Annual Maintenance Kit Instructions for

THE FT SERIES

Wall-Mounted, Modulating Gas, Condensing, Boilers and Combination Boilers

For Size **199,000** BTU/h

FOR YOUR SAFETY: This product must be installed and serviced by a professional service technician, qualified in hot water boiler and heater installation and maintenance. Improper installation and/or operation could create carbon monoxide gas in flue gases which could cause serious injury, property damage, or death. Improper installation and/or operation will void the warranty.

⚠ WARNING

If the information in this manual is not followed exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other unit.

WHAT TO DO IF YOU SMELL GAS

- Do not try to light any unit.
- Do not touch any electrical switch; do not use any phone in your building.
- Immediately call your gas supplier from a nearby phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

Installation and service must be performed by a qualified installer, service agency, or gas supplier.

⚠ AVERTISSEMENT

Assurez-vous de bien suivres les instructions données dans cette notice pour réduire au minimum le risque d'incendie ou d'explosion ou pour éviter tout dommage matériel, toute blessure ou la mort.

Ne pas entreposer ni utiliser d'essence ni d'autres vapeurs ou liquides inflammables dans le voisinage de cet appareil ou de tout autre appareil.

QUE FAIRE SI VOUS SENTEZ UNE ODEUR DE GAZ:

- Ne pas tenter d'allumer d'appareils.
- Ne touchez à aucun interrupteur. Ne pas vous servir des téléphones dansle bâtiment où vous êtes.
- Appelez immédiatement votre fournisseur de gaz depuis un voisin. Suivez les instructions du fournisseur.
- Si vous ne pouvez rejoindre le fournisseur de gaz, appelez le service des incendies.

L'installation et l'entretien doivent être assurés par un installateur ou un service d'entretien qualifié ou par le fournisseur de gaz.

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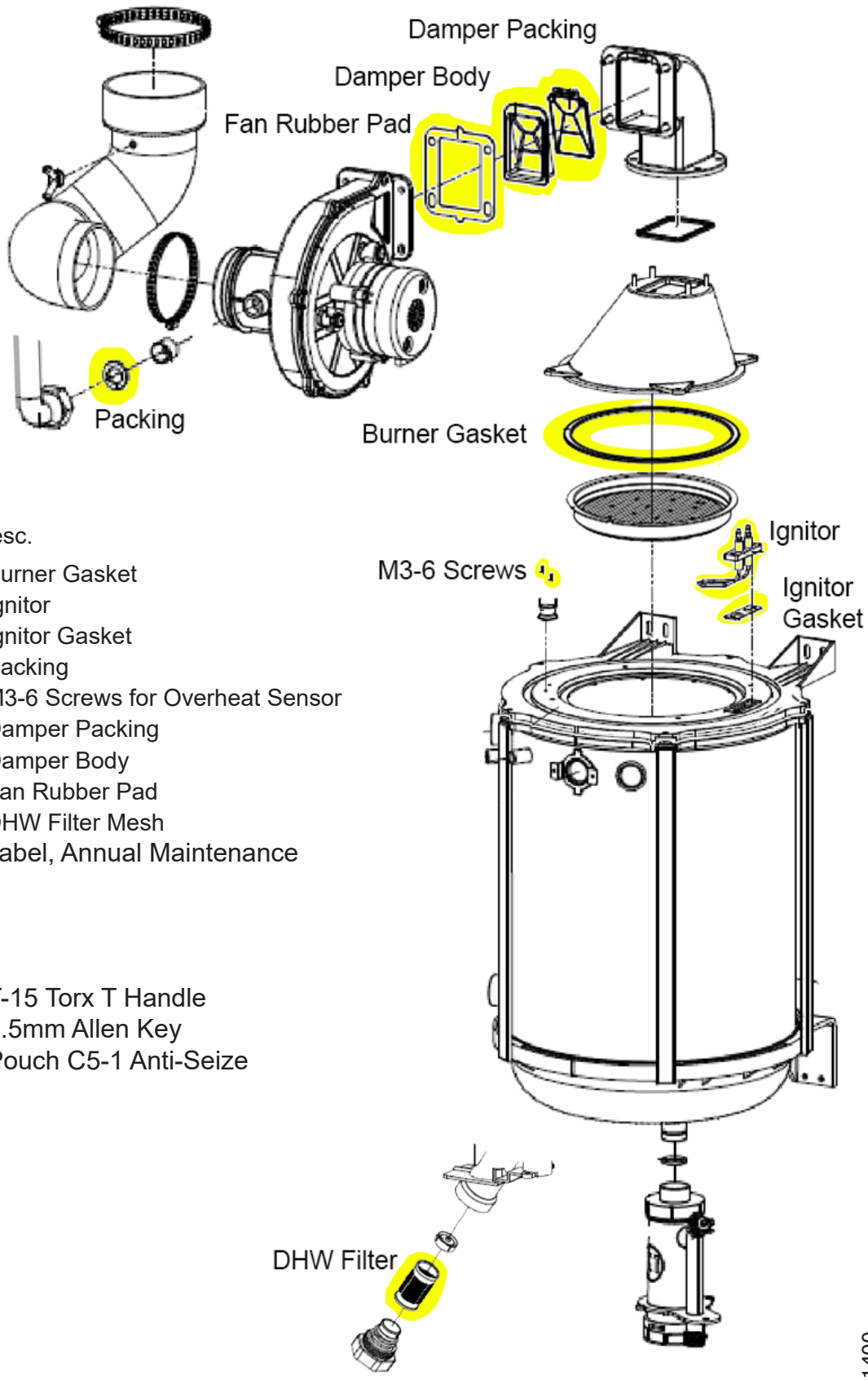

Included Parts

Part #	Qty.	Desc.
FT1824	1	Burner Gasket
FT1763	1	Ignitor
FT1316	1	Ignitor Gasket
FT1710	1	Packing
FT1062	2	M3-6 Screws for Overheat Sensor
FT1770	1	Damper Packing
FT1915	1	Damper Body
FT1082	1	Fan Rubber Pad
FT1120	1	DHW Filter Mesh
H2415700	1	Label, Annual Maintenance

Included Tools

M00079	1	T-15 Torx T Handle
M00080	1	2.5mm Allen Key
M00078	1	Pouch C5-1 Anti-Seize

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Maintenance Item Checklist	✓
Check the power source. Follow all 'Lock-Out and Tag Procedures' (if required) prior to turning off power. Then make sure that the power is off before you visually and physically inspect all power connections. Check that the main power is installed per all local requirements. If there are any incorrect installation issues, or wear, or damage to the power supply, make all needed repairs or replacements.	
Check the vent pipe. Visually inspect the flue gas vent pipe and screen for any signs of blockage, leakage or deterioration of the piping. Make all needed repairs or replacements.	
Check the air inlet pipe. Visually inspect the air inlet to be sure it is unobstructed. Inspect entire length of air piping for ensuring that piping is intact, and all joints are properly sealed. Make all needed repairs or replacements.	
Check the vent & intake terminal screens (rodent screen). Visually inspect the terminal screen and clean any debris from the terminals. Make all needed repairs or replacements.	
Check the pressure relief valve(s). Inspect and test the boiler relief valve(s). Also check the pipes for any signs of weeping or leakage. Make all needed repairs or replacements.	
Clean / check the condensate outlet. Clean the condensate trap regularly. While the boiler is running, check the discharge end of the condensate drain tubing. Make sure that no flue gas is escaping from the condensate drain tubing. Condensate trap needs to be refilled to prevent flue gas leaking. Make all needed repairs or replacements.	
Check the boiler piping (gas and water). Visually inspect for leaks around internal water piping. Also inspect external water piping, circulators, relief valve and fittings. Repair any leaks found. Test repair for leaks, put boiler back in service.	

Combustion System Checks & Maintenance

• Dust and deposits in the FT's airway, burner, and combustion chamber can affect the combustion system and reliability of the unit. An important part of the annual service procedure for the FT is to confirm the heat exchanger is clean, and the combustion system is properly calibrated. The procedure below describes how to disassemble the airway, burner and combustion chamber to ensure it is clean, and not restricted by dust or deposits. Once properly cleaned the combustion system should be re-calibrated to ensure proper performance.

Following the steps in Section 4.13 of the FT Series Installation and Operating Instructions, perform a combustion test and record the results below. The combustion test requires a flue gas analyzer to measure combustion quality. Flue gas analyzers require periodic maintenance and calibration to provide accurate readings. If you do not have flue gas analyzer, or if your flue gas analyzer has not been properly maintained do not attempt to calibrate the boiler!

Boiler Firing Mode	Recommended CO_2 – **Natural Gas**	Recommended CO_2 – **LP Gas**	Record Actual CO_2 Readings
Low Fire	8% - 10%	9% - 10.5%	
High Fire	8.5% - 10.5%	9.5% - 11%	

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NOTE: Allow the boiler to fire for at least 90 seconds before performing a combustion test! Combustion readings may vary between start-up and steady state operation. Performing a combustion test at steady state operation provides the most accurate readings is essential to proper calibration of the boiler

If the CO_2 readings are outside the recommended ranges, do not attempt to adjust the boiler until the airway and combustion chamber have been fully cleaned!

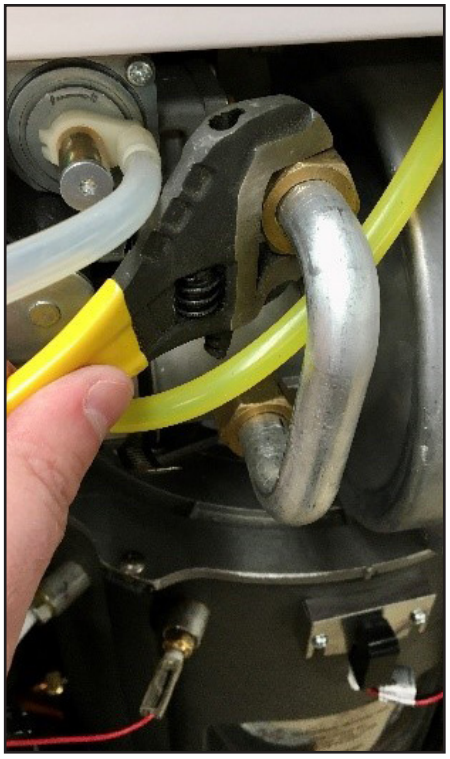
Disassembly / cleaning the boiler

Step 1. Remove the front panel by unscrewing the four screws that hold the front panel to the boiler casing.

Step 2. Turn off power to the FT unit by switching the black rocker switch to the “Off” position. Unplug the power cord to ensure the unit is powered down and turn off the gas supply to the boiler before beginning work. Close isolation valves on the boiler supply and return piping to seal off the boiler from the hydronic system. Place a bucket under the boiler relief valve outlet. Lift the handle on the boiler relief valve to vent off boiler pressure. When servicing combi boilers, close the isolation valves on the DHW inlet and DHW outlet. Place a bucket under the DHW relief valve outlet. Lift the handle on the relief valve to vent off DHW pressure.

Step 3. Loosen the nut where the gas line connects to the right side of the gas valve by ½ turn. Remove the nut connecting the gas line to the fan venturi and rotate the gas line away from the fan.

Step 4. Loosen the hose clamps on each end of the air intake hose and remove the hose to provide access to combustion air fan and lower burner case. This may include removing the gas line reference tubing (to the gas valve and air pressure switch.



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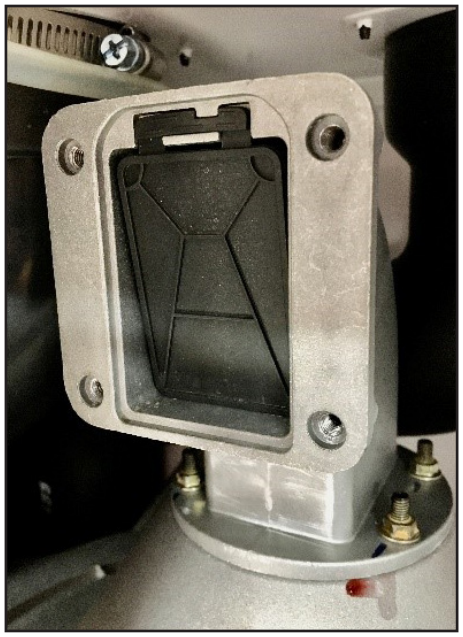
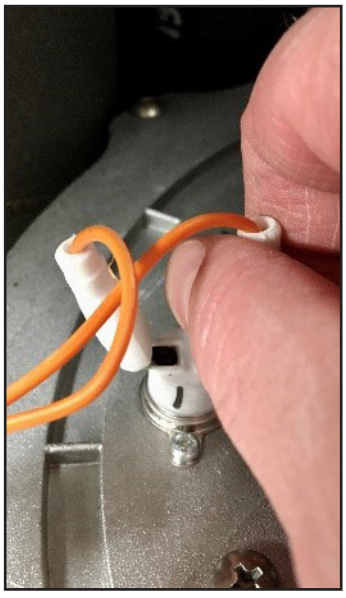
Step 5. Using a 4mm hex key, remove the four hex screws to release the combustion fan from the 90-degree air tube. Remove the rubber gasket, the damper body, and the damper packing (flapper valve). Replace these components with the new parts in the kit when re-assembling the boiler.

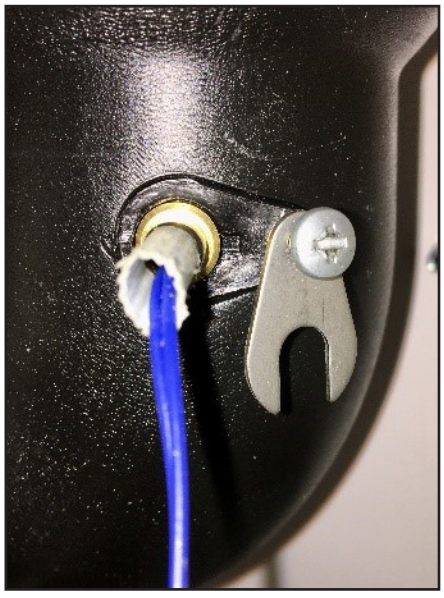


Step 6. Unplug the wires from the Overheat Sensor to improve access to the lower burner case if necessary.

Step 7. Loosen the retainer for the exhaust temperature sensor and remove the sensor from the exhaust pipe if you require more clearance to lower burner case.

Step 8. Loosen the igniter mounting screws from the lower burner case, then remove the igniter and igniter gasket. Replace the igniter and ignitor gasket with the new parts in the kit when re-assembling the boiler.





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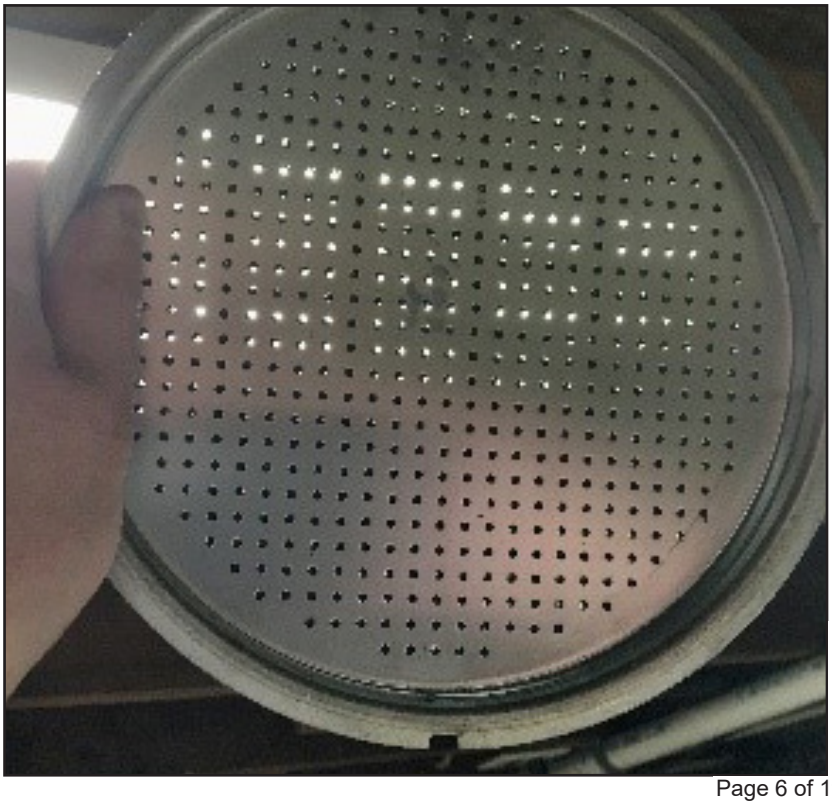
Step 9. Remove the four mounting screws from the upper burner case and separate it from the lower burner case. The burner gasket may cause the upper burner case to stick.

Step 10. Press or pull on the 90-degree elbow mounted to the upper burner case to break it free from the burner gasket if necessary.

Step 11. Remove the burner gasket from the burner flange. Gently lift the burner out of the lower burner case.

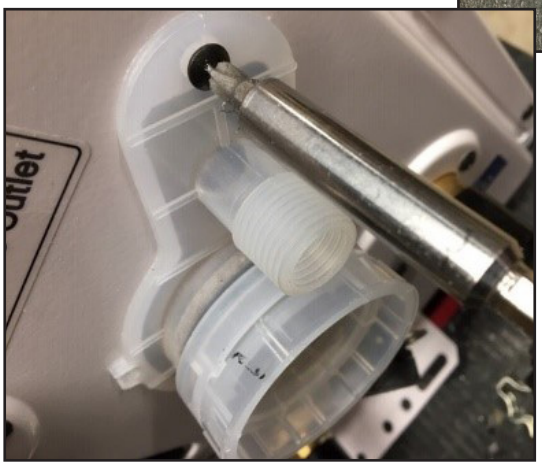
Step 12. Pry or pull the burner from the lower burner plate. Use caution to avoid bending the burner flange.

Step 13. Remove the burner and wipe any debris off the top with soft brush or rag. Do not brush the bottom surface of the burner. Blow out any dust or debris with an air compressor or shop vacuum. Hold the burner up in front of a light to confirm the perforations are clear and not blocked by debris.



Step 14. Inspect the combustion chamber for deposits and debris. Remove deposits in the combustion chamber with a damp rag – DO NOT use metallic brushes or any type of detergent inside the heat exchanger. Be sure to clean the inside surfaces of the combustion chamber observation window and the flame sensor window.

Step 15. If the tube sheet or tubes appear dirty or fouled, flush the heat exchanger. Begin by removing the condensate trap from the flue collector. Remove the four Philips head screws and air hose connected to the blocked condensate switch. Install a short piece of 1” ID hose to the condensate outlet connection on the flue collector. Run the hose to a bucket or drain to catch water while flushing the heat exchanger. Spray water into the fire tubes to flush any deposits through the tubes into the condensate trap. DO NOT use any type of detergent inside the heat exchanger.



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Step 16. Disassemble and clean any debris or build-up from the condensate trap. Ensure the check ball moves freely up and down inside the trap and the clear tube between the condensate trap and air pressure switch is clean and dry. Reassemble and re-install the trap once it is clean and the boiler heat exchanger has been flushed.

Step 17. Place a bucket under the boiler and remove the clip from the CH return filter. Position the bucket to catch water that drains from the filter housing. Twist the and pull the filter straight down to remove it from boiler. Clean any debris with a small brush and water and re-install the filter.

Additionally, for Combi Models:

Step 18. Locate the DHW filter at the bottom of the boiler behind the condensate trap. Remove the clips from the DHW filter. Position a bucket under the boiler to catch water that drains from the filter housing. Remove the clips from the DHW filter. Twist and pull the DHW filter straight down to remove it from boiler. Hold the screen upright and gently twist it counterclockwise to remove it from the filter cap. Use a blunt tool to push the flow restrictor from the top of the screen. Clean the flow restricter with a rag or soft brush and install it gasket-side up in the top of the new screen. Install the new DHW filter screen on the filter cap and twist it clockwise to lock it in place. Install the DHW filter ensuring it is fully seated in the filter body before inserting the clips. Install the flow restricter gasket side up if it is dislodged during cleaning. Flushing the DHW heat exchanger is not a routine maintenance item under normal conditions. If DHW performance is not restored after the DHW filter has been cleaned and properly re-installed, refer to the cleaning procedure in Section 8.2 of the FT unit Installation and Operating Instructions.

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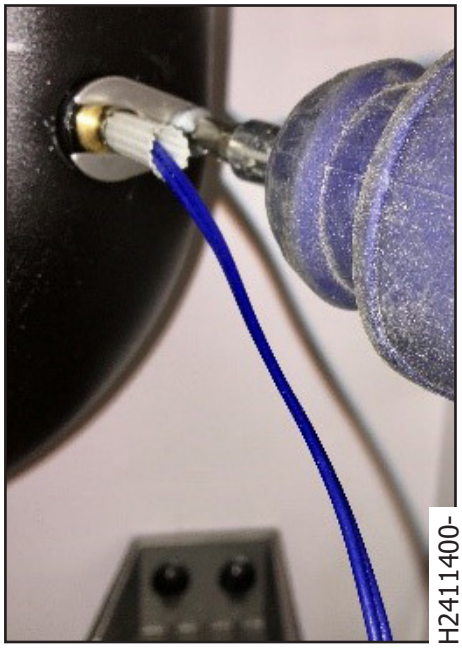
Step 19. To re-install the burner, align the notch in the burner flange with the insert in the lower burner case, and gently press the burner into the case. Install the new burner gasket on top of the burner flange. Ensure the gasket is seated on the burner in the groove around the lower burner case. Clean any oxidation or debris from the inside of the upper burner case before re-installing it on the boiler.

Step 20. Install the upper burner case, the igniter gasket and igniter. Prepare the new igniter for installation by confirming the gap between the electrodes is 1/8". Install the new igniter with a the new ignitor gasket. Apply a small amount of high-temp anti-seize paste on the screws to facilitate removal during future service. Snug the screws then torque an additional ¾ turn.

Step 21. Re-install the overheat temperature sensor if it was removed during disassembly. If the original screws were damaged during disassembly, use the M6 screws included with the kit. Apply a small amount of high-temp anti-seize paste on the screws to facilitate removal during future service.



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Step 22. Reconnect the combustion air pipe to the intake air adapter and snug the hose clamp.

Step 23. Re-install the fan / venturi assembly. Be sure the flapper valve (packing) tabs are properly seated in the mounting grooves at the top of the 90-degree air tube. Use the upper right fan mounting screw to hold the fan gasket in place. Install the damper body in the center opening of the fan gasket. Install the damper body so the larger end of the taper is at the bottom and the smaller end of the taper is at the top. Align the damper body with the damper and 90-degree air tube and snug the mounting screw. Hold the fan / venturi in place while starting the other mounting screws to maintain alignment. Connect the air tube to the venturi and snug the hose clamp. Reconnect the small diameter tubing from the air tube to the air pressure switch and gas valve (if applicable) and the blocked vent switch if it was disconnected during disassembly.

Step 24. Reconnect the orange wires to the overheat temperature sensor. Plug the Molex connectors into the blower and the blocked vent switch. Connect the red ignition leads to the igniter.

Step 25. Reconnect the gas line to the venturi. Be sure the green paper gasket is seated at each gas line connection. Both the natural gas and LP fuel orifices are tapered. Install the orifice so the taper is facing outward – toward the front door of the boiler. The taper should be visible when installed in the venturi. Tighten both ends of the gas pipe.

Step 26. Re-confirm that all gas, wiring, and air line connections are complete.

Step 27. Check the cap on the air vent at the top of the boiler to confirm it is open one turn. Open the isolation valves on the CH Supply and CH Return so the boiler can fill with water. Check the CH filter at the bottom of the boiler for leaks.

Additionally for Combi Models:

Step 28. Open the isolation valves on the DHW inlet and outlet piping. Open a hot water faucet and allow the water to run until all of the air has been bled from the boiler. Check the DHW filter at the bottom of the boiler for leaks.

Step 29. Final Combustion Test and Calibration:

- The combustion test requires a manometer to measure incoming fuel pressure and a flue gas analyzer to measure combustion quality. Flue gas analyzers require periodic maintenance and calibration to provide accurate readings. If you do not have flue gas analyzer, or if your flue gas analyzer has not been properly maintained do not attempt to calibrate the boiler!
- Following the steps in Section 4.13 of the FT unit Installation and Operating Instructions, perform a combustion test and record the results below. The combustion test requires a flue gas analyzer to measure combustion quality.
  NOTE: Allow the boiler to fire for at least 90 seconds before performing a combustion test! Combustion readings may vary between start-up and steady state operation. Performing a combustion test at steady state operation provides the most accurate readings and is essential to proper calibration of the boiler!
- If the CO_2 readings are below the recommended ranges, turn the gas valve fine adjustment screw clockwise to increase CO_2 levels, counterclockwise to decrease CO_2 levels.

Boiler Firing Mode	Recommended CO_2 – **Natural Gas**	Recommended CO_2 – **LP Gas**	Record Actual CO_2 Readings
Low Fire	8% - 10%	9% - 10.5%	
High Fire	8.5% - 10.5%	9.5% - 11%	

NOTE: The gas valve fine adjustment screw is precise and should only be adjusted in very small increments! A good rule of thumb is one degree of rotation (there are 360 degrees in a full turn) should equate to an increase or decrease in the CO_2 level of approximately 1/10 of a percent (.1%). It is better to make several small adjustments re-testing the flue products after each adjustment to bring the CO_2 into the recommended range, than to attempt a single large adjustment.

If the boiler was operating at or near the recommend CO_2 levels before cleaning, it should require very minor – if any adjustments after cleaning.

Step 30. Look for the Annual Service & Calibration' label on the unit and fill it out with the Date, CO_2 readings and the name of the service technician. If a label is not already on the unit, use the label that is included with this annual service kit.

THE FT SERIES

Annual Service & Calibration

Date:	Low Fire CO2:	High Fire CO2:	Performed By:
	%	%	
	%	%	
	%	%	
	%	%	
	%	%	

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