IBM 3270 Information Display System Problem Determination Guide
Preface

This guide presents charted problem identification procedures for operators of the IBM Information Display System. The operator’s yes-or-no answers to the guide’s logical questions will quickly trace an apparent problem to one of the following system units:

- IBM 3271 Control Unit, Models 1 and 2
- IBM 3272 Control Unit, Models 1 and 2
- IBM 3275 Display Station, Models 1 and 2
- IBM 3277 Display Station, Models 1 and 2
- IBM 3284 Printer, Models 1, 2, and 3
- IBM 3286 Printer, Models 1 and 2
- IBM 3288 Line Printer, Model 2

As certain controls and indicators are referenced, it is assumed that the user is familiar with, and has available a copy of, Operator’s Guide for IBM 3270 Information Display System, GA27-2742.

Third Edition (November 1974)

This is a major revision of, and obsoletes, GA27-2750-1. Most significant is the inclusion of a section on the 3288 Line Printer. In addition, there are several other changes which, though minor, contribute to the overall accuracy and usability of the publication.

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Text for this publication has been prepared with the IBM SELECTRIC® Composer.

A form is provided at the back of this publication for reader’s comments. If the form has been removed, comments may be addressed to: IBM Systems Development Division, Product Publications, Dept. 52L, Neighborhood Road, Kingston, N.Y. 12401

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GLOSSARY OF TERMS

cursor: An indicator character which is visible on the display screen when the unit is turned on. (It resembles an underscore.) The cursor shows where the next character that is entered from the keyboard will appear on the screen.

data tone: A high-pitched tone that is heard when the computer responds to the telephone. It indicates a connection can be made to the terminal.

designator character: A > or ? character displayed in front of a selector pen field.
detect bars: When the selector pen is being used, detect bars are the lines that appear (on the display screen) through those fields that may be selected.
machine problem: Occurs when a terminal fails to perform the expected function because of a mechanical or electrical failure.

modem: A unit of equipment which enables terminals to send and receive data over telephone lines.

programming problem: Occurs when the computer programs are not operating properly, causing unpredictable results at your display terminal or printer.

switched-line 3275: The 3275 communicates with the computer over regular telephone lines. With this equipment, the operator must dial the number of the computer to establish a connection.
terminal: The 3277 and 3275 display stations are referred to as terminals.
typematic keys: Keys that repeat their function as long as they are held down.
INTRODUCTION

Your 3270 Information Display System was designed to operate with maximum reliability. This is important if you are to do the job asked of you. And, most of the time, you will enjoy this reliability. At some time, however, it is possible that something may go wrong—or seem to. It is impossible for any equipment to be completely failure-proof. (The most expensive watch requires occasional servicing and adjustment.) Also, computer programming is a complex field which can introduce an occasional error. And possibly you just may have forgotten to operate some necessary control.

If something should go wrong, this Problem Determination Guide will help you to determine whether you can recover from your problem on your own or whether outside help is needed. When help is needed, the Guide suggests the proper person to contact and the procedure to follow.

In some cases, you will be advised to fill out an Operator Trouble Report. Three forms may be used, depending on the type of keyboard used with your terminal. They may be ordered under the following form numbers:

- Typewriter Keyboard – GX27-2952
- Data Entry Keyboard – GX27-2953
- Operator Console Keyboard – GX27-2954

You may merely wish to test your terminal's operation at some time. Your supervisor can tell you if your equipment has the "Request for Test" (RFT) capability. Instructions for running these tests are provided in A Guide to Using the Test Request Feature on IBM 3270 Information Display Systems, Form GA27-2774.

The "Problem Chart" below will direct you to the page that applies to your problem.
PROBLEM CHART

You seem to be having a problem with your equipment.

○ Is more than one device failing to operate properly?

NO

YES

Check control unit:
○ 3271 – Turn to page 31.
○ 3272 – Turn to page 34.

○ Is your problem with a display station or a printer?

DISPLAY

PRINTER

○ 3248/3286 – Turn to page 11.
○ 3288 – Turn to page 17.

○ 3277 – Turn to page 6.
○ 3275 – Turn to page 23.
3277 DISPLAY STATION

- Is there a cursor on the screen?

YES

- Is the terminal's power cord plugged into a wall outlet?
  
  Yes
  
  No
  
  Plug the power cord into a wall outlet and start procedure again.

- Is the power (OFF-PUSH) switch pulled out?
  
  Yes
  
  No
  
  Pull the switch out and start procedure again.

- Does the wall outlet have power?
  
  Yes
  
  No
  
  Ask your supervisor to have the power restored. After this is done, try your procedure again.

- Rotate the OFF-PUSH switch clockwise. Is there a cursor on the screen now?
  
  Yes
  
  No
  
  You have a machine problem. Fill out an Operator Trouble Report and ask your supervisor to call the IBM service representative.
Is there some other problem with your display screen?

NO

YES

Do any of the following describe the problem?
1. One or many horizontal lines across screen.
2. Screen is full of squares.
3. Brightness control (nearest knob on OFF-PUSH switch) has no effect.
4. Image is not focused.
5. Image size is incorrect.
6. Image is off-center or tilted on display.
7. Spacing between rows of characters is incorrect.
8. Characters are wrong size.
9. Characters are not formed correctly.
10. Cursor is incorrectly positioned (below or through characters).
11. Cursor is too long or too short.
12. More than one cursor appears on screen.
13. Display indicators (SYSTEM AVAILABLE, INSERT MODE, INPUT INHIBITED) are not working properly.

No

Yes

Fill out an Operator Trouble Report. Ask your supervisor to verify your problem and to call the IBM service representative.

Explain your difficulty to your supervisor in your own words.
Do you have a problem with your keyboard?

NO

YES

Is the INPUT INHIBITED light on?

No

Yes

Press the RESET key and start your operation again.

Is INPUT INHIBITED light still on?

No

Yes

Fill out an Operator Trouble Report. Ask your supervisor to verify your problem and call the IBM service representative.

Do any of the following describe the problem?

1. One or more keys or spacebar broken, loose, missing, or bind when operated.
2. CLEAR key fails.
3. Cursor control keys (↑ ↓ ← →) fail or cause INPUT INHIBITED light to come on.
4. Typematic keys do not work.
5. Character keys fail.
6. Program access keys (ENTER, PA1-PA3, TEST REQ, PF keys) fail.

No

Yes

Fill out an Operator Trouble Report. Ask your supervisor to verify your problem and call the IBM service representative.

Describe your problem in your own words to your supervisor.
Do you have a problem with your Selector Pen (optional feature)?

YES

Do any of the following describe the problem?
1. Selector Pen is damaged, or operation is not smooth when tip is pressed.
2. Detect bars appear when pen is not used.
3. Detect bars appear and remain after selection.
4. Detect bars appear, but designator characters do not change.

NO

Fill out an Operator Trouble Report. Ask your supervisor to verify your problem and call the IBM service representative.

Describe your problem to your supervisor in your own words.
Do you have a problem with your Identification Badge Reader (optional feature)?

**NO**

- Does the magnetic identification card fail to read?

**NO**

- Is your card jammed inside the reader?

**NO**

- Fill out an Operator Trouble Report. Ask your supervisor to verify your problem and call the IBM service representative.

- Describe your problem to your supervisor in your own words.

**YES**

- Try another magnetic card. If it works, your original card may be defective. If it does not work, fill out a Trouble Report Form.

- Is your card jammed inside the reader?

**YES**

- Any 3277 problems not mentioned or resolved at this point should be discussed with your supervisor, who will assist you in filling out an Operator Trouble Report.
3284/3286 PRINTER

- Is the printer totally inoperative?

  NO
  
  YES
  
  Is the printer plugged into a wall outlet?

  Yes
  
  Plug printer into wall outlet and start operation again.

  No
  
  Does the wall outlet have power?

  Yes
  
  Ask your supervisor to have the power restored. After this is done, start operation again.

  No
  
  Is the printer top cover closed?

  Yes
  
  Close top cover and try operation again.

  No
  
  Do you have paper in the printer?

  Yes
  
  Insert paper into printer. (Operator’s Guide, Form GA27-2742, tells you how to do this.) Close cover and try operation again.

  No
Is the TEST switch (under the cover) in the online (ON LN) position?

Yes  No

- Set TEST switch to ON LN, close cover, and try operation again.

- Is the printer still inoperative?

No  Yes

- Place TEST switch in PRINT PAT position.
- Place MODE switch in MODE 2 position.
- Momentarily operate the START PRINT switch.

- Was the printout successful? (See Figure 1 or 2 for example.)

Yes  No

- Place TEST switch in ON LN position. Fill out an Operator Trouble Report and ask your supervisor to call the IBM service representative.

Place TEST switch in PRINT PAT position.
Place MODE switch in MODE 1 position.
Momentarily operate the START PRINT switch.

- Was the printout successful? (See Figure 3 or 4 for example.)

Yes  No

- Place TEST switch in ON LN position. Fill out an Operator Trouble Report and ask your supervisor to call the IBM service representative.
Is the print quality poor (bad spacing, missing or illegible characters)?

No

Yes

Check ribbon adjustment of copy control lever (under top cover) and operate printer again. (The Operator's Guide, Form GA27-2742, describes this adjustment.)

Is your printer working properly now?

Yes

No

Place TEST switch in ON LN position. Fill out an Operator Trouble Report and ask your supervisor to call the IBM service representative.

Are you getting the expected printout?

YES

NO

Place TEST switch in ON LN position. Fill out an Operator Trouble Report and ask your supervisor to call the IBM service representative.

END
Note: This figure illustrates the contents of the test pattern rather than the size and style of individual characters.

Figure 1. All-H Test Pattern (Mode 2), 3284/3286 Model 1

Note: This figure illustrates the contents of the test pattern rather than the size and style of individual characters.

Figure 2. All-H Test Pattern (Mode 2), 3284/3286 Model 2
Notes:
1. A character may or may not appear in the position marked by the arrow. Disregard any character that may appear.
2. This figure illustrates the contents of the test pattern rather than the size and style of individual characters.
3. The USA EBCDIC character set is used in this illustration. Pattern will vary, depending on character generator feature installed.

Figure 3. Alphameric Test Pattern (Mode 1), 3284/3286 Model 1
Figure 4. Alphameric Test Pattern (Mode 1), 3284/3286 Model 2
3288 LINE PRINTER

- Is the line printer totally inoperative?

  NO
  
  YES
  
  Is the printer plugged into a wall outlet?

  Yes
    No
    Plug printer into wall outlet and start operation again.
  
  Is printer power switch, labeled 1 and 0, turned on? (1 end depressed?)

  Yes
    No
    Depress 1 end of switch to turn switch on. Start operation again.
  
  Does the wall outlet have power?

  Yes
    No
    Ask your supervisor to have the power restored. After this is done, start operation again.
  
  Is Sys Avl indicator off, and is Ops Chk indicator blinking?

  No
  
  Yes
  
  Make sure PRINT PAT/ON LN/PRINT BFR (Test) switch is in ON LN position. Start operation again.
Is Ready indicator off, and is Ops Chk indicator blinking?

No

Make sure covers and print unit are closed. Be sure printer has a supply of forms, properly loaded and without jams. (Operator’s Guide, Form GA27-2742, tells you how to do this.) Start operation again.

Yes

Are Sys Avl and Ops Chk indicators both off?

No

Fill out an Operator Trouble Report. Ask your supervisor to verify your problem and check communications between the Control Unit and the CPU.

Yes

Is the paper path free of jams?

Clear jam. (Check forms chute, forms guides, exit cover, forms tractors.) Start operation again.

Page 19
Is the printer still inoperative?

Yes

Place PRINT PAT/ON LN/PRINT BFR switch in PRINT PAT position.

Place MODE 1/MODE 2 switch in MODE 2 position.

Momentarily operate the Start Test switch.

Was the printout successful? (See Figure 5 for example.)

Yes

Place PRINT PAT/ON LN/PRINT BFR switch in ON LN position. Fill out an Operator Trouble Report and ask your supervisor to call the IBM service representative.

No

Place PRINT PAT/ON LN/PRINT BFR switch in PRINT PAT position.

Place MODE 1/MODE 2 switch in MODE 1 position.

Momentarily operate the Start Test switch.

Was the printout successful? (See Figure 6 for example.)

Yes

No

Place PRINT PAT/ON LN/PRINT BFR switch in ON LN position. Fill out an Operator Trouble Report and ask your supervisor to call the IBM service representative.
Is the print quality poor (bad spacing and alignment; missing or smudged characters)?

No

Make sure type belt release lever is fully closed (to the rear), ribbon is properly installed, and forms thickness control is set for the number of forms you are using. Start operation again.

Yes

Is your printer working properly now?

No

Place PRINT PAT/ON LN/PRINT BFR switch in ON LN position. Fill out an Operator Trouble Report and ask your supervisor to call the IBM service representative.

Yes

Are you getting the expected printout?

NO

Place PRINT PAT/ON LN/PRINT BFR switch in ON LN position. Fill out an Operator Trouble Report and ask your supervisor to call the IBM service representative.

END

YES
Figure 5. All-H Test Pattern (Mode 2) 3288 Model 2
Figure 6. Alphameric Test Pattern (Mode 1) 3288 Model 2
3275 DISPLAY STATION

- Is there a cursor on the screen?
  - YES
  - NO
    - Is the terminal's power cord plugged into a wall outlet?
      - Yes
        - Is the power (OFF-PUSH) switch pulled out?
          - Yes
            - Pull the switch out and start procedure again.
          - No
            - Yes
              - Does the wall outlet have power?
                - Yes
                  - Ask your supervisor to have the power restored. After this is done, try your procedure again.
                - No
                  - No
                    - Yes
                      - Rotate the OFF-PUSH switch clockwise. Is there a cursor on the screen now?
                        - Yes
                          - You have a machine problem. Fill out an Operator Trouble Report and ask your supervisor to call the IBM service representative.
Is there some other problem with your display screen?

NO

YES

Do any of the following describe the problem?
1. One or many horizontal lines across screen.
2. Screen is full of squares.
3. Brightness control (nearest knob on OFF-PUSH switch) has no effect.
4. Image is not focused.
5. Image size is incorrect.
6. Image is off-center or tilted on display.
7. Spacing between rows of characters is incorrect.
8. Characters are wrong size.
9. Characters are not formed correctly.
10. Cursor is incorrectly positioned (below or through characters).
11. Cursor is too long or too short.
12. More than one cursor appears on screen.
13. Display indicators (SYSTEM AVAILABLE, INSERT MODE, INPUT INHIBITED) are not working properly.

No

Yes

Fill out an Operator Trouble Report. Ask your supervisor to verify your problem and to call the IBM service representative.

B

Explain your difficulty to your supervisor.
Do you have a problem with your keyboard?

NO

YES

Is the INPUT INHIBITED light on?

No

Yes

Press the RESET key and start your operation again.

Is INPUT INHIBITED light still on?

No

Yes

Fill out an Operator Trouble Report. Ask your supervisor to verify your problem and call the IBM service representative.

Do any of the following describe the problem?

1. One or more keys or spacebar broken, loose, missing, or bind when operated.
2. CLEAR key fails.
3. Cursor control keys (↑ ↓ ← →) fail or cause INPUT INHIBITED light to come on.
4. Typematic keys do not work.
5. Character keys fail.
6. Program access keys (ENTER, PA1-PA3, TEST REQ, PF keys) fail.

No

Yes

Fill out an Operator Trouble Report. Ask your supervisor to verify your problem and call the IBM service representative.

Describe your problem in your own words to your supervisor.
Do you have a problem with your Selector Pen (optional feature)?

- **NO**
- **YES**
  - Do any of the following describe the problem?
    1. Selector Pen is damaged, or operation is not smooth when tip is pressed.
    2. Detect bars appear when pen is not used.
    3. Detect bars appear and remain after selection.
    4. Detect bars appear, but designator characters do not change.

  - **No**
    - **Yes**
      - Fill out an Operator Trouble Report. Ask your supervisor to verify your problem and call the IBM service representative.
      - Describe your problem to your supervisor in your own words.
Do you have a problem with your Identification Badge Reader (optional feature)?

NO

YES

Does the magnetic identification card fail to read?

No

Yes

Try another magnetic card. If it works, your original card may be defective. If it does not work, fill out a Trouble Report Form.

Is your card jammed inside the reader?

No

Yes

Fill out an Operator Trouble Report. Ask your supervisor to verify your problem and call the IBM service representative.

Describe your problem to your supervisor in your own words.

Is yours a switched-line 3275 (you have a dialable modem)?

NO

YES

When you try to dial the computer site, do you get a busy signal, no answer, or no data tone?

No

Yes

Ask your supervisor to have the modem checked for a possible problem and, if necessary, to contact the computer site to make sure the computer is operational.
• Is the SYSTEM READY light on?

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**YES**

• Is the modem turned on?

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**YES**

• Is the modem plugged into a wall outlet?

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**YES**

• Does the wall outlet have power?

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**YES**

• Is the SYSTEM READY light on now?

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**YES**

Check whether other terminals on the line (if any) are failing. Ask your supervisor to inquire whether there is any problem at the computer site. If the problem is determined to be with your 3275, fill out an Operator Trouble Report and ask your supervisor to call the IBM service representative.
Page 28

• Is the SYNC SEARCH light blinking on and off?

YES

• Check whether other terminals on the line (if any) are failing. Ask your
  supervisor to enquire whether there is any problem at the computer site.
  If the problem is determined to be with your 3275, fill out an Operator
  Trouble Report and ask your supervisor to call the IBM service representative.

NO

• Is the STATUS light on or blinking?

YES

• You have a machine problem. Fill out an Operator Trouble Report and
  ask your supervisor to call the IBM service representative.

NO

• (Normal condition)

Page 30
Is the SYSTEM AVAILABLE light on?

- YES
  - Press RESET key; then press ENTER key. Did the SYSTEM AVAILABLE light come on?
    - Yes
      - Apparently the computer is not available to operate with your terminal. Stand by. If the computer does not become available within a reasonable period, ask your supervisor to contact the computer site to report the problem.
    - No
      - Are you getting the expected responses?

- NO
  - Are you getting the expected responses?
    - YES
      - END
    - NO
      - Ask your supervisor to contact the computer site to report a possible programming problem.
3271 CONTROL UNIT

- Are all the lights on the side of the control unit off?

  YES  NO

  Page 32

  - Is the control unit plugged into a wall outlet?

    YES  NO

    - Plug unit into wall outlet and try operation again.

    - Is the control unit power-on switch in the ON position?

      YES  NO

      - Turn unit on and try operation again.

      - Does the wall outlet have power?

        YES  NO

        - Ask your supervisor to have power restored. After this is done, try your operation again.

        - Are all the lights on the side of the control unit still off?

          YES  NO

          Page 32

          - You have a machine problem. Fill out an Operator Trouble Report and ask your supervisor to call the IBM service representative.
Is the SYSTEM READY light on?

YES

Is the modem plugged into a wall outlet?

YES

Plug in the modem and try again.

NO

Does the wall outlet have power?

YES

Ask your supervisor to have power restored. After this is done, make sure your modem is turned on and try your operation again.

NO

Check whether other terminals on the line (if any) are failing. Ask your supervisor to enquire whether there is any problem at the computer site. If the problem is determined to be with your 3271, fill out an Operator Trouble Report and ask your supervisor to call the IBM service representative.
Does the SYNC SEARCH light blink on and off?

YES  NO

- Ask your supervisor to check with the central computer site to determine that the computer is running and that your device is in the "active" polling list. If these checks are OK, you probably have a machine problem. Fill out an Operator Trouble Report and ask your supervisor to call the IBM service representative.

- Is the STATUS light on or blinking?

NO  YES

- (Normal condition)  - You have a machine problem. Fill out an Operator Trouble Report and ask your supervisor to call the IBM service representative.

- END
3272 CONTROL UNIT

- Is the control unit plugged into a wall outlet?

  YES
  NO
  
  Plug unit into wall outlet and try operation again.

- Does the wall outlet have power?

  YES
  NO
  
  Ask your supervisor to have power restored. After this is done, try your operation again.

- Is control unit turned on?

  YES
  NO
  
  Turn on control unit and try operation again.

  If control unit is still not functioning properly, fill out an Operator Trouble Report and ask your supervisor to call the IBM service representative.
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