Installation Manual

HydroBloc 0100
Version 2.10

HYD-0100

HBX Control Systems Inc.

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Comfort
Control
Innovation

GETTING STARTED

This manual will help with the installation, parameter setting, troubleshooting and general maintenance requirements for the HydroBloc. To guarantee the safe and reliable operation of this HydroBloc, you must first read this manual in detail and take particular note to any and all warnings or caution directives prior to connecting to AC power.

Only suitably qualified individuals with formal training in electrical and HVAC controls should attempt the installation of this equipment. Incorrect wiring and installation will affect the warranty provided with this unit. Wiring must be completed in accordance with the codes and practices applicable to the jurisdiction for the actual installation.

The HBX HYD-0100 is a microprocessor based controller and as such is not to be regarded as a safety (limit) control. Please consult and install the heating or cooling appliance in accordance with the manufacturer's recommendations.

SAFETY SYMBOLS:

Extreme Hazard -
This action poses a serious threat that could result in personal injury or death, as well as permanent damage to the equipment. Proceed with caution.

Moderate Hazard -
This action may cause personal injury or have adverse effects on the installation process if handled incorrectly.

Disconnect Power Source -
The presence of low voltage(24VAC) or high voltage(120VAC) could result in personal injury or permanent damage to components or equipment.

Point of Interest -
This point clarifies pertinent information, or brings your attention to an action that may have adverse effects on the installation process.

RECEIVING, UNPACKING, INSPECTION AND STORAGE

This HYD-0100 has gone through rigorous quality control tests at the factory before shipment. After receipt and before installation perform the following checks:

Receipt

After receiving, inspect the unit for any possible physical damage that may have occurred during transportation.

Inspection

After unpacking the unit make sure the box contains:

- HYD-0100 HydroBloc
- Terminal Block
- 3 Fittings:
  – Delivery Fitting with Pressure and Temperature Sensor
  – Return Connection
  – Supply Fitting
- 4 3/4" Unions
- 1 Interconnect Wire
- 1 Outdoor Sensor
- 3 O-Rings
- 3 Stainless Steel Fitting Clips
- 1 Stainless Steel Backplate
- 1 Universal Sensors
- 1 Screwdriver
- 1 Cable Tie
- 1 Stainless Steel Temperature Sensor Clip

Make sure the part number on the unit corresponds to the part number on the original box.

Storage

The HYD-0100 should be kept in its original shipping carton prior to installation. In order to retain the warranty coverage it should be stored properly:

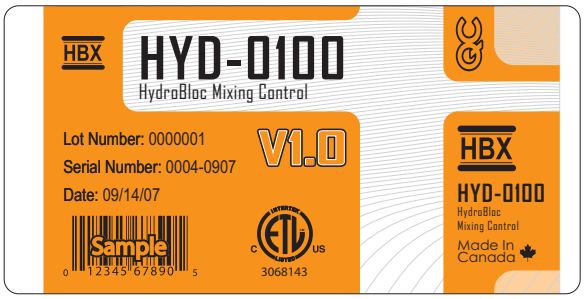
- Store in a clean dry place
- Store within an ambient temperature range of +10ºC to +40ºC
- If possible, store in an air-conditioned environment where the relative humidity is less than 95%
- Do not store in places where the unit may come into contact with corrosive substances
- Do not store on unstable surfaces where it may become damaged due to falling

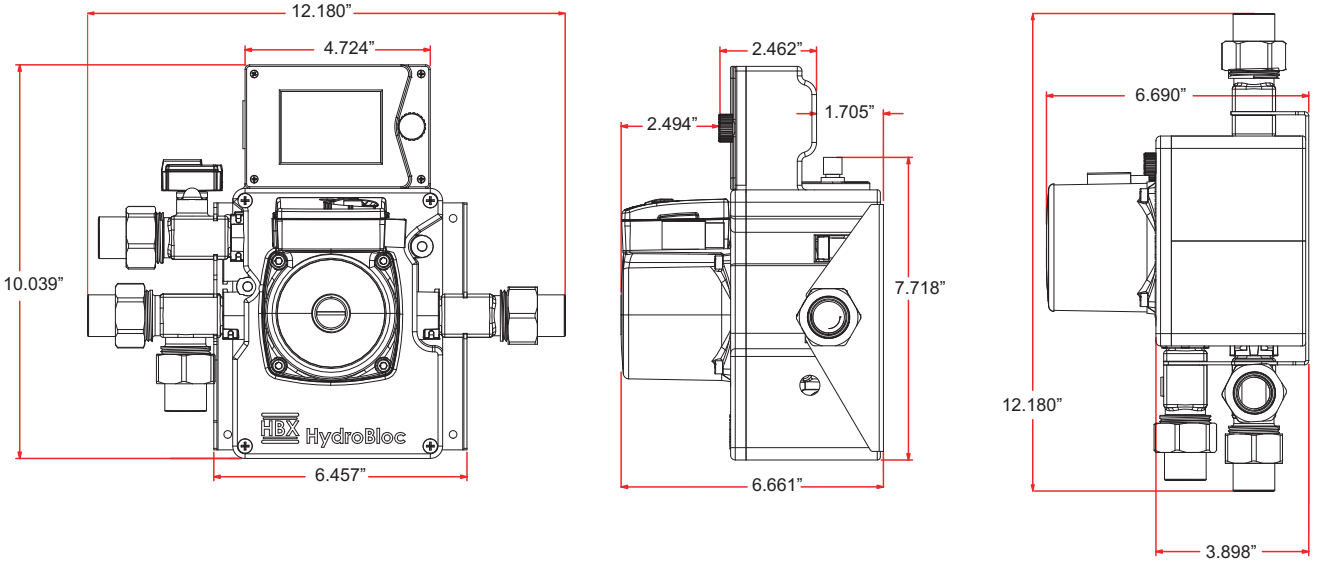
GENERAL TECHNICAL DATA

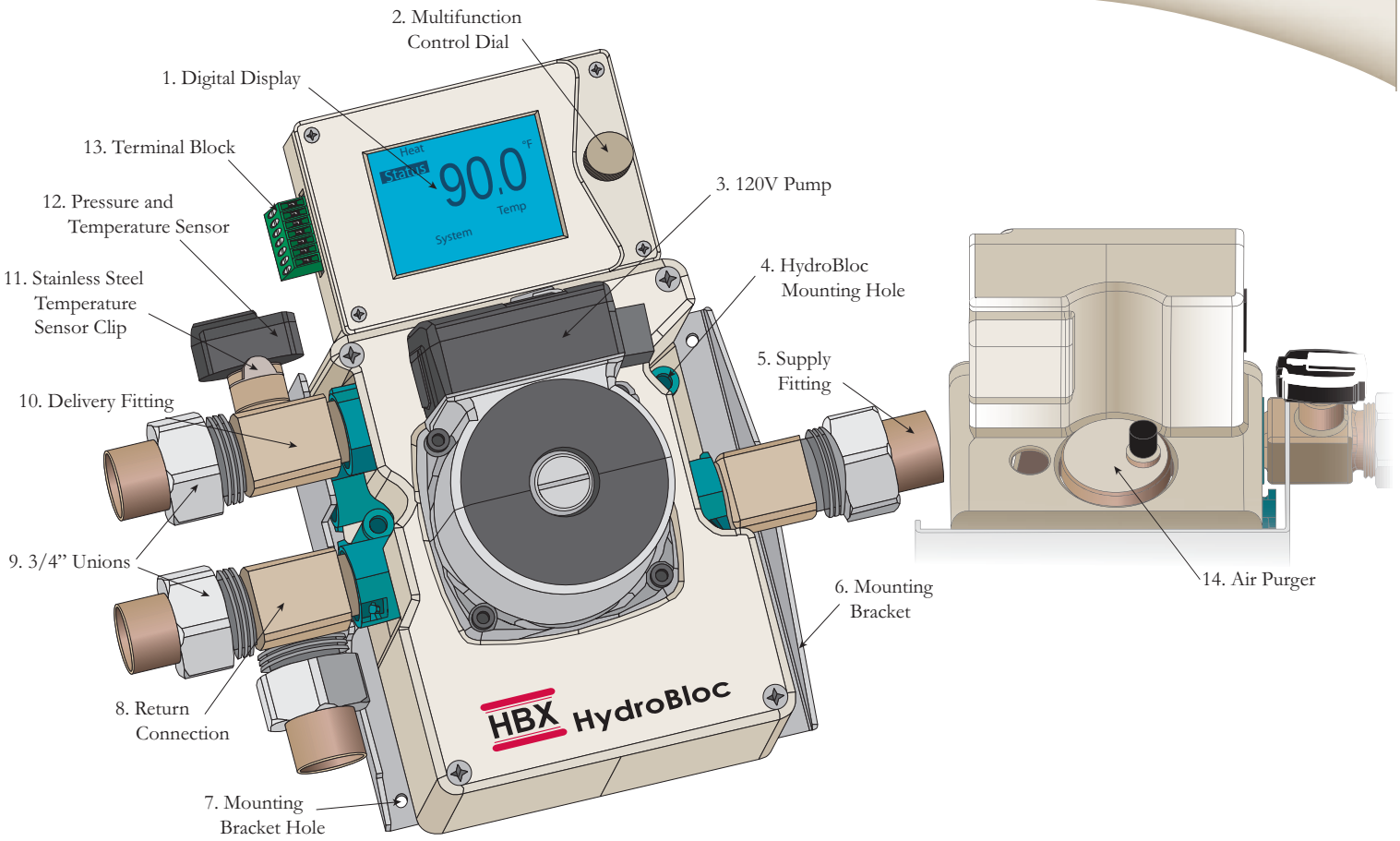
Input Voltage:
120 VAC, ± 10%, 60Hz, 2A
2 x Thermistor Inputs:
Boiler (Chiller)/ Outdoor
1 x Boiler/ Chiller Output Relays:
125VAC 2A
1 x Pressure/Temperature Sensor:
System Sensor
Microprocessor:
16Bit, 20MHz
Languages:
English
Weight:
4.53 KG (10 lbs)
Dimensions:
309mm (12.180") W x 255mm (10.039") H x 169mm (6.661") D
ETL Listings:
Meets CSA C22.2 No. 24
Meets UL Standard 873
ETL Control No. 3068143
Storage:
+10ºC to +40ºC

Nameplate Information:

The exterior label contains specific information unique to your HBX HydroBloc and identifies some of the basic features. The label displays the serial number which will match the serial number on your actual HydroBloc, the lot number, the bar code and the products ETL number.







Example:
Viewing from top left and moving right in a clockwise direction:

1. Digital Display:
Multi-colour backlight that indicates all parameters.

2. Multi-function Control Dial:
Turn left, turn right, and enter when pressed.

3. 120V Pump:
Adjustable three speed pump.

4. HydroBloc Mounting Hole

5. Supply Fitting:
Boiler/ Chiller input.

6. Mounting Bracket:
Stainless steel bracket that is used to fix fitting positions and help with wall mounting.

7. Mounting Bracket Hole

8. Return Connection:
System and Boiler/ Chiller Return

9. Unions:
(3/4")

10. Delivery Fitting w/ Sensor:
Out to system load

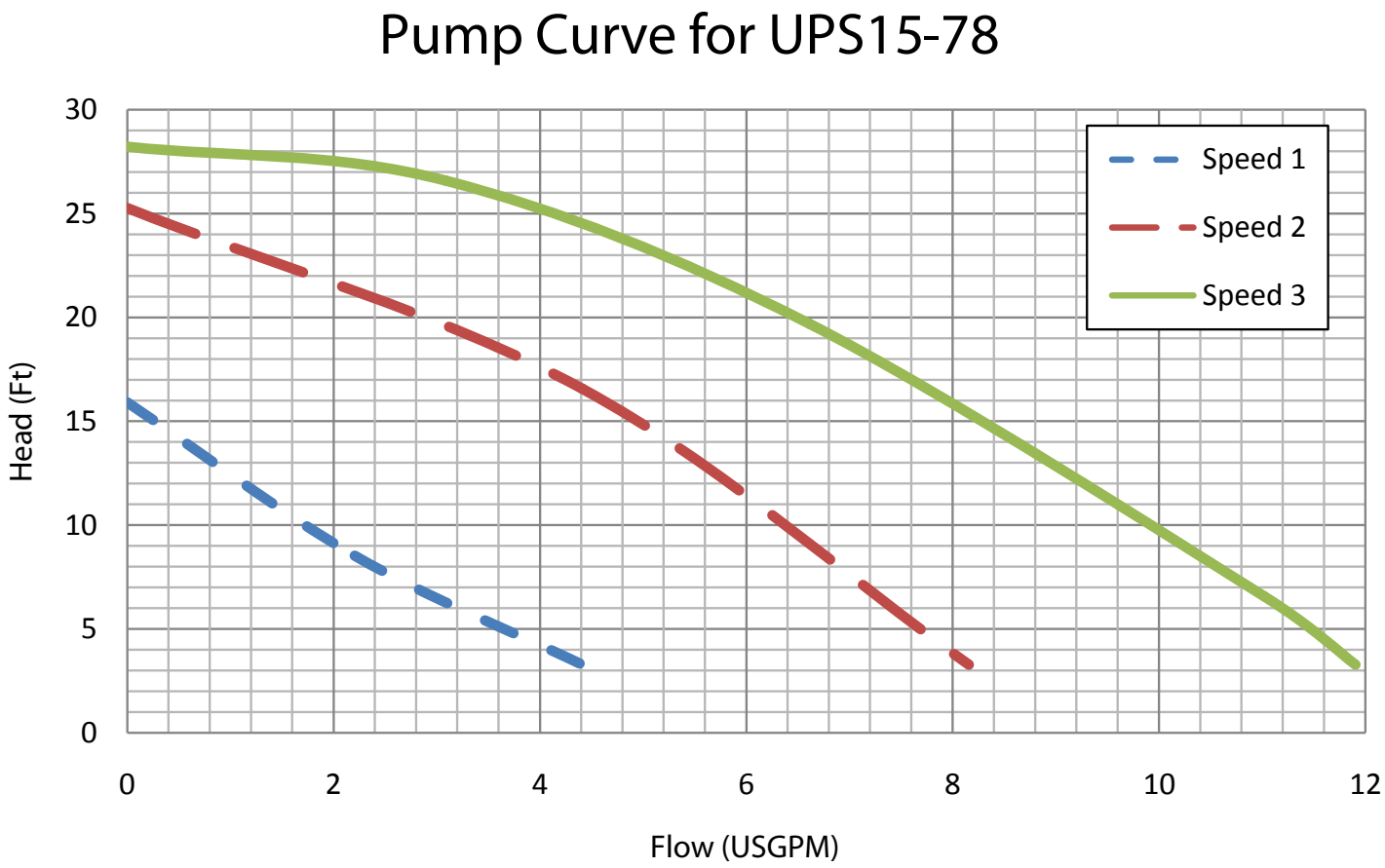
11. Stainless Steel Temperature Sensor Clip:
This clip to holds the pressure sensor in place.

12. Pressure and Temperature Sensor:
Sensor indicates both ongoing system temperature and pressure.

13. Terminal Block:
Seven pin terminal block used to hook up sensor inputs, boiler demand, and heat demand inputs.

14. Air Purger
Purges air from the hydronic system.

HYDROBLOC PERFORMANCE PUMP CURVE

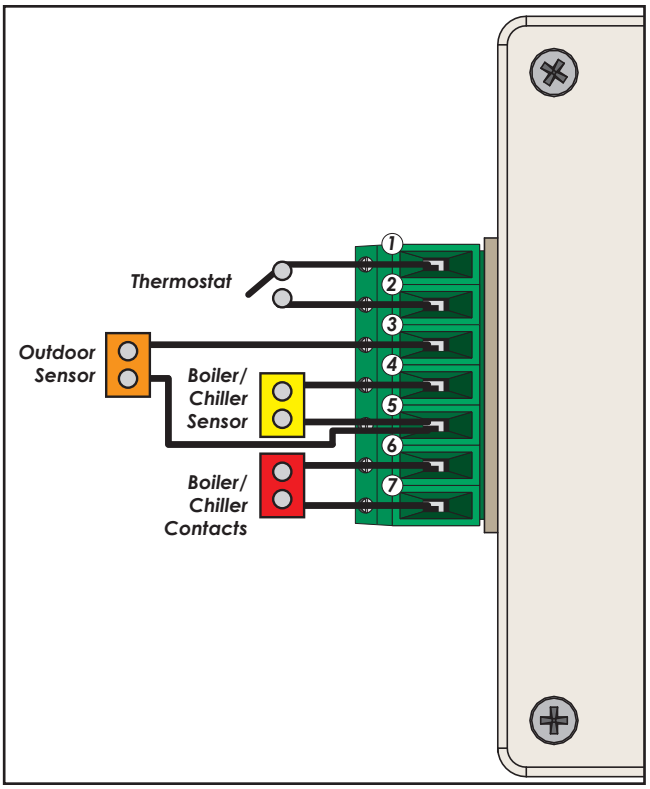


TERMINAL DESIGNATIONS

Terminal 1 and 2:

Thermostat Input
Run wire straight from thermostat.

Do not apply power here as the thermostat input functions on closed contacts.



Terminal 3 and 5:

Outdoor Sensor
Place outside on the North side of the building (if possible).

Terminal 4 and 5:

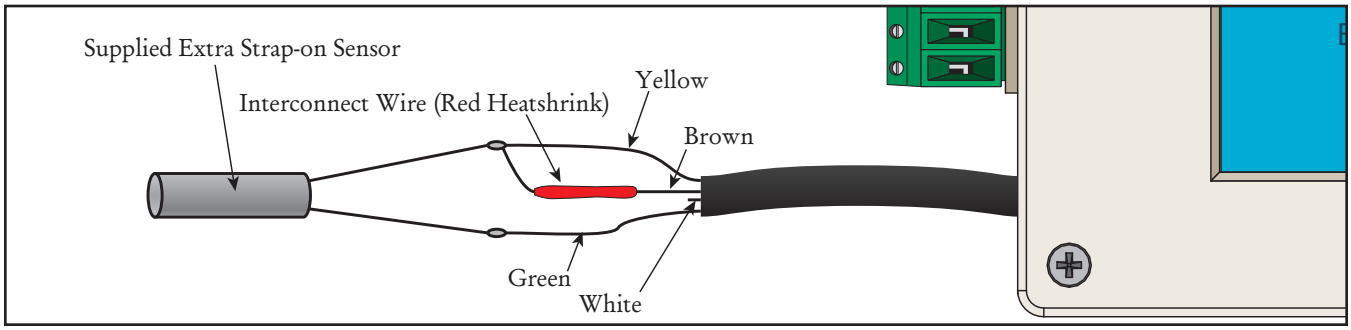
Boiler/ Chiller Sensor
This sensor is put on the main boiler/chiller loop.

Terminal 6 and 7:

Boiler/ Chiller Contacts
This contact is used to send the demand signal for the boiler/ chiller to turn on.

SYSTEM SENSOR ATTACHMENT (OPTIONAL SETUP)

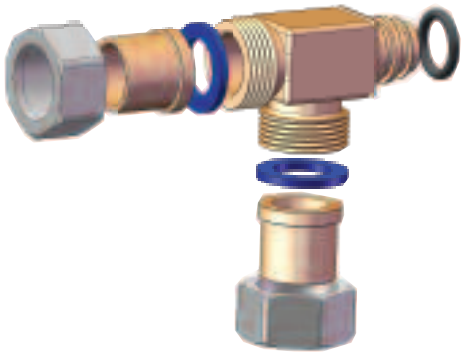
When using the Hydrobloc in an injection setup you must cut the wire from the existing system/pressure sensor and use the extension wire to attach that line to a strap on system sensor (sold seperately). There is also an Interconnect Wire that needs to be connected (included)



You must splice a strap-on sensor to the green (ground) and the yellow (signal) wire. Then you must place the wire between the newly connected yellow wire and the brown wire. This will then allow you to mount the sensor on the main system loop to use the Hydrobloc in a primary/secondary application. (No pressure indicated on display)

FITTING INSTALLATION

To place each fitting into the port on the Hydrobloc first place the o-ring over the fitting. Once the o-ring is in place firmly twist and press the fitting into its appropriate position as shown in the diagram below.



1. Backplate
Installed on the wall to mount the Hydrobloc.

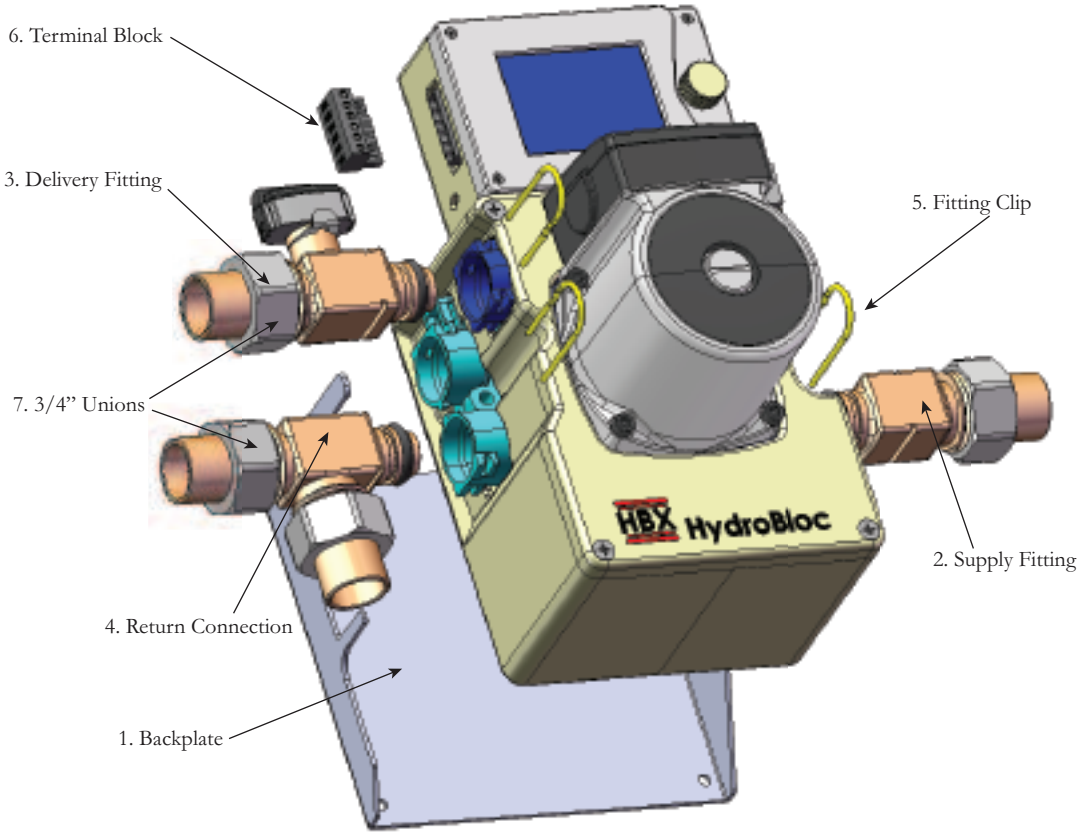
2. Supply Fitting
This fitting is to be installed on the lower right hand side of the Hydrobloc.

3. Delivery Fitting
This fitting is to be installed on the top left hand side of the Hydrobloc closest to the front of the Hydrobloc.

4. Return Connection
This fitting is to be installed on the lower left hand side of the Hydrobloc.

5. Fitting Clip
Secure all three fittings to the Hydrobloc.

6. Terminal Block
Seven pin terminal block used to hook up sensor inputs, boiler/ chiller demand, and demand inputs.



SCREEN COLOURS

The Hydrobloc is equipped with a multi-colour LCD screen that enables the user to learn information about the status of the system at a glance.

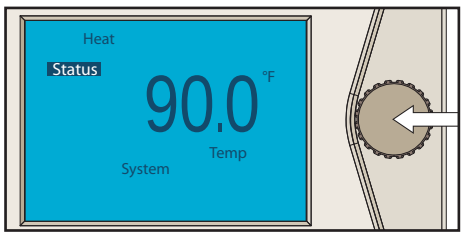
Light Blue - No heat demand (no cool demand - cooling mode)

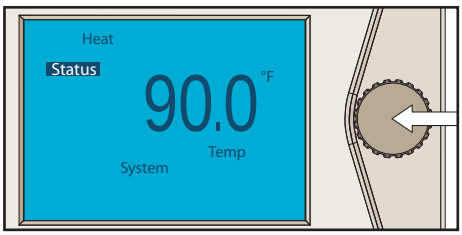
Red - Heat demand and boiler running

Yellow -green - Heat demand ON, boiler running but in boiler protection (cool demand ON and chiller running - cooling mode)

Dark Blue - Heat demand ON and boiler satisfied (cool demand ON and chiller satisfied - cooling mode)

HYDROBLOC OPERATION MODE: HEATING OR COOLING

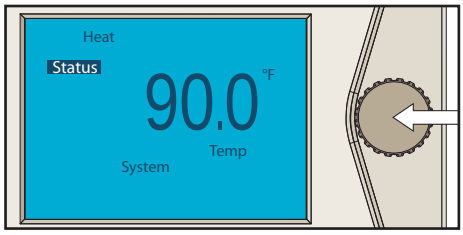




The Hydrobloc is capable of operating in heating or cooling mode. During initial power up of the hydrobloc the user may select either mode by rotating the dial. To change modes, cycle power to the unit and select the desired operation mode.

HYDROBLOC HEATING:

SET AND STATUS MODE

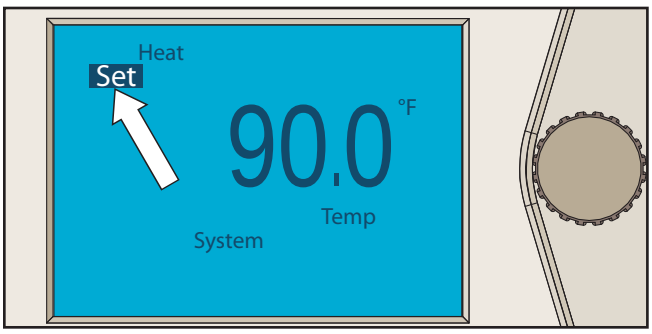


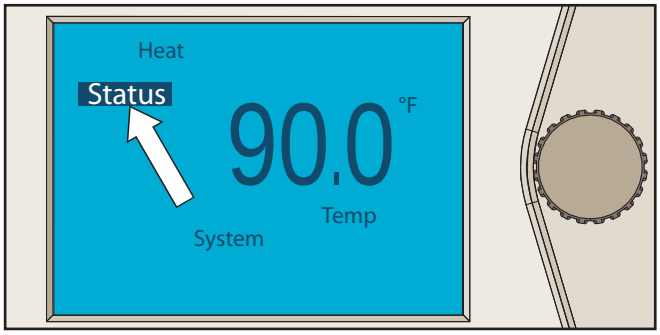
DIAL MANIPULATION

There are 2 modes for the control, **programming** and **status screens**. The **programming** screen is identified by the **SET icon** on in the top/middle left corner. The **status** screen is indicated by the **STATUS icon** on in the top/middle left corner.

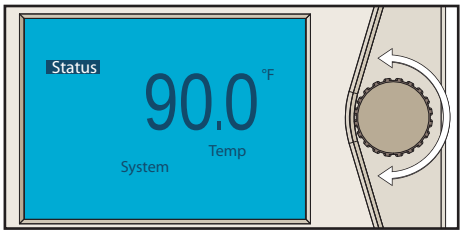
By pressing the dial in for more than 1 second will allow the user to access the **programming** section of the control.

Heat demand is indicated by the HEAT indicator on in the top left corner of the screen.

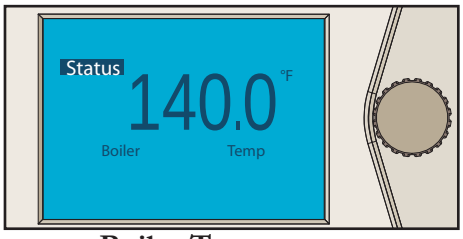




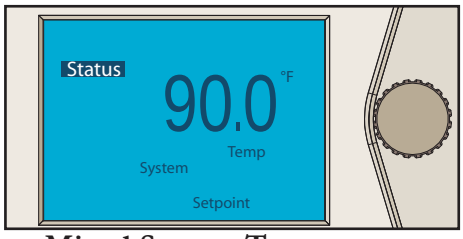
HYDROBLOC HEATING: STATUS SCREENS



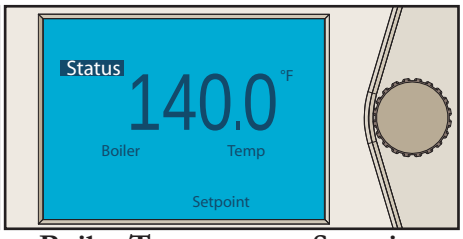
Status Screen Dial Manipulation
In this mode turning the dial left or right will show the different status screens on the control.



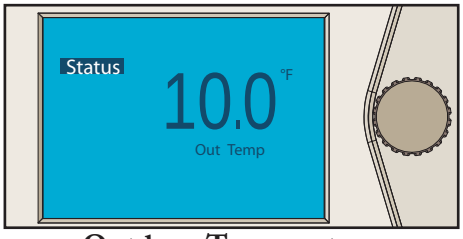
Boiler Temperature



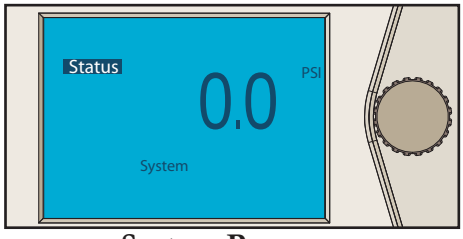
Mixed System Temperature Setpoint



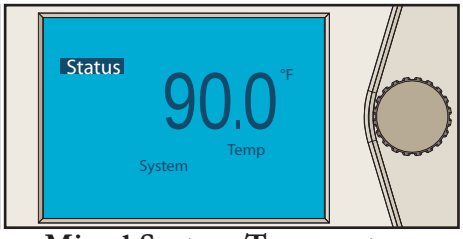
Boiler Temperature Setpoint



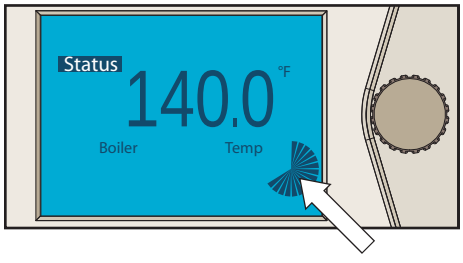
Outdoor Temperature

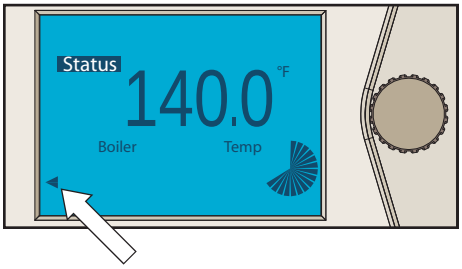


System Pressure



Mixed System Temperature

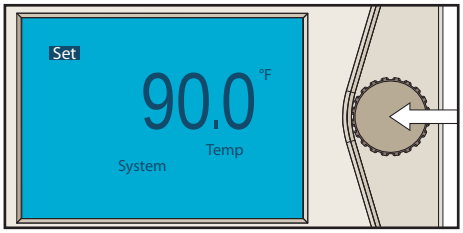




Valve Position Indicator

WWSD
Arrow showing in bottom left corner indicates that the Hydrobloc is in Warm Weather Shut Down (WWSD).

HYDROBLOC HEATING: PROGRAMMING

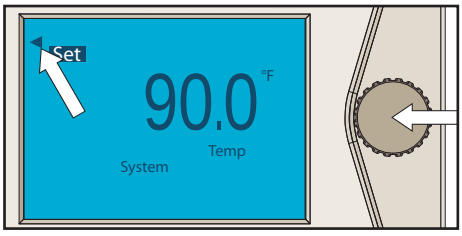


Programming Scroll Mode

To enter this mode the dial must be pressed in for more than 1 second. When the SET indicator comes on release the button, you will now be in programming scroll mode.

In this mode turning the dial to the left or right will scroll through the programming options on the control. Each setting will be indicated by the icons around the screen as well as the temperature of that setting. There are 11 settings to be set in the programming scroll mode.

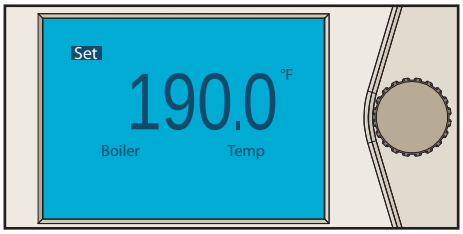
If you allow the control to idle in Programming Scroll Mode for thirty seconds the control will automatically return to status mode.



Programming Change Mode

To change a setting you must press the dial in momentarily and an arrow will appear in the top left corner of the screen. This will indicate the control is in the programming change mode. While in the change mode the user will be able to change the setting of that selection by turning the dial to the left to decrease the setting and to the right to increase the setting. Once you have finished changing the setting press the dial momentarily and the arrow in the top left corner will disappear. This will indicate that the user is no longer in programming change mode.

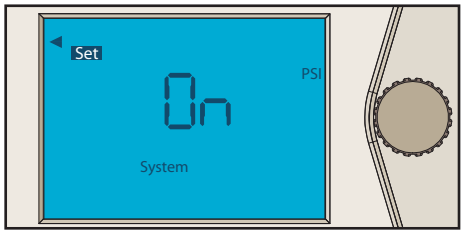
HYDROBLOC HEATING: PROGRAMMING ADJUSTMENTS



Design Boiler Temperature

This is the design boiler temperature. It is used in the outdoor reset design calculation and is also the maximum setting for the boiler.

(50°F-200°F) Default: 190°F

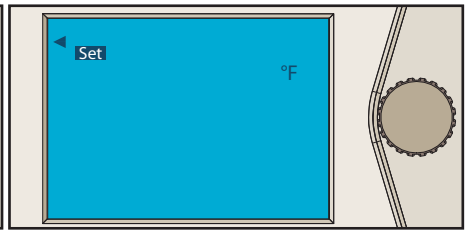


Mixing Adjustment

See HYD-0100-04 Drawing. Once **OFF** is selected the Hydrobloc will no longer show pressure and it will use the Strap-On System Sensor to sense the temperature. By using a different system sensor this allows us to still provide boiler protection.

Note: **You will have to attach the new system sensor to the low temp. system (pg 6).**

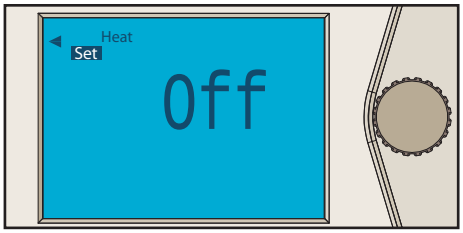
(On/Off) Default: On



Celcius or Fahrenheit

Use this setting to change the display format from °C to °F.

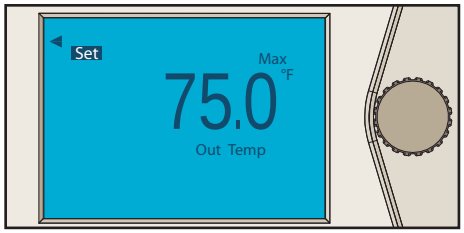
(°C/°F) Default: °F



Heat Demand
ON: This setting indicates that the Hydrobloc is in a permanent heat demand. Used instead of attaching a thermostat.

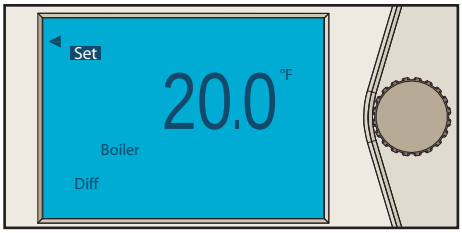
On1: Puts the Hydrobloc in permanent pump demand (pump alwaysON).

(On/On1/Off) Default: Off



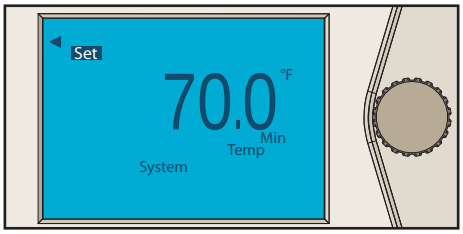
WWSD
This setting is used to set the temperature at which the Hydrobloc will go into WWSD. Above this temperature the system will be shut off.

(20°F-150°F) Default: 75°F



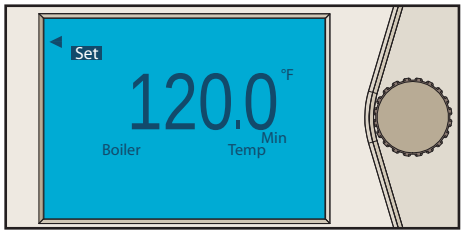
Boiler Differential
This setting is used to set the boiler differential.

(10°F-50°F) Default: 20°F



Min System Temperature
This is the minimum system temperature. Set this temperature to the minimum temperature you would like to see in the low temperature system loop.

(20°F-150°F) Default: 70°F



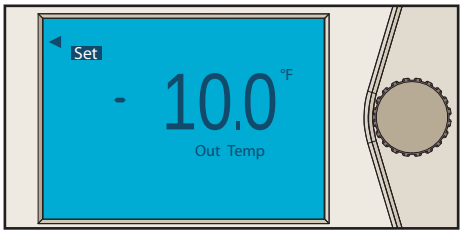
Min Boiler Temperature
This is the minimum boiler temperature. This setting will vary depending on the type of boiler you're running. This is boiler supply temperature so keep that in mind when selecting this feature.

If the min boiler temperature is set to **OFF** then the boiler demand will always be on when a heat demand is present.

This is used when you would like the modulating boiler to control itself.

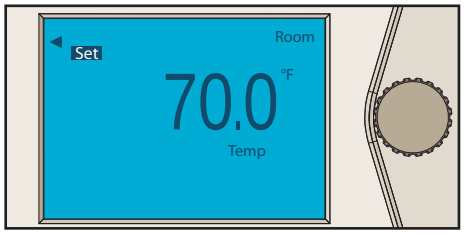
(Off-200°F) Default: 120°F

System Setpoint Operation: To set a point on the System Output Temperature adjust the Min System Temperature to be the same as the design system temperature.



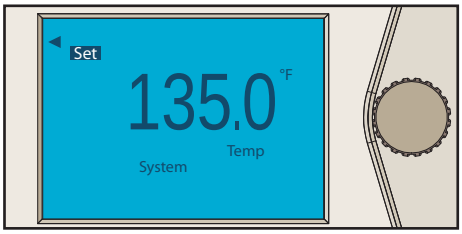
Design Out Temperature
This is the design outdoor temperature. It is used in the outdoor reset design calculation. Set this temperature to the temperature at which you would like to hit your maximum temperature in from the control.

(-50°F-100°F) Default: -10°F



Design Room Temperature
This is the design room temperature. It is used in the outdoor reset design calculation. Set it to the approximate desired room temperature.

(0°F-120°F) Default: 70°F

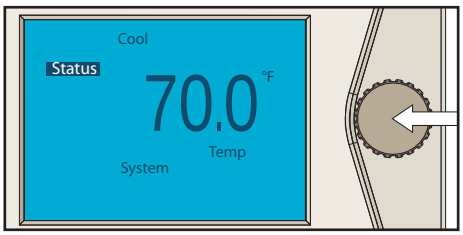


Design System Temperature
This is the design low temperature system temperature. It is used in the outdoor reset design calculation for the low temperature reset curve.

(50°F-200°F) Default: 135°F

HYDROBLOC COOLING:

SET AND STATUS MODE

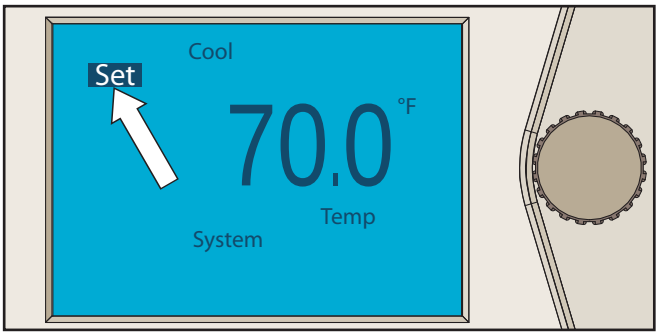


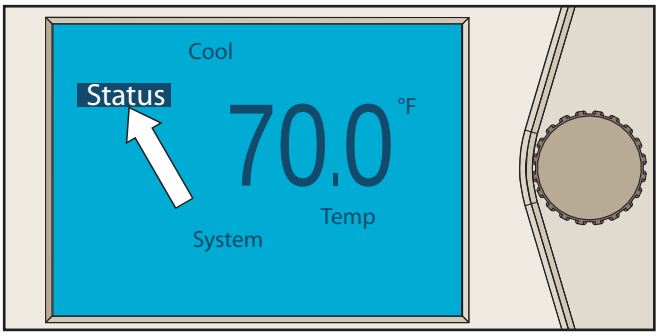
DIAL MANIPULATION

There are 2 modes for the control, **programming** and **status screens**. The **programming** screen is identified by the **SET icon** on in the top/middle left corner. The **status** screen is indicated by the **STATUS icon** on in the top/middle left corner.

By pressing the dial in for more than 1 second will allow the user to access the **programming** section of the control.

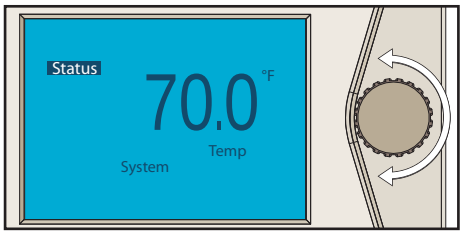
Cool demand is indicated by the COOL indicator on in the top left corner of the screen.



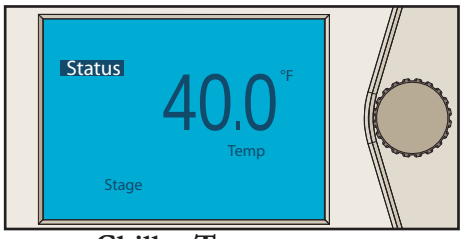


Care must be taken to prevent condensation forming on any exposed piping, panels or devices which cold water flows through. To avoid condensation, the chilled water temperature must be set above the ambient dew-point temperature.

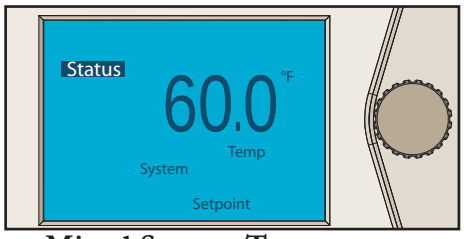
HYDROBLOC COOLING: STATUS SCREENS



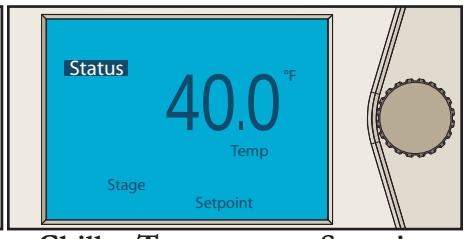
Status Screen Dial Manipulation
In this mode turning the dial left or right will show the different status screens on the control.



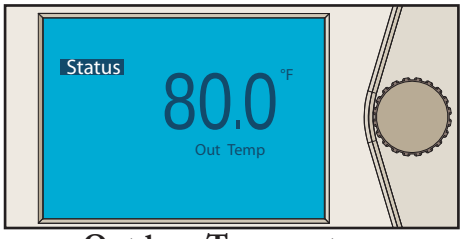
Chiller Temperature



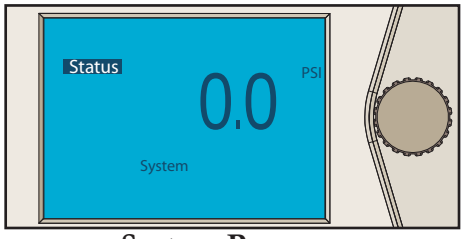
Mixed System Temperature Setpoint



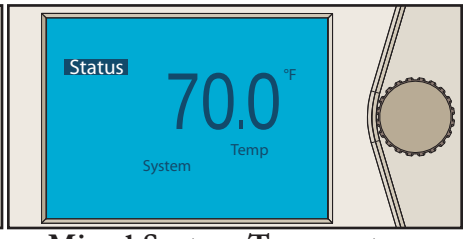
Chiller Temperature Setpoint



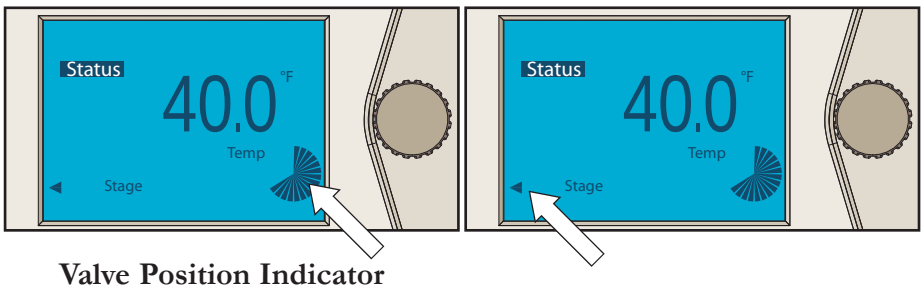
Outdoor Temperature



System Pressure



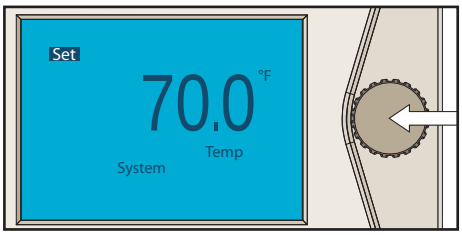
Mixed System Temperature



Valve Position Indicator

CWSD
Arrow showing in bottom left corner indicates that the Hydrobloc is in Cold Weather Shut Down (CWSD).

HYDROBLOC COOLING: PROGRAMMING

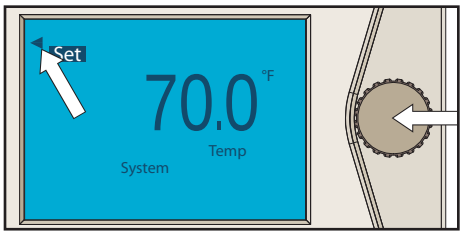


Programming Scroll Mode

To enter this mode the dial must be pressed in for more than 1 second. When the SET indicator comes on release the button, you will now be in programming scroll mode.

In this mode turning the dial to the left or right will scroll through the programming options on the control. Each setting will be indicated by the icons around the screen as well as the temperature of that setting. There are 11 settings to be set in the programming scroll mode.

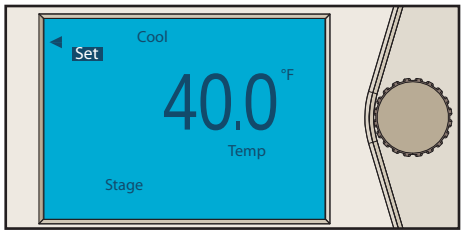
If you allow the control to idle in Programming Scroll Mode for thirty seconds the control will automatically return to status mode.



Programming Change Mode

To change a setting you must press the dial in momentarily and an arrow will appear in the top left corner of the screen. This will indicate the control is in the programming change mode. While in the change mode the user will be able to change the setting of that selection by turning the dial to the left to decrease the setting and to the right to increase the setting. Once you have finished changing the setting press the dial momentarily and the arrow in the top left corner will disappear. This will indicate that the user is no longer in programming change mode.

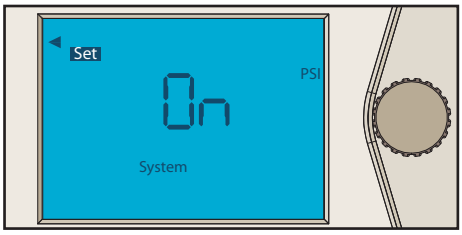
HYDROBLOC COOLING: PROGRAMMING ADJUSTMENTS



Design Chiller Temperature

This is the design chiller temperature. It is used in the outdoor reset design calculation and is also the lowest temperature setting for the chiller.

(50°F-200°F) Default: 190°F

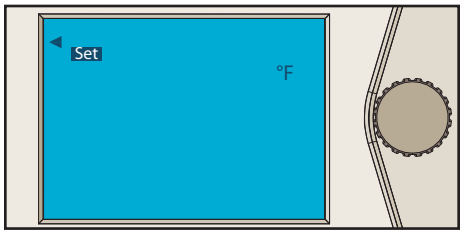


Mixing Adjustment

See HYD-0100-04 Drawing. Once **OFF** is selected the Hydrobloc will no longer show pressure and it will use the Strap-On System Sensor to sense the temperature.

Note: **You will have to attach the new system sensor to the mixed temp. system (pg 6).**

(On/Off) Default: On

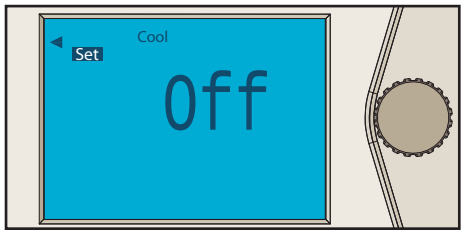


Celcius or Fahrenheit

Use this setting to change the display format from °C to °F.

(°C/°F) Default: °F

PROGRAMMING ADJUSTMENTS

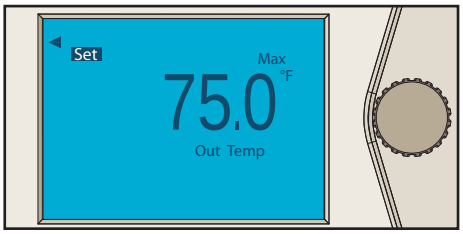


Cool Demand

ON: This setting indicates that the Hydrobloc is in a permanent demand. Used instead of attaching a thermostat.

On1: Puts the Hydrobloc in permanent pump demand (pump always ON).

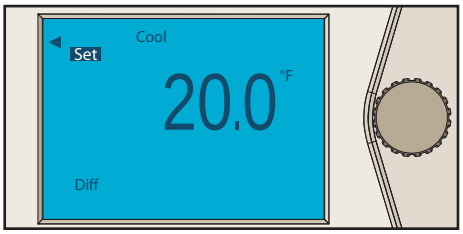
(On/On1/Off) Default: Off



CWSD

This setting is used to set the temperature at which the Hydrobloc will go into CWSD. Below this temperature the system will be shut off.

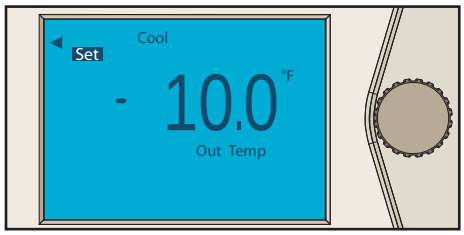
(20°F-150°F) Default: 75°F



Chiller Differential

This setting is used to set the chiller differential.

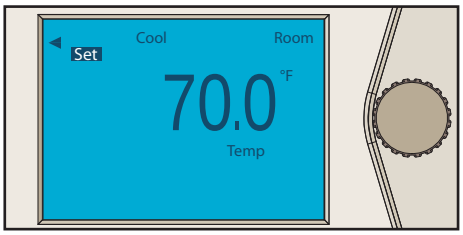
(10°F-50°F) Default: 20°F



Design Out Temperature

This is the design outdoor temperature. It is used in the outdoor reset design calculation. Set this to the outdoor temperature at which you would like to hit your minimum (coolest) temperatures on the reset curve.

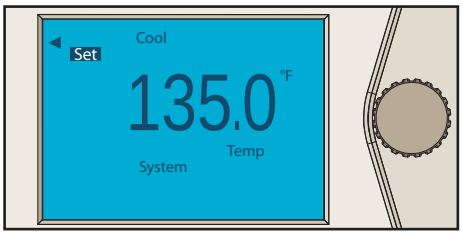
(-50°F-100°F) Default: -10°F



Design Room Temperature

This is the design room temperature. It is used in the outdoor reset design calculation. This is the maximum chilled water temperature.

(0°F-120°F) Default: 70°F



Design System Temperature

This is the design mixed temperature system temperature. It is used in the outdoor reset design calculation for the mixed temperature reset curve.

(50°F-200°F) Default: 135°F

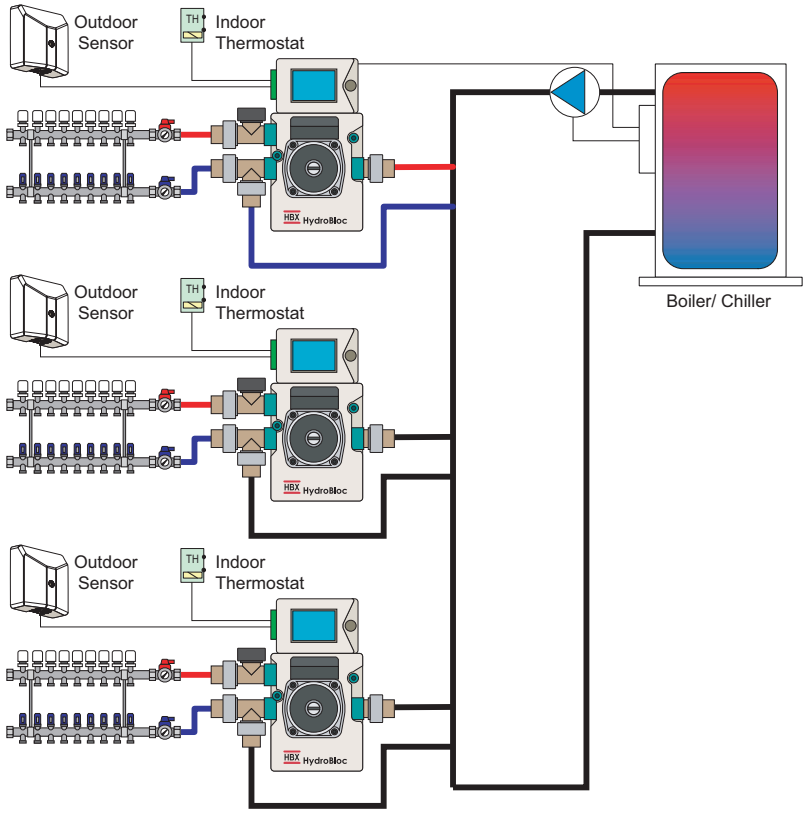
This is the lowest (coolest) water temperature used in the mixed system.

System Setpoint Operation: To set a setpoint on the mixed system Output Temperature adjust the Design Room Temperature to be the same as the design system temperature.

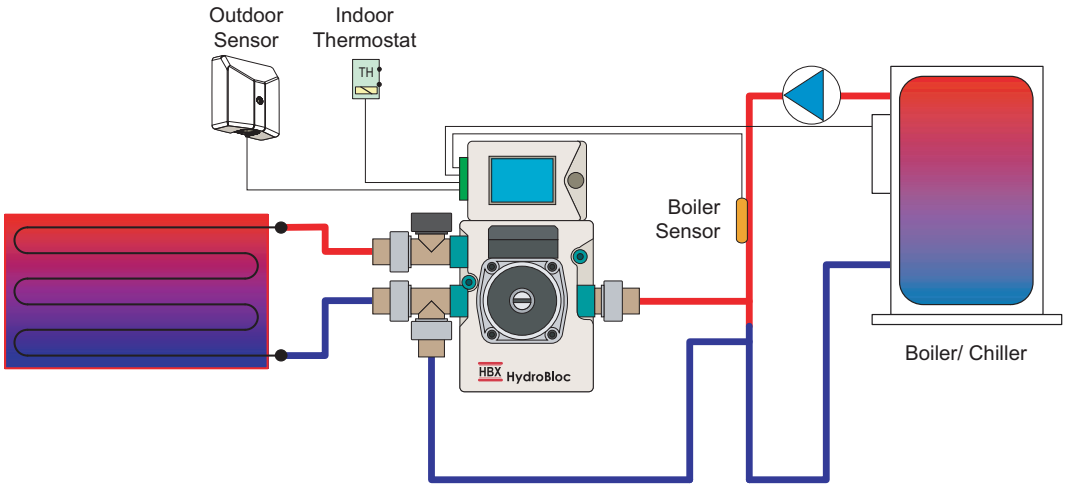
HYD-0100-01 DRAWING:

Description:

This drawing exhibits the HydroBloc in a multiple-mixing manifold application.



HYD-0100-02 DRAWING:



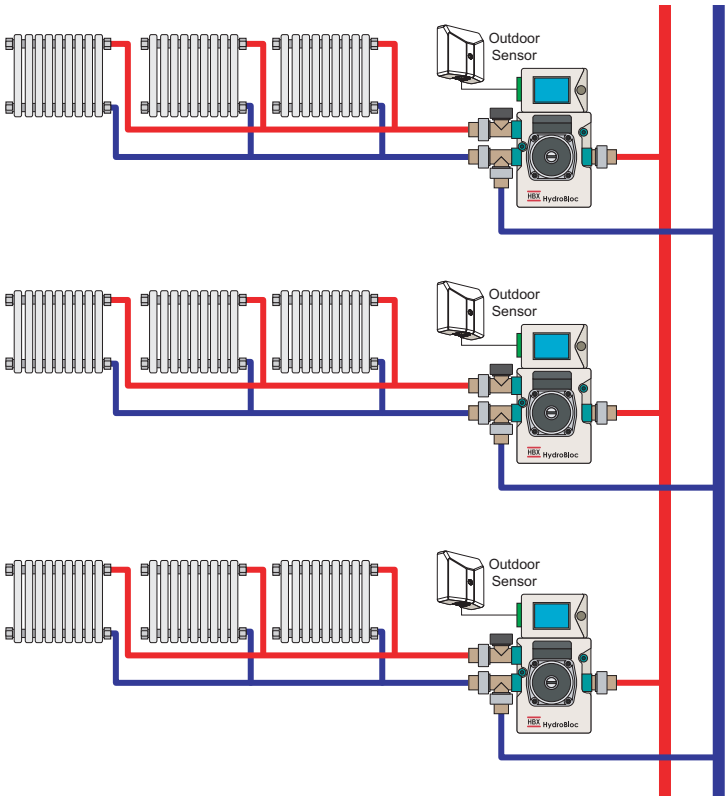
Description:

This is an example of the Hydrobloc in a typical application. It is used to mix into a low temperature loop.

HYD-0100-03 DRAWING:

Description:

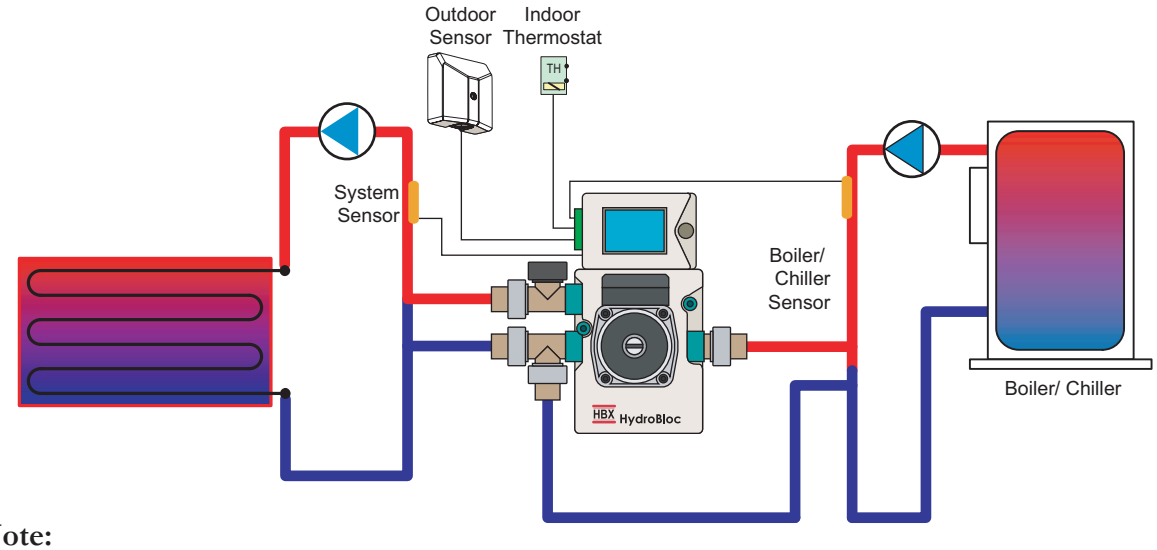
Each unit of a multi-family dwelling (an apartment for example) can have independent outdoor reset control. This provides optimum comfort as well as offering improved control and energy efficiency.



HYD-0100-04 DRAWING:

Description:

This is an example of the HydroBloc being used as an injection pump. (See note below)



Note:

The system temperature/pressure sensor is no longer used. You must use the thermistor extension wire and the extra strap-on thermistor for this configuration, as well as turn the **Mixing Adjustment** to **OFF** in the programing adjustments of the **HydroBloc (pg 10)**. See the **System Sensor Attachment** section on page 6.

Limited Warranty
HBX Controls warrants each of its products to be free from defects in workmanship and materials under normal use and service for a period of 24 months from date of manufacture or 12 months from date of purchase from an HBX Authorized Dealer, if within the above documented period after date of manufacture.

If the product proves to be defective within the applicable warranty period, HBX on its sole discretion will repair or replace said product. Replacement product may be new or refurbished of equivalent or better specifications, relative to the defective product. Replacement product need not be of identical design or model. Any repair or replacement product pursuant to this warranty shall be warranted for not less than 90 days from date of such repair, irrespective of any earlier expiration of original warranty period. When HBX provides replacement, the defective product becomes the property of HBX Controls.

Warranty Service, within the applicable warranty period, may be obtained by contacting your nearest HBX Controls office via the original Authorized Agent and requesting a Return Material Authorization Number (RMA #). Proof of purchase in the form a dated invoice/receipt must be provided to expedite the issuance of a Factory RMA.

After an RMA number has been issued, the defective product must be packaged securely in the original or other suitable shipping package to ensure that it will not be damaged in transit. The RMA number must be visible on the outside of the package and a copy included inside the package. The package must be mailed or otherwise shipped back to HBX with all costs of mailing/shipping/insurance prepaid by the warranty claimant.

Any package/s returned to HBX without an approved and visible RMA number will be rejected and shipped back to purchaser at purchaser's expense. HBX reserves the right, if deemed necessary, to charge a reasonable levy for costs incurred, additional to mailing or shipping costs.

Limitation of Warranties.
If the HBX product does not operate as warranted above the purchasers sole remedy shall be, at HBX's option, repair or replacement. The foregoing warranties and remedies are exclusive and in lieu of all other warranties, expressed or implied, either in fact or by operation of law, statutory or otherwise, including warranties of merchantability and fitness for a particular purpose/application. HBX neither assumes nor authorizes any other person to assume for it any other liability in connection with the sale, installation maintenance or use of HBX Controls products.

HBX shall not be liable under this warranty; if its testing and examination discloses that the alleged defect in the product does not exist or was caused by the purchasers or third persons misuse, neglect, improper installation or testing, unauthorized attempts to repair or any other cause beyond the range of intended use, or by accident, fire, lightning or other hazard.

Limitation of Liability.
In no event will HBX be liable for any damages, including loss of data, loss of profits, costs of cover or other incidental, consequential or indirect damages arising out of the installation, maintenance, commissioning, performance, failure or interruption of an HBX product, however caused and on any theory of liability. This limitation will apply even if HBX has been advised of the possibility of such damage.

Local Law.
This limited warranty statement gives the purchaser specific legal rights. The purchaser may also have other rights which vary from state to state in the United States, from Province to Province in Canada and from Country to Country elsewhere in the world.

To the extent this Limited Warranty Statement is inconsistent with local law, this statement shall be deemed modified to be consistent with such local law. Under such local law, certain disclaimers and limitations of this statement may not apply to the purchaser. For example, some states in the United States, as well as some governments outside the United States (including Canadian Provinces), may:

Preclude the disclaimers and limitations in this statement from limiting the statutory rights of a consumer (e.g. United Kingdom);

Otherwise restrict the ability of a manufacturer to enforce such disclaimers or limitations; or

Grant the purchaser additional warranty rights which the manufacturer cannot disclaim, or not allow limitations on the duration of implied warranties.

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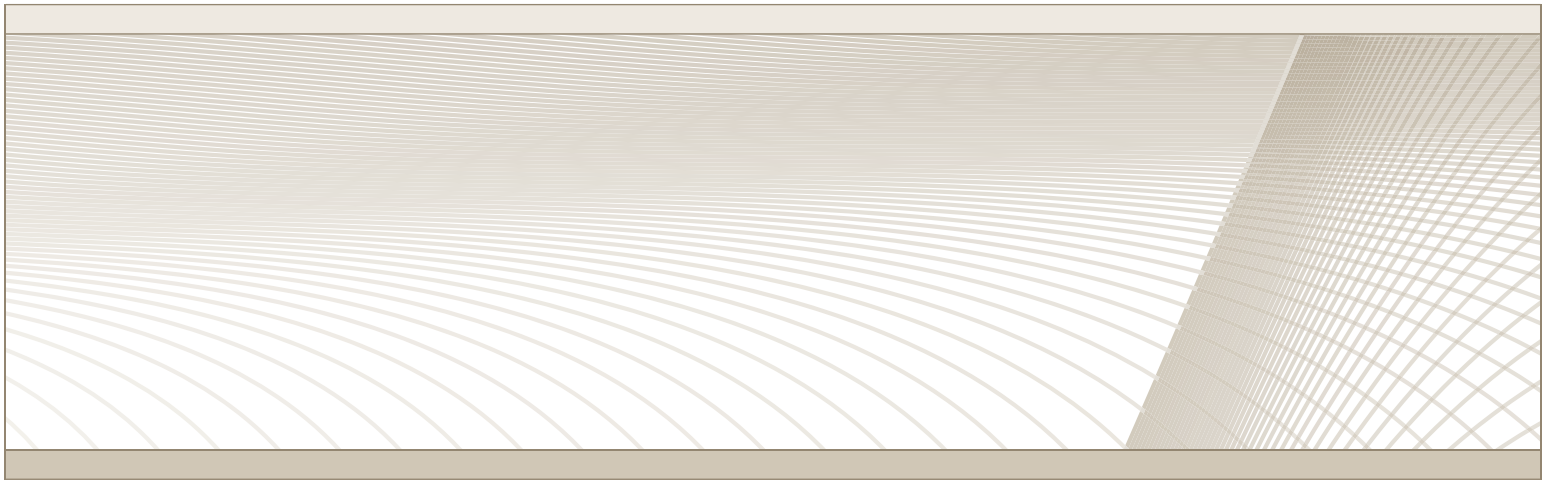
Email: info@hbxcontrols.com Web: www.hbxcontrols.com

v3.2



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