Condensing

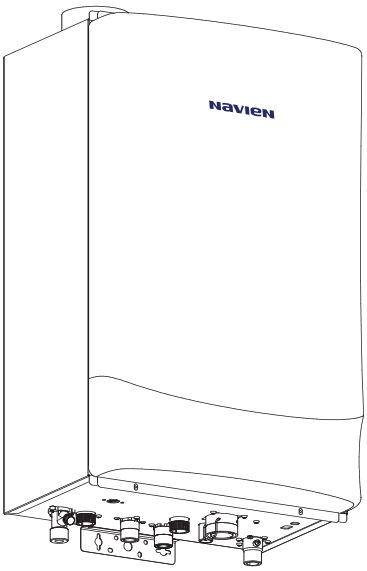
Navien

Navigating Energy and Environment

Navien Gas Water Heater

Operation & Installation Manual

Navien Condensing Water Heater Manual



For potable water heating and space heating

MODEL	
NR-180(A)	NP-180(A)
NR-210(A)	NP-210(A)
NR-240(A)	NP-240(A)

Keep this manual near the Navien Condensing Water Heater for future reference whenever maintenance or service is required.

⚠ WARNING

If the information in these instructions is not followed exactly, a fire or explosion may result causing property damage, personal injury or death.

- **Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or other appliance.**
- **WHAT TO DO IF YOU SMELL GAS**
  - Do not try to light any appliance.
  - Do not touch any electrical switch: do not use any phone in your building.
  - Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
  - If you cannot reach your gas supplier, call the fire department.
- **Installation and service must be performed by a qualified installer, service agency or the gas supplier.**

⚠ CAUTION

This product warranty is valid only used in the America and Canada but automatically be voided for other countries. (for America and Canada unit standard only)

- Please return the "Manual" to the customer after installing.

KD Navien

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Contents

Safety Instructions:

Safety-related information and instructions have been provided in this manual and on the Navien water heater to warn any person(s) of potential hazards. Read and follow all safety information and instructions throughout this manual. It is very important to understand the safety instructions before installing, operating or servicing Navien Water Heater.

Safety Related Symbols

This is safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

DANGER	Indicates an imminent hazardous situation which , if not avoided, could result in injury or death.
WARNING	Indicates a potential hazardous situation which, if not avoided, could result in injury or death.
CAUTION	Indicates an imminent hazardous situation which , if not avoided, may result in minor or moderate injury.
CAUTION	Used whitout the safety alert symbol indicates a potential hazardous situation which, if not avoided, could result in property damage.

All safety messages will refer to a potential hazard. Follow the instructions in this manual exactly to avoid the risk of injury.

Safety Instructions:

⚠ WARNING
Safety Precautions

- ❑ Read and understand this safety information before installing, operating or servicing this Navien Water Heater.
- ❑ This manual must remain with the Navien Water Heater.
- ❑ Have your installer show you the location of the gas shut-off valve and show you how to close the valve. Close the manual shut-off valve if the Navien Water Heater ever becomes subjected to overheating, fire, flood, physical damage or any other such damaging condition. And, DO NOT operate the Water Heater again until it has been checked by qualified personnel.
- ❑ DO NOT turn on the water heater unless water and gas supplies are fully opened.
- ❑ DO NOT turn on the water heater if cold water supply shut-off valve is closed.
- ❑ DO NOT use this Navien Water Heater for other than its intended purpose as described in this manual.
- ❑ DO NOT attempt to repair or replace any part of your water heater unless it is specifically recommended in this manual. All other servicing should be referred to an authorized technician or professional service technician.
- ❑ Make certain power to water heater is “OFF” before removing the front cover for any reason.
- ❑ Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operaton after servicing.
- ❑ Improper adjustment, alteration, service or maintenance can cause property damage, personal injury, or death.
- ❑ To prevent scalding, always check the temperature of the hot water before showering, bathing, etc.
- ❑ DO NOT attempt to change the water temperature while someone is using the water heater.
- ❑ DO NOT use parts other than those specified for this equipment.
- ❑ DO NOT operate the water heater if you feel something is wrong with the unit.
- ❑ DO NOT allow children to operate or otherwise handle the unit.

⚠ WARNING

This product must be installed and serviced by a licensed plumber, a licensed gas fitter, or a professional service technician. Improper installation and/or operation or installation by an unqualified person will void the warranty.

Safety Instructions:

DANGER

Vapors from flammable liquids will explode and catch fire causing death or servere burns.
Do not use or store flammable products such as gasoline, solvents or adhesives in the same room or area near the water heater.

Keep flammable products:
1. far away from heater ;
2. in approved containers;
3. tightly closed ; and
4. out of children's reach.

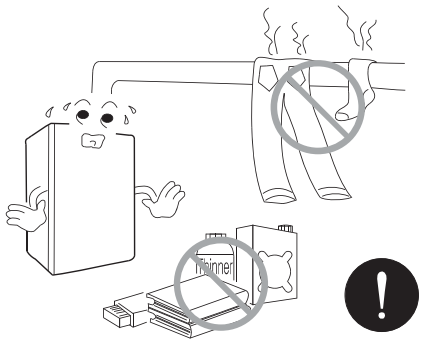
Water heater has a main burner flame:

1. Which can come on at any time ; and
2. May ignite flammable vapors.

Vapors :
1. cannot be seen ;
2. are heavier than air ;
3. go a long way on the floor ; and
4. can be carried from other rooms rooms to the main burner flame flame by air currents.

Read and follow water heater warnings and instructions. If this manual is missing, contact the retailer or manufacturer.

- ❑ DO NOT place flammable liquids such as oils or gasoline, etc. near the water heater.
- ❑ DO NOT place combustibles such as newspapers and laundry etc. near the water heater or the venting system.
- ❑ DO NOT place or use hair spray, spray paint or any other type of spray can near the water heater or the venting system (including the vent terminator).
- ❑ DO NOT place anything in or around the vent terminals that could obstruct the air flow in and out of the water heater such as a clothes line.
- ❑ DO NOT operate the water heater when the front cover is opened. Operating the water heater under such condition may cause fire or carbon monoxide(CO) poisoning, which may result in property damage, personal injury or even death.



Safety Instructions:

DANGER
WHAT TO DO IF YOU SMELL GAS

If the information in these instructions is not followed exactly, a fire or explosion may result causing property damage, personal injury or death.

- **DO NOT OPERATE THE WATER HEATER. DO NOT OPERATE ANY FAUCETS. Smell all around the water heater area for gas. Be sure to smell near the floor because as some gas is heavier than air and will settle near the floor.**
  - DO NOT try to light any appliance.
  - DO NOT touch any electric switch.
  - DO NOT use any phone in your building.
  - Immediately call your Gas Supplier from a neighbor's phone. Follow the Gas Supplier's instructions.
  - If you cannot reach your Gas Supplier, call 911 for police and/or the fire department.
  - DO NOT return to your home until authorized by your gas supplier or the fire department.

DANGER
COMPROMISED VENTING SYSTEM

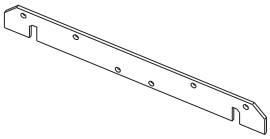
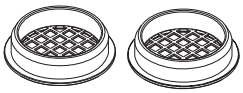
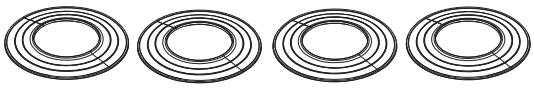
- Failure to follow the Venting Section of the Installation Manual may result in the unsafe operation of this water heater. To avoid the risk of fire, explosion or asphyxiation from carbon monoxide, never operate the water heater unless it is properly vented to outside and has an adequate air supply for proper operation.
- Be sure to inspect the vent terminator and the air intake pipe annually to ensure safe operation of the water heater.
- Immediately turn off and do not use the water heater if any of the vent pipes, vent elbows and/or the intake air pipe are :
  - i. damaged in any way;
  - ii. have separated at a joint;
  - iii. are cracked or show evidence of corrosion, rusting or melting;

WARNING

Improper venting may cause a build-up of carbon monoxide (CO). Breathing carbon monoxide can cause brain damage or death. Read and follow the above instructions carefully.

Accessories and Optional Accessories

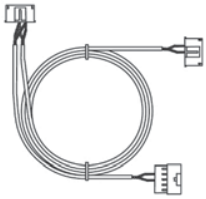
1. Included with the Water Heater:

Item	Description	Qty
Navien Gas Water Heater		1
Remote Controller		1
Navien Condensing Water Heater Manual		1
Wall Mounting Bracket		1
Tapping Screws & Anchors		4
Vent terminators		2
Wall Flanges		4

Check that you have received all of the above parts before installing the Water Heater.

Accessories and Optional Accessories

2. Optional Accessories:

Item	Description
Navien Plumb Easy Valve Set	
Navien Pressure Relief Valve	
Navien condesate Neutralizer	
Navien Ready-Link Communication Cable	

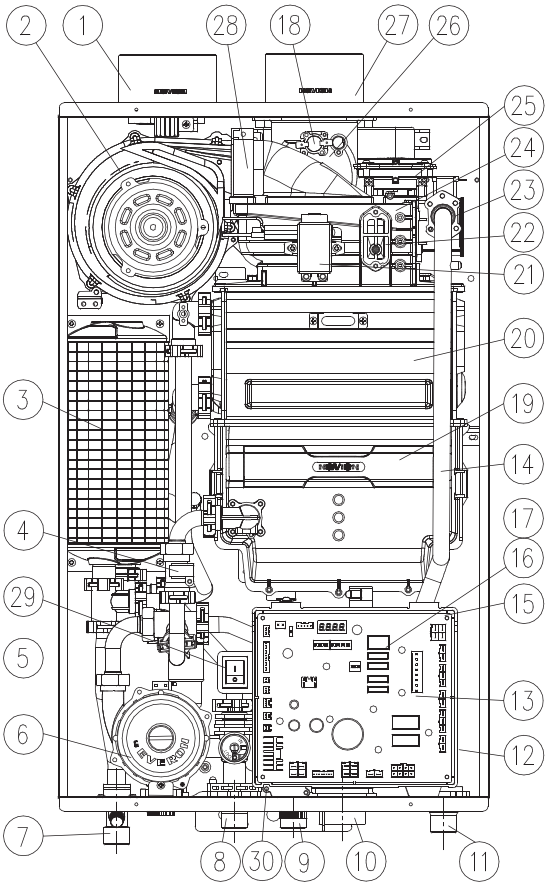
! Contact your Navien Water Heater supplier for optional accessories.

Specifications

Please review these specifications before installation to confirm proper unit selection: As Navien is dedicated to continuous product improvement, Navien reserves the right to change specifications and/or design and/or discontinue any model or feature without prior notice and without incurring obligations.

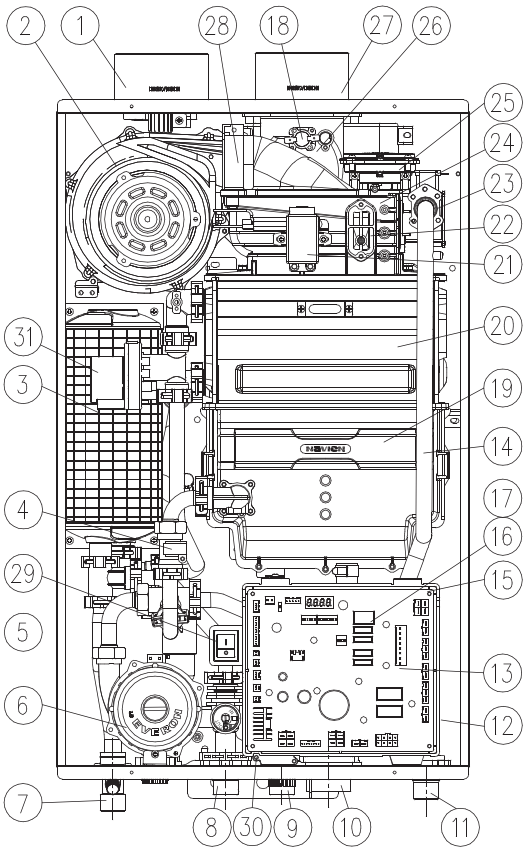
Item		NR-180(A) NP-180(A)	NR-210(A) NP-210(A)	NR-240(A) NP-240(A)
Heat Capacity (Input)	Natural Gas	Min: 15,000 Btuh Max: 150,000 Btuh	Min: 17,000 Btuh Max: 180,000 Btuh	Min: 17,000 Btuh Max: 199,000 Btuh
	Propane Gas	Min: 15,000 Btuh Max: 150,000 Btuh	Min: 17,000 Btuh Max: 180,000 Btuh	Min: 17,000 Btuh Max: 199,000 Btuh
Flow Rate (DHW)	35°F Rise	8.3 GPM	10.0 GPM	11 GPM
	45°F Rise	6.5 GPM	7.7 GPM	8.6 GPM
	77°F Rise	3.8 GPM	4.5 GPM	5.0 GPM
Dimensions		W17" x H28"x D14"	W17" x H28"x D15"	W17" x H28" xD15"
Weight NR-A, NP-A		77 lbs	86 lbs	86 lbs
Weight NR, NP		67 lbs	77 lbs	77 lbs
Installation Type		Indoor / Outdoor Wall-Hung		
Venting Type		Forced Draft Direct Vent		
Ignition		Electronic Ignition		
Water Pressure (min-max)		15 – 150 PSI		
Natural Gas Supply Pressure (from source, Min ~ Max)		5"WC ~ 10.5" WC		
Propane Gas Supply Pressure (from source, Min ~ Max)		9"WC ~ 13.5" WC	8"WC ~ 13.5" WC	
Natural Gas Manifold Pressure (min-max)		0.4"WC ~ 4.2" WC	0.4" WC ~ 3.5" WC	0.6" WC ~ 3.7" WC
Propane Gas Manifold Pressure (min-max)		0.8"WC ~ 7.6" WC	0.8" WC ~ 5.9" WC	1.0" WC ~ 5.9" WC
Minimum Flow Rate		0 GPM for "A" models (no minimum flow rate requirement), 0.5 GPM for non-"A" models		
Connection Sizes	Cold Water Inlet	3/4" NPT		
	Hot Water Outlet	3/4" NPT		
	Gas Inlet	3/4" NPT		
Power Supply	Main Supply	120VAC, 60Hz		
	Maximum Power Consumption	200W (max 2A)		
Materials	Casing	Cold Rolled Carbon Steel		
	Heat Exchangers	Primary Heat Exchanger: Stainless Steel Secondary Heat Exchanger: Stainless Steel		
Venting	Exhaust (ø3")	ø3" PVC,CPVC, Polypropylene, ø3" Special Gas Vent Type BH (Class IIIA/B/C)		
	Intake (ø3")	ø3" PVC,CPVC, Polypropylene, ø3" Special Gas Vent Type BH (Class IIIA/B/C),		
	Vent Clearances	0" to combustibles		
Safety Devices		Flame Rod,Thermal Fuse(Overheat Cut Off device) APS, GPS, Gas-Valve Operation Detector, Ignition Operation Detector, Water Temperature High Limit Switch, Exhaust Temperature High Limit Switch		
Accessories		Plumb Easy Valve Set, Condensate Neutralizer, Ready-Link Communication Cable		

Key Components: NR-A



No	Description	Navien Part No.	No	Description	Navien Part No.
1	Intake Air Duct	BH2505400B	16	WAV	AAVC9EXFC003B
2	Fan Motor	NAFA9GLPCT01	17	Transformer	BH1205008A
3	Buffer Tank	PASNCWBFTANK_001	18	Exhaust Limit Switch	BH1401027A
4	Flow Sensor	AASS9EXFS003C	19	Secondary H/E	-
5	PCB Board	NACR1GS32410	20	Primary H/E	-
6	Circulation Pump	NAPU9GLPCT33	21	Ignition Transformer	BH1201045A
7	DHW Supply Adapter	BH2507348B	22	APS Venturi	BH2501413A
8	3-Way Valve	AAVC9EX00012B	23	Manifold	PABCR180AMF_001
9	DHW Inlet Adapter	AAVC9EX00016B	24	Burner	PABNCN30KDBN_003
10	Syphon	BH2507442C	25	APS	NASS9EX00009
11	Gas Inlet Adapter	BH2507722A	26	Exhaust Duct	BH2544004F
12	Main Gas valve	BH0901018A	27	Exhaust Pipe	BH2505401B
13	GPS Venturi	BH2507359C	28	Air Intake Guide	BH2543002C
14	Gas Pipe	BH2507509C	29	Power Switch	BH1426002A
15	GPS	NASS9EXGPS01	30	Water Leakage Detector	-

Key Components: NP-A



No	Description	Navien Part No.	No	Description	Navien Part No.
1	Intake Air Duct	BH2505400B	17	Transformer	BH1205008A
2	Fan Motor	NAFA9GLPCT01	18	Exhaust Limit Switch	BH1401027A
3	Buffer Tank	PASNCWBFTANK_001	19	Secondary H/E	-
4	Flow Sensor	AASS9EXFS003C	20	Primary H/E	-
5	PCB Board	NACR1GS32410	21	Ignition Trans	BH1201045A
6	Circulation Pump	NAPU9GLPCT33	22	APS Venturi	BH2501413A
7	DHW Supply Adapter	BH2507348B	23	Manifold	PABCR180AMF_001
8	3-Way Valve	AAVC9EX00012B	24	Burner	PABNCN30KDBN_003
9	DHW Inlet Adapter	AAVC9EX00016B	25	APS	NASS9EX00009
10	Syphon	BH2507442C	26	Exhaust Duct	BH2544004F
11	Gas Inlet Adapter	BH2507722A	27	Exhaust Pipe	BH2505401B
12	Main Gas valve	BH0901018A	28	Air Intake Guide	BH2543002C
13	GPS Venturi	BH2507359C	29	Power Switch	BH1426002A
14	Gas Pipe	BH2507509C	30	Water Leakage Detector	-
15	GPS	NASS9EXGPS01	31	WAV	AAVC9EXFC003B
16	2-Way Valve	AAVC9EX00014A			

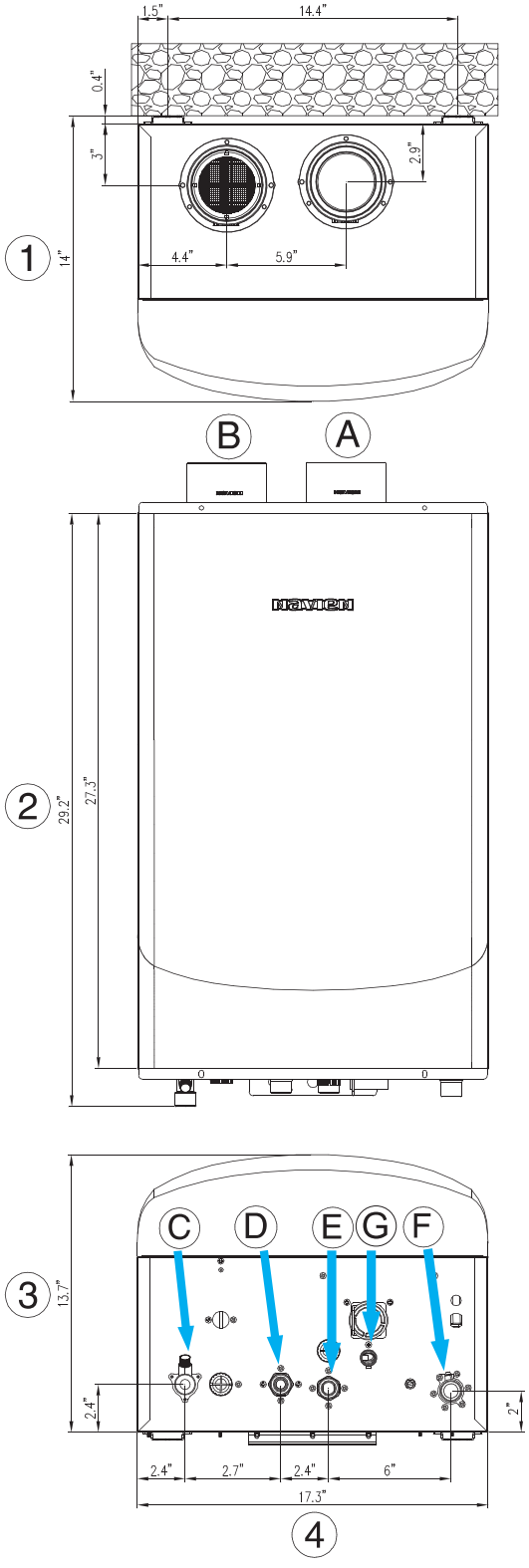
Dimensions: NR-A, NP-A

NR-A , NP-A

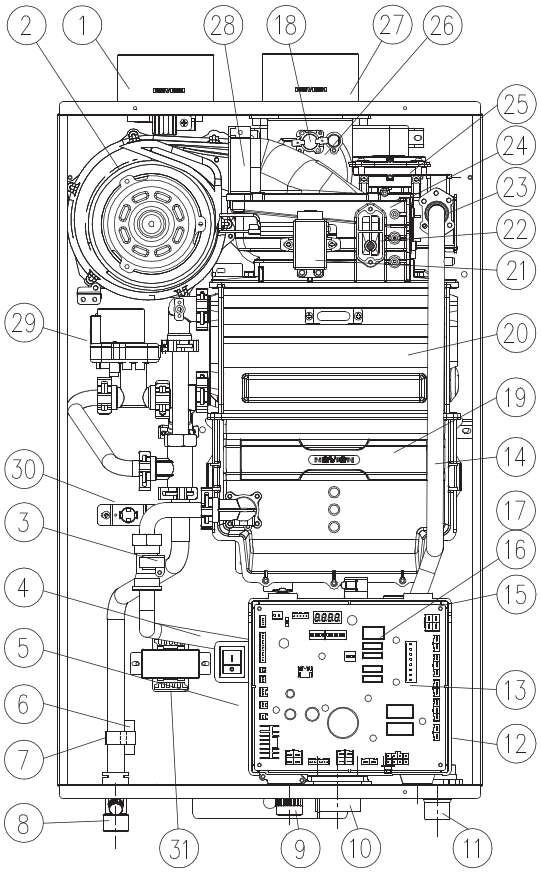
	Description	Diameter
A	Exhaust	3”
B	Air Intake	3”
C	DHW Supply	¾”
D	Recirculation Inlet	¾”
E	Cold Water Inlet	¾”
F	Gas Inlet	¾”
G	Condensate Outlet	½”

NR-A , NP-A Type Dimensions

Model	①	②	③	④
180	14”	29.2”	13.7”	17.3”
210	15.2”	29.2”	14.9”	17.3”
240	15.2”	29.2”	14.9”	17.3”

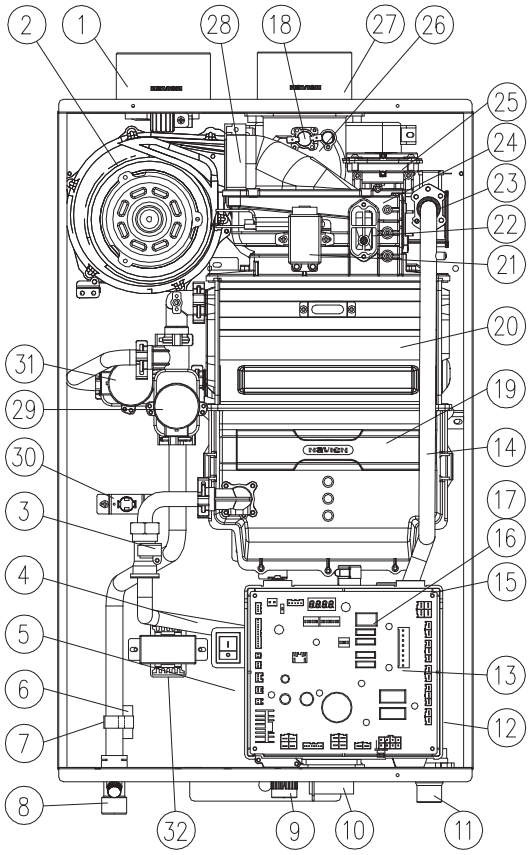


Key Components: NR



No	Description	Navien Part No.	No	Description	Navien Part No.
1	Intake Duct	BH2505400B	17	Transformer	BH1205008A
2	Fan Motor	NAFA9GLPCT01	18	Exhaust Limit Switch	BH1401027A
3	Flow Sensor	AASS9EXFS003C	19	Secondary H/E	-
4	Power Switch	BH1426003A	20	Primary H/E	-
5	PCB Board	NACR1GS32401	21	Ignition Trans	BH1201045A
6	Heater	BH1501047B	22	APS Venturi	BH2501413A
7	Heater Clip	BH2507447A	23	Manifold	PABCR180AMF_001
8	DHW Supply Adapter	BH2507348B	24	Burner	PABNCN30KDBN_003
9	DHW Inlet Adapter	AAVC9EX00016B	25	APS	NASS9EX00009
10	Syphon	BH2507452C	26	Exhaust Duct	BH2544004F
11	Gas Inlet Adapter	BH2507722A	27	Exhaust Pipe	BH2505401B
12	Main Gas valve	BH0901018A	28	Air Intake Guide	BH2543002C
13	GPS Venturi	BH2507359C	29	Bypass Mixing Valve	AAVC9EXMIX01B
14	Gas Pipe	BH2507351C	30	Freeze Protect Switch	BH1402001A
15	GPS	NASS9EXGPS01	31	Mixing Trans	BH1205013A
16	WAV	AAVC9EXFC003B			

Key Components: NP



No	Description	Navien Part No.	No	Description	Navien Part No.
1	Intake Air Duct	BH2505400B	17	Transformer	BH1205008A
2	Fan Motor	NAFA9GLPCT01	18	Exhaust Limit Switch	BH1401027A
3	Flow Sensor	AASS9EXFS003C	19	Secondary H/E	-
4	Power Switch	BH1426003A	20	Primary H/E	-
5	PCB Board	NACR1GS32401	21	Ignition Trans	BH1201045A
6	Heater	BH1501047B	22	APS Venturi	BH2501413A
7	Heater Clip	BH2507447A	23	Manifold	PABCR180AMF_001
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11	Gas Inlet Adapter	BH2507722A	27	Exhaust Pipe	BH2505401B
12	Main Gas valve	BH0901018A	28	Air Intake Guide	BH2543002C
13	GPS Venturi	BH2507359C	29	WAV	NCVM9EX00005B
14	Gas Pipe	BH2507351C	30	Freeze Protect Switch	BH1402001A
15	GPS	NASS9EXGPS01	31	Bypass Mixing Valve	AAVC9EXMIX01B
16	2-Way Valve	AAVC9EX00014A	32	Mixing Trans	BH1205013A

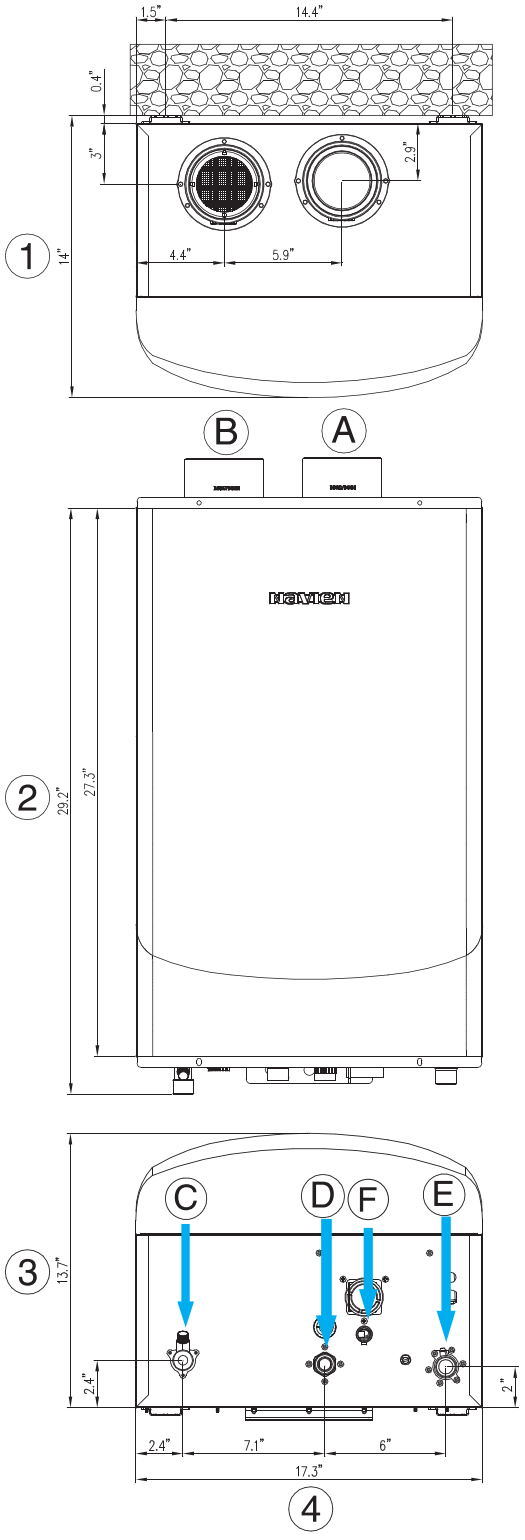
Dimensions: NR, NP

NR, NP

	Description	Diameter
A	Exhaust	3”
B	Air Intake	3”
C	DHW Supply	¾”
D	Cold Water Inlet	¾”
E	Gas Inlet	¾”
F	Condensate Outlet	½”

NR, NP Type Dimensions

Model	①	②	③	④
180	14”	29.2”	13.7”	17.3”
210	15.2”	29.2”	14.9”	17.3”
240	15.2”	29.2”	14.9”	17.3”



Installation - Contents

Installation Warnings:

⚠ WARNING

The additional safety issues outlined below must also be followed completely when installing this Navien Water Heater:

⚠ WARNING

Follow all local codes and/or the most recent edition of the National Fuel Gas Code (ANSI Z223.1/NFPA 54) in the USA or the Natural Gas and Propane Installation Code in Canada (CAN/CGA B149.1).

1. This unit is designed for indoor and outdoor installations. DO NOT operate this unit without the vent piping connected. Exhaust gases must be completely expelled out of the building.
2. DO NOT use this appliance if any part has been underwater. Immediately call a qualified service technician to inspect the appliance and replace any part of the control system and any gas control which has been underwater.
3. Be sure not to reverse the water and gas connections as this may damage the gas valves.
4. Water temperature over 125°F can cause severe burns instantly or death from scalds. If the proposed water heater outlet temperature is above 125°F, a thermostatically controlled mixing valve (or a temperature limiting valve) for reducing point of use water temperature is recommended to reduce the risk of scald injury. Contact a licensed plumber or the local plumbing authority for further information.
5. The appliance should be located in an area where leakage within the unit or at its connections will not result in damage to the surrounding area. Navien will not be responsible for any damage resulting from leaking if adequate drainage is not provided.
6. DO NOT use this water heater for any purpose other than water heating and space heating.
7. If the water quality is known to have high acidity and/or high hardness, water treatment is recommended to maintain full warranty. Consult the local water authority. (Max. 12 Grains)
8. Protect against snow accumulation around the vent terminations. Ensure the exhaust vent pipe and the intake airpipe remain clear from obstructions at all times.
9. DO NOT overtighten fittings as pipe and/or fitting damage may occur causing leakage.
10. DO NOT install water heater where subject to vibtations.
11. The vent for this appliance shall not terminate over public walkways, near soffit vents, crawl space vents, or other areas where condensate or vapor could create a nuisance, hazard, or cause property damage. The vent also should not terminate where condensate or vapor could cause damage or could be detrimental to the operation of regulators, relief valves, or other equipment.
12. For other than a direct vent appliance, the appliance must be located as close as possible to a chimney or gas vent.
13. Should overheating occur or if the gas supply fails to shut off, turn off the manual gas control valve to the appliance.

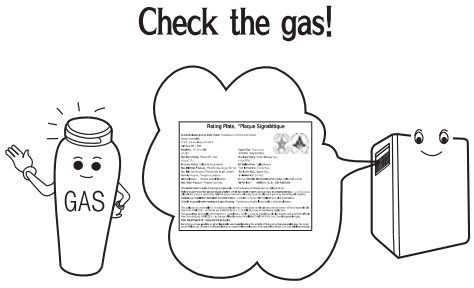
Getting Started:

CHECK THE RATING PLATE

Navien units come from the factory configured for use with either Liquid Propane (LP) or Natural Gas (NG). **Before starting the installation**, check the rating plate located on the backside of the front cover of the Water Heater to ensure the unit matches gas type, gas pressure, water pressure and electrical supply. **If the unit does not match following requirements, do not install.**

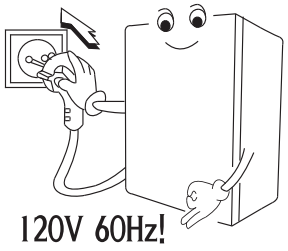
WARNING **Be sure the gas type and electricity voltage match the Rating Plate.**

- ❑ Use only the same gas type indicated on the rating plate of the Navien Water Heater. Using different gas type will cause abnormal combustion and Water Heater malfunction.



- ❑ Be sure to use 120V AC, 60Hz, minimum 2A current. Using abnormally high or low AC voltage may cause abnormal operation, and may reduce the life expectancy of this product.

  If not certain, please contact Navien immediately.



WARNING

Conversion of this unit from natural gas to propane or vise versa cannot be done in the field. Please re-confirm gas type on the rating plate (left side of unit) before installing. DO NOT attempt any field conversion; this will result in dangerous operating conditions and will void all warranty.

Navien America Inc. is not liable for any property damage and/or personal injury resulting from unauthorized conversions.

Check Rating Plate:

Sample Rating Plate

Rating Plate, *Plaque Signalétique

Automatic Instantaneous Water Heater,
*Chauffe-eau automatique instantané
Navien America Inc.
20 Goodyear Irvine CA 92618 USA
Tel: (949) 420 – 0420

Model No., *N° de modèle
NR-180
Max. Input Rating, *Entrée GPL : max.
150,000 Btuh
Recovery Rating, *Calibre de recouvrement :
Max. Inlet Gas Pressure, *Pression max. de gaz d'entrée
Min. Inlet Gas Pressure, *Pression min. de gaz d'entrée
Manifold Pressure, *Pression d'admission
Electrical Rating, *Régime nominal électrique
Max. Water Pressure, *Pression d'eau max.

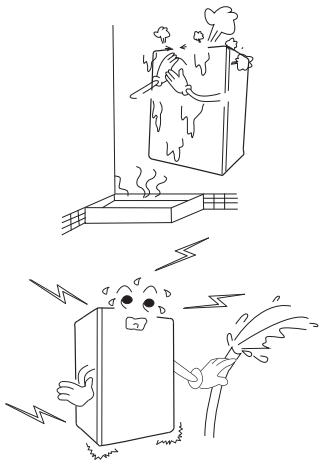
Type of Gas, *Type de gaz
NG *GAZ NATUREL
Min. Input Rating, *Débit calorifique max.
15,000 Btuh
227 Gallons/Hour, *gallons/heures
10.5 Inches W.C. *pouces W.C.
5.0 Inches W.C. ,*pouces W.C.
4.2 Inches W.C. *po W.C.
AC *c.a. **120 Volts 60Hz Use less than 2 Amp,** *Utilise moins de 2A
150 Psi *lb/po2 **ANSI Z21. 10. 3b – CSA 4.3B-2004**

SAMPLE

DESIGN CERTIFIED ®
CERTIFIED ®

DO NOT install the Navien Water Heater in areas with excessively high humidity:

- ❑ DO NOT install the unit in a location where there is excessively high humidity such as bathrooms, damp crawl space and other areas such as this. This may cause the unit to malfunction.
- ❑ To avoid possible electrical shock, DO NOT touch the internal components of the water heater or the power cord with wet hands.
- ❑ DO NOT splash excessive water on the Water Heater or remote controller when cleaning: they are water resistant, not water proof.



Locating the Water Heater:

⚠ WARNING
Considering the Location

Location selection may not necessarily affect the operation of the Navien water heater but it will affect the customer's experience and level of satisfaction with the product. Understanding that each building is different, the contractor will have to select the best location based on a combination of the following factors:

1. Locate Navien Water Heater close to a drain where condensed water and possible water leakage will not damage to surrounding areas. A significant amount of condensed water will be produced each time the water heater is used. In addition, as with any water heating appliance, the potential for leakage at some time in the life of the product does exist. If there is no drain, Navien will not be responsible for any water damage that may occur.
2. Locate where the domestic water supply comes into the building.
3. Locate where the gas supply comes into the building.
4. Locate the unit close to the main fixtures in the home (bathrooms, kitchen, laundry, etc.). Select a location that minimizes the water piping distance between the major fixtures. If the distances are long or an appliance needs "instant" hot water, Navien recommends using its "A" models and running a recirculation line back from the furthest fixture. Insulate as much of the hot water supply line and recirculation line as possible.
5. Consider Venting Options: Select a location that minimizes the amount of venting required. Consider venting restrictions from windows, doors, air intakes, gas meters, neighbor's houses, etc.
   - ❑ Maintain proper clearances from any openings in the building (see chart in venting section).
   - ❑ Navien Water Heater requires a minimum clearance of 12 inches above the exterior grade or follow local codes.
   - ❑ Do not install the water heater where moisture from the exhaust may cause discoloration or damage to walls.
   - ❑ Install the exhaust vent so that there are no obstacles around the termination and so that exhaust cannot accumulate.
   - ❑ Do not enclose the termination.
   - ❑ Do not install the water heater near vents for heating or cooling. A minimum of 4 feet (1.2m) should be maintained.
6. It is not recommended to install the Water Heater in bathrooms, bedrooms, any occupied rooms normally kept closed, or in indoor areas without proper venting.

Locating the Water Heater:

7. Select a location that ensures the unit will have sufficient and clean combustion air; avoid installation where dust or debris will accumulate; avoid installation where chemical agents (e.g., hair spray, spray detergent, chlorine, chemicals) are used.
8. If installing into a very tight space or corner, please ensure there is sufficient service and maintenance access to all gas and water piping to ensure that regular maintenance (such as cleaning the water filter, the air filter and the condensate trap) will not become problematic.

   Allow sufficient clearance:

	Indoor Install	Outdoor Install
Top of Water Heater	Min. 9 inches	Min. 36 inches
Back of Water Heater	Min. 0.5 inches	Min. 0.5 inches
Front of Water Heater	Min 4 inches	Min. 24 inches
Sides of Water Heater	Min. 3 inches	Min. 3 inches
Bottom of Water Heater	Min. 12 inches	Min. 12 inches

9. DO NOT install in an area that contains or stores gasoline or other flammables.
10. Ensure that combustibles are clear of the immediate area. Ensure hanging laundry or other such items will not impede the air movement into or out of the Water Heater or its venting.
11. For commercial applications, avoid greasy fumes or a large amount of steam; take measures to prevent the fumes and steam from entering in the equipment.
12. Navien water heater installation site must be adequate drainage equipment. Otherwise, due to leakage may result in property damage.

Mounting the Unit to the Wall:

1. All Navien units come with an upper mounting bracket pre-drilled at 16” on center for easy installation on standard stud walls. Affix the bracket to the wall securely, ensuring that it is level and that is can support the weight of the Water Heater. If the strength of the wall is not sufficient, reinforce the area to prevent any unsafe situations.
2. If the framing is not standard, reinforment of the wall is required or if installing on an uneven surface, fasten ¾” plywood to the stud wall and then attach the mounting brackets to the plywood.
3. When using the supplied mounting bracket, it creates a 5/8” clearance from the back of the unit.
4. The upper bracket is installed on the wall and the Water Heater is then hung on the bracket. On the back of the Water Heater at each of the top corners, there is a hanger bracket on the back of the Water Heater that interlocks with a tab on the wall mounting bracket.

Plumbing:

Plumbing and Water Connection Guidelines

Pipe Sizing

- ❑ The water fittings on the Navien Water Heater are ¾".
- ❑ Although Navien's water connections are ¾", if the installation site has only ½" plumbing throughout the building, it is **NOT** necessary to upsize the water lines to ¾" when installing a single unit.
- ❑ When installing multiple units to supply high volumes of hot water either in residential (multi-head shower systems for example) applications or in commercial applications, the number of Navien Water Heaters required and the header pipe sizing needs to be properly sized to meet the total hot water demand. A water pressure of **40 PSI** is recommended for each Water Heater for proper operation of the Water Heaters. Consult the Navien website or call for further information on sizing such applications.

Water Piping Guidelines

- ❑ All pipes, pipe fittings, valves and other components, including solder, must be approved for use in potable water systems.
- ❑ The use of unions and manual shut off valves on both the cold water inlet and DHW outlet and Recirculation water inlet(Only "A" Model) are recommended.
- ❑ The longer the piping, the longer it takes to get hot water to the fixtures. Make the hot water piping system as short as possible.
- ❑ To conserve water and energy, insulate all water piping especially the hot and recirculation water lines. **DO NOT** cover the drain or pressure relief valve.
- ❑ After the Water Heater has been installed, be sure to clean the inlet water filter located within the cold inlet and then test the unit. The inlet water filter is there to prevent debris from entering your heater. This will need to be cleaned periodically to maintain optimum flow; See "draining the unit" and "cleaning the inlet water filter" procedures in the maintenance section of the operation manual for instructions on these two procedures.

Space Heating

Navien water heater is to be used for suitable for water (potable) heating and space heating shall also include the following apply.

- ❑ Piping and components connected to the Water Heater for the space heating application shall be suitable for use with potable water.
- ❑ The effect that toxic chemicals, such as used for boiler treatment, shall not be introduced into the potable water used for space heating.
- ❑ The effect that a water heater which will be used to supply potable wter shall not be connected to any heating system or component(s) previously used with a nonpotable water heating appliance.
- ❑ When the system requires water for space heating at temperatures higher than required for other uses, a means such as a mixing valve shall be installed to temper the water for those uses in order to reduce scald hazard potential.
- ❑ Water heaters for combination water/space heating cannot be used in space heating applications only.
- ❑ The installation connection points for the space heating circuit and, if applicable, specify any electrical connection points provided for the heating circuit.

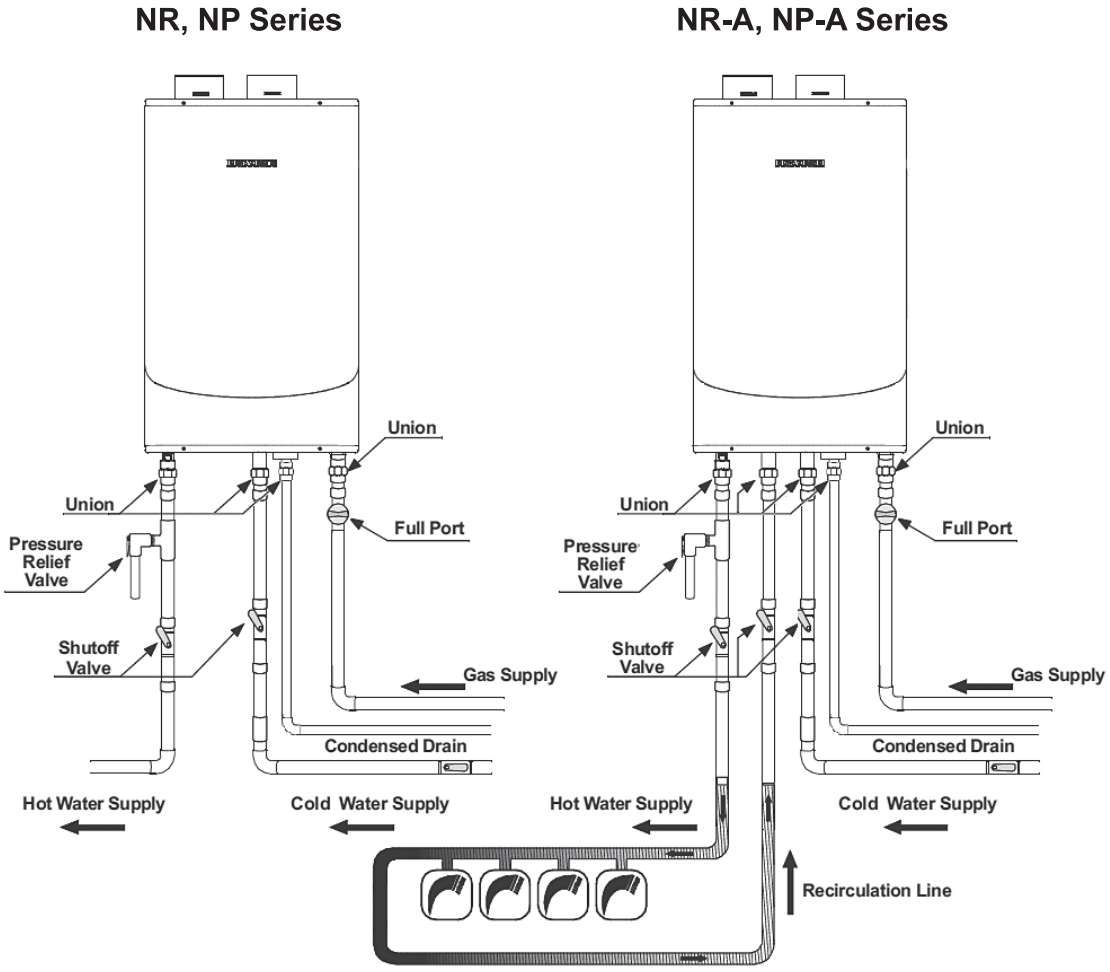
CAUTION

This Water Heater must only be used with the following water supply system conditions :

- With clean, potable water free of corrosive chemicals, sand, dirt, of other contamintes.
- With inlet water temperature above 32°F (0℃), but not exceeding 140°F (60℃).
- Free of lime and scale deposits.

Water Piping Guidelines

Water Piping Guidelines



NOTICE : If using mixing valves on the outlet, choose one which prevents cold water pressure from overcoming hot water line pressure.
The flow rate of hot water may vary when more than two faucets(appliances, fixtures, etc.) are being used simultaneously.
If a Water Heater is installed in a closed water supply system, such as one having a backflow preventer in the cold water supply line, means shall be provided to control thermal expansion. Contact the water supplier or local plumbing inspector on how to control this situation.

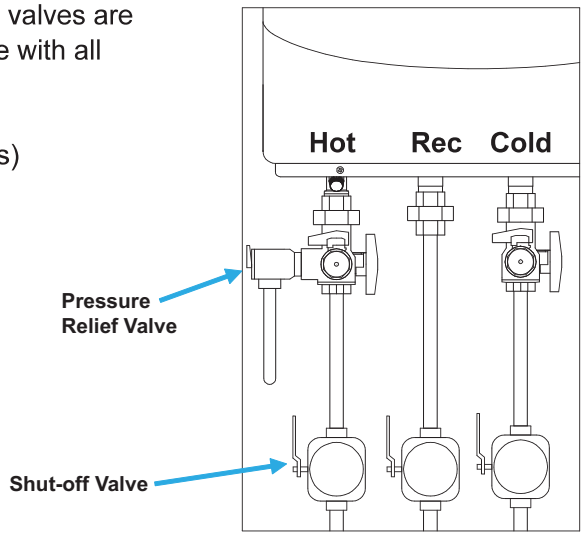
Pressure Relief Valve:

WARNING

Failure to comply with the guidelines on installing the pressure relief valve and discharge piping can result in personal injury, death or substantial property damage.

- ❑ An approved ¾", maximum **150 PSI** pressure relief valve must be installed on the hot water outlet, as close to the unit as possible. Please see below for more information on approved pressure relief valves.
- ❑ Each Navien Water Heater has a high-temperature shut off switch built in as a standard safety feature (called a temperature high limit switch) therefore a "pressure only" relief valve is required. This unit does not come with a pressure relief valve but one must be installed on the hot water outlet.
- ❑ The discharge capacity of the pressure relief valve must be at least equal to the maximum pressure rating of the Water Heater.
- ❑ The maximum input BTUH rating on the valve must be equal to or greater than the maximum input BTUH rating of the Water Heater.
- ❑ The discharge piping for the pressure relief valve must be directed so that the hot water cannot splash on anyone or on nearby equipment. Attach the discharge tube to the pressure relief valve and run the end of the tube to within 6" from the floor. This discharge tube must allow free and complete drainage without any restrictions. No reducing coupling or other restriction may be installed in the discharge line.
- ❑ The following ¾", maximum **150 PSI** valves are examples of valves approved for use with all Navien products:

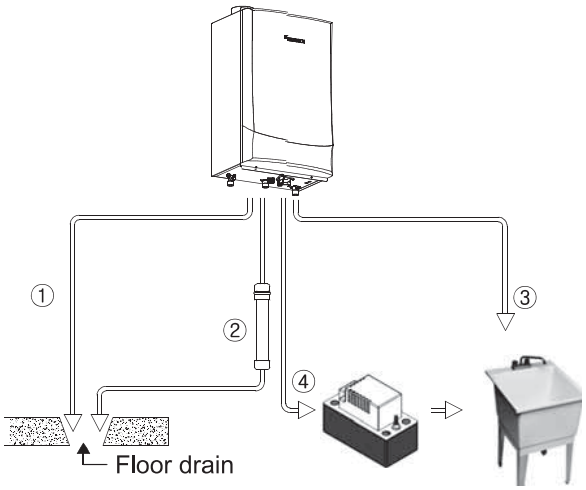
  1. Wilkins P-1000A (Zurn Industries)
  2. Conbraco 17-402-04
  3. Watts Industries 3L(M7)
  4. Cash Acme FWL-2 ¾"



Instructions for pressure, temperature and vacuum relief valves shall specify that no valve is to be placed between the relief valve and the tank. The instructions shall specify installation in such a manner that the discharge from temperature and pressure relief valves will be conducted to a suitable place for disposal when relief occurs and that no reducing coupling or other restriction be installed in the discharge line.

Disposal of Condensate:

- This Navien Water Heater is a high efficiency gas appliance that creates condensation when it operates. Condensation has an acidic (pH) of approximately 3~4. Follow your local code with regards to the disposal of condensation. Here are several options for the Disposal of Condensate (see diagram below):
  - ① From Water Heater direct to drain.
  - ② From Water Heater to neutralizer to drain.
  - ③ From Water Heater to laundry tub (bottom of water heater must be above the height of laundry tub; must have a negative slope to properly drain).
  - ④ From Water Heater to condensate pump to laundry tub (for long distances between water heater and laundry tub or when bottom of Water Heater is installed below height level of laundry tub).
- All Navien's NR & NP Series Water Heaters are condensing gas appliances. A condensate trap comes factory installed inside each Water Heater.
- All condensate must be drained in accordance with all local regulations. Navien recommends draining the condensate to a laundry tub as the alkalie in the detergent from the washing machine will neutralize the acid in the condensation. If a laundry tub is not close by, you may need to install a condensate pump to push the condensate to the nearest laundry tub or consider installing a condensate neutralizer so that you can release the neutralized (non-acidic) water into a regular, nearby drain.
- If a neutralizer is installed, periodic replacement of the lime stone (or neutralizing agent) will be required. The rate of depletion of the lime stone varies upon usage of the water heater. During the first year of operation, please check the neutralizer every few months for depletion. If you notice any depletion, order some replacement neutralizer lime stone.
- Use only corrosion-resistant materials for the condensate drain lines such as 1/2" PVC, CPVC, Polypropylene pipe.
- Aug of 1/2 GPM condensate PCR unit.

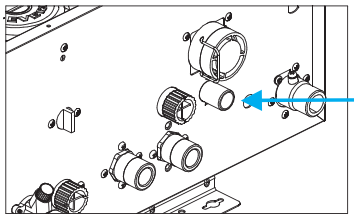


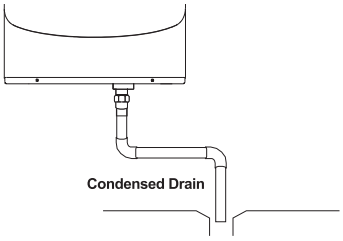
Note: Do not cap(or plug) the intergrated condensate line. Without proper drainage or disposal, condensate will damage the Navien Water Heater.

Condensate Drain & Cleaning:

Disposal of Condensate

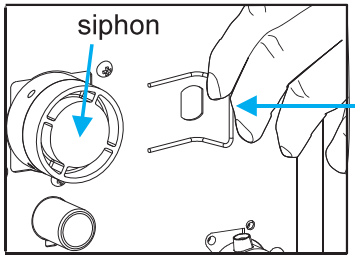
- A condensate drain line must be connected to the port at the bottom of the unit(see below). The end of the pipe should drain to a laundry tub or to a floor drain.
- Condensate pipe line should be installed under the bottom of the water heater(see below).

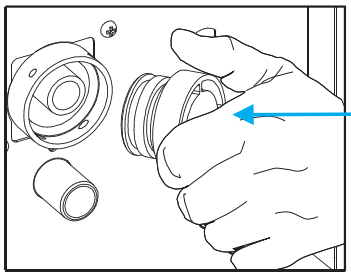




Floor drain or laundry tub

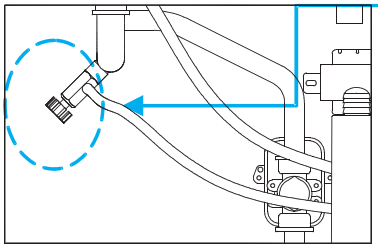
- Over time, blockage of the siphon by debris may occur; when the condensate cannot be released, the water heater will go into error and will shut down. When this occurs, the siphon must be cleaned. To clean, you will need a bucket to collect any residual water. See figures below.





Prepare bucket; twist and remove cap; drain, clean out siphon and re-insert cap and retaining clip.

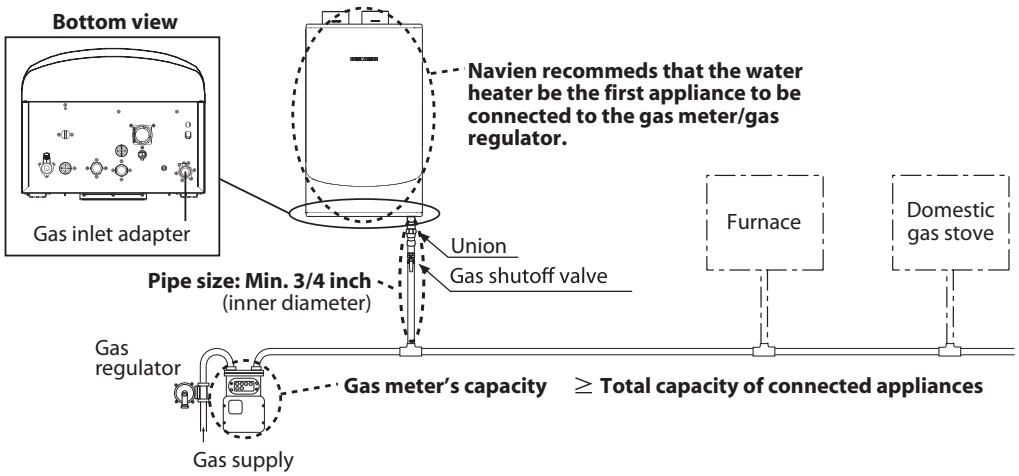
- Once the cap and clip have been re-inserted, the syphon must be re-filled. See figure below.



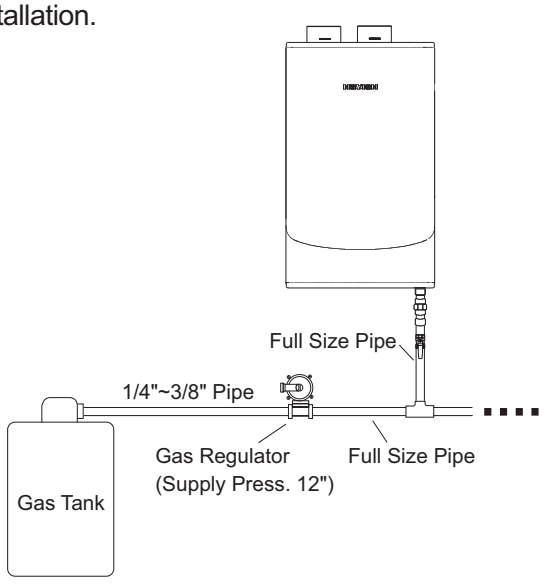
- Open the valve and water will begin to fill in the syphon. Fill the siphon to the top and then close the valve.
- Open a hot water faucet; examine the open end of the condensate drain line to ensure no flue gases are exiting from that pipe. If the flue gases are exiting, immediately stop the unit and call Navien for additional instructions.

Gas Piping:

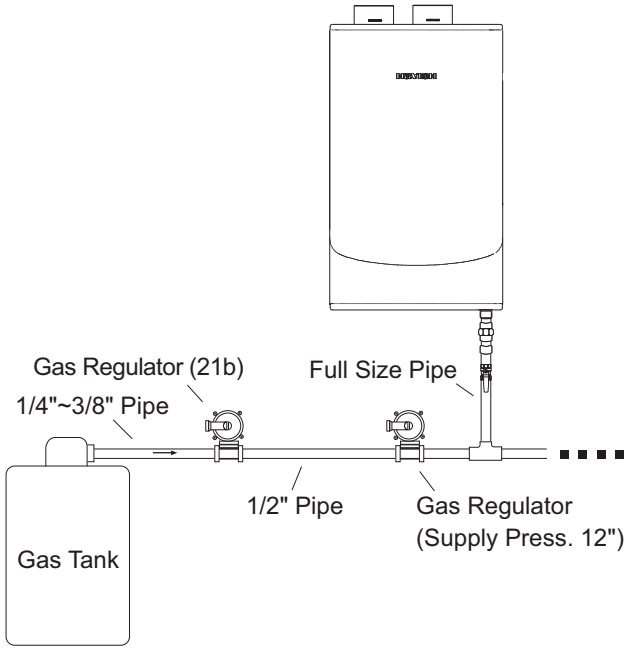
- **Navien recommends the Water Heater be the first appliance installed downstream of the gas meter** to ensure it will have sufficient gas supply.



- Use the charts on the following pages to properly size the gas supply line.
- The gas connection fitting on all Navien units is ¾". **DO NOT** use less than ¾" piping.
- When using flexible gas line, ensure the pipe's inner diameter is sufficient to supply the required BTUs, also ensure that the flexible line has no crimps or tight bends this will restrict gas flow.
- Install a full port on the gas supply line and the water heater.
- When using rigid pipe, Navien recommends the installation of a union on the gas supply pipe close to the water heater to facilitate any future maintenance and service.
- LP Gas Piping Installation.
  -. Regular System



-. 2lb System



Gas supply Line Pressures:

1. The minimum and maximum inlet gas pressures are:
   Natural Gas Min. 5.0” WC - Max. 10.5” WC
   Propane Gas Min. 8.0(9.0 : 180)” WC - Max. 13.5” WC
2. Gas pressures over and above the specified ranges will result in adverse performance and dangerous operating conditions, any damage resulting from extreme gas supply pressures will not be covered by the limited warranty.
3. Until pressure testing of the main gas supply line is completed, ensure the gas line to the Navien Water Heater is disconnected to avoid any damage to the Water Heater.
4. The appliance must be isolated from the gas supply piping system by closing its individual manual shutoff valve during any pressure testing of the gas supply piping system at test pressures equal to or less than ½ psi (3.5 kPa);
5. The gas appliance and its gas connections must be leak tested before placing the appliance in operation. Leaks can be found by using a gas leak detetion device or by applying soapy water to all gas fittings. Should bubbles occur tighten those connections and re-test.
6. Always purge the gas line for any debris before connecting to the Water Heater gas inlet.
7. Never use an open flame to test for gas leaks, as property damage, personal injury, or death could result.

Gas Pipe Sizing Chart:

Referenced from Uniform Plumbing Code 1997

Gas Pipe Sizing

Maximum Natural Gas Delivery Capacity

in Cubic Feet (ft^3) per Hour (0.60 Specific Gravity, 0.5" WC Pressure Drop)

Pipe Size	Length in Feet										
	10'	20'	30'	40'	50'	60'	70'	80'	90'	100'	125'
3/4"	363	249	200	171	152	138	127	118	111	104	93
1"	684	470	377	323	286	259	239	222	208	197	174
1 1/4"	1,404	965	775	663	588	532	490	456	428	404	358
1 1/2"	2,103	1,445	1,161	993	880	798	734	683	641	605	536
2"	4,050	2,784	2,235	1,913	1,696	1,536	1,413	1,315	1,234	1,165	1,033
2 1/2"	6,455	4,437	3,563	3,049	2,703	2,449	2,253	2,096	1,966	1,857	1,646
3"	11,412	7,843	6,299	5,391	4,778	4,329	3,983	3,705	3,476	3,284	2,910
3 1/2"	16,709	11,484	9,222	7,893	6,995	6,338	5,831	5,425	5,090	4,808	4,261
4"	23,277	15,998	12,847	10,995	9,745	8,830	8,123	7,557	7,091	6,698	5,936

Contact your gas supplier for BTU/ft^3 rating. Use 1000 BTU/ft^3 for simplied calculation.

Maximum Liquefied Propane Delivery Capacity

in Thousands of BTU/Hour (0.5" WC Pressure Drop)

Pipe Size	Length in Feet												
	10'	20'	30'	40'	50'	60'	70'	80'	90'	100'	125'	150'	200'
3/4"	567	393	315	267	237	217	196	185	173	162	146	132	112
1"	1,071	732	590	504	448	409	378	346	322	307	275	252	213
1 1/4"	2,205	1,496	775	663	588	532	490	456	428	404	358	511	440
1 1/2"	3,307	2,299	1,161	993	880	798	734	683	641	605	536	787	675
2"	6,221	4,331	2,235	1,913	1,696	1,536	1,413	1,315	1,234	1,165	1,033	1,496	1,260

** For reference only. Please consult gas pipe manufacturer for actual pipe capacities.

Maximum Natural Gas Delivery Capacity with Corrugated Stainless Steel Pipe

in Cubic Feet (ft^3) per Hour (0.60 Specific Gravity, 0.5" WC Pressure Drop)

Pipe Size	Length in Feet											
	10'	20'	30'	40'	50'	60'	70'	80'	90'	100'	150'	200'
3/4"	206	147	121	105	94	86	80	75	71	67	55	48
1"	383	269	218	188	168	153	141	132	125	118	94	82
1 1/4"	614	418	334	284	251	227	209	194	181	171	137	116
1 1/2"	1,261	888	723	625	559	509	471	440	415	393	320	277
2"	2,934	2,078	1,698	1,472	1,317	1,203	1,114	1,042	983	933	762	661

Maximum Liquefied Propane Delivery Capacity with Corrugated Stainless Steel Pipe

in Thousands of BTU/Hour (0.5" WC Pressure Drop)

Pipe Size	Length in Feet											
	10'	20'	30'	40'	50'	60'	70'	80'	90'	100'	150'	200'
3/4"	325	232	191	166	149	136	126	118	112	106	87	76
1"	605	425	344	297	265	241	222	208	197	186	143	129
1 1/4"	971	661	528	449	397	359	330	307	286	270	217	183
1 1/2"	1,993	1,404	1,143	988	884	805	745	696	656	621	506	438
2"	4,638	3,285	2,684	2,327	2,082	1,902	1,761	1,647	1,554	1,475	1,205	1,045

** For reference only. Please consult gas pipe manufacturer for actual pipe capacities.

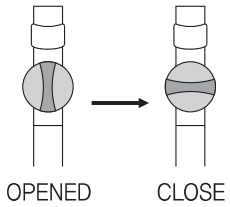
Measuring Inlet Gas Pressure:

The Navien Water Heater cannot operate properly without sufficient inlet gas pressure and volume. Below are instructions on how to check the inlet gas pressure.

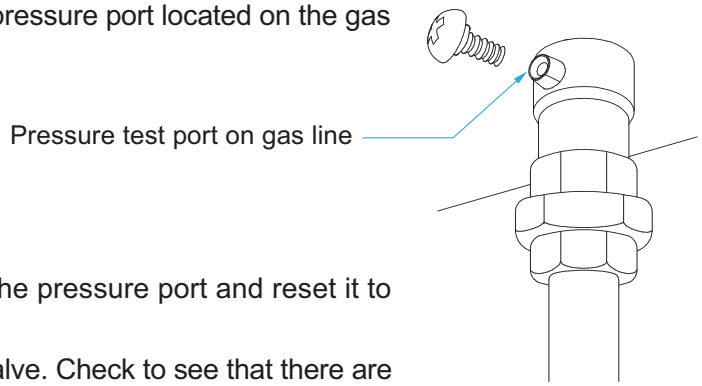
CAUTION

THIS IS ONLY TO BE DONE BY A LICENSED PROFESSIONAL.

Procedure to measure the inlet gas pressure:



1. Shut off the manual gas valve on the supply gas line.
2. Open a hot faucet. The unit should turn on and the gas in the gas pipe line should purge. Leave the faucet on to keep the unit running until the unit shuts down due to lack of gas supply. Then shut off the hot faucet.
3. Remove the screw for the pressure port located on the gas inlet of the Water Heater.



4. Connect a manometer to the pressure port and reset it to zero.
5. Re-open the manual gas valve. Check to see that there are no gas leaks.
6. Open multiple fixtures that have high flow rates (bathtub, showers, kitchen sink) to ramp the Water Heater up to its maximum burn.
7. When the Navien Water Heater is at maximum burn, check the inlet gas pressure reading on the manometer; it should read between 5.0” and 10.5” WC for Natural gas between 8.0”(9.0”) to 13.5” WC for Liquid Propane.
8. The maximum inlet gas pressure must not exceed the value specified by the manufacturer and the minimum value listed is for the purposes of input adjustment.

Venting:

WARNING

Improper venting of the Water Heater can result in excessive levels of carbon monoxide which can result in severe personal injury or death. This Water Heater must be vented in accordance with the "Venting of Equipment" section of the latest edition of the ANSI Z223.1 / NFPA 54 Natural Fuel Gas Code and/or the "Venting systems and air supply for appliances" section of the latest version of the CAN/CGA B149.1 Natural Gas and Propane Installation Code in Canada and in accordance with all applicable local building codes.

WARNING

This Navien Water Heater can be vented with PVC, CPVC or Approved Polypropylene. SCH 40 PVC vent can be used in all cases EXEPT when the incoming (Supply) or Hot water recirculation return water temperatures exceed 150°F (65°C). IF you set the Water Heater at a temperature higher than 150°F (65°C) AND you are incorporating either an external recirculation loop or a combination heating system, you MUST use;

- In the USA, CPVC(Schedule 80) or stamped Polypropylene with minimal 194°F(90°C).
- In Canada, Type BH Special Gas Vent Class IIB (CPVC) or Class IIC (Polypropylene) approved to ULC-S636.
- Never intermingled with different materials mentioned above. One material type to be used throughout the whole installation.

WARNING

- Please use Approved to ULC-S636 PVC and CPVC Glue, because Navien vent collar material is PVC.
- After vent installation there should be no leakage of exhaust gases, because leakage of exhaust gases can bring catastrophic harm.

Venting Guidelines

- ❑ For best results, keep the vent system as short and straight as possible.
- ❑ Locate the Water Heater as close as possible to the vent terminator.
- ❑ The water heater vent must not be common vented with any other gas appliance or vent stack.
- ❑ Slope the vent upwards toward the vent terminal at a rate of ¼" per foot (2% slope).
- ❑ The exhaust pipe and intake air pipe must be sealed air tight at each joint from exhaust pipe to terminator.
- ❑ Make sure that the seam of the vent pipe in horizontal runs is toward the top of the installation.

Note: To avoid moisture and frost build-up and to maintain clearances to openings on adjacent homes, 45° elbows, 90° elbows or tees may be attached to the end of the termination vent pipe to direct the exhaust plumes away from any adjacent house as long as the total allowable vent lengths, maximum number of elbows and distance to air intake restrictions are observed.

Venting:

- ❑ Do not store hazardous or flammable substances near the vent terminator.
- ❑ If this product will be installed in an area where snow is known to accumulate, protect the vent termination from blockage.
- ❑ Vent terminator must be a minimum of 12” above ground or local codes.
- ❑ Support the vent pipe with hangers at regular intervals or as required by local code, the weight of the vent pipe must not rest on the Water Heater.
- ❑ Exhaust pipe and intake air pipe must be supported every 5 feet.

Navien and Direct Vent:

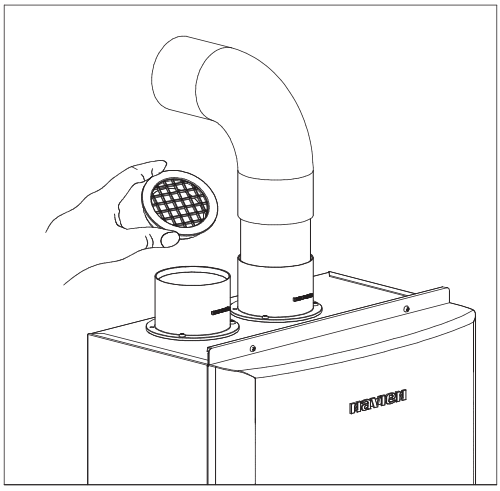
- ❑ All Navien Water Heaters are prepared at the factory to be direct vent (sealed combustion) units which draw all of their required combustion air directly from outside the building.
- ❑ All Navien Water Heaters use 3” diameter exhaust and 3” diameter intake air duct. To ensure the draw and exhaust of air directly to and from the outside, the exhaust vent and air intake vent must be sealed airtight from unit collar to terminator.
- ❑ The intake air pipe materials can be made of ABS, PVC, CPVC, galvanized steel, corrugated aluminum or any other such materials. If you are using a corrugated material, ensure there is no inadvertent crimping of, or damage to, the intake air pipe.

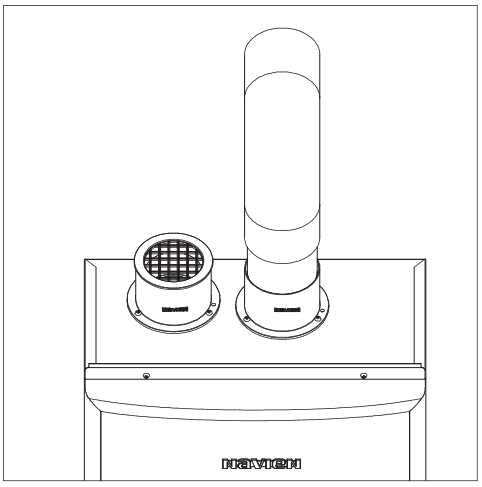
Navien and Non-Direct Vent:

- ❑ Navien recommends direct vent installations whenever possible to avoid back drafting cold air through the unit, if you cannot use direct vent, it is essential to have an ample supply of make up air.
- ❑ If at any time, the building experiences a negative pressure situation when using a non-Direct Vent unit, there is a possibility of back drafting cold, winter air from outside through the heat exchanger of the water heater. This situation may freeze the water heater’s heat exchanger. According to the building codes in most jurisdictions, negative pressures in homes are not allowed. In a home with a well-balanced air supply, freezing of the heat exchanger will not occur.
- ❑ Since the cause of the back drafting is insufficient make up air within the home or building. This will not be deemed a manufacturing problem and any freezing damage which occurs from back drafting will not be covered under warranty. To avoid any such issues in colder climates, Navien requires the use of direct vent.

Venting:

❑ To fit the unit for non-direct vent, insert the termination end cap (provided with the Water Heater) into the intake air duct. Do not glue to allow for easy removal and cleaning of the cap.





Combustion Air Supply Requirement for Non-Direct Vent:

❑ When a Navien Water Heater is installed without a dedicated intake air pipe (non-Direct Vent) communicating directly with the outdoors, combustion air must be supplied to the space. The opening sizes below are Navien's minimum requirements. Follow the latest version of the National Fuel Gas Code (ANSI Z223.1 / NFPA 54) or CAN/CGA B-149.1.

Model	NR, NP-180 (A)	NR, NP -210 (A)	NR, NP -240 (A)
Maximum Input (BTUH)	150,000	180,000	199,000
Outdoor make up air is provided, a minimum free area of 1 in^2	5.3 in^2 3" (W) x 2" (H) or 3" round	6.1 in^2 2.5" (W) x 2.5" (H) or 3" round	7 in^2 2¾" (W) x 2¾" (H) or 3" round
Indoor make up air is provided, a minimum free area of 1 in^2	150 in^2 12¼" (W) x 12¼" (H)	180 in^2 13¼" (W) x 13¼" (H)	199 in^2 14¼" (W) x 14¼" (H)

Venting:

Exhaust Vent Pipe Materials

- Venting requirements in USA and Canada are different. Please consult the chart below and the most recent edition of the National Fuel Gas Code (ANSI Z223.1 / NFPA 54) or CAN/CGA B-149.1 as well as local codes for applicable venting regulations and restrictions.
- All Navien Water Heaters are Category IV appliances;

Navien Recommended Vent Materials	
USA	CANADA
PVC Schedule 40 CPVC Schedule 80 Approved Polypropylene	Type BH Special Gas Vent Class IIA (PVC) Type BH Special Gas Vent Class IIB (CPVC) Type BH Special Gas Vent Class IIC (Polypropylene)

IMPORTANT NOTE ON VENT MATERIAL SELECTION: This appliance has built in PCB for Max 150°F (65°C) exhaust temperature as a result of this limited controlling, Exhaust temperature cannot be over a 150°F (65°C). Following this limited control, Navien Water Heater can be vented with SCH40 PVC to vent. If the incoming (or recirculation return) water temperature does not exceed 150°F (65°C), the exhaust temperature will not exceed 150°F (65°C).

However, IF you set the water heater at a temperature higher than 150°F (65°C) AND ALSO you are incorporating either and external recirculation loop or a combination heating system, the exhaust temperature may exceed 150°F (65°C). In this situation you MUST use Schedule 80 CPVC or Approved Polypropylene (in the USA) or Type BH Special Gas Vent Class IIB (CPVC) or Class IIC (Polypropylene) approved to ULC-S636 (in Canada).

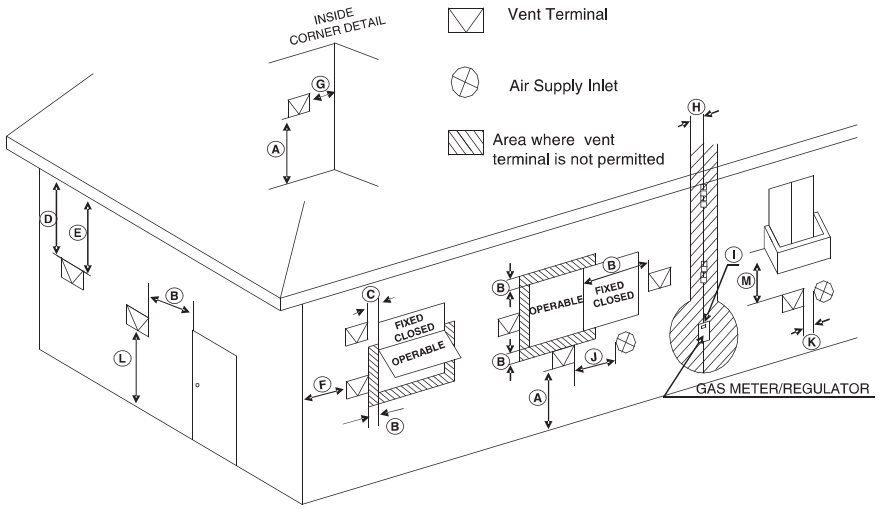
A New requirement for Canada

For installation in Canada, field supplied plastic vent piping must comply with CAN/CGA B149 1(latest edition)and be certified to the Standard For Type BH Gas Venting Systems, ULC S636 Components of this listed system shall not be interchanged with other vent systems or unlisted pipe/fittings. All plastic components and specified primers and glues of the certified vent system must be from a single system manufacturer and not intermixed with other system manufacturer's vent system parts. The supplied vent connector and vent termination are certified as part of the Water Heater.

Venting Clearances:

All clearance requirements are in accordance with ANSI Z21.10.3 and the National Fuel Gas Code, ANSI Z223.1 / NFPA 54 and CAN/CGA B149.1 Natural Gas and Propane Installation Code.

ANSI Z223.1 / NFPA 54 CAN/CGA B149.1 Natural Gas and Propane Installation Code.



	Clearance To:	US Direct Vent Indoor Installation	Canada Direct Vent Indoor Installation
A	Above grade, veranda, porch, deck or balcony	1'	1'
B	Window or door that may be opened	1	3'
C	Permanently closed window	*	*
D	Vertical clearance to ventilated soffit located above the terminal within a horizontal distance of 2 feet from the center of the terminal	*	*
E	Unventilated soffit	*	*
F	Outside corner	*	*
G	Inside corner	*	*
H	Each side of center line extended above meter/regulator assembly	*	3' within a height 15'above meter/regulator assembly
I	Service regulator vent outlet	*	3'
J	Non-mechanical air supply inlet or combustion air inlet to any other appliance	1'	3'
K	Mechanical air supply inlet	3' above if within 10' horizontally	6'
L	Above paved sidewalk or paved driveway located on public property	*	7'
M	Under veranda, porch, deck, or balcony	*	1'

Venting:

Allowable 3" Venting

MAX LENGTH	MAX # of ELBOWS	EQUIVALENT LENGTHS
100’	6	Reduce the maximum vent length accordingly for each elbow used: Each 90˚elbow equates to 6 linear feet of vent. Each 45˚elbow equates to 3 linear feet of vent.
NOTE: 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.		

Allowable 2" Venting

Navien does allow the reduction from 3” to 2” diameter venting up to 2,000 feet above sea level. Installations above 2,000 feet all require 3” venting.

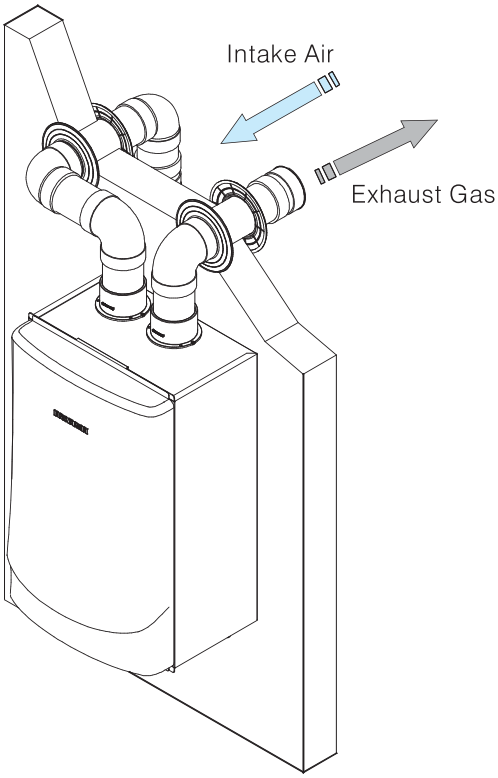
MAX LENGTH	MAX # of ELBOWS	EQUIVALENT LENGTHS
24’	2	Reduce the maximum vent length accordingly for each elbow used: Each 90˚elbow equates to 6 linear feet of vent. Each 45˚elbow equates to 3 linear feet of vent.
NOTE: The maximum lengths listed above are for the exhaust pipe section only. The intake air pipe length can be of equal length. The Maximum Length are not including elbows.		

Venting: Indoor Installation

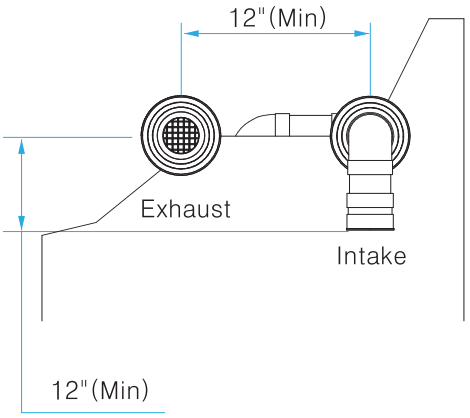
Vent Configuration Options

The following diagrams represent some typical venting configurations and are included to assist you in your designing your vent system. Possible configurations are not limited to these diagrams.

Option #1: 3” 2-pipe side wall vent



Interior View

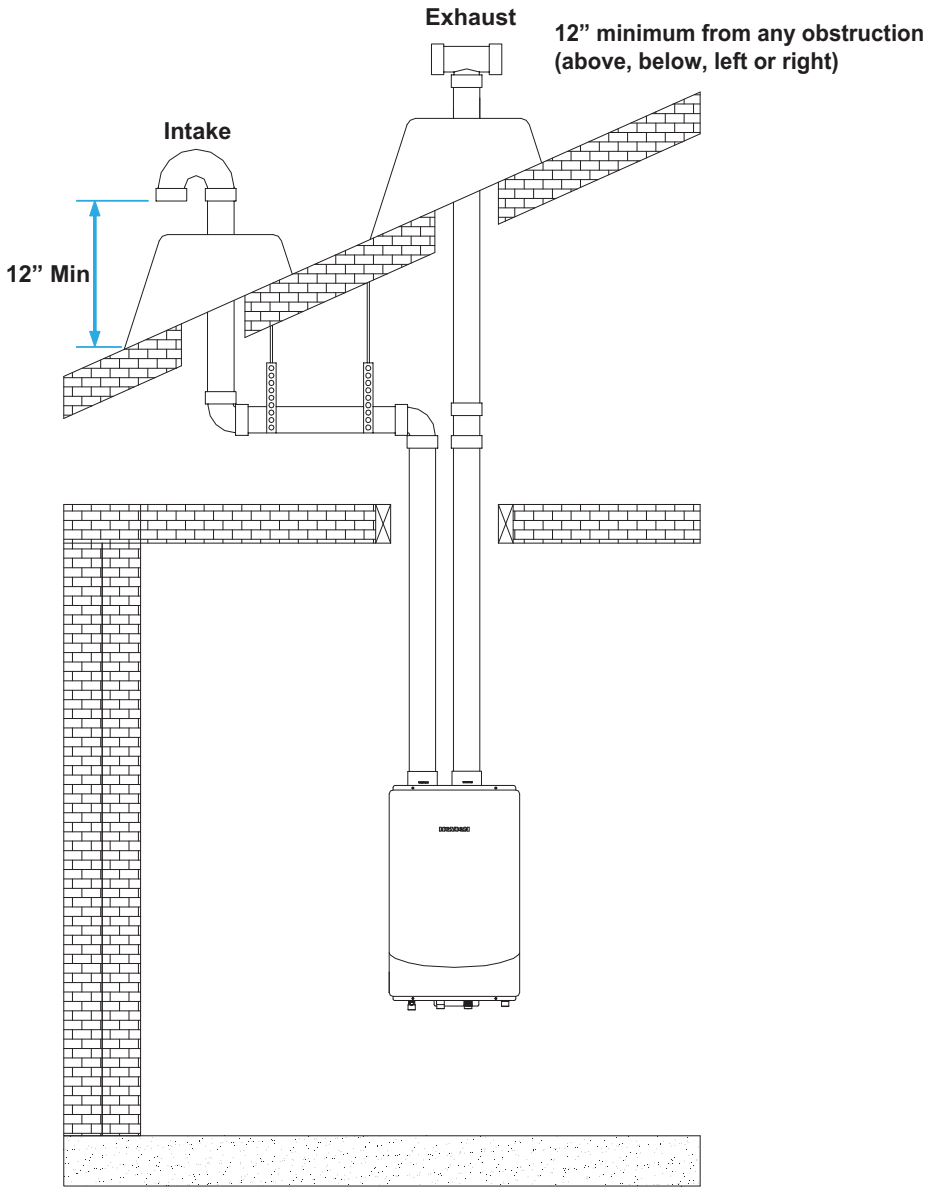


Exterior View

Option #2: Non-concentric venting through a side wall. Air is drawn from different location at a minimum of 12” from the termination. Please try to minimize the length of the intake air pipe length.

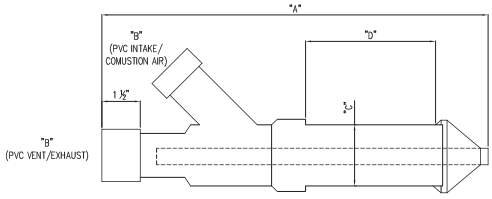
Venting:

Option #3: 3” 2-pipe Vertical Vent Termination



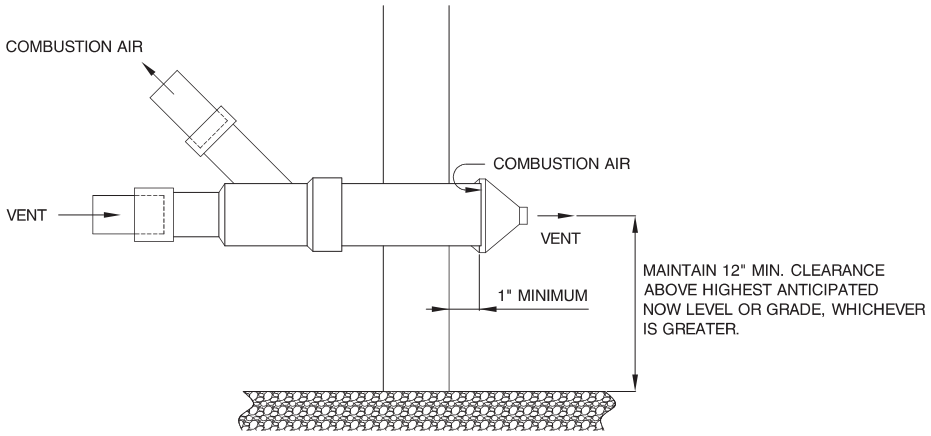
Venting:

CONCENTRIC VENT TERMINATION

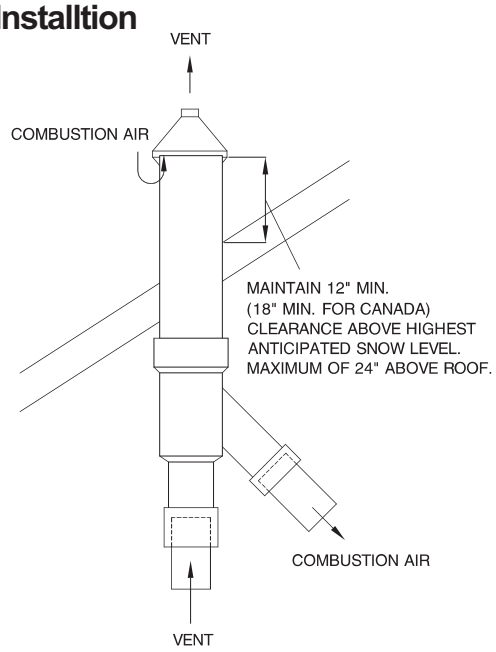


	"A"	"B"	"C"	"D"
DIMENSION	38- 7/8"	3"	4- 1/2"	21- 1/8"

1. Sidewall Installation



2. Roof Installtion



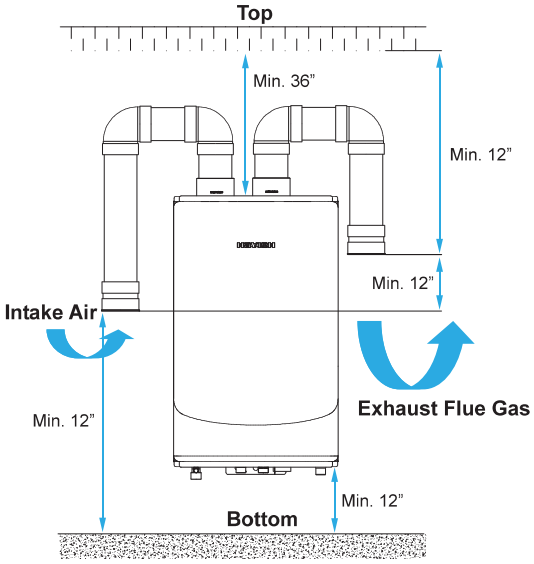
Venting:

Contaminated Combustible Air Will Damage the Unit

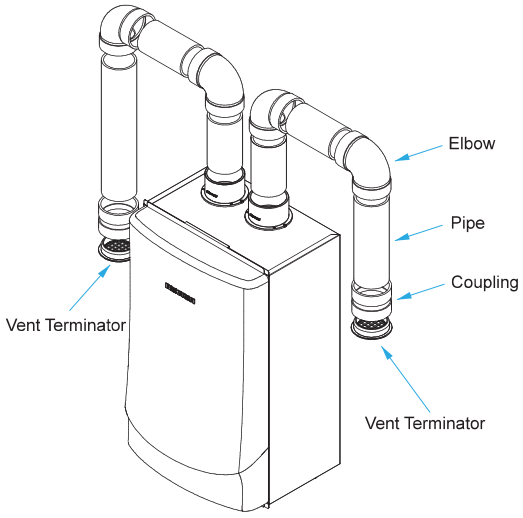
- ❑ Follow all local codes, or in the absence of local codes, follow the most recent edition of The National Fuel Gas Code: ANSI Z223.1/NFPA 54 in the USA or CAN/CSA B149.1 Natural Gas, Propane Installation Code in Canada.
- ❑ Outdoor installation only for a mild climate.

Outdoor Venting

- ❑ For Outdoor Venting, Intake air pipe should not be next to Exhaust pipe. That will prevent exhaust flue gas from entering the intake air pipe. Make sure there are plenty of air around the intake air pipe and protect any objects from entering the intake air pipe.



< Clearance >



<Venting Disassemble>

Venting Clearance

- ❑ When Navien Water Heater is installed outdoor, water heater installed location should be in open unroofed area with following clearance table below.

Bottom of water heater	Min. 12”
Back of water heater	Min. 0.5”
Side of water heater	Min. 3”
Front of water heater	Min. 24”
Top of water heater	Min. 36”

⚠ WARNING

The additional safety issues outlined below must also be followed completely when installing this Navien Water Heater:

⚠ WARNING

Follow all local codes and/or the most recent edition of the National Fuel Gas Code (ANSI Z223.1/NFPA 54) in the USA or the Natural Gas and Propane Installation Code in Canada (CAN/CSA B149.1).

- Vent terminal should not be pointing toward any opening of the building or windows. Do not install the Water Heater in crevices to prevent gas from accumulating.
- Prevent debris, liquid or flammable gas from entering the Water Heater intake air pipe terminal. It may cause damage to the Water Heater and warranty will be avoided.
- Install the Water Heater outdoor under the overhang with 3 feet or more from the eaves to the top of the Water Heater vent terminal. Water heater must have open space around all 3 sides.
- Water heater vent terminal should be 1ft(united state)/3ft(Canada) or more from windows and doors (refer to P35)

Electrical Connections:

WARNING

Follow the electrical code requirements of the local authority having jurisdiction. In the absence of such requirements, follow the latest edition of the National Electrical Code (NFPA 70) in the U.S. or the latest edition of CGA C22.1 Canadian Electrical Code - Part 1 in Canada.

Electric Wiring: Grounding and Surges

- ❑ All units come with a factory installed 3-pronged (grounded) plug end. The Water Heater can be plugged into any electrical outlet close to the unit as it requires only 2 Amperes. It is not necessary to run a dedicated electrical line to the water heater.
- ❑ If the local jurisdiction requires the unit to be wired directly, remove and discard the factory installed plug. An on/off switch controlling the main power between the breaker and the Navien Water Heater should be provided to facilitate end-user maintenance and servicing.
- ❑ The heater must be electrically grounded. Ensure the electical receptacle, in which the water heater will be plugged into, is properly grounded; if wiring directly, do not attach the ground wire to either the gas or the water piping as plastic pipe or dielectric unions may isolate the water heater electrically.
- ❑ The use of a surge protector is recommended to protect from power surges.
- ❑ **Do not plug electrical power to the unit until all plumbing and gas piping is complete and the Water Heater has been filled with water.**
- ❑ The electrical supply required by the Water Heater is 110 ~ 120 VAC at 60 Hz with a maximum 2 A rating.
- ❑ **Do not connect 220~240V AC to this Navien Water Heater. It will damage the Water Heater and this damage is not covered under warranty.**
- ❑ Do not disconnect the power supply when the unit is in normal operation.
- ❑ If there is a power failure in cold weather areas, the freeze prevention system in the water heater will not operate and may result in freezing of the heat exchanger; in cold weather areas where power failures are common, you must completely drain the unit to prevent damage if the power will be off for any extended period of time.
- ❑ A battery back-up (available at most computer retailers) may be used to supply hot water during periods of power outages.
- ❑ Damage caused by freezing is not covered under warranty.

CAUTION

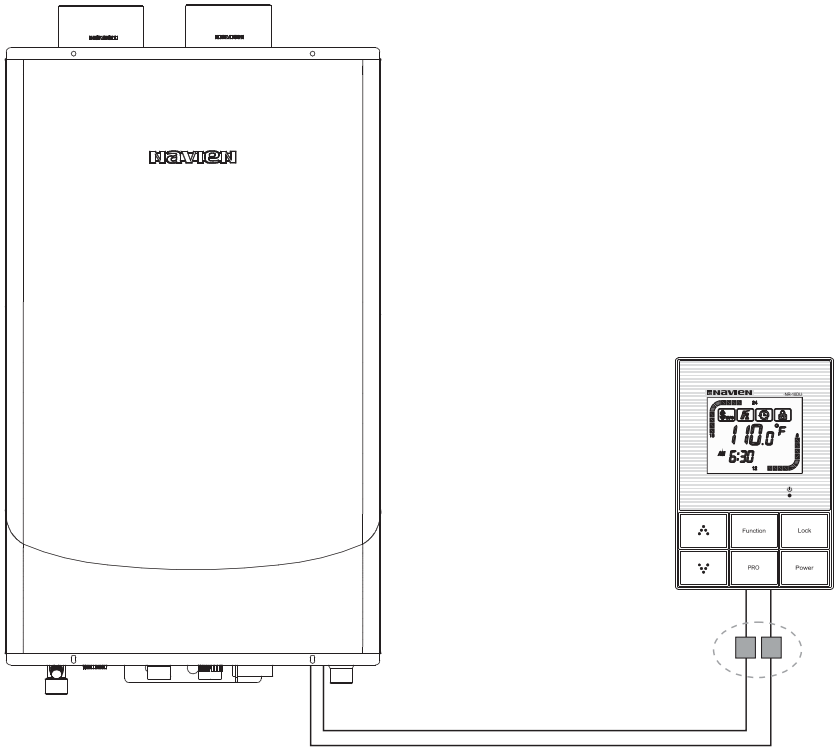
Label all wires prior to disconnection when servicing coltrols.
Wiring errors can cause improper and dangerous operation.
Verify proper opation after servicing.

Remote Controller Installation:

Remote Controller NR-10DU

The following are considerations for determining the location of the remote controller:

- ❑ Disconnect the power to the water heater before installing the remote controller.
- ❑ The wire on the reserve of a remote controller is connected to the orange wire on the PCB board which is located on bottom of the Water Heater. The naked wire must be completely insulated after connection. **DO NOT** connect 110~120VAC to this remote controller.
- ❑ The maximum length of wire between the Water Heater and the remote controller installation location is limited to a maximum of 300 feet.
- ❑ There is no polarity.
- ❑ The remote controller is water resistant but not water proof.
- ❑ Do not install the remote controller outdoors.
- ❑ Do not install the remote controller in any area where the control will be directly exposed to water, heat, humidity or steam.
- ❑ Place remote controller out of children's reach.
- ❑ Do not disassemble the remote controller.
- ❑ Feed the remote controller wire through the black rubber seal at the bottom, right hand, back corner of the case through.



PCB Board Settings:

Water Heater Temperature Settings:

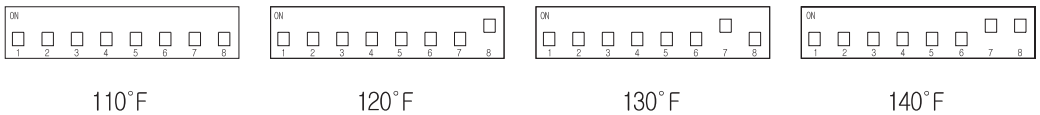
WARNING

Hot water temperatures over 125°F can cause severe burns instantly or death from scalding.

- With the Navien Water Heaters, the temperature has been preset at the factory to 120ºF (NR, NR-A), 140ºF (NP, NP-A). The PCB board will electronically control this temperature. The output hot water temperature can be adjusted either manually using the main PCB board's dip switches or with the remote controller. Using the dipswitches, 4 hot water output temperatures can be selected. Please refer to the chart below.
- Once the remote controller is connected to the Water Heater, it overrides the PCB board dipswitch settings. If the remote controller is disconnected from the unit, the PCB board will automatically revert to the temperature indicated by the dipswitches. The PCB board does not store the remote controller's temperature in memory. As such, the remote controller must remain connected to the Water Heater at all times to maintain any temperature other than the 4 presets.

Dipswitch settings for all NR, NR-A series are below: the factory default setting temperature is 120°F (49°C)

TEMPERATURE SETTING

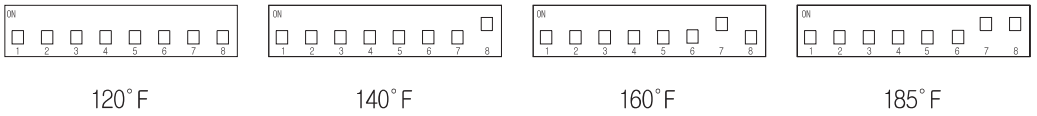


110˚F 120˚F 130˚F 140˚F

WARNING : Only change relevant switches. DO NOT touch any other switches. Shown sample dipswitch configurations are NR, NR-A series.

Dipswitch settings for all NP, NP-A series are below: the factory default setting temperature is 140°F (60°C)

TEMPERATURE SETTING



120˚F 140˚F 160˚F 185˚F

WARNING : Only change relevant switches. DO NOT touch any other switches. Shown sample dipswitch configurations are NP, NP-A series.

Cascade Connection and Set-up Procedures:

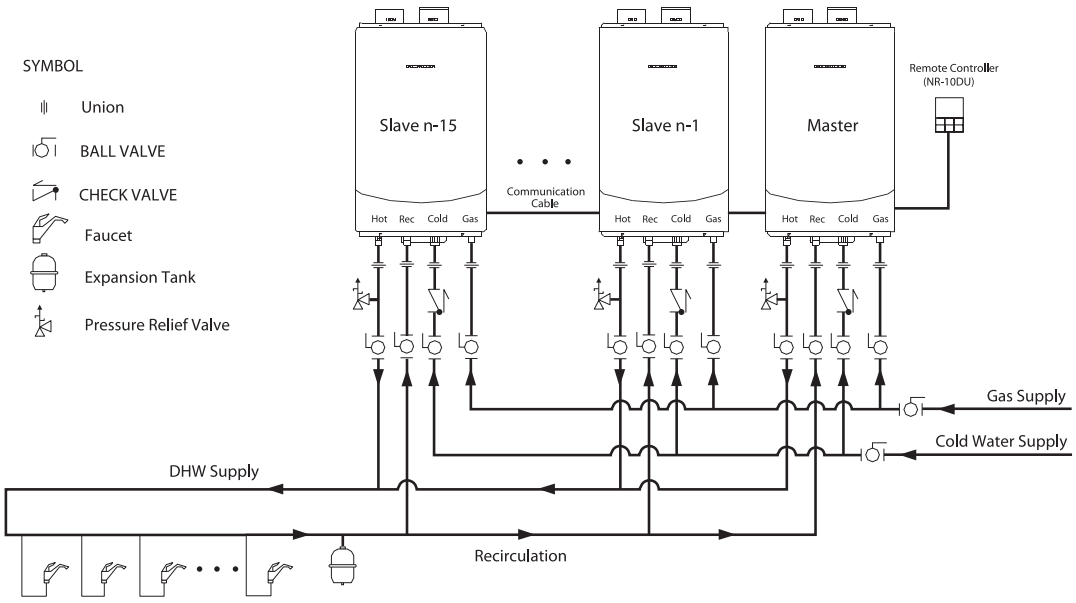
Step 1: Plumbing

The Water Heater unit can be connected with other units up to 16 units for user's purpose.

CAUTION

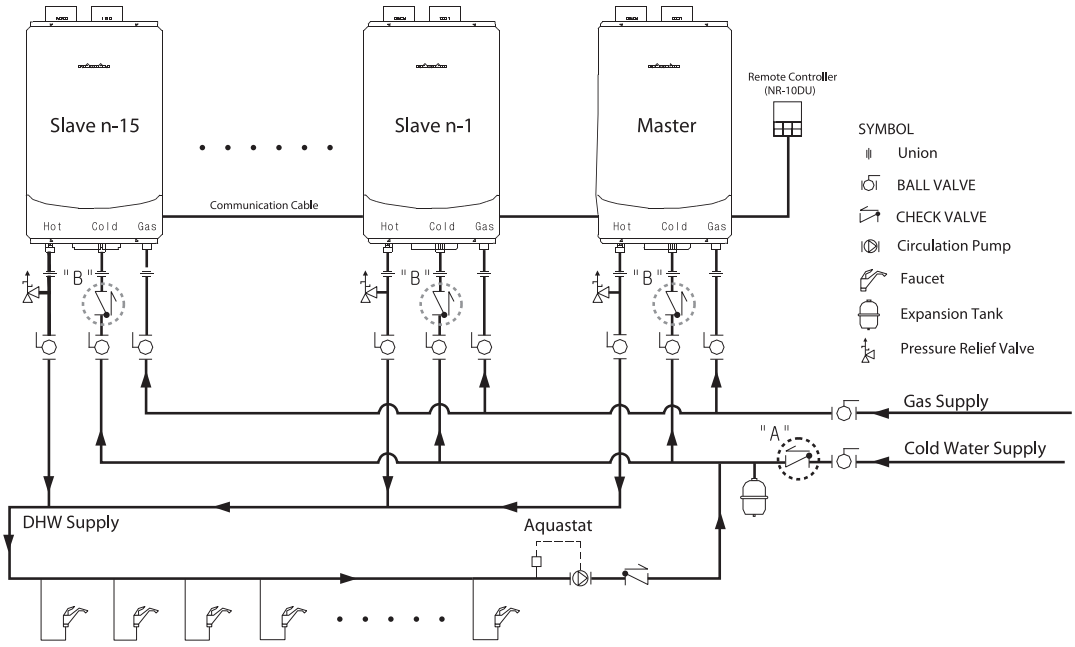
This drawing can be a useful guideline when installing a unit. However, installation may vary depending on the location circumstances, local building codes or state regulation. Make sure to check the local building codes and state regulation before installation, and comly with it.

1. Case I : NR-A, NP-A Recirculation



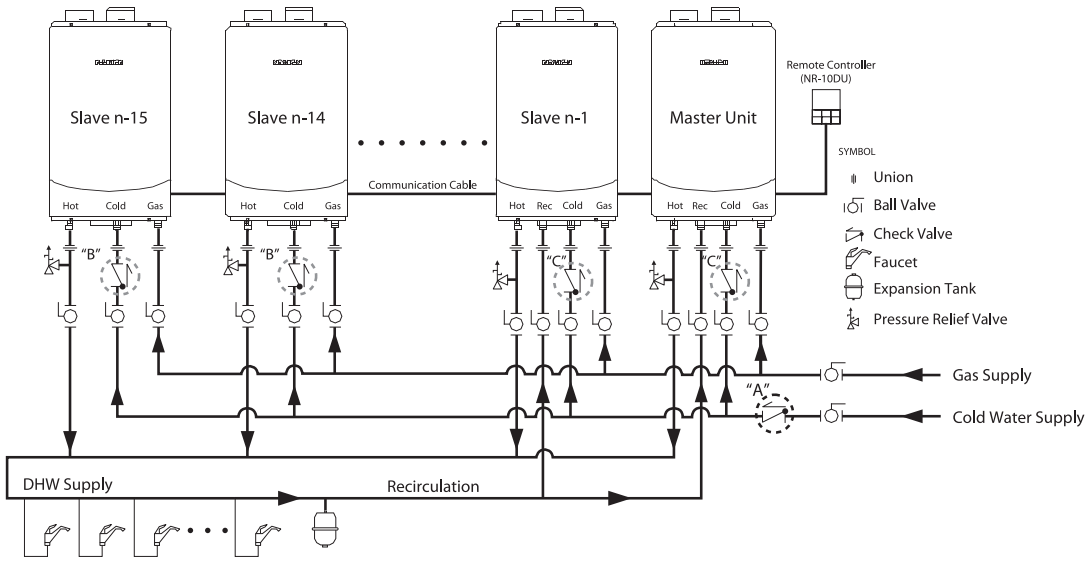
- In the status that recirculation piping connected to cascade piping are open, activate internal pump. If flow rate per a unit does not reach to 2 GPM, please check flow rate as closing ball v/vs at recirculation enterance one by one.
  At this time, please set the unit whose ball v/v is closed as internal circulation.

2. Case II : NR, NP MODEL Recirculation



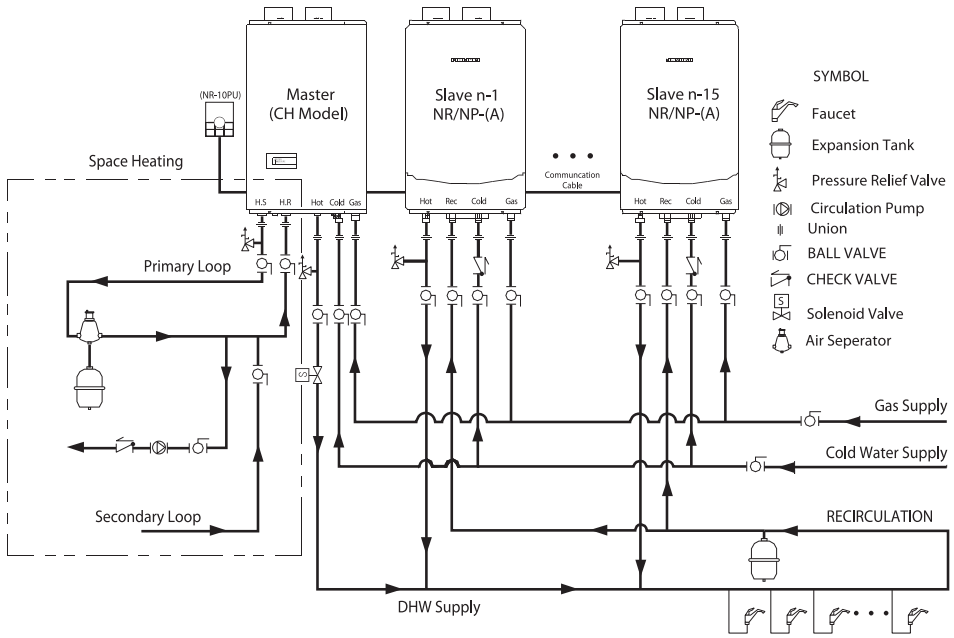
- Install Check valve in either “A” or “B”.
- Navien recommends to use "A" Series for recirculation.
- Because NR/NP models don't have circulation pumps inside, external pump shall be installed to use recirculation function, additional pump could be installed out of the unit. In this case be sure to set the head pressure and flowrate of the pump properly to enable each unit's flowrate to be more than 2 GPM.

3.Case III NR, NP + NR-A, NP-A Model Recirculation



- It is necessary to install the check valve in “C”.
- Install check valve in either “A” or “C”.

4. Case IV. CH + NR-A, NP-A Model Recirculation

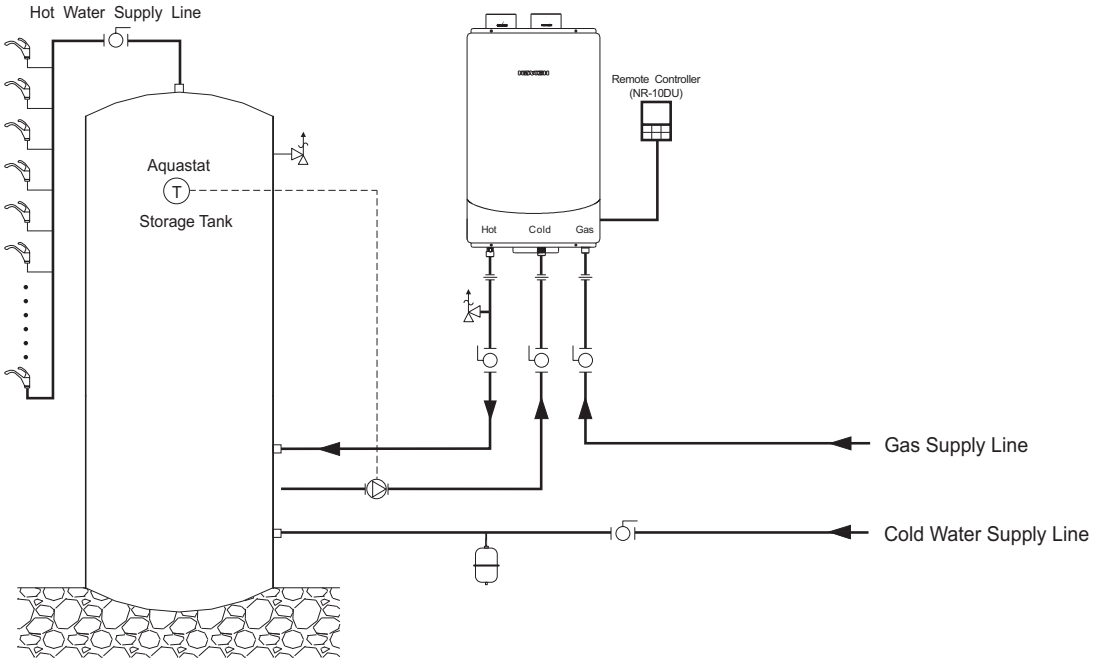


- Install check valve in the “A” series cold water inlet for cascade system.
- When linking with CH series connnect the solenoid valve wire to the external power wire of CH series.

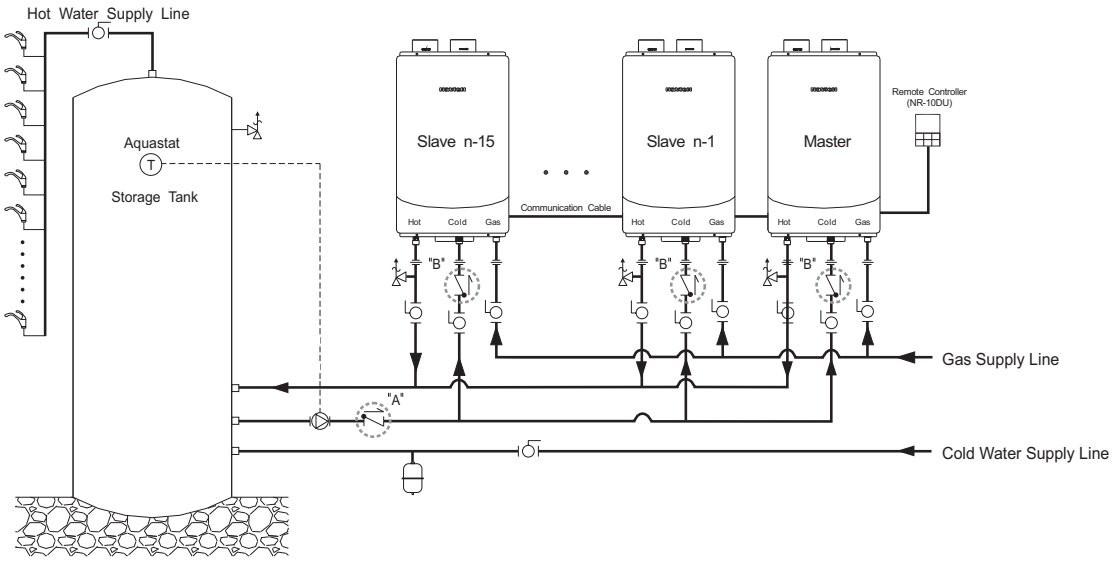
5.Case V. DHW Storage Tank Mode

Install the storage tank and pump in the exterior, and when it comes to exterior circulation pump control system(Aqua-stat) that are controlled by the temperature of the tank, setup to exterior DHW storage tank usage mode.

[Example: DHW Storage Tank Installation]



[1 Unit + DHW Storage Tank]



[Cascade System + DHW Storage Tank]

May vary according to user's environment changes mentioned below.

1) DHW Storage tank's stoppage.
-. Able to change cascade connected water heater's stoppage temperature.
-. Combustion stoppage temperature
= DHW setup temperature – R/C combustion stoppage setup value

If combustion stoppage temperature isn't changed, combustion will stop at the DHW setup temperature.

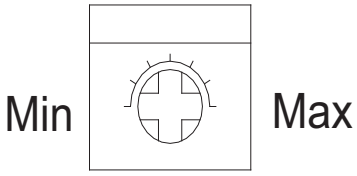
2) Cascade On unit temperature setting when using storage tank
-. Able to adjust cascade connected water heater's initiation temperature.
-. Cascade On unit's temperature
= DHW setup temperature – R/C cascade ON unit setup value

If remote controller cascade ON unit temperature isn't changed, default value is 13ºF.

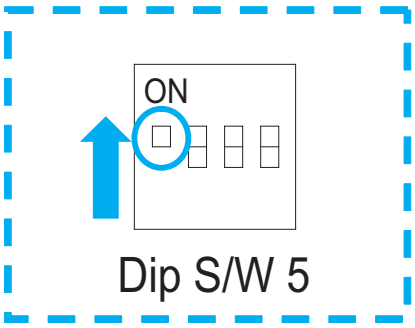
3) Cascade OFF unit temperature setting when using DHW storage tank.
-. Able to adjust cascade connected individual water heater's initiation temperature.
-. Cascade ON unit temperature
= DHW setup temperature – R/C cascade OFF unit setup value

If remote controller cascade OFF unit temperature isn't changed, default value is 9ºF.

■ Dip Switch Setting



Modulating Gas Valve Adjusting



Dip S/W 5

NO.	Description		
	Function	ON	OFF
1	DHW Storage Tank Mode Select	ON	OFF

Step 2: The Common Vent

A “combined” vent is a venting system for two or more appliances at one level that are attached to a common vent.

Least Total Height is the vertical distance from the highest appliance flue outlet in the system to the top of the vent. This is one fixed dimension for any one system, regardless of the number or placement of appliances in the system.

Connector Rise for any appliance is the vertical distance from its flue outlet to the point where the next connector joins the system.

Using the Common Vent Tables

Determining each vent connector size:

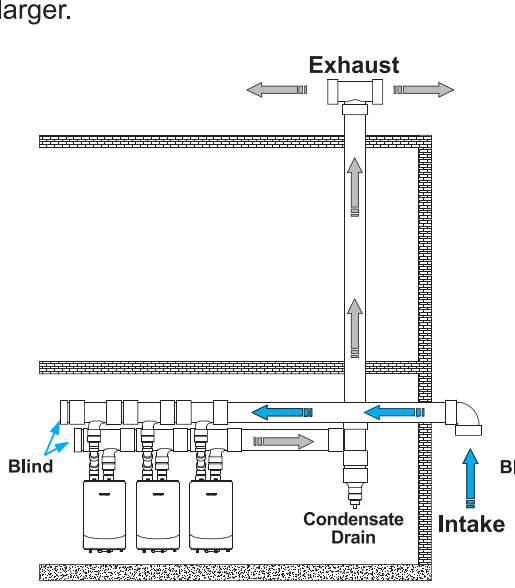
1. Determine the least total height for the system.
2. Determine the connector rise for each appliance.
3. Enter the vent connector tables (refer to 51 page) at the appropriate least total height. Continue across to the right on a line for the first appliance Connector rise to the rating plate BTUH rating (or the next higher rating) for that appliance. Read the connector vent size for that appliance at the top of the column.
4. At the least total height, repeat the procedure for the connector rise and BTUH rating for each appliance.

Caution: Never use a connector smaller than draft hood outlet size.

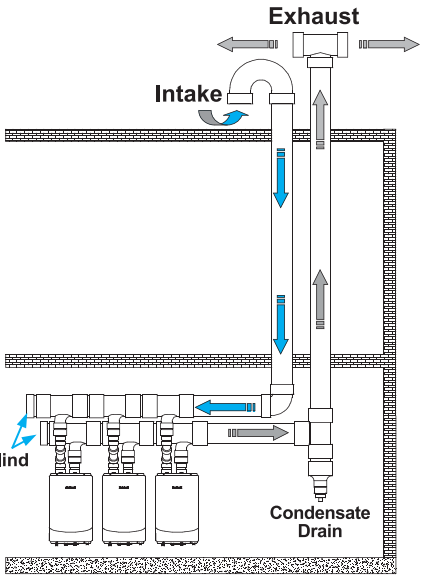
Determining the size of a common vent:

1. Add together all appliances BTUH input ratings to determine the total BTUH rating.
2. Enter the common vent tables (refer to 51 page) at the least total height.
3. Continue across to the right, stop at the first value which is equal to or greater than the total BTUH rating.
4. Read the size of the common vent at the top of the column.

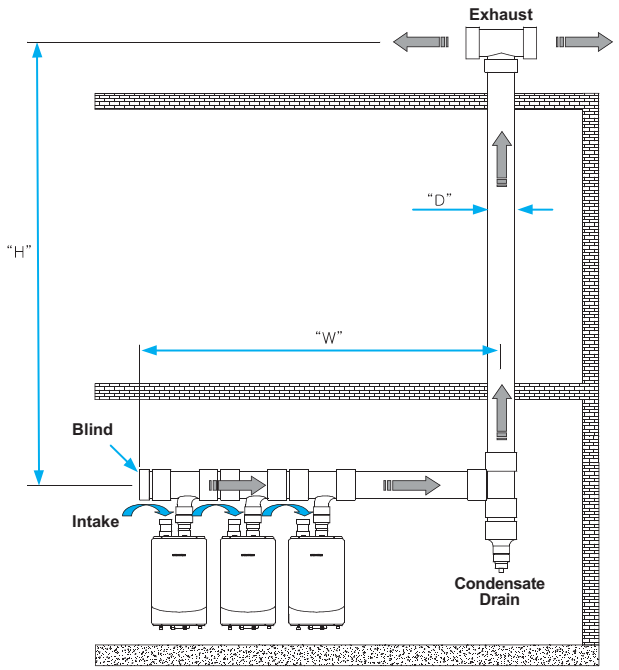
Caution: Regardless of the table results, the common vent must always be at least as large as the largest connector. If both connectors are the same size, the common vent must be one size larger.



[Room Sealed Different]



[Room Sealed Same Area]



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

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

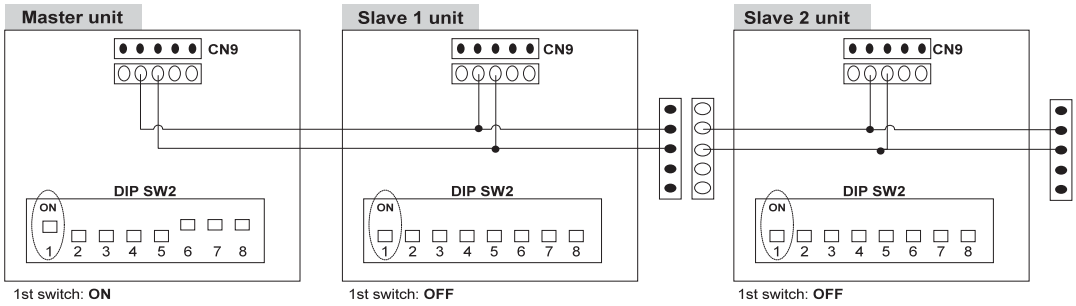
6. Cascade system Plumbing Pipe Size (@ NR/NP-240(A))

Q'ty	△T=86 ºF Flowrate (GPM)	Velocity of Water (ft/s)	Pipe Diameter (mm/in)		Q'ty	△T=86 ºF Flowrate (GPM)	Velocity of Water (ft/s)	Pipe Diameter (mm/in)	
1	7.19	4.78	20A	3/4"	16	115.07	5.44	80A	3"
2	14.38	5.61	25A	1"	17	122.26	5.81	80A	3"
3	21.57	5.54	30A	11/4"	18	129.45	6.14	80A	3"
4	28.77	5.21	40A	11/2"	19	136.64	6.46	80A	3"
5	35.96	6.53	40A	11/2"	20	143.83	6.83	80A	3"
6	43.15	4.49	50A	2"	21	151.02	4.06	100A	4"
7	50.34	5.24	50A	2"	22	158.21	4.25	100A	4"
8	57.5	6.00	50A	2"	23	165.41	4.45	100A	4"
9	64.72	4.39	65A	21/2"	24	172.60	4.65	100A	4"
10	71.92	4.75	65A	21/2"	25	179.79	4.85	100A	4"
11	79.11	5.34	65A	21/2"	26	186.98	5.05	100A	4"
12	86.30	5.84	65A	21/2"	27	194.17	5.24	100A	4"
13	93.49	6.33	65A	21/2"	28	201.36	5.44	100A	4"
14	100.68	6.79	65A	21/2"	29	208.56	5.61	100A	4"
15	107.87	5.11	80A	3"	30	215.75	5.81	100A	4"

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

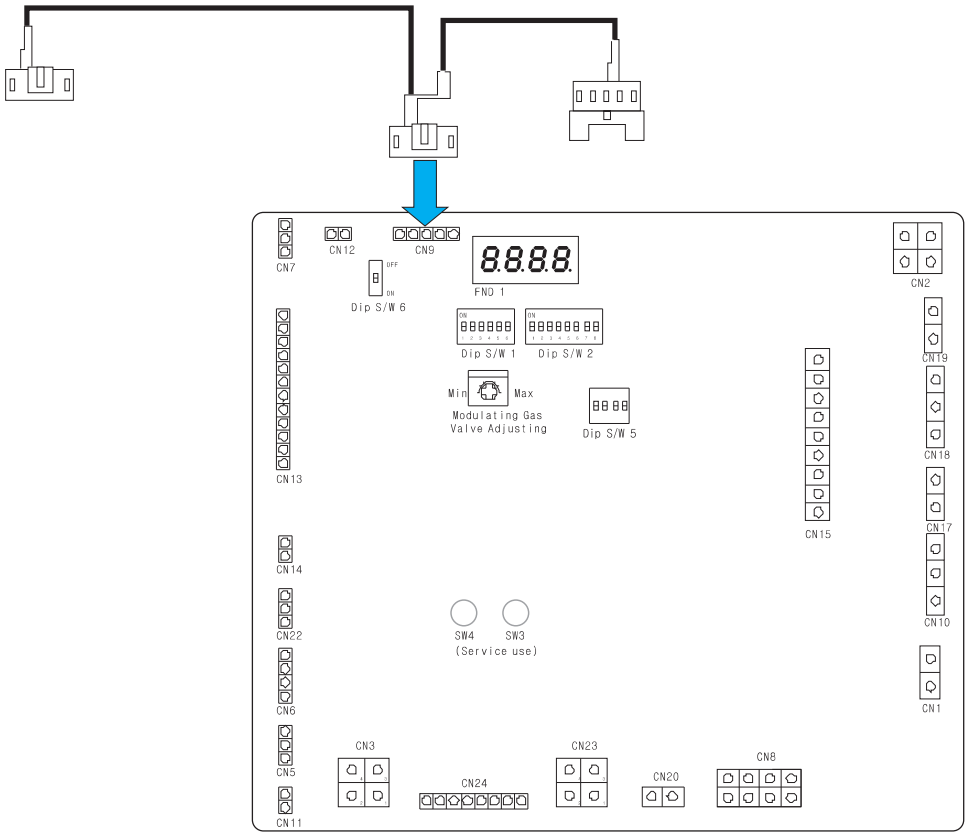
Step 3: Cable connection and DIP switch change

The water heater unit can be connected with other units up to 16 units using communication cables. After choosing one of the units as the master unit, connect the cables and change the DIP switch 2 on the PCB as below. During step 1, the power supply should be OFF.

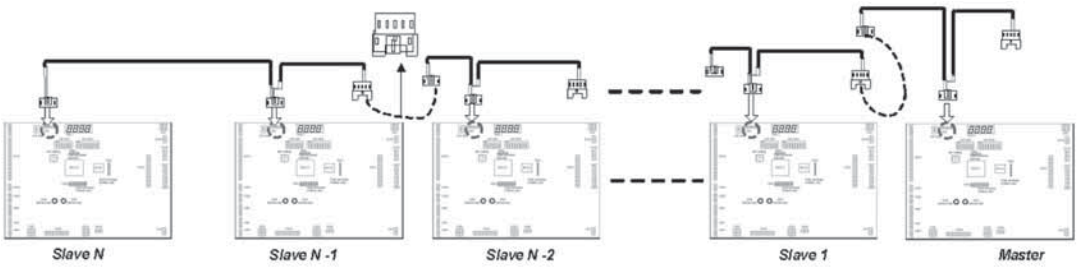


Cable connection and DIP switch set-up

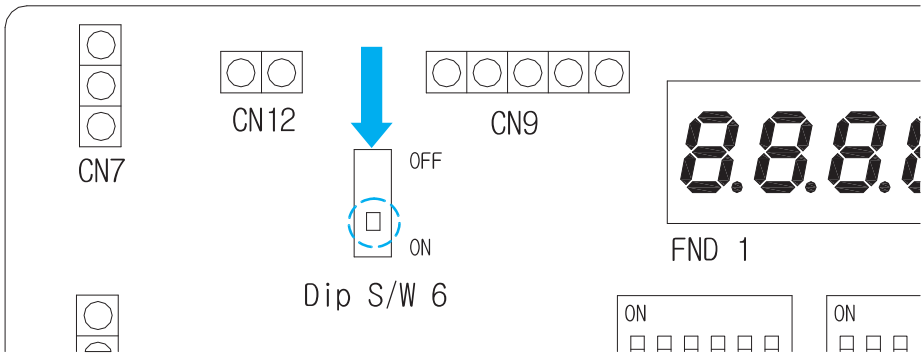
- cascade communication cable PCB connecting adapter PCB CN9 port.



- The diagram above displays the master unit and slave unit connected with the ready link commnication cable



- The Dip SW6(KDC-324-xM PCB Board), which is used only for organizing cascade system, Is to be switched Down if the corresponding unit is the first or the last unit of Cascade connection.



- The recommended location for the master unit is in the center.

Step 4: Communication set-up

After the cable connections and DIP switch set-up, the communication set-up should be done.
Master set-up
After the power ON, each FND1 will display on the PCB as below:

Unit	Master Unit	Slave 1 Unit	Slave 2 Unit
FND1	H.0.0.0.	S.0.0.0.	S.0.0.0.

FND1 display: Master set-up

Slave set-up

After the master set-up, push the SW3 and SW4 of slave 1 unit simultaneously for more than 3 seconds.
FND1 of the slave 1 unit will be changed to “S001”.
Slave 2 unit also can be set-up as above.
After the slave set-up, each FND1 will be changed on the PCB as below:

Unit	Master Unit	Slave 1 Unit	Slave 2 Unit
FND1	H.0.0.0.	S.0.0.1.	S.0.0.2.

FND1 display : Slave set-up

Set-up finish

After the slave set-up, push the SW3 and SW4 of the master unit simultaneously for more than 3 seconds.
All the FND will be changed to the setting temperature display and set-up procedures are finished.

Master unit Change

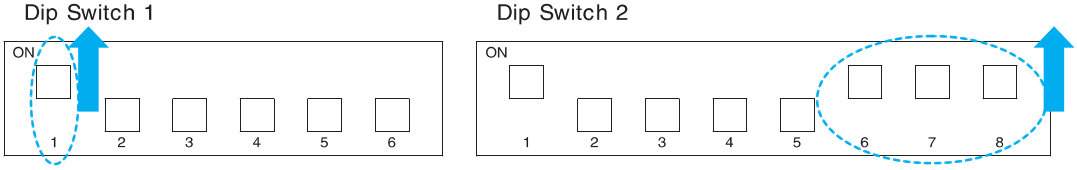
It is always possible to change the master unit. After all units are powered off, choose one of the units as the master unit and change the DIP SW2 (1st switch) according to master unit change.
Throughout communication set-up (Step 4) master unit change will be done.

Slave unit Addition/Removal

It is always possible to add or remove a slave unit. After all units are powered OFF, the communication cable is added or removed on the PCB according to the slave unit being added or removed.
There are two cases for system set-up.
Master unit change (recommended): Repeat **Step 1** and **Step 2, Step 3, Step 4.**
Master unit unchanged: In this case, it is necessary to change the processing mechanism of the master unit. The set-up procedures are as below:

Master unit set-up

To add or remove the slave unit, DIP SW1 and SW2 of the master unit PCB are changed as below:



DIP Switch set-up of the master unit PCB: Slave unit addition/removal

1st switch (DIP SW1) and 6-8th switch (DIP SW2) should be set to ON position.
After all unit power ON, push the SW3 and SW4 of the master unit simultaneously for more than 3 seconds.
Each FND1 will display on the PCB as below:

Unit	Master Unit	Slave 1 Unit	Slave 2 Unit	Slave 3 Unit
FND1	H.0.0.0.	S.0.0.0.	S.0.0.0.	S.0.0.0.

FND1 display: Master set-up (slave unit addition)

Slave unit set-up

This procedure is same as the 2.2 Slave set-up of the 3. Step 3: Communication set-up.
After the slave set-up, each FND1 will be changed on the PCB as below:

Unit	Master Unit	Slave 1 Unit	Slave 2 Unit	Slave 3 Unit
FND1	H.0.0.0.	S.0.0.1.	S.0.0.2.	S.0.0.3.

Set-up finish

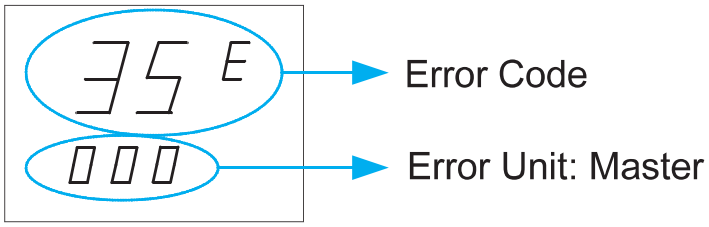
After the slave set-up, DIP SW1 and DIP SW2 should be set to the original position and push the SW3 and SW4 of the master unit simultaneously for more than 3 seconds.
All the FND will be changed to the setting temperature display and set-up procedures are finished.

Error display

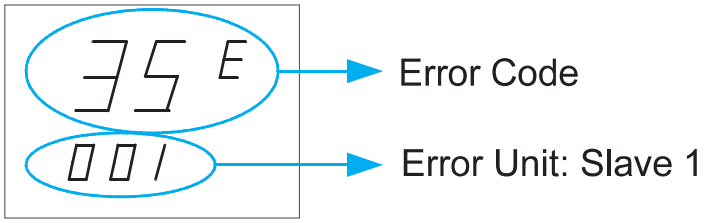
In case of the error condition in the cascade system, a relevant error and unit are displayed on the remote controller.

Error display example:

1) Error code 35 of the master unit



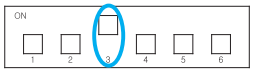
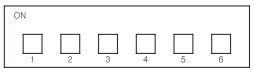
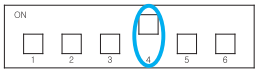
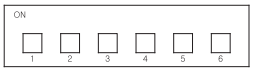
2) Error code 35 of the slave 1 unit



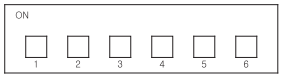
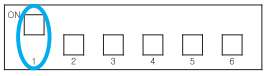
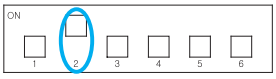
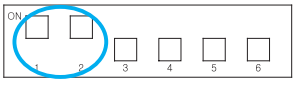
Water Heater DIP Switch Settings:

There are two sets of DIP switches; one set has 6 switches and the other has 8 switches.

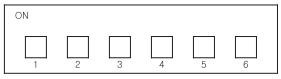
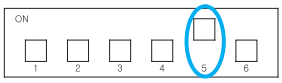
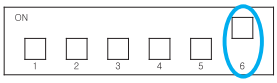
Set of Dip Switch #1. (6 Switches):

	Description		
	Function	**ON**	**OFF**
1	Operation Select 1	**(1) Operation Mode Select**	
2	Operation Select 2		
3	Gas Type Select	Liquid Propane Gas	Natural Gas
			
4	Vent Select	Cascade Individual Vent	Cascade Common Vent
			
5	Model Select 1	**Factory Setting**	
6	Model Select 2		

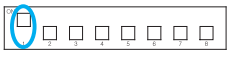
1 & 2: Burner Operation Mode Select (Do Not Used)

Operation Mode	**DIP Switch**	
	1	**2**
Normal Operation	**OFF**	**OFF**
		
Maximum Operation	**ON**	OFF
		
Minimum Operation	OFF	**ON**
		
3 Stage Minimum	**ON**	**ON**
		

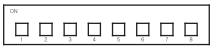
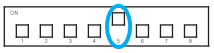
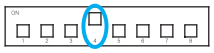
5 & 6: Model Selection

Model	DIP S/W	
	5	6
NR/NP-180, NR/NP-180A	OFF	OFF
		
NR/NP -210, NR/NP -210A	ON	OFF
		
NR/NP -240, NR/NP -240A	OFF	ON
		

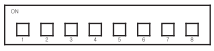
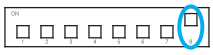
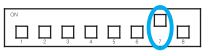
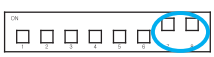
Set of 8 Switches: Operating Mode Selection:

NO.	Description		
	Function	ON	OFF
1	Ready-Link Multi-System Select	Ready-Link Multi-System Master	Single Unit Operation or Multi-System Slave
			
2	Location select	Korea	North America
			
4	Pump & Recirculation Select	Refer to next page	
5			
6	Model Select	Factory setting	
7	Temperature Select	Refer to next page	
8			

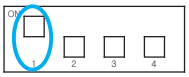
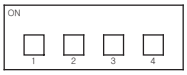
4 & 5: Pump and Recirculation Modes Selection

Description		DIP Switch #	
		4	5
With Pump (NR-180A, NR-210A, NR-240A, NP-180A, NP-210A, NP-240A)	Normal	OFF	OFF
			
	External Recirculation	OFF	ON
			
	Internal Recirculation	ON	OFF
			
Without Pump (NR-180, NR -210, NR -240, NP-180, NP -210, NP -240)		ON	ON
			

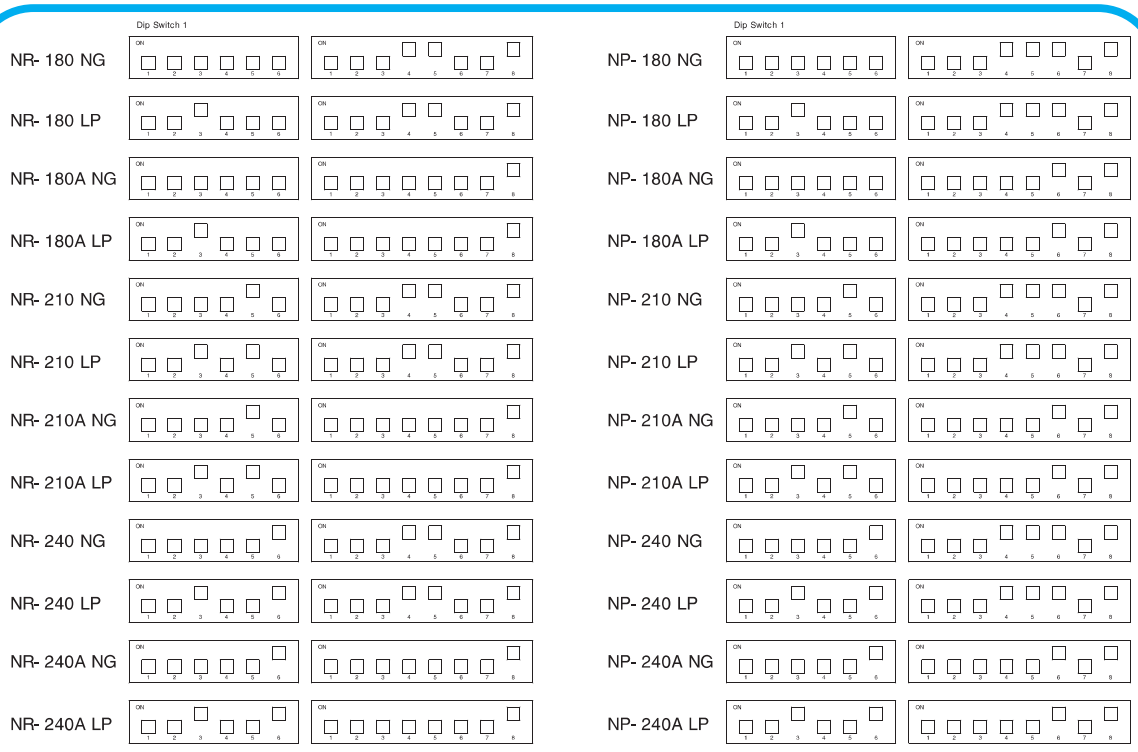
7 & 8: Temperature Selection

Temperatures		DIP Switch #	
Regular Models (NR,NR-A Series)	Premium Models (NP,NP-A Series)		
˚F (˚C)	˚F (˚C)	7	8
110 (43)	120 (49)	OFF	OFF
			
120 (49)	140 (60)	OFF	ON
			
130 (54)	160 (71)	ON	OFF
			
140 (60)	185 (85)	ON	ON
			

Set of 4 Switches (No.5 Switch):

No	Model	DIP S/W #4	
		ON	OFF
1	DHW Storage Tank or Solar System Mode Select	DHW Storage Tank or Solar System	Normal Operation
			

Factory Setting of Dip Switch:



Completing the Install:

If you answered “yes” to all of the questions in the above checklist, your install is now complete. If you answered “no” to any of the points in the checklist, please review the installation and operation manual to confirm your installation. For any troubleshooting issue, see the “Troubleshooting” section in this Manual. For any questions or problems during the installation, contact Navien’s technical department toll-free at 1-800-519-8794 (949-420-0420) or visit the technical support section of the website at:

- www.navienamerica.com

Installation Checklist:

❑ **Selecting the location and installing the Water Heater:**

- Are the proper clearances from windows, doors and other intake air vents maintained?
- Is the distance between the Water Heater and point of vent termination minimized?
- Is distance between Water Heater and major fixtures within the house minimized?
- Are the proper service clearances maintained?
- Is the make-up air supply sufficient for proper operation of Water Heater?
- Is the make-up air supply free of dust, dirt, corrosive elements and flammable vapors?
- Is there a drain in close proximity of the Water Heater?
- Are all combustible materials including clothing, cleaning materials, rags, etc. clear of the Water Heater and vent piping?
- Is the Water Heater securely mounted to the wall?

❑ **Water Supply**

- Is the water supply pressure sufficient (should be greater than 40psi)?
- Are there shut off valves on the inlet and outlet to facilitate inlet water filter cleaning?
- Has the air been bled out of each fixture?
- Has each fixtures been checked to ensure hot water is being supplied?
- Has the inlet water filter been cleaned?
- If a recirculation line has been installed, have all of the hot water pipes and the recirculation return line been insulated?

❑ Pressure Relief Valve

- Is there an approved pressure relief valve installed on the hot water outlet?
- Does the rating plate on the pressure relief valve indicate a BTU level equal to the maximum BTU rating of the water heater?
- Is the pressure relief valve ¾”?
- Has the pressure relief valve been installed on the hot outlet pipe close to the exit of the water heater?
- Has a discharge drain tube been installed from the pressure relief valve to within 6~8” of the floor?

❑ Gas Supply

- Does the gas supply match the water heater’s gas type indicated on the rating plate?
- Is the gas line a minimum of ¾”ID (inner diameter)?
- Is the gas supply line length and diameter sufficient to deliver the required BTUs?
- Has the gas supply line pressure been measured?
- Is the gas supply pressure sufficient for proper operation (within the ranges indicated in the specifications section of this manual)?
- Is the gas line is equipped with manual full port?
- Has the gas line been pressure tested and/or have all fittings been checked for leaks?
- Has the gas company inspected the installation (if required)?

❑ Venting

- Has the water heater been vented with 3” PVC, 3” CPVC, Polypropylene Type BH Special Gas Vent (S636 PVC) for Category IV appliances or in accordance with this manual and/or your local code?
- Ensure that PVC cellular core pipe has not been used as venting for this water heater.
- Is the vent sloped upwards toward the vent terminal at a rate of ¼” per foot (2% grade)?
- Are all vent runs properly supported?
- Has the vent terminal been properly supported?
- Have all air intake and exhaust joints from flue collar to termination been properly sealed?
- Have the vent end caps been installed on the exhaust and the intake pipes?
- Has the venting been checked for leakage?
- Is the vent terminal a minimum of 12” above the exterior grade?
- Has sufficient make-up air been supplied?
- Is the total vent length within the stated maximum vent length restriction?
- Has a condensation drain line been installed from the water heater to a floor drain or laundry tub?

❑ Electrical Wiring

- Is the supplied voltage 110~120V AC?
- Is the water heater plugged into a properly grounded electrical outlet?
- If the supplied power cord has been discarded to meet local codes, has an “On/Off” switch been installed to facilitate end-user maintenance?
- Have you check for polarity?

❑ DIP Switch Settings

- **For the set of 6 DIP switches:**
- Are switch #1 and #2 in the down (off) position?
- Is switch #3 properly set for the gas supply type?
- Is switch #4 in the down (off) position?
- Are switch #5 and #6 set for the proper model number?
- **For the set of 8 DIP switches:**
- Unless using multiple units, is switch #1 in the down (off) position?
- Are switch #2 and #3 in the down position?
- If using NR, NP series, switch #4 and #5 must be in the up (on) position; If using NR-“A”, NP-“A” series, set the switches proper for normal mode(#4:off, #5:off) or external recirculation mode(#4:off, #5:on) or internal recirculation mode(#4:on, #5:off).
- Is switch #6 properly set for regular or premium type?
- Are switches #7 and #8 set to the customer’s desired temperature? Recommended temperature should not exceed 120°F.
- Has the homeowner been advised of the scalding potential of water temperatures set above 125°F?
- Dip switch is property set for CASCADE master unit and last unit **DOWN** or **ON** position.

❑ Final

- Has the owner been advised of the minimum flow rate to trigger the burner (if not using the NR-“A” or NP-“A” series)?
- Has the owner been shown how to clean the inlet water filter?
- Has the owner been left with the operation and installation manual for future reference?
- Has the owner been shown how to shut off the gas in case of an emergency?

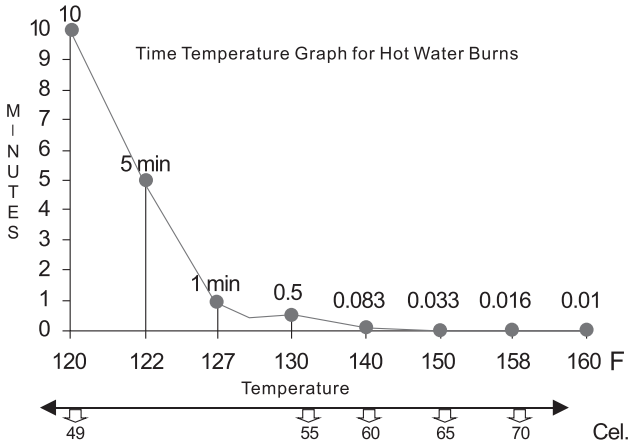
Operation – Contents

Safety Instructions:

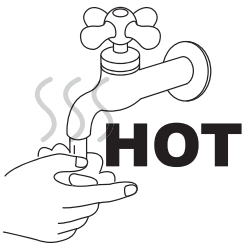
DANGER
HOT WATER TEMPERATURE SETTING

- ❑ **This Navien Water Heater is factory set at 120°F (NP Series: 140°F) for your safety and comfort. Increasing the set temperature increases the risk of accidental scalding. Consult the chart below before you decide to adjust the set temperature.**

Water Temperature	Time in which a young child can suffer a ful thickness (3rd degree) burn*
70℃ (160˚F)	Less than 1 second
60℃ (140˚F)	1 second
55℃ (130˚F)	10 seconds
49℃ (120˚F)	10 minutes
37℃ (100˚F)	Very low scald risk



DANGER



Water temperature over 125°F can cause severe burns instantly or death from scalds.

Children, disabled and elderly are at highest risk of being csalded.

See instruction manual before setting temperature at water heater.

Feel water before bathing or showering.

Temperature limiting valves are avaliable, see manual.

DANGER

- ❑ Households with small children, disabled, or elderly persons may require 120°F or lower temperature setting to prevent contact with “HOT” water.
- ❑ Water temperatures over 125°F can cause severe burns instantly or death from scalds. If the proposed water heater outlet temperature is above 125°F, a thermostatically controlled mixing valve or temperature limiting valve should be considered to reduce the risk of scalding.
  Contact a licensed plumber or the local plumbing authority for further information.

Navien Warranty:

GENERAL

Navien America, Inc. (Navien) warrants this Navien Water Heater and its component parts to be free from defects in materials and workmanship, under normal use and service, for the Applicable Warranty Period. At its option, Navien will replace the defective component part(s), in accordance with the terms of this Limited Warranty, if it fails in normal use and service during the Applicable Warranty Period. The replacement component part(s) must be Navien original factory component part(s). The replacement component part(s) will be warranted only for the unexpired portion of the original component part's Applicable Warranty Period.

APPLICABLE WARRANTY PERIODS (* DHW means Domestic Hot Water)

Period of Coverage			
Heat Exchanger		All other Parts and Components	
NR & NP Series Residential *DHW use only	NP Series Commercial use Or Residential Space Heating use	NR & NP Series Residential DHW use only	NP Series Commercial use Or Residential Space Heating use
15 years	**10 years**	**5 years**	**3 years**

Proof of purchase is required to obtain warranty service. You can show proof of purchase with dated sales receipt, by completing and mailing the enclosed warranty registration card within 30 days of purchasing the product or by registering online at www.navienamerica.com

EFFECTIVE DATE

The Effective Date of warranty coverage (the beginning of the Applicable Warranty Periods) is the date of purchase of this water heater, if properly registered.

HEAT EXCHANGER WARRANTY

The Applicable Warranty Period for a NR & NP series Heat Exchanger failure installed in a Residential DHW application (including domestic recirculation) is **Fifteen (15)** years from the Effective Date. The Applicable Warranty Period for a NP series Heat Exchanger failure installed in a Commercial application or Residential "Combi (DHW and Space heating)" application is **Ten (10)** years from the Effective Date. For any Commercial application or Residential Combi application, a NP series unit is recommended. If a NR series unit is used in any Commercial application or Residential Combi application, the Applicable Warranty for a Heat Exchanger failure will be voided.

PARTS WARRANTY (excluding heat exchanger)

The Applicable Warranty Period for a NR & NP series part(s) failure installed in a Residential DHW application (including domestic recircualtion) is Five(5) years from the Effective Date. The Applicable Warranty Period for a NP series part(s) failure installed in a Commercial application or Residential Combi application is Three(3) years from the Effective Date. IF a NR unit is used in any Commercial application or Residential Combi application, the Applicable Warranty for a Part(s) failure will be voided.

Water Heater Should not be used for Space heating (Only NR-(A) Series)

The NR Series Water Heater should not be used for space heating and other heating. If NR Series Water Heater is used for space heating and other heating, the applicable warranty will be voided.

Navien America, Inc. Limited Warranty:

LABOR ALLOWANCE:
The Applicable Period for this Labor Allowance for all water heater models is One (1) year from the Effective Date. The payment and amount of any payment are subject to approval at Naiven's sole discretion. The Labor Allowance will be paid based on Navien's Schedule of Labor Allowances.

TRANSFERABILITY
This warranty is offered to the original and subsequent owners of the water heater but is limited to the original address registered with the warranty only. The warranty will be void if the water heater is relocated to any other location.

WARRANTY EXCLUSIONS

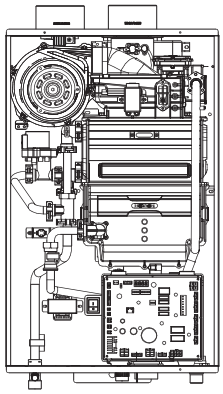
This warranty does not cover the following conditions:

- ❑ Damages, malfunctions, or failures resulting from failure to install the water heater in accordance with applicable building codes, ordinances or normal plumbing and electrical trade practices.
- ❑ Damages, malfunctions or failures resulting from improper installation or failure to operate and maintain the water heater in accordance with the manufacturer's instructions provided.
- ❑ Performance problems caused by improper sizing of the water heater or the gas supply line, the venting connection, combustion air openings, electric service voltage, wiring or fusing.
- ❑ Damages, malfunctions or all failures caused by conversion from natural gas to LP gas or LP gas to natural gas or attempt to operate with a type of gas not specified for the water heater.
- ❑ Damages, malfunctions or failures caused by operating the water heater with any parts removed or with parts that have been modified, altered or unapproved for installation.
- ❑ Damages, malfunctions or failures caused by abuse, negligence, alteration, accident, fire, flood, freezing, lightning and other acts of God.
- ❑ Heat Exchanger failures caused by operating the water heater in a corrosive or contaminated atmosphere.
- ❑ Damages, malfunctions or failures caused by poor water quality, lime or mineral build-up or sediment build-up. (12 Grains of hardness may)
- ❑ Damages, malfunctions or failures caused by operating the unit at water temperatures outside the factory calibrated temperature limits and/or exceeding the maximum setting of the high limit control.
- ❑ Heat Exchanger failures caused by operating the water heater when it is not supplied with potable water at all times.
- ❑ Damages, malfunctions or failures caused by subjecting the heat exchanger to pressures or firing rates greater or lesser than those shown on the rating plate.
- ❑ Units installed outside of the fifty states (and the District of Columbia) of the United States of America and outside of Canada.
- ❑ Rating plate has been removed by an unauthorized person. A water heater should not be operated if the rating plate has been removed.
- ❑ Damage due to freezing.

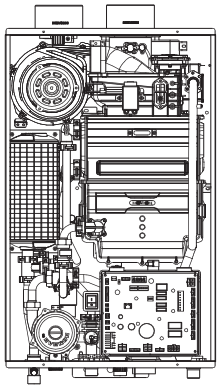
Model Description & Legend:

Model Description Legend	
NR	Navien Regular (potable domestic hot water only) Maximum Temperature: 140°F Dual Stainless Steel Heat Exchangers with Copper piping
NP	Navien Premium (potable domestic hot water and space heating and commercial applications) Maximum Temperature: 185°F Dual Stainless Steel Heat Exchangers with Stainless steel piping
A	With Pump and 0.5 US gallon (2 litre) Buffer Tank

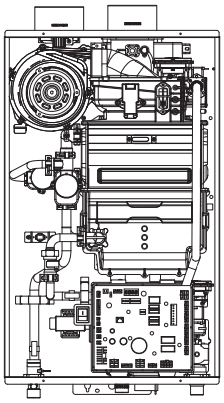
NR-A, NP-A : Condensing Water Heater with built in pump and buffer tank
NR, NP : Condensing Water Heater without pump and buffer tank



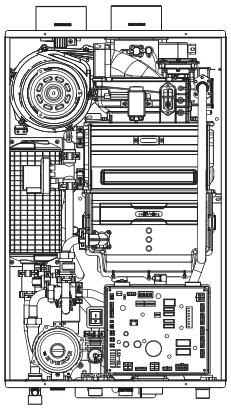
NR



NR-A



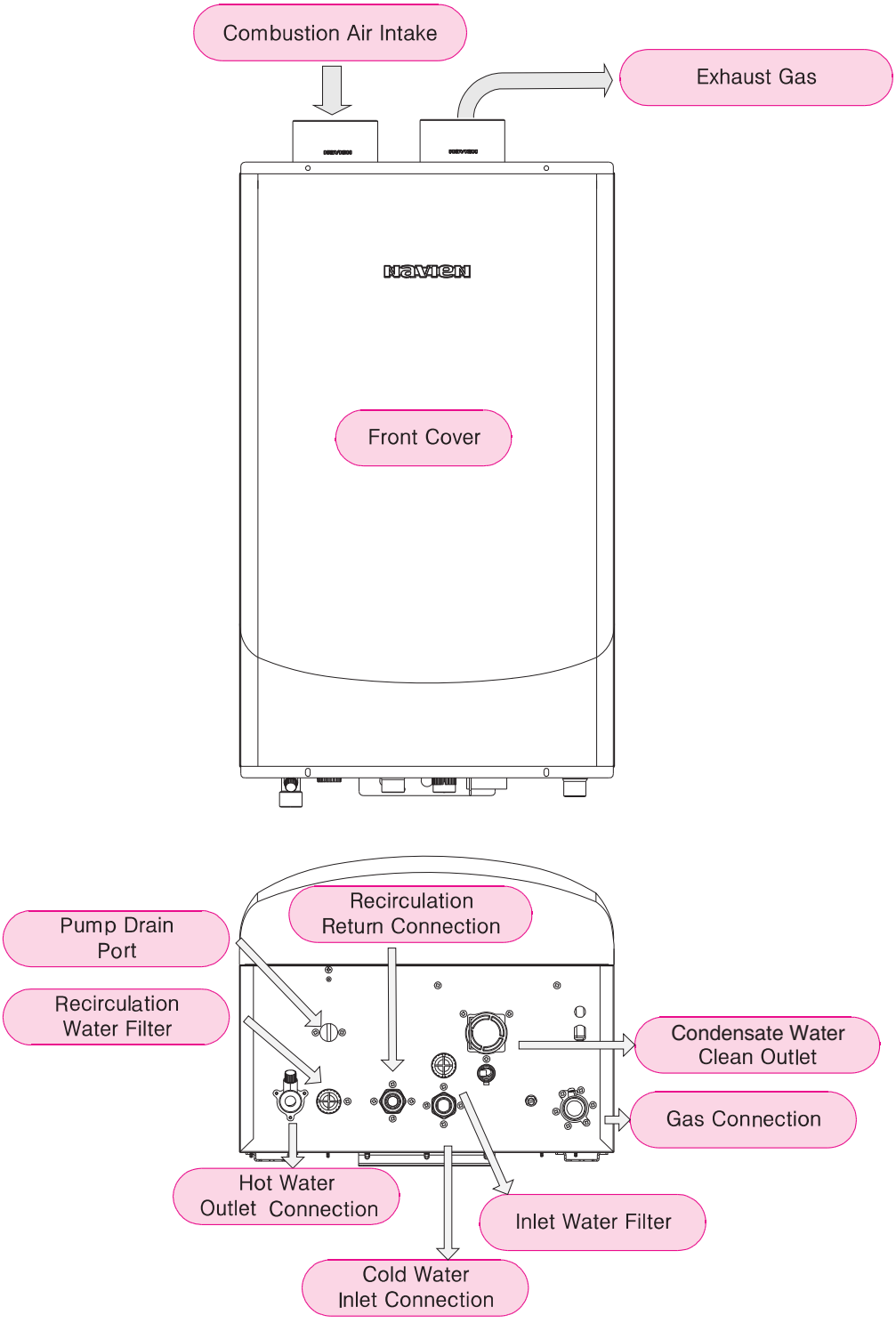
NP



NP-A

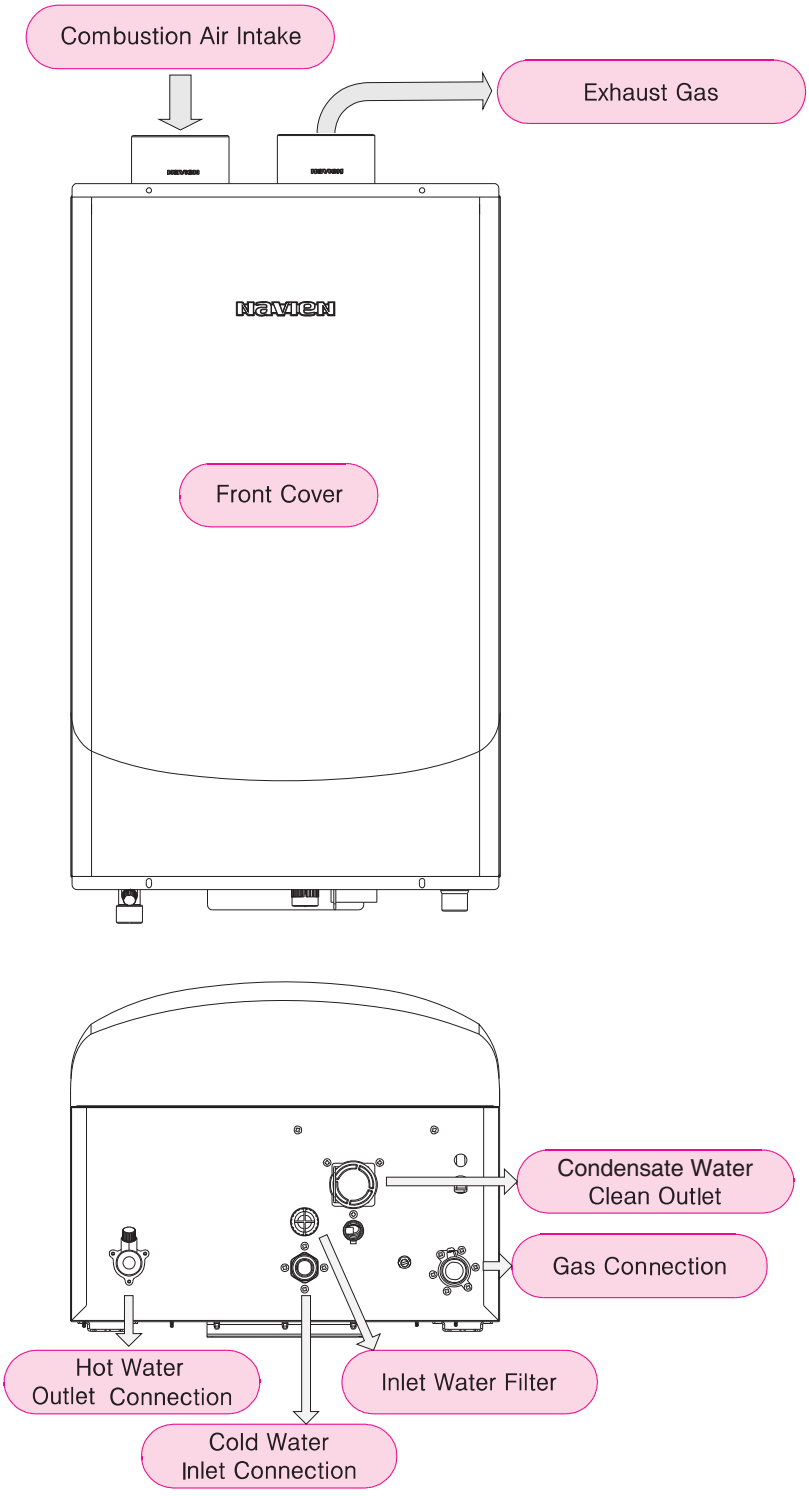
General Parts:

NR-A / NP-A Water Heater

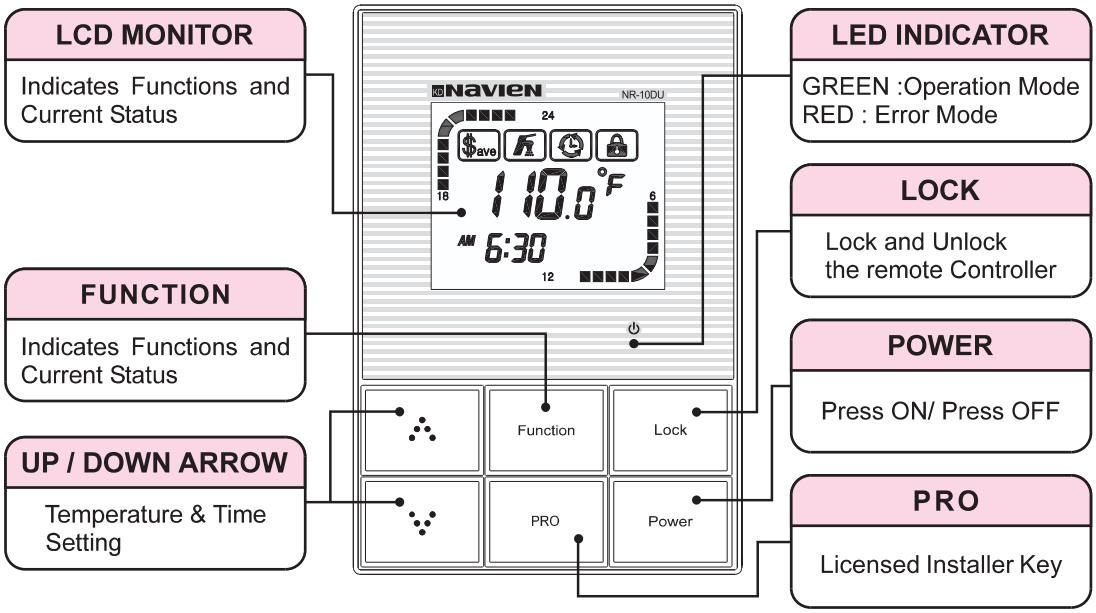


General Parts:

NR / NP Water Heater



Remote Controller:



❑ LCD Monitor

Energy saving Indicator

Hot Water 'In Use' Indicator

Recirculation Indicator

Lock Indicator

Temperature Incator
(Error codes are displayed in the event of failure)

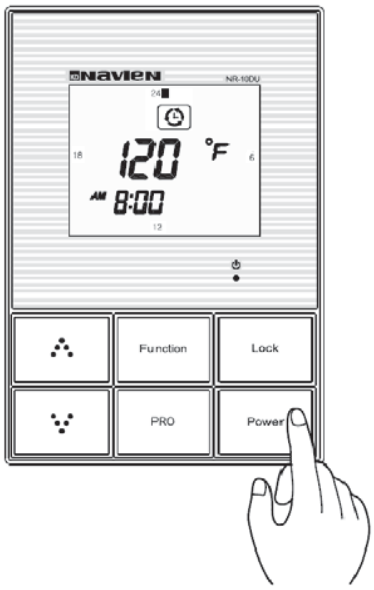
Clock

The Navien Remote Controller allows the customer to adjust hot water temperatures and to diagnose certain operating and fault conditions. The factory set temperature of the remote controller is at 120°F(NP Series: 140°F). Remove the protective sheet from the remote controller surface.

※ Although any buttons on remote controller are pressed, the backlight might not be turned on for 30 minutes after the water heater is powerd on.

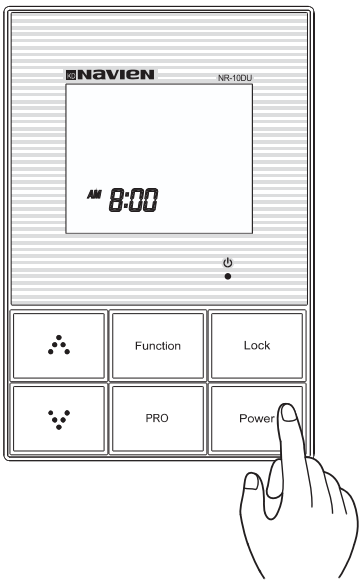
Remote Controller Set-Up Instructions: Turning the Remote Controller On/Off

To turn the remote controller “ON”, press the Power button.



When power in “ON”, the temperature will be displayed on the remote controller.

To turn the remote controller “OFF”, press the Power button again.

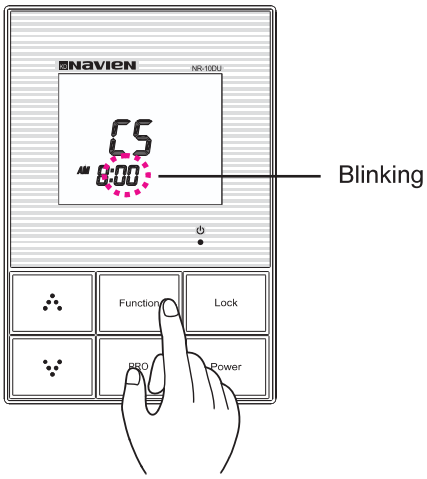


When the power is “OFF”, remote controller is OFF, only the time is displayed.

! Model without the clock indication function Will have the clocks turn off as well when the power is turned off.

Setting the Clock:

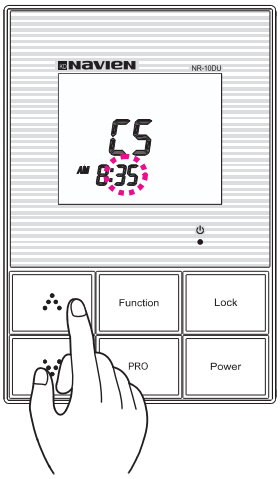
1. Press the Function button and hold for 3 seconds.



The minute section of the time display will flash

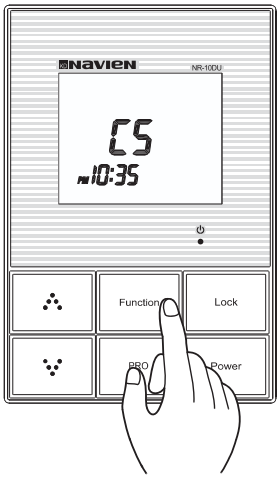
Hour : Minute

2. Setting the hour and minute.



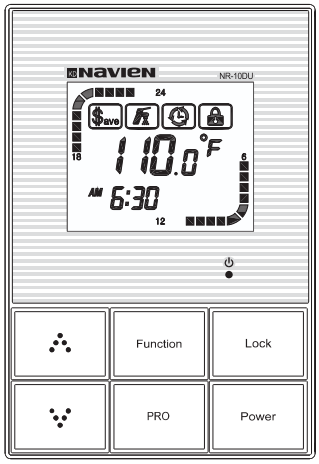
Use the ∴(Up) or ∵(Down) buttons to scroll until the desired minute time is reached. Press the "Function" button to set.
Once the "Function" button is pressed, the hour section of the time displays flashes. Use the ∴(Up) or ∵(Down) to scroll until the desired hour is reached. Press the "Function" button again to set.

3. Setting AM or PM.



Once the "Function" button is pressed, "AM/PM" flashes on the display. Use the ∴(Up) or ∵(Down) buttons to select AM or PM. After 3 seconds, the selection is automatically set.

Adjusting the Temperature:



- ❑ Use the remote controller to adjust the outlet water temperature of the Navien Water Heater.
- ❑ To adjust the hot water temperature, all hot water taps must be closed, the internal circulator must be off and any external circulating pumps must also be turned off.
- ❑ Press the △∴(Up) or △∵(Down) button to scroll until the desired temperature is displayed on the LCD Monitor.

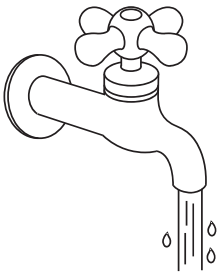
∗ NOTE: THE TEMPERATURE CAN ONLY BE ADJUSTED BETWEEN 98°F AND 110°F WHEN THE UNIT IS IN OPERATION. (A HOT WATER FAUCET IS OPEN).

∗ THE TEMPERATURE CAN ONLY BE ADJUSTED WHILE THE INDICATOR IS FLASHING.

WARNING

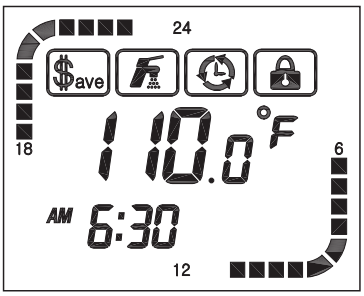
Water temperatures over 125°F can cause severe burns instantly. See the "Safety Instructions" section for appropriate temperature settings.

Hot Water Tap



- ❑ To operate the Navien Water Heater, press the "Power" button and use △∴(Up) and △∵(Down) buttons on the remote controller until the desired temperature is displayed on the screen. Then simply open any hot water faucet. This will automatically light the burner and provide hot water at the preset temperature.

∗ NOTE: THE NAVIEN WATER HEATER HAS A DATA MEMORY FUNCTION THAT WILL RETAIN AND RESTORE DATA IN THE EVENT OF A POWER OUTAGE.

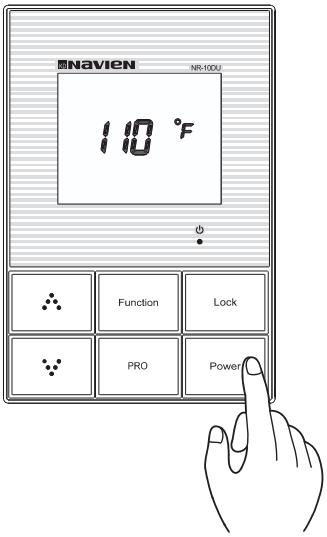


- ❑ Navien Water Heater has a built in back-light. The screen's backlight will illuminate when a button on the controller is pushed.

∗ NOTE: IF THE BACK-LIGHT ON THE DISPLAY GOES DARK, THE REMOTE CONTROLLER'S INTERNAL BATTERY IS DISCHARGED. WAIT FOR A FEW MINUTES UNTIL THE BATTERY RECHARGES AND THE BACK-LIGHT WILL AUTOMATICALLY ILLUMINATE THE DISPLAY AGAIN.

Hot Water Temperature Adjustment:

1. Press the “Power” Button to Turn the Remote Controller “ON”:



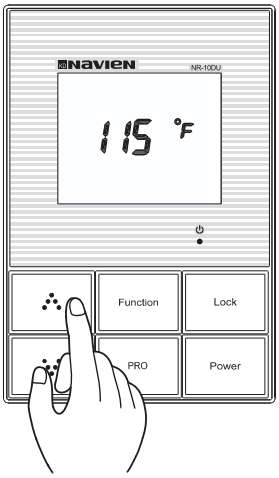
When the power is “ON”, the set temperature will be displayed on the remote controller.

When the power is “OFF”, only the time will be displayed on the remote controller.

2. Set temperature:

∗ NOTE: FOR ALL RESIDENTIAL APPLICATIONS, NAVIEN RECOMMENDS A TEMPERATURE OF 120°F OR BELOW. THE INITIAL FACTORY SETTING IS 120°F FOR NR SERIES AND 140°F FOR NP SERIES.

❑ For Temperatures Between 98°F a d 120°F:

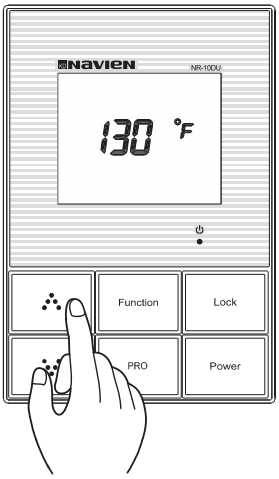


Press the △ (Up) or △ (Down) button to scroll until the desired temperature is displayed on the LCD Monitor.

For temperatures between 98°F and 120°F, temperatures can be adjusted in increments of 1°F.

Hot Water Temperature Adjustment:

❑ For Temperatures Between 125°F and 140°F :

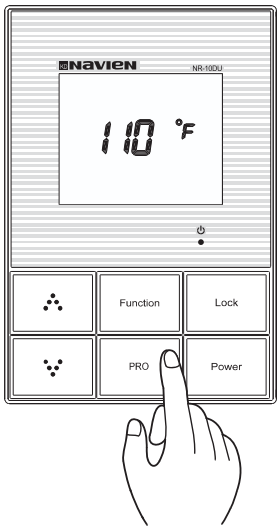


Each time (Up) Key is pressed for 3 seconds, temperature increases by 5°F. When the desired temperature is reached, leave alone and it will automatically set.

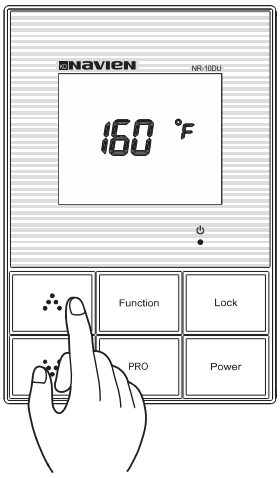
Each time (Down) Key is pressed, temperature decreases by 5°F.

For temperatures between 125°F and 140°F, temperatures can be adjusted in increments of 5°F.

❑ For Temperatures Above 140°F (140~185°F) (Only "NP-A & NP Series) :



When the Pro Key is pressed for 5 seconds, high temperature adjustment mode is readied.



Each time Pro Key is pressed for 5 seconds in high temperature adjustment mode, temperature increases by 10°F (140~180°F) or 5°F (180~185°F). When the desired temperature is reached, leave alone and it will automatically set.

Each time the (Down) Key is pressed, temperature decreases by 10°F (140~180°F) or 5°F (180~185°F).

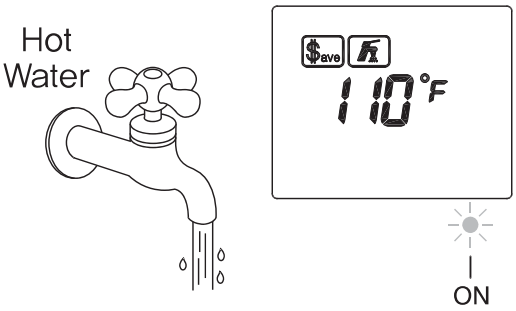
The Pro Key can only be used and adjusted by factory trained installers. For Navien training and Certification information, call 1-800-519-8794, or visit the website at www.navienamerica.com.

The Example. (unit : °F)

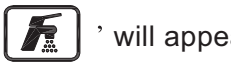
NR/NR-A, NP/NP-A Series		NP/NP-A Series	
∴(Up), ∵(Down) Key	∴(Up), ∵(Down) Key	**Pro,** ∵(Down) Key	**Pro,** ∵(Down) Key
98~120°F	125~140°F	150~180°F	185°F
Adjusted by 1°F	Adjusted by 5°F	Adjusted by 10°F	Adjusted by 5°F

- Once a temperature is selected, the unit will operate at that selected temperature until that temperature is changed.
- A Navien Water Heater will not provide hot water instantly at the hot water fixture unless an “A” series unit in used with “external recirculation” mode.
- Any existing cold water in the hot water lines must be purged before hot water can reach the hot water fixtures.

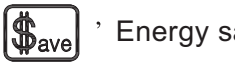
3. Turning the hot water “ON”:



When a hot water faucet is opened, the unit will automatically start. The GREEN LED indicator will illuminate indicating normal operation.

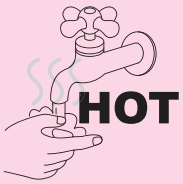
‘  ’ will appear on the display.

When the water heater is “condensing”, the “Energy Saving” indicator will appear on the monitor.

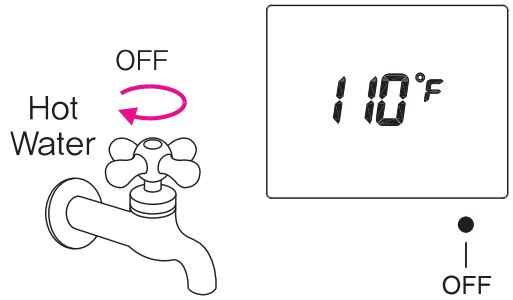
‘  ’ Energy saving indicator.

WARNING

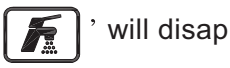
- **To prevent scalding, check the water temperature before bathing or showering.**



4. Turning the hot water “OFF”:

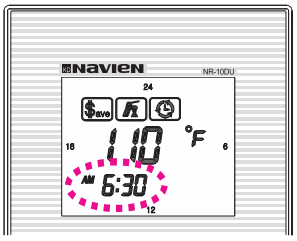


When the hot water faucet is closed, the water heater turns off automatically. The GREEN LED indicator turns off.

‘  ’ will disappear from the display

“A” Series Recirculation Timer Setting:

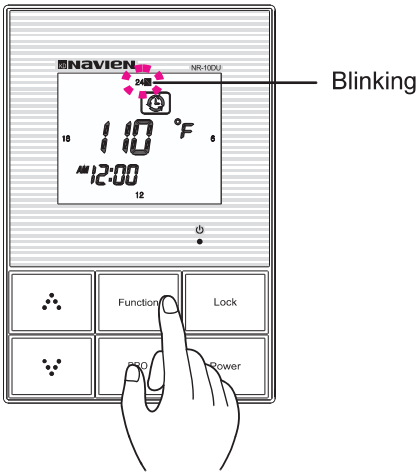
1. Check the current time



Before setting the Recirculation timer, ensure the remote controller is set to the current time. If the clock is not set to the current time, please adjust the clock (refer to 74 page).

Next, determine when recirculation is needed and for how long an interval.

2. Press the Function Button.

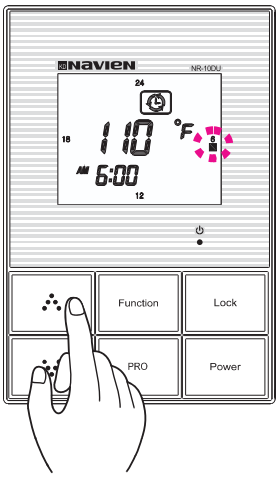


When the “Function” button is pressed,

‘ ’ appears and ‘■’ flashes.

The circulation timer blinks.

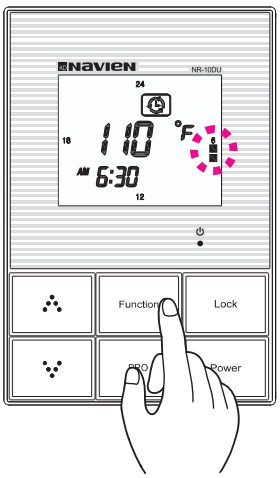
3. Press the ∴(UP) or ∵(DOWN) Key:



Press the ∴(Up) or ∵(Down) Key to adjust the cursor ‘■’ around the 24 hour clock in 30 minute increments. The 24 hour clock is displayed around the perimeter of the remote controller display screen.

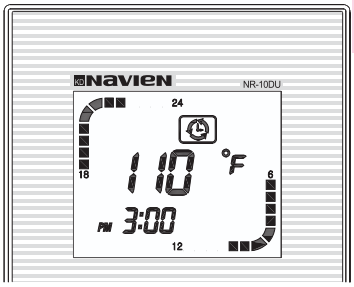
Each solid black block indicates one 30 minute Recirculation period

4. Press the Function Button and Set the Circulation Timer.



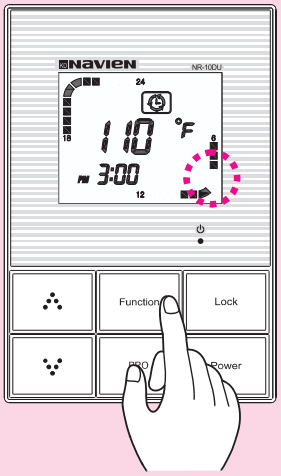
When you press the function button at a desired recirculation start time, a '■' mark will appear meaning, that you are setting that time period for a circulation. After the black box mark appears, it will automatically go to the next time period, asking you if you want a circulation at that time, and so forth. You can manually press "⁘" or "⁘" to scroll to the time period that you want altered.

Tip : If you have made an error, or want to change the settings, use the "⁘" or "⁘" button to scroll through the time periods and press the function button. Then the '■' will disappear meaning that you don't want circulation happening at that period.



For example, recirculation could be set to run from 6AM to 9AM and from 6PM to 9PM daily- see screen sample on the left side.

Deactivate Circulator timer and periods

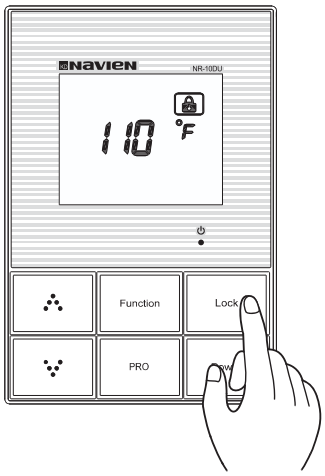


Move indicator '■' to a blacked block period and press the "FUNCTION" key to deactivate the recirculation pump for the current period. Repeat this action to clear multiple periods.

Lock Function Setting:

The “LOCK” key function will prevent unintentional temperature adjustments on the Remote Controller. When the “LOCK” key is in operation, the “FUNCTION” or the (Up) or (Down) keys cannot be utilized. To disengage the “LOCK” function, press the LOCK key again.

Press the Lock Button.



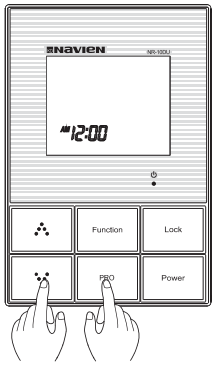
To engage and disengage the “LOCK” key feature, press and hold down the key for 3 seconds.

NOTE: WHEN THE POWER IS “OFF”, THE “LOCK” FUNCTION CANNOT BE USED.

Well Pump setting function:

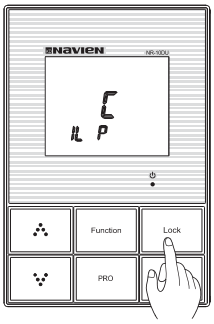
Please set as below when a well pump is used at inlet side of a water heater.

1. Press the ⁘(Down) and PRO Key



Get into setting mode by pressing "⁘(Down) + PRO" buttons simultaneously for 3 seconds in power off status.

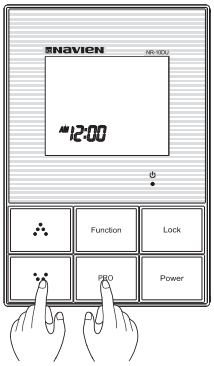
2. Press the Lock Button



When in setting mode, "IL P" is displayed on the lower left side of the screen. If a Remonte Controller is in setting mode "S" is displayed on the lower left side of the screen. If a Remote Controller is not in setting mode, "C" is displayed on the lower left side of the screen.

At this time, you can change the status of the Remote Controller from "S" to "C" (or from "C" to "S") by pressing "LOCK" button.

3. Press the ⁘(Down) and PRO Key

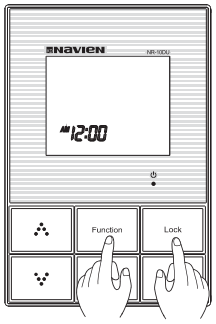


A Remote Controller can be put back to power off mode by pressing the "⁘(Down) + PRO" buttons simuntaneously for 3 seconds.

Function to set the number of initial activating water heaters when cascade is used:

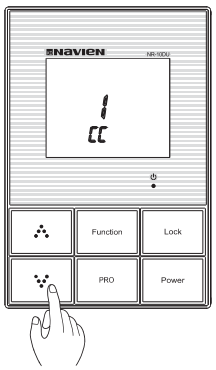
This is a function to decide the number of initial activating water heaters when multiple water heaters are connected together in a cascade.

1. Press the Function and Lock Key



Get into setting mode by pressing the “Function + Lock” buttons simultaneously for 3 seconds in power off status.

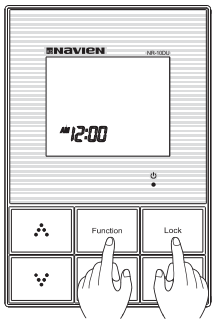
2. Press the Lock Button



“CC” is displayed near where the ‘minute’ side of the clock on the LCD screen (lower left side) in setting mode. And the current number of initial activating water heaters is displayed near where temperature is displayed (center of screen).

At this time the number of initial activating water heaters can be adjusted in a range of 0~16 by pressing the “∴(Up) or ∵(Down)” buttons.

3. Press the Function and Lock Key

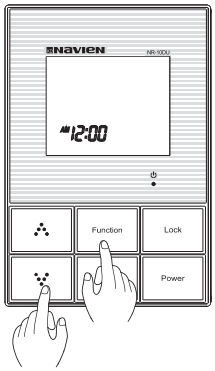


A remote controller can be put back to power off mode by pressing the “Function + Lock” buttons simuntaneously for 3 seconds.

Pump activation setting function when hot water is used:

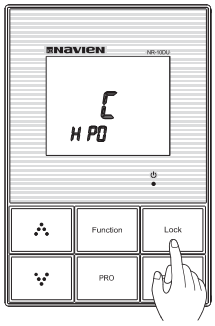
This function allows the internal pump to turn on or off (A series models only) when hot water is being used.

1. Press the Function and (Down) Key



Get into setting mode by pressing the “Function + Down” buttons simultaneously for 3 seconds in power off status.

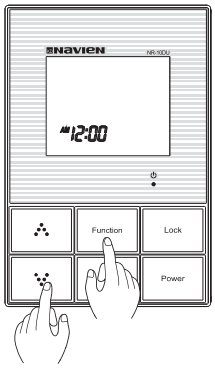
2. Press the Lock Button



When in setting mode, “HPO” is displayed near where ‘minute’ of clock is usually displayed (lower left side). If a Remote Controller is in setting mode “S” is displayed near where the temperature is usually displayed (center of screen). If a remote controller is not in setting mode, “C” is displayed near where tempearture is usually displayed (center of screen).

At this time, you can change the status of the remote controller from “S” to “C” (or from “C” to “S”) by pressing the “LOCK” button.

3. Press the (Down) and PRO Key

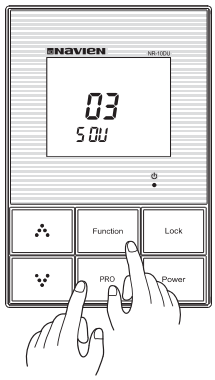


A remote controller can be put back to power off mode by pressing the “Function + Down” buttons simuntaneously for 3 seconds.

Temperature setup functions for DHW Storage tank usage mode;

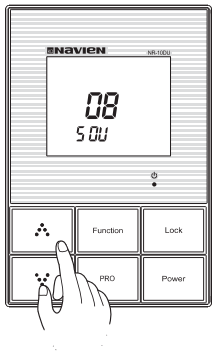
This is a function not compatible with the recirculation function model.

1. With the power OFF, press “Function”+“Pro” key together for 3 seconds, go into “Cascade On unit setup temperature”.



With the power off, when you press the “Function”, and “Pro” keys together for 3 seconds, you will see a “S OU” on the screen and the cascade On unit setup value when using the cascade function near the temperature is indicated.
*S OU : Setting temp-gap for heating-On each of the unit

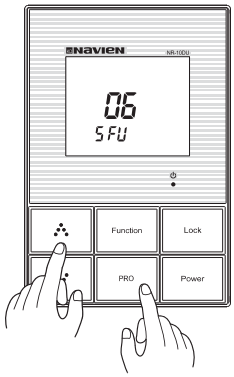
2. Press “ ⁘ ” or “ ⁘ ” and change to desired value.



Press “ ⁘ ” or “ ⁘ ” to adjust the cascade ON unit value. The value can be varied in a variety range of 0 ~ 60 by 1.

*Cascade ON unit temperature
= DHW setting temp. – R/C setting temp.

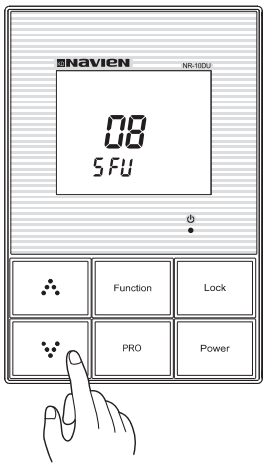
3. Press the “⁘” button and pro button together for 3 seconds.



When you press the “⁘” button and the “Pro” button together for 3 seconds, “S FU” will be visible, and the cascade OFF unit setup value will be shown near the temperature indicator.

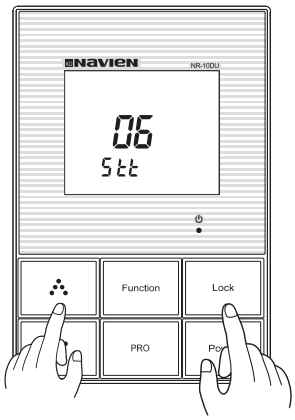
*S FU : Setting temp-gap for heating-OFF each of the unit

4. Press the " ∴ " or " ⁘ " button to adjust to desired values.



Press the "∴" or "⁘" button to adjust desired cascade OFF unit value. The value may be adjusted within the cascade ON unit setup value by 1.

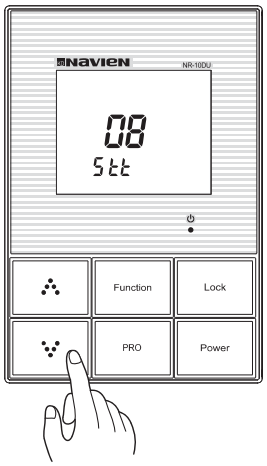
5. Press the "∴" button and "Lock" button together for 3 seconds



*S tt : Setting temp-gap of storage tank

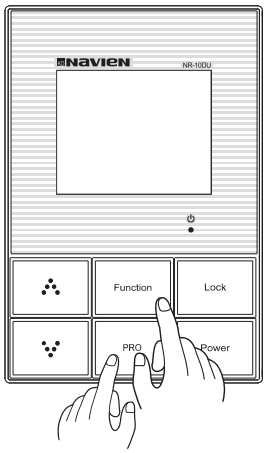
When you press the "∴" button and "Lock" button together for 3 seconds, "S tt" will appear near the clock and the desired stoppage time for the storage tank will be shown near the temperature value.

6. Press the "∴" or "⁘" button and change it to desired value.



Press the " ∴ " or " ⁘ " button to adjust the storage tank temperature. The value will be within the cascade OFF unit range and adjustable by 1.

7. Press the "Function" and "Pro" button together for 3 seconds.



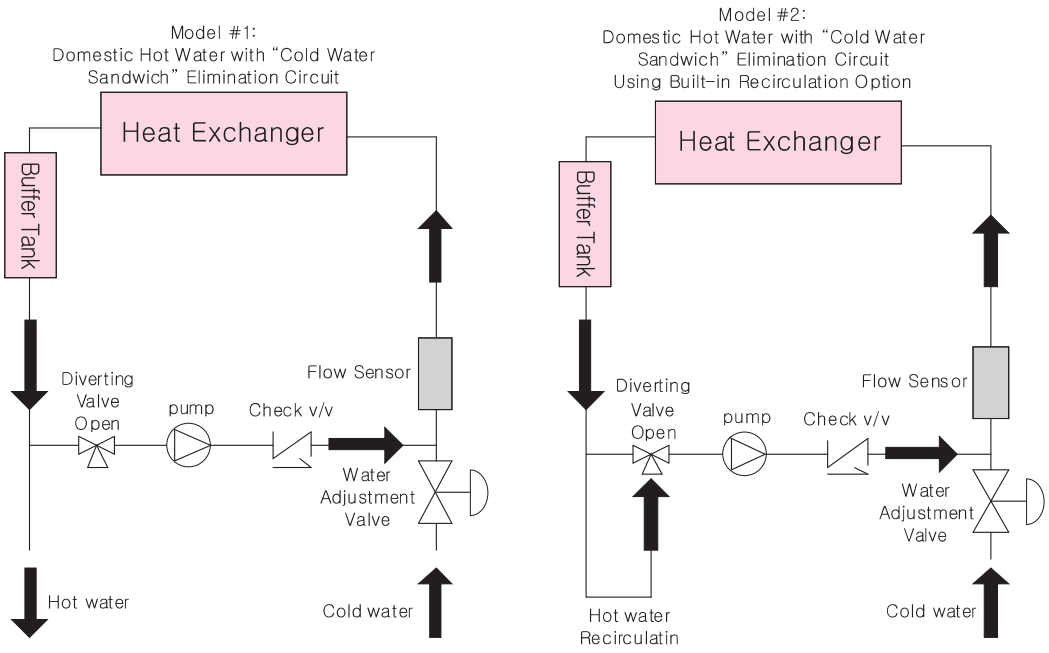
When you press the "Function" button and "Pro" button for 3 seconds, the setup mode will be over and it enter the power off mode.

Applications:

"A" Series models' Built-In Circulation Function:

On all "A" series, there are two pre-heating modes the unit can operate in: internal recirculation mode or external recirculation mode. The desired mode is selected by manually adjusting a 3-way valve inside the unit and adjusting the DIP switches on the PCB board.

Navien Models with "A" Series Two Operational Modes:



There are 3 main performance advantages of selecting the "A" series:

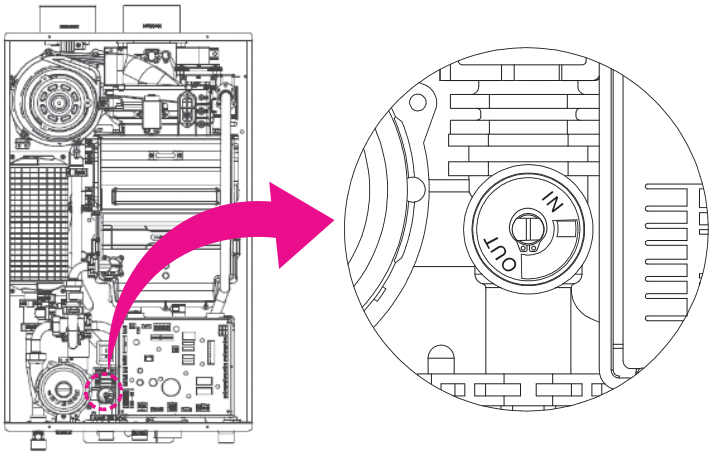
1) elimination of any minimum flow rate requirement.
2) elimination of any hot/cold/hot stacking, the so-called "cold water sandwich".
3) quicker hot water delivery to your fixtures, thus less water waste.

NOTE: When you select this function, there will be some minor efficiency loss as a result of the unit maintaining a steady temperature within the circulation loop. In many cases though, the reduction in gas savings due to the efficiency loss will be more than recovered by savings on your water bill.

“A” Series Internal Recirculation Mode:

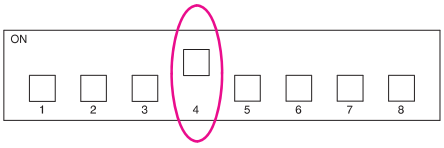
When connecting the Water Heater to an internal recirculation loop, the 3-way valve and the DIP switches on the PCB board should be set to “Internal Recirculation”.
The diagram below shows the internal recirculation flow path for pre-heating:

Internal Recirculation mode

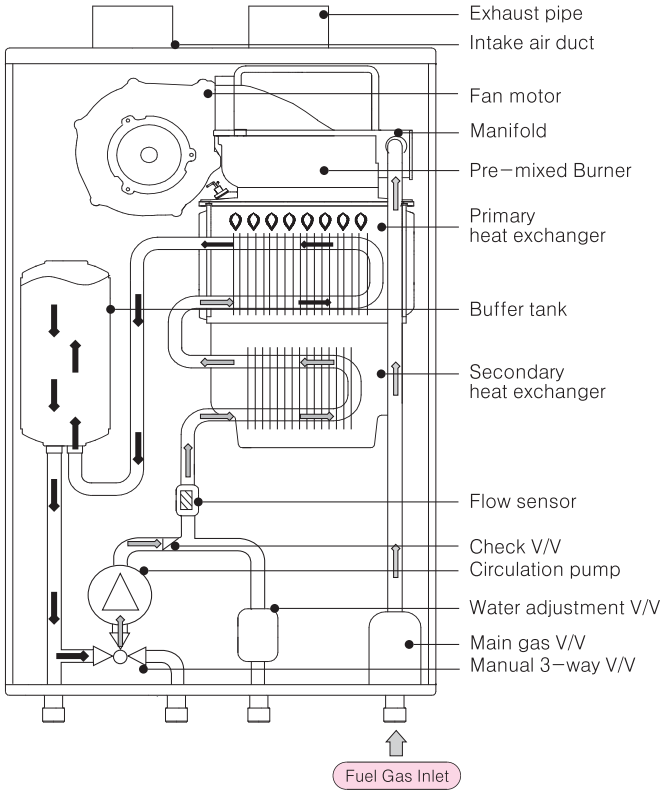


Location of the 3-way valve

DIP-SW2



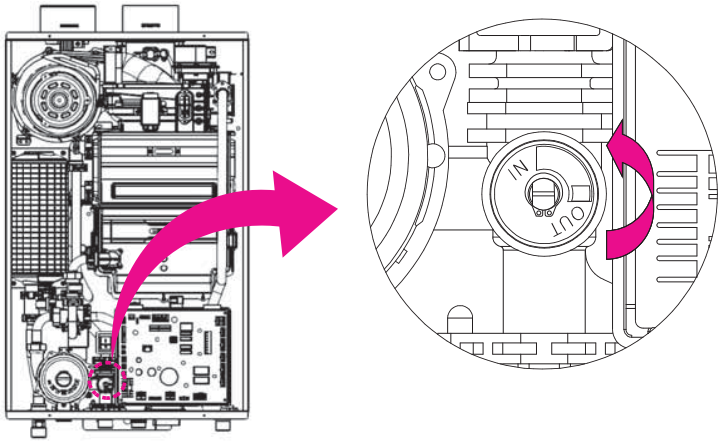
Dip-switch setting for Internal Recirculation mode



“A” Series External Recirculation Mode:

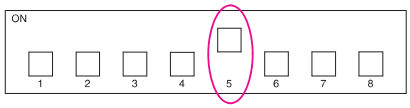
When connecting the water heater to an external recirculation loop, the 3-way valve and the DIP switches on the PCB board should be set to “External Recirculation”.
The diagram below shows the external recirculation flow path for pre-heating:

External Recirculation mode

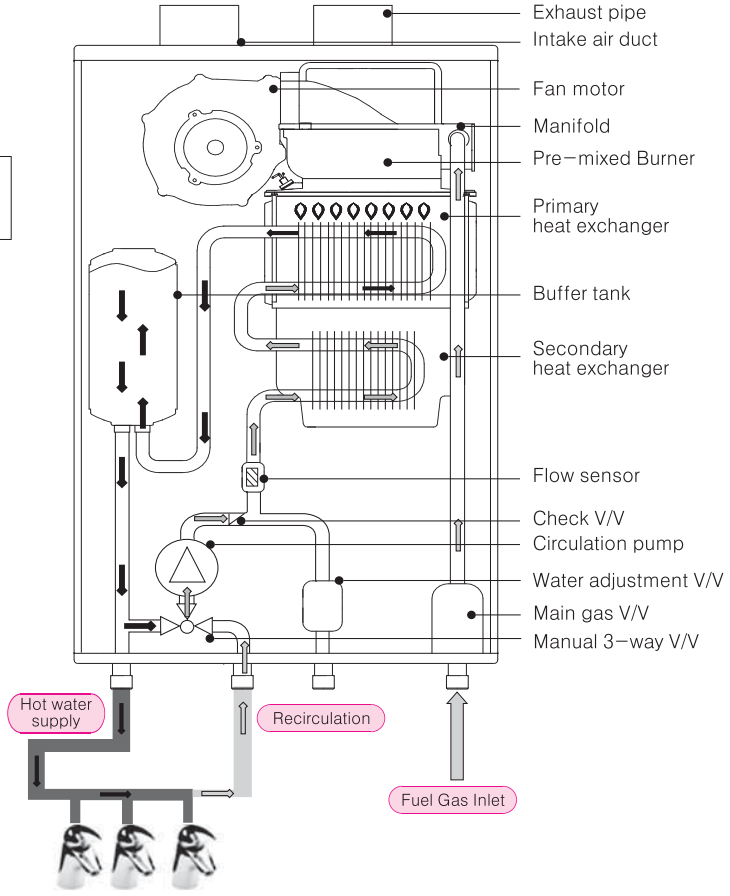


Location of the 3-way valve

DIP-SW2



Dip-switch setting for External Recirculation mode



Maintenence – Contents

Water Quality:

These are a provided table for evaluation of water quality and a highly recommendation of periodic maintenance on water heater. Regardless of the water quality table below, periodic mainternace of heat ex-changer inside is suggested. (Refer to page 92).

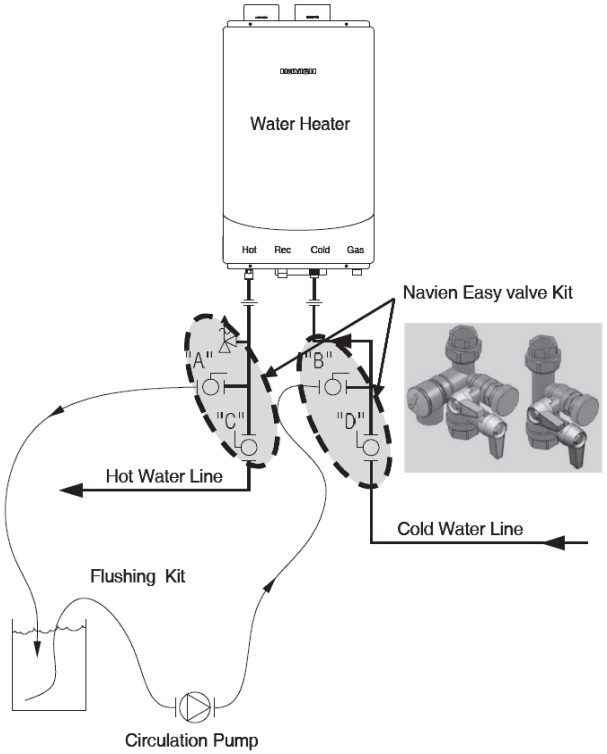
Damage to the water heater as a result of poor water quality is not covered by the Limited Warranty. To ensure full warranty coverage, treat or condition water that exceeds the target levels provided in this table.

Contaminant	Level
Aluminum	0.05 to 0.2 mg/l
Chloride	250 mg/l
Copper	1.0 mg/l
Iron	0.3 mg/l
Manganese	0.05 mg/l
pH	6.5 ~ 8.5
Total Dissolved Solids (TDS)	500 mg/l
Sulfate	250 mg/l
Zinc	5 mg/l

[Maximum Contaminant Levels]

■ Source : EPA National Secondary Drinking Water Regulations (40 CFR Part 143.3)

Flushing the Heat Exchanger:



Flushing Procedure

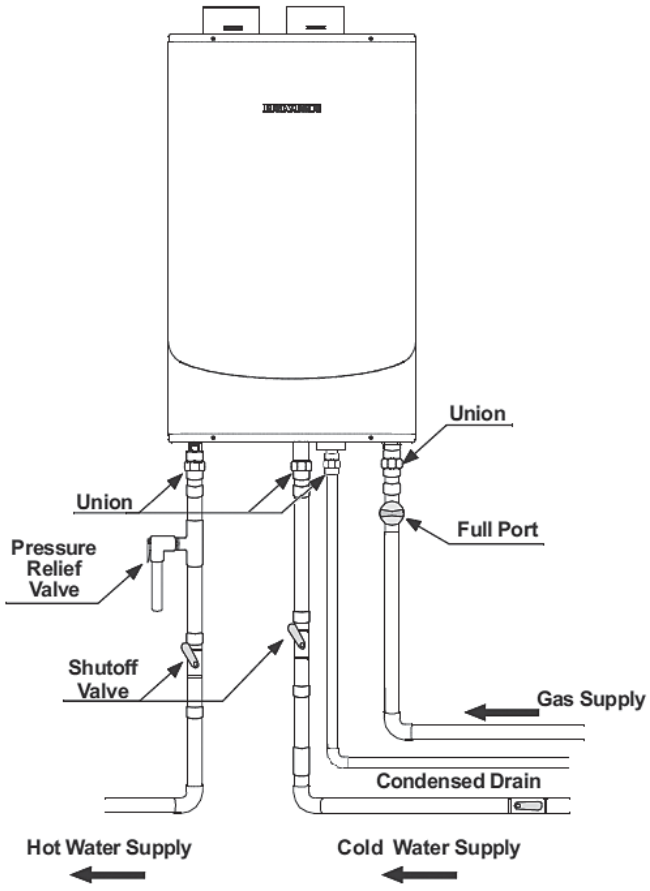
1. Disconnect electrical power to the water heater.
2. Close the “C” & “D” valve on both the hot & cold water lines.
3. Connect the pump outlet tube to the cold water line at the “B” valve.
4. Connect the drain tube to “A” valve.
5. Pour approximately 5 gallons of virgin, food grade, while vinegar of critic 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;
    - ① Remove the free and the drain tube from the pail.
    - ② Close “B” valve and open “D” valve. (* Do not open “C” valve)
    - ③ Allow water to flow through the water heater for 5 minutes.
    - ④ 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.

Cleaning the Water Heater:

Regular Maintenance:

CAUTION

Make sure the unit is OFF and the electrical power supply has been disconnected. The water heater may remain very hot for several minutes after it is turned off. To prevent burns, wait until the equipment has cooled down before inspecting.



❑ **Cleaning the Water Heater**

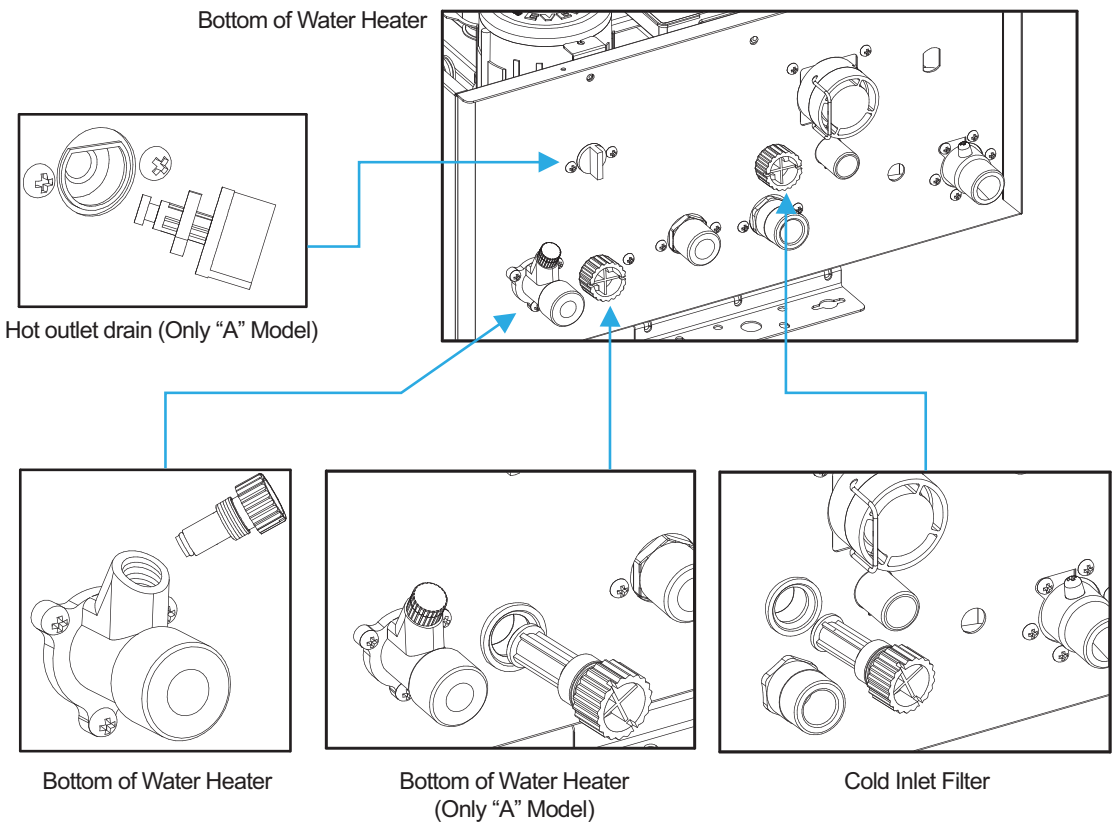
Wipe the outside surface with a wet cloth. Use a non-acidic, non-abrasive cleanser to remove any surface stains.

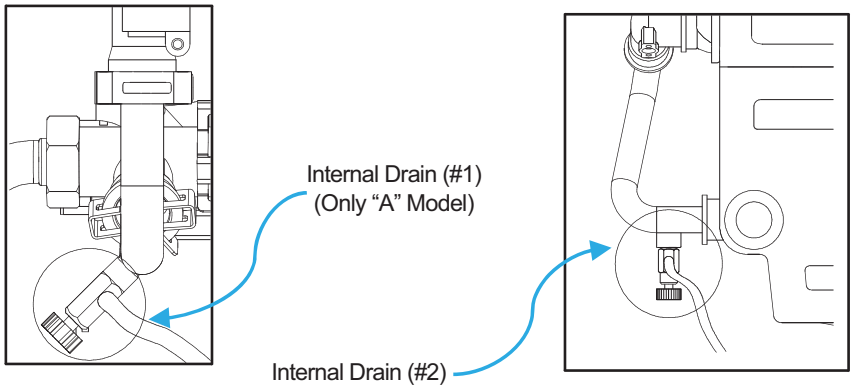
❑ **Cleaning the Remote Controller**

Wipe the surface with a wet cloth. The remote controller is moisture resistant but NOT water proof. Keep it as dry as possible.

Draining the Water Heater:

Draining the Water Heater - Parts you need to know:





Draining the Water Heater:

Draining the Water Heater:

Procedure to drain the Water Heater (refer below).
You will need to prepare a bucket to collect some of the water to be drained.

1. Turn off the power to the unit.
2. Close the gas valve.
3. Close the water supply valve on the inlet to the unit. If there is no valve, turn off the water supply at the water meter.
4. Open all hot water faucets fully; there may be some remaining water in the plumbing lines but it will quickly drain and the water flow should stop.
5. Open the drain plug at the hot outlet side; open the 2 drain valves inside the unit; open the drain valve at the pump and remove the filter from the cold inlet side.
6. When the water is completely drained, return the 2 drain plugs and the inlet filter and close the 2 drain valves inside the unit.

Refilling the water heater:

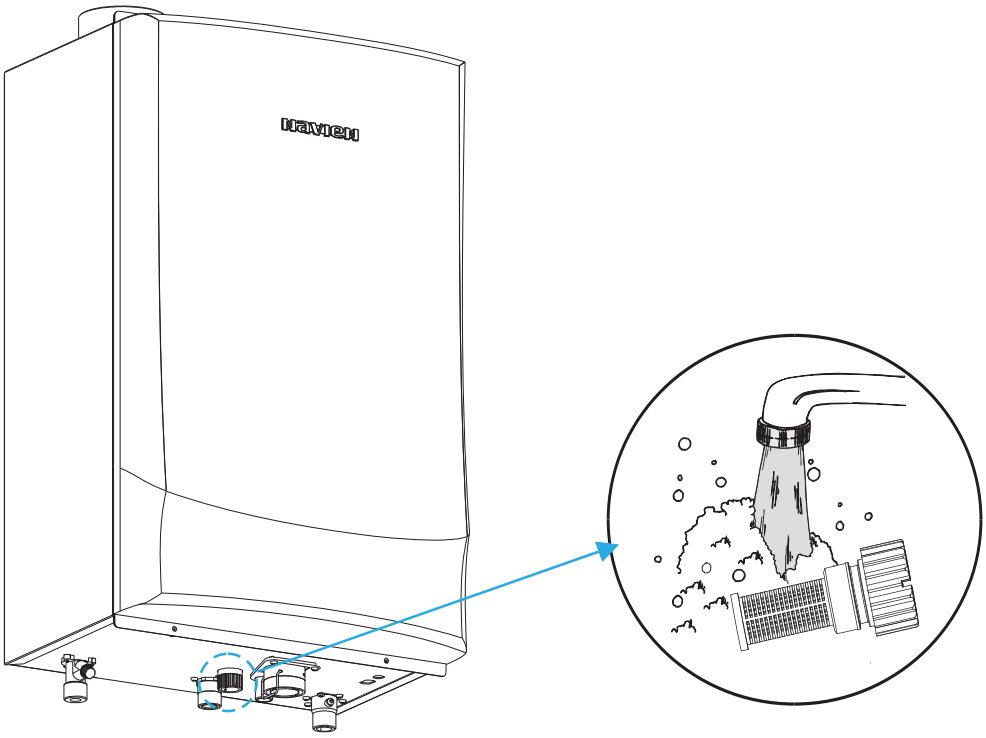
1. Confirm that the 2 drain plugs and the inlet filter have been re-inserted and that the 2 drain valves inside the unit are closed.
2. Slowly open the water supply valve on the inlet to the unit. If there is no valve at the Water Heater, turn on the water supply at the water meter.
3. Inspect the unit for possible leaks both inside and outside of the unit; If there are leaks, close the water supply valve immediately. Then contact your installer, service contractor, or Navien for service instructions.
4. Once all of the air has left the hot water lines, close all hot water faucets.
5. Turn on power to the unit.
6. Open the gas valve.
7. Open a hot water faucet to test for normal operation; the unit should operate normally.

Cleaning the Inlet Water Filter:

Procedure:

Procedure to clean the cold water inlet filter (figure below). You will need to prepare a bucket to collect some of the draining water.

1. Clean the inlet filter by rinsing it under a faucet and scrubbing with a brush if needed.
2. When the water is completely drained, return the 2 drain plugs and the inlet filter and close the 2 drain valves inside the unit.
3. Follow steps 2 through 7 of the previous “Refilling the Water Heater” section.

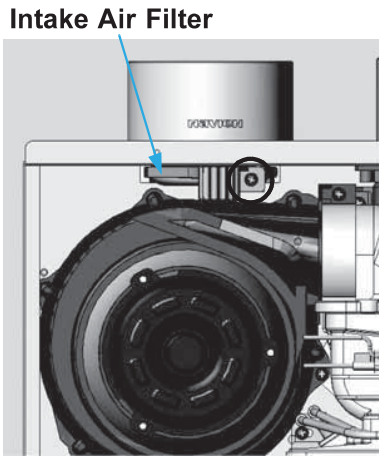


Cleaning the Intake Air Filter:

Cleaning the intake air filter:

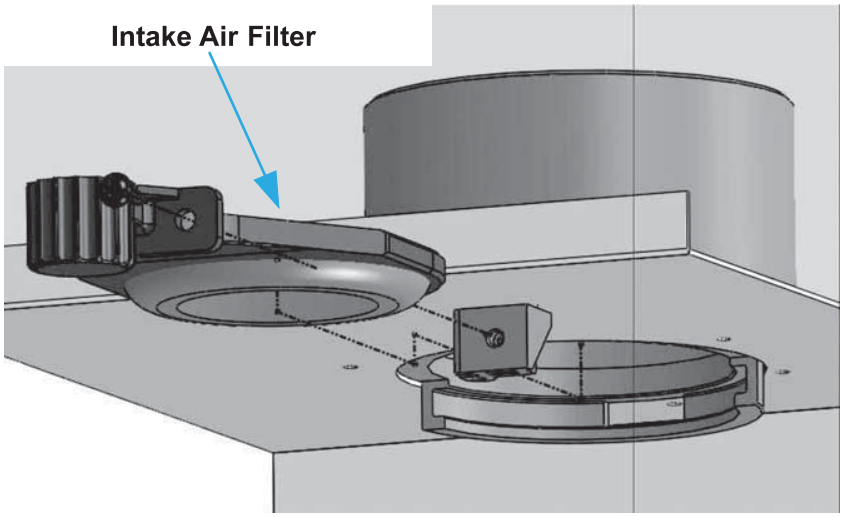
※ **If an intake air filter is blocked by dust or pollen, the water heater will not operate and 'Error Code 10' will be displayed. To prevent this from happening, please clean the air intake filter every 3~4 months by following the instructions below;**

1. Locate the intake air filter just above the fan and under the intake air duct in the top left corner of the Water Heater.



2. To access the filter, there is one Philips is screw that needs to be removed. The screw located in the circled area on the diagram to the right. Make note of which screw is taken. Once the screw is removed, pull the filter out towards the front.

3. Remove the filter from the bottom of the intake air duct. Remove the Intake air filter from the plastic assembly and clean it with a toothbrush and water. Re-fit the screen into the plastic assembly and fit the filter and frame onto the bottom of the intake air duct.



Freeze Protection:

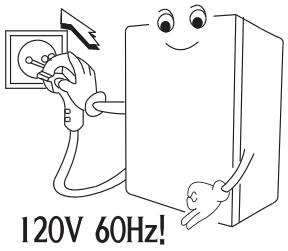
CAUTION

Damage caused by freezing is NOT covered under Warranty

- Freezing damage will only occur if backdrafting is present caused by negative pressure within the building. This situation is not caused by the Navien Water Heater and as such is not Navien's responsibility. As such, Navien will not warrant any damage due to freezing. The installing contractor must be aware of this situation and ensure that there is sufficient make-up air to avoid such a situation.
- This water heater is designed for indoor/outdoor installation.
- To avoid any freezing issues, Navien strongly recommends the use of Direct Vent. Ensure the exhaust vent pipe AND the air intake pipe are both connected directly from the water heater collars (top of unit) to the outdoors. This Direct Vent type installation will minimize any air movement within the unit.

1. DO NOT unplug the electric power supply cord

- The freeze protection function requires electricity. If the water heater is installed in a cold area that experiences freezing temperatures and/or frequent power outages, drain the unit to avoid damage. The freeze protection will operate regardless of whether the remote controller is ON or OFF.



2. Navien "A" Series Condensing water heaters

- The Navien Water Heater models NR-180/210/240A and NP-180/210/240A have an optional recirculation mode. If this mode is selected and even if the intake air duct is not connected as explained previously, the water heater should not freeze.
- Don't close a gas valve for freeze protection.

Freeze Protection:

1. If the hot water will not flow and you suspect the Water Heater is frozen:

❑ Follow the steps below :

1. Close the gas valves.
2. Turn off the power button.
3. Open the faucet closest to the Water Heater.
4. Use a hair dryer(s) or a portable electric heater to heat up the heat exchangers within the water heater; heat both the primary and the secondary heat exchangers.
5. Check every couple of minutes to see if water is running at the open faucet.
6. When the water is flowing again, check for water leaks from the equipment and piping before using.

2. Extended Periods of Non-Use and/or Power Outages:

❑ If the Water Heater will not be used for an extended period of time or if there is a potential for power outages, drain the Water Heater as follows :

1. Turn off the power to the unit.
2. Close the gas valve.
3. Close the water supply valve on the inlet to the unit. If there is no valve, turn off the water supply at the water meter.
4. Open all hot water faucets; there may be some remaining water in the plumbing lines that will drain but any water flow should quickly stop.
5. Open the drain plug at hot outlet side; open the drain valve inside the unit; open the drain valve at the pump and remove the filter from the cold inlet side.
6. When the water is completely drained, return the drain plugs.

Troubleshooting Contents:

Basic Troubleshooting and Frequently Asked Questions:

- ❑ If an 'Error Code' displays on the remote controller, follow the troubleshooting chart below before contacting your installer, service contractor or NAVIEN representative.
- ❑ Troubleshooting step #1 is to turn the unit OFF and then ON to reset the Navien Water Heater.
- ❑ If after resetting and following the steps outlined below, the water heater does not return to consistent operation, contact your installer, service contractor or Navien for service instructions.

Problem	Possible Cause(s)	What to do
There is no water at all when the hot water tap is opened.	• Is the cold water filter clean? • Is the unit display flashing an error code? • Is the unit frozen?	• Make sure the shut–off valves on the hot and cold pipes are open. • Check if there is any error code flashing on the remote controller.
When the tap is opened, there is no hot water or the hot water turns cold and stays cold.	• Is the clean flow sensor? • Is the hot water fixture sufficiently open to draw at least 0.5 GPM through the water heater? • Is the unit display flashing an error code? • If there is an external recirculation system installed, is there a check valve on the recirculation return line?	• Check if there is any error code flashing on the remote controller.
It takes too long time to get hot water to the fixtures.	• If the unit is an "A" model, consider using the external recirculation mode.	• Have contractor install a recirculation return line from the furthest faucet possible back to the water heater.
The water is not hot enough.	• Is the set temperature too low?	• Check unit's temperature setting. • Check for cross plumbing between cold and hot water lines.
The water is too hot.	• Is the set temperature set too high?	• Check unit's temperature setting.

Error Code Guide:

Error Code	Reason	Self-diagnostic / Action
E001	Water is boiling inside the heat exchanger.	1. Clean the inlet water filter (part #62); 2. Check the water adjustment valve.(part #16) 3. Check the heat exchanger; remove and clean with a cleaning solution.
E003	Ignition failure.	1. Check to see if the main gas supply valve is open. 2. Check that the power is “ON”. 3. Check the igniter for spark. (part #18)
E004	False flame detection.	1. Ensure ground wire is connected. 2. Check the igniter for spark.
E007	Hot water outlet: thermostat open.	1. Check the thermostat. 2. Replace the thermostat.
E008	Hot water outlet: thermostat short.	
E009	Abnormal fan motor activity.	1. Check and clean the intake air filter. (part #10). 2. Check and clean the fan motor. (part #21).
E010	Abnormal air pressure.	1. Check the exhaust pipe for Obstructions. 2. Check and clean the intake air filter (part #10).
E012	Flame loss.	1. Check the main gas line (valve open?). 2. Check intake air filter. 3. Check ground wire. 4. Check power supply.
E015	Abnormal PCB board.	1. Check power supply. 2. Check the power switch.
E016	Overheating of heat exchanger.	1. Turn OFF the system for at least 30 minutes then restart; 2. Clean the inlet water filter. (part #62). 3. Check the water adjustment valve. (part #16) 4. Check the heat exchanger; remove and clean with a cleaning solution.
If any of the above solutions do not resolve the problem with the Water Heater, contact Navien’s Technical department at 1-800-519-8794.		

Error Code Guide:

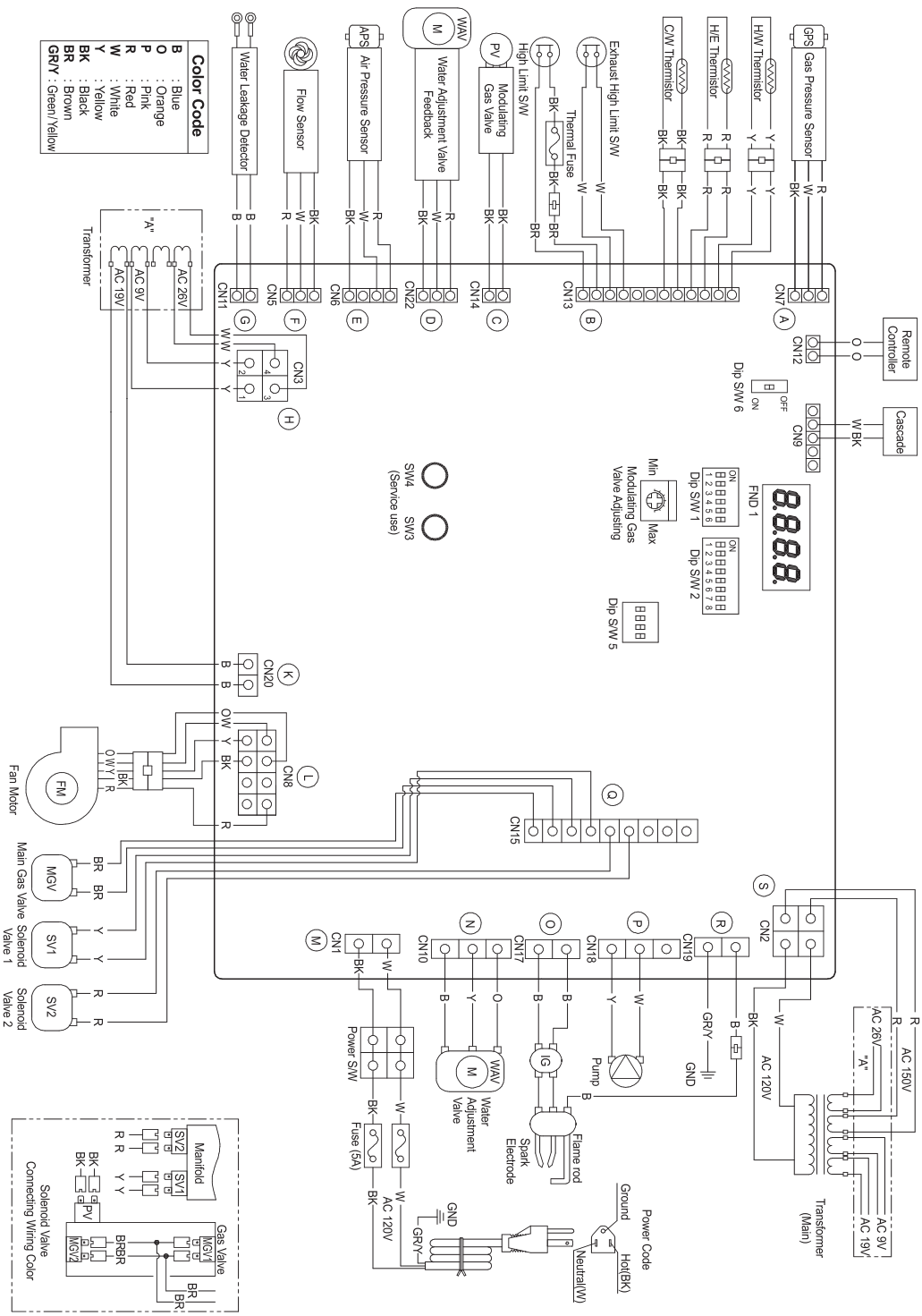
Error Code	Reason	Self-diagnostic / Action
E021	Cold water inlet(Only Non-A) : thermostat open.	1. Check the thermostat. 2. Replace the thermostat.
E022	Cold water inlet(Only Non-A) : thermostat short.	
E027	Abnormal activity of the air pressure sensor	1. Check the exhaust pipe for obstructions. 2. Check and clean the intake air filter (part #10).
E030	Exhaust Overheat: exhaust limit switch shuts down the unit when the flue temperature exceed 149°F (65°C)	1. Turn OFF the system for at least 30 minutes then restart. 2. Clean the inlet water filter. (part #62) 3. Check the water adjustment valve.(part #16) 4. Check the heat exchanger; remove and clean with a cleaning solution.
E032	Cold water inlet : thermostat open.	1. Check the thermostat. 2. Replace the thermostat.
E033	Cold water inlet : thermostat short.	
E034	Abnormal the water adjustment valve.	1. Check the water adjustment valve.
E035	Abnormal activity of the gas pressure sensor	1. Check gas line.
E036	Communication failure	1. Contact to Navien tech. dept.
E037	Water leakage of Inside unit.	1. Close cold water main line. 2. Replace leaking parts.
E038	Abnormal circulation pump.	1. Check the circulation pump. 2. Check the flow sensor. 3. Check the cold water main line.
E039	Abnormal the flow sensor	1. Check the flow sensor.
E041	Hot water outlet : thermostat open.	1. Check the thermostat. 2. Replace the thermostat.
E042	Hot water outlet : thermostat short.	
E043	Abnormal cascade connection.	1. Check Model type.
E044	Abnormal thermostat connection.	1. Check thermostat connection.
E045	Abnormal the bypass mixing valve.	1. Check the bypass mixing valve.
E048	Abnormal LPG gas pressure.	1. Check the LPG Gas. 2. Fill the LPG Gas.

There will be error codes displayed on the remote controller and on the PCB board (within the unit) of any problems or failures that occur with the Water Heater.

NOTE: To reset the Water Heater, either unplug and re-plug the electric supply or if a remote controller is installed, press the power button of the remote controller “OFF” then “ON”.

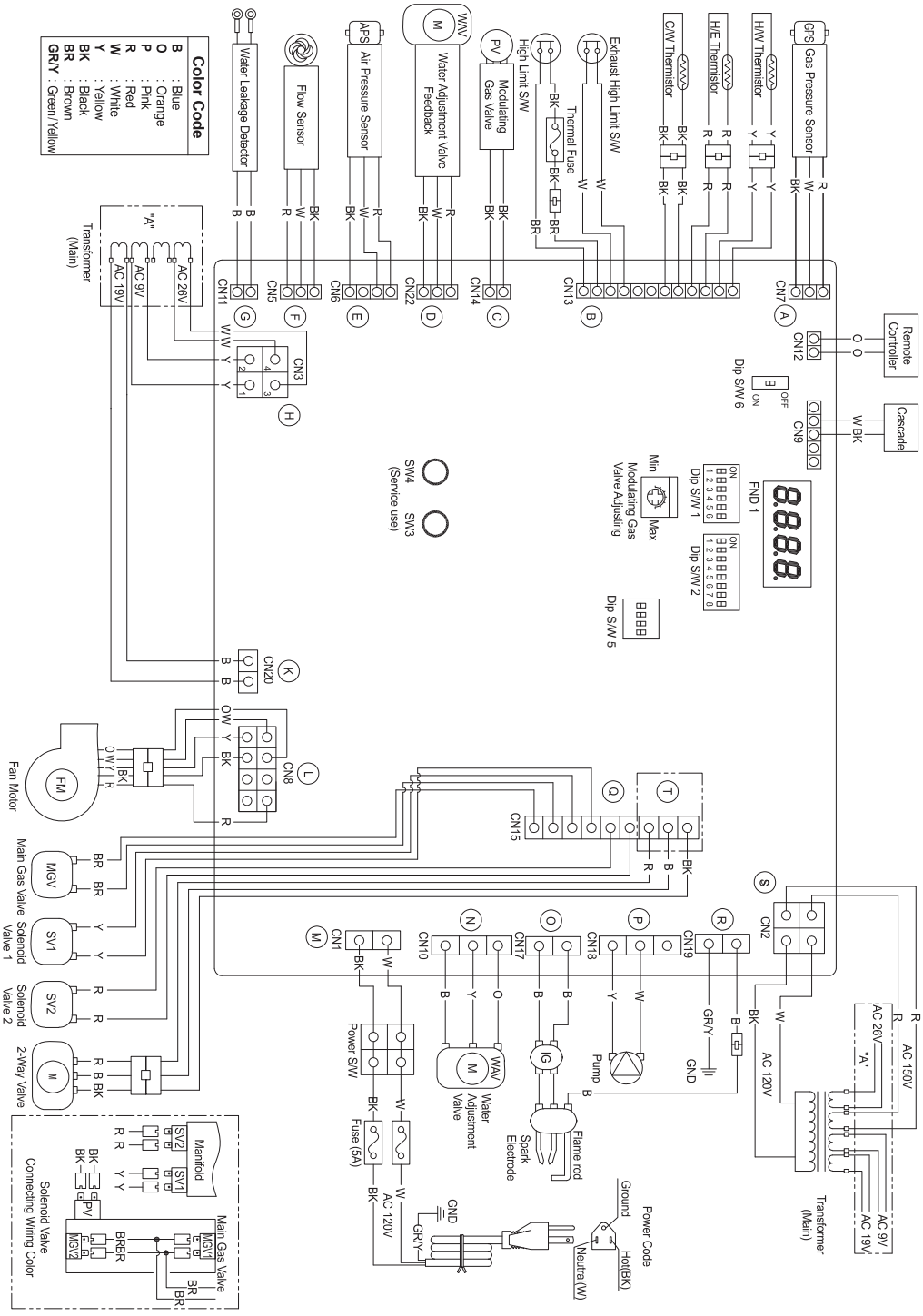
Wiring Diagram Contents:

Wiring Diagram: NR-A



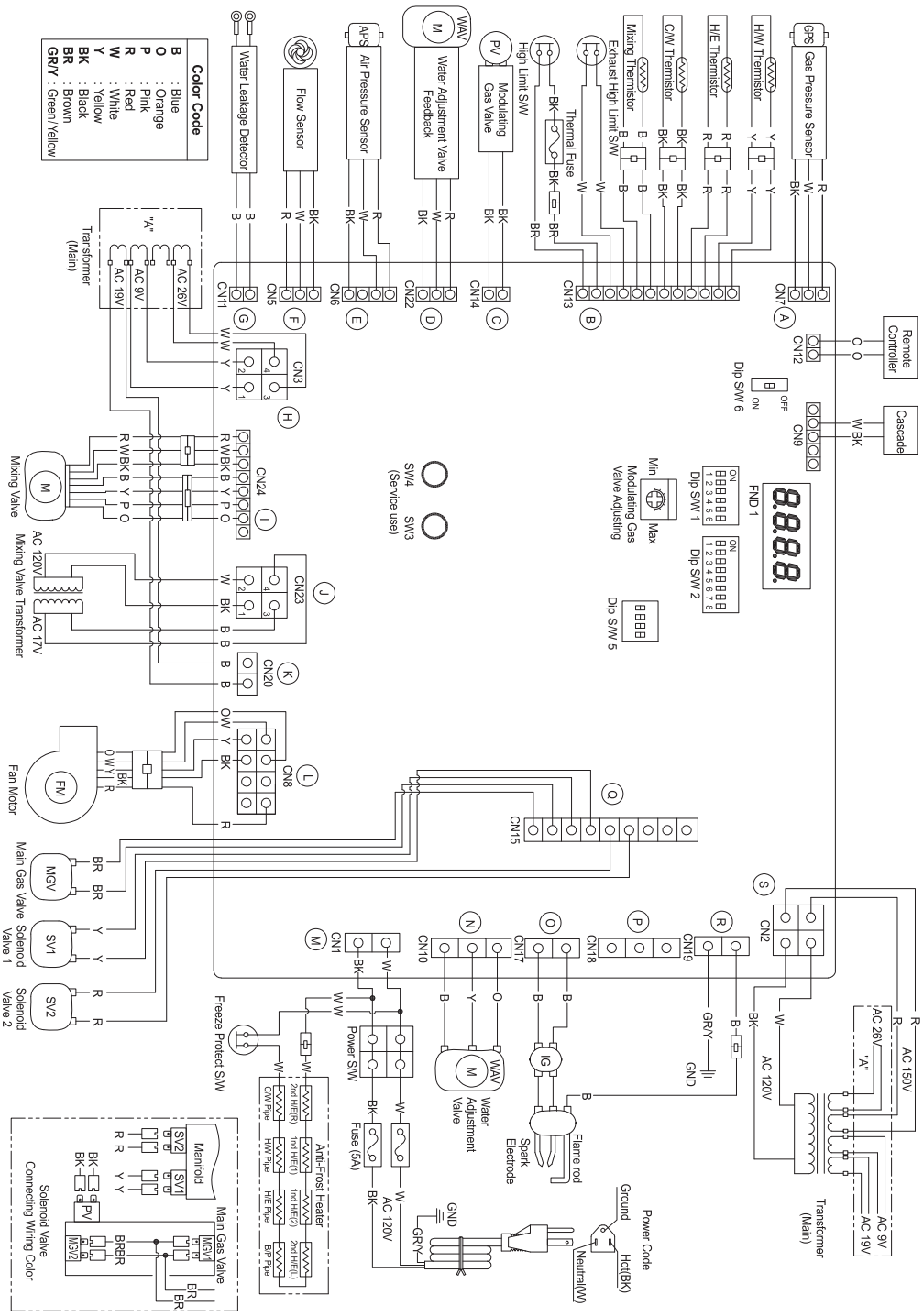
If any of the original wires as supplied with the heater must be replaced, they must be replaced with their equivalent.

Wiring Diagram: NP-A



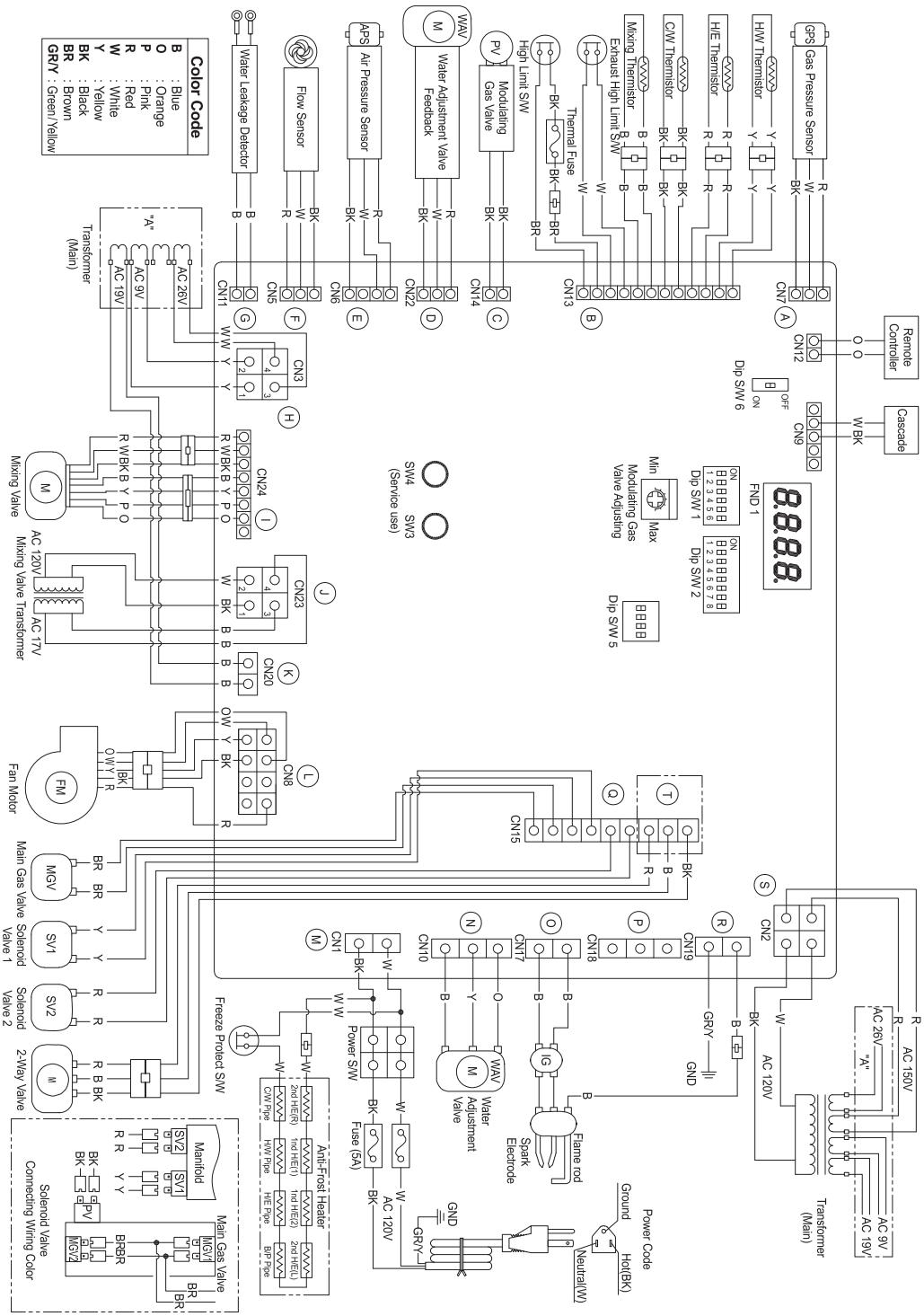
If any of the original wires as supplied with the heater must be replaced, they must be replaced with their equivalent.

Wiring Diagram: NR



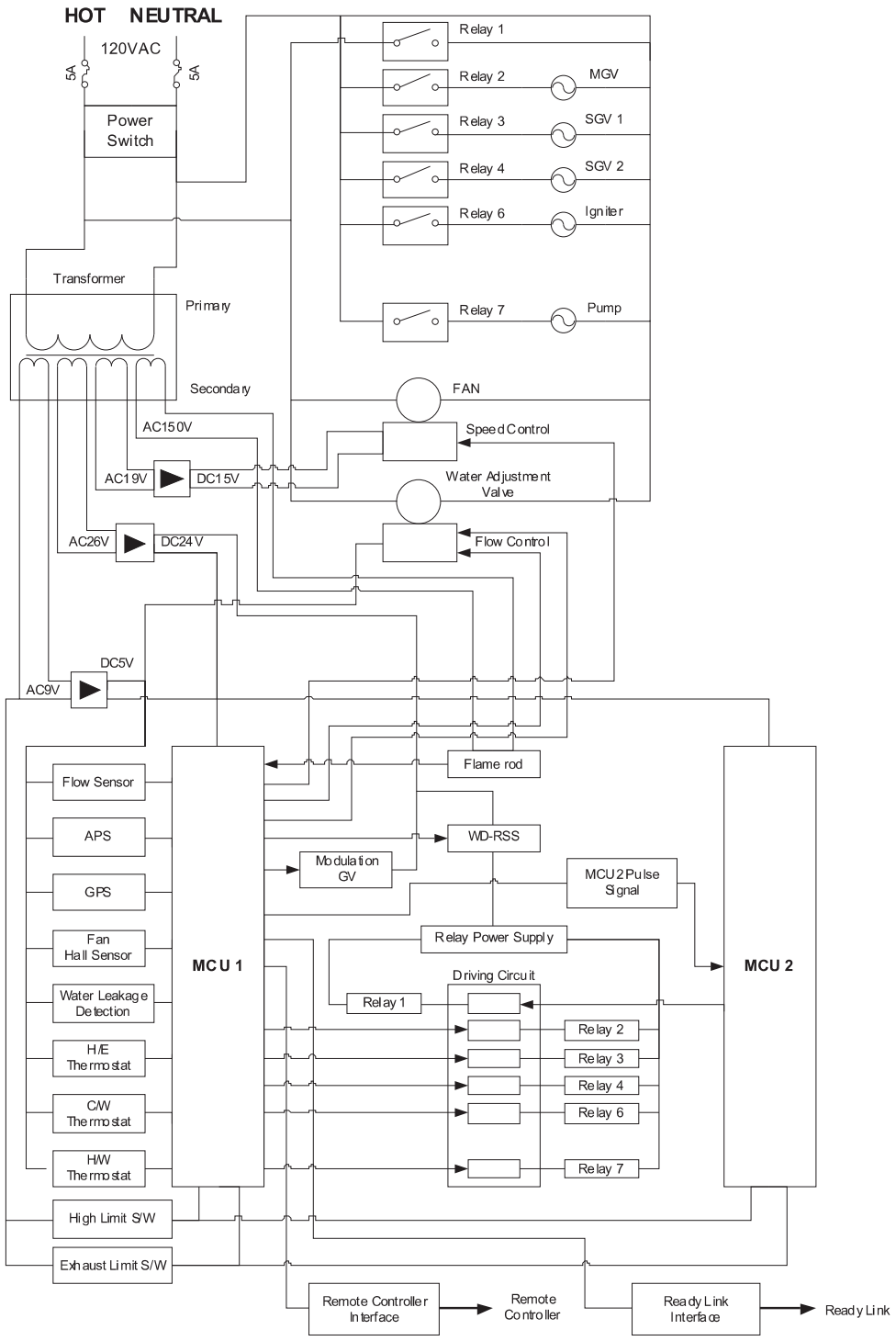
If any of the original wires as supplied with the heater must be replaced, they must be replaced with their equivalent.

Wiring Diagram: NP

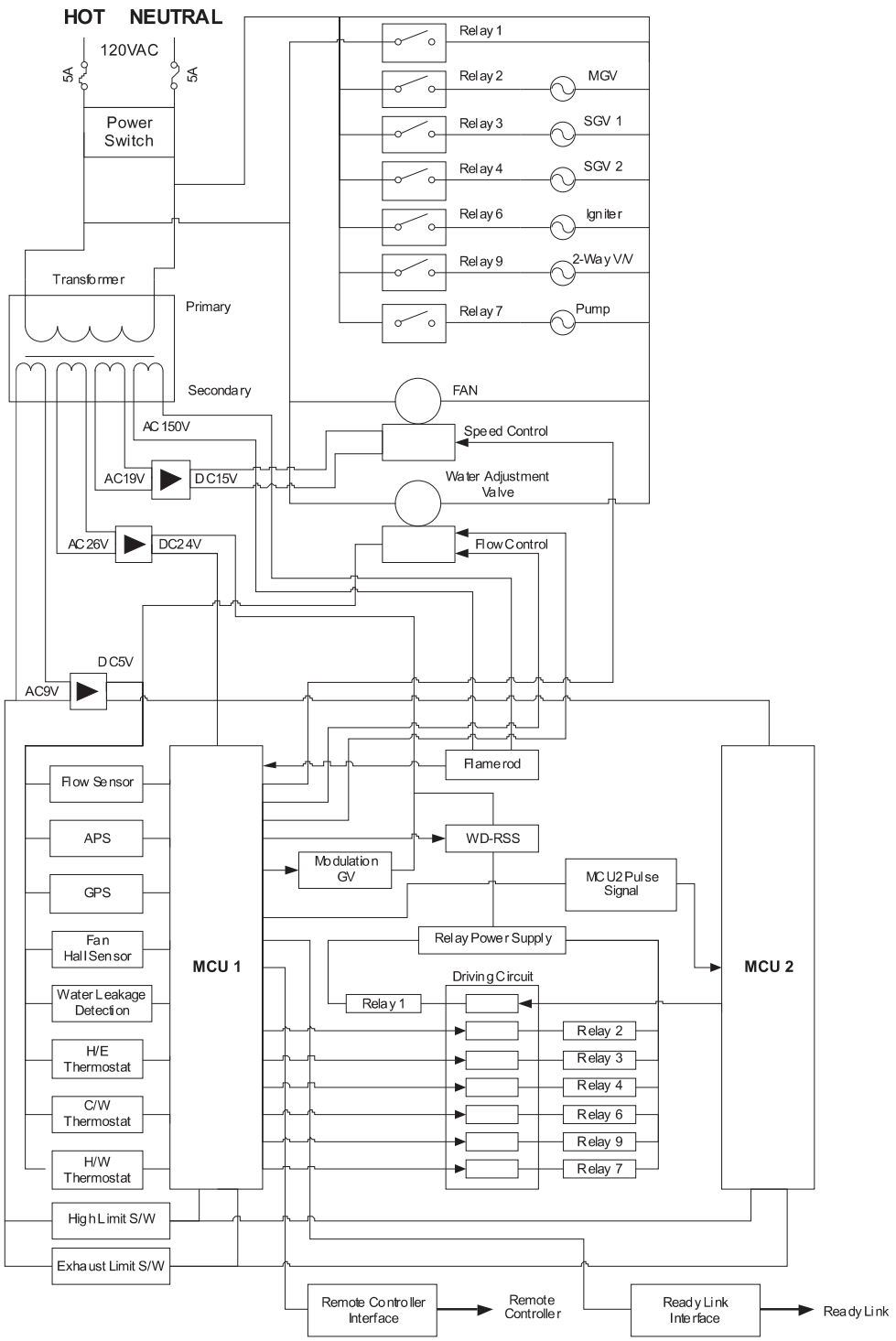


If any of the original wires as supplied with the heater must be replaced, they must be replaced with their equivalent.

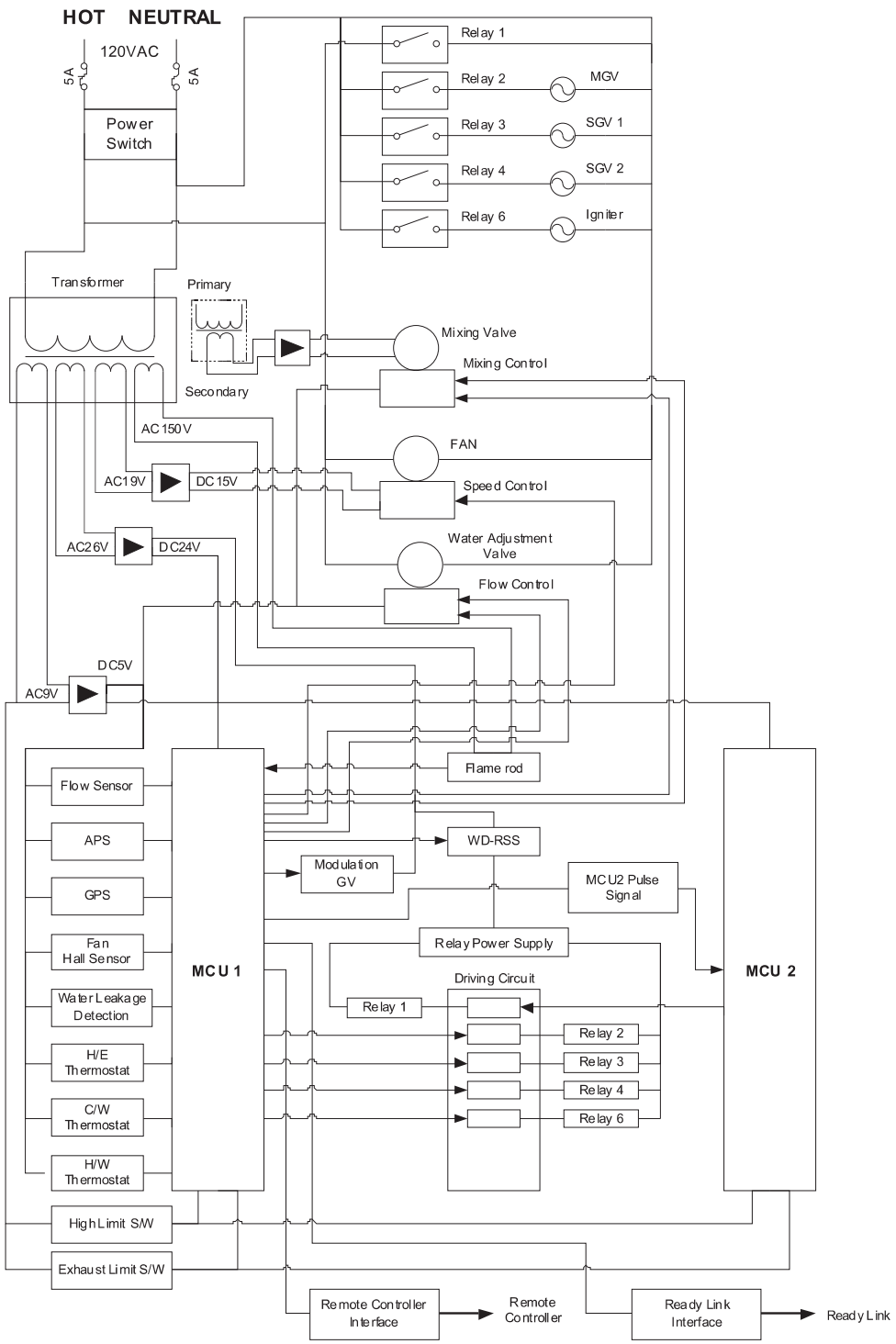
Ladder Diagram: NR-A



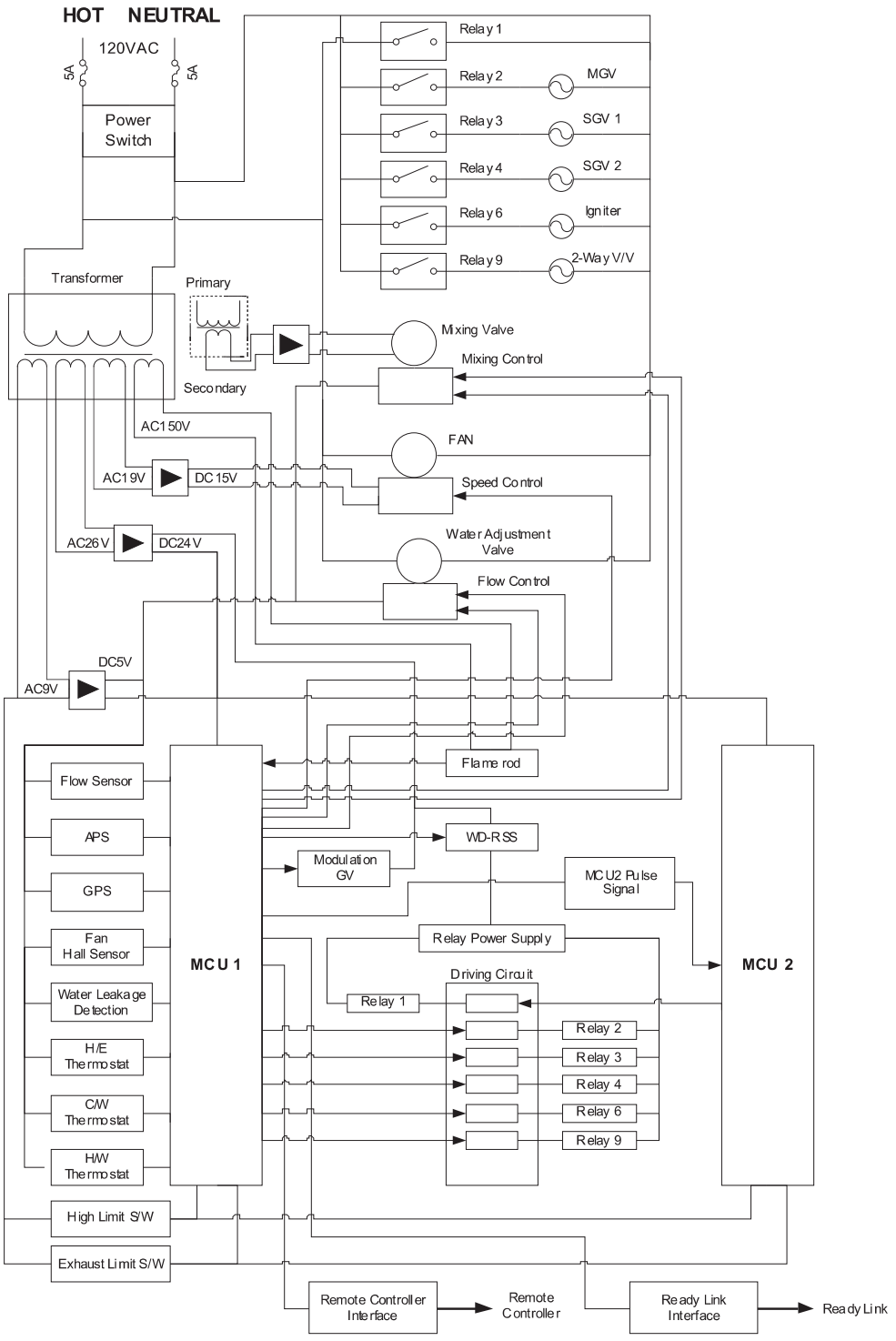
Ladder Diagram: NP-A



Ladder Diagram: NR

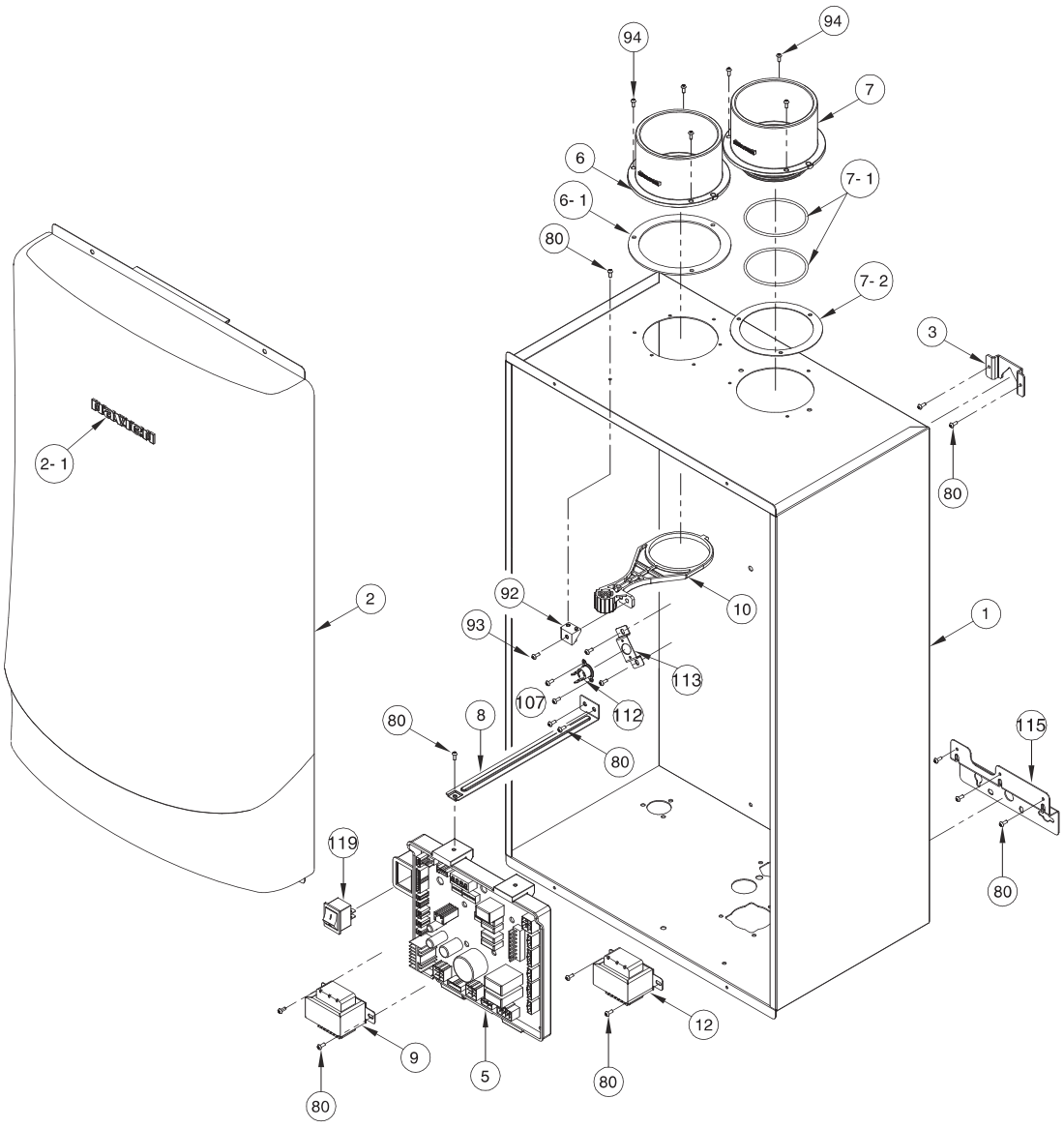


Ladder Diagram: NP



Components Diagram & Parts List contents :

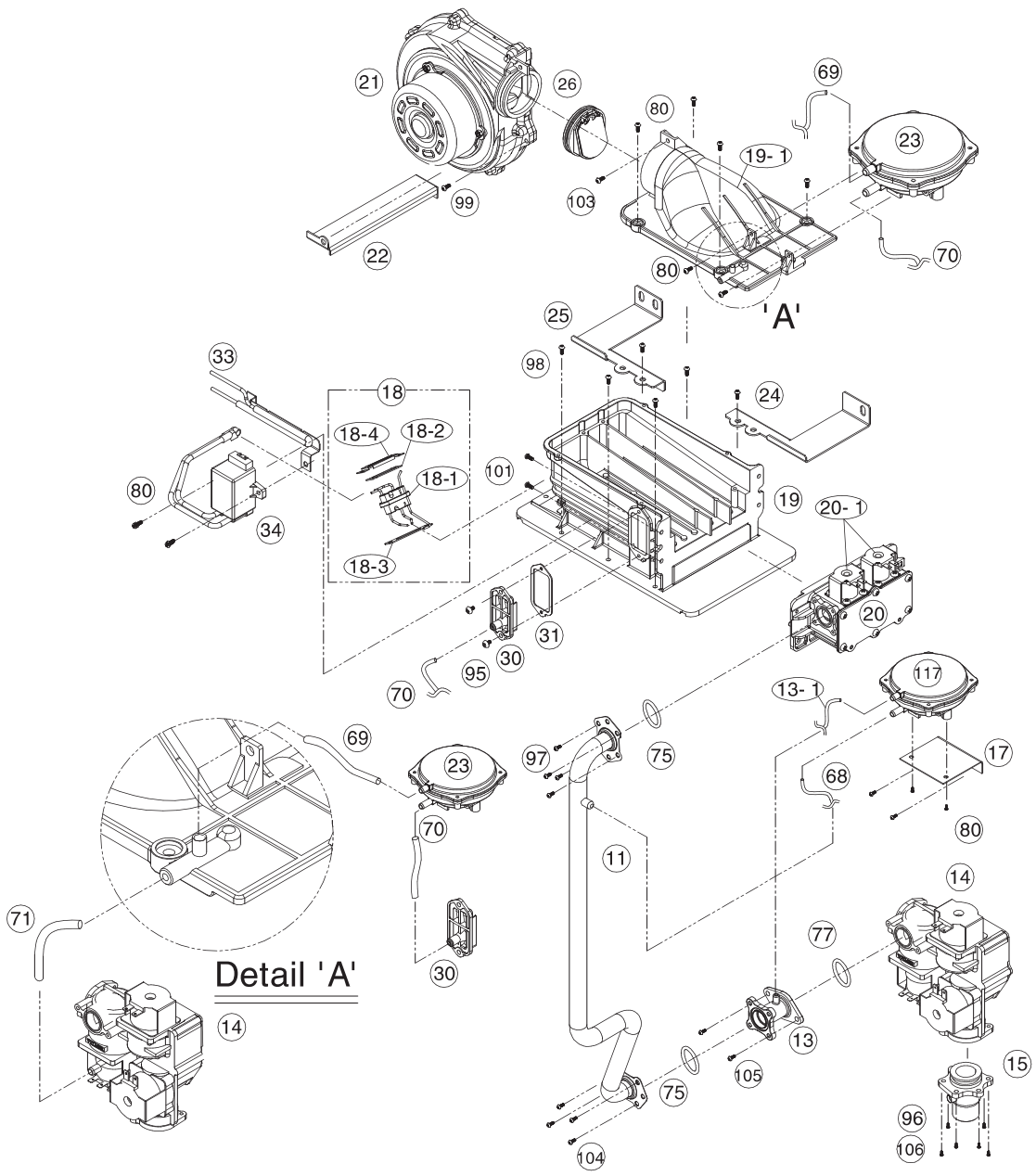
Case Disassemble



Case Part List

NO	Description	Navien Part No.	Remark
1	Case	BBK05011117	180 A
		BBK05011118	210/240 A
		BBK05011137	180
		BBK05011138	210/240 A
2	Cover	BBR15012151	
2-1	Navien Logo	BH2603009A	
3	Case upper bracket	BH2505277A	
115	Case lower bracket	BH2505348A	
5	PCB board	NACR1GS32401	
6	Intake air duct	BH2505400B	
6-1	Intake air duct packing	-	No.6 Ass'y
10	Intake air filter	BH2505416A	
92	Intake air filter support	BH2505417A	
7	Exhaust pipe	BH2505401B	
7-1	Exhaust pipe O-ring	-	No.7 Ass'y
7-2	Exhaust pipe packing	-	No.7 Ass'y
8	PCB board bracket	BH2505306A	180(A)
		BH2505402A	210/240(A)
9	Mixing valve transformer	BH1205013A	Only "Non-A"
12	transformer	BH1205008A	
119	Power switch	BH1426002A	"A" Series
		BH1426003A	"Non-A" Series
80	Screw (D4 x 8)	BH1705007A	
93	Bolt (M4 x 16)	BH1603009A	
94	Screw (D4 x 16)	BH1708004A	
112	Freeze protect switch	BH1402001A	Only "Non-A"
113	Freeze protect S/W bracket	BH2505423A	Only "Non-A"

Burner Disassemble



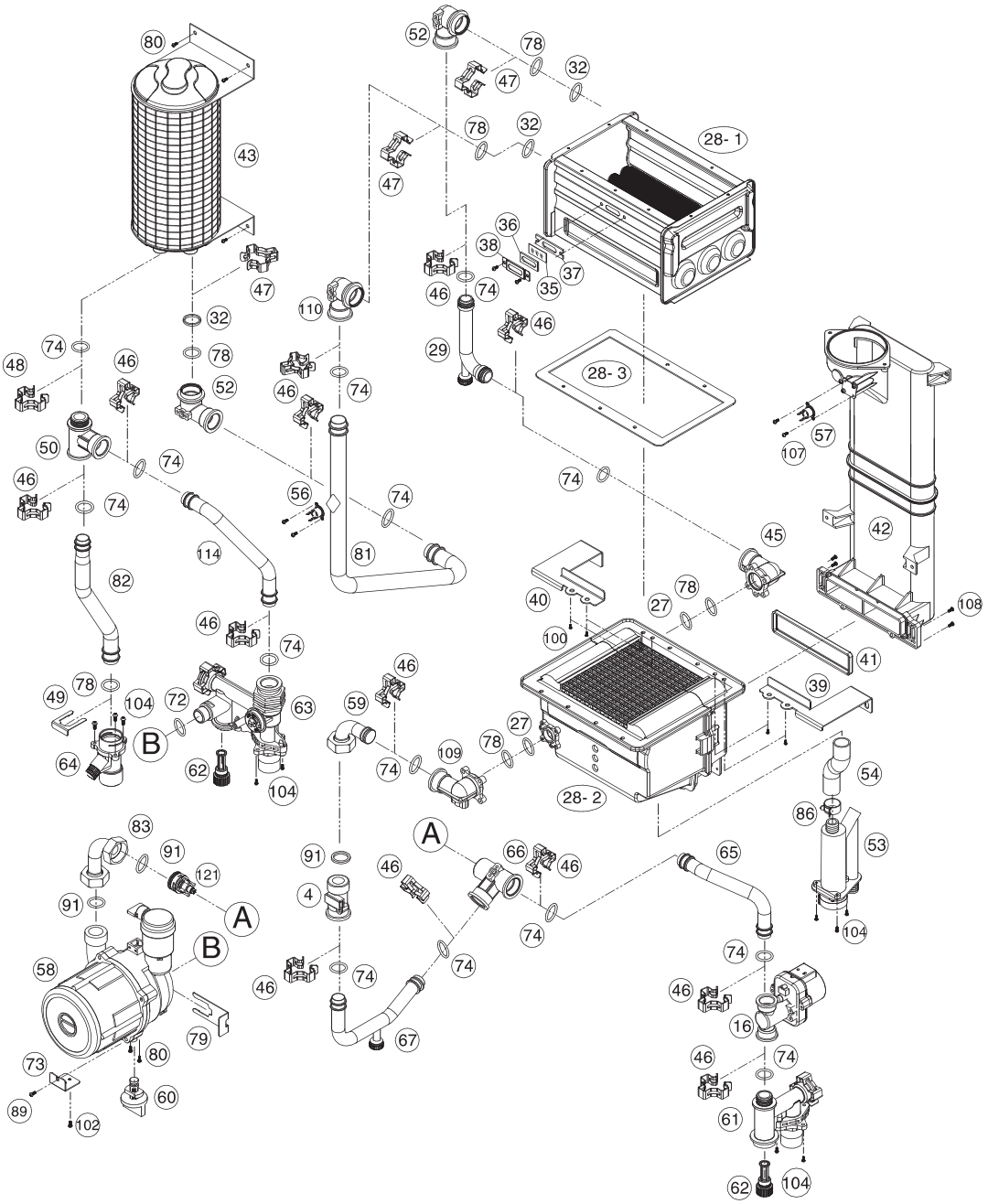
Burner Part List

NO	Description	Navien Part No.	Remark
11	Gas pipe	BH2507510C	210/240 NG
		BH2507509C	180 NG
		BH2507512C	210/240 Propane
		BH2507511C	180 Propane
13	GPS venturi	BH2507359C	180 NG
		BH2507360C	210/240 NG
		BH2507409C	180 Propane
		BH2507422C	210/240 Propane
13-1	GPS venturi tube	BH2203002A	
14	Main gas valve	BH0901018A	
15	Gas inlet adapter	BH2507722A	
117	Gas pressure sensor	NASS9EXGPS01	
17	GPS bracket	BH2507346A	
18	Flame rod ass'y	PH1603058D	NG
		PH1603059D	Propane
18-1	Flame rod	BH2501679A	NG
		BH2501680A	Propane
18-2	Flame rod packing A	BH2505054A	
18-3	Flame rod packing B	BH2405051A	
18-4	Flame rod bracket	BH2505681A	
19	Burner	PABNCN30KDBN_003	180 NG
		PABNCW48KDBN_002	210/240 NG
		PABCR180ABN_002	180 Propane
		PABCR210/240ABN_002	210/240 Propane
19-1	Air flow guide	BH2543002C	180
		BH2543003C	210/240
20	Manifold	PABCR180AMF_001	180 NG
		PABCC210AMF_001	210/240 NG
		PABNR/NP180AMF_001	180 Propane
		PABCC210AMF_002	210/240 Propane
20-1	Solenoid valve	PH0905028A	
21	Fan motor	NAFA9GSFB002	

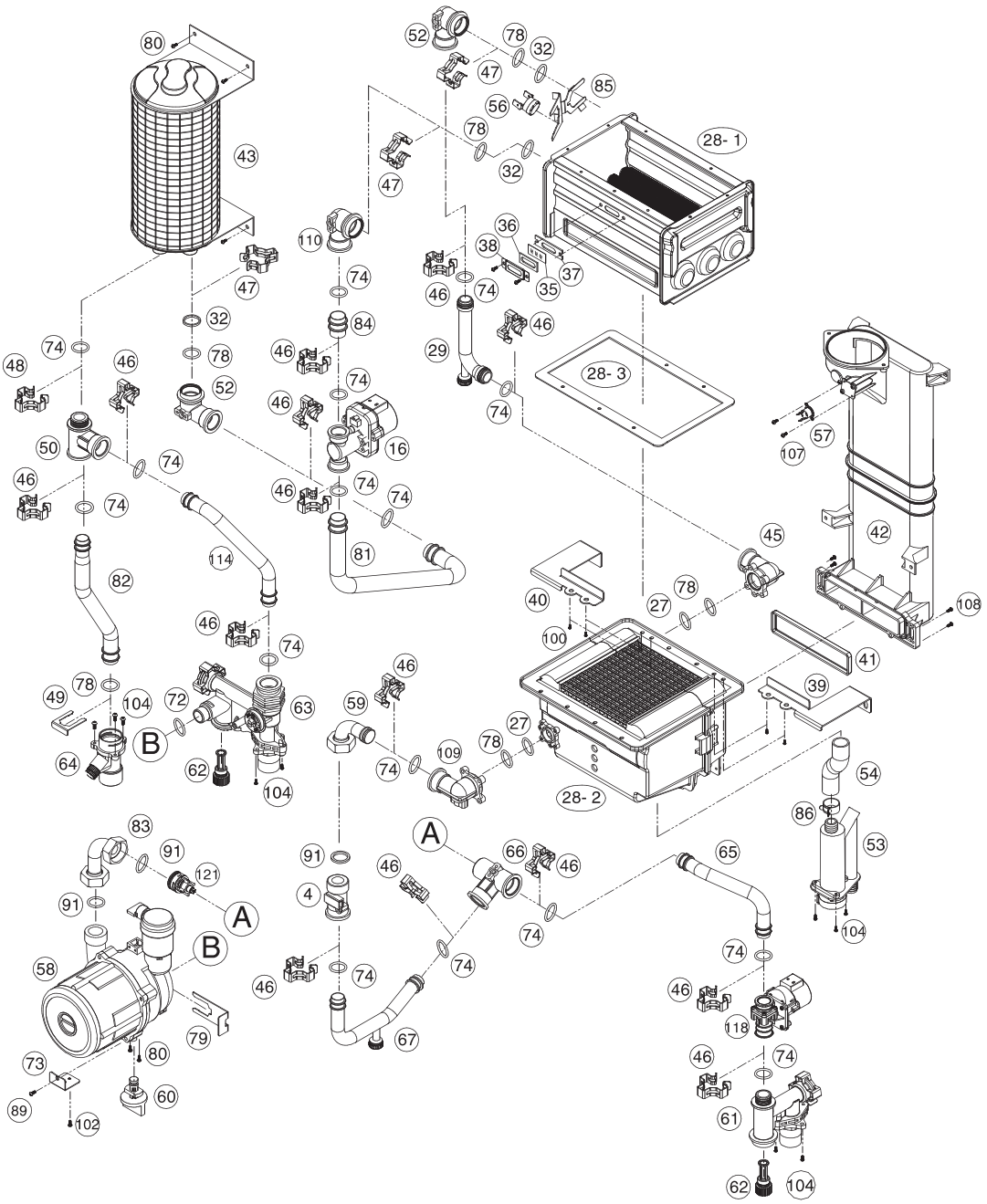
Burner Part List

NO	Description	Navien Part No.	Remark
22	Fan motor bracket	BH2501604A	210/240
		BH2501605A	180
23	Air pressure sensor	NASS9EX00009	
24	Burner bracket R	BH2501443C	
25	Burner bracket L	BH2501444C	
26	Fan motor damper	BH2505403C	
30	APS venturi	BH2501413A	
31	APS venturi packing	BH2405031A	
33	Thermal fuse	BH1419012A	180
		BH1419013A	210/240
34	Ignition transformer	BH1201045A	
68	Tube	BH2203001A	
69	Tube	BH2202023A	180
		BH2202024A	210/240
70	Tube	BH2202022A	180
		BH2202025A	210/240
71	Tube	BH2202036A	180
		BH2202041A	210/240
75	O-ring	BH2421003A	
77	O-ring	BH2421008A	
80	Screw (D4 x 8L)	BH1705007A	
95	Screw (D4 x 10L)	BH1705001A	
96	Bolt (M4 x 12L)	BH1603006A	
97	Screw (D4 x 4L)	BH1710001A	
98	Screw (D4 x 12L)	BH1612005A	
99	Screw (D4 x 25L)	BH1701030A	
101	Screw (D4 x 12L)	BH1708003A	
103	Screw (D4 x 14L, STS)	BH1701031A	
104	Bolt (M4 x 10L, STS)	BH1611006A	
105	Bolt (M4 x 10L)	BH1611005A	
106	Bolt (M4 x 6L)	BH1611001A	

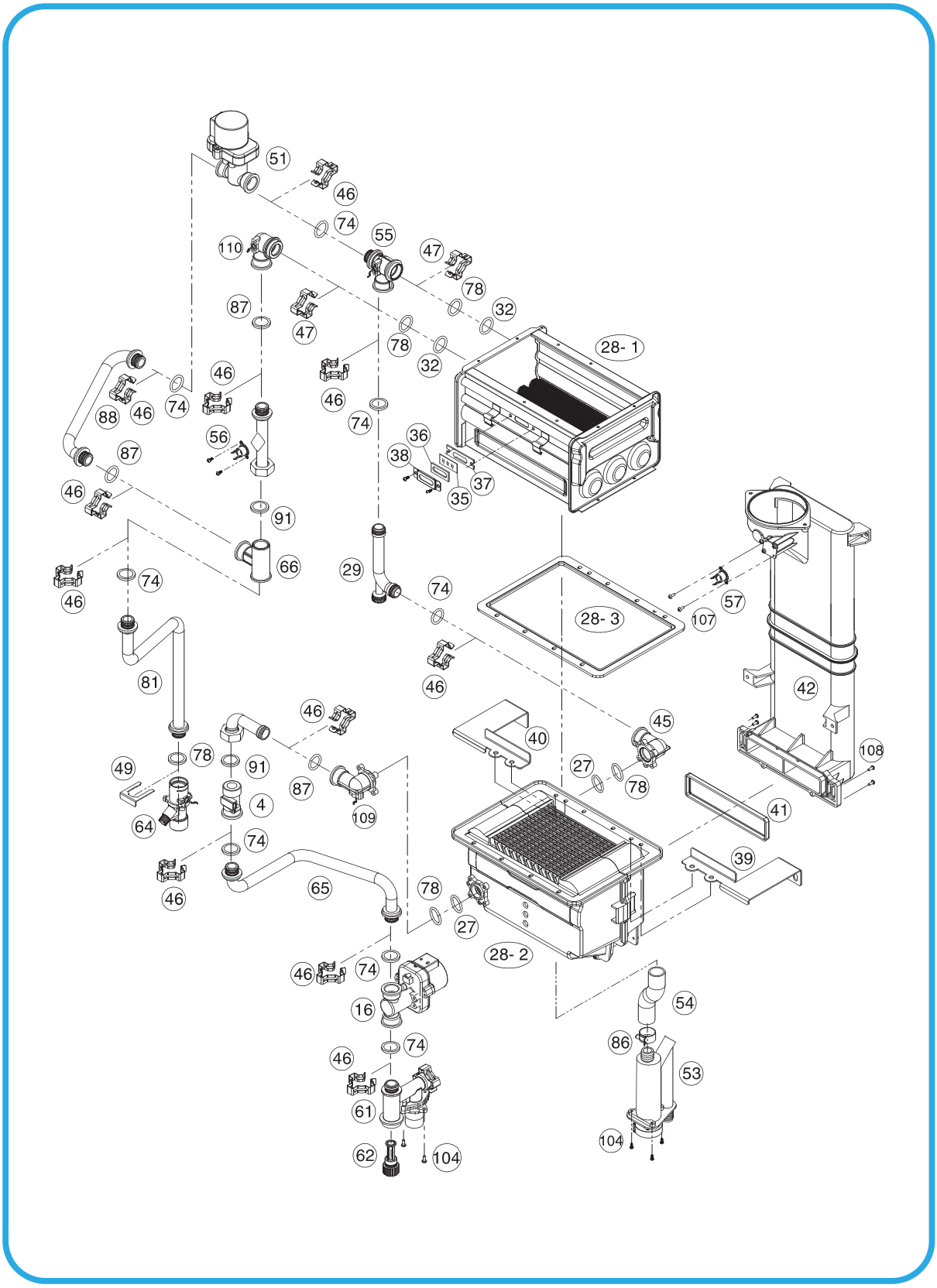
Water Way Disassemble : NR-A



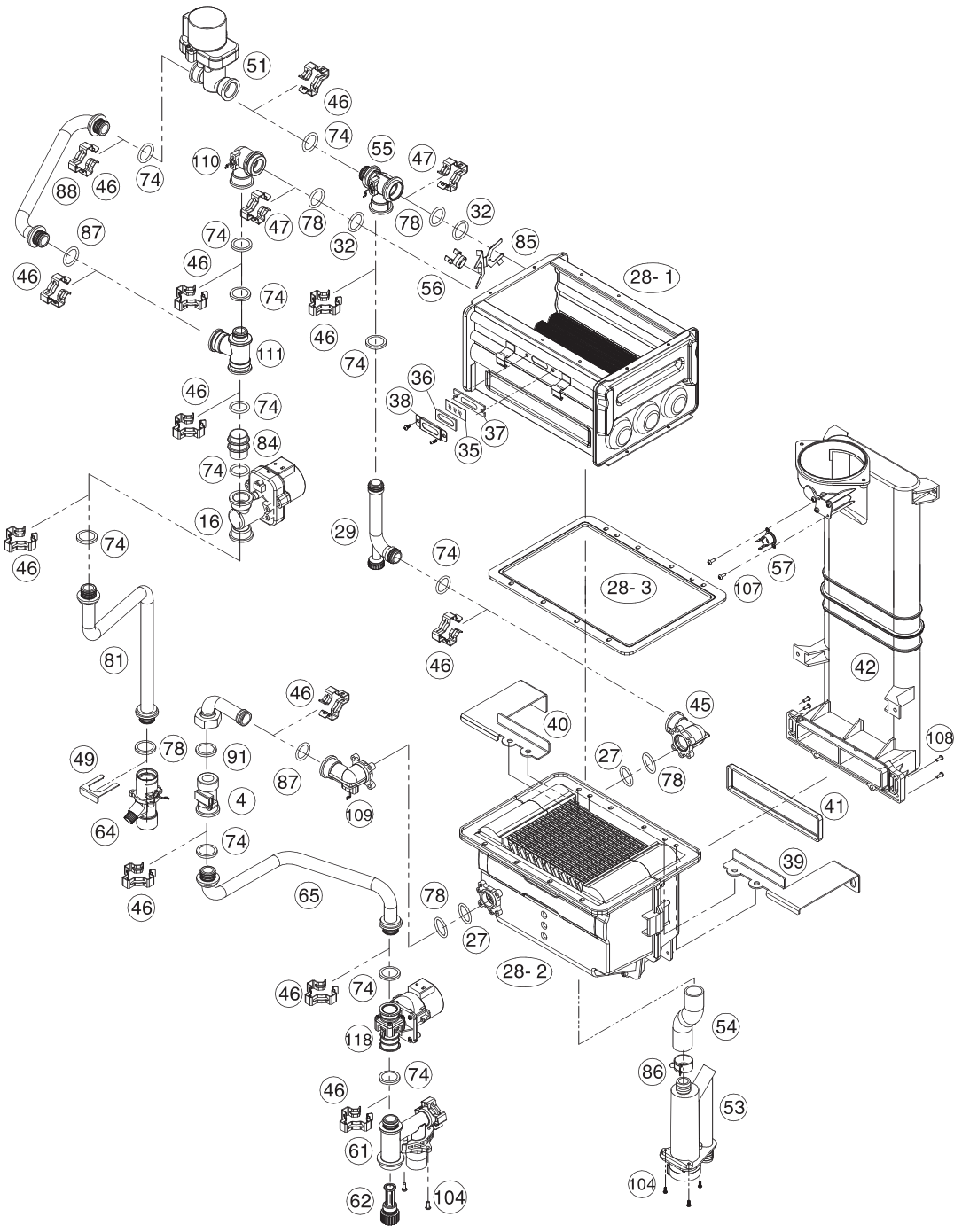
Water Way Disassemble : NP-A



Water Way Disassemble : NR



Water Way Disassemble : NP



Water Way Part List

NO	Description	Navien Part No.	Remark
4	Flow sensor	AASS9EXFS003C	
16	Water adjustment valve	AAVC9EXFC003B	
27	Heat exchanger packing	BH2406048A	
28	Heat exchanger ass'y	BBM20341018	NR-180A
		BBM20341017	NR-210/240A
		BBM20341019	NP-180A
		BBM20341020	NP-210/240A
		BBM20341023	NR-180
		BBM20341024	NR-210/240
		BBM20341025	NP-180
		BBM20341026	NP-210/240
29	Heat exchanger middle pipe	BH2507576D	NR-A, NR
		BH2507617B	NP-A, NP
32	Back-up ring	BH2507308A	
35	H/E inspection glass	BH2501554A	
36	Inspection packing A	BH2405050A	
37	Inspection packing B	BH2405051A	
38	Inspection glass bracket	BH2501572A	
39	H/E bracket R	BH2501704B	
40	H/E bracket L	BH2501703B	
41	Exhaust duct packing	BH2406050A	
42	Exhaust duct	BH2544007D	
43	Buffer tank	PASNCWBFTANK_001	"A" Series
45	Secondary H/E outlet adapter	BH2507532B	
46	Fastener D	BH2507402B	
47	Fastener F	BH2507388B	
48	Fastener A	BH2507400B	
49	Clip C	BH2507345A	
50	Buffer tank adapter	BH2507520E	"A" Series
51	Bypass mixing valve	AAVC9EXMIX01B	"Non-A" Series
52	Primary H/E inlet adapter	BH2501562B	
53	Syphon	BH2501442C	"A" Series
		BH2501452C	"Non-A" Series
54	Syphon hose	BH2204041D	
55	Bypass T adapter	BH2501639B	"Non-A" Series
56	High limit switch	BH1401022A	
57	Exhaust limit switch	BH1401027A	
58	Circulation pump	NAPU9GLPCT33	"A" Series

Water Way Part List

NO	Description	Navien Part No.	Remark
59	Secondary H/E inlet pipe	BH2507527B	NR-A
		BH2507529C	NP-A
		BH2507573B	NR
		BH2507612B	NP
60	Pump drain coke	BH2505269A	“A” Series
61	DHW inlet adapter	AAVC9EX00016B	
62	Inlet water filter	BH1303013A	
63	3-Way valve	AAVC9EX00012B	“A” Series
64	DHW Supply adapter	BH2507348B	“A” Series
		BH2507572A	“Non-A” Series
65	Cold water inlet pipe	BH2507528C	NR-A
		BH2507530C	NP-A
		BH2507574B	NR-180
		BH2507575B	NR-210/240
		BH2507614B	NP-180
		BH2507613B	NP-210/240
66	T-type adapter	BH2507526C	“A” Series
67	Flow sensor inlet adapter	BH2507522B	NR-180A
		BH2507521B	NR-210/240A
		BH2507524B	NP-180A
		BH2507525B	NP-210/240A
72	O-ring	BH2422027A	“A” Series
73	Circulation pump bracket	BH2501445A	“A” Series
74	O-ring	BH2422017A	
78	O-ring	BH2422026A	
79	Circulation pump fastener	BH2507475A	“A” Series
80	Screw D4 x 8L	BH1705007A	
81	DHW Outlet pipe	BH2507513C	NR-180A
		BH2507514C	NR-210/240A
		BH2507516C	NP-180A
		BH2507517C	NP-210/240A
		BH2507569B	NR-180
		BH2507570B	NR-210/240
		BH2507610B	NP-180
		BH2507611B	NP-210/240
82	Buffer tank outlet pipe	BH2507515B	NR-A
		BH2507518C	NP-A

Water Way Part List

NO	Description	Navien Part No.	Remark
83	Circulation pump outlet pipe	BH2507532A	NR-A
		BH2507533A	NP-A
84	DHW Outlet pipe C	BH2507519C	NR, NP-A
85	H-type clip	BH2501541A	NR, NP-A
86	Syphon hose clip	BH2507310A	
87	O-ring	BH2422025A	
88	Bypass pipe	BH2507577B	NR-180
		BH2507578B	NR-210/240
		BH2507615B	NP-180
		BH2507616B	NP-210/240
89	Bolt M4 x 8L	BH1603015A	
90	Check valve	BH0913004D	“A” Series
91	Packing ring (3/4")	BH2422036A	
100	Bolt M4 x 12L (STS)	BH1612007A	
102	Screw D4 x 6L	BH1705006A	
104	Bolt D4 x 10L (STS)	BH1611006A	
107	Bolt M3 x 5L	BH1603002A	
108	Bolt M4 x 14L (STS)	BH1612008A	
109	Water pipe adapter (A, Screw)	BH2507507C	
110	Water pipe adapter (A, Clip)	BH2507508B	
111	T-type adapter (clip)	BH2507474D	NP
112	Freeze protect switch	BH1402001A	“Non-A” Series
113	Freeze protect S/W bracket	BH2505423A	“Non-A” Series
114	3-Way valve inlet pipe	BH2507536C	NR-A
		BH2507537C	NP-A
118	Motorized 2-way valve	AAVC9EX00014A	NP, NP-A

Memo

Memo

Memo

Memo

Service

GENERAL TROUBLESHOOTING
PROBLEM POSSIBLE SOLUTIONS

It takes a long time to get hot water to the fixtures.

- Circulation pump is in freeze protection mode. Circulation pump needs to change hot water circulation mode.

The water is not hot enough.

- Check ground water temperature first and system setting temperature.
- Check cross plumbing between cold water lines and hot water lines.

How Shut off main cold water supply valve to the water heater, which means no water supply to the water heater. Open any hot water faucet. If cold water comes from hot side faucet, there is cross hot and cold water lines somewhere in facility.

- Is the gas supply valve fully open?
- Is the gas line sized properly?
- Is the gas supply pressure enough?
- Is the set temperature too low?

The water is too hot.

- Is the set temperature set too high?

The hot water is not available when a fixture is opened.

- Make sure the unit gets 120V 60Hz power supply?
- Is the gas supply valve fully open?
- Is the water supply valve fully open?
- Is the filter on cold water inlet clean?
- Is the hot water fixture sufficiently open to draw at least 0.5GPM through the water heater?
- Is the unit frozen?
- Is there enough LPG gas in the tank?

The Hot water turns cold and stays cold.

- Is the flow rate enough to keep the Water Heater running?
- If there is a recirculation system installed, does the recirculation line have right check valves?
- Is the gas supply valve fully open?
- Is the filter on cold water inlet clean?
- Are the fixtures clean of debris and obstructions?
- Check cross plumbing between cold water lines and hot water lines.

Hot water temperature fluctuating.

- Check incoming cold water pressure whether it is too low. (needs Min. 15PSI)
- Is the filter on cold water inlet clean?
- Is the gas line sized properly?
- Is the supply gas pressure enough?
- Check for cross connection between cold water lines and hot water lines.

Service

- Should you have any questions about this Navien Water Heater or if your Water Heater requires adjustment, repair or routine maintenance, it is suggested that you first contact the original installer. In the event the firm is unavailable, please refer to the contractor locator section of the Navien website (www.navienamerica.com) or contact to the Navien America Inc. Service Department :

Navien America Inc
20 Goodyear Irvine,
CA 92618
Tel : 949 420 0420, Fax : 949 420 0430

- When Contacting the manufacturer, please have the following information ready :
  ① Model and serial number of the Water Heater as shown on the rating plate (located on the left side of unit).
  ② Address where the Water Heater is physically located.
  ③ Name and address of original installer and any service agency who has performed service on the Water Heater.
  ④ Date of original installation and dates of any service work was performed.
  ⑤ Details of the problem as best as you can describe them.
  ⑥ List of people, with dates, who have been contacted regarding your problem.

Condensing

NAVIEN

Navigating Energy and Environment

Navien Gas Water Heater

KD NAVIEN

Navien America Inc.
20 Goodyear Irvine, CA 92618
Tel: 949 420 0420, Fax : 949 420 0430, Toll Free: 1-800-519-8794
www.NavienAmerica.com

Version : 2.00(Sep 19. 2011)