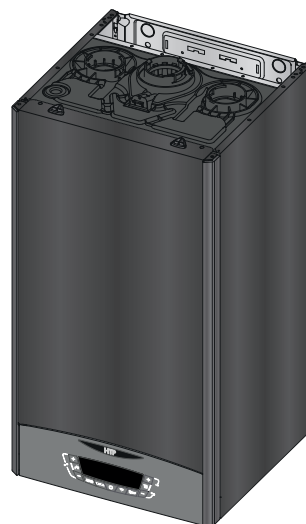




# ***ELU and EFTU***

## High Efficiency Condensing Wall-Hung Gas Boilers

### User's Information Manual



NSF/ANSI 372



Globally Recognized. Industry Respected.

Heat Exchanger Bears the ASME "H" Stamp

### **! 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 GASOLINE OR OTHER FLAMMABLE VAPORS AND LIQUIDS IN THE VICINITY OF THIS OR ANY OTHER BOILER.**

#### **WHAT TO DO IF YOU SMELL GAS**

- Do not try to light any boiler.
- Do not touch any electrical switch.
- Do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department. Installation and service must be provided by a qualified installer, service agency, or the gas supplier.

Improper installation, adjustment, alteration, service, or maintenance could void product warranty and cause property damage, severe personal injury, or death.

California Proposition 65 Warning: This product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

### **NOTICE**

The manufacturer reserves the right to make product changes or updates without notice and will not be held liable for typographical errors in literature.

The surfaces of these products contacted by potable (consumable) water contain less than 0.25% lead by weight as required by the Safe Drinking Water Act, Section 1417.

**NOTE TO CONSUMER: PLEASE KEEP ALL INSTRUCTIONS FOR FUTURE REFERENCE.**

## FOR YOUR SAFETY READ BEFORE OPERATING

**WARNING:** If you do not follow these instructions exactly, a fire or explosion may result, causing property damage, personal injury or loss of life.

- A. This appliance does not have a pilot. It is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.
- B. **BEFORE OPERATING** smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.

### WHAT TO DO IF YOU SMELL GAS

- Do not try to light any appliance
- Do not touch any electric switch; do not use any phone in your building
- Immediately call your gas supplier from a neighbor's phone. Follow the gas suppliers' instructions.

- If you cannot reach your gas supplier, call the fire department.

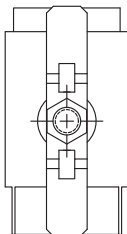
- C. Use only your hand to turn the gas control knob. Never use tools. If the handle will not turn by hand, don't try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.

- D. Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

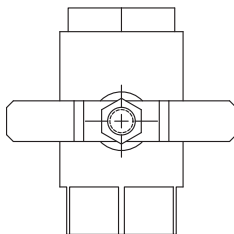
## OPERATING INSTRUCTIONS

1. STOP! Read the safety information above.
2. Set the thermostat to lowest setting.
3. Turn off all electric power to the appliance.
4. This appliance is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.

GAS VALVE  
ON



GAS VALVE  
OFF



5. Remove front cover.
6. Turn gas shutoff valve to "off". Handle will be across the piping, do not force.
7. Wait five (5) minutes to clear out any gas. If you then smell gas, STOP! Follow "B" in the safety information above on this label. If you don't smell gas, go to next step.
8. Turn gas shutoff valve to "on". Handle will be in line with piping.
9. Install Front Cover.
10. Turn on all electric power to appliance.
11. Set thermostat to desired setting.
12. If the appliance will not operate, follow the instructions "To Turn Off Gas To Appliance" and call your service technician or gas supplier.

## TO TURN OFF GAS TO APPLIANCE

1. Set the thermostat to lowest setting.
2. Turn off all electric power to the appliance if service is to be performed.
3. Remove Front Cover.
4. Turn gas shutoff valve to "off". Handle will be across the piping. Do not force.
5. Install Front Cover.

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## WARNING

The combustion chamber insulation in this product contains ceramic fiber material. Ceramic fibers can be converted to cristobalite in very high temperature applications. The International Agency for Research on Cancer (IARC) has concluded, "Crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (Group 1)." DO NOT, UNDER ANY CIRCUMSTANCES, OPEN THE COMBUSTION CHAMBER OF THIS BOILER! The combustion chamber of this boiler may be opened by a qualified service technician ONLY. FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN SUBSTANTIAL PROPERTY DAMAGE, SEVERE PERSONAL INJURY, OR DEATH.



## **WARNING**

DO NOT attempt to install, repair, or service this boiler. Contact a qualified technician if the boiler needs repair or maintenance. Ask your gas supplier for a list of qualified service providers.

DO NOT attempt to disassemble this boiler. If repairs are required, contact a qualified service technician.

All safety devices must be tested by the installer / qualified service technician after the boiler is installed.

Always verify proper boiler operation with the qualified service technician after servicing.

The gas ignition system components must be protected from water (dripping, spraying, rain, etc.) during boiler operation and service (circulator replacement, condensate trap, control replacement, etc.)

DO NOT touch the exhaust vent or hot water pipes during boiler operation.

This boiler features a factory installed overheating prevention device. This limit will shut down the boiler in the event that the boiler water temperature exceeds the set point of the limit control. Certain local codes require additional water temperature limiting devices.

### A. Before Operating the Boiler

#### 1. Check the Gas Type

When operating the boiler for the first time, ensure the connected gas type matches the boiler gas type. HTP boilers are factory set to operate on Natural Gas. BEFORE OPERATING WITH PROPANE the boiler must be converted to Propane operation by a qualified service technician, using the conversion kit specific to the boiler model.

## **DANGER**

Attempting to operate this boiler on Propane when it has not been correctly converted to Propane operation will result in improper boiler operation resulting in property damage, personal injury, or death.

#### 2. Check the Power (120V / 60 Hz)

Ensure the boiler is connected to a properly rated power supply.

## **WARNING**

Failure to connect the boiler to the properly rated power supply described above (120V / 60Hz) could result in property damage, personal injury, or death.

#### 3. Check the Automatic Feed Valve

Ensure the automatic feed valve to the boiler is providing the proper pressure to the central heating (CH) loop.

#### 4. Check the Gas Shut-Off Valve

Ensure the manual gas shut-off valve is open. The boiler will not operate unless it is supplied with gas.

## **WARNING**

It is the user's responsibility to know the location of the gas shut-off valve and how to operate it. Immediately close the gas shut-off valve if the boiler is subjected to fire, overheating, flood, physical damage, or any other damaging condition that might affect the operation of the unit. Have the boiler checked by a qualified technician before resuming operation.

Call a qualified service technician if repair of the gas pipeline or replacement of the gas regulator is necessary.

#### 5. Check the area around the boiler.

Remove any combustible or flammable materials from the area around the boiler and do not hang anything from the exhaust vent pipe.

## **WARNING**

DO NOT store flammable or combustible materials near this boiler. DO NOT use spray paint, hair spray, or any other flammable sprays near the boiler or near the exterior fresh air intake pipe termination. DO NOT place any items in or around the exterior exhaust vent termination and/or fresh air intake pipe that could restrict or block the flow in or out of the vent system.

Exhaust gas entering the living space can cause carbon monoxide poisoning. If exhaust gas should leak into the living space:

- Shut down the boiler.
- Close the gas valve.
- Open windows for ventilation.

Immediately call a qualified service technician to inspect the boiler and exhaust vent pipe. Any damages to the exhaust vent pipe should be repaired immediately.

### B. Primary Water

- Do not attempt to clean the heating system. Call a qualified service technician for service.
- If you notice any leaks, immediately call a qualified service technician. Leaks in boiler or piping must be repaired at once.

### C. Freeze Protection

## **WARNING**

Closed loops that use glycol as heat transfer fluid must be serviced periodically. Glycol can break down over time, become acidic, and attack gaskets and seals in boilers. This can result in property damage, severe personal injury, or death.

Each glycol manufacturer has different recommendations for testing and replacement. Do not test glycol quality yourself. Have your qualified service technician check glycol quality during annual servicing. If you are unsure when your glycol was last tested, call a qualified service technician to test and replace glycol, if necessary.

DO NOT shut off the boiler for long periods of time during potentially freezing conditions. If the boiler must be shut off during potentially freezing conditions (is not to be used for an extended period of time), shut down the system and drain it of water. Shut off the gas and cold water supply valves.

Ensure exposed water pipes are thermally insulated to prevent damage due to freezing conditions. If the boiler is not to be used for an extended period of time during freezing conditions, shut down the system and completely drain the boiler.

If the water pipes should freeze, thaw the pipes with a hair dryer or other electric heating device. If this does not work, call a qualified service technician.

### D. Combustion Air Contamination Prevention

## **DANGER**

Do not operate the boiler if its combustion air intake is located in or near one of the areas or in the vicinity of products listed in Table 1. These areas will always contain hazardous contaminants that can form strong acids while passing through the burner and vent system. These acids will corrode the boiler's heat exchanger, burner components and vent system, resulting in flue gas spillage and/or water leakage, possible substantial property damage, severe personal injury, or death. If the boiler combustion air intake is located in any area likely to cause or contain contamination, or if products which would contaminate the air cannot be removed, the intake must be re-piped and terminated to another location.

**DO NOT** re-pipe ventilation system on your own. Call a qualified service provider for assistance.

Products to Avoid	Areas Likely to Have Contaminants
Spray cans containing fluorocarbons	Dry cleaning / laundry areas and establishments
Permanent wave solutions	Swimming pools
Chlorinated waxes / cleaners	Metal fabrication plants
Chlorine-based swimming pool chemicals	Beauty shops
Calcium chloride used for thawing	Refrigeration repair shops
Sodium chloride used for water softening	Photo processing plants
Refrigerant leaks	Auto body shops
Paint or varnish removers	Plastic manufacturing plants
Hydrochloric or Muriatic acid	Furniture refinishing areas and establishments
Cements and glues	New building construction
Antistatic fabric softeners used in clothes dryers	Remodeling areas
Chlorine-type bleaches, laundry detergents, and cleaning solvents	Garages and workshops
Adhesives used to fasten building products	

Table 1 - Products and Areas Likely to Have Contaminants

**NOTE: DAMAGE TO THE Boiler CAUSED BY EXPOSURE TO CORROSIVE VAPORS IS NOT COVERED BY WARRANTY.** (Refer to the limited warranty for complete terms and conditions.)

E. General Cautionary Statements

The boiler is protected from malfunctioning by means of internal checks performed by the electronic microprocessor PCB, which stops the boiler from operating if necessary. In the event of the boiler being shut off in this manner, a code appears on the display which refers to the type of shut-off and the reason behind it.

There are two types of shut-off:

1. Blocking Error

A blocking error means the boiler will restart automatically as soon as the problem which caused the error clears or is removed; the error is indicated by the «ERROR» symbol which appears on the display followed by the error code.

For example, if the boiler indicates a 110 error code, the error will clear automatically when the CH temperature decreases. The boiler will restart and operate normally.

**NOTE:** Contact a qualified service technician if the error continues to occur.

In the event of **Error 108 - Shut-off due to insufficient water pressure inside the heating circuit** - turn the boiler off. Turn the external electric power to the OFF position. Shut off the main gas valve and contact a qualified service technician to check for any leaks of water.

2. Lockout Error

A lockout error means the boiler does not return to operation after the error condition goes away. The **Reset** button must be pressed on the control panel to restore boiler operation.

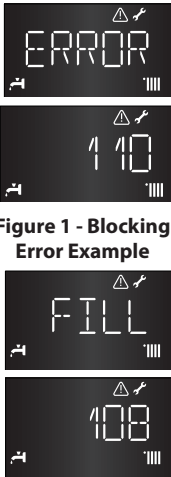


Figure 1 - Blocking Error Example



Figure 2 - Shut-Off Error for Low Water Pressure

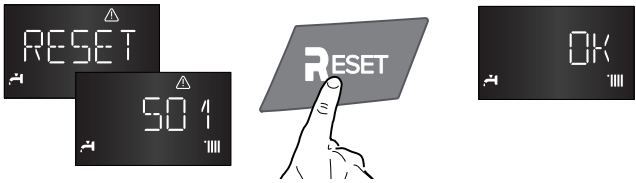


Figure 3 - Lockout Error Example

If the error condition occurs often contact a qualified service technician.

**WARNING**

**Important**  
Contact a qualified service technician for assistance if a Lockout Error occurs frequently. Repeated Lockout Error conditions could indicate a serious error with the boiler or installation. Failure to contact a qualified service technician to troubleshoot the error could result in substantial property damage, serious personal injury, or death.

**DANGER**

If the boiler signals the error again after a reset, turn off the boiler. Move the external electric switch to the OFF position. Close the gas valve and contact a qualified service technician.  
**DO NOT** attempt to repair or service this boiler. Contact a qualified service technician if the boiler needs repair or maintenance. Ask your gas supplier for a list of qualified service providers.

**CAUTION**

Ensure each zone valve connected to the boiler is open while the boiler is operating. Doing so ensures proper heating system operation.

**DO NOT** wipe the boiler or control panel with a wet cloth. Doing so may result in an electric shock, substantial property damage, premature boiler failure, severe personal injury, or death.

**DANGER**

Always be careful when opening a hot water faucet or draining water from the boiler. Water temperature over 125°F can instantly cause severe burns or death from scalds. Children, disabled, and elderly are at the highest risk of being scalded. See Installation Manual before setting temperature at boiler. Feel water before bathing or showering!

Approximate Time / Temperature Relationships in Scalds	
120°F	More than 5 minutes
125°F	1 1/2 to 2 minutes
130°F	About 30 seconds
135°F	About 10 seconds
140°F	Less than 5 seconds
145°F	Less than 3 seconds
150°F	About 1 1/2 seconds
155°F	About 1 second

Table 2 - Time and Temperature Relationship in Scalds



## Part 3 - Maintenance Schedule

### A. Owner Maintenance

#### Periodically

- Check area around the boiler.
- Check and remove any blockage from the outdoor exhaust vent and intake pipe terminations. DO NOT perform this maintenance if exhaust vent and intake pipe terminations are in difficult to reach locations.
- Check the CH loop pressure gauge. Normal CH pressure will range from 15 - 30 psi.

#### Monthly

- **VERY IMPORTANT:** Check / test carbon monoxide detectors to ensure proper operation per the manufacturer's instructions.
- Check exhaust vent and intake piping.
- Check exhaust vent and intake pipe bracing. Ensure bracing is undamaged and in good condition.
- Check the pressure relief valve.
- Check the condensate drain system.
- If applicable, check the condensate neutralizer and ensure it is full of condensate neutralizing marble chips.

#### Every 6 Months

Check boiler piping and gas supply piping for corrosion or signs of potential leakage.

### B. Qualified Service Technician

The following maintenance should be performed by a qualified service technician annually:

#### General

- Attend to any reported problems.
- Inspect the interior of the boiler cabinet area; clean and vacuum if necessary.
- Clean the condensate trap and fill with fresh water.
- If applicable, check the condensate neutralizer and ensure it is full of condensate neutralizing marble chips.
- Check for leaks: Water, gas, flue, and condensate.
- Verify exhaust vent and intake piping are in good condition and sealed tight.
- Check exhaust vent and intake pipe bracing. Ensure bracing is undamaged and in good condition.
- Check boiler water pressure, piping, and expansion tank.
- Check control settings.
- Check ignition electrode. Sand off any white oxide. Clean and reposition.
- Check ignition and ground wiring.
- Check all control wiring and connections.
- Check burner flame pattern (stable and uniform).

#### Additional Items if Combustion or Performance is Poor

- Ensure boiler is connected to the proper gas type.
- Ensure boiler is connected to proper electrical power supply.
- Check the water valves and gas shut-off valve. Ensure all are fully open.
- Clean heat exchanger and flue ways.
- Remove burner assembly and clean burner head using compressed air only.

The qualified service technician should review service with the owner after the maintenance items are completed.

## Part 4 - Maintenance Procedures



### DANGER

The boiler must be inspected and serviced annually, preferably at the start of the heating season, by a qualified service technician. In addition, the maintenance and care of the boiler as outlined in this manual must be performed by the user/owner to assure maximum efficiency and reliability. Follow the maintenance procedures given throughout this manual. Failure to perform the service and maintenance or follow the directions in this manual could damage the boiler or system components, resulting in substantial property damage, severe personal injury, or death.

### A. Daily Maintenance - To Be Performed by Owner

#### Check the Surrounding Area



### DANGER

To prevent the potential of substantial property damage, severe personal injury, or death, eliminate the materials listed in Table 1 from the area surrounding the boiler and the vicinity of the combustion air intake. If contaminants are found:

- Remove products immediately from the area.
- If contaminants have been there for an extended period, call a qualified service technician to inspect the boiler for possible damage from acid corrosion.

If products cannot be removed, immediately call a qualified service technician to re-pipe the combustion air intake piping away from the contaminated areas.

#### Combustible/Flammable Materials

Do not store combustible materials, gasoline, or other flammable vapors or liquids near the boiler. If found, remove these materials immediately.

#### Air Contaminants

If allowed to contaminate combustion air, products containing chlorine or fluorine will produce acidic condensate that will cause significant damage to the boiler. Read the list of potential contaminants and areas likely to have these contaminants in Table 1. If any of these contaminants are in the room where the boiler is located, or combustion air is taken from one of the areas listed, the contaminants must be removed immediately or the intake pipe must be relocated to another area.

#### Check the Power Source

Make sure the power cord is properly connected. The main power line is connected to the manual switch box inside the boiler.

#### Check the Status of the Display Panel

Observe the Display Panel to ensure the boiler is powered on and check for any error codes. Clear any debris from the panel.

#### Check Exhaust Vent and Intake Pipe Terminations

Verify that the boiler exhaust vent and intake pipe terminations are clean and free of obstructions. Remove any debris from the exhaust vent and intake pipe openings. If removing the debris does not allow the boiler to operate correctly, contact your qualified service technician to inspect the boiler and the vent system.

#### Ensure the Boiler Cabinet is Closed

Ensure the boiler cabinet is closed. The cabinet must be closed while the boiler is running.

#### Check Pressure Gauge


- Check the CH loop pressure gauge.
- Normal CH pressure will range from 15 - 30 psi.
- Boiler may not operate if pressure is lower than 15 psi.
- Higher pressure readings may indicate a problem with the

expansion tank.

- Contact a qualified service technician if pressures are low or high, or if there is an issue with boiler operation.

**⚠ WARNING**

**Breathing Hazard - Carbon Monoxide Gas**



- Do not operate heater if flood damaged.
- Install vent system in accordance with local codes and manufacturers installation instructions.
- Do not obstruct heater air intake or exhaust. Support all vent piping per manufacturers installation instructions.
- Do not place chemical vapor emitting products near unit.
- According to NFPA 720, carbon monoxide detectors should be installed outside each sleeping area.
- Never operate the heater unless it is vented to the outdoors.
- Analyze the entire vent system to make sure that condensate will not become trapped in a section of vent pipe and therefore reduce the open cross sectional area of the vent.

**Breathing carbon monoxide can cause brain damage or death.**  
**Always read and understand instruction manual.**

LP-304

## B. Monthly Maintenance - To Be Performed by Owner

**VERY IMPORTANT:** Check / test carbon monoxide detectors to ensure proper operation per the manufacturer's instructions.

### Check Exhaust Vent and Intake Piping

Visually inspect the exhaust vent piping for any signs of blockage, leakage, or deterioration of the piping. Inspect the exhaust vent bracing. Ensure bracing is undamaged and in good condition. Notify a qualified service technician immediately if any problems are found.

**⚠ WARNING**

Failure to inspect the venting system and have it repaired by a qualified service technician can result in vent system failure, causing severe personal injury or death.

Visually inspect the intake piping for any signs of blockage. Inspect the entire length of the intake pipe to ensure piping is intact and all joints are properly sealed. Inspect the intake pipe bracing. Ensure bracing is undamaged and in good condition. Notify a qualified service technician if any problems are found.

### Check Pressure Relief Valves

- Visually inspect the primary pressure relief valves and discharge pipes for signs of weeping or leakage.
- If the pressure relief valves often weep, the expansion tank may not be operating properly. Immediately contact a qualified service technician to inspect the boiler and system.

### Check Exhaust Vent Condensate Drain System

- While the boiler is running, check the discharge end of the condensate drain tubing. Ensure no flue gas is leaking from the condensate drain tubing by holding your fingers near the opening.
- If you notice flue gas leaking from the opening, this indicates a dry condensate trap. If problem persists, contact a qualified service technician to inspect the boiler and condensate line and refill the condensate trap.
- If applicable, check the condensate neutralizer and ensure it is full of condensate neutralizing marble chips.

## C. 6 Month Maintenance - To Be Performed by Owner

### Check Primary and Gas Piping

- Remove the boiler cover and perform a gas leak inspection following Operating Instructions, page 2, this manual. If gas odor or leak is detected, follow procedures on page 2. Call a qualified service technician.

- Visually inspect for leaks around the internal boiler water connections and around the heat exchanger. Visually inspect the external system piping, circulators, and system components and fittings. Immediately call a qualified service technician to repair any leaks.

**⚠ WARNING**

Have leaks fixed at once by a qualified service technician. Failure to comply could result in substantial property damage, severe personal injury, or death.

### Operate Pressure Relief Valve

- Before proceeding, verify that the relief valve has been piped to a safe place of discharge, avoiding any possibility of scalding from hot water.

**⚠ WARNING**

To avoid water damage or scalding due to relief valve operation, a discharge line must be connected to the valve outlet and directed to a safe place of disposal. This discharge line must be installed by a qualified service technician or heating/plumbing installer in accordance with the boiler installation manual. The discharge line must be terminated so as to eliminate possibility of severe burns or property damage should the valve discharge.

- Read the pressure gauges to ensure the system is pressurized. Normal CH pressure will range from 15 - 30 psi. Boiler may not operate if pressure is lower than 15 psi.
- Lift the relief valve top lever slightly, allowing water to relieve through the valve and discharge piping.
- If water flows freely, release the lever and allow the valve to seat. Watch the end of the relief valve discharge pipe to ensure that the valve does not weep after the line has had time to drain. If the valve weeps, lift the lever again to attempt to clean the valve seat. If the valve does not properly seat and continues to weep, contact a qualified service technician to inspect the valve and system.
- Repeat the process on any other relief valves.
- If water does not flow from the valve when you completely lift the lever, the valve or discharge line may be blocked. Immediately shut the boiler down per instructions on page 2 and call a qualified service technician to inspect the valve and system.

## D. Annual Maintenance - To Only Be Performed by a Qualified Service Technician

### Check the Burner

The burner should be checked and cleaned only by a qualified service technician.

### Clean the Combustion Chamber

Cleaning the boiler combustion chamber heat exchanger is a complicated procedure that should only be performed by a qualified service technician.

### Check CH Loop Water Quality

Ensure CH Loop Water Quality is within the requirements in the installation manual.

### Combi Models - Flush DHW Loop

The DHW loop may require more than annual cleaning depending on water quality, temperature, and usage.

**NOTE:** Flushing the boiler heat exchanger and CH and DHW loops are complicated procedures that should only be performed by a qualified service technician.

**NOTE:** Improper maintenance WILL VOID boiler warranty.

See boiler Installation Manual for list of Maintenance procedures as well as instructions for replacing components.

