

**BAXI**

**BAXI LUNA  
HT COMMERCIAL**

**EN**

**COMMERCIAL GUIDE**

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## **THIS DOCUMENT IS INTENDED AS AN EDUCATIONAL TOOL ONLY**

This guide and the instructions and suggestions within are intended solely as an educational tool assisting completely qualified Gas Appliance Mechanics who have successfully completed the Baxi Installation Program. Use of the information herein for the purposes of onsite appliance correction by untrained personnel may cause extremely dangerous conditions, and may void the manufacturer's warranty. Baxi N.A. assumes absolutely no liability in the execution of the training suggestions in this document. Should you experience problems or complications beyond your realm of training, please contact Baxi N.A. for further instructions.

## 1. BAXI Luna Commercial Boiler Specifications



Commercial Models Technical Data			Luna HT 1.45	Luna HT 1.65	Luna HT 1.100
Rated heat input	BTU/hr		167,262	241,600	379,127
Reduced heat input	BTU/hr		55,618	73,361	112,980
Rated heat output	BTU/hr		153,546	221,789	348,039
Reduced heat output	BTU/hr		52,058	69,326	106,766
Sealed combustion chamber			yes	yes	yes
Ignition			electronic	electronic	electronic
Maximum pressure on heating circuit	psi		30	30	30
Regulation of heating circuit water temperature	high tem	°F	86/180	86/180	86/180
	low tem	°F	86/113	86/113	86/113
Dimensions:	Height	in	37.40	37.40	37.40
	Width	in	23.62	23.62	23.62
	Depth	in	18.35	18.35	25.62
Net weight	lbs		141	158	215
Gas type			NG/LP	NG/LP	NG/LP
Hydraulic separator, secondary pump and expansion tank must be sized for the application. Boiler control with sequencing and outdoor reset is also required.					

### Features

#### Hydraulic System

- ◆ Nickel-chrome stainless steel AISI 316L heat exchanger
- ◆ Nickel-chrome stainless steel AISI 316L premix burner
- ◆ System to prevent pump sticking

#### Thermoregulation System

- ◆ Remote controller and climatic regulator (supplied as optional)
- ◆ Built-in weather compensation function (outdoor sensor supplied as optional)
- ◆ Mixed systems (low and high temperature) installation optional
- ◆ Cascade system installation option
- ◆ Sensor for indirect tank option

#### Control System

- ◆ Central heating and indirect cylinder
- ◆ Hydraulic pressure switch to prevent boiler operating in the event of low water
- ◆ Pressure gauge
- ◆ Total anti-frost protection
- ◆ Full range of accessories for single and cascade installations

## 2. Multi-Boiler Application Sizing Recommendations

Below are some sizing recommendations to help increase overall system efficiency when sizing large applications.

#### *Each Boiler Sized for 100% of the Load*

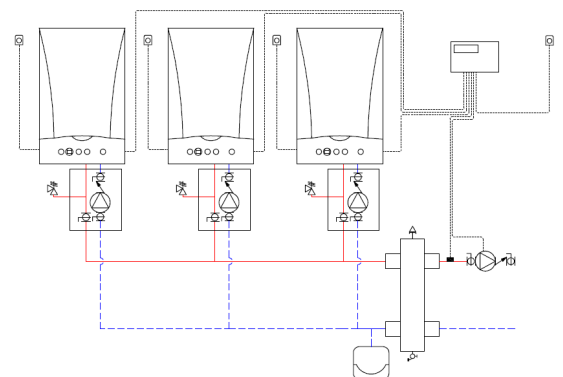
- System turn down is the same as the boiler turn down

#### *Each Boiler Sized for 75% of the Load*

- System turn down is 1.5 times the boilers turn down

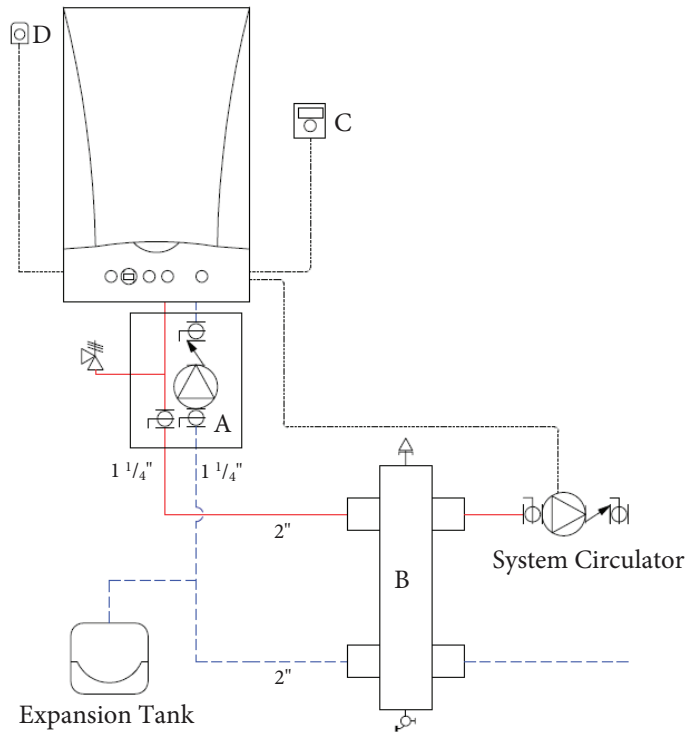
#### *Each Boiler Sized for 50% of the Load*

- System turn down is 2 times the boilers turn down



## 3. Single Boiler Installation

BAXI LUNA HT 1.450\*, 1.650 and 1.1000



Position	Part Number	Quantity	Description
A	72208001	1	<b>Commercial Boiler Connection Kit</b> 2x Shaped EPDM gasket 3x Ball valve 1.25" 1x Durlon Gasket 1/8"x2" 1x Union Nut 2" G 1x Weld adapter piece with 3/4" nipple 2" x 1.25" 4x Bolt, screw and washer 1x Grundfos Pump
B	725625	1	Hydraulic Separator 120/80 2"NPT 35GPM Max **
C	714072611	1	Remote controller and climatic regulator (QAA73)
D	714072811	1	HT outdoor sensor (QAC34)
--	714076810	Optional	Indirect tank sensor
--	72208002	Optional	Domestic hot water connection 1" NPT access for DHW

**Additional Components Required (obtain from your Distributor)**

1 x Pressure Relief Valve (3/4" 30psi)

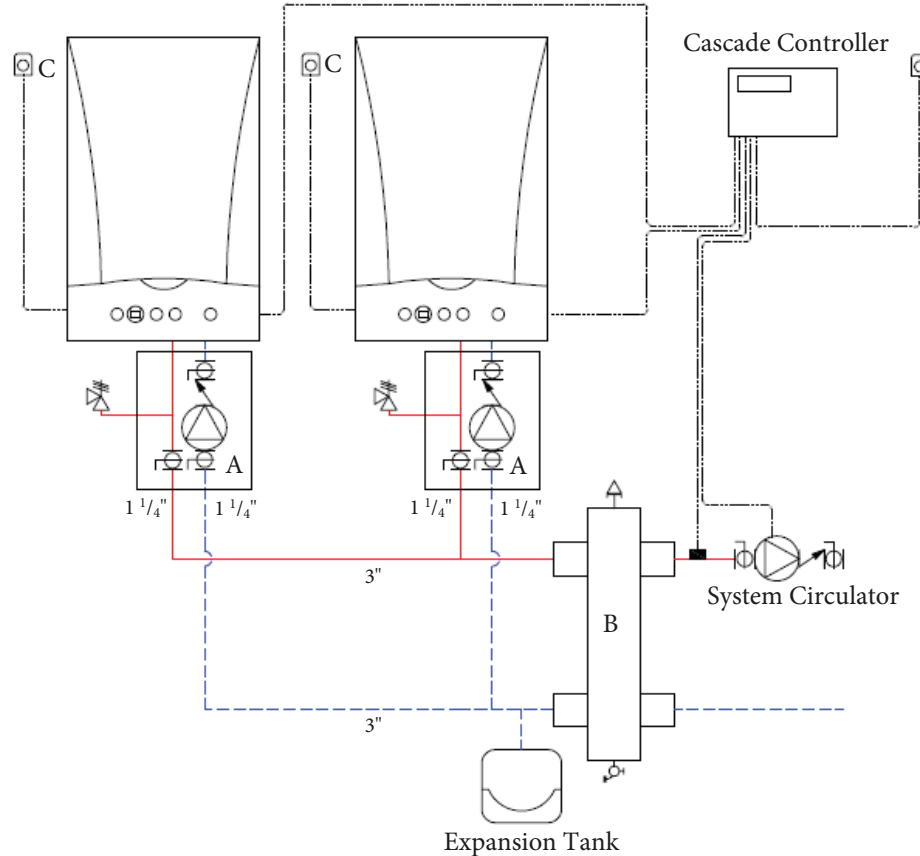
1 x Expansion Tank (sized based on total volume of the system)

\* Single Boiler Installations with the BAXI Luna HT 1.450, we recommend using Hydraulic Separator 80/50. Connection size 1 1/4" NPT, part number 725582

\*\* The hydronic junction has been sized based on flow rate of the boiler system side. If the heating system side requires a higher flow then the maximum output of the hydronic junction increase the size of the separator.

## 4. Two Boiler Installation

BAXI LUNA HT 1.450\*, 1.650 and 1.1000



Position	Part Number	Quantity	Description
A	72208001	2	<b>Commercial Boiler Connection Kit</b> 2x Shaped EPDM gasket 3x Ball valve 1.25" 1x Durlon Gasket 1/8"x2" 1x Union Nut 2" G 1x Weld adapter piece with 3/4" nipple 2" x 1.25" 4x Bolt, screw and washer 1x Grundfos Pump
B	726250	1	Hydraulic Separator 200/120 3"NPT 80GPM Max**
--	533200	Optional	Prefab. Insulation 200/120
--	714072611	1	Remote controller and climatic regulator (QAA73)
C	714072811	2	HT outdoor sensor (QAC34)
--	714076810	Optional	Indirect tank sensor
--	72208002	Optional	Domestic hot water connection 1" NPT access for DHW

**Additional Components Required (obtain from your Distributor)**

1 x Cascade Controller`

2 x Pressure Relief Valve ((3/4" 30psi)

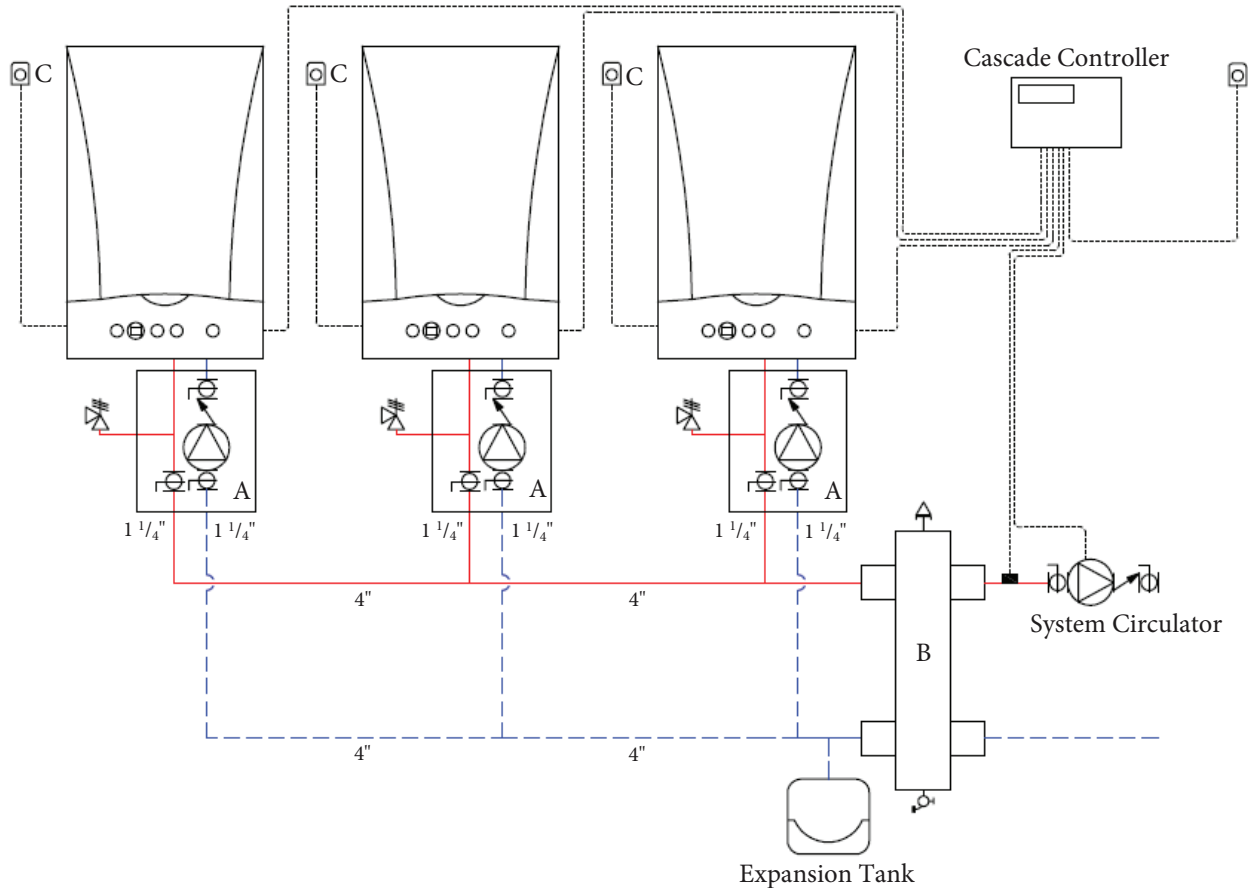
1 x Expansion Tank (sized based on total volume of the system)

\* Two Boiler Installations with the BAXI Luna HT 1.450, we recommend using Hydraulic Separator 120/80. Connection size 2" NPT, part number 725625

\*\* The hydronic junction has been sized based on flow rate of the boiler system side. If the heating system side requires a higher flow then the maximum output of the hydronic junction increase the size of the separator.

## 5. Three Boiler Installation

BAXI LUNA HT 1.450\*, 1.650 and 1.1000



Position	Part Number	Quantity	Description
			<b>Commercial Boiler Connection Kit</b>
A	72208001	3	2x Shaped EPDM gasket 3x Ball valve 1.25" 1x Durlon Gasket 1/8"x2" 1x Union Nut 2" G 1x Weld adapter piece with 3/4" nipple 2" x 1.25" 4x Bolt, screw and washer 1x Grundfos Pump
B	726250	1	Hydraulic Separator 250/150 4"NPT 118GPM Max **
--	533250	Optional	Prefab. Insulation 250/150
--	714072611	1	Remote controller and climatic regulator (QAA73)
C	714072811	3	HT outdoor sensor (QAC34)
--	714076810	Optional	Indirect tank sensor
--	72208002	Optional	Domestic hot water connection 1" NPT access for DHW

**Additional Components Required (obtain from your Distributor)**

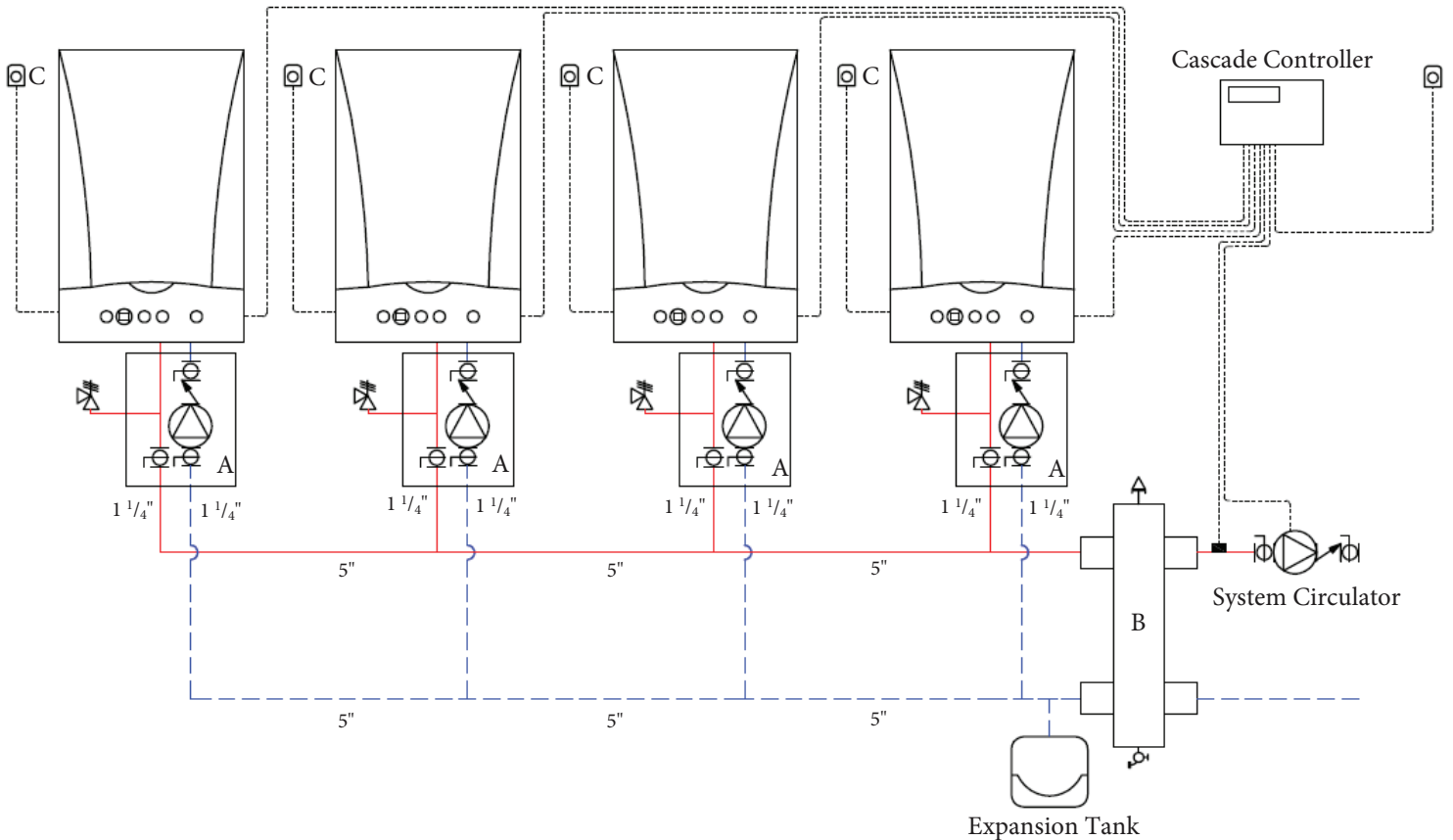
- 1 x Cascade Controller
- 3 x Pressure Relief Valve (3/4" 30psi)
- 1 x Expansion Tank (sized based on total volume of the system)

\* Three Boiler Installations with the BAXI Luna HT 1.450, we recommend using Hydraulic Separator 200/120. Connection size 3" NPT, part number 726250

\*\* The hydronic junction has been sized based on flow rate of the boiler system side. If the heating system side requires a higher flow then the maximum output of the hydronic junction increase the size of the separator.

## 6. Four Boiler Installation

BAXI LUNA HT 1.450\*, 1.650 and 1.1000



Position	Part Number	Quantity	Description
A	72208001	4	<b>Commercial Boiler Connection Kit</b> 2x shaped EPDM gasket 3x ball valve 1.25" 1x Durlon Gasket 1/8"x2" 1x Union Nut 2" G 1x Weld adapter piece with 3/4" nipple 2" x 1.25" 4x bolt, screw and washer 1x Grundfos Pump
B	726300	1	Hydraulic Separator 300/200 5"NPT 189GPM Max **
--	533300	Optional	Prefab. Insulation 300/200
--	714072611	1	Remote controller and climatic regulator (QAA73)
C	714072811	4	HT outdoor sensor (QAC34)
--	714076810	Optional	Indirect tank sensor
--	72208002	Optional	Domestic hot water connection 1" NPT access for DHW

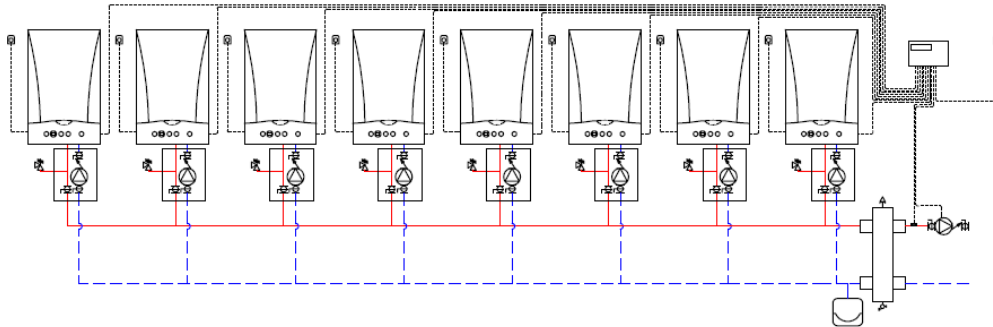
**Additional Components Required (obtain from your Distributor)**

- 1 x Cascade Controller
- 4 x Pressure Relief Valve (3/4" 30psi)
- 1 x Expansion Tank (sized based on total volume of the system)

\* Four Boiler Installations with the BAXI Luna HT 1.450, we recommend using Hydraulic Separator 200/120. Connection size 3" NPT, part number 726250

\*\* The hydronic junction has been sized based on flow rate of the boiler system side. If the heating system side requires a higher flow then the maximum output of the hydronic junction increase the size of the separator.

## 7. Multi-Boiler Installation



8 Boiler Installation

BAXI Luna boilers can be piped in a tandem order to provide a greater range of Btu's. It is recommended that you contact your local BAXI representative for information on large application sizing.

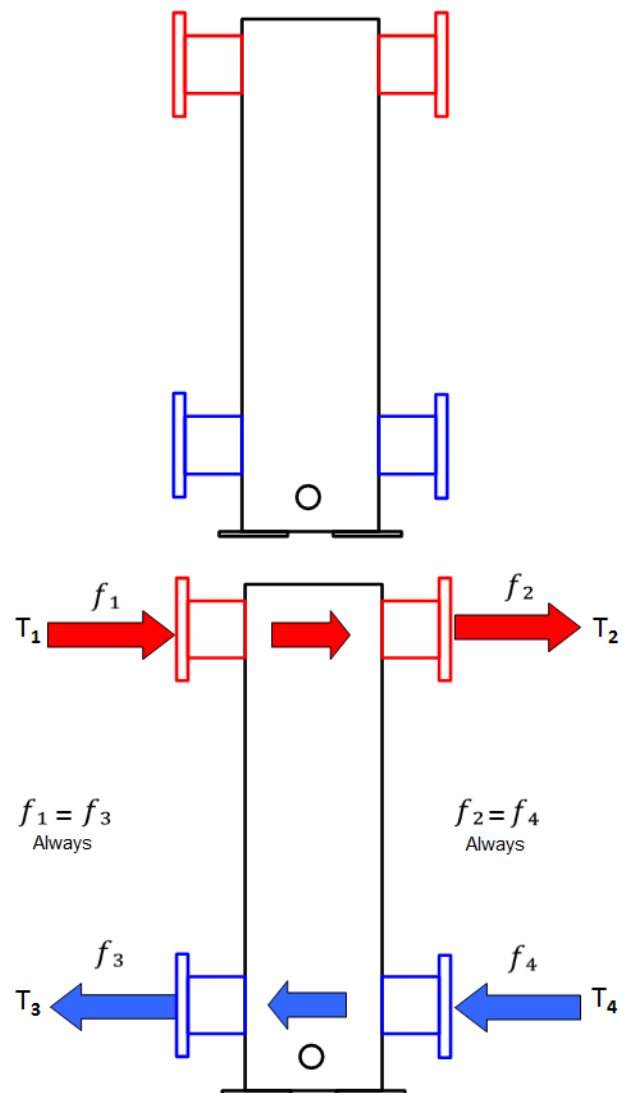
## 8. Hydronic Junction

A hydronic junction connects (hydraulically separates) the boiler system (primary loop) and heating loop (secondary loop). The cross section of the chamber of the hydronic junction is 2-3 times larger than the supply connection.

For installations equipped with a hydronic junction, every pump works conflict free and independently from other pumps that are working at the same time. Also the heat supply will adapt itself to the required heat load. Hydronic junctions are great at separating air from the fluid and trapping sediment due to the low velocity in the chamber.

### 8.1 Balanced System

This hydronic junction distribution of flow and temperature are equal between  $T_1 - T_2$  and  $T_4 - T_3$ . This case is an exception, not the norm.





## 8.2 Greater Primary Flow Rate

The flow on the primary side is greater than flow on the secondary side (i.e. when pumps shut down or zone valves close). Therefore a part of the flow returns to primary side with a higher temperature  $T_3$ . With higher temperature return water the boiler has to reduce its firing rate.

You can calculate the boiler return temperature  $T_3$  by using the formula below.

$$T_3 = \left[ \frac{(f_1 - f_2) T_1 + (f_4) T_4}{f_1} \right]$$

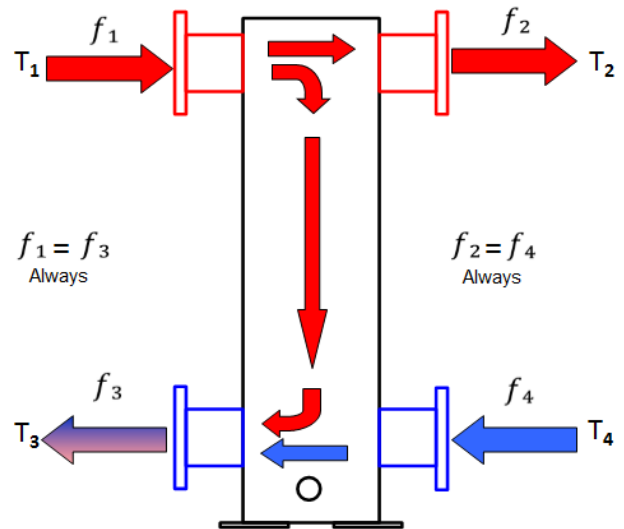
$T_3$  = Temperature of return water to boiler

$f_1$  = Flow rate entering from Primary side (gpm)

$f_2, f_4$  = Flow rate of the Secondary side (gpm)

$T_1$  = Temperature of fluid entering from Primary side

$T_4$  = Temperature of fluid returning from Secondary side



## 8.3 Greater Secondary Flow Rate

The flow on the primary side is smaller than flow on the secondary side (i.e. when the heat load is greater than the boiler output, zones opening or pumps turning on). Therefore a part of the fluid stream is diverted into the secondary side and directly lowers the temperature  $T_2$  and indirectly the temperature  $T_3$ . This gives the boiler a signal to either to increase the heating output or to switch on an additional boiler.

You can calculate the boiler return temperature  $T_3$  by using the formula below.

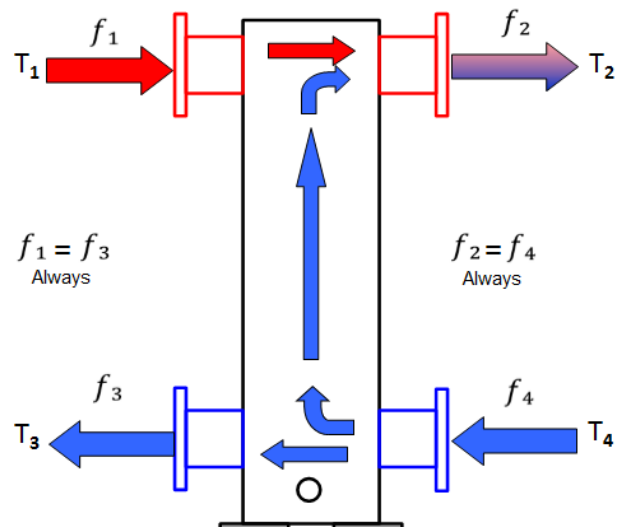
$$T_2 = \left[ \frac{(f_4 - f_1) T_4 + (f_1) T_1}{f_4} \right]$$

$f_4$  = Flow rate returning from Secondary side

$f_1$  = Flow rate entering from Primary side

$T_4$  = Temperature of fluid returning from Secondary side

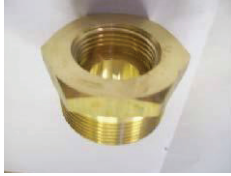
$T_1$  = Temperature of fluid entering from Primary side



# Commercial Heating Solutions

## 9. Commercial Connection Kit Instructions

### 9.1 Connecting to the BAXI Luna HT 1.450 and 1.650 (Only)



**Supply Connection**



**Return Connection**

In the Commercial Connection Kit you will find two brass fitting with 1" BSP female connection and 1 1/2" BSP male connection. The female side will connect to the supply and return of the boiler, while the male side connects to the header set. The HT 1.1000 will connect directly to the header set.

### 9.2 Connection to Brass fitting (1.45 /1.65) or HT 1.100



Put the nut over the end of the valve with a 1 1/4" gasket between valve and pipe connector



Put the brass fitting over the ball valve and the gasket between the pump and the brass fitting. Ensure the pump is installed on the return with the check valve facing to the boiler.



Connection 1 1/4" NPT to piping

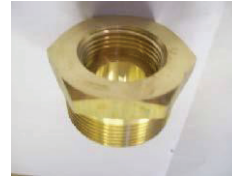


## 10. Domestic Connection Kit Instructions

### 10.1 Connecting to the BAXI Luna HT 1.450 and 1.650 (Only)



**Supply Connection**



**Return Connection**

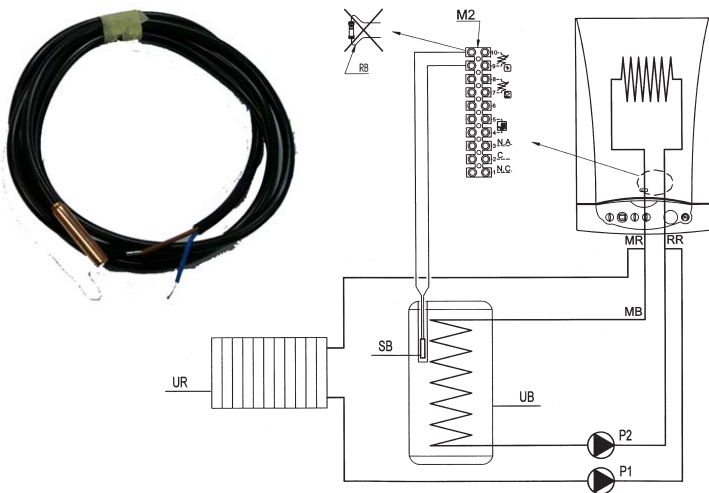
In the Commercial Connection Kit you will find two brass fitting with 1" BSP female connection and 1 1/2" BSP male connection. The female side will connect to the supply and return of the boiler, while the male side connects to the header set. The HT 1.1000 will connect directly to the header set.

### 10.2 Connection to brass fitting (1.45 /1.65) or HT 1.100



1 1/2" union to brass fitting and 1 1/2" female thread to the Commercial Connection Kit. Refer to section Commercial Connection Kit Instructions

1" male thread for supply and return to the indirect domestic storage tank. Ensure the pump is installed on the return with the check valve toward to boiler.



Attach the indirect tank sensor to HT Boiler on the M2 bus terminal position 9 + 10