Instructions

Z-Pump Heater Kits

332881E
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For heating Z-pumps mounted to an HFR™.
For professional use only.

Not approved for use in explosive atmospheres or hazardous locations.

24U565
For Pump Sizes 5 through 86

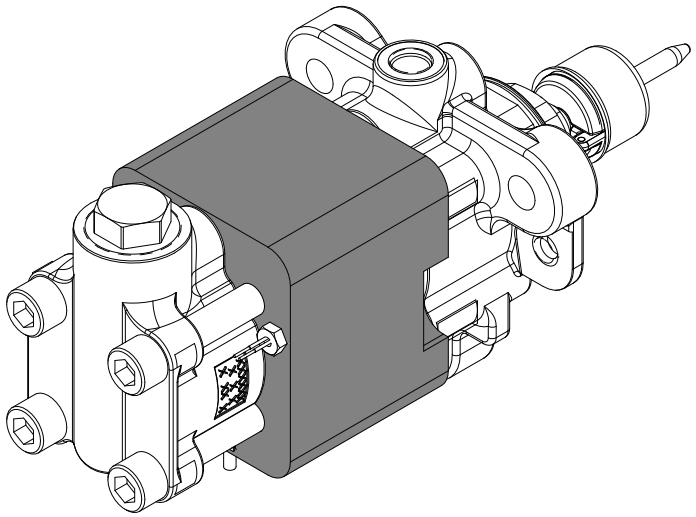
24U931
For Pump Sizes 75 through 86 (Pre 2013)

24U566
For Pump Sizes 90 through 160 Elite/20-120

24U932
For Pump Sizes 90 through 120 (Pre 2013)

2008837
For Pump Size Elite 160

Important Safety Instructions
Read all warnings and instructions in this manual and in Z-Series Chemical Pumps, Instructions-Parts manual. Save all instructions.



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Related Manuals

313997	HFR, Setup-Operation
313998	HFR, Repair-Parts
3A0019	Z-Series Chemical Pump, Instructions-Parts
309213	Therm-O-Flow® Accessory Heat Zone Controls, Instructions-Parts List

Models

Part No.	Z-Pump Cylinder Size
24U565	5 through 86
24U931	75 through 86 (Pre 2013)
24U566	90 through 160 Elite / 20-120
24U932	90 through 120 (Pre 2013)
2008837	Elite 160

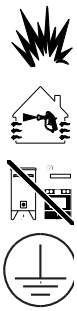
Overview

The Z-pump heater is used to heat the pump cylinder on an HFR to raise the material temperature. The heater can be controlled by a Therm-O-Flow control box or other controller equipment.

Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbols refer to procedure-specific risks. When these symbols appear in the body of this manual or on warning labels, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

⚠WARNING



FIRE AND EXPLOSION HAZARD

Flammable fumes, such as solvent and paint fumes, in **work area** can ignite or explode. To help prevent fire and explosion:

- Use equipment only in well ventilated area.
- Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static arc).
- Keep work area free of debris, including solvent, rags and gasoline.
- Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present.
- Ground all equipment in the work area. See **Grounding** instructions.
- Use only grounded hoses.
- Hold gun firmly to side of grounded pail when triggering into pail. Do not use pail liners unless they are antistatic or conductive.
- **Stop operation immediately** if static sparking occurs or you feel a shock**.** Do not use equipment until you identify and correct the problem.
- Keep a working fire extinguisher in the work area.



SKIN INJECTION HAZARD

High-pressure fluid from dispensing device, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. **Get immediate surgical treatment.**

- Engage trigger lock when not dispensing.
- Do not point dispensing device at anyone or at any part of the body.
- Do not put your hand over the fluid outlet.
- Do not stop or deflect leaks with your hand, body, glove, or rag.
- Follow the **Pressure Relief Procedure** when you stop dispensing and before cleaning, checking, or servicing equipment.
- Tighten all fluid connections before operating the equipment.
- Check hoses and couplings daily. Replace worn or damaged parts immediately



MOVING PARTS HAZARD

Moving parts can pinch, cut or amputate fingers and other body parts.

- Keep clear of moving parts.
- Do not operate equipment with protective guards or covers removed.
- Pressurized equipment can start without warning. Before checking, moving, or servicing equipment, follow the **Pressure Relief Procedure** and disconnect all power sources.



BURN HAZARD

Equipment surfaces and fluid that is heated can become very hot during operation. To avoid severe burns:

- Do not touch hot fluid or equipment.

⚠WARNING



TOXIC FLUID OR FUMES HAZARD

Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.

- Read MSDSs to know the specific hazards of the fluids you are using.
- Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.
- Always wear chemically impermeable gloves when spraying, dispensing, or cleaning equipment.



PERSONAL PROTECTIVE EQUIPMENT

Wear appropriate protective equipment when in the work area to help prevent serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. This protective equipment includes but is not limited to:

- Protective eyewear, and hearing protection.
- Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer

Installation

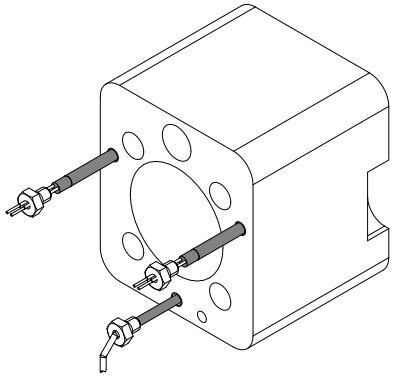
Grounding

The equipment must be grounded to reduce the risk of static sparking and electric shock. Electric or static sparking can cause fumes to ignite or explode. Improper grounding can cause electric shock. Grounding provides an escape wire for the electric current.

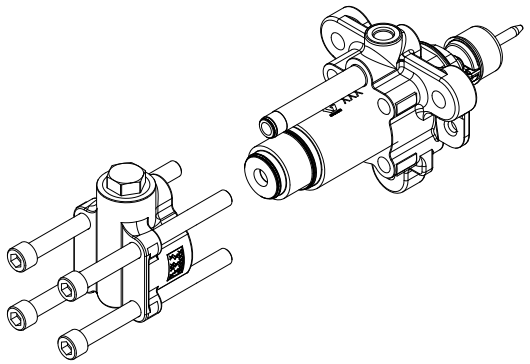
Heater Kit: The kit is grounded through the heater control box when it is plugged in. Refer to the Therm-O-Flow Accessory Heat Zone Controls, Instructions-Parts List manual for details. If the user is not using the recommended heat control box, verify there is continuity between pin 8 and ground.

Setup

1. Follow **Pressure Relief Procedure** within the Z-Series Chemical Pump, Instructions-Parts manual.
2. Follow **Shutdown** procedure within the HFR, Setup-Operation manual.
3. If the heater elements and RTD sensor are not installed, apply thermal grease (P/N: 110009) to the surfaces and insert them into the heater block.

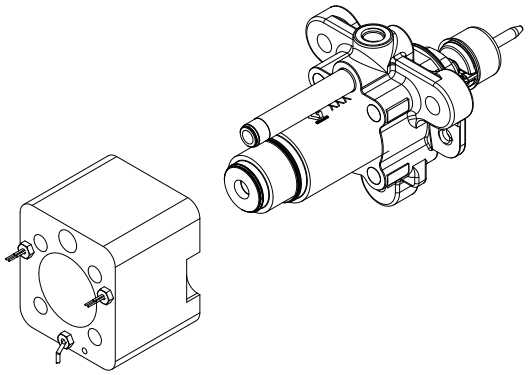


4. Place a waste container under the pump to catch any material that drains during disassembly.
5. Remove the inlet housing from the Z-pump. Refer to the Z-Series Chemical Pump, Instructions-Parts for more details.

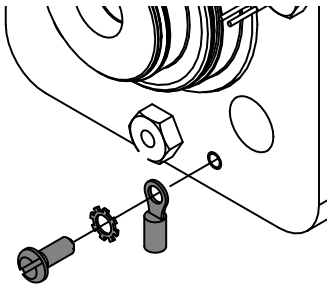


6. Apply thermal grease (P/N: 110009) to the outer diameter of the pump cylinder and the inner diameter of the heater block.
7. Slide the heater block over the pump cylinder.

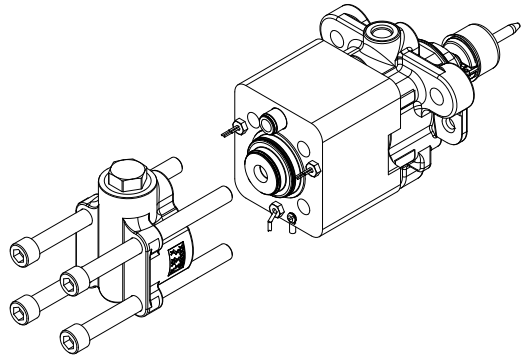
NOTE: For the B (Blue) side pump, ensure the notch in the heater block is positioned so the linear position sensor can be serviced.



8. Attached the ground wire to the heater block.

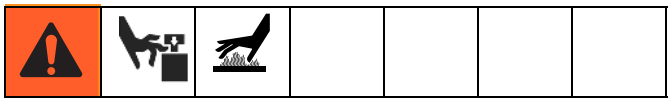


9. Install the inlet housing to the Z-pump.



10. Plug the electrical connector into the temperature control box.
11. Install the insulation cover over the Z-pump.
12. Perform steps 3 through 11 for the other side.
13. Turn on the heat controller and verify the temperature increases. Refer to Therm-O-Flow Accessory Heat Zone Controls, Instructions-Parts List for more details.
14. Perform **Startup** procedure with the HFR, Setup-Operation manual.

Maintenance



1. Make sure the power is off and that the disconnect switch is in the OFF position.
2. Replace any parts whose resistance readings do not comply with the ranges listed.

NOTE: Check resistance at ambient room temperature (63° - 77°F).

NOTE: Refer to **Schematic**, page 10, for pin identification.

Frequency	Resistance Values (Ohms)	Between Terminals
Heaters		
Every two weeks or regular maintenance	262 +26/-13 at 240V	Pins 1 and 2
RTD Sensor		
Every two weeks or regular maintenance	108 +/- 1 at 70°F (21°C)	Pins 3 and 4
Heater Block		
Regular maintenance	Continuity	Heater Block Surface and pin 8
	No Continuity	Pins 1 through 7 to heater block, connector shell, and pin 8

Troubleshooting



Some solutions require disassembling the pump heater. To avoid injury, always relieve pressure and disconnect electrical cable before performing these procedures.

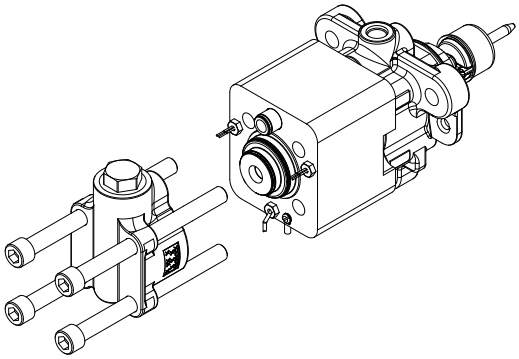
1. Follow **Pressure Relief Procedure** within the Z-Series Chemical Pump, Instructions-Parts manual.
2. Check all possible problems and causes before disassembling the pump.

Problem	Cause	Solution
Pump heater does not heat material	Loose heater wires	Check and reconnect wire connections
	Loose sensor wires	Check and reconnect wire connections
	Heater cartridge failed	Replace heater
	Sensor failed	Replace sensor
	Temperature controller failed	Refer to Therm-O-Flow manual
	No power to heating circuitry	Refer to Therm-O-Flow manual

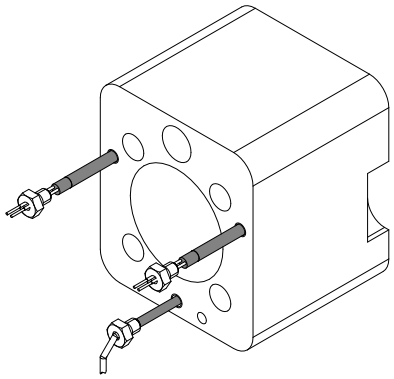
Repair



1. Follow **Pressure Relief Procedure** within the Z-Series Chemical Pump, Instructions-Parts manual.
2. Follow **Shutdown** procedure within the HFR, Setup-Operation manual.
3. Place a waste container under the pump to catch any material that drains during disassembly.
4. Remove the inlet housing from the Z-pump. Refer to the Z-Series Chemical Pump, Instructions-Parts for more details.



5. Remove and disconnect the lead wires from the failed components.
6. Remove the failed components.
7. Apply thermal grease (P/N: 110009) to the surfaces of the new components and insert them into the heater block.



8. Route the new wires through the retaining bushings and crimp after cutting to length and stripping.
9. Use an ohmmeter to check the resistance of the new components and heater block. Refer to **Maintenance**, page 7, for resistance values. Refer to **Schematic**, page 10, for pin identification.

Schematic

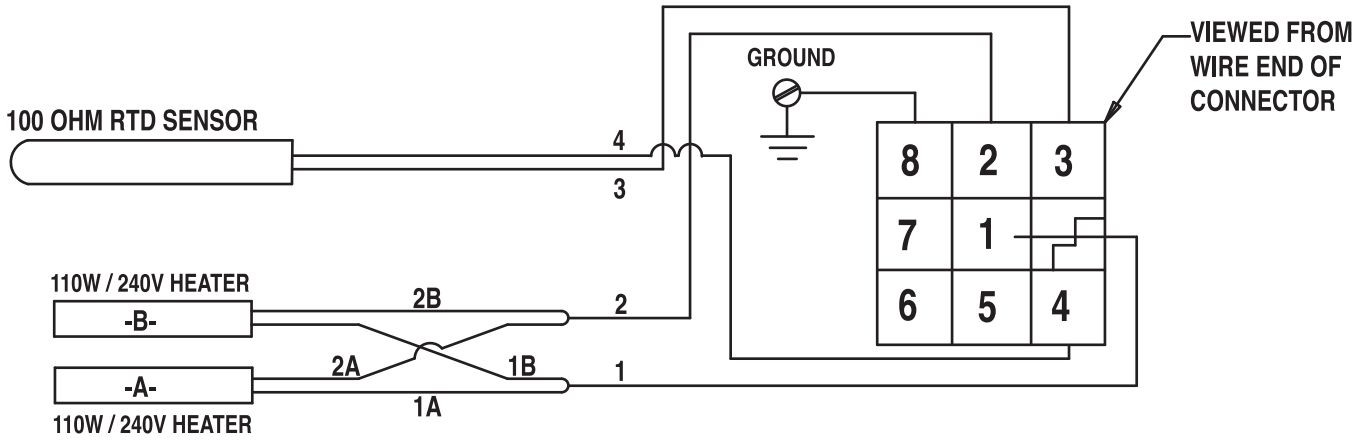
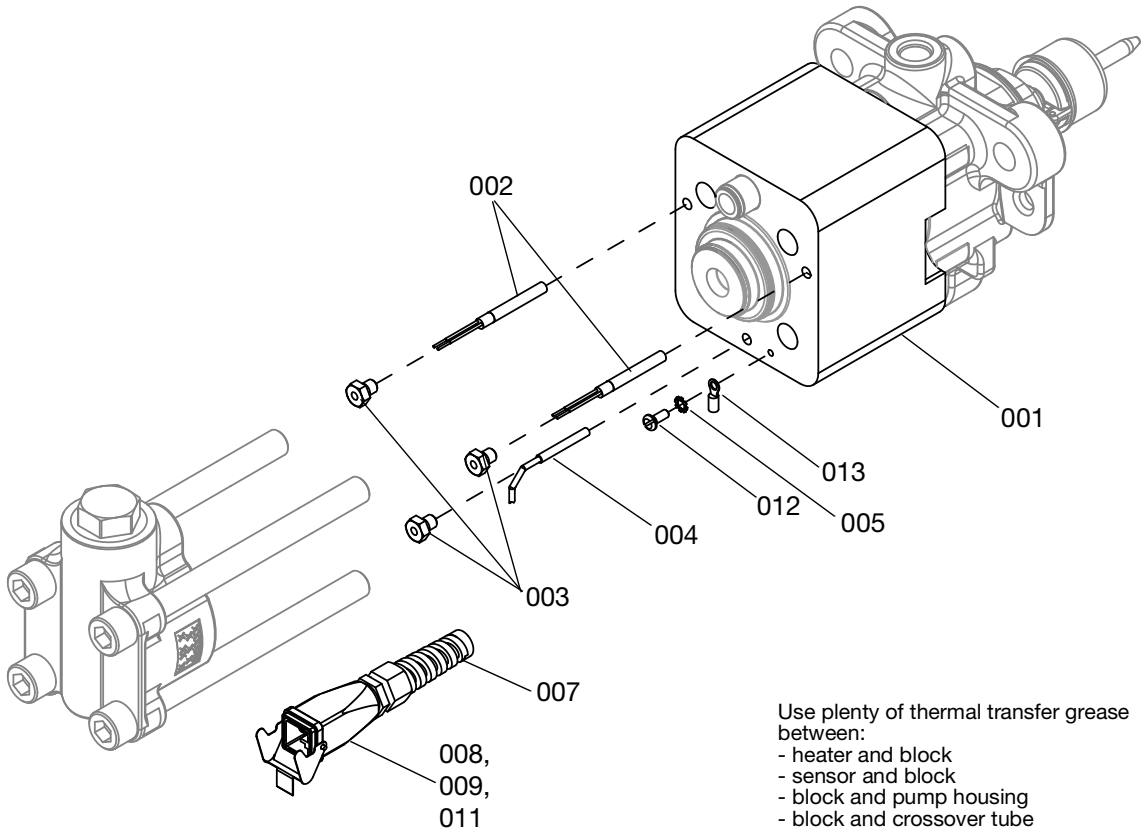


FIG. 1: Electrical Schematic

Parts


002
001
013
012
005
004
003
007
008,
009,
011
Use plenty of thermal transfer grease between:
- heater and block
- sensor and block
- block and pump housing
- block and crossover tube

Heater Parts Table

Ref	Part	Description	Quantity				
			24U565, HEATER, Z pump, 5-86	24U931, HEATER, Z pump, 75-86 (Pre 2013)	24U566, HEATER, Z pump, 90-160 Elite/20-120	24U932, HEATER, Z pump, 90-120 (Pre 2013)	2008800, HEATER, Z pump, Elite 160
001	16X374	BLOCK, heater, Z pump, 5 thru 65	1				
	16Y419	BLOCK, heater, Z pump, 75 thru 86		1			
	16X375	BLOCK, heater, Z pump, 90 thru 120			1		
	16Y422	BLOCK, heater, Z pump, 140 thru 160				1	
	2008800	BLOCK, pump htr,160 elite, HFR					1
002	121205	HEATER, cartridge	2	2	2	2	2
003	15B773	INSERT, threaded, m8	3	3	3	3	3
004	C32255	SENSOR, temperature	1	1	1	1	1
005	C38163	WASHER, lock, external tooth	1	1	1	1	1
006❖	122783	WIRE, braid, copper	6	6	6	6	6
007✿	---	BUSHING, strain relief	1	1	1	1	1
008✿	---	CONNECTOR, cable coupler hood	1	1	1	1	1
009	115860	INSERT, male	1	1	1	1	1
011	115862	CONNECTOR, male, crimp	5	5	5	5	5
012	96/0415/99	SCREW, 10-24x0.50	1	1	1	1	1
013	81/9997-B/11	TERMINAL, tongue, 14-16awg, #10 stud	1	1	1	1	1
014❖	---	WIRE, copper, electrical, (16awg)	2	2	2	2	2
015❖	84/0021/89	TIE, wrap, 4 in., black, nylon	3	3	3	3	3
017❖	125236	COVER, lower, chemical, z-pump, 440	1	1	1	1	1
018❖	U70687	STRIP, velcro, 6 in. x 2 in., double side	1	1	1	1	1
021❖	110009	TUBE, compound, thermal	1	1	1	1	1

❖ *Parts not shown.*

✿ *Included in repair kit 2015242.*

--- Parts not available for individual sale.

Technical Data

Z-Pump Heater Kits		
	US	**Metric**
Maximum Fluid Temperature (Based on Pump Seals)	180°F	82°C
Voltage	230/240 Vac	
Wattage	220 W	
Maximum Current	1 A	
Resistance Temperature Detector (platinum RTD; 0.00385 ohm/ohm/°C	108.2 ohms @ 70°F	
Heater Resistance	*individually:* 524 ohms, +53/-26 ohms *wired in parallel:* 262 ohms, +26/-13 ohms	
Weight	6.8 lb.	3.1 kg

Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

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Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

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For the latest information about Graco products, visit www.graco.com.

For patent information, see www.graco.com/patents.

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Graco reserves the right to make changes at any time without notice.

Original instructions. This manual contains English. MM 332881

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