HYOSUNG

1500

Operator Manual

If need additional support please contact us:

We pride ourselves on our exceptional client support -
If you're still having a problem with one of our Kiosks, please get in touch and we'll help resolve the issue as fast as possible.

Call Toll Free:
1 855 820 2274

Email Support:
support@rapidcashatm.ca

For additional resources, please visit: rapidcashatm.ca

RapidCash ATM Ltd.
15001 112 Avenue
Edmonton, Alberta,
T5M 2V6

NH-1500

OPERATOR MANUAL

HYOSUNG
NAUTILUS HYOSUNG INC.

Revision Record

Date	Page	Version	Description of Change
April 2004	All	1.0	New Publication
Jan 2007	All	1.1	All Revised
April 2007	6-37	1.2	Addition of G, Addendum : AP software
March 2009	1-9,10 3-17,19,20 6-8~29	1.3	Addition of new type of CDU and Receipt Printer Addition of Error Code Table
February 2010	1-7,8,13,14,15 2-3, 3-4,16, 6-15	1.4	Changing images in chapter 1,2,3,6. Modifying temperature specification. Changing CI of Nautilus Hyosung.

Table of Contents

Chapter 1. INTRODUCTION

1.1 Basic Features

1.1.1 About the NH-1500

The NH-1500 is designed to meet the everyday demands of immediate cash needs for individuals with a compact size to fit in virtually any place. This Automated Teller Machine (ATM) is connected to a network processor to verify accounts and any other inquires through the insertion of a customer's card. The NH-1500 is easy to use, easy to service and is able to support customer's needs.

H/W Features

- UL 291 Business Hour Service
- Mechanical combination lock
- Electronic combination lock (optional)
- 320 × 240 Resolution of back-lit LCD / color display (optional)
- Dial-up telephone line instead of expensive leased line
- 1,000/2,000 new notes capacity (USD)
- DIP type magnetic card reader
- Automated receipt printer paper loading
- Thermal receipt printer for high speed printing
- Modular design for easy maintenance

Functional Features

- Electronic journal stores up to 2,000 transactions
- Supports English, Spanish, French, Korean and Japanese (optional)
- Detailed average history report feature
- Quick setup feature
- Advertisement feature for store promotion
- Error code description for easy to service

1.1.2 What is in this manual

This NH-1500 Automated Teller Machine Manual contains all information needed for normal operational use.

This manual contains Unit Specifications, ATM Opening & Closing Procedures, Operator Functions, Customer Transactions, Error Recovery and etc.

Some of the information in this manual may differ according to the network processor to be connected.

1. 2 Precautions for Safety

1.2.1 Overview

Common Precaution for Safety

Precautions outlined in this manual provide information on safe and proper handling of the product. Non-compliance of the precautions may result in injury or damage to the product.
This precaution symbol with sample term tells you safety warnings during equipment handlings.

Please read the following instructions before operating equipment.

- Operate equipment in the order outlined in this manual.
- Follow precautions indicated in this manual, as well as the equipment itself. Failure to properly address these precautions may lead to injury or damage to the product.
- Avoid operations not addressed in this manual.
- If you cannot remedy system problems using the methods outlined in this manual, please refer to contact information listed in the manual.
- Improper use of the secondary lock feature will reduce the security level of the ATM.
- Any change or modifications in construction of this device which are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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

1.2.2 Description of Precaution Symbols

Symbol	Description
	**Electrical Shock** • Do not remove cover. Only a maintenance engineer is allowed to open the cover. • Do not touch. You may receive electric shock. • Make sure to turn off the power when servicing the equipment.
	**High Temperature** • Do not touch the equipment when it is running. • The equipment can get extremely hot and may cause a burn. • Make sure to close the cover before running the equipment.
	**Be Careful when Moving** • The equipment is heavy. Make sure at least 2 people to lift or move the equipment. • Do not attempt to move the equipment alone. You may be injured by dropping the heavy equipment.
	**Fire Hazard** • Place the equipment in an area away from any combustible materials. • The equipment may catch on fire from overheating or short circuit of the power supply unit.
	**Disassembly** • Do not disassemble or modify the equipment unless you are a certified engineer. • Contact the service center for maintenance, adjustments and repairs. • Improper disassembly may cause fire or electrical shock.
	**Fall down** • Do not place the equipment where the floor cannot sustain the weight of the equipment, or on slanted or unstable surface. • Equipment may fall down and cause injury or damage.
	**Unplug the Equipment** • Stop using the equipment immediately if it smokes, emits an unusual smell, makes abnormal sounds, or if liquids or other foreign materials enter the equipment. • If the above-mentioned abnormalities occur, immediately turn off the power, unplug the equipment and contact the service center. • If you ignore these symptoms, the equipment may catch on fire or cause electric shock.

1.3 System Specifications

1.3.1 Dimensions

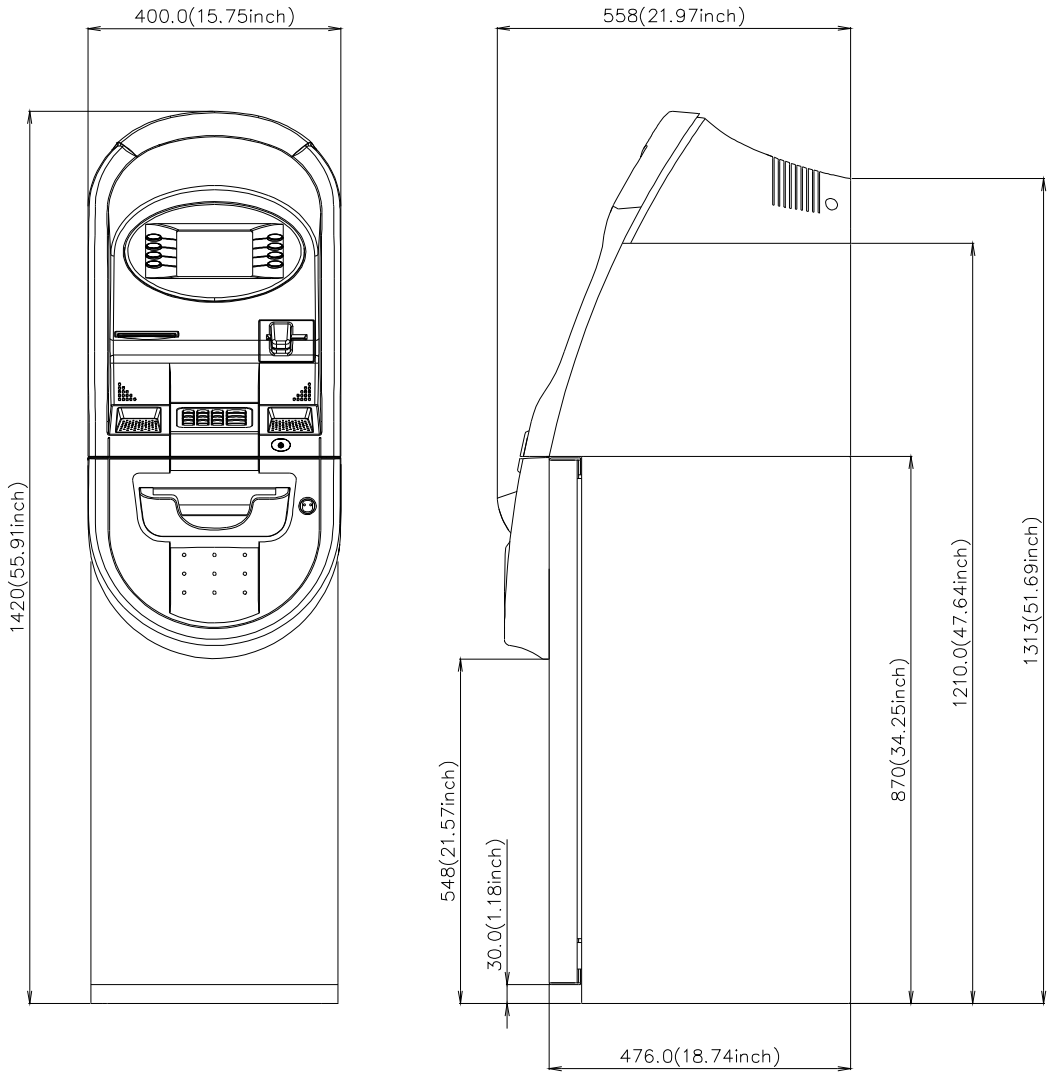


Fig. 1.1 NH-1500 Dimension

Weight : 122Kg (269 lbs)

1.3.2 Component Locations

Fig. 1.2 Component Locations

1.3.3 LCD & Customer Keypad

Fig. 1.3 LCD & Customer Keypad

LCD

- Screen Size : 5.7″
- Mono / Color (optional)
- Resolution : 320 × 240
- Display Characters : 40 × 15 (Standard Character)
- 8 Menu Keys

Keypad

- Certified VISA compliant EPP (Encryption Pin Pad)
- 10 Alphanumeric , ◂ , ▸ , CANCEL, CLEAR, ENTER, BLANK Keypads
- Each Keypad has integral raised Braille symbols

Voice Guidance Port

- Voice assisted operation available through the headphone jack on the front bezel

1.3.4 Cash Dispensing Unit

Fig. 1.4 Cash Dispenser Unit (Standard Drawer type)

Cash Dispensing Unit

- Dispensing speed : 4 notes/second
- Capacity of 1,000 new notes (standard dispenser)
  Capacity of optional dispensers depend on their model.
- Reject bin with capacity of 200 notes
- Low level cassette detection
- Double note detect module

Optional dispenser include:

1000 /2000 note removable cassette

4000/6000 note removable dual/tripple cassettes

Fig. 1.5 Optional Dispenser Model

1.3.5 Receipt Printer

Fig. 1.6 Receipt Printer

Receipt Printer

- Thermal line printer with cutter
- 36 characters/line
- Semi-Automatic roll paper setting

Paper Specifications

- One sided thermal paper (Factory paper is thermal side out)
- 180 mm (7.1 inch) outside diameter roll
- 22 mm (0.87 inch) core inside diameter
- 79.5 mm (3.125 inch) wide
- 21# weight (paper thickness)

For more detail information about paper specifications, please refer to Chapter6. Appendix A. Receipt Paper Specifications

1.3.6 Magnetic Card Reader

Fig. 1.7 Magnetic Card Reader

Magnetic Card Reader

- Dip type Card Reader (ISO Track 1 & 2)
- Card read timing : Ejection
- Readable ejection speed : 6 inches ~ 39.3 inches/second
- MTBF (Mean Time Between Failure) : 1 million passes

1.3.7 Main Control Board

Fig. 1.8 Main Control Board

Main Control Board

- Modem : 56kbps dial-up modem (standard)
- Electronic Journal : Max 2,000 transactions stored
- Battery back-up for set-up parameters (NVRAM)
- Real Time Clock
- 1 MB RAM

1.3.8 Operating Environment

Power Requirements

115 Vac ±10% 3.0A 60Hz , 250 Watt
230 Vac ±10% 1.5A 50Hz , 250 Watt

Power Connections

The NH-1500 ATM MUST be connected to a DEDICATED POWER CIRCUIT. This circuit must consist of **LINE**, **NEUTRAL** and **GROUND** leads connected directly to the power circuit breaker panel. This circuit cannot be shared with any other equipment.

Phone Line Requirements

The NH-1500 ATM MUST be connected to a DEDICATED PHONE LINE. This line must be a direct dial “tone” or “pulse” line that is equipped with a standard telephone wall jack (RJ-11). This line cannot be shared with any other equipment at the location. Use of shielded (CAT5) phone cable is highly recommended for the good stability and for decreasing the chance of interference as well as noise.

Temperature

- In storage : 14°F - 140°F (-10°C ~ 60°C, 15°C/H)
- While operating : 41°F - 104°F (5°C ~ 40°C, 10°C/H)

Humidity

- In storage : 10% < RH < 90%, Non-Condensed
- While operating : 25% < RH < 85%, Non-Condensed

1.4 Warranty & Service

Manufactures Warranty

Nautilus Hyosung provides a LIMITED ONE-YEAR PARTS warranty for the NH-1500 series ATM. Hyosung guarantees your NH-1500 ATM to be free from defects in materials and workmanship.

The one-year parts warranty periods will begin 15 days from the shipping date.

WHAT IS COVERED:

- Cash Dispensing Unit and Cash Cassette.
- Receipt Printer
- LCD module
- Magnetic Card Reader
- EPP Keypad
- Power Supply
- Main Board (Control Electronics)
- Lock and locking mechanism (LIMITED 90 DAY warranty)
  Dial and Electronic locks will be covered by a limited 90-day warranty when the provided warranty registration card is completed and returned to Hyosung within 10 days of installation. Should the lock fail under normal use, Hyosung will replace the lock only. Services required to open the vault and or replace the lock are at the expense of the ATM owner.

WHAT IS NOT COVERED:

- Power cable and modem cable.
- Key lock and key
- Plastic Bezels
- Software upgrade
- Receipt printer jam
- Note jam
- Forgotten password or combination of lock
- Any damages from misuse, improper installation and vandalism
- Any damages from “brown out” or low power, lightning or other acts of God

Your distributor/dealer may offer an enhanced or extended warranty in addition to the original manufacturer's one-year warranty. Once the manufacturer's warranty has expired, all claims for warranty service must be resolved directly between the distributor/dealer and the ATM owner. Hyosung will only honor the extended warranty of a NH-1500 ATM that is registered in the Hyosung Extended Part Replacement (EPR) warranty program.

Obtaining Service

If you have any problems or question about your Hyosung ATM, your dealer or distributor is your primary contact for assistance/service. Your manufactures warranty is provided through your dealer or distributor.

Chapter 2. INSTALLATION

2.1 Unpacking

1) Unpack the machine on top of the palette.

2) Cut the straps that are fastened around the box with a knife. (refer to Fig. 2.1)
(Be careful when cutting the straps.)

3) Use an appropriate tool to remove the nails from the palette. (refer to Fig. 2.1)

4) Remove the lid, then box from the top. Do not discard the packaging materials until you have verified any shipping damage claim. Contact your distributor immediately if you see any shipping damage. Store the box in a safe place to re-use or discard appropriately.

5) Verify the contents carefully with the packing list to be sure all items listed are included. Notify your distributor of any shortages.

6) If only the palette needs to be removed, lift the whole machine from the bottom and set it aside.

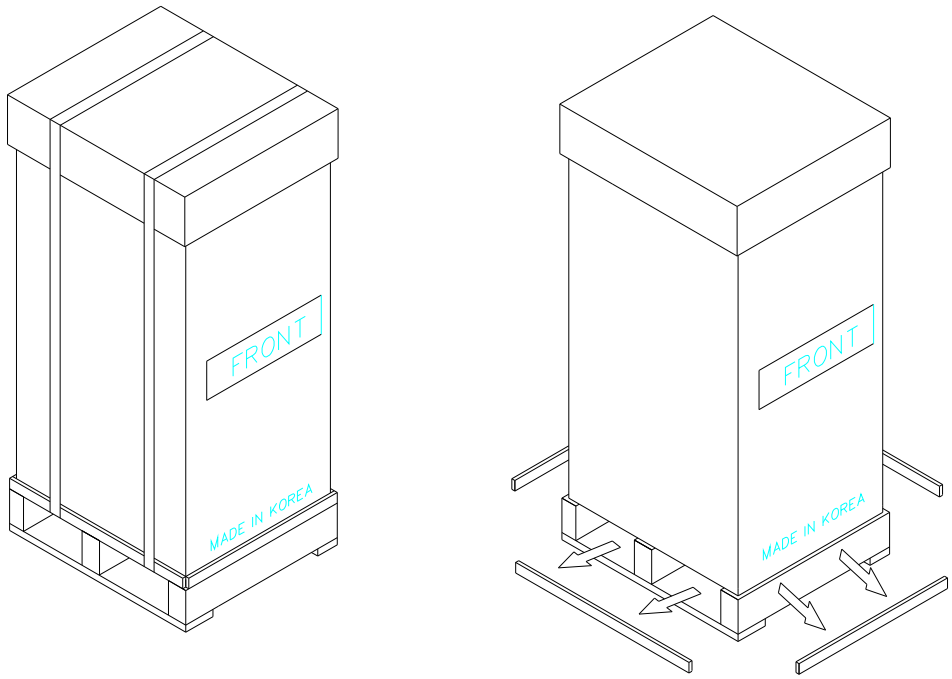


Fig. 2.1

2.2 Physical Installation

To install the NH-1500 series ATM, perform the following steps.

1) Place the "Anchor bolts locate sheet" inside vault at the place where the machine is to be installed. (refer to Fig. 2.2).
   Please check if the place to be installed is flat surface in advance.
2) Place the system on a flat surface. Be careful when opening the top or bottom of the machine since it can come off balance.
3) Make use of "Anchor bolts locate sheet" to drill the appropriated sized holes for the anchors to be suitable for below diagram (Anchors are not included in NH-1500 ATM)
4) Install the Anchor nuts into the ground according to "Anchor bolts locate sheet". (4 places)
5) Place the NH-1500 on top of the anchors.
6) Open the Security cover with the key provided. Please refer to Chapter 3.1.1 for Opening and Closing door.
7) Using the default combination, open the Security Door.
   This combination SHOULD BE CHANGED AS SOON AS possible. Please refer to Chapter 3.1.3 and 3.1.4 for instructions on changing the lock combination.
8) After the anchor nuts are in place, according to the anchor holes on the bottom of the NH-1500, tighten the anchor bolts tightly. (refer to Fig. 2.3)
   Note that it may distort the vault and cause problems concerning the door linkage if anchors bolts are too over-tightened.

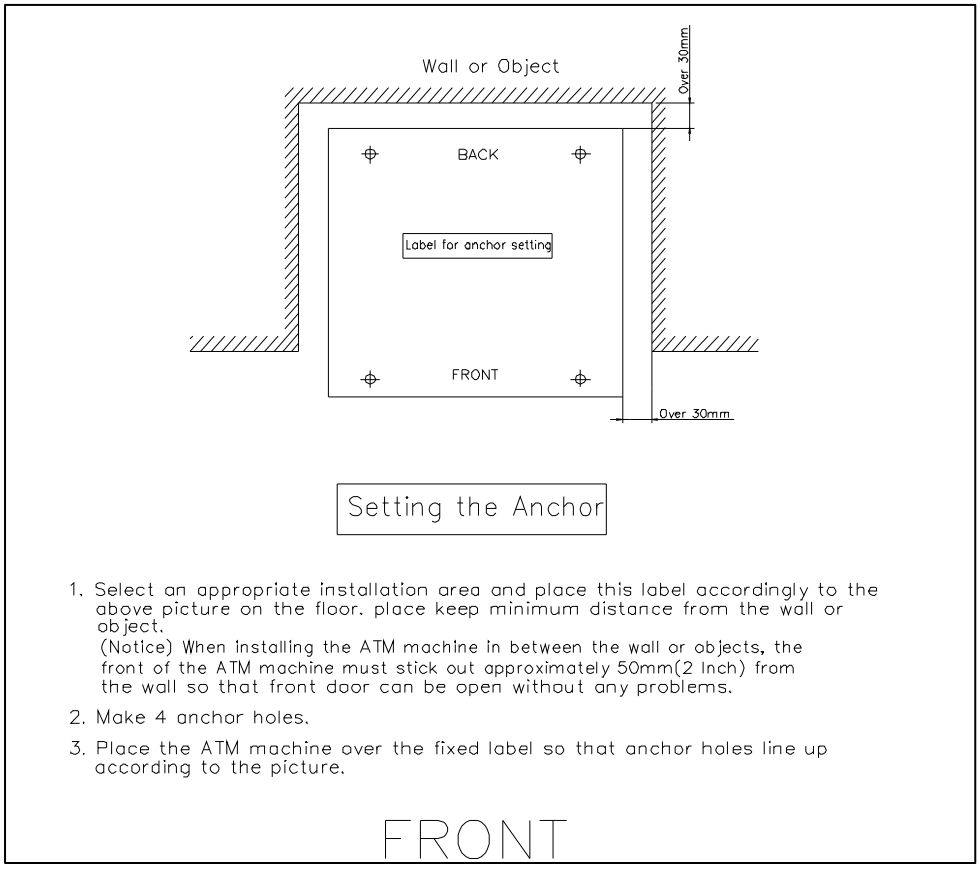


Fig. 2.2

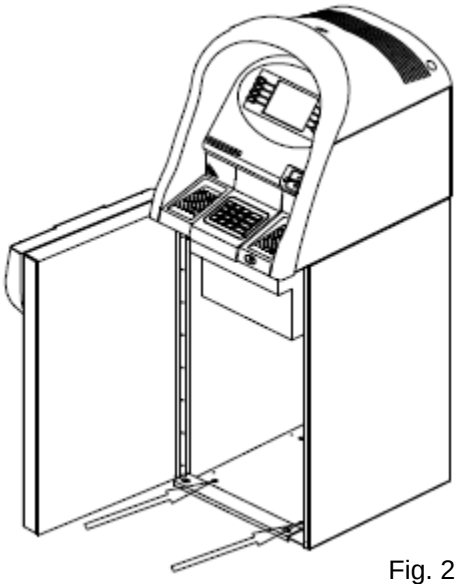


Fig. 2.3

Warning : When NH-1500 machine is moved to the installation site or other place, great possible care should be taken not to hurt your hands or body. Before installing the anchor, NEVER open both the Front Panel and Cash dispenser at the same time. It may fall down forward and will cause a severe damage.

2.3 Hardware Setup

1) Verify the power voltage (110/220V) to be used and set the appropriate voltage on the power supply. The default setting should be 110V
2) Verify that the telephone line to be used for the ATM is in proper working order. Hyosung recommends the use of shielded phone line (CAT5) in locations with close proximity to other appliances.
3) Open the security door and remove any shipping materials and note any warning or installation instructions.
4) Remove the screw, which is set to hold the Cash Dispensing Unit platform in place.
5) Remove the cash cassette from the box for removable cassette dispenser only, fill the cassette with the appropriate amount of notes, and place it in the Cash Dispensing Unit carefully. Place the appropriate denomination label on the front of the cassette. Please refer to Chapter 3.2.1 and 3.2.2
6) Before closing the vault, thoroughly test the combination lock by locking and unlocking the lock several times. It is much easier to diagnose potential lock problems before shutting the door. Please refer to Chapter 3.1.3 and 3.1.4 for testing the combination lock.
7) Open the top of the ATM. Place the receipt paper in the Receipt Printer. The paper prints only on one side (shiny side). Always check the roll when you install paper.
   Place the roll so that the coated side (shiny side) will be facing up. Please refer to Chapter 3.2.4 for paper loading instruction.
8) Connect the Power cable and telephone cable to the appropriate outlets on the wall. (Verify once again if the power voltage is 110V or 220V)
9) Turn the power on and verify if all systems are operational. If any part of the system is not operational then an error code will be displayed. Verify with the Error Code and follow the appropriate steps which is described at Chapter 6. Appendix C. If the error is not corrected please contact your local distributor. Set all the system parameters. For more detailed information, refer to Chapter 3.3 Programming Operations.

Chapter 3. OPERATION INSTRUCTION

3.1 Opening and Closing

3.1.1 Security Cover and Door

3.1.1.1 Opening the Security Cover and Door

1) Turn the Security Cover key clockwise to open the Security Cover.

2) To unlock the Combination Lock.
Please refer to Chapter 3.1.3 and 3.1.4 on how to open the Combination Lock

3) Turn the Security Door Handle counter-clockwise, then pull the Security Door to open.

3.1.1.2 Closing the Security Cover and Door

1) First close the Security Door and turn the Security Door Handle clockwise until it is locked. Make sure again that the Security Door is completely closed. In addition, Door Handle should be vertical before closing the lock

2) Turn the dial counterclockwise more than four times

3) With the Security Cover key turned clockwise, close the Security Cover and turn the Security Cover key counter-clockwise until it is locked. Remove the key when it is locked.

3.1.2 Front Panel

3.1.2.1 Opening the Front Panel

1) Insert the Front Panel key and turn it clockwise.

2) With the Front Panel key turned, pull the Front Panel outward.

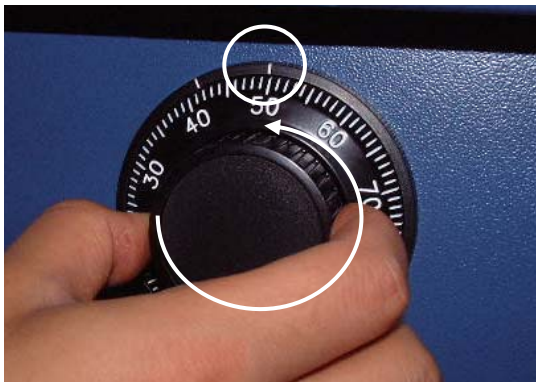
Please take the reverse order of above sequence to close the Front Panel

3.1.3 Mechanical Combination Lock

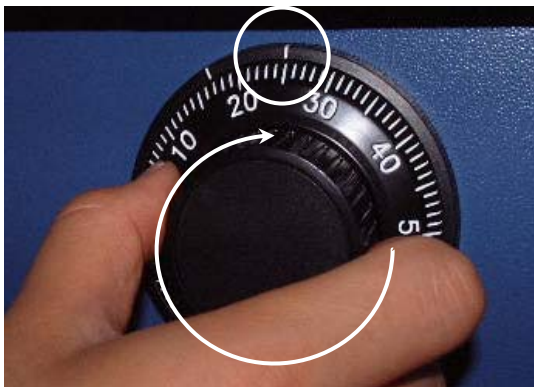
Only after fully understanding this instruction, please operate the lock or change the password

3.1.3.1 Opening the Mechanical Combination Lock

1)There are two kinds of index at the top of the dial ring. One is an Opening Index which is located at 12 o'clock direction and the other is a Changing Index at 11 o'clock direction. During revolutions, do not turn back to regain a proper alignment with the numbers. The factory default value for this mechanical lock is set to 50-25-50

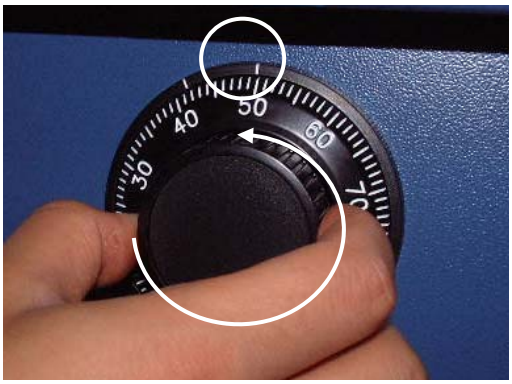


2) Turn counterclockwise for more than four times and set to the first number (Let's assume the first number is "50.")

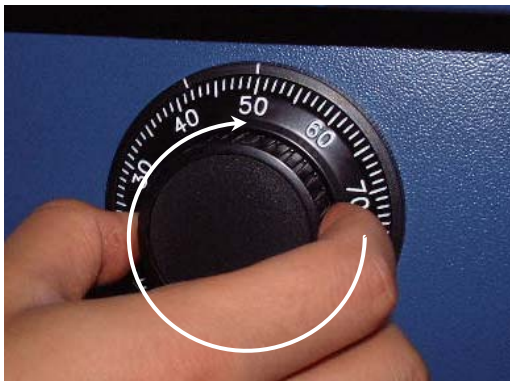


3) Turn clockwise and stop at the second number at the third time. (Let's assume the second number is "25")

To be continued



4) Turn counterclockwise and stop at the third number at the second time. (Let's assume the third number is "50")



5) Turn clockwise until the dial does not move any more.

6) The safe door will open when turning the handle counterclockwise.

3.1.3.2 Changing to a New Password

To make up a new combination, select 3 set of numbers of your own choosing

- **DO NOT USE numbers between 0 and 20 for your last number**
- **DO NOT USE numbers ending in 0 or 5**
- **DO NOT USE number in a rising or falling sequence (e.g. 10-30-50)**

For example, let's assume that you would like to change to a new password as the following number (10-50-70)

1) Open the safe door as described in the above.
2) To close the mechanical lock, turn the handle clockwise with the door opening
3) Turn counterclockwise for more than four times and set to “50” at changing index as shown in the Figure 1.
4) Turn clockwise and stop at “25” at the third time as shown in the Figure 2.
5) Turn counterclockwise and stop at “50” at the second time as shown in the Figure 3.

Fig.3.1

Fig.3.2

Fig.3.3

To be continued

6) Push the change bar COMPLETELY until it is held by the dial change home (Figure 4) inside the security door and turn 90 degree clockwise (Figure 5).

.

Warning : NEVER INSERT OR TURN THE CHANGE BAR IN THE LOCK WHEN THE COVER IS OPEN.

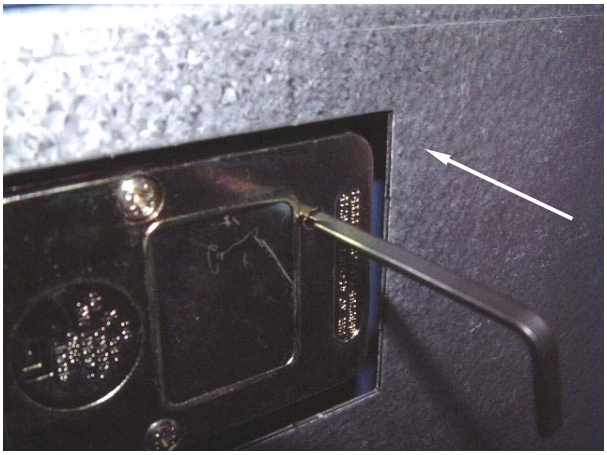


Fig.3.4

Fig.3.5

7) Turn to the counterclockwise more than four times and position at changing index to “10” (target number to change).

8) Turn to the clockwise for three times and position the scale to “50” (target number to change).

9) Turn to the counterclockwise for two times and position the scale to “70” (target number to change).

Fig.3.6

Fig.3.7

To be continued

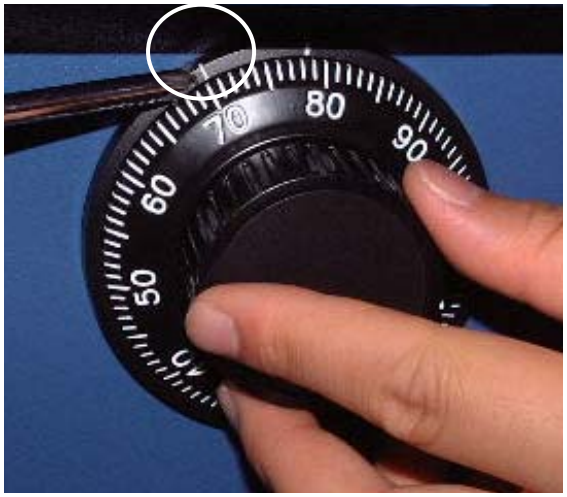


Fig.3.8

10) When password setting is completed, turn the change bar counterclockwise and remove it from the safe.

3.1.4 Electronic Combination Lock

Please operate the lock or change the password only after fully understanding this instruction

OPENING THE LOCK

1) Enter valid six (6) digit code at a time. (Factory default password : 123456)
2) The lock will signal a valid code entry with a double signal.
3) Within four (4) seconds, turn handle counterclockwise to the open position.
4) Pull door open.

LOW BATTERY WARNING

- Repeated audio and visual signal (LED flashing and repeated beeping) during opening indicates battery low.

AUDIO AND VISUAL SIGNAL

- Double signal (LED flashes and unit beeps) indicates entry is valid or accepted.
- Triple signal indicates invalid or not accepted.

WRONG TRY PENALTY

- Entry of four (4) consecutive invalid codes starts a 5-minute delay period.
  - LED flashed red at five (5) second intervals.
- At the end of the delay period, two more consecutive invalid codes will restart an additional 5-minute delay period.

CHANGING YOUR PASSWORD

1) Enter “zero” six times.
2) Enter your existing six (6) digit code one time.
3) Enter your NEW six (6) digit code two times.
4) If a mistake is made wait thirty (30) seconds and repeat steps 1. - 3.
5) Test lock operation several times before closing the door.
   - Valid Code Entry - Double signal after valid six (6) digit code is entered.
   - Invalid Code Entry - Triple signal and old code is still valid.

WARNING : ALWAYS PERFORM THIS OPERATION WITH THE DOOR OPEN

BATTERY LOW WARNING

- Repeated beeping during an opening indicates that the battery is low and needs immediate replacement.
- Uses one (1) 9-Volt Alkaline Battery. LA GARD recommends the use of Duracell™ or Everready™ Alkaline batteries.
  If battery is depleted and will not allow lock to open, simply follow instructions below.

CHANGING YOUR BATTERY

Note: Some manufacturers use a small screw to secure the battery compartment cover to the keypad housing. If your model has this screw, it must be removed first before following the steps listed below.

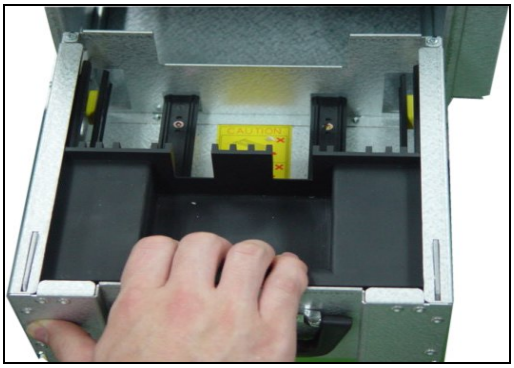
1) Remove black plastic battery compartment cover (located at the bottom of the keypad) by gently pulling downward on it's handle.
2) Allow the battery and it's attached leads to drop down and out of the battery compartment. If it does not drop, gently pull on the battery until it does.
3) The connector is easily removed by unsnapping it from the two terminals on the top of the battery. Never Pull on the Battery Leads
4) Connect a new 9-Volt Alkaline battery to the battery clip.
5) Push the battery and the leads completely up into the battery compartment.
6) Install the battery cover by placing one side of the cover in position and then pressing the other side into position with your finger.

3.2 Unit Operations

3.2.1 Replenishing Cash to the Cassette

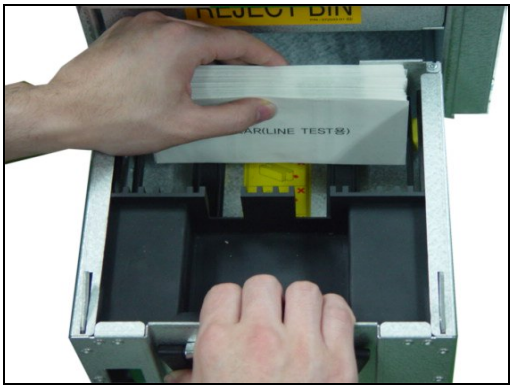
1) Open the Security Cover and Door.
(Please see Chapter 3.1.1~3 Opening and Closing the Security Cover and Door)

2) Push the green unlocking latch on the left side of cassette handle with finger in order to pull out cash cassette drawer.



3) Pull the cash cassette drawer out carefully.

To be continued

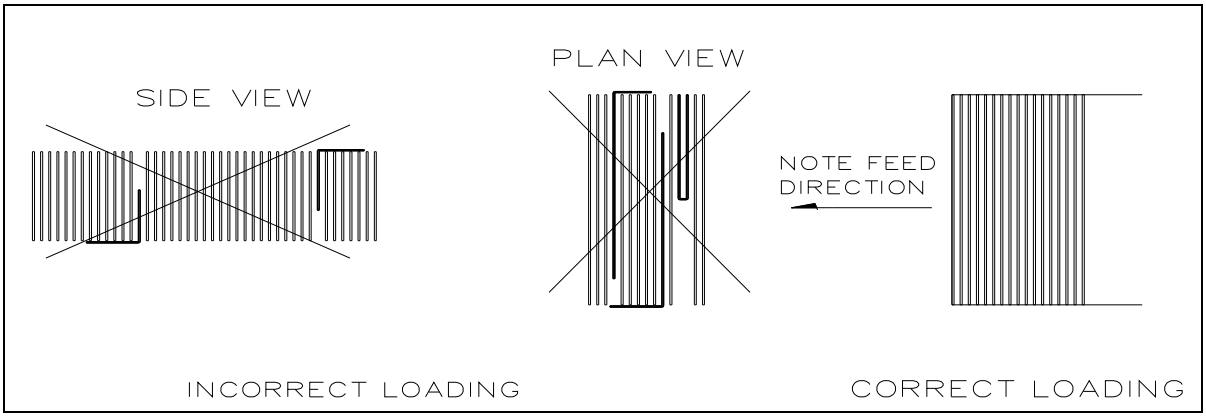


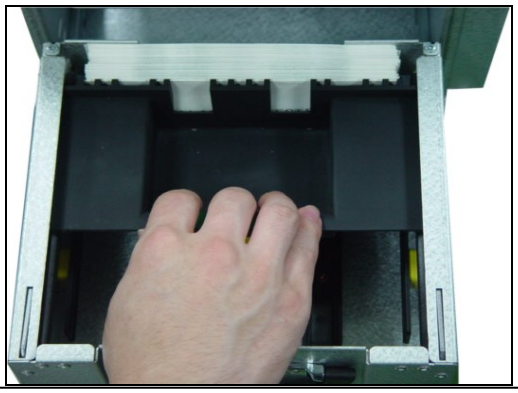
4) Pull the cash plate back until it is locked against the cash plate latch. And then add cash into the cassette.

NOTE: TIPS ABOUT ADDING BILLS:

1. Fan the notes so that the notes do not stick together.
2. Remove all notes with holes or notes that are torn.
3. Unfold the folded notes.
4. Place the notes correctly.

For more detailed information about acceptable bill conditions to be suitable for cassette, please refer to Chapter 6. Appendix B. Bill Conditions

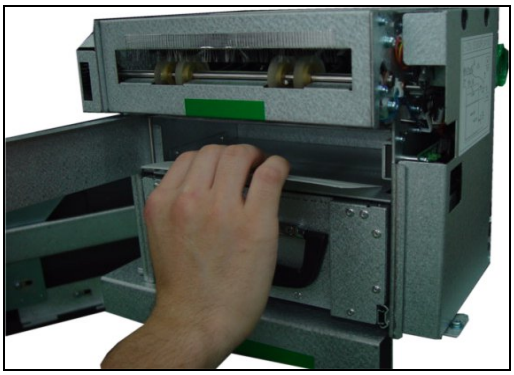




5) After replenishing the cash cassette, release the cash plate latch and allow the cash plate gradually to take up its position behind the notes. And then push the cash drawer until it latches closed

3.2.2 Emptying the Reject Bin

1) Open the reject bin cover by pulling on the green tab located on the right of the reject bin.



2) Remove any notes inside the reject bin.

3) Close the reject bin cover by pressing it closed until it locks in place

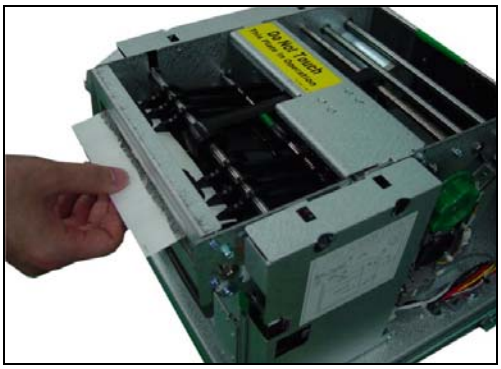
WARNING :

Do not recycle rejected bills into a cassette.
Doing so could cause more rejects or jams

3.2.3 How to Clear Note Jams

1) Pull out the green tab on the bottom rail of the cash dispenser slowly.

2) Turn the green knob located on upper right of cash dispenser in order to move jamming notes into a well removed position



3) Take out the jamming notes carefully.

3.2.4 Loading the Receipt Paper

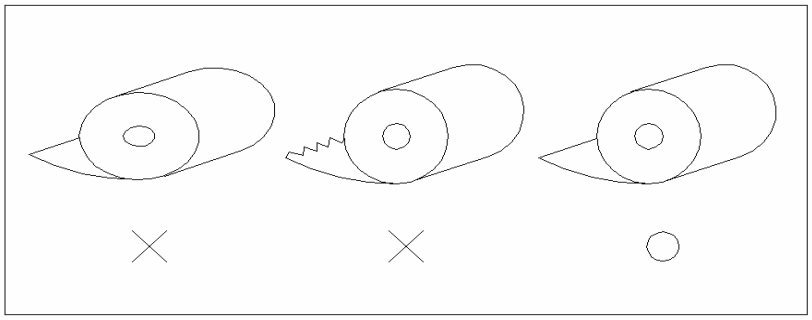
1) Open the Front Panel with key and pull this outward completely with hands. (Please see the Chapter 3.1.2)

2) Prepare the new paper roll. Please see the NOTE described below

3) Remove the green paper holder by carefully pulling it off and add the receipt paper into the spindle. And then insert the green paper holder tightly again to fix it.

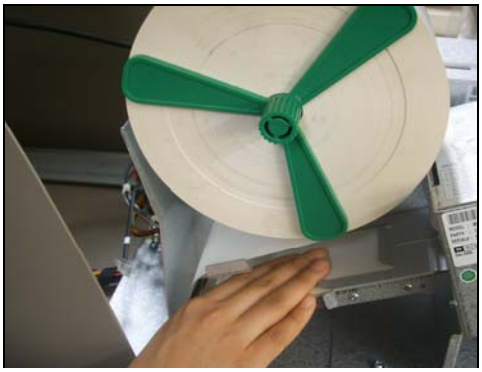
NOTE:

1. Make sure the roll is in its proper roll form. (A deformed roll may cause jamming problems)
2. When replacing the new roll, make sure the end of the roll paper has a clean cut. (See the below figure.)

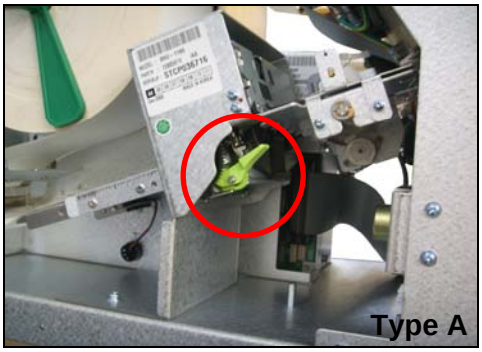


To be continued

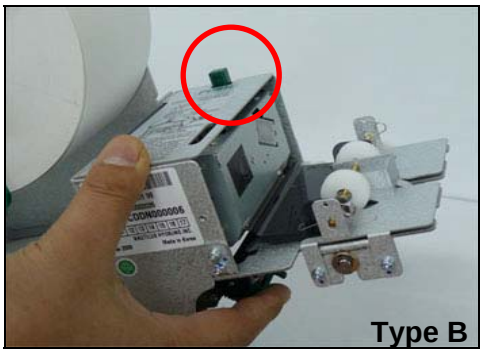
4) The shiny side of the paper should be faced up to be printed properly and the metallic tension guide should be surrounded with paper to reduce the tension during feeding



5) Insert the leading edge of paper into the loading guide of the receipt printer slowly. When the machine is initialized, the paper is going to start feeding

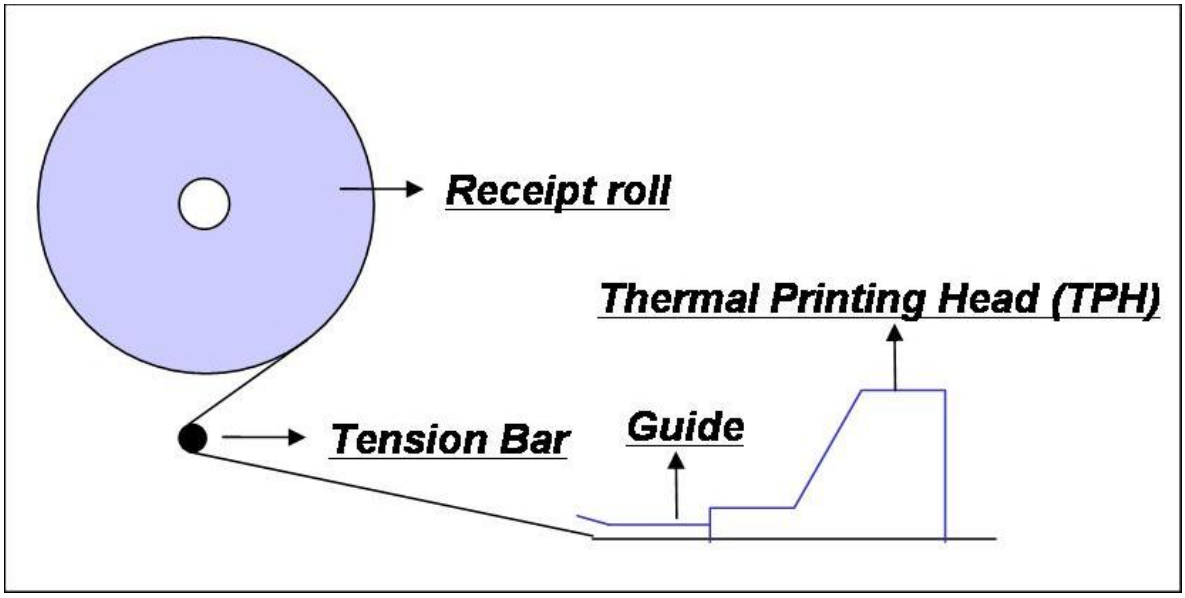


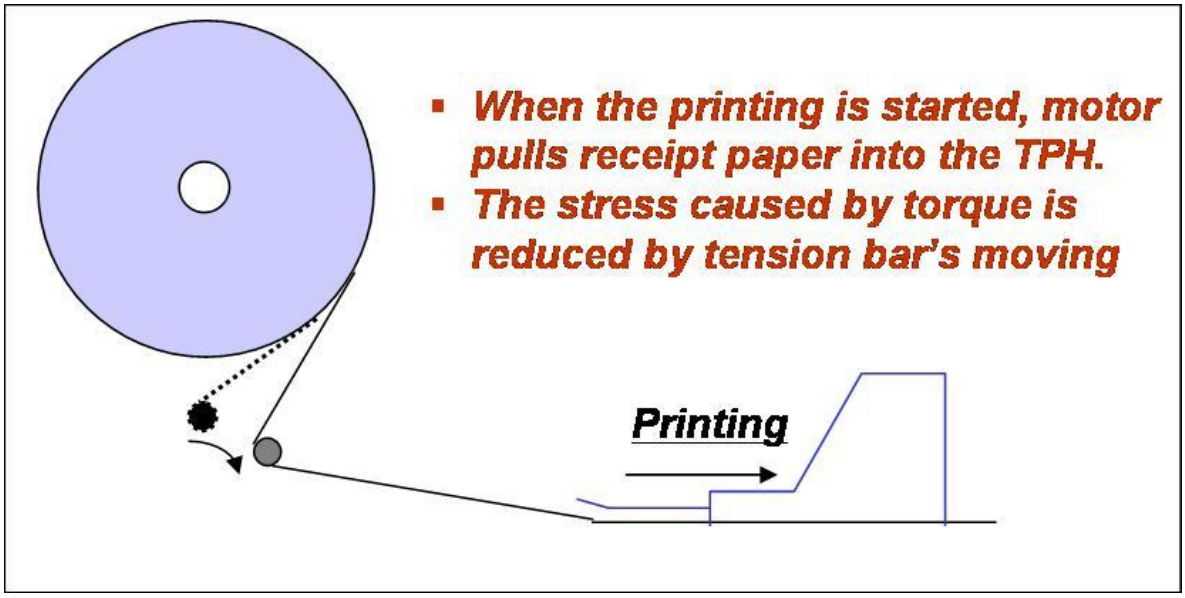
6) If the paper does not feed at all during initializing, make sure that paper has a CLEAN CUT at the end and the Thermal Print Head (TPH) is closed. According to the type of Receipt Printer, to close TPH, lift up the green lever behind the transport path (Type A) or the green button on the TPH (Type B).



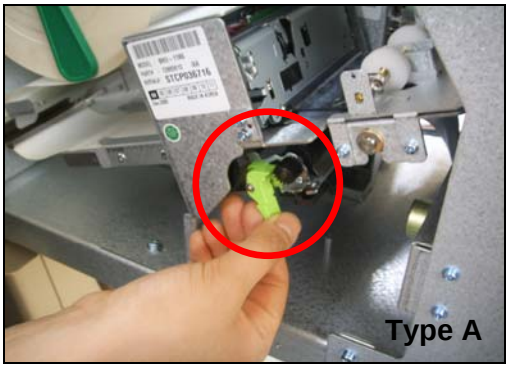
7) When finished loading paper, close the Front Panel and remove the key.

NOTE: THE BASIC MECHANISM OF RECEIPT PRINTER

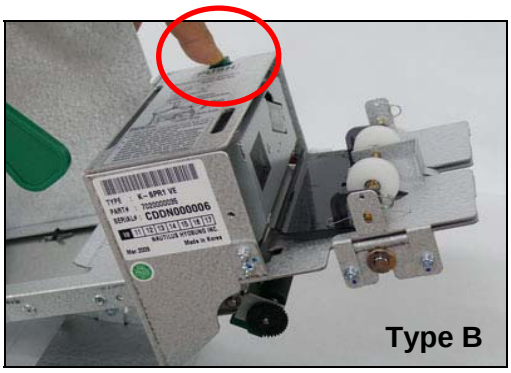


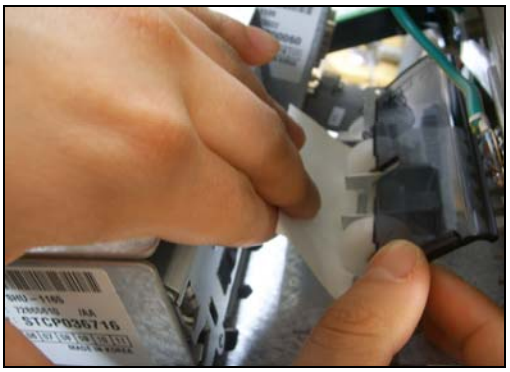


3.2.5 How to Clear a Receipt Jam

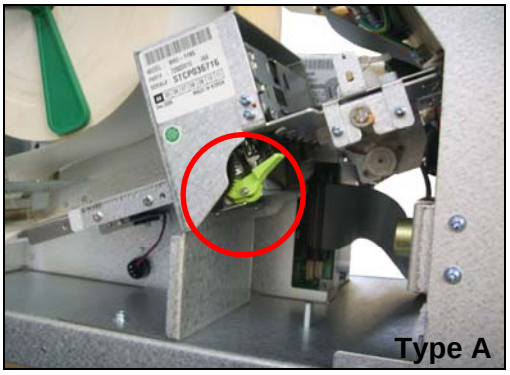


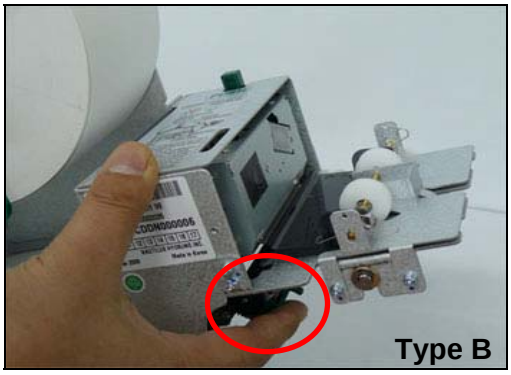
1) Open the Front Panel with key and pull this outward completely with hands.
To remove a jammed paper inside transport path, press down the green lever or the green button to release the lower roller assembly.





2) To take out a jammed paper in front of transport path, lift up the transparent window guide and remove the jamming receipt carefully.





3) After finishing clearing the receipt, load the receipt paper properly. Please make sure to lift up the green lever or the green button one more time before closing the Front Panel. When finished loading paper, close the Front Panel and remove the key.

3.3 Programming Operations

3.3.1 Accessing the Operator Function Menu

PLEASE WAIT
WHILE CONNECTING
TO HOST

1) Turn on the NH-1500. The system will automatically be initialized and run the status check once when the NH-1500 is turned on. The system will attempt to connect to the host.

INSERT AND REMOVE
YOUR CARD QUICKLY

2) If the host connection is established, the display will show “IN SERVICE” screen. Press the CANCEL, CLEAR, ENTER key simultaneously and then press 1, 2, 3 keys in order.

ENTER PASSWORD
[* * * * * *]

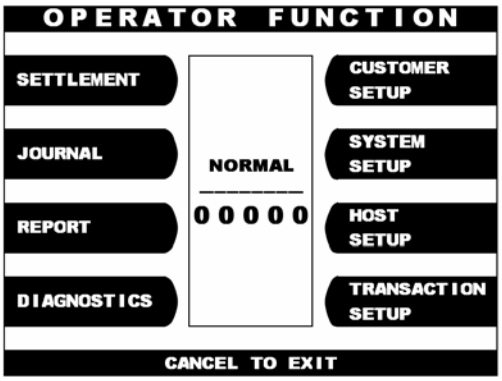
3) Enter the Operator Password and press ENTER. If the wrong password is entered, the screen will be back to “ENTER PASSWORD” screen. The factory default Master Password is “555555”.

WARNING: You MUST change your password from the FACTORY DEFAULT ONE AS SOON AS installation is finished. If you don’t change your password, you can’t enter the “In service” mode. (F0016 error will be displayed on LCD)

To be Continued

NOTE: There are 3 kinds of passwords to be entered for its purpose

- Operator Password (just allowing access to basic menu)
- Service Password (just allowing access to basic and diagnostics menu)
- Master Password (allowing access to all menu including setup parameter)



4) If the correct password is entered, the OPERATOR FUNCTION menu will be displayed.

NOTE:

The Operator Function menu can't be accessed during connection to the host or initializing the machine. It is possible to be accessed in case of "In Service" mode, "Out of Service" mode or "Error" mode.

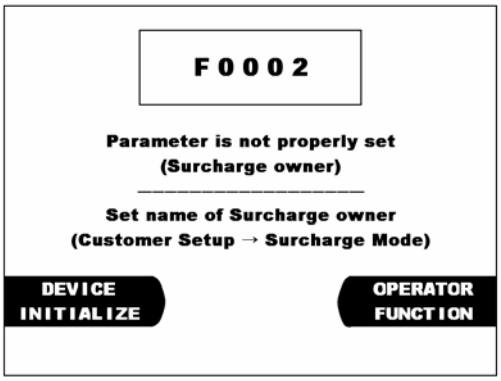
If an inappropriate password is entered three times consecutively, this screen will be reverted back to previous mode.

3.3.1.1 When an Error Occurs

1) When an error occurs, please press CANCEL, CLEAR, ENTER simultane-ously and then press 1, 2, 3 in order.

NOTE: If the machine goes out of service, the error code will not always appear on the screen. If you do not see an error code, enter operator function and go to reports. Look in the error summary for error codes

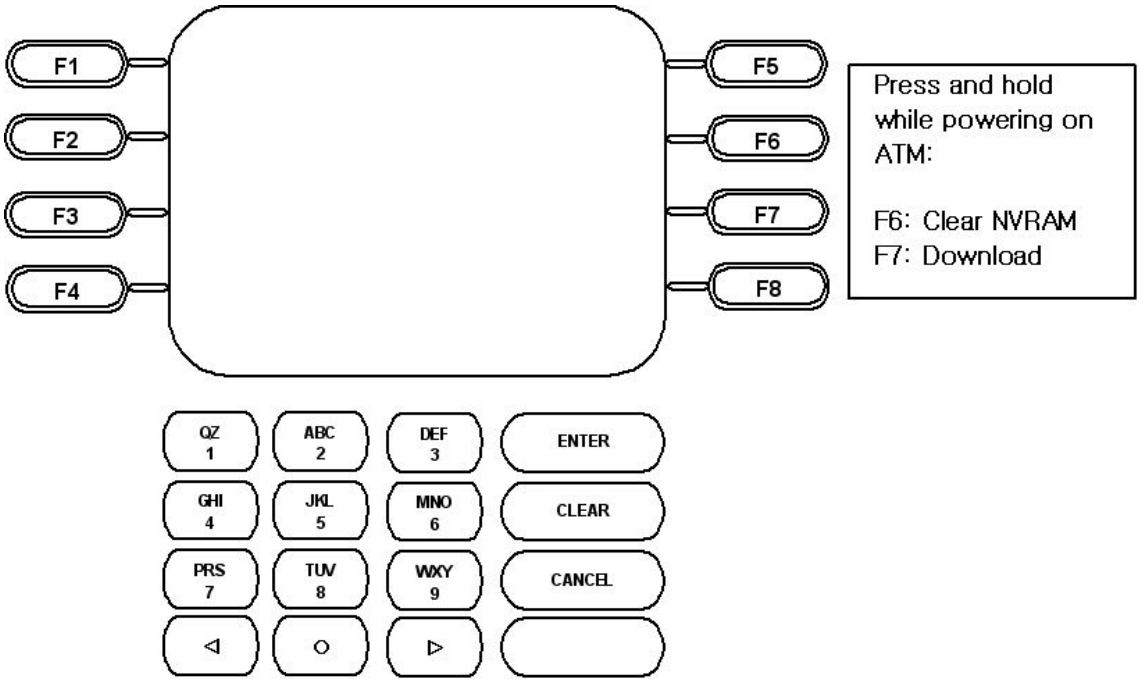
2) “ENTER PASSWORD” will be displayed and enter the Operator Password.



3) When the screen is in current display, press the OPERATOR FUNCTION key to access the OPERATOR FUNCTION.

3.3.1.2 How to Use Keypad

This section will explain the basic operation of the Keypad.



Shift Status				0	1	2	3	4	5	6	7	8	9
F5	Alpha	F6	Upper	+ - =	Space Q Z	A B C	D E F	G H I	J K L	M N O	P R S	T U V	W X Y
			Lower	+ - =	Space q z	a b c	D e f	G H I	j k l	m n o	p r s	t u v	w x y
	Numeric		Don’t care	0 ( )	1 [ ]	2 { }	3 < >	4 , .	5 ! $	6 ‘ “	7 % *	8 : ;	9 ? /
	Table		Don’t care	The character on the current cursor position on the screen will be selected.									

3.3.1.3 How to Enter the Character

a. The Keypad Character Table of previous page will appear on the bottom of the screen in all keypad input screens.

b. F5 key gives the option for Alpha or Numeric, Table mode. Default is Alpha.

c. F6 key gives the option for Upper or Lowercase characters. It is valid only in the Alpha mode. Default is Uppercase.

d. The input of characters is limited to the space provided.

e. Keys are in toggle fashion such as, when key “1” is pressed once it is “SPACE”, pressed twice it is “Q”, pressed third time it is “Z” when in the Alpha mode. When the desired character is selected, press ENTER.

f. ◀ , ▶ keys move the cursor position in the Alpha or Numeric mode. In the Table mode ◀ , ▶ keys are used to select the character.

g. F1 key is used to clear the whole screen and returns the cursor to its initial position.

h. F2 key is used to clear the current line.

i. F3 key is used to ignore the changes and to exit.

j. F7 key is used to save the current changes and to exit.

3.3.2 Settlement Menu

The Settlement Function of the Operator Function includes the following :

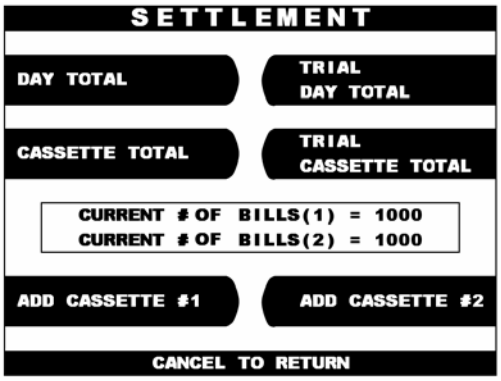
DAY TOTAL
CASSETTE TOTAL
TRIAL DAY TOTAL
TRIAL CASSETTE TOTAL
ADD CASSETTE #1
ADD CASSETTE #2 (optional)

3.3.2.1 Day Total

DAY TOTAL shows the cumulative values of all transactions such as withdrawals, transfer and balance inquires performed by the ATM since the last Day total and the corresponding host total, allowing you to compare the ATM total against the host processor records. The DAY TOTAL includes all information of the ATM terminal totals and the host totals starting from the last time a DAY TOTAL was done until now. If the host can not be connected, an “ERROR” message will be displayed and only the ATM terminal totals will be printed without verification with the host. All information will be deleted when this function is properly executed.

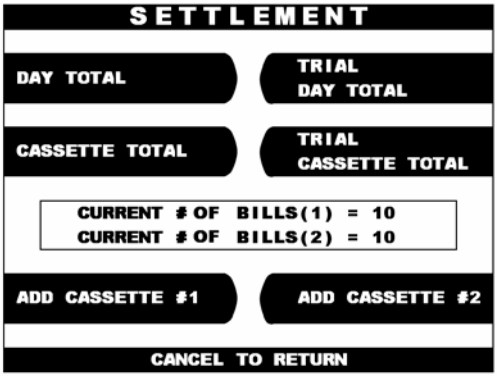
Please keep in mind that you may find discrepancies between what the terminal had reported and what the host reports according to the cut off time of the host (or Processor). To prevent this, ask your dealer in advance and find the approximate cut off time for your processor to do DAY TOTAL at this same time.

If it does not match the reciprocal information, the missing transactions will usually appear on the next total.



1) Select ‘SETTLEMENT’ from the ‘OPERATOR FUNCTION’ menu and then select ‘DAY TOTAL’ from the SETTLEMENT menu.

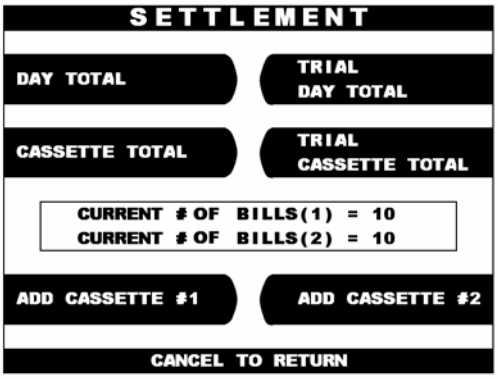
2) After the information is downloaded from the processor, the Day Total information will be printed from the Receipt Printer. If the GOOD message appears, press “ENTER”.



3) The TRIAL DAY TOTAL function is used anytime to confirm the totals since the last DAY TOTAL. It does the same function as the DAY TOTAL, except the day total information is not cleared.

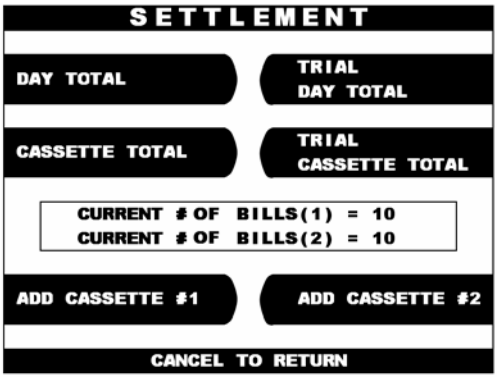
3.3.2.2 Cassette Total

The CASSETTE TOTAL includes the total loaded number of bills in the cassette, the normal dispensed amount, the number of rejected notes, the test dispensed amount and the number of remaining notes, etc. since the last CASSETTE TOTAL was operated. This will be printed from the Receipt Printer. All information will be deleted when this function is properly executed.
Please remember that pressing the CASSETTE TOTAL is the only way to reset any cassette information back to zero. Therefore, after performing a CASSETTE TOTAL and replenishing the cash in the cassette, enter the total number of bills loaded in the cassette, using the ADD CASSETTE which will be explained in the next section



1) Select ‘SETTLEMENT’ from the ‘ OPERATOR FUNCTION’ menu and then select ‘CASSETTE TOTAL’ from the SETTLEMENT menu.

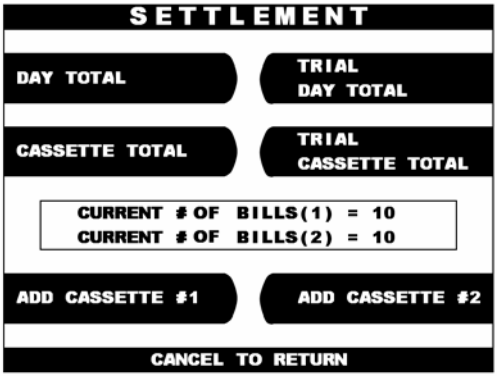
2) The Cassette Total information will be printed from the Receipt Printer. If the GOOD message appears, press “ENTER”.



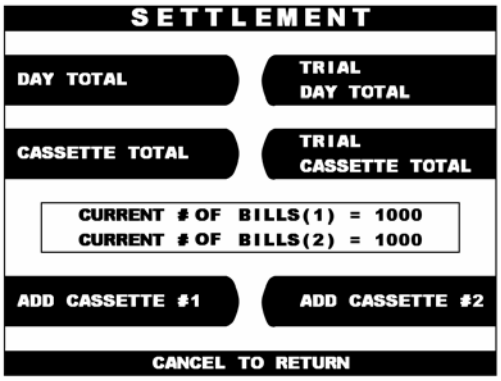
3) The TRIAL CASSETTE TOTAL function is used to check the amount dispensed from the cassette since the last CASSETTE TOTAL was operated. It does the same function as the CASSETTE TOTAL, except the cassette total information is not cleared.

3.3.2.3 Add Cassette

This menu can input how many bills have been added to the ATM as well as generating Day Total and Cassette Total.
The operator must set the additional number of bills being loaded into the cash cassette at all times. That's why the current number of bills will be reset to "0" after the use of CASSETTE TOTAL,.



1) Select 'ADD CASSETTE ' to be added from the SETTLEMENT menu



2) Set the number of bills loaded in the cassette.

NOTE : Enter the NUMBER of bills, NOT the amount of cash.

3) Press the enter key when finished setting the amount

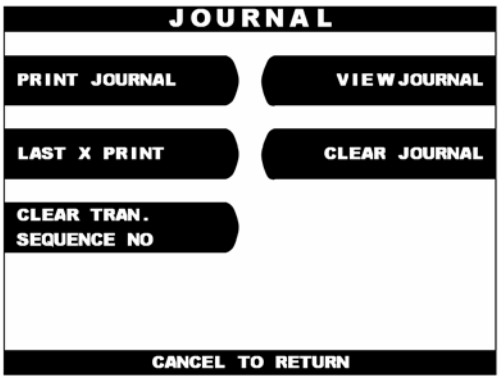
3.3.3 Journal Menu

The details of each transaction are stored in the electronics journal and can be retrieved at a later date. When they are needed, just the desired information can be recalled and a printout of the records made.
Depending on the size of each entry, the memory can hold up to 2000 records. Once the journal memory reached its maximum limit, it will begin to overwrite the oldest entries. Therefore, it is highly recommended that you will back up the entries to avoid loosing records.
The Journal Function of the Operator Function includes the following:

PRINT JOURNAL
LAST X PRINT
VIEW JOURNAL
CLEAR JOURNAL
CLEAR TRANSACTION SEQUENCE NUMBER

3.3.3.1 Print Journal

The PRINT JOURNAL function is used to automatically print out any journal entries collected since the last time this command was operated. All records stored in the electronic journal will be printed. There are two kinds of format to print out the journal.
One is a Standard format, which is full information identical to a customer's receipt and the other is Condensed format, which will be just printed out the sequence number, business date, time, what type of transaction and the amount requested and dispensed. It is highly recommended that this function will be used regularly to hold up a kind of evidence of customer information. This information should be stored in case of an inquiry by a customer, and can also be useful in certain troubleshooting situations.



1) Select 'JOURNAL' from the OPERATOR FUNCTION menu. And then select 'PRINT JOURNAL' from the JOURNAL menu. Push the 'PRINT' or 'Condensed' menu according to which you want to print out.

```
-------------------------------------
  <00128> 24/07/2003. PM 04:55:58
    *** NORMAL TRANSACTION ***

          *** WITHDRAWAL ***
  SEQUENCE NO    ; 0002
  ACCOUNT FROM ; CHECKING
  CARD       DATA                    ;
2115062139109109
  HOST DATE       ; 24/07/2003
  HOST TIME       ; 16:56:03
  AVAILABLE BAL;        £3456.08
  RETRIEVAL NO ; 000001030948
  AUDIT NO        ; 030948
  NET ID          ; 56
  BUSINESS DATE; 24/07/2003
  SURCHARFE       ;  £        1.25
  REQUESTED       ;  £       40.00
  DISPENSED       ;  £       40.00
  BALANCE         ;  £458990.00
  PROC COUNT      ; 7
```

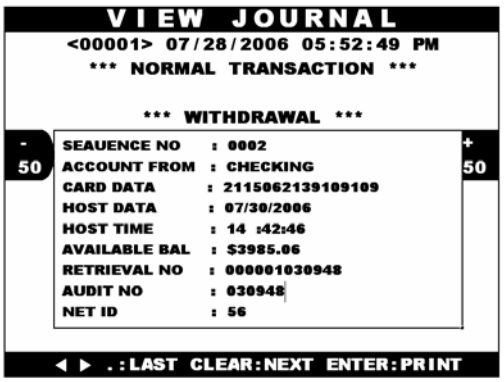
2) Wait while the Journal data is being printed. If the GOOD message appears, press "ENTER".

3.3.3.2 Last X print

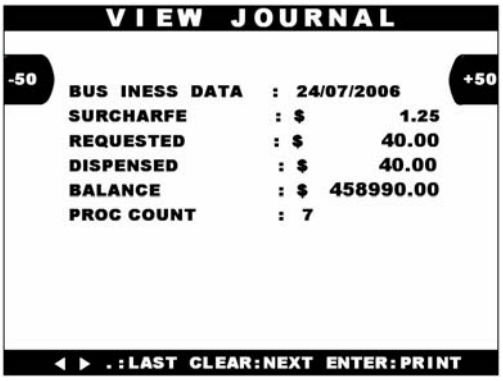
The LAST X PRINT(PRINT) function is used to display and print any record from the electronic journal, either before or after when Clear Journal or Print Journal has been performed. This function may be useful to reprint records for which the paper trail has been lost or destroyed. Reprint certain range of journal data specified by X record after they have been printed or cleared. The LAST X PRINT(CONDENSED JOURNAL) function is used to reprint condensed records for which the paper trail has been lost or destroyed. Reprint as condensed certain range of journal data specified by X record after they have been printed or cleared.

3.3.3.3 View Journal

The VIEW JOURNAL function is used to display the journal data in the LCD screen without printing records.



1) You may see the Journal Data which will be displayed on the screen



3.3.3.4 Clear Journal

The CLEAR JOURNAL function is used to mark all records not printed in the journal. Journal records are not erased. They are marked as if they had been printed.

3.3.3.5 Clear Tran. Sequence No

The CLEAR TRAN. SEQUENCE NO. function is used to reset the transaction serial number to “1”. This may be useful if you switch processing or switch Terminal ID numbers and want to keep new records.

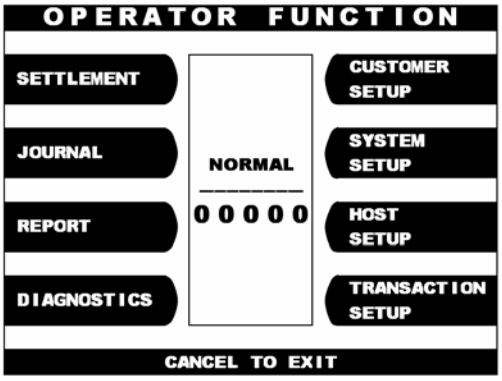
3.3.4 Report Menu

The Report function of the Operator Function includes the following :

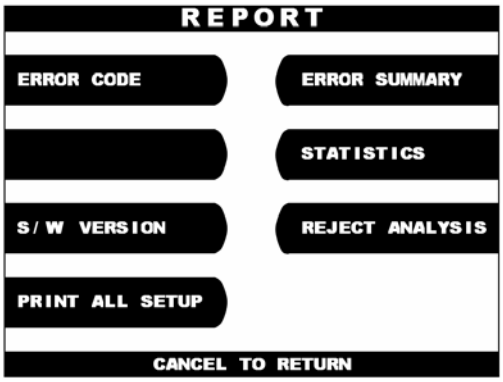
ERROR CODE
S/W VERSION
PRINT ALL SETUP
ERROR SUMMARY
STATISTICS
REJECT ANALYSIS

3.3.4.1 Error Code

The ERROR CODE includes all error codes, descriptions and corrective actions. If an error occurs, the current error code will be displayed. To search the error code, use ◀ , ▶ key.



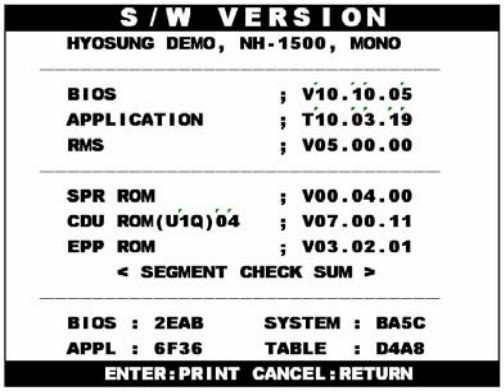
1) Select 'REPORT' from the OPERATOR FUNCTION menu



2) Select 'ERROR CODE' from the REPORT menu.

3.3.4.2 S/W Version

The S/W VERSION function is used to display each software version of system.



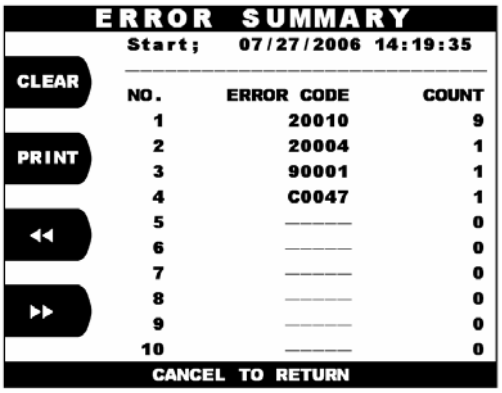
1) Software Version will be displayed.
To print the Software Version information, press "ENTER".

3.3.4.3 Print All Setup

The PRINT ALL SETUP function is used to print all parameters of the system.

3.3.4.4 Error Summary

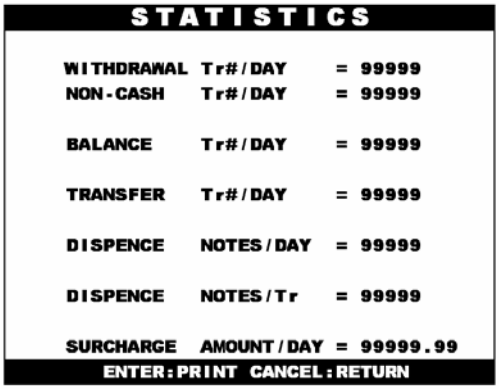
The ERROR SUMMARY function is used to display the error code and number of times the error occurred since the last ERROR SUM CLEAR. Therefore an operator can know which error occurs frequently and with this function it is useful for preventive maintenance.



1) The error summary data will be displayed.
   Press “PRINT” key to print the Error Summary Data.

3.3.4.5 Statistics

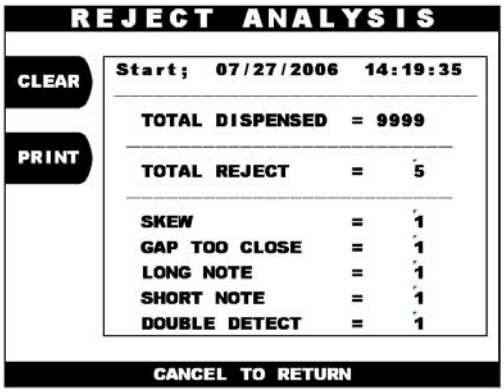
The STATISTICS displays all transaction statistics data. To clear the data, press “CLEAR”.



Statistics data will be displayed.
Press “ENTER” key to print data.

3.3.4.6 Reject Analysis

The REJECT ANALYSIS function includes the analysis for the reason of the note reject and it is useful for the preventive maintenance.



Reject Analysis data will be displayed.
Press “PRINT” key to print data.

Chapter 4. OPERATOR FUNCTIONS

4.1 Customer Setup Menu

The Customer Setup function of the OPERATOR MENU includes the following :

CHANGE MESSAGE
- **WELCOME MESSAGE**
- **RECEIPT HEADER**

BIN LIST

SURCHARGE MODE

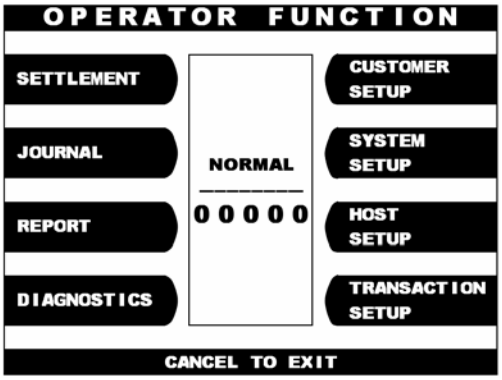
ADVERTISEMENT

OPTIONAL FUNCTION
- **OPTIONAL SETTING**
- **STANDARD3 OPTION**
- **SELECT PROCESSOR**

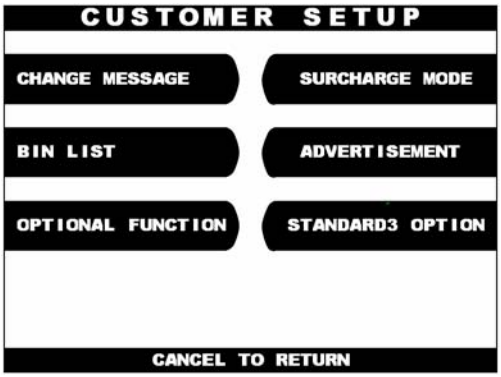
4.1.1 Change Message

4.1.1.1 Welcome Message

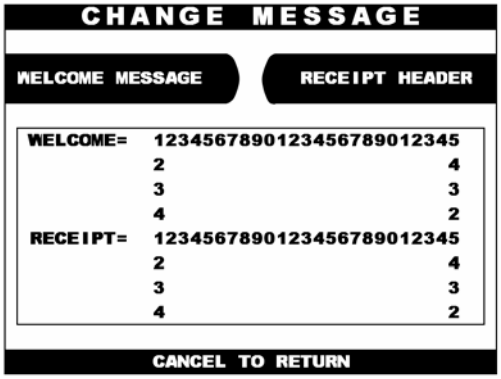
The WELCOME MESSAGE function is used to edit the welcome text in “INSERT AND REMOVE YOUR CARD QUICKLY” screen. The factory default message is “WELCOME!!!”.



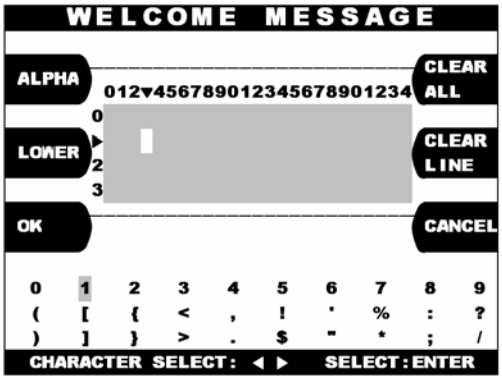
1) Select the 'CUSTOMER SETUP' from the OPERATOR FUNCTION menu.



2) Select the 'CHANGE MESSAGE' from the CUSTOMER SETUP menu.



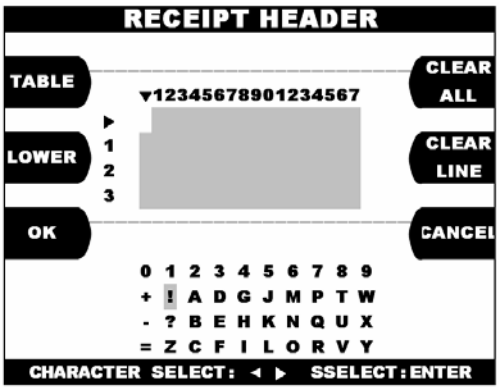
3) Select the 'WELCOME MESSAGE' in the CHANGE MESSAGE menu.



4)You can edit the welcome message.
Please refer to 6.1.2 How to use keypad

4.1.1.2. Receipt Header

The RECEIPT HEADER function is used to edit the message at the header of receipt. The factory default message is none.



1)You can edit the RECEIPT HEADER.
Please refer to Chapter 3.3.1.2 and 3.3.1.3 concerning how to use keypad

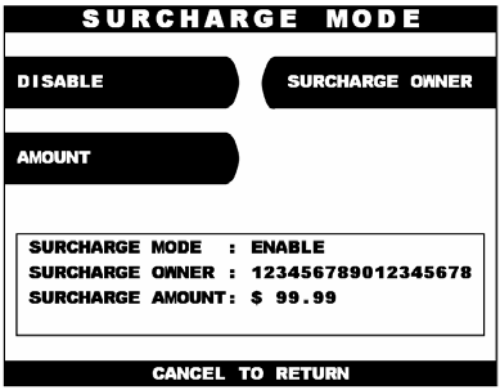
4.1.2 BIN List

The BIN LIST function is used to register bank lists and give bin codes not to surcharge the additional fee. But it is necessary to confirm the connected host because according to the host it can be used or not. After designating the INDEX, input a BIN code with using “EDIT BIN LIST”.

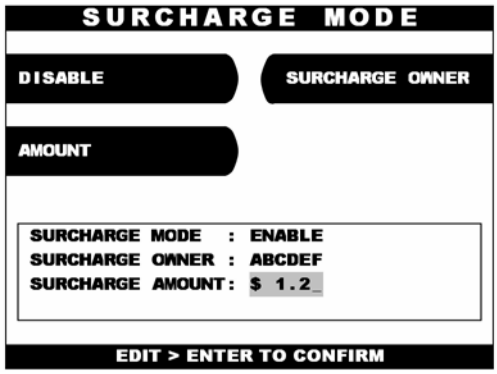
The BIN LIST menu will be displayed.

4.1.3 Surcharge Mode

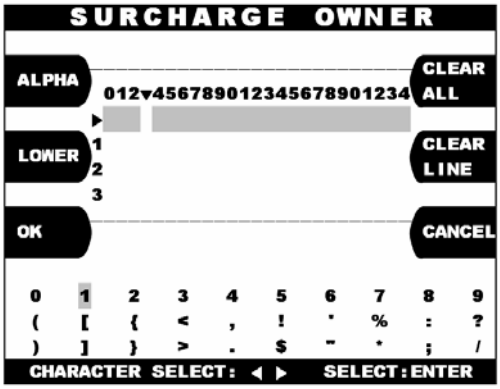
The SURCHARGE MODE includes the function to enable or disable the surcharge warning screen, setting the surcharge amount and surcharge owner. When the surcharge mode is disabled, the surcharge warning message will not be displayed and when the surcharge mode is enabled, the surcharge amount and owner name will be displayed in the surcharge warning screen. The factory default is disabled mode, surcharge amount is $0.00 and the surcharge owner is none.



1) If you press the ENABLE key, it will be enabled as displayed.



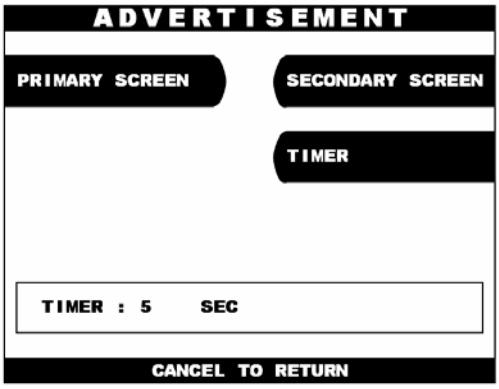
2) If you press the AMOUNT key, you can enter the desired surcharge amount.



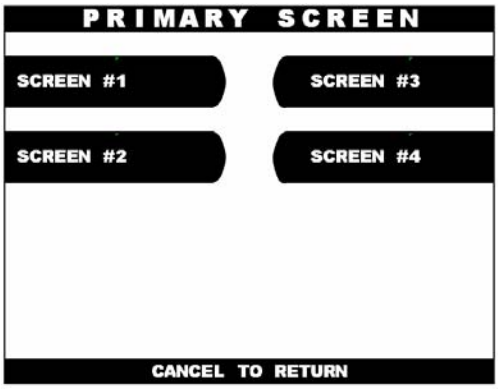
3) If you press the SURCHARGE OWNER key, you can enter the owner's name with keypad. Please refer to Chapter 3.3.1.2 and 3.3.1.3 concerning how to use keypad.

4.1.4 Advertisement

The ADVERTISEMENT function is used to set the image of screen displayed during idle time, such as "INSERT AND REMOVE YOUR CARD QUICKLY" and "PLEASE WAIT CONNECTING". The factory default is disabled mode, 3 seconds and no message.



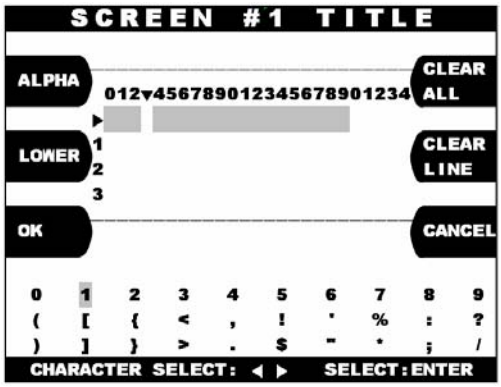
1) The ADVERTISEMENT menu will be displayed.



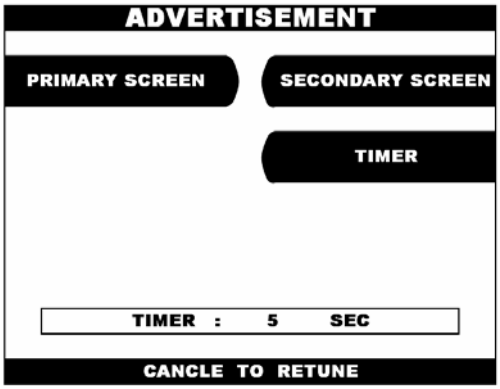
2) If you press the PRIMARY SCREEN key, the PRIMARY SCREEN will be displayed. Select the 'SCREEN #1'from the PRIMARY SCREEN MENU.

3) If you press the ENABLE/DISABLE key, it will be changed to be enabled or disabled.

4) Select the ‘SCREEN TITLE key’ from the PRIMARY SCREEN MENU.



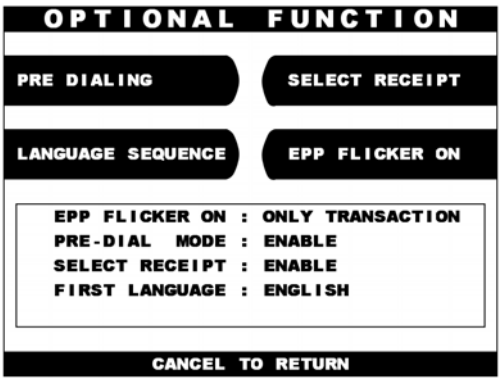
5) If you press the SCREEN TITLE key, you can enter the desired advertisement message. Please refer to Chapter 3.3.1.2 and 3.3.1.3 concerning how to use keypad.



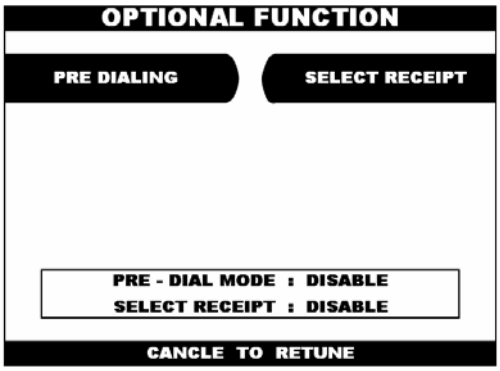
6) If you press the TIMER key, you can input the desired refreshing timer of advertisement image.

For Secondary screen, screen title is not supported

4.1.5 Optional Function



1) If you press the PRE DIALING key, you can change the desired pre-dialing mode.
It means that the ATM starts pre-dialing to the host at transaction screen when Pre Dialing mode is set to ‘Enable’



2) If you select the ‘SELECT RECEIPT’ from the OPTIONAL FUNCTION MENU, it will be changed to be enabled or disabled.

4.2 System Setup Menu

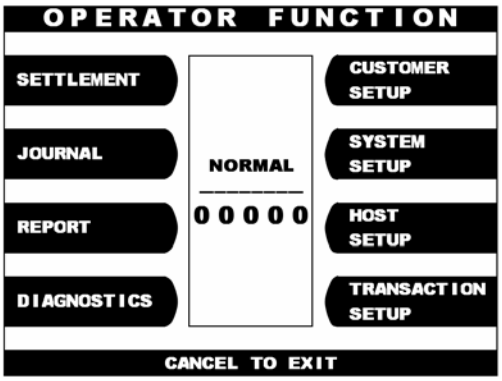
The SYSTEM SETUP function of the OPERATOR FUNCTION includes the following:

SET CLOCK
ISO #1, #2, #3 EN/DISABLE
LANGUAGE EN/DISABLE
CHANGE PASSWORD
MODEM
- **MODEM SETUP**
  - **DIAL MODE**
    - **MODEM SPEED**
    - **SPEAKER OUT**
    - **INITIAL STRING**
- **MODEM TEST**

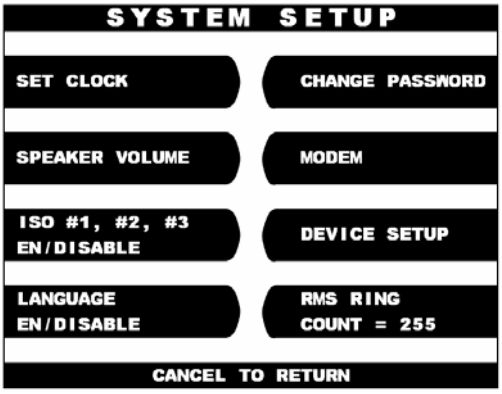
RMS RING COUNT
SPEAKER VOLUME
DEVICE SETUP

4.2.1 Set Clock

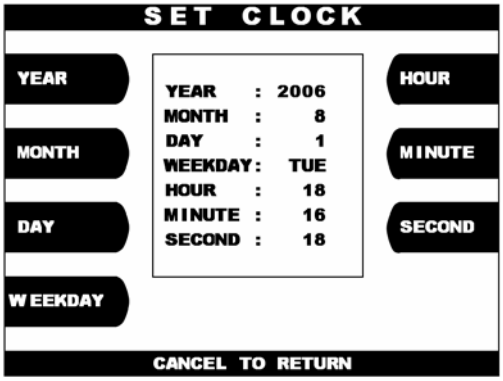
The SET CLOCK function is used to set the date and clock. When the “SECOND” key is pressed, the second will be reset to “0”.



1) Select the ‘SYSTEM SETUP’ in the OPERATOR FUNCTION menu.



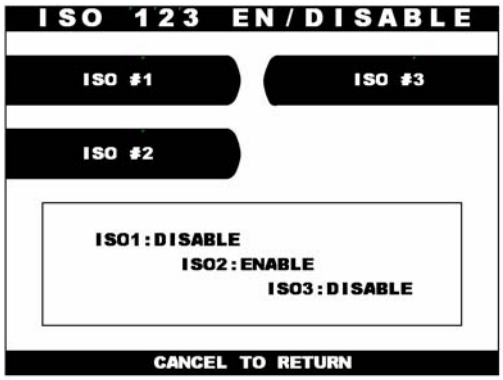
2) Select the ‘SET CLOCK’ in the SYSTEM SETUP menu.



3)The SET CLOCK menu will be displayed.

4.2.2 ISO #1, #2, #3 En/Disable

The ISO #1, #2, #3 EN/DISABLE includes the function to enable or disable you to set the ISO tracks of the card to be read from card reader. Each key will be changed to be enabled or disabled.



If you press the ISO #1, #2, #3 key, it will be changed to be enabled or disabled.

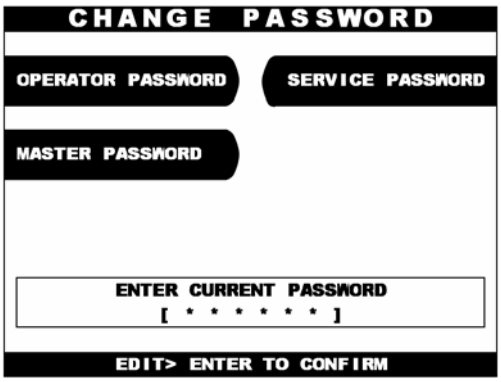
4.2.3 Language En/Disable

The LANGUAGE EN/DISABLE key includes the function to enable or disable you to the specific LANGUAGE which is proceeded with screen in transaction. Each key will be changed to be enabled or disabled.

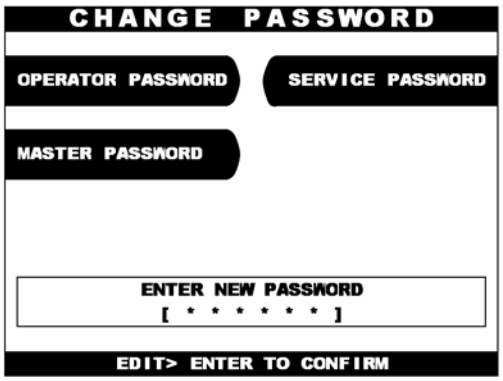
If you press the ENGLISH, SPANISH, KOREAN, FRENCH or JAPANSE key, it will be changed to be enabled or disabled.

4.2.4 Change Password

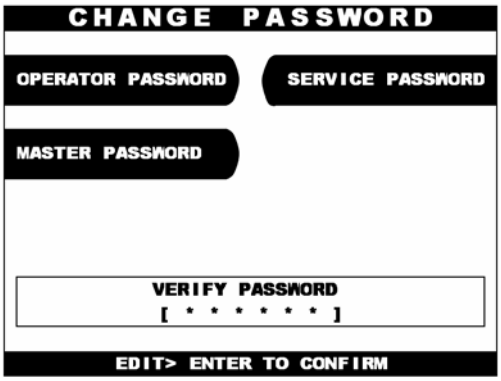
The CHANGE PASSWORD function is used to change the Operator Password.
The factory default Operator Password is “111111”.
The factory default Service Password is “222222”.
The factory default Master Password is “555555”.



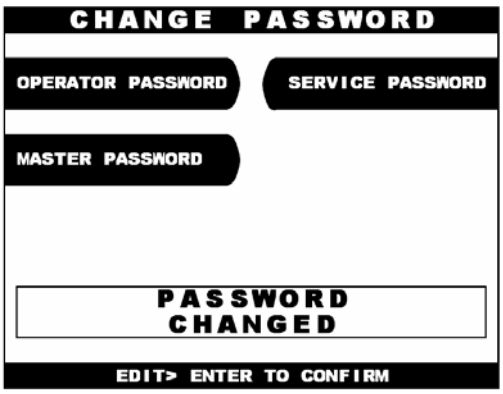
1) Select the ‘MASTER PASSWORD’ or the ‘OPERATOR PASSWORD’ or the ‘SERVICE PASSWORD’ in the CHANGE PASSWORD. Enter the current Operator Password.



2) Enter the new Operator Password or the new Master Password.



3) Enter the new Operator Password or the new Master Password again.



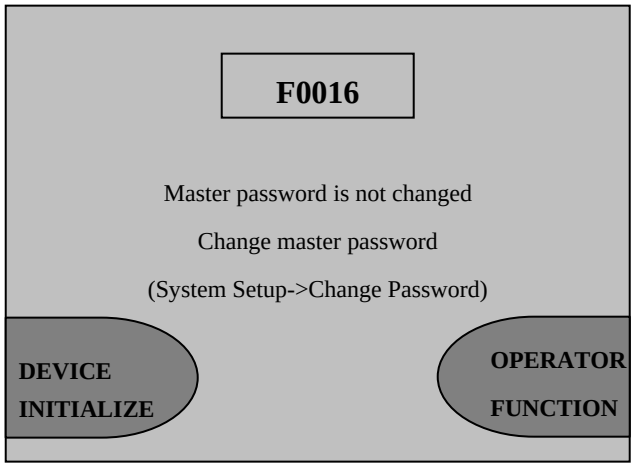
4) The password will be changed.

Notice for Master Password :

The new AP software will no longer allow you to put the ATM in service using the default master password.

Then master password must be changed before attempting to initialize the machine, or a F0016 error will be reported.

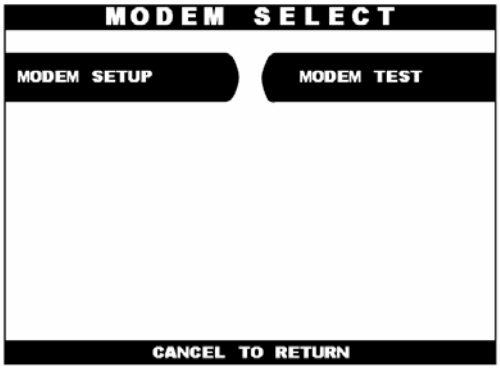
As with all passwords, the Master Password must be 6 digits in length.



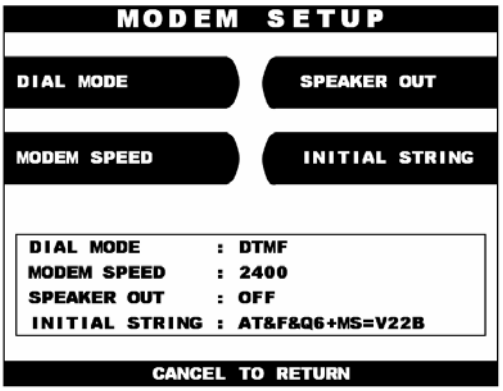
4.2.5 Modem

4.2.5.1 MODEM SETUP

The DIAL MODE function is used to change the Dial Mode to touch-tone mode(DTMF) or rotary mode(PULSE). Consult with the local phone company to determine which option is supported. The factory default is DTMF.



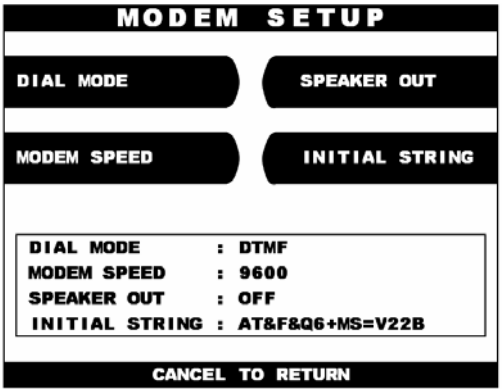
1)Select the 'MODEM SETUP' in the MODEM menu.



2) When the DIAL MODE is pressed , the DIAL MODE will be changed to DTMF or PULSE.

Modem speed

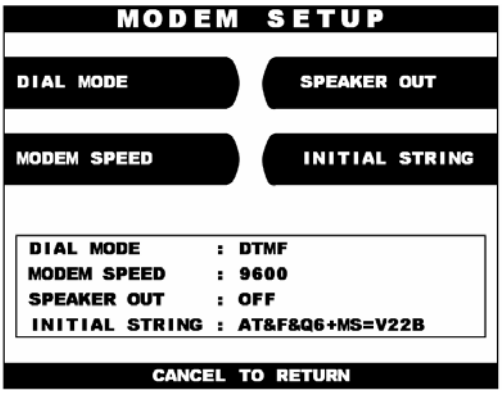
The MODEM SPEED function is used to set the modem connecting speed with the host. The factory default speed is 2400bps.



1)The Modem Speed can be changed from 1,200bps up to 56,600bps.

Speaker out

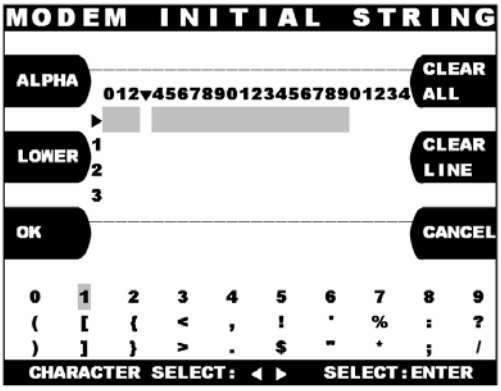
The SPEAKER OUT function is used to change the speaker out on or off at the modem dial connection. Service Personnel can check the dialing if it is normal or abnormal with this function in the speaker out on state. The factory default is OFF.



1)Select the ‘SPEAKER OUT’ in the MODEM SETUP menu.
When you press the Speaker Out key, you can change speaker out on or off.

Initial string

The INITIAL STRING function is used to edit the Modem Initial String when the special circumstances require a nonstandard Modem Initial String. The factory default is AT&F&Q6+MS=V22B. Before editing the Initial String, consult with Service Personnel.



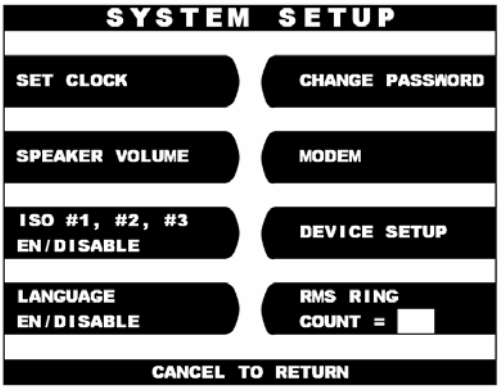
1) Enter the desired modem initial string.
   Please refer to 6.1.2 How to use keypad.

4.2.5.2 Modem test

The MODEM TEST function is used to perform the modem reset test.
When the error occurs, contact the Service Personnel.

4.2.6 RMS Ring Count

When RMS calls to ATM, ATM will answer to RMS after ringing as RMS RING COUNT.



1) Input the RMS RING COUNT and press
   'ENTER'.

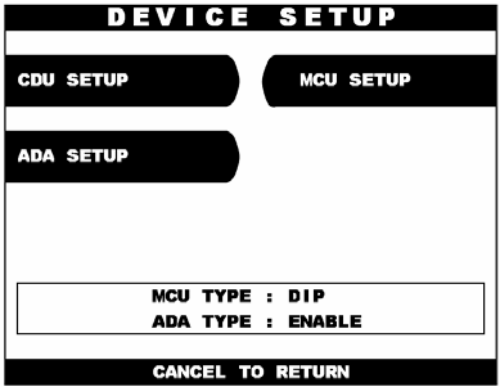
4.2.7 Speaker Volume

The SPEAKER VOLUME function is used to set the speaker volume. With using ◀ , ▶ key an operator can hear the beep sound.

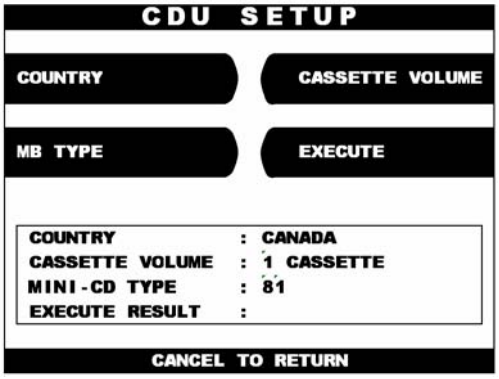
1) Set your speaker volume by th using ◀ , ▶ key.

4.2.8 Device Setup

The DEVICE SETUP menu enables you to set up the additional function of some modules such as Cash Dispenser, Card Reader, ADA. You can change denomination as well as the number of cassette from CDU Setup menu and select dip or swipe type of card reader. Moreover, you can select “Enable” or “Disable” of voice guidance for the visually handicapped



1) Select the ‘CUD SETUP’ from the DEVICE SETUP menu



2) You can set up the each information such as country, cassette volume, the type of cash dispenser by inputting the correspondence button.

4.3 Host Setup Menu

The HOST SETUP function of the OPERATOR FUNCTION includes the following:

KEY MANAGEMENT
- **MASTER KEY INDEX**
- **CHECK MASTER KEY**
- **EDIT MASTER KEY**
- **SET MASTER KEY SERIAL NUMBER**

TELEPHONE NUMBER

ID SETUP
- **TERMINAL NUMBER**
- **ROUTING ID**
- **NET. USER ADDR (optional)**

HOST STATUS MESSAGE

CONNECT TIMER

REMOTE MONITOR
- **RMS EN/DISABLE**
- **RMS STATUS SEND EN/DISABLE**
- **PASSWORD**
- **REMOTE PHONE**
- **MODEM SPEED**

COMM. KEY D/N (optional)

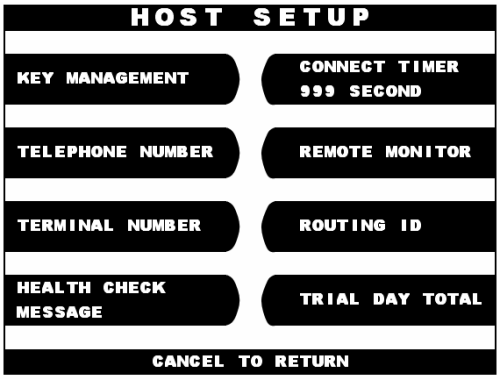
AUTO DAY TOTAL

4.3.1 Key Management

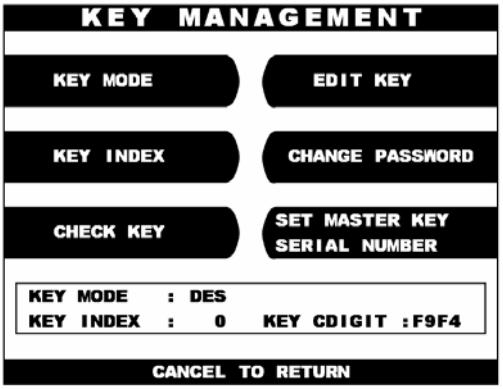
It is necessary to input proper password to enter Key Management. Default password will be “000000” for part #1 and “000000” for part #2
At this Key Management mode, 5 minute TIME OUT is designated for security from when the moment the Key Management is entered. If it takes over 5 minutes for you to input the Key Management or wait for this screen, you will be taken back to the Host Step Menu.

4.3.1.1 Master Key Mode

The MASTER KEY INDEX function is used to set the Master Key Index.
The range is 0 to 15.

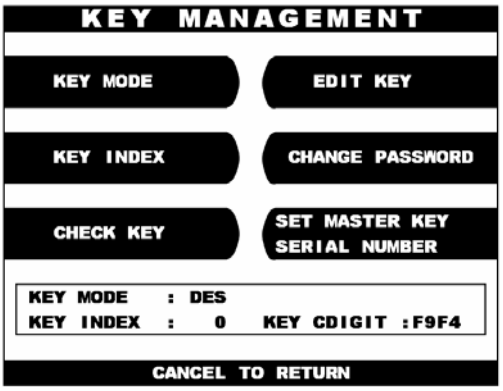


1) Select the ‘HOST SETUP’ from the OPERATOR FUNCTION menu.
Select the ‘KEY MANAGEMENT’ from the HOST SETUP menu and input the default password for part #1 and part #2 to enter this.

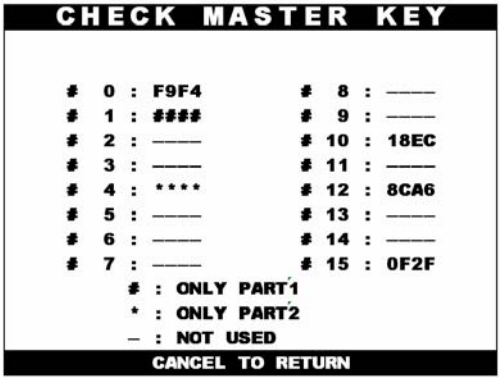


2) Select the ‘MASTER KEY MODE’ from the KEY MANAGEMENT menu.
There are so many kinds key mode to be selected such as DES, Dual Master Key, Unique Key+DES, TDES, Unique Key+TDES, MAC, Unique Key+MAC, TDES+MAC.Please refer to Chapter 6. Appendix D.1 about each detailed information

4.3.1.2 Check Master Key



1) Select the 'CHECK MASTER KEY' in the KEY MANAGEMENT menu.

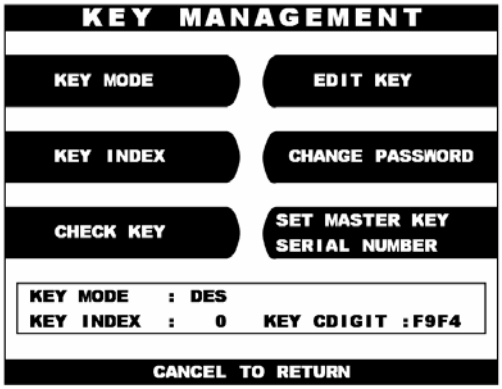


2) It will display the check sum of all injected master key.
'****' will be displayed on your screen
When a PART2 key only is input and '####" displayed when a PART1 key only is inputed.

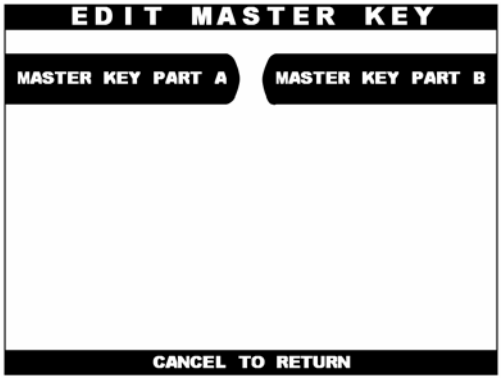
The CHECK MASTER KEY function is used to display the check sum of all injected Master Key. The master key which is displayed as "_____" means it is in empty state. If Check Sum value doesn't match after entering your master key, please reenter your master keys from the first or contact the processor.

4.3.1.3 Edit Master Key

The EDIT MASTER KEY function is used to enter the Master Key.
When you start entering Master Key, please refer to Chapter 6. Appendix D.2 Enter Master Key with about the EPP(Encrypted Pin Pad) Alpha-Numeric Key Layout. Especially, do NOT use the LCD buttons to enter the letters for the master key.



1) Select the ‘EDIT MASTER KEY’ in the KEY MANAGEMENT menu.



2) Select the ‘MASTER KEY PART1’ or ‘MASTER KEY PART2’ in the EDIT MASTER KEY menu.

3) Enter the master key index.

```
MASTER KEY INDEX
<# 0>
ENTER MKEY PART 1
[* * * * * * * *_]
```

4) Enter the Master Key PART 1.

```
MASTER KEY INDEX
<# 0>
VERIFY MKEY PART 1
[* * * * * * * *_]
```

5) Verify the Master Key PART 1.

```
MASTER KEY INDEX
<# 0>
ENTER MKEY PART 2
[* * * * * * * *_]
```

6) Enter the Master Key PART 2

```
MASTER KEY INDEX
<# 0>
VERIFY MKEY PART 2
[* * * * * * * *_]
```

7) Verify the Master Key PART 2.

```
MASTER KEY INDEX
<#  0>
CHECK SUM = 03B2
PRESS ENTER KEY
```

8) After inputting the Master Key, the check sum will be displayed. Press “ENTER” after confirming the check sum.

4.3.1.4 Change Password

This screen enable you to change the password for the secure mode of Key Management. Make sure that the changed password should be composed of 6 digits.
If you change the new password and forget it, you should clear RAM on the EPP to reset it. Then default password will be generated and you must input the Master Key from the first again.

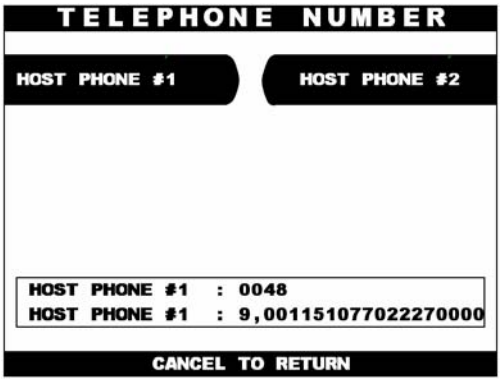
4.3.1.5 Set Master Key Serial Number

The MASTER KEY SERIAL NUMBER function is used to insert the ATM machine number for RMS (Mono : 1400000001 ~ 1499999999, Color : 1500000001 ~ 1599999999).

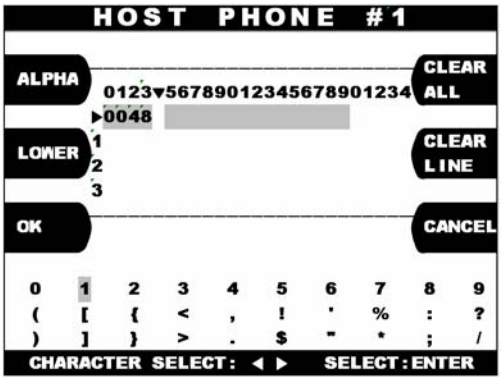
4.3.2 Telephone Number

The TELEPHONE NUMBER function is used to enter the Primary Telephone Number and the Back-up Telephone number of the host.

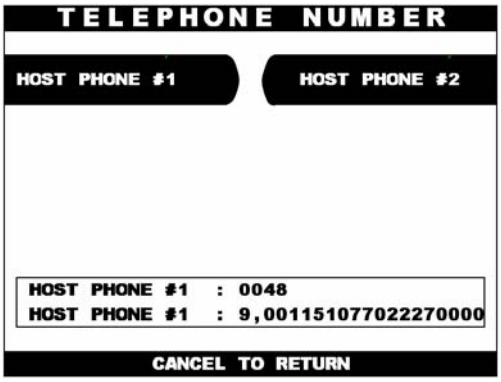
NOTE : Hyosung strongly recommend you to input not only the PRIMARY TELEPHONE NUMBRER of host but the DIFFERNET SECOND ONE for the purpose of a better communication status between terminal and host. Unless the Secondary Telephone number of host will be input for your mistake, the same number with Primary one will automatically be set.



1) Select the 'HOST PHONE #1' from the TELEPHONE NUMBER menu.



2) Enter the Host Phone number 1.
Please refer to Chapter 3.3.1.2 How to use keypad. If this ATM is connected to a outside line through a PBX type system, you may insert a couple of commas(,) to create some pause between numbers.



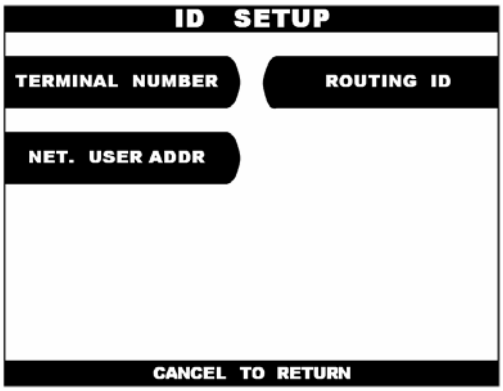
3) Please input the Back-up Telephone number of host to the 'HOST PHONE #2' as the same way above.

4.3.3 ID Setup (optional)

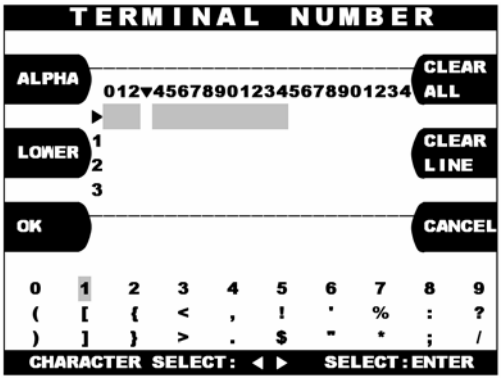
This menu just can be optionally supported by the request of specific customer !!

4.3.3.1 Terminal Number

The TERMINAL NUMBER function is used to set the Terminal Number of NH-1500.
It is a unique number of NH-1500 to be provided by the processor and identifies your ATM on the network. You will get the Terminal Number from either your dealer or data processing company.



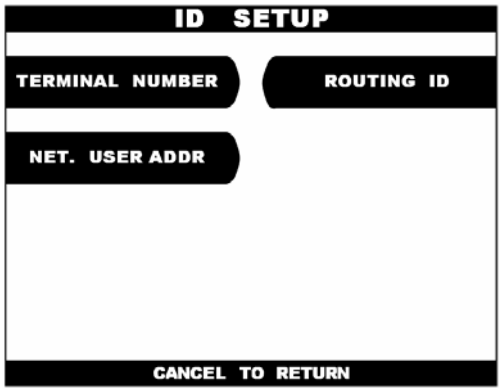
1) Select the 'TERMINAL NUMBER' in the ID SETUP menu.



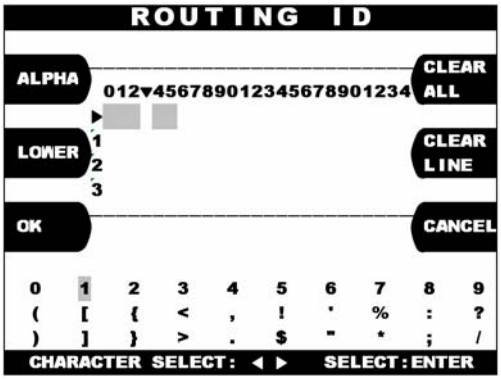
2) Enter the Terminal Number.
Please refer to Chapter 3.3.1.2 how to use keypad.

4.3.3.2 Routing ID

The ROUTING ID function is used to set the Routing ID Number of NH-1500.
It is also a unique number of NH-1500 depending on the data processor or communication equipments to be connected. You will get the Routing ID number from either your dealer or data processing company.
If Host Processor mode is set to STANDARD 3 or ST3+LINK, then No Routing ID number will be used.



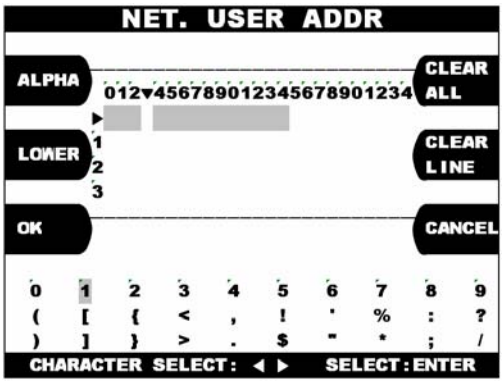
1) Select the 'ROUTING ID' in the ID SETUP menu.



2) Enter the desired Routing ID number.
Please refer to Chapter 3.3.1.2 and 3.3.1.3 concerning how to use keypad.

4.3.3.3 Net User Address (optional)

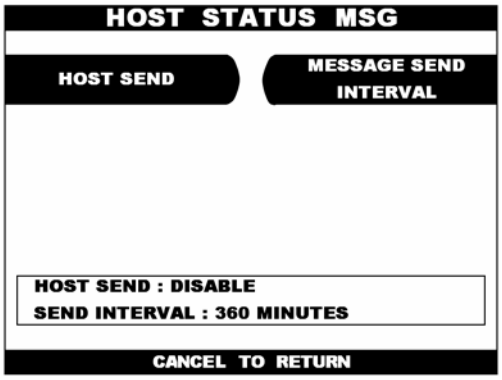
The NET. USER ADDR function is used to set the NETWORK USER ADDRESS Number of NH-1500.



1) Enter the desired NET. USER ADDR number.
Please refer to Chapter 3.3.1.2 and 3.3.1.3 concerning how to use keypad.

4.3.4 Host Status Message

The HOST SEND function is used to set HOST SEND MESSAGE to be enabled or disabled.
The MESSAGE SEND INTERVAL function is used to set INTERVAL TIME.
If Host Processor mode is set to STANDARD 3 or ST3+LINK, then Heartbeat Interval Message should be DISALBLED.



1)Select the 'HOST SEND' and 'MESSAGE SEND INTERVAL' from the HOST STATUS MESSAGE menu.

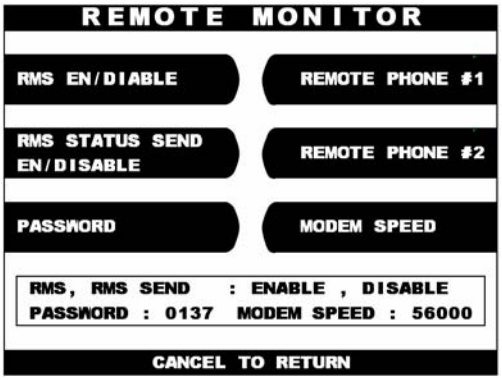
4.3.5 Connect Timer

The CONNECT TIMER function is used to set the waiting timer during connecting to the host. After powering on the machine, the machine will try to connect to the host. However when the machine fails to connect to the host, it will wait for a while and will attempt to connect again. This function is used to set the waiting time. The factory default is 60 second.

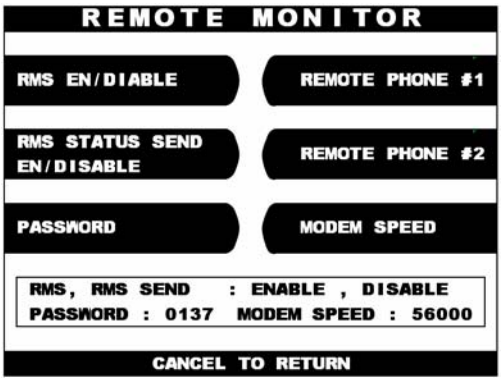
4.3.6 Remote Monitor

4.3.6.1 RMS EN/DISABLE

The RMS(Remote Management System) EN/DISABLE function is used to connect with the RMS mode in enabled or in disabled. The factory default is enabled.



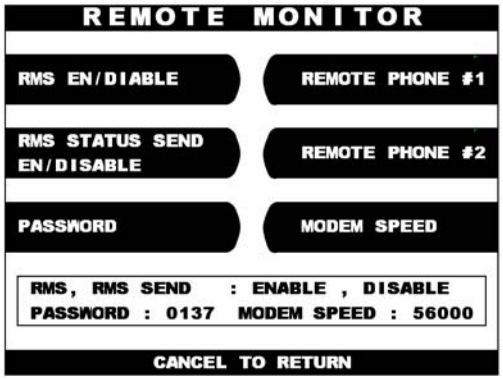
1) Select the 'RMS EN/DISABLE' from the REMOTE MONITOR menu.



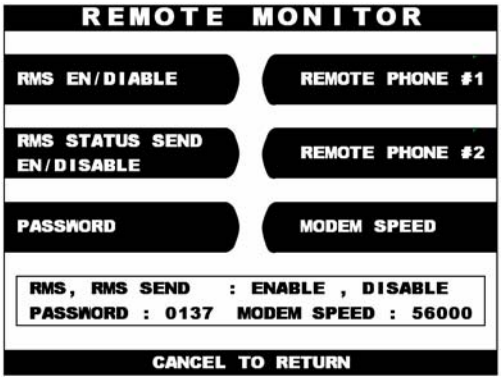
2) When you press the RMS EN/DISABLE key, it will be changed to be enabled or disabled.

4.3.6.2 RMS Status Send En/Disable

The RMS(Remote Management System) STATUS SEND EN/DISABLE function is used to send NH-1500 status to the RMS when NH-1500 status is changed. The factory default is disabled.



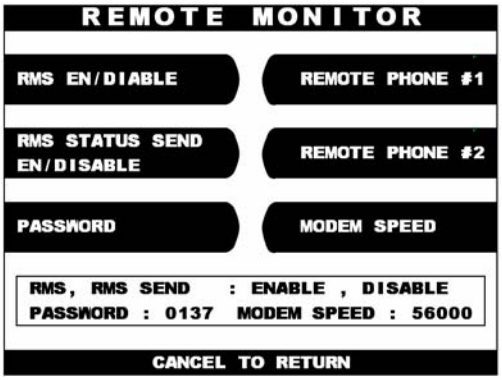
1) Select the 'RMS STATUS SEND EN/DISABLE' in the REMOTE MONITOR menu.



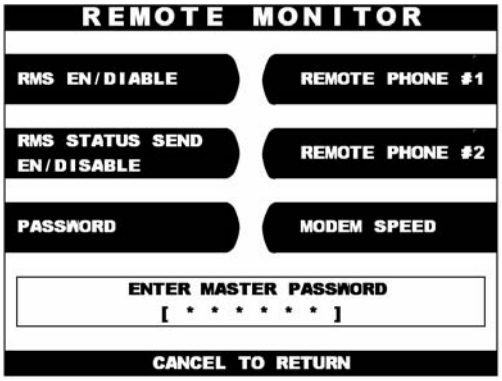
2) When you press the RMS STATUS SEND EN/DISABLE key, it will be changed to be enabled or disabled.

4.3.6.3 Password

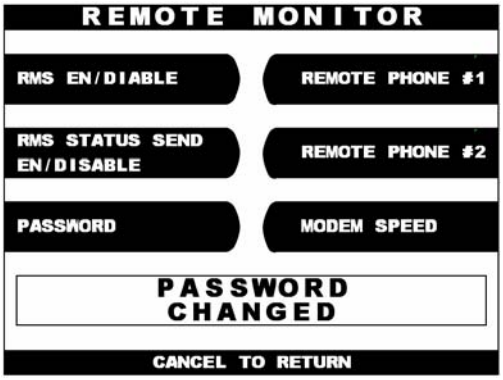
The PASSWORD function is used to set the RMS password to connect to NH-1500 from RMS. The factory default RMS Password is "333333".



1)Select the 'PASSWORD' in the REMOTE MONITOR menu.



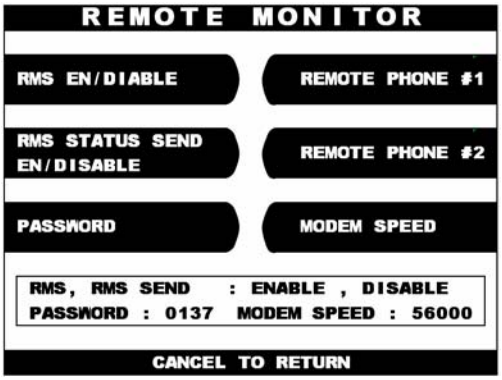
2) Enter the MASTER Password and then enter the new RMS Password twice in order



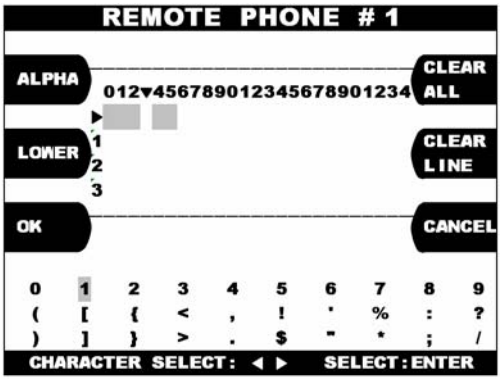
3) The password will be changed.

4.3.6.4 Remote Phone

The REMOTE PHONE function is used to input the RMS Primary Telephone Number and the Back-up Telephone Number.



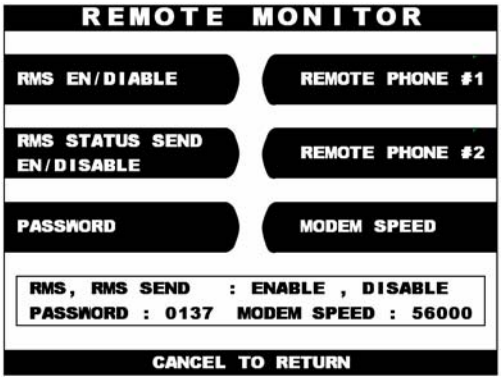
1) Select the ‘REMOTE PHONE #1’ and #2 in the REMOTE MONITOR menu.



2) Enter the first Remote Phone number.
Please refer to Chapter 3.3.1.2 and 3.3.1.3 concerning how to use keypad.

4.3.6.5 Modem Speed

The MODEM SPEED function is used to set the Modem speed of RMS and NH-1500.



1) When you press the MODEM SPEED key, the speed will be changed to 300bps up to 56,600bps.

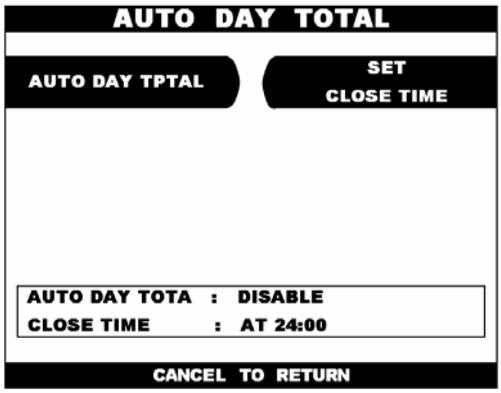
4.3.7 Comm. Key D/N (optional)

The COMM. KEY D/N function is used to set working key.

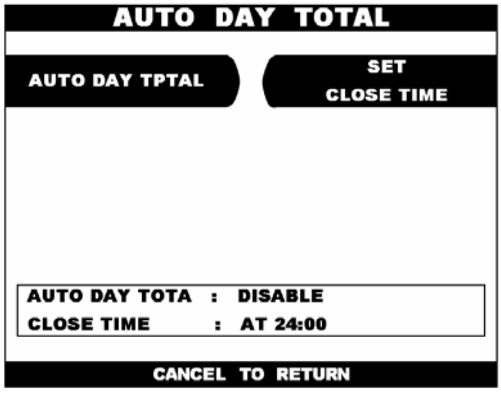
1) Select the 'COMM. KEY D/N' in the HOST SETUP menu. If you press 'COMM. KEY D/N' key, it will receive a working key from host.

4.3.8 Auto Day Total

The AUTO DAY TOTAL function is used to run automatic action of DAY TOTAL.



1)Select the ‘CLOSE TIME’ in the HOST SETUP menu.
If you press ‘AUTO DAY TOTAL’ key, it will be changed to be enabled or disabled.



2) If you press ‘SET CLOSE TIME’ key, it will set close time.

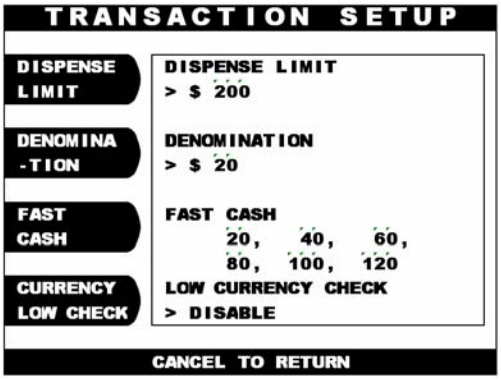
4.4 Transaction Setup Menu

The TRANSACTION SETUP function of the OPERATOR FUNCTION includes the following:

DISPENSE LIMIT
DENOMINATION
FAST CASH
CURRENCY LOW CHECK

4.4.1 Dispense Limit

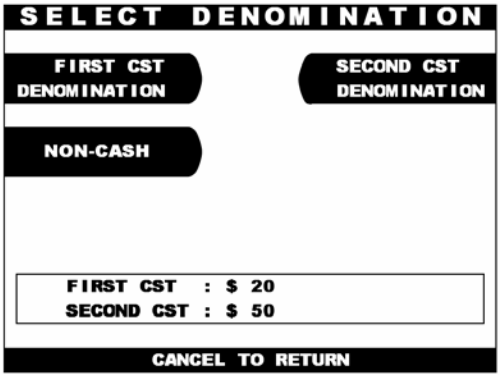
The DISPENSE LIMIT function is used to set the maximum amount of notes that can be dispensed per transaction. The maximum amount must be multiples of denomination. And the maximum number of notes must not be over totals of 40 notes. The factory default is $200.



1) Select the 'TRANSACTION SETUP' in the OPERATOR FUNCTION menu.
   Enter the desired dispense limit after pressing the Dispense Limit screen key.

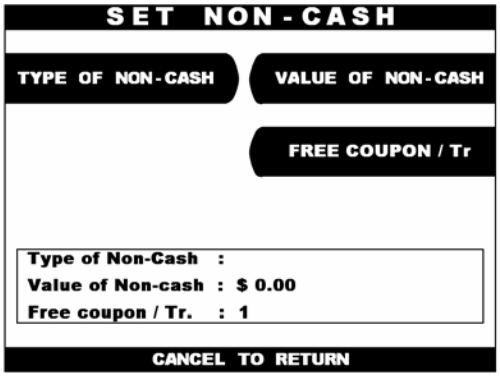
4.4.2 Denomination

The DENOMINATION function is used to set the denomination of notes to be set in the cassette. The valid denomination is $1, $2, $5, $10, $20, $50, $100. The factory default is $10 and $20.

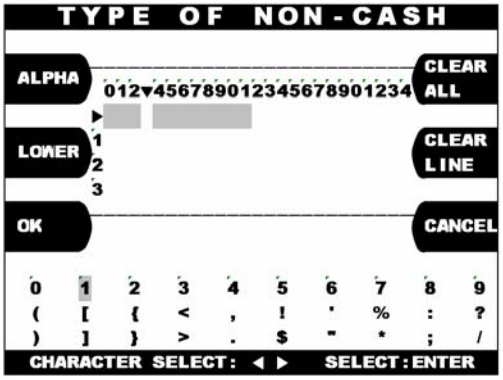


☞ **Above screen is an example for Cash Dispense Unit having 2 cassettes.**

1) Select the 'DENOMINATION' in the TRANSACTION SETUP.
   Enter the desired denomination of bills after pressing the Denomination key. To set denomination on the second cassette, press the SECOND CST DENOMINATION button



2) When you set the second cassette denomination to $0 you will have access to the Set Non-Cash menu. This menu will allow you to set the type of non-cash item to be dispensed from the second cassette



3) If you are going to sell a non-cash item like a voucher for stamps, this is where you will set the name of the item to be sold. The text you enter for this will appear as an option to the customer after they swipe their card and enter the PIN. To set the type of non-cash coupon, press the button and enter the name into the screen shown to the left.

Value of Non-Cash

This sets the value for the non-cash item to be dispensed from the second cassette. For example, if you were going to be dispensing a voucher for a $5 book of stamps, you would set he value to $5.00

Free Coupon / TR.

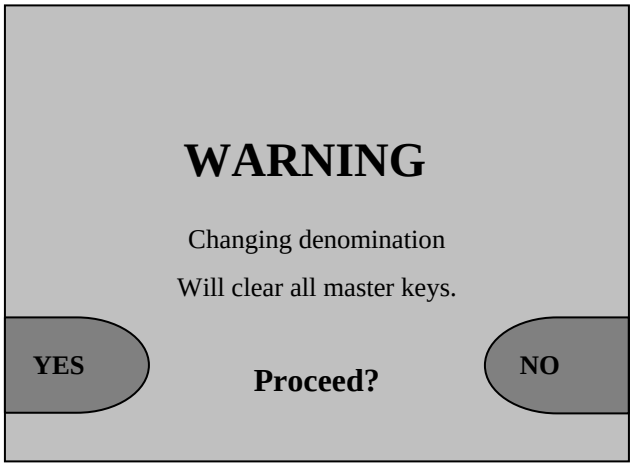
This allows you to dispense free coupons with each transaction. If you set the value of non-cash to $0.00, you can specify a number (1-25) of coupons to dispense. To set this amount, press the Free Coupon / Tr. Button and then enter the amount from the main keypad. Press enter when finished.

Changing Denomination:

With this new AP software, changing the cassette denomination (Transaction Setup) will cause all master keys to be erased from the EPP keyboard. The purpose of this is to prevent unauthorized access to this critical parameter.

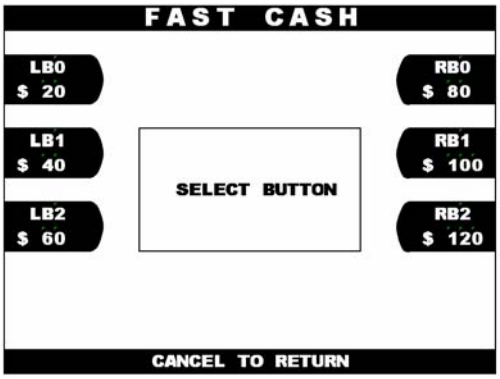
When programming the terminal, make certain that you change the denomination setting (If you intend to)BEFORE programming your master key.

You'll be prompted by the Warning screen shown before you can change the denomination



4.4.3 Fast Cash

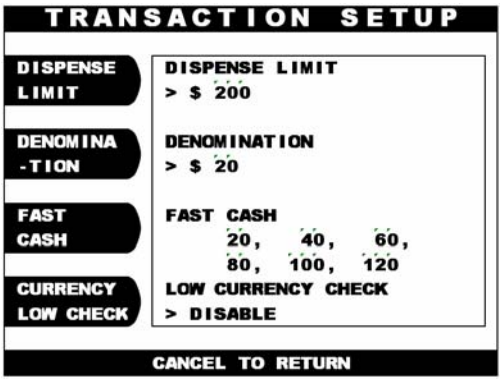
The FAST CASH function is used to set the cash amount, which is to be displayed on the FAST CASH screen. The maximum amount must be less than the Dispensable Limit. The factory default is $20, $40, $60, $80, $100, $120.



1) Select the 'FAST CASH' in the TRANSACTION SETUP menu.
   You can change the fast cash amount LB0 to LB2 and RB0 to RB2 by pressing the button.

4.4.4 Currency Low Check

The CURRENCY LOW CHECK function is used to set the cassette low level detection. If this function is enabled, the machine will be changed to "OUT OF SERVICE" when notes are not enough in the cassette. The factory default is in disable.



1) If you want to enable the Low Currency check function, press the Currency Low Check screen key once.

Chapter 5. DIAGNOSTICS

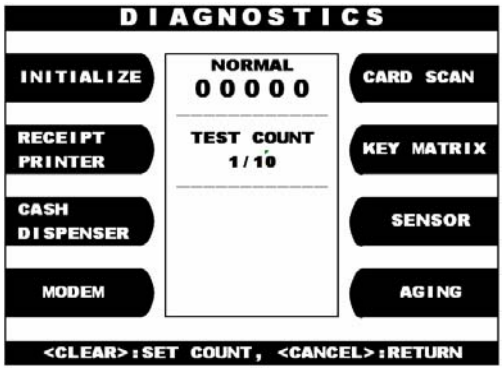
Diagnostics provide important information about the status of the ATM. This performs self-tests on the major units to help determine and isolate any malfunctions or errors.

The Diagnostic function of Operator Function includes the following:

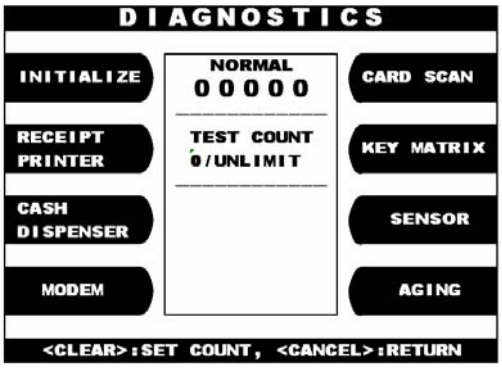
INITIALIZE
RECEIPT PRINTER
CASH DISPENSER
MODEM
CARD SCAN
KEY MATRIX
SENSOR
AGING

Changing the TEST COUNT

The TEST COUNT means the number of test.



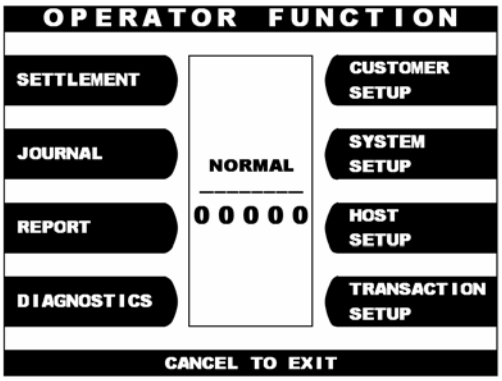
1) If you want to change the test count, press “CLEAR” then input the test count and press “ENTER”.



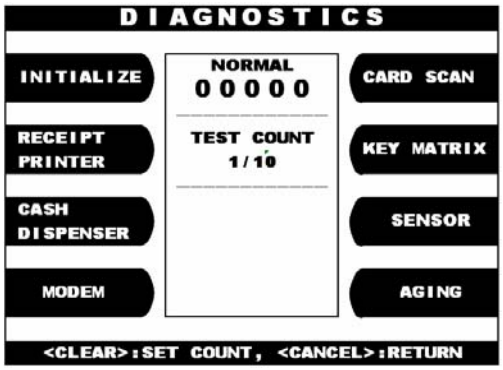
2) If you input ‘0 (zero)’, the test count will be changed to unlimited.

5.1 Initialize

The INITIALIZE has the function of resetting each unit of the NH-1500. If an error occurs while executing, the system will stop and display an error code. Confirm the detailed error description in the ERROR CODE of REPORT MENU.



1) Select 'DIAGNOSTICS' from the OPERATOR FUNCTION.

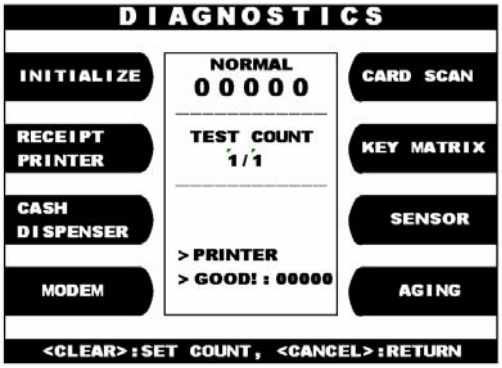


2) Select the 'INITIALIZE' from the DIAGNOSTICS menu. And then all units will start initializing.

3) When the ATM is in the normal state, the GOOD message will be displayed.

5.2 Receipt Printer

The RECEIPT PRINTER has the function of printing a sample receipt and cutting out one receipt. If an error occurs while executing, the system will stop and display an error code. Confirm the detailed error description in the Chapter 3.3.4.1 ERROR CODE of REPORT MENU.

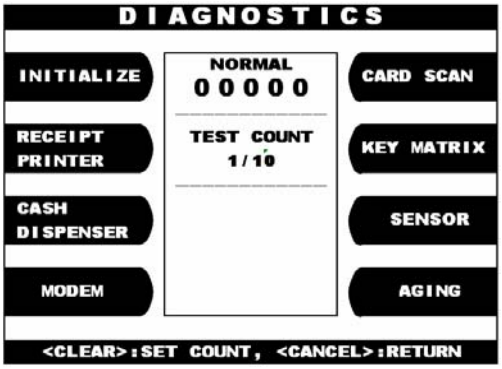


1) Select the 'RECEIPT PRINTER' from the DIAGNOSTICS menu.
When the ATM is in the normal state, the GOOD message will be displayed.
You can set test count you want this test to run by pressing CLEAR button

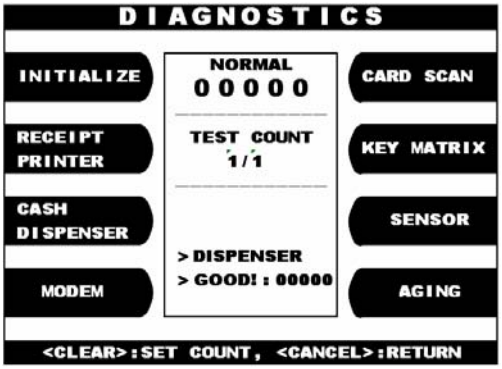
2) If this test is successful, you will get the receipt, as shown in the left picture, written a pattern of characters

5.3 Cash Dispenser

The CASH DISPENSER has the function of testing the dispense mechanisms. This function will dispense one note from the cassette and dump it into the reject bin. If an error occurs, the system will stop and display an error code. Confirm the detailed error description in the ERROR CODE of REPORT MENU.



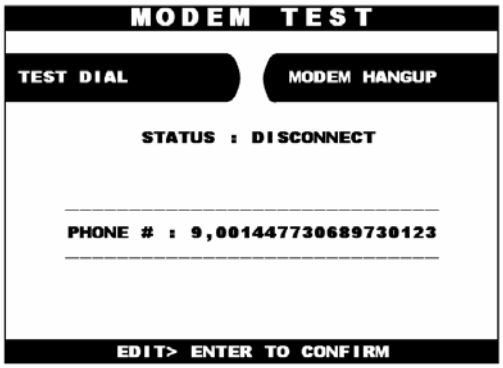
1) Select the CASH DISPENSER from the DIAGNOSTICS menu.
   The CASH DISPENSER test will be performed.



2) When the ATM is in normal state, the GOOD message will be displayed.

5.4 Modem

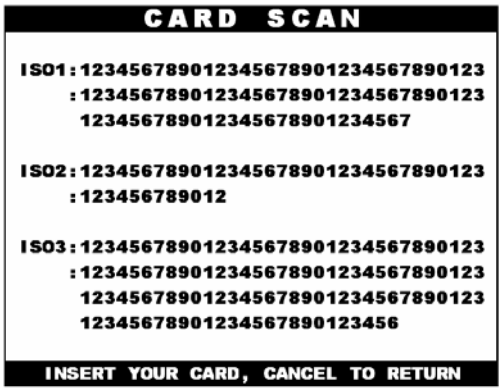
The MODEM has the function of testing the ATM's modem for any errors. When the telephone input is displayed after pressing the TEST DIAL key, input a known good telephone number, which the modem will dial to verify its ability to access the telephone line and perform a dialing operation. It is also good to input the your mobile phone number to check the modem status as the fastest way.
The TEST DIAL function is used to check the function of the modem dial and the MODEM HANGUP function is used to hang-up the dialing after using TEST DIAL.
If an error occurs, the system will stop and display an error code. Confirm the error description in the ERROR CODE MENU.



Select the 'MODEM' in the DIAGNOSTICS menu. The MODEM TEST will be displayed.

5.5 Card Scan

The CARD SCAN has the function of testing the magnetic stripe reader and the card itself. This function uses a series of dialogs to report the operation of the card reader

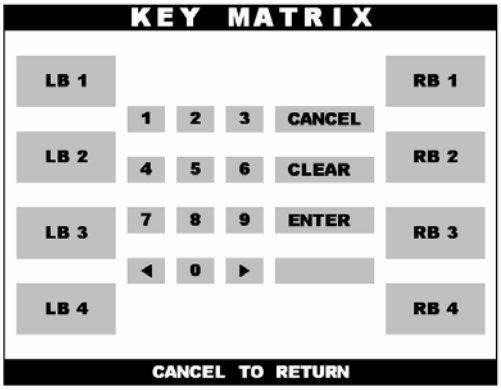


Select 'CARD SCAN' in the DIAGNOSTICS menu. And if the display is ready, please insert and remove the card quickly. If the card can be read properly, the information from the tracks on the card will be displayed.

If the card is damaged or not a standard format, any data will not be displayed. If this happens. The card cannot be used for the transactions on the ATM,

5.6 Key matrix

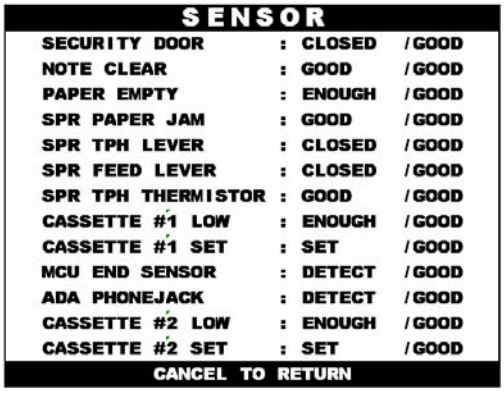
The KEY MATRIX has the function of testing the key pad. This function enable you to verify proper operation of the numeric, function, and control button on the Pin Pad



Select 'KEY MATRIX' from the DIAGNOSTICS menu.
Select the desired key to be tested and the key being pressed will blink on the display.

5.7 Sensor

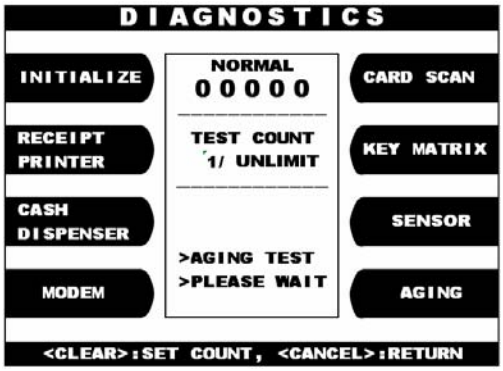
The SENSOR has the function of testing if all the sensors in unit are in proper working condition. The sensors are tested by blocking or unblocking the sensors.
If the sensor is not in good condition, please take proper actions to recover the normal status as soon as possible.
For example remove the jams on transport path, check the sensor connection and status by cleaning it up using a blower or air gun, replenish the cash in cassette.



Select 'SENSOR' from the DIAGNOSTICS menu.
All SENSOR data will be displayed.

5.8 Aging

The AGING function is mainly used at the factory. If you want to test all units a lot of times without stopping, this function enable you to test unlimitedly.



Select ‘AGING’ from the ‘DIAGNOSTICS’ menu.
All units will be tested unlimitedly.
When you press “CANCEL” key, the testing will be stopped.

Chapter 6. APPENDIX

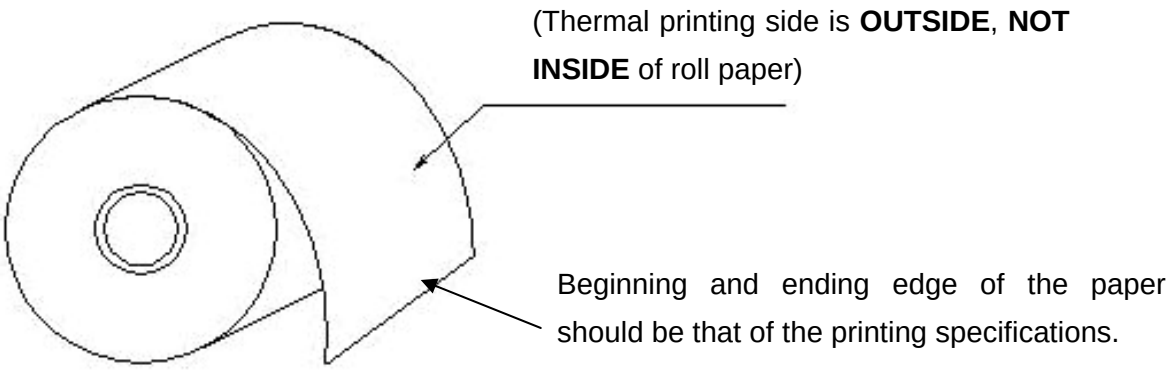
A. RECEIPT PAPER SPECIFICATIONS

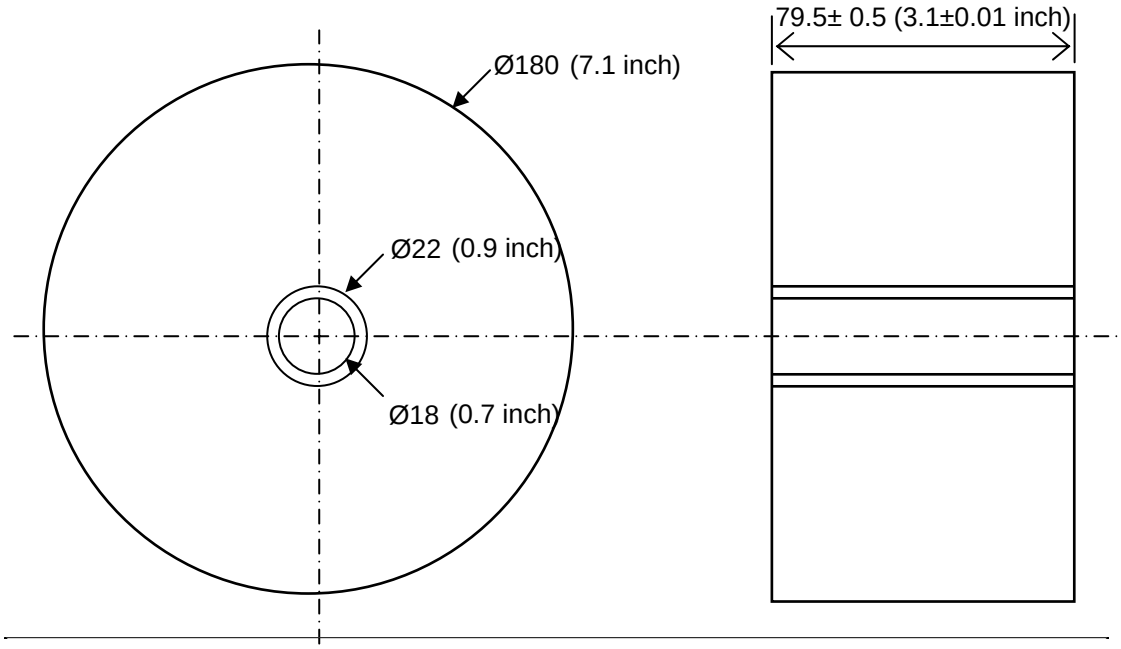
Paper type: Thermal roll paper

Print color: Black

Specification : Paper detects heat.

Roll enough for 3,200 slips.(in case of 72gsm paper)





- All measurements are in mm.

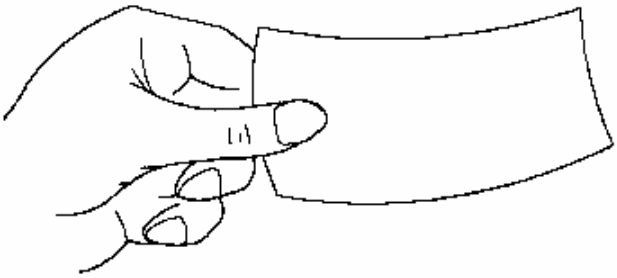
B. BILL CONDITIONS

B.1 Acceptable condition

- Bill which is very clean and can readily be recognized as a true bill

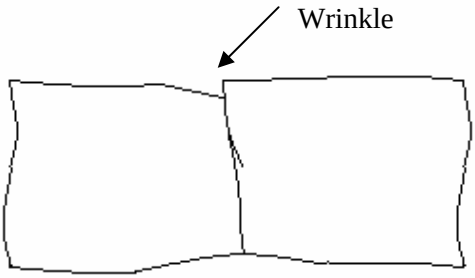
- Bill which has sufficient life or sizing to be handled easily

- Bill which can be manually held straightly when one end is held by a hand and the bill is slightly curved vertically

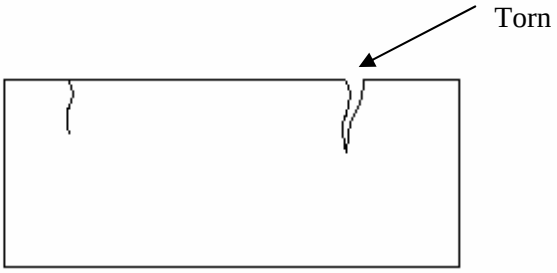


B.2 Unacceptable condition

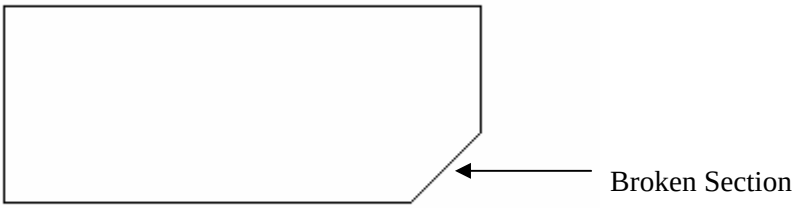
- Bill having serious wrinkles, torn or broken section wherein paper fiber is broken and separation begins
  - ✓ Wrinkle



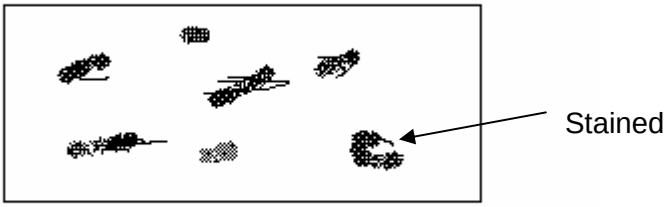
  - ✓ Torn



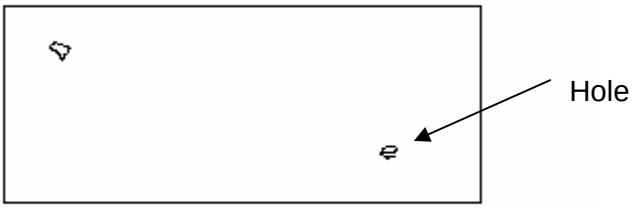
  - ✓ Broken section



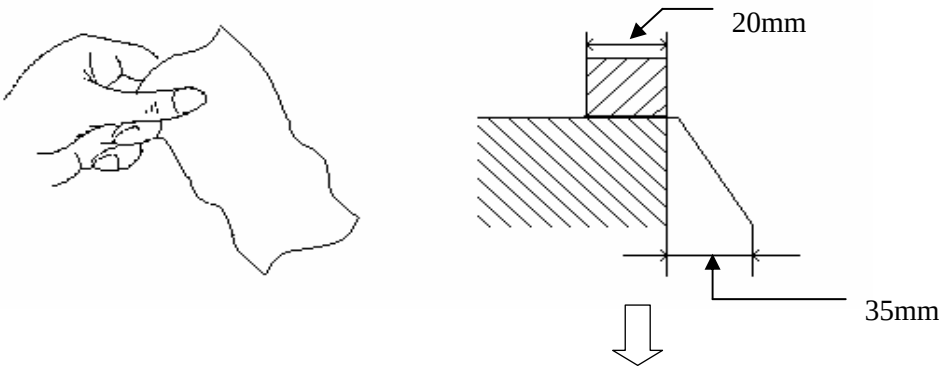
Bill having adequate life or sizing, but stained seriously



- Bill with holes (Perforated bill)

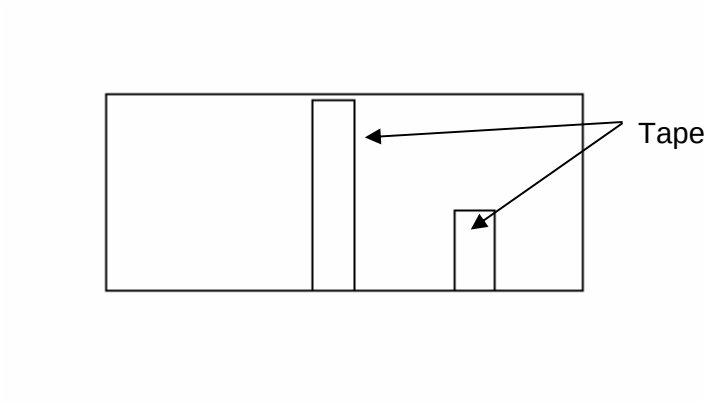


- Bill ragged and cannot be held straightly when one end is supported by a hand

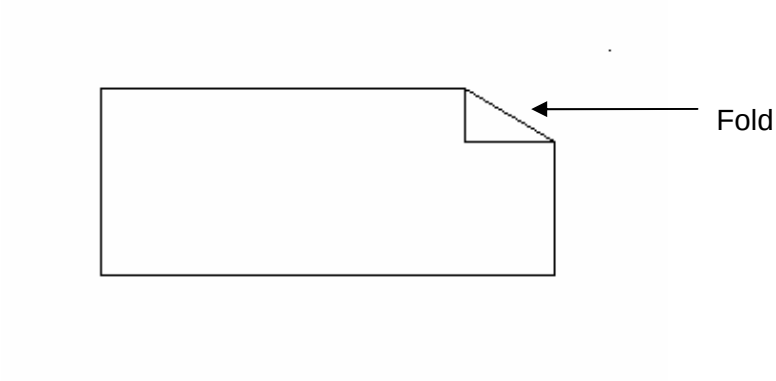


When the bill is held by 20mm and the straightness of the bill is 35mm or less, it cannot be used

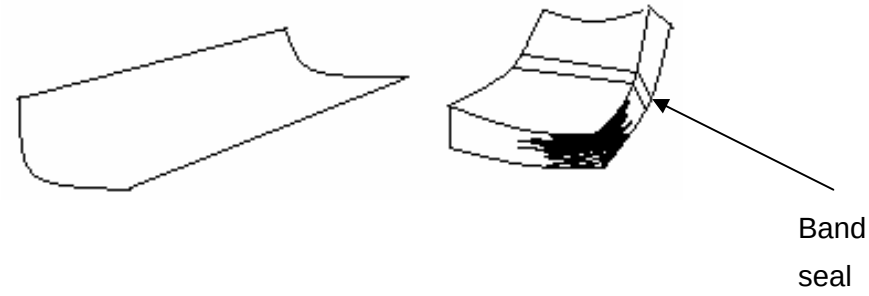
- Bill with cellophane tape, scotch tape, etc



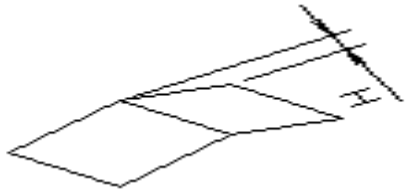
- Bill with folds



- Gradually curved bill (bills tied by hand seal, etc)

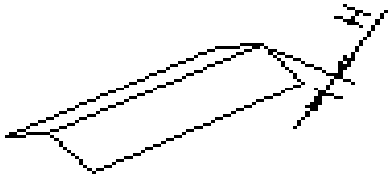


- Bill with folded lines
  - ✓ Case 1



  - ✓ Case 2

  - ✓ Case 3



☞ Bill distortion should not exceed 10 mm

C. ERROR CODES

ERROR CODES	ERROR DESCRIPTION	CORRECTIVE ACTION
10301	DEV_PIN	
20001	Unable to load a cassette.	Removed and replace cassette–Check the micro-switch located on the inside left wall of the dispenser.
20002	Low cash.	Replenish the cash-if using less than 75 bills, disable the “Low Cash Warning” in the Transaction Setup Menu.
20002	Cassette empty	
20003	Reject Bin full.	Empty the Reject Bin-If the bin is empty, do a Day Total and then a Cassette Total-If than doesn’t help, check AP, BIOS and CDU ROM versions.
20004	Vault Door is open.	Close the vault door. Check door switch.
20004	Door opened	Close the vault door. Check door switch.
20005	Cash Dispenser Unit data (country, cassette, shutter) setting error occurs during initialization.	1. Check Cash Dispenser Unit information. 2. check battery back-up SRAM.
20010	Receipt paper jam	Remove any jammed paper from the printer.
20011	TPH Headup Lever Open	Check Headup Lever.
20012	Receipt printer feed plate open	Close the feed plate.
20013	Out of receipt (Receipt paper empthy)	Replenish the receipt paper.
20014	Receipt printer head overheated before printing	Check the printer head and change if necessary.
20016	Note detected in stacker (shutter or presenter type)	Clear any notes from the stacker.
2XX15	Cash Dispenser detects	Remove any jammed bills from the dispenser.
20101	Receipt printer lever opened	1. Close the lever of print head completely
20102	Receipt printer head overheated	1. Wait the time until the temperature of head adequately slow down and try to initialize
20103	Receipt paper jam	1. Remove jammed paper between printer head and rollers
20104	Receipt paper empty	1. Replenish receipt paper 2. Check the status of sensor and its connector
20105	Receipt paper setting error	1. Check the status of setting paper 2. Check the status of sensor and its connector
20106	Command is received while doing self-test	1. After terminating self-test and initialize receipt printer
20107	No receipt paper	1. Replenish receipt paper in paper charger 2. Check the status of Near End sensor and its connector
20108	Receipt paper cutting error	1. Check the Cutter module 2. Check if printer head lever is properly close
20109	No sensing black mark (dark sensor)	1. Check the status of Black mark sensor 2. Check if Dip switch # 6 is correctly set (Dip switch # 6 is set by On in case of not using Black mark)

ERROR CODES	ERROR DESCRIPTION	CORRECTIVE ACTION
2010A	The size of image print data is abnormal	1. Check the AP version and initialize
20215	Sensor detects note in delivery path before CDU dispenses	Remove note from the CDU delivery path.
20801	Receipt printer lever opened	1. Close the lever of print head completely
20802	Receipt printer head overheated	1. Wait the time until the temperature of head adequately slow down and try to initialize
20803	Receipt paper jam	1. Remove jammed paper between printer head and rollers
20804	Receipt paper empty	1. Replenish receipt paper 2. Check the status of sensor and its connector
20805	Receipt paper setting error	1. Check the status of setting paper 2. Check the status of sensor and its connector
20806	Command is received while doing self-test	1. After terminating self-test and initialize receipt printer
20807	No receipt paper	1. Replenish receipt paper in paper charger 2. Check the status of Near End sensor and its connector
20808	Receipt paper cuttimg error	1. Check the Cutter module 2. Check if printer head lever is properly close
20809	No sensing black mark (dark sensor)	1. Check the status of Black mark sensor 2. Check if Dip switch # 6 is correctly set (Dip switch # 6 is set by On in case of not using Black mark)
2080A	The size of image print data is abnormal	1. Check the AP version and initialize
21315	CS4 sensor detects note in delivery path befoe CDU dispenses Sensor is located along the delivery path right before the reject bin.	Remove note from the CDU delivery path.
21A15	CS1A sensor detects note in delivery path before CDU dispenses. Sensor is located along the delivery path right after where the note exits the 1st cassette.	Remove note from the CDU delivery path.
21B15	CSB sensor detects note in delivery path before CDU dispenses Sensor is located along the delivery path right after where the note exits the 1st cassette.	Remove note from the CDU delivery path.
24A15	CS3A sensor detects note in delivery path before CDU dispenses Sensor is located along the delivery path right after where the note exits the 3rd cassette.	Remove note from the CDU delivery path.
24B15	CS3B sensor detects note in delivery path before CDU dispenses Sensor is located along the delivery path right after where the note exits the 3rd cassette.	Remove note from the CDU delivery path.
40000	Cash Dispenser(CDU) received the undefined command from AP software	1. Get the trace file and log files in "D:\trace" 2. Call your attendant

ERROR CODES	ERROR DESCRIPTION	CORRECTIVE ACTION
40011	Notes are detected on tray(CS2 Sensor) before dispensing	1. Remove notes on CS2 sensor 2. Clean CS2
40014	CS4A sensor detects note in delivery path before/after CDU dispenses	1. Remove note from the CDU delivery path. 2. Clean CS4A
40015	CS2 or CS4A sensor detects note in delivery path before/after CDU dispenses	1. Remove note from the CDU delivery path. 2. Clean CS2 and CS4A
40018	CS4B sensor detects note in delivery path before/after CDU dispenses	1. Remove note from the CDU delivery path. 2. Clean CS4B
40019	CS2 or CS4B sensor detects note in delivery path before/after CDU dispenses	1. Remove note from the CDU delivery path. 2. Clean CS2 and CS4B
4001C	CS4A or CS4B sensor detects note in delivery path before/after CDU dispenses	1. Remove note from the CDU delivery path. 2. Clean CS4A and CS4B
4001D	CS2, CS4A or CS4B sensor detects note in delivery path before/after CDU dispenses	1. Remove note from the CDU delivery path. 2. Clean CS2, CS4A and CS4B
40021	CS1A sensor detects note in delivery path before/after CDU dispenses	1. Remove note from the CDU delivery path. 2. Clean CS1A
40022	CS1B sensor detects note in delivery path before/after CDU dispenses	1. Remove note from the CDU delivery path. 2. Clean CS1B
40023	CS1A or CS1B sensor detects note in delivery path before/after CDU dispenses	1. Remove note from the CDU delivery path. 2. Clean CS1A and CS1B
40028	CS13 sensor detects note in delivery path before/after CDU dispenses	1. Remove note from the CDU delivery path. 2. Clean CS13
40029	CS1A or CS13 sensor detects note in delivery path before/after CDU dispenses	1. Remove note from the CDU delivery path. 2. Clean CS1A and CS13
4002A	CS1B or CS13 sensor detects note in delivery path before/after CDU dispenses	1. Remove note from the CDU delivery path. 2. Clean CS1B and CS13
4002B	CS1A, CS1B or CS13 sensor detects note in delivery path before/after CDU dispenses	1. Remove note from the CDU delivery path. 2. Clean CS1A, CS1B and CS13
40030	Failed in checking the main motor echo	1. Initialize 2. Check Main Motor Encoder Slit 3. Initialize after Power On/Off 4. Check Encoder Sensor CS8 BRKT 5. Check CS8 Sensor Cable 6. Change Main Motor Encoder Slit Sensor CS8
40031	Failed in checking the reject gate solenoid echo	
40032	Failed in checking the present gate solenoid echo	
40033	Check sum error (No information is set)	1. Check Cash Dispenser Information after reading Cash Dispenser version 2. Initialize 3. Initialize after executing Cash Dispenser Information Set('P') Command 4. Change Cash Dispenser B/D

ERROR CODES	ERROR DESCRIPTION	CORRECTIVE ACTION
40034	Error of two sheets detecting sensor(CS5_1) for initializing	1. Check CS5_1 Sensor Cable 2. Check second Dip Switch in Cash Dispenser B/D 3. Change CS5_1 Sensor
40036	Error of CS 2, CS13 sensor during initialization	
40037	Error of 2 sheets detecting sensor(CS5_1/CS5_2) for dispensing	1. Check Cash Dispenser Board Segment 2. Initialize 3. Read data of 'Read Double Sensor' Command
40038	Error in checking SRAM	
40039	Gate operation sensor (CS3) error before initial recovery	1. Initialize after removing notes or dust over Gate 2. Check CS3 Sensor BKRT 3. Check CS3 Sensor Cable 4. Exchange Sensor after abnormal operating CS3 Gate detecting Sensor 5. Replace Reject Solenoid 1
4003A	When more than 5 sheets of cash dispensing is required during a test	1. Check command that Cash Dispenser is received 2. Check Cash Dispenser EP ROM Version or specification
4003B	When CS15A or CS 15B sensor is detected as dark after initial recovery	1. Remove notes or dust on CS15A Sensor 2. Check CS15A Sensor Cable 3. Exchange Sensor after abnormal operating CS15A Sensor
40040	Cassette is removed during dispensing	1. Check the cassette catcher 2. Set the cassette properly
40041	Error if re-driving is over 5 times during separated rejection	1. Check notes in Reject Box 2. Rearrange notes in Cassette 3. Remove dust in CS15AB, CS31AB, CS41AB CS1AB Sensor 4. Check dust existing in CS5 Sensor Guide 5. Check dust existing in Main Motor Encoder Slit 6. Check index value of notes each cassette
40042	In case the number of notes detected outlet sensor(CS13) is less than the number of required notes	1. Check notes dispensed and rejected 2. Remove notes jammed in C 여 3. Remove dust in CS13 Sensor 4. Exchange sensor after abnormal operating CS13 Sensor

ERROR CODES	ERROR DESCRIPTION	CORRECTIVE ACTION
40043	Error if total reject is more than 20 sheets	1. Check notes in Reject Box 2. Rearrange notes in Cassette 3. Remove dust in CS1AB, CS15AB, CS31AB, CS41AB Sensor 4. Check dust in existence CS5 Sensor Guide 5. Check notes index value
40044	Error if continuous 5 times are rejected	1. Check notes in Reject Box 2. Rearrange notes in Cassette 3. Check dust in Main Motor Encoder Slit 4. Remove dust in CS15AB, CS31AB, CS1AB Sensor 5. Exchange CS8 Encoder Slit Sensor
40045	In case the number of notes detected outlet sensor(CS13) is more than required notes.	1. Check notes dispensed and rejected 2. Remove dust in CS13 Sensor 3. Exchange sensor after abnormal operating CS13 Sensor
40046	Program error(Separated rejection)	1. Initialize after Reset Power 2. Upgrade Cash Dispenser Firmware or Re-download 3. Exchange Cash Dispenser B/D
40047	1 cassette misfeed error (Separated rejection)	1. Check notes in 1 Cassette 2. Check Sensor(CS6) Poll 3. Check jam in 1 cassette and reload 4. Remove dust in CS1A, CS1B Sensor 5. Exchange 1 cassette box when there are many error
40049	Error to dispense 0 sheets to be required (Separated rejection)	1. Check received command 2. Check communication cable 3. Check Cash Dispenser Firmware Version
4004A	Error of note jam (Separated rejection)	1. Remove jammed notes on Cash Dispenser return path 2. Remove dust in CS1~CS4 sensor 3. Install after rearranging notes in cassette
4004B	Continuous 3 times error if note is long (once tried, twice retried)=>Separated rejection	1. Check state of notes in reject box 2. Rearrange notes in cassette 3. Check Index of notes 4. Check foreign objects in the main motor encoder slit 5. Replace the CS8 encoder slit sensor
4004C	In case the number of notes detected outlet sensor(CS13) is more than that of notes detected on CS1A,B sensor	

ERROR CODES	ERROR DESCRIPTION	CORRECTIVE ACTION
4004D	Error of being removed 1st cassette before separate rejection	
4004E	Error of being removed 2nd cassette before separate rejection	
40051	Received a request for over 150 notes dispensing on the Cash Dispenser from the upper unit.	1. Check the Cash Dispenser received command 2. Check the abnormal communication cable. 3. Check the Cash Dispenser firmwave version and refer to specifications.
40052	The remaining notes at the sensor in front of the CST after dispense operation (CS1A, CS1B)	1. Remove the remaining notes at a sensor in front of the CST 2. Realign notes in the cassette 3. Check abnormal clutch. 4. Check abrasion of the cassette box pick unit.
40053	Error for the double note detection during separation.	
40054	Cash Dispenser EP Program Error during dispense operation (failed table search)	1. Initialize after resetting the power 2. Upgrade the Cash Dispenser firmware or download software again 3. Replace the Cash Dispenser B/D
40055	Timeout due to note's length error passed through the CS13 during dispense operation	1. Remove a jammed note between the tray and Cash Dispenser 2. Remove a jammed note at the position of the CS13 sensor 3. Remove a dust on the CS13 sensor
40056	Abnormal operation of the gate solenoid during dispense operation.	1. Remove a jammed note on the gate 2. Remove notes in the reject box and remount the reject box 3. Check if the CS3 sensor bracket is bended. 4. Check if the CS3 sensor cable is disconnected (CN10 #9~10) 5. Exchange a sensor after abnormal operating CS3 Gate detecting sensor. 6. Replace the reject solenoid 1
40058	Retract box position error during command reserved operation	1. Mount the retract box or open the box cover 2. Check if CS62 sensor poll is abnormal 3. Check if the CS62 sensor cable is disconnected (Cash Dispenser Board CN10 #5~2).
40059	Initial jam time error	
4005B	2 Cassette Miss Feed Error (Fail to reject bill separately.)	

ERROR CODES	ERROR DESCRIPTION	CORRECTIVE ACTION
4005D	Continuously detected 2 notes for three times or more during dispense operation	1. Check notes' status in the reject box 2. Realign notes in the cassette 3. Check foreign objects at the position of the CS5 Sensor Guide 4. Check if the CS5 cable is disconnected (CS5_1:Cash Dispenser B/D CN10 #11~12, 25~28/ CS5_2:CN12)
40060	Something is detected in C31AB sensor before dispensing bills from 3rd cassette.	
40061	Something is detected in C31AB sensor before dispensing bills.	
40062	Bills are remained in CS1AB sensor after dispensing bills.	
40063	Bills are remained in CS31AB sensor after dispensing bills	
4006A	CS15AB ~ CS13 Time out(Jam) during dispensing bills from second cassette.	
4006B	Something is detected on CS31A, CS31B sensor during initialization	
40070	Something is detected on CS41AB sensor before dispensing bills from fourth cassette.	
40072	Something is detected on CS41AB sensor during dispensing bills.	
40073	Bills is remained in CS41AB sensor after dispensing bills.	
4007A	CS31AB ~ CS13 Time out (Jam) during dispensing bills from fourth cassette.	
4007B	Something is detected on CS41A, CS41B sensor in initialization	
4007C	Missfeed error in 4th cassette	
4007D	Trying to dispense bills from 4th cassette but the 4th cassette doesn't installed.	
40080	Something is detected on CS15AB sensor before dispensing operation	

ERROR CODES	ERROR DESCRIPTION	CORRECTIVE ACTION
40081	Something is detected in C15AB sensor during dispensing operation	
40082	Bill is remained in CS15AB sensor after dispensing operation	
4008F	CS13 sensor detects the notes with hole	1. Initialize Cash Dispenser (CDU) 2. Remove the holed note on CS13
4009A	CS31AB~CS13 Time out(Jam) during dispensing from 3rd cassette.	
4009D	Trying to dispense bills from 3rd cassette but the 3rd cassette doesn't installed.	
4009F	3 cassette miss feed error	
400AC	Something is detected on CS2 sensor after dispense operation	
400BC	Communication error - Command Length doesn't match.	
400BE	Bill pickup sensor(CS1, CS15) recognized has a hole and CS4 sensor detects it or CS4 snesor detects the gap too close	
400C7	Something is detected on CS12 sensor during dispensing bills or initialization.	
400C8	Something is detected on CS14 sensor during dispensing bills or initialization.	
400C9	Something is detected on CS14 sensor after dispense operation	
400CC	Bill is remained on the sensor in front of cassette during resetting.	
400D0	Bills are passed on CS13~CS12 sensor - Timeout[Jam]	
400D1	Bills are passed on CS12~CS14 sensor - Timeout[Jam]	
400FF	Bill jam	1. Remove the jammed notes 2. Initialize

ERROR CODES	ERROR DESCRIPTION	CORRECTIVE ACTION
4DN00	Cash Dispenser communication failure during sending command to cash dispenser	1. Do RESET at Operator Function 2. Reboot ATM
4DN01	Cash Dispenser communication failure during receiving command to cash dispenser	1. Do RESET at Operator Function 2. Reboot ATM
90001	Card Swipe Error.	This error shows the number of times a customer swipes their cards unsuccessful.
991@@91	ON TRANSACTION POWER OFF	1. Check power supply 2. Check backup battery

ERROR CODES	ERROR DESCRIPTION	CORRECTIVE ACTION
AXXX1	Receipt Printer feed lever open-during operation.	Close the feed lever in the printer.
AXXX2	Thermal printer is Over heated-during operation.	If problem is consistent then print head assembly may be defective.
AXXX3	Receipt paper jam.	Remove jammed paper- Release receipt paper drawer by pressing the tab with the green sticker located at the front of the printer.
AXXX4	Receipt paper is empty.	Replenish the paper roll.
AXXX5	Receipt paper is jamming during loading.	Remove any jammed paper and then reload.
AXXX7	Feed Lever Opened.	Check feed lever and sensor pollution.
AXXX8	Receipt paper cutter error.	If consistent, printer will require repair/replacement.
A0101	Open lever detected before executing command	Close the feed lever.
A0102	Printer thermal head overheated while executing command	Check the thermal printer head and change if necessary.
A0103	Paper jam detected before executing command	Remove any jammed paper from the printer.
A0104	Paper setting error detected before executing command	Remove and re-install the receipt paper.
A0105	Paper check error detected before executing command	Remove and re-install the receipt paper.
A0108	Paper cutter software check error detected before executing command	Check for and remove any jammed paper.
A0801	Open lever detected while executing command	Remove any jammed paper.
A0802	Receipt printer head overheated while printing	Check the thermal printer head and change if necessary.
A0803	Paper jam detected while executing command	Remove and re-install the receipt paper.
A0804	Paper setting error detected before executing command	Remove and re-install the receipt paper.
A0805	Paper check error in doing command	Remove any jammed paper.
A0808	Paper cutter software check error detected while executing command	Check for and remove any jammed paper.
ADNXX	Printer connection error.	Check cables between Print and Main board. Remove cables (even though they are attached) and reconnect.
ADN01	No response detected for 30 seconds after sending command	Check cable and connection between the CE and printer.
ADN0F	No response detected for 30 seconds after sending command	Check cable and connection between the CE and printer.
ADN11	No response detected after 3 retries	Check cable and connection between the CE and printer.
ADN12	No response detected between ENQ-ACK after 5 retries of ENQ	Check the cable and connection between the CE and printer.

ERROR CODES	ERROR DESCRIPTION	CORRECTIVE ACTION
ADN13	No response detected after 5 retries because of timeout between STX-BCC interval	Check cable and connection between the CE and printer.
CANCE	Surcharge Cancel.	Customer has canceled the transaction at surcharge.
C0000	Cash Dispenser(CDU) received the undefined command from AP software	1. Get the trace file and log files in "D:\trace" 2. Call your attendant
C001X	CDU sensor is tripped.	Most typically a C0011 error, this would indicate a bill jam at the exit sensor of the cash Dispenser. Usually caused by a customer putting fingers in the cash drawer during dispense.
C0011	Notes are detected on tray(CS2 Sensor) before dispensing	1. Remove notes on CS2 sensor 2. Clean CS2
C0014	CS4A sensor detects note in delivery path before/after CDU dispenses	1. Remove note from the CDU delivery path. 2. Clean CS4A
C0015	CS2 or CS4A sensor detects note in delivery path before/after CDU dispenses	1. Remove note from the CDU delivery path. 2. Clean CS2 and CS4A
C0018	CS4B sensor detects note in delivery path before/after CDU dispenses	1. Remove note from the CDU delivery path. 2. Clean CS4B
C0019	CS2 or CS4B sensor detects note in delivery path before/after CDU dispenses	1. Remove note from the CDU delivery path. 2. Clean CS2 and CS4B
C001C	CS4A or CS4B sensor detects note in delivery path before/after CDU dispenses	1. Remove note from the CDU delivery path. 2. Clean CS4A and CS4B
C001D	CS2, CS4A or CS4B sensor detects note in delivery path before/after CDU dispenses	1. Remove note from the CDU delivery path. 2. Clean CS2, CS4A and CS4B
C002X	CDU sensor is tripped.	Check dispenser for jammed bills and restart the machine.
C0021	CS1A sensor detects note in delivery path before/after CDU dispenses	1. Remove note from the CDU delivery path. 2. Clean CS1A
C0022	CS1B sensor detects note in delivery path before/after CDU dispenses	1. Remove note from the CDU delivery path. 2. Clean CS1B
C0023	CS1A or CS1B sensor detects note in delivery path before/after CDU dispenses	1. Remove note from the CDU delivery path. 2. Clean CS1A and CS1B
C0028	CS13 sensor detects note in delivery path before/after CDU dispenses	1. Remove note from the CDU delivery path. 2. Clean CS13
C0029	CS1A or CS13 sensor detects note in delivery path before/after CDU dispenses	1. Remove note from the CDU delivery path. 2. Clean CS1A and CS13
C002A	CS1B or CS13 sensor detects note in delivery path before/after CDU dispenses	1. Remove note from the CDU delivery path. 2. Clean CS1B and CS13
C002B	CS1A, CS1B or CS13 sensor detects note in delivery path before/after CDU dispenses	1. Remove note from the CDU delivery path. 2. Clean CS1A, CS1B and CS13
C0030	CDU main motor failure	Replace main motor
C0031	CDU gate solenoid echo error	Check the dispenser gate solenoid cable and connection.
C0032	CDU outlet solenoid echo error	Check the dispenser outlet solenoid cable and connection.

ERROR CODES	ERROR DESCRIPTION	CORRECTIVE ACTION
C0033	CDU checksum error (no dispenser information is set)	Check the dispenser information using the CDU Test Program.
C0034	CDU double detect module failure 1 (while re-dispensing)	Check for notes in the dispenser double detect module.
C0035	CDU double detect module failure 2 (before dispensing)	Check the dispenser double detect lever.
C0036	CS4 Sensor is blocked before initializing	Check for any notes and remove.
C0037	CS7 sensor which detects double note is blocked while dispensing note	Check connection and for pollution in sensor.
C0038	SRAM check error	Check for any notes and remove.
C0039	Reject gate failure while initializing or dispensing note	Check for pollution in sensor
C003A	Request more than 4 notes in test mode	Reset the demand to less than 4 in the CE.
C003B	CS1A, CS1B, and CS2 sensors is block while initializing	Check for any notes and remove.
C0040	Cassette missed while dispensing note	Check the seating of the cassette.
C0041	Execeeded 5 re-initializations	Check the note quaility.
C0042	Mismatch between requested notes and dispensed notes	Check delivery path for any notes and remove.
C0043	Exceeded 10 rejected notes during a single dispense transaction	Check the note quality.
C0044	5 consecutive rejected notes during a single dispense transaction	Check the note quality.
C0045	Over-dispensing notes	Check the number of dispensed notes and note quality.
C0046	Program error	Reload EP program.
C0047	1st cassette misfeed error	Check notes in the cassette.
C0048	Dispense command error (wrong count)	Check notes and note information using the CDU Test Program.
C0049	Requested 0 notes	Modify command error in CE.
C004A	Dispense timeout from CS1 to CS4	Check for any notes in the delivery path and remove.
C004B	3 consecutive rejects due to long-note detect	Check the note quality.
C004C	Exit count is greater than the CS1A/B pass-through count (count mismatch)	Check the number of dispensed notes.
C004D	Cassette is not in suitable position before dispensing note	Check the seating of the cassette.
C004E	Too many notes dispensed	Check the number of dispensed notes.
C004F	Miscount of notes between sensors.	Test CDU using diagnostics. Verify amount of dispensed notes versus requested notes.
C0050	Power down while dispensing notes	Check the number of dispensed notes.
C0051	Too many notes requested	Modify command error in CE.
C0052	CS1A, CS1B detected after dispensing	Check for any notes in the delivery path and remove.
C0053	CDU double detect module failure (while dispensing) Double notes detected	Check the dispenser sensors. Check double detect component.
C0054	CDU program error	Modify the dispenser EP program.

ERROR CODES	ERROR DESCRIPTION	CORRECTIVE ACTION
C0055	Long note detected (CS13 sensor)	Check the note quality.
C0056	Reject gate is not in the correct position during reject	Check the seating of the reject bin.
C0057	Cassette information is not properly set.	Set information of Cash Dispenser Unit if error is not cleared after power Off/On.
C0058	Reject bin is not in the correct position	Check the seating of the reject bin.
C0059	Initial jam time error	Check the seating of the cassette.
C005A	Cash cassette 1 removed prior to dispenser.	1. Set cassette again. 2. Check CS7(NS16) 3. Check related logic of Cash Dispenser Unit board.
C005B	2nd cassette misfeed error	Check the notes in the cassette.
C005C	Reject bin note detect error (CS14)	Check the reject bin.
C005D	Double-pick detected 3 consecutive times	Check the CS9 sensor (double detect sensor)
C005E	Dispenser command size check error.	Download new EP software.
C005F	Dispenser command error.	1. Check AP software. 2. Download new EP software.
C00AB	Note has been detected on the path before initializing the Cash Dispenser Unit.	1. Remove the jammed note on the path. 2. Check if the sensor is polluted. 3. Check if cable is cut or the connector is wrongly inserted. 4. Check logic related to the sensor in the Cash Dispenser Unit board.
C00E0	NS2A, NS2B dark.	Check NS2.
C00E1	NS4 dark.	Check NS4.
C006X	Sensor failure.	Check sensor for debris. Contact manufacturer.
C0060	CS31A, CS31B detected before dispensing	Check for sensor pollution and replace if necessary.
C0061	CS31A, CS31B detected after dispenser motor on and before dispensing	Check for sensor pollution and replace if necessary.
C0063	CS31A, CS31B detected after dispensing	Check for sensor pollution and replace if necessary.
C006A	Dispensing timeout error from CS15 to CS4	Check for sensor pollution and replace if necessary.
C006B	CS31A, CS31B detected during initialization	Check for sensor pollution and replace if necessary.

ERROR CODES	ERROR DESCRIPTION	CORRECTIVE ACTION
C007X	Sensor failure.	Check sensor for debris. Contact manufacturer.
C0070	CS41A, CS41B detected before dispensing	Check for sensor pollution and replace if necessary.
C0071	Exceeded 200 note limit	Check for sensor pollution and replace if necessary.
C0072	CS41A, CS41B detected after dispenser motor on	Check for sensor pollution and replace if necessary.
C0073	CS41A, CS41B detected after dispensing	Check for sensor pollution and replace if necessary.
C007A	Dispensing timeout error from CS15 to CS4	Check for sensor pollution and replace if necessary.
C007B	CS31A, CS31B detected error during initialization	Check for sensor pollution and replace if necessary.
C007C	4th cassette misfeed error	Check the notes in the cassette.
C007D	4th cassette taken out before dispensing	Check the 4th cassette.
C0080	CS15A, CS15B detected before dispensing	Check for sensor pollution and replace if necessary.
C0081	CS15A, CS15B detected after motor on	Check for sensor pollution and replace if necessary.
C0082	CS15A, CS15B detected after dispensing	Check CS10 sensor and if shutter is working.
C0083	Stacker sensor failure.	CDU will require repair/replacement.
C0084	Shutter close error.	CDU will require repair/replacement.
C008F	CS13 sensor detects the notes with hole	1. Initialize Cash Dispenser (CDU) 2. Remove the holed note on CS13
C009A	Dispensing timeout error from CS31 to CS4	Check the dispenser.
C009D	No cassette present before dispensing from 3rd cassette	Check the 3rd cassette.
C009F	3rd cassette misfeed error	Check the notes in the cassette.
C1010	OUT OF CASH	
CDNXX	CDU connection failure.	Check the cable between CDU and mainboard. Remove cables (even though they are of concern only if it is repeated. Outside interference may cause it.
CDN01	No response detected after sending command	Check cable and connection between the CE and dispenser.
CDN0F	No response detected after sending command	Check cable and connection between the CE and dispenser.

ERROR CODES	ERROR DESCRIPTION	CORRECTIVE ACTION
CDN11	No response detected after 3 retries of sending command	Check cable and connection between the CE and dispenser.
CDN12	No response detected between ENQ-ACK after 5 retries of ENQ	Check cable and connection between the CE and dispenser.
CDN13	No response detected after 5 retries because of timeout between STX-BCC interval	Check cable and connection between the CE and dispenser.
D0001	Error while modem initializing	Check the modem connection and the modem test.
D0002	Reversal transaction failure	Check for any CDU error codes and the number of notes dispensed to customer.
D0003	PIN ERROR	
D0004	INVALID PIN	1. Reboot ATM
D0005	BANK UNAVAILABLE	
D0006	CARD NOT SUPPORTED	
D0007	INSUFFICIENT FUNDS	
D0008	INELIGIBLE TRANSACTION	
D0009	INELIGIBLE ACCOUNT	
D0010	DAILY LIMIT EXCEEDED	
D0011	UNABLE TO PROCESS	
D0012	Invalid transaction	Check the transaction from the host and try again.
D0013	Invalid amount	Check the transaction from the host and try again.
D0014	Invalid card number	Check the transaction from the host and try again.
D0015	UNABLE TO PROCESS	
D0016	WITHDRAWAL LIMIT ALREADY REACHED	
D0017	INVALID AMOUNT	
D0018	EXTERNAL DECLINE	
D0019	SYSTEM ERROR	
D0020	Surcharge screen should have been displayed	Check the transaction from the host and try again. Check BIN List
D0021	ROUTING LOOKUP PROBLEM	
D0022	UNABLE TO PROCESS	
D0023	TRANSACTION NOT SUPPORTED	

ERROR CODES	ERROR DESCRIPTION	CORRECTIVE ACTION
D0024	Exceeds Issuer Withdrawal Limit	Check the transaction from the host and try again.
D0039	No Credit Account	Check the transaction from the host and try again.
D0051	Insufficient Funds	Check the transaction from the host and try again. Try Balance Inquiry
D0052	No Checking Account	Check the transaction from the host and try again.
D0053	No Savings Account	Check the transaction from the host and try again.
D0054	Expired Card	Check the transaction from the host and try again.
D0055	Incorrect Pin	Check the transaction from the host and try again.
D0057	Transaction not Permitted – Card	Check the transaction from the host and try again.
D0058	Transaction not Permitted – Terminal	Check the transaction from the host and try again.
D0061	Exceeds Withdrawal Limit	Check the transaction from the host and try again.
D0075	PIN Tries Exceeded	Check the transaction from the host and try again.
D0078	No Account	Check the transaction from the host and try again.
D0080	Invalid Date	Check the transaction from the host and try again.
D0083	Can not Verify PIN	Check the transaction from the host and try again. Try different cards.
D0086	Can not Verify PIN	Check the transaction from the host and try again. Try different cards.
D0091	Bank Unavailable	Check the transaction from the host and try again.
D0092	System Unavailable	Check the transaction from the host and try again.
D0093	Transaction Serial Number missmatch	Check the terminal setting from the host.
D0094	Record format missmatch. Check if a proper AP for the host has been loaded.	Check the terminal setting from the host.
D0095	Routing ID missmatch. Check the routing Identification.	Check the terminal setting from the host.
D0096	Terminal ID missmatch. Check the terminal Identification.	Check the terminal setting from the host.
D0097	Response Type missmatch (Reversal)	Check the terminal setting from the host.
D0098	Response Type missmatch (Day Close)	Check the terminal setting from the host.

ERROR CODES	ERROR DESCRIPTION	CORRECTIVE ACTION
D0099	Response Type missmatch (Config.)	Check the terminal setting from the host.
D009A	Response Type missmatch (Withdrawal/Balance/Transfer)	Check the terminal setting from the host.
D009B	STX error	Check the terminal setting from the host.
D009C	ETX error	Check the terminal setting from the host.
D009D	FS out (after response code)	Check the terminal setting from the host.
D009E	FS out (after retrieval reference number)	Check the terminal setting from the host.
D009F	FS out (after system trace audit number)	Check the terminal setting from the host.
D00A0	FS out (after account balance)	Check the terminal setting from the host.
D00A1	FS out (after available balance)	Check the terminal setting from the host.
D00A2	FS out (after surcharge amount)	Check the terminal setting from the host.
D00A3	FS out (after authorization response text)	Check the terminal setting from the host.
D00A4	ETX wrong position	Check the terminal setting from the host.
D00A5	FS out (after total cash dispense amount)	Check the terminal setting from the host.
D00A6	FS out (after total non-cash dispense amount)	Check the terminal setting from the host.
D00A7	FS out (after total surcharge amount)	Check the terminal setting from the host.
D00A8	FS out (after config surcharge amount)	Check the terminal setting from the host.
D00A9	ETX out (config)	Check the terminal setting from the host.
D00AC	Invalid data received from the host (MAC data mismatch)	Check the terminal setting from the host.
D00B0	TERMINAL ID MISMATCHED	
D00B1	TRANSACTION CODE MISMATCHED	
D00B2	SECOND FIELD ID CODE MISMATCHED	
D00B3	FIRST DES KEY WRONG SIZE	
D00B4	SURCHARGE AMOUNT WRONG SIZE	

ERROR CODES	ERROR DESCRIPTION	CORRECTIVE ACTION
D00B5	Sequence Number MISMATCHED	
D00B6	INVALID RESPONSE CODE ERROR	
D00B7	Authorization Number Error	
D00B8	BUSINESS DATE Error	
D00B9	TransactionTime Number Error	
D00BA	BUSINESS DATE Error	
D00BB	Balance amount Error	
D00BC	Actual Surcharge Error	
D00BD	Sequence Number MISMATCHED	
D00BF	BUSINESS DATE Error	
D00C0	Settlement Error	
D0111	REVERSAL DECLINED	
D0222	PIN CHANGE DECLINED	
D0300	Modem is not responding	Check the modem controller.
D0301	The target call address has call blocking enabled.	1. Check modem cable 2. Contact to technical support team
D0302	The specified terminal identifier is invalid.	1. Check modem cable 2. Contact to technical support team
D0303	All call appearances on the specified address are currently in use.	1. Check modem cable 2. Contact to technical support team
D0304	The disable address parameter contains dialing control characters that are not processed by the service provider.	1. Check modem cable 2. Contact to technical support team
D0305	The specified country/region code is invalid.	1. Check modem cable 2. Contact to host and phone company
D0306	The operation failed for an unspecified or unknown reason.	1. Contact to technical support team
D0307	Insufficient resources to complete the operation	1. Contact to technical support team
D1000	No connection	1. Check phone number 2. Check modem cable 3. Contact phone company

ERROR CODES	ERROR DESCRIPTION	CORRECTIVE ACTION
D1100	NO ENQ FROM HOST	1. Check phone number 2. Check modem cable 3. Contact telephone company
D1100	Cannot receive ENQ from the host	Check host.
D1200	Transmission error	Check the modem controller.
D1200	Transmission error : Failed to receive the whole data within 5 seconds after requesting the modem to send the data.	1. Check modem and modem cable connection 2. Contact telephone company
D1300	NAK more than 3 times	Check host.
D1300	Receiving NAK more than 3 times	1. Check modem and modem cable connection 2. Contact telephone company
D1401	Disconnected by Unknown Reason	1. Check modem and modem cable connection 2. Contact telephone company
D1402	Disconnected by rejected call from remote party	Try again later.
D1403	Disconnected because the local phone was picked up	Try again later.
D1404	Disconnected by Forwarded	1. Check modem and modem cable connection 2. Contact telephone company
D1405	Disconnected by Unreachable	1. Check modem and modem cable connection 2. Contact telephone company
D1406	Disconnected by Congestion	1. Check modem and modem cable connection 2. Contact telephone company
D1407	Disconnected by Incompatible	1. Check modem and modem cable connection 2. Contact telephone company
D1408	Disconnected by un-known reason	1. Check modem and modem cable connection 2. Contact telephone company
D1409	Disconnected by Bad Address	1. Check modem and modem cable connection 2. Contact telephone company
D1410	Disconnected by Unavailable	1. Check modem and modem cable connection 2. Contact telephone company
D1500	Modem dial connection timeout/Host is not responding	1. Check the telephone line connection. 2. Check host phone number
D1500	1. Modem dial connection time-out (while dialing the modem). 2. No response from host for 60 seconds.	1. Check modem and modem cable connection 2. Contact telephone company
D1601	Disconnected by Bad Address	1. Check modem and modem cable connection 2. Contact telephone company
D1602	Disconnected by Unavailable	1. Check modem and modem cable connection 2. Contact telephone company
D1603	Disconnected by Out of Order	1. Check modem and modem cable connection 2. Contact telephone company
D1700	No carrier (while sending/receiving data after dial connection)	1. Check modem and modem cable connection 2. Contact telephone company

ERROR CODES	ERROR DESCRIPTION	CORRECTIVE ACTION
D1701	No Carrier during ENQ data receive from host	1. Check modem and modem cable connection 2. Contact telephone company
D1702	No Carrier before sending data send to host	1. Check modem and modem cable connection 2. Contact telephone company
D1703	No Carrier during sending data send to host	1. Check modem and modem cable connection 2. Contact telephone company
D1704	No Carrier during ACK/NAK data send to host	1. Check modem and modem cable connection 2. Contact telephone company
D1705	No Carrier during ACK/NAK data receive from host	1. Check modem and modem cable connection 2. Contact telephone company
D1706	No Carrier during receiving data	1. Check modem and modem cable connection 2. Contact telephone company
D170X	No carrier during data sending/receiving after the modem is connected.	1. Check modem and modem cable connection 2. Contact telephone company
D1800	No Dial Tone(in Modem dial connection)	1. Check telephone line connection. 2. Check Modem.
D1900	No Answer	1. Check telephone line connection. 2. Check phone number.
D1900	No Answer	1. Contact telephone company
D2000	Dial Busy	Try again later. Check phone number.
D2000	Dial(Line) busy	Try again later. Check phone number.
D2100	Time out(30sec.) for initializing modem before Modem Dial connecting	1. Check telephone line connection. 2. Check Modem.
D2100	Time out(30sec.) for initializing modem before Modem Dial connecting	1. Check telephone line connection. 2. Check Modem.
D2200	not receiving EOT from HOST	1. Check telephone line connection. 2. Check Modem.
D2200	not receiving EOT from HOST	1. Check telephone line connection. 2. Check Modem.
D2300	No response from Host - Dialing time out to Host	1. Check telephone line connection. 2. Check Modem.
D2500	Cannot connect to the host	1. Check telephone line connection
D2510	Timeout while Sending	1. Check telephone line connection
D2511	Communication error while Sending	1. Check telephone line connection
D2512	Socket error while Sending	1. Check telephone line connection
D2513	Timeout while Receiving	1. Check telephone line connection
D2514	Communication error while Receiving	1. Check telephone line connection

ERROR CODES	ERROR DESCRIPTION	CORRECTIVE ACTION
D2515	Socket Error while Receiving	1. Check telephone line connection
D3200	No response from Host/Dialing time out to Host	1. Check telephone line connection
D3201	Outbound call is aborted	1. Check telephone line connection. 2. Check Modem.
D3202	Fail to dial out	1. Check telephone line connection. 2. Check Modem.
D3203	No Line Reply	
D3204	Get Line ID Failed	
D3205	Modem Comport Failed	
D3206	Call Failed	
D3207	No Answer	
D3208	Modem Call Other Error	
E0001	RMS Port Failure	1. Check telephone line connection. 2. Check RMS Port setting.
E0002	RMS Response Time out	1. Check telephone line connection. 2. Check Modem.
E0003	RMS Modem Failure	1. Check telephone line connection. 2. Check Modem.
E0004	RMS No Dial Tone	1. Check telephone line connection. 2. Check Modem.
E0005	RMS MODEM Disconnection time out	1. Check telephone line connection. 2. Check Modem.
F0001	Number of Bill is not inputted	Enter number of bill. (required)
F0002	Parameter is not properly set (Surcharge Owner)	Enter surcharge owner. (required)
F0003	Parameter is not properly set (Surcharge Amount)	Enter surcharge amount. (required)
F0004	Parameter is not properly set (Adver. Text refreshing timer)	Enter Ad text refresh timer.
F0005	Parameter is not properly set (Advertisement text)	Enter Ad text.
F0006	Parameter is not properly set (Dispense limit)	Enter Dispense limit.
F0007	Parameter is not properly set (Denomination)	Enter Denomination. (required)
F0008	Parameter is not properly set (Fast Cash)	Enter Fast Cash amount.
F0009	Master Key Index invalid	Check Master key index.

ERROR CODES	ERROR DESCRIPTION	CORRECTIVE ACTION
F000A	Master Key empty	Enter Master key. (required)
F000B	Host Phone Number is not inputted	Enter Host phone number. (required)
F000C	Error Retry Timer is not inputted	Enter Retry timer.
F000D	RMS Password is not inputted in RMS Enable	Enter RMS password.
F000E	RMS Phone Number is not inputted in RMS Enable	Enter RMS phone number.
F000F	Terminal Number is not inputted	Enter Terminal number. (required)
F0010	Routing ID is not inputted	Enter Routing ID. (required)
F0011	Master Key Serial Number is not inputted	Enter Master key serial number.
F0012	Non-Cash Type text is not inputted	Enter Non-cash type text.
F0013	Parameter is not properly set	Check proper parameters in setting.
F0014	NVRAM Failure	Try to clear NVRAM
F0015	ATM Serial No. Empty	Enter ATM serial number. (required)
F0016	Default master password was not changed	
F001F	Machine serial number is not set	
F002F	Host type is not set	
F003F	Communication ID invalid (only triton)	
F004F	EPP(Pinpad) key mode is invalid	1. Check modem cable 2. Contact to technical support team
F005F	Denomination is invalid	1. Check modem cable 2. Contact to technical support team
F006F	Failed Host Connection!	
POWERAB	UPS ABNORMAL	
POWERAC	POWER OUT OR AC OFF	
POWERBA	BATTERY LOW	
SDN01	Service Panel (SPL) communication error	Check the cables and connections

D. TDES KEY INSTALLATION

Triple-Data Encryption Standard or TDES was designated as a way to strengthen the security of the master key by upgrading from a 16 bit key to a 32 bit key. In addition to the required software changes to support the TDES, the specification calls for a pin-pad to encrypt any data sent between the keypad and the CPU. In this new configuration the master keys are stored securely within the pin-pad, rather than the main board as done previously.

Hardware Specification:

NH-1500 (color or mono) with EPP (Encrypted Pin Pad)

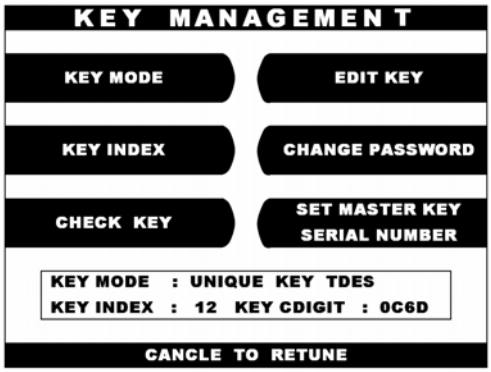
All NH-1500 have been shipped with TDES capable hardware.

Installation Procedure:

To access the key Management menu from Host Setup, you'll need to enter the Secure Mode Password (Parts1 and 2) .

NOTE : Applicable to V10.01.08 / V10.11.08 AP (or higher) ONLY – earlier versions do not have additional password for Key Management Area.

Default Secure Mode password is :
Part #1 = 000000 / Part #2 = 000000



Access the Key Management selections by entering the operator function menu
[Cancel]+[Clear]+[Enter] – 1,2,3 (See operator manual)

Enter Master Password and choose Host Setup
NOTE : Master Password is required to change master key.

D.1 Select Key Mode

The table below describes the format for each key mode.

DES	2-16 digit master keys entered as Part A and Part B
Dual Master Key	2-16 digit master keys entered as Part A and Part B (a common key is entered, and then a working key is downloaded from the host
Unique Key, DES	2-16 digit master keys entered as Part A and Part B with 10 digit unique serial number entered prior to each part.
TDES	2-32 digit master keys entered in 16 digit pieces, Part A (left and right) and Part B (left and right)
Unique Key, TDES	2-32 digit master keys entered in 16 digit pieces, Part A (left and right) and Part B (left and right) – 10 digit unique serial number entered prior to each part.
MAC	2-16 digit master keys entered as Part A and Part B, with 2 additional 16 digit number entered as MAC Part A and Part B.
Unique Key, MAC	2-16 digit master keys entered as Part A and Part B with 2 additional 16 digit number entered as MAC Part A and Part B.
TDES, MAC	2-32 digit master keys entered in 16 digit pieces, Part A (left and right) and Part B (left and right) , with 2 additional 16 digit number entered as MAC Part A and Part B.

Unique Key modes use a unique 10 digit serial number that is entered before each half of the master key to allow the processor to bind the key to the terminal ID automatically. In case where the processor provides a serial number that is less than 10 digits, zeros must be added at the beginning of the number to equal 10 digits.

D.2 Enter Master Key

Master Key security requires that no one person has access to all parts of the key. To ensure this, the processor will provide keys in separate sealed envelopes (sometimes referred to as ”com-velope” or “Key components”. Each envelope contains either one or two 16 digit keys in the case of unique key, a serial number. The diagram below shows a sample Unique Key, TDES master key,

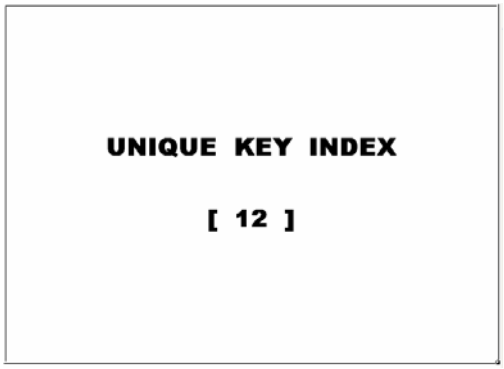
```
Data Stamp : 05/15/2006
Serial # : 235913
Digits L : 95D1   R : 8A4C   3D : E130AB

Left Part : 4536 5A3C D349 AB27      Right Part : 2352 6AD3 F1CC 628A
Left Check Digit : 81D3              Right Check Digit : 712A
                 Single DES Encryption uses left part only.
```

Begin by choosing Edit Master Key from the menu. Depending on Key Mode, the menu prompts for Part A and Part B.

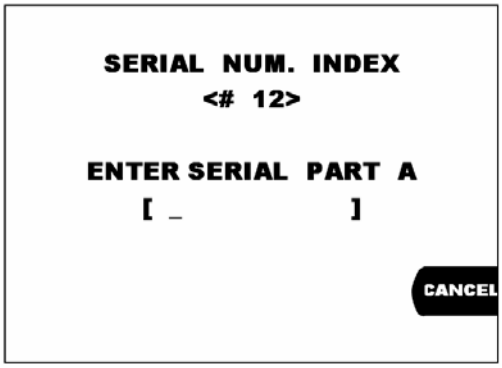
The Edit Master Key interface is designated so that Parts A and B can be entered at completely different times and in either order (Part A first, or Part B first). If a technician is dispatched to enter a key part, choose Check Key from the Key Management menu to determine which part of the key has already been entered.

In this example we see that a complete key has been entered in Index #8 that only Part A has been entered for Index #12.
This would tell the second technician that they need to enter their key as Part B on index 12.
Part 1 = Part A / Part2 = Part B

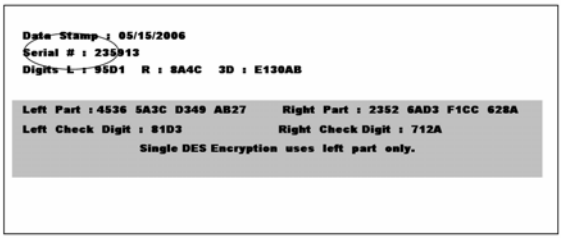


Once you have selected Part A or B, you'll be prompted to enter a Key Index.
This index points to the location where the key will be stored. There are 16 possible memory locations (0-15) available. Unique master keys must be stored at location #12, and MAC keys at location #15.

The interface will default the values for Unique and MAC keys regardless of what you enter. It is very important to remember that both parts of a key must be entered on the same index. If you enter Part A on index #2 and Part B on index #3, the key will not be complete. Use the Check key function (shown above) to determine where your keys parts have been entered.

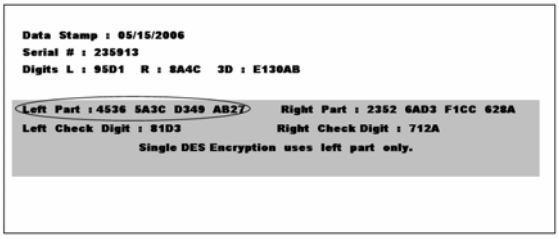


If entering a Unique key, next you'll be prompted to enter the key serial number.
This 10 digit number is found on the paperwork containing your master keys. If the number the processor has provided is less than 10 digits, you'll need to add zeros to the beginning of the number to equal 10 digits,



In the example shown at left, the serial number is 235913. This 6 digit number would be changed to 0000235913 to create 10 digits.

The next step is to enter the master key itself. If you are using TDES, you'll need to enter the left portion first.
After entering the key, you'll be prompted to enter it a second time for verification.



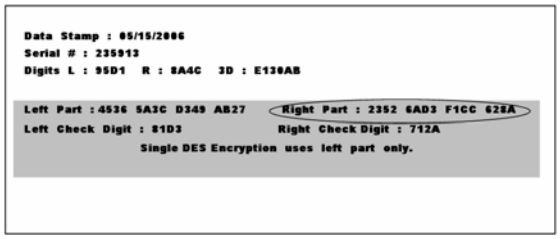
The 16 digit alpha-numeric key is entered using the pin-pad only.
Letters are entered by using the arrow and function keys. Use pin-pad layout below.

1	2	3	F
4	5	6	E
7	8	9	D
A	0	B	C

EPP (Encrypted Pin Pad) Master Key Alpha-Numeric Key Layout

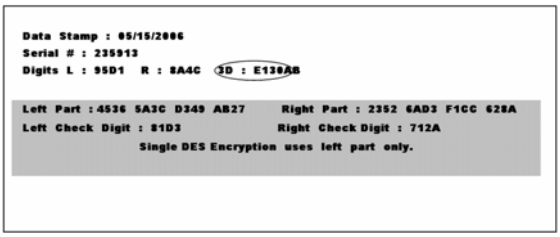
At this point the left (or first 16 digit) portion of the master key has been entered successfully.

If you are entering a 32 bit key (TDES), the second or “Right” half of the key is entered next. This option will only appear when in TDES mode.



After entering the right portion of the key successfully you’ll be prompted with a check digit as shown below. Verify the check digit with the information provided by the processor.

Check digits appear after entering both the right and left portion of each part of the key.

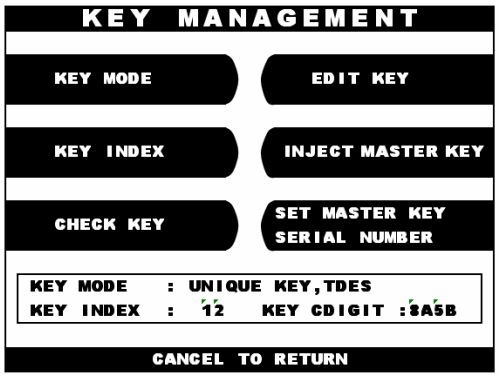


Compare the check digit against the number located at the top of the key component.
This represents a check digit for the combined keys. There is not a check digit shown for left and right portions individually.

After successfully entering both the left and right portion of Part A, you'll be returned to the Edit Master key menu.
At this point you can proceed with Part B, or If Part B is to be entered at a later time you can exit the menu and turn off the machine until both halves of the key are entered.

Part B is entered with the same procedure given for Part A. Enter the left and right (for TDES) portions of the keys and verify the check digits against what has been provided by the processor.

D.3 Verifying Master Key



Once both Part A and Part B have been entered successfully, the key management menu will display a check digit for the key index where the master key was entered.
If no check digit is entered, use the check key screen to determine where the key parts were entered, then re-enter the keys as necessary.

At this point, the master key is successfully entered. If all other parameters have been entered properly, power off the ATM and power on to connect host and initialize the keys.

D.4 HOST PROCESSOR SETUP

Host Processor selection changes the communications protocol to specifically match your particular processor. In most cases this is set at the factory when your machine is ordered, however in the event that the machine needs to be reprogrammed for a new processor, it may be necessary to change the processor mode.

NOTE: The Processor selection menu requires a special procedure to access, and will require you to clear out the memory on the ATM to access. This means all existing journal and programming to be lost.

To access the Host Processor mode, begin by clearing NVRAM.

Power off the ATM and hold down button **[F6]** as shown on Chapter 3.3.1.2, power the machine back on while continuing to hold the button down.
You'll be prompted with a screen asking if you want to "CLEAR NVRAM" press yes.
You then be prompted to enter the master password. If you do not successfully enter the correct master password after 3 attempts it will abort the action.
Once the memory is cleared, the ATM will reboot and immediately go out of service (since the programming has been cleared). At this point all passwords have reverted to factory default, so enter the operator function menu using the default password.

Go to the Customer Setup menu, and press the **[F8]** button as shown on Chapter 3.3.1.2, (there will not be a corresponding button on the screen) this will access the processor mode selection menu.

Once the processor mode has been selected, it will appear in the box at the bottom of the screen. Once this menu has been exited, if you wish to enter it or change processor mode again, you'll have to clear NVRAM and start over.
Contact your distributor or processor for which mode is appropriate.

E. CUSTOMER TRANSACTIONS

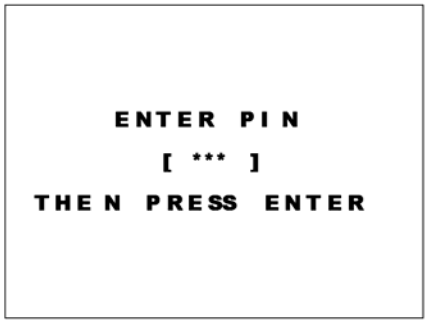
E.1 Opening Procedures

This section explains how to place your ATM in service.

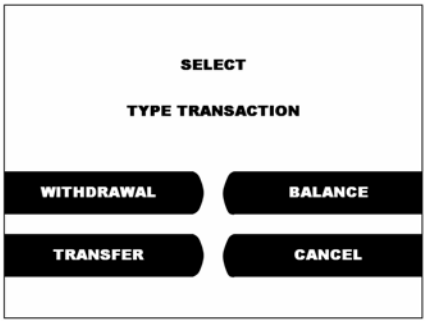
1) Open the Front Panel and turn the power on.
2) If there is no receipt paper, load the receipt paper
3) Open the security door and replenish the cash cassette.
4) Go in the OPERATOR FUNCTION mode and input the number of bills in the cash cassette.
5) Exit the OPERATOR FUNCTION MODE
6) After connecting to the processor, the terminal will be ready for service
7) If the machine is not ready for service, please check the following:
    1. Determine if the phone line is properly connected
    2. Determine if all communication parameters are connected
    3. If, after doing the above steps, the ATM is still not in service, contact your service personnel.

E.2 Withdrawal Transaction

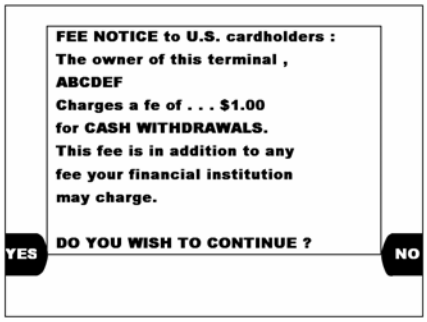
Insert your card and remove it quickly.



Enter your pin number and then press the “Enter” key to confirm it.

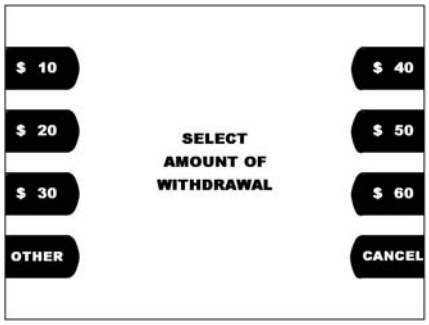


Press the “WITHDRAWAL” button on the screen



If a “SURCHARGE“ function is already enabled, the “Surcharge “screen will be displayed. Press “YES” to proceed this transaction or “NO” to cancel it.

Select the type of withdrawal you want to transact



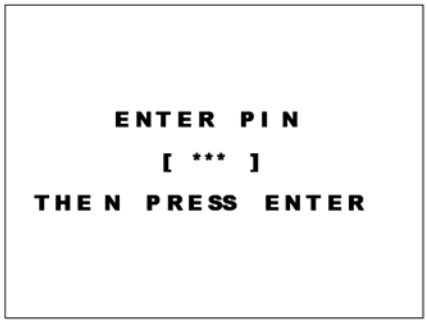
Select the desired amount to be withdrawn. If the desired amount is not displayed there, select the "OTHER" field

After the desired amount is entered, the ATM starts with dialing the processor and requests approval for the transaction

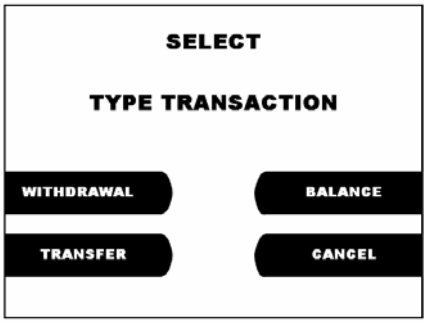
After the approval from the processor is completed, the desired amount will be dispensed and the receipt will be released.

E.3 Balance Inquiry Transaction

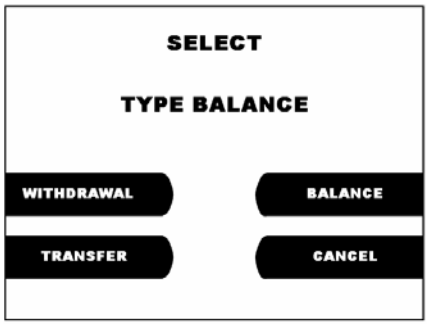
Insert your card and remove it quickly.



Enter your pin number and then press the “Enter” key to confirm it.



Press the “Balance” button on the screen



Select the type of balance you want to transact

PLEASE WAIT

CONNECTING

The ATM dials the processor and requests approval for the transaction.

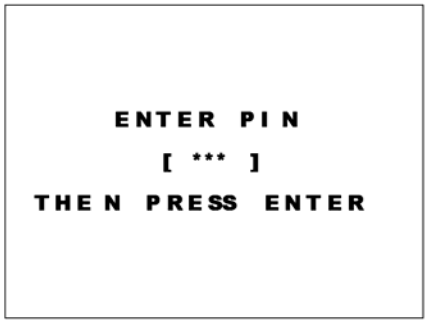
TAKE RECEIPT

THANK YOU

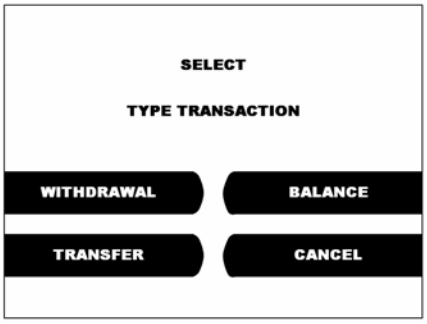
When authorization is received from the processor, the following screen will be displayed and the receipt will be printed.

E.4 Transfer Transaction

Insert your card and remove it quickly.



Enter your pin number and then press the “Enter” key to confirm it.



Press the “Transfer” button on the screen

Select the type of withdrawal you want to transact. And then select the desired account to be transferred “FROM”

Select the desired account to be transferred “TO.”

Enter the desired amount to be transferred and press the “ENTER” key.

The ATM dials the processor and requests approval for the transaction.

When the authorization is received from the processor, the following screen will be displayed and the receipt will be printed.

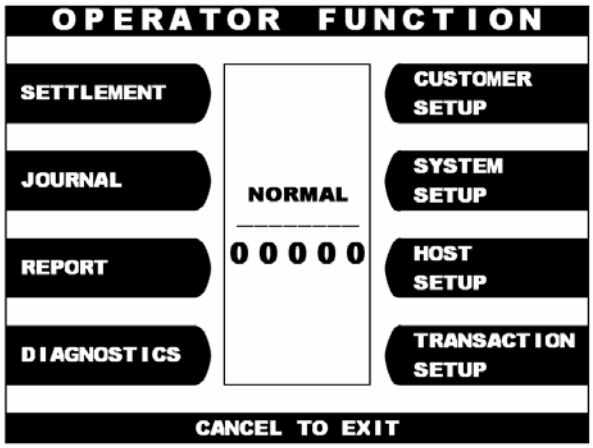
F. How to configure for STD3

F.1 Select Standard3 Option

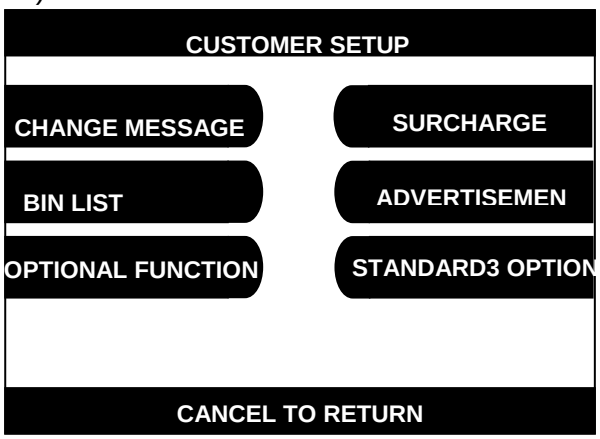
1) Clear NV-RAM.

2) After NV-RAM is cleared, Go to the OPEATION MODE.

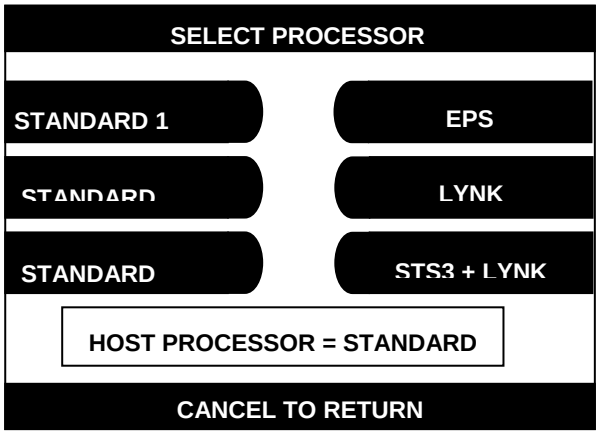
3) Select the 'CUSTOMER SETUP' from the OPERATOR FUNCTION menu.



4) You can see ‘CUSTOMER SETUP’. On this menu, you have to select F8(Function Key). This Function Key is invisible on the screen. But, you can find the function button beside the screen. Press F8 Function Key.
This function key is able to be used only once after NV-RAM is cleared.

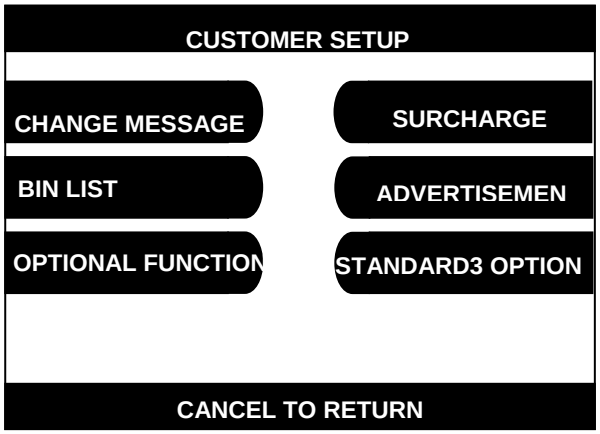


5) You can see ‘SELECT PROCESSOR’ menu. This menu enables you to select processor mode.

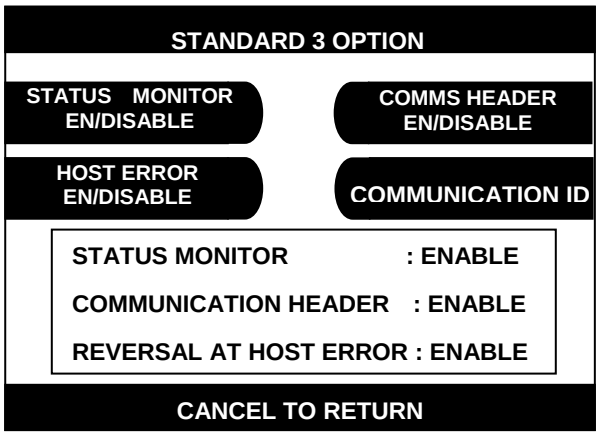


Default processor value is STANDARD 3.
On this menu, you could change other processor option.
If you select the STANDARD 3, you can see STANDARD 3 Option button on the CUSTOMER SETUP Screen.

6) You can see the ‘STANDARD3 OPTION’ button on the screen. This button makes you configure standard3 option.



7) STANDARD3 OPTION Menu consists of status monitor field enable/disable, communication header field enable/disable and reversal at host error enable/disable buttons.



If communication header is enabled, you can see communication id button on the screen.

(1) Status Monitor Enable/Disable Function makes you include status monitoring field in the transaction message. This field indicates the terminal status, for example, terminal's software version, devices status, each cassette's dispense amounts and so forth.

(2) Host Error Enable/Disable Function decides to send reversal message to host when the transaction request, i.e. the withdrawal request, is failed with communication error. If the host error en/disable function is configured as enable and communication error occurs, the terminal sends the reversal message to host.

(3) Communication Header Enable/Disable Function enables or disables you to optionally include communication ID, terminal ID, S/W version, encryption mode flag and information header field in the transaction message. Communication ID signifies the 'owner' of the message to a communications service provider. Terminal ID indicates to host the type of terminal. Software Version No which is made of two digit base 36 number represents the version of software installed on the terminal. Encryption Mode Flag field is 0, 1 or 2. Each number has meaning. The number of '0' indicates single DES encryption of PIN block. The number of '1' is reserved. Last number 2 indicates Triple DES encryption of PIN block. Information Header field is currently not supported.

If you select enable, every transaction message includes the Communication field, terminal ID, S/W version, encryption mode flag and information header field.

G. Addendum: AP Software

Programming Changes

The application software on this ATM has been updated with the following changes.

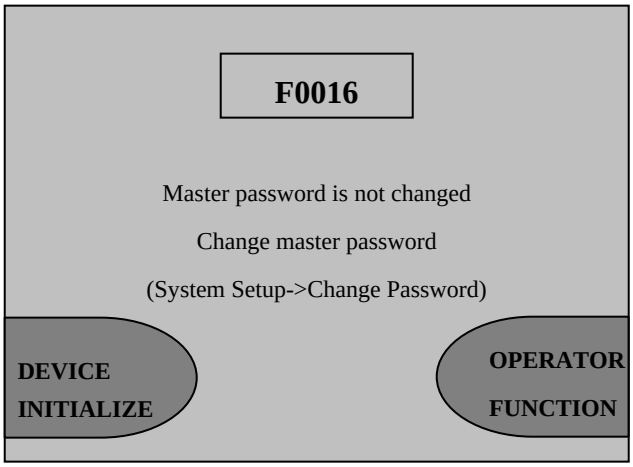
Which have not been covered in the Operator Manual. Please familiarize yourself with these new programming procedures before installing the terminal.

Master Password:

The software will no longer allow you to put the ATM in service using the default master password.

Then master password must be changed before attempting to initialize the machine or a F0016 error will be reported.

As with all passwords, the Master Password must be 6 digits in length



Changing Denomination:

With this new AP software, changing the cassette denomination (Transaction Setup) will cause all master keys to be erased from the EPP keyboard. The purpose of this is to prevent unauthorized access to this critical parameter.

When programming the terminal, make certain that you change the denomination setting (If you intend to)BEFORE programming your master key.

You'll be prompted by the Warning screen shown before you can change the denomination