Job: _____

Engineer: _____

Contractor: _____

Prepared By: _____ Date: _____

Model: _____ Indoor/Outdoor: _____

XTherm™ - Type H

Heating Boilers
Models 1005A-2005A

96% Thermal Efficiency at Full Rate; Up to 99% at Part Load

100% Factory Fire Tested

VERSA IC™ Modulating Controller with LCD Display

Full Electronic Modulation, Constant Ratio 7:1 Turndown

Full Safety Diagnostics with History

Status Display Lights

Cascade up to 4 Heaters – No External Sequencer Required

Modbus RTU BMS Port

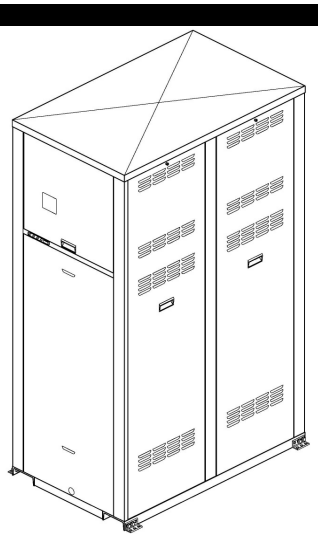
Maximum Outlet Water Temperature: 235°F

Minimum Inlet Water Temperature: 50°F

Limited Twenty-Five-Year Thermal Shock Warranty

Limited Ten-Year Primary Heat Exchanger Warranty

Limited Ten-Year Secondary Heat Exchanger Warranty



Proudly Made in the USA

Heat Exchanger
- Headers
  - ☐ Cast Iron – Standard
  - ☐ Bronze – Option A-1
- ASME H Stamped; 160 PSIG MAWP
- National Board Listed
- Fin Tubing
  - ☐ Copper – Standard
  - ☐ Cupro Nickel – Option A-3
- ASME Powder-Coated Tube Sheet
- Silicone High Temp O-Rings
- ASME Pressure Relief Valve
  - ☐ 60 PSIG – Standard
  - ☐ _____ PSIG – Optional
- 150 PSI Air Vent, Auto
- T&P Gauge, Shipped Loose
- Stainless Steel Secondary Heat Exchanger
- Stainless Steel Evaporator Plate
- Boiler Pump: 120V, 1Ø, 60Hz;
  - ☐ Cast Iron – Standard
  - ☐ Bronze – Option

Control
- 120V, 60Hz, 1Ø, Power Supply
- 120/24V 60Hz Transformer
- Ignition Module
  - ☐ 3-Try – Standard
  - ☐ Single-Try – Option C-6
- Hot Surface Ignition (HSI)
- Remote Flame Sensor
- Fixed High Limit, Manual Reset, 240°F
- On/Off Power Switch
- Flow Switch
- Blocked Vent Pressure Switch
- Freeze Protection
- Alarm Dry Contact
- Pump Outputs – Pilot Duty
  - DHW Indirect
  - System
- Programmable Pump Time Delays
- LCD Display: Status, Fault and Diagnostics
- Modulating Temperature Control; 7:1 turndown
- Water Temperature Sensors (7)
- Cold Water Protection – Built In
- Blocked Condensate Switch
- Modbus RTU BMS Port (Up to 115K Baud Rate, see Cat. No. 5000.73)
- ☐ B-85 BMS Gateway, Modbus RTU to Modbus TCP, N2 Metasys, BACnet IP, or BACnet MS/TP
- ☐ B-86 BMS Gateway, Modbus RTU to LonWorks

Burner
- Radially Fired Knitted Burner

Gas Train
- Fuel
  - ☐ Natural Gas
  - ☐ Propane
- Dual-Seat Combination Valve
- Manual Shut Off Firing Valve

Construction
- Indoor/Outdoor Construction
- Enclosed Front Controls
- PolyTuf Powder Coat Finish
- Rear Connections (Water, Gas, Vent, Electrical, Comb. Air, Cond. Drain)
- Combustion Air Filter
- Design Certified ANSI Z21.13/CSA 4.9
- Front Connection Low Voltage Wiring

Venting
- Vent Termination, Cat IV
  - ☐ Outdoor or Indoor, Vertical – Option D-11
  - ☐ Indoor, Horizontal – Option D-15
- Extractor – Optional, Cat II
  - ☐ By others
  - ☐ Not required

Options
- ☐ D-32 PVC Vent Adapter (Includes 162ºF Manual High Limit) (Factory installed only)
- ☐ D-33 Centrotherm™ Polypropylene Vent Adapter (Includes 180ºF Manual High Limit) (shipped loose)
- ☐ F-10 Low Water Cut-Off, Remote Probe
- ☐ I-1 High Limit, Auto Reset, Adj., 100-240°F
- ☐ I-2 High Limit, Manual Reset, Adj., 100-240°F
- ☐ S-1 Low Gas Pressure Switch, Manual Reset
- ☐ S-2 High Gas Pressure Switch, Manual Reset
- ☐ Z-12 Condensate Neutralizer Kit

Regulatory Agency Requirements
- ☐ _____

Multi-Boiler Digital Temp Controllers
- ☐ B-36 TempTracker Mod+ Hybrid, 2-4 Boilers, OA Reset
- ☐ B-37 TempTracker Mod+ Hybrid, 5-10 Boilers, OA Reset
- ☐ B-38 TempTracker Mod+ Hybrid, 11-16 Boilers, OA Reset
- ☐ B-39* EMS 4-20 mA Remote Setpoint Interface Module
- ☐ B-62* BACnet MS/TP Interface Module (*only used with B-36 to B-38)

Raypak® A Rheem® Company

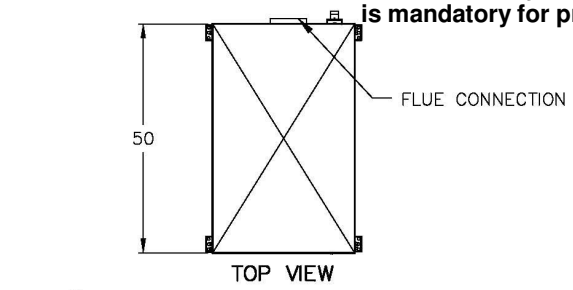
XTherm – Type H
Models 1005A-2005A

Model _____

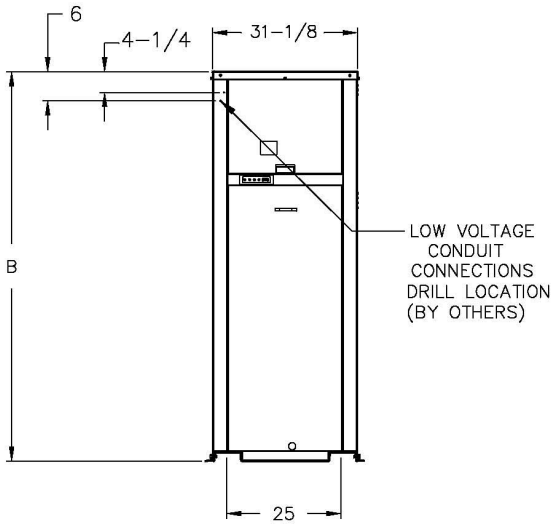
NOTE: Primary/Secondary plumbing is mandatory for proper operation.

CLEARANCES (in.)

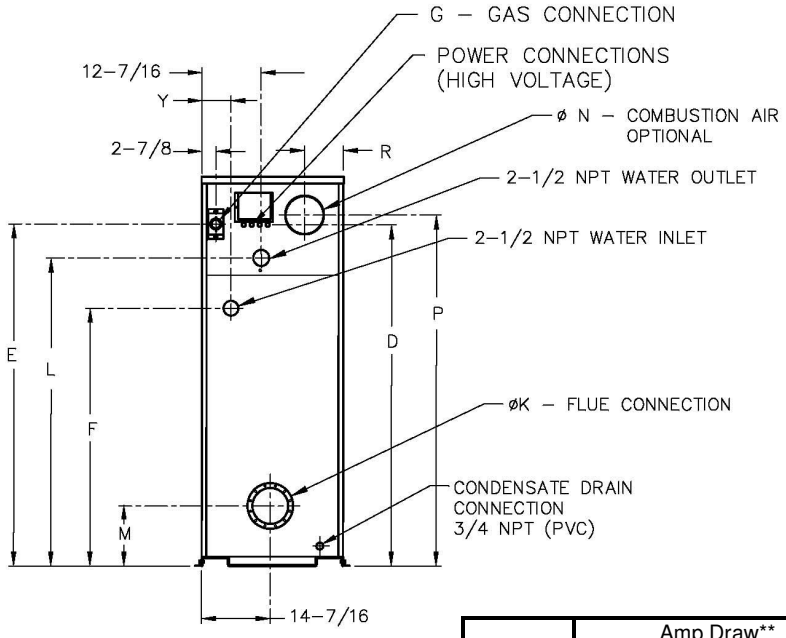
	Front	Rear	Right	Left	Top	Floor	Vent
Certified Minimum	24	12	1	1	0	0	1
Minimum Service	24	36	24	1	10	N/A	N/A



TOP VIEW



FRONT VIEW



REAR VIEW

Model	Amp Draw**	
	Boiler †	Pump †
1005A	12**	10
1505A	12**	14
2005A	18**	17

† Separate power connections are factory supplied and separate supply breakers must be field supplied.
** Current draw is for boiler only (Supply breaker must have delayed trip).

Model (H7-)	MBTUH		Dimensions (in)												Ship Weight (Lbs.)
	Input	Output	B Height	D	E	F	G* NPT	K Flue Ø	L	M	N C/A Ø	P	R	Y	
☐1005A	999	959	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
☐1505A	1500	1440	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
☐2005A	1999	1919	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

Note: Ratings shown are for elevations up to 4,500 feet. For installations at elevations above 4,500 feet, please consult the factory for additional instructions.

* For Propane Gas, all models are 1" NPT

System Return Temp (ºF)	☐Model 1005A			☐Model 1505A			☐Model 2005A		
	Supply Temp[1] (ºF)	Minimum Pipe Size[2]		Supply Temp[1] (ºF)	Minimum Pipe Size[2]		Supply Temp[1] (ºF)	Minimum Pipe Size[2]	
		<80' eq	80-200' eq		<80' eq	80-200' eq		<80' eq	80-200' eq
60	138	2" NPT	2-1/2" NPT	147	2" NPT	2-1/2" NPT	154	2" NPT	2-1/2" NPT
80	138	2" NPT	2-1/2" NPT	147	2" NPT	2-1/2" NPT	154	2-1/2" NPT	3" NPT
100	138	2-1/2" NPT	3" NPT	147	2-1/2" NPT	3" NPT	154	2-1/2" NPT	3" NPT
120	145	2-1/2" NPT	3" NPT	158	2-1/2" NPT	3" NPT	170	2-1/2" NPT	3" NPT
140	165	2-1/2" NPT	3" NPT	178	2-1/2" NPT	3" NPT	190	2-1/2" NPT	3" NPT
160	185	2-1/2" NPT	3" NPT	198	2-1/2" NPT	3" NPT	210	2-1/2" NPT	3" NPT

[1] – Approximate high fire heater outlet temperature based on the standard heater pump and recommended connecting pipe size.

[2] – Minimum pipe size based on total equivalent feet of supply and return piping between the system loop and heater.

M6

Plate Heat Exchanger

M6-FG

Applications
General heating and cooling duties. Heating by means of steam.

Standard design
The plate heat exchanger consists of a pack of corrugated metal plates with portholes for the passage of the two fluids between which heat transfer will take place.

The plate pack is assembled between a fix frame plate and a movable pressure plate and compressed by tightening bolts. The plates are fitted with a gasket which seals the interplate channel and directs the fluids into alternate channels. The number of plates is determined by the flow rate, physical properties of the fluids, pressure drop and temperature program. The plate corrugations promote fluid turbulence and support the plates against differential pressure.

The frame plate and the pressure plate are suspended from an upper carrying bar and located by a lower guiding bar, both of which are fixed to a support column.

Connections are located in the frame plate or, if either or both fluids make more than a single pass within the unit, in the frame and pressure plates.

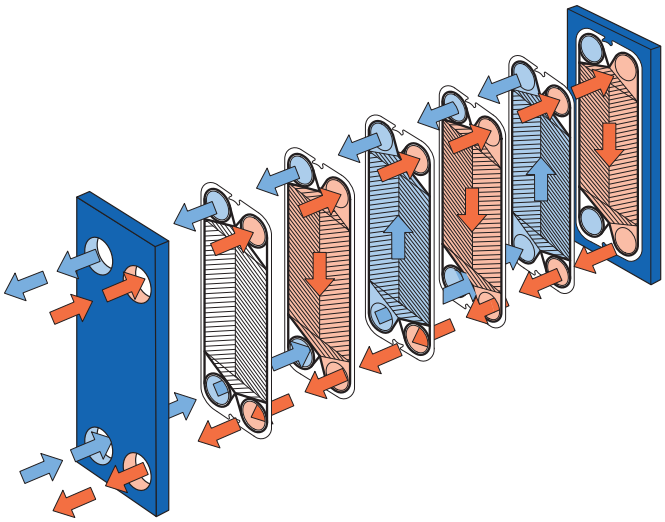
Typical capacities
Liquid flow rate
Up to 16 kg/s (250 gpm), depending on media, permitted pressue drop and temperature program.

Water heating by steam
300 to 800 kW

Plate types
M6, M6-M and M6-MD

Frame types
FM, FG and FD

Working principle
Channels are formed between the plates and the corner ports are arranged so that the two media flow through alternate channels. The heat is transferred through the plate between the channels, and complete counter-current flow is created for highest possible efficiency. The corrugation of the plates provides the passage between the plates, supports each plate against the adjacent one and enhances the turbulence, resulting in efficient heat transfer.



Flow principle of a plate heat exchanger

STANDARD MATERIALS

Frame plate
Mild steel, Epoxy painted

Nozzles
Carbon steel
Metal lined: Stainless steel, Titanium, Alloy 254 SMO, Alloy C276
Rubber lined: Nitrile, EPDM

Plates
Stainless steel: Alloy 316, Alloy 304. Alloy 254 SMO, Alloy C276, Titanium

Gaskets
Nitrile, EPDM, Viton®
Other grades and material available on request.

TECHNICAL DATA

Pressure vessel codes, PED, ASME, pvcALS™

Mechanical design pressure (g) / temperature

FM	pvcALS™	1.0 MPa / 180°C
FG	PED	1.6 MPa / 180°C
FG	ASME	162 psig / 482°F
FG	pvcALS™	1.6 MPa / 180°C
FD	PED, pvcALS™	2.5 MPa / 180°C
FD	ASME	351 psig / 482°F

Connections

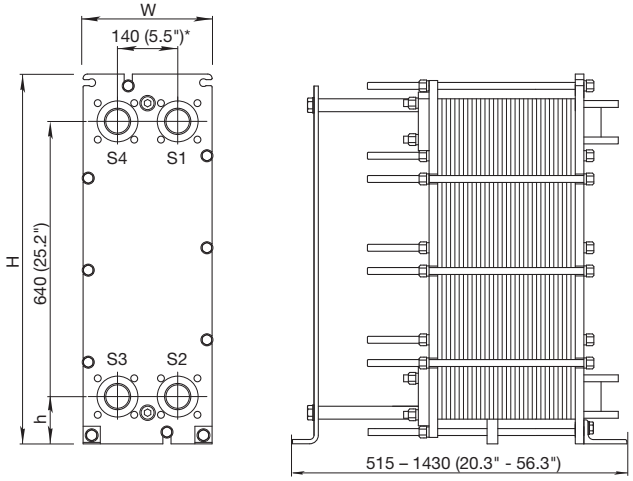
Pipe connections (not for frame type FD)

	Size:	
Straight threaded	50 mm	ISO G2"
Tapered threaded	50 mm	ISO R2", NPT2"
Straight weld	50 mm	
Threaded inlet port	50 mm	ISO G2"

Flange connections

		Size:	
FM	pvcALS™	50 mm	DIN/GB/GOST PN10, ASME Cl. 150, JIS 10K
FG	PED	50 mm	DIN PN16, ASME Cl. 150
FG	ASME	2"	ASME Cl. 150
FG	pvcALS™	50 mm	DIN/GB/GOST PN16, ASME Cl. 150, JIS 16K
FD	PED	50 mm	DIN PN25, ASME Cl. 300
FD	ASME	2"	ASME Cl. 300
FD	ALS	50 mm	DIN, GB, GOST PN25, JIS 20K

Dimensions



* Displacement of some connection types occur.

Measurements mm (inch)

Type	H	W	h
M6-FM	920 (36.2")	320 (12.6")	140 (5.5")
M6-FG	920 (36.2")	320 (12.6")	140 (5.5")
M6-FD	940 (37.0")	330 (13.0")	150 (5.9")

The number of tightening bolts may vary depending on pressure rating.

Maximum heat transfer surface
38 m² (400 sq. ft)

Particulars required for quotation
- Flow rates or heat load
- Temperature program
- Physical properties of liquids in question (if not water)
- Desired working pressure
- Maximum permitted pressure drop
- Available steam pressure