

# User Manual

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## Desert Air 10M Cube Heater

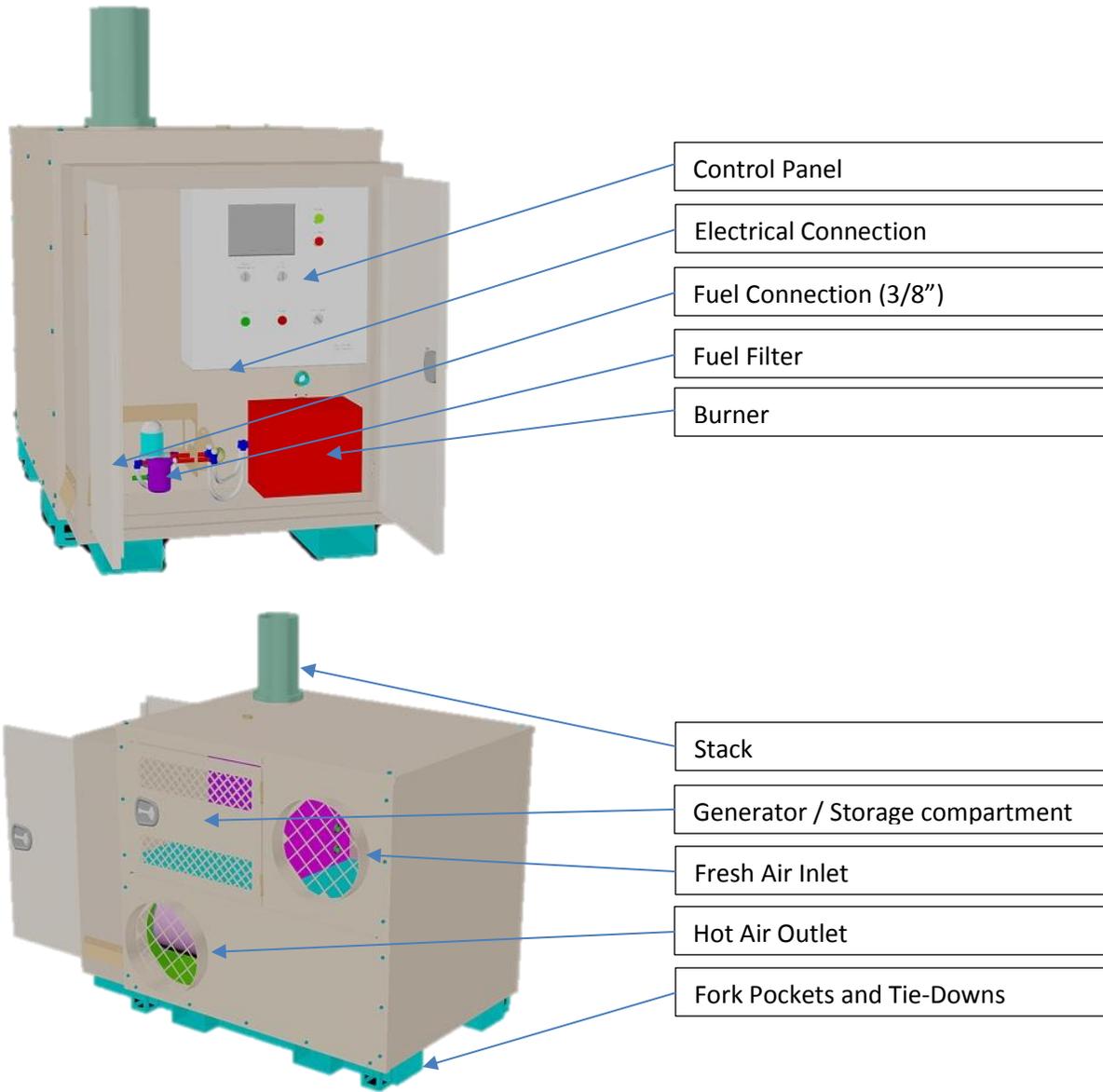


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## Identifying the heater components

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## Technical Specifications

Table 1 – Technical Specifications	
Model	Desert Air 10M
Greatest Dimensions	
Length	74 in. (1880 mm)
Width	47 in. (1194 mm)
Height (including stack)	60 in. (1524 mm)
Weight	
BTUs	1 million
Voltage	120V 1Ø
Ampacity	20 Amp
Air Outlet diameter	18 in.
Fuel Type	No. 2 fuel oil
Fuel Filter replacement	General Filters #1A-30
Operating Temperature minimum	-47°C (-52°F)
Discharge Temperature	27°C to 204°C (80°F to 400°F)
Web browser	Internet Explorer

# Connecting and activating the heater

## 1. Attach the fuel line

Note: This section is based on the *Riello Installation and Operating Manual* for Riello 40 F20, section "Oil Line Connections."

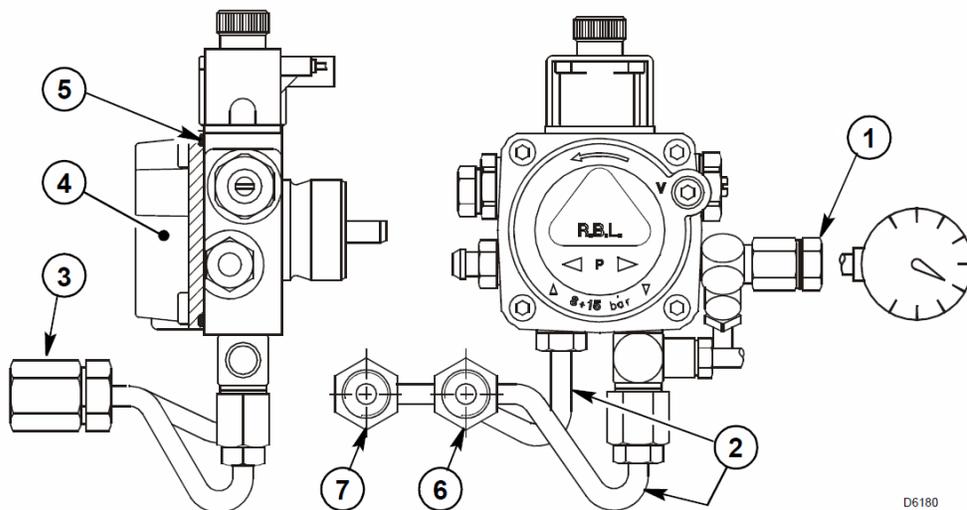
### WARNING:

The burner is designed to operate on a two line system.

### NOTE 1:

- THE BURNER HAS BEEN INSTALLED WITH A TWO LINE SYSTEM TO ALLOW THE HYDRAULIC DELAY VALVE TO OPERATE.
- Pump pressure was set to 177 PSI at time of burner start-up. A pressure gauge is attached to the PRESSURE PORT (1) for pressure readings.
- The heater comes with an air separator to allow the two-line burner system to be connected to a single feed line.

Figure 1 - Burner Connections



Two PIPE CONNECTORS (2) are supplied with the heater for connection to either a single- or a two-pipe system.

All pump port threads are **British Parallel thread design**. Direct connection of NPT threads to the pump will damage the pump body.

Riello manometers and vacuum gauges do not require any adapters, and can be safely connected directly to pump ports.

An NPT (metric) adapter **must** be used when connecting other gauge models.

**NOTE 2:** If the pump cover (4) is removed for any reason, be sure the O-ring (5) is properly seated in the pump cover (4) before re-attaching the pump cover to the pump housing.

## Single Line Attachment

**NOTE.** The heater is shipped with air separator and fuel filter.

A) Attach the fuel supply hose to the inlet side of fuel filter. The thread size is 3/8 NPT.

**WARNING:**

Do not exceed 11 feet (3.5m) of height from the bottom of the fuel tank to the heater

## Two Line (Lift System)

A) The heater is shipped with the pump set to operate on a two line system. Suction and return lines (6 and 7 in Figure 1) should be the same depth inside the fuel tank.

Be sure there are no air leads or blockages in the piping system. Any obstructions in the return line will cause failure of the pump shaft seal. Do not exceed the pipe lengths indicated in the table.

B) Attach the two pipe connectors (2) to the pump suction and pump return ports (6 and 7).

Attach the required piping to these two pipe connectors using the NPT/Metric Adapters that are supplied with the burner.

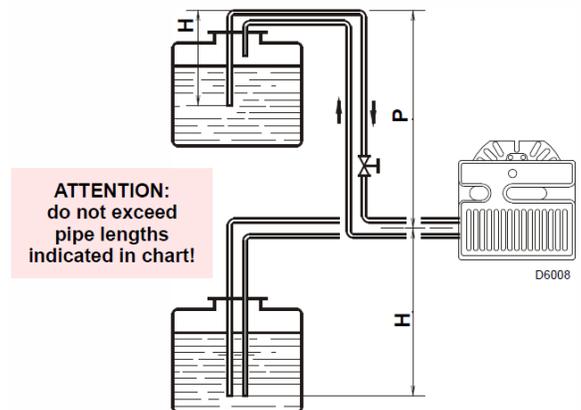
Table 1 Pipe Lengths

2 LINE (LIFT) SYSTEM - PIPE LENGTHS					
H		3/8" OD		1/2" OD	
Feet	Meters	Feet	Meters	Feet	Meters
0	0.0	115	35	330	100
1 1/2	0.5	100	30	330	100
3	1.0	80	25	330	100
5	1.5	65	20	295	90
6 1/2	2.0	50	15	230	70
9 1/2	3.0	25	8	100	30
11	3.5	20	6	65	20

**WARNING:**

- Pipe dope or Teflon tapes are NOT to be used on any direct oil connection to the fuel pump.
- The height "P" in Pipe Length Charts should not exceed 13 feet (4m).
- The vacuum should not exceed 11.44 inches of mercury.

Figure 2



## 2. Attach the electrical

**NOTE.** The heater requires a 120V, 20 amp, twist-lock receptacle.

- A) Plug the heater's power cord into the receptacle.
- B) Make sure that the green light on the control panel is lit.

## 3. Attach the duct work

## 4. Set the temperature, fan speed, and differential

- A) Set the temperature and fan speed either by turning the knobs or by using the touchscreen on the control panel.
- B) Set the temperature differential using the touchscreen on the control panel.

To use the touchscreen, tap **Settings** on the Main screen to access the Settings screen. Tap the temperature, fan speed, or temperature differential display button. The keyboard appears automatically. Tap the number keys for the desired setting.

## 5. Activate the heater

- A) Turn on the burner by pressing the Start button on the control panel.
- B) If the burner fails to light, the fuel lines may be full of air. Unplug the heater and see the instructions for "Purging the pump" under "Maintenance and Repair."

## Operating the heater

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### Restarting the heater

- A) If the heater is being restarted because of flame failure, press the Reset button on the burner.  
Otherwise, press the Stop button on the control panel and hold for 3 seconds.
- B) Press the Start button.

### Adjusting the temperature, fan speed, and temperature differential

- A) Set the temperature and fan speed either by turning the knobs or by using the touchscreen on the control panel.
- B) Set the temperature differential using the touchscreen on the control panel.

To use the touchscreen, tap **Settings** on the Main screen to access the Settings screen. Tap the temperature, fan speed, or temperature differential display button. The keyboard appears automatically. Tap the number keys for the desired setting.

### Stopping the heater

- A) Press the Stop button on the control panel.

**NOTE.** The fan will run until the heater is cool.

**WARNING!**  
**ALLOW THE HEATER TO COOL DOWN AND THE FAN TO STOP BEFORE DISCONNECTING POWER.**

## Disconnecting the heater

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### 1. Shut down the heater

- A) Press the Stop button on the control panel.

**NOTE.** The fan will run until the heater is cool.

**WARNING!**  
**ALLOW HEATER TO COOL DOWN AND THE FAN TO STOP TURNING BEFORE PROCEEDING.**

### 2. Disconnect the heater

- A) Unplug the heater's power cord
- B) Disconnect the fuel lines
- C) Disconnect the duct work

## Maintenance and repair

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### Changing the fuel filter

The fuel filter should be changed after 500 hours of operation.

Replace the fuel filter with a General Filters #1A-30.

### Resetting the Smart Motor Controller (SMC)

To reset the SMC, press the Stop button on the control panel and hold for 3 seconds.

### Purging the pump

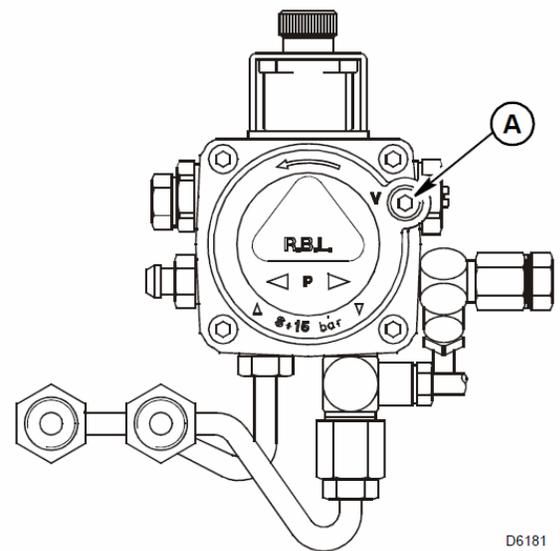
Note: This section is based on the *Riello Installation and Operating Manual* for Riello 40 F20, section " Pump Purge."

Purging the pump may be required to clear air out of the fuel lines.

#### *Two Line (Gravity or Lift System)*

- A) Press the Stop button on the control panel. Note: the fan will run until the heater is cool.
- B) Unplug the burner and remove the burner's air tube cover.
- C) Shine a light source on the photo cell on the control box (now visible where the air tube cover was removed), plug in the burner and press the Start button on the control panel. With the light source in place, the burner will operate in pre-purge only.
- D) When the pump is sufficiently purged, the hydraulic air shutter will open.
- E) Once the burner is purged, press the Stop button on the control panel and unplug the burner.
- F) Replace the air tube cover on the burner. Plug in the burner and press the Start button on the control panel. The heater is now ready to operate.

Figure 3



#### **NOTE:**

To protect the pump gears, it is advisable to lubricate the pump prior to purging a lift system. Apply fuel oil through the VACUUM PORT (A) in Figure 3.

#### **ATTENTION:**

**It is important that the fuel line be completely sealed and free from air leaks or any internal blockages.**

#### **WARNING!**

**WHEN THE BYPASS PLUG IS INSTALLED, A TWO PIPE SYSTEM MUST BE USED OR FAILURE OF THE PUMP SHAFT SEAL WILL OCCUR.**

## Troubleshooting

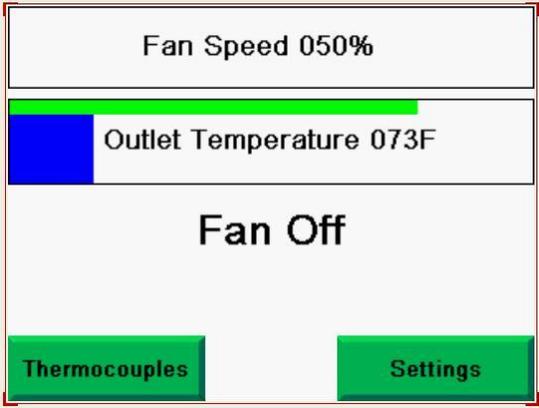
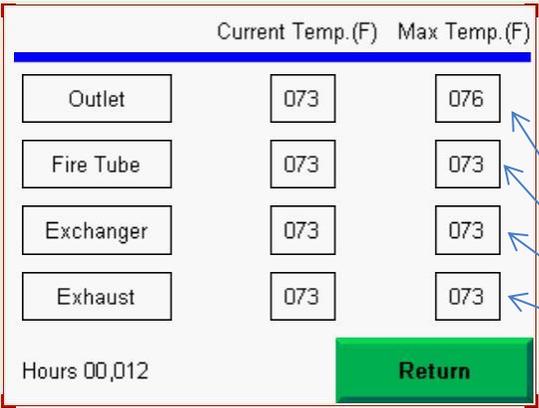
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If the heater fails to operate:

- Make sure there is enough fuel.
- Make sure the electrical connections are intact.
- If the fuel lines are full of air, try “Purging the pump” (under Maintenance and Repair).
- Refer to the Technical Manual.

## Control panel touchscreen operations

The touchscreen on the control panel displays the operating status of the heater. It also lets you make precise adjustments to the thermostat, fan speed, and temperature differential, and changes to the computer's notification settings.

<p><b>Main screen</b></p> 	<p>The Main screen displays fan speed, outlet temperature, and operating status.</p> <ul style="list-style-type: none"> <li>To navigate to other screens, tap <b>Thermocouples</b> or <b>Settings</b></li> </ul>
<p><b>Thermocouples screen</b></p> 	<p>The Thermocouples screen displays the current temperature and the maximum temperature reached <u>since the last reset</u>.</p> <ul style="list-style-type: none"> <li>To reset a maximum temperature display, tap the desired <b>display button</b> under "Max Temp. (F)." The display will change to zero.</li> <li>Tap <b>Return</b> to navigate to the Main screen.</li> </ul>
<p><b>Settings screen</b></p> 	<p>The Settings screen lets you set the fan speed, temperature (thermostat) and temperature differential.</p> <ul style="list-style-type: none"> <li>Tap a <b>display button</b>. The keyboard appears automatically. Tap the number keys for the desired setting.</li> <li>Tap <b>Return</b> to navigate to the Main Screen.</li> <li>Tap <b>Email</b> to navigate to email settings.</li> </ul>

## Email screen

The Email screen contains the following elements:

- Email Address:** christopherb@cboiler.com, Test Mail
- Communication Topic:** Heater Change, Heater Problem
- Low Temperature Set point (F) 80 to 300:** 260, Low Temp.
- Buttons:** Config Email, Return

A light blue box labeled "display button" has an arrow pointing to the "260" button.

The Email screen lets you specify an email address and the conditions for sending emails about the heater's operating status.

- Tap the **Email Address** button to bring up the keyboard. Type in the target email address.
- Tap **Test Mail** to send a test message to the email address.
- Tap **Heater Change** to have an email sent when the heater starts or stops or when the temperature and fan settings change.
- Tap **Heater Problem** to have an email sent when a problem with the heater is detected. Note: **Heater Problem** is activated only if **Heater Change** is active.
- Tap **Low Temp** to have an email sent when the heater drops to the low temperature set point.
- Tap the low temperature set point **display button** to bring up the keyboard. Tap the number keys for the desired setting.
- Tap **Return** to navigate to the Main Screen.
- To work with network settings, tap **Config Email**.

## Config Email screen

The Config Email screen contains the following elements:

- Mail Serv. IP:** 192, 168, 1, 10
- "From" Email Address:** heater01@company.com
- SMTP Username:** heater01
- SMTP Password:** [Redacted]
- SMTP Authentication:** No
- Security Mask:** 192, 168, 255, 255
- Buttons:** Goto Config, Return

The Config Email screen is used to configure the heater for internet connectivity. **Obtain these settings from your network administrator.**

- Tapping on any display button brings up the keyboard automatically.
- **"From" Email Address** is the email address of the heater.
- When typing in **SMTP Password**, characters are not displayed.
- In the Security Mask address, 255 represents the wild card.
- Tap **Return** to navigate to the Main screen.
- Tap **Goto Config** to navigate to date, time, and language settings,

## Using the web browser

Using the Internet Explorer 7 web browser, you can display and change settings, display diagnostic information, and monitor events. Access the web pages by entering the heater's mail server IP address in the address bar of the web browser.

### Data View 1 tab

Data Description	Writes from Controller	Writes to Controller
Current Air Temperature 73		N50:00
Set Temperature 350		N50:01
Set Fan Speed 83		N50:02
Set Temperature Differential 10		N50:03
Sensor A Current 73 Max 76		N50:04
Sensor B Current 73 Max 73		N50:05
Sensor C Current 73 Max 73		N50:06
Sensor D Current 73 Max 73		F51:00
Hours 0104		F51:01
		F51:02

Enter auto-refresh rate in seconds: 10

Password required to submit writes: DISABLE

Only values CHANGED will be affected

Clear all values

Update Timer: 473

Write to Device

Clear Values

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The Data View 1 tab displays the current values and settings of the heater.

The heater's temperature, fan speed, and temperature differential can be set by typing in values in the appropriate boxes under "Writes to Controller."

When done, click "Write to Device."

## Events tab

The Events tab displays changes in status since the last power up.



## Diagnostics tab

The Diagnostics tab displays information about the heater's computer and connectivity.

