Installation Manual

Insulated UPMXL 25-124 Add-on Kits

NOTE: This manual assumes you are familiar with both the geothermal heat pump and the original flow center you are repairing. Detailed wiring information may be different for each heat pump manufacturer's equipment. Refer to the heat pump manufacturer's literature for additional information. Review the following Geo-Flo documents to understand the function of the 3-way 4-position flushing and service valves and flushing procedures when replacing a pump:

Pressurized flow centers: Document #2122: Pressurized Flow Center Installation, Operating, and Maintenance Instructions

Non-pressurized flow centers: Document #3761: NP Series Non-Pressurized Flow Center Installation, Operating, and Maintenance Manual AND Document #3866: NPD Series Dual-Circuit Non-Pressurized Flow Center Install., Operating, & Maintenance Manual

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Doc # 5174
Revision 2024JAN10

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Background

Grundfos Pumps Corporation discontinued production of the variable speed Magna GEO 32-140 ECM pump in 2019. Geo-Flo purchased a large quantity of these pumps to cover anticipated Magna GEO flow center warranties, but the supply has been depleted. Since the life of a flow center is typically much longer than the warranty period, we developed two kits to allow customers to update their existing flow center with the variable speed UPMXL 25-124 ECM pump to prevent a total flow center replacement. These kits allow a repair to be made without flushing the ground loop with a flush cart. The UPMXL pump will not fit the Magna GEO or UP26 series pump housing/volute, so you cannot simply remove and replace the motor. It is the contractor's responsibility to determine whether to repair the flow center with this kit, or to replace it with a new flow center. Table 2 at the end of this manual provides a cross reference from the original Magna GEO flow center to the equivalent UPMXL flow center.

NOTE: Check with the distributor where you purchased the original Magna GEO flow center to inquire about the warranty period. Geo-Flo standard warranty on the Magna GEO flow centers is (5) years from the date of manufacture but this warranty period may be different depending on where you purchased the product. Some OEMs extend the Geo-Flo warranty.

Geo-Flo Part numbers that are affected by this pump change are shown in Table 1. Examples of these flow centers are shown in Figure 1. This list does not include all geothermal heat pump OEMs part numbers. Some OEMs have their own part numbers and installation manual; contact your Territory Manager or Distributor for more information.

Part Number	Description	Add-on kit recommended
1255	OEM Module, GPC, Brass, Single, Magna GEO 32-140	FLP1L-FLK
1256	OEM Module, GPC, Brass, Double, 32-140+26-99	FLP1L-FLK
1275	Flow Center, NPV, Variable Speed	FLP1L-FLE
1275B	FLW CNTR, NPV, MAGNA GEO, Bosch	FLP1L-FLE
1275C	FLW CNTR, NPV, MAGNA GEO, COMP, FCN13CD	FLP1L-FLE
1275T	FLW CNTR, NPV, MAGNA GEO, TTHERM	FLP1L-FLE
1276	Flow Center, NPV2, Variable speed + 3 speed	FLP1L-FLE
1276B	FLW CNTR, NPV, MAGNA GEO + UPS26-99, Bosch	FLP1L-FLE
1276C	FLW CNTR, NPV2, MAGNA GEO+UPS26-99, CMP, FCN24CD	FLP1L-FLE
1298	Flow Center, FLV1, Magna GEO VS, black cab.	FLP1L-FLK
1298B	Flow CNTR, FLO-LINK, 1 MAGNA GEO, BRASS, Bosch	FLP1L-FLK
1298C	FLW CNTR, FLO-LINK, 1 MAGNA GEO, BRASS, FCP13BD	FLP1L-FLK
1299	Flow Center, FLV2, Magna GEO VS + 99 3-speed, black cab.	FLP1L-FLK
1299B	Flow Center, FLV2, Magna GEO VS + 99 3-speed, black cab, Bosch	FLP1L-FLK
1299C	FLW CNTR, FLO-LINK, MAGNA GEO+UP26-99 BRS, FCP24BD	FLP1L-FLK
1334	FLW CNTR, NPD2-VS-C1	FLP1L-FLE
1335	FLW CNTR, NPD2-VS-VS	FLP1L-FLE
1336	FLW CNTR, NPD3-VSC1-VS	FLP1L-FLE
1342	NPV1 Plus, 1 Magna GEO	FLP1L-FLE
1343	NPV2 Plus, 1 Magna GEO+UPS26-99	FLP1L-FLE

Table 1. Geo-Flo Part numbers covered in this manual.

Figure 1: Examples of pressurized Flo-Link, and non-pressurized NP and NPD Magna GEO flow centers.

Kit Descriptions

The FLP1L-FLE kit is typically used with non-pressurized flow centers.

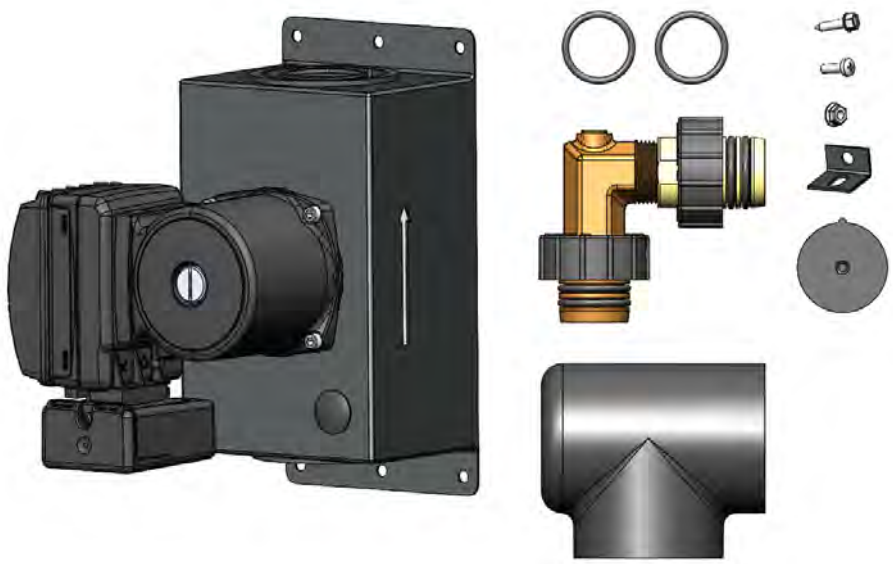

Figure 2: FLP1L-FLE kit contents. This kit is used with non-pressurized flow centers.

FLP1L-FLE includes:

(1) Insulated UPMXL 25-124 1x208-230V pump
(1) Flo-Link X Flo-Link elbow: used to connect insulated pump to flow center
(1) Angle bracket: used to secure insulated pump to flow center
(1) #10 hex head sheet metal screw: used to connect angle bracket to flow center
(1) #10 X 5/8” long pan head screw: used to connect insulated pump to angle bracket
(1) #10 nut: used to connect insulated pump to angle bracket
(1) Insulation elbow and plastic cap
(2) Replacement O-rings: Used to replace O-ring on fitting that is removed from the flow center and reconnected to the insulated pump

The FLP1L-FLK kit is typically used with pressurized flow centers.

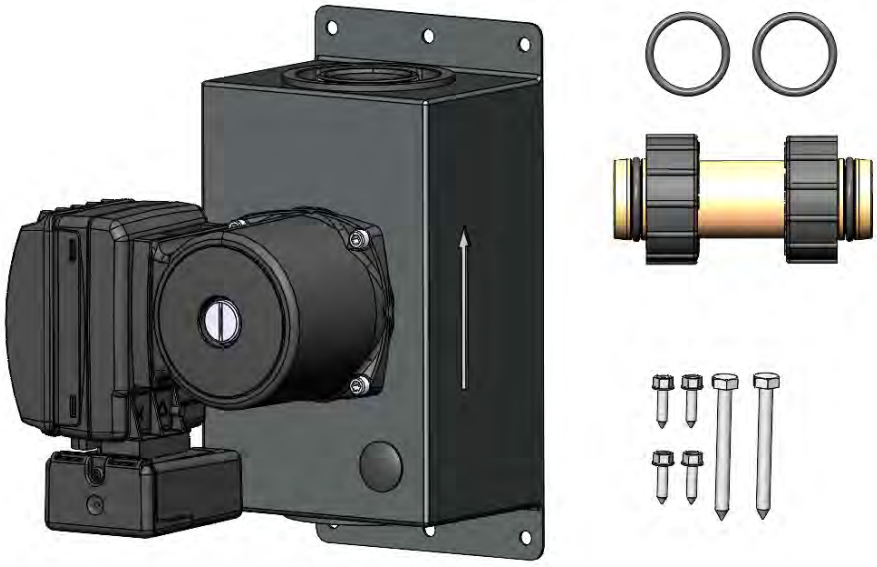

Figure 3: FLP1L-FLK kit contents. This kit is used with pressurized flow centers.

FLP1L-FLK includes:

(1) Insulated UPMXL 25-124 1x208-230V pump

(1) Flo-Link X Flo-Link straight fitting: used to connect insulated pump to flow center

(4) #10 hex head sheet metal screw: option to connect insulated pump to heat pump

(4) ¼" X 2-1/2" long lag screws: option to connect insulated pump to wall

(2) Replacement O-rings: Used to replace O-ring on fitting that is removed from the flow center and reconnected to the insulated pump

Required Fittings and Equipment

Flushing any Flo-Link double O-ring flow center (FL and NP Series) and the heat pump side of the geothermal system can be completed without a flush cart. Flo-Link fittings as shown in Figure 4 are required for this procedure. The Geo-Flo Geo-Gooser tool (PN 3502) is useful in conjunction with the garden hose adapter (PN3248) when flushing pressurized flow centers. Review the flushing procedure sections of this manual for how these fittings are used. Geo-Flo 3-way, 4-position service and flush valves require a socket wrench with a 3/8" drive to actuate the valve.

Figure 4. Flo-Link X Garden hose adapter set (PN 3248), left, and Flo-Link X 1" hose barb (PN 2913), right, Geo-Gooser tool (PN 3502), bottom

Geo-Flo recommends checking the antifreeze level after completing repairs and adding make-up water to the system. This will require a hydrometer or refractometer.

After the pump installation is complete, you will need to verify that the system is operating properly by checking the system flow rate. This will require a pressure gauge with PT needle to check the pressure drop across the heat pump. See the referenced manuals for more details. If your system has a flow meter installed, a pressure drop measurement may not be required.

This procedure assumes that the existing flow center is connected to the heat pump with a flexible rubber hose kit. If the flow center is hard piped, other Flo-Link fittings may be required. If you are unsure what fittings you may need, contact your Geo-Flo distributor for assistance.

Installation Procedure

Review the entire manual before beginning the procedure.

WARNING: OPEN THE MAIN POWER SUPPLY DISCONNECT SWITCH AND SECURE IT IN AN OPEN POSITION PRIOR TO PERFORMING ELECTRICAL WORK. VERIFY THAT POWER HAS BEEN DISCONNECTED PRIOR TO WIRING THE PUMP(S). FAILING TO SECURE THE ELECTRICAL SUPPLY COULD RESULT IN SERIOUS INJURY OR DEATH.

1. Disconnect power to the unit. Verify that there is no power at the flow center using a multimeter.
2. Remove high voltage wiring from Magna GEO pump (L1, L2, and ground wires).
3. The Magna GEO pump will remain in place after the installation is complete. This will not disrupt the system.
4. Disconnect the low voltage signal cable (brown, blue, black wires) from the Magna GEO pump by disconnecting the Molex connector.
5. Install the FLP1L-FLE or FLP1L-FLK according to the graphics shown in the flush procedure sections below for the type of unit you are replacing. Ensure that the pump is installed in the same flow direction as the existing pump. The pump cabinet has an arrow showing the direction of flow. Two O-rings are included in the kit to replace the ones on the Flo-Link fitting removed to install the UPMXL insulated pump.
6. Wire the high-power connections on the UPMXL pump (see Figure 5). Note that Grundfos labels the wiring terminal block "L-⏚-N" for both 115 and 230V pumps worldwide. The UPMXL pump in this kit is 208-230V. You can verify the pump voltage on the pump's nameplate.

   IMPORTANT: Two-pump variable speed NP flow centers have a UPS26-99 in series with the original Magna GEO VS pump. The UPMXL VS replacement will also be in series with the UPS26-99. It is important to recognize that the UPS26-99 MUST operate when the UPMXL operates to provide positive pressure to the UPMXL. Some pump controllers, including the UPC-GEO have algorithms that first enable the VS pump then enables the UPS26-99. This MUST be changed by wiring the UPS26-99 to the T-side of the unit's contactor. Failure to follow this may result in an air-locked UPMXL pump, pump failure, and/or unit lock-out.

7. Wire the low voltage connection from the UPMXL to the pump's controller. Depending on the model heat pump and controller you are repairing, this may be completed by connecting the Molex connector to the existing cable, or by wiring the blue, brown, and black wires on the UPMXL control cable to the controller.
8. Flush the heat pump and flow center using the flush procedure for the type of flow center you are repairing. After following the flush procedure, return to Step 9 below.

9. Energize the system.

10. Verify the flow rate by checking the pressure drop across the unit's heat exchange and comparing this to the manufacturer's published literature of pressure drop versus flow rate. If your system has a flow meter installed, you may use this reading. The flow rate should be within the manufacturer's published recommended range for closed loop systems (typically 2-1/4 to 3 GPM per nominal ton). Record the system flow rate and leave it at the jobsite for future reference.
11. Check the system's antifreeze and freeze protection level. Add additional antifreeze if needed. Record the antifreeze level and leave it at the jobsite for future reference.
12. Mark or tag the old Magna GEO pump with a notification that the pump has been decommissioned so that future technicians understand the pump is no longer intended to operate. Example: "THIS PUMP HAS BEEN DECOMMISSIONED AND REPLACED WITH THE UPMXL"

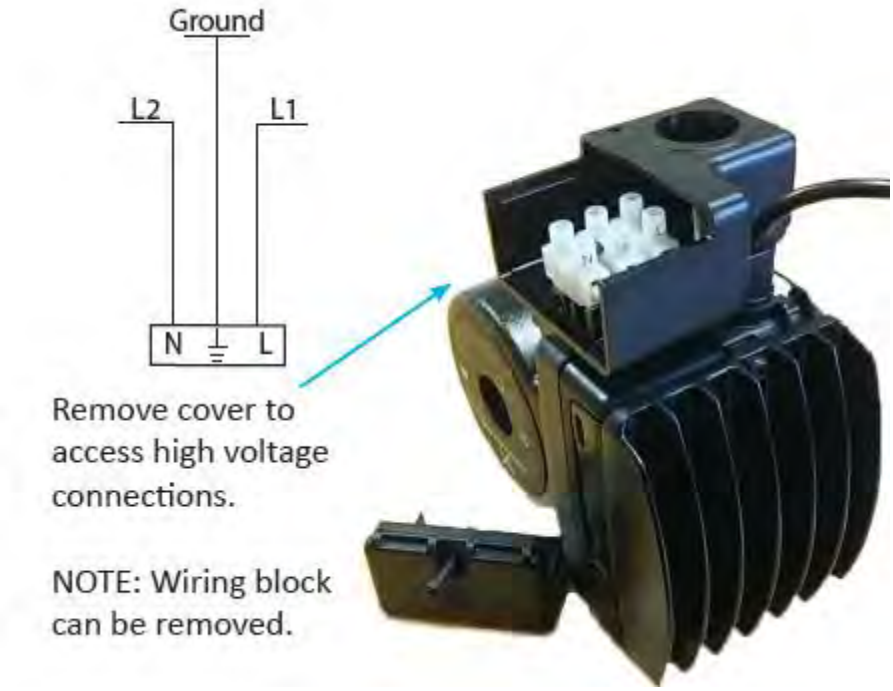

Figure 5. Wiring for UPMXL pump.

Flush Procedure for Pressurized Flow Center

The UPMXL can be installed on either size of the flow center depending on the space available. Ensure that the arrow on the insulated pump matches the direction of flow of the existing flow center. The space required below the existing flow center is approximately 12 inches.

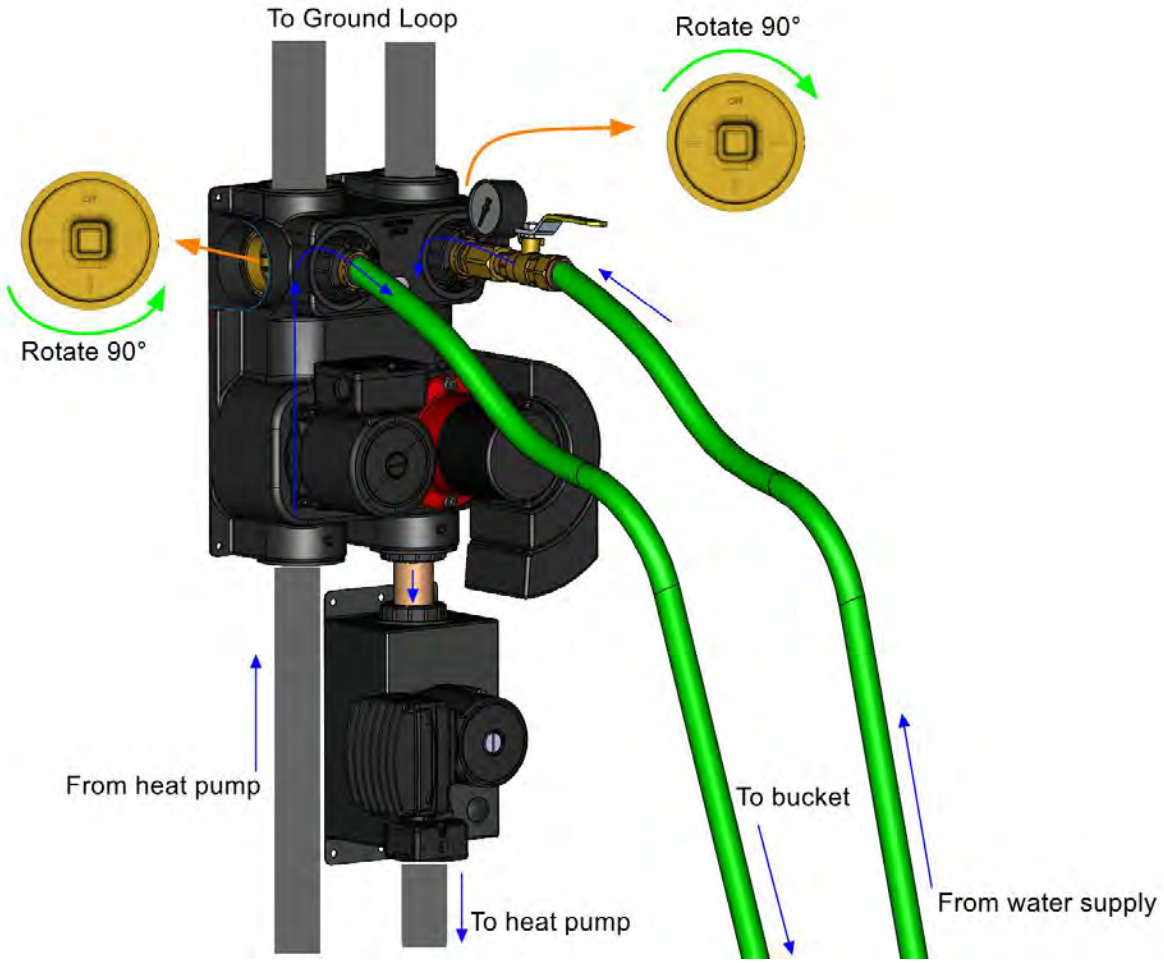

Figure 6. Installation and flushing of the UPMXL insulated pump.

1. Attach a section of garden hose with Flo-Link adapter or 1” rubber hose with Flo-Link adapter to the 3-way valves on the flow center. The hose should be connected to a clean water source such as domestic supply or a transfer pump in a bucket of clean water. The return line should be directed back to a bucket. The bucket will allow you to monitor the fluid for the presence of air bubbles.
2. Carefully rotate the three-way valves to isolate the ground loop side of the system from the heat pump side. To avoid air entering the ground loop pipes, rotate the valves from the operating position (“OFF” toward the front of the flow center) 90 degrees ONLY to the ground loop

connections (“OFF” toward ground loop). With the valves up as shown in Figure 6, the left valve is rotated CCW, and the right valve is rotated CW.

NOTE: Rotating the valves from the operating position (“OFF” toward front of flow center) 270 degrees to the ground loop side will allow air to enter the ground loop. If this occurs, a full system flush may be required. Air circulating in the system may cause noise, pump air lock, pump failure, and/or system shut down.

3. Run the water supply through the flow center, insulated pump, and heat pump until all air has been removed.
4. While the water supply is on, vent the newly installed UPMXL by rotating the vent screw in the middle of the pump one turn. A few drops of water should escape; this ensures that air has been displaced by water and ensures the pumps bearings are lubricated.
5. Return the 3-way valves to the operating position (“OFF” toward front of flow center). Start with the return side valve so that the water source pressurizes the system. Then, rotate the 3-way valve that is connected to the water supply.
6. Turn off the water supply and remove the hoses.
7. Return to Step 9 of the Installation Procedure section of this manual.

Flush Procedure for Single Pump NP flow Center

The UPMXL is installed in the location shown in Figure 7 to allow the column of water to provide the necessary suction head to the pump, and to ensure the pump has the least amount of head loss on the suction side. Installing the pump at the upper left would require that the pump "pull" fluid from the tank through the existing Magna GEO pump. This head loss could exceed the positive suction head provided by the column of water in the tank potentially leading to an air-locked UPMXL pump, pump failure, and/or unit lock-out.

1. Attach a section of garden hose with Flo-Link adapter or 1" rubber hose with Flo-Link adapter to the 3-way valve between the loop and the heat pump. See Figure 7 below.
2. Ensure the 3-way valves are positioned with "OFF" and the flow indicating tabs as show in the figure. "OFF" at 12 O'clock on the valves connected to the loop isolate the loop from the flow center and unit.
3. Energize the new pump to circulate fluid from the NP tank through the heat pump and back into the top of the tank. Be sure that the fluid does not splash in the tank creating additional air bubbles. Pushing the hose below the fluid level in the tank will help prevent this.
4. Run the pump until all air is purged from the pump and unit. You may hear air passing through the pump initially, but this should stop once all the air is purged. If you continue to hear air, ensure the tank is filled with fluid. Then, try squeezing the hose to decrease the fluid velocity allowing the air to rise to the top of the tank. Vent the newly installed UPMXL by rotating the vent screw in the middle of the pump one turn. A few drops of water should escape; this ensures that air has been displaced by water and ensures the pumps bearings are lubricated. Add make-up fluid to the tank as necessary.
5. Return the valves to the operating position and remove the jumper hose.
6. Return to Step 9 of the Installation Procedure section of this manual.

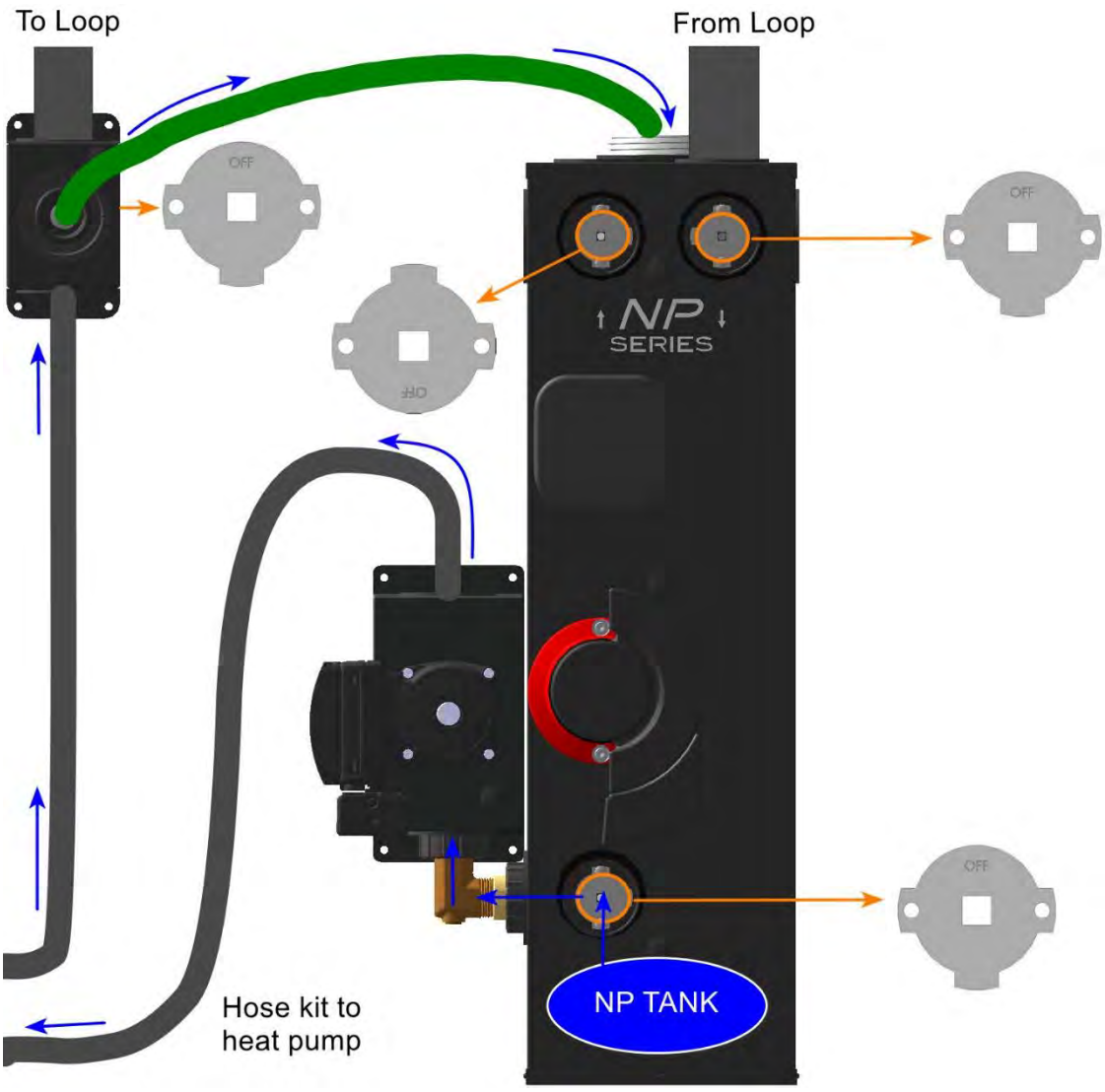

Figure 7. Single pump NP flow center installation and flush procedure

Flush Procedure for Double Pump NP Flow Center

The UPMXL is installed in the location shown in Figure 8 to allow the existing UPS26-99 pump to provide the necessary suction head to the UPMXL pump and to ensure the two pumps operate in series. The UPS26-99 MUST be wired to operate prior to the UPMXL being energized. See the *Installation Procedure* section for more information.

1. Attach a section of garden hose with Flo-Link garden hose adapter or 1" rubber hose with Flo-Link x hose barb adapter to the 3-way valve between the loop and the heat pump. See Figure 8 below.
2. Ensure the 3-way valves are positioned with "OFF" and the flow indicating tabs as show in the figure. "OFF" at 12 O'clock on the valves connected to the loop isolate the loop from the flow center and unit.
3. Energize the existing UPS26 pump and the new pump to circulate fluid from the NP tank through the heat pump and back into the top of the tank. Be sure that the fluid does not splash in the tank creating additional air bubbles. Pushing the hose below the fluid level in the tank will help prevent this.
4. Run the pump until all air is purged from the pump and unit. You may hear air passing through the pump initially, but this should stop once all the air is purged. If you continue to hear air, ensure the tank is filled with fluid. Then, try squeezing the hose to decrease the fluid velocity allowing the air to rise to the top of the tank. Vent the newly installed UPMXL by rotating the vent screw in the middle of the pump one turn. A few drops of water should escape; this ensures that air has been displaced by water and ensures the pumps bearings are lubricated. Add make-up fluid to the tank as necessary.
5. Return the valves to the operating position and remove the jumper hose.
6. Return to Step 9 of the Installation Procedure section of this manual.

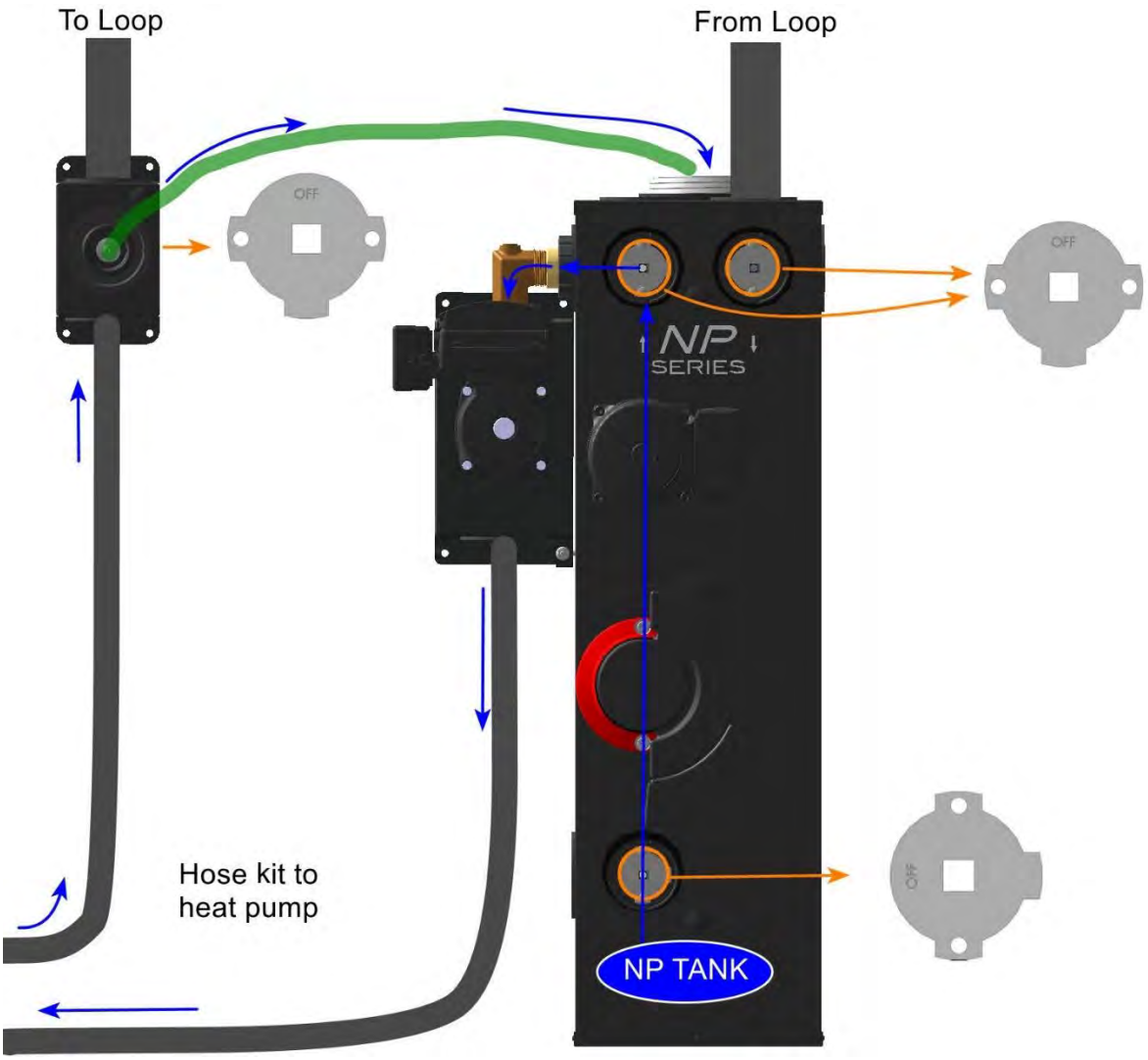

Figure 8. UPMXL installation location and flush direction for double pump NP flow center.

Flush Procedure for NPD Dual Circuit Non-Pressurized Flow Centers

Refer to Figures 9 and 10 to determine which pump replacement/circuit applies to your situation.

The UPMXL is installed in lower locations on single pump circuit NPDs to allow the column of water to provide the necessary suction head to the pump, and to ensure the pump has the least amount of head loss on the suction side. Installing the pump at the upper location would require that the pump "pull" fluid from the tank through the existing Magna GEO pump. This head loss could exceed the positive suction head provided by the column of water in the tank potentially leading to an air-locked UPMXL pump, pump failure, and/or unit lock-out.

The UPMXL is installed in upper locations on double pump circuits NPDs to allow the existing UPS26-99 pump to provide the necessary suction head to the UPMXL pump and to ensure the two pumps operate in series. The UPS26-99 MUST be wired to operate prior to the UPMXL being energized. See the *Installation Procedure* section for more information.

1. Attach a section of garden hose with Flo-Link garden hose adapter or 1" rubber hose with Flo-Link x hose barb adapter to the 3-way valve between the loop and the heat pump. See Figure 9 below.
2. Ensure the 3-way valves at the "to/from loop" are positioned with "OFF" and the flow indicating marks as show in the figure. "OFF" at 12 O'clock on the valves connected to the loop isolate the loop from the flow center and unit.
3. Energize the existing UPS26 pump and/or the new pump on the circuit you are purging to circulate fluid from the NP tank through the heat pump and back into the top of the tank. Be sure that the fluid does not splash in the tank creating additional air bubbles. Pushing the hose below the fluid level in the tank will help prevent this.
4. Run the pump until all air is purged from the pump and unit. You may hear air passing through the pump initially, but this should stop once all the air is purged. If you continue to hear air, ensure the tank is filled with fluid. Then, try squeezing the hose to decrease the fluid velocity allowing the air to rise to the top of the tank. Vent the newly installed UPMXL by rotating the vent screw in the middle of the pump one turn. A few drops of water should escape; this ensures that air has been displaced by water and ensures the pumps bearings are lubricated.
5. Add make-up fluid to the tank as necessary.
6. Return the valves to the operating position and remove the jumper hose.
7. Return to Step 9 of the Installation Procedure section of this manual.

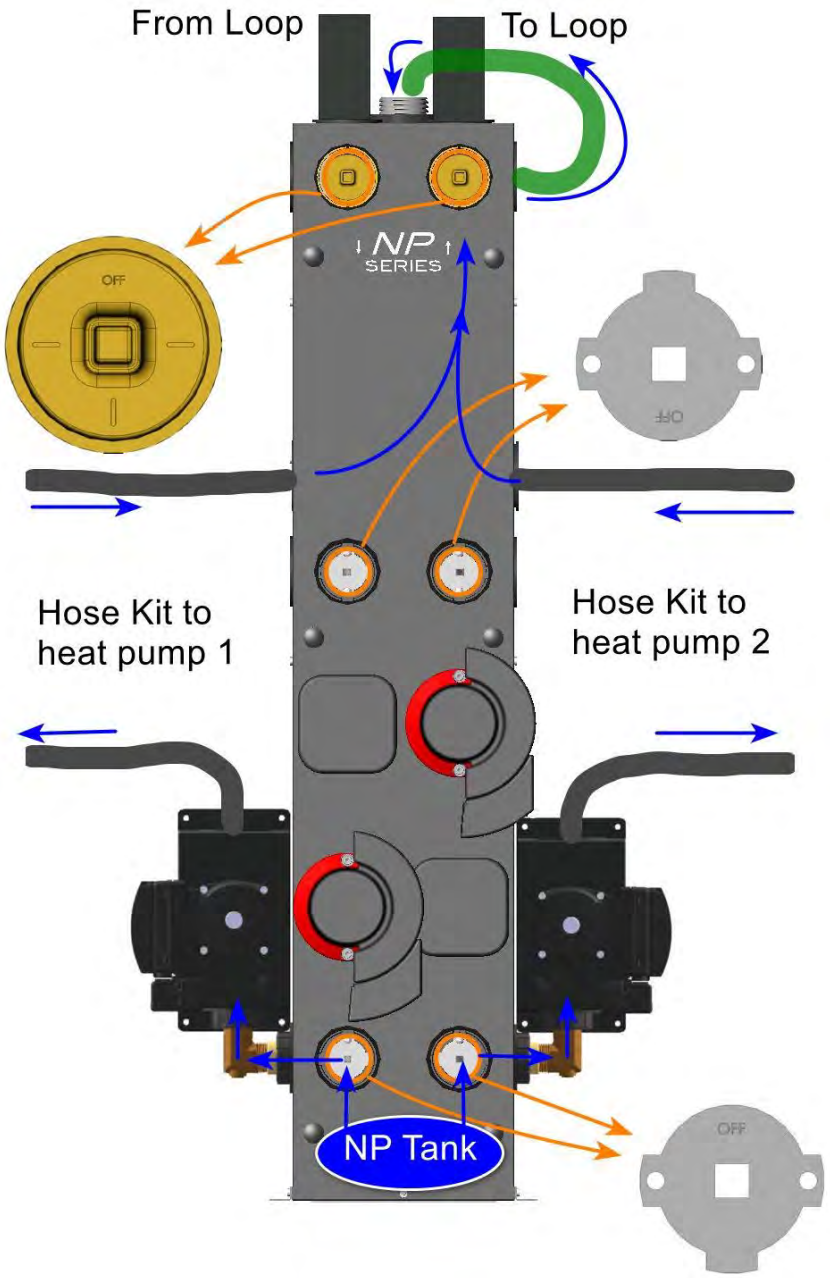

Figure 9. UPMXL installation locations and flush directions for NPD with a single Magna GEO for heat pump 1 and/or 2.

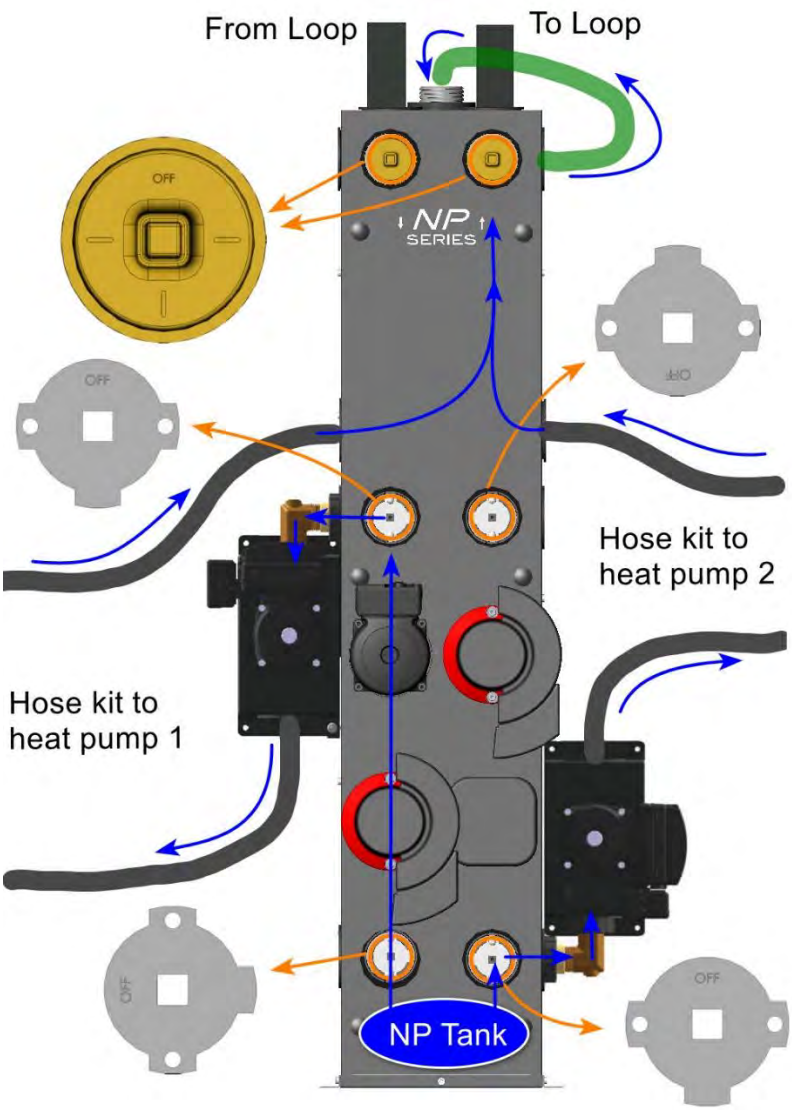

Figure 10. UPMXL installation locations and flush directions for NPD with a Magna GEO in series with a UPS26-99 for heat pump 1, and a single Magna GEO for heat pump 2.

Replacement Flow Center Cross Reference

The contractor may determine that a full flow center replacement is preferable to using a UPMXL Add-on kit to repair the existing flow center. Factors influencing this decision include the age of the existing flow center, the condition of the existing flow center, the water quality in the existing loop, and the building owner's budget. For example, a nine-year-old two-pump NP flow center that shows signs of corrosion and has a tank of orange fluid that appears to contain small bits of sand is a good candidate for replacement instead of repair. This condition may indicate that the existing Magna GEO pump failed due to poor water quality and a full system flush and filter will be required. Table 2 provides a cross reference from the original Magna GEO flow center to the equivalent UPMXL flow center. Note that not all heat pump OEM part numbers are listed. Contact your OEM or distributor for more information.

Original Flow Center		Replacement Flow Center	
1255	OEM Module, GPC, Brass, Single, Magna GEO 32-140	FL1L	FLW CNTR, FL1, UPMXL 25-124, 208-230V
1256	OEM Module, GPC, Brass, Double, 32-140+26-99	FL2M	FLW CNTR, FL2, UPMXL 25-124 + UPS26-99, 208-230V
1275	Flow Center, NPV, Variable Speed	NP1L	FLW CNTR, NP1, UPMXL 25-124, 208-230V
1275B	FLW CNTR, NPV, MAGNA GEO, Bosch	NP1L-B	FLW CNTR, NP1, UPMXL 25-124, 208-230V, BOSCH
1275C	FLW CNTR, NPV, MAGNA GEO, COMP,FCN13CD	NP1L-C	FLW CNTR, NP1, UPMXL 25-124, 208-230V, CARRIER
1275T	FLW CNTR, NPV, MAGNA GEO, TTHERM	NP1L-T	FLW CNTR, NP1, UPMXL 25-124, 208-230V, TTHERM
1276	Flow Center, NPV2, Variable speed + 3 speed	NP2M	FLW CNTR, NP2, UPMXL 25-124 + UPS26-99, 208-230V
1276B	FLW CNTR, NPV, MAGNA GEO + UPS26-99, Bosch	NP2M-B	FLW CNTR, NP2, UPMXL 25-124 + UPS26-99, 208-230V, BOSCH
1276C	FLW CNTR, NPV2, MAGNA GEO+UPS26-99, CMP, FCN24CD	NP2M-C	FLW CNTR, NP2, UPMXL 25-124 + UPS26-99, 208-230V, CARRIER
1298	Flow Center, FLV1, Magna GEO VS, black cab.	FL1L	FLW CNTR, FL1, UPMXL 25-124, 208-230V
1298B	Flow CNTR, FLO-LINK, 1 MAGNA GEO, BRASS, Bosch	FL1L-B	FLW CNTR, FL1, UPMXL 25-124, 208-230V, BOSCH
1298C	FLW CNTR, FLO-LINK, 1 MAGNA GEO, BRASS, FCP13BD	FL1L-C	FLW CNTR, FL1, UPMXL 25-124, 208-230V, CARRIER
1299	Flow Center, FLV2, Magna GEO VS + 99 3-speed,black cab.	FL2M	FLW CNTR, FL2, UPMXL 25-124 + UPS26-99, 208-230V
1299B	Flow Center, FLV2, Magna GEO VS + 99 3-speed, black cab, Bosch	FL2M-B	FLW CNTR, FL2, UPMXL 25-124 + UPS26-99, 208-230V, BOSCH
1299C	FLW CNTR, FL-LINK, MAGNA GEO+UP26-99 BRS, FCP24BD	FL2M-C	FLW CNTR, FL2, UPMXL 25-124 + UPS26-99, 208-230V, CARRIER
1334	FLW CNTR, NPD2-VS-C1	NPD2LA	FLW CNTR, NPD2, UPMXL 25-124 & UPS26-99, 208-230V
1335	FLW CNTR, NPD2-VS-VS	NPD2LL	FLW CNTR, NPD2, (2) UPMXL 25-124, 208-230V
1336	FLW CNTR, NPD3-VSC1-VS	NPD3ML	FLW CNTR, NPD3, UPMXL+UPS26-99 & UPMXL, 208-230V
1342	NPV1 Plus, 1 Magna GEO	NPP1L	FLW CNTR, NP1 PLUS, UPMXL 25-124, 208-230V
1343	NPV2 Plus, 1 Magna GEO+UPS26-99	NPP2M	FLW CNTR, NP2 PLUS, UPMXL + UPS26-99, 208-230V

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