

# XFyre<sup>™</sup>

NINETY PLUS

## High Efficiency Boilers & Water Heaters

New Versa IC<sup>™</sup>  
Control  
Platform

up to **99%**  
Efficiency!

Can be vented with:

PVC, Centrotherm<sup>®</sup> Polypropylene  
or Stainless Steel.

**MBTU Models**

**300A • 400A • 500A • 700A • 850A**

CSA Certified Low Lead Content

Less Than .25% Pb



Ultra Low Emissions



Proudly made in the U.S.A

***Xtreme performance powered by***



# Xtreme Outdoor Performance

## Up to 99% part load!

### XFyre® Condensing Modulating Boiler - The Green Choice

Raypak's XFyre® is a natural extension of our successful XTherm® modulating vertical boiler line (1,1.5, 2 Million BTUH). Raypak offers state of the art features not found in other condensing boilers and combines these desirable features into one complete boiler package. A new leading edge in integrated control platform, the Versa IC, fully integrates burner modulation, temperature control, outdoor reset, ignition, safety, and individual fault monitoring. Versa IC also includes a Modbus communication port as standard. XFyre is outdoor certified. Utilizing cabinet and control protection technology already proven in over 250,000 Raypak products, the XFyre is a seasoned veteran of outdoor environments. Mechanical engineers, architects and building owners now have extreme installation flexibility, high efficiency, space saving footprint, zero side clearance, direct vent capability, inexpensive PVC or Polypropylene venting, and full service access. Installers enjoy ease-of-commissioning, reliability, serviceability and long-term performance. Small space, no longer a problem. Raypak's vertical water connections allow the units to be installed side by side, further reducing the footprint on multi-boiler installations. Our compact design makes it possible to install up to 3.4 million BTUH in under 67 ft<sup>2</sup> of floor space, plus front and rear clearance. Tie them all together with our built-in Versa IC Control and you may have a boiler system with a 20:1 turndown that operates at up to 99% thermal efficiency! This is an Xtreme green retrofit system.

### XFyre Combustion System

Modulation is nothing new to Raypak. We have been honing our gas modulation experience for over 60 years. The Raypak XFyre will precisely track the heating load with its built-in Versa IC Integrated Control platform, eliminating costly overshooting. Utilizing the latest European technology for the combustion-components, the optimum fuel-air ratio is maintained throughout the entire range of the load-tracking operation. Our 5:1 turndown ensures efficiency is maintained throughout the firing rate and actually increases during part load, right when you want it! The XFyre 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 XFyre is cutting edge technology with atmospheric simplicity.

### Vent Flexibility

**Category IV** - Category IV -CSA-certified 94% efficiency at full fire for hydronic boilers and 95% for domestic water heaters (Up to 99% at part load!). When the job requires high efficiency, XFyre meets your needs. Combined vent and combustion air duct length of up to 200 equivalent feet. Can select PVC (depending on return water temperature), CPVC, Polypropylene or Stainless Steel for your project. XFyre is CSA certified to all four options. Ships PVC and SS ready, or for Polypropylene with D-33 field adapter kit.



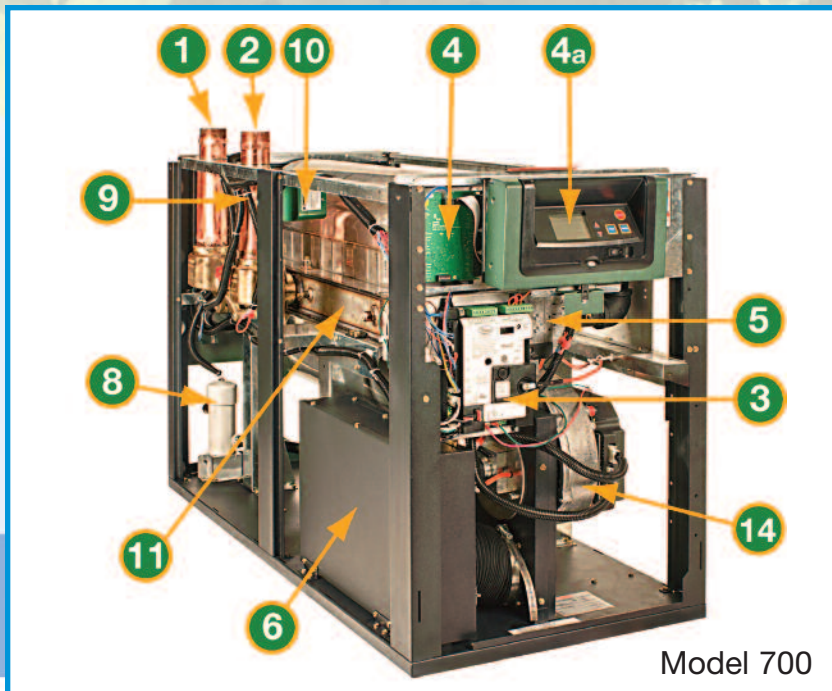
### Key Features

- 5 models from 300,000 to 850,000 BTUH
- 94% thermal efficiency hydronic and 95% water heaters
- AB-1953 Low Lead Certified
- All models CSA indoor/outdoor certified
- Small footprint, less than 9-1/2 square feet
- Top water connections - allows side by side installation
- All models are equipped with 316L welded stainless steel heat exchanger and copper plumbing. ASME Section IV constructed and stamped. National Board registered.
- Multiple pump outputs - Boiler, System, and Indirect
- Dual flame sensing - Remote flame sensor and spark ignition rod
- Modulating gas valve and burner, up to 5:1 turndown
- Meets all current Low NOx regulations, less than 20ppm
- Whisper-quiet operation
- On-board diagnostic center, real English, no codes.
- 0-10 VDC BMS Interface (setpoint or direct drive)
- Built-in cascade function for up to 4 boilers
- Built-in outdoor reset functionality
- Complete cabinet protects all controls and wiring
- Tough rust-resistant powder coat finish
- Easy to service - air filter
- PVC\*-CPVC-Polypropylene-Stainless vent certified. \*PVC requires Max 170°F return water
- Suitable for altitudes up to 10,000 ft. (derate may apply)
- Modbus BMS port

### Options

- Outdoor air sensor (B-32)
- Indirect sensor
- TruSeal® direct vent kit (D-21 factory installed, D-22 Loose)
- Condensate neutralizer (Z-12)





Model 700

### 1. Water Inlet

As low as 50°F entering. All copper and brass factory installed vertical plumbing connections. Vertical plumbing allows boilers to be installed side by side or in tight places if need be. Male NPT connections.

### 2. Water Outlet

All copper and brass factory installed vertical plumbing connections. Male NPT connections.

### 3. Direct Spark Ignition

XFyre's state-of-the-art combustion control system utilizes the finest dual electrode igniter to start the combustion cycle. After ignition, the spark rod also acts as a second flame sensor.

### 4. Versa IC Board

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 boilers, link to Raypak Temp Tracker Mod+ Hybrid Master control for up to 16.

### 4a. Control Interface

Large easy to read (3.5") LCD display. Will continuously monitor flame strength ( $\mu$ a) sensor temps, BMS signal (0-10V) set points, DeltaT, 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.

### 5. Air Fuel Ratio Gas Valve

XFyre uses a German, precision manufactured, main gas valve considered by most to be second to none. This high tech gas valve works in perfect unison with the combustion air blower. The result is smooth and quiet light-offs while delivering a 5:1 turn down. With this much flexibility, XFyre is the right boiler for almost any size job.

### 6. Intake Air Filter

Every XFyre comes standard with a front access, easy to service Merv 8 media, combustion air filter.

### 7. Manual Reset High Limit

This function is fully integrated into the Versa IC control platform. **(Not Shown)**

### 8. Condensate Trap

The XFyre has a built-in condensate trap located at the rear of the unit. The trap and the overflow condensate sensor are accessible through their own access panel.

### 9. Vent Switch

Senses possible obstructions in the flue vent pipe. **(Not Shown)**

### 10. Flow Switch

The XFyre keeps its flow switch safe and dry inside the cabinet, which protects it during shipping and in the boiler room.

### 11. "Duo" Style Heat Exchanger

The XFyre uses a combined 316L stainless steel dual chamber condensing and non condensing heat exchanger. Weld-sealed technology eliminates gaskets and o-rings. Special glycol is not required for hydronic applications. ASME Section IV constructed and stamped. National Board registered.

### 12. Flame Sense Electrode

After a call for heat, separate flame electrode monitors flame rectification. This helps to ensure proper carry over while also constantly monitoring the flame.

### 13. Internal TruSeal® Connection

Allows the XFyre to be direct vented up to 200 combined equivalent feet (vent and air intake) in a horizontal or vertical vent system. **(Not Shown)**

### 14. Smart Blower Technology

Utilizing a whisper quiet, all metal, technologically advanced combustion blower. Air and fuel are precisely mixed.

### 15. Weather-Proof Jacket

Heavy gauge galvanized steel with a UV-resistant Polytuf powder coat finish is impervious to weather and corrosion. Raypak has one of the finest, top-of-the-line powder coat systems on the west coast regardless of industry. We laugh at a 1000 hour salt spray test. Independent test documentation available upon request. **(Not Shown)**

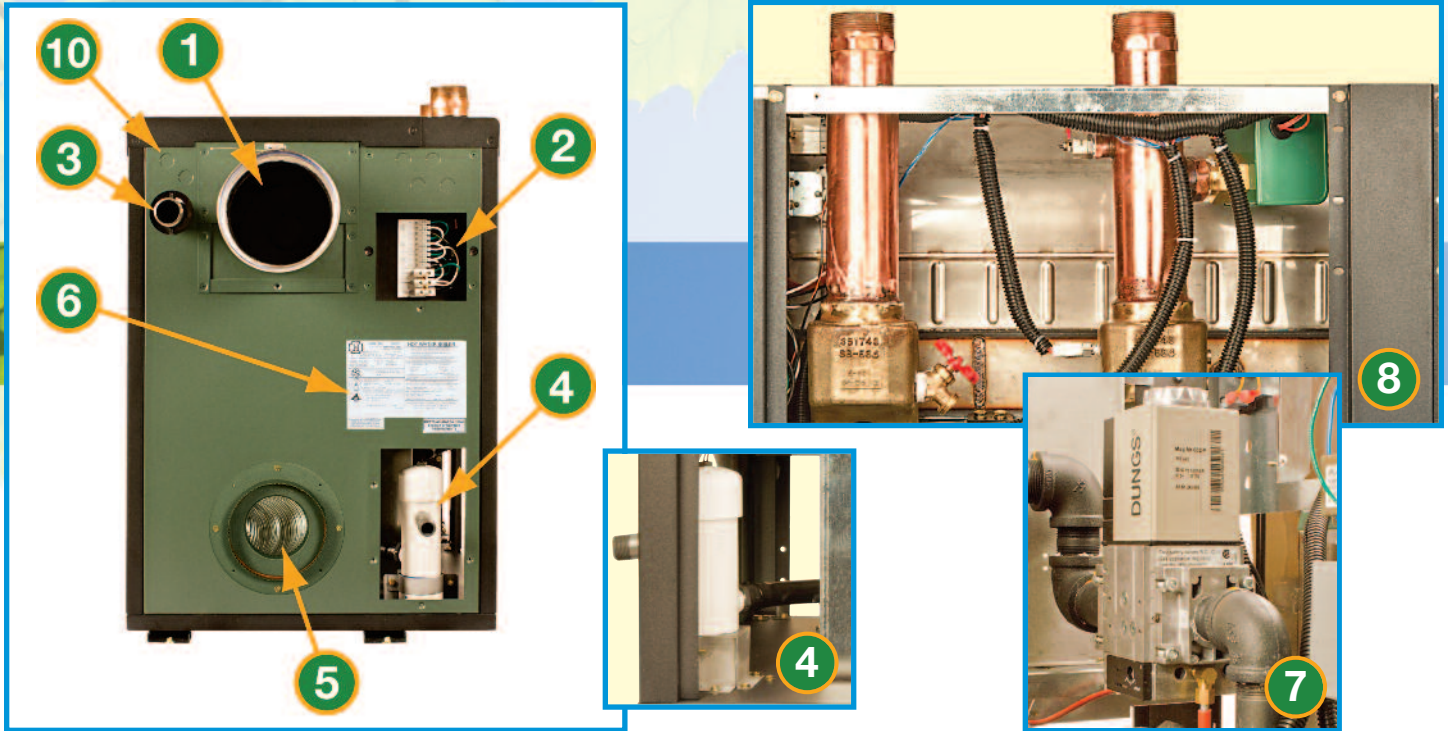
Think Green



Think Raypak

# Xtreme Access

The **X**Fyre is purpose built for the contractor and service professional.



**Completely serviceable from the front, top and both sides!**

#### 1. Flue Outlet

Category IV- PVC, CPVC, Polypropylene and Stainless Steel certified. The XFire ships PVC ready, no extras to purchase! (PVC Vent max 170°F return at 9.0%CO<sub>2</sub>)

#### 2. High Voltage Wiring Box

120VAC main incoming power connections. Boiler pump, system pump, and indirect DHW pump wiring.

#### 3. Gas Inlet

The XFire will operate at 100% full rate with gas pressures as low as 4.0" w.c.

#### 4. Condensate Drain and Trap

3/4"-NPT PVC connection for condensate removal. Inset photo shows condensate trap, overfill sensor and pressure switch for the flue. Raypak offers optional condensate neutralizer kits (option Z-12) that can be plumbed between the heater and the drain.

#### 5. Direct Vent Capability

Every XFire is direct vent capable. By installing an optional combustion air adapter, your XFire is ready for direct vent. For factory installation, order (option D-21) TruSeal® at time of order.

#### 6. Easy Access Rating Plate Location

#### 7. Gas Valve

Raypak uses German-made, high quality gas valves, considered the finest modulating gas valves produced today. To the right of the gas valve is the boiler computer control center, which always keeps the blower, gas valve, direct spark ignition and flame supervision in perfect harmony.

#### 8. Inlet and Outlet Connections and Flow Switch

The vertical inlet and outlet connections are all copper and brass fitted with NPT male pipe thread connections. The flow switch is fully contained within the cabinet, protecting it from the elements and boiler room mishaps. Servicing of the Flow switch can be done from the top or left side.

#### 9. Air Filter

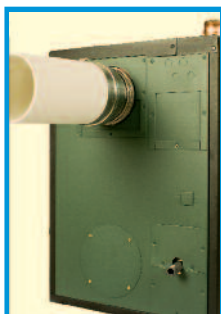
Simple front access; just remove the front door. The filter just slides right out for quick and easy inspection and replacement. The high capacity filter is rated MERV 8.

#### 10. Low Voltage Knockouts

Separate conduit location for all sensor, communication, and low voltage wiring to keep them as far away from the line voltage as possible.



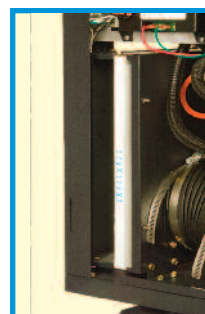
Poly Vent



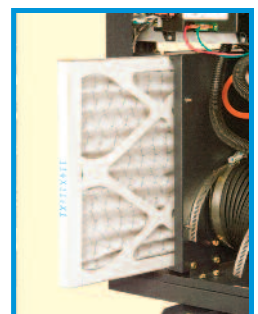
PVC Vent



Remove Front Door



Loosen wing-nuts

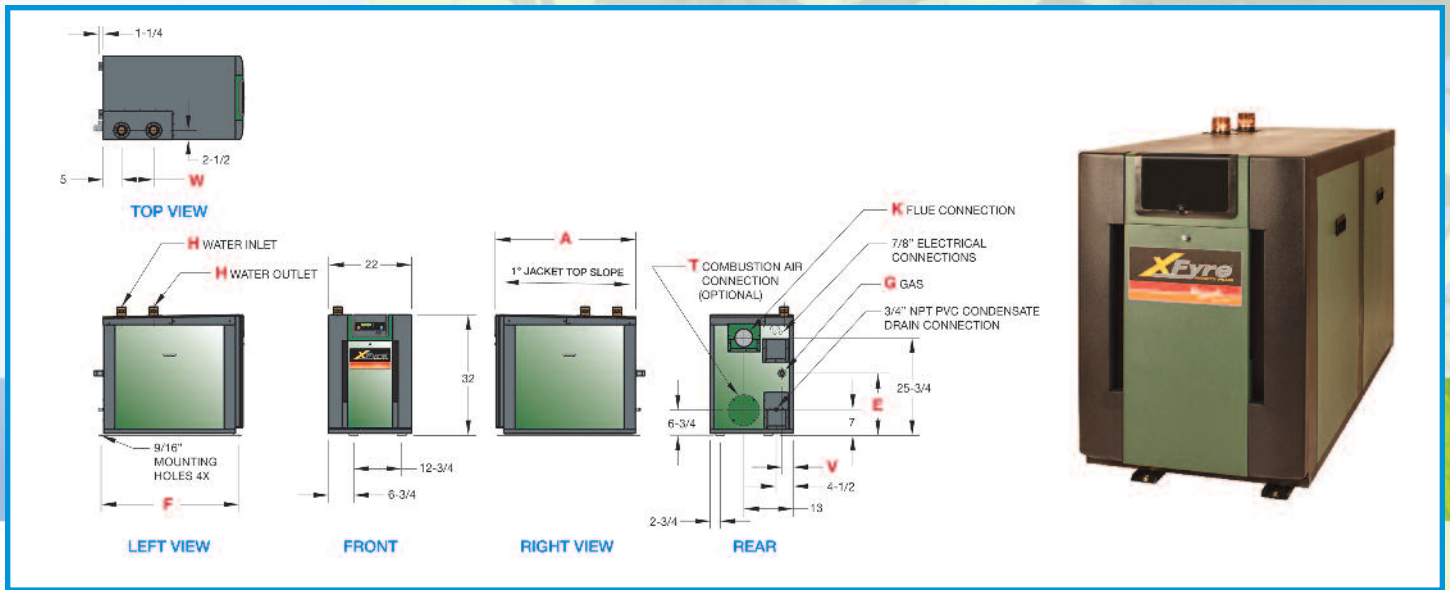


Pullout filter media

FRONT ACCESS INTAKE AIR FILTER



# Xtremely Small Footprint



PHYSICAL DATA	Model	Dimensions (in.)						Ship Weight (lbs.)	Foot-Print (ft <sup>2</sup> )	Amps*	
		A Length	F Mounting	G NPT	H NPT	K Flue Ø	T C/A Ø				W
	300A	28 - 1/4	27 - 9/16	3/4	1 - 1/2	4	4	8 - 1/2	410	4.3	3
	400A	30 - 3/4	29 - 3/4	1	2	4	4	7 - 1/16	465	4.7	4
	500A	37 - 1/4	36 - 1/4	1	2	4	4	8 - 1/2	505	5.7	4
	700A	47 - 3/4	47 - 1/16	1 - 1/4	2	6	6	10 - 9/16	550	7.3	5
	850A	54 - 1/4	53 - 9/16	1 - 1/4	2	6	6	10 - 9/16	580	8.3	5

For installations at elevations above 2,000 feet, derate may apply, please consult the factory for additional instructions. No mechanical changes required up to 10,000 feet.

\*Current Draw is for heater only. (Supply breaker must have delayed trip.)

MBTUH	Model	MBTUH Input	Boiler		MBTUH Input	Water Heaters		Minimum Input
			Output	Efficiency		Output	Efficiency	
	300A	300	282	94%	300	285	95%	60
	400A	399	375	94%	399	379	95%	80
	500A	500	470	94%	500	475	95%	100
	700A	700	658	94%	700	665	95%	140
	850A	850	799	94%	850	808	95%	170



CLEARANCES	Heater Side	Certified Minimum	Service Minimum
Rear	24"	24"	
Right	0"	0"	
Left	0"	0"	
Top	12"	24"	
Floor*	0"	---	
Vent	1"	---	

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

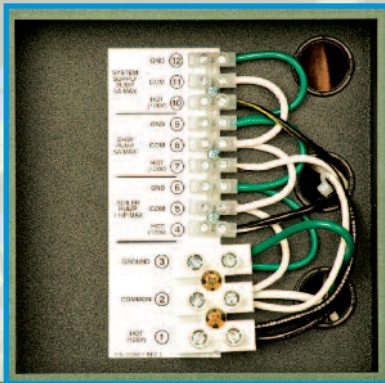
XFyre Model	Standard Pump Models			
	H		WH	
	HP	Amps	HP	Amps
300A	0012-1/8hp	1.3	1611-1/4hp	5.7
400A	0012-1/8hp	1.3	1630-1/2hp	6.9
500A	1611-1/4hp	5.7	1630-1/2hp	6.9
700A	1630-1/2hp	6.9	1634-1hp	14.0
850A	1630-1/2hp	6.9	1634-1hp	14.0

Note: Current draw (Amps) is for pump only

Water hardness grains per gallon

Water hardness above 15 gpg requires water softener.

# Xtremely Easy to Wire



120VAC Wiring Center  
(rear of boiler)

## Xtremely Easy to Wire Front Control Plugs For System Connections

XFyre has a front mounted wiring center with plug connections for all low voltage control systems and sensor connections. The Versa IC will allow cascading of up to four boilers, or DHW direct system, or if required a priority based indirect DHW system. If additional boilers are needed it may be linked through its Modbus port to Raypak's Temp Tracker Mod+ Hybrid Master Control, to sequence up to 10 boilers. Also accepts 0-10VDC from BMS.

## 120VAC Wiring Center

The XFyre's 120VAC wiring center is located on the rear of the boiler. All incoming line voltage and pump wiring are contained away from the 24v control wiring. Wiring the boiler is simple and straight forward.



Low Voltage Wiring Center

## Hydronic Boiler

TYPE H	XFyre Model	Rates Of Flow And Pressure Drops											
		20°F		30°F		35°F		Minimum Flow*			Maximum Flow		
		GPM	ΔP	GPM	ΔP	GPM	ΔP	GPM	ΔP	ΔT	GPM	ΔP	ΔT
300A	28	17	19	8	16	6	14	5	39	36	28	16	
400A	38	18	25	7	21	5	19	4	39	47	29	16	
500A	47	16	31	7	27	5	24	4	39	56	23	17	
700A	66	30	44	13	38	9	34	7	39	70	34	19	
850A	80	40	53	17	46	12	41	10	39	80	40	20	

\*Closed systems only

## Water Heater

TYPE WH	XFyre Model	Water Hardness					Flow Rates						Do not use when hardness exceeds 15 grains per gallon
		0-15 Grains Per Gallon					Minimum Flow			Maximum Flow			
		ΔT	GPM	ΔP	MTS	SHL	ΔT	GPM	ΔP	ΔT	GPM	ΔP	
300A	24	24	12	1.5	17	20	9	29	36	28	16		
400A	20	38	18	2	20	26	8	29	47	29	16		
500A	20	48	16	2	19	33	8	29	56	23	17		
700A	20	67	30	2	36	46	14	29	70	34	19		
850A	23	70	30	2	36	56	19	29	80	40	20		

MTS = Minimum Tube Size, inch.

SHL = System Head Loss, ft (based on heater and tank placed no more than 5 ft apart).

ΔT = Temperature rise, °F

ΔP = Pressure drop through heat exchanger, ft

TYPE WH	XFyre Model	Recovery Rates								
		Temperature Rise (°F)								
		20	30	40	50	60	70	80	90	100
300A	1711	1140	855	684	570	489	428	380	342	
400A	2275	1517	1138	910	758	650	569	506	455	
500A	2851	1901	1426	1140	950	815	713	634	570	
700A	3992	2661	1996	1597	1331	1140	998	887	798	
850A	4847	3231	2423	1939	1616	1385	1212	1077	969	



# Xtreme Control

## Boiler Control and On-Board Diagnostic Center

Versa IC merges safety, ignition and temperature control, outdoor reset and freeze protection, plus system monitoring, alarm and diagnostics, and BMS transmission all in one Integrated Control Platform. Easy front access to read, set up and trouble shoot on a 3.5" LCD screen. The entire package is CSA certified, and listed for each individual function.

Inlet and outlet sensors factory installed in boiler. Remote sensor for system included. BMS all point diagnostics transmission port. 0-10V DC set point input standard. Also can drive and monitor external motorized auxiliaries such as extractors and louvers. Additional connections for auxiliary functions indirect DHW, and dry contact remote alarm relay are provided.



## Outdoor Proven

Raypak is no stranger to the outdoor environment. Our touchpad is 100% waterproof and has been proven and perfected on our pool products. No guesswork here, just one tough boiler ready to take on jobs that others have to walk away from.

## Diagnostic Information

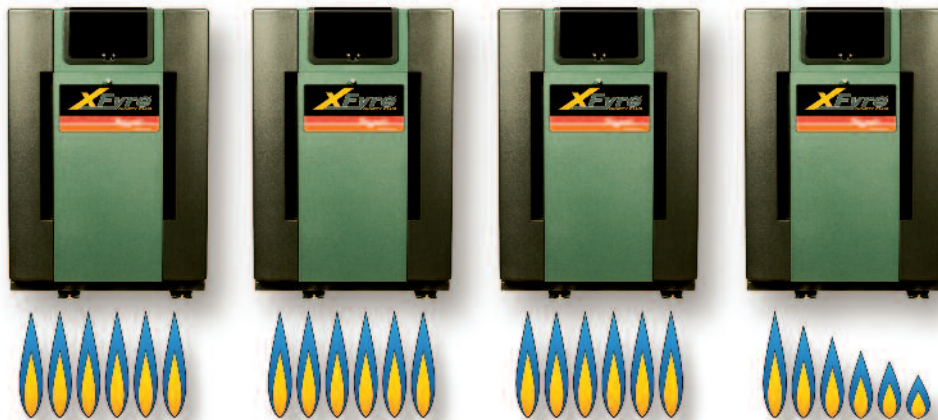
### Safety Faults

- Sensor Failure - 6
- Condensate Full
- Vent Temp Limit
- Low Water Level
- Low Water Flow
- High Temperature Limit
- Low Gas
- High Gas
- $\Delta T$  Error
- Blower Failure
- Blower Speed
- Low 24v Power
- History to 15 Faults

### Ignition Control Faults

- Ignition Failure
- False Flame Sense

# Xtreme Firing Rates



## Cascade up to 4 Boilers

## Deliver up to 3.4 Million BTU at a 20:1 turndown rate!

The XFire comes standard with a built-in Cascading Boiler Control. No other controls to buy, just daisy chain the units together with 2 wire shielded cable (not supplied) that connect to the front mounted low voltage wiring board. Designate a Cascade Master Boiler and set all the other boilers as Followers. It's that simple! The XFire has built-in Lead-Lag control. This allows rotation of the starting boiler so all boilers in the system remain active and the run times remain equal on each unit.



**HEAT EXCHANGER**

ASME Section IV, National Board Registered, 160 PSI	• H Stamp	●	●
Heat Exchanger Tubes	• 316L Stainless Steel	●	●
Stainless Steel	• CSA Certified CA AB-1953 low lead	●	●
Pressure Relief Valve (loose)	• 60 PSI • 125 PSI • 30, 45, 75, 150 PSI	○ ● ○	● ○ ○
Temperature & Pressure Gauge (Loose)		●	●
Pump	• 120V, Single-Phase	○	○

**JACKET**

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

**OPERATING CONTROLS**

120V Power Supply		●	●
On/Off Switch		●	●
Programmable Pump Time Delay, Single-Phase	• Included in Controller	●	●
Terminal Block Connections (Front mounted)	• Enable / Disable • 0-10 VDC Setpoint/Direct Drive Input	● ●	● ●
LCD diagnostic display with 10-Event History		●	●
Versa IC Control System (Cascade up to 4 heaters)	• (up to 5:1 Turndown) • Outdoor Reset Sensor • DHW Indirect Sensor	● N/A N/A	● ○ ●
External Multiple Boiler Controllers	• TempTracker Mod+ Hybrid (up to 5:1 Turndown)	○	○

**SAFETIES**

Direct Spark Ignition System	• 1-try • 3-try	○ ●	○ ●
High/Low Gas Pressure Switches		○	○
Blocked Vent Switch		●	●
High Limit Switch	• Manual Reset, Fixed • Automatic Reset, Fixed • Adjustable	● ○ ○	● ○ ○
Low Water Cut-Off, 24V	• With Manual Reset and Test Buttons	○	○
Flow Switch		●	●

**GAS TRAIN**

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

**OTHER**

CSA-Certified Efficiency	• 94% at Full Fire • 95% at Full Fire • 99% at Part Load	N/A ● ●	● N/A ●
Air Filter		●	●
TruSeal Direct-Vent		○	○
Alarm Contacts		●	●
CSD-1 / GE GAP Control System		○	○
Low NOx	• Meets all current requirements	●	●
Condensate Drain and Trap		●	●
Condensate Neutralizer		○	○

● ● = Standard    ○ ○ = Optional

