UTICA BOILERS

Technical Training 2014

Gas-Fired, Wall Hung
Modulating Condensing Boiler

SSV

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Ratings & Capacities

Capacities BTUH	50,000	75,000	100,000	150,000	200,000
Modulation with 5 to 1 turndown	50,000 ------- 10,000	75,000 -------- 15,000	100,000 -------- 20,000	150,000 -------- 30,000	200,000 -------- 40,000
Nat or LP	LP conversion kits are available as an option				
AFUE	95	95	95	95	95
Water Connections	3/4” Copper stub	3/4” Copper stub	3/4” Copper stub	1” Copper stub	1” Copper stub

DESIGN CERTIFIED™

ASME

AHRI CERTIFIED® www.ahridirectory.org

C US

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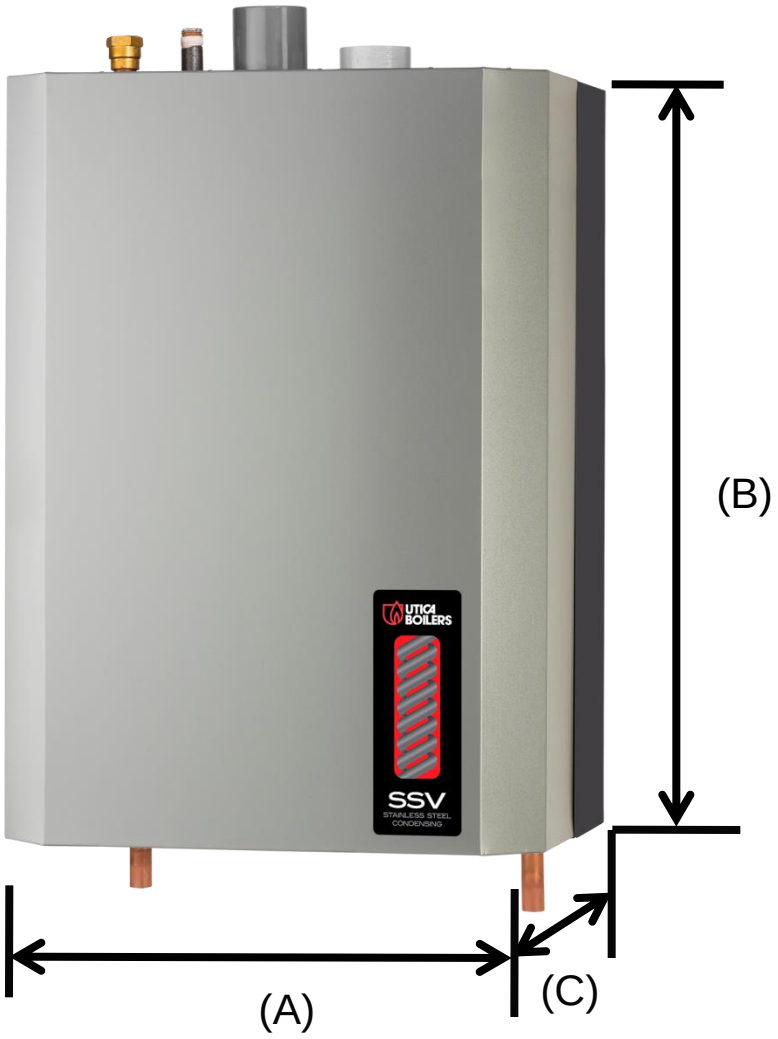
Dimensions/Weights



Model Size	50,000 75,000 100,000	150,000 200,000
Width (A)	20”	23”
Height (B)	27.75”	37.75”
Depth (C)	14.75”	16.3”
Boiler Weights	**75 lbs.**	**127 lbs.**

Control Package
ARGUS™ Vision

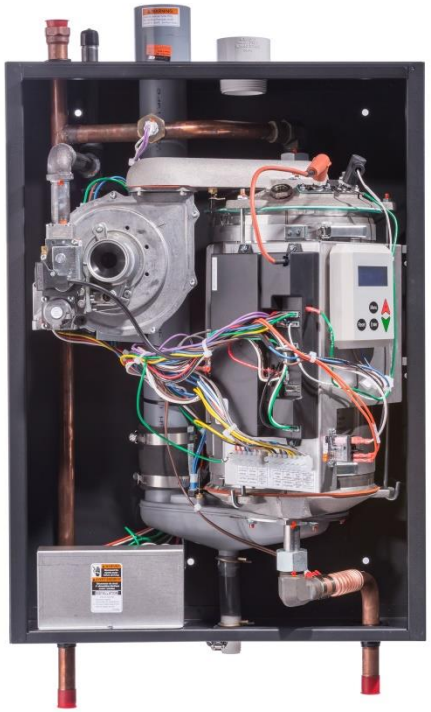
ARGUS™ Control
EASY TO PROGRAM
EASY TO UNDERSTAND

Same Control on 50-200 models!

Control Package
ARGUS™ Vision

- **The ARGUS Control:**
- **Plain text display – no codes**
- **Displays boiler status and water temperature**
- **Records run time & cycling for Heating and Domestic Hot water**
- **Has built in Domestic Hot Water Priority**
- **Functions as Multiple Boiler Controller-up to 16 boilers!**
- **Built in Boost function**
- **Monitors the temperature of the Supply water, Return water, and Outdoor Air to continuously modulate the combustion process. This insures the boiler only burns the fuel necessary for the heat load of the home.**

- Wiring Harness
- Eliminated Low Water Cut Off
- Eliminated Internal Trap
- Smaller Cabinet
- One Piece Jacket
- Jacket removal Clip



Features-All Sizes

- Vertical Stainless Steel Coil Heat Exchanger
- Specialized flue collector designs
- Argus vision control
- Internal gas drip leg
- Copper stub Connections
- Boiler powers CH & DHW & Primary Loop Pump
- Smaller Cabinet
- One Piece Jacket
- Jacket removal Clip

Stainless Steel Coil Heat Exchanger

• Vertical Coil – Self Cleaning

• Stainless Steel Coil 316L with 444 fins that are laser welded to the coil.

• ASME "H" stamp with 150 MAWP

• Exclusive to ECR. Developed in our research facility located in Utica, NY

Benefits

Waterways are wide and smooth with a helix coil that expands and contracts to inhibit hard water scaling. The vertical design coil prevents debris from settling in the heat exchanger. Condensate flowing over the fins continually "washes" the combustion side

The stainless steel is resistant to the effects of acidic condensate. The laser welding process ensures the highest level of heat transfer and efficiency

Competitive advantages over other brands which do not have this heat exchanger technology.

H Stamped, ASME heat exchanger designed, assembled and independently audited in our Utica NY facility; unlike competitors
who source their heat
exchangers.

Stainless Steel Coil Heat Exchanger

316L stainless steel tubing has 444 fins laser welded onto the tubing. 444 fins are used due to their high heat transfer and high corrosion resistance in the combustion area.

Tubing Diameter

The larger diameter tubing and round shape optimize water flow through the heat exchanger. *Less restriction compared to other designs*

Positioning / Self Cleaning

The vertical positioning of the coil heat exchanger and open fin spacing allows the heat exchanger to drain off any combustion particles. The natural flexing of the coil during operation reduces scale buildup

Self cleaning – both water and flue gas sides

Heat Exchanger Comparisons

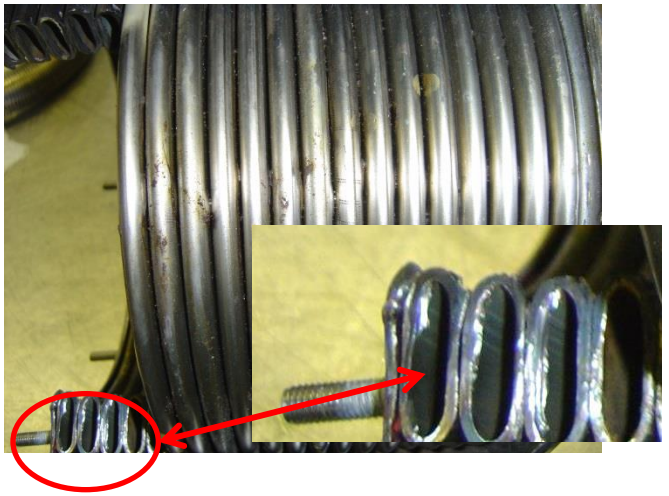
Competition **SSV Coil**

VLT round shape with a larger diameter coil for better water flow and reduced scaling

SSV Coil

Vertically positioned to drain away any debris and scale - self cleaning. Open flueways between the coils.

Competition



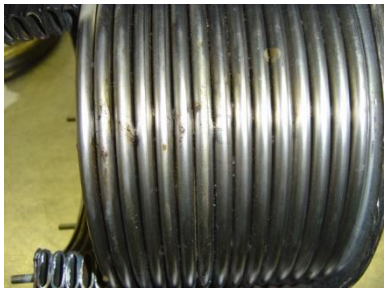
Horizontal positioning - low spots where debris may settle. Close flueways between the coils. Oval shaped small diameter tubes restrict water flow

Heat Exchanger Comparisons

SSV Coil

Vertical Coil can't trap byproducts of combustion or water scale.

Less Maintenance!



Heat Exchanger Comparisons

Vertically Positioned - yes
Self Cleaning – (see below)
Stainless Construction – yes

Multiple Welds

SSV Coil

Water Tube – Single piece coil
Self Cleaning
Flue Gas Side – **Yes**
Water Side – **Yes** - water flow velocity is maintained preventing debris from settling. The natural flexing of the coil (during operation) reduces scale buildup
15 year HX warranty
5:1 turndown
95% AFUE

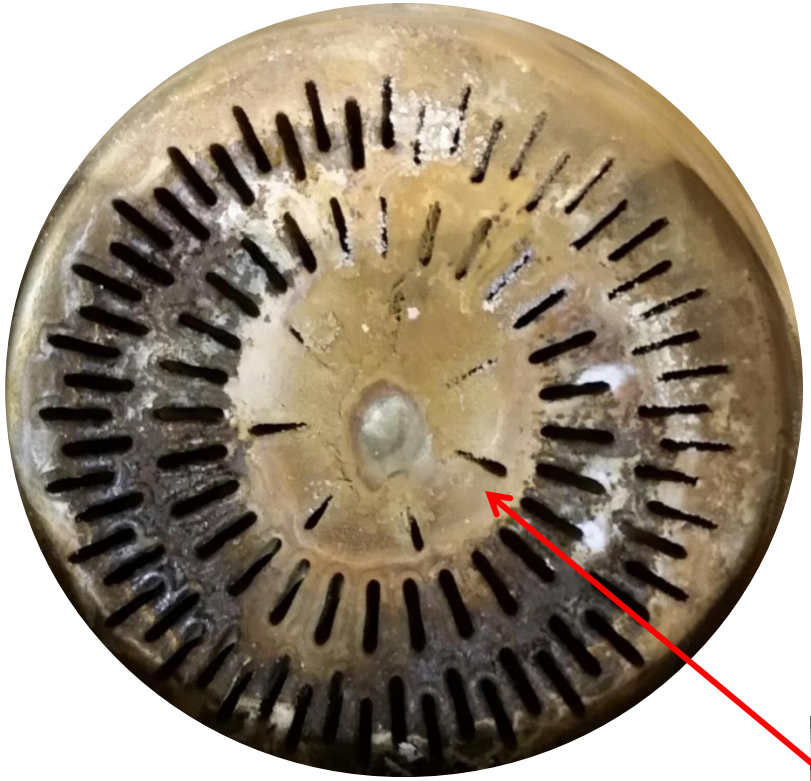
Competition

Fire Tube – multiple tubes with welded connections potential stress and leak points

Self Cleaning
Flue Gas Side – **Yes**
Water Side – Water flow velocity is reduced allowing debris to settle inside the heat exchanger
10 year HX warranty
3.7:1 or 5:1 turndown – depending on manufacture
95% AFUE

Heat Exchanger Comparisons

SSV Coil



Vertical Coil can't trap byproducts of combustion

Less Maintenance!

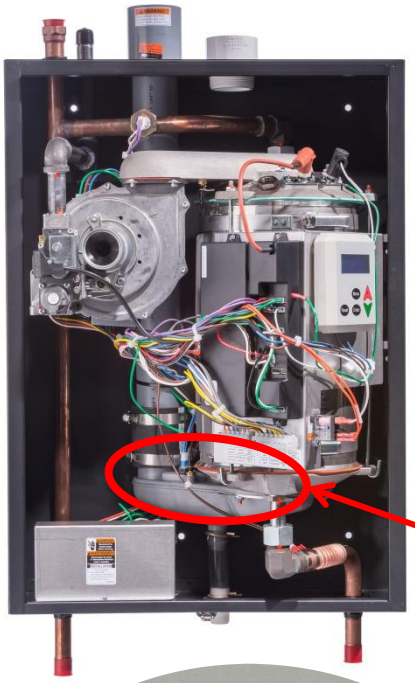
Heat Exchanger Comparisons

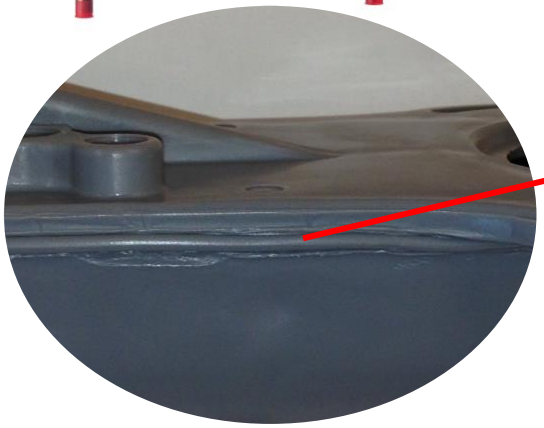
SSV Coil

Vertical Coil can't trap water scale.

Less Maintenance!

Condensate Collector 50-200 models





Ultrasonic Weld

Flue Collector: High temperature non-metallic

- •Polypropylene
- •Excellent corrosion resistance in highly acidic critical area
- • Condensate will not pool on metal surfaces of the heat exchanger

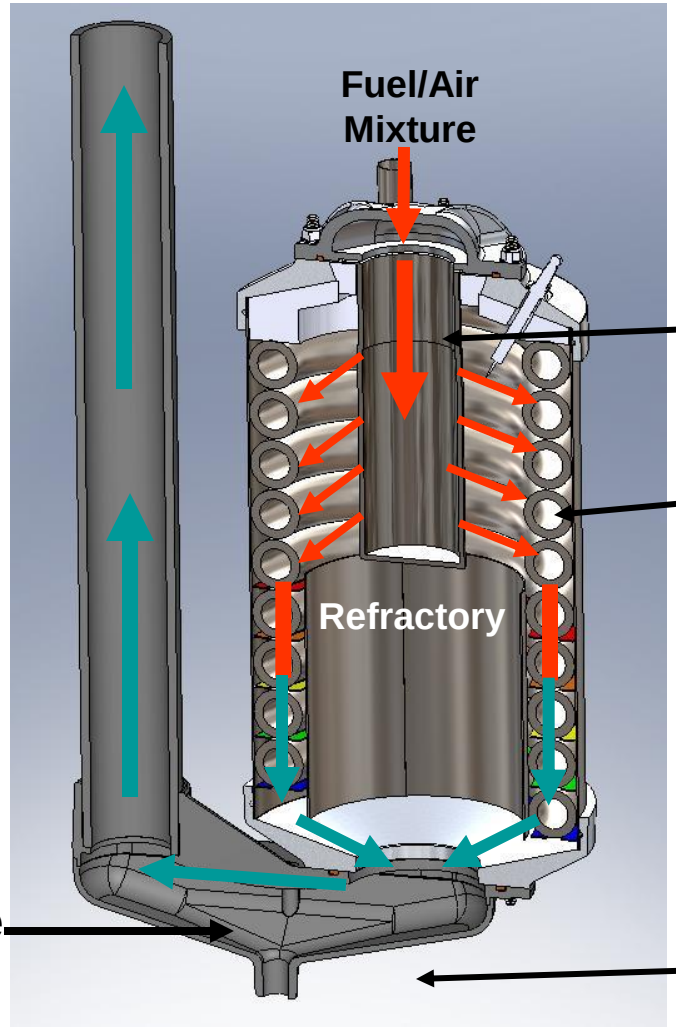
Listed with Polypropylene as a venting option

Gas Burner

- Worgas™ designed gas burner for the unit
- Natural / propane
- Easy removal for field inspection
- Easy removal for maintenance to heat exchanger

Note: Burner is keyed to heat exchanger. Line up notch in heat exchanger casting.

Combustion Path



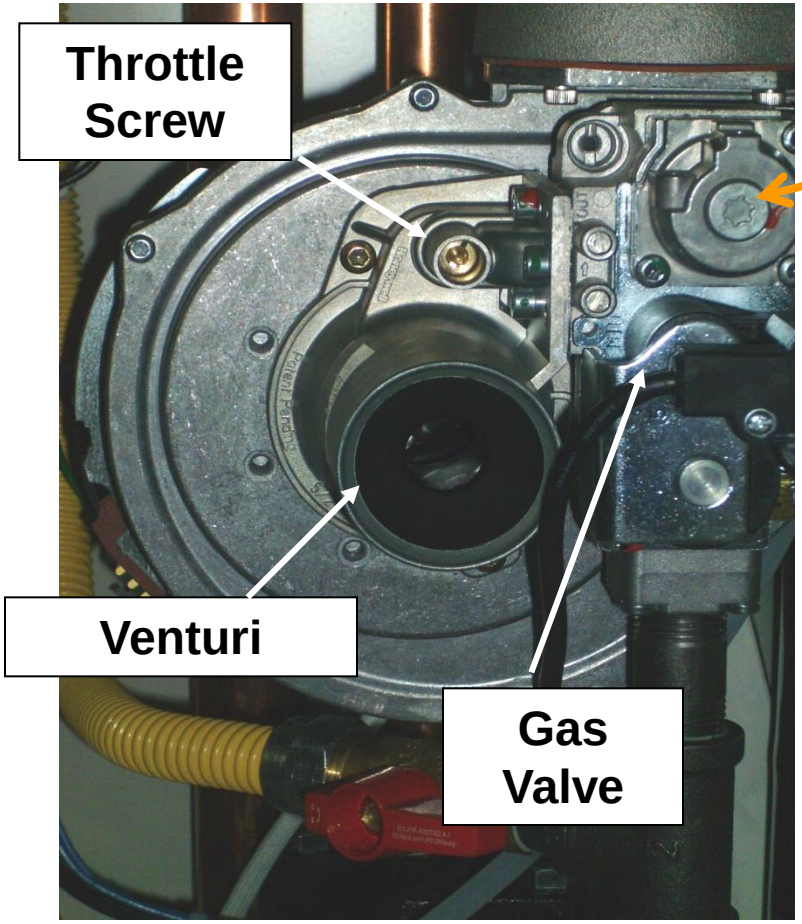
Burner

Heat
Exchanger

Polypropylene
Flue Collector

Condensate
Drain

Gas Valve 50-200 Models



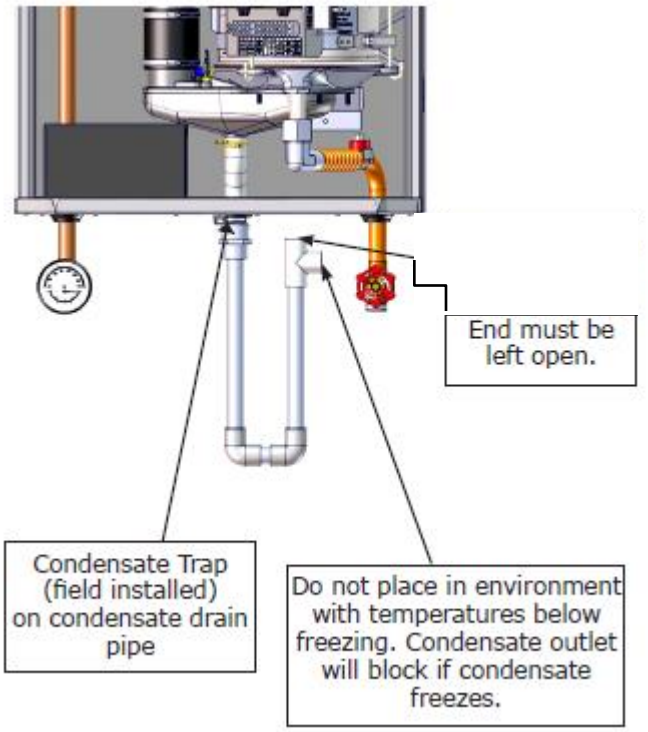
Don't touch offset screw
Will void valve's calibration

- 120 volt gas valve system
- Venturi system takes air from within the sealed cabinet
- Adjust throttle screw for proper gas / air CO^2 setting

Condensate Drain

- Preassembled external condensate trap with air break
- Fill trap with water prior to start of boiler.
- Contractor is required to run a drain off boiler.

FIGURE 6-18 Condensate Drain



Installation

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Combustible Clearances

Boiler Clearances		
Dimension	Combustible Materials (1)	Service (1) (2)
Model	050/075/100/ 150/200	050/075/100/ 150/200
Top	**0” (0 cm)**	**14” (36 cm)**
Left Side	**0” (0 cm)**	**0” (0 cm)**
Right Side	**0” (0 cm)**	**0” (0 cm)**
Front	**0” (0 cm)**	**6” (16 cm)**
Back	**0” (0 cm)**	**0” (0 cm)**
Bottom	**0” (0 cm)**	**12” (38)**
Combustion Air/Vent Piping	**0” (0 cm)**	**6” (16 cm)**
Hot Water Piping	**1/2” (1.3 cm)**	**6” (16 cm)**
(1) Required distances measured from boiler.		
(2) Service, proper operation clearance recommendation.		

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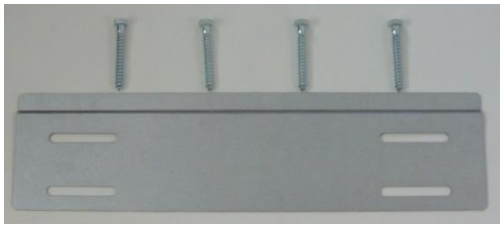
Locating The Boiler

- Access to outdoors to meet minimum and maximum pipe lengths
- Disposal of condensate
- Drainage of water or anti-freeze during service or from safety relief valve piping
- Access to system water, gas piping and electrical service
- Ambient room location above 32°F
- Approved for installation in a closet
- Protect boiler from any external water or moisture that could damage the electrical or combustion controls

Hanging the Boiler

Wall Mounting Bracket & Hardware Included with boiler



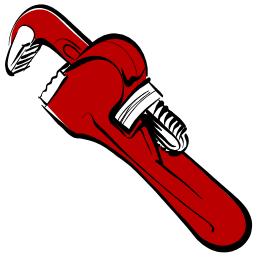
Optional Floor Stand Features Include:

- Powder Coated Black Paint with a textured finish to match the boiler back panel. The paint process provides a durable rust resistant finish.
- One size floor stand fits the entire SSV condensing family from 50 through 200 mbh.
- The stand is shipped in a knockdown configuration for ease of handling and transport. The stand can be quickly assembled at the jobsite in just a few minutes.

Note: For Multiple Boiler Applications - Boilers can be placed side by side or back to back

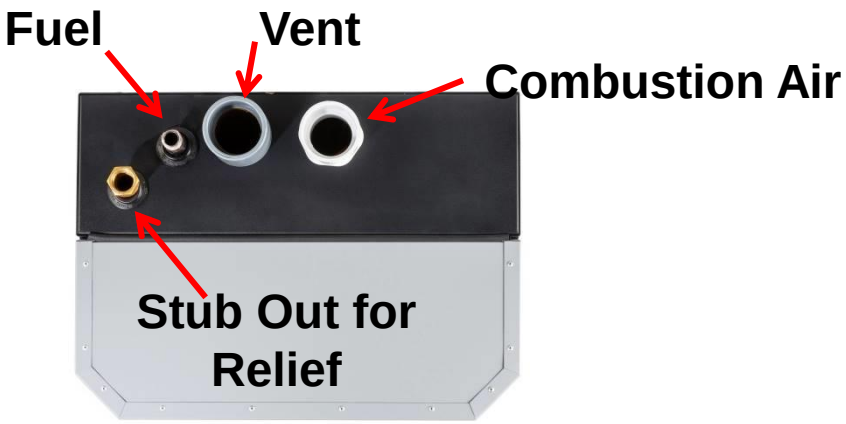
Boiler Connections

- Bottom Supply and Return :
  - **3/4” Copper Stub 50-75-100**
  - **1” Copper Stub 150-200**
- Condensate Drain – ¾” NPT
- Combustion Air & Vent:
  - **2” PVC 50-75-100**
  - **3” PVC 150-200**
- ¾” NPT Stub out on top for field installation of Safety Relief (included with Boiler)

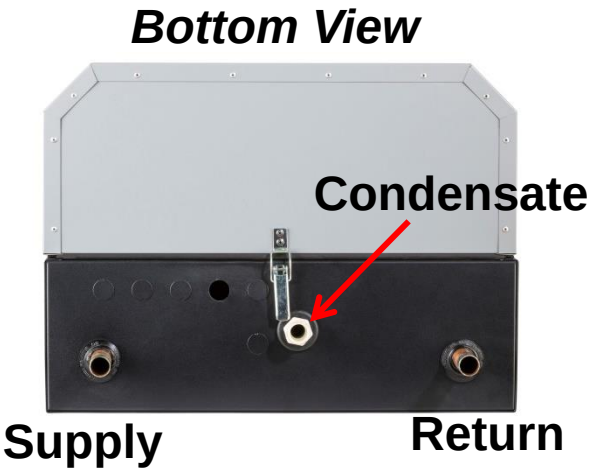


Backup wrench when tightening fittings

Top View

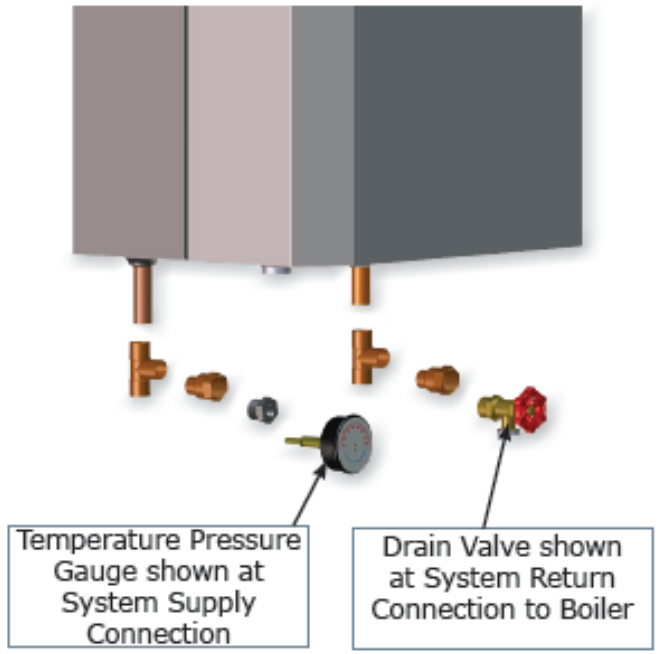


Bottom View



Trimming the Boiler

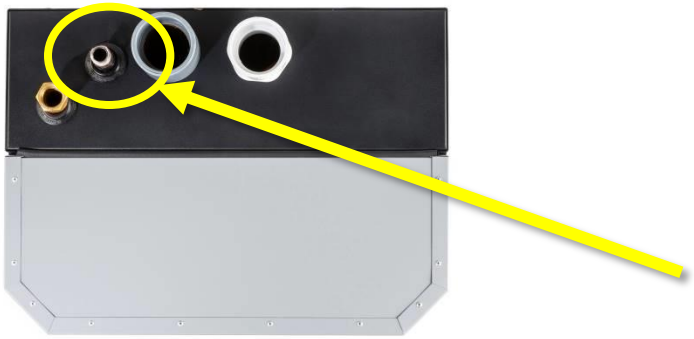
FIGURE 5-3 Temperature Pressure Gauge and Drain Valve Installations



Included with the boiler is a trim kit!

Gas Piping

- Gas piping needs to be in accordance with all national and local codes
- Sediment Leg built inside boiler
- Always check gas piping and connections for leaks



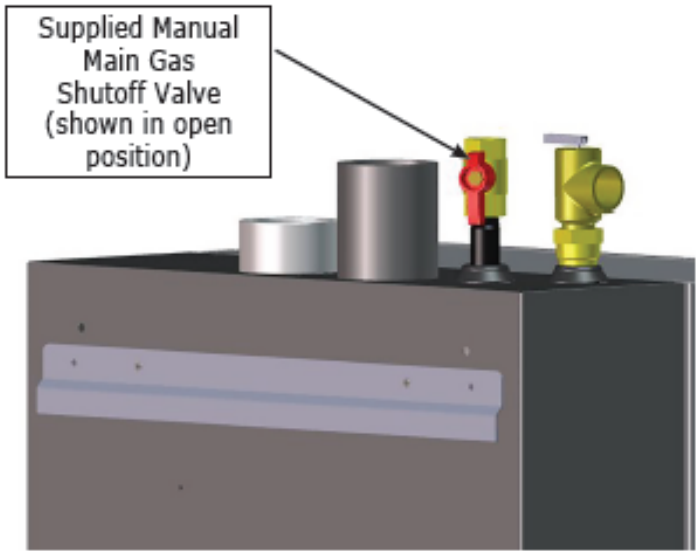
½" NPT Gas Connection 50/75/100

¾" NPT Gas Connection 150/200

Use a backup wrench when tightening

Gas Piping

FIGURE 7-2 Manual Gas Shutoff Valve - Outside Boiler Jacket (view from top rear of boiler)



Rated up to 150 MAWP

- Factory supplied 30 psig relief valve
- Install ¾” or larger discharge pipe to floor
- Install relief valve with spindle in vertical position only
- Do not install shutoff valve between boiler and safety relief valve
- Field Installed - pipe relief valve to within 6” of floor

Gas Pressures

Gas Supply Pressure				
Capacities BTUH	**Natural Gas**		**Propane**	
	Min.	**Max.**	**Min.**	**Max.**
50,000 - 200,000	***3.0" w.c.** (0.7kPa)	**13.5" w.c.** (3.3 kPa)	**5.0" w.c.** (1.2 kPa)	**13.5" w.c.** (3.4 kPa)

*Minimum gas pressure requirement of 3" w.c. – excellent for metropolitan areas with low gas pressure from the utility.

LP Gas Conversion

- All boilers shipped as Nat Gas. LP Kit available.
- Propane orifice conversion from natural gas in less than 5 minutes.
- Orifice to be installed for propane gas fired units
- Propane gas supply inlet pressures: 5” w.c. minimum, 13.5” w.c. maximum

Propane orifice location 50-200

Venting/Combustion Air

Combustion Air and Vent Pipe Equivalent Length				
Model	**2” Pipe**		**3” Pipe**	
	050	**075/100**	**075/100**	**150/200**
Min.	**6 ft.** (1.8 m)	**6 ft.** (1.8 m)	**6 ft.** (1.8 m)	**6 ft.** (1.8 m)
Max.	**100 ft.** (30.5 m)	**50 ft.** (15.2 m)	**100 ft.** (30.5 m)	**100 ft.** (30.5 m)

1 - 90° elbow = 5 ft. (1.6 m)
1 - 45° elbow = 3.5 ft. (1.1 m)
1 – 2” x 3” adapter = 0 ft. (0 m)
Note: Concentric Vent Kit = 5 ft. (1.6 m) **equivalent length**
i.e.: Boiler can be installed on outside wall and vented with 1 - 90° elbow and 1 ft. (0.30m) of vent pipe.

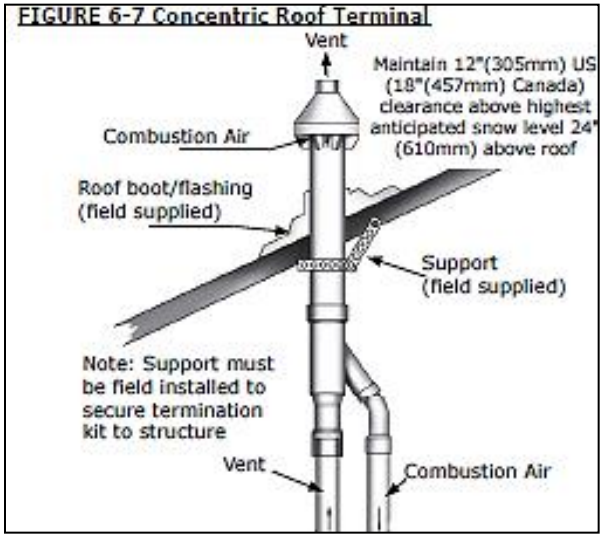
Venting/Combustion Air

- **PVC**
- **CPVC**
- **ABS**
- **Polypropylene**

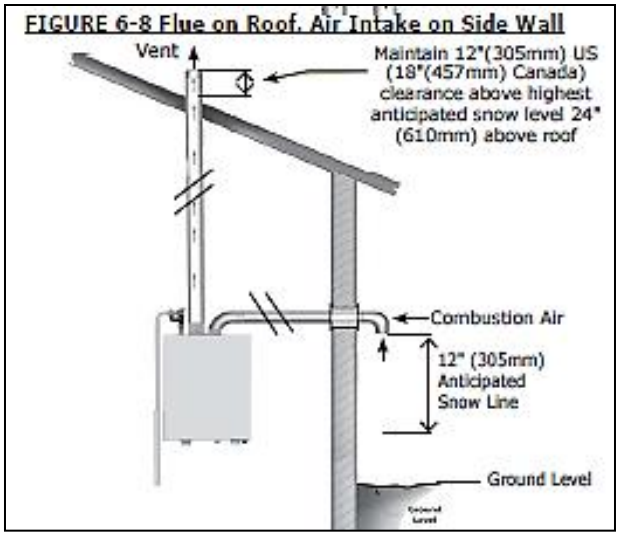
*** Make sure to use appropriate glue for proper vent pipe*

Table 4 – Combustion air and vent pipe fittings must conform with the following:		
Item	**Material**	**Standards**
Vent Pipe and Fittings	**PVC schedule 40**	**ANSI/ASTM D1785**
	PVC – DWV	**ANSI/ASTM D2665**
	CPVC schedule 40	**ANSI/ASTM D1784/F441**
	SDR-21 & SDR-26 PVC	**ANSI/ASTM D2241**
	ABS-DWV	**ANSI/ASTM D2661**
	Schedule 40ABS	**ANSI/ASTM F627**
	PP (Polypropylene) Pipe and Components	**UL 1738 ULC S636-08**
Pipe Cement / Primer	**PVC**	**ANSI/ASTM D2564**
	CPVC	**ANSI/ASTM F493**
	Schedule 40 ABS	**ANSI/ASTM D2235**
• **IPEX is approved vent manufacturer in Canada listed to ULC-S636.** • **IPEX System 636 Cements and Primers are approved in Canada listed to ULC-S636**		
Use of cellular core PVC (ASTM F891), cellular core CPVC, or Radel®, (Polyphenolsulfone) in venting systems shall be prohibited.		

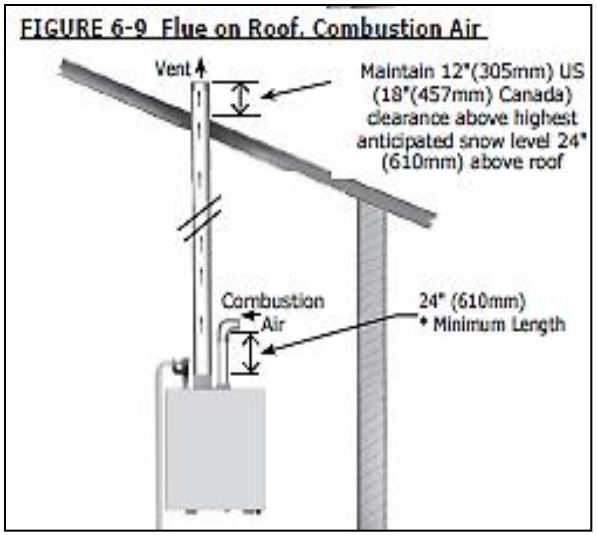
Venting Configurations



Roof w/ Concentric combustion air



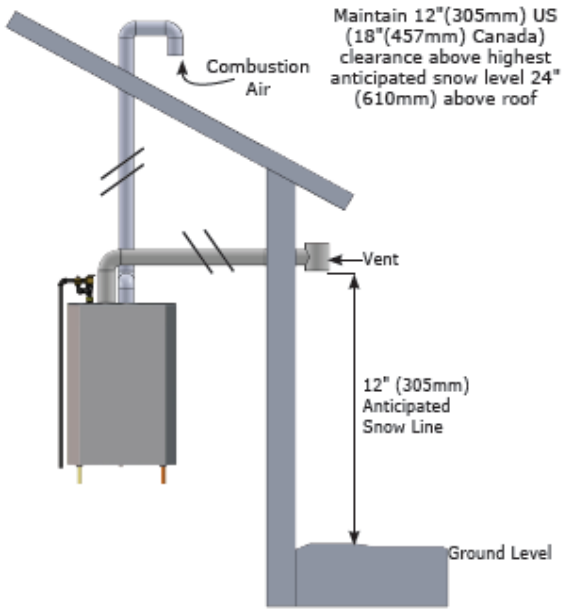
Roof w/ sidewall combustion air



Roof w/ inside combustion air

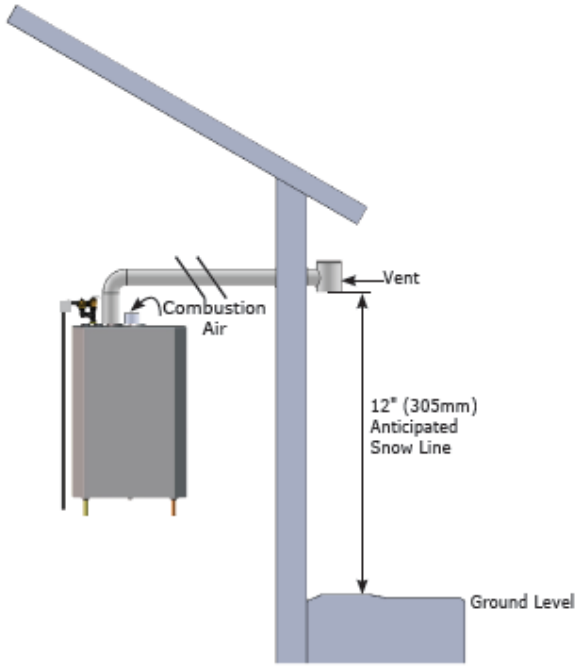
Venting Configurations

FIGURE 6-10 Flue on Sidewall, Combustion Air on Roof



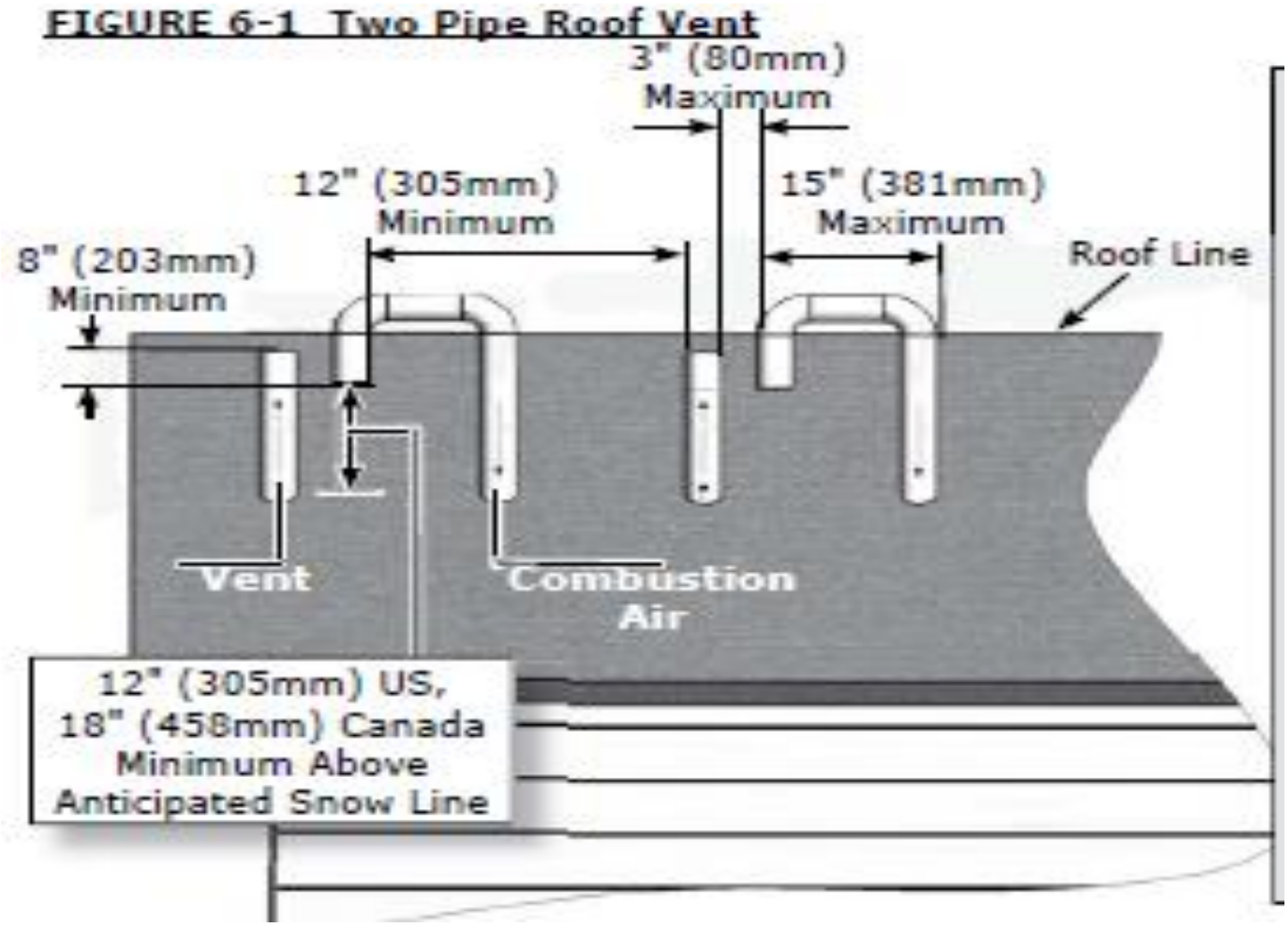
Sidewall vent w/
combustion air on roof

FIGURE 6-11 Flue on Sidewall, Inside Combustion Air



Sidewall vent w/
inside combustion air

Venting Configurations



Venting Configurations

FIGURE 6-2 Two Pipe Side Wall Vent

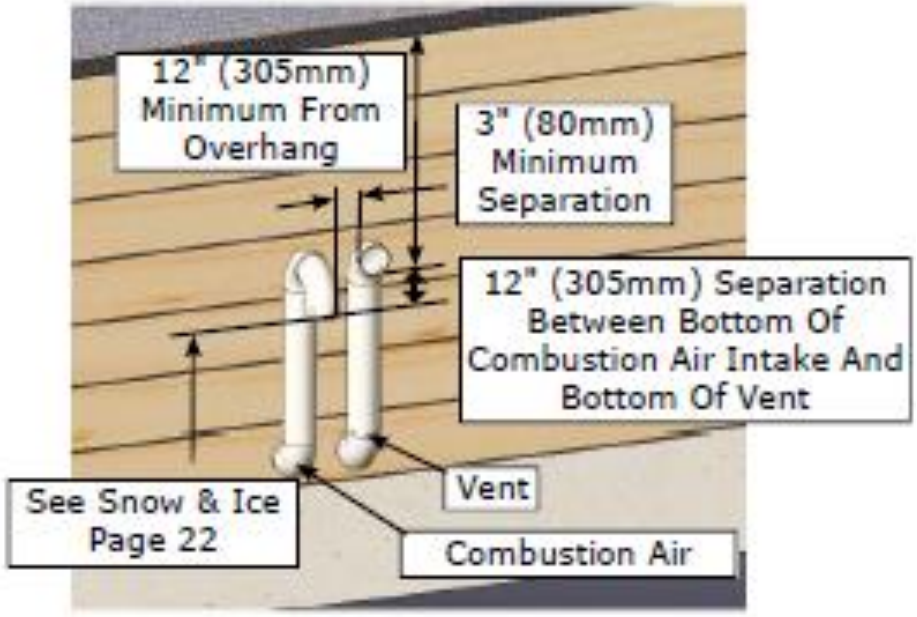
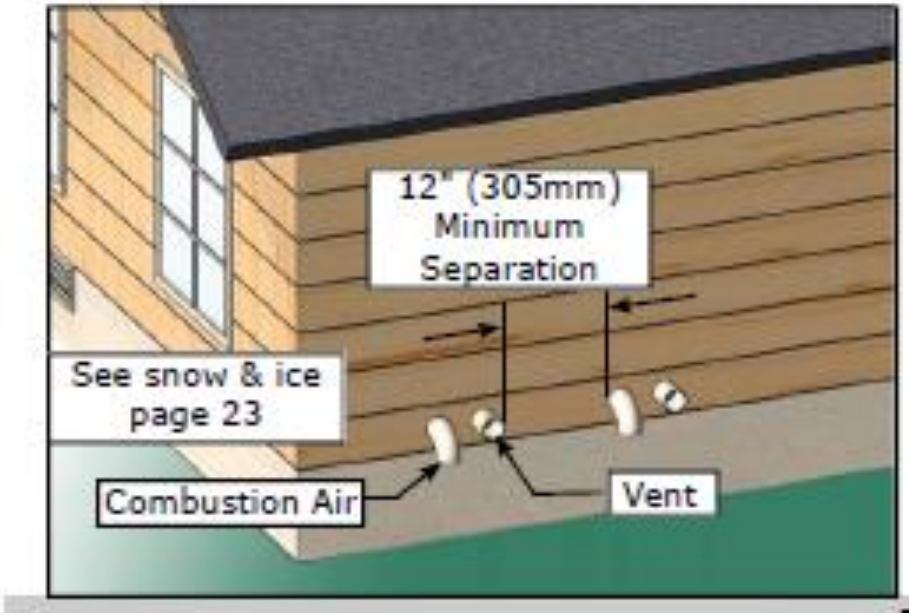


FIGURE 6-3 Two Pipe Side Wall Vent (Multiple Appliances.



Venting / Combustion Air

- Side wall or roof venting systems allowed
- 1’ from or below doors, windows / gravity inlets ***except*** when using indoor air for combustion. 4’ clearance required for single pipe installations.
- 3’ above and 10’ from any forced air inlet
- Above expected Snow grade (12”)
- 3’ from a inside “L” corner
- 4’ horizontally from, no case above or below electrical, gas meter / regulators or relief equipment
- Cannot be vented under a deck or porch

Piping

Primary Pump Selection

This boiler ***must*** be installed with a Primary/Secondary arrangement *or* with a low loss accessory.

Use the worksheet in the IOM to calculate your pump size.

Primary Loop Equavelent Length Calculation and Pump Selection, 150/200 MBH
(This boiler must be piped Primary/Secondary)

This chart is valid for piping diagrams on pages XXXXXXXXXXX

Instructions:
Fill in chart using the 1" section first.Then consult chart 4 for pump selection.
Pump size may be decreased by decreasing equivalent length of pipe.
Use larger diameter pipe as primary loop to decrease equivalent length. Use chart 2 or 3.

Note: The figures below are based off of industry average. Consult the valve/fitting manufaturer for exact equivalent length or for fittings not shown below.

Chart 1		A	B	C
Pipe diameter	Fitting	Enter Number of fittings	Multiply By	Equivalent Length A x B
1"	90° Elbow		2.5	
	45° Elbow		1.3	
	Tee-branch		5.0	
	Tee-through		1.7	
	Swing check valve		8.3	
	Lift check valve		50.0	
			Enter Total 1" straight pipe length in feet	
			Add up numbers in column C:	Pump Factor

Chart 2		A	B	C
Pipe diameter	Fitting	Enter Number of fittings	Multiply By	Equivalent Length A x B
1.25"	90° Elbow		3.1	
	45° Elbow		1.7	
	Tee-branch		6.3	
	Tee-through		2.1	
	Swing check valve		10.4	
	Lift check valve		62.5	
			Enter Total 1.25" straight pipe length in feet	
			Add up numbers in column C Total equivalent length of Primary	
			Multiply Total of Column C in Chart 2 by 0.35	Pump Factor

Chart 3		A	B	C
Pipe diameter	Fitting	Enter Number of fittings	Multiply By	Equivalent Length A x B
1.5" (Any pipe/fitting larger than 1.5", count as 1.5")	90° Elbow		3.8	0.00
	45° Elbow		2.0	0.00
	Tee-branch		7.5	0.00
	Tee-through		2.5	0.00
	Swing check valve		12.5	0.00
	Lift check valve		75.0	0.00
			Enter Total 1.5" straight pipe length in feet	
			Add up numbers in column C Total equivalent length of Primary	0.00
			Multiply Total of Column C in Chart 3 by 0.15	Pump Factor

Chart 4

Total equavlent length of Primary		Pump options (Minimum)		
From	To	Grundfos	Taco	B&G
0	20	UP 26-99	Taco-0013	NRF-36 speed-3
21	35	UP 26-116	Taco 2400-20	PL-36
36	50	UP 26-150	Taco 2400-50	PL-55

Note: If the heating system uses antifreez solution 30% or higher , choose the next step larger pump given in the table.

Primary Pump Selection

Calculate your "Pump Factor"

Note: additional charts for other pipe sizes.

Primary Loop Equavelent Length Calculation and Pump Selection, 150/200 MBH

(This boiler must be piped Primary/Secondary)

Instructions:

Fill in chart using the 1" section first.Then consult chart 4 for pump selection.

Pump size may be decreased by decreasing equivalent length of pipe.

Use larger diameter pipe as primary loop to decrease equivalent length. Use chart 2 or 3.

Note: The figures below are based off of industry average. Consult the valve/fitting manufacturer for exact equivalent length or for fittings not shown below.

Chart 1		A	B	C
Pipe diameter	Fitting	Enter Number of fittings	Multiply By	Equivalent Length A x B
1"	90° Elbow	8	2.5	20
	45° Elbow		1.3	
	Tee-branch		5.0	
	Tee-through		1.7	
	Swing check valve		8.3	
	Lift check valve		50.0	
	Enter Total 1" straight pipe length in feet			20
	Add up numbers in column C:			Pump Factor 40

Primary Pump Selection

Calculate your "Pump Factor"

Chart 2		A	B	C
Pipe diameter	Fitting	Enter Number of fittings	Multiply By	Equivalent Length A x B
1.25"	90° Elbow	8	3.1	24.8
	45° Elbow		1.7	
	Tee-branch		6.3	
	Tee-through		2.1	
	Swing check valve		10.4	
	Lift check valve		62.5	
	Enter Total 1.25" straight pipe length in feet			20
	Add up numbers in column C Total equivalent length of Primary			44.8
		Multiply Total of Column C in Chart 2 by 0.35		Pump Factor 15.68

Note: Sizes larger than boiler connection require correction factor.

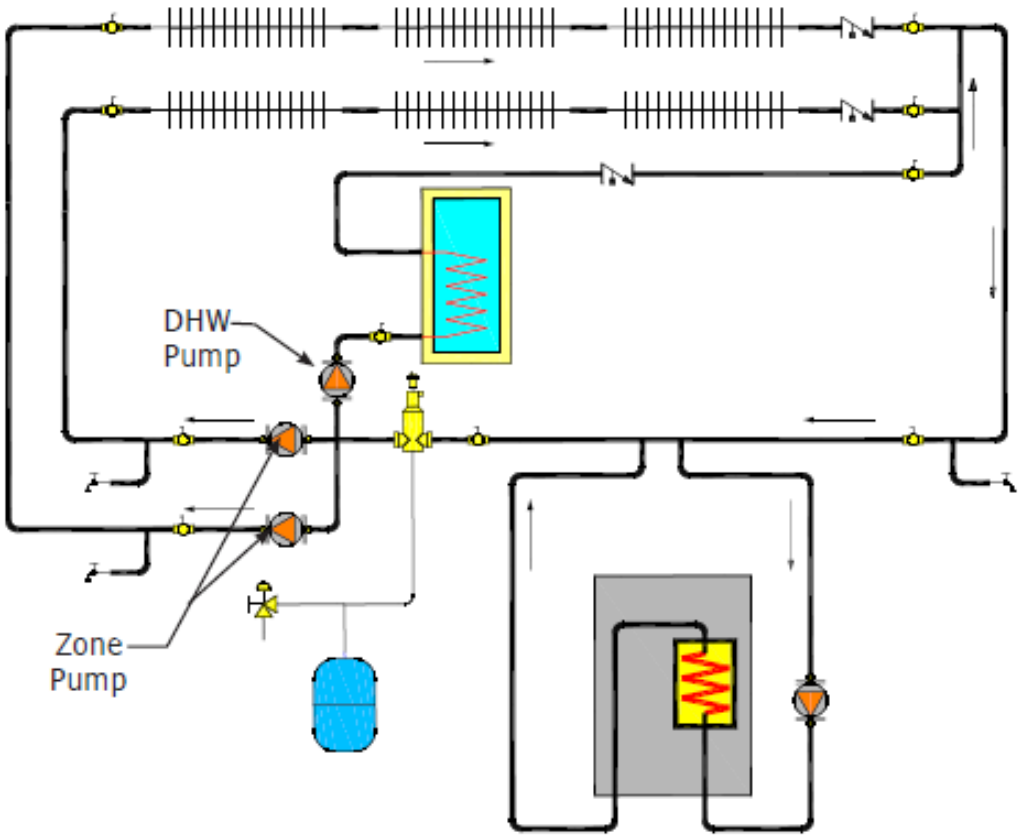
Primary Pump Selection

Using Pump Factor select the correct pump below.

Chart 4				
Total equavlent length of Primary		Pump options (Minimum)		
From	To	Grundfos	Taco	B&G
0	20	UP 26-99	Taco-0013	NRF-36 speed-3
21	35	UP 26-116	Taco 2400-20	PL-36
36	50	UP 26-150	Taco 2400-50	PL-55
Note: If the heating system uses antifreez solution 30% or higher , choose the next step larger pump given in the table.				

External Primary/Secondary Piping

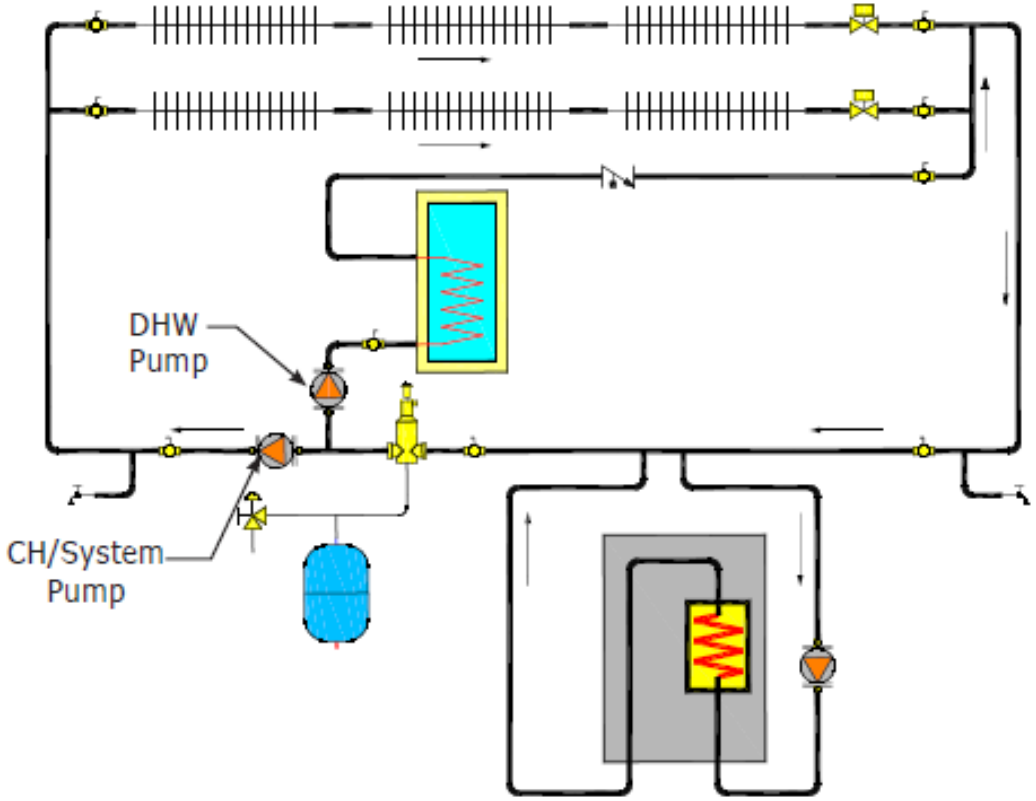
FIGURE 5-6 Single Boiler Primary/Secondary Two-Pipe Zoned System With Zone Pumps



Additional Piping Diagrams in I.O.M.

External Primary/Secondary Piping

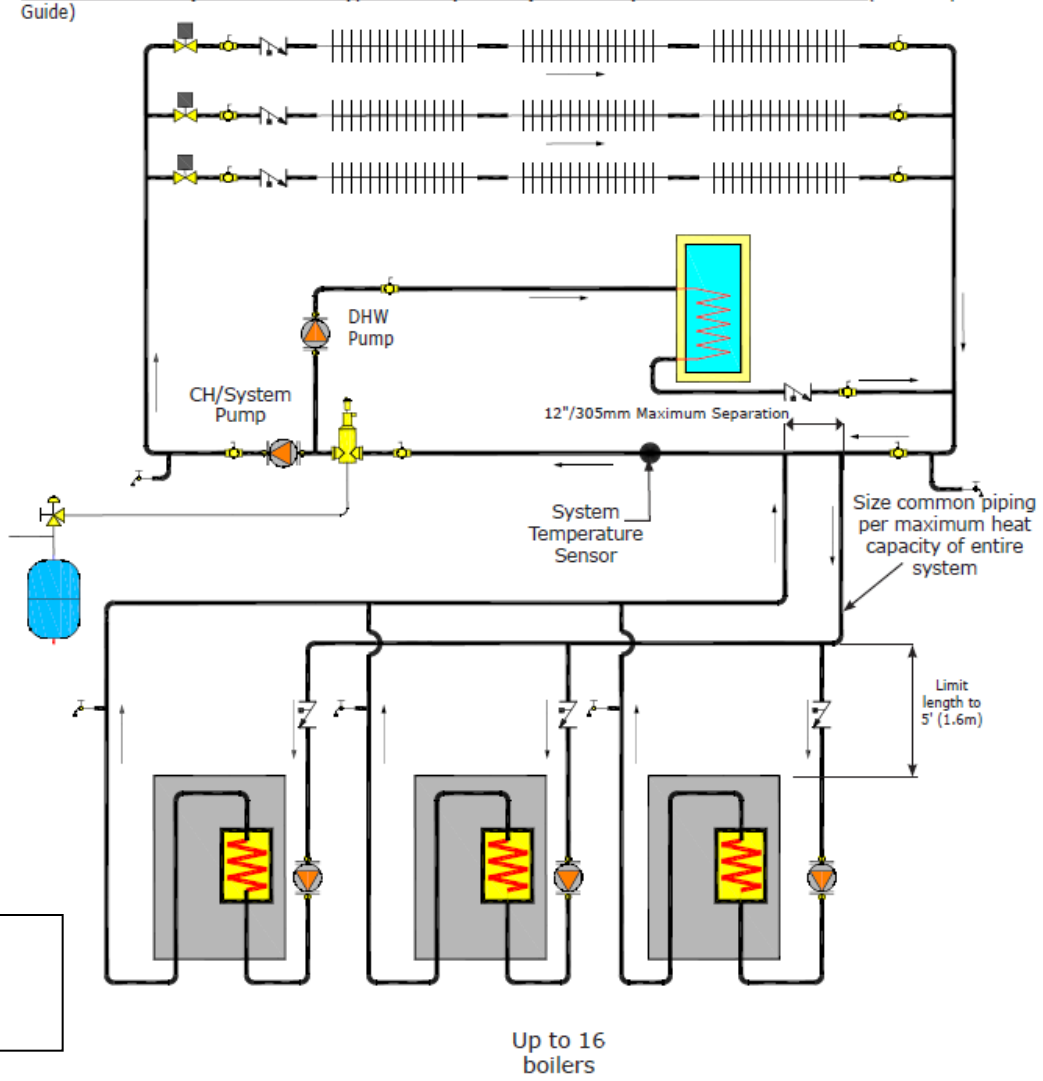
FIGURE 5-5 Single Boiler Primary/Secondary Two-Pipe Zoned System With Zone Valves



Additional Piping Diagrams in I.O.M.

External Primary/Secondary Piping

FIGURE 5-8A Multiple Boiler Primary/Secondary Two Pipe Zoned System With Zone Valves - (See Multiple Boiler Guide)



Additional Piping Diagrams in I.O.M.

Low Water Cutoff

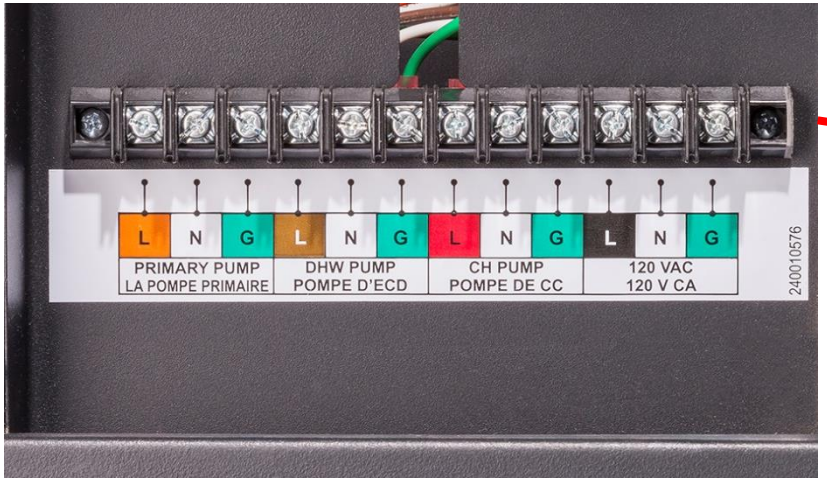
Installing contractor must furnish and install a Low Water Cutoff device.

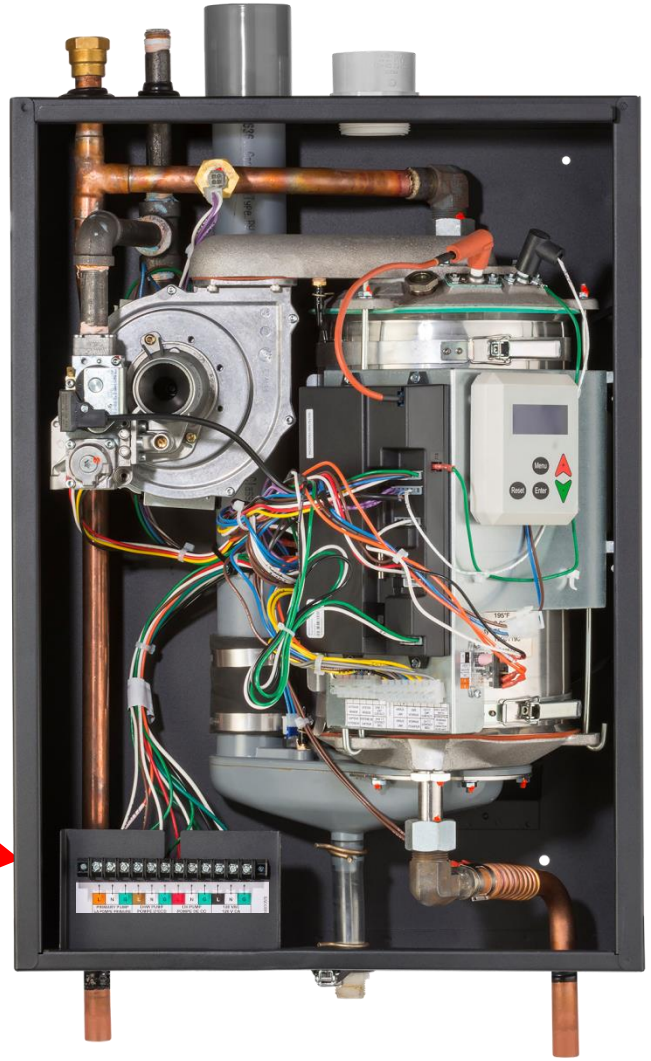
The Low Voltage Terminal Strip has 2 landing points for the LWCO safety switch. Separate power source must be field provided (24 vac or 120 vac).

Failure to install a LWCO will produce a lockout error E36 on the boiler display on startup.

Electrical Connections
Line Voltage

- Wiring connections located inside, bottom left
- Incoming 120 volt
- Primary Loop circulator pump
- Domestic hot water circulator pump
- Central heating circulator pump

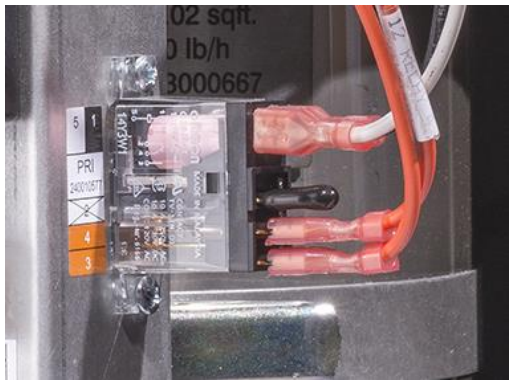




Electrical Connections
Line Voltage

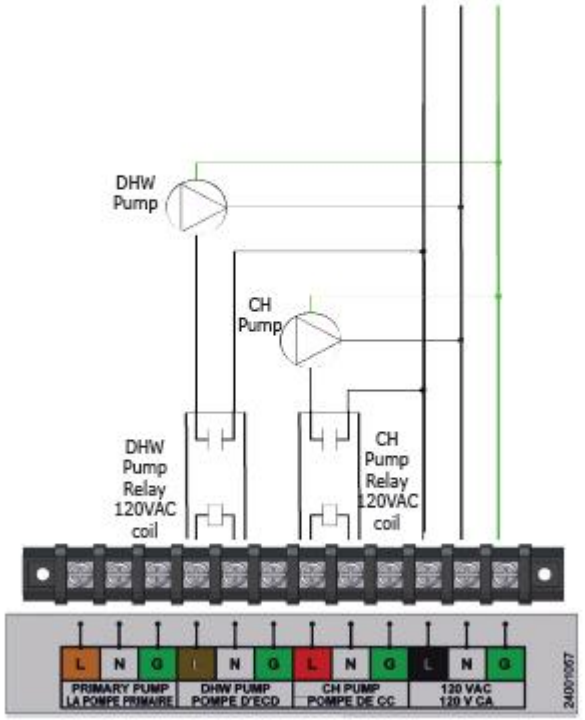
Table 9 - Maximum Allowable Current Draw

MBH	CH PUMP	DHW PUMP	PRIMARY PUMP	NOTE
50 75 100	1 A*	1 A*	10 A**	*Powered by Control Board
150 200	10 A**	10 A**	10 A**	**Powered by installed 10 Amp relay
If CH or DHW pump current is more than the maximum allowable current draw install proper field sourced relays as shown in figure 8-3. Maximum allowable total amperage of all 3 pumps must not exceed 20 amps.				



Built-in 10 amp relay for Primary Pump all models & CH/DHW pumps on 150-200 models.

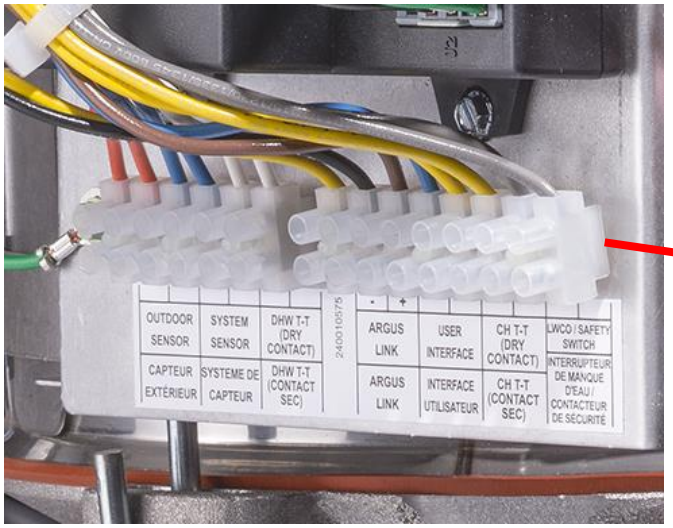
FIGURE 8-3 Isolation Relays for CH System Pump and DHW Pump

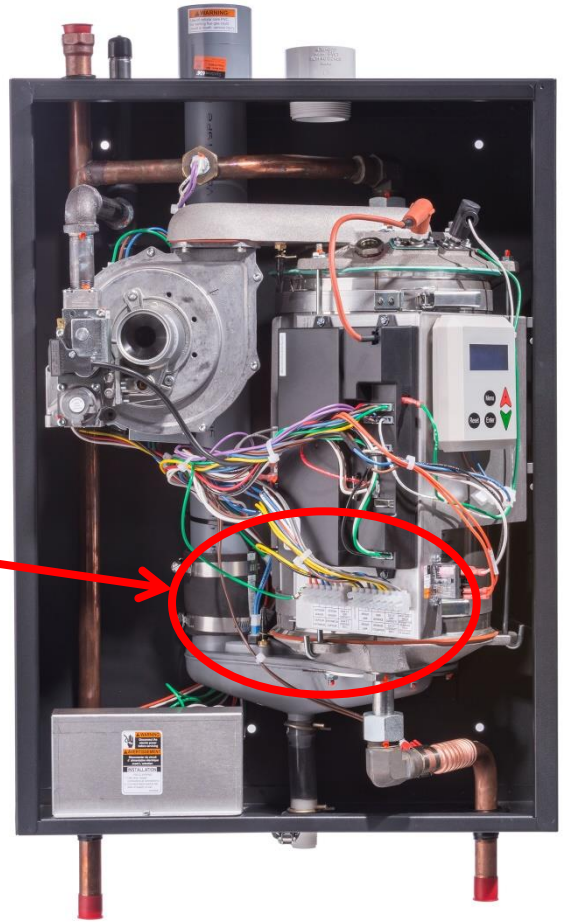


Low voltage terminal strip located inside boiler

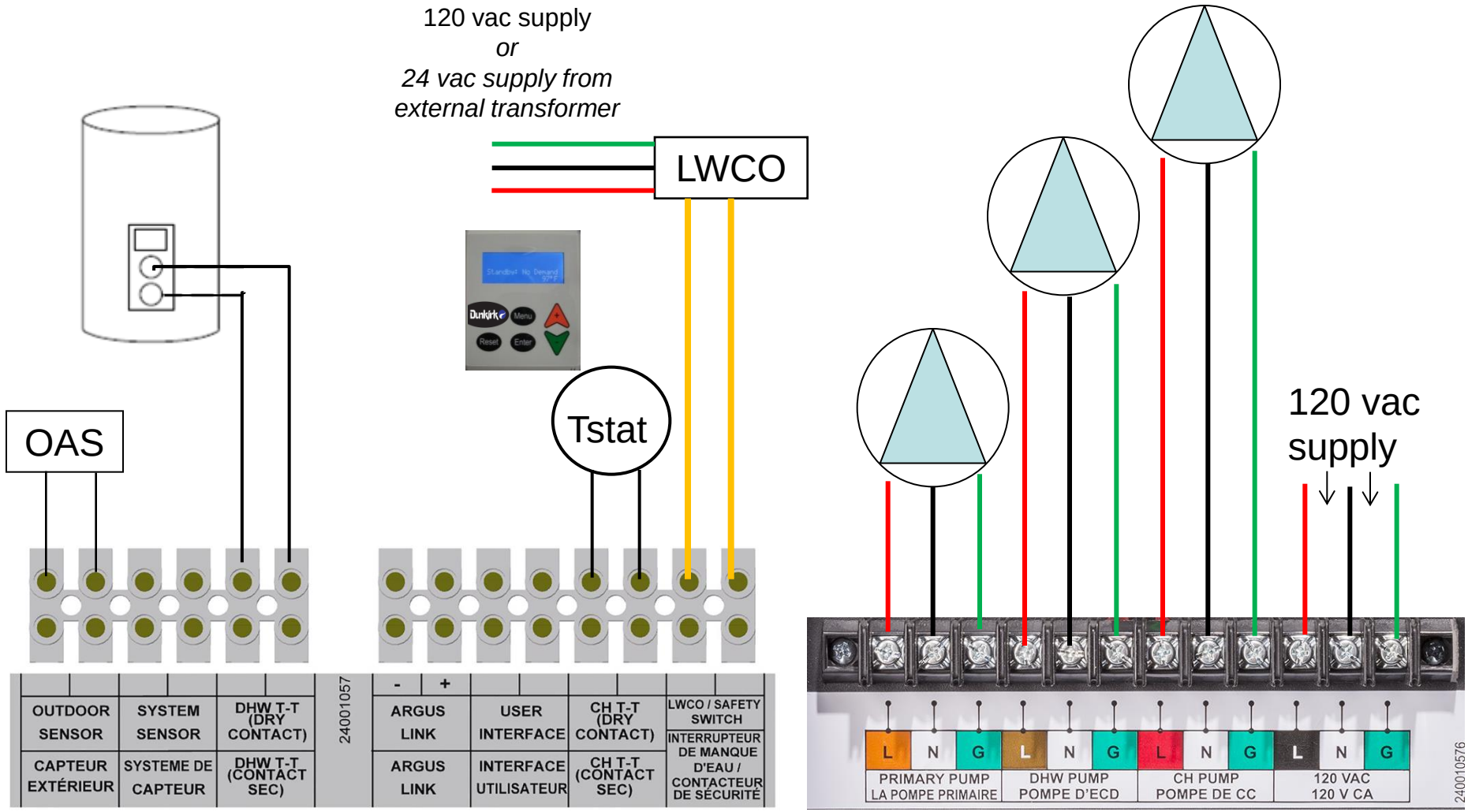
Connections

- Outdoor Sensor
- System Sensor
- DHW T-T
- Argus Link
- User Interface
- CH T-T
- LWCO end switch



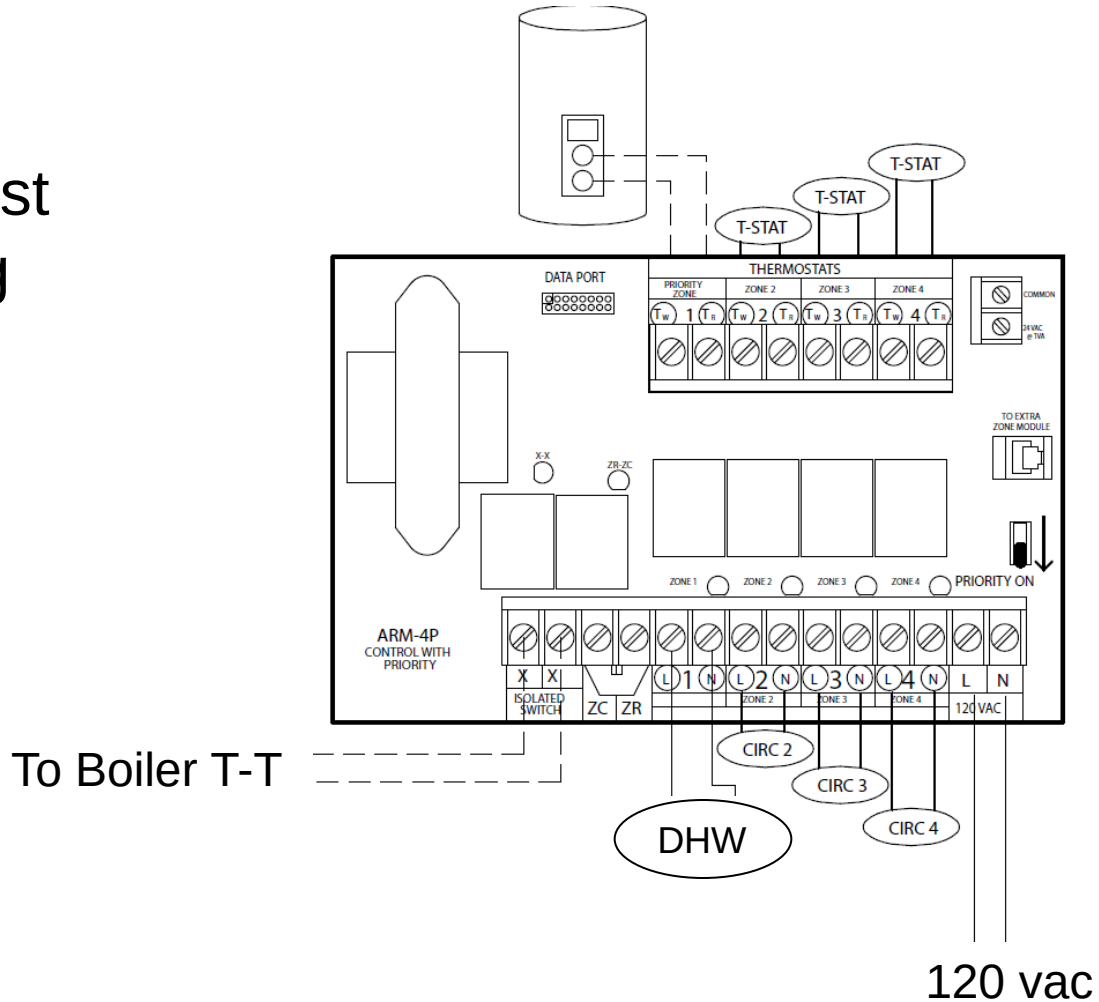


One Zone Heat or One Zone Heat & Indirect



Priority DHW with Zone Control

Typical Cast Iron Wiring

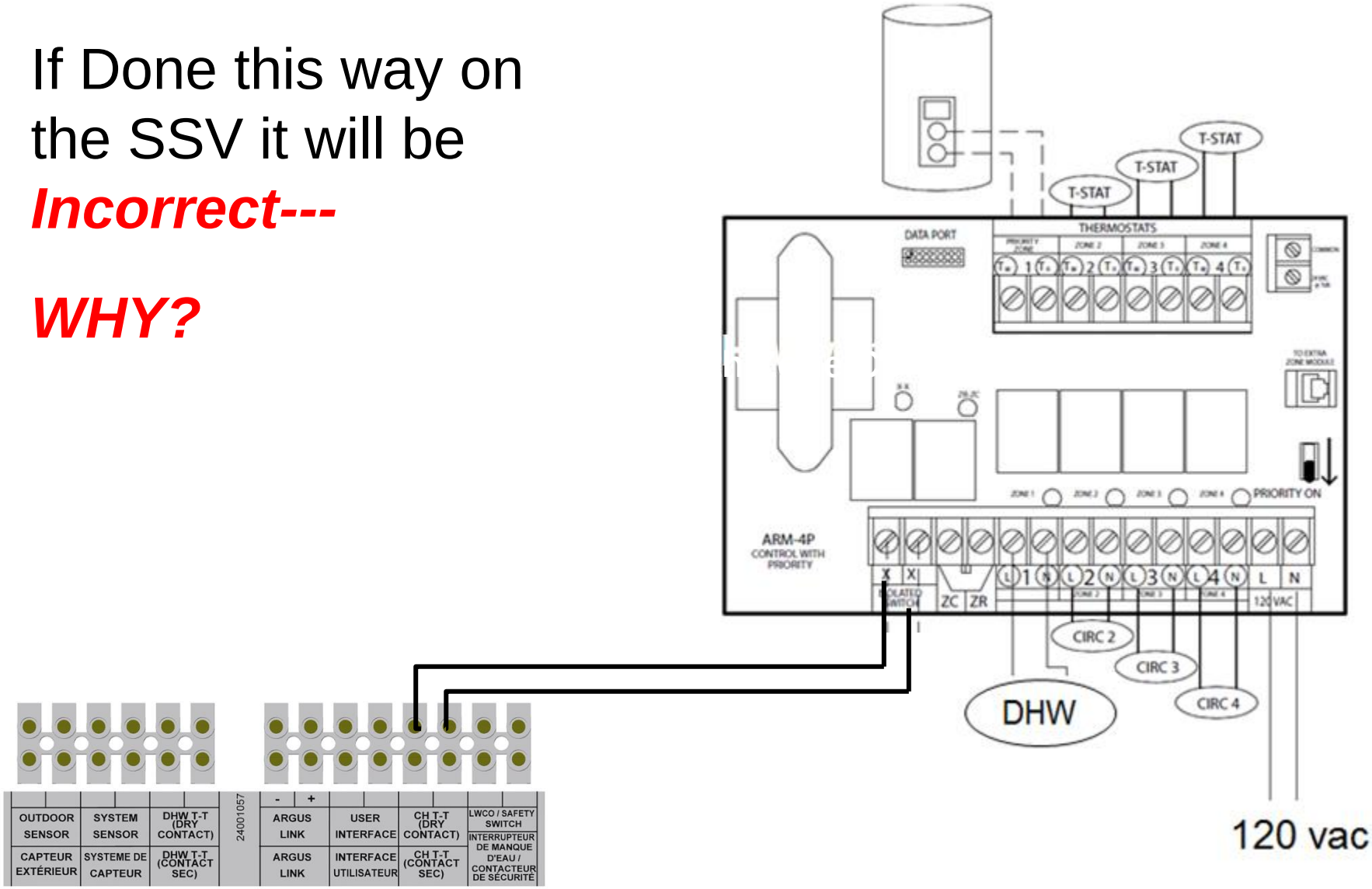


Priority DHW with Zone Control

If Done this way on the SSV it will be

Incorrect---

WHY?

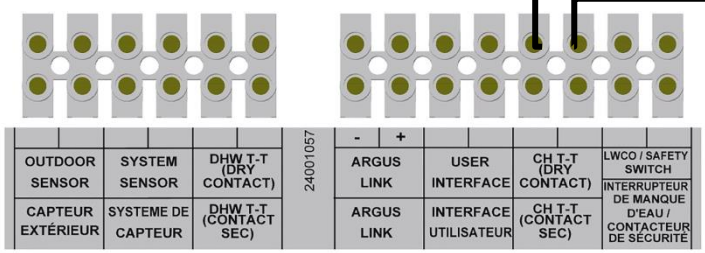


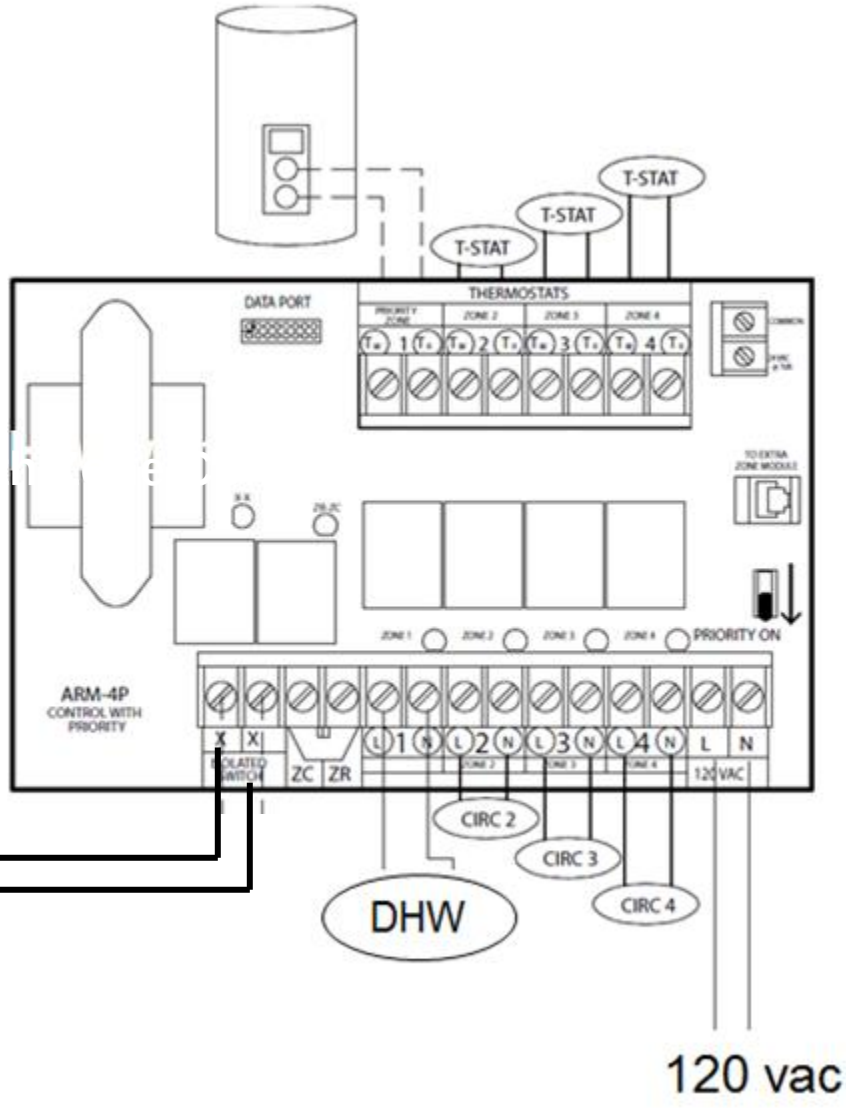
Priority DHW with Zone Control

If Done this way on the SSV it will be ***Incorrect---***

WHY?

Hint: Installed in December and it worked fine until spring.

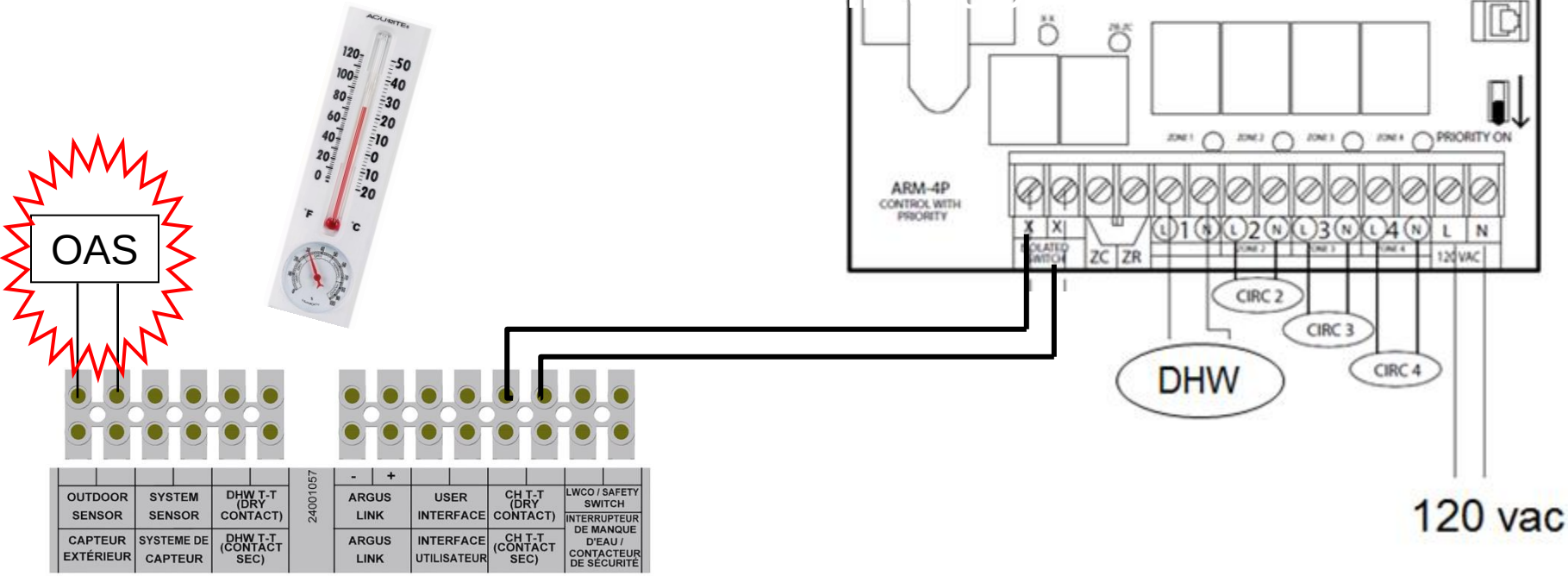




Priority DHW with Zone Control

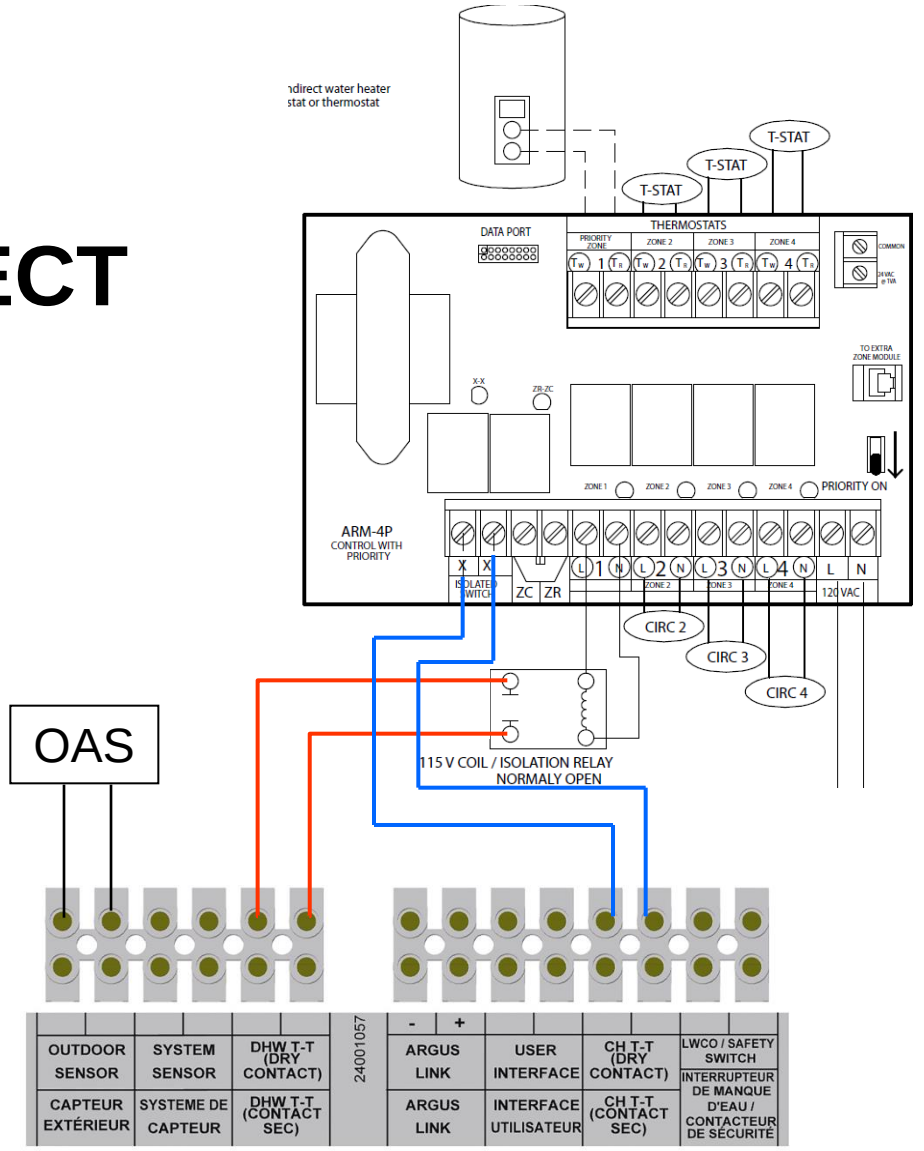
If Done this way on the SSV it will be ***Incorrect---***

WHY?



Priority DHW with Zone Control

CORRECT

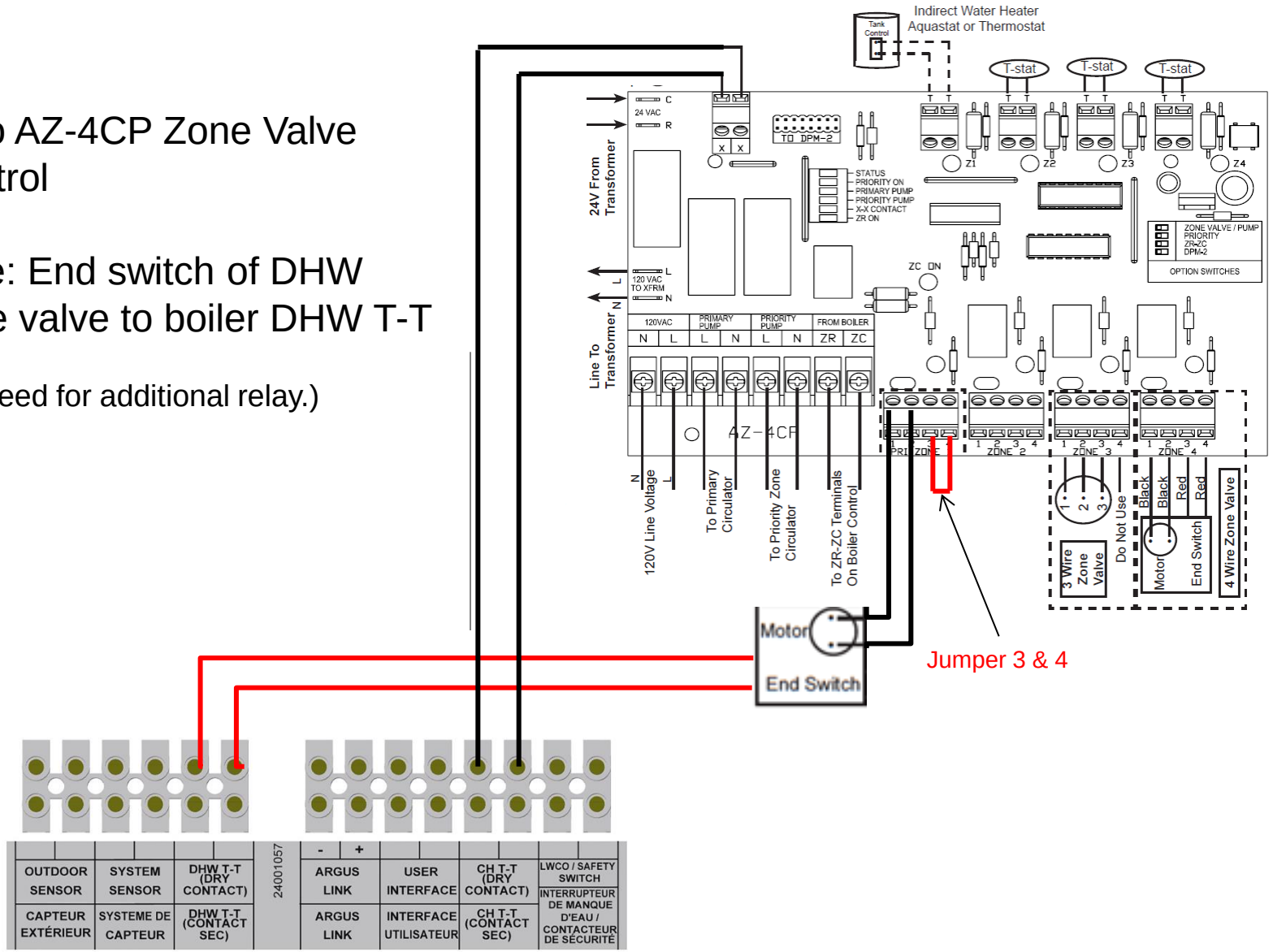


System Wiring
Zone Valves

Argo AZ-4CP Zone Valve Control

Note: End switch of DHW zone valve to boiler DHW T-T

(No need for additional relay.)



Wiring Multiple Boilers

- **Multiple Boiler System**

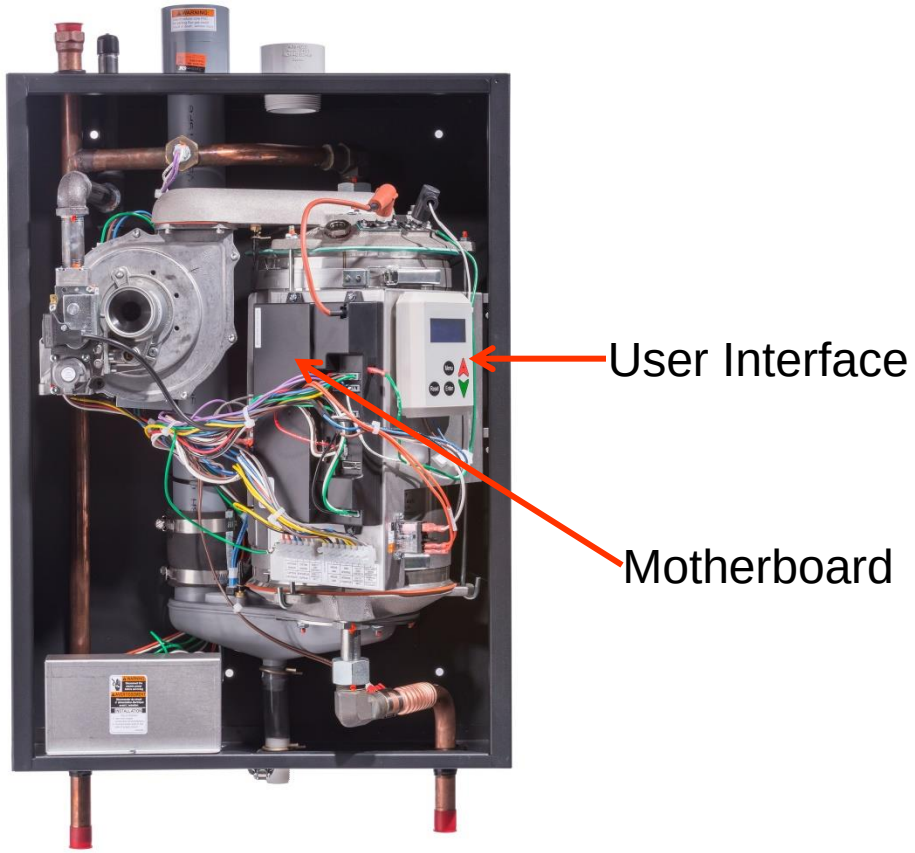
  ARGUS ™ control on first boiler will act as the master control. Requires a Multiple Boiler Install Kit p/n 550002186
- No need for expensive MBS control

- **Wiring**

  Daisy chain wiring from the master to additional boilers with low voltage wiring from the ARGUS link terminals (2-conductor low voltage wire, maintain polarity)

Control Package
ARGUS™ Vision

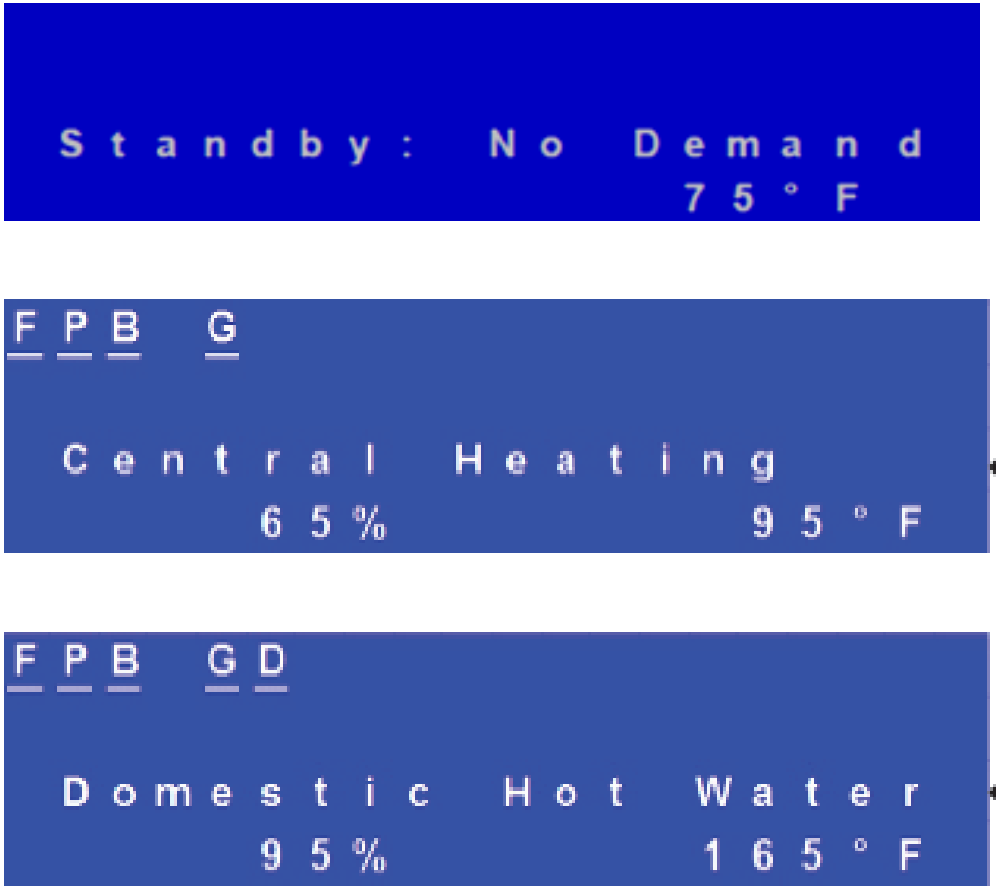
- **ARGUS™**
- **Display / mother board**
- **Fuse protected**



Control Package
ARGUS™ Vision

- Key Features:
  - User Interface with full text readout of error codes + diagnostics.
  - Integrated Multiple boiler control w/ simplified physical connection.

Control Display



Boiler operates in standby mode until demand for Central Heat (CH) or Domestic Hot Water (DHW) is detected.

Control Display

Boiler Status Indicator

F = Flame Detected

P = Boiler Pump On

B = Combustion Air Blower

S = Spark Ignition On

G = Gas Valve Open

D = DHW Pump On

Service Reminder Indicator

Boiler in Standby Mode

Boiler Supply Water

Temperature Indicator

Control Program

ARGUS™ Control

Key	Description
RESET	Reset Control / System
MENU	Enter / Exit user menu
ENTER	Select Menu item Confirm new parameter value
▲ PLUS	Scroll up to next menu item Go to next screen Increase value
▼ MINUS	Scroll down to next menu item Go to previous screen Decrease value

EASY TO PROGRAM
EASY TO UNDERSTAND

TWO MENU'S: MAIN MENU & INSTALLERS MENU

Menu Navigation

Main Menu

- **Boiler Status**
- **Settings**

Key	Description
RESET	Reset Control / System
MENU	Enter / Exit user menu
ENTER	Select Menu item Confirm new parameter value
▲ PLUS	Scroll up to next menu item Go to next screen Increase value
▼ MINUS	Scroll down to next menu item Go to previous screen Decrease value

Boiler Status

- **Supply Temperature Setpoint**
- **Supply Temperature**
- **Return Temperature**
- **DHW Status**
- **System (Sensor) N.C.** (Not Connected)
- **Flue Temperature**
- **Outside Air Temperature**
- **Boiler Pump**
- **CH/System Pump**
- **DHW Pump**

Menu Navigation

Main Menu

- **Boiler Status**
- **Settings** →

No Outdoor Sensor

Settings

- **CH Setpoint**
- **DHW Setpoint**
- **Change Units ºF/ºC**

OR

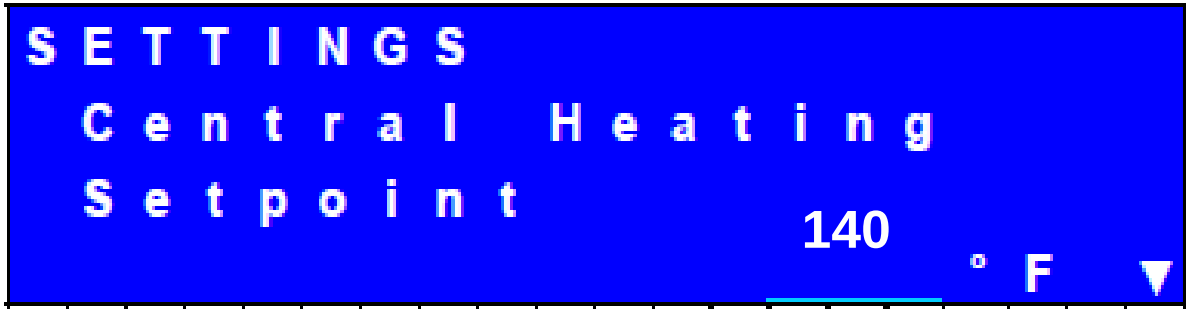
Outdoor Sensor

Settings

- **OD Reset (Not Adjustable)**
- **DHW Setpoint**
- **Change Units ºF/ºC**

Key	Description
RESET	Reset Control / System
MENU	Enter / Exit user menu
ENTER	Select Menu item Confirm new parameter value
▲ PLUS	Scroll up to next menu item Go to next screen Increase value
▼ MINUS	Scroll down to next menu item Go to previous screen Decrease value

Sample Screen Display



Menu Navigation

(Menu & Enter Buttons – 4 seconds)

Installer Menu

- Boiler Status
- Boiler Config
- CH Settings
- DHW Settings
- Cascade Settings
- System Test

Key	Description
RESET	Reset Control / System
MENU	Enter / Exit user menu
ENTER	Select Menu item Confirm new parameter value
▲ PLUS	Scroll up to next menu item Go to next screen Increase value
▼ MINUS	Scroll down to next menu item Go to previous screen Decrease value

Boiler Status

- Fan Speed – Actual, Low, IGN, High
- Flame
  - Signal
  - Failures
- Ignition Attempts
  - Successful
  - Failed
- Boiler Run Time
  - CH – hours
  - DHW – hours
- Blocking Errors (non-volatile memory for 16)
- Locking Errors (non-volatile memory for 16)

Menu Navigation

(Menu & Enter Buttons – 4 seconds)

Installer Menu

- **Boiler Status**
- **Boiler Config**
- **CH Settings**
- **DHW Settings**
- **Cascade Settings**
- **System Test**

Boiler Config

- **Address Selection**
- **LWCO – enable/disable**
- **Pump Mode**
  - **CH or Ch & DHW - 0**
  - **System Pump - 4**
- **Service Reminder**
  - **On/Off**
  - **Duration**

Key	Description
RESET	Reset Control / System
MENU	Enter / Exit user menu
ENTER	Select Menu item Confirm new parameter value
▲ PLUS	Scroll up to next menu item Go to next screen Increase value
▼ MINUS	Scroll down to next menu item Go to previous screen Decrease value

Menu Navigation

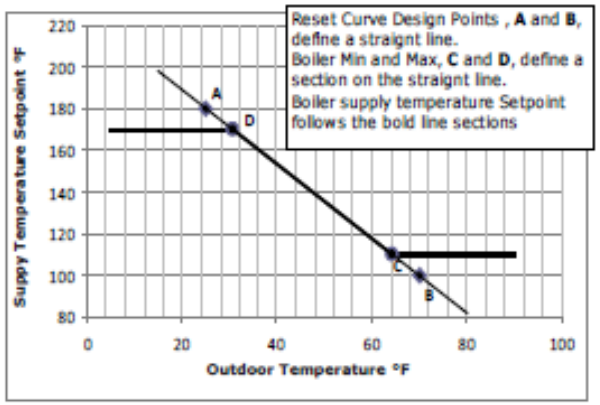
(Menu & Enter Buttons – 4 seconds)

Installer Menu

- **Boiler Status**
- **Boiler Config**
- **CH Settings**
- **DHW Settings**
- **Cascade Settings**
- **System Test**

Key	Description
RESET	Reset Control / System
MENU	Enter / Exit user menu
ENTER	Select Menu item Confirm new parameter value
▲ PLUS	Scroll up to next menu item Go to next screen Increase value
▼ MINUS	Scroll down to next menu item Go to previous screen Decrease value

Figure A-2 Outdoor Reset Curve
Calculated supply temperature follows thick black line in graph below based on outdoor temperature.



CH Settings

CH Mode

- **0-** **CH with Tstat**
- **1-** **CH: Tstat & Outdoor Sensor**
- **2-** **CH: No Tstat, Full setback by OAS**
- **3-** **CH: Permanent Demand**

Warm Weather Shutdown (70) *

Reset Curve Design – High end (180 @ 25)* (A)

Reset Curve Design – Low end (100 @ 70)* (B)

Reset Curve Min/Max Temperatures (180/70)* (C-D)

Boost Function

Max Power

***Defaults**

Menu Navigation

(Menu & Enter Buttons – 4 seconds)

Installer Menu

- **Boiler Status**
- **Boiler Config**
- **CH Settings**
- **DHW Settings**
- **Cascade Settings**
- **System Test**

DHW Settings

- **DHW Mode**
- **DHW Priority (Default – 30 min)**

Key	Description
RESET	Reset Control / System
MENU	Enter / Exit user menu
ENTER	Select Menu item Confirm new parameter value
▲ PLUS	Scroll up to next menu item Go to next screen Increase value
▼ MINUS	Scroll down to next menu item Go to previous screen Decrease value

Menu Navigation

(Menu & Enter Buttons – 4 seconds)

Installer Menu

- Boiler Status
- Boiler Config
- CH Settings
- DHW Settings
- Cascade Settings
- System Test

Key	Description
RESET	Reset Control / System
MENU	Enter / Exit user menu
ENTER	Select Menu item Confirm new parameter value
▲ PLUS	Scroll up to next menu item Go to next screen Increase value
▼ MINUS	Scroll down to next menu item Go to previous screen Decrease value

Cascade Settings

- Emergency Setpoint
- Start Delay Time
- Stop Delay Time
- Start Boiler Differential
- Stop Boiler Differential
- Calculated Setpoint: Max Offset Up
- Calculated Setpoint: Max Offset Down
- Next Boiler Start Rate
- Next Boiler Stop Rate
- Rotation Interval
- Boilers for DHW
- Start Modulation Delay Factor
- System Test – Post Pump Time

Menu Navigation

(Menu & Enter Buttons – 4 seconds)

Installer Menu

- Boiler Status
- Boiler Config
- CH Settings
- DHW Settings
- Cascade Settings
- System Test

System Test Settings

- System test power: (Low, IGN, High)
- Boiler Pump (On / Off)
- CH Pump (On / Off)
- DHW Pump (On / Off)

Key	Description
RESET	Reset Control / System
MENU	Enter / Exit user menu
ENTER	Select Menu item Confirm new parameter value
▲ PLUS	Scroll up to next menu item Go to next screen Increase value
▼ MINUS	Scroll down to next menu item Go to previous screen Decrease value

Error Code Troubleshooting

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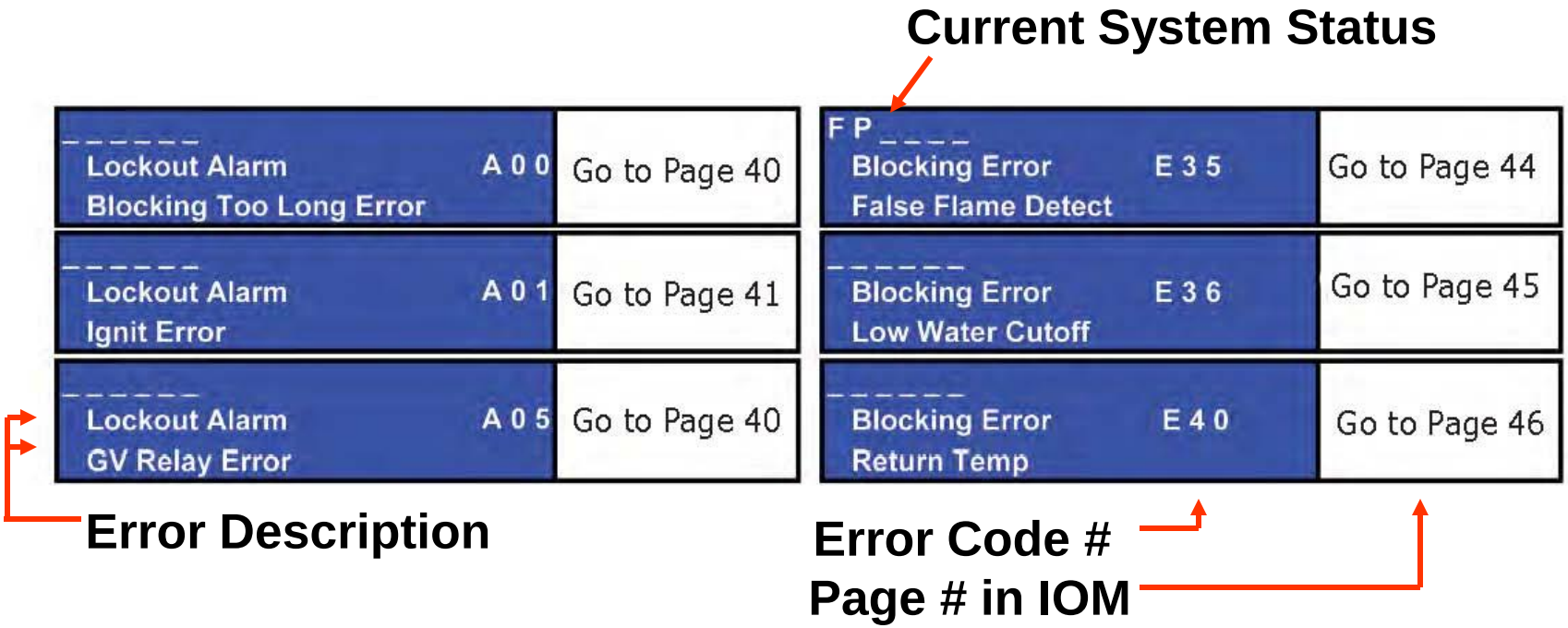
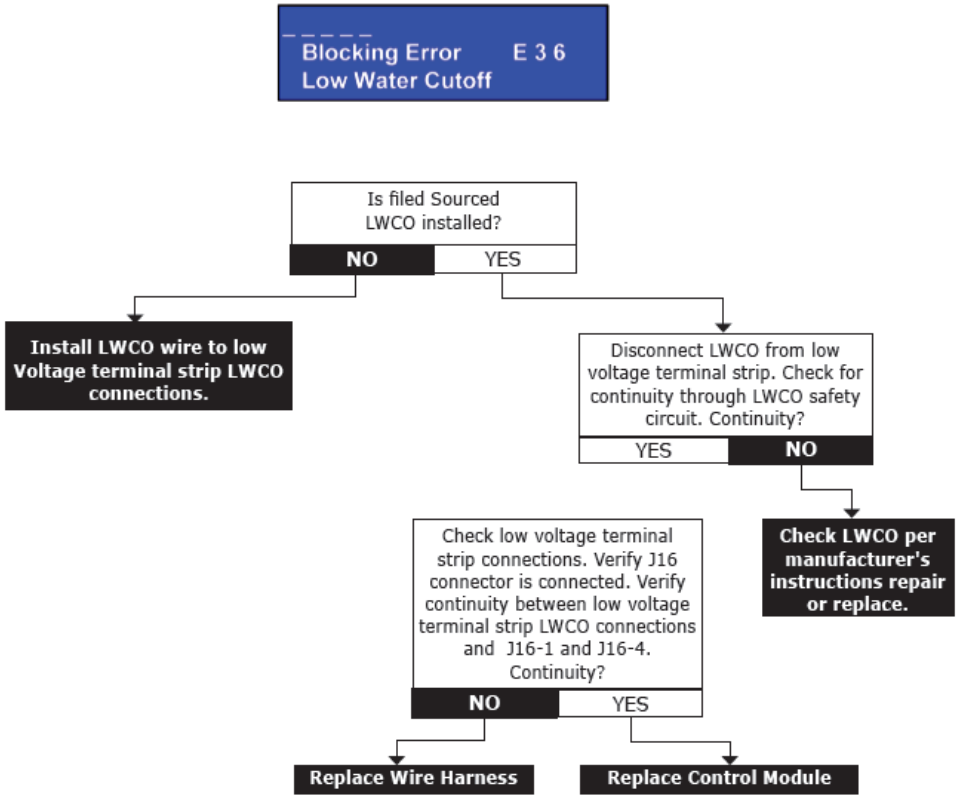
Error Code Troubleshooting



Error Code Troubleshooting



- Flow chart design
- Error code listed in blue box
- Easy to follow and understand
- Step by step procedure

Combustion Requirements

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Combustion

• Combustion and proper installation set up required for all high efficiency models

• **<u>Combustion Analyzer</u> -** Properly check CO^2 level of exhaust

• **<u>Gas Meter</u> –** U-tube manometer or gauge set to check inlet gas pressure

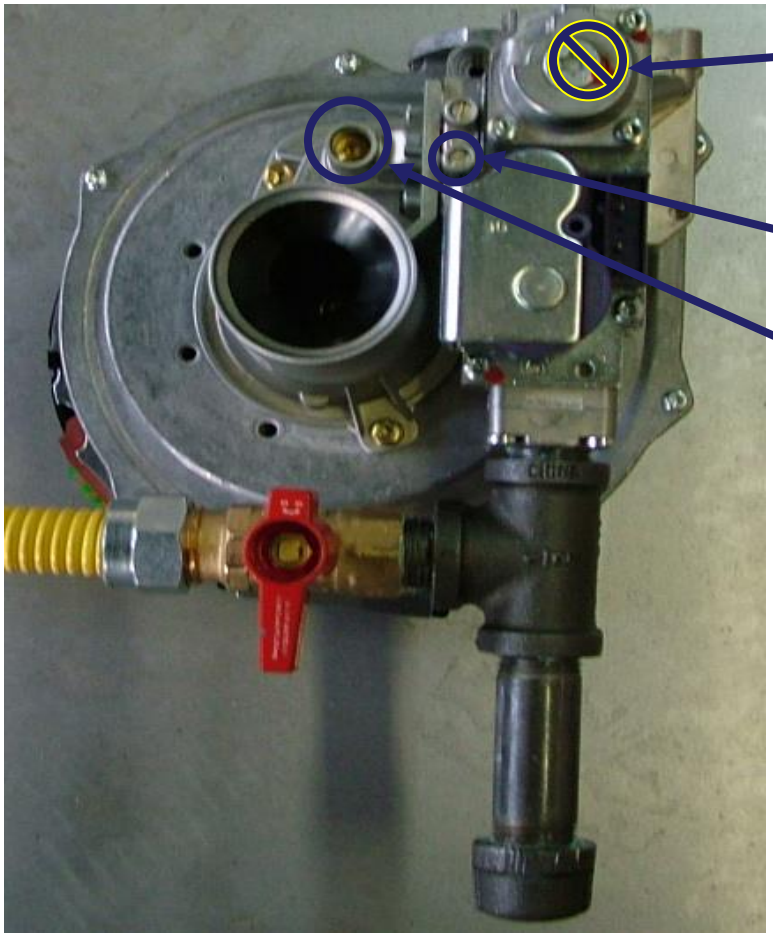
•To change gas inlet pressure adjust at system regulator **<u>NOT</u>** THE GAS VALVE REGULATOR

•**Sampling port located on Flue Collector**

<u>No need to drill sample port in flue pipe!!</u>

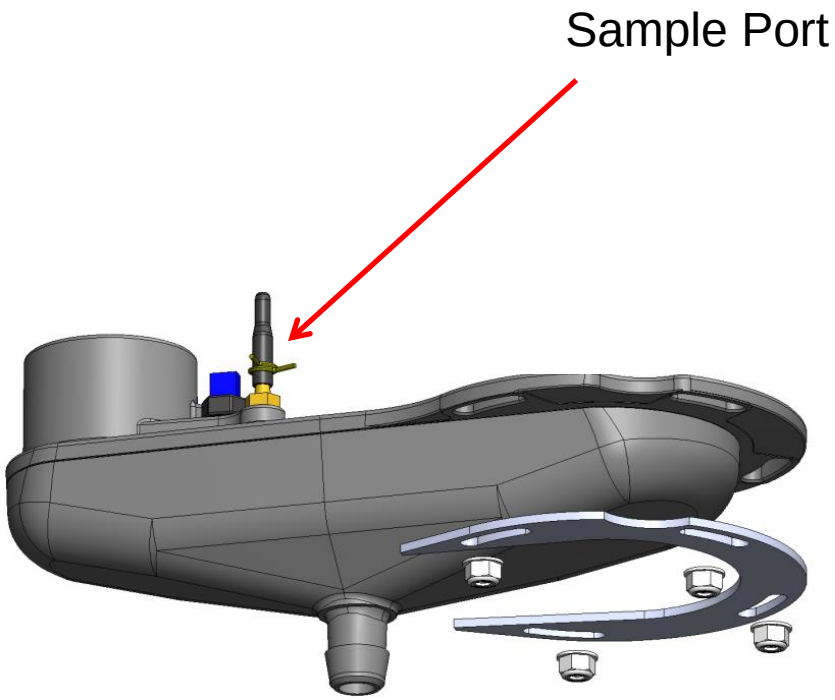
Combustion
Gas Valve on 50-200 Models

Gas	CO2		CO
	Min	Max	
Natural Gas	9.0	9.5	<200ppm
Propane	10.0	11.0	<200ppm



- Do not adjust the gas regulator on the gas valve
- Gas inlet pressure tap
  - Natural: 3” – 13.5” w.c.
  - LP: 5” – 13.5” w.c.
- Throttle screw – to adjust the air / gas mixture on the venturi assembly
- All gas pressure changes are done at the utility regulator external of the equipment

Combustion: Built-in Sample Port



Maintenance/Cleaning

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Maintenance/Cleaning

- Turn off gas and electrical
- Remove blower / burner assembly and examine flue passageways
- Remove igniter and sensor off top of heat exchanger
- Burner may be cleaned by inserting an air hose into blower opening of casting and blowing air thru heat exchanger side

Maintenance/Cleaning

- Clean heat exchanger with nylon brush if required
- Any remaining sediment can be removed with a shop vacuum snorkel
- Re-install refractory and burner / gas valve
- Visually inspect condensate trap – re-fill trap (If required)

Critical Installation Points

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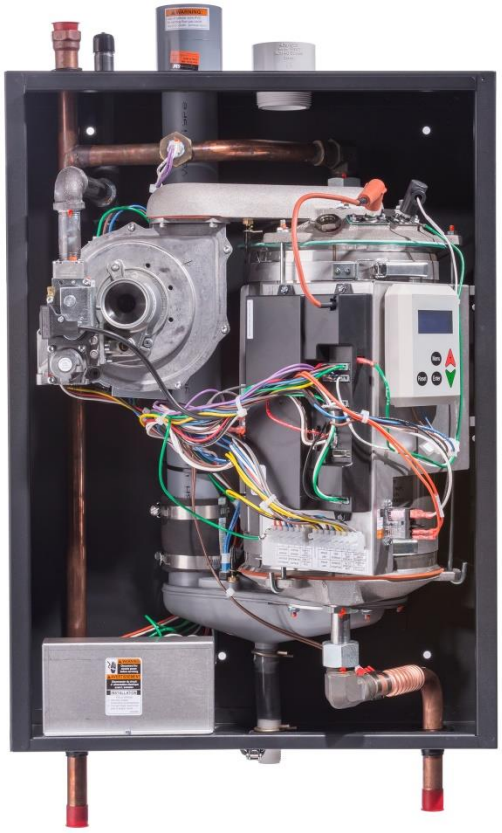
Getting The Air Out



- Air in the system affects Low Mass Boilers differently than cast iron boilers
- Heat Exchanger Water Volume is much lower
- Air removal methods different
- Water Flow rates are important
- How does Antifreeze affect the System?
- Clean Water

Getting The Air Out

- Cast Iron Boilers are more tolerant of system air issues.
- Gravity works with us

Getting The Air Out

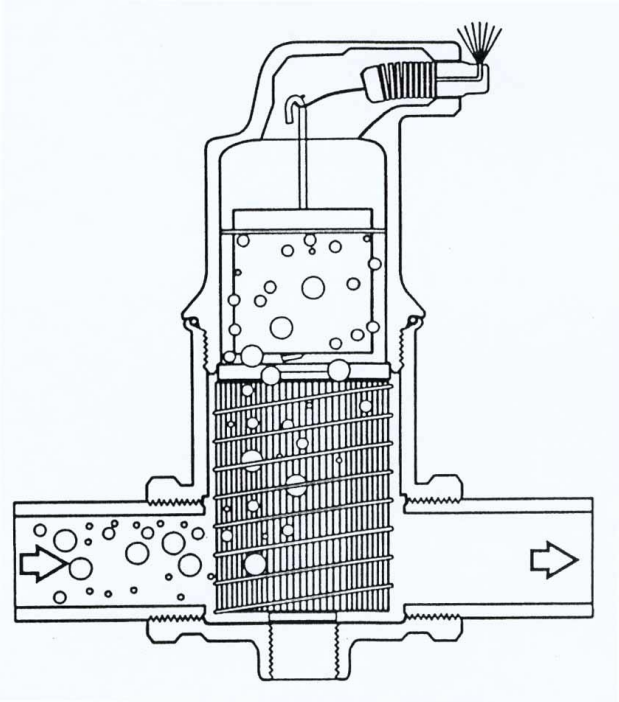
Cast Iron Air Scoop

- Based on venturi principal; accelerated flow yields reduced pressure, causing dissolved gases to separate
- Slow Process – Less Effective
- Proper location Critical for air scoop to remove air

Getting The Air Out

Micro-Bubble Separator

- Based on the principal that reduced velocity plus multiple impact sites allow air bubbles to separate easily
- Faster process, much more effective
- Location Not Critical for Separator to function



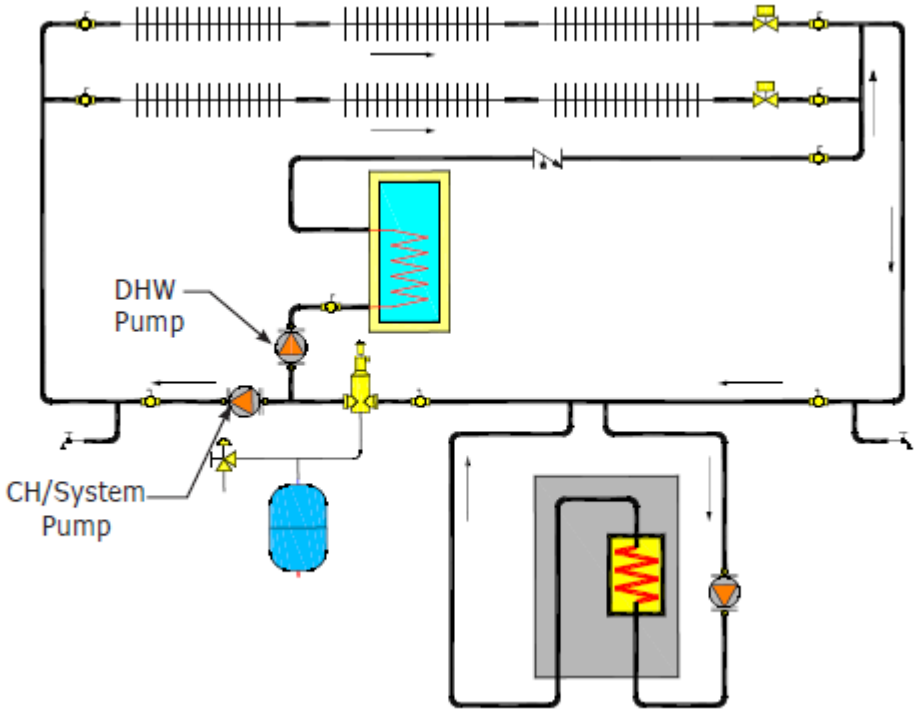
Getting The Air Out

How to properly purge a system

- When filling the boiler you must relieve the air in the boiler by opening the pressure relief valve
- Before firing the boiler you should turn on the Boiler Pump and the CH pump by the System Test Menu and let the water circulate while listening for air.
- If air is present repeat system and boiler purging.

Water Flow

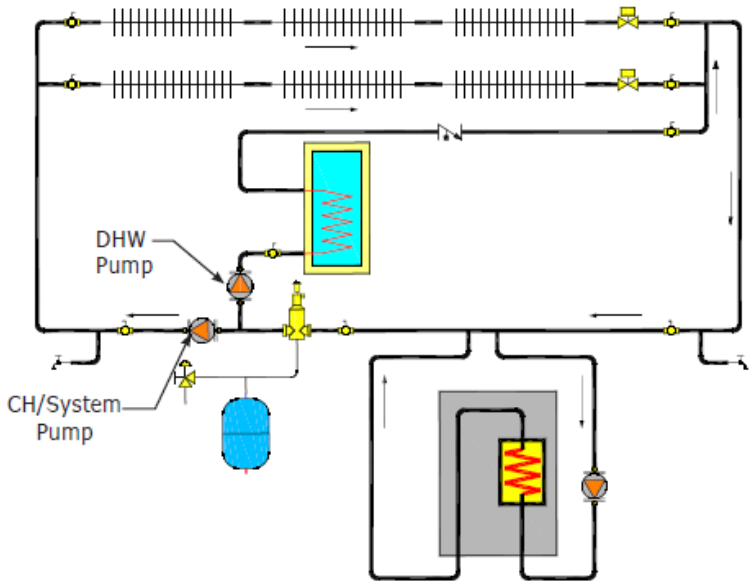
- Low System Flow Rates will cause Boiler to heat quickly
- Cycles frequently on High Limit-Less Efficient
- Harder to get air out of boiler



Water Source

- Treated (Softened) water can reduce circulator capacity by 10-15% !!

- If reduced flow rate is causing noise issues a higher head pump may resolve the problem.



Flush & Clean

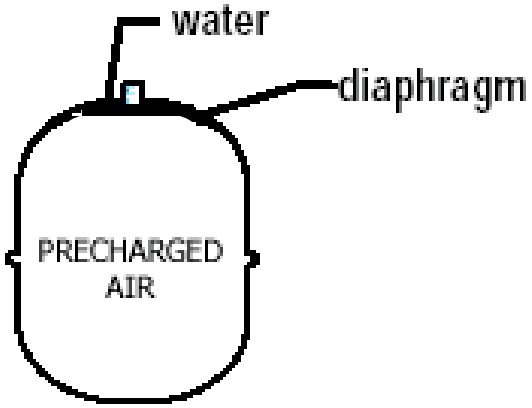
- Water quality can affect system performance
- Dirty brackish water can lower boiling point
- Also makes air removal more difficult
- Using a strainer in the return line helps greatly

Increase the Boiling Point

- If existing system is contributing to air removal difficulties raise the boiling point.
- Increase system pressure to 20 psi.
- Remember to pump Expansion tank!
- If higher pressure needed change Boiler relief to 50 psi and increase system pressure further.
- Remember to pump Expansion tank!

Adjust Expansion Tank Pressure

Normal Tank Operation



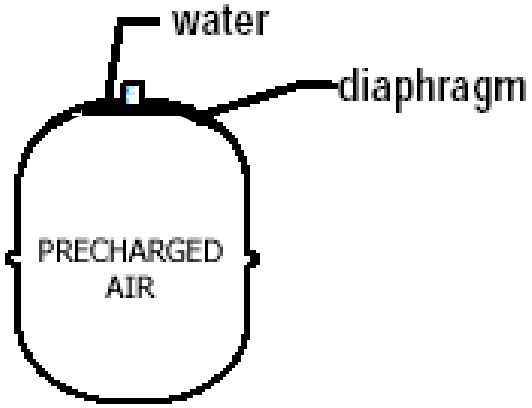
System Off

System Pressure=12

Tank Pressure=12

Adjust Expansion Tank Pressure

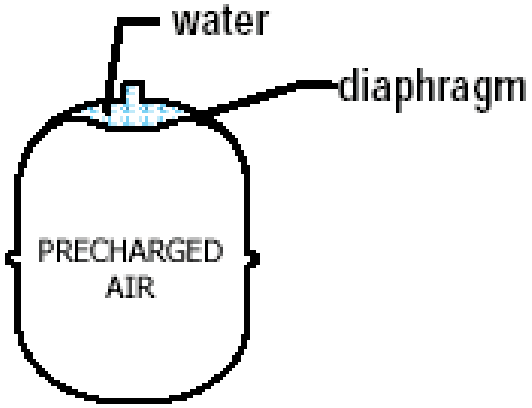
Normal Tank Operation



System Off

System Pressure=12

Tank Pressure=12



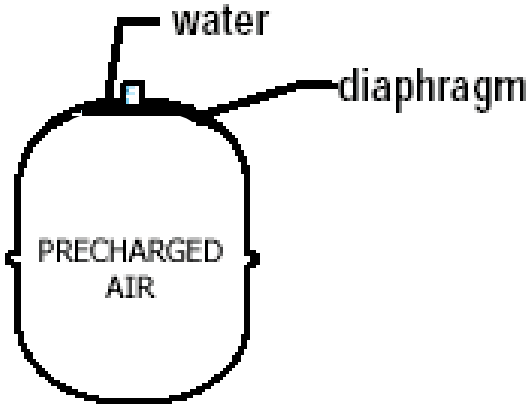
System **On**

System Pressure=14

Tank Pressure=14

Adjust Expansion Tank Pressure

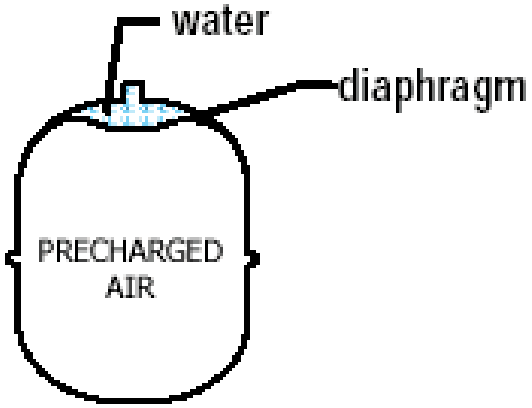
Normal Tank Operation



System Off

System Pressure=12

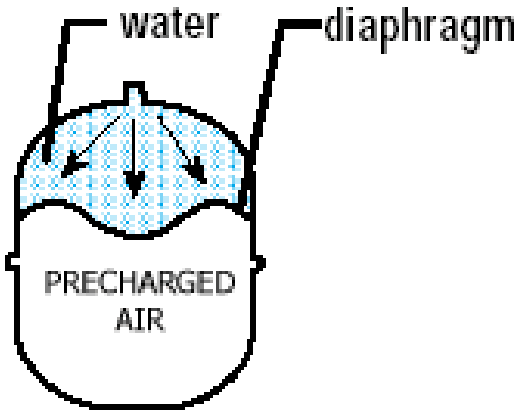
Tank Pressure=12



System On

System Pressure=14

Tank Pressure=14



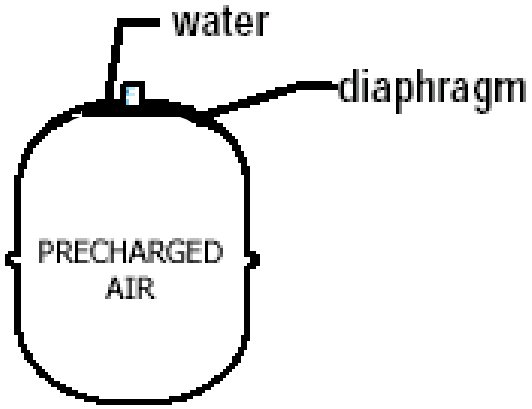
System On

System Pressure=18

Tank Pressure=18

Adjust Expansion Tank Pressure

What happens if I don't Pump Up my Tank?



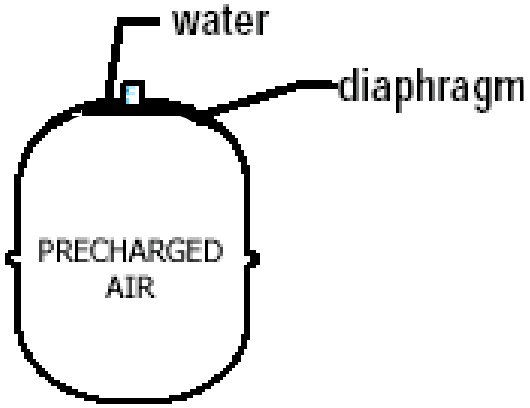
System Off

System Pressure=12

Tank Pressure=12

Adjust Expansion Tank Pressure

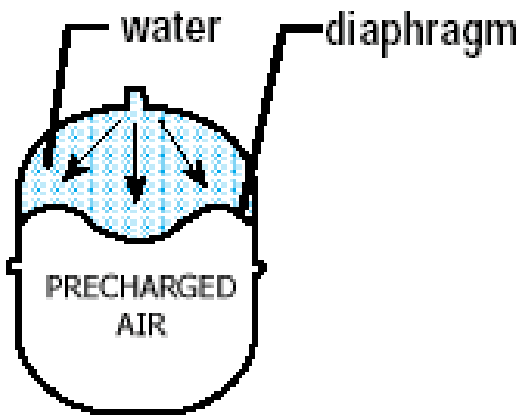
What happens if I don't Pump Up my Tank?



System Off

System Pressure=12

Tank Pressure=12



System Off

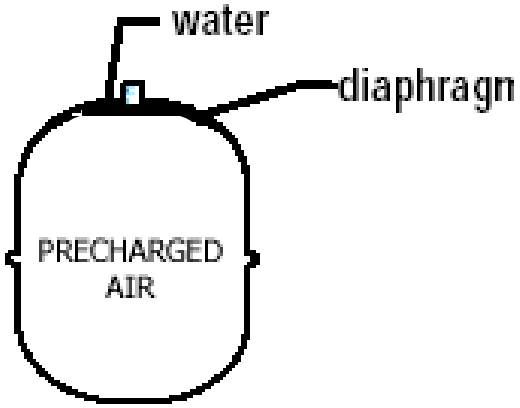
System Pressure Increased to 20

(Tank Fills until air is Compressed to match)

Tank Pressure=20

Adjust Expansion Tank Pressure

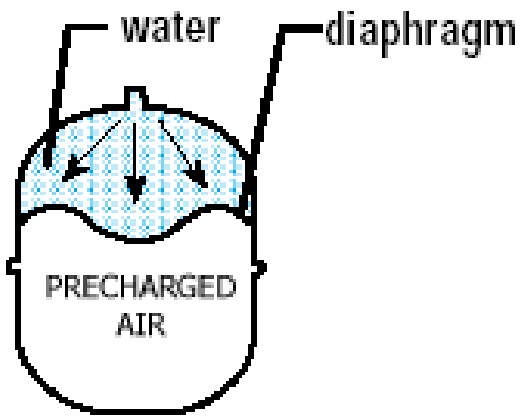
What happens if I don't Pump Up my Tank?



System Off

System Pressure=12

Tank Pressure=12

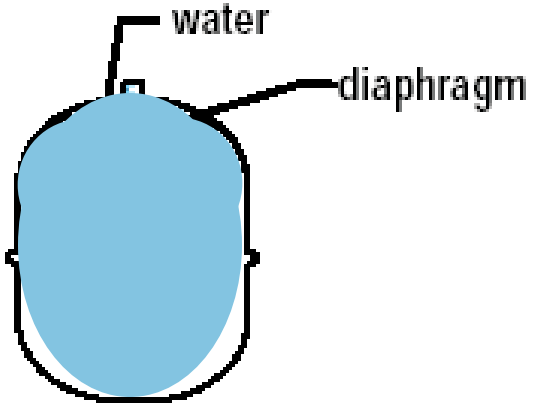


System Off

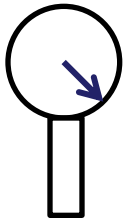
System Pressure=20

(Tank Fills until air is Compressed to match)

Tank Pressure=20

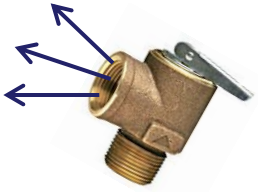


System **On**- Pressure Increases due to Expansion

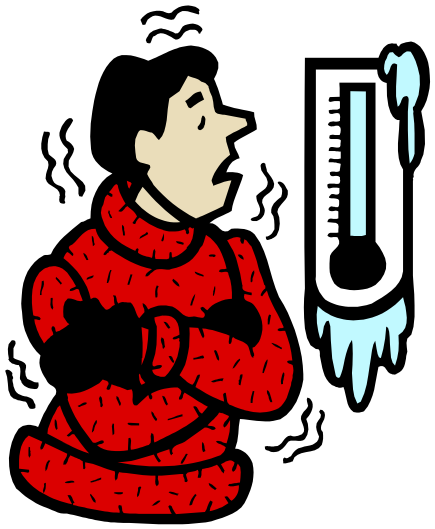


System Pressure=

Tank =FULL!



Antifreeze



- Antifreeze is more viscous. Pump capacity reduced.
- Thermal transfer capability reduced 17% at 50-50 strength.
- Only use what's necessary.
- Use tester to determine proper level.
- Don't mix & match
- Future Service / Acidic

Utica SSV Warranty

- 15 Year ECR Limited Warranty
- One Year all other parts
- First Year Leak Warranty

The SSV heat exchanger is simply the finest ever designed and as such we provide the strongest factory warranty available. An additional first year leak-free heat exchanger coverage provides the original purchaser the right to select a new replacement SSV boiler or heat exchanger at their choice, and receive a labor allowance of $500.00 for the servicing contractor.

Questions

Most Efficient 2014
ENERGY STAR
www.energystar.gov

www.uticaboilers.com

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Welcome

The Heat is ON!

ECR International takes pride in it's ability to deliver a complete package of heating and cooling products. An integral part of the ECR family is Utica Boilers, who has been a trusted supplier of gas and oil-fired boilers for residential and commercial buildings since 1928. High efficiencies, easy maintenance and installation features, and limited lifetime warranties make Utica Boilers the preferred choice of contractors and homeowners alike.

The Utica line of products are designed, tested and assembled to ensure that our customers get the very best in home heating comfort and value. The complete line of gas and oil-fired products has earned a reputation for exceptional quality, performance and dependability. Highest quality components, exceptional quality and testing standards are supplemented by a computerized process that tracks components to finished goods. ECR International's highly trained and skilled workforce insures that Utica's products and service are among the best in the industry.

For more information on Local Energy Credits for High Efficiency HVAC equipment go to www.energystar.gov. Additional State Tax Credits and local utility incentives may be available. Please consult your tax professional and local utility company regarding availability and eligibility requirements.

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