Duplo Docu Cutter DC-545 & DC-545HC Trimmer

Training Manual

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SERVICE TRAINING MANUAL

DocuCutter™

DC-545 & DC-545HC

Table Of Contents

Product Overview

The DocuCutter DC-545 is a fully automatic four-sided paper trimmer. In addition to four sided trimming, it can also perform up to five parallel margin slits (a sixth slitter is available as an option), multiple leading and trailing edge cuts (up to 10) and multiple sheet creases (up to 4). Full bleed color documents are finished in a single pass with no operator intervention. The DocuCutter DC-545 produces postcards, greeting cards, photo albums, business cards, and much more.

The optional DC-545HC configuration includes:

AF-100 autofeeder

Stand

The DC-545HC configuration is shown on the cover of this manual. The DocuCutter DC-545 is shown in Figure 1 below.

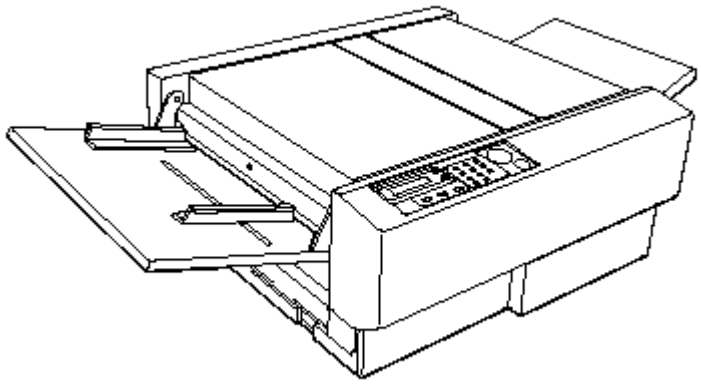


Figure 1. The DocuCutter DC-545

Programmable Memory

The DocuCutter DC-545 is manually programmable so additional jobs (up to 80 total) may be designed and stored for future use. See Section 6 of the DocuCutter DC-545 Service Manual for programming details.

The major components of the DocuCutter DC-545 are shown in Figure 2 below.

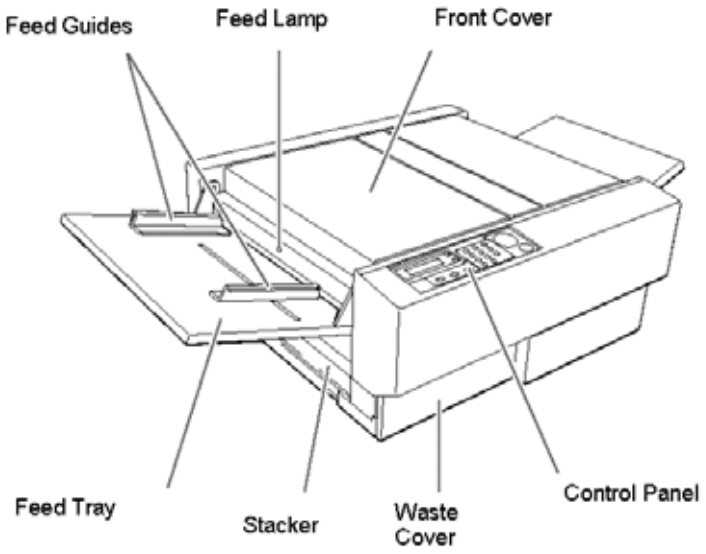


Figure 2. Major Components - View A

The remaining major components of the DocuCutter DC-545 are shown in Figure 3 below.

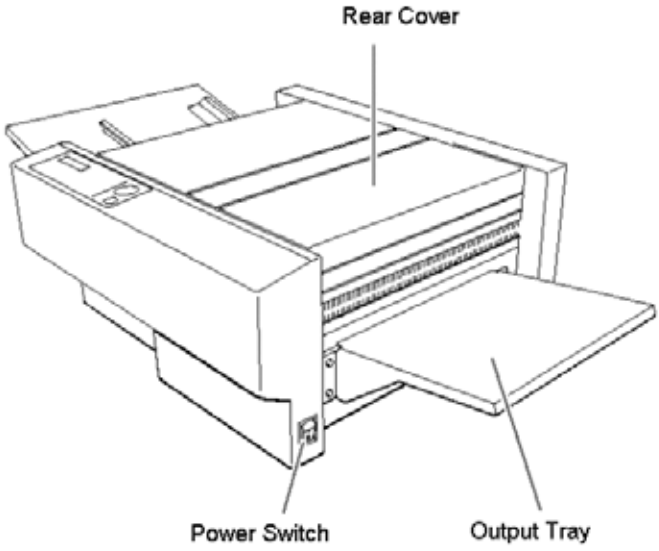


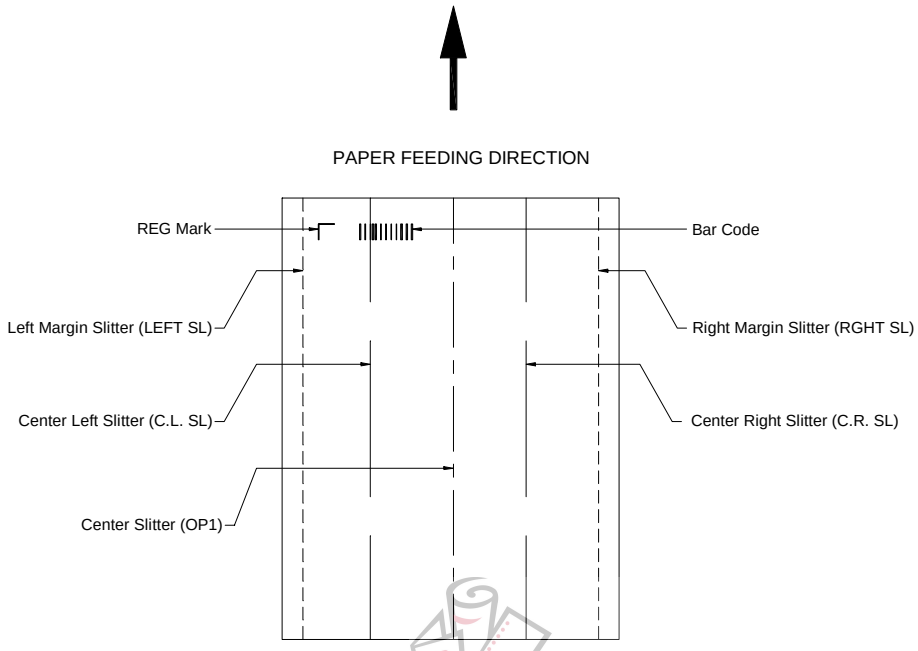
Figure 3. Major Components - View B

Automatic Operation via Barcode

The operator places a single sheet of preprinted output containing a properly formatted code 39 barcode in the feed tray of the DocuCutter DC-545 (or in the feed tray of the AF-100 on HC version systems). See the DC-545 Instruction Manual for bar code and registration mark details. The preprinted output contains a barcode indicating which preprogrammed job the DocuCutter DC-545 needs to execute. The DocuCutter DC-545 automatically sets the slitter positions, activates the cutter for lead/trail edge trimming and the creaser for any required crease(s).

Automatic Registration Correction

The DC-545 reads a small 90-degree angle registration mark, adjacent to the barcode. It is used for cutting, creasing, and trimming registration correction. The REG mark reference position is input during entry of each set of programming parameters. Since the REG mark and image shift proportionately, any error in the REG mark position is used as error correction data for image registration. The DocuCutter DC-545 automatically compares the actual image position to the reference position and offsets the cutting and creasing position (horizontal shift) and slit position (vertical shift) to maintain precise trims—every time.



DocuCutter DC-545 Specifications

The table below provides the specifications applicable to the DocuCutter DC-545. This information is provided for reference purposes only.

Paper size	Maximum = 12.6" x 18" Minimum = 8.5" x 11"
Finishing size	Minimum = 2" x 3.5" (business card size)
Paper thickness	28 lb bond to 10 pt cover (80-230 gsm)
Front edge cutting width	0.125" Minimum
Rear edge cutting width	0.125" Minimum
Side cutting width	3" Maximum 0.125" Minimum
Cutting accuracy	±0.762 mm
Cutting speed	2 ppm Minimum
Feeding method	Manual feeding (3.93” stack with AF-100 vacuum feeder in the HC configuration)
Stacker	Drop type
Power supply	AC 120 V ±10 % @ 60 Hz
Current consumption	2.1A
Machine dimensions	44.5W x 22D x 11H in. 1130W x 559D x 279H mm
Machine weight	Main body: 127 lb. (58 kg)

Safety

The objective of this section is to familiarize you with the safety requirements related to the operation and servicing of the DocuCutter DC-545. By reading this section, you will gain an understanding of the important safety information relating to this product.

NOTE *One of the most important goals of this section is to give you enough information so that you will always take the proper safety precautions when servicing this product.*

- **At no time** will you ever be instructed to come in contact with internal drive components or high voltage electrical devices that are under power. In fact, the first step in most service procedures is - “disconnect power cords.”
- **At no time** should you ever instruct an operator to touch any moving or powered internal components.
- The only time that power is left on during a service procedure is when specific components are being tested.

All safety devices and covers should be in place and in working order before completing a service call. It is your responsibility to follow safe work procedures at all times. If you perform an unapproved service procedure, you may run the risk of injuring yourself or the people nearby. Also, you could be inadvertently demonstrating a dangerous service procedure to a customer. This could result in a severe injury and an expensive lawsuit.

Cutter and Slitter Blades

Because the DocuCutter DC-545 contains a series of Slitters and a Cutter, a variety of Warning Labels have been placed on the machine. You should be aware of the Warning Label locations, as shown in Figure 4 below.

WARNING **The Cutter Blade and the Slitter Blades could cause serious injury if not handled properly. Always use caution when working near the Cutter or Slitters.**

Keep the Warning Labels clean at all times. If Labels become damaged, replace them.

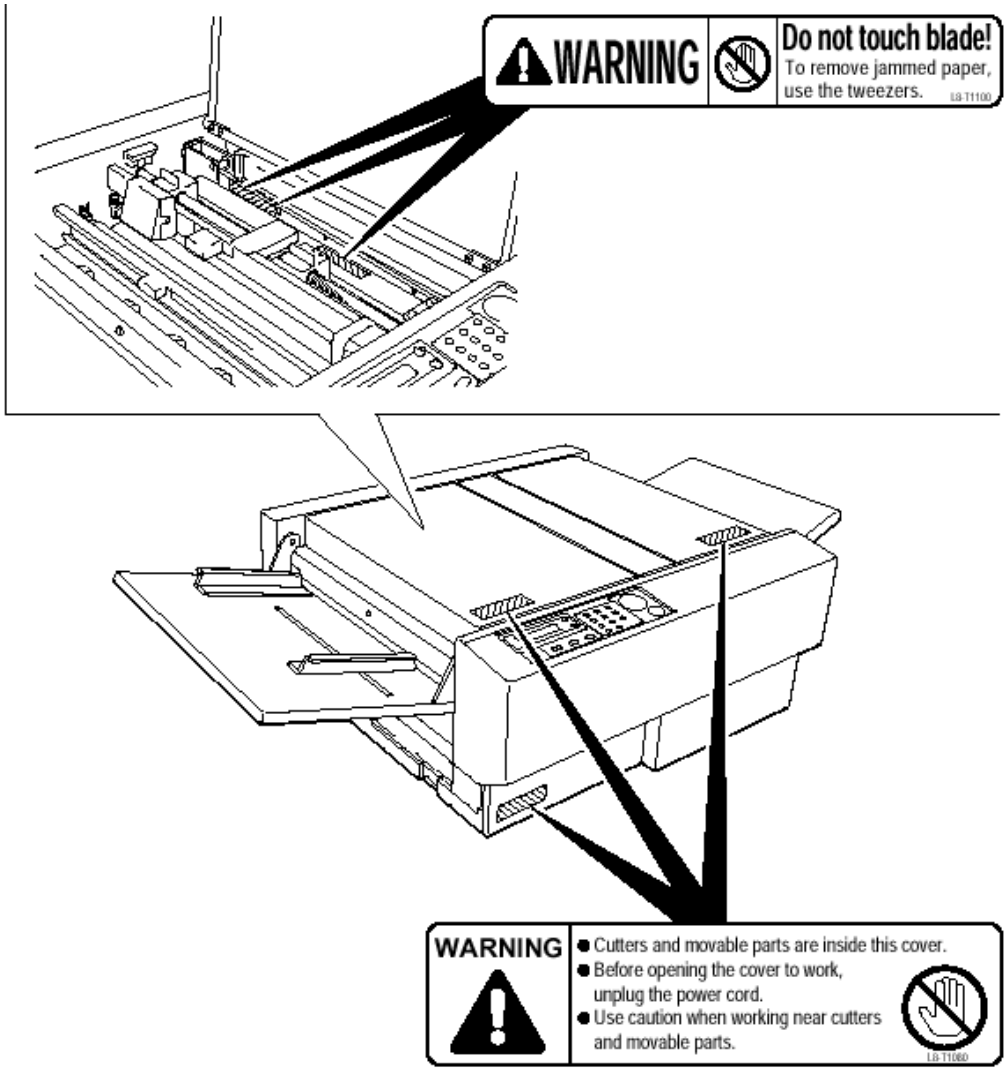


Figure 4. Warning Label Locations

Safety Notes

The DocuCutter DC-545 has been designed and tested to meet strict safety requirements. These include safety agency examination and approval, and compliance to established environmental standards. The following notes and warnings will help to ensure your complete understanding of the safety requirements for the DocuCutter DC-545:

- **ALWAYS** follow all warnings and instructions marked on, or supplied with, the equipment.
- **ALWAYS** disconnect the machine from the wall outlet before cleaning.
- **ALWAYS** use the materials and supplies specifically designed for this machine. Use of unsuitable materials may result in poor performance and possibly create a hazardous situation.
- **ALWAYS** ensure that the machine is located on a solid support surface with adequate strength for the weight of the machine.
- **NEVER** use any supplies or cleaning materials for purposes other than what they were intended.
- **NEVER** push objects of any kind into the slots of the machine as they may touch dangerous voltage points or cause a short circuit in parts that could result in a risk of fire or electric shock.
- **NEVER** push objects of any kind into the ventilation openings in the back and bottom of the machine.
- **NEVER** allow anything to rest on the power cord.
- **NEVER** use a ground adapter plug to connect the copier to a power source receptacle that lacks a ground connection terminal.
- **ALWAYS** make sure that the total amperage of all products plugged into the wall outlet does not exceed the outlet protection.

Maintenance Safety

- **DO NOT** use aerosol cleaners. Follow the instructions in the Service Manual for proper cleaning methods.
- **DO NOT** use this machine near water, wet locations, or outdoors.
- **NEVER** attempt any maintenance function that is not specified in the Service Manual, or as directed by an authorized service representative.
- **NEVER** spill liquid of any kind on the machine.

Electrostatic Discharge (ESD) Protection Program

The purpose of the Electrostatic Discharge (ESD) Protection Program is to preserve the inherent reliability and quality of electronic components that are handled by field service personnel. This program is implemented as a direct result of advances in micro circuitry technology, as well as a new acknowledgment of the magnitude of the ESD problem in the electronics industry today.

This program will reduce field service costs that are charged to PWB failures. Approximately 90% of all PWB failures that are ESD-related do not occur immediately. Using the ESD Field Service Kit will eliminate these delayed failures and intermittent problems caused by ESD. This will improve product reliability and reduce callbacks.

The ESD Field Service Kit should be used whenever Printed Wiring Boards or ESD-sensitive components are being handled. This includes activities like replacing or reseating circuit boards or connectors. The kit should also be used to prevent additional damage when circuit boards are returned for repair.

DocuCutter DC-545 Installation

These instructions are for installing the DC-545 base unit. Refer to the Duplo AF-100 Installation Manual for details on installing the DC-545HC configuration (including the AF-100 autofeeder and the associated stand).

The following Installation notes are provided as a reference.

- The DocuCutter DC-545 should be installed on a flat and stable surface (the machine weighs 127 pounds / 58 kg). As a precaution, on every service call, be sure to verify that the customer has the machine installed in an appropriate location.
- The Paper Tray should be attached to the main body of the DocuCutter DC-545 as shown in Figure 5.

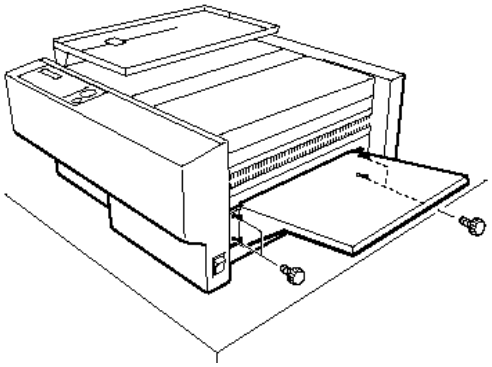


Figure 5. Attaching the Paper Tray

The power cord should be attached to the DocuCutter DC-545 and a wall outlet, as shown in Figure 6.

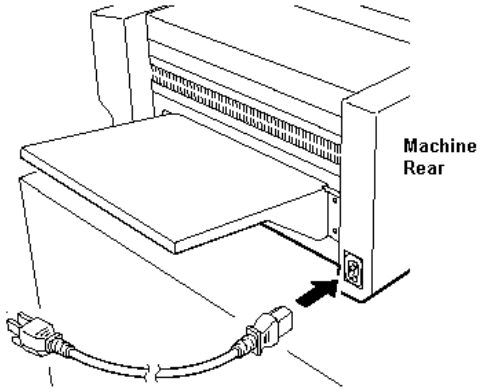


Figure 6. The Power Cord Location

The Control Panel

The Control Panel on the DocuCutter DC-545 performs the following functions:

- Displays operation and machine status during normal operation
- Indicates when problems with the machine have occurred
- Allows for operator /service input to assist in jam clearance
- Provides service personnel with a method of accessing the Service Mode Diagnostic Tools

The location of the Control Panel on the DocuCutter DC-545 is shown in Figure 7.

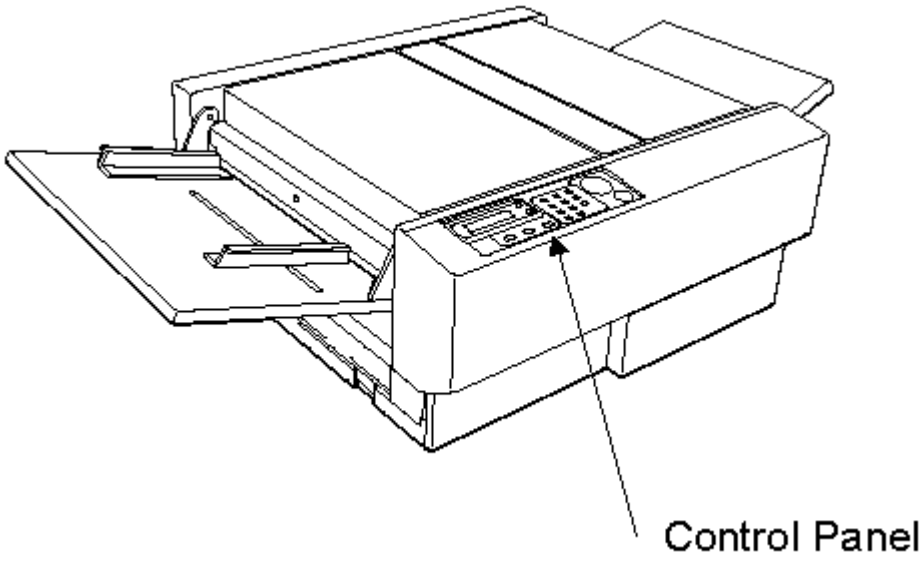


Figure 7. Control Panel Location

Each of the Control Panel areas is shown in Figure 8 below. The function of each area is described in the table that follows.

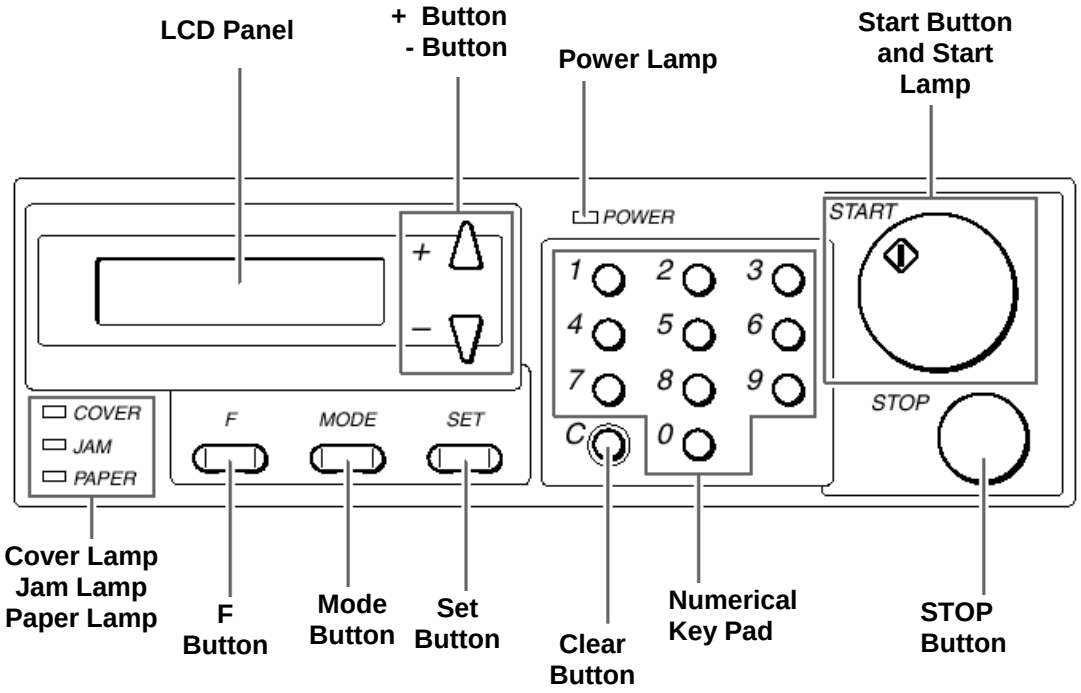


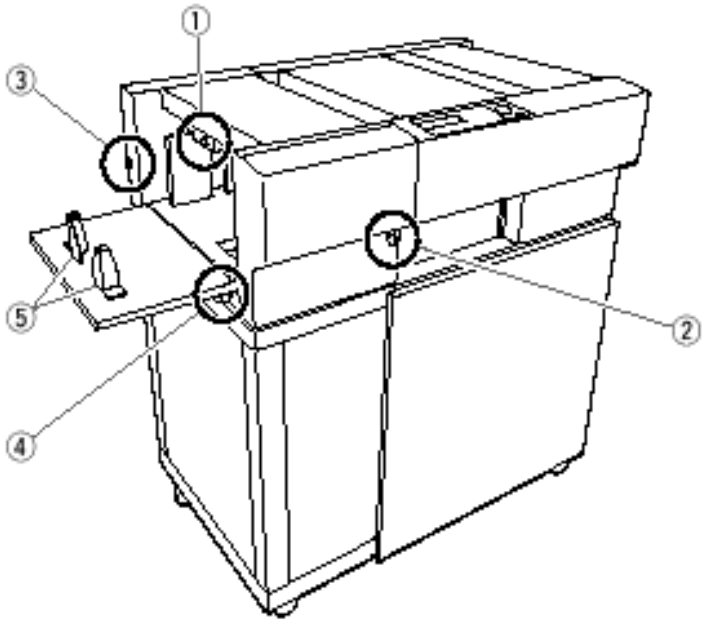
Figure 8. The Control Panel

The Liquid Crystal Display (LCD) Panel displays the status of the machine. Messages are displayed when an error or paper jam occurs.	The STOP Button stops cutting after the current sheet is complete. The STOP Button also clears jam indication after the paper is cleared. While in the service menu the STOP Button is used to exit various menus.
The <+> Button ejects the document from the machine at the time of paper jam. In the service mode, this button is used to advance through the various menus and increment adjustment values in a positive direction.	During programming, the Numerical Key Pad enters preset program numbers and job data.
The< –> Button ejects the document from the machine at the time of paper jam. In the service mode, this button is used to advance through the various menus and increment adjustment values in a negative direction.	During programming, the CLEAR Button clears data values. It is also used to clear the total sheets processed counter.
The POWER Lamp lights up when the power is switched on.	During programming mode, the SET Button enters data values. In the HC configuration (AF-100 autofeeder attached) the SET button is used to process only one sheet for proofing purposes.
In the HC configuration, (AF-100 autofeeder attached) the START Button is used to start processing. While in the stand-alone configuration (DC-545 only, no AF-100 autofeeder) the START button is not used.	The MODE Button changes the main menu functions. [RUN] Ready for processing [SELECT] Manual job selection (as opposed to bar code)

In the service mode, this button is used to enter various service menus.	[INPUT] Programming mode [SELECT] Manual job selection (as opposed to automatic job recall via a bar code) BARCODE Used to toggle barcode mode on/off. When the values is changed the REG mark and autocut features are enabled.
The COVER Lamp blinks when the front cover, rear cover, or the waste cover is open.	In the HC configuration (AF-100 autofeeder attached) the PAPER Lamp blinks when paper runs out.
The JAM Lamp blinks when a paper jam has occurred.	

AF-100 OPERATOR CONTROLS

1. Level adjustment lever for adjusting the level of the paper stack
2. Separator adjustment knob for adjusting the amount of space between the mechanical paper separators and the top sheet of paper
3. Airflow adjustment knob for adjusting the amount of airflow used to separate the sheets in the paper stack
4. Skew adjustment knob for adjusting the skew of the paper stack
5. Stoppers for holding the rear edge of the paper stack



LCD Panel

The LCD Panel located on the Control Panel displays the status of the machine and displays messages when an error or paper jam occurs.

A sample LCD Panel display is shown in Figure 9 below.

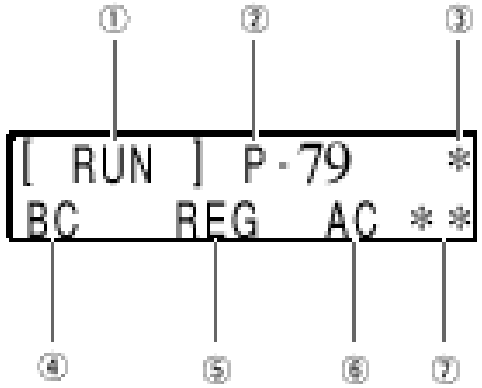


Figure 9. The LCD Panel

1. Status - Displays the current operating mode.
2. Preset Number - Displays the Program (P) number.
3. OPTION - An "*" is displayed when the AF-100 is attached.
4. BAR CODE - When using bar codes "BC" is displayed; "- -" is displayed when bar codes are not being used.
5. REGISTER MARK - When using register marks "REG" is displayed; "- -" is displayed when REG marks are not being used.
6. AUTO CUT - When using the autocut function, "AC" is displayed; "- -" is displayed when autocut is not being used.
7. COUNTER - Displays the number of pages processed.

PWB Locations

The locations of each of the Printed Wiring Boards (PWBs) in the DocuCutter DC-545 are shown in Figure 10.

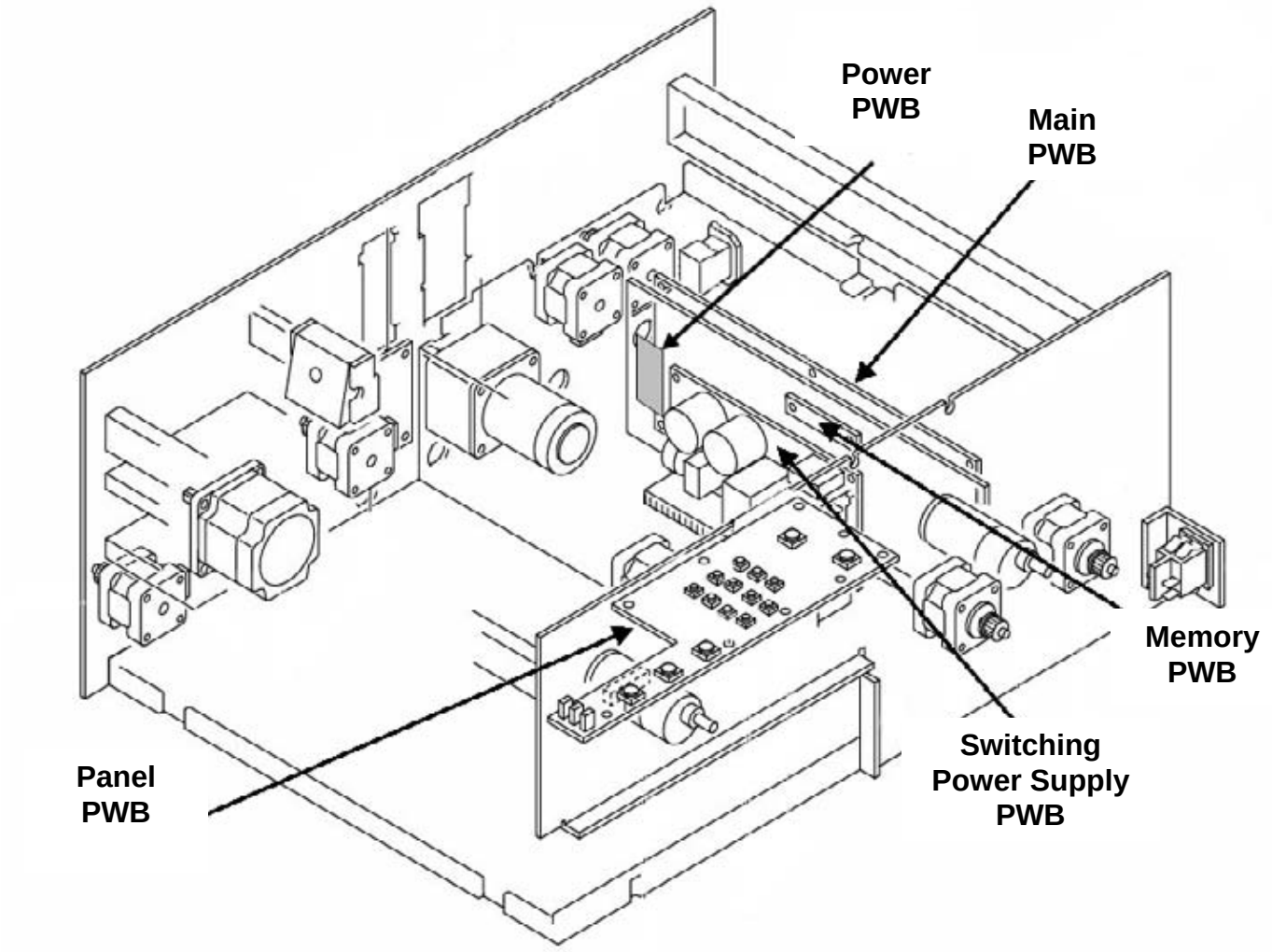


Figure 10. PWB Locations

Switch and Sensor Locations

The DocuCutter DC-545 contains a series of Switches and Sensors to determine paper position. The locations of the Slitter Sensors within the DocuCutter DC-545 are shown in Figure 11.

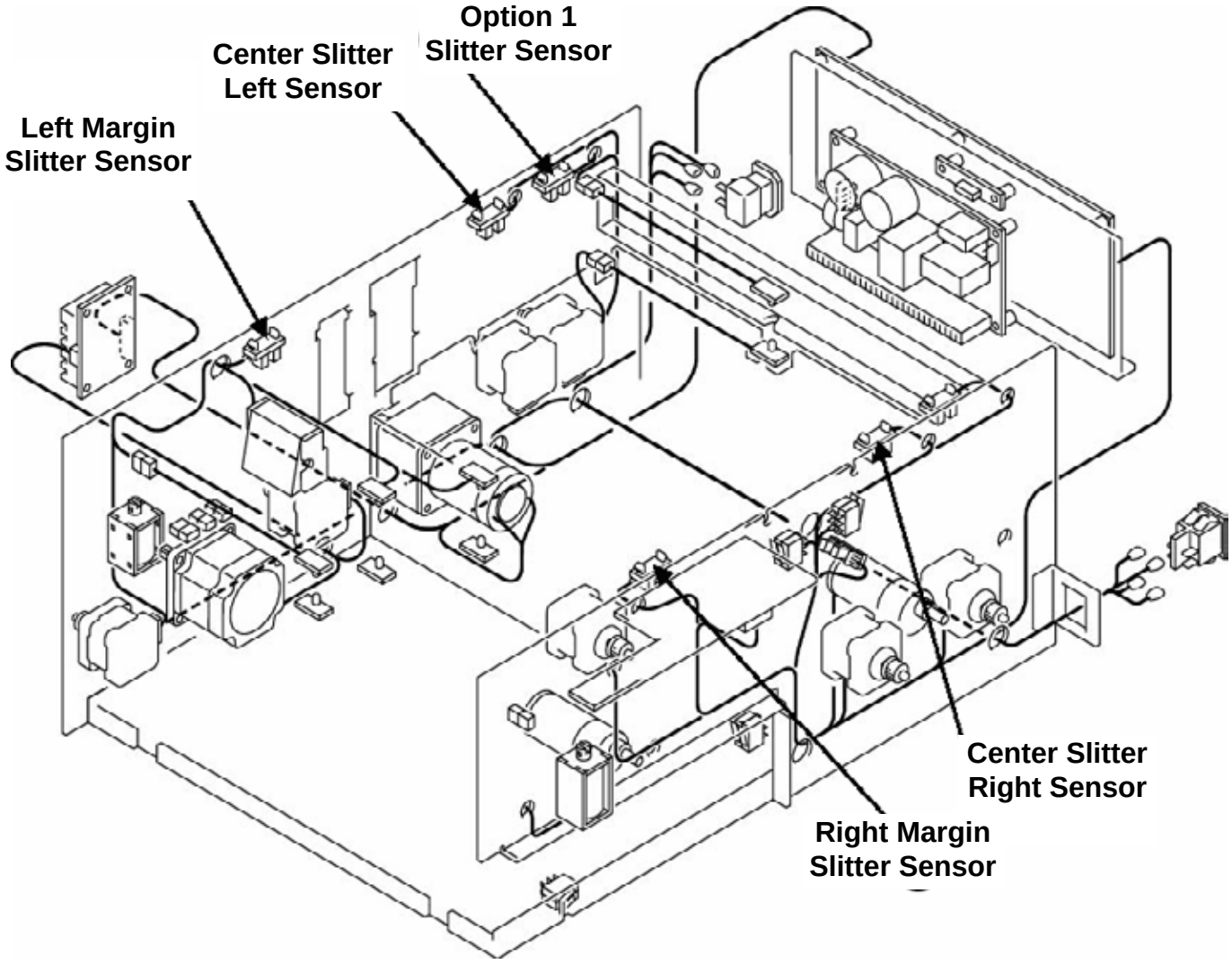


Figure 11. Slitter Sensor Locations

The remaining Switches and Sensors are shown below in Figure 12.

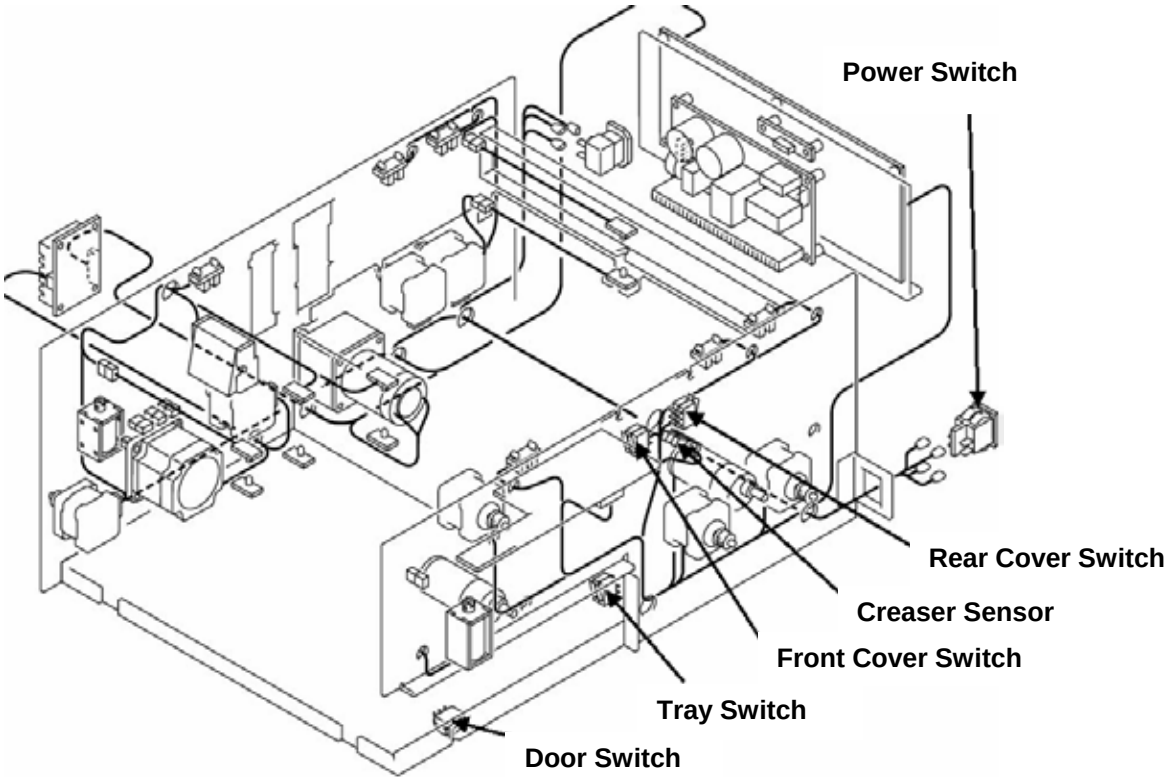


Figure 12. Switches and Sensors

Paper Handling

Throughout the following paragraphs, you will be reading about Slitters, a Cutter, and a Creaser. These components are used in various combinations to finish documents in the DocuCutter DC-545. Figure 13 is provided below to help you understand the paper handling terms associated with the DocuCutter DC-545.

You should note that, by definition, a **cut** or a **crease** is **perpendicular** to the direction of paper feed, while a **slit** is **parallel** to the paper feed direction.

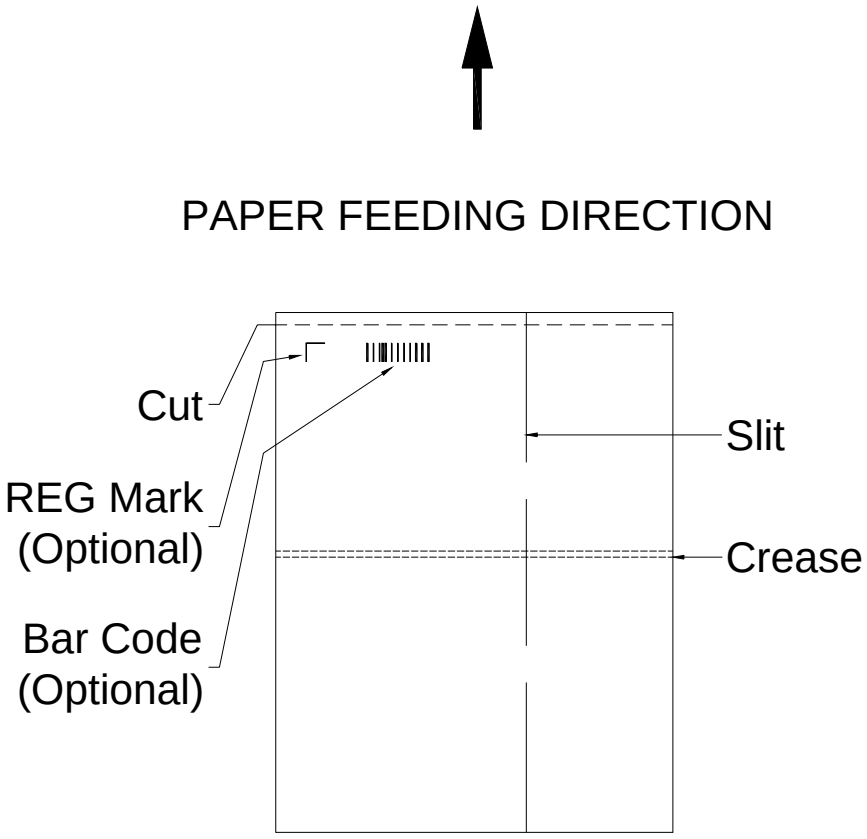


Figure 13. Paper Handling Terms

Paper Path

All of the finishing operations within the DocuCutter DC-545 take place along the Main Paper Path. The locations of the main paper path components are shown in Figure 14.

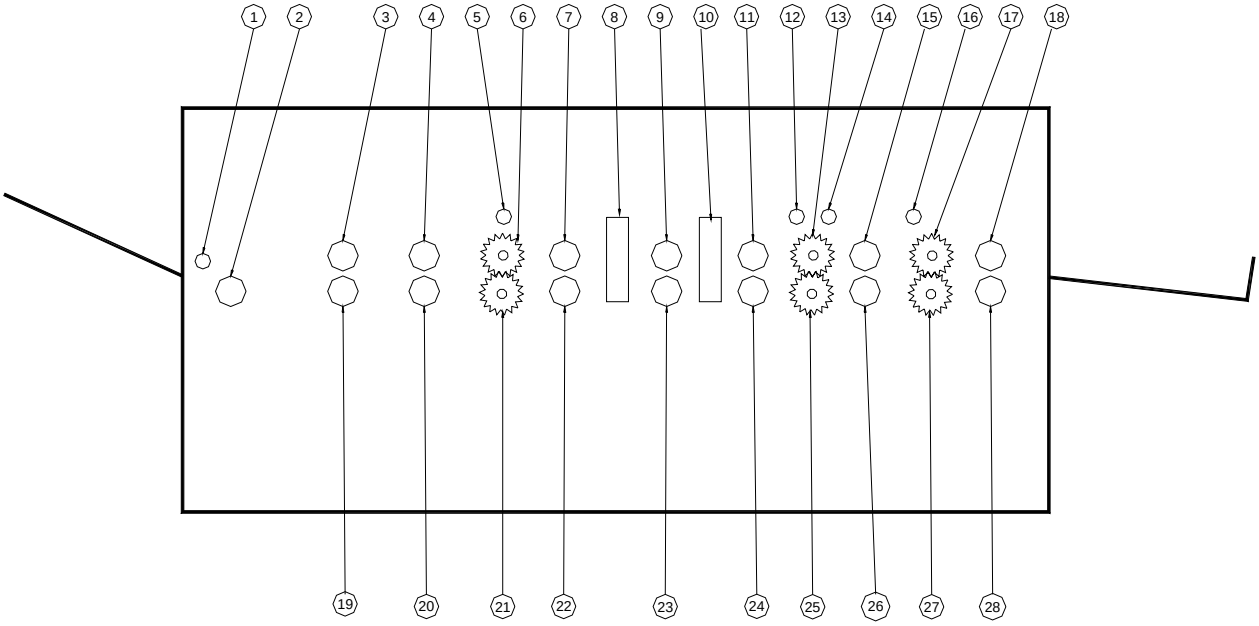


Figure 14. Main Paper Path Components

Names and Locations of Paper Path Components			
Item Number	**Descriptions**	**Item Number**	**Descriptions**
1	Input Feed Rollers	19	Lower Primary Feed Roller
2	Input Roller	20	Lower Secondary Feed Roller
3	Upper Primary Feed Roller	21	Lower Margin Slitter Drive Gear
4	Upper Secondary Feed Roller	22	Lower Cutter Feed Roller
5	Right (Left) Margin Slitter Lead Screw	23	Lower Creaser Feed Roller
6	Upper Margin Slitter Drive Gear	24	Lower Center Slitter Feed Roller
7	Upper Cutter Feed Roller	25	Lower Center Slitter Drive Gear
8	Cutter Unit	26	Lower Rear Slitter Drive Roller
9	Upper Creaser Feed Roller	27	Lower Rear Slitter Drive Gear
10	Creaser Unit	28	Lower Exit Drive Roller
11	Upper Center Slitter Feed Roller		
12	Left Center Slitter Lead Screw		
13	Upper Center Slitter Drive Gear		
14	Right Center Slitter Lead Screw		
15	Upper Rear Slitter Feed Roller		
16	Rear Slitter Drive Lead Screw		
17	Upper Rear Slitter Drive Gear		
18	Upper Exit Feed Roller		

Slitting

Standard configuration provides for five **Slitters** used in the DocuCutter DC-545. An optional sixth slitter is available. The five factory provided slitters are called:

- **Right Margin Slitter**
- **Left Margin Slitter**
- **Center Left Slitter**
- **Center Right Slitter**
- **Option 1 Slitter**

Two DC Slitter Drive Motors provide cutting energy to each of the Slitters:

- One DC Slitter Drive Motor provides cutting energy for the Left Margin Slitter and Right Margin Slitter
- One DC Slitter Drive Motor provides cutting energy for the Center Left Slitter, Center Right Slitter, and the Center Slitter.

Cutting Surfaces

Each Slitter consists of a two beveled edge cutting wheels. Much like a pair of scissors, the two pieces working together produce a fine cut. Furthermore, the design provides for high performance with long life characteristics (1,500,000 sheets).

Cutting Drive

The Slitter's two cutting wheels are independently driven by gear driven shafts. The hub of each wheel has a removable key while the driving shafts have key-ways located throughout the drive shafts length.

NOTE *Use caution while removing the Cutter Units as the keys can easily fall out.*

Position Detection

Each Slitter has a Sensor Plate mounted to the top of the Slitter. The Sensor Plate has a slot that permits the Slitter Sensor to activate when the Slitter is in the home position. The Sensor Plates are shown in Figure 15.

NOTE *The Slitter Sensor Plate can be moved side-to-side several millimeters when the mounting screws are loosened. The available movement is for factory setup and should not be changed. Slitter calibration position is performed through the service menu.*

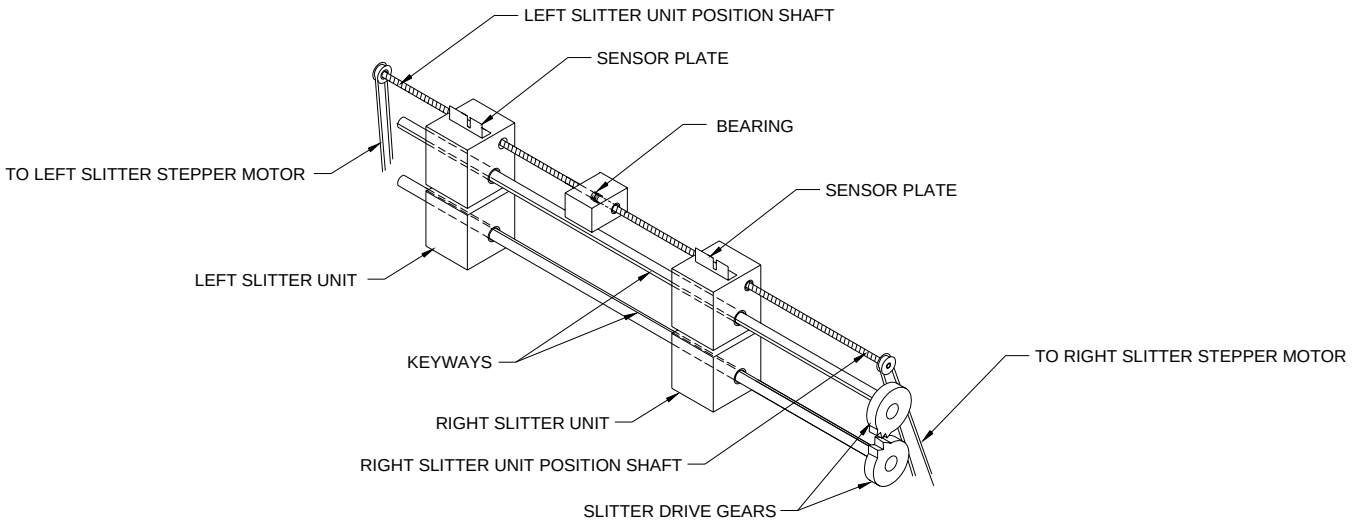


Figure 15. Slitter Components

Slitter Position Drive

Each Slitter has its own positioning drive motor (stepper motor). The use of a stepper motor ensures highly accurate positioning of the slitter unit. Each stepper motor drives a lead screw. The Slitters contain a bearing that rides on the lead screw, so as the lead screw turns, the Slitter is driven from side to side. Direction of the Slitter movement is determined by the stepper motor control signal.

Slitter Positioning

Each job contains position information for the Slitters. The program information sets the Slitter position each time a sheet is processed. This method provides extremely accurate performance.

When a job is executed, each stepper motor is driven until the Slitters arrive at the home position (home position is next to the side frame where each sensor is located). Next, the stepper motors drive the Slitters in the opposite direction, away from the side frame, until the desired position is obtained. Position information is monitored by the stepper motor drive signal.

Once the Slitter positions are correct, the DocuCutter begins to drive the Slitter cutting drive gears, thus providing slitting energy. Then the drive rollers convey the paper through the machine.

Cutting

The DocuCutter DC-545 uses an integrated **Cutter** to produce a cut (or multiple cuts) perpendicular to the paper path, as determined by the program data. The Cutter specifically enables lead and trail edge cuts so custom finished sizes and full bleed documents are obtainable. It also enables multiple cut applications such as business cards to be produced in a single pass. Cutting is accomplished using the components listed below:

- A high torque DC motor with a self-contained torque enhancing transmission
- Long life (2,000,000 cuts), replaceable, precision upper cutting blade

Cutter Construction

The Cutter Unit consists of a movable, precisely beveled, Upper Cutting Blade and a counter-cutting surface. Much like a pair of scissors, the two pieces working together produce a very fine cut. The design provides for high performance with long life characteristics.

Cutting Drive

Energy is supplied to the Cutter Unit by a high torque drive configuration. The Motor, via a self-contained gear drive to the Cutter Drive Cam, supplies rotational energy. The Cam causes the Upper Blade to move towards the bottom surface, cutting the paper, and then returns the blade to the home position.

Operational Status

The Cam activates a Micro switch. The Micro switch signals the Microprocessor that the Cutter Unit has reached the home position. The Cutter Unit is cycled each time the DocuCutter DC-545 is powered on. If the Microprocessor fails to receive the home position signal, a jam is declared and the LCD indicates CUTTER LOCK.

Cutting Position Detection

The preset job data indicates where the paper requires cutting. When the lead edge of the paper triggers Paper Path Sensor #3 (PPS3), the Microprocessor calculates the distance the paper travels via the Stepper Motor Control pulses. When the desired distance is reached, the Cutter Drive Motor is activated and the paper is cut.

Creasing

The DocuCutter DC-545 uses an integrated **Creaser** to produce a crease (or multiple creases) perpendicular to the paper path, as determined by the program data. The crease enables smooth, even forming of finished paper so it may be folded easily after processing. Creasing also permits folding of color printed documents with minimal toner cracking or flaking.

Creasing is accomplished in the DocuCutter DC-545 with the following components:

- A high torque DC Motor with a self-contained torque enhancing transmission
- Long life, high-precision male and female paper creasing surfaces

Creaser Construction

The upper and lower surfaces of the Creaser are designed to mesh when they are pressed together. One surface has a channel and the other surface has a ridge that fits into the channel.

Creasing Drive

Energy is supplied to the Creaser by a high torque drive configuration. Rotational energy is supplied by the motor, through a self-contained gear drive, to a Drive Belt and ultimately to the Creaser Drive Pulley. The Pulley is directly connected to an Eccentric Shaft. When the Shaft is driven, the eccentricity causes the upper creasing surface to move towards the lower creasing surface, thus creasing the paper.

Operational Status

The Camshaft activates a Photo Interrupter. The Photo Interrupter signals the Microprocessor that the Creaser Unit has reached the home position. The Creaser Unit is cycled each time the DocuCutter DC-545 is powered on. If the Microprocessor fails to receive the home position signal, a jam is declared and the LCD indicates CREASER LOCK.

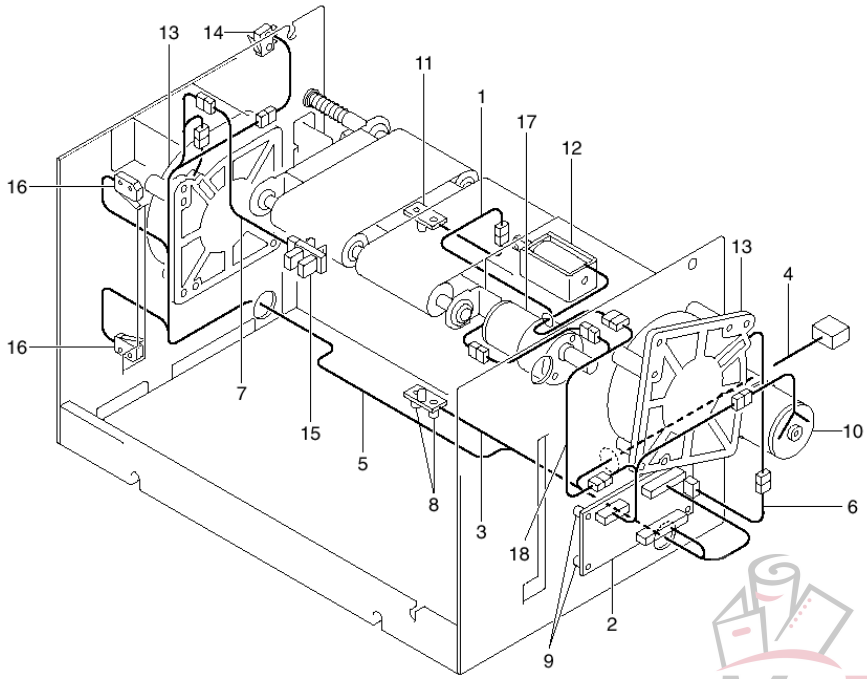
Creasing Position Detection

The preset job data indicates where the paper requires a crease. When the lead edge of the paper triggers PPS3, the microprocessor calculates the distance the paper travels via the Stepper Motor control pulses. When the desired distance is reached, the Creaser Drive Motor is activated and the paper is creased.

AF-100 Theory Of Operation

The following describes the operating principle of the AF-100 Autofeeder.

1. The operator loads a stack of paper in the AF-100 feed tray and then presses the START button on the DC-545.
2. The paper sensor (11) detects the presence of paper and allows the blower (13) and vacuum fan (13) to turn ON.
3. The paper level sensor (15) determines the paper pile height is at the desired level. The elevator is raised if the paper pile is not high enough. When the paper pile reaches the proper height the elevator stops raising the stack and the vacuum shutter solenoid (12) turns ON, allowing vacuum pressure to pick up the top sheet on the pile.
4. The feed motor turns ON and drives the feed belts in order to feed the sheet into the DC-545. PPS1, located in the DC-545, senses the paper and causes the feed motor (13) and the vacuum feed shutter solenoid to turn OFF.
5. When the finished sheet of paper passes PPS4, signaling the sheet has exited the DC-545, the feed process repeats until the paper pile is depleted.



Programming Jobs

The DocuCutter DC-545 is manually programmable with 80 sets of available finishing program numbers. An individual set of cutting dimensions are stored and recalled by a finishing program number.

You may be required to change or add finishing programs depending upon customer requirements. Follow the steps below to manually enter a finishing program:

NOTE *The information provided here is also available in General Procedure GP-5 of the DocuCutter DC-545 Field Service Manual. It is presented in this document for reference purposes only.*

1. Power On the DocuCutter.
2. Repeatedly push the <MODE> button until the display indicates [INPUT].
3. Push and hold the <SET> button until the display appears.
4. Enter the desired program number using the numerical keypad (01 ~ 80). In this example the program number is 52.
5. Press the [SET] button.
6. Place a PREPRINTED (with a REG mark) sample sheet in the DocuCutter DC-545.
7. While observing the number on the lower left of the LCD display panel, push the <+> button until the number changes (a typical change is approximately 500 to 50, depending on the REG mark position). If the REG mark goes past the image sensing area, press the <-> button to move the paper (REG mark) back.
8. Enter the three-digit value from the lower left of the display using the appropriate key on the keypad. In this example, the value is 52.
9. Press the [SET] button.
10. Remove the sample paper by pressing the <-> button.
11. Measure the distance (in millimeters) between the leading edge of the paper and the horizontal portion of the REG mark. The value must be between 5 and 50 millimeters.
12. Enter the value from step 11 using the 10 key keypad.
13. Press the [SET] button.
14. Enter the distance from the left side of the paper to the position for the left margin slit (LEFT SL) location. This value must be between 0 and 120 millimeters.
15. Press the [SET] button.
16. Enter the distance from the left side of the paper to the position for the right margin slit (RGHT SL) location. This value must be between 200 and 320 millimeters.

17. Press the [SET] button.
18. Enter the distance from the left side of the paper to the position for the center left slit (C.L. SL) location. This value must be between 0 and 160 millimeters.
19. Press the [SET] button.
20. Enter the distance from the left side of the paper to the position for the center right slit (C.R. SL) location. This value must be between 0 and 320 millimeters. However, the C.R. SL value must be 50 mm greater than the value of the C.L. SL. This is due to both slitters are on the same set of cutting drive shafts.
21. Press the [SET] button.
22. Enter the distance from the left side of the paper to the position for the center (OP1 SL) slit location. This value must be between 0 and 320 millimeters.
23. Press the [SET] button.
24. Enter the distance from the leading edge of the paper to the position for the first cut (CUT 1) location. This value must be between 0 and 999 millimeters.
25. Press the [SET] button.
26. Enter the distance from the leading edge of the paper to the position for the second cut (CUT 2) location. This value must be between 0 and 999 millimeters. If a second cut is not required, enter a value of zero.
27. Press the [SET] button.

NOTE: If attempting to enter a lower CUT value than the previous value is attempted, the DocuCutter will not permit the lower value to be entered.

28. Enter the distance from the leading edge of the paper to the position for the first score (SCR. 1) location. This value must be between 0 and 650 millimeters. If a second score is not required, enter a value of zero.
29. Press the [SET] button.

NOTE: If attempting to enter a lower SCR value than the previous value is attempted, the DocuCutter will not permit the lower value to be entered.

30. Enter the total length (in millimeters) of the sample paper.
31. Press the [SET] button.
32. Press the <SET> button to retain the settings or <STOP> to discard the settings. The display will indicate “Memory Please Wait” while the information is written to the DocuCutter memory circuit. The memorization process will take approximately 10 seconds.

DC-545: AUTO CUT function

When AUTO CUT is ON, it works under the following conditions:

The first cut in the preset program is longer than 17.0 mm.

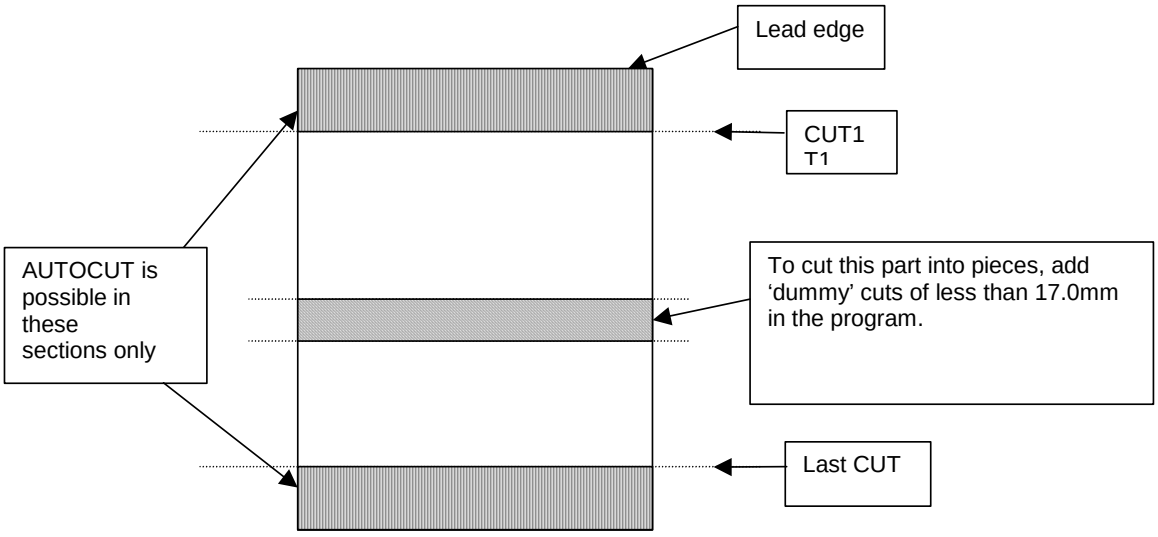
The distance between the total length entered in the program and the last cut position entered in the program is longer than 21.0 mm.

IMPORTANT NOTE ON AUTO CUT

Auto cut works on:

a) The section between the lead edge and CUT 1 and/or

b) The section between the last CUT in the preset program and the trail edge only. If you want to have the any other margin cut into pieces, make sure to add 'dummy' cuts of less than 17 mm in the program. Otherwise, the margin cut can be left in the machine or ejected on the paper tray.



IMPORTANT NOTE ON DATA ERROR

When the total number of Scores, Cuts, and AUTO CUTS exceeds 17, '---E6--- DATA ERROR' is indicated on the LCD.

DC-545 Theory of Operation

The following describes the DC-545 base model theory of operation without the AF-100 autofeeder. For details of the AF-100 theory, see the AF-100 Theory of Operation.

1. The document is placed in the Feed Tray and PPS1 detects the presence of the document.

2. After 1.5 seconds, the Feed Solenoid drives down the Input Rollers.

3. After 100msec, the Gate is driven down by the Gate Solenoid, and the Feed Motor is turned on to feed the document.

4. Next, the Main Motor feeds the document.

Note: If PPS2 cannot detect the document, after it has been fed 30mm since feed initiation, “J2 - FEED JAM” is displayed.

<When using sheet with a Bar Code>

5. The document is fed from the PPS2 location until the CCD detects the Bar Code.

6. Note: If the CCD cannot read the Bar Code after the document is fed 50mm, “E3 - BARCODE ERROR” will be displayed.

<When using a sheet without a Bar Code>

7. After the document is fed 50mm from the PPS2 location, the slitters return to their home positions and then move to the positions indicated by the program number.

8. After the slitters are in position, the job is performed. Go to step 13.

Note: If the slitters do not move to their indicated positions within approximately 5 seconds, “E5 - SLITTER ERROR” will be displayed.

9. When the CCD scans the Bar Code, the document feeding stops, and each slitter returns to its home position.

Note: If the slitters do not return to their home positions (all slitter sensors aren’t blocked) within approximately 5 seconds, “E5 - SLITTER ERROR” will be displayed.

10. After the slitters return to their home positions, the slitters move to their indicated positions according to the preset job data detected by scanning the Bar Code.

Note: If the slitters do not move to their indicated positions within approximately 5 seconds, “E5 - SLITTER ERROR” will be displayed.

11. After the slitters are positioned properly, the document is fed until the CCD detects the vertical line of the REG Mark.

Note: If the CCD cannot scan the vertical line within 10 mm of feeding, “E4 - REG MARK ERROR will be displayed.

12. Each slitter is adjusted for any registration error.

13. The document is fed backwards until PPS2 detects its leading edge.

14. The document is fed by 0.1mm increments until the CCD detects the horizontal line of the REG Mark.

Note: If the CCD cannot scan the horizontal line within 50mm of feeding, “E4 - REG MARK ERROR” will be displayed.

15. After the horizontal component of the REG Mark is scanned, any required error correction is calculated. Horizontal registration correction is performed during the cutting and creasing processes.

16. The document processing begins.

Reasons for JAM and ERROR messages

1. When turning on the power, if any Paper Path Sensor (PPS1 – PPS4) is blocked, “J1 - REJECT PAPER” will be displayed.

2. If PPS3 cannot detect the document, after it is fed 10 cm since PPS2 detects it, “J3 - CENTER JAM” will be displayed.

3. If PPS3 has been blocked, after document is fed its entire length since PPS3 detects it, “J3 - CENTER JAM” will be displayed.

4. If PPS4 cannot detect the document, after it is fed 44 cm since PPS3 detects it, “J4 - SLITTER JAM” will be displayed.

5. If PPS4 has been blocked, after the document is fed its entire length since the PPS4 detected it, “J4 - SLITTER JAM” will be displayed.

6. If the Upper Blade of the cutter unit does not return to the home position (the Cutter Position Switch is not closed) within 400msec since the cutter movement initiation, “J7 - CUTTER LOCK” will be displayed.

7. If the Upper Blade of the score unit does not return to the home position (the Score Position Switch is not blocked) within 3 seconds since the score movement initiation, “J8 - CREASE LOCK” will be displayed.

8. If the covers are opened while the machine is running, “E1 - COVER OPEN” will be displayed.

9. If the CCD does not communicate with the Main PWB, “E2 - RS232C ERROR” will be displayed.

10. If the number of cuts exceeds 10, “E6 - DATA ERROR will be displayed.

DocuCutter DC-545 Maintenance Procedures

The following Maintenance procedures are available in the DocuCutter DC-545 Field Service Manual. They are presented here for information only.

ITEM	ACTION
PPS1 (Paper Path Sensor 1)	Use a brush to clean any paper dust, etc. from the upper and lower sensor portions.
PPS2 (Paper Path Sensor 2)	Use a brush to clean any paper dust, etc. from the upper and lower sensor portions.
PPS3 (Paper Path Sensor 3)	Use a brush to clean any paper dust, etc. from the upper and lower sensor portions.
PPS4 (Paper Path Sensor 4)	Use a brush to clean any paper dust, etc. from the upper and lower sensor portions.
PAPER LEVEL SENSOR	Use a brush to clean any paper dust, etc. from the sensor.
ROLLERS	Use a lint free cloth moistened with water to clean the Rollers.
ROLLER BEARINGS	Clean and oil the Roller Bearings.
SUCTION BELTS	Clean the Belts with rubber belt cleaner.
SLITTERS	Clean and oil the Slitters.
CUTTER	Clean and oil the Cutter Assembly.

Table 1. Recommended Maintenance Schedule

DocuCutter DC-545 Service Mode

Entering the **Service Mode** in the DocuCutter DC-545 enables you to perform a variety of diagnostic tests.

NOTE *The information provided here is also available in General Procedure GP-4 of the DocuCutter DC-545 Field Service Manual. It is presented in this document for reference purposes only.*

The procedure for entering the Service Mode follows:

1. If the machine is already powered on, power off the machine.
2. While depressing the STOP button, power on the machine. A buzzer will sound to indicate you are entering the Service Mode.
3. Press the <+> or <-> buttons to scroll through the available Service Mode diagnostic selections.
4. When you locate the appropriate Service Mode diagnostic selection, press the START button.

To exit the Service Mode, press the STOP button and switch the power off.

The Service Modes are described in Table 2.

HELP CODE	Content
H-00	ROM version indication
H-01	Total cut counter
H-02	Total feed counter
H-03	P.P.S.1 check
H-04	P.P.S.2 check
H-05	P.P.S.3 check
H-06	P.P.S.4 check
H-07	P.P.S.5 check
H-08	Sensor & switch check
H-09	DIP SW status check
H-10	Feed motor check
H-11	Feed solenoid check
H-12	Left margin slitter check
H-13	Right margin slitter check
H-14	Left center slitter check
H-15	Right center slitter check
H-16	OP1 slitter check
H-17	Main motor check
H-18	Score check
H-19	Cutter check
H-20	Slitter blade drive check
H-21	LED check
H-22	CCD performance check
H-23	Total score counter
H-24	Slitter position adjustment
H-25	RAM initialize
H-26	Score distance adjustment
H-27	P.P.S.2 & CCD distance adjustment
H-28	OP2 slitter check (Option slitter 2)
H-29	Elevator check (Optional AF-100)
H-30	Fan Check (Optional AF-100)
H-31	Solenoid & Feed check (Optional AF-100)
H-32	Feeder Total check (Optional AF-100)
H-33	SPEED UP – Prevents slitters from returning home while in REG mark correction mode.

Table 2

Documentation Review

You will be required to use DocuCutter DC-545 Field Service Manual when servicing the DocuCutter DC-545 machine. The Manual contains the following sections:

- Section 1 - Service Call Procedures
- Section 2 - Status Indicator RAPs
- Section 3 – Output Quality RAPs
- Section 4 - Repairs/Adjustments
- Section 5 - Parts List
- Section 6 - General Procedures
- Section 7 - Wiring Data

Many of the topics described in this training guide are described in detail in the Field Service Manual. As always, you should make the Field Service Manual your main source for obtaining service information.

When servicing the DocuCutter DC-545, you should also be aware of the information available in the Duplo DocuCutter DC-545 Instruction Manual. The Duplo DocuCutter DC-545 Instruction Manual provides a variety of information for customers, including both operating and troubleshooting information.

Conclusion

Congratulations!! You have completed the DocuCutter DC-545 Training Guide. You should now be able to:

- Understand and describe the main components and features of the DocuCutter DC-545.
- Be able to operate the DocuCutter DC-545.
- Be familiar with all of the documentation available for servicing and operating the DocuCutter DC-545.
- Understand the important safety precautions required when servicing the DocuCutter DC-545.
- Be familiar with the steps required to program jobs in to the DocuCutter DC-545.
- Be able to enter the Service Mode of the DocuCutter DC-545.
- Understand how to set the adjustments on the AF-100 autofeeder
- Understand the AF-100 operation theory.

If you have any questions about the features and functions of the DocuCutter DC-545, or this manual, review the appropriate Service Manual, or the Product Operation Manual as required.

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- Regency Covers
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- Comb Binding Machines
- Comb Binding Supplies
- Wire Binding Machines
- Pouch Laminators
- Laminating Rolls
- 3-Ring Binders
- Roll Laminators
- Velobind Spines
- Paper Cutters
- Paper Joggers
- Letter Openers
- Thermal Covers
- Unibind Supplies
- Proclick Spines
- Zipbind Spines
- Linen Covers
- Spiral Coil
- Index Tabs