

Heat Exchanger Replacement Procedure

This instructional manual is only intended for use by a qualified service professional or authorized manufacturer's service representative. Any unauthorized use of this manual may result in voiding the warranty. Reach out to our customer care for additional support. Contact details are available on the rating plate of the water heater.

Required tools for this service (These are not included in this service kit.)

- 1) 14" Phillips head Screwdriver (magnetic)
- 2) 8" Phillips head Screwdriver (magnetic)
- 3) Flat head Screwdriver or Box wrench (5/16")
- 4) Pliers
- 5) Hand towels

NOTICE

The following parts are packed in this box, and the item #20 (Drain Plug) may be overlooked because it is small. Before replacement of the Heat Exchanger, make sure that all parts are including in this box.

Including Items

Item #	Item Name	Shape / Size (W x L)	QTY
1	Heat Exchanger	—	1
2	Heat Exchanger Replacement Procedure	—	1
3	Burner Chamber Gasket	L shape / 10.1" x 8.3"	2
4	Heat Insulation Gasket for Exhaust Duct	□ shape / 7.7" x 11.5"	1
5	Primary Hex Flange Gasket (I Shape Gasket)	I shape / 9.1" x 0.6"	2
6	Secondary Heat Exchanger Gasket	Rectangle (Large) / 10.6" x 9.6"	1
7	Primary Heat Exchanger Gasket	Rectangle (Small) / 9.7" x 7.8"	1
8	Ignition Plug Cover	—	1
9	O-Ring P54.6 (Biggest one)	—	1
10	O-Ring P4	—	1
11	O-Ring P6	—	1
12	O-Ring P16	—	7
13	Water Pipe Clump 16A	—	1
14	Water Pipe Clump 16-25	—	2
15	Water Pipe Clump 6-13	—	1
16	Copper Water Pipe 1	L shape / —	1
17	Copper Water Pipe 2	Question(?) shape / —	1
18	Brass Pipe Connection	L shape / —	1
19	Screw	—	4
20	Drain Plug*	—	1

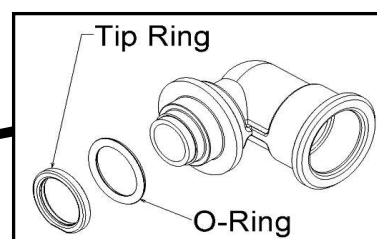
*#20 : Drain Plug

Since this Drain Plug is packed in the same Nylon bag as the Copper Water Pipes (#16 & 17) and Brass Pipe Connection (#18), it may be more likely to be overlooked.

Make sure that this Drain Plug (#20) is in there.



The Elbow (Heat Exchanger Connection) has a ring at the tip that can come off. Make sure the ring is not left inside the old Heat Exchanger. For more details, please refer to pages 8 and 14.



Procedure

1. Drain the unit as shown in following procedure.

Drainage using the Remote Controller

* RC-7651M

- 1** (1) Turn the power on/off button "off".

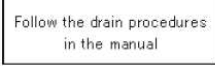
- (2) Press the flow meter alarm set button for about two seconds until the alarm sounds. The maximum hot water temperature will flash.

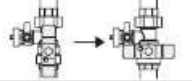

(Ex. 120°F)
- (3) Press the flow meter alarm set button again.

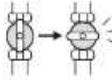
- (4) Press the setting button marked "UP". The display will change from "oF" to "on" after the button is pushed.


* RC-9018M

- 1** (1)  button is "OFF".
- (2) Press the  button inside the cover, Select **Misc settings** using the  buttons. Press the  button. The "Misc settings" screen appears.
- (3) Select **Drain water** using the  buttons, and then press  button.
- (4) Select "YES" using the  buttons,

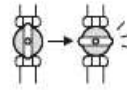

Press  button.


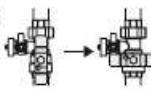
- 2** Close the water supply valve.

- 3** Fully open all hot water fixtures/faucets.

- 4** 1) Open the drain plug (1)
 2) Open the drain plug (2) and (3), and then drain the water out of the unit.
- 5** When the water is completely drained, replace all drain plugs and close the hot water fixtures/faucets.
- 6** Close the gas valve and disconnect the electrical power supplied to the unit.


Do not touch with wet hands.

Manual Draining

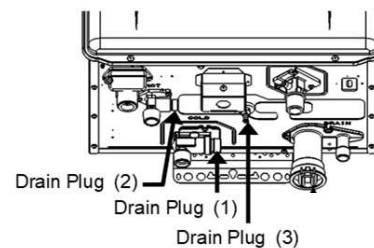
- 1** Close the gas valve.

- 2** (1) Turn the power on/off button "On".
 (2) Turn and leave open the hot water fixtures for more than 2 minutes and close.


 * If multiple units are being used, drain two minutes for each unit.
 * An 11 Error Code may appear on the remote controller. This is not a malfunction of the unit. Do not turn Power ON/OFF Button OFF.
- 3** Close the water supply valve and disconnect the electrical power supplied to the unit.


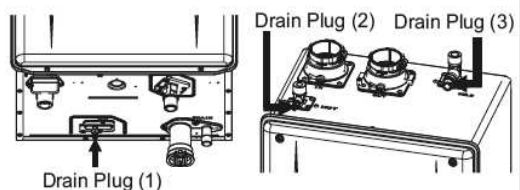
Do not touch with wet hands.
- 4** Fully open all hot water fixtures.

- 5** 1) Open the drain plug (1)
 2) Open the drain plug (2) and (3), and then drain the water out of the unit.
- 6** When the water is completely drained, replace all drain plugs and close the hot water fixtures.

Commercial Model - Bottom Connection Type



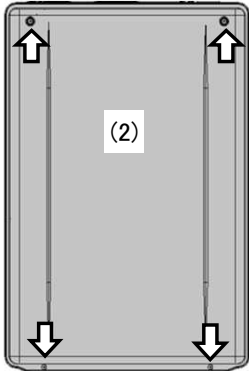
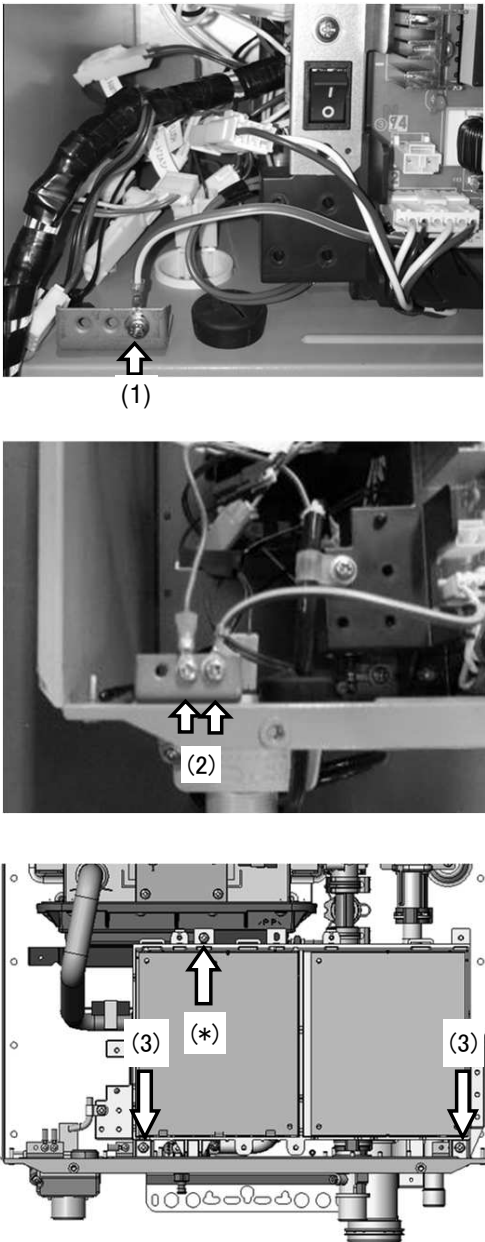
Residential Model - Top Connection Type



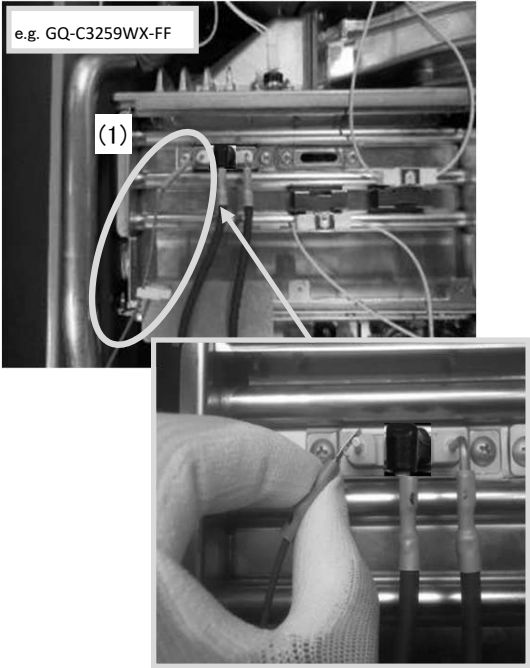
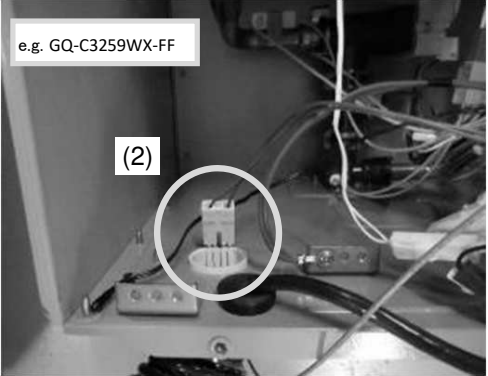
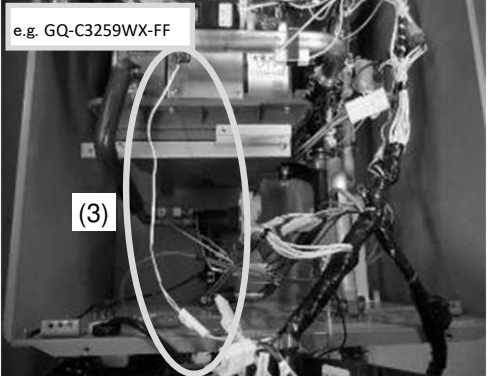
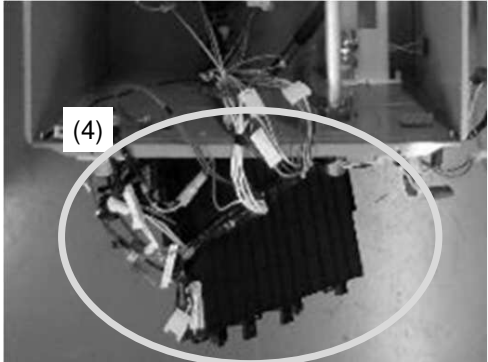
Drain Plugs

Each drain plug might not be visible if insulation is installed around the piping.

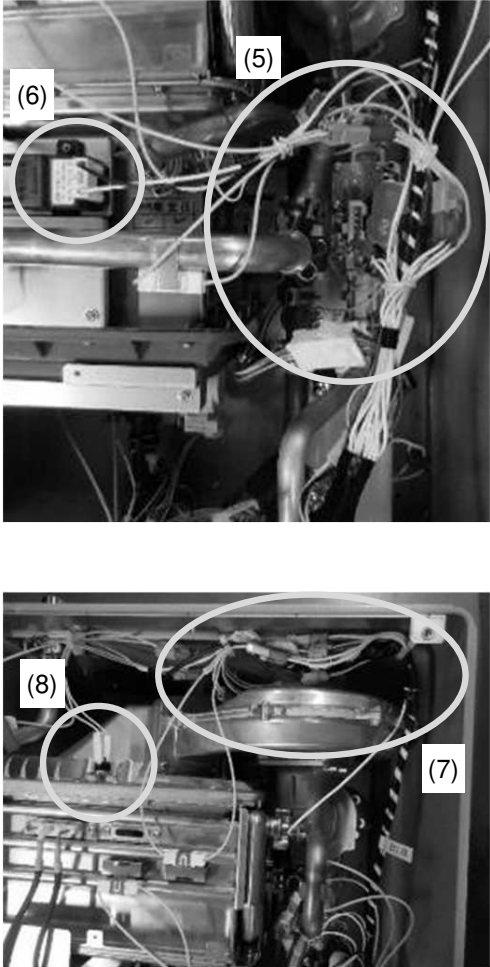
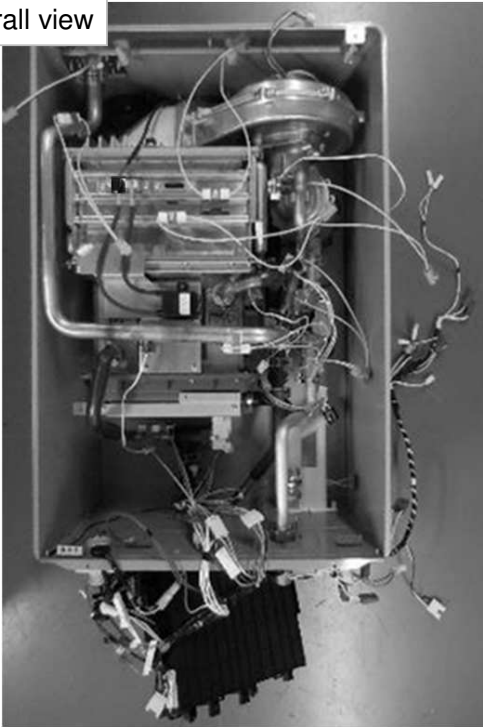
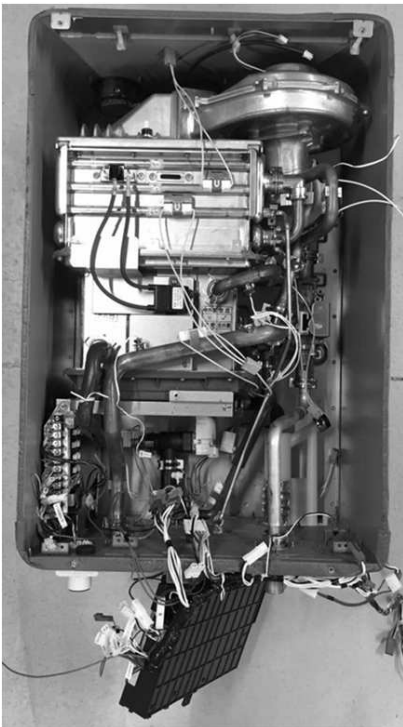
Heat Exchanger Replacement Procedure

Procedure	Diagram
2. Remove Front Cover (1) Disconnect electrical power to the unit. (2) Remove 4 screws w/ washer(M4×12).	
3. Remove ground wires (1) Only GQ-C3259WZ-FF Remove ground wire. (2) Only GQ-C3259WX-FF / GQ-C2859WX-FF Remove 2 ground wires. (3) Remove 2 screws(M4×12)* that hold Circuit Board. *There may be 3 screws.	

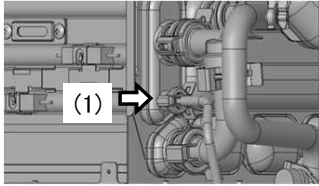
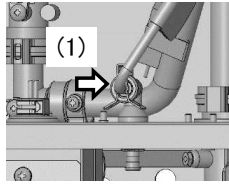
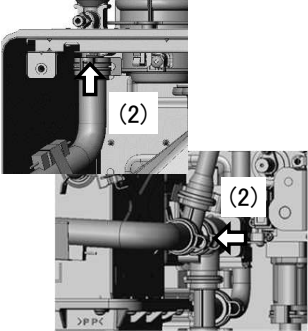
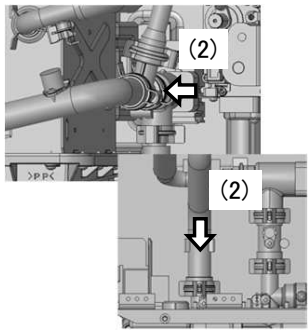
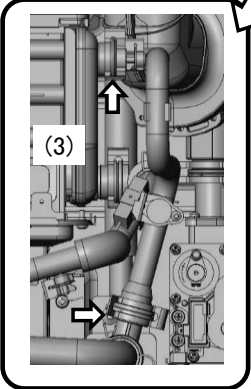
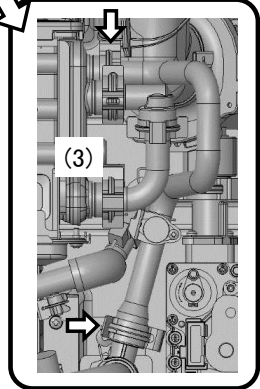
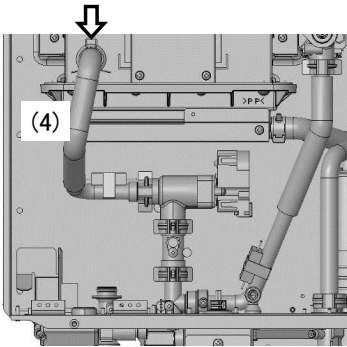
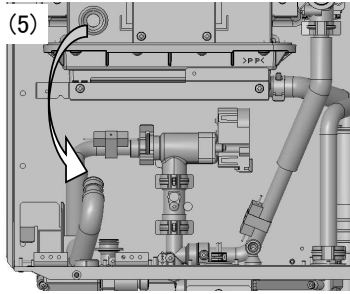
Heat Exchanger Replacement Procedure

Procedure	Diagram
4. Unplug all wires that attach to Wiring Harness (1) Unplug Flame Rod. Hold this part of the figure by the finger and remove the plug. (2) Unplug remote control connector. (3) Unplug Thermistor. (4) Remove Circuit Board to the outside of the unit.	e.g. GQ-C3259WX-FF  (1) e.g. GQ-C3259WX-FF  (2) e.g. GQ-C3259WX-FF  (3) e.g. GQ-C3259WX-FF  (4)

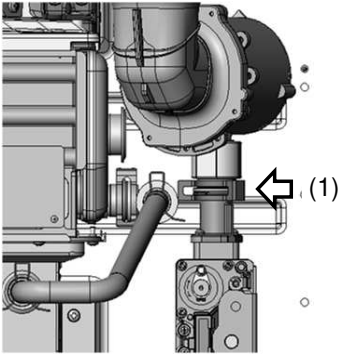
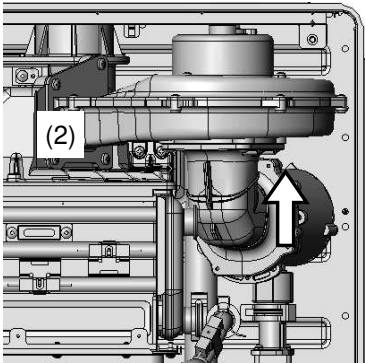
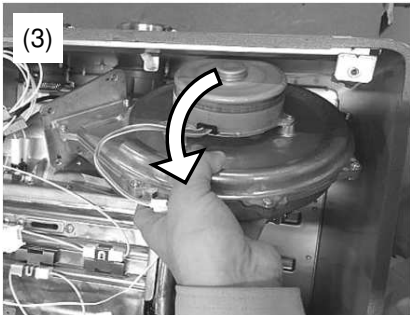
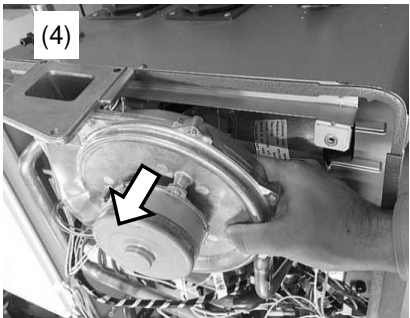
Heat Exchanger Replacement Procedure

Procedure	Diagram
(5) Remove Cable Ties. Unplug 6 Freeze Prevention Heaters, Water Servo - Bypass, Gas Valve, Thermistor - Primary Heat Exchanger Inlet, High Limit Switch. (GQ-C3259WZ-FF : 2 High Limit Switches.) (6) Unplug Igniter. (7) Detach the Wiring Harness from the Wire clamps. Unplug 4 Freeze Prevention Heaters, (GQ-C3259WZ-FF : 1 Freeze Prevention Heater.), Fan Motor, Thermistor - Primary Heat Exchanger Outlet, Thermistor - Exhaust. (8) Unplug High Limit Switch.	
Overall view  GQ-C3259WX-FF / GQ-C2859WX-FF	 GQ-C3259WZ-FF

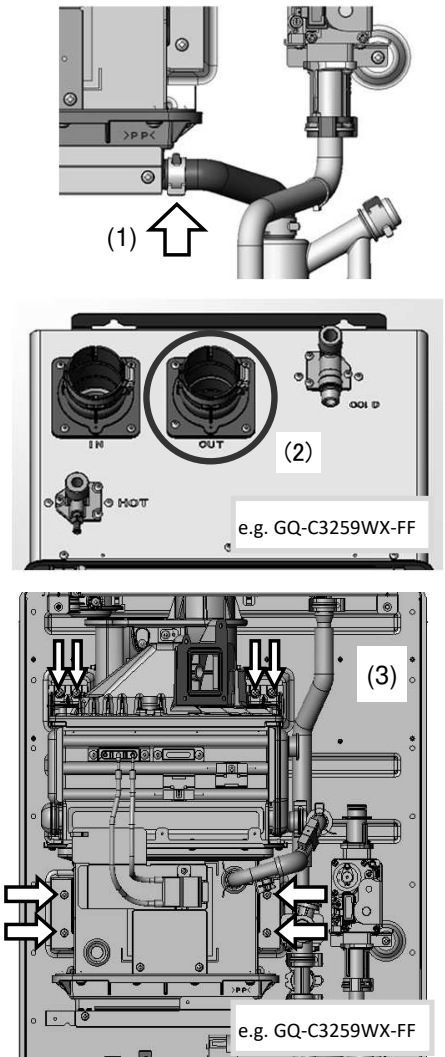
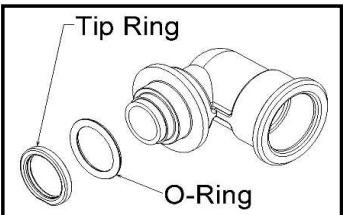
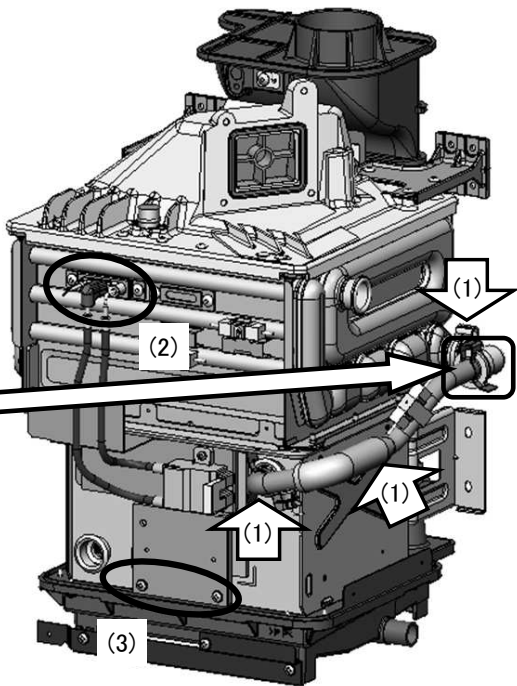
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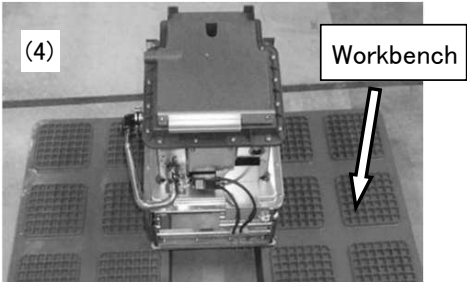
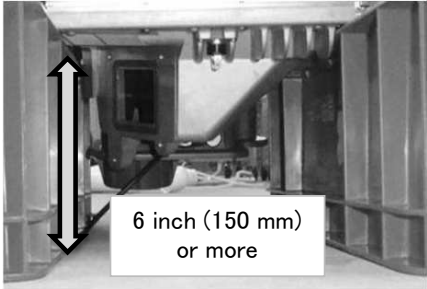
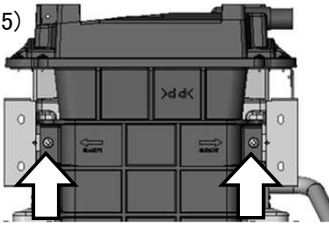
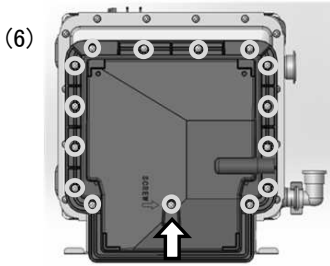
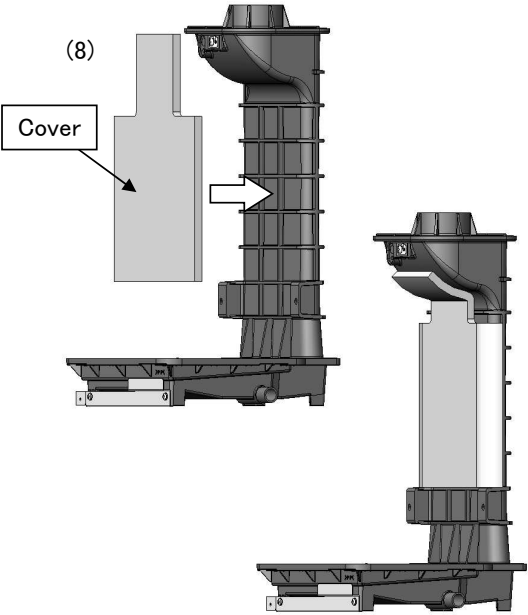
Procedure	Diagram
5. Remove Pipes <u>(1) ONLY GQ-C3259WZ-FF</u> Remove 2 "C" Clamps, Pipe - Primary SS HEX to Drain Water Connection. (2) Remove 2 "C" Clamps, Pipe - T-Elbow to Outlet Water Connection. (3) Remove 2 "C" Clamps, Pipe - Primary SS HEX to T-Elbow. (4) Remove "C" Clamp, Pipe - Primary SS HEX Connection. (5) Tilt Pipe - Water Servo - Main to the bottom of the unit.	<u>ONLY GQ-C3259WZ-FF</u>   <u>GQ-C3259WX-FF</u> <u>GQ-C2859WX-FF</u>  <u>GQ-C3259WZ-FF</u>  or   (4)  (5) 

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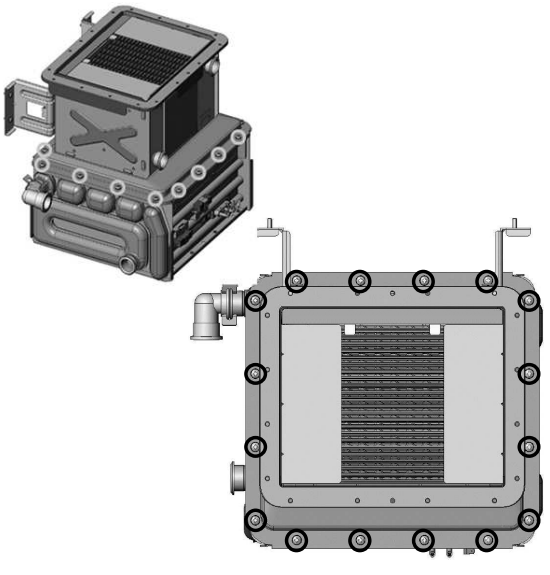
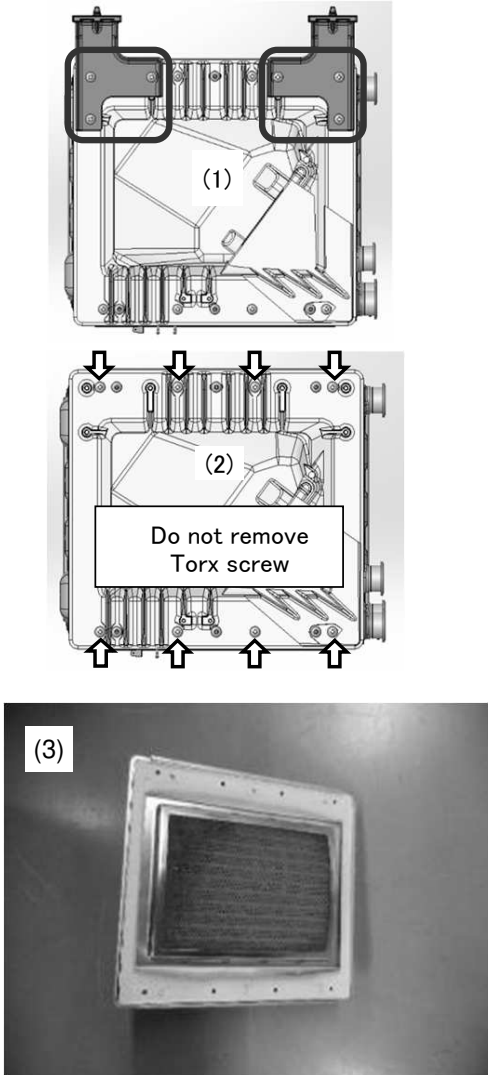
Procedure	Diagram
6. Remove Fan Motor and Venturi assembly (1) Remove "C" Clamp. Then remove 4 screws(M5×12) with a Long Philips screwdriver. <u>NOTE : Do not use a power driver.</u> (2) Pull up Fan Motor and Venturi assembly. (3) Tilt Fan Motor and Venturi assembly. (4) Rotate and detach Fan Motor and Venturi assembly.	 (1) This diagram shows the removal of the C-clamp. An arrow points to the C-clamp on the fan motor assembly. Below it, another diagram shows the removal of four screws (M5×12) from the assembly, with arrows indicating the locations of the screws.  (2) This diagram shows the fan motor and venturi assembly being pulled up. An arrow points upwards from the assembly.  (3) This diagram shows the fan motor and venturi assembly being tilted. An arrow points to the assembly, and a curved arrow indicates the tilting motion.  (4) This diagram shows the fan motor and venturi assembly being rotated and detached. An arrow points to the assembly, and a curved arrow indicates the rotation.

Heat Exchanger Replacement Procedure

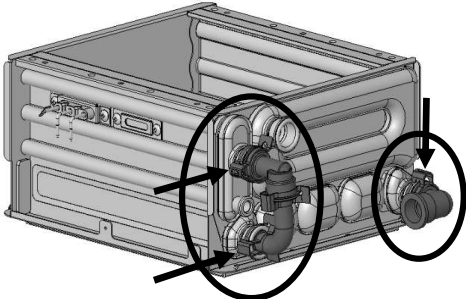
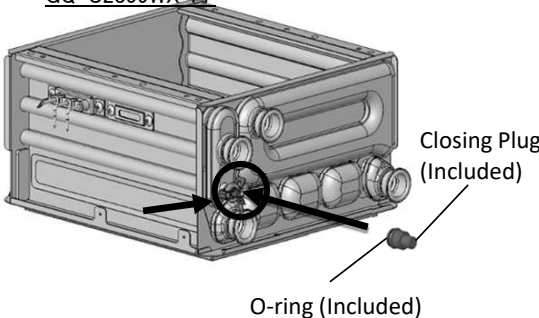
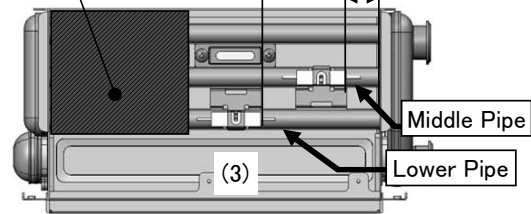
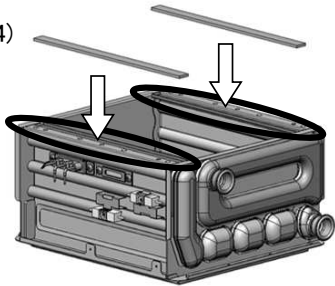
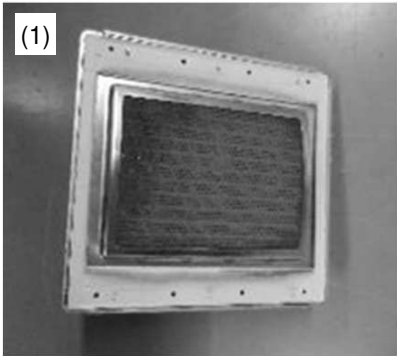
Procedure	Diagram
7. Remove the heat exchanger assembly from Case (1) Remove Hose Clamp, pull Drain Hose - SS HEX off. (2) Remove 4 screws(M4×12), pull Exhaust Flue off. Discard these screws. (3) Remove 8 screws(M4×10) fixing heat exchanger assembly. (4) Lift up and remove the heat exchanger assembly from the case.	 (1) (2) e.g. GQ-C3259WX-FF (3) e.g. GQ-C3259WX-FF
8.Remove parts from the heat exchanger (1) Remove 2 "C" Clamps, Pipe - Secondary SS HEX to Primary SS HEX. <u>NOTE : The Elbow (Heat Exchanger Connection) has a ring at the tip that can come off.</u> <u>Make sure the ring is not left inside the old Heat Exchanger.</u>  Tip Ring O-Ring (2) Unplug High Voltage Igniter Wires from Ignition Plug. Then remove and discard Plug Covers of Ignition Plug. (3) Remove Mounting Plate - Igniter.	 (1) (2) (1) (1) (3)

Procedure	Diagram
(4) Put the heat exchanger assembly upside down on Workbench with the height of 6 inch (150 mm) or more. Without support, Burner Chamber and Exhaust Duct can be damaged. (5) Remove 2 screws (M4×12) on the back of Exhaust Duct. (6) Remove 15 screws (M4×12) on the bottom of Exhaust Duct. (7) Remove Exhaust Duct. (8) Remove "Cover - Exhaust duct", and exchange to new one. NOTE: Make sure that the exhaust duct is not deformed by heating. If it's deformed, replace it.	(4)  Workbench  6 inch (150 mm) or more (5)  (6)  (8)  Cover

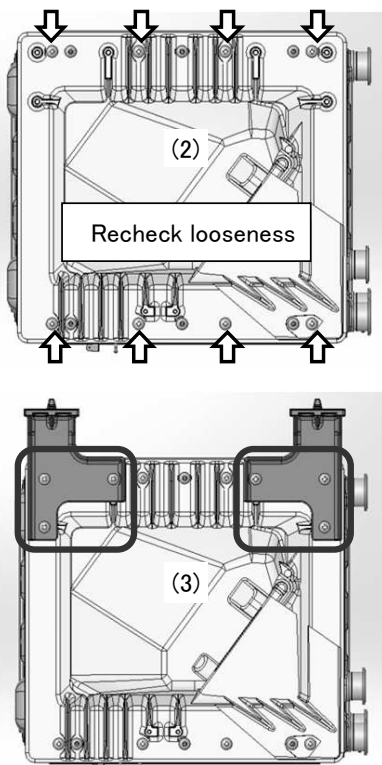
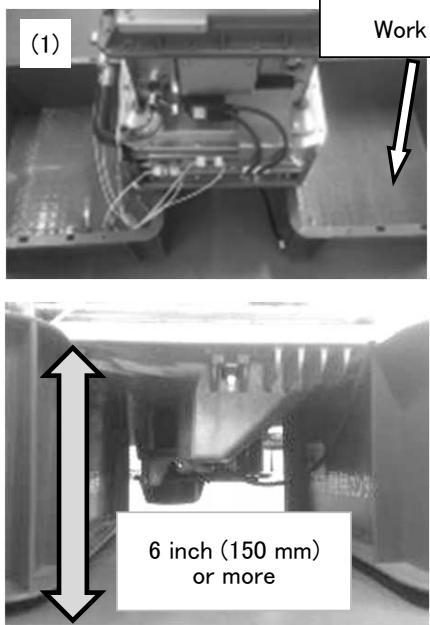
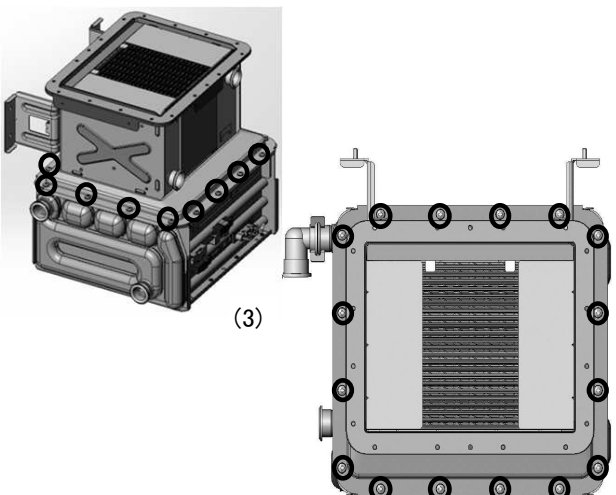
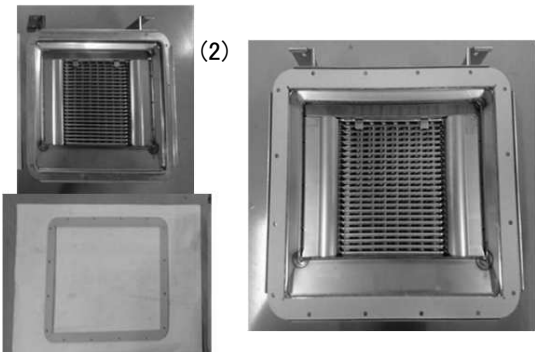
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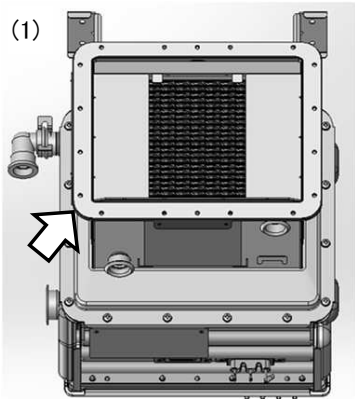
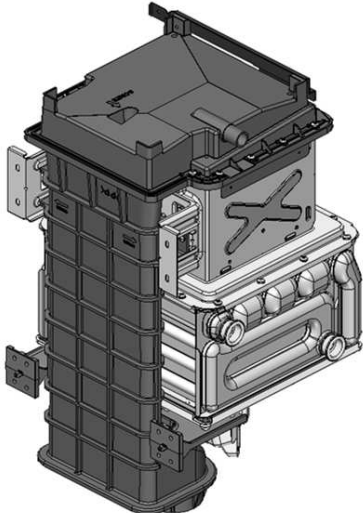
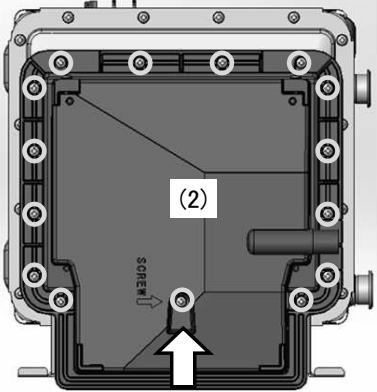
Procedure	Diagram
9. Separate Primary SS HEX and Secondary SS HEX (1) To separate Primary SS HEX and Secondary SS HEX, remove 16 screws(M4×10) from the bottom of Secondary SS HEX.	
10. Separate Primary SS HEX and Burner Chamber (1) Remove 6 screws(M4×10) to remove Mounting Plate - Chamber. (2) Remove 8 screws(M4×18) to separate Primary SS HEX and Burner Chamber. Check the 「NOTE:」 is below. (3) Separate Primary SS HEX and Burner Chamber. ※Put Burner Chamber so that the burner face faces upward. NOTE: 1) Put Burner Chamber so that the burner face faces upward. 2) Check the burner surface for damage. If it's damaged, replace the burner chamber (SET). 3) If the surface of the burner is scaled by leaking water, replace the burner chamber (SET).	

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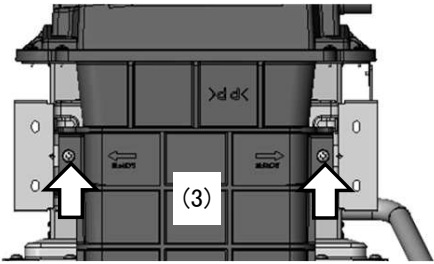
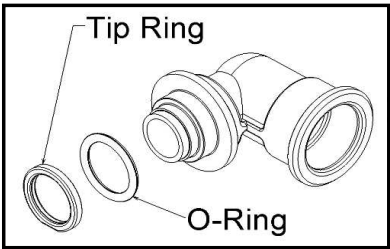
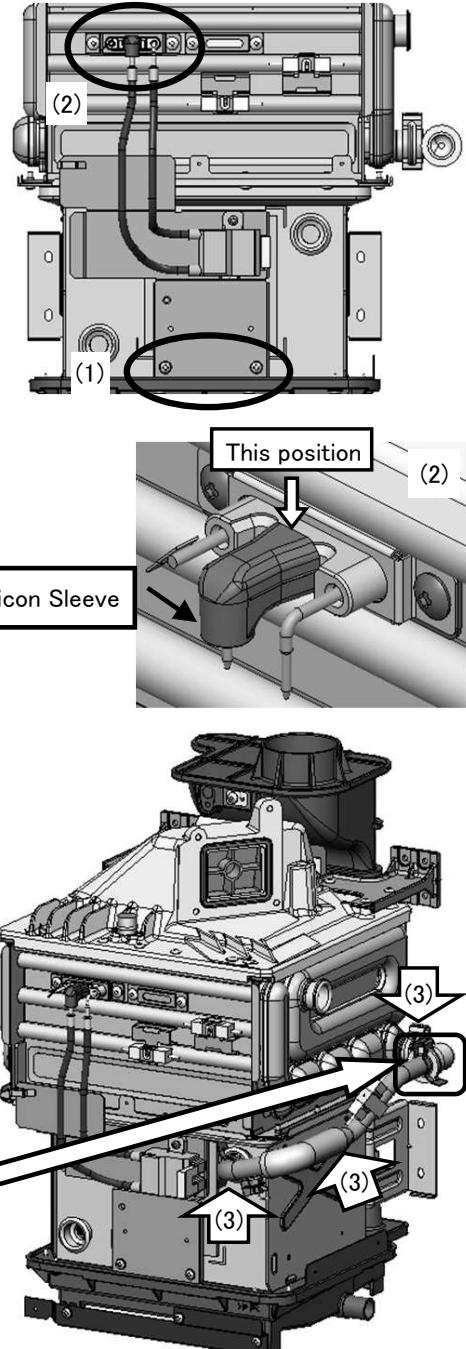
Procedure	Diagram
11. Replace Primary SS HEX (1) Attach Water Connector - Elbow and "C" Clamp to new Primary SS HEX. In that case, exchange O-ring - High Temp P16 of Water Connector - Elbow for a new one. Attach Pipe - Primary SS HEX Connection with 2 "C" Clamps to new Primary SS HEX. In that case, exchange O-rings - High Temp P16 of Pipe - Primary SS HEX Connection for new ones. (2) Only GQ-C3259WX-FF / GQ-C2859WX-FF Attach Closing Plug and O-ring - High Temp P6 with "C" Clamp. (3) Attach 2 Freeze Prevention Heaters to new Primary SS HEX with 2 Clamps. (4) Exchange 2 Gasket - Primary Heat Exchangers	(1)  (2) <u>GQ-C3259WX-FF</u> <u>GQ-C2859WX-FF</u>  DO NOT attach this area 3 inch (76 mm) 1 inch (25 mm) Middle Pipe Lower Pipe (3)  (4) 
12. Join Primary SS HEX and Burner Chamber (1) Peel off old Gasket- Burners and replace it with new Gasket - Burner.	(1) 

Heat Exchanger Replacement Procedure

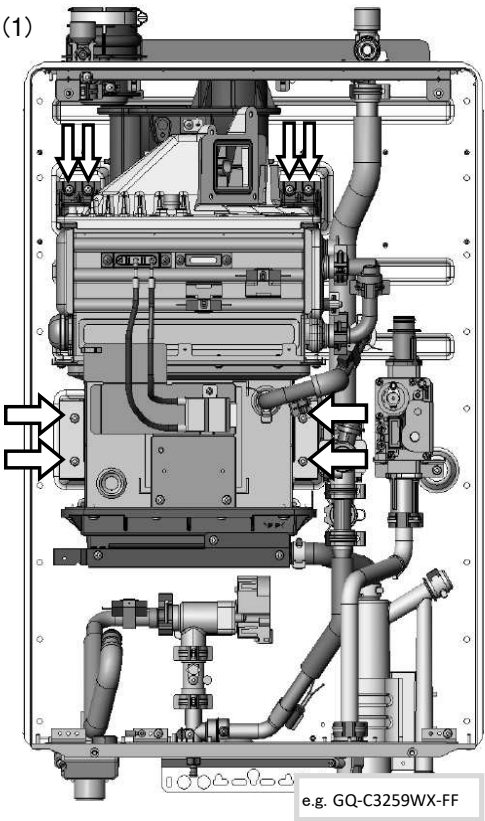
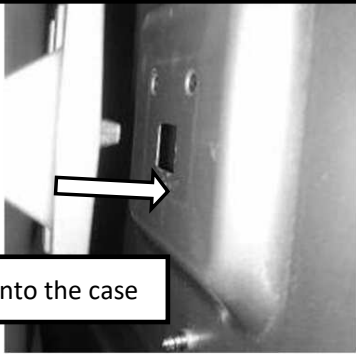
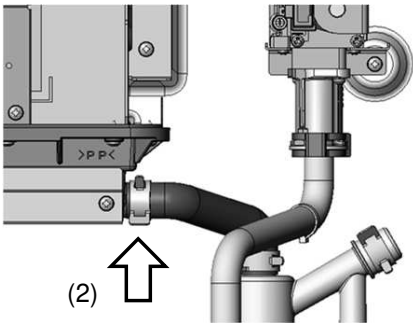
Procedure	Diagram
(2) Join Primary SS HEX and Burner Chamber with 8 screws(M4×18). When tightening is over, please check again for looseness of screws. (3) Attach Mounting Plate - Chamber to Burner Chamber.	
13.Assemble new Primary SS HEX and Secondary SS HEX (1) Put the heat exchanger assembly upside down on Workbench with the height of 6 inch (150 mm) or more. Without support, the chamber and Exhaust Duct can be damaged. (2) Replace new Gasket - Secondary Heat Exchanger with a new one. (3) Join new Primary SS HEX and Secondary SS HEX with 16 screws (M4×10).	
	

Procedure	Diagram
14. Exhaust Duct Replacement (1) Set new Gasket-Exhaust Duct to match the line inside the secondary heat exchanger. (2) Attach Exhaust Duct to the secondary heat exchanger and fix with 15 screws (M4×12).	(1)  (2)  Attach Exhaust Duct (2) 

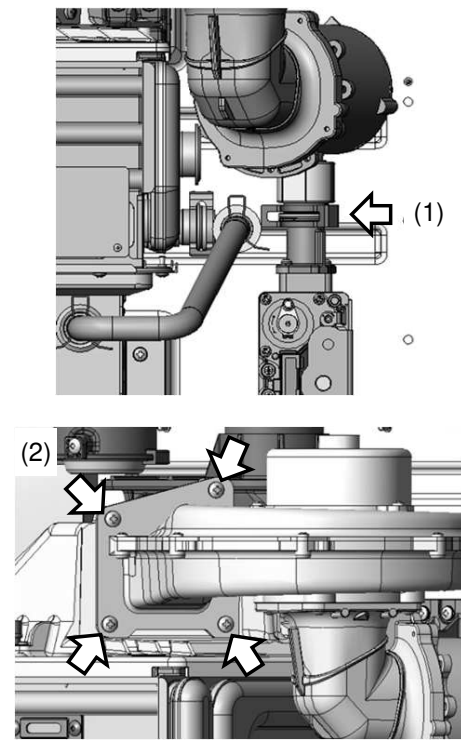
Heat Exchanger Replacement Procedure

Procedure	Diagram
(3) Fix the secondary heat exchanger and Exhaust Duct with 2 screws(M4×12) from the backside.	
15.Attach parts to heat exchanger (1) Attach Mounting Plate - Igniter with 2 screws (M4×8). (2)Put and insert the new Silicon Sleeve all the way on the Ignition Plug. Then plug High Voltage Igniter Wires to Ignition Plug. (3) Attach Pipe - Secondary SS HEX to Primary SS HEX with 2 "C" Clamps. In that case, exchange O-Rings - High Temp P16 of Pipe - Secondary SS HEX to Primary SS HEX for new ones. <u>NOTE : The Elbow (Heat Exchanger Connection) has a ring at the tip that can come off.</u> <u>Make sure the ring is not left inside the old Heat Exchanger.</u>  Tip Ring O-Ring	 This position Silicon Sleeve

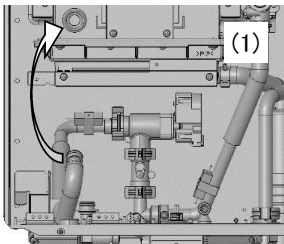
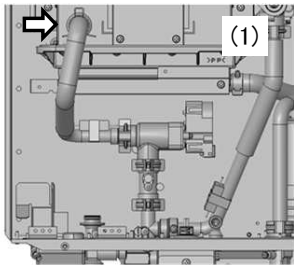
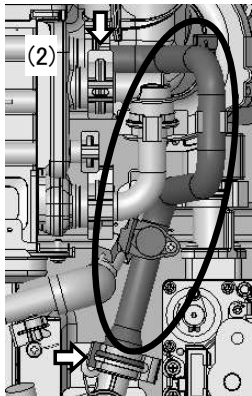
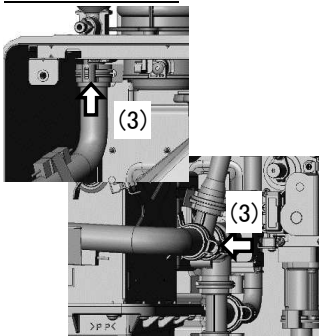
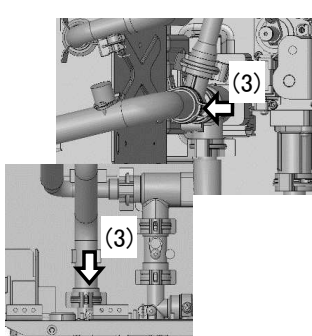
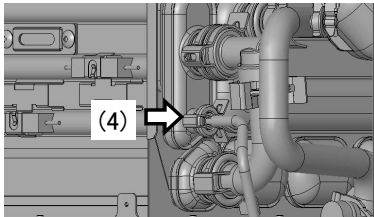
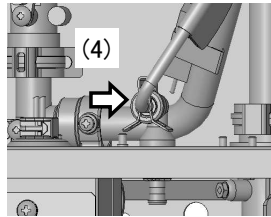
Heat Exchanger Replacement Procedure

Procedure	Diagram
16. Fix the heat exchanger assembly into the case (1) Fix the heat exchanger assembly into the case with 8 screws(M4×10). (2) Attach Drain Hose - SS HEX into the drain outlet of Exhaust Duct and fix it with Hose Clamp.	(1)  e.g. GQ-C3259WX-FF Heat exchanger assembly connection enlarged view  Put into the case  (2)

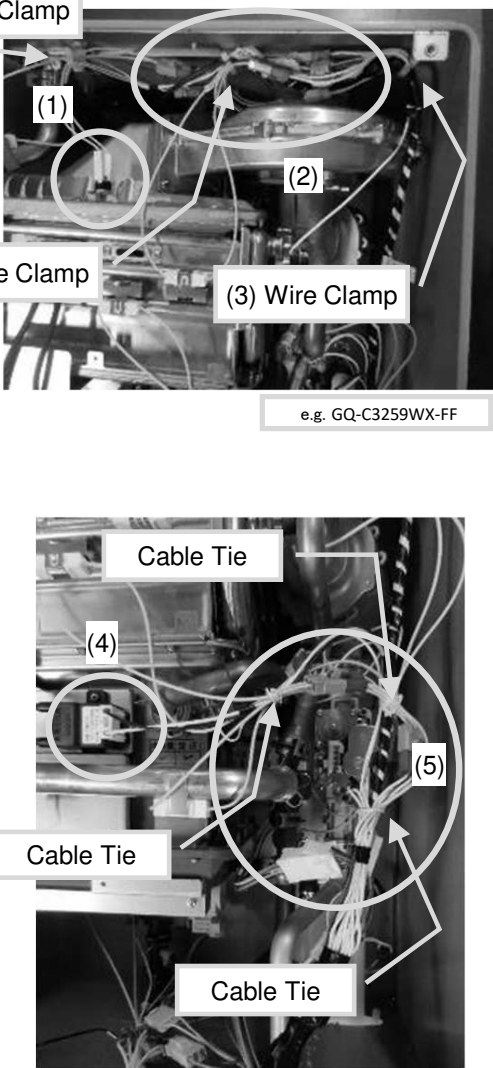
Heat Exchanger Replacement Procedure

Procedure	Diagram
(3) Replace the O-Ring of Exhaust Flue with new one. (4) Attach Exhaust Flue to the case with 4 new screws(M4×12).	
17. Attach Fan Motor and Venturi assembly (1) Attach the Fan Motor and Venturi assembly. Attach "C" Clamp at the bottom of Venturi. (2) Secure the Venturi to the Burner Chamber by tightening the 4 screws(M5×12) removed in Step 6. The screws need only to be hand tightened and should not be tightened using a drill. First, insert and tighten 4 screws, but do not fully tighten these screws. Once all screws are inserted, proceed to completely tighten 4 screws. NOTE: When tightening the screws, be certain to not apply excess force. Excess force can strip out the original holes and screws. Keep the Fan motor in horizontal. It makes easier to tighten the screws correctly.	 Do not use a power driver.

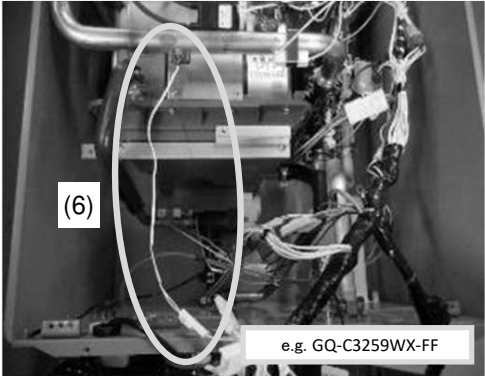
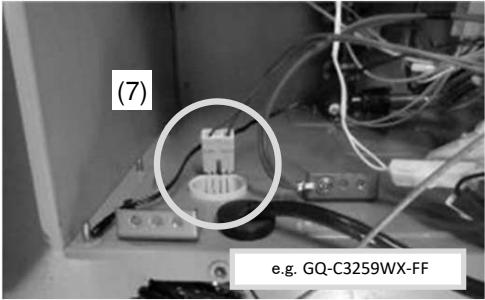
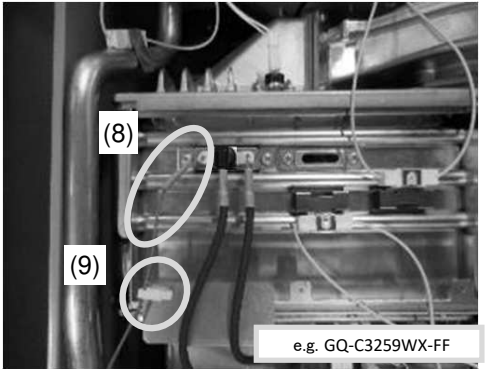
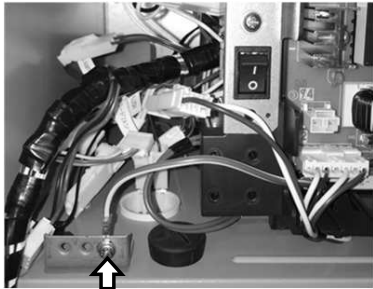
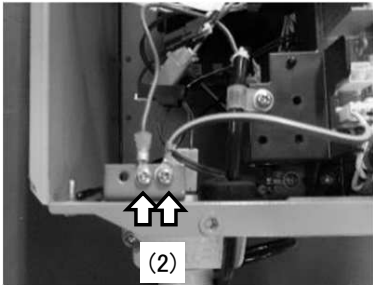
Heat Exchanger Replacement Procedure

Procedure	Diagram
18. Attach Pipes (1) Put Pipe - Water Servo - Main in Secondary SS HEX and fix it with "C" Clamp. (2) Attach Pipe - Primary SS HEX to T-Elbow with 2 "C" Clamps. Replace the Pipe - Primary SS HEX to T-Elbow to new one. Relocate the High Limit Switch , Thermistor and the Freeze Prevention Heater from old pipe to new one. (3) Attach Pipe - T-Elbow to Outlet Water Connection with 2 "C" Clamps. (4) ONLY GQ-C3259WZ-FF Attach Pipe - Primary SS HEX to Drain Water Connection with 2 "C" Clamps.	 (1)  (1)  (2) <u>GQ-C3259WX-FF</u> <u>GQ-C2859WX-FF</u>  (3) <u>GQ-C3259WZ-FF</u>  (3) <u>ONLY GQ-C3259WZ-FF</u>  (4)  (4)

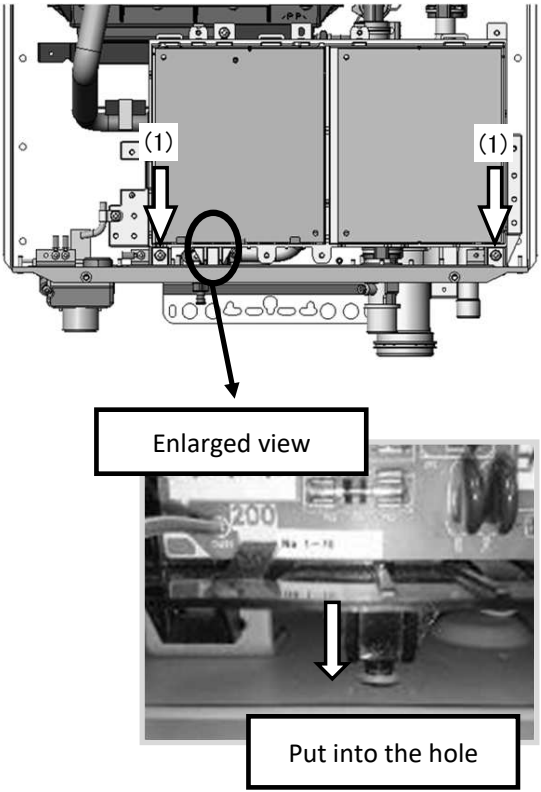
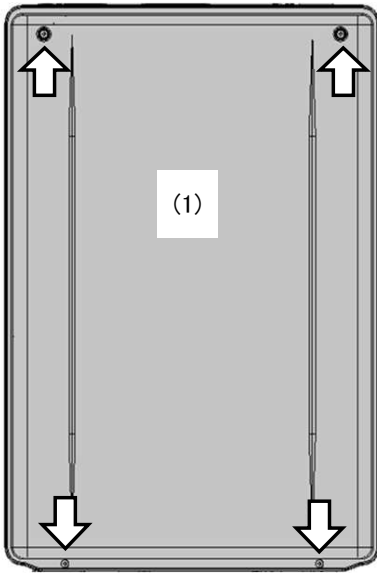
Heat Exchanger Replacement Procedure

Procedure	Diagram
19. Plug all wires that attach to Wiring Harness (1) Plug High Limit Switch. (2) Plug 4 Freeze Prevention Heaters, Fan Motor, (GQ-C3259WZ-FF: 1 Freeze Prevention Heater.), Thermistor - Primary Heat Exchanger Outlet, Thermistor - Exhaust and hook Wiring Harness to 2 Wire Clamps. (3) Hook Wiring Harness by using Wire Clamps. (4) Plug Igniter. (5) Plug 6 Freeze Prevention Heaters, Water Servo - Bypass, Gas Valve Thermistor - Primary Heat Exchanger Outlet, High Limit Switch (GQ-C3259WZ-FF: 2 High Limit Switches.) and bundle Wiring Harness with 3 Cable Ties.	 The diagram consists of two photographs showing the internal wiring of a unit. The top photograph shows the initial wiring stage with labels: (1) points to a high limit switch, (2) points to a bundle of wires for freeze prevention heaters and fan motor, and (3) points to wire clamps used to secure the harness. The bottom photograph shows a more complete assembly with label (4) pointing to an igniter, (5) pointing to another bundle of wires, and three 'Cable Tie' labels pointing to the bundled harness. Both photographs are captioned 'e.g. GQ-C3259WX-FF'.

Heat Exchanger Replacement Procedure

Procedure	Diagram
(6) Plug Thermistor. (7) Plug remote control connector. (8) Plug Flame Rod. (9) Hook Flame Rod to the Wire Clamp.	  
20. Attach ground wires (1)Only GQ-C3259WZ-FF Attach ground wire. (2)Only GQ-C3259WX-FF / GQ-C2859WX-FF Attach 2 ground wires.	 

Heat Exchanger Replacement Procedure

Procedure	Diagram
21. Attach Circuit Board (1) Attach Circuit Board with 2 screws(M4×12).	 The diagram illustrates the process of attaching the circuit board. The top part shows a perspective view of the heat exchanger unit with two arrows labeled (1) pointing to the screws being inserted into the board. An enlarged view below shows a close-up of the screw being inserted into a hole in the board, with a label 'Put into the hole'.
22. Attach Front Cover (1) Attach Front Cover with 4 screws w/ washer(M4×12).	 The diagram shows the front cover of the heat exchanger unit. Four arrows labeled (1) point to the screws being inserted into the cover, indicating the attachment points.