Heat Exchanger Replacement

Model Include : NR981-OD, NR981-DVC,NR981-SV
NC1991-OD, NC1991-DVC
NR98OD(GQ-2857WX US), NR98DVC(GQ-2857WX-FFA US)
NR98SV(GQ-2857WX-F US)
NC199OD(GQ-2857WZ US), NC199DVC(GQ-2857WZ-FFA US)

This instructional manual is only intended for use by a qualified service professional or authorized Noritz Service Representative. Any unauthorized use of this manual may result in voiding the warranty.

Please contact Noritz Technical Support (866-766-7489) for additional support.

Noritz America Corporation

11160 Grace Avenue, Fountain Valley, CA 92708

Phone 866-766-7489 Fax 714-241-1196

Heat Exchanger Replacement Procedure

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 “ ”. The display will change from "oF" to "on" after the button is pushed.

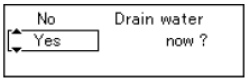
* RC-9018M

(1) ON/OFF button is “OFF”.

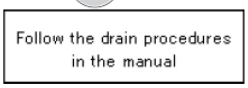
(2) Press the MENU button inside the cover,
Select Misc settings using the buttons.
Press the ENTER button.
The "Misc settings" screen appears.

(3) Select Drain water using the buttons,
and then press ENTER button.

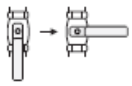
(4) Select "YES" using the buttons,



Press ENTER button.



2 Close the water supply valve.



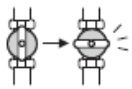
3 Fully open all hot water fixtures.

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

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

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

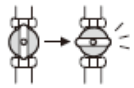
Do not touch with wet hands.



1. Drain the unit as shown in following procedure

Manual Draining

1 Close the gas valve.

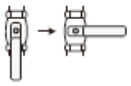


2 (1) Turn the power on/off button “On”.

(2) Turn and leave open the hot water fixtures/ 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 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.

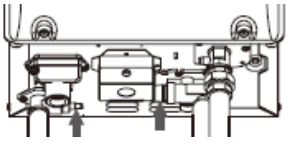


Do not touch with wet hands.

4 Fully open all hot water fixtures/faucets.

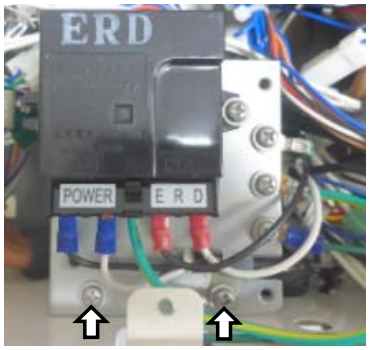
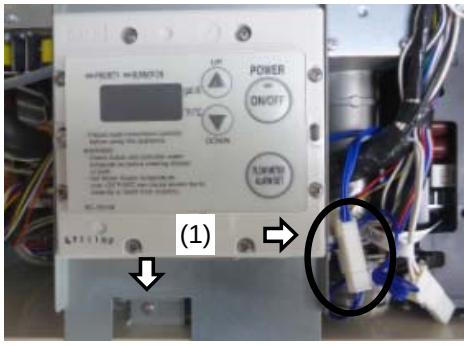
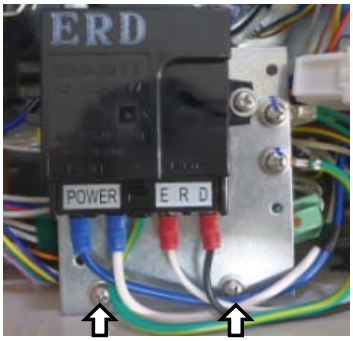
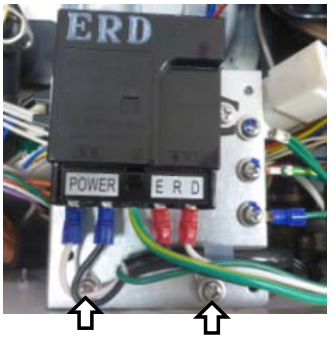
5 Open all drain plugs and drain the water out of the unit.

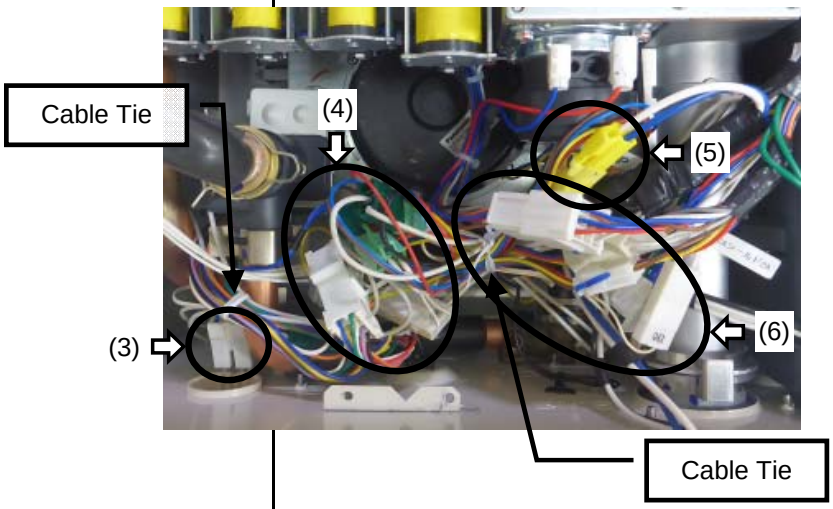
6 When the water is completely drained, replace all drain plugs and close the hot water fixtures/faucets.

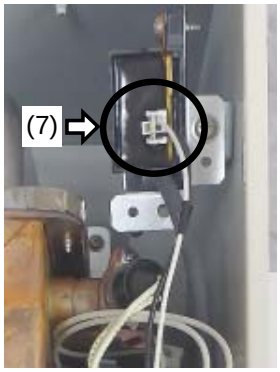
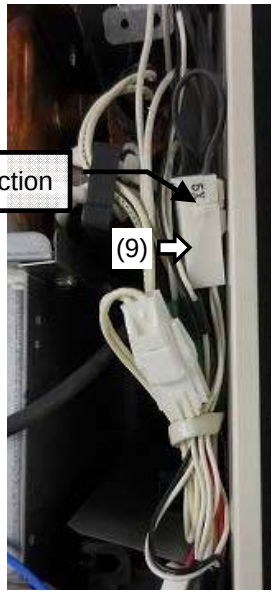
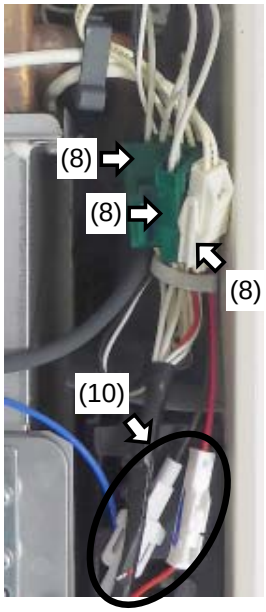
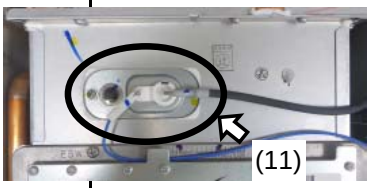
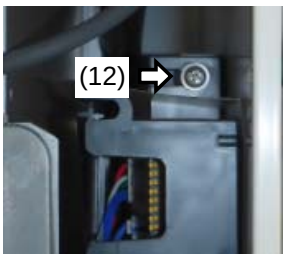
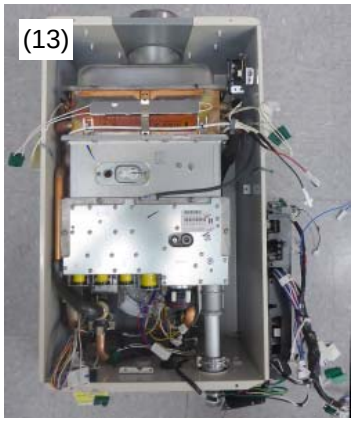


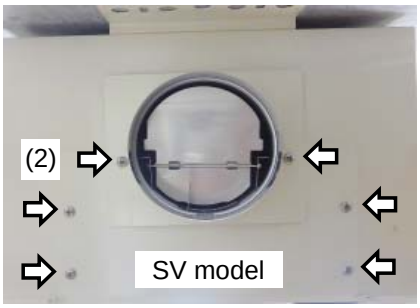
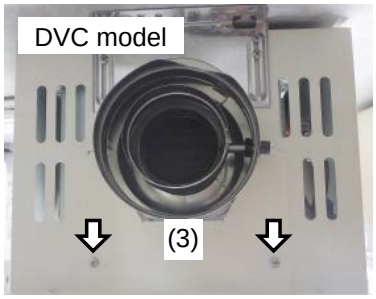
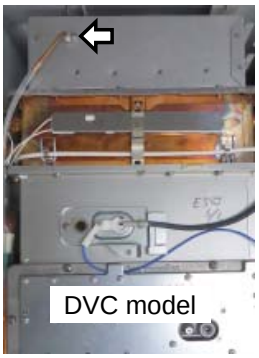
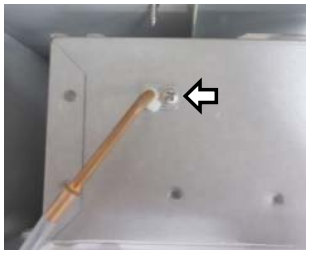
Drain Plugs
Each drain plug might not be visible if insulation is installed around the piping.

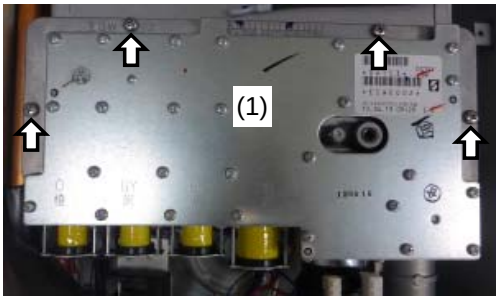
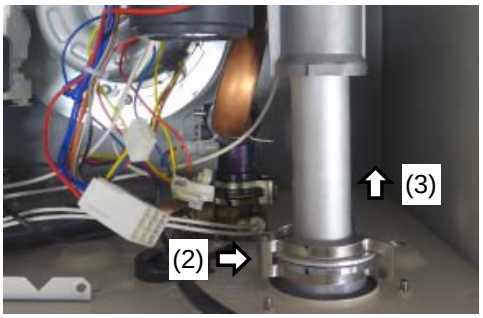
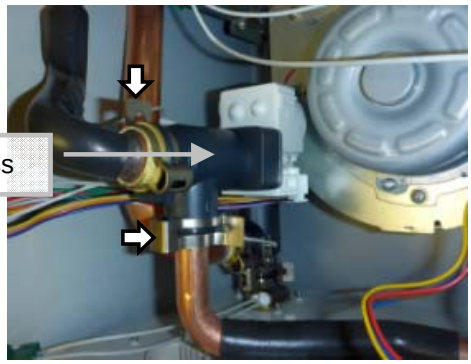
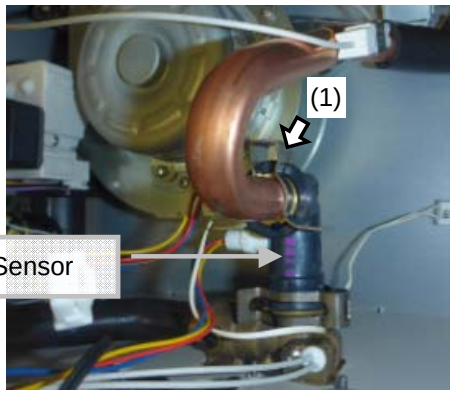
Heat Exchanger Replacement Procedure

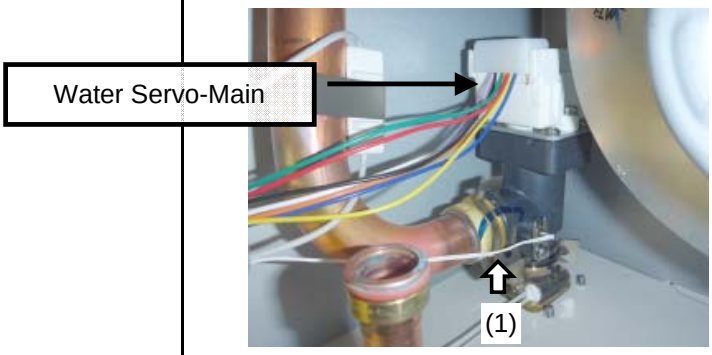
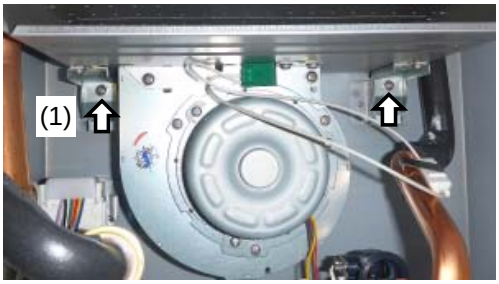
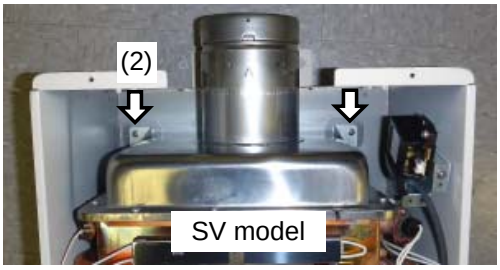
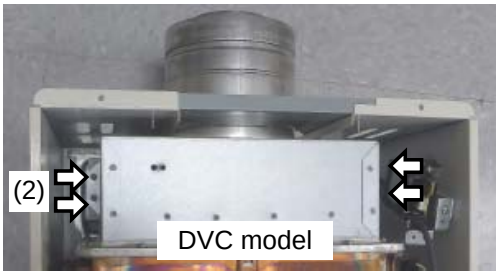
Procedure	Diagram
2. Remove Front Cover (1)Disconnect electrical power to the unit (2)Turn off gas and water (3) Remove 4 screws	 Ex.) OD model
3. Remove Lightning Protection (1) **DVC model for residential only ;** Remove 2 screws that hold Mounting plate for Remote Controller, and unplug Remote Controller (2) Let Remote Controller hang outside of the unit (3) Remove 2 screws that hold the Lightning Protection Plate (Whichever the unit is in case No.2, 3, 4) (4) Let Lightning Protection hang outside of the unit  Case No.4 (DVC model for commercial)	 Case No.1 (DVC model for residential)  Case No.2 (OD model)  Case No.3 (SV model)

Procedure	Diagram
4. Unplug all wires that attach to the wiring harness and the body of the water heater (1) Loosen the wire anchor from left side of the case, unplug Freeze Prevention Heater (2) Unplug Thermistor - Heat Exchanger (3) Remove Cable Tie, unplug Wiring for Remote Controller (4) Unplug Freeze Prevention Heaters (4), Water Servo - Main, - Bypass, and Thermistor - Hot Water (5) **OD model only ;** Unplug wiring for Power supply cord (6) Remove Cable Tie, unplug Wiring for Fan Motor, Water Flow Sensor, Thermistor - Cold Water, -Air Inlet and Wiring for Manifold Plate	 

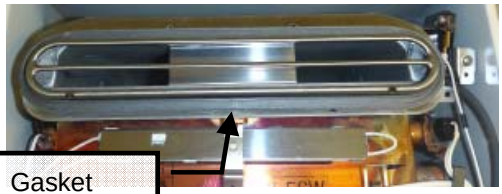
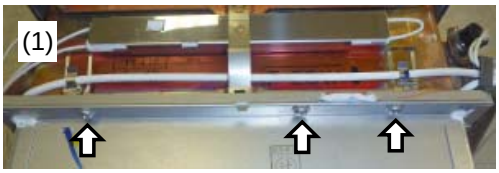
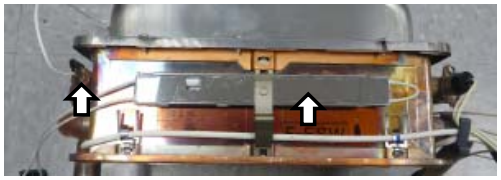
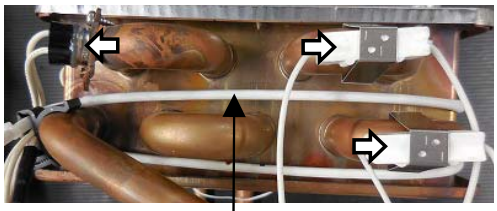
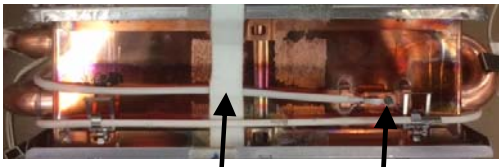
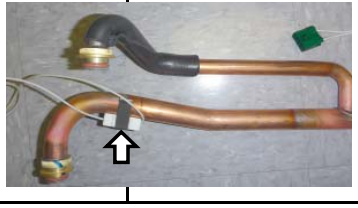
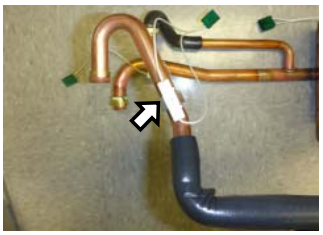
Procedure	Diagram
(7) Unplug wiring for Igniter (8) Loosen the wire anchor from right side of the case, unplug High Limit Switch, **SV, DVC model only ;** Unplug Freeze Prevention Heater (2) (9) Unplug Thermistor-Scale Detection* *The following models have "Thermistor - Scale Detection" NR98OD(GQ-2857WX US) NR98DVC(GQ-2857WX-FFA US) NR98SV(GQ-2857WX-F US) NC199OD(GQ-2857WZ US) NC199DVC(GQ-2857WZ-FFA US) (10) Unplug Thermal Fuse (2) (11) Unplug Flame Rod and Ignition Plug (12) Remove screw that hold Circuit Board (13) Let all wires and Circuit Board hang outside of the unit	      Ex.) SV model

Procedure	Diagram
5. **SV, DVC model only ;** Remove Case Top Cover from top of the unit (1) Disconnect the venting from the unit (2)**SV model only ;** Remove 6 screws and remove 2 Case top Covers of the unit, Gasket - Exhaust Flue and set aside. (3) **DVC model only ;** Remove 2 screws and remove Case Top Cover of the unit and set aside.	  Gasket - Exhaust Flue 
6. **DVC model only ;** Remove Tube - Metal Back Pressure Tube (1) Remove 1 screw on Exhaust box that attach the tube (2) Remove the tube from Exhaust box	 

Procedure	Diagram
7. Remove Manifold Plate (1) Remove 4 big silver screws on Manifold Plate that attach the Manifold Plate to Burner (2) Remove "C" Clamp (3) Locate inlet pipe to Manifold Plate and push up, remove the Manifold Plate	 
8. Remove Water Servo - Bypass (1) Remove 2 "C" Clamp (2) Remove Water Servo - Bypass	
9. Disconnect a pipe from Water Flow Sensor (1) Remove "C" Clamp, disconnect a pipe from Water Flow Sensor	

Procedure	Diagram
10. Disconnect a pipe from Water Servo - Main (1) Remove "C" Clamp, disconnect a pipe from Water Servo - Main	
11. Remove the assembly from Case (1) Remove 2 set screws on the bottom of Burner (2) Remove 2 set screws near the top of the case **DVC model only ;** Remove 4 set screws near the top of the case (3) Exhaust Box, Copper Heat Exchanger (CU HE), Burner, and Fan Motor will come out in one section, remove from the unit	  

Heat Exchanger Replacement Procedure

Procedure	Diagram
12. Replacing the gasket (1) **OD model only ;** Remove Gasket on the front of Exhaust Box, and reinstall Gasket onto new Exhaust Box	 Gasket
13. Remove CU HE (1) Remove 12 screws holding Burner to CU HE (2) Separate Burner from CU HE	 (1)
14. Remove the heat exchanger components from old heat exchanger and put on new heat exchanger (1) Front side: Freeze Prevention Heater, and Thermistor - Heat Exchanger (2) Right side: High Limit Switch **SV, DVC model only ;** Freeze Prevention Heater (Secure to put Freeze Prevention Heater on same position) Wiring Harness of Thermistor - Scale Detection The following models have "Thermistor - Scale Detection" NR98OD(GQ-2857WX US) NR98DVC(GQ-2857WX-FFA US) NR98SV(GQ-2857WX-F US) NC199OD(GQ-2857WZ US) NC199DVC(GQ-2857WZ-FFA US) (3) Back side: Thermistor - Scale Detection* Remove Packing on CU HE Remove the small screw(M3×6) on CU HE that holding Thermistor-Scale Detection *The following models have "Thermistor - Scale Detection" NR98OD(GQ-2857WX US) NR98DVC(GQ-2857WX-FFA US) NR98SV(GQ-2857WX-F US) NC199OD(GQ-2857WZ US) NC199DVC(GQ-2857WZ-FFA US) (4) Under side: Freeze Prevention Heater on water outlet pipe, and Freeze Prevention Heater on water inlet pipe (Secure to put Freeze Prevention Heater on same position)	(1)Front side  (2)Right side  (3)Back side  Packing - for holding Thermistor Thermistor - Scale Detection (4)Under side  

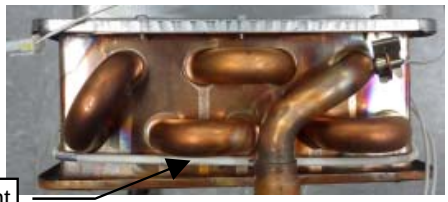
Procedure	Diagram

(4) Attach Thermal Fuse, 4 Clamps, and Harness Clip on 4 sides of CU HE, see 4 views of CU HE to make sure Thermal Fuse is routed correctly

Front side

Clamp

Left side



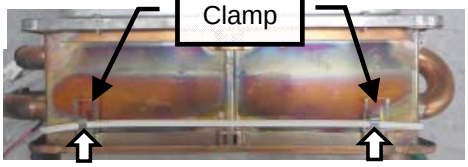
The end of Insulation tube (Black) and Inlet Pipe of CU HE are lined up

Keep Thermal Fuse straight

Back side

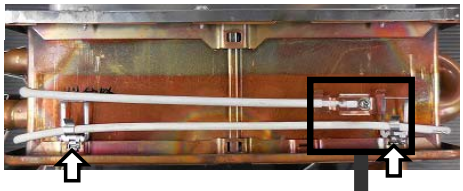
NR981-OD/DVC/SV
NC1991-OD/DVC

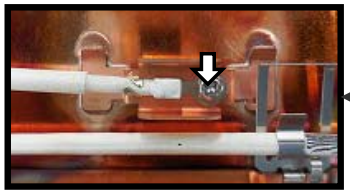
Clamp



Back side

NR98OD/SV/DVC(GQ-2857WX＊＊)
NC199OD/DVC(GQ-2857WZ＊＊)



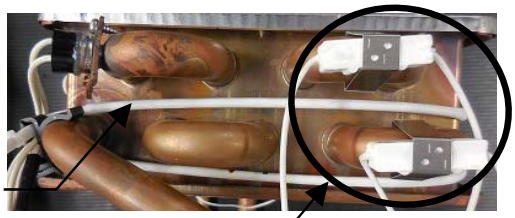


Secure the Thermistor-Scale Detection with screw(M3×6) on CU HE

NOTE ; Only tighten by a hand screwdriver (No Drills). Not need to attach the Packing (for holding Thermistor - Scale Detection) when replacement.

To hold Wiring Harness of Thermistor - Scale Detection, tie the Wiring Harness with Harness Clip.

Right side

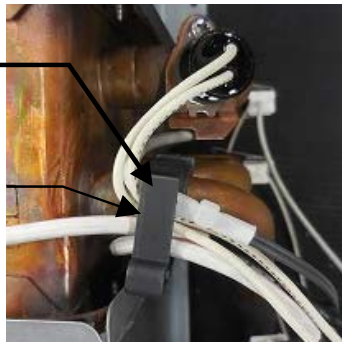


Wiring Harness of Thermistor-Scale Detection

DVC and SV model have 2 Prevention Heaters on bended pipe

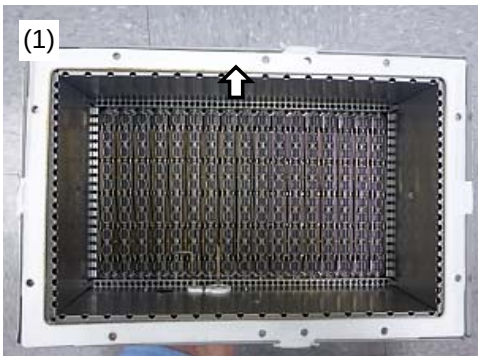
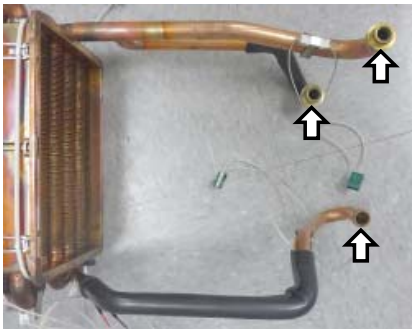
Make sure Wiring Harness does not contact with Freeze Prevention

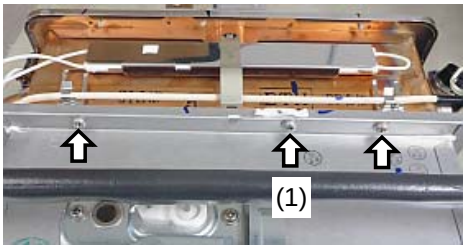
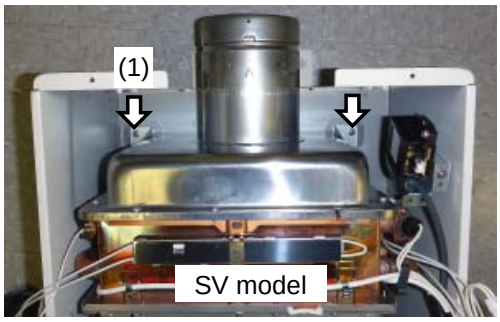
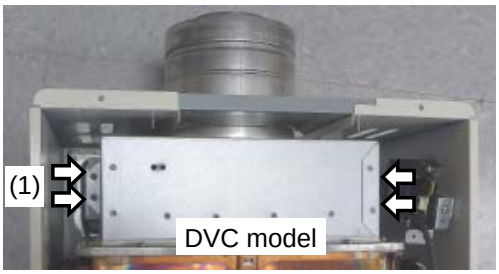
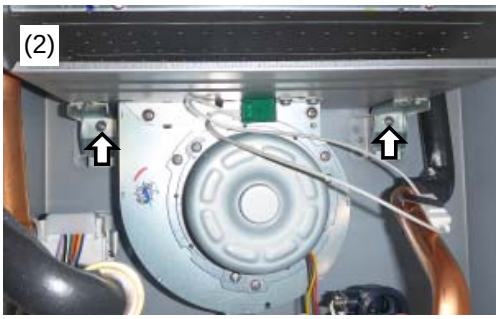
Harness Clip

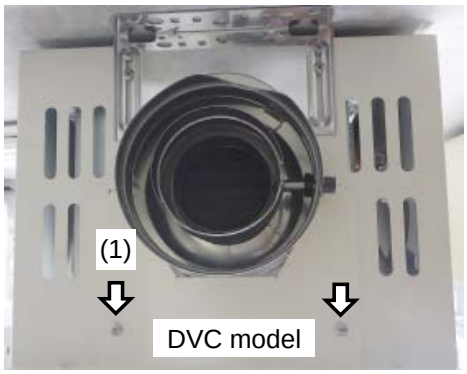


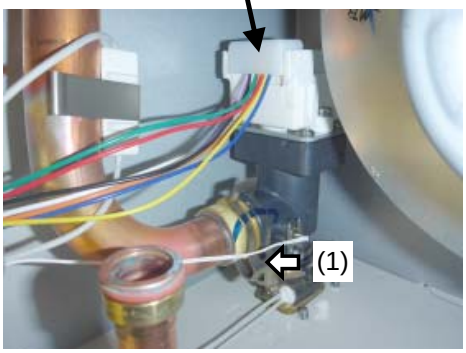
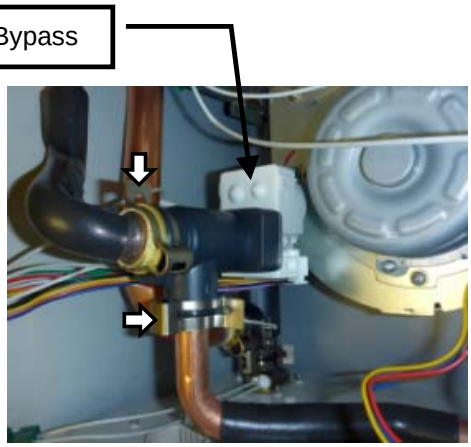
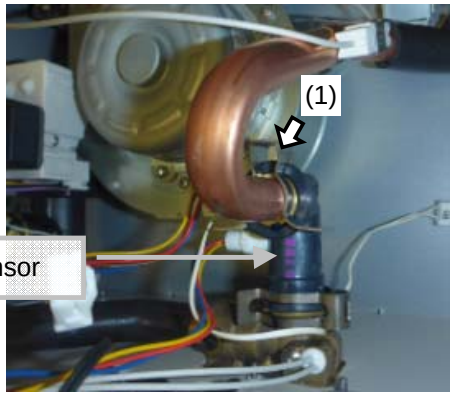
◆Tie "Thermal Fuse" and "High Limit Switch" with Harness Clip

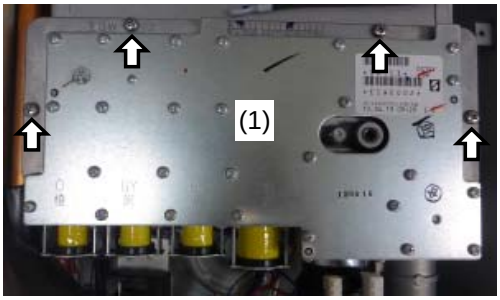
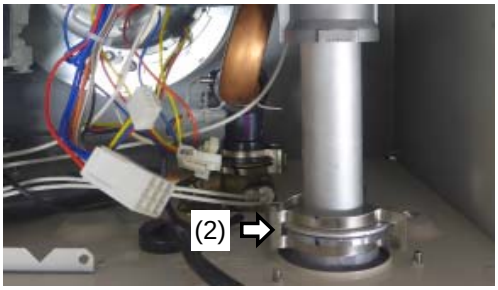
◆Tie "Thermal Fuse", "High Limit Switch" and "Thermistor - Scale Detection" with Harness Clip

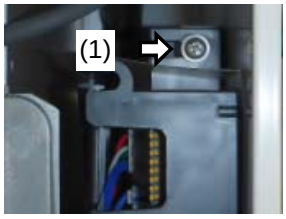
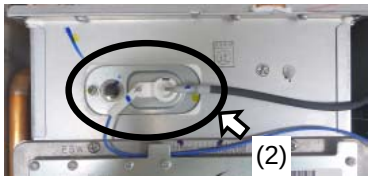
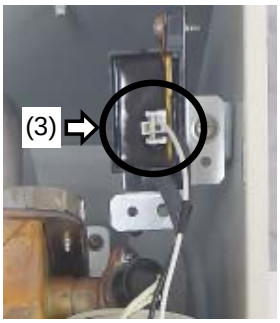
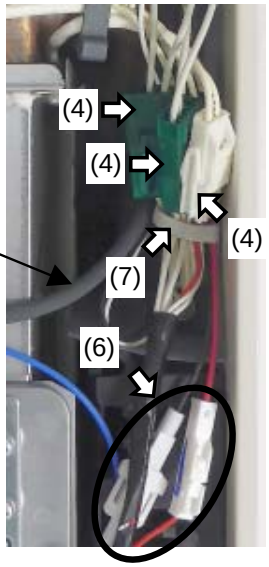
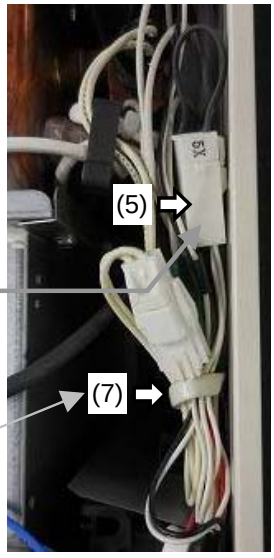
Procedure	Diagram
15. Replace Gasket (1) Remove old burner Gasket and replace with new one	
16. Place new O - Rings on new CU HE (1) Inlet to CU HE (2) Outlet from CU HE (3) Bypass from CU HE	   

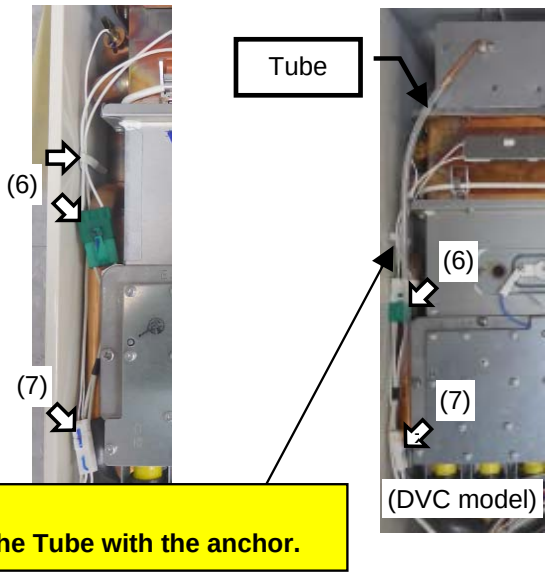
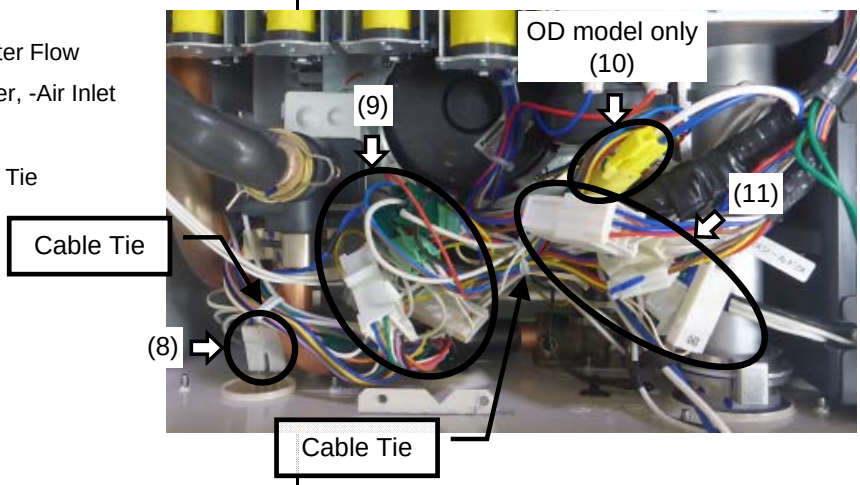
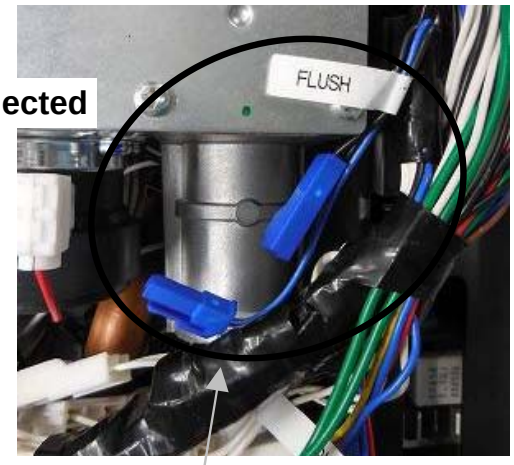
Procedure	Diagram
17. Replace Burner, and CU HE (1) Attach 12 screws around perimeter of Burner and CU HE	
18. Replace the assembly back inside the case (1) Secure 2 set screws near the top of the case **DVC model only ;** Secure 4 set screws near the top of the case (2) Secure 2 set screws on the bottom of Burner	  

Procedure	Diagram
19. Replace Case Top Cover on top of the unit **DVC model only ;** (1) Attach Case Top Cover to the unit and secure 2 screws **SV model only ;** (1) Attach Big Case Top Cover to the unit and secure 4 screws (2) Place Gasket - Exhaust Flue on Exhaust pipe (3) Attach Small Case Top Cover to the unit and secure 2 screws (4) Reconnect the venting to the unit	   

Procedure	Diagram
20. Reconnect a pipe to Water Servo - Main (1) Insert a pipe to Water Servo - Main, and attach "C" Clamp	
21. Reconnect two pipes to Water Servo - Bypass (1) Replace Water Servo - Bypass (2) Attach 2 "C" Clamp	
22. Reconnect a pipe to Water Flow Sensor (1) Insert a pipe to Water Flow Sensor, and attach "C" Clamp	

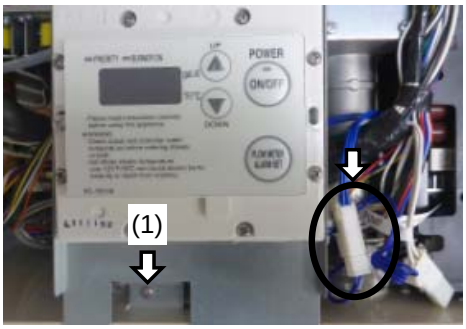
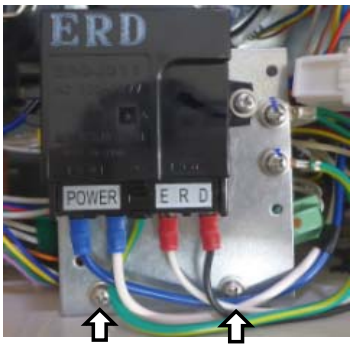
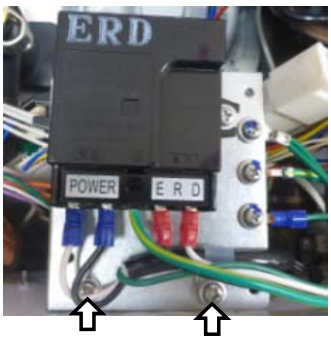
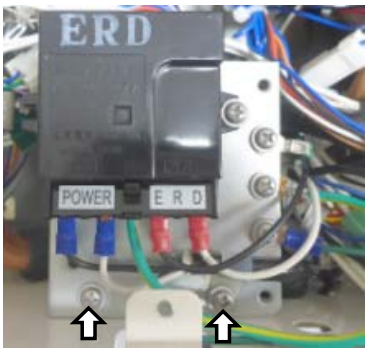
Procedure	Diagram
23. Replace Manifold Plate (1) Secure the Manifold Plate to Burner with 4 big silver screws (2) Secure gas pipe of Manifold Plate to gas inlet fitting with "C" Clamp	 
24. Replace Tube - Metal Back Pressure Tube **DVC model only ;** (1) Attach Tube with 1 screw.	

Procedure	Diagram
25. Reconnect all wires that attach to the wiring harness and the body of the unit (1) Insert Circuit Board and attach with screw (2) Plug Flame Rod and Ignition Plug (3) Plug wiring for Igniter (4) Plug High Limit Switch **SV, DVC model only ;** Plug Freeze Prevention Heater (2) (5) Plug Thermistor - Scale Detection* *The following models have "Thermistor - Scale Detection" NR98OD(GQ-2857WX US) NR98DVC(GQ-2857WX-FFA US) NR98SV(GQ-2857WX-F US) NC199OD(GQ-2857WZ US) NC199DVC(GQ-2857WZ-FFA US) (6) Plug Thermal Fuse (2) (7)Tie all wires (except for Ignition Wire) with the anchor from right side of the case **Caution!** **1. Don't tie Ignition Wire with the anchor.** **2.Set Ignition wire behind of other wires.** Thermistor - Scale Detection **Caution!** **1. Don't tie Ignition Wire with the anchor.** **2.Set the Ignition wire behind of other wires.**	    

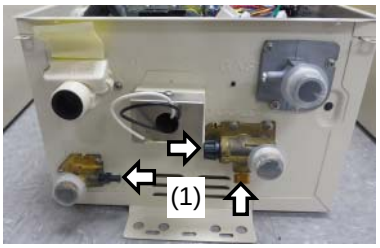
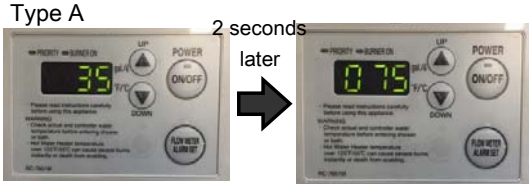
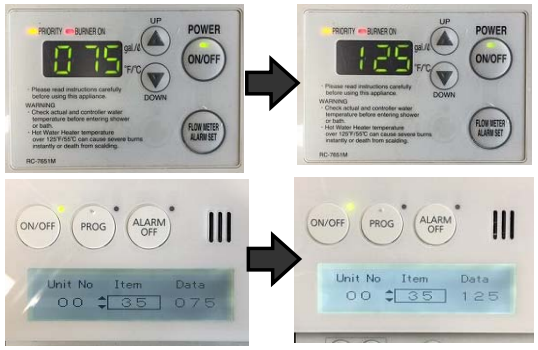
Procedure	Diagram
(6) Plug Freeze Prevention Heater Tie the wire anchor from left side of Case **DVC model only ;** Don't tie the Tube with the anchor (7) Plug Themistor - Heat Exchanger (8) Plug Wiring for Remote Controller, tie Cable Tie (9) Plug Freeze Prevention Heaters (4), Water Servo - Main, - Bypass, and Thermistor - Hot Water (10) **OD model only ;** Plug wiring for Power supply cord (Yellow connector) (11) Plug Wiring for Fan Motor, Water Flow Sensor, Thermistor - Cold Water, -Air Inlet and Wiring for Manifold Plate, And then tie wirings with Cable Tie	 **Caution!** **Don't tie the Tube with the anchor.**  **Disconnected** 

*NR98OD/SV/DVC(GQ-2857WX＊＊) and NC199OD/DVC(GQ-2857WZ＊＊) have "Blue connector" for Scale Flushing

NOTE ; Don't connect this blue connector when replacing Heat Exchanger

Procedure	Diagram
26. Replace Lightning Protection (1) **DVC model for residential only ;** replace Remote Controller, plug Remote Controller, and attach the Mounting plate for Remote Controller with screw (2) Attach Lightning Protection Plate with 2 screws (Whichever the unit is in case No.2, 3, 4)	 Case No.1 (DVC model for residential)  Case No.2 (OD model)  Case No.3 (SV model)  Case No.4 (DVC model for commercial)

Heat Exchanger Replacement Procedure

Procedure	Diagram
27. Check for water leak (1) Secure 3 drain valves (2) Turn on water inlet valve slowly (check for leaks around "C" Clamps) (3) If you get leaks, close water inlet valve Re-secure "C" Clamps of leaking points	
28. Check for gas leaks and doing trial operation (1) Turn on gas supply valve (2) Turn on the unit Check for leaks around Manifold Plate and joining areas For example ; Between Burner and CU HE (3) If you get leaks, Close gas supply valve Re-secure "C" Clamps of leaking points	
29. Replace Front Cover (1) Secure Front Cover with 4 screws	 Ex.) OD model
30. Check for correct operation of the water heater. The following steps are for "NR98OD/DVC/SV(GQ-2857WX**)" and "NC199OD/DVC(GQ-2857WZ**)" (1) Turn on the remote controller The water heater does not need to run now (Do not open the water outlet valve and faucet) (2) Press and hold both the "UP(▲)" and "DOWN(▼)" buttons simultaneously for more than 2 seconds to enter the Maintenance Monitor mode* "03" will first appear on the remote controller *The maintenance monitor data No. will appear on the display for 2 seconds, and then the data will appear (Type A remote controller only) (3) Push the "UP(▲)" button until you see the data No.35** **The data No.35 shows the "Temperature of Thermistor-Scale Detection (4) Turn on the gas supply valve, and then open the water supply valve and faucet (water outlet valve) to run the water heater for at least 1 minute. (5) Check whether the data No.35 rises when the water heater is running (The water heater operation is correct if it displays more than 32°F) If the temperature does not rise or displays 32°F, then the connection to the Thermistor-Scale Detection need to be checked and repeat (1) - (5) in step 30 (6) Press and hold both the "UP(▲)" and "DOWN(▼)" buttons simultaneously for more than 2 seconds to return normal mode	Type A  Type B  Ex.) This shows the data No.35 "75°F" (Thermistor-ScaleDetection detects "75°F)  Ex.) This shows the data No.35 rises "75°F" to "125°F" when the water heater is running