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 RPH- and RPHC-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 | STEAM CAPACITY | BHP | VOLTAGE(1) | PHASE | NUMBER OF HEATING STAGES | SHIP WT. (2) | PRESSURE VESSEL CAPACITY GAL. (L) | OP. PRESS. RANGE | Steam Outlet Size (NPT) | Steam Pressure
--- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ---
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″ | 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″

(1) 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.
(2) On boiler equipped with condensate tank, add 180lbs (82kg)
(3) 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.

Model Number Key

- Feed Water Options:
  - Blank = Solenoid Valve
  - H = Solenoid Valve + Pump
- Condensate Tank:
  - Blank = No Condensate Tank
  - C = Boiler with Condensate Tank
- Boiler Power in kW

Example: RPHHC300K3H = RHP-Series boiler with pump and condensate tank, 300kW heating power, power supply 480V, 3ph, safety valve set to 150psi.
### Electrical Specifications

<table>
<thead>
<tr>
<th>kW</th>
<th>V</th>
<th>A</th>
<th>A</th>
<th>12 x 90A, 250V</th>
<th>AWG (mm²)</th>
<th>4 x 93A res.</th>
<th>4 x 30kW, 240V, 3ph</th>
<th>3 x 500MCM</th>
<th>CONFIGURATION</th>
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<td>3</td>
<td>288.7</td>
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<td>380</td>
<td>220</td>
<td>3</td>
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<td>223</td>
<td>3</td>
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**Construction**

- **4 – 6 Heating Stages**
  - Step Controller with First On – First Off Switching Sequence (FOFO)
- **PID – Operating Pressure Controller**
  - Honeywell T77SU
- **Electronic Boiler Controller:**
  - Low Water & High Pressure Lockout
  - Automatic Refill
  - Automatic Flush & Drain Function
  - Boiler Monitoring
- **Shell Wrapper, Black Painted, 16 Gauge Carbon Steel**
- **Electrical Enclosure, NEMA1, Black Painted, 12 Gauge Carbon Steel**
- **Boiler Monitoring**
  - Valve: Three-Way, Two-Way
  - Drain and Balance
  - Automatic Refill
- **Primary Pressure Safety Limit Control with Automatic Reset Function**
- **Secondary Pressure Safety Limit Control with Manual Reset Function**
- **Safety Relief Valve**
- **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, MCDONNEL & MILLER MODEL 157S

WATER LEVEL GAUGE

EXTERNAL WATER
COLUMN DRAIN BALL VALVE ¾” 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)

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)

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

HEATING ELEMENT
WIRING, RATED 125°C
MINIMUM
RHP & RPH120 – 180 MODELS
(Approximate Dimensions)

RHPHC120 – 180 MODELS
(Approximate Dimensions)
Optional Equipment

1. **Timer Controlled Boiler Blowoff System, #OPT1001**:  
   ![Diagram of Programmable Digital Timer]
   - Program boiler blowoff day time and duration
   - When boiler blowoff time is reached:
     - Boiler control circuits turn off automatically
     - Boiler Blowoff Valve opens

2. **Automatic Flush & Drain System, #OPT1016**:  
   ![Diagram of Electronic Boiler Controller and Steam Pressure Gauge]
   - Steam pressure drops below setting of blowoff-pressure controller (15psig or less).
   - At the end of boiler blowoff, valve closes automatically.

3. **Blow Down Tank: #BTANK300USA/CRN**
   ![Diagram of Blowdown Tank]
   - Designed in accordance with the National Board Guide for Blowoff Vessels NB-27
   - Designed and manufactured in accordance with the requirements of the A.S.M.E. Boiler and Pressure Vessel Code Section VIII, Division 1.
   - Each tank bears the National Board Stamp "U".
   - The design pressure as per NB-27 is 50psig.

4. **Control Voltage Transformer**
   - When using this option, only the main power supply is required to operate the boiler.
   - Transformer Option Part Number
     | Boiler Voltage | RHP-120 - RHP-210 | RHP-240 – RHP-300 |
     |----------------|------------------|-----------------|
     | 240V           | OPT1010-240R     | OPT1011 – 240RVP |
     | 380V           | OPT1010-380      | OPT1011 – 380RVP |
     | 415V           | OPT1010-380      | OPT1011 – 380RVP |
     | 480V           | OPT1010-480R     | OPT1011 – 480RVP |
     | 600V           | OPT1010-600R     | OPT1011 – 600RVP |

5. **Timer Controlled Boiler On/Off #OPT1017**
   ![Diagram of Timer Controlled Boiler On/Off]
   - Program timer to turn boiler ON/OFF automatically

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