



**Product Submittal for Raytherm® - Type P  
Professional-Series Pool Heaters  
Models 1414-1758**

**Outdoor only**

Date: \_\_\_\_\_ Job: \_\_\_\_\_ Location: \_\_\_\_\_

Equipment Tags: \_\_\_\_\_ Engineer: \_\_\_\_\_ Contractor: \_\_\_\_\_

Model: \_\_\_\_\_ Notes: \_\_\_\_\_

Prepared by: \_\_\_\_\_ Gas Type: Natural Gas  Propane

82% Thermal efficiency

100% Factory fire-tested

Limited twenty-year warranty against thermal shock damage

Limited five-year heat exchanger warranty

Maximum setpoint: 106°F

A floor load of 70 lbs./sq. ft. or less

Cuts fuel costs substantially because the standby and radiation losses normal to other boilers are eliminated

Operates with water temperature at the tubes as low as 105°F without condensing

Proudly assembled in the USA



**H-Bypass option shown.**





Job: \_\_\_\_\_

**Features and Options**

**Heat Exchanger**

- ASME Inspected and stamped, 160 PSIG
- National board registered
- Bronze headers
- Cupronickel finned tubing
- ASME Steel tube sheet
- Silicone high-temp O-rings
- 125 PSIG ASME pressure relief valve
- Temperature and pressure gauge
- Water connections
  - Left-hand (standard)
  - A-6 Right-hand

**Controls**

- 120 VAC, 60 Hz, 1 Ph power supply
- 120/24 V Transformer
- 100% Pilot shutoff/lockout
- Electronic, intermittent ignition device (IID) pilot
- High limit, manual reset, fixed, 180°F
- High limit, auto reset, fixed, 140°F (loose)
- Flow Switch
- Economaster pump delay
- On/Off power switch
- Poolstat, 66-106°F

**Gas Train**

- Combination valve
- Manual main gas shutoff cock
- Firing mode - on/off
- Fuel (Left-hand connection)
  - Natural gas
  - Propane gas (minimum grade HD-5)

**Construction**

- Outdoor construction
- Enclosed front controls
- Stainless steel burners
- PolyTuf powder-coat finish
- Design Certified ANSI Z21.56/CSA 4.7

**Base**

- J-1 Combustible floor shield

**Venting**

- Stackless top

**Bypass Options (see following)**

- None (by others)
- H H-Bypass (default)
- CWR Cold water run

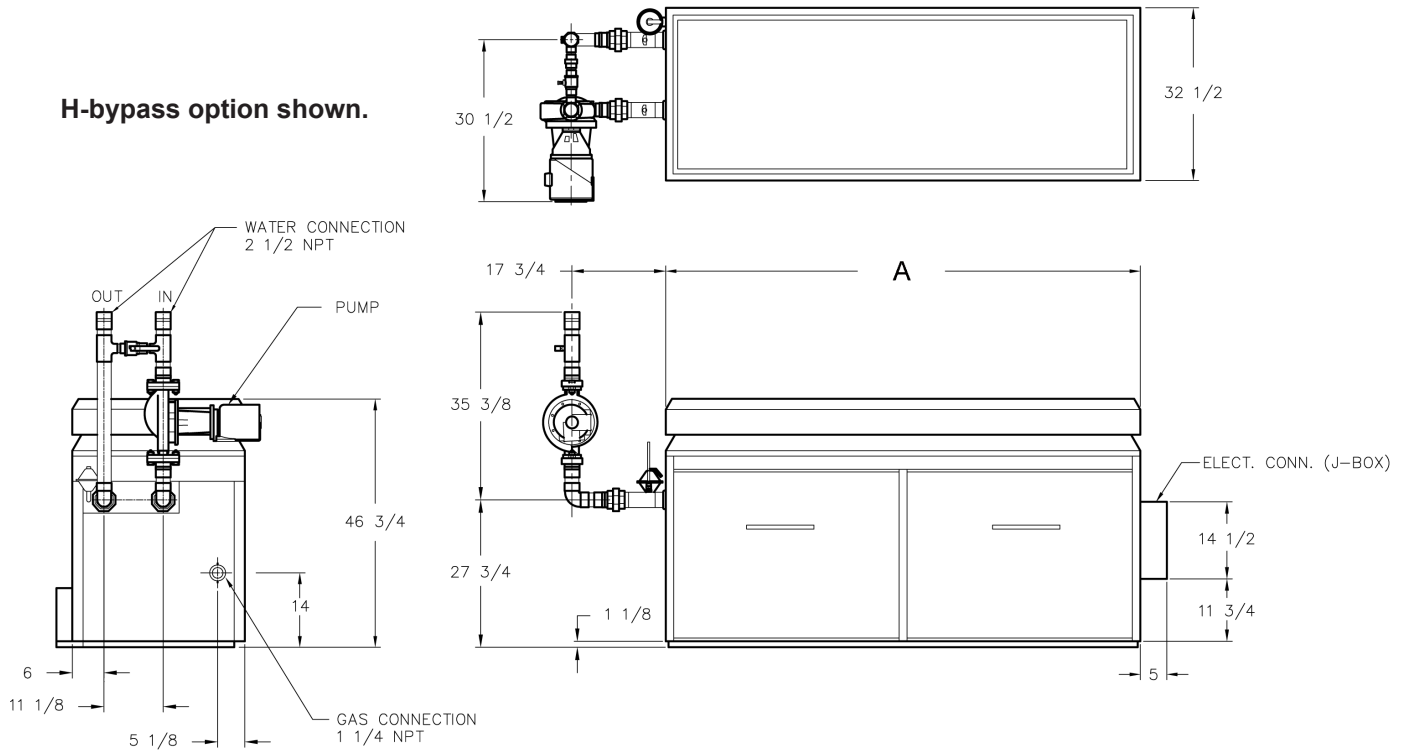
**Additional Safety Controls**

- B-22 Pump override
- C-5 Latching lockout module (CSD-1)
- E-4 Alarm package
  - 3" bell
  - 4" bell
- F-9 Low water cut-off
- I-6 Temp control, 100°F max
- M-1 Safety valve, motorized
- M-10 Safety valve, solenoid
- S-1 Low gas pressure switch, manual reset
- S-2 High gas pressure switch, manual reset
- \_\_\_\_\_
- \_\_\_\_\_

**Regulatory Agency Requirements**

- G-1 CSD-1 (factory mtd)  
Exempt from CSD-1 as of 2004 edition
- G-15 CSD-1 field upgrade kit

H-bypass option shown.



Model No.	MBTUH Nat (x1000)* (kWh)		Width A Inches (mm)	Approx. Shipping Weight lbs. (kg)	Heater Amp Draw
	MTBU Input	MTBU Output			
P-1414	1413.0 (414)	1158.5 (339)	74-7/8 (1901)	1050 (476)	<12
P-1571	1570.0 (460)	1287.0 (377)	81-1/8 (2060)	1065 (483)	
P-1758	1758.0 (515)	1441.5 (422)	89-3/8 (2270)	1140 (517)	

Ratings shown are for natural gas at elevations up to 2,000 feet. For elevations over 2,000 feet, reduce ratings at the rate of 4% for each 1,000 feet above sea level.

\* For propane ratings, multiply natural gas values by 0.955.

Front-mounted pump is 3/4 HP, 120 VAC 1Ø 60 Hz, 11 amp.

The H-bypass design uses a pumped bypass with manual valves to control the inlet water temp to avoid condensation and scaling.

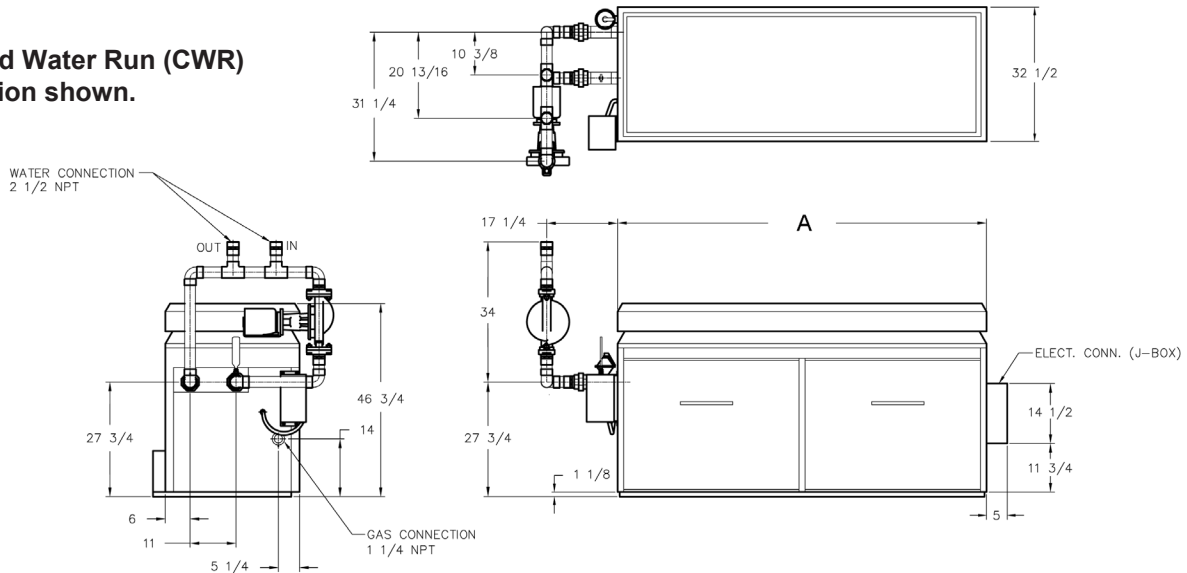
Primary/secondary piping is required for proper operation.

### HEATER FLOW RATES with H-Bypass

Model No.	Loop Flow GPM (LPM)	Heater Flow GPM (LPM)
P-1414	30-50 (113-189)	85 (321)
P-1571	40-65 (151-246)	
P-1758	45-70 (170-264)	

Adjust flow to obtain 120°F outlet temperature.

Cold Water Run (CWR) option shown.



Model No.	MBTUH Nat (x1000)* (kWh)		Width A Inches (mm)	Approx. Shipping Weight lbs. (kg)	Heater Amp Draw	CWR Amp Draw	
	MTBU Input	MTBU Output				120 VAC	240 VAC
P-1414	1413.0 (414)	1158.5 (339)	74-7/8 (1901)	1065 (483)	<12	16.6	8.3
P-1571	1570.0 (460)	1287.0 (377)	81-1/8 (2060)	1120 (508)			
P-1758	1758.0 (515)	1441.5 (422)	89-3/8 (2270)	1140 (517)			

Ratings shown are for natural gas at elevations up to 2,000 feet. For elevations over 2,000 feet, reduce ratings at the rate of 4% for each 1,000 feet above sea level.

\* For propane ratings, multiply natural gas values by 0.955.

Front-mounted pump is 3/4 HP, 120 VAC 1Ø 60 Hz, 11 amp.

The Cold Water Run bypass design uses a variable-speed injector pump to automatically control the inlet water temperature to avoid condensation and scaling, even when the pool water changes temperature rapidly.

**Primary/secondary piping is required for proper operation.**

Separate 120 VAC 1Ø or 240 VAC 1Ø power required for Cold Water Run control. The control provides 3-phase power to the injector pump.

Also requires  P-47 Flange Kit for Injector Pump. The injector pump is included with the option, and ships loose for installation at the bypass inlet.

### Cold Water Run Pump Data

Model No.	Heater Pump			P-45 Injector Pump*			
	Flow GPM (LPM)	ΔT °F (°C)	Pressure Drop (ft. hd.)	Flow GPM (LPM)	ΔT °F (°C)	Pump HP	Pump P/N
P-1414	90 (340)	27 (15)	14	60 (227)	40 (22.2)	1/3	951394
P-1571		30 (16.7)	14.5		45 (25)		
P-1758		34 (18.9)	15.4		50 (27.8)		

\*Requires separate circuit breaker