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# Fire Tube Style Heat Exchanger Detailed Cleaning Instructions

## ⚠ WARNING

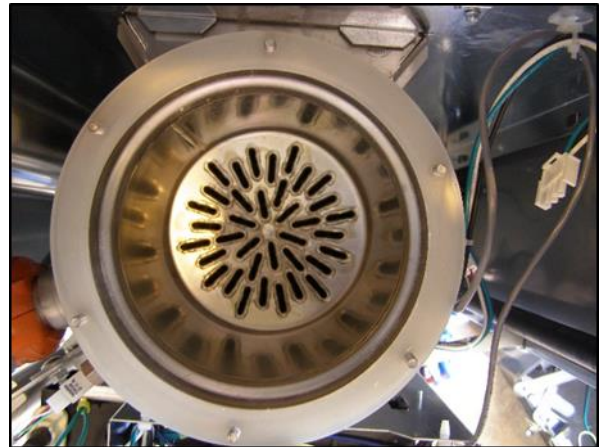
This boiler must be serviced by a qualified heating technician. Failure to properly maintain or service this appliance may result in property damage, serious injury to occupants or, death.

### Applicable Boilers:

- Tft60-399
- Vmax110(P)-153(P)
- FTV110(C), 150(C),190(C)

### Tools Required

- Pliers
- Phillips #2 screwdriver
- Flat Screwdriver
- 1/4" nut driver or wrench
- 5/16" nut driver or wrench (8mm Wrench Optional)
- 10mm wrench
- 1/2" Wrench
- 7/16" Wrench
- 9/16" Wrench
- Pipe wrench
- Torx T25, Torx T20 Screwdriver
- Adjustable wrench
- Household white vinegar
- Stiff bristle nonmetallic scrub brush (Cleaning kit 85259)



New Combustion Chamber (Tft/Vmax Shown)



Dirty Combustion Chamber (Tft/Vmax Shown)

## NOTICE

Read these instructions through before beginning your cleaning procedure

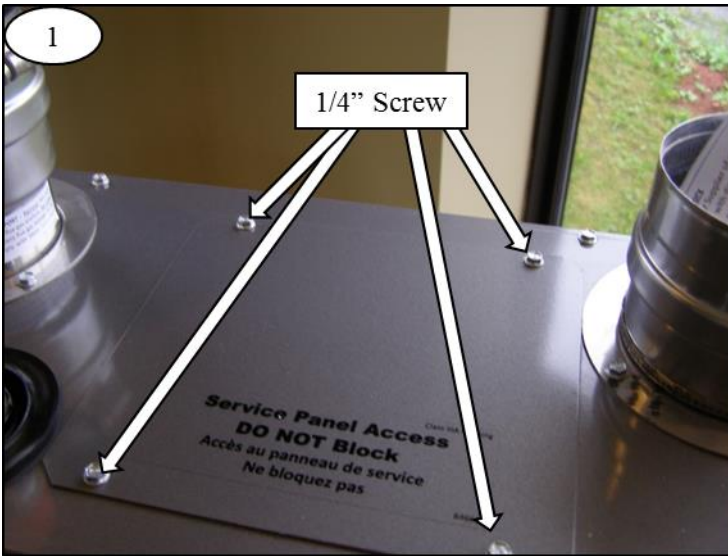
## ⚠ WARNING

Allowing any trinity boiler to operate with a dirty combustion chamber will not only adversely affect the operation of the boiler but will also void the warranty. Failure to clean the combustion chamber on a frequency that matches the needs of the application may result in fire, property damage, or death.



Boiler Cleaning Kit Part Number 85259(optional)

**Disassembly Instructions** (TFT 60-110 used for reference pictures)

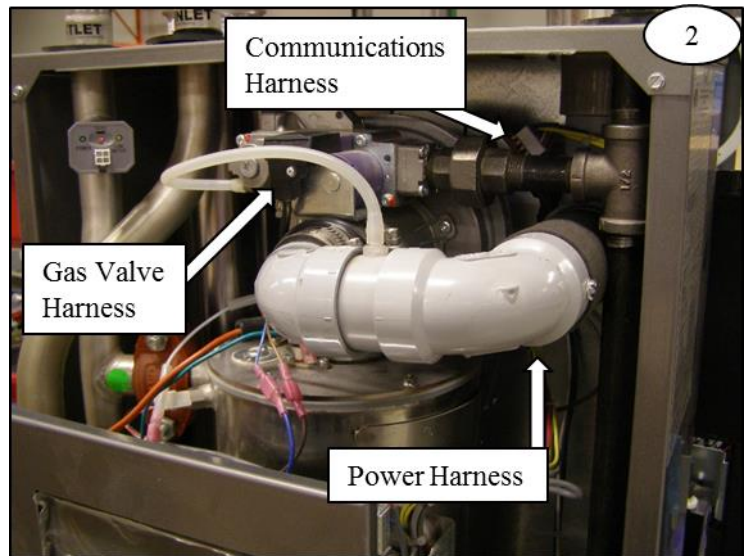


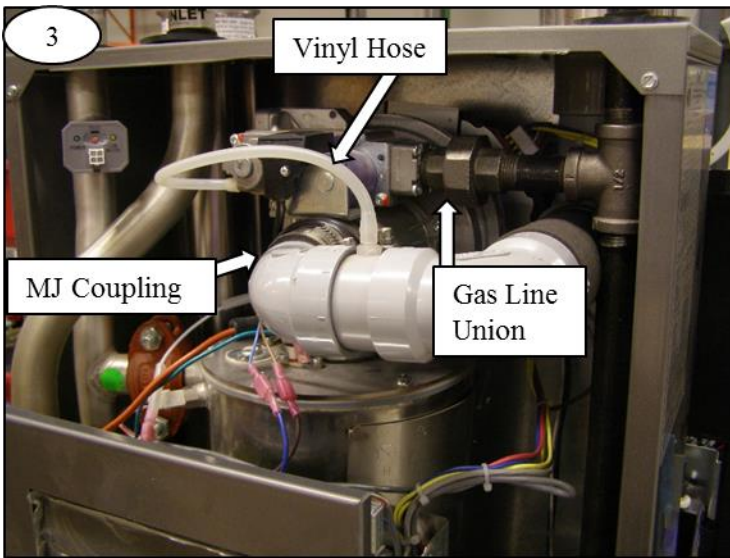
- Turn off power and gas to the boiler.
- Remove top service panel.
- Remove condensate drain from bottom of boiler.

**NOTICE**

Note the location of the wiring and tubing prior to disassembly.

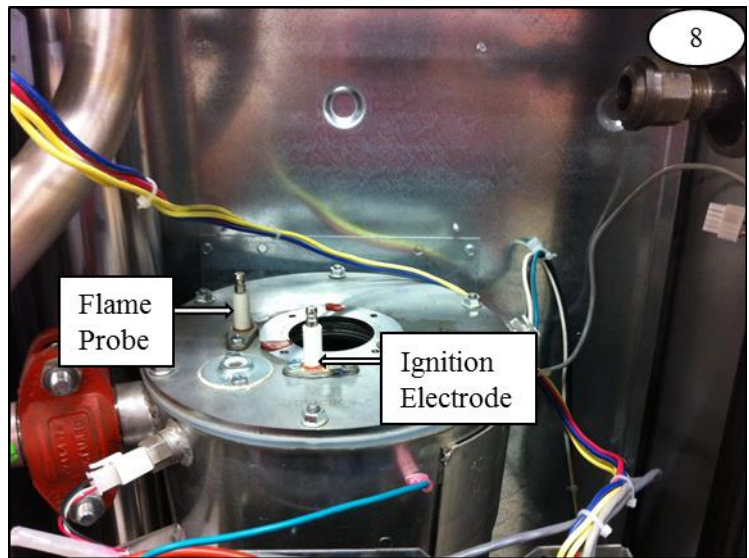
- Disconnect the wiring harnesses on the blower motor, flame rod igniter and gas valve.





- Detach the vinyl hose from the gas valve.
- Loosen the MJ coupling and remove the air inlet assembly from the Venturi of the gas valve.
- Disconnect the gas line (gas line union beside the gas valve).

- Detach the gas valve and Venturi assembly from the blower motor.
- Remove the blower motor and gasket.
- Remove the flame probe and ignition electrode.
- Remove the burner plate and burner plate gasket
- Remove the burner plate ceramic disk.



**NOTICE**

A screw driver with an 8” or 10” blade will be required to remove the rear screws on the blower motor on **older** Tft and Vmax models. Newer Models and FTV models will require a 5/16” or 8mm Wrench.

**NOTICE**

The burner plate and gasket will only fit on the heat exchanger in one position.



- Photograph or document the condition of the combustion chamber.
- Record the duration from installation to the first cleaning, as this will aid in developing a cleaning schedule.
- Use a vacuum with a high efficiency filter to remove any loose debris or dust, refer to Refractory Ceramic Fibers in the Installation and Operations Manual.
- Place a bucket under the condensate drain.

- Wet the inside of the combustion chamber with water. Use a garden hose with a trigger nozzle to direct pressurized water through the fire tubes.
- Water should pass through the fire tubes in the heat exchanger and exit via the condensate drain.
- Use dry rags or plastic to protect electrical components from being damaged by dripping or spraying water.
- Allow water to drain through the condensate drain.

- Use Brush from Cleaning kit, a stiff nylon brush, or other non-metallic brush to loosen the incrustations and any other contaminants that remain on the surface and openings of the fire tubes.
- Continue scrubbing and rinsing with clean water until the water runs clear from the condensate drain.
- Soak the combustion chamber with household white vinegar and allow it to sit for 5-10 minutes.
- Scrub the chamber again and then thoroughly flush the combustion chamber with plenty of clean water.



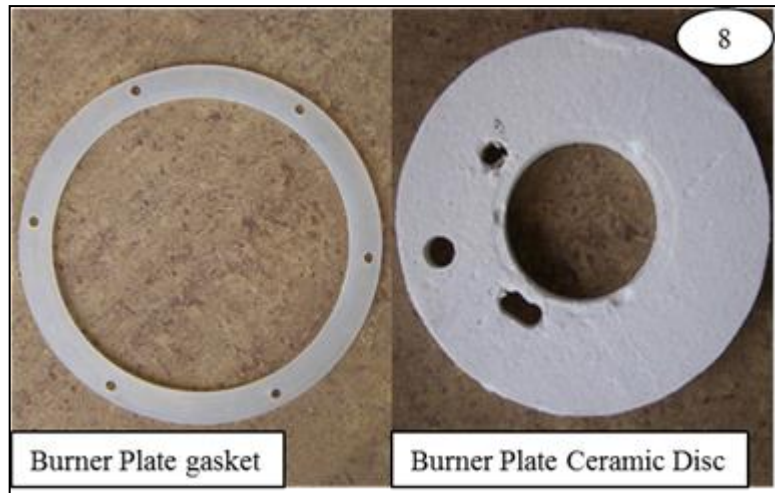


- Clean the condensate trap.
- Use dry rags for oily or sticky residue. Re-install the trap and pre-charge it with water.

**NOTICE**

Ensure that the ball in the condensate trap is floating freely prior to leaving the job site. Failure to do so may result in boiler malfunction causing property damage.

- Inspect the burner plate ceramic disc and the burner plate gasket for wear and damage.
- Replace any worn or damaged components.



- Reassemble in reverse order.
- Torque the nuts on the burner plate to 48 in. lb. (4 ft. lb.)
- If torque wrench is not available tighten the burner plate nuts until the burner plate gasket bulges slightly.

**Burner Plate Gasket** ±Do not over-tighten the burner plate nuts. This could result in gasket failure and a gas leak. This may result in fire, property damage, or death.

- After reassembly perform the following check for leaks:
- With gas turned off disconnect the communications harness (5pin connector) from the blower motor. This will cause the blower motor to run at high speed.
- Then temporarily block the exhaust vent.
- Use a mixture of soap and water to check for leaks throughout the boiler assembly.
- Confirm there are no leaks, then, remove the blockage from the exhaust vent. And reconnect the communication wire harness to the blower.
- Check for proper operation including smooth ignition.
- Perform a combustion analysis (refer to the Installation and Operations Manual).

**Parts for Service:** Refer to the parts list in the Installation and Operations Manual