ZT Technical Manual

Bill Acceptor
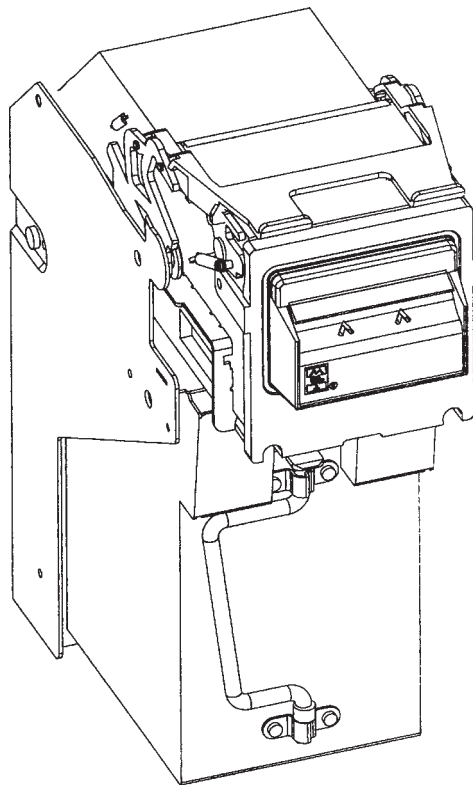
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Safety Instructions

Use the following safety guidelines to help protect your MEI Bill Acceptor from potential damage and to help ensure your own personal safety.

To help prevent electric shock and damage to your acceptor, follow all OEM machine safety procedures and use only MEI tested units, chassis, and harnessing.
Always remove rings, watches and all metal jewelry when working with electronic machines because metal acts as a conductor.
Clean your acceptor with a dampened lint-free cloth using a mild soap solution. Never use petroleum-based cleaners, as they will permanently damage the acceptor.

Overview

MEI's ZT Series Acceptors are a high-security, low maintenance acceptor designed for gaming machines. ZT Series Acceptors combine ease of use and reliability to create a durable addition to your gaming machine.

ZT1200

The ZT1200 Bill/Bar Code Acceptors are a family of stand-alone, high-security acceptors that accept currency and bar code documents over a wide range of electrical and enviromental conditions. They can be used either indoors or in protected, temperature controlled enviroments.

Designed for a high rate of genuine bill acceptance and standard bar code decoding while maintaining security (resistance to a variety of frauds) these acceptors also include features such as:

- bookmarks

- host calibration

- remote downloading of the acceptor's application software

- improved human interface

- a variety of bezel options

Operation of the ZT1200 is made easy by allowing the bill combinations to be selected from the on board option switches or externally via the electronic interface or via coupon. Two way acceptance of barcodes add to an already versatile acceptor that is able to accept bank notes four ways, or two ways. In addition, the ZT1200 application software can be designed for various countries' currency.
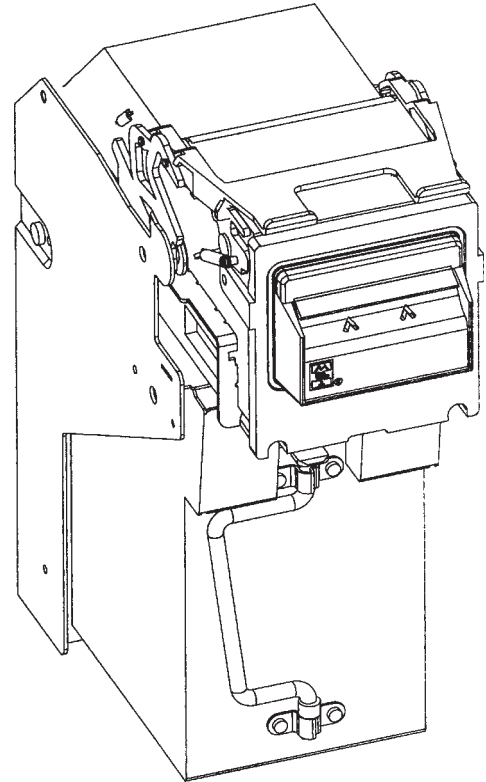
Overview

The ZT1100 Bill Acceptor Series models are the predecessors to the 1200 Series. Providing the same high-security, low-maintenance, durability and ease-of-use of the ZT1200 series, the ZT1100 series has similar functionality with fewer features.

The ZT1100 Series lead the way for the ZT1200 by introducing:
- Superior optical sensing technology
- Docking capability
- Configuration coupons
- Performance data audit capability
- Four-way acceptance

ZT1100/ZT1200 Series Common Characteristics
- Flash downloadable EEPROM or Replaceable *PROM
- Audit capability
- Four-way acceptance: bill in any direction
- Accepts $1, $2, $5, $10, $20, $50 and $100s
- *PROM units "P" units have Software EPROM located on the bottom of unit

Additional Features on the ZT 1200 Series
- No magnetic audio head
- Bar Code capability
- New Platform Bill Entry Guide

Specifications
Note:Specifications are subject to change without notice.
ZT Series Acceptor Power consumption
- Standby: 3 Watts
- Acceptance: 3 Watts Peak 30 Watts
- Stacking: 40 Watts Peak 40 Watts

Input Voltage
- +12 to 40 VDC, +0%, -5%

Overview

Model Number

ZT1 X XX XX X

                └─Prom/Flash
            Bill Data Width
            67mm or 71mm
        └─OEM Specific Interfaces
     └─Enhanced Optics/ Bar Code
└─ZT Series 1000

Serial Number

WW Y L CC #####

              └─Sequential Production Number
          └─Configuration Code
       └─Manufacturing Location
     └─Year Manufactured
└─Week Manufactured
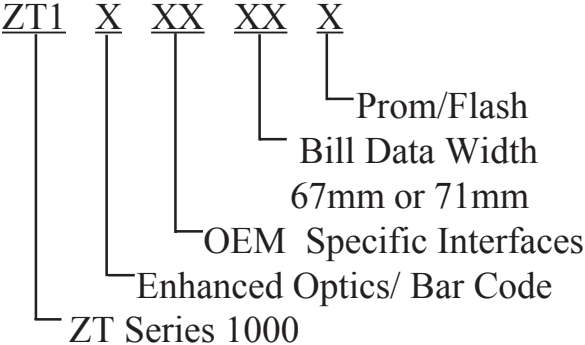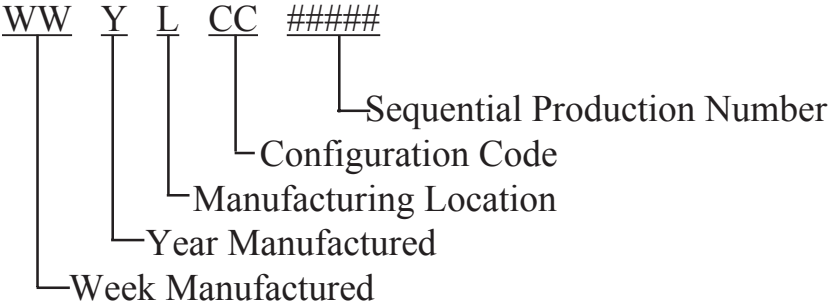
Overview

Periodic maintenance improves the performance and extends the working life of any bill acceptor. Additional attention may be required if acceptance rates fall below normal or the bill acceptor becomes inoperable due to a jammed object.

PARTS OF THE ZT SERIES BILL ACCEPTOR

The ZT Series consists of three main components.

RTU
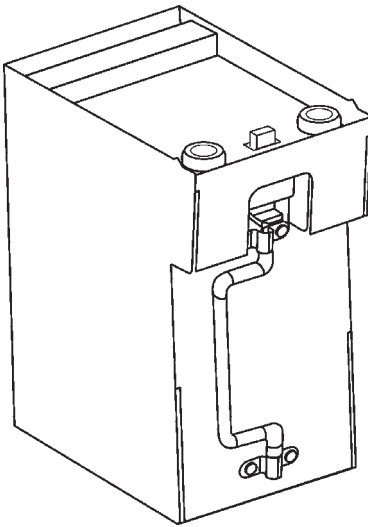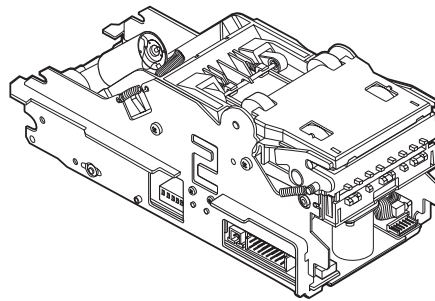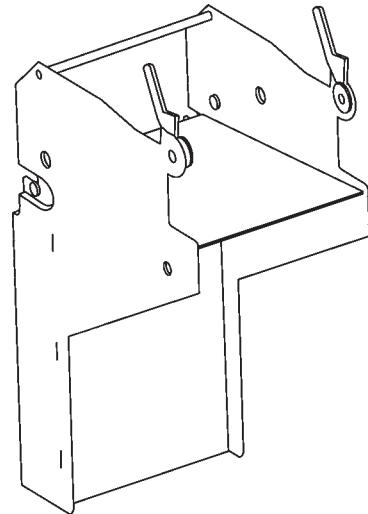
Cashbox/LRC   **Chassis**

The RTU and Chassis are only interchangeable with other identical ZT series models. The Cashbox, however, is common to all ZT series models.

Operation

The ZT1200 and ZT1100 Series acceptors operate on the same principle, using many of the same operating modes to achieve the goal of accepting and collecting currency. This section describes the Operating Modes and Physical Operation of the ZT Series. To access and configure the acceptor see the Configuration Section.

ZT Series Operating Modes

Knowing what each operating mode does is essential in understanding how to configure the ZT Series Acceptor to its desired specifications.

Boot

This mode is used to load new software into the flash memory. The unit will not accept bills or give credits while in this mode. See Configuration Section for flash procedure.

Interface

This is the normal operating mode of the ZT Series Bill Acceptor. While in this mode, the unit communicates with the host machine enabling credits to be issued after bill acceptance.

Coupon

Default bill acceptance and security settings can be changed in this mode using the MEI Configuration Coupon in conjunction with the Bill Option Switch. See Configuration Section for coupon configuration.

Calibration

In this mode the acceptor will draw in a piece of MEI calibration paper to calibrate the unit's data acquisition circuitry. See the Maintenance Section for calibration procedure.

Test

Used in conjunction with MEI diagnostic software, this mode analyzes the performance of the acceptor and acquires historical data stored in EE PROM.

Operation

Last Five Bills (ZT1200 Only)
This mode is unique to the ZT1200 model. If the Platform Bill Entry Guide
is connected and enabled it can display the last five bills inserted
(last bill first). More details can be found in the modes section

Physical Operation
The ZT Series uses a unique design that embeds the sensors under the smooth plastic
bill path reducing jams, debris buildup and the need for cleaning because there are no
complicated magnetic head or pinch rollers.

When a bill is inserted into the bill path, the sensors read the presence of a bill and
attempts to pull it in. When the bill is in the bill path it goes into escrow mode, unless a
jam or other error occurs, where the bill is validated then accepted or rejected. If the
bill is accepted it is then sent to the stacker to be stacked. Once stacked, credits are
sent to the host machine. Below are more detailed descriptions of each state that the
acceptor enters during operation.

Description of the Current Processing States
The acceptor communicates its status to the host machine based on the current
processing state. When a bill or bar code document is inserted into the bill acceptor an
action takes place and one of the following states is indicated.
- Idling
- Accepting
- Escrowed
- Rejected
- Stacking
- Jammed
- Cassette full
- Failure
- Stacked

Idling
The acceptor is not processing a bill or bar code document. It is waiting for one to be
inserted.

Operation

Accepting
A bill or bar code document is normally being pulled into the Acceptor and has not yet reached the Escrow position (described next). If the document fails the validation tests, it is rejected.

Escrowed
This is a position where enough information has been retrieved from the bill or bar code document for the acceptor to make a decision on its validity and denomination. The entire document is inside the acceptor, out of the customer's hands, but is still in a position where it can be returned to the customer if needed.
Note: *If a bill or bar code document appears to be in the Escrow position when power is applied, the acceptor will default to the Escrow mode.*

Rejected
When a bill or bar code document fails the validation tests it is returned to the customer.

Stacking
The document has been accepted and now is moved from the escrow position toward a fully secured position past all of the acceptor's internal sensors. The acceptor will remain in this state until the bill or bar code document is successfully stacked or a jam occurs.

Jammed
The acceptor cannot successfully finish an operation such as stacking or returning the bill or bar code document.

Cassette Full
The acceptor cannot stack any additional bills or bar codes into the cassette. This indicates the cassette or magazine attached to the acceptor is full. The acceptor will disable and indicate an "out of service" condition (Out of service line is only active for NISR interface).

Operation

Failure

The acceptor has discovered some condition, other than those conditions listed above, which does not permit it to continue accepting bill or bar code documents. Typically, the acceptor has determined, after some attempts at error recovery, it can no longer accept currency. For example, the acceptor may determine one of its optical sensors has failed.

Stacked

The bill or bar code document is fully moved to a secure position within the acceptor. Credits should be issued to the machine.

ZT Series Acceptor Removal

Now that you are familiar with the modes and states of operation, it is necessary to know how to remove and install the acceptor for configuration, maintenance and troubleshooting purposes.

Operation

RTU REMOVAL AND INSTALLATION

RTU Removal

Note: *Releasing the RTU will power down the unit. See the next section entitled "Docking Station" for details.*

1.   Pull forward on the release lever on top of the RTU. At the same time, pull forward on the RTU to its first locked position (about half-way out).

2.   Again, pull forward on the release lever. Pull forward on the RTU to remove it from the Chassis.
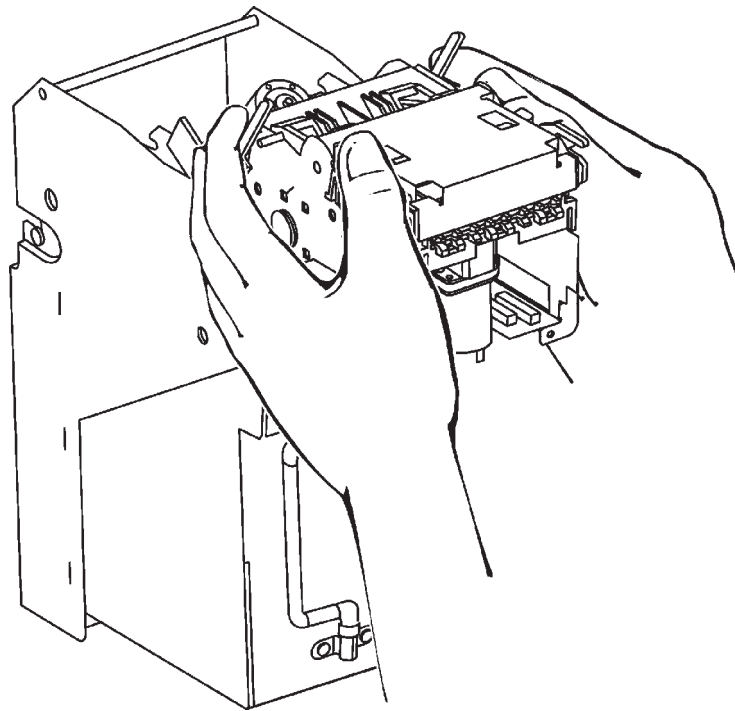
Operation

RTU REMOVAL AND INSTALLATION

RTU Installation

Note: Installing the RTU will power up the unit. See the next section entitled "Docking Station" for details.

1.   Make sure all bill path access areas are latched closed.

2.   Slide the RTU into the Chassis and push firmly to seat the unit. If the above steps are completed properly, the unit will perform a run-and-stack operation as if it were accepting a bill.
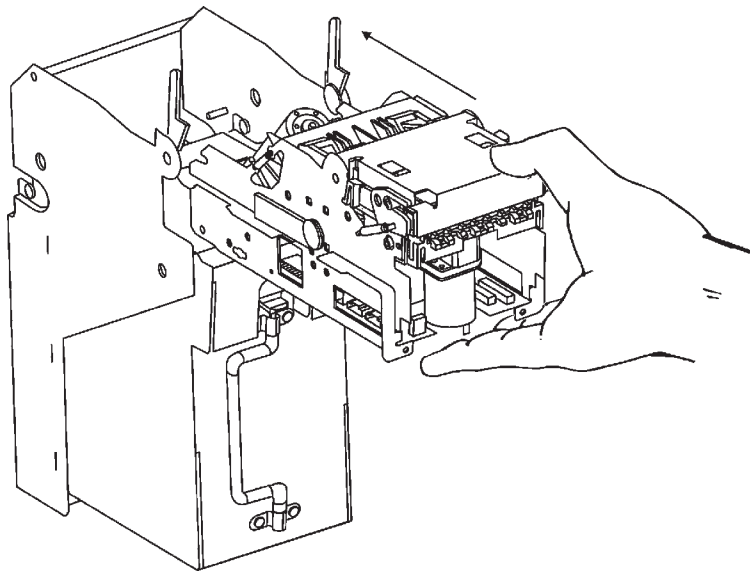
Operation

Docking Station

The ZT series is equipped with a Docking Station Harness. The Docking Station Harness allows the RTU to be fully removed from the Chassis, without disconnecting the harness from the RTU.

Note: *With the host machine connections made and power on, releasing the RTU will power down the unit.*
Fully installing the RTU will power up the unit.
Always refer to the machine OEM install guide when conncecting power to the RTU.

Chassis Dkg Stn Connector

RTU Released

RTU Dkg Stn Connector

Chassis Cutaway

Chassis Harness

RTU Fully Installed

Docking Station Made

Chassis Cutaway
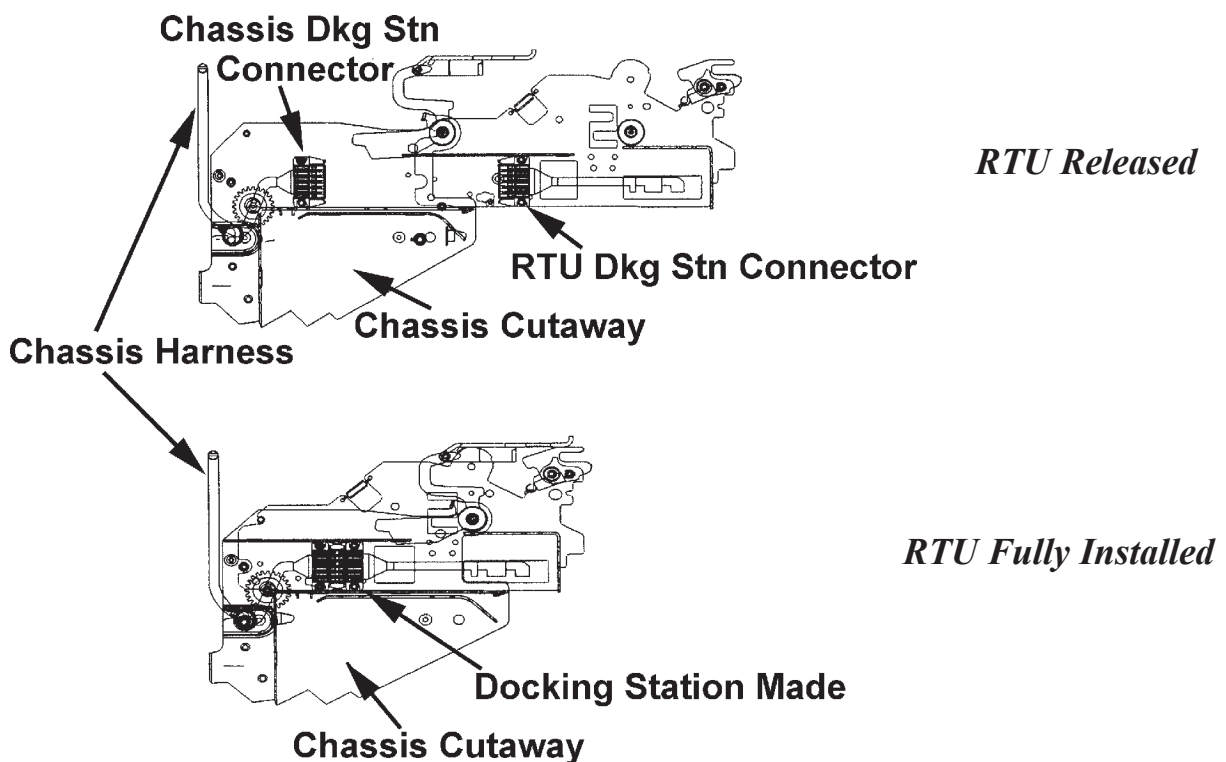
Switch Configuration (For ZT1107 & ZT1200)

The versatility of the ZT Series Acceptors require the user to set the acceptor to the specific configuration needed. Configuration is accomplished via jumpers or switches depending on the model.
Jumpers are used on ZT1100 models except the ZT1107 (See page 35).
Switches are used for ZT1107 & ZT1200 series models (Shown below).

Switch Locations (For ZT1107 & ZT1200)

Platform Bezel
Connector

Bezel Option
Switch

Option
Switches

Power

Interface

External
RS232 Port

Mode Switch
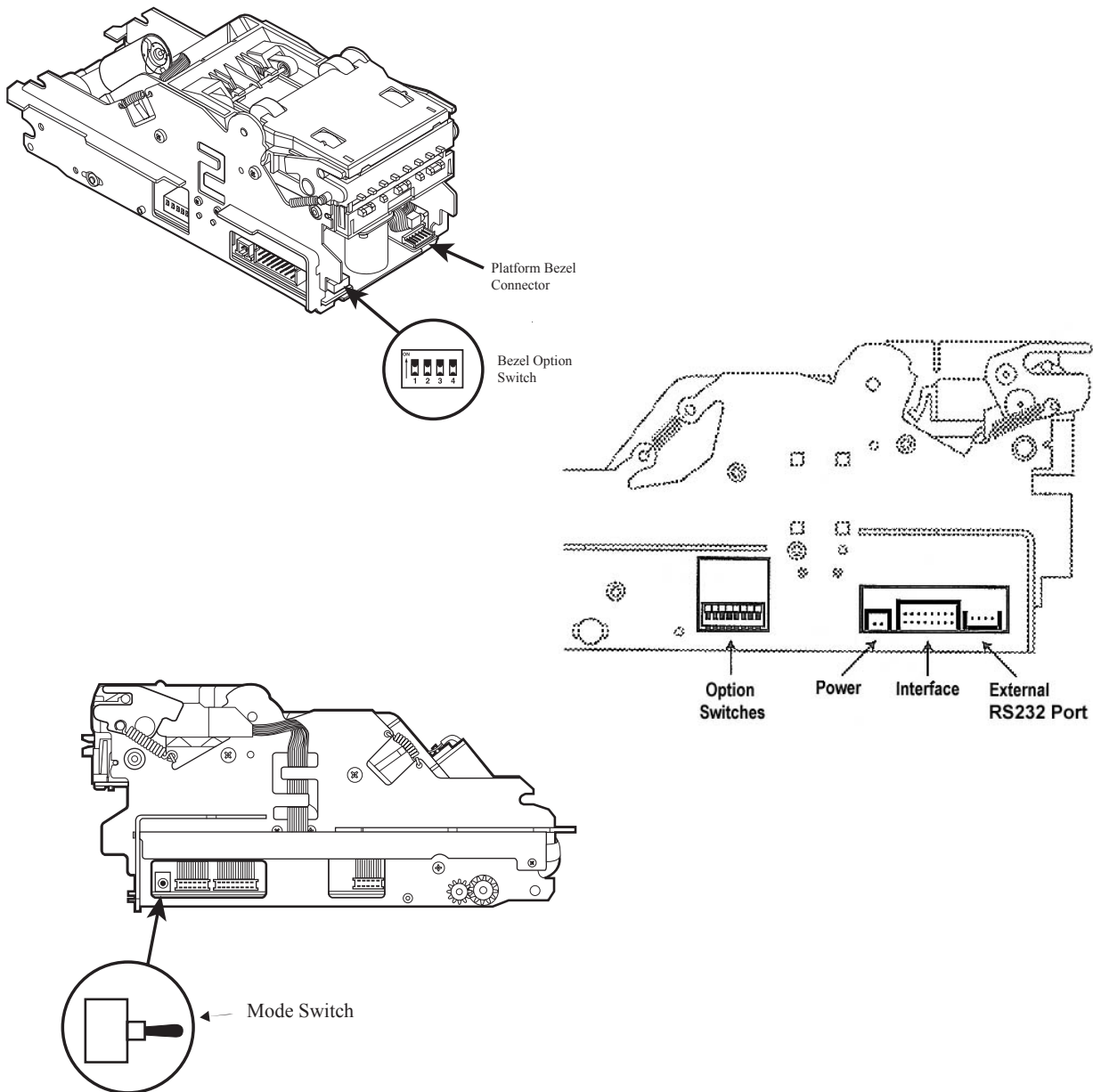
Switch Configuration (For ZT1107 &ZT1200)

Bill Entry Guide Option Switch Positions

The Bill Entry Guide Option Switch settings are used to control the different bezel options.   Table 1 describes the dip switch settings.

Platform Bezel
Connector

Bezel Option
Switch
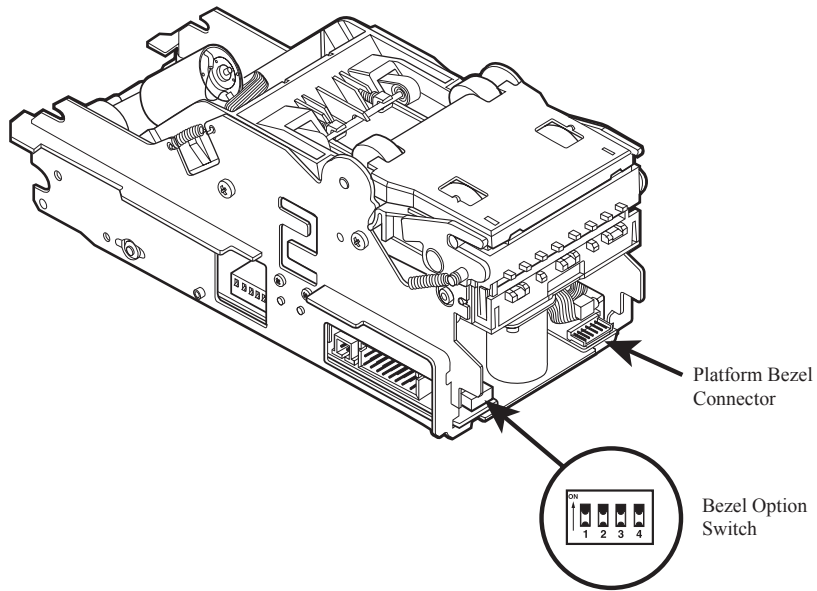
Switch	On	Off
1	Test Mode	Default to Mode Switch.
2	Reserved	Reserved
3	Non-Platform Bezel	Platform Bezel
4	Bezel Flash Mode Disabled	Bezel Flash Mode

(For Platform Bezel Only)

Switch Configuration (For ZT1107 & ZT1200)———

Switch 1 - Test Mode Enable
With this switch in the ON position, the acceptor is in the test mode. This mode allows testing of the unit without the host machine issuing credits. It is used in conjunction with MEI diagnostic software to analyze the performance of the acceptor and acquire historical data from it.
Caution*: When the bezel switch one is on, bills are accepted but no credits are applied by the host machine. Make sure to reset switch one to the OFF position before placing the acceptor back in service.*

Switch 2 - Reserved

Switch 3 - Platform Bill Entry Guide Feed Mode
With this switch in the ON position, if a bill is rejected it does not have to be withdrawn clear of the front sensors for the acceptor to attempt to draw it in again. The bill is released completely by the wheels on a reject. With this switch in the OFF position, a bill is held by the wheels on a reject, and needs to be withdrawn completely from the mouth of the acceptor and reinserted before it will be drawn in again. If the bill is not withdrawn in a few seconds, the transport motors will run in reverse to release the bill.

Switch 4 - Platform Bill Entry Guide Flash Mode
With this switch in the OFF position and the acceptor in serviceand enabled, the platform bezel operates in the following manners:

Standby: In the normal operations mode, the chevron will build from the back to the front, in sequence, in essence pointing into the mouth of the bill acceptor. The sequence will build at 0.5 second intervals, building the complete chevron in 2 seconds. The sequence will then repeat.

Busy / Disabled: The red LED on solid indicates the unit is busy or out of service.

Switch Configuration (For ZT1107 & ZT1200)

Diagnostic Codes: A flashing red LED means that there is a fault. The red LED will flash at a rate of 0.5 Hz. The particular fault is then indicated by the green runway LEDs flashing at a rate of 2 Hz. The widest row closest to the user is row number one and the row farthest away (single triangle) is row number four. The four error messages are:
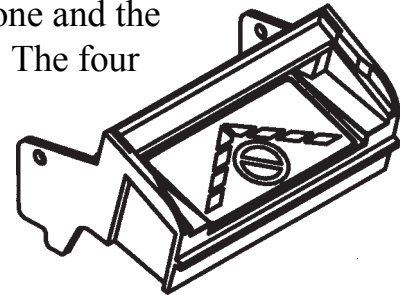
- Row number 1 lit - Hardware fault
- Row number 2 lit - Stacker full
- Row number 3 lit - Jam in the stacker
- Row number 4 lit - Jam in the currency channel

With this switch in the ON position and the acceptor in service and enabled, the platform bill entry guide operates as follows:

- Standby: All lights in the chevron are on continuously.
- Busy / Disabled: All lights are out; the bezel is dark.
- Diagnostic Codes: The same as above.

Row #   Binary Code

4   8

3   4

2   2

1   1
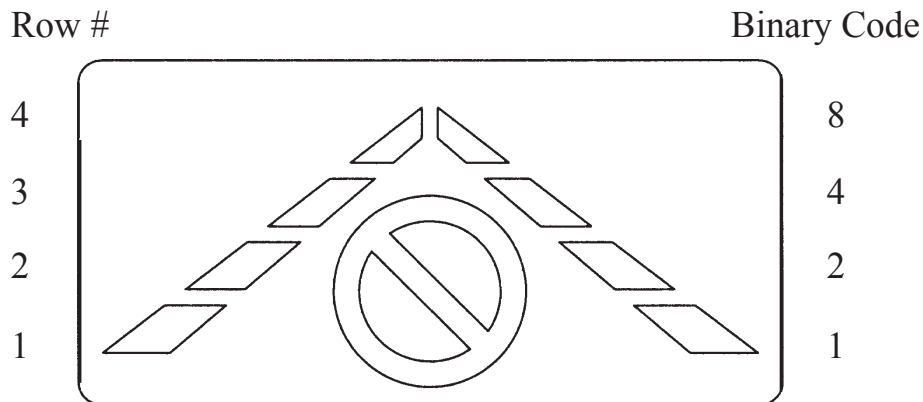
Switch Configuration (For ZT1107 & ZT1200)▬▬

Bill Option Switch Positions

Bill Option Switch settings are used to enable or disable individual bill denomination acceptance as well as bill direction acceptance and coupon mode.

US Currency

	$1	$2	$5	$10	$20	$50	$100	2 Way accept
Reject								
Accept ON	1	2	3	4	5	6	7	8
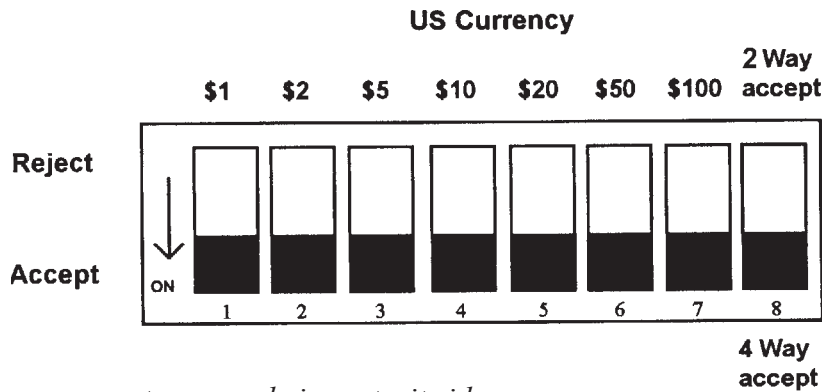
4 Way accept

Note: *1) Two-way acceptance mode is portrait side up.*
2) For V.2.08 IGT Neplex & V.2.80 or later EBDS/NISR software, switch 8 is used to enable/disable barcode coupon acceptance.

MODE SWITCH POSITIONS

- Last 5 Bills Mode (Toggled two times.)
- Coupon Mode (Toggled one time.)
- Test Mode (Hold up.)
- Boot Mode (Hold up on power -up.)

- Calibration Mode (Power-up only.)
- Download/Run Mode (ZT1207R Only)
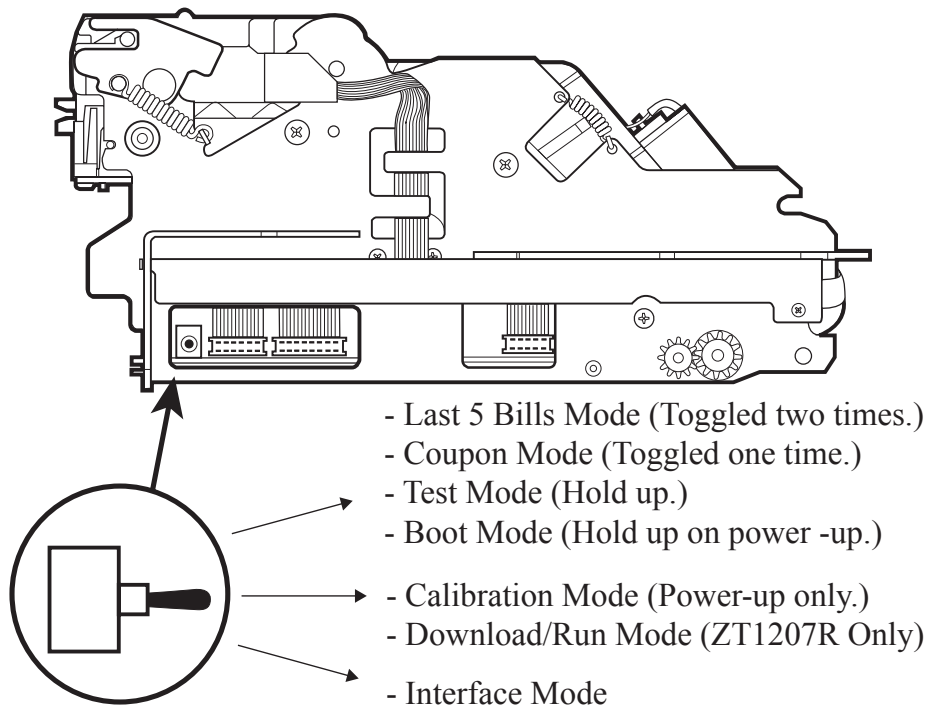
- Interface Mode

The Mode Switch is a two position switch with momentary action.

Modes (For ZT1107 & ZT1200)

Interface Mode (Normal operating mode).

This mode is selected by placing the Mode Switch to the down position. Interface Mode is the normal operating mode of the ZT Bill Acceptor. This allows the unit to communicate with an installed machine so that it may accept bills and give credits.

Calibration Mode

This mode is selected by placing the Mode Switch to the middle position and cycling power. After the calibration is successfully completed the ZT Bill Acceptor will automatically return to Interface Mode (Normal Run Mode). Refer to the section entitled "Calibration" for more details on calibrating a ZT Bill Acceptor.

Note: MEI recommends that the Mode Switch be returned to the Interface Mode position (Normal Run Mode) after calibrating the unit. (Except ZT1207R, leave mode switch in middle position).

Boot Mode

This mode is selected by holding the Mode Switch in the up position while cycling power to the ZT Bill Acceptor. Boot Mode is a special mode which is reserved for factory use and field software upgrades. The unit will not accept bills when in this mode. To exit Boot Mode return the Mode Switch to the Interface Mode position (Normal Run Mode) and cycle power.

Modes (For ZT1107 & ZT1200)

Test Mode

A mode is available on both the ZT1100 & ZT1200 which will allows testing of the ZT unit without having to communicate through an interface to the host machine. This mode is very useful for troubleshooting and other stand-alone testing of the bill acceptor.

To Enter Test Mode

1.   *Power up the ZT1200 in "Interface Mode". (See page 20), under "Mode Switch Positions" in the Switch Configuration section.)*

2.   *After the unit performs a brief motor operation (with no interface detected) or a run-and-stack operation(when an interface is detected), wait at least an additional 10 seconds before performing the next step.*

3.   *Hold the Mode Switch in Test Mode Position (See page 20).The ZT will perform a run-and-stack.*

4.   *The ZT1200 will now accept and stack bills,* **BUT NO CREDITS WILL BE ISSUED ON THE HOST MACHINE.**

Note: The cashbox must be in place for bill acceptance.

To Exit Test Mode

1.   *Release the Mode Switch and return it to the Interface(Normal) run mode (See page 20).*

2.   *Remove RTU*

3.   *Replace RTU, unit will perform a brief motor operation (with no interface detected) or a run-and-stack operation (when an interface is detected).*

4.   *The unit is now ready for use.*

Modes (For ZT1107 & ZT1200)
Coupon Mode (ZT1200)

This mode is selected by toggling the Mode Switch to the up position. This mode allows the default settings to be changed in the ZT Bill Acceptor. These setting are used when switches 1-7 are in the OFF position on Bill Option Switch. The factory default Coupon Settings are $1, $2, $5, $10, $20, $50, and $100's enabled with four way acceptance. Coupon Mode will only allow a one time try for coupon configuration. After an attempt, the ZT Bill Acceptor will automatically return to Interface Mode.

1.   Turn Bill Option switches #1 thru 7 to the OFF position
        (See Page 20).

2.   Install RTU into machine, the unit will perform a brief motor operation (with no interface detected) or a run-and-stack operation (when an interface is detected).

3.   To enter the coupon mode, toggle the Mode Switch to the up position one time (See Page 20). The motor will pulse in reverse to indicate coupon configuration mode.

COUPON CONFIGURATION

1.   Paper copies of this Manual will have a usable coupon on page 24. Electronic copies of the coupon are **not** usable. If you have a coupon, you may make copies only with a standard, carbon-based, non-color copier. Copies of the coupon are usable if cut to match the size of the attached coupon.

2.   Fill out the coupon using a #2 pencil to fill in the blocks for desired options. For correct operation, all 8 lines must be completed. Fill in only one block per line. Do not mark the back of the coupon.

3.   Complete lines 1 thru 7 to enable desired bill denominations. Fill in one block for each denomination. Standard security enables maximum bill acceptance. High security may be desired for locations where a higher level of discrimina tion is desired. OFF will reject bills of the selected denomination.

4.   Complete line 8 to enable desired bill direction. Enable 1 or 2 way face up, or 4 way acceptance (which allows acceptance in all directions).

Modes (For ZT1107 & ZT1200)

INSERT COUPON AND VERIFY SETTINGS WERE ACCEPTED

ACCEPTED: If the coupon is accepted, it will be held in escrow mode for about 3 seconds then returned.

REJECTED: If the coupon is rejected, it will be immediately returned. If rejected, review instructions or try new coupon.

TO RETURN TO NORMAL OPERATION

After the coupon is accepted and returned the unit will return to normal operating mode. The coupon settings will now be used to configure the unit.

If the coupon is used to configure security only.

1.   Remove RTU.

2.   Change Bill Option Switches to their orginal posititon (Page 20).

3.   Re-install the RTU.

Modes (For ZT1107 & ZT1200)

ZT 1200 Series Coupon

Modes (For ZT1107 & ZT1200)

LAST FIVE BILLS MODE

In this mode the ZT1200 with the use of the Platform Bezel can display the last five bills inserted (last bill first) through the flashing bezel LEDs. The rows are used in binary form to encode the bill type.

Denomination	Bill Type	Binary Code
$1	1	0001
$2	2	0010
$5	3	0011
$10	4	0100
$20	5	0101
$50	6	0110
$100	8	1000

PLATFORM BEZEL
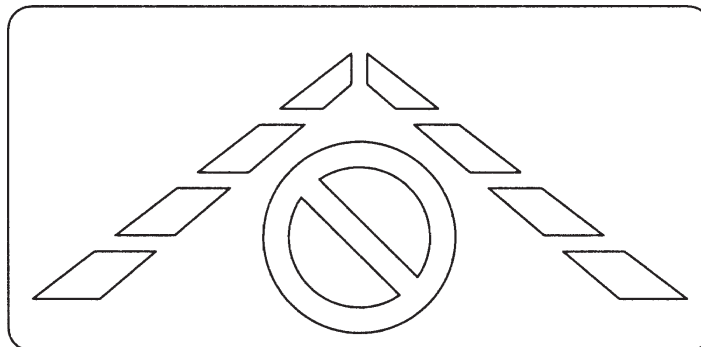
Modes (For ZT1107 & ZT1200)

LAST FIVE BILLS MODE

To Enter Last Five Bills Mode

1. Toggle the Mode Switch two times in the up position without cycling power to the ZT Bill Acceptor. (See Page 20.)

2. The last five bills inserted will be displayed, last bill first. For example, if the last bill inserted was a ten, the lights in row three would light up signifying Bill Type 4 (See Page 26). If the last bill inserted was a twenty, the lights in both row one and three would light up signifying Bill Type 5 (See Page 26). If the last bill was unknown, (i.e. stacked without credit) all lights will light up.

3. After the first bill is displayed for 0.5 seconds, the bezel will go dark for 0.5 seconds, then display the bill type for the next to last bill inserted. The cycle repeats through the last five bills, then the unit is dark for a full second before the cycle repeats.

Note: The Last Five Bills Mode memory can be reset by cycling power to the ZT Bill Acceptor.

To Exit Last Five Bills Mode

1. Return the Mode Switch to the Interface Position. (See Page 20.)

Note: *The ZT1200 will automatically return to Interface Mode after a bill is inserted.*

Modes (For ZT1107 & ZT1200)

PLATFORM BEZEL FLASH MODE

This mode is a function of the Platform Bezel (Page 26) and can be selected by putting Bezel Option Switch 4 to the OFF position. (Page 17). In this position the Platform Bezel will operate as follows:

Standby: In the normal operations mode, the chevron will build from the back to the front, in sequence, in essence pointing into the mouth of the bill acceptor. The sequence will build at 0.5 second intervals, building the complete chevron in 2 seconds. The sequence will then repeat.

Busy / Disabled: The red LED on solid indicates the unit is busy or out of service.

Diagnostic Codes: A flashing red LED means that there is a fault. The red LED will flash once every two seconds. The particular fault is then indicated by the green runway LEDs flashing at a rate of twice a second. The widest row closest to the user is row number one and the row farthest away (single triangle) is row number four. The four error messages are:

* Row number 1 lit - Hardware fault
* Row number 2 lit - Stacker full
* Row number 3 lit - Jam in the stacker
* Row number 4 lit - Jam in the currency channel

NON-PLATFORM BEZEL FLASH MODE

This mode is a function of the Platform Bill Entry Guide (Page 26) and can be selected by putting Bill Entry Guide Option Switch 4 to the ON position (See Page 17). In this position the Platform Bezel will operate as follows:

Standby: All lights in the chevron are on continuously.

Busy / Disabled: All lights are out; the bezel is dark.

Diagnostic Codes: The same as above.

Modes (For ZT1107 & ZT1200)

BILL ENTRY GUIDE FLASH MODE

PLATFORM BILL ENTRY GUIDE
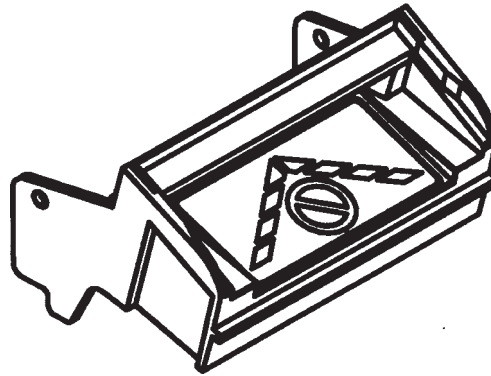
NON-PLATFORM BILL ENTRY GUIDE

UNIVERSAL BILL ENTRY GUIDE
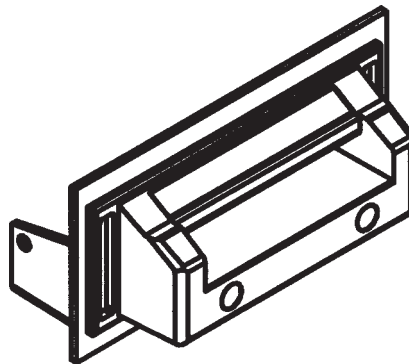
Connectors and Harnessing (ZT1107 & ZT1200)

Bill Entry Guide Connector

Pin 1
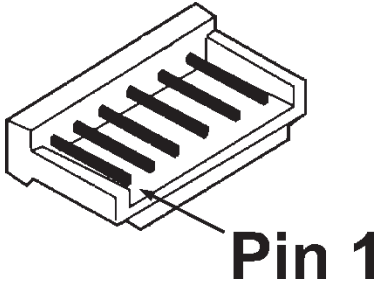
Signal Pinout

Pin #	Function
1	GROUND
2	$\overline{\text{BEZ1\_OUT}}$
3	CASS_MEM

Pin #	Function
4	+10 VDC
5	$\overline{\text{BEZ2\_OUT}}$
6	GROUND

Mating Connector Information

Connector with Female IDC Pins: AMP #173977-6

Connectors and Harnessing (ZT1107 & ZT1200)

Cassette Present Switch

HARNESS ASSEMBLY CANNOT INTERFERE WITH HOME SWITCH
LEVER OR TORSION SPRING OPERATION.

WHITE WIRE TO
NORMALLY CLOSED (NC)

RED WIRE TO
NORMALLY OPEN (NO)

BLACK WIRE
TO COMMON (COM)

CONNECTIONS

WHITE - NORMALLY CLOSED
RED - NORMALLY OPEN
BLACK - COMMON
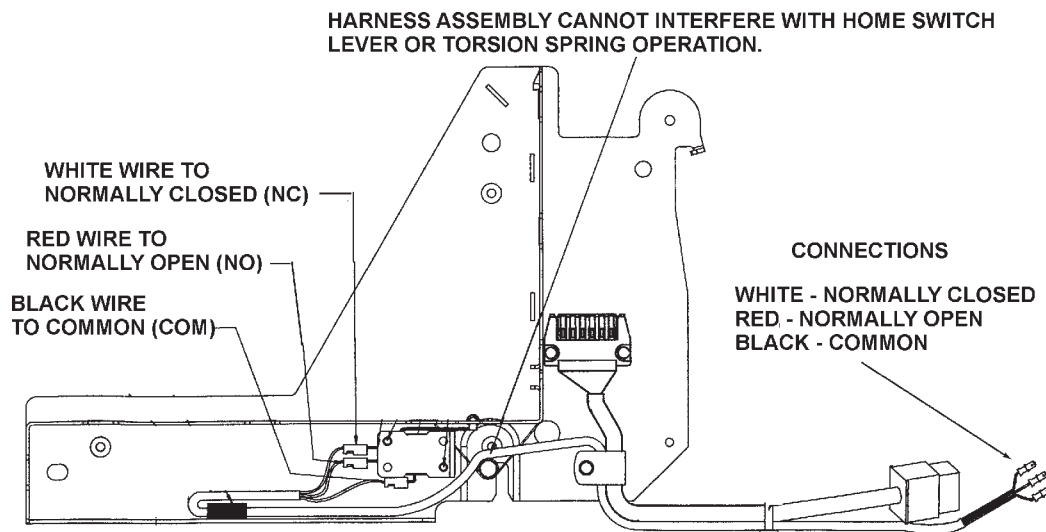
External RS232 Connector

Pin 1
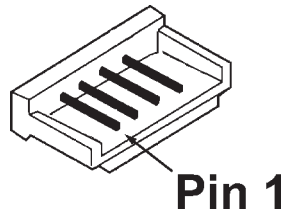
Signal Pinout

Pin#	Function	Pin#	Function
1	TXD-2	3	RXD-2
2	5V OUT	4	GND

Mating Connector Information

Preloaded with Insulation
Displacement Receptacle   AMP#173977-4
                or
Connector Housing   AMP#175778-4
Female Pin   AMP#175161-1

Connectors and Harnessing (ZT1107 & ZT1200)

Docking Station (continued)

Chassis Harness Termination Connector

Standard ZT1200 units, with docking station, will have a Chassis Harness that terminates with a 12 Pin Connector. Please see below for signal pinout and mating connector information.

Signal Pinout

Pin#	Function		Pin#	Function
1	CASSETTE PRESENT		7	NISR_INTERRUPT
2	BEZ_LED_OUT		8	LED_SUPPLY
3	NISR_SEND		9	TXD/CREDIT
4	OUT_OF_SERVICE		10	OPT_RXD/ACC_EN
5	GROUND		11	POWER 12-40 VDC
6	RS232 RXD		12	RS232 TXD

Mating Connector Information

Connector: AMP Cap #172333-1
Male Pins: AMP Pin # 170360-1 or # 170364-1

*Note: Some ZT1200 units may have Chassis Harness termina
tion connectors that are "OEM-Specified." Please
refer to the host machine manual for pinout and
connector information.*
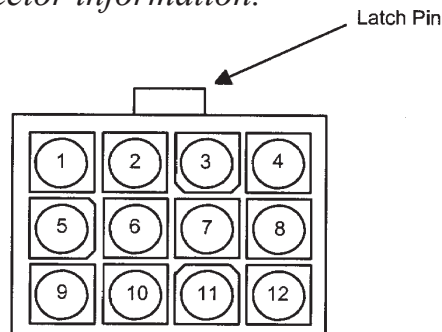
12 Pin Chassis Docking Station Connector (End View)

Modes For ZT1100 (Except 1107)⎯⎯⎯⎯⎯

Mode Jumper Positions

Interface Mode (Normal operating mode).

This mode is the normal operating mode of the ZT1100 Bill Acceptor. This allows the unit to communicate with the machine that it is installed in so that it may accept bills and give credits.

Calibration/Test Mode

This mode is used when calibrating the unit or performing bill testing.

Refer to the section entitled "Calibration" for more details on calibrating the ZT1100. Refer to the section entitled "Test Mode" for more information on using the test function.

Boot Mode

The ZT1100 can be placed in a special boot mode which is reserved for factory use, and field software upgrades. The unit will not accept bills or give credits when in this mode.

Boot Mode   **Calibrate / Test Mode**   **OR**   **Interface Mode**
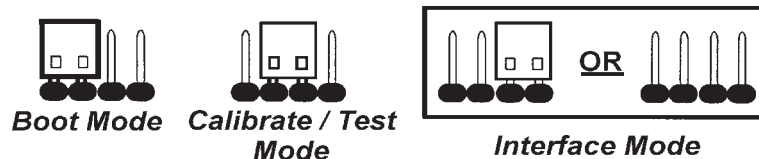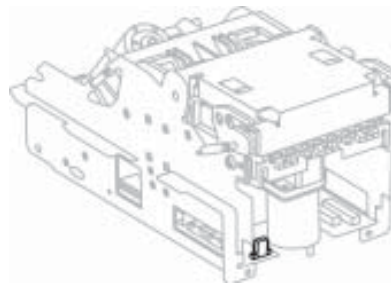
Modes For ZT1100 (Except 1107)

TEST MODE

A mode is available on the ZT1100 which will allow testing of the unit without credits being communicated to the host machine. This mode is very useful for troubleshooting and other stand-alone testing of the bill acceptor.

To Enter Test Mode

1.   Power up the ZT1100 in "Interface Mode". (See diagram on previous page)

2.   After the unit performs a run-and-stack operation, wait at least an additional 10 seconds before performing the next step.

3.   Place the mode jumper in Test Mode. (See diagram on previous page)

4.   The ZT1100 will now accept and stack bills, ***BUT NO CREDITS WILL BE ISSUED ON THE HOST MACHINE.***

Note: The cashbox must be in place for bill acceptance.

To Exit Test Mode

1.   Remove RTU.

2.   Remove the mode jumper or move the jumper to Interface Mode. (See heading entitled "Mode Jumper Positions" on previous page)

3.   Replace RTU, unit will do a run-and-stack.

4.   The unit is now ready for use.

Modes For ZT1100 (Except 1107)

CALIBRATION

A calibration of the ZT1100 Bill Acceptor may need to be performed after certain maintenance procedures. Those procedures that require it will explicitly state that a calibration must be performed. As a general guide, any disassembly of the ZT1100 must be followed up with a calibration.

Materials Required - Mars ZT Calibration Kit - Part Number 251061008

1.   Power down the ZT1100 unit.

2.   Move the calibration jumper to the calibration position. Refer to the section entitled "Connectors and Harnessing" in the back of this manual for details on your specific model.

3.   Apply power to the ZT1100 unit.

4.   Insert a piece of Mars calibration paper into the bezel of the ZT1100 and allow the unit to draw the paper in.

5.   After a few seconds, the calibration paper will be rejected.

6.   Remove the calibration paper from the bezel.

7.   The RTU will perform a "run and stack" operation if the calibration was accepted. If the unit does not perform a "run-and-stack", the calibration data was not accepted. In this case the calibration paper must be re-fed.

Note: If after several attempts the unit does not perform a ""run-and-stack"", the unit may require additional service.

8.   Allow the ZT1100 unit to idle for at least 20 seconds following the run-and-stack operation. Make sure that all bills, calibration paper or other objects are removed from the bezel during this period.

9.   Power down the ZT1100 unit and remove the mode jumper.

10.   Power up the unit. A run-and-stack operation will be performed if ready for service.

Connectors and Harnessing ZT1100 (Except 1107)_

RTU Connectors

Connector placement and pinout information is shown below.
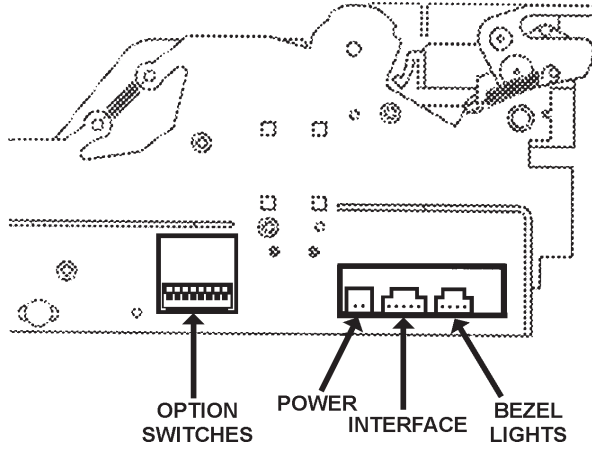
View from left side of RTU.

OPTION SWITCHES   POWER   INTERFACE   BEZEL LIGHTS

2 1
(View of connector as mounted on ZT1100 control board.)

**Power
(2 Pins)**
Pin#	Function
1	+12-40 VDC
2	Ground

Mating Connector:
Molex
50-57-9402 (Housing)
16-02-0103 (Pins)

Recommended Wire Gauge:
22 or 24 Gauge

5   1
(View of connector as mounted on ZT1100 control board.)

**Interface
(5 Pins)**
Pin#	Function
1	/Reset
2	Transmit
3	+12-24 VDC
4	Receive
5	Return

Mating Connector:
Molex
50-57-9405 (Housing)
16-02-0103 (Pins)

Recommended Wire Gauge:
22 or 24 Gauge

4   1
(View of connector as mounted on ZT1100 control board.)

**Bezel Light
(4 Pins)**
Pin#	Function
1	LED Pwr
2	Bezel LED Control
3	/Reset
4	Ground

Mating Connector:
Molex
50-57-9404 (Housing)
16-02-0103 (Pins)

Recommended Wire Gauge:
22 or 24 Gauge

Connectors and Harnessing ZT1100 (Except 1107)_

Docking Station (continued)

Chassis Harness Termination Connector

Standard ZT1100 units, with docking station, will have a Chassis Harness that terminates with a 12 Pin Connector. Please see below for signal pinout and mating connector information.

Signal Pinout

Pin#	Function	Pin#	Function
1	/Reset	7	Ground (Optional)
2	Bezel LED Control	8	Bezel LED Pwr (Output)
3	+12-24 VDC (Opto Pwr)	9	Transit Data
4	Return (Opto GND)	10	Receive Data
5	Ground (ZT Pwr)	11	+12-40 VDC (ZT Pwr)
6	/Reset (Opto-Isolated)	12	No Connect

Mating Connector Information

Connector: AMP Cap #172333-1
Male Pins: AMP Pin # 170360-1 or # 170364-1

Note: Some ZT1100 units may have Chassis Harness termination connectors that are "OEM-specified". Please refer to the host machine manual for pinout and connector information.

Cassette Present Switch

HARNESS ASSEMBLY CANNOT INTERFERE WITH HOME SWITCH LEVER OR TORSION SPRING OPERATION.

WHITE WIRE TO NORMALLY CLOSED (NC)

RED WIRE TO NORMALLY OPEN (NO)

BLACK WIRE TO COMMON (COM)

CONNECTIONS
WHITE - NORMALLY CLOSED
RED - NORMALLY OPEN
BLACK - COMMON
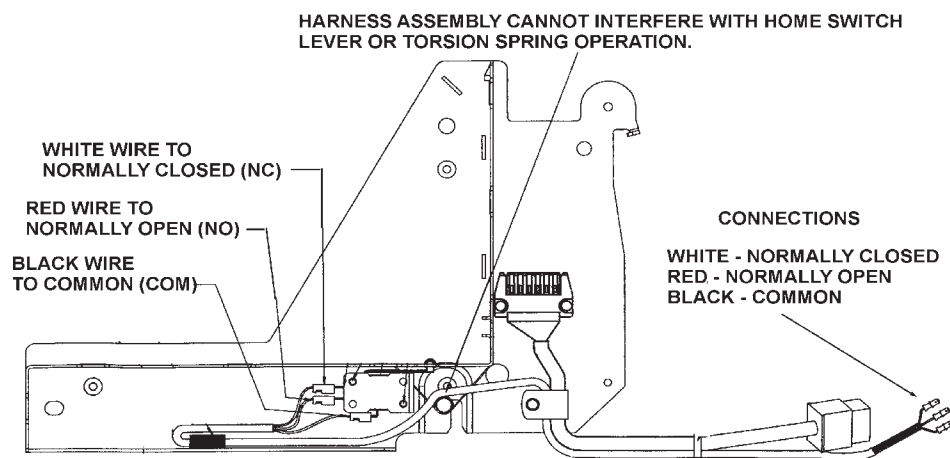
Maintenance

Periodic maintenance improves the performance and extends the working life of any bill acceptor. Additional attention may be required if acceptance rates fall below normal or the bill acceptor becomes inoperable due to a jammed object.

CLEANING AND CLEARING JAMS

Before you start

Periodic cleaning or clearing of the RTU, Chassis or Cashbox (Picture on page 8) may be required to properly maintain the unit. Read these instructions completely before starting work.

Disconnect Power

Disconnect the power from the bill acceptor before starting work. This will keep the motors from running while clearing or cleaning the unit. Refer to the appropriate section of this manual for power connector locations for your specific model.

Maintenance

Release the RTU from its normal operating position

Pull forward on the release lever to free the RTU from the Chassis and pull it to the first locked position (about half-way out). Refer to the picture below for details.

Note: Releasing the RTU will power down the unit. See the section entitled "Docking Station" (Page 15) for details.
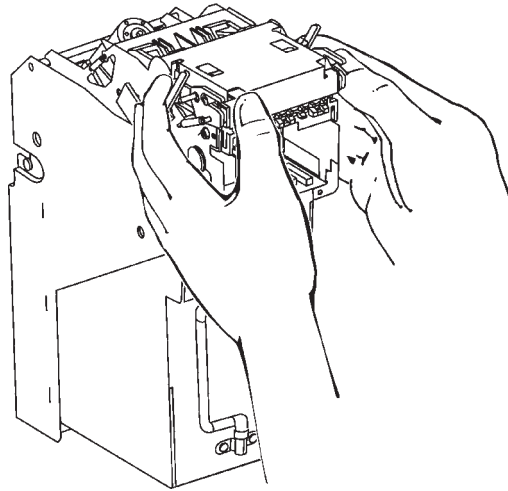
Cleaning and clearing the front sensor area

To access the front sensor area, lift up on the U-shaped latches located on the front of the unit. Lift the plastic housing until it rests at a 45 degree position. See Below.

Release Lever

Front U-shaped Latches
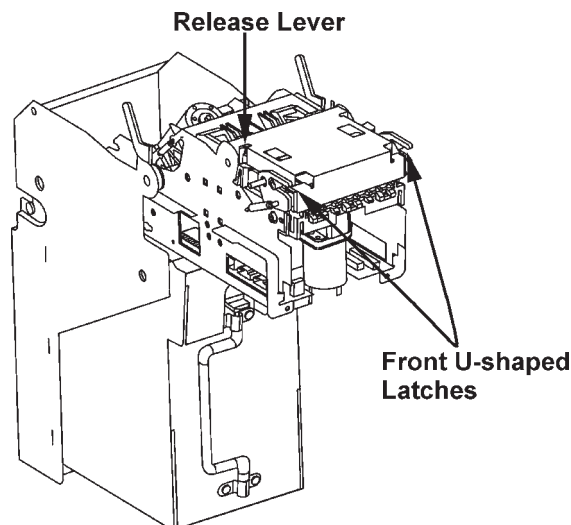
Maintenance

CLEANING THE OPTICAL SENSORS

Use a lint-free cloth dampened with a mild soap solution to clean all accessible optical areas. Make sure to buff these areas dry before placing the bill acceptor back in service.

Note: **Calibrate the unit after cleaning. (See heading entitled "Calibration" on page 44)**
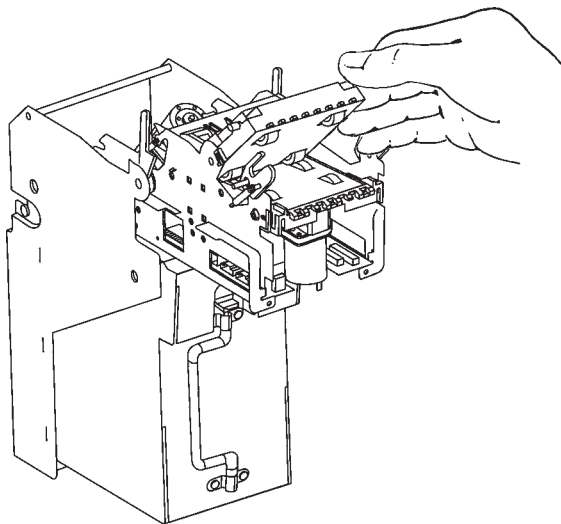
CAUTION

Use of petroleum-based chemicals to clean the optical areas may permanently damage the plastic parts. Use only a mild soap solution.

Maintenance

CLEARING THE REAR BILL PATH AREA

Pull the RTU out to the first locked position or completely remove the RTU from the chassis. Grasp the black plastic fin on the top of the RTU near the middle of the unit and pull up firmly to access the bill path (See picture below).
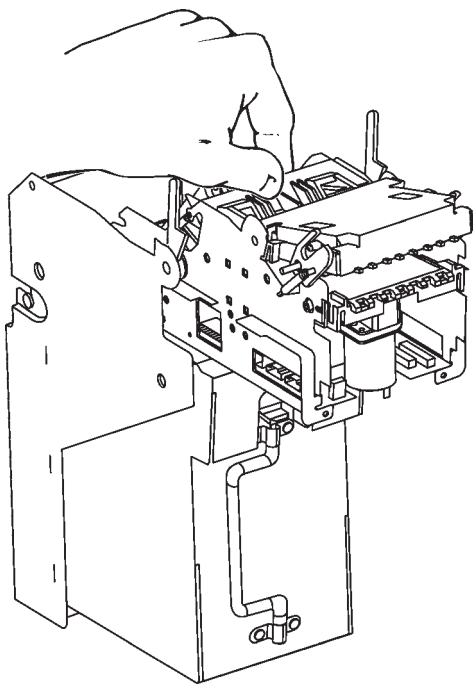
CAUTION

Do not use the motor housing as a handle to open the rear bill path area. Use only the lifting web provided.

Maintenance

CLEARING JAMS IN THE CASHBOX

Note: *Most bill jams in the Cashbox can be cleared without opening or unlocking the Cashbox itself. Generally, only severe jams require the Cashbox to be opened.*

1. Remove the Cashbox from the Chassis.

2. Locate the small, white plastic gear at the top right of the Cashbox.

3. Rotate the gear clockwise. It may require several turns of the gear before the jammed bill appears between the pinch rollers. Make sure that the gear is able to be turned without excessive binding.

4. After the jam has been cleared, re-install the Cashbox in the Chassis. Make sure the Cashbox is firmly seated by aggressively pushing it "home".

5. Within 6 seconds, the RTU will perform a brief motor operation (with no interface detected) or a run-and-stack operation (when an interface is detected). This indicates that all components are installed correctly.

Tip: *Remove and re-seat the RTU to ensure that it is also properly aligned.*

Maintenance

PLACING THE BILL ACCEPTOR BACK IN SERVICE

To place the unit back in service, make certain that the following items are completed in this order:

1.   Make sure the rear bill path access door is latched closed.

2.   Make sure the front sensor housing is closed and the U-shaped brackets are properly latched.

3.   Replace the RTU in the Chassis and check to make sure it is firmly seated.

Note: Installing the RTU may power up the unit. See the section entitled "Docking Station" for details.

4.   Re-install all required harness connectors.

5.   If Steps 1 through 4 are completed properly, the unit will perform a "run and stack" if an interface is detected or a "brief motor run" if no interface is detected. If this is not the case, check the harness connections to the host machine, then recheck each item above.
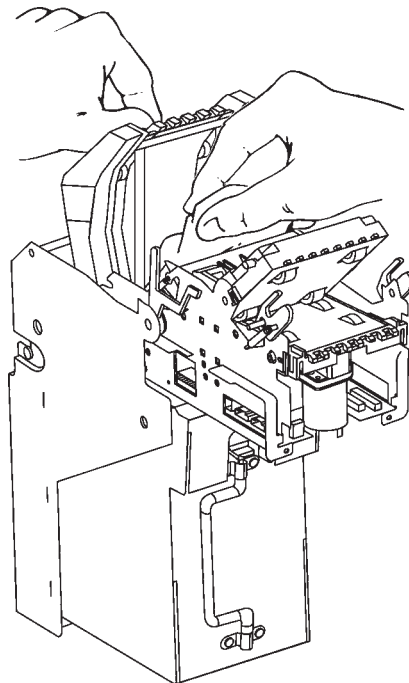
Maintenance

CALIBRATION

A calibration of the ZT Bill Acceptor may need to be performed after certain maintenance procedures. Those procedures that require it will explicitly state that a calibration must be performed. As a general guide, any disassembly of the ZT Bill Acceptor must be followed up with a calibration.

For ZT 1100 calibration procedures (Except 1107) see page 35.

ZT 1107 & ZT1200 CALIBRATION Procedure

Materials Required - MEI ZT1200 Calibration Kit - Part Number 251069160

1. Power down the ZT1200 and move the Mode Switch to the calibration position (Middle Position).For ZT1207R, place the bezel option switch 1 on.

2. Apply power to the ZT1200 unit and insert a piece of Mars calibration paper into the bezel of the ZT1200 within 4 seconds and allow the paper to be "stepped" in half way.

Note: The ZT1200 will exit Calibration Mode and return to Interface Mode automatically 4 seconds after power up if no calibration paper is inserted into the ZT1200.

3. After a few seconds, the calibration paper will be rejected.

4. Remove the calibration paper from the bezel.

5. The RTU will perform a "run and stack"or "brief motor run" (drive motor will run in reverse for a split second) operation depending on the interface and/or mode of operation of the unit if the calibration was accepted.

6. If the unit does not perform a "run-and-stack" or "brief motor run", the calibration data was not accepted. In this case, the calibration paper must be re-fed.

7. Allow the ZT1200 unit to idle for at least 20 seconds following the "run-and-stack" or "run" operation. Make sure that all bills, calibration paper or other objects are removed from the bezel during this peroid.

Note: If after several attempts the unit does not perform a "run and stack" or "brief motor run" the unit may require additional service.

Maintenance

CALIBRATION CONTINUED

8.   Power down the ZT1200 unit and place the Mode Switch to the Interface Position (Normal Run Mode). See heading entitled "Mode Switch Positions" on page 20 in the Switch Configuration section.

9.   Power up the ZT1200 unit. A "run-and-stack" if an interface is detected or "breif motor run" operation if no interface is detected will occur if the ZT is ready for service.

Analyzer Instruction

Version 1.0

Analyzer has six sections that are used for analysis of MEI bill acceptors. Sections are divided by tabs.

The six tabs are:

Communication - Establishing communication between the software on your computer and the bill acceptor.

Configuration- Describes options setting of the bill acceptor.

Audit- Provides incremental audit information from the bill acceptor.

Flash- Used to download software to the bill acceptor.

Collect- For MEI Internal use only! No instruction given on this section.

Sensor- Used to calibrate, clear and read sensor values.

Note: Install Analyzer program directly to C:\ (local) drive on your computer.Remove other versions of Analyzer prior to installing this version.

Analyzer
Communication Tab
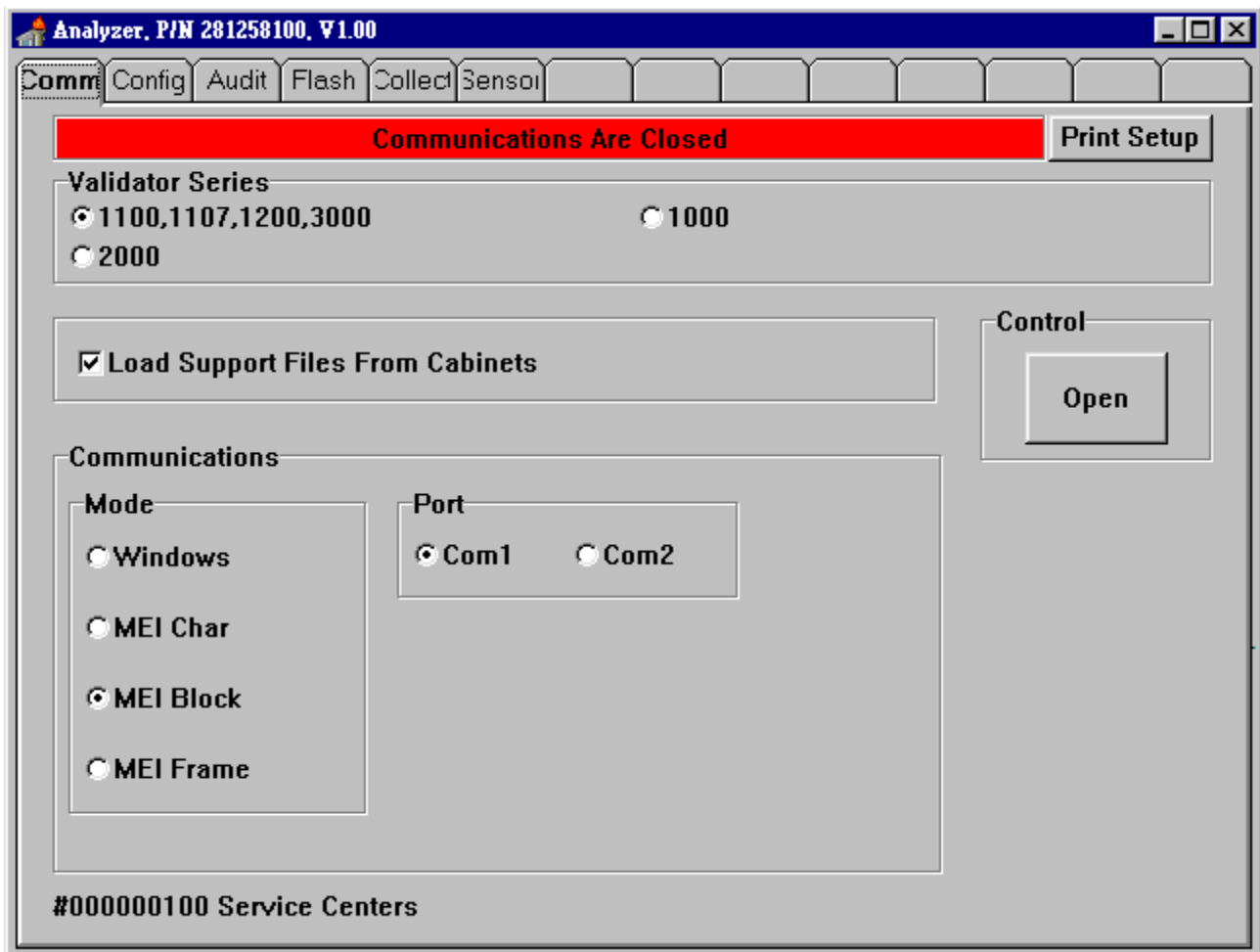
1. Open the Analyzer program. You will be viewing the communications tab. The communications bar will be red indicating "communications are closed."
2. Under the "Validator Series" section, select the button for the 1100,1200 model.
3. Check the "load support files from cabinets" box.
4. Select the "MEI Block" from the Mode section.
5. Select "Com1" from the Port section.
6. Apply power to the ZT and click on the control button "open". The bar should turn green indicating that communication has been established.

Analyzer

Cofiguration Tab
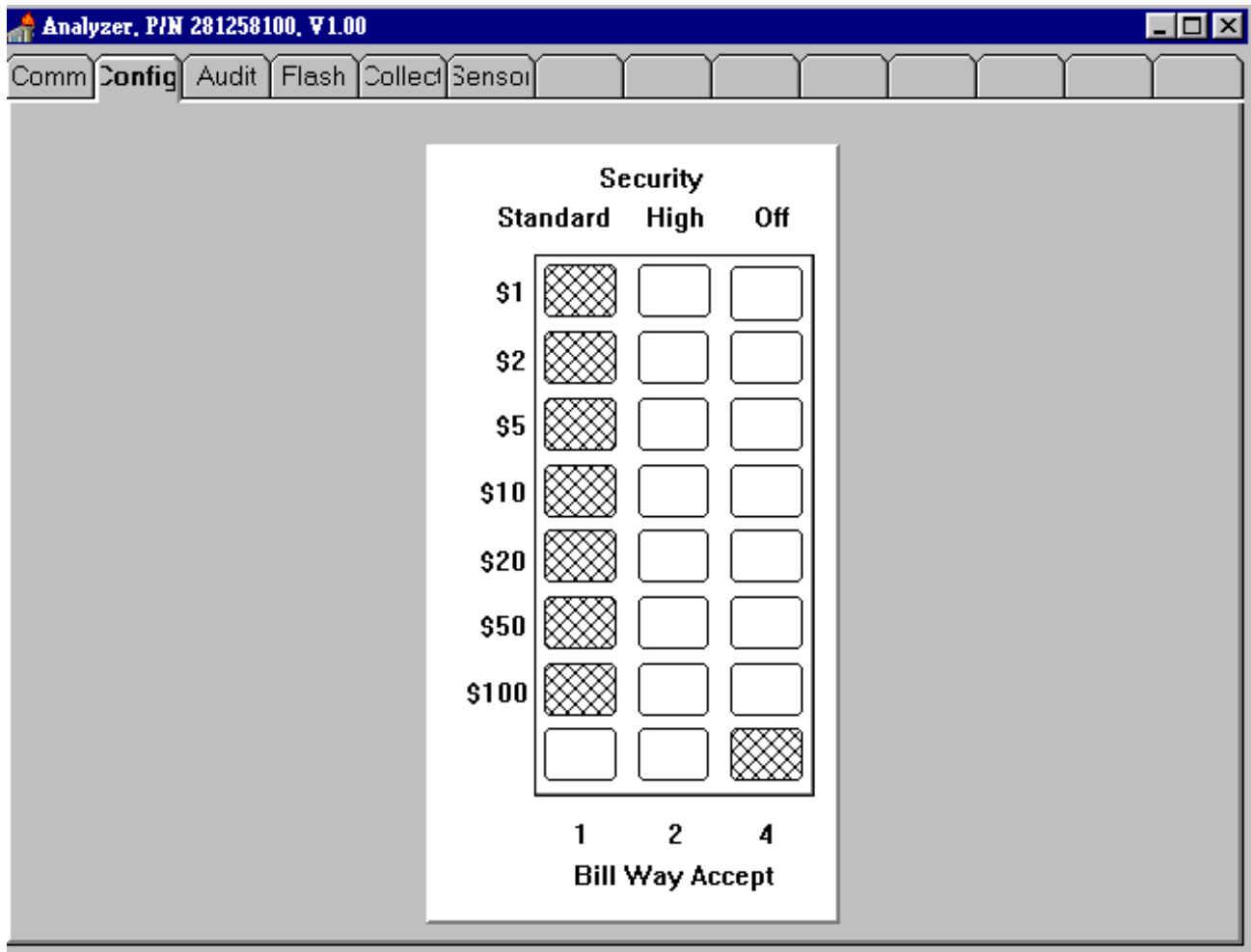
Follow Steps 1-6 on page 46. Communication must be established prior to Configuring the bill acceptor.

1) Click on the config. tab. A configuration coupon will appear. Click on the buttons to configure the ZT Series bill acceptor to the desired settings. The settings are instantly changed.

Analyzer

Audit Tab
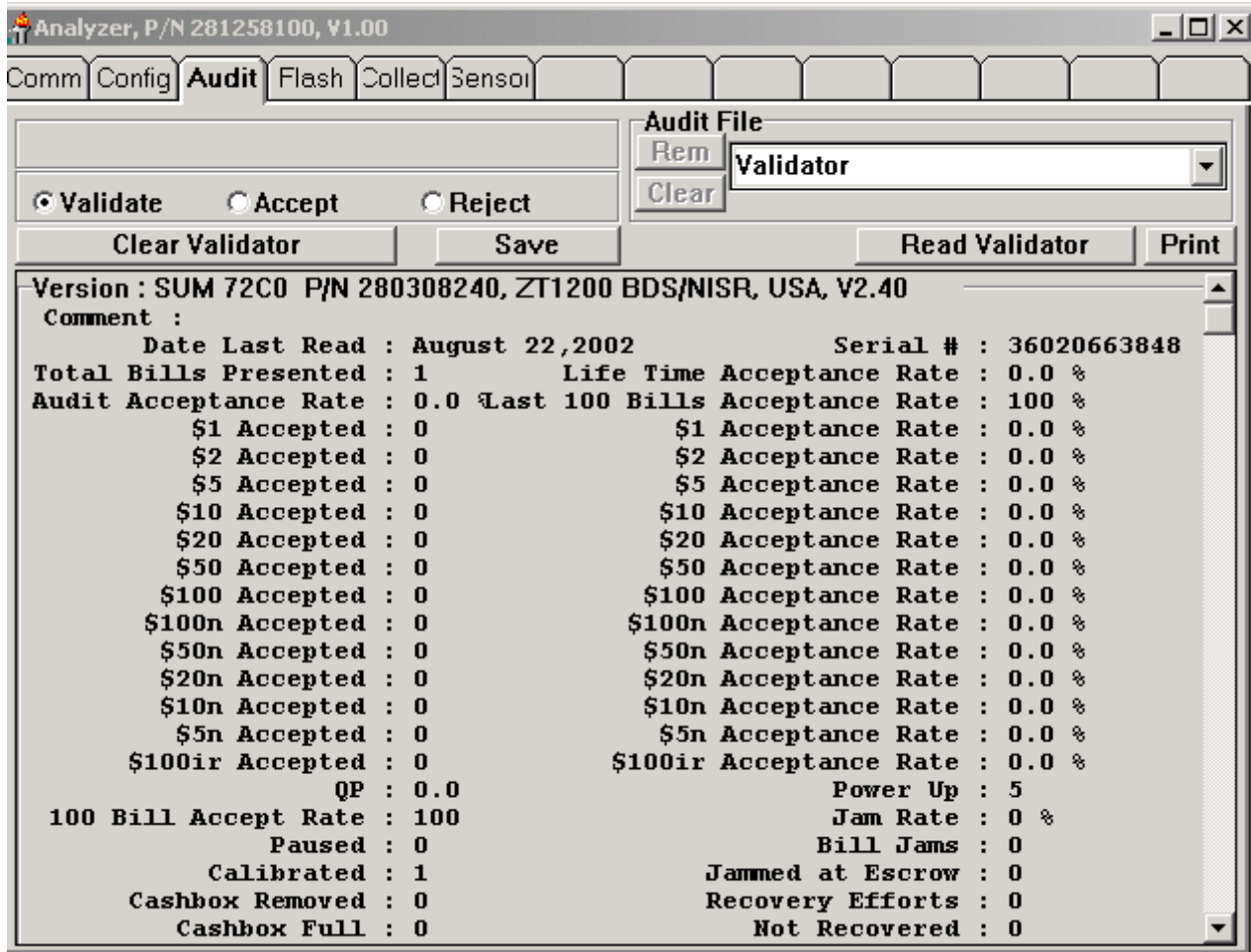
Follow Steps 1-6 on page 46. Communication must be established to perform an audit of the bill acceptor.

1) Click on the "Audit tab", You should see the screen above .
2) Click on the "Read Validator" button. All of the values should adjust and the serial number should match the serial number on the ZT1200 that you are reading from.

Saving Audit Data

1) Click on the "Read Validator" button. Then click on the "save" button. A audit box will appear on your screen. (The highlighted area will have a number that consisits of two letters and nine numbers.The first six numbers make the month, day, and year. The last three numbers make up the number of entries for that day (001,002,003...).

Audit Tab (Cont.)
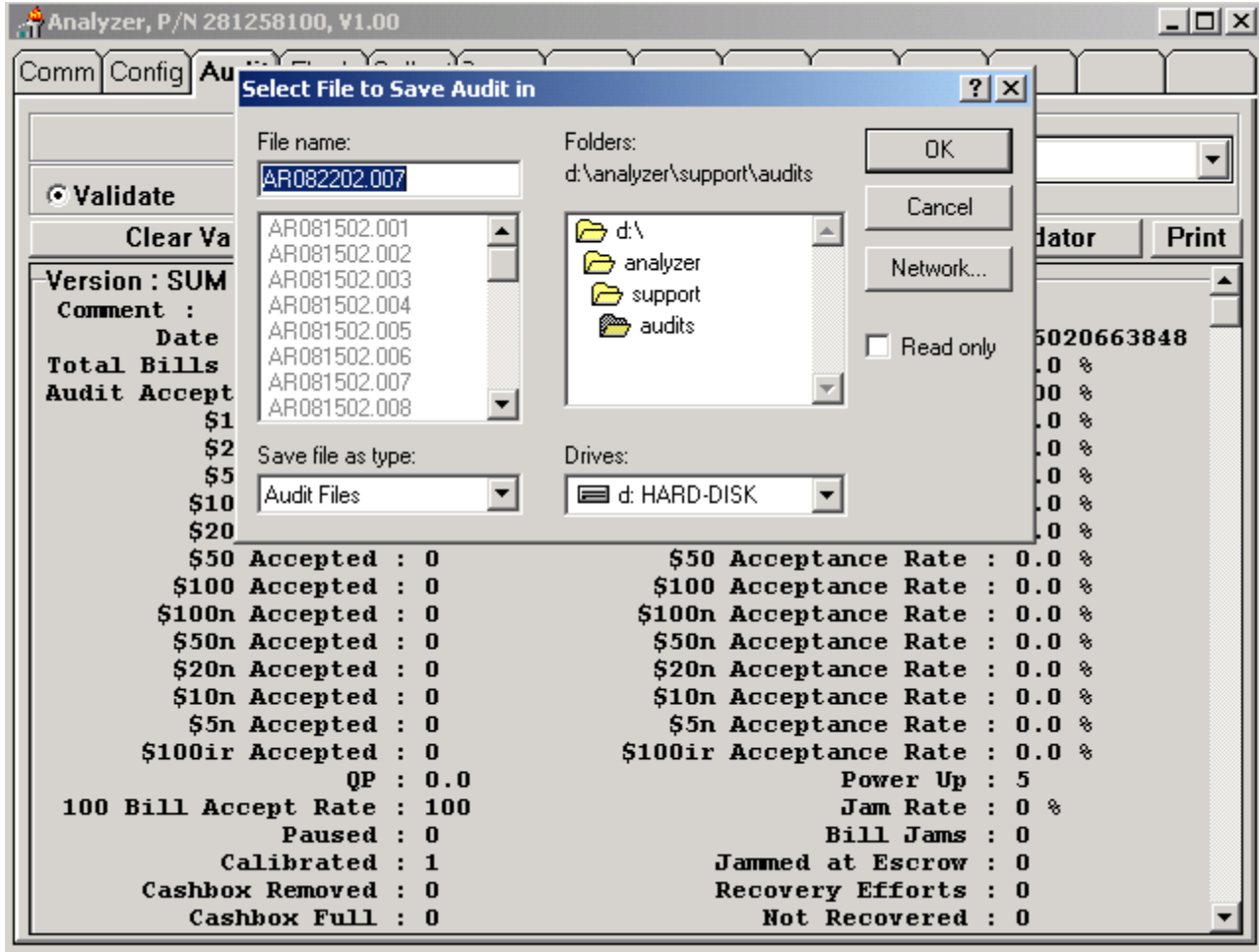
Fig.1

1) Click on the "okay" button. A "Annotate Audit" box will appear on your screen (See fig. 2). The
information that you type in this box will be the "title" for this particuliar saved audit data file.
(Typical titles are the machine model, location, and/or asset number).
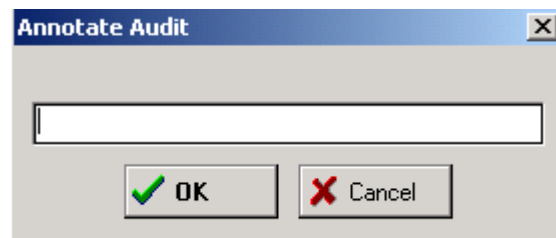
Fig.2

Audit Tab (Cont.)
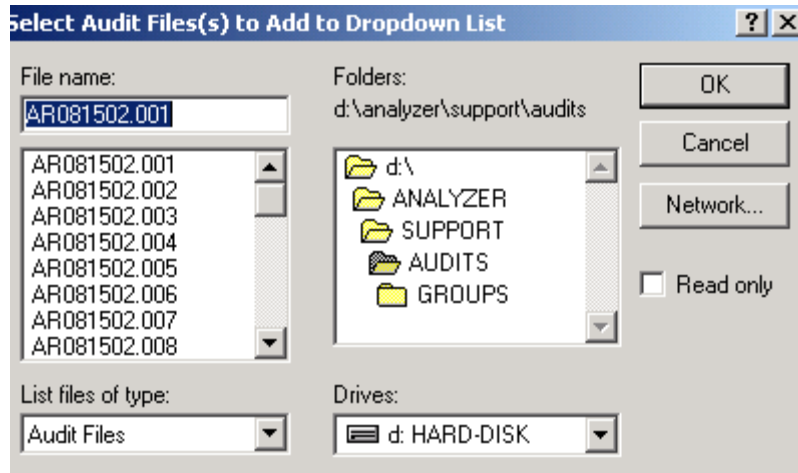
fig.3

Retrieve and view audit data files

1) Double click on the word "audit file" located at the upper right hand corner of the screen. "Select audit files to add to dropdown list" will appear.(see fig.3).

2) Highlight the audit file you wish to view (remember that the first six numbers represent the month, day, and year). Click on the "ok" button. The Audit data for that particuliar unit will display on the screen.

fig.4

cursor

Audit Tab (Cont.)

fig.5

Viewing audit data by comments you've assigned

1) Double click on the word "audit file" located at the upper right corner of the screen. A box will appear titled "select audit files to add to dropdown list" (see fig.3).
2) Select wich audit data file you wish to view by highlighting it.(remember that the first six numbers represent the month,day, and year in that order). Click on the "ok" button.
3) The files that you selected will be listed under the "audit file" box. To view all of these files by serial number and comments, (name & location that you typed in the previous steps for fig.2,) place the cursor under the "audit file" box so that it is just inside the black border. (see fig.4)
4) Right click . A small drop down menue will appear. Select view by serial number.
5) The above screen will appear (see fig.5). You can view which audit file you want to view by looking under the comments column. The name that you assiged to this file will appear there.
6) Click on one of the boxes (comments,serial, version, etc) for the file you want to view. Then right click and choose retain selection.

Audit Tab (Cont.)
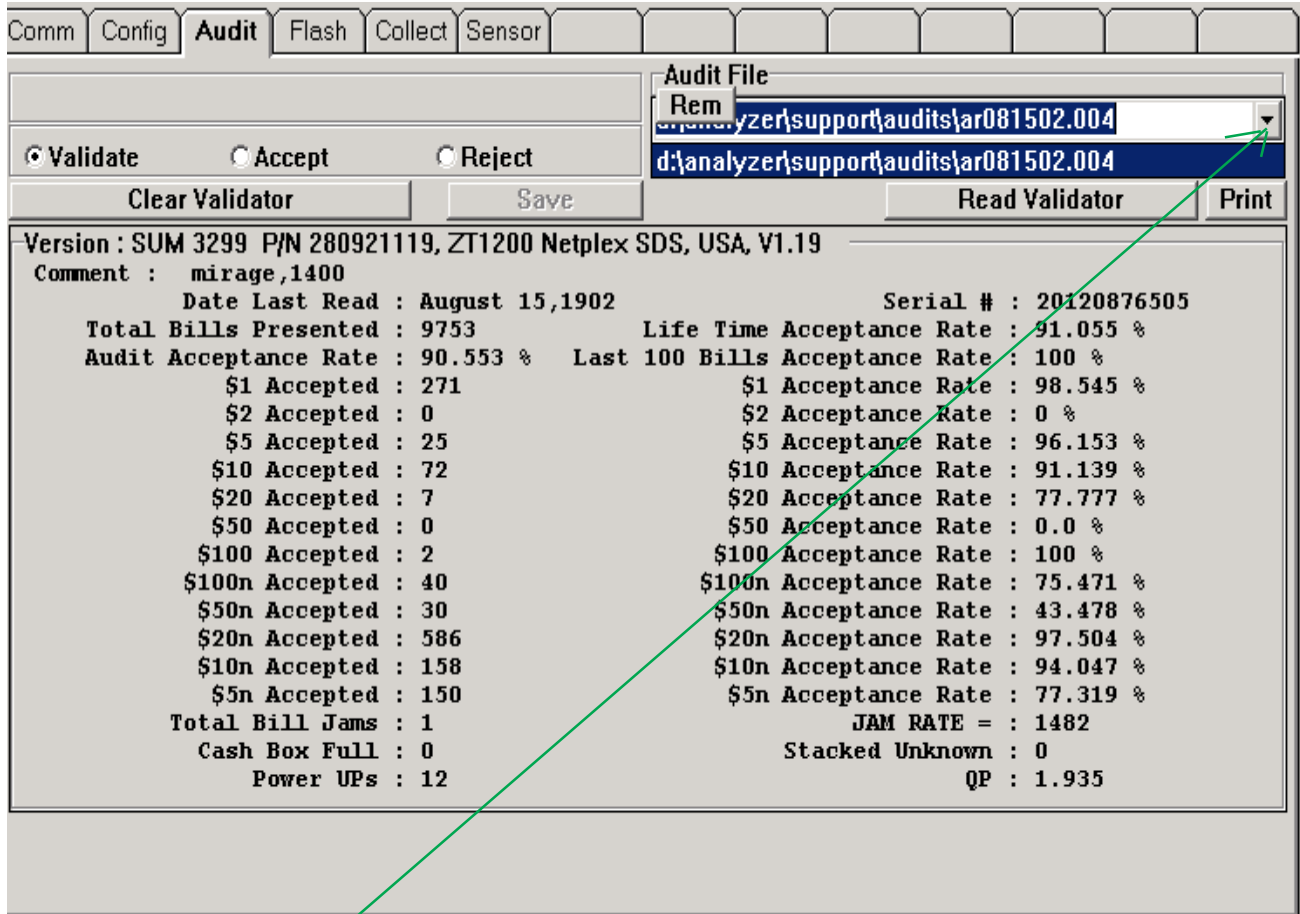
fig. 6

(drop down menu)

 7) You will then view the audit data screen again. Click on the drop down menu for the "audit box".
Select the file that appears. See fig 6 (It's the audit data you "choose to retain" in the previous step).
8) The audit data will appear. You can match up the serial # or look at the comments section of the audit data to check that it matches up to what you choose to view.
9) Repeat these steps for each additional audit file you wish to view.

Flash Tab

Flashing software procedure
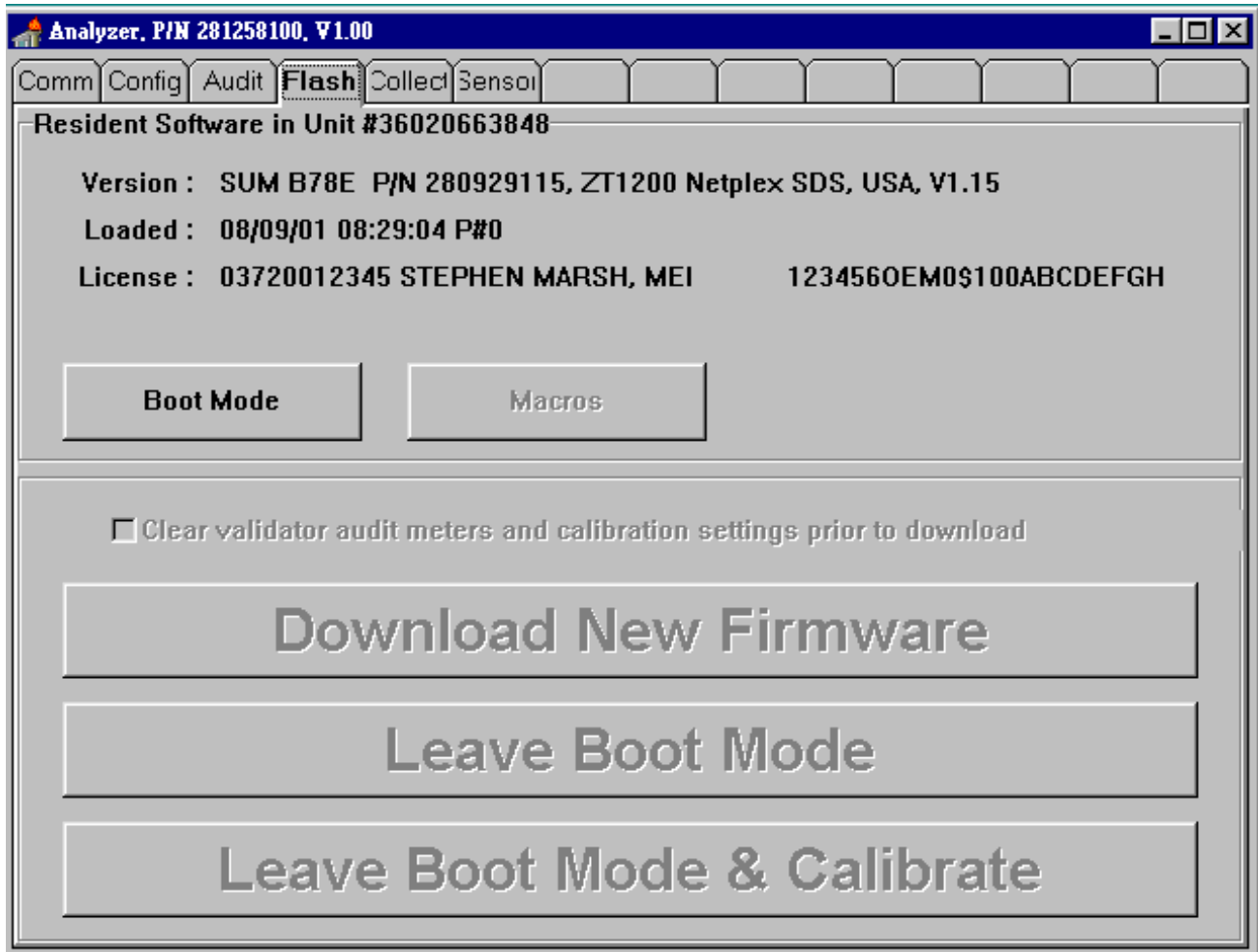
1.Click on the "Flash" tab, the "Boot Mode" button will be in bold.

Flash Tab (Cont.)
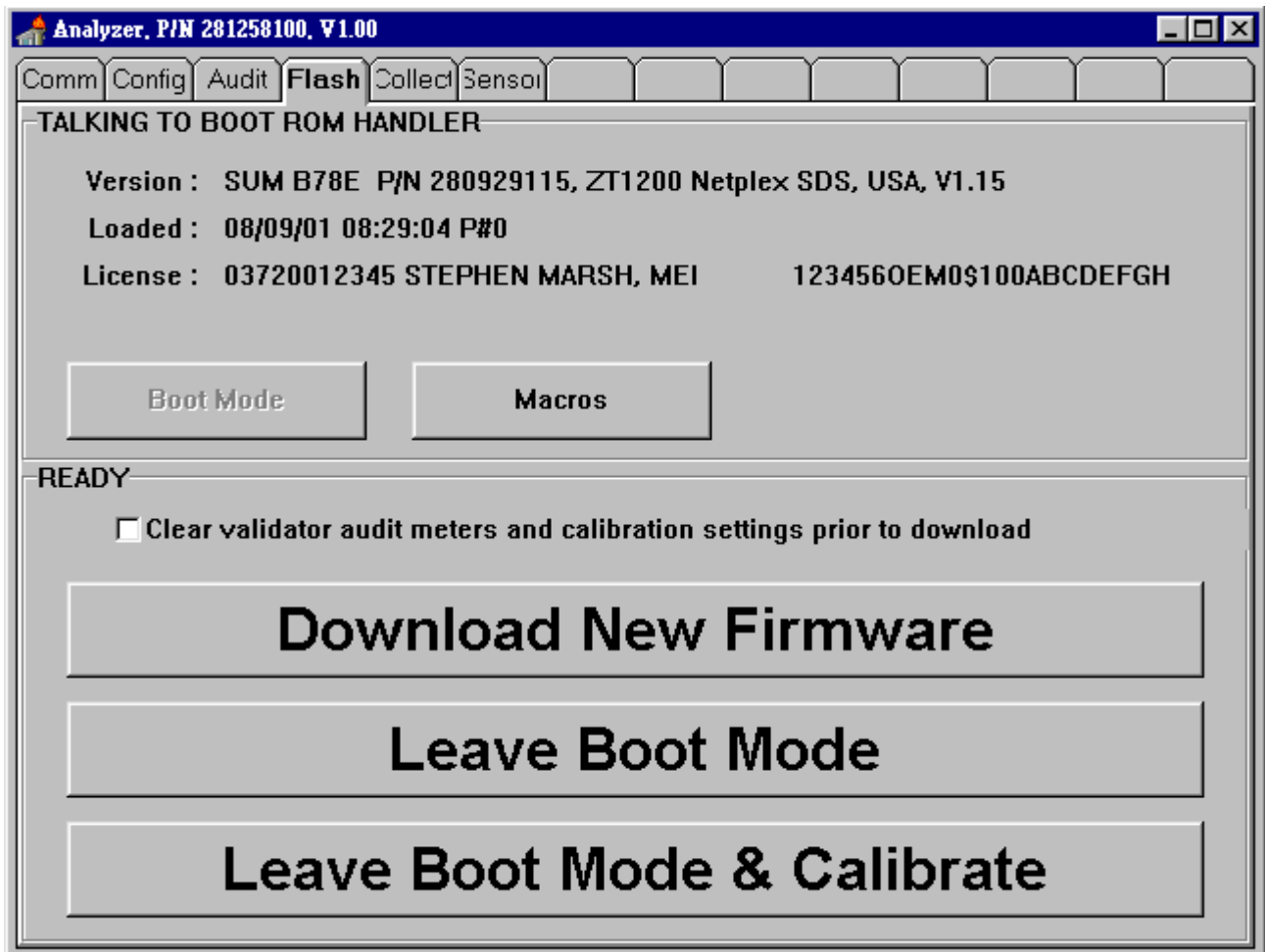
2. To place the unit in Boot mode, apply power to the ZT series bill acceptor while holding the toggle switch in the "up" position. (this can be done by pulling the RTU out about have way and reinserting it into the chasis while holding the toggle switch up).

3. The "Download New Firmware", "Leave Boot Mode", and "Leave Boot Mode & Calibrate" buttons will be in bold.

Flash Tab (Cont.)

10. Select the function you wish to do (download new firmware, leave bootmode, and leave bootmode and calibrate). If you choose to download new firmware, follow the steps belowe.

  A) To "download new firmware", click on the button marked as so. The screen will show the following.

  B) Using your mouse Select the bin file you wish to download and click on the "ok" button.

  C) The number 955 will appear in the "Download New Firmware" and immediately beagin to countdown to 0 and say " New Firmware Downloaded"

  D) Click on the "Leave Boot Mode" button. This will return you to the Comm. screen where the ZT1200 will perform A "run & stack". After this sequence of events is complete, "loading support files" will appear In the communications box folowed by the version of software that you just downloaded.
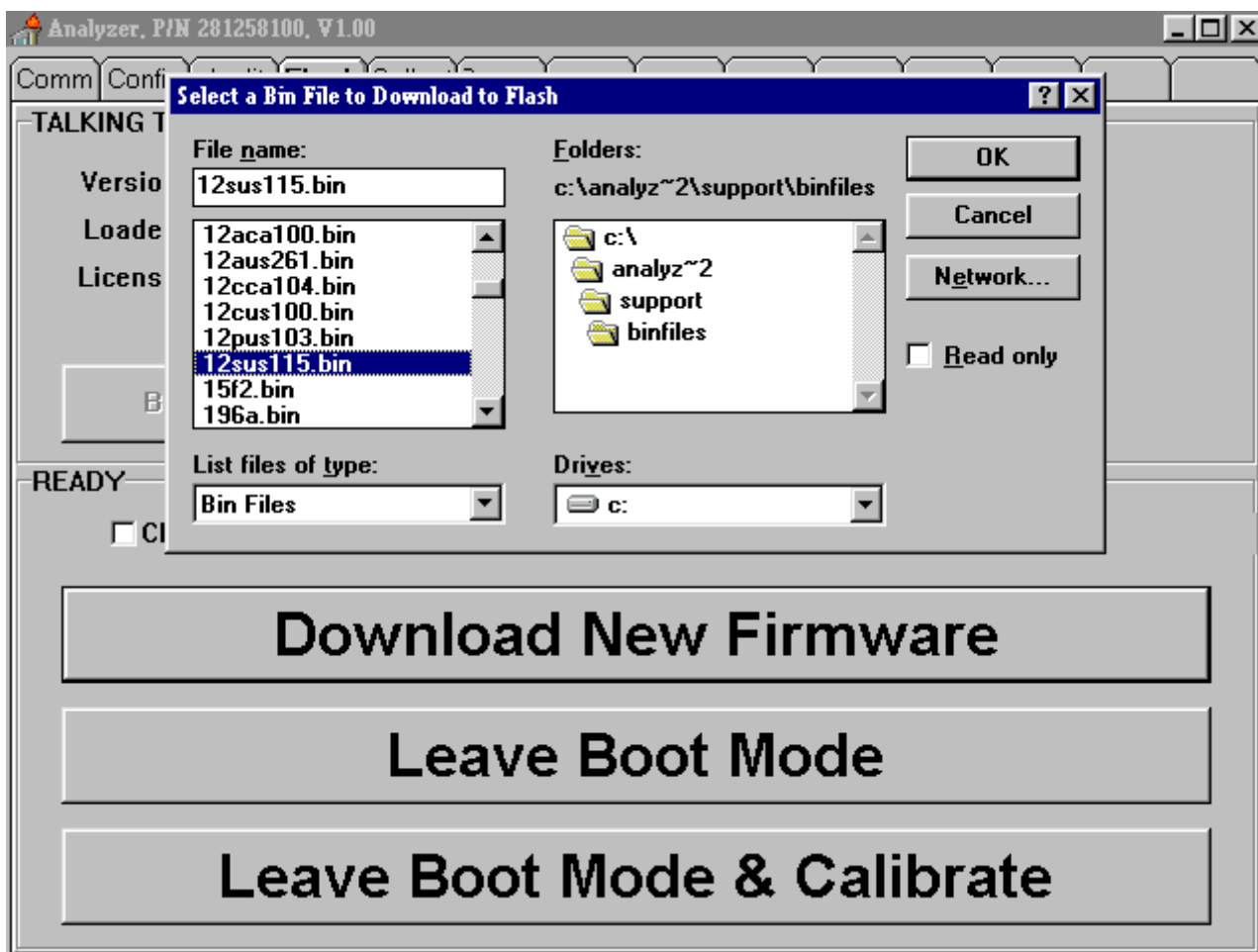
11. Selecting the "Leave Boot Mode" button will take you out of Boot mode screen and return you to the communications screen.

12. Selecting the "Leave Boot mode & calibrate" button will also take you out of the Boot mode and into calibration mode. (The LEDS inside the bill path will be flickering.)

13. After A succesfull calibration The ZT will perform A "run and stack" and will return to normal

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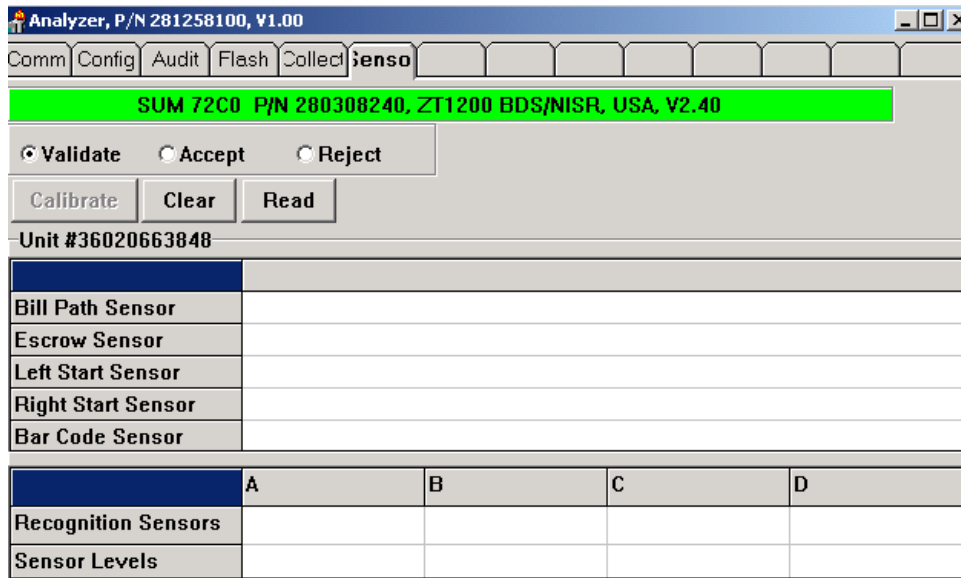
Sensor Tab

fig.1

1) Click on the "sensor" tab. Your screen should look like fig.1.
2) Click on the "read" button. your screen should resemble fig.2. The sensor readings should all be **green**.
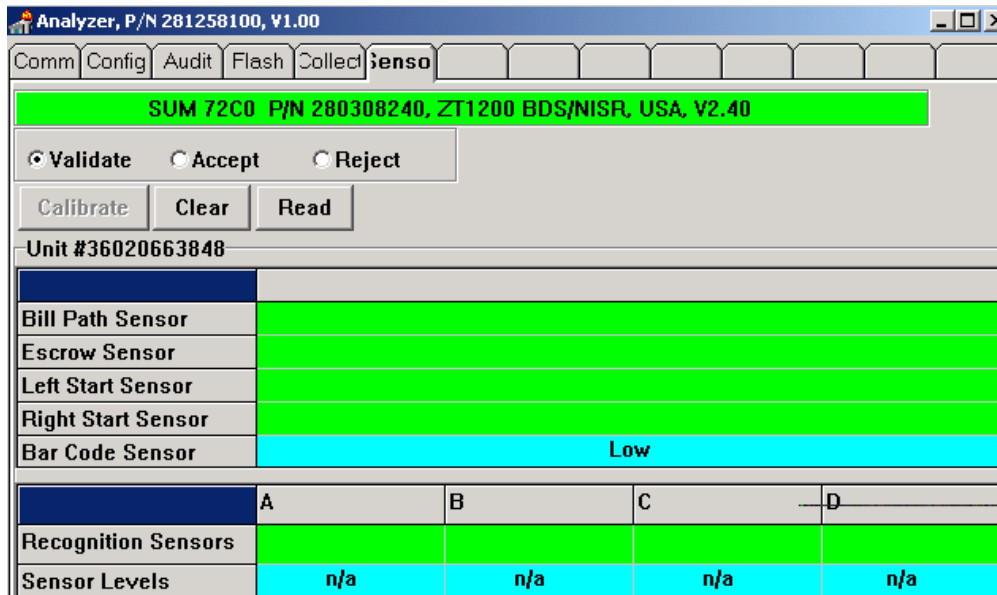
fig.2

3) The last catagory, "sensor levels" will come up with **"n/a"** in the blocks. To obtain these readings you need to insert a piece of calibration paper (just as if you are inserting a bill.) The paper will be returned and the blocks should turn green.
4) If any of your sensor readings come up **low (blue)** or **high (red)**, this indicates that there is a problem.(80% of the time it's the sensor thats gone bad and needs to be replaced).
5) After the proper repairs have been made, recalibrate the ZTseries acceptor and follow step 1.

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Troubleshooting

Unit will not draw-in bills.	Jammed bill in bill path.	Check bill path for jammed bill.
	Cassette not properly seated.	Remove the Cashbox and re-install.
	RTU not properly seated.	Remove the RTU and re-install.
	Interface connector not installed or faulty connection.	Check interface connector.
	Power connector not installed or faulty connection.	Check power connector.
	Mode Switch not in Interface Mode position.	Power down, place Mode Switch to the Interface Mode position and power-up.
	Unit Disabled by machine.	Check machine for errors.
	Unit Disabled by machine.	Check machine doors.
Unit does not give credit.	Mode Switch not in Interface Mode position.	Power down, place Mode Switch to the Interface Mode position and power-up.
	Bezel Option Switch in Wrong position.	Return Bezel Option Switch #1 to OFF Position (Page 17) cycle power.

Troubleshooting

Unit does not give credit.	*Cassette Jammed*	*Remove RTU, verify Home Flag in "UP" position. If not,cassette may be jammed. Remove cassette and verify proper operation pushing in on silver pusher at cassette rear.*
	Communication error.	*Power down, power up to clear error.*
Unit jams.	*Cassette not properly seated.*	*Remove the Cashbox and re-install.*
	RTU not properly seated.	*Remove the RTU and re-install.*
	Gear missing.	*Remove RTU, check for two gears on the left-hand side replace gear if missing.*
	Defective cashbox (LRC).	*Remove RTU. Roll chassis idler gear(left rear of chassis) and check for slipping. Remove and re-install cashbox. Recheck for slipping. If slipping persists, replace cashbox.*
Unit draws bills in, but will not accept bills.	*Option switches not set properly.*	*See section entitled "Option Switch Settings".*
	Interface errors.	*Check controller/ machine enabling of bill acceptor.*

Troubleshooting

Unit draws bills in, but will not accept bills.	*Unit in Calibrate Mode.*	*Check Mode Switch Position Section.*
	Communication error.	*Power down, check connectors, power up*
	Bills inserted upside down.	*Check switch for 4-way.*
	Worn or non-genuine bills.	*Use cash in better condition.*
Unit runs motor, stacks three times, then goes out of service.	*Cassette not properly installed.*	*Remove and re-install cashbox.*
	Home Flag unclipped or broken.	*Remove RTU and verify proper Home Flag action. Re-clip or replace Home Flag.*
	Cassette present cherry switch pushing on stacker arm.	*Some applications may have a cherry switch mounted behind the Bill Acceptor to verify cashbox removal. Remove cherry switch and wire to cassette present wires from chassis main harness.*
RTU runs motor seven times and unit goes out of service.	*Dirt in bill path.*	*Clean bill path and recalibrate.*

Parts

Bill Acceptor Assembly

Ref Num	Description	Qty	Part Number
1	Chassis Assembly	1	see pp. 5, 6
2	Cassette or "Cash Can" Assembly	1	251001048
			see pp. 7,8
	Cassette or "Cash Can" handle	1	251019174P
	RTU (Recognition Transport Unit) or "Head" Assembly (Boxed)	1	
	ZT1101 US P		251004033
	ZT1101 CA (Canada) F		251015078
	ZT1101 US P		251004055
	ZT1201 67MM F		251001065
	ZT1102 US (Pulse) P		251002017
	ZT1102 USN (Netplex) F		251003047
	ZT1202 67MM F		251007067
	ZT1202 F/T (packaged unit)		251007109
	ZT1103 US F		251002039
	ZT1103 AU (Australia) F		251008036
	ZT1104 US F		251004050
	ZT1204 67MM F		251005080
	ZT1105 US F		251000052
	ZT1107 AU (Australia) F		251005068
	ZT1207 67MM F		251009083
	ZT1207R 67MM F		
4	Jumper, Unit Interface or "Pigtail" (Not on all Models)	1	
	ZT1101 XX , ZT1202 XX 67MM		251077015
	ZT1102 XX, ZT1202 XX 67MM		251073017
	ZT1107 XX and ZT1207X XX 67MM		251073039
5	ZT Jumper Plug (TRC Teach Plug)	1	208240001-PAK5
6	Calibration Paper (Green Paper)	10	111513417P
	Calibration Paper (Blue Paper)	10	111515416P
	IGT ZT1200 Calibration kit	1	251069160P
	IGT ZT1100 Calibration kit	1	251063149P
7	(Cash Can Lock Cam) Hasp PKG 25	1	251039030P
	(Cash Can lock Cam) Long Hasp PKG 25	1	251069146P

Parts ━━━━━━━━━━━━━━━━━━━━━━━

Chassis Assembly

Ref Num	Description	Qty	Part Number
1	Chassis, Packaged	1	
	(without cassette present switch)		251018063
	(with cassette present switch)		251009049
2	SK Assy, Actuator Arm and Rollers	1	251019032
3	Lever Home Switch 1/4" Shaft PKG 10	1	251028095P
4	Retaining Ring, 4.77 DIA E Type	1	08-10-009 – PAK100
5	Spring Torsion 6.35 ID PKG25	1	251044039P
6	Gear 24T 24DP PKG 25	1	251020094P
7	Nut, Gear Retainer	1	251030102
8	Shaft, Actuator 1/4" DIA	1	251030107
9	Release Latch PKG 15	1	251026177
9*	Release Pin – Chassis PKG 10 (Optional Metal Bar replaces standard U - Shaped Release Latch)	1	251034122P
10	Flag Home Switch PKG 50	1	251026091P
11	Retaining Ring (2.74 DIA) PK100	2	251041044P
12	Harness Chassis Docking	1	
	(w/o cassette present switch)		251071013
	(with cassette present switch)**		251075033
13	Screw 4-40 Posidriv Panhead	2	08-00-138 – PAK100
14	Clip, Wire Holder PKG 50	1	251040053P
15	Push On Retainer PKG 100	1	251048054P
16**	Switch, Micro	1	251081001P
17**	Switch Plate	1	251030124P
18**	Screw, 4-40 x .750L Taptite Flathead PKG100	2	251049062P
19**	Wire Clip PKG10	1	251047063P

* Not Shown
**Parts used on Chassis with Cassette Present Switch

Parts

Chassis Assembly
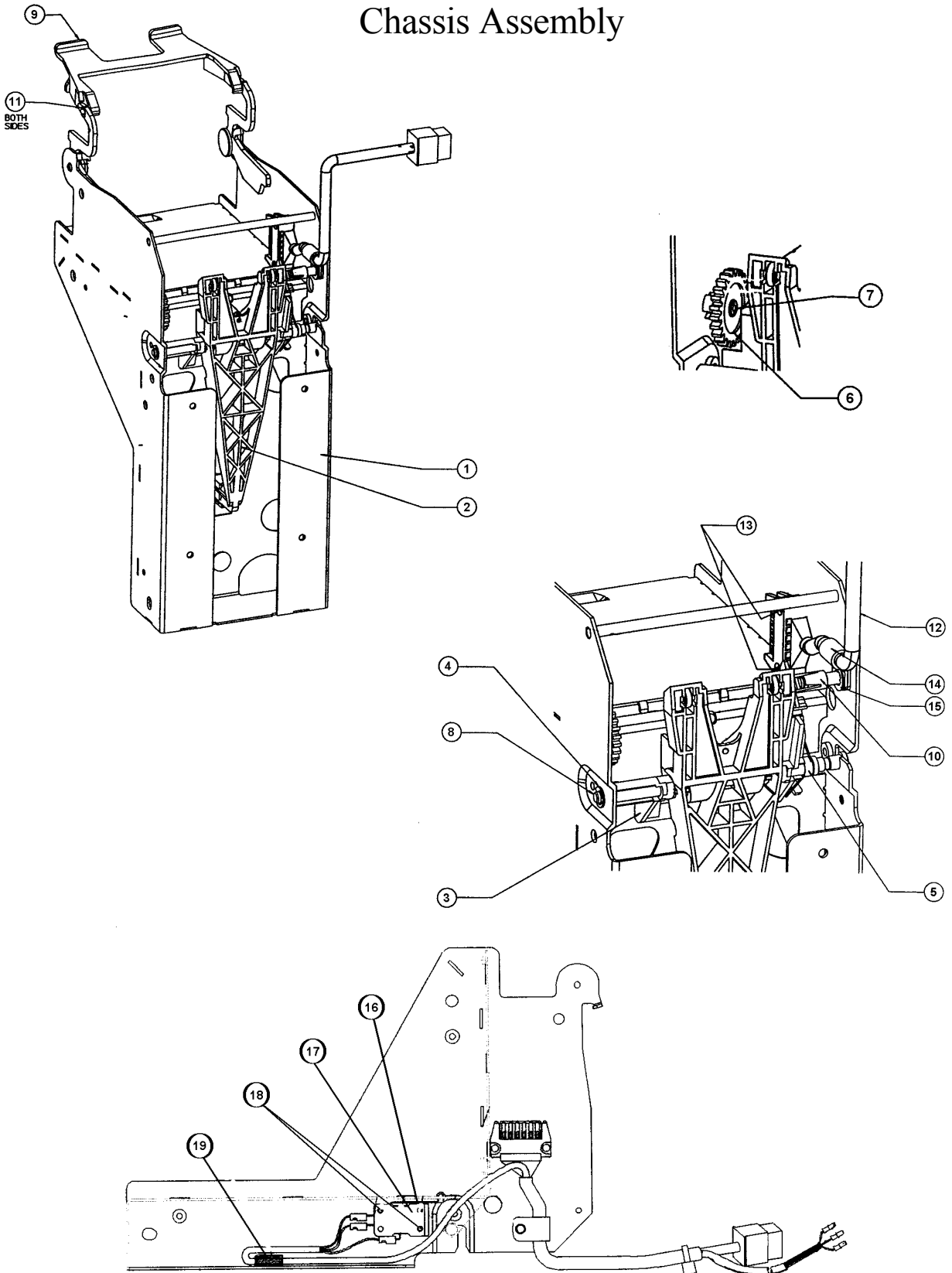
Parts _____

Cassette Assembly

Ref Num	Description	Qty	Part Number
1	Cassette Assembly 67-71mm (Boxed)	1	
	(w/o Arrow Label)		251001004
	(with Arrow Label)		251001048
2	Handle, Guide PKG 10	2	251038066P
3	Screw 4-40 x 1/4 Phillips	8	08-00-104 – PAK100
4	Spring, Torsion PKG 50	1	251036067P
5	Handle, PVC Coated PKG 5	1	251014043P
6	Latch, Release PKG 15	1	251037117P
7	Retainer, Latch PKG 25	1	251035054P
8	Spring, Compression 4.54 x 22.23 PKG 10	1	251049040P
9	Label, Arrow PKG15	1	251054049P
10	Assy, Cassette Housing and Door	1	251038120
11	Screw 4-20 x 6.35MM, P/H Plastit	2	08-00-141 – PAK100
12	Spring, Cassette Conical	1	251041061
13	Plate Elevator Side PKG10	2	251033055P
14	Plate Pressure 71 MM PKG2	1	251039079P
15	Washer #4 Flat	2	08-06-003 – PAK100
16*	Locking Hasp	1	251039030P-PAK25

* Not Shown
** Parts used on Chassis with Cassette Present Switch

Parts

Cassette Assembly
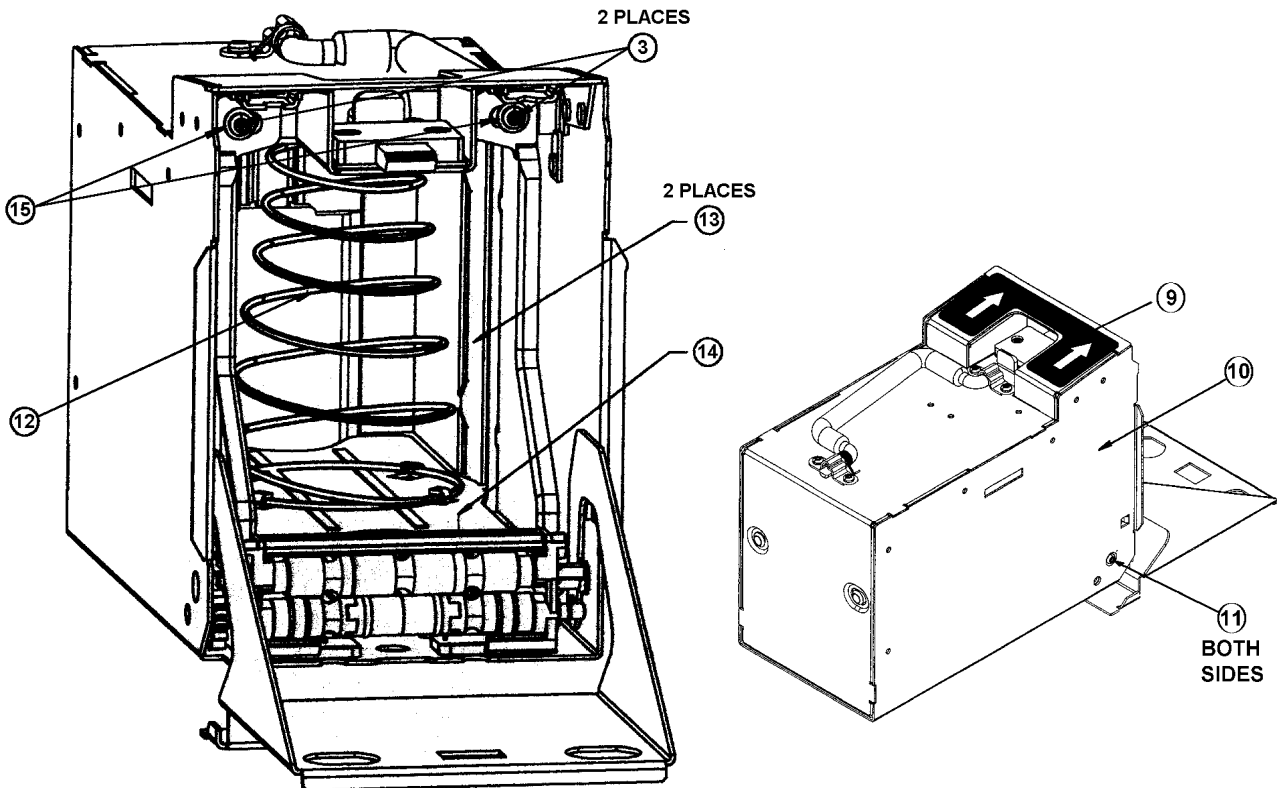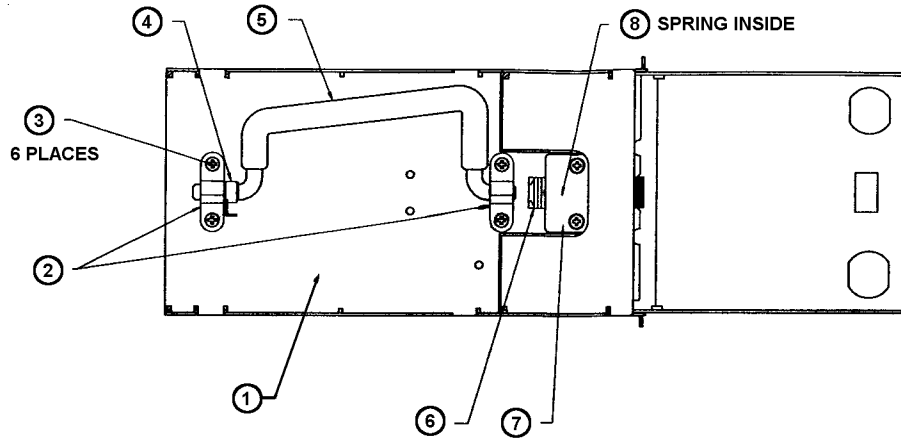
Parts

Cassette Plastics Outer Assembly

Ref Num	Description	Qty	Part Number
1	Elevator, Left Side 67-71 MM PKG2	1	251024134P
2	Elevator, Right Side 67-71 MM PKG2	1	251022135P
3	Spring, Flat PKG100	4	251043009P
4	Bearing, Pinch PKG100	4	250022045P
5	Spring, Flat PKG100	2	251041027P
6	Bridge, Elevator 71 / 77 MM PKG2	1	251025022P
7	Screw #4 Pan	2	08-00-121 – PAK100
8	Shaft, Idler 71 MM Bill Path PKG15	1	251034080P
9	Gear, 12T / 24DP PKG 25	1	251021024P
10	Retaining Ring 3.97 DIA PKG100	4	251044034P
11	Bushing, 4.02 ID x 7.886 OD PKG 50	2	251028051P
12	Screw, #6 - 19x19.05 Plast PH PHL PKG100	2	251041022P
13	Clip, pusher base. PKG100	1	251033094P

Parts

Cassette Plastics Outer Assembly

* 71MM USES INNER MTG SLOTS.
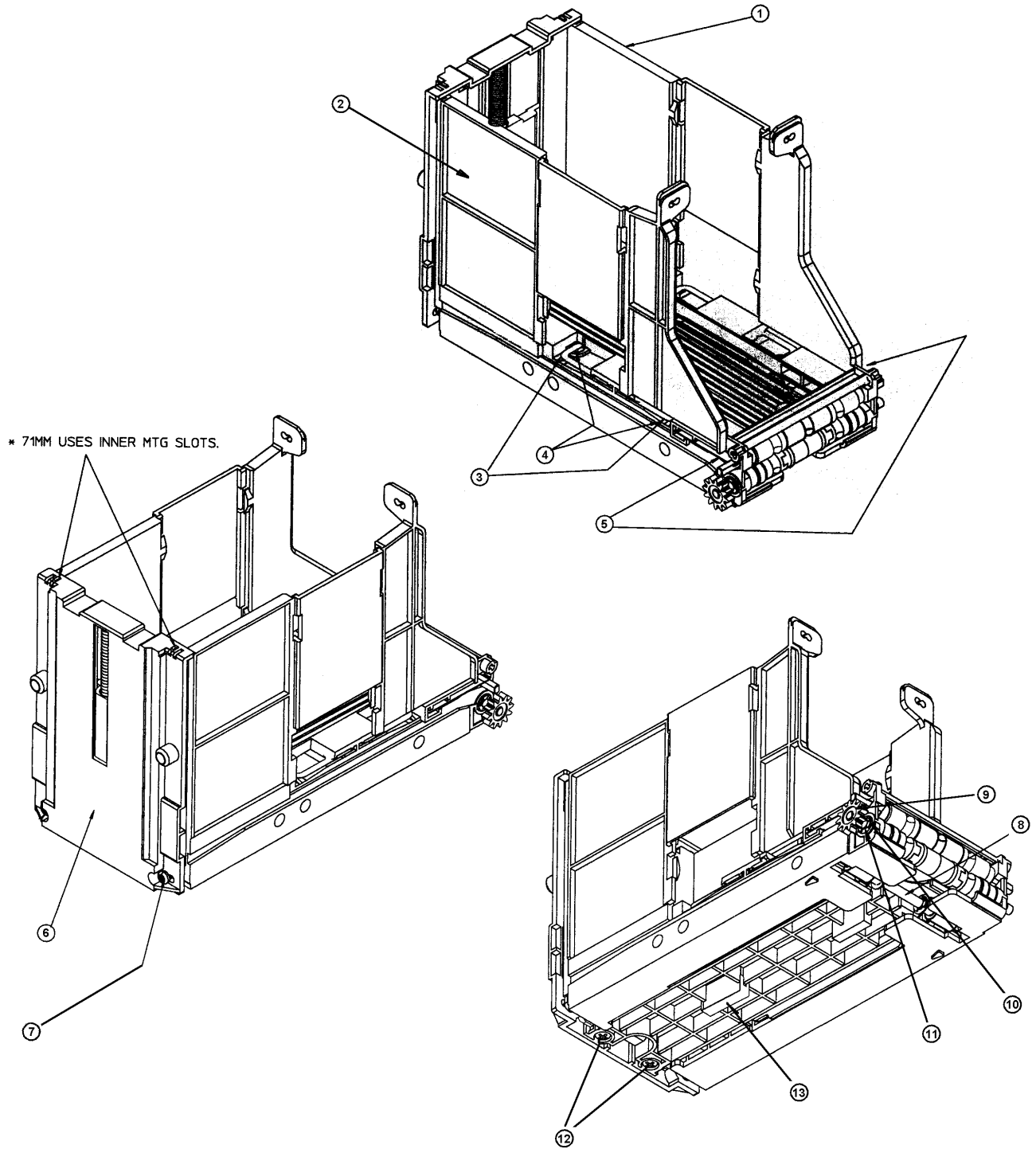
Parts

Cassette Plastics Inner Assembly

Ref Num	Description	Qty	Part Number
1	Spring Compression GLC Slider PKG100	1	251046033P
2	Pusher Slider PKG5	1	251027021P
3	Pusher Base 71 MM	1	251022059P
4	Pulley, Flat PKG 50	2	251026030P
5	Retainer, Pulley PKG 25	2	251029025P
6	Pulley Flat 11MM (With Flange) PKG100	4	251028110P
7	Bearing, Pinch PKG100	4	251023224P
8	Spring, Flat PKG100	4	251043009P
9	Retaining Ring 3.97 DIA PKG100	4	251044034P
10	Bushing, 4.02 ID x 7.886 OD PKG 50	10	251028051P
11	Belt, Flat Endless PKG 50	2	251023224P
12	Roller, Nip, End 71 MM Bill Path PKG25	2	251027060P
13	Roller, Nip, Center PKG25	1	251022032P
14	Shaft, Idler 71 MM Bill Path PKG15	1	251034080P
15	Pulley, Tension PKG25	2	251024031P
16	Washer No. 8 Nylon 0.51 THK PKG100	2	251042035P
17	Spring, Torsion PKG 50	2	251046011P
18	Shaft, Drive 71 / 77 MM PKG15	1	251035032P
19	Shaft, Roller 71 MM Bill Path PKG2	1	251032081P
20	Pulley, Drive Crown 71 MM PKG25	2	251025061P
21	O Ring PKG25	2	251044012P
22	Roller, Lug PKG50	2	251023028P

Parts

Cassette Plastics Inner Assembly
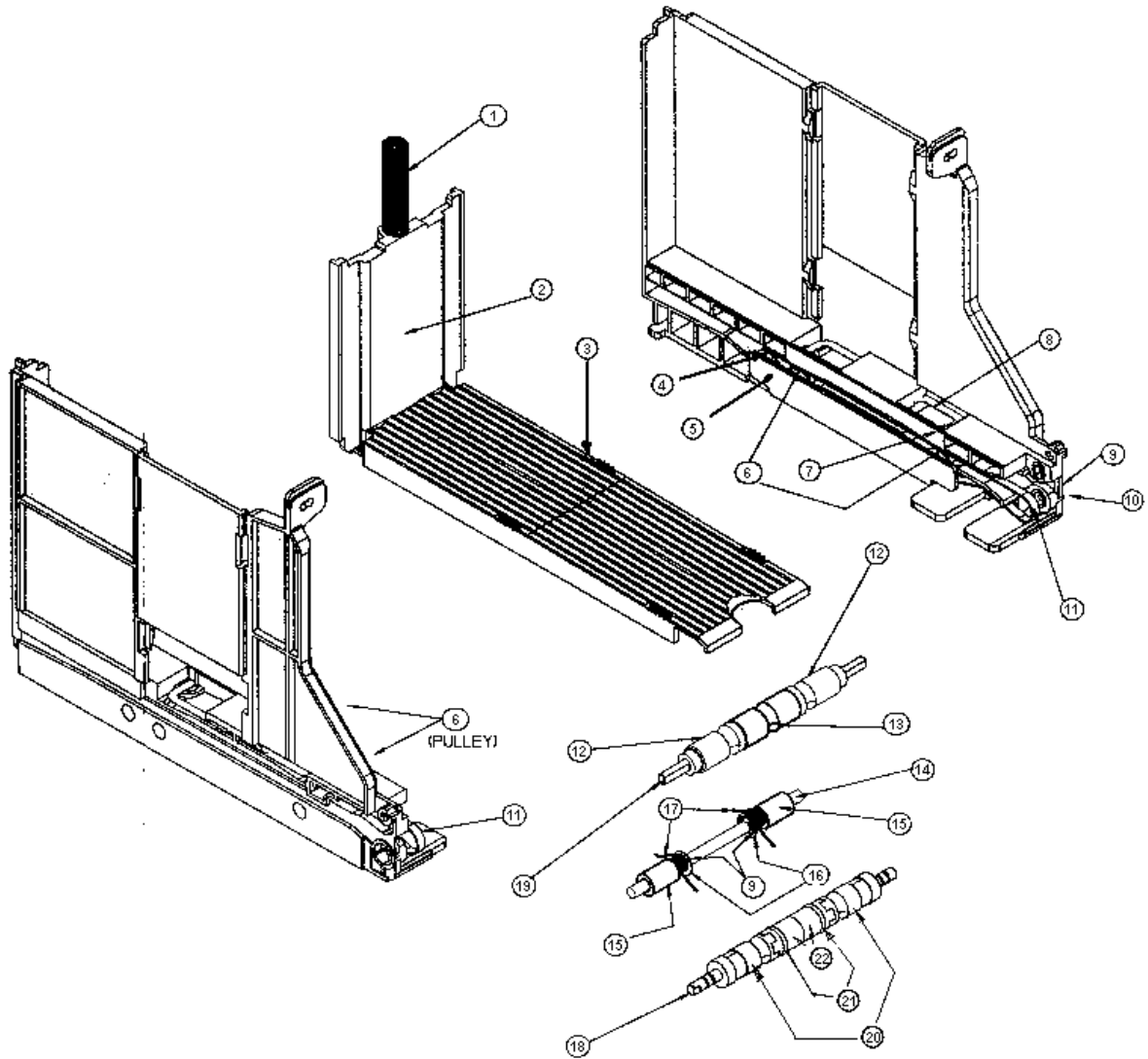
Parts ────────────────────────────

RTU Assembly

Ref Num	Description	Qty	Part Number
1	Assy. RTU Housing 67MMMK2	1	see pp. 15, 16
2	Assy, Optics Housing 67MM MK2	1	see pp.17, 18
3	Assy, RTU Cover 67-72-mm Hi Spd	1	see pp.19, 20
4	ZT1100-SK Assy, ZT1000 MK2 Control Board	1	251062050
	ZT1200-SK Assy, ZT1200 Control Bd PCB		251067142
5	Assy. L. H. Sideplate (Docking)	1	251016064
6	Assy, RH Side RTU + Hardware	1	251019015
7	Gear, 13T / 32 DP PKG 25	1	251020011P
8	Screw #4 Pan	2	08-00-121 – PAK100
9	Screw 6 X .312 Plastite	5	08-00-242 – PAK100
10	Screw 4-40 Posidriv Pan Head	4	08-00-138 – PAK100
11	Cable Clamp PKG 5	1	251031090P
12	Screw, 6-19x5 / 16-100 Flhd Plast PK100	1	251044045P
13	Shield, Control PCB ZT1000 PKG 50	1	251024112P
14	Lens, LED PKG 25	1	250029033P
15	SK Assy, ZT1000 MK2 LED Board	1	251060051
16	Cable, ZT LED/Control 10 Pos PKG 5	1	251073012P
17	Screw, 2-28 x 1/4 Lg Pan HD Posi	2	08-00-066 – PAK100
18	Spring, Ext - Cover Latch PKG25	2	251045025P
19	Spring, Ext - Optics Latch PKG 50	2	251047024P
20	RTU Docking Station Cable for:	1	
	ZT1101 US and CA		251077010
	ZT1201 67MM (Blue)		251071030
	ZT1102 US and USN		251074020
	ZT1202 67MM (Red)		251072043
	ZT1103 US and AU		251076007
	ZT1104 US and ZT1105 US		251074020
	ZT1204 67MM (Red)		251072043
	ZT1107 UA and AU		251076029
	ZT1207 67MM (Yellow)		251076029
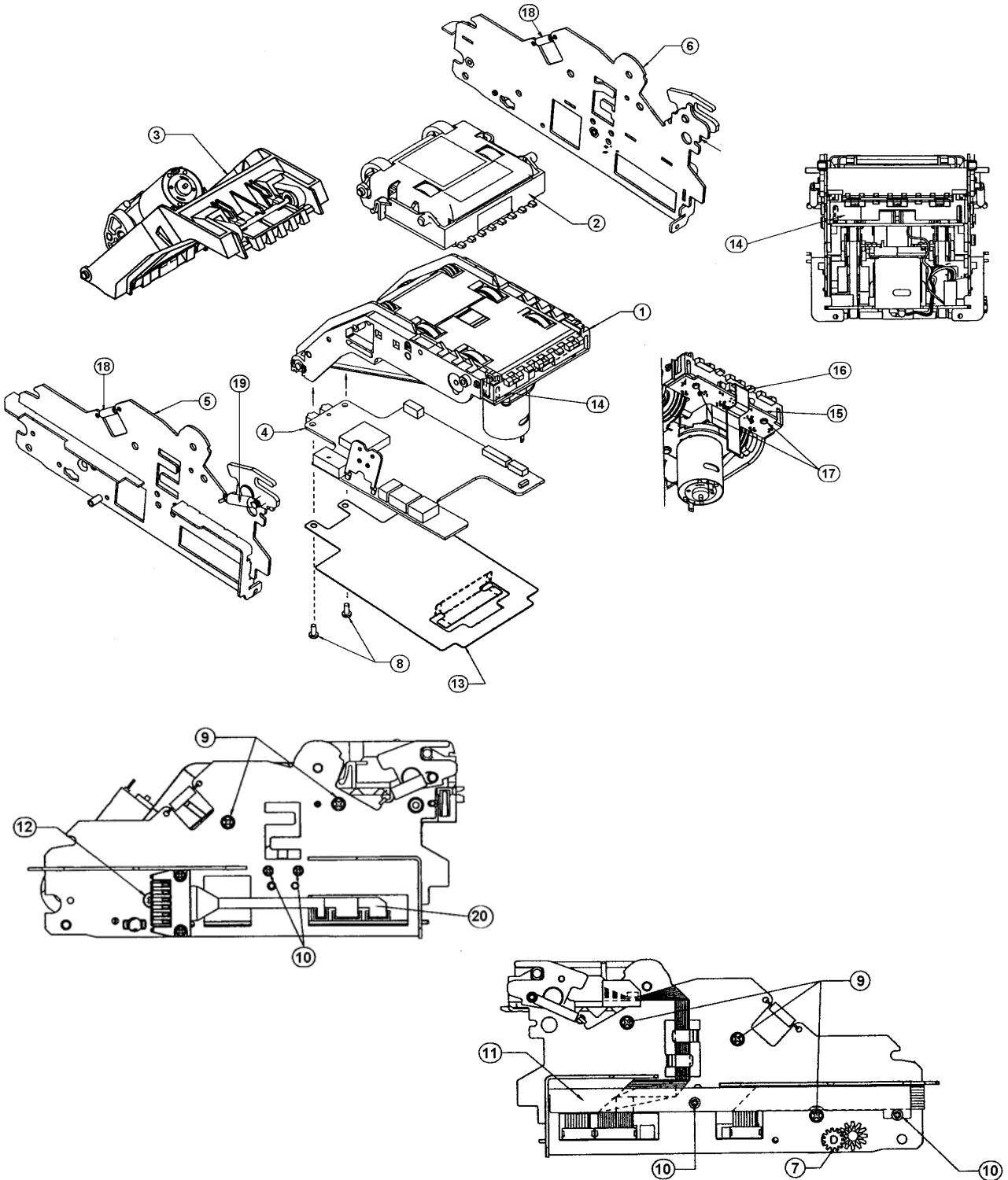
Parts

RTU Assembly

Parts

RTU Housing Assembly

Ref Num	Description	Qty	Part Number
1	SK Assy. RTU Trnsp High Spd / Lo Noise	1	251069048
2	Brkt, Transport Motor Stabilizer PKG 10	1	251033077P
3	Bushing, Transport Drive PKG 50	2	251024058P
4	Pulley, 10 mm DIA RTU Timing PKG 25	6	251022015P
5	Pin, Dowel 3.175 DIA x 14.288 PKG 100	6	251036089P
6	Pulley – Idling	2	09-02-006 – PAK25
7	Shaft, RTU Idler 4.76 DIA x 86.0 PKG 5	1	251039074P
8	Shaft RTU Secondary Idler PKG 25	2	251033011P
9	Spring, Extension - RTU Belts PKG 50	2	251043026P
10	Shaft, Tensioner RTU PKG 5	1	251034007P
11	Pulley Idle, Tension RTU PKG 25	2	251024036P
12	Pulley 18T Timing 3.22 DIA Hole PKG 25	4	251022010P
13	Shaft, Driven RTU PKG 5	1	251036006P
14	ZT1100 – Clutch Roller With Knurl	1	251042030
15	Pulley, 18T Clutch PKG 25	1	251027102P
16	Pulley 18T Timing 3.98 DIA Hole PKG 25	1	251027009P
17	Bushing, 4.02 ID x 7.886 OD PKG 50	2	251028051P
18	Timing Belt 205T MXL (ESD) PKG 100	2	251029140P
19	Insert, RTU Pinch Roller PKG 25	1	251029123P
20	ZT1100–Housing, RTU-67mm Path (US and AU)		251020131
	ZT1100–Housing, RTU-71mm Path (CAN)	1	251027141
	ZT1202 67MM – Housing ZT1200 RTU 67mm		251029184
21	Screw 4-40 x 9.52 mm PZ P/H TT	2	08-00-140 – PAK100
22	Prism X Channel High Performance PKG 50	2	251027129P
23*	Label, RTU Front	1	251053058P

* Not Shown, Black Wrap-Around Label at Front of RTU Housing

Parts

RTU Housing Assembly

BOTH SIDES

BOTH SIDES

BOTH SIDES

BOTH SIDES
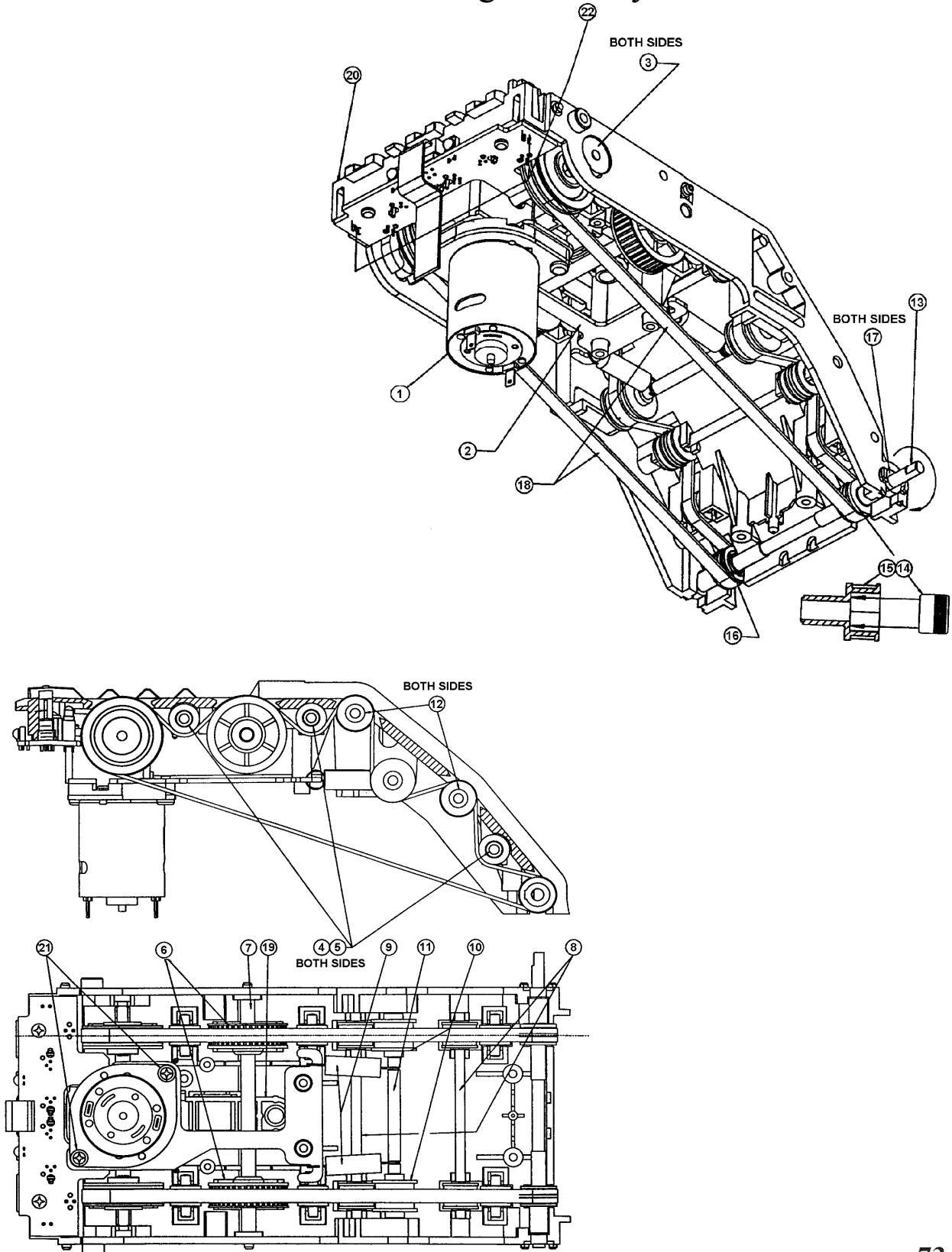
Parts

Optics Housing Assembly

Ref Num	Description	Qty	Part Number
1	Shaft Optics Idler 5.56 D x 60.4 PKG 2	2	251031073P
2	Spring Holder (Long)	4	04-16-037 – PAK100
3	Wheel	4	04-02-058 – PAK25
4	Spring, Compression PKG 100	4	251047029P
5	ZT1100 – Housing, Optics 67 mm PK 5 (US&AU)	1	251027124P
	ZT1100 – Housing, Optics 71mm (CAN)		251025142
	ZT1200 67MM – Housing, ZT1200 Optics 67mm		251021183P
6	ZT1100 - SK Assy ZT1000 MK2 Optics Board	1	251066053
	ZT1202 67MM – SK Assy ZT1200 Optics PCB		251064113
7	Cable Optics Bd - Control Bd PKG 5	1	251078001P
8	Screw 2-28 x 1/4 Lg Pan Hd Posi	4	08-00-066 – PAK100
9	Cover, RTU Sensor Housing	1	251025088
10*	Label Optics Front	1	251058003P

* Not Shown, Black Wrap-Around Label at Front of Optics Housing

Parts

Optics Housing Assembly

4 PLACES
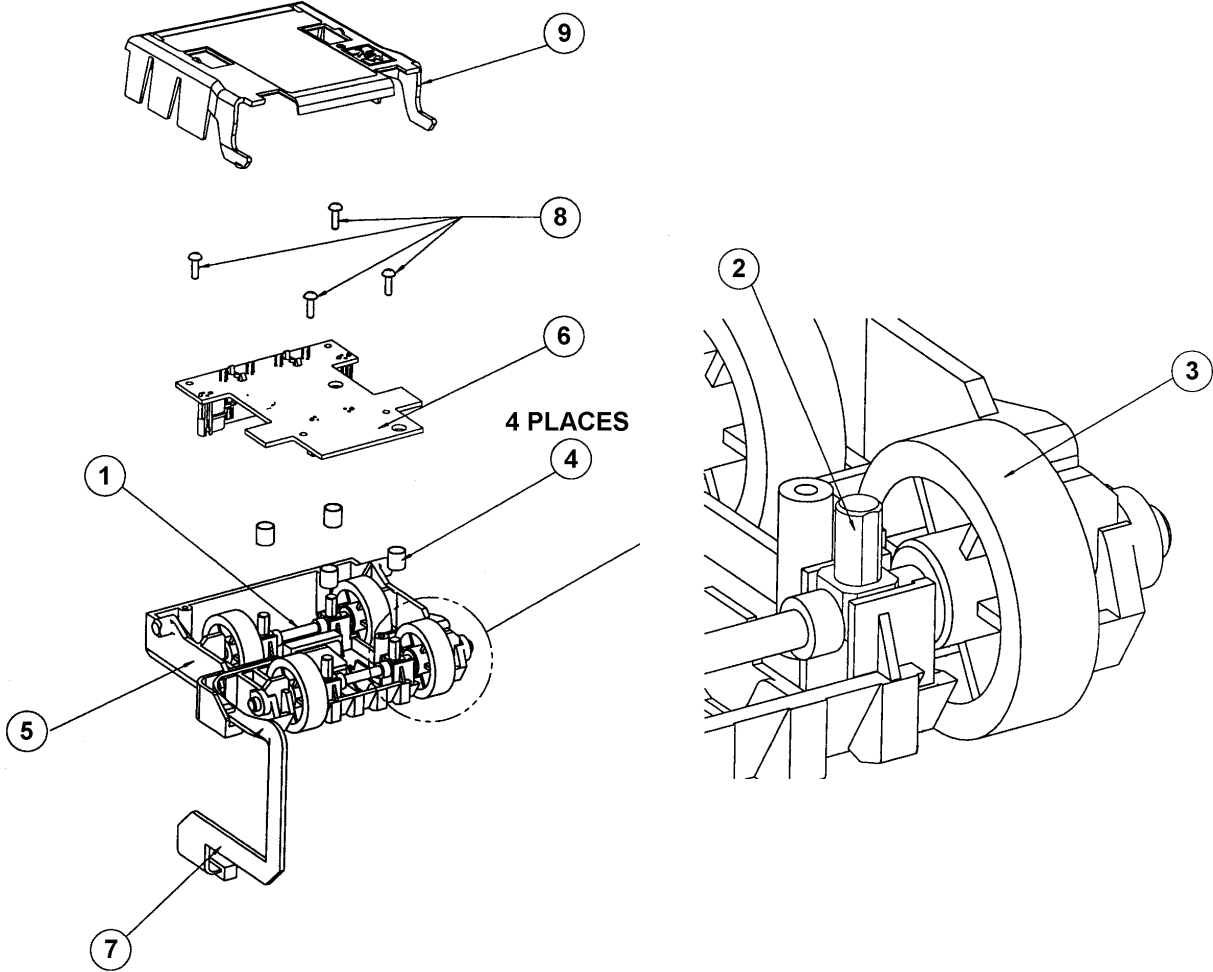
Parts

RTU Cover 67 - 72mm Assembly

Ref Num	Description	Qty	Part Number
1	Shaft Tensioner, RTU Cover PKG 15	1	251038049P
2	Pulley Crowned RTU PKG 50	2	251023001P
3	Spring Holder (Long)	2	04-16-037 – PAK100
4	Pulley Idler 10mm Flanged PKG 25	4	251026035P
5	Pin, Dowel 3.175 DIA x 14.288 PKG 100	2	251036089P
6	Belt, Flat, Endless PKG 100	2	251024014P
7	Shaft, Cover Idler 3.125 x 73.5 PKG 25	1	251037112P
8	Cover, RTU 72 mm PKG 2	1	251021127P
9	Spring, Compression RTU Cover PKG 100	2	251040036P
10	Prism, RTU Exit Sensor PKG 15	1	251021080P
11	SK Assy, RTU Stkr Hi Spd / Low Noise	1	251067049
12	SK Assy, PCB - ZT1000 Stacker Bd.	1	251068052
13	Screw 2-28 x 1/4 Lg Pan P/H Posi	1	08-00-066 – PAK100
14	Screw 6 x 0.375 P/H PZ Plastite PKG 100	2	08-00-234P
15	Cable Stacker Bd - Control Bd PKG 10	1	251074003P

Parts

RTU Cover 67 - 72mm Assembly
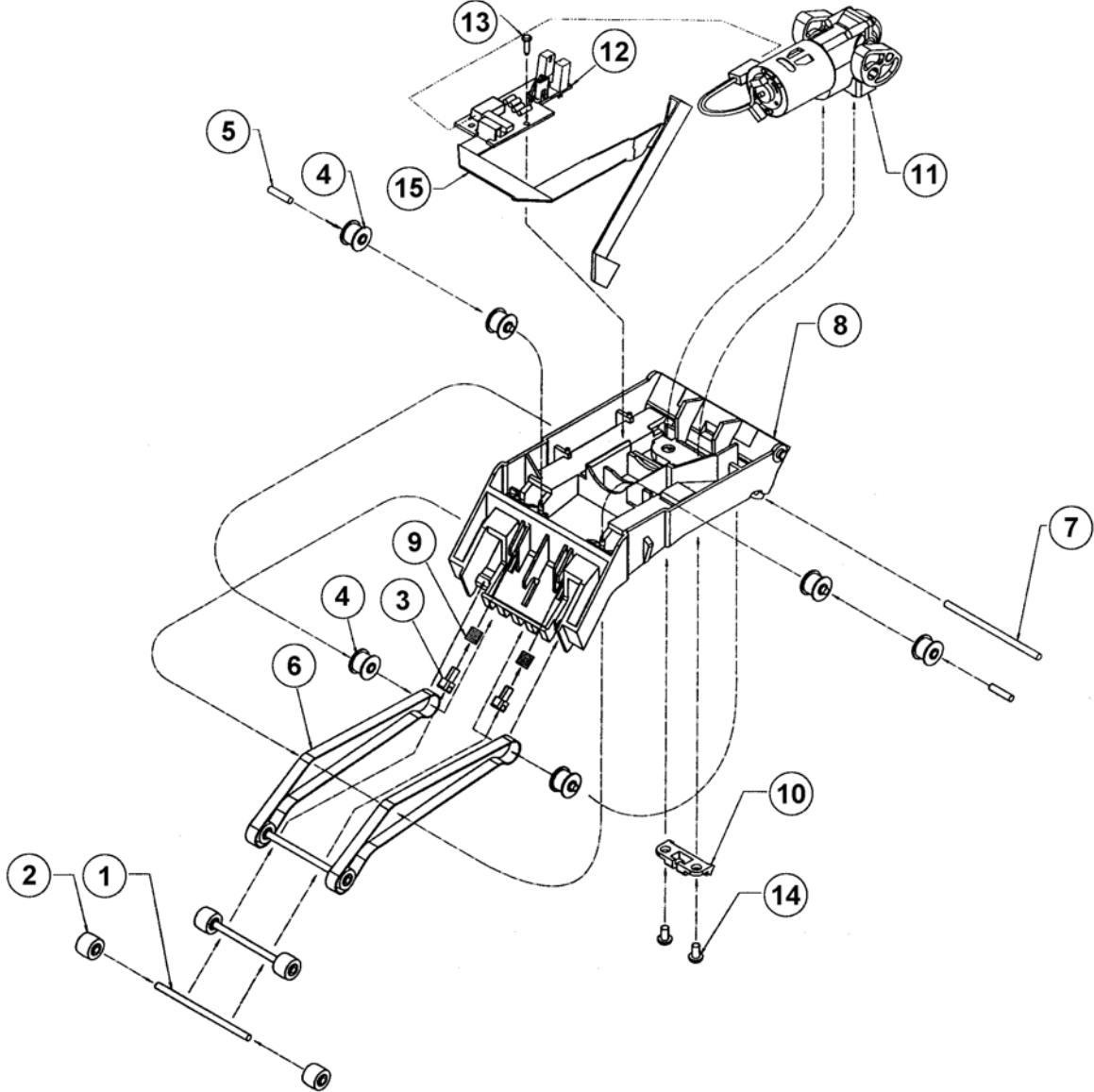
Frequently Asked Questions ————————

1)Q < What does RTU mean?
A > RTU is short for Recognition and Transport Unit - known in the industry as the bill acceptor "head."

2)Q < What purpose do the cassette (cash can) arrows serve?
A > Arrows highlight a cassette's position (upright or upside-down). Arrows provide a visual aid to soft count crews who frequently arrange cassettes by position to signal that they are full or empty.

3)Q < Where should the black and white cable that comes out of the RTU front be connected?
A > The black and white cable is designed to route machine bezel power through a ZT bill acceptor's main cable to the bezel in some applications. Only then should the cable be connected to the bezel. The cable is not used in many applications and should then be left unplugged. Do not plug the cable into the four-pin header located on the PC Board at the front, left-hand corner of the ZT Series 1000 or 1100 bill acceptor RTU.

4)Q < What are the differences among model #'s?
A >
• ZT1101 U.S. bill acceptor interfaces with Silicon Gaming machines. It uses MEI's BDS Interface and accepts U.S. currency.
• ZT1101 CA bill acceptor interfaces with Silicon Gaming machines. It uses MEI'S BDS Interface and accepts Canadian currency.
• ZT1102 U.S. bill acceptor interfaces with IGT's Pulse machines. It uses the IGT IDO22 and IDO23 interfaces and accepts U.S. currency.
• ZT1102 USN bill acceptor interfaces with IGT's Netplex (80960) machines. It uses the IGT IDO24 interface and accepts U.S. currency.
• ZT1103 U.S. bill acceptor interfaces with various machines. It uses MEI's BDS Interface and accepts U.S. currency.
• ZT1103 AU bill acceptor interfaces with various machines. It uses MEI'S BDS Interface and accepts Australian currency.
• ZT1104 U.S. bill acceptor interfaces with Sigma Game machines. It uses MEI'S BDS Interface and accepts U.S. currency.
• ZT1105 U.S. bill acceptor interfaces with Bally Gaming machines. It uses MEI'S BDS Interface and accepts U.S. currency.
• ZT1107 AU bill acceptor interfaces with Aristocrat machines. It uses MEI'S BDS Interface and accepts Australian currency.
• ZT1101 U.S., ZT1103 U.S., ZT1104 U.S. and ZT1105 U.S.

Frequently Asked Questions ————————

use the same MEI Bi Directional Interface Protocol. Minor differences exist among the models that mostly pertain to bezel styles and terminating connectors.

• ZT 1201 67MM bill acceptor interfaces with Silicon Gaming machines. It uses MEI Open Collector BDS Interface and is designed to accept 67mm width class currency.

• ZT 1202 67MM bill acceptor interfaces with IGT machines. It uses MEI Open Collector BDS Interface and is designed to accept 67mm width class currency.

• ZT 1204 67MM bill acceptor interfaces with various machines. It uses MEI Open Collector BDS Interface and is designed to accept 67mm width class currency.

• ZT 1207 67MM bill acceptor interfaces with various machines. It uses MEI NISR, MEI Open Collector BDS and MEI RS-232 BDS Interfaces and is designed to accept 67 mm width class currency.

5)Q < What are the differences between a ZT1000 and a ZT1100 bill acceptor?

A > MEI no longer manufactures ZT1000 bill acceptors; they have been replaced by the ZT1100 Series.

CHANGES FROM ZT1000 TO ZT1100 BILL ACCEPTORS
Removal of the Magnetic Head, Superior Optical Sensing Technology, Docking Capability as standard Configuration Coupon Performance data audit capability Four-way bill acceptance

CHANGES FROM ZT1100 TO ZT1200 BILL ACCEPTORS
Removed 4 position shunting header (formerly used to change modes) Added a four position Bezel Control DIP switch to support the following options: Position 1= Test Mode (ON) Position 2 = Reserved Position 3 = Platform Bezel Feed Mode (ON) Position 4 = Platform Bezel Flash Mode (OFF - flash lights / ON - no flash) Added Mode Toggle Switch Calibration Coupon Configuration Last 5 bills (for platform bezel only) Increase Code Memory from 64K to 128K bytes (Program memory) Increased Data Memory from 8K to 32K bytes. (Data processing) Increased EEPROM from 2K to 4K (Audit lives here) Added NISR Interface (ZT1207 supports NISR and BDS interfaces only) Moved EPROM to Bottom of Control PCB Added RS232 Level Interface Hardware Changed RTU interface connections to an 18 pin connector (OEM specific pig-tail harnesses remain the same.) Added second RS232 interface hardware to enhance external communication capability. Added Optics hardware/software for bar code decoding. Added Bar code messaging enhancements to MEI'S BDS protocol, IGT Netplex, and bar code messaging support via the second RS232 serial port for other interface applications.

Frequently Asked Questions _____

6)Q < What are the differences among interfaces?
A > MEI'S BDS Protocol is a proprietary MEI protocol specification
used to accomplish two-way serial communication between the bill
acceptor and a host machine. It is not used for interfacing to IGT
machines. Open collector BDS uses open collector interface hardware.
RS-232 BDS uses RS-232 level interface hardware.
IGT Pulse and Netplex protocols are proprietary IGT interfaces used to
communicate between IGT host machines and their Imbedded Bill
Acceptors.

7)Q < How is a Series 1000 bill acceptor's manufacturing date determined?
A > Locate the unit's serial number on the product label. The product
label is located on the black plastic cover at the very top of the RTU.
The first three digits of the serial number are the date code of the bill
acceptor. The first two digits indicate the week of the year it was made.
The third digit indicates the year of manufacture.
For example: 089 means the unit was manufactured the 8th week of
1999.

**8)Q < How do I and how often should I clean a Series 1000 bill
acceptor?**
A > The best way to clean the bill acceptor is with mild, non-abrasive,
diluted cleaning solution sprayed onto a soft cloth. Remove the RTU
and open the bill acceptor mouth. Wipe out the bill path. It is recommended
that you calibrate the bill acceptor after cleaning. (Refer to
Question # 11.) Cleaning should be performed after two years, depending
upon use, or if the unit's acceptance rate drops below normal.

9)Q < Can I use alcohol to clean a Series 1000 bill acceptor?
A > Alcohol is not the preferred cleaning solution (Refer to Question # 8)

10)Q < Can I use cleaning cards?
A > Cleaning cards offer simple preventative maintenance for some bill
acceptors. Since a Series 1000 bill acceptor is easily opened, more
effective cleaning can be accomplished with a soft, lint-free cloth and an
appropriate cleaning solution. (Refer to Question # 8.)
Notes and Illustrations

**11)Q < How do I and how often should I calibrate a Series 1000 bill
acceptor?**
A > *ZT1000 AND ZT1100 BILL ACCEPTOR CALIBRATION*
Calibration is performed by removing the RTU (head), by attaching a
jumper across the middle two pins at the front of the RTU, by reinserting
the RTU, and by inserting special calibration paper. If calibration
is accepted, the unit will cycle and stack. If no cycle and stack
operation is observed and bill path LED's are still flickering, re-insert
calibration paper or try a new piece of calibration paper. If, after several

attempts, the unit does not calibrate, the unit may require additional service (see questions 23 - 25.). Remove RTU after calibration, remove jumper, and replace the RTU. Necessary parts and instructions for calibration are included in the Series 1000 Calibration Kit (MEI Part Number 251061008).

ZT1107 AND ZT1200 BILL ACCEPTOR CALIBRATION
Calibration is performed by removing the RTU (head), by setting the mode switch to the middle position, by re-inserting the RTU, and by inserting special calibration paper. Calibration paper MUST be inserted within four seconds or the unit will time-out and return to Normal Mode. Remove and replace RTU to return to calibration mode. If calibration is accepted, the unit will cycle and stack. If no cycle and stack operation is observed and bill path LED's are still flickering, re-insert calibration paper or try a new piece of calibration paper. If, after several attempts, the unit does not calibrate, the unit may require additional service (see questions 23 - 25.). Remove RTU after calibration, reset the mode switch to normal (down) position, and replace the RTU. Necessary parts and instructions for calibration are included in the ZT Calibration Kit (MEI Part Number 251061008).

WHEN TO CALIBRATE
Calibration should be performed after the unit is opened for service, after new firmware is loaded into the unit, or if bill acceptance degrades. Generally, the bill acceptor will self track its own calibration and will not normally need calibration.

12)Q < Is regular paper suitable to calibrate a unit?
A > DO <u>NOT</u> use regular paper for calibration. The paper included in the Series 1000 Calibration Kit is specially sorted to specific tolerances and should be the only paper used for calibration.

13)Q < What is the operating voltage for a Series 1000 bill acceptor?
A > The operating voltage range is +12 to +24 VDC.

14)Q < What are a Series 1000 bill acceptor's dip switch functions?
A > Bill Option Dip switches 1 through 7 enable or disable the different bill denominations accepted by the ZT. The switches 1 through 7 on the U.S. version enable/disable $1, $2, $5, $10, $20, $50, and $100 notes respectively. The DOWN position enables the note. Switch 8 selects 2-way or 4-way bill acceptance. The DOWN position selects 4-way acceptance.
Refer to question 5 under Changes from ZT1100 to ZT1200 bill acceptors for descriptions of the Bezel Control and Mode Toggle Switches. Further information is available in the ZT1200 User Guide.

Frequently Asked Questions —————————

15)Q < What is the purpose of the red, black, and white wires that come out of the main cable?

A > The wires are connected to an internally mounted switch and are used in conjunction with Player Tracking Systems to identify that a cassette (cash box) is present or that it has been pulled. Different combinations allow Normally Open or Normally Closed wiring.

16)Q < Why is there a four-pin header at the front of a ZT1100 bill acceptor RTU?

A > The four-pin header allows a user to put a ZT1100 bill acceptor into different modes to facilitate service. The modes are calibration, self-test, flash download, and audit.

The four-pin header has been removed for a ZT1200 bill acceptor and has been replaced by a Mode Toggle switch. A six-pin header has been added to the front of the ZT1200 to supply power and control to some specific MEI bezel applications.

17)Q < How do I test a unit if it is not in a machine?

A > *ZT1000 AND ZT1100 BILL ACCEPTORS*

The unit may be put into self-test mode by jumpering the four-pin header on the middle two pins after external power has been applied. This action eliminates the machine interface and allows normal, noninterface testing to be conducted. IMPORTANT: If testing in a machine, remove the jumper and cycle machine power after self-testing.

ZT1107 AND ZT1200 BILL ACCEPTORS

The unit may be put into self-test mode by moving the mode toggle switch to the "UP" momentary position and by holding the switch in that position. Releasing the switch will cancel test mode. This action eliminates the machine interface and allows normal, non-interface testing to be conducted. IMPORTANT: If testing in a machine, reset the mode toggle switch to the normal (down) position and cycle machine power after self testing.

18)Q < How do I clear a bill jam?

A > Pull the RTU forward. Open the front of the RTU by pushing up on the U-shaped latches at both sides of the RTU front. Push the front lid up to expose the bill path. Remove the bill, if accessible. If the bill is toward the back of the RTU, close the lid. Remove the RTU. Pull up the rear lid by grasping the middle of the plastic at the point where it meets the rear of the front lid. Do NOT grasp gears, springs, or belts to pull up the lid. Pull the bill out, if accessible. If the bill is jammed in the cassette (cash box) the idler wheel, located at the right rear of the chassis, may be turned to extract an unstacked bill without removing the cassette.

Frequently Asked Questions _____

19)Q < Is it O.K. to swap heads among my machines?
A > Like model number RTU's may be easily swapped. Be careful that the bill acceptor interface is correct. (Refer to Questions # 4, 5, and 6.) Consider the machine denomination and verify that the correct bills are enabled/disabled and that any bezel placards display proper denominations.

20)Q < How are software upgrades performed?
A > Software upgrades are performed through a download tool called FlashPort® or through an EPROM change. ZT1200 units feature a bottom socket to facilitate replacement of ICs.

21)Q < What is a configuration coupon?
A > Used on U.S. models only, the configuration coupon is a specially designed coupon included in the ZT1100 US and the ZT1200 bill acceptor Users Guides that allows configuration of the bill acceptor. The coupon allows the user to turn off, select high security, or select very high security for individual denominations. The coupon also allows 1, 2, or 4-way bill acceptance. For specific directions, refer to the Users Guides.

22)Q < How do you read the bills?
A > Bills are read using sophisticated optical technology.

23)Q < Where are your Series 1000 bill acceptor authorized service centers located?
A > Series 1000 Authorized Service Center locations are as follows:
• MEI
1301 Wilson Drive,
West Chester, PA 19380
610-430-2500
• MEI
2700 East Patrick Lane Ste. 1,
Las Vegas, NV 89120
702-597-4836

24)Q < Where can I call for technical assistance?
A >
• MEI Toll-Free Technical Support|800-345-8172
• East Coast Industry Support|610-430-2808
• West Coast Industry Support|702-597-4836

25)Q < How can I get spare parts for my Series 1000 bill acceptor?
A > Spare parts may be ordered through your machine manufacturer or through MEI's West Chester or Las Vegas locations. In Nevada, spare parts are also available from Happ Controls Inc.

Frequently Asked Questions ⎯⎯⎯⎯⎯⎯

GLOSSARY
Back of Bill Sensor
This sensor is located at the end of the bill path just before the
elevator assembly. Once a bill passes this sensor the bill is ready
to be pushed into the cassette.
Bar code sensor and bar code window leading edge.
The bar code sensor is located in the middle of the bill path and is
activated after a predefined time delay after the bill or bar code
marked document has reached the escrow sensor.

Bar code symbology features.

Parameter	Value
Bar code symbology	Interleaved 2 of 5
Minimum bar width size	0.020" (0.5mm)
Minimum WIDE-TO-NARROW ratio	2/1
Maximum WIDE-TO-NARROW ratio	3/1
Minimum characters in bar code	6
Maximum characters in bar code	28

Bar code terminology

Term	Descritpion
Bar	Dark element of the bar code
Space	Light element of the bar code
Quiet Zone	Light element of the image preceding the start character and after the stop character (white space).
Narrow Bar / Space	Narrow bar or space in a bar code
Wide Bar / Space	Wide bar or space in a bar code
Frame	Sequence of elements (quiet zones, bars, and spaces) for one image
Start Character	Predefined sequence of the image elements at the start of bar code
Stop Character	Predefined sequence of the image elements at the end of bar code
Start Quiet Zone	Quiet zone before bar code start character

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Stop Quiet Zone	Quiet zone after bar code start character
Range	Image elements between two sequential quiet zones
Digitizing	Coverting physical size of the frame elements to an array of digital values
Source String	Part of the image frame
Transition	Digital value of one image element physical size
Foward	Bar code orientation when the acceptor sees the start character first (the start character is closest to the bezel)
Backward	Bar code orientation when the acceptor sees the stop character first (the stop character is closest to the bezel)

Bar code Window trailing edge.
Once a predefined length of the bill or bar code marked document has moved toward the stacker, the bar code sensor is deactivated.
Chassis
The metal housing that mounts into the host machine and holds the RTU and the LRC.
Chassis Harness
The cable harness mounted in the chassis that mates with the RTU harness and carries electrical signals from the RTU to the host machine.
Escrow Sensor and point of no return
The escrow sensor is located in the middle of the bill path and is activated while the bill is in the escrow position. Once a bill has moved past this sensor (toward the stacker) it can not be returned.
Fast Feed
A fast feed is defined as a second bill inserted into the bezel while the acceptor is in the process of stacking or validating a bill. When the acceptor detects a fast feed during stacking, it will stack the first bill and reject the second bill. During validation both bank

notes will be returned.
LRC
Lockable **R**emovable **C**assette; the portion of the acceptor in which the currency accepted is stored.

Frequently Asked Questions ⎯⎯⎯⎯⎯⎯

PowerUp-B sequence.
This feature is specific to the BDS serial protocol and is useful to obtain the value of a non-returnable note when power is interrupted during bill processing.

RTU
Recognition and **T**ransport **U**nit; the part of the acceptor that contains the electronics, sensors, and motors necessary for the acceptor to operate.

RTU Harness
The cable harness mounted to the left side of the RTU that connects the RTU to the host through the chassis harness.