

LATE 5 PLUS

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LA75 Plus Companion Printer Service Guide

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**digital equipment corporation
maynard, massachusetts**

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About This Manual

This guide describes how to troubleshoot, install, repair and maintain the LA75 Plus Companion Printer. The information is presented in the following chapters:

- Chapter 1 Overview**
Gives a brief overview of the LA75 Plus and its capabilities.
- Chapter 2 Troubleshooting**
Describes fault symptoms, their probable causes, and solutions.
- Chapter 3 Tests and Diagnostics**
Describes the use of the LA75 Plus self tests.
- Chapter 4 Installation**
Describes the preparation and installation in a step-by-step process.
- Chapter 5 Setup**
Describes the setup mode.
- Chapter 6 Removing and Replacing FRUs**
Lists the Field Replaceable Units (FRUs). Explains, using a step-by-step process, how to remove, replace, and retest.
- Chapter 7 Maintenance and Cleaning**
Describes the maintenance tasks and cleaning techniques.
- Chapter 8 Automatic Sheet Feeder (ASF)**
Includes installation and removal of the sheet feeder; plus setting it up, testing, and troubleshooting.
- Chapter 9 Firmware**
Gives a brief description of the firmware and its location.

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Appendixes provide the following information:

Appendix A	Specifications
Appendix B	Spares and Service Kit Part Numbers
Appendix C	Meaning of the Indicators
Appendix D	Function of the Switches
Appendix E	Functional Diagram
Appendix F	Control Character Acronyms
Appendix G	Features List
Appendix H	LA75 Plus/LA75 Differences

Conventions Used In This Guide

WARNINGS contain information to prevent personal injury.

CAUTIONS contain information to prevent damage to equipment.

NOTES contain helpful or general interest information.

PN refers to a Digital part number.

Reference Documentation

Title	Order Number
<i>LA75 Plus Desktop Service Guide</i>	EF-G090B-03
<i>LA75 Plus Companion Printer Installation and User's Guide</i>	EK-LA75E-UG-001
<i>LA75 Plus Companion Printer Programmer's Reference Manual Supplement</i>	EK-PPLV2-PS-001
<i>DEC ANSI-Compliant Printing Protocol Level 2-PRM</i>	EK-PPLV2-PM-001
<i>LA75 Plus Companion Printer Technical Manual</i>	ER-LA75P-TM-001
<i>LA75 Plus Companion Printer Sheet Feeder Guide</i>	EK-LA75E-SF-001

1

Overview

The LA75 Plus is a reliable, low cost, narrow carriage, dot matrix printer. It is designed to be a personal desk top printer suitable for general business applications. It has flexible paper handling and is capable of printing on single sheets, multiple part forms, and envelopes. The print quality is suitable for limited word processing in a small-to-medium computer environment.

The LA75 Plus supports serial and parallel interfaces. Both are located on the Main PCB kit. The serial interface connects with Digital compatible systems through Digital's DECconnect, modular 6-pin type connector (MMJ).

The parallel interface connects through a standard 26 pin Centronics type connector.

The active port is selected by the Setup function.

The LA75 Plus Companion Printer emulates Digital's ANSI Conformance Level-2 printer protocol and IBM Proprinter X24 protocol. These protocols reside in the printer.

The LA75 Plus is produced in four voltage models to meet all worldwide voltage requirements.

The LA75 Plus enables the user to select a Quiet print mode, in which acoustic noise is reduced to a minimum by performing printing with double passes.

The LA75 Plus also has self test diagnostics. These are initiated at power-up by pressing front panel switches when the power is switched on.

1.1 Recommended Tools

You are recommended to use the following tools:

Table 1-1 Recommended Tools

Part Number	Description
29-26106-00	50 Hz Terminal Tool Kit
29-26109-00	60 Hz Terminal Tool Kit
12-25083-01	MMJ Loopback Connector
29-27887-01	Parallel Loopback Connector
29-11762-00	Antistatic Kit

1.2 Identification of the Parts

The following figures and tables show the main parts of the LA75 Plus Companion Printer.

Table 1-2 LA75 Plus Part Names

Item Number	Item Name
1.	Access Cover
2.	Tractor Release Lever
3.	Paper Release Lever
4.	Printhead Adjustment Lever
5.	Control Panel
6.	Printhead
7.	Ribbon Cartridge
8.	Paper Parking Lever
9.	Paper Cover
10.	Bail Bar
11.	Parallel Port
12.	Serial Port
13.	Power Cord Socket
14.	Platen Knob
15.	AC Line Fuse

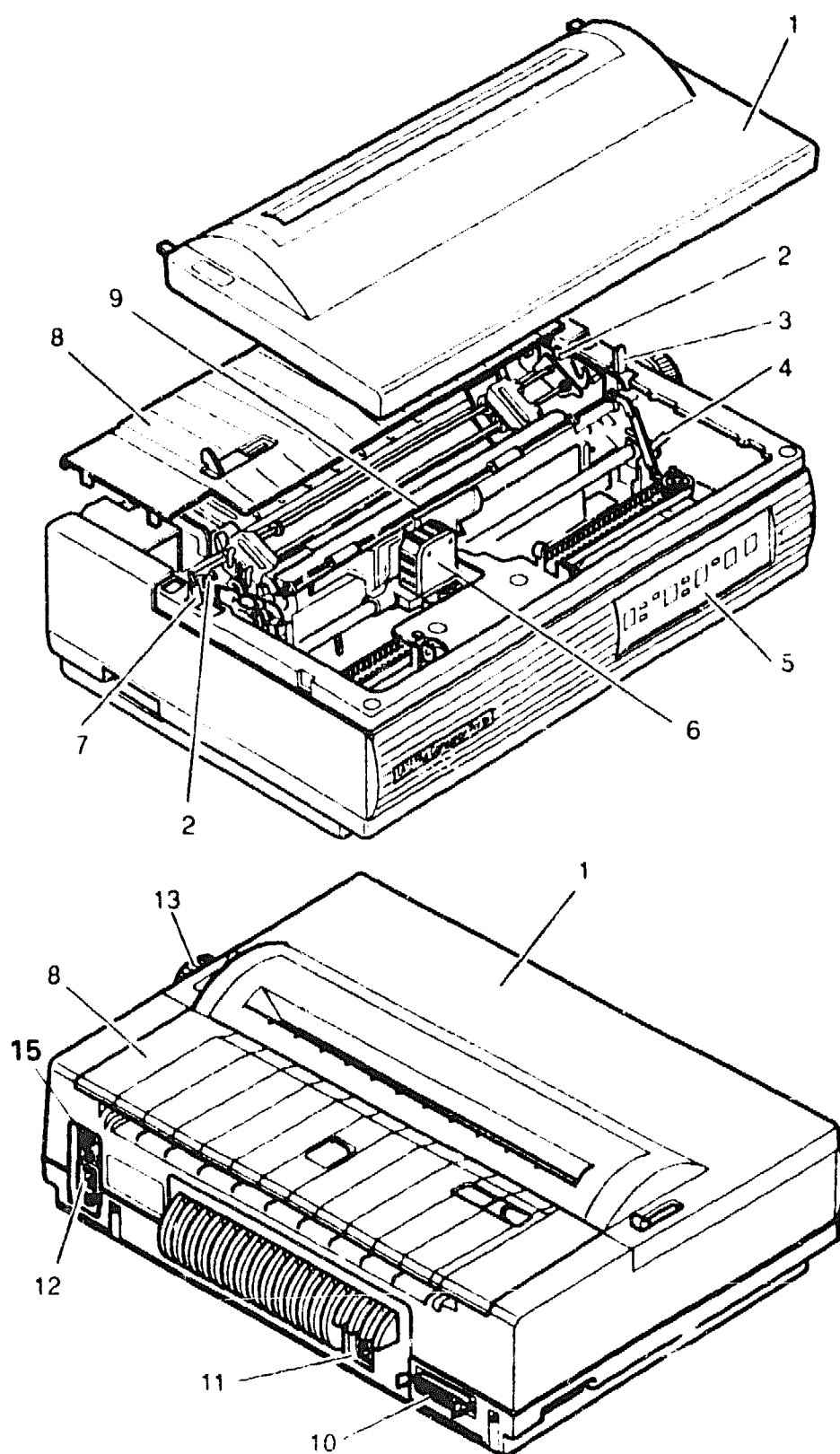


Figure 1-1 Identification of the Parts

2

Troubleshooting

2.1 Introduction

The general office environment, in which the LA75 Plus will be used, has its own hazards for equipment like this. Make sure that airborne particles and paper dust and the drying out of the light lubricating oil are not the main factors of a poor performance. These problems can be rectified by cleaning and lubrication, but only in exceptional circumstances should they be done on-site. Internal cleaning and lubrication are repair center activities.

WARNING

The procedures described in this chapter involve the removal of the system covers and should be performed by trained personnel only.

ADVARSEL!

Ifølge de procedurer, som er beskrevet i dette kapital, skal systemets beskyttelsesplader fjernes; dette bør kun udføres af personer der ved hvordan dette skal gøres.

WAARSCHUWING

Bij de procedures die in dit hoofdstuk worden beschreven dienen bepaalde delen van de systeemomhulling te worden verwijderd; dit mag uitsluitend worden gedaan door opgeleid personeel.

NOTE

VAROITUS!)Tässä luvussa kuvatut toimenpiteet liittyvät järjestelmän suojakansien irrottamiseen. Ainoastaan koulutettu henkilökunta saa suorittaa nämä toimenpiteet.

AVIS!

Ce chapitre décrit les interventions qui demandent que les couvercles extérieurs des appareils soient enlevés. Ces travaux devraient être mis en main uniquement par des techniciens expérimentés.

2-2 Troubleshooting

VORSICHT!

Bei der Ausführung der in diesem Kapitel beschriebenen Anweisungen müssen die Systemabdeckungen entfernt werden. Dies sollte nur von geschultem Personal ausgeführt werden.

אזהרה

הפעולות המתוארות בפרק זה, כרוכות בהסרת המכסים של המערכת ויבוצעו אך ורק על ידי אדם מוסמך.

ATTENZIONE

La procedura descritta in questo capitolo comporta la rimozione delle coperture e deve essere eseguita solo da personale specializzato.

仕 事

本章では、本体カバーの取り外し等について述べてあります。作業は、必ず専門の担当者によっておこなってください。

ADVARSEL

I dette kapitlet beskrives bl. a. hvordan man fjerner dekslene rundt systemet. Dette arbeidet må bare utføres av fagfolk.

AVISO

Os procedimentos descritos neste capítulo respeitam à forma como se retiram as proteções do sistema. Dada a sua especificidade, recomendamos que seja executado por pessoal especializado.

¡ATENCIÓN!

Los procedimientos descritos en este capítulo incluyen el desmontaje de las cubiertas del sistema y debe ser realizado solamente por personal entrenado.

WARNING

I detta kapitel beskrivs hur systemkaapan tas bort. Detta faar endast utfoeras av utbildad personal.

2.2 General Troubleshooting Rules

- **Learn about the problem.**
Talk to the operator who is using the equipment and probably knows more about the problem than anyone else.
- **Examine the environment.**
Could it cause problems for the equipment?
For example, is it very dirty or very hot?
- **Identify the problem.**
Before removing any FRUs, demonstrate the fault for yourself.
The printout of the LA75 Plus will show many of the problems.
- **Isolate the problem.**
Use the faultfinding notes and tables and any other assistance to help you.
Also check the initial power-up sequence as shown in Section 3.1.
- **Correct the problem.**
Use replacement and adjustment procedures to bring the equipment back to full service.
- **Test the equipment.**
Wherever possible test the equipment in the presence of the operator to show that the problem has been fixed and that no other problems have been introduced.

2.3 Print Quality Check List

When examining the printer output look for:

- Equal density of characters
- Equal intensity of print over the whole print area
- Character sharpness
- No missing parts of characters

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- Underline character and descenders (g, y, q, p) fully formed
- No smudges or streaks
- Even spacing between lines and characters.

2.4 Before You Start

Start with the most obvious symptom but consider that it may be indicating multiple failures.

The seven visual indicators on the front panel, shown in Figure 2-1, can be interpreted as shown in Table C-1.

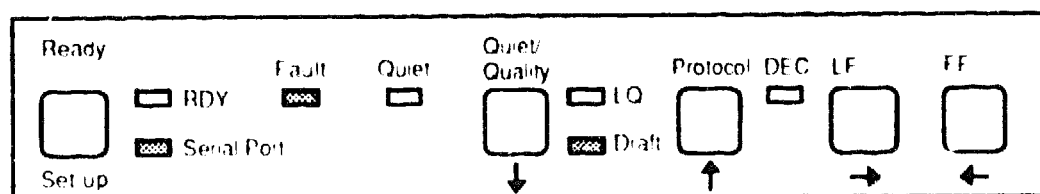


Figure 2-1 Locations of the Indicators (LED)

NOTE

When checking the indications of the LEDs, refer to Appendix C for their precise meaning. Remember that it is possible for LEDs to burn out. The first two seconds of the start-up procedure are intended to show any LED that is permanently on or off.

The precise function of each of the control panel switches is shown in Appendix D.

2.5 Fault Isolation

The following sections list possible fault symptoms and give tests you can make and actions you can take to help to clear those symptoms.

Table 2-1 indicates what problems are covered in this chapter and where you can find the relevant information.

Table 2-1 Problems Covered in this Chapter

Problem Areas	Section	Specific Faults
Power related problems	Section 2.5.1	No indicators on when power is switched on.
		RDY indicator is flashing. Fault indicator is flashing and does not respond when Ready sw. is pressed.
		At power on, the carriage does not move.
		Printing does not start.
		No response to computer commands. RDY indicator is on.
		Carriage moves but there is no printout during printing self-test.
		Pinfeed paper does not advance.
Operation-related problems	Section 2.5.2	Single sheet paper does not advance.
		RDY indicator is flashing. Fault indicator is on.
		LA75 Plus stops printing. Fault indicator is on.
		No reverse paper feed.
		Paper is not positioned at perforation for tear-off feature.
Print-related problems	Section 2.5.3	Printhead carriage does not move smoothly.
		Carriage does not move. Fault indicator flashes.
		Print faint or of poor quality.
		Character or characters do not print evenly or are not uniform in pitch.
		Print lines overlap.

Table 2-1(Cont.) Problems Covered in this Chapter

Problem Areas	Section	Specific Faults
Print-related problems (cont.)	Section 2.5.3	Characters printed at a slant. Paper tears or jams. Error reports or error characters printed. RDY indicator is on. Font cartridge is installed and printer uses internal Courier Fonts. Printer does not stop when out of paper.
Ribbon or carriage-related problems	Section 2.5.4	Ribbon problems. Printer cannot print in color. Carriage does not move smoothly.
Automatic sheet feeder-related problems	Section 2.6	ASF not working after installation. Printer/sheet feeder does not operate. Paper does not feed. Paper skews, feeds incompletely, double feeds, or feeds inconsistently. Output paper is stacking badly.

2.5.1 Power-Related Problems

No Indicators On When Power is Switched On

1. If the printer is functioning correctly but no indicators are on, replace the Panel PCB assembly.
2. Test the power supply at a wall socket by substitution or metering. If faulty, contact the responsible site engineer.
3. Make sure the connectors are firmly inserted into both the printer and the wall socket. (In the U.K. and Ireland, make sure the fuse in the three pin plug is zero ohms.)
4. Switch the power off and disconnect the power cable. Check whether a fuse has blown.

- a. Check the fuse on the Power Supply and replace the fuse if necessary:

1.6A (Medium Time-lag) for U.S.	DEC P.N. 29-26003-00
1.0 A (Time-lag) for Europe	DEC P.N. 29-26004-00
1.6A (Medium Time lag) for Japan	DEC P.N. 12-19283-02
 - b. Check the fuse on the Main PCB kit and replace the fuse if necessary:

FU3 3.15 A (Medium Time-lag)	DEC P.N. 12-33600-01.A01
FU1 5.0 A (Medium Time-lag)	DEC P.N. 29-26001-01.A01
5. Check whether the secondary output of the transformer is normal.
- a. Switch the power off and disconnect the power cable. Disconnect the 2-pin connector CN3 on the Main PCB kit from the transformer.
 - b. Connect the power cable, switch the power on and measure the AC voltage from the secondary of the transformer.

If the measured voltage is not a nominal 28VAC, switch the power off, disconnect the power cable and then replace the Power Supply.

If the measured voltage is a nominal 28VAC, switch the power off, disconnect the power cable and then replace the Main PCB kit or/and the Mechanical Assembly. Be sure to reconnect the 2-pin connector CN3 to the Main PCB kit.

RDY indicator is flashing,

Fault indicator is flashing (one second period) and does not respond when Ready switch is pressed.

1. Is the access cover fitted and seated correctly?
Closing it and pressing the Ready switch should light the RDY indicator.
2. If you have an Automatic Sheet Feeder, ensure that its front cover is correctly seated.
Closing it and pressing the Ready switch should light the RDY indicator.
3. Load paper.
4. Logic may not be receiving the access cover switch signal.
 - a. Make sure the connection between the Panel PCB Assembly and the Main PCB kit is good.
 - b. Replace the Panel PCB Assembly.
5. Logic may not be able to respond to the access cover signal. Replace the Main PCB kit.

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At power on, the carriage does not move.

1. Make sure the access cover is seated correctly.
2. Logic may not be receiving the access cover switch signal.
 - a. Make sure the connection between the Panel PCB Assembly and the Main PCB kit is good.
 - b. Replace the Panel PCB Assembly.
 - c. Replace the Main PCB kit.
3. Make sure the printhead carriage can move. Push and pull from side to side. It should move freely. If not:
 - a. Remove any visible obstruction.
 - b. Replace the Mechanical Assembly.

Printing does not start.

1. Make sure the RDY indicator is on. If not, press the Ready switch. Printing should start when you send data from the host computer.
2. Make sure the printer is connected to the host computer.
3. Make sure the host computer can send data.
4. Make sure you have set the correct protocol. See Chapter 5 and Appendix G.
5. Make sure you have selected the correct port. See Chapter 5 and Appendix G.
6. Logic may not be receiving the Ready switch signal.
 - a. Make sure the connection between the Panel PCB Assembly and the Main PCB kit is good.
 - b. Replace the Panel PCB Assembly.
7. Logic may not be able to respond to the READY signal. Replace the Main PCB kit.
8. Replace the Mechanical Assembly.

No response to computer commands.

RDY indicator is On.

1. Examine the data cable connections. Reseat the data cable if necessary.
2. Check the condition of the data cable. Replace if damaged.

3. Run the printing self test. If this is not satisfactory, replace the Main PCB kit. If the printing self test is satisfactory, run either the serial or parallel loopback test appropriate for your situation. If this test fails, replace the Main PCB kit. If both tests give satisfactory results, the problem may be in the host computer.
4. Examine the features setup for a communications mismatch. Do features such as 1, 6, 7, 8 or 9 match those of the host computer?

Carriage moves, but there is no printout during printing self test.

1. Make sure the ribbon is installed.
2. Examine the ribbon path. Does the ribbon pass in front of the whole printhead? Adjust if necessary.
3. Printhead pins may not be able to respond to control signals. Replace the printhead.
4. Printhead may not be receiving control signals. Replace the Mechanical Assembly.
5. The Main PCB kit may not be able to send printhead control signals. Replace the Main PCB kit.

Pinfeed paper does not advance.

1. Make sure the tractor/friction feed lever is set to tractor feed.
2. The paper feed mechanism may be jammed or broken. Replace the Tractor Unit BK or the Mechanical Assembly.
3. Replace the Main PCB kit.

Single sheet paper does not advance.

1. Make sure the tractor/friction feed lever is set to friction feed.
2. Replace the Main PCB kit.
3. The paper feed mechanism may be jammed or broken. Replace the Mechanical Assembly.

2.5.2 Operation-Related Problems

**RDY indicator is flashing,
Fault indicator is On.**

1. This is an "out of paper" response.
Make sure the tractor/friction feed lever is in the correct position.

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2. Load paper.
3. The Fault indicator will turn off and the RDY indicator will either turn On or flash. If it flashes, press the Ready switch to turn on the RDY indicator.

LA75 Plus stops printing, Fault indicator is On.

1. This is an "out of paper" response.
Load paper. If the RDY indicator is flashing, press the Ready switch.
LA75 Plus should continue printing.
2. Make sure the paper is not torn or otherwise damaged. If it is, replace with undamaged paper.
3. Make sure that the connection of the paper edge detector to the Main PCB kit is good.
4. Replace the Main PCB kit.
5. Replace the Mechanical Assembly.

No reverse paper feed.

1. Are you trying to park? The printer will not reverse paper feed when:
 - a. In Ready state (RDY indicator On).
 - b. Tractor/friction feed lever is in friction feed position.
2. Make sure you are not at the end of paper.
3. Make sure that the paper is not damaged.
4. Make sure that the connection of the paper edge detector to the Main PCB kit is good.
5. Replace the Main PCB kit.
6. Replace the Mechanical Assembly.

Paper is not positioned at perforation for tear-off feature.

1. Make sure the printer is in the Pause state. If the RDY indicator is on, press the Ready switch.
2. If the platen has been moved by hand, reload the paper. Make sure you use a complete form for the first sheet.

3. Select the correct form length using the setup feature.
4. Replace the Main PCB kit.

Printhead carriage does not move smoothly.

1. Examine the paper pathway. Remove any obstructions.
2. Examine the printhead carriage bar (the round bar on which the printhead moves). Is it dirty? If so, clean it with a soft cloth.
3. Examine the carriage area for obstructions. Remove as necessary.
4. Replace the Main PCB kit.
5. Replace the Mechanical Assembly. Return the faulty assembly to the service center for replacement of the carriage motor.

**Carriage does not move,
Fault indicator flashes.**

1. Examine the paper pathway. Remove any obstructions. Press the Ready switch when the paper pathway is cleared.
2. Replace the Main PCB kit.
3. Replace the Mechanical Assembly. Return the faulty assembly to the service center for replacement of the carriage motor.

2.5.3 Print-Related Problems

Print faint or of poor quality.

1. Is the paper thickness control set correctly for the paper you are using? Adjust as necessary.
2. Have you used the correct paper? Appendix A contains a full specification of the paper you can use. Replace paper if it does not match the specification.
3. Make sure the ribbon is tensioned correctly.
4. Make sure the ribbon is of the correct type (see Appendix A).
5. Does the ribbon need changing? Replace with a new ribbon if necessary.
6. Is the ribbon cartridge properly seated? Reseat as necessary.
7. Replace the printhead.
8. Replace the Main PCB Kit.

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Character or characters do not print evenly or are not uniform in pitch.

1. Examine the paper pathway for dirt or other obstruction that may cause the gap between printhead and platen to vary. Remove the obstruction.
2. Replace the Main PCB kit.
3. Replace the Mechanical Assembly. Return the faulty assembly to the service center for replacement of the carriage motor.

Print lines overlap.

1. Examine the paper pathway for dirt or other obstruction that may prevent the platen from rotating freely. Remove the obstruction.
2. Make sure the tractor/friction feed lever is set fully to the front or to the rear and not in an intermediate position.
3. Make sure the platen can rotate freely by moving the platen knob.
4. Replace the Mechanical Assembly.
5. Replace the Main PCB kit.

Characters printed at a slant, Paper tears, Paper jams.

1. Make sure the tractor/friction feed lever is set fully to the front or to the rear and not in an intermediate position.
2. Examine the paper pathway, remove any obstructions.
3. Is the paper too loose or too taut between the tractors?
If the holes in the paper are deformed at their outer edges, the paper is too taut.
If the paper rises between the tractors, it is too loose.
Readjust the tractor spacing so that the paper lies smoothly but without any tension.
4. Replace the Mechanical Assembly.

Error reports or error characters printed. RDY indicator is On.

1. Run the printing self test. If this is not satisfactory, replace the Main PCB Kit. If the printing self test is satisfactory, run either the serial or parallel loopback test appropriate for your situation. If this test fails, replace the Main PCB kit. If both tests give satisfactory results, the problem may be in the host computer.

2. Examine and if necessary reseal the data cable connections.
3. Make sure the data cable is in good condition. If it is damaged, replace it.
4. Examine the features setup; there may be a communications mismatch. Do features such as 1, 6, 7, 8, and 9 match those of the host computer?
5. Make sure the host computer is operating correctly.
6. Replace the data cable.

Font cartridge is installed and printer uses internal Courier Fonts.

1. Switch off the printer and check the font cartridge is correctly inserted.
2. Check the font cartridge is selected in the printer setup.
3. Check the proper control sequences are sent to the printer by the host system.

Printer does not stop when out of paper.

1. The printer circuits do not detect that there is no paper. Examine the paper pathway. Remove any obstructions. Press the Ready switch when the paper pathway is cleared.
2. Make sure that the connection of the paper edge detector to the Main PCB kit is good.
3. Replace the Main PCB kit.
4. Replace the Mechanical Assembly.

2.5.4 Ribbon or Carriage-Related Problems

Ribbon Problems.

1. Make sure the ribbon is:
 - 1) Tensioned correctly.
 - 2) Not worn thin or dry.

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- 3) Not torn damaged in any other way.
- 4) Not jammed.
- 5) The correct type as recommended by Digital.

2. Replace the Main PCB kit.

3. Replace the Mechanical Assembly.

Printer cannot print in color.

1. Check the color ribbon is installed.
2. Make sure the ribbon is:
 - 1) Tensioned correctly.
 - 2) Not worn thin or dry.
 - 3) Not torn damaged in any other way.
 - 4) Not jammed.
 - 5) The correct type as recommended by Digital.
3. Check and adjust the paper thickness lever.
4. Run the service test if necessary.
5. Replace the Main PCB kit.
6. Replace the Mechanical Assembly.
7. Check the proper control sequences are sent to the printer by the host system.

Carriage does not move smoothly.

1. Examine the paper pathway. Remove any obstructions.
2. Examine the printhead carriage bar (the round bar on which the printhead moves). Is it dirty? If so, clean it with a soft cloth.
3. Examine the carriage area for obstructions. Remove as necessary.
4. Replace the Main PCB kit.
5. Replace the Mechanical Assembly. Return the faulty assembly to the service center for replacement of the carriage motor.

2.6 Automatic Sheet Feeder-Related Problems

In all the following problems, the quickest fault elimination test by far is to replace the suspect ASF with another either from stock or from another LA75 Plus. Therefore, your first action in all cases should be to substitute another ASF for the suspect one wherever possible.

ASF not working after installation.

1. The ASF can only operate correctly when the firmware recognizes that it has been installed. The firmware check for the presence of the ASF is done when power is switched on.

Switch the power off, pause for a few seconds, and switch the power on.

Printer/Sheet Feeder does not operate.

1. Check the power to printer. Refer to the printer user manual.
2. Check the cable connections at the printer and the host computer.
3. Press the Ready switch to put the printer on-line.

Paper does not feed.

1. Check the sheet feeder installation.
2. Check that the tractor/friction feed lever is set to the friction feed.
3. Clear the paper jam.
4. Clean the feed rollers with DEC platen cleaner.

Paper skews, feeds incompletely, double feeds, or feeds inconsistently.

1. Clean the printer platen with DEC platen cleaner.
2. Clean the feed rollers with DEC platen cleaner.
3. Set the right hand hoppers for correct paper width.
4. Remove some paper.
5. Fan and reload paper.
6. Use paper conforming to specifications. See the printer user manual.
7. Check the sheet feeder installation.

2-16 Troubleshooting

Output paper is stacking badly.

1. Check the output holder installation.
2. Use paper conforming to specifications. See printer user manual.
3. Empty the output paper holder.

Tests and Diagnostics

3.1 Introduction

The front panel enables the operator to select three types of printer function, namely: Setup (see Chapter 5), user features and test, and Digital Services diagnostics. Five diagnostics always run when the power to the LA75 Plus is switches on. These are:

- **ROM checksum test**
This test verifies all bits in the ROM.
- **RAM pattern test**
This test exercises and verifies all bits in the RAM.
- **NVR checksum test**
This test verifies all bits in the NVR (No Volatile RAM).
- **LED test**
The LEDs flash on and off for 2 seconds to enable the user to verify that all LEDs switch on and off.
- **Head movement test**
This test moves the head from the center position to the left margin and back to the center.

3.2 Tests and Diagnostics Summary

Table 3-1 Tests and Diagnostics

Test	Comment	To Start	To Stop
ROM checksum	Startup sequence	Power on.	Stops at end of pass.
RAM pattern	Startup sequence	Power on.	Stops at end of pass.
NVR checksum	Startup sequence	Power on.	Stops at end of pass.
LED test	Startup sequence	Power on.	Stops at end of pass.
Head Movement test	Startup sequence	Power on.	Stops at end of pass.
Service test	D.S. Engineering test	Press Quiet/Quality switch AND Protocol switch AND switch the power on. Release front panel switches.	Power off.
H pattern	D.S. Engineering test	Press Quiet/Quality switch AND FF switch AND switch on. Release front panel switches.	Press FF switch to go to next test. Power off to stop.
Printhead pattern	D.S. Engineering test	While in the H pattern test, press FF switch.	Press FF switch to go to next test. Power off to stop.
PLU/PLD	D.S. Engineering test (Paper movement)	While in the PH pattern test, press FF switch.	Press FF switch returns to the H pattern test. Power off to stop.
Serial Loopback	D.S. Engineering test Needs loopback connector	Press Ready switch AND LF switch AND switch the power on. Release front panel switches.	Power off.
Parallel Loopback	D.S. Engineering test Needs loopback connector	Press Ready switch AND FF switch AND switch the power on. Release the front panel switches.	Power off.

Table 3-1 (Cont.)

Test	Comment	To Start	To Stop
Carriage Motion	Repair Center test	Press Protocol switch AND FF switch AND power on.	Power off.
Printing Self-test	User's test Swirl pattern	With paper loaded, press FF switch AND power ON.	Power off.
First line on page adjustment	User adjustment	With no paper loaded, press LF switch AND power ON.	To adjust first line press LF or FF switch. Press Quiet/Quality switch to save the setting. Power off.
Hex Dump	Programmer's tool	With paper loaded, press Protocol switch AND power ON.	Power off.

3.2.1 Internal Diagnostics

Self test operations to check internal logic are performed automatically at power-up. Detected failures cause the Fault indicator to blink and the test to stop. The automatic diagnostics include the following tests:

1. ROM checksum test to verify all bits of ROM;
2. RAM pattern test to exercise and verify all bits of RAM;
3. NVR checksum test;
4. All the control panel LED indicators blink for 2 seconds at a 1 second period (0.5s ON, 0.5s OFF, and so on).

This test is applied only if no switch is pressed at power-up.

This test is also applied if the Sheet Feeder is installed.

During the NVR test, if the NVR memory is detected empty, it is filled with the factory settings.

3-4 Tests and Diagnostics

3.2.2 LA75 Plus Service Test

Function

This test thoroughly exercises all mechanical elements of the LA75 Plus.

Selection and Deselection

With paper loaded, press the Quiet/Quality switch AND Protocol switch AND switch the power on.

Release the front panel switches.

Switch the power off to stop the test at its completion.

Operations

This test performs the following:

1. First line printing test: the first line of the form is printed with:
 - the underlined letter "E" from column 1 to 5
 - the underlined Space from column 6 to 75
 - the underlined letter "E" from column 76 to 80
2. Title: LA75 Plus Service Test
3. Configuration information (one line per item):
 - Paper feeding mode: Rear Feeding, Bottom Feeding, or Auto sheet feeder
 - Firmware code version
 - Ribbon type: Black or Color
 - Type of cartridge installed (DEC character sets cartridge, Emulation cartridge, Font cartridge or none)
4. H-pattern alignment test pattern (with no adjustment capability)
5. Printhead test
6. Paper movement test: this test prints two black dashed lines (3.2 mm apart), then after all other steps of the current form, prints a red dashed line. The red line is centered between the two black lines and between the black dashes.

In ASF mode or Pull Tractor mode, this test is not performed.

7. PLU/PLD test (one line)

8. Printing self test normal mode (4 lines): if the color ribbon is installed, one line per base color is printed.
9. Printing self test Quiet mode (4 lines), black color only
10. LQ printing self test (1 line), black color only
11. NLQ printing self test (1 line), black color only
12. Carriage motion exerciser: 2 full cycles (one cycle is: carriage movement from one end to the other and back)
13. Color printing test: this test is used to verify the correct printing of the 8 basic colors.
14. Continuous line printing: one dot (wire position 11) printed all over the line
15. Last line of the form print test: same pattern as the first line printing test.

At the completion of this test, 2 form feeds are performed.

Discussion

For this test, the form length is always set to 11 inches.

Paper will be loaded automatically if not already loaded at power-up.

The text is printed at 10 CPI, 6 LPI, draft density, normal print mode.

Examine the quality and accuracy of the printout.

Look at each single item/test. (i.e. positioning of the characters, paper movement, quality of the color, etc.)

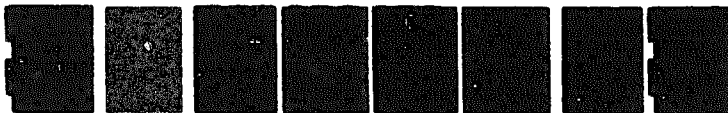
Run the test sequence if the vertical adjustment (H pattern test) is required or the printhead needs to be replaced.

3-6 Tests and Diagnostics

```

EEEE                                     EEEE
LA75 Plus SERVICE TEST
Configuration information:
Paper Feeding Mode = Rear Feeding
Firmware Code Version = V1.0
Ribbon Type = Color
Type of Cartridge = None

```

[illegible]

```

EEEEEE                                     EEEEE
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

```

Figure 3-1 Service Test Printout

3.2.3 Test Sequence Initiated by the Quiet/Quality and FF switches

The following tests are provided by the printer when the Quiet/Quality and the FF switches are pressed simultaneously before the printer is turned on, are released after power-up, and when the FF switch is pressed in sequence. The following table gives the test sequence:

ACTION ON SWITCHES	TEST INITIATED
Quiet/Quality + FF pressed at power-up then released	"H" Test
FF pressed and released	Print Head Pattern
FF pressed and released	PLU/PLD Test

The test sequence should be run after the service test to make appropriate adjustments (i.e. vertical adjustment) or controls (i.e. PH needles, paper movement) for part replacement.

3.2.3.1 "H" Pattern Self Test

Function

This self test is used to adjust bidirectional print accuracy (Vertical Dot Alignment).

Selection and Deselection

Press the Quiet/Quality switch AND the FF switch AND switch the power on. Release the front panel switches.

The test runs automatically and stops after the seven possible selections have been printed.

Note that this test should not be interrupted before completion.

Operation

The printer outputs seven groups of four lines of Hs, each preceded by its setting number.

The currently selected adjustment setting is printed after the seven "H" patterns.

To change the setting press the LF switch until the required setting number is printed.

The last selected number is stored.

3-8 Tests and Diagnostics

Discussion

Each group of Hs is printed at 10 CPI in draft mode so that the Hs connect vertically. This enables easy selection of the best adjustment setting.

Choose the setting that gives the best alignment over the most commonly used part of the line (usually the lefthand side).

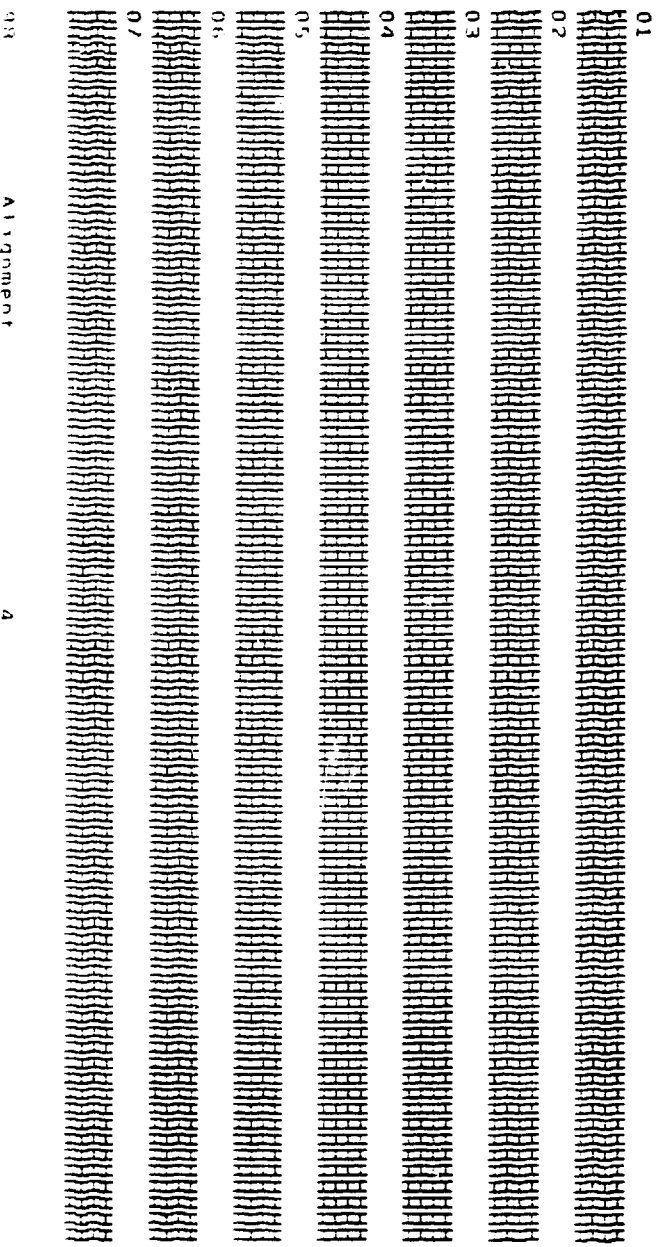


Figure 3-2 Dot Alignment Printout

3.2.3.2 Printhead Pattern Test

Function

The printer outputs a pattern that enables the D.S. Engineer to verify that each printing needle is functioning correctly and to examine the printout for signs of wear on each pin.

Selection and Deselection

While in the H pattern self test press the FF switch.

Press the FF switch to move on to the next test.

Switch off to stop the test.

Operation

There are not operational procedures for this test.

Discussion

This pattern activates individual print pins.

Wear on an individual pin can be seen by:

- Lighter print than other pins (caused by the pin being shorter)
- Erratic print (caused by either a worn pin or worn bearing), or missing line print.

Replace the printhead if necessary.

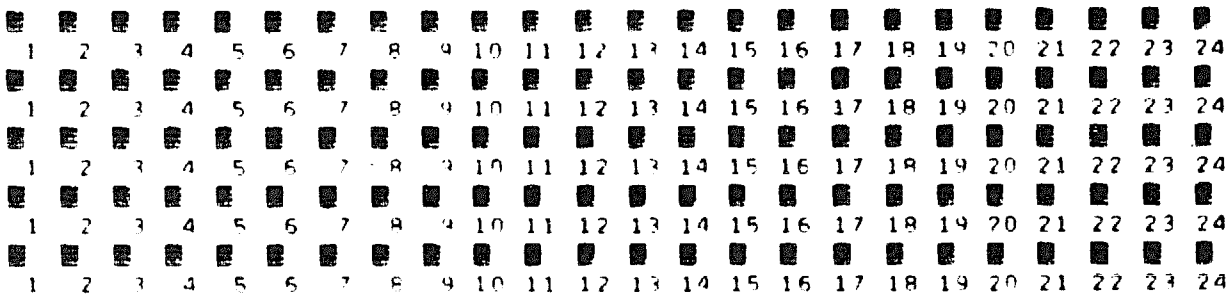


Figure 3-3 Printhead Pattern

3.2.3.3 PLU/PLD Test

Function

"PLU/PLD" stands for Partial Line Up and Partial Line Down. This is a print pattern to test the up and down motion of the platen and paper.

Selection and Deselection

While in the printhead pattern test, press the FF switch.

If the FF switch is pressed, the H pattern test is selected.

Switch off to stop the test.

Operation

The characters "MID" are printed starting at column one at current line.

Then the following sequence is executed 6 times:

- partial line up (1/12 inch)
- print "PLU"
- partial line down (1/12 inch)
- print "MID"
- partial line down (1/12 inch)
- print "PLD"
- partial line up (1/12 inch)
- print "MID"

At the end of the line a <CR> is actioned and the pattern repeats continuously until its deselection of the test.

Discussion

Printing is performed at 10 CPI and 6 LPI in draft mode.

Examine the output for quality and position of the characters.

A typical printout is shown in Figure 3-4.

Figure 3-4 Paper Motion Test

3-12 Tests and Diagnostics

3.2.4 Serial Port Loopback Self Test

Function

The printer is capable of executing a loopback test when connected in any configuration which externally loops the SEND DATA signal back to the RECEIVE DATA signal, and the DSR signal back to the DTR signal of the serial port. This is typically achieved with a loopback connector. Detected failures cause the Fault indicator to blink.

Selection and Deselection

Insert loopback connector (PN 12-25083-01).

Press the Ready switch AND the LF switch AND switch the power on. Release the front panel switches to initiate this test.

Switch the power off to stop the test and remove the loopback connector.

Operation

This test transmits the character sequence of the printing self test (ASCII Swirl) on the SEND DATA signal at the selected baud rate and in the selected character format.

The Fault indicator flashes if the printer does not detect data on the RECEIVE DATA line within one second after the loopback test is started or if a signal output to the DTR is not detected on the DSR circuit.

Successful execution of the test is determined by operator examination of the printed test pattern.

Discussion

Examine the quality of the printout (refer to print quality check list in Section 2.3 and make sure the sequence of characters is complete. If this is not satisfactory, replace the Main PCB kit.

3.2.5 Parallel Port Loopback Self Test

Function

The test operates with a loopback connector. It exercises each output signal and the corresponding input circuits of the parallel port.

The test runs continuously.

Detected failures cause the Fault indicator to flash and the test to stop.

Selection and Deselection

Insert the parallel loopback connector (PN 29-27887-01) into the parallel port connector. Press the Ready switch AND the FF switch AND switch the power on. Release the front panel switches to initiate this test.

Switch the power off to stop the test and remove the loopback connector.

Operation

Run this test in the following way:

1. Insert the loopback connector and run the test. There should be no failures.
2. Remove the loopback connector and run the test. It should fail.

Discussion

This test produces no printout.

Replace the Main PCB kit if step 1 above fails or if step 2 does not fail.

3.2.6 Carriage Motion Self Test

Function

This is a repair center test only. The printer executes carriage motions and ribbon motions continuously.

Detected failures cause the Fault indicator to flash.

During this test, the paper supply is not checked by the printer. If the cover is opened, the test will stop and the Fault indicator blinks. The test can be resumed by closing the cover and pressing the Ready switch.

Selection and Deselection

Press the Protocol switch AND the FF switch AND switch the power on.

Switch off to stop the test.

Operation

There are no operational procedures for this test.

3-14 Tests and Diagnostics

3.2.7 Printing Self Test

Function

This is a confidence check on the general serviceability of the printer for use by the customers and D.S. Engineers during installation. It prints the 94 printable characters of the U.S. ASCII character set continuously in an 80 character-wide swirl pattern. The print quality and printing modes are defined by setup.

Selection and Deselection

With paper loaded, press the FF switch, AND switch the power on.

The test runs continuously until switched off.

Operation

The printer outputs a swirl pattern (see Figure 3-5). There are no operational activities with this test. Verify the quality of the output visually. Refer to Section 2.3 for print quality guidelines.

Detected failures causes the Fault indicator to blink.

When no paper is detected the Fault indicator is on, once the paper is loaded, manually or using the FF switch, the test starts automatically.

Discussion

The size and spacing of the print output is determined by the setting of the appropriate features; for example, horizontal print density, vertical print density, and print quality features affect the style of this printout. Refer to Chapter 5 for the method of changing the settings of the printer.

If the color ribbon is installed, each line is printed with a color change by using the 4 basic colors in a 4 line period.

If the sheet feeder is installed through setup, this test will start by feeding paper from the sheet feeder bin.

Figure 3-5 shows a part of the test printout.

```

**$Z&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOpQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz
**$Z&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOpQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz
$Z&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOpQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz

) + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ ` a b c d e f g h i j k l m n o p q r s t u v w x
+ , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ ` a b c d e f g h i j k l m n o p q r s t u v w x y
+ , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ ` a b c d e f g h i j k l m n o p q r s t u v w x y z
- . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ ` a b c d e f g h i j k l m n o p q r s t u v w x y z {
- . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ ` a b c d e f g h i j k l m n o p q r s t u v w x y z { |
. / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ ` a b c d e f g h i j k l m n o p q r s t u v w x y z { | }
/ 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ ` a b c d e f g h i j k l m n o p q r s t u v w x y z { | } ~
0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ ` a b c d e f g h i j k l m n o p q r s t u v w x y z { | } ~ !
1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ ` a b c d e f g h i j k l m n o p q r s t u v w x y z { | } ~ ! "
2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ ` a b c d e f g h i j k l m n o p q r s t u v w x y z { | } ~ ! " #
3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ ` a b c d e f g h i j k l m n o p q r s t u v w x y z { | } ~ ! " # $
4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ ` a b c d e f g h i j k l m n o p q r s t u v w x y z { | } ~ ! " # $ %

```

Figure 3-5 Print Test Pattern

3.2.8 First Line on Page Adjustment

Function

This adjustment allows the user to define the position of the first active line on the page. The active range is within 0 to +0.5 inches from the top of form.

Selection and Deselection

With no paper loaded, press the LF switch AND switch the power on.

Operation

After the printer is turned on, if the FF switch is pressed, paper is loaded automatically and eight Hs are printed at the first line first column according to the latest setting. Paper is then advanced to enable the user to read the printed line on top of the tear bar. The user is able to change the setting by pressing the LF and FF switches as follows:

LF Switch:	Printed line moves 2/180 inch down the page.
FF Switch:	Printed line moves 2/180 inch up the page.
Quiet/Quality Switch:	Store last setting and perform a form feed.

Each time a switch is pressed the following actions occur:

1. The paper is moved up or down 2/180 inch.
2. Eight Hs are printed in the next group of eight columns to show the current location.
3. Paper is advanced to enable the user to see the new setting above the tear bar.

Discussion

This adjustment has no impact on the tear off operation. The paper movement that enables users to tear off forms is dependent on the selected form length, not of this adjustment.

The Hs pattern is printed in draft mode, normal print mode at 10 cpi, so that 10 changes can be performed on a page width. At the eleventh change, the printing resumes at the first column. The user can also switch the power off and start again with a new form.

A typical printout is shown in Figure 3-6

3-18 Tests and Diagnostics

<XNN> in bold with NN for the hexadecimal code (for example 8/0 would be image as **<X80>**).

This mode is applicable whether the sheet feeder is installed or not.

4

Installation

4.1 Preparation

The LA75 Plus is designed to work in a normal office environment. No special conditions are needed. The only preparation needed is to ensure that the space allocated is adequate for its operation and is within normal reach of the cables from the host computer and electrical supply socket; that is, the cable should not be pulled tight nor should they cross passageways.

4.2 Installation

Note:

You should refer to the LA75 Plus Companion Printer Installation and User's Guide (P.N. EK-LA75E-UG-001) to get more detailed information for the installation of the printer and loading paper modes.

1. Unpack the LA75 Plus.
2. Inspect the contents for damage and for quantity against the user documentation.
Any damage or shortages should be reported.
3. Locate the LA75 Plus where it is to be used.

4-2 Installation

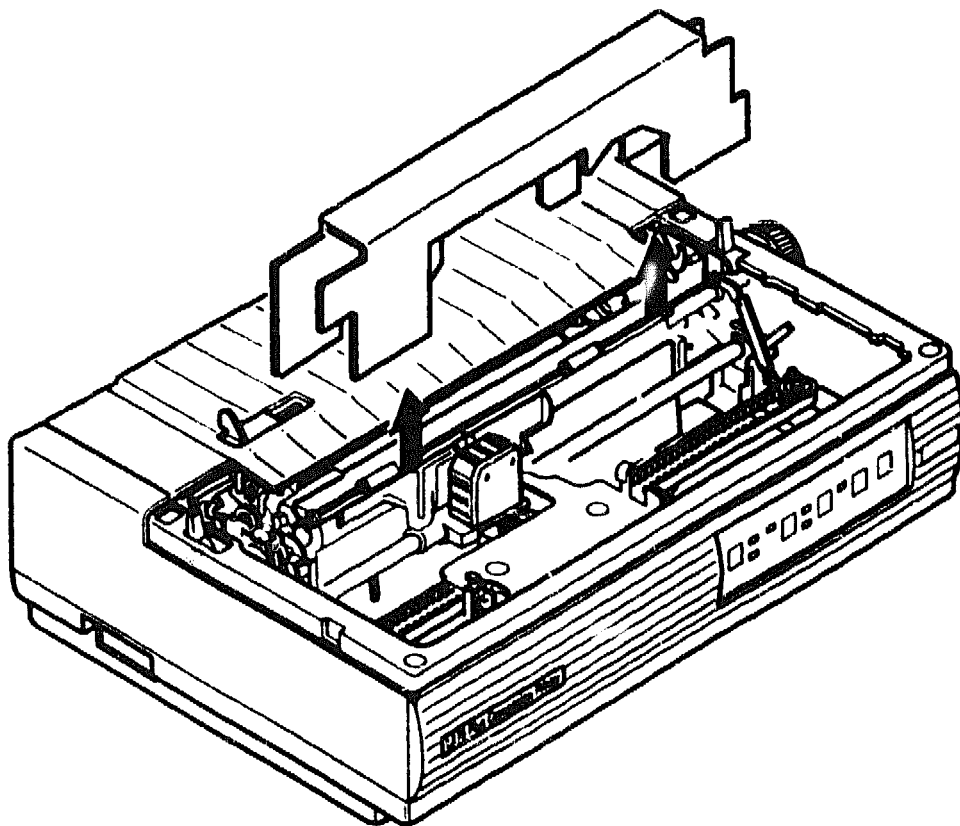


Figure 4-1 Removing the Transit Packing

4. Remove the cardboard transit packing. See Figure 4-1.
5. Make sure that the label on the back of the printer quotes the same voltage as that available from the wall socket.
6. Connect the power cable first to the printer and then to the wall socket.
DO NOT SWITCH ON.
7. Install the ribbon cartridge.
 - a. Tension the ribbon by rotating the knob as indicated on the ribbon cartridge.

- b. Fit the ribbon cartridge between the mounting clips (A) on the carriage. Make sure the ribbon fits between the front of the printhead (B) and the clear plastic smudge guard (C). Press down on the cartridge until you hear it click into place.

Note:

Make sure the ribbon is secured on both the left and right sides.

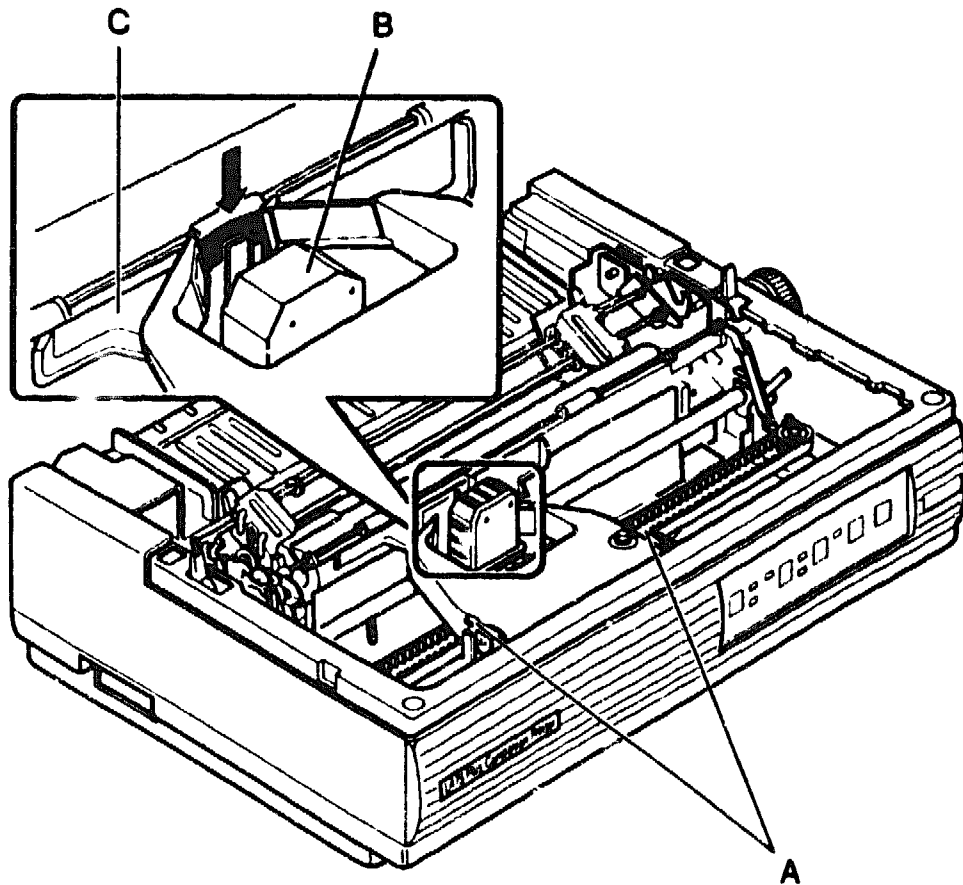


Figure 4-2 Installing the Ribbon Cartridge

- c. Turn the ribbon knob enough to tighten the ribbon against the printhead.
9. Do not connect the data cable to the host system.
10. Load the paper (Rear Loading).

4-4 Installation

Note 1:

There are three ways to load paper for the LA75 Plus which are:

- Load fanfold paper from the back of the printer.
- Hand feed single sheets from the back of the printer.
- Load fanfold paper (i.e. Labels) through the printer's bottom slot.

Note 2:

The printer loads paper automatically.

Do not use the platen control knob.

- a. Unlock only the clamp on the right tractor by pulling the clamp towards the front of the printer.

Note:

The left tractor has been factory set so that the left edge of the paper (column 1) lines up correctly with the printhead when it starts printing.

- b. Open both tractor doors.

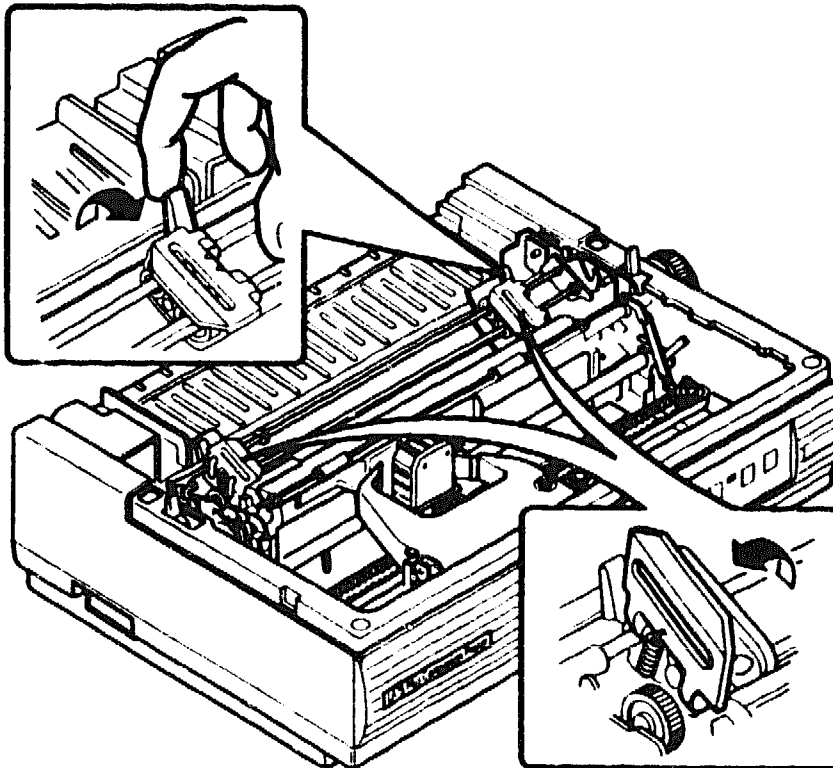


Figure 4-3 Adjusting the Tractor Position (1)

- c. Align the pinfeed holes on both edges of the paper with the tractor pins. Close the tractor doors to secure the paper.

Note:

The red marks on the bail bar indicate the print area for a standard sheet of paper. Use these marks to help position the paper correctly.

- d. Readjust the right tractor position by moving it to the right so that the paper extends smoothly between the two tractors. (The pinfeed holes should not be mis-shaped by too much tension on the paper.) Lock the right tractor by pushing the tractor clamp towards the back of the printer.

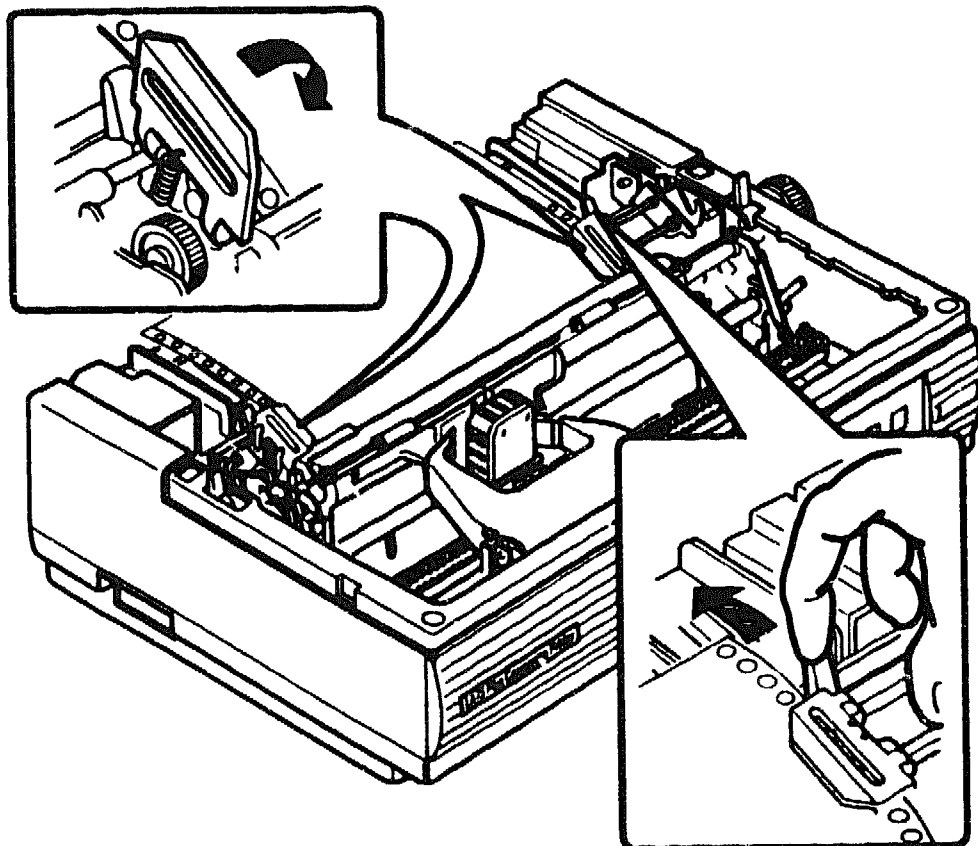


Figure 4-4 Adjusting the Tractor Position (2)

4-6 Installation

11. Pull the paper release lever towards the front of the printer to set the printer in tractor mode.

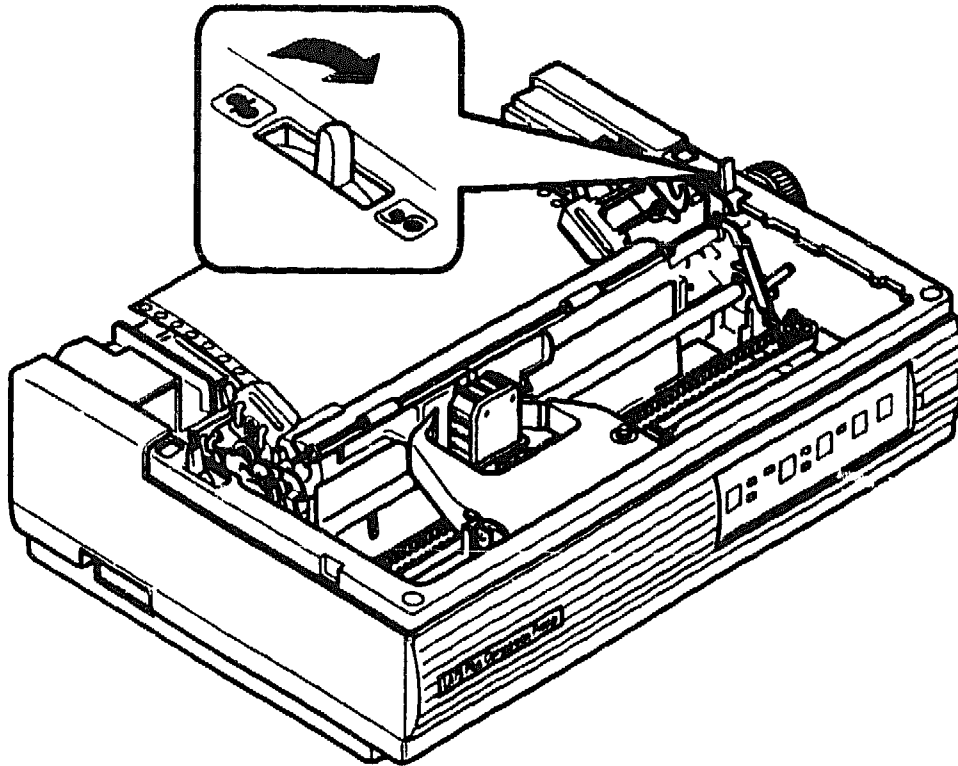


Figure 4-5 Setting the Paper Release Lever

12. Replace the access cover and the paper cover.

Note:

The printer will not work if the covers are not on, or if they are replaced incorrectly.

13. Power on.

The Start Up Sequence

During the start up process the following should happen:

- a. All indicators flash for approximately two seconds. (This is for LED verification. If any do not come on or do not go off, there is a fault.)

NOTE

If you are switching on AND pressing switches, the LED test does not occur.

- b. The printhead moves to the left, to the right, and back to center.
- c. The paper loads to top of form.
- d. The DEC LED flashes slowly. (If the Digital protocol is selected, the DEC LED is on.)

The printer is ready for testing.

Test the basic operation of the printer by printing the list of features and values as follows:

1. Switch the power off.
2. Press the Ready switch AND switch the power on.
3. Release the Ready switch .

The printer outputs the current feature list. For a new printer this will be the factory set list. The factory settings are shown in Appendix G by an asterisk (*).

The basic installation is now complete. The printer is ready for verification testing.

4.3 Verification

This section describes the testing needed to verify that the LA75 Plus operates correctly and can be accepted by the customer and D.S.

NOTE

The self tests referred to in this process are described in Chapter 3.

If any of the self tests fail, refer to the appropriate table in Chapter 2. Continue with the installation verification tests when the problem has been fixed.

4-8 Installation

The test sequence should be:

- 1. Do the startup tests**
- 2. Run the D.S. tests and diagnostics**
- 3. Connect the printer to the host computer.**

4.4 Running the D.S. Tests and Diagnostics

Run the D.S. tests and diagnostics in the following order:

- 1. Service Test**
- 2. Test Sequence for any adjustment or more depth checking**
- 3. Serial Loopback**
Needs loopback connector (PN 12-25083-01)
- 4. Parallel Loopback**
Needs loopback connector (PN 29-27887-01)
- 5. First Line on Page Adjustment**

Refer to Chapter 3 for the selection and deselection procedures and for the expected results.

4.5 Connecting the Printer to a Computer System

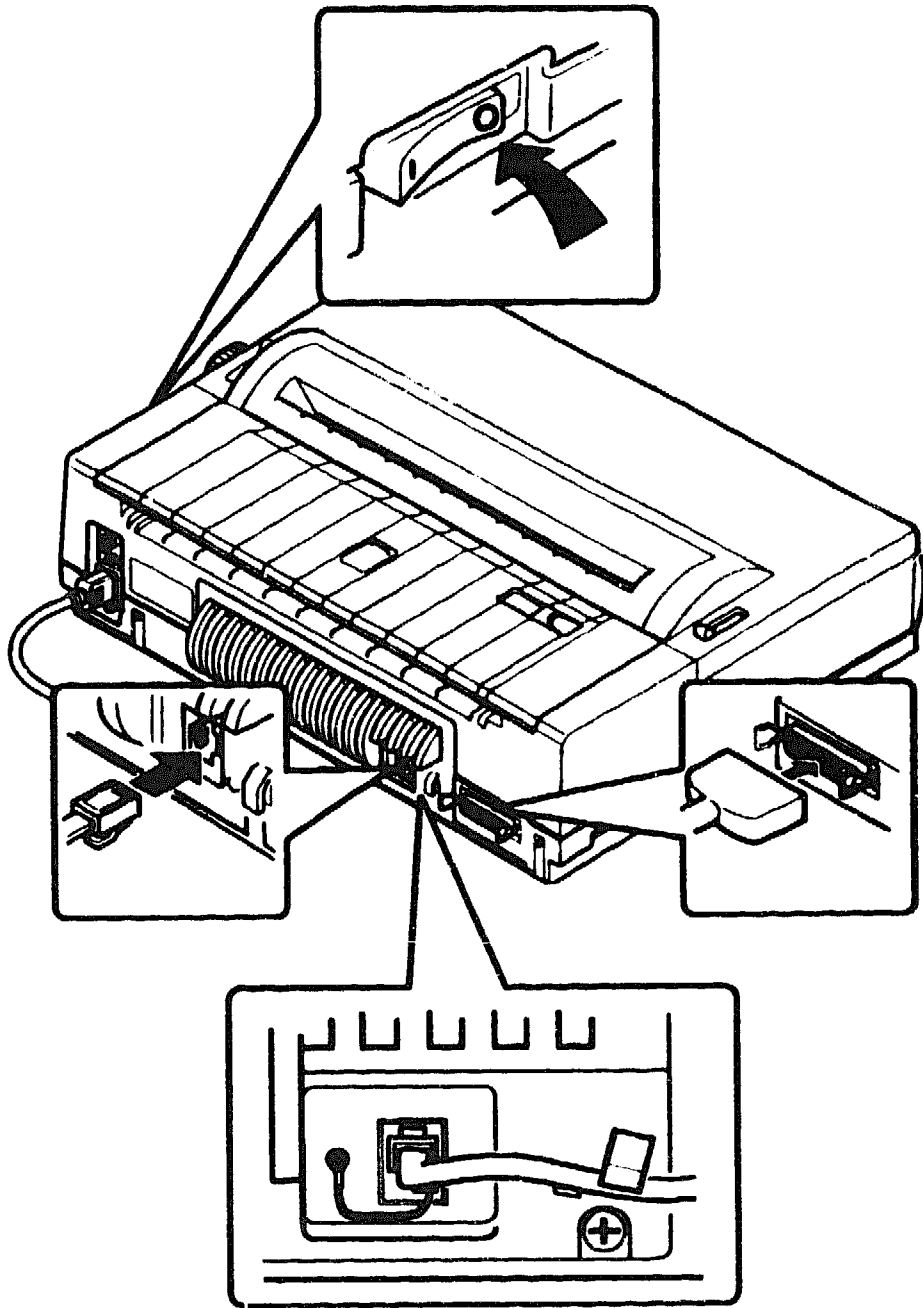


Figure 4-6 Connecting the Printer to a Computer System

5

Setup

5.1 Introduction

The setup mode enables the definition of the operating features of the printer.

There are no alphanumeric indicators on the LA75 Plus. All setup information is displayed on the printout.

When first selected, the setup mode prints the factory set values of the printer, shown by asterisks (*) in Appendix G. Subsequent selections of this mode print the current features list. When the list is complete, the first feature is reprinted and is ready to be changed if needed.

The Ready switch on the front panel (Figure 2-1) controls the selection of the setup mode and enables you to choose the operational features of the LA75 Plus.

When the setup mode is selected, the symbols beneath the keys of the front panel apply and have the meaning shown in Table 5-1:

Table 5-1 Meaning of Setup Symbols

	= Select the previous feature
	= Select the next feature
	= Move to the next value of the current feature
	= Move to the previous value of the current feature

In the setup mode the Serial Port and Draft indicators blink simultaneously, all other indicators are off.

The functionality of the LA75 Plus is divided into a series of features, such as form length, line spacing, baud rate and so on. These are selected by entering the setup mode and moving up and down the list of features with the  and  switches.

5-2 Setup

Use the  and  switches to select the needed value for each feature.

When exiting the setup mode, the printer automatically stores these values in non-volatile RAM (NVR or NVM).

5.2 Selecting Setup Mode

Use the following procedure to select the setup mode:

With paper loaded:

1. Switch off the printer.
2. Press and hold the Set-up switch.
3. Switch the LA75 Plus on.
4. Release the Set-up switch.

Press the  or  switch, to see the value, for the displayed feature.

The printer stores the last displayed value of any feature, unless the power fails, or is removed before the next feature is selected.

Move through the features list with the  and  switches.

When all the necessary values have been set, press the Set-up switch to return to the Ready state.

NOTE

If the power is switched off before exiting from the setup mode, the newly selected values are not stored.

5.3 Paper Out in Setup Mode

Paper out in the setup mode causes the front panel switches to be disabled and the Fault indicator to flash. Load more paper manually using the platen knob. When the paper is loaded, press the Ready switch to resume the setup mode.

5.4 Setup with Automatic Sheet Feeder

In this mode, if the paper cannot be loaded because of a paper jam or because there is no paper in the input bin, the Fault indicator flashes. To clear this fault condition and resume the setup, follow this procedure:

- Load paper into the input bin
- Press the FF switch
- Press the Ready switch

5.5 Selectable Features

Refer to Appendix G for the full list of available features. The factory set values of each feature are shown by an asterisk (*).

5.6 Factory Setting

The feature number 99 is used to store the factory setting for each feature. If the value "YES" has been selected prior to exiting the setup mode, all factory setting values are stored.

6

Removing and Replacing FRUs

6.1 Introduction

The FRUs of the LA75 Plus are:

FRU	PART NUMBER
Main PCB	29-29322-01. A01
Mechanical Assembly	29-29328-01. A01
Printhead 24-pin	29-29312-01. A01
Control Panel	29-29309-01. A01
Tractor Assembly	29-25917-01
Main PCB Fuse FU1 5A	29-26001-01.A01
Main PCB Fuse FU3 3.15A	12-33600-01.A01
Power Supply Fuse 1.6 A US	29-26003-00
Power Supply Fuse 1A EU	29-26004-00
Automatic 1-bin Sheet Feeder	LA75Y-SF

6.2 General

This chapter describes how to remove, replace, and adjust major FRUs for the LA75 Plus.

Figure 6-1 shows the FRU removal sequence.

WARNING

Set the power switch to 0 (off) and disconnect the AC power cord when you remove or replace an FRU.

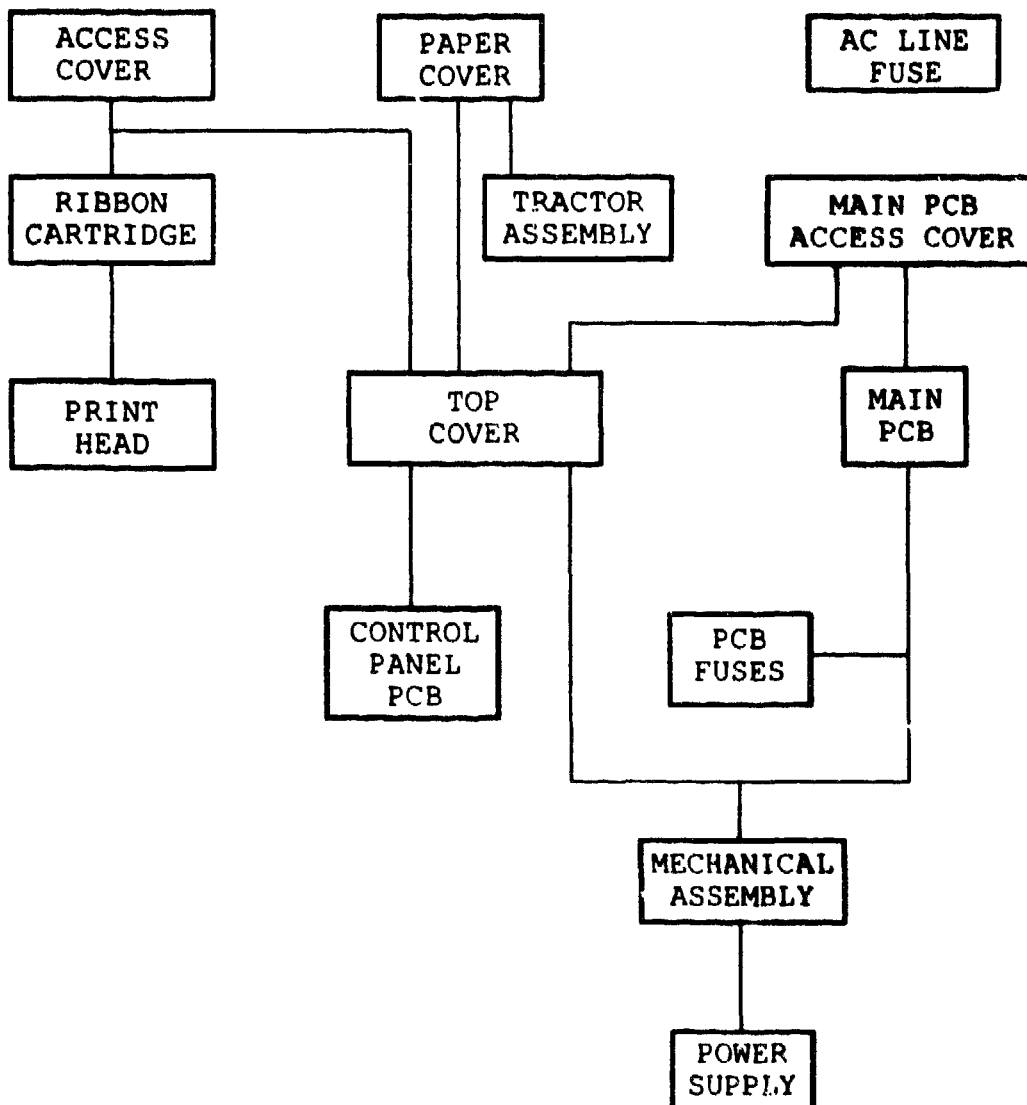


Figure 6-1 Major FRU Chart

The printhead can be replaced by removing the access cover. Access to all other FRUs is gained by removing the top cover (see Figure 6-3).

WARNING

The procedures described in this chapter involve the removal of the system covers and should be performed by trained personnel only.

ADVARSEL!

Ifølge de procedurer, som er beskrevet i dette kapital, skal systemets beskyttelsesplader fjernes; dette bør kun udføres af personer der ved hvordan dette skal gøres.

WAARSCHUWING

Bij de procedures die in dit hoofdstuk worden beschreven dienen bepaalde delen van de systeemomhulling te worden verwijderd; dit mag uitsluitend worden gedaan door opgeleid personeel.

NOTE

VAROITUS!)Tässä luvussa kuvatut toimenpiteet liittyvät järjestelmän suojakansien irrottamiseen. Ainoastaan koulutettu henkilökunta saa suorittaa nämä toimenpiteet.

6-4 Removing and Replacing FRUs

AVIS!

Ce chapitre décrit les interventions qui demandent que les couvercles extérieurs des appareils soient enlevés. Ces travaux devraient être mis en main uniquement par des techniciens expérimentés.

VORSICHT!

Bei der Ausführung der in diesem Kapitel beschriebenen Anweisungen müssen die Systemabdeckungen entfernt werden. Dies sollte nur von geschultem Personal ausgeführt werden.

אזהרה

הפרק מתאר את הפעולות הנדרשות להסרת כיסויי המכשיר. עבודה זו צריכה להיעשה אך ורק על ידי אדם מוסמך.

ATTENZIONE

La procedura descritta in questo capitolo comporta la rimozione delle coperture e deve essere eseguita solo da personale specializzato.

ADVARSEL

I dette kapitlet beskrives bl. a. hvordan man fjerner dekslene rundt systemet. Dette arbeidet må bare utføres av fagfolk.

AVISO

Os procedimentos descritos neste capítulo respeitam à forma como se retiram as protecções do sistema. Dada a sua especificidade, recomendamos que seja executado por pessoal especializado.

¡ATENCIÓN!

Los procedimientos descritos en este capítulo incluyen el desmontaje de las cubiertas del sistema y debe ser realizado solamente por personal entrenado.

WARNING

I detta kapitel beskrivs hur systemkaapan tas bort. Detta faar endast utfoeras av utbildad personal.

注 意

本書では、本体カバーの取り外し等について述べてあります、作業は、必ず専門の担当者によっておこなってください。

6-6 Removing and Replacing FRUs

6.3 AC Line Fuse

Remove and replace the ac line fuse as follows.

1. Turn the ac line fuse holder counterclockwise and remove it from the power plate (Figure 6-2).
2. Remove the fuse from the holder.

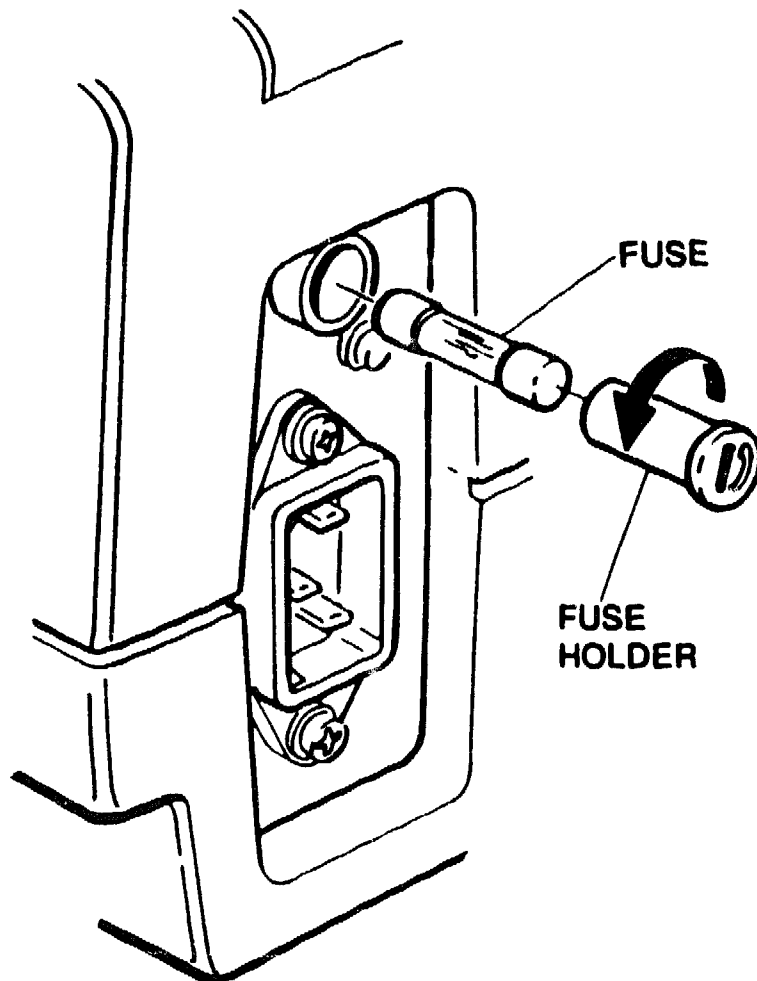


Figure 6-2 Removing AC Line Fuse

To install a fuse, reverse the above procedure.

CAUTION

Replace the fuse with a fuse of equal value.

6.4 Printhead

Remove and replace the printhead as follows.

WARNING

If the printer was recently used, the printhead may be hot. Be careful when handling the printhead.

1. Remove the access cover (Figure 6-3).
2. Remove the ribbon cartridge (Figure 6-3).

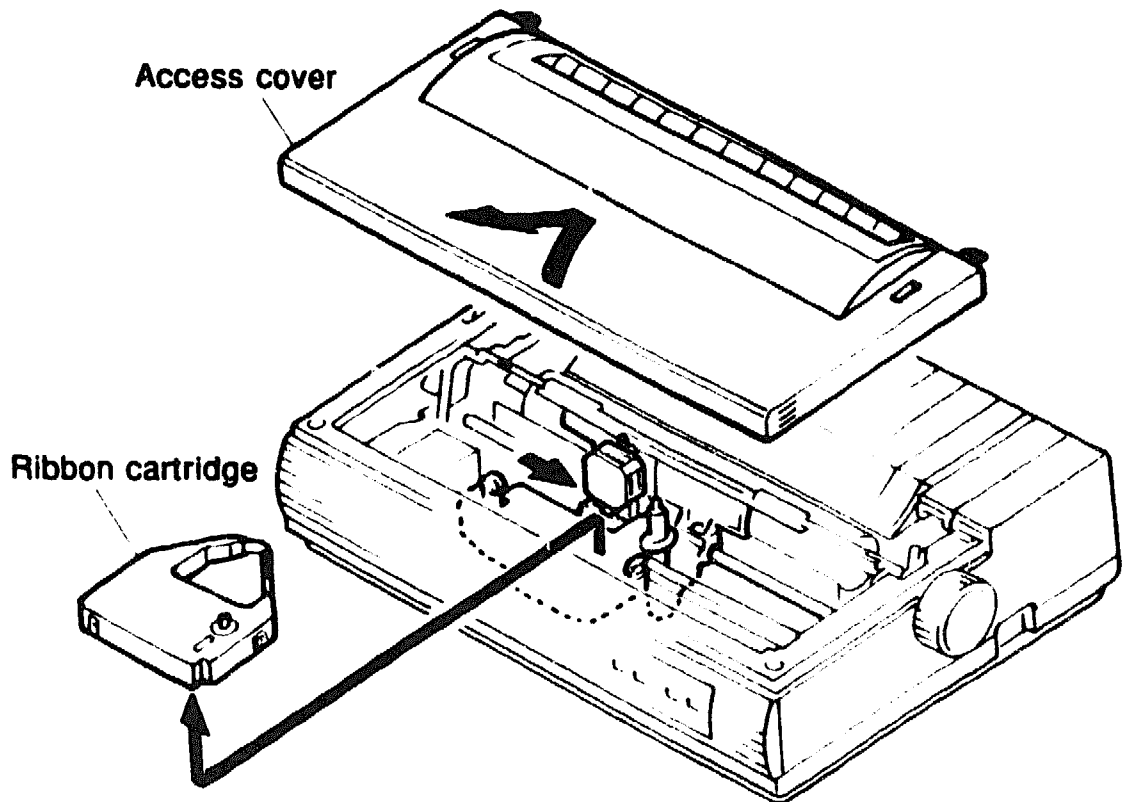


Figure 6-3 Removing the Access Cover and the Ribbon Cartridge

6-8 Removing and Replacing FRUs

3. Remove the head band from the printhead, and pull out the printhead upward (Figure 6-4).

To install a printhead, reverse steps 1 through 3.

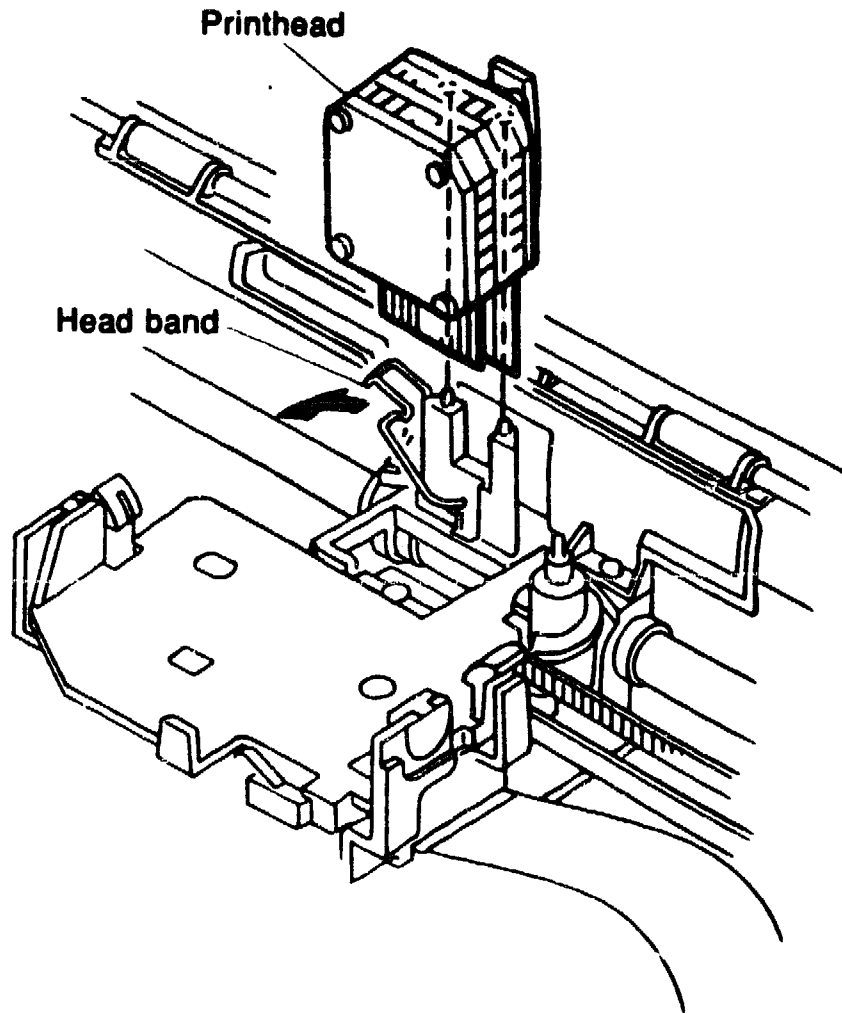


Figure 6-4 Removing the Printhead

6.5 Smudge Guard

This section refers to repair center activity. It is for information only.

Remove and replace the smudge guard as follows.

First remove the following FRU.

- Printhead (Paragraph 6.4)

1. Remove the two screws holding the smudge guard and remove the smudge guard (Figure 6-5).

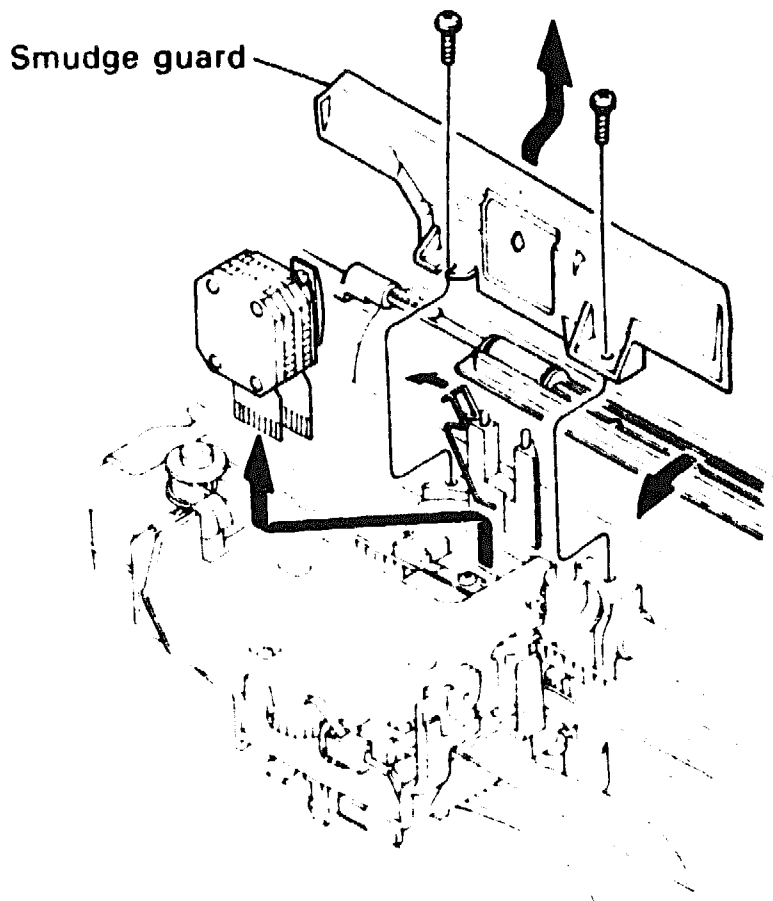


Figure 6-5 Removing the Smudge Guard

6-10 Removing and Replacing FRUs

To install a new smudge guard, to the following.

1. Check that the printhead gap (gap between the print head and platen) is 0.35 - 0.40 mm when the impression control lever is pushed fully to the rear. Use a thickness gauge to check the gap at two points : at both ends of the platen (Figure 6-6).

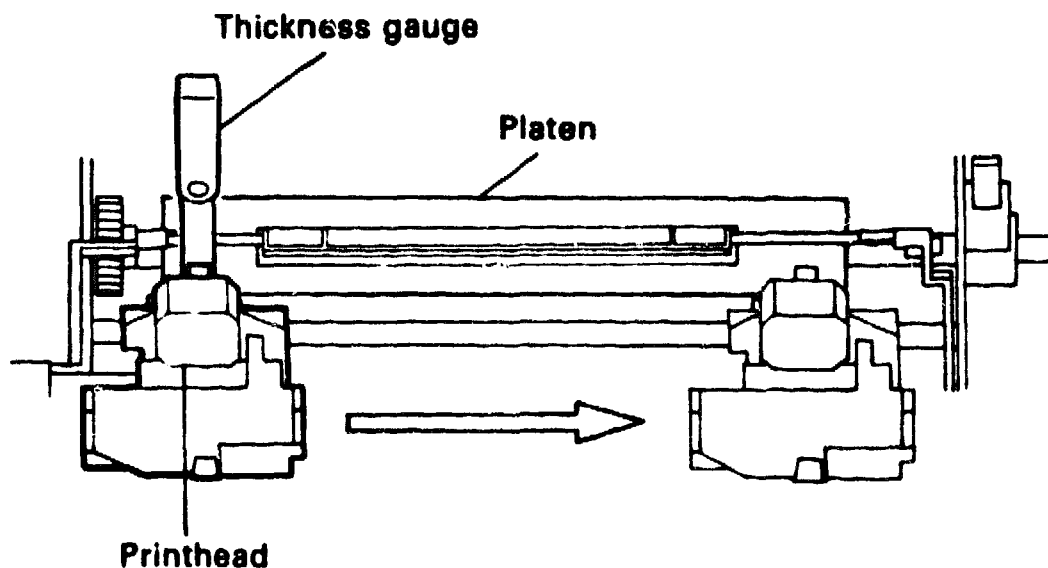


Figure 6-6 Checking the Printhead Gap

2. If the gap is not 0.35 - 0.40 mm, loosen the impression control lever screw and adjust the gap by moving the arm up and down (Figure 6-7).

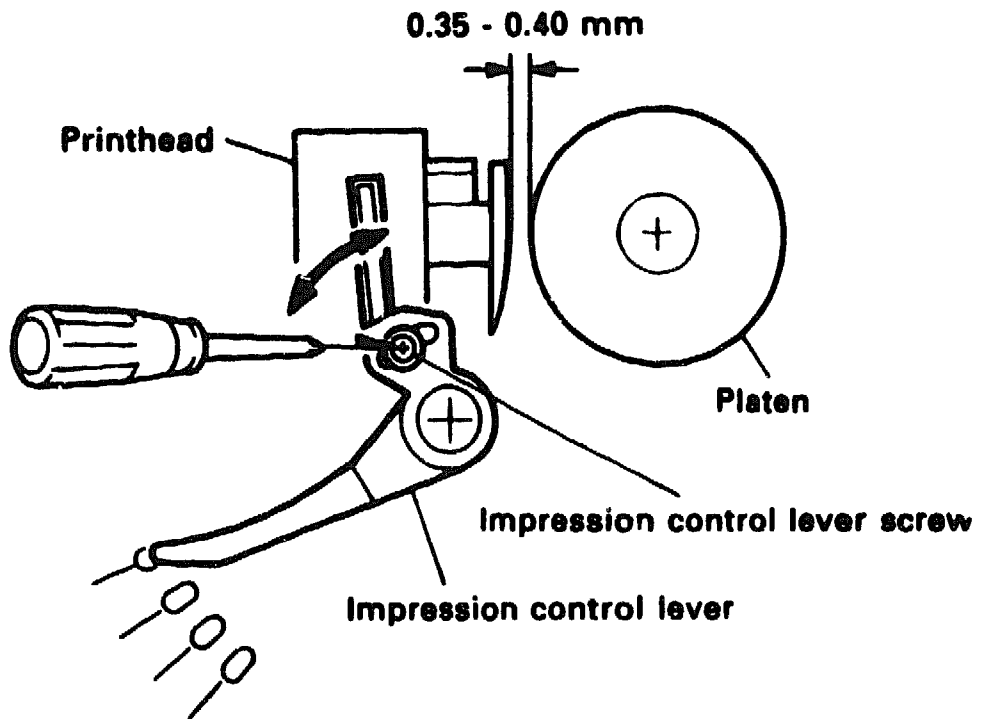


Figure 6-7 Adjusting the Printhead Gap

6-12 Removing and Replacing FRUs

3. Install and adjust the smudge guard following the procedure below.
 - a. Loosely tighten the two screws holding the smudge guard (Figure 6-8).

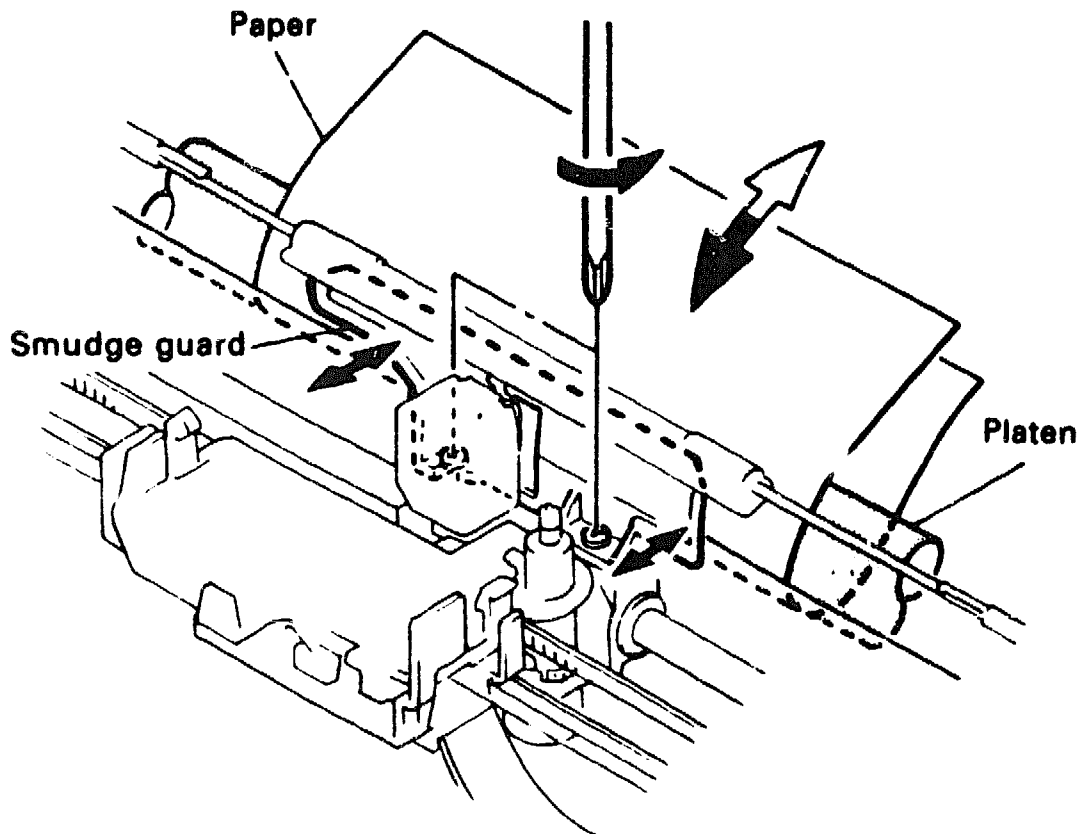


Figure 6-8 Adjusting the Smudge Guard

- b. Insert a mylar sheet of 0.125 mm-thick between the platen and smudge guard. Adjust the smudge guard position so that the mylar sheet travel is smooth. Then, firmly tighten the two screws (Figure 6-8).
- c. After the adjustment, insert a sheet of paper between the platen and Smudge guard to make sure that the adjustment is appropriate (Figure 6-9).

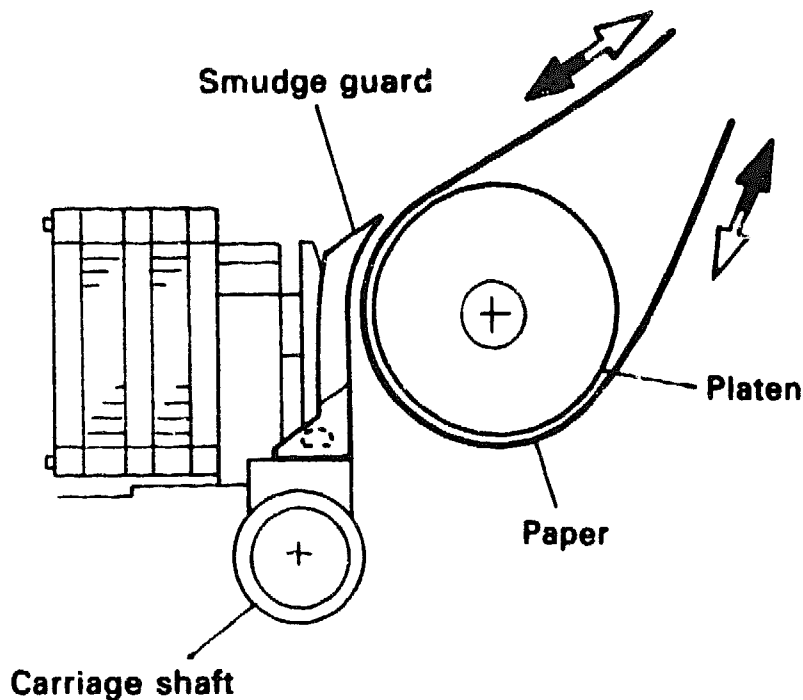


Figure 6-9 Adjusting the Smudge Guard (Cross Section)

6.6 Main PCB

CAUTION

Be careful not to touch the ROM chip pins. Static electricity can damage the chips.

Remove and replace the main PCB as follows.

1. Remove the main PCB access cover and the slide cover (Figure 6-10).

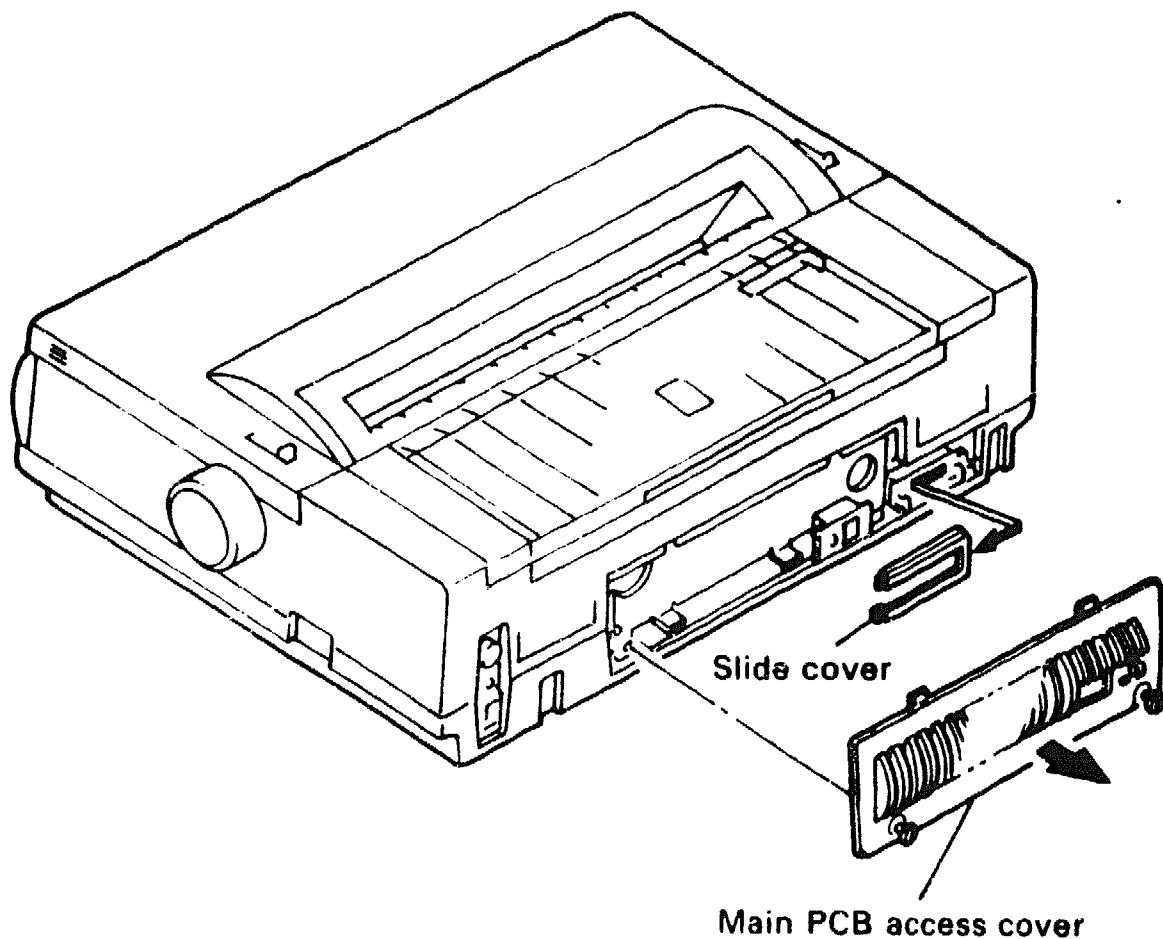


Figure 6-10 Removing the Main PCB Access Cover

2. Detach the power connector at the left end of the main PCB and pull out the main PCB by putting your finger on the heatsink (Figure 6-11).

To install the main PCB, reverse 1 through 2. Set the feature values to the customer's printer configuration requirements.

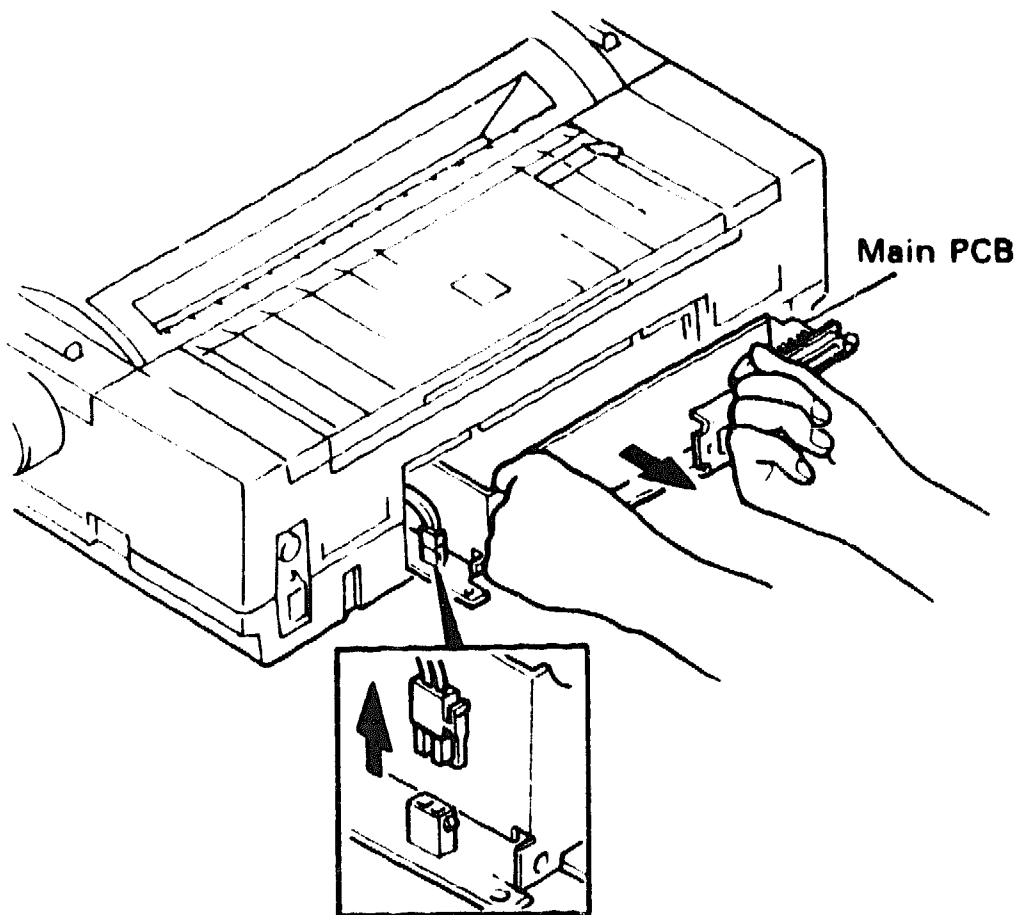


Figure 6-11 Removing the Main PCB

6-16 Removing and Replacing FRUs

6.6.1 PCB Fuses

Remove and replace the PCB fuses as follows.

First remove the following FRU.

- Main PCB (Paragraph 6.6)

Remove and replace the defective fuse(s) from the main PCB (Figure 6-12).

Reinstall the main PCB by reversing the steps in paragraph 6.6.

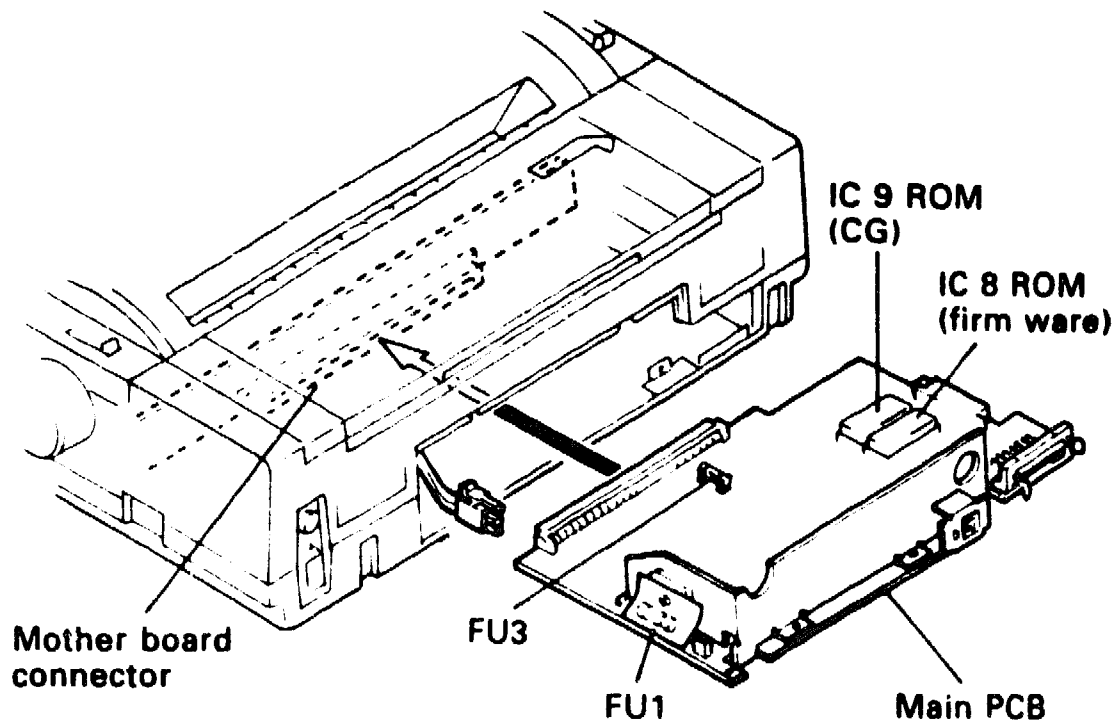


Figure 6-12 Removing the PCB Fuses

6.7 Top Cover

Remove and replace the top cover as follows.

1. Remove the access cover and the paper cover (Figure 6-13).
2. Pull off the platen knob (Figure 6-14).
3. Remove the main PCB access cover and the slide cover (Figure 6-10).
4. Remove the two screws at the front of the top cover (Figure 6-14).
5. Remove the two screws at the rear of the printer (Figure 6-14).
6. Carefully pull the back of the top cover away from the printer and unplug the control panel connector from the inside front of the cover (Figure 6-14).

To install the top cover, reverse steps 1 through 6.

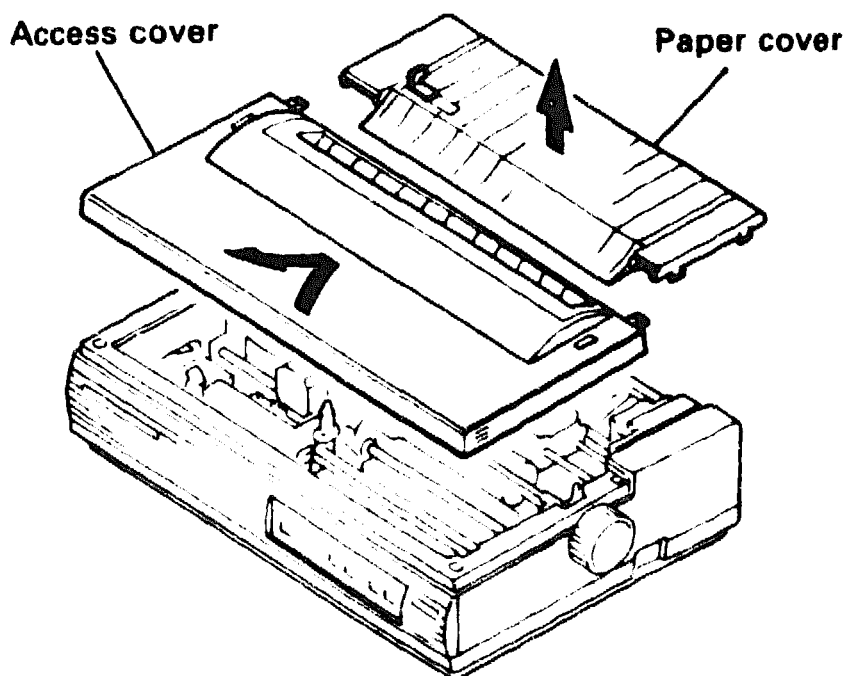


Figure 6-13 Removing the Access Cover and Paper Cover

6-18 Removing and Replacing FRUs

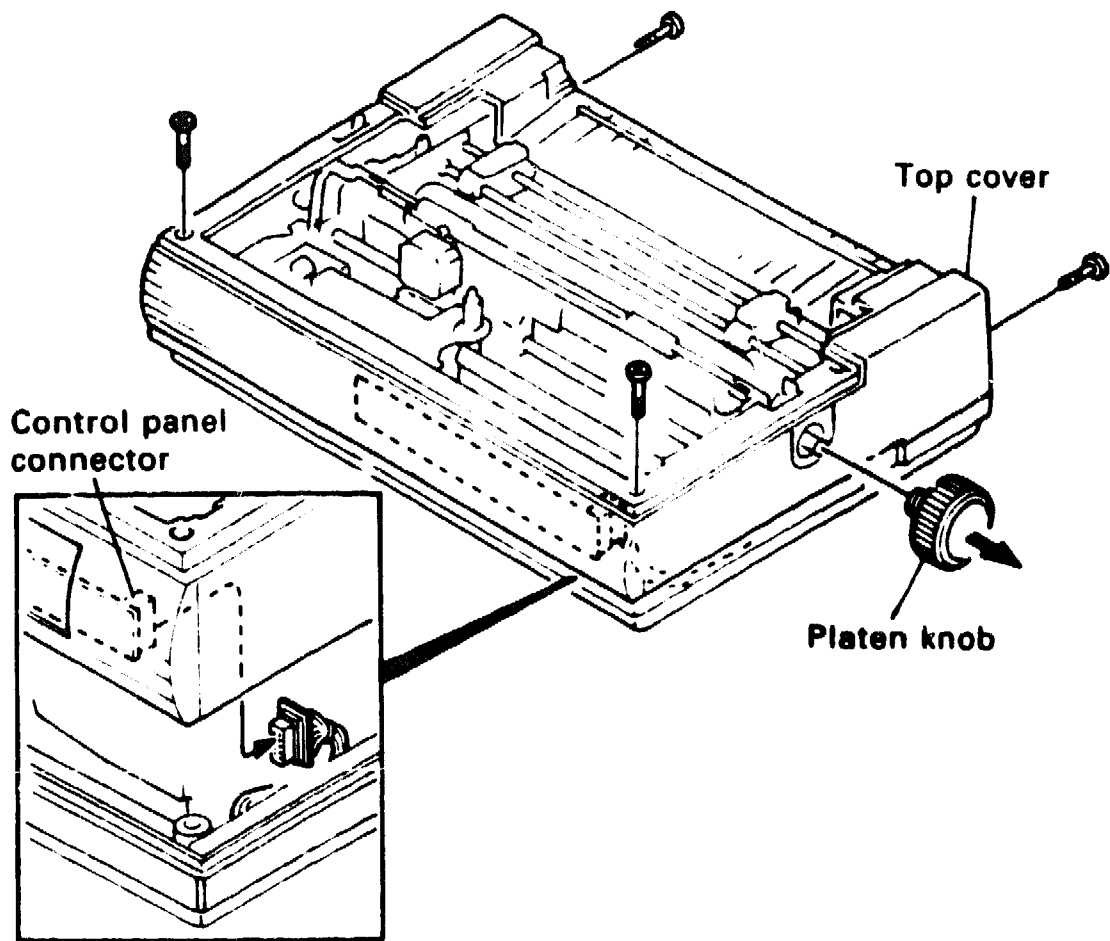


Figure 6-14 Removing the Top Cover

6.8 Tractor Assembly

Remove and replace the tractor assembly as follows.

Note:

It is not necessary to remove the top cover when removing the tractor assembly. In this paragraph, the top cover is removed so that you can understand the removal/replacement procedure easier.

Normally, the tractor assembly can be removed after removing the access cover and the paper cover.

First remove the following FRU.

- Top cover (Paragraph 6.7)

1. Set the tractor assembly to the pull position.
2. Pull up the rear of the tractor assembly to disengage the rear tractor bushings from the clamps (Figure 6-15).
3. Remove the tractor assembly by guiding the front tractor bushings through the exit tractor channels (Figure 6-16).

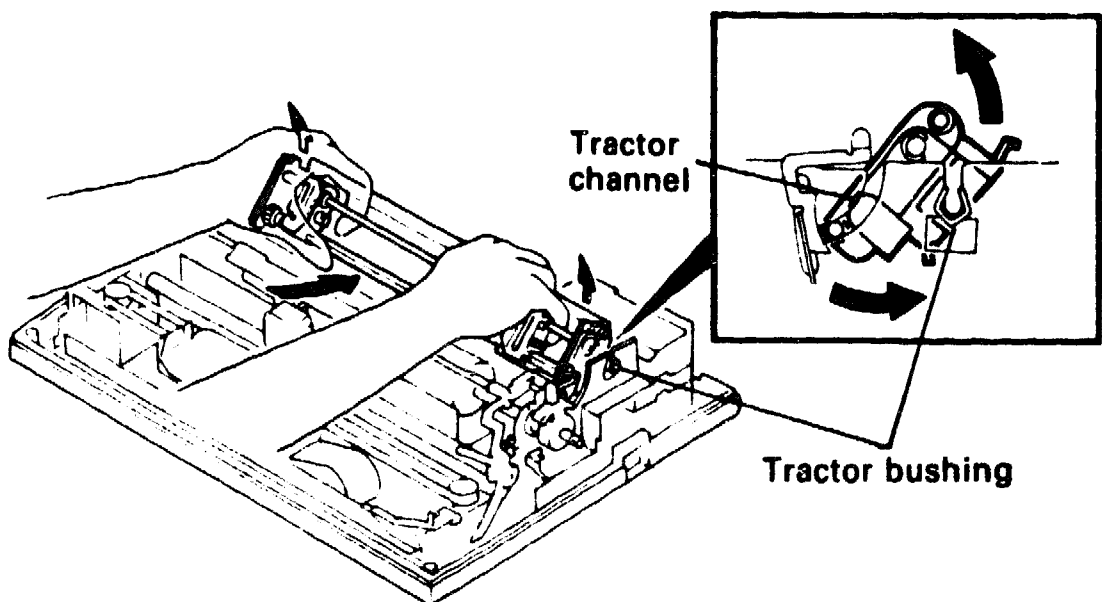


Figure 6-15 Removing the Tractor Assembly (1)

6-20 Removing and Replacing FRUs

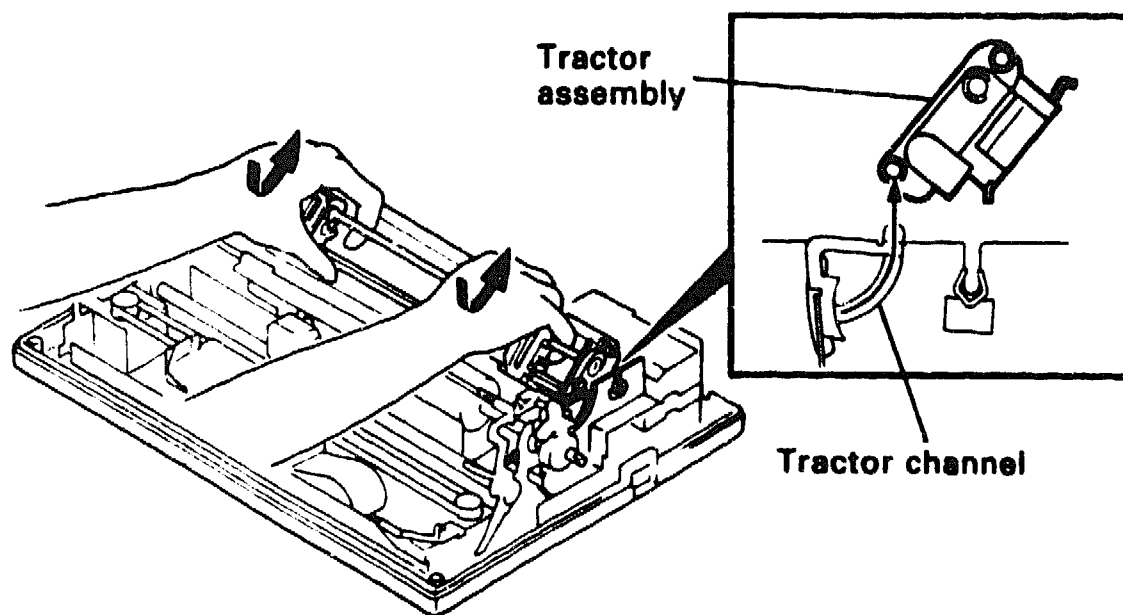


Figure 6-16 Removing the Tractor Assembly (2)

To install the tractor assembly, do the following.

1. Pull the tractor release levers forward and line up the front tractor bushings with the exit tractor channels (Figure 6-17).
2. Press down the right and left sides of the tractor assembly and engage the rear tractor bushings into the clamps (Figure 6-17).

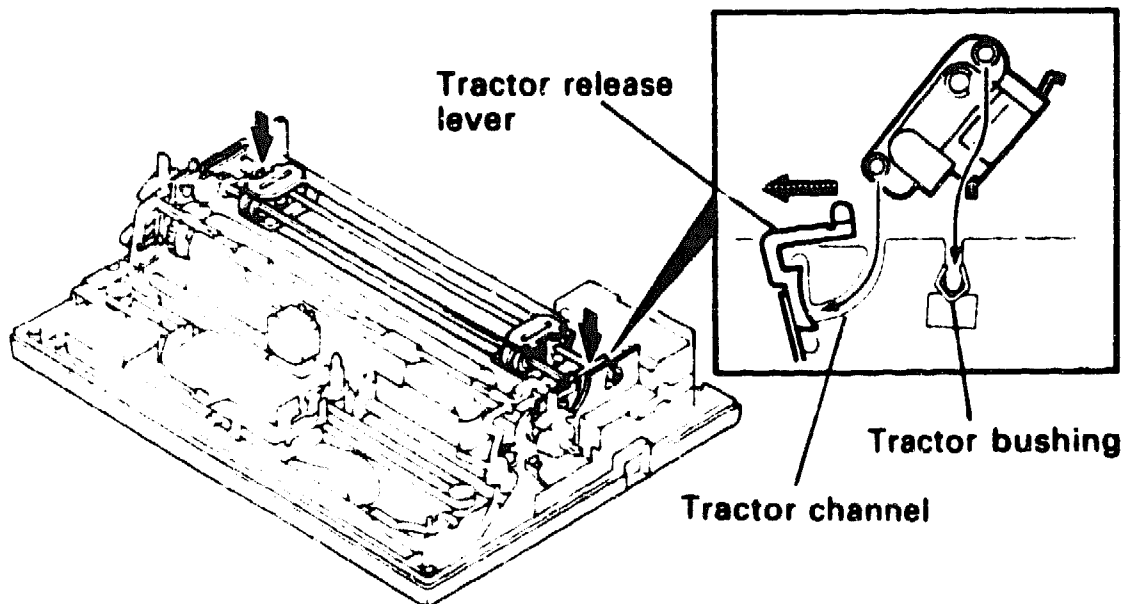


Figure 6-17 Installing the Tractor Assembly

6.9 Control Panel PCB

Remove and replace the control panel as follows.

First remove the following FRU.

- Top cover (Paragraph 6.7)

1. Remove the four screws holding the control panel to the top cover (Figure 6-18).
2. Remove the one screw holding the access cover interlock switch and remove the switch.
3. Remove the control panel PCB.

To install the control panel, reverse steps 1 through 3.

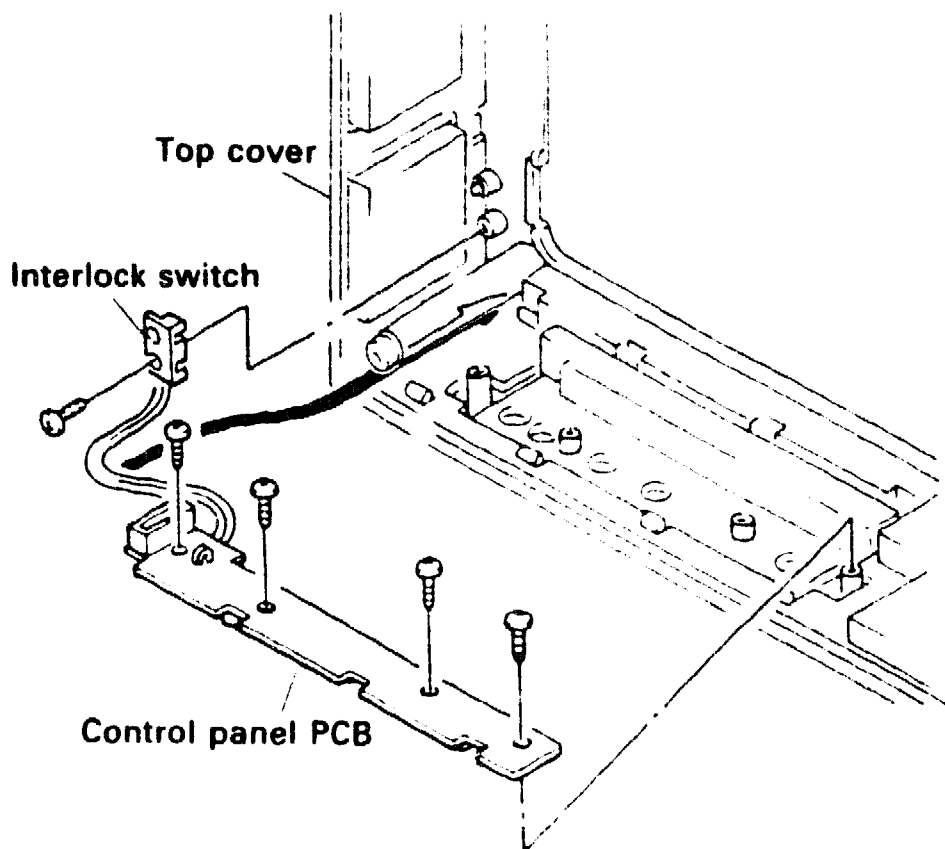


Figure 6-18 Removing the Control Panel PCB

6.10 Mechanical Assembly

Remove and replace the mechanical assembly as follows.

First remove the following FRUs.

- Printhead (Paragraph 6.4)
- Main PCB (Paragraph 6.6)
- Top cover (Paragraph 6.7)

1. Remove the five screws holding the mechanical assembly (Figure 6-19).
2. Remove the screw connecting the ground strap to the power supply (Figure 6-19).
3. Remove the mechanical assembly (Figure 6-19).

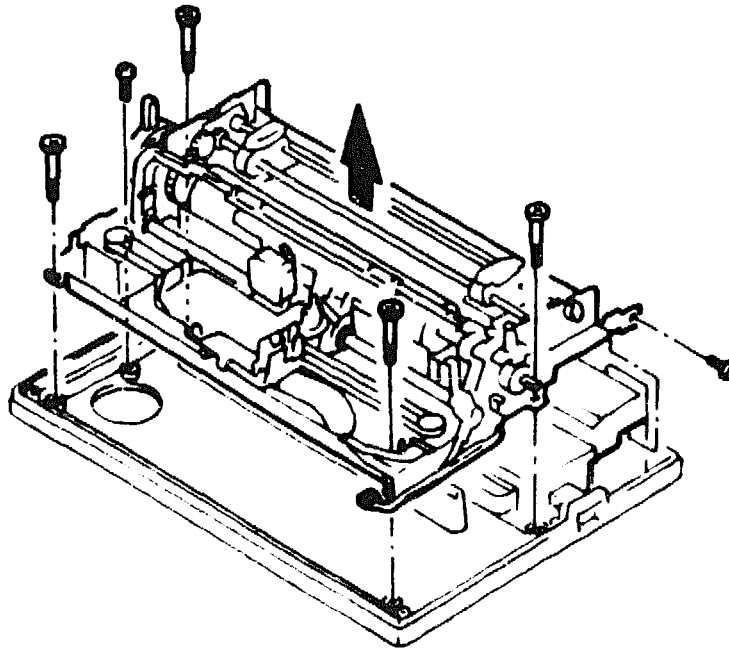


Figure 6-19 Removing the Mechanical Assembly

To install the mechanical assembly, reverse steps 1 through 3.

Install the ribbon cartridge and the printhead on the replaced assembly.

Note:

The replacement mechanical assembly is delivered with transit packing. Remove and retain this packing material for use in the mechanical assembly being returned.

6.11 Power Supply

Remove and replace the power supply as follows.

First remove the following FRUs.

- Main PCB (Paragraph 6.6)
- Top cover (Paragraph 6.7)
- Mechanical assembly (Paragraph 6.10)

Remove the three screws holding the power supply and remove the power supply (Figure 6-20).

To install the power supply, reverse the above procedure.

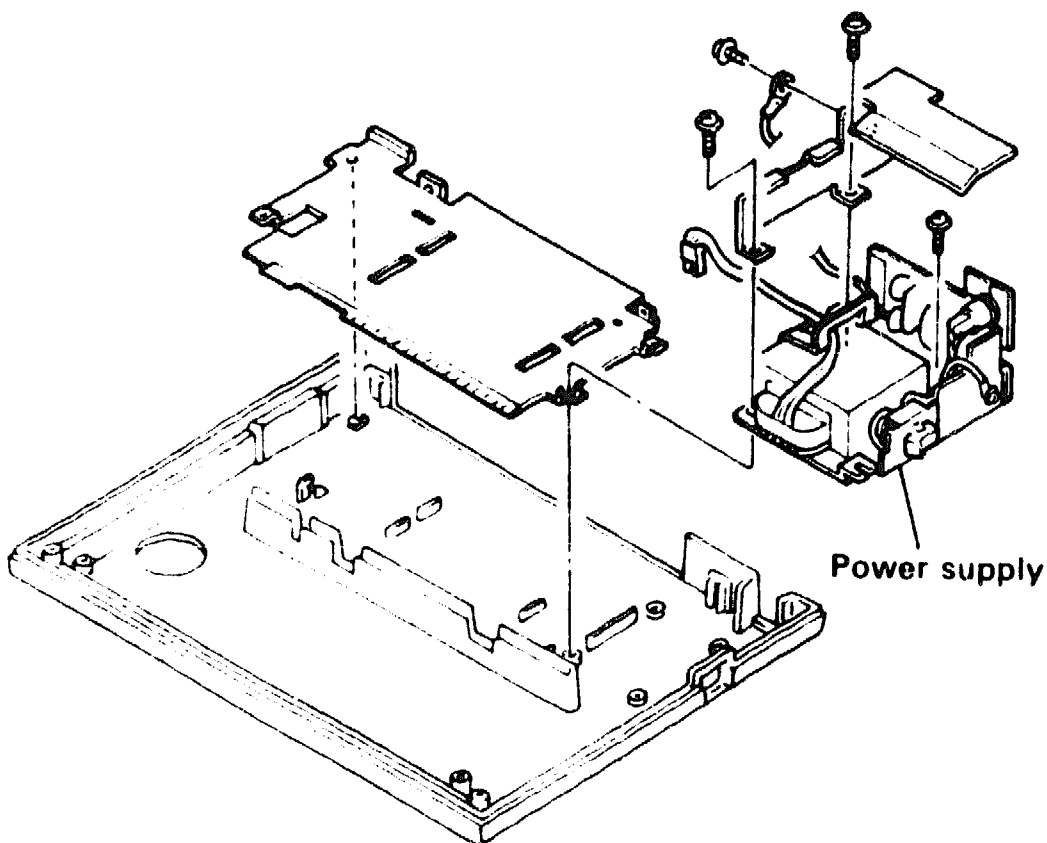


Figure 6-20 Removing the Power Supply

6.12 Automatic Sheet Feeder (ASF)

6.12.1 Removal

1. Unload all paper.
2. Press the automatic sheet feeder release button Z and lift the assembly up and off the printer.

Store in a safe place.

3. Replace the access cover.
4. Set the friction/tractor feed lever to suit your need.

The removal of the ASF is now complete.

6.12.2 Replacement

Refer to Section 8.2 for replacement details.

Maintenance and Cleaning

7.1 Introduction

The LA75 Plus has been designed as a low maintenance printer. Most of the maintenance needed is determined by the environment in which it operates.

High ambient temperatures cause the oil on the paper moving mechanism and carriage to dry out. Dust, dirt in the atmosphere, and the residue from the ribbons and paper coat the internal surfaces (especially the oily ones), and clog the mechanism.

Use a few minutes of a site visit to examine the printer rather than wait for the fault call.

7.2 Cleaning

Customer cleaning responsibilities are defined in *LA75 Plus Companion Printer Installation and User's Guide* (EK-LA75E-UG-001).

Wipe off dirt with a soft cloth. Remove obstacles such as small pieces of paper using tweezers.

CAUTION

Be very careful not to damage the mechanism nor bend a part when cleaning.

7-2 Maintenance and Cleaning

7.2.1 Cleaning the Carriage Shaft

This is a repair center activity only.

The carriage shaft accumulates dust easily as it is lubricated with launa oil. Wipe off dirt with a soft cloth. Lightly lubricate the cleaned parts.

NOTE

Do not overlubricate. Excessive dust could build up and may cause damage.

7.2.2 Platen

Open the access cover and clean the platen surface with DEC platen cleaner.

CHAR

[illegible]

8

Automatic Sheet Feeder (ASF)

8.1 Introduction

The ASF is a single bin cut sheet feeder.

It attaches to the LA75 Plus by simply lowering into position. A locking catch keeps it in position.

The printer firmware interrogates the ASF sensor to assume that the ASF is or is not fitted.

8.2 Installing the Automatic Sheet Feeder (ASF)

Detailed user level installation information is supplied with each ASF. This guide summarizes the installation for the D.S. Engineer.

Refer to Figure 8-1.

The ASF is delivered with transit packing in place. Remove this before using the ASF.

Item Number	Item Name
1.	Automatic Sheet Feeder
2.	Documentation
3.	Front Stacker Support
4.	Rear Stacker Support
5.	Rear Cover

8-2 Automatic Sheet Feeder (ASF)

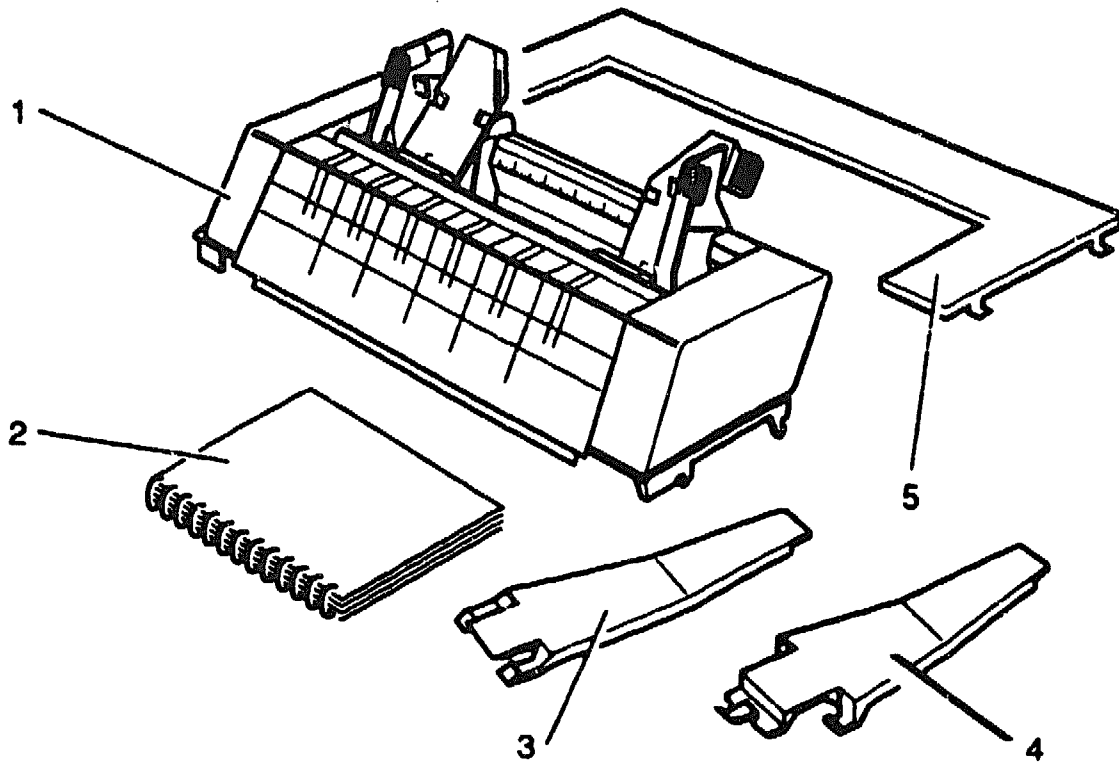


Figure 8-1 Unpacking the ASF

8.2.1 Preparation

1. Install and test the LA75 Plus printer.
2. Remove all paper.
3. Switch the power off.

8.2.2 Installation

Refer to Figure 8-2.

1. Remove the access cover (A) and the insert (B) from the access cover.
2. Remove the paper cover (C).
3. Store the insert (B) and the paper cover (C) in a safe place.

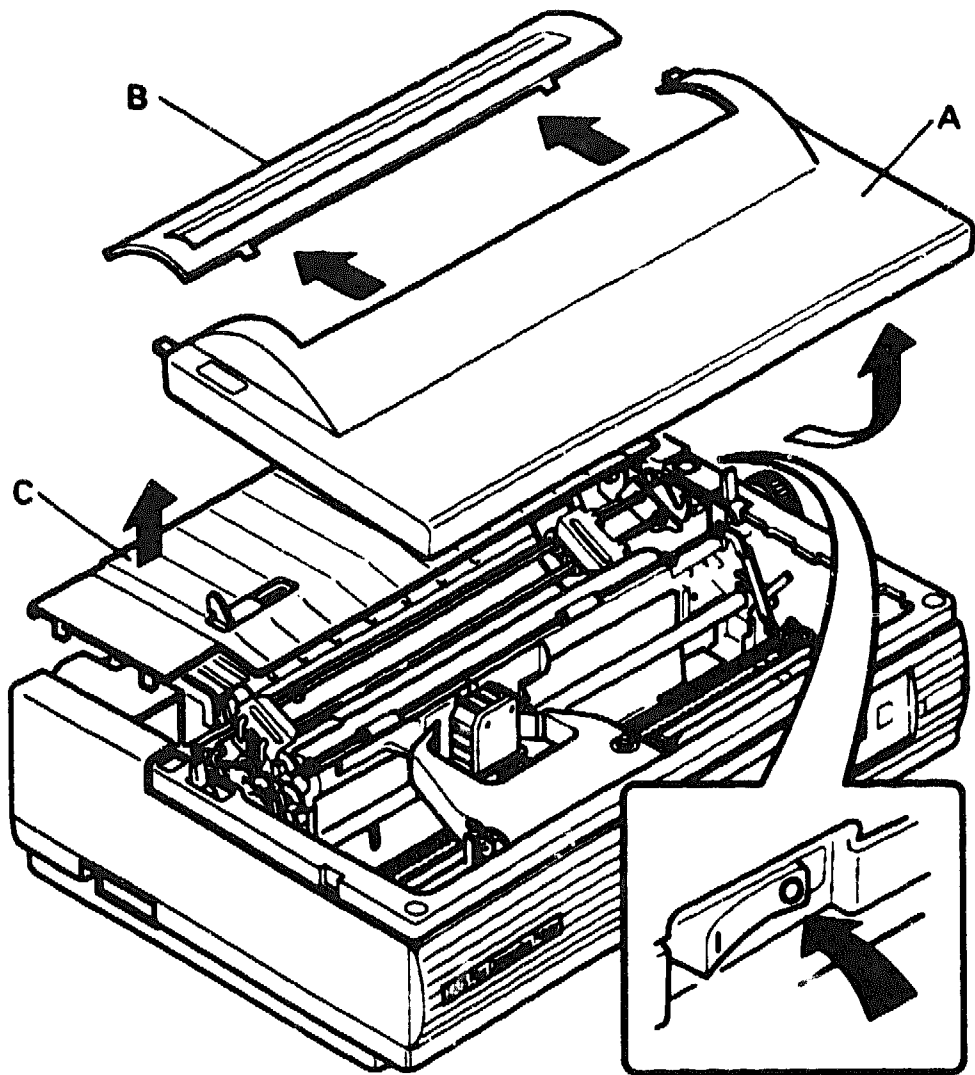


Figure 8-2 Removing the Covers

8-4 Automatic Sheet Feeder (ASF)

4. Attach the sheet feeder to the printer as shown.

Refer to Figure 8-3.

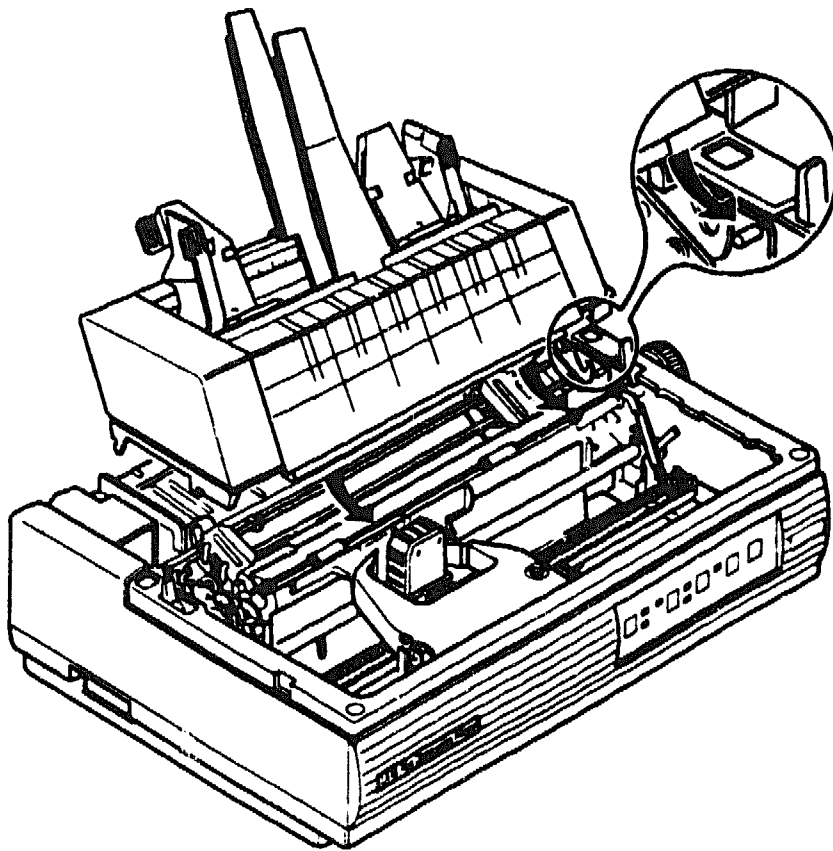


Figure 8-3 Installing the ASF

5. Replace the printer's access cover (A).
6. Attach the sheet feeder's rear cover to the sheet feeder.
7. Set the tractor/friction feed lever to the friction mode (backwards).
8. Turn the printer on.

The ASF is now installed.

NOTE

The presence of the ASF is detected when the power is switched on. If you have installed the ASF with the power on, you will need to switch the power off and on again for it to be recognized.

8.3 Removal

1. Unload all paper.
2. Remove the access cover and the rear cover.
3. Detach the ASF from the printer.

The removal of the ASF is now complete.

NOTE

The presence of the ASF was detected when the power was switched on. If you removed the ASF with the power on, you will need to switch the power off and on again for the printer to return to pinfeed or single sheet operation.

8.4 Loading Paper

8.4.1 Preparing to Load the Paper

Refer to Figure 8-4.

1. Pull the right and left rear tabs towards the front of the printer until the paper bin locks open to allow for paper loading.

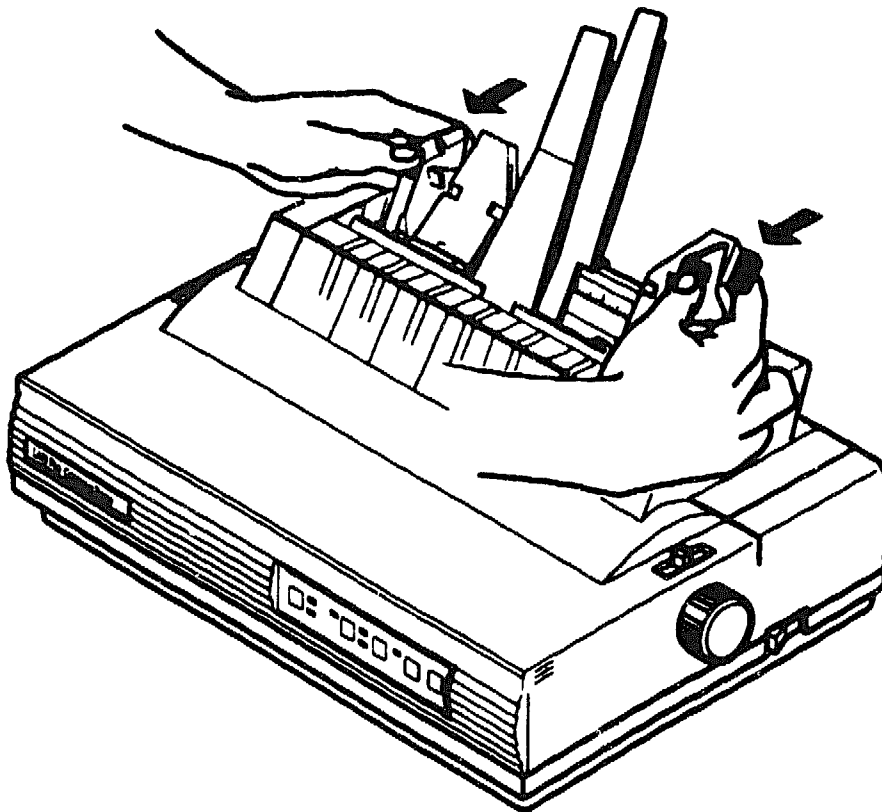


Figure 8-4 Opening the Paper Bin Locks

Refer to Figure 8-5.

2. Slide the left paper guide all the way to the left.
3. Slide the right paper guide so that it roughly matches the width of your paper.
4. Center the front stacker support between the two paper guides.

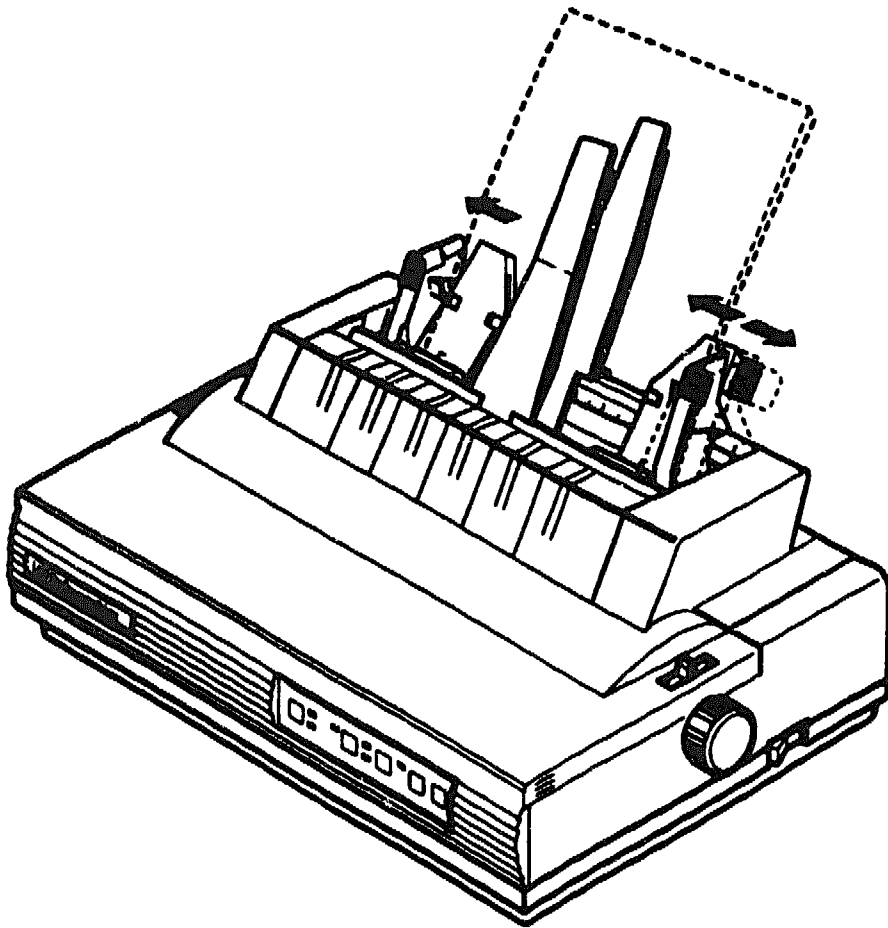


Figure 8-5 Adjusting the Paper Guides

8-8 Automatic Sheet Feeder (ASF)

8.4.2 Loading Paper

Refer to Figure 8-6.

1. Insert the paper along the left paper guide.
2. Adjust the position of the right paper guide until the paper is held firmly, but not so tightly that it causes the paper to bunch.

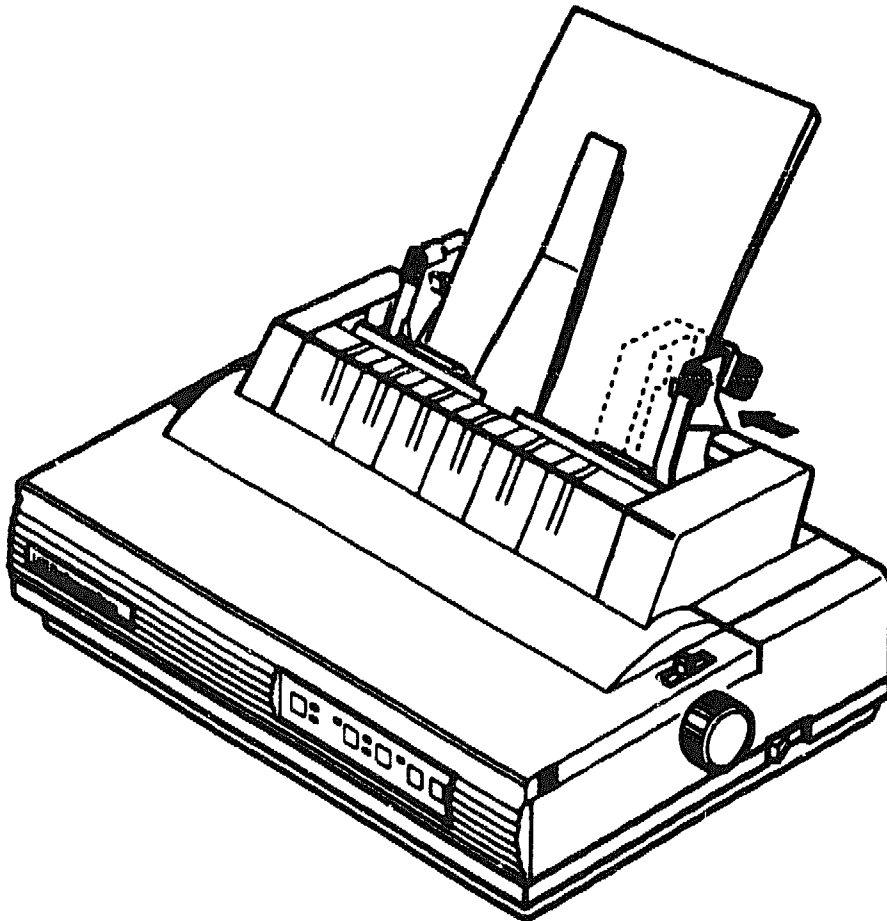


Figure 8-6 Adjusting the Right Paper Guide

3. Push the rear tabs on both paper guides towards the back of the printer to secure the paper against the guide rollers.

Refer to Figure 8-7.

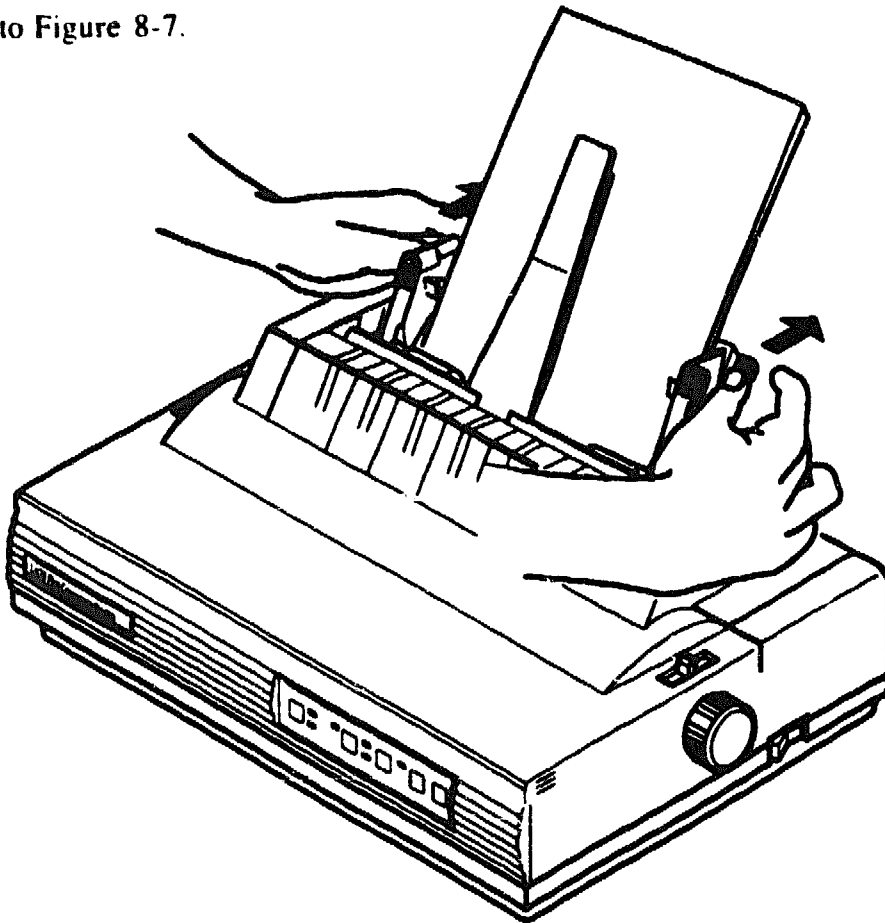


Figure 8-7 Closing the Paper Bin Locks

The LA75 Plus automatic sheet feeder is now ready for use.

8.5 Testing the ASF

Use the printing self test to test the ASF. Refer to Section 3.2.7 for details of this test.

9

Firmware

The Main PCB kit has two ROMs, IC8 and IC9. The codes in IC8 controls the functions of the printer. This chip also contains the two protocols: ANSI (Digital Conformance Level-2) and IBM Proprinter Emulation. IC8 is labeled "Vendor Part Number" and "Version No.". IC9 stores the character generator. This chip is also labeled "Vendor Part Number" and "Version No.".

When working with an open LA75 Plus, always note the revision level of each ROM to assess whether an update is required. The release level is written on the ROMs. The level of firmware (IC8) is printed on the first line of the features setup printout. (See Chapter 5.)

9.1 Replacing the Firmware

These components are replaced with the Main PCB kit removed. Refer to Section 6.6 for details of removing the Main PCB kit and location of the ROMs, IC8 and IC9.

Replace the Main PCB kit and test the printer fully.

Table 9-1 Current Firmware Revision Status

Digital Part Number	Vendor Part Number	Release
N/A	FBCB0025801	LA75 Plus V 1.1
N/A	FBCB0030601	LA75 Plus X 9.9

[illegible]

A

Specifications

A.1 Printer Specifications

Feature	Range	
Paper Handling:	Pinfeed, Single Sheet Single bin Automatic Sheet Feeder (optional) Also see Paper Specifications in this chapter	
Selectable Form Length:	Inches	mm
	3	76.2
	3.5	88.9
	4	101.6
	5.5	139.7
	6	152.4
	7	177.8
	8	203.2
	Inches	mm
	8.5	215.9
	11	279.4
	11 2/3	296.16
	12	304.8
	14	355.6
	15	381
	(1/144"): XXXX	(0.176): XXX
Other values are available by software selection.		
Horizontal Print Density	5 CPI	10 CPI (80 col)
	6 CPI	12 CPI
	6.6 CPI	13.2 CPI
	8.25 CPI	16.5 CPI (132 col)
	8.55 CPI	17.1 CPI
	9 CPI	18 CPI

A-2 Specifications

Feature	Range	
Vertical Print Density	2 LPI	6 LPI
	3 LPI	8 LPI
	4 LPI	12 LPI
	1 Line/cm	
	2 Lines/cm	
Character Sets:	DEC	
	US ASCII	DEC Turkish
	Great Britain	DEC Turkish Supplemental
	DEC Finland	DEC Greek Supplemental
	France	DEC Supplemental
	DEC French Canada	DEC Technical
	Germany	Katakana
	Italy	DEC Hebrew Supplemental
	JIS Roman	VT100
	DEC Norway/Denmark	W.P./Legal
	Spain	User Preference Character Set
	DEC Sweden	SPECIAL
	Norway/Denmark	Cartridge Character Sets
	DEC Dutch	labelled with (External)
	DEC Swiss	ISO Latin 1 Supplemental
	DEC Portugal	ISO Hebrew Supplemental
	DEC Hebrew	ISO Latin 5 Supplemental
		ISO Latin/Greek Supplemental
Printing Quality Modes:	IBM	
	U.S.A. (Code Page 437)	
	Multilingual (Code page 850)	
	Portugal (Code Page 860)	
	Norway (Code Page 865)	
	Spain (Code page 220)	
	Greece (Code Page 210)	
	Canada-French (Code Page 863)	
	German GS (Code Page 190)	
	Turkish (Code page 857)	
	Cartridge Character Sets labelled with (External)	
Print Attributes:	Draft	
	Memo	
	NLQ	
	Underline	
	Double underline	
	Overline	
	Italic	
	Strike-through	
	Shadow bold	
	Double width	

Feature	Range
Noise Level:	52 dB in Quiet Mode
Dimensions:	Width = 400 mm (15.7"), Depth = 290 mm (11.4"), Height = 120 mm (4.8"), Height with Auto Sheet Feeder = 400 mm (15.7")
Weight:	16 pounds (7.5 kg)
Power Requirements:	100 V @ 0.75 A, 50/60 Hz, 50 W 120 V @ 0.75 A, 50/60 Hz, 50 W 220 V @ 0.5 A, 50/60 Hz, 50 W 240 V @ 0.5 A, 50/60 Hz, 50 W

A-4 Specifications

A.2 Paper Specifications

Feature	Range
Paper Types:	Pinfeed (tractor media) Single sheets Up to 3 part forms Envelopes
Continuous Paper (Tractor Media):	1. Single part continuous paper between 4" and 10" wide including perforations is supported. The allowable weight for these forms is 56 to 90 g/m² (15 to 24 pounds per ream). 2. Multiple part forms: 4" to 10" wide including perforation. • 3 parts (1 original and 2 copies) with carbon: First Sheet -60 to 75 g/m² (16 to 20 lb/ream) Copies -45 to 56 g/m² (12 to 15 lb/ream) Total thickness: .012" maximum (0.3 mm) • 3 parts (1 original and 2 copies) without carbon: First Sheet and Copies -54 to 56 g/m² (14.5 to 15 lb/ream) Last Sheet -49 to 56 g/m² (13 to 15 lb/ream) Total thickness: .012" maximum (0.3 mm)
NOTE Hole spacing should be 12.7 mm +/- 0.25 mm (0.50" +/- 0.01") non-accumulative over 50.8 mm (2.00") with a hole diameter of 3.8 mm to 4.1 mm (0.15" to 0.16").	
Single-sheet Paper (Hand-fed Media):	Single-sheet plain bond, typewriter quality paper between 60 and 90 g/m ² (16 and 24 pounds per ream). Hand-fed multiple-part forms (.012 max. thickness) and up to 8.5" in width.
Single-sheet Paper (Sheet-feeder Media):	Single-sheet plain bond (60 to 90 g/m ² (16 to 24 lb/ream)) Bin Capacity: up to 100 sheets at 75 g/m ² (20 lb/ream)

[illegible][illegible]

B

Spares and Service Kit Part Numbers

B.1 Recommended Van-Kit Spares List

Description	Part Number
Mechanical Assembly	29-29328-01.A01
Printhead 24-pin	29-29312-01.A01
Main PCB	29-29322-01.A01
Main PCB Fuse FU1 5A	29-26001-01.A01
Main PCB Fuse FU3 3.15A	12-33600-01.A01
Control Panel	29-29309-01.A01
Tractor Assembly	29-25917-00
Power Supply Fuse 1.6 A US	29-26003-00
Power Supply Fuse 1A EU	29-26004-00
Automatic 1-bin Sheet Feeder	LA75Y-SF

B-2 Spares and Service Kit Part Numbers

B.2 Special Tools

Description	Part Number
MMJ Loopback Connector	12-25083-01
Parallel Loopback Connector	29-27887-01 A01

B.3 Power Cables

Description	Part Number
USA, Canada, Mexico	17-00606-10
Australia, New Zealand	17-00198-05
Central Europe	17-00199-21
United Kingdom/Ireland	17-00209-15
Switzerland	17-00210-13
Denmark	17-00310-08
Italy	17-00364-18
Israel	17-00457-16

B.4 Data Cables

Description	Part Number
MMJ serial cable (BC16E-10)	17-00811-02
Shielded MMJ serial cable (DD16E-10) for Germany	17-01364-01
Parallel cable (BC19M-10)	17-01516-00

B.5 Miscellaneous Spares

Description	Part Number
Power Supply 100 V (JAPAN)	29-29324-01.A01
Power Supply 120 V US	29-29325-01.A01
Power Supply 220 V EU (Except UK)	29-29326-01.A01
Power Supply 240 V UK	29-29327-01.A01
Top Cover BK	29-29348-01.A01
Bottom Cover BK	29-29349-01.A01
IF Cover	29-29350-01.A01
Platen Knob	29-25971-00.A01
Main PCB Access Cover	29-25974-01.A01
Rear Cover - Printer	29-25973-00.A01
Rear Cover - ASF	29-29352-01.A01
Platen BK	29-25955-00.A01
Release Lever	29-25919-01.A01
Card Holder	29-29311-01.A01
Paper Support Kit - ASF	29-29356-01.A01
Front Cover - ASF	29-29357-01.A01
Black Ribbon Cartridge (x6)	LA75R-KA
Color Ribbon Cartridge (x6)	LA75R-KC

B-4 Spares and Service Kit Part Numbers

B.6 LA75 Plus Miscellaneous Kits

Description	Part Number
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LA75 Plus Misc. Screw/Washer Kit-1 29-25975-01.A01

Item #	Description	Qty
1	Frame Set Screw	10 pcs
2	Carriage Motor Screw	10 pcs
3	PF Motor Screw	10 pcs
4	Impression Control Screw	10 pcs
5	Impression Control Lever Washer	10 pcs
6	Tapping Tight Screw M3 x 6	10 pcs
7	Sems Tapping Tight Screw M3 x 7	10 pcs
8	Sems Tapping Tight Screw M4 x 8	10 pcs
9	Tapping Tight Screw M3 x 7	10 pcs
10	Sems Tapping Tight Screw M3 x 5	10 pcs
11	Cover Screw A	10 pcs
12	Cover Screw B	10 pcs

LA75 Plus Misc. Screw Kit-2

29-25975-02.A01

Item #	Description	Qty
1	Tapping Screw M3 x 8	10 pcs
2	Double Sems Screw M2.6 x 6	10 pcs
3	Double Sems Screw M4 x 6	10 pcs
4	Double Sems Screw M4 x 12	10 pcs
5	Pan Head Screw M2.6 x 6	10 pcs
6	Double Sems Screw M3 x 6	10 pcs
7	Double Sems Screw M3 x 14	10 pcs
8	Double Sems Screw M3 x 16	10 pcs
9	Pan Head Screw M2.6 x 10	10 pcs

Spares and Service Kit Part Numbers B-5

Description	Part Number
LA75 Plus Misc. Spring Kit	29-25976-01.A01

Item #	Description	Qty
1	Carriage Pulley Arm Spring	2 pcs
2	Ribbon Wire Spring	2 pcs
3	Bail Roller Arm Spring	2 pcs
4	Shift Gear Spring	2 pcs
5	Indicator Spring	2 pcs
6	Platen Gear Spring	2 pcs
7	Tractor Lock Spring (L)	2 pcs
8	Tractor Lock Spring (R)	2 pcs
9	Deflector Spring	2 pcs
10	Pinch Roller Spring	2 pcs
11	Auto Loading Lever Spring	2 pcs
12	Cassette Cover Spring	2 pcs

LA75 Plus Misc. E-Ring Kit	29-25977-00.A01
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Item #	Description	Qty
1	E-Ring E2	10 pcs
2	E-Ring E2.5	10 pcs
3	E-Ring E3	10 pcs
4	E-Ring E4	10 pcs

LA75 Plus Misc. Gear Kit	29-25978-01.A01
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Item #	Description	Qty
1	Drive Gear	2 pcs
2	Shift Gear	2 pcs
3	Reduction Gear	2 pcs
4	Platen Gear (A)	2 pcs
5	Platen Gear (B)	2 pcs
6	Tractor Gear	2 pcs

[illegible][illegible]

Meaning of the Indicators

Table C-1 Meaning of the Indicators

Indicator Title	State	Meaning
RDY	Off	Power off
	On	Ready or Busy states
	Blinking	Pause state
Serial Port	Off	Parallel port active
	On	Serial port active
	Blinking	Setup mode (See Draft blinking)
Fault	Off	No faults
	On	Out of paper
	Flashing	One-second period if: • paper cover is open • paper jam • carriage error • ASF activated but cannot eject paper or cannot load paper 0.5 second period if internal diagnostic error.
DEC	Off	IBM mode selected
	On	Digital mode selected
	Blinking	Protocol is communication port dependent
Quiet	Off	Normal mode selected
	On	Quiet mode selected
LQ	Off	Print quality controlled by software
	On	High printing quality
Draft	Off	Print quality controlled by software
	On	Draft printing quality
	Blinking	Setup mode (See Serial Port blinking)

Note:

The indicators flash on and off for 2 seconds at the startup sequence (Power on.).

[illegible][illegible]

D

Function of the Switches

Table D-1 Meaning of Operator Controls

Key Label	Meaning
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The switches on this printer have two different functions: normal and setup. The setup function results if the printer is switched on with the Ready switch pressed. (See Chapter 5.).

Ready	Pressing and releasing this switch toggles the printer between the Pause and Ready states. When the printer is Ready, the RDY indicator is on. When the printer is in the Pause state, the RDY indicator is blinking, and printing stops or cannot start. In the push tractor mode or friction mode, when the printer moves from the Ready to the Pause state, the paper is advanced for Viewing or Tear-off, when the printer comes back to the Ready state, the paper is backed to the previous position.
Quiet/Quality	When the printer is in the Pause state, pressing this switch forces one of the three print quality settings, LQ, Draft print qualities or software control. The selection made with this switch will not be affected by a software selection. When the LQ print quality is forced, the LQ indicator is on; when the Draft print quality is forced, the Draft indicator is on; when the print quality is under the software control, both the LQ and Draft indicators are off.
Protocol	When the printer is in the Pause state, pressing this switch toggles the active protocol between the two protocols 1. DEC Protocol 2. IBM Proprinter protocol When the DEC protocol is selected, the DEC indicator is on.

D-2 Function of the Switches

Key Label	Meaning
Protocol (cont.)	When the IBM protocol is selected, the DEC indicator is off. When no protocol is currently active and is port dependant at power-up, the DEC indicator is blinking.
LF	Pressing this switch advances the paper one line at the current pitch.
FF	For automatic paper loading, pressing the FF advances the paper to the top of form, ready for printing. This switch is used to perform demand printing operations. Demand printing operations allow the user to print and tear-off a single form, without wasting the next form (fan-fold). Depending upon the printer state, Ready or Pause, and upon the paper position, pressing this switch causes the paper to move to the next form line 1 (Top of Form) or to move to the next Tear-off position.

Functional Diagram

Figure E-1 shows the functional blocks of the printer.

E-2 Functional Diagram

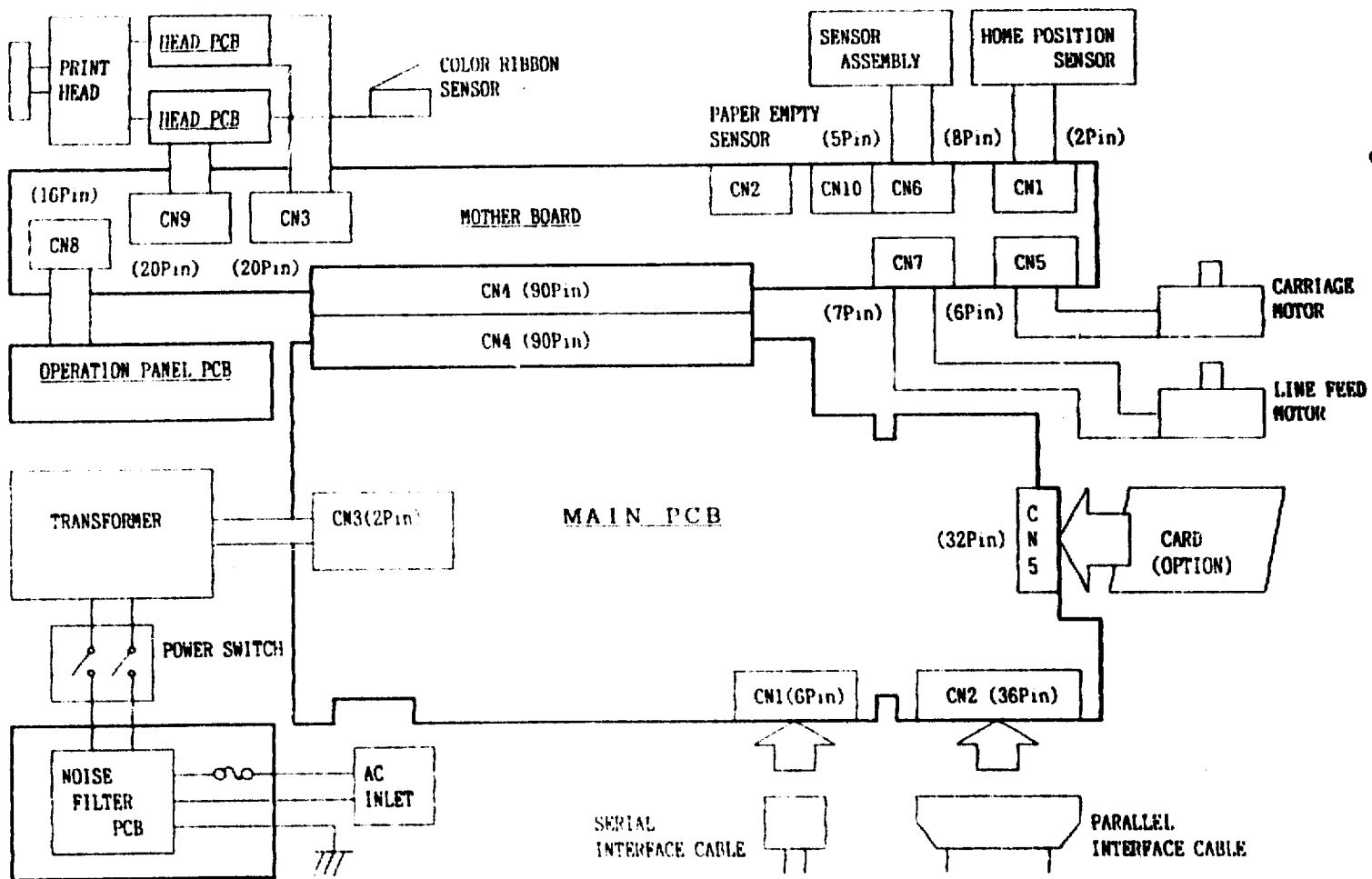


Figure E-1 Functional Diagram

[illegible]

F

Control Character Acronyms

Control	Acronym	Control	Acronym
X00	NUL	X1E	RS
X01	SOH	X1F	US
X02	STX	X20	SP
X03	ETX	X7F	DEL
X04	EOT	X84	IND
X05	ENQ	X85	NEL
X06	ACK	X86	SSA
X07	BEL	X87	ESA
X08	BS	X88	HTS
X09	HT	X89	HTJ
X0A	LF	X8A	VTS
X0B	VT	X8B	PLD
X0C	FF	X8C	PLU
X0D	CR	X8D	RI
X0E	SO	X8E	SS2
X0F	SI	X8F	SS3
X10	DLE	X90	DCS
X11	DC1	X91	PU1
X12	DC2	X92	PU2
X13	DC3	X93	STS
X14	DC4	X94	CCH
X15	NAK	X95	MW
X16	SYN	X96	SPA
X17	ETB	X97	EPA
X18	CAN	X98	CSI
X19	EM3	X9C	ST
X1A	SUB	X9D	OSC
X1B	ESC	X9E	PM
X1C	FS	X9F	APC
X1D	GS		

A large, stylized graphic of the letters 'APP' in a bold, sans-serif font. The letters have a dark, metallic texture with visible grain and some lighter, reflective highlights, giving them a three-dimensional, industrial feel. They are arranged diagonally across the page.

A large, bold, black letter 'G' with a textured, slightly distressed appearance, set against a white background. The 'G' is the primary visual element of the advertisement.[illegible]

G

Feature List

Setup Features and Values

Number	Feature	Value	
Generic 1	Protocol at Power-up	1. DEC 2. IBM Proprinter	3. Port Dependant (Serial = DEC, Parallel = IBM)*
Generic 2	Form Length	1. 3 inches 2. 3.5 inches 3. 4 inches 4. 5.5 inches 5. 6 inches 6. 7 inches 7. 8 inches	8. 8.5 inches 9. 11 inches (A)* 10. 11 2/3 inches (A4) 11. 12 inches 12. 14 inches 13. 15 inches 14. (1/180"): xxxx
Generic 3	Vertical Pitch	1. 2 Lpi 2. 3 Lpi 3. 4 Lpi 4. 6 Lpi*	5. 8 Lpi 6. 12 Lpi 7. 1 line per cm 8. 2 lines per cm 9. 4 lines per cm
Generic 4	Automatic Advance	1. Selected	2. Not selected*
Generic 5	Print Quality Control	1. Software Control* 2. Draft Locked	3. LQ Locked
Generic 6	Port Selection	1. Serial port 2. Parallel port	3. Automatic
Generic 7	Baud Rate	1. 200 2. 300 3. 600 4. 1200	5. 2400 6. 4800* 7. 9600
Generic 8	Data Bits and Parity	1. 7-Even 2. 7-Odd 3. 7-Space 4. 7-Mark	5. 8-Even 6. 8-Odd 7. 8-None*

G-2 Feature List

Number	Feature	Value	
Generic 9	Buffer Control	1. XON/XOFF*	2. DTR
Generic 10	Error Beep	1. One Beep*	3. Continuous
		2. Three Beeps	4. Off
Generic 11	Typestyle	1. Internal*	2. Cartridge
Generic 12	Input Buffer Size	1. 8K*	2. 32K - No DLL Capability
Generic 13	Disconnect on Fault	1. No action*	2. Drop DTR

Setup Features and Values - DEC Protocol Features

Number	Feature	Value	
DEC1	Horizontal Pitch	1. 5 Cpi	7. 10 Cpi (80 col)*
		2. 6 Cpi	8. 12 Cpi
		3. 6.6 Cpi	9. 13.2 Cpi
		4. 8.25 Cpi	10. 16.5 Cpi (132 col)
		5. 8.55 Cpi	11. 17.1 Cpi
		6. 9 Cpi	12. 18 Cpi
DEC2	G0 Character Set	1. U.S. ASCII*	15. DEC Portugal
		2. Great Britain	16. DEC Hebrew
		3. DEC Finland	17. DEC Turkish
		4. France	18. DEC Turkish Supp.
		5. DEC French Canada	19. DEC Greek Supp.
		6. Germany	20. DEC Supplemental
		7. Italy	21. DEC Technical
		8. JIS Roman	22. Katakana
		9. DEC Norway/ Denmark	23. DEC Hebrew Supp.
		10. Spain	24. VT100
		11. DEC Sweden	25. W.P. Legal
		12. Norway/Denmark	26. User Preference character set
		13. DEC Dutch	27. SPECIAL
		14. DEC Swiss	28. Cartridge character sets labelled with (External)
DEC 3	User Pref. Character Set	1. DEC Supplemental*	7. DEC Technical
		2. ISO Latin 1 Supp.	8. ISO Latin 5 Supp.
		3. Katakana	9. ISO Latin Greek supp.
		4. ISO Hebrew Supp.	10. SPECIAL
		5. DEC Hebrew Supp.	11. Cartridge character sets labelled with (External)
		6. DEC Hebrew	
DEC 4	Printer ID	1. LA50	3. LA210
		2. LA120	4. Conf. Level 2 (LA75 Plus)*
DEC 5	Text Mode Right Margin	1. Truncate	2. Wrap*
DEC 6	Auto LF on CR	1. Selected	2. Not Selected*
DEC 7	Auto CR on LF	1. Selected	2. Not Selected*

G-4 Feature List

Number	Feature	Value	
DEC 8	Disconnect on EOT	1. Select	2. Not Selected*
DEC 9	Initialization Message	1. Selected	2. Not Selected*

Setup Features and Values - IBM Protocol Features

Number	Feature	Value	
X24 1	Slashed Zero	1. Zero with slash	2. Without slash*
X24 2	Auto LF on CR	1. Selected	2. Not Selected*
X24 3	Auto CR on LF	1. Selected	2. Not Selected*
X24 4	Active Character Table	1. Graphics set A*	2. Graphics set B
X24 5	National Character Set	1. U.S.A (Code Page 437)*	6. Greece (Code Page 210)
		2. Multilingual (Code Page 850)	7. Canada-French (Code Page 863)
		3. Portugal (Code Page 860)	8. German GS (Code Page 190)
		4. Norway (Code Page 865)	9. Turkish (Code Page 857)
		5. Spain (Code Page 220)	10. Cartridge character sets labelled with (External)
X24 6	Emphasized (Bold)	1. Selected	2. Not Selected*
X24 7	Character Height	1. Single*	2. Double
X24 8	Horizontal Pitch	1. 5 Cpi	5. 12 Cpi
		2. 6 Cpi	6. 17.1 Cpi
		3. 8.55 Cpi	7. Proportional
		4. 10 Cpi*	8. Prop. Enlarged
X24 9	Alternate Graphic Mode	1. Not Selected*	2. Selected

G-6 Feature List

Setup Features and Values - Factory Setting

Number	Feature	Value
99	Factory Setting	1. No 2. Yes
If the value 2 Yes is selected when exiting the setup mode, all features are set with their factory settings indicated with the * symbol.		

[illegible]

LA75 Plus/LA75 Differences

H.1 Hardware/Firmware Differences

Feature	LA75 Plus	LA75
Number of Models	4 (2 for Europe)	6 (4 for Europe)
Input Ports	DEC 423 and Parallel	DEC 423 or Parallel
Protocols	DEC 2 and IBM	Digital (1 & 2) and IBM
Firmware compatibility	LA75 Compatible	
Color	Y	N
Downloadable character set	Y	Y
Front cartridge	Y	Y
Front panel	5 Switches 7 Indicators	5 Switches 7 Indicators
Setup configuration	Similar to LA75 with additional features	
Footprint	425 mm X 360 mm	452 mm X 338 mm

H.1.1 Printing Capabilities

Feature	LA75 Plus	LA75
Printhead	24 Wires	9 Wires
Carriage	Narrow	Narrow
Character sets	Same as LA75 + Others	
Fonts	Same as LA75 + Others	

H-2 LA75 Plus/LA75 Differences

Feature	LA75 Plus		LA75
Print accuracy and quality	Better		
Line and dot spacings	Same as LA75 + Others		
Paper and printable width	Same as LA75		
Print qualities	Draft-NLQ-LQ		Draft-Memo-NLQ-LQ
Print modes	Normal and Quiet		Normal
Print speeds (CPS)	Normal	Quiet	Normal
Draft	250	125	250
Memo	NA	NA	125
NLQ	125	63	40
LQ	83	42	32
Noise Level (DbA)	Normal	Quiet	Normal
	<55	52	55

H.1.2

Paper Handling

Feature	LA75 Plus	LA75
Medium	Fanfold and Cut Sheet	Fanfold and Cut Sheet
Multipart forms	1+3	1+3
Tractor	Push and Pull	Push and Pull
Bottom feed	Y	Y
Auto loading	Y	Y
Auto park	Y	Y
Zero tear off	Y	N
Viewing	Y	N
Automatic viewing	Y	N
Top of form printing	Y	Y
Automatic Sheet Feeder (ASF)	One bin	One bin
A.S.F. detected by printer	Y	Y

H.1.3 Usage and Life

Feature	LA75 Plus	LA75
Average pages/month	2000	1500
Head life	150 million chars.	200 million chars.
Black ribbon cartridge	2 million chars.	2 million chars.
Color ribbon cartridge	400 K chars. per band	NA