

Steps shown are guidelines: Your water heater will be different

## EXAMPLE: How to clean combustion chamber on gas water heater

<http://waterheatertimer.org/How-to-troubleshoot-gas-water-heater.html>

### Replacement Parts

**IMPORTANT:** The following maintenance procedures are for the Flame Lock™ Safety System components and should be performed by a qualified person.

Replacement parts may be ordered through your plumber or the local distributor. Parts will be shipped at prevailing prices and billed accordingly. When ordering replacement parts, always have the following information ready:

1. model, serial, and product number
2. type of gas
3. item number
4. parts description

See pages 27-28 for a list of available repair parts.

### Removing the Manifold Assembly

1. Turn off the gas to the water heater at the manual gas shut-off valve (Figure 3).
2. Turn the gas control/temperature knob to the "OFF" position (Figure 19).

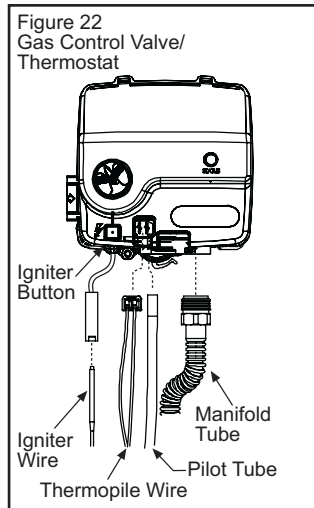
3. Remove the outer door.

4. Remove the two screws securing the manifold door to the combustion chamber (Figure 23).

5. Disconnect the thermopile, pilot tube, the igniter wire from the igniter button, the two connectors attached to the thermal switch, and manifold tube at the gas control valve/thermostat. (Figures 22 & 23.)

6. Grasp the manifold tube and push down slightly to free the manifold tube, pilot tube, and thermopile.

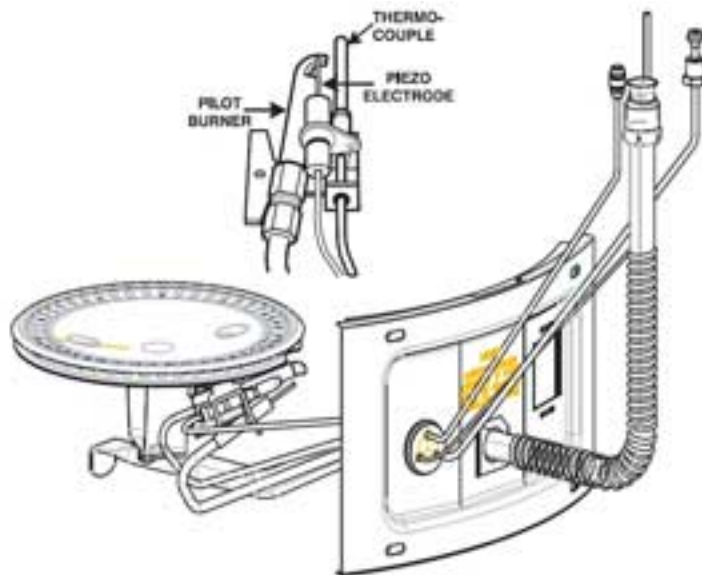
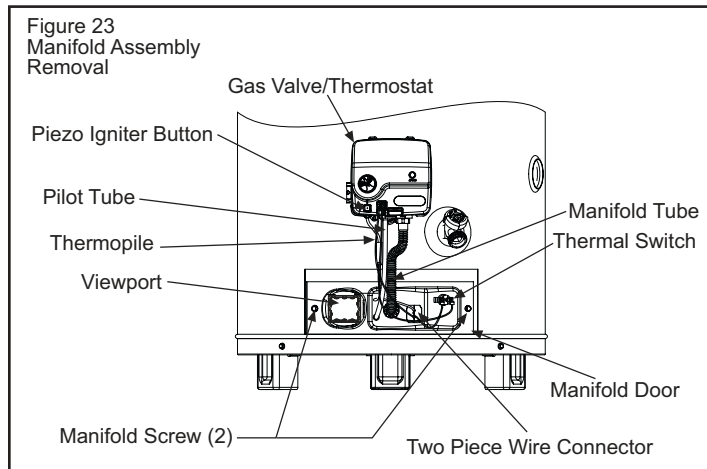
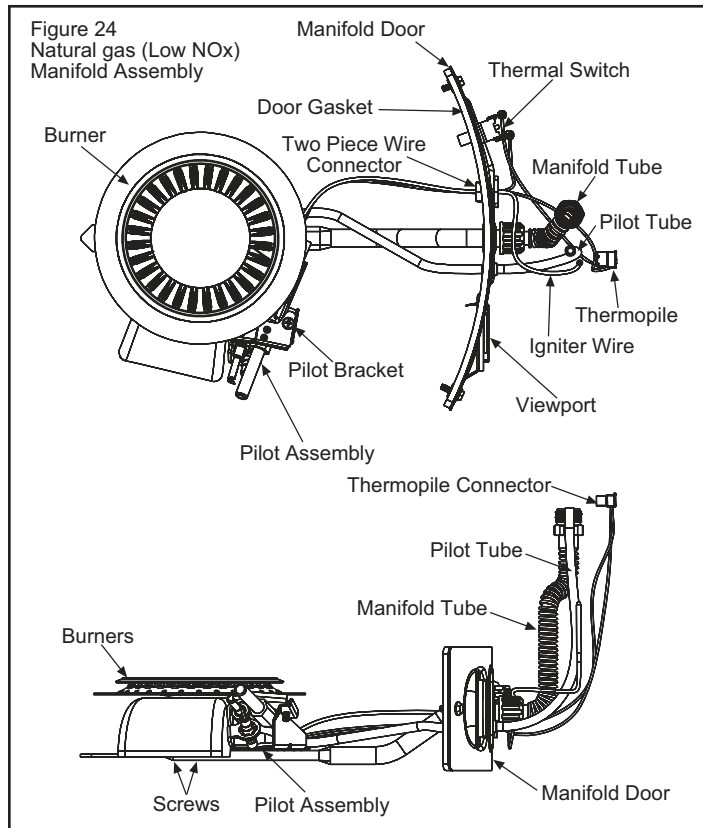
7. Carefully remove the manifold assembly from the combustion chamber. **NOTE:** Be sure not to damage internal parts.



### Removing the Burner from the Manifold Assembly

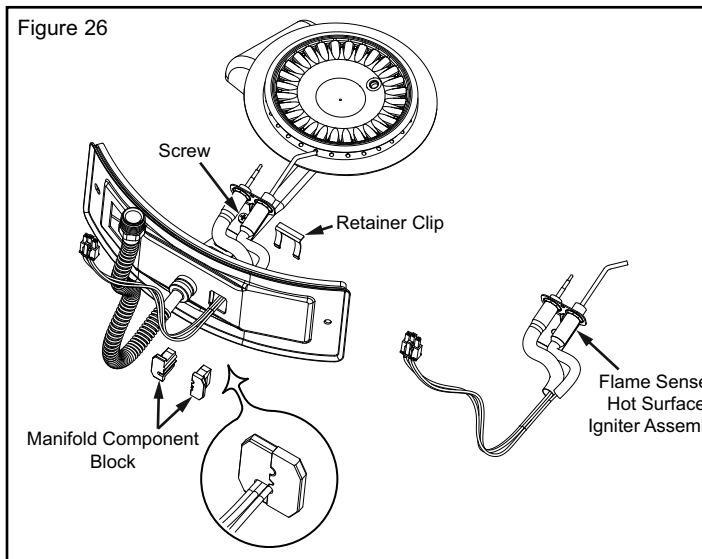
#### Natural Gas Burner (Low Nox)

1. Take off the burner by removing the two (2) screws located underneath the burner.
2. Check the burner to see if it is dirty or clogged. The burner may be cleaned with soap and hot water (Figure 24).



## Replacing the Flame Sense/Hot igniter Assembly

1. Remove the manifold/burner assembly. See Removing the Manifold/Burner Assembly.
2. Lift the retainer clip straight up from the back of the manifold component block (using a flat-blade screwdriver), then remove the manifold component block from the manifold door (Figure 26.)
3. Remove and keep the screw securing the flame sense/hot surface igniter assembly (Figure 26)
4. Remove and discard the old flame sense/hot surface igniter assembly.
5. Route the new flame sense/hot surface igniter connector wire through manifold/burner door opening as shown in figure 26. Secure assembly to bracket using screw removed earlier.



6. Reposition the manifold component block in the manifold door opening and secure it with the retainer clip.
7. See Replacing the Manifold/Burner Assembly.

## External Inspection & Cleaning of the Air Intake Chamber Screen

1. At least twice annually inspect the air intake chamber screen (Figure 27) for any dust or debris that may have accumulated on the screen.

**NOTE:** If the water heater is located in an area that is subjected to lint and dirt, it may be necessary to check the air intake chamber screen more frequently.

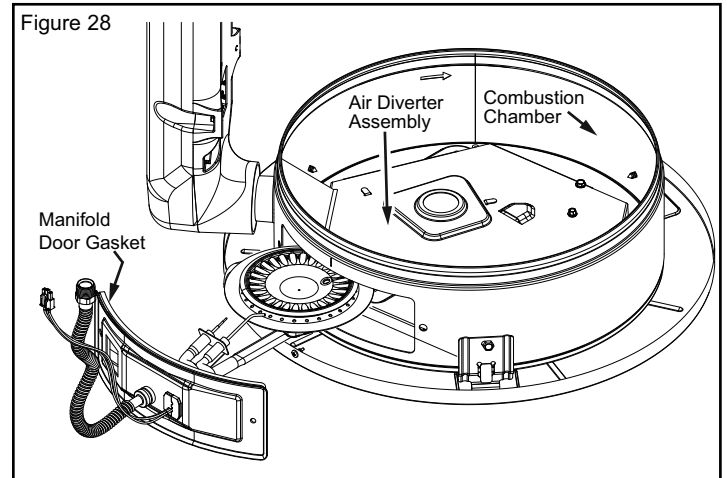
2. Use a vacuum cleaner with a hose attachment to remove any dust or debris that may have accumulated on the screen.



Figure 27

## Cleaning the Combustion Chamber and Air Diverter Assembly

1. Follow procedure outlined in "Removing the Manifold/Burner Assembly".
2. Use a vacuum cleaner/shop vac to remove all loose debris in the combustion chamber (Figure 28). Use compressed air to clear any dust or debris that may have accumulated on the air diverter assembly.



3. Reassemble following the procedure under "Replacing the Manifold/Burner Assembly".

## Replacing the Manifold/Burner Assembly

**WARNING**



**Explosion Hazard**

**Tighten both manifold door screws securely.**

**Remove any fiberglass between gasket and combustion chamber.**

**Replace viewport if glass is missing or damaged.**

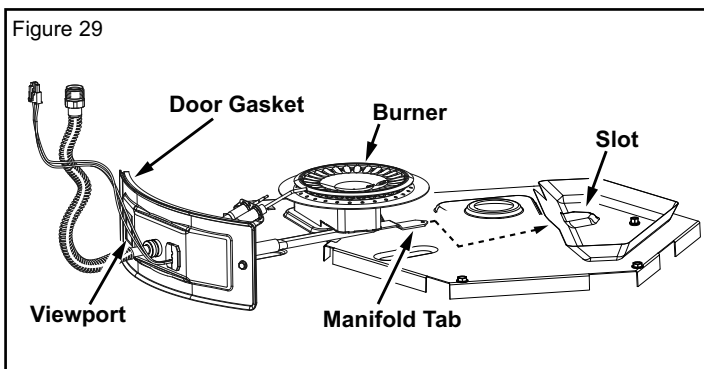
**Replace two piece wire connector if missing or removed.**

**Replace door gasket if damaged.**

**Failure to follow these instructions can result in death, explosion, or fire.**

1. Check the door gasket for damage or imbedded debris prior to installation.
2. Inspect the view port for damage and replace as required.

3. Insert the manifold/burner assembly into the burner compartment making sure that the tip of the manifold tube engages in the slot of the bracket inside the combustion chamber (Figure 29).
  4. Inspect the door gasket and make sure there is no fiberglass insulation between the gasket and the combustion chamber.
  5. Replace the two screws, which secure the manifold/burner assembly door to the combustion chamber and tighten securely. Once the manifold/burner assembly door is tightened, visually inspect the door gasket between the manifold/burner assembly door and the combustion chamber for spaces or gaps that would prevent a seal.
- IMPORTANT:** Do not operate the water heater if the door gasket does not create a seal between the manifold door and the combustion chamber.
6. During the following procedure, do not cross-thread or apply any thread sealant to any of the fittings listed below. First, reconnect the manifold tubing to the gas control valve/thermostat.
  7. Reconnect the flame sense/hot surface igniter wire to the gas control valve/thermostat (Figure 24).
  8. Turn gas supply on and refer to the Lighting Instructions.
  9. With the burner lit, check the gas control valve/thermostat supply line, two piece wire connector, and manifold tube connections for leaks. Check for leaks by brushing on an approved noncorrosive leak detection solution.
- IMPORTANT:** Do Not splash solution onto the electrical connections. Bubbles forming indicate a leak. Correct any leak found. All leaks must be fixed immediately.
10. Replace the outer door (see Item 19 page 32).



## Removing and Replacing the gas Control Valve/Thermostat

**IMPORTANT:** Use only factory authorized replacement parts.

1. Set the gas control valve/thermostat to its lowest setting by first depressing the COOLER ⏴ and HOTTER ⏵ buttons together and hold for 1 second. Then press the COOLER ⏴ button until the WARM indicator light appears (Figure 21).

2. Unplug the electrical transformer from the wall outlet.
3. Turn off the gas supply to the water heater at the manual gas shut-off valve. This valve is typically located beside the water heater. Note the position of the shut-off valve in the open/on position then proceed to turn it off (Figure 3).
4. Drain the water heater. Refer to the section of "Draining and Flushing" section and follow the procedure.
5. Disconnect the the flame sense/hot surface igniter wire, power supply transformer, pressure switch/fan and display connector wires from the thermostat (Figure 24). Disconnect the manifold tube at the thermostat (Figure 24).
6. Refer to "Gas Piping" section (Figure 3) and disconnect the ground joint union in the gas piping. Disconnect the remaining pipe from the gas control valve/thermostat.
7. To remove the gas control valve/thermostat, thread a correctly sized pipe into the inlet and use it to turn the gas control valve/thermostat (counterclockwise.) Do not use pipe wrench or equivalent to grip body. Damage may result, causing leaks. Do not insert any sharp objects into the inlet or outlet connections. Damage to the gas control valve/thermostat may result.

## Replacing the Gas Valve

1. To replace the gas control valve/thermostat, reassemble in reverse order. When replacing the gas control valve/ thermostat, thread a correctly sized pipe into the inlet and use it to turn the gas valve (clockwise.) DO NOT OVER TIGHTEN or damage may result.

**NOTE:** Use an approved TEFLON® tape or pipe compound only on the threaded section of the gas control valve/thermostat that screws into the tank.

2. Reconnect the gas piping to the gas control valve/thermostat.

**NOTE:** Use an approved Teflon tape or pipe compound on the gas piping connections.

3. Reconnect the manifold tube, flame sense/hot surface igniter wire, power supply transformer, pressure switch/fan and display connector wires (Figure 24).
4. Fill the tank completely with water.

**NOTE:** To purge the lines of any excess air, keep the hot water faucet open for 3 minutes after a constant flow of water is obtained.

5. Turn on the gas supply and test the gas supply connections by brushing on an approved noncorrosive leak detection solution.

**IMPORTANT:** Do Not splash solution onto the electrical connections. Bubbles forming indicate a leak. Correct any leak found.

6. Check the operation of the burner by following the lighting instructions on the front of the water heater. With the burner lit, check the gas control valve/thermostat supply line, manifold tube connections for leaks.
7. Verify proper operation and then replace the outer door.
8. If additional information is required, contact Residential Technical Assistance by referencing the phone number on the water heater or on the front cover of this manual.