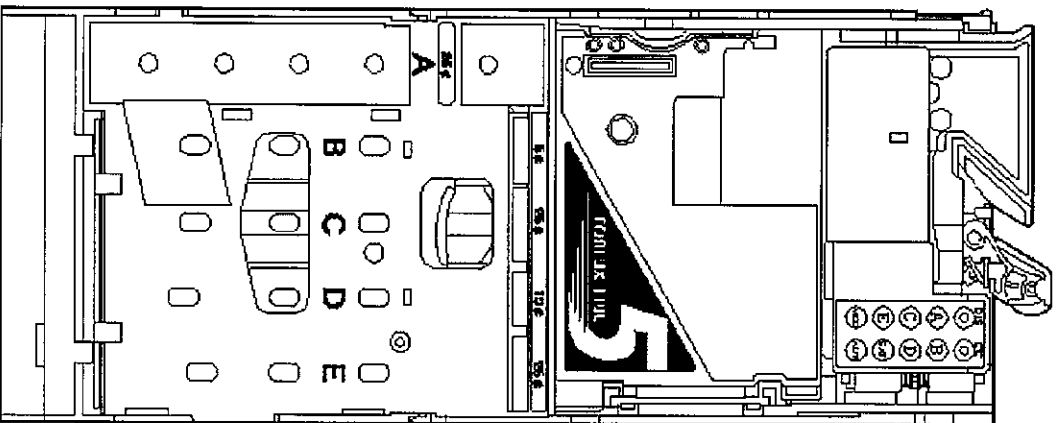


**CONLUX®**

Multi Drop Bus 5-Tube Coin Changer

**CCMS**

Series



**Service Manual**

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## 1. OUTLINE

\* CCM5 series coin changers can be used with U.S. 5¢, 10¢, 25¢, and \$1 coins as well as Canadian 5¢, 10¢, 25¢, \$1, and \$2 coins.

\* A selector switch on back of the Discriminator allows the user to select between U.S.-coin-only, Canadian-coin-only or U.S.-and Canadian coins.

\* Five coin tubes are integrated inside a cassette for ease of handling change.

\* Up to three different type of coins are dispensed simultaneously to ensure rapid return of change.

\* The coin changer communicates with the vending machine controller via the Multi-Drop Bus (M.D.B.).

## 2. Product Model Names

- 2.1 Coin changer CCM5 □ - □ Cassette division (Table I)  
Color identification (Table II)
- 2.2 Discriminator CCM5 □ D Color identification (Table II)

### 2.3 Cassette Tube Assy

Table I

Division	Name	Item	Tube A	Tube B	Tube C	Tube D	Tube E
1	US-1	Type of coin accommodated	25¢	5¢	25¢	10¢	25¢
		Coin filling method	Manual	Auto	Auto	Auto	Manual
		Number of coins per tube	Approx. 87	Approx. 72	Approx. 79	Approx. 103	Approx. 86
2	US-2	Type of coin accommodated	10¢	5¢	25¢	10¢	5¢
		Coin filling method	Manual	Auto	Auto	Auto	Manual
		Number of coins per tube	Approx. 114	Approx. 72	Approx. 79	Approx. 103	Approx. 77
4	US-4	Type of coin accommodated	\$1	5¢	25¢	10¢	25¢
		Coin filling method	Auto	Auto	Auto	Auto	Manual
		Number of coins per tube	Approx. 64	Approx. 72	Approx. 79	Approx. 103	Approx. 86
5	US-5	Type of coin accommodated	10¢	10¢	5¢	10¢	5¢
		Coin filling method	Manual	Auto	Auto	Auto	Manual
		Number of coins per tube	Approx. 114	Approx. 103	Approx. 72	Approx. 103	Approx. 77

### 2.4 Color Identification

Table II

Symbol	Color identification
None	Discriminator and Part of other parts: Red
G	Standard Color: Grey

### 3. GENERAL SPECIFICATIONS

Specifications and design are subject to change without notice.

Items	CCM5Series						
<p>Coins Accepted</p> <p>Coins Paid Out</p> <p>Coin Tube Capacity</p> <p>Change Payout operation</p>	<p>US coins: 5¢, 10¢, 25¢, \$1 Canadian coins: 5¢, 10¢, 25¢, \$1, \$2</p> <p>* A selector switch on the back of the coin discriminator enables the coin mode (country) to be selected.</p> <p>5¢, 10¢, 25¢, and \$1 coins</p> <p>* The change coins differ with the cassette tubes to be installed. Refer to table of next page for details.</p> <p>DC motor and DC solenoid used in combination (All tubes: A to E)</p>						
<p>Power Supply</p> <p>Insulation Resistance</p> <p>Operating Temperature Range</p> <p>Rated Power Consumption</p> <p>Weight</p>	<p>34VDC±10%</p> <p>20Mohm or greater</p> <p>+5°F~-140°F(-15°C~+60°C)</p> <p>0.10A (Wait State)</p> <p>0.66A (Operate State: Coin discrimination, motor operation, etc.)</p> <p>0.92A(Peak:Max. 5 sec.)</p> <p>Approx. 4.19 Lbs. (1.9kg)</p>						
<p>Function</p>	<p>Change sensing function (All tubes: tubes A to E)</p> <p>Auto fill tube; full status sensing function</p> <p>Failure sensing function (Monitor L.E.D.)</p> <p>Inventory function</p> <p>Cassette tube assy out-of-position sensing function</p> <p>Simultaneous coin payout function (up to 3 types of coins)</p> <p>Coin accept/reject programming function</p> <p>Simplified automatic change adjusting function</p> <p>Motor lock auto recovery function</p> <p>Drive power supply control function</p> <p>Memory backup function</p> <p>Selecting the change adjusting function</p> <p>Inventory mode function</p> <p>Cassette tube type sensing function</p>						
<p>Option</p>	<table border="1" data-bbox="790 639 898 1380"> <thead> <tr> <th data-bbox="857 639 898 863">Optional device</th> <th data-bbox="857 863 898 1042">Product name</th> <th data-bbox="857 1042 898 1380">Coin tube capacity</th> </tr> </thead> <tbody> <tr> <td data-bbox="790 639 857 863">Satellite tube</td> <td data-bbox="790 863 857 1042">ST-5/ ST-25</td> <td data-bbox="790 1042 857 1380">5¢ coins : approx. 110 coins/ 25¢ coins : approx. 130 coins</td> </tr> </tbody> </table> <p>* ST-25 (for 25¢), ST-5 (for 5¢)</p> <p>You can fit up to two optional tubes, either in pairs or individually, and in any order to the CCM5.</p>	Optional device	Product name	Coin tube capacity	Satellite tube	ST-5/ ST-25	5¢ coins : approx. 110 coins/ 25¢ coins : approx. 130 coins
Optional device	Product name	Coin tube capacity					
Satellite tube	ST-5/ ST-25	5¢ coins : approx. 110 coins/ 25¢ coins : approx. 130 coins					

### 4. Detailed Specifications

#### (1) Cassette Tube Assy

Five coin tubes are integrated inside a cassette which can be removed from the coin changer. The respective tubes are also equipped with an open/close back cover that the coins can be replenished or collected easily. The cassette tube type sensing function is activated upon attaching a cassette to the coin changer, and the specification applicable to the cassette type is adopted.

\*The names of the cassette tube assy and types of coins accommodated are shown next page.

Division	Name	Item	Tube A	Tube B	Tube C	Tube D	Tube E
1	US-1	Type of coin accommodated	25¢	5¢	25¢	10¢	25¢
		Coin filling method	Manual	Auto	Auto	Auto	Manual
		Number of coins per tube	Approx. 87	Approx. 72	Approx. 79	Approx. 103	Approx. 86
		Full status detecting software counter	71	64	71	97	None
2	US-2	Type of coin accommodated	10¢	5¢	25¢	10¢	5¢
		Coin filling method	Manual	Auto	Auto	Auto	Manual
		Number of coins per tube	Approx. 114	Approx. 72	Approx. 79	Approx. 103	Approx. 77
		Full status detecting software counter	97	64	71	97	None
4	US-4	Type of coin accommodated	\$1	5¢	25¢	10¢	25¢
		Coin filling method	Auto	Auto	Auto	Auto	Manual
		Number of coins per tube	Approx. 64	Approx. 72	Approx. 79	Approx. 103	Approx. 86
		Full status detecting software counter	63	64	71	97	None
5	US-5	Type of coin accommodated	10¢	10¢	5¢	10¢	5¢
		Coin filling method	Manual	Auto	Auto	Auto	Manual
		Number of coins per tube	Approx. 114	Approx. 103	Approx. 72	Approx. 103	Approx. 77
		Full status detecting software counter	97	97	64	97	None

\* Refer to section (2) for details of the full status detecting software counter.

## (2) Automatic Coin Replenishment Tube Full Status Sensing Function

For sensing the number of coins, there is an interrupter switch with a lever at the top section of each automatic coin replenishment tube, along with the coin counter in the software. Based on these two sensing means, the coin tube full status is acknowledged.

If either of the two sensing methods detects the full status and a coin of the particular type which has been sensed as full is inserted, it will be delivered to the cash box by the discriminator.

The software counter for sensing the full status maintains its memory even in the event of a power failure. (Protected by the memory backup function.)

\* The software counter function remains effective even if the cassette tube assembly is removed from the coin changer. When the coins are collected out of the tubes, clear the memory of the software counter.

\* Refer to page 9 for clearing the memory.

\* Refer to section (1) for the value of the software counter.

### (3) Coin Acceptance Prohibited

Coin acceptance is prohibited under the following conditions irrespective of the control by the main controller:

- (1) During a power failure.
- (2) When a coin or coins are being dispensed, an abnormal condition is caused or when power is supplied for the first time (for approx. 2 sec.)
- (3) Coin acceptance is prohibited by setting the coin type acceptance prohibition function (only for the specified coin type).
- (4) If the coin acceptance conditions for the coin type to be sent to the cash box are not established by the mounted cassette tube assy.

No.	Name	U.S. and Canadian coins				Canadian coin
		5¢	10¢	25¢	\$1	
1	US-1	○	○	○	△	△
2	US-2	○	○	○	△	△
4	US-4	○	○	○	○	△
5	US-5	○	○	○	△	△ Note 1

\*The mark "○" in the table above indicates that the particular type of coin can be accepted regardless of the condition of the change.

\*The mark "△" in the table above indicates that the particular type of coin can be accepted depending upon the condition of smaller denomination coins in the tubes.

\*The following are examples in US-1.

\*Conditions of the changer for acceptance of \$1 : Change for \$1 in 10¢ and 25¢ denominations is available.

Example:

If the cassette tube assy has four 25¢ and ten 10¢ coins, it can accept two \$1 coins.

If the cassette tube assy has six 25¢ and fifteen 10¢ coins, it can accept three \$1 coins.

If the cassette tube assy has one 25¢ and nine 10¢ coins, it cannot accept any \$1 coin.

\*Conditions of the changer for acceptance of \$2: Change for \$2 in 25¢ denominations is available.

Example:

If the cassette tube assy has eight 25¢ coins, it can accept one \$2 coin.

If the cassette tube assy has sixteen 25¢ coins, it can accept two \$2 coins.

If the cassette tube assy has eight 25¢ coins and one \$1 coin has already been inserted, it cannot accept any \$2 coin.

\*The following are examples in US-4.

\*Conditions of the changer for acceptance of \$2: Change for \$2 in 25¢ and \$1 denominations is available.

Example:

If the cassette tube assy has eight 25¢ coins, it can accept one \$2 coin.

If the cassette tube assy has sixteen 25¢ coins, it can accept two \$2 coins.

If the cassette tube assy has two \$1 coins, it can accept one \$2 coin.

If the cassette tube assy has six \$1 coins, it can accept three \$2 coins.

If the cassette tube assy has one \$1 and four 25¢ coins, it can accept two \$2 coins.  
 If the cassette tube assy has one \$1 and three 25¢ coins, it cannot accept any \$2 coin.

\*The following are examples in US-5.

\* Conditions of the changer for acceptance of 25¢: Change for 25¢ in 5¢ and 10¢ denominations is available.

Example:

If the cassette tube assy has five 5¢ coins, it can accept one 25¢ coin.

If the cassette tube assy has one 5¢ coin and two 10¢ coins, it can accept one 25¢ coin.

If the cassette tube assy has one 5¢ coin and five 10¢ coins, it can accept two 25¢ coins.

If the cassette tube assy has five 10¢ coins, it cannot accept any 25¢ coin.

Note 1:

When US-5 is mounted, Canadian \$2 coins are acceptable only if two satellite tubes for 25¢ (ST-25) that have sufficient change (six 25¢ each, twelve 25¢ in total) are attached, and the status of the empty switch is "Sufficient Change."

Example:

Both ST-25 have sufficient change: One \$2 is acceptable.

Only one ST-25 has sufficient change: \$2 is not acceptable.

#### (4) Escrow

When the main controller transmits the same value as the total amount of the inserted coins by the EXPANSION/ALTERNATIVE PAYOUT command, all the inserted coins are returned.

#### (5) Failure Sensing Function

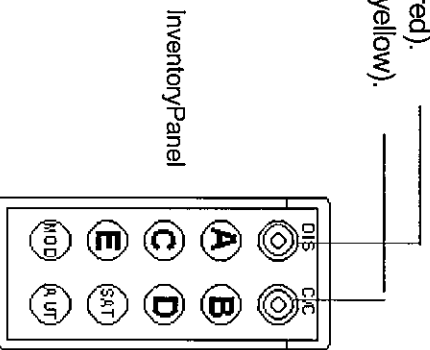
When the coin changer senses a failure, the abnormal condition is notified to the main controller. At the same time, the L.E.D. on the inventory panel starts flashing.

The monitoring system consists of two L.E.D.'s. One is for monitoring the status of the discriminator (DIS display: red) and the other is for monitoring the coin changer (C/C display: yellow). The L.E.D.'s flashing whenever a failure is detected in each section.

Normal condition ..... Both L.E.D. lamps are illuminated.

Failure in the discriminator ..... DIS L.E.D. is flashing (red).

Failure in the coin changer area ..... C/C L.E.D. is flashing (yellow).





## (6) Automatic Recovery of Motor Lock

If the dispensing operation fails because the pay-out motor locks:

- (1) the changer will automatically start a reset cycle to clear the jam.
- (2) in case of failure to clear the jam automatically: (1) press any inventory switch and it will then start the sequence to unlock the motor.

With the motor unlocked, the coin dispensing mechanism stops operation and enters standby mode. If the motor remains locked, set the dispensing mechanism to the standby position to stop the dispensing operation. Under this particular circumstance, the cassette tube assembly can be removed to make it easier to solve the cause of the motor lock.

## (7) Simultaneous Dispensing Function

Up to three different types of coins can be dispensed simultaneously to complete the process of returning change, depending on the amount of change required and the condition of coins in the tubes.

\* This function is not available in inventory mode.

\* The combination of tubes D and E are not applicable to this function. (Level 3 controller is required.)

## (8) Simplified Automatic Change Adjusting Function

This function allows the coin changer, without needing to communicate with the main controller, to independently control the increment or decrement of the quantity of change.

For detailed operating instructions, refer to section 5-3-3, "Loading the change tubes" on page 16.

## (9) Memory Backup Function

An electrical double-layer capacitor is used, so data in the memory such as the number of coins in the tubes for change, data of the empty quantity counter, data of the full status sensing software counter and the number of coins stored for the simplified automatic change adjusting function are protected even in the event of a power failure.

The memory backup lasts for 3 days or longer (at 25°C) once the system has been turned on for longer than 24 hours continuously.

The data maintained by the backup function can be forcibly cleared as follows.

### (1) Deleting Backup Data

1. Detach the cassette assembly from the coin changer.
2. Press and hold down the Auto switch (AUT display "ON") for about 5 seconds.
3. The two L.E.D.'s (red and yellow) will flash rapidly for about 1 second to indicate that all of the data has been cleared.

Note: The backup data clear operation uses the same switch as that for the simplified automatic change adjusting function. Be careful not to operate the switch incorrectly.

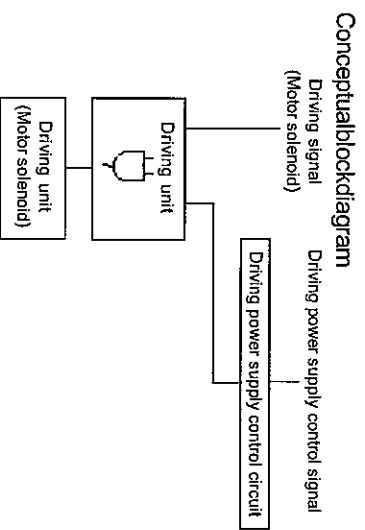
### (10) Coin Accept/Reject Programming Function

This function allows the coin changer to prohibit the acceptance of particular types of coins independently of the main controller. Instructions for setting these functions, refer to section 5-3-5, "Coin Accept/Reject Programming Function" on page 19.

### (11) Driving Power Supply Control Function

The load control system of the motor solenoid which is part of the coin discriminator and dispensing unit consists of two circuits, a driving circuit and a driving power supply control circuit (a circuit to supply power to the driving circuit).

Driving of the load (motor solenoid) requires both a driving signal and driving power supply control signal to prevent malfunction of the driving unit due to external noise.



### (12) Selecting the Change Adjusting Function

The CCM5 series has the following functions for adjusting change automatically.

- (1) Simplified Automatic Change Adjusting Function
- (2) Inventory/Mode Function

You can select one of the above functions by setting the display switches on the inventory panel. The selection is shown on the display switches on the inventory panel.

For detailed operating instructions, refer to section 5-3-8, "Selecting the Change Adjusting Function" on page 22.

### (13) Change Sensing Function

Information on the change obtained by the coin changer is transmitted to the main controller by the command TUBE STATUS.

Information regarding the change is maintained in the memory even in the event of a power failure as it is protected by the memory backup function.

\* Refer to page 9 for clearing the memory.

#### 13-1 Changed data

Information on each type of coin used for change is prepared on the basis of the proximity empty switch mounted on each coin tube as well as the memorized data on the number of inserted coins (empty quantity counter). Information for each type of coin is transmitted to the main controller.

The changed data is applicable to only those coin types specified for coin tubes in the cassette tube unit. Other types of coins are all sent to the cash box with "0" transmitted to the main controller.

- (1) Changed data on the basis of the proximity empty switch  
If any of the specified types of coins is normally stored in the automatic coin replenishment tube or

manual coin replenishment tube are stored in either tube exceeding the fixed quantity, the number of coins is transmitted to the main controller for each type of coin applicable. (If two or more tubes have coins exceeding each specified quantity, the information on them is also transmitted to the main controller. In this case, the information is not the total of the numbers of coins in different tubes.)

Number of coins for each coin type for "Sufficient Change" status by the empty switch	5¢	4 coins
	10¢	9 coins
	25¢	6 coins
	\$1	4 coins

Example: 5¢ empty switch

Empty switch status	Change data
Empty switch "Out of change" status	0
5¢ empty switch "Sufficient Change" status	4
One 5¢ coin dispensed. Empty switch "Sufficient Change" status	4
One 5¢ coin dispensed. Empty switch "Out of Change" status	3
Two 5¢ coins dispensed. Empty switch "Out of Change" status	1
One 5¢ coin dispensed. Empty switch "Out of Change" status	0
5¢ empty switch "Sufficient Change" status	4

(2) Changed data on the basis of the empty quantity counter

1. When the empty switch is in "Sufficient Change" status  
(Initial value of change data = number of coins by type)

Each time a coin or coins are inserted, the initial value of the number of coins by type is increased and the value is transmitted to the main controller.

When none of the inserted coins are dispensed as a result of a sale and are stored in the coin changer, the number of coins inserted is added to the initial value of the number of coins by type and the coins are held by the coin changer.

On the other hand, if any coins are dispensed as the change in a sale, the number of coins dispensed is subtracted from the value of the number of coins by type until the initial value (which equals "Sufficient Change") is reached. The changed value is transmitted to the main controller.

Example: When the 5¢ empty switch is in "Sufficient Change" status

	Change data value
Initial value	4 (Empty switch "Sufficient Change" status)
One 5¢ coin is inserted.	5 (Empty switch "Sufficient Change" status)
One 5¢ coin is inserted.	6 (Empty switch "Sufficient Change" status)
One 5¢ coin is dispensed.	5 (Empty switch "Sufficient Change" status)
One 5¢ coin is dispensed.	4 (Empty switch "Sufficient Change" status)
One 5¢ coin is dispensed.	4 (Empty switch "Sufficient Change" status)

## 2. When the empty switch is in "Out of Change" status

(Initial value of change data = 0)

Each time a coin or coins are inserted, the number of inserted coins is transmitted to the main controller. When the number of inserted coins is less than the number of coins by type and the empty switch is in the "Sufficient Change" status, the change data at that particular moment equals the number of coins by type. The number of coins inserted thereafter is added and transmitted to the main controller. If the sale proceeds without establishing "Sufficient Change" as a result of coin insertion, the data of the empty quantity counter is transmitted to the main controller as the change data.

On the other hand, if any coins are dispensed as change in a sale, the number of coins dispensed are subtracted from the value 1 at a time after the empty switch enters the "Out of Change" status, until the value reaches "0". The changed value is transmitted to the main controller.

Example: When the 5¢ empty switch is in "Out of Change" status

	Changed data
Initial value	0 (Empty switch "Out of Change" status)
One 5¢ coin is inserted.	1 (Empty switch "Out of Change" status)
One 5¢ coin is inserted.	4 (Empty switch "Sufficient Change" status)
One 5¢ coin is inserted.	5 (Empty switch "Sufficient Change" status)
One 5¢ coin is dispensed.	4 (Empty switch "Sufficient Change" status)
One 5¢ coin is dispensed.	3 (Empty switch "Out of Change" status)
One 5¢ coin is dispensed.	2 (Empty switch "Out of Change" status)
One 5¢ coin is dispensed.	1 (Empty switch "Out of Change" status)

\* The memory stored in the software counter is cleared when the cassette assembly is removed from the coin changer.

## 13-2 Maximum values of change data

The maximum values of change data for the respective types of coin are shown below.

Maximum values of change data	
5¢	*1 76
10¢	*2 255
25¢	*3 160
\$1	63

\*1 The maximum value of the change data when US-2 with ST-5 (two tubes) or US-5 with ST-5 (two tubes) is used.

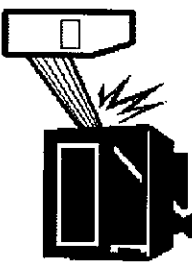

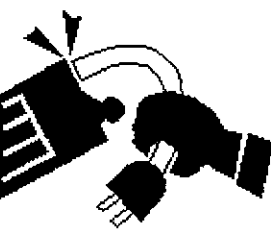
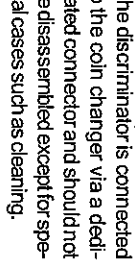


\*2 When US-5 is used, the summed up value of the change data for the full status of one denomination in a cassette becomes 291. A: 97 + B: 97 + D: 97 = 291

However, the value 255 is transmitted by the TUBESTATUS command, because the maximum value of the change data to be sent by that command is specified to be 255 (FFH). This continues until the total number of coins in the tubes becomes 254 or less by dispensing.

\*3 The maximum value of the change data when US-1 with ST-5 (two tubes) is used.

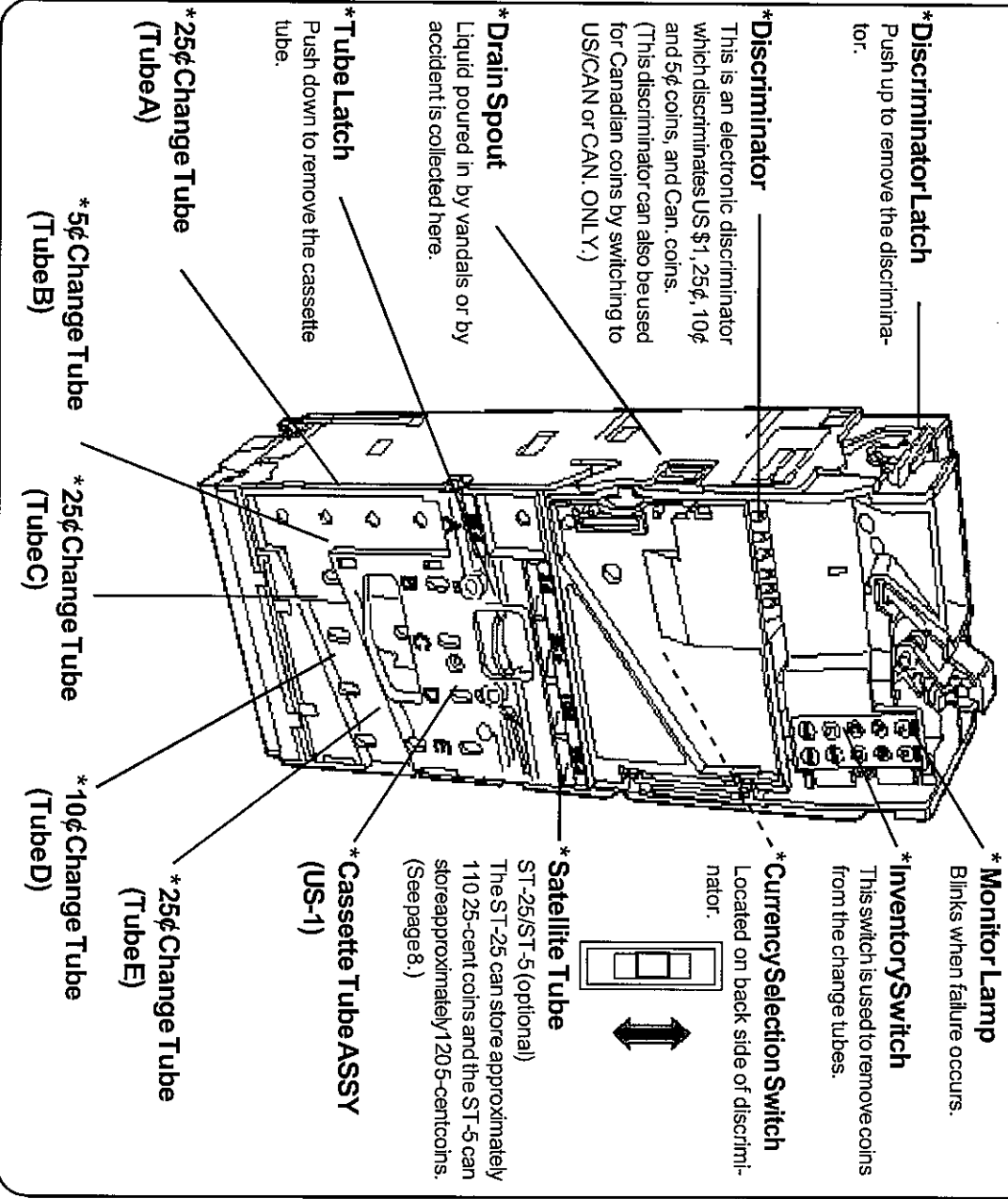
## 5. HANDLING AND INSTALLATION

### 5-1 Handling Instructions

	<p>The discriminator is connected to the coin changer via a dedicated connector and should not be disassembled except for special cases such as cleaning.</p>	<p>In case the discriminator is to be disassembled, be sure to turn off the power of the coin changer before disassembling.</p> 	<p>Do not carry the coin changer by the harness.</p> 
	<p>Store the coin changer in a dry location.</p>		

### 5-2 Identification of Components and their Location

This figure shows the coin changer containing the cassette tube assembly US-1 and an optional satellite tube.

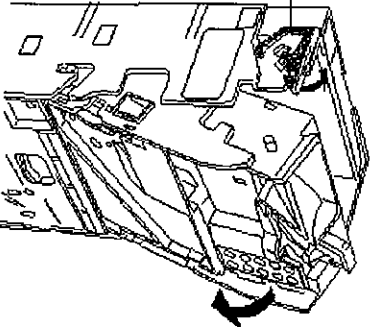
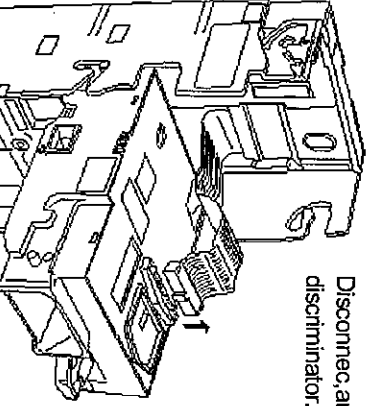
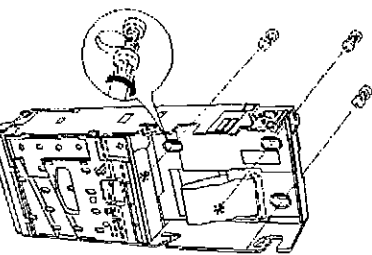
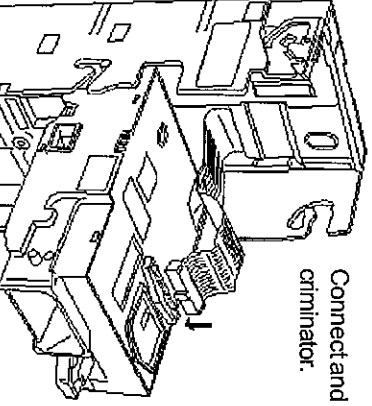
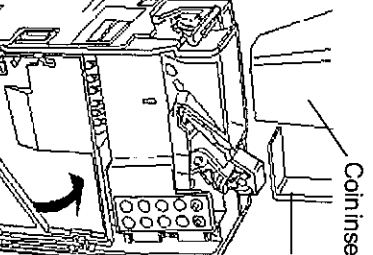
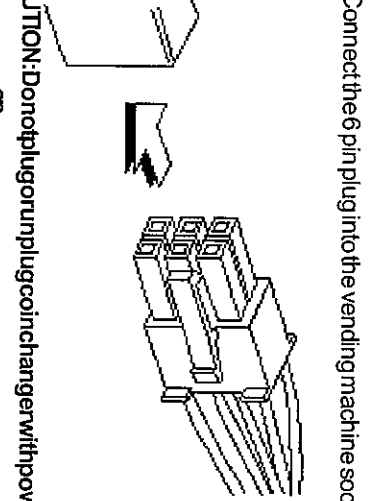


## 5-3 Operating Instructions

### Setup Procedure

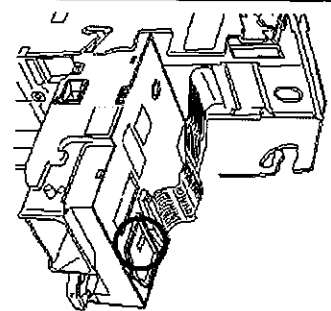
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### 5-3-1 Installation Procedure

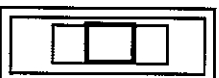
<p>(1)</p>  <p>Discriminator latch</p> <p>Push up the discriminator latch and tilt the discriminator forward.</p>	<p>(2)</p>  <p>Discriminator</p> <p>Disconnect and remove the discriminator.</p>
<p>(3)</p>  <p>Coin insert chute</p> <p>Locate the slotted holes in the coin changer to the mounts in the vending machine and tighten it at the 3 places shown. (Do not over tighten!)</p>	<p>(4)</p>  <p>Discriminator</p> <p>Connect and install the discriminator.</p>
<p>(5)</p>  <p>Coin insert chute</p> <p>Coin return lever</p> <p>When coin changer is installed, ensure proper alignment of coin insert chute and return lever.</p>	<p>(6)</p>  <p>CAUTION: Do not plug or unplug coin changer with power on</p> <p>Connect the 6 pin plug into the vending machine socket.</p>

### 5-3-2 Currency Selection Switch

The currency select switch on the back of the discriminator has three positions for selecting U.S. only, U.S. & Canada, or Canada only mode.



U.S. ONLY  
U.S. / CAN  
CAN. ONLY

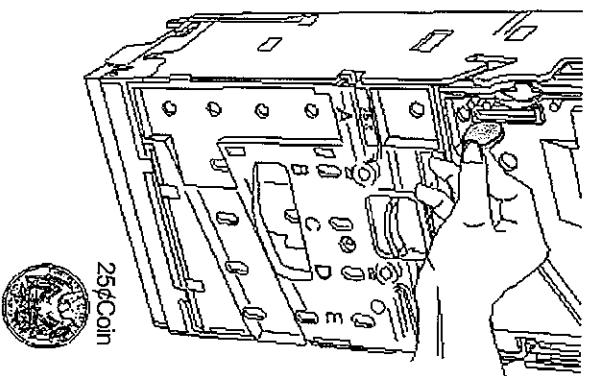


U.S. ONLY: For U.S. coins only  
U.S./CAN: For both U.S. & Canadian coins  
CAN. ONLY: For Canadian coins only

### 5-3-3 Loading the Change Tubes (In case of US-1)

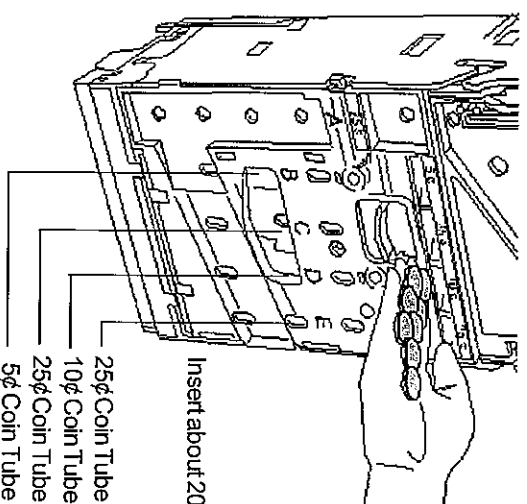
\* Inserting Coins Through the Coin Insert Slots on the Cassette Tube Assy (US-1)

#### \* Loading 25¢ Coins (Tube A)



Insert about 20 coins in each tube.

#### \* Loading 5¢, 10¢ and 25¢ Coins



U.S. Coin or  
Canadian Coin



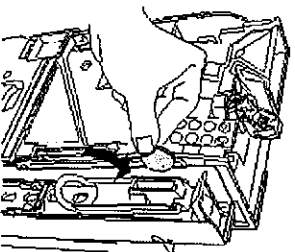
5¢ Coin 10¢ Coin 25¢ Coin

Insert about 20 coins in each tube.

25¢ Coin Tube (Tube E)  
10¢ Coin Tube (Tube D)  
25¢ Coin Tube (Tube C)  
5¢ Coin Tube (Tube B)

#### \* For satellite tube (optional)

Insert coins (5-cent coins for the ST-5 or 25-cent coins for the ST-25) one by one.

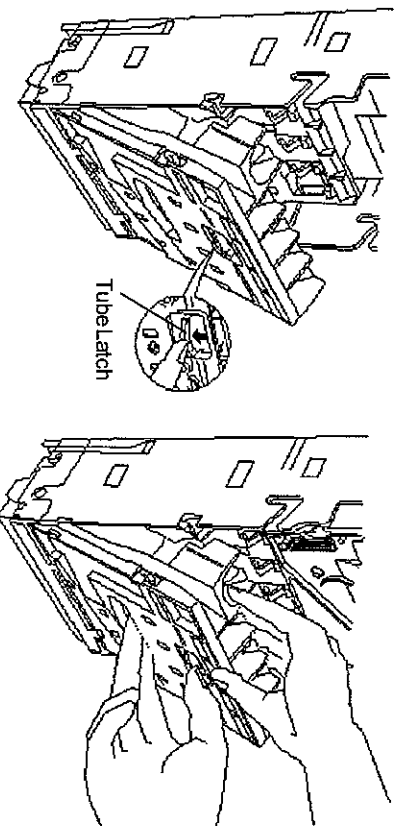


#### Notes:

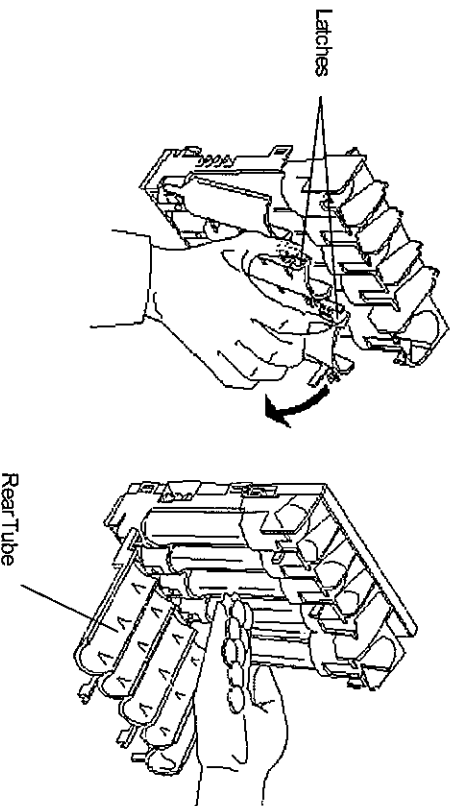
- (1) If a coin drops in and stands on end, correct it.
- (2) Be careful not to load bent coins.
- (3) Be careful to load the correct coin in each tube.

**\*Inserting Coins With the Cassette Tube Assy Removed**

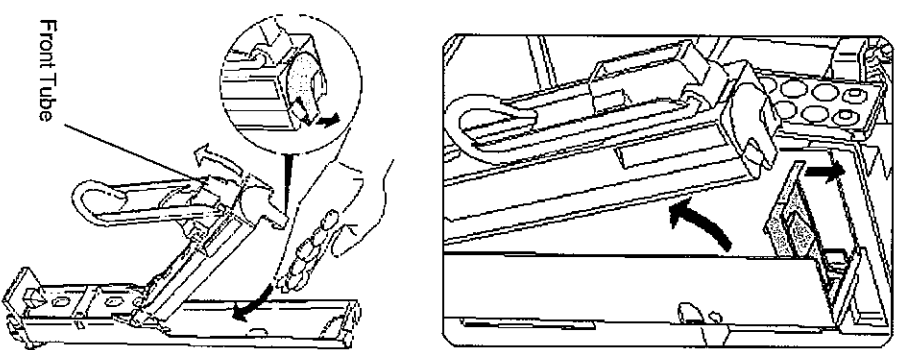
(1) Remove the cassette tube assy as follows:  
Press down the tube latch and pull the cassette tube assy toward you to remove it.



(2) Squeeze the upper two levers to release the lock and open the rear tube. Replenish as many individual coins into their respective tubes as required.  
(3) Close the rear tube and mount the cassette tube unit back in place.



**\*For satellite tube (optional)**  
First, push up the tube latch, tilt the satellite tube towards you, and remove it. Then unlatch the rear latch, tilt the front tube towards you, and supply the coins (5-cent coins for the ST-5 or 25-cent coins for the ST-25).

**Notes:**

- (1) If a coin drops in and stands on end, correct it.
- (2) Be careful not to load bent coins.
- (3) Be careful to load the correct coin in each tube.

**\*When reinstalling the cassette tube assy, be sure to verify the operations as follows:**  
Insert at least two coins of each denomination from the vending machine and confirm that they are stored in the correct tubes. Then press the coin return lever and confirm that the coins are properly returned.



### 5-3-4 Inventory Panel

The inventory panel consists of the eight switches and two monitor lamps shown below.

- \* Tube Inventory switches A-E: 5 (A ~ E display)
- \* Satellite Inventory switch: 1 (SUT display)
- \* Mode switch: 1 (MOD display)
- \* Auto switch: 1 (AUT display)
- \* Monitor L.E.D.: 2 (DIS and C/C display)

#### \* Monitor L.E.D. (for displaying status)

The statuses of the discriminator (DIS) and coin changer (C/C) of the coin changer are displayed by the L.E.D.'s. The L.E.D.'s are also used to set or check various functions.

#### \* Failure Sensing Function

When the coin changer senses a failure, the abnormal condition is notified to the main controller. At the same time, the L.E.D. on the inventory panel starts flashing.

The monitoring system consists of two L.E.D.'s. One is for monitoring the status of the discriminator (DIS display: red) and the other is for monitoring the coin changer (C/C display: yellow). The L.E.D.'s flashing when ever a failure is detected in each section.

Normal condition ..... Both L.E.D. lamps are illuminated.  
 Failure in the discriminator ..... DIS L.E.D. is flashing (red).  
 Failure in the coin changer area ..... C/C L.E.D. is flashing (yellow).

#### \* Tube Inventory Switches A ~ E (for collecting coins in the cassette tube assy)

By pressing any one of switches A to E, dispensing of the corresponding tube in the cassette tube assy is carried out.

The dispensing operation continues until it is stopped by any of the following conditions.

<Conditions for stopping dispensing operation>

1. Operation has been carried out 150 times continuously regardless of the presence of coins for change. (Automatic Halt)
2. After the change sensing function senses an "Out of Change" status, operation has been carried out 20 times continuously. (Automatic Halt)
3. Any one of the inventory switches (A ~ E and SAT) is pressed during dispensing operation. (Manual Halt)

#### \* Satellite Inventory Switch

This inventory switch is for extensive use of the satellite tube.

When one or more satellite tubes are attached, press the switch to dispense coins as follows (regardless of the condition of the change):

One satellite tube: A is activated / Two satellite tubes: A and B alternately

Note: A and B are the names of the satellite tubes and A is fitted closer to the coin changer.

The dispensing operation continues until it is stopped by any of the following conditions.

<Conditions for stopping dispensing operation>

1. Operation has been carried out 170 times per one tube continuously regardless of the presence of coins for change. (Automatic Halt)
2. After the change sensing function senses an "Out of Change" status, operation has been carried out 20 times per one tube continuously. (Automatic Halt)
3. Any one of the inventory switches (A ~ E and SUT) is pressed again during dispensing operation. (Manual Halt)

#### \* Mode Switch

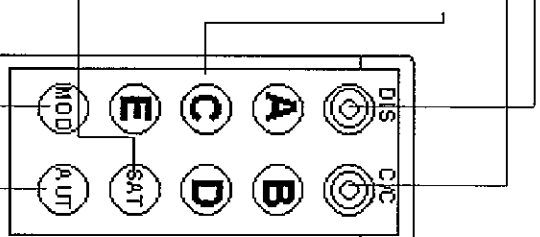
Pressing this switch starts the coin type acceptance prohibit setting.

Refer to section 6-5 for how to use this switch.

#### \* Auto Switch


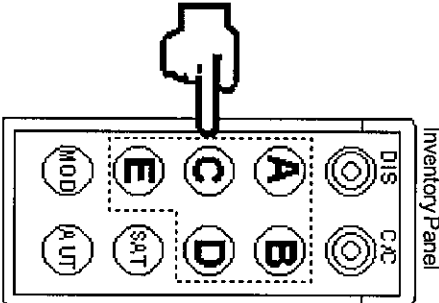

There are two types of options for the Auto Switches as shown below.

1. Deleting Backup Data. (Refer to "Service Manual" for details.)
2. Activating Simplified Automatic Change Adjusting Operation. (Refer to section 6-6 for details.)



## 5-3-5 Coin Accept/Reject Programming Function

### \* Coin Accept/Reject procedure

	Setting procedure	Inventory Panel	"DIS" Lamp (red)											
STEP 1	<p>(1) Press the "MOD" display switch on the inventory panel for 5 seconds or until "DIS" lamp status flashing.</p> <p>(2) After 5 seconds, the "DIS" display monitor lamp (red) starts flashing rapidly to indicate that the Accept/Reject mode has been established (Programming mode).</p>	5 sec. or longer	 <p>Rapid flashing after about 5 seconds</p>											
STEP 2	<p>(1) Within 30 seconds, press the inventory switch corresponding to the type of coin to be specified for the Accept/Reject function.</p> <table border="1" data-bbox="1254 295 1433 821"> <thead> <tr> <th colspan="2">Inventory switches and corresponding coin types</th> </tr> </thead> <tbody> <tr> <td><input type="radio"/> A Inventory switch</td> <td>For setting 5¢ coin</td> </tr> <tr> <td><input type="radio"/> B Inventory switch</td> <td>For setting 10¢ coin</td> </tr> <tr> <td><input type="radio"/> C Inventory switch</td> <td>For setting 25¢ coin</td> </tr> <tr> <td><input type="radio"/> D Inventory switch</td> <td>For setting \$1 coin</td> </tr> <tr> <td><input type="radio"/> E Inventory switch</td> <td>For setting *\$2 coin</td> </tr> </tbody> </table> <p>(2) The type of coin specified by the inventory switch is set for the Accept/Reject function. Then, the "DIS" display monitor lamp (red) goes out for 1 second, then starts flashing rapidly again.</p> <p>For about 30 seconds the system remains in the Accept/Reject standby status.</p> <p>* If the currency selection switch (refer to section 6-2) is set to "U.S. only", \$2 coins cannot be specified for this function. Also, if "U.S. only" is selected while \$2 coin has been specified for the Accept/Reject function, the setting of \$2 for this function is invalidated.</p>	Inventory switches and corresponding coin types		<input type="radio"/> A Inventory switch	For setting 5¢ coin	<input type="radio"/> B Inventory switch	For setting 10¢ coin	<input type="radio"/> C Inventory switch	For setting 25¢ coin	<input type="radio"/> D Inventory switch	For setting \$1 coin	<input type="radio"/> E Inventory switch	For setting *\$2 coin	 <p>Goes out for 1 second</p>  <p>Flasher rapid again</p>
Inventory switches and corresponding coin types														
<input type="radio"/> A Inventory switch	For setting 5¢ coin													
<input type="radio"/> B Inventory switch	For setting 10¢ coin													
<input type="radio"/> C Inventory switch	For setting 25¢ coin													
<input type="radio"/> D Inventory switch	For setting \$1 coin													
<input type="radio"/> E Inventory switch	For setting *\$2 coin													

Operating the return lever or pressing the "MOD" switch for 5 seconds or longer cancels the Accept/Reject mode and enters standby mode.


Notes: Other than the step above, the Accept/Reject mode ends under any of the following conditions:

- (1) No switch is pressed for more than 30 seconds since the Accept/Reject mode was established.
- (2) A coin or coins are inserted.
- (3) Abnormal condition occurs.
- (4) The main controller transmits a command to prohibit acceptance of all types of coins.


### \* Check for the coin types specified for Accept/Reject function

- (1) The "DIS" display monitor lamp (red) flashes rapidly for 2 seconds upon turning on the power if any coin type has been specified for the accept/Reject function.
- (2) The "DIS" display monitor lamp (red) goes out momentarily (for 0.25 second) when a coin type specified for the Accept/Reject function is inserted.

Rapid flashing for 2 seconds



Goes out momentarily



### \* Releasing the Accept/Reject programming

Refer to the "Setting Procedure" above and enter the Accept/Reject mode to cancel the Accept/Reject Programming.

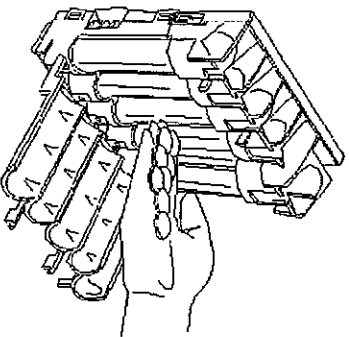
## 5-3-6 How to Operate the Simplified Automatic Change Adjusting Function

This function allows the coin changer to control the change independently of the vending machine controller based on the number of coins initially loaded as the base quantity in each coin tube (automatically replenished tube) of the cassette tube assembly in the coin changer. This function is very convenient when the types of coins are restricted depending on the goods handled by the vending machine or when the change handled by multiple vending machines needs to be unified for easier sales control. To take advantage of this function, carefully read the handling instructions and warnings described later.

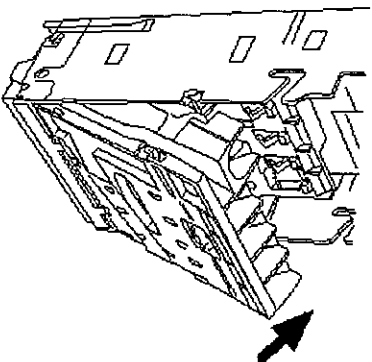
### 1. Setting the Base Quantities (the numbers of coins to be loaded initially)

The following steps apply to the changer with the cassette tube assembly US-1 mounted. You can follow the same steps for a changer with cassette tubes other than the US-1 if the auto replenishment function is provided.

- (1) Remove the cassette tube assembly from the coin changer and replenish as many coins in each individual coin tube (B, C and D tubes) as desired as the base quantities.
- (2) Install the cassette tube assembly.

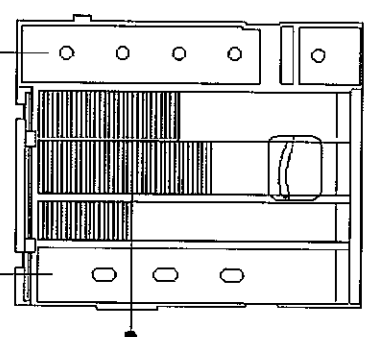


Number of coins to be set as each base quantity (>=20)



- (3) Upon completion of installation, the

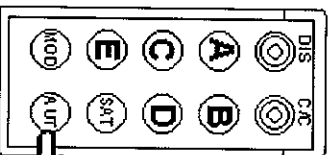
coin changer judges each set quantity as zero regardless of the actual quantity. Thereafter the coin changer records the dispensed or inserted coins as decrements or increments from the base quantity, respectively.



This function is not applicable to the manual replenishment tubes.

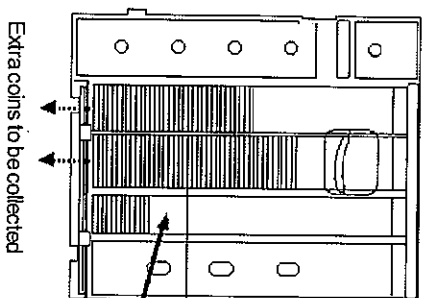
### 2. Collecting the extra coins

- (1) When the coins in the cassette tube assembly exceed the base quantity, press the automatic change adjustment switch "AUT" for at least one second. Then the coin changer pays out the extra coins to restore the initially set base quantity.



Press for at least one second.

- (2) When the coins in the cassette tube assembly become fewer than the base quantity, remove the cassette tube assembly and replenish the shortfall.

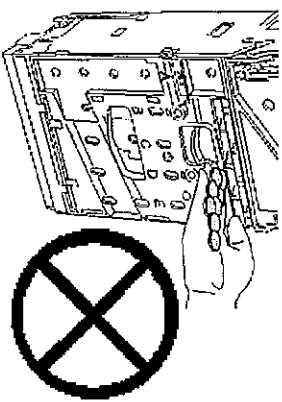
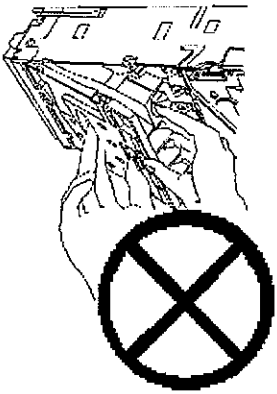


\*The shortfall quantity is not displayed. Therefore, the levels of base quantities of individual coin types should be marked to make it easier to recognize the shortfall and replenish coins quicker.

**[Warnings]**

\* **DO NOT** collect the coins manually while this function is in operation.

\* **DO NOT** insert coins directly into the tubes. The inserted coins will be held in the tubes without being counted by the unit.



\* Each base quantity (the number of coins to be set initially in each coin tube (B, C, D)) should be at least 20 to keep the changer in the "sufficient change" status.

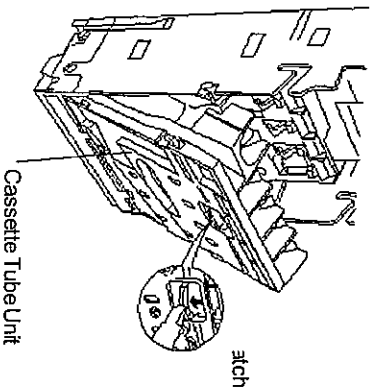
The coin changer's memory will be cleared when:

- (1) The cassette tube assy is removed.
- (2) The coin changer's communication with the vending machine controller is disconnected.

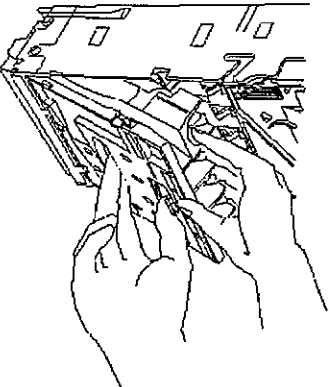
### 5-3-7 Removing Coins from the Payout Tubes

\* **When the Cassette Tube Assy is Removed:**

- (1) Press down the tube latch and pull the cassette assy unit toward you to remove it.

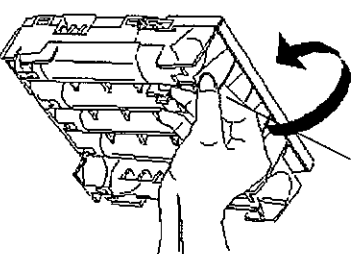


- (2) If coins remain in the tubes when removing the cassette tube assy, use both hands as illustrated.



- (3) To collect the extra coins in the coin tubes, release the locking tabs on the rear tube and pull it open toward you. You can also collect the extra coins without opening the rear tube by putting your fingers into the coin tubes that contain no extra coins and turning the cassette tube assy up side down.

Put your fingers into the coin tubes having no extra coins.



\* **After removing the cassette tube assy, be sure to verify the operations after reinstalling:**

Insert at least two coins of each denomination and confirm that they are stored in the correct coin tubes. Then press the coin return lever of the vending machine and confirm that the coins are properly returned.

\* **When the Automatic Change Adjusting Switch (AUT) is used:**

Pressing the automatic change adjusting switch for at least one second activates the automatic change adjusting function and the extra coins are paid out. (Refer to page 19 for details.)

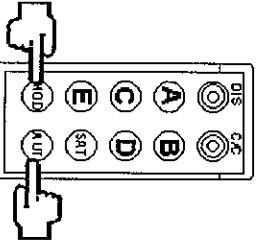
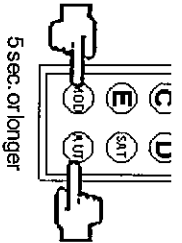
### 5-3-8 Selecting the Change Adjusting Function

The CCM5 series has the following functions for adjusting change automatically.

- (1) Simplified Automatic Change Adjusting Function
- (2) Inventory Mode Function

You can select one of the above functions by setting the display switches on the inventory panel. These selections are shown on the display switches on the inventory panel.

#### \*Selecting Functions

	Setting procedure	Monitor lamp
STEP 1	<p>(1) Press the "MOD" and "AUT" switches on the inventory panel at the same time.</p> <p>(2) The two monitor lamps (DIS and C/C) indicate the setting mode.</p> 	<p>&lt;Indication of setting mode&gt; For Simplified Automatic Change Adjusting Function: DIS: Not lit      C/C: Lit <input type="radio"/>                      <input checked="" type="radio"/></p> <p>For Inventory Mode Function: DIS: Lit            C/C: Not lit <input checked="" type="radio"/>                      <input type="radio"/></p>
STEP 2	<p>(1) Press the "MOD" and "AUT" display switches for at least 5 seconds.</p> <p>(2) After 5 seconds, the two monitor lamps (DIS and C/C) indicate the state of the switched setting.</p>  <p>* Simplified Automatic Change Adjusting Function → switched to Inventory Mode Function * Inventory Mode Function → switched to Simplified Automatic Change Adjusting Function</p>	<p>&lt;Indication of switched setting mode&gt; For Simplified Automatic Change Adjusting Function: DIS: Not lit      C/C: Lit <input checked="" type="radio"/>                      <input type="radio"/></p> <p>For Inventory Mode Function: DIS: Lit            C/C: Not lit <input type="radio"/>                      <input checked="" type="radio"/></p>
STEP 3	<p>Releasing the "MOD" and "AUT" switches enters standby mode.</p> <p>Note 1: Other than the step above, the setting mode ends under any of the following conditions:</p> <ol style="list-style-type: none"> <li>(1) The switch is kept pressed for 60 seconds or longer after switching to the setting mode.</li> <li>(2) A coin is inserted.</li> <li>(3) An abnormal condition occurs.</li> <li>(4) The main controller transmits a command to dispense coins from the system.</li> </ol> <p>Note 2: If the setting is switched, the data such as the increment/decrement counter and the number of coins accommodated in the tubes is initialized and cleared to zero.</p>	<p>&lt;Returned to standby mode&gt; DIS: Lit            C/C: Lit <input type="radio"/>                      <input type="radio"/></p>

### 5-3-9 Inventory Mode Function

This function allows the coin changer to control the increment or decrement of the quantity of change in dependency of the main controller.

This function is used for:

- (1) Setting the number of coins accommodated in the tubes
- (2) Dispensing the coins for the increment
- (3) Replenishing the coins to compensate for the decrement

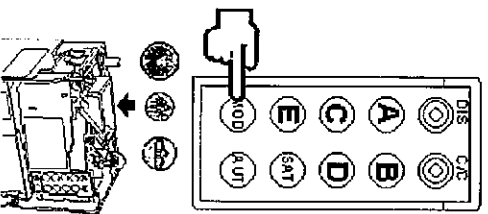
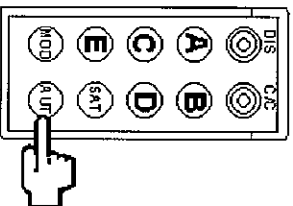
#### (1) Operating Procedure

To control the quantity of change with this function, follow the steps below.

- (1) Empty the automatic replenishment tubes and clear the backup data.
  - (2) Set the number of coins to accommodate in the tubes.
  - (3) Vending operation
  - (4) When collecting coins, dispense for increment or replenish for decrement. Continue with steps (3) and (4) repeatedly.
- To change the number of coins accommodated in the tubes, perform step (1) then step (2).

#### (2) Procedure for Setting the Number of Coins Accommodated in the Tubes

	Operation procedure	Monitor lamp
STEP 1	<p>(1) Press the "AUT" switch on the inventory panel for 1 second or longer.</p> <p>(2) After 1 second, the "DIS" and "C/C" display monitor lamps start flashing alternately to indicate that Inventory Mode has been set.</p> <p>Note: Follow the same procedure as above when setting the dispensing of coins for increment. If the backup data is not cleared before the operation, coin dispensing can be activated.</p>	<p>DIS    C/C</p> <p>☼    ●</p> <p>●    ☼</p> <p>Alternately flashing</p>
STEP 2	<p>(1) Press the "MOD" switch on the inventory panel.</p> <p>(2) The "DIS" and "C/C" display monitor lamps flash alternately twice to indicate that the mode for setting the number of coins accommodated in the tubes has been set.</p> <p>(3) Insert the desired initial quantity of coins in each coin tube.</p> <p>Coins can be inserted in each tube until the tube overflows. Overflowed coins are returned to the coin exit.</p> <p>Note: If you press the "AUT" switch during the above operation, the state returns to that of STEP 1. Pressing the "MOD" switch again enters the state for STEP 2 to continue the operation.</p>	<p>DIS    C/C</p> <p>☼    ●</p> <p>☼    ●</p> <p>●    ☼</p> <p>●    ☼</p> <p>Flashing alternately twice</p>



	Operator procedure	Monitor lamp
	Operating the return lever cancels the Inventory/Mode and enters standby mode.	DIS <input type="radio"/> C/C <input type="radio"/>
STEP 3	<p>Notes: In addition to the above step, the setting mode ends under any of the following conditions:</p> <p>(1) No switch is pressed for 60 seconds since the Inventory/Mode was set.</p> <p>(2) An abnormal condition occurs.</p> <p>(3) The main controller transmits a command to dispense coins from the system.</p>	DIS <input type="radio"/> C/C <input type="radio"/>

## &lt;Notes&gt;

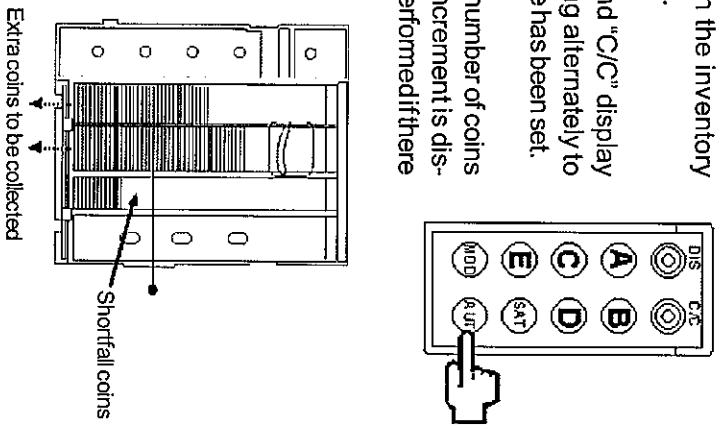
The data on the number of coins accommodated in the tubes is maintained in the backup data. When the operation is repeated without clearing the backup data, the newly set number of coins accommodated is added to the value in the stored data.

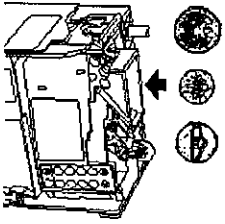




## Operation

Number of coins accommodated

- (1) Clearing the backup data 0
- (2) Setting the number of coins accommodated in the tubes (inserting 20 coins) 20
- (3) Normal operation (vending) 20
- (4) Setting the number of coins accommodated in the tubes (inserting 20 coins) 40 (+ 20)

**(3) Dispensing for Increment and Replenishing for Decrement**

	Operator procedure	Monitor lamp
STEP 1	<p>(1) Press the "AUT" switch on the inventory panel for 1 second or longer.</p> <p>(2) After 1 second, the "DIS" and "C/C" display monitor lamps start flashing alternately to indicate that Inventory/Mode has been set.</p> <p>(3) If there is an increase in the number of coins against the set value, the increment is dispensed. Dispensing is not performed if there is no increment.</p>	<p>DIS <input type="radio"/> C/C <input type="radio"/></p> <p>Alternately flashing</p> 

Operation procedure		Monitor lamp
STEP2	<p>(1) Insert the coins for replenish for the decrement (for the coin types that were not dispensed),</p> <p>1) Inserted coins are delivered into the tubes for replenishment.</p> <p>2) Overflow coins are returned to the coin exit.</p> <p>(2) Replenishment is completed when each type of coin is returned to the coin exit.</p>  <p>Note: If you press the "MOD" switch during the above operation, the state returns to the mode for setting the number of coins accommodated in the tubes. Pressing the "AUT" switch again enters the state for STEP 2 to continue the operation.</p>	<p>DIS    C/C</p> <p> </p> <p> </p> <p>Alternately flashing</p>
STEP3	<p>Operating the return lever cancels the Inventory Mode and enters standby mode.</p> <p>Notes: In addition to the above step, the setting mode ends under any of the following conditions:</p> <p>(1) No switch is pressed for 60 seconds since the Inventory Mode was set.</p> <p>(2) An abnormal condition occurs.</p> <p>(3) The main controller transmits a command to dispense coins from the system.</p>	<p>DIS    C/C</p> <p><input type="radio"/>    <input type="radio"/></p>

### 5-3-10 Vend Test

(1) Connect the 6-pin plug to the vending machine socket.

**(Caution: Do not plug in or unplug coin changer with power on.)**

(2) Deposit three types of coins: 5¢, 10¢ and 25¢

\*Is the amount indicated correctly on the amount indicator?

\*Is the vend lamp on the vending machine returned on? (When the deposited coins reach the vend price while the products to be vend are loaded in the vending machine)

\*Is the coin that is set to be prohibited by the coin changer rejected and returned to the return slot of the vending machine?

(3) Press the coin return lever of the vending machine.

\*Are the deposited coins and returned coins the same?

(4) Deposit 5¢, 10¢ and 25¢ coin such that the total amount exceeds the vend price, then press the vend button on the vending machine.

\*Is the change amount correct?

(Take the product out of the vending machine.)

Perform the above steps to confirm that the system is ready for vending.

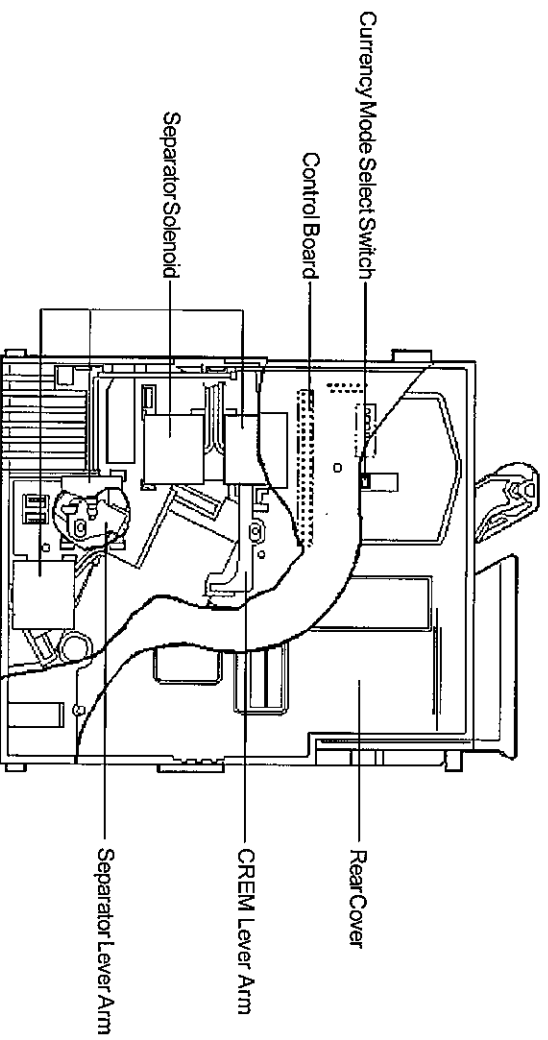
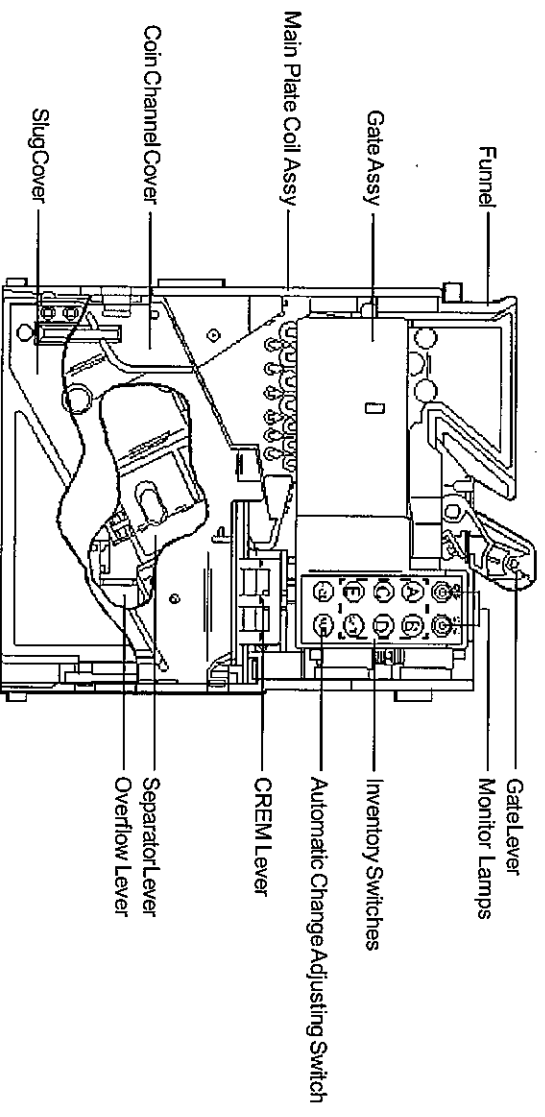
If an abnormality occurs during testing, read this manual again and identify the cause.



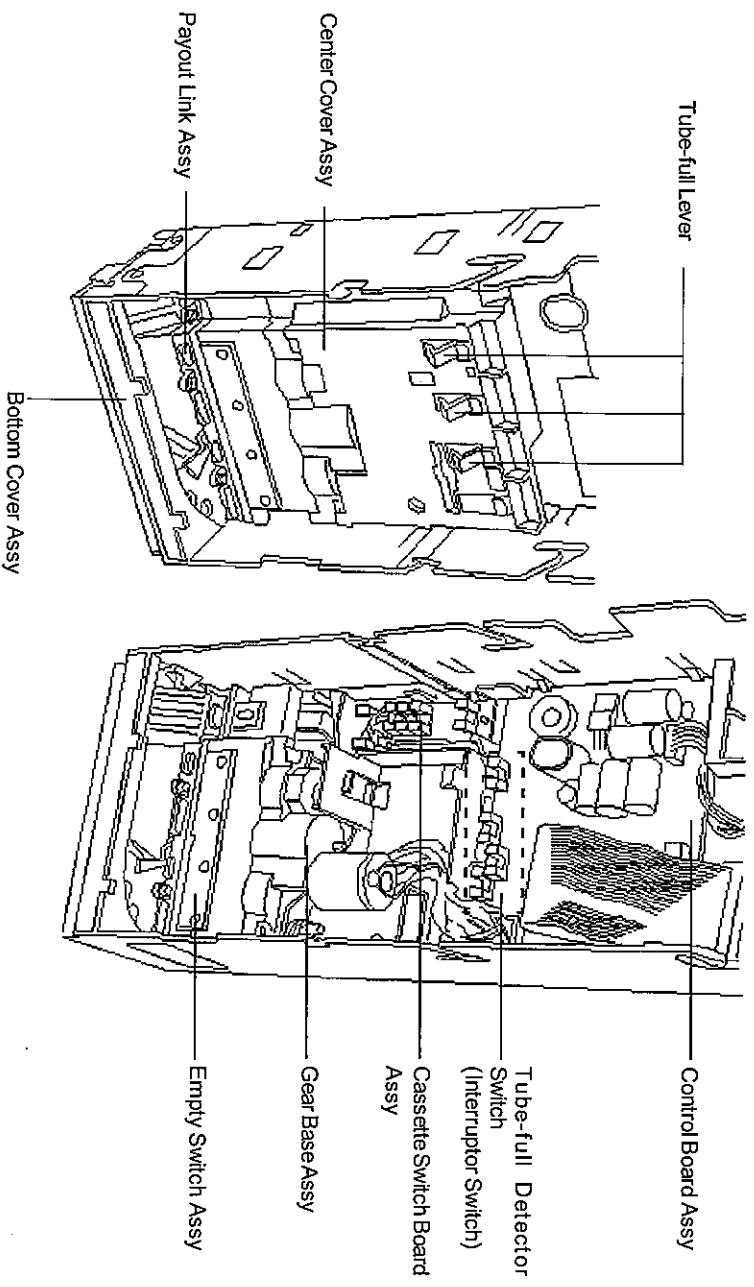
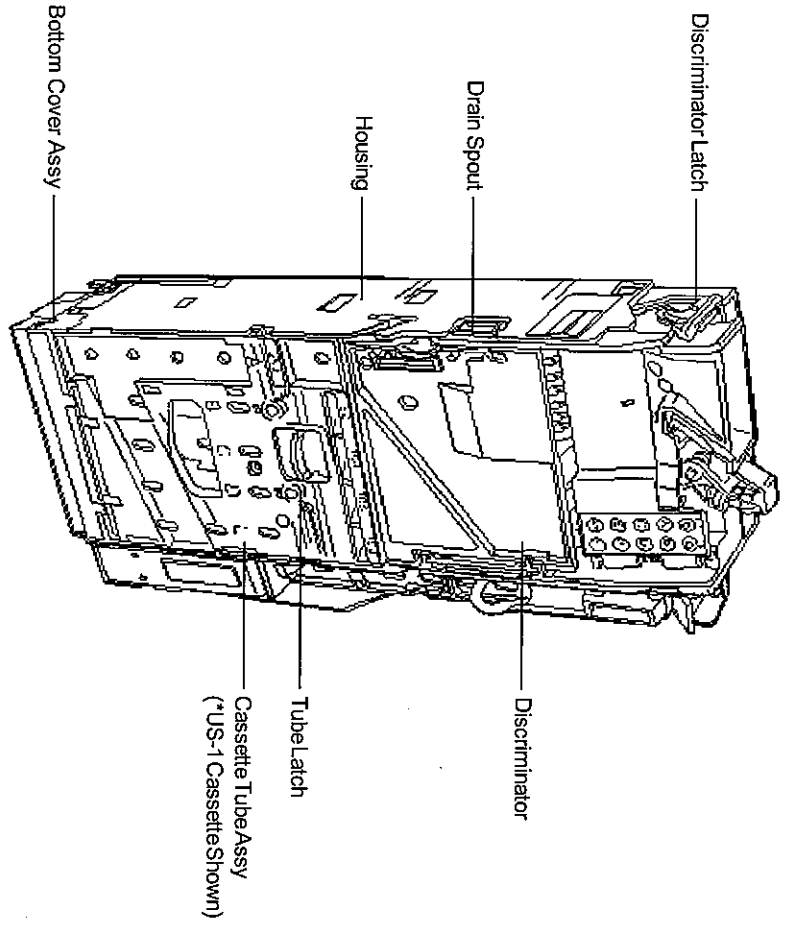
## 6. CONSTRUCTION AND DESCRIPTION

### 6-1 Description of Parts

#### \* Discriminator Section



**\* Coin Changer**



## 6-2 Flow of Coins

### 6-2-1 US-1 Cassette

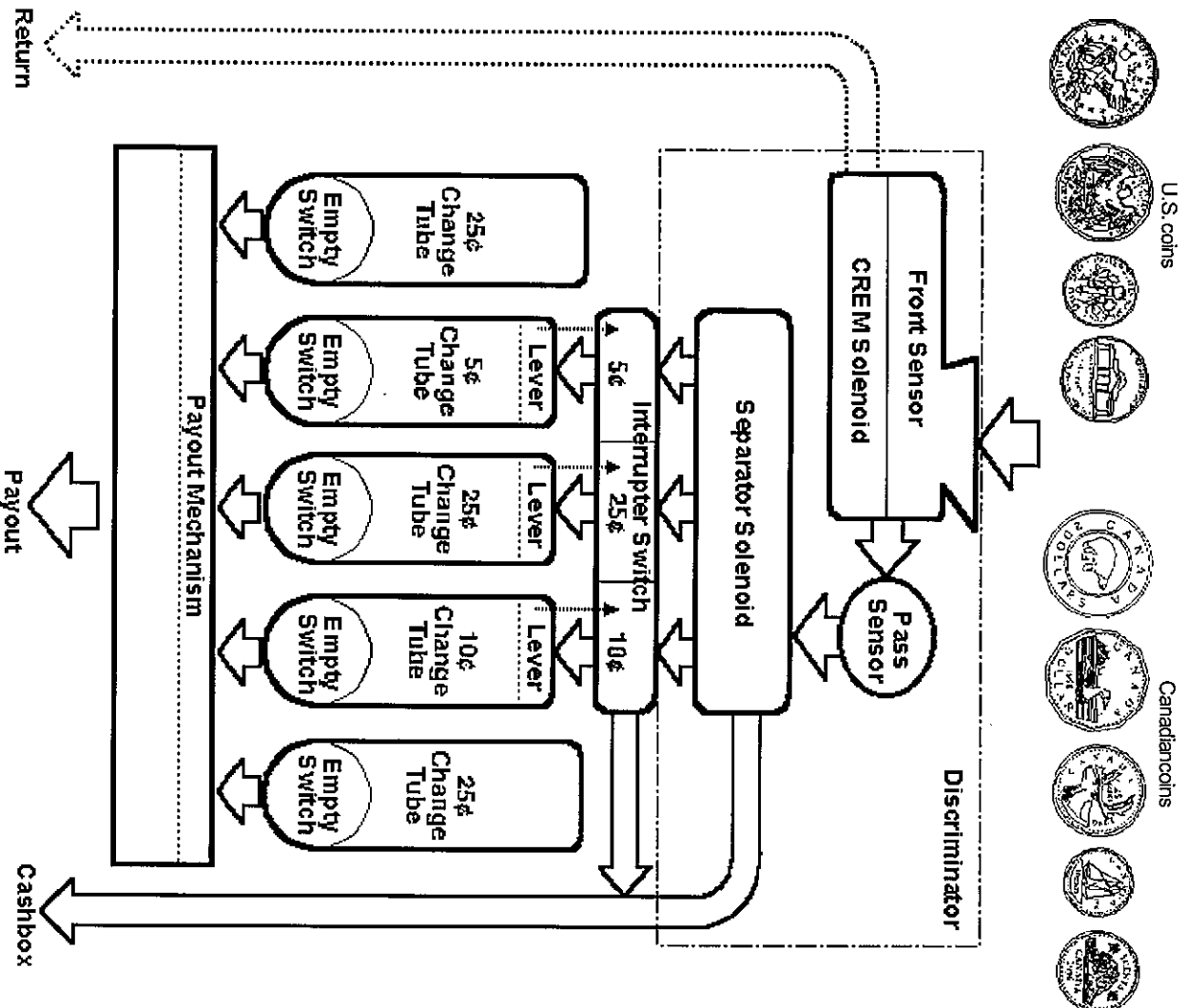
\*The front sensor evaluates each inserted coin, if judged genuine, the CREM solenoid operates and coins are routed past the credit sensor to the tubes.

\*Canadian \$2 coins are always routed to the cash box.

\*Defective coins or slugs are returned, either automatically or by operating the return lever.

\*For sensing the number of coins, there is an interrupter switch with a lever at the top section of each automatic coin replenishment tube, along with the coin counter in the software. Based on these two sensing methods, the coin tube full status is sensed.

If either of the two sensing methods detects the full status and a coin of the particular type which has been sensed as full is inserted, it will be delivered to the cash box by the separator solenoid.



**6-2-2 US-2 Cassette**

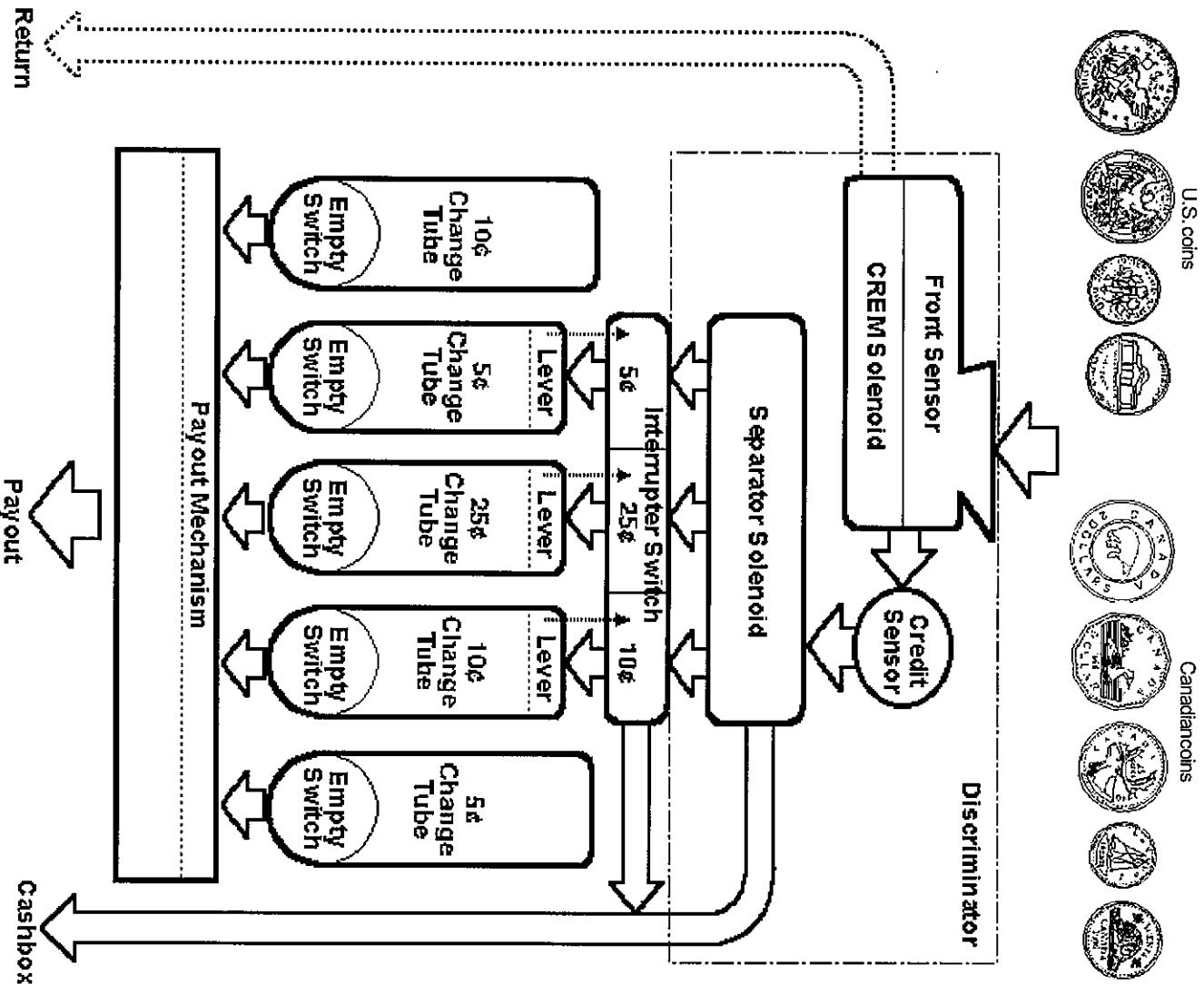
\*The front sensor evaluates each inserted coin, if judged genuine, the CREM solenoid operates and coins are routed past the credit sensor to the tubes.

\*Canadian \$2 coins are always routed to the cash box.

\*Defective coins or slugs are returned, either automatically or by operating the return lever.

\*For sensing the number of coins, there is an interrupter switch with a lever at the top section of each automatic coin replenishment tube, along with the coin counter in the software. Based on these two sensing methods, the coin tube full status is sensed.

If either of the two sensing methods detects the full status and a coin of the particular type which has been sensed as full is inserted, it will be delivered to the cash box by the separator solenoid.



### 6-2-3 US-4 Cassette

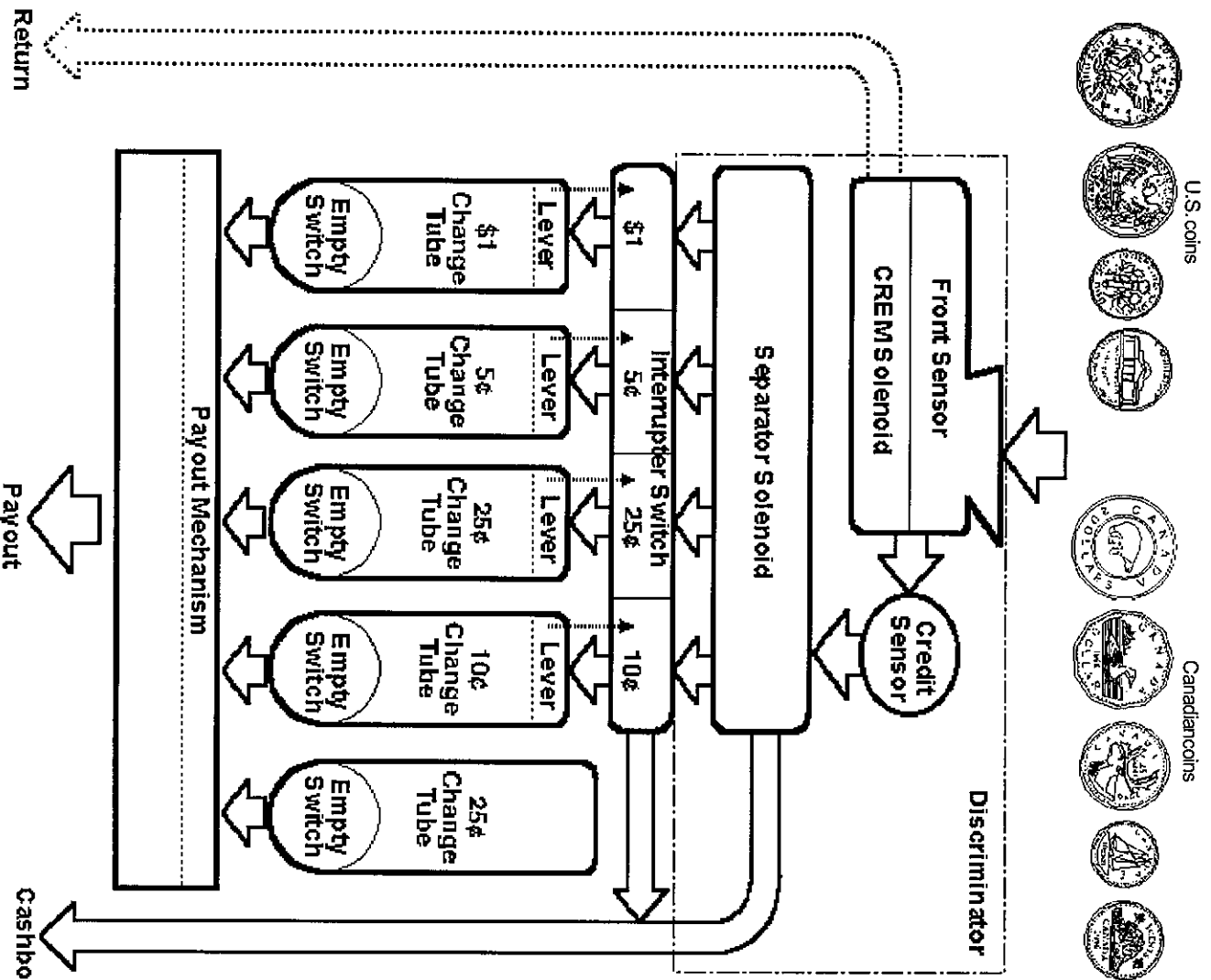
\*The front sensor evaluates each inserted coin, if judged genuine, the CREM solenoid operates and coins are routed past the credit sensor to the tubes.

\*Canadian \$2 coins are always routed to the cash box.

\*Defective coins or slugs are returned, either automatically or by operating the return lever.

\*For sensing the number of coins, there is an interrupter switch with a lever at the top section of each automatic coin replenishment tube, along with the coin counter in the software. Based on these two sensing methods, the coin tube full status is sensed.

If either of the two sensing methods detects the full status and a coin of the particular type which has been sensed as full is inserted, it will be delivered to the cash box by the separator solenoid.



### 6-2-4 US-5 Cassette

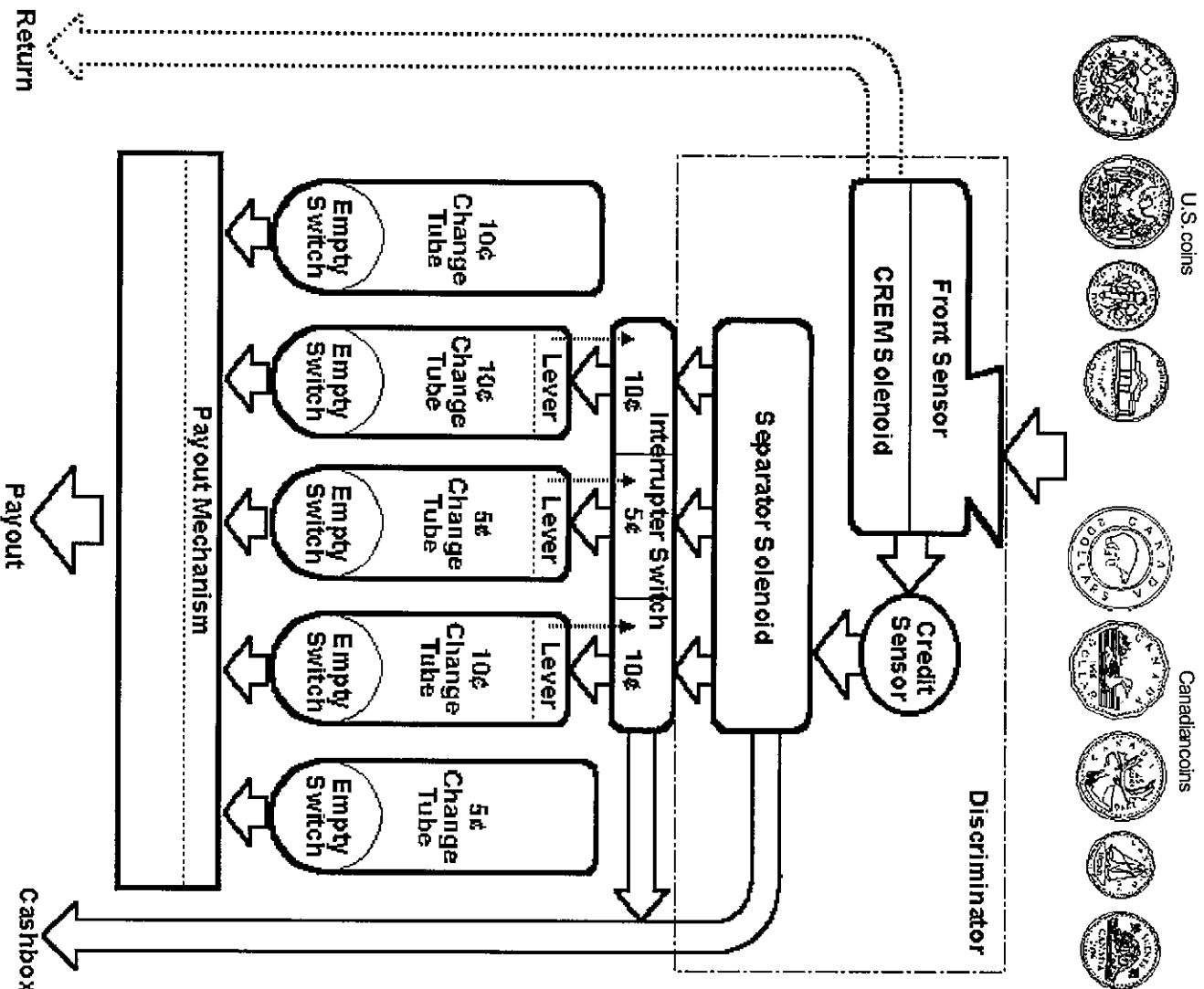
\*The front sensor evaluates each inserted coin, if judged genuine, the CREM solenoid operates and coins are routed past the credit sensor to the tubes.

\*Canadian \$2 coins are always routed to the cash box.

\*Defective coins or slugs are returned, either automatically or by operating the return lever.

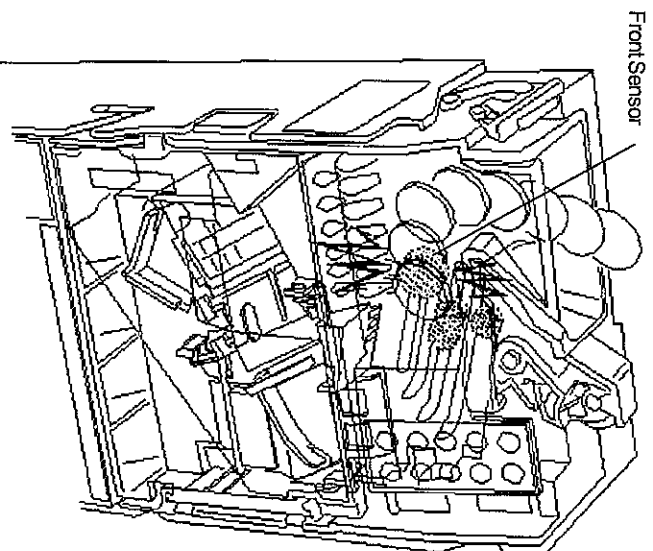
\*For sensing the number of coins, there is an interrupter switch with a lever at the top section of each automatic coin replenishment tube, along with the coin counter in the software. Based on these two sensing methods, the coin tube full status is sensed.

If either of the two sensing methods detects the full status and a coin of the particular type which has been sensed as full is inserted, it will be delivered to the cash box by the separator solenoid.



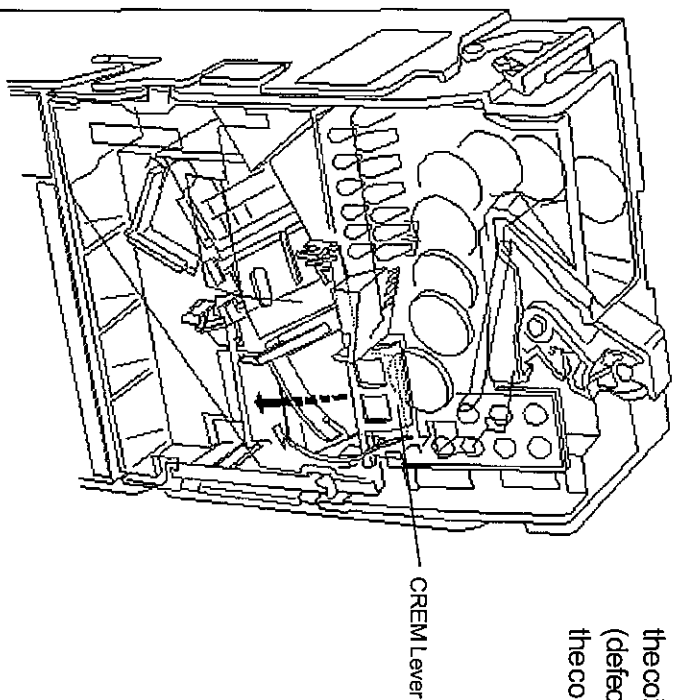
### 6-3 Discrimination Method

#### 6-3-1 Discrimination by Metal Content and External Shape (Diameter)



When coins pass between the front sensors, the metal content and diameter of the coins are checked and compared with the preset reference values of the control board. A coin is judged to be genuine only when these values match.

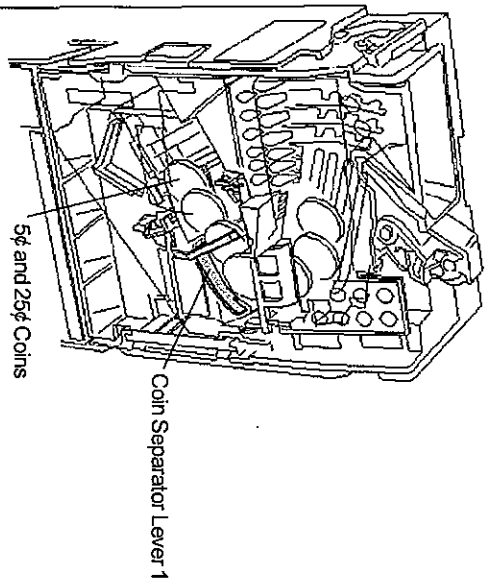
#### 6-3-2 CREM Solenoid and CREM Lever



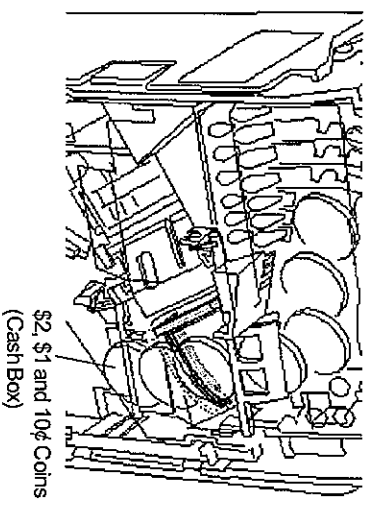
If a coin is judged to be genuine, the CREM solenoid operates, the CREM lever opens and the coin is received. If a coin is judged to be bad (defective), the CREM lever remains closed and the coin is guided to the return chute.

### 6-3-3 Separator Solenoid and Lever

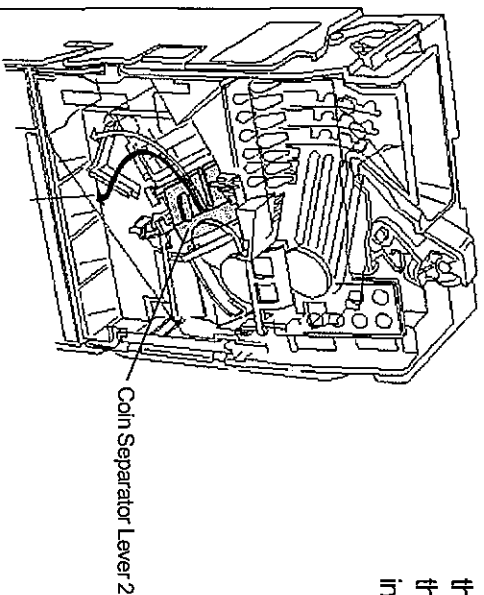
\* Separating \$1, \$2 and 10¢ coins from 5¢ and 25¢ coins (or coins to be stored in the cash box)



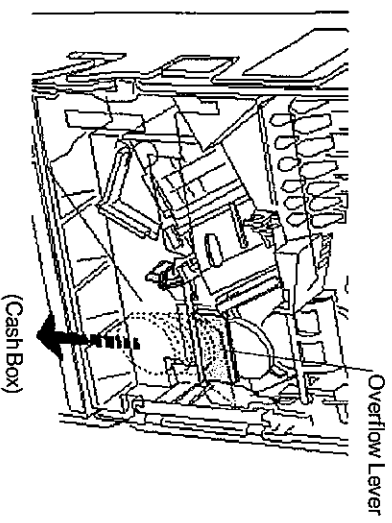
When inserted coins are \$1, \$2 or 10¢ coins or when they are to be sent to the cash box, the coin separator solenoid 1 is activated to open the coin separator lever 1, and the coins are sent to the cash box. When inserting 5¢ or 25¢ coins, the coin separator lever 1 is kept closed and the coins are delivered to the 5¢/25¢ coin channel.



\* Separating the coins to be delivered to the 5¢/25¢ coin channel from the coins to be stored in the cash box

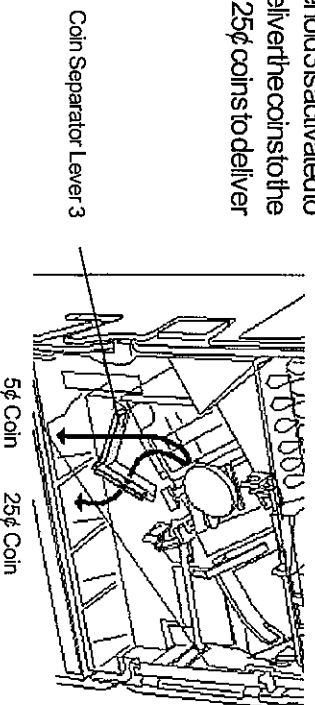


When coins are to be delivered to the 5¢/25¢ coin channel, the coin separator solenoid 2 is activated to close the coin separator lever 2 and allows the coins to be delivered to the 5¢/25¢ coin channel. When coins are to be stored in the cash box, the overflow lever is opened to drop the coins into the cash box channel.



\* Separating 5¢ coins from 25¢ coins

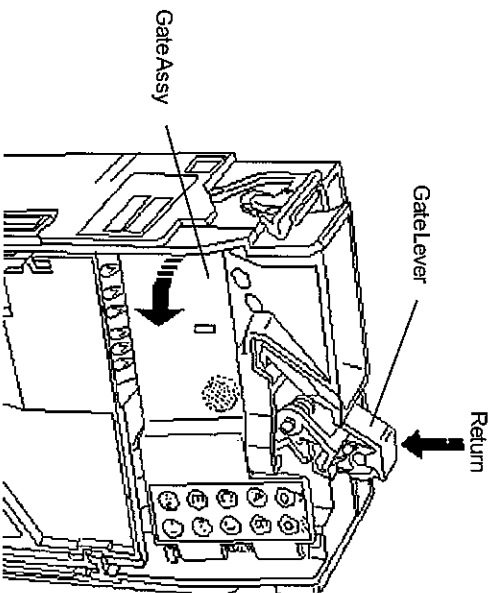
For 5¢ coins, the coin separator solenoid 3 is activated to open the coin separator lever 3 to deliver the coins to the 5¢ channel. This lever is closed for 25¢ coins to deliver them to the 25¢ channel.





## 6-4 Operation of Switches, Sensors, and Related Parts

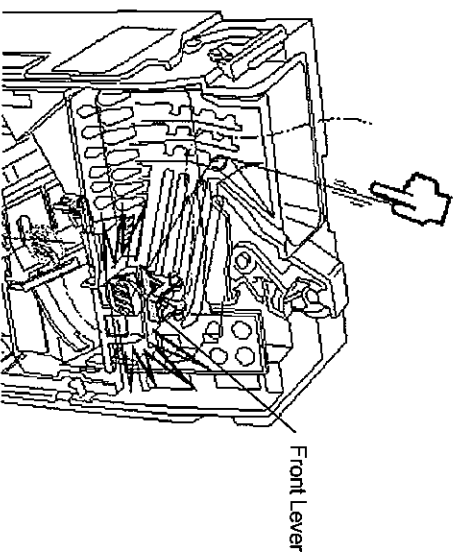
### 6-4-1 Gate Lever Assembly and Related Parts



When the return lever on the vending machine is operated, it pushes the gate lever down and the gate opens.

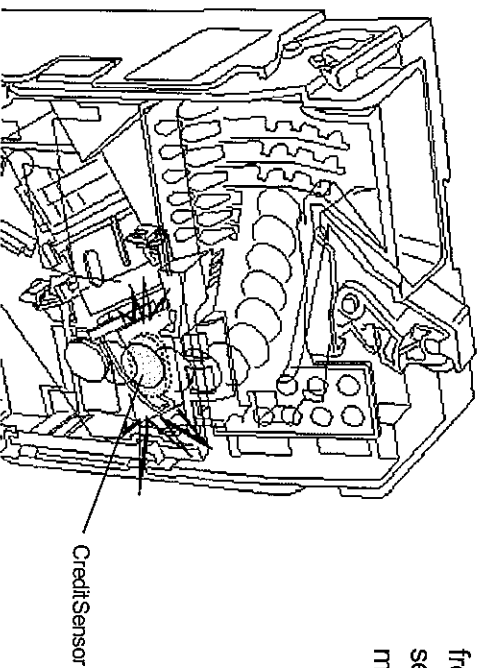
If there are any defective coins, etc. stopped behind the gate, this operation causes them to be guided into the coin return chute. In addition, the movement of the front sensor causes the cancel signal to be sent. (escrow)

### 6-4-2 Anti-Stringing Hook



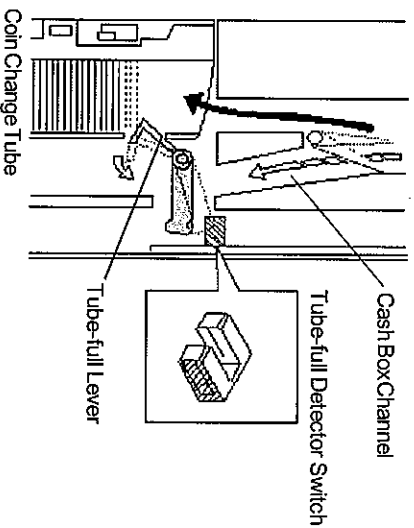
The hook of the housing prevents stringing!

### 6-4-3 Credit Sensor



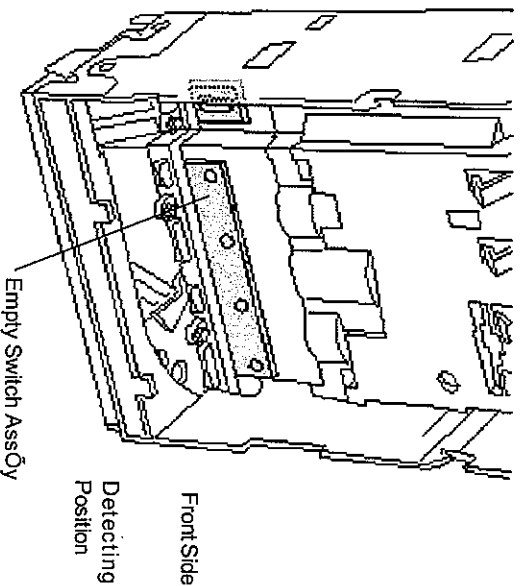
When a coin is determined to be genuine by the front sensor, it will be guided past the credit sensor and its value will be accumulated in the memory of the control board.

### 6-4-4 Tube-full Detector Switches and Levers



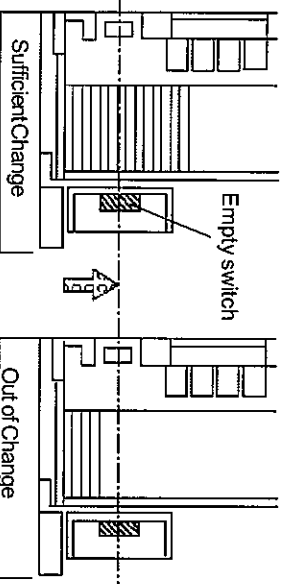
When each coin tube (automatic coin replenishment tube) for 5¢, 10¢, 25¢ or \$1 becomes full, the associated tube-full lever is lifted to activate the respective tube-full switch and thus inform the tube-full status. In this case, the overflowed coins are separated and routed to the cashbox.

### 6-4-5 Empty Switches (Proximity Switch)

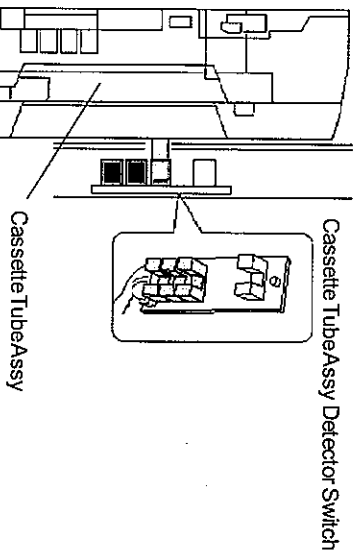


This sensor detects the presence of coins in the change tube. The coin changer will determine the tube to be empty when the coins are below the sensor levels.

5¢ coin change tube: 4 coins  
10¢ coin change tube: 9 coins  
25¢ coin change tube: 6 coins

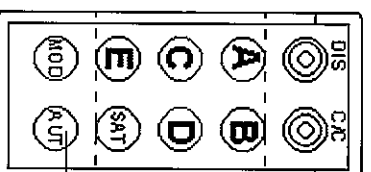


### 6-4-6 Cassette Ass'y Detector Switch



1. This switch detects whether the cassette tube assembly is installed correctly.
2. This switch also detects which cassette has been installed.

### 6-4-7 Inventory Switches and Simplified Automatic Change Adjusting Switch



Tube inventory switches:  
These switches are used to manually collect the extra coins in the tubes.

Automatic Change Adjusting Switch:  
This switch is used to automatically collect the extra coins in the tubes.

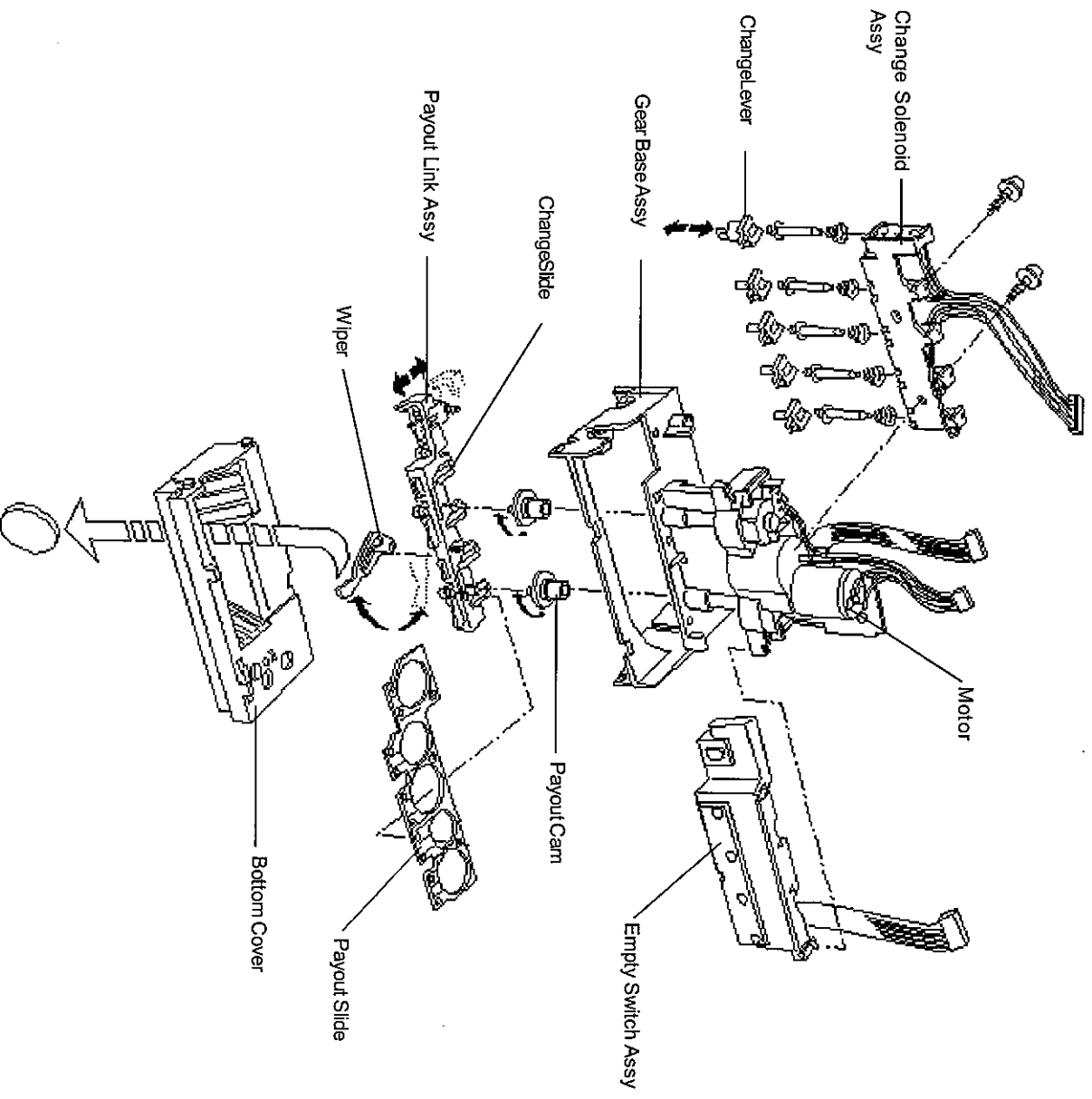
## 6-5 Payout System

### 6-5-1 Payout Diagram

When the rotation of the motor is transmitted to the gear, payout cam and payout link assembly, the payout link assembly reciprocates back and forth. This motion is also transmitted to the change slide and the payout wiper.

The change solenoids activate the change lever to control the motions of the change slides.

Coins are carried by the payout link assembly and drop down when the change slides are activated. The dropped coins are paid out by the payout wiper.

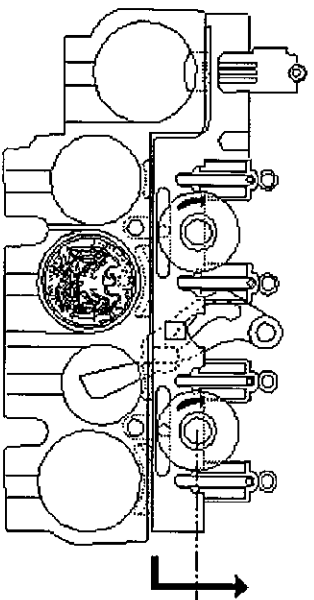


### 6-5-2 Operation of the Change Solenoids and Payout System

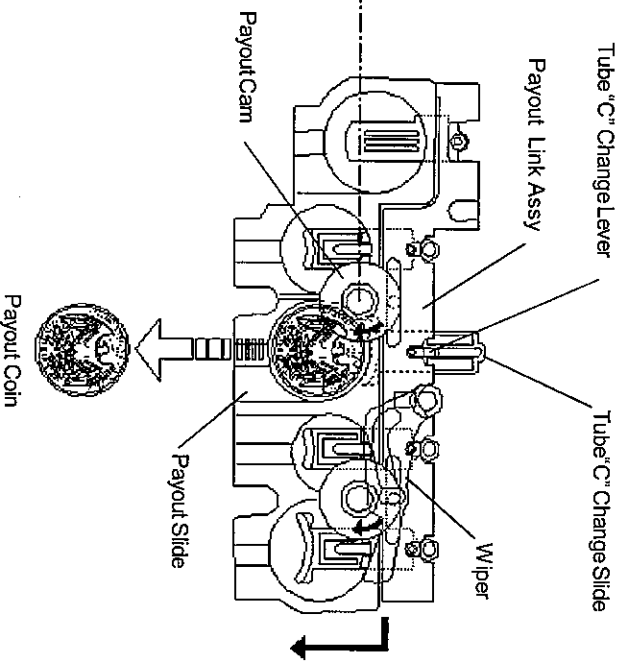
Change solenoids are provided for each coin tube, and the solenoids are activated to dispense coins from the associated coin tube.

### 6-5-3 Payout of Change

\*Standby status:



\* Payout from the OC tube:



**\* Operation of the payout wiper**  
Coins are paid out by the payout wiper interlocked with the payout link assembly.

- (1) Coins in tube A: The change solenoids for tube A are activated to move the associated change lever. The payout link assembly is activated to move the change slide. The coin carried by the payout link assembly drops down and is dispensed by the payout wiper. Then all the relevant parts return to the standby status.
- (2) Coins in tube B: Operations are the same as (1) except that the change solenoids for tube B are activated.
- (3) Coins in tube C: Operations are the same as (1) except that the change solenoids for tube C are activated.
- (4) Coins in tube D: Operations are the same as (1) except that the change solenoids for tube D are activated.
- (5) Coins in tube E: Operations are the same as (1) except that the change solenoids for tube E are activated.

## 7. SIGNAL CONDITIONS and WIRING DIAGRAM

### 7-1 TerminalConnections/Signals

#### (1)6PConnector

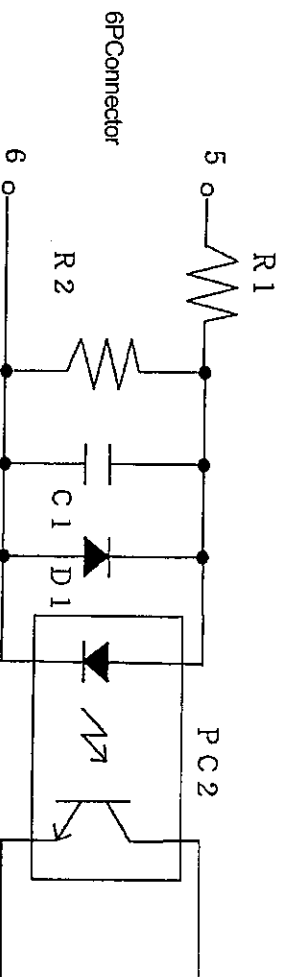
Receptaclehousing: Molex55557-06R  
 Socketterminal: Molex5556PBT

Terminal No.	SignalName	Input/Output	SignalConditions
1	PowerSupply	Input	+ DC34V (usually supplied)
2	PowerSupply	Input	-DC34V (usually supplied)
3	N.C.	—	—
4	MainControl/Reception	Output	TransmissionDataOutputSignal.
5	MainControlTransmission	Input	ReceptionDataInputSignal.
6	CommonCommunications	Input	CommonTransmissionLine.

Note: Input/Output is relative to the Coin Changer.

#### (2)Input/OutputCircuits

##### 1. Input circuit



R1:270ohm, 1/4W.

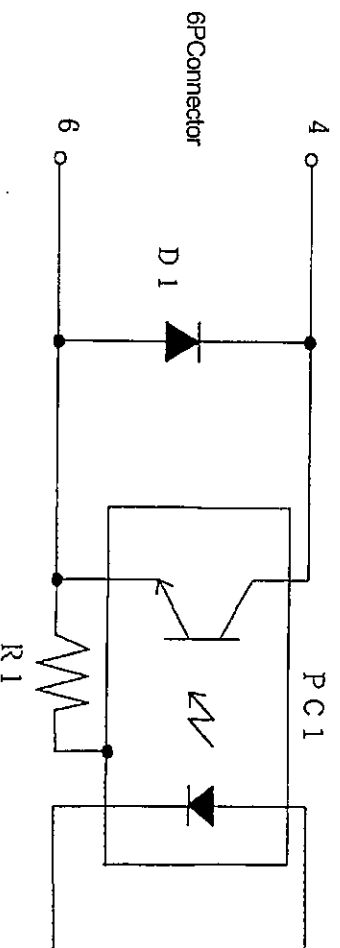
R2:270ohm, 1/4W

PC2:EquivalenttoSharpPC702V13

D1: Equivalentto NEC1S953

C1: Equivalentto Murata GRM40CH, 2200pF, 50 V

##### 2. Output circuit

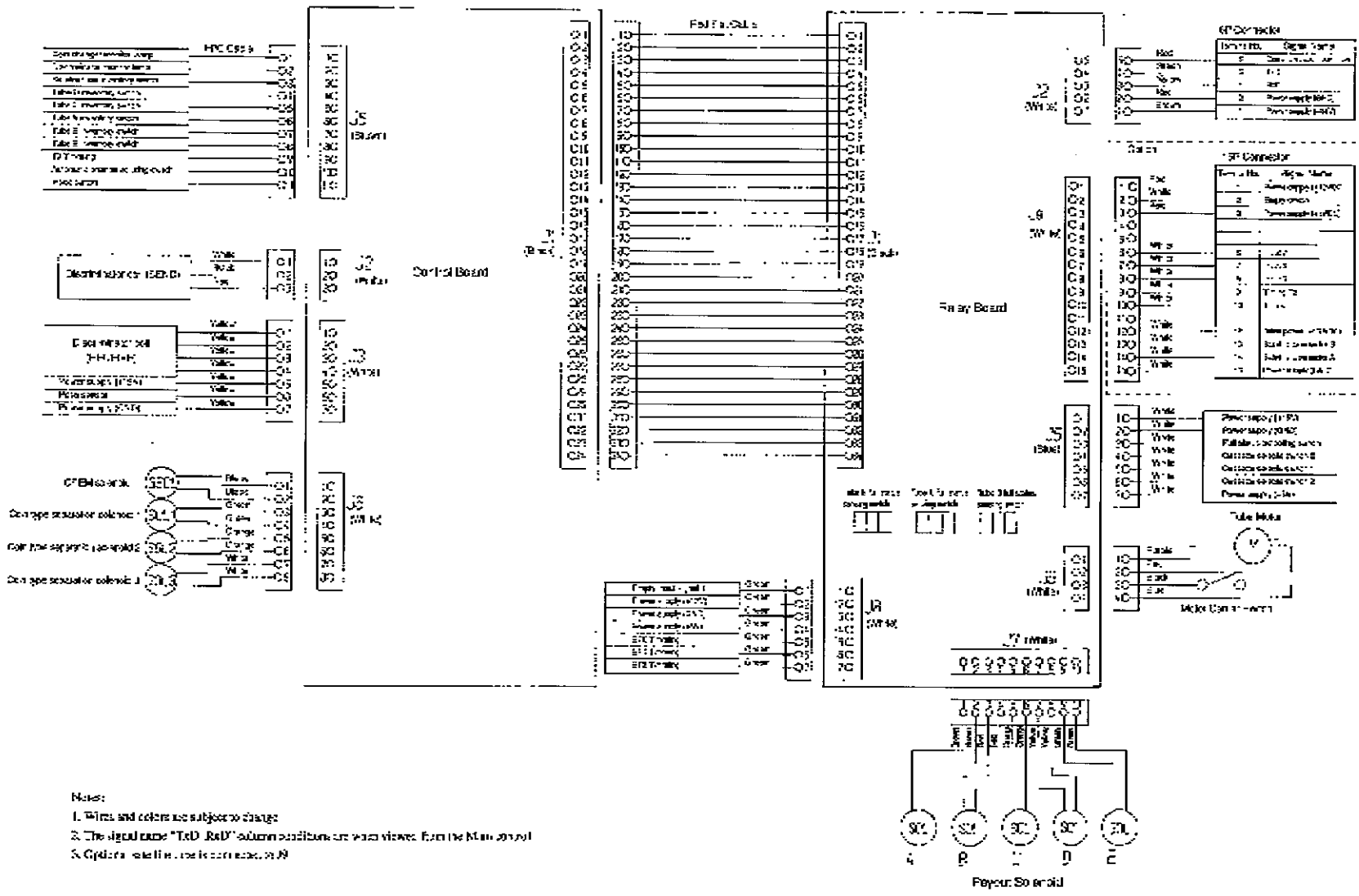


PC1: EquivalenttoSharpPC-702V13

D1: Equivalentto NEC1S953

R1:470ohm, 1/10W

7-2 Wiring Diagram



## 8. PREVENTIVE MAINTENANCE

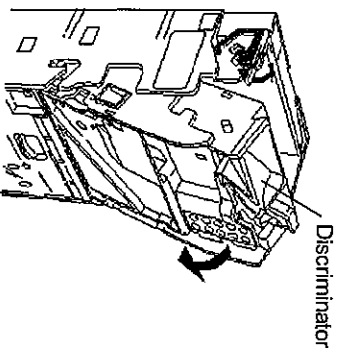
The coin changer can become dirty from coins, dust, foreign matter, etc. therefore, good coin acceptance cannot be maintained.

Use mild soap water to remove sticky matter, syrup, etc. **NEVER USE SOLVENTS!**

**\*Preparing to clean the discriminator (Be sure to turn off the power to the coin changer before cleaning.)**

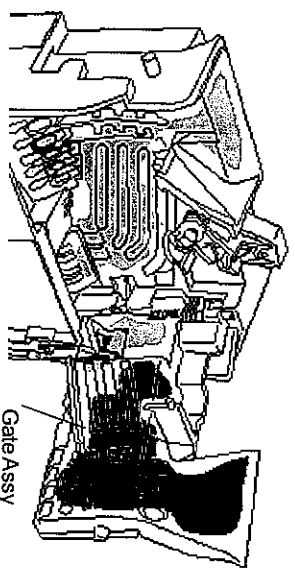
**\*Remove the discriminator**

- (1) Push up the latch and pull the discriminator towards you.
- (2) Disconnect, and remove the discriminator.



**\*Cleaning: Keep shaded area clean.**

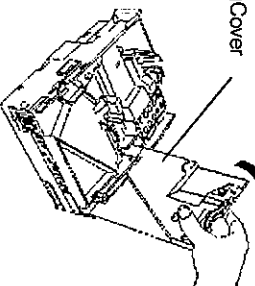
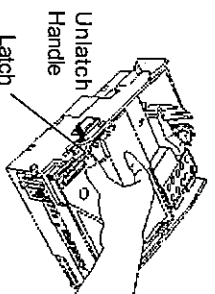
Open the gate assy, wipe clean the coin channel section using a soft cloth.



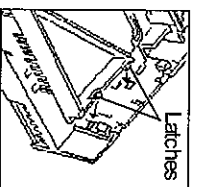
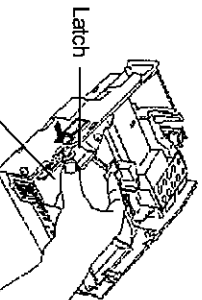
**CAUTION:**  
Do not connect or disconnect coin changer with power on.

**\*Remove the slug cover and the coin channel cover**

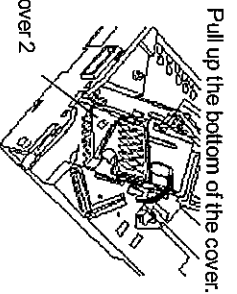
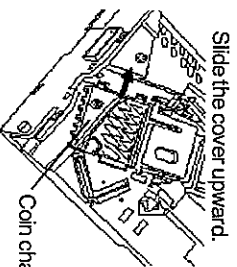
- (1) Press the unlatch handle on the slug cover with your thumb and pull the cover open towards you.
- (2) Pull the slug cover up to detach it from the main plate.



- (3) Press the latch handle on the coin channel cover 1 with your thumb and pull towards you.



- (4) Slide the coin channel cover 2 upward, release the lower latch, and pull the cover up toward you to detach it.

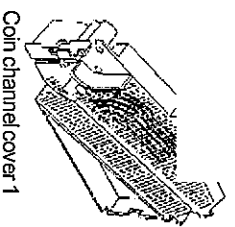
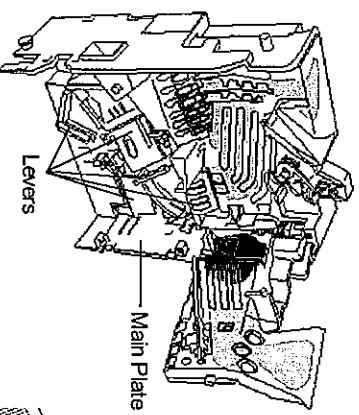


**\*Cleaning the coin channels**

After removing the slug cover and the coin channel covers, wipe clean the main plate and the coin channel covers 1 and 2. In particular, thoroughly clean the shaded part in the figure.

**Note:**

When wiping, be careful not to touch the levers or springs on the main plate.



**Note:**

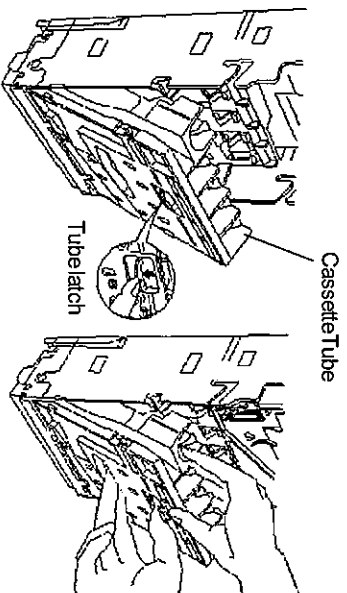
\* If stubborn dirt persists, use a cloth that has been wetted and run through lightly.

\* Never use benzene, thinner or other volatile liquids.

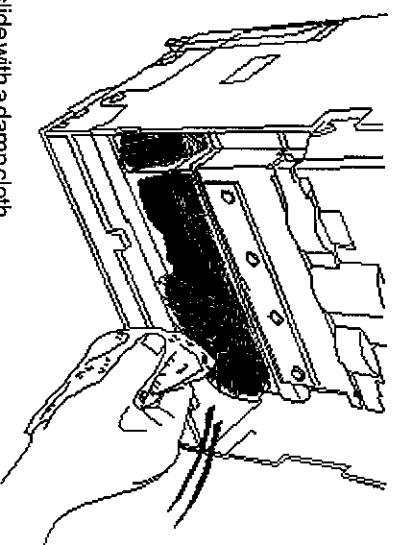
**\* Install in reversed order.**

**\*Cleaning the payout section of the coin changer**

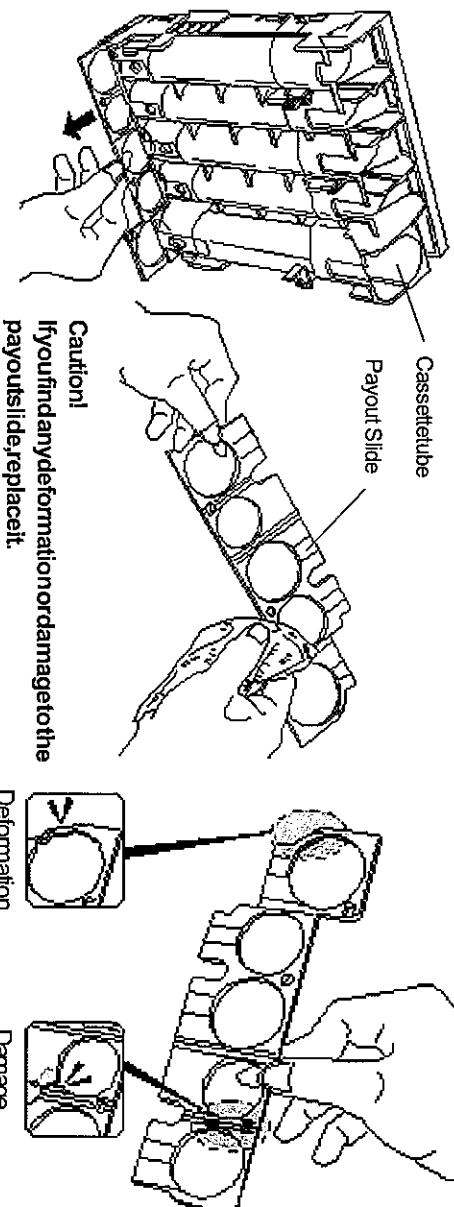
(1) Remove the cassette tube before cleaning. First press down the tube latch, tilt the cassette tube towards you and remove it. Use both hands to hold the cassette tube which may be heavy with stored coins.



(2) Wipe clean the coin dispensing section (the bottom cover) and the payout link assembly that are shaded in this figure) using a soft cloth.

**\*Cleaning the coin dispensing section**

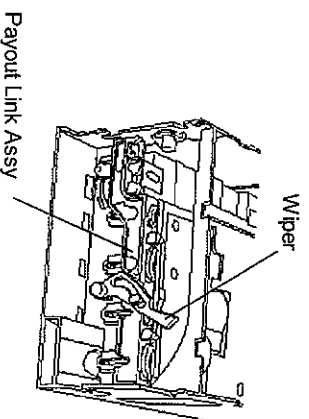
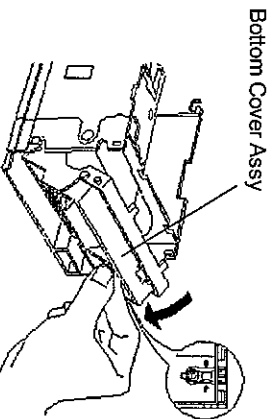
(3) Remove the payout slide from the cassette tube and clean the slide with a damp cloth.

**\*Cleaning the payout slide**

**Caution!**  
If you find any deformation or damage to the payout slide, replace it.

**\*Cleaning the payout link assy**

(1) Squeeze the latch on the bottom base between two fingers and pull the assy toward you to remove it.  
(2) Clean the payout wiper, the payout link assy and the bottom base.

**[Warning]**

For usual cleaning, **DO NOT** remove the payout link assy or payout wiper. If they are very dirty and need to be removed for cleaning, be sure to install them back correctly after cleaning. If incorrectly installed the payout operation will fail.

**\* After cleaning, insert coins in individual denominations in the normal operation status and confirm proper payout functions.**



## 9. DISASSEMBLY AND ASSEMBLY PROCEDURE

Remove the coin changer in the order written, install in reverse order.

### 9-1 Disassembly and Assembly of the Main Body of the Coin Changer

**PRIOR TO ANY SERVICE ALWAYS TURN POWER OFF TO THE VENDOR!**

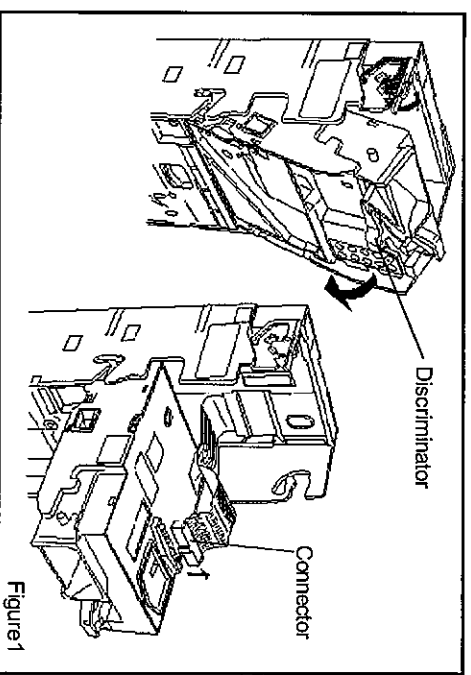
#### 1. Discriminator

Removal:

1. Push the latch up.
2. Pull the discriminator toward you.
3. Disconnect the discriminator connector.
4. Remove the discriminator from the housing.

Installation:

In reverse order.



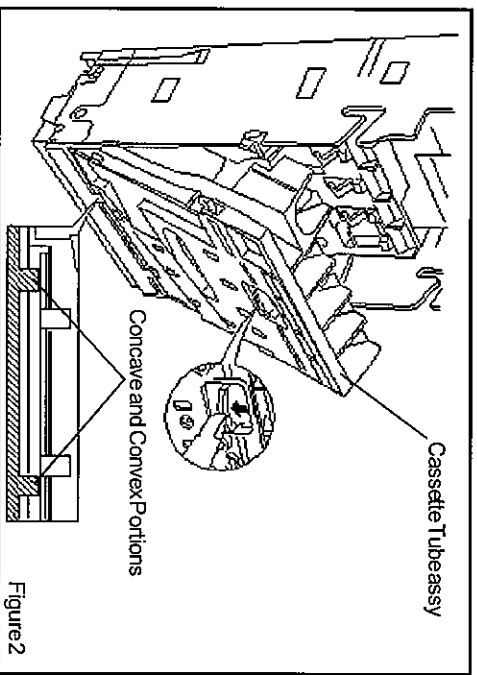
#### 2. Cassette Tube Assembly

Removal:

1. Press the cassette latch down.
2. Pull the cassette tube assembly toward you.

Installation:

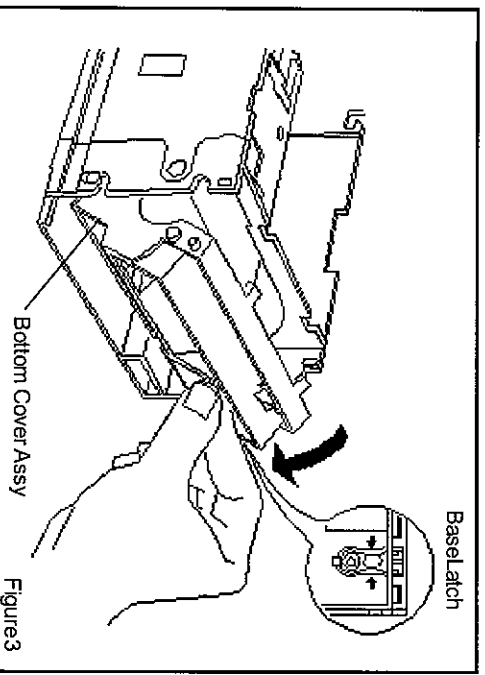
Engage the concave portions of the cassette tube assembly with the convex portions of the bottom cover assembly and push the unit until it engages with a click.



#### 3. Bottom Cover Assy

Removal:

1. Squeeze the base latch between two fingers and open the bottom cover assembly toward you.
2. Lift the bottom cover assembly up a little and pull it out toward you.



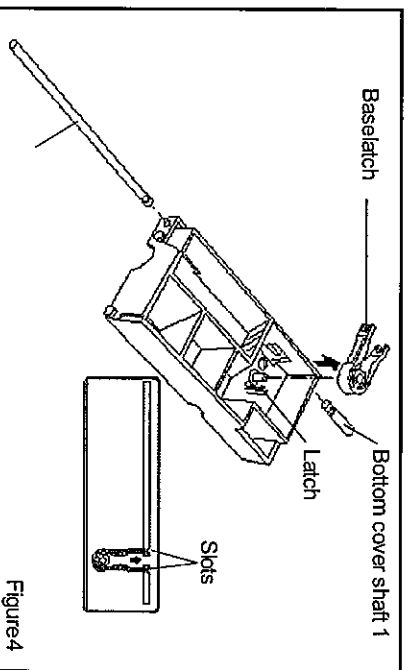
#### 4. Base Latch and Bottom Cover Shaft

##### Removal:

1. Release the latch that fixes the base latch.
2. Pull the base latch up toward you to detach it.
3. Pull the bottom cover shafts 1 and 2 out from both sides.

##### Installation

Engage the concave portions of the base latch with the slots on the bottom cover shafts 1 and 2 as illustrated.



#### 5. Payout Link Assy, Wiper, Change Slide and Change Lever

##### Removal:

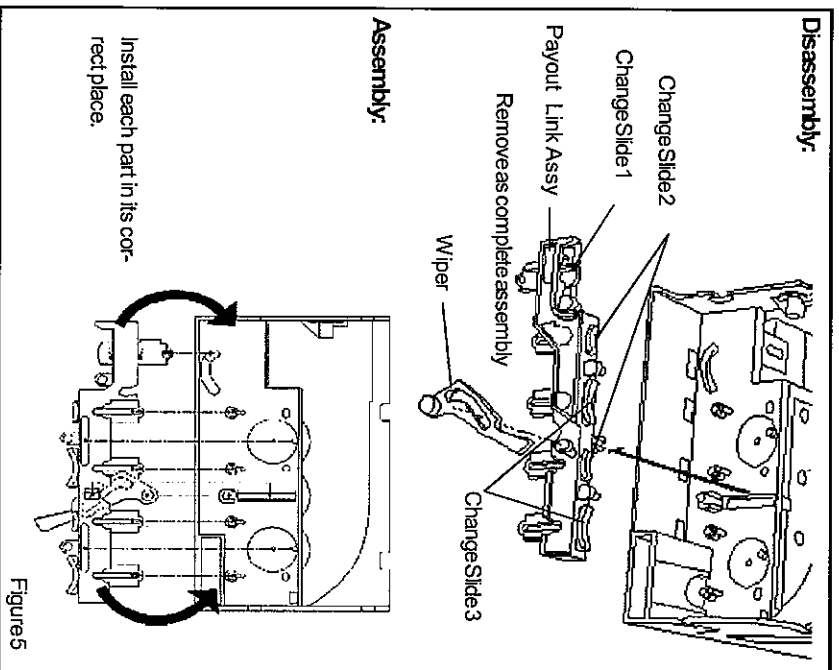
1. Pull the payout link assy outward you from the bottom of the gear base assy.
2. The wiper and change slides 1, 2 and 3 can be removed for cleaning.

**Note:** Unless very dirty, **DO NOT** remove these parts.

##### Installation:

Push the payout link assy into the gear base assy until it is firmly installed.

**Note:** Be sure to set the payout link assy, change slides and wiper to the standby status as illustrated.



#### 6. Payout Cam

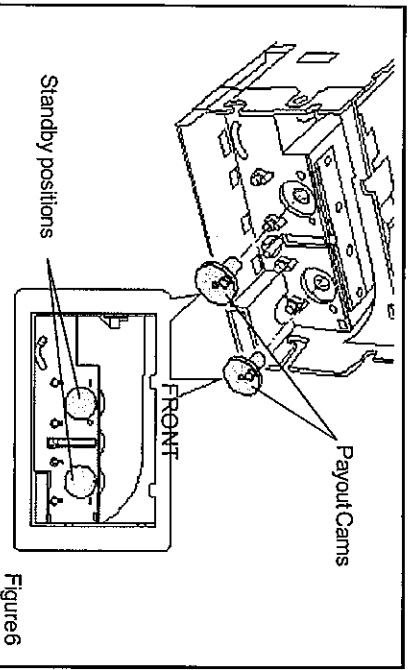
##### Removal:

1. Pull the payout cams out.

##### Installation:

Set the payout cams at the standby positions as illustrated.

**Note:** After any service to the payout area always check the payout of each tube!



## 7. Center Cover Assy

### Removal:

1. Hold the center cover assy with your left hand, press section A with your thumb from inside to allow the right side panel to unlatch from the housing (five latches).
2. Pull the center cover up and release the latch at section B (four latches) left side panel.
3. Guide the flat ribbon connector through the slot.

**Note: Be careful not to damage the latches on sections A and B.**

### Installation:

1. Guide the flat ribbon connector through the slot.
2. Engage the four left latches first and then the five right latches.

**Note: Be sure that the latches on sections A and B are firmly engaged.**

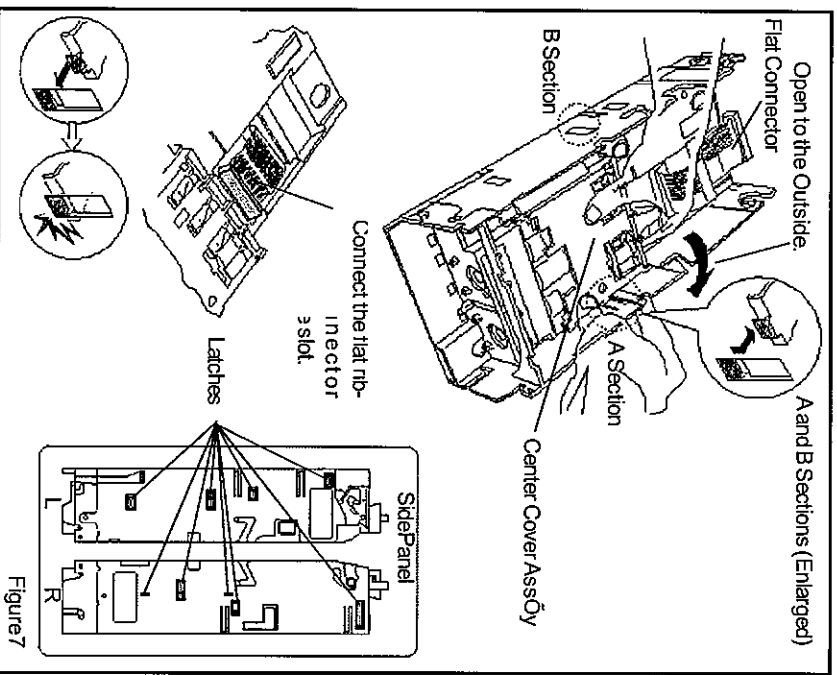


Figure 7

## 8. Tube-full Lever

### Removal:

1. Pull the tube lever shaft out.
2. Then release the three tube-full levers.

### Installation:

Be sure the shaft is aligned properly. Insert the tube lever shaft until it is firmly locked. (See the figure.)

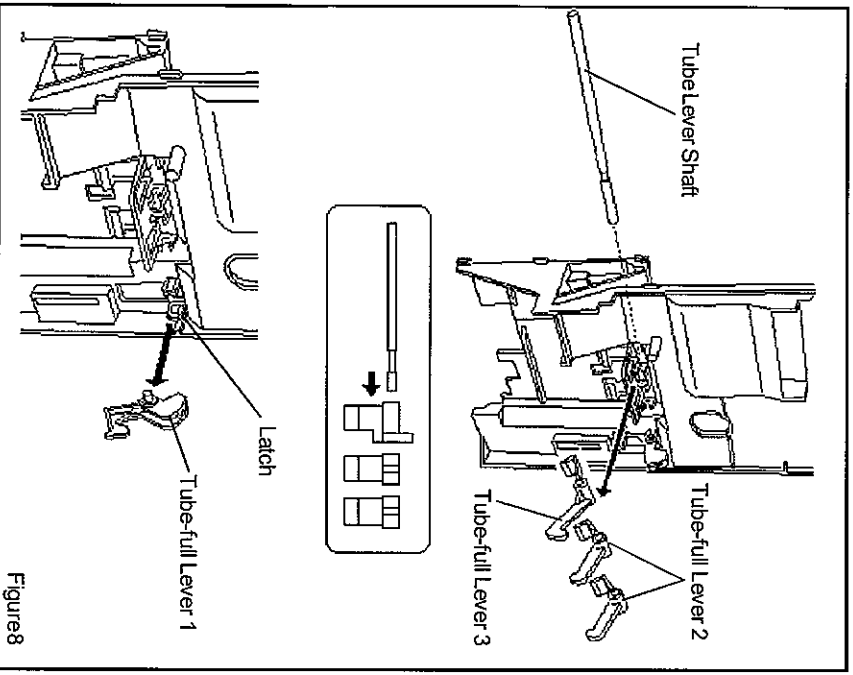
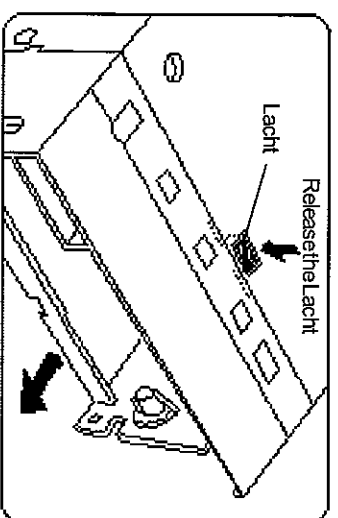
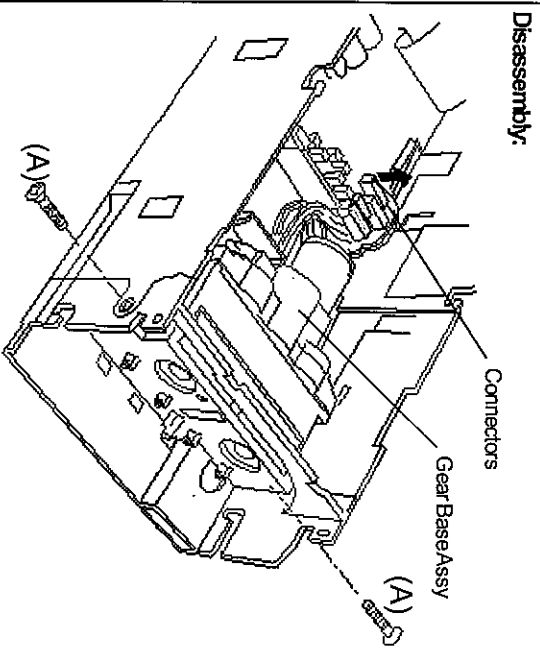


Figure 8

## 9. Gear Base Assy

### Removal:

1. Unplug the three connectors.
2. Remove the cross-headed (flat head) screws M3x8(2)“(A)”.
3. Release the latch on the rear panel and detach the assembly.



### Assembly:

- Installation:**
1. Engage the latch on the rear panel.
  2. Plug in connectors and guide the harness back in place. (See the Figure 9.)

### Note:

The harness should be guided very carefully in the exact same way as before the removal. To ensure this, be sure to memorize how the harness is set before removal. If improperly set, it may cause abnormal stress and damage to parts.

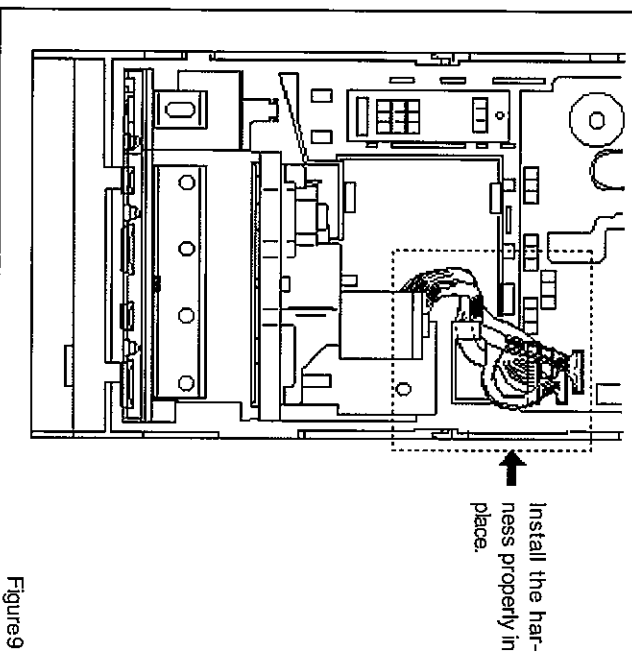


Figure 9

## 10. Change Lever and Change Solenoid

### Removal:

1. Cut the harness tie wrap on the back of the gear baseassy.
2. Remove two M3x8 screws.
3. Remove the harness. Before removal, memorize how the harness is set so that you can properly reinstall it later.
4. Detach the change solenoids and the change levers.

### Note:

When you detach the change solenoids, the associated change levers, plungers, and springs are also removed. Keep them together. Do not mix them up!

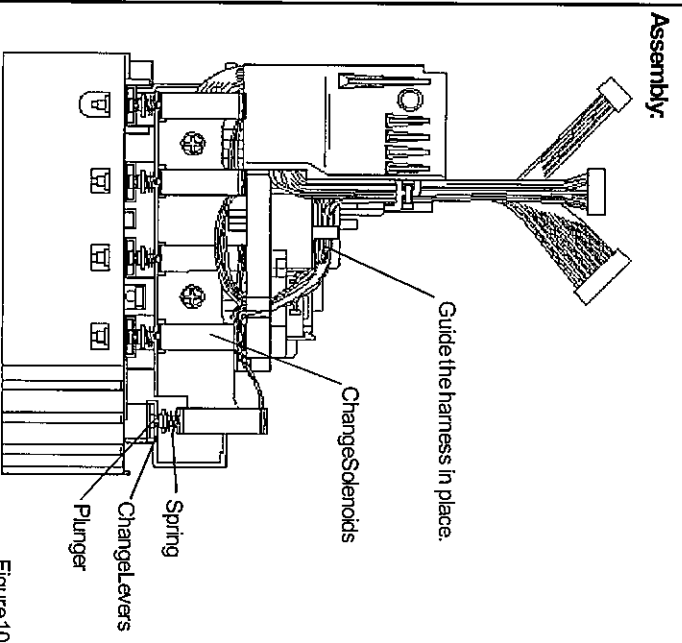
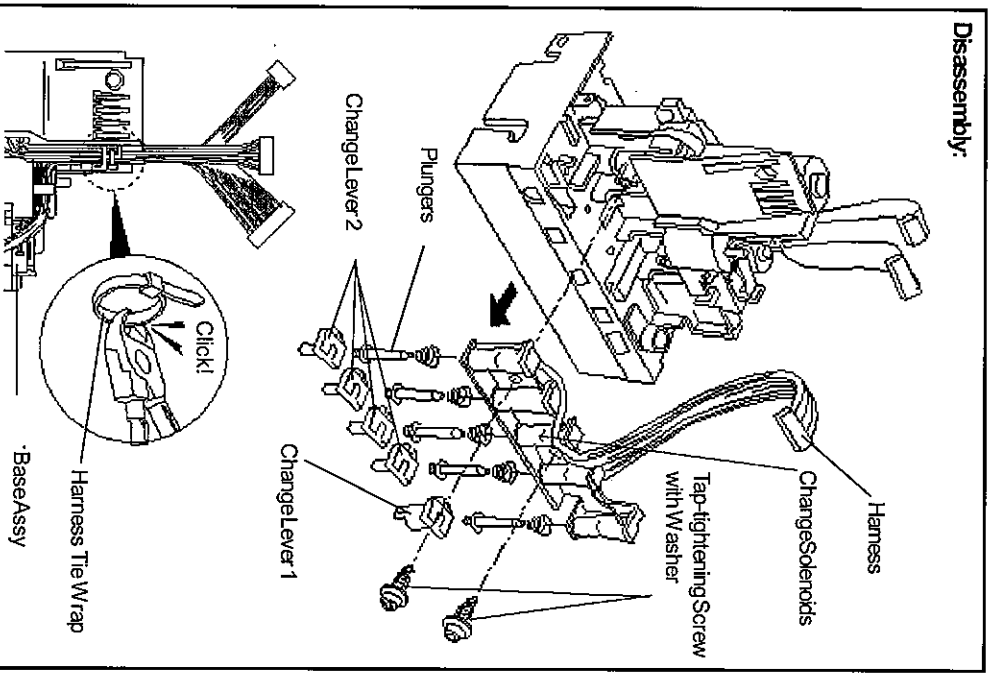


Figure 10

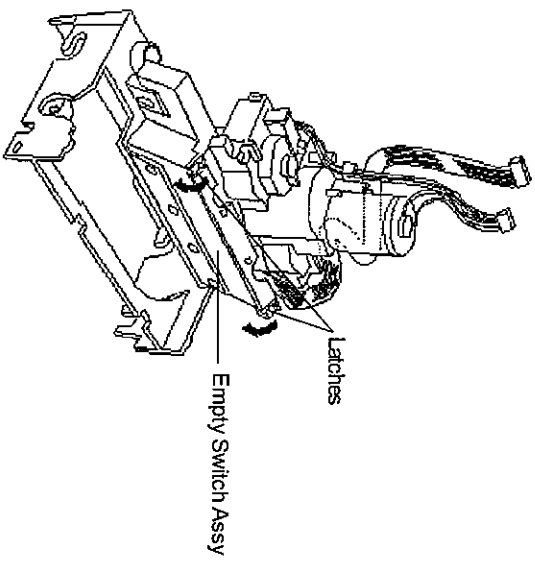
### Installation:

1. Insert the plungers of the change solenoids into the slots of the change levers. (See the figure.)
2. Install the harness properly in place as it was before removal. (See the Figure 10.)

### 11. Empty Switch Assy

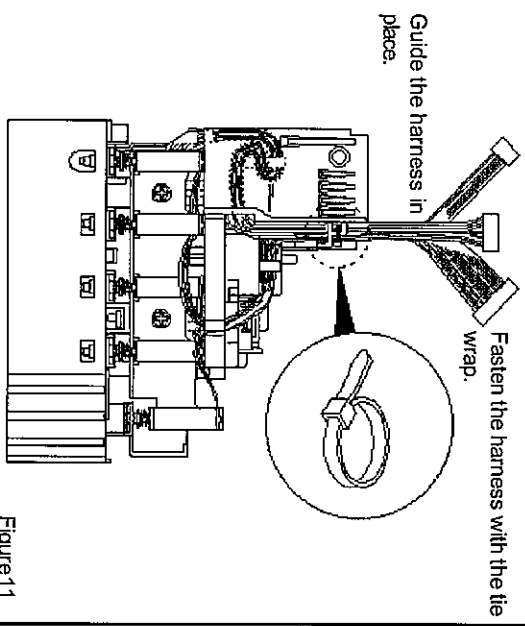
#### Removal:

1. Remove the harness. Before removal, memorize how the harness is guided so that you can properly reinstall it later.
2. Release the right and left latches and pull the empty switch assy out.



#### Installation:

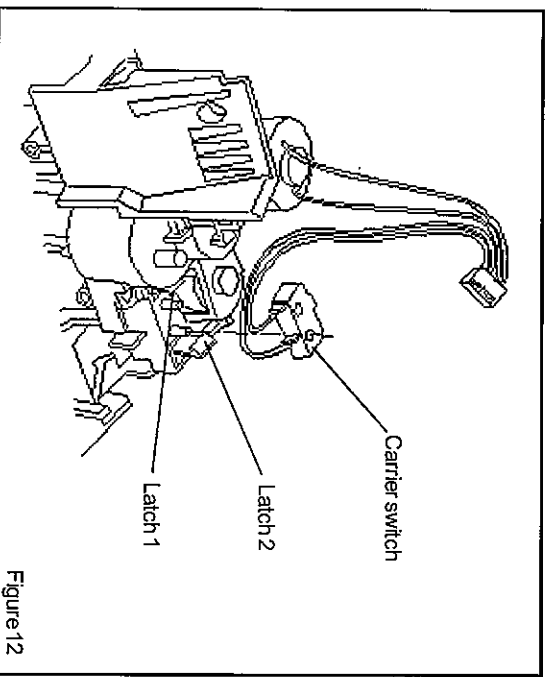
1. Install the harness properly in the same place as before removal.
2. Bundle the harness and fasten it with the tie wrap.



### 12. Carrier Switch Assy

#### Removal:

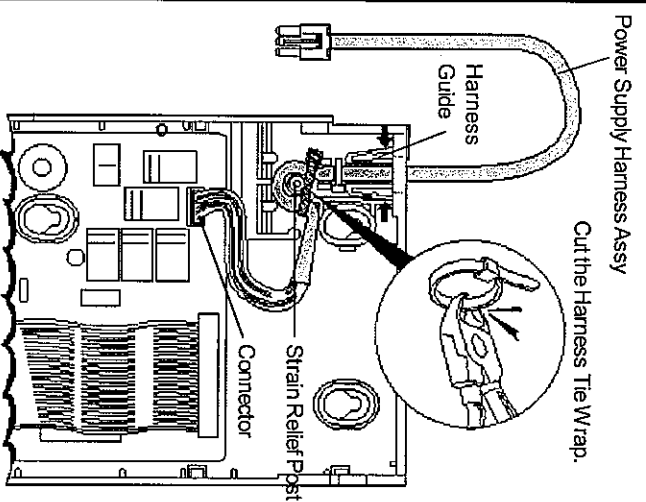
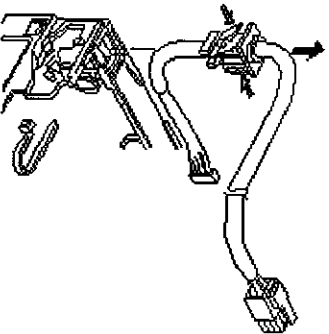
1. Release latch 1 and latch 2.
2. Remove the carrier switch.



### 13. Power Supply Harness Assy

#### Removal:

1. Cut the harness tie wrap from the power supply harness assy.
2. Disconnect the connector from the board.
3. Release the right and left latches on the harness guide and remove the power supply harness assy together with the connector.



#### Installation:

1. Mount the power supply harness assy back in place, and fasten the harness with the tie wrap as illustrated.

#### Note:

Make sure the harness guide latches back into place

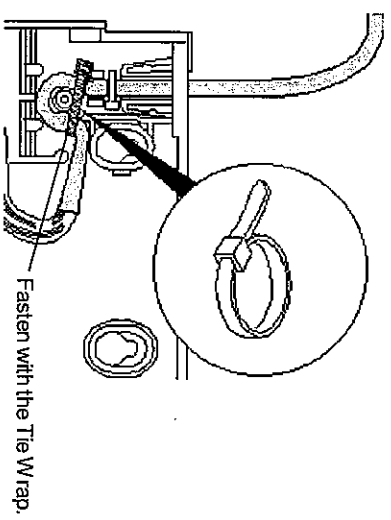


Figure 13

### 14. Relay Board Assy

#### Removal:

1. Disconnect all harnesses.
2. Release the four latches on the housing and re-move the board.

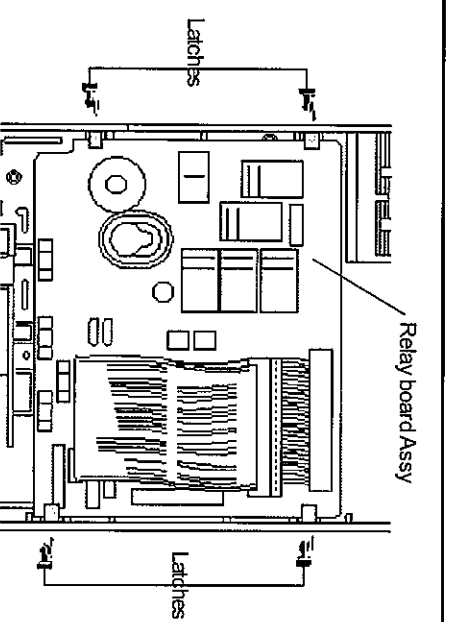


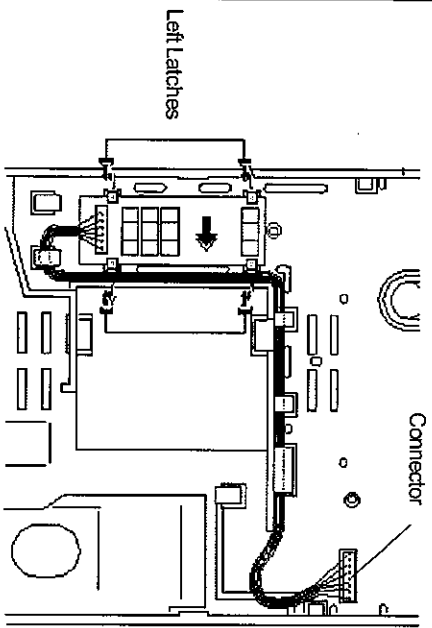
Figure 14

### 15. Cassette Switch Board Assy

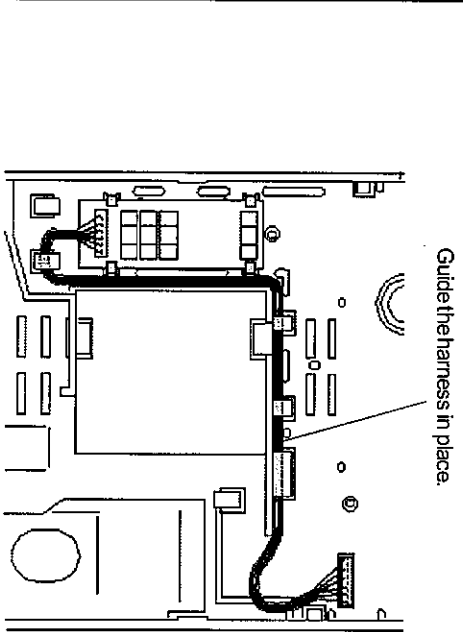
**Removal:**

1. Remove the harness.
2. Release the two left latches on the switch board assy.
3. Release the two right latches on the switch board assy.

**Disassembly:**



**Assembly:**



- Installation:**
1. Guide the harness in place. (See the Figure 15.)

### 16. Discriminator Latch

**Removal:**

1. Release the lock and open the latch to the outside.
2. Push the latch down.
3. Twist the latch to the outside.

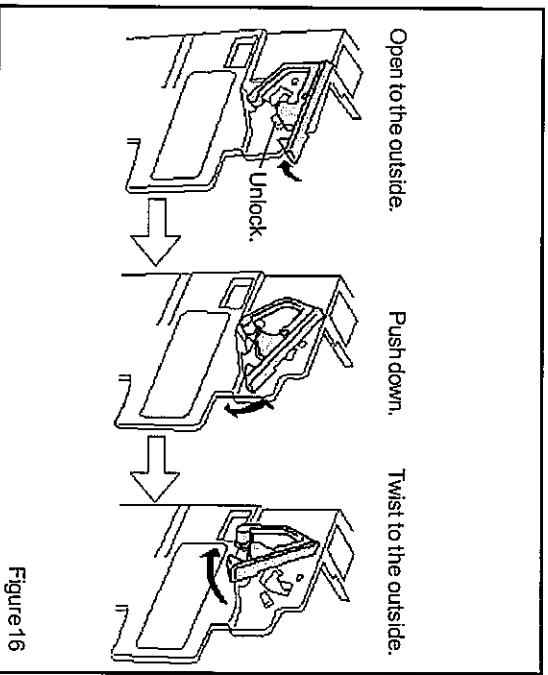


Figure 16



## 9-2 Disassembly and Assembly of the Cassette Tube Assy

### 1. Payout Slide

1. Pull the payout slide out.

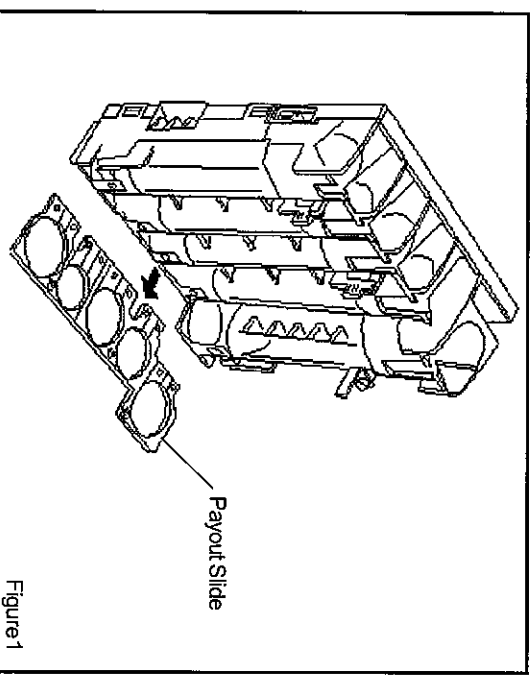


Figure 1

### 2. Tube Cover

Removal:

1. Release the two right latches.
2. Release the upper left latch.
3. Release the lower left latch.

Note:

The left latch is engaged very firmly, you may need extra force to unlatch.

Installation:

Engage the two left latches first, then the two right latches.

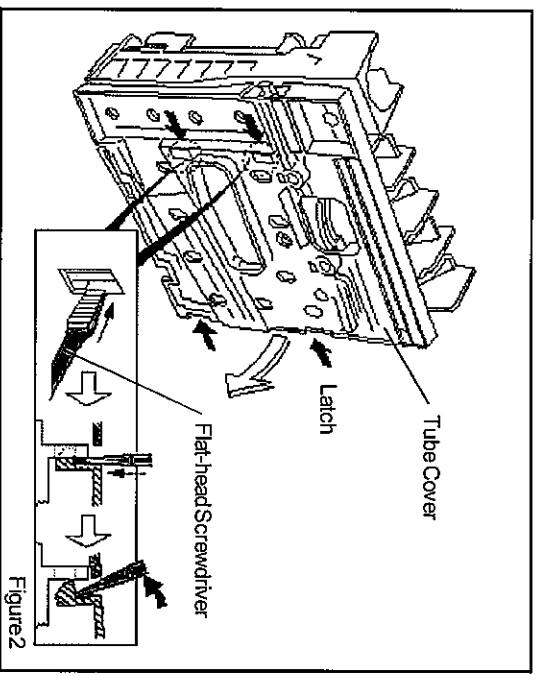


Figure 2

### 3. Latch (R), (L)

Removal:

1. Release the latch (L).
2. Release the latch (R).

Installation:

Engage the latch (R) before the latch (L).

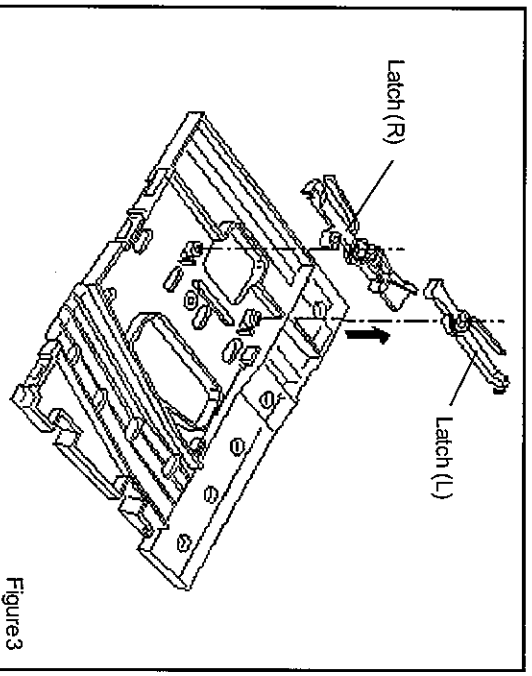


Figure 3

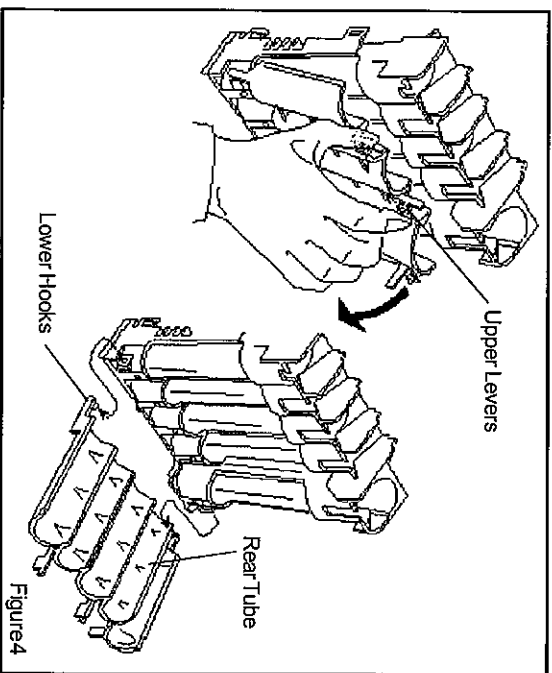
#### 4. Rear Tube

**Removal:**

1. Squeeze the upper levers between two fingers and pull the rear tube toward you.
2. Release the left and right hooks.

**Installation:**

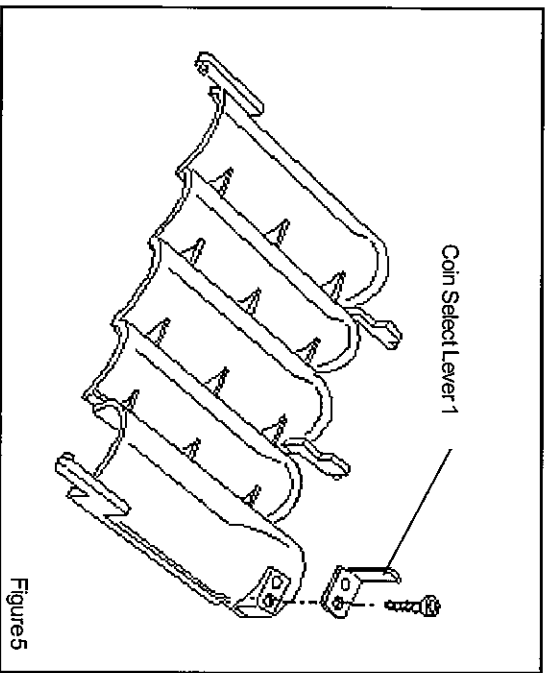
Engage the left and right hooks on the bottom first. Then close the rear tube.



#### 5. Select Lever (1)

**Removal:**

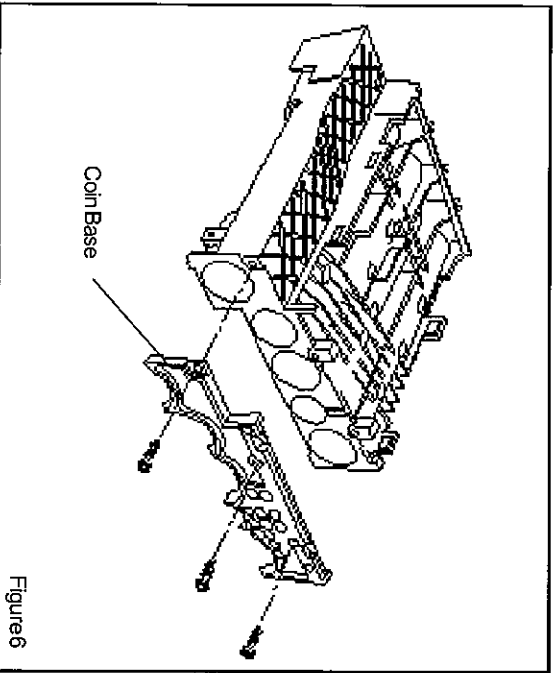
1. Remove one tapping screw M3x5.



#### 6. Coin Base

**Removal:**

1. Remove three tapping screw M3x8.



## 9-3 Disassembly and Assembly of the Discriminator

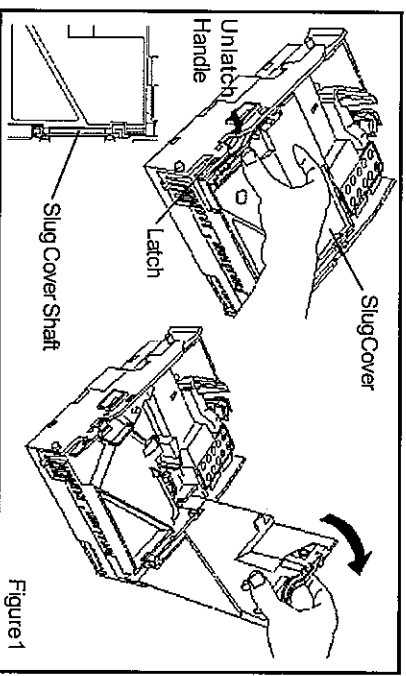
### 1. Slug Cover

#### Removal:

1. Press the unlatch handle on the slug cover with your thumb and pull the cover toward you.
2. Pull the slug cover up to detach it.

#### Installation:

Align the slug cover shaft on the right with the notch on the main plate and push in the cover until the latch engages with a click. Then close the cover.



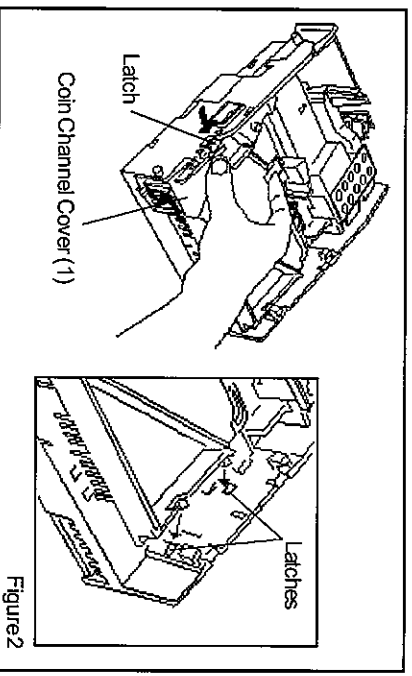
### 2. Coin Channel Cover (1)

#### Removal:

Press the unlatch handle on the coin channel cover (1) with your thumb and pull open the cover toward you.

#### Installation:

Align the latches on the right with the slots on the main plate and push the cover in until the latch engages with a click.



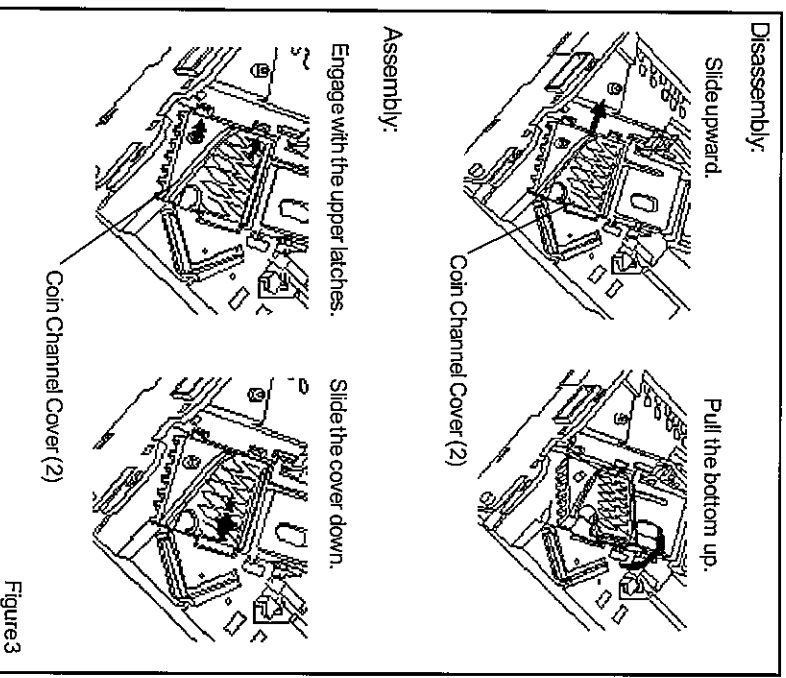
### 3. Coin Channel Cover (2)

#### Removal:

1. Slide the coin channel cover (2) upward and release the lower latch.
2. Pull the bottom of the cover up to detach the cover.

#### Installation:

1. Engage the upper latches.
2. Slide the coin channel cover (2) down to lock it in place.



#### 4. Rear Cover

##### Removal:

1. Press the unlatch handles on both sides of the middle part of the rear cover.
2. Pull the cover toward you to detach it.

##### Installation:

1. Hold the cover by the unlatch handles and push it back in place.
2. Confirm that all the latches are firmly engaged.

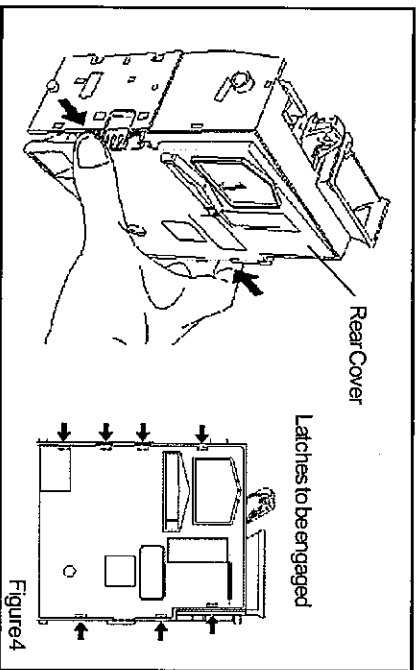


Figure 4

#### 5. Control Board Assy

##### Removal:

1. Release the left latch and then the two right latches.
2. Lift the control board assy up a little to disconnect the three connectors and the ribbon cable.

##### Installation:

When connecting the connectors to the control board assy, insert the ribbon cable coming out of the gate assy into the terminal on the board. Be careful not to bend or twist the cable.

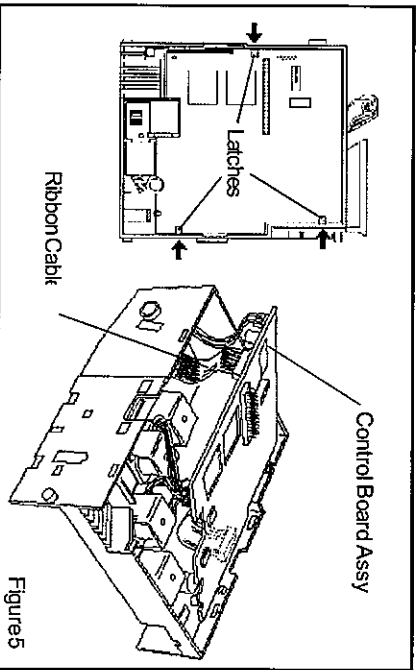


Figure 5

#### 6. Gate Assy

##### Removal:

1. Unlatch the gate spring using a flat-head screwdriver.
2. Detach the gate assy.

##### Note:

Take special care not to cut or twist the ribbon cable.

##### Installation:

1. Pass the connector and the ribbon cable through their slots on the main plate.
2. Latch the gate spring onto the main plate using a flat-head screwdriver.
3. Push hard on the right side of the gate against the spring.

##### Note:

Handle the gate spring with care as the spring is strong.

Take special care not to damage the guide on the left side of the gate assy.

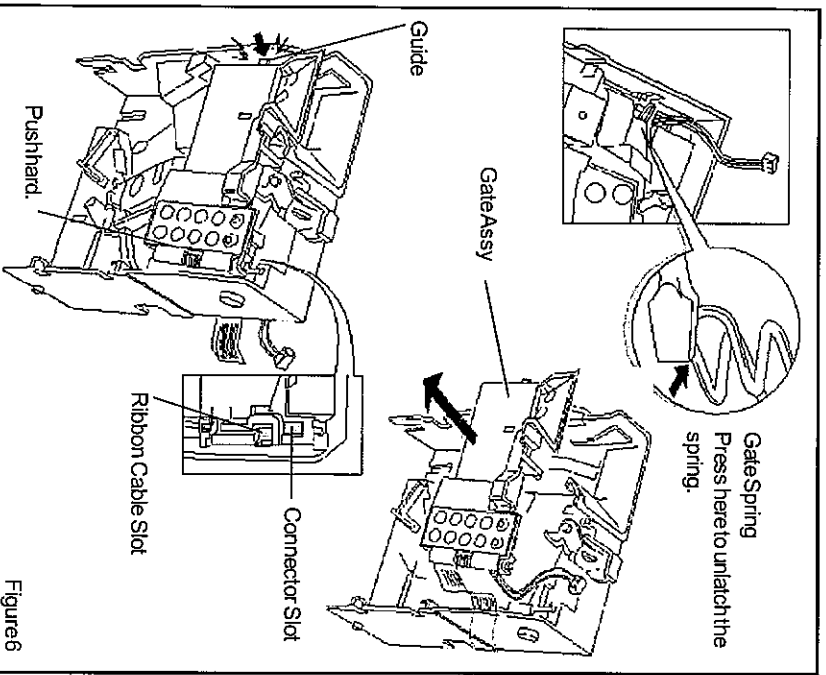


Figure 6

## 7. Gate Cover

### Removal:

1. Release latch A using a flat-head screwdriver.
2. Pull up the left side of the gate cover and release latch B.
3. Detach the cover.

### Installation:

1. Engage latch B.
2. Engage latch A.

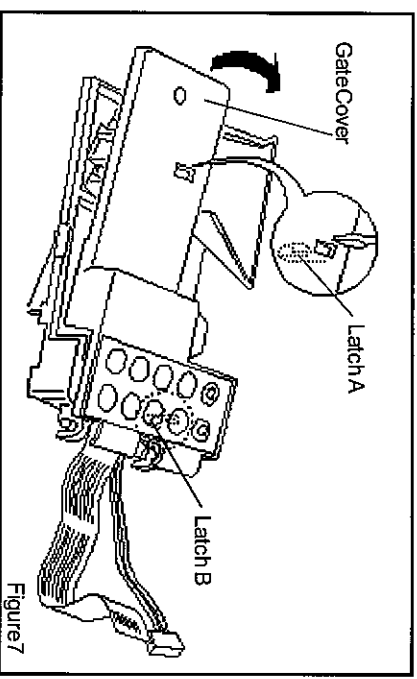


Figure 7

## 8. Gate Spring and Gate Pin

### Removal:

Pull the gate pin out to detach the gate spring.

### Installation:

When installing, handle the gate spring with care the spring is strong.

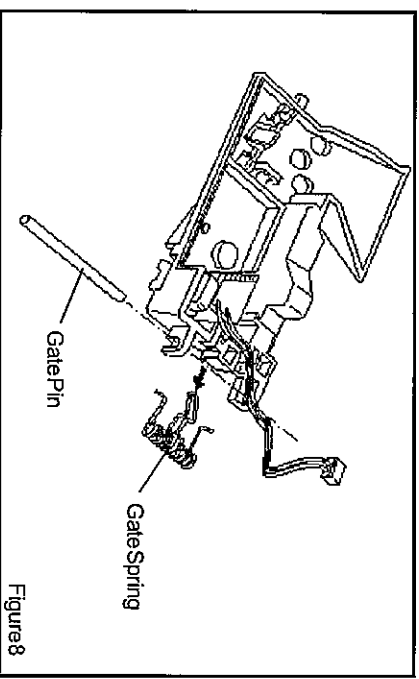


Figure 8

## 9. Front Lever

### Removal:

1. Release the latches on both sides.
2. Pull the lever out toward you to detach it.

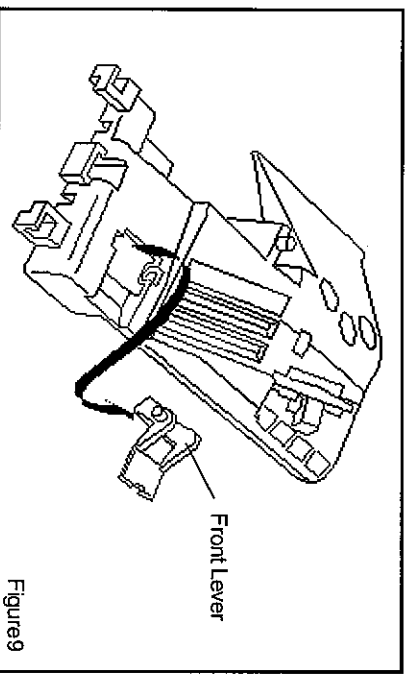


Figure 9

## 10. Gate Rail

### Removal:

1. Release the latch.
2. Pull the rail out.

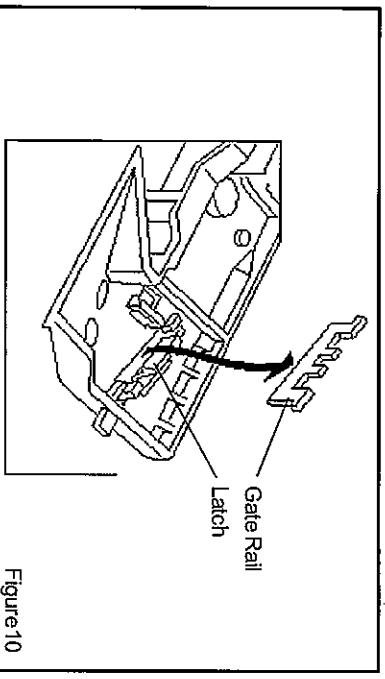
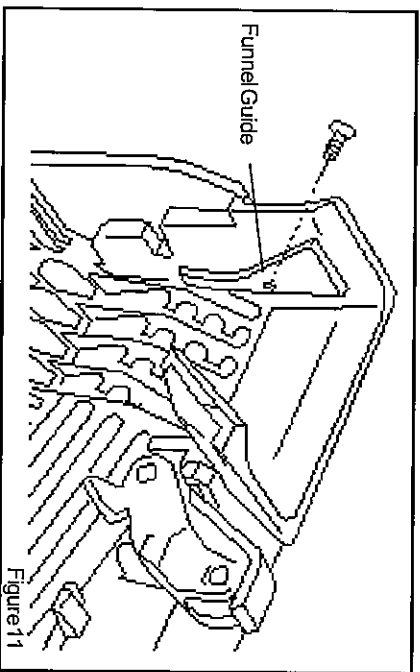


Figure 10

### 11. Funnel Guide

#### Removal:

1. Remove the (flat-head) screw M3x0.5x4(1).
2. Pull the funnel guide out.



### 12. Gate Lever, Gate Lever Roller and Gate Lever Spring

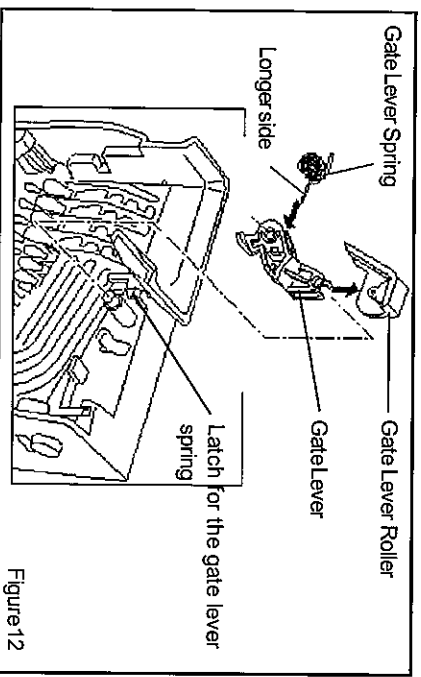
#### Removal:

1. Unlatch the spring using a screwdriver.
2. Detach the gate lever assy from the main plate.

#### Installation:

Mount the gate lever assy back in place.

Be sure the gate lever spring is aligned properly.



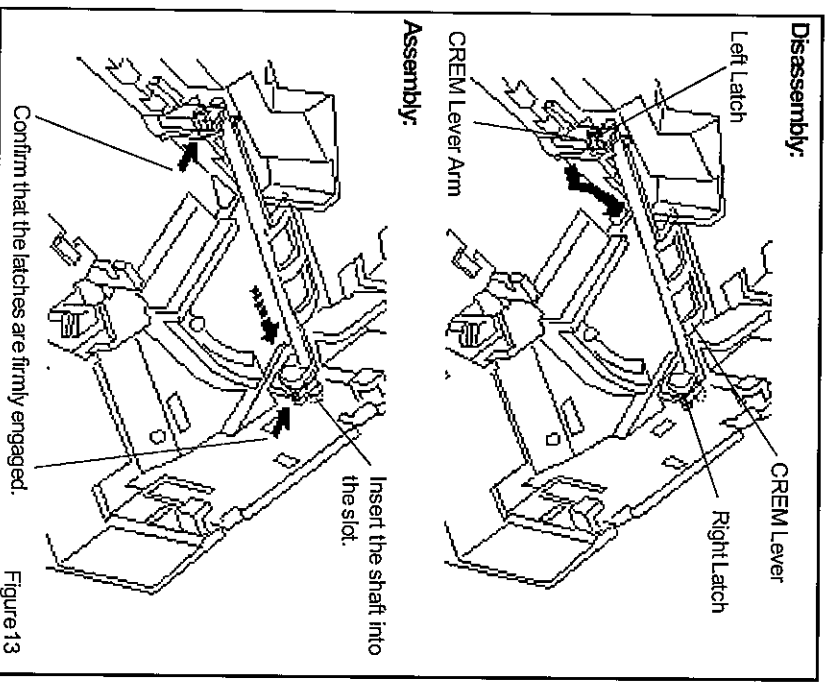
### 13. CREM Lever

#### Removal:

1. Release the left latch and then the right latch of the CREM lever arm.
2. Pull the CREM lever up.

**Installation:**  
Insert the shaft of the CREM lever into the right and then left slots on the main plate.

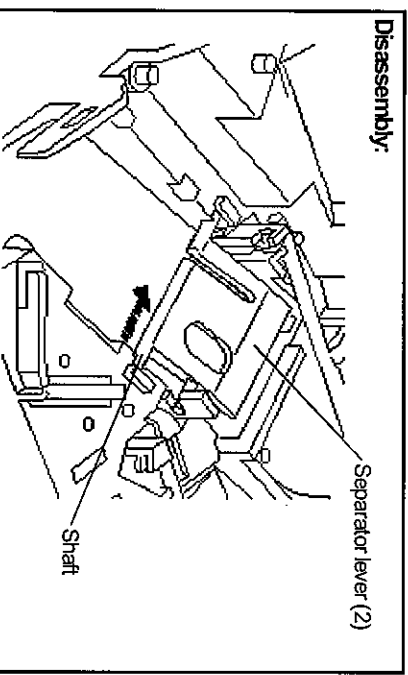
**Note:**  
Confirm that the right and left latches of the CREM lever are firmly engaged with the slots of the CREM lever arm.



#### 14. Separator Lever (2)

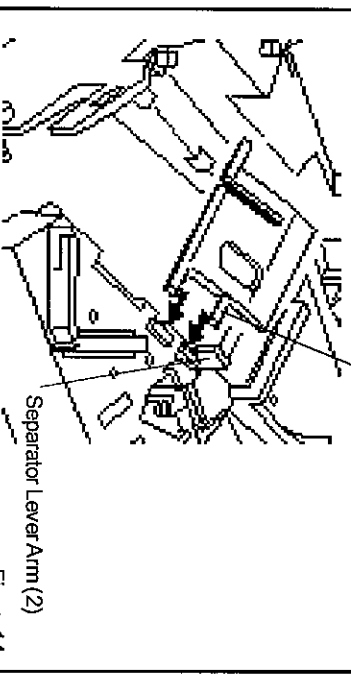
##### Removal:

1. Slide the separator lever (2) upward.
2. Unlatch the lower shaft.
3. Pull the lever out.



##### Assembly:

Align the latch with the slot.



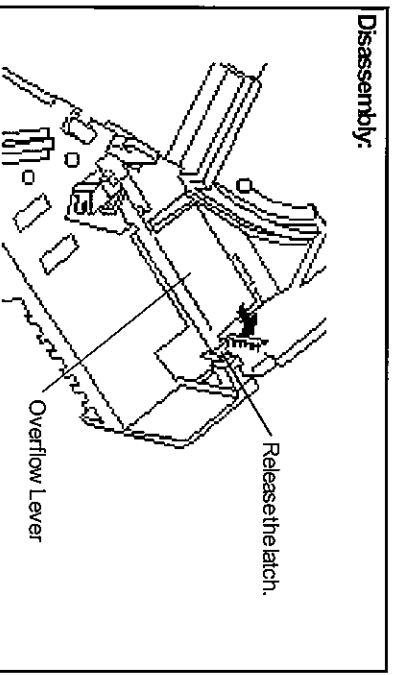
##### Installation:

Be sure to align the latch of the separator lever (2) with the slot of the separator lever arm (2).

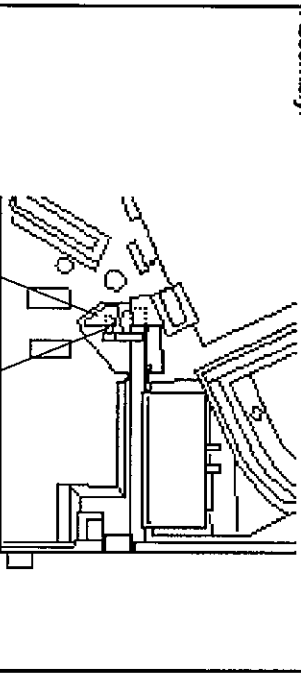
#### 15. Overflow Lever

##### Removal:

1. Release the right latch on the main plate.
2. Pull the overflow lever out.



##### Assembly:



##### Installation:

Be sure to engage the latch of the overflow lever with the slot of the separator lever arm (2).

## 16. Separator Solenoid Assy

### Removal:

1. Release the four latches.
2. Slowly pull the separator solenoid assy out.

### Note:

Be sure to pull the assembly slowly so that the parts of the assembly will not be removed.

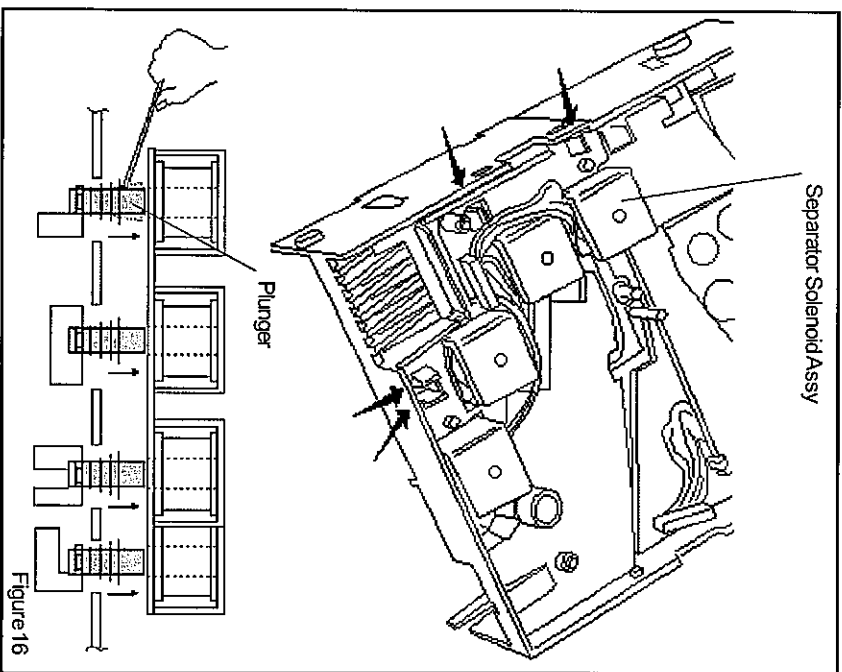
### Installation:

1. Align the plunger shaft of each lever into the solenoid.
2. Lock the shaft in place with the four latches.

### Note:

If the plunger position is diverted from the solenoid slot, adjust the plunger position using the screwdriver so that the plunger fits into the solenoid slot.

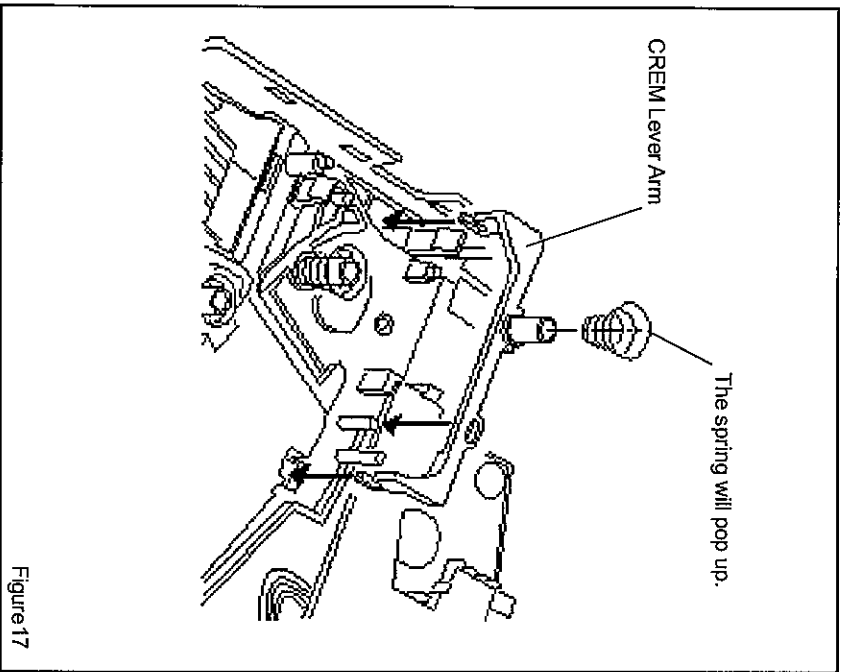
**NEVER** forcibly push the plunger into the slot, or you might damage the solenoid levers.



## 17. CREM Lever Arm

### Removal:

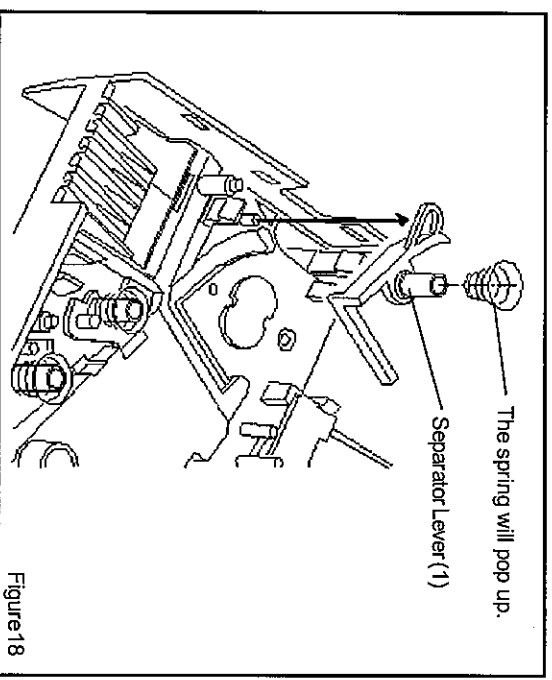
Pull the CREM lever arm out.





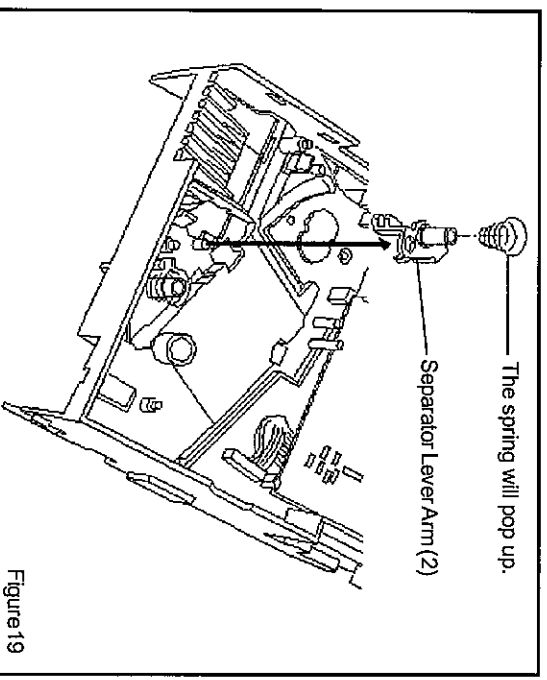
### 18. Separator Lever (1)

Removal:  
Pull the separator lever (1) out.



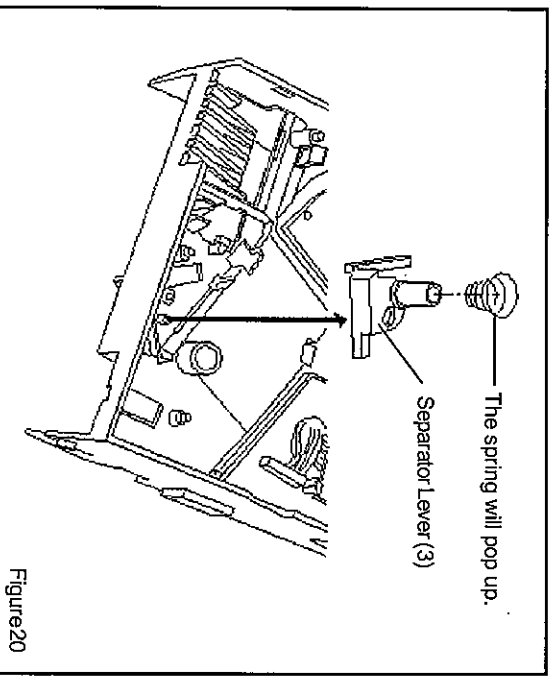
### 19. Separator Lever Arm (2)

Removal:  
Pull the separator lever arm (2) out.



### 20. Separator Lever (3)

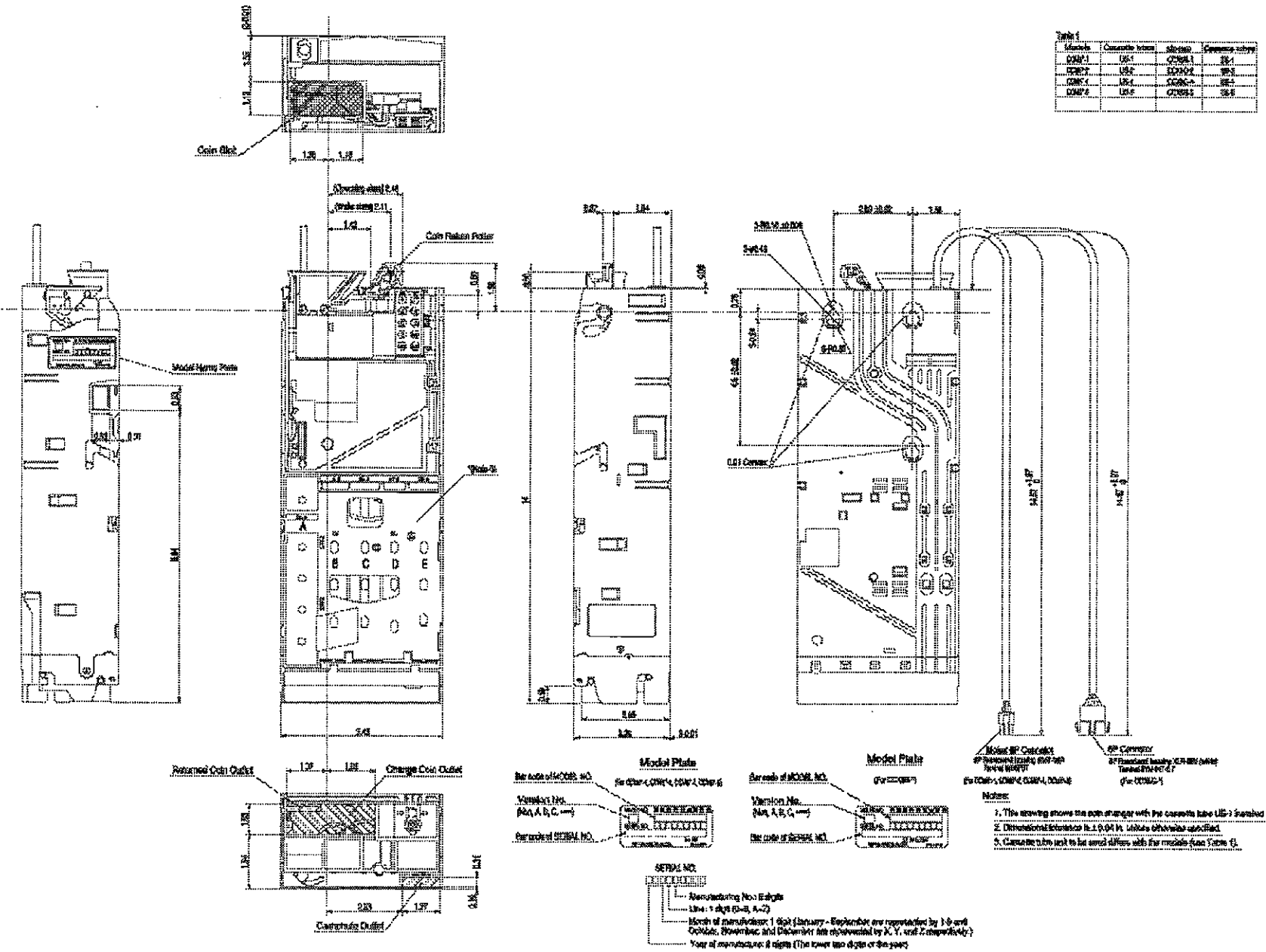
Removal:  
Pull the separator lever (3) out.



10. EXTERNAL VIEW AND DIMENSIONS

Table 1

Model No.	Coin slot type	Printer	Printer type
CCMS-1	US-1	CP800-1	US-1
CCMS-2	US-2	CP800-2	US-2
CCMS-3	US-1	CP800-3	US-1
CCMS-4	US-2	CP800-4	US-2



**MEMO**

CCM5  
SERIES

**59**

WHEN CALLING FOR SERVICE, PLEASE PROVIDE THE FOLLOWING INFORMATION:

MODEL NUMBER: \_\_\_\_\_

SERIAL NUMBER: \_\_\_\_\_

**Vendnet.**  
A WITTER GROUP COMPANY  
165 NORTH 10TH STREET  
WAUKEE, IA 50263  
TEL: 1-877-4CONLUX  
(1-877-426-6589)

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