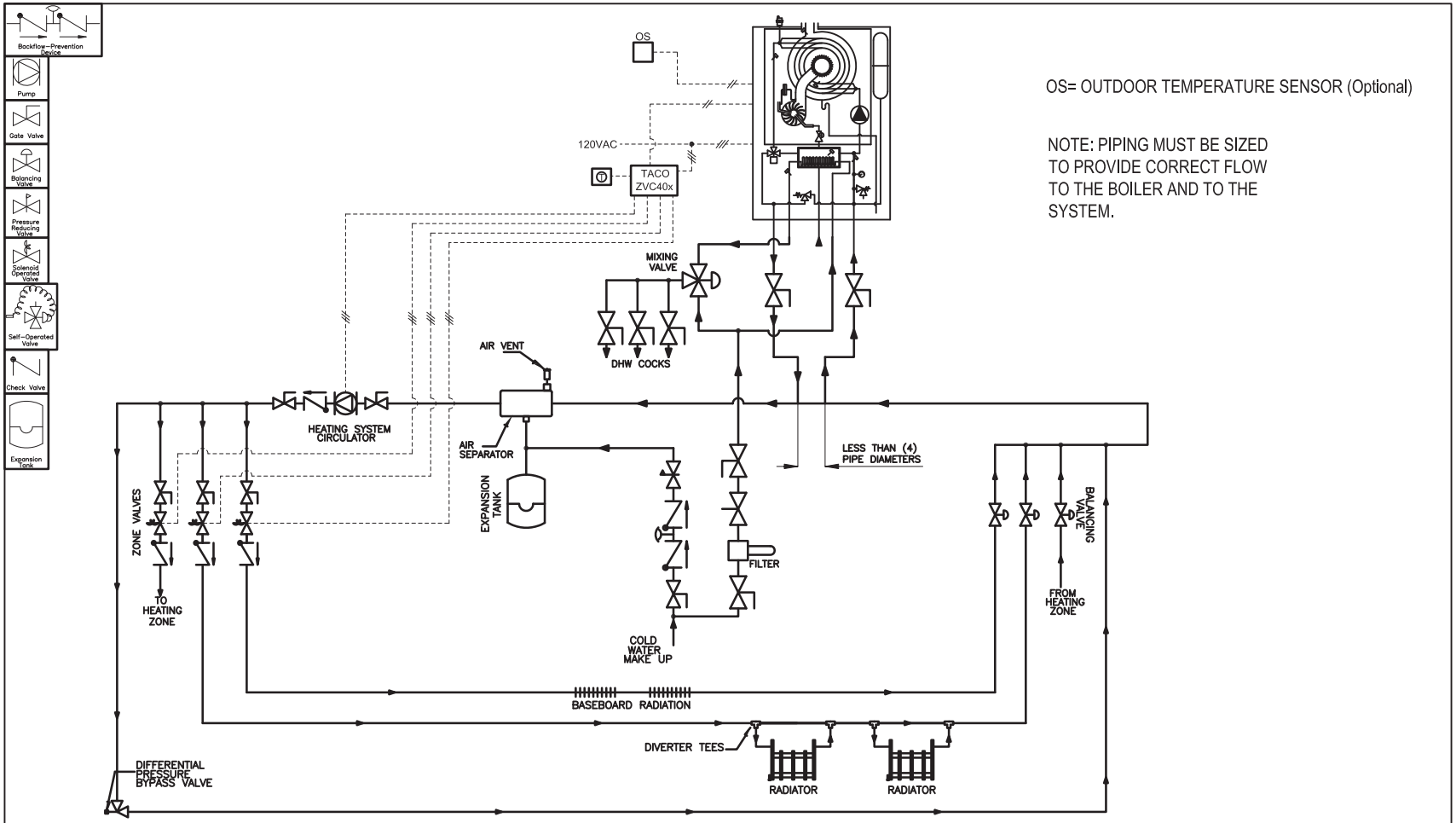
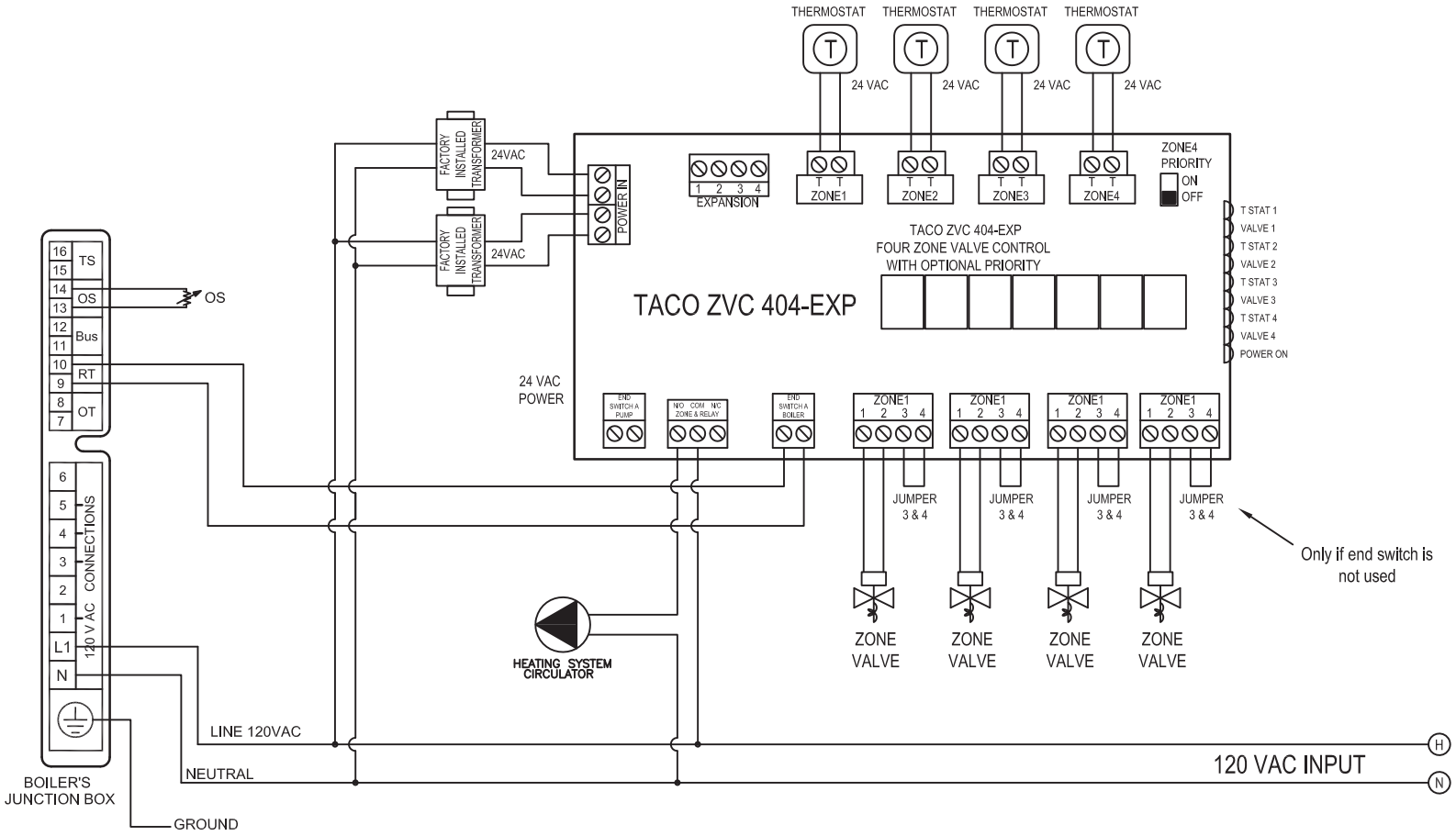
Suggested Piping Diagrams for Model 160 Combi/Heat Only Boiler



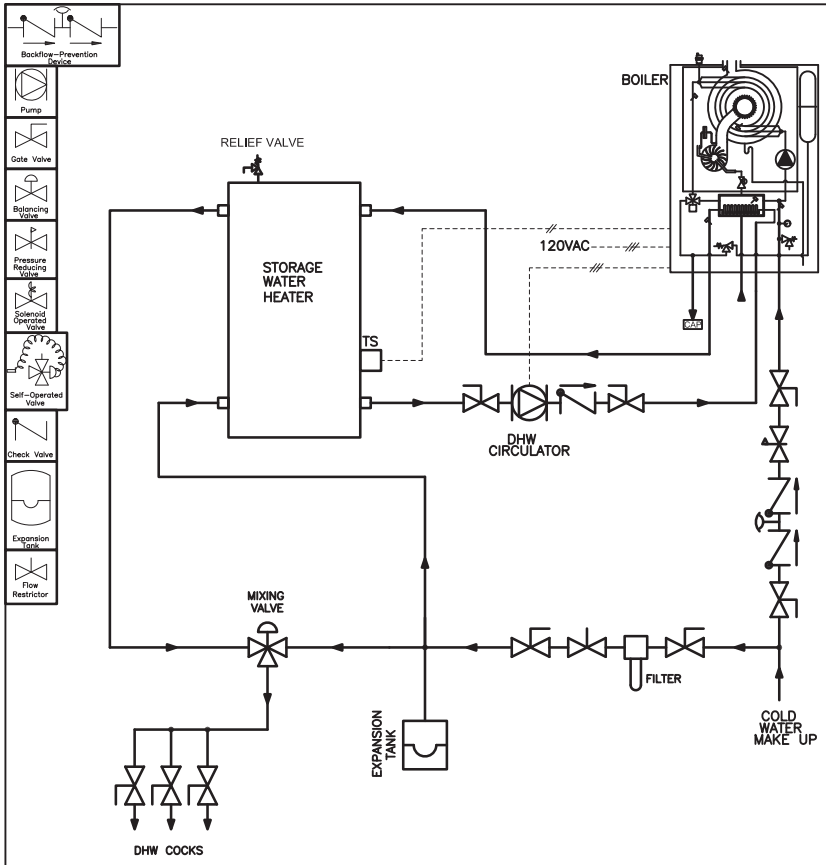
Concept Drawing: This is only a concept drawing, not an engineered drawing. It is not intended to describe a complete system, nor any particular system. It is up to the system designer to determine the necessary components for and configuration of the particular system being designed, including additional equipment and any safety devices which in the judgement of the designer are appropriate, in order to properly size, configure and design that system and to ensure compliance with building and safety code requirements.

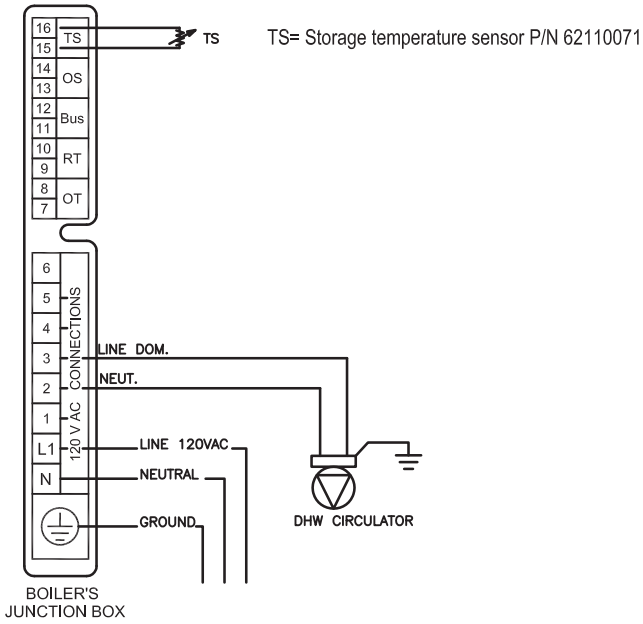
COMBI BOILER AND HEATING BY PRIMARY/SECONDARY LOOP. ZONE VALVES ARE CONTROLLED BY TACO ZVC40x CONTROL. (piping diagram, see Page 2 for electrical diagram)

Document N° 62415073
Release 05 of Oct. 20, 2011



Concept Drawing: This is only a concept drawing, not an engineered drawing. It is not intended to describe a complete system, nor any particular system. It is up to the system designer to determine the necessary components for and configuration of the particular system being designed, including additional equipment and any safety devices which in the judgement of the designer are appropriate, in order to properly size, configure and design that system and to ensure compliance with building and safety code requirements.	**COMBI BOILER AND HEATING BY PRIMARY/SECONDARY LOOP. ZONE VALVES ARE CONTROLLED BY TACO ZVC40x CONTROL. (Electrical diagram, see Page 1 for piping diagram)**	Page 2 Document N° 62415073 Release 05 of Oct. 20, 2011



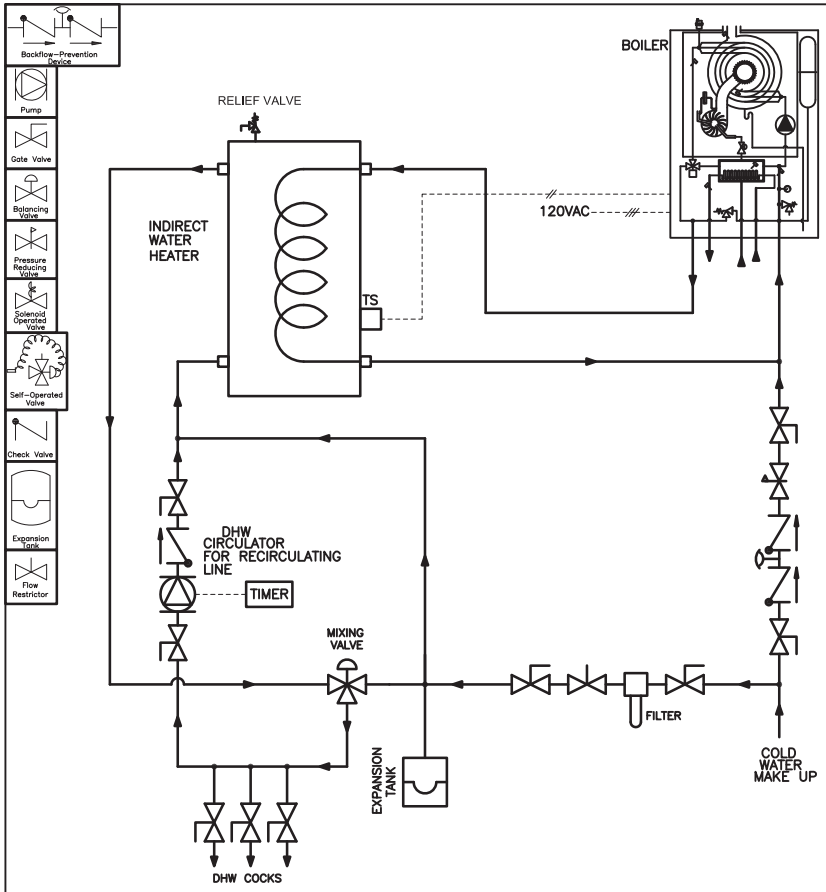


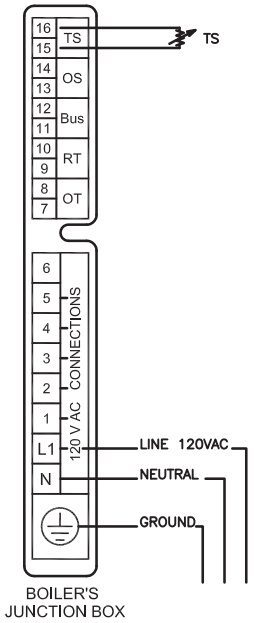
NOTE:
- The U3 sensor placed on the minitank, must be disconnected from the rear of the connection board.
- Switch N°1 inside boiler control board, must be switched to the ON position;
Failure to follow these guidelines could result in system problems.

Concept Drawing: This is only a concept drawing, not an engineered drawing. It is not intended to describe a complete system, nor any particular system. It is up to the system designer to determine the necessary components for and configuration of the particular system being designed, including additional equipment and any safety devices which in the judgement of the designer are appropriate, in order to properly size, configure and design that system and to ensure compliance with building and safety code requirements.

COMBI BOILER AND STORAGE WATER HEATER
HEATING SIDE NOT USED

Document N° 62415073
Release 05 of Oct. 20, 2011





TS= Storage temperature sensor P/N 62110071

NOTE:

- Disconnect the plug from the diverter valve inside the boiler to prevent water blockage for the storage. The plug must be disconnected when the boiler is in central heating function;

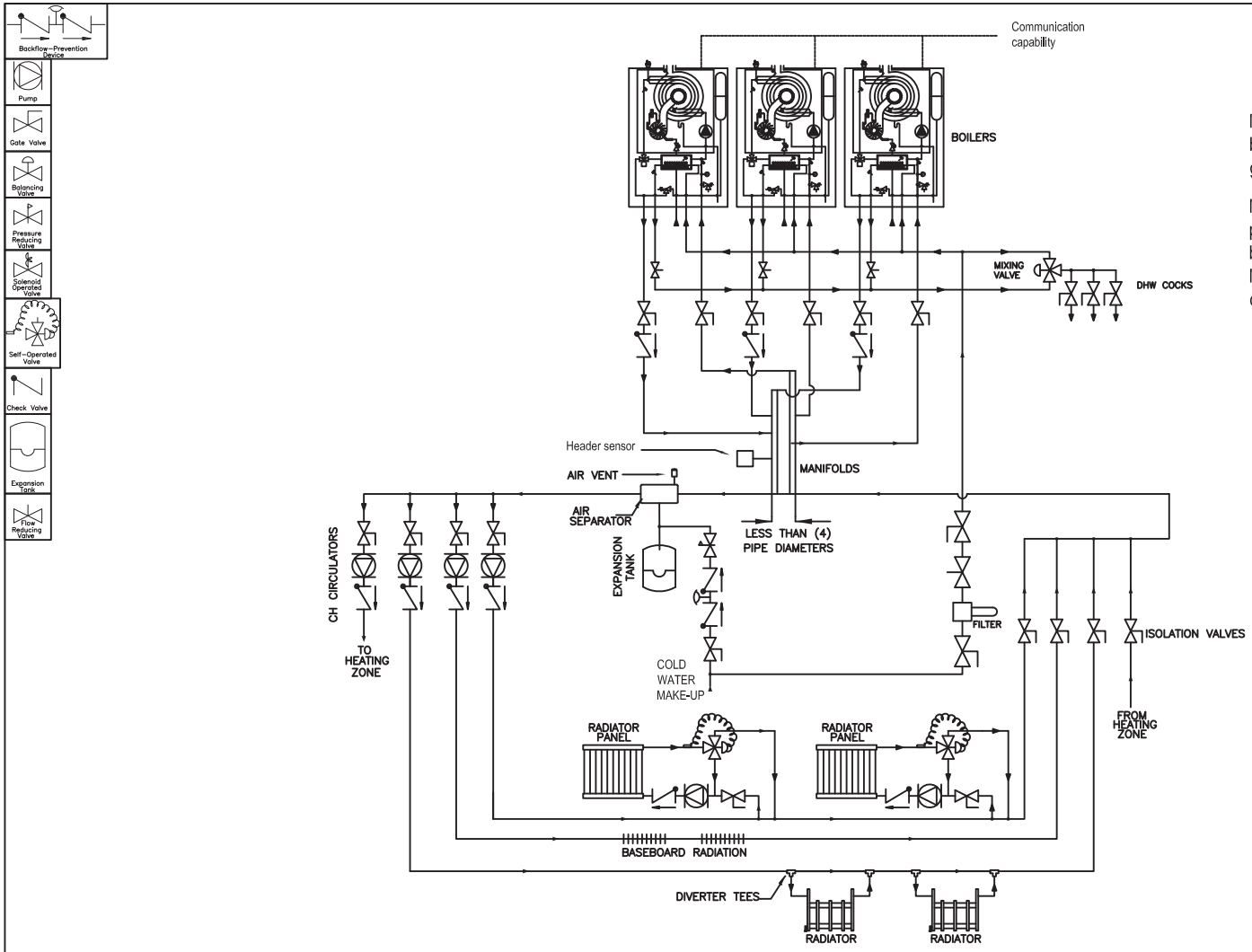
- The U3 sensor placed on the minitank, must be disconnected from the rear of the connection board.

- Switch N°1 inside boiler control board, must be switched to the ON position;

Failure to follow these guidelines could result in system problems.

NOTE: it is mandatory to wire the DHW circulator to a TIMER that runs the DHW circulator only for demand period.
Do not run the DHW circulator for all the time

Concept Drawing: This is only a concept drawing, not an engineered drawing. It is not intended to describe a complete system, nor any particular system. It is up to the system designer to determine the necessary components for and configuration of the particular system being designed, including additional equipment and any safety devices which in the judgement of the designer are appropriate, in order to properly size, configure and design that system and to ensure compliance with building and safety code requirements.	**COMBI BOILER WITH INDIRECT WATER HEATER AND RECIRCULATING LINE. HEATING SIDE IS NOT USED**	Page 4 Document N° 62415073 Release 05 of Oct. 20, 2011



NOTE: in this configuration the boilers can produce up to 13 gal/min DHW with 75°F rise

NOTE: Manifold must be sized to provide the correct flow to the boilers and to the system.
NOTE: Provide suitable device to control the CH circulators

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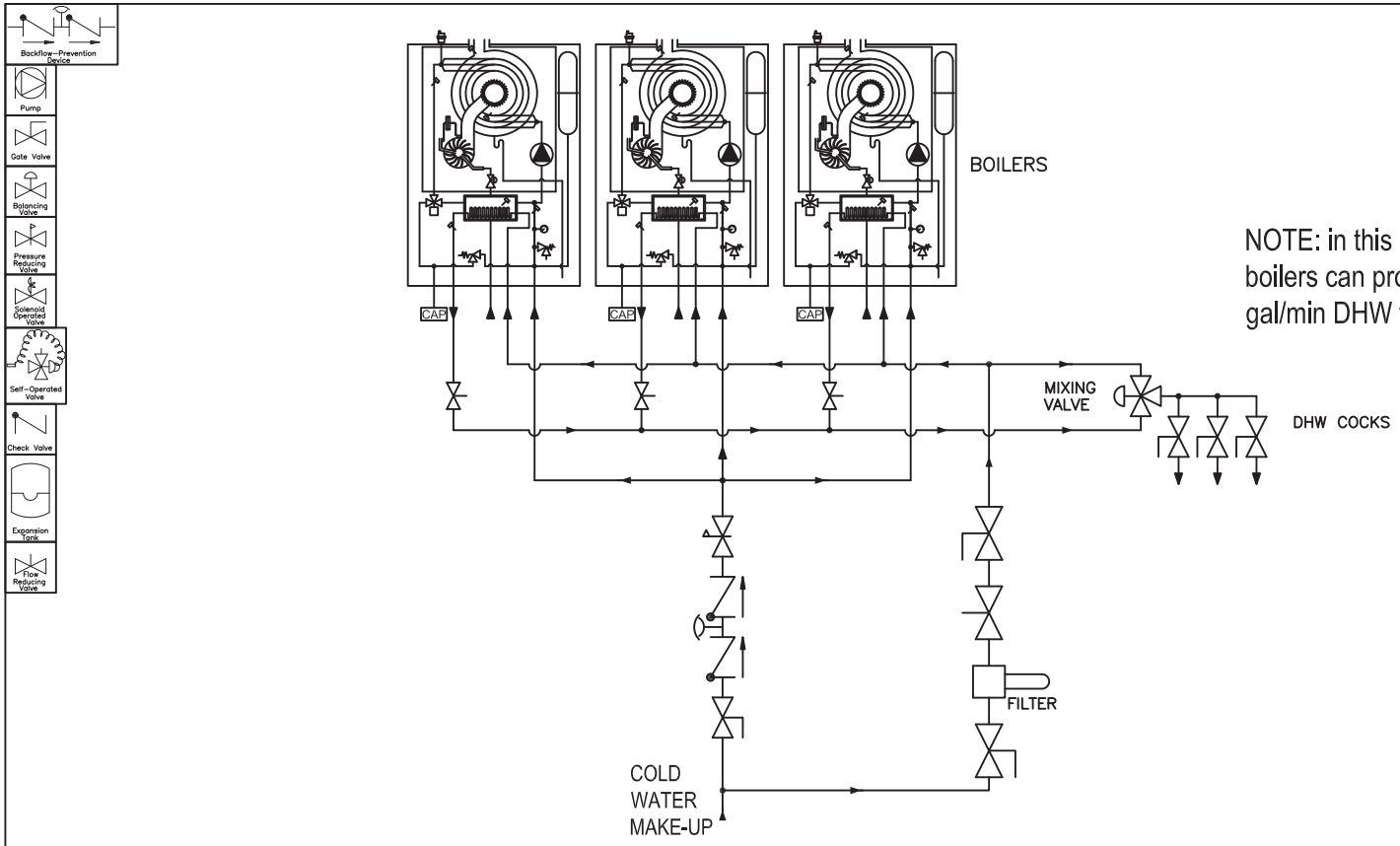
MULTIPLE COMBI BOILERS INSTALLATION FOR INSTANTANEOUS DHW AND HEATING. BOILERS ARE CONTROLLED BY ITS TEMPERATURE CONTROLS

Document N° 62415073
Release 05 of Oct. 20, 2011

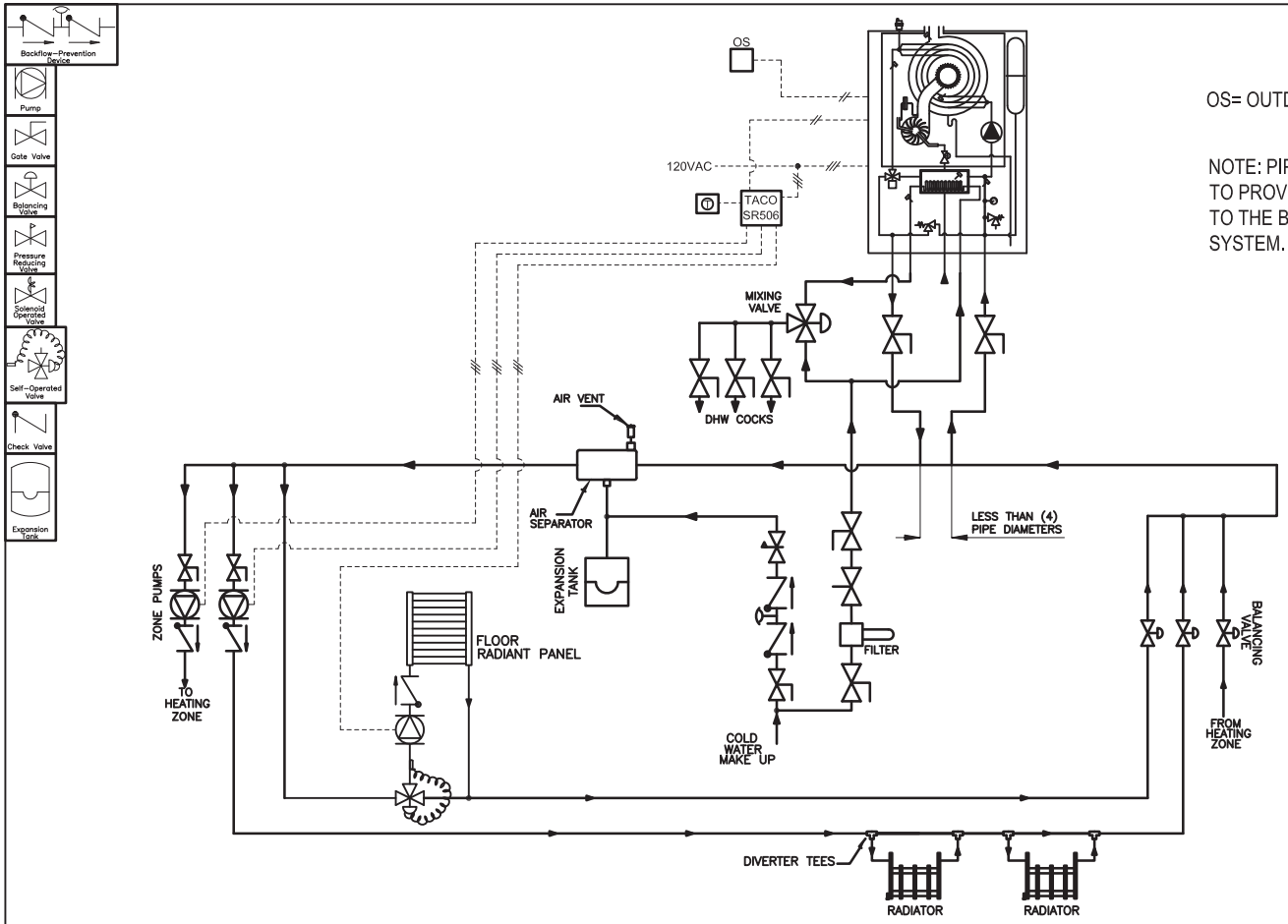


NOTE: in this configuration the boilers can produce up to 13 gal/min DHW with 75°F rise

Concept Drawing: This is only a concept drawing, not an engineered drawing. It is not intended to describe a complete system, nor any particular system. It is up to the system designer to determine the necessary components for and configuration of the particular system being designed, including additional equipment and any safety devices which in the judgement of the designer are appropriate, in order to properly size, configure and design that system and to ensure compliance with building and safety code requirements.

MULTIPLE COMBI BOILERS INSTALLATION FOR INSTANTANEOUS DHW PRODUCTION ONLY. BOILERS ARE CONTROLLED BY OWN TEMPERATURE CONTROL

Document N° 62415073
Release 05 of Oct. 20, 2011



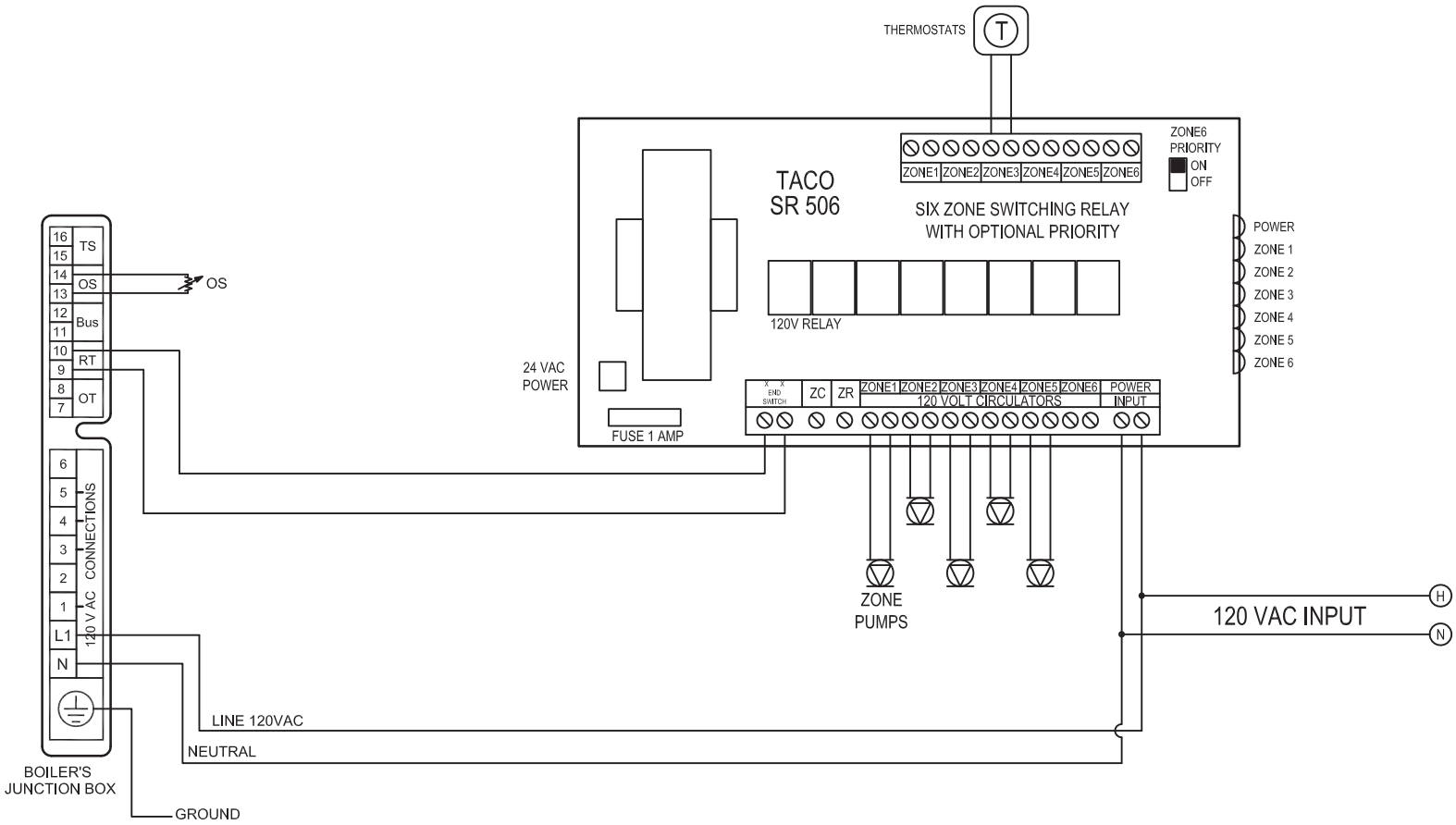
OS= OUTDOOR TEMPERATURE SENSOR (Optional)

NOTE: PIPING MUST BE SIZED TO PROVIDE CORRECT FLOW TO THE BOILER AND TO THE SYSTEM.

Concept Drawing: This is only a concept drawing, not an engineered drawing. It is not intended to describe a complete system, nor any particular system. It is up to the system designer to determine the necessary components for and configuration of the particular system being designed, including additional equipment and any safety devices which in the judgement of the designer are appropriate, in order to properly size, configure and design that system and to ensure compliance with building and safety code requirements.

COMBI BOILER AND HEATING BY ZONE PUMPS THAT ARE CONTROLLED BY TACO SR506 CONTROL. (Piping diagram. See page 8 for Electrical diagram)

Document N° 62415073
Release 05 of Oct. 20, 2011



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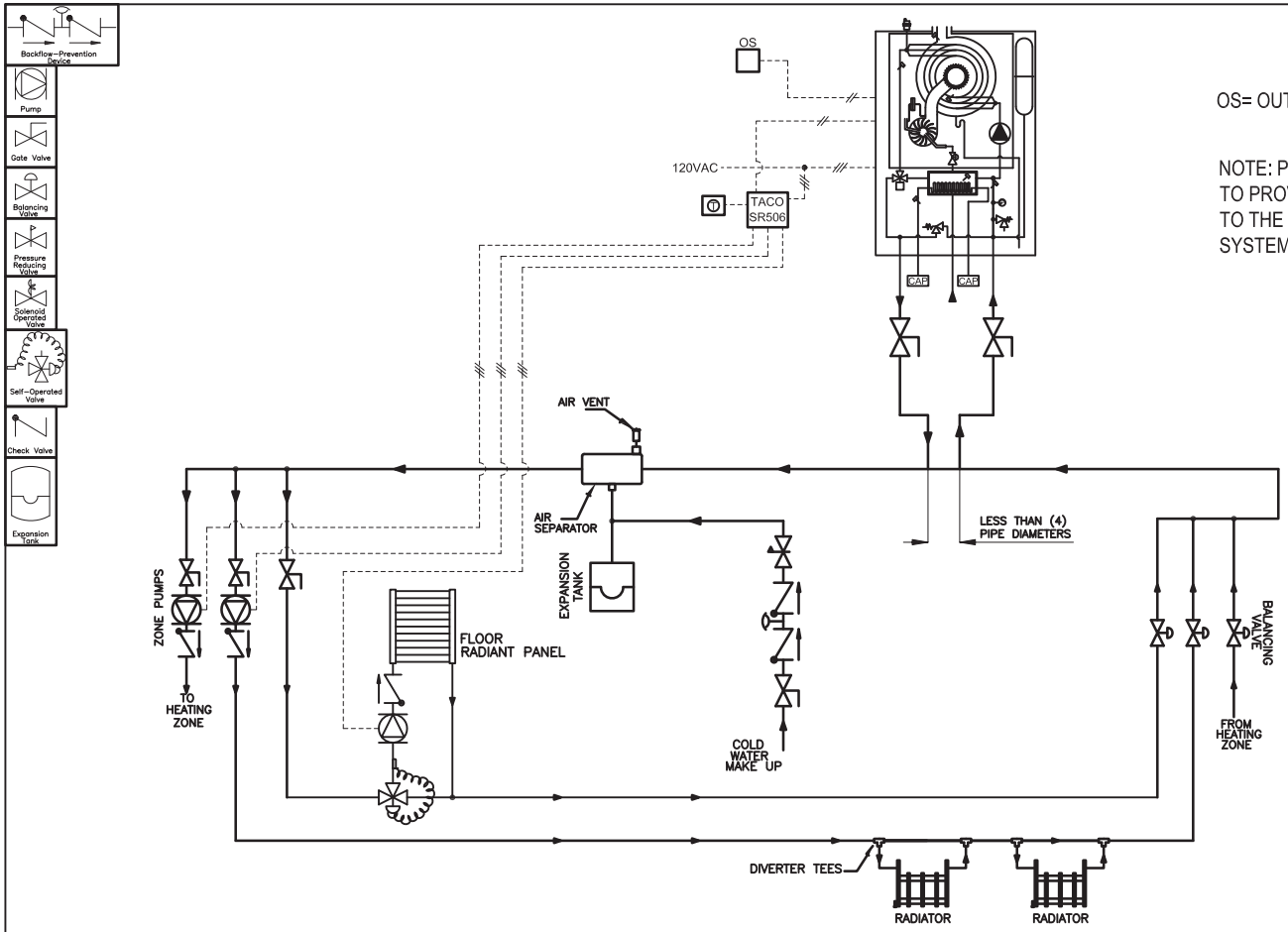


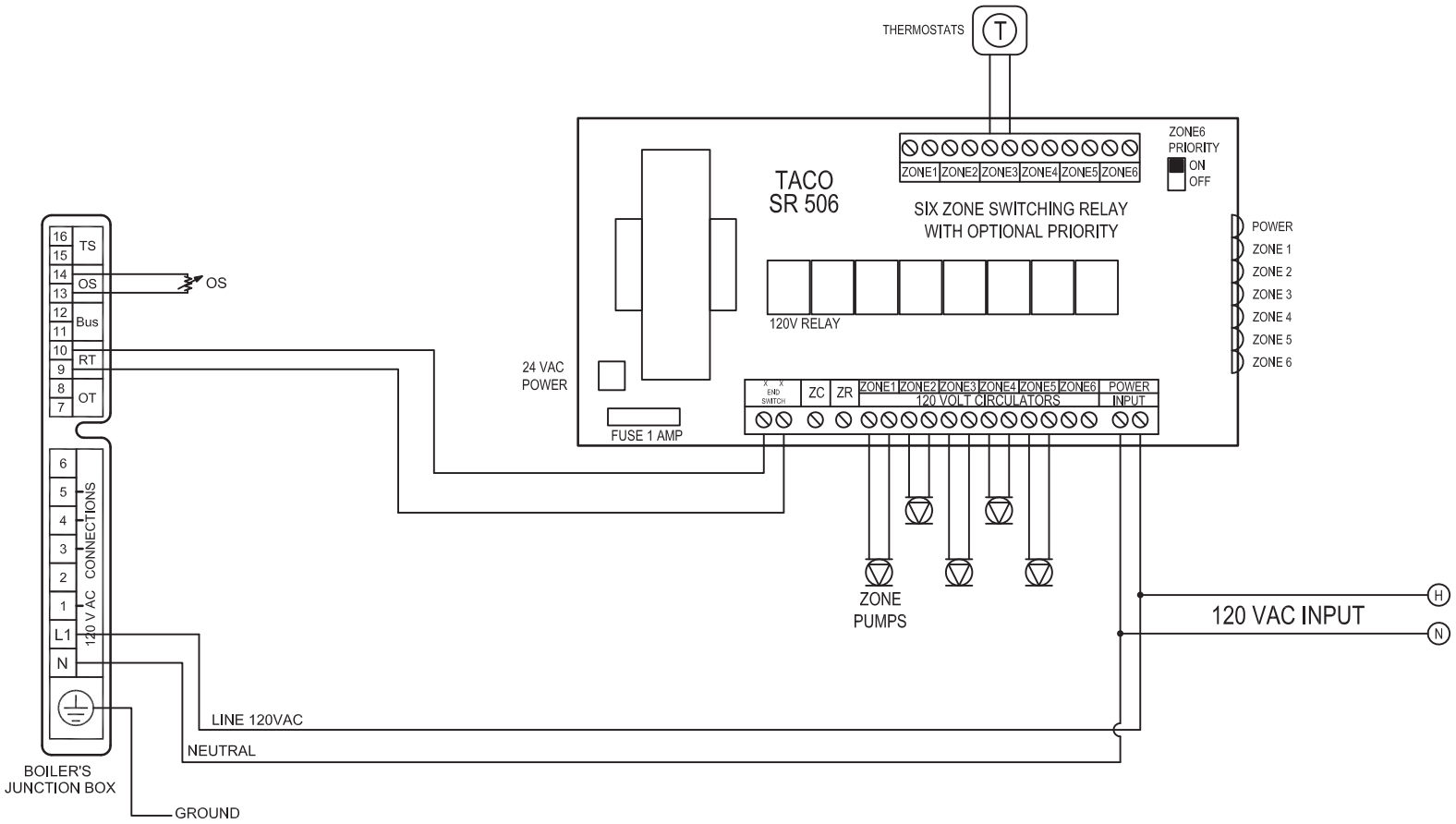
OS= OUTDOOR TEMPERATURE SENSOR (Optional)

NOTE: PIPING MUST BE SIZED TO PROVIDE CORRECT FLOW TO THE BOILER AND TO THE SYSTEM.

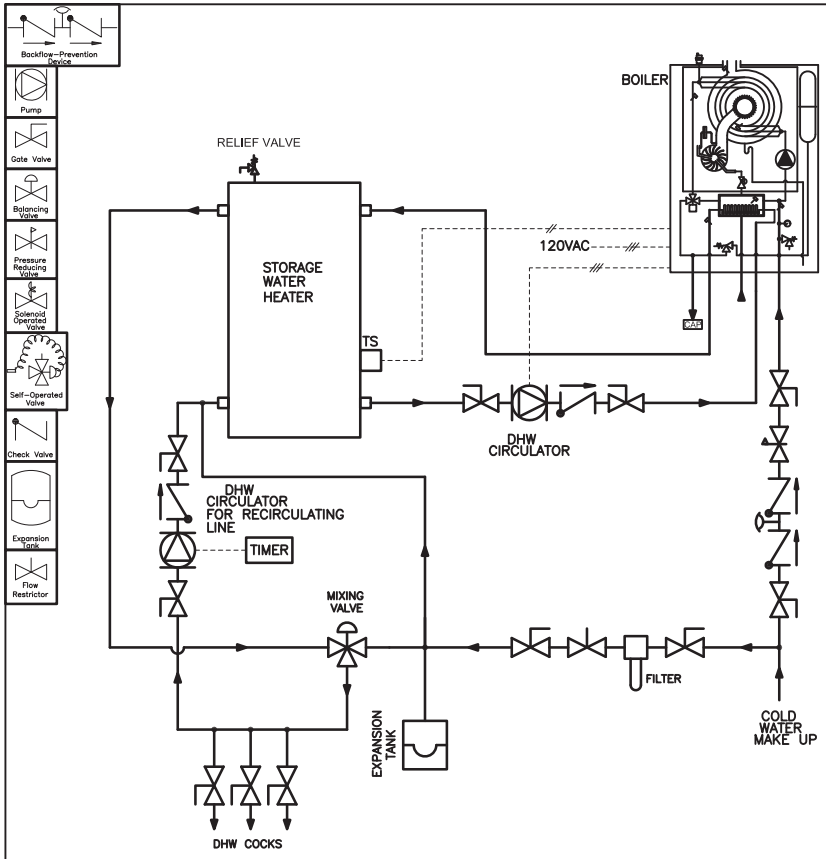
Concept Drawing: This is only a concept drawing, not an engineered drawing. It is not intended to describe a complete system, nor any particular system. It is up to the system designer to determine the necessary components for and configuration of the particular system being designed, including additional equipment and any safety devices which in the judgement of the designer are appropriate, in order to properly size, configure and design that system and to ensure compliance with building and safety code requirements.

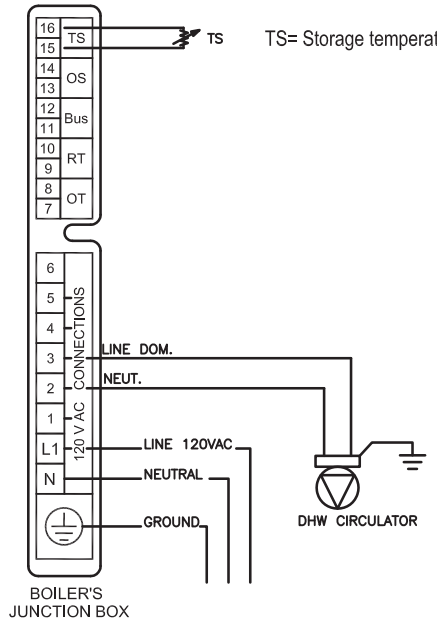
COMBI BOILER (Domestic side not used) HEATING BY ZONE PUMPS THAT ARE CONTROLLED BY TACO SR506 CONTROL. (Piping diagram. See Page 10 for electrical diagram)

Document N° 62415073
Release 05 of Oct. 20, 2011



Concept Drawing: This is only a concept drawing, not an engineered drawing. It is not intended to describe a complete system, nor any particular system. It is up to the system designer to determine the necessary components for and configuration of the particular system being designed, including additional equipment and any safety devices which in the judgement of the designer are appropriate, in order to properly size, configure and design that system and to ensure compliance with building and safety code requirements.	**COMBI BOILER (Domestic side not used) HEATING BY ZONE PUMPS THAT ARE CONTROLLED BY TACO SR506 CONTROL. (Electrical diagram. See Page 9 for piping diagram)**	Page 10 Document N° 62415073 Release 05 of Oct. 20, 2011



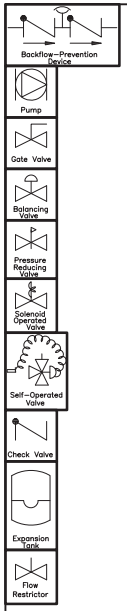


NOTE: THE SWITCH N°1 INSIDE THE BOILER CONTROL BOARD MUST BE SWITCHED TO THE "ON" POSITION. THE U3 SENSOR PLACED ON THE BOILER'S MINITANK, MUST BE DISCONNECTED FROM THE REAR OF THE CONNECTION BOARD

NOTE: it is mandatory submit the DHW circulator to a TIMER that run the DHW circulator only for the need.
Do not run the DHW circulator for all the time

Concept Drawing: This is only a concept drawing, not an engineered drawing. It is not intended to describe a complete system, nor any particular system. It is up to the system designer to determine the necessary components for and configuration of the particular system being designed, including additional equipment and any safety devices which in the judgement of the designer are appropriate, in order to properly size, configure and design that system and to ensure compliance with building and safety code requirements.

COMBI BOILER WITH STORAGE WATER HEATER AND RECIRCULATING LINE. HEATING SIDE IS NOT USED

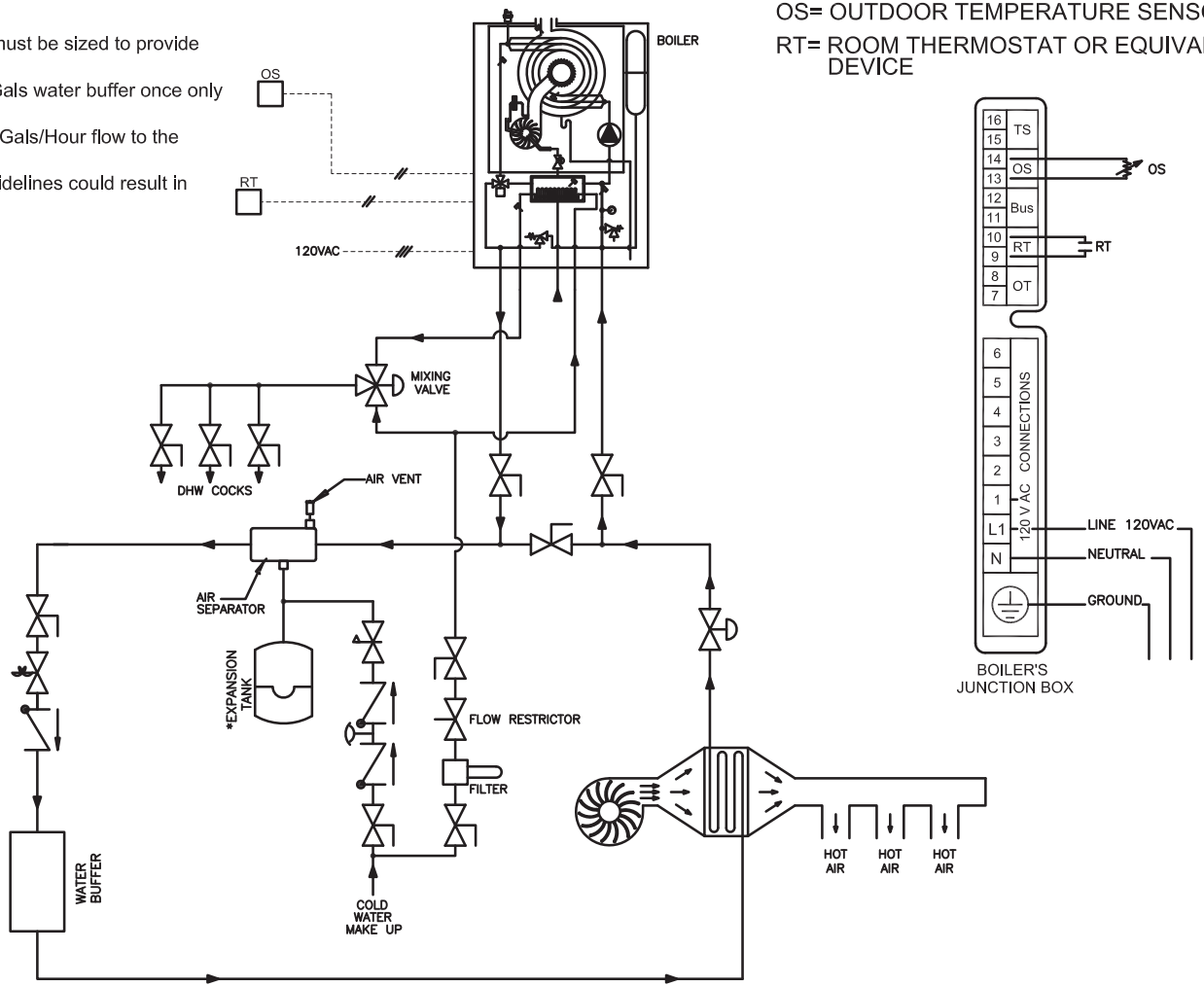


NOTE:
- Piping heating system must be sized to provide flow for each zone.
- Provide a minimum 18Gals water buffer once only one zone can be open.
- Provide a minimum 100Gals/Hour flow to the system.

Failure to follow these guidelines could result in system problems.

OS= OUTDOOR TEMPERATURE SENSOR

RT= ROOM THERMOSTAT OR EQUIVALENT DEVICE



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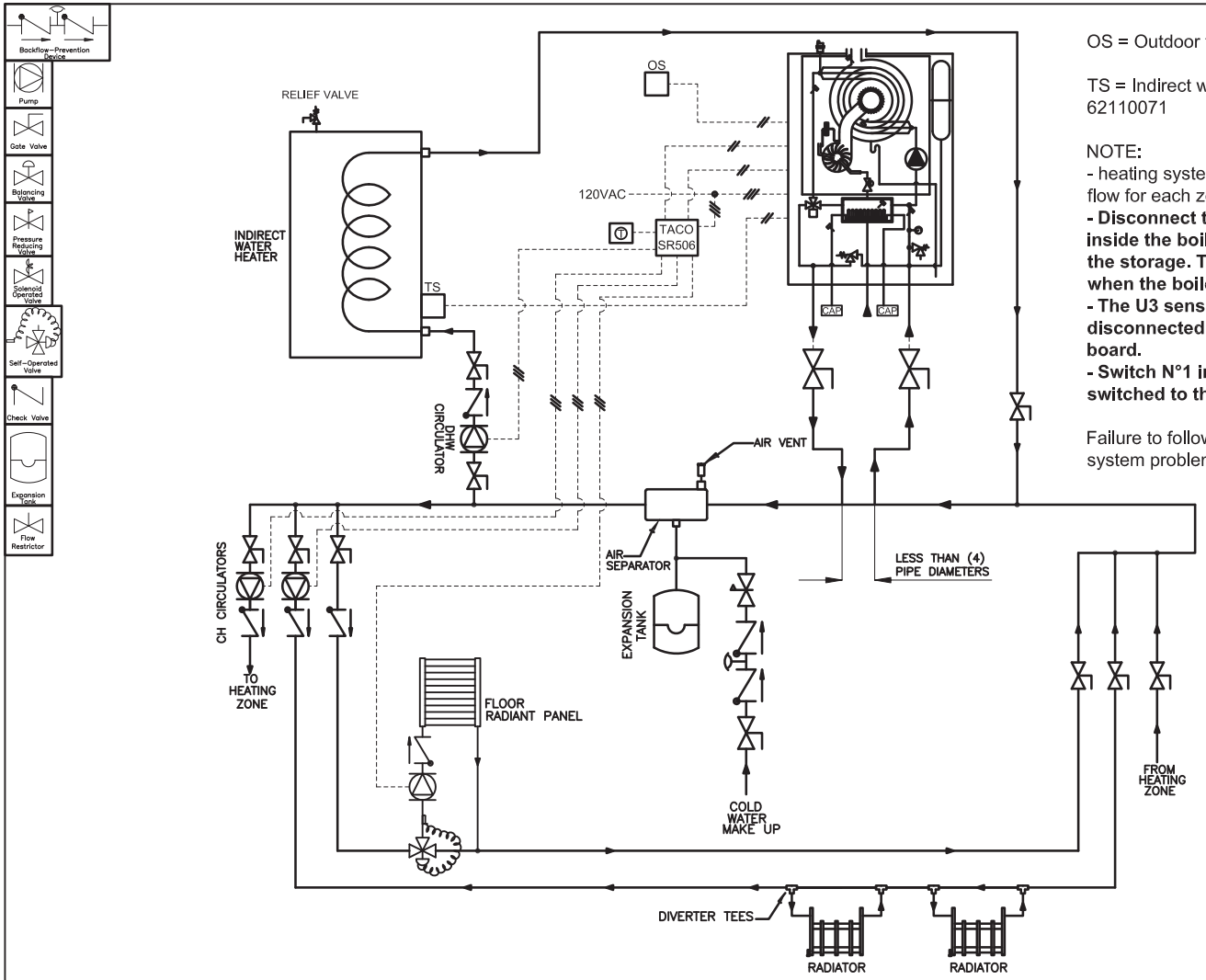
COMBI BOILER WITH INSTANTANEOUS DHW, SINGLE HEATING ZONE WITH AIR HANDLER

Document N° 62415073
Release 05 of Oct. 20, 2011



OS = Outdoor temperature sensor (optional);

TS = Indirect water heater temperature sensor P/N 62110071

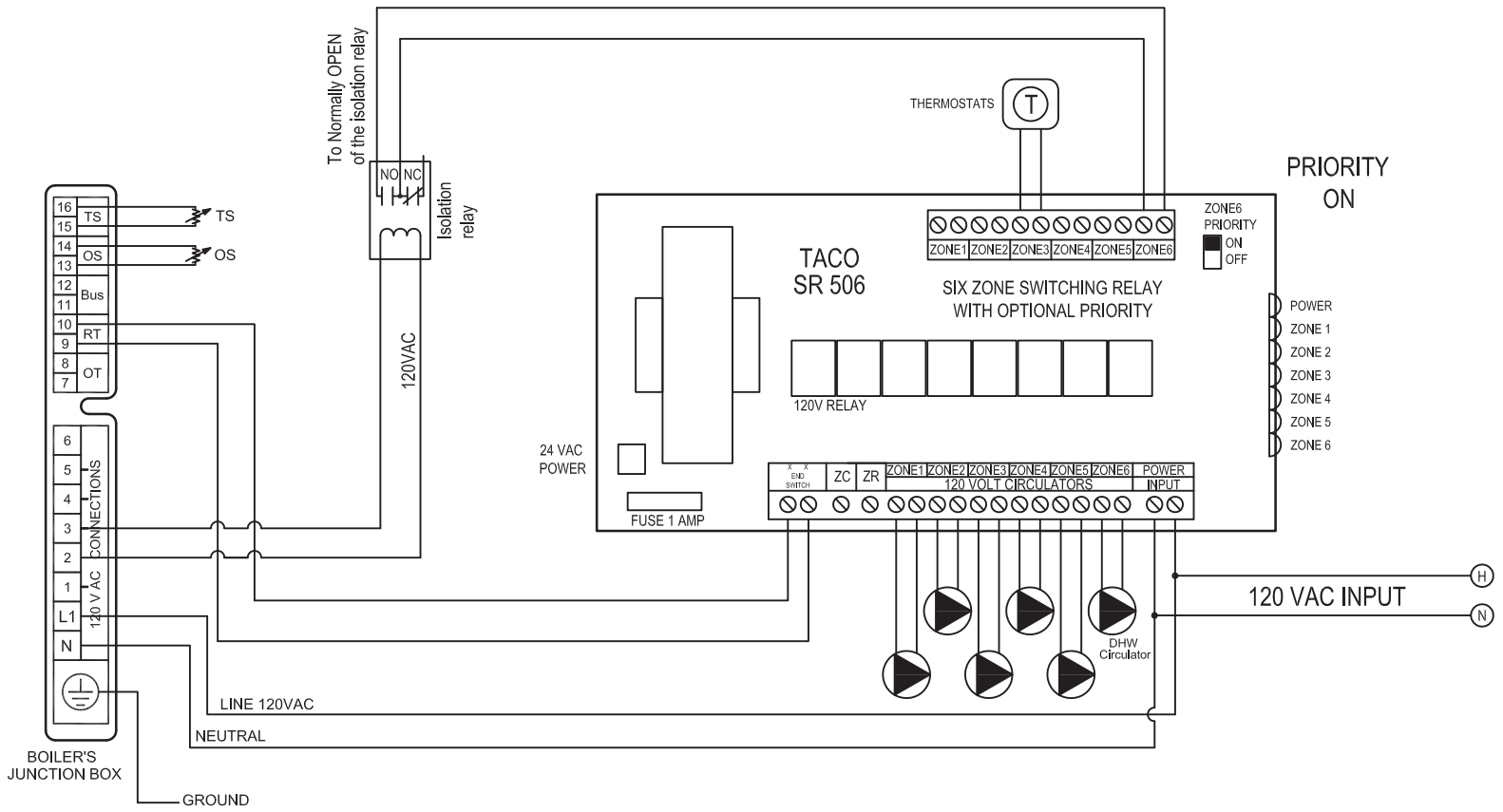
NOTE:
- heating system must be sized to provide correct flow for each zone;
- Disconnect the plug from the diverter valve inside the boiler to prevent water blockage for the storage. The plug must be disconnected when the boiler is in central heating function;
- The U3 sensor placed on the minitank, must be disconnected from the rear of the connection board.
- Switch N°1 inside boiler control board, must be switched to the ON position;

Failure to follow these guidelines could result in system problems.

Concept Drawing: This is only a concept drawing, not an engineered drawing. It is not intended to describe a complete system, nor any particular system. It is up to the system designer to determine the necessary components for and configuration of the particular system being designed, including additional equipment and any safety devices which in the judgement of the designer are appropriate, in order to properly size, configure and design that system and to ensure compliance with building and safety code requirements.

COMBI BOILER with DHW by indirect water heater and Central Heating by primary/secondary loop. Pumps are controlled by TACO SR 506 control (Piping diagram. See Page 14 for electrical diagram).

Document N° 62415073
Release 05 of Oct. 20, 2011



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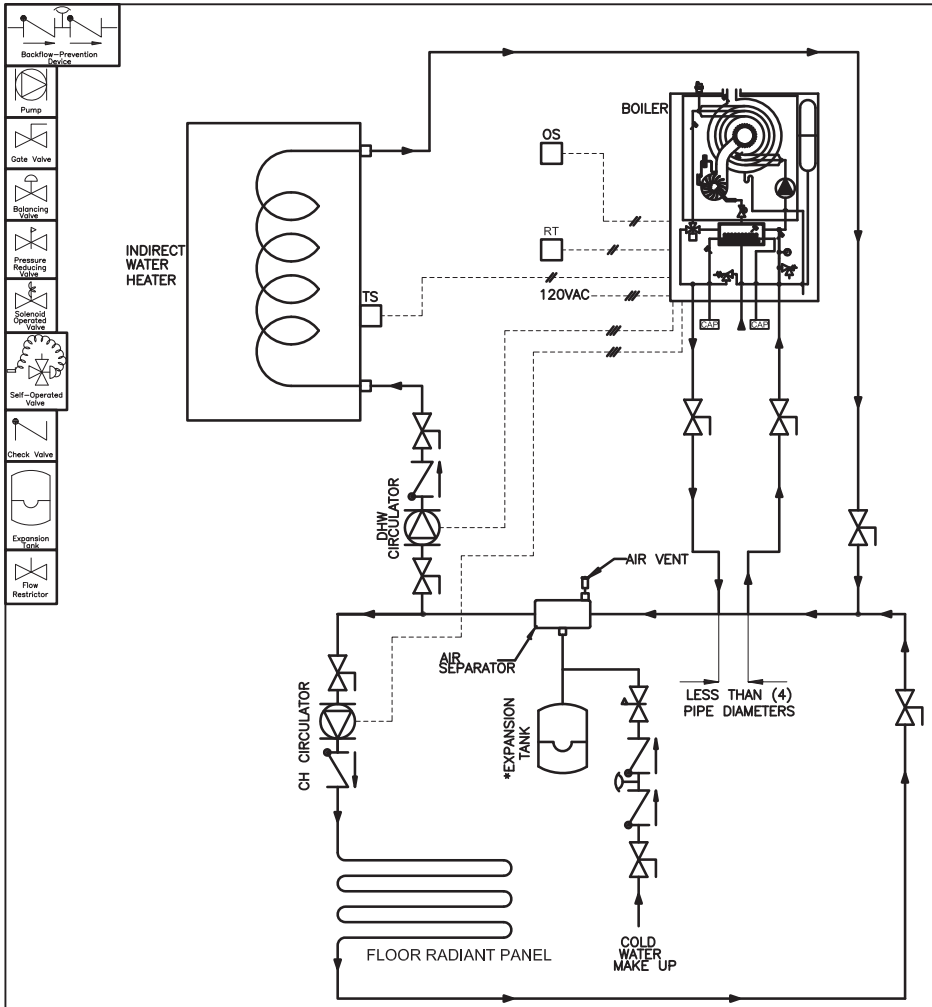
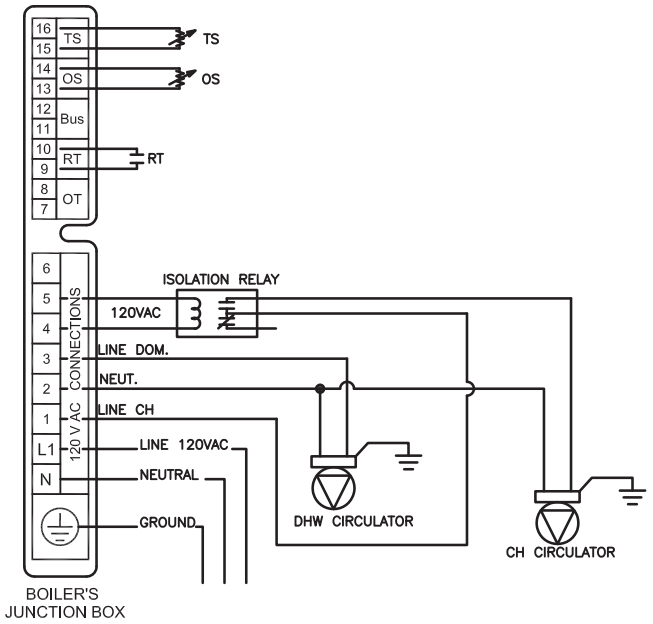
COMBI BOILER with DHW by indirect water heater and Central Heating by primary/secondary loop. Pumps are controlled by TACO SR 506 control (Piping diagram. See Page 14 for electrical diagram).

Document N° 62415073
Release 05 of Oct. 20, 2011





OS = Outdoor temperature sensor (optional);
TS = Indirect water heater temperature sensor P/N 62110071
RT = Room thermostat or equivalent device
NOTE:
- Heating system piping must be sized to provide correct flow;
- Disconnect the plug from the diverter valve inside the boiler to prevent water blockage for the storage. The plug must be disconnected when boiler is in central heating function;
- Switch N°1 inside boiler control board must be switched to the ON position;
- The U3 sensor placed on the minitank, must be disconnected from the rear of the connection board;
- Switch N°6 inside boiler control board must be switched to the ON position to delivery lower temperatures for central heating;

Failure to follow these guidelines could result in system problems.

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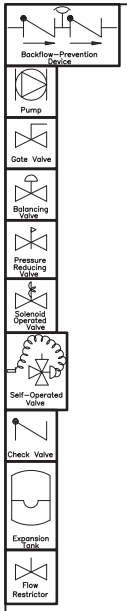
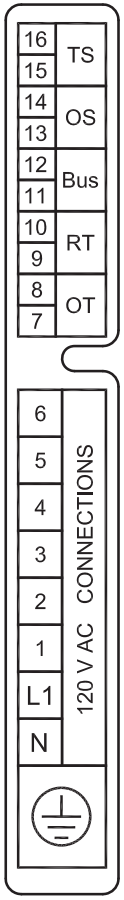
COMBI BOILER with DHW by indirect water heater and Central Heating by primary/secondary loop. Secondary is for floor radiant heating system (low termperature)

Document N° 62415073
Release 05 of Oct. 20, 2011





BOILER'S
JUNCTION BOX

TS = Indirect water heater or storage tank temperature sensor (optional)

OS = Outdoor temperature sensor (optional)

Bus = PC connections or remote command connections

RT = Room thermostat connections

OT = Modulating room thermostat connections

6 = Not used

5 = 120 Vac neutral only when internal pump is ON

4 = 120 Vac line only when internal pump is ON

3 = 120 Vac Line for 3 way valve domestic command or 120Vac line for domestic pump

2 = Neutral for 3 way valve or Neutral for domestic pump

1 = 120 Vac Line for 3 way valve Central heating command

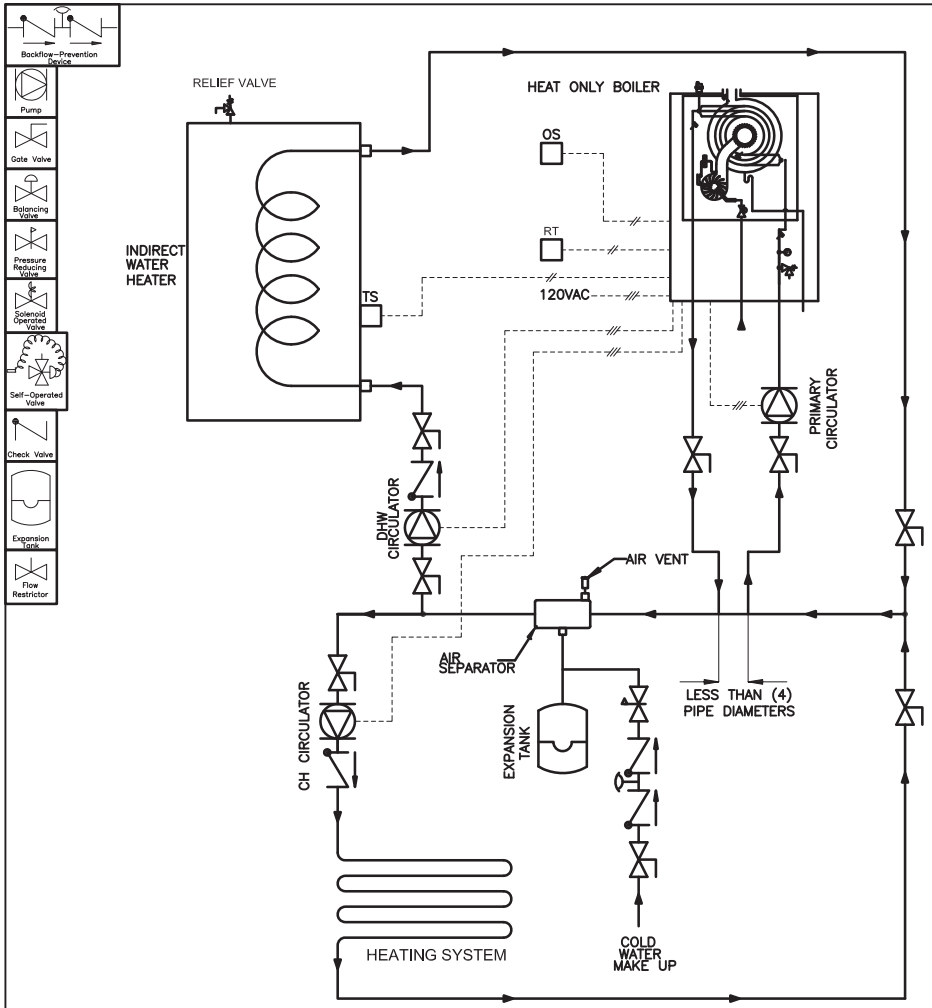
L1 = 120 Vac Line for main voltage

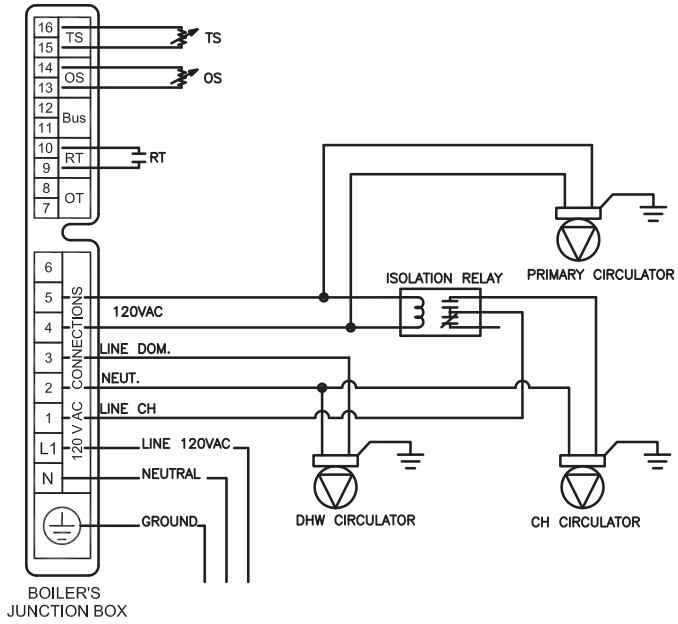
N = 120Vac Neutral for main voltage

= Ground connections

JUNCTION BOARD ELECTRICAL CONNECTIONS FOR CONDENSING BOILERS (COMBI AND HEAT ONLY BOILER)

Document N° 62415073
Release 05 of Oct. 20, 2011





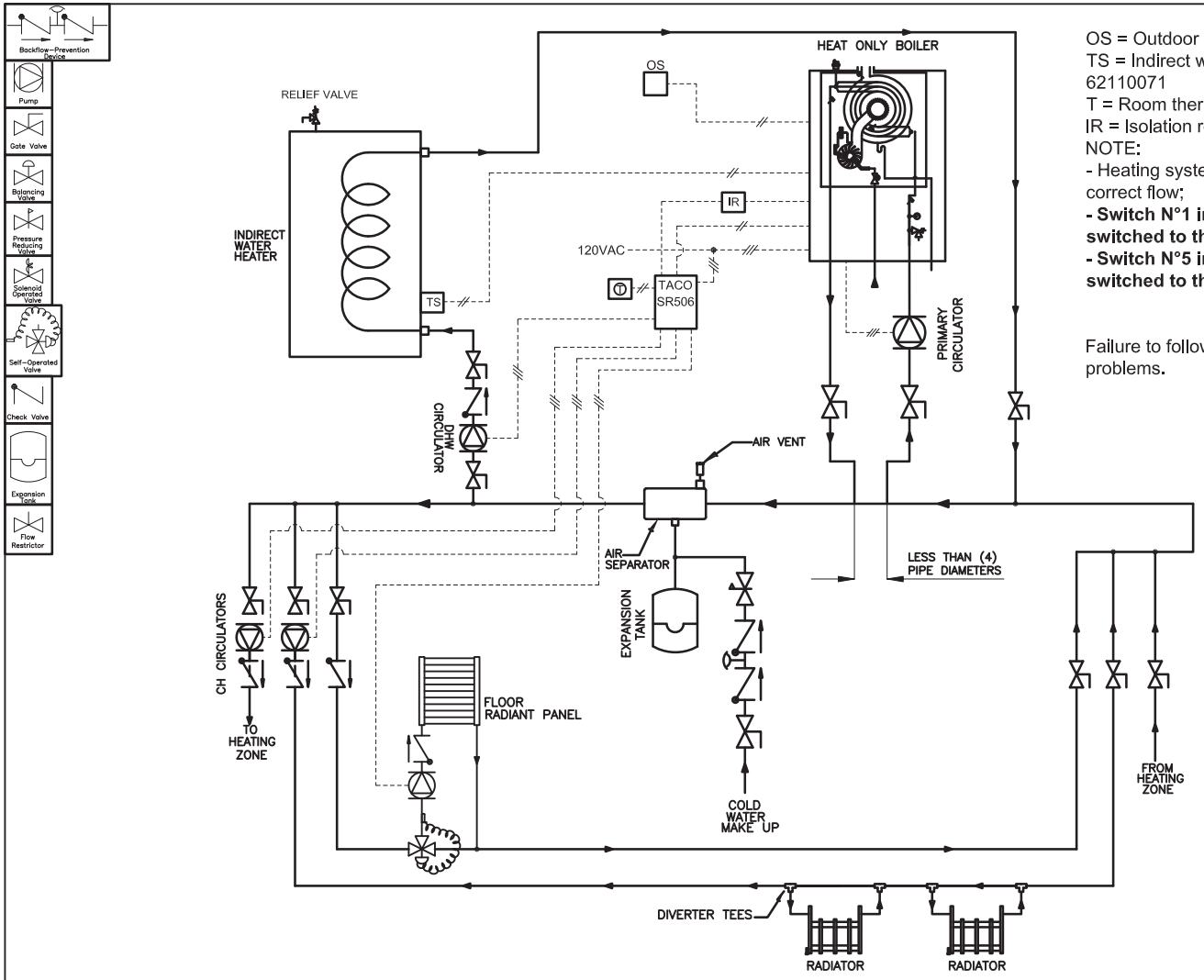
OS = Outdoor temperature sensor (optional);
TS = Indirect water heater temperature sensor P/N 62110071
RT = Room thermostat or equivalent device
NOTE:
- Heating system piping must be sized to provide correct flow;
- Switch N°1 inside boiler control board must be switched to the ON position;
- Switch N°5 inside boiler control board must be switched to the OFF position;

Failure to follow these guidelines could result in system problems.

Concept Drawing: This is only a concept drawing, not an engineered drawing. It is not intended to describe a complete system, nor any particular system. It is up to the system designer to determine the necessary components for and configuration of the particular system being designed, including additional equipment and any safety devices which in the judgement of the designer are appropriate, in order to properly size, configure and design that system and to ensure compliance with building and safety code requirements.

HEAT ONLY BOILER WITH DHW BY INDIRECT WATER HEATER AND CENTRAL HEATING BY PRIMARY/SECONDARY LOOP

Document N° 62415073
Release 05 of Oct. 20, 2011



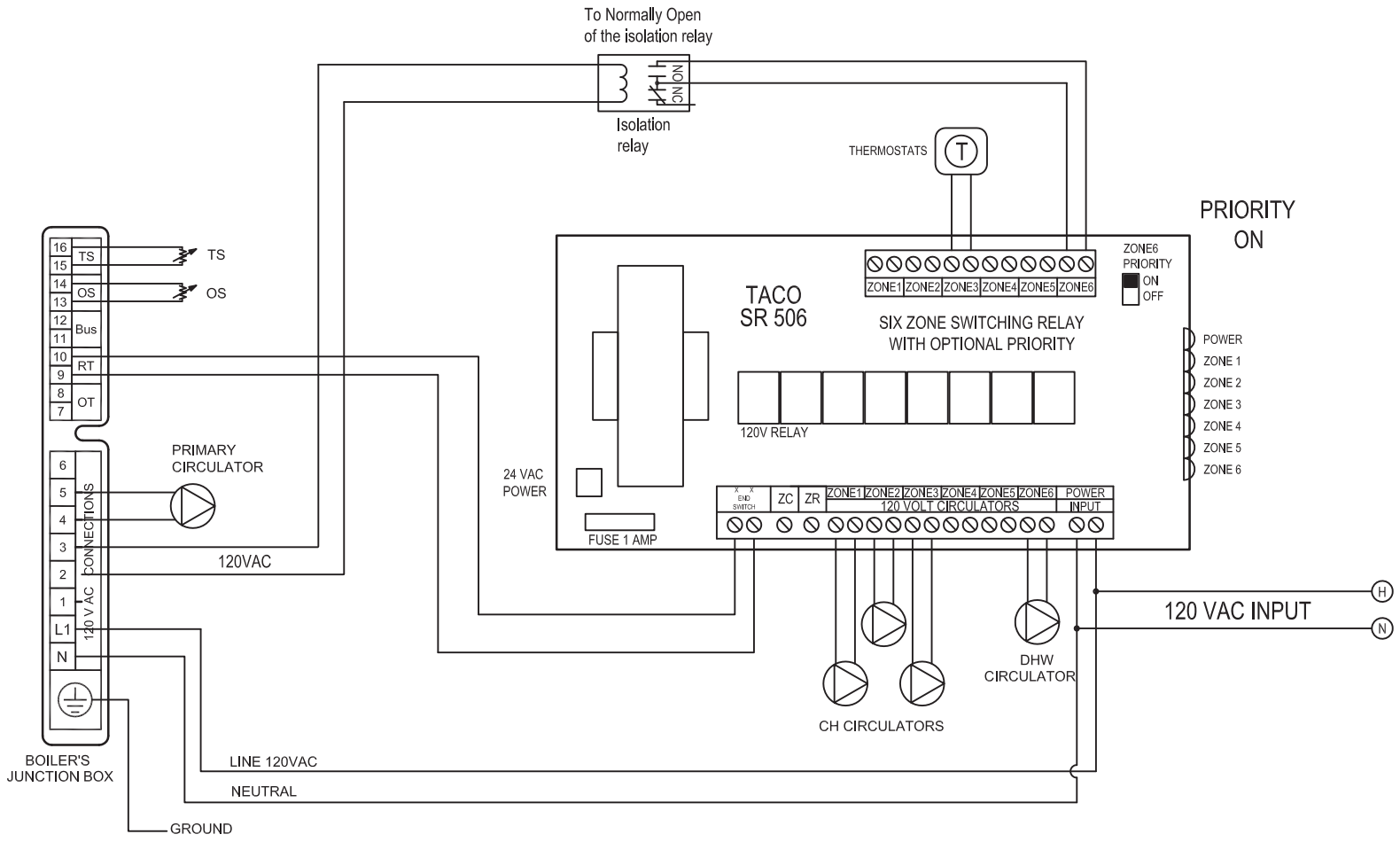
OS = Outdoor temperature sensor (optional);
TS = Indirect water heater temperature sensor P/N 62110071
T = Room thermostat or equivalent device
IR = Isolation relay
NOTE:
- Heating system piping must be sized to provide correct flow;
- Switch N°1 inside boiler control board must be switched to the ON position;
- Switch N°5 inside boiler control board must be switched to the OFF position;

Failure to follow these guidelines could result in system problems.

Concept Drawing: This is only a concept drawing, not an engineered drawing. It is not intended to describe a complete system, nor any particular system. It is up to the system designer to determine the necessary components for and configuration of the particular system being designed, including additional equipment and any safety devices which in the judgement of the designer are appropriate, in order to properly size, configure and design that system and to ensure compliance with building and safety code requirements.

HEAT ONLY BOILER with DHW by indirect water heater and Central Heating by primary/secondary loop. CH Pumps are controlled by TACO SR 506 control (Piping diagram. See Page 19 for Electrical diagram).

Document N° 62415073
Release 05 of Oct. 20, 2011



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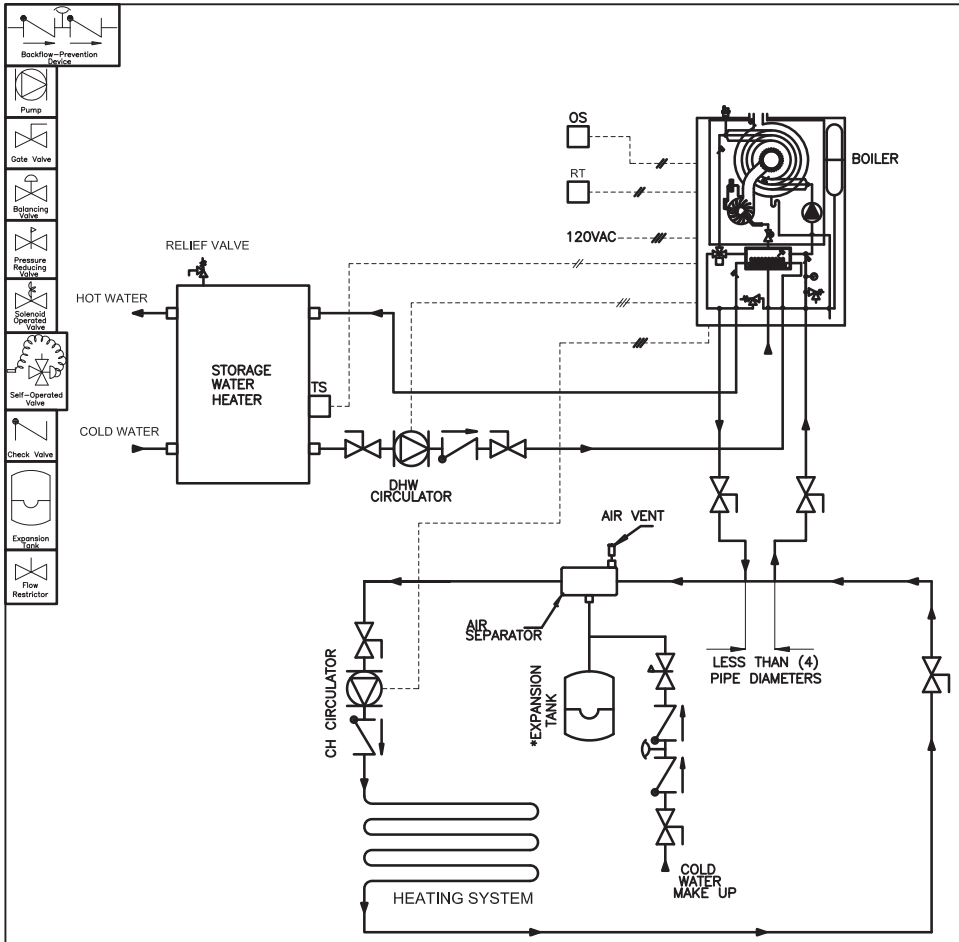
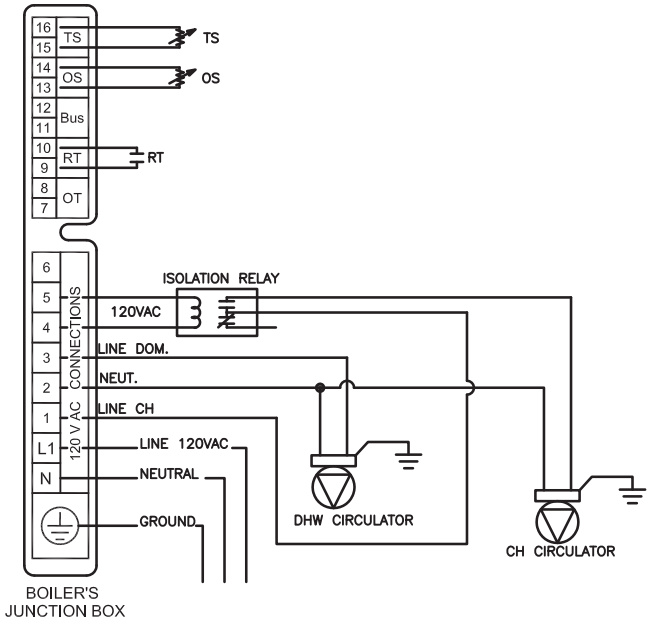
HEAT ONLY BOILER with DHW by indirect water heater and Central Heating by primary/secondary loop. CH Pumps are controlled by TACO SR 506 control (Electrical diagram. See Page 18 for Piping diagram).





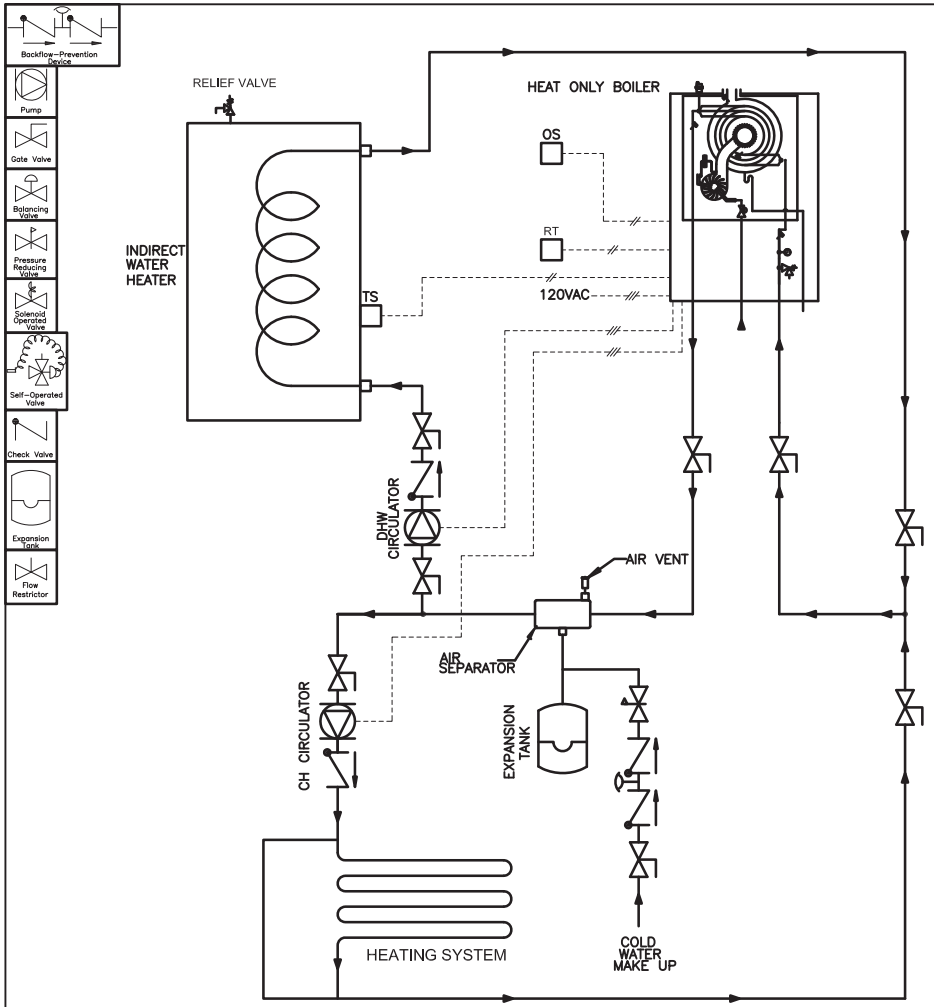
OS = Outdoor temperature sensor (optional);
TS = Storage water heater temperature sensor P/N 62110071
RT = Room thermostat or equivalent device
NOTE:
- Heating system piping must be sized to provide correct flow;
- Switch N°1 inside boiler control board must be switched to the ON position;
- The U3 sensor placed on the minitank, must be disconnected from the rear of the connection board;

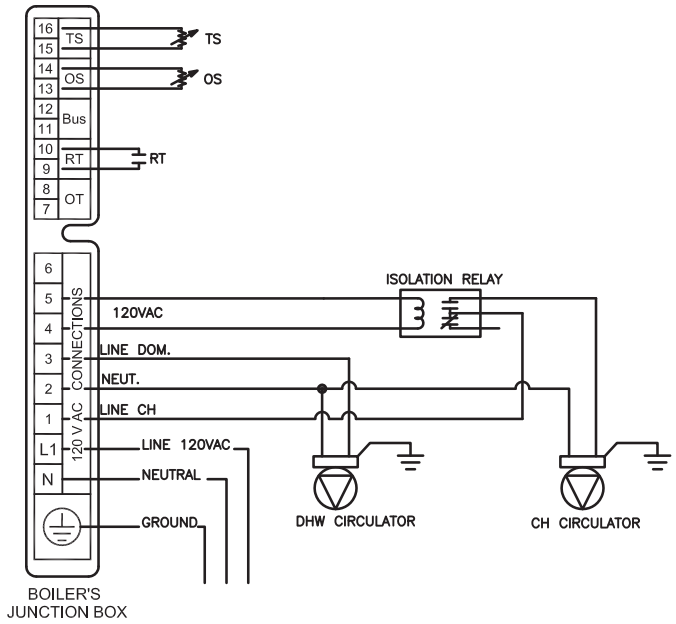
Failure to follow these guidelines could result in system problems.

Concept Drawing: This is only a concept drawing, not an engineered drawing. It is not intended to describe a complete system, nor any particular system. It is up to the system designer to determine the necessary components for and configuration of the particular system being designed, including additional equipment and any safety devices which in the judgement of the designer are appropriate, in order to properly size, configure and design that system and to ensure compliance with building and safety code requirements.

COMBI BOILER with DHW by STORAGE water heater and Central Heating by primary/secondary loop.

Document N° 62415073
Release 05 of Oct. 20, 2011





OS = Outdoor temperature sensor (optional);
TS = Indirect water heater temperature sensor P/N 62110071
RT = Room thermostat or equivalent device
NOTE:
- Heating system piping must be sized to provide correct flow; provide a minimum of 100gal/hr flow to the system (heating and DHW);
- Switch N°1 inside boiler control board must be switched to the ON position;
- Switch N°5 inside boiler control board must be switched to the OFF position;

Failure to follow these guidelines could result system problems

Concept Drawing: This is only a concept drawing, not an engineered drawing. It is not intended to describe a complete system, nor any particular system. It is up to the system designer to determine the necessary components for and configuration of the particular system being designed, including additional equipment and any safety devices which in the judgement of the designer are appropriate, in order to properly size, configure and design that system and to ensure compliance with building and safety code requirements.

HEAT ONLY BOILER with DHW by indirect water heater and Central Heating without primary/secondary loop.

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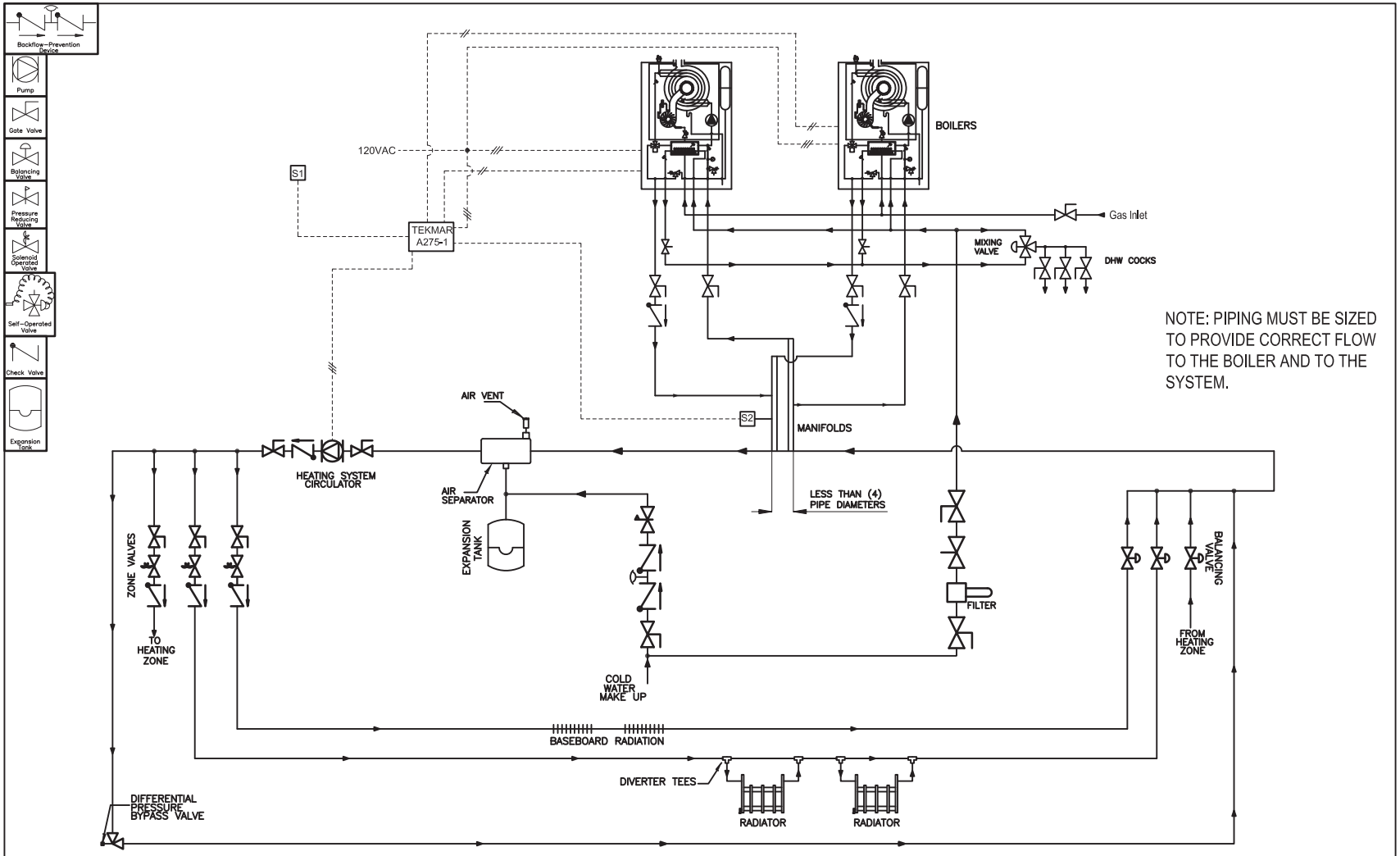

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COMBI BOILERL with instantaneous DHW and heating by primary/secondary loop. Zone valves are controlled by TEKMAR A275-1 control. (Piping diagram. See page 23 for Electrical diagram)

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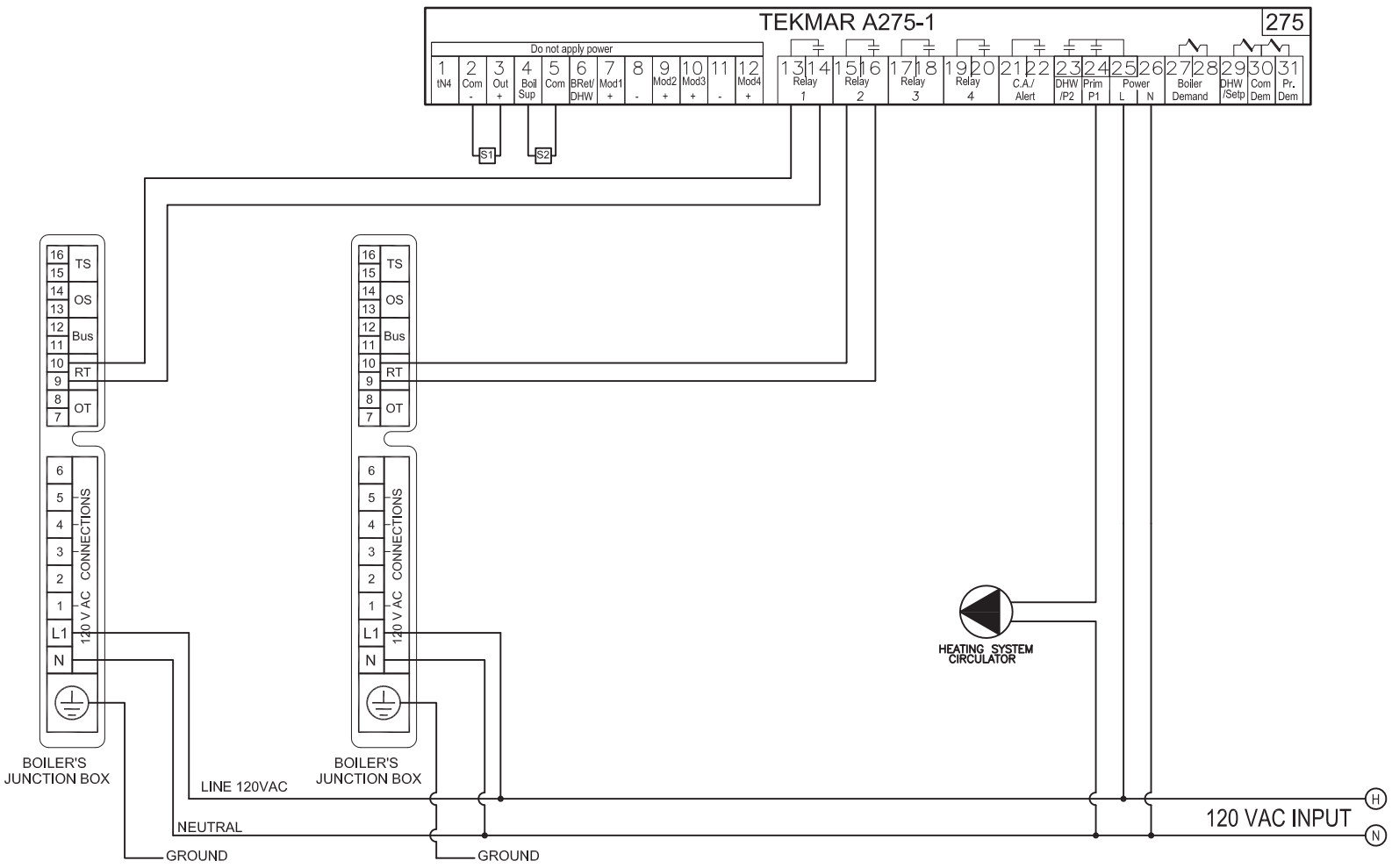

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COMBI BOILER with instantaneous DHW and heating by primary/secondary loop. Zone valves are controlled by TEKMAR A275-1 control (Electrical diagram. See page 22 for Piping diagram).