

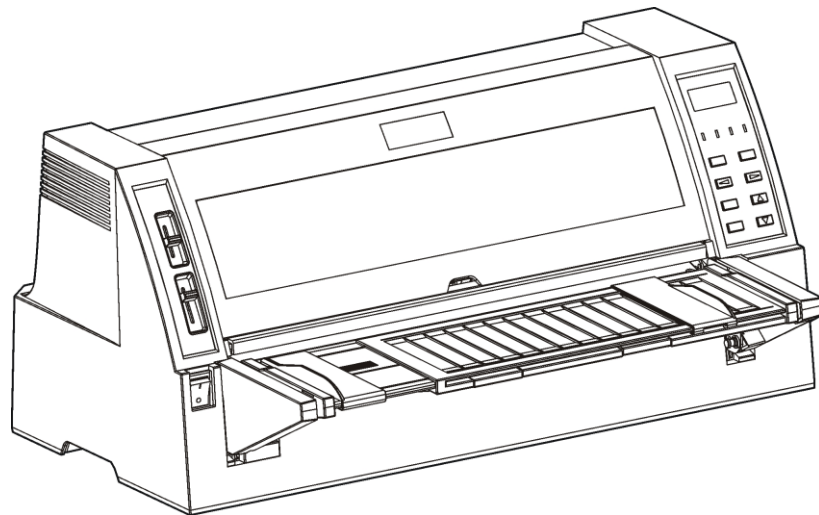


**Accel-7450**

**24-Pin Dot Matrix Printer**

# **Alignment & Test Guide**

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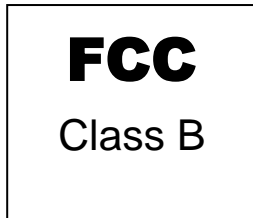


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For detail service and repair instructions the ACCEL 7450 Service Guide is available for purchase.

## Regulatory Statement:



This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.



16PU  
NWGQ  
E247562  
120VAC ~ 60Hz ~ 2.3A

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# SAFETY

This GUIDE is to help qualified service technicians repair or adjust your ACCEL-7450 printer.

Please read the guide carefully before repairing and making adjustments to your printer.

The warranty will not cover any trouble with or damage to the printer resulting from repair or modification by unqualified persons.

## Operational safety



## CAUTION

- Do not touch the print head immediately after printing because it is too hot.
- Do not put your finger under the tractor cover while loading fanfold paper.
- Do not put your finger on the tractor gear, when using the rear tractor.

## Cautions in setting up



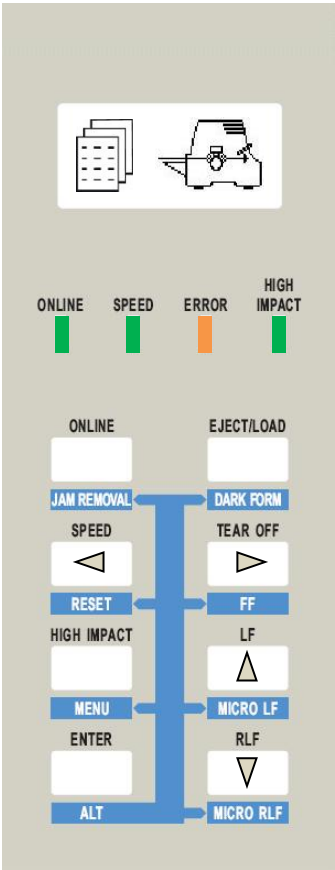
## CAUTION

- Unpack the printer. Make sure that the printer body and all accessories are included in the package and no parts are damaged.
- Place the printer on a rigid, horizontal base in a location that is free of vibration.
- Do not use the printer in a location exposed to direct sunlight or close to a heater or other heat generating equipment.
- Before connecting or disconnecting the interface cable, be sure to turn off the printer.
- Do not use the printer in a dusty location or any location subject to sudden changes in temperature and humidity.
- Do not connect the printer to a non-standard power source.
- Never try to print without a ribbon cassette installed and paper loaded.
- Rear Operating Clearance**
  - Fanfold Paper: 2" plus Paper Length
  - Manual Cut Sheets: Paper Length Minus 9"
- Take care not to twist the ribbon while installing the ribbon cassette.
- If the case or cover becomes dirty, clean it with a soft cloth moistened with a small quantity of neutral detergent diluted with water. Never use a hard cloth or volatile solvent such as alcohol, thinner, or benzene.
- Push the lock levers of both tractors to the LOCK positions firmly when loading fanfold paper.
- Do not turn off the printer during printing, as this may lead to a malfunction.

# CONTROL PANEL

The liquid crystal display (LCD) on the control panel displays the current printer status, user messages and menu functions.

## Control Panel Key Functions



### Basic Printer Functions

<b>ONLINE</b>	This key is used to enable printing (ONLINE light ON) or disable printing (ONLINE light OFF).
<b>EJECT/LOAD</b>	Pressing this key loads paper to TOF and returns (Ejects) paper back to the load/parked position when pressed a second time.
<b>SPEED</b>	Pressing this key displays the currently selected printing quality on the LCD. Each press of the key displays and advances the print quality.
<b>TEAR OFF</b>	Pressing this key, automatically advance pin feed paper perforation to the paper cutter position.

<b>HIGH IMPACT</b>	Pressing this key temporarily changes the print impact for multipart forms from NORMAL to DARK print mode. The HIGH IMPACT LED light is ON when DARK print mode is selected.
<b>LF</b>	Pressing this key feeds the line in the forward direction at a pitch of 1/6 inch regardless of the LF PITCH setting in the printer's control panel menu. Holding this key down produces continuous forward line feeding.
<b>ENTER</b>	Pressing this key selects the setting displayed on the LCD.
<b>RLF</b>	Pressing this key feeds paper in the reverse direction at a pitch of 1/6 inch regardless of the LF PITCH setting in the printer's control panel menu. Holding this key down produces continuous reverse line feeding.
<b>ALT + JAM REMOVAL</b>	Pressing this key combination allows paper to be easily removed. Use this special mode if the EJECT key does not discharge the paper.
<b>ALT + DARK FORM</b>	Pressing this key combination causes the printer to load manual feed forms regardless of their color. Use this special mode if printing starts at the wrong place due to non-reflective (dark) areas on a form.
<b>ALT + RESET</b>	Pressing this key combination evokes a power on reset and clears print buffer. The LCD displays "INITIALIZING" for a few seconds then returns to ready mode.
<b>ALT + FF</b>	Pressing this key combination advances paper one form distance.
<b>ALT + MENU</b>	Pressing this key combination opens the printer's control panel menu system. Refer to the USER MANUAL for features and selection procedure.
<b>ALT + MICRO LF</b>	Pressing this key combination micro feeds the line in the forward direction at a pitch of 1/20 inch intervals.
<b>ALT + MICRO RLF</b>	Pressing this key combination micro feeds the line in the reverse direction at a pitch of 1/20 inch intervals.

## Calibration/Default Reset

<b>INITIALIZATION #1 (No Paper)</b>	Power-up while pressing HIGH IMPACT + LF keys together. LCD will display INITIALIZING... EEPROM INITIAL 1. User settings are restored.
<b>INITIALIZATION #2 (Cut-sheet)</b>	Power-up while pressing SPEED + TEAR OFF keys together. LCD will display INITIALIZING... EEPROM INITIAL 2 / Cut Sheet. Sensor threshold settings are set.
<b>INITIALIZATION #2 (Tractor)</b>	Power-up while pressing ONLINE + EJECT/LOAD keys together. LCD will display INITIALIZING... EEPROM INITIAL 2 / Tractor. Tractor sensor threshold setting is set.

## Diagnostic Test Functions

<b>SENSOR &amp; GAP MOTOR OUTPUT</b>	Power-up while pressing ALT + MENU keys together. LCD will display the following: <ul style="list-style-type: none"> <li>➤ L.EG ~ left paper edge sensor value (sensor is located on head carrier)</li> <li>➤ R.EG ~ right paper edge sensor value (sensor is located on head carrier)</li> <li>➤ PS ~ cut-sheet media sensor value (sensor is located above paper tray)</li> <li>➤ GAP ~ position (number of steps from HOME to PLATEN)</li> </ul> NOTE: the above values are dynamic and update with changing paper or printing.
<b>PRINT GAP TEST</b>	Power-up while pressing EJECT/LOAD + TEAR OFF + LF keys together. The printer will begin gap testing continuously. Approximately, every 4-seconds a new Gap operation is performed. The current and historic values are displayed as follows: <ul style="list-style-type: none"> <li>➤ MIN ~ smallest print gap distance recorded</li> <li>➤ MAX ~ largest print gap distance recorded</li> <li>➤ CUR ~ most recent print gap distance</li> <li>➤ TOTAL ~ number of print gaps performed</li> <li>➤ MISS ~ number of times print gap was not within tolerance</li> </ul>
<b>USB DATA LOSS TEST</b>	Power-up normally. Press ONLINE to take the printer offline. Press and hold the ENTER key for five (5) seconds. The LCD will display the following: <ul style="list-style-type: none"> <li>➤ IN ~ number of bytes received from USB port</li> <li>➤ OUT ~ number of bytes retrieved from buffer and currently printed</li> </ul>
<b>ASCII SELF TEST</b>	Power-up while pressing LF key. LCD will display INITIALIZING... CUT SHEET / ASCII TEST. Press ONLINE and SPEED key to change print speed. Press ONLINE to resume printing.
<b>HEX DUMP</b>	Power-up while pressing SPEED key. LCD will display INITIALIZING... HEX DUMP.
<b>CHARACTER "H" TEST</b>	Power-up while pressing TEAR OFF key. LCD will display INITIALIZING... CUT SHEET / H PRINT
<b>PRINT NEEDLE TEST</b>	Power-up while pressing HIGH IMPACT key. LCD will display INITIALIZING... CUT SHEET / PIN TEST

## Printer Alignment Functions

<b>HA GAP ADJUSTMENT</b>	Power-up while pressing LF + RLF keys together. LCD will display the following: <ul style="list-style-type: none"> <li>➤ HEAD GAP ADJ DW, numeric value (larger number/less gap)</li> <li>➤ HEAD GAP ADJ UP, numeric value (larger number/greater gap)</li> </ul>
<b>MULTI-PART GAP ADJUST</b>	Power-up while pressing TEAR OFF + LF + RLF keys together. LCD will display the following: <ul style="list-style-type: none"> <li>➤ HEAD GAP ADJ MUL, numeric value (larger number/greater gap)</li> </ul>
<b>PRINT REGISTRATION ADJUSTMENT</b>	Power-up while pressing ENTER + RLF keys together. LCD will display the following: <ul style="list-style-type: none"> <li>➤ HORIZONTAL DOT ADJUSTMENT, Mode 0~4.</li> </ul>
<b>TEAR OFF ADJUSTMENT</b>	Press TEAR OFF key 6-seconds. LCD will display the following: <ul style="list-style-type: none"> <li>➤ LF – INC (INCREASE) advances the paper further outside printer</li> <li>➤ RLF – DEC (DECREASE) retracts the paper inside printer</li> <li>➤ ETNTER – saves setting</li> </ul>



# ALIGNMENT & TEST

## HA Print Gap

### Scope:

This adjustment is used to set the nominal operating print gap (space between printhead and platen). Performing this procedure may be necessary when replacing the printhead, or experiencing light, missing and smearing print. This procedure is completed when “HA Print Gap Down” (downward pressure), and “HA Adjust UP” (printhead vs. platen gap) is adjusted.



Physical measurements (with feeler gauges) may not be necessary after restoring print gap values found on the HA ADJUST label located inside the printer behind the printhead carrier. Refer to **page 10** for details. Use the following HA GAP ADJ DOWN, HA GAP ADJ UP and Multi-part Print Gap procedures to restore label values.

### Required materials:

- ❖ 8.5X11 inch cut sheet paper
- ❖ .004 inch feeler gauge, one foot long
- ❖ .006 inch feeler gauge, one foot long

### Procedure:

#### HA GAP ADJ DOWN

1. Select control panel **AUTO** print gap, and Cut Sheet  modes.
2. With the printer power turned OFF, press and hold the LF and RLF keys while turning ON the printer power switch. Hold keys until printer initialization (carriage movement) is completed. The printer is now in “HA GAP ADJ DW” mode, the current setting is displayed on the LCD (\* indicates selection). Decreasing the numeric value reduces downward carriage pressure.
3. Load a piece of cut sheet paper landscape orientation (  ) into the printer.  
**NOTE: failure to load paper in the landscape orientation will cause gap discrepancy.**
4. Press the ENTER key and verify the print gap is electronically confirmed in two positions across the platen. Print gap is established when the printhead moves down and up vertically.

5. Press the ENTER key a second time to print “H” pattern. Paper will advance forward.
6. Press the LF key to decrease “HEAD GAP ADJ DW” value displayed on LCD. Press the ENTER key twice to print and verify “H” pattern. Continue repeating this step one number setting until “H” pattern print disappears. **NOTE: if “H” pattern print was not witnessed during first print pass, increase numeric value one setting until “H” pattern print appears.**

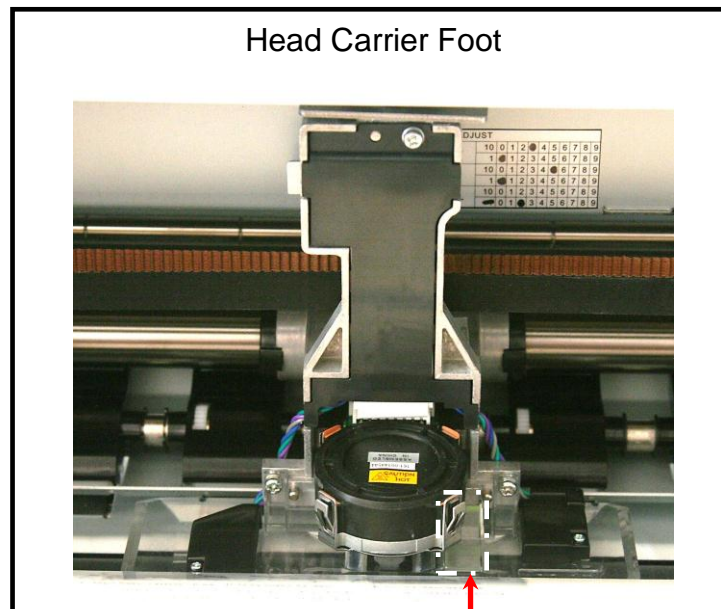
HEAD GAP ADJ DW	
16	*
17	

7. Press the RLF key to increase/adjust “HEAD GAP ADJ DW” value by five additional settings. **Explanation: current down value ~6~ (no “H” print) + 5 = 11, the final down setting.**
8. Press the TEAR OFF key to enter “HEAD GAP ADJ UP” mode and verify value displayed on LCD. Typical factory setting is 40 ~ 50.

HEAD GAP ADJ UP	
50	*
51	

## HA GAP ADJ UP

9. Press the ENTER key and verify the print gap is electronically positioned. Print gap is established when the printhead moves down.
10. Press the ENTER key a second time to print "H" pattern. Paper will advance forward.
11. Press the EJECT key to remove paper.
12. Press the HIGH IMPACT key to exit menu and save settings.
13. Load cut sheet paper and start self-test print (LF key + Power Up).
14. Press the ONLINE key to stop test print. Turn the printer power OFF and manually remove paper by pulling on trailing edge. **Note: moving the printhead carrier by hand will adversely change the gap measurement in the next step.**
15. Using a .004" feeler gauge check the gap between the head carrier foot and platen. **Specification: .004" fits, .006" does not fit.**



Insert feeler gauge between  
metal foot and platen

**NOTE: If .004" print gap has been achieved skip steps 16 through 22.**

16. With the printer power turned OFF, press and hold the LF and RLF keys while turning ON the printer power switch. Hold keys until printer initialization (carriage movement) is completed.
17. Press the TEAR OFF key to enter "HEAD GAP ADJ UP" mode.
18. Press the LF or RLF key based on feeler gauge measurements; RLF key will increase gap value (enlarge print gap), or LF key will decrease gap value (reduce print gap).
19. Press the ENTER key two times to print "H" pattern. Paper will advance forward.
20. After setting desired gap, press the EJECT key to remove paper.
21. Press the HIGH IMPACT key to exit menu and save settings.
22. Repeat steps 13 through 21 until .004 inch print gap is achieved.

END OF PROCEDURE

## Multi-Part Print Gap



### Scope:

This adjustment is used to correct; multi-part form contrast, light print on last form layer, or smearing print on top sheet of form.

### Required materials:

- ❖ Multi-part form

### Procedure:

1. Select control panel **AUTO** print gap, and Cut Sheet  modes.
2. With the printer power turned OFF, press and hold the TEAR OFF, LF and RLF keys while turning ON the printer power switch. Hold keys until printer initialization (carriage movement) is completed. The printer is now in "HEAD GAP ADJ MUL" mode, the current numeric setting is displayed on the LCD (\* indicates selection). Typical factory setting +0 ~ 5. Increasing the (+) numeric value will result in darker print.  
Load a multi-part form landscape (  ) into the printer.
3. Press the ENTER key twice to print "H" pattern. Paper will advance forward.
4. Press the LF key to decrease, or RLF key to increase "HEAD GAP ADJ MUL" value displayed on LCD.
5. Press the ENTER key twice to print and verify "H" pattern contrast.
6. Eject the printed form to review contrast'
7. Repeat above steps to achieve desired contrast/gap.

END OF PROCEDURE

## HA Gap Adjust Label

Refer to the HA AJUST label located inside the printer behind the printhead carrier. The numbers shown on the label represent the HA Print Gap settings made prior to shipment. Restore the settings shown on the label using the HA PRINT GAP procedures on **pages 6~9**. The following example shows how to read the table.

HA ADJUST											
DW	10	0	●	2	3	4	5	6	7	8	9
	0	0	1	2	3	4	5	●	7	8	9
UP	10	0	1	2	3	●	5	6	7	8	9
	0	0	1	2	3	4	●	6	7	8	9
MUL	10	0	1	2	3	4	5	6	7	8	9
	0	0	●	2	3	4	5	6	7	8	9

**NOTE:** If a minus sign is shown in the first-digit line of "MUL," the setting is a negative number.

EXAMPLE: Down = 16  
 UP = 45  
 Multiple = 1

- ❖ DW  
 This is the DOWN PULSE setting. It sets the distance by which the head travels downward in the auto gap mode.
- ❖ UP  
 This is the UP PULSE setting. It sets the distance (print gap) by which the head travels backward in the auto gap mode.
- ❖ MUL (HA MULTIPART ADJUST)  
 This is the HA MULTIPART ADJUST setting.  
 It sets the print density for copy paper. The HA MULTIPART ADJUST setting adjustment is enabled only in the HA auto mode.  
 The HA MULTIPART ADJUST setting is adjustable between -15 and +15.  
 As the setting decreases, the print darkness increases.

## Horizontal Print Registration


### Scope:


This adjustment is used to align adjacent lines of print horizontally.

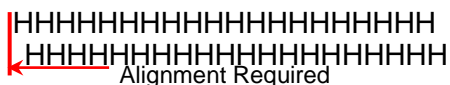
### Required materials:

- ❖ Cut-sheet paper, or pin feed paper

### Procedure:

1. Select control panel **AUTO** print gap, and Cut Sheet  modes. Tractor mode and pin feed paper is optional.
2. With the printer power turned OFF, press and hold the ENTER and RLF keys while turning ON the printer power switch. Hold keys until printer initialization (carriage movement) is completed. The printer is now in "HORIZONTAL ADJ" mode, the current numeric setting is displayed on the LCD.

3. Load a cut-sheet paper landscape (  ) into the printer.
4. Press the ENTER key to print MODE 0, "H" pattern.
5. Review "H" pattern to determine required +/- alignment.

Print Example: 

6. Press SPEED or TEAR OFF key to align print horizontally (+/-).
7. Press ENTER to select and print new adjustment.
8. Repeat steps to achieve print line alignment.
9. Press EJECT/LOAD to select next print mode.
10. Repeat above steps for each print pitch mode (MODE 0~4).

END OF PROCEDURE

## Vertical Print Registration


### Scope:

This adjustment is used to align first line of print vertically in relation to the top of form.

### Required materials:

- ❖ Cut-sheet paper

### Procedure:

1. Select control panel **AUTO** print gap, and Cut Sheet  modes.
2. Power ON printer.
3. Load a sheet of cut-sheet paper.
4. Press and hold the ENTER key for six seconds to enter “TOP EDGE ADJUST” mode.
5. Press LF or RLF keys to adjust paper up or down. **NOTE: LF key moves paper up, print down on the page. RLF key moves paper down, print up on the page. Paper moves 1/60 inch (10/60 inch maximum).**
6. Press ENTER key to save new paper setting and exit.

END OF PROCEDURE

## Tear Off (pin feed present distance)

### Scope:

This adjustment is used to align the tractor pin feed paper tear off position.

### Required materials:

- ❖ Tractor pin feed paper

### Procedure:

1. Install tractor assembly and continuous pin feed paper.
2. Power ON printer.
3. Press and hold the TEAR OFF key for six seconds to enter adjustment mode.
4. Press LF key to increase, or RLF key to decrease paper location in reference to the printer enclosure tear off position.
5. Press the ENTER key to save new setting.

END OF PROCEDURE

## Cut-sheet pinch roller adjustment

### Scope:

This adjustment is used to set front and rear pinch roller assembly tension to prevent Cut-sheet paper skewing.

### Procedure:

1. With the printer power turned OFF, press and hold the ONLINE key while turning ON the printer power switch. Hold key until printer initialization (carriage movement) is completed. The printer is now in the hidden menu mode.
2. Press HIGH IMPACT and ENTER keys to enter MENU SETUP.
3. Press the TEAR OFF key twice to display "MANUAL FRONT ADJ" on the LCD.
4. Press RLF key to select 500.
5. Press ENTER key to choose setting. An \* will appear indicating the selection.
6. Press the TEAR OFF key once to display "MANUAL REAR ADJ" on the LCD.
7. Press RLF key to select 250.
8. Press ENTER key to choose setting. An \* will appear indicating the selection.
9. Press HIGH IMPACT key to save and exit menu.

END OF PROCEDURE



## Diagnostic Test Functions

### Hexadecimal Dump Function

The hexadecimal dump function produces an exact printout of the codes received by the printer.

#### Procedure:

1. To enter the hexadecimal dump mode, depress the **SPEED** button while turning ON the printer's power.
2. When the host sends output to the printer, all codes and data are printed in hexadecimal format. The example as below.

```

***** HEXADECIMAL DUMP *****
(0000) 1B 40 A9 A6 29 29 A9 A6 2A 2A A9 A6 2B 2B A9 A6
(0010) 2C 2C A9 A6 2D 2D A9 A6 2E 2E A9 A6 2F 2F A9 A6
(0020) 30 30 A9 A6 31 31 A9 A6 32 32 A9 A6 33 33 A9 A6

```

**NOTE:** Load the paper along the left side (the "0" mark on the ruler).

3. By comparing the characters printed in the right column with the hex codes, you can verify exactly what codes are being sent to the printer. If the code sent is a printable character (20h-7Eh), that character is printed in the right column. If the code sent is a non-printable character, such as a control code, a dot is printed.
4. To exit from the hexadecimal dump mode, turn off the power switch or press the RESET ([ALT] + [SPEED]) button.

END OF PROCEDURE

### Self-Test Function

The self-test prints a continuous pattern of ASCII characters. The font and print quality is determined by the control panel or menu settings.

#### Procedure:

1. To initiate the self-test, depress the LF button while turning ON the printer's power.
2. To terminate or stop the self-test function, either turn off the power or press the **RESET** ([ALT] + [SPEED]) button.

END OF PROCEDURE

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