Installation Manual
# HydroBloc 0110
## Version 1.2.0

**HBX**

# HYD-0110

HBX Control Systems Inc.

# TABLE OF CONTENTS

Table of Contents

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-0110 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.

# RECEIPT, RECEIVING & INSPECTION

This HYD-0110 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-0110 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 / Outdoor
**1 x Boiler Output Relays:**
24 VAC 1A
**1 x Relay Contact**
24 VAC 1A
**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:**
Store in a clean dry place
Temperature: +10¼C to +40¼C
Humidity: 0 to 95% (air conditioned environment)
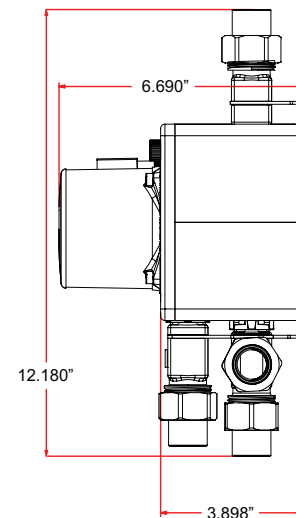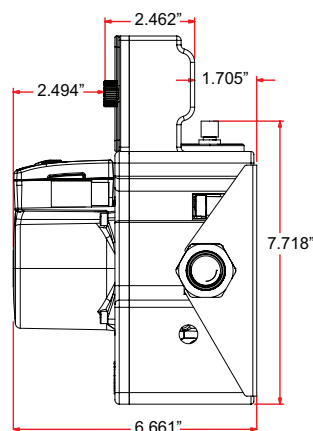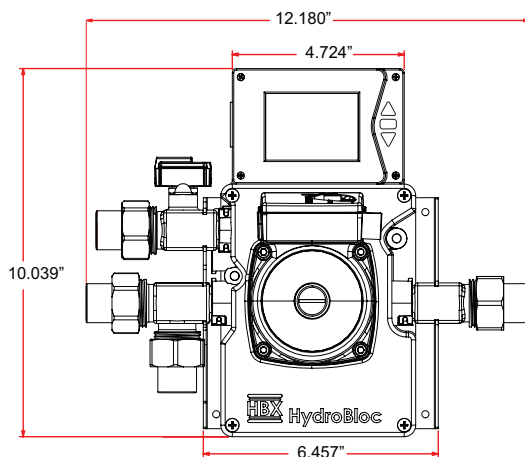
## Nameplate Information:

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.
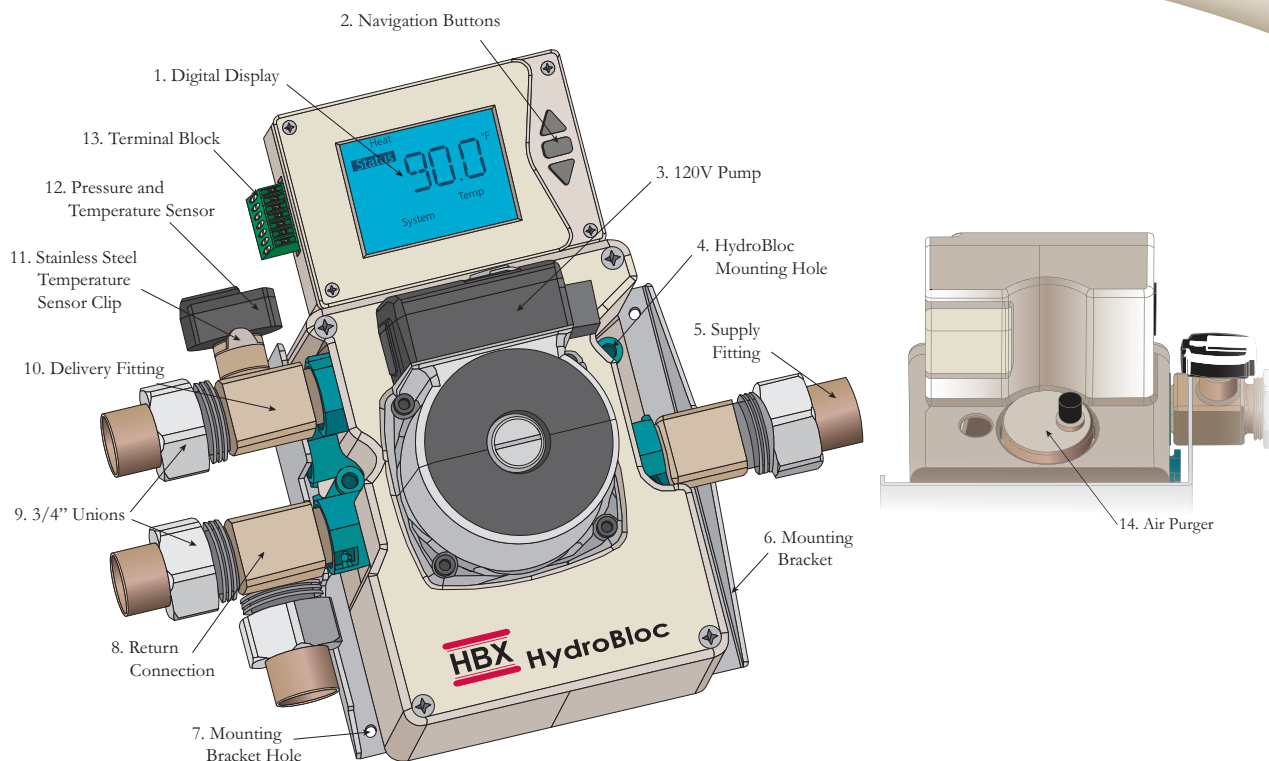
# HYD-0100

Lot #:00000001  **V1.20**
Serial #:000250723
Date:2023-07-20

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

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

**2. Navigation Buttons:**
Up button, down button, center button

**3. 120V Pump:**
Adjustable three speed pump.

**4. HydroBloc Mounting Hole**

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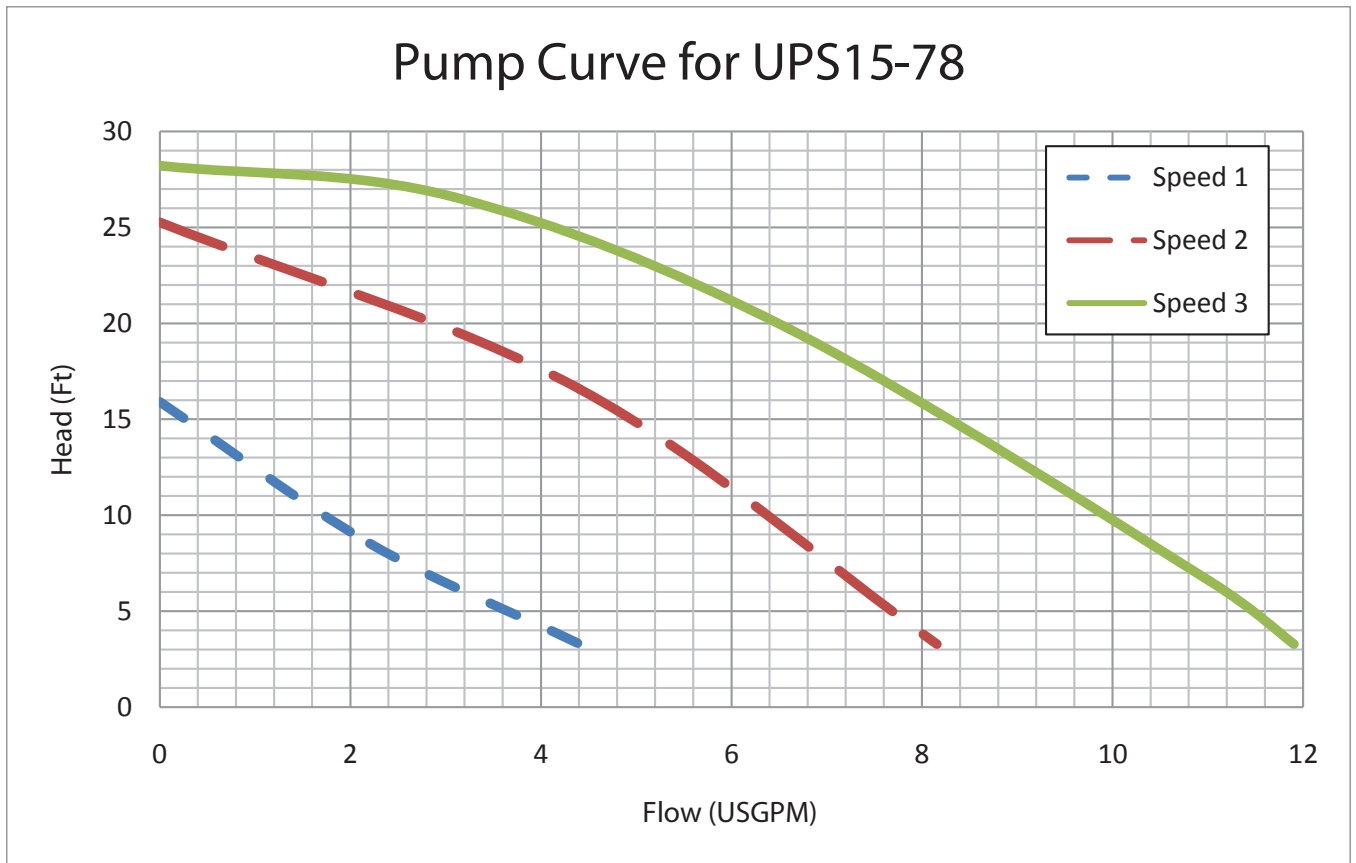
**13. Terminal Block:**
Seven pin terminal block used to hook up sensor inputs, boiler demand, and heat demand inputs.

**14. Air Purger**
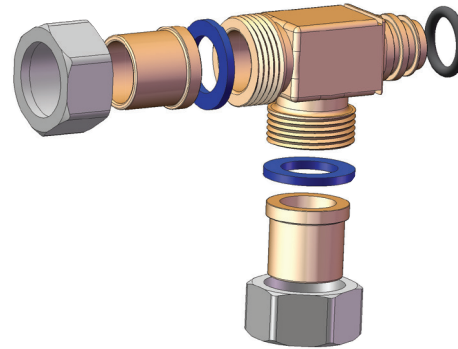Purges air from the hydronic system.

# HYDROBLOC PERFORMANCE PUMP CURVE

## Pump Curve for UPS15-78

## INSTALLATION

## FITTING ASSEMBLY

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.



## Hydrobloc Assembly

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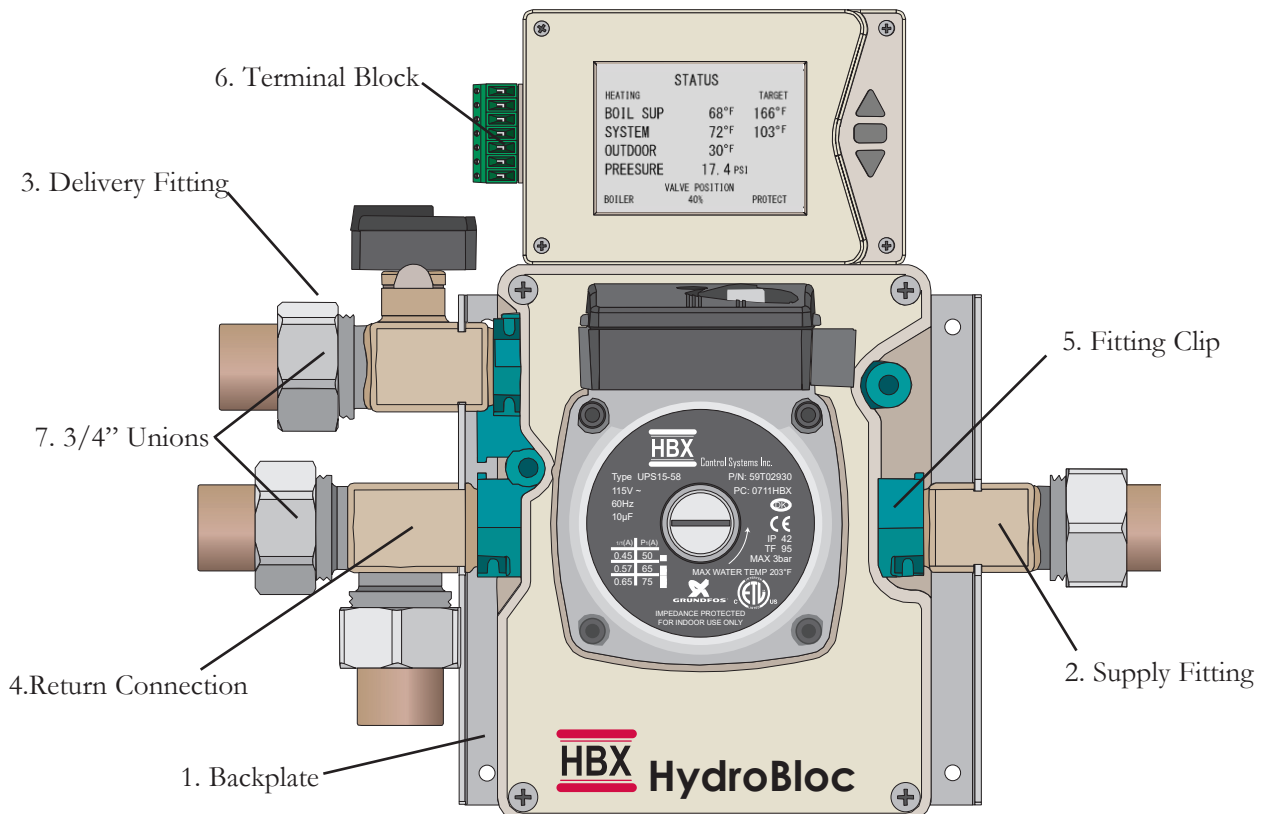
**4. Return Connection**
This fitting is to be installed on the lower left hand side of the Hydrobloc.

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

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

## WIRING AND INSTALLATION

**Terminal 1 and 2:**

Thermostat Input
Run wire straight from thermostat.

**Terminal 3 and 4:**

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

**Terminal 4 and 5:**

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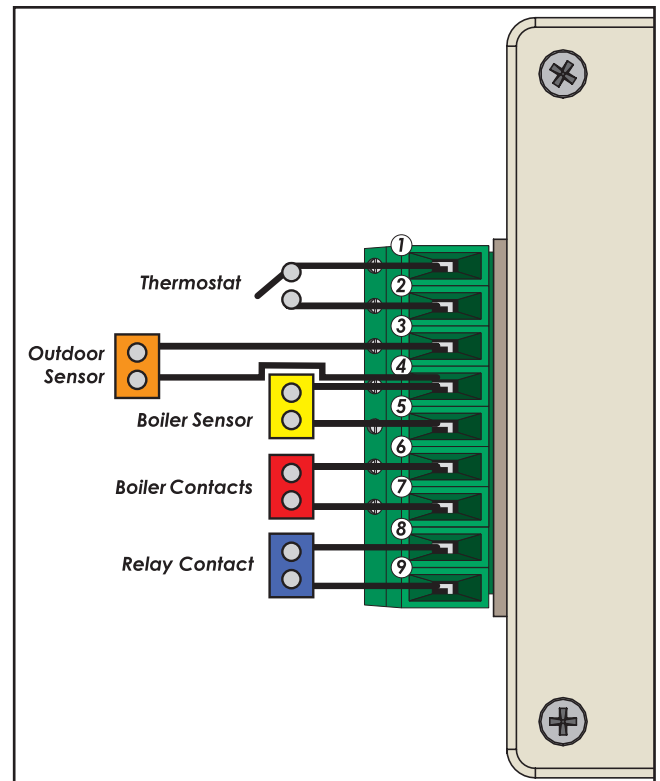This sensor is put on the main boiler loop.

**Terminal 6 and 7:**

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

**Terminal 8 and 9:**

Relay contact that functions as a pump contact. Dry contact
connection.



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

## SCREEN COLOURS

Light Blue — No Heat Demand

Red — Heat Demand and the boiler is running

Yellow/Green — Heat Demand and boiler is running but it is in boiler protection

Dark Blue — Heat Demand and the boiler target is satisfied. Boiler will not be running

Flashing Red — Faulty or fail sensor. 80F fluid will be supplied to the floor to prevent freezing.

Flashing Purple — Purge. The valve will open for 30 minutes.

## STATUS SCREEN

```
              STATUS
HEATING                  TARGET
BOIL SUP       68°F     166°F
SYSTEM         72°F     103°F
OUTDOOR        30°F
PREESURE       17. 4 PSI
            VALVE POSITION
BOILER          40%        PROTECT
```

Heating — this will appear on the screen with a heat demand is present. When this is present the HYD-0110 will be calling for heat.

Boil Sup — this shows the actual boiler temperature on the left and the boiler target temperature on the right side of the screen.

System — this shows the actual system temperature reading on the left and the system target temperature on the right of the screen.

Outdoor — this shows the current outside temperature.

Pressure — this shows the system pressure reading. If the there is low pressure then the word LOW will be shown on the screen. If LOW is displayed for 1 minute or longer the control will shut off.

Valve Position — this indicated the position of the valve. 100% would be fully open.

Boiler Protect — Boiler Protect will appear on the screen in the bottom corners when in Boiler Protection.

## SETUP MENU

```
   SETUP MENU
CIRCULATOR CONTROL
DESIGN TEMPS
WATER TEMP CONTROL
BOILER SETTINGS
DEFAULTS\PURGE
▶ BACK
```

The Setup Menu is where to access the other menus for the controller.

1.  Back — selecting the back option will send the controller to the previous screen.

## CIRCULATOR

```
   CIRCULATOR
▶ OPERATION:     ON\OFF
  BACK
```

Operation — when set to ON/OFF the circulator will turn on and off based on the demand. When set to CONSTANT the circulator will constantly be on unless it WWSD. (This option will not be available in BOILER AQUASTAT mode). Default: ON/OFF

## DESIGN TEMPERATURES

```
   DESIGN TEMPERATURES
▶ OUT DESIGN:        10°F
  ROOM DESGN:        70°F
  WWSD:              70°F
  BACK
```

OUT DESIGN — This is the design outdoor temperature. It is used in outdoor reset design calculation. Set this value to a temperature at which the maximum target temperature the control will go to once the OUT DESGIN is reached.

(-40F – 70F) Default: 10F

ROOM DESIGN — This is the design room temperature. It is used in the outdoor reset design calculation. Set it to the approximate room temperature.

(35F – 120F) Default: 70F

WWSD — This sets the temperature at which the control will enter WWSD. This temperature will shut the circulator/ control off.

(35F – 120F) Default: 70F

## WATER TEMPERATURE CONTROL

```
   WATER TEMP CONTROL
▶ TEMP CONTROL:     FIXED
  WATER TEMP:       120°F
  BACK
```

Temp Control: Fixed — A consistent water temperature will be maintained.

Water Temp — When there is a demand and not in WWSD the control will target this temperature. (50F – 180F). Default: 120F

```
   WATER TEMP CONTROL
▶ TEMP CONTROL:     RESET
  MIX DESIGN:       120°F
  MIX MIN:           70°F
  BACK
```

Temp Control: Reset — The water temperature target will change based on outdoor reset design calculation.

Mix Design — This setting is the top of the heat curve. The target will hit this temperature as the outdoor temperature approaches the OUT DESIGN.

(50F – 180F) Default: 120F

Mix Min — This setting is the bottom of the heat curve. The target will hit this temperature as the outdoor temperature approaches WWSD.

## BOILER SETTINGS

```
   BOILER SETTINGS
▶ TYPE:           RESET
  BOILER DESIGN:  180°F
  BOILER MIN:     140°F
  BOILER DIFF:     20°F
  BACK
```

Type: Reset — When set to RESET the supply water temperature will change based on outdoor reset. Default: RESET

Boiler Design — This setting is the top of the heat curve. The target will hit this temperature as the outdoor temperature approaches the OUT DESIGN.

(70F – 200F) Default: 180F

Boiler Min — This is the minimum boiler temperature. Set this to the temperature that the boiler will be at when is approaches WWSD.

(70F – 200F) Default: 140F

Boiler Diff: Adjust this setting to the desired differential for the boiler. This value will center the differential around the set point. (Eg- 20F differential would be 10F below and 10F above).

(10F – 50F) Default: 20F

```
   BOILER SETTINGS
▶ TYPE:       CONDENSING
  BACK
```

Type: Condensing — When set to CONDENSING the control recognizes this boiler being used is a condensing type and that the boiler will maintain its own temperatures.

```
   BOILER SETTINGS
▶ TYPE:        AQUASTAT
  SENSOR:        SUPPLY
  SUPPLY MIN:     140°F
  BACK
```

Type: Aquastat — When set to AQUASTAT the control will recognize that a non-condensing boiler is being used that will maintain its own temperatures. This setting cannot be used if CONSTANT CIRCULATION is selected.

Sensor — Depending on how the sensor is placed will depend on what to set this to. If the sensor is placed on the supply line then SUPPLY must be selected and if it is placed on the return then RETURN must be selected.

Supply Min/ Return Min — the minimum supply or return temperature.

(70F- 200F) Default: 140F

## DEFAULTS/PURGE

```
     DEFAULTS\PURGE
▶°C   OR   °F
 OVERWRITE DEFAULTS
 RESTORE DEFAULTS
 PURGE
 BACK
```
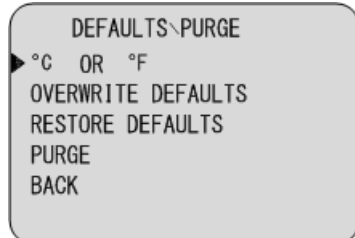
C or F — This setting is used to set the temperatures displayed on the control in either Celsius or Fahrenheit. Default: F

Overwrite Defaults — This settings will overwrite the Factory Default Settings with the selected settings.

Restore Defaults — This will restore the settings to their Default settings. If the Factory Default Settings were overwritten then the user settings selected during the overwrite will be restored instead.

Purge — This will open PURGE MODE.

## PURGE MODE

```
       PURGE MODE
▶ACTIVATE           30:00
 CANCEL
 BACK
     VALVE FULLY OPEN
     30 MIN DURATION
```
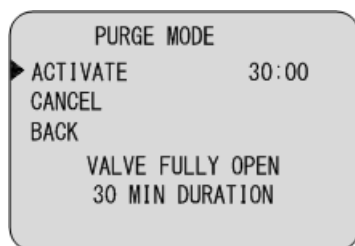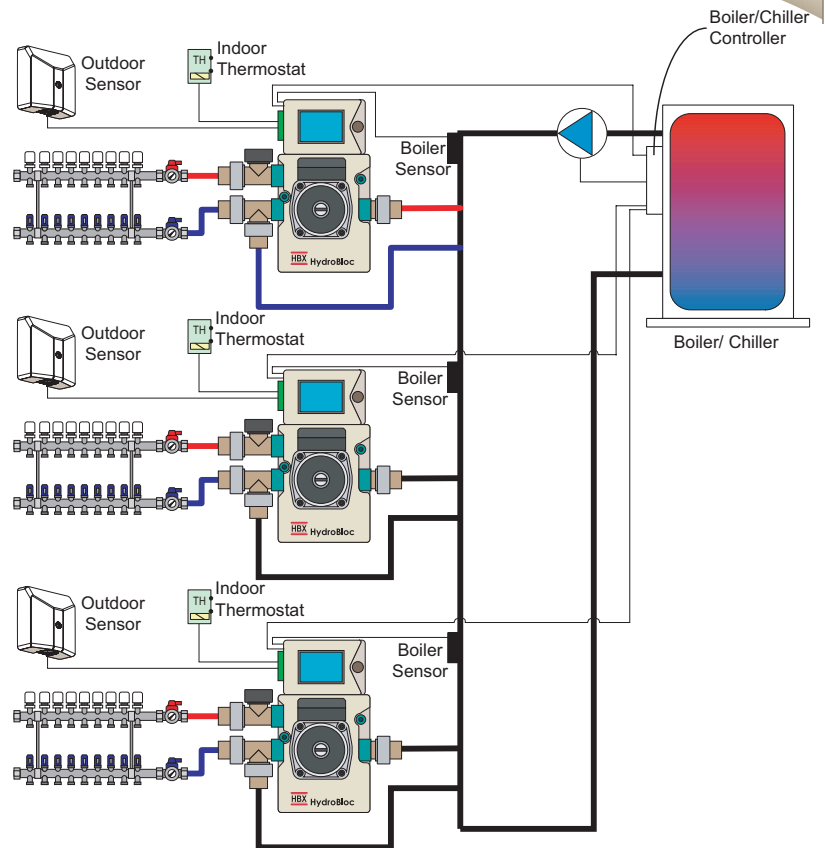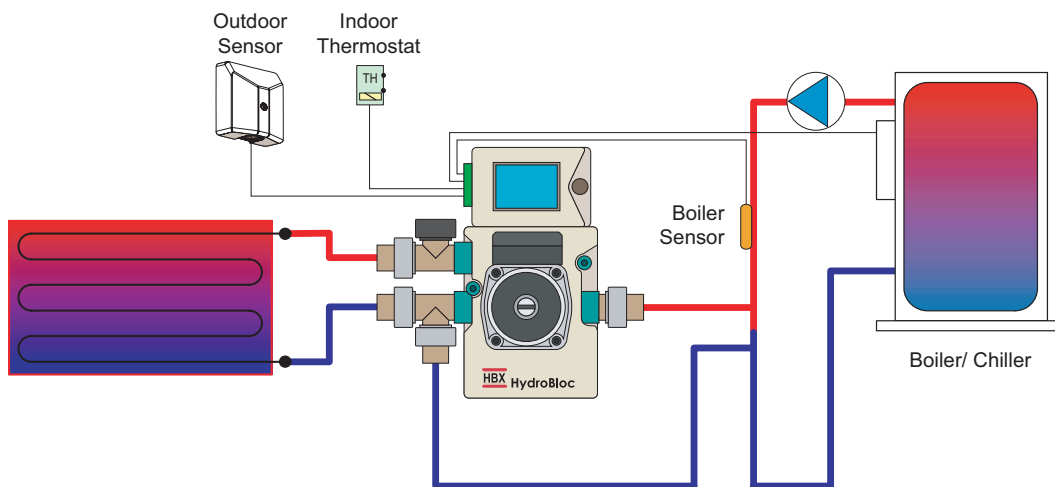
Activate — This will open the internal valve for 30 minutes for the purposes of purging.

Cancel — This will end the Purge Mode. This in turn will close the internal valve and end the timer.

### HYD-0110-01 DRAWING:

**Description:**

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



### HYD-0110-02 DRAWING:



**Description:**

This is an example of the Hydrobloc in a typical application. It is used to mix into a low temperature loop.
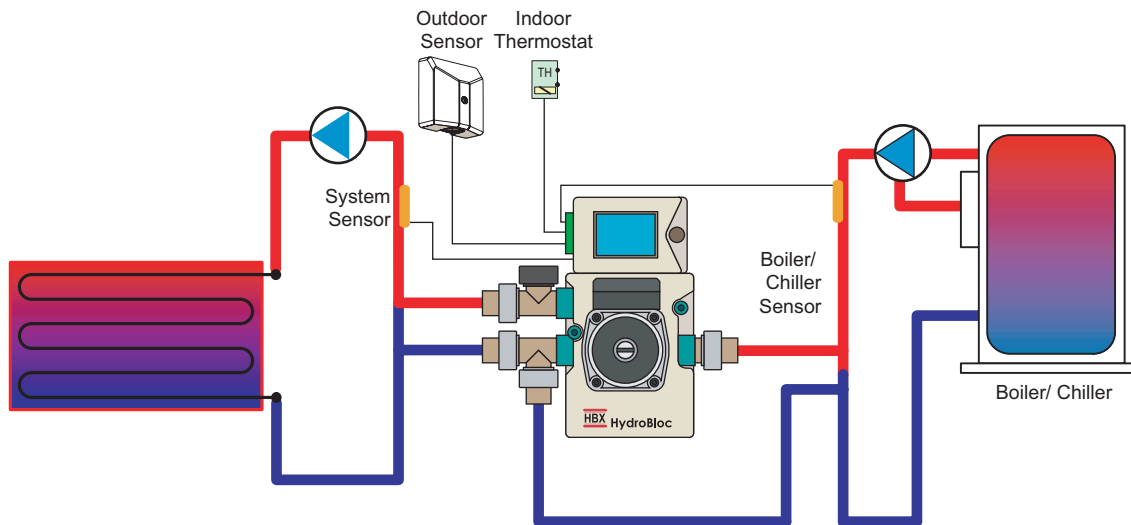
## HYD-0110-03 DRAWING:

**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.
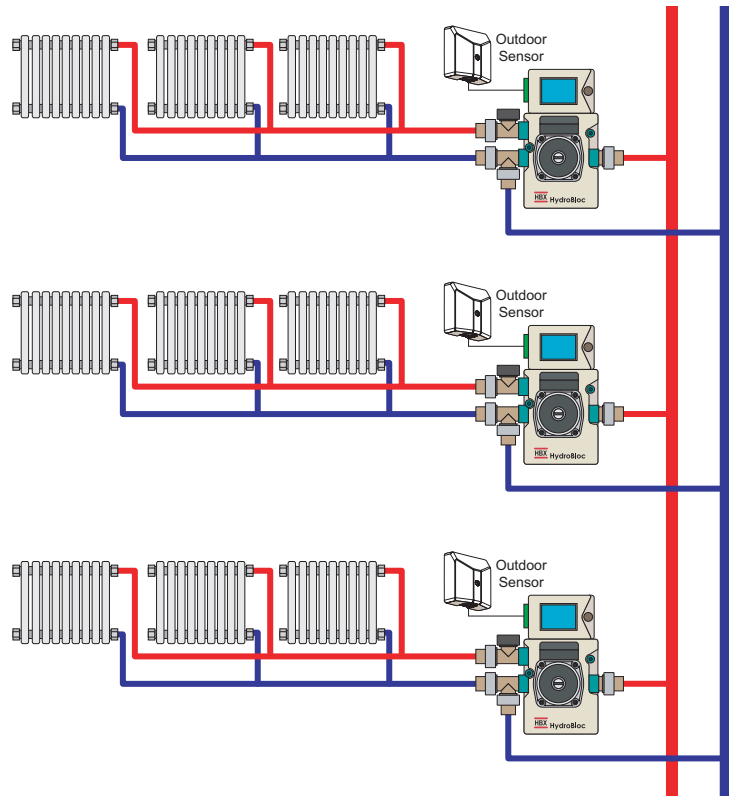


## HYD-0110-04 DRAWING:

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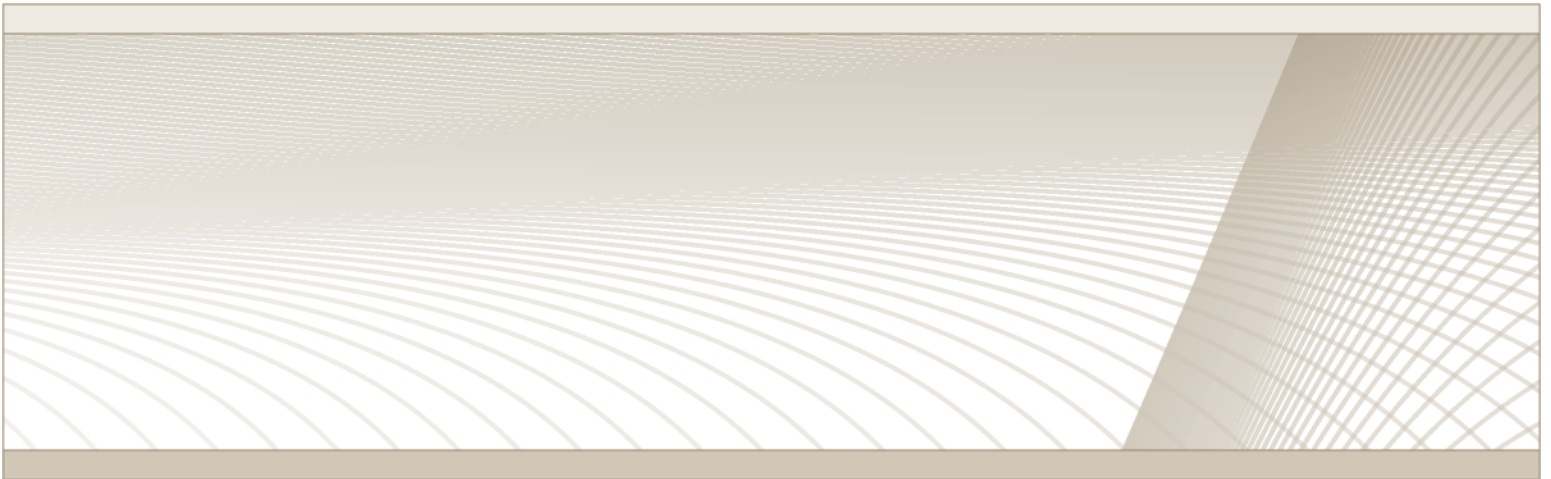
Preclude the disclaimers and limitations in this statement from limiting the statutory rights of a consumer (e.g. United Kingdom);

Otherwise restrict the ability of a manufacturer to enforce such disclaimers or limitations; or
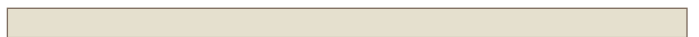
Grant the purchaser additional warranty rights which the manufacturer cannot disclaim, or not allow limitations on the duration of implied warranties.