

## RHP120 – RHP300 Steam Boiler Series



### Features

- Maximum safety valve setting 150psi
- All boilers are manufactured in accordance with the requirements of the A.S.M.E. Boiler and Pressure Vessel Code and A.S.M.E. CSD-1. Each boiler bears the National Board Stamp "S".
- High quality saturated steam, operating pressure range 0 – 135psig
- Heavy duty carbon steel pressure vessel. Vessel jacket and electrical enclosure made from black painted carbon steel
- Large selection of optional equipment

### Standard Equipment of Each Boiler Includes:

- A.S.M.E. pressure relief valve
- One (1) slow opening boiler bottom blowoff valve as per A.S.M.E. Code B31.1
- Steam outlet globe valve
- High pressure feed pump in RHPH- and RHPHC-models
- One (1) primary high pressure cutoff control with automatic reset and one (1) secondary high pressure cutoff control with manual reset
- One (1) primary low water cutoff control with automatic reset and one (1) secondary low water cutoff with manual reset
- PID-step controller with number of heating stages depending on boiler model
- Digital readout of the operating pressure
- Magnetic contactors
- Internal branch circuit fusing
- Main supply power distribution block
- Indicator lights for POWER, REFILLING, HEATING, ALARMS and Automatic Boiler Blowoff Status
- Pressure and water level gauge

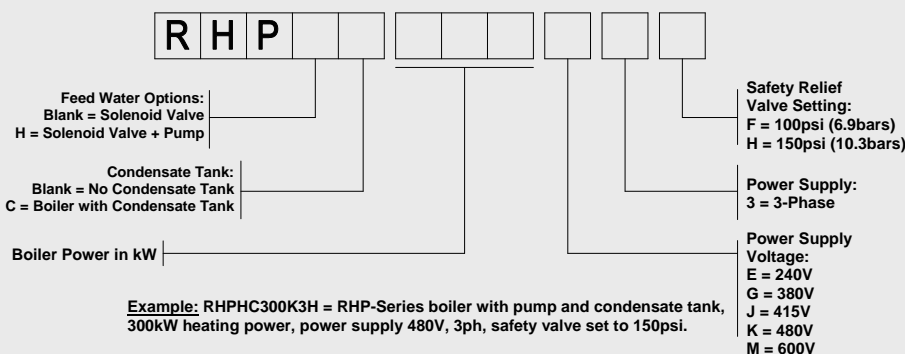


### Applications

- Process Steam
- Industrial Autoclaves
- Air Humidification
- Dry Cleaning
- Food Service
- Laboratories
- Automotive Industry

HEATING POWER kW	STEAM CAPACITY lbs/hr (kg/hr) <sup>(3)</sup>	BHP	VOLTAGE <sup>(1)</sup>	PHASE	NUMBER OF HEATING STAGES	SHIP WT. <sup>(2)</sup> lbs (kg)	PRESSURE VESSEL CAPACITY GAL. (L)	OP. PRESS. RANGE psig (bar)	Steam Outlet Size (NPT) Steam Pressure	
									LP < 15psig	HP > 15psig
120 KW	409.0 (185.3)	12	240/380/415/480/600	3	4	1,300 (589)	78.5 (297)	0-135 (0 – 9.3)	2"	1-1/4"
150 KW	512.0 (232.0)	15	240/380/415/480/600	3	5	1,400 (634)	78.5 (297)	0-135 (0 – 9.3)	2"	1-1/4"
180 KW	614.0 (278.0)	18	240/380/415/480/600	3	6	1,500 (680)	78.5 (297)	0-135 (0 – 9.3)	3"	1-1/2"
210kW	717.0 (324.8)	21	240/380/415/480/600	3	6	1,600 (725)	78.5 (297)	0-135(0 – 9.3)	3"	1-1/2"
240kW	819.0 (370.6)	24	380/415/480/600	3	6	1,650 (748)	78.5 (297)	0-135(0 – 9.3)	3"	2"
300kW	1,024.0 (464.0)	30	380/415/480/600	3	6	1,700 (770)	78.5 (297)	0-135 (0 – 9.3)	3"	2"

### Model Number Key



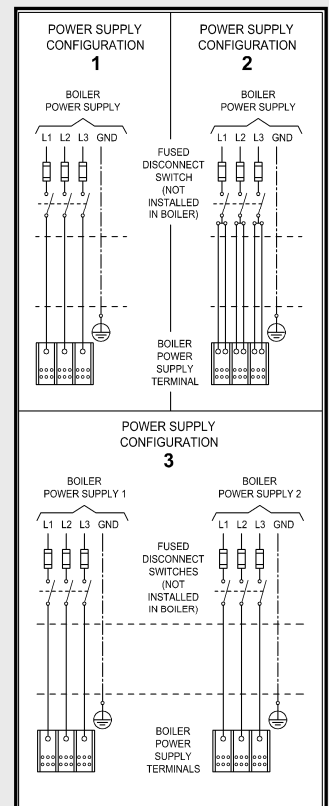
<sup>(1)</sup> Each boiler model requires two (2) power supplies: Primary heating power and secondary control voltage. Nominal control voltage is 120V, 50/60Hz. Boiler models rated for 380V and 415V are equipped with control voltage transformers that require 220/240V applied to their primary side in order to provide the 120V AC control voltage to the boiler. As an option, all boiler models can be equipped with control voltage transformers so that only the heating power supply needs to be connected to the boiler.

<sup>(2)</sup> On boiler equipped with condensate tank, add 180lbs (82kg)

<sup>(3)</sup> The STEAM CAPACITY listed above is based on the evaporation rate from and at 212°F, at 0psig. If the boiler feed water temperature is 50°F, then the STEAM CAPACITY for each model listed above is approximately 15% lower.

## Electrical Specifications

HEATING POWER kW	VOLT AGE V	PH	AMP DRAW A	MIN REQ. N.E.C. SERVICE A	INTERNAL POWER FUSING	INTERNAL ELEMENT WIRING AWG (mm <sup>2</sup> )	NUMBER & SIZES OF CONTACTORS	NUMBER & SIZE OF ELEMENTS	POWER SUPPLY	
									TERMINAL MAX. CONDUCTOR SIZE	CONFIGURATION
120	240	3	288.7	361.0	12 x 90A, 250V	6 (13.3)	4 x 93A res.	4 x 30kW, 240V, 3ph	3 x 500MCM	1
	380	3	182.3	228.0	12 x 60A, 600V	8 (8.35)	4 X 75A res.	4 x 30kW, 380V, 3ph	3 x 500MCM	1
	415	3	166.9	209.0	12 x 50A, 600V	8 (8.35)	4 x 50A res.	4 x 30kW, 415V, 3ph	3 x 500MCM	1
	480	3	144.3	181.0	12 x 50A, 600V	8 (8.35)	4 x 50A res.	4 x 30kW, 480V, 3ph	3 x 500MCM	1
	600	3	115.5	145.0	12 x 40A, 600V	8 (8.35)	4 x 50A res.	4 x 30kW, 600V, 3ph	3 x 2/0AWG	1
150	240	3	360.8	451.0	15 x 90A, 250V	6 (13.3)	5 x 93A res.	5 x 30kW, 240V, 3ph	6 x 500MCM	2
	380	3	227.9	285.0	15 x 60A, 600V	8 (8.35)	5 X 75A res.	5 x 30kW, 380V, 3ph	3 x 500MCM	1
	415	3	208.7	261.0	15 x 50A, 600V	8 (8.35)	5 x 50A res.	5 x 30kW, 415V, 3ph	3 x 500MCM	1
	480	3	180.4	226.0	15 x 50A, 600V	8 (8.35)	5 x 50A res.	5 x 30kW, 480V, 3ph	3 x 500MCM	1
	600	3	144.3	181.0	15 x 40A, 600V	8 (8.35)	5 x 50A res.	5 x 30kW, 600V, 3ph	3 x 500MCM	1
180	240	3	433.0	542.0	18 x 90A, 250V	6 (13.3)	6 x 93A res.	6 x 30kW, 240V, 3ph	6 x 500MCM	2
	380	3	273.5	342.0	18 x 60A, 600V	8 (8.35)	6 X 75A res.	6 x 30kW, 380V, 3ph	3 x 500MCM	1
	415	3	250.4	313.0	18 x 50A, 600V	8 (8.35)	6 x 50A res.	6 x 30kW, 415V, 3ph	3 x 500MCM	1
	480	3	216.5	271.0	18 x 50A, 600V	8 (8.35)	6 x 50A res.	6 x 30kW, 480V, 3ph	3 x 500MCM	1
	600	3	173.2	217.0	18 x 40A, 600V	8 (8.35)	6 x 50A res.	6 x 30kW, 600V, 3ph	3 x 500MCM	1
210	240	3	505.2	632.0	21 x 90A, 250V	6 (13.3)	7 x 93A res.	7 x 30kW, 240V, 3ph	6 x 500MCM	3
	380	3	319.1	399.0	21 x 60A, 600V	8 (8.35)	7 X 75A res.	7 x 30kW, 380V, 3ph	6 x 500MCM	2
	415	3	292.2	366.0	21 x 50A, 600V	8 (8.35)	7 x 50A res.	7 x 30kW, 415V, 3ph	3 x 500MCM	1
	480	3	252.6	316.0	21 x 50A, 600V	8 (8.35)	7 x 50A res.	7 x 30kW, 480V, 3ph	3 x 500MCM	1
	600	3	202.1	253.0	21 x 40A, 600V	8 (8.35)	7 x 50A res.	7 x 30kW, 600V, 3ph	3 x 500MCM	1
240	380	3	364.6	456.0	24 x 60A, 600V	8 (8.35)	8 X 75A res.	8 x 30kW, 380V, 3ph	6 x 500MCM	2
	415	3	333.9	418.0	6 x 100A, 600V 12 x 50A, 600V	8 (8.35)	8 x 50A res.	8 x 30kW, 415V, 3ph	6 x 500MCM	2
	480	3	288.7	361.0	6 x 90A, 600V 12 x 50A, 600V	8 (8.35)	8 x 50A res.	8 x 30kW, 480V, 3ph	3 x 500MCM	1
	600	3	230.9	289.0	6 x 70A, 600V 12 x 40A, 600V	8 (8.35)	8 x 50A res.	8 x 30kW, 600V, 3ph	3 x 500MCM	1
300	380	3	455.8	570.0	30 x 60A, 600V	8 (8.35)	10 X 75A res.	10 x 30kW, 380V, 3ph	3 x 500MCM	2
	415	3	417.4	522.0	12 x 100A, 600V 6 x 50A, 600V	8 (8.35)	10 x 50A res.	10 x 30kW, 415V, 3ph	3 x 500MCM	2
	480	3	360.8	451.0	12 x 90A, 600V 6 x 50A, 600V	8 (8.35)	10 x 50A res.	10 x 30kW, 480V, 3ph	3 x 500MCM	2
	600	3	288.7	361.0	12 x 70A, 600V 6 x 40A, 600V	8 (8.35)	10 x 50A res.	10 x 30kW, 600V, 3ph	3 x 500MCM	1



## Construction

**4 – 6 HEATING STAGES STEP CONTROLLER WITH FIRST ON – FIRST OFF SWITCHING SEQUENCE (FOFO)**

**PID – OPERATING PRESSURE CONTROLLER HONEYWELL T775U**

**ELECTRONIC BOILER CONTROLLER:**

- LOW WATER & HIGH PRESSURE LOCKOUT
- AUTOMATIC REFILL
- AUTOMATIC FLUSH & DRAIN FUNCTION
- BOILER MONITORING

**SHELL WRAPPER, BLACK PAINTED, 16GAGE CARBON STEEL**

**ELECTRICAL ENCLOSURE, NEMA1, BLACK PAINTED, 12GAGE CARBON STEEL**

**SAFETY RELIEF VALVE**

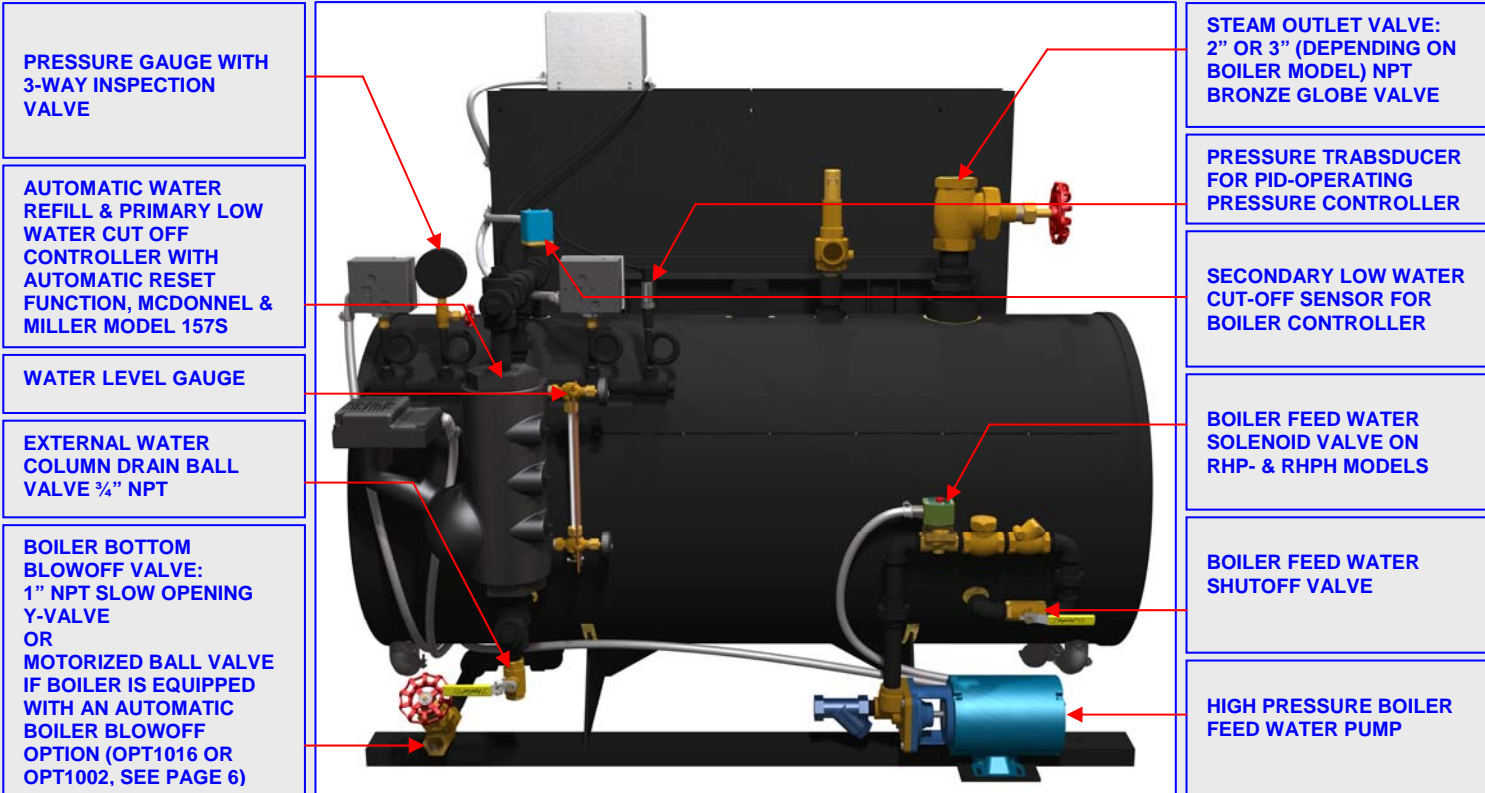
**SECONDARY PRESSURE SAFETY LIMIT CONTROL WITH MANUAL RESET FUNCTION**

**PRIMARY PRESSURE SAFETY LIMIT CONTROL WITH AUTOMATIC RESET FUNCTION**

**TWO (2) INSPECTION & CLEANOUT OPENINGS 3" NPT AS PER A.S.M.E. CODE (LOCATED IN OPPOSITE HEAD OF PRESSURE VESSEL; NOT SHOWN IN THIS IMAGE)**

**SHELL INSULATION: FIBERGLASS, 2" THICK**

**HEATING ELEMENTS, 30kW, 304 STAINLESS STEEL SHEATHING STANDARD; INCOLOY® SHEATHING OPTIONAL (SEE PAGE 6) 2" CARBON STEEL FLANGES CLASS 150#**



**PRESSURE GAUGE WITH 3-WAY INSPECTION VALVE**

**AUTOMATIC WATER REFILL & PRIMARY LOW WATER CUT OFF CONTROLLER WITH AUTOMATIC RESET FUNCTION, MCDONNELL & MILLER MODEL 157S**

**WATER LEVEL GAUGE**

**EXTERNAL WATER COLUMN DRAIN BALL VALVE 3/4" NPT**

**BOILER BOTTOM BLOWOFF VALVE: 1" NPT SLOW OPENING Y-VALVE OR MOTORIZED BALL VALVE IF BOILER IS EQUIPPED WITH AN AUTOMATIC BOILER BLOWOFF OPTION (OPT1016 OR OPT1002, SEE PAGE 6)**

**STEAM OUTLET VALVE: 2" OR 3" (DEPENDING ON BOILER MODEL) NPT BRONZE GLOBE VALVE**

**PRESSURE TRABSDUCER FOR PID-OPERATING PRESSURE CONTROLLER**

**SECONDARY LOW WATER CUT-OFF SENSOR FOR BOILER CONTROLLER**

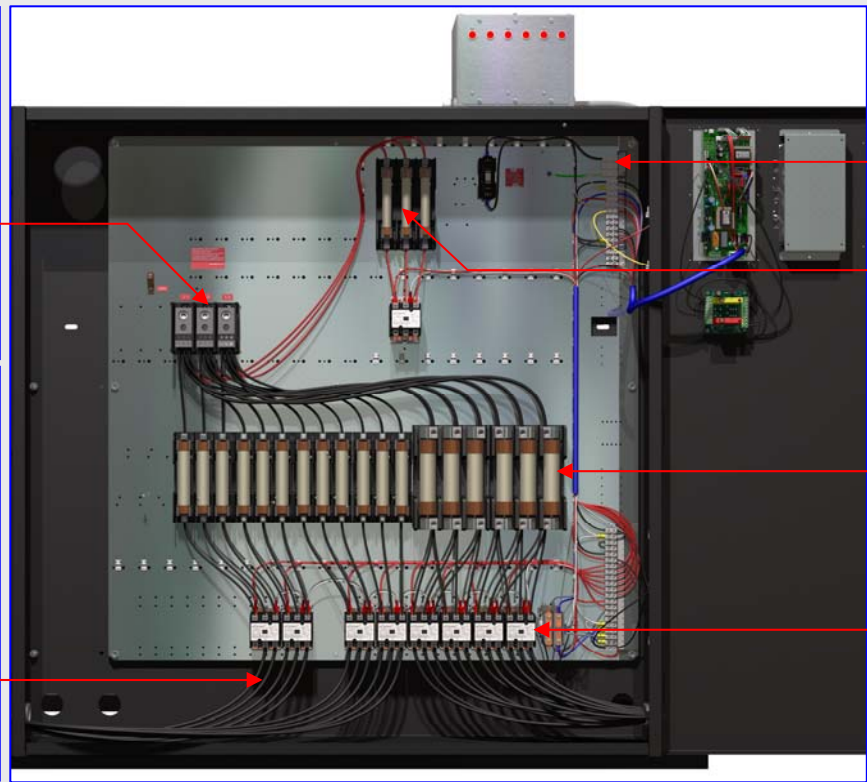
**BOILER FEED WATER SOLENOID VALVE ON RHP- & RHPH MODELS**

**BOILER FEED WATER SHUTOFF VALVE**

**HIGH PRESSURE BOILER FEED WATER PUMP**

**FIELD TERMINAL FOR POWER CIRCUITS; NUMBER AND SIZE OF TERMINALS PROVIDED PER CIRCUIT AND PHASE DEPENDS ON BOILER MODEL (REFER TO ELECTRICAL SPECIFICATION TABLE ON PAGE 2)**

**HEATING ELEMENT WIRING, RATED 125°C MINIMUM**



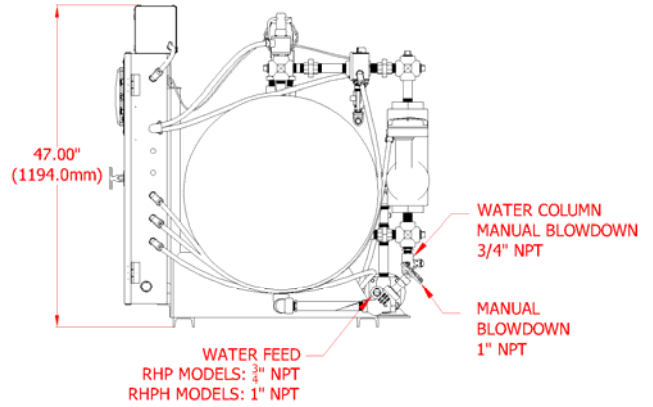
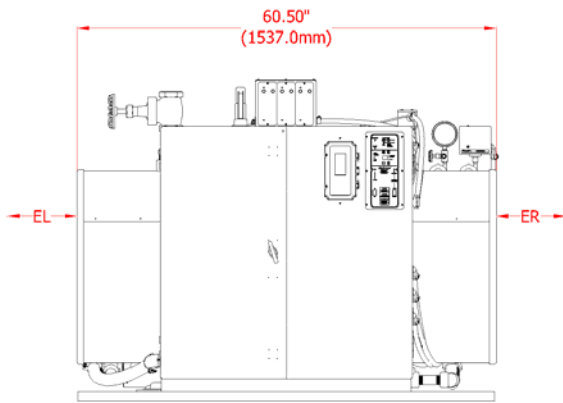
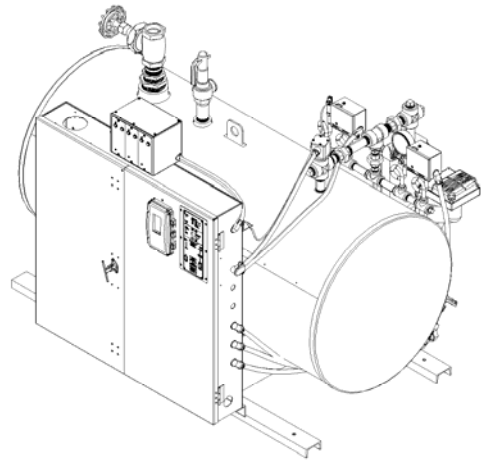
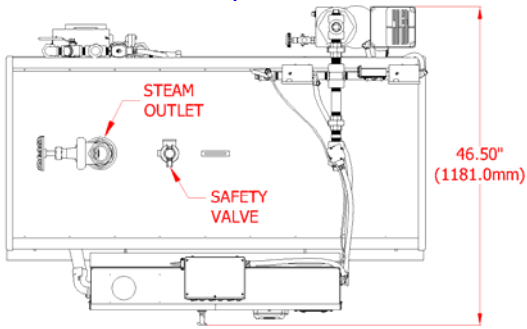
**FIELD TERMINAL FOR CONTROL VOLTAGE HOOKUP; NOT NEEDED WHEN A CONTROL VOLTAGE TRANSFORMER (OPT1010 OR OPT1011) IS INSTALLED**

**BOILER FEED WATER PUMP FUSING; UL CLASS RK5**

**HEATING ELEMENT CIRCUIT FUSING; UL CLASS K STANDARD OR UL CLASS J OPTIONAL**

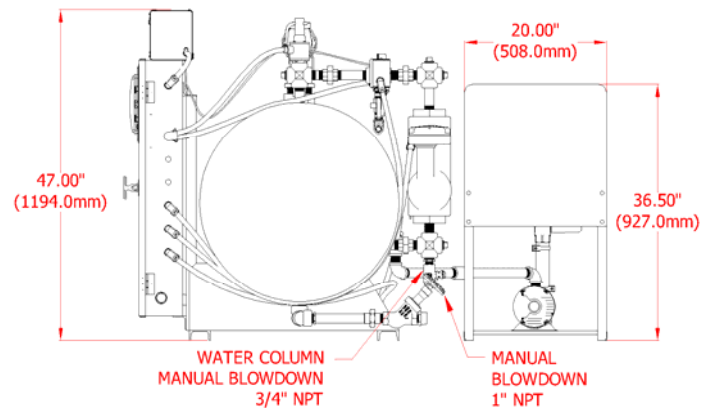
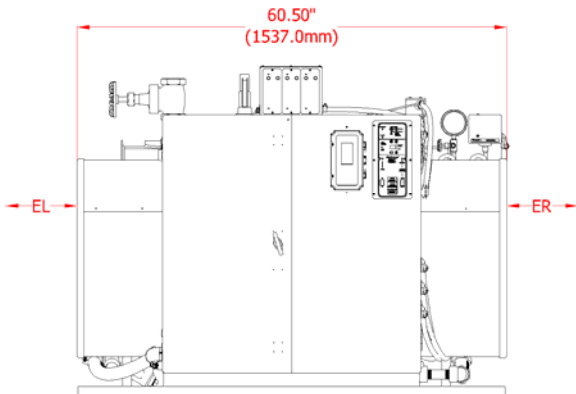
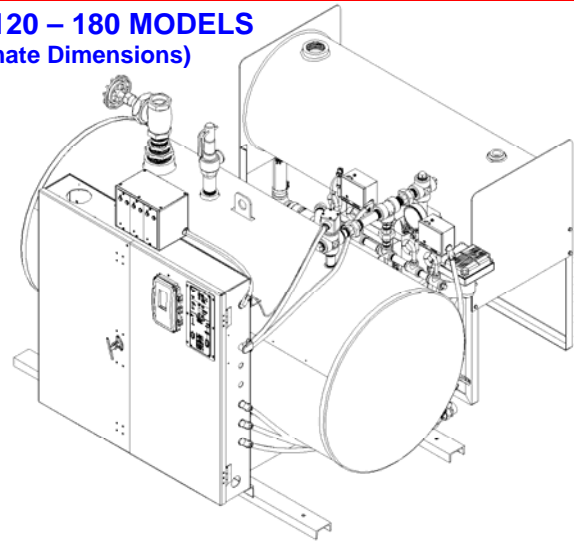
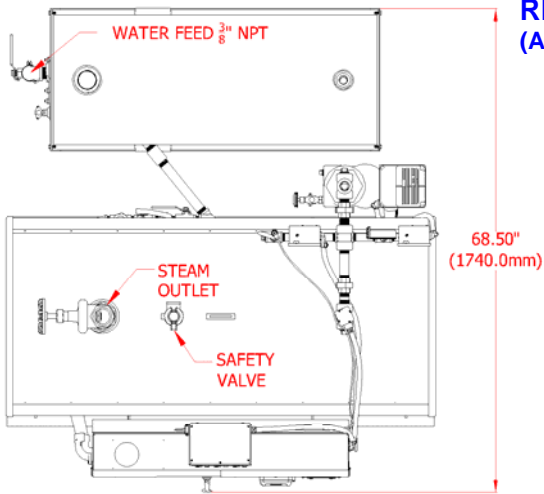
**HEATING ELEMENT CIRCUIT MAGNETIC CONTACTORS, RATED MIN. 250,000 CYCLES AT FULL RATED ELECTRICAL LOAD**

**RHP & RHPH120 – 180 MODELS**  
(Approximate Dimensions)



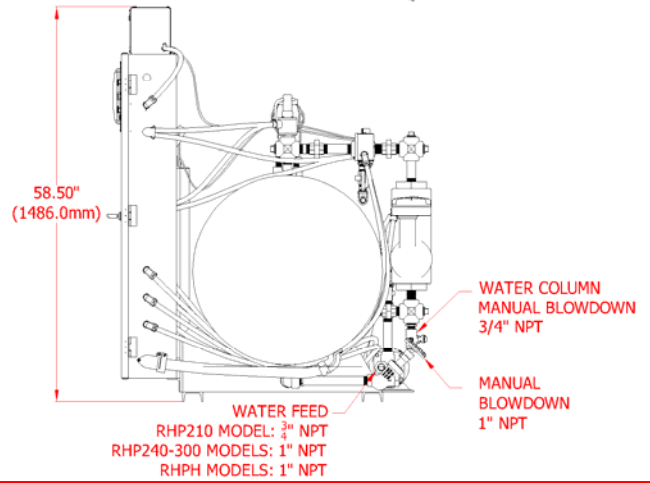
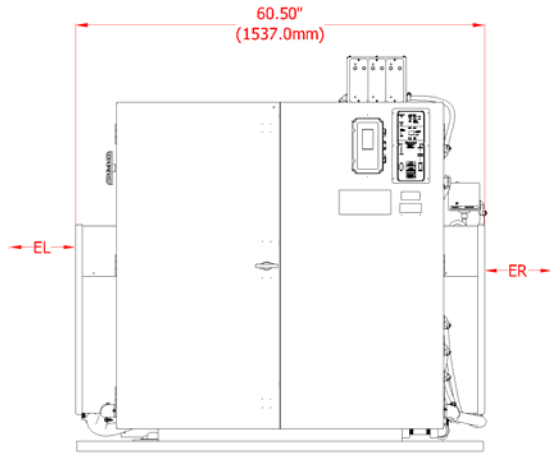
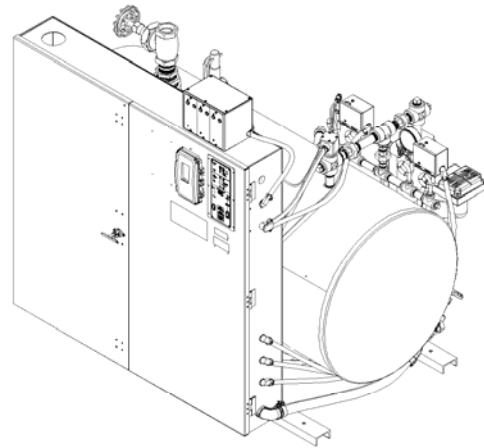
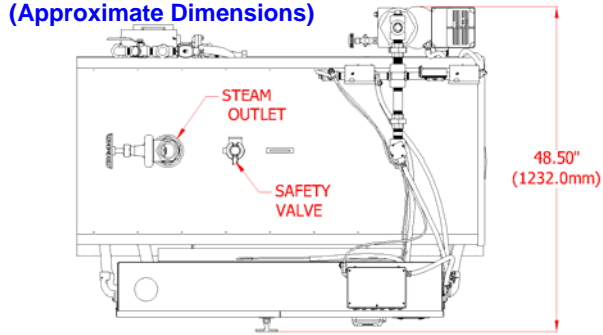
CLEARANCE FOR ELEMENT REMOVAL  
RHP & RHPH120 - 150: EL = 36" (915.0mm) ER = 0  
RHP & RHPH180: ER = EL = 36" (915.0mm)

**RHPHC120 – 180 MODELS**  
(Approximate Dimensions)



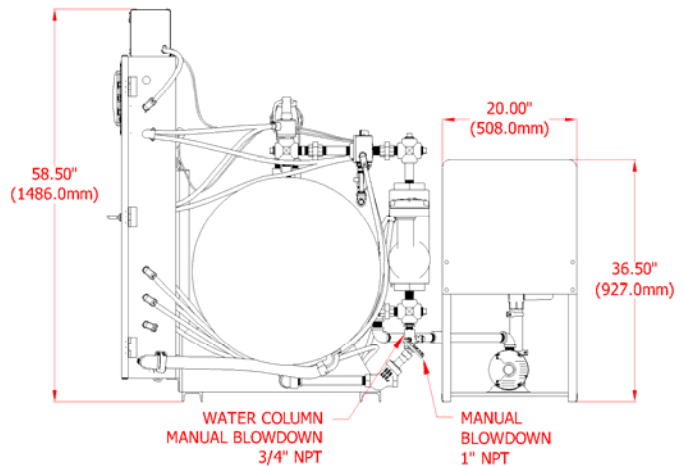
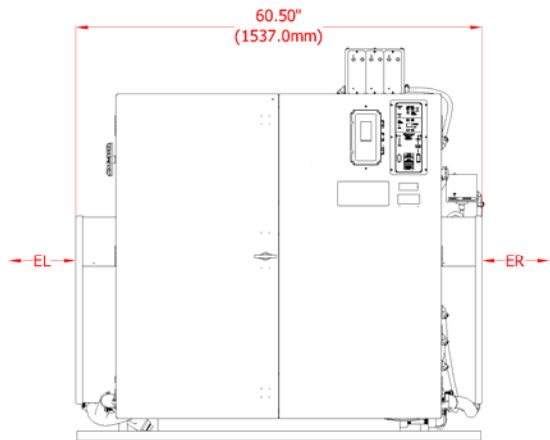
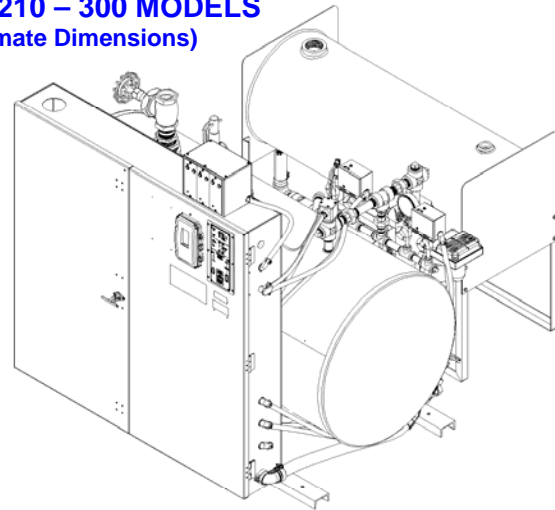
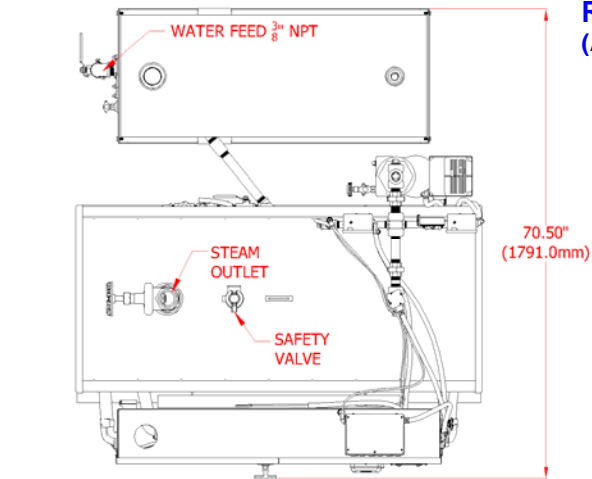
CLEARANCE FOR ELEMENT REMOVAL  
RHP & RHPH120 - 150: EL = 36" (915.0mm) ER = 0  
RHP & RHPH180: ER = EL = 36" (915.0mm)

**RHP & RHPH210 – 300 MODELS**  
(Approximate Dimensions)



CLEARANCE FOR ELEMENT REMOVAL: ER = EL = 36" (915.0mm)

**RHPHC210 – 300 MODELS**  
(Approximate Dimensions)



CLEARANCE FOR ELEMENT REMOVAL ER = EL = 36" (915.0mm)

## Optional Equipment

### 1. Timer Controlled Boiler Blowoff System, #OPT1001:



Program boiler blowoff day time and duration

When boiler blowoff time is reached:  
- Boiler control circuits turn off automatically  
- Boiler Blowoff Valve opens

Boiler Blowoff Valve installed between boiler and blow down tank



At the end of boiler blowoff:  
- Boiler Blowoff Valve closes  
- Boiler control circuits turn on automatically  
- The water level in boiler restores  
- Boiler resumes operation automatically

### 2. Automatic Flush & Drain System, #OPT1016

**Electronic Boiler Controller**



Steam pressure drops below setting of blowoff-pressure controller (15psig or less).



At the end of boiler blowoff, valve closes automatically.

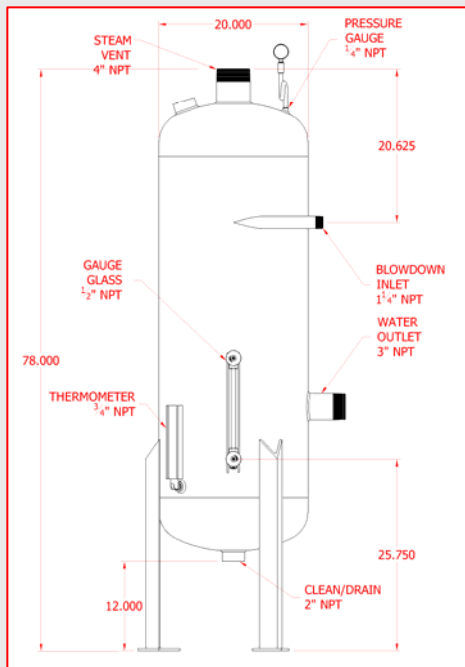
Boiler Blowoff Valve installed between boiler and blow down tank



Boiler Power OFF

Blowoff Enable ON

### 3. Blow Down Tank: #BTANK300USA/CRN



Typical Blowdown Tank Installation



### 4. Control Voltage Transformer

When using this option, only the main power supply is required to operate the boiler.

Boiler Voltage	Transformer Option Part Number	
	RHP-120 - RHP-210	RHP-240 - RHP-300
240V	OPT1010-240R	
380V	OPT1010-380	OPT1011 - 380RHP
415V	OPT1010-380	OPT1011 - 380RHP
480V	OPT1010-480R	OPT1011 - 480RHP
600V	OPT1010-600R	OPT1011 - 600RHP

### 5. Timer Controlled Boiler On/Off #OPT1017



Program timer to turn boiler ON/OFF automatically

### 6. INCOLOY® HEATING ELEMENT SHEATHING, #OPT-INCOLOY®