Heat Exchanger Replacement

This instructional manual is only intended for use by a qualified service professional or authorized 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.

Items Needed for service (Not Included)
・14" Phillips head Screwdriver（magnetic）
・8" Phillips head Screwdriver（magnetic）
・Flat head Screwdriver or Box wrench（5/16"）
・Pliers
・hand towels
・1-5 gallon bucket

Procedure

1. Drain the unit as shown in following procedure

Drainage using the Remote Controller

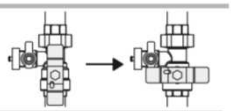
1 (1) Press the ON/OFF button OFF.
The Operation Panel must be off.

(2) Press the SETTINGS button, Select U:05 using the ▲ ▽ buttons. Press the ENTER button.
The "User Mode" screen appears.

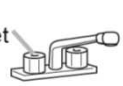
(3) Select U:05 (After 1 sec.) dr A (drA Drain The Water) using the ▲ ▽ buttons, and then press the ENTER button.

(4) Press and hold the ▲ button approximately 2 seconds to turn "ON".

2 Close the water supply valve and the auto feeder shutoff valve.



3 Fully open all hot water fixtures/faucets.

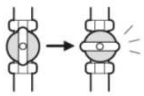


4 Open all drain plugs and drain the water out of the unit.

5 When the screen display turns off, replace all drain plugs and close the hot water fixtures/ faucets.

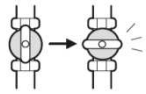
6 Close the gas valve and disconnect the electrical power supplied to the unit.

Do not touch with wet hands.



Manual Draining

1 Close the gas valve.

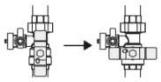


2 (1) Turn the power button on.

(2) Turn and leave open the hot water fixtures/ faucets 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 Operation Panel. This is not a malfunction of the unit. Do not turn the power button off.

3 Close the water supply valve and disconnect the electrical power supplied to the unit.

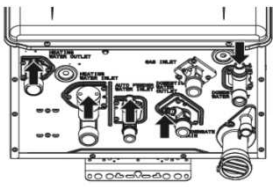


Do not touch with wet hands.

4 Fully open all hot water fixtures/faucets.

5 Open all drain plugs and drain the water out of the unit.

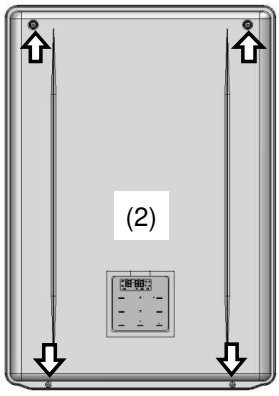
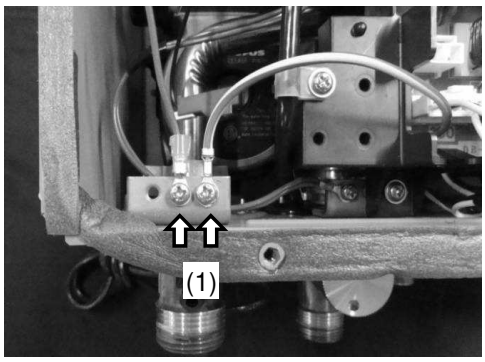
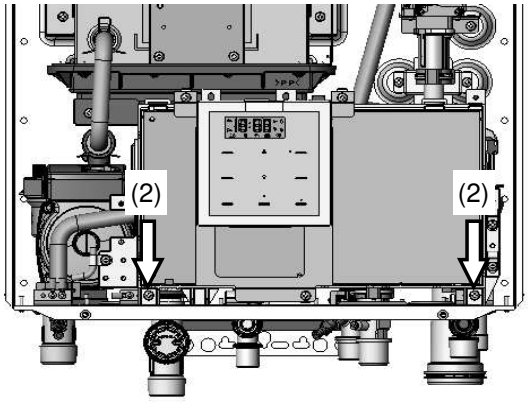
6 When the water is completely drained, replace all drain plugs and close the hot water fixtures/faucets.

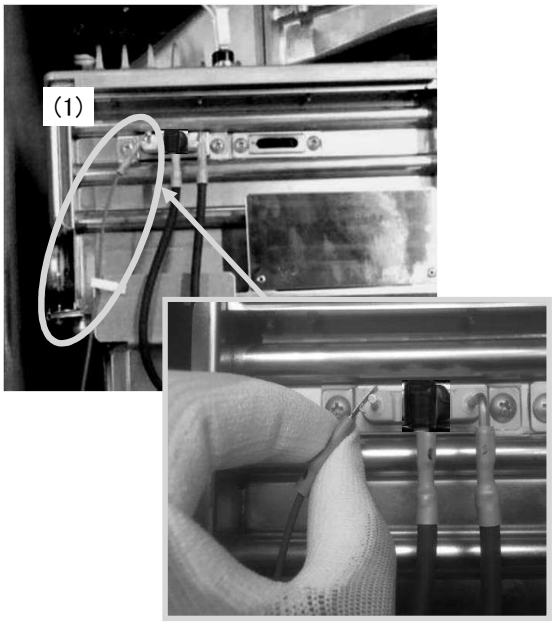
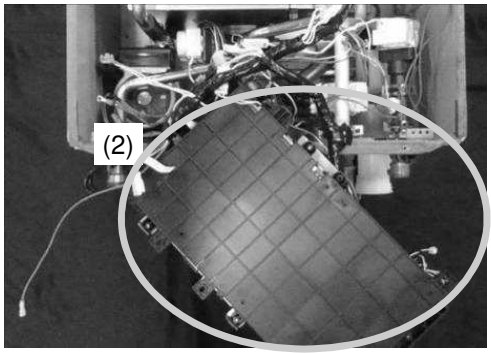


Drain Plugs

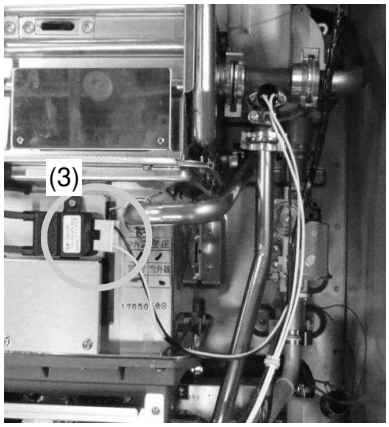
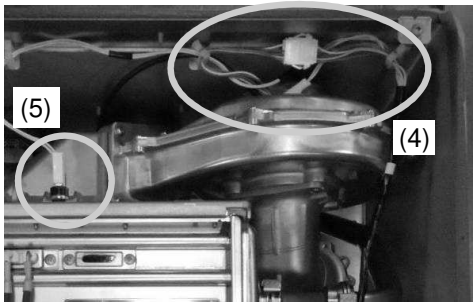
Each drain plug might not be visible if insulation is installed around the piping.

Heat Exchanger Replacement Procedure

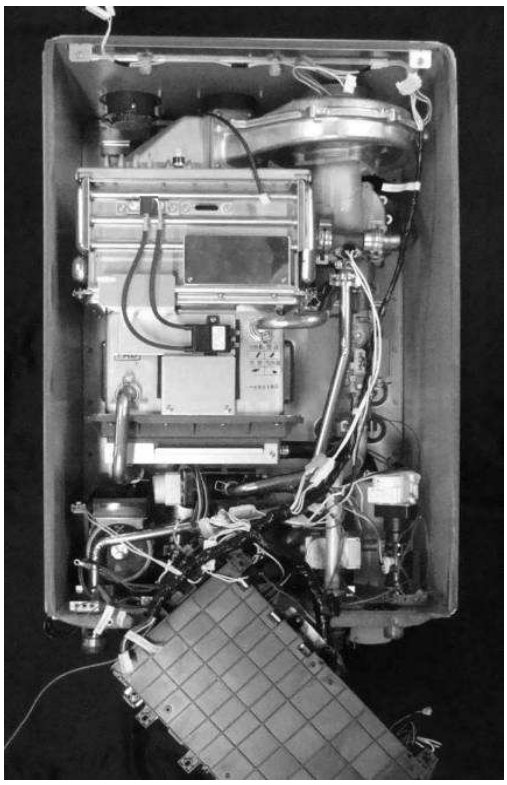
Procedure	Diagram
2. Remove Front Cover (1) Disconnect electrical power to the unit. (2) Remove 4 screws w/ washer (M4×12).	
3. Remove ground wires (1) Remove 2 ground wires.	
(2) Remove the 2 screws (M4×12) that hold Circuit Board.	

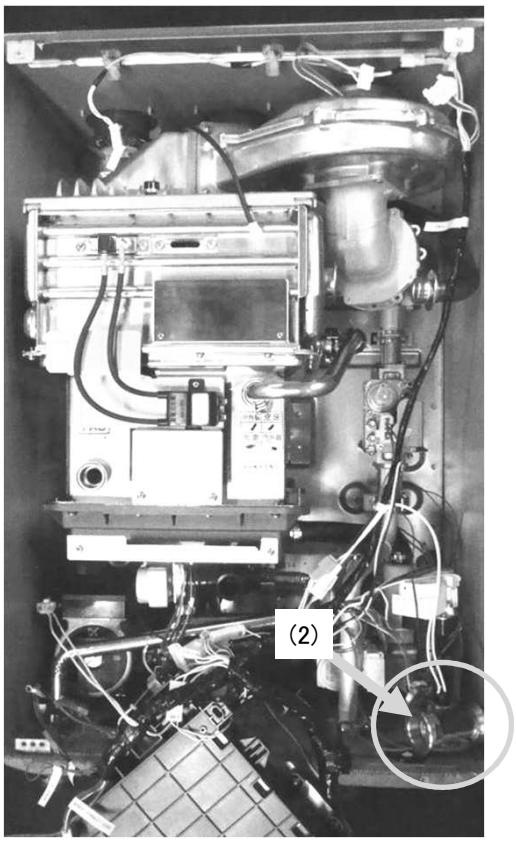
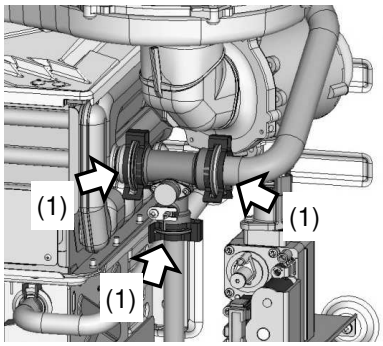
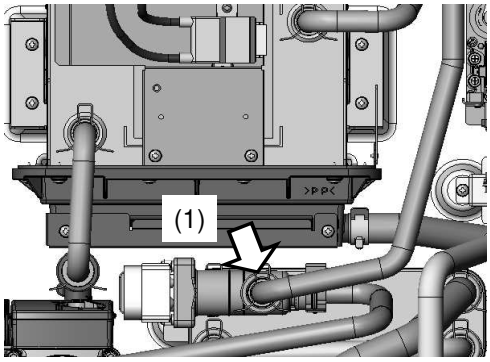
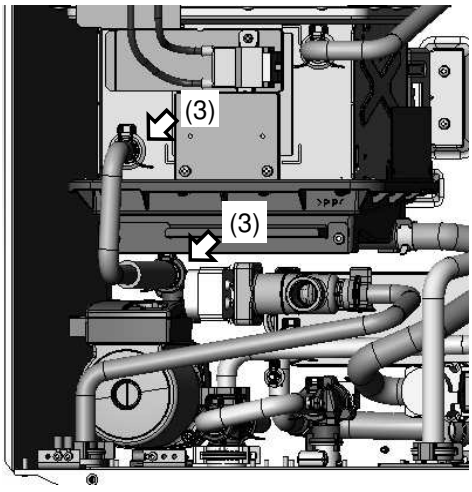
Procedure	Diagram
4. Unplug all wires that attach to Wiring Harness (1) Unplug Flame Rod. Hold this point in the figure by the finger and remove the plug.	
(2) Remove Circuit Board to the outside of the unit.	

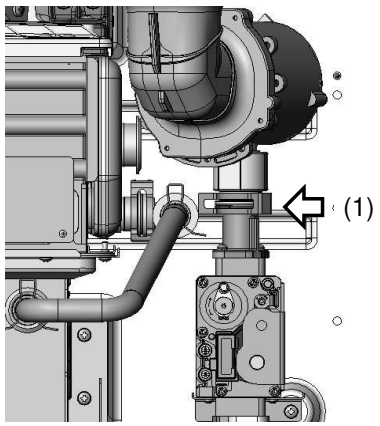
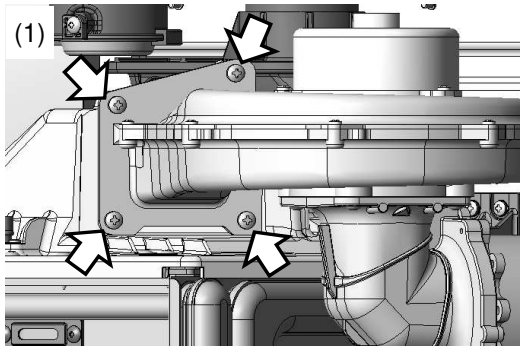
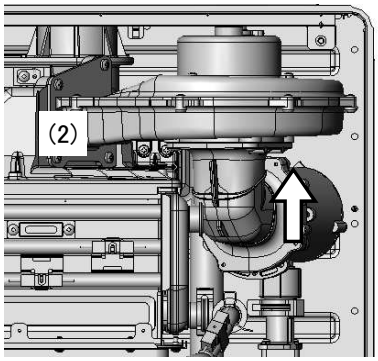
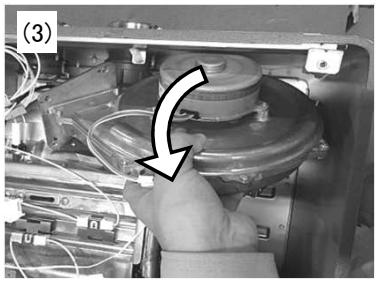
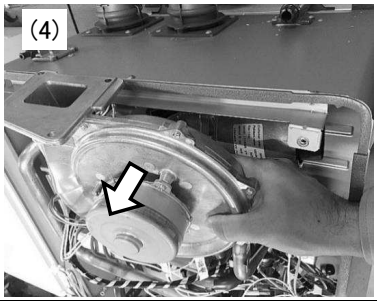
Heat Exchanger Replacement Procedure

Procedure	Diagram
(3) Unplug Igniter.	
(4) Detach the Wiring Harness from the Wire Clamps. Unplug Fan Motor and Thermistor - Exhaust. (5) Unplug High Limit Switch.	

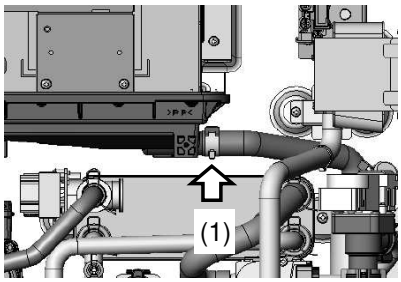
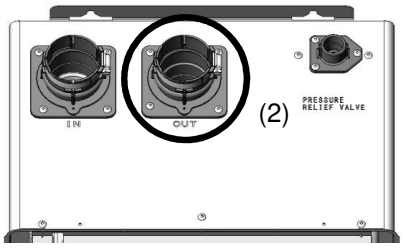
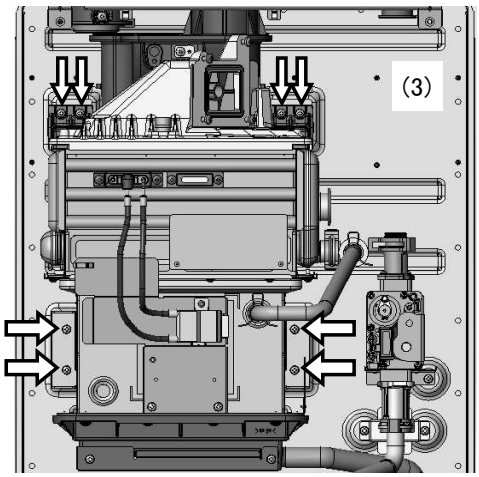
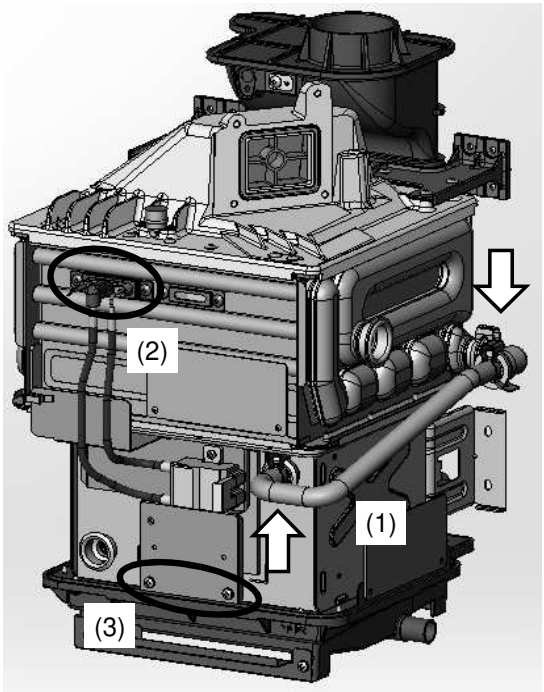
Overall view

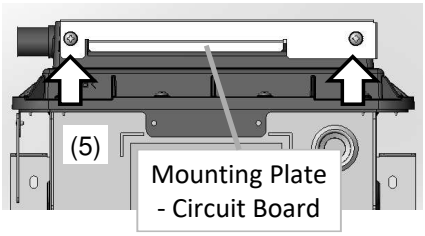
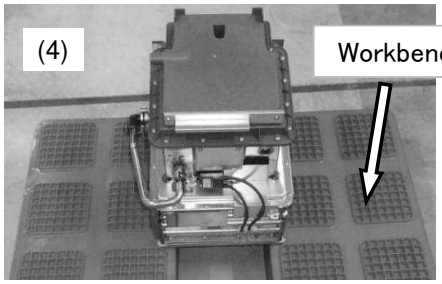
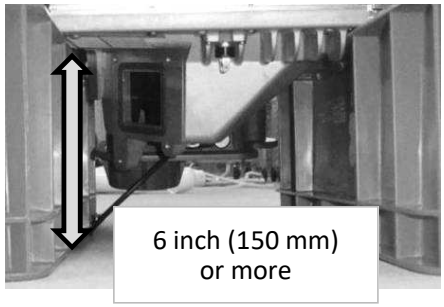
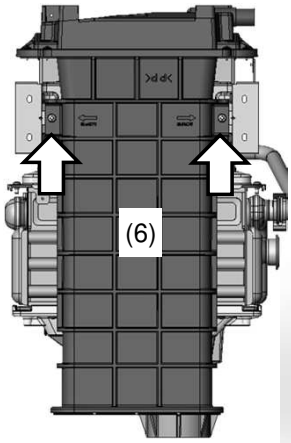
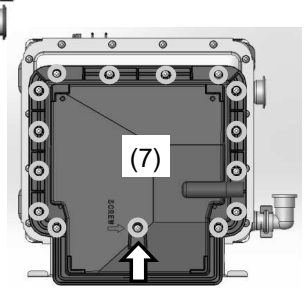
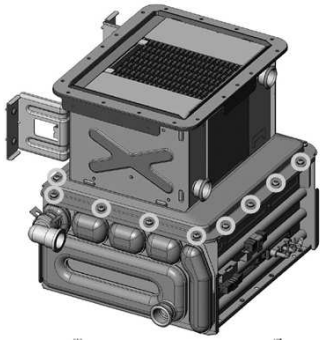
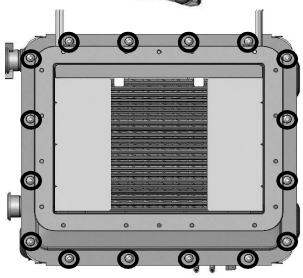


Procedure	Diagram
5. Remove Pipes (1) Remove 4 "C" Clamps, Pipe - T-Elbow to Relief Valve Connection, Pipe - T-Elbow to Distribution Valve - Heating and T-Elbow. (2) Tilt Pipe - T-Elbow to the bottom of the unit.  (3) Remove 2 "C" Clamps and Pipe - Pump Outlet - Elbow to Secondary SS HEX.	  

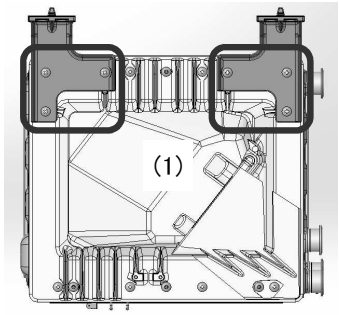
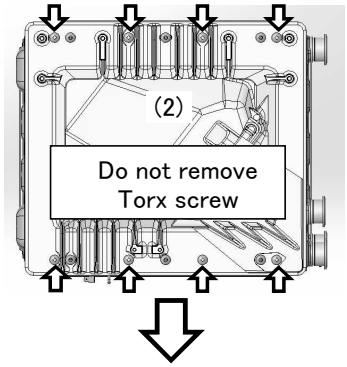
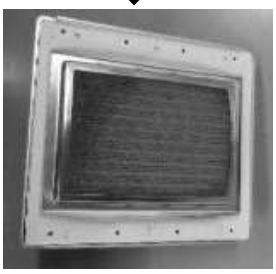
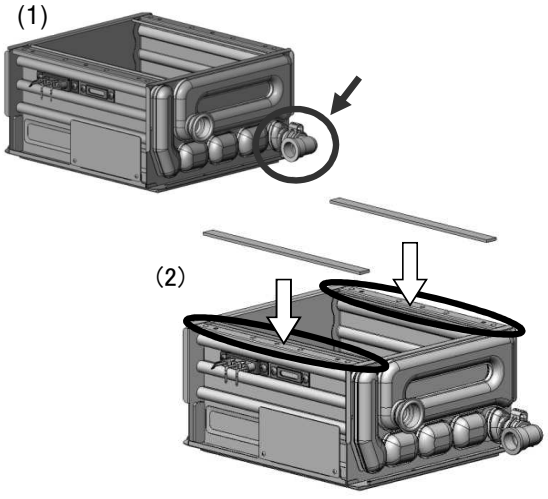
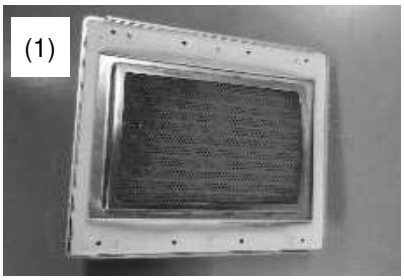
Procedure	Diagram
6. Remove Fan Motor and Venturi assembly (1) Remove "C" Clamp. Then remove 4 screws (M5×12) with a Long Philips screwdriver. **NOTE : Do not use a power driver.**	 
(2) Pull up Fan Motor and Venturi assembly.	
(3) Tilt Fan Motor and Venturi assembly.	
(4) Rotate and detach Fan Motor and Venturi assembly.	

Heat Exchanger Replacement Procedure

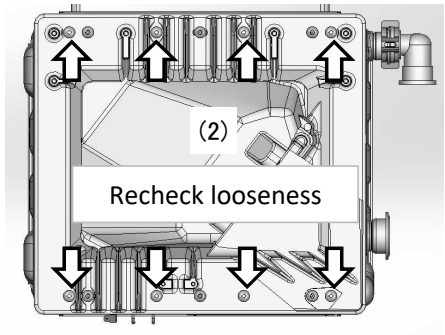
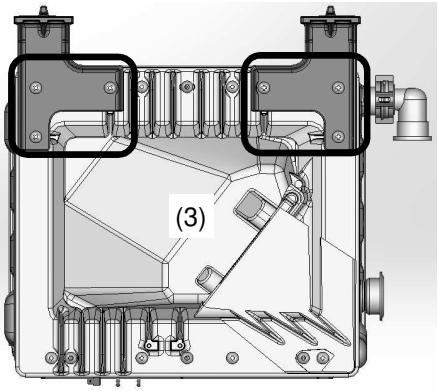
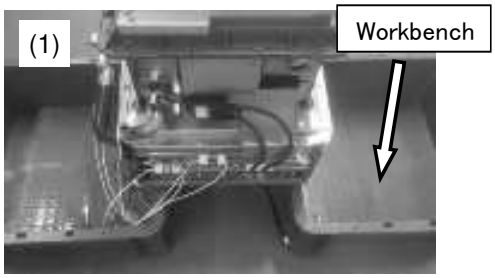
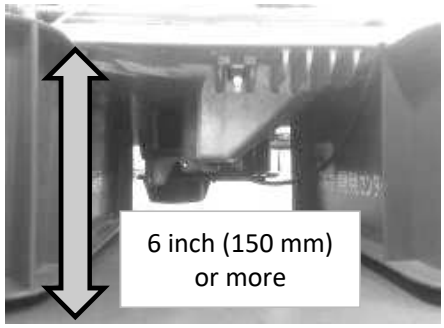
Procedure	Diagram
7. Remove the heat exchanger assembly from Case (1) Remove Hose Clamp, pull Drain Hose - SS HEX off.	
(2) Remove 4 screws (M4×12), pull Exhaust Flue off. Discard these screws.	
(3) Remove 8 screws (M4×10) fixing heat exchanger assembly. (4) Lift up and remove the heat exchanger assembly from the case.	
8.Remove parts from the heat exchanger (1) Remove 2 "C" Clamps, Pipe - Secondary SS HEX to Primary SS HEX. (2) Unplug High Voltage Igniter Wires from Ignition Plug. Then remove and discard Plug Cover of Ignition Plug. (3) Remove Mounting Plate - Igniter.	

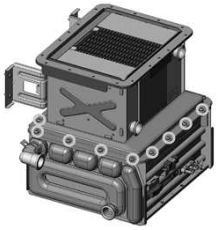
Procedure	Diagram
(4) Put the heat exchanger assembly upside down on workbench with the height of 6 inch (150 mm) or more. Without support, Burner Chamber and Exhaust Duct can be damaged. (5) Remove 2 screws (M4×12) and Mounting Plate-Circuit Board from Exhaust Duct. (6) Remove 2 screws (M4×12) on the back of Exhaust Duct. (7) Remove 15 screws (M4×12) on the bottom of Exhaust Duct. (8) Remove Exhaust Duct.  **<u>NOTE:</u>** **Make sure that the exhaust duct is not deformed by heating. If it's deformed, replace it.**	   
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.	 

Heat Exchanger Replacement Procedure

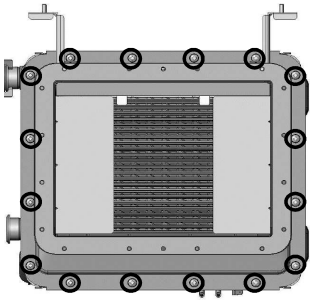
Procedure	Diagram
10. Separate Primary SS HEX and Burner Chamber (1) Remove 6 screws (M4×10) to remove Mounting Plate - Chamber. (2) Remove 8 screws (M4×18) to separate Primary SS HEX and Burner Chamber. Check the「NOTE:」is below. (3) Separate Primary SS HEX and Burner Chamber. ※Put Burner Chamber so 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).**	  
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. (2) Exchange 2 Gasket - Primary Heat Exchangers for new ones.	
12. Join Primary SS HEX and Burner Chamber (1) Peel off old Gasket- Burners and replace it with new Gasket - Burner.	

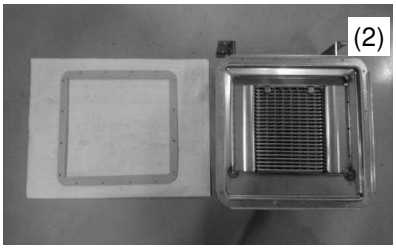
Heat Exchanger Replacement Procedure

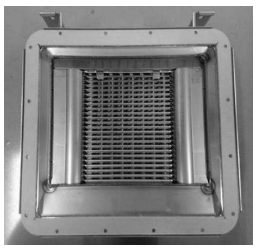
Procedure	Diagram
(2) Join Primary SS HEX and Burner Chamber with 8 screws (M4×18). When tightening is over, please check again for looseness of screws	
(3) Attach Mounting Plate - Chamber to Burner Chamber.	
13. Assemble new Primary SS HEX and Secondary SS HEX (1) Put the heat exchanger assembly upside 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 Primary new SS HEX and Secondary SS HEX with 16 screws (M4×10).	 

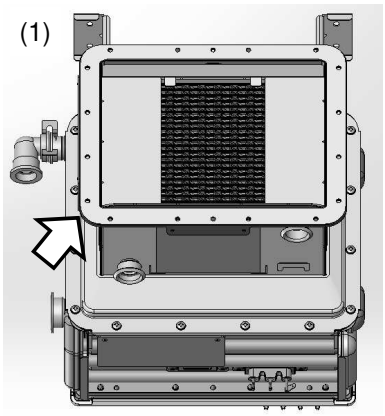
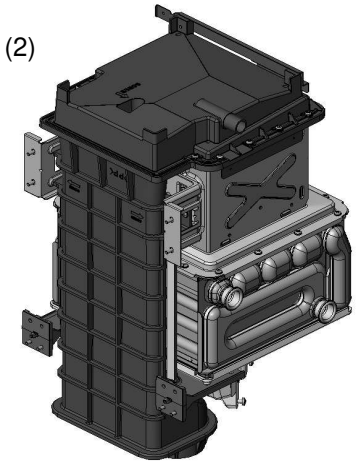
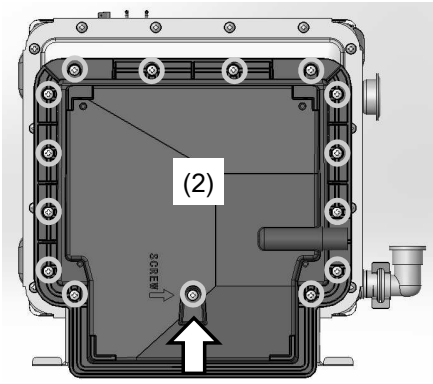
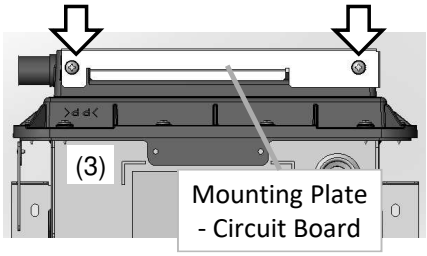


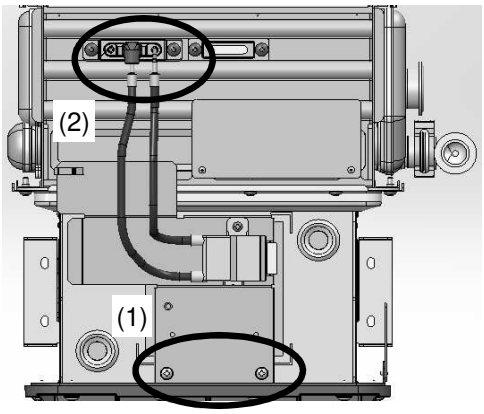
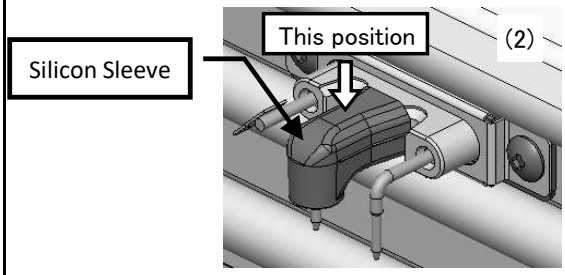
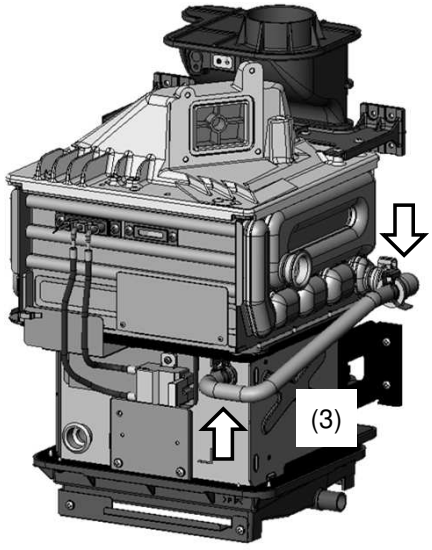
(3)

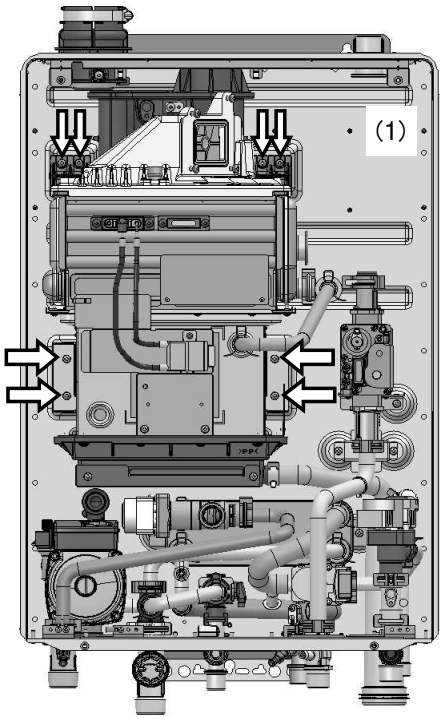
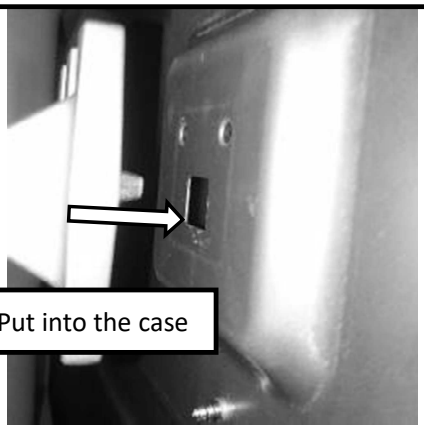
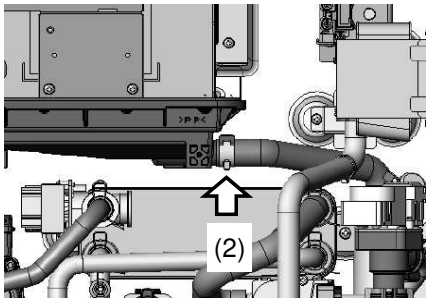


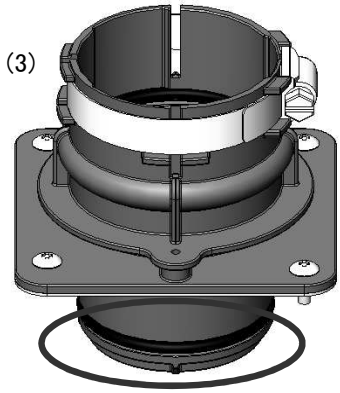
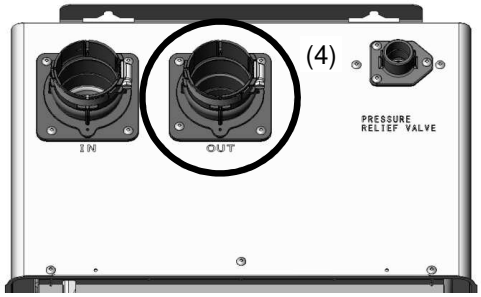
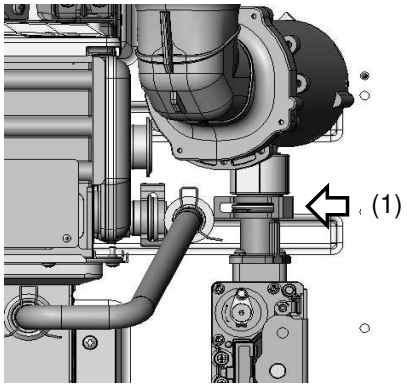
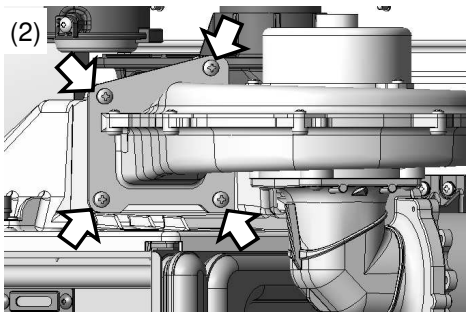


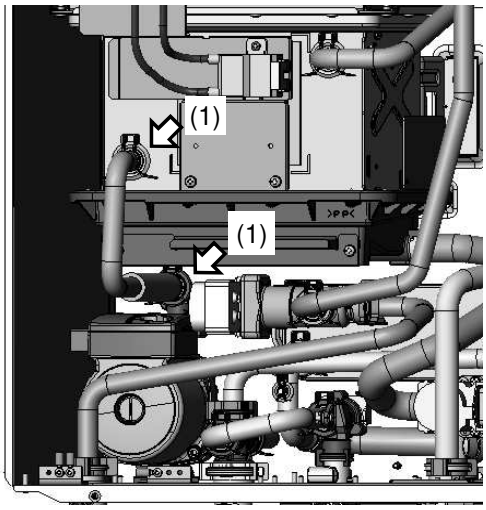
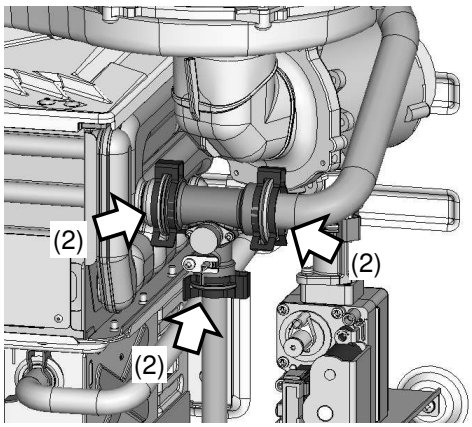
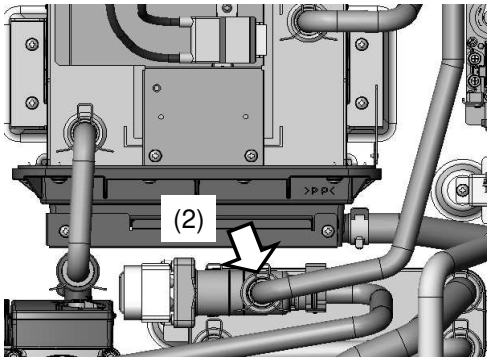


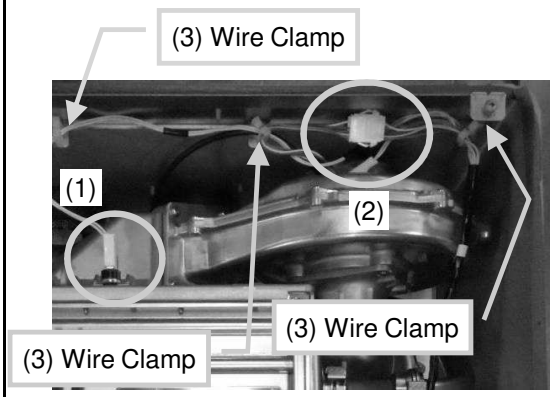
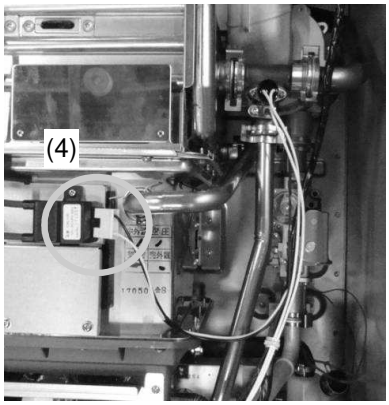
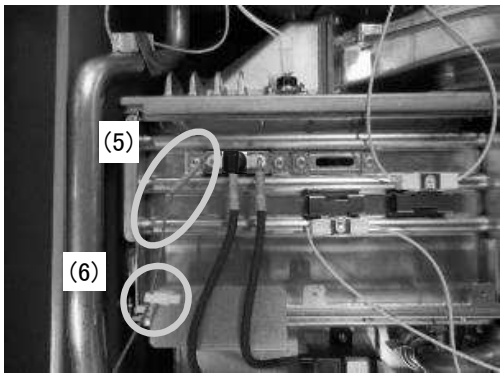
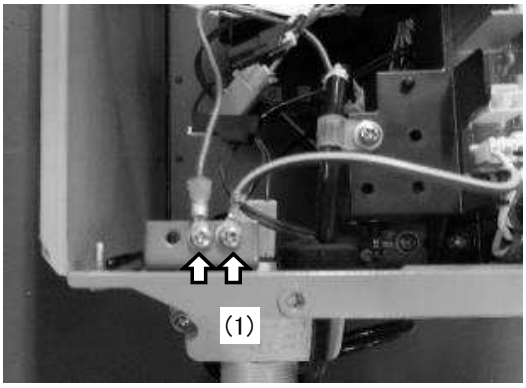
Procedure	Diagram
14. Attach Exhaust Duct (1) Set new Gasket-Exhaust Duct to match the line inside the secondary heat exchanger.	
(2) Attach Exhaust Duct to the secondary heat exchanger and fix with 15 screws (M4×12).	 Attach Exhaust Duct 
(3) Attach Mounting Plate-Circuit Board to the new Exhaust Duct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

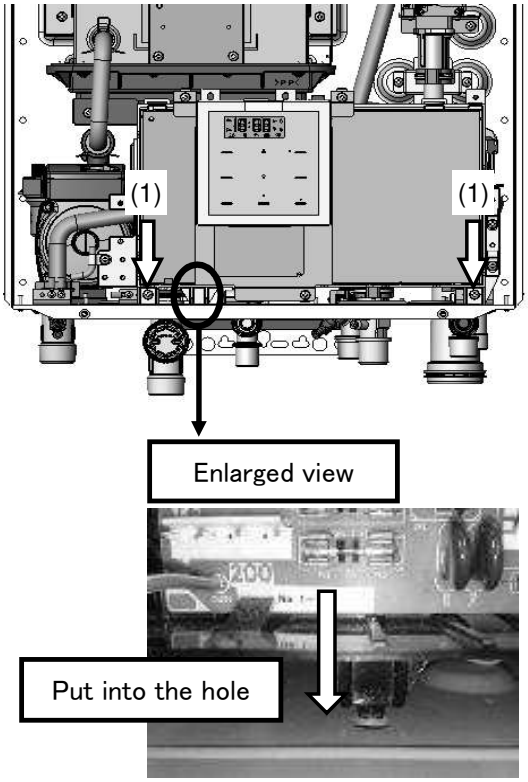
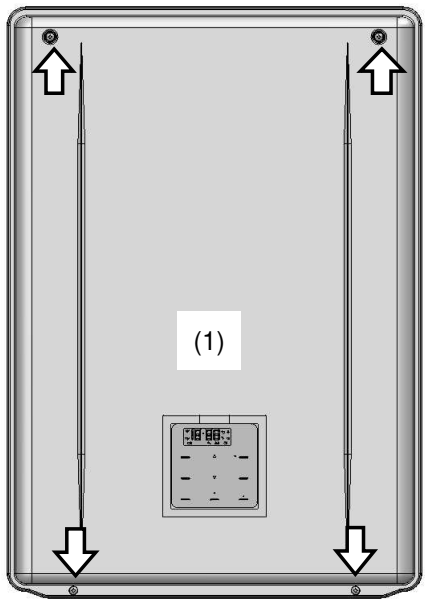
Procedure	Diagram
(4) Fix the secondary heat exchanger and Exhaust Duct with 2 screws (M4×12) from the backside.	
15. Attach parts to heat exchanger (1) Attach Mounting Plate - Igniter with 2 screws (M4×8). (2)Put and insert the new Silicon Sleeve all the way on the Ignition Plug. Then plug High Voltage 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.	  

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).	 Heat exchanger assembly connection enlarged view 
(2) Put Drain Hose - SS HEX into the drain outlet of Exhaust Duct and fix it with Hose Clamp.	

Procedure	Diagram
(3) Replace the O-Ring of Exhaust Flue with new one. (4) Attach Exhaust Flue to the case with 4 new Screws - Pre-Coated Machined (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.

Procedure	Diagram
18. Attach Pipes (1) Put Pipe - Pump Outlet - Elbow to Secondary SS HEX and fix it with 2 "C" Clamps.	
(2) Attach Pipe - T-Elbow to Relief Valve Connection, T-Elbow and Pipe - T-Elbow to Distribution Valve - Heating with 4 "C" Clamps.	 

Procedure	Diagram
19. Plug all wires that attach to Wiring Harness (1) Plug High Limit Switch. (2) Plug Fan Motor and Thermistor - Exhaust. and hook Wiring Harness to 2 Wire Clamps. (3) Hook Wiring Harness by using Wire Clamps. (4) Plug Igniter. (5) Plug Flame Rod. (6) Hook Flame Rod to the Wire Clamp.	  
20. Attach ground wires (1) Attach ground wires.	

Procedure	Diagram
21. Attach Circuit Board (1) Attach Circuit Board with the 2 screws (M4×12).	
22. Attach Front Cover (1) Attach Front Cover with 4 screws w/ washer (M4×12).