Technical Test Points for Intra-X and Extra-X

Supply Power - 115VAC
May be tested using a voltmeter across the hot and neutral on the cord socket. You should see 115VAC.

Supply Fuses for the Intra-X Only
May be tested with an Ohmmeter across either end of each fuse individually. Continuity across the fuse indicates OK while an open or infinite resistance indicates a blown fuse. The fuses may be accessed by depressing the center tab, and pulling out the drawer just below the main power socket.

Power Switch - 115VAC
This may be tested two ways, with or without power. Always test an item with power off when possible. When the troubleshooting process requires testing an item with the power on, use EXTREME CAUTION! **Power on method** - Remove the black and red wires from the backside of the power switch, leaving the blue and brown wires (line side) in place. With the switch on, there should be 115VAC across the red and black terminals. Be sure to note the placement of wires and replace them exactly as they came off. **Power off method** - With the machine unplugged, remove all wires from the backside of the power switch, being careful to take note of the wire positions. With an Ohm Meter and the power switch in the ON position, you should read continuity from 1A to 2A and from 4B to 5B. With the power switch in the OFF position you should see an open from 1A to 2A and from 4B to 5B.. If you do not have continuity in the ON position, replace the switch.

Safety Switch - 115VAC
The safety switch should have continuity while depressed between pins #1 & #2, the outside pins, and between pins #3 & #4, the inside pins. With power on, 115VAC should be read on the board side, across the brown & blue wires, while the safety switch is depressed.

Process Switch – Continuity Check
Remove wires P16 and P17 (START) from the printed circuit board. There should be continuity across these two wires while the process switch is depressed and you should see an open when the process switch is released. If not, replace the process switch.

Power at the printed circuit board - 115VAC
A voltmeter should read 115VAC between P12 (NEUTRAL) and P11 (LIVE) when the machine is plugged in, power is turned on and the safety switch is depressed. Use Caution when testing live circuits.

Drive Motor - 115VAC
Voltage to the drive motor may be tested from the printed circuit board, pin P9 (DRIVE) to P12 (NEUTRAL). You should see 115VAC.

Drive motor coil resistance may be tested as indicated below:

Intra-X: Measure with wires removed from the printed circuit board. The two white wires should stay tied together when testing.

Black wire P9 (DRIVE) to red wire P18 (CAP) - 4.6 K Ohms
Black wire P9 (DRIVE) to white wire (Terminal Strip) - 2.3 K Ohms
Red wire P18 (CAP) to white wire (Terminal Strip) - 2.3 K Ohms

Extra-X: Measure with wires removed from the printed circuit board. The two white wires should stay tied together when testing.

Black wire P9 (DRIVE) to red wire P18 (CAP) - 2.5 K Ohms
Black wire P9 (DRIVE) to white wire (Terminal Strip) - 1.25 K Ohms
Red wire P18 (CAP) to white wire (Terminal Strip) - 1.25 K Ohms

Dryer Heat Element - 32 Ohms Intra-X or 64 Ohms Extra-X
The dryer element maybe tested by removing the brown and blue wires from the right side of the smaller terminal strip located above the dryer fan. Check for 32 Ohms across the blue and brown wires with an Ohmmeter, (64 Ohms from brown-to-brown on an Extra-X). An open reading may indicate the overload located on the element is open. If the overload is reset and the reading is still open, replace the element. Power to the element may be tested between the printed circuit board P4 (DRYER) and P12 (NEUTRAL), or between the yellow and blue wires on the left side of the dryer terminal strip. You should see 115VAC.

Dryer Fan Motor - 115VAC, 24.5 Ohms
Voltage to the dryer fan motor may be tested from the printed circuit board P8 (FAN) to P12 (NEUTRAL). You should see 115VAC. Coil resistance should be 24.5 Ohms. It can be tested across the same two points. Be sure to remove the brown wire from P8 (FAN) before testing resistance to avoid back reading resistance through the printed circuit board.

Developer & Fixer Temperature Sensor – Resistance Check
Resistance maybe tested across the developer and fixer temperature sensors by removing the wires from the printed circuit board P1 & P2 (DEV NTC) for the developer sensor or P22 & P23 (FIXER NTC) for the fixer sensor and connecting the wires to an Ohmmeter. Resistances should read as follows. NOTE: Resistance will go down as the temperature goes up and vice versa. The temperature light will flash when resistance is out of range, (below 1.4 K Ohms or above 2.8 K Ohms).

Temp	**Resistance**
69	2.7 K Ohms
74	2.4 K Ohms
76	2.35 K Ohms
77	2.3 K Ohms
78	2.2 K Ohms
80	2.0 K Ohms
83	1.9 K Ohms
85	1.5 K Ohms
90	1.4 K Ohms

Developer Heating Element - 115VAC, (160 Ohms Intra-X), (100 Ohms Extra-X)
Voltage may be checked by placing a voltmeter between the blue neutral wire on the thermal overload and P3 (DEV HEATER) on the printed circuit board. You should see 115VAC. Resistance could be checked with an Ohmmeter across the blue neutral wire on the thermal overload and the orange wire P3 (DEV HEATER) on the printed circuit board. Remove the wire from the printed circuit board to avoid back reading resistance through the board. Resistance should be 160 Ohms for the Intra-X and 100 Ohms for the Extra-X.

Fixer Heating Element - 115 VAC, (160 Ohms Intra-X), (100 Ohms Extra-X)
Voltage may be checked by placing a voltmeter between the blue neutral wire on the thermal overload and P10 (FIXER HEATER) on the printed circuit board. You should see 115VAC. Resistance may be checked with an Ohmmeter across the blue neutral wire on the thermal overload and the orange wire P10 (FIXER HEATER) on the printed circuit board. Remove the wire from the printed circuit board to

avoid back reading resistance through the board. Resistance should be 160 Ohms for the Intra-X and 100 Ohms for the Extra-X.

Chem Heating Element Thermal Overload – Continuity Check
Check resistance directly across the thermal overload by removing the wires on both sides of the thermal overload and making sure the red reset button is pushed in. If Ohmmeter does not show continuity, replace the thermal overload.

The Following are only found on the Extra-X

Replenisher Pump - 115VAC, 20 Ohms
Voltage to the replenisher pump may be tested with a voltmeter across the printed circuit board P5 (REPLENISH) and P12 (NEUTRAL). You should see 115VAC. Resistance across the motor coil may be tested with an Ohmmeter by removing the wire from P5 (REPLENISH) and testing from that wire to P12 (NEUTRAL). You should see 20 Ohms.

Water Solenoid - 115VAC, 1.29 K Ohms
Voltage to the water solenoid may be tested with a voltmeter across the printed circuit board P19 (SOLENOID) and P12 (NEUTRAL). You should see 115VAC. Coil resistance may be tested with an Ohmmeter by removing the brown wire from P19 (SOLENOID) and measuring from that wire to P12 (NEUTRAL). You should see 1.29 K Ohms.

Developer and Fixer Circulation Pumps - 115VAC, 370 Ohms
Voltage to the developer circulation pump may be tested with a voltmeter across the printed circuit board P6 (PUMP1) and P12 (NEUTRAL). You should see 115VAC. Voltage to the fixer circulation pump may be tested with a voltmeter across the printed circuit board P7 (PUMP2) and P12 (NEUTRAL). You should see 115VAC. Resistance may be tested by removing P6 (PUMP1) and measuring from the wire to P12 (NEUTRAL) on the printed circuit board. You should see 370 Ohms. Do the same for P7 (PUMP2).

Circuit Breakers – Continuity Check
To check either circuit breaker, simply remove the wires from the circuit breaker and check for continuity across the circuit breaker's terminals. If there is no continuity, reset the circuit breaker and retest. If you do not have continuity replace the circuit breaker.

If your dryer has HIGH HEAT try the following simple tests to isolate your problem.

Before conducting any tests remove the dryer heating element and clean any lint or dust that has collected within the element. You can use compressed air to remove the lint or dust. After cleaning replace the dryer heating element. Run your processor and check the dryer temperature with a thermometer. If the temperature falls between 160 to 175 degrees you have corrected your high heat problem by cleaning the dryer heating element. If the temperature is above 175 degrees then perform the following.

Check to ensure your circuit board has pins P20 & P21 If you **DO NOT** have pins P20 & P21 on your circuit board, you have an older MK III circuit board. If this is the case, skip to the MK III section below.

The following two tests will determine whether your circuit board is good or defective. If either test indicates a defective circuit board then the circuit board needs to be replaced along with the PTC & TRIP thermister set.

Test 1 - Remove the two red TRIP wires from pins P20 & P21 on your circuit board and run your machine for 3 to 4 minutes. If you detect NO HEAT coming from the dryer grill, your circuit board passes the first test ok. If you detect high heat, your circuit board is defective and needs to be replaced along with the PTC & TRIP thermister set. No further testing is required simply order your parts.

Test 2 – Remove the brown wire from P14 and the white wire from P15. These are your PTC wires. Run your machine for 3 to 4 minutes and measure the temperature coming from your dryer heating element. If the dryer temperature drops to between 120 to 130 degrees your circuit board is good. Replace the PTC & TRIP thermister set only. If your dryer temperature is still high your circuit board is defective and needs to be replaced along with the PTC & TRIP thermister set. No further testing is required simply order your parts.

A final test can be performed to ensure the PTC & TRIP thermister set are in fact bad. Two devices control the processor's dryer heat, the circuit board and the PTC & TRIP thermister set. Make sure the PTC & TRIP wires are connected correctly to the circuit board and run your processor for 3 to 4 minutes. Knowing the circuit board is good from the previous two tests, if the dryer temperature exceeds 175 degrees your PTC & TRIP thermister set is proven to be defective, as long as the dryer heating element was properly cleaned as mentioned above.

MK III Section - If your dryer has HIGH HEAT try the following simple test to isolate your problem.

Locate the terminals labeled PTC on your circuit board. The terminals can be found on the left-hand side of the circuit board. There will be a thin brown and white wire going to the PTC terminals.

Remove the wires going to the PTC terminals. Run your machine for 3 to 4 minutes and measure the temperature coming from your dryer heating element.

If the dryer temperature drops to between 120 to 130 degrees your PTC thermister sensor is bad. Your circuit board is good. Replace the PTC thermister sensor.

If you still have high heat above 175 degrees your circuit board and PTC thermister sensor are defective. You'll need to replace the circuit board and PTC thermister sensor.