

# VISCON<sup>®</sup> HF

High Flow, High Pressure Fluid Heater

3A2954T

EN

*For variable heating of viscous fluids. For professional use only.*

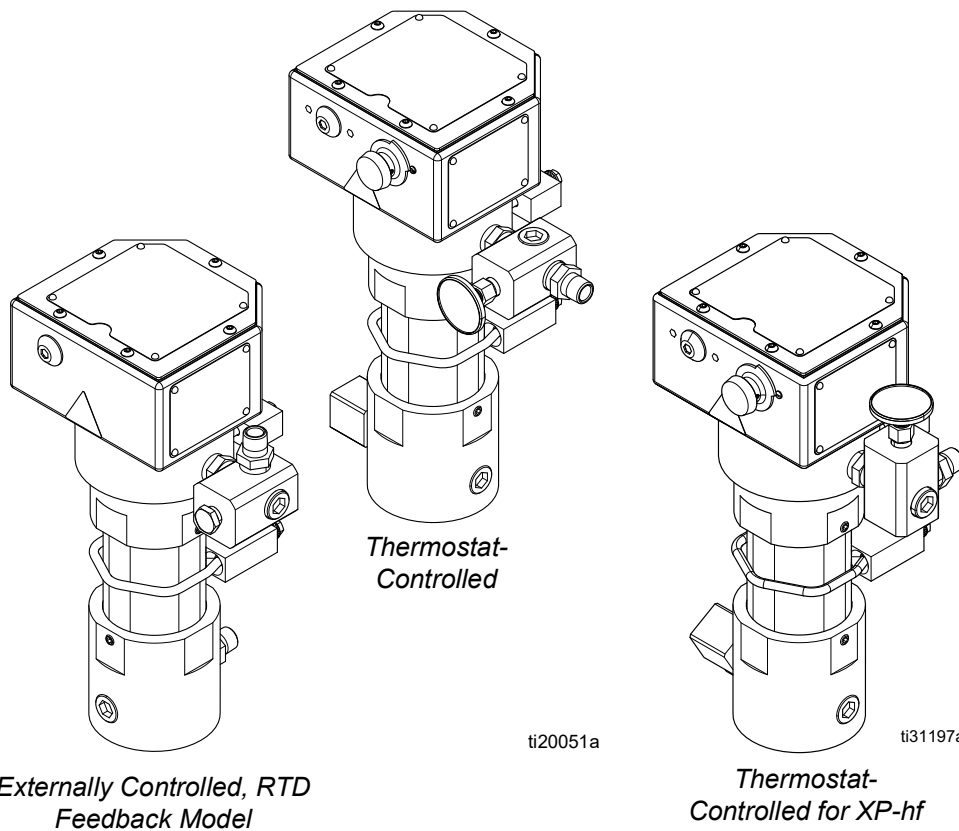
*7250 psi (50 MPa, 500 bar) Maximum Working Pressure*

See page 3 for model information and approvals.



## Important Safety Instructions

Read all warnings and instructions in this manual before using the equipment. Save these instructions.



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# Models

## Hazardous Location Heaters

See **SPECIAL CONDITIONS FOR SAFE USE**, page 5.






Model	Series	Description	VAC (50/60 Hz single phase) / Watts / Amps	Approvals
24W248	A	Thermostat Control	240 / 5400 / 22.5	    <p>Certified to CAN/CSA C22.2 No. 88 &amp; 30 Conforms to UL 499, UL 823, UL 122701</p> <p>Certificate No: <b>18-KA4B0-0073X</b></p> <p>ATEX Ratings:  <b>II 2 G Ex db IIB T4 Gb</b> ATEX Certificate No. ITS14ATEX18155X UKEX Certificate No. ITS21UKEX0367X</p> <p>IECEX Ratings Ex db IIB T4 Gb IECEX Certificate No. IECEX ETL 14.0046X Ta = -20°C to 60°C</p> <p>For US/CAN: Class I, Division 1, Groups C, D (T3) Ta = -20°C to 60°C</p> <p>See <b>Technical Specifications</b>, page 51, for additional information.</p>
24W612	A	RTD, For Use With External Digital Control	240 / 5400 / 22.5	
26C476	A	Thermostat Control	480 / 5400 / 11.25	
25C962	A	Thermostat Control For XP-hf	240 / 5400 / 22.5	Heater is a reconfiguration of 24W248. See above for 24W248 approvals.
26C859	A	Thermostat Control for XM-Skid	480 / 5400 / 11.25	Heater is a reconfiguration of 26C476. See above for 26C476 approvals.

## Non-Hazardous Location Heaters





Model	Series	Description	VAC (50/60 Hz single phase) / Watts / Amps	Approvals	
24P016	C	Thermostat Control	240 / 5400 / 22.5	 <p>RECOGNIZED COMPONENT</p> <p>5024314                      Certified to CAN/CSA STD C22.2 No. 88                      Conforms to UL STD 499</p>	
25C961	A	Thermostat Control, For XP-hf	240 / 5400 / 22.5		
262853	C	RTD, For Use With External Digital Control	240 / 5400 / 22.5		
26C475	A	Thermostat Control	480 / 5400 / 11.25		
26C860	A	Thermostat Control	240 / 5400 / 22.5		Heater is a reconfiguration of 24P016. See above for 24P016 approvals.
26C861	A	Thermostat Control	480 / 5400 / 11.25		Heater is a reconfiguration of 26C475. See above for 26C475 approvals.

# 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.

 <b>DANGER</b>	
	<p><b>SEVERE ELECTRIC SHOCK HAZARD</b></p> <p>This equipment can be powered by more than 240 V. Contact with this voltage will cause death or serious injury.</p> <ul style="list-style-type: none"> <li>• Turn off and disconnect power at main switch before disconnecting any cables and before servicing equipment.</li> <li>• This equipment must be grounded. Connect only to grounded power source.</li> <li>• All electrical wiring must be done by a qualified electrician and comply with all local codes and regulations.</li> </ul>
 <b>WARNING</b>	
	<p><b>SPECIAL CONDITIONS FOR SAFE USE</b></p> <ul style="list-style-type: none"> <li>• For information on the required dimensions of the flameproof joints contact the holder of this certificate (Graco Inc); Flamepath joints are not intended to be repaired.</li> <li>• Special fasteners for securing equipment covers shall have a minimum yield strength of 1,100 MPa and be corrosion resistant and sized M8 x 1.25 x 30.</li> <li>• Models provided with RTD sensors are to be provided with external temperature controller set to not greater than 239°F (115°C).</li> </ul>
	<p><b>BURN HAZARD</b></p> <p>Equipment surfaces and fluid that is heated can become very hot during operation. To avoid severe burns:</p> <ul style="list-style-type: none"> <li>• Do not touch hot fluid or equipment.</li> </ul>

# **WARNING**

	<p><b>FIRE AND EXPLOSION HAZARD</b></p> <p>Flammable fumes, such as solvent and paint fumes, in <b>work area</b> can ignite or explode. Paint or solvent flowing through the equipment can cause static sparking. To help prevent fire and explosion:</p> <ul style="list-style-type: none"> <li>• Use equipment only in well-ventilated area.</li> <li>• Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static sparking).</li> <li>• Ground all equipment in the work area. See <b>Grounding</b> instructions.</li> <li>• Never spray or flush solvent at high pressure.</li> <li>• Keep work area free of debris, including solvent, rags and gasoline.</li> <li>• Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present.</li> <li>• Use only grounded hoses.</li> <li>• Hold gun firmly to side of grounded pail when triggering into pail. Do not use pail liners unless they are anti-static or conductive.</li> <li>• <b>Stop operation immediately</b> if static sparking occurs or you feel a shock. Do not use equipment until you identify and correct the problem.</li> <li>• Keep a working fire extinguisher in the work area.</li> <li>• Never operate with covers removed. Do not open when energized.</li> <li>• Install conduit within 18 in (457 mm).</li> <li>• Do not install if operating temperature exceeds ignition temperature of hazardous atmosphere.</li> </ul>
	<p><b>SKIN INJECTION HAZARD</b></p> <p>High-pressure fluid from gun, 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. <b>Get immediate surgical treatment.</b></p> <ul style="list-style-type: none"> <li>• Do not spray without tip guard and trigger guard installed.</li> <li>• Engage trigger lock when not spraying.</li> <li>• Do not point gun at anyone or at any part of the body.</li> <li>• Do not put your hand over the spray tip.</li> <li>• Do not stop or deflect leaks with your hand, body, glove, or rag.</li> <li>• Follow the <b>Pressure Relief Procedure</b> when you stop spraying and before cleaning, checking, or servicing equipment.</li> <li>• Tighten all fluid connections before operating the equipment.</li> <li>• Check hoses and couplings daily. Replace worn or damaged parts immediately.</li> </ul>
	<p><b>TOXIC FLUID OR FUMES HAZARD</b></p> <p>Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.</p> <ul style="list-style-type: none"> <li>• Read Safety Data Sheets (SDSs) to know the specific hazards of the fluids you are using.</li> <li>• Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.</li> </ul>
	<p><b>PERSONAL PROTECTIVE EQUIPMENT</b></p> <p>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. Protective equipment includes but is not limited to:</p> <ul style="list-style-type: none"> <li>• Protective eyewear, and hearing protection.</li> <li>• Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.</li> </ul>



# WARNING



## EQUIPMENT MISUSE HAZARD

Misuse can cause death or serious injury.

- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See **Technical Specifications** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Specifications** in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request Safety Data Sheets (SDSs) from distributor or retailer.
- Do not leave the work area while equipment is energized or under pressure.
- Turn off all equipment and follow the **Pressure Relief Procedure** when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards.
- Make sure all equipment is rated and approved for the environment in which you are using it.
- Use equipment only for its intended purpose. Call your distributor for information.
- Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not kink or over bend hoses or use hoses to pull equipment.
- Keep children and animals away from work area.
- Comply with all applicable safety regulations.



## PRESSURIZED ALUMINUM PARTS HAZARD

Use of fluids that are incompatible with aluminum in pressurized equipment can cause serious chemical reaction and equipment rupture. Failure to follow this warning can result in death, serious injury, or property damage.

- Do not use 1,1,1-trichloroethane, methylene chloride, other halogenated hydrocarbon solvents or fluids containing such solvents.
- Do not use chlorine bleach.
- Many other fluids may contain chemicals that can react with aluminum. Contact your material supplier for compatibility.



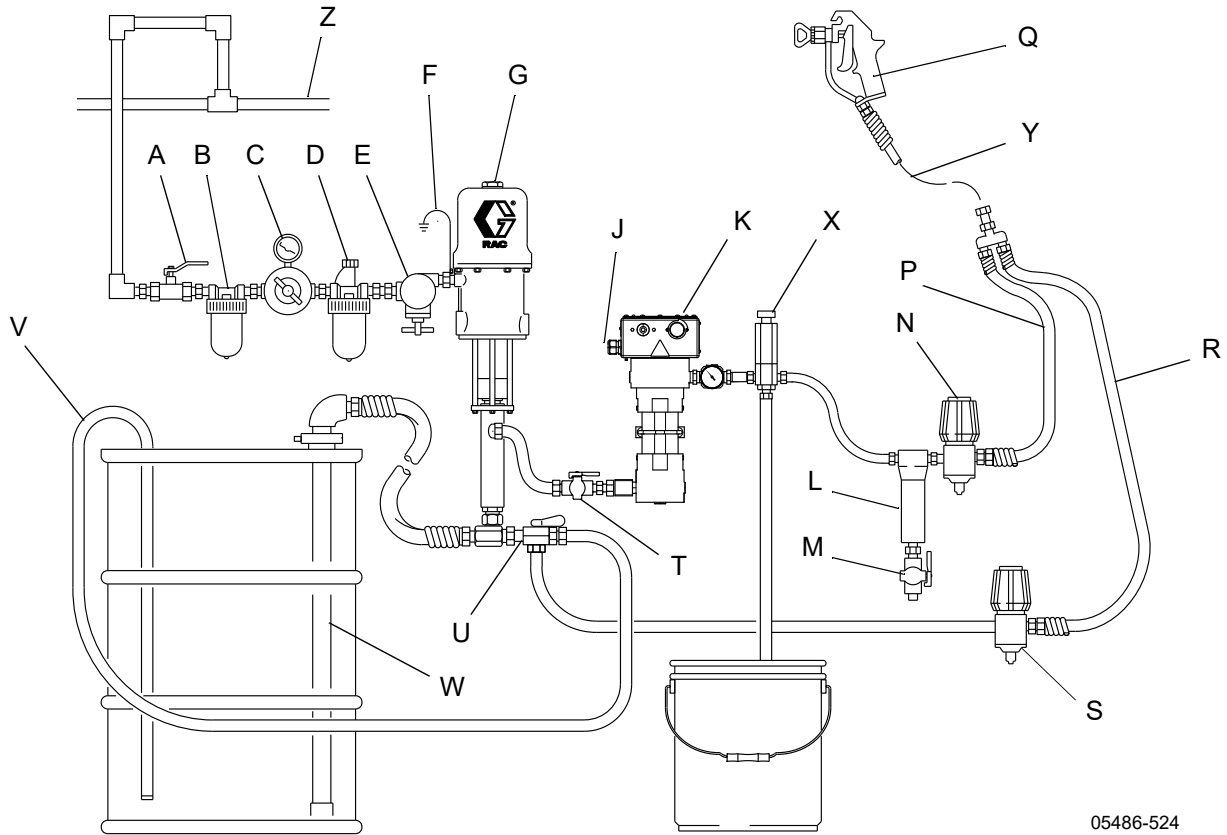
## THERMAL EXPANSION HAZARD

Fluids subjected to heat in confined spaces, including hoses, can create a rapid rise in pressure due to the thermal expansion. Over-pressurization can result in equipment rupture and serious injury.

- Open a valve to relieve the fluid expansion during heating.
- Replace hoses proactively at regular intervals based on your operating conditions.

# Typical Installation

The typical installation drawing is only a guide. Your Graco distributor can assist in designing your system.



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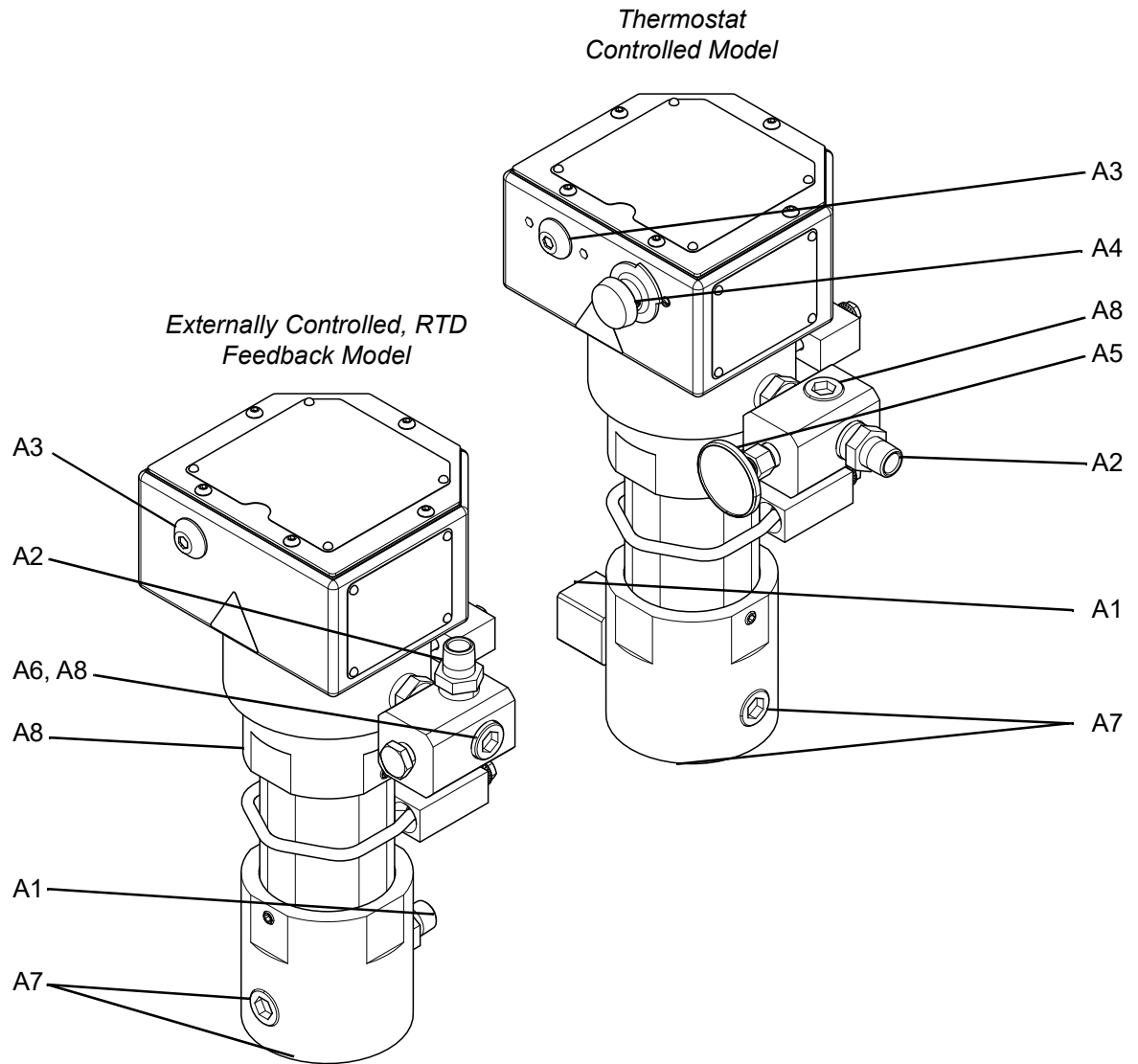
**FIG. 1: Typical Installation – Heated Circulating System**

**Key:**

- |   |                             |   |                          |
|---|-----------------------------|---|--------------------------|
| A | Bleed-type Master Air Valve | N | Fluid Pressure Regulator |
| B | Air Filter                  | P | Fluid Supply Line        |
| C | Air Regulator and Gauge     | Q | Spray Gun                |
| D | Air Line Lubricator         | R | Fluid Return Line        |
| E | Pump Runaway Valve          | S | Back Pressure Valve      |
| F | Ground Wire                 | T | Fluid Shutoff Valve      |
| G | Pump                        | U | Director Valve           |
| J | Power Cable (not shown)     | V | Drain Back Tube          |
| K | Heater                      | W | Suction Tube             |
| L | Fluid Filter                | X | Pressure Relief Valve    |
| M | Drain Valve                 | Y | Whip End Hose            |
|   |                             | Z | Air Supply Line          |



# Component Identification



ti20051a

## Key:

- A1 Fluid Inlet
- A2 Fluid Outlet
- A3 Heater ON Indicator Light
- A4 Temperature Control Knob (24P016, 24W248, 26C475, and 26C476)
- A5 Temperature Gauge (24P016, 24W248, 26C475, and 26C476)
- A6 Optional External RTD Feedback Port (262853 and 24W612 Only)
- A7 Optional Inlet Ports (front and bottom)
- A8 Optional Outlet Ports (one on outlet manifold and one on opposite side of heater)

# Installation

<ul style="list-style-type: none"> <li>Select system components that meet temperature and pressure ratings listed in <b>Technical Specifications</b>, page 51. The normal output range of the heater can be adjusted from 84-220°F (29-104°C).</li> <li>To prevent fire and explosion, locate heater away from all flammable materials and where operators will not come in contact with hot metal surfaces.</li> <li>To avoid burns, insulate and/or label lines and components exiting heater that may become hot.</li> </ul>				

**NOTICE**

The inlet fluid temperature cannot exceed 275°F (135°C). This will cause the heater to exceed its rated temperature code.

## Select Tubing

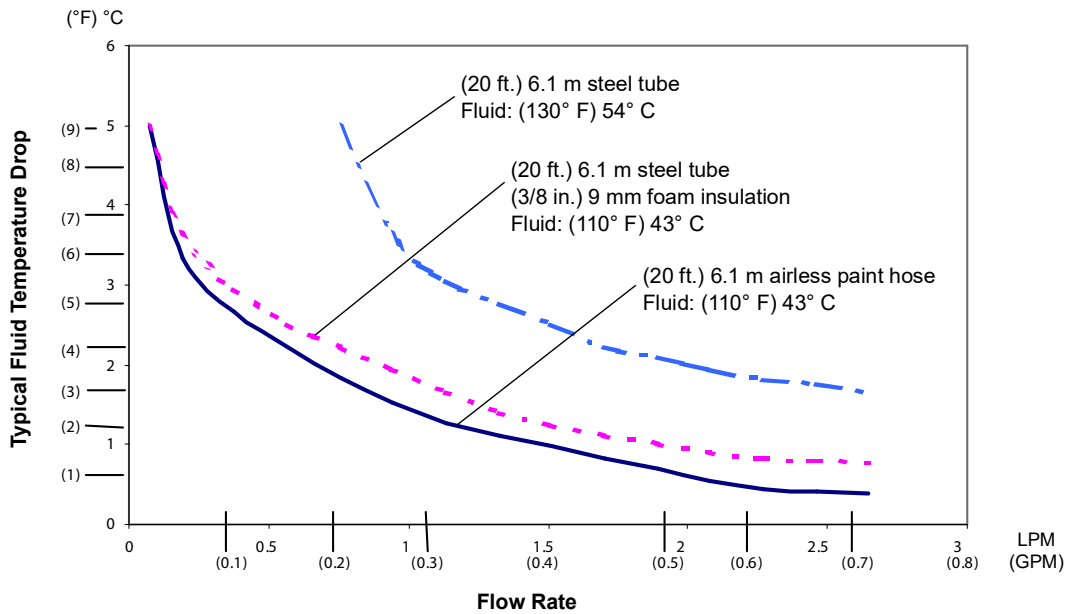
Fluid loses some heat through the tubing or hose between the heater and spray gun. Locate heater close to the spray area to minimize heat loss through plumbing.

The chart in FIG. 2 shows a heat loss curve for three common types of tubing.

### Chart Notes:

- Higher flow rates have less heat loss.
- Foam-insulated steel tubing and high pressure airless paint hose retain heat best. Insulated tubing and hose are more expensive, but higher costs are commonly offset by lower operating costs.

**Heat Loss Curve: 70°F (21°C) Ambient**



**FIG. 2: Typical Temperature Drop**

## Mount Heater

**NOTE:** The Viscon HF heaters will mount anywhere a Viscon HP heater was previously mounted. See the dimensions listed for accessory bracket 192585 on page 48 and the heater dimensions shown on page 50.

**NOTE:** Heater controls must be easily accessible.

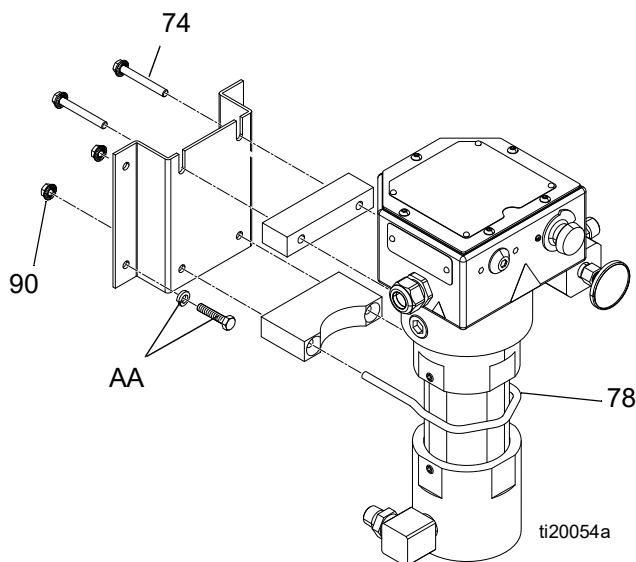
**NOTE:** The mounting surface must be able to support the weight of the heater and fluid as well as any stress caused during operation.

## Wall Mount

**NOTE:** Use wall bracket as a template to mark bolt holes.

### Accessory Bracket 192585

1. Use lockwashers and M8 bolts (AA) of appropriate length, not supplied, to mount bracket.
2. Install two screws (74) through spacer block and into top two heater mounting holes until they are about 1/8 in. (3 mm) from fully installed.
3. Lift heater and slide two screw heads into bracket slots.
4. Install u-bracket (78) around heater and install remaining 2 nuts (90). Tighten all nuts and bolts.

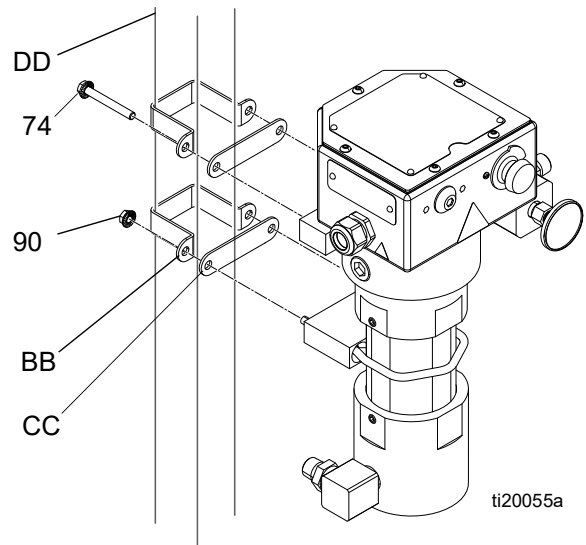


**FIG. 3: Accessory Bracket 192585**

## Cart Mount

**NOTE:** For a 2.5 in. square tube frame cart, two each of cart mounting bar 183485 (CC) and clamp 183484 (BB) are required. See **Accessories**, page 48, to order.

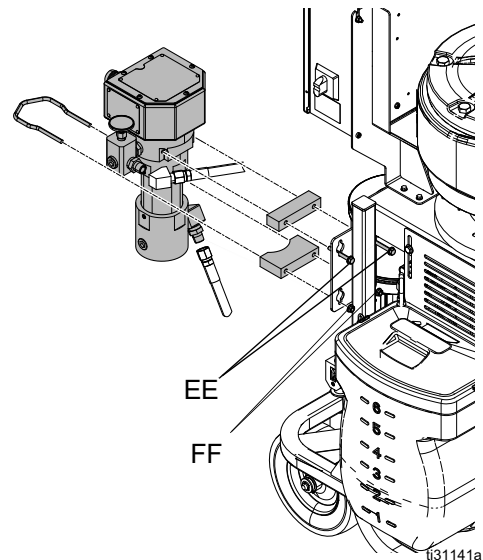
Place clamps (BB) around the cart vertical post (DD) and secure to the heater mounting bars (CC) with bolts (74) and nuts (90).



**FIG. 4**

## XP and XP-hf Mount




Loosen screws (EE) and nuts (FF) attached to heater. Insert screw heads and nuts through heater mounting holes on XP or XP-hf frame. Guide screws and nuts to rest in mounting holes. Tighten fasteners.



**FIG. 5: XP and XP-hf Mount**

## Fluid Connections and Accessories

Install a fluid shutoff valve (T) in the heater's 3/4 in. npt(m) fluid inlet. Do not overtighten. Connect the fluid supply line to the valve.

				
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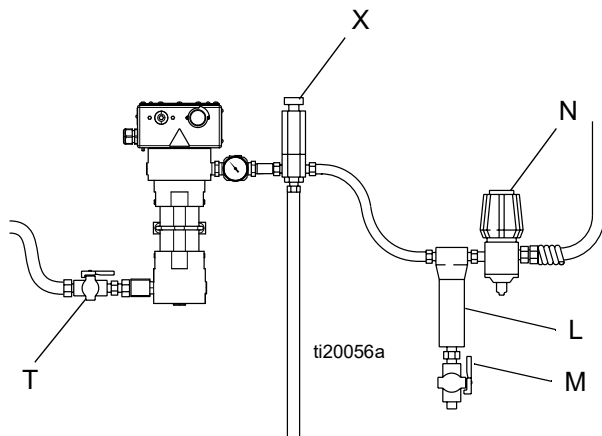
To prevent serious injury caused by component or equipment rupture:

- Never install a shutoff device between the heater and gun as this will trap the heated fluid and not allow for expansion.
- Never use a fluid regulator as a shutoff device if it is installed between the heater and gun
- Provide a means for adequately handling fluid expansion caused by heat.

To handle fluid expansion caused by heat:




- Use flexible hoses between heater and gun.
- Install a properly sized accumulator downstream from the heater.
- Install a pressure relief valve (X) pre-set to relieve pressure when it exceeds the system maximum working pressure.
- If feeding an airless spray gun, install a fluid filter (L), drain valve (M), and fluid pressure regulator (N) near the heater's 3/4-14 npt(f) fluid outlet. Then connect the fluid outlet line.

**NOTE:** To ensure proper temperature control, the RTD sensor must always be mounted on the outlet side of housing (67). If the outlet is plumbed to the left side, swap position of sensor (88) and plug (82).



**Fig. 6: Fluid Connections and Accessories**

## Electrical Connections

				
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Improper wiring may cause electric shock or other serious injury if work is not performed properly.

- This equipment must be grounded. Connect only to a grounded power source.
- All electrical wiring must be done by a qualified electrician and comply with all local codes and regulations.



<b>NOTICE</b>
To help prevent damage, avoid spilling liquids onto electrical components and never operate with the cover removed or screws missing.

## Installation Requirements

- See **Models**, page 3 for power requirements. The heater requires a dedicated circuit protected with a circuit breaker.
- Power conductors used for supply connection must be 10 AWG or larger and suitable for at least 221°F (105°C). An intermediate Type “e” junction may be required.
- For Non-Hazardous Location Heaters, the power cord must pass through the strain relief cord grip (87). It will accept cords with an outside diameter of 0.51-0.71 in. (13-18 mm).
- Make ground connection to the green ground screw inside the control head.
- For 24W248, 24W612, 25C962, and 26C476 Hazardous Location Heaters only: Make power connections to the two post bushings in the control head. Refer to the applicable schematic on page 19. Power entry should be connected through the 3/4 npt port. Follow **Hazardous Area Cabling and Conduit Requirements**, page 13.
- For 25C962 Hazardous Location Heaters only: Cable entry fitting (117) has internal Pg 16 DIN 40430 electrical thread for 14 mm cable diameter.
- For 24W612 and 262853 only, the RTD entry should be connected through the 1/2 npt port.





## RTD Temperature Connection

(Model 262853 and 24W612 Only)

				
<p>Models provided with RTD sensors are to be provided with external temperature controller set to not greater than 239°F (115°C).</p>				

A separate smaller cord grip is provided to bring a cable and connector into the M8 4-pin connection inside the heater. Refer to the applicable schematic on page 19 and the **Technical Specifications** on page 51.

## Grounding

				
<p>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.</p>				

1. Connect the electrical supply ground wire to the ground screw inside the heater electrical compartment. See FIG. 11 page 19, FIG. 12, page 21.
2. For Hazardous Location Heaters only: Connect a ground view as shown in FIG. 7. Loosen the ground screw and attach a ground wire (Y, Graco part 222011, not supplied). Tighten the ground screw securely. Connect the other end of the ground wire to a true earth ground.

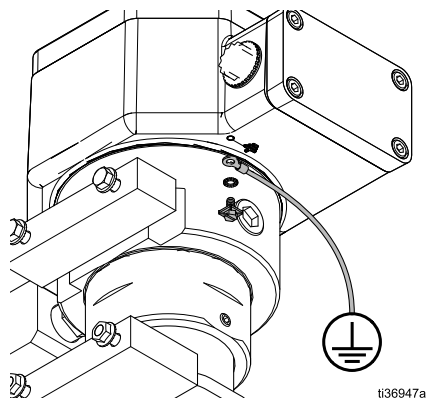
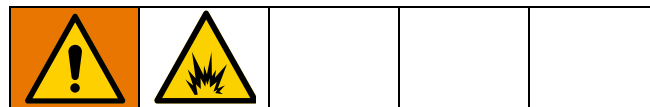


FIG. 7: External Ground Wire

## Hazardous Area Cabling and Conduit Requirements



### Explosion Proof

All electrical wiring in the hazardous area must be encased in Class I, Division 1, Groups C1 and D approved explosion-proof conduit. Follow all national, state, and local electric codes.

A conduit seal (D) is required within 18 in. (457 mm) of the heater for the US and Canada. All cables must be rated at 221°F (105°C).

### Flame Proof (ATEX)

Use appropriate conduit, connectors, and cable glands rated for ATEX II 2 G. Follow all national, state, and local electric codes. All cable glands and cables must be rated at 221°F (105°C).

# Operation

## Pressure Relief Procedure



Follow the Pressure Relief Procedure whenever you see this symbol.



This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection, and splashing fluid, follow the Pressure Relief Procedure when you stop spraying and before cleaning, checking, or servicing the equipment.

1. Engage the gun trigger lock.
2. Shut off main power to the heater.
3. Circulate fluid for at least 10 minutes to cool the heated fluid and heater.
4. Shut off all air and fluid supplies.
5. Disengage the gun trigger lock.
6. Hold a metal part of the gun firmly to a grounded metal pail, and trigger the gun to relieve pressure.
7. Engage the gun trigger lock.

## Initial Equipment Flush



To avoid fire and explosion:

- Flush equipment only in a well-ventilated area
- Ensure main power is off and heater is cool before flushing
- Do not turn on heater until fluid lines are clear of solvent

The heater was tested with lightweight oil, which needs to be flushed out before using the equipment. Use a compatible solvent, and follow flushing instructions in your fluid supply and spray gun manual.

## Prime the System

**NOTE:** Refer to FIG. 1, page 8, for the following procedure.

**NOTICE**

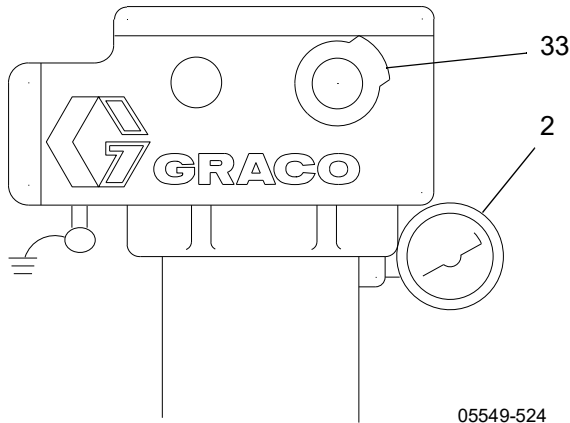
To prevent damage, do not turn on heater until system is fully primed.

1. Do not turn on the heater yet.
2. If using an airless spray gun, do not install a spray tip yet.
3. Start the pump according to the instructions supplied with it.
4. Turn the system director valve (U) to circulate, and circulate fluid for several minutes.
5. Open the spray gun (Q) at the last outlet to prime the line. Repeat for all gun stations.
6. Engage the gun trigger lock.
7. Shut off the air supply to the pump.
8. Perform the **Pressure Relief Procedure**.
9. Install the gun spray tip.

## Set Heater Control

This procedure applies to model 24P016 only. Heater 262853 with RTD control has no adjustments to make on the heater, it requires use of an external temperature controller.

1. Set the heater control knob (33) to a trial setpoint of 4 or 5.
2. Start the pump and circulate fluid through the system at a very low flow rate of about 10-12 oz/min (0.30-0.35 liter/min).
3. After the indicator light turns off: read the temperature on the thermometer (2). If it does not match the desired temperature, adjust the setpoint.



**FIG. 8: Set Heater Control**

## Adjust for Spraying




### NOTICE

Operating the heater at its highest setting of over 180°F (82°C) for long periods of time decreases the heater life. This can also cause fluid to dry out which can cause heater clogging and a poor spray pattern.

1. Adjust pump pressure and heater setpoint to the lowest settings needed for good fluid atomization.
2. Set all system back pressure valves (S - FIG. 1 on page 8) to maintain even fluid pressure at all gun stations.

# Maintenance

## Flush the Equipment

				
<p>To avoid fire and explosion:</p> <ul style="list-style-type: none"> <li>• Flush equipment only in a well-ventilated area</li> <li>• Ensure main power is off and heater is cool before flushing</li> <li>• Do not turn on heater until fluid lines are clear of solvent</li> </ul>				

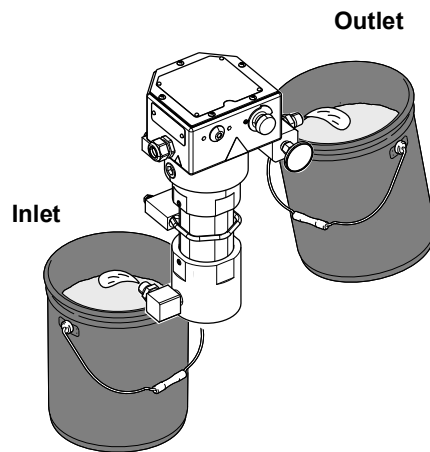
Clogged fluid passages reduce heating efficiency, flow rate, and pressure. Flush or clean whenever a change in heating efficiency, flow rate, or pressure is noticed.

1. Follow **Pressure Relief Procedure**, page 14.
2. Ensure main power is off and heater is cool before flushing. Use a compatible solvent, and follow flushing instructions in your fluid supply and spray gun manual. **Do not turn on heater until fluid lines are clear of solvent.**

## Drain the Heater

				
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1. Follow **Pressure Relief Procedure**, page 14.
2. Remove heater inlet and outlet fittings or pipe plugs. Have a container ready to catch the fluid.





ti20057a

**FIG. 9: Drain the Heater**



# Troubleshooting

				
<p><b>DANGER</b>  <b>SEVERE ELECTRIC SHOCK HAZARD</b>                  This equipment can be powered by more than 240 V. Contact with this voltage will cause death or serious injury. Turn off and disconnect power at main switch before disconnecting any cables and before servicing equipment</p>				

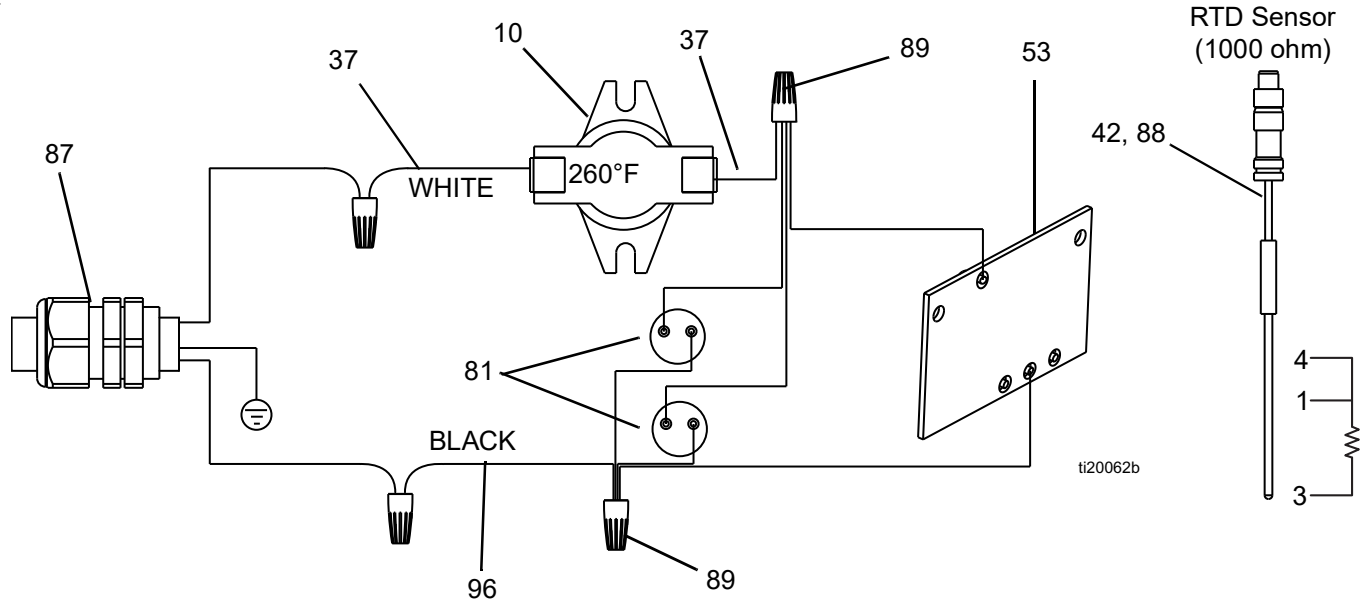
				
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Problem	Cause	Solution
Heater will not heat.	No current.	Check circuit and fuses.
	The overtemperature switch (10) tripped.	<ul style="list-style-type: none"> <li>Check continuity of overtemperature switch. If circuit is open, press red reset switch and re-check. Determine why switch opened before restarting.</li> <li><b>Model 24P016 and 24W248 only:</b> check that the thermostat (24) is open when the knob is turned to the left and closed when turned to the right.</li> </ul>
Temperature too low.	The heater cartridges (81) burned out.	Replace the cartridges.
	The fluid requires more warm-up time.	Increase the warm-up time.
	The temperature setting is wrong.	Adjust the setting, <b>Set Heater Control</b> , page 15.
	The flow rate is too high	Reduce flow rate or use 2 heaters
	The fluid passages are clogged.	<b>Heater Core Replacement</b> , page 23.
One of the two heater cartridges (81) failed.	Check each cartridge for a resistance of approximately 21 ohms. The pair in parallel should have a resistance of approximately 10.7 ohms. See <b>Heater Cartridges</b> on page 26.	
Temperature too high.	The temperature setting is wrong.	Adjust the setting, <b>Set Heater Control</b> , page 15.
	The primary thermostat (24) failed.	Replace, <b>Thermostat and Probe</b> , page 20.
High fluctuating temperatures, about 220-250°F (104-120°C) at 0.1 GPM.	The primary thermostat (24) contacts are sticking.	Replace the thermostat (24), <b>Thermostat and Probe</b> , page 20.

Problem	Cause	Solution
Too much pressure drop or fluid will not flow.	The flow rate is too high.	Reduce flow rate or use 2 heaters.
	The fluid passages are clogged.	Flush or clean the passages, <b>Flush the Equipment</b> , page 16.
Heater fittings leak.	The fittings are loose or damaged.	Tighten or replace the fittings.
Heater temperature rises far beyond the setpoint temperature during heating	<b>Model 262853 and 24W612 Only:</b> RTD sensor (88) is installed too far into fluid path. Sensor does not sense aluminum core.	Replace sensor (88) and compression fitting (72). See <b>RTD Sensor and Fitting Replacement</b> , page 26.
	The heater core is dirty or has baked on material.	Disassemble and clean all parts that come in contact with material.

# Schematics

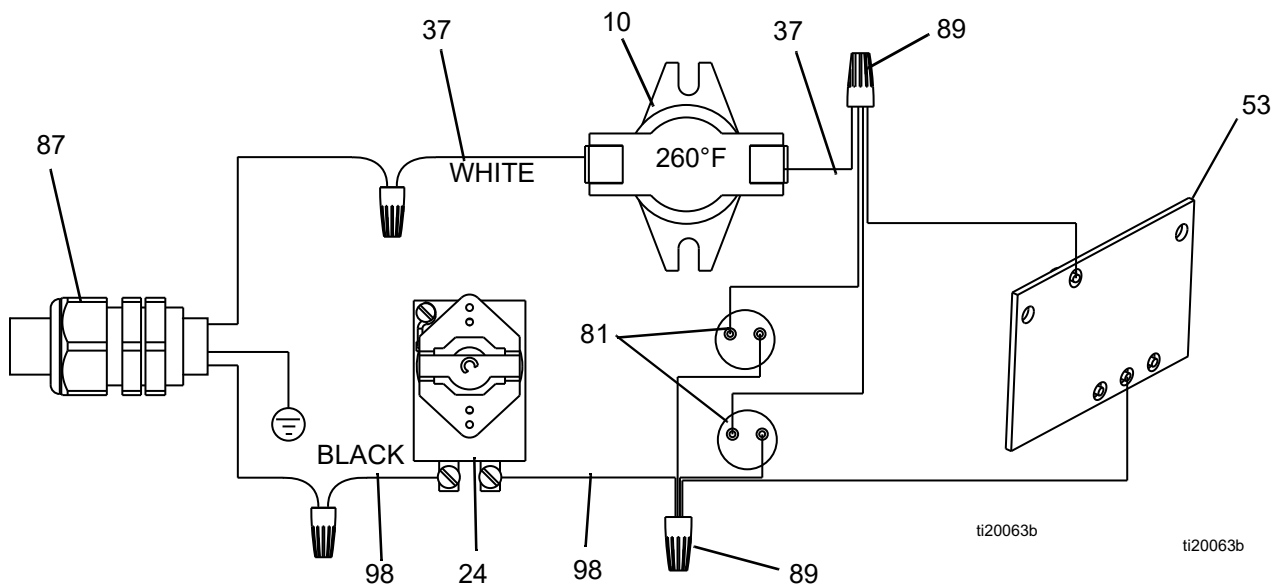
**NOTE:** Refer to **Parts**, pages 27 or 31, for an illustration of your heater.



ti20062b

**FIG. 10: Electrical Schematic - 262853, 24W612 Heater with RTD**

RTD Pin	Wire Color	Signal
1	Red	Excitation
2	---	---
3	White	RTD Element
4	Red	Lead Ohms









ti20063b

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**FIG. 11: Electrical Schematic - 24P016, 24W248, 26C475, 26C476, 26C859, 26C860, 26C861 Heater with Thermostat**

# Repair

To avoid burns, electric shock, and skin injection, make sure the main power is OFF, heater is cool, and pressure is relieved before repairing.

## Thermostat and Probe

(For model with thermostat, see FIG. 12 on page 21)

1. Perform **Pressure Relief Procedure**, page 14.
2. Remove screws (52) then remove housing cover (18).
3. Loosen screws (25) that secure thermostat in place.
4. Remove wires from the thermostat terminals (FF).
5. Loosen setscrew (26) in switch shaft (28).
6. Pull thermostat probe (EE) out of heater block.
7. Remove thermostat (24) from housing (1).
8. Remove screw standoff (35) with washer (27).
9. Remove bracket from thermostat (24) and secure to new thermostat.

### NOTICE

To avoid damaging capillary tube (GG) of the thermostat, which can cause heater malfunction, do not kink or nick the tube.

To avoid shorting out the heater, do not allow capillary tube to contact the terminals on switch (10) or thermostat (24). Follow step 10, below.

10. Liberally apply thermal lubricant (110009) to probe (EE) of new thermostat (24). Loop capillary tube (GG) several times and wrap the loops with tie strap (42-not shown). Insert probe in the heater block.
11. Continue reassembling in reverse order of disassembly. See the **Reassembly Notes**, page 20.

## Overtemperature Switch

**NOTE:** This switch is a manual reset type. Press the red button to reset the switch. Check for continuity across the contacts. If the switch tripped, always determine the cause before returning the heater to service.

1. Follow **Pressure Relief Procedure**, page 14.
2. Remove screws (52) then remove housing cover (18).
3. Unplug wires from tabs (HH) on switch.
4. Remove the two screws (16) securing the switch then remove the switch (10).
5. Liberally apply thermal lubricant (part no. 110009) to the bottom of the thermostat switch and reinstall it in reverse order of disassembly.

### Reassembly Notes

- Refer to FIG. 11 or FIG. 10 for wiring connections.
- Make sure gasket (47) is installed and aligned with electrical housing screw holes.
- Secure cover (18) with screws (52). Torque screws to 89 in-lb (10 N•m).

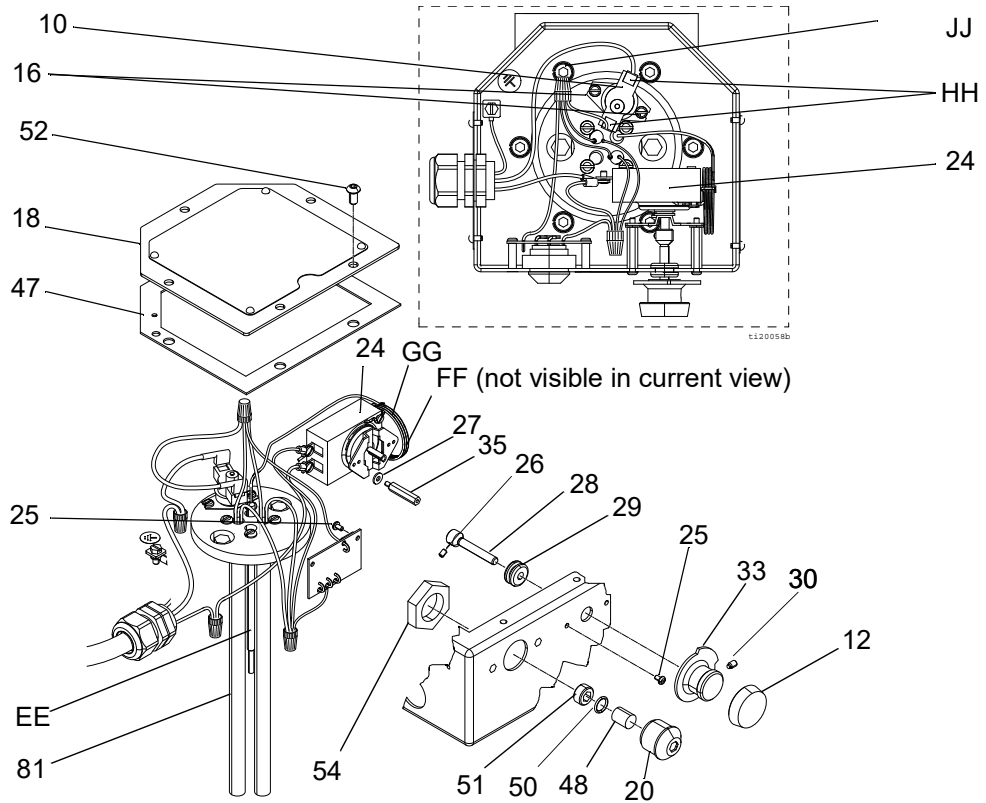


FIG. 12: Thermostat Repair

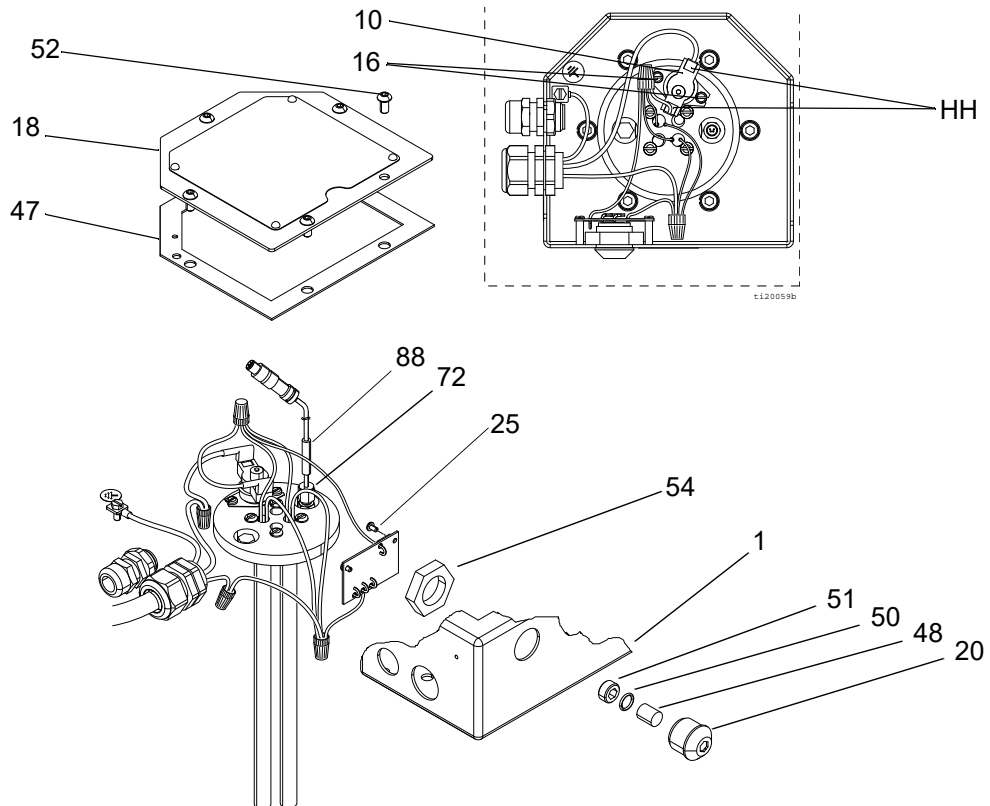


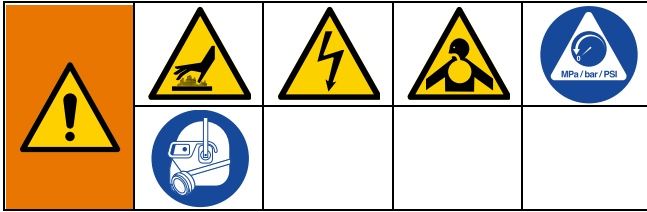
FIG. 13: RTD Sensor Repair

## Control Knob

This procedure applies to thermostat-controlled heaters only. See the **Fig. 12: Thermostat Repair** on page 21.

1. Follow **Pressure Relief Procedure**, page 14.
2. Turn control knob (33) to setpoint 1.
3. Loosen the control knob setscrew (30).
4. Remove control knob.
5. Remove adjusting knob (12) from the control knob and press fit it onto the new control knob. Check the grommet (29) and replace if worn.
6. Position new knob so setpoint 1 aligns with the 12 o'clock position and the knob is about 1/16 in. (1 mm) away from the housing. Install and tighten setscrew (30).

## Heater Core Replacement



### Removal

**NOTE:** See **Parts** illustration on page 27.

1. Perform the **Pressure Relief Procedure**, page 14.
2. Disconnect all power.
3. Wait for system to cool.
4. Disconnect the inlet fluid hose and fitting from the heater inlet housing (65).
5. Loosen the two set screws (83) on the front and back of the inlet housing (65).
6. Unscrew inlet housing (65). Pull down and away.
7. Remove cylinder clamps (77, 78).
8. Loosen the two set screws (83) on the sides of the outlet housing (67).

#### NOTICE

*On digital control models 262853 and 24W612 only, to prevent damaging the RTD sensor (72), do not rotate the core (68) when performing the following step.*

9. Unscrew cylinder (66) and pull straight down and off to expose the core (68).
10. Remove cover screws (52) and cover (18).

#### NOTICE

*On digital control models 262853 and 24W612 only, remove RTD sensor (88) to avoid damaging it.*

11. *On digital control models 262853 and 24W612 only, remove RTD sensor (88):*
  - a. Loosen nut on compression fitting (72).
  - b. Pull nut and sensor straight up and out.
  - c. Leave the rest of the compression fitting in place.
12. Completely loosen four screws (71) on aluminum disc (69) in control housing.
13. Carefully pull heater core (68) straight down out of housing.

**NOTE:** Heater cartridges should slide out and stay with heater. If they need to be tapped out of the core, the 1 in. npt plug (95) on the bottom of the core can be removed for access.

**NOTE:** The capillary bulb and tube will also slowly pull out and stay with the heater.

## Installation

**NOTE:** See **Parts** illustration on page 27.

1. Install new 1 in. npt plug (95) into the bottom of the new core (68) with the supplied anaerobic pipe sealant (39).
2. Install new springs (31) in heater cartridge (81) holes. The springs will sit under the heater cartridges.
3. Lubricate and install new o-rings (70, 79) on the new core (68). The white one goes on the shoulder and the black one goes in the groove above the shoulder.

### NOTICE

To prevent damage to the heater cartridge, do not apply heat sink paste to the heater cartridge (81).

4. Add the supplied heat sink paste (38) to the capillary bulb and the hole in the core (68) where it fits (not shown).
5. On all models, apply heat sink paste (38) to the top of the core (68) where it will mate against the disc (69).
6. Align new core (68) to match the position of the disc (69).

7. Push new core (68) fully up into position.
8. *On digital control models 262853 and 24W612 only,* re-install RTD sensor (88) and compression nut. Turn core (68) slightly to allow sensor to pass through the shoulder on the core.
9. Re-tighten the compression nut 1/8 turn past snug.
10. Using blue (medium strength) thread lock adhesive, tighten the four screws (71) through disc (69) into core (68) to 20-25 in-lb (2.26-2.82 N•m).
11. Install new o-rings (76) on cylinder (66).
12. Screw cylinder all the way up, then back off until the flats line up with the set screws. Tighten set screws.
13. Replace mounting clamps (77, 78).
14. Install inlet housing (65) fully, then back off until the set screws line up with the flats on cylinder. Tighten set screws.
15. Replace fluid fitting and hose.
16. Check that all wiring is secure and will not be pinched then use cover screws (52) to install cover (18). Torque screws (52) to 85-90 in-lb (9.6-10.1 N•m).



## Replace Heater Core and Unclog Fluid Passage

The heater core (68) can be removed for thorough cleaning or replacement. See the **Parts** illustration that applies to your heater on page 27 or 31.

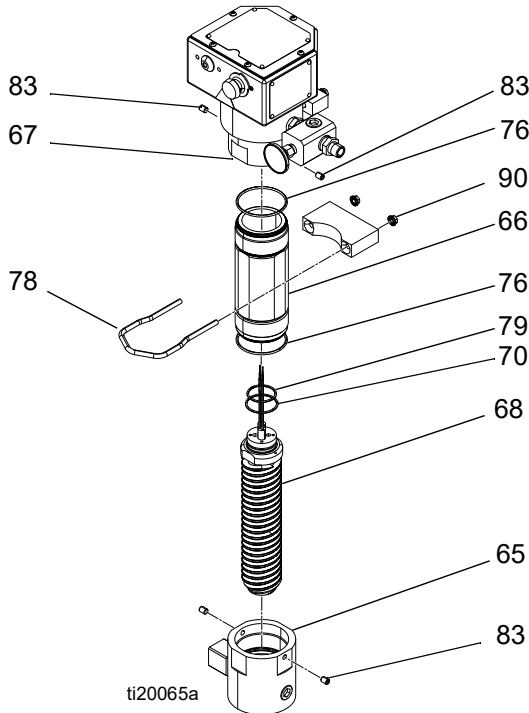


FIG. 14

1. Follow **Pressure Relief Procedure**, page 14.
2. Disconnect power.
3. Wait for system to cool.
4. **Drain the Heater**, page 16.
5. Loosen set screws (83) from bottom inlet housing with a 3/16 in. hex key.
6. Unscrew bottom inlet housing (65).
7. Remove nuts (90) then remove cylinder u-bolt clamp (78).
8. Loosen set screws (83) on upper fluid housing (67).

### NOTICE

**Models 262853 and 24W612 only:** To prevent damaging the RTD sensor (72), do not rotate the core (68) when performing the following step.

9. Unscrew cylinder (66). Pull down to remove.
10. Remove screws (52) then remove cover (18).
11. **On model 262853 and 24W612 Only:** Remove RTD sensor (88). Loosen nut on compression fitting (72). Pull nut and sensor straight up out of heater.
12. Remove 4 screws (71) from top of plate (69).
13. Disconnect heater cartridge (81) wire leads from wire nuts (89).

### NOTICE

To prevent damage to sensors and wiring, do not turn core (68). The core pushes straight down out of housing (67).

14. Pull heater core straight down out of the upper housing (67).
15. Use a wire brush to clean outside fluid passages until bare aluminum is visible.

**NOTE: Thermostat-Controlled Heaters Only:** The capillary bulb/tube from the thermostat (24) will slowly pull out of its hole in the core (68). The heater core wires will pull down through plate (69).

### Reassembly Notes

- Always replace o-rings (70, 76, and 79).
- Refer to FIG. 12 or FIG. 13 on page 21 for wiring connections.
- **Model 262853 and 24W612 Only:** Make sure the core (68) is aligned with the plug (82) pin in housing (67).
- Make sure gasket (47) is installed and aligned with electrical housing screw holes.
- Secure cover (18) with screws (52). Torque screws to 85-90 in-lb (10 N•m).

## Heater Cartridges

See **Parts** illustration that applies to your heater on page 27 or 31.

1. Follow **Pressure Relief Procedure**, page 14.
2. Disconnect power.
3. **Drain the Heater**, page 16.
4. Perform **Heater Core Replacement** procedure on page 23. This includes removing the inlet housing (65).
5. With the inlet housing removed, remove five screws (52) and cover (18).
6. Disconnect wires from heater cartridges (81).
7. Remove pipe plug (95) and springs (31) from bottom of core (68).
8. Use a 3/8 in. (10 mm) rod to push each cartridge out of the top of the core.
9. Wire new cartridges per FIG. 10 or FIG. 11, page 19.

## RTD Sensor and Fitting Replacement

(Model 262853 and 24W612 Only)

1. Follow **Pressure Relief Procedure**, page 14.
2. Disconnect power.
3. Remove screws (52) then remove cover (18).
4. Disconnect M8 cable connection for sensor (88).
5. Loosen nut on compression fitting (72) and pull the sensor (88) straight up and out.
6. Remove compression fitting.

## Reassembly

### NOTICE

To avoid damage to the heater and inaccurate temperature readings, the sensor (88) position cannot be changed once a compression fitting (72) has been tightened. A new sensor (88) and a new compression fitting (72) must be used if the position is wrong.

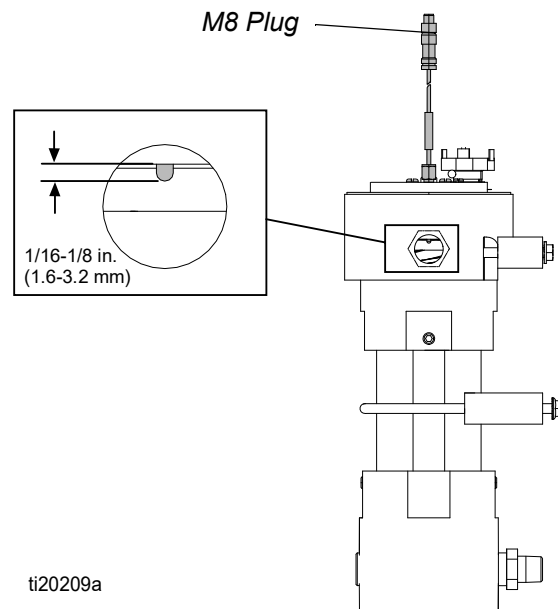
**NOTE:** Sensor (88) and fitting (72) must be replaced together.

1. Install new compression fitting (72) into housing (67).

### NOTICE

To avoid damage to the heater and inaccurate temperature readings, the RTD sensor must always be mounted on the outlet side of housing (67). If the outlet is plumbed to the left side, swap position of sensor (88) and plug (82).

2. Position sensor through housing (67) so it sticks through the aluminum shoulder on core (68) 1/16 to 1/8 in. (1.6 to 3.2 mm) into fluid outlet, when looking into the outlet. See FIG. 15.



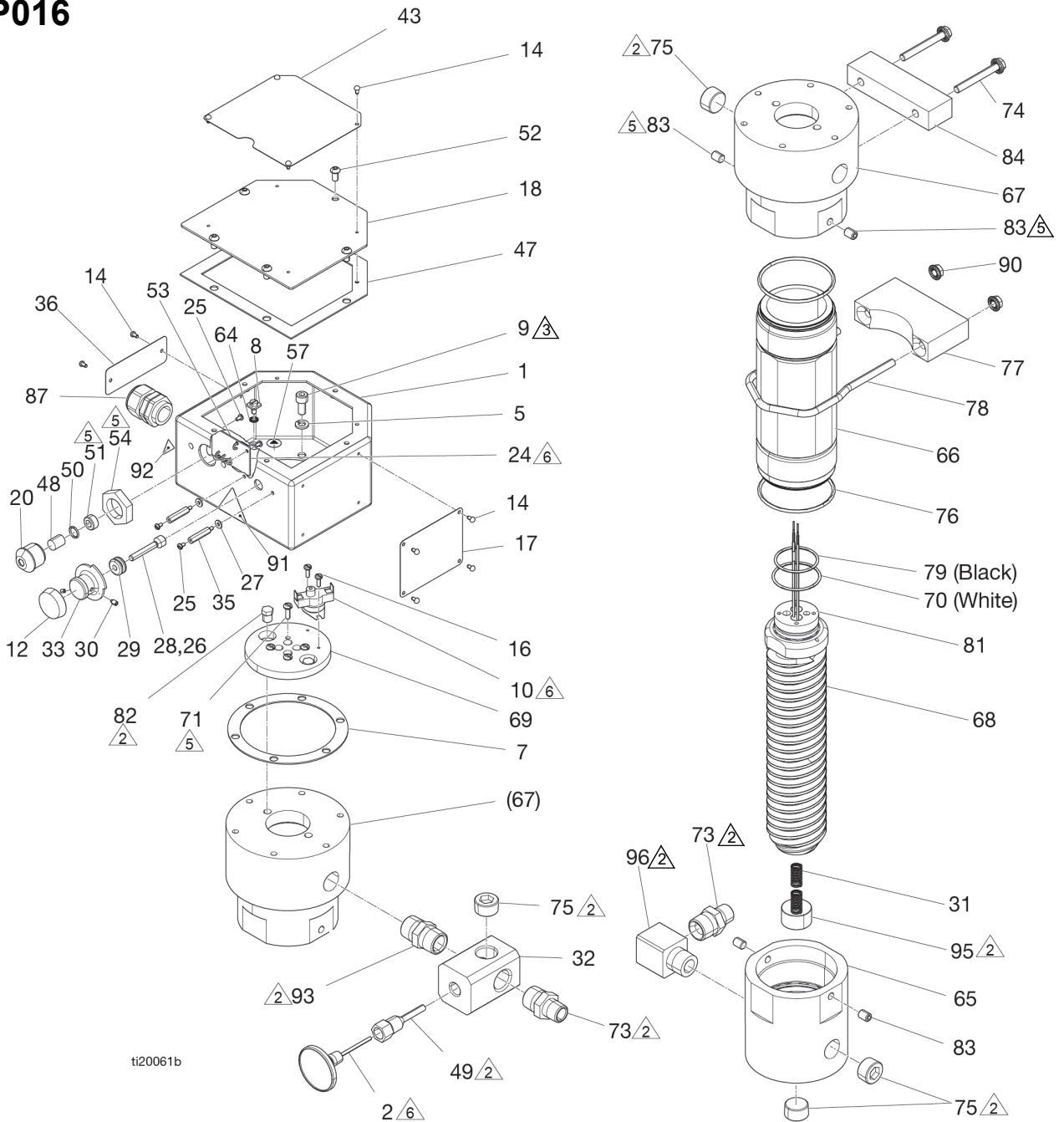
**FIG. 15**

3. Tighten compression nut on fitting (72) 3/4 turn after it holds sensor tight.
4. Connect M8 plug.
5. Install cover.

# Parts

## Non-Hazardous Location Heaters

### 24P016



ti20061b

- Apply sealant
- Torque to 7-11 ft-lb (10-15 N•m)
- Apply medium strength thread locking fluid
- Apply thermal paste

## 24P016

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
1	---	ENCLOSURE, controls, heater	1	65	24P019	HOUSING, inlet, heater	1
2	102124	THERMOMETER, dial	1	66	24P021	SLEEVE, center, heater	1
5	107542	WASHER, lock, spring	6	67	24P020	HOUSING, outlet, heater	1
7	15A990	GASKET, heater	1	68†	---	CORE, spiral, heater	1
8	116343	SCREW, ground	1	69†	16P607	PLATE, mounting, heater	1
9	117367	SCREW, socket head cap, M8 x 18	6	70†	164891	PACKING, o-ring	1
10	24P291	THERMOSTAT SWITCH	1	71†	103374	SCREW, machine, round head	4
12	177969	KNOB, adjusting	1	73	16R883	FITTING, nipple, reducing, 3/4 x 1/2	2
14	100055	SCREW, drive, #6	10	74	126669	SCREW, machine, serrated hex head; 5/16-18 x 2.5 in.	2
16	104590	SCREW, machine, pan head	2	75	18H243	PLUG, pipe headless, 3/4 in.	4
17	---	LABEL, brand	1	76†	126396	PACKING, o-ring, PTFE, 235	2
18	15A810	COVER, heater controls, top	1	77	16P609	CLAMP, mounting, bottom, heater	1
20	15B828	HOUSING, light, heater	1	78	16P610	CLAMP, u-bolt, heater	1
24	108676	THERMOSTAT	1	79†	102930	PACKING, o-ring	1
25	100032	SCREW, machine, pan head	4	81	17E551	CARTRIDGE, heater, 2700W, 240V	2
26	105672	SCREW, set, socket cap head	1	82	556410	PLUG, steel 1/8 pipe hex head	2
27	114027	WASHER, flat	2	83	101679	SCREW, set, socket cap	4
28	183068	SHAFT, switch	1	84	16P608	CLAMP, mounting, top, heater	1
29	112738	GROMMET	1	87	121603	GRIP, cord, 0.51-0.71, 3/4	1
30	101366	SCREW, set, socket cap head	1	89◆	122032	NUT, wire	3
31†	16A240	SPRING, compression	2	90	110996	NUT, hex, flange head	2
32	16R930	FITTING, tee, thermometer, 3/4	1	91▲	189285	LABEL, burn hazard, triangular	1
33	177968	KNOB, control	1	92▲	189930	LABEL, shock hazard, triangular	1
35	117526	SPACER, standoff, threaded	2	93	16R882	FITTING, nipple, 3/4	1
36▲	15B623	LABEL, electric shock warning	1	95†	105325	PLUG, pipe	1
37◆	16T502	WIRE, assy, white (see page 19)	2	96	166590	FITTING, elbow, street, high pres- sure	1
38†	110009	LUBRICANT, thermal, 1 oz tube	1	98◆	246346	WIRE, assembly, black (see page 19)	1
43▲	15B625	LABEL, multiple warnings, English	1				
47	15A991	GASKET, heater	1				
48	15B827	LENS, light, glass	1				
49	15D757	HOUSING, thermometer	1				
50	103338	PACKING, o-ring	1				
51	117483	SCREW, jam, socket	1				
52	111962	SCREW, cap, button head	5				
53	246014	BOARD, circuit, heater indicator light assembly	1				
54	106216	NUT, lock	1				
57▲	172953	LABEL, grounding symbol, round	1				
60▲◆	15B819	LABEL, multiple warnings, multi-language	1				
64	111307	WASHER, lock, external	1				

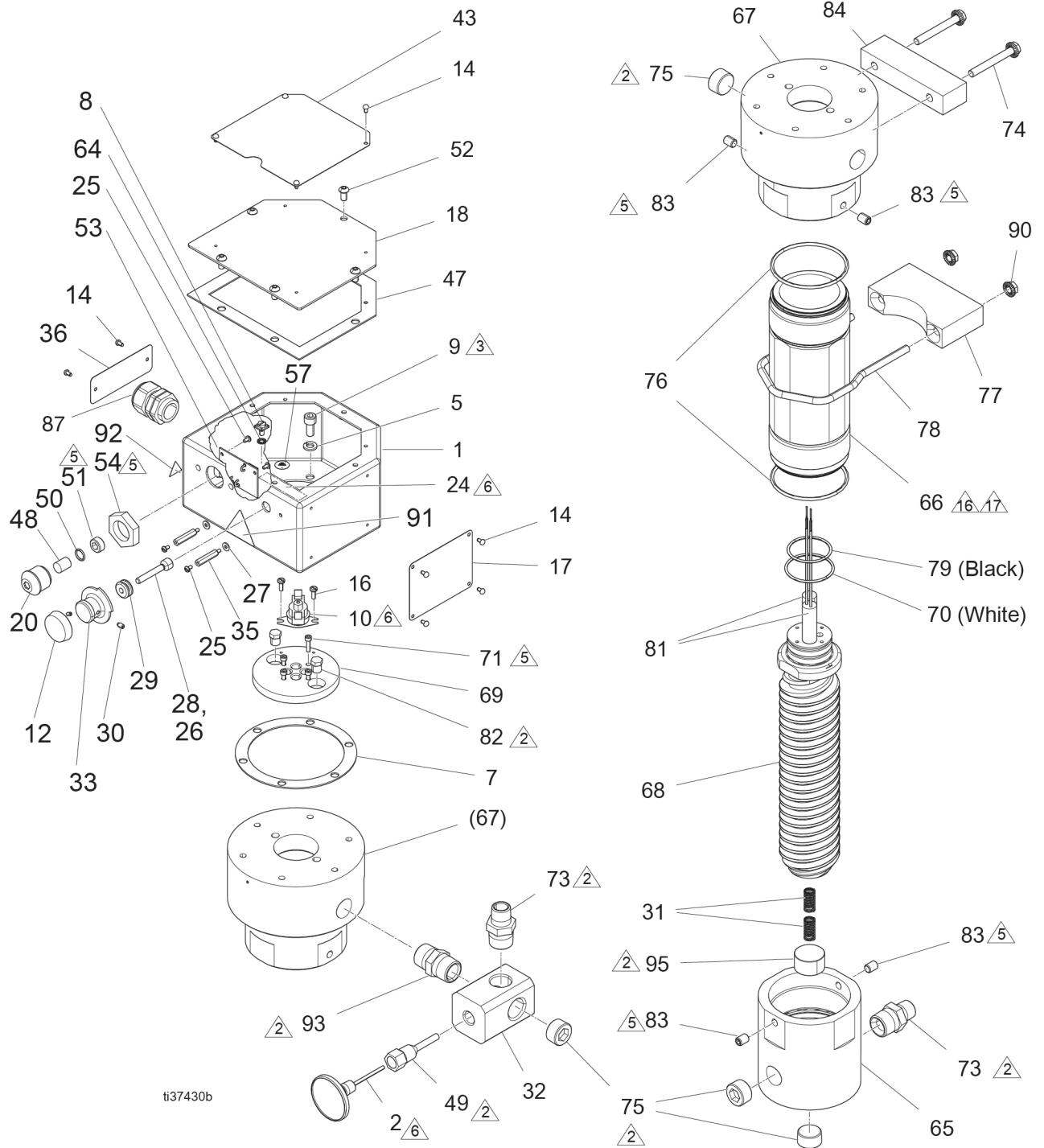
--- Not for sale.

▲ Replacement safety labels, tags and cards are available at no cost.

◆ Not shown.

† Parts included in Heater Core (68) Replacement Kit 24P022.

# 26C860, 26C861



ti37430b

- △2 Apply sealant
- △3 Torque to 7-11 ft-lb (10-15 N•m)
- △5 Apply medium strength thread locking fluid
- △6 Apply thermal paste

## 26C860

Ref. Part	Description	Qty.	Ref. Part	Description	Qty.
1 ---	ENCLOSURE, controls, heater	1	64 111307	WASHER, lock, external	1
2 102124	THERMOMETER, dial	1	65 24P019	HOUSING, inlet, heater	1
5 107542	WASHER, lock, spring	6	66 24P021	SLEEVE, center, heater	1
7 15A990	GASKET, heater	1	67 17C956	HOUSING, outlet, heater	1
8 116343	SCREW, ground	1	68 † ---	CORE, spiral, heater, 480V	1
9 117367	SCREW, shcs, m8x18	6	69 † 16P607	PLATE, mounting, heater	1
10 24P291	THERMOSTAT, Viscon, hf, 260f	1	70 † 164891	PACKING, o-ring	1
12 177969	KNOB, adjusting	1	71 † 103374	SCREW, mach, rdh	4
14 100055	SCREW, drive, #6	10	73 16R883	FITTING, nipple, reducing, 3/4 x 1/2	2
16 104590	SCREW, mach, pnh	2	74 126669	SCREW, mach, serrated hex head	2
17 ---	LABEL, ident, brand, Viscon, hf	1	75 18H243	PLUG, pipe headles	4
18 15A810	COVER, heater controls, top	1	76 † 126396	PACKING, o-ring, pffe, 235	2
20 15B828	HOUSING, light, heater, Viscon HP	1	77 16P609	CLAMP, mounting, bottom, heater	1
24 108676	SWITCH, thermostat	1	78 16P610	CLAMP, u-bolt, heater	1
25 100032	SCREW, mach, pnh	4	79 † 102930	PACKING, o-ring	1
26 105672	SCREW, set, sch	1	81 17E551	CARTRIDGE, heater, 2700w	2
27 114027	WASHER, flat	2	82 556410	PLUG, stl 1/8 pipe hex hd	2
28 183068	SHAFT, switch	1	83 101679	SCREW, set, sch	4
29 112738	GROMMET,	1	84 16P608	CLAMP, mounting, top, heater	1
30 101366	SCREW, set, sch	1	87 121603	GRIP, cord,. 51-.71, 3/4	1
31 † 16A240	SPRING, compression	2	89 ◆ 122032	NUT, wire	4
32 16R930	FITTING, tee, thermometer, 3/4	1	90 110996	NUT, hex, flange head	2
33 177968	KNOB, control	1	91 ▲ 189285	LABEL, safety, burn	1
35 117526	SPACER, standoff, threaded	2	92 ▲ 189930	LABEL, caution	1
36 ▲ 15B623	LABEL, plate, danger, Viscon	1	93 16R882	FITTING, nipple, 3/4	1
37 ◆ 16T502	WIRE, assy, white (see page 19)	2	95 † 105325	PLUG, pipe	1
38 † 110009	LUBRICANT, thermal	1	98 ◆ 246346	WIRE, assembly, black (see page 19)	2
43 ▲ 15B625	LABEL, plate, warning	1			
47 15A991	GASKET, heater	1			
48 15B827	LENS, light, glass	1			
49 15D757	HOUSING, thermometer, Viscon HP	1	--- Not for sale.		
50 103338	PACKING, o-ring	1	▲ Replacement safety labels, tags and cards are available at no cost.		
51 117483	SCREW, jam, socket	1	◆ Not shown.		
52 111962	SCREW, cap, button hd	5			
53 246014	BOARD, ckt, htr ind light assy	1	† Parts included in Heater Core (68) Replacement Kit 24P022.		
54 106216	NUT, lock	1			
57 ▲ 172953	LABEL, designation	1			

## 26C861

Ref. Part	Description	Qty.	Ref. Part	Description	Qty.
1 ---	ENCLOSURE, controls, heater	1	64 111307	WASHER, lock, external	1
2 102124	THERMOMETER, dial	1	65 24P019	HOUSING, inlet, heater	1
5 107542	WASHER, lock, spring	6	66 24P021	SLEEVE, center, heater	1
7 15A990	GASKET, heater	1	67 24P020	HOUSING, outlet, heater	1
8 116343	SCREW, ground	1	68† ---	CORE, spiral, heater	1
9 117367	SCREW, shcs, m8x18	6	69† 17Y479	PLATE, mounting, heater, 480V	1
10 24P291	THERMOSTAT, Viscon, hf, 260f	1	70† 164891	PACKING, o-ring	1
12 177969	KNOB, adjusting	1	71† 16K078	SCREW, cap, socket head	4
14 100055	SCREW, drive, #6	10	73 16R883	FITTING, nipple, reducing, 3/4 x 1/2	2
16 104590	SCREW, mach, pnh	2	74 126669	SCREW, mach, serrated hex head	2
17 ---	LABEL, ident, brand, Viscon, hf	1	75 18H243	PLUG, pipe headles	4
18 15A810	COVER, heater controls, top	1	76† 126396	PACKING, o-ring, ptfe, 235	2
20 15B828	HOUSING, light, heater, Viscon HP	1	77 16P609	CLAMP, mounting, bottom, heater	1
24 108676	SWITCH, thermostat	1	78 16P610	CLAMP, u-bolt, heater	1
25 100032	SCREW, mach, pnh	4	79† 102930	PACKING, o-ring	2
26 105672	SCREW, set, sch	1	81 26C477	CARTRIDGE, heater, 2700w, 480V	2
27 114027	WASHER, flat	2	82 556410	PLUG, stl 1/8 pipe hex hd	2
28 183068	SHAFT, switch	1	83 101679	SCREW, set, sch	4
29 112738	GROMMET,	1	84 16P608	CLAMP, mounting, top, heater	1
30 101366	SCREW, set, sch	1	87 121603	GRIP, cord, . 51-.71, 3/4	1
31† 16A240	SPRING, compression	2	89◆ 122032	NUT, wire (see page 19)	4
32 16R930	FITTING, tee, thermometer, 3/4	1	90 110996	NUT, hex, flange head	2
33 177968	KNOB, control	1	91▲ 189285	LABEL, safety, burn	1
35 117526	SPACER, standoff, threaded	2	92▲ 189930	LABEL, caution	1
36▲ 15B623	LABEL, plate, danger, Viscon	1	93 16R882	FITTING, nipple, 3/4	1
37◆ 16T502	WIRE, assy, white (see page 19)	2	95† 105325	PLUG, pipe	1
38† 110009	LUBRICANT, thermal	1	98◆ 246346	WIRE, assembly, black (see page 19)	2
43▲ 15B625	LABEL, plate, warning	1			
47 15A991	GASKET, heater	1			
48 15B827	LENS, light, glass	1			
49 15D757	HOUSING, thermometer, Viscon HP	1			
50 103338	PACKING, o-ring	1			
51 117483	SCREW, jam, socket	1			
52 111962	SCREW, cap, button hd	5			
53 246014	BOARD, ckt, htr ind light assy	1			
54 106216	NUT, lock	1			
57▲ 172953	LABEL, designation	1			

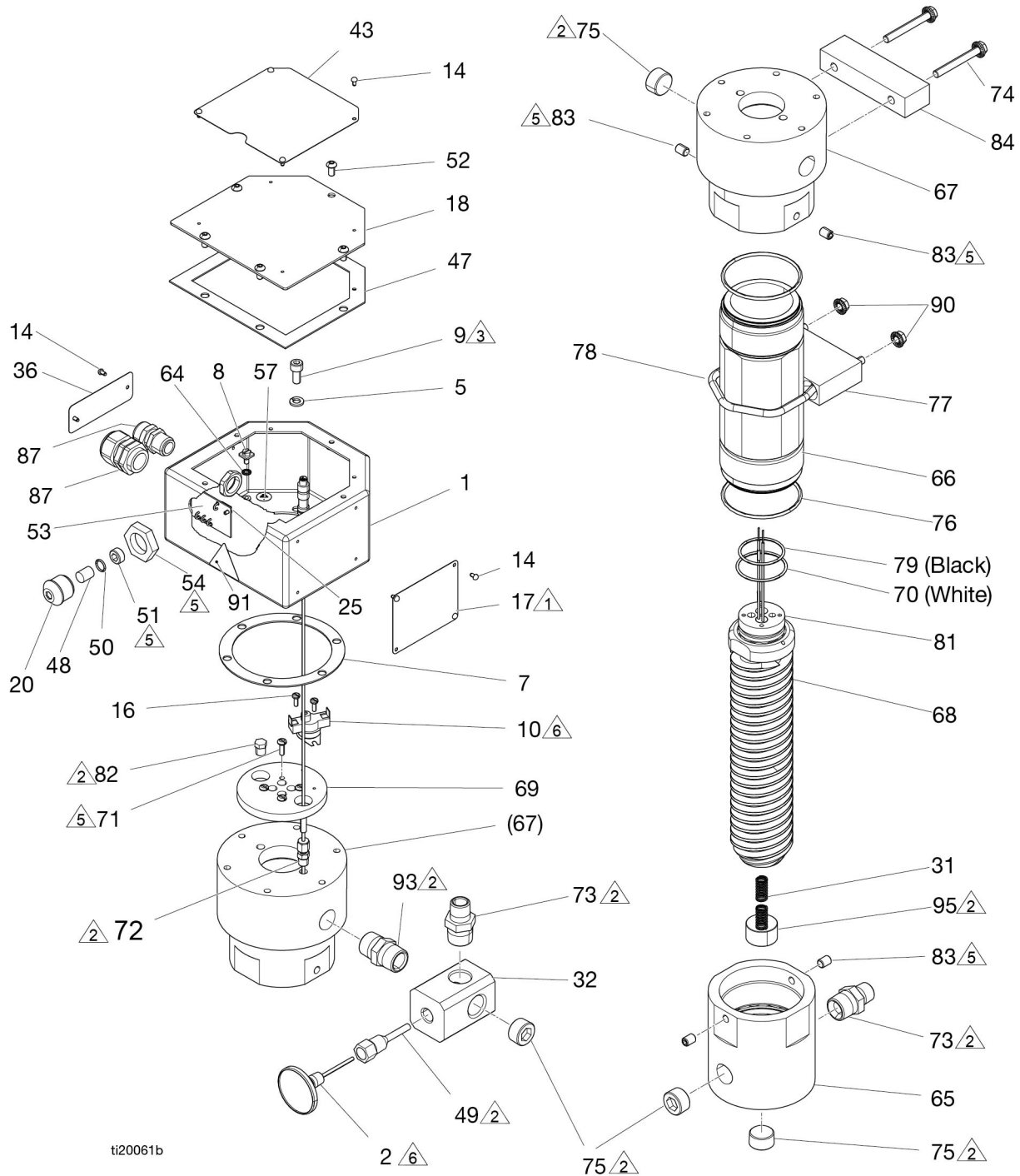
--- Not for sale.

▲ Replacement safety labels, tags and cards are available at no cost.





◆ Not shown.

† Parts included in Heater Core (68) Replacement Kit 26C637

# 262853



ti20061b

-  Apply sealant
-  Torque to 7-11 ft-lb (10-15 N•m)
-  Apply medium strength thread locking fluid
-  Apply thermal paste



## 262853

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
1	---	ENCLOSURE, controls, heater	1	69†	16P607	PLATE, mounting, heater	1
2	102124	THERMOMETER, dial	1	70†	164891	PACKING, o-ring, PTFE, #135	1
5	107542	WASHER, lock, spring	6	71†	103374	SCREW, machine, round head	4
7	15A990	GASKET, heater	1	72	126351	FITTING, compression, thermo-couple	1
8	116343	SCREW, ground	1	73	16R883	FITTING, nipple, reducing, 3/4 x 1/2	2
9	117367	SCREW, shcs, m8x18	6	74	126669	SCREW, machine, serrated hex head; 5/16-18 x 2.5 in.	2
10	24P291	THERMOSTAT SWITCH	1	75	18H243	PLUG, pipe headless, 3/4 in.	4
14	100055	SCREW, drive, #6	10	76†	126396	PACKING, o-ring, PTFE, 235	2
16	104590	SCREW, machine, pan head	2	77	16P609	CLAMP, mounting, bottom, heater	1
17	---	LABEL, brand	1	78	16P610	CLAMP, u-bolt, heater	1
18	15A810	COVER, heater controls, top	1	79†	102930	PACKING, o-ring	1
20	15B828	HOUSING, light, heater, viscon hp	1	81	17E551	CARTRIDGE, heater, 2700W, 240V	2
25	100032	SCREW, machine, pan head	2	82	16V591	PLUG, steel locator	1
31†	16A240	SPRING, compression	2	83	101679	SCREW, set, socket cap	4
32	16R930	FITTING, tee, thermometer, 3/4	1	84	16P608	CLAMP, mounting, top, heater	1
36▲	15B623	LABEL, electric shock warning	1	85	260067	FITTING, strain relief, 1/2 npt	1
37◆	16T502	WIRE, assembly, white (see page 19)	2	86	117625	NUT, locking	1
38†	110009	LUBRICANT, thermal, 1 oz tube	1	87	121603	GRIP, cord, 0.51-0.71, 3/4	1
43▲	15B625	LABEL, multiple warnings, English	1	88	126381	SENSOR, RTD, 1k ohm, 4 pin	1
47	15A991	GASKET, heater	1	89◆	122032	NUT, wire	3
48	15B827	LENS, light, glass	1	90	110996	NUT, hex, flange head	2
49	15D757	HOUSING, thermometer, viscon HP	1	91▲	189285	LABEL, burn hazard, triangular	1
50	103338	PACKING, o-ring	1	92▲	189930	LABEL, shock hazard, triangular	1
51	117483	SCREW, jam, socket	1	93	16R882	FITTING, nipple, 3/4	1
52	111962	SCREW, cap, button head	5	95†	105325	PLUG, pipe	1
53	246014	BOARD, circuit, heater indicator light assembly	1	98◆	16U122	WIRE, 14 awg, high temp	1
54	106216	NUT, lock	1				
57▲	172953	LABEL, grounding symbol, round	1				
60▲◆	15B819	LABEL, multiple warnings, multi-language	1				
64	111307	WASHER, lock, external	1				
65	24P019	HOUSING, inlet, heater	1				
66	24P021	SLEEVE, center, heater	1				
67	24P020	HOUSING, outlet, heater	1				
68†	---	CORE, spiral, heater	1				

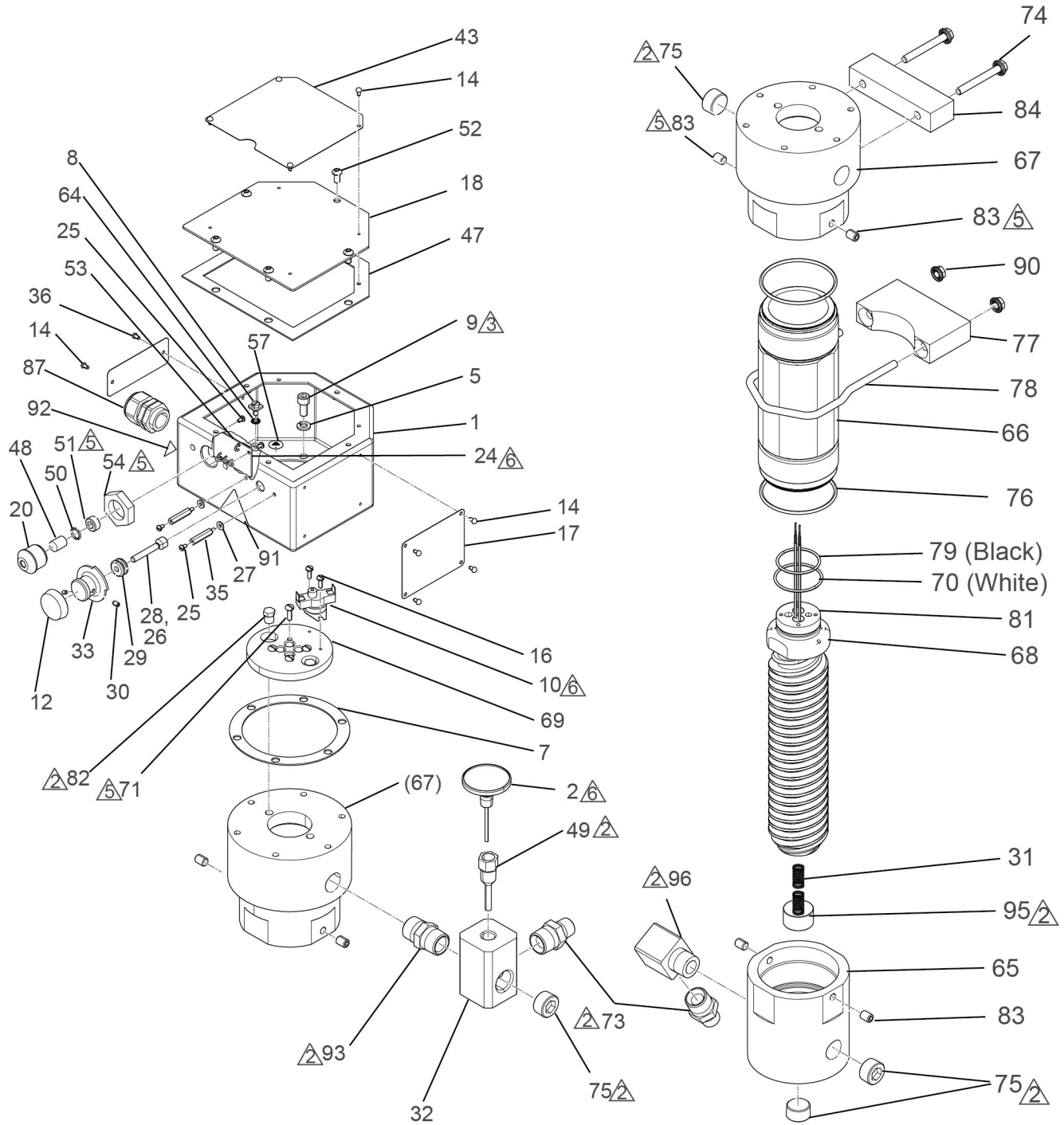
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▲ Replacement safety labels, tags and cards are available at no cost.





◆ Not shown.

† Parts included in Heater Core (68) Replacement Kit 24P022.

# 25C961



ti31198b

-  Apply sealant
-  Torque to 7-11 ft-lb (10-15 N•m)
-  Apply medium strength thread locking fluid
-  Apply thermal paste

## 25C961

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
1	---	ENCLOSURE, controls, heater	1	64	111307	WASHER, lock, external	1
2	102124	THERMOMETER, dial	1	65	24P019	HOUSING, inlet, heater	1
5	107542	WASHER, lock, spring	6	66	24P021	SLEEVE, center, heater	1
7	15A990	GASKET, heater	1	67	24P020	HOUSING, outlet, heater	1
8	116343	SCREW, ground	1	68†	---	CORE, spiral, heater	1
9	117367	SCREW, socket head cap, M8 x 18	6	69†	16P607	PLATE, mounting, heater	1
10	24P291	THERMOSTAT SWITCH	1	70†	164891	PACKING, o-ring	1
12	177969	KNOB, adjusting	1	71†	103374	SCREW, machine, round head	4
14	100055	SCREW, drive, #6	10	73	16R883	FITTING, nipple, reducing, 3/4 x 1/2	2
16	105676	SCREW, machine, pan head	2	74	126669	SCREW, machine, serrated hex head; 5/16-18 x 2.5 in.	2
17	---	LABEL, brand	1	75	18H243	PLUG, pipe headless, 3/4 in.	4
18	15A810	COVER, heater controls, top	1	76†	126396	PACKING, o-ring, PTFE, 235	2
20	15B828	HOUSING, light, heater	1	77	16P609	CLAMP, mounting, bottom, heater	1
24	108676	THERMOSTAT	1	78	16P610	CLAMP, u-bolt, heater	1
25	100032	SCREW, machine, pan head	4	79†	102930	PACKING, o-ring	1
26	105672	SCREW, set, socket cap head	1	81	17E551	CARTRIDGE, heater, 2700W, 240V	2
27	114027	WASHER, flat	2	82	556410	PLUG, steel 1/8 pipe hex head	2
28	183068	SHAFT, switch	1	83	101679	SCREW, set, socket cap	4
29	112738	GROMMET	1	84	16P608	CLAMP, mounting, top, heater	1
30	101366	SCREW, set, socket cap head	1	87	121603	GRIP, cord, 0.51-0.71, 3/4	1
31†	16A240	SPRING, compression	2	89◆	122032	NUT, wire	3
32	16R930	FITTING, tee, thermometer, 3/4	1	90	110996	NUT, hex, flange head	2
33	177968	KNOB, control	1	91▲	189285	LABEL, burn hazard, triangular	1
35	117526	SPACER, standoff, threaded	2	92▲	189930	LABEL, shock hazard, triangular	1
36▲	15B623	LABEL, electric shock warning	1	93	16R882	FITTING, nipple, 3/4	1
37◆	16T502	WIRE, assy, white (see page 19)	2	95†	105325	PLUG, pipe	1
38†	110009	LUBRICANT, thermal, 1 oz tube	1	96	166590	FITTING, elbow, street, high pres- sure	1
43▲	15B625	LABEL, multiple warnings, English	1	98◆	246346	WIRE, assembly, black (see page 19)	1
47	15A991	GASKET, heater	1				
48	15B827	LENS, light, glass	1				
49	15D757	HOUSING, thermometer	1				
50	103338	PACKING, o-ring	1				
51	117483	SCREW, jam, socket	1				
52	111962	SCREW, cap, button head	5				
53	246014	BOARD, circuit, heater indicator light assembly	1				
54	106216	NUT, lock	1				
57▲	172953	LABEL, grounding symbol, round	1				
60▲◆	15B819	LABEL, multiple warnings, multi-language	1				

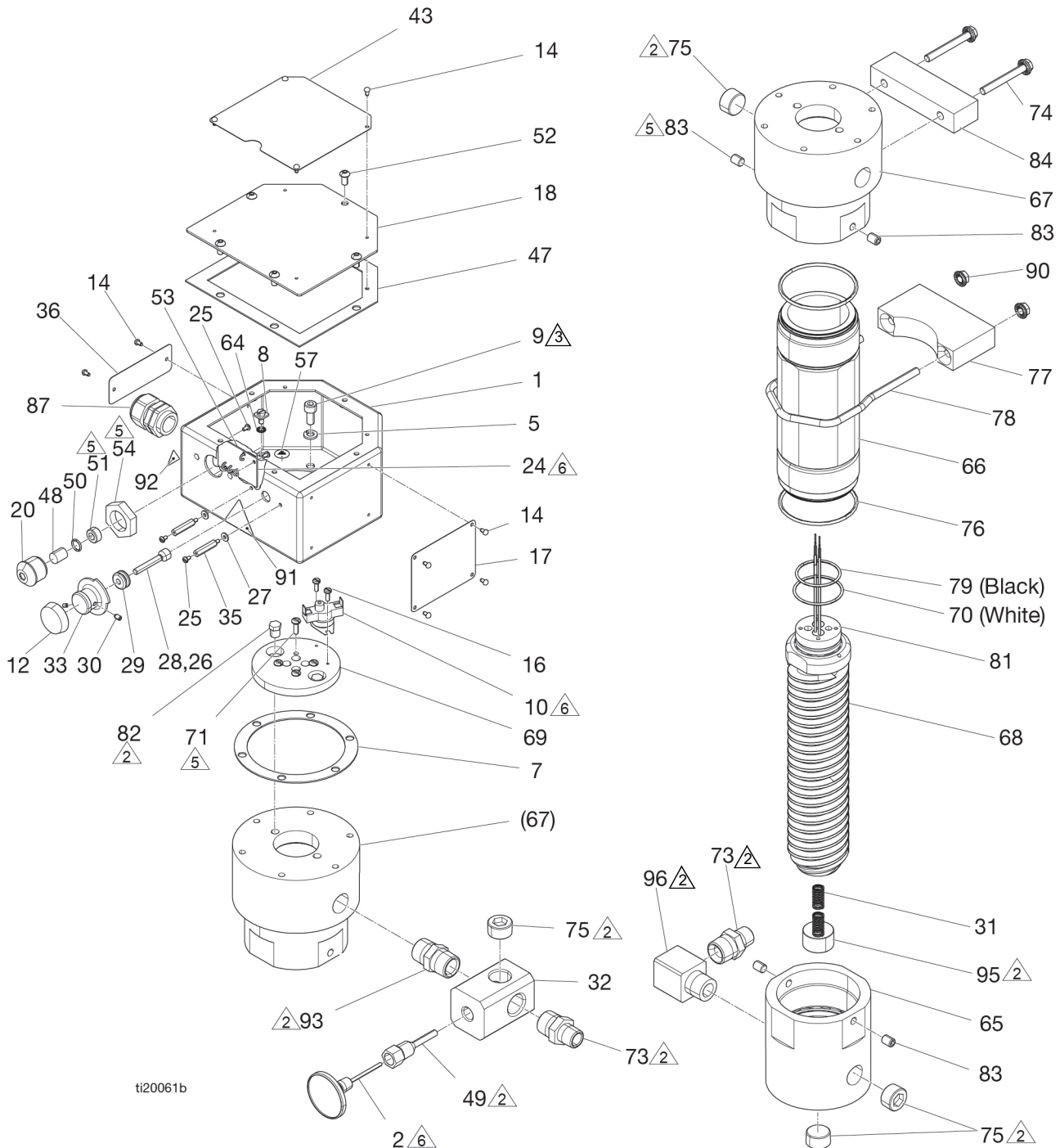
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▲ Replacement safety labels, tags and cards are available at no cost.





◆ Not shown.

† Parts included in Heater Core (68) Replacement Kit 24P022.

# 26C475



ti20061b

-  Apply sealant
-  Torque to 7-11 ft-lb (10-15 N•m)
-  Apply medium strength thread locking fluid
-  Apply thermal paste

## 26C475

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
1	---	ENCLOSURE, controls, heater	1	65	24P019	HOUSING, inlet, heater	1
2	102124	THERMOMETER, dial	1	66	24P021	SLEEVE, center, heater	1
5	107542	WASHER, lock, spring	6	67	17C956	HOUSING, outlet, heater	1
7	15A990	GASKET, heater	1	68†	---	CORE, spiral, heater	1
8	116343	SCREW, ground	1	69†	16P607	PLATE, mounting, heater	1
9	117367	SCREW, socket head cap, M8 x 18	6	70†	164891	PACKING, o-ring	1
10	24P291	THERMOSTAT SWITCH	1	71†	103374	SCREW, machine, round head	4
12	177969	KNOB, adjusting	1	73	16R883	FITTING, nipple, reducing, 3/4 x 1/2	2
14	100055	SCREW, drive, #6	10	74	126669	SCREW, machine, serrated hex head; 5/16-18 x 2.5 in.	2
16	104590	SCREW, machine, pan head	2	75	18H243	PLUG, pipe headless, 3/4 in.	4
17	---	LABEL, brand	1	76†	126396	PACKING, o-ring, PTFE, 235	2
18	15A810	COVER, heater controls, top	1	77	16P609	CLAMP, mounting, bottom, heater	1
20	15B828	HOUSING, light, heater	1	78	16P610	CLAMP, u-bolt, heater	1
24	108676	THERMOSTAT	1	79†	102930	PACKING, o-ring	2
25	100032	SCREW, machine, pan head	4	81	26C477	CARTRIDGE, heater, 2700W, 480V	2
26	105672	SCREW, set, socket cap head	1	82	556410	PLUG, steel 1/8 pipe hex head	2
27	114027	WASHER, flat	2	83	101679	SCREW, set, socket cap	4
28	183068	SHAFT, switch	1	84	16P608	CLAMP, mounting, top, heater	1
29	112738	GROMMET	1	87	121603	GRIP, cord, 0.51-0.71, 3/4	1
30	101366	SCREW, set, socket cap head	1	89◆	122032	NUT, wire	3
31†	16A240	SPRING, compression	2	90	110996	NUT, hex, flange head	2
32	16R930	FITTING, tee, thermometer, 3/4	1	91▲	189285	LABEL, burn hazard, triangular	1
33	177968	KNOB, control	1	92▲	189930	LABEL, shock hazard, triangular	1
35	117526	SPACER, standoff, threaded	2	93	16R882	FITTING, nipple, 3/4	1
36▲	15B623	LABEL, electric shock warning	1	95†	105325	PLUG, pipe	1
37◆	16T502	WIRE, assy, white (see page 19)	2	96	166590	FITTING, elbow, street, high pres- sure	1
38†	110009	LUBRICANT, thermal, 1 oz tube	1	98◆	246346	WIRE, assembly, black (see page 19)	1
43▲	15B625	LABEL, multiple warnings, English	1				
47	15A991	GASKET, heater	1				
48	15B827	LENS, light, glass	1				
49	15D757	HOUSING, thermometer	1				
50	103338	PACKING, o-ring	1				
51	117483	SCREW, jam, socket	1				
52	111962	SCREW, cap, button head	5				
53	246014	BOARD, circuit, heater indicator light assembly	1				
54	106216	NUT, lock	1				
57▲	172953	LABEL, grounding symbol, round	1				
60▲◆	15B819	LABEL, multiple warnings, multi-language	1				
64	111307	WASHER, lock, external	1				

--- Not for sale.

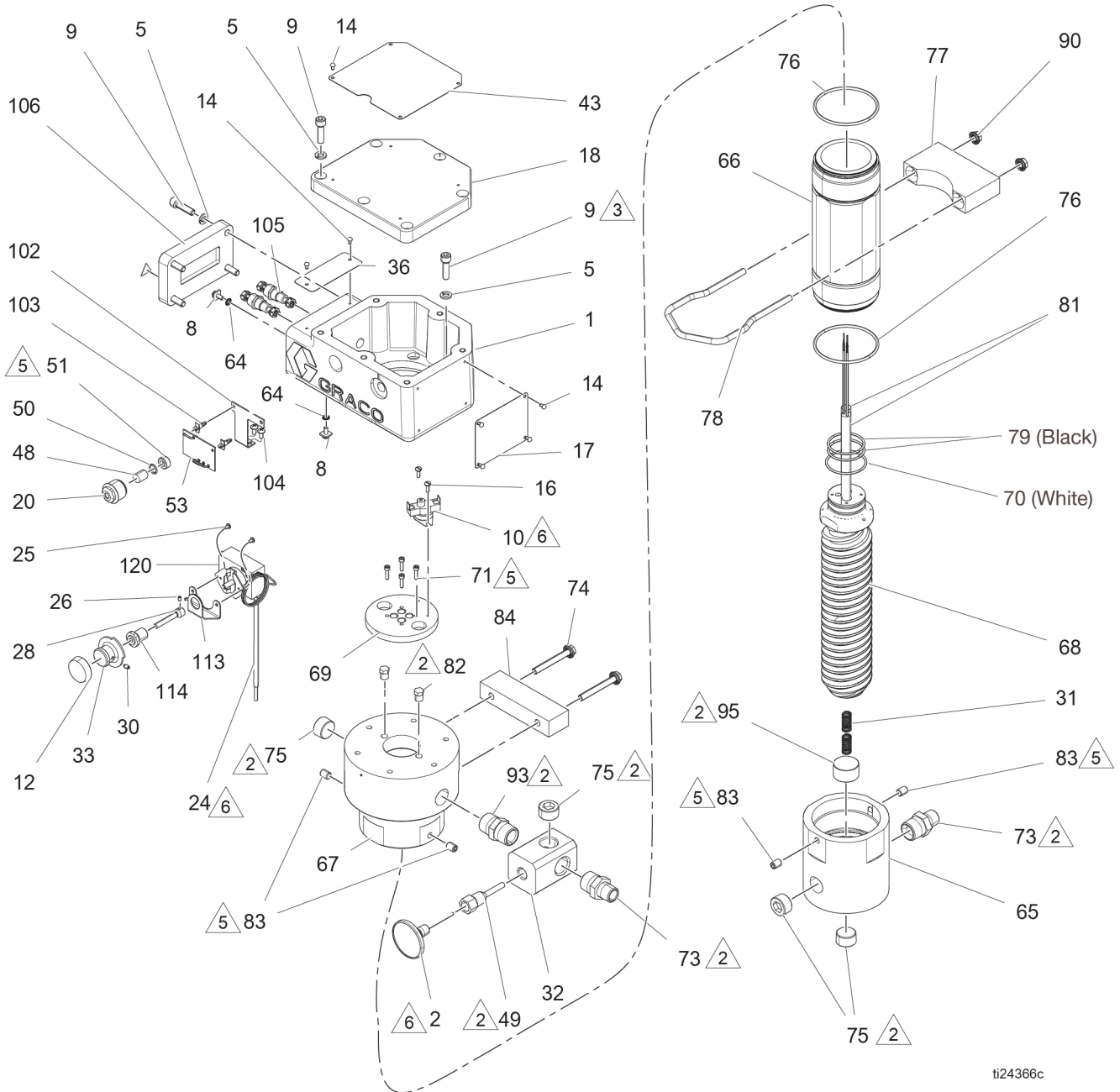
▲ Replacement safety labels, tags and cards are available at no cost.

◆ Not shown.





† Parts included in Heater Core (68) Replacement Kit 26C637.

# Hazardous Location Heaters

## 24W248



ti24366c

-  Apply sealant
-  Torque to 7-11 ft-lb (10-15 N•m)
-  Apply medium strength thread locking fluid
-  Apply thermal paste

**24W248**

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
1	---	HOUSING, control	1	70†	164891	PACKING, o-ring	1
2	102124	THERMOMETER, dial	1	71†	16K078	SCREW, mach, rdh	4
5	107542	WASHER, lock, spring	16	73	16R883	FITTING, nipple, reducing, 3/4 x 1/2	2
8	116343	SCREW, ground	2	74	126669	SCREW, mach, serrated hex head; 5/15-18 x 2.5 in	2
9	109114	SCREW, cap, sch	16	75	18H243	PLUG, pipe headles	4
10	24P291	THERMOSTAT, viscon, hf, 260f	1	76†	126396	PACKING, o-ring, ptfe, 235	2
12	177969	KNOB, adjusting	1	77	16P609	CLAMP, mounting, bottom, heater	1
14	100055	SCREW, drive, #6	10	78	16P610	CLAMP, u-bolt, heater	1
16	104590	SCREW, mach, pnh	2	79†	102930	PACKING, o-ring	2
17	---	PLATE, identification, viscon hf	1	81	17E551	CARTRIDGE, heater, 2700w, 240v	2
18	183073	COVER, housing	1	82	556410	PLUG, stl 1/8 pipe hex hd	2
20	17D130	HOUSING, light, sightglass	1	83	101679	SCREW, set, sch	4
24	108676	SWITCH, thermostat	1	84	16P608	CLAMP, mounting, top, heater	1
25	100032	SCREW, mach, pnh	2	89◆	122032	NUT, wire	2
26	105672	SCREW, set, sch	1	90	110996	NUT, hex, flange head	2
28	183068	SHAFT, switch	1	93	16R882	FITTING, nipple, 3/4	1
30	101366	SCREW, set, sch	1	95†	105325	PLUG, pipe	1
31†	16A240	SPRING, compression	2	98◆	246346	WIRE, assembly, black (see page 19)	1
32	16R930	FITTING, tee, thermometer, 3/4	1	102	15B243	BRACKET, led ckt board mounting	1
33	177968	KNOB, control	1	103	117514	SPACER, circuit board mounting	2
36▲	15B623	LABEL, electric shock warning	1	104	114669	SCREW, mach, phillips pan hd	2
37◆	16T502	WIRE, assy, white (see page 19)	2	105	108675	BUSHING, post	2
38†	110009	LUBRICANT, thermal, 1 oz tube	1	106	183066	COVER	1
43▲	15B625	LABEL, multiple warnings, English	1	109◆	108664	TOOL, wrench allen	1
48	15B827	LENS, light, glass	1	110◆	105747	TOOL, wrench, allen	1
49	15D757	HOUSING, thermometer, viscon hp	1	111◆	101369	TOOL, allen, wrench	1
50	103338	PACKING, o-ring	1	113	183067	BRACKET, switch	1
51	117483	SCREW, jam, socket	1	114	183071	BUSHING	1
53	246014	BOARD, ckt, htr ind light assy	1	120	183070	NUT, bushing	1
60▲	15B819	LABEL, warning, viscon hp	1				
61▲	15B777	LABEL, warning, viscon hp	1				
64	111307	WASHER, lock, external	2				
65	16P603	HOUSING, inlet, heater	1				
66	16P605	SLEEVE, center, heater	1				
67	17C956	HOUSING, outlet, heater	1				
68†	---	CORE, spiral, heater	1				
69†	17C957	PLATE, mounting, heater	1				

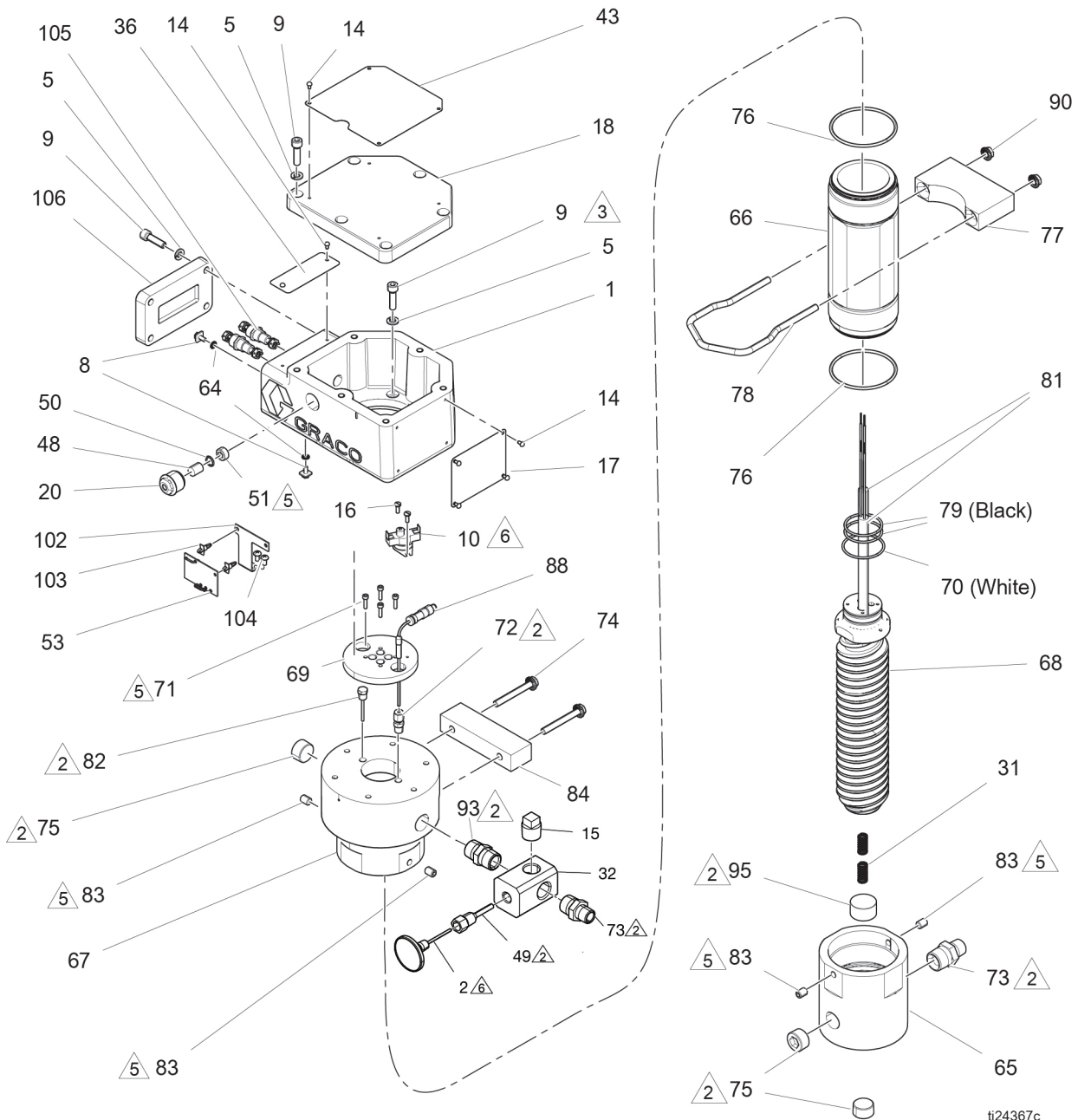
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▲ Replacement safety labels, tags and cards are available at no cost.





◆ Not shown.

† Parts included in Heater Core (68) Replacement Kit 24Y660.

# 24W249



ti24367c

-  Apply sealant
-  Torque to 7-11 ft-lb (10-15 N•m)
-  Apply medium strength thread locking fluid
-  Apply thermal paste



## 24W249

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
1	---	HOUSING, control	1	73	16R883	FITTING, nipple, r educing, 3/4 x 1/2	2
2	102124	THERMOMETER	1	74	126669	SCREW, mach, serrated hex head	2
5	107542	WASHER, lock, spring	16	75	18H243	PLUG, pipe headles	4
8	116343	SCREW, ground	2	76†	126396	PACKING, o-ring, ptfe, 235	2
9	109114	SCREW, cap, sch	16	77	16P609	CLAMP, mounting, bottom, heater	1
10	24P291	THERMOSTAT, Viscon, hf, 260f	1	78	16P610	CLAMP, u-bolt, heater	1
14	100055	SCREW, drive, #6	10	79†	102930	PACKING, o-ring	2
16	104590	SCREW, mach, pnh	2	81	17E551	CARTRIDGE, heater, 2700w, 240v	2
17	---	PLATE, identification, Viscon hf	1	82	16V591	PLUG, pin lock	1
18	183073	COVER, housing	1	83	101679	SCREW, set, sch	4
20	17D130	HOUSING, light, sightglass	1	84	16P608	CLAMP, mounting, top, heater	1
32	16R930	FITTING, tee, thermometer, 3/4	1	88	126381	SENSOR, rtd, 1k ohm, 4 pin	1
31†	16A240	SPRING, compression	2	89◆	122032	NUT, wire	2
36▲	15B623	LABEL, plate, des, Viscon hp	1	90	110996	NUT, hex, flange head	2
37◆	16T502	WIRE, assembly, white (see page 19)	2	95†	105325	PLUG, pipe	1
38†	110009	LUBRICANT, thermal, 1 oz tube	1	96◆	16U122	WIRE, 14awg, high temp	1
43▲	15B625	LABEL, plate, warning	1	102	15B243	BRACKET, led ckt board mounting	1
48	15B827	LENS, light, glass	1	103	117514	SPACER, circuit board mounting	2
49	15D757	HOUSING, thermometer	1	104	114669	SCREW, mach, phillips pan hd	2
50	103338	PACKING, o-ring	1	105	108675	BUSHING, post	2
51	117483	SCREW, jam, socket	1	106	183066	COVER	1
53	246014	BOARD, ckt, htr ind light assy	1	109◆	108664	TOOL, wrench allen	1
60▲	15B819	LABEL, warning, Viscon HP	1	110◆	105747	TOOL, wrench, allen	1
61▲	15B777	LABEL, warning, viscon HP	1	111◆	101369	TOOL, wrench, allen	1
64	111307	WASHER, lock, external	2				
65	16P603	HOUSING, inlet, heater	1				
66	16P605	SLEEVE, center, heater	1				
67	17C956	HOUSING, outlet, heater	1				
68†	---	CORE, spiral, heater	1				
69†	17C957	PLATE, mounting, heater	1				
70†	164891	PACKING, o-ring	1				
71†	16K078	SCREW, mach, rdh	4				
72	126351	FITTING, compression, thermocouple	1				

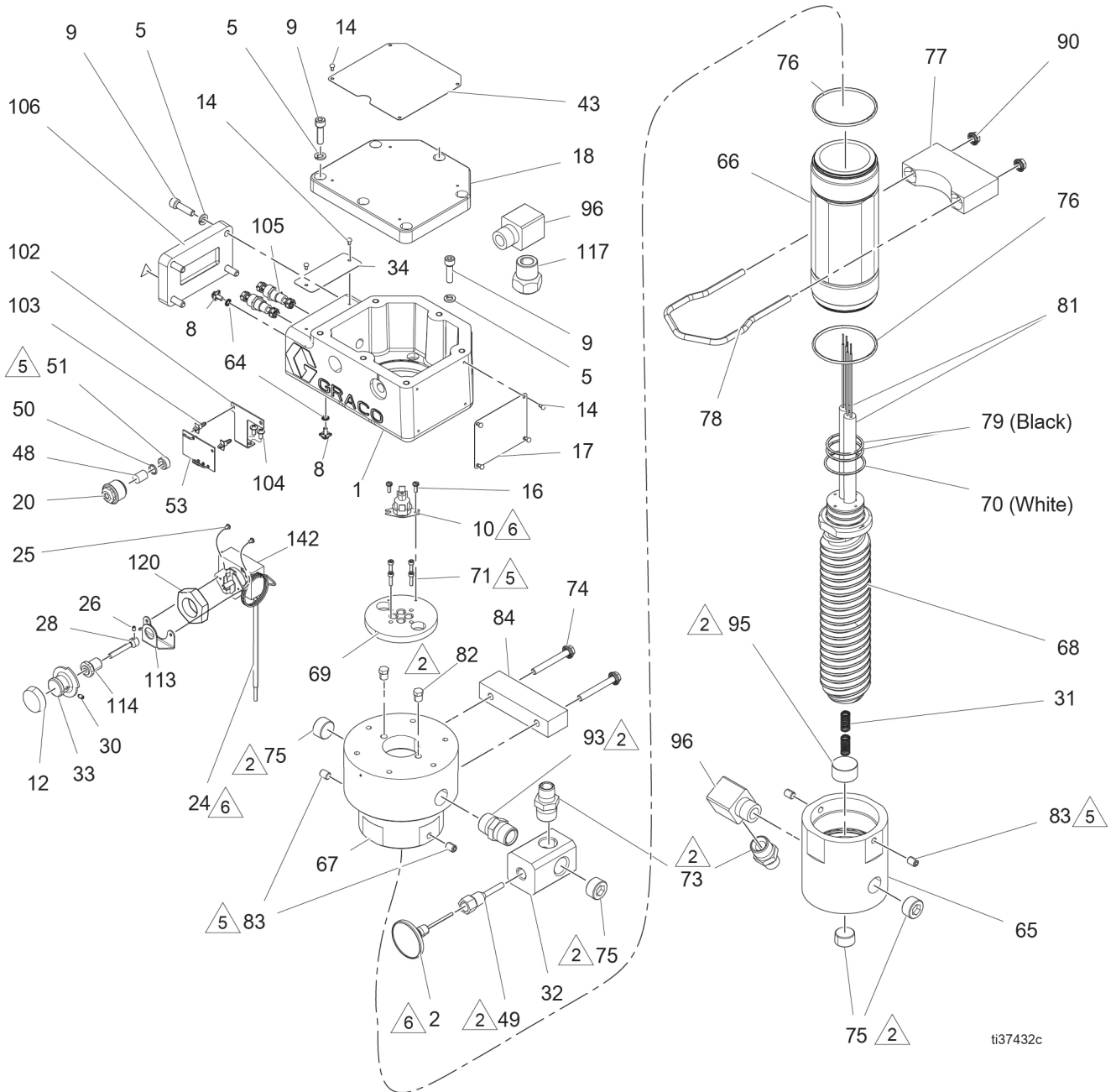
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

▲ Replacement safety labels, tags and cards are available at no cost.

◆ Not shown.

† Parts included in Heater Core (68) Replacement Kit 24Y660.

# 25C962



-  Apply sealant
-  Torque to 7-11 ft-lb (10-15 N•m)
-  Apply medium strength thread locking fluid
-  Apply thermal paste

ti37432c

## 25C962

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
1	---	HOUSING, control	1	71†	16K078	SCREW, mach, rdh	4
2	102124	THERMOMETER, dial	1	73	16R883	FITTING, nipple, reducing, 3/4 x 1/2	2
5	107542	WASHER, lock, spring	16	74	126669	SCREW, mach, serrated hex head; 5/15-18 x 2.5 in	2
8	116343	SCREW, ground	2	75	18H243	PLUG, pipe headles	4
9	109114	SCREW, cap, sch	16	76†	126396	PACKING, o-ring, PTFE, 235	2
10	24P291	THERMOSTAT, Viscon, hf, 260f	1	77	16P609	CLAMP, mounting, bottom, heater	1
12	177969	KNOB, adjusting	1	78	16P610	CLAMP, u-bolt, heater	1
14	100055	SCREW, drive, #6	10	79†	102930	PACKING, o-ring	2
16	104590	SCREW, mach, pnh	2	81	17E551	CARTRIDGE, heater, 2700w, 240v	2
17	---	PLATE, identification, Viscon hf	1	82	556410	PLUG, stl 1/8 pipe hex hd	2
18	183073	COVER, housing	1	83	101679	SCREW, set, sch	4
20	17D130	HOUSING, light, sightglass	1	84	16P608	CLAMP, mounting, top, heater	1
24	108676	SWITCH, thermostat	1	89◆	122032	NUT, wire	2
25	100032	SCREW, mach, pnh	2	90	110996	NUT, hex, flange head	2
26	105672	SCREW, set, sch	1	93	16R882	FITTING, nipple, 3/4	1
28	183068	SHAFT, switch	1	95†	105325	PLUG, pipe	1
30	101366	SCREW, set, sch	1	96	166590	FITTING, elbow	1
31†	16A240	SPRING, compression	2	98◆	246346	WIRE, assembly, black (see page 19)	1
32	16R930	FITTING, tee, thermometer, 3/4	1	102	15B243	BRACKET, led circuit board mounting	1
33	177968	KNOB, control	1	103	117514	SPACER, circuit board mounting	2
36▲	15B623	LABEL, electric shock warning	1	104	114669	SCREW, mach, phillips pan hd	2
37◆	16T502	WIRE, assy, white (see page 19)	2	105	108675	BUSHING, post	2
38†	110009	LUBRICANT, thermal, 1 oz tube	1	106	183066	COVER	1
43▲	15B625	LABEL, multiple warnings, English	1	109◆	108664	TOOL, wrench allen	1
48	15B827	LENS, light, glass	1	110◆	105747	TOOL, wrench, allen	1
49	15D757	HOUSING, thermometer, Viscon hp	1	111◆	101369	TOOL, allen, wrench	1
50	103338	PACKING, o-ring	1	113	183067	BRACKET, switch	1
51	117483	SCREW, jam, socket	1	114	183071	BUSHING	1
53	246014	BOARD, circuit, htr ind light assy	1	117	185065	ADAPTER, cable	1
60▲	15B819	LABEL, warning, Viscon HP	1				
61▲	15B777	LABEL, warning, Viscon HP	1				
64	111307	WASHER, lock, external	2				
65	16P603	HOUSING, inlet, heater	1				
66	16P605	SLEEVE, center, heater	1				
67	17C956	HOUSING, outlet, heater	1				
68†	---	CORE, spiral, heater	1				
69†	17C957	PLATE, mounting, heater	1				
70†	164891	PACKING, o-ring	1				

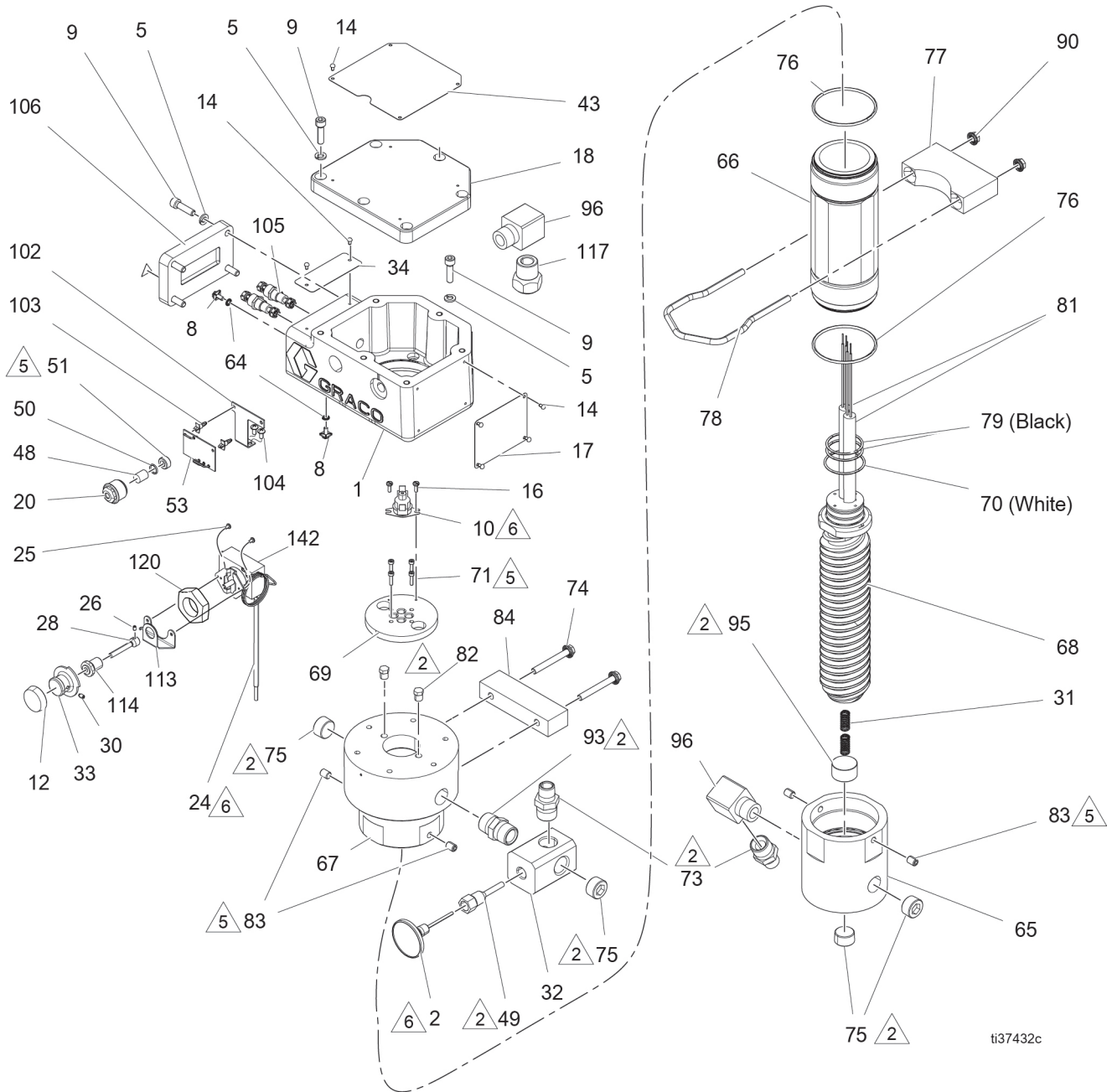
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


▲ Replacement safety labels, tags and cards are available at no cost.

◆ Not shown.

† Parts included in Heater Core (68) Replacement Kit 24Y660.

# 26C516



-  Apply sealant
-  Torque to 7-11 ft-lb (10-15 N·m)
-  Apply medium strength thread locking fluid
-  Apply thermal paste

ti37432c

**26C516**

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
1	---	HOUSING, control	1	70†	164891	PACKING, o-ring	1
2	102124	THERMOMETER, dial	1	71†	16K078	SCREW, mach, rdh	4
5	107542	WASHER, lock, spring	16	73	16R883	FITTING, nipple, reducing, 3/4 x 1/2	2
8	116343	SCREW, ground	2	74	126669	SCREW, mach, serrated hex head; 5/15-18 x 2.5 in	2
9	109114	SCREW, cap, sch	16	75	18H243	PLUG, pipe headles	4
10	24P291	THERMOSTAT, Viscon, hf, 260f	1	76†	126396	PACKING, o-ring, PTFE, 235	2
12	177969	KNOB, adjusting	1	77	16P609	CLAMP, mounting, bottom, heater	1
14	100055	SCREW, drive, #6	10	78	16P610	CLAMP, u-bolt, heater	1
16	104590	SCREW, mach, pnh	2	79†	102930	PACKING, o-ring	2
17	---	PLATE, identification, Viscon hf	1	81	26C477	CARTRIDGE, heater, 2700w, 480v	2
18	183073	COVER, housing	1	82	556410	PLUG, stl 1/8 pipe hex hd	2
20	17D130	HOUSING, light, sightglass	1	83	101679	SCREW, set, sch	4
24	108676	SWITCH, thermostat	1	84	16P608	CLAMP, mounting, top, heater	1
25	100032	SCREW, mach, pnh	2	89◆	122032	NUT, wire	2
26	105672	SCREW, set, sch	1	90	110996	NUT, hex, flange head	2
28	183068	SHAFT, switch	1	93	16R882	FITTING, nipple, 3/4	1
30	101366	SCREW, set, sch	1	95†	105325	PLUG, pipe	1
31†	16A240	SPRING, compression	2	96	166590	FITTING, elbow	2
32	16R930	FITTING, tee, thermometer, 3/4	1	98◆	246346	WIRE, assembly, black (see page 19)	1
33	177968	KNOB, control	1	102	15B243	BRACKET, led circuit board mounting	1
36▲	15B623	LABEL, electric shock warning	1	103	117514	SPACER, circuit board mounting	2
37◆	16T502	WIRE, assy, white (see page 19)	2	104	114669	SCREW, mach, phillips pan hd	2
38†	110009	LUBRICANT, thermal, 1 oz tube	1	105	108675	BUSHING, post	2
43▲	15B625	LABEL, multiple warnings, English	1	106	183066	COVER	1
48	15B827	LENS, light, glass	1	109◆	108664	TOOL, wrench allen	1
49	15D757	HOUSING, thermometer, Viscon HP	1	110◆	105747	TOOL, wrench, allen	1
50	103338	PACKING, o-ring	1	111◆	101369	TOOL, allen, wrench	1
51	117483	SCREW, jam, socket	1	113	183067	BRACKET, switch	1
53	246014	BOARD, circuit, htr ind light assy	1	114	183071	BUSHING	1
60▲	15B819	LABEL, warning, Viscon HP	1	120	183070	NUT, bushing	1
61▲	15B777	LABEL, warning, Viscon HP	1				
64	111307	WASHER, lock, external	2				
65	16P603	HOUSING, inlet, heater	1				
66	16P605	SLEEVE, center, heater	1				
67	17C956	HOUSING, outlet, heater	1				
68†	---	CORE, spiral, heater	1				
69†	17C957	PLATE, mounting, heater	1				

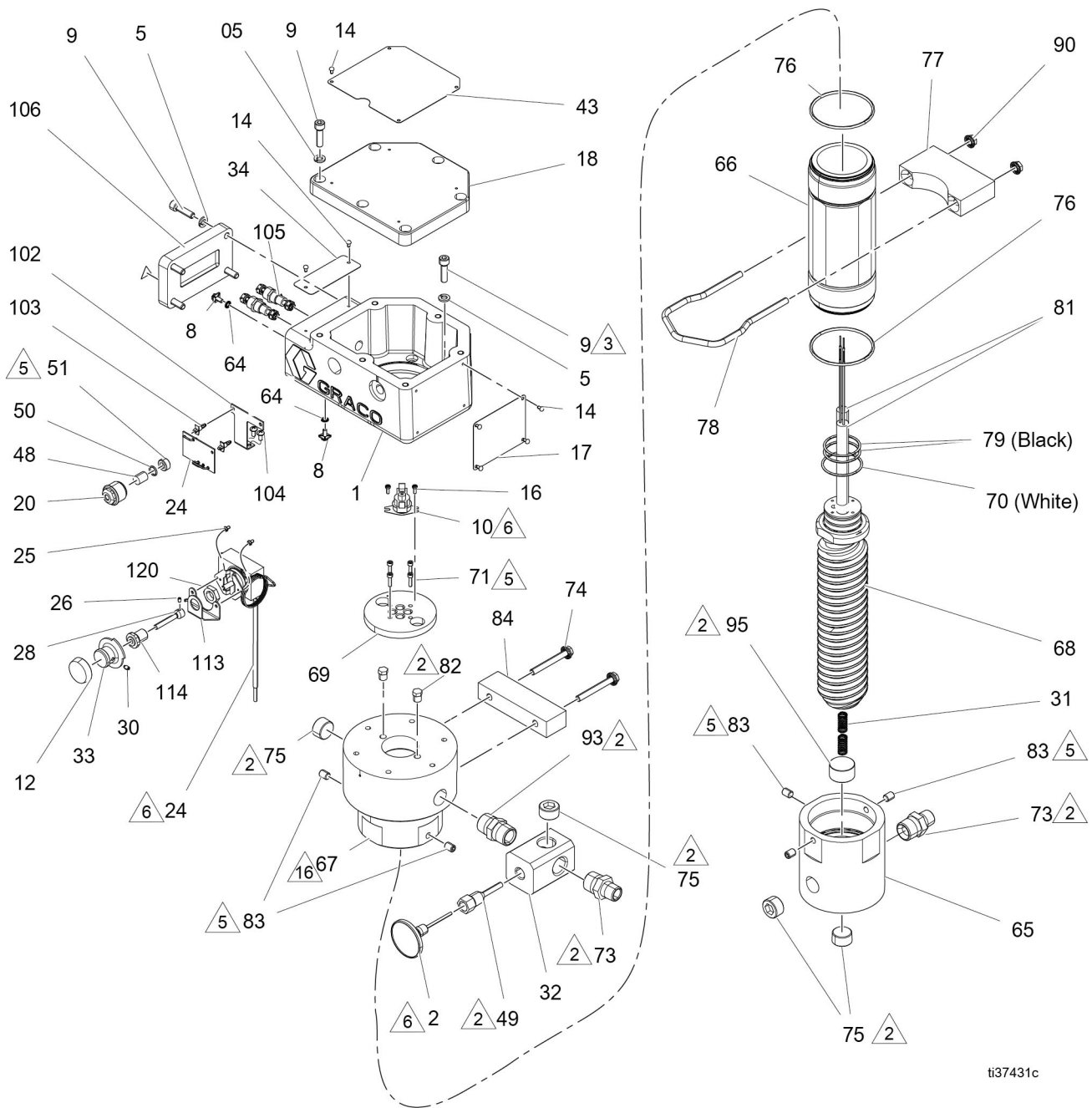
--- Not for sale.

▲ Replacement safety labels, tags and cards are available at no cost.

◆ Not shown.

† Parts included in Heater Core (68) Replacement Kit 26C637.

# 26C859



- Apply sealant
- Torque to 7-11 ft-lb (10-15 N·m)
- Apply medium strength thread locking fluid
- Apply thermal paste

ti37431c

## 26C859

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
1	---	HOUSING, control	1	69†	17C957	PLATE, mounting, heater	1
2	102124	THERMOMETER, dial	1	70†	164891	PACKING, o-ring	1
5	107542	WASHER, lock, spring	16	71†	16K078	SCREW, mach, rdh	4
8	116343	SCREW, ground	2	73	16R883	FITTING, nipple, reducing, 3/4 x 1/2	2
9	109114	SCREW, cap, sch	16	74	126669	SCREW, mach, serrated hex head; 5/15-18 x 2.5 in	2
10	24P291	THERMOSTAT, Viscon, hf, 260f	1	75	18H243	PLUG, pipe headles	4
12	177969	KNOB, adjusting	1	76†	126396	PACKING, o-ring, PTFE, 235	2
14	100055	SCREW, drive, #6	10	77	16P609	CLAMP, mounting, bottom, heater	1
16	104590	SCREW, mach, pnh	2	78	16P610	CLAMP, u-bolt, heater	1
17	---	PLATE, identification, Viscon hf	1	79†	102930	PACKING, o-ring	2
18	183073	COVER, housing	1	81	26C477	CARTRIDGE, heater, 2700w, 480v	2
20	17D130	HOUSING, light, sightglass	1	82	556410	PLUG, stl 1/8 pipe hex hd	2
24	108676	SWITCH, thermostat	1	83	101679	SCREW, set, sch	4
25	100032	SCREW, mach, pnh	2	84	16P608	CLAMP, mounting, top, heater	1
26	105672	SCREW, set, sch	1	89◆	122032	NUT, wire	2
28	183068	SHAFT, switch	1	90	110996	NUT, hex, flange head	2
30	101366	SCREW, set, sch	1	93	16R882	FITTING, nipple, 3/4	1
31†	16A240	SPRING, compression	2	95†	105325	PLUG, pipe	1
32	16R930	FITTING, tee, thermometer, 3/4	1	98◆	246346	WIRE, assembly, black (see page 19)	1
33	177968	KNOB, control	1	102	15B243	BRACKET, led circuit board mounting	1
36▲	15B623	LABEL, electric shock warning	1	103	117514	SPACER, circuit board mounting	2
37◆	16T502	WIRE, assy, white (see page 19)	2	104	114669	SCREW, mach, phillips pan hd	2
38†	110009	LUBRICANT, thermal, 1 oz tube	1	105	108675	BUSHING, post	2
43▲	15B625	LABEL, multiple warnings, English	1	106	183066	COVER	1
48	15B827	LENS, light, glass	1	109◆	108664	TOOL, wrench allen	1
49	15D757	HOUSING, thermometer, Viscon HP	1	110◆	105747	TOOL, wrench, allen	1
50	103338	PACKING, o-ring	1	111◆	101369	TOOL, allen, wrench	1
51	117483	SCREW, jam, socket	1	113	183067	BRACKET, switch	1
53	246014	BOARD, circuit, htr ind light assy	1	114	183071	BUSHING	1
60▲	15B819	LABEL, warning, Viscon HP	1	120	183070	NUT, bushing	1
61▲	15B777	LABEL, warning, Viscon HP	1				
64	111307	WASHER, lock, external	2				
65	16P603	HOUSING, inlet, heater	1				
66	16P605	SLEEVE, center, heater	1				
67	17C956	HOUSING, outlet, heater	1				
68†	---	CORE, spiral, heater	1				

--- Not for sale.

▲ Replacement safety labels, tags and cards are available at no cost.

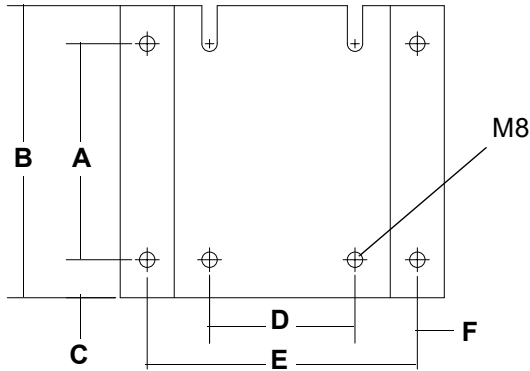
◆ Not shown.

† Parts included in Heater Core (68) Replacement Kit 26C637.

# Accessories

## Mounting Bracket

192585



7761a

### Dimensions – inches (mm)

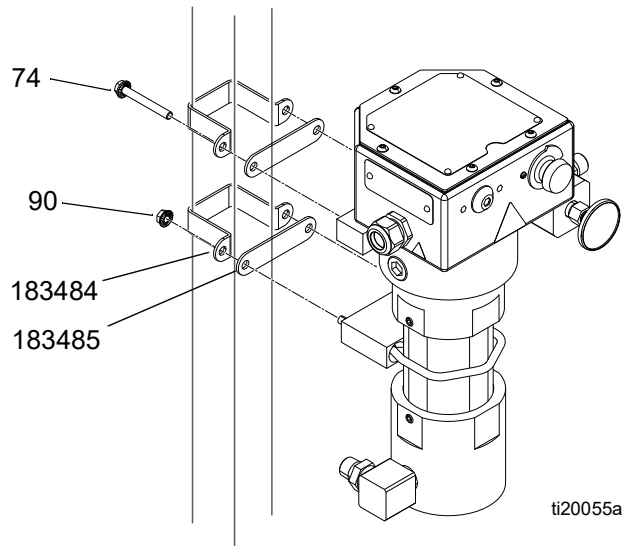
A	B	C (4x)	D	E	F (2x)
5.0 (127)	6.76 (172)	0.88 (22.4)	3.37 (85.6)	6.25 (158.8)	1.44 (36.6)

## Cart Bracket

For mounting heaters to 2.5 in. (63 mm) square tube frames. Order two each of the following.

**183484:** Clamp

**183485:** Mounting bar



ti20055a

74 & 90 screw and nut included with heater

## Thermal Lubricant

**110009:** 1 fluid ounce tube

## Power Cord Set

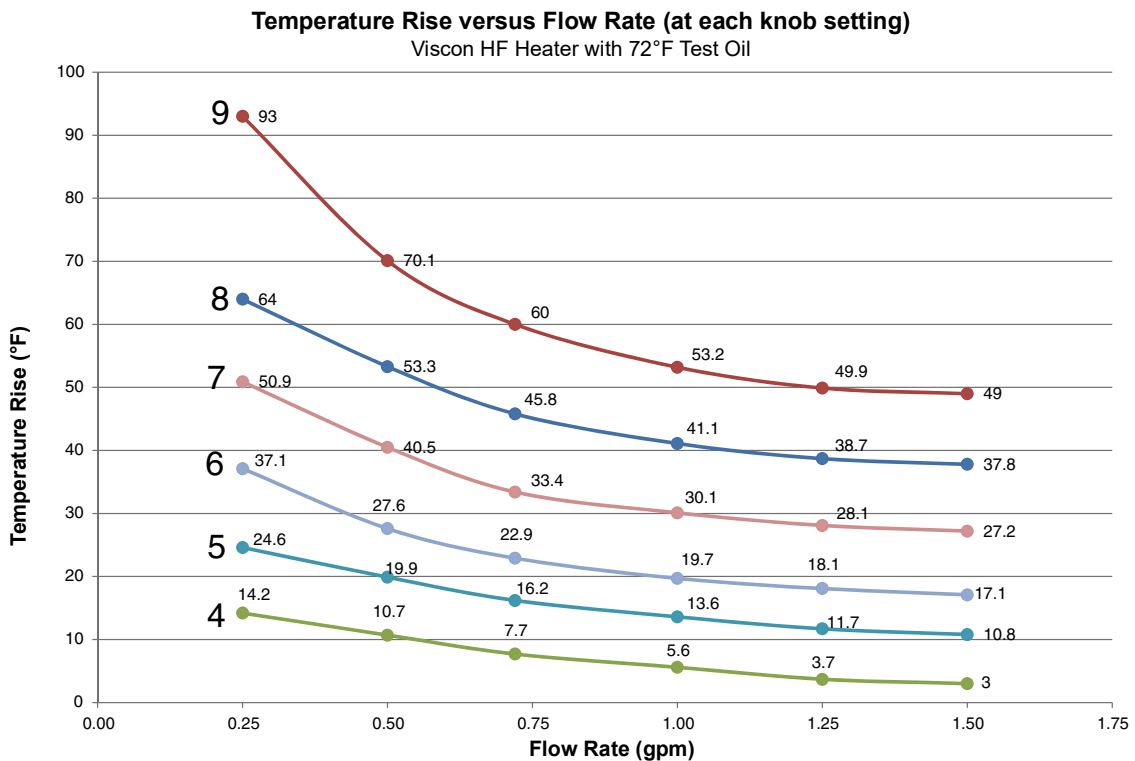
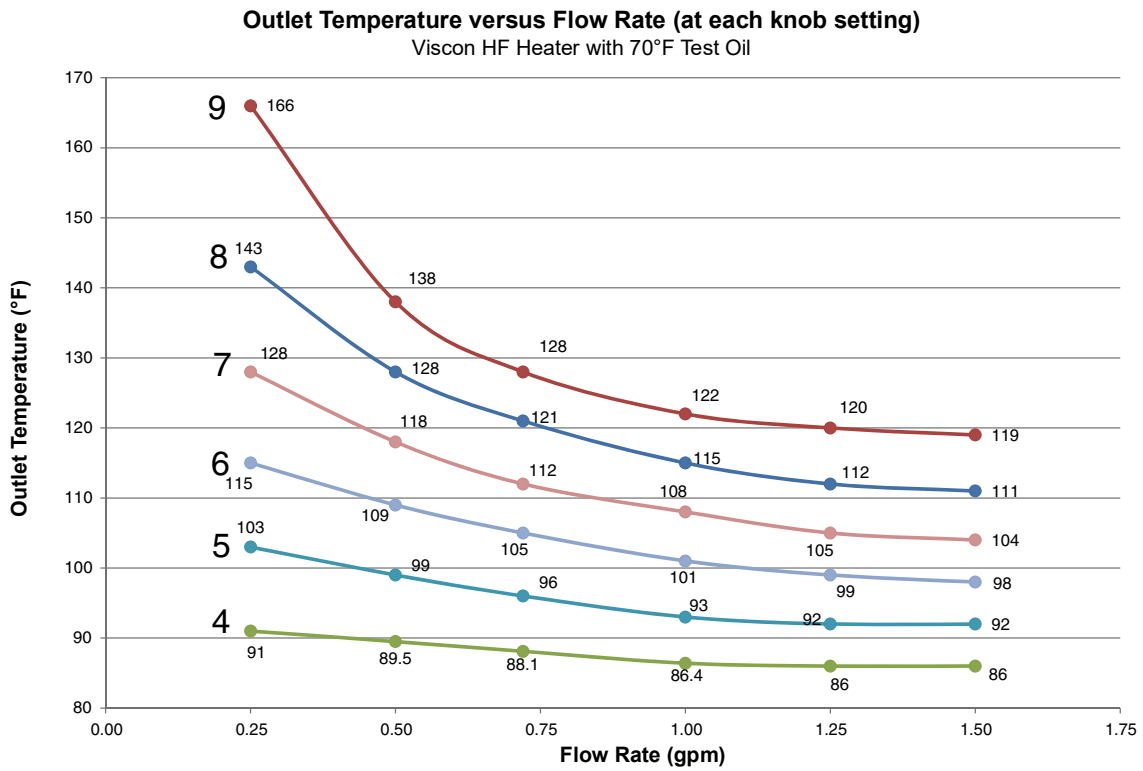
**110160\*:** 600 V, 12 Awg, Extra Hard Usage Type St, High Temperature (221°F, 105°C) rated

**24W679:** 600 V, 12 Awg, Extra Hard Usage Type St, High Temperature (221°F, 105°C) rated

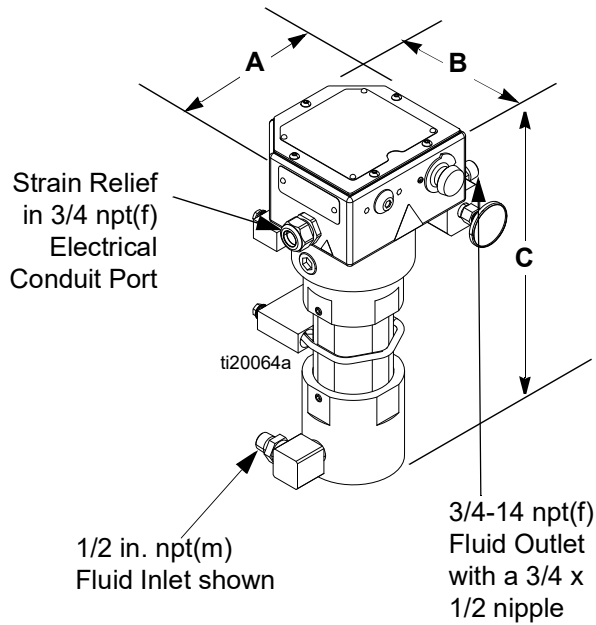
*\*Hazardous location heaters are no longer rated for use in a hazardous area when used with these accessories.*



# Performance Charts (Thermostat Version)



# Dimensions



*Model 24P016 shown*

Ref.	Measurement, in. (mm)
A	7.25 (184)
B	7.0 (178)
C	17.75 (451)

**NOTE:**

- 24P016, 24W248, 25C961, and 25C962 come with a 3/4 npt street elbow and a 3/4 x 1/2 npt nipple for fluid inlet.
- 262853 comes with a 3/4 x 1/2 npt nipple pointing to the back. 25C961 and 25C962 come with a 3/4 npt street elbow and a 3/4 x 1/2 npt nipple angled towards the back for the fluid outlet.
- Lower inlet housing can be turned to face the front, back, left, or right.

# Technical Specifications

The heater can be used in the following environmental conditions: indoor use, 99% maximum relative humidity, pollution degree 2, installation category II, maximum ambient temperature 140° F (60° C).

<b>Viscon HF Heater</b>		
	<b>US</b>	<b>Metric</b>
Maximum fluid working pressure	7250 psi	50 MPa, 500 bar
Voltage / Wattage / Current*	See <b>Models</b> on page 3.	
Fluid Passage Heat Transfer Area	210 in. <sup>2</sup>	1355 cm <sup>2</sup>
Fluid Passage Dimensions (3 parallel paths)	<i>Height: 0.41 in.</i> <i>Width: 0.32 in.</i> <i>Length: 3 x 48 in.</i>	
Fluid Passage Equivalent Diameter	0.72 in.	18.3 mm
Thermometer Range	64 - 250 °F	18 - 121 °C
Temperature Operating Range	84 - 219 °F	29 - 104 °C
RTD (Model 262853 and 24W612 Only)	1000 ohm, class B, 3-wire Connector: M8, 4-pin male	
<b>Materials of Construction</b>		
Wetted materials on all models	Stainless Steel, Anodized Aluminum, Electroless Nickel-Plated Steel, PTFE	
<b>Weight</b>		
All models	51 lb	23.2 kg
<b>Notes</b>		
*Main supply fluctuation not to exceed 10%.		
All trademarks or registered trademarks are the property of their respective owners.		

# 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.

**THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.**

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.

**GRACO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IN CONNECTION WITH ACCESSORIES, EQUIPMENT, MATERIALS OR COMPONENTS SOLD BUT NOT MANUFACTURED BY GRACO.** These items sold, but not manufactured by Graco (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

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For the latest information about Graco products, visit [www.graco.com](http://www.graco.com).

For patent information, see [www.graco.com/patents](http://www.graco.com/patents).

**TO PLACE AN ORDER, contact your Graco distributor or call to identify the nearest distributor.**

**Phone: 612-623-6921 or Toll Free: 1-800-328-0211 Fax: 612-378-3505**

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Original instructions. This manual contains English. MM 3A2954

**Graco Headquarters:** Minneapolis

**International Offices:** Belgium, China, Japan, Korea

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