



HUMBOLDT

Humboldt Water Baths H-1390, H-1392, H-1394



H-1394

H-1390

Water Baths with Microprocessor-based Temperature Control

- Auto-tuning is fast & effortless
- Dual, digital display simultaneously shows set point and process temperature
- Ramp-to-set point handles critical temperature processes smoothly
- Set point range limiting protects process and equipment
- Percent power limit protects components from stress
- Rapid cycling provides fast system response
- Operator lockout guards against unwanted changes
- All exposed parts are stainless steel. Front panel is water and corrosion resistant.

Humboldt water baths are a perfect match for Marshall and Superpave test applications and meet ASTM D1559, D5581 and D4867.

Humboldt water baths feature a microprocessor-based digital controller for precise temperature control throughout their temperature range of ambient to 180°F (82°C) at an accuracy of $\pm 0.1\%$ of input span. The dual digital display simultaneously shows the set point and the process temperature at a glance.

Humboldt Water Baths are fully insulated to help maintain constant temperatures easily. Models H-1390 and H-1392 can accommodate (12) 4" diameter or (3) 6" diameter Marshall specimens at a time. And the model H-1394

can accommodate (16) 4" and (9) 6" diameter Marshall specimens at a time. All models include a stainless steel shelf, which supports specimens while allowing 2" of free circulating water above and below specimens. Models H-1390 and H-1394 also utilize a magnetic stirring bar to induce water flow within the bath and ensure a uniform temperature is maintained. Model H-1392 does not have a magnetic stirring bar.

All exposed areas are stainless steel and the front control panel is both water and corrosion resistant.



Humboldt Water Baths



Deluxe Water Bath, 110V 60Hz— H-1390

Deluxe Water Bath, 220V 50/60Hz— H-1390.4F

Microprocessor-based temperature control for precise temperature control throughout the range. Includes magnetic circulator, ensuring constant water temperature, and, a stainless steel shelf, which stands 2" (51mm) above the bottom of the unit for free circulation of water above and below test samples. Volume is 7.76 gallons (29.40L) and dimensions are: ID: 19.5"W x 11.5"D x 8" H (495.3 x 292.1 x 203.2mm). Meets ASTM D1559. Shipping wt. 47 lbs. (21.4kg)



Large Deluxe Water Bath, 110V 60Hz— H-1394

Large Deluxe Water Bath, 220V 50/60Hz— H-1394.4F

Same as H-1390, except volume is: 14 gallons (53L) and dimensions are 20" x 20" x 10" deep (508 x 508 x 254mm). Shipping wt. 74 lbs. (33.5kg)

Water Bath, 110V 60Hz— H-1392

Water Bath, 220V 50/60Hz— H-1392.4F

Same as H-1390, except it does not have a magnetic circulator. Shipping wt. 74 lbs. (33.5kg)



H-1390, H-1392, H-1394



Humboldt
Deluxe Water Baths

Introduction

Product Description

Humboldt Deluxe Water Baths provide Microprocessor-based temperature control throughout the unit's range from ambient to 180°F (82°C), with an accuracy of $\pm 0.1\%$ of input span. All models are fully-insulated and models H-1390 and H-1394 include a magnetic stirrer which assures constant water temperature throughout bath. Model H-1392 does not have a magnetic circulator. All units provide:

- auto-tuning is fast & effortless;
- dual, digital display simultaneously shows set point and process temperature;
- ramp-to-set point handles critical temperature processes smoothly;
- set point range limiting protects process and equipment;
- percent power limit protects components from stress;
- rapid cycling provides fast system response;
- operator lockout guards against unwanted changes, and
- all exposed parts are stainless steel. Front panel is water and corrosion resistant.

Models covered in manual include:

Deluxe Water Bath, 110V 60Hz— H-1390

Deluxe Water Bath, 220V 50/60Hz— H-1390.4F

Microprocessor-based temperature control for precise temperature control throughout the range. Includes magnetic stirrer, ensuring constant water temperature, and, a stainless steel shelf, which stands 2" (51mm) above the bottom of the unit for free circulation of water above and below test samples. Volume is 7.76 gallons (29.40L) and dimensions are: ID: 19.5"L x 11.5"W x 8"D (495.3 x 292.1 x 203.2mm). Meets ASTM D6926. Shipping wt. 47 lbs. (21.4kg)

Large Deluxe Water Bath, 110V 60Hz— H-1394

Large Deluxe Water Bath, 220V 50/60Hz— H-1394.4F

Same as H-1390, except volume is: 14 gallons (53L) and dimensions are 20"L x 20"W x 10"D (508 x 508 x 254mm). Shipping wt. 74 lbs. (33.5kg)

Water Bath, 110V 60Hz— H-1392

Water Bath, 220V 50/60Hz— H-1392.4F

Same as H-1390, except it does not have a magnetic stirrer. Shipping wt. 74 lbs. (33.5kg)

Product Description

This product is intended for use only in accordance with the directions and specifications contained in this User Guide. While Humboldt Deluxe Water Baths can be used for many uses within labs, they were designed specifically for use in providing a consistent temperature bath for storing asphalt Marshall specimens in accordance with ASTM D6926, AASHTO T245 and British Standard BS 598: Part 107. The control processor in all our water baths provides a temperature range from ambient to 180°F (82°C) accurate to within 0.1% of input span $\pm 1^{\circ}\text{C}$.

Humboldt Water Baths are fully insulated to help maintain constant temperatures easily. Models H-1390 and H-1392 can accommodate (12) 4" diameter or (3) 6" diameter Marshall specimens at a time. And the model H-1394 can accommodate (16) 4" and (9) 6" diameter Marshall specimens at a time. All models include a stainless steel shelf, which supports specimens while allowing 2" of free circulating water above and below specimens. Models H-1390 and H-1394 also utilize a magnetic stirring bar to induce water flow within the bath and ensure a uniform temperature is maintained. Model H-1392 does not have a magnetic stirring bar.

Initial Installation

Your Humboldt water bath was thoroughly inspected and tested prior to being shipped and should be ready to operate once initial installation procedures are completed. To begin, please remove all packaging. Water baths are packed, one to a box, with the bath, shelf, stirring bar and glass stirrer plate all individually wrapped. Please make sure you remove the tape from the stirring bar and glass stirrer plate. Inspect all components and make sure they are free of any damage, which could have occurred during shipping. If shipping damage is observed, please contact Humboldt or your local agent and file a claim with any carriers involved.

You Humboldt water bath should be placed on a table or bench that is level. Check unit for power requirements and connect the line cord plug into a suitable electrical outlet.

Using the white stirring bar, locate the magnetic field, generated on the bottom of the water bath tank. Once the field is located, place the round glass stirrer plate over the field and place the stirring bar on top of the glass stirrer plate.

The stirring bar should spin in the middle of the glass, if it is not located in the center, (See figure #1) shift the stirrer plate position until the stirring bar is centered.



Figure #1

Once the spin bar and stirrer plate are in position, carefully place the shelf into the unit without disrupting the placement of the spin bar.

Slowly fill the bath with water. The water level should be approximately 1" from the top when specimens are placed in the bath.

WARNING

DO NOT RUN UNIT DRY.

UNIT SHOULD NEVER BE USED WITH LESS THAN 2 INCHES OF WATER. IF UNIT IS EMPTIED WHEN HOT, IMMEDIATELY REFILL WITH A MINIMUM OF 2 INCHES OF WATER

NEVER USE FLAMMABLE LIQUIDS IN BATH

Every Humboldt Deluxe Water Bath is calibrated to a certified thermometer to ensure accurate temperatures during operation. In most cases you should not need to recalibrate your water bath. However, if you need to access the controller for calibration purposes, please contact Humboldt for step-by-step directions.

Operation

Once you have completed set-up and have filled the water bath with water. You are ready to operate the bath. To turn the unit on, Push the POWER switch down to turn it on. The heating indicator to the left of the POWER switch will illuminate and show you the current temperature of the bath on top of the controller in white and the current set point, on the bottom in green.



Figure #2

At this point you can also turn on the spin bar by pushing down on the STIR switch.

Use the arrows on the controller to set the desired temperature you would like to operate the bath at, i.e. the set-point. The set-point is the lower number, which is in green. Humboldt Deluxe Water Baths are only capable of heating the bath, there is no cooling function.

Once you have set the set-point for the bath, the heating element will begin to heat the bath. This will be indicated by a yellow ^{output 1} light to the left of the actual temperature reading, the top number on the controller. Once the bath temperature has stabilized at the desired temperature, the heat pilot light will cycle on and off as the thermostat calls the heaters to maintain that temperature.

Typical time to heat a bath from 70°F to 140°F is 1 hour.

Switching between °F to °C

From the factory, the temperature controllers for Humboldt 120V Deluxe Water Baths come set to °F and the 220V models come set to °C.

To change the temperature reading between °F and °C, follow these steps.

First you will need to unlock the temperature controller, which is locked at the factory for calibration reasons.

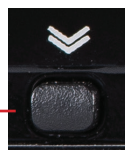
To unlock the temperature controller:

- 1) At the same time, Push and Hold button 1 and 2 on the left of the controller for 5 seconds.



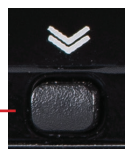
The controller will now read **oAPt** and have a setting of 2.

Push the down arrow 2 times and it will now read 0.



- 2) Now, Push Button 2 and the controller will read CCPt and have a setting of 2

Push the down arrow 2 times and it will now read 0.



- 3) Next, at the same time, Push button 1 and 2 on the left of the controller. This will return the controller to its normal state, except unlocked. You are now ready to follow the following procedure for switching between °F and °C.

WARNING

Please note: changing any other parameters during Unlock, Lock or switching between °F and °C may cause unit to become uncalibrated. If unit becomes uncalibrated, temperature control will be unstable and performance will be diminished.

To change unit from Fahrenheit to Celsius:

1) Hold this button (Left button) for 4 seconds.



1) The display will look like this.



2) Press this button (2nd button) .



2) The display will look like this.



3) Press the Down button to change the display to read C instead of F



4) Hold this button (Left button) for 3 seconds to save setting and exit menu.



To change unit from Celsius to Fahrenheit:

1) Hold this button (Left button) for 4 seconds.



1) The display will look like this.



2) Press this button (2nd button) .



2) The display will look like this.



3) Press the Down button to change the display to read C instead of F



4) Hold this button (Left button) for 3 seconds to save setting and exit menu.



Relock Controller

Once you are done switching between °F and °C, you must now lock the temperature controller.

To lock the unit, follow the steps below:

To lock the temperature controller:

- 1) At the same time, Push and Hold button 1 and 2 on the left of the controller for 5 seconds.



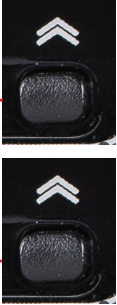
The controller will now read **oAPt** and have a setting of 0.

Push the up arrow 2 times and it will now read 2.

- 2) Now, Push Button 2 and the controller will read CCPt and have a setting of 0

Push the up arrow 2 times and it will now read 2.

- 3) Next, at the same time, Push button 1 and 2 on the left of the controller for 3 seconds. This will return the controller to its normal, locked state. The change is now complete and the water bath is ready to operate.



Power Cord

Your bath is fitted with a molded vinyl grounding plug. The cord is made of three conductors: (American color coding):

120V Models

Green = Ground (Earth)

White = Cold (neutral)

Black = Hot (Live)

220V Models

Green = Ground (Earth)

Blue/White = Hot (Live)

Brown/Black = Hot (Live)

Fuse

All Humboldt water baths use a fast-blow fuse that is fitted into the left rear of the machine. Water baths for 120V service use a 15 amp, Optifuse #FCA-15A fuse. The Humboldt replacement part for this fuse is: H-2986.6.1.

Water baths for 220V service use a 7.5 amp, Optifuse #FCA-7.5A fuse. The Humboldt replacement part for this fuse is: H-2986.6.2.

Maintenance

Water baths can generally be maintained by keeping them clean and properly filled.

WARNING

DO NOT RUN UNIT DRY.

UNIT SHOULD NEVER BE USED WITH LESS THAN 2 INCHES OF WATER. IF UNIT IS EMPTIED WHEN HOT, IMMEDIATELY REFILL WITH A MINIMUM OF 2 INCHES OF WATER

NEVER USE FLAMMABLE LIQUIDS IN BATH

Warranty

Humboldt Mfg. Co. warrants its products to be free from defects in material or workmanship. The exclusive remedy for this warranty is Humboldt Mfg. Co., factory replacement of any part or parts of such product, for the warranty of this product please refer to Humboldt Mfg. Co. catalog on Terms and Conditions of Sale. The purchaser is responsible for the transportation charges. Humboldt Mfg. Co. shall not be responsible under this warranty if the goods have been improperly maintained, installed, operated or the goods have been altered or modified so as to adversely affect the operation, use performance or durability or so as to change their intended use. The Humboldt Mfg. Co. liability under the warranty contained in this clause is limited to the repair or replacement of defective goods and making good, defective workmanship.

Humboldt Mfg. Co.
875 Tollgate Road
Elgin, Illinois 60123 U.S.A.

U.S.A. Toll Free: 1.800.544.7220
Voice: 1.708.468.6300
Fax: 1.708.456.0137
Email: hmc@humboldtmfg.com

Testing Equipment for



Construction Materials

HUMBOLDT

www.humboldtmfg.com