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NPE-A Series Tankless Water Heater

One NPE-A Tankless External Recirculation Mode

Drawn By: B. Fenske  NPE-A-1-E-BF02  August 1, 2013
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<th>15 to 16 Units - 3”</th>
</tr>
</thead>
</table>

**NPE-A Series Tankless Water Heater**

**Two NPE-A Tankless External Recirculation Mode**

---

**Drawn By:** B. Fenske  
**NPE-A-2-E-BF02**  
**August 1, 2013**

![Diagram of NPE-A Series Tankless Water Heater system](image)
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</tr>
</thead>
</table>

**NPE-A Series Tankless Water Heater**

**Three NPE-A Tankless External Recirculation Mode**

**Drawn By:** B. Fenske  **NPE-A-3-E-BF02**  **August 1, 2013**

20 Goodyear
Irvine, CA 92618
800-519-8794
www.Navien.com
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<th>15 to 16 Units - 3&quot;</th>
</tr>
</thead>
</table>

NPE-A Series Tankless Water Heater

Four NPE-A Tankless External Recirculation Mode

Drawn By: B. Fenske  NPE-A-4-E-BF02  August 1, 2013

20 Goodyear
Irvine, CA 92618
800-519-8794
www.Navien.com
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Note:
Applications with a mixture of Navien NPE-A (Circulation) & NPE-S (Standard) the following should followed:
1. 50% of Tankless Units shall be NPE-A Models
2. Minimum of 2 NPE-A (2 of 3-4, 3 of 6)

Recommended Pipe Size/Heater Count

| 1 Unit - ¾" | 2 Units - 1" | 3 Units - 1-¼" | 4 to 5 Units - 1-½" | 6 to 8 Units - 2" | 9 to 14 Units - 2-½" | 15 to 16 Units - 3" |

NPE-A/S Series Tankless Water Heater

Four NPE-A/NPE-S Tankless
External Recirculation Mode

20 Goodyear
Irvine, CA 92618
800-519-8794
www.Navien.com

Drawn By: B. Fenske  NPE-A-S-4-E-BF02  August 1, 2013
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**Recommended Pipe Size/Heater Count**

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<tr>
<th>Units</th>
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</table>

**NPE-A Series Tankless Water Heater**

Five NPE-A Tankless External Recirculation Mode

---

20 Goodyear
Irvine, CA 92618
800-519-8794
www.Navien.com

Drawn By: B. Fenske  NPE-A-5-E-BF02  August 1, 2013
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Recommended Pipe Size/Heater Count

<table>
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<tr>
<th></th>
<th>1 Unit - ¾”</th>
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</tr>
</thead>
<tbody>
<tr>
<td>NPE-A Series Tankless Water Heater</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Six Plus NPE-A Tankless</td>
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<td></td>
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<td></td>
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<td></td>
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<tr>
<td>External Recirculation Mode</td>
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</tbody>
</table>

NPE-A-6P-E-BF02
August 1, 2013

Drawn By: B. Fenske

20 Goodyear
Irvine, CA 92618
800-519-8794
www.Navien.com
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Note:
Applications with a mixture of Navien NPE-A (Circulation) & NPE-S (Standard) the following should followed:
1. 50% of Tankless Units shall be NPE-A Models
2. Minimum of 2 NPE-A (2 of 3-4, 3 of 6)

Recommended Pipe Size/Heater Count

<table>
<thead>
<tr>
<th>1 Unit</th>
<th>2 Units</th>
<th>3 Units</th>
<th>4 to 5 Units</th>
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<th>9 to 14 Units</th>
<th>15 to 16 Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>¾&quot;</td>
<td>1&quot;</td>
<td>1-¼&quot;</td>
<td>1-½&quot;</td>
<td>2&quot;</td>
<td>2-½&quot;</td>
<td>3&quot;</td>
</tr>
</tbody>
</table>

NPE-A\S Series Tankless Water Heater

Six Plus NPE-A\NPE-S Tankless External Recirculation Mode

Drawn By: B. Fenske  NPE-A-S-6P-E-BF02  August 1, 2013
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</table>

NPE-A Series Tankless Water Heater

Ten NPE-A Tankless
External Recirculation Mode
Alternative Mounting Shown

Drawn By: B. Fenske NPE-A-10-E-BF02 August 1, 2013

Domestic Recirculation Return
Domestic Hot Water

Condensate
Gas

Domestic Cold Water

Storage Vessel
Check Valve
Pressure Relief Valve
Mixing Valve
DHW Circulator w/Aquastat & Check Valve
Full-port Ball Valve

Circulator
Expansion Tank
Aquastat
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NPE-A Series Tankless Water Heater
One NPE-A Tankless External Recirculation Mode With Low Temp Secondary Supply

Drawn By: B. Fenske  NPE-A-1-E-MV-BF02  August 1, 2013
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Recommended Pipe Size/Heater Count

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</table>

NPE-A Series Tankless Water Heater

Three Plus NPE-A Tankless Domestic External Recirculation Mode With Thermostatic Mixing Valve for Low Temp Fixtures

Drawn By: B. Fenske  NPE-A-3P-E-MV-BF02  August 1, 2013
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1. Domestic restaurant tankless units typically set at 140°F.
2. High-temperature dishwasher tankless unit(s) typically set at 180°F+ for sanitation.
3. Select count of tankless units serving dishwasher to meet flow rate requirements @ 40-45°F rise.
4. Dishwasher tankless unit(s) may not be cascaded or common vented with domestic supply tankless units.
5. Follow tankless venting instructions with proper materials for high temperature applications with dishwashers.

### Recommended Pipe Size/Heater Count

<table>
<thead>
<tr>
<th>Count</th>
<th>Pipe Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Unit</td>
<td>¾”</td>
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<tr>
<td>2 Units</td>
<td>1”</td>
</tr>
<tr>
<td>3 Units</td>
<td>1-⅝”</td>
</tr>
<tr>
<td>4 to 5 Units</td>
<td>1-⅜”</td>
</tr>
<tr>
<td>6 to 8 Units</td>
<td>2”</td>
</tr>
<tr>
<td>9 to 14 Units</td>
<td>2-¼”</td>
</tr>
<tr>
<td>15 to 16 Units</td>
<td>3”</td>
</tr>
</tbody>
</table>

### NPE-A Series Tankless Water Heater

Three Plus NPE-A Tankless Domestic External Recirculation Mode with NPE Tankless as High-Temperature Booster Heater for Dishwasher

- **Storage Vessel**
- **Check Valve**
- **Pressure Relief Valve**
- **Mixing Valve**
- **DHW Circulator w/Aquastat & Check Valve**
- **Full-port Ball Valve**
- **Circulator**
- **Expansion Tank**
- **Aquastat**

*Drawn By: B. Fenske  NPE-A-6P-E-DW-BF02  August 1, 2013*
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NPE-A Series Tankless Water Heater

Two NPE-A Tankless
External Recirculation Mode
Two Domestic Circuits

20 Goodyear
Irvine, CA 92618
800-519-8794
www.Navien.com

Drawn By: B. Fenske
NPE-A-2-E2-BF02
August 1, 2013
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<th>4 to 5 Units - 1-⅝&quot;</th>
<th>6 to 8 Units - 2&quot;</th>
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**NPE-A Series Tankless Water Heater**

Three NPE-A Tankless
External Recirculation Mode
Two Domestic Circuits

- Storage Vessel
- Check Valve
- Pressure Relief Valve
- Mixing Valve
- Full-port Ball Valve
- Circulator
- Expansion Tank
- Aquastat

20 Goodyear
Irvine, CA 92618
800-519-8794
www.Navien.com

Drawn by: B. Fenske
NPE-A-3-E2-BF02
August 1, 2013
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Notes:
1. Use Navien Cord P #30011612A
2. Set DIP Switches on Integrated Controller
   #1 – OFF, #2 – ON, #3 – ON
3. Select External Circulator Performance
   to be 2 GPM Minimum, 4 GPM Maximum based on 5 Psi drop @ 4 GPM at tankless
   * Refer to NPE Installation Manual for further details

Domestic Hot Water

Condensate

Gas

Domestic Cold Water

NPE-A Series Tankless Water Heater

One NPE-A Tankless
Using External Pump for Booster Recirculation with Part #30011612A External Pump Wire

Drawn By: B. Fenske  NPE-A-1-PW-EC-BF02  August 1, 2013
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| NPE-A Series Tankless Water Heater

Two NPE-A Tankless External Recirculation Mode With External Circulator

Drawn By: B. Fenske NPE-A-2-EC-BF02 August 1, 2013

20 Goodyear
Irvine, CA 92618
800-519-8794
www.Navien.com
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NPE-A Series Tankless Water Heater

**Four NPE-A Tankless External Recirculation Mode With External Circulator**

Storage Vessel

Check Valve

Pressure Relief Valve

Mixing Valve

DHW Circulator w/Aquastat & Check Valve

Full-port Ball Valve

Circulator

Expansion Tank

Aquastat
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Recommended Pipe Size/Heater Count

<table>
<thead>
<tr>
<th>1 Unit - $\frac{3}{4}''$</th>
<th>2 Units - 1''</th>
<th>3 Units - 1-$\frac{1}{4}''$</th>
<th>4 to 5 Units - 1-$\frac{1}{2}''$</th>
<th>6 to 8 Units - 2''</th>
<th>9 to 14 Units - 2-$\frac{1}{2}''$</th>
<th>15 to 16 Units - 3''</th>
</tr>
</thead>
</table>

NPE-A Series Tankless Water Heater

Four Plus NPE-A Tankless External Recirculation Mode With External Circulator

Drawn By: B. Fenske  NPE-A-4Plus-EC-BF02  August 1, 2013

Storage Vessel  Check Valve  Circulator
Pressure Relief Valve  Expansion Tank
Mixing Valve  Aquastat
DHW Circulator w/Aquastat & Check Valve  Full-port Ball Valve
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<td>NPE-A Series Tankless Water Heater</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Two NPE-A Tankless External Recirculation Mode With External Circulator – 2 Returns

Drawn By: B. Fenske  NPE-A-2-EC2-BF02  August 1, 2013

20 Goodyear
Irvine, CA 92618
800-519-8794
www.Navien.com
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### NPE-A Series Tankless Water Heater

**Three NPE-A Tankless External Recirculation Mode With External Circulator – 2 Returns**

**Recommended Pipe Size/Heater Count**

<table>
<thead>
<tr>
<th></th>
<th>1 Unit - ¾&quot;</th>
<th>2 Units - 1&quot;</th>
<th>3 Units - 1-¼&quot;</th>
<th>4 to 5 Units - 1½&quot;</th>
<th>6 to 8 Units - 2&quot;</th>
<th>9 to 14 Units - 2½&quot;</th>
<th>15 to 16 Units - 3&quot;</th>
</tr>
</thead>
</table>

**Storage Vessel**

- **Check Valve**
- **Pressure Relief Valve**
- **Mixing Valve**
- **DHW Circulator w/Aquastat & Check Valve**
- **Full-port Ball Valve**
- **Circulator**
- **Expansion Tank**
- **Aquastat**

---

**Drawn By:** B. Fenske  
**NPE-A-3-EC2-BF02**  
**August 1, 2013**
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Notes:
1. For Storage Tank/Geothermal Operation; DIP Switch #6 of 10 located on Integrated Display Panel should be set ON (UP).
2. With Storage Tank/Geothermal Operation Enabled. NPE Tankless DHW setting may be set at or near storage tank thermostatic mixing valve temperature output.
3. External recirculation modes may be used with NPE-A Unit (Burner will maintain recirculation system temperature).

Recommended Pipe Size/Heater Count

<table>
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<th>Recommended Pipe Size</th>
<th>1 Unit - ¾&quot;</th>
<th>2 Units - 1&quot;</th>
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</table>

NPE-A\S Series Tankless Water Heater

Three NPE-A\S Tankless With Geo-Thermal Storage Feed

Drawn By: B. Fenske  NPE-A-3G-BF02  August 1, 2013
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Using Existing Air Handler Internal Circulator
Navien NPE Internal Circulator must be programmed for “Internal Circulation Mode”

NPE-A Series Tankless Water Heater
Navien NPE-A Series Tankless Combi Use Application with Air Handler
“Apollo/Hydroheat Tank Replacement”

Drawn By: B. Fenske NPE-A-Combi-AH-BF02 August 1, 2013
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Notes:
1. For Storage Tank/Geothermal Operation; DIP Switch #6 of 10 located on Integrated Display Panel should be set ON (UP).
2. With Storage Tank/Geothermal Operation Enabled, NPE Tankless DHW setting may be set at or near storage tank thermostatic mixing valve temperature output.
3. External recirculation modes may be used with NPE Unit (Burner will maintain recirculation system temperature).

(A) Follow GeoThermal Unit and Tank Manufacturer Recommendations and Requirements
This drawing is intended only as a guide and not as a replacement for professionally engineered project drawings. This concept system drawing does not imply compliance with local building codes. Actual installation may vary depending on installation location & parameters and it must be done in accordance to all local building codes. Verify with local building officials before commencement of system installation.

**Notes:**

1. For Storage Tank/Solar Operation; DIP Switch #6 of 10 located on Integrated Display Panel should be set ON (UP).
2. With Storage Tank/Solar Operation Enabled, NPE Tankless DHW setting may be set at or near storage tank thermostatic mixing valve temperature output.
3. External recirculation modes may be used with NPE Unit (Burner will maintain recirculation system temperature).
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NPE-A Series Tankless Water Heater
Navien NPE-A Series Tankless ComfortAir+ Application with Air Handler

Drawn By: B.F. NPE-A-ComfortAir+-BF01 April 1, 2015

Opt. AC COIL
AIRFLOW
Domestic Hot Water To Fixtures
AHU Supply
AHU Return
Domestic Cold Water
Condensate Gas

Storage Vessel
Check Valve
Circulator
Expansion Tank
DHW Circulator w/Aquastat & Check Valve
Pressure Relief Valve
Mixing Valve
Full-port Ball Valve
Flow Sensor
This drawing is intended only as a guide and not as a replacement for professionally engineered project drawings. This concept system drawing does not imply compliance with local building codes. Actual installation may vary depending on installation location & parameters and it must be done in accordance to all local building codes. Verify with local building officials before commencement of system installation.

AHU with circulator or pump module (Internal or External)

Domestic Hot Water To Fixtures

AHU Supply

AHU Return

(A) Crossover between Supply and Return to AHU required to decouple pump flows (primary/secondary)

Domestic Cold Water

Condensate

Gas

NPE-A Series Tankless Water Heater
Navien NPE-A Series Tankless ComfortAir+ Application with Air Handler Pump Module

Drawn By: B.F. NPE-A-ComfortAir+-P-BF01 April 1, 2015

Navien NPE

- A Series Tankless ComfortAir+ Application

- with Air Handler Pump Module

- AHU Supply

- AHU Return

- Condensate

- Gas

- Domestic Cold Water
This drawing is intended only as a guide and not as a replacement for professionally engineered project drawings. This concept system drawing does not imply compliance with local building codes. Actual installation may vary depending on installation location & parameters and it must be done in accordance to all local building codes. Verify with local building officials before commencement of system installation.

**Typical Programmable Thermostat**

- **ON**
- **ELE HT** *
- **RH**
- **RC**
- **W**
- **Y**
- **G**
- **C**

**Navien ComfortAir+ Control Board**

- **W1**
- **W2**
- **R**
- **Flow Switch**
- **T/S (T-Stat)**
- **Outdoor Sensor**

**Notes:**

**Heat Only (single stage):**
- 2 wires – Thermostat to Navien ComfortAir Module (RH & W)
- 3 wires – Thermostat to Air Handler (RC, G & C)

**Heat & Cool (single stage):**
- 2 wires – Thermostat to Navien ComfortAir Module (RH & W)
- 4 wires – Thermostat to Air Handler (RC, Y, G & C)

1. Remove factory jumper at thermostat (RH to RC) to isolate AHU and Navien for dual transformer operation
2. Set programable thermostat for “electric heat mode” (This is done with manual switch or programming, follow manufacturer instructions)

* This closes RC to G (AHU fan) & RH to W (boiler heat call).

**NPE-A Series Tankless Water Heater**

**Navien NPE-A Series**

**ComfortAir + Supplemental Control Wiring 1**

**Alternate Wiring Diagram**

Using compatible thermostat as control center. No wires between NPE-A ComfortAir+ control board and air handler.

Note: Fan disable during domestic hot water operation is non-functional.