

HEAT EXCHANGER REPLACEMENT KIT INSTRUCTIONS

Kit #550003284

FOR UCS & DMG 380 BOILER

Kit installation shall be completed by qualified agency.

⚠ WARNING

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

⚠ CAUTION

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

⚠ CAUTION

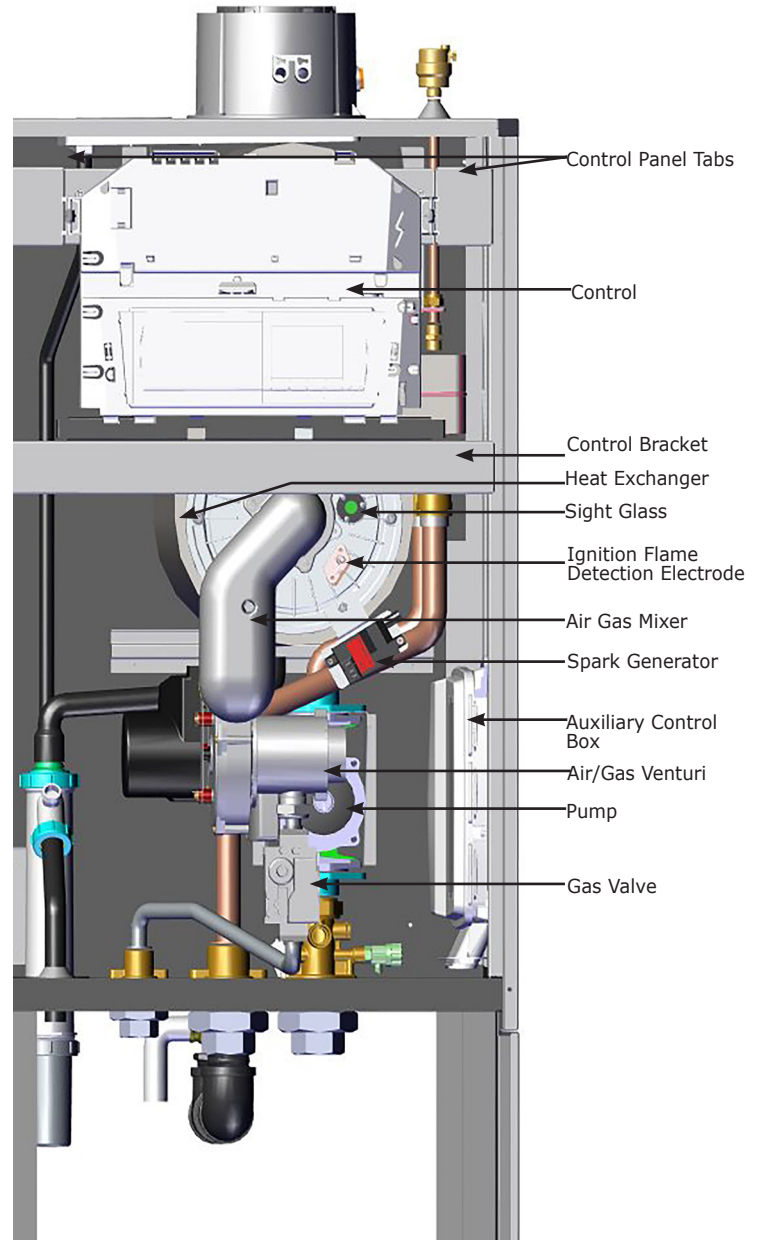
Heat Exchanger weight exceeds 50 pounds (23 kg). Do not lift heat exchanger without assistance.

⚠ 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.

Figure 1 - 380 Heat Exchanger - Front of Boiler



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

HEAT EXCHANGER REPLACEMENT KIT INSTRUCTIONS

Existing Heat Exchanger Removal

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

⚠ WARNING

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

2. Turn power and gas off to appliance.
3. Remove two (2) screws from front panel. Remove panel.

⚠ WARNING

Burn hazard. Verify unit has cooled before servicing. Use appropriate personal protection equipment.

4. Inspect combustion chamber through sight glass. Verify flame is not present. See Figure 1.
5. Isolate boiler from system, drain boiler.
6. Disconnect nut securing gas valve to Air/Gas Venturi. See Figure 2.
7. Loosen nut securing supply pipe to supply connection nipple. Remove gasket.
8. Remove 3 and 5 wire harness from Blower/Fan motor.
9. Remove four (4) screws securing control assembly bracket to boiler's cabinet. Place control gently on boiler base.
10. Disconnect ignition wire and ground from Ignition/Flame Detection Electrode. Disconnect limit wires from combustion chamber cover. Disconnect sensor wires on supply pipe.
11. Remove nut from combustion chamber securing Spark generator. Set Spark Generator and bracket in bottom of unit. See Figure 2.
12. Remove five nuts from combustion chamber cover. Support combustion chamber cover and Air/Gas Mixer assembly. Remove nut from center of Air/Gas Mixer assembly. Gently remove Air/Gas Mixer assembly and set aside. See Figure 3.

Figure 2 - Heat Exchanger, Air/Gas Mixer Assembly
(View with Side, Top and Bottom Panels Removed)

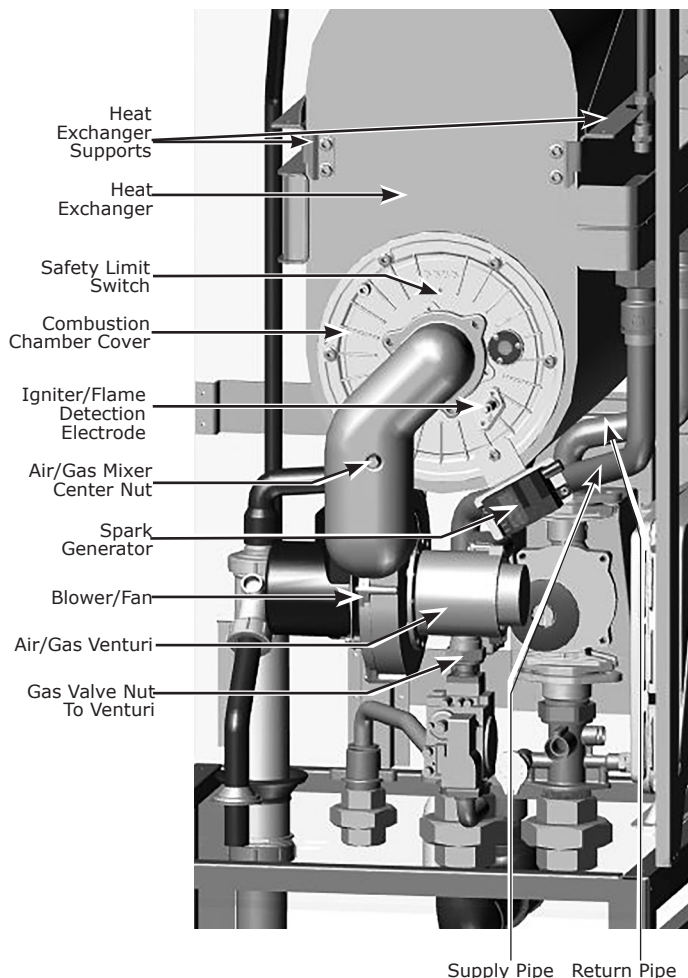
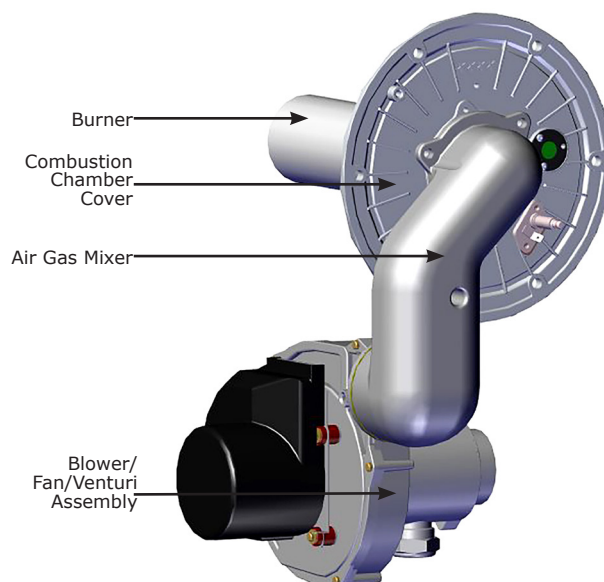
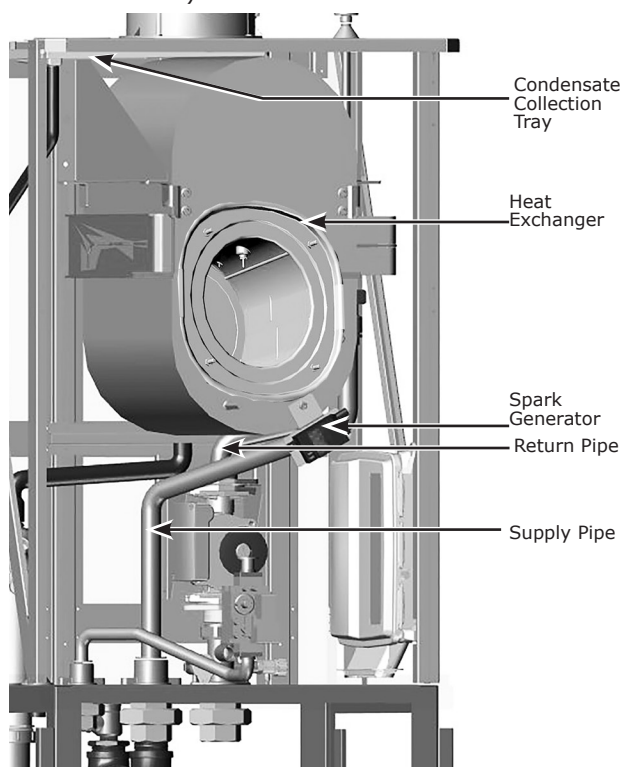


Figure 3 - Air/Gas Mixer Assembly



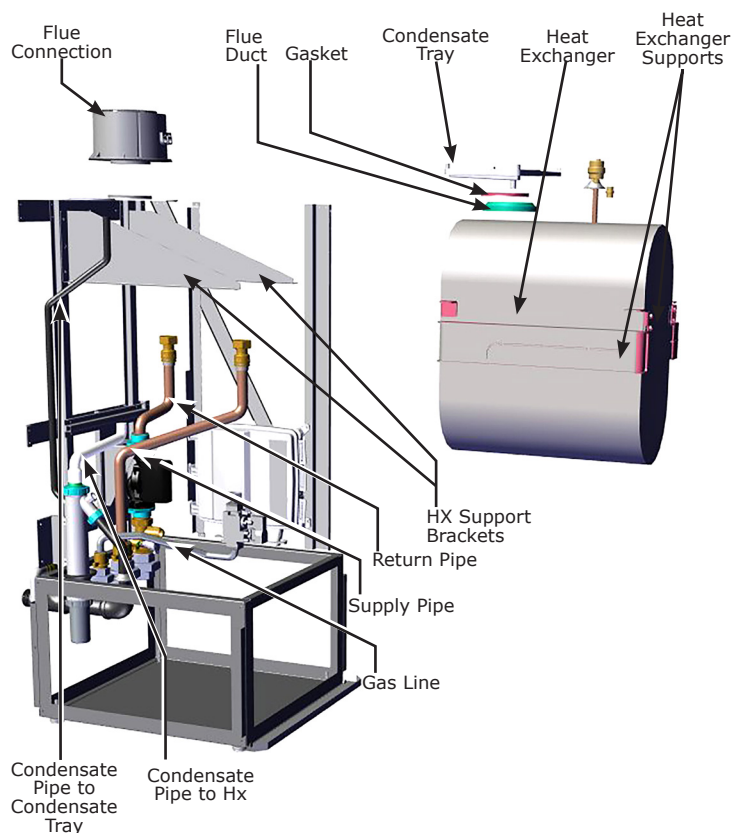
HEAT EXCHANGER REPLACEMENT KIT INSTRUCTIONS

Figure 4 - Heat Exchanger With Air/Gas Mixer Assembly Removed (View with Side, Top and Bottom Panels Removed)



13. Disconnect flue pipe from flue connection on top of boiler. Disconnect flue sensor.
14. Remove four (4) screws from flue connection and gasket assembly. Lift up to remove and set aside.
15. Remove four (4) screws from top panel securing condensate collection tray. Disconnect condensate hose from condensate collection tray. See Figure 8.
16. Disconnect three (3) screws securing right side panel and remove.
17. Disconnect nuts securing supply and return piping to heat exchanger. Remove gaskets. Carefully rest piping in bottom of boiler. See Figure 2 and 5.
18. Disconnect condensate hose from heat exchanger.
19. Disconnect auto air vent piping and gasket from heat exchanger. Remove through top of boiler.
20. Remove three (3) screws from left side panel and remove.

Figure 5 - Heat Exchanger Removed from Boiler Frame (View with Side, Top and Bottom Panels Removed)



Note Heat Exchanger weight exceeds 150 lbs. (68Kg). Use best lifting practice and lifting weight limit per individual. See Caution.

21. Support heat exchanger. Remove two (2) bolts at rear of support brackets securing heat exchanger to boiler.
22. Remove two (2) bolts at front of support brackets securing heat exchanger to boiler.
23. Continue to support heat exchanger. Move support brackets away from heat exchanger. Remove heat exchanger from cabinet. See Figure 5.
24. Guide heat exchanger out of cabinet through front of unit. disconnect limit from rear of heat exchanger.
25. Remove gasket and condensate tray from top of existing heat exchanger. See Figure 5.

HEAT EXCHANGER REPLACEMENT KIT INSTRUCTIONS

New Heat Exchanger Installation

1. Install condensate collection tray and new gasket onto top of new heat exchanger. See Figure 5.
2. Guide new heat exchanger through front of unit. Connect high limit harness to sensor on rear of heat exchanger.
3. Rest heat exchanger on rear support and secure heat exchanger to left and right brackets with four (4) nuts and bolts.
4. Connect auto air vent piping with new gasket and vent pipe grommet to top panel of boiler.
5. Connect condensate pipe to heat exchanger.
6. Connect supply and return piping to supply connection fitting and top of pump flange using new gaskets and tighten.
7. Insert flue connection into top of flue outlet in top of heat exchanger using new gasket, secure with four (4) screws.
8. Connect vent pipe to flue connection, Connect flue sensor on flue connection. See Figure 5.
9. Install left and right side panels. Secure with three (3) screws to each side.
10. Place Air/Gas Mixer assembly carefully into heat exchanger. Secure with center nut through Air/Gas Mixer. Secure with four (4) remaining nuts. Lower right stud last.
11. Install Spark Generator on lower right stud, secure with nut. See Figure 2 and 4.
12. Connect ignition wire and ground to Ignition/Flame Detection Electrode. Connect limit wiring to combustion chamber cover limit on supply piping.
13. Connect 3 and 5 wire harness to fan motor.
14. Connect gas valve to Air/Gas Venturi using new gasket.
15. Turn water on to boiler. Fill boiler. Purge and check for leaks.
16. Return control assembly to upright position. Open valves to system. See Figure 1.
17. Restore power, gas and water to boiler. Test operation. Check for gas and water leaks.
18. **Adjust Parameters 17-19 as indicated A-D:**

HEAT EXCHANGER REPLACEMENT KIT INSTRUCTIONS

A - Installer Level Parameters

Parameters **P17** to **dF** (error code history) must only be modified by a qualified installer.

To prevent unwanted settings, some parameter settings can only be changed after special access code **0012** is entered.








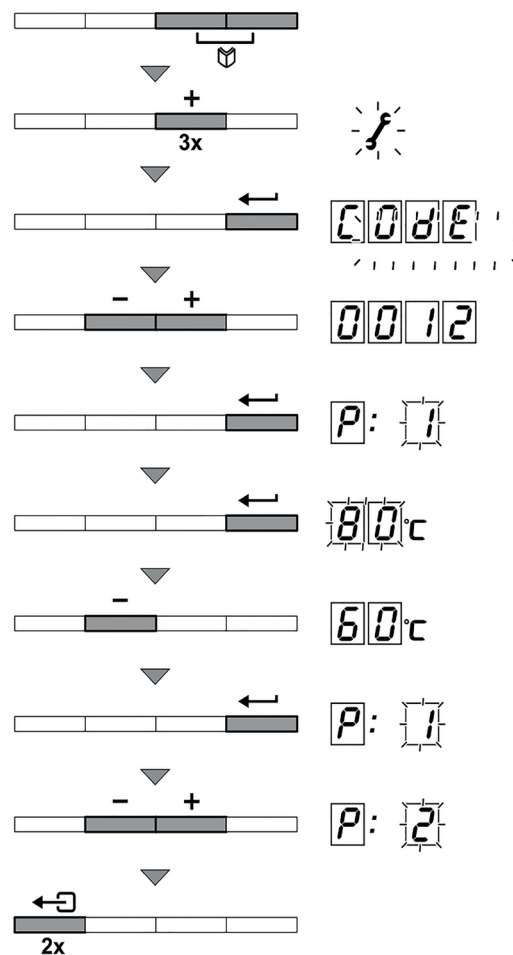
- Press the two Menu buttons  simultaneously and then (+) button until the symbol  flashes on the menu bar.
- Select the INSTALLER menu using the  button. "CODE" appears on the display.
- Use (-) or (+) button to input the installer code "0012".
- Confirm using  button, "P1" is displayed with "1" flashing.
- Press  button a second time, the value will appear and flashes, for example [80°C (176°F)].
- Change the value by pressing the [-] or [+] button. [In this example using [-] button to change the value to 60 °C (140 °F).]
- Confirm the value with the  button, "P1" is displayed with 1 flashing. Button, "P1" is displayed with 1 flashing. If necessary, set other parameters by selecting them using the (-) or (+) button.
- Press  button 2 times to return to current operating mode.

FIGURE 6 - Installer Level Parameters



Natural Gas				Propane			
Air/Gas Mixture		Nozzle		Air/Gas Mixture		Nozzle	
in	mm	in	mm	in	mm	in	mm
1 3/16	30	7/32	5.3	1.18	30	5/32	4

B - Boiler has two dedicated built in test ports. See Figure 8.

One connection port is connected to exhaust flue (A), and allows monitoring of the quality of combustion products and combustion efficiency.

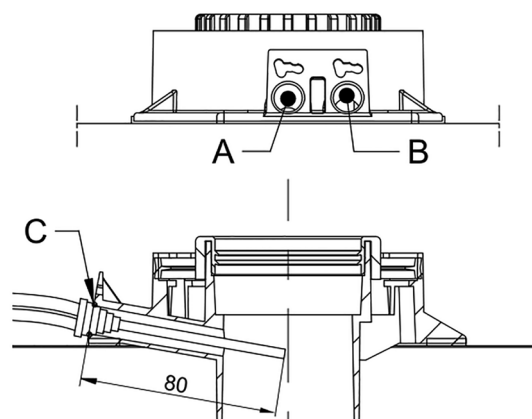
Other is connected to combustion air intake (B), used to check for recycling products for combustion.

The following can be measured at exhaust flue test port:

- temperature of combustion products
- oxygen (O₂) or carbon dioxide (CO₂) concentration;
- carbon monoxide (CO) concentration.



Temperature of combustion air must be measured on air intake test port (B) by inserting measurement sensor approximately 3-3/16" (80.00 mm) (C).

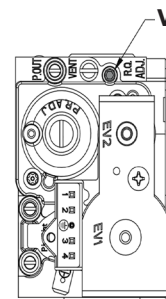
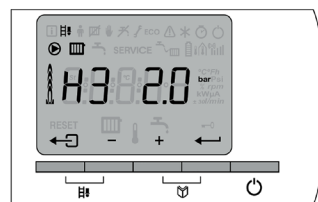
FIGURE 7 - Combustion Air Temperature Ports



HEAT EXCHANGER REPLACEMENT KIT INSTRUCTIONS

C - Combustion Setup (High-Fire)


- Unscrew exhaust port plug at exhaust flue test port. See Figure 8.
- Insert combustion analyzer into exhaust flue test port. Verify opening around combustion analyzer probe is completely sealed when taking measurements.
- Set boiler to high-fire by pressing two buttons  simultaneously. Display will show **H3** and the  symbol will appear.
- Measure percentage of O₂ or CO₂ in flue gases.
- Compare the measured values with values in table below. Remove front panel when comparing values.
- Adjust gas/air ratio using high-fire adjustment screw (**V**) if needed. Turn screw clockwise to reduce CO₂ level and counterclockwise to increase it.

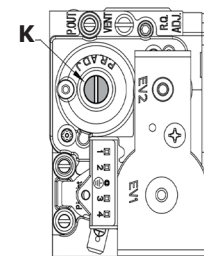
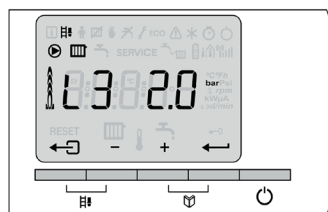


O ₂ /CO ₂ Values at High Fire Natural Gas			
Nominal value		Permitted value	
O ₂ %	CO ₂ %	O ₂ %	CO ₂ %
4.3	9.3	3.9 - 4.7	9.1 - 9.5

O ₂ /CO ₂ Values at High-Fire Propane Gas			
Nominal value		Permitted value	
O ₂ %	CO ₂ %	O ₂ %	CO ₂ %
5.7	10.0	5.4 - 6.0	9.8 - 10.2

D - Combustion Setup (Low-Fire)

- Unscrew exhaust port plug at exhaust flue test port.
- Insert combustion analyzer into exhaust flue test port. Verify the opening around combustion analyzer probe is completely sealed when taking measurements.
- Set boiler to low-fire by pressing two buttons  simultaneously. If the boiler is already in combustion setup mode for high fire, press the (-) button several time until **L3** is displayed on the screen.
- Measure percentage of O₂ or CO₂ in flue gases.
- Compare the measured values with values in table below. Remove front panel when comparing values.
- Adjust gas/air ratio using low-fire adjustment screw (**K**) if needed. Turn screw clockwise to increase CO₂ level and counterclockwise to decrease it.



K - Screw cover shown. Adjustment screw is located under cover.

O ₂ /CO ₂ Values at Low-Fire Natural Gas			
Nominal value		Permitted value	
O ₂ %	CO ₂ %	O ₂ %	CO ₂ %
5.7	8.5	5.4 - 6.1	8.3 - 8.7

O ₂ /CO ₂ Values at Low-Fire Propane Gas			
Nominal value		Permitted value	
O ₂ %	CO ₂ %	O ₂ %	CO ₂ %
6.4	9.6	6.1 - 6.70	9.4 - 9.8

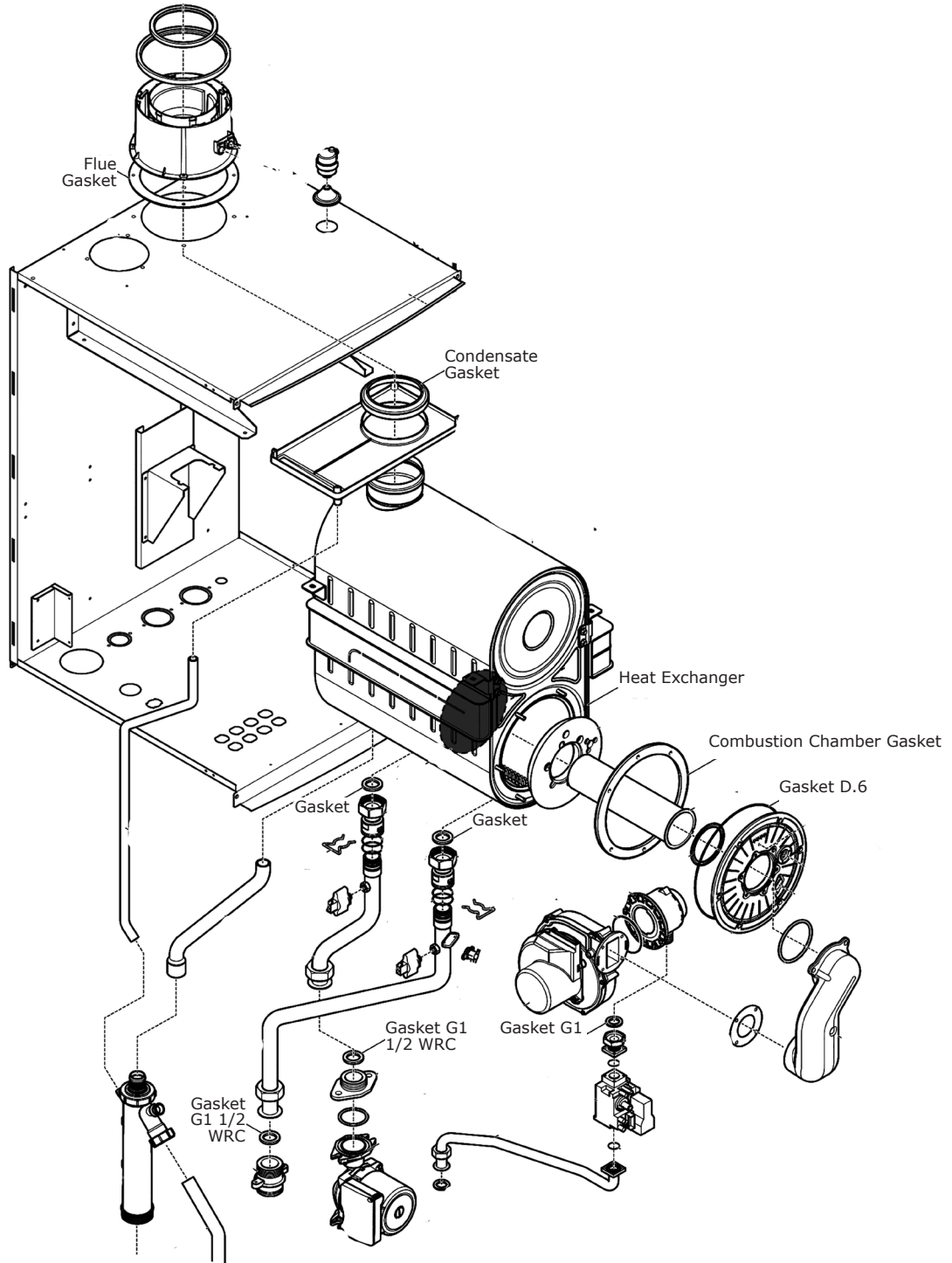
19. Resume operation using OPERATING INSTRUCTIONS found on Operating Instructions label on boiler or in Installation, Operation & Maintenance Manual.

20. Install front panel secure with screws.

21. Verify proper operation.

HEAT EXCHANGER REPLACEMENT KIT INSTRUCTIONS

Figure 8 - Heat Exchanger - Exploded View



HEAT EXCHANGER REPLACEMENT KIT INSTRUCTIONS

Heat Exchanger Replacement Kit 550003284 -Includes:		
Description	PART #	Qty
HEAT EXCHANGER	-	1
GASKET - SUPPLY/ RETURN CONNECTION TO HX	-	2
FLUE CONNECTOR GASKET	-	1
COMBUSTION CHAMBER GASKET	-	1
GASKET G1 1/2 WRC	-	2
CONDENSATE COLLECTOR GASKET	-	1
COMBUSTION CHAMBER COVER GASKET G1	-	1
GASKET D.6	-	1
KIT INSTRUCTIONS	240011719	1