

XTherm

ULTRA HIGH EFFICIENCY

Commercial Pool Heaters

Models 1005A, 1505A, 2005A,
2505, 3005, 3505, 4005

97% Thermal Efficiency



Touch Screen
VERSA IC® Control
Platform

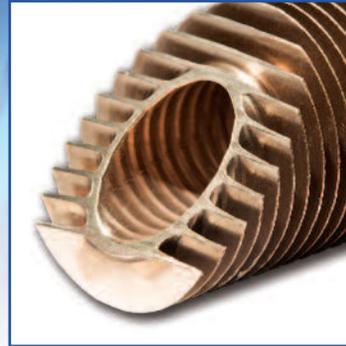
Xtreme performance powered by



Proudly assembled in the U.S.A

Xtreme Performance

97% thermal efficiency!



We use commercial grade Cupro-Nickel finned tubing in the primary heat exchanger. Standard copper-based heat exchangers can not stand up to the harsh environment of commercial pool heating. Your customers expect the best and Raypak delivers with professional grade commercial pool heaters.

Raypak's Next Generation Condensing Heater

Time-honored technologies unite with cutting-edge advancements in Raypak's new XTherm® vertical heater. Never before has a vertical heater provided both the installer and pool builder such installation flexibility, ease-of-commissioning, reliability and long-term performance. Small space, not a problem. The XTherm has one of the smallest installed footprints of any vertical condensing heater. Our compact design makes it the perfect choice for those hard to reach retrofit projects. Raypak's XTherm is built with commercial-grade components and materials. From our steel channel base to our stainless steel flue wrapper, and condensing heat exchanger, you can tell the XTherm is built to last. It's easy to handle and install, but still user friendly to service. Now is the perfect time to take a closer look at Raypak.

Flexibility

Industry-leading vent length allowances afford greater vent location options, thus reducing wasted space. Vent versatility is further enhanced by the self-tuning combustion system which compensates for unusual chimney and vent configurations.



PVC Vent Option (D-32)

Category IV - CSA-certified 97% efficiency at full fire for in pool applications. When the job requires high efficiency, XTherm meets your needs. The XTherm can use either AL29-4C stainless steel, PVC, CPVC or Polypropylene for venting. Just specify the D-32 vent option when using PVC vent or D33 vent option for polypropylene vent.

At the heart of every Raypak XTherm is a unique integral evaporator system - the first defense against condensation in the primary heat exchanger. Raypak's evaporator system collects and re-evaporates condensate which may form during initial start-up.

Simplicity

The Raypak XTherm will precisely heat your pool. Utilizing the latest technology for the combustion-components, the optimum fuel-air ratio is maintained throughout the entire range of the load-tracking operation. The XTherm automatically self-tunes to accommodate the widest range of gas supply pressures. The high quality integrated blower-gas valve is self-correcting and allows smooth operation with fluctuating gas supply pressures. The Raypak XTherm is cutting edge technology with atmospheric simplicity.

Key Features

- PVC vent capable - optional at time of order
- 3 models from 1,000,000 to 2,000,000 BTUH
- 97% thermal efficiency at full fire in pool applications
- Minimum continuous inlet water temperature (50°F)
- Small footprint, less than 11 square feet
- AB 1953 low lead certified
- On-board diagnostic center, real English, no codes
- All models indoor/outdoor construction
- Complete cabinet protects all controls and wiring
- Low NOx - Less than 20ppm
- Suitable for altitudes up to 10,000 ft. (derate above 5,000 ft.)
- Equipped with all cupro-nickel, bronze, stainless steel and CPVC waterways
- Certified to ANSI Z21.56

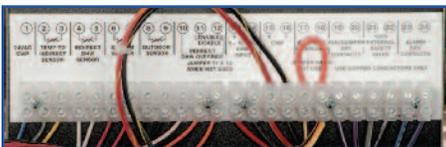
Think Green



Think Raypak



1. Low Voltage Wiring Terminal
Up front and easy to get to. Makes sensor wiring and BMS wiring simple and clean.



2. Versa IC[®]
The Versa IC, Integrated Control system is CSA listed and certified as a combined temperature, safety, and ignition control device. Easy front access to all field wiring. This includes outdoor sensor, DHW sensor, system alarm, Modbus BMS port and 0-10V DC input connections. Each unit comes factory-equipped with cascade control capability. Simple, quick access daisy chain of up to 4 heaters.

3. Control Interface
Large easy to read (3.5") LCD display. Will continuously monitor flame strength (μ a), sensor temps, BMS signal (0-10V) set points, delta-T, all safety signals, full diagnostics and fault history for last 15 events. Simple touch pad settings. Everything you need from set-up to service is at your fingertips, all in one location.

4. Combustion Air Fan
Cast aluminum, non-sparking construction. The state of the art variable-speed fan works in smooth harmony with the main gas valve.

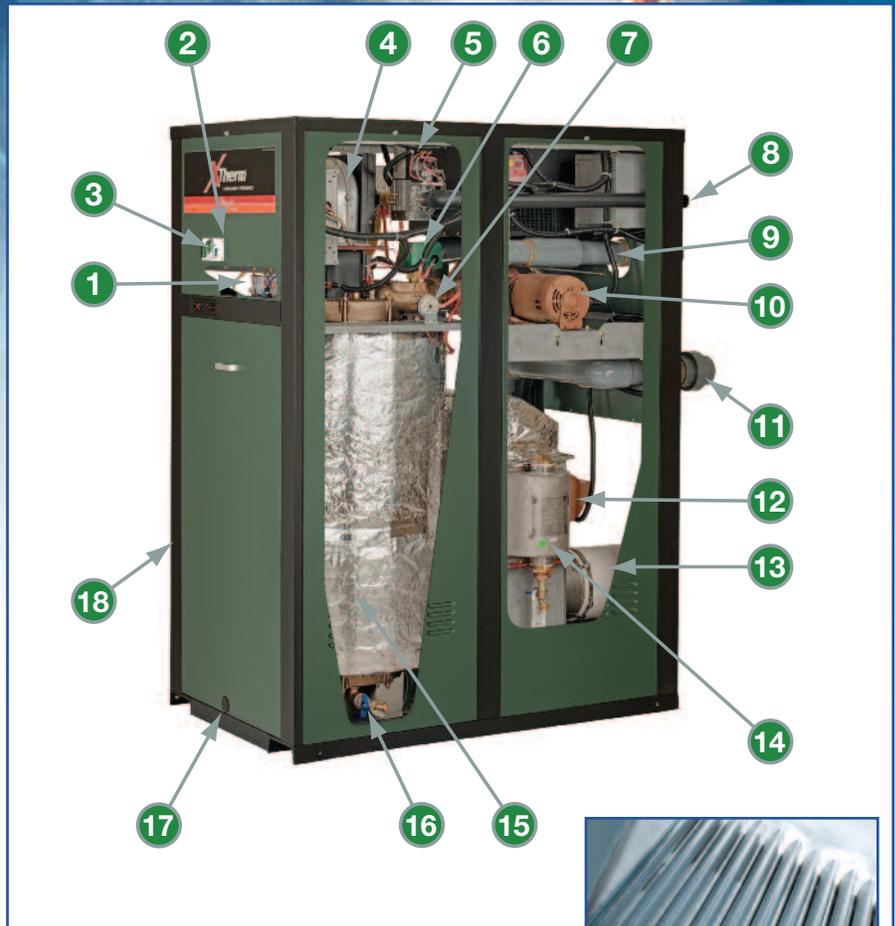
5. Dungs Gas Valve
The XTherm uses a state-of-the-art main gas valve manufactured in Germany. This precision gas valve works in perfect unison with the combustion air fan. The result is silky smooth light-offs.

6. Flow Switch
Monitors water flow and provides safe shut down if water flow drops below the minimum required.

7. Vent Pressure Switch
Monitors vent pressure and provides safe shut down if back pressure is excessive.

8. Gas Inlet
The XTherm will operate at 100% full rate with gas pressures as low as 4.0" w.c.

9. Water Outlet



10. Heater Pump
Sometimes referred to as the primary pump. This fixed speed pump keeps flow constant through the primary heat exchanger.

11. Water Inlet
The XTherm can accept 50°F continuous inlet water temperature.

12. Cold Water Run Pump
The XTherm comes factory equipped with a built-in Cold Water Run system. This advanced water control system keeps the inlet water temperature to the primary heat exchanger above 120°F, regardless of the incoming water temperature. It constantly self adjusts and regulates the incoming water flow while still maintaining a constant ΔT in the heat exchanger.

13. Flue Outlet
The stainless steel flue outlet is compatible with CAT IV stainless steel. PVC or CPVC vent material may be used in conjunction with the D-32 vent option on the XTherm. Also available with option D-33 Polypropylene vent material. Dramatically cut your installation costs by using these non-metallic vent materials.

14. Stainless Steel Condensing Heat Exchanger
Recovers waste heat to boost efficiency up to 97%. The XTherm utilizes a separate high-grade stainless steel condensing heat exchanger. This allows the corrosive combustion condensate to be collected safely without damaging the heater. There is a condensate disposal connection on the rear of the heater. The XTherm is also equipped with a condensate switch that will sense a blocked condensate drain, which protects the heater.

15. Vertical Primary Heat Exchanger
Cylindrical, multi-pass heat exchanger captures all radiant energy, eliminating the need for heavy refractory.

16. Drain Valve
One of two drain valves located at the bottom of the heat exchanger. A third drain valve is located on the condensing heat exchanger. This allows for complete winterizing and drainage of the heater.

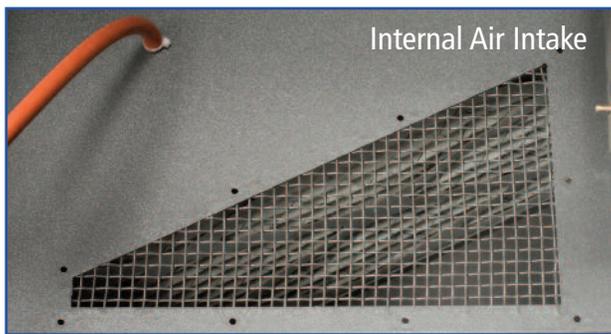
17. Viewing Port
Allows for easy burner inspection.

18. Weather-Proof Jacket
Heavy gauge galvanized steel with a UV-resistant Polytuf powder coat is impervious to weather and corrosion. The Polytuf coating passes the 1000 hour salt spray test (ASTM B117).



Xtreme Versatility

Can be installed indoor or outdoors!



1. High Voltage Wiring Box
120VAC connections.

2. Removable Air Filter
Provides easy access and is easily removable for inspection and replacement. 12"x20" high capacity filter is rated MERV 8 (95% - 98% arrestance.)

3. Direct Vent Capability
Every XTherm is direct vent capable. By installing the optional vent pipe adapter (D-18) and air plenum plug, your XTherm is ready for direct vent. This makes it ideal for storage of pool chemicals in the same room as the XTherm. Damaging chemicals are not in contact with the heat exchanger or combustion chamber.

3a. Outdoor Cover
If your job requires outdoor installation, an optional air

vent plug easily screws on to cover the direct vent air intake. The combustion air will then be drawn from inside the heater through screened plenum openings. *See photo above right.*

4. Gas Inlet
The XTherm will operate at 100% full rate with gas pressures as low as 4.0" w.c.

5. Water Outlet - 2-1/2" CPVC Slip

6. Water Inlet - 2-1/2" CPVC Slip
The XTherm can accept as low as 50°F continuous inlet water temperature without damage to the primary heat exchanger.

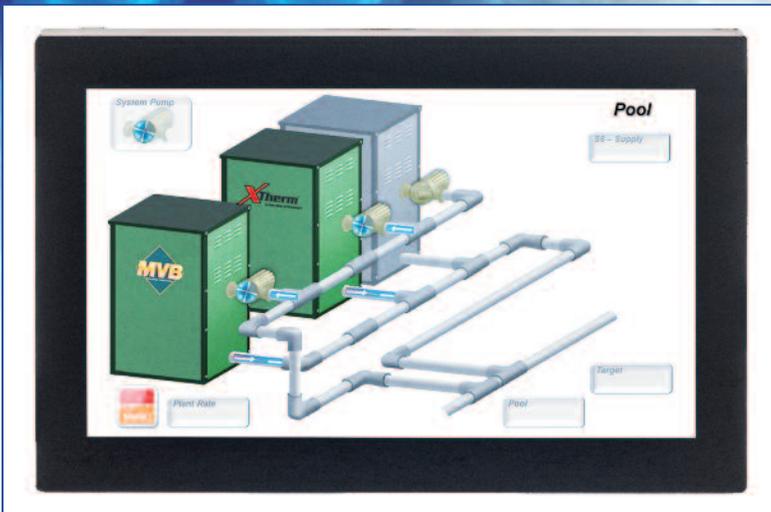
7. Access Panel to Cold Run Pump
Easily removable access panel even when unit is

plumbed in place. Provides full access to inspect and service the Cold Run Pump system and condensate drain switch.

8. Flue Outlet
The stainless steel flue outlet is compatible with CAT IV stainless steel. For a dramatic cost reduction over Category IV stainless steel, PVC or CPVC vent material may be used in conjunction with the D-32 vent option. Also available with optional D-33 Polypropylene vent material.

9. Condensate Drain
3/4" NPT PVC connection for condensate removal. Raypak offers optional condensate treatment kits (Z-12) that can be plumbed between the heater and the drain.

Xtreme Control



Cascade up to 4 Heaters

The XTherm comes standard with a built-in Cascading Heater Control. No other controls to buy, just connect your other VERSA IC equipped heaters as followers to the master unit with 2-wire shielded cable (not supplied) to the front mounted low voltage wiring board. Designate a Cascade Master Heater and set all the other heaters as Followers. It's that simple! The XTherm has built-in equal run-time rotation. This allows rotation of the starting heater so all heaters in the system remain active and the run times remain equal on each unit.

Raypak Leadership in Heater Management

The new VERSA IC® fully integrates temperature control, ignition, safety, temperature safety and individual fault monitoring as well as the internal cold water protection for the non-condensing exchanger for complete heater control. A Modbus communications port is standard for continuous monitoring, trending, and trouble shooting. Easy front access to read, setup and troubleshoot on a 7" color touch screen.



Diagnostic Information

Control Faults

- Low 24VAC
- Control Setup
- ID Card Fail
- Device Lost
- Device Error
- PIM Error

Safety Faults

- Sensor Failure - 6
- Condensate Full
- Vent Temp (PVC and Poly)
- Vent Block
- Manual Limit
- Auto Limit
- Water Flow
- Delta-T Fault
- Low Water
- Low Gas
- High Gas
- Extra 1
- Options

Ignition Control Faults

- Ignition Lockout
- False Flame
- Ignition Failure
- Low HSI Current
- Blower Speed

Optional Gateways

- Cascade up to 4 heaters
- Modbus RTU comm port standard
- All faults and interlocks monitored and reported in plain English
- Building Management System integration via optional gateways:
 - BACnet MS/TP, BACnet IP, N2 Metasys or Modbus TCP
 - LONworks

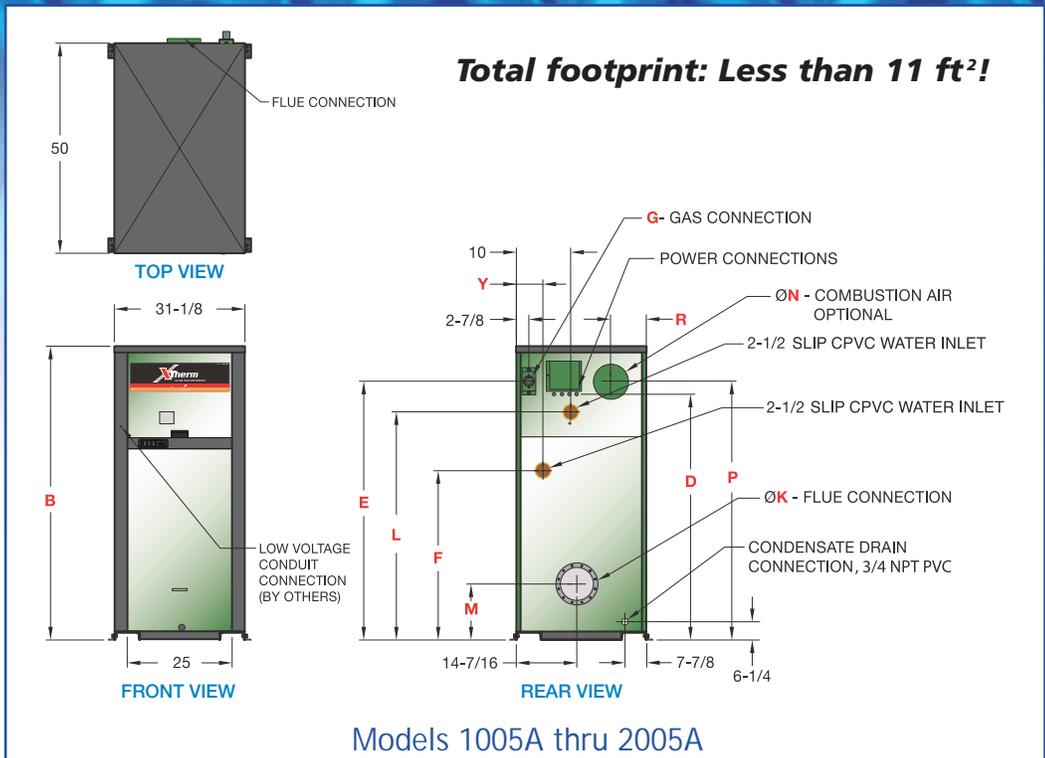


BACnet®, Metasys®
Modbus®
gateway module (optional)



LONworks®
gateway module
(optional)

Xtremely Small Footprint



Model	Dimensions (inches)											P-Models			
	B Ht.	D	E	F	G NPT	K Flue Ø	L	M	N C/A Ø	P	R	Y	Weight (lbs.)	Heater Amps	Pump Amps [†]
1005A	55-1/8	45	47-1/8	36-1/2	1-1/4	6	40-1/16	11-1/2	6	47-1/8	8-1/16	6-1/16	1065	12	10
1505A	67-1/8	57	59-1/16	38-1/2	1-1/4	8	52-1/16	12-5/8	8	59-1/8	8-3/16	6-1/16	1234	12	14
2005A	81-1/8	71	71-3/16	38-1/2	2	8	64-1/16	12-5/8	8	73-1/8	8-3/16	6-1/4	1461	18	17
2505	68-3/16	65	64-13/16	21-1/8	2-1/2	10	7-5/16	18-1/2	10	70	-	-	2656	12**	15**
3005	73-3/16	70	69-13/16	26-1/8	2-1/2	10	7-5/16	23-1/2	10	65	-	-	2775	15**	16**
3505	78-3/16	75	74-13/16	31-1/8	2-1/2	10	7-5/16	28-1/2	12	60	-	-	2925	17**	16**
4005	83-3/16	80	79-13/16	30-7/8	2-1/2	12	7-5/16	29-1/4	12	55	-	-	3058	20**	24**

*For propane gas, all models are 1-1/4" NPT.

† Amp load does not include primary heater pump; a separate 120 VAC electrical connection must be supplied for the primary pump.

**At 240VAC.

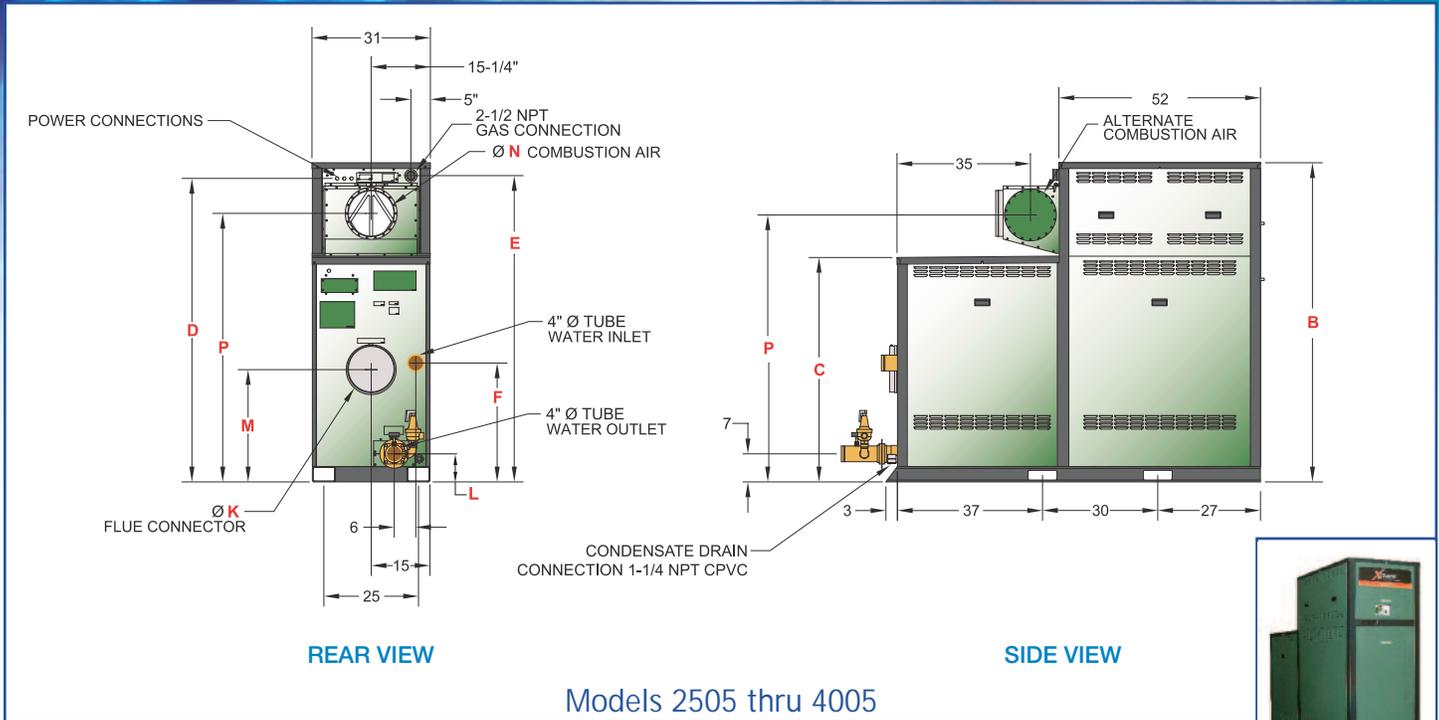
Model	MBTUH Input	Pool Heater	
		Output	Efficiency
1005A	999	969	97%
1505A	1500	1455	97%
2005A	1999	1939	97%
2505	2501	2426	97%
3005	3000	2910	97%
3505	3500	3395	97%
4005	4000	3880	97%

CLEARANCES	Heater Side		From Combustible Surfaces (min.)	For Service (Minimum)
	Indoor	Outdoor	Unobstructed	Unobstructed
Floor*			0	N/A
Rear			12	36
Right Side			1	24
Left Side			1	1
Front			24	24
Top	Indoor	Outdoor	0	10
Vent Stack	Indoor	Outdoor	1	N/A
Vent Cap	Indoor	Outdoor	12	12

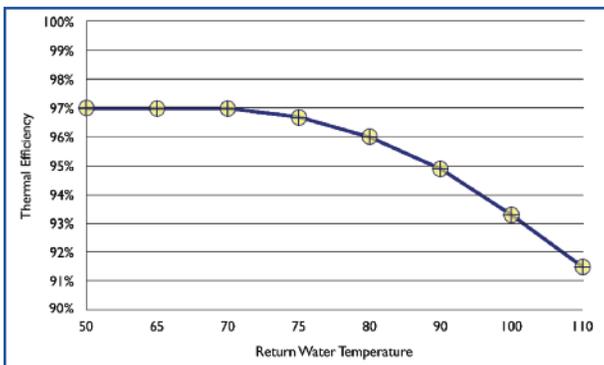
* Do not install on carpeting Note: Local codes may require increased clearances

Salt Water Chlorination
 The XTherm can be used with pools that are sanitized via Salt Water Chlorination; up to 3000 PPM.
 As with all Raypak heaters, please feel free to contact your local Raypak representative or our Applications Department for assistance with planning your next installation.

Xtreme Size Range



Xtreme Pumping



25 meters X 25 meters X 1-1/2 meters deep				
BTUH	Annual Fuel Usage			
	Efficiencies			
	68%	78%	82%	97%
2,000,000	\$26,243	\$22,039	\$20,712	\$16,898

Using one 2,000,000 BTUH Heaters

50 meters X 25 meters X 2 meters deep				
BTUH	Annual Fuel Usage			
	Efficiencies			
	68%	78%	82%	97%
4,000,000	\$80,653	\$66,424	\$62,047	\$49,756

Using two 2,000,000 BTUH Heaters

The annual fuel usage is based on maintaining an indoor swimming pool at 80°F for 6 months of the year and using a fuel cost of \$1.00 per therm.

Cold Water Run System

The XTherm comes standard with a state-of-the-art Cold Water Run system factory mounted and plumbed. Raypak's Cold Water Run system provides constant protection against condensation in the primary heat exchanger. The system utilizes a variable speed pump to inject just the right amount of water from the main system loop into the heater to maintain the optimum inlet temperature. This allows the full capacity of the heater to be utilized to meet the system load, while at the same time continuously maintaining the optimum inlet water temperature to prevent condensation in the primary heat exchanger. All of this keeps the condensate where it belongs, in the stainless steel condensing heat exchanger.



HEAT EXCHANGER	ASME, National Board Registered, 160 PSI	• HLW Stamp	●
	Heat Exchanger Tubes	• Cupro Nickel	●
	Bronze Headers		●
	Stainless Steel Condensing Heat Exchanger	• U Stamp	●
	Pressure Relief Valve (Mounted on Outlet)	• 75 PSI	●
	Temperature & Pressure Gauge		●
	Pump - Primary	• 120V, Single-Phase (1005A-2005A); 240V, Single Phase (2505-4005)	●

JACKET	Indoor/Outdoor Construction		●
	Vent Terminal	• Outdoor • Through-the-Wall	○ ○
	Fully-Enclosed Controls		●
	Combustible Floor Rated		●

OPERATING CONTROLS	120V Power Supply with 120V/24V Transformer		●
	On/Off Switch		●
	Programmable Pump Time Delay, Single-Phase	• Included in Versa IC	●
	Terminal Block Connections (Front mounted)	• Enable / Disable • External Interlocks • 0-10 VDC Setpoint/Direct Drive Input	● ● ●
	Color touch screen		●
	Status Display Lights (4)		●
	Temperature Controller with 3 Water Sensors	• Versa IC	●
	Multiple Heater Controller	• Cascade up to 4 heaters	●

SAFETIES	Hot Surface Ignition System	• 1-try • 3-try	○ ●
	High/Low Gas Pressure Switches		○
	Blocked Vent and Air Pressure Switches		●
	High Limit Switch	• Manual Reset, Fixed • Manual Reset, Adjustable • Automatic Reset, Adjustable (Shipped Loose)	● ○ ●
	Low Water Cut-Off, 24V	• With Manual Reset and Test Buttons	○
	Flow Switch		●

GAS TRAIN	Combination Gas Valve		●
	Combustion Air Blower		●
	Additional Safety Valve	• Motorized (externally mounted) • Solenoid (externally mounted)	○ ○

OTHER	CSA-Certified Efficiency	• 97% at Full Fire	●
	Air Filter		●
	TruSeal Direct-Vent Ready		●
	Vent Adapter - PVC Option D-32 (Factory installed only) or Polypro Option D-33 (Field installed)		○
	Alarm System		○
	CSD-1 / GE GAP Control System		○
	Low NOx	• Less than 20ppm	●
	Cold Water Run - Variable Speed Pump	• Prevents condensation in primary heat exchanger	●

● = Standard ○ = Optional

