

**START – PC, XT, and Portable PC**

**Place the hard-tab page labeled "START – PC, XT, and Portable PC" in place of this page, then discard this page.**



## MAP 0000: Start (PC, XT, Portable PC)

This is the entry point for maintenance analysis procedures (MAPs). The MAPs will help you determine the failing field replaceable unit (FRU).

The Advanced Diagnostics program is intended to test *only* IBM products. Non-IBM products, prototype cards, and modified options can give false errors and invalid system responses.

All voltages in the MAPs are positive unless otherwise specified.

### 001

Before you begin:

1. Power off the system.
2. Ensure all connectors are installed correctly.
3. Ensure all jumpers and switches are set correctly.

**Note:** Ensure the Portable Personal Computer 115/230 Vac selector switch is set for the voltage available at the outlet.

- Insert the Advanced Diagnostics diskette into drive A.
- Power on the system.

### IS THE POWER SUPPLY FAN RUNNING?

Yes    No

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002

Go to Step 045 in this MAP.

### 003

- Listen carefully for any audio responses during the power-on self test (POST).

### DID YOU HEAR ONE SHORT BEEP AT THE END OF THE POST?

Yes    No

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(Step 004 continues)

**004**

Go to Step 006 in this MAP.

**005**

Go to Step 010 in this MAP.

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**006**

(From Step 004 in this MAP)

**DID THE MESSAGE (RESUME = "F1" KEY) APPEAR ON THE SCREEN?**

Yes No

**007**

Go to Step 052 in this MAP.

**008**

- Make a note of any error messages on the screen.
- Press the **F1** key to continue.

**DID THE MESSAGE (RESUME = "F1" KEY) GO AWAY WHEN THE F1 KEY WAS PRESSED?**

Yes No

**009**

Go to "MAP 0300: Keyboard Start."

**010**

(From Step 005 in this MAP)

**DOES THE ADVANCED DIAGNOSTICS MENU APPEAR?**

Yes No

**011**

Go to Step 053 in this MAP.

**012**

- Select **0** (SYSTEM CHECKOUT).

**Note:** Depending upon the options installed in the system, questions about attached devices may appear on the screen. Press **Y** or **N** as required, then **Enter**.

(Step 012 continues)

012 (continued)

**DOES THE INSTALLED DEVICES MENU APPEAR?**

Yes No

013

Go to Step 037 in this MAP.

014

- Compare the list to the options installed *inside* the system.

**Note:** The Installed Devices list displays only those devices supported by this manual. If a device is missing from the list and is not supported by this manual, press **Y (IS THE INSTALLED DEVICES LIST CORRECT?)** then **Enter** to continue the diagnostic tests. Go to Step 025 in this MAP.

**DOES THE INSTALLED DEVICES LIST CORRECTLY IDENTIFY THE DEVICES INSTALLED INSIDE THE SYSTEM?**

Yes No

015

Go to Step 017 in this MAP.

016

Go to Step 025 in this MAP.

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017

(From Step 015 in this MAP)

Follow the instructions on the screen and attempt to correct the Installed Devices list.

**Note:** A 199 error indicates you answered "No" to the question about the Installed Devices list. Disregard the error.

**COULD YOU CORRECT THE INSTALLED DEVICES LIST?**

Yes No

(Step 018 continues)

**018**

Go to Step 020 in this MAP.

**019**

Go to Step 025 in this MAP.

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**020**

(From Step 018 in this MAP)

**IS THE OPTION MISSING FROM THE INSTALLED DEVICES LIST?**

Yes No

**021**

Press **Y (IS THE INSTALLED DEVICES LIST CORRECT?)** then **Enter** to continue the diagnostic tests.

Go to Step 025 in this MAP.

**022**

- Make sure all switches and jumpers are set correctly for the missing option. Be sure to check the system board switches as well as the option's switches and jumper positions.

**ARE THE SWITCHES AND JUMPERS SET CORRECTLY?**

Yes No

**023**

Reset any incorrect jumper or switch settings. Go to Step 001 in this MAP to verify system operation.

**024**

Go to the appropriate MAP for the missing device.

**Note:** If you are unable to find the MAP that corresponds to the device, you have an IBM device with its own service manual or a device not supported by IBM diagnostic tests.

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**025**

(From Steps 014, 016, 019, and 021 in this MAP)

- Follow the instructions on the screen to run the tests on all devices. Use the **(RUN TESTS MULTIPLE TIMES)** option.

**DID YOU RECEIVE AN ERROR MESSAGE?**

Yes	No
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	<b>026</b>

	Go to Step 028 in this MAP.
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**027**

Go to the MAP indicated by the error code. For example, if you receive the error code 7XX, go to "MAP 0700: Math Coprocessor."

**Note:** If you are unable to find the MAP that corresponds to your error code, you have an IBM device with its own service manual or a device not supported by IBM diagnostic tests.

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**028**

(From Step 026 in this MAP)

**DID THE SYSTEM CHECKOUT MENU APPEAR AT THE END OF TESTING?**

Yes	No
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	<b>029</b>

	Go to "MAP 0020: Power Start."
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**030****DID YOU NOTICE ANY FAILURE SYMPTOMS?**

Yes	No
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	<b>031</b>

	Go to Step 033 in this MAP.
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**032**

Go to Step 053 in this MAP.

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### 033

(From Step 031 in this MAP)

#### DID THE CUSTOMER PROVIDE A SYMPTOM?

Yes No

034

Go to Step 036 in this MAP.

### 035

Go to the MAP for the suspected failing device.

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### 036

(From Step 034 in this MAP)

The Advanced Diagnostic tests have finished without detecting an error.

- If you are still experiencing a problem:
    - Check all switch settings.
    - Check all jumper positions.
    - Check all cables and connectors for proper installation.
    - Run the Advanced Diagnostic tests on all devices. Use the **(RUN TESTS ONE TIME)** option. If you receive an error, go to the MAP indicated by the error code. For example, if you receive the error code 7XX, go to "MAP 0700: Math Coprocessor."
  - If you are experiencing a problem with a device not supported by this manual, refer to that device's service manual for special testing instructions.
  - If you suspect an intermittent problem, start an error log. If you need instructions, refer to the Reference manual.
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**037**

(From Step 013 in this MAP)

**DID YOU RECEIVE AN ERROR MESSAGE INDICATING A DISKETTE READ ERROR?**

Yes    No

**038**

Go to Step 040 in this MAP.

**039**

Go to "MAP 0600: Diskette Drive Start."

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**040**

(From Step 038 in this MAP)

**IS A MATH COPROCESSOR INSTALLED IN THE SYSTEM?**

Yes    No

**041**

Go to "MAP 0300: Keyboard Start."

**042**

- Power off the system and remove the math coprocessor.
- Power on the system.
- Select **0 (SYSTEM CHECKOUT)**.

**DOES THE INSTALLED DEVICES MENU APPEAR?**

Yes    No

**043**

Reinstall the math coprocessor, then go to "MAP 0300: Keyboard Start."

**044**

- Replace the math coprocessor and the 8088 processor. If that does not correct the problem, replace the system board.
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**045**

(From Step 002 in this MAP)

**IS THE POWER CORD PLUGGED INTO A FUNCTIONING, PROPERLY GROUNDED ELECTRICAL OUTLET?**

Yes No

**046**

- Attach the system to a functioning, properly grounded electrical outlet. Return to Step 001 in this MAP to verify system operation.

**047**

- Power off the system.
- Disconnect the power cord from the electrical outlet then from the system unit.
- Check the system unit power cord for continuity.

**DOES THE POWER CORD HAVE CONTINUITY?**

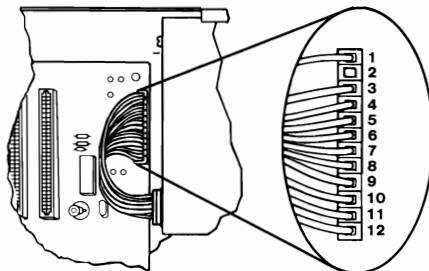
Yes No

**048**

Replace the power cord.

**049**

- Reconnect the power cord.
- Power on the system.
- Check for a voltage of 2.4 to 5.2 Vdc between pins 1 and 5 (ground) at the system board power supply connector, Figure 1.



**Figure 1. System Board Power Connectors**

049 (continued)

**IS THE VOLTAGE 2.4 TO 5.2 VDC BETWEEN PINS 1 AND 5?**

Yes    No

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**050**

Go to "MAP 0020: Power Start."

**051**

Replace the power supply.

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(From Step 007 in this MAP)

Refer to the following figure and go to the MAP indicated or take the action described.

**Note:** If you received an error message and incorrect audio response, use the error message as the POST Error Symptom.

<b>POST Error Symptom:</b>	<b>Action:</b>
No Beep and:	
Blank Display .....	MAP 0020: Power Start
Unreadable Display .....	MAP 0020: Power Start
Blinking Cursor .....	MAP 0020: Power Start
Parity Check Message .....	MAP 0200: Memory Start
1XX Error .....	MAP 0100: System Board Start
Machine Functioning Properly .....	MAP 0020: Power Start
1 Long and 1 Short Beep .....	Replace System Board
1 Long and 2 Short Beeps .....	Go to Step 054 in this MAP
1 Long and 3 Short Beeps .....	Go to Step 054 in this MAP
2 Short Beeps and:	
Blank or Unreadable Display .....	Go to Step 054 in this MAP
Distorted Image on Display .....	Go to Step 054 in this MAP
1XX Error .....	MAP 0100: System Board Start
XXXXX XX 201 Error .....	MAP 0200: Memory Start
XXXX 201 Error .....	MAP 0200: Memory Start
301 Error .....	MAP 0300: Keyboard Start
XX301 Error .....	MAP 0300: Keyboard Start
601 Error .....	MAP 0600: Diskette Drive Start
17XX Error .....	MAP 1700: Fixed Disk Drive Start
30XX Error .....	MAP 3000: PC Network
31XX Error .....	MAP 3100: Alt. PC Network
C8000 ROM Error .....	Replace Fixed Disk Drive Adapter
CC000 ROM Error .....	MAP 3000: PC Network
ROM Error .....	Replace System Board
FXXXX ROM Error .....	Replace System Board
Continuous Beep .....	MAP 0020: Power Start
Repeating Short Beeps .....	MAP 0020: Power Start
Any Errors Not Shown Above .....	Go to Step 062 in this MAP

**Figure 2. POST Errors**

**053**

(From Steps 011 and 032 in this MAP)

Refer to the following figure and go to the MAP indicated or take the action described.

**Note:** If you received an error message and incorrect audio response, use the error message as the symptom.

<b>Symptom:</b>	<b>Action:</b>
Incorrect Memory Size Displayed .....	MAP 0200: Memory Start
Incorrect Colors on Display .....	Go to Step 054 in this MAP
No High Intensity on Display .....	Go to Step 054 in this MAP
Missing, Broken or Incorrect Characters on Display .....	Go to Step 054 in this MAP
Distorted Image on Display .....	Go to Step 054 in this MAP
Blank Display .....	Go to Step 054 in this MAP
Unreadable Display .....	Go to Step 054 in this MAP
Flashing Cursor Only .....	Go to Step 057 in this MAP
BASIC Screen Appears .....	MAP 0600: Diskette Drive Start
Loads Program from Fixed Disk .....	MAP 0600: Diskette Drive Start
Disk Boot Failure .....	MAP 0600: Diskette Drive Start
Loads Program from Remote Station .....	MAP 0600: Diskette Drive Start
PARITY CHECK Error .....	MAP 0200: Memory Start
Keyboard Problem .....	MAP 0300: Keyboard Start
Cannot Finish Diagnostic Tests .....	MAP 0020: Power Start
Printer Problems .....	Refer to the Service Manual for the Printer
Network Problems .....	Refer to the Service Manual for the Network

**Figure 3. Failure Symptoms**

**054**

(From Steps 052 and 053 in this MAP)

**IS AN ENHANCED GRAPHICS ADAPTER INSTALLED?**

Yes No

**055**

Go to the MAP for the failing display adapter.

**056**

Go to "MAP 2400: Enhanced Graphics Adapter."

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**057**

(From Step 053 in this MAP)

**IS A MATH COPROCESSOR INSTALLED?**

Yes No

**058**

Go to "MAP 0600: Diskette Drive Start."

**059**

- Power off the system.
- Remove the math coprocessor from the system board.
- Power on the system.

**DID THE FAILING SYMPTOM REMAIN?**

Yes No

**060**

Replace the math coprocessor and the 8088 processor.

**061**

Reinstall the math coprocessor, then go to "MAP 0600: Diskette Drive Start."

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**062**

(From Step 052 in this MAP)

Go to the MAP indicated by the error code. For example, if you receive the error code 7XX, go to "MAP 0700: Math Coprocessor."

**Note:** If you are unable to find the MAP that corresponds to your error code, you have an IBM device with its own service manual or a device not supported by IBM diagnostic tests.

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**Notes:**

