

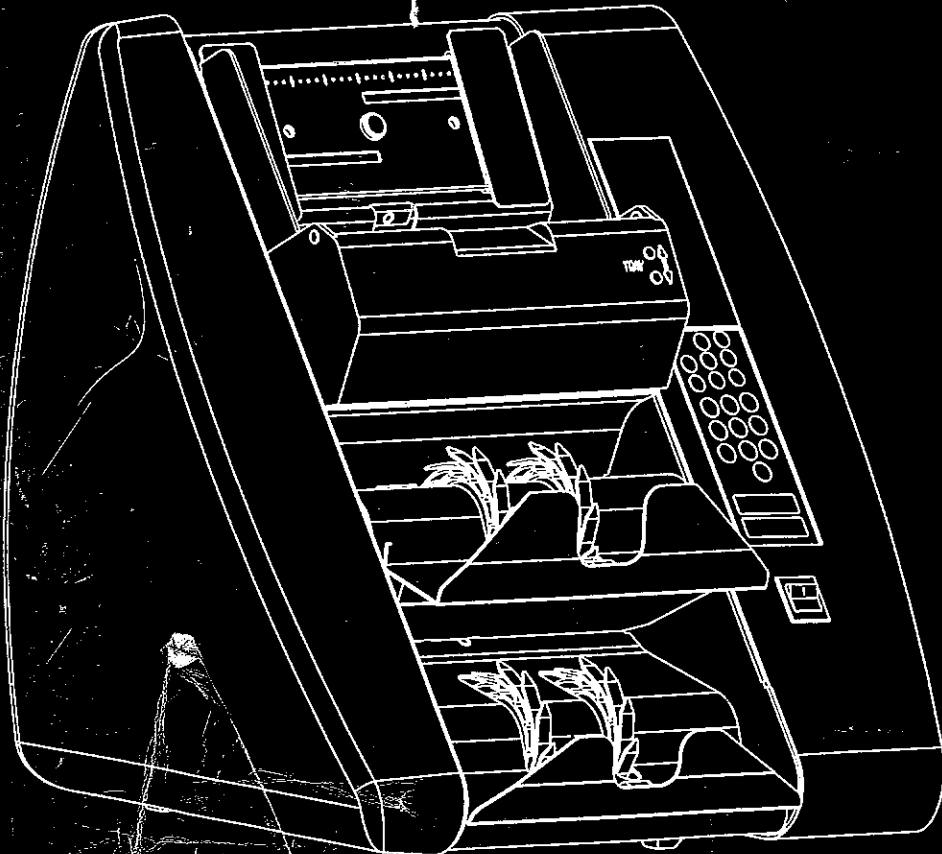


DeLaRue

operator's guide

2800VB

Value Balancing Currency Sorter/Counter



declaration of conformity



warning!

This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference; in which case, the user at his own expense will be required to take whatever measures may be necessary to correct the interference.



This machine has been designed for optimum safety for its operators. For your added protection, please follow the guidelines wherever this symbol appears and adhere to all Warnings and Important notes found within this manual. Always keep loose clothing, jewelry and hair out of the feed input tray area when operating the machine.

reference material

If this equipment does cause reception interference, the user should contact an authorized sales or service representative for suggestions. The user may find the booklet, **Interference Handbook, 1986**, prepared by the Federal Communications Commission helpful. This booklet is available for a small fee by ordering Stock Number: 004-000-00450-7 from the U.S. Government Printing Office, Washington, DC 20402.

to the reader

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DE LA RUE SYSTEMS Headquarters

Langstone Gate
Solent Road
Havant
Hampshire PO9 1TP
England

De La Rue Systems' counters are the direct result of over 40 years' experience in designing, manufacturing and distributing world class currency counting machines. Worldwide factory-trained service and support specialists are provided through De La Rue Systems' network of branch offices and authorized distributors.

Due to De La Rue's constant strive for product improvement, minor discrepancies between the actual machine, text and illustrations may exist. All information contained herein is based on latest specifications at time of publication and is subject to change without notice.

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* CDA is a registered trademark of De La Rue Systems.

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control panel

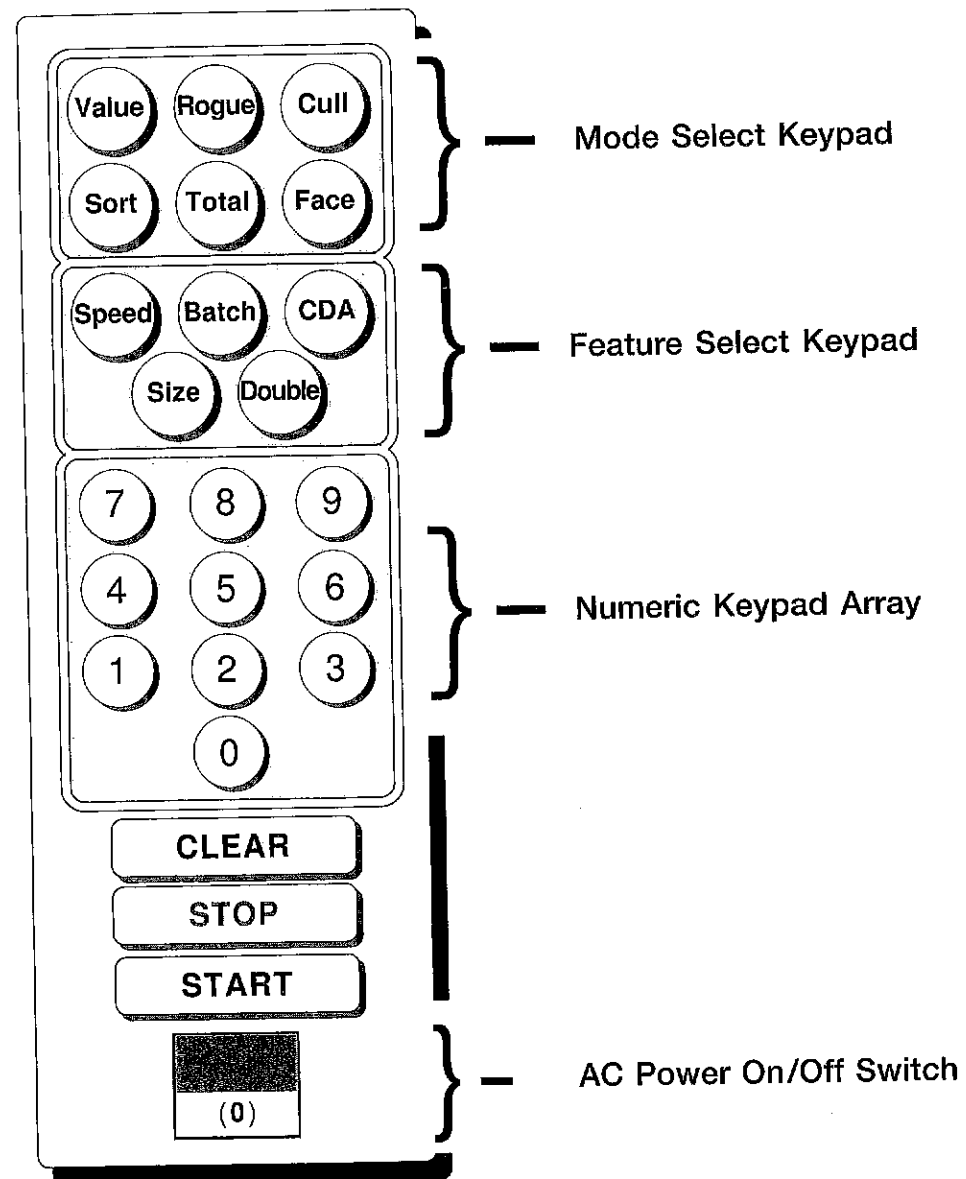


Figure 1a: Control Panel Overview

touch button array

VALUE - Press to cycle through U.S. currency denominations (example, \$1, \$5 \$10, etc.), and Piece Count mode for straight pack counting.

ROGUE - Press to enter rogue mode and switch between VALUE and PIECE count modes. Rogue is used when a value count is needed of a given pack that is thought to contain only

SORT - Press to switch the sort mode on or off. Pressing sort, together with a number key selects various pack sorting features (see heading "sort mode").

one denomination. The "first note through" sets sort criteria - all other denominations are off-sorted.

TOTAL - Press to view the GRAND total count at the sub total location on the display (up to 9 digits maximum).

CULL - Press to enter the cull mode, cycle to select a specific denomination. Cull is used when a value count is needed of a specific denomination. All other denominations in the pack are off-sorted.

SPEED - Press to switch speeds between HIGH (up to 1,000 npm), MED (up to 600 npm) or LOW (300 npm) minimum. Speeds are approximate and influenced by document quality and size. The speed is shown at the COUNT total location.

FACE - Press to switch face mode on or off. When facing notes, HIGH speed (1,000 npm) is selected.

SIZE - Press to cycle the length (size) measurement feature between settings 3 through 8 and off.

BATCH - Press to switch the batch counting mode on or off. Batch must be pressed before entering a batch value.

NUMERIC KEYPAD - Used to enter batch settings from 1 to 999 and access features in other modes.

CDA - Press to switch the magnetic counterfeit detection mode on or off.

DOUBLE - Press to switch the doubles detection feature between sensitivity settings 1 through 6 or off.

START - Press to continue the count after an error or jam stoppage, or after the STOP button has been pressed.

CLEAR - Press to clear (zero) the COUNT, SUB and GRAND totals. To protect against accidental clearing, the button must be pressed twice to clear a total.

POWER - Sets the 2800VB AC power to ON (I) and OFF (O).

STOP - Press to stop any count in process. When pressed, the **START** button must be pressed to continue the count.

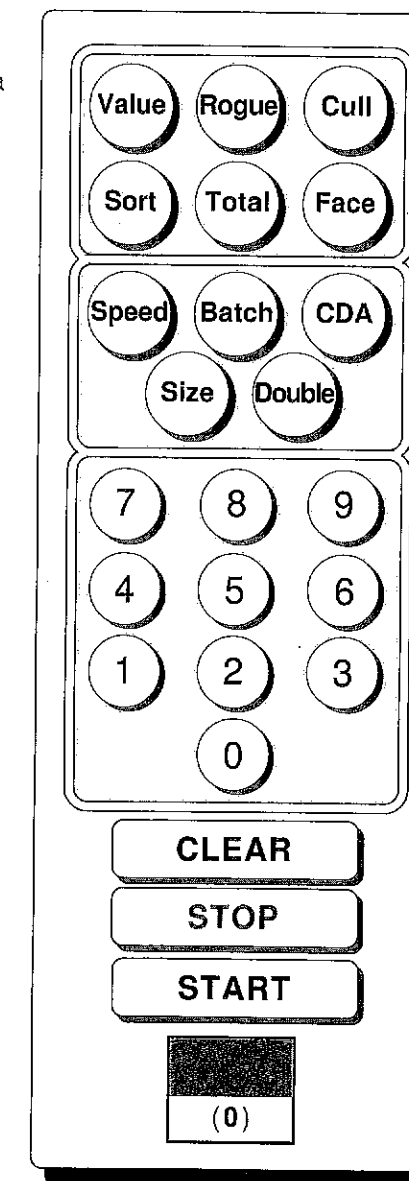


Figure 1b: Touch Button

lcd display

Piece (or) Value Count -

Shown to indicate that either the PIECE count or the VALUE mode is selected.

Rogue - Shown when rogue mode is selected. (Off-sorts the odd denomination in the pack.)

Face - Shown when note facing is selected. (Separates notes according to the portrait.)

Sort - Shown when note sorting is selected. (Off-sorts denominations and errors in accordance with selected sort mode.)

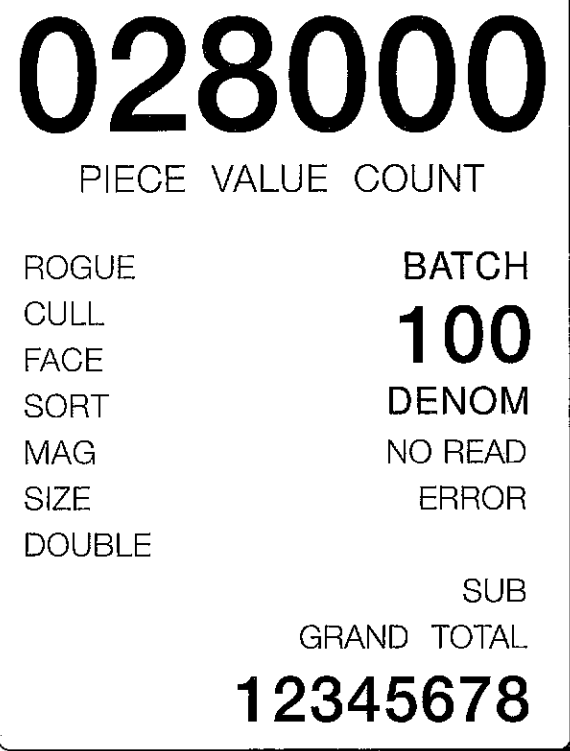
Mag - Shown when magnetic counterfeit detection is selected and flashes when a "suspect" is detected.

Size - Shown when length measurement is selected and flashes when a "suspect" is detected.

Double - Shown when doubles detection is selected and flashes when a double note is detected.

Cull - Shown when cull is selected. (Sorts a selected denomination from a pack of mixed notes.) All other notes and errors off-sort to the top tray.

COUNT - Shows the accumulated PIECE or VALUE total (up to 6 digits maximum).



BATCH - Flashes when the notes counted are equal to the selected batch setting.

Batch Setting - Shows - the selected batch setting (from 1 to 999), the denomination for value processing, or the selected sort mode. Error codes are also shown here.

Denom - Shown when in the VALUE or CULL mode to indicate that the batch setting represents the denomination selected (e.g., 1 for \$1, 10 for \$10, 50 for \$50, etc.).

No Read - Flashes when the unit cannot determine the denomination or characteristics of a note.

Error - When flashing by itself, indicates a feed error (chain note or jam). ERROR also flashes with other messages, such as, doubles, size, etc.

Sub Total - Shows the sub total (value or piece) count for a specific job (up to 8 digits maximum). This total is always shown.

Grand Total - Shows the grand total count for a single account (DDA) or for all work processed during a specific time period. The Grand Total is displayed by pressing the TOTAL touch button (up to 8 digits maximum).

Figure 1c: LCD Display

installing the 2800

The Model **2800 Value Balancing Currency Sorter/Counter** is designed to automatically value balance, count and sort U.S. currency. The **2800** offers:

- mixed denomination value balancing
- rogue denomination off-sort based on the first note through
- operator selected denomination off-sorts using the cull mode
- non-stop sorting of old and new style currency
- non-stop facing - notes feeding portrait side down (*face down or green side up*) versus notes feeding portrait side up (*face up*)
- non-stop orientation of notes

The **2800** easily converts to a currency/document counter (single stacker mode, piece count) to count and batch paper currency, USDA Food Coupons, checks and other similar documents within machine specifications. In the single stacker mode, good notes are fed to the bottom tray; *error** notes are fed to the top tray for examination by the machine operator.

**Error Note - is a note or document that is different from the rest of the pack, such as a counterfeit "suspect," a half note, a size "suspect," or possibly a double note.*

The **2800** is designed and built for quiet operation and to provide many years of trouble-free service with minimum maintenance using De La Rue's enhanced service diagnostics.

Machine model, serial and option numbers (where applicable) are stamped on individual nameplates affixed to the underside of the chassis. You must make reference to these numbers when you communicate with your service representative.

to begin

1. The temperature of the area where the **2800 Dual Pocket Sorter/Counter** is operated should range between 65° and 85°F (18° and 29°C), with a relative humidity range of 35% to 85%, non-condensing.
2. When choosing a location for the machine, avoid areas with drafts, excessive vibrations, and direct exposure to bright sunlight and heat sources.
3. Save all shipping documents for future use, including the specially designed shipping carton and insulator packaging, should the machine require transporting to another location or to the factory for servicing.

installing the 2800

4. If you see any sign of damage, immediately notify the shipping company and your sales office.
5. Check to make sure that all accessories or options ordered were shipped with the machine. Replacements are available through your authorized service or sales office.
6. If the machine needs to be moved or shipped, insert it in the protective shipping bag and place it in the specially designed insulator packaging. Slide the packaging into the carton. Insert the accessories in the box and place it in the packaging cutout. Fold down the carton flaps and seal shut with reinforcing tape.

ac power cord

1. Before plugging in the 2800 Sorter/Counter to your AC power outlet, make sure the AC voltage is within +15% or -10% of the voltage listed on the label next to the power socket on the back of the machine. (See Figure 2 on the next page.)
2. To prevent a circuit overload when connecting several units to the same power source, check to make sure their combined currents will not overload your electrical system.

⚠ Never Overload Your Electrical System!

For Example: A typical system configuration at 115 VAC is as follows:

Machine	Amperage
2800 Sorter/Counter	2.20 amp
4810 PC Cash Settlement	2.00 amp
3310 Scale	0.06 amp
Total amperage draw	4.26 amp

Note: De La Rue's typical Coin Sorter / Counter draws approximately 2.0 to 3.0 amps. If a sorter is part of your system, check the coin sorter operator's manual for the proper amperage draw.

Set the 2800 AC power switch to OFF (O).

3. Plug the socket end of the power cord into the socket located at the back of the counter. (See Figure 2 on the next page.)

installing the 2800

4. Plug the three-pronged plug into an appropriate AC wall outlet.

⚠ WARNING!

If your outlet is only two-pronged, you must use a 3-2 adapter. The ground wire (or tab) must be connected to the center screw (earth ground) of the outlet.

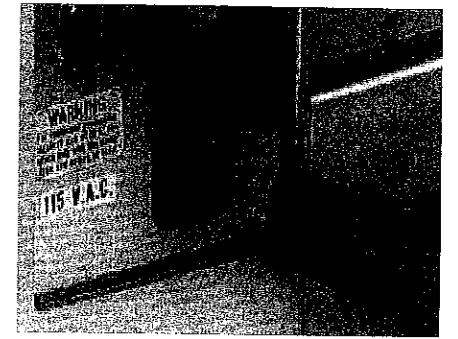


Figure 2: Power Bracket - Voltage Label and AC Power Cord Socket

auto-sensing

RS232 Communications

Set the 2800 AC power switch to OFF (O) and unplug the power cord from the machine.

1. Plug the RS232 cable to the connector at the back of your machine.
2. Plug the other end into your Host Computer System. Refer to the installation instructions provided with your system for proper RS232 interfacing.

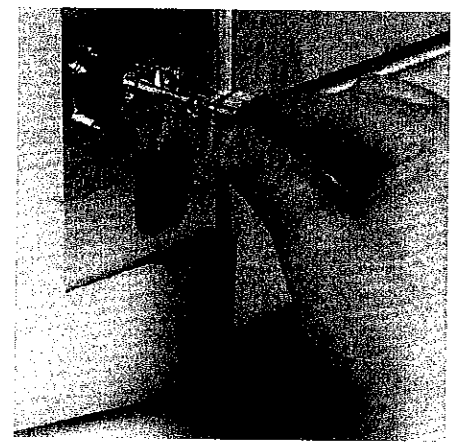


Figure 3: RS232 Interface Connector

3. Tighten the locking screws. A loose connector will cause intermittent communication transmission problems.

installing the 2800

check list... ✓

- ✓ Does the rating on the fuse label at the back of the **2800** machine match your outlet power rating? *For example, 115V at 50/60 Hz.*
- ✓ Is the AC power cord connected to a grounded outlet and pushed in tightly at both ends?
- ✓ Is the RS232 interface cable connection from the **2800** connected to the cash settlement (or host computer system) connector port?
- ✓ Are all connectors secured? A loose connector will cause intermittent communication transmission problems.
- ✓ If the answer is "yes" to all of the preceding questions, continue with "Placing Documents...." on the next page to begin using your **2800** Value Balancing Currency Sorter/Counter.
- ✓ If a "no" answer applies, make the necessary corrections *before* continuing.

align edges

document guides

placing documents

1. Before placing documents on the feed input tray, align the leading edges as shown in Figure 4 below.



Figure 4: Placing Documents to be Counted

Heading "Document Consideration," in the **Appendix** of this manual, explains the various types of documents that may be processed.

Note: For new or brick documents, bend and flex the stack allowing air into the pack.

2. Place the stack in the center of the feed tray. **Do not throw** documents onto the feed tray as jamming may result.

The document guides are set to position documents in the center of the feed path for optimum performance. (See Step 5 if an off-center feed is needed.)

The following procedure is only needed for the **first** pack of notes/documents placed on the feed tray.

1. Set the **2800** AC power switch to ON (I).
2. Press the **STOP** touch button.
3. Place the first pack of notes/documents in the center of the feed tray (see Figure 4 above).

speed

- Slide the document guides loosely against the left and right edges of the pack as shown in Figure 5.

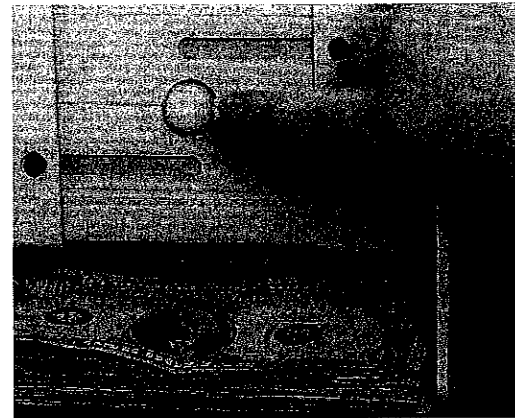
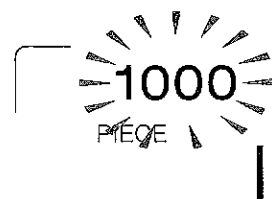
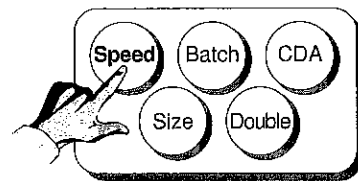


Figure 5: Setting the Document Guides

Off-Center Feed

- If an off-center feed is needed (favoring one side or the other), press the guide release button.
- While holding the button in, each document guide may be moved separately from side to side.
- Release the button when the guides are set as needed.
- To center the guides, press and hold the release button while sliding both document guides to the full center position, then release the button.

speed



Three preset speeds are selectable at 300rpm (notes per minute) minimum, 600rpm, and up to 1000rpm maximum. The speed setting is briefly shown (flashes) at the COUNT total location on the display.

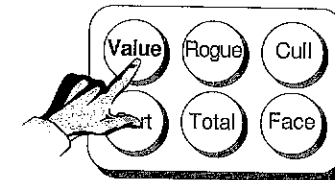
Note: Actual speed (or count rate) is determined by the quality and the size of the notes/documents being counted.

- Press the **SPEED** touch button to select a speed (300 - 300rpm, 600 - 600rpm or 1000 - 1,000rpm). The speed momentarily flashes on the display.

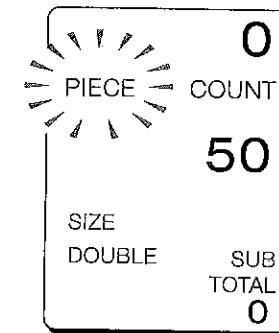
Note: When facing notes or using the CDA detection feature, HIGH speed (1000rpm) is used for best results. At power on, the 2800 defaults to the last speed selected prior to turning the unit off.

counting

Mode Select Keypad



Note: Before selecting an operating mode, the COUNT total on the display must be zero (0).



The 2800 easily converts to a note/document counter by pressing the **Sort** and the **ZERO (0)** buttons. Message PIECE COUNT is shown on the display.

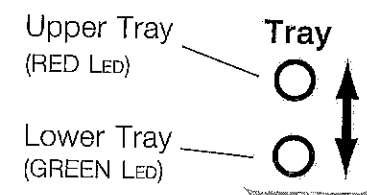
The COUNT total is the sum of notes in the bottom tray only. The top tray is used for off-sorting error notes, such as doubles, half notes, or chain notes. The machine continues the count without stopping on the error note.

When using more than one detection feature (for example, doubles and size), the error notes in the top tray could be caused by either or both features or could be a half or chain note. You must examine the errors and determine what action to take.

Notes: When using CDA or when in the FACE mode, the machine defaults to HIGH speed (1000rpm). However, the actual speed is determined by the quality and size of the notes being counted.

- Set the 2800 AC power switch to on (I).
- A previous batch setting or detection feature may appear. Press the appropriate touch button(s) to clear the display.

For example, if the last operation before turning off the counter included batching at 50, Length Measurement (SIZE), and DOUBLES, when turning the unit on the batch is set to 50 and SIZE and DOUBLES are shown. Press **SIZE** and cycle to zero (0) to clear (turn off) SIZE, press **DOUBLE** and cycle to zero (0) to clear DOUBLES, then press **BATCH** to clear the batch setting.



- RED and GREEN LED's light to show that the bottom tray is for good notes/documents (GREEN LED) and the top tray for off-sorted or error notes/documents (RED LED).
- For the first pack only,
 - Press **STOP**.
 - Place the pack on the feed tray.
 - Adjust the document guides (see heading "document guides" on page 5).
 - Press **START** to begin the count.

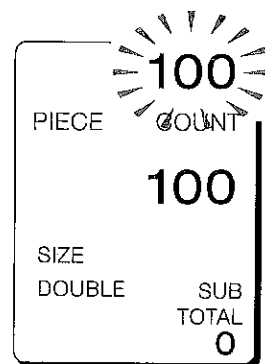
For all other similar packs, place documents on the feed tray. Counting begins immediately with good notes feeding to the bottom tray.

- The feed tray holds up to 600 U.S. teller-quality notes. However, the top and bottom trays hold only up to 200 teller-quality U.S. notes each and must be emptied accordingly.

reset totals

6. Additional documents may be counted and added to the COUNT as long as the bottom tray contains at least one document.
7. Pressing the **STOP** button stops any operation. To continue, press **START**.
8. When the pack is finished:
 - Remove any *error* notes in the top tray only (RED LED flashing) and place them in the feed tray to verify that they are true errors. Good notes feed to the bottom tray while true errors again feed to the top tray.
 - When this count is complete, remove any *errors* in the top tray and set them aside to be checked later.
 - Remove all notes from the bottom tray.
9. The COUNT total shows the piece count of the pack processed (number of notes in the pack).
10. When the machine is not in use, set the AC power switch to OFF (O).

to reset a total



Count Total (level-1 total)

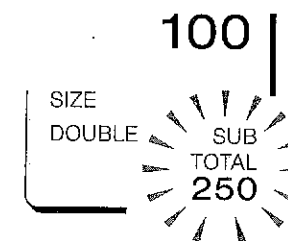
To prevent a pack PIECE COUNT or VALUE COUNT (\$000) from being added to the SUB TOTAL when recounting (or verifying) the pack, press the **CLEAR** button *before removing notes from the bottom tray*. The COUNT total flashes to ask if this is correct. Press **CLEAR** again to zero this count.

Sub/Grand Totals (level-2 and level-3 totals)

The **SUB** and **GRAND TOTALS** accept up to 8 digits maximum and are shown at the lower right-hand corner of the display.

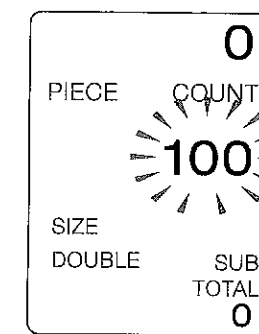
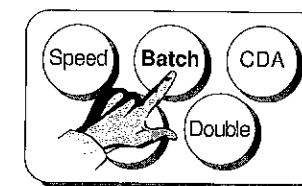
The **SUB TOTAL** is the total number of notes (or dollar value when in the value modes) processed for a particular job or batch. The **GRAND TOTAL** is the total number of notes (or dollar value) processed over a period of time - an operator's shift, a full day, etc.

batching



batching

Feature Select Keypad



1. To clear the **SUB TOTAL**, press **CLEAR** when the COUNT total is zero (0). If you press **CLEAR** with a COUNT shown, the COUNT is cleared first. The sub total flashes to ask if this is correct. Press **CLEAR** again to zero this total.
2. To clear the **GRAND TOTAL**, first press **TOTAL** to display the **GRAND TOTAL**, then press **CLEAR** while the total is shown. The grand total flashes to ask if this is correct. Press **CLEAR** again to zero this total.

1. Set the 2800 AC power switch to ON (I).
2. RED and GREEN LED's light to show that the bottom tray is for good notes/documents (GREEN LED) and the top tray for *error* notes/documents (RED LED).

Notes:

- When Facing notes (beginning on page 25), both LED's are GREEN because you are using both trays for good notes.
- Batching is not used in the VALUE count modes or when in the SORT 1 mode.

3. Press the **BATCH** button. The number **100** or a previous batch setting may appear.
4. To select another setting use the numeric keypad (numbers 1 through 0). If an error is made in selecting, press **CLEAR** or press zero (0) three times and enter again.

Note: The batch setting remains in memory. When returning to the batch mode, this setting reappears. Repeat Step 4 if another setting is needed.

Setting a Zero Batch

Press the **BATCH** button to clear the display and switch to the Continuous Count mode.

Batch Counting

1. For the *first* pack only,
 - Press **STOP**.
 - Place the pack on the feed tray.

batching

- Adjust the document guides (see heading "document guides" on page 5.)
- Press **START** to begin the count.

For all other similar packs, place documents on the feed tray. Counting begins immediately with good notes feeding to the bottom tray.

2. The feed tray holds up to 600 U.S. teller-quality notes. However, the top and bottom trays hold only up to 200 teller-quality U.S. notes each and must be emptied accordingly.
3. The machine stops when the COUNT total is equal to your BATCH setting. BATCH also flashes.

If the feed tray empties before the batch is complete, additional documents may be added to continue the count. Without removing notes from the bottom tray, add more notes to the feed tray.

4. Pressing the **STOP** button stops any operation. To continue, press **START**.
5. When a BATCH is finished:
 - First remove any *error* notes in the top tray (RED LED flashing) and place them in the feed tray to verify that they are true errors. Good notes feed to the bottom tray while true *errors* again feed to the top tray.
 - Remove the counted batch from the bottom tray. The COUNT total is cleared and the next batch count starts until all notes are processed.
6. When this count is complete, remove any *errors* remaining in the top tray and set them aside to be checked later.
7. Remove all notes from the bottom tray.
8. When the machine is not in use, set the AC power switch to OFF (O).

Notes:

- If you clear the bottom tray while error notes are in the top tray the beeper sounds. You must clear the top tray before the next batch can process.
- Press **Start** to continue the next batch.

chain notes



Chain Notes: - two or more notes fed close together or slightly overlapped

chain and half notes

The **Chain Note** feature examines notes that are fed too close to each other or slightly overlapped.

Single Pocket Mode

When a CHAIN note is detected, the *error* notes are fed to the top tray and machine counting continues "uninterrupted."

The COUNT total does not include the *error* notes in the top tray.

removing the chain note

1. When the pack or job count is complete, remove the chain notes fed into the top tray and any other errors.

Notes:

- If you remove notes from the bottom tray first, the top tray RED LED and message ERROR flash. This is to remind you that those notes also belong to the pack and the pack must be recounted for accuracy.
 - If Length Measurement is used, SIZE may also appear since the error-producing note may be larger than required.
2. Separate the chain notes and place them and all other errors back in the feed tray to verify that they are true errors. Good notes feed to the bottom tray while true errors again feed to the top tray.
 3. Press **START** to continue the count.
 4. When the count is complete, remove all notes from the bottom tray.

Dual Pocket Mode

When a chain note is detected:

- Machine counting immediately **stops**.
- The LED of the tray containing the chain note flashes RED.
- A single beep sounds (see Beeper in the Appendix).
- ERROR flashes on the display.
- Operation STOPS.

chain and half notes

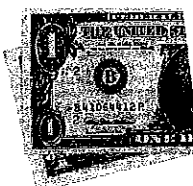
to examine the chain note

1. Remove the top two notes fed into the tray having the flashing RED LED (*error tray*) to find the chain notes.
2. Separated chain note(s) and place them and all other notes from the *error tray* back into the feed tray.

The number of notes removed from the *error tray* is subtracted from the COUNT total and from the SUB total to keep an accurate count of all notes processed.

3. Press **START** to recount the pack.

half notes



Half Note – folded left-to-right or torn in half as shown



Half Note – folded in direction of feed or torn in half as shown

The **Half Note** detection feature examines documents that are folded or torn the short way (left-to-right) or the long way (top-to-bottom in direction of feed).

Single Pocket Mode

When a half note (folded or torn in half) is detected, the *error note* is fed to the top tray and machine counting continues.

The COUNT total does not include the *error notes* in the top tray.

to examine the half note

1. When the pack or job count is complete, remove the half notes fed into the top tray.

Notes:

- If you remove notes from the bottom tray first, the top tray RED LED and ERROR flash (and possibly DOUBLE, if doubles detection is on). This is to remind you that these notes also belong to the pack and the pack must be recounted for accuracy.
- If Length Measurement is used, SIZE may also appear since the error-producing note may be smaller than required.

2. Set any torn notes aside. Unfold and place the half note and all other errors back in the feed tray.
3. Press **START** to continue the count. Good notes feed to the bottom tray while true errors again feed to the top tray.

half notes

4. When the count is complete, remove all notes from the bottom tray.

Dual Pocket Mode

When a half note is detected:

- Counting immediately **stops**.
- The LED of the tray containing the half note flashes RED.
- A single beep sounds (see Beeper in the Appendix).
- ERROR flashes on the display.
- Operation STOPS.

to examine the half note

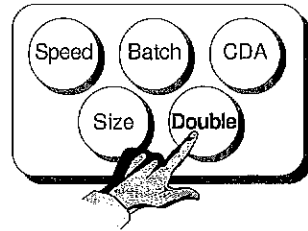
1. Remove the last two notes fed into the tray having the flashing RED LED (*error tray*) to find the half note (folded or torn).
2. Place the torn note(s) aside or unfold the half note(s) and place them and all other notes from the *error tray* back into the feed tray.

The number of notes removed from the *error tray* is subtracted from the COUNT total and from the SUB total to keep an accurate count of all notes processed.

3. Press **START** to recount the pack.

doubles detection

Feature Select Keypad



Detecting a double note is done by optically comparing previously counted notes to the note presently being counted. If the present note does not compare to the previously counted notes it is then considered a "DOUBLE."

1. Press the **DOUBLE** button. DOUBLE and a 0 or a previous setting are shown.
2. Cycle (press) the **DOUBLE** button to select a sensitivity setting for the type of notes being processed. Double settings range from 1 through 6 and the selected setting flashes.

Notes:

- Setting 1 is the most sensitive, while setting 6 is the least. Also, setting 4 is recommended for U.S. currency; 2 is used for USDA Food Coupons.
- If DOUBLES is not needed, cycle to setting 0. After a brief delay, doubles is turned OFF and disappears from the display.

Single Pocket Mode

1. When a double document is detected, the error note(s) is fed to the top tray, and counting continues "uninterrupted."

The COUNT total does not include error notes in the top tray.

to examine the double note

1. When the pack or job count is complete, remove the double documents fed into the top tray and separate them.

Notes:

- If you remove notes from the bottom tray first, the top tray RED LED and DOUBLE flash. This is to remind you that these notes also belong to the pack and the pack must be recounted for accuracy.
- It is possible for the first note in a pack to be a double note. In this case, because of machine speed, this double note feeds to the bottom tray and a few notes feed to the top tray. Counting STOPS, the bottom tray RED LED and DOUBLE flash. The COUNT total is also zeroed to allow a recount for accurate totals. Clear both trays before continuing.

2. Place the separated doubles back onto the feed tray to verify that they are true errors. Good notes feed to the bottom tray while true errors again feed to the top tray.

doubles detection

Note: If the machine repeatedly detects DOUBLES, review heading "document considerations" in the Appendix of this manual.

Dual Pocket Mode

1. When a double document is detected:

- Counting immediately stops.
- The LED of the tray(s) with the double note flashes RED.
- A single beep sounds (see Beeper in the Appendix).
- DOUBLE and ERROR flash on the display.
- Operation STOPS.

to examine the double note

1. Remove the last two notes fed into the tray having the flashing RED LED (error tray) and separate the double note.
2. Place the separated doubles and all other notes from the error tray back onto the feed tray.
3. Press **START** to continue the count.

The number of notes from the error tray is subtracted from the COUNT total and from the SUB total to keep an accurate count of all notes processed.

Note: If the machine repeatedly detects DOUBLES, review heading "document considerations" in the Appendix of this manual.

counterfeit detection (CDA®)

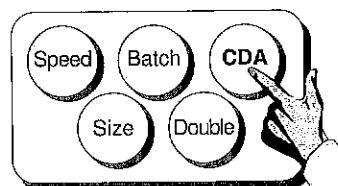
magnetic

Counterfeit Detection Aid (CDA®) examines the magnetic properties of the ink on each U.S. currency note as it feeds. Message CDA is shown on the display when it is turned on.

Notes:

- The CDA "suspect" may be a genuine note but damaged or otherwise unfit. For example, the note may be severely faded, torn, bleached, etc.
- When operating with CDA, be sure to use the document guides and run the machine at HIGH speed (1000rpm), the default setting.

Feature Select Keypad



1. Set the 2800 AC power switch to ON (I).
2. Press the **CDA** button. MAG is shown on the display.

Single Pocket Mode

1. When a CDA "suspect" is detected the *error* note is fed to the top tray and machine counting continues.

The COUNT total remains accurate. It is not cleared AND does not include the "suspect" in the top tray.

to examine the CDA suspect.....

1. When the pack or job count is complete, remove any suspects from the top tray and examine them.

Note: *If you remove notes from the bottom tray first, the top tray RED LED and MAG flash. This is to remind you that these notes also belong to the pack and the pack must be recounted for accuracy.*

2. Place them back in the feed tray to verify that they are true CDA errors.
3. Press **START** to continue the count.
4. When the count is complete, all error notes in the top tray should be placed aside for further examination.
5. Remove all notes from the bottom tray.

counterfeit detection

Dual Pocket Mode

1. When a CDA "suspect" is detected:
 - Counting immediately **stops**.
 - The LED of the tray containing the CDA suspect flashes YELLOW.
 - A single beep sounds (see Beeper in the Appendix).
 - CDA flashes on the display.
 - Operation STOPS.

to examine the CDA suspect.....

1. Remove the last two notes fed into the tray having the blinking YELLOW LED (*error* tray) to find the CDA suspect.
2. Examine the CDA "suspect" and:

If Acceptable –

- Return the last two notes to the tray they were taken from (the one having the blinking YELLOW LED).
- The COUNT total remains accurate.
- Press **START** to continue the count.

If Not Acceptable –

- Either place the CDA "suspects" aside for examination later, or place them back in the feed tray to verify that they are true CDA errors.
- Empty the *error* tray (the one having the blinking YELLOW LED) and place all notes back into the feed tray.
- Press **START** to recount the pack.

Remember: *The COUNT total is the sum of both the top and bottom trays. Therefore, when the error producing tray is emptied, the machine automatically subtracts the amount of notes in that tray from the COUNT total when **START** is pressed to begin the recount. This keeps an accurate total of notes processed for a job or pack.*

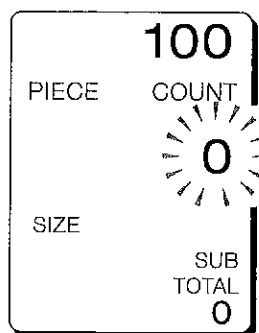
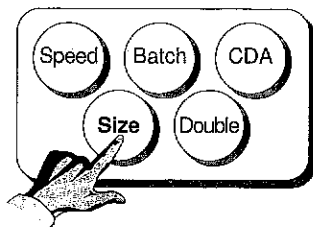
size (length measurement)

SIZE detection (or Length Measurement) is used to count currencies of different overall sizes. Notes that are larger or smaller (in millimeters) than previously counted notes cause a SIZE "suspect" error.

Other SIZE "suspects" may also result from any of the following causes:

- a note of an incorrect denomination (with some international currencies).
- a badly skewed note (fed on a severe slant).
- a note with a piece missing.
- a note with a badly damaged edge.

Feature Select Keypad



1. Press the **SIZE** button. SIZE and a **0** or a previous setting are shown at the batch count area on the display.
2. Cycle (press) the **SIZE** button to select a millimeter setting for the type of notes being processed. Size settings range from **3mm** through **8mm** and the selected setting briefly flashes on the display.

Note: If SIZE is not needed, cycle to setting **0**. After a brief delay, size detection is turned OFF and disappears from the display.

Single Pocket Mode

1. When a SIZE suspect is detected it is fed to the top tray and machine counting continues "uninterrupted."

The COUNT total is the sum of notes in the bottom tray only.

to examine the SIZE suspect

1. When the pack or job count is complete, remove the SIZE errors fed into the top tray and examine them. The suspects may be either under or oversized or possibly folded in half.

Note: If you remove notes from the bottom tray first, the top tray RED LED and SIZE flash. This is to remind you that those notes also belong to the pack and the pack must be recounted for accuracy.

2. Unfold and place the size error back into the feed tray, or set the under or oversized error note aside.

size (length measurement)

3. Press **START** to continue the count.
4. When the count is complete, remove all notes from the bottom tray.

Dual Pocket Mode

1. When a SIZE suspect is detected:
 - Counting immediately **stops**.
 - The tray LED with the SIZE suspect flashes **YELLOW**.
 - A single beep sounds (see Beeper in the Appendix).
 - SIZE flashes on the display.
 - Operation **STOPS**.

to examine the SIZE suspect

1. Examine the last two notes fed into the tray having the blinking **YELLOW** LED and remove the suspect (the note that is either under or oversized).
2. Examine the SIZE suspect and:

If Acceptable -

- Return the note to the tray from which it was taken (the one having the flashing **YELLOW** LED).
- The **COUNT** total remains accurate.
- Press **START** to continue the count.

If Not Acceptable -

- Place the suspect note aside.
- Empty the error tray (the one having the flashing **YELLOW** LED) and place all notes back into the feed tray.
- Press **START** to recount the pack.

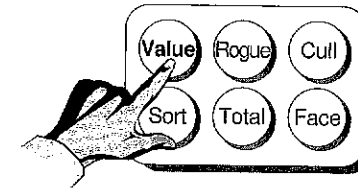
Remember: The **COUNT** total is the sum of both the top and bottom trays. Therefore, when the error producing tray is emptied, the machine automatically subtracts the amount of notes in that tray from the **COUNT** total when **START** is pressed to begin the recount. This keeps an accurate total of notes processed for a job or pack.

auto-sensing

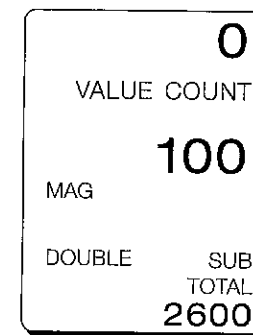
Auto-Sensing (RS232 Communications)

Auto-Sensing (or RS232 Communications Interfacing) transmits count totals, and if desired, operational control of the Model 2800 to a Host Computer System. Refer to your host computer system documentation for further information.

Mode Select Keypad



Note: Before selecting an operating mode, the COUNT or VALUE total on the display must be zero (0).



value balancing

Value Balancing is used when a "DOLLAR VALUE" is needed of a given pack of mixed currency.

All verified notes are fed to the bottom tray and accumulate towards a VALUE total, which is a dollar value (\$000).

Error notes, such as DOUBLES and SIZE or CDA "suspects," are fed to the top tray. These NOTES are not INCLUDED in the total. The machine continues uninterrupted. Also, Batching is not used.

1. Press the **VALUE** touch button.

RED and GREEN LED's light to show that the bottom tray is for good notes (GREEN LED) and the top tray for the off-sorted error notes (RED LED).

2. VALUE and MAG appear on the display.

Note: Document guides must be used. See "document guides" on page 5.

3. Place notes on the feed tray.

Counting begins immediately with the *verified denominations* feeding to the bottom tray; no-reads* and error notes off-sorting to the top tray.

* **No-reads** are notes that the 2800 cannot verify by denomination. No-reads are usually caused by excessive dirt, fading, a washed-out notes or damaged notes (tears or folded corners).

4. Additional notes may be processed and added to the count as long as the bottom tray contains at least one note.

The VALUE total (large 6-digits) is a dollar (\$000) amount of all notes in the bottom tray only.

5. When the pack is finished:

- Remove all *error* notes from the top tray and examine them for double notes, CDA, size "suspects," etc.

Note: If you remove notes from the bottom tray first, the top tray YELLOW LED flashes and the beeper sounds. This is to remind you to remove and examine these notes. Also, the **START** button must be pressed to begin the next count.

- Remove all notes from the bottom tray.

rogue note

- The COUNT total shows the dollar value (\$000) of all notes in the bottom tray.

to view VALUE totals by denomination

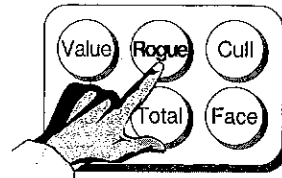
Press the **Value** button to cycle through each currency denomination. The dollar VALUE total for each denomination is shown. A PIECE count total appears after the last denomination is displayed.

A **SUB** total is also shown and a **GRAND** total is available by pressing the **TOTAL** button.

See heading "to reset a total" on page 8.

rogue note

Mode Select Keypad



Note: Before selecting an operating mode, the COUNT or VALUE total on the display must be zero (0).

Rogue Note is used when a "DOLLAR VALUE" is needed for a specific pack that is thought to contain only one currency denomination.

The *first note through* sets the denomination and those notes feed to the bottom tray. All other denominations are off-sorted to the top tray.

Other errors, such as DOUBLES, SIZE or CDA "suspects," are also fed to the top tray and the count continues without stopping. Notes in the top tray are not included in the dollar VALUE total.

- Press the **ROGUE** touch button.

YELLOW and GREEN LED's light to show that the top (YELLOW) and bottom (GREEN) trays are used and ready to accept notes.

- ROGUE and MAG are shown on the display.

Note: When in the ROGUE mode, the COUNT, SUB and GRAND totals are dollar (\$000) values, not piece counts, and are the sum of notes fed to the bottom tray only.

- If batching is needed, press **BATCH** and select a batch quantity. See Steps 3 and 4 on page 9.

Note: Document guides must be used. See "document guides" on page 5.

rogue note

- Place notes on the feed tray. Counting begins with the *first note through* feeding to the bottom tray and setting the denomination to be processed. All other denominations and feed errors off-sort to the top tray.
- Additional notes may be processed and added to the existing value as long as the bottom tray contains at least one note.

- When the pack is finished:

- Remove all notes from the top tray and examine them for improper denominations and errors, such as double notes, CDA or size "suspects," etc.

Note: If you remove notes from the bottom tray first, the top tray YELLOW LED flashes and the beeper sounds. This is to remind you to remove and examine these notes. Also, the **START** button must then be pressed to begin the next count.

- Place notes that may belong in the bottom tray back into the top tray and run them again to verify their error condition.
- When this is complete, remove all notes from the top then bottom trays. Any remaining error notes must be placed aside and re-examined further.

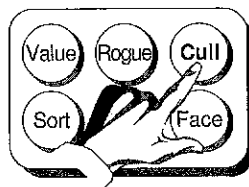
- The COUNT total shows the dollar value (\$000) of all notes in the bottom tray.

To reset totals, see heading "to reset a total" on page 8.

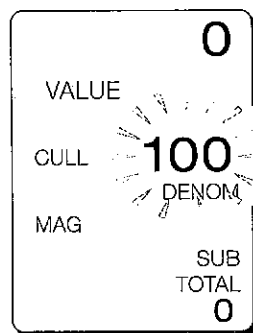
cull

CULL is used when a "DOLLAR VALUE" is needed of a specific currency denomination that is part of a pack of mixed U.S. currency.

Mode Select Keypad



Note: Before selecting an operating mode, the COUNT or VALUE total on the display must be zero (0).



The *selected denomination* is fed to the bottom tray. All other denominations off-sort to the top tray.

Error notes, such as DOUBLES, SIZE or CDA "suspects", are also fed to the top tray without stopping the count. Notes in the top tray are not included in the VALUE total.

1. Press the **CULL** touch button.
YELLOW and GREEN LED's light to show that the top (YELLOW) and bottom (GREEN) trays are ready to accept notes.
2. **CULL** and the number **100** (for \$100), or a previous setting, flash on the display. VALUE, MAG and DENOM are also shown.
3. Cycle (press) the **CULL** button and select the denomination to be culled from the pack. For example, select **100** for \$100, **20** for \$20, **1** for \$1, etc.
4. The selected dollar value briefly flashes at the BATCH count location. CULL and MAG remain on the display.

Note: When in the CULL mode, the COUNT, SUB and GRAND totals are dollar (\$000) values, not piece counts, and are the sum of notes fed to the bottom tray only.

5. If batching is needed, press **BATCH** and select a batch quantity. See Steps 3 and 4 on page 9.

For this example,

All other denominations (e.g., \$1) and error notes off-sort to the top tray

The selected denomination (e.g., \$100) feeds to the bottom tray

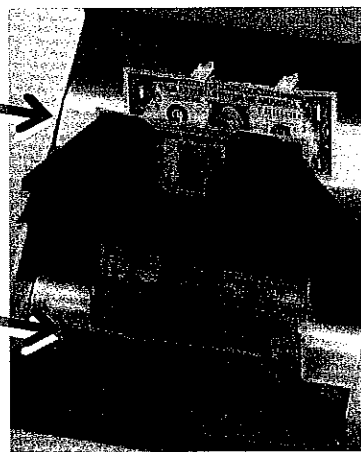


Figure 6: Stacker Output Trays

Note: Document guides must be used. See "document guides" on page 5.

6. Place notes on the feed tray. Counting begins with the selected denomination feeding to the bottom tray; all other denominations and errors off-sort to the top tray. See Figure 6.
7. The feed tray holds up to 600 U.S. teller-quality notes. However, the top and bottom trays only hold up to 200 teller-quality notes each and must be emptied accordingly.

facing notes

8. Additional notes may be processed and added to the existing VALUE as long as the bottom tray contains at least one note.

9. When the pack is finished:

- Remove any notes from the top tray and examine them for improper denominations or other errors, such as double, CDA or Size "suspects," etc.
- Place notes that may belong in the bottom tray back into the top tray and run them again to verify their error condition.

Note: If you remove notes from the bottom tray first, the top tray YELLOW LED flashes and the beeper sounds. This is to remind you to remove and examine these notes. Also, the **START** button must then be pressed to begin the next count.

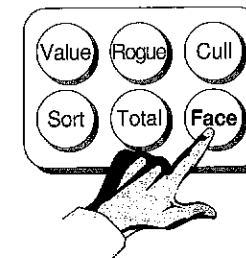
- When this is complete, remove all notes from the top then bottom trays. Any remaining error notes must be placed aside and re-examined further.

10. The COUNT total shows the dollar value (\$000) of the notes in the bottom tray.

To reset totals, see heading "to reset a total" on page 8.



Mode Select Keypad



Note: Before selecting an operating mode, the COUNT or VALUE total on the display must be zero (0).

Note Facing detects and separates U.S. currency that is not faced the same way.

The *face up* notes (*portrait side up*) are fed to the bottom tray. Notes that are not portrait side up (*green side up*) off-sort to the top tray.

The COUNT total is the sum of notes in "both" the top and bottom trays.

Facing is operable in the VALUE or PIECE count. However, in VALUE, batching is not available.

1. First, select either VALUE using the **VALUE** button or PIECE count using the **SORT 0** buttons.
2. Then press the **FACE** touch button. In PIECE count, FACE appears; in VALUE count, FACE and MAG appear.

Two GREEN LED's light to show that both trays are used and are ready to accept notes.

facing notes

However, the actual speed is determined by the quality and size of the notes being counted.

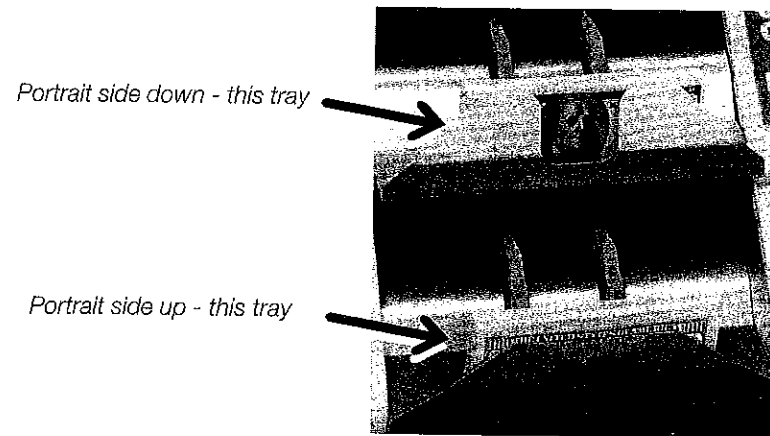


Figure 7: Facing Stacker Output Trays

- If you are in PIECE count and batching is needed, press **BATCH** and select a batch quantity using the numeric keypad. See Steps 3 and 4 on page 9.

Batching is available in the PIECE COUNT mode only and is the sum of both the top and bottom trays.

- Place notes on the feed tray. Counting begins with face up (portrait side up) notes feeding to the bottom tray, face down notes off-sorting to the top tray. See Figure 7.

Note: Document guides must be used. See "document guides" on page 5.

- The feed tray holds up to 600 teller-quality notes. However, the top and bottom trays only hold up to 200 teller-quality U.S. notes each and must be emptied accordingly.
- Additional notes may be processed and added to the existing count as long as the trays contain at least one note.
- To recount or verify a pack, remove all notes from both trays and place them back into the feed tray, portrait side up.
- When finished, remove all notes from both trays and face them properly (either all *face up* or all *face down*).
- The COUNT or VALUE total is the sum of notes in both the top and bottom trays.

To reset totals, see heading "to reset a total" on page 8.

Within the Sort mode of operation the following features are offered:

sort modes

Within the Sort mode of operation the following features are offered:

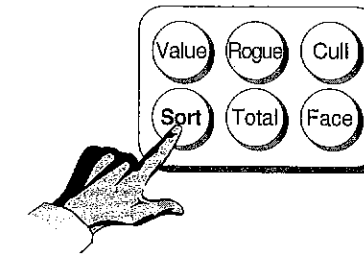
- Sort 0 - Piece Count Mode
- Sort 1 - Old vs. New U.S. Currency Design, mixed
- Sort 2 - Old vs. New U.S. Currency Design, by denomination
- Sort 3 - Add Note Value (one note at a time)
- Sort 5 - Subtract Note Value (one note at a time)
- Sort 7 - Sort Head vs. Feet, by denomination

To enter a sort mode,

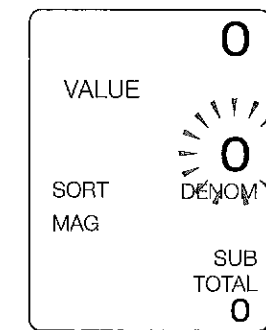
- Press the **Sort** button.
- While the SORT flashes on the display, enter the number for your mode selection per the above list. The entered number also flashes.

Note: If SORT stops flashing before you enter a number, you must press **Sort** again and enter the number again before the flashing stops.

Mode Select Keypad



Note: Before selecting an operating mode, the COUNT or VALUE total on the display must be zero (0).



Sort 0: Piece Count

Sort 0 sets the counter in the PIECE COUNT mode and PIECE is shown on the display.

See section Basic Operating Features, heading "counting," beginning on page 7.

Sort 1: New vs. Old

Sort 1 sorts U.S. currency by design (new vs. old) and assumes the pack is mixed denominations.

The new design feeds to the top tray, the old design to the bottom tray.

- Press the **Sort** and number **1** buttons. SORT and MAG are shown.

Two GREEN LED's light to show that both trays are used and are ready to accept notes.
- The VALUE count is the sum (**\$000**) of both trays.

sort modes

Sort 2: New vs. Old

Sort 2 also sorts U.S. currency by design (new vs. old) but assumes the pack contains only one U.S. denomination.

1. Press the **Sort** and number **2** buttons. SORT, VALUE and MAG are shown.

RED and GREEN LED's light to show that the bottom tray is for the set denomination (GREEN LED) and the top tray for the off-sorted notes (RED LED).
2. The *first note through* sets the design and denomination that feeds to the bottom tray.

The top tray (RED LED) accepts the other currency design, error notes and notes that are a different denomination.
3. The VALUE count is the sum of bottom tray only.

Sort 3: Add a Note

Sort 3 "adds" one note at a time to the existing VALUE count of a specific denomination.

This mode is used with all other modes, except PIECE count, where dollar values are not considered.

1. After pressing **Sort 3**, VALUE and 10 (for \$10 denomination) are shown on the display.
2. Press the number **9** button to cycle up from \$10 and stop at the denomination to be added (20, 50 or 100)...
or
...press the number **3** button to cycle down from \$10 and stop at the denomination to be added (5, 2 or 1).
3. Immediately press **STOP** to "add" one note of this denomination to the VALUE count.
4. Repeat preceding Steps 1 and 2 for each note that must be added. Two (2) beeps sound when entry is accepted.

sort modes

Sort 5: Subtract a Note

Sort 5 "subtracts" one note at a time from the existing VALUE count of a specific denomination.

This mode is used with all other modes, except PIECE count, where dollar values are not considered.

1. After pressing **Sort 5**, VALUE and 10 (for \$10 denomination) are shown on the display.
2. Press the number **9** button to cycle up from \$10 and stop at the denomination to be subtracted (20, 50 or 100)...
or
...press the number **3** button to cycle down from \$10 and stop at the denomination to be subtracted (5, 2 or 1).
3. Immediately press **STOP** to "subtract" one note of this denomination from the VALUE count.
4. Repeat preceding Steps 1 and 2 for each note that must be subtracted. Two (2) beeps sound when entry is accepted.

Sort 7: Head vs. Feet

Sort 7 sorts U.S. currency according to the direction of the portrait (feet first or head first) and assumes the pack contains only one U.S. denomination.

1. Press the **Sort** and number **7** buttons. SORT, CULL and MAG are shown.

Two GREEN LED's light to show that both trays are used and are ready to accept notes.
2. The *first note through* sets the denomination for the pack.
3. Notes feeding feet first are directed to the bottom tray. The top tray accepts notes fed head first.
4. The VALUE count is the sum of both trays.
5. Notes that are of a different denomination feed to a tray according to their head first-feet first direction.

sort modes

The count immediately **stops** and the appropriate LED flashes RED to indicate the *error* tray. The beeper sounds and DENOM is shown on the display.

6. Remove all notes from the error producing tray and examine the last two notes fed for improper denomination or *errors*, such as DOUBLES, CDA or SIZE "suspects," etc. The value of these notes is subtracted from the SUB total and not included in the VALUE count shown.

cleaning



WARNING!

Before cleaning, set the Model 2800 AC power switch OFF (O) and disconnect the power cord from the machine. To prevent electric shock, do not remove the machine side covers as there are no user-serviceable parts underneath. Refer all servicing to an authorized service technician.

Replacements of Professional Cleaner and foam-tipped cleaning swabs (see Accessories, page A-11) may be purchased from your local sales or service office.

Also, read and adhere to the warning notices printed on the label of the Professional Cleaner.



CAUTION!

Do not splash Professional Cleaner onto the rollers or bearings. Excess fluid dripping inside these components can be costly. It can dissolve grease in the bearings, causing premature wear.

how often

For optimum machine performance, cleaning must be performed once a week under normal usage, more frequently under heavy usage. Rotate each part by hand to clean the entire surface. Cleaning is best accomplished using:

- DRY Foam-tipped Cleaning Swab - for sensor lenses and magnetic pickup heads.
- A lint-free, nonabrasive cloth moistened with the approved Professional Cleaner or dampened with water.
- Small, soft brush.
- Vacuum, similar to those used for cleaning PC computers, including a nozzle and crevice tool.

exterior

Set the 2800 AC power switch to OFF (O) and unplug power cord from the machine.

1. Brush and vacuum accumulated dust from the feed input and the upper and lower stacker output trays.
2. Use the dry, foam-tipped cleaning swab to clean each sensor lens at these locations. **Do not** moisten this swab; best results are achieved when it is dry.

cleaning

the lcd display

Set the 2800 AC power switch to OFF (O) and unplug the power cord from the machine.

⚠ CAUTION!

Never allow cleaning fluid or liquid to drip or run down the face of the display and find its way inside where it could short electronic circuitry. Never use an abrasive or chemical type cleaner which will scratch or chemically attack the plastic lens of the display or the machine side covers.

Use only a slightly water-dampened, lint-free, nonabrasive cloth to clean the display panel. Clean by applying only light pressure; never press hard.

opening the back door

Set the 2800 AC power switch to OFF (O) and unplug the power cord from the machine.

⚠ WARNING!

On CDA machines the back door includes electrical parts. Be extremely careful not to damage the interconnecting wire cables or short out the electronics.

1. Slide the back door spring latch downward to release it. Open the door downwards as shown in Figure 8.
2. The back door is hinged to the chassis. Do not apply excessive downward force as damage to the hinge may result.

Special machine options require electronics installed to the door and include wire cables between the cover and the chassis. (See *WARNING* above.)

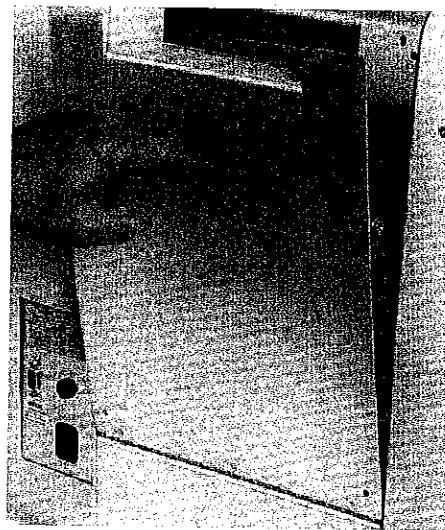


Figure 8: Opening the Back Cover

internal

Set the 2800 AC power switch to OFF (O) and unplug the power cord from the machine.

Front of Machine

1. Open the back door.
2. Release the movable drive plate by pressing both pin fasteners in towards each other as shown in Figure 9. The drive plate is free to rotate up and down.

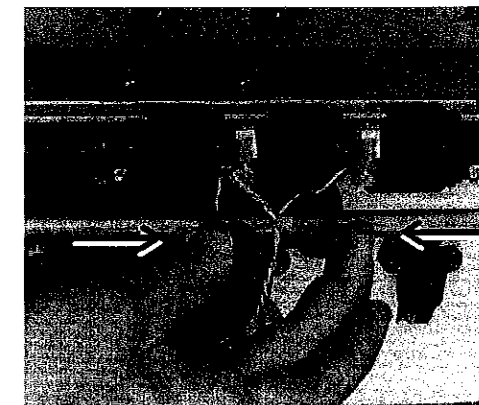


Figure 9: Releasing the Movable Drive Plate

3. Brush and vacuum accumulated dust from the exposed areas being careful not to damage electrical wiring.
4. Clean items shown in Figure 11 beginning on the next page.
5. Release and raise the red-tipped retaining spring clip as shown in Figure 10.
6. The stripper assembly is free to move up or down.

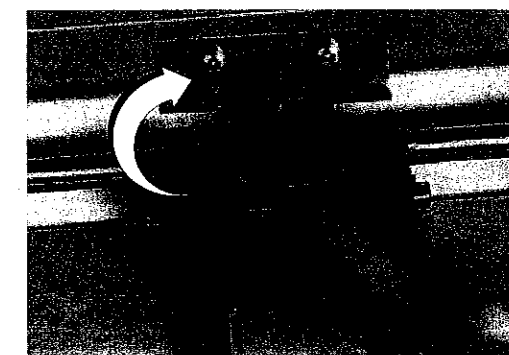
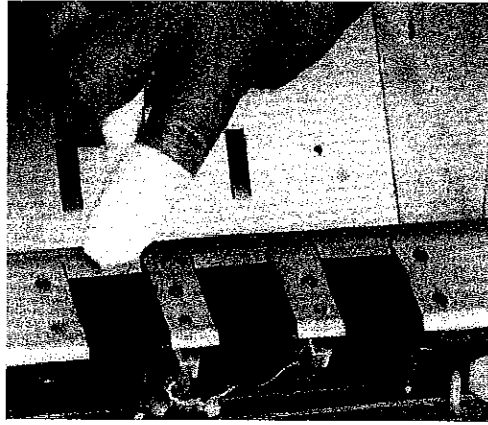


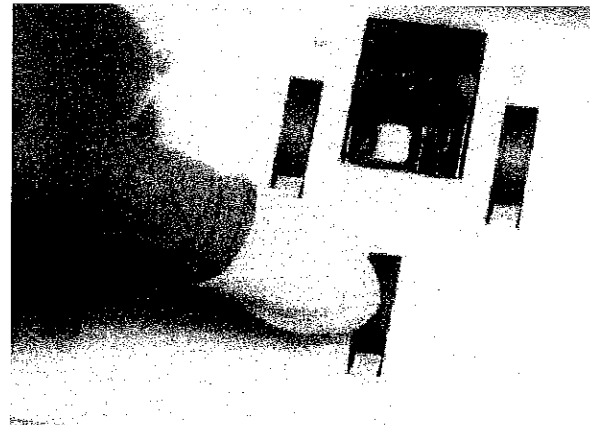
Figure 10: Releasing the Stripper Assembly

Text continued on page 35.

cleaning



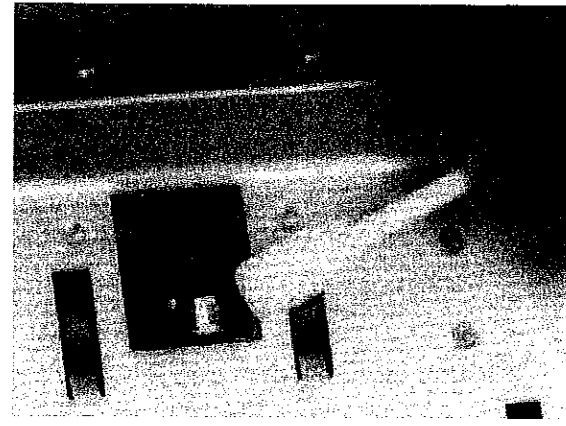
Acceleration Rollers (quantity 6) - Wipe surface using a cloth moistened with the approved Professional Cleaner.



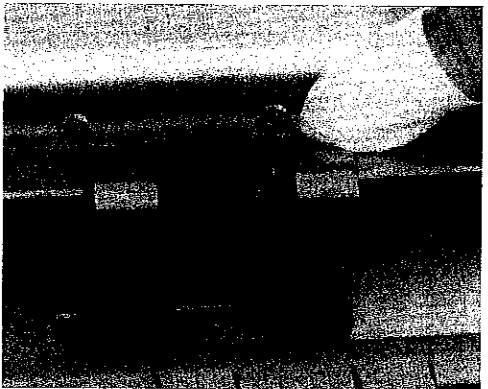
Pinch Rollers (quantity 5) - Brush paper dust from areas around the rollers and wipe each using a cloth moistened with the approved Professional Cleaner.



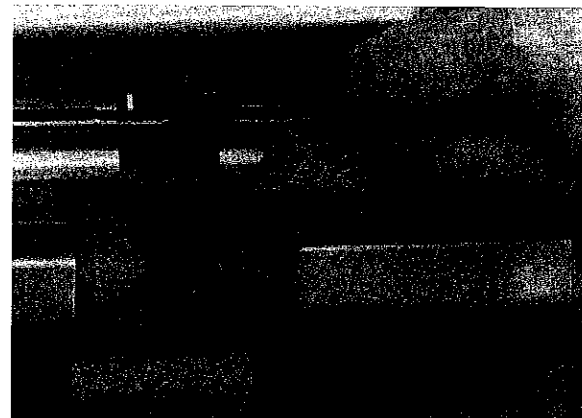
Paper Path Tension Springs (quantity 2) - Brush paper dust from areas around and under spring.



Magnetic Pickup Head (quantity 2) - Wipe surface using DRY Foam-tipped Cleaning Swab, also wipe tension spring. The second head is located on the movable plate.



Stripper Pads (quantity 2) - See Step 5, page 33 to lower the strippers. Wipe both pads using a cloth moistened with the approved Professional Cleaner. Also clean the Dancer O-Rings (2).



Feed Wheels (quantity 2) - See Step 5, page 33 to lower the strippers. Brush each wheel using a side-to-side motion to remove paper dust from the grooves. Vacuum area when finished.

Figure 11: General Cleaning, inside the Movable Drive Plate Area

cleaning

7. See Figure 11 on the preceding page and clean the stripper pads and feed wheels.
8. When finished, raise the stripper assembly and fasten the red-tipped retaining clip.
9. Close the movable drive plate making sure it is latched firmly in place. Both pins must snap into the side plate.
10. Close and lock the back door.

Note: Make sure the cable wiring is not pinched when the door is closed and locked.

Front of Machine

1. Release the upper stacker tray cartridge by pressing the release tabs upwards on both sides of the unit as shown in Figure 12. The cartridge lowers slightly.
2. Slide the cartridge out as far as it will go to expose the internal feed path, rollers and belts. (See Figure 13 on the next page).

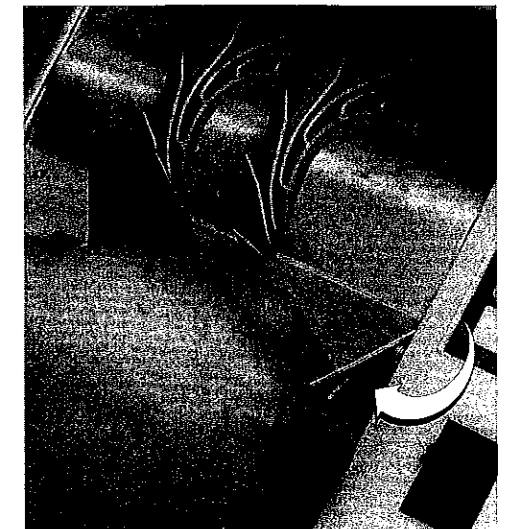
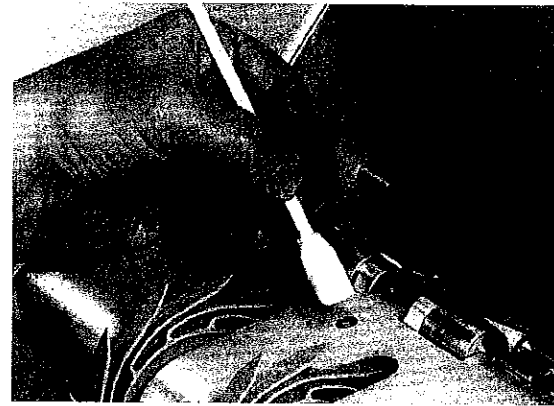


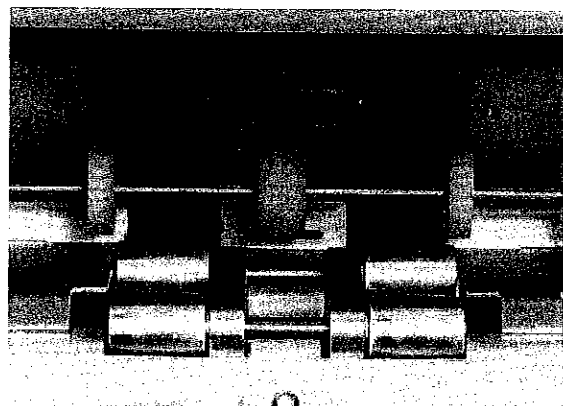
Figure 12: Releasing the Upper Stacker Tray Cartridge

3. Brush and vacuum paper dust from all exposed areas. See Figure 13 on the next page.
4. When finished, slide the cartridge back into place and lift the front upwards until the latches on both sides snap into place. Make sure the cartridge is firmly latched.

setting strippers



Auto Start/Stop Sensor Lenses (quantity 2) - Wipe surface using DRY Foam-tipped Cleaning Swab. The other lens is located on the plate directly above the lens shown when the cartridge is returned to its original position.



Rollers and Belts - Wipe both belts and each roller using a cloth moistened with the approved Professional Cleaner.

Figure 13: General Cleaning, inside the Upper Stacker Cartridge Area

setting strippers

Set the 2800 AC power switch to OFF (O).

The stripper pads may require adjustment if frequent errors develop (such as jams, doubles, chain notes, miscounting, etc.), or to accommodate the thickness of various type documents.

1. Open the back cover and unclip and lower the stripper assembly.
2. Four (4) stripper positions are imprinted on the hex adjustment nut as shown in Figure 14.

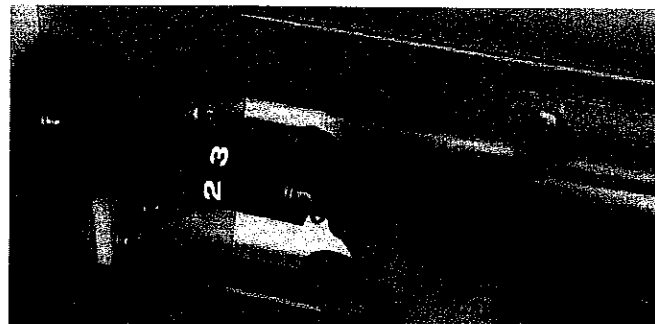


Figure 14: Stripper Pad Adjustment

setting strippers

3. Slide the hex adjustment nut towards the center of the unit to release it from behind the stop tab.
4. Turn the adjustment rod until the preferred number setting (1, 2, 3 or 4) is face up as shown in Figure 14 on the preceding page.

Note: Setting 3 is suggested for counting U.S. currency.

- Frequent double stops or extra notes feeding through suggests a lower number setting to apply extra stripping force (example, setting 2).
- Slow feeding or frequent jams at the stripper pads suggests a higher number setting for less stripping force (example, setting 4).

5. Release the hex nut allowing spring force to slide it behind the stop (locking) tab.
6. Raise and secure the stripper assembly and close the back cover.

document consideration

Most documents normally in use can be accurately counted. But document quality has an important effect on correct machine operation. The following conditions can cause problems, such as reduced machine speed, jams, frequent no-reads, doubles, chain or skewed note errors.

□ **Very Wrinkled Documents**

Smooth out wrinkles and feed the curled edges last. Feeding the curled edges first can cause jamming or slow operation.

□ **Badly Torn or Ragged Documents**

Feed these documents in small quantities.

□ **Documents Containing Paper Clips or Staples**

Do not feed documents containing paper clips or staples. These will damage the machine. Remove these objects before counting the documents.

□ **Unbroken "Brick" Currency**

Bend or flex unbroken (brick) currency or perforated documents to allow air between each note. Form the stack so the bottom note is leading (meaning it is the closest note to the machine input slot in the feed tray). See Figure 4 on page 5.

□ **Documents of Ink Blotter Texture**

Operation will be slow. In some cases, this kind of document may cause excessive wear on the rollers.

□ **Block-perforated Documents**

These tend to lock together and cause undercounting. In most instances, riffling and/or buckling the pack breaks the perf-lock and allows acceptable operation.

□ **The 2800 Currency Sorter/Counter is not intended to feed:**

- ✓ stapled documents
- ✓ certain plastic or plastic-coated documents
- ✓ documents outside the specified thickness or size range
- ✓ oily, greasy or sticky documents
- ✓ cellophane or highly transparent documents, etc.

clearing jams

(Also see Document Consideration on preceding page.)
Feed jams may be caused by:

- ❑ Extremely poor quality documents
- ❑ Badly wrinkled, torn or folded leading edges
- ❑ Throwing documents onto the feed input tray

Before clearing any jam:

**Set the 2800 AC power switch to OFF (O)
and unplug the power cord from the machine.**

Feed Input Area

Feed jams occurring at the strippers in the feed input tray area are cleared by setting the AC power switch to OFF (O), then trying to pull the documents free.

You may also open the back cover door and lower the stripper assembly (see Steps 5 and 6 on page 33) to gain access to any jammed documents behind the strippers.

Raise and secure the stripper assembly, close the back cover door, connect AC power cord and set power switch to ON (I).

Press **START** to clear any documents that may be hidden within the feed path.

Top Tray Cartridge

Suspected jams within the feed path, behind the top tray cartridge are cleared as follows:

Set the 2800 AC power switch to OFF (O) and unplug the power cord from the machine.

1. Release the top tray cartridge by pressing the release tabs upwards on both sides of the unit as shown in Figure A-1. The cartridge lowers slightly.



Figure A-1: Releasing the Top Tray Cartridge

clearing jams

2. Slide the cartridge out as far as it will go to expose the internal feed path, rollers and belts.
3. Reach in and remove the jammed documents.
4. When you are finished, slide the cartridge back into place and lift the front upwards until the latch on each side snaps into place. Make sure the cartridge is firmly latched.
5. Connect the AC power cord and set the power switch to ON (I).
6. Press **START** to clear any documents that may be hidden within the feed path.

Behind the Movable Drive Plate

Suspected jams within the feed path, behind the movable plate area are cleared as follows:

**Set the 2800 AC power switch to OFF (O)
and unplug the power cord from the machine.**

1. To gain access to jammed documents in this area, release the movable drive plate by pressing both fasteners towards each other, then rotate the plate downward as shown in Figure A-2.
2. Remove the jammed documents.
3. Close the movable drive plate making sure it is firmly latched in place, then close the back cover door.
4. Connect the AC power cord and set the power switch to ON (I).
5. Press **START** to clear any documents that may be hidden within the feed path.

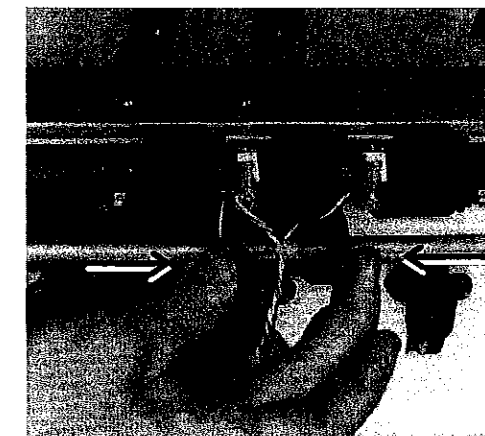
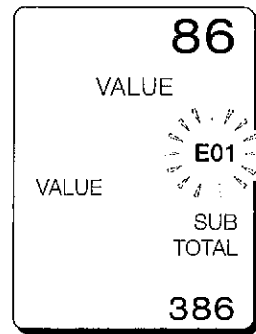


Figure A-2: Releasing the Movable Drive Plate

messages/beeper



Heading "display messages" (beginning on page A-5) lists special messages, their causes and corrective action.

In the Dual Pocket Mode, it is possible to experience an *error* condition in both trays at the same time. In which case, both LED's light either YELLOW or RED or a combination thereof.

beeper tone

The beeper sounds when:

- A double note is detected.
- Jammed notes occurred.
- A feed error such as a chain note or half note is encountered (see Figure A-3).

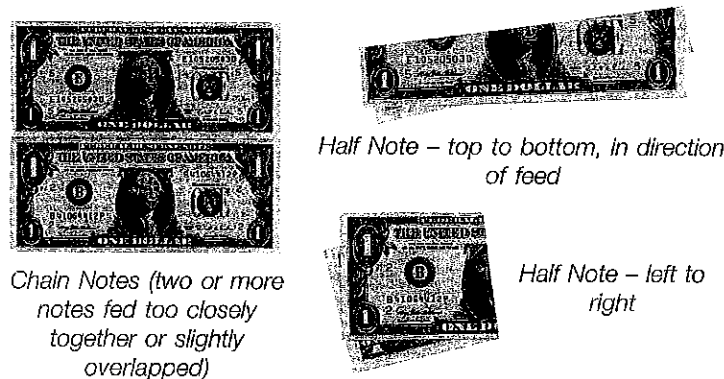


Figure A-3: Sample Chain and Half Notes

- A task has been completed.
- An incorrect button is pressed during an operating sequence.
(For example, pressing any button other than **START** after the **STOP** button is pressed.)

Check the display for a message and review that section of the manual to continue the count.

display messages

message	reason	solution
MAG (Counterfeit)	A U.S. note is a "suspected" counterfeit. The suspect may be genuine but otherwise damaged – badly torn, bleached, etc.	a) Remove last two notes fed into the <i>error</i> producing tray and locate the CDA "suspect." <i>Note: The error producing tray flashes either a RED or YELLOW LED (RED for Single Pocket, YELLOW for Dual Pocket operation).</i> b) See Section: "Advance operating features, heading Counterfeit Detection" for the proper operating sequence.
DOUBLE (Sensitivity settings 1-6)	Two or more notes stick together and feed as one; a single note is folded almost in half.	a) Remove last two notes fed into the <i>error</i> producing tray and locate the DOUBLE notes. <i>Note: The error producing tray flashes a RED LED.</i> b) See Section: "Basic operating features, heading Doubles Detection" for the proper operating sequence.
SIZE (Sensitivity settings 1-6)	An under or oversized note is fed. A skewed note or one with a piece missing can trigger a SIZE (or LENGTH) error even though it is the correct size.	a) Remove last two notes fed into the <i>error</i> producing tray and locate the SIZE "suspect." <i>Note: The error producing tray flashes either a RED or YELLOW LED (RED for Single Pocket, YELLOW for Dual Pocket operation).</i> b) See Section: "Basic operating features, heading Size (length measurement)" for the proper operating sequence.
Error	Feeding error occurred (jam, extra notes in batch, chain note, half note, etc.). See Figure A-3 on the preceding page for an illustration of Chain Notes, and both types of Half Notes.	Feed Errors - a) Remove last two notes fed into the <i>error</i> producing tray and locate the ERROR note. <i>Note: The error producing tray flashes a RED LED.</i> b) Combine all notes from the <i>error</i> producing tray with those in the feed tray. c) Press START to feed any documents remaining in the feed path. <i>Remember: In the Dual Pocket Mode, the COUNT total is the sum of both trays. Therefore, when the error producing tray is emptied, the machine automatically subtracts the amount of notes in that tray from the COUNT total when START is pressed to begin the recount.</i> d) Press START to recount the pack. For Jams - e) Empty both trays, press START a few times to loosen the jam, or press STOP and pull jammed notes from the feed tray. If necessary, open back cover, lower the strippers and remove jammed documents. See heading "Clearing Jams," page A-2. f) Repeat steps a through d.

display messages

message	reason	solution
Error - continued	Excess dirt buildup.	a) Clean the counter. See "Cleaning and Maintenance" beginning on page 31.
	Stripper not set for the type of notes being counted.	a) Adjust the stripper pads. See "setting strippers" beginning on page 36.
	Stripper Guide Plate not secured.	a) Lock the Stripper Assembly.
	A note is fed that is folded in half in the direction of feed. See heading "Chain and half notes" for further information.	a) Remove last two notes fed into the error producing tray and locate the ERROR note. Notes: □ The error producing tray flashes a RED LED. □ ERROR also appears with other messages, such as DOUBLE, CDA, Length (SIZE), etc. For these cases, see appropriate heading, e.g. DOUBLE. b) See Section: "Basic operating features, heading Chain and half notes" for the proper operating sequence.
E01	Count sensor is blocked too long. A note may be jammed in the feed path blocking a count sensor.	a) Press the STOP button. Remove notes from feed input tray. b) Pull jammed notes from the feed rollers (usually caused by gulping). If necessary, open the back cover, lower the strippers and remove the notes. c) Close machine and remove all notes from both trays and combine them with those removed from the feed tray. d) Press START to feed any notes remaining in the feed path. e) Place all notes in the feed tray and press START to recount the pack.
E02	Motor Overload. Counting notes for extended periods of time that are outside the specified size range (especially thickness). Excessive stripper pressure (too tight or uneven setting) or a mechanical failure (binding shaft bearing) may cause this message.	a) When the beep sounds and the E02 message appears, allow the machine to remain idle for a few minutes. b) Check dimensions of the documents being counted and make sure they are within the specified range. c) Check stripper pad adjustment. Adjust the strippers as needed.
E03	Sensor blocked at start. At auto-start or when START is pressed code E03 alerts the operator that a note is in the feed path (possibly jammed).	The unit attempts to clear the jammed note(s) by running at "slow" speed for a period of time. If the note clears, normal operation is returned. If it did not, the unit times out, stops and E03 is shown again.

— Continued on the next page —

display messages

message	reason	solution
E03 - continued	Sensor blocked at start. At auto-start or when START is pressed code E03 alerts the operator that a note is in the feed path (possibly jammed).	Clear the jam as follows: a) Open the back door. Release and lower the movable guide plate and the stripper guide plate. b) Physically remove any jammed notes in the feed path. c) Repeat Steps c-e on preceding page (code E01).
E04	Sensor blocked at stop. At the end of a count code E04 alerts the operator that a note has remained in the feed path (possibly jammed).	a) Press START . The unit attempts to clear the jammed note(s) by running at "slow" speed for a period of time. If the note clears, normal operation is returned. If it did not, the unit times out, stops and E04 is shown again. Repeat Steps a, b and c above to clear the jam.
E05	Runout too long	These E-codes indicate a timing error at different locations in the feed path (a note not being at the right place at the right time). E05 and E06 indicates a possible hardware problem; such as, slippage, brake or motor problem, worn belt, etc. E07, E08 and E09 errors occur at the gate area. Jams are cleared by sliding the top tray cartridge out and/or opening the movable guide plate. E10, E11 and E12 errors occur at the lower tray. Jams are cleared by reaching in and pulling notes from the tray sensor area. E13, E14 and E15 errors occur at the top tray. Jams are cleared by reaching in and pulling notes from the tray sensor area. For these codes, both trays must be emptied and START must be pressed to begin a recount of the pack. The error code clears and the count and proceeds normally if there are no notes jammed in the feed path. However, if a note is in the path, the unit attempts to clear the note by running at "slow" speed for a period of time. If the note clears, normal operation is returned. If it did not, the unit times out, stops and E03 is shown to indicate a jam. To clear a unit, a) Access the area where the jam is located as indicated by the initial E-code. b) Physically remove any jammed notes within the feed path. c) Repeat Steps c-e on preceding page (code E01).
E06	Coast too long	
E07	Gate unexpected lead	
E08	Gate late lead	
E09	Gate late trail	
E10	Exit-1 Unexpected lead	
E11	Exit-1 Late lead	
E12	Exit-1 Late trail	
E13	Exit-2 Unexpected lead	
E14	Exit-2 Late lead	
E15	Exit-2 Late trail	
No Reads	The unit cannot verify the characteristics of the note, usually caused by leading edge tears or large folds, missing corners, or severe fading.	a) Remove last two notes fed to the error tray and examine. If the note seems correct, place it back in the feed tray to be processed again or place it aside for additional examination.

replacing the fuse

programming



WARNING!

If the fuse burns out frequently, **do not** continue to use the counter. Contact your local authorized service office.

Set the 2800 AC power switch to OFF (O) and unplug the power cord from the machine.

The fuse is located on the machine back plate, at the lower left-hand side as viewed from the back.

- Using a medium sized screwdriver, insert it into the slot in the fuse cap and turn counterclockwise (about 1/4 turn).

Spring force pops the fuse cap free.

- Remove the fuse cap from the holder to expose the fuse.

- The replacement fuse must be the exact size and amperage as the old fuse:

- 3.2 amp/250 volt slow-blow type for 100/115 VAC
- 1.6 amp/250 volt slow-blow type for 230 VAC

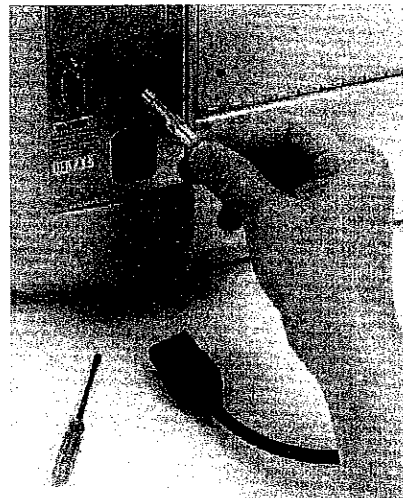


Figure A-4: Replacing the Fuse



Never increase fuse amperage or size.

- Place the new fuse in the cap. Insert the cap into the fuse holder.
- Using the screwdriver, gently press inward and turn clockwise about 1/4 turn to lock the cap in place.

master clear

When performing a "Master Clear," all functions return to their factory defaults. The programming mode is then exited returning the 2800 to normal operation.

To Return to Factory Defaults

- Set the 2800 AC power switch to OFF (O).
- Press and hold the **CLEAR** touch button while setting the AC power to ON. After the series of "beeps," release the **CLEAR** button.
- All function touch buttons return to their factory default settings and the counter is ready for normal operation.

rs232 communication

RS232 Communications is programmable for:

- Baud rate
- Stop bits
- Bits/Characters
- Parity

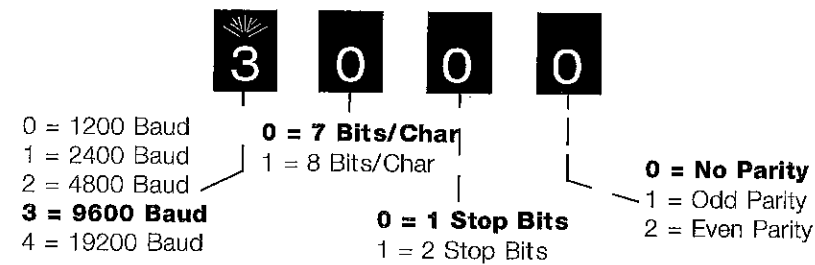
The default settings are highlighted on the next page and are the standard settings for RS232 Communications Interface.

- Set the 2800 AC power switch to OFF (O).
- Press and hold the **BATCH** touch button while setting the AC power to ON. After the "beep," release the **BATCH** button.

programming

accessories

A four digit number appears with the first number flashing as shown and explained in the following example.



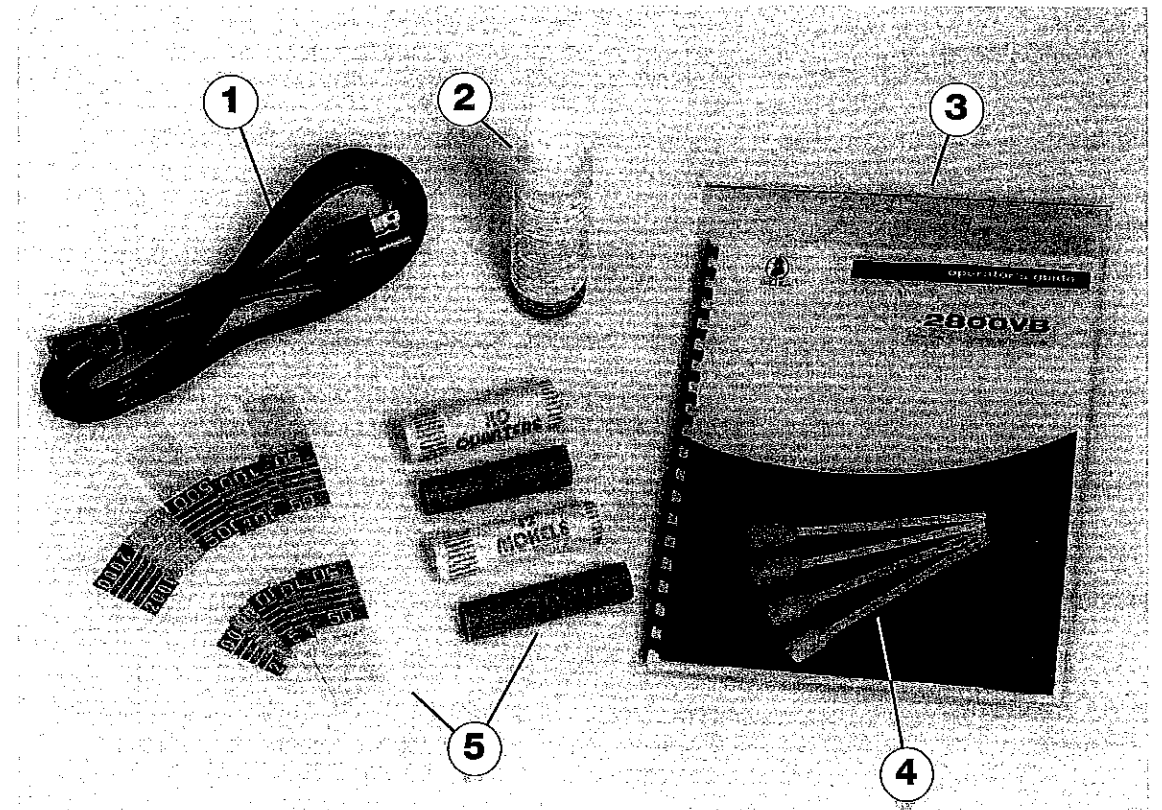
Setup

1. Use the **START** button to cycle through the four digit number.
2. Use the number **9** button to increase the setting; use the number **3** button to decrease the setting.
3. When you are finished, set the 2800 AC power switch to Off (**0**).

All settings are stored in memory.

to exit the program mode

1. To end programming at any time and return to normal machine operation simply press the **STOP** button.
2. After the "beep," release the **STOP** button, then set the AC power switch to OFF (**0**).



- 1** AC Power Cord D000534 *
(USA at 115V shown)
- 2** Approved Professional Cleaner (4oz.) D002061
- 3** Operator's Manual D103091
- 4** Foam-Tipped Cleaning Swab (1) D002996
- 5** No-Moist Pressure-Sensitive Bill Straps *
Coin Wrappers *

* Contact your authorized sales or service office for ordering information on No-Moist Pressure-Sensitive Bill Straps and Coin Wraps and the AC Power Cord for your machine.

specifications

Auto-Sensing (RS232 Communications)	2800 Value Balancing Sorter/Counter includes RS232 Communications Interfacing for transmitting data to a host computer system. Programmable per industry standards (9 pin connector).
Batching	Variable Batch ... Numeric keypad array allows entries from 1 to 999 notes per batch
Capacity	Feed Tray 5.0" (125mm) or...up to 600 U.S. teller-quality notes Output Trays 1.5" (38mm) or...up to 200 U.S. teller-quality notes Feed Width 10.0" (254mm)
Counterfeit Detection Aid	Patented Magnetic Counterfeit Detection, U.S. Currency only
Counting Speed	Three "Quick-set" default speeds: 300 notes per minute minimum (npm), 600 npm or up to 1000 npm maximum.
Dimensions	Height 18.50" (469mm) Width 18.00" (457mm) Depth 14.75" (375mm)
Displayed Count Levels	Count and Value 6-digit LCD Batch 3-digit LCD Sub and Grand Totals 8-Digit LCD
Document Size Range and Thickness	Minimum 2" x 4"(50mm by 100mm) Maximum 3.50" x 9.50"(90mm by 195mm) Thickness 0.003" to 0.007"(0.08mm to 0.18mm)
Doubles Detection	Detection is "adaptive," On/Off selectable and automatically controlled by the machine. The count is zeroed for an accurate pack recount.
Environmental Conditions	Operating Temperature 65° to 85°F (18° to 29°C) Storage Temperature - 40° to 95°F (- 40° to 35°C) Humidity Range 35% to 85% relative humidity, non-condensing
Length (Size)	Length (Size) measurement is On/Off selectable and detects notes that are under or oversized by the selected millimeter setting (from 3mm-8mm).
Location	Avoid areas of excessive vibrations, drafts, and direct exposure to bright sunlight and heat sources.
Messages/Beeper	Displays messages or sounds the beeper for chain, doubles and half notes in either direction, length and CDA "suspects," and other errors.
Operating Modes	Touch button selectable for: Standard Count, Value Balancing, Cull, Rogue Note, Facing (both portrait and head-and-feet) and Old vs. New currency.
Power Requirements	Standard 115VAC (+15%/-10%), 50-60 HZ Optional 100VAC (+15%/-10%), 50-60 HZ 230VAC (+15%/-10%), 50-60 HZ
Weight	39 lbs. (17.72 kg.)

De La Rue's policy is to continually improve products. We reserve the right to change specifications and design without notice.

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DeLaRue

DE LA RUE SYSTEMS

Headquarters

Langstone Gate
Solent Road
Havant
Hampshire PO9 1PT
England

Telephone: +44 (0)1705 492000
Telefax: +44 (0)1705 492920

1750 Woodhaven Drive
Bensalem, PA 19020
USA

Telephone: (215) 638-3600
Fax: (215) 638-1188