Disclaimer:

These piping diagrams are an example of possible configurations which may not work in all applications. Local codes and authorities should be always be verified with a qualified engineer’s consultation on all installation details including piping schematics. Please consult Patterson-Kelley, LLC Boiler & Water-Heater Owner’s Manuals for correct operational standards for all P-K boilers and water-heaters. Patterson-Kelley LLC cannot, and will not, be held liable for any lack of due diligence of any party involved in the installation of its products.

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Primary loop diagram

Flow Meter

From System

PK Condensing Boiler

Boiler Temperature Sensors to control Boiler Firing Rate
Header Temperature and OA Reset Schedule to Control staging

Condensate

System fill

Notes:
1. Minimum pipe size to boiler equal to boiler supply/return connection size.
2. Return/supply header piping to be at least one pipe size larger than piping to equipment
3. Bypass loop recommended on primary-only systems to decrease heat exchanger wear during boiler off times
4. 2 way control valves necessary on primary and bypass loops, can be operated by boiler controls
Flow Meter

Primary HYDRONIC SYSTEM PIPING

T-3
T

From System

Boiler Temperature Sensors to control Boiler Firing Rate
Header Temperature and OA Reset
Schedule to Control staging

Notes:
1. Minimum pipe size to boiler equal to boiler supply/return connection size.
2. Return/supply header piping to be at least one pipe size larger than piping to equipment.
3. Bypass loop recommended on primary-only systems to decrease heat exchanger wear during boiler off times.
4. 2 way control valves necessary on primary and bypass loops, can be operated by boiler controls.

Primary loop diagram

House Pumps

To System

System fill

Patterson-Kelley
1200 Thermific

4
Primary loop diagram

Boiler Temperature Sensors to control Boiler Firing Rate
Header Temperature and OA Reset Schedule to Control staging

Notes:
1. Minimum pipe size to boiler equal to boiler supply/return connection size.
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Primary loop diagram

Boiler Temperature Sensors
to control Boiler Firing Rate
Header Temperature and OA Reset
Schedule to Control staging

Notes:
1. Minimum pipe size to boiler equal to boiler supply/return connection size.
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Primary loop diagram

Boiler Temperature Sensors to control Boiler Firing Rate
Header Temperature and OA Reset Schedule to Control staging

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Primary loop diagram

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1. Minimum pipe size to boiler equal to boiler supply/return connection size.
2. Return/supply header piping to be at least one pipe size larger than piping to equipment.
3. Bypass loop recommended on primary-only systems to decrease heat exchanger wear during boiler off times.
4. 2 way control valves necessary on primary and bypass loops, can be operated by boiler controls.
From System

Boiler Temperature Sensors to control Boiler Firing Rate
Header Temperature and OA Reset Schedule to Control staging

Flow Meter

T-3

House Pumps

To System

System fill

Notes:
1. Header piping should be one pipe size larger than direct boiler piping
2. Primary Header should be 4" piping
3. Distance between 1\textsuperscript{st} and 2\textsuperscript{nd} tee should be no more than 4 pipe diameters
Primary/Secondary loop diagram

Boiler Temperature Sensors to control Boiler Firing Rate
Header Temperature and OA Reset
Schedule to Control staging

From System

To System

House Pumps

System fill

Notes:
1. Header piping should be one pipe size larger than direct boiler piping
2. Primary Header should be 4” piping
3. Distance between 1st and 2nd tee should be no more than 4 pipe diameters

Patterson Kelley
Non condensing boiler

3 way valve

Primary/Secondary
HYDRONIC SYSTEM
PIPING
Primary/Secondary loop diagram

Boiler Temperature Sensors to control Boiler Firing Rate
Header Temperature and OA Reset
Schedule to Control staging

Notes:
1. Header piping should be one pipe size larger than direct boiler piping
2. Primary Header should be 4" piping
3. Distance between 1st and 2nd tee should be no more than 4 pipe diameters
Primary/Secondary loop diagram

Notes:

1. Header piping should be one pipe size larger than direct boiler piping
2. Primary Header should be 4" piping
3. Distance between 1st and 2nd tee should be no more than 4 pipe diameters

Boiler Temperature Sensors to control Boiler Firing Rate
Header Temperature and OA Reset
Schedule to Control staging

From System

To System

System fill

House Pumps

Condensate

PK Condensing Boiler

PK Condensing Boiler
Notes:
1. Header piping should be one pipe size larger than direct boiler piping
2. Primary Header should be 4" piping
3. Distance between 1st and 2nd tee should be no more than 4 pipe diameters
Primary/Secondary loop diagram

- **Flow Meter**
- **Primary/Secondary**
- **HYDRONIC SYSTEM**
- **PIPING**

**From System**

- **PK Condensing Boiler**
- **Boiler Temperature Sensors** to control Boiler Firing Rate
- **Header Temperature and OA Reset**
- **Schedule to Control staging**

**To System**

- **House Pumps**
- **System fill**

**Notes:**
1. Header piping should be one pipe size larger than direct boiler piping
2. Primary Header should be 4” piping
3. Distance between 1st and 2nd tee should be no more than 4 pipe diameters

**Primary/Secondary HYDRONIC SYSTEM PIPING**
Primary/Secondary loop diagram

Boiler Temperature Sensors to control Boiler Firing Rate
Header Temperature and OA Reset Schedule to Control staging

Notes:
1. Header piping should be one pipe size larger than direct boiler piping
2. Primary Header should be 4” piping
3. Distance between 1st and 2nd tee should be no more than 4 pipe diameters
Three Tee Piping allows for pre-heating from Condensing Boilers to Non-condensing Boilers

Notes:
1. Header piping should be one pipe size larger than direct boiler piping
2. Primary Header should be 4" piping
3. Distance between 2nd and 3rd tee should be no more than 4 pipe diameters
Three Tee Piping allows for pre-heating from Condensing Boilers to Non-condensing Boilers

Boiler Temperature Sensors to control Boiler Firing Rate
Header Temperature and OA Reset Schedule to Control staging

Notes:
1. Header piping should be one pipe size larger than direct boiler piping
2. Primary Header should be 4” piping
3. Distance between 2nd and 3rd tee should be no more than 4 pipe diameters
Three Tee Piping allows for pre-heating from Condensing Boilers to Non-condensing Boilers

Boiler Temperature Sensors to control Boiler Firing Rate
Header Temperature and OA Reset Schedule to Control staging

Notes:
1. Header piping should be one pipe size larger than direct boiler piping
2. Primary Header should be 4" piping
3. Distance between 2\textsuperscript{nd} and 3\textsuperscript{rd} tee should be no more than 4 pipe diameters
Three Tee Piping allows for pre-heating from Condensing Boilers to Non-condensing Boilers

Boiler Temperature Sensors to control Boiler Firing Rate
Header Temperature and OA Reset Schedule to Control staging

Notes:
1. Header piping should be one pipe size larger than direct boiler piping
2. Primary Header should be 4" piping
3. Distance between 2nd and 3rd tee should be no more than 4 pipe diameters
Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal
2. Appropriately sized expansion tank should be located on cold water inlet
3. Building recirculation (if utilized) should be tied into dedicated recirculation connection on side of HIDRA
4. 12k OHM tank sensor should be used in storage tanks
Building recirculation

Cold water inlet

Domestic hot water with 1 condensing boiler and 2 storage tanks

Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal
2. Appropriately sized expansion tank should be located on cold water inlet
3. Building recirculation (if utilized) should be tied into dedicated recirculation connection on side of HIDRA
4. 12k OHM tank sensor should be used in storage tanks

Legend:
- Balancing valve
- Condensate neutralization
- Circulator pump
- Expansion tank
- Flow direction
- Temp sensor/gauge
Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal
2. Appropriately sized expansion tank should be located on cold water inlet
3. Building recirculation (if utilized) should be tied into dedicated recirculation connection on side of HIDRA
4. 12k OHM tank sensor should be used in storage tanks
Building recirculation
Cold water inlet
Domestic hot water with 2 condensing boilers and 2 storage tanks

Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal
2. Appropriately sized expansion tank should be located on cold water inlet
3. Building recirculation (if utilized) should be tied into dedicated recirculation connection on side of HIDRA
4. 12k OHM tank sensor should be used in storage tanks

Legends:
- Balancing valve
- Expansion tank
- Condensate neutralization
- Circulator pump
- Temp sensor/gauge
- Flow direction
- Isolation valve
Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal
2. Appropriately sized expansion tank should be located on cold water inlet
3. Building recirculation (if utilized) should be tied into dedicated recirculation connection on side of HiDRA
4. 12k OHM tank sensor should be used in storage tanks
Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal
2. Appropriately sized expansion tank should be located on cold water inlet
3. Building recirculation (if utilized) should be tied into cold water inlet
4. 12k OHM tank sensor should be used in storage tanks
Domestic hot water with 2 condensing boilers and 3 storage tanks

Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal.
2. Appropriately sized expansion tank should be located on cold water inlet.
3. Building recirculation (if utilized) should be tied into cold water inlet.
4. 12k OHM tank sensor should be used in storage tanks.

LEGEND
- Flow direction
- Expansion tank
- Condensate neutralization
- Circulator pump
- Isolation valve
- Temp sensor/gauge
Domestic hot water with 3 condensing boilers and 2 storage tanks

Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal
2. Appropriately sized expansion tank should be located on cold water inlet
3. Building recirculation (if utilized) should be tied into cold water inlet
4. 12k OHM tank sensor should be used in storage tanks
Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal
2. Appropriately sized expansion tank should be located on cold water inlet
3. Building recirculation (if utilized) should be tied into cold water inlet
4. 12k OHM tank sensor should be used in storage tanks
Domestic hot water with 1 non-condensing boiler and 2 storage tanks

Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal
2. Appropriately sized expansion tank should be located on cold water inlet
3. Building recirculation (if utilized) should be tied into hot water supply
4. 12k OHM tank sensor should be used in storage tanks

LEGEND
- Balancing valve
- Condensate neutralization
- Circulator pump
- Isolation valve
- Flow direction
- Temp sensor/gauge

Cold water inlet
Building recirculation
Hot water supply to building
Hot water supply to building

T
T
Domestic hot water with 1 non-condensing boiler and 2 storage tanks

Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal
2. Appropriately sized expansion tank should be located on cold water inlet
3. Building recirculation (if utilized) should be tied into hot water supply
4. 12k OHM tank sensor should be used in storage tanks
Domestic hot water with 1 non-condensing boiler and 2 storage tanks.

Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal.
2. Appropriately sized expansion tank should be located on cold water inlet.
3. Building recirculation (if utilized) should be tied into hot water supply.
4. 12k OHM tank sensor should be used in storage tanks.

Diagram:
- Cold water inlet
- Building recirculation
- Hot water supply to building
- Circulator pump
- Isolation valve
- Expansion tank
- Temp sensor/gauge
- Flow direction

Legend:
- Expansion tank
- Condensate neutralization
- Circulator pump
- Isolation valve
- Balancing valve
- Flow direction
- Temp sensor/gauge
Domestic hot water with 1 non-condensing boiler and 2 storage tanks

Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal
2. Appropriately sized expansion tank should be located on cold water inlet
3. Building recirculation (if utilized) should be tied into hot water supply
4. 12k OHM tank sensor should be used in storage tanks

LEGEND
- Flow direction
- Expansion tank
- Temp sensor/gauge
- Balancing valve
- Condensate neutralization
- Circulator pump
- Isolation valve
- Tank senor/valve
Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal.
2. Appropriately sized expansion tank should be located on cold water inlet.
3. Building recirculation (if utilized) should be tied into dedicated recirculation connection on side of HiDRA.

Hot water supply

Refer to mixing valve installation instructions

Cold Water inlet

Hot

Mixed

Condensate

Refer to mixing valve installation instructions

Refer to mixing valve installation instructions

Balancing valve

Condensate neutralization

Circulator pump

Isolation valve

Legend:

Expansion tank

Flow direction

Temp sensor/gauge

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Double HiDRA with storage tank piping diagram

Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal.
2. Appropriately sized expansion tank should be located on cold water inlet.
3. Building recirculation (if utilized) should be tied into dedicated recirculation connection on side of HiDRA.
4. 12k OHM tank sensor should be used in storage tanks.

Refer to mixing valve installation instructions.
Double HiDRA with storage tank piping diagram

Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal.
2. Appropriately sized expansion tank should be located on cold water inlet.
3. Building recirculation (if utilized) should be tied into dedicated recirculation connection on side of HiDRA.
4. 12k OHM tank sensor should be used in storage tanks.
5. Placing a temperature gauge next to a temperature sensor is recommended.

Refer to mixing valve installation instructions.

LEGEND
- Balancing valve
- Condensate neutralization
- Circulator pump
- Isolation valve
- Flow direction
- Expansion tank
- Temp sensor/gauge
Double HiDRA with storage tank piping diagram

Notes:

1. For actual piping locations and dimensions, refer to appropriate appliance submittal.
2. Appropriately sized expansion tank should be located on cold water inlet.
3. Building recirculation (if utilized) should be tied into dedicated recirculation connection on side of HiDRA.
4. 12k OHM tank sensor should be used in storage tanks.
5. Placing a temperature gauge next to a temperature sensor is recommended.

Refer to mixing valve installation instructions.

LEGEND
- Balancing valve
- Condensate neutralization
- Circulator pump
- Isolation valve
- Flow direction
- Expansion tank
- Temp sensor/gauge

Cold Water inlet

Hot water supply

Condensate

Building Recirculation
Notes:

1. For actual piping locations and dimensions, refer to appropriate appliance submittal.

2. Appropriately sized expansion tank should be located on cold water inlet.

3. Building recirculation (if utilized) should be tied into dedicated recirculation connection on side of HiDRA.

4. Placing a temperature gauge next to a temperature sensor is recommended.
Notes:

1. For actual piping locations and dimensions, refer to appropriate appliance submittal.
2. Appropriately sized expansion tank should be located on cold water inlet.
3. Building recirculation (if utilized) should be tied into dedicated recirculation connection on side of HiDRA.

Refer to mixing valve installation instructions.

LEGEND:
- Balancing valve
- Condensate neutralization
- Circulator pump
- Isolation valve
- Expansion tank
- Flow direction
- Temp gauge

Flow direction markers indicate the direction of water flow through the system.
Notes:

1. For actual piping locations and dimensions, refer to appropriate appliance submittal

2. Appropriately sized expansion tank should be located on cold water inlet

3. Building recirculation (if utilized) should be tied into dedicated recirculation connection on side of HIDRA

4. Placing a temperature gauge next to a temperature sensor is recommended

LEGEND

- Balancing valve
- Expansion tank
- Condensate neutralization
- Flow direction
- Circulator pump
- Isolation valve
- Temp sensor/gauge
Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal.
2. Appropriately sized expansion tank should be located on cold water inlet.
3. Building recirculation (if utilized) should be tied into dedicated recirculation connection on side of HiDRA.
4. 12k OHM tank sensor should be used in storage tanks.
5. Placing a temperature gauge next to a temperature sensor is recommended.
Double Mach N Roll with 200 gallon tank piping diagram

Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal.
2. Appropriately sized expansion tank should be located on cold water inlet.
3. Building recirculation (if utilized) should be tied into cold water inlet.
4. 12k OHM tank sensor should be used in storage tanks.

Refer to mixing valve installation instructions.
Building Recirculation

LEGEND
- Balancing valve
- Condensate neutralization
- Flow direction
- Circulator pump
- Isolation valve
- Temp gauge
- Expansion tank
- Flow direction
- Temp gauge
- Expansion tank
Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal
2. Appropriately sized expansion tank should be located on cold water inlet of air elimination
3. Building recirculation (if utilized) should be tied into cold water make up
4. Refer to ASHRAE 90.1 for return water %
5. Bronze domestic pump must be sized for full COMPACT size
6. All COMPACTS must have a section VIII relief valve downstream
Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal.
2. Appropriately sized expansion tank should be located on cold water inlet of air elimination.
3. Building recirculation (if utilized) should be tied into cold water make up.
4. Refer to ASHRAE 90.1 for return water %
5. Bronze domestic pump must be sized for full COMPACT size.
6. All COMPACTS must have a section VIII relief valve downstream.
Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal.
2. Appropriately sized expansion tank should be located on cold water inlet of air elimination.
3. Building recirculation (if utilized) should be tied into cold water make up.
4. Refer to ASHRAE 90.1 for return water %.
5. Bronze domestic pump must be sized for full COMPACT size.
6. All COMPACTS must have a section VIII relief valve downstream.
Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal
2. Appropriately sized expansion tank should be located on cold water inlet of air elimination
3. Building recirculation (if utilized) should be tied into recirculation on compact
4. Refer to ASHRAE 90.1 for return water %
5. All COMPACTS must have a section VIII relief valve downstream
Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal.
2. Appropriately sized expansion tank should be located on cold water inlet of air elimination.
3. Building recirculation (if utilized) should be tied into compact recirculation.
4. Refer to ASHRAE 90.1 for return water %.
Notes:

1. For actual piping locations and dimensions, refer to appropriate appliance submittal.

2. Appropriately sized expansion tank should be located on cold water inlet of air elimination.

3. Building recirculation (if utilized) should be tied into cold water make up.

4. Refer to ASHRAE 90.1 for return water %.

5. All COMPACTS must have a section VIII relief valve downstream.
Notes:

1. For actual piping locations and dimensions, refer to appropriate appliance submittal.

2. Appropriately sized expansion tank should be located on cold water inlet of air elimination.

3. Building recirculation (if utilized) should be tied into cold water make up.

4. Refer to ASHRAE 90.1 for return water %.

5. All COMPACTS must have a section VIII relief valve downstream.
Notes:

1. For actual piping locations and dimensions, refer to appropriate appliance submittal.

2. Appropriately sized expansion tank should be located on cold water inlet of air elimination.

3. Building recirculation (if utilized) should be tied into cold water make up.

4. Refer to ASHRAE 90.1 for return water %.

5. All COMPACTS must have a section VIII relief valve downstream.
Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal
2. Appropriately sized expansion tank should be located on cold water inlet of air elimination
3. Building recirculation (if utilized) should be tied into cold water make up
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3. Building recirculation (if utilized) should be tied into cold water make up
4. Refer to ASHRAE 90.1 for return water %
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6. All COMPACTS must have a section VIII relief valve downstream
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1. For actual piping locations and dimensions, refer to appropriate appliance submittal.
2. Appropriately sized expansion tank should be located on cold water inlet of air elimination.
3. Building recirculation (if utilized) should be tied into cold water make up.
4. Refer to ASHRAE 90.1 for return water %.
5. Bronze domestic pump must be sized for full COMPACT size.
6. All COMPACTS must have a section VIII relief valve downstream.

LEGEND:
- Expansion tank
- Flow direction
- Temperature sensor/gauge
- Steam valve
- Relief valve
- Isolation valve
- Circulator pump
- Steam supply
- Hot water outlet
- Hot water to building
- Cold water
- Recirculation pump
- Mixing valve
- Tank
- N.C. Bypass
- Hot water outlet
Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal.
2. Appropriately sized expansion tank should be located on cold water inlet of air elimination.
3. Building recirculation (if utilized) should be tied into cold water makeup.
4. Refer to ASHRAE 90.1 for return water %
5. Bronze domestic pump must be sized for full COMPACT size.
6. All COMPACTS must have a section VIII relief valve downstream.

LEGEND
- Flow direction
- Expansion tank
- Temp sensor/gauge
- Steam valve
- Relief valve
Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal.
2. Appropriately sized expansion tank should be located on cold water inlet of air elimination.
3. Building recirculation (if utilized) should be tied into cold water make up.
4. Refer to ASHRAE 90.1 for return water %.
5. Bronze domestic pump must be sized for full COMPACT size.
6. All COMPACTS must have a section VIII relief valve downstream.
Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal.
2. Appropriately sized expansion tank should be located on cold water inlet of air elimination.
3. Building recirculation (if utilized) should be tied into cold water make up.
4. Refer to ASHRAE 90.1 for return water %.
5. Bronze domestic pump must be sized for full COMPACT size.
6. All COMPACTS must have a section VIII relief valve downstream.
Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal.
2. Appropriately sized expansion tank should be located on cold water inlet of air elimination.
3. Building recirculation (if utilized) should be tied into cold water make up.
4. 12k ohm tank sensor must be used.
5. Refer to ASHRAE 90.1 for return water %.
6. Domestic water side must have a volume of water on supply side.
2 Compacts with NY TRIM and Hot water storage tank

Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal
2. Appropriately sized expansion tank should be located on cold water inlet of air elimination
3. Building recirculation (if utilized) should be tied into COMPACT recirculation
4. Refer to ASHRAE 90.1 for return water %
5. Bronze domestic pump must be sized for full COMPACT size
6. All COMPACTs must have a section VIII relief valve downstream
2 Compacts with Hot water storage tank

Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal.
2. Approximately sized expansion tank should be located on cold water inlet of air elimination.
3. Building recirculation (if utilized) should be tied into cold water make up.
4. Refer to ASHRAE 90.1 for return water %.
5. Bronze domestic pump must be sized for full COMPACT size.
6. All COMPACTS must have a section VIII relief valve downstream.
Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal.
2. Appropriately sized expansion tank should be located on cold water inlet of air elimination.
3. Building recirculation (if utilized) should be tied into cold water make up.
4. Refer to ASHRAE 90.1 for return water %
5. Bronze domestic pump must be sized for full COMPACT size.
6. All COMPACTS must have a section VIII relief valve downstream.
Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal.
2. Appropriately sized expansion tank should be located on cold water inlet of air elimination.
3. Building recirculation (if utilized) should be tied into cold water make up.
4. Refer to ASHRAE 90.1 for return water %.
5. Bronze domestic pump must be sized for full COMPACT size.
6. All COMPACTS must have a section VIII relief valve downstream.
Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal
2. Appropriately sized expansion tank should be located on cold water inlet of air elimination
3. Building recirculation (if utilized) should be tied into cold water make up
4. Refer to ASHRAE 90.1 for return water %
5. Bronze domestic pump must be sized for full COMPACT size
6. All COMPACTS must have a section VIII relief valve downstream

LEGEND

- Temp sensor/gauge
- Relief valve
- Steam valve
- Isolation valve
- Circulator pump
- Expansion tank
- Flow direction
Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal.
2. Appropriately sized expansion tank should be located on cold water inlet of air elimination.
3. Building recirculation (if utilized) should be tied into cold water make up.
4. 12k ohm tank sensor must be used.
5. Refer to ASHRAE 90.1 for return water %.
6. Domestic water side must have a volume of water on supply side.

3 Compacts with NY TRIM and Hot water storage tank
Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal.
2. Appropriately sized expansion tank should be located on cold water inlet of air elimination.
3. Building recirculation (if utilized) should be tied into cold water make up.
4. Refer to ASHRAE 90.1 for return water %.
5. Bronze domestic pump must be sized for full COMPACT size.
6. All COMPACTS must have a section VIII relief valve downstream.

LEGEND
- Flow direction
- Expansion tank
- Temp sensor/gauge
- Steam valve
- Relief valve

Steam Supply
Steam Supply
Steam Supply

Hi-Limit to drain
PK Compact
PK Compact
PK Compact

Relief Valve to drain
Relief Valve to drain
Relief Valve to drain

PK Compact
PK Compact
PK Compact

Circulating Pump
(Size for Full Capacity of Compact)

N.C. Bypass
N.C. Bypass
N.C. Bypass
Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal.
2. Appropriately sized expansion tank should be located on cold water inlet of air elimination.
3. Building recirculation (if utilized) should be tied into cold water line.
4. Refer to ASHRAE 90.1 for return water %.
5. All COMPACTS must have a section VIII relief valve downstream.
Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal
2. Appropriately sized expansion tank should be located on cold water inlet of air elimination
3. Building recirculation (if utilized) should be tied into cold water make up
4. Refer to ASHRAE 90.1 for return water %
5. Bronze domestic pump must be sized for full COMPACT size
6. All COMPACTS must have a section VIII relief valve downstream
Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal.
2. Appropriately sized expansion tank should be located on cold water inlet of air elimination.
3. Building recirculation (if utilized) should be tied into cold water make up.
4. 12k ohm tank sensor must be used.
5. Refer to ASHRAE 90.1 for return water %.

Single condensing boiler with 2 Duration III and hot water storage tank
Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal.
2. Appropriately sized expansion tank should be located on cold water inlet of air elimination.
3. Building recirculation (if utilized) should be tied into cold water make up.
4. 12k ohm tank sensor must be used.
5. Refer to ASHRAE 90.1 for return water %.
6. Domestic water side must have a volume of water on supply side.
Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal.
2. Appropriately sized expansion tank should be located on cold water inlet of air elimination.
3. Building recirculation (if utilized) should be tied into cold water make up.
4. 12k ohm tank sensor must be used.
5. Refer to ASHRAE 90.1 for return water %.
6. Domestic water side must have a volume of water on supply side.
Single condensing boiler with Duration III and hot water storage tank

Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal.
2. Appropriately sized expansion tank should be located on cold water inlet of air elimination.
3. Building recirculation (if utilized) should be tied into cold water make up.
4. 12k ohm tank sensor must be used.
5. Refer to ASHRAE 90.1 for return water %.
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Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal.
2. Appropriately sized expansion tank should be located on cold water inlet of air elimination.
3. Building recirculation (if utilized) should be tied into cold water make up.
4. 12k ohm tank sensor must be used.
5. Refer to ASHRAE 90.1 for return water %.
6. Domestic water side must have a volume of water on supply side.
Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal.
2. Appropriately sized expansion tank should be located on cold water inlet of air elimination.
3. Building recirculation (if utilized) should be tied into cold water make-up.
4. 12k ohm tank sensor must be used.
5. Refer to ASHRAE 90.1 for return water %.
6. Domestic water side must have a volume of water on supply side.

Legend:
- Flow direction
- Expansion tank
- Temp gauge
- Wye Strainer
- Condensate neutralization
- Circulator pump
- Isolation valve

Triple condensing boiler with 2 Duration III and hot water storage tank

System fill

Cold water make up

Recirculation loop return
Notes:
1. Header piping should be one pipe size larger than direct boiler piping
2. Distance between 1st and 2nd tee should be no more than 4 pipe diameters
3. For actual piping locations and dimensions, refer to appropriate appliance submittal
4. Appropriately sized expansion tank should be located on cold water inlet of air elimination
5. Building recirculation (if utilized) should be tied into cold water make up
6. 12k OHM tank sensor to be installed in tank
Notes:
1. Header piping should be one pipe size larger than direct boiler piping
2. Distance between 1st and 2nd tee should be no more than 4 pipe diameters
3. For actual piping locations and dimensions, refer to appropriate appliance submittal
4. Appropriately sized expansion tank should be located on cold water inlet of air elimination
5. Building recirculation (if utilized) should be tied into cold water make up
6. 12k OHM tank sensor to be installed in tank
Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal.
2. Appropriately sized expansion tank should be located on cold water inlet of air elimination.
3. Building recirculation (if utilized) should be tied into cold water make up.
4. 12k ohm tank sensor must be used.
Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal.
2. Appropriately sized expansion tank should be located on cold water inlet of air elimination.
3. Building recirculation (if utilized) should be tied into cold water make-up.
4. 12k ohm tank sensor must be used.
Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal
2. Appropriately sized expansion tank should be located on cold water inlet of air elimination
3. Building recirculation (if utilized) should be tied into cold water make up
4. 12k ohm tank sensor must be used.
Notes:
1. Header piping should be one pipe size larger than direct boiler piping
2. For actual piping locations and dimensions, refer to appropriate appliance submittal
3. Appropriately sized expansion tank should be located on cold water inlet of air elimination
4. Building recirculation (if utilized) should be tied into cold water make up
5. 12k OHM tank sensor to be installed in tank

LEGEND
- Flow direction
- Expansion tank
- Condensate neutralization
- Circulator pump
- Isolation valve
- Balancing valve
- Temperature sensor/gauge
1 condensing boiler with 2 Duration III on Primary/Secondary system

Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal.
2. Appropriately sized expansion tank should be located on cold water inlet of air elimination.
3. Building recirculation (if utilized) should be tied into cold water make up.
4. 12k ohm tank sensor must be used.
5. Refer to ASHRAE 90.1 for return water %
6. Domestic water side must have a volume of water on supply side.
Notes:
1. Header piping should be one pipe size larger than direct boiler piping.
2. For actual piping locations and dimensions, refer to appropriate appliance submittal.
3. Appropriately sized expansion tank should be located on cold water inlet of air elimination.
4. Building recirculation (if utilized) should be tied into cold water make up.
Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal.
2. Appropriately sized expansion tank should be located on cold water inlet of air elimination.
3. Building recirculation (if utilized) should be tied into cold water make up.
4. 12k ohm tank sensor must be used.
5. Refer to ASHRAE 90.1 for return water %.
6. Domestic water side must have a volume of water on supply side.
Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal.
2. Appropriately sized expansion tank should be located on cold water inlet of air elimination.
3. Building recirculation (if utilized) should be tied into cold water make up.
4. 12k ohm tank sensor must be used.
5. Refer to ASHRAE 90.1 for return water %.
6. Domestic water side must have a volume of water on supply side.
3 condensing boilers with 1 Duration III on Primary/Secondary system

Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal.
2. Appropriately sized expansion tank should be located on cold water inlet of air elimination.
3. Building recirculation (if utilized) should be tied into cold water make up.
4. 12k ohm tank sensor must be used.
5. Refer to ASHRAE 90.1 for return water %.
6. Domestic water side must have a volume of water on supply side.
3 condensing boilers with 2 Duration III on Primary/Secondary system

Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal
2. Appropriately sized expansion tank should be located on cold water inlet of air elimination
3. Building recirculation (if utilized) should be tied into cold water make up
4. 12k ohm tank sensor must be used.
5. Refer to ASHRAE 90.1 for return water %
6. Domestic water side must have a volume of water on supply side.
3 condensing boilers with 3 Duration III on Primary/Secondary system

Notes:
1. For actual piping locations and dimensions, refer to appropriate appliance submittal.
2. Appropriately sized expansion tank should be located on cold water inlet of air elimination.
3. Building recirculation (if utilized) should be tied into cold water make up.
4. 12k ohm tank sensor must be used.
5. Refer to ASHRAE 90.1 for return water %.
6. Domestic water side must have a volume of water on supply side.