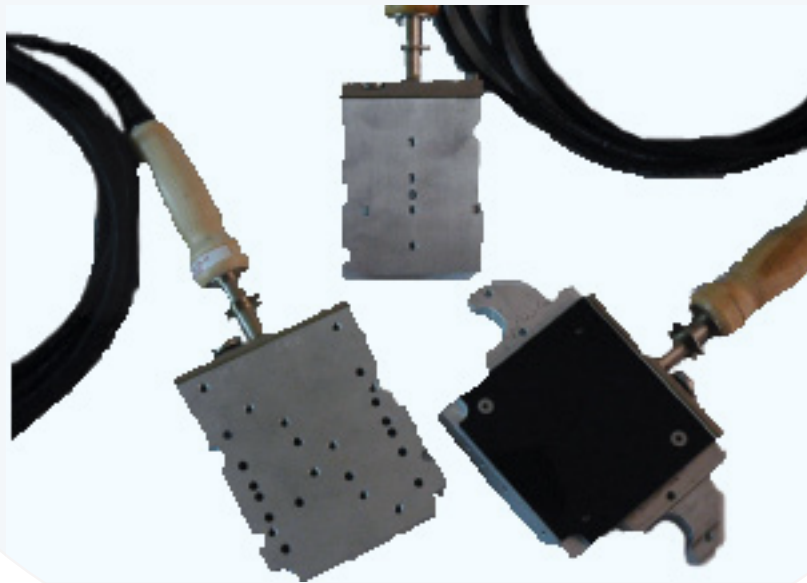


TD-1, TD-3 & 14M Heaters

Assembly & Repair Guide



CONNECTRA[®]
equipment

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Copy information listed on your Warranty Card for your records:
Model No. _____
Serial No. _____
Date Received _____
Distributor _____

Description

The purpose of this manual is to provide procedures for using the TD-1, TD-3, & 14M Heaters. Use these instructions in conjunction with instructions provided by the pipe manufacturer. Additionally, maintenance instructions are provided.

These heaters are also used with other Connectra® equipment in saddle fusion. Appropriate saddle fusion instructions are contained in the Outrider manuals.

The TD-1, TD-3, and 14M electric heaters are fast and efficient heater tools for use in the socket and saddle fusion of plastic pipe. Designed for accurate temperature control, the heaters are equipped with an adjustable thermostwitch and an analog thermometer. Stick resistant coated socket and saddle faces are available for a wide variety of pipe sizes.

Specifications

Power Requirements

120VAC, 60Hz (240VAC available)	
TD-1	800 Watts
TD-3	1650 Watts
14M	

Weight

TD-1	3.1 lbs
TD-3	8.8 lbs
14M	

Heater Body Size

TD-1	4 ½" X 5 1/2"
TD-3	7" x 6"
14M	

Thermostwitch

Cartridge Type - Range ^{100°} - 600° F.

Heaters

Cartridge Type

Thermometer

Stem type - Dial range ^{150-750°} F

Accuracy +/- 1% around dial range. +/- 1/2 of 1% at mid range.

Temperature Control

+/- ^{10°}

Safety Precautions

Safety is important. Please use the proper personal protective equipment when using all hand and power tools. Always wear OSHA approved or government certified safety glasses when working with power and hand tools. A full-face safety shield may be needed for added protection when operating grinders or other high-speed equipment. Wear hearing protection when operating loud equipment. Use care when dealing with electricity and handling hot heaters. Use heat resistant gloves to handle hot heating irons. Always disconnect electrical power before doing any work on equipment wiring.

Heaters Are Not Explosion Proof



Heaters do not have sealed electrical contacts and should never be plugged in and used in an area that might contain flammable or explosive vapors or dust. To be used in this type of environment, the heater should be heated in a safe place and unplugged before transfer to the location where the fusion will occur.



Electrical Safety

An electrical shock can be deadly. Before plugging a faulty or recently repaired heater into power use a volt/ohmmeter to check for an electrical short in the wiring or components. Be sure that your power supply provides the correct voltage and is rated for the power requirement of the equipment to be tested. It is highly recommended that a Ground Fault Interrupt circuit protection device be used for testing heaters. Replace or repair a damaged or frayed electrical cord or plug. After completing any

wiring always check the electrical circuit before reassembly of the heater. Confirm that the electrical safety ground is installed correctly. Use the volt/ohmmeter to confirm that the safety ground is electrically isolated from the power wires. Always use extra care in a wet environment.

Handling Hot Equipment

Fusion heaters normally maintain a temperature of 450F° to 500°F. They can cause severe burns if not handled with care. Protective gloves capable of withstanding these temperatures should be worn. Never lay a hot heater on a surface that is not heat resistant. Never leave a powered heater unattended. A faulty thermostitch or incorrect thermostitch setting can cause the heater to reach temperatures above 700°F. Only use a non-synthetic cloth, like cotton, to wipe hot surfaces.

Tools, Materials, & Assy Specs

Please use the proper personal protective equipment when using all hand and power tools. Use care when dealing with electricity and handling hot heaters.

Tools Required For Assembly and Repair

The following tools will be needed to properly assemble, service and repair the TD-1, TD-3 and 14M heaters.

- Crimping pliers capable of crimping high temperature, non-insulated butt connectors and parallel connectors for 14-16 gauge and 10-12 gauge wire
- Wire cutters and wire strippers

- Scissors or knife for cutting glass tape
- Screwdriver with a 3/16" round shank and flat blade at least five inches long (for thermal switch adjustment)
- 3/16" Hex wrench
- Adjustable open-end wrench capable of 1-1/8" size opening
- Flat punch
- Small hammer
- 3/16" diameter pin punch
- Volt/ohmmeter

High Temperature Protective Insulation

Protective sleeve material and insulation should be capable of withstanding repeated exposure to 1,000°F temperature (p/n: 28-8412-0100-10). Install the protective insulating sleeves before crimping the wire connectors. Be sure that the sleeve extends past the connector on each side by 1/2" or more. Ensure that the sleeve cannot slip from the connector by taping with the fiberglass tape. A minimum of two layers of tape should always be applied. Alternate tape layers should be wrapped with an opposite bias, i.e. with the angle of the tape in the opposite direction.

Crimping Wire Connectors

Crimping tools should be kept in good working conditions. Worn crimp jaws or pliers should be replaced. Only use high temperature, nickel plated butt and parallel crimp style connectors to connect wires. Before crimping be sure that the seam of the connector is oriented toward the female side of the crimping jaws. Wire crimps should be done with sufficient force to securely trap all of the wires. The connector should be deformed

completely. Each wire should be pulled firmly after crimping to check the crimp.

Wire Connections

Use only high temperature wire connectors. **DO NOT USE INSULATED CONNECTORS.**

Only strip the minimum amount of insulation from the end of the wire to make a crimp connection. This is normally about 3/16".

Do not use lead-based solder to connect wiring. This type of solder melts at a temperature well below the operating temperature of the heating tool. Wire ends, heater components and surfaces must be kept clean and free of grease or oil. This includes oil from your hands. Wire ends should be twisted prior to crimping.

Do not trim wire strands to reduce the size of the wire. This will reduce the current carrying capacity of the wire.

Do not twist multiple wire ends together before crimping.

Do not allow sharp corners or loose wire strands. Power cord wire insulation is not capable of withstanding heater temperatures. If exposed to high temperature, the rubber insulation will crack and crumble leading to a short circuit in the wiring.

Sealants, Adhesives and Potting Compounds

Heater cartridges will reach temperatures higher than the heater set temperature. Sealants or potting compounds can be used to secure and pro

tect wiring, wiring connectors and components. The material used must be capable of withstanding sustained temperature of 550°F and a maximum temperature of 650°F. If the material is close to or contacts the heater cartridges, it should be rated for a temperature of 900°F.

Even sealants and adhesives rated for high temperature have a tendency to degrade at high temperature. Do not rely on them alone to provide electrical insulation.

Heater Disassembly Procedure

Be sure power is disconnected from the heater. Remove butt plates or heater faces to prevent damage to the coating. Exercise care when handling the heater to prevent damage to the face of the heater body. The heater body should be kept flat and smooth to allow good heat transfer to the heater face during the fusion process.

Loosen the clamping nut on the cord strain relief. This should allow the cord to slide through the cord grip. Remove the screws that attach the handle to the heater body. Carefully slide the handle out of the body. Keep the handle aligned with the body until the thermometer is clear of the body. At the discretion of the operator, the thermometer may be removed from the handle before the handle is detached from the body.

Cut the wires that connect the black and white power wires just below the crimp connectors. The ground wire lug may be unscrewed from the body, however the lug must be able to pass through

the cord grip. If the lug cannot be removed or slip through the cord grip, cut the wire just below the power cord crimp connector. The ground lug must be removed on the TD-1 heater to allow removal of the thermoswitch. Slide the wire out of the handle.

To replace the wooden handle first unscrew and remove the cord grip. Unscrew and remove the coupling that holds the wooden grip on the heater handle. Slide the wooden grip off of the heater handle. Do not twist the handle. It has an indexing pin to keep it from turning. Repeated exposure to heat can cause the wooden grip to stick to handle. If necessary, use a pin punch and hammer to drive the wooden off of the handle.

Slide the thermoswitch and heater cartridges from the heater body. Do not pull on the wires to do this. During operation repeated heat cycles will make the wire and wire insulation brittle. Use a pin punch through the access holes in the bottom of the heater body to push the components from the heater body.

All insulation and fiberglass wrapping should be replaced when reworking a used heater.

Heater Assembly Procedure

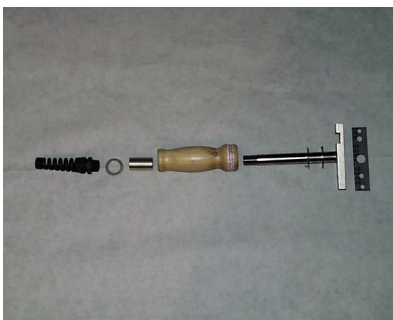
Connectra's TD-1, TD-3 and 14M heaters are very similar in construction. The following assembly procedure will cover the three heaters with any differences noted in the procedure. Check the parts lists to determine differences in the components used on each heater.

Pre-assembly Checks

Use an ohmmeter to do a quick check of the circuit continuity on the heater cartridges and the thermostats before starting. Also check for a short to the case on each component. This will prevent installation of a faulty part. Make sure all heater cartridge cavities and the thermostat cavity are clean and free of oil, dirt or other debris. Wipe the surfaces of the heater clean to remove dirt and oil.

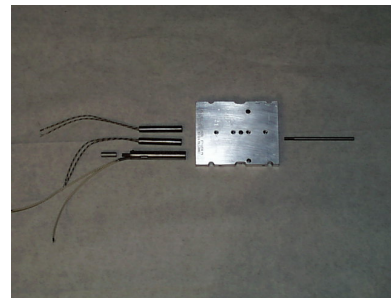
Handle Assembly

Slide the wooden handle over the shaft of the heater handle weldment. Align the pin on the handle weldment with the small hole in the end of the wooden handle. Install the threaded coupling onto the handle shaft. Each end of the coupling has a different thread. Be sure the correct end is threaded onto the shaft. Screw the coupling down until it is flush with the end of the wooden handle. Place the washer on the flexible strain relief and thread into the coupling. Tighten until the handle is secure. Do not over-tighten. It will strip the plastic threads. Feed the cord wire through the handle assembly. After the wire passes through the handle slip the gasket over the end of the wire. Pull 1 to 2 feet of wire through the handle. You will need enough wire to work with the wire connections.



Body Assembly

Check the holes in the body to be sure they are free of dirt and debris before inserting the two heater cartridges and the thermostat. (The TD-3 and 14M heaters will have three heater cartridges.) The components should slide easily into the body. If any interference is encountered, remove the components and check the hole for debris or damage. Slide the thermostat adjustment screw shield over the adjustment screw shaft on the end of the thermostat. The heater guide shaft shown in the photo at the right hand end of the heater body should not be installed until the heater is to be used in field operations.



Wiring

The following wiring schematic and wiring diagram show the circuit connections for the TD-1 heater. The picture to the left shows the heater after the wiring has been completed prior to wrapping the wire bundle with two wraps of $\frac{3}{4}$ " high temperature fiberglass tape. The heater can operate at temperatures in excess of 450°F. CAUTION: Lead solder should never be used to connect wiring. It will soften at heater operating temperatures.

Before wiring the heater, each wire must be cut to length and the insulation stripped to expose the conductor. Remove from $\frac{3}{16}$ " to $\frac{7}{32}$ " of insulation from the end of the wire.



Caution: The length of insulation removed is important because excess exposed wire can penetrate the insulation and cause an electrical short.



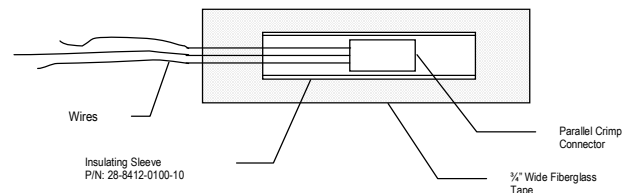
The length of each wire should be measured after the wire is folded over into the body cavity and bent up in the center of the body. The length of each wire above the heater body is shown in the following table. The length of the wire exposed on the power cord is measured from the rubber cable cover. When stripping the insulation be careful to not cut the wire strands. The ground wire is made from the longest piece of wire cut from the thermostat lead that connects to the heater cartridges.

Wire	Length
Thermostat wire to the black power wire	3"
Heater cartridge lead furthest from the thermostat	4"
All other wires including the ground wire	2.5"
Black power cord wire	1.25"
White power cord wire	2"
Green power cord wire (grounding wire)	2.5"

Crimp a grounding lug (p/n: 28-8408-0510-10) to the end of the longest piece of wire cut from the thermostat. Pull on the lug to be sure it is secure. Place the wire into the heater body and measure the length required; cut the wire and remove the recommended amount of insulation. Attach

the grounding wire to the body with a screw and lock washer.

Use a 10-12 ga parallel connector (p/n: 28-8408-0100-10) to connect the two heater cartridges (three for the TD-3 and 14M) to the short wire on the thermostat. The longest heater cartridge lead should be one of these wires. After crimping, pull on each wire to be sure they are secure. Be sure there are no exposed wire strands or sharp corners that could penetrate the insulation. Slide an insulating sleeve over the end of the crimped connection. Do not slip the insulating sleeve all the way down. Let approximately 1/2" of the insulating sleeve extend past the end of the connection. Cut a 2.5" length of 3/4" wide fiberglass tape. Fold the end of the insulating sleeve over at the end and lay the tape on the wire parallel to the wires with the end of the tape extending past the end of the connection about 1". See the picture below. Wrap the tape around wire and fold the end of the tape over the end of the connection. Cut a 6" piece of fiberglass tape and spiral wrap the end of the wire with two layers of tape. Extend the over wrap past the first piece of tape.



Insulation of the Connector for the Thermostat to Heater Cartridge Wiring

Note: Check to be sure the gasket is in place over the power cord before making the first power cord connection.

Slide an insulating sleeve over each of the remaining thermoswitch, ground wire and heater cartridge leads. Use one 14-16 ga butt connector (p/n: 28-8408-0300-10) to connect the remaining two heater cartridge wires to the white power cord wire on the TD-1 and a 10-12 ga butt connector (p/n: 28-8408-0700-10) to connect the three heater cartridge wires to the white power cord wire on the TD-3 and 14M. Pull on each wire to confirm they are secure. Check for sharp corners or loose wire strands. Slide the insulating sleeve over the connector and be sure it is centered over the connector.

Use a 14-16 ga butt connector (p/n: 28-8408-0300-10) to connect the remaining thermoswitch wire to the black power cord wire and the ground wire to the green power cord wire. Pull on each wire to confirm they are secure. Check for sharp corners or loose wire strands. Slide the insulating sleeves over the connectors and be sure they are centered over the connectors.

Final Assembly

Install the thermometer and tighten hand tight only. The black, white and green power cord connections should be positioned inside the heater handle as far from the heater body as possible without interfering with the cord strain relief. The connections should be staggered to prevent rubbing against each other and causing an electrical short circuit. After the wires are positioned together with the connectors staggered, neatly fold and position any excess length of wire into the cavity of the heater body. Be sure to center the wire bundle in the center of the heater body. Take care to pre-

vent insulation damage or interference with any of the hardware. Cut a 12" length of $\frac{3}{4}$ " wide fiberglass tape. Wrap the three-wire bundle with a spiral wrapping from just above the heater body to 1" past the end of the rubber cable cover. The spiral wrap should start at the power cord end, go toward the heater body and come back to the power cord to complete the two full layers of tape. Each spiral wrap should overlap the previous wrap.



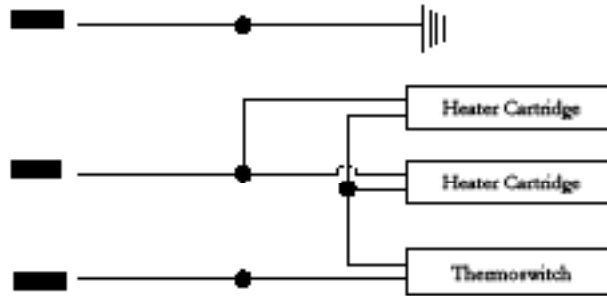
Use an ohmmeter to check the electrical circuit to be sure there is no electrical short circuit before installing the handle.

Slide the handle down the wire to the heater body and position the gasket. Install the two mounting screws. Tighten the cord-grip clamping nut to firmly grip the wire. Do not over tighten the plastic threads. They can strip easily.

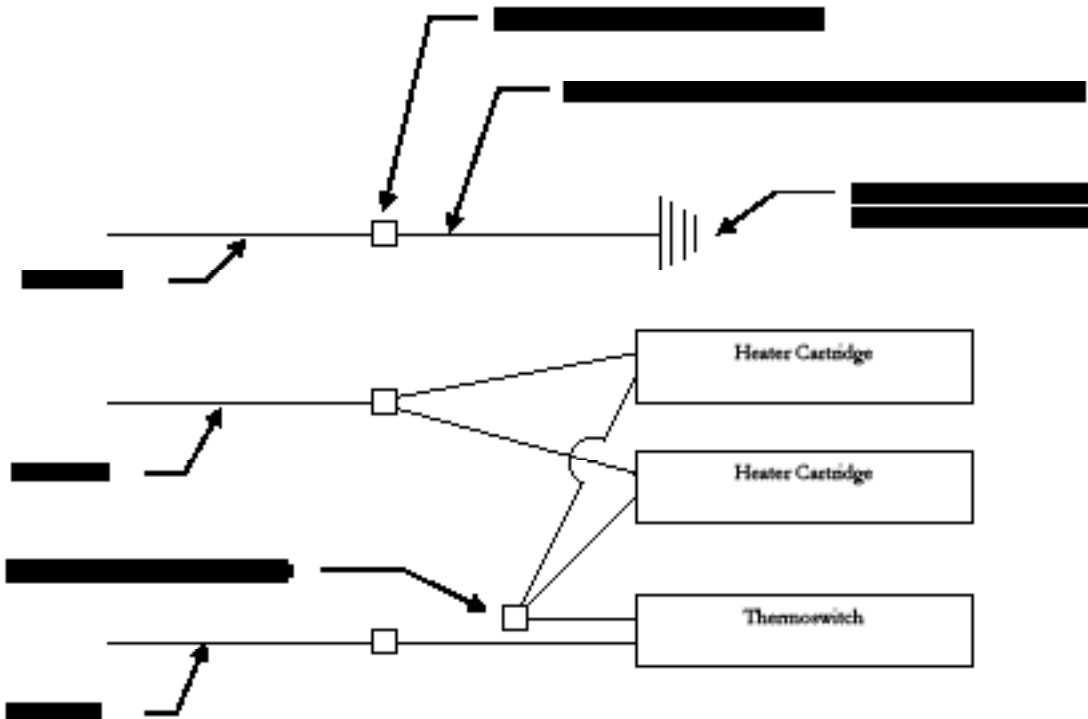
The heater can now be powered for testing. The completed heater shown in the picture to the left has the guide rod installed. This may be installed in the field prior to operation.



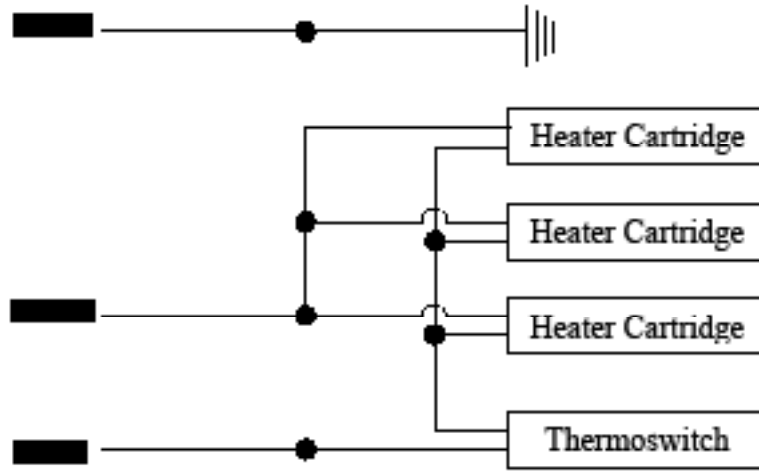
Wiring Schematics & Diagrams



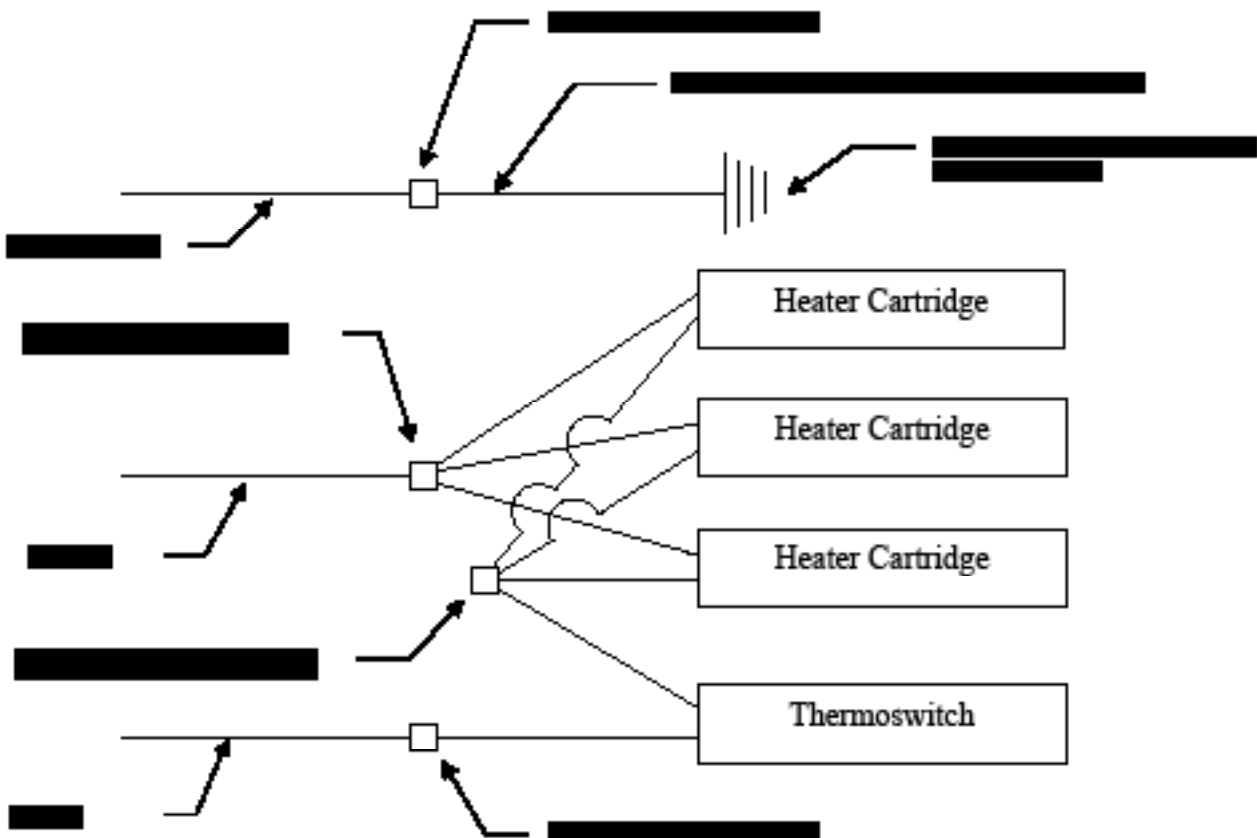
TD-1 Wiring Schematic



TD-1 Wiring Diagram



TD-3 and 14M Wiring Schematic



TD-3 and 14M Wiring Diagram

Repairs

Be sure to disconnect the power before starting a repair. Certain checks can be made prior to disassembly to help identify problems. The checks to be made will depend on the problem observed. See the Troubleshooting Guide Section for possible causes of the problem.

- Check the power cord for damage.
- Use an ohmmeter to check for an electrical short circuit to ground from both power prongs on the power cord.
- Use an ohmmeter to check for an electrical short circuit to the heater body from both power prongs on the power cord.
- Use an ohmmeter to check the resistance between the power prongs on the power cord.
- Check the temperature in multiple locations on the face of the heater body during heat up.

Repeated exposure to high temperatures will make the wiring insulation very brittle. Any repair that disturbs the wiring will require replacement of the insulating sleeves and wrapping tape to prevent a potential electrical short circuit.

If the heater has been used in service for a period of time, it can cause deterioration of the wire insulation and may cause the heater cartridges or thermostats to stick in the heater body. Any time a heater is disassembled the wiring should be checked and repaired if any deterioration is found.

With time and use the wooden grip has a tendency to swell and stick to the handle. When this happens it must be driven off with a hammer and punch. This process may destroy the wooden grip.

Heater cartridges and thermostats that become stuck in the heater body may be driven out of the body with the long pin punch and hammer. However, this may damage the component and require replacement of the part.

Adjusting the Heater Temperature Setting

TD-1 and TD-3 heaters are set at 500°F at the factory. The 14M heaters are set at 450°F. This difference is related to the different melt temperatures generally recommended for socket fusion and butt fusion. The TD-1, TD-3 and 14M heaters use a thermostat to control temperature. The end of the thermostat has an adjustment screw which can be rotated to change the temperature setting. A small, flat blade type screwdriver will fit the slotted end of the thermostat. Rotate the screw clockwise to lower the temperature setting. Rotate the screw counter clockwise to raise the temperature. One turn will change the temperature setting by approximately 100°F.

If a replacement thermostat has been purchased and has never been adjusted, it will need to be adjusted to reach the desired temperature. A new thermostat, purchased as a spare part from Georg Fischer Central Plastics, will be set at 100°F. The temperature adjustment screw should be turned counterclockwise 3-1/4 turns for a temperature of approximately 450°F or 3-1/2 turns counterclockwise for a temperature of approximately 500°F.



Warning: During initial heat-up always monitor the temperature closely to prevent overheating.

If the temperature setting of the thermostick is unknown, turn the adjustment screw clockwise slowly until increased resistance is felt on the screw. Plug in the heater and monitor the temperature. Increase the temperature approximately 100°F per turn counterclockwise.

Do not rely on the thermometer to provide an accurate measurement of the temperature on the face of the heater. The thermometer indicates an approximate surface temperature. The thermometer is mounted in the body of the heater and indicates core temperature of the heater. The surface temperature can be affected by environmental conditions and should be checked with a calibrated pyrometer.



Cautions:

- Do not adjust the temperature of the heater above 575°F or 300°C. A higher temperature can damage or shorten the life of heater components.
- Long periods of storage can cause the thermostick contacts to stick. Always monitor your heater during the initial heat up to be sure the heater does not overheat.
- If the adjustment screw is screwed out too far it can disable the control mechanism of the thermostick.
- Always make small adjustments to the thermostick. One-quarter turn adjustments are recommended.



Warning: Do not adjust the temperature

above 575°F or 300°C. This can result in damage to the heater components and the non-stick surfaces.

Troubleshooting Guide

Problem	Possible Causes
Power cord prong shows electrical short to ground prong or heater body	a) Insulation failure and contact between the wire or connector with the heater body or handle b) Electrical short to the case in a heater cartridge or thermoswitch c) Power cord damage
No complete electrical circuit between power cord prongs	a) Thermoswitch malfunction and contacts will not close b) Broken wire or broken wire connection in power cord wiring to the heater
High or low resistance between the power prongs	a) Failure of one or more heater cartridges b) Failure of the wire insulation and contact between wires
Heater draws too much amperage	a) Wiring, heater cartridge or thermoswitch has a short to ground b) Wiring short between the black and white wire c) Heater cartridge failure
Heater overheats and adjustment will not provide control	a) Thermoswitch contacts are stuck in the closed position b) Adjustment screw is corroded or damaged and cannot be screwed in far enough to set the desired temperature
Heater will not reach the desired temperature	a) Thermoswitch needs adjustment b) One or more heater cartridges has failed
Heater does not maintain accurate temperature control	a) Thermoswitch is damaged and does not operate correctly b) Environmental conditions are changing causing temperature variations
Temperature is not uniform over the face of the heater	One of the heater cartridges has failed
Electrical arcing or smoke	a) Electrical wiring has shorted b) A thermoswitch or heater cartridge has an electrical short circuit

Parts Lists

TD-1 Heater Part's List

Stock code/Component	Description	Qty Req'd	U/m
00-0823-0400-08	SHCS 1/4-20 X 1" ZINC PLATED	2.00	EA
00-1574-0020-00	WASHER, #8 LOCK, INTERNAL TOOTH	1.00	EA
00-3366-0800-12	SCREW, RD HD #8-32 X .375" LG	1.00	EA
00-3795-0163-00	TAG, HEATER INSTRUCTION	1.00	EA
00-3795-0164-00	HEATER OPERATIONS	1.00	EA
28-8123-1800-10	LABEL-HEATER WARNING	1.00	EA
28-8153-0010-10	BODY, DD-1A HEATER	1.00	EA
28-8153-0100-10	WASHER, FLAT 1.25X.88 X .048 SS	1.00	EA
28-8153-0110-10	GASKET, HEATER HANDLE DD-1	1.00	EA
28-8153-3030-20	SHAFT, HEATER GUIDE	1.00	EA
28-8153-3080-10	HANDLE, TD-3 HEATER	1.00	EA
28-8153-3090-20	COUPLING, TD3 HEATER HANDLE	1.00	EA
28-8153-4040-20	HANDLE, TD-1 HEATER	1.00	EA
28-8153-4060-10	FLEX FTG, .50"-NPT X .28-.47	1.00	EA
28-8213-1010-10	ADJUSTMENT SHIELD, .375" OD	1.00	EA
28-8401-0100-10	HEATER CARTRIDGE, WATLOW 120V	2.00	EA
28-8402-0100-10	THERMOSWITCH	1.00	EA
28-8404-0800-10	CORD SET (16-3 ga.)	1.00	EA
28-8408-0300-10	TERMINAL - AMP #323795	3.00	EA
28-8408-0510-10	ROUND NON-INSULATED EYELET	1.00	EA
28-8412-0100-10	INSULATING SLEEVE 1-5/8" LONG	4.00	EA
28-8412-0400-14	TAPE, FIBERGLASS 3/4"	12.00	IN
28-8559-0410-10	THERMOMETER 150/750°F	1.00	EA

TD-3 Heater Part's List

Stock code/Component	Description	Qty Req'd	U/m
00-0823-0400-08	SHCS 1/4-20 X 1" ZINC PLATED	2.00	EA
00-1300-0005-00	WASHER, #8 LOCK, EXTERNAL TOOTH	1.00	EA
00-3366-0800-12	SCREW, RD HD #8-32 X .375" LG	1.00	EA
00-3795-0163-00	TAG, HEATER INSTRUCTION	1.00	BEA
00-3795-0164-00	HEATER OPERATIONS	1.00	EA
28-8123-1800-10	LABEL-HEATER WARNING	1.00	EA
28-8153-0100-10	WASHER, FLAT 1.25X.88 X .048 SS	1.00	EA
28-8153-3010-20	BODY, HEATER TD-3	1.00	EA
28-8153-3030-20	SHAFT, HEATER GUIDE	1.00	EA
28-8153-3060-10	GASKET, HEATER	1.00	EA
28-8153-3080-10	HANDLE, TD-3 HEATER	1.00	EA
28-8153-3090-20	COUPLING, TD3 HEATER HANDLE	1.00	EA
28-8153-4070-10	FLEX FITTING, .50NPT X .39-.56	1.00	EA
28-8204-7980-20	HANDLE, HEATER 14M	1.00	EA
28-8213-1010-10	ADJUSTMENT SHIELD, .375" OD	1.00	EA
28-8401-0550-10	4" x 1/2" 500 WATT HEATER CART	3.00	EA
28-8404-0700-10	CORD SET (14/3) W/MOLDED PLUG	1.00	EA
28-8408-0100-10	TERMINAL 12-10 GA HILINE#8C138	1.00	EA
28-8408-0700-10	10-12 ga BUTT CONNECTOR	1.00	EA
28-8408-0300-10	TERMINAL - AMP #323795	2.00	EA
28-8408-0510-10	ROUND NON-INSULATED EYELET	1.00	EA
28-8412-0100-10	INSULATING SLEEVE - 1 5/8" LONG	4.00	EA
28-8412-0400-14	TAPE, FIBERGLASS 3/4"	24.00	IN
28-8559-0100-10	THERMOMETER 150/750°F	1.00	EA
V00169	THERMOSWITCH LARGE	1.00	EA

14M Heater Part's List

Stock code/Component	Description	Qty Req'd	U/m
00-0682-0400-10	SCREW BTN HD SOC 1/4"-20 X 1-1/4" LG	2.00	EA
00-0685-0400-12	FLAT HD SOC 1/4"-20 X 1-1/2" LG	4.00	EA
00-0811-0177-00	SLEEVE .312 OD X .028 WT	2.00	EA
00-1300-0005-00	WASHER, #8 LOCK, EXTERNAL TOOTH	1.00	EA
00-3366-0800-12	SCREW, RD HD #8-32 X .375" LG	1.00	EA
00-3795-0163-00	TAG, HEATER INSTRUCTION	1.00	EA
28-8123-1800-10	LABEL-HEATER WARNING	1.00	EA
28-8153-0100-10	WASHER, FLAT 1.25X.88 X .048 SS	1.00	EA
28-8204-7960-20	BODY, HEATER 14M	1.00	EA
28-8204-7970-20	HEATER PULL-OFF PLATE	1.00	EA
28-8153-3060-10	GASKET, HEATER	1.00	EA
28-8204-7980-20	HEATER HANDLE 14M	1.00	EA
28-8153-3090-20	COUPLING, TD3 HEATER HANDLE	1.00	EA
28-8153-4070-10	FLEX FITTING, .50NPT X .39-.56	1.00	EA
28-8153-3070-20	BUTT PLATE	2.00	EA
28-8153-3080-10	WOOD HANDLE	1.00	EA
28-8213-1010-10	ADJUSTMENT SHIELD, .375" OD	1.00	EA
28-8401-0550-10	4" x 1/2" 500 WATT HEATER CART	3.00	EA
28-8404-0700-10	CORD SET (14/3) W/MOLDED PLUG	1.00	EA
28-8408-0100-10	TERMINAL 12-10 GA HILINE#8C138	1.00	EA
28-8408-0700-10	10-12 ga BUTT CONNECTOR	1.00	EA
28-8408-0300-10	TERMINAL - AMP #323795	2.00	EA
28-8408-0510-10	ROUND NON-INSULATED EYELET	1.00	EA
28-8412-0100-10	INSULATING SLEEVE - 1 5/8" LONG	4.00	EA
28-8412-0400-14	TAPE, FIBERGLASS 3/4"	12.00	IN
28-8559-0100-10	THERMOMETER 150/750°F	1.00	EA
V00169	THERMOSWITCH LARGE	1.00	EA

Coated Heater Faces

The non-stick coating on the heater faces and butt plates is a high temperature thermoplastic. Its function is to allow easy separation of the heater from the polyethylene fittings or pipe without disturbing the melted surface of the plastic.

The area of the heater face that contacts the pipe or fitting must be kept clean and oil free to prevent contamination of the fusion joint. Always protect the coated surfaces from physical damage. Damage to the coating will adversely affect the performance of the non-stick properties of the material. This will cause sticking of the fittings or pipe. If the coating is treated with care it should allow hundreds of fusions; however, the coating material will wear out with use.

The heater face can be cleaned at room temperature with soap and water. Use only a soft, lint free cotton cloth to wipe the surface. During fusion operation clean the heater surface with the same type of soft, lint free cotton cloth. Do not use any type of cleaner.

If plastic starts to stick to the coated heater face and is difficult to remove, it is time to have the heater faces recoated or replace them.

Statement of Warranty

Warranty/Disclaimers – Georg Fischer Central Plastics, LLC (“Seller”) warrants for a period of three (3) years from the date of invoice that the products sold under the order invoiced (the “Products”) will be free from defects in materials and workmanship, except for items supplied to Seller by other vendors in connection with the order. The items to which the warranty does not extend (the “Excluded Items”) include, without limitation, electrical devices, pumps, controls, and similar items. Seller assigns to the buyer of the Products, without recourse, any warranty on the Excluded Items which is provided by manufacturer thereof.

The warranty provided hereby does not apply to any product or component that has been repaired or altered by anyone other than Seller, and does not cover any failure of the Products which Seller determines to have been caused due to abuse, misuse, negligence or normal wear and tear.

As a condition to the buyer’s exercise of its rights under this warranty, the Products must be returned to Seller’s dock, freight prepaid, in Shawnee, Oklahoma, within ten (10) days of the date of failure, accompanied by a Return Goods Authorization (available from Seller) and information related to the claim. Buyer’s REMEDIES UNDER THIS WARRANTY ARE LIMITED to, at Seller’s sole option, the replacement or repair of the Products determined by Seller to be defective, or a refund of the purchase price, less an allowance for services rendered by the Product prior to the warranty claim. IN NO EVENT SHALL SELLER BE LIABLE FOR LOSS OF USE, DAMAGE TO OR LOSS OF PRODUCTS OR SERVICES, FAILURE TO REALIZE EXPECTED SAVINGS, FRUSTRATION OF ECONOMIC OR BUSINESS EXPECTATIONS, LOST REVENUE OR PROFITS, OR FOR ANY OTHER SPECIAL, INCIDENTAL, CONSEQUENTIAL OR PUNITIVE DAMAGES, EVEN IF THEY WERE FORESEEABLE OR SELLER WAS INFORMED OF THEIR POTENTIAL. Products repaired or replaced pursuant to this warranty will be delivered to buyer FOB Seller’s dock in Shawnee, Oklahoma
THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE, WHICH ARE EXPRESSLY DISCLAIMED. SELLER NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON TO MODIFY THESE TERMS AND CONDITIONS, WARRANT SPE-

CIFIC APPLICATIONS, OR ASSUME FOR SELLER ANY OTHER LIABILITY IN CONNECTION WITH THE SALE OF ANY SELLER’S PRODUCT OTHER THAN AS PROVIDED IN THIS WARRANTY.

Recommendations - Any recommendations and suggestions provided by Seller concerning its products and the use thereof are based on tests and data believed to be reliable but are not intended to be complete or exhaustive. The user is responsible for determining the applicability of governmental regulations relating to the use of the products and for all other aspects of the use of Seller’s products.

Actual use of the products by others is beyond the control of Seller and Seller makes no warranty or other agreement, expressed or implied, regarding any aspect of such use. Seller shall have no liability arising from the use of Seller’s products by a third party.

Modifications – Seller may improve or otherwise modify its products without any obligation to improve or otherwise modify in any way any products (including any parts or accessories) previously sold by Seller.

Distributors – Seller’s products are sold through authorized distributors, who determine the price, terms and conditions of sale.

Other – No partial invalidity of this agreement shall affect the remainder. This agreement shall be governed and construed in accordance with the laws of Oklahoma, excluding its laws relating to conflicts-of-law.

The sole purpose of the exclusive remedy contained in the limited Warranty shall be to provide repair or replacement of failed products, or to refund the purchase price of the failed product as explained above. This exclusive remedy shall not be deemed to have failed of its essential purpose so long as Seller agrees to repair or replace the failed product or to refund the purchase price as explained above.

