

PLUMBING GUIDE

Domestic Hot Water System & Space Heating System

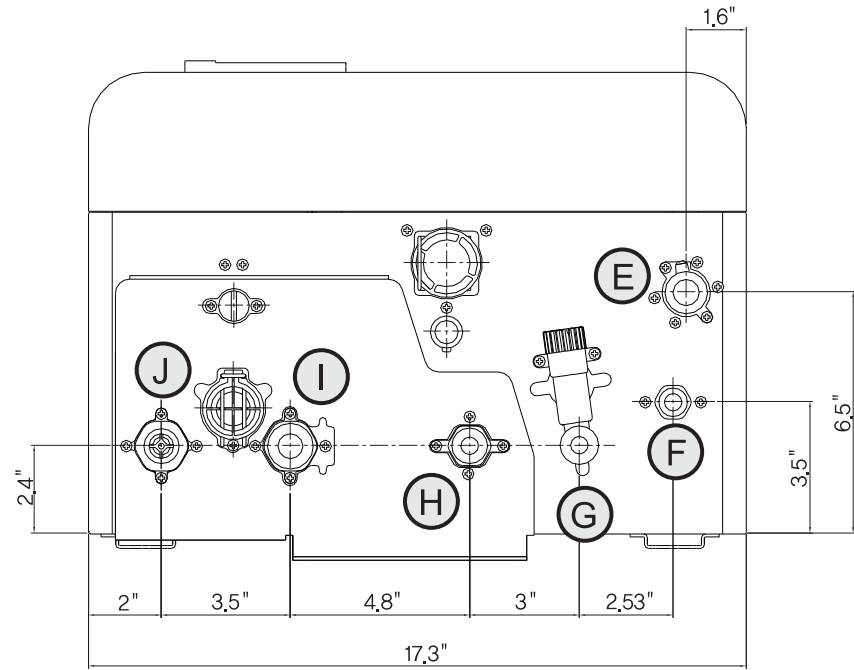
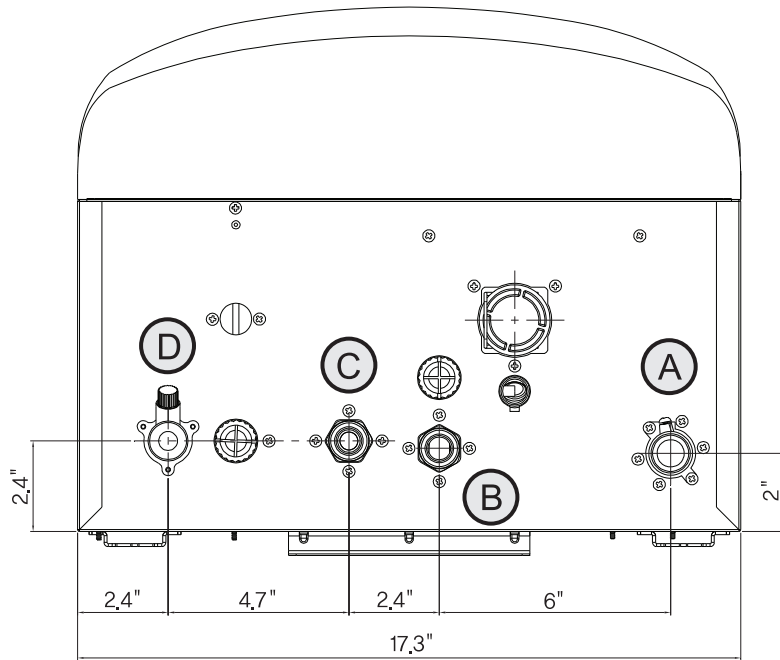
※ Revisions

Version	Description of Changes	Date
1.00	First Issue	July. 2010
1.01	Add to Gas piping Installation	August. 2010

※ Contents

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1. Dimension & Connection Size



1) NR/NP-A Series Connection Size

No.	Description	Diameter
A	Fuel Gas Inlet	3/4"
B	Domestic Cold Water Inlet	3/4"
C	Recirculation Return ("A" Model Only)	3/4"
D	Domestic Hot Water Supply	3/4"

2) CH Series Connection Size

No.	Description	Diameter
E	Fuel Gas Inlet	3/4"
F	Auto Water Feeder Inlet	1/2"
G	Domestic Cold Water Inlet	3/4"
H	Domestic Hot Water Supply	3/4"
I	Space Heating Return	1"
J	Space Heating Supply	1"





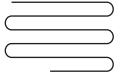









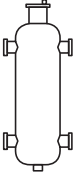

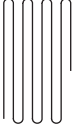

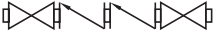
2. Cascade system Plumbing Pipe Size (@ 240 Model)

Q'ty	$\Delta T=86^{\circ}\text{F}$ Flow rate (GPM)	Velocity of Water (ft/s)	Pipe Diameter (mm,inch)	
1	7.19	4.78	20A	¾"
2	14.38	5.61	25A	1"
3	21.57	5.54	30A	1 1/4"
4	28.77	5.21	40A	1 1/2"
5	35.96	6.53	40A	1 1/2"
6	43.15	4.49	50A	2"
7	50.34	5.24	50A	2"
8	57.5	6.00	50A	2"
9	64.72	4.39	65A	2 1/2"
10	71.92	4.75	65A	2 1/2"
11	79.11	5.34	65A	2 1/2"
12	86.30	6.33	65A	2 1/2"
13	93.49	6.33	65A	2 1/2"
14	100.68	6.79	65A	2 1/2"
15	107.87	5.11	80A	3"

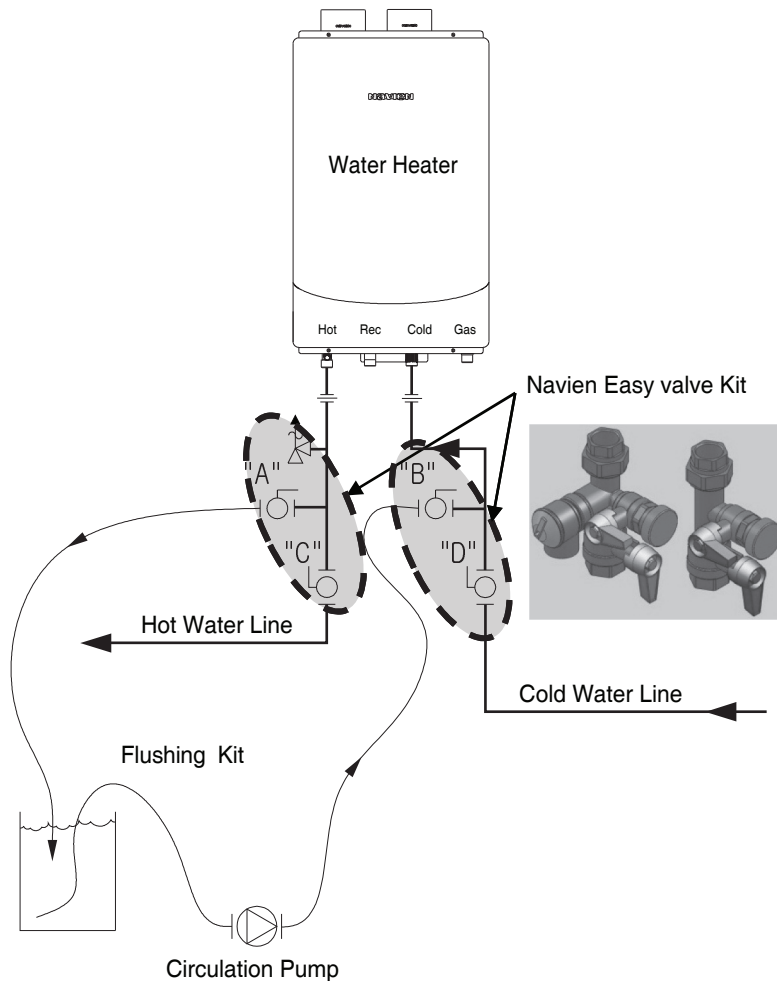
Q'ty	$\Delta T=86^{\circ}\text{F}$ Flow rate (GPM)	Velocity of Water (ft/s)	Pipe Diameter (mm,inch)	
16	115.07	5.44	80A	3"
17	122.26	5.81	80A	3"
18	129.45	6.14	80A	3"
19	136.64	6.46	80A	3"
20	143.83	6.83	80A	3"
21	151.02	4.06	100A	4"
22	158.21	4.25	100A	4"
23	165.41	4.45	100A	4"
24	172.60	4.65	100A	4"
25	179.79	4.85	100A	4"
26	186.98	5.05	100A	4"
27	194.17	5.24	100A	4"
28	201.36	5.44	100A	4"
29	208.56	5.61	100A	4"
30	215.75	5.81	100A	4"

- If the flow rate inside pipes is over 6.6 ft/s, erosion may be occur inside the pipes.
- Above spec's may be different depending on installation circumstances.

3. Symbol

	Union		Regulator		Check Valve
	Ball Valve		In-Floor Heating		Plate Heat Exchanger
	Solenoid Valve		Circulation Pump		3-Way Mixing Valve
	Snow Melting		Air Separator		Pressure Relief Valve
	Zone Valve		Expansion Tank		Hydro Separator
	Faucet		Base Board		Aqua-stat
	Back-Flow Preventer				

4. Flushing the Heat Exchanger



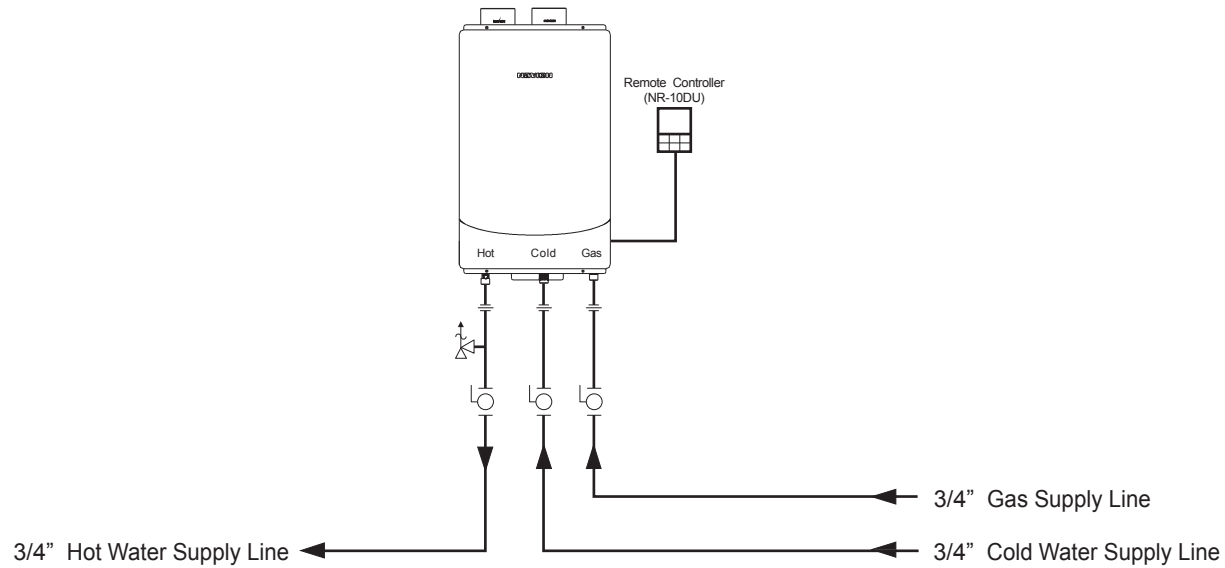
Flushing Procedure:


1. Disconnect electrical power to the water heater.
2. Close the "C" & "D" valve on both the hot & cold water lines.
3. Connect the pump outlet tube to the cold water line at the "B" valve.
4. Connect the drain tube to "A" valve.
5. Pour approximately 5 gallons of virgin, food grade, white vinegar or citric acid pail.
6. Place the drain tube and pump inlet tube to the pump inlet into the cleaning solution.
7. Open both "A" & "B" valves on the hot and cold water lines.
8. Operate the pump and allow the cleaning solution to circulate through the water heater for least 45 minutes.
9. Turn off the circulation pump.
10. Rinse the cleaning solution from the water heater by;
 - a) Remove the free and the drain tube from the pail.
 - b) Close "B" valve and open "D" valve.
Do not open "C" valve.
 - c) Allow water to flow through the water heater for 5 minutes.
 - d) Close "A" valve and open "C" valve.
11. Disconnect all tubes.
12. Remove the inlet filter at the cold water inlet and clean out any residue.
13. Place the filter back into the unit.
14. Restore electrical power to the water heater.

5. NR/NP Series Standard Piping Installation

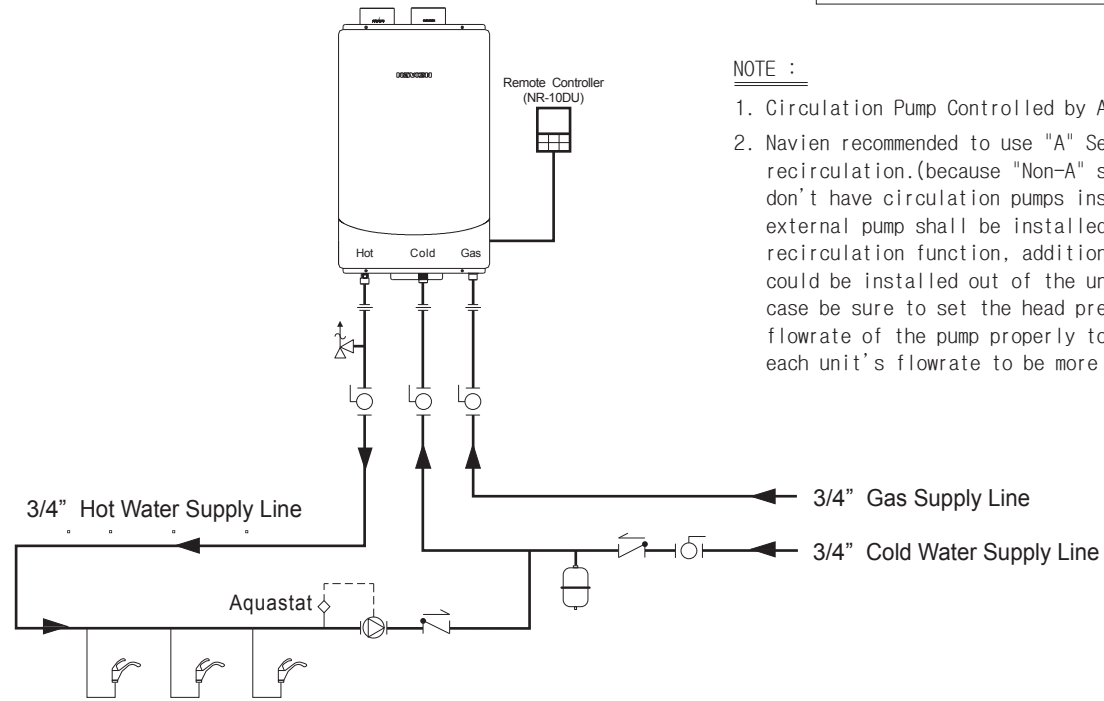
5. 1 Single Installation

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 <p>20 Goodyear Irvine. CA 92618 1-800-519-8794 www.navienamerica.com</p>	TITLE		SYMBOL
	Domestic Hot Water Standard Installation Single Unit Piping Installation		
	Navien Condensing Water Heater Non-A Series		<p> Union</p> <p>○ Ball Valve</p> <p>↑ Pressure Relief Valve</p>
Drawing Number	DHW-NA-01	DATE	January 21, 2010

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NOTE :

1. Circulation Pump Controlled by Aquastat.
2. Navien recommended to use "A" Series for recirculation. (because "Non-A" series don't have circulation pumps inside, external pump shall be installed to use recirculation function, additional pump could be installed out of the unit. In this case be sure to set the head pressure and flowrate of the pump properly to enable each unit's flowrate to be more than 2 GPM)



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TITLE
Domestic Hot Water Standard Installation
Single Unit with Recirculation
Piping Installation

Navien Condensing Water Heater Non-A Series

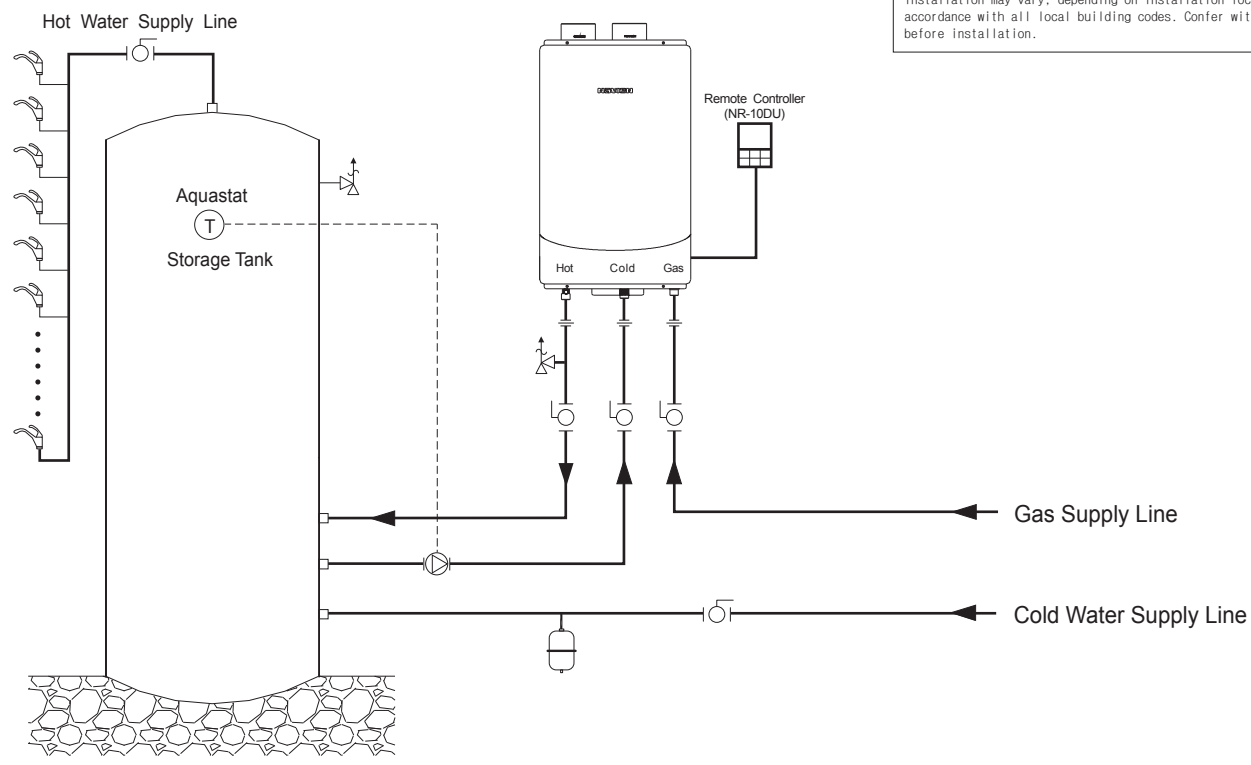
Drawing Number
DHW-NA-02

DATE
January 21, 2010

SYMBOL

- | | |
|------------------|-----------------------|
| Union | Faucet |
| Ball Valve | Expansion Tank |
| Check Valve | Pressure Relief Valve |
| Circulation Pump | |

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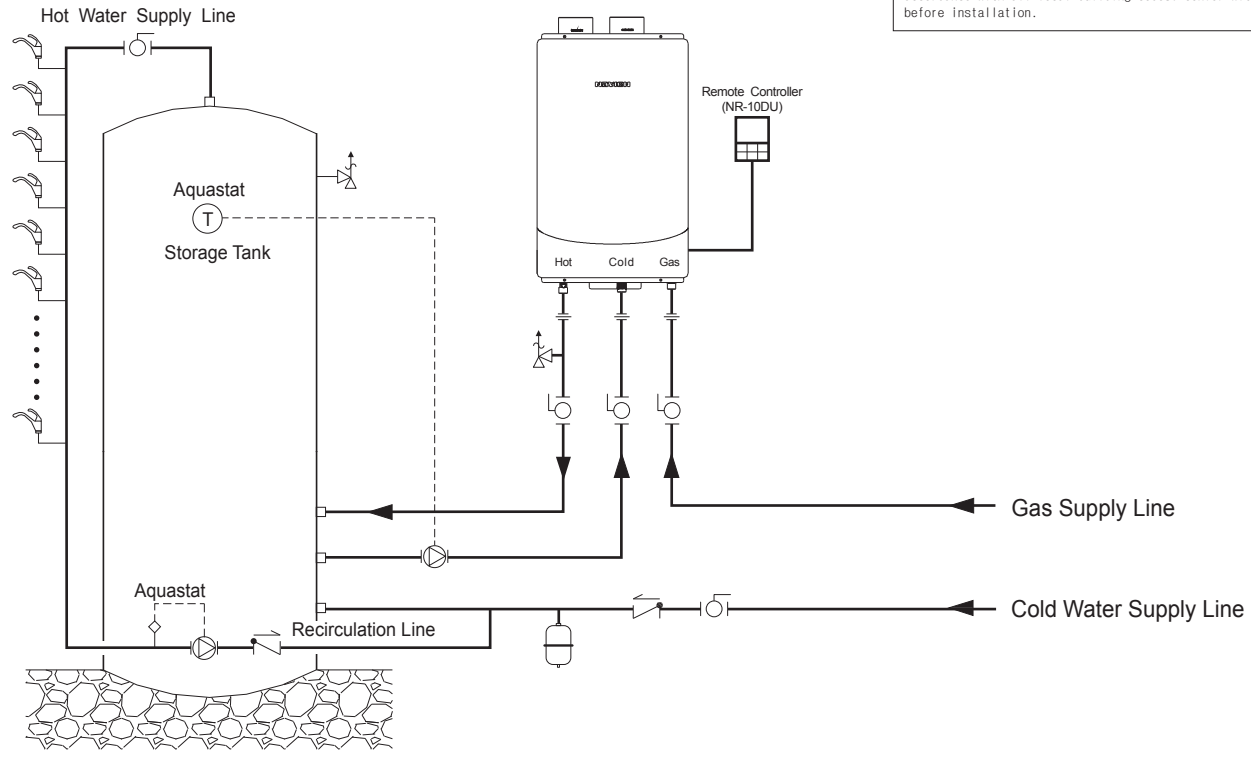


7-CREATOR
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TITLE	
Domestic Hot Water Standard Installation Single Unit with Backup Storage Tank Piping Installation	
Navien Condensing Water Heater Non-A Series	
Drawing Number	DATE
DHW-NA-03	January 21, 2010

SYMBOL	
	Union
⊖	Ball Valve
⊗	Check Valve
⊕	Aqu-astat
⊕	Faucet
⊕	Expansion Tank
⊕	Pressure Relief Valve
⊕	Circulation Pump

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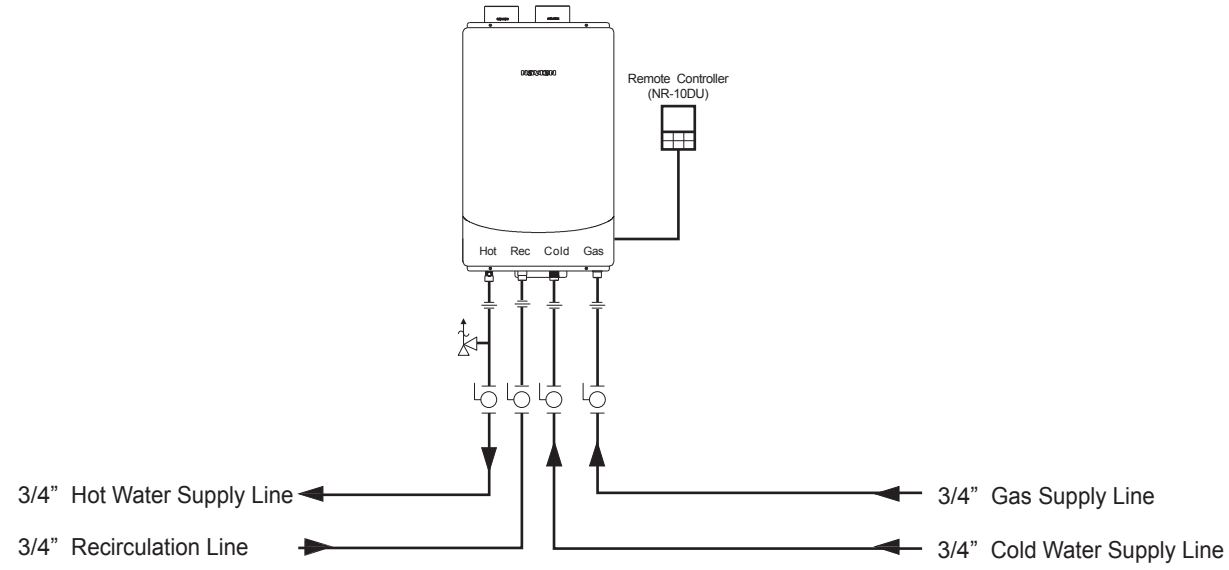
TITLE
 Domestic Hot Water Standard Installation
 Single Unit with Backup Storage Tank
 and Recirculation
 Piping Installation

Navien Condensing Water Heater Non-A Series

Drawing Number: DHW-NA-04 DATE: January 21, 2010

SYMBOL	
	Union
	Ball Valve
	Check Valve
	Aqua-stat
	Faucet
	Expansion Tank
	Pressure Relief Valve
	Circulation Pump

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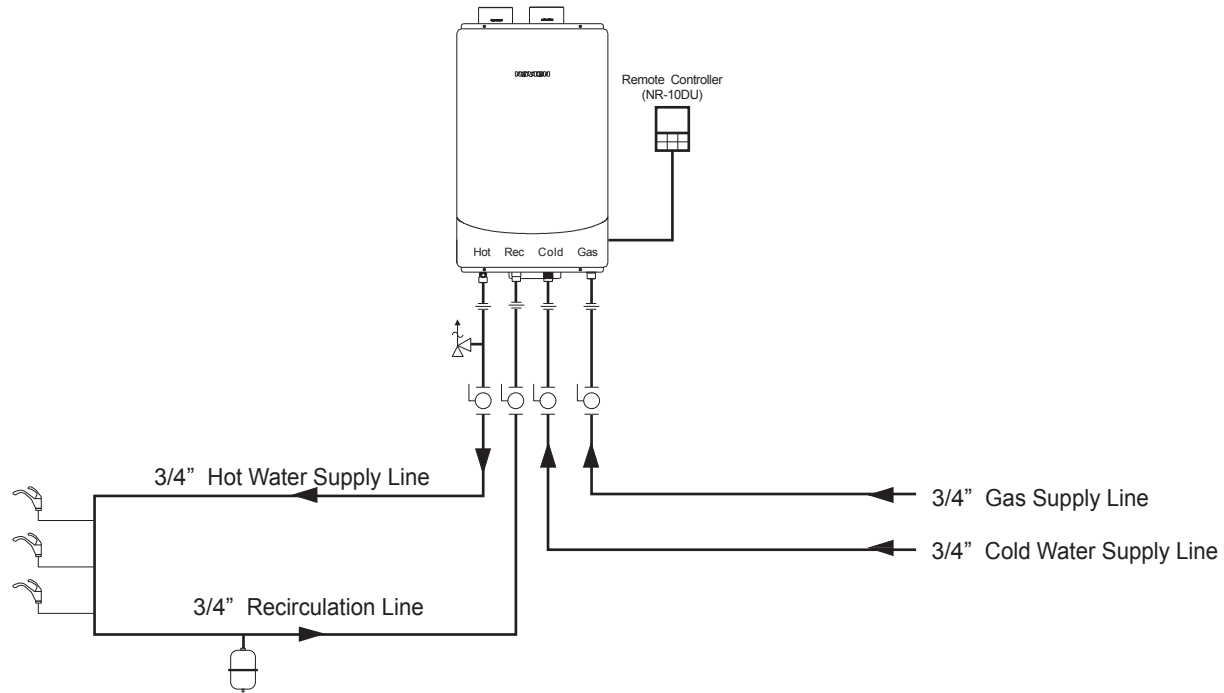


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TITLE	
Domestic Hot Water Standard Installation Single Unit Piping Installation	
Navien Condensing Water Heater A Series	
Drawing Number	DATE
DHW-A-01	January 21, 2010

SYMBOL	
	Union
	Ball Valve
	Pressure Relief Valve

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TITLE
Domestic Hot Water Standard Installation
Single Unit
Piping Installation

Navien Condensing Water Heater A Series

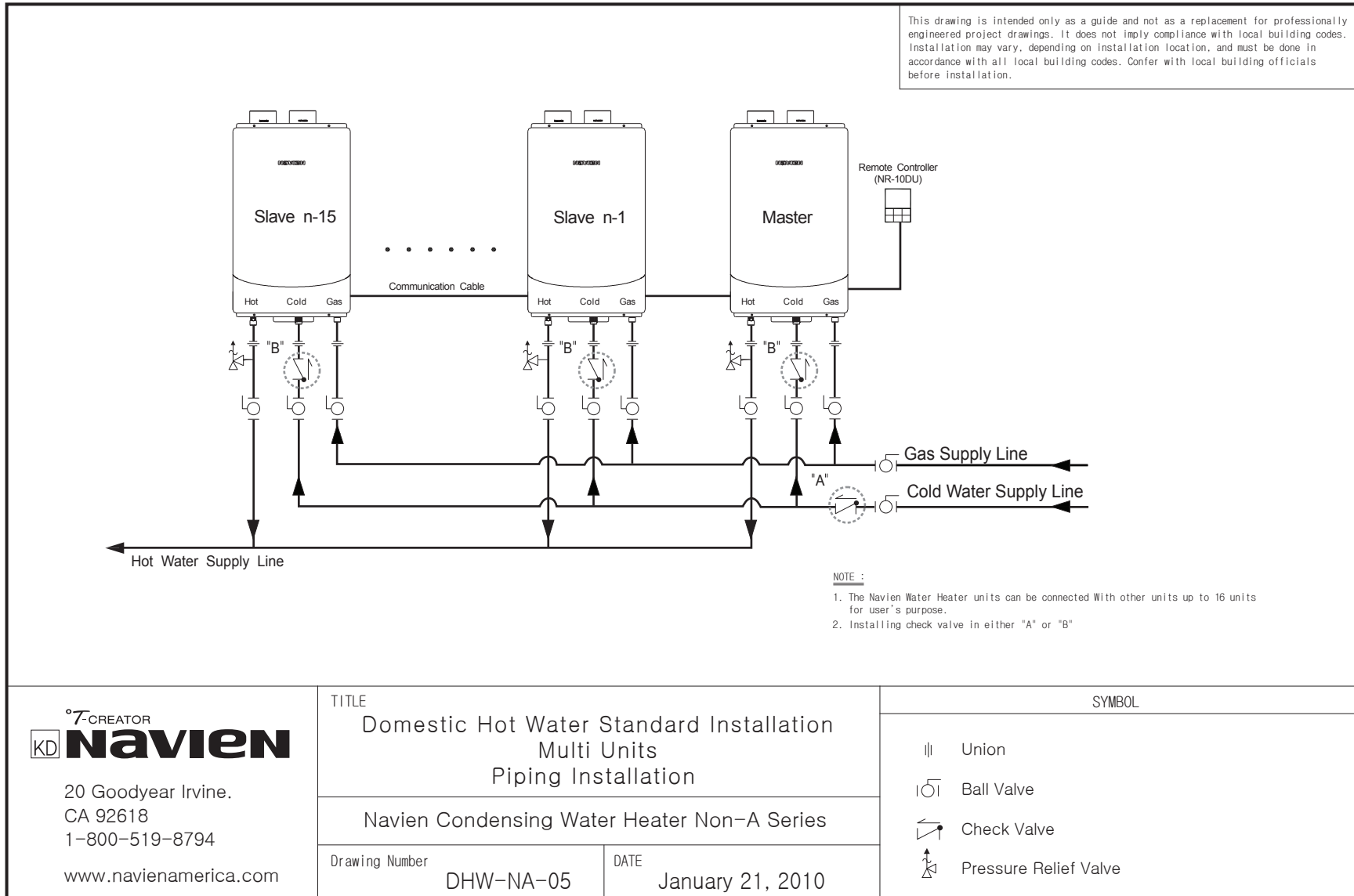
Drawing Number
DHW-A-02

DATE
January 21, 2010

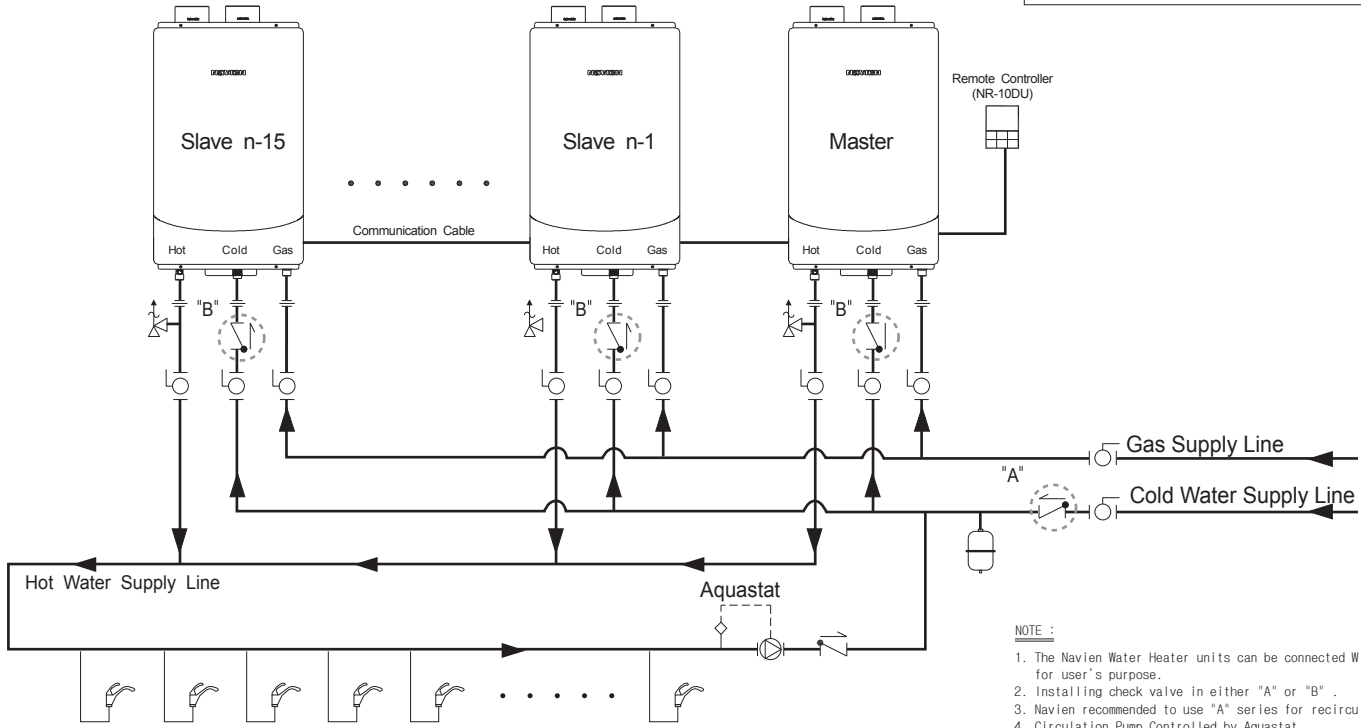
SYMBOL

- | | |
|--|---|
|  Union |  Expansion Tank |
|  Ball Valve |  Pressure Relief Valve |
|  Faucet | |

5. 2 Cascade Installation



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- NOTE :**
1. The Navien Water Heater units can be connected With other units up to 16 units for user's purpose.
 2. Installing check valve in either "A" or "B" .
 3. Navien recommended to use "A" series for recirculation.
 4. Circulation Pump Controlled by Aquastat.



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TITLE
Domestic Hot Water Standard Installation
Multi Units Recirculation
Piping Installation

Navien Condensing Water Heater Non-A Series

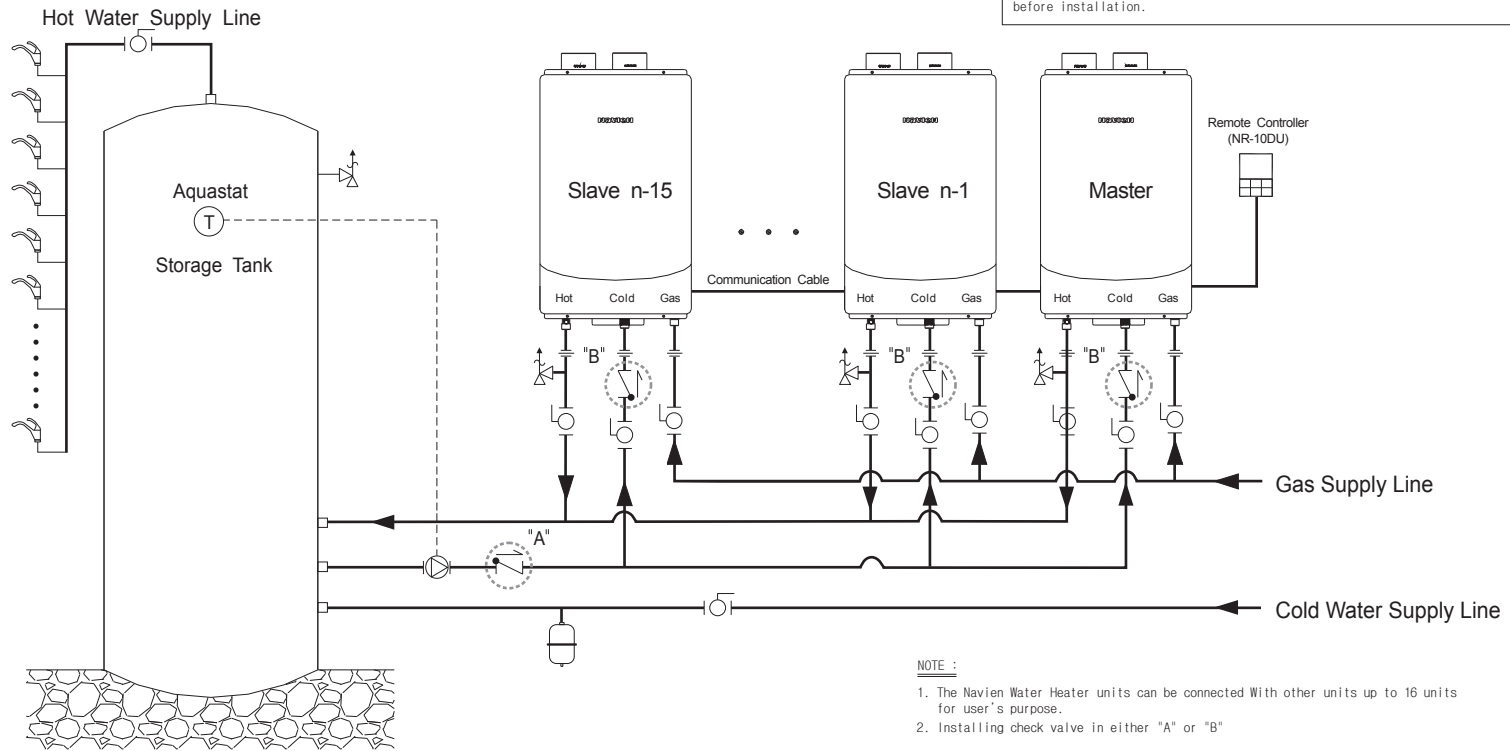
Drawing Number
DHW-NA-06

DATE
January 21, 2010

SYMBOL

- | | | | |
|--|------------------|--|-----------------------|
| | Union | | Faucet |
| | Ball Valve | | Expansion Tank |
| | Check Valve | | Pressure Relief Valve |
| | Circulation Pump | | |

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- NOTE :**
1. The Navien Water Heater units can be connected With other units up to 16 units for user's purpose.
 2. Installing check valve in either "A" or "B"



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TITLE
Domestic Hot Water Standard Installation
Multi Units with Backup Storage Tank
Piping Installation

Navien Condensing Water Heater Non-A Series

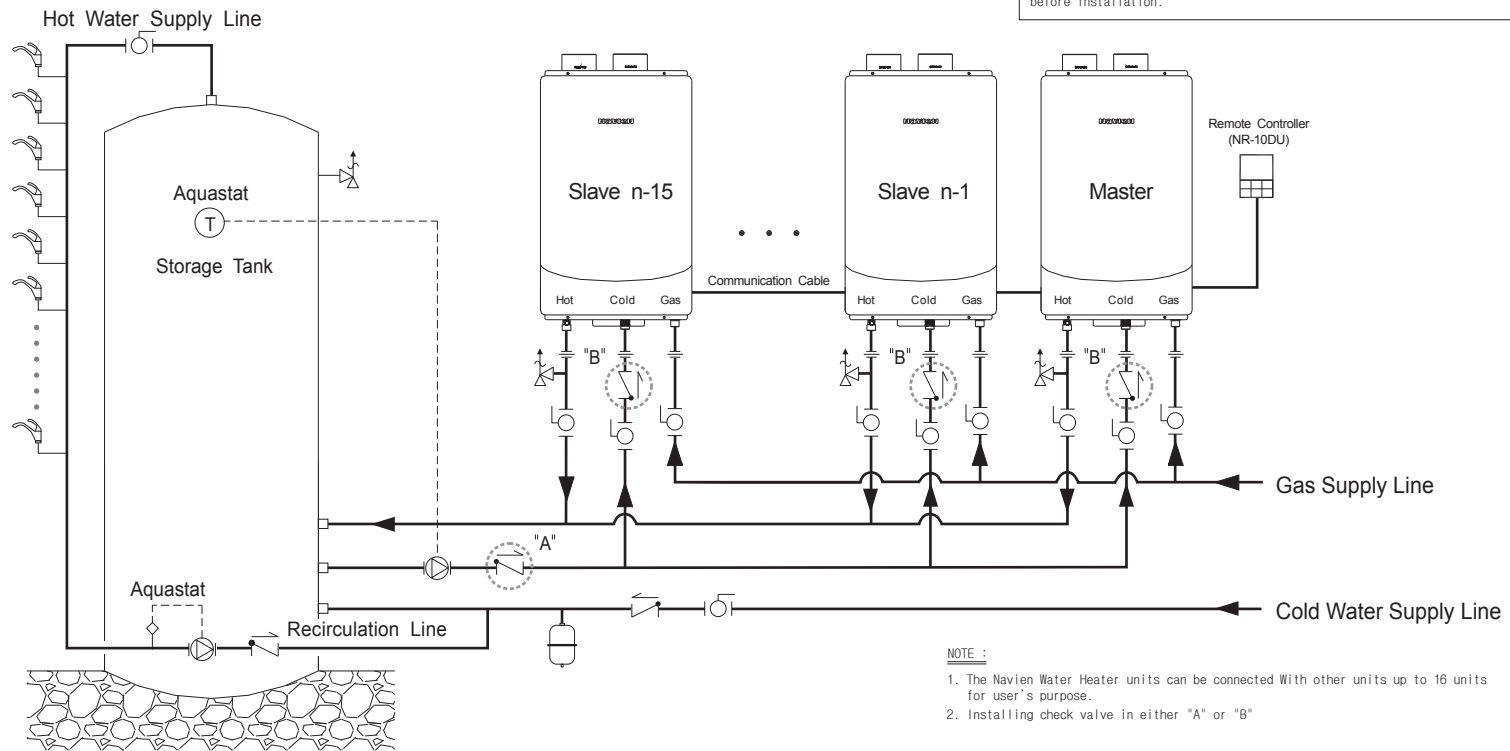
Drawing Number
DHW-NA-07

DATE
January 21, 2010

SYMBOL

- | | | | |
|---|-------------|--|-----------------------|
| | Union | | Faucet |
| ⊖ | Ball Valve | | Expansion Tank |
| | Check Valve | | Pressure Relief Valve |
| ⊕ | Aqua-stat | | Circulation Pump |

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- NOTE :**
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 2. Installing check valve in either "A" or "B"



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TITLE
Domestic Hot Water Standard Installation
Multi Unit with Backup Storage Tank
and Recirculation
Piping Installation

Navien Condensing Water Heater Non-A Series

Drawing Number
DHW-NA-08

DATE
January 21, 2010

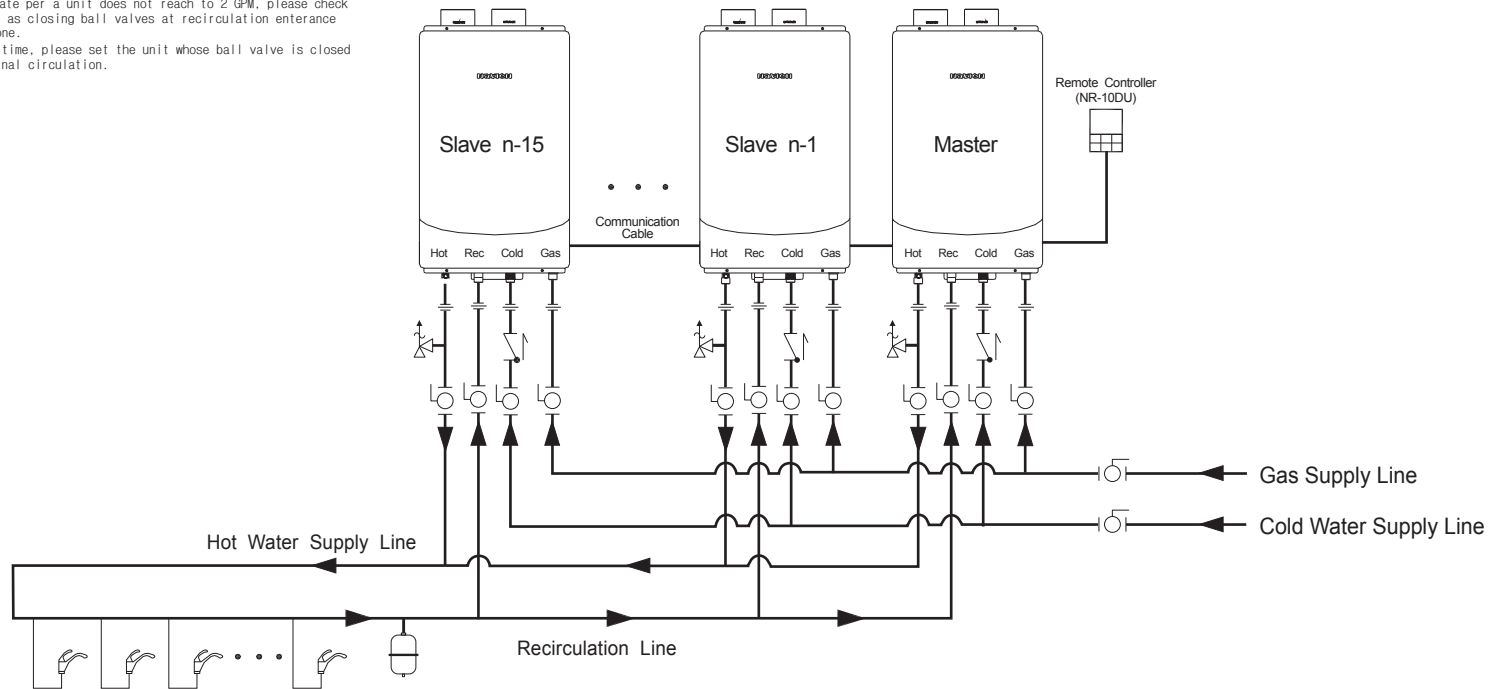
SYMBOL

- | | | | |
|--|-------------|--|-----------------------|
| | Union | | Faucet |
| | Ball Valve | | Expansion Tank |
| | Check Valve | | Pressure Relief Valve |
| | Aqua-stat | | Circulation Pump |

NOTE :

1. The Navien Water Heater units can be connected with other units up to 16 units for user's purpose.
2. Navien recommended to use "A" series for recirculation.
3. In the status that recirculation piping connected to cascade piping are open, activate internal pump.
4. If flowrate per a unit does not reach to 2 GPM, please check flowrate as closing ball valves at recirculation entrance one by one.
5. At this time, please set the unit whose ball valve is closed as internal circulation.

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TITLE
Domestic Hot Water Standard Installation
Multi Units
Piping Installation

Navien Condensing Water Heater A Series

Drawing Number
DHW-A-03

DATE
January 21, 2010

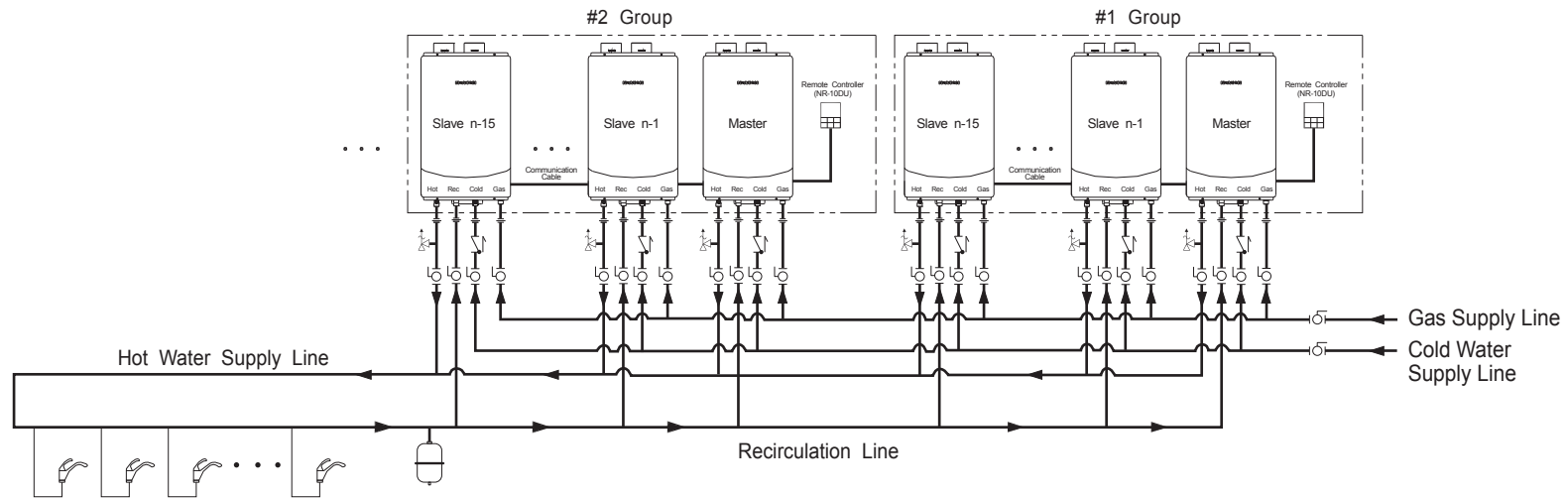
SYMBOL

- | | | | |
|-----|-------------|--|-----------------------|
| | Union | | Faucet |
| ○ ○ | Ball Valve | | Expansion Tank |
| | Check Valve | | Pressure Relief Valve |

NOTE :

1. The Navien Water Heater units can be connected with other units up to 16 units for user's purpose.
2. Navien recommended to use "A" series for recirculation.
3. In the status that recirculation piping connected to cascade piping are open, activate internal pump.
4. If flowrate per a unit does not reach to 2 GPM, please check flowrate as closing ball valves at recirculation entrance one by one.
5. At this time, please set the unit whose ball valve is closed as internal circulation.

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TITLE
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Multi Units
Piping Installation

Navien Condensing Water Heater A Series

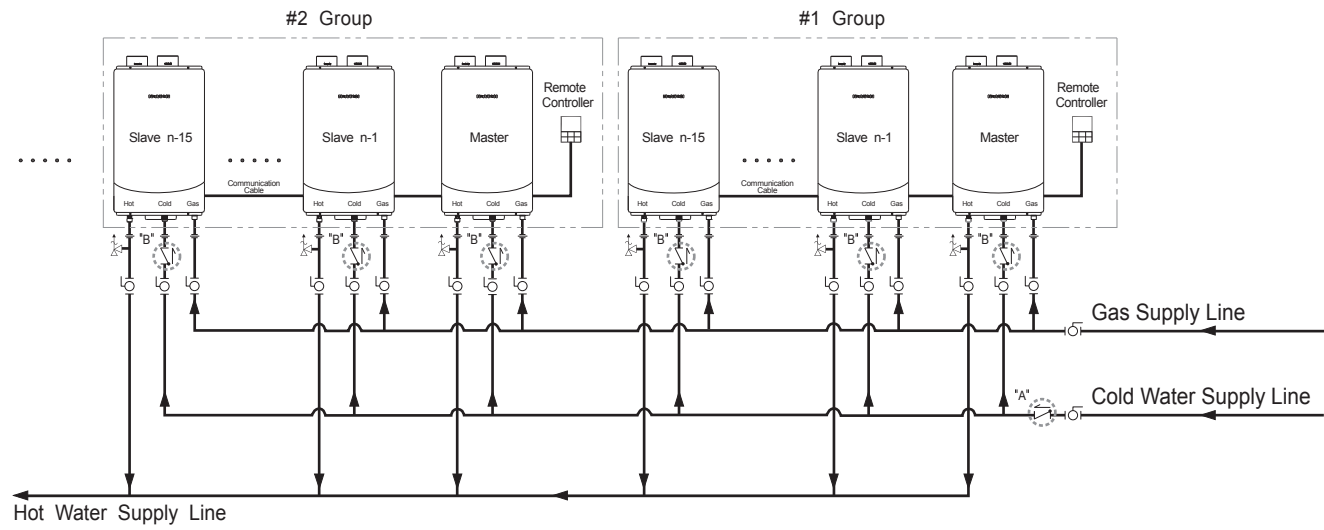
Drawing Number
DHW-A-04

DATE
January 21, 2010

SYMBOL

- | | | | |
|-----|-------------|--|-----------------------|
| | Union | | Faucet |
| ○ ○ | Ball Valve | | Expansion Tank |
| | Check Valve | | Pressure Relief Valve |

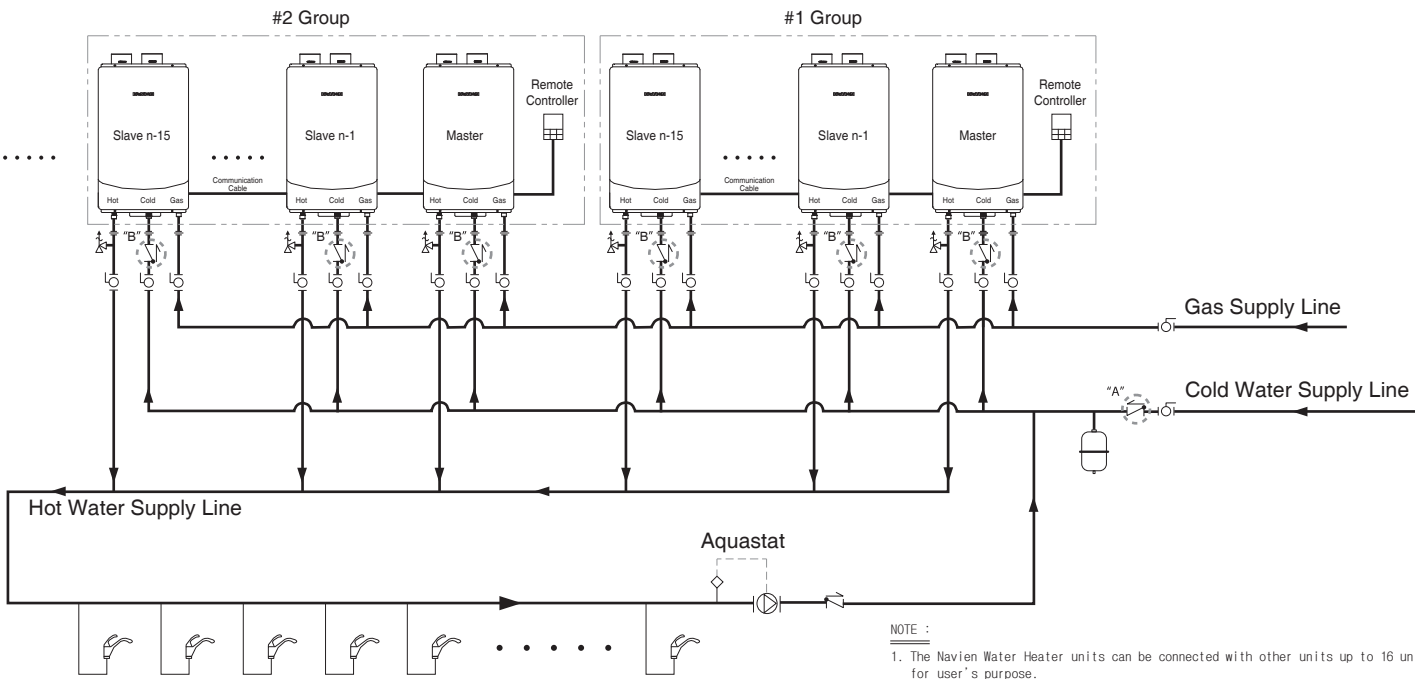
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- NOTE :**
1. The Navien Water Heater units can be connected With other units up to 16 units for user's purpose.
 2. Installing check valve in either "A" or "B"

 <p>20 Goodyear Irvine. CA 92618 1-800-519-8794 www.navienamerica.com</p>	TITLE		SYMBOL
	Domestic Hot Water Standard Installation Multi Group and Multi Units Piping Installation		
	Navien Condensing Water Heater Non-A Series		 Union  Ball Valve  Check Valve  Pressure Relief Valve
Drawing Number	DATE		
DHW-NA-09	January 21, 2010		

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- NOTE :
1. The Navien Water Heater units can be connected with other units up to 16 units for user's purpose.
 2. Install the check valve in either "A" or "B".
 3. Navien recommends to use "A" series for recirculation.
 4. Circulation Pump is Controlled by Aquastat.



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TITLE
Domestic Hot Water Standard Installation
Multi Group and Multi Units Recirculation
Piping Installation

Navien Condensing Water Heater Non-A Series

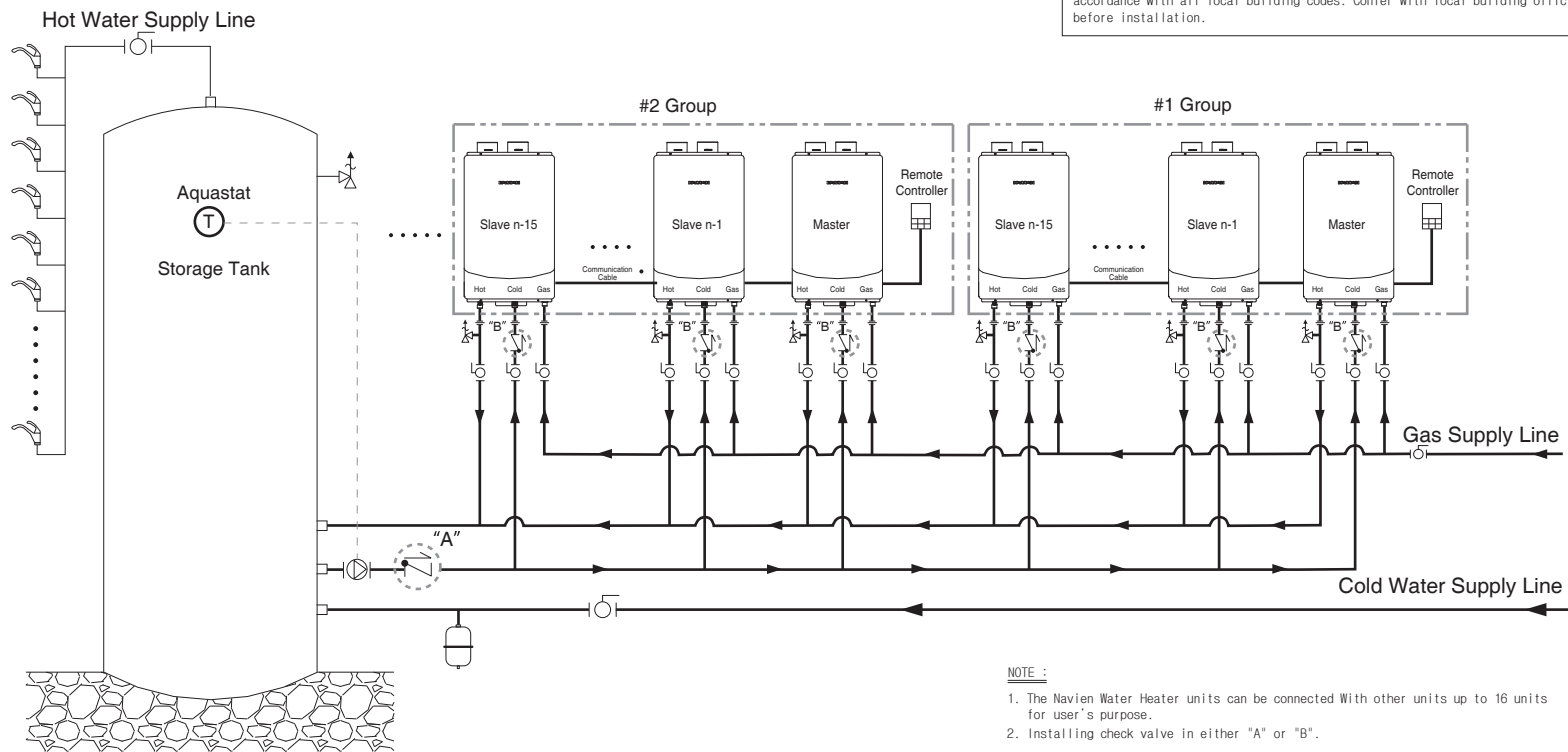
Drawing Number
DHW-NA-10

DATE
January 21, 2010

SYMBOL

- | | | | |
|--|------------------|--|-----------------------|
| | Union | | Faucet |
| | Ball Valve | | Expansion Tank |
| | Check Valve | | Pressure Relief Valve |
| | Circulation Pump | | |

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- NOTE :**
1. The Navien Water Heater units can be connected With other units up to 16 units for user's purpose.
 2. Installing check valve in either "A" or "B".

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TITLE
 Domestic Hot Water Standard Installation
 Multi Group and Multi Units with
 Backup Storage Tank
 Piping Installation

Navien Condensing Water Heater Non-A Series

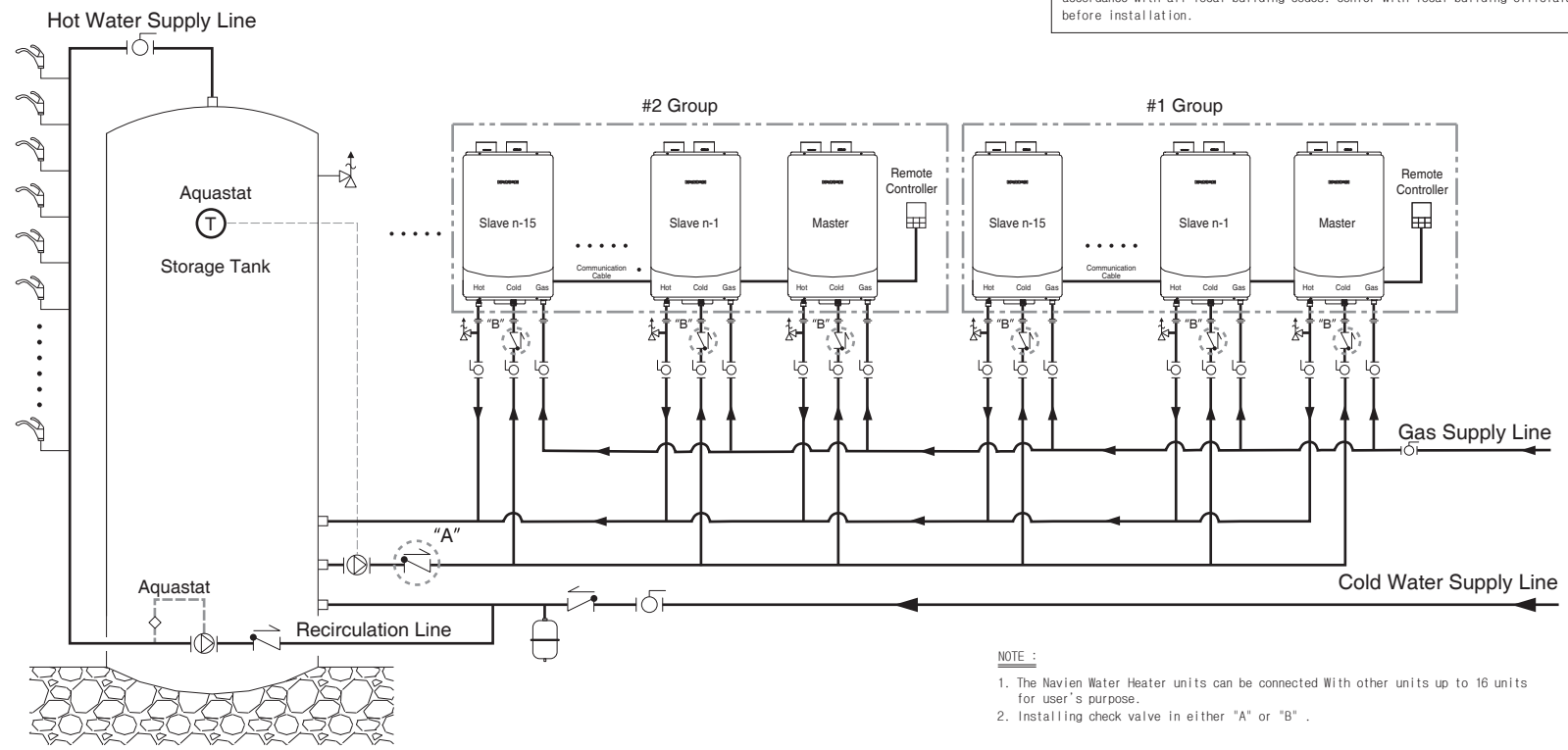
Drawing Number
 DHW-NA-11

DATE
 January 21, 2010

SYMBOL

- | | | | |
|-----|-------------|--|-----------------------|
| | Union | | Faucet |
| IOI | Ball Valve | | Expansion Tank |
| | Check Valve | | Pressure Relief Valve |
| ⊕ | Aqua-stat | | Circulation Pump |

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- NOTE :
1. The Navien Water Heater units can be connected With other units up to 16 units for user's purpose.
 2. Installing check valve in either "A" or "B" .



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TITLE
 Domestic Hot Water Standard Installation
 Multi Group and Multi Units with
 Backup Storage Tank and Recirculation
 Piping Installation

Navien Condensing Water Heater Non-A Series

Drawing Number
 DHW-NA-12

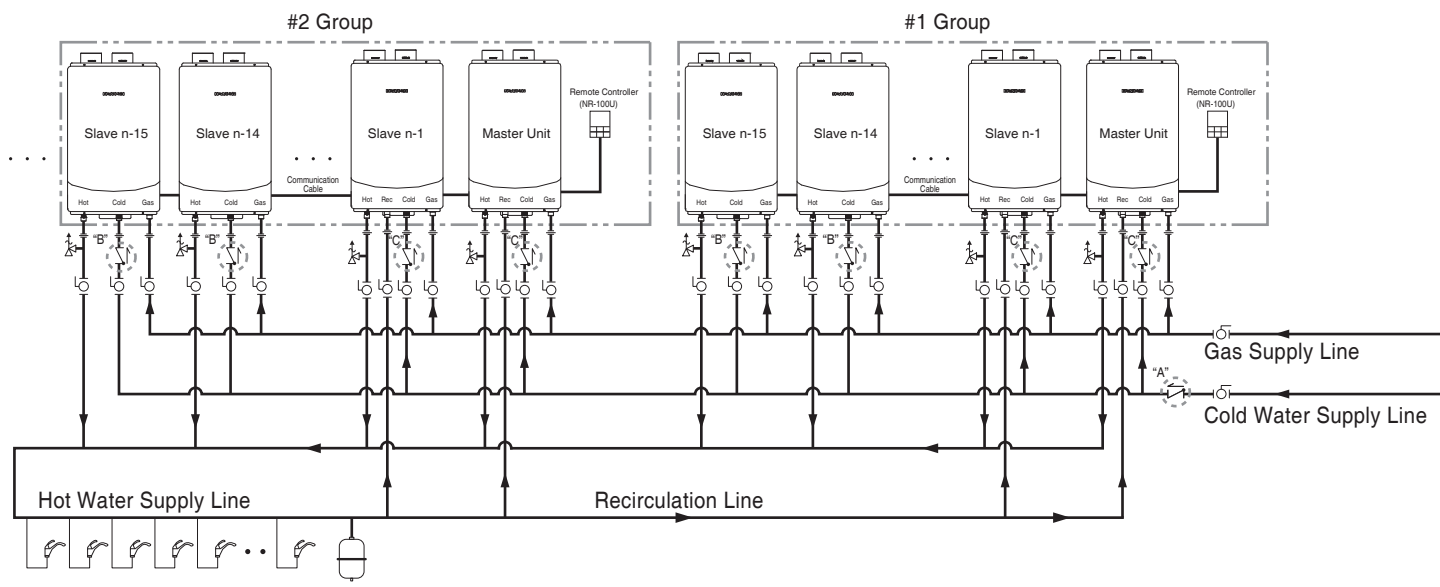
DATE
 January 21, 2010

SYMBOL	
	Union
	Ball Valve
	Check Valve
	Aqua-stat
	Faucet
	Expansion Tank
	Pressure Relief Valve
	Circulation Pump

NOTE :

1. The Navien Water Heater units can be connected with other units up to 16 units for user's purpose.
2. Navien recommends to use "A" series for recirculation.
3. In the status that recirculation piping connected to cascade piping are open, activate internal pump.
4. If flow rate per a unit does not reach to 2 GPM, please check flowrate as closing ball valves at recirculation entrance one by one.
5. At this time, please set the unit whose ball valve is closed as internal circulation.

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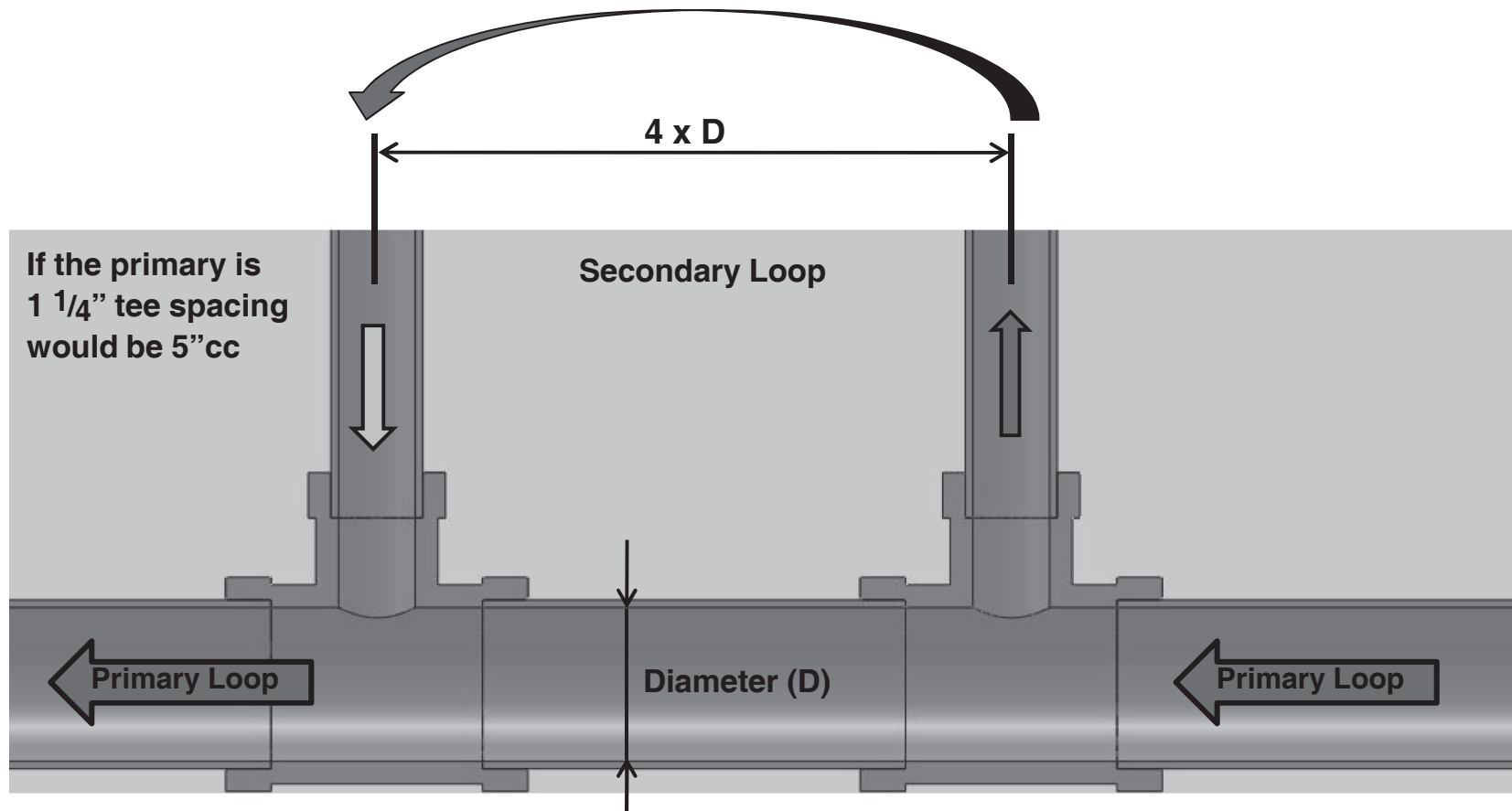
7-CREATOR
KD Navien
 20 Goodyear Irvine.
 CA 92618
 1-800-519-8794
 www.navienamerica.com

TITLE	
Domestic Hot Water Standard Installation Multi Units Piping Installation	
Navien Condensing Water Heater A Series	
Drawing Number	DATE
CS-KD-02	January 21, 2010

SYMBOL	
	Union
	Ball Valve
	Check Valve
	Solenoid Valve
	Faucet
	Expansion Tank
	Pressure Relief Valve
	Circulation Pump

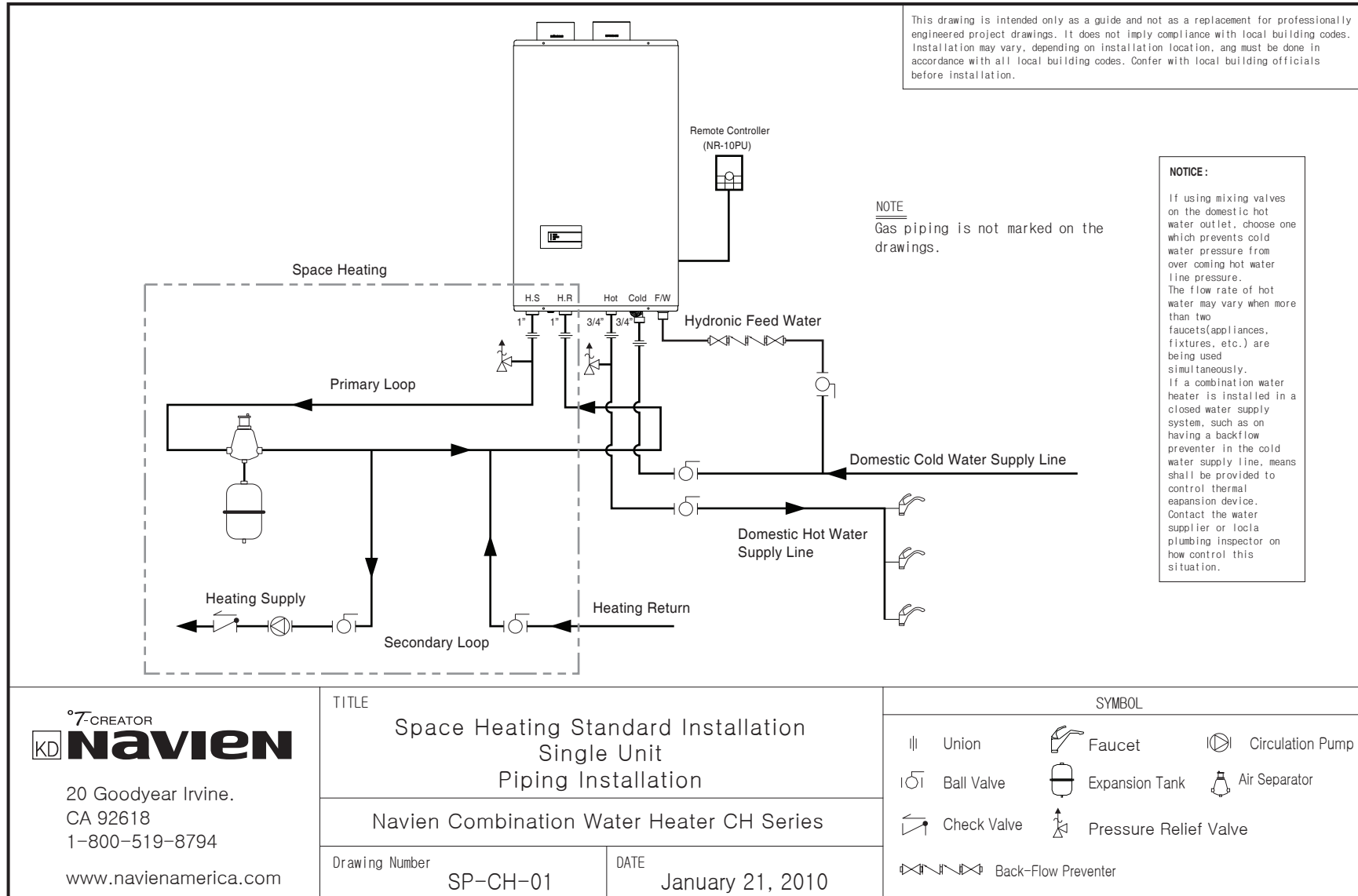
6. CH Series Standard Piping Installation

6. 1 Primary Vs Secondary Distance



- The center-to-center spacing between the side ports of tees at the Primary/Secondary interface should not exceed 4 times the diameter of the primary piping.
- To minimize turbulence install a minimize of eight pipe diameters of straight pipe upstream of the first tee (of a closely-spaced pair), and four pipe diameters of straight pipe downstream of the second tee.

6. 2 Single Installation

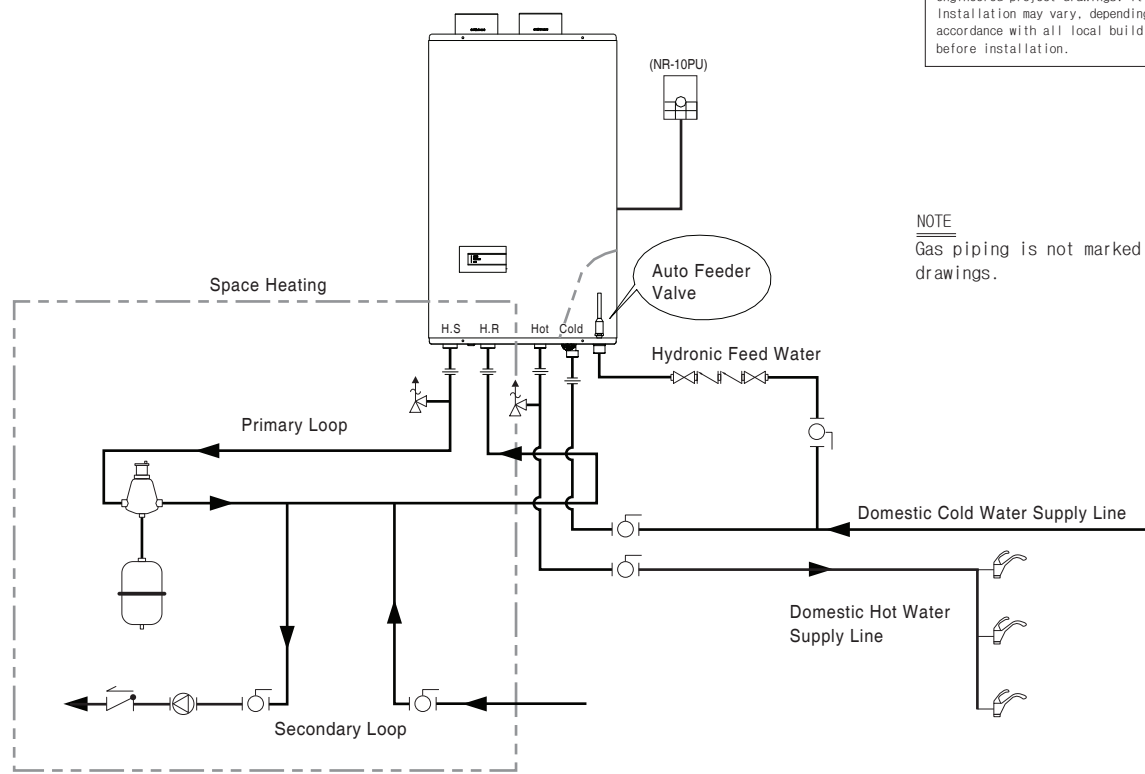


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NOTE
Gas piping is not marked on the drawings.

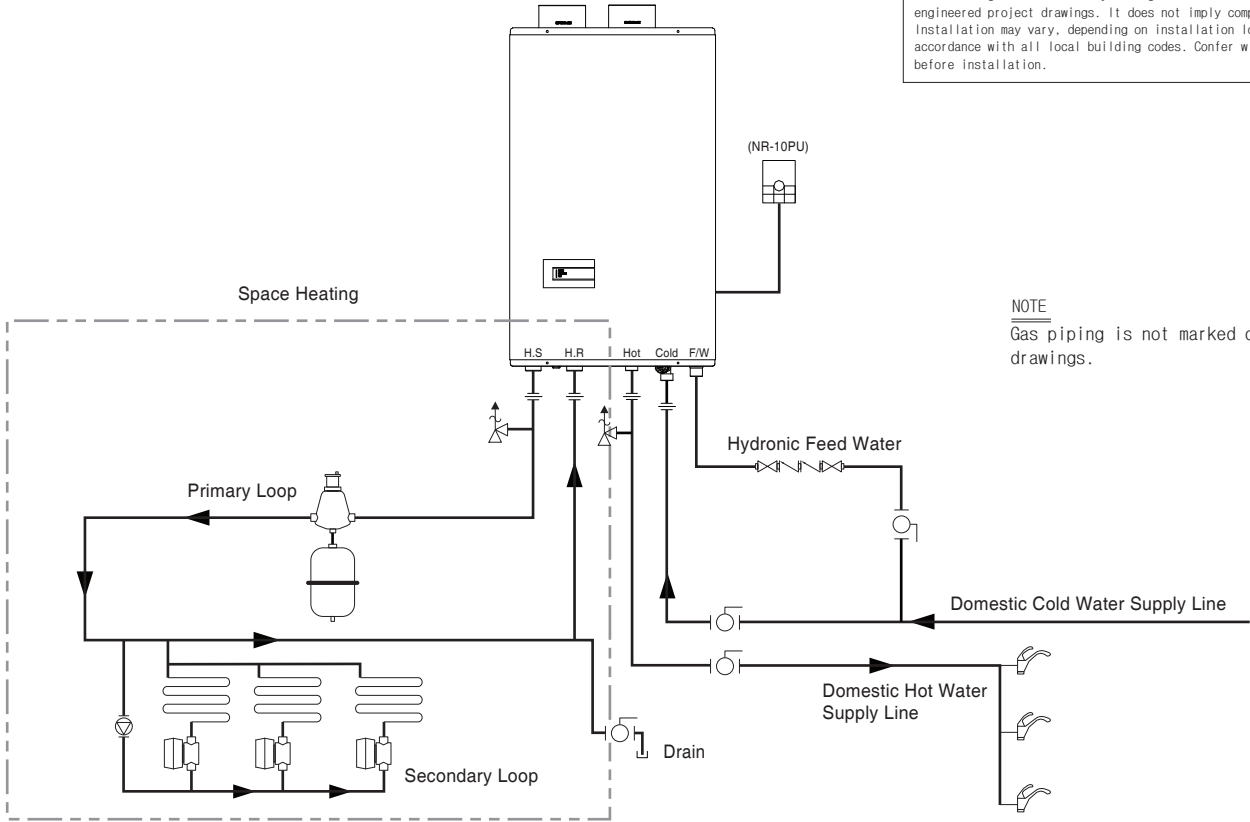
NOTICE:
If using mixing valves on the domestic hot water outlet, choose one which prevents cold water pressure from overcoming hot water line pressure. Hot water Temperature may vary when more than two faucets (appliances, fixtures, etc.) are being used simultaneously.

7-CREATOR
KD Navien
20 Goodyear Irvine.
CA 92618
1-800-519-8794
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TITLE	
Space Heating Standard Installation Single Unit Piping Installation	
Navien Combination Water Heater CH Series	
Drawing Number	DATE
SP-CH-02	January 21, 2010

SYMBOL	
	Union
	Faucet
	Ball Valve
	Expansion Tank
	Check Valve
	Circulation Pump
	Air Separator
	Pressure Relief Valve
	Back-Flow Preventer

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NOTE
Gas piping is not marked on the drawings.

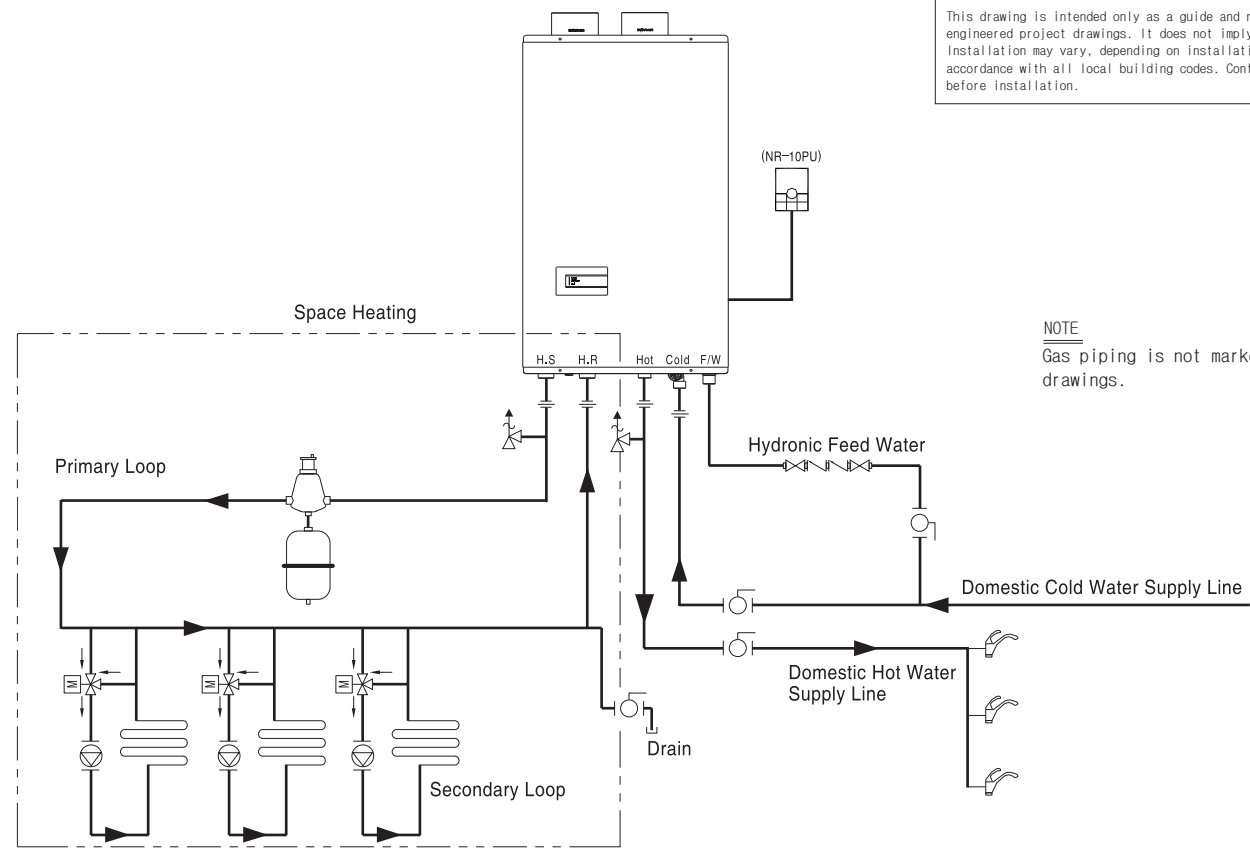


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CA 92618
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TITLE	
Space Heating Standard Installation Single Unit Piping Installation	
Navien Combination Water Heater CH Series	
Drawing Number	DATE
SP-CH-03	January 21, 2010

SYMBOL					
	Union		Faucet		In-floor Heating
	Ball Valve		Expansion Tank		
	Zone Valve		Air Separator		
	Circulation Pump		Pressure Relief Valve		
	Back-Flow Preventer				

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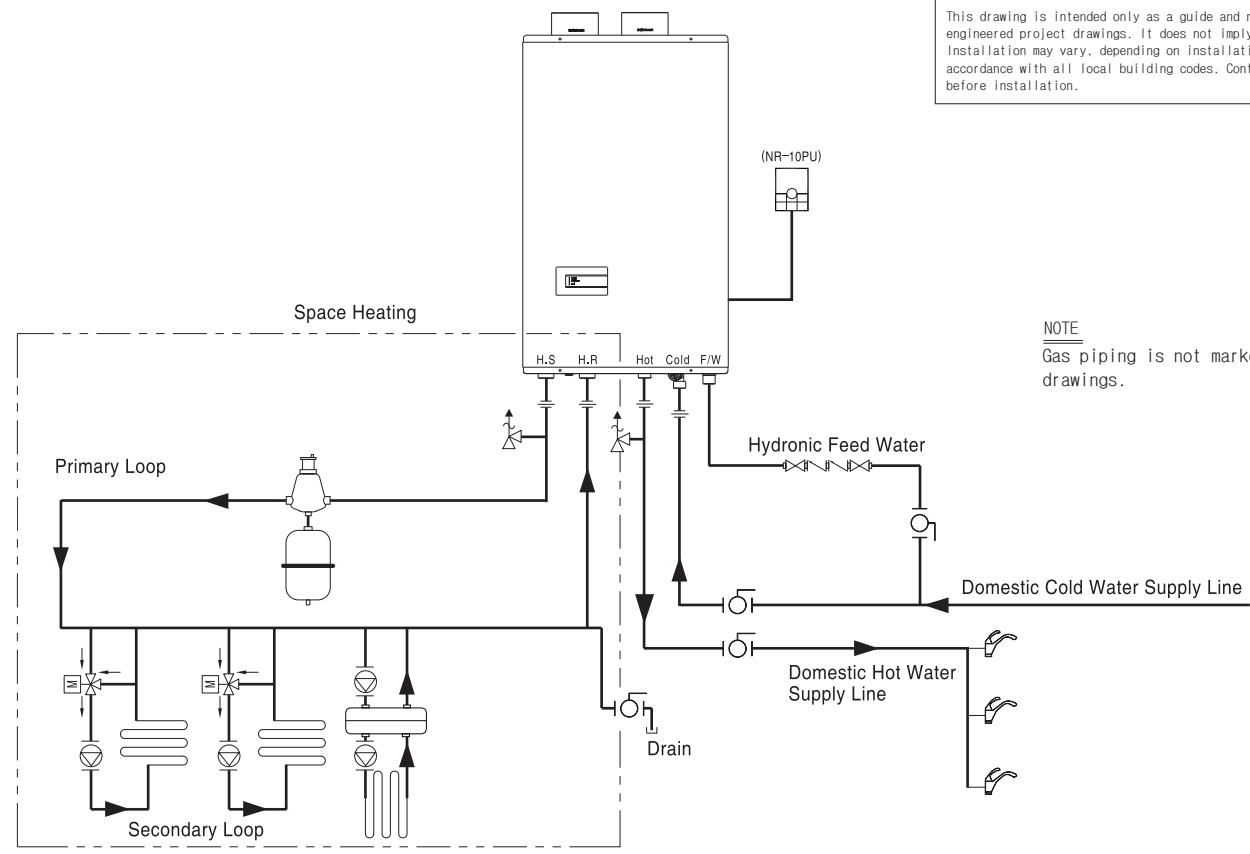
NOTE
Gas piping is not marked on the drawings.

7-CREATOR
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CA 92618
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TITLE	
Space Heating Standard Installation Single Unit Piping Installation	
Navien Combination Water Heater CH Series	
Drawing Number	DATE
SP-CH-04	January 21, 2010

SYMBOL		
	Union	
	Ball Valve	
	3-Way Mixing Valve	
	Circulation Pump	
	Back-Flow Preventer	

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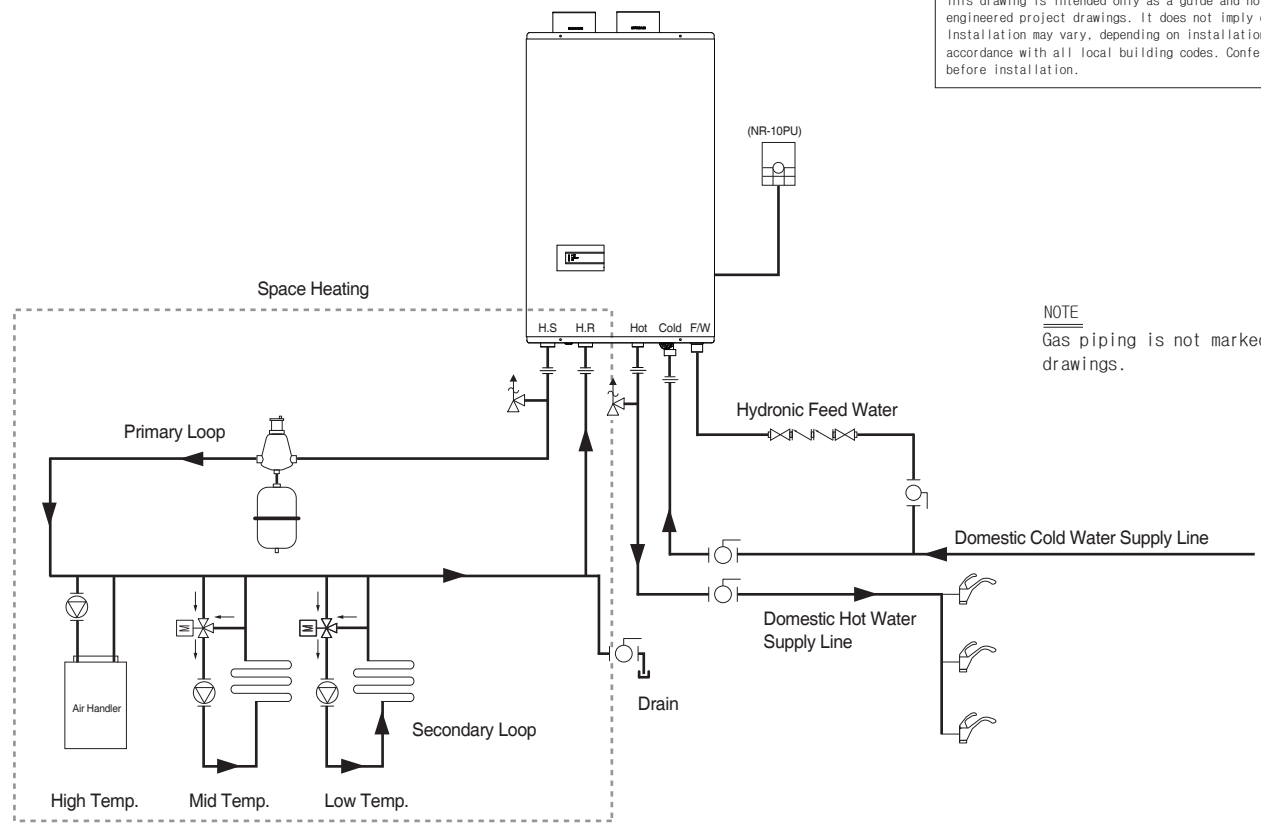
NOTE
Gas piping is not marked on the drawings.

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TITLE
Space Heating Standard Installation
Single Unit
Piping Installation
Navien Combination Water Heater CH Series
Drawing Number SP-CH-05 DATE January 21, 2010

SYMBOL					
	Union		Faucet		In-floor Heating
	Ball Valve		Air Separator		Plate Heat Exchanger
	Snow Melting		Expansion Tank		
	3-Way Mixing Valve		Circulation Pump		
	Pressure Relief Valve		Back-Flow Preventer		

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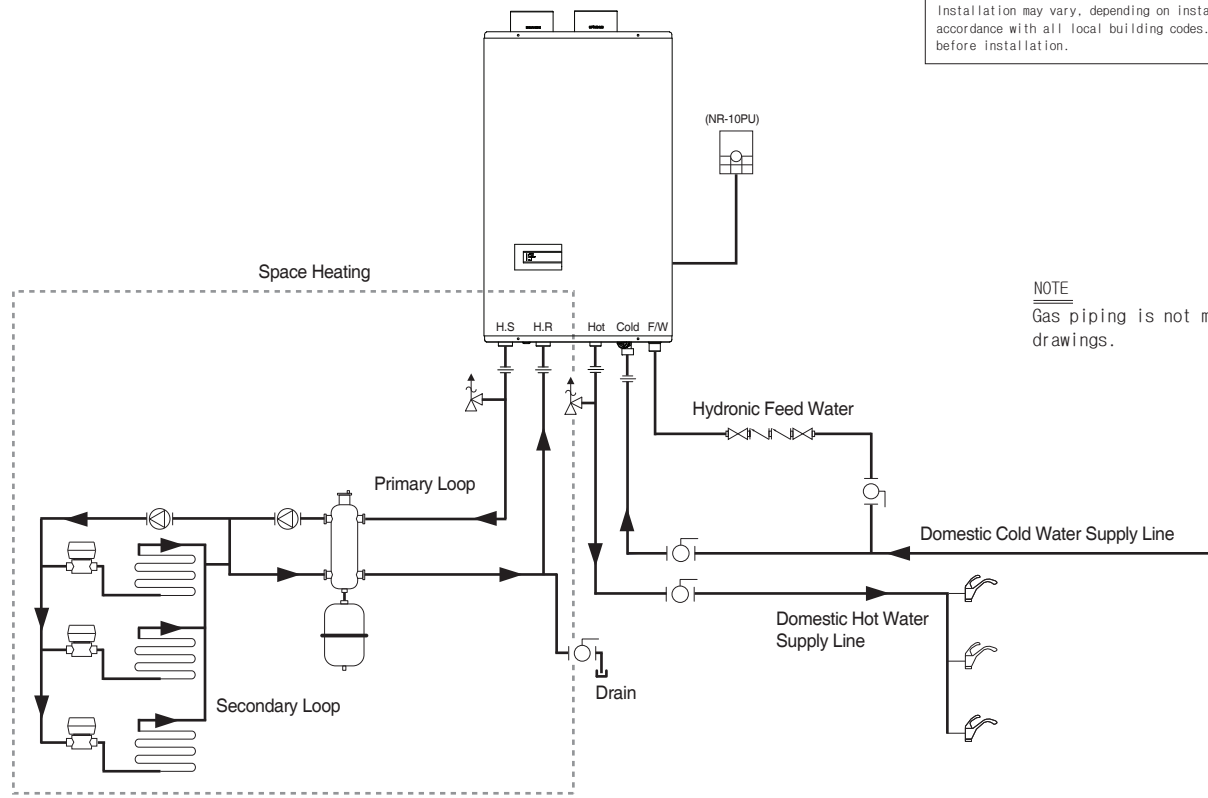
NOTE
Gas piping is not marked on the drawings.

7-CREATOR
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TITLE	
Space Heating Standard Installation Single Unit Piping Installation	
Navien Combination Water Heater CH Series	
Drawing Number	DATE
SP-CH-06	January 21, 2010

SYMBOL		
	Union	
	Ball Valve	
	3-Way Mixing Valve	
	Air Separator	
	Back-Flow Preventer	

This drawing is intended only as a guide and not as a replacement for professionally engineered project drawings. It does not imply compliance with local building codes. Installation may vary, depending on installation location, and must be done in accordance with all local building codes. Confer with local building officials before installation.



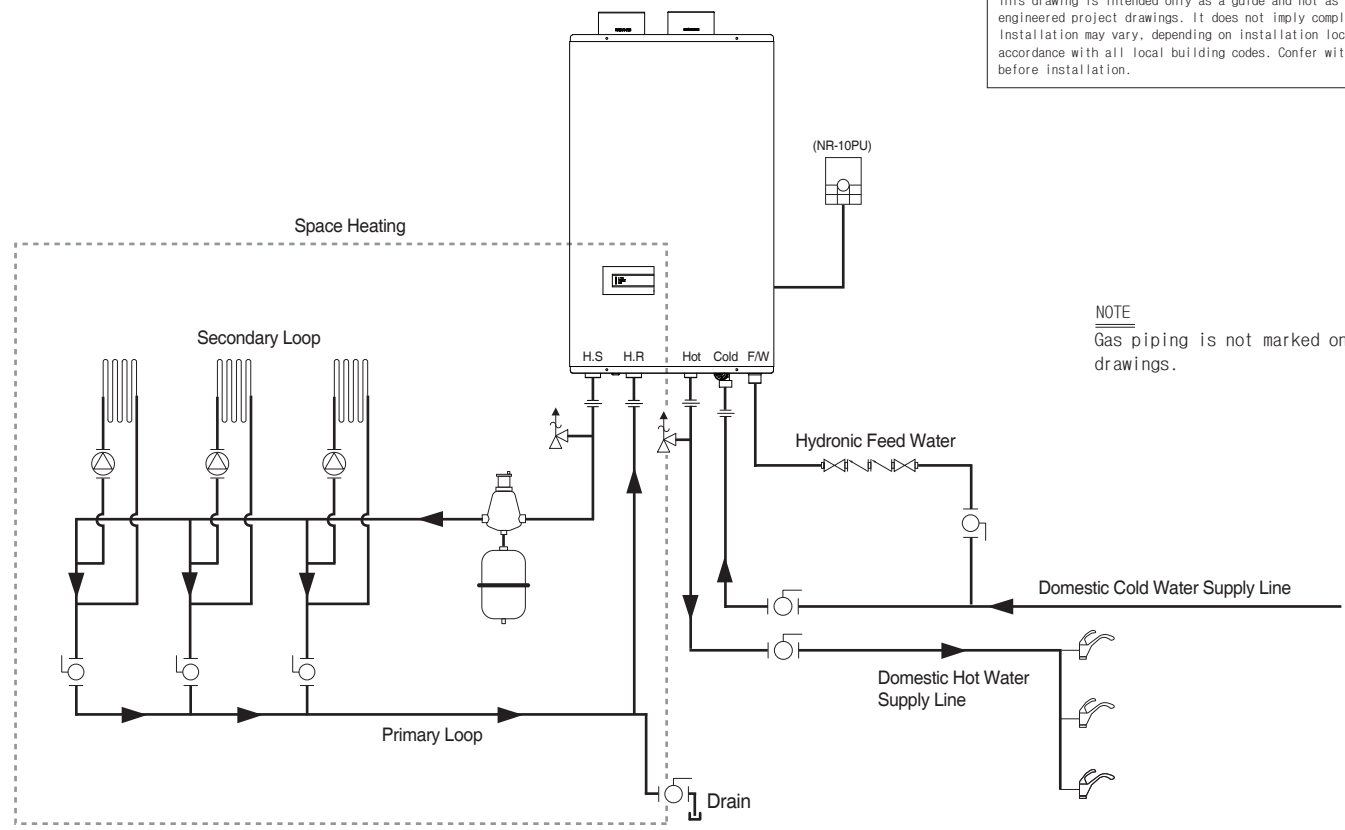
NOTE
Gas piping is not marked on the drawings.

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TITLE	
Space Heating Standard Installation Single Unit Piping Installation	
Navien Combination Water Heater CH Series	
Drawing Number	DATE
SP-CH-07	January 21, 2010

SYMBOL		
	Union	
	Ball Valve	
	Zone Valve	
	Air Separator	
	Back-Flow Preventer	

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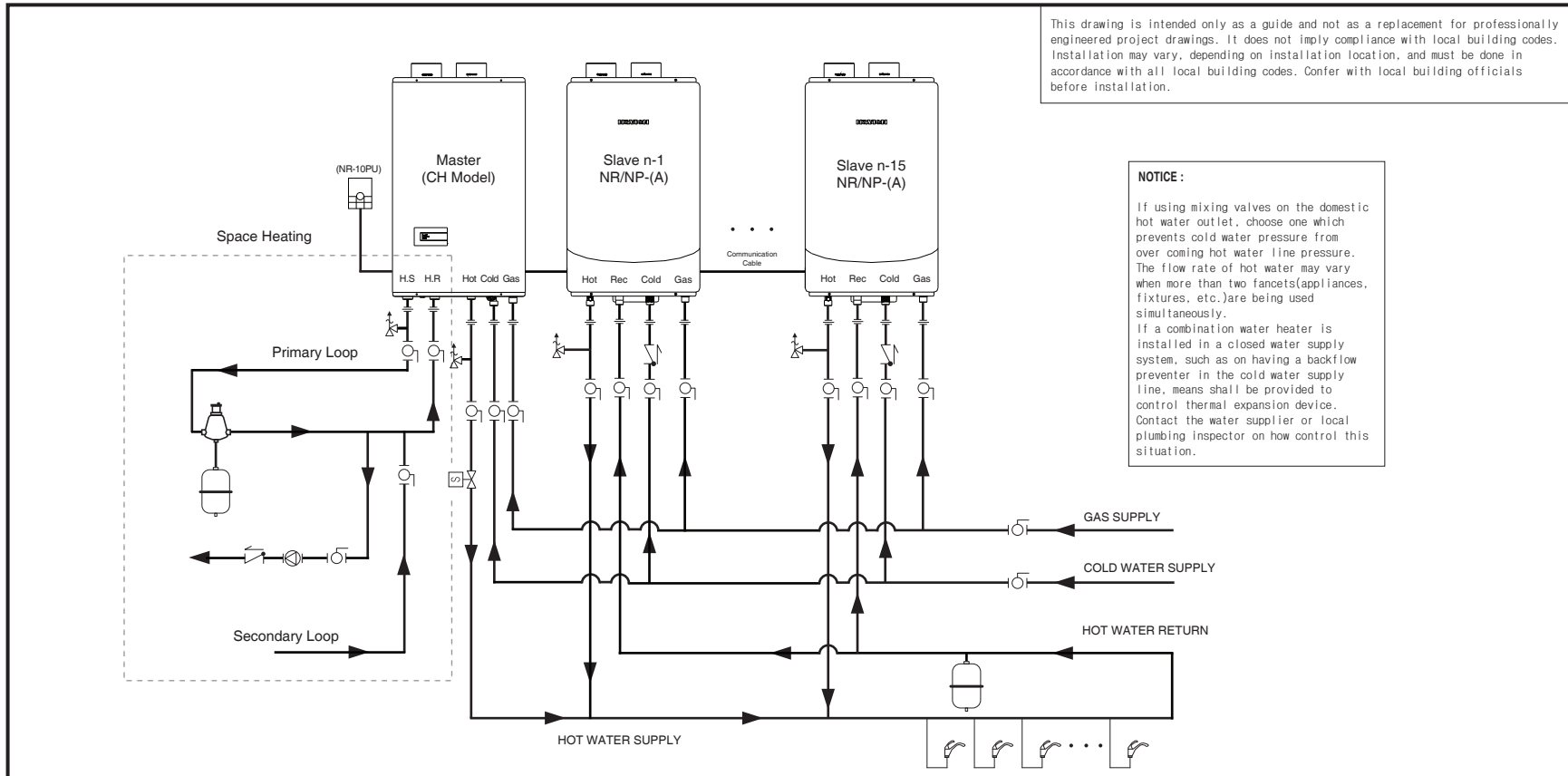
NOTE
Gas piping is not marked on the drawings.

7-CREATOR
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TITLE
Space Heating Standard Installation
Single Unit
Piping Installation
Navien Combination Water Heater CH Series
Drawing Number SP-CH-08
DATE January 21, 2010

SYMBOL					
	Union		Faucet		Base Board
	Ball Valve		Expansion Tank		
	Air Separator		Circulation Pump		
	Pressure Relief Valve				
	Back-Flow Preventer				

6. 3 Cascade Installation



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TITLE

Cascade System Standard Installation
 CH + NR/NP-A
 Piping Installation

Navien Condensing Water Heater

Drawing Number

CS-KD-03

DATE

January 21, 2010

SYMBOL

|| Union

Faucet

Air Separator

Ball Valve

Expansion Tank

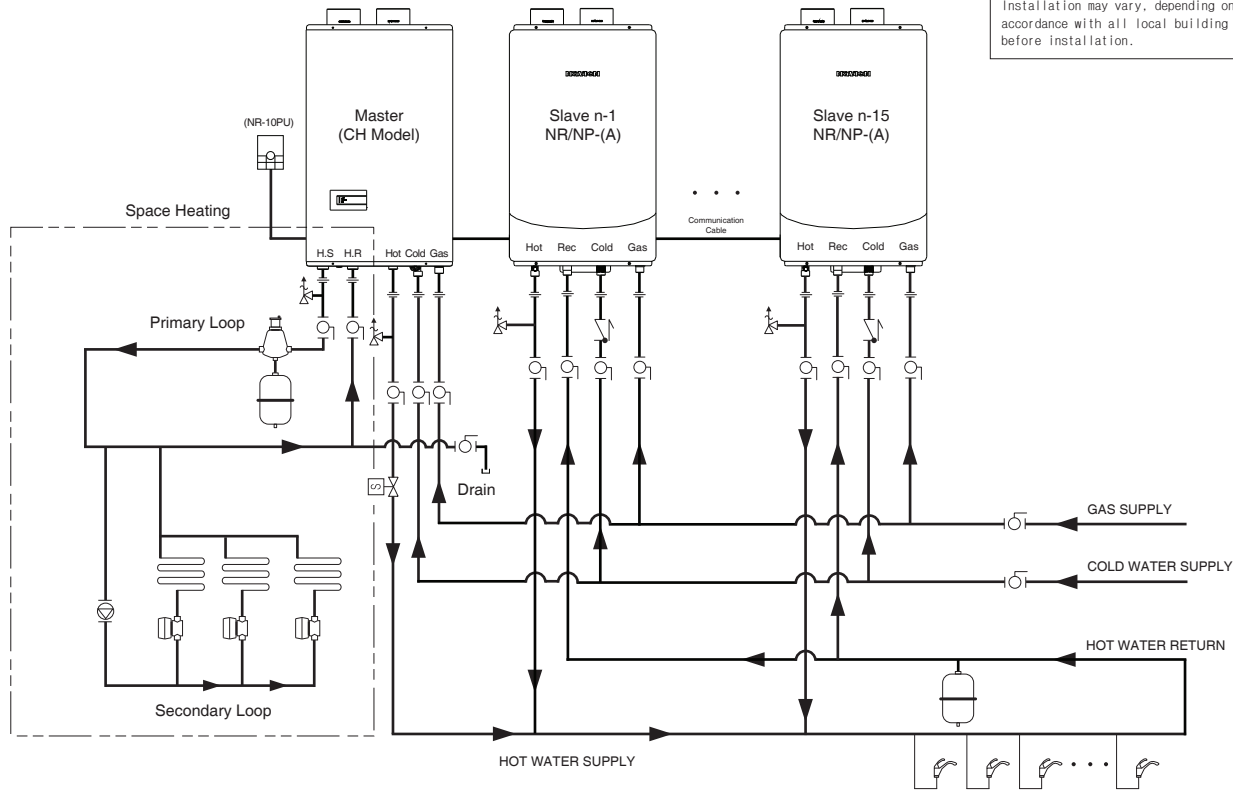
Check Valve

Pressure Relief Valve

Solenoid Valve

Circulation Pump

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TITLE
Cascade System Standard Installation
CH + NR/NP-A
Piping Installation

Navien Condensing Water Heater

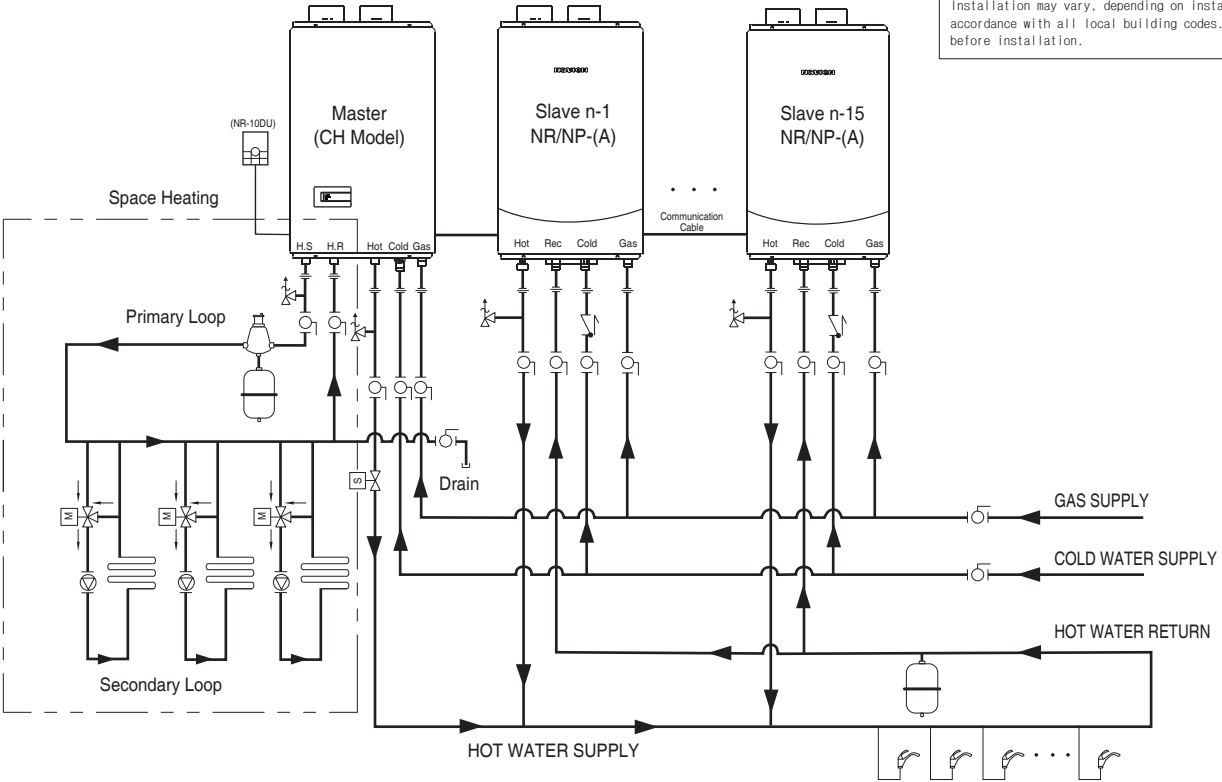
Drawing Number
CS-KD-04

DATE
January 21, 2010

SYMBOL

- | | | |
|------------------|-----------------------|--------------------|
| Union | Faucet | ⊗ Circulation Pump |
| ⊖ Ball Valve | Expansion Tank | |
| ↗ Check Valve | Pressure Relief Valve | |
| ⊞ Solenoid Valve | Air Separator | |
| ⊞ Zone Valve | In-Floor Heating | |

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TITLE
Cascade System Standard Installation
CH + NR/NP-A
Piping Installation

Navien Condensing Water Heater

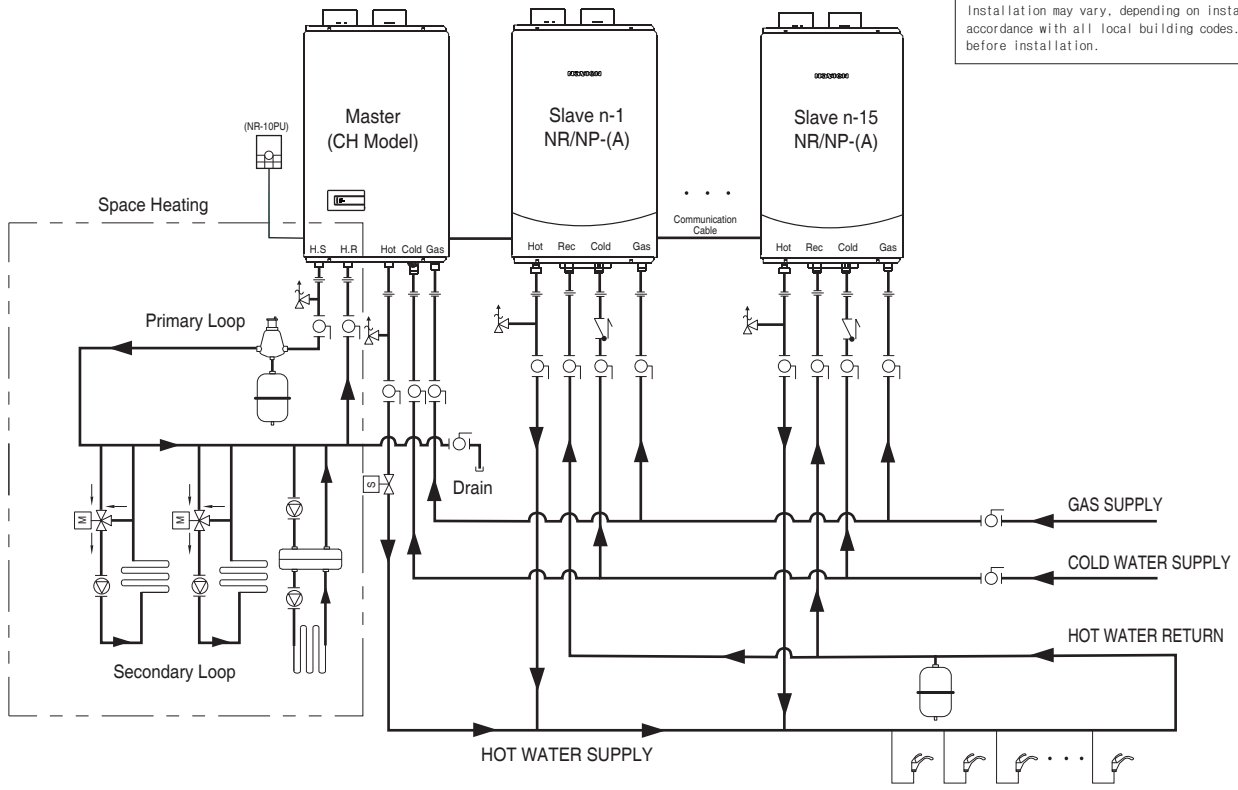
Drawing Number
CS-KD-05

DATE
January 21, 2010

SYMBOL

- | | | |
|--------------------|-----------------------|------------------|
| Union | Faucet | In-floor Heating |
| Ball Valve | Expansion Tank | |
| Check Valve | Air Separator | |
| Solenoid Valve | Circulation Pump | |
| 3-Way Mixing Valve | Pressure Relief Valve | |

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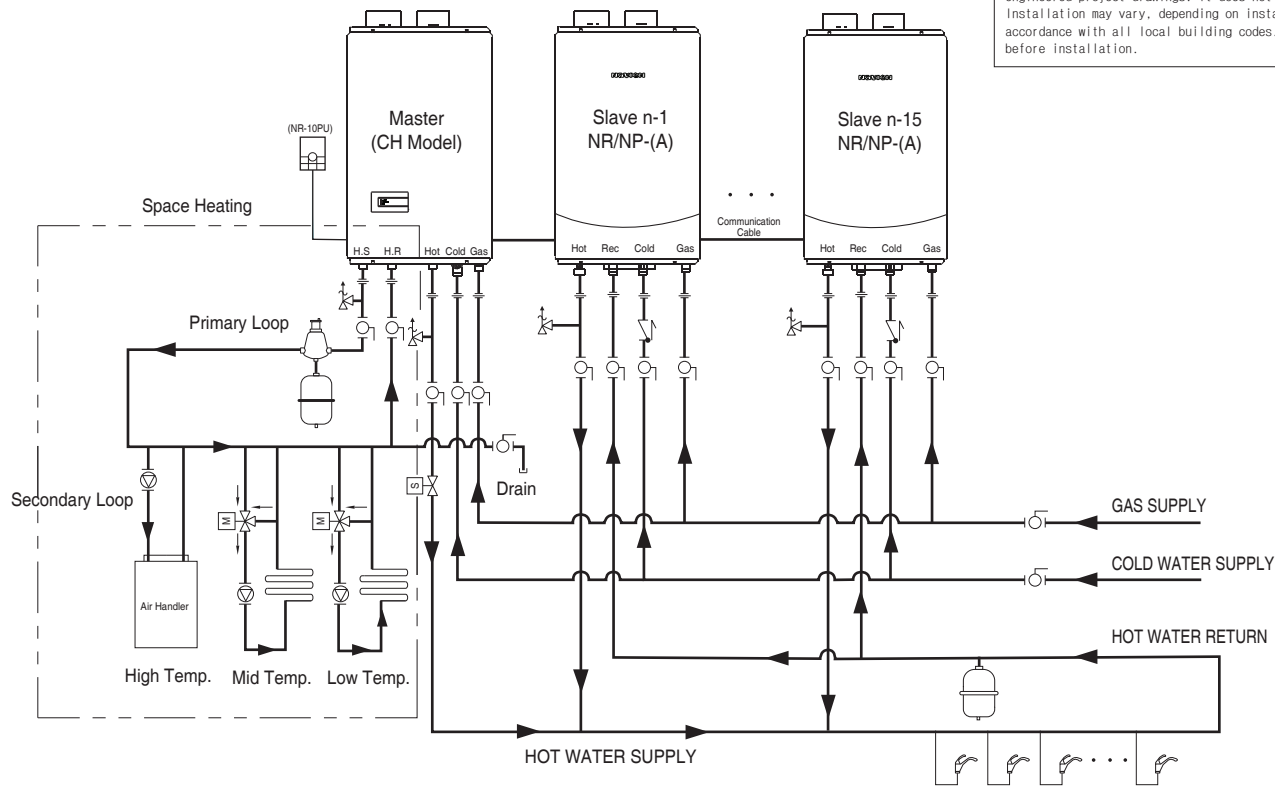
TITLE
 Cascade System Standard Installation
 CH + NR/NP-A
 Piping Installation

Navien Condensing Water Heater

Drawing Number CS-KD-06 DATE January 21, 2010

SYMBOL					
	Union		Faucet		In-Floor Heating
	Ball Valve		Air Separator		Plate Heat Exchanger
	Check Valve		Expansion Tank		Snow Melting
	Solenoid Valve		Circulation Pump		3-Way Mixing Valve
	Pressure Relief Valve				

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TITLE
Cascade System Standard Installation
CH + NR/NP-A
Piping Installation

Navien Condensing Water Heater

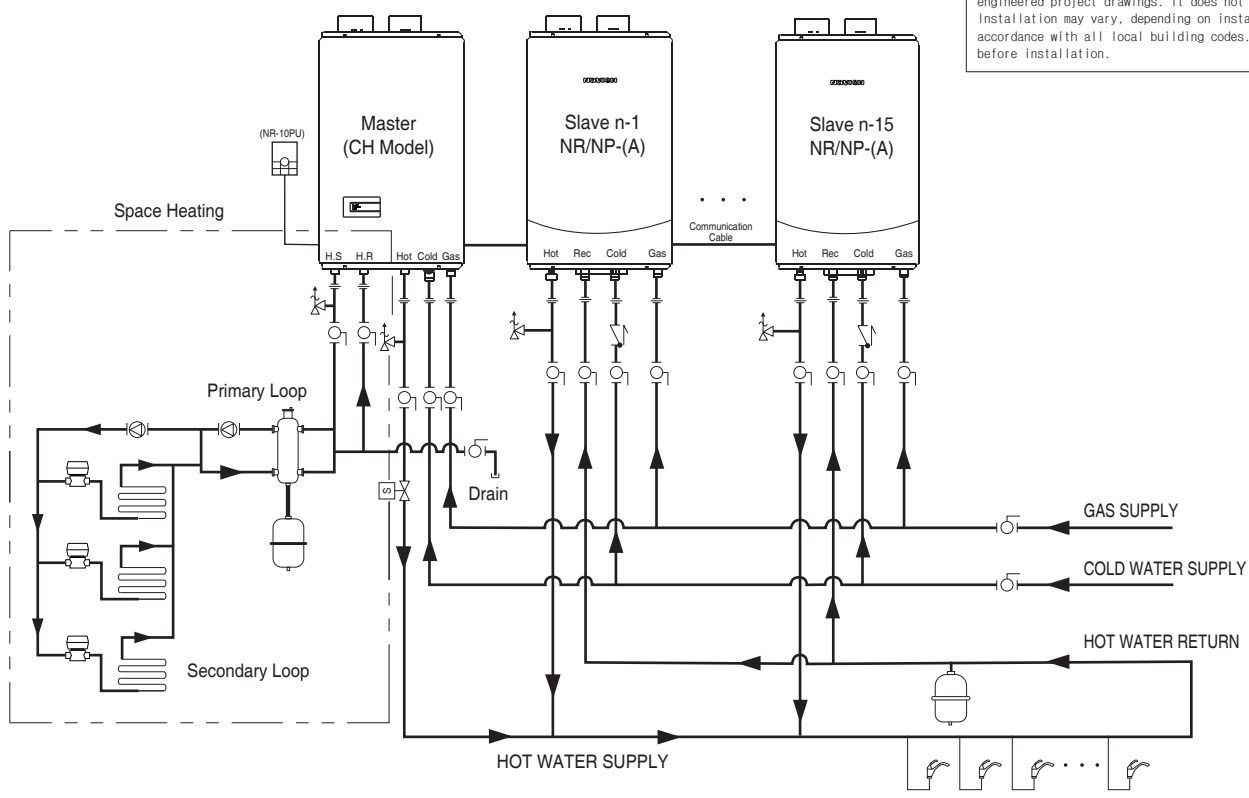
Drawing Number
CS-KD-07

DATE
January 21, 2010

SYMBOL

- | | | |
|-----------------------|--------------------|------------------|
| Union | Faucet | In-floor Heating |
| Ball Valve | Expansion Tank | |
| Check Valve | Circulation Pump | |
| Solenoid Valve | Air Separator | |
| Pressure Relief Valve | 3-Way Mixing Valve | |

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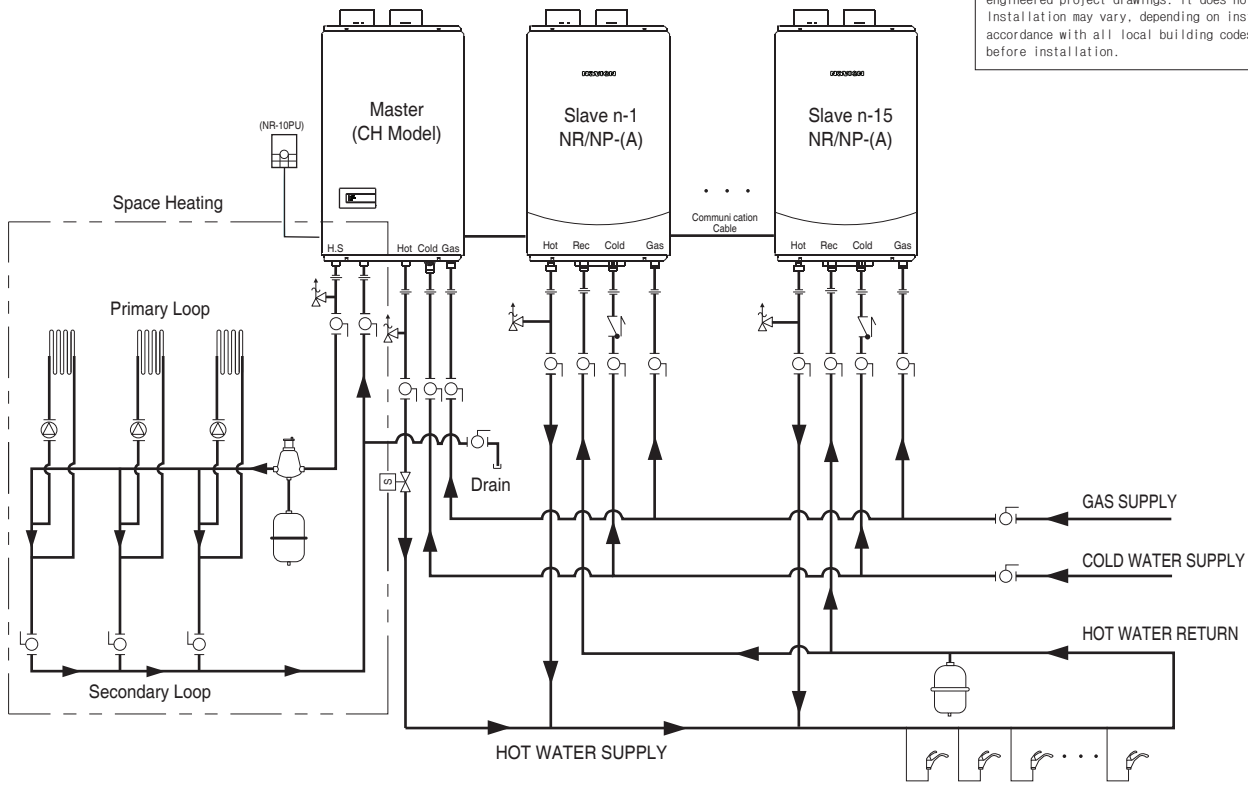
TITLE
 Cascade System Standard Installation
 CH + NR/NP-A
 Piping Installation

Navien Condensing Water Heater

Drawing Number: CS-KD-08 DATE: January 21, 2010

SYMBOL		
	Union	
	Ball Valve	
	Check Valve	
	Solenoid Valve	
	Pressure Relief Valve	
	In-Floor Heating	
	Zone Valve	

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7-CREATOR
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TITLE

Cascade System Standard Installation
 CH + NR/NP-A
 Piping Installation

Navien Condensing Water Heater

Drawing Number

CS-KD-09

DATE

January 21, 2010

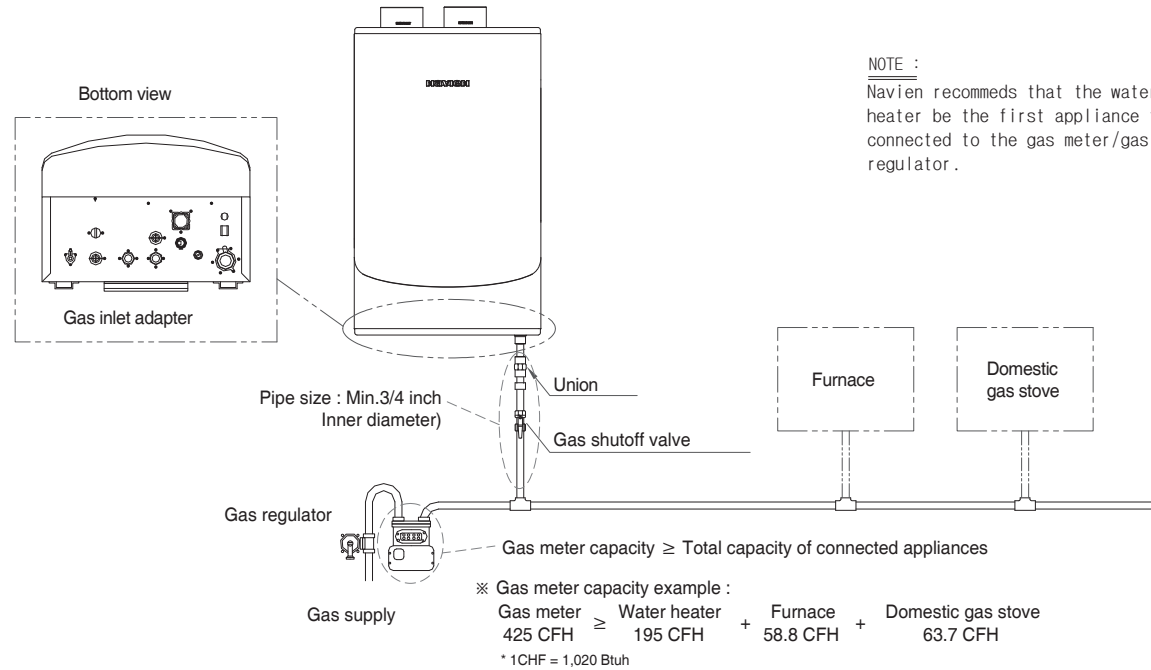
SYMBOL


- | | | |
|----------------|-----------------------|------------|
| Union | Faucet | Base Board |
| Ball Valve | Expansion Tank | |
| Check Valve | Circulation Pump | |
| Solenoid Valve | Pressure Relief Valve | |
| Air Separator | | |

7. Gas Piping Installation

7. 1 Standard Gas Piping Installation

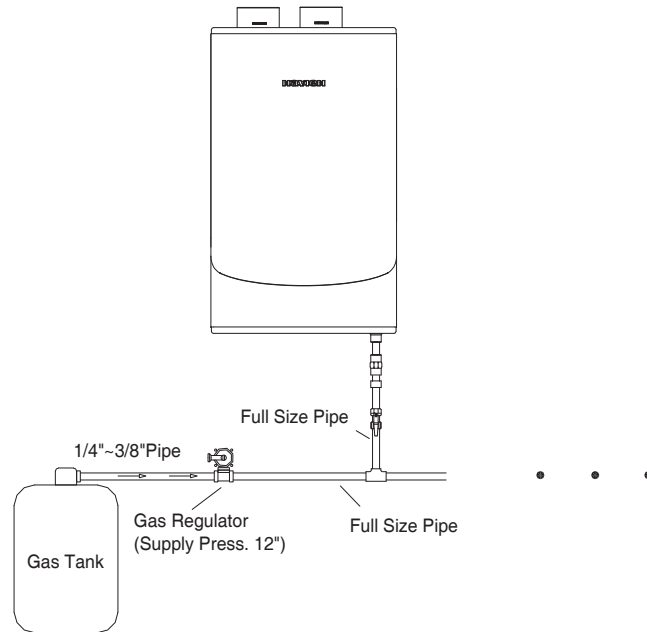
This drawing is intended only as a guide and not as a replacement for professionally engineered project drawings. It does not imply compliance with local building codes. Installation may vary, depending on installation location, and must be done in accordance with all local building codes. Confer with local building officials before installation.



 <p>20 Goodyear Irvine. CA 92618 1-800-519-8794 www.navienamerica.com</p>	TITLE		SYMBOL
	Condensing Water Heater Standard Installation Gas Piping		
	Navien Condensing Water Heater NR/NP Series		
Drawing Number GP-KD-01	DATE Agust 19, 2010		

7. 2 LP Unit Regular System Piping Installation

This drawing is intended only as a guide and not as a replacement for professionally engineered project drawings. It does not imply compliance with local building codes. Installation may vary, depending on installation location, and must be done in accordance with all local building codes. Confer with local building officials before installation.



NOTE :
Navien recommends that the water heater be the first appliance to be connected to the gas meter/gas regulator .

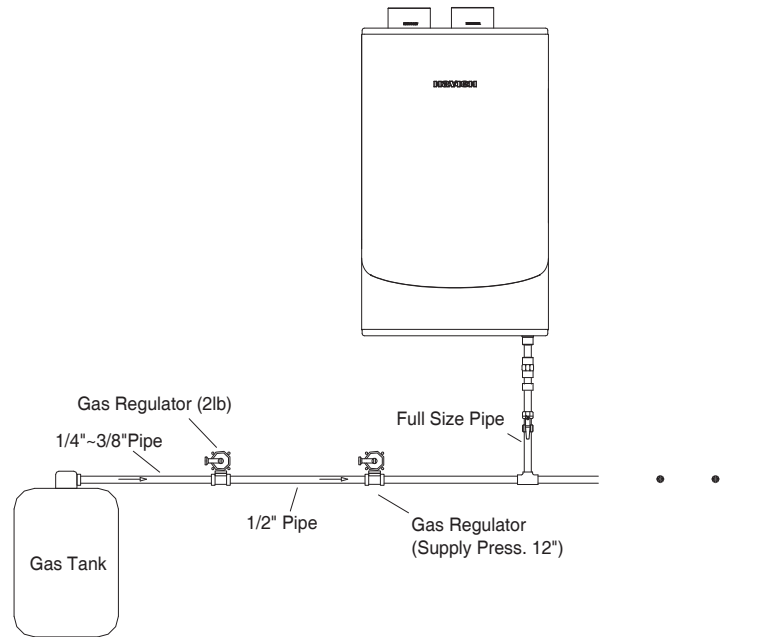


20 Goodyear Irvine.
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TITLE		SYMBOL
Condensing Water Heater Standard Gas Piping Lp Unit Regular System Installation		
Navien Condensing Water Heater NR/NP Series		
Drawing Number	GP-KD-02	DATE
		August 19, 2010

7. 3 LP Unit 2lb System Piping Installation

This drawing is intended only as a guide and not as a replacement for professionally engineered project drawings. It does not imply compliance with local building codes. Installation may vary, depending on installation location, and must be done in accordance with all local building codes. Confer with local building officials before installation.



NOTE :
Navien recommends that the water heater be the first appliance to be connected to the gas meter/gas regulator.



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TITLE
Condensing Water Heater
Standard Gas Piping
LP Unit 2lb System Installation

Navien Condensing Water Heater NR/NP Series

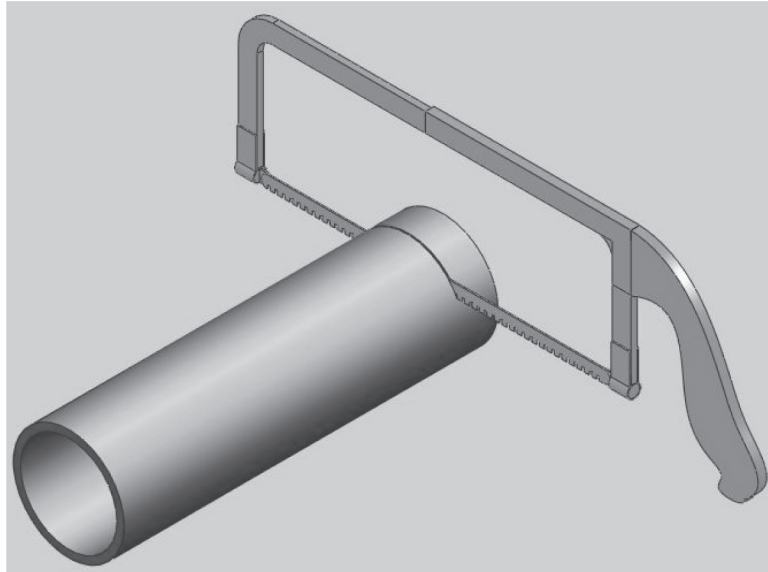
Drawing Number
GP-KD-03

DATE
August 19, 2010

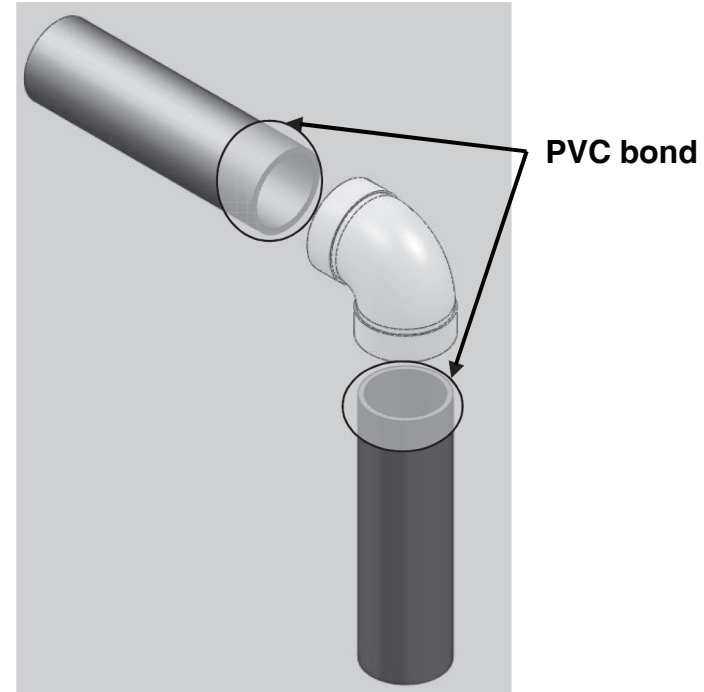
SYMBOL

8. Vent Installation

8. 1 Vent pipe Cutting & Joining



- Components should be selected to minimize cutting. Where cutting is unavoidable, pipe sections can be cut to length, but only at the non-seal end.
- Bends and other pre-formed components must not be cut.

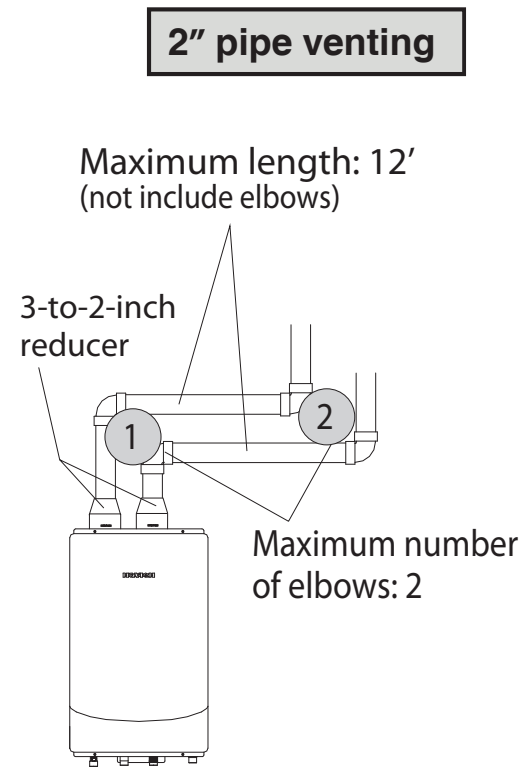
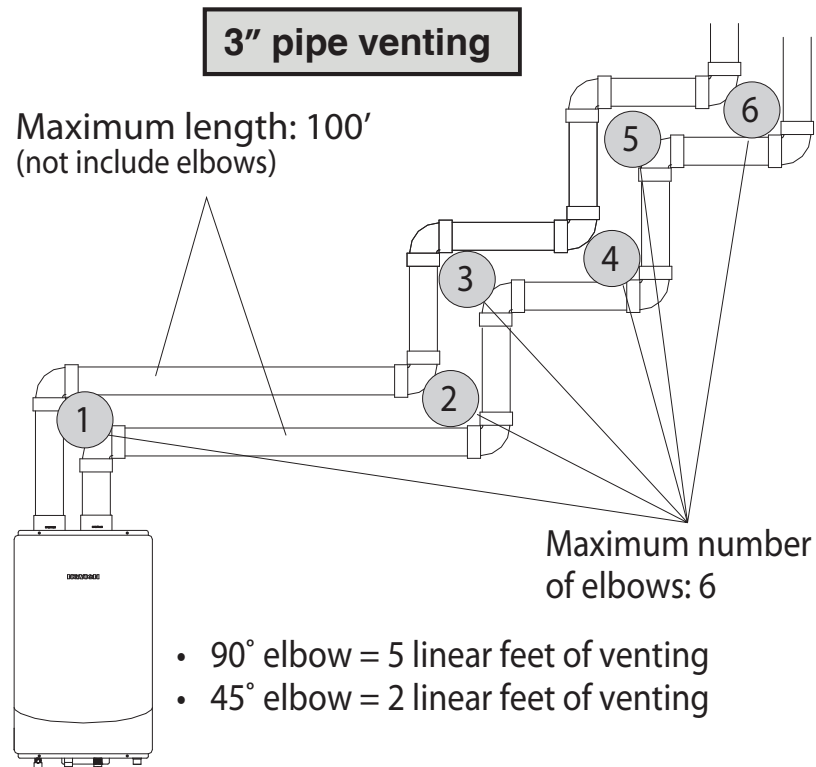


- Apply PVC bond to the end of pipe.
- Push male end of pipe into opening with light twisting movement.

※ PVC bond

Do not work with components which are at a temperature of less than 32°F(0°C).

8. 2 Vent Length

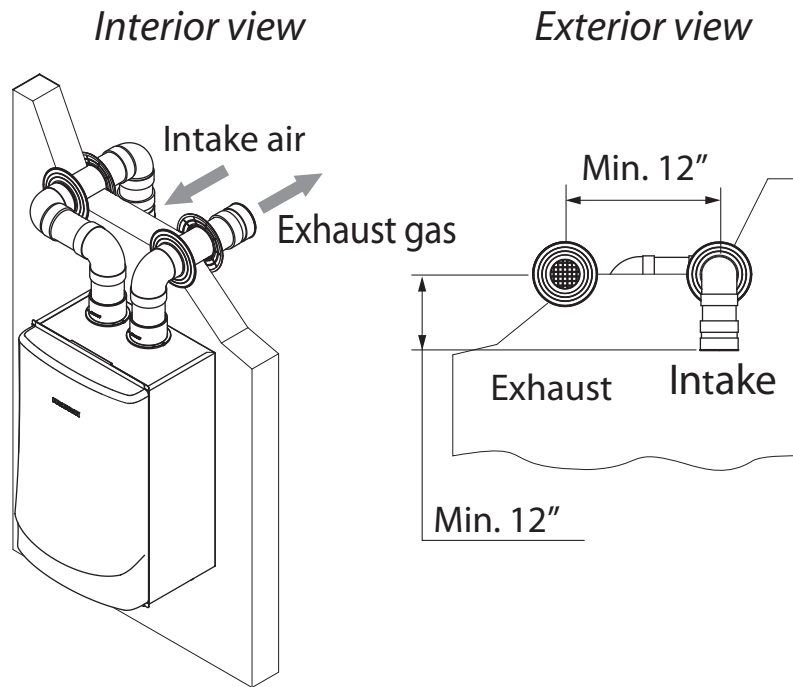


- The maximum lengths listed above are for the exhaust pipe section only.
- The intake air pipe length can be of equal length.
- The maximum length are not including elbows.

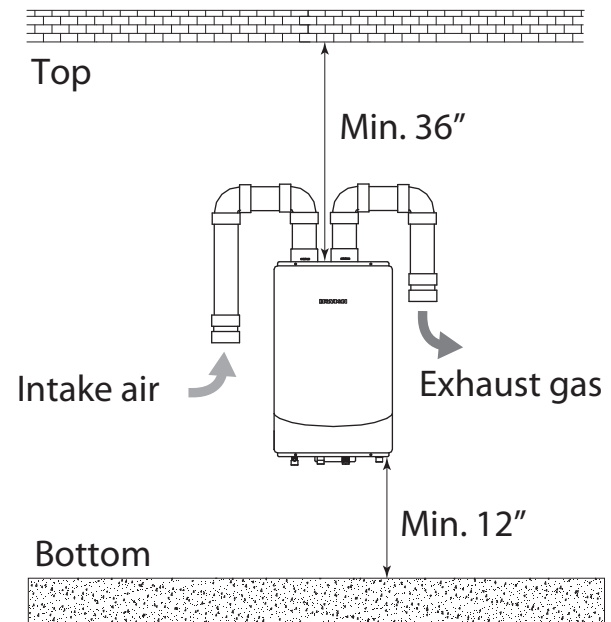
- The 2" diameter Sch40 PVC venting pipe installation is a maximum 12 feet, plus 1 elbow and elbow termination (2 elbows total) up to 2,000 feet elevation.
- Installations above 2,000 feet require all 3" venting.

8. 3 Indoor & Outdoor Installation

Indoor vent termination

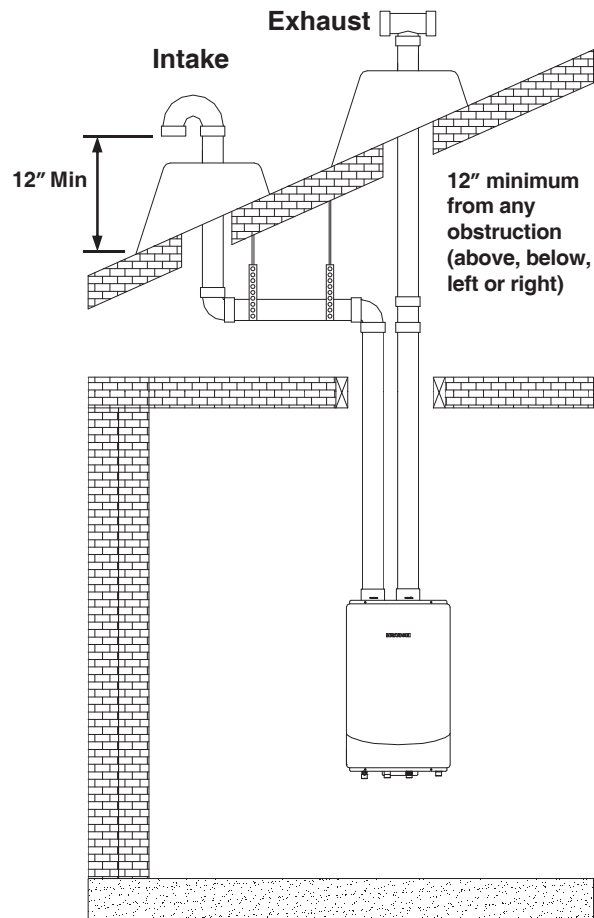


Outdoor vent termination



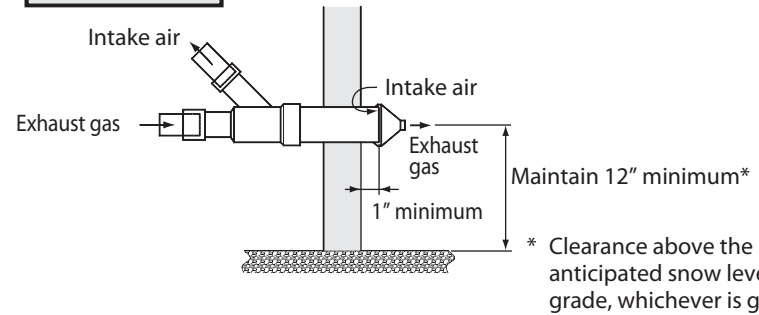
8. 4 Vertical & Concentric Installation

Vertical vent termination

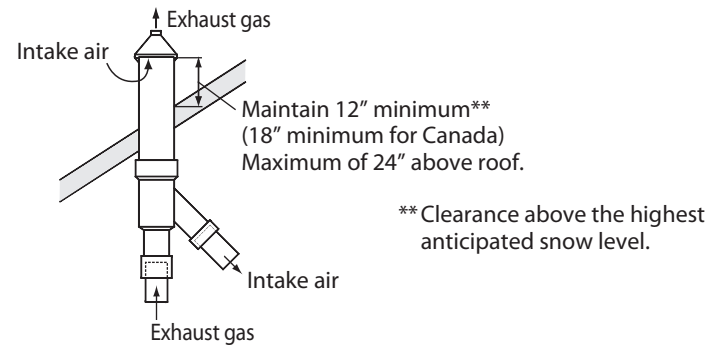


Concentric vent termination

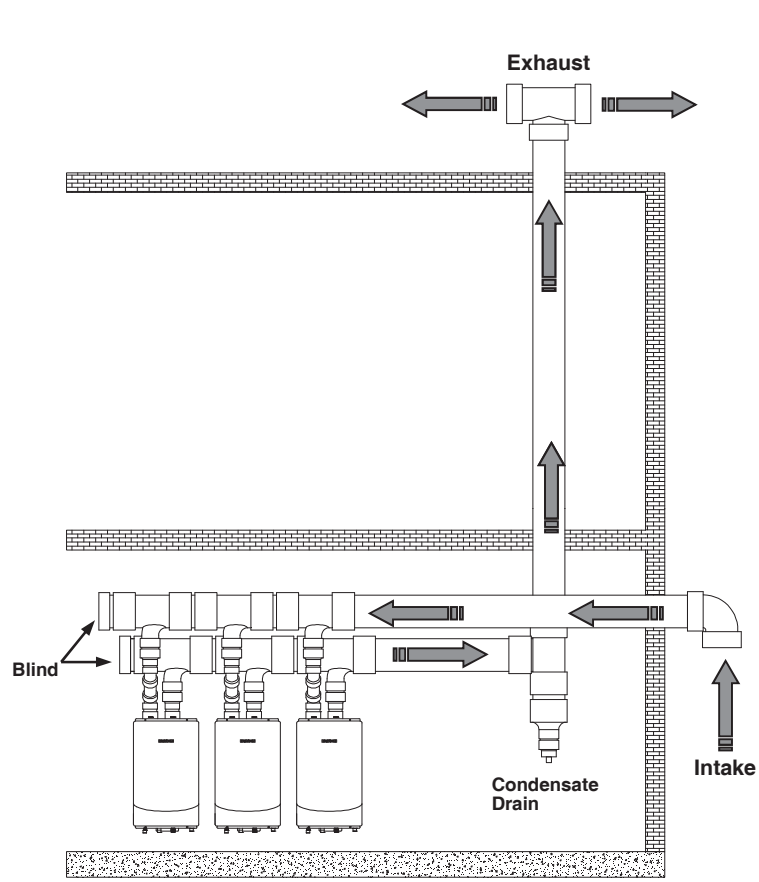
Side Wall



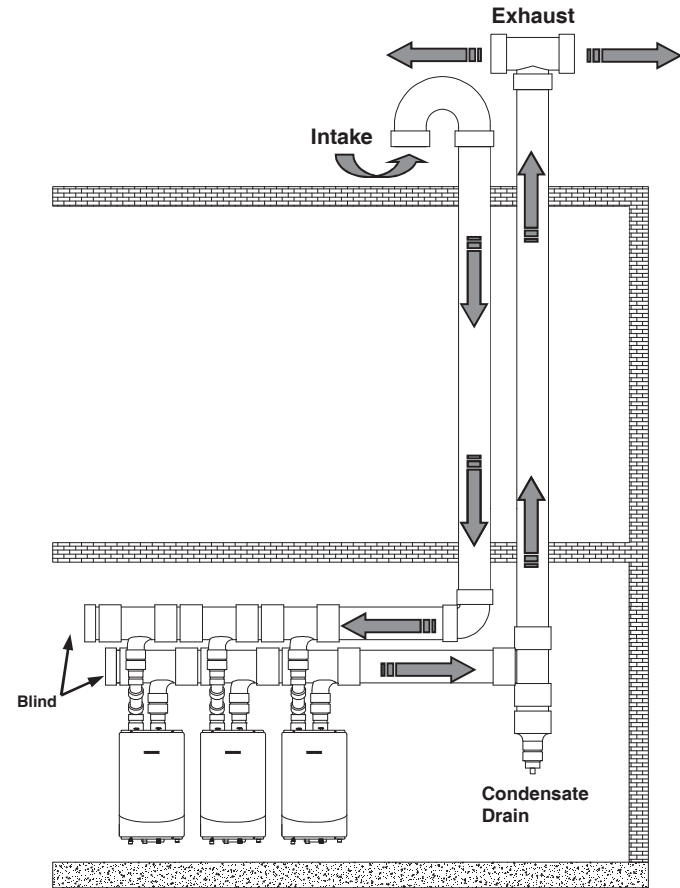
Roof



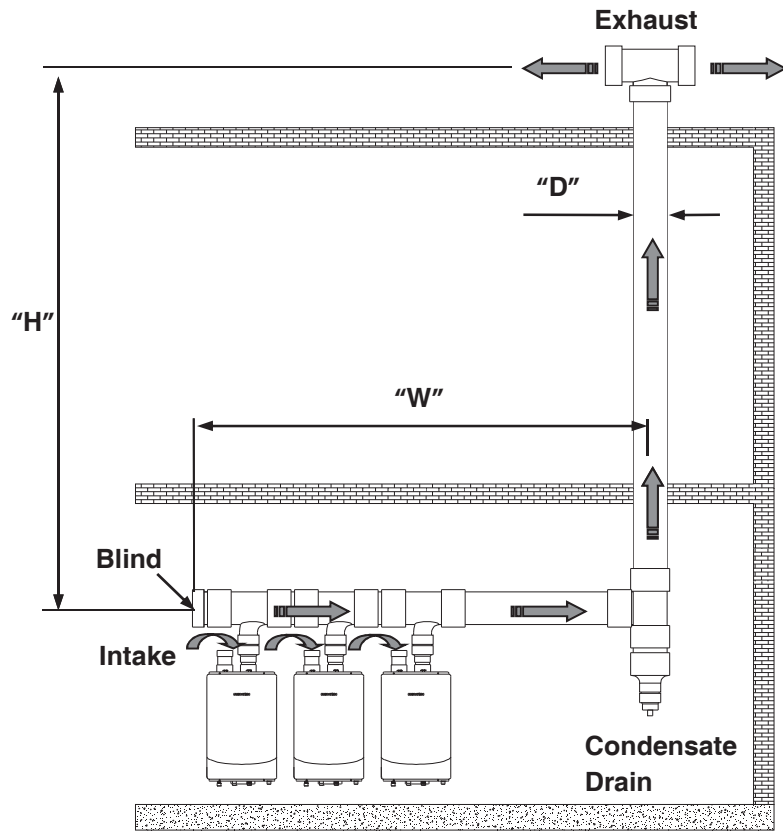
8. 5 Common Vent Installation



[Room Sealed Different]



[Room Sealed Same Area]



Required Load (Btuh)	Model			Total length(L: Max. ft)			
	NR-180(A)	NR-210(A)	NR-240(A)	D= 3"	D= 4"	D= 5"	D= 6"
Till 300,000	2			50	90	100	-
Till 330,000	1	1		50	90	100	-
Till 360,000		2		50	90	100	-
Till 379,000		1	1	50	90	100	-
Till 398,000			2	50	90	100	-
Till 540,000		3		-	60	90	100
Till 559,000		2	1	-	60	90	100
Till 578,000		1	2	-	60	90	100
Till 597,000			3	-	60	90	100
				D= 5"	D= 6"	D= 7"	D= 8"
Till 739,000		3	1	70	100	-	-
Till 758,000		2	2	70	100	-	-
Till 777,000		1	3	70	100	-	-
Till 796,000			4	70	100	-	-
Till 995,000			5	56	80	100	-
Till 1,194,000			6	-	67	90	100
Till 1,393,000			7	-	57	78	100
				D= 7"	D= 8"	D= 9"	D=10"
Till 1,592,000			8	68	89	100	100
Till 1,791,000			9	60	79	100	100
Till 1,990,000			10	54	71	90	100
Till 2,189,000			11	-	65	82	100
Till 2,388,000			12	-	59	75	93
				D= 9"	D=10"	D=11"	D=12"
Till 2,587,000			13	69	85	100	-
Till 2,786,000			14	64	79	96	100
Till 2,985,000			15	60	74	90	100
Till 3,184,000			16	56	69	84	100

Caution: One short radius elbow = 8 feet, One long radius elbow = 5 feet Total length (L) = H + W

Memo

A large, empty rectangular box with a thin black border, intended for writing the content of a memo. It occupies most of the page below the title.

Domestic Hot Water System & Space Heating System

PLUMBING GUIDE

navien

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