



ETi[®] 400

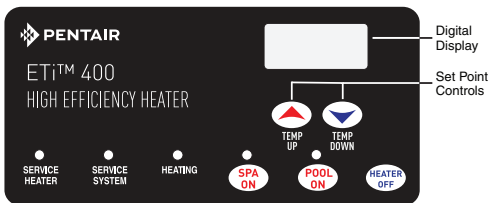
HIGH EFFICIENCY HEATER

QUICK REFERENCE GUIDE

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CONTROL PANEL OVERVIEW



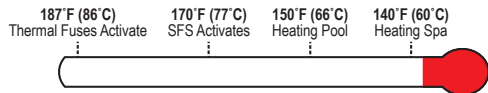
- **POOL ON:** Press button to base heater operation on Pool Temperature. LED indicates heater is responding to Pool Temperature set point.
- **SPA ON:** Press button to base heater operation on Spa Temperature. LED indicates heater is responding to Spa Temperature set point.
- **HEATER OFF:** Press button to switch off the heater.
- **HEATING LED:** Illuminates when burner is active. Blinking LED indicates heater is calling for heat but not firing. If LED remains illuminated, but burner fails to activate, one of the Service LEDs will illuminate and indicate a system fault.
- **SERVICE SYSTEM LED:** Indicates insufficient water flow through heater. Ensure filter and skimmers are clean. If LED remains illuminated, switch OFF heater and contact a qualified service professional.
- **SERVICE HEATER LED:** Indicates a fault in heater or its controls. Switch OFF heater and contact a qualified service professional.

TO VIEW ERROR CODES:

1. Press and release POOL ON and TEMP UP buttons simultaneously. The most recent error code will display.
2. Use the TEMP UP or TEMP DOWN buttons to scroll through the last 5 error codes.
Note: To erase an error code, press POOL ON and SPA ON simultaneously while the heater is off.

TO VIEW STACK FLUE TEMPERATURES:

1. Press and hold the POOL ON or SPA ON button for 5 seconds. Stack Flue 1 (SF1) temperature will display, along with a dot in the upper left corner.
2. Press the TEMP UP button to display Stack Flue 2 (SF2) temperature.

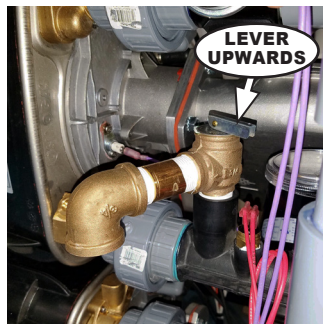


REGULAR MAINTENANCE

For a list of all ETi heater replacement parts, and their associated part numbers, consult the latest Pentair product catalog or *ETi 400 Installation and User's Guide*.

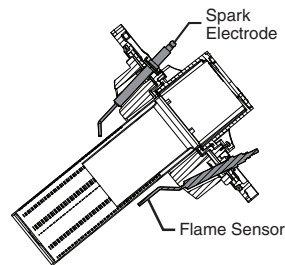
START OF EVERY POOL SEASON:

1. Inspect heater panels and venting system for restrictions to air and exhaust flow.
2. If installed within an enclosure, ensure enclosure air intakes are open and clear of obstructions.
3. Test **Pressure Relief Valve**. See image to the right.
4. Test **Water Pressure Switch**. Refer to the *ETi 400 Installation and User's Guide* for specific test procedures.



EVERY 12 MONTHS:

1. Have a qualified service professional clean and vacuum out any soot or deposits from **Heat Exchanger**. If necessary, use a biodegradable descaler solution to break up mineral deposits.
Inspect the heat exchanger insulation for damage.
2. Have a qualified service professional inspect burner spark electrode and flame sensor for damage.



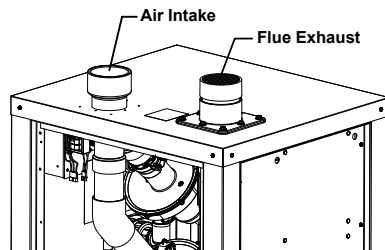
MAX AIR INTAKE AND EXHAUST LINE LENGTHS

4" Pipe	120 ft (36.3 m)	— # of 90° elbows	✗	12 ft (3.7 m)	— # of 45° elbows	✗	6 ft (1.8 m)
6" Pipe	300 ft (91.4 m)	— # of 90° elbows	✗	12 ft (3.7 m)	— # of 45° elbows	✗	6 ft (1.8 m)

Note: All horizontal sections must slope towards the heater 1/4" per foot. This allows condensate to drain through the neutralizer cartridge properly.

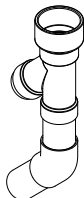
VENTILATION REQUIREMENTS

- Schedule 40 PVC, Schedule 80 CPVC and stainless steel are all approved venting materials. PVC joints must be glued in compliance with National Fuel Gas Code.
- If installed within an enclosure and vented outside, the termination cap provided with the heater must be used. If venting vertically, the termination cap may require a rain cap (not provided).



AIR INTAKE REQUIREMENTS

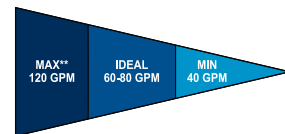
- Max combustion intake length matches max venting length calculated above.
- Intake and exhaust pipes must be minimum of 36" (91.4 cm) apart.
- If using 4" pipe, Combustion Air Intake Kit (P/N 475971 -- sold separately) **MUST** be installed. Refer to the *ETI 400 Installation and User's Guide* for specific installation procedures.



**Air Intake Kit
(P/N 475971)**

WATER FLOW REQUIREMENTS

- Front and back outer panels can be swapped, allowing water connections to be oriented as needed.
- To reduce flow rates, an external bypass valve is required when water flow is above 120 GPM.



GAS REQUIREMENTS

- Bottom panels and internal gas valve can be swapped, allowing gas inlet to be oriented as needed.
- Gas Supply Requirements**

	MIN	MAX
NATURAL GAS	4" WC	10.5" WC
PROPANE	4" WC	12" WC

Note: Maximum pressure change should not exceed 2" WC. Minimum running pressure should not fall below 4" WC.

- Max Gas Supply Line Length**

	3/4"	1"	1-1/4"	1-1/2"
NATURAL GAS	N/A	20 ft (6.1 m)	90 ft (27.4 m)	200 ft (61 m)
PROPANE	20 ft (6.1 m)	60 ft (18.3 m)	220 ft (67.1 m)	450 ft (137.2 m)

- Combustion Parameters**

	CO ₂	O ₂
NATURAL GAS	7.8 - 9.2%	4.8 - 7.2%
PROPANE	9.6 - 10.2%	5.4 - 6.3%

OTHER INSTALLATION REQUIREMENTS

- 15 Amp Circuit Required.
- Heater produces 2-4 gallons (7.6 - 15.1 L) of condensate per hour. Condensate neutralizers are not always required, but we strongly recommend installing a Condensate Neutralizer Kit (P/N 475612).

- **Which fuel does my heater use?**

Inspect the heater's gas orifice. The outer face of the gas orifice will be marked with either **FN (Natural Gas)** or **NL (Propane)**.

- **What certifications does the ETi 400 meet?**

The ETi heater is certified by The American Society of Mechanical Engineers (ASME). The heater also complies with CSD-1 standard and CSA certified for ANSI Z21.56 /CSA 4.7. Certification sheets are either included with the heater manual, or inside the packing slip attached to each heat exchanger.

- **What makes the ETi 400 heat exchanger special?**

The direct-fire heat exchanger is made of extremely durable and highly corrosion-resistant titanium. The heat exchanger's temperature rise is 30°F +/- 5°F (-1°C +/- 15°C).

- **How efficient is the ETi 400 heater?**

The ETi 400 has one of the highest thermal efficiencies in the pool industry. 96% of the heat generated during the combustion process is transferred directly to pool water. This high efficiency improves your heat up time and reduces your energy cost as shown by the formulas below:

$$\text{TIME} = \frac{\text{Pool/Spa Volume} \times 8.34 \times \Delta T}{\text{Heater BTU} \times 0.96}$$

Time: Hours required to heat pool

Pool/Spa Volume: Volume of pool in gallons

ΔT: Desired temperature rise

Heater BTU: Heater BTU rating

Gas Price: Local gas price (therm/dollar)

$$\frac{\text{ENERGY COST}}{100,000} = \frac{\text{Heater BTU} \times \text{Time}}{\text{Gas Price}}$$

- **Will the outside of my heater become hot?**

Thanks to the heater's high efficiency most of the heating capacity goes directly into your pool, but a small amount is expelled as exhaust. This means the heater's plastic and metal outer surfaces remain close to room temperature.

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