



turn to the experts™ 

# Geothermal System Components Catalog



Effective May 15, 2016



# Table of Contents

## Residential Flow Centers

Flo-Link Series Pressurized Flow Centers.....	2,6
GPM Series Pressurized Flow Centers .....	2,8
Variable Speed Pressurized Panel Mount Flow Centers ..	7
NP Series Non-Pressurized Flow Centers.....	3,9
Variable Speed Non-Pressurized Flow Center Kits.....	10
Geo-Prime Hybrid Flow Centers .....	16

## Hose Kits

1" Hose Kits .....	11
--------------------	----

## Fittings

Flo-Link Double O-Ring Fittings .....	11, 13
Threaded Fittings & Adapters.....	11, 14

## Geothermal Accessories

Pressure Battery Expansion Tank.....	16
Geo-Booster .....	16
Geo-Prime Tank .....	16
P/T Plugs.....	16
Variable Speed Pump Controllers.....	16
Flow Center Pump Sharing Relay.....	16
Heat Pump Connector Kits .....	16
NP Series Connector Kit.....	17
High Density Rubber Unit Mounting Pads.....	18

**Contact Replacement Components for flow center replacement pumps, 3-way valve re-build kits, and other replacement parts for geothermal accessories (see page 27 for parts list).**

## Auxiliary Electric Heaters

Internal Electric Heat.....	19
-----------------------------	----

## Open Loop Accessories

Motorized Valves.....	20
Flow Regulators .....	20
P/T Plugs.....	16

## Fusion and Service Tools

Flush Cart .....	22
Installation/Service Tools.....	23
NP Series Tools .....	24
Fusion Tools.....	25

## Replacement Parts

Replacement Pumps.....	27
Flow Center Valve Repair Kits.....	27
Blank-off Plates.....	27
Flow Center Wiring Kit .....	27
Swivel Fitting Gasket.....	27

## Application Notes / Pump Curves

Application Notes: P/T plug at flow center .....	28
Grundfos UP26-99, UPS26-99, UP26-116 .....	29
Grundfos Magna GEO (variable speed) .....	30

## Flo-Link & GPM series Pressurized Flow Centers

Residential flow centers are available in a wide variety of combinations. Flo-Link double O-ring style flow centers are unsurpassed in ease of installation. Flo-Link double O-ring fittings provide leak-free union connections at the flow center, installed without tools (no need for pipe wrenches). Virtually any type of transition (fusion, thread, barb, PVC glue, etc.) is available for Flo-Link fittings. The full port 3-way flushing and isolation valves are designed for the wide range of temperatures experienced in ground loop applications.



**Flo-Link series foamed flow center** with high impact polystyrene cabinet (shown with variable speed Grundfos Magna GEO pump): Flo-Link flow centers are available in one pump and two pump configuration with variable speed (UPS32-140) and constant speed (UPS26-99) pump(s).



**Flo-Link™ double O-ring fitting sets** for union/transition to flow center: See Hose Kit/Fitting section for complete assortment of Flo-Link fittings.

Flo-Link flow centers include specially designed volutes, which allow the entire power head to be external to cabinet. This provides additional flexibility for installers and service technicians when a pump head needs to be rotated, or when a single pump flow center needs to be upgraded to a two pump flow center.



**GPM series foamed flow center with ABS plastic cabinet** (shown as GPM-1, single pump--also available as GPM-2)

The GPM series flow centers utilize reliable 3-way valves with the same features and benefits as the Flo-Link valves, but have threaded FPT connections. GPM flow centers are available in one to four pump configurations. The cabinet is designed to allow pump heads to be rotated, or for upgrading/downgrading (i.e. adding/removing a pump).

Field upgradable to two pump flow center

## NP SERIES

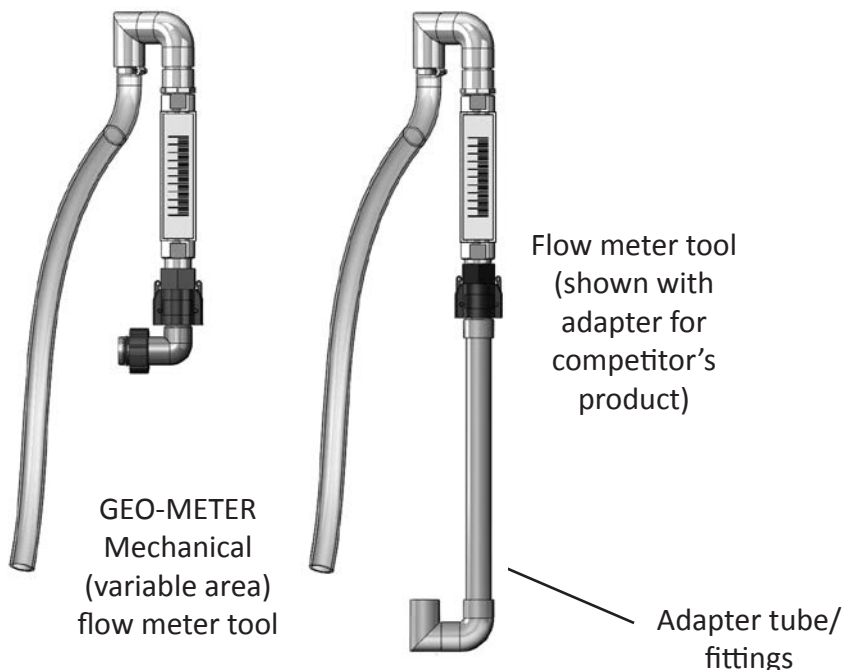
Non-Pressurized  
Flow Center

The NP series non-pressurized flow center raises the bar for non-pressurized applications. Building upon the success of the 3-way flushing valves with Flo-Link connections, the NP series reduces installation time, and increases reliability. In fact, by incorporating flushing valves into the flow center, the ground loop may be flushed without adding external flush ports, saving installation time and additional cost. Plus, piping becomes much simpler. Flo-Link double O-ring include transition fittings for most any application (PE fusion, PVC, threaded, etc.). Top or side connections to the heat pump and ground loop add even more flexibility.

Pump selection for the new NP series is the ultimate in flexibility. The NP series is the first to use the redesigned UPS26-99 Grundfos 3-speed pump. Or, the new variable speed Magna GEO may be selected for even more operating costs savings. Current options are as follows:

- **NP<sup>1</sup>** -- Grundfos UPS26-99 or UP26-116
- **NP<sup>2</sup>** -- Two UPS26-99 (3-speed) or UP26-116 pumps
- **NP<sup>V</sup>** -- Variable speed Magna GEO
- **NP<sup>V2</sup>** -- One Magna GEO and one UPS26-99

The NP series has many installation/service-friendly features. One of the best is the GEO-METER flow tool, shipped with both elbow and straight adapter fittings. For even more flexibility, an adapter is available to use this tool with the competition's flow center, providing a "one tool fits all" solution.



## Geo-Prime Series Hybrid Flow Centers



The Geo-Prime series is a hybrid system with a tank that may be added to a standard pressurized flow center or pump to create a non-pressurized system. In addition to its applicability in a non-pressurized system, the tank can be used as an add-on to traditional pressurized systems. In either case, the Geo-Prime ensures that the pumps receive only air-free loop fluid and provides enough additional make-up fluid to prevent call-backs associated with loop expansion during seasonal temperature changes.

The Geo-Prime Tank consists of a fluid reservoir, two bypass valves and an air-eliminating dip tube inside of a foam-insulated cabinet. The tank includes a sealing cap with integrated pressure and vacuum relief to prevent the reservoir from being over-pressurized or collapsing. The tank is mounted above the suction flange of the pump to ensure a flooded volute and to provide the necessary suction head pressure for the pump.

### Benefits Include:

- HDPE construction with fused joints
- Single pass internal air separation
- Integrated pressure/vacuum relief in sealing cap
- Integrated bypass valves to allow ground loop system to be flushed with industry standard flush cart
- Utilizes Flo-Link double O-ring connections for easy installation
- Integrated "sight glass" for fluid level monitoring without removing cap
- Approx. 2.5 gallon fluid capacity
- Foam insulated high impact polystyrene cabinet
- Modular system: may be used with pressurized flow center or insulated pump.

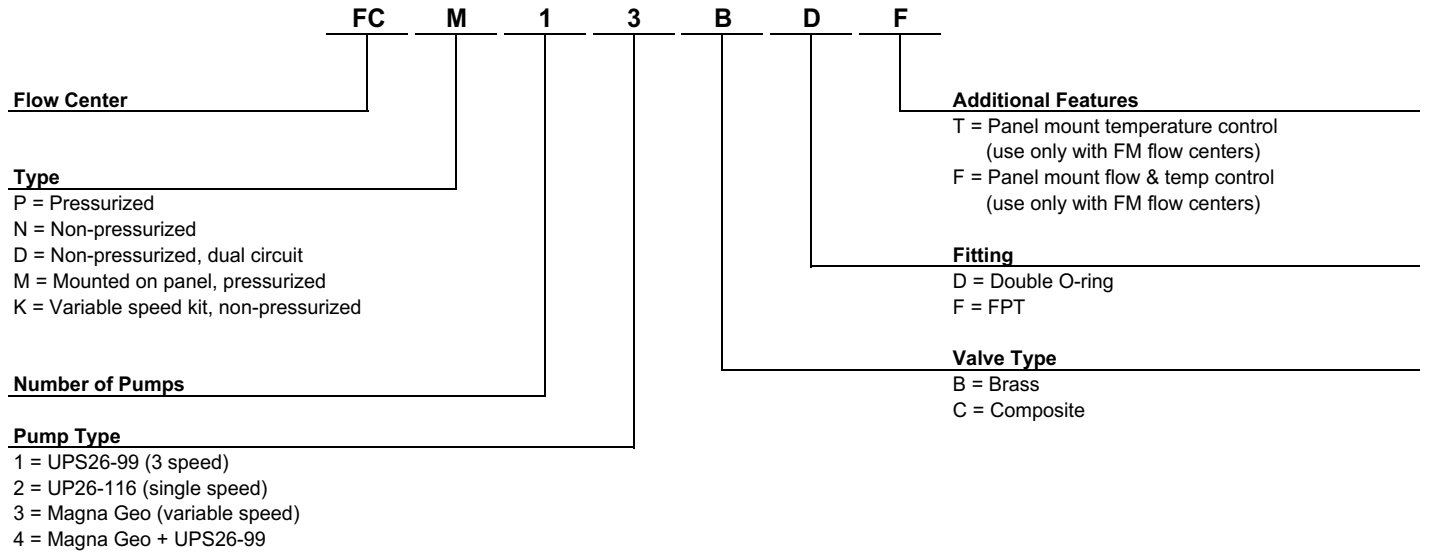


**Typical Application:** Geo-Prime is installed above flow center. An insulated pump may also be used instead of a flow center when 3-way flushing valves are not needed (see picture to the left).



## Flow Center Nomenclature

A wide range of both pressurized and non-pressurized products are available, saving installation time and providing the most reliable solutions for geothermal closed loop systems on the market today. The charts following this page show which model number combinations are available.



FCP



FCM



FCN



**Wiring Harness:** All flow centers include wiring a harness for connecting pumps to heat pump controls.

**NOTE:** Heat pumps with Infinity controls require a second wiring kit (RC part #4129) when connecting to a variable speed flow center.

# Residential Flow Centers

Part Number	Description
	<b>Flo-Link Foamed Cabinet (Double O-ring Connections -- Brass Valves)</b>
<b>FCP11BD</b>	FL1-99 UPS26-99, 3-speed, 230V, Grundfos
<b>FCP12BD</b>	FL1-116 UP26-116, single speed, 230V, Grundfos
FCP13BD	FLV1, UPS32-140 (variable speed), 230V, Grundfos**
<b>FCP21BD</b>	FL2-99 UPS26-99, 3-speed, 230V, Grundfos, Qty 2
<b>FCP22BD</b>	FL2-116 UP26-116, single speed, 230V, Grundfos, Qty 2
FCP24BD	FLV2, one UPS32-140 (variable speed) and one UPS26-99 (3-speed), 230V, Grundfos**
Each unit contains: Mounting hardware and one set of Flo-Link by 1-1/4" fusion fittings (loop side).	
<b>**NOTE: Variable speed flow centers require a controller package (See Accessories section)</b>	
	<b>Flo-Link Foamed Cabinet (Double O-ring Connections -- Composite Valves)</b>
<b>FCP11CD</b>	FL1-99 UPS26-99, 3-speed, 230V Grundfos
<b>FCP21CD</b>	FL2-99 UPS26-99, 3-speed, 230V, Grundfos, Qty 2
Each unit contains: Mounting hardware and one set of Flo-Link by 1-1/4" fusion fittings (loop side).	

## Flo-Link Series (Double O-ring) Pressurized Flow Centers

**IMPORTANT:** For heat pumps with Infinity controls, use wiring kit (RC part # 4129) when connecting to a variable speed flow center.

**NOTE:** Part #s in **BOLD ITALIC** are stocking items



A controller kit is required for all variable speed flow centers (see Geothermal Accessories), or a [panel mount version is available, which includes all necessary components.](#)



**Flo-Link double O-ring fitting sets** for union/transition to flow center: See Hose Kit/Fitting section for complete assortment of Flo-Link fittings.



**Loop Pressurization Accessories:** A Pressure Battery expansion tank or Geo-Prime is recommended for all pressurized systems. See Geothermal Accessories section for loop pressurization options.



# Residential Flow Centers

## Panel Mount Variable Speed Flow Centers

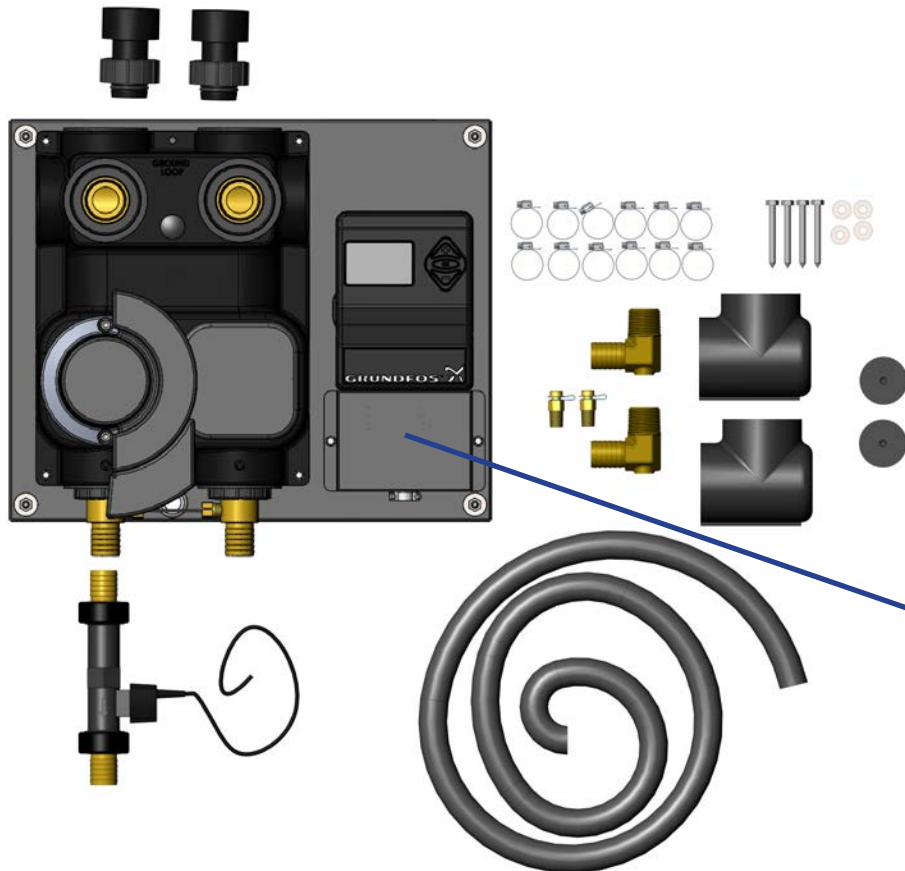


In our ongoing efforts to create products that are easier to install and time-saving, there are several new packages for variable speed pumping options that completely eliminate the need for wiring the controller. The packages listed below include panel-mounted controls with a terminal strip for simply wiring the panel to the heat pump thermostat connections. Note that this option is for heat pumps with 24VAC thermostats.

Part Number	Description		
	Variable Speed Pre-wired Packages (Panel Mounted)		
	Flow Center	Control	Connections
<b><i>FCM13BDT</i></b>	Magna GEO (var. spd.), brass valves	Temperature Difference	Hose kit / PE fusion**
<b><i>FCM13BDF</i></b>	Magna GEO (var. spd.), brass valves	Flow & Temperature Control	Hose kit / PE fusion**
<b><i>FCM24BDT</i></b>	1-Magna GEO + 1-UPS26-99, brass vlvs	Temperature Difference	Hose kit / PE fusion**
<b><i>FCM24BDF</i></b>	1-Magna GEO + 1-UPS26-99, brass vlvs	Flow & Temperature Control	Hose kit / PE fusion**

**NOTE: Part #s in BOLD ITALIC are stocking items**

\*\*Kit includes all of the fittings necessary for connecting to the ground loop (1-1/4" PE fusion) and to the heat pump (1" MPT).



**IMPORTANT: For heat pumps with Infinity controls, use wiring kit (RC part # 4129) when connecting to a variable speed flow center.**

Terminal strip for connection to heat pump includes terminals R, C, Y1, & Y2.

# Residential Flow Centers

## GPM Series (FPT) Pressurized Flow Centers

Part Number	Description
	<b>GPM-1 with Foamed Cabinet (FPT Connections)</b>
<b>FCP11BF</b>	GPM-1 UPS26-99, 3-speed, 230V, Grundfos
FCP12BF	GPM-1 UP26-116, single speed 230V, Grundfos
Each unit contains: Mounting hardware.	
<b>GPM-2 with Foamed Cabinet (FPT Connections)</b>	
<b>FCP21BF</b>	GPM-2 UPS26-99, 3-speed, 230V, Grundfos, Qty 2
FCP22BF	GPM-2 UP26-116, single speed 230V, Grundfos, Qty 2
Each unit contains: Mounting hardware.	
<b>GPM-3 with Foamed Cabinet (FPT Connections)</b>	
FCP31BF	GPM-3 UPS26-99, 3-speed, 230V, Grundfos, Qty 3
FCP32BF	GPM-3 UP26-116, single speed 230V, Grundfos, Qty 3
Each unit contains: Mounting hardware.	
<b>GPM-4 with Foamed Cabinet (FPT Connections)</b>	
FCP41BF	GPM-4 UPS26-99, 3-speed, 230V, Grundfos, Qty 4
FCP42BF	GPM-4 UP26-116, single speed 230V, Grundfos, Qty 4
Each unit contains: Mounting hardware.	

**NOTE: Part #s in *BOLD ITALIC* are stocking items**



**GPM-1**



**GPM-3**



**GPM-4**



**GPM-2**



**GPM series** flow centers require 1" MPT adapter fittings. See Hose Kit/Fitting section for complete assortment of fittings.

# Residential Flow Centers

Part Number	Description
	NP <sup>1</sup> with Foamed Cabinet (Flo-Link Double O-Ring Connections)
<b><i>FCN11CD</i></b>	NP <sup>1</sup> UPS26-99, 3-speed, 230V, Grundfos
<b><i>FCN12CD</i></b>	NP <sup>1</sup> UP26-116, single speed, 230V, Grundfos
Requires: Flo-Link adapter sets for all connections or connector kit (see Hose Kit/Fitting section)	
NP <sup>2</sup> with Foamed Cabinet (Flo-Link Double O-Ring Connections)	
<b><i>FCN21CD</i></b>	NP <sup>2</sup> UPS26-99, 3-speed, 230V, Grundfos, Qty 2
<b><i>FCN22CD</i></b>	NP <sup>2</sup> UP26-116, single speed, 230V, Grundfos, Qty 2
Requires: Flo-Link adapter sets for all connections or connector kit (see Hose Kit/Fitting section)	
NP <sup>V</sup> & NP <sup>V2</sup> w/ Foamed Cabinet (Flo-Link Dbl O-Ring Connections)	
<b><i>FCN13CD</i></b>	NP <sup>V</sup> Magna GEO (variable speed), 230V, Grundfos**
<b><i>FCN24CD</i></b>	NP <sup>V2</sup> one Magna GEO (variable spd.) & one UPS26-99 (constant spd.), 230V, Grundfos**
Requires: Flo-Link adapter sets for all connections or connector kit (see Hose Kit/Fitting section)	
<b>**NOTE: Variable speed flow centers require a controller package (See Accessories section)</b>	

**NOTE: Part #s in BOLD ITALIC are stocking items**

A controller kit is required for all variable speed flow centers (see Geothermal Accessories) or a **Flow Center Kit (FCK)** is available, which includes all necessary components.



**IMPORTANT: For heat pumps with Infinity controls, use wiring kit (RC part # 4129) when connecting to a variable speed flow center.**

Also available with Magna GEO variable speed pump



**Flo-Link double O-ring fitting sets** for union/transition to flow center. See Hose Kit/Fitting section for complete assortment of Flo-Link fittings.



**GEO-METER flow meter tool, adapters, and case** (see Tools section)

## NP SERIES Non-Pressurized Flow Center



**NP Series**  
(Two-pump version shown)

# Residential Flow Centers

## Non-Pressurized Variable Speed Flow Centers Kits

In our ongoing efforts to create products that are easier to install and time-saving, there are two new packages for variable speed pumping options that completely eliminate the need for wiring the controller. The packages listed below include variable speed control kits with a terminal strip for simply wiring the panel to the heat pump thermostat connections. Note that this option is for heat pumps with 24VAC thermostats.

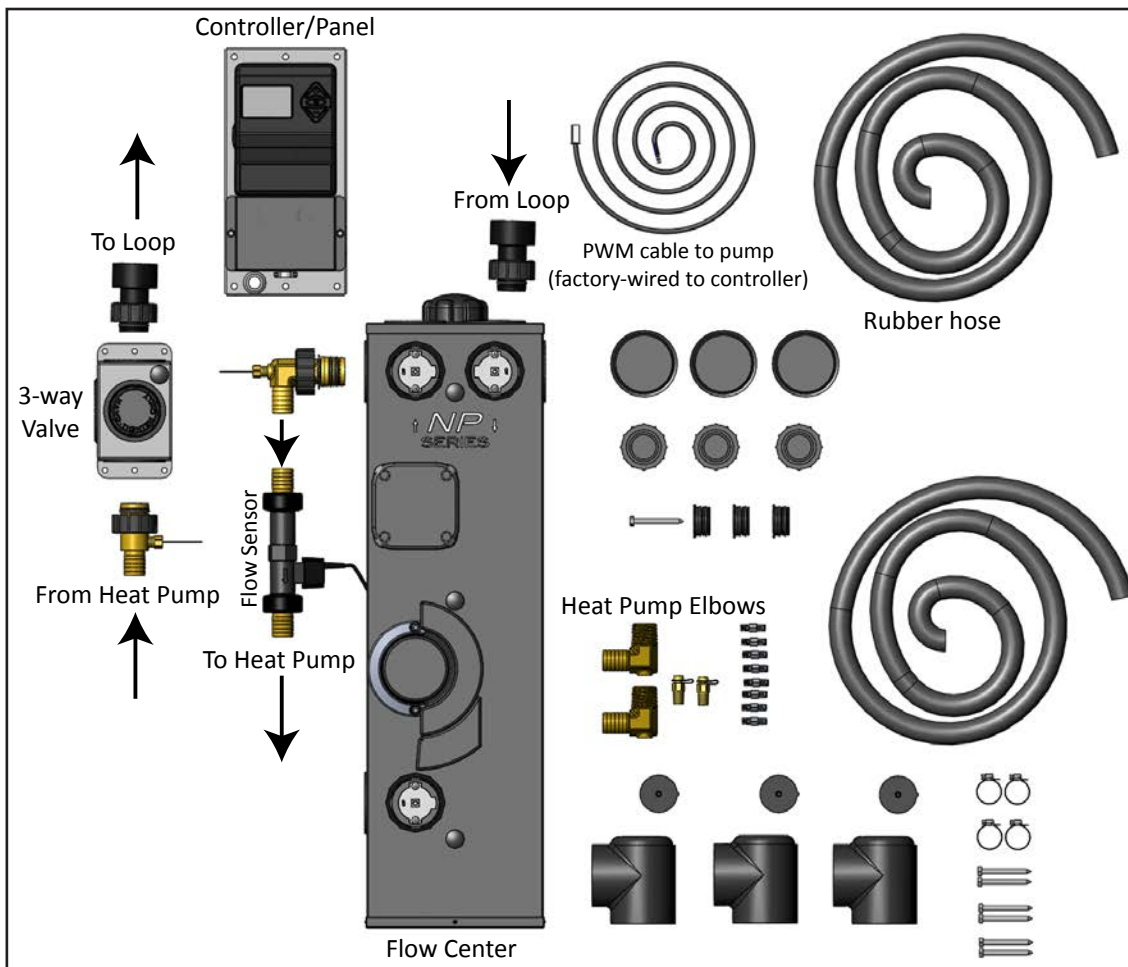


Part Number	Description		
	Variable Speed Pre-wired Packages (Panel Mounted)		
	Flow Center	Control	Connections
<b>FCK13BDF</b>	Magna GEO (var. spd.), brass valves	Flow & Temperature Control	Hose kit / PE fusion**
<b>FCK24BDF</b>	1-Magna GEO + 1-UPS26-99, brass vlvs	Flow & Temperature Control	Hose kit / PE fusion**

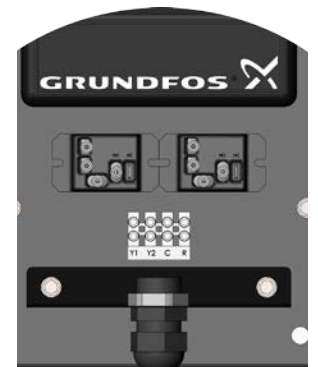
\*\*Kit includes all of the fittings necessary for connecting to the ground loop (1-1/4" PE fusion) and to the heat pump (1" MPT).

### Kit Contents:

**NOTE: Part #s in BOLD ITALIC> are stocking items**



**IMPORTANT:** For heat pumps with Infinity controls, use wiring kit (RC part # 4129) when connecting to a variable speed flow center.

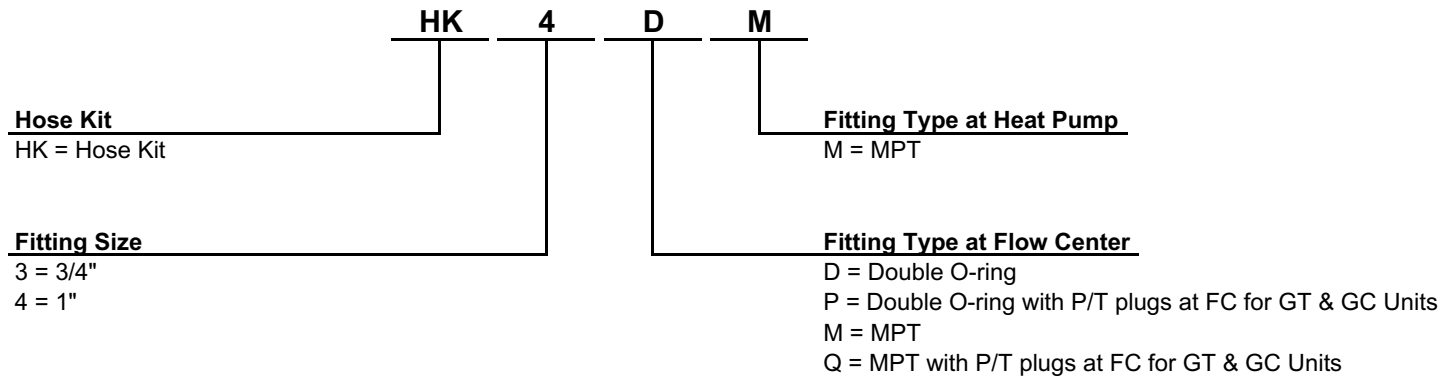


Terminal strip for connection to heat pump includes terminals R, C, Y1, & Y2.



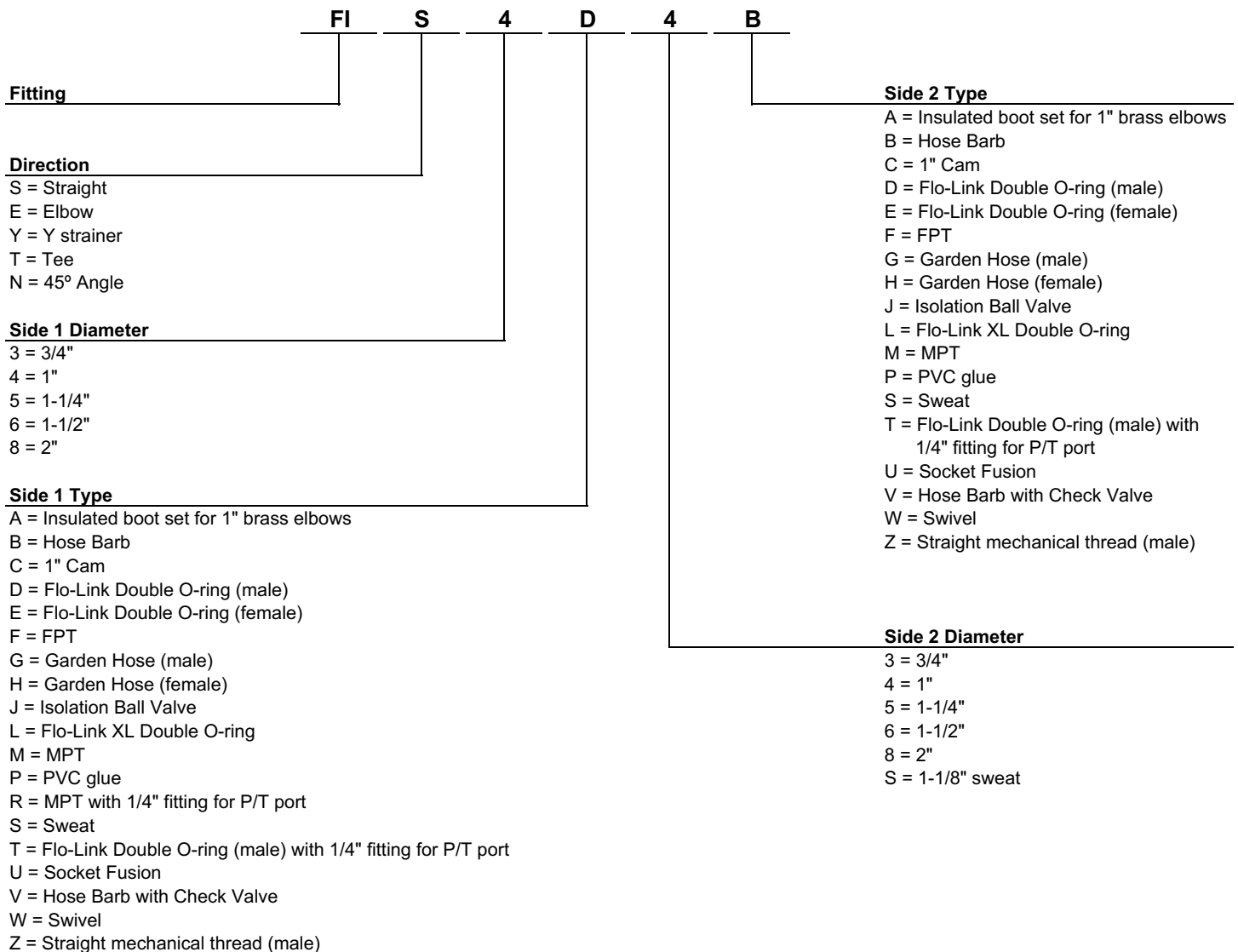
## Hose Kit Nomenclature

Hose kits provide a turn-key solution for connecting the geothermal heat pump to the flow center. They even include insulating boots for the elbow at the heat pump to help prevent condensation, and to lessen installation time.



# Fittings

## Fitting Nomenclature



# Hose Kits

## Hose Kits with P/T Plugs at Heat Pump

HK4DM



HK4MM



Part Number	Description
	<b>1" Hose Kit (Flo-Link Dbl O-ring @ Flow Cntr; MPT @ Heat Pump)</b>
<b><i>HK4DM</i></b>	Hose kit contents: <ul style="list-style-type: none"> <li>Qty 1: 12 ft. 1" ID black hose</li> <li>Qty 2: Insulating boot</li> <li>Qty 2: Insulating boot caps</li> <li>Qty 2: PT plug, 1/4" MPT</li> <li>Qty 2: Fitting, Flo-Link x 1" hose barb (flow center)</li> <li>Qty 2: Elbow, 1" MPT x 1" hose barb w/PT port (heat pump)</li> <li>Qty 8: Hose clamps</li> </ul>
	<b>1" Hose Kit (MPT @ Flow Center &amp; Heat Pump)</b>
<b><i>HK4MM</i></b>	Hose kit contents: <ul style="list-style-type: none"> <li>Qty 1: 12 ft. 1" ID black hose</li> <li>Qty 2: Insulating boot</li> <li>Qty 2: Insulating boot caps</li> <li>Qty 2: PT plug, 1/4" MPT</li> <li>Qty 2: Fitting, 1" MPT x 1" hose barb (flow center)</li> <li>Qty 2: Elbow, 1" MPT x 1" hose barb w/PT port (heat pump)</li> <li>Qty 8: Hose clamps</li> </ul>

NOTE: Part #s in **BOLD ITALIC** are stocking items

## Hose Kits with P/T Plugs at Flow Center (see page 28 for pressure drop chart)

HK4PM



HK4QM



Part Number	Description
	<b>1" Hose Kit (Flo-Link Dbl O-ring @ Flow Cntr; MPT @ Heat Pump)</b>
<b><i>HK4PM</i></b>	Hose kit contents: <ul style="list-style-type: none"> <li>Qty 1: 12 ft. 1" ID black hose</li> <li>Qty 2: Insulating boot</li> <li>Qty 2: Insulating boot caps</li> <li>Qty 2: PT plug, 1/4" MPT (at flow center -- see page 28)</li> <li>Qty 2: 1/4" MPT plug (at heat pump)</li> <li>Qty 2: Fitting, Flo-Link x 1" hose barb w/PT port (flow center)</li> <li>Qty 2: Elbow, 1" MPT x 1" hose barb w/PT port (heat pump)</li> <li>Qty 8: Hose clamps</li> </ul>
	<b>1" Hose Kit (MPT @ Flow Center &amp; Heat Pump)</b>
<b><i>HK4QM</i></b>	Hose kit contents: <ul style="list-style-type: none"> <li>Qty 1: 12 ft. 1" ID black hose</li> <li>Qty 2: Insulating boot</li> <li>Qty 2: Insulating boot caps</li> <li>Qty 2: PT plug, 1/4" MPT (at flow center -- see page 28)</li> <li>Qty 2: 1/4" MPT plug (at heat pump)</li> <li>Qty 2: Fitting, 1" MPT x 1" hose barb w/PT port (flow center)</li> <li>Qty 2: Elbow, 1" MPT x 1" hose barb w/PT port (heat pump)</li> <li>Qty 8: Hose clamps</li> </ul>

NOTE: Part #s in **BOLD ITALIC** are stocking items



# Fittings

Flo-Link double O-ring fittings are the geothermal industry's best transition/union fittings for connections to flow centers and heat pumps. The Flo-Link design provides a leak-free connection without the use of thread sealant, and saves installation time. All part numbers shown are for the set.

**NOTE: Part #s in *BOLD ITALIC* are stocking items**

## PE and PVC Adapters



## Brass Adapters - Hose Barb



## Brass Adapters - Threaded



## Brass Adapters with Fitting for PT Port



## Installation/Service Adapters



# Fittings

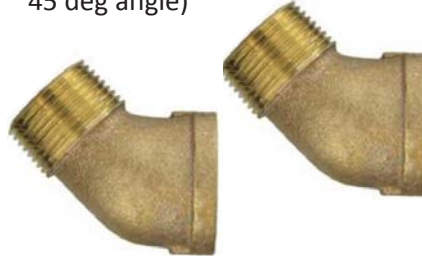
## Threaded Fittings, Adapters, and Other Fitting Components

**NOTE: Part #s in *BOLD ITALIC* are stocking items**

**FIE4M4B** (ea.): 1" MPT Elbow x 1" Hose Barb w/ fitting for PT Port



**FIN4M4F** (set): 1" MPT x 1" FPT 45 deg. Elbow (use with hose kit for heat pumps with fittings on 45 deg angle)



**FIS4M4B** and **FIS4M5B** (ea.): 1" MPT x 1" Hose Barb (4B) and 1" MPT x 1-1/4" Hose Barb (5B)



**FIS4R4B** (ea.): 1" MPT x 1" Hose Barb with 1/4" fitting for P/T port



**FIE4M4F** (set): 1" MPT x " FPT Elbow with P/T plugs (typically used for open loop systems)



**FIE4A4A** (set): Insulating boot set for 1" elbows



**FIS4Z4W**: Water Heater Adapters (use ASME rated water heater as buffer tank)



**FIS4M4C** (each): 1" MPT X 1" CAM, Aluminum



**Dual Unit Connection Kit** (Connect 2 heat pumps to 1 flow center)



**NEW!**

**FIT4D4E** (set): Flo-Link double O-ring connections at flow center. Use H4KDM or HK4PM hose kit for heat pump connections or Flo-Link adapters if hard piping.

## Accessory Nomenclature

Accessories include connection kits, pump controllers, and other items to add to the ease of installation for geothermal systems.

Accessory	AC	PB	Type
			PB = Pressure Battery GB = Geo-Booster GP = Geo-Prime PTP1 = 1/4" P/T plug PTP2 = 1/2" P/T plug VCT = Var. Spd. Controller for Magna GEO, temperature VCFHB = Var. Spd. Controller for Magna GEO, flow & temp (hose barb) VCFPVC = Var. Spd. Controller for Magna GEO, flow & temp (PVC) CK4MM = 1" connector kit--MPT at heat pump & flow center (hose kit fittings w/o hose) CK4DM = 1" connector kit--MPT at heat pump/DbI O-ring @ flow cntr (hose kit fittings w/o hose) CKNP = NP series connector kit with hose PSRN = Pump sharing relay, NEMA enclosure MP2436 = Unit mounting base pad, 3/4" rubber, 24x36" MP2836 = Unit mounting base pad, 3/4" rubber, 28x36" RH50 = Rubber hose, 1" diameter, 50' length

# Geothermal Accessories



**Pressure Battery  
Expansion Tank**



**Geo-Booster**



**Geo-Prime**



**Pump Sharing Relay  
(Two heat pumps with  
one flow center)  
ACPSRN**

Part Number	Description
	<b>Loop Pressurization</b>
<b>ACPB</b>	Pressure Battery (polyethylene expansion tank) -- up to 6 tons
<b>ACGB</b>	Geo-Booster (loop pressurization system -- 35 psig)
<b>ACGP</b>	Geo-Prime Tank*
*Use with Flo-Link flow centers or insulated pumps. May also be used with GPM flow centers with Flo-Link female x 1" MPT adapter (see Fittings section).	
<b>Pressure/Temperature Plugs</b>	
<b>ACPTP1</b>	1/4" P/T Plug (each)
<b>ACPTP2</b>	1/2" P/T Plug (each)
<b>Controllers for Variable Speed Flow Centers</b>	
<b>ACVCT</b>	Grundfos Magna GEO Controller (for NPV & NPV2) -- Temperature Control (hose kit or PVC connections -- 1/4" MPT immersion thermistors included)
<b>ACVCFHB</b>	Grundfos Magna GEO Controller (for NPV & NPV2) -- Temperature and Flow Control for hose kit connections
<b>ACVCFPVC</b>	Grundfos Magna GEO Controller (for NPV & NPV2) -- Temperature and Flow Control for PVC connections
<b>Two Heat Pump Flow Center Sharing Control</b>	
<b>ACPSRN</b>	Pump sharing relay (2 units; 1 flow center) w/NEMA encl.
<b>Additional Rubber Hose Lengths</b>	
<b>ACRH50</b>	1" ID Black 150 psi hose, 50 ft. length

**NOTE: Part #s in *BOLD ITALIC* are stocking items**



**ACPTP1 ACPTP2**

**IMPORTANT: For heat pumps with Infinity controls, use wiring kit (RC part # 4129) when connecting to a variable speed flow center.**



**Variable Speed Pump Controller  
(ACVCFHB shown)**



Part Number	Description
<b><i>ACCKNP</i></b>	<p>Hose kit contents:</p> <ul style="list-style-type: none"> <li>• Qty 1: 12 ft. 1" ID black hose. 150 psi</li> <li>• Qty 4: Insulating boot</li> <li>• Qty 2: Elbow, 1" MPT x 1" hose barb w/PT port (heat pump connection)</li> <li>• Qty 2: PT plug, 1/4" MPT</li> <li>• Qty 2: Elbow with 1/4" plugs, Flo-Link x 1" hose barb (flow center connection)</li> <li>• Qty 1: 3-way Valve, Single, Composite, Flo-Link fittings</li> <li>• Qty 1: 1-1/4" PE fusion x Flo-Link (3-way Valve connection to ground loop)</li> <li>• Qty 1: Flo-Link x 1" hose barb (3-way Valve connection to heat pump)</li> <li>• Qty 1: 1-1/4" PE fusion x 1" hose barb (ground loop connection to hose at flow center, RH side)</li> <li>• Qty 12: Hose clamps</li> </ul> <p>Compatible with NP series flow centers and heat pumps with 1" FPT connections.</p>

**NOTE:** Part #s in ***BOLD ITALIC*** are stocking items



The vast majority of geothermal systems are installed indoors, which makes vibration and sound isolation important. Standard condenser pads are not designed for indoor packaged equipment. ACMP pads are made of high density SBR recycled rubber, which provides a high degree of vibration and sound absorption for compressor-bearing units installed indoors.

Part Number	Description
	Unit Mounting Pad
<b><i>ACMP2436</i></b>	3/4" high density rubber equipment pad, 24" x 36"
<b><i>ACMP2836</i></b>	3/4" high density rubber equipment pad, 28" x 36"

**NOTE: Part #s in *BOLD ITALIC* are stocking items**

Size	Mounting Pad Used by Model				
	GT/GC Vertical	GP Vertical	GB Vertical	GS/GZ	GW
018	N/A	N/A	ACMP2436	N/A	N/A
024	ACMP2436	ACMP2436	ACMP2436	ACMP2436	ACMP2436
030	N/A	N/A	ACMP2436	N/A	N/A
036	ACMP2836	ACMP2436	ACMP2436	ACMP2436	ACMP2436
042	N/A	N/A	ACMP2836	N/A	N/A
048	ACMP2836	ACMP2436	ACMP2836	ACMP2436	ACMP2436
060	ACMP2836	ACMP2836	ACMP2836	ACMP2836	ACMP2436
072	ACMP2836	ACMP2836	ACMP2836	ACMP2836	ACMP2436

**Equipment Pad Features:**

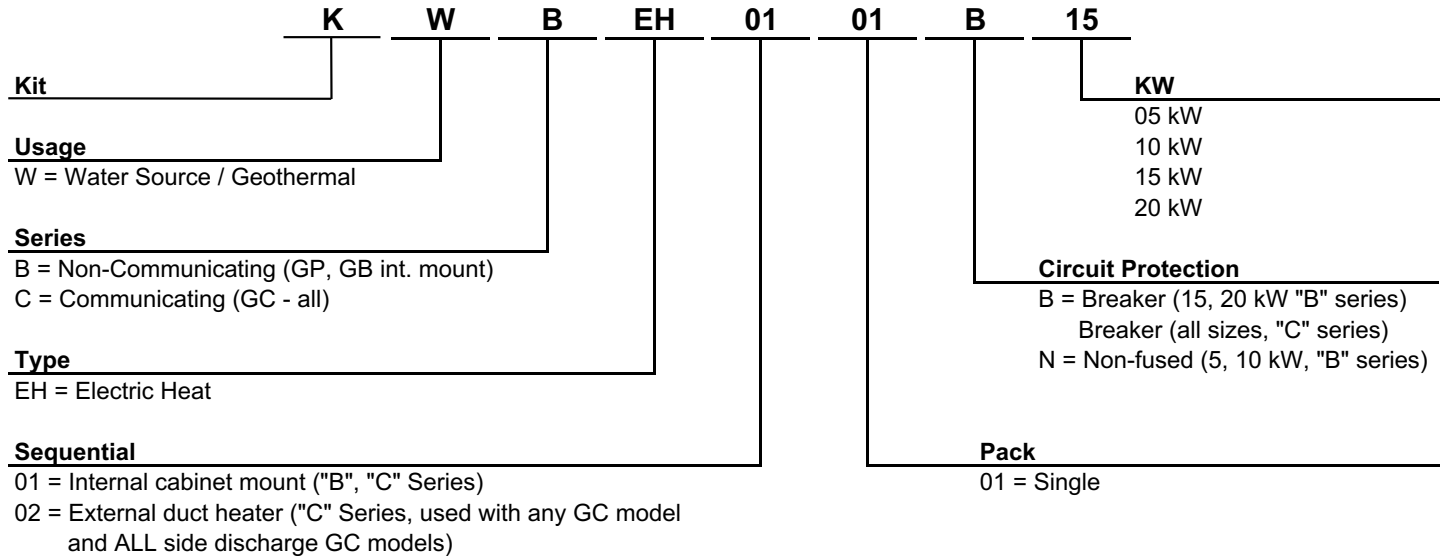
- Absorbs low frequency sound/vibration (particularly suited for compressors)
- Environmentally friendly recycled material (SBR bonded black recycled rubber)
- High density (60 lbs/cu. ft.)
- Anti-skid texture
- Non-porous, both sides
- Rated for packaged unit weight (very little compression)
- May be trimmed as needed
- Individually boxed





## Auxiliary Heater Nomenclature

The KW series heater package is a field installable electric resistance heater kit designed for the GC, GP, and GB series heat pumps. The KW series heater package requires separate electrical service connection, independent from the heat pump's power supply. Installation of this heater package will convert the heat pump into a two point power connection. The heater package is available in four capacities, 5, 10, 15, and 20 kW. Unit tonnage vs. heater package capacity compatibility is shown in the table below.



Heater Series	GHP Model	Aux. Heat Size Compatibility			
		5 kW	10 kW	15 kW	20 kW
Internal Mount	GP024	●	●	-	-
	GP036	●	●	-	-
	GP048	●	●	●	-
	GP060	●	●	●	●
	GP072	●	●	●	●
Series "B" Internal Mount	GB018	●	-	-	-
	GB024	●	●	-	-
	GB030	●	●	-	-
	GB036	●	●	●	-
	GB042	●	●	●	-
	GB048	●	●	●	●
GB060	●	●	●	●	
Series "C" Internal Mount	GC024	●	●	-	-
	GC036	●	●	●	-
	GC048	●	●	●	●
	GC060	●	●	●	●
	GC072	●	●	●	●
Series "C" Duct Mount	GC024	●	●	-	-
	GC036	●	●	●	-
	GC048	-	●	●	-
	GC060	-	-	●	●
GC072	-	-	●	●	

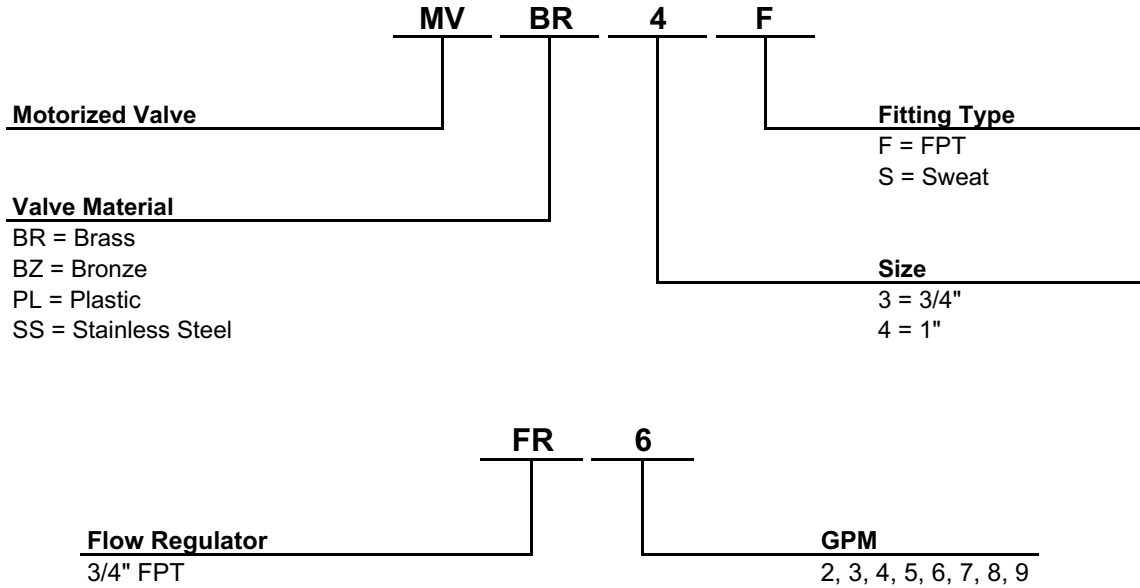
### Notes:

- Side discharge GP and GB models require externally-mounted duct heaters (supplied by others).
- Series "C" external duct heaters are communicating only, and are not compatible with non-communicating GP and GB models.

● = Heater Kit compatible  
-- = Heater Kit NOT compatible

## Open Loop Accessory Nomenclature

Solenoid valves and flow restrictors are essential for open loop systems to shut off the water when the heat pump is not running and to maintain proper water flow without wasting water.



MVBR3F & MVBR4F



FR2 through FR9



Part Number	Description
	<b>Motorized Solenoid Valves</b>
<b><i>MVBR3F</i></b>	Valve, motorized solenoid, forged brass 3/4" FPT, 24V w/end sw
<b><i>MVBR4F</i></b>	Valve, motorized solenoid, forged brass 1" FPT, 24V w/end sw
<b>Flow Regulator Valves</b>	
<b>FR2</b>	Valve, flow regulator, 3/4" FPT x 3/4" FPT, 2 GPM
<b><i>FR3</i></b>	Valve, flow regulator, 3/4" FPT x 3/4" FPT, 3 GPM
<b><i>FR4</i></b>	Valve, flow regulator, 3/4" FPT x 3/4" FPT, 4 GPM
<b><i>FR5</i></b>	Valve, flow regulator, 3/4" FPT x 3/4" FPT, 5 GPM
<b><i>FR6</i></b>	Valve, flow regulator, 3/4" FPT x 3/4" FPT, 6 GPM
<b><i>FR7</i></b>	Valve, flow regulator, 3/4" FPT x 3/4" FPT, 7 GPM
<b><i>FR8</i></b>	Valve, flow regulator, 3/4" FPT x 3/4" FPT, 8 GPM
<b><i>FR9</i></b>	Valve, flow regulator, 3/4" FPT x 3/4" FPT, 9 GPM

**NOTE: Part #s in *BOLD ITALIC* are stocking items**

## Fusion and Service Tool Nomenclature

There are a number of specialized tools needed for proper geothermal system installation. Carrier offers a full range of fusion equipment, flush carts, and service jobs to get the job done right the first time.



**Type**

- HFD = Heat fusion tool double face
- FKT = Complete fusion kit
- SF3 = 3/4" socket face
- SF4 = 1" socket face
- SF5 = 1-1/4" socket face
- SF6 = 1-1/2" socket face
- SF8 = 2" socket face
- CR3 = 3/4" cold ring
- CR4 = 1" cold ring
- CR5 = 1-1/4" cold ring
- CR6 = 1-1/2" cold ring
- CR8 = 2" cold ring
- DG3 = 3/4" depth gauge / chamfer tool
- DG4 = 1" depth gauge / chamfer tool
- DG5 = 1-1/4" depth gauge / chamfer tool
- DG6 = 1-1/2" depth gauge / chamfer tool
- DG8 = 2" depth gauge / chamfer tool
- FHO = Fitting holder
- FTI = Fusion timer
- TS5 = Temp stick 500 deg.
- MBR = Mounting bracket

**Type**

- FHB = Heater bag
- PC4 = Pipe cutter 1"
- PC5 = Pipe cutter, ratchet, 1-1/2"
- PC8 = Pipe cutter, ratchet, 2"
- GGO = Geo-Gooser
- FLK = Flush kit
- DTH = Digital thermometer
- PG1 = Pressure gauge, 100 psi
- GAD = Gauge adapter
- HYD = Hydrometer (alcohols)
- MFI = Magnetic field indicator
- FLC = Flush Cart
- FLC2 = Flush Cart with 1-1/4" ball valves on hose assy
- FLH1 = Flush cart hose assy set, 10 ft., 1" CAM ftgs (loop side)
- FLH2 = Flush cart hose assy set, 10 ft., 1" CAM ftgs (loop side), 1-1/4" ball valves included with hoses
- FLH3 = Flush cart hose assy set, 20 ft., 1-1/2" CAM ftgs (loop side)
- FB100 = Flush cart filter, 100 micron
- FB001 = Flush cart filter, 1 micron
- NPFMT = NP series flow meter tool
- NPBDA = Flow meter tool, B & D adapter



The professional's choice to purge air and flush debris from residential and light commercial geothermal ground loops, this premium Flush Cart includes all the important features required to safely flush and purge the loop including power flushing, power draining, pump and dump, and debris filtering. Its compact design utilizes standard components which allows for easy field service. The 1.5 HP self-priming 115V pump is mounted above the cart's axle, providing a well balanced system that is easy to maneuver.



TLFLC2

Part Number	Description	
	Flush Cart & Accessories	
TLFLC2	Flush cart*	
TLFLH1	Hose assy, flush cart (set of 2, 10 ft.)--1" CAM ftgs (loop side)	
TLFLH2	Hose assy, flush cart (set of 2, 10 ft.)--w/ 1-1/4" ball valves	
TLFFLH3	Hose assembly (set of 2, 20 ft.)--1-1/2" CAM ftgs (loop side)**	
TLFB100	Filter bag, 100 micron, for flush cart	(Each)
TLFB001	Filter bag, One (1) micron, for flush cart	(Each)

TLFLH1



TLFB001/  
TLFB100



\*Ships with hose set with 1-1/4" ball valves

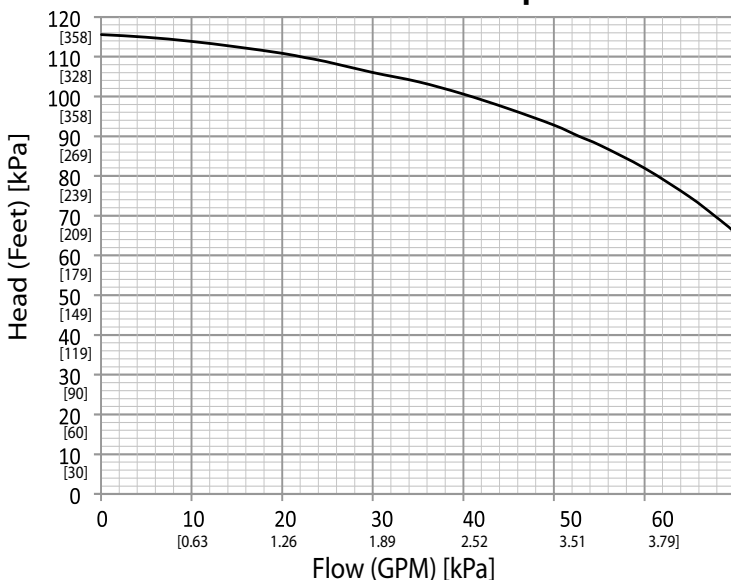
\*\*Ships with 2 - CAM male x male adapters. May be used as an extension set or with Flo-Link XL flow centers.

### Features:

- **ETL Safety Listing (Listed to UL Standard 778)**
- Tank: 10" Diameter, 13 gallon capacity
- Hand Truck: P-Handle, powder-coated steel
- Tires: 10" Pneumatic
- Wiring: 20' 12/3 SJO cord with 15 Amp male plug
- Power Switch: Weatherproof switch box with 20 Amp GFCI protected switch
- Filter: Removable/reusable, 5.5" Dia X 31"long, 100 micron, 90 GPM max.
- Power Flush Valve: Brass, 2" Full port
- Dead-Head Valve: Brass, 1.5" Full port
- Hose connections: 1.5" CAM male quick-connect
- Power Drain Valve: Brass, 1/2" Full port with garden hose swivel connection
- Pump & Dump Valve: Brass, 1/2" Full port with garden hose swivel connection
- Fill Valve: Brass, 1/2" Full port with garden hose swivel connection
- Pump Case Drain Port Valves: (2) 1/4", Brass
- PT Port: Located on discharge side of pump; allows pressure measurement
- Pump/Tank Connection: 2" flexible wire-reinforced hose
- Sight tube: Flexible with O-ring; allows fluid level monitoring during dead-head
- Hoses: (2) 1.5" ID, Flexible PVC hose with rigid PVC helix with 1.5" CAM female quick connect fittings (pump side) and 1" CAM fittings (loop side)



### Flush Cart Munro Pump Curve



Part Number	Description
	Loop Tools & Accessories
<b><i>TLGGO</i></b>	Geo-Gooser loop pressurization device
<b><i>TLDTH</i></b>	Thermometer, digital w/case
<b><i>TLPG1</i></b>	Pressure gauge, 0-100 psig, 3.5" dial w/PT adapter
TLGAD	Gauge adapter P/T plug w/guard
TLHYD	Hydrometer, alcohols
TLMFI	AC Magnetic Field Indicator (check pump operation)
<b><i>TLFLK</i></b>	Loop Service and Flush Kit

Contact Replacement Components for flow center replacement pumps, 3-way valve re-build kits, and other replacement parts for geothermal accessories (see page 27 for parts list).

NOTE: Part #s in ***BOLD ITALIC*** are stocking items



TLGGO

TLFLK



TLDTH



TLPG1



TLGAD



TLHYD



TLMFI

Part Number	Description
	<b>GEO-METER Flow Meter Tool</b>
<b><i>TLNPFMT</i></b>	Mechanical (variable area) flow meter tool
<b><i>TLNPBDA</i></b>	Adapter kit for B & D flow meter tool (allows B & D tool to be used with NP series flow centers)
Flow meter tool 3762 contains: Tool with fittings, 90° cam x Dbl O-ring adapter, straight cam x Dbl O-ring adapter, B & D adapter, and carrying case.	

**NOTE: Part #s in *BOLD ITALIC* are stocking items**

TLNPBDA: Adapter kit for B & D flow meter tool



TLNPFMT: Flow meter tool (shown in and out of case)



Flow meter tool shown in use





TLHFD



TLFKT

Socket Face Set



Cold Ring Vice Grip Clamp



Depth Gauge/Chamfer Tool



Part Number	Description
	Fusion Tools
TLHFD	Heat fusion tool - double face
TLFKT	Fusion tool kit 3/4", 1-1/4", & 2" -- includes: <ul style="list-style-type: none"> <li>• Complete fusion tool set (3/4", 1-1/4" &amp; 2")</li> <li>• Heating tool w/cover, socket faces, cold rings, 1-1/4" &amp; 2" chamfer tools, tool box</li> <li>• Timer, temple sticks, up to 2" ratchet cutter</li> </ul>
Socket Faces	
TLSF3	3/4" IPS socket face set
TLSF4	1" IPS socket face set
TLSF5	1-1/4" IPS socket face set
TLSF6	1-1/2" IPS socket face set
TLSF8	2" IPS socket face set
Cold Rings Vice Grip Clamp	
TLCR3	3/4" IPS cold ring Vice Grip clamp
TLCR4	1" IPS cold ring Vice Grip clamp
TLCR5	1-1/4" IPS cold ring Vice Grip clamp
TLCR6	1-1/2" IPS cold ring Vice Grip clamp
TLCR8	2" IPS cold ring Vice Grip clamp
Depth Gauge/Chamfer Tool	
TLDG3	3/4" IPS depth gauge/chamfer tool
TLDG4	1" IPS depth gauge/chamfer tool
TLDG5	1-1/4" IPS depth gauge/chamfer tool
TLDG6	1-1/2" IPS depth gauge/chamfer tool
TLDG8	2" IPS depth gauge/chamfer tool
**	Replacement blade for all depth gauge/chamfer tools**

\*\*Available through Replacement Components

FLFHO



TLFTI



TLTS5



TLMBR



TLFHB



TLPC4



TLPC5



Part Number	Description
	Fusion Tools
TLFHO	Fitting holder - 2" IPS
TLFTI	Fusion timer
TLTS5	Temp stick - PE, 500°F
TLMBR	Mounting bracket for fusion tool
TLFHB	Fusion tool heater bag
Pipe Cutters	
TLPC4	PE cutter - up to 1"
**	Replacement blade for TPC4
TLPC5	PE ratchet cutter - up to 1-1/4"
**	Replacement blade for TPC5
TLPC8	PE ratchet cutter - up to 2"
**	Replacement blade for TPC8

\*\*Available through Replacement Components

# Replacement Parts



Replacement pump head -- "NV" (no volute) part numbers\*



9428/9405/9104\*



9024



9424

Contact Replacement Components for flow center replacement pumps, 3-way valve re-build kits, and other replacement parts for geothermal accessories.

Part Number	Description
	Replacement Pumps - Flow Centers
9425NV	UPS26-99 (3-speed), 230V Grundfos pump, no volute*
9428	UPS26-99F (3-spd), 230V Grundfos pump, cast iron volute
9405NV	UP26-116 (single speed), 230V Grundfos pump, no volute*
9405	UP26-116F (sngl spd), 230V Grundfos pump, cast iron volute
9104NV	UPS26-99 (3-speed), 115V Grundfos pump, no volute*
9104	UPS26-99F (3-spd), 115V Grundfos pump, cast iron volute
9024	Grundfos Magna GEO 32-140 var. speed, 230V, cast iron
Replacement Pump - Flush Cart	
9424	Munro 1.5 HP 115V/208-230V single phase
Flow Center 3-Way Valve Repair Kits / Gaskets for Swivel Fittings	
2938	Repair Kit, Composite Valve, Flo-Link Double O-ring
3518	Repair Kit, Brass Valve, Flo-Link Double O-ring
3341	Repair Kit, Brass Valve, FPT Connections
4026	Set of 10 1" gaskets for swivel fittings at heat pump
Blank-off Plate Kits**	
3480	Blank-off Plate Kit, Flo-Link Double O-ring flow centers
3479	Blank-off Plate Kit, 1" FPT flow centers
Wiring Kits	
3977	Wiring kit for residential flow centers***
4129	Wiring kit for Infinity/Evolution units using var. spd. flow center (purchased separately from RC)

\* It is normally not practical to change the volute in a foamed-in flow center. Part numbers with "NV" at the end indicate that the replacement pump is the pump head only (does not include the volute). This approach lowers the weight of the package (and shipping costs), and avoids disposal issues with the unused cast iron volute.

\*\* Used for converting a two-pump flow center to a one pump flow center.

\*\*\* Included with residential flow centers, starting Fall 2014.



3518

3977



2938



3341

Gasket in 4026 (pack of 10)



3479/3480



# Application Notes for Hose Kits with P/T Plugs at the Flow Center

For heat pumps with water connections under the return air duct or for any system that could benefit from installing P/T plugs at the flow center instead of at the heat pump, there are hose kits available (HK4PM and HK4QM) that provide an option for the location of the P/T plugs (at the heat pump or at the flow center). Flow center connections with P/T ports and a set of 1/4" MPT brass plugs are included to allow the placement of the P/T plugs at either location.

**NOTE: When the P/T plugs are placed at the flow center, additional pressure drop must be added to the heat pump heat exchanger pressure drop to determine flow rate.** Use the table below for the additional hose kit pressure drop. An example follows.

## Hose Kit Pressure Drop\*

Flow Rate (U.S. GPM)	Pressure Drop at Various Flow Rates/Antifreeze Concentration (includes fittings & 12 ft. of hose)											
	20% Propylene Glycol		25% Propylene Glycol		20% Ethanol		12.5% Methanol		20% Methanol		Water	
	Ft. of Hd.	PSI	Ft. of Hd.	PSI	Ft. of Hd.	PSI	Ft. of Hd.	PSI	Ft. of Hd.	PSI	Ft. of Hd.	PSI
4	0.2	0.1	0.2	0.1	0.2	0.1	0.1	0.0	0.1	0.0	0.1	0.0
5	0.2	0.1	0.3	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1
6	0.3	0.1	0.4	0.2	0.3	0.1	0.3	0.1	0.3	0.1	0.2	0.1
7	0.4	0.2	0.5	0.2	0.4	0.2	0.4	0.2	0.4	0.2	0.3	0.1
8	0.5	0.2	0.6	0.3	0.5	0.2	0.5	0.2	0.5	0.2	0.4	0.2
9	0.7	0.3	0.7	0.3	0.7	0.3	0.6	0.3	0.6	0.3	0.5	0.2
10	0.8	0.3	0.9	0.4	0.8	0.3	0.7	0.3	0.7	0.3	0.6	0.3
11	0.9	0.4	1.0	0.4	1.0	0.4	0.8	0.3	0.9	0.4	0.7	0.3
12	1.1	0.5	1.2	0.5	1.1	0.5	1.0	0.4	1.0	0.4	0.8	0.3
13	1.2	0.5	1.4	0.6	1.3	0.6	1.1	0.5	1.2	0.5	1.0	0.4
14	1.4	0.6	1.6	0.7	1.5	0.6	1.3	0.6	1.3	0.6	1.1	0.5
15	1.6	0.7	1.8	0.8	1.6	0.7	1.4	0.6	1.5	0.6	1.2	0.5
16	1.8	0.8	2.0	0.9	1.8	0.8	1.6	0.7	1.7	0.7	1.4	0.6
17	2.0	0.9	2.2	1.0	2.0	0.9	1.8	0.8	1.8	0.8	1.5	0.6
18	2.2	1.0	2.5	1.1	2.3	1.0	2.0	0.9	2.0	0.9	1.7	0.7

\*Use the above chart for entering water temperatures between 30°F and 50°F. For temperatures above 50°F, use the column labeled "Water". Antifreeze is shown in % by volume.

### Example:

Hose kit part number HK4PM is installed between a model GT048 and an FCP flow center with the P/T plugs installed at the flow center. The entering water temperature is 30°F, and the antifreeze is 20% propylene glycol. The heat pump is in the heating mode. The hose kit pressure drop must be added to the heat exchanger (HX) pressure drop in order to determine the flow rate of the system when using P/T plugs at the flow center.

### GT048 HEATING PERFORMANCE - FULL LOAD

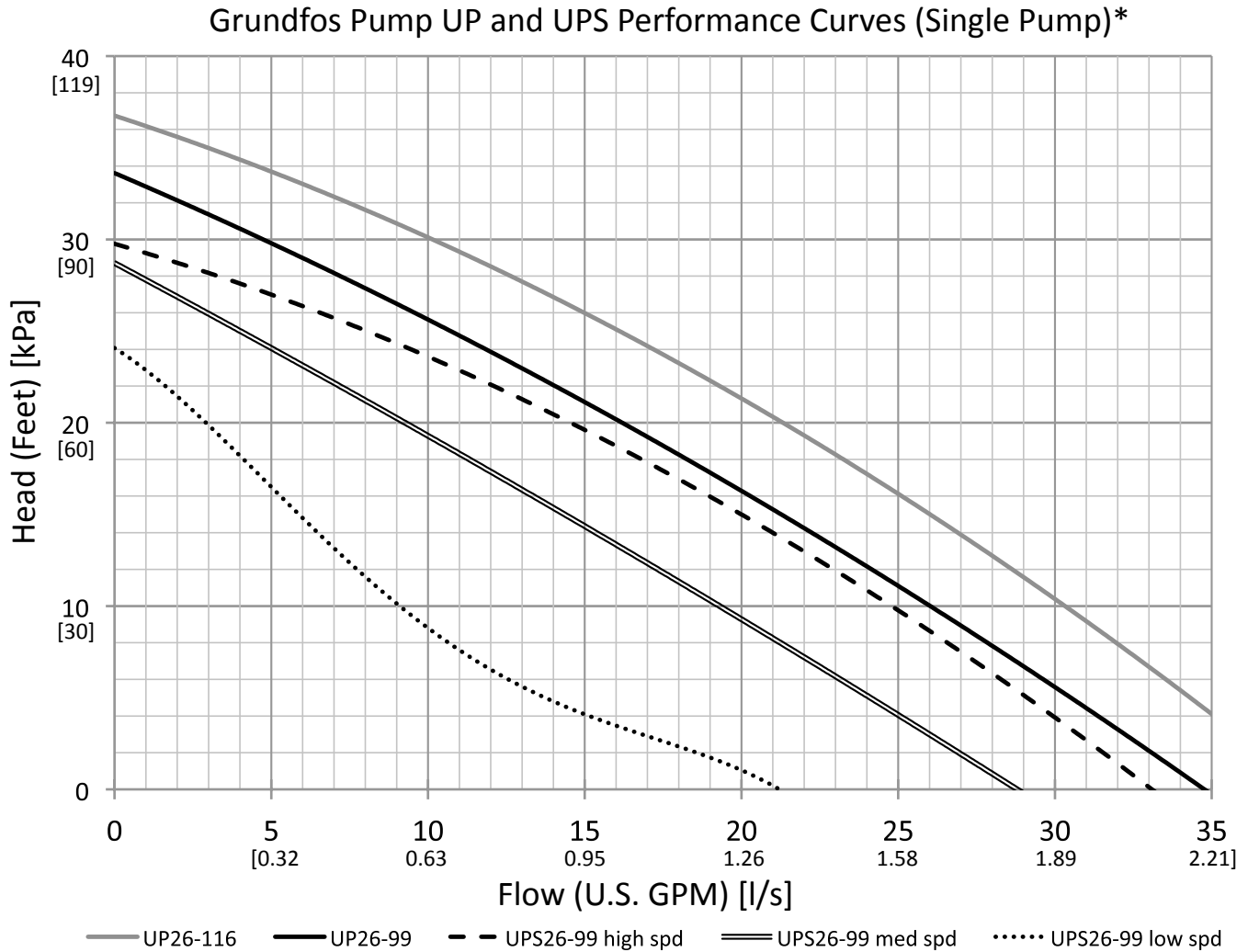
GT048 Heating performance - Full Load				
Entering Water, °F	Water flow, GPM	Pressure Drop Ft. Water	Pressure Drop (Psi)	Ent. °F
30	6	2.9	1.3 ←	60
				70
				80
	8	4.9	2.1 ←	60
				70
				80
	12	10.2	4.4 ←	60
				70
				80

1.3 (HX) + 0.1 (hose kit) = 1.4 psi @ 6 GPM  
 2.1 (HX) + 0.2 (hose kit) = 2.3 psi @ 8 GPM  
 4.4 (HX) + 0.5 (hose kit) = 4.9 psi @ 12 GPM

# Pump Curves

## Grundfos UPS26-99, UP26-99, and UP26-116

UPS26-99 (3-speed) and UP26-116 (single speed) pumps are used on current residential flow centers. UP26-99 (single speed) pumps are still in use on older flow centers.



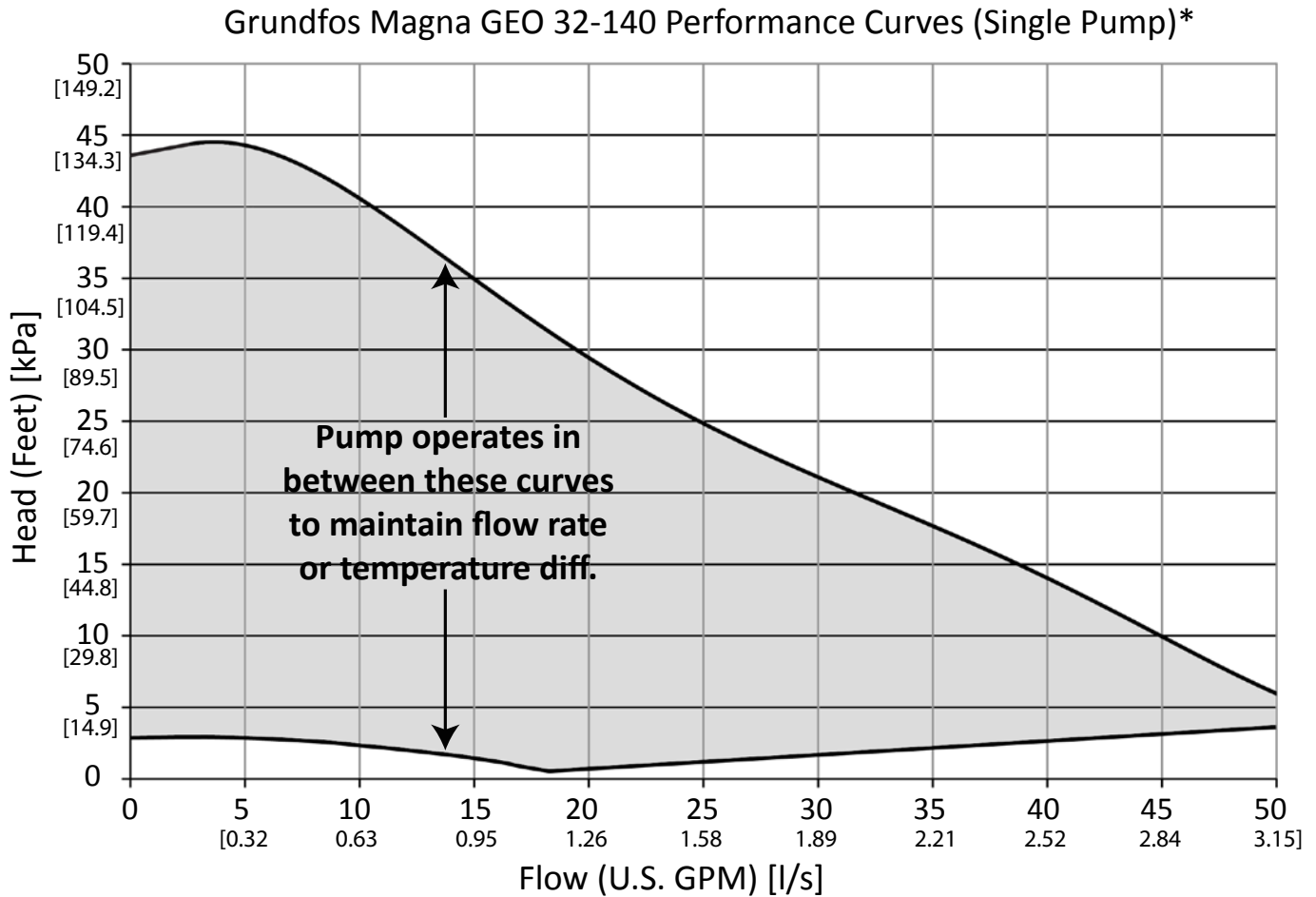
\*Above pump curves are for a single pump. Pumps for two-pump flow centers are piped in series. To determine the pressure drop with multiple pumps, multiply the head shown on the chart by the number of pumps. For example, one UP26-116 pump can produce 24 ft. of head at 15 GPM; two UP26-116 pumps in series can produce 48 ft. of head.

Curves are manufacturer's reported averages using water at 68°F [20°C].

# Pump Curves

## Grundfos Magna GEO Variable Speed

The Magna GEO pump is used on residential Flo-Link (double O-ring) pressurized flow centers and on NP series non-pressurized flow centers. For two-pump variable speed flow centers, use the graph on the next page.



\*Above pump curves are for a single pump. The Magna GEO (variable speed) pump adjusts speed (when used with a controller) to maintain flow rate or temperature difference. The pump can operating anywhere between the upper and lower curves to provide the flow rate set point.

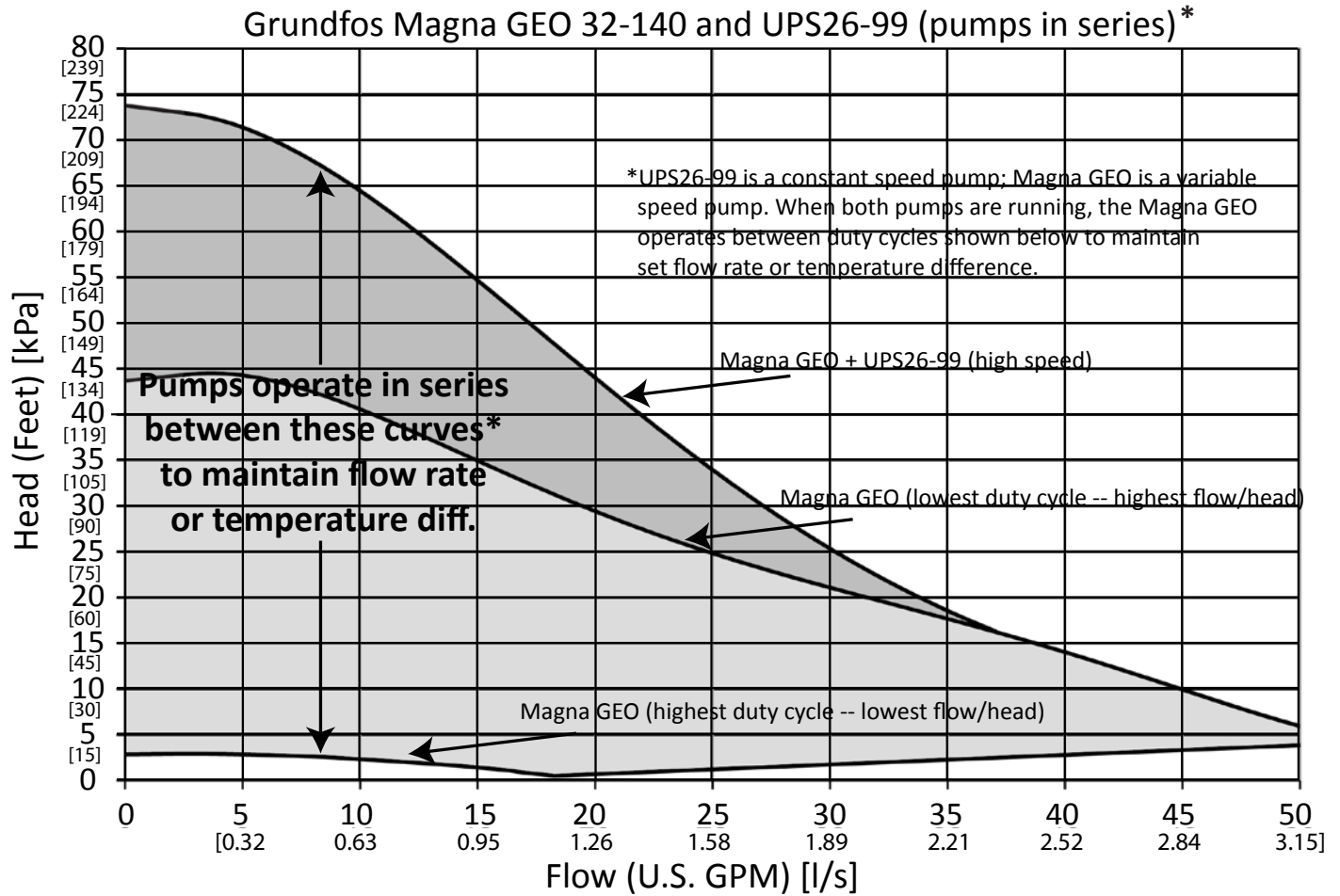
Curves are manufacturer's reported averages using water at 68°F [20°C].



# Pump Curves

## Grundfos Magna GEO Variable Speed with Second Pump in Series (UPS 26-99)

The Magna GEO pump is used on residential Flo-Link (double O-ring) pressurized flow centers and on NP series non-pressurized flow centers. The graph below is for two-pump flow centers.



\*When the Magna GEO pump is used with a second pump in series, the second pump is constant speed. The Magna GEO (variable speed) pump adjusts speed (when used with a controller) to maintain flow rate or temperature difference. The controller energizes the constant speed pump (UPS26-99) when the Magna GEO cannot meet set point, and adjusts the Magna GEO pump accordingly.

Curves are manufacturer's reported averages using water at 68°F [20°C].

# Updates Table

Date	Description of Changes	Pages
May 13, 2016	Updated fitting nomenclature	11
	Added FIT4D4E Dual Unit Connection Kit	14
	Updated auxiliary heater nomenclature and compatibility table	19
March 17, 2016	Updated picture of FIS4M4B and FIS4M5B	8,14
	Updated fitting nomenclature	11
	Corrected hose kit descriptions	12
	Added FIS4R4B fitting (1" MPT x 1" hose barb w/port for P/T plug)	14
	Updated picture of flow regulator valve	20
December 10, 2015	Added Infinity/Evolution wiring kit for variable speed flow centers	27
	Updated for communicating heat pumps	5, 6, 7, 9, 10, 11, 17, 18, 20
July 23, 2015	Moved Application Notes to section with pump curves	28
	Added HK4PM and HK4QM hose kits	11, 12, 13
March 13, 2015	Changed FIS4T4B & FIS4T4M to stocked items	14
	Added NP series variable speed kits	10
	Added FIN4M4F 45 deg elbow for heat pumps w/angled connections	14
	Added FIE4M4F threaded heat pump elbows with P/T plugs	
	Added 50 ft. length of additional rubber hose	16
	Added high density rubber equipment pads	18
	Added auxiliary electric heaters	19
Added replacement parts	27	
April 15, 2014	First Published	All

**Contact Replacement Components for flow center replacement pumps, 3-way valve re-build kits, and other replacement parts for geothermal accessories (see page 27 for parts list).**





turn to the experts<sup>SM</sup>



# Geothermal System Components Catalog