	3"	2"
45° bend	0.82 ft [0.25 m]	3 ft [0.91m]
90° bend	1.64 ft [0.50 m]	5 ft [1.5 m]

NOTE: Two pipe separated flue can run horizontal or vertical.

FIGURE 6-7 - Twin Pipe Separated Horizontal Flue Termination

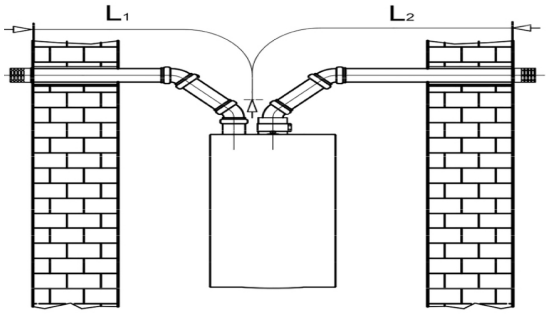


FIGURE 6-8 - Twin Pipe on Roof Combustion Air On Sidewall

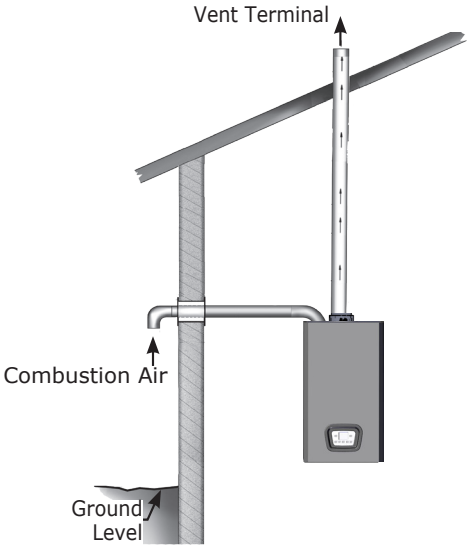
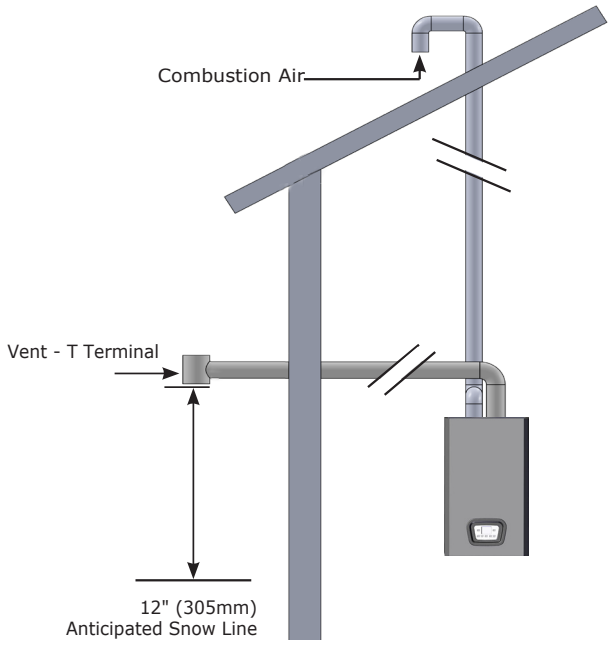


FIGURE 6-9 - Twin Pipe Flue On Sidewall, Combustion Air On Roof



Exhaust and combustion air intake are located in same general location and are of equal length.

Twin Pipe Maximum Vent Lengths Terminating in same location		
125/150	**165/205**	
3" [80 mm]	3" [80 mm]	2" [50 mm]
49 ft	100 ft	85 ft

Single Wall Elbows - Equivalent Length

Polyproplene

	3"	2"
45° bend	0.82 ft [0.25 m]	3 ft. [0.91m]
90° bend	1.64 ft [0.50 m]	5 ft [1.5 m]

PVC/CPVC

	3"
45° bend	3.5 ft [1 m]
90° bend	5.0 ft [01.50 m]

Note: Twin Pipe Common Atmospheric Zone termination can be run horizontal or vertical

FIGURE 6-11-Twin Pipe Roof Vent

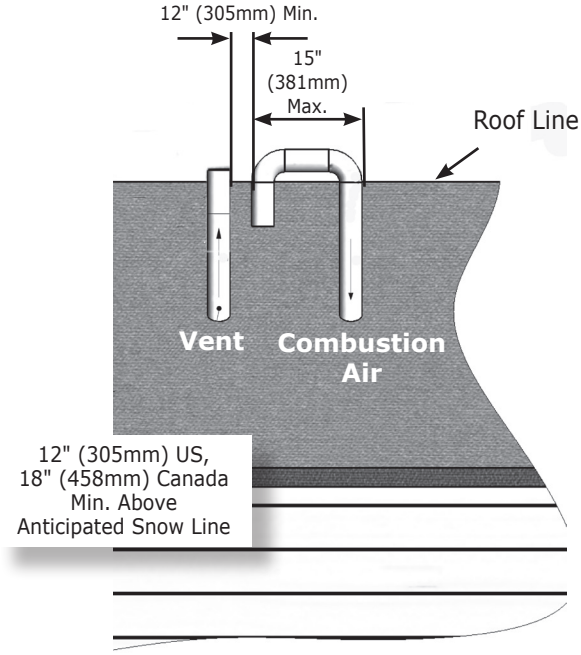


FIGURE 6-12 -Twin Pipe Side Wall Vent (Multiple Appliances)

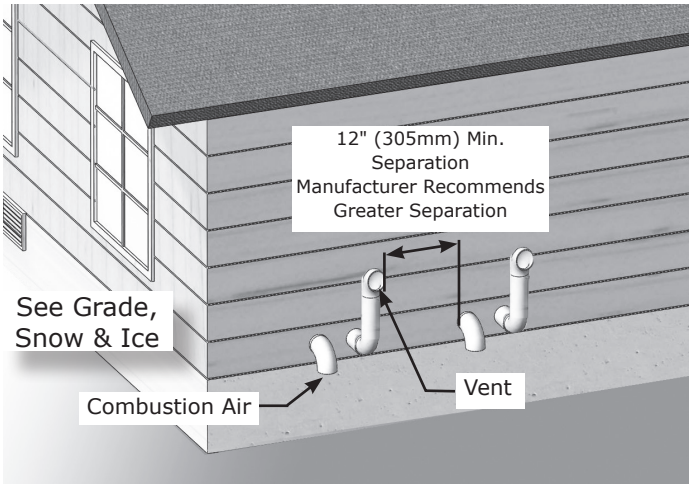


FIGURE 6-13 - Horizontal Twin Pipe, Exhaust and Intake

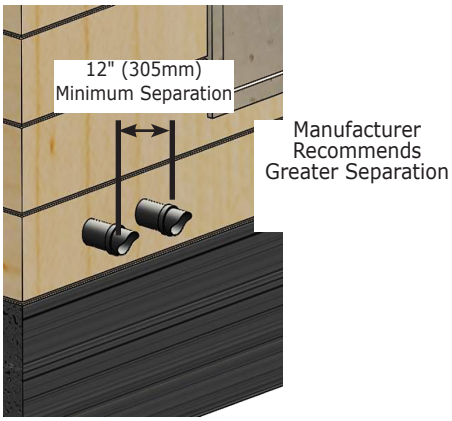


FIGURE 6-14 -Twin Pipe Side Wall Vent

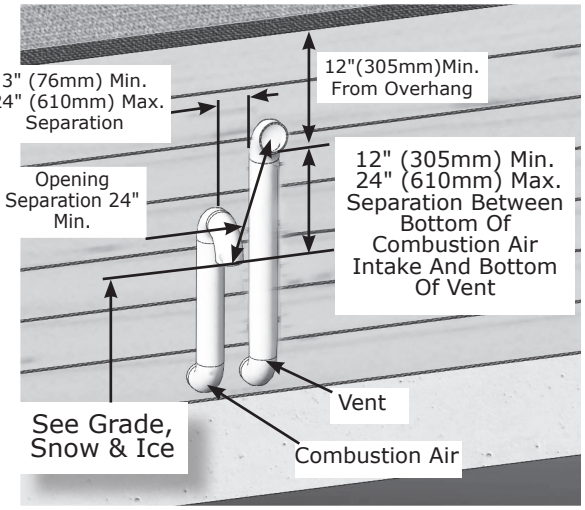
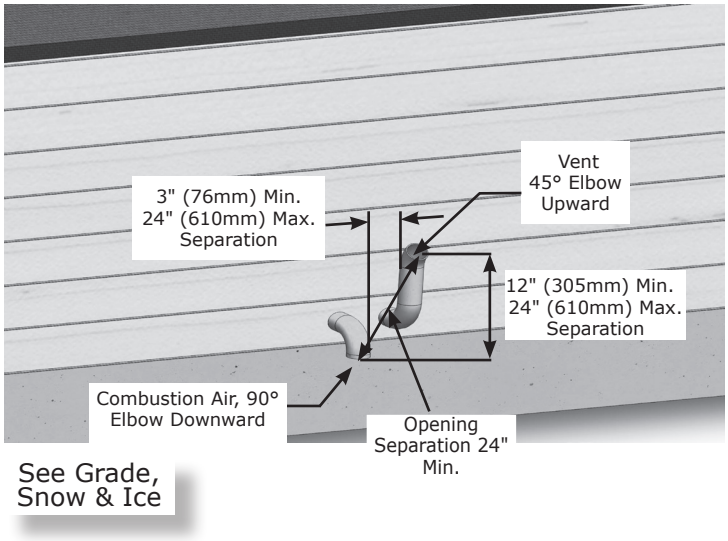


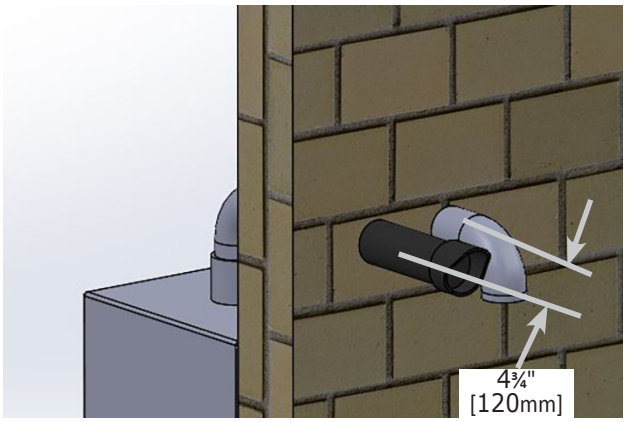
FIGURE 6-15 -Twin Pipe Side Wall with 45° Vent



Roof Terminations	• 12" (305mm) Min. horizontal separation between combustion air intake and vent of same appliance. • 12" (305mm) Min. 84" (2.2m) Max. vertical separation between combustion air intake and vent of different appliances. • 15" (381mm) Max. horizontal length of vent. • Min. vent/intake between different appliances 12" (305mm). • Max. allowable total vertical vent length with outside exposure is 10 ft.(3.05m). • Abandoned unused masonry chimney may be used as chaseway for combustion air and vent. Both combustion air and vent pipe must exit above top of chimney with clearances as shown in figure 6-11.

Grade, Snow & Ice	Maintain 12"(305mm) US, 18"(457mm) Canada clearance above highest anticipated snow level, 24" (610mm) above roof. Avoid locations where snow may drift and block vent and combustion air. Ice or snow may cause boiler to shut down if vent or combustion air becomes obstructed.

FIGURE 6-16- Single Wall Exhaust Kit and Air Intake Minimum Distance Center to Center



6.9 Flexible Vent System

Flexible Pipe Maximum Vent Lengths			
3" [80 mm] Diameter Pipe		125/150	165/205
Natalini	Exhaust	75 ft [22.8m]	50 ft [15.2m]
	Intake	50 ft [15.2m]	50 ft [15.2m]
DuraVent®	Exhaust	82 ft [24.9m]	50 ft [15.2m]
	Intake	50 ft [15.2m]	50 ft [15.2m]
Centrotherm	Exhaust	52 ft [15.8m]	50 ft [15.2m]
	Intake	50 ft [15.2m]	50 ft [15.2m]
Z-Dens	Exhaust	NA	50 ft [15.2m]
	Intake		50 ft [15.2m]

Single Wall Elbows - Equivalent Length

	3" [80 mm]
45° bend	0.82 ft [0.25 m]
90° bend	1.64 ft [0.50 m]

Note *Flexible vent systems shall only be run vertical. Horizontal runs before adapting to flexible must be rigid pipe.*

- Maximum vent lengths based on equivalent straight runs only. Include rigid pipe and fittings in overall equivalent length calculations.
- Flexible venting installations use single wall polypropylene to pass flue gasses to base of chimney, then flexible venting to get them to termination at the top.
- Combustion air is not supplied through masonry chimney. Combustion air must be from outside using 3" [80 mm] single wall polypropylene.
- Position boiler to use minimum of rigid single wall polypropylene venting to the chimney.
- Follow venting manufacturer's instructions on assembly and clearances to maintain.
- Avoid sharp bends in flexible venting.

FIGURE 6-17 - Flexible Venting System

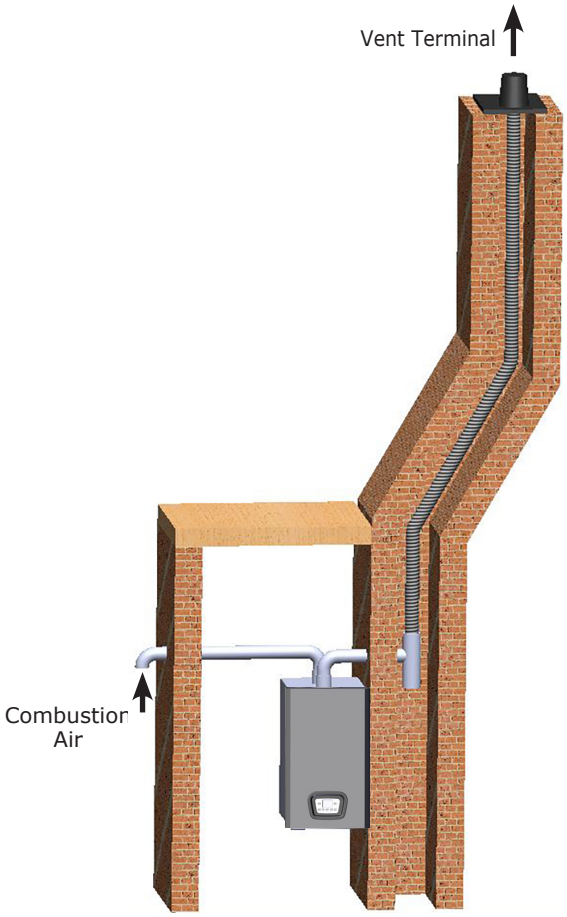
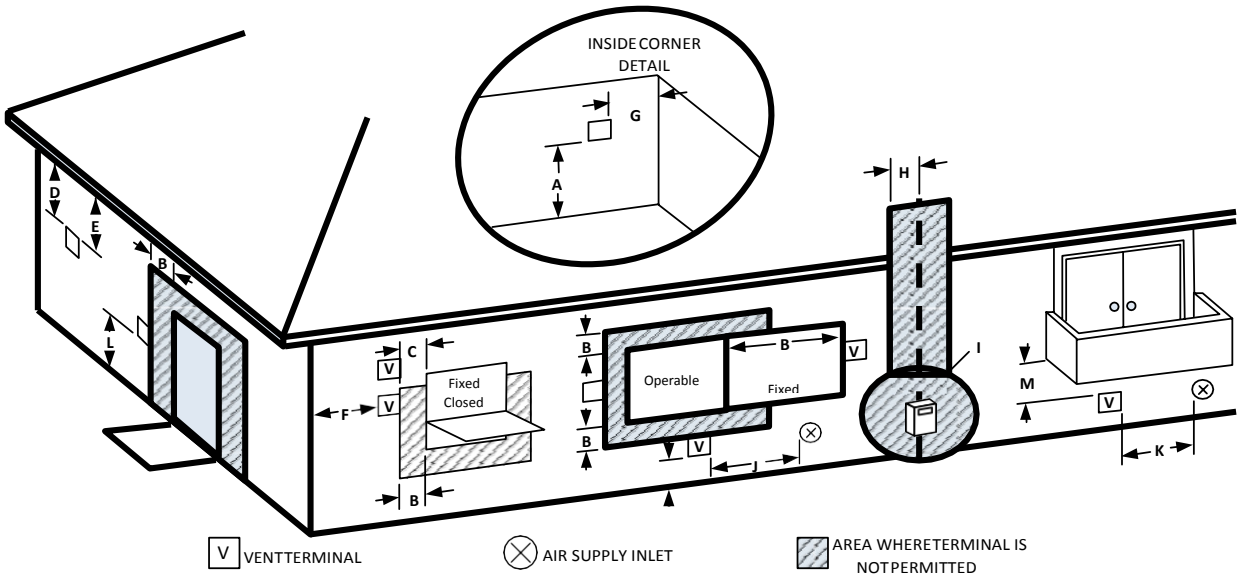


FIGURE 6-16 - Flue Terminal Location

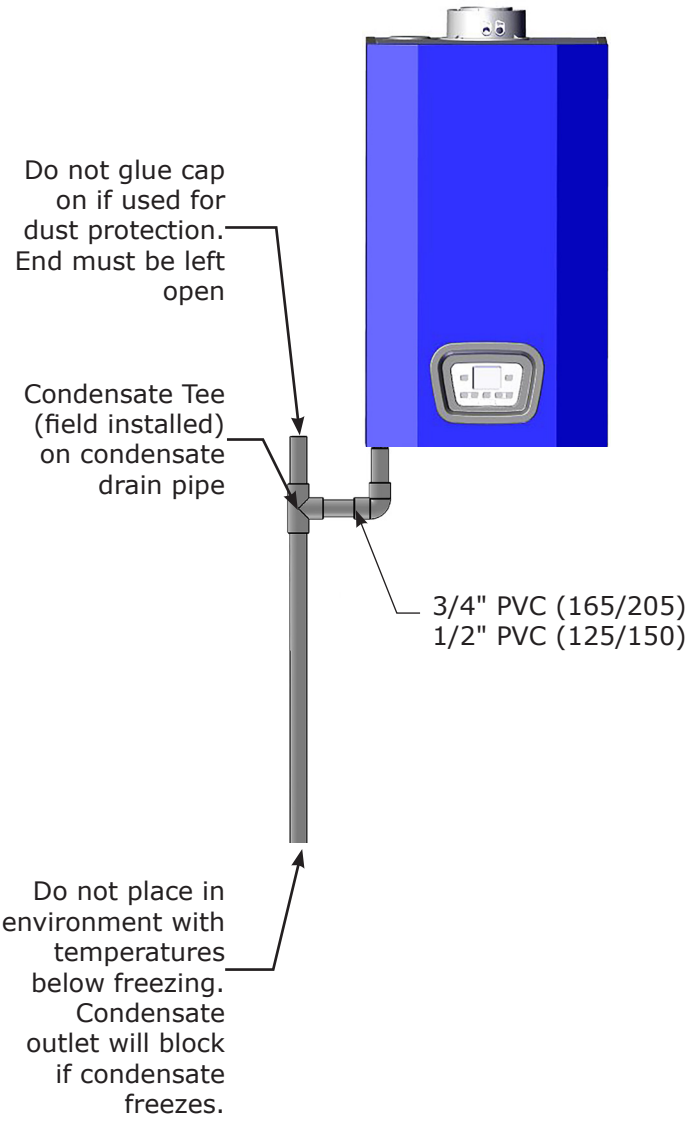
All vent pipe and combustion air pipe and fittings shall comply with the following:
Materials used in the U.S. must comply with the following standards:
ANSI/ASTM D1785, ANSI/ASTMD2661, ANSI/ ASTM F441.



Vent Termination Minimum Clearances			
		US Installations	Canadian Installations
A	Clearance above grade, veranda, porch, deck, or balcony	12" (305mm)	12" (305mm)
B	Clearance to window or door that may be opened	12" (305mm)	3 ft. (0.9m)
C	Clearance to permanently closed window	*12" (305mm)	*12" (305mm)
D	Vertical Clearance to ventilated soffit located above the terminal within a horizontal distance of 2 feet (610 mm) from the center line of the terminal	18" (457mm)	18" (457mm)
E	Clearance to unventilated soffit	18" (457mm)	18" (457mm)
F	Clearance to outside corner	9" (229mm)	9" (229mm)
G	Clearance to inside corner	36" (456mm)	36" (456mm)
H	Clearance to each side of center line extended above meter/ regulator assembly	3 ft. (0.9m) within a height of 15 ft. (4.5m) above the meter/ regulator assembly	3 ft. (0.9m)
I	Clearance to service regulator vent outlet	3 ft. (0.9m)	3 ft. (0.9m)
J	Clearance to non-mechanical air supply inlet to building or the combustion air inlet to any other appliance	12" (305mm)	3 ft. (0.9m)
K	Clearance to mechanical air supply inlet	*3 ft. (0.9m)	6 ft. (1.8m)
L	Clearance above paved sidewalk or paved driveway located on public property	*7 ft. (2.1m)	7 ft. (2.1m) †
M	Clearance under veranda, porch, deck or balcony	*12" (305mm) ‡	12" (305mm)‡
† A vent shall not terminate directly above a sidewalk or paved driveway that is located between two single family dwellings and serves both dwellings.		*For clearances not specified in ANSI Z223.1/NFPA 54 or CSA B149.1, clearance will be in accordance with local installation codes and the requirements of the gas supplier and these installation instructions.	
‡ Permitted only if veranda, porch, deck or balcony is fully open on a minimum of one side beneath the floor.			

Note: Local Codes or Regulations may require different clearances. Flue terminal must be exposed to external air and position must allow the free passage of air across it at all times. In certain weather conditions the terminal may emit a plume of steam. Avoid positioning terminal where this may cause a nuisance.

FIGURE 6-17 Condensate Drain



6.10 Condensate Piping

- Use materials acceptable to authority having jurisdiction. In absence of such authority:
  - USA - PVC or CPVC per ASTM D1785/D2845 Cement or primer per ASME D2564 or F493.
- No external trap needed.
- Connect condensate hose, hose clamps, and coupling to boiler drain trap as shown in figure 6-17.
- Connect condensate piping to 3/4" PVC for 165/205 or 1/2" PVC for 125/150 as shown.
- Slope condensate drain pipe minimum 1/4" per foot (21mm/m) away from boiler.
- Support condensate pipe to eliminate any sages.
- Use field source condensate pump, designated for use with condensing boiler, if boiler located below disposal point.
- Condensate pump should have overflow switch. Condensate from Boiler is slightly acidic and may cause property damage if overflow.
- Field source condensate neutralizing kit as required by authority having jurisdiction or for environmentally friendly condensate disposal.

NOTICE

Manufacturer requires an air vent be used to prevent condensate line vacuum lock.

⚠WARNING

Fire, explosion, asphyxiation and burn hazard. Boiler piping and gas connections shall be leak tested before placing boiler in operation. Failure to follow these instructions and or improper installation could result in death or serious injury.

⚠ CAUTION

WHAT TO DO IF YOU SMELL GAS

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

⚠ DANGER

Fire Hazard. Do not use matches, candles, open flames, or other methods providing ignition source. Failure to comply will result in death or serious injury.

⚠WARNING

If overheating occurs or gas supply fails to shut off, do not turn off or disconnect the electrical supply to the pump. Shut off gas supply at a location external to the appliance.
Do not use this boiler if any part has been under water. Call a qualified service technician before use.

NOTICE

Sediment trap shall be located upstream of gas controls.

7.1 General

- Use piping materials and joining methods acceptable to authority having jurisdiction. In absence of such requirements:
  - USA - National Fuel Gas Code, ANSI Z223.1/NFPA 54
- Install manual main shutoff valve before the gas valve accordance with state and local requirements.
- Size and install gas piping system to provide sufficient gas supply to meet maximum input at not less than minimum supply pressure.
  - A. DCB-125 requires a gas rate of 137.60 ft_3/h (3.90 m_3/h) for Gas A (Natural Gas) and 101.30 ft_3/h (2.87 m_3/h) for Gas E (Liquid Propane Gas).
  - B. DCC-150 requires a gas rate of 167.20 ft_3/h (4.74 m_3/h) for Gas A (Natural Gas) and 122.80 ft_3/h (3.48 m_3/h) for Gas E (Liquid Propane Gas).
- Gas meter and supply pipes must be capable of delivering the listed quantity of gas in addition to demand from any other appliances in the house. Boiler requires a 3/4" (19.5 mm) gas supply pipe.
- Support piping with hooks straps, bands, brackets, hangers, or building structure components to prevent or dampen excessive vibrations and prevent strain on gas connection. Boiler will not support piping weight.
- Use thread (joint) compound (pipe dope) suitable for liquefied petroleum gas.
- Install external field sourced manual main gas shutoff valve, ground joint union, and sediment trap upstream of gas controls.
- Install boiler so gas ignition system components are protected from water dripping, spraying,rain, etc. During appliance operation and service.
- Leak test boiler and gas line connections before placing boiler into operation.

7.2 Leak Check Gas Piping

Pressure test boiler and gas connection before placing boiler in operation.

- Pressure test over 1/2 psig (3.5 kPa). Disconnect boiler and its individual gas shutoff valve from gas supply system.
- Pressure test at 1/2 psig (3.5 kPa) or less. Isolate boiler from gas supply system by closing manual gas shutoff valve.
- Locate leakage using gas detector, noncorrosive detection fluid, or other leak detection method acceptable to authority having jurisdiction. Do not use matches, candles, open flames, or other methods that can provide ignition source.
- Correct leaks immediately and retest.

NOTICE

If overheating occurs or gas supply fails to shut off, do not turn off or disconnect electrical supply to pump. Shut off gas supply at location external to the boiler.

⚠ DANGER

Electrocution Hazard! HIGH VOLTAGE - Connections in terminal block M1 are high voltage (120V / 60Hz). Before making connections, verify appliance is disconnected from power supply. Respect the input polarity on terminal block M1: L (LINE) - N (NEUTRAL). Failure to follow these instructions WILL result in death or serious injury.

⚠WARNING

Electrical shock hazard. Turn OFF electrical power supply at service panel before making electrical connections. Failure to do so could result in death or serious injury.

8.1 *General*

Electrically bond boiler to ground in accordance with requirements of authority having jurisdiction. Refer to:

- USA- National Electrical Code, ANSI/NFPA 70.
- Install all wiring in accordance with requirements of National Electrical Code and any additional national, state, or local code requirements having jurisdiction.
- All wiring shall be N.E.C. Class 1.
- Boiler shall be electrically grounded in accordance with the National Electrical Code, ANSI/NFPA No. 70-latest edition.
- Boiler requires a 120V 60Hz power supply. Ensure electrical supply is polarized.
- There shall only be one common isolator, providing complete electrical isolation, for boiler and any external controls. Using PVC insulated cable 12 AWGx3C 221°F (105 ºC).

8.2 Install Room Thermostat

Install room thermostat on inside wall. Do not install where it will be influenced by drafts, hot or cold water pipes, lighting fixtures, television, sunrays or near a fireplace.

8.3 Electrical Connections

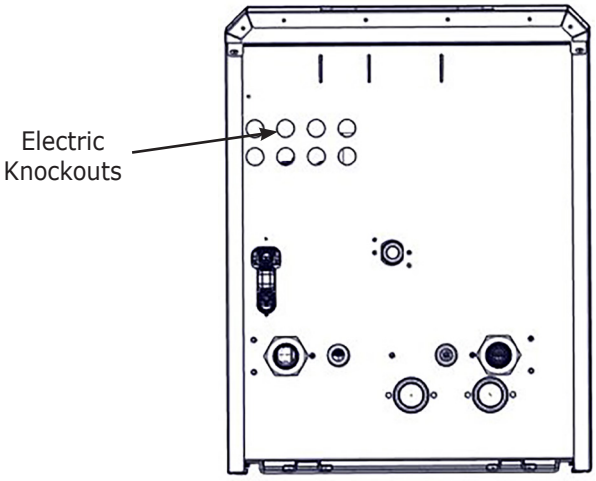
- Boiler requires 120V 60Hz power supply. Verify electrical supply is polarized.
- Boiler shall be grounded and on dedicated circuit.
- Shall be one common isolator, providing electrical isolation for boiler and any external controls. Using PVC insulated cable 18 AWGx3C 221°F (105°C).
- All wiring must be installed in accordance with requirements of the National Electrical Code and any additional national, state, or local code requirements having jurisdiction. All wiring must be N.E.C. Class 1.
- Canada, installation must conform to CSA C22.1 Canadian Electrical Code Part 1 and any local codes.
- If replacing original boiler wiring use only TEW 105°C or equivalent.
- If appliance is connected to in floor system, install limit thermostat to prevent latter from overheating.

Model Size	125	150	165	205
Power Supply	120V - 60Hz			
Power Consumption	133 W	142 W	173 W	182 W
Internal Fuse (Qty. 2)	F3.15 A			
Electrode Spark Gap	1/8" to 3/16" [3.1mm to 4.7mm]			

Note Wiring diagrams can be found in Appendix A of this Manual.

FIGURE 8-1 Electric Knockouts Bottom Of Boiler -

Illustration shown (size 205), illustration is for location purposes, wiring knockouts found same general location on all sizes.



⚠ DANGER

Electrocution Hazard! HIGH VOLTAGE - Connections in terminal block M1 are high voltage (120V / 60Hz). Before making connections, verify appliance is disconnected from power supply. Respect the input polarity on terminal block M1: L (LINE) - N (NEUTRAL). Failure to follow these instructions WILL result in death or serious injury.

8.4 Access To Connection Block

1. Ensure there is no line voltage at boiler.
2. Unscrew two screws located under front panel. Remove front cover.
3. Guide controller or thermostat wire through round grommet(s) on right side of boiler's bottom plate right.
4. Tilt control box forward by opening holding clips located on left side of boiler.
5. Expose M1 and M2 terminal blocks by removing screw from plastic cover on left. See Figure 8-3.
6. Remove plastic from channel in plastic cover. Run wires through new opening.
7. Connect wires to appropriate terminals on connection block.
8. Tilt control box back to original position. Ensure clip on left side is fully engaged.
9. Replace front cover and screws under front panel.
10. Turn power to boiler on.

Various thermostats and controllers can be connected to standard control PCB.

8.5 Main Supply Connection

Main supply is connected to terminal block **M1** which is high voltage (120V / 60Hz).
Fuses, 3.15 A, are incorporated in the power supply terminal block. To check or replace fuse pull out black fuse carrier.

FIGURE 8-2 Terminal Block Locations

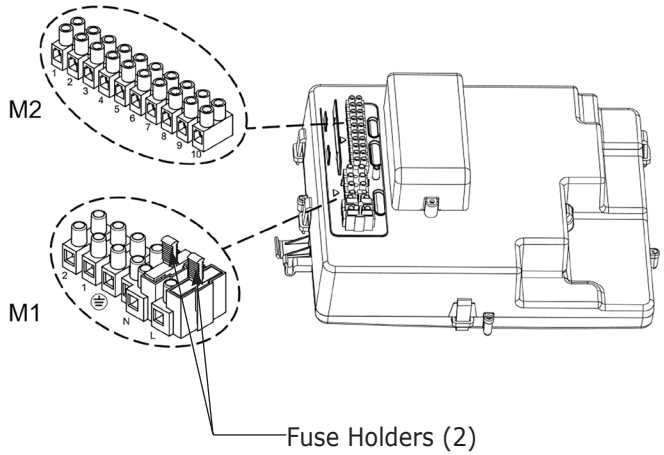
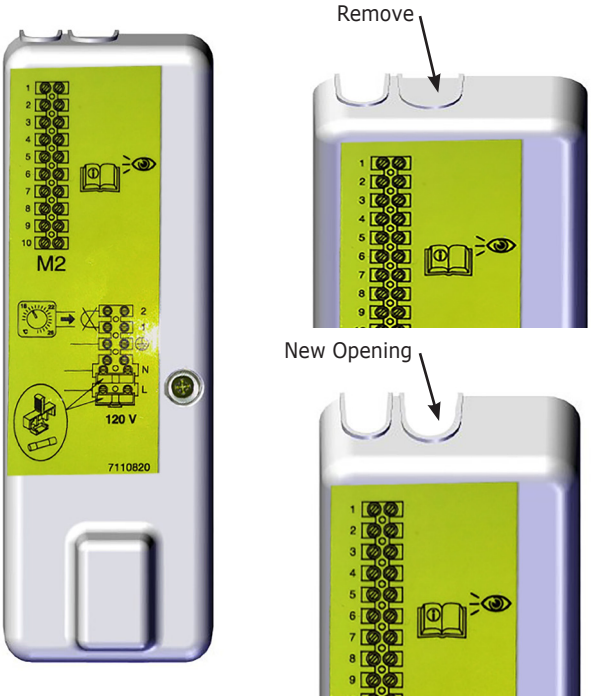


FIGURE 8-3 Terminal Plastic Cover with Knockouts



TERMINAL BLOCK M1

(L) = Live (brown)
(N) = Neutral (light blue).
⏚ = Ground (yellow-green).
(1) (2) = contact for 120V Room Thermostat.
Place jumper back on terminals 1-2 of boiler terminal block **M1** if room thermostat is not used or if Remote Control is not installed.

TERMINAL BLOCK M2

Terminals 1 - 2: bus connection of programmable room unit (supplied as accessory)
Terminals 4 - 5: outdoor temperature sensor connection (supplied as accessory)
Terminal 3 : not used.
Terminals 6 - 7 - 8: see section 8.6.
Terminals 9 - 10: Indirect storage tank sensor connection for Dunkirk Models DCB-125 & 165.

8.6 Install Room Thermostat

Install room thermostat on inside wall. Do not install where it will be influenced by drafts, hot or cold water pipes, lighting fixtures, television, sun rays or near a fireplace.

Dry contact only - do not apply 24 volts between 6 and 7.

A. Connect 24V Room Thermostat

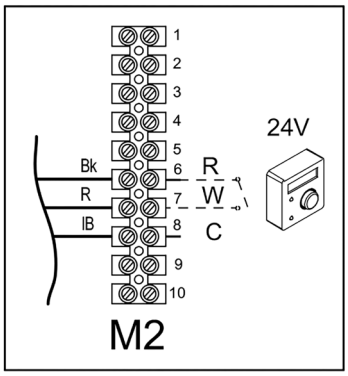
- turn power off to boiler;
- access terminal block **M2**;
- connect 24V room thermostat to terminals **6(R)-7(W)-8(C)**; Do not apply dry volt between 2 terminals. Dry contact only.
- turn boiler power on;
- verify room thermostat operates per thermostat manufacturer instructions.

NOTE: maximum load allowed is 10 mA

B. Connect 24V Heat Anticipator Room Thermostat

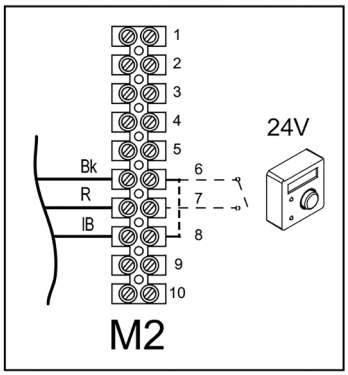
- turn power off to boiler;
- access terminal block **M2**;
- connect wires of 24V Heat anticipator room thermostat to terminals **6-7**;
- connect bridge between terminals **6-8**;
- turn boiler power on;
- verify 24 V Heat anticipator room thermostat operates per thermostat manufacturer instructions.

FIGURE 8-4 Thermostat Connections



A

24V Room Thermostat



B

24V Heat Anticipator Room Thermostat

8.7 Optional Electrical Connections

A. Outdoor Temperature Sensor

To connect this accessory, see figure 8-5, terminals 4-5, and instructions supplied with sensor.

B. Setting "Kt" Climate Curve

When external sensor is connected to boiler, the electronic board adjusts the flow temperature calculated according to set Kt coefficient.

Select required curve by pressing  as indicated in chart below for selecting the appropriate curve (00 to 90).

	Flow temp		Outside temp

FIGURE 8-5 Outdoor Sensor Connections

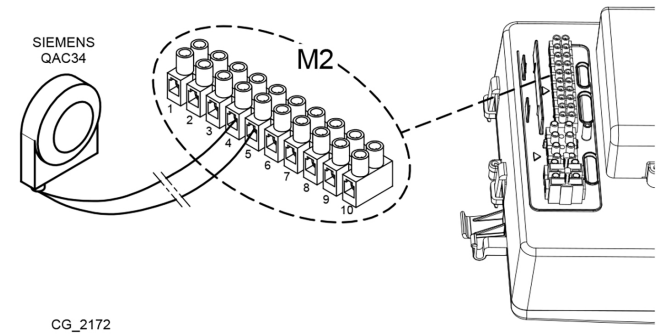
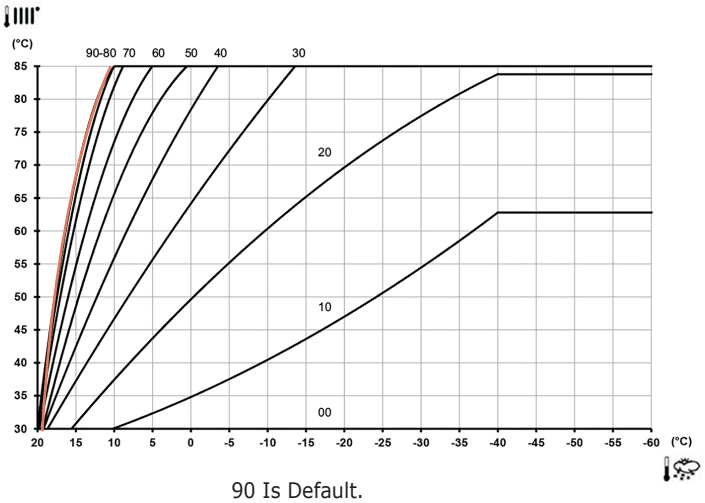
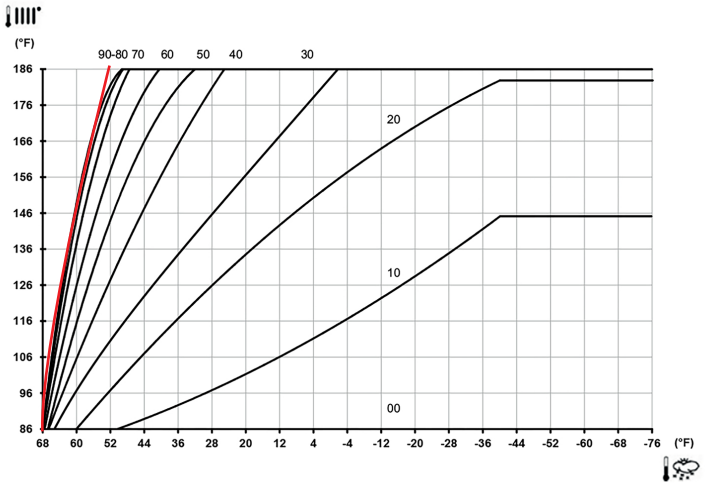


FIGURE 8-6 Kt Climate Curves



90 Is Default.



NOTE:

Temperatures below -40 °F (-40 °C), maximum heating flow temperature set point no longer increases, curves shown on graph become horizontal.

8.8 Indirect Storage Tank

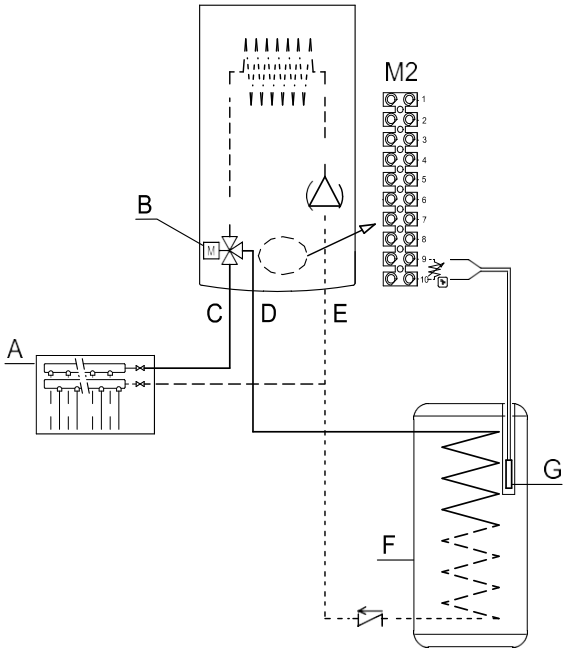
Boilers DCB-125 and DCB-165 can be electrically connected to indirect storage tank as follows:

- Connect DHW priority sensor NTC to terminals **9-10** on terminal block **M2**.
- Insert NTC sensor element in the sensor well of indirect storage tank.
- Verify exchange capacity of the storage boiler coil is appropriate for boiler power.
- Adjust DHW temperature +95 °F...+140 °F (+35 °C...+60 °C) by pressing  on boiler Controll.

IMPORTANT: set parameter P03 = 05 as described in: "PARAMETER SETTINGS".

FIGURE 8-7A Kt Indirect Storage Tank

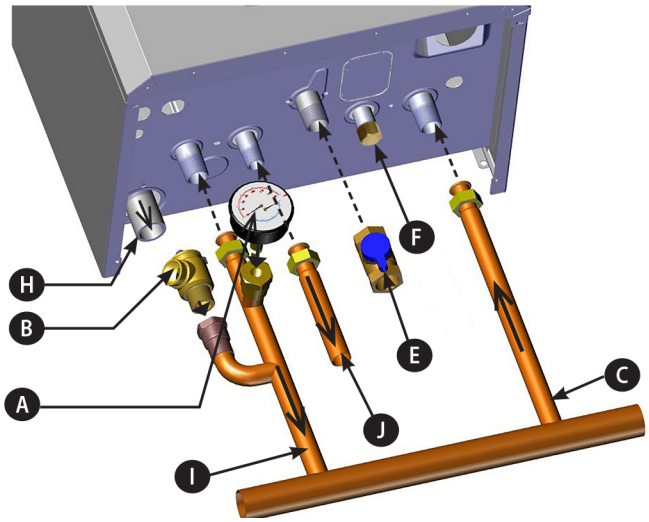
*125 Model shown - See Application Guide for size 165



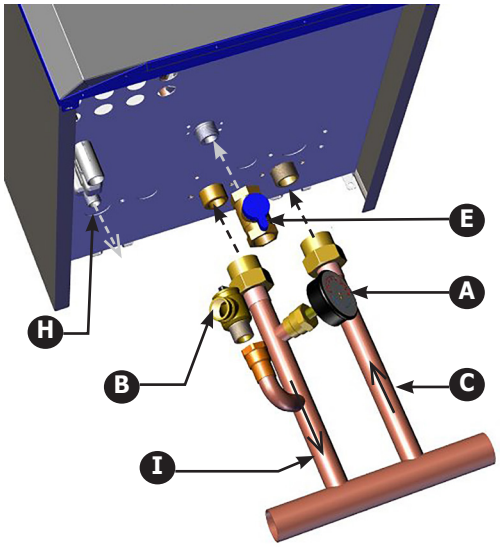
A	Heating system
B	Three way diverter valve
C	Heating water flow
D	Heating supply to DHW indirect storage tank coil
E	Heating water return
F	Tank
G	Optional DHW priority sensor tank

9.1 Central Heating System Connections - Heat Only

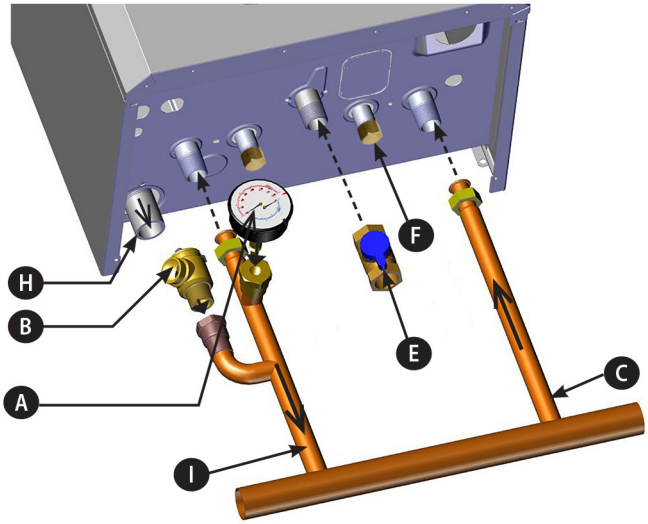
DCB-125 HEATING ONLY *WITH* OPTIONAL INDIRECT DHW CONNECTION



DCB-165 HEATING ONLY



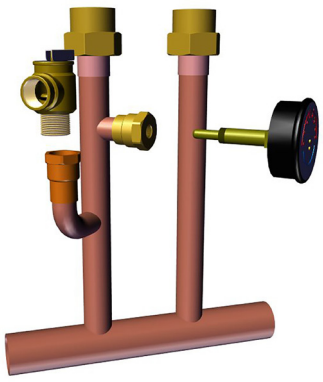
DCB-125 HEATING ONLY *WITHOUT* OPTIONAL INDIRECT DHW CONNECTION



LEGEND		125	165
A	Pressure Gauge	-	
B	Pressure Relief Valve	30.00 psi [2.11 bar]	
C	Heating return connection	3/4" [22.2mm]	1" [25.4mm]
E	Gas shutoff connection	3/4" [22.2mm]	
F	Boiler filling connection	1/2" [15.9mm]	na
H	Drain connection for condensate	13/16" [21mm] ID Hose	3/4 NPT
I	Heating supply connection	3/4" [22.2mm]	1" [25.4mm]
J	Optional Indirect DHW connection	1/2" [15.9mm]	na

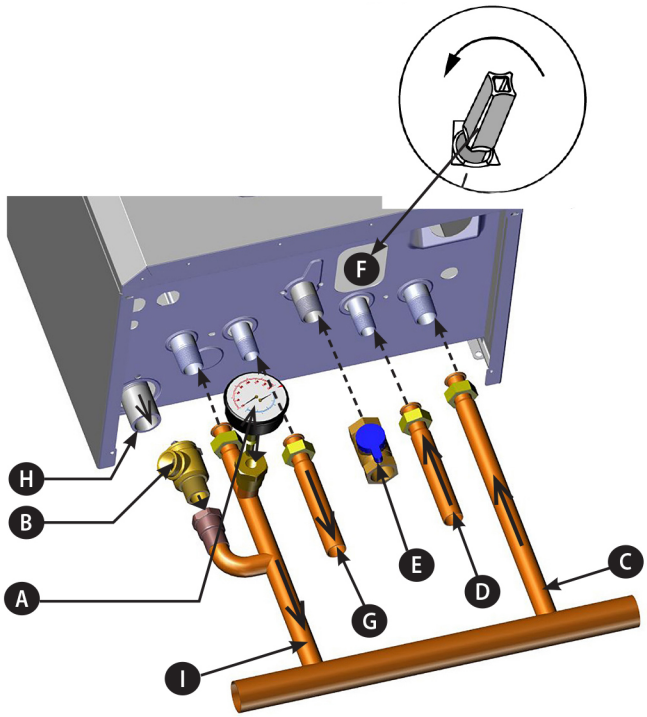
MANIFOLD DCB-125

MANIFOLD DCB-165

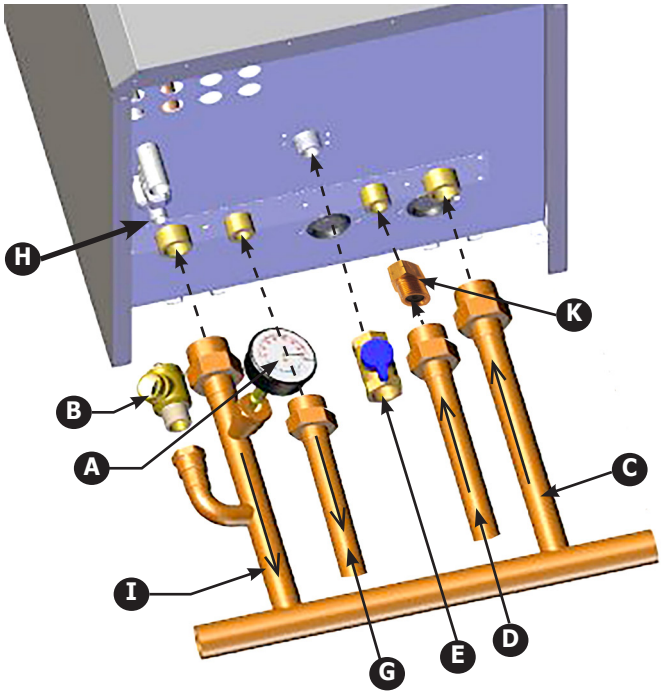


9.2 Central Heating System Connections - Combi

DCC-150 COMBI

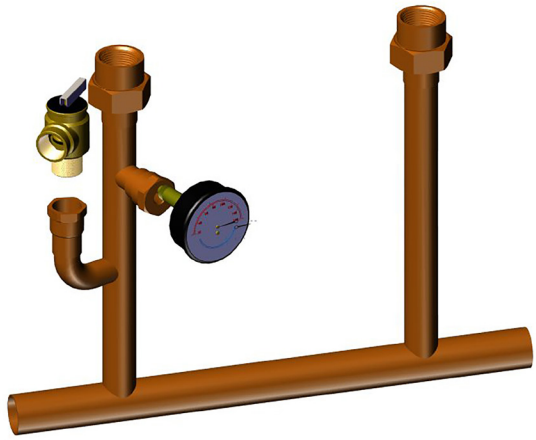


DCC-205 COMBI



	LEGEND	150	205
A	Pressure Gauge	-	
B	Pressure Relief Valve	30.00 psi [2.11 bar]	
C	Heating return connection	3/4" [22.2mm]	1" [25.4mm]
D	Cold DHW inlet tap / system filling connection for Combi	1/2" [15.9mm]	3/4" [22.2mm]
E	Gas shutoff connection	3/4" [22.2mm]	
F	Boiler filling connection	1/2" [15.9mm]	na
G	DHW outlet/indirect storage tank connection	1/2" [15.9mm]	3/4" [22.2mm]
H	Drain connection for condensate	13/16" [21mm] ID Hose	3/4 NPT
I	Heating supply connection	3/4" [22.2mm]	1" [25.4mm]
K	5 gpm DHW flow restrictor (Factory installed) (205 only)	na	3/4" [22.2mm]

MANIFOLD DCC-150/205



9.3 System Start Up

Follow all codes and regulations when filling the boiler.
Use drain taps to allow system to completely drain.
Thoroughly flush the heating system before boiler is connected and again after first heating.

- Boiler is fitted with automatic air vent positioned on pump Vent and is fitted with adjustable sealing cap. See Figure 9-1.
- Open central heating flow and return valves. Spindle is flat in-line with valve.
- Open fill point valve on filling system until water begins to flow. To aid venting boiler drain may be open until water flows out. Close drain as soon as water appears.
- Systems using radiators to remove air - Vent each radiator in turn, starting with lowest in the system.
- It is important the pump is properly vented to avoid running it dry and damaging its bearings. Unscrew and remove cap from center of pump. Use screwdriver. Rotate exposed spindle about half turn, replace cap.
- Check operation of heating pressure relief valve. Pull lever on top of valve upwards lifting the seat. This will allow water to escape from system. Check water is escaping from the system.
- Open cold water supply inlet valve. Turn on all hot water taps. Allow water to flow until no air is present. Turn off taps. See page 4- Physical Data and section 2.7 Operational Features.

9.4 Fill Condensate Trap with Water

⚠ WARNING

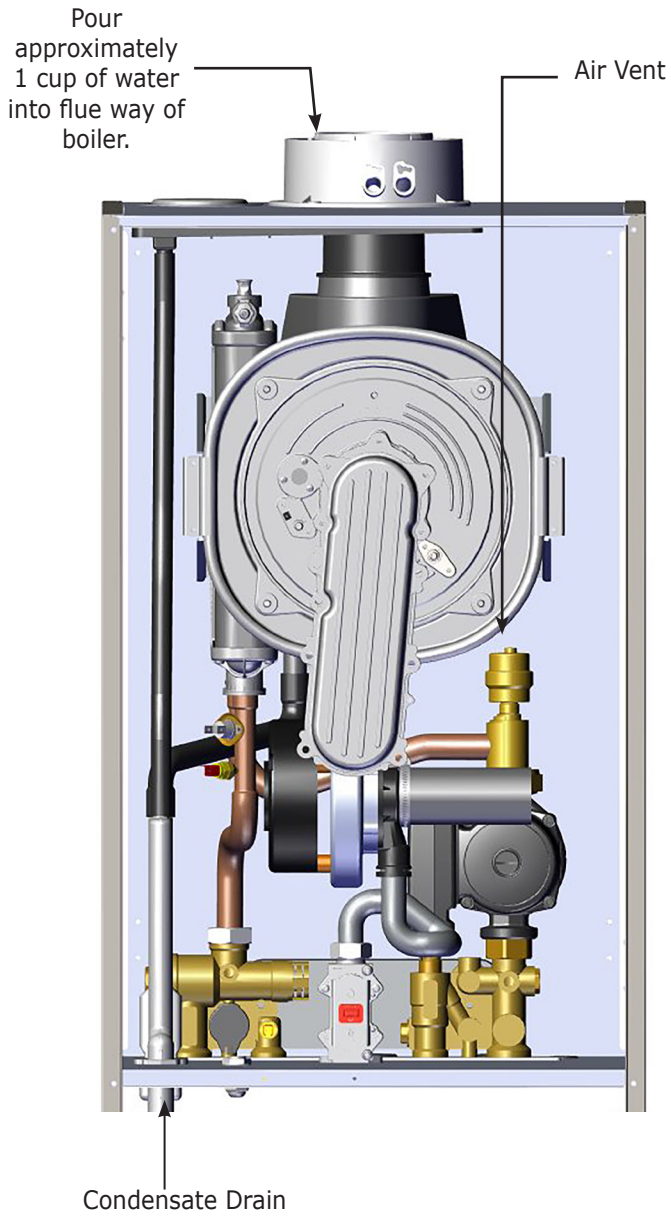
Asphyxiation hazard! Fill condensate trap before starting boiler to avoid combustion products escaping boiler. Failure to follow these instructions could result in death or serious injury.

- To fill the condensate trap pour water into exhaust vent until water begins to flow through the siphon.
- Visually inspect the siphon to ensure it is full with clean water.
- During operation check condensate trap to ensure it draining properly.

Note Condensate trap must be manually filled with water at initial start up.

FIGURE 9-1 Condensate Drain Assembly

Model 205 shown (location similar in all sizes)



9.5 Control Panel

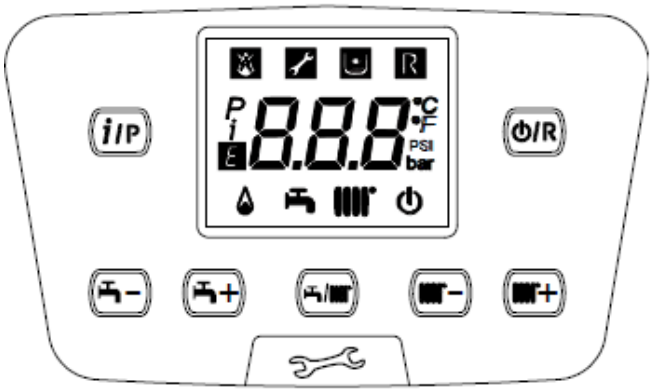
Press and hold (i/P) for 1 second, to display information as shown in the table below.

Press (⏻/R) to exit.

i	DESCRIPTION	i	DESCRIPTION
00	Secondary fault internal code	**09**	Setpoint Central Heating (°F/°C)
01	Heating flow temperature (°F/°C)	**10/11**	Manufacturing information
02	Outdoor temperature (°F/°C)	**12**	Flue sensor temperature (°F/°C)
03	Indirect Tank DHW temperature (boiler CH only)	**13**	Manufacturing information
04	Domestic hot water temperature (boiler with plate exchanger)	**14**	Identification Open Therm communication
05	Water pressure in heating system (PSI/bar)	**15**	Manufacturing information
06	Heating return temperature (°F/°C)	**16**	Manufacturing information
07	Thermo fuse status (000/001)	**17**	Fan speed ("i17"x100)
08	Not used	**18**	Manufacturing information

BUTTONS Key

(+) (–)	DHW temperature adjustment *(+ to increase the temperature and – to decrease it)*
(+) (–)	Heating water temperature adjustment *(+ to increase the temperature and – to decrease it)*
(i/P)	Boiler operating information
	Operating mode: DHW – DHW & Heating – Heating Only
(⏻/R)	Off – Reset – Exit menu/functions



SYMBOL Key

	Off: heating and DHW disabled (only boiler frost protection is active)		Burner lit
	Ignition fault		DHW operating mode enabled
	Boiler/system water pressure low		Heating mode enabled
	Call a qualified service technician	P	Programming menu
R	Manually resettable fault (⏻/R)	i	Boiler information menu
E	Fault in progress	°C, °F, bar, PSI	Set unit of measurement (SI/US)

NOTICE

All connections shall be made and water added before performing this function.

9.6 Commissioning

When lighting the boiler for the first time perform the following procedure:

1. Turn power to boiler on. Code **"000"** appears on the display. Appliance is ready for "commissioning" procedure.
2. Press (CH+) (i/P) at the same time. Hold for 6 seconds. "**On**" appears on the display for 2 seconds followed by code "**312**" indicating "**de-aeration**" function is active. This function lasts 10 minutes.
3. Boiler will turn on after dearation function is complete. Display will show code "**000**" alternating with **%** of ignition power and temperature value (°F / °C).
   - During this **gas recognition function** phase which lasts about 7 minutes, type of gas being used is analyzed.
   - During this function, assure maximum heat exchange to heating or DHW system (domestic hot water demand) by having all heating zones open or all domestic hot water taps open, in order to prevent boiler from switching off due to overheating.
   - If boiler operates on Gas A (Natural Gas), display shows **NG** (Natural Gas) for about 10 seconds. Boiler is now ready for normal operation.
   - If display shows **LPG** (Gas E), press (⏻/R) and (i/P) together and hold down for at least 4 seconds to exit without changing factory setting. Boiler will stay set to Natural Gas.
   - If boiler operates on Gas E (LPG) display shows **LPG** (Gas E). Press (i/P) for at least 6 seconds to confirm gas used.
   - If display shows **NG** (Gas A) and does not recognize the type of gas used, press (⏻/R) and (i/P) together and hold down for at least 4 seconds to exit the function. Then change parameter **P02=01** as described in section 9.12 Parameter Settings of boiler Installation, Operation and Maintenance Manual.

9.7 Calibration Function:

Boiler must be in stand by mode (no requests) before initiating the function.

The function consists of an automatic sequence and a manual sequence.

Automatic Sequence

a. Press together for 6 seconds the (⏻/R) and (CH−) buttons and then within 3 seconds the (i/P) button. After 6 seconds it is possible hear a 'click' of the gas valve and see '**On**' on the display;

b. The function is active if and blink together;

c. After ignition (also more than one attempt) the boiler works at maximum power for at least 1 minute, then at the ignition power, and at the end at minimum power. When the display shows *P* and icons it means the value of the curve has been stored. During the function the display shows the power level and flow temperature alternately.

Note ***Boiler must not shutoff during calibration. Open all heating zones in heating or DHW mode to ensure boiler does not shutoff.***

NOTICE

During initial ignition, burner may not ignite. This may cause boiler to shut down until any air in gas pipes is vented. Repeat ignition procedure until gas reaches the burner. To reset boiler operation, press (⏻/R) for at least 2 seconds.

NOTICE

First ignitions immediately after installation, system will implement a self-learning procedure to reach correct ignition level.

IMPORTANT INFORMATION

A. If venting or gas recognition function is interrupted by power blackout, start function again when power is restored. Press (i/P) and (CH+) together and hold at same time for at least 6 seconds.

B. If display shows fault **E118** (low pressure in hydraulic circuit) during venting function, open filling tap on appliance and restore correct pressure.

C. If gas recognition function is interrupted due to fault (e.g.: **E133** no gas) press (⏻/R) to reset. Then press (i/P) and (CH−) (for at least 6 seconds) to restart the function again.
If gas recognition function is interrupted due to overheating, restart function by pressing and holding down together for at least 6 seconds.

D. Combustion of this appliance has been factory controlled, calibrated and set for operation with **Gas A** (Natural Gas).

E. During Gas Type Control Function, combustion ratio will increase for a short period of time while gas type is being established.

9.8 De-Aeration Function

Used to eliminate air inside the heating circuit when boiler is installed or after maintenance when water is drained from primary circuit.

1. Press buttons (i/P) (RESET) together and hold for 6 seconds. **On** appears on display for a few seconds, followed by program row **312**.
2. The electronic board will activate pump on/off cycle for 10 minutes. Function will automatically stop at end of the cycle.
3. To manually exit this function, press (i/P) (RESET) buttons together and hold for 6 seconds.

9.9 Commission Set Up (Gas) - Changing The Type Of Gas

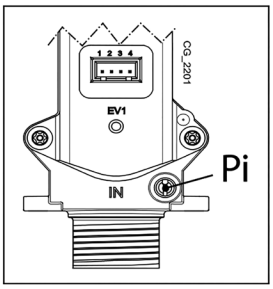
During the **first** installation boiler carries out an automatic commissioning function.
The system is able to detect the gas type present in the network.

Correct gas type setting, is made by pressing two buttons at the same time, see section 9.6 Commissioning.

Change of gas type is made **after** the first installation:

- Change parameter P02. See section 9.6 Commissioning and section 9.11 Parameter Settings.
- Check minimum gas pressure is suitable for selected gas:
  Gas A (NG) = 3.5" (8.7mbar)
  Gas E (LPG) = 8.0" (19.9mbar)
- Place supplied label with indication of gas type close to the data plate of boiler replacing the original.
- Manufacturer recommends verification of CO_2 concentration on the flue.

FIGURE 9-3 - Gas Inlet Tap - Pi



PI = Gas Supply Inlet Pressure Tap

9.10 Chimney Sweep Function (CO_2 Adjust)

For correct boiler operation, content of (CO_2- O_2) in the combustion flue must be within tolerances indicated in table below.

COMBUSTION TABLE

		Gas A (Natural Gas) DCB-125		Gas A (Natural Gas) DCC- 150		Gas A (Natural Gas) DCB-165		Gas A (Natural Gas) DCC-205		Gas E (LPG)	
		CO2 %	O2 %	CO2 %	O2 %	CO2 %	O2 %	CO2 %	O2 %	CO2 %	O2 %
Maximum power (100%)	Nominal value	8.7	5.4	9.0	4.9	9.0	4.9	9.0	4.9	10.0	6.0
	Permitted value	8.2 – 9.3	6.3 – 4.3	8.5 – 9.5	5.7 – 4.0	8.7 – 9.3	5.4 – 4.3	8.7 – 9.3	5.4 – 4.3	9.5 – 10.5	6.8 – 5.2
Ignition power (*)	Nominal value	8.7	5.4	8.7	5.4	8.7	5.4	8.7	5.4	10.8	4.8
	Permitted value	8.2 – 9.3	6.3 – 4.3	8.2 – 9.3	6.3 – 4.3	8.2 – 9.3	6.3 – 4.3	8.2 – 9.3	6.3 – 4.3	10.3 – 11.3	5.5 – 4.1
Minimum power (0%)	Nominal value	8.8	5.2	8.8	5.2	9.0	4.9	9.0	4.9	10.0	6.0
	Permitted value	8.2 – 9.3	6.3 – 4.3	8.2 – 9.3	6.3 – 4.3	8.7 – 9.3	5.4 – 4.3	8.7 – 9.3	5.4 – 4.3	9.5 – 10.5	6.8 – 5.2

(*) Automatically calculated from the PCB

Chimney Sweep Function enables boiler to generate maximum heating power.
After activation, boiler power % can be adjusted from minimum (0%) to maximum (100%) in DHW mode.

A. Press and hold (mr+) and (⏻/R) at the same time for 6 seconds. When the function is enabled, displays shows "**On**" for few seconds followed by program row "**303**" alternating with % of boiler power.
B. Press (mr−) (mr+) to gradually adjust power (increments of 1%).
C. To exit press both buttons together for at least 6 seconds.

If value of **CO_2-O_2** is different, check the electrodes and their relative distances. See Figure 11-1.
If necessary, replace electrodes and position them correctly.
If problem persists, use "**COMBUSTION ADJUSTMENT FUNCTION (CO_2%)**". See Section 11 General Maintenance, Figure 11-1 Electrodes.

NOTICE

- Press (⏻/R) to display instantaneous flow temperature for 15 seconds.
- Use a regularly calibrated combustion analyzer for combustion analysis.
- During normal operation boiler performs combustion control cycles. In this phase CO values higher than 400 ppm can occur for brief periods of time.

9.11 Combustion Adjustment Function (CO_2%)

This function sets out to partially adjust the value of CO_2%.
Use the following procedure:

1. Press buttons (mr+) and (i/P) together for at least 6 seconds. When the function is enabled, displays shows "**On**" for a few seconds followed by program row "**304**" alternated with the % of boiler power;
2. After burner is lit, boiler reverts to maximum DHW power (100). When display shows "**100**" it is possible to partially adjust value of CO_2 %;
3. Press (mr+) and (i/P) . Display shows "**00**" alternating with function number "**304**" (flashes);
4. Press (mr−) (mr+) to raise or lower the amount of **CO_2** (from -3 to +3);
5. Press (i/P) to save new value. Power value "**100**" will show on display again. Boiler continues operating at maximum DHW power.

This procedure can be used to adjust **CO_2** to ignition power and minimum power by pressing (mr−) (mr+) after performing step 5 above.

6. After saving the new value (step 5 above), press (mr−) to set boiler to ignition power. Wait for value of **CO_2** to stabilize. Adjust as described in step 4 of procedure (power value is a number <> 100 and <> 0). Repeat step 5 to save.
7. Press (mr+) to adjust boiler to **minimum power**. Wait for value of **CO_2** to stabilize. Go to step 4 to adjust (power value = 00);
8. Exit function by pressing (mr+) and (i/P) together for at least 6 seconds, see step 1.

9.12 Check Firing Rate

1. Measure input, if a gas meter is installed in the system.
   - Turn off gas to all other appliances.
   - Activate some heating zones to dissipate heat.
   - Set boiler on high fire using Chimney Sweep Function.
   - Use ½, 1 or 2 cu ft dial on gas meter. Measure time required for two or more complete revolutions. Measure time for one or more minutes.
   - Calculate input.

For Natural Gas :

$$\text{Input (MBH)} = \frac{3600 \times \_\_\_ \text{ cu ft}}{\_\_\_\_\_ \text{ seconds}}$$

Example: Natural Gas - Gas flow from Meter = 2 cu ft
Measured time = 72 seconds

$$= \frac{3600 \times 2 \text{ cu ft}}{72 \text{ seconds}} = 100 \text{ MBH}$$

For Propane (LP):

$$\text{Input (MBH)} = \frac{9160 \times \_\_\_ \text{ cu ft}}{\_\_\_\_\_ \text{ seconds}}$$

Input Rate (MBH)

For Metric formulas- See Glossary

2. Compare measured input to table below. If calculated input is not in range given in Table below, check firing rate again after setting the combustion following steps in section 9.10.

Table 9-2 Input Rate @ High Fire (MBH)

Approximate Rate @ 100% Fire (MBH)	
Size	
125	125
150	153
165	164
205	205

9.13 Parameter Settings

Program boiler electronic board parameters as follows:

- Press (−) and (+) together, hold them down for 6 seconds until program "**P01**" appears on the display alternated with the set value;
- Press (−) or (+) to scroll the list of parameters;
- Press (i/P), value of selected parameter begins flashing, press (−)(+) to change the value;
- Press (i/P) to confirm the value or press (⏻/R) to exit without saving.

Further information in regards to parameters listed in the following table are supplied together with required accessories if necessary.

	9.14 Description Of Parameters: Factory Settings	FACTORY SETTINGS	
		125-165	150-205
P01	Manufacturer information	01	
P02	**Gas used** **00** = Gas A (Natural Gas) **01** = Gas E (LPG Gas)	00	
P03	Hydraulic system **00** = instantaneous appliance **03** = instantaneous appliance with pre-heat function **04** = heating only appliance with DHW thermostat **05** = appliance with external storage indirect tank **08** = heating only appliance **13** = instantaneous appliance with pre-heat function for solar application	08	00
P04	Programmable relay 1 setting (optional): **00** = no function is associated **01** = close contact with a room thermostat request (other than ECR thermostat) **02** = close contact with a ECR room thermostat request **03** = relay for indicating low water pressure **04** = relay for error code display **05** = relay for kitchen fan function **07** = relay for post circulation pump **09** = DHW relay on with DHW program setting **10** = DHW relay on with DHW request; if **P64** = 1 relay on with CH and DHW request **13** = relay for Cooling function **14** = close contact with room thermostat request (120V~) with post circulation **15** = close contact with open therm remote control request with post circulation	02	
P05	Programmable relay 2 setting (optional): (Same configurations as Relay 1-**P04**)	04	

parameters continued on next page

	9.14 Description Of Parameters: Factory Settings conti.	FACTORY SETTINGS	
		125-165	150-205
P06	Outdoor temperature sensor input configuration **00**= with outdoor temperature sensor connected, external temperature value has influence to calculate heating flow temperature setpoint **01**= with outdoor temperature sensor connected, display shows external temperature value (no influence) **02...05** = no function is associated	00	
P07	**00..02** = No function is associated **03** = This is an input contact for CH request (e.g. trigger phone). When contact CN2 is closed and Room Thermostat (RT) requiring heat switches burner on. **Note:** verify heating mode is enabled (winter or heat only mode) **04** = This is an input contact for Low Temperature Thermostat (e.g. floor heating system). When Low Temperature Thermostat connected on CN2 cuts out, burner switches off and display shows **E178** anomaly. **Note:** verify heating mode is enabled (winter or heat only mode) **05** = This is an input contact for external DHW recirculation pump. When contact CN2 is closed the pump runs for a specific period. To enable input it is necessary to set parameter **P04 or P05 = 08** and **P69 = 05**. Pump will run at **P19** minutes (Summer/Winter mode or Only Winter mode) or **P19/2** minutes (only Summer mode).	00	
P09	Manufacturer information	--	
P10	Heating setpoint setting OT / RT (Open Therm / Room Thermostat 120V~) **00** = with Remote Control (RC) connected, temperature request is RC setpoint **01** = Temperature Request is highest set point between RC and PCB **02** = Temperature request is RU setpoint. The RT enable the gas boiler operates	00	
P11..P12	Manufacturer information	--	
P13	Max. heating output **(0-100%)**	100	80
P14	DHW max. output **(0-100%)**	100	
P15	Min. heating output **(0-100%)**	00	
P16	Maximum CH setpoint (°C) **00** = 176°F (80°C) **01** = 113°F (45°C)	00	
P17	Pump overrun time in heating mode **(01-240 minutes)**	03	
P18	Burner ignition delay in CH mode **(00-10 minutes) - 00=10 seconds**	03	
P19	Manufacturer information	07	
P20	Pump overrun time in DHW mode **(seconds)**	30	
P21	Anti-legionellosis function **00** = Disabled - **01** = Enabled	00	
P22	Manufacturer information (set "**22**" to display parameters P71 and P72)	00	
P23	Maximum DHW setpoint temperature **113°-140°F (45°-60°C), Default 49 = 120°F**	49	
P24	Manufacturer information	35	
P25	No water safety device	00	
P26..P31	Manufacturer information	--	
P32..P41	Diagnostics (See SERVICE Instructions)	--	
P44	Temperature unit setting **00** = °C **01** = °F	01	
P71 * P	Maximum fan speed	--	
P72 *	Minimum fan speed	--	

NOTE : To scroll to parameter **P71** and **P72** it is necessary to set **P22** to **22** before scrolling up to the parameter.

***** See Tables : SECTION 12.2 - Parameters Setting For High Altitude.

9.15 Adjusting Maximum Heating Power

Maximum boiler heating power can be reduced to suit requirements of heating system it serves.
Table showing parameter **P13** values according to desired maximum power model is shown for each single boiler.
To access and edit **P13** values, proceed as described in Parameter Settings.

Boiler Model - PARAMETER P13 (%)/ Heating Output

Btu/h	KW	DCB-125	DCC-150
20,400	6.0	0	0
23,800	7.0	4	3
27,200	8.0	7	6
30,700	9.0	11	9
34,100	10.0	15	12
40,900	12.0	22	18
47,700	14.0	30	24
54,500	16.0	37	29
61,400	18.0	44	35
68,200	20.0	52	41
75,100	22.0	59	47
81,900	24.0	67	53
88,700	26.0	74	59
95,500	28.0	80	65
102,300	30.0	88	71
109,200	32.0	96	75
112,600	33.0	100	80

Btu/h	kW	DCB-164	DCC-205
27,400	8.0	0	0
31,300	9.2	4	3
35,800	10.5	7	6
41,300	12.1	11	9
46,500	13.6	15	12
55,900	16.4	22	18
65,700	19.3	30	24
74,500	21.8	37	29
83,200	24.4	44	35
92,300	27.0	52	41
101,900	29.9	59	47
110,000	32.2	67	53
118,000	34.8	74	59
127,000	37.2	80	65
136,900	40.1	88	71
145,300	42.6	96	75
151,700	44.4	100	80

FOR YOUR SAFETY READ BEFORE OPERATING

⚠ WARNING

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

- This appliance is equipped with an ignition device which automatically lights burner. **Do NOT try to light this burner by hand.**
- Before operating smell all around appliance area for gas. Be sure to smell next to floor because some gas is heavier than air and will settle to the floor.
- **Use only your hand to turn the gas shutoff valve**. Never use tools. If valve will not turn by hand, do not try to repair it, call a qualified service technician. Force or attempted repair may result in fire or explosion.
- **Do not use this appliance if any part has been under water.** Immediately call a qualified service technician to inspect appliance and to replace any part of control system and any gas control which has been under water.

⚠ CAUTION

WHAT TO DO IF YOU SMELL GAS

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

10.1 Boiler Sequence Of Operation

- With demand for heating, pump circulates water through the primary circuit.
- Combustion fan will come on and begin to run at ignition speed.
- Once fan reaches ignition speed control board will allow power to flow to spark generator and gas valve creating ignition in combustion chamber. Flame sensor will acknowledge presence of flame in combustion chamber and send signal to control board.
- Temperature sensor will send signal to control board allowing control board to increase / decrease fan speed. Combustion fan will in turn modulate gas rate accordingly.
- Once central heating loop temperature exceeds central heating loop setpoint the unit will shutdown and go through 3 minute time delay (burner pause time) before another call for heat.
- During this time the pump will run for additional three minutes to dissipate any residual heat.

10.2 Testing For Gas Leaks And Purging The Gas Supply

- With boiler gas service cock closed (spindle flats at right angles to valve). Pressure test gas supply and inlet pipe work connection to boiler gas service cock for soundness.
- Loosen screw of pressure inlet gas test port on gas valve. See section 13.4 Gas Valve. Verify gas supply is ON. Open boiler service cock to purge.
- Retighten test port screw and test for gas leaks. Close boiler gas shutoff device.

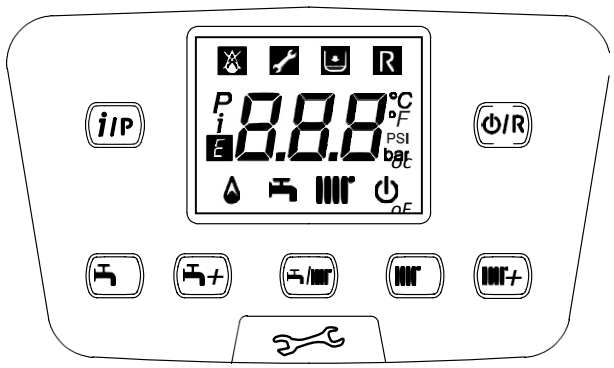
10.3 Boiler Controls

To light boiler correctly, proceed as follows:

- Check system pressure is correct;
- Power boiler;
- Open gas tap (positioned under boiler);
- Select required heating mode. See section 10.4 Operating Modes.

BUTTON Key

	DHW temperature adjustment *(+ to increase the temperature and – to decrease it)*
	Heating water temperature adjustment *(+ to increase the temperature and – to decrease it)*
i/P	Boiler operating information
	Operating mode: *DHW – DHW & Heating – Heating Only*
⏻/R	Off – Reset – Exit menu/functions



SYMBOL Key

⏻	Off: Heating and DHW disabled (only boiler frost protection is active)		Burner lit
	Ignition fault		DHW operating mode enabled
	Boiler/system water pressure low		Heating mode enabled
	Call a qualified service technician	*P*	Programming menu
R	Manual reset fault ⏻/R	*i*	Boiler information menu
E	Fault in progress	*°C, °F,* bar, PSI	Set unit of measurement

10.4 Boiler Operation

Domestic hot water supply always takes priority over central heating.
Demand for hot water required during central heating period, boiler automatically switches to hot water mode until demand is satisfied i.e. storage water is to required temperature.
This interruption in central heating is only when demand for hot water is present and should not be noticed by the User.

10.5 Central Heating Mode

1. Call for heat. Pump will start to circulate central heating water, operating the flow switch.
2. Fan will run. Once fan speed is reached burner will light.
3. Burner output automatically adjusts to suit system demand; as temperature of water in boiler approaches that set by adjustable temperature selector, burner output is reduced.
4. When set temperature is reached, burner is turned off and fan stops. Pump continues to run for three minutes to remove residual heat build up in boiler. Burner will not relight for 3 minutes.
5. If CH sensor has not registered pre-set temperature but room thermostat is satisfied the burner is turned off. Fan stops. Pump continues to run for three minutes. In this instance there is no 3 minute delay before burner relights.
6. If there is demand for DHW during 3 minute burner delay, boiler will operate to provide DHW until tap is closed. Boiler will immediately revert to provide CH if there is demand.

10.6 Domestic Hot Water Mode

- Flow switch senses demand for hot water (opening a hot water tap, etc.), the pump starts and burner lights at its ignition output, increasing to its maximum output.
- Water in the boiler is diverted from central heating system to domestic hot water heat exchanger, heating the incoming supply water.
- Burner output is varied to maintain temperature of hot water as set by the adjustable temperature selector.
- When flow switch senses hot water is no longer required burner is turned off. Boiler immediately returns to central heating mode.

10.7 Frost Protection

Boiler has a built in frost thermostat which automatically turns boiler and pump on.
If water in boiler falls below 41°F (5°C), providing the display is switched on, boiler will operate until water temperature in the system reaches approximately 86°F (30°C).
Frost protection is for the boiler only and not for complete Central Heating System.

10.8 Pump

If display is switched on and boiler has not operated for 24 hours for heating or hot water, pump will operate automatically for five minutes every 24 hours.

10.9 Low Water Pressure Sensor (Internal)

This device protects the primary exchanger from damage. It will not allow the boiler to run in a LOW water pressure situation. Low water condition occurs when water pressure drops below 7.0 psi (0.5 bar), approximately.

⚠ DANGER

Before servicing, turn off electrical power to boiler at service switch. Close manual gas valve to turn gas supply OFF to boiler. Failure to comply will result in death or serious injury.

⚠CAUTION

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

Note Verify proper operation after servicing.

Note Perform regular service and maintenance by qualified service agency at least once every 12 months to assure safe, trouble free operation and maximum efficiency.

11.1 Beginning of Each Heating Season

- Check boiler area is free from combustible materials, gasoline, and other flammable vapors and liquids.
- Visually inspect combustion air and vent piping for proper operation. Check for and remove any obstruction to flow of combustion air or vent gases. Immediately repair or replace pipe showing deterioration or leakage. Reassemble per instructions in section 6. Ensure proper reassembly and resealing of system.
- Visually inspect condensate drain line for proper operation. Checking for deteriorated or plugged condensate drain line. Verify condensate trap drains freely and clean as required.
- Test safety relief valve for proper operation. Refer to valve manufacturer's instructions packaged with relief valve.
- Examine flue passages in heat exchanger, burner, condensate lines, and cleaning (if necessary) by following instructions in "Annual Examination and Cleaning of Boiler Components" in this section.
- Circulator pump and combustion air blower motor furnished with boiler are permanently lubricated from factory and require no further lubrication. Lubricate field sourced pumps and/or motors according to pump and/or motor manufacturer's instruction.
- Check following components are operating properly and are free of blockages or obstructions:
  - air vent;
  - check venturi air inlet for blockage and clean as required;
  - verify pressure test port cap and combustion test port are in place;
  - return temperature sensor clip (if equipped) must be securely seated on pipe; Check boiler for any sign of leaks.
- Check external low water cutoff operation (if installed).
  - Check operation by pressing test button on low water cutoff.
    - "Low Water" LED on the external LWCO should illuminate and boiler should shut down.
  - Every 5 years remove low water cutoff. Reinstall after cleaning.
  - Every 10 years replace low water cutoff.
- Visual inspection of flame through sight glass. Burner should be fully illuminated.
- Check heating system expansion tank.

⚠ WARNING

Following service procedures must be performed by qualified service agent. Boiler owner shall not attempt these steps. Failure to do so could result in death or serious injury.

⚠ WARNING

Combustion chamber insulation in this product contains ceramic fiber material. Ceramic fibers can be converted to cristobalite in very high temperature applications. The International Agency for Research on Cancer (IARC) has concluded, Crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (Group1). Avoid breathing dust and contact with skin and eyes. Use NIOSH certified dust respirator (N95). This type of respirator is based on the OSHA requirements for cristobalite at the time this document was written. Other types of respirators may be needed depending on the job site conditions. Current NIOSH recommendations can be found on the NIOSH website http://www.cdc.gov/niosh/homepage.html. NIOSH approved respirators, manufacturers, and phone numbers are also listed on this website. Wear long-sleeved, loose fitting clothing, gloves, and eye protection. Apply enough water to the combustion chamber lining to prevent dust. Wash potentially contaminated clothes separately from other clothing. Rinse clothes washer thoroughly.
NIOSH stated First Aid. Eye: Irrigate immediately. Breathing: Fresh air.

⚠ WARNING

Before servicing, turn off electrical power to boiler at service switch. Close manual gas valve to turn gas supply OFF to boiler. Test for gas leaks on any gas carrying components after servicing. Service not complete until appliance operation verified per Installation, Operation & Maintenance Manual provided with boiler.

⚠ CAUTION

Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Failure to follow these instructions could result in minor or moderate injury.

NOTICE

Perform regular service and maintenance by qualified service agency at least once every 12 months to assure safe, trouble free operation and maximum efficiency.

11.2 Maintenance And Routine Servicing

Check and service boiler as necessary.
Frequency of servicing will depend upon installation conditions and usage, manufacturer recommends annually.

- Check flue terminal outside and ensure it is not blocked.
- Operate boiler. Check operation of boiler's controls.
- Ensure all system connections and fittings are sound. Correct any joints and fittings that maybe leaking.
- Follow safety valve manufacturer recommendations for service.

To ensure boiler operates at peak efficiency, following checks must be performed every year:

- check appearance and tightness of gas and combustion circuit gaskets
- check condition and position of ignition and flame sensing electrodes
- check condition of burner and its connection to aluminum front plate
- check for dirt in combustion chamber. Use vacuum cleaner for this cleaning operation
- check gas valve is calibrated correctly
- check there is no dirt in condensate trap
- check central heating system pressure
- check expansion tank pressure
- check vent system, clean if necessary

Record details and maintain service history.

11.3 Component Replacement And Cleaning

1. Remove any deposits from heat exchanger using suitable soft brush. *Do not* use brush with metallic bristles.
2. Check condition of the combustion chamber insulation panels. Any damaged panels must be replaced.
3. Check condition of burner injector on the manifold, carefully clean it with a soft brush if necessary. *Do not* use a brush with metallic bristles this might damage the injector.
4. Remove any fallen deposits from bottom of inner case.
5. Clean burner with soft brush and check flame ports are clear. Blockages may be removed with stiffer brush.
6. Check condition of electrodes.
7. Check spark gap, positioning and height of electrodes.
8. Check fan impeller is clean and free to rotate.

⚠ DANGER

Before servicing, turn off electrical power to boiler at service switch. Close manual gas valve to turn gas supply OFF to boiler. Failure to comply will result in death or serious injury.

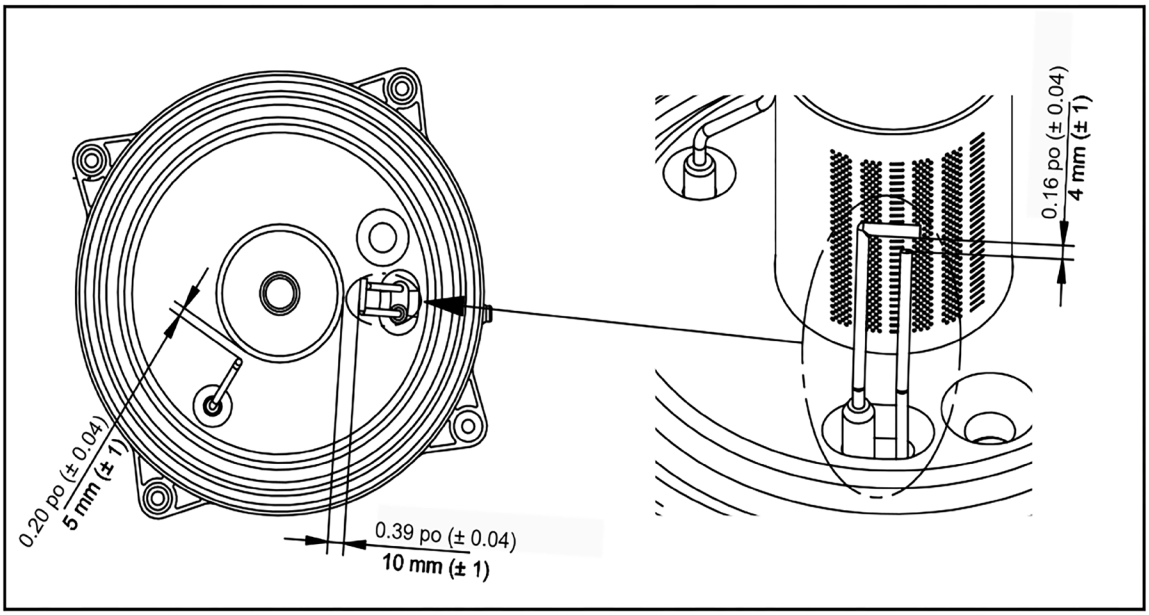
11.4 Draining the Boiler

- turn boiler off
- isolate electrical supply
- close boiler gas service cock
- allow boiler to cool
- drain boiler through onboard drain if available or external drain valve.

11.5 Draining the Heating Circuit

- Follow all steps in 11.4.
- Close central heating flow and return valves.
- Connect suitable pipe to drain point.
- Route it to suitable container.
- Open drain tap.

11-1 ELECTRODES



11.6 Hydraulic Unit (DHW)

For special areas, where water is harder than 200 ppm or 12 grains/ gallon, install polyphosphate dispenser or equivalent treatment system, compliant with current regulations.

11.7 Cleaning The Cold Water Filter

Boiler is fitted with cold water filter located on DHW hydraulic assembly (**B**). To clean:

- Drain domestic hot water system. (C - 150 only)
- 165 Drain is field supplied/installed.
- Remove nut on DHW priority sensor unit using 18mm wrench. (B)
- Pull out flow sensor and its filter.
- Remove any impurities.

NOTICE

When replacing and/or cleaning "O-rings" on hydraulic assembly (DHW), use only Molykote 111 as a lubricant, not oil or grease.

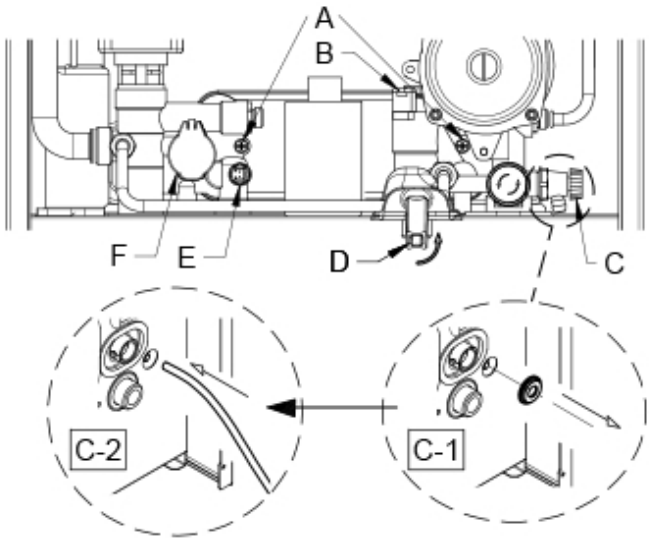
11.8 Final Commissioning

- Allow heating system to heat. Balance the system to achieve temperature difference across heating supply and return pipes at the boiler.
- Check system for proper volume and pressure. See page 4 for acceptable volume and pressure.
- Turn off boiler.
- Thoroughly flush water pipe work. Clean filters in heating return and supply water isolating valves.
- Repressurize the system.

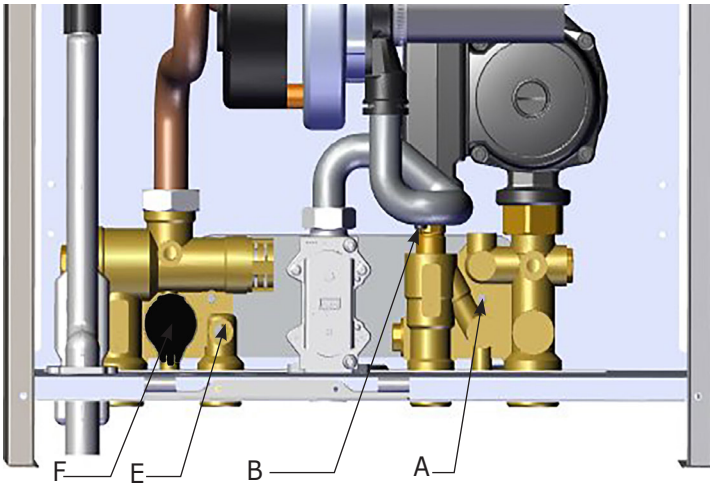
11.9 Final Assembly

- Place front jacket in position over boiler. Ensure bottom is located behind the control panel. Secure in position at top using screws previously removed.
- If boiler is to be left in service with the User, set controls and room thermostat.
- If boiler is not to be handed over immediately, close boiler gas service valve and turn off electrical supply.
- If there is possibility of boiler being left during frost conditions drain boiler and system. See section 11: Component Replacement Or Periodic Cleaning. Manufacturer recommends attaching a label to the boiler drawing attention to the fact that the system has been drained.

Model DCC-150



Model DCC-205



LEGEND

Hydraulic Assembly (B)

A	DHW exchanger fixing screw
B	DHW priority sensor with filter
C	Boiler/system drain tap (150 unit only) *(**C-1 & C-2:** access to tap **C** - bottom of boiler)*
D	Boiler / system filling tap (150 unit only)
E	DHW temperature NTC probe
F	Low water cutoff

11.10 User Information

Advise and demonstrated to User the following important information:

A. How to light and turn off boiler. How to operate system controls.

B. Importance of annual servicing of boiler to ensure safe and efficient operation.

C. Servicing or replacement of parts shall be carried out by a qualified personnel.

D. Ensure boiler controls and room thermostat, if fitted, are set to User's requirements.

E. Tell User about sealed system pressure.

F. Tell User if display is active and boiler has not operated for 24 hours for heating or hot water, the pump will automatically operate for 5 minutes.

G. Explain to User an internal frost thermostat is fitted in boiler, and electrical supply to boiler must be left on for thermostat to operate.

H. Show User position of pressure relief valve discharge pipe.

I. Leave this Installation, Operation and Maintenance Manual with User for use on future calls.

11.11 Safety Flue Thermostat - *DO NOT* disable this safety device.

Safety Flue Thermostat found on the flue inside the boiler, interrupts flow of gas to the burner if the temperature overheats.

After verifying the cause of the trip, press (⏻/R) for about 2 seconds.

11.12 Flue Pressure Switch- *DO NOT* disable this safety device.

This device, positioned inside the sealed chamber, interrupts flow of gas to the burner if flue pressure exceeds 1.6 in w.c. (4 mbar). Verify if vent is blocked before resetting the boiler.

NOTICE

When servicing the appliance, check the condition and position of flame sensing electrode and replace it if necessary.

11.13 Replacement Parts

Perform Automatic Calibration procedure described as follows if one or more of the following components are replaced. Check and adjust CO2% value as indicated in the Combustion Table.

Components replaced:

- Primary heat exchanger
- Fan
- Gas valve
- Gas nozzle
- Burner
- Flame sensing electrode

11.14 Automatic Calibration Function

Before performing this function verify there are no heat demands in progress.

During this function ensure there is maximum heat exchange to the system in Heating or DHW mode (DHW request) to avoid boiler shutting off due to overheating.

Press (⏻/R) and (−) together and hold for about 6 seconds. When display indicates "**On**" press (i/P) within 3 seconds after pressing previous buttons.

NOTICE

Important: If display indicates "**303**" Automatic Calibration function has not been activated. Disconnect boiler from main power supply for few seconds and repeat procedure.

1. When function is enabled, and will flash on the display.
2. After ignition sequence, which can also take place after few attempts, boiler performs three operations. Each operation lasts about 1 minute:
   - maximum power
   - ignition power
   - minimum power
3. Before moving to the following phase, from maximum power to ignition power and then to minimum power. *P* and appear on the display.
4. During this phase, power level reached by boiler and delivery temperature alternate on the display.
5. When , and flash together on the display, calibration function has terminated.
6. Press (⏻/R) to exit the function. Display will show **ESC**.

NOTICE

Important: If Calibration function does not complete the function, press (⏻/R) button to exit and decrease Maximum fan speed (parameter P71) before performing function again.

12 TECHNICAL DATA

12.1 Ratings and Capacity

Model Number	CH Input, MBH[1]		[1][2] CH Heating Capacity, MBH *	[1][3] Net AHRI Rating Water, MBH	[2]AFUE%
	Maximum	Minimum			
-125	125	22	113	98	95.0
-150	125	22	113	98	95.0
-165	164	29.5	153	133	95.0
-205	164	29.5	153	133	95.0

(1) 1000 Btu/hr (British Thermal Units Per Hour)
(2) Heating Capacity and AFUE (Annual Fuel Utilization Efficiency) are based on DOE (Department of Energy) test procedures.
(3) Net AHRI Ratings based on piping and pickup allowance of 1.15. Contact Technical Support before selecting boiler for installations having unusual piping and pickup requirements, such as intermittent system operation, extensive piping systems, etc.

*Max CH Supply temp 176° F (80°C)

12.2 Domestic Hot Water Specifications

Item		DCC-150	DCC-205
Input Ratings (MBH)	Min	22	29.5
	Max	153	205
Output Ratings (MBH)	Min	19	26
	Max	136	180
Domestic Water Pressure		2.9 psi (0.2 bar) - 116 psi (8.0 bar)	
Minimum Flow Rate		0.50 GPM	
Maximum Flow Rate		3.50 gpm	5.00 GPM
Flow Rate 77°F (43°C) Temp. Rise		3.25 GPM	4.65 GPM
DHW Supply Connection Size		1/2"NPT	3/4"NPT
Cold Water Input Connection Size		1/2"NPT	3/4"NPT

*Max DHW temp 140° F (60° C)

	Natural gas (A) 17.4 mbar 7.0 in w.c.		**LP gas (E) 27.4 mbar 11.0 in w.c.**	
	0 - 2000 Ft 0 - 610 m	2000 - 4500 Ft 610 – 1370 m	0 - 2000 Ft 0 - 610 m	2000 - 4500 Ft 610 – 1370 m
Parameter P71 * Fan Speed (rpm)	115 5,650	60 5,100	65 5,150	40 4,900
Parameter P72 * Fan Speed (rpm)	40 1,150		25 1,000	
CO Limit (ppm)	<400			

	Natural gas (A) 17.4 mbar 7.0 in w.c.		**LP gas (E) 29.8 mbar 12.0 in w.c.**	
	0 - 2000 Ft 0 - 610 m	2000 - 4500 Ft 610 – 1370 m	0 - 2000 Ft 0 - 610 m	2000 - 4500 Ft 610 – 1370 m
Parameter P71 * Fan Speed (rpm)	220 6,700	170 6,200	170 6,200	150 6,000
Parameter P72 * Fan Speed (rpm)	40 1,150		25 1,000	
CO Limit (ppm)	<400			

* To modify the fan speed see section 9.12.

12.3 High Altitude Parameter

For elevations between 2000 ft (600m) and 10,000 ft (3048m), use the following information:

Altitude	Model Number	Input, MBH (KW)		Heating Capacity, MBH*	AFUE, %	Domestic Hot Water (DHW) Circuit**			
		Maximum	Minimum			Max Input, MBH	Min Input, MBH	Max Output, MBH	Min Output, MBH
2,000-4,500 ft (600m-1350m)	DCB-125	113	22	101	95.0				
	DCC-150	113	22	101	95.0	137	22	122	19
	DCB-165	147	26.5	137	95.0				
	DCC-205	147	26.5	137	95.0	184.5	26.5	157	23
4,501-6,500 ft (1372m-1981m)	DCB-165	135	24.1	126	95.0				
	DCC-205	135	24.1	126	95.0	168	24.1	143	20
6,501-10,000 ft (1982m-3048m)	DCB-165	113	20.3	105	95.0				
	DCC-205	113	20.3	105	95.0	141	20.3	120	17

* Max CH Supply temp 176° F (80° C) for DCB-125 and DCC-150
* Max DHW temp 140° F (60° C)

** DCC-150 Max DHW Flow rate 3.5 GPM (13.2 l/min)
** DCC-205 Max DHW flow rate 5.0 GPM (18.9L/min)

13.1 Error Messages And Resetting The Boiler

E		Error Description	Operation
09		Gas valve connection fault	Check cable PCB/gas valve and gas valve plug
10		Outdoor sensor fault	Check sensor and cable
15		Gas valve command fault	Verify all cables. Replace PCB. Call authorized SERVICE center
20		Central Heating NTC sensor fault	Check sensor and cable
28		Flue NTC heat exchanger sensor fault	Check sensor and cable
40		Return NTC sensor fault	Check sensor and cable
50		Domestic Hot Water NTC sensor fault	Check sensor and cable
53		Obstruction in flue pipe, Recirculation, Out of Calibration, Poor gas quality	Check for obstruction in flue pipe. Check for recirculation, recalibrate, check gas quality
55		PCB not programmed	Call authorized SERVICE center
83-84-85 86-87		Communication problem between boiler board and control unit	Probable short circuit on wiring. Check cable between control unit and boiler
109		Pre-circulation alarm (temporary fault)	Check correct circulation of water and pump. Check supply and return wiring is correct.
110	R	Safety thermostat tripped due to over temperature (pump probably blocked or air in heating circuit)	Check safety thermostat and cable; check correct circulation of water and pump
118		Hydraulic pressure too low.	Refill heating system by opening cold water tap
117		Hydraulic pressure too high.	Relieve pressure via relief valve or drain. Ensure water feed is operating correctly.
125	R	No circulation of water (control performed via temperature sensor).	Check correct circulation of water and pump. Check correct connection of NTC sensor on pipe
128	R	Loss of flame	Check sensing electrode and cable, flue recirculation, electrical continuity between burner and ground. Enable automatic calibration. Call authorized SERVICE center.
130	R	NTC flue sensor tripped due to over temperature	Check thermostat, correct circulation of water and pump. Check status of primary exchanger.
131		Thermo fuse tripped due to over temperature or wire harness disconnected from thermo fuse, off the board, or wire harness may be cut.	Check thermo fuse, correct circulation of water and pump. Check status of primary exchanger. Replace heat exchanger. Call authorized SERVICE center. Verify wire harness installation and continuity.
133	R	Ignition failure	Check correct operation of condensate trap. Check sensing electrode, spark electrode and cable. Check flue recirculation, electrical continuity between burner and ground. Enable automatic calibration function. Call authorized SERVICE center
134	R	Gas supply valve blocked	Check gas pressure, sensing electrode, spark electrode and cable, replace PCB if it necessary. Call authorized SERVICE center
135		Internal error	Verify all cables. Replace PCB. Call authorized SERVICE center
160		Fan fault	Check fan and cable
162/317		Incorrect power supply frequency.	Incorrect power supply frequency.
169		Flue pressure switch (contact open)	Check pressure switch and cable. Check obstruction on flue pipe
164/384	R	Fault flame (parasitic flame).	Check correct operation of T. gas valve.
165/385		Input voltage too low.	Check power supply

To RESET R boiler press (⏻/R) button for at least 2 seconds.
For other error codes not described in table please contact manufacturer at 1(800) 325-5479.

14 - GLOSSARY

- ***APPLIANCE -*** Device to convert gas into energy; term includes any component, control, wiring, piping or tubing required to be part of the device.

- ***ANSI*** - American National Standards Institute, Inc. over see's creation and maintenance of voluntary consensus standards, including ANSI Z21.13/CSA 4.9: Gas-Fired Low Pressure Steam and Hot Water Boilers.

- ***ASME -*** **Association of Mechanical Engineers** Establishes rules of safety governing the design, fabrication, and inspection of boilers and pressure vessels, determining the MAWP of such vessels.

- ***ASTM*** - American Society for Testing and Materials. ASTM International is one of largest voluntary standards development organizations in world trusted source for technical standards for materials, products, systems, and services. Known for their high technical quality and market relevancy, ASTM International standards have important role in information infrastructure that guides design, manufacturing and trade in the global economy.

- ***AUTHORITY HAVING JURISDICTION*** - Individual or organization adopting and enforcing codes, rules, and by-laws governing various concerns of community. Commonly referred to as "final authority" for any matters relating to LIFE SAFETY and BUILDING CONSTRUCTION within a community.

- ***BOILER*** - Appliance intended to supply hot liquid for space-heating, processing or power purposes.

- ***BTU*** - Abbreviation for British Thermal Unit. Quantity of heat required to raise temperature of 1 pound of water 1°F.

- ***BURNER*** - Device for final conveyance of gas or mixture of gas and air, to combustion zone.

- ***CALIBRATE*** - Make fine adjustments or divide into marked intervals for optimal measuring.

- ***COAXIAL VENTIN***G Sharing the same center.

- ***COMBUSTION*** - Rapid oxidation of fuel gases accompanied by production of heat or heat and light. Complete combustion of fuel is possible only in presence of adequate supply of Oxygen.

- ***COMBUSTIBLE MATERIAL*** - Materials made of or surfaced with wood, compressed paper, plant fibers, or other materials capable of being ignited and burned. Such material shall be considered combustible even though flame-proofed, fire-retardant treated, or plastered.

- ***COMBUSTION AIR*** - Air that is drawn into an appliance to mix with fuel and support combustion.

- ***CONDENSATE*** - Liquid separated from flue gas due to reduction in temperature.

- ***DIRECT VENT BOILER*** - Boiler constructed and installed so all combustion air is derived directly from outdoors and all vent gases are discharged to outdoors.

- ***DOMESTIC -*** Relating to household usage as opposed to commercial usage.

- ***DOMESTIC WATER -*** Potable drinking water - tap water.

- ***DRAFT*** - Pressure difference causes gases or air to flow through a chimney, vent, flue or appliance.

- ***FLA*** - Full load amps.

- ***FLUE*** - Enclosed passageway for conveying combustion gases.

- ***FLUE GASES*** - Products of combustion plus excess air in appliance flues or heat exchanger.

- ***GAS SUPPLIER -*** Party that sells commodity of Natural Gas (Gas A) or LPG (Gas E).

- ***HIGH-VOLTAGE*** - Circuit involving potential of not more than 600 volts and having circuit characteristics in excess of those of low-voltage circuit.

- ***HYSTERESIS (DIFFERENTIAL) -***difference between the temperature at which the thermostat switches off - and the temperature at which it switches on again.

- ***IGNITER*** - Device utilizing electrical energy to ignite gas at main burner.

- ***LEAK CHECK*** - Operation performed on gas piping system to verify system does not leak.

- ***LICENSED QUALIFIED INSTALLER / SERVICE TECHNICIAN -*** any individual, firm, corporation or company that either directly or through a representative is engaged in the installation, replacement, repair or servicing of gas piping, venting systems, appliances, components, accessories, or equipment, and whose representative is experienced and trained, in such work and has complied with the requirements of the authority having jurisdiction.

- ***LOW WATER CUTOFF*** - Device constructed to automatically cut off fuel supply when surface of water in boiler falls to lowest safe water level.

- ***LOW-VOLTAGE*** - Circuit involving potential of not more than 30 volts.

- ***METRIC GAS METERS***

  Natural Gas

$$MBH = \frac{127{,}116 \times \text{___ cu meters}}{\text{_____ Seconds}}$$

For example: Gas Meter measures 0.1 cubic Meters in 100 seconds

$$MBH = \frac{127{,}116 \times 0.1}{100} = 127\ MBH$$

  Propane Gas (LP)

$$MBH = \frac{383{,}482 \times \text{___ cu meters}}{\text{_____ Seconds}}$$

- ***NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS -*** Group composed of boiler and pressure vessel inspectors representing states, cities and provinces enforcing pressure equipment laws and regulations.

- ***PRESSURE TEST*** - Operation performed to verify gas tight integrity of gas piping following its installation or modification.

- ***PURGE*** - To free gas conduit of air or gas, or mixture of gas and air.

- ***PURGE TIME*** - Period of time intended to allow for dissipation of any unburned gas or residual products of combustion.

- ***QUALIFIED AGENCY*** - Any individual, firm, corporation, or company engaged in and responsible for:
  - Installation, testing, or replacement of gas piping, or connection, installation, testing, repair or servicing of appliances and equipment.
  - Experienced in such work.
  - Familiar with all precautions required.
  - Complies with all requirements of authority having jurisdiction.

- ***SAFETY RELIEF VALVE*** - Valve designed to relieve pressure in hot water supply system when pressure exceeds pressure capability of equipment.

- ***SAFETY SHUTOFF DEVICE*** - Device that will shut off gas supply to controlled burner in event source of ignition fails.

- ***SEDIMENT TRAP*** - Gas piping arrangement designed to collect any liquid or solid contaminant before reaching gas valve.

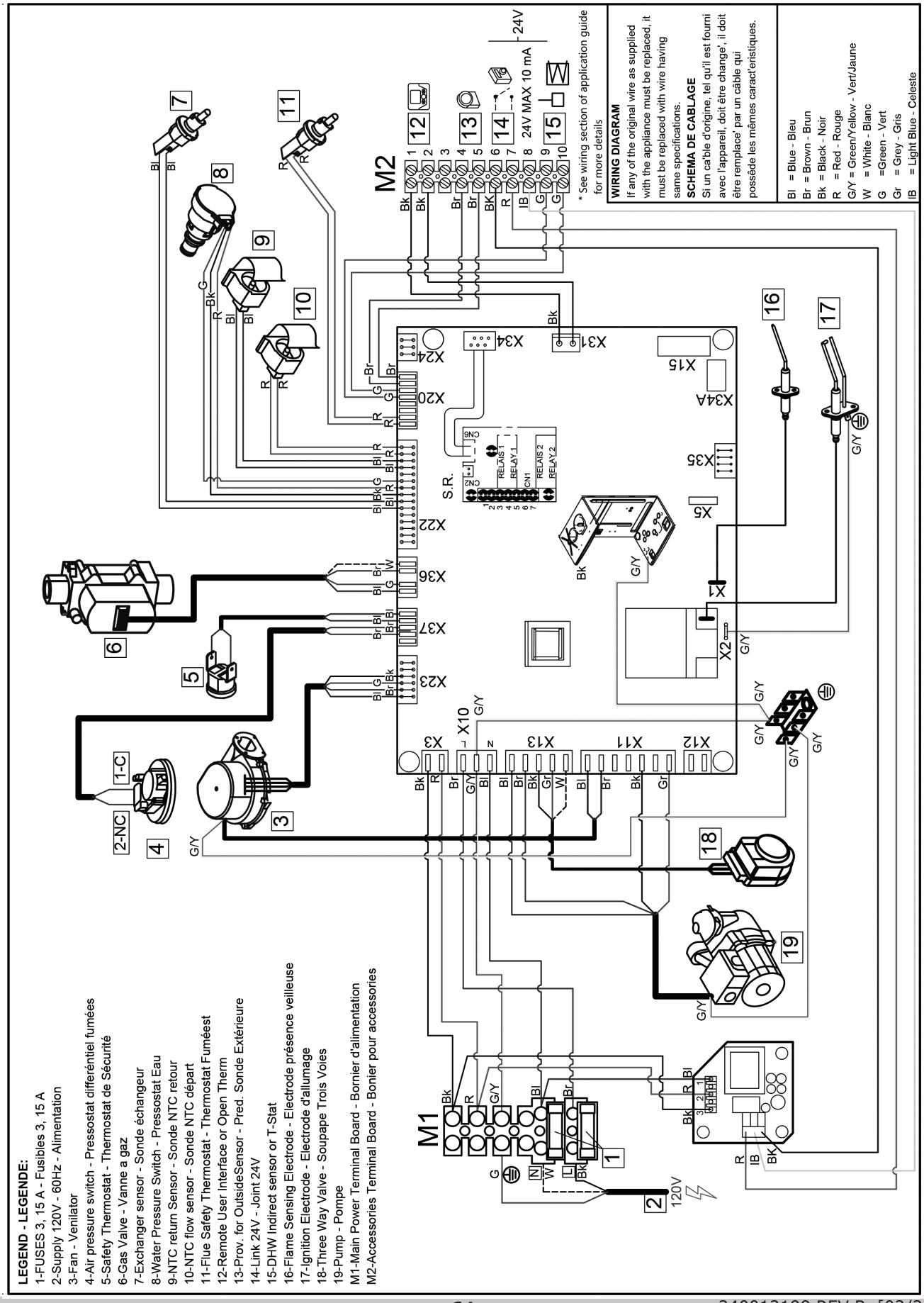
- ***SERVICE*** -Supply, installation, or maintenance of goods carried out by a Qualified Installer / Service Technician.

- ***TWO PIPE SYSTEM*** - Type of venting that allows for exhaust flue and intake air piping to be separated from each other. Fresh air may be drawn in at a different area from where flue terminal is located.

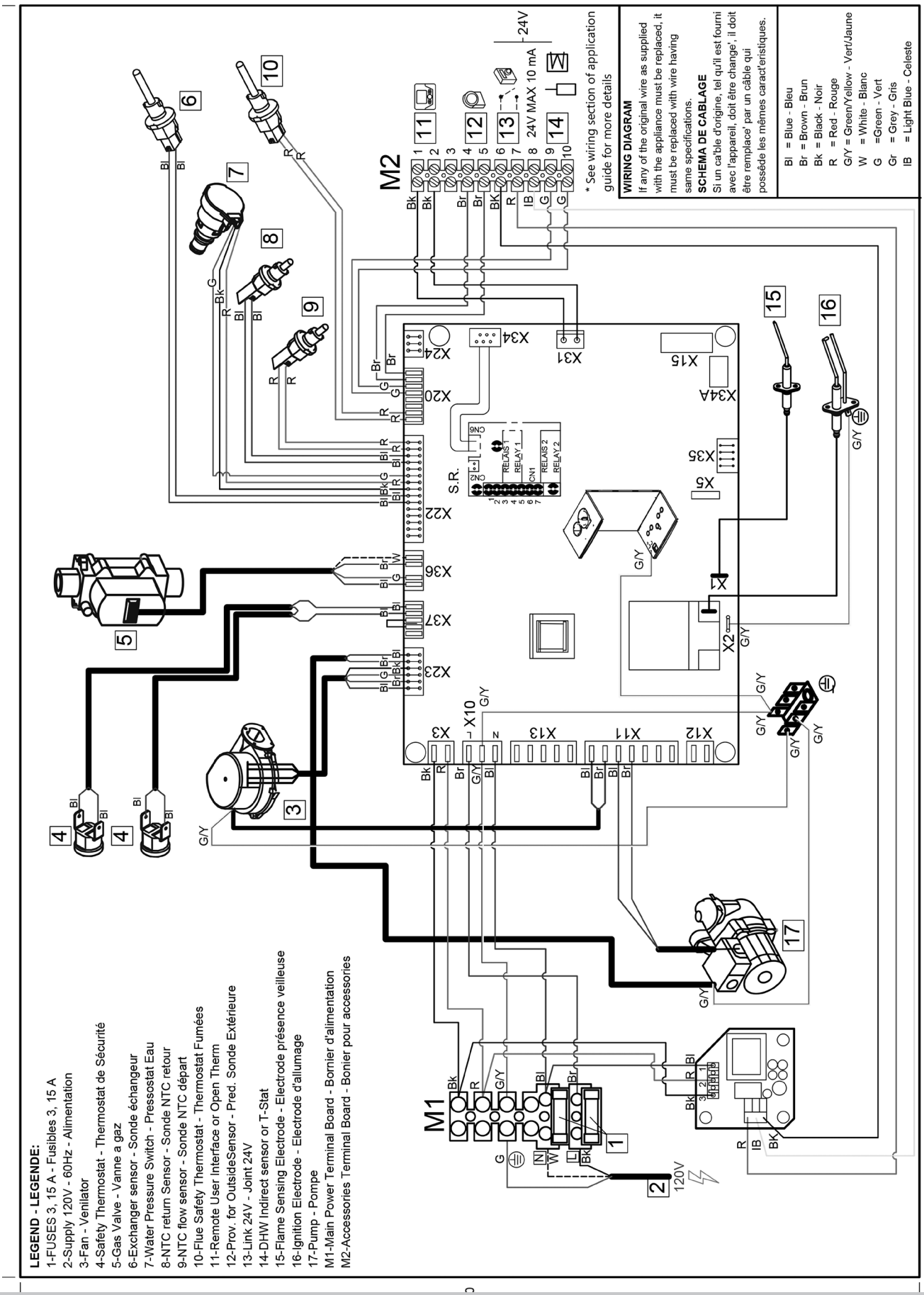
- ***VENT*** - Passageway used to convey flue gases from appliance vent connector to outdoors.

- ***VENTING SYSTEM*** - Continuous open passageway from of appliance vent connector to outdoors for purpose of removing flue or vent gases.

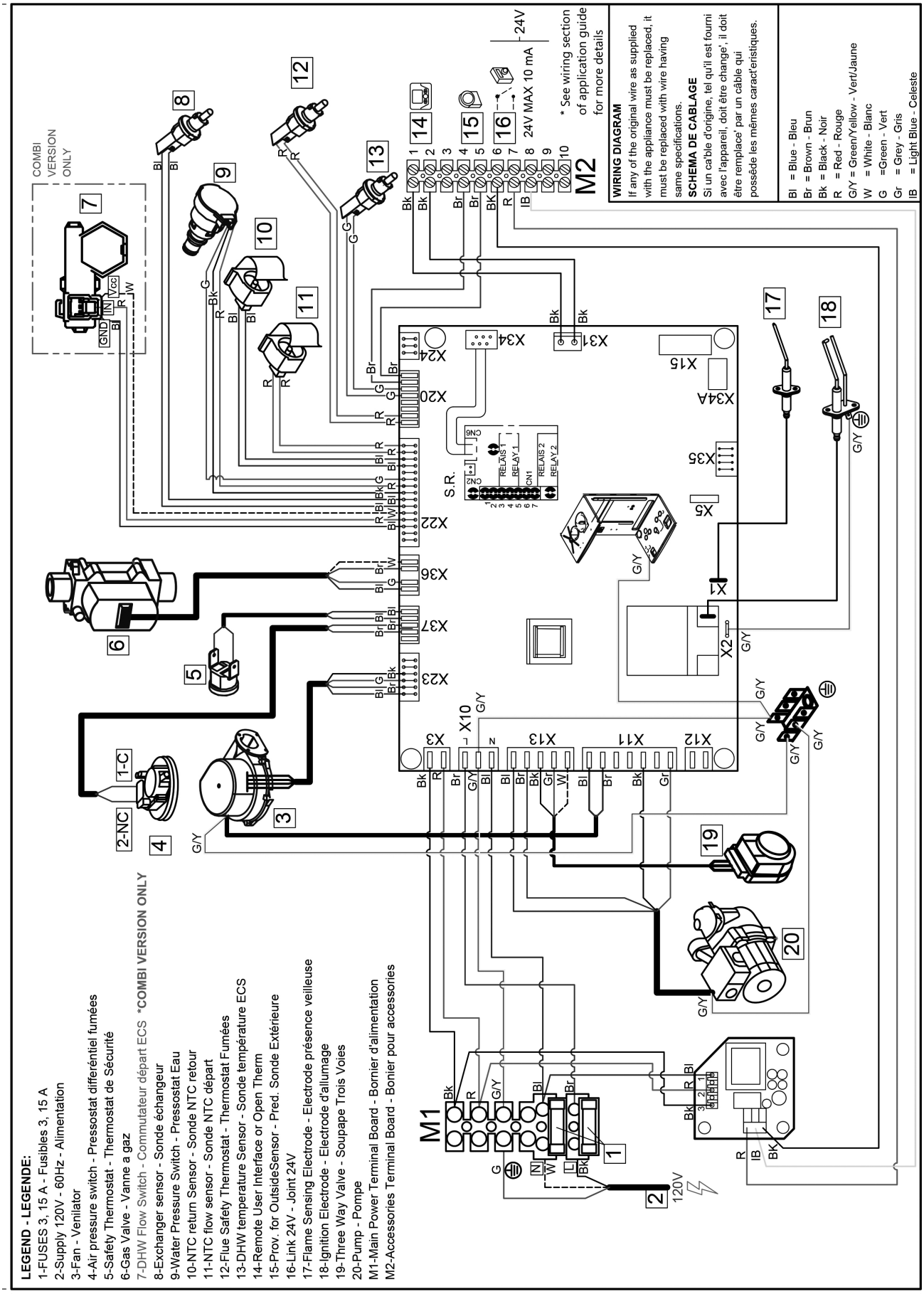
A-1 MODELS 125 - Heat Only



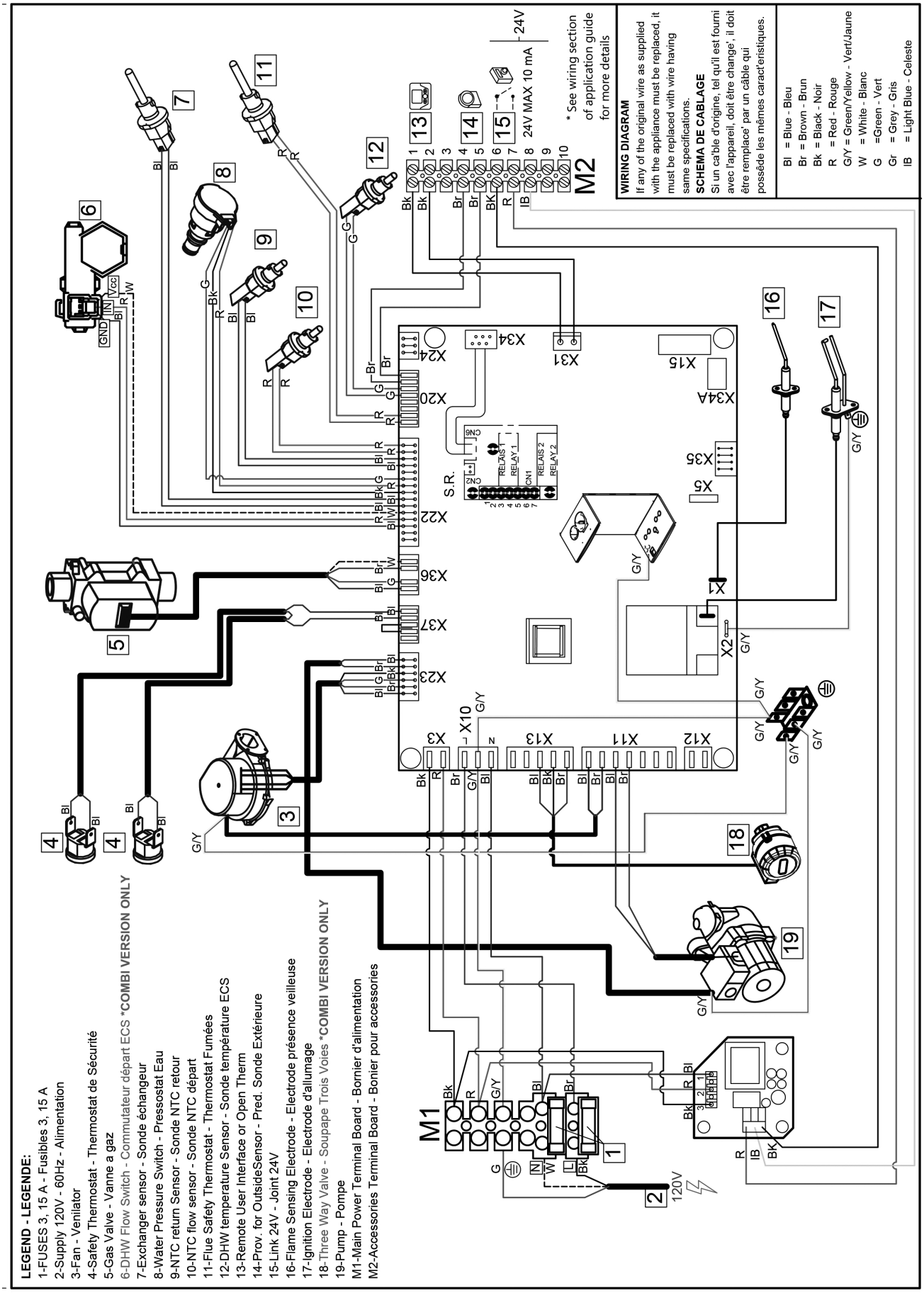
A-2 MODELS 165 - Heat Only



A-3 MODELS 150 - Combi



A-4 MODELS 205 - Combi



IMPORTANT

In accordance with Section 325 (f) (3) of the Energy Policy and Conservation 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.

TABLE OF CONTENTS - PARTS LIST

550003161 Front Jacket Replacement Kit Includes:					
Description	Qty Per	**125**	**150**	**165**	**205**
KIT,JKT,FRNT	1	●	●	●	●
BD,FRONTAL INSULATION PANEL	1	●	●	●	●
RVT, 1/8",SEALING	1	●	●	●	●
BEZEL,WNDW	1	●	●	●	●
NUT,PUSH,1/4"x17/32",PS250085OH	1	●	●	●	●
LBL,LOGO	1	●	●	●	●

125/150

Kit 550003165 - Right Side Jacket Replacement Kit 125/150 - includes:			
Description	Qty Per	**125**	**150**
JKT,SIDE,RT,	1	●	●
BD, SIDE, INSULATION PANEL	1	●	●

Kit 550003163 - Left Side Jacket Replacement Kit 125/150 - Includes:			
Description	Qty Per	**125**	**150**
JKT,SIDE,LT,	1	●	●

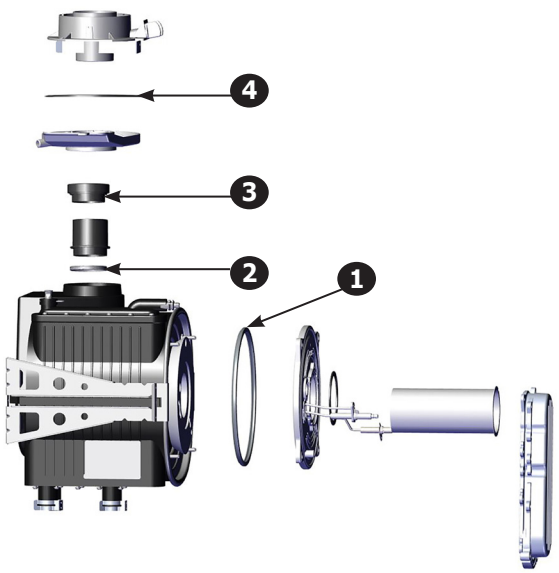
165/205

Kit 550003478- Right Side Jacket Replacement Kit 165/205			
Description	Qty Per	**165**	**205**
JKT,SIDE,RT	1	●	●
LBL,WARN,SFTY	1	●	●

Kit 550003477- Left Side Jacket Replacement Kit 165/205			
Description	Qty Per	**165**	**205**
JKT,SIDE,LT,HO	1	●	●

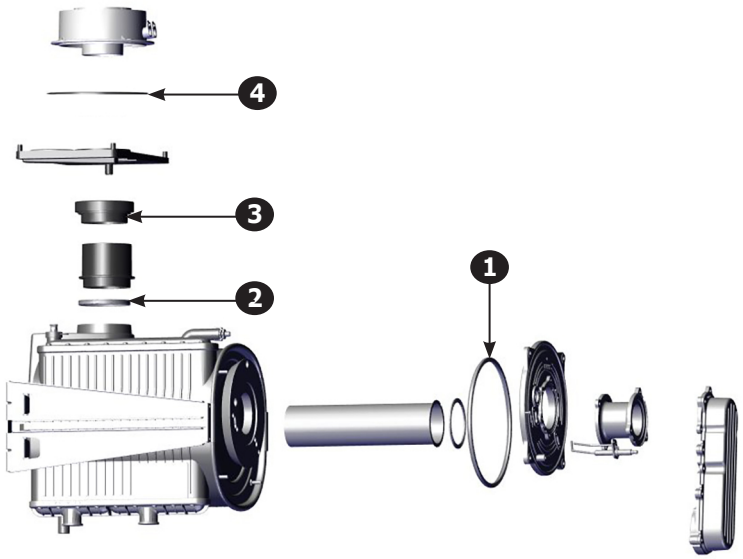
COMBUSTION CHAMBER GASKET REPLACEMENT KITS

125/150



Kit 550003156 - Combustion Chamber Gasket Replacement 125/150 - Kit Includes:					
POS	PN	Description	Qty Per	125	150
1	BD710111502V	Combustion CHAMBER gasket	1	●	●
2	BD710108001V	gasket with double lip (condensate tray)	1	●	●
3	BD000005411030	Gasket (water tray to heat exchanger)	1	●	●
4	BD710107601V	Flue Adapter Gasket	1	●	●
-	240011402	instructions	1	●	●

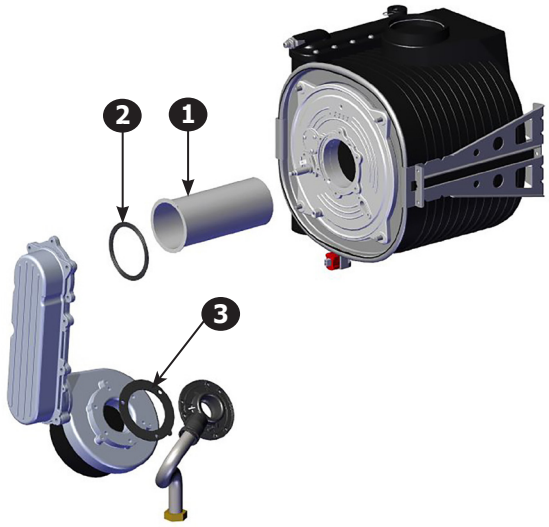
165/205



Kit 550003458 - Heat Exchanger Gasket Replacement 165/205 - Kit Includes:					
POS	PN	Description	Qty Per	165	205
1	BD722003801V	Combustion CHAMBER gasket	1	●	●
2	BD767373901V	condensate tray seal	1	●	●
3	BD000005411030	Gasket (water tray to heat exchanger)	1	●	●
4	BD000005410712	Gasket, Flue adapter to cabinint	1	●	●
-	240012082	Instructions 165/205	1	●	●

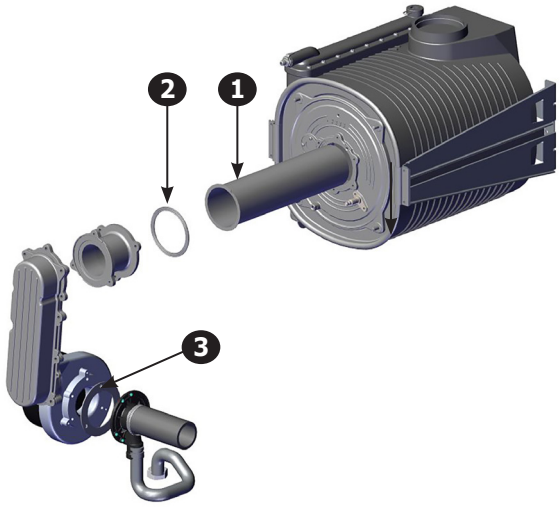
BURNER SERVICE AND REPLACEMENT KITS

125/150



Kit 550003155 - Burner Service Kit 125/150 - Kit includes:					
POS	PN	Description	Qty Per	125	150
1	BD711559101V	BURNER	1	●	●
2	BD711408002V	BD,GASKET, BURNER, assy	1	●	●
3	BD710115601V	BD,Venturi Gasket, Mixer to Air/GAS	1	●	●
-	240011401	INST,GSKT,BNR,MAC/H,DCC/B	1	●	●

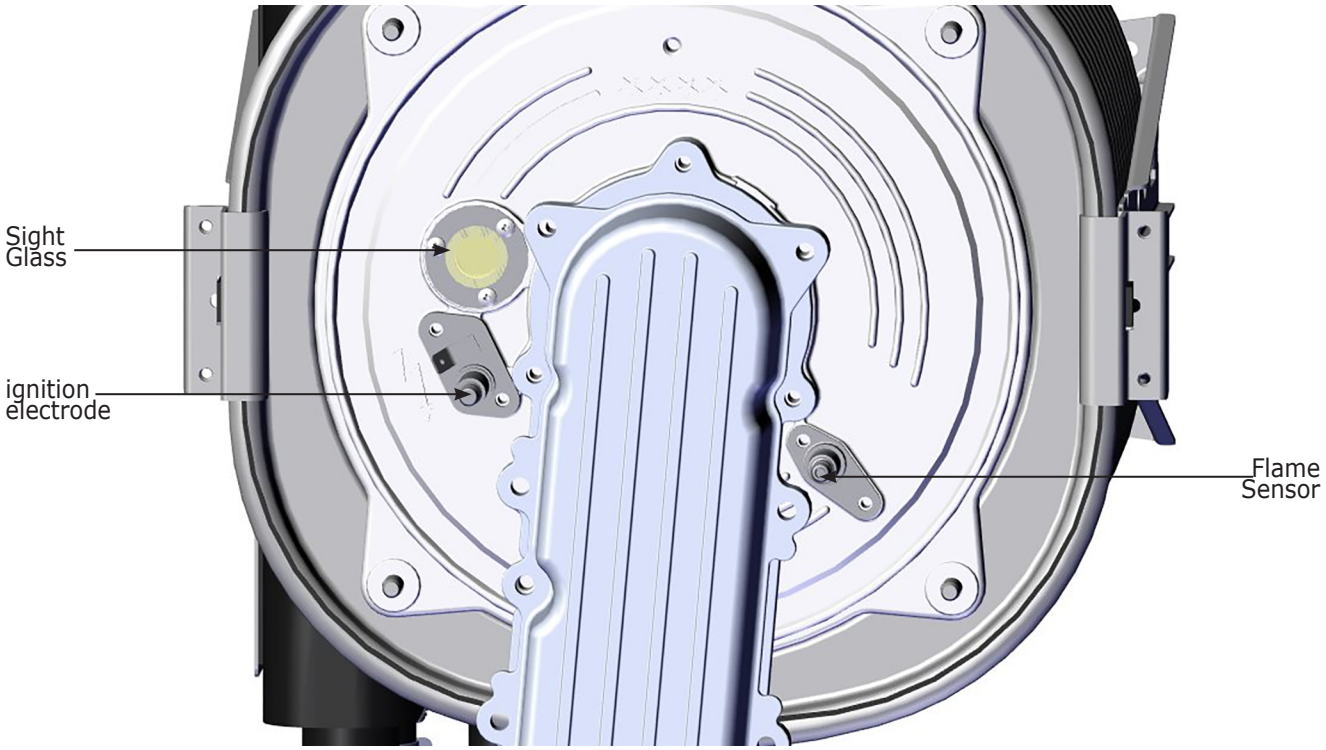
165/205



Kit 550003456 - Burner Service Kit 165/205 - Kit includes:					
POS	PN	Description	Qty Per	165	205
1	BD769578001V	55 kW BURNER	1	●	●
2	BD711408002V	BD,GASKET, BURNER	1	●	●
3	BD710115601V	BD,VENTURI GASKET, MIXER TO AIR/GAS DUCT	1	●	●
-	240011401	INST,GSKT,BNR,MAC/H,DCC/B	1	●	●

SIGHT GLASS, FLAME SENSOR, AND IGNITION ELECTRODE REPLACEMENT KITS

125/150/165/205



Kit 550003157 - Sight Glass Replacement Kit						
PN	Description	Qty Per	125	165	150	205
BD710112202V	SIGHT GLASS GASKET	1	●	●	●	●
BD710112101V	SIGHT GLASS	1	●	●	●	●
240011403	SIGHT GLASS REPLACEMENT KIT INSTRUCTIONS	1	●	●	●	●

Kit 550003152 -Ignition Electrode Replacement Kit						
PN	Description	Qty Per	125	165	150	205
BD711010701V	BD,ELECTRODE IGNITION	1	●	●	●	●
BD710185302V	BD,GSKT,IGN,PEN	1	●	●	●	●
240011398	INST,RPLMT,ELCTD,MAC/H,DCC/B	1	●	●	●	●

Kit 550003151 - Flame Sensor Replacement Kit						
PN	Description	Qty Per	125	165	150	205
BD711010801V	BD,FLAME SENSOR,B&P	1	●	●	●	●
BD710185201V	BD,FLAME SENSING ELECTRIC GASKET	1	●	●	●	●
240011397	INST,RPLMT,,FLAME SNSR,MAC/H,DCC/B	1	●	●	●	●

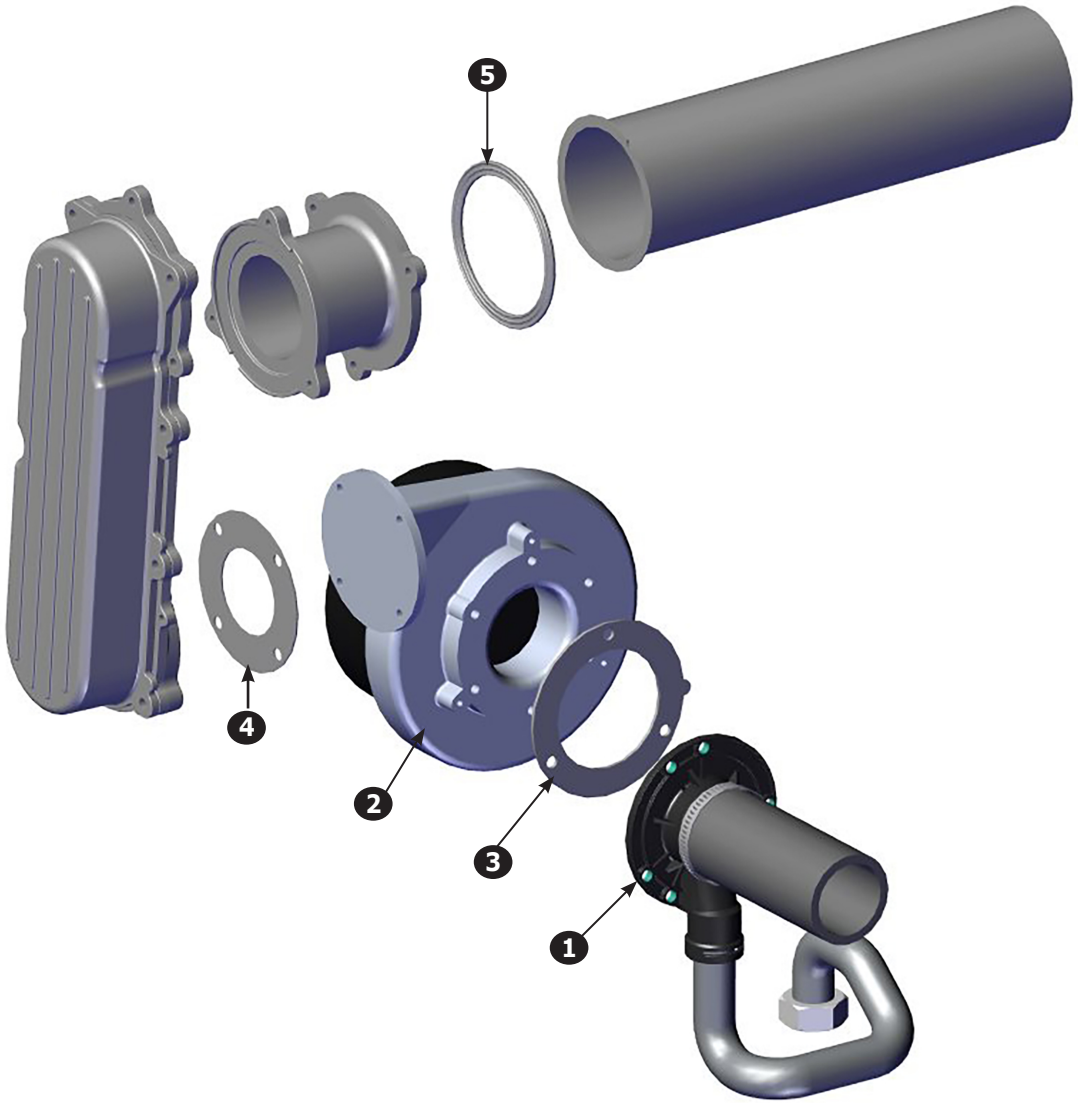
FAN, AIR MIXER, BLOWER REPLACEMENT KITS

125/150

Kit 550003154 - Replacement, Fan Mixer 125/150 - Kit inlcudes:					
POS	PN	Description	Qty Per	**125**	**150**
1	BD710458103v	MIXER PL30 C1500107 (Gas Train)	1	●	●
2	BD711073902V	FAN NRG 118 115w 120v (Inducer)	1	●	●
3	BD710042401V	BD, VENTURI,GASKET MIXER TO FAN	1	●	●
4	BD710115601V	BD,GASKET, MIXER TO AIR/GAS DUCT	1	●	●
N/A	BD710011401V	BD,CLIP - FIXING GAS PIPE	1	●	●
N/A	BD710061402V	BD,O-RING 18X3 NBR	2	●	●
5	BD711408002V	BD,GASKET, BURNER	1	●	●
N/A	240011400	INST,RPLMT,FAN MXr, kit instructins	1	●	●

FAN, AIR MIXER, BLOWER REPLACEMENT KITS

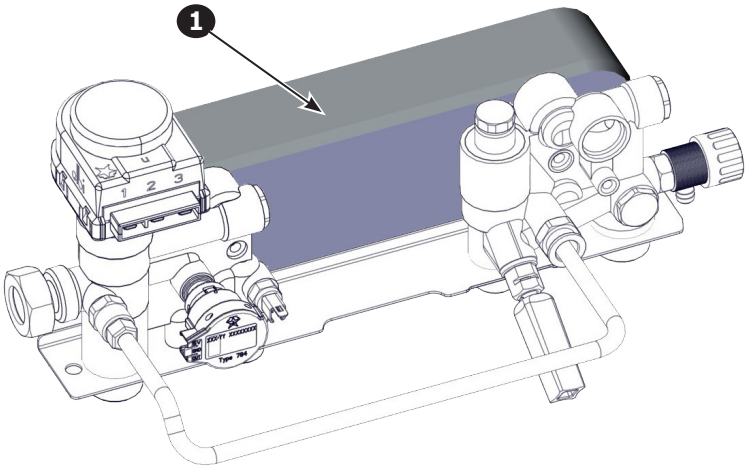
205/165



Kit 550003454 - Replacement, Fan Mixer **165/205** - Kit inlcudes:					
POS	PN	Description	Qty Per	**165**	**205**
1	BD769578101V	MIXER 165/205 B&P	1	●	●
2	BD769577901V	FAN NRG 118 115w 120v	1	●	●
3	BD710042401V	BD,VENTURI GASKET MIXER TO FAN	1	●	●
4	BD710115602V	BD,GASKET, MIXER TO AIR/GAS DUCT	1	●	●
NA	BD710011401V	BD,CLIP - FIXING GAS PIPE	1	●	●
NA	BD710061402V	BD,O-RING 18X3 NBR	2	●	●
5	BD711408002V	BD,GASKET, BURNER	1	●	●
NA	240011400	INST,RPLMT,FAN MXR, kit instructions	1	●	●

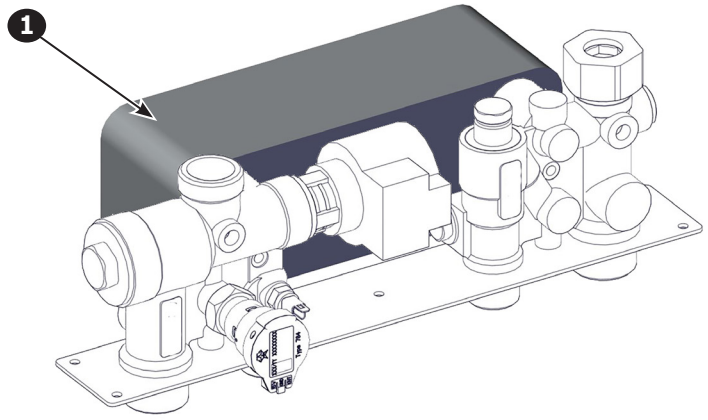
DHW PLATE REPLACEMENT KIT WITH GASKETS

150 only



Kit 550003153 - DHW Plate Replacement Kit with Gaskets - **150**				
POS	PN	Description	Qty Per	**150**
1	BD711612501V	DHW PLATE EXCHANGER 20 PLATES	1	●
NOT SHOWN	BD722275601V	DHW PLATE EXCHANGER O-RING	4	●
-	240011399	INST,RPLMT,DHW PLT,MAC/H,DCC/B	1	●

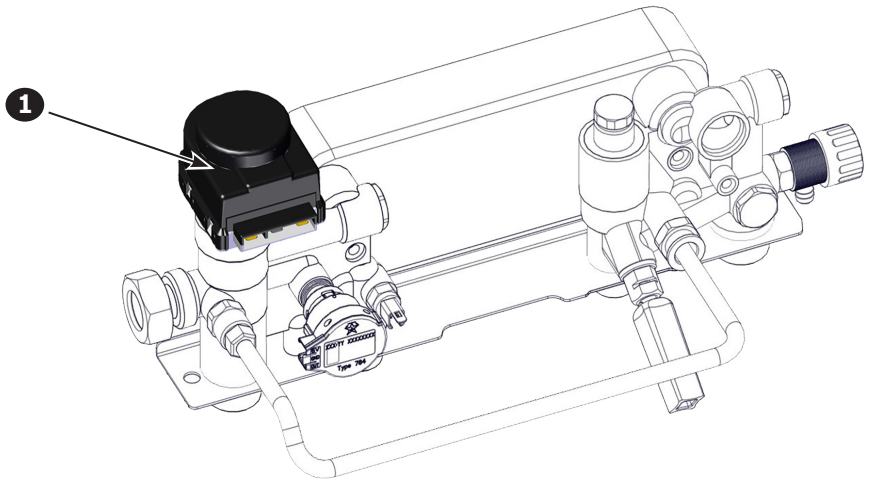
205 only



Kit 550003455 - DHW Plate Replacement Kit with Gaskets - **205**				
POS	PN	Description	Qty Per	**205**
1	240012161	FLAT PLATE HEAT EXCHANGER : PTP EXCHANGER	1	●
NOT SHOWN	BD722275601V	BD,O-RING 18.3X3.6 R15	4	●
-	240011399	INST,RPLMT,DHW PLT	1	●

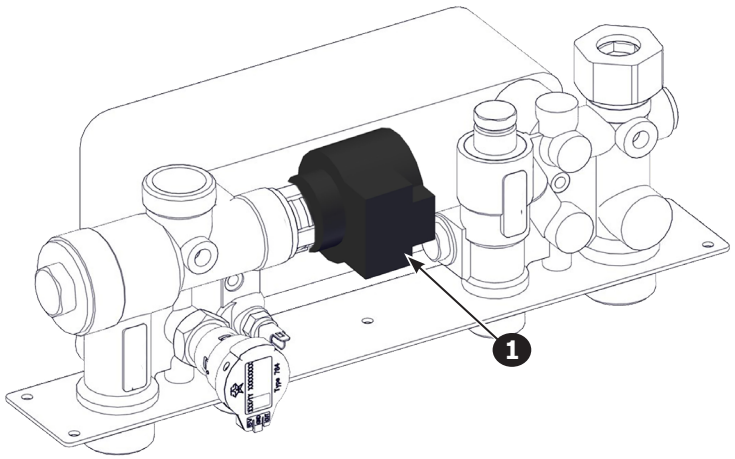
3 WAY VALVE MOTOR REPLACEMENT - KITS

125/150



Kit 550003166 - 3 Way Valve Motor Replacement - 125/150 Kit Includes:					
Pos	PN	**Description**	Qty Per	**125**	**150**
1	BD000005696391	3 WAY VALVE MOTOR 120V	1	●	●
not shown	BD710189001V	GASKET, 7X26X2	1	●	●
-	240011406	INSTRUCTIONS	1	●	●

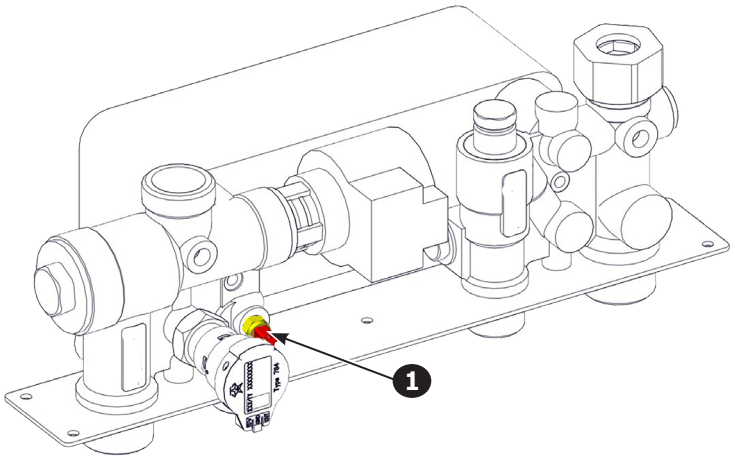
205 only



Kit 550003460- 3 Way Valve Motor Replacement - 205 Kit Includes:				
Pos	PN	**Description**	Qty Per	**205**
1	240012162	BD, 3WV Motor 110V 205	1	●
not shown	240012163	Clip for motor	1	●
-	240012116	Instructions	1	●

SENSOR REPLACEMENT - KITS

150/205



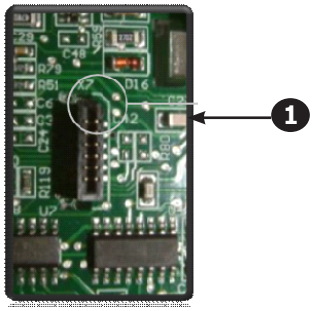
Kit 550003159 - DHW Temperature Sensor Replacement Kit 150/205 - Includes:					
Pos	PN	**Description**	Qty Per	**150**	**205**
1	BD710831501V	BD,NTC SENSOR HONEYWELL-S011026	1	●	●
not shown	BD710189001V	BD,GASKET 9,7X15X2	1	●	●
-	240011405	INST,SNSR,DHW TEMP	1	●	●

125/165

Kit 550003189 - DHW Sensor Replacement Kit For Indirect Storage Tank 125/165 - Includes:					
Pos	PN	**Description**	Qty Per	125	165
1	KHG714076810	BD,KIT,DHW,SENSOR	1	●	●
not shown	240008013	CLIP,MTG,HW,32002656	1	●	●
not shown	240010821	THERMOPASTE,1OZ	1	●	●
n/a	240011464	INST,KIT,DHW,SNSR,TANK	1	●	●

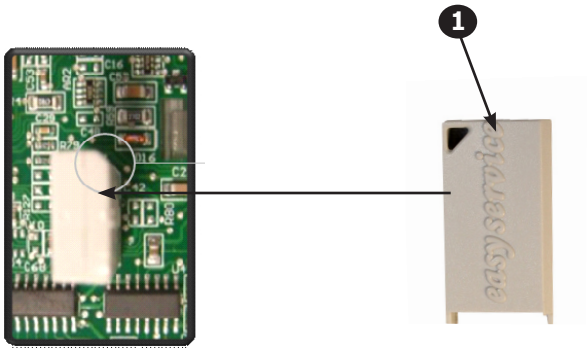
PCB /CONTROL REPLACEMENT KIT

125/150/165/205



Kit 550003502 - PCB /Control Replacement Kit W/O Key - Includes:							
POS	PN	**Description**	Qty Per	**125**	**165**	**150**	**205**
1	BD770219401	BD,PCB,B&P,HAGC03-BX04,W/O SVC KEY	1	●	●	●	●
-	240012196	INST,KIT,CTRL RPLMT,MAC/H,DCC/B 125-205	1	●	●	●	●

125/150/165/205



Kit 550003191 - Service Key Replacement Kit - Includes:							
Pos	PN	**Description**	Qty Per	**125**	**165**	**150**	**205**
1	BD710707701N	BD,SERVICE KEYY	1	●	●	●	●
-	240012196	INST,KIT,CTRL RPLMT	1	●	●	●	●

FLUE GASKET CONNECTION REPLACEMENT - KITS

125/150

Kit 550003158 - Flue Gasket Connection Replacement 125/150 - Kit Includes:				
PN	**Description**	Qty Per	**125**	**150**
BD710107601V	GASKET ADAPTER (FLUE)	1	●	●
Bd710784801v	SUCTION CAP GASKET	1	●	●
BD710107401V	WASHER DIA 60 OUTLET BEND (FLUE ADAPTER)	1	●	●
BD710107101V	WASHER DIA 100 OUTER ADAPTER SEAL (FLUE ADAPTER)	1	●	●
240011404	INSTRUCTIONS - 240011404	1	●	●

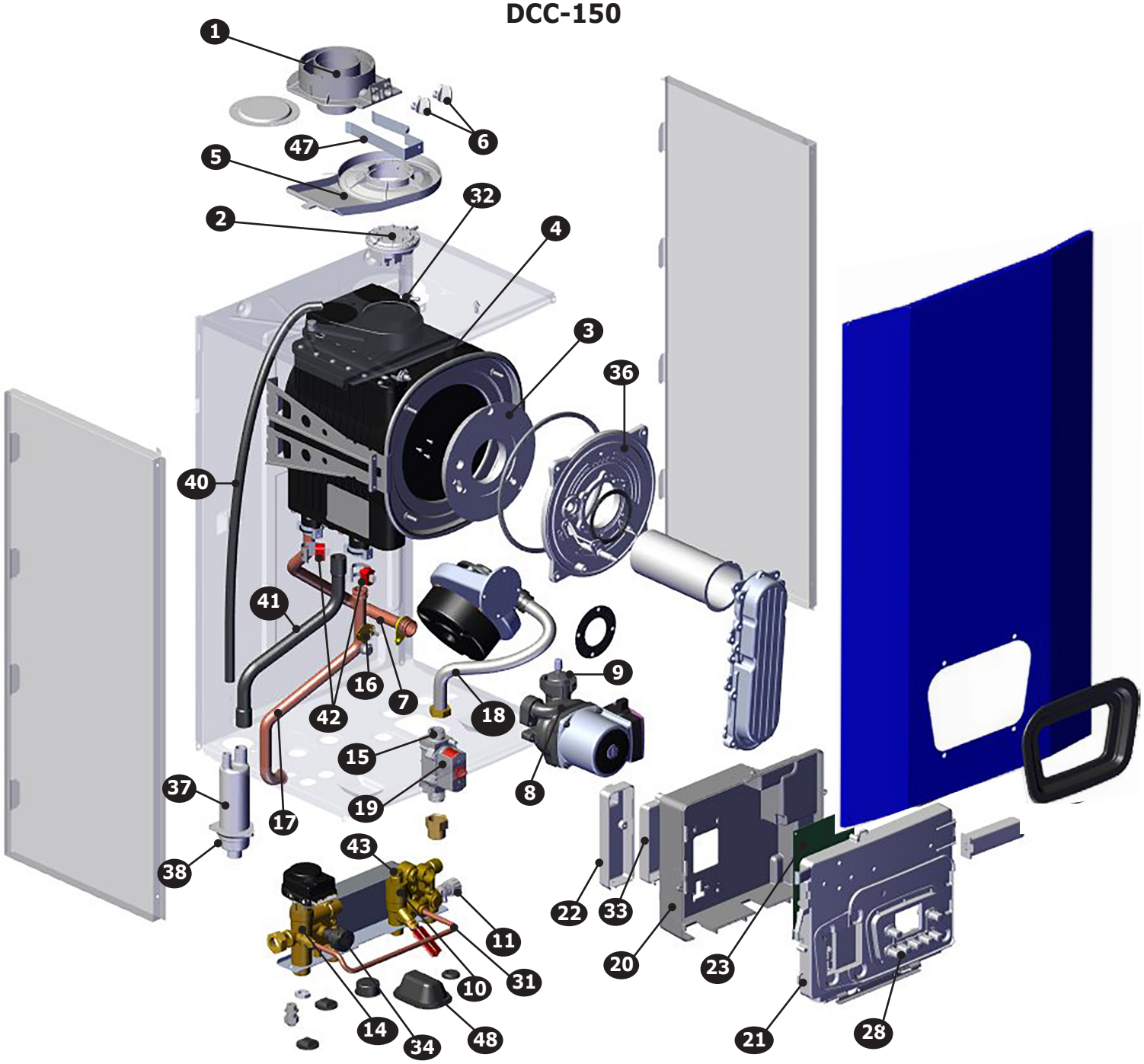
165/205

Kit 550003264 - Flue Gasket Connection Replacement 165/205 - Kit Includes:				
PN	**Description**	Qty Per	**165**	**205**
BD000005670522	GASKET ADAPTER (FLUE)	1	●	●
BD000005410712	SEAL, FLUE ADAPTER	1	●	●
BD710300601V	COVER PLATE, TWIN PIPE	1	●	●
BD710784801V	GASKET, COVER PLATE, TWIN PIPE	1	●	●
BD710107801V	O-RING, 8.73X1.78	1	●	●
240011727	INSTRUCTIONS	1	●	●

Seals, Clips, ETC. - Kit

Kit 550003150 - Seals, Clips, Etc - Kit inlcudes:						
PN	Description	Qty Per	**125**	**165**	**150**	**205**
BD721623501V	BD,FIXING CLIP - HEX PIPES	2	●	●	●	●
BD710963001V	BD,O-RING 21,5X3 EP7	2	●	●	●	●
BD722275601V	BD,O-RING 18.3X3.6 R15-	4			●	
BD710188902V	BD,FIXING CLIP	2	●		●	●
BD710189001V	BD,GASKET 9,7X15X2	1			●	●
BD710113601V	BD,GASKET G1/2 AFM	2	●		●	
BD710113001V	BD,GASKET G3/4 17X24X2	2	●	●	●	●
BD710188501V	BD,FIXING CLIP - 3WAY VALVE MOTOR	1	●		●	
BD710108401V	BD,ANELLO OR 11,91X2,62	3	●			
BD000005411331	BD,O-RING 20,24X2,62	4	●	●	●	●
BD710188701V	BD,FIXING SPRING	1			●	
BD710107801V	BD,O-RING 8,73X1,78	5	●		●	
BD710039501V	BD,HYDRAULIC GROUP GASKET	5	●		●	●
BD710110901V	BD,O-RING 40,95x2,62	1	●		●	
BD000005402141	BD,PUMP GASKET G1 1/2,380	2		●		●
BD000005405001	BD,GASKET G1 22x30,3x2 WRC,240/380	1		●		●
BD710011401V	BD,CLIP - FIXING GAS PIPE	1	●	●	●	●
BD710045702V	BD,OR,9,19x2,62,EDPM	1		●		
BD710061402V	BD,O-RING 18X3 NBR	1	●	●	●	●
BD710110601V	BD,CLIP D10,BITRON,240/380	1		●		
BD710111001V	BD,SPRING CLIP BIFM182	2	●	●	●	●
BD710151101V	BD,SPRING CLIP BIFM252	2	●	●	●	●
BD710397801V	BD,GSKT,G1",31x42,FOAM,240/380	2		●		●

DCC-150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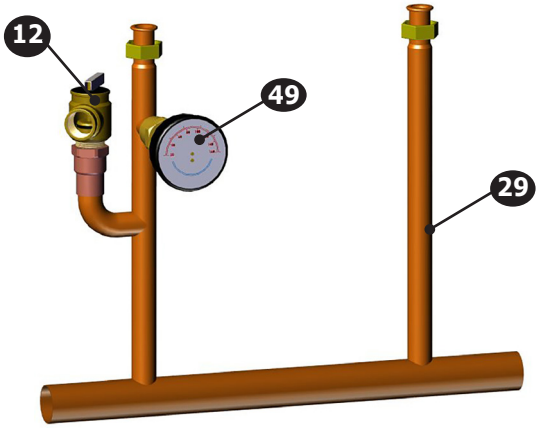
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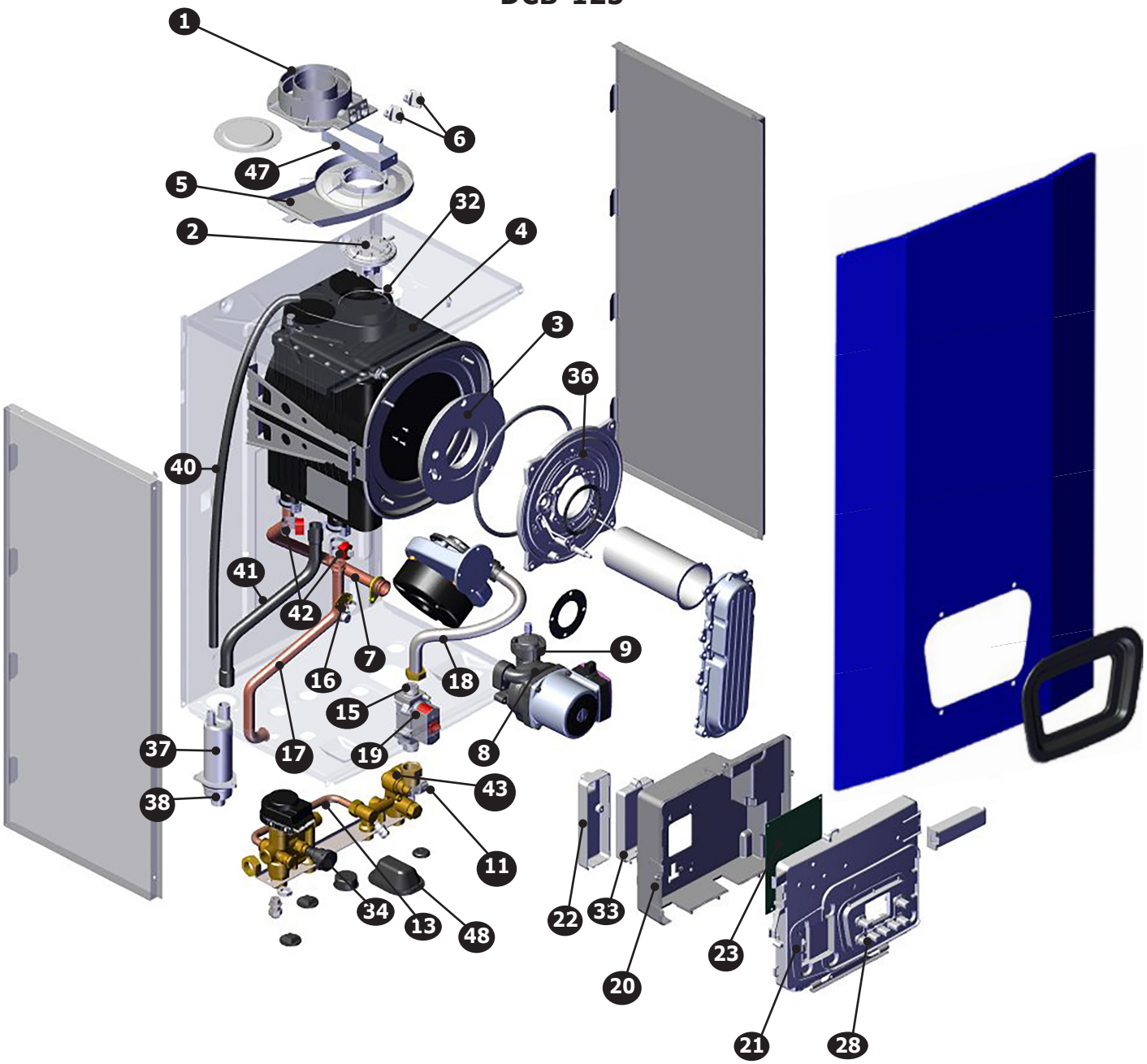
DCB-125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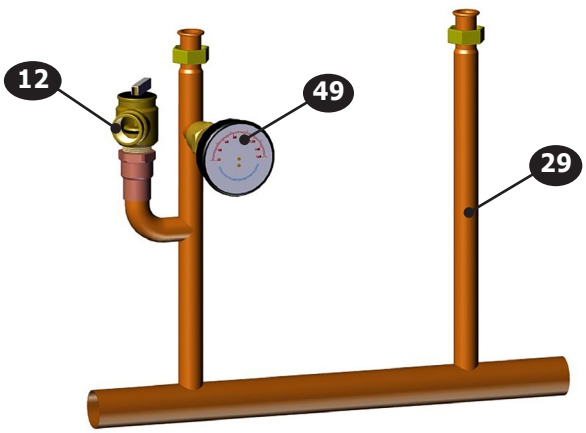
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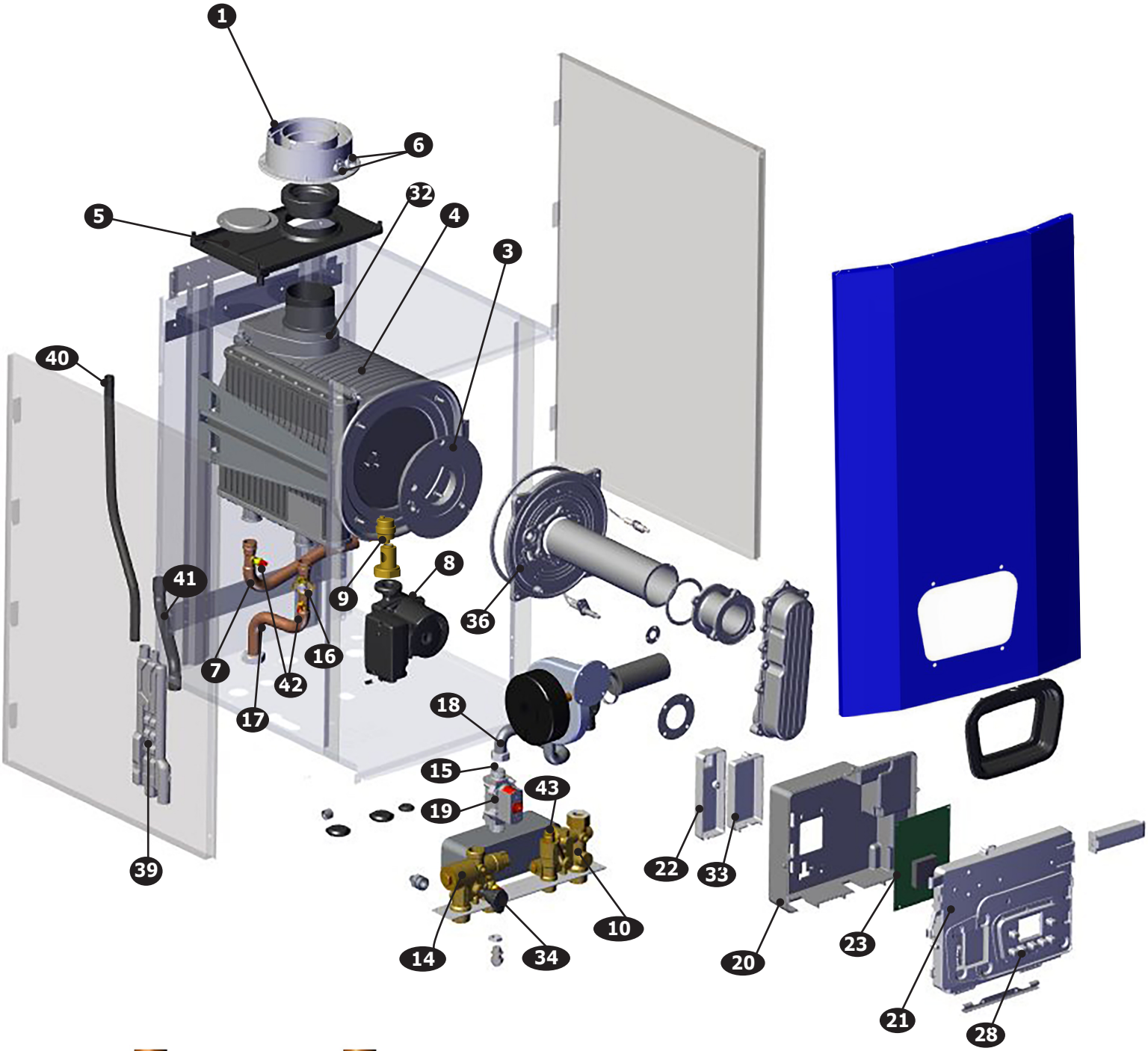
DCC-205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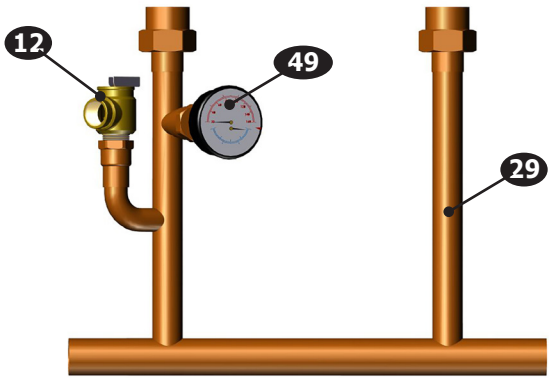
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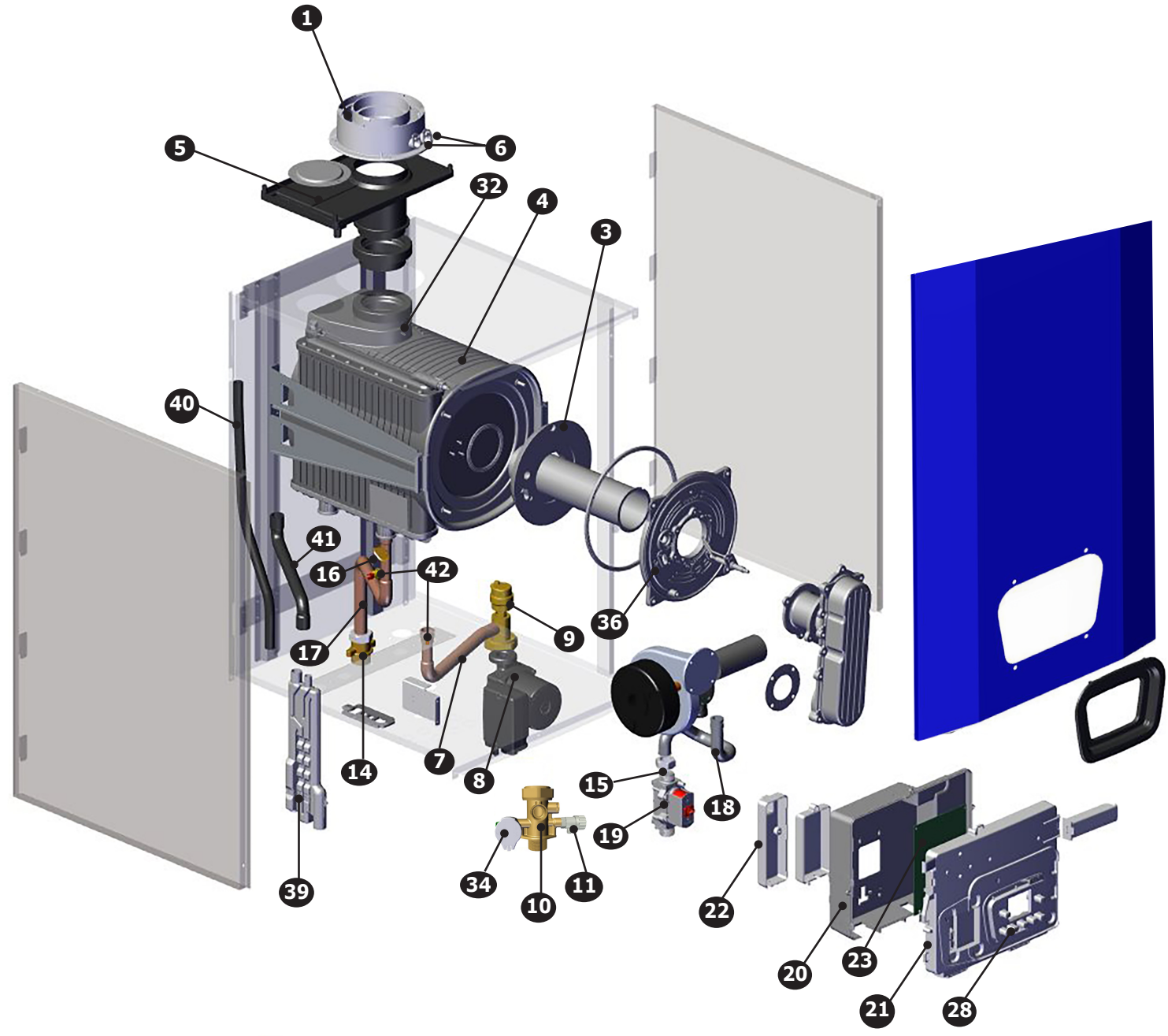
DCB-165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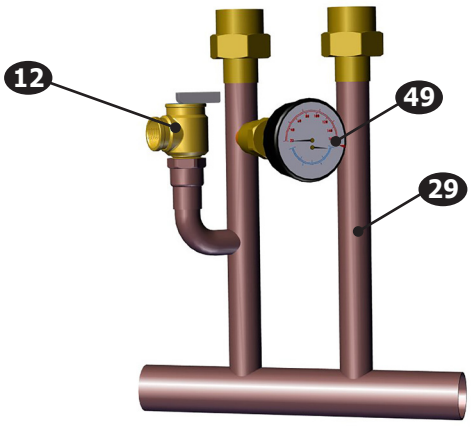
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ITEM	PN	DESCRIPTION	DCC-150	DCB-125	DCC-205	DCB-165
1	BD711085101V	FLUE CONNECTION 125/150	●	●		
	BD000005670522	FLUE CONNECTION 165/205			●	●
2	BD000005679722	FLUE PRESSURE SWITCH 400-350PA	●	●		
3	BD710111601V	INSULATION PANEL (HEAT EXCHANGER)	●	●	●	●
4	BD711447001V	HEAT EXCHANGER 125/150	●	●		
	BD767801501V	HEAT EXCHANGER 165/205			●	●
5	BD710282301V	CONDENSING WATER COLLECTOR 125/150	●	●		
	BD767553501V	CONDENSING WATER COLLECTOR 165/205			●	●
6	BD710100701V	TEST POINT PLUG	●	●	●	●
7	BD711425802V	PUMP/EXCHANGER PIPE ASSEMBLY 125/150	●	●		
	BD766949001V	PUMP/EXCHANGER PIPE ASSEMBLY 205			●	
	BD767944701V	PUMP/EXCHANGER PIPE ASSEMBLY 165				●
8	BD710786502V	PUMP UPR 120V 125/150	●	●		
	BD722354801V	PUMP UPR 120V 165/205			●	●
9	BD710493600V	AIR VENT PUMP GR. 125/150	●	●		
	BD710715302V	AIR VENT PUMP 165/205			●	●
10	BD711607101V	RETURN BLOCK ASSY 150	●			
	BD710735501V	RETURN BLOCK ASSY 125		●		
	240012164	RETURN BLOCK ASSY 205			●	
	BD711238101V	RETURN BLOCK ASSY 165				●
11	BD710188101V	120074 DRAINING TAP	●	●	●	●
12	BD000005669851	SAFETY VALVE ASSY 30 PSI 125/150	●	●	●	●
13	BD710267001V	BY-PASS PIPE ASSY 125		●		
14	BD711605801V	SUPPLY BLOCK / 3 WAY VALVE ASSY 150	●			
	BD710266901V	SUPPLY BLOCK / 3 WAY VALVE ASSY 125		●		
	240012165	SUPPLY BLOCK / 3 WAY VALVE ASSY 205			●	
	BD711237001V	SUPPLY BLOCK ASSY 165 (NPL,G1"X1"NPT)				●
15	BD710458501V	GAS NOZZLE 5,8 MM ORIFICE 125/150	●	●		
	BD768414801V	GAS NOZZLE 9mm ORIFICE 165/205			●	●
16	BD710626001V	TEMP SENSOR / HIGH LIMIT	●	●	●	●
17	BD711425902V	PIPE HTEX SUPPLY 125/150	●	●		
	BD766948901V	PIPE HTEX SUPPLY 205			●	
	BD767944601V	PIPE HTEX SUPPLY 165				●
18	BD711007101V	FLEXIBLE GAS PIPE 125/150	●	●		
	BD769059001V	FLEXIBLE GAS PIPE 165/205			●	●
19	BD710089606V	GAS VALVE B&P SGV100	●	●	●	●
20	BD711075102V	CONTROL PANEL COVER	●	●	●	●
21	BD711074801V	CONTROL PANEL	●	●	●	●
22	BD711075601V	TERMINAL BLOCK COVER V0	●	●	●	●
23	550003502	KIT, RPLMT, CTRL	●	●	●	●
*	BD000005688441	TERMINAL BLOCK	●	●	●	●
*	BD5405340V	FUSE HOLDER	●	●	●	●
*	BD8422730V	FUSE 3,15A 250V	●	●	●	●
*	BD711366901V	120V Interface board with connector	●	●	●	●
28	BD710126301V	7 PUSH BUTTON PANEL B&P WASHER	●	●	●	●

* Not Shown

ITEM	PN	DESCRIPTION	DCC-150	DCB-125	DCC-205	DCB-165
29	550003365	MANIFOLD CONNECTION ASSEMBLY 150	●			
	550003366	MANIFOLD CONNECTION ASSEMBLY 125		●		
	240011866	MANIFOLD CONNECTION ASSEMBLY 205			●	
	240011771	MANIFOLD CONNECTION ASSEMBLY 165				●
*	BD000005643331	GAS SHUTOFF VALVE	●	●	●	●
31	BD711052301V	FILLING PIPE	●			
32	BD711180100	NTC SENSOR FLUE	●	●	●	●
33	BD711075801V	COVER CLIP-IN	●	●	●	●
34	BD710109101V	PRESSURE SENSOR WATER	●	●	●	●
*	BD710127501V	CABLE DETECTION ELECTRODE 125/150	●	●		
	BD710993801V	CABLE DETECTION ELECTRODE 165/205			●	●
36	BD711407900	HEAT EXCHANGER ALUMINUM DOOR 125/150	●	●		
	BD766847401V	HEAT EXCHANGER ALUMINUM DOOR 165/205			●	●
37	BD710016703V	SIPHON BODY (CONDENSATE COLLECTION)	●	●		
38	BD710522301V	PLUG SIPHON (CONDENSATE COLLECTION)	●	●		
39	BD765674901V	CONDENSATE TRAP 165/205			●	●
40	BD710066102V	HOSE EXCHANGER / COND TRAP 125/150	●	●		
	BD766859301V	HOSE EXCHANGER / COND TRAP 165/205			●	●
41	BD710066001V	HOSE CONDENSATE TRAY TO TRAP 125/150	●	●		
	BD766859801V	HOSE CONDENSATE TRAY TO TRAP 165/205			●	●
42	BD722143801V	TEMPERATURE SENSOR - CLIP ON 125/150	●	●		
	BD710831501V	TEMPERATURE SENSOR - WELL MOUNT 165/205			●	●
43	BD710189401V	FLOW DETECTOR	●	●	●	
*	BD710117601V	TERMINAL BLOCK (6-POSITION)	●	●		
*	BD710014803V	WALL MOUNT BRACKET 125/150	●	●		
	109009874	WALL MOUNT BRACKET 165/205			●	●
47	BD711085501V	REDUCTION FLUE SUPPORT	●	●		
48	BD710156201V	SEAL FILLING TAP	●			
	BD721583002V	SEAL FILLING TAP		●		
*	BD710117901V	TERMINAL BLOCK 10 PIN	●	●	●	●
49	1260006SP	PRESSURE/TEMPERATURE GAUGE	●	●	●	●
*	240011392	PLUG, 49MM	●	●		
*	BD000008417651	POWER CABLE UL-CSA	●	●	●	●
*	BD71010311V	CABLE GROUND FRAME	●	●	●	●
*	BD71026700V	CABLE TERM. BLOCK ROOM THERMOST	●	●	●	●
*	BD710992901V	REMOTE CONTROL CABLE	●	●	●	●
*	BD710993001V	GAS VALVE POWER CABLE	●	●	●	●
*	BD710993101V	LOW TENSION CABLE	●		●	
*	BD710993201V	CABLE PWM FAN	●	●	●	●
*	BD710993301V	CABLE 3WV/PUMP/FAN	●	●	●	●
*	BD710993405V	PCB POWER CABLE	●	●	●	●
*	BD710993502V	CABLE EXTERNAL BOILER	●		●	
*	BD710993702V	CABLE SAFETY THERMOSTAT	●	●	●	●
*	BD710993901V	LOW TENSION CABLE		●		●
*	BD710994002V	CABLE EXTERNAL SENSOR/BOILER		●		●
*	BD711065801V	CABLE NTC FLUE	●	●	●	●
*	BD711250601V	IGNITION CABLE 125/150	●	●		
*	BD710126203V	IGNITION CABLE 165/205			●	●

Kenmore Boilers
LIMITED WARRANTY
Effective 8/1/2016

THIS LIMITED WARRANTY GIVES THE ORIGINAL RETAIL CUSTOMER ONLY SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER LEGAL RIGHTS WHICH VARY FROM STATE-TO-STATE

Keep this warranty certificate and the installation manual supplied with your boiler for future reference.

Our Warranty
By this warranty statement ("Limited Warranty"), Kenmore Boilers issues limited warranties from the date of installation of the Boiler to the Original Purchaser (as herein defined), subject to the terms and conditions stated below. As used in this Limited Warranty "Original Purchaser" shall mean, the person that purchased the new Boiler directly (a) from the Kenmore Boilers brand dealer; or (b) in the case of a newly constructed home, from the contractor who purchased such new Boiler directly from a Kenmore Boilers brand dealer or wholesaler for installation and use in the newly constructed home.

For the purpose of this warranty document the "Primary Heat Exchanger" is defined as and limited to the coated Copper heat exchanger that provides space heating. A "Secondary Heat Exchanger" (available in combi units only) is defined and warranted as a "Component Part." It is the brazed plate heat exchanger that provides potable hot water heating.

CONDENSING WATER BOILER
(Models –DCB, DCC)
RESIDENTIAL 10 YEAR LIMITED WARRANTY

The following ten (10) year limited warranty shall apply to only the original installation of the Condensing Water Boiler in a single or two-family residential dwelling, used without interruption by the Original Purchaser as his or her residence.

First Year – Limited Warranty for Residential Use Condensing Water Boilers (Includes Heat Exchanger and Component Parts)

Kenmore Boilers warrants its' Condensing Water Boilers used in residential applications to be free from defects in material and workmanship under normal usage for a period of one (1) year from the date of original installation. In the event that any part of such Condensing Water Boiler is found to be defective in material or workmanship during this one-year period, then Kenmore Boilers will repair or replace, at its option, the defective part. Labor charges to remove and install repaired or replaced parts are the responsibility of the Original Purchaser.

Second through Tenth Year – Limited Warranty for the Heat Exchanger of Residential Use Condensing Water Boilers (Includes Heat Exchanger Only - Not Component Parts)

Kenmore Boilers warrants that the stainless steel heat exchanger ("Heat Exchanger") of its Condensing Water Boilers used in residential applications to be free from defects in material and workmanship under normal usage for a period of ten (10) years from the date of original installation. In the event the Heat Exchanger is found to be defective in material or workmanship during this period, Kenmore Boilers will repair or replace, at its option, the defective Heat Exchanger. Labor charges to remove and install repaired or replaced parts are the responsibility of the Original Purchaser.

CONDENSING WATER BOILER
(Models – DCB, DCC)
COMMERCIAL 8 YEAR LIMITED WARRANTY

The following eight (8) year limited warranty shall apply to only the original installation of the Condensing Water Boiler in a three or more family dwelling or business, used without interruption by the Original Purchaser.

First Year – Limited Warranty for Commercial Use Condensing Water Boilers (Includes Heat Exchanger and Component Parts)

Kenmore Boilers warrants its' Condensing Water Boilers used in commercial applications to be free from defects in material and workmanship under normal usage for a period of one (1) year from the date of original installation. In the event that any part of such Condensing Water Boiler is found to be defective in material or workmanship during this one-year period, then Kenmore Boilers will repair or replace, at its option, the defective part. Labor charges to remove and install repaired or replaced parts are the responsibility of the Original Purchaser.

Second through Fourth Year – Limited Warranty for the Heat Exchanger of Commercial Use Condensing Water Boilers (Includes Heat Exchanger Only - Not Component Parts)

Kenmore Boilers warrants that the Heat Exchanger of its Condensing Water Boilers used in commercial applications to be free from defects in material and workmanship under normal usage for a period of four (4) years from the date of original installation. In the event the Heat Exchanger is found to be defective in material or workmanship during this period, Kenmore Boilers will repair or replace, at its option, the defective Heat Exchanger. Labor charges to remove and install repaired or replaced parts are the responsibility of the Original Purchaser.

Fifth through Eighth Year – Limited Warranty for the Heat Exchanger of Commercial Use Condensing Water Boilers (Includes Heat Exchanger only – Not Component Parts)

Kenmore Boilers warrants the Heat Exchanger of its Condensing Water Boilers used in commercial applications to be free from defects in material and workmanship for the fifth year through eighth year from the date of installation.

If the Heat Exchanger is found to be defective, Kenmore Boilers will replace the original Heat Exchanger upon the payment of a proportionate charge based on the time the Condensing Water Boiler has been in service.

The proportionate charge will be equal to the appropriate percentage of the list price of such Heat Exchanger at the time the warranty claim is made, and will be determined as follows:

5th Year	6th Year	7th Year	8th Year
20%	40%	60%	80%

Labor charges to remove and install repaired or replaced parts are the responsibility of the Original Purchaser.

Note: If the Heat Exchanger model involved is no longer available due to product obsolescence or redesign, the value used to establish the list price will be the published price as shown in the Kenmore Boilers brand repair parts booklet where the Heat Exchanger last appeared or the current retail price of the then nearest equivalent Heat Exchanger. If no nearest equivalent Heat Exchanger is available, Kenmore Boilers shall have the option to allow a credit towards the then current selling price of an equivalent new boiler. Such credit shall be based on the depreciated replacement value of the failed Heat Exchanger.

LIMITATIONS/EXCLUSIONS

1.Under no circumstances will Kenmore Boilers be responsible for any other costs associated with rectifying the defective part or Product, including, without limitation, costs associated with removing and reinstalling the defective part or Product and/or its replacement part or Product, and all labor and material costs connected therewith, including, without limitation, costs associated with returning the defective part or Product to Kenmore Boilers. Replacement material will be invoiced to the distributor in the usual manner and will be subjected to adjustment upon proof of defect.

2.This Limited Warranty will not be applicable if the Product is (a) used or operated over its rated capacity and/or at a pressure over or under its rated capacity in accordance with the installation instructions; (b) installed for uses other than home heating; (c) not maintained in accordance with Kenmore Boilers' recommendation or accepted good practice as determined by industry standards; or (d) subjected to unauthorized alteration.

3.This Limited Warranty in no way, can be considered as a guarantee of workmanship of an installer or repairman connected with the installation or repair of the Product or as imposing on Kenmore Boilers liability of any nature for unsatisfactory performance as a result of faulty workmanship in the installation or service of the Product, which liability is hereby expressly disclaimed.

4.This Limited Warranty will not be applicable if the Product has been damaged as a result of being improperly installed, serviced or operated, including, without limitation, operated with insufficient water; allowed to freeze or subjected to flood conditions.

5.Kenmore Boilers shall not be liable for any damages, defaults or delays in performance under this Limited Warranty caused by any contingency beyond its control, including, without limitation, a shortage or reduced supply of energy or raw materials, freezing, flood, fire, wind or lightening.

6. Kenmore Boilers shall not be liable for any damages, defaults or delays in performance under this Limited Warranty caused by (a) any contingency beyond its control, including, without limitation, a shortage or reduced supply of energy or raw materials, freezing, flood, fire, wind or lightening; (b) the failure of external wiring, piping, or other attachments and accessory products not integral with the Product; (c) installation, service or operation that is not in compliance with all applicable federal, state and provincial laws or regulations; (d) misapplication or the use of the Product for purposes other than for which it was designed; (e) the use of parts not supplied or designated by Kenmore Boilers; (f) failure to maintain the Product free of water sediments or scale deposits and in accordance with the installation instructions maintenance schedule; (g) components of a Product which are not defective, but must be replaced during the warranty period as a result of reasonable wear and tear; (h) failure of a component, control or component part other than a component part manufactured solely by Kenmore Boilers; or (i) potable water with a Ph exceeding 8.0 or below 6.0, and/or chloride concentrations exceeding 80 parts per million (ppm).

7. In order for this Limited Warranty to be effective (i) the Product must have been assembled in strict compliance with installation instructions furnished with the Product by Kenmore Boilers; and (ii) the Product must not have been damaged during shipment and installation.

8.The furnishing of replacement parts under the terms of this Limited Warranty will apply to the original warranty period and will not serve to extend such period.

9.The remedy for breach of this Limited Warranty is expressly limited to the repair or replacement of any part found to be defective under conditions of normal use, unless otherwise specifically set forth herein, and the remedy for

Kenmore Boilers
LIMITED WARRANTY
Effective 8/1/2015

THIS LIMITED WARRANTY GIVES THE ORIGINAL RETAIL CUSTOMER ONLY SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER LEGAL RIGHTS WHICH VARY FROM STATE-TO-STATE

Keep this warranty certificate and the installation manual supplied with your boiler for future reference.

breach of this Limited Warranty, statutory duty or by reason of tort (including, without limitation, negligence) does not extend to liability for incidental, special or consequential damages or losses, such as loss for the use of the material, inconvenience or loss of time. The maximum liability of Kenmore Boilers in connection with the sale of the Product shall not in any case exceed the price of the part claimed to be defective, or the price of the Product if the entire Product is claimed to be defective. This Limited Warranty is the complete and exclusive statement of warranty terms in regards to the Product.

10. This Limited Warranty only applies to Products installed in the United States or Canada.

11. For all sales not subject to the Magnuson-Moss Warranty Act there are no implied warranties of merchantability and/or fitness for any particular purpose all of which are hereby specifically disclaimed. For all other sales, all implied warranties of merchantability and/or fitness for any particular purpose are limited in duration to the period of this Limited Warranty.

PLEASE NOTE: Some states, provinces and territories do not allow the exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above limitations and exclusions may not apply to you.

MISCELLANEOUS

The Magnuson-Moss Warranty Act applies to "consumer" sales as contrasted with "commercial" sales. A consumer sale is one to a buyer for personal, family or household purposes and not for the purpose of resale.

By "implied warranties" we mean ones the law presumes to have been given by the seller even though they aren't set out in writing.

"Fitness for a particular purpose" means the seller knows the particular purpose for which the buyer requires the goods, and the buyer relies on the seller's skill and judgment in making the purchase.

"Merchantable" means that the product is fit for the ordinary purposes for which that kind of product is used.

"Incidental" damages include expenses of inspection, obtaining substitute goods, transportation, etc.

"Consequential" damages include injury to persons or property resulting from a breach of warranty, and any loss from general or particular requirements known to us and which you cannot reasonably prevent.

If any provision of this Limited Warranty shall be determined to be illegal, unconscionable or unenforceable, all other terms and provisions hereof shall nevertheless remain effective and shall be enforced to the fullest extent permitted by law. The warranties made under this Limited Warranty are exclusive and may not be altered, enlarged or changed by a distributor, dealer, or other person whatsoever.

PROCEDURE FOR OBTAINING WARRANTY SERVICE

For prompt warranty service, notify the installer who, in turn, will notify the Kenmore Boilers distributor from whom such distributor purchased the Boiler. If this action does not result in warranty service, the Original Purchaser or installer should contact Kenmore Boilers Customer Service (see contact information below), giving full particulars in support of the claim. Alleged defective part or parts must be returned through trade channels in accordance with Kenmore Boilers' procedure currently in force for handling returned goods for the purpose of inspection or determining the cause of failure. Kenmore Boilers will furnish the new part(s) to an authorized Kenmore Boilers distributor who, in turn, will furnish the part(s) to the heating contractor who installed the Boiler.

Sears Roebuck and Co.
Dept. 817 WA
Hoffman Estates, IL 60179

FM [illegible], Rev. A

INSTALLATION AND CHECK-OUT CERTIFICATE

Boiler Model _____ **Serial #** _____ **Date Installed**_____

Measured BTU/HR input_____

- ○ **Installation instructions have been followed**
- ○ **Checkout procedure and adjustments performed**
- ○ **Maintenance and Service issues reviewed with owner/ maintenance person**
- ○ **Installation booklet affixed on or adjacent to boiler**

Installer (Company) _____

Address _____

Phone _____

Installer's Name _____

Signature _____