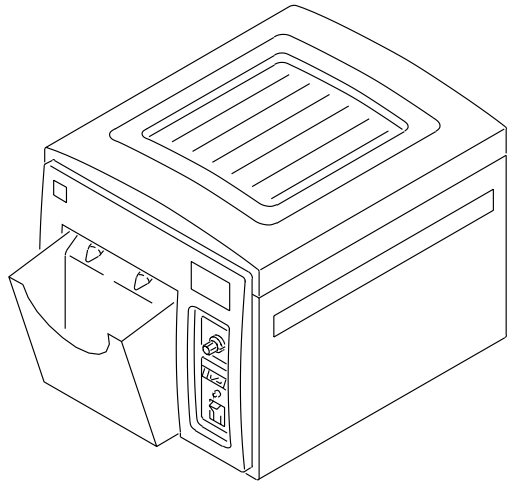
Publication No. 3E0819
29OCT99

HEALTH IMAGING

DIAGNOSTICS
for the
Kodak Min-R MAMMOGRAPHY PROCESSOR
Service Code: 3752

Important
Use qualified personnel to service this equipment.



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Warning

To avoid hazardous conditions, keep floors and floor coverings around your Processor and associated drains clean and dry at all times. Any accumulation of fluids from mixing tanks, drain lines, etc., should be cleaned up immediately. In the event of an accumulation of liquid due to backup, overflow, or other malfunctions of the drain associated with your Processor, call a plumber or other contractor to correct any problem with the drain. Kodak accepts no responsibility or liability whatsoever for the serviceability of any drain connected to or associated with a Processor. Such drains are the sole responsibility of the customer.

Radio Interference

Caution

This equipment generates, uses, and can radiate radio-frequency energy. If the equipment is not installed and used according to the instructions, it might cause interference to radio communications. The equipment has been tested and found to comply with the limits for a *Class A* computing device pursuant to Subpart J of Part 15 of the FCC Rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at the user's own expense will be required to take whatever measures may be required to correct the interference.

This digital apparatus does not exceed the *Class A* limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

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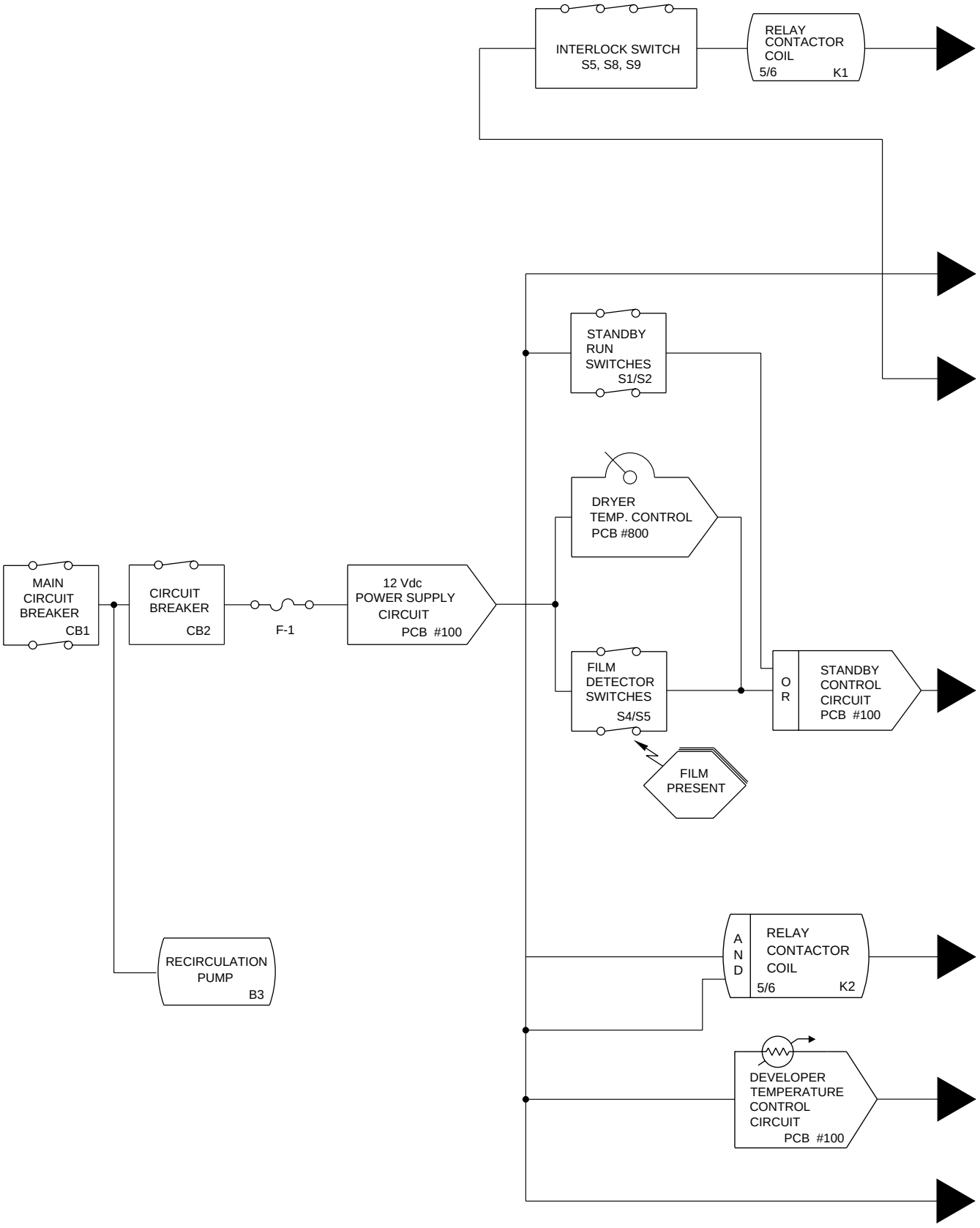
Section 1: Correcting Difficulties

1. Transport Failure						
	2. Surface Artifacts					
		3. Abnormal Film Densities				
			4. Wet Films			
				5. Low Solution Levels		
					6. Overlapping of Films	
1	**2**	**3**	**4**	**5**	**6**	
•					•	Film Feeding Error Feed only single thicknesses of film. Feed the next film only after the film feed signal sounds If there is no film feed signal, refer the difficulty to qualified service personnel.
•	•	•	•			Feed only compatible films.
•					•	Check that all Racks and Crossovers are seated correctly.
•	•					Check that the surfaces of all the Rollers are clean and smooth, especially in the Developer Turnaround Assembly.
•			•			Check that the Dryer Air Tubes are in the correct positions.
	•		•			Remove any dirt from the Dryer Rollers and Air Tubes from the Dryer Assembly, especially the slots. Use a bottle brush and rinse with water.
	•	•	•	•		Check that the replenishment rates are correct.
	•					Adjust the Dryer temperature control setting to the **lowest** possible temperature that still allows good drying.
	•					Clean the Feed Shelf and Detector Rollers.
•	•				•	Clean any biological growth in the Wash Tank with a mild solution of chlorine bleach. Use 60 mL (2 fl oz) of bleach per 3.8 L (1 gallon) of water. Wipe the Tanks with a soft sponge.
•				•		Check that the Weirs are seated correctly. Check that the Tanks are full.
•	•	•	•		•	Change any chemicals that were not mixed correctly, are exhausted, or are contaminated. Check that the replenishment flow rates are correctly set. Fill the Replenishment Tanks if necessary.
•	•				•	Check that <u>all</u> Rollers are in place and positioned and rotating correctly.
•	•				•	Check that <u>all</u> Roller Gears, Sprockets, and Idlers are engaged.
•	•				•	Replace any Roller that has a broken or worn Gudgeons.
•	•				•	Replace any Bearings that do not allow the Turnaround Rollers to rotate correctly.
•	•					Check the tension on the Rack Chain. Check that the Rollers do not hesitate and that the Chain moves smoothly.
		•				With the Processor on, check for movement on the surface of the solutions. Movement indicates recirculation.
•	•					If the incoming wash water is dirty, clean the Rack and Tank thoroughly. Change the incoming Water Filter. Use the correct Water Filter.
			•			Check that the Dryer Air Exhaust is free from any obstruction.
•					•	Check that the Turnaround Assembly is adjusted correctly. The Turnaround Assemblies must be square with the Racks.
	•	•				Check the incoming water temperature. Temperature must be between 4.4×°C (40°F) and 29.4°C (85°F).

1. Transport Failure	2. Surface Artifacts	3. Abnormal Film Densities	4. Wet Films	5. Low Solution Levels	6. Overlapping of Films	
1	2	3	4	5	6	
		•				Check that the correct Bulb and Safelight Filter are in the Safelight and at the correct distance from the Feed Shelf and work surface.
•		•				Check that the Top Cover is tight on the Processor. Check that there are no leaks in the Light Lock Gasket.
•						10 x 10 cm films - feed films diagonally if they fail to transport reliably.
					•	For all transport speeds, the buzzer should sound once the trailing edge of the film has advanced 75 mm (3 in.) into the Processor.
•	•	•			•	Check that the Tank solution levels are at the overflow Weirs.
				•		Check for solution in the Replenishment Tanks. Fill if necessary. NOTE: Mix developer replenisher in quantities not to exceed a 2-week supply.
		•				With a reliable thermometer, check that the temperature of the developer is correct. If necessary, have qualified service personnel make adjustments. NOTE: Check the incoming water temperature. It must be a minimum of 4×°C (7°×F) lower than the desired developer temperature.

Section 2: Sequence of Operation

Main Circuit



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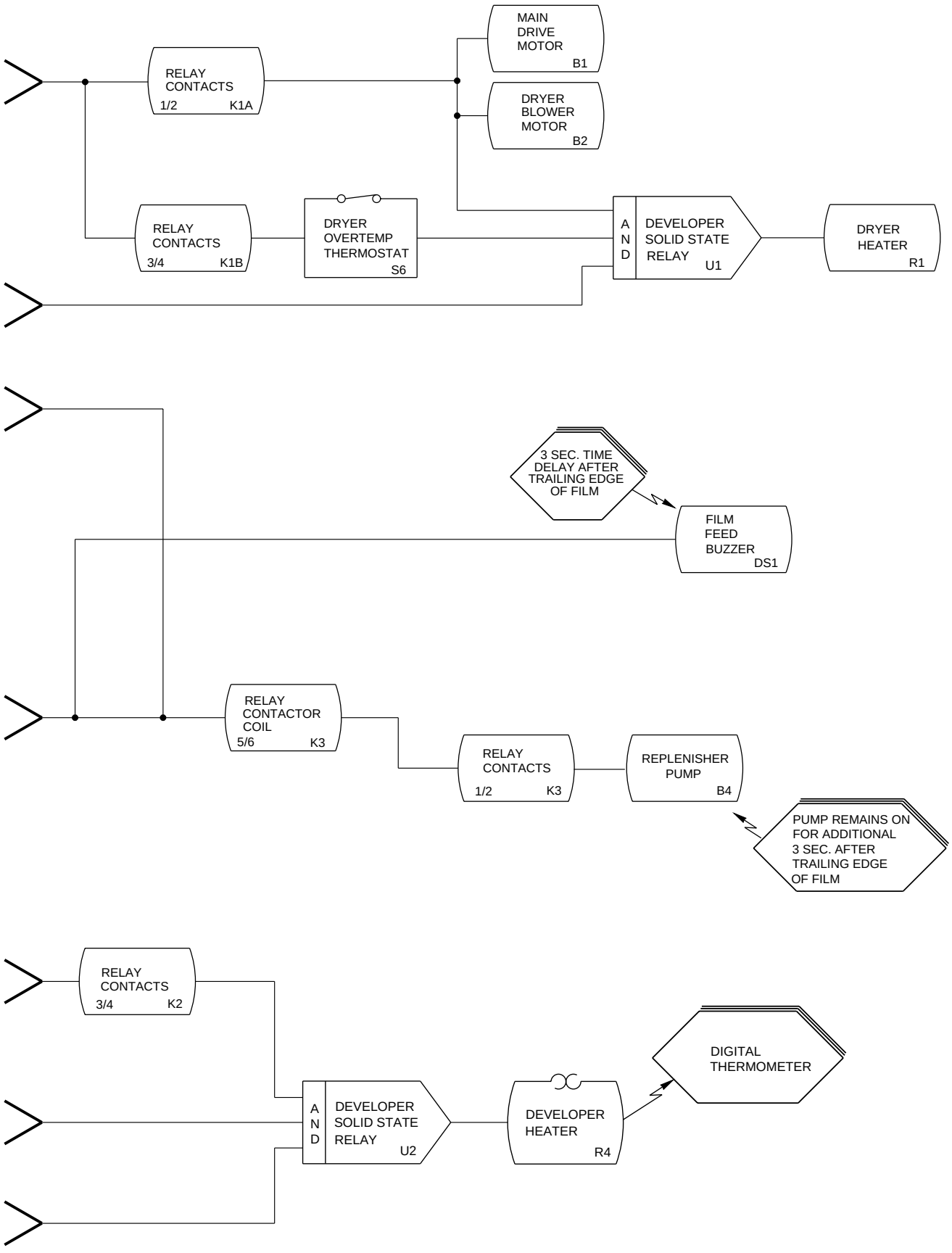
MAIN DRIVE MOTOR B1
RELAY CONTACTS 1/2 K1A
DRYER BLOWER MOTOR B2
RELAY CONTACTS 3/4 K1B
DRYER OVERTEMP THERMOSTAT S6
AND
DEVELOPER SOLID STATE RELAY U1
DRYER HEATER R1
3 SEC. TIME DELAY AFTER TRAILING EDGE OF FILM
FILM FEED BUZZER DS1
RELAY CONTACTOR COIL 5/6 K3
RELAY CONTACTS 1/2 K3
REPLENISHER PUMP B4
PUMP REMAINS ON FOR ADDITIONAL 3 SEC. AFTER TRAILING EDGE OF FILM
RELAY CONTACTS 3/4 K2
AND
DEVELOPER SOLID STATE RELAY U2
DEVELOPER HEATER R4
DIGITAL THERMOMETER

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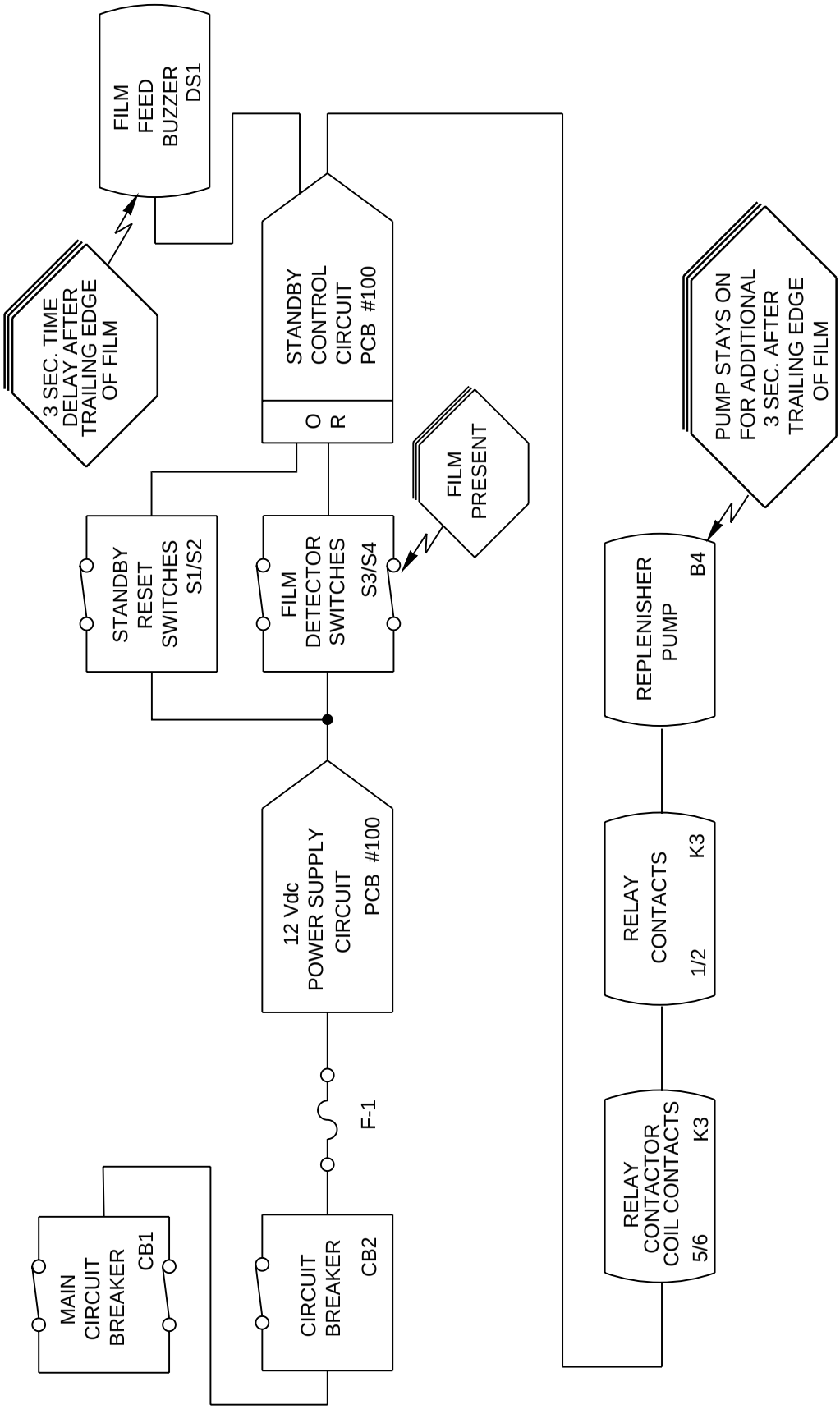
Film Detection and Replenishment



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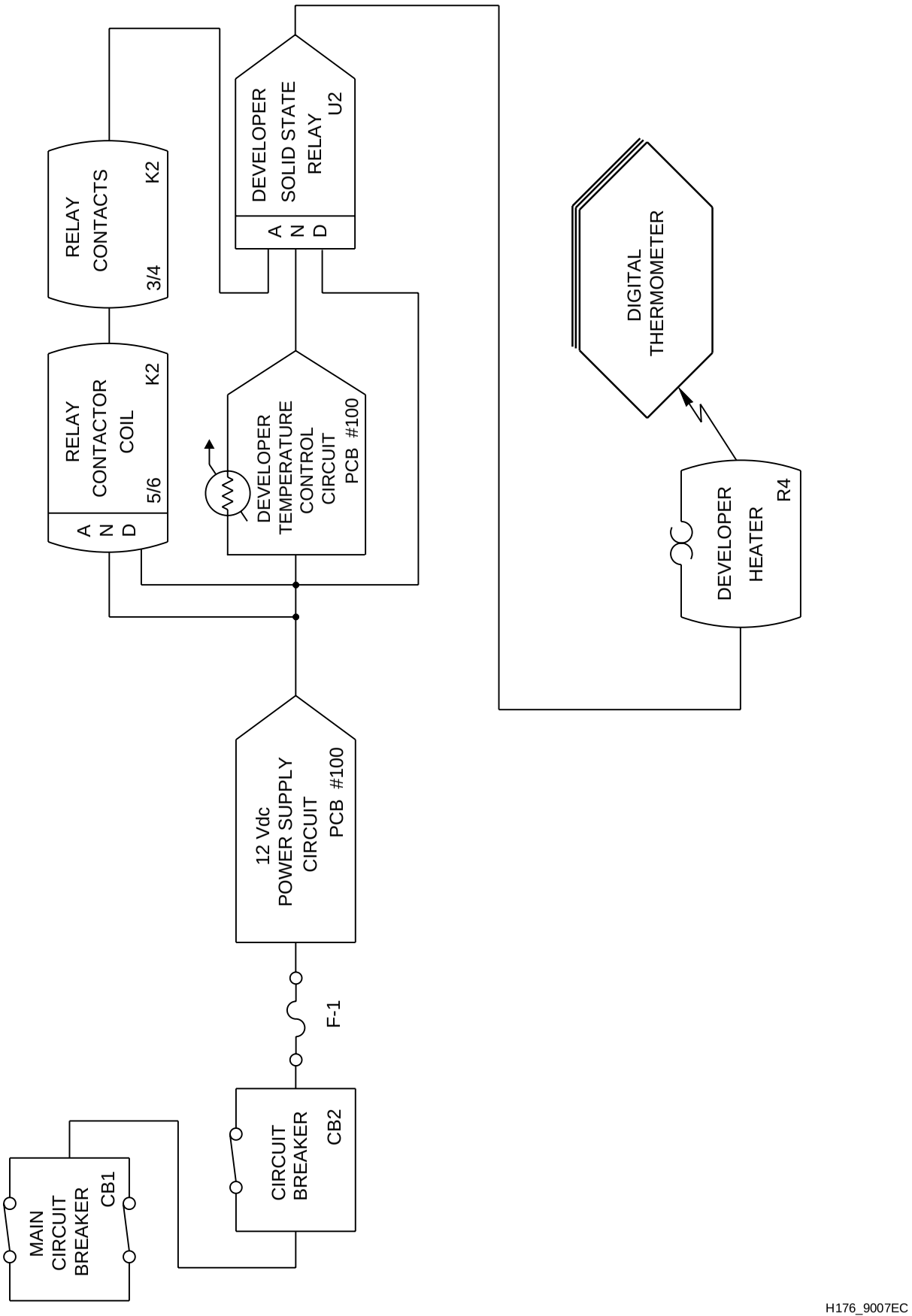
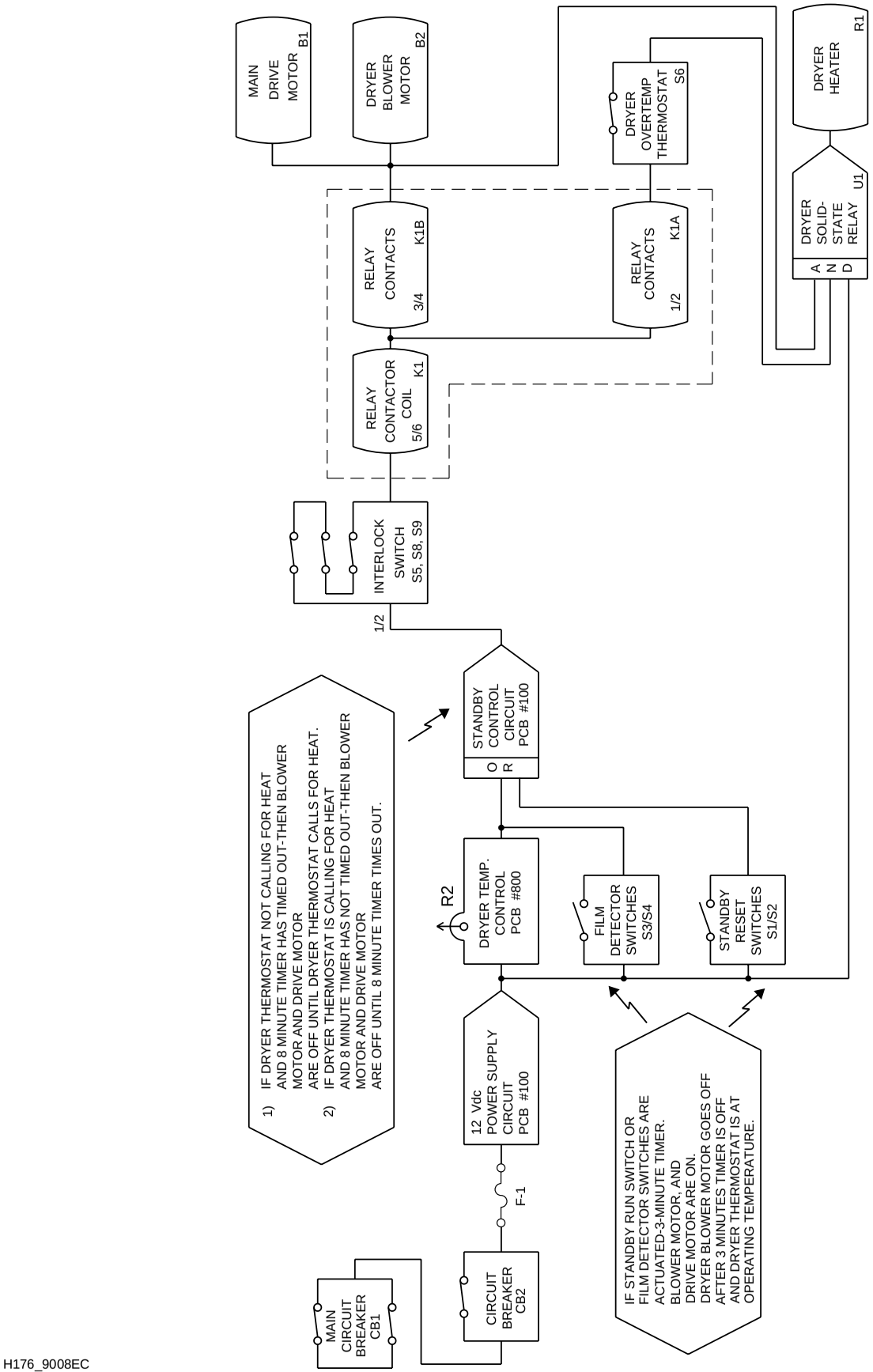
Developer Temperature Control



DRYER and DRIVE MOTOR



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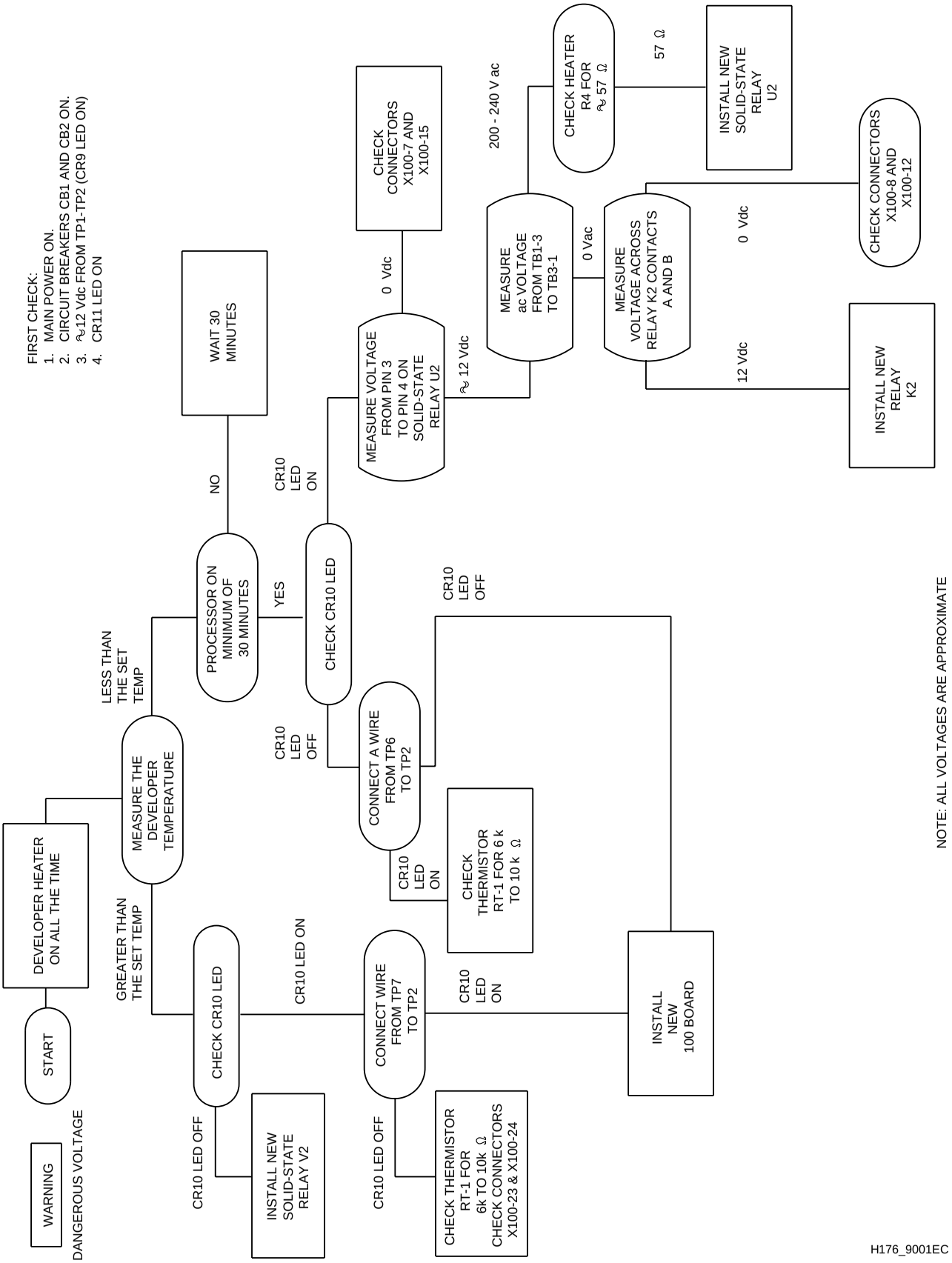
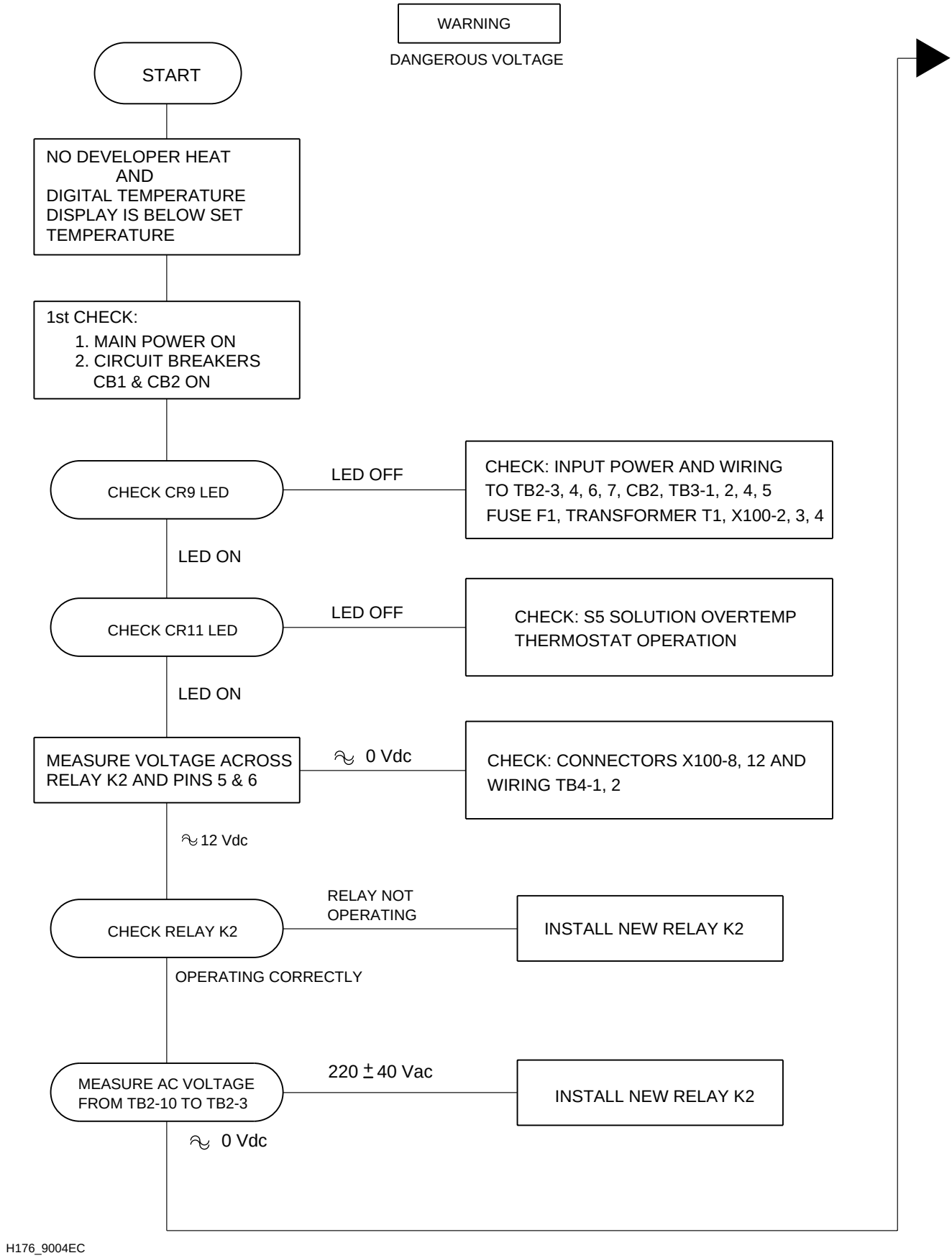
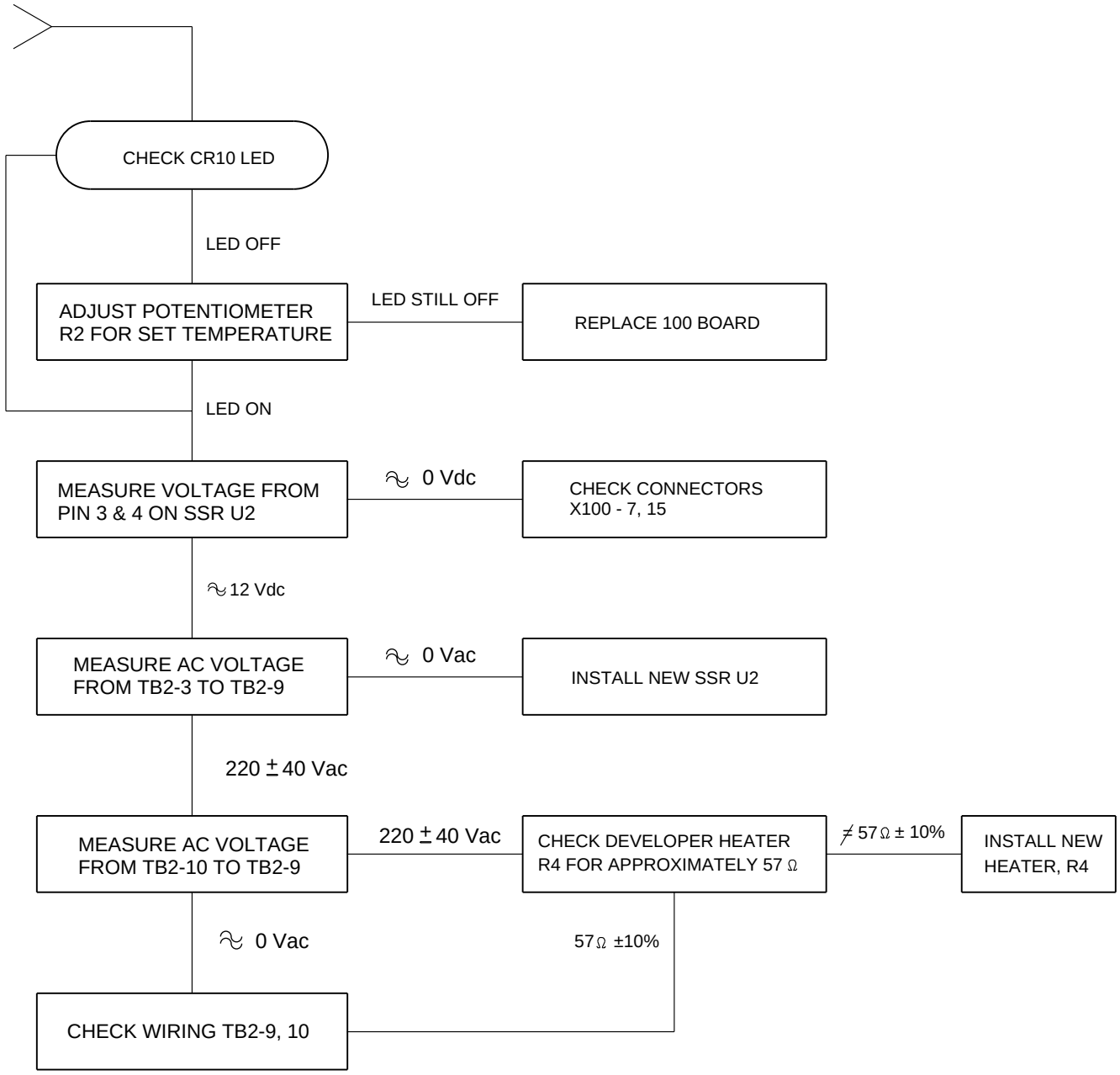
Section 3: Troubleshooting Flow Charts

DEVELOPER HEATER: On All of the Time



DEVELOPER: No Heat




CHECK CR10 LED
LED OFF
ADJUST POTENTIOMETER R2 FOR SET TEMPERATURE
LED STILL OFF
REPLACE 100 BOARD
LED ON
MEASURE VOLTAGE FROM PIN 3 & 4 ON SSR U2
≈ 0 Vdc
CHECK CONNECTORS X100 - 7, 15
≈ 12 Vdc
MEASURE AC VOLTAGE FROM TB2-3 TO TB2-9
≈ 0 Vac
INSTALL NEW SSR U2
220 ± 40 Vac
MEASURE AC VOLTAGE FROM TB2-10 TO TB2-9
220 ± 40 Vac
CHECK DEVELOPER HEATER R4 FOR APPROXIMATELY 57 Ω
≠ 57 Ω ± 10%
INSTALL NEW HEATER, R4
≈ 0 Vac
57 Ω ±10%
CHECK WIRING TB2-9, 10

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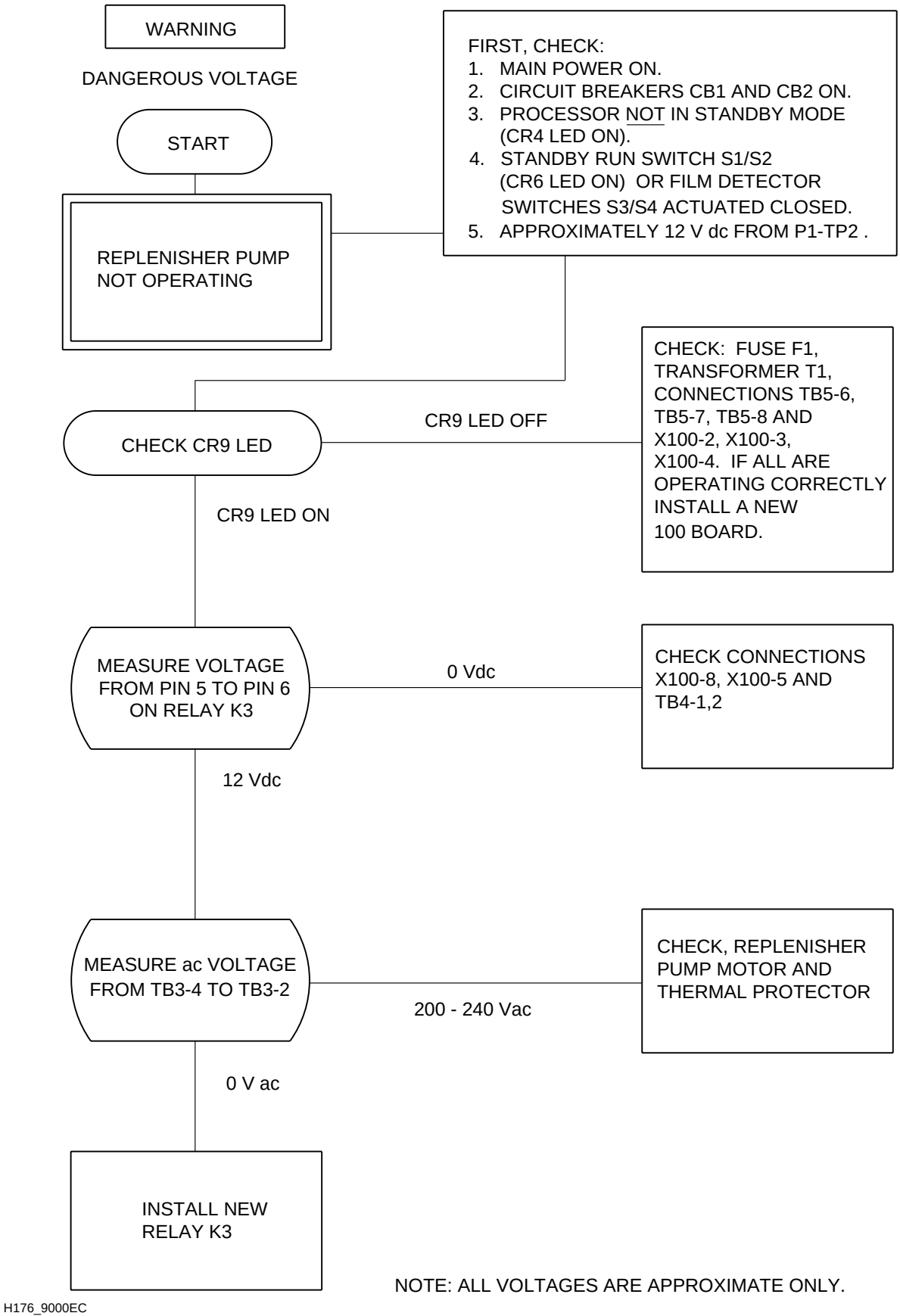
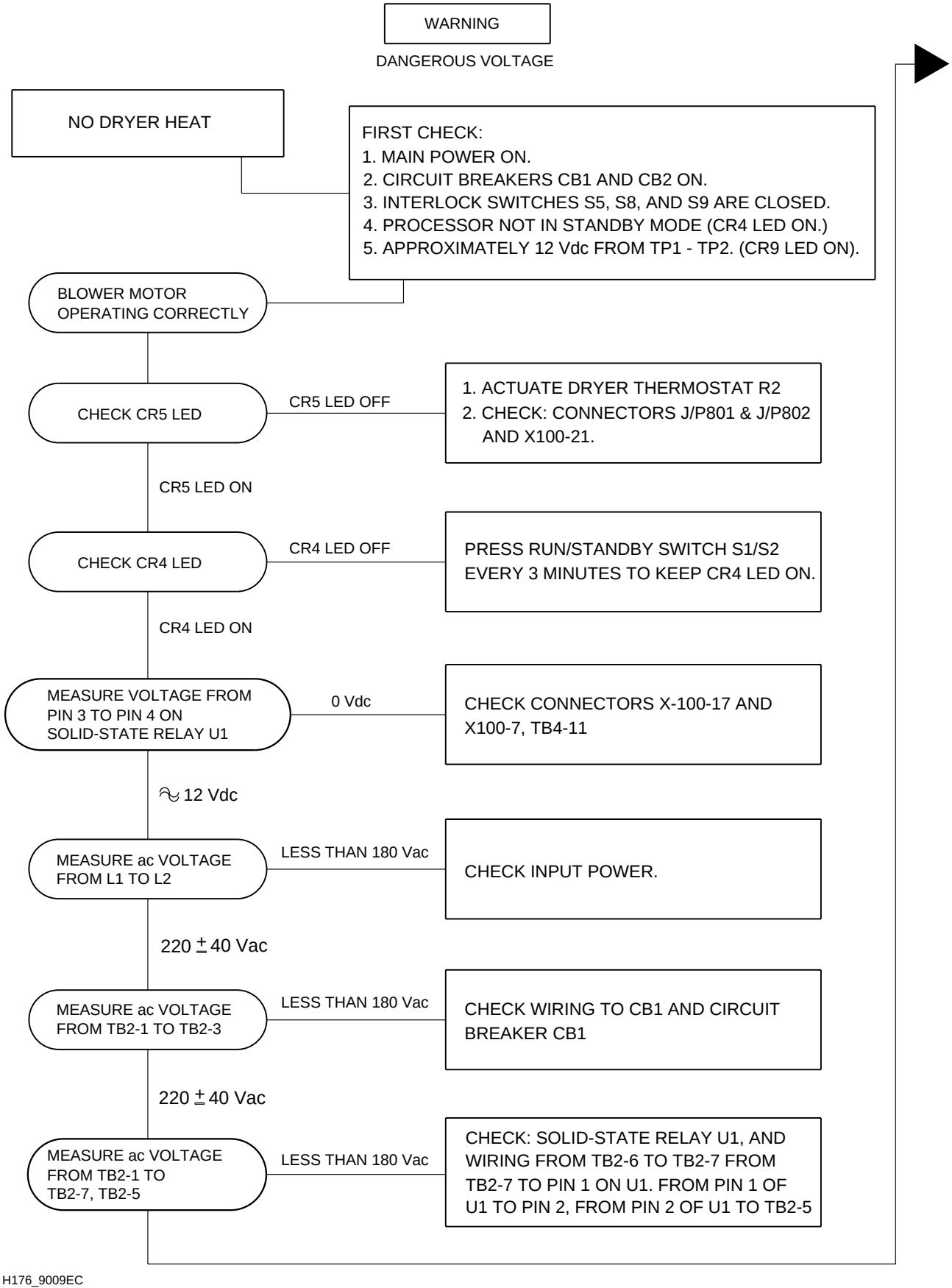
REPLENISHER PUMP: Not Operating



DRYER: No Heat



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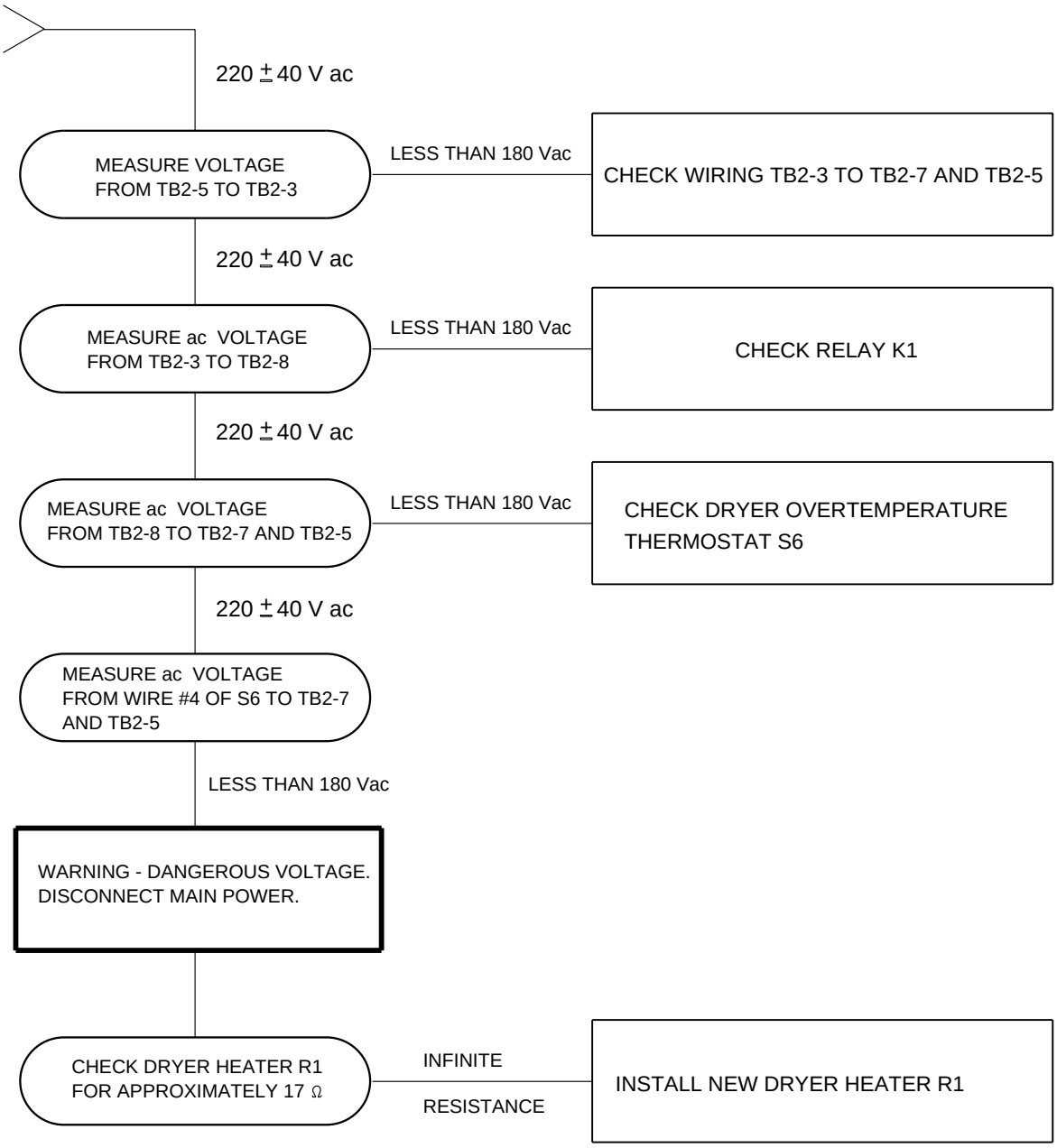
220 ± 40 V ac
MEASURE VOLTAGE FROM TB2-5 TO TB2-3
LESS THAN 180 Vac
CHECK WIRING TB2-3 TO TB2-7 AND TB2-5
220 ± 40 V ac
MEASURE ac VOLTAGE FROM TB2-3 TO TB2-8
LESS THAN 180 Vac
CHECK RELAY K1
220 ± 40 V ac
MEASURE ac VOLTAGE FROM TB2-8 TO TB2-7 AND TB2-5
LESS THAN 180 Vac
CHECK DRYER OVERTEMPERATURE THERMOSTAT S6
220 ± 40 V ac
MEASURE ac VOLTAGE FROM WIRE #4 OF S6 TO TB2-7 AND TB2-5
LESS THAN 180 Vac
WARNING - DANGEROUS VOLTAGE. DISCONNECT MAIN POWER.
CHECK DRYER HEATER R1 FOR APPROXIMATELY 17 Ω
INFINITE
RESISTANCE
INSTALL NEW DRYER HEATER R1

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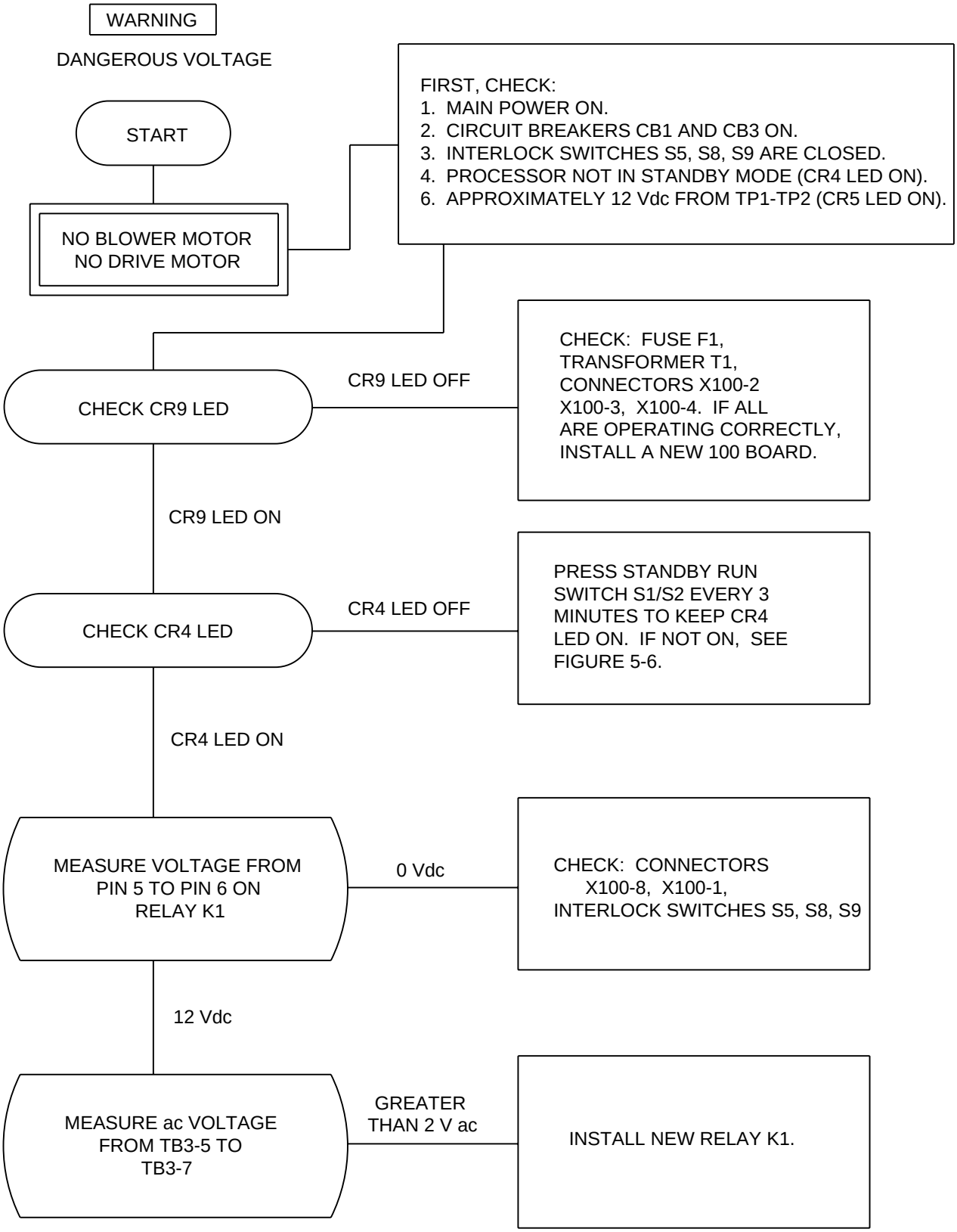
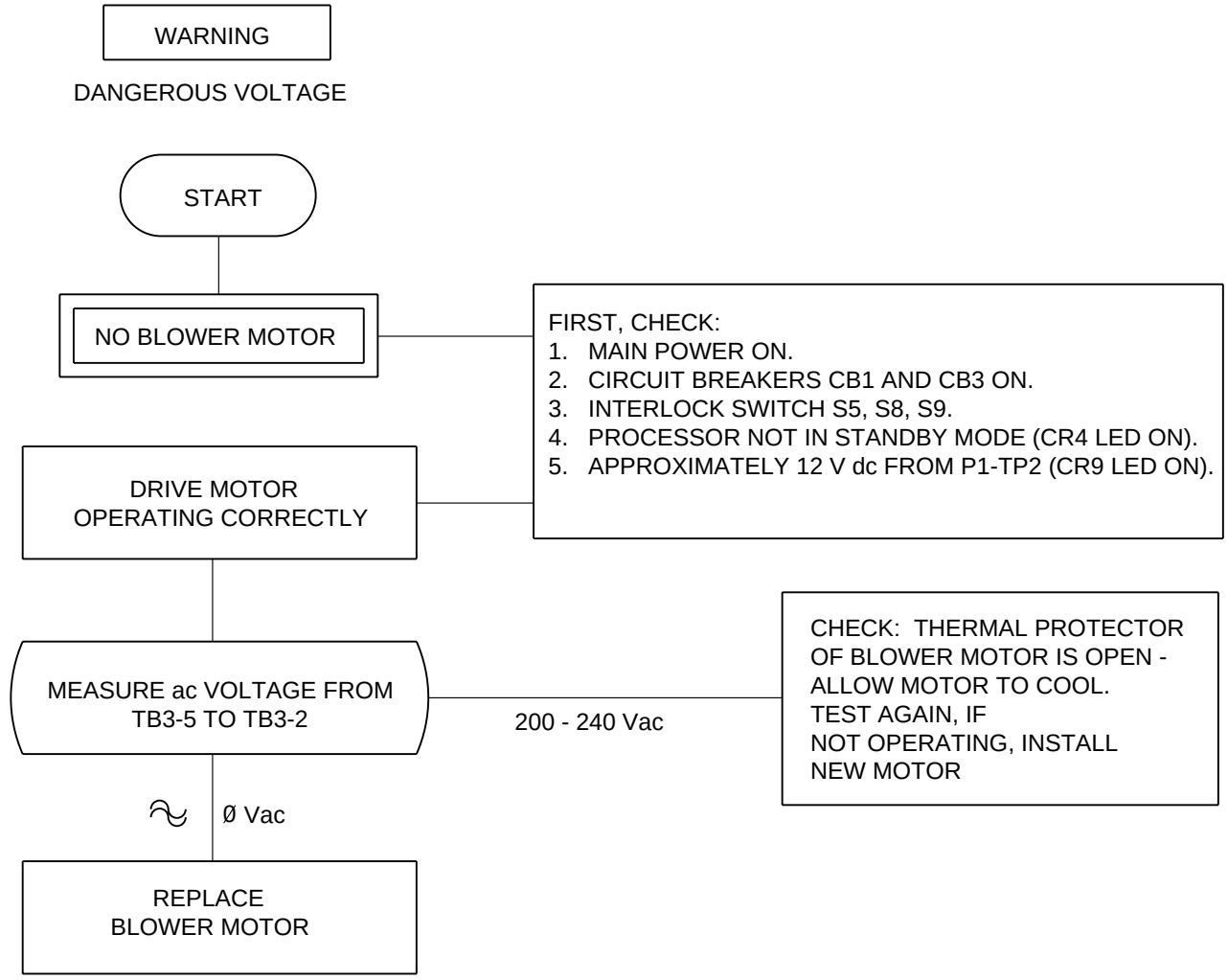
BLOWER MOTOR and DRIVE MOTOR: Not Operating



NOTE:
ALL VOLTAGES ARE APPROXIMATE ONLY
DIAGNOSTIC FLOWCHART FOR THE DRYER TEMPERATURE CONTROL, AND MAIN DRIVE. H176_9002EC

BLOWER MOTOR: Not Operating



NOTE:
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DIAGNOSTIC FLOWCHART FOR THE DRYER
TEMPERATURE CONTROL, AND MAIN DRIVE

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