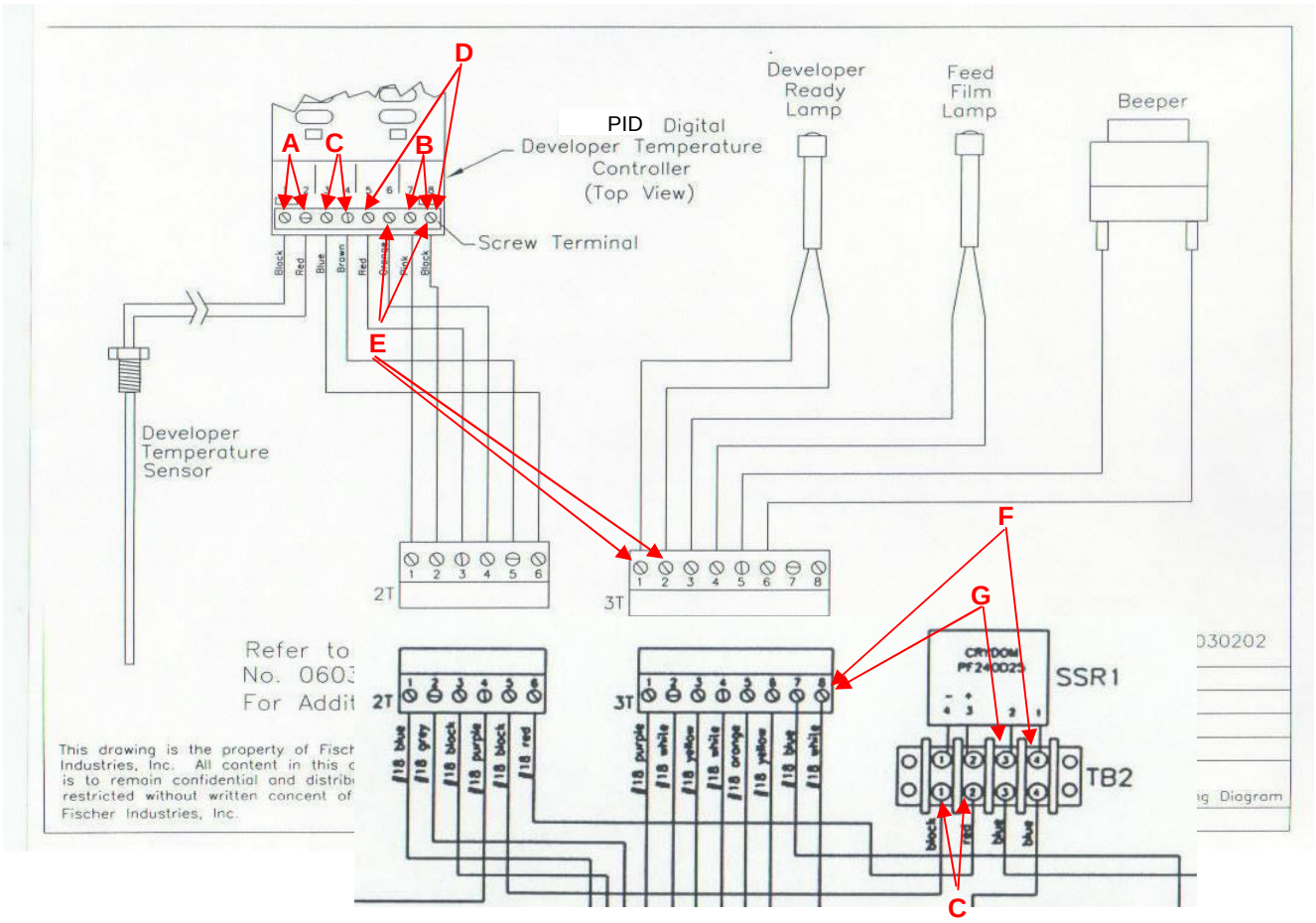
Fischer 3000S, 3000ST, 4000M, 4000MT Developer Temperature Control Troubleshooting



This document describes how to troubleshoot the developer control section of a Fischer 3000S, 3000ST, 4000M and 4000MT.
Refer to the letters shown in red on the drawing above from A through J as you read the instructions below.

In the 10 years that Fischer used PID developer temperature controllers, 3 different models were used: Cal 3300, Cal 32E, and Watlow. They all work fundamentally the same, although programmed differently.

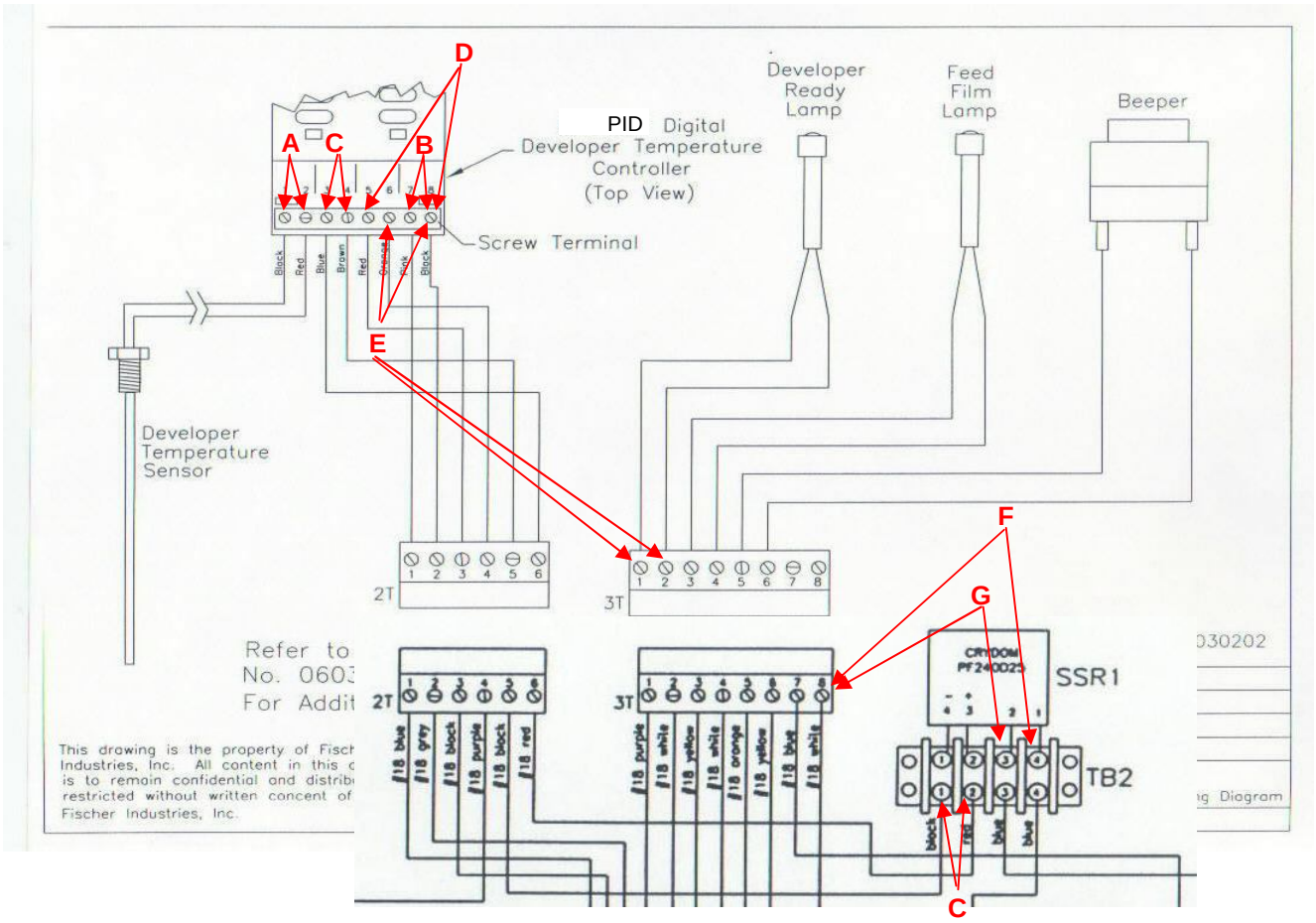
A The temperature sensor is a 100 ohm RTD attached to terminals 1 & 2 on the PID temp controller. Measure resistance (ohms). The measurement should be around 100 ohms at normal room temperature and should rise as temperature rises. Grab the tip of the probe with your hand to raise the temperature and check to see of the resistance rises. If not operating in this manner, replace temperature sensor.

B With processor turned ON, measure 110-120VAC at all times between 7 & 8 on the PID temp controller. If no power is noted, keep working your way back down the wiring until you find where the break occurs in the power. It could be a loose wire in a connector, a broken jumper on a terminal block, or a broken wire. Repair the connection.

C With processor turned ON and the PID temp controller calling for heat, measure 3-15VDC between 3 & 4 on the PID temp controller. The 3 is the + (positive) and the 4 is the - (negative) terminal. Take the same measurement at 1 & 2 on TB2, with 1 being the - (negative) and 2 being the + (positive). This is the input signal from the PID temp controller to the solid state relay (SSR1) connected to TB2. If the PID temp controller is not delivering a 3-15VDC signal, replace the PID temp controller, part number KL85B10.

D With the processor turned ON, measure 110-120VAC at all times between 5 & 8 on the PID temp controller. If no power is noted, keep working your way back down the wiring until you find where the break occurs in the power. It could be a loose wire in a connector, a broken jumper on a terminal block, or a broken wire. Repair the connection.

E With the processor turned ON and the PID temp controller at setpoint, measure 110-120VAC between 6 & 8 on the PID temp controller. The signal switches from 5 to 6 when setpoint is reached. That signal from 6 goes to the microprocessor terminal 17 and back out the microprocessor through terminal 14. The end result should be 110-120VAC at terminals 1 & 2 on connector 3T to power the Developer Ready Light.



F With the processor turned ON, measure 110-120VAC at all times between terminal 4 on TB2 and position 8 on connector 3T. If no power is noted, keep working your way back down the wiring until you find where the break occurs in the power. It could be a loose wire in a connector, a broken jumper on a terminal block, or a broken wire. Repair the connection.

G With the processor turned ON and the PID temp controller calling for heat, measure 110-120VAC between terminal 3 on TB2 and position 8 on connector 3T. If no power is noted, replace the Solid State Relay, part number ME85B20.

At this point, you should now see how developer heat is controlled:

A The temperature sensor provides input to the PID controller.
B Power is supplied to the PID controller.
C A DC output is sent by the PID controller to the Solid State Relay as a trigger signal.
D Power is supplied to the PID controller that will be used to power the Developer Ready Light.
E Power is switched at setpoint by the PID controller to power the Developer Ready Light.
F Power is supplied to the Solid State Relay that will be used to power the Dev. Heat Exchanger.
G Power is switched at setpoint by the Solid State Relay to power the Developer Heat Exchanger.

Once power is sent to the Developer Heat Exchanger, the developer should heat. If not, check the following:
1) Heat Exchanger measures 22 ohms resistance across the screw terminals on each side.
2) The resettable thermostat on the Heat Exchanger has been pushed in to reset. Check for continuity.
3) Check for continuity of the non-resettable thermostat on the Heat Exchanger.
4) The circulating pumps are working.
5) Fresh water is flowing.
6) 110-120VAC is being delivered to the Heat Exchanger. If not, check the wiring back through the connector.

TIP: The Cal 32E and Watlow PID temperature controllers both have connectors on the back where the wires screw in that lift directly off the back of the unit. If the unit is exhibiting an erratic display, you may be able to resolve the problem by unmating and mating the connector on the back of the unit several times to "clean" off the contact points.