

NaviCirc™

Installation and Operation Manual



Certified to
NSF / ANSI 372

COMPONENT



Note

This device is designed and optimized for use only on Navien NPE-A water heaters.



WARNING

All Installations should be done only by a qualified expert and in accordance with the appropriate Navien manual. Improper installation of this device may result in serious injury or property damage.

When Installing the NaviCirc:

- Read these instructions carefully. Failure to comply could damage the NaviCirc or cause a hazardous condition.
- Check the ratings provided in the instructions and on the product to make sure the product is suitable for the application.
- Installers must be trained, experienced, and licensed service technicians.
- Follow local codes for installation and application requirements.

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After the installation is complete, verify proper operation of the NaviCirc by following the instructions provided in this manual.

1. About the NaviCirc

NaviCirc is a circulation device for standard domestic hot water lines without a recirculation system. It allows domestic hot water lines and domestic cold water lines to connect to the NaviCirc and pre-heat hot water lines by circulating hot and cold water through the NaviCirc. This prevents hot water loss and heating time loss.

To prevent too much hot water from flowing into the cold water line, the NaviCirc includes a feature that automatically blocks circulation when reaching a temperature of approximately 95°F (35°C).

1.1 Included Items

A detailed illustration of the NaviCirc recirculation valve, a cylindrical metal device with four ports and a central handle.	An illustration of the product's manual, showing the cover with the NaviCirc logo and some text.
<p>NaviCirc (Recirculation Valve)</p>	<p>Installation and Operation Manual</p>
An illustration of three screws with long anchors, used for mounting the device.	An illustration of two flexible hoses with fittings, and two additional fittings.
<p>Anchors and Screws</p>	<p>Flexible Hoses (with kit only)</p>

1.2 Specifications

Refer to the following table for product specifications.

Items	Specifications
Product name	NaviCirc
Part number	PFFW-SXX-001
Water flow rate range	0.53 - 1.06 GPM (2.0 - 4.0 LPM)
Crossover shutoff temperature	95°F (35°C)
Water temperature range	41°F to 180°F (5°C to 82°C)
Ambient temperature range	32 - 122°F (0 - 50°C) (Indoor use only)
Storage temperature range	23 - 122°F (-10 - 50°C)
Max water pressure	150 psi
Installation operation	Horizontal
Dimensions (in)	5.62 x 3.93 x 2.19
Weight (lb)	1.10 lb (0.5 kg)

1.3 Compatible Products & Pump Requirements

The NaviCirc is most compatible with Navien NPE-A Series water heaters.

NPE-A models may utilize the built-in pump along with the appropriate piping to create a hot water recirculation loop. If the NaviCirc is used on a non-Navien appliance, consult the manufacturer for compatibility and size the pump with the following head requirements:

Pump MAX head approx. 15 ft (4.6 m) – 23 ft (7 m)

Note

Navien does not guarantee the performance of the NaviCirc when used on a non-Navien appliance.

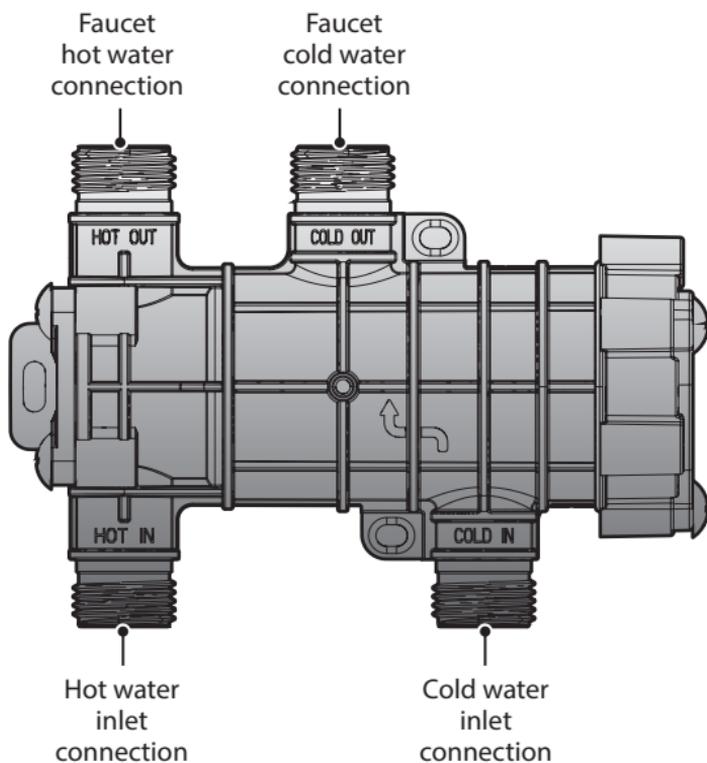


CAUTION

If the selected external pump does not meet the recommended specifications provided in this manual, the NaviCirc may not operate properly.

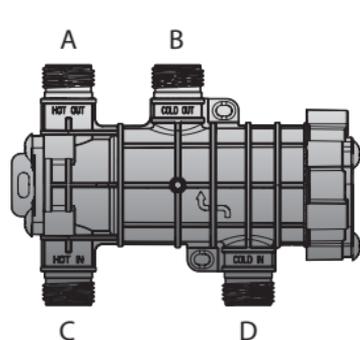
1.4 Configuration

Refer to the following diagram for the NaviCirc layout.

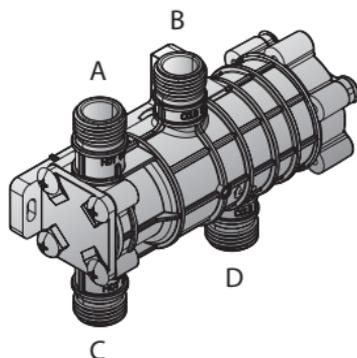


1.5 Supply Connections

Refer to the following table for the NaviCirc supply connection specifications.



Front view



Side view

	List	Connection
A	Hot water outlet	½" NPS
B	Cold water outlet	½" NPS
C	Hot water inlet	½" NPS
D	Cold water inlet	½" NPS
Dimension (in)		5.62 x 3.93 x 2.19

Supply Connections

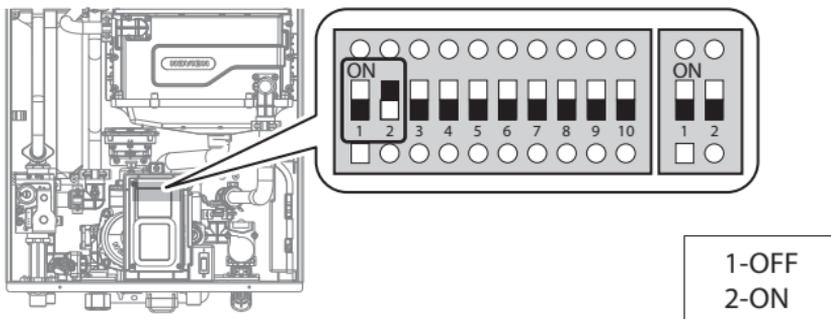
2. Application System

2.1 NPE-A System

2.1.1 Application Guidelines

See the installation guidelines below for additional instructions.

1. Locate the 10-switch set of dipswitches on the front panel and verify that **DIP SW2** is **ON** for **EXTERNAL** recirculation.



2. On the front panel, press the Power button to turn off the water heater.
3. Enter the R&D information menu by pressing the Up [+] button three times, the Down [-] button three times, and then the Up [+] button four more times.

Note

Maximum recirculation pipe lengths:

- 100 feet (30 m) equivalent length of ½" copper pipe
- 400 feet (120 m) equivalent length of ¾" copper pipe

4. In the R&D information menu, use the Up [+] or Down [-] button to move to 2.PAR (Parameter information mode), and then press the Information button.

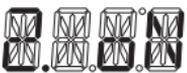
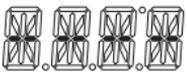
No.	Mode	Display
1	Technical information	
2	Parameter information	

5. Use the Up [+] and Down [-] buttons to enter Parameter #17 (P.17 – Enable Thermal Bypass Valve).

Item	Name	Description	Display
P17	Enabler thermal bypass valve	Set thermal bypass valve operation	

(Required Adjustments to the Available Parameters)

6. Use the Up [+] or Down [-] button to move to adjust the parameter option to 2. ON.

Range	Description	Display
1.OFF	Thermal bypass valve is disabled.	
2. ON	Thermal bypass valve is enabled.	
Null	Setting for S-type models, Panel DIP3 ON, Cascade ON, or AHU is enabled.	

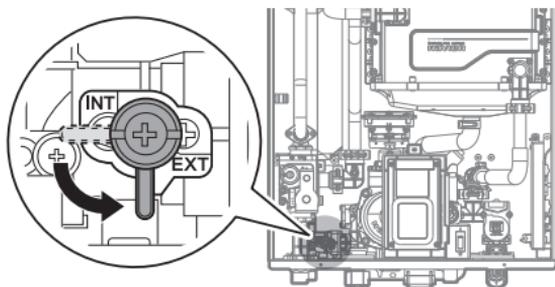
Note

- Additional parameters are available to adjust unit operation for various plumbing systems. Refer to the NPE Installation & Operation Manual for more information on these parameters.

Items	Description
Pump Cycle Interval Time (P.12)	<p>Sets the maximum time that the internal circulator will operate once a recirculation cycle has been initiated.</p> <ul style="list-style-type: none"> Setting range: 1 to 120 (in 1-minute increments) Default: 20 min <p>Note</p> <p>When the optional HotButton accessory is installed, the maximum setting value is limited to 5 minutes.</p>

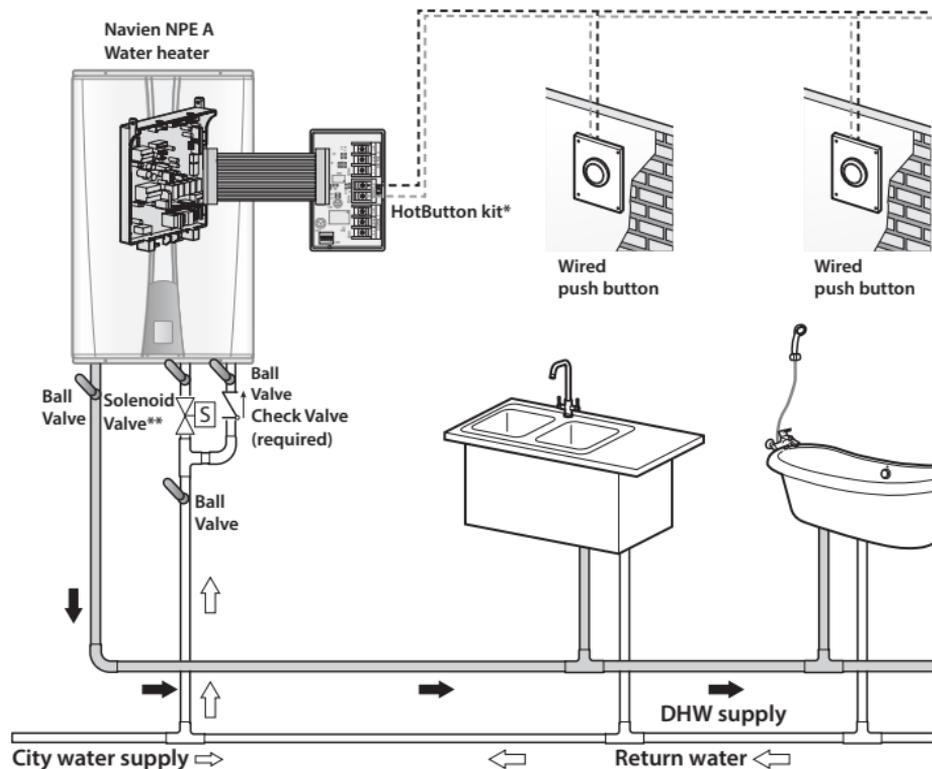
Items	Description
Return Line Sampling Time (P.14)	<p>Sets the length of time that the circulator will operate periodically in order to check the temperature of the recirculation return line and see if it needs to be re-heated.</p> <ul style="list-style-type: none">• Setting range: 1 to 120 (in 1-minute increments)• Default: 30 min

- Set the 2-way valve inside the water heater to "EXT."



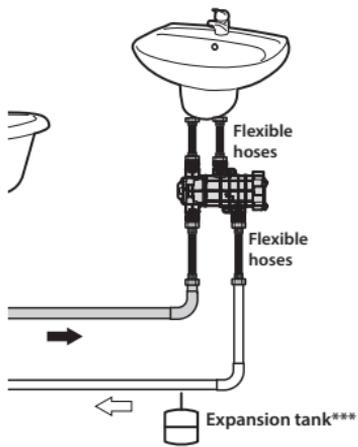
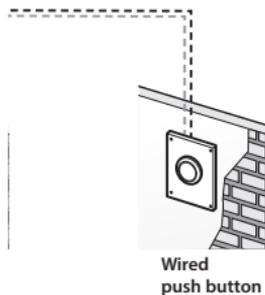
2.1.2 NPE-A System Diagram

Follow the instructions to install the NaviCirc to the wall.



Install the recirculation valve to the faucet furthest from the water heater.

If installed in close proximity to the water heater, faucets further away from the water heater will take longer to receive hot water.



Note

A branch from the cold water line must be connected to the RECIRCULATION RETURN water connection located on the water heater. Additionally, the end user might experience lukewarm water when first opening the cold water tap.

Maximum recirculation pipe lengths:

- 100 feet (30 m) equivalent length of ½" copper pipe
- 400 feet (120 m) equivalent length of ¾" copper pipe

* The HotButton kit is sold separately.

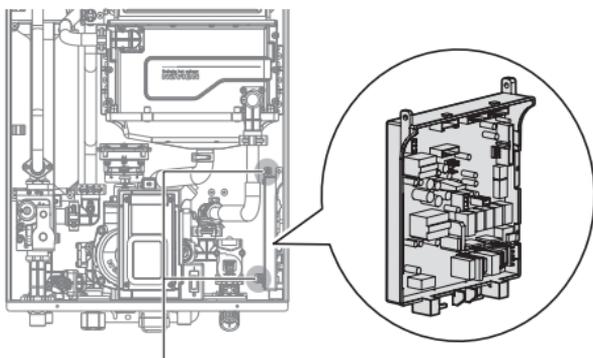
** Solenoid valve not required under most conditions. Temperature fluctuations may occur during high system flow rates.

*** Expansion tank only required if a check valve is installed on the cold water supply line or if required by local codes.

Installing the Solenoid Valve (optional)

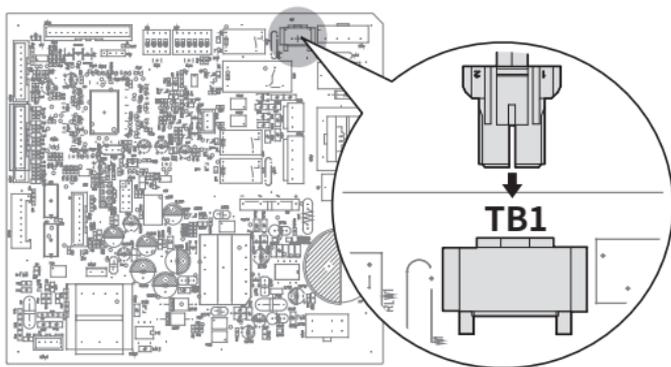
A Navien external pump wire (#GXXX001319) is needed to complete the solenoid valve installation. See the installation guidelines below.

1. Make sure that the system power is off before proceeding with the installation of the wiring.
2. Remove the front cover from the unit and remove the PCB by removing the 2 attaching screws from the housing.
3. Use a 120 VAC (max 1.5 A) normally closed solenoid valve for this application (a slow closing solenoid is recommended to prevent water hammer).
4. Connect the external pump wire to the proper wires from the solenoid valve.
5. Remove the 2 screws holding the PCB box in place and remove the PCB box from the system.

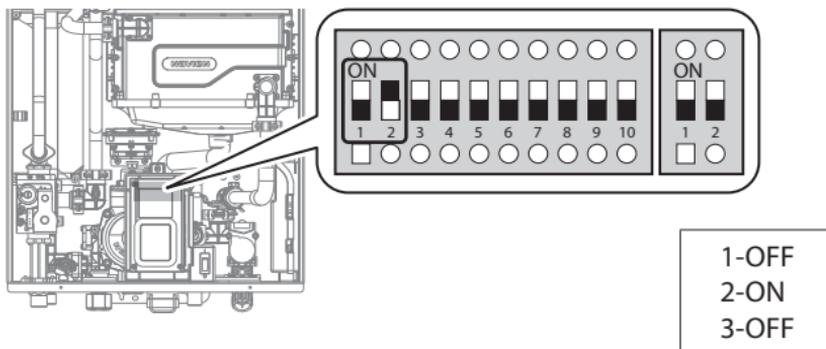


Remove Screws here.

6. Locate the TB1 connection on the PCB and attach the external pump wire and solenoid valve assembly to this connector.

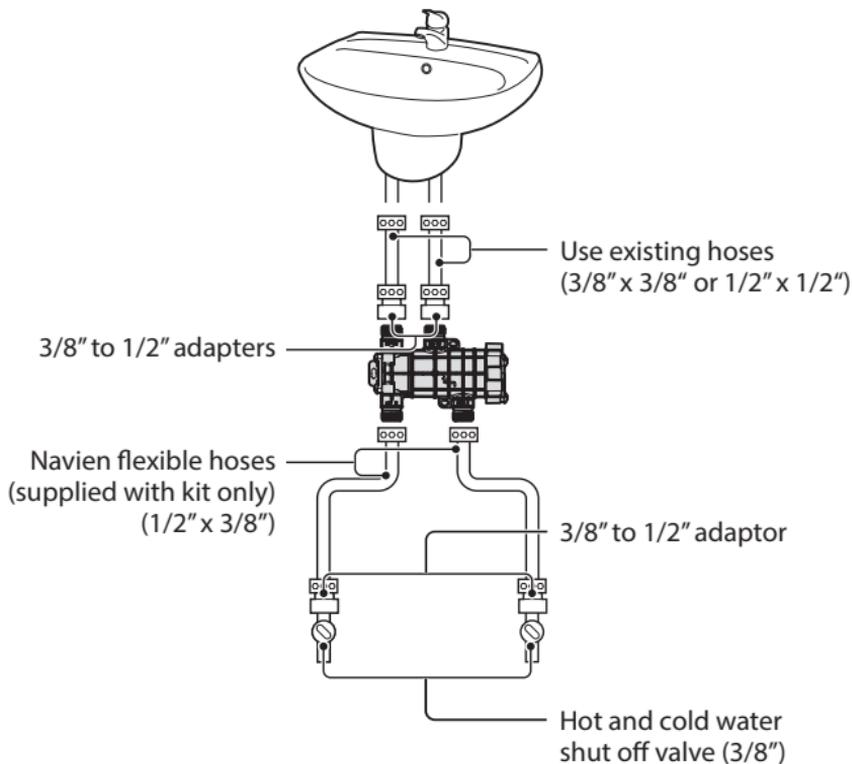


7. Locate the 10-switch set of dipswitches on the front panel and verify that **DIP SW2** is **ON** for **EXTERNAL** recirculation.



2.2 Installing the NaviCirc

Follow the instructions to install the NaviCirc to desired faucet location.



2.2.1 Installing the NaviCirc

1. Make sure that the install location is near the faucet furthest from the water heater.
2. Close the hot and cold water inlet shutoff valves.
3. Open both the hot and cold water faucets.



WARNING

Ensure that the hot and cold water faucets are open. Operating the device without opening them will build water pressure and may result in injury or death.

4. Disconnect the $\frac{3}{8}$ " (or $\frac{1}{2}$ ") hose that was originally connected to faucet.
5. Secure the NaviCirc below the faucet in the desired location.
6. Connect the $\frac{3}{8}$ " to $\frac{1}{2}$ " adaptor to the NaviCirc **HOT OUT** and **COLD OUT** (or the hot and cold shutoff valves depending on the shutoff valve hose size) connections.
7. Connect the end of the existing $\frac{3}{8}$ " (or $\frac{1}{2}$ ") hot and cold water hoses connected to the faucet to the **HOT OUT** and **COLD OUT** connections.

Note

Do not use Teflon tape or adhesives on the NaviCirc $\frac{1}{2}$ " male orifices. Make sure to use hoses with rubber gaskets.

8. Connect Navien supplied $\frac{1}{2}$ " to $\frac{3}{8}$ " flex line or other flexible hose to $\frac{3}{8}$ " hot and cold shutoff valves with or without the adaptor depending on the existing shutoff valve hose size.
9. Connect the remaining $\frac{1}{2}$ " hot and cold water flex lines to the NaviCirc **HOT IN** and **COLD IN** connections.

2.2.2 Leak Check & Air Purge

1. Close hot water and cold water faucets.
2. Open hot water and cold water shutoff valves.
3. Open hot water and cold water faucets.
4. Check if there are leaks after connecting the hoses to the NaviCirc.

Note

In case of leaks, close the shutoff valves and repair any leaks.

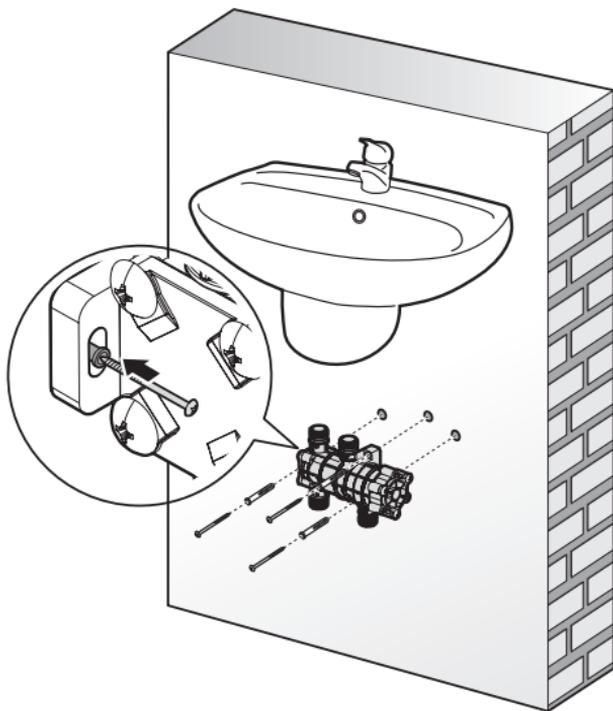
5. Purge the air from the system by opening the hot water and cold water faucet.

Note

Perform an air purge so that all residual air can properly leave the system pipes. If the air purge is not performed long enough, the recirculation valve may not operate properly. Also, residual air can damage the recirculation pump.

2.3 Securing the NaviCirc to the Wall

Follow the instructions to install the NaviCirc to desired faucet location.



Secure the NaviCirc with the three anchor bolts included with the installation kit.

Note

Do not forcefully secure the NaviCirc to the wall with anchor bolts, as this can damage the system. Make sure to place it horizontally in a fixed position.

3. Troubleshooting

If you experience a problem with the NaviCirc, refer to the following table for possible remedies.

Problem	Possible cause(s)
The water from the hot water tap is not hot enough.	<ul style="list-style-type: none">• Full temperature water has not reached the fixture.• The hot water temperature of the water heater is set too low.• The pump is not operating properly.• The pump is working, but hot water does not reach the NaviCirc.• NaviCirc is not installed properly.
The water from the hot water tap is not hot enough even when the water heater is set at a high temperature.	<ul style="list-style-type: none">• NaviCirc malfunction.
The water from the hot water tap is too hot.	<ul style="list-style-type: none">• The water heater temperature is set too high.
Hot water comes out while cold water is being used.	<ul style="list-style-type: none">• NaviCirc is operating properly.• NaviCirc malfunction.
Noises after installation.	<ul style="list-style-type: none">• Recirculation temperature cut-off function.

What to do

- Keep the fixture open to allow the hot water line to purge.
- Set the water heater temperature to a higher temperature.
- Check whether the pump is stuck.
- If NaviCirc is used on a non-Navien appliance, check that the pump is properly sized and installed per the manufacturer's instructions.
- Clean out the water heater filter and the NaviCirc inlet.
- Contact Navien Technical Support.

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- Adjust the water heater temperature.

- It is normal for some hot water to bleed over to the cold line during recirculation.
- If the hot water discharge continues to come from the cold water faucet after installation, the NaviCirc may require service.
- In this case contact Navien Support.

- The NaviCirc will stop recirculation if it reaches the set temperature during recirculation. This is the NaviCirc temperature cut-off function and small noises may occur. This means the NaviCirc is operating normally.
- If other noises occur, contact Navien Technical Support.

LIMITED WARRANTY NAVIEN, INC.

Warranty Period

Navien products come with a limited warranty covering parts. The following warranty periods begin to run from the date of original installation. The date of original installation must be provided to Navien, and upon request, proof of the original installation date must also be provided to Navien. When the product is installed in a new construction, the commencement date shall be dated upon which the end-user takes title to the property.

Note

Navien does not guarantee the performance of the NaviCirc when used on a non-Navien appliance.

APPLICABLE WARRANTY PERIOD

Period of Coverage	
All other part and components	3 years

Warranty Claim Procedures

To obtain warranty repair service, the end user or homeowner must contact the original installer of your Navien product. If the original installer cannot be identified, the end user or home owner may contact Navien's Technical Administration Department at (800) 519-8794. Proof of purchase is required to obtain warranty service.

Warranty Service

At its option, Navien will replace the defective component (part), in accordance with the terms of this Limited Warranty, if it fails in normal use and service during the applicable warranty period identified above. The replacement component must be Navien original factory component. Navien, at its sole discretion, may replace the product with a new or refurbished product of comparable quality and design. The replacement component or product will be warranted only for the unexpired portion of the original component's applicable warranty period. Payment for labor in completing the warranty service is subject to Navien's prior written approval and shall be subject to Navien's schedule of approved labor allowances.



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