WIRSBO®
Life, Safety, Comfort Systems

Warm Cozy Floors

proMIX™ 201
Installation Manual

RADIANT FLOORS
COMFORT HEATING

Bringing *comfort* to life

uponor

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Installation Manual
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If you are only PROGRAMMING the proMIX 201, go to:

PROGRAMMING
Steps 1-2

IMPORTANT NOTE:
If you are not familiar with how the Wirsbo proMIX 201 operates or the theory behind settings for a radiant system, it is important you review the Control Function Overview. It will help with understanding the functions of the control within the hydronic radiant heating system.

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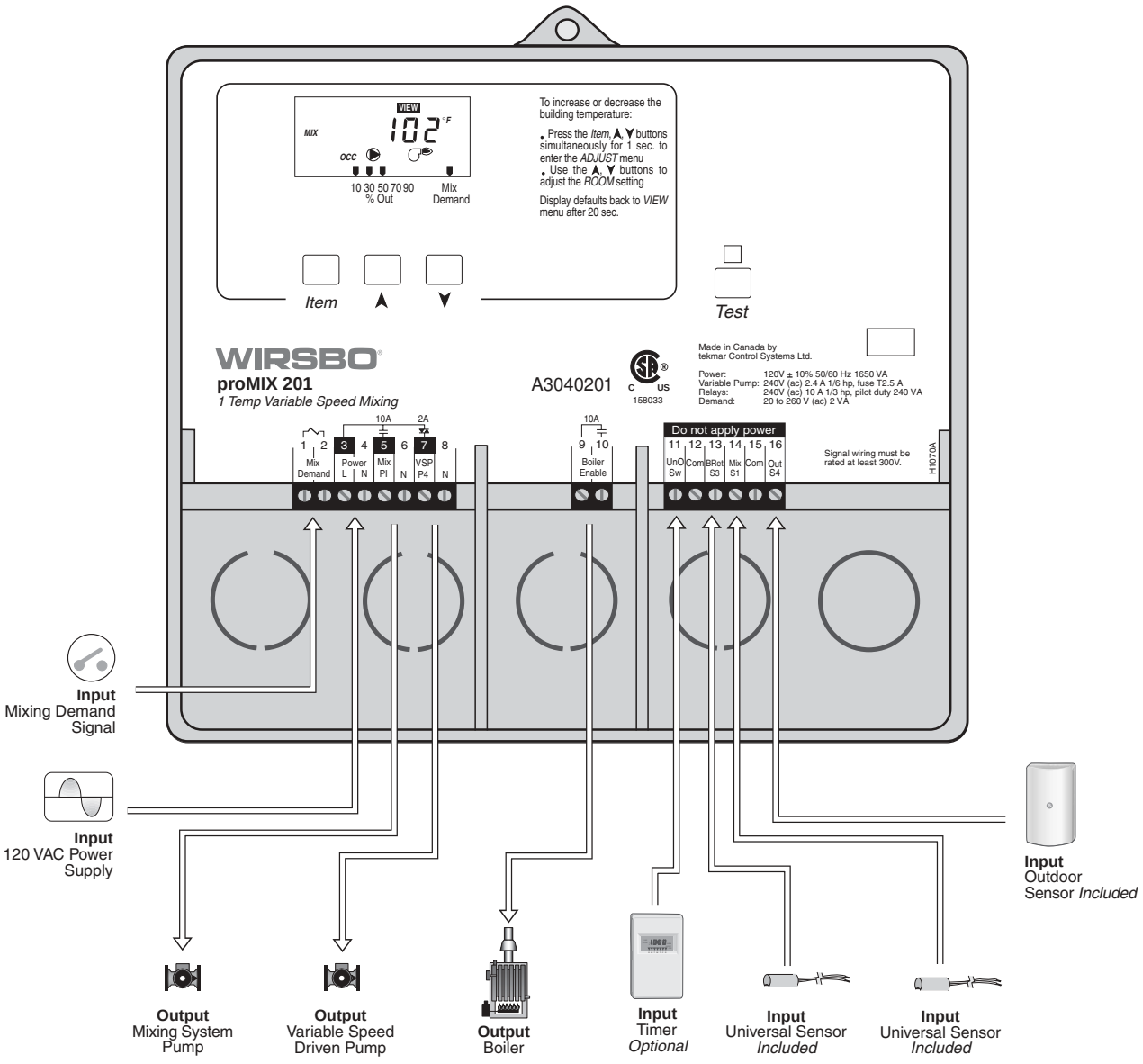
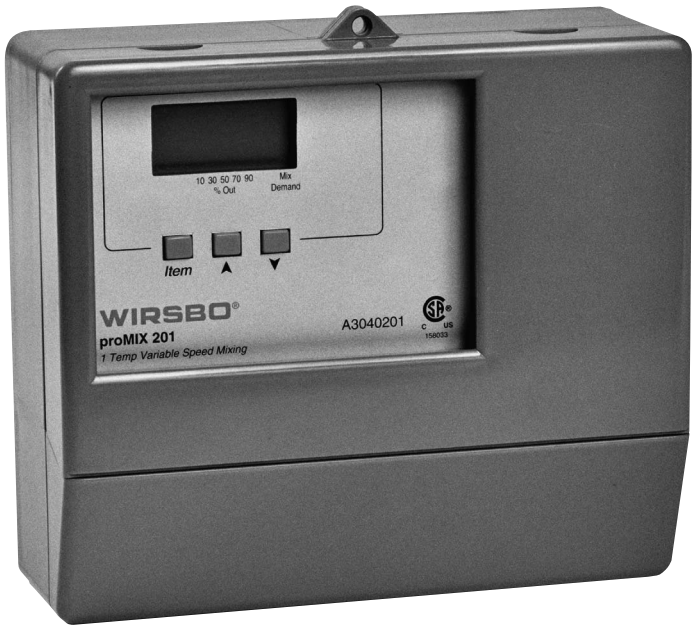
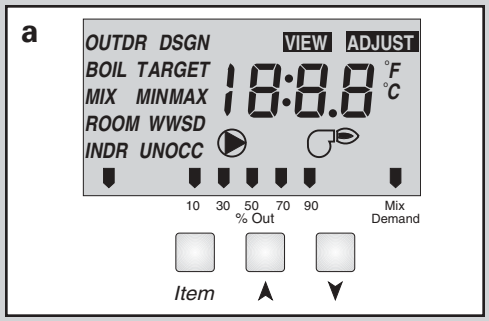


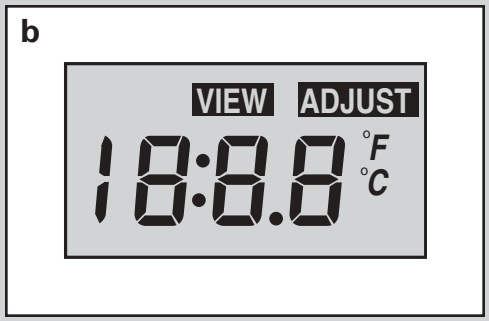
INTRODUCTION
CONTROL OVERVIEW

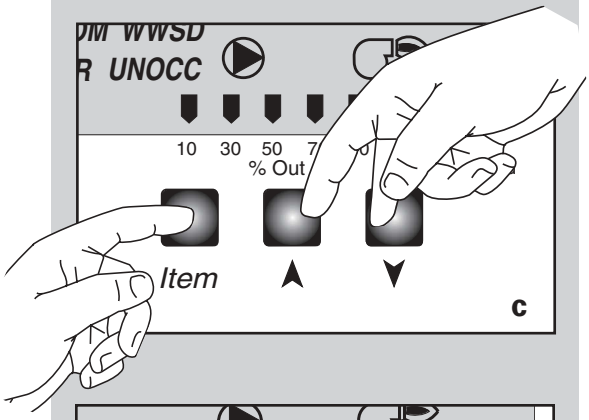
The Wirsbo proMIX™ 201 is a weather-responsive, single-temperature reset control for hydronic radiant heating systems. The proMIX 201 provides either reset or setpoint supply water temperatures through the use of a variable speed injection mixing circulator. This control also protects the boiler from low return water temperatures by monitoring the boiler return water temperature. The proMIX 201 can function as a standalone mixing control or function as an expansion module to the Wirsbo SYSTEMpro 311.

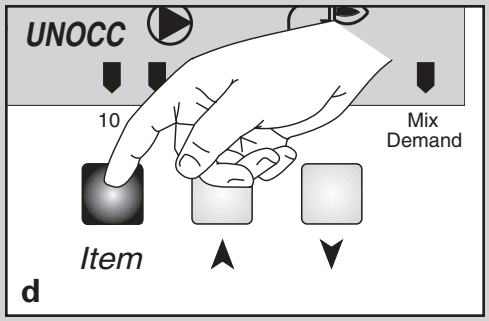


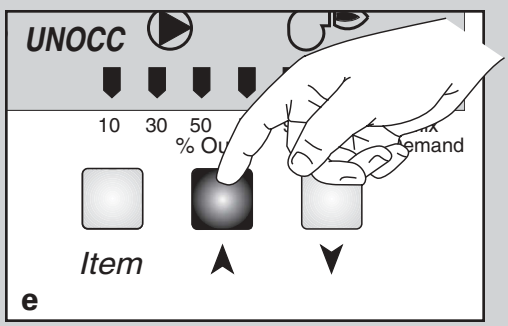
RADIANT FLOORS
COMFORT HEATING











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INTRODUCTION
NAVIGATING THE CONTROL

The proMIX 201 (also referred to as "control") has a liquid crystal display (LCD) that lets users set up the operation of the system. The proMIX 201 has three push buttons for selecting and adjusting settings.
(See fig. a.)

Note: It is recommended that the user record control settings (for later review) on the Program Setup Sheet provided in Appendix V.

Menu (See fig. b.)

- All items displayed by the control are organized into two menus.
- Menus are listed on upper right side of the display
- Control displays the “View” menu during normal operation.
- To select the Adjust Menu, press all three buttons simultaneously for one second **(see fig. c.)**
- Within specific menu selections, a group of items can be viewed and selected.

Item (See fig. d.)

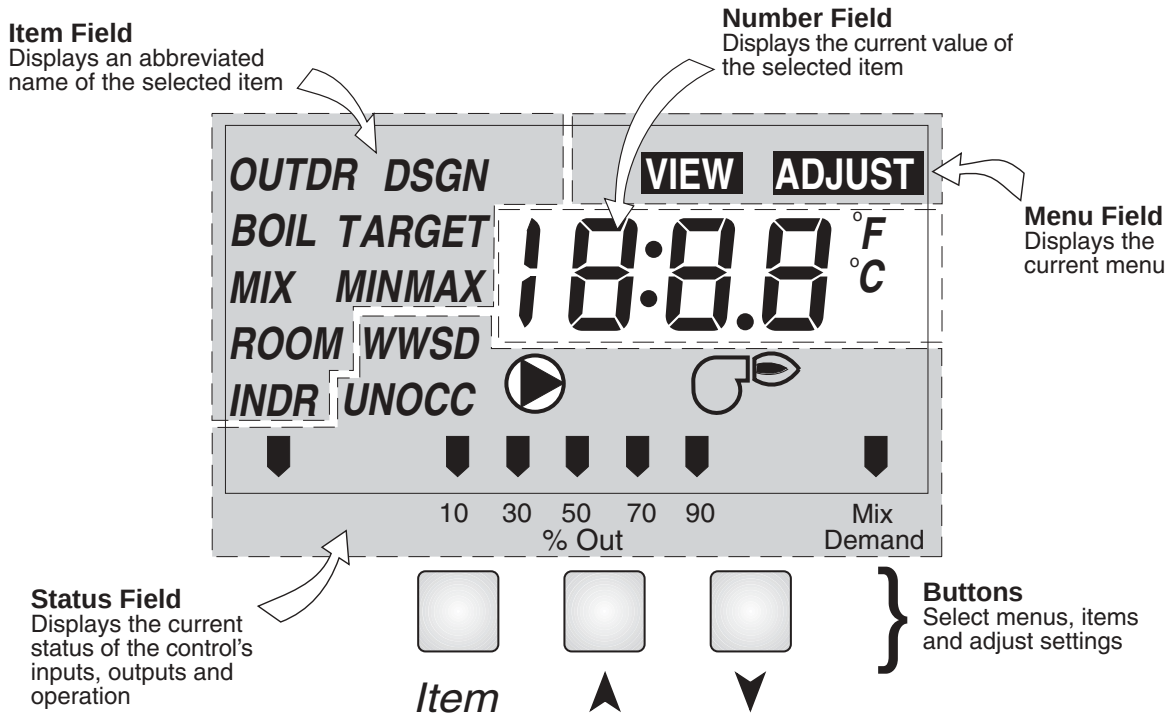
- The abbreviated name of the selected item will be displayed in the item field of the display.
- To view the next available item, press and release the Item button.
- Once you have reached the last available item in a menu, press and release the Item button to return the display to the first item in the same menu.

Adjustments (See fig. e)

- To make an adjustment to a control setting, first select the appropriate menu with the Menu button.
- Then select the item you want using the Item button.
- Finally, use the up and/or down button to make the change.

Note: You can get more information by viewing the Status field of the LCD. The status field shows which of the control’s outputs are active. Most symbols in the status field can only be seen when the View menu is selected.

Display



Symbol Description

Pump Displays when the mixing system pump is in operation	**Occupied Schedule** Displays when the control is in occupied (day) mode. *OCC*	**Units of Measurement** Indicates degrees Fahrenheit or Celsius. *°F, °C*
Burner Displays when the boiler relay is turned on.	**Unoccupied Schedule** Displays when the control is in unoccupied (night) mode. *UNOCC*	**Pointer** Displays the control operation as indicated by the text.

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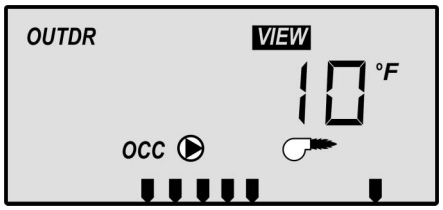
INTRODUCTION

VIEWING THE STATUS OF THE SYSTEM PERFORMANCE

- The View menu is available for viewing the current status of the system performance.
- While in the View menu, push the item button to scroll through the available menu items showing the current settings and temperatures in the system.

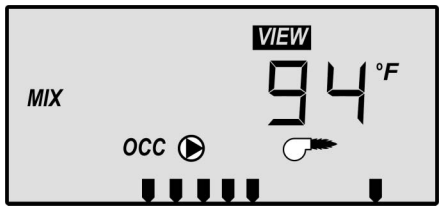
a



OUTDR (See fig. a)

Shows actual outside temperature at outdoor sensor S4 location.

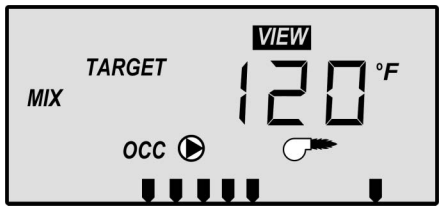
b



MIX (See fig. b)

Shows actual mix supply temperature to the system at mix supply sensor S1 during occupied mode

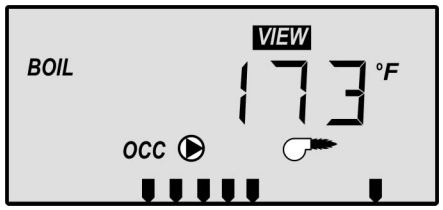
c



MIX TARGET (See fig. c)

The targeted mixed supply water temperature the control has calculated in order to meet current conditions

d



BOIL (See fig. d)

Shows actual boiler return water temperature at the boiler return sensor S3

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INSTALLATION

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CAUTIONS AND DISCLAIMERS

Failure to install and/or operate this control properly could result in:

- ***Damage to the equipment***
- ***Personal injury***
- ***Property damage***

It is up to you to make sure this control is installed safely in a way that meets all codes and standards that apply. Do not use this electronic control as a primary limit control. Other controls that are meant to be used and certified to be used as safety limits must be placed into the control circuit.

Carefully read the Control Overview (page 3) to make sure you have chosen the proper control for your application.

Warning Symbol: **Indicates presence of hazards which can cause severe personal injury, death or substantial property damage if ignored**

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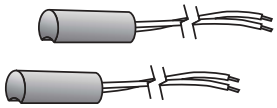
INSTALLATION - STEP 1

CHECKING CONTENTS

Check the contents of this package.
The Wirsbo proMIX 201 should have:

proMIX 201
(A3040201)

Outdoor Sensor
(A3040070)



Two Universal Sensors
(A3060071)

Product Manual

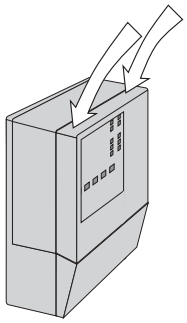
If any of the contents listed are missing or damaged, please contact your wholesaler or your Wirsbo sales representative for assistance.

INSTALLATION - STEP 2
THE CONTROL BASE

Removing the Control from the Base
Follow steps a - g

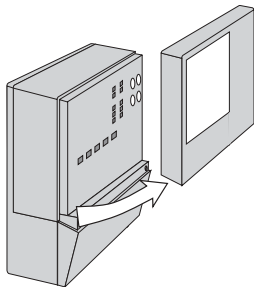
Press down at the fingertip grips on top of the front cover and pull out and down **(see fig. a)**.

a



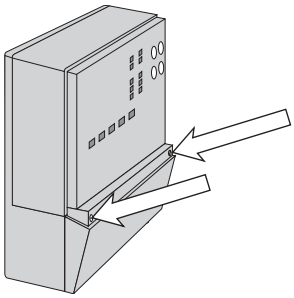
Lift the front cover up and away from the control **(see fig. b)**.

b



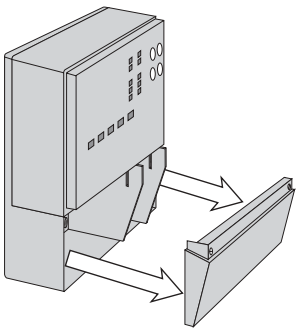
Loosen the screws at the front of the wiring cover **(see fig. c)**.

c



The wiring cover pulls straight out from the wiring chamber **(see fig. d)**.

d



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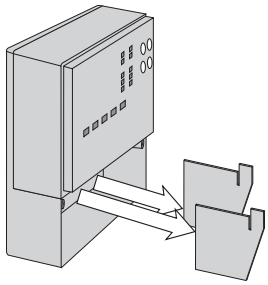
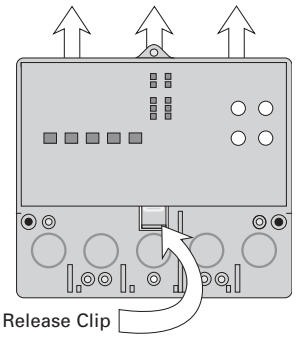


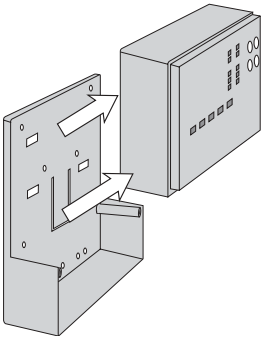
Remove the safety dividers from the wiring chamber by pulling them straight out of their grooves **(see fig. e)**.

f



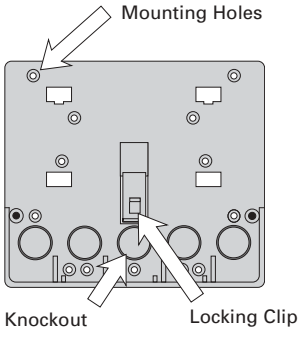
Press the control release clip on the base inside the wiring chamber and slide the control upwards **(see fig. f)**.

g



The control lifts up and away from the base **(see fig. g)**.

h



Mounting the Base (see fig. h.)

1) Find a convenient and accessible location typically in the mechanical room.

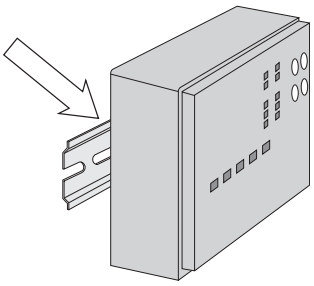
2) Following the hole pattern, mount the control base using appropriate screws or bolts.

The control can also be mounted on a standard DIN rail. (See fig. i.)

First remove the control from its base and then, using the hooks and spring clip on the back of the control, mount it onto the DIN rail. This will be a popular option for those who prefer to mount the control inside a larger electrical panel.

The wiring can enter the bottom or the back of the enclosure. Knockouts provided in the base allow the wiring to be run in conduit up to the enclosure. The base also has holes that line up with the mounting holes of most common electrical boxes.

i



CAUTION

All wiring must be performed by a licenced professional and comply with local trade practices and codes.

Wirsbo does not take responsibility for any damage caused due to failure to comply.

INSTALLATION - STEP 3
ROUGH-IN WIRING

Things to note before you start wiring:

- All electrical wiring should end in the control base wiring chamber.
- The base has standard ¾" (22 mm) knockouts.
- Knockouts accept common wiring hardware and conduit fittings.
- Before removing knockouts, check wiring diagram and select those sections of the chamber with common voltages.
- Do not allow the wiring to cross between low/high voltage sections or else wires will interfere with safety dividers (these dividers should be installed at a later time).
- Do not apply power to any of the wires during rough-in wiring stage.
- All wires should be stripped to ⅜"L (9 mm) for the correct connection to the control.

Wiring Components:

1) Install the various sensors indicated below as per instructions listed and run the wiring back to the control base and label all wires for later installation.

Main Sensors:

- Outdoor Sensor S4
- Boiler Return Sensor S3
- Mixing Sensor S1

2) Run appropriate wire from all other system components (pump, boiler, etc.) to the control base.

3) Run wires from the 120VAC power to the control base.

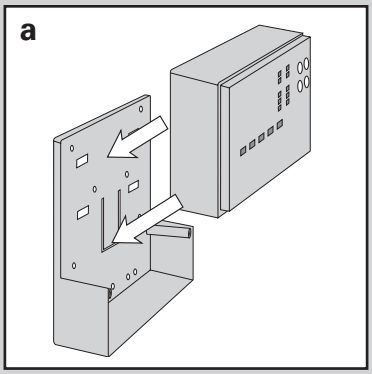
- Use a clean power source to ensure proper operation.
- Comply with local codes for minimum gauge and breaker requirements.

INSTALLATION - STEP 4
ATTACHING THE CONTROL TO THE BASE

1) Push the proMIX 201 control into the base you mounted in **step 2**.

2) Slide the control down until it snaps firmly into place **(See fig. a.)**

a



INSTALLATION - STEP 5
MOUNTING THE SENSORS

a

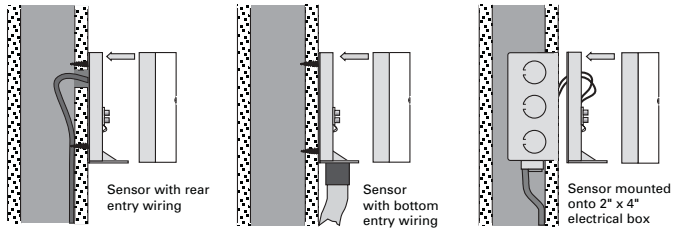
Outdoor Sensor (S4) (See fig. a.)

The Outdoor Sensor includes a 10 kΩ thermistor which provides an accurate measurement of the outdoor temperature. The sensor is protected by a white UV-resistant PVC plastic enclosure.

Step 1: Mounting (See fig. b.)

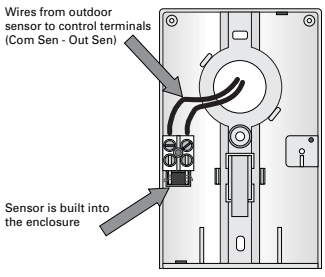
Note: The temperature sensor (thermistor) is built into the enclosure.

b



- Remove the screw and pull the front cover off the sensor enclosure.
- The outdoor sensor can either be mounted directly onto a wall or a 2" x 4" electrical box. When the sensor is wall mounted, the wiring should enter through the back or bottom of the enclosure. Do not mount the sensor with the conduit knockout facing upwards as rain could enter the enclosure and damage the sensor.
- In order to prevent heat transmitted through the wall, from affecting the sensor reading, it may be necessary to install an insulating barrier behind the enclosure.
- The outdoor sensor should be mounted on an exterior wall which best represents actual outdoor temperature (a north facing wall). It should not be exposed to heat sources such as solar gain, exhaust ventilation or window openings.
- The outdoor sensor should be installed at an elevation above the ground that will prevent accidental damage or tampering. Installing the sensor in the shadow of the roof eave is common.

c



Step 2: Wiring and Testing (See fig. c.)

- Connect 18 AWG or similar wire to the two terminals provided in the enclosure and run the wires from the outdoor sensor to the control.

  ***CAUTION:* Do not run sensor wires parallel to telephone or power cables. If the sensor wires are located in an area with strong sources of electromagnetic interference (EMI), shielded cable or twisted pair should be used or the wires can be run in a grounded metal conduit. If using shielded cable, the shield wire should be connected to the Com Sen terminal on the control and not to earth ground.**

- Follow the sensor testing instructions in this brochure and connect the wires to the control as per installation – **step 6**.
- Replace the front cover of the sensor enclosure.

Universal Sensors (S1 and S3)

(See fig. d.)

These Universal Sensors have a zinc sleeve for fast response and a wide operating range. They can be used in a multitude of applications. They are supplied with 10 inches (250 mm) of 2 conductor wire.

Step 1: Mounting (See figs. e thru g.)

Note: The Sensor is designed to mount on a pipe or in a temperature immersion well.

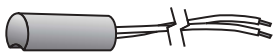
- The Universal Sensor can be strapped directly to the pipe using the cable tie provided. Insulation should be placed around the sensor to reduce the effect of air currents on the sensor measurement.
- The Universal Sensor should be placed downstream of a pump or after an elbow or similar fitting. Proper sensor location requires that the fluid is thoroughly mixed within the pipe before it reaches the sensor.

Step 2: Wiring and Testing

CAUTION: **Do not run sensor wires parallel to telephone or power cables. If the sensor wires are located in an area with strong sources of electromagnetic interference (EMI), shielded cable or twisted pair should be used or the wires can be run in a grounded metal conduit. If using shielded cable, the shield wire should be connected to the Com Sen terminal on the control and not to earth ground.**

- If it is necessary to connect 18 AWG wire to the two sensor wires, wire nuts can be used to hold the wires together.
- Follow the sensor testing instructions given in this brochure, and then connect the wires to the control.

d



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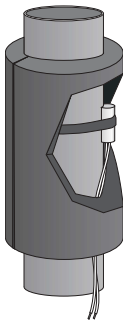

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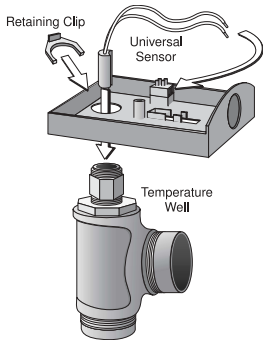

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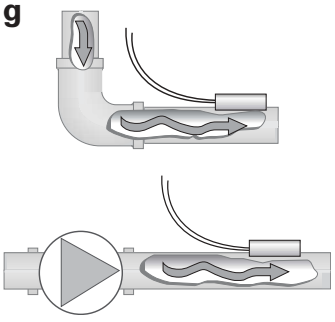

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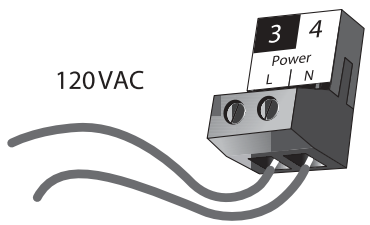

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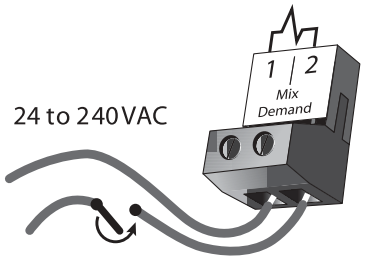


INSTALLATION - STEP 6
ELECTRICAL CONNECTIONS TO THE CONTROL

IMPORTANT: **Test to be certain no voltage is present in any wires.**

Powered Input Connections

120 VAC Power (See fig. a.)

- Connect 120VAC power supply to Power L and neutral N terminals (3 and 4).
- Provides power to microprocessor and control display as well as power to Mix P1 terminal (5) and VSP P4 terminal (7) from Power L terminal (3)

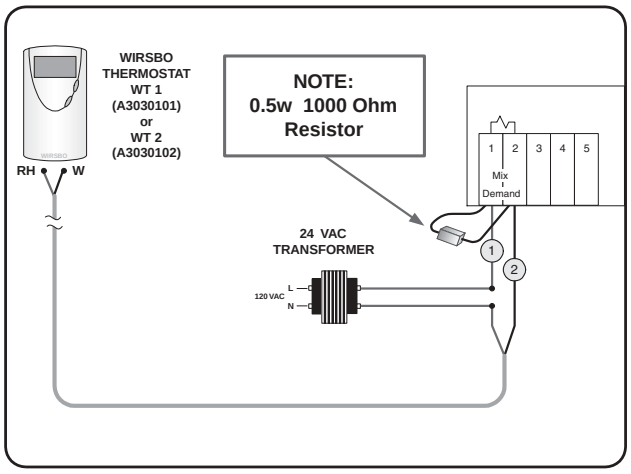
Demand Connections

Demand to the control is generated from a thermostat zone control module or external relay. This connection must have 24 VAC supplied to the demand terminals.

Mixing Demand (See fig. b.)

- Apply a voltage between 24VAC and 240VAC across Mixing Demand terminals (1 and 2).

Mixing Demand with Wirsbo Thermostat



Note: When connecting a Wirsbo Thermostat WT1 or WT2 directly to the Mix Demand Terminals 1 and 2, a 0.5 watt 1000 ohm resistor needs to be installed parallel as shown. A packet with the resistor and schematic is included in the box.

Output Connections

1) Boiler Contact (See fig. c.)

Boiler terminals (9 and 10) are an isolated output. No power is available on these terminals from the control.

- Use terminals as switch to make or break the boiler circuit.
- When the proMIX 201 requires the boiler to fire, contact closes between terminals 9 and 10.

2) Mixing System Pump (Mix P1) (See fig. d.)

Mixing System Pump (Mix P1) output terminals (5 and 6) are powered outputs. When relay in the control closes, 120VAC is provided to Mix P1 terminal (5) from Power L and neutral terminal (6). To operate the System Pump:

- Connect one side of system pump circuit to terminal (5).
- Connect the second side of pump circuit to neutral (N) terminal (6).

4) Variable Speed Injection Pump (VSP P4) (See fig. e.)

The proMIX 201 can vary speed of most small wet rotor circulators (see **Appendix I - page 43**).

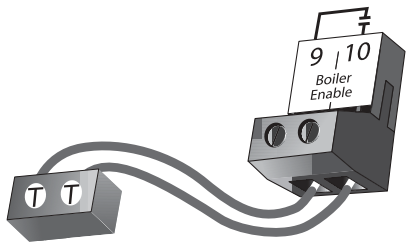
- The VSP P4 terminal (7 and 8) on the control are powered outputs.
- Power is supplied to VSP P4 terminal (7) and neutral terminal (8).

To operate the variable speed injection pump:

- Connect one side of pump circuit to VSP P4 terminal (7).
- Connect the second side of pump circuit to neutral (N) terminal (8).

Note: The control has an internal overload fuse rated at 2.5 A 250 VAC. Contact your Wirsbo sales representative for repair information if fuse is blown.

c



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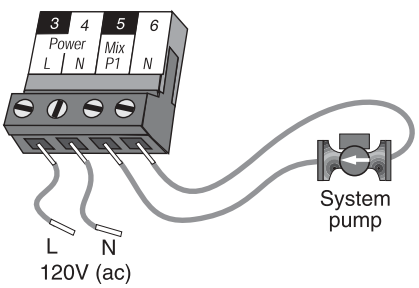

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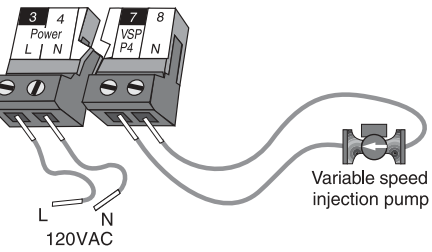

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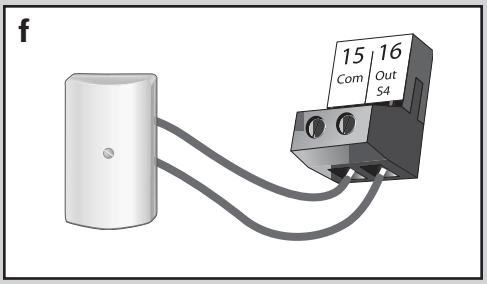

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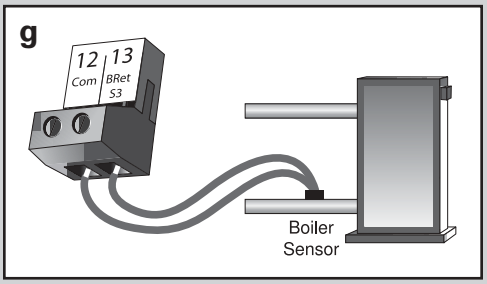

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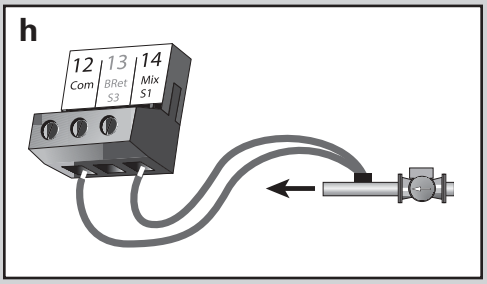

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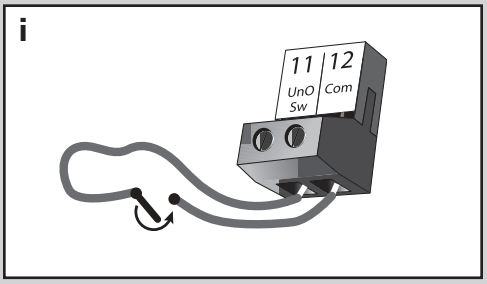


Sensor and Unpowered Connections

WARNING: **Do not apply power to these terminals as this will damage the control.**

Connect the two wires from sensors to terminals described below.

1) Outdoor Sensor S4 wires to Com and Out S4 terminals (15 and 16) (See fig. f.)

- Measures outdoor air temperature

2) Boiler Return Sensor S3 wires to Com and BRet S3 terminals (12 and 13) (See fig. g.)

- Measures boiler return water temperature

3) Mixing Supply Sensor S1 wires to Com and Mix S1 terminals (12 and 14) (See fig. h.)

- Measures the mixed supply temperature after the mixing system pump (P1)

Note: Sensor is normally attached downstream of system pump (P1).

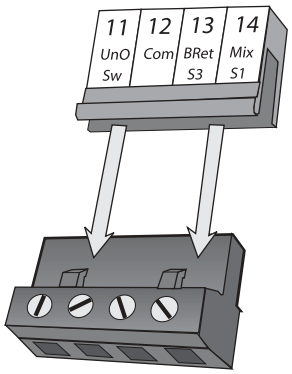
4) Unoccupied External Timer or Switch wires to UnO Sw and Com terminals (11 and 12) (See fig. i.)

- When continuity is detected between terminals 11 and 12, the control registers an unoccupied signal (night mode).

Temperature Resistance Chart

Temperature		Resistance	Temperature		Resistance	Temperature		Resistance	Temperature		Resistance
°F	°C	Ω	°F	°C	Ω	°F	°C	Ω	°F	°C	Ω
-50	-46	490,813	20	-7	46,218	90	32	7,334	160	71	1,689
-45	-43	405,710	25	-4	39,913	95	35	6,532	165	74	1,538
-40	-40	336,606	30	-1	34,558	100	38	5,828	170	77	1,403
-35	-37	280,279	35	2	29,996	105	41	5,210	175	79	1,281
-30	-34	234,196	40	4	26,099	110	43	4,665	180	82	1,172
-25	-32	196,358	45	7	22,763	115	46	4,184	185	85	1,073
-20	-29	165,180	50	10	19,900	120	49	3,760	190	88	983
-15	-26	139,402	55	13	17,436	125	52	3,383	195	91	903
-10	-23	118,018	60	16	15,311	130	54	3,050	200	93	829
-5	-21	100,221	65	18	13,474	135	57	2,754	205	96	763
0	-18	85,362	70	21	11,883	140	60	2,490	210	99	703
5	-15	72,918	75	24	10,501	145	63	2,255	215	102	648
10	-12	62,465	80	27	9,299	150	66	2,045	220	104	598
15	-9	53,658	85	29	8,250	155	68	1,857	225	107	553

a



INSTALLATION - STEP 7
TESTING THE WIRING

Note: The following tests are to be performed using standard testing practices and procedures. They should only be carried out by properly trained and experienced persons.

IMPORTANT! – Things to note before you start ANY testing:

- **Before supplying power for testing, each terminal block must be unplugged from its header on the control.**
- **To remove the terminal block, pull straight down from the control (See fig. a).**
- **The following tests should only be carried out by properly trained and experienced persons.**
- **When testing, use standard testing practices and procedures.**
- **To properly test wiring and sensors a good quality electrical test meter, capable of reading at least 0 – 300 VAC and at least 0 – 2,000,000 Ohms is essential.**

Test The Sensors

To test the sensors, the actual temperature at each sensor location must be measured.

A good quality test meter capable of measuring up to 5,000 kΩ (1 kΩ = 1000 Ω) is required to measure the sensor resistance. In addition to this, the actual temperature must be measured with either a good quality digital thermometer, or if a thermometer is not available, a second sensor can be placed alongside the one to be tested and the readings compared.

First measure the temperature using the thermometer and then measure the resistance of the sensor at the control. The wires from the sensor must not be connected to the control while the test is performed. Using the chart on **page 19**, estimate the temperature measured by the sensor. The sensor and thermometer readings should be close. If the test meter reads a very high resistance, there may be a broken wire, a poor wiring connection or a defective sensor. If the resistance is very low, the wiring may be shorted, there may be moisture in the sensor or the sensor may be defective. To test for a defective sensor, measure the resistance directly at the sensor location.

Do not apply voltage to a sensor at any time as damage to the sensor may result.

Test The Power Supply

1) Make sure exposed wires and bare terminals are not in contact with other wires or grounded surfaces.
2) Turn on the power and measure the voltage between the Power L and Power N terminals (3 and 4) using an AC voltmeter, the reading should be between 108 and 132VAC.

Test The Powered Demand Inputs

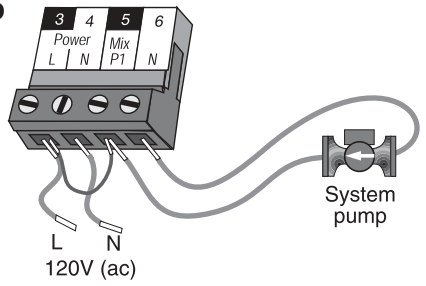
Voltage Readings for Demand Devices (described below)

1) When a demand device calls for heat, you should measure between 20 and 260VAC at the terminals.
2) When off, you should measure less than 5VAC.

Mixing Demand

• Measure voltage between Mix Demand terminals (1 and 2).

b



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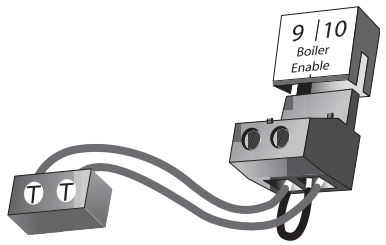

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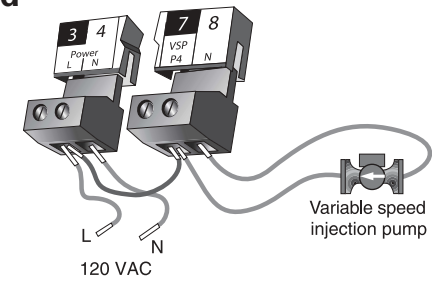


Test The Outputs

IMPORTANT NOTE FOR ALL OUTPUT DEVICES:
Once you have verified that a device operates properly, shut off the power to the device and remove the jumper you were asked to install during the testing procedure below.

Mixing System Pump (Mix P1) — terminal (5) (See fig. b.)

1) Make sure power to terminal block is off.
2) Install a jumper between Power L and Mix P1 terminals (3 and 5).
3) Install a second jumper between Power N and N terminals (4 and 6).
4) When power is applied to Power L and Power N terminals (3 and 4) system pump should start.

Boiler — connected to the Boiler terminals (9 and 10) (See fig. c.)

- Make sure power to the boiler circuit is off.
- Install a jumper between the terminals (9 and 10).
- When the boiler circuit is powered up, the boiler should fire.

Note: Boiler may have a flow switch that prevents firing until the boiler loop pump is running

Variable Speed Injection Pump — connected to (VSP P4) (7) (See fig. d.)

- Make sure power to terminal block is off.
- Install a jumper between the Power L and VSP P4 terminals (3 and 7).
- Install a second jumper between Power N and N terminals (4 and 8).
- When the variable speed pump circuit is powered up, the variable speed pump should operate at full speed.

Troubleshooting for ALL Output Devices described above:

- If the device does not start, check all wiring connections.
- If the device still fails to start, you may need to refer to the manufacturers installation or troubleshooting information supplied with the device.

INSTALLATION - STEP 8
COMPLETING THE INSTALLATION

Once you have successfully tested all the wiring and found that everything is operational, you are ready to complete the installation.

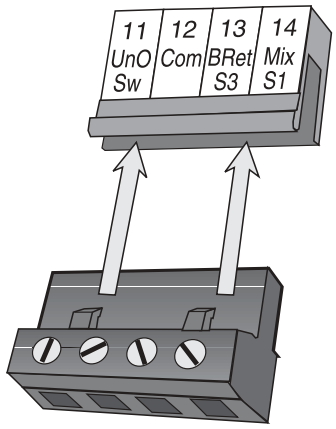
1) Make sure all power to the devices and terminal blocks is off, and remove any remaining jumpers from the terminals.
2) Reconnect the terminal blocks to the control by carefully aligning them with their respective headers on the control.
3) Push the terminal blocks into the headers — they should snap firmly into place **(see fig. a)**.
4) Install supplied safety dividers between unpowered sensor inputs and powered or 120VAC wiring chambers.
5) Apply power to the control.

Note: The operation of the control on power up is described in the Control Function Overview section of this manual (page 33).

Cleaning the Control

- Moisten cloth with water and wring out prior to wiping control.
- Do not use solvents or cleaning solutions on the control.

a



PROGRAMMING

TABLE OF CONTENTS

PROGRAMMING - STEP 1
PROGRAMMING THE CONTROL

General Note: This section is designed to assist the installer in the programming of this control. Refer to the Menu Tree in Appendix II to familiarize yourself with the sequence of the ADJUST Menu screens prior to programming. For more detailed information on any particular Menu item or control function, please refer to the Control Function Overview Section.

***Important (Please Read)*: The proMIX 201 is now fully installed and ready for a trained, qualified individual to begin entering the settings that will help it control a hydronic radiant heating system at its most efficient level.**

Before you start PROGRAMMING you should:

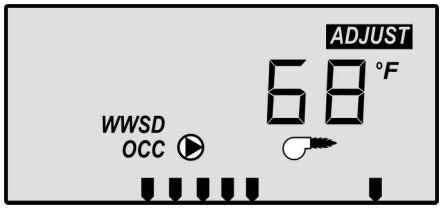
Review the Control Function Overview if you are not familiar with how the control functions operate in conjunction with the specific systems installed.

PROGRAMMING THE "ADJUST" MENU

There are two modes in which the proMIX 201 will operate – Reset and Setpoint. Reset mode will create a relationship between the supply water and outdoor air temperatures. As the outdoor air cools, the supply water temperature to the system will increase. Conversely, when the outdoor air temperature warms, the supply water temperature will decrease. In setpoint mode, the control will provide a consistent supply water temperature to the system regardless of outdoor air temperature changes.

- To enter into the ADJUST Menu, push and hold all three buttons on the control for 1 second **(see fig. a)**.
- The control will then display the ADJUST icon in the upper right corner of the LCD display **(See fig. b)**.
- The control will automatically switch back to the VIEW Menu if the buttons are left untouched for 90 seconds.

b



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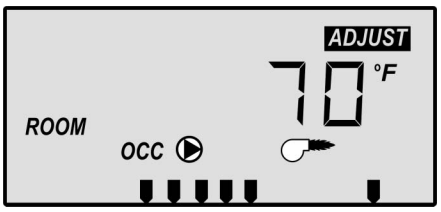

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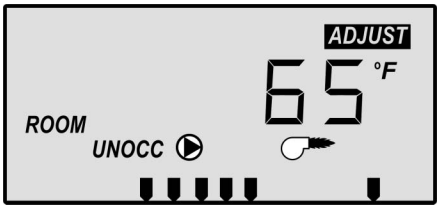

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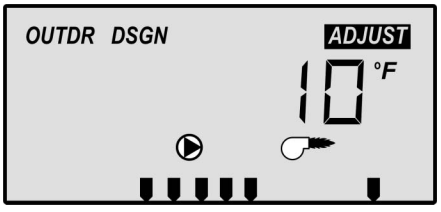


RESET MODE

ROOM – OCCUPIED (ROOM OCC) (See fig. c.)

1) Go to the ROOM OCC item field in the ADJUST Menu.
2) Set to the desired room air temperature during an occupied (day) period.

RANGE: 35 to 100°F (2 to 38°C)

DEFAULT: 70°F (21°C)

ROOM – UNOCCUPIED (ROOM UNOCC) (See fig. d)

1) Go to the ROOM UNOCC item field in the ADJUST Menu.
2) Set to the desired room air temperature during an unoccupied (night) period.

RANGE: 35 to 100°F (2 to 38°C)

DEFAULT: 65°F (18°C)

OUTDOOR DESIGN (OUTDR DSGN) (See fig. e.)

1) Go to the OUTDR DSGN item field in the ADJUST Menu.
2) Set to the outdoor design temperature used in the heat loss calculation.

RANGE: -60 to 32°F or OFF (-51 to 0°C or OFF)

DEFAULT: 10°F (-12°C)

MIXING INDOOR (MIX INDR) (See fig. f.)

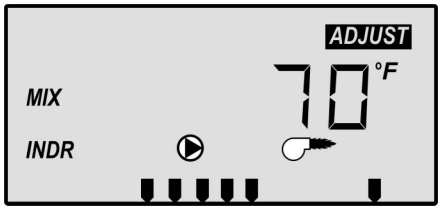
1) Go to the MIX INDR item field in the ADJUST Menu.

2) Set to the room design temperature used in the heat loss calculation.

RANGE: 35 to 100°F (2 to 38°C)

DEFAULT: 70°F (21°C)

f



MIXING DESIGN (MIX DSGN) (See fig. g.)

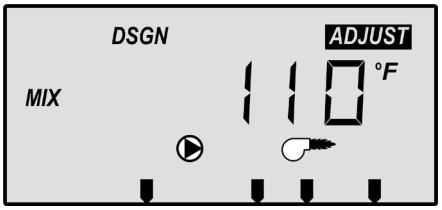
1) Go to the MIX DSGN item field in the ADJUST Menu.

2) Set to the design supply water temperature used in the heat loss and design calculations.

RANGE: 70 to 220°F (21 to 104°C)

DEFAULT: 110°F (43°C)

g



MIXING MAXIMUM (MIX MAX) (See fig. h.)

1) Go to the MIX MAX item field in the ADJUST Menu.

2) Set to the maximum supply water temperature used in the mixing system.

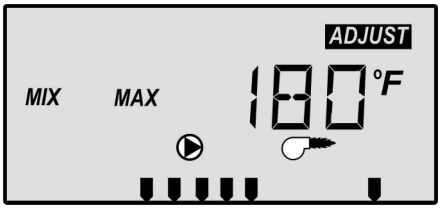
RANGE: 80 to 225°F (27 to 107°C)

DEFAULT: 180°F (82°C)

Note: Do not exceed the water temperatures shown for the following construction methods.

• **Concrete**	**150°F**	• **Joist No Plates**	**180°F**
• **Poured Underlayment**	**140°F**	• **Joist with Plates**	**165°F**
• **Radiant Wall/Ceiling** (using drywall)	**120°F**	• **Quik Trak®**	**180°F**

h



BOILER MINIMUM TEMPERATURE (Boil MIN) (See fig. i.)

1) Go to the BOIL MIN item field in the ADJUST Menu.

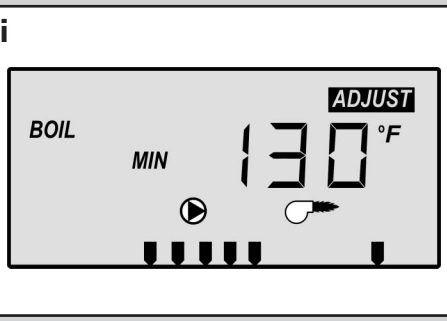
2) Set to the minimum boiler return water temperature recommended by the boiler's manufacturer.

RANGE: OFF or 80 to 180°F (OFF or 27 to 82°C)

DEFAULT: 130°F (54°C)

Note: If the installed boiler is designed for low return temperature operations, set the BOIL MIN to OFF.

i



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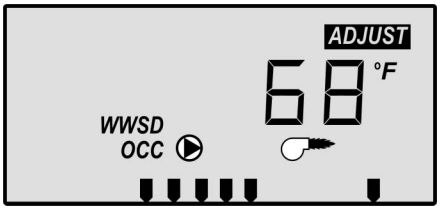


WARM WEATHER SHUT DOWN – OCCUPIED (WWSD OCC) (See fig. j.)

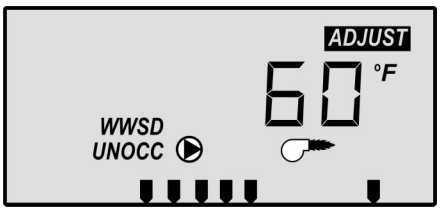
1) Go to the WWSD OCC item field in the ADJUST Menu.

2) Set to the system's WWSD temperature. during the occupied (day) period

RANGE: 35 to 100°F or OFF (2 to 38°C or OFF)

DEFAULT: 68°F (20°C)

k



WARM WEATHER SHUT DOWN – UNOCCUPIED (WWSD UNOCC) (See fig. k.)

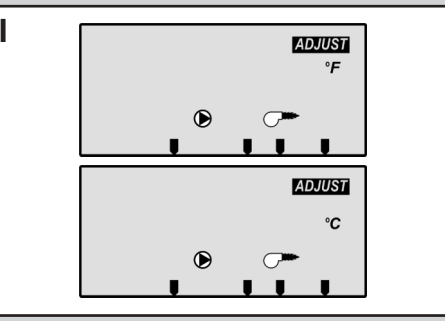
1) Go to the WWSD UNOCC item field in the ADJUST Menu.

2) Set to the system's WWSD temperature during the unoccupied (night) period.

RANGE: 35 to 100°F or OFF (2 to 38°C or OFF)

DEFAULT: 60°F (16°C)

l



UNITS (See fig. l.)

1) Go to the units of measurement item field in the ADJUST Menu (last screen).

2) Set to either Fahrenheit (°F) or Celsius (°C) for all temperatures to be displayed in the control.

RANGE: °F or °C

DEFAULT: °F

SETPOINT MODE

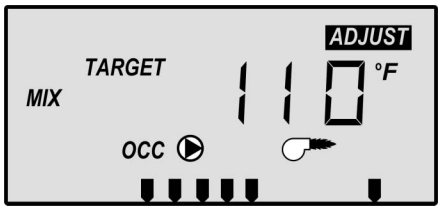
MIX TARGET (See fig. m)

1) Go to the OUTDR DSGN item field in the ADJUST Menu.
2) Set the OUTDR DSGN setting to OFF.
3) Go to the MIX TARGET item field in the ADJUST Menu.
4) Set to MIX TARGET to the desired setpoint temperature.

RANGE: OFF, 60 to 200°F (16 to 93°C)

DEFAULT: 110°F (43°C)

m



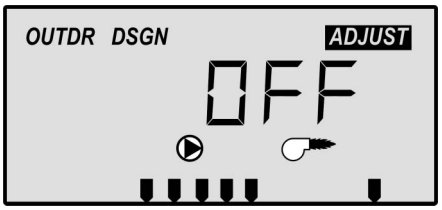
OUTDOOR DESIGN TEMPERATURE (OUTDR DSGN) (See fig. n)

1) Go to the OUTDR DSGN item field in the ADJUST Menu.
2) Set to OFF.

RANGE: Must be set to OFF in this mode

DEFAULT: 10°F (-12°C)

n



BOILER MINIMUM TEMPERATURE (Boil MIN) (See fig. o)

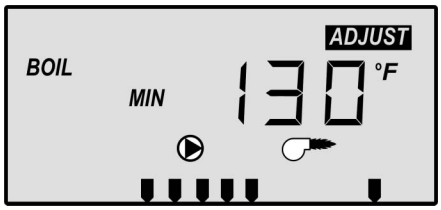
1) Go to the BOIL MIN item field in the ADJUST Menu.
2) Set to the minimum boiler return water temperature recommended by the boiler's manufacturer.

RANGE: OFF or 80 to 180°F (OFF or 27 to 82°C)

DEFAULT: 130°F (54°C)

Note: If the installed boiler is designed for low return temperature operations, set the BOIL MIN to OFF.

o



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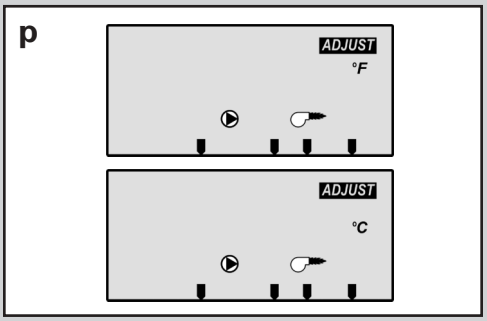

UNITS (See fig. p.)

1) Go to the units of measurement item field in the ADJUST Menu (last screen).
2) Set to either Fahrenheit (°F) or Celsius (°C) for all temperatures to be displayed in the control.

RANGE: °F or °C

DEFAULT: °F

PROGRAMMING - STEP 2
TEST SEQUENCE

The proMIX 201 has a built-in test routine which is used to test the main control functions. The control monitors the sensors and displays an error message whenever a fault is found. See **Appendix IV (page 52)** for a list of the proMIX 201's error messages and possible causes. When the test button is pressed, the test light is turned on. The outputs and relays are tested in the following sequence:

- Each step in the test sequence lasts between 10 and 20 seconds.
- To reach the desired step, repeatedly press and release the test button until the appropriate device and segment in the display turn on.

Step 1

- The injection pump operates at 100% for 10 seconds and then shuts off.

Step 2

- The mixing pump (P1) is turned on for 20 seconds.

Step 3

- The boiler contact is turned on for 10 seconds. After 10 seconds, the boiler and mixing pump contacts are shut off.

Step 4

- After the test sequence is completed, the control resumes its normal operation.

NOTE:

Before you begin testing, all appropriate settings must be entered into the control using the LCD screen. If you are unfamiliar with the theory behind a hydronic radiant heating system, please refer to the Control Function Overview for more help.

CONTROL FUNCTION OVERVIEW

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CONTROL FUNCTION OVERVIEW - SECTION A

GENERAL

The proMIX 201 uses a variable speed injection pump to control the supply water temperature to a hydronic heating system. The supply water is based on either the current outdoor temperature or a fixed setpoint temperature. The following section provides information on general function activities for the control.

POWERING UP THE CONTROL

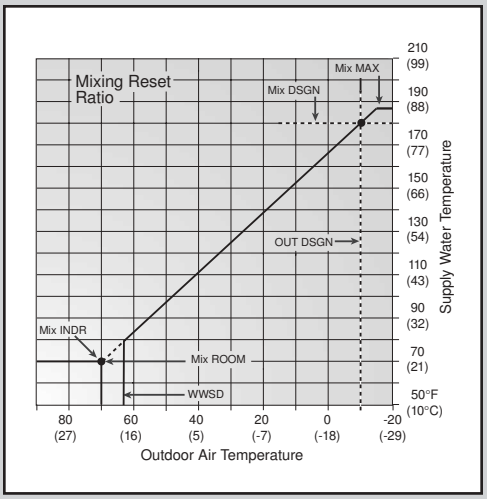
When the proMIX 201 is powered up, it displays the control number in the LCD for two seconds. Next, it displays the software version for two seconds. Finally, the control enters into normal operating mode by displaying current outdoor air temperature.

EXTERNAL MIXING DEMAND

An external mixing demand allows for use of a conventional thermostat system for zoning. Demand is generated by applying a voltage between 24 and 240VAC across the Mix Demand terminals (1 and 2). Once voltage is applied, the Mix Demand pointer is displayed in the lower right corner of the LCD.

- If the proMIX 201 is not in WWSD, it closes the System Pump (P1) contacts (terminals 5 and 6) and the pump icon is shown in the control's display.
- The proMIX 201 calculates a MIX TRG temperature based on outdoor air temperature and other input settings.
- When required, the control will close the contacts to the Boiler Enable (terminals 9 and 10) in order to start the boiler.

Note: If connecting a Wirsbo thermostat (WT1 or WT2) directly to the Mix Demand terminals, refer to Mixing Demand with Wirsbo Thermostat on page 16.



OUTDOOR RESET

The calculated heat loss of a building or space is based on the percentage of the average coldest weather conditions the area experiences over the heating season. If the heat demand is analyzed as a percentage of the heating systems capacity, the heating system operates at or near maximum capacity for only a small portion of the heating season. If the water temperature is controlled using a non-weather responsive tempering device, the device will supply a fixed water temperature that does not fluctuate with the demand for heat. Resetting the supply water temperature allows the heating system to adjust to the varying demand loads of the structure. Less energy (lower water temperature) is required during the spring and fall compared to the middle of winter. Resetting the supply water temperature based on a relationship to outdoor temperature, allows the controls to match the output of the system to the actual load. Additionally, by supplying the correct supply water temperature based on this relationship, the radiant zones remain open and run longer, providing increases comfort and efficiency.

SETPOINT CONTROL

When the Outdoor Design (OUTDR DSGN) setting is set to OFF, the proMIX 201 supplies a fixed supply water temperature equal to the MIX TARGET setting. An outdoor sensor is not required during this mode of operation.

VARIABLE SPEED INJECTION MIXING (VSP)

Variable Speed Injection Mixing is used to transfer heat from a primary, high temperature boiler loop to a secondary, low temperature radiant heating loop. The speed of the injection circulator is automatically adjusted to inject the desired volume of hot water to the low temperature loop to blend with the cooler return water from the secondary system to achieve the required supply water temperature.

- The variable speed injection pump is connected to the VSP P4 and N terminals (7 and 8) on the control.
- The Wirsbo proMIX 201 has the ability to support either a reset or a setpoint supply water temperature.
- The control increases or decreases power output to the injection pump based on the distance between the current supply water temperature and the target supply water temperature.

- Once the target supply water temperature is reached, the pump speed varies to maintain a correct supply water temperature.
- A visual indication of current variable speed output is displayed in the LCD screen by small pointers at the bottom of the display that point to the percentage of operation.
- For correct sizing and piping of the variable speed injection pumps, refer to the essay, Variable Speed Injection Mixing, in **Appendix I**.

MIXING SYSTEM PUMP (P1) OPERATION

The System Pump (P1) contacts (terminals 5 and 6) closes whenever there is a Mixing Demand and the proMIX 201 is not in WWSD.

- After the Mixing Demand is removed, the System Pump (P1) contacts remain closed for 20 seconds to purge the boiler of residual heat.
- During WWSD, the System Pump (P1) is operated based on the Exercise setting in the control.

EXERCISING

The proMIX 201 has a built-in pump exercising function. If a pump output on the control has not been operated at least once during every three-day period, the control turns on the pump outputs (P1; P3 if wired with P1) for 20 seconds. Exercising reduces possibility of a pump seizing during a long period of inactivity.

BOILER PURGE

After all demands are satisfied, the proMIX 201 continues to operate the System Pump output (P1) for 20 seconds to purge residual heat from the boiler. There must not be any motorized valves that will restrict the water flow through the pump and boiler.

> **Note: The Boiler Pump (P3) must be wired with the System Pump (P1) in order to take advantage of the boiler purge with this control.**

OCCUPIED vs. UNOCCUPIED

This function is used to reset the existing reset ratio based on lower room heat demands during unoccupied versus occupied time periods. The proMIX 201 does not actively use this function. To be truly effective, this function should be incorporated with a master setback thermostat with the ability to slave all other thermostats to the setback activity.

- The control is operated in the OCCUPIED setting unless a switch is closed between the Unoccupied Switch (UnO Sw – terminal 11) and the Common (Com – terminal 12) on the control.
- Once the circuit is closed, the control will function under the UNOCCUPIED settings.

CONTROL FUNCTION OVERVIEW - SECTION B

MIXING ZONE

The proMIX 201 can provide a reset or setpoint supply water temperature from the primary boiler loop to a secondary mixed loop via a variable speed injection pump. The following section provides information on screen function activities for the control.

ROOM TEMPERATURE – OCCUPIED (ROOM OCC) (See fig. a.)

This is the desired room temperature the occupant is using for the mixing zone when the room is occupied. This setting is used in the reset ratio. The default setting for this screen is 70°F.

ROOM TEMPERATURE – UNOCCUPIED (ROOM UNOCC)

This is the desired room temperature the occupant is using for the mixing zone when the room is unoccupied. This setting is used in the reset ratio. The default setting for this screen is 65°F.

OUTDOOR DESIGN TEMPERATURE (OUTDR DSGN) (See fig. b.)

OUT DSGN is the outdoor design air temperature based on a percentage of the average coldest temperature where the building is located. This is the temperature used when performing heat loss calculations for the building.

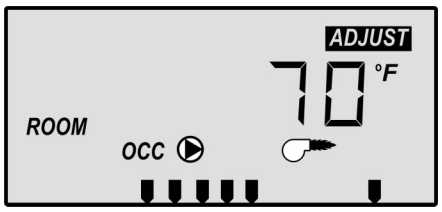
MIXING INDOOR TEMPERATURE (MIX INDR) (See fig. c.)

MIX INDR is the room temperature used in original heat loss calculations for the building. This setting establishes the beginning of the reset ratio for the mixing zone.

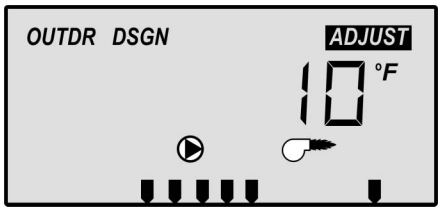
MIXING SUPPLY DESIGN TEMPERATURE (MIX DSGN) (See fig. d.)

MIX DSGN temperature is the design supply water temperature required to heat the mixing zones when the outdoor temperature is at OUT DSGN temperature. This information is obtained from the project's heat loss and design information.

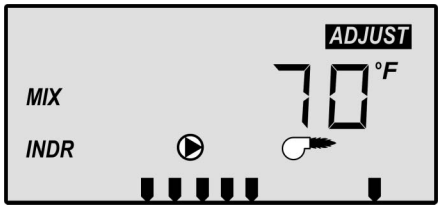
a



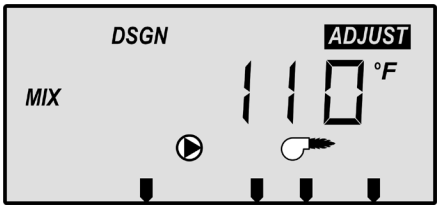
b



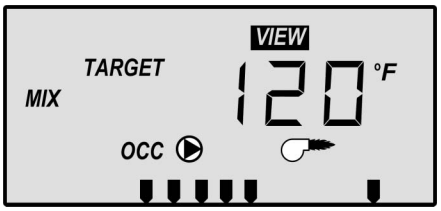
c



d



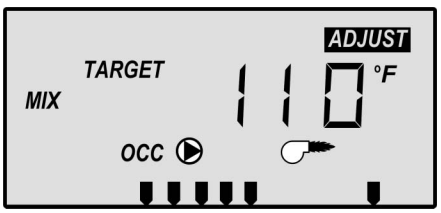
e



MIXING SUPPLY TARGET TEMPERATURE – RESET MODE (MIX TARGET) (See fig. e)

MIX TRG temperature is determined from the reset ratio settings established from the input settings in the ADJUST Menu. With a heat demand, the control displays the temperature it is currently trying to maintain as the mixing supply temperature. If control does not presently have a requirement for heat, it displays "---" in the LCD. The OUTDR DSGN setting must have a temperature assigned in order for the control to be in the reset mode. This screen is only available in the VIEW Menu when in the reset mode.

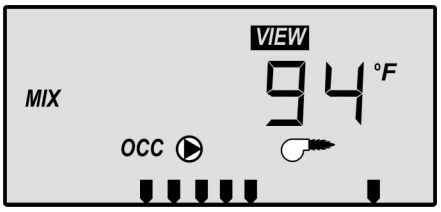
f



MIXING SUPPLY TARGET TEMPERATURE – SETPOINT MODE (MIX TARGET) (See fig. f)

MIX TRG setting is the desired fixed supply water temperature as entered in the ADJUST Menu. The outdoor design temperature (OUTDR DSGN) must be set to OFF in order to enter the setpoint mode in the control. This screen is only available in the ADJUST Menu for setting the temperature and in the VIEW Menu to see the desired setpoint temperature when in the setpoint mode.

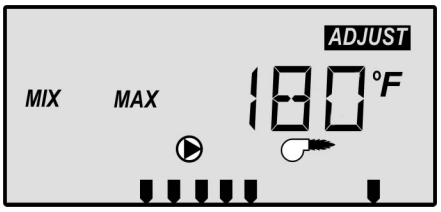
g



MIXING SUPPLY ACTUAL TEMPERATURE (MIX) (See fig. g)

Actual supply water temperature provided to the mixing zones. Temperature is sensed from the mixing supply sensor (S1) location. This screen is only available in the VIEW Menu.

h



MIXING SUPPLY MAXIMUM TEMPERATURE (MIX MAX) (See fig. h)

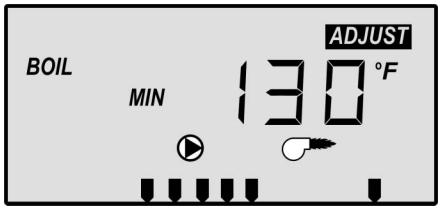
MIX MAX setting is for the highest supply water temperature the control is allowed to use as a MIX TRG temperature. This temperature is the highest temperature allowed based on the construction method used within the mixing zone area. If the control calculates a MIX TARGET temperature near the MIX MAX temperature, the LCD's MAX segment will be displayed in the LCD while either the MIX TARGET temperature or the MIX temperature is being viewed

BOILER MINIMUM RETURN TEMPERATURE (BOIL MIN) (See fig. i.)

Most boilers require a minimum return water temperature in order to prevent flue gas condensation. The BOIL MIN adjustment is set to the boiler manufacturer's recommended minimum return temperature. Only when a boiler sensor is installed on the boiler return can the proMIX 201 provide boiler protection. In this case, when the boiler is firing and the boiler return water temperature is below the BOIL MIN setting, the proMIX 201 turns on the BOIL MIN segment in the LCD. The control will then reduce the heating load on the boiler by limiting the output of the variable speed injection pump. Once the return temperature raises above the BOIL MIN setting, the segment light will extinguish and the variable speed injection pump will return to normal operation. If the installed boiler is designed for low temperature operations, set the BOIL MIN adjustment to OFF.

Note: Boiler protection is only possible if a boiler sensor is mounted on the return of the boiler and connected to the Com (12) and the BRet S3 (13) terminals on the control.

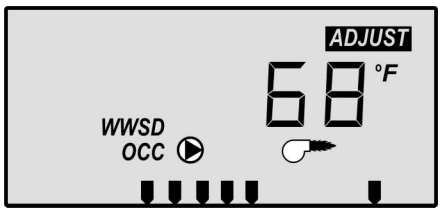
i



WARM WEATHER SHUT DOWN – OCCUPIED (WWSD OCC) (See fig. j.)

When the outdoor air temperature rises above WWSD OCC setting, the proMIX 201 turns on the LCD's WWSD pointer. When control is in Warm Weather Shut Down, Mix Demand pointer is still displayed if there is a demand. The control will not respond to any Mixing Demand with pump or boiler output activity. The default setting for this screen is 68°F.

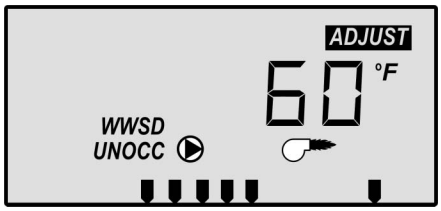
j



WARM WEATHER SHUT DOWN – UNOCCUPIED (WWSD UNOCC) (See fig. k.)

When the outdoor air temperature rises above WWSD UNOCC setting, the proMIX 201 turns on the LCD's WWSD pointer. When control is in Warm Weather Shut Down, Mix Demand pointer is still displayed if there is a demand. The control will not respond to any Mixing Demand with pump or boiler output activity. The default setting for this screen is 60°F.

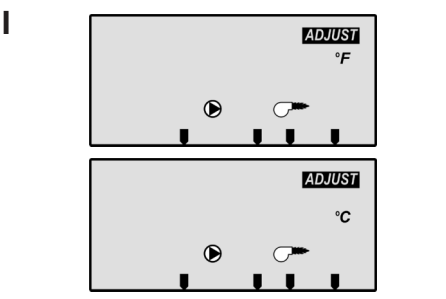
k



TEMPERATURE DISPLAY UNITS (See fig. l.)

Set to either Fahrenheit (°F) or Celsius (°C) for the units of measurement in which all temperatures are to be displayed in the control's LCD.

l



CONTROL FUNCTION OVERVIEW - SECTION C

TROUBLESHOOTING

When troubleshooting any heating system, it is a good idea to establish a set routine to follow. Below is an example of a sequence you can use when diagnosing or troubleshooting problems in a hydronic heating system.

Establish the Problem

Get as much information from the customer as possible about the problem:

- Is there too much heat, not enough heat or no heat?
- Is the problem only in one zone or does the problem affect the entire system?
- Is this a consistent problem or only intermittent?
- For how long has the problem existed?

This information is critical in correctly diagnosing the problem.

Understand the Sequence of Operation of the System

If a particular zone is not receiving enough heat, check:

- Which pumps or valve in the system must operate to deliver heat to the affected zone?

If the zone is receiving too much heat, check:

- Which pumps, valves or check valves must operate to stop delivery of heat?

Now, press the Test button on the control and follow it through the test sequence as described in the Testing section. Pause the control as necessary to make sure the correct device is operating as it should.

Sketch the Piping of the System

This is a relatively simple step that tends to be overlooked, however it can often save hours of time in troubleshooting a system. Use your sketch to:

- Note flow directions in the system–paying close attention to the location of the pumps, check valves, pressure bypass valves and mixing valves.
- Ensure the correct flow direction on all pumps.

This is also a very useful step if additional assistance is required.

Document the Control for Future Reference

Before making any adjustments to the control, document all items that the control is currently displaying. Include items such as:

- Error messages
- Current temperatures
- Settings (Program Setup Sheet - **Appendix V, page 54)**
- Devices that should be operating as indicated by the LCD

This information is an essential step if additional assistance is required to diagnose the problem.

Isolate the Problem Between the Control and the System

Now that the sequence of operation is known and the system is sketched:

- Is the control operating proper pumps and valves at the correct times?
- Is the control receiving correct signals from the system about when it should be operating?
- Are proper items selected in menus of the control for the device that is to be operated?

Test the Contacts, Voltages and Sensors

Using a multimeter:

- Ensure that the control is receiving adequate voltage to the power terminals and the demand terminals as noted in the technical data.
- Determine if the internal contacts on the control are opening and closing correctly.
- Follow the instructions in the Testing the Wiring section to simulate the closed contacts on the terminal blocks as required.
- Test the sensors and their wiring as described in earlier section.

APPENDIX

TABLE OF CONTENTS

NOTES:

Variable Speed Injection Mixing For Hydronic Heating Systems

The purpose of this section is to discuss the use of variable speed injection mixing to precisely transfer heat from the high temperature boiler (primary) loop to the lower temperature radiant (secondary) loop in hydronic heating systems.

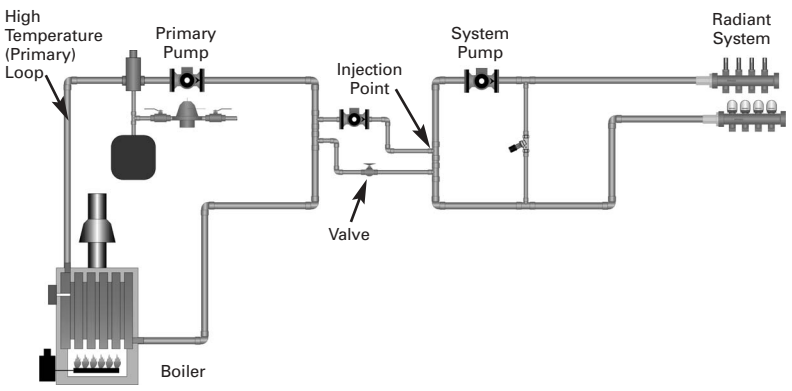
Various devices and plumbing arrangements can be used to accomplish this transfer. In the past, it was common to use a mixing valve in order to temper the water between the primary and secondary loops in a system. In some instances, the heat source (condensing or electric boiler, geo-thermal heat pump, etc.) can be operated at lower temperatures and dedicated solely to operating a low temperature radiant heating system. In the vast majority of systems, mixing is required because:

- A boiler minimum operating temperature is required
- High temperature water is required for other system needs
- Water temperatures vary over a wide range (e.g. solar heat sources, waste heat utilization, wood fired boilers, etc.)

When the available heat source produces higher water temperatures than is required by the radiant heating system, a tempering device is required. To achieve the lower water temperature required for the radiant system, the high temperature boiler water must be blended or injected into the return side of the radiant system to a level that meets the required supply water temperature for the radiant side. Technologies have evolved to the point of using small "wet rotor" pumps to accurately adjust the secondary radiant supply water temperature regardless of the flow activities on either primary or secondary loops **(See fig. a)**.

The speed of the injection pump is automatically adjusted to deliver the desired volume of hot boiler water to the lower temperature radiant loop. The injection pump speed is constantly adjusted as the radiant heating system demand and the supply water temperature change. If the boiler return temperature becomes too cold, the injection pump can be slowed down to reduce the heat injection rate, resulting in an increased boiler return temperature.

a Mixing with variable speed pump



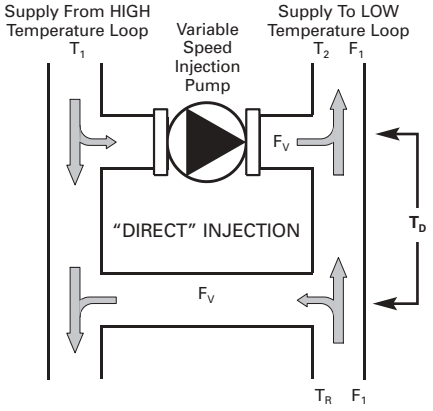
Wirsbo offers a variety of controls that utilizes variable speed injection pump output. This output modulates the power supply to the circulator to vary its rotational speed. For residential and many commercial systems, the controls have a 120 VAC 50/60Hz output to directly power small circulators.

A permanent capacitor, impedance protected motor (no start switch) on the circulator is required. The maximum allowable amperage for this output is 2.2 amps, which limits the allowable circulator size to ½ hp.

This type of system can use a small circulator to inject a high BTU input into a relatively large system flow. Typically, the injection pump need only deliver ⅛ to ¼ of the system flow for low temperature radiant panels if high temperature water is available for injection. In small hydronic systems, the smallest available circulator for variable speed injection may be too large. It is important to properly size the injection pump and use a globe valve on the return injection leg.

b Direct Injection Mixing
"F_V" to be calculated

Direct Injection $F_V = (F_1 \times T_D) / (T_1 - T_R)$



For proper injection pump sizing, the designer must know the following information: **(See fig. b.)**

$\mathbf{F_V}$ = Flow Rate (Injection Loop) in gpm

$\mathbf{F_1}$ = Radiant (Secondary Loop) Flow Rate in gpm

$\mathbf{T_1}$ = Boiler (Primary Loop) Supply Temperature

$\mathbf{T_2}$ = Radiant (Secondary Loop) Supply Temperature

$\mathbf{T_R}$ = Radiant (Secondary Loop) Return Temperature

$\mathbf{T_D}$ = Radiant (Secondary Loop) Temperature Differential ($\mathbf{T_2}$ - $\mathbf{T_R}$)

Note: All values are to be given at design conditions. The formula used for sizing the injection pump is shown below.

$\mathbf{F_V} = (\mathbf{F_1 \times T_D}) / (\mathbf{T_1} - \mathbf{T_R})$

Example:

If values at design conditions are:

$\mathbf{F_1}$ = Radiant (Secondary) Flow = 30 gpm

$\mathbf{T_1}$ = Boiler (Primary) Supply = 180°F

$\mathbf{T_2}$ = Radiant (Secondary) Supply = 140°F

$\mathbf{T_R}$ = Radiant (Secondary) Return = 120°F

$\mathbf{T_D}$ = Radiant (Secondary) Differential = 20°F

To find the injection pump flow rate:

$\mathbf{F_V} = (30 \times 20) / (180 - 120)$

$\mathbf{F_V} = (600) / (60)$

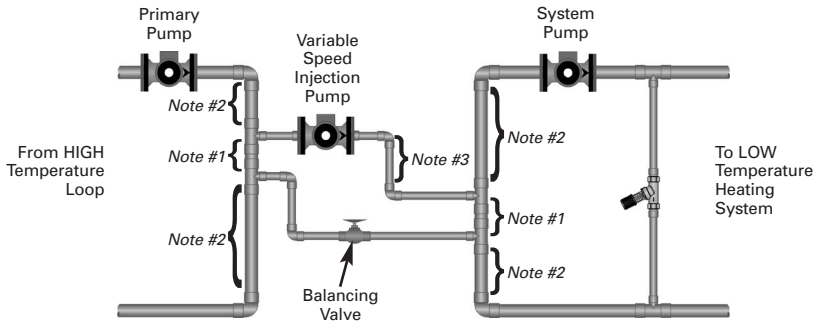
$\mathbf{F_V}$ = 10 gpm

In order to provide the proper amount and temperature of supply water on the radiant heating loop, the variable speed injection pump needs only to inject 10 gpm at design conditions.

Figures c and d show the two most common piping layouts for variable speed injection mixing. Pay particular attention to the drop lines (or thermal traps) shown in the injection legs. These are particularly important to prevent "thermal siphoning" from the primary loop into the secondary loop. Consult the pump manufacturers' chart (below) to assist in the selection of the proper injection pump for the project.

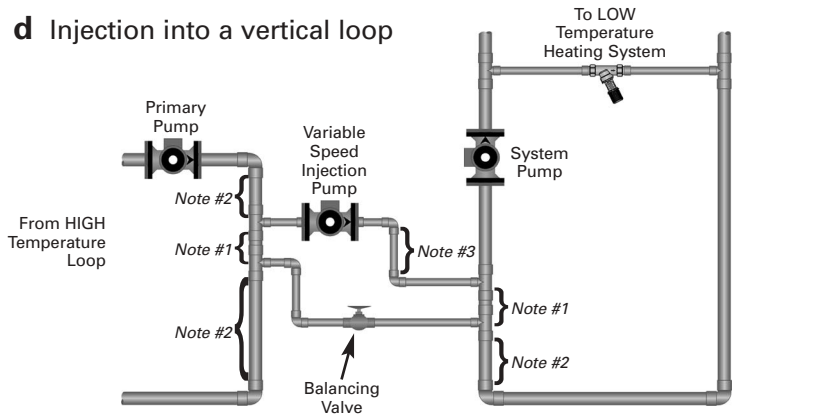
In the piping arrangement shown, the variable speed injection pumps are plumbed in such a way as to limit head pressure in the injection legs to only a few feet at most. Use standard pressure drop calculations and equivalent length of feet charts for exact calculations if required.

c Injection into a horizontal loop



Note #1 - Maximum 4 Pipe Diameters Apart
Note #2 - Minimum 6 Pipe Diameters Apart
Note #3 - Drop line to be longer than 1 foot

d Injection into a vertical loop

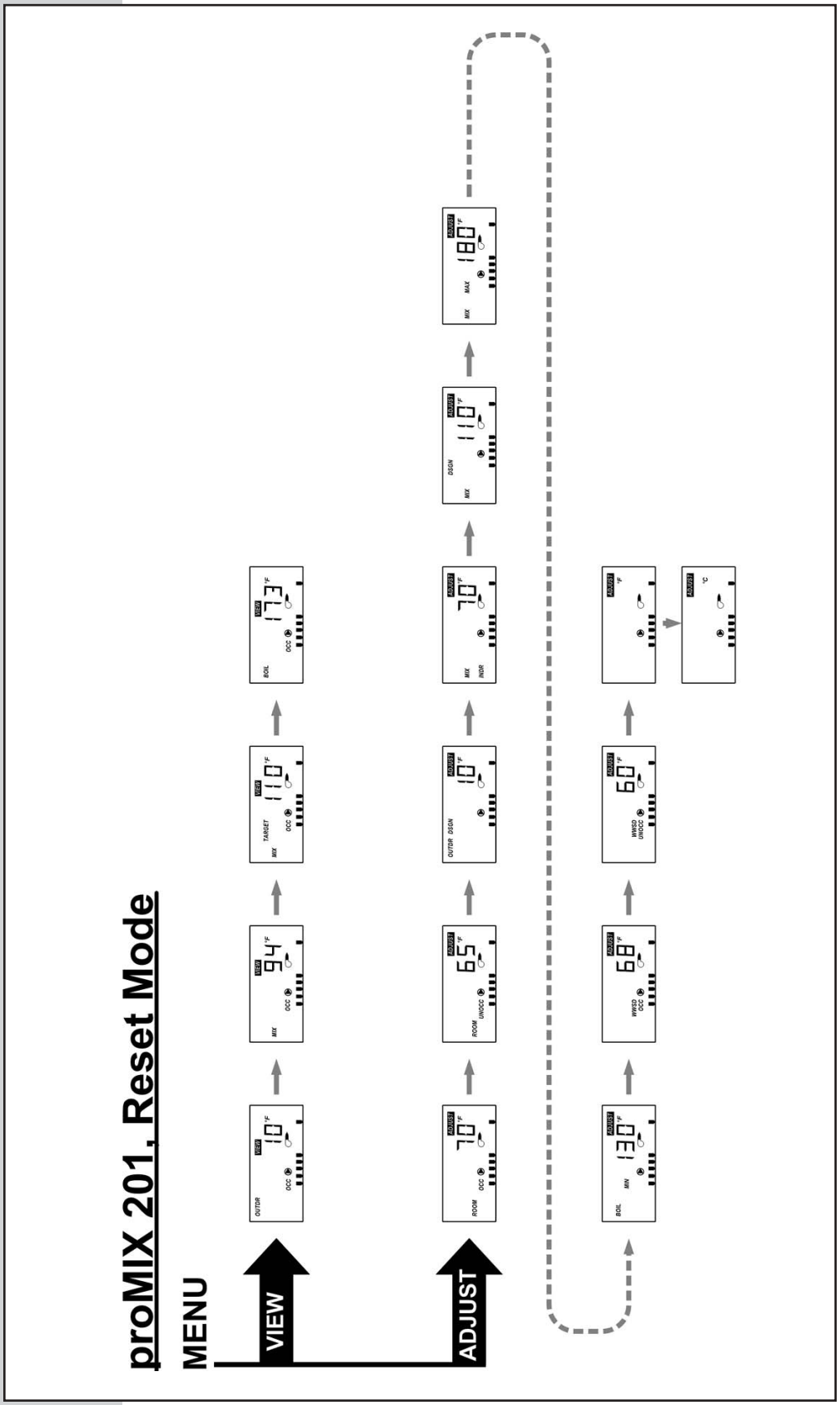


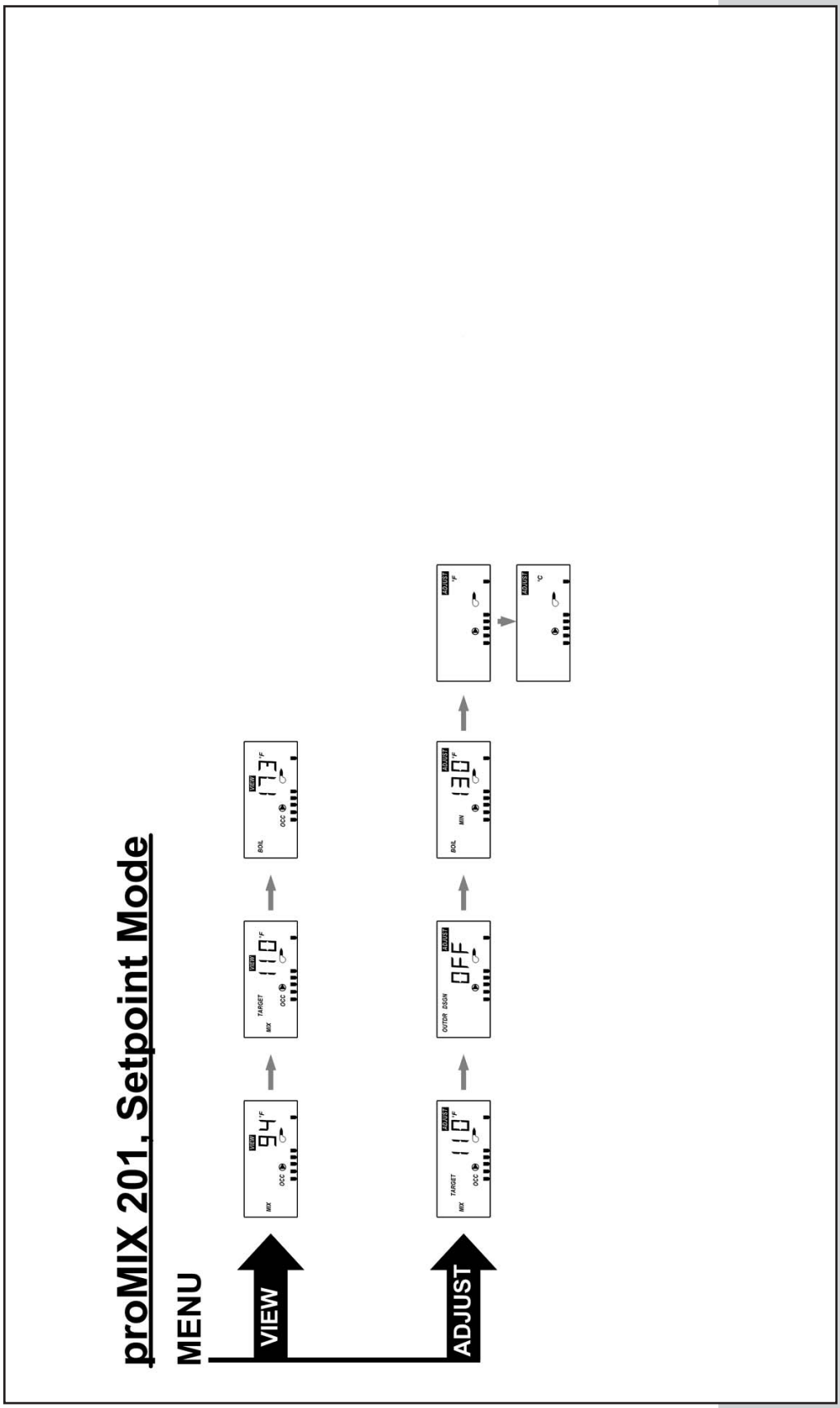
Note #1 - Maximum 4 Pipe Diameters Apart
Note #2 - Minimum 6 Pipe Diameters Apart
Note #3 - Drop line to be longer than 1 foot

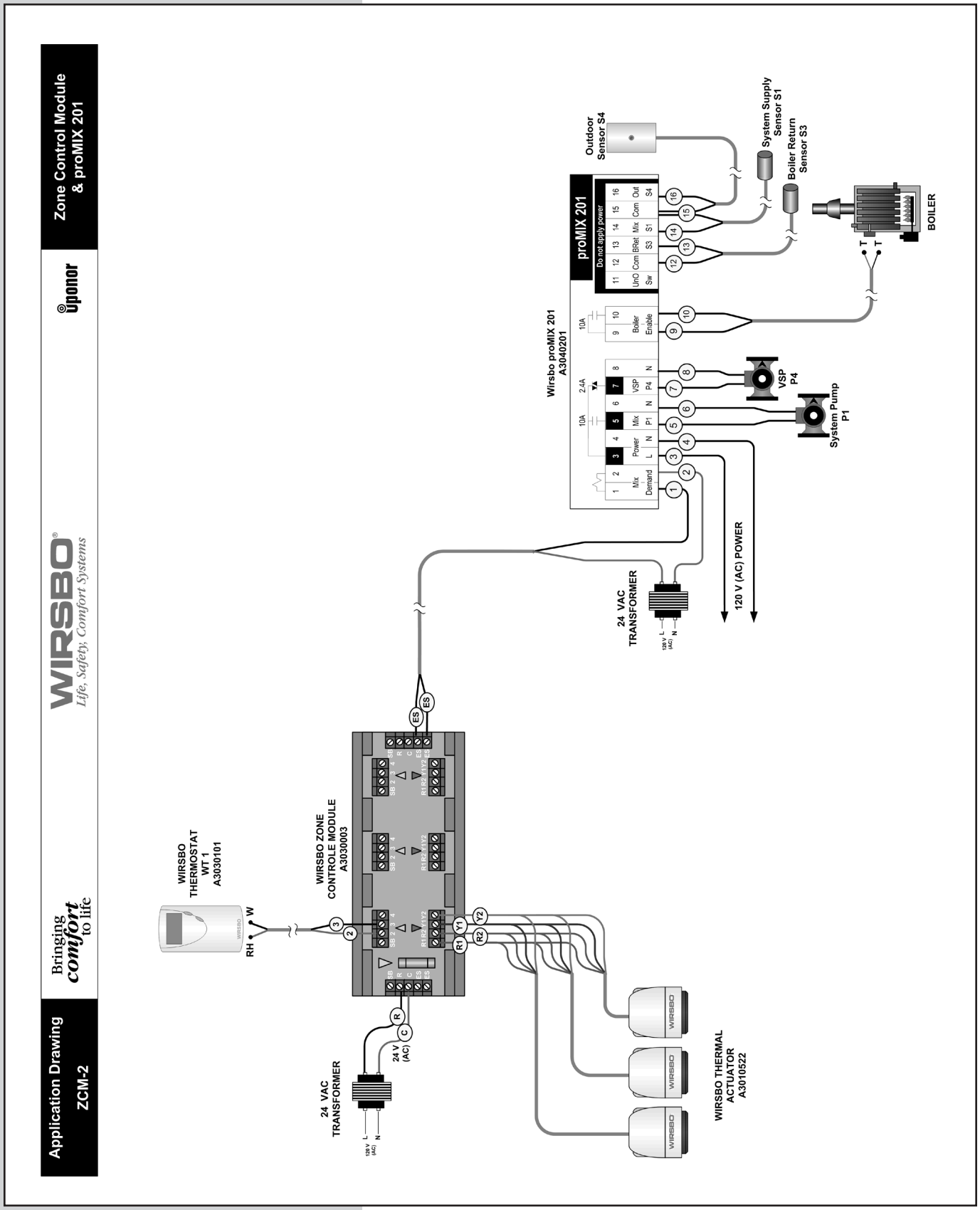
Variable Speed Injection Design Flow Rates

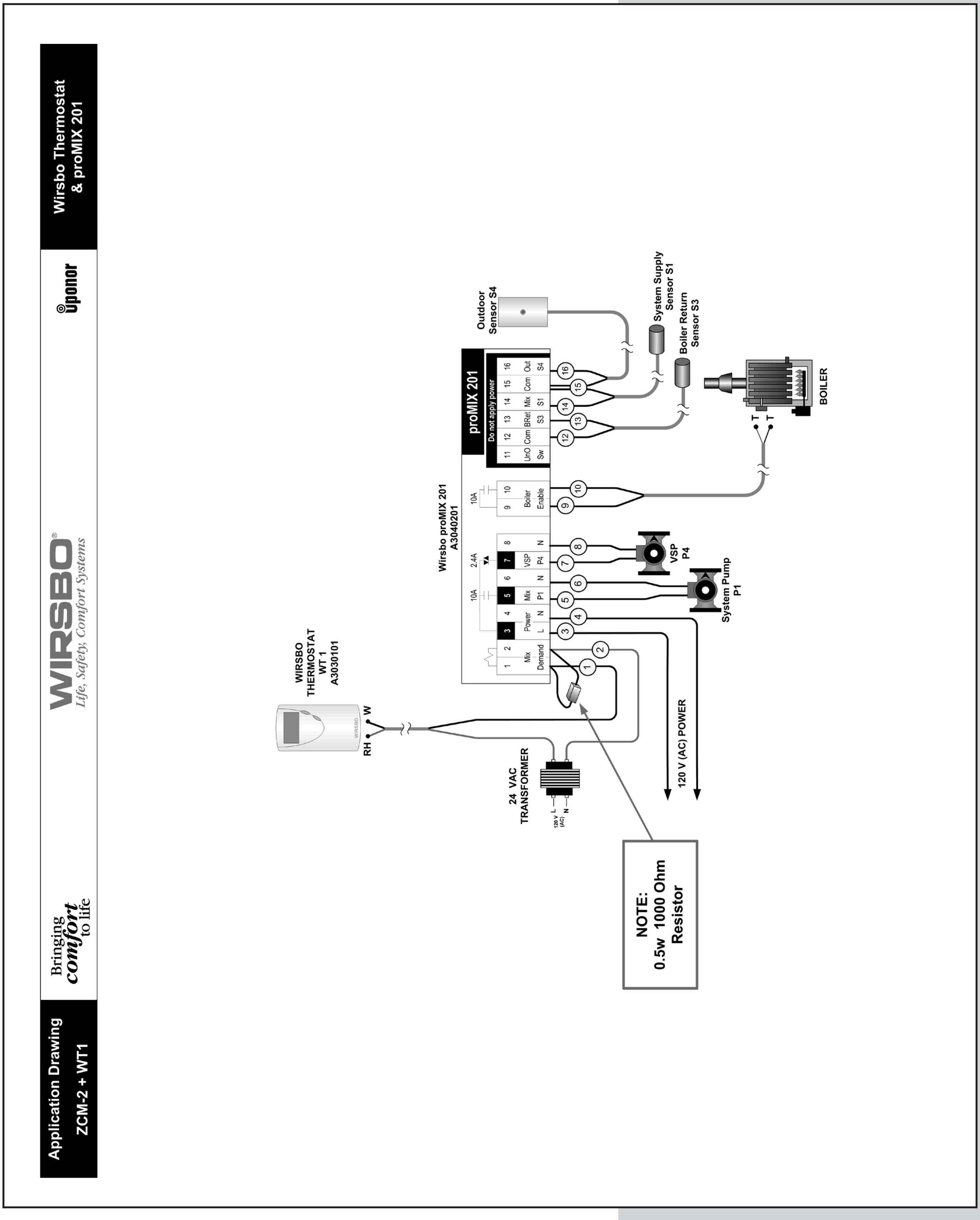
Design Injection Flow Rate (US GPM)		Turns open of the Globe Valve (%)	Nominal Pipe Diameter (inches)	Manufacturer Approved Pump Models												
				Grundfos (F)				Taco				B&G			Armstrong	
Without Globe Valve	With Globe Valve			15-42		26-64	43-75	003	007	0010	0012	NRF 9	NRF 22	NRF 33	Astro	
				2*	3**										30	50
–	1.5 - 2.0	20	0.5	X	X				X				X		X	
2.5	2	100	0.5					X								
4 - 5.5	3.0 - 4.5	100	0.5	X	X				X			X	X		X	
4.5 - 6.5	4 - 5.5	100	0.75					X				X				
9 - 10.5	7.5 - 8.5	100	0.75		X				X				X		X	
9	8	100	1									X				
14 - 15	12 - 13	100	1		X				X				X			
19	17	100	1.25													X
22 - 24	19 - 21	100	1.25			X				X				X		
26 - 28	–	100	1.5			X				X				X		
35 - 37	31 - 32	100	1.5				X				X					
33	30	100	2											X		
41 - 45	39 - 42	100	2				X				X					

* Speed 2, ** Speed 3 (Brute)
Table courtesy of tekmar - This table assumes there are 5 feet of pipe, four elbows, and branch trees of the listed diameter.
These circulators have been tested and approved by the manufacturers for use with the Wirsbo pro Series controls.

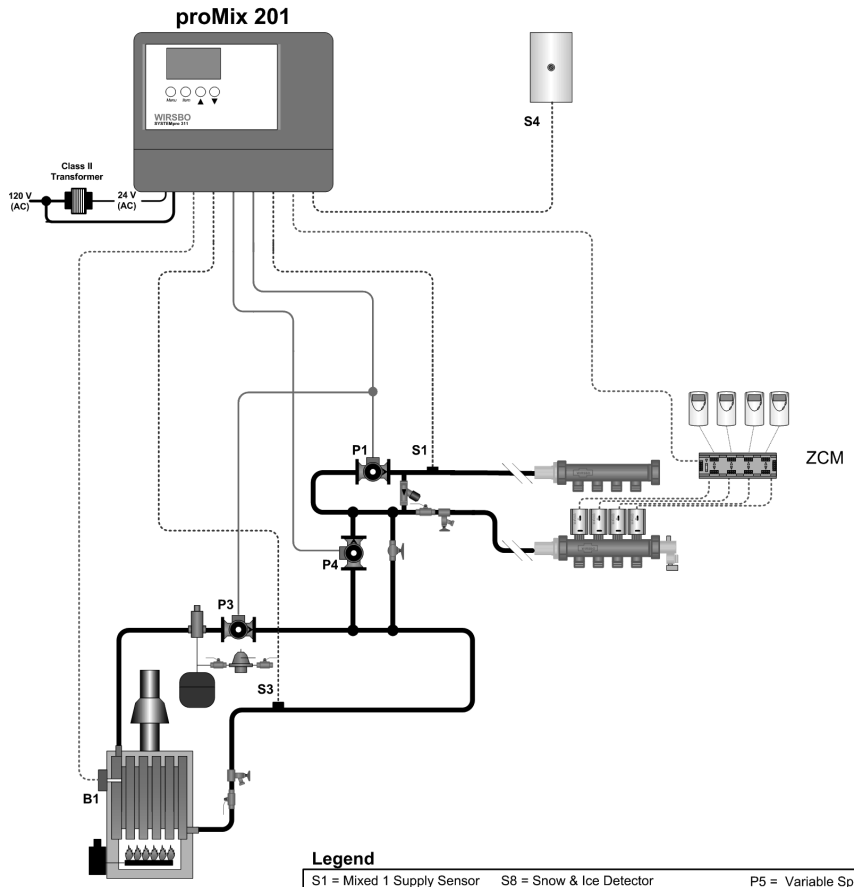

proMIX 201, Reset Mode
MENU
VIEW
ADJUST
OUTDR
ROOM
MIX
TARGET
BOIL
OUTDR DSGN
MIX DSGN
WWSD
MIN
MAX
OCC
UNOCC
°F
°C


proMIX 201, Setpoint Mode
MENU
VIEW
ADJUST
MIX
TARGET
BOIL
OUTDR DSGN
MIN
OCC
ADJUST
°F
°C


Application Drawing
ZCM-2
Bringing comfort to life
WIRSBO
Life, Safety, Comfort Systems
Uponor
Zone Control Module
& proMIX 201
WIRSBO THERMOSTAT WT 1 A3030101
RH
W
WIRSBO ZONE CONTROLE MODULE A3030003
24 VAC TRANSFORMER
24 V (AC)
R
C
WIRSBO THERMAL ACTUATOR A3010522
Wirsbo proMIX 201 A3040201
proMIX 201
Do not apply power
24 VAC TRANSFORMER
120 V (AC) POWER
VSP P4
System Pump P1
Outdoor Sensor S4
System Supply Sensor S1
Boiler Return Sensor S3
BOILER


Application Drawing
ZCM-2 + WT1
Bringing comfort to life
WIRSBO
Life, Safety, Comfort Systems
Uponor
Wirsbo Thermostat
& proMIX 201
WIRSBO
THERMOSTAT
WT 1
A3030101
RH
W
24 VAC
TRANSFORMER
120 V (AC)
L
N
NOTE:
0.5w 1000 Ohm
Resistor
120 V (AC) POWER
Wirsbo proMIX 201
A3040201
proMIX 201
Do not apply power
Mix
Demand
Power
L
N
Mix
P1
N
VSP
P4
N
Boiler
Enable
UnO
Sw
Com
BRet
S3
Mix
S1
Com
Out
S4
10A
2.4A
10A
VSP
P4
System Pump
P1
Outdoor
Sensor S4
System Supply
Sensor S1
Boiler Return
Sensor S3
T
T
BOILER

Application Drawing W201-1	Bringing comfort to life	WIRSBO Life, Safety, Comfort Systems	Uponor	Mechanical Page 1 of 2



Legend

S1 = Mixed 1 Supply Sensor	S8 = Snow & Ice Detector	P5 = Variable Speed Injection Pump 2	= 120 V (AC)
S2 = Mixed 2 Supply Sensor	A1 = Aquastat	P6 = DHW Pump	= Sensor Wire
S3 = Boiler Supply or Return	B1 = Boiler	P7 = Hi-Temp Pump	= 24 V (AC)
S4 = Outdoor Sensor	P1 = MIxed 1 System Pump	V1 = Floating Action Mixing Valve	= T-stat Wire
S5 = Mixed Return Sensor	P2 = Mixed 2 System Pump	T = Thermostat or Heat Demand	= Misc.
S6 = DHW Sensor	P3 = Boiler Pump		
S7 = Slab Sensor	P4 = Variable Speed Injection Pump 1		

NOTE: This drawing is conceptual only, not an engineered drawing. It is up to the system designer to determine the necessary components for and configuration of the particular system designed, including additional equipment, isolation relays (for loads greater than the control's specified output ratings), and any safety devices which in the judgement of the designer are appropriate. Certain components may have been left out on this drawing for the purpose of clarity. Mechanical considerations such as tee spacing, flow control, pipe sizing and pump selection, is the responsibility of the installing contractor. Local codes and trade practices must be followed.

Symbols					
= Pump	= Air Separator & Expansion Tank w/ fill	= Zone Valve	= Ball Valve	= Flow Check	
= Floating Action Mixing Valve	= Tempering Valve	= Heat Exchanger	= Pressure By-Pass Valve	= Globe Valve	= Drain Valve

Project:

Uponor Wirsbo
5925 148th Street W.
Apple Valley, MN 55124
Phone: 1-800-321-4739
Fax: 1-952-891-1409
www.wirsbo.com

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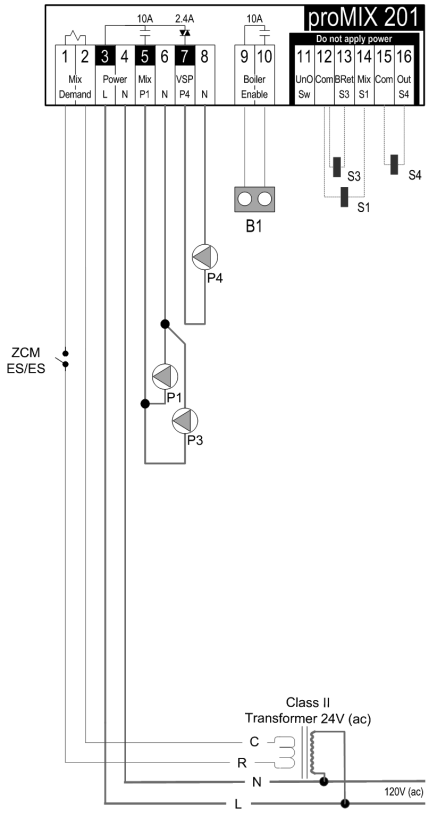
Rep:	DATE:



Legend

NOTE: This drawing is conceptual only, not an engineered drawing. It is up to the system designer to determine the necessary components for and configuration of the particular system designed, including additional equipment, isolation relays (for loads greater than the control's specified output ratings), and any safety devices which in the judgement of the designer are appropriate. Certain components may have been left out on this drawing for the purpose of clarity. Mechanical considerations such as tee spacing, flow control, pipe sizing and pump selection, is the responsibility of the installing contractor. Local codes and trade practices must be followed.

S1 = Mixed 1 Supply Sensor
S2 = Mixed 2 Supply Sensor
S3 = Boiler Supply or Return
S4 = Outdoor Sensor
S5 = Mixed Return Sensor
S6 = DHW Sensor
S7 = Slab Sensor
S8 = Snow & Ice Detector
A1 = Aquastat
B1 = Boiler
P1 = MIxed 1 System Pump
P2 = Mixed 2 System Pump
P3 = Boiler Pump
P4 = Variable Speed Injection Pump 1
P5 = Variable Speed Injection Pump 2
P6 = DHW Pump
P7 = Hi-Temp Pump
V1 = Floating Action Mixing Valve
T = Thermostat or Heat Demand

= 120 V (AC)
= Sensor Wire
= 24 V (AC)
= T-stat Wire
= Misc.

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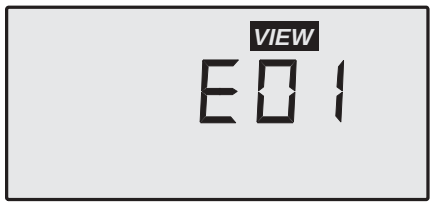
Error Messages

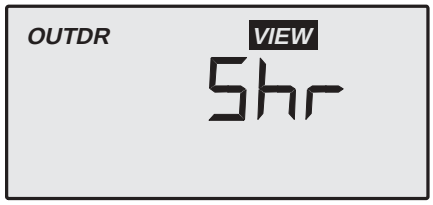
a



EEPROM ERROR (See fig. a.)

The control was unable to read a piece of information from its EEPROM. This error can be caused by a noisy power source. The control will load the factory defaults and stop operation until all the settings are verified.

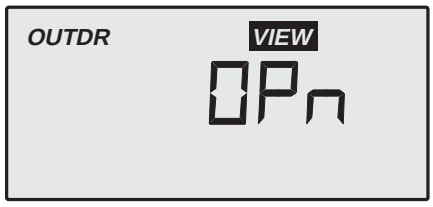
b



OUTDOOR SENSOR SHORT (See fig. b.)

The control is no longer able to read the outdoor sensor due to a short circuit. In this case the control assumes an outdoor temperature of 32°F (0°C) and continues operation. Locate and repair the problem as described in Installation - Step 7 (page 20). To clear the error message from the control after the sensor has been repaired, press the Item button.

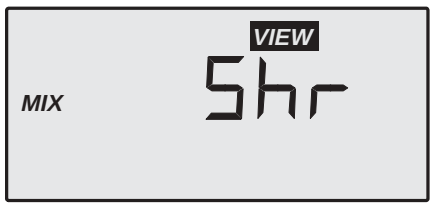
c



OUTDOOR SENSOR OPEN (See fig. c.)

The control is no longer able to read the outdoor sensor due to an open circuit. In this case the control assumes an outdoor temperature of 32°F (0°C) and continues operation. Locate and repair the problem as described in Installation - Step 7 (page 20). To clear the error message from the control after the sensor has been repaired, press the Item button.

d



MIXING SUPPLY SENSOR SHORT (See fig. d.)

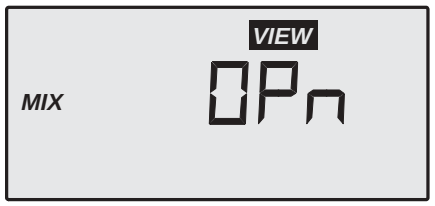
The control is no longer able to read the mixing supply sensor due to a short circuit. In this case the control will operate the variable speed injection pump at a fixed output as long as there is a mixing demand. Locate and repair the problem as described in Installation - Step 7 (page 20).To clear the error message from the control after the sensor has been repaired, press the Item button.

Error Messages (continued)

MIXING SUPPLY SENSOR OPEN (See fig. e.)

The control is no longer able to read the mixing supply sensor due to a short circuit. In this case the control will operate the variable speed injection pump at a fixed output as long as there is a mixing demand. Locate and repair the problem as described in Installation - Step 7 (page 20). To clear the error message from the control after the sensor has been repaired, press the Item button.

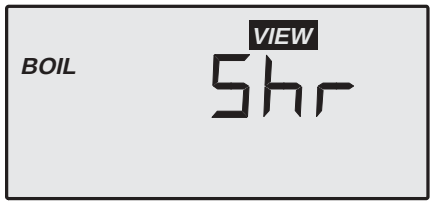
e



BOILER SENSOR SHORT (See fig. f.)

The control is no longer able to read the boiler sensor due to a short circuit. If the BOIL MIN adjustment is higher than 100°F (38°C), the control operates the Boiler contact as a boiler enable (see section C). The boiler temperature is then limited by the operating aquastat. If the BOIL MIN adjustment is lower than 100°F (38°C),the control does not operate the Boiler contact. Locate and repair the problem as described in Installation - Step 7 (page 20). To clear the error message from the control after the sensor has been repaired, press the Item button.

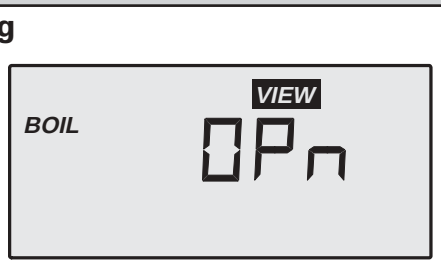
f



BOILER SENSOR OPEN (See fig. g)

The control is no longer able to read the boiler sensor due to an open circuit. If the BOIL MIN adjustment is higher than 100°F (38°C), the control operates the Boiler contact as a boiler enable. The boiler temperature is then limited by the operating aquastat. If the BOIL MIN adjustment is lower than 100°F (38°C), the control does not operate the Boiler contact. Locate and repair the problem as described in Installation - Step 7 (page 20). If the boiler sensor is deliberately removed, the control must be powered down, and then powered back up. To clear the error message from the control after the sensor has been repaired, press the Item button.

g



proMIX 201 Program Setup

ADJUST MENU

SETPNT (MIX TARGET) (setpoint temperature if SETP is selected)		_____°F
ROOM OCC (room temperature for mixing zones in occupied mode)		_____°F
ROOM UNOCC (room temperature for mixing zones in unoccupied mode)		_____°F
OUT DSGN (outdoor design temperature from heat loss)		_____°F
MIX INDR (set to the room temperature from heat loss)		_____°F
MIX DSGN (design supply water temperature from heat loss/design)		_____°F
MIX MAX (highest supply water temperature allowed)		_____°F
BOIL MIN (minimum return water temperature to boiler)		_____°F
WWSD OCC (Warm Weather Shut Down temperature or OFF)	_____OFF	_____°F
WWSD UNOCC (Warm Weather Shut Down temperature or OFF)	_____OFF	_____°F
UNIT (°F or °C)	_____°F	_____°C

NOTES

NOTES

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PM201MAN5/03

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