HARRINGTON

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VENDING MACHINES LTD.

SK1500 Operating Manual

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The SL3000 Slimline Series Vendor

This Operator's Manual is divided into Four (4) main sections: Unpacking your SL3000 Vendor, Brief description of Vendor, Service Mode and Fault Analysis.

IMPORTANT NOTICES

Your vendor is intended for indoor use only
Your vendor must be set on a level, well supported location and wall mounted.
Always unload vendor before transporting it.
Remove the plastic cable ties from each helix coil.
Remove any protective sheets from under the Helix coil support plates before loading the vendor.
Do not load your vendor with disfigured or damaged product.

Section 1 UNPACKING YOUR VENDOR

FIXING OF BASE PLATE

Your Vendor comes with the vertical support plate affixed on to the Body. The Base Plate along with mounting screws is, however kept separately in the packing box.

Remember to tighten the base plate on to this vertical support plate at the time of installation.

HOW TO LOCK & UNLOCK THE DOOR OF SL3000 SNACK VENDOR

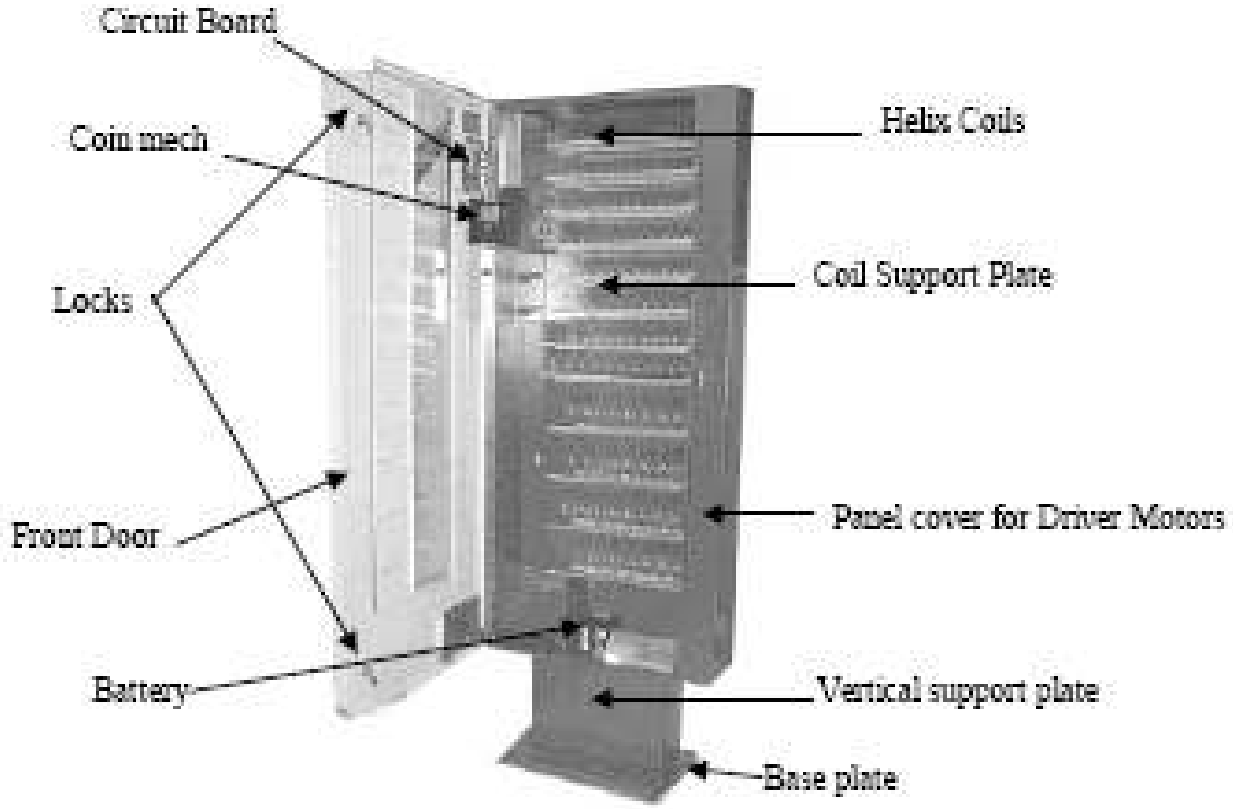
Your SL3000 Vendor has 2 locks, one each at the bottom and top of the front door [figure 1]. To open the door, insert the Key in the locks and turn counter clockwise. The door can now be opened. To lock the door, turn the keys clockwise in both the locks. The paper sheets under the Helix coil support plates must also be removed before loading the vendor.

ELECTRICAL CONNECTION

The SL3000 Snack Vendor requires an input of 12 volt DC.

Section 2 BRIEF DESCRIPTION OF SL3000

Fig 1 Photo of machine with door open



GENERAL DESCRIPTION

The SL3000 Snack vendor may be driven by a 12-volt battery or via a permanent 12 VDC Supply obtained through an AC/DC adapter.
The SL3000 incorporates a Multi Functional Controller Board with a range of features such as 12 individual selections, multiple coin handling, and a compact size.

KEYPAD AND LCD DISPLAY

The Keypad is touch sensitive. Light pressure will be necessary to activate each number. The vendor's Keypad is used by the customer to make their selection, and by the operator to set and test the many functions of the vendor.

DELIVERY SYSTEM

The delivery system of your SL3000 Snack vendor consists of the Keypad, LCD Display, Driver Motors, Coil Support Plates and Helix Coils. The customer inserts money and enters their selection on the Keypad. The selected Driver Motor turns the Helix Coil that vends the product.

LOADING PRODUCT

To present your product in an attractive and professional manner as possible, do not load damaged items. Note: The Size of the item being vended must be larger than the Helix Coil, but smaller than the coil support plate, to vend correctly. Never force an oversized item into the helix Coil or attempt to vend an item that is smaller than the Helix Coil as this will create problems and deter customers.

BATTERY MODE OF OPERATION

During Battery mode, the machine operates in 'Sleep Mode'. This means that when the machine is not in operation (between vends), it will automatically shut down in order to save battery power, thus prolonging the life of the battery. During 'Sleep Mode' the machine display turns off its left hand digit (unless there is a value greater than 0 present) and the machine monitors to see if a coin has been inserted or a button pressed in order to 'wake-up'. The following conditions will 'wake-up' the machine from 'Sleep Mode'.

1. Coin Insertion
2. Selection Button Press
3. Black (Reset) Button Press
4. Red Service Button Press

On Wake-up the machine will only go back to 'Sleep Mode ' under the following conditions:

1. Directly after a vend has been made (Unless there is excess credit present in which case the machine will wait a further 60 seconds before going to sleep].
2. After 30 seconds after a selection has been pressed and the machine contains product.
3. After 20 seconds after a selection has been pressed and the machine does not contain a product.
4. After 5 seconds if an invalidated coin has been inserted and the machine contains product.
5. After 60 seconds after a coin has been inserted and validated.
6. After 5 seconds if the machine is completely empty.
7. After 5 seconds after if the machine is out of order.
8. After 5 seconds after the black (reset) button is pressed and the machine is empty.
9. After 20 seconds after the black (reset) button is pressed and the machine contains product.
10. After 8 seconds after leaving service mode

These values are extended each time a selection is pressed or coin inserted to a maximum of 60 seconds.

When the machine goes to sleep, the following messages are displayed under set conditions

	When Awake	When Asleep	
I.	00.00 – 09.00	0.00 – 9.99	(Decimal points always on)
II.	10.00 – 99.99	10.00 – 99.99	(Decimal points always on)
III.	Free	Fr.ee	(Decimal points always on)
Iv.	Test	Te.st	(Decimal points always on)
v.	Out of Ordr	F-Er	(Fatal Error set)
vi.	- - .- -	-.- -	(Decimal point always on)

When the vending machine detects that a battery is low an error code will be displayed (51). This code will remain on display until the battery has been replaced and the black reset button has been pressed.
When the vending machine detects that a battery is dead, the machine will permanently turn itself off.

Section 3 Service Mode

Overview

The operation of the machine can be adjusted by entering service mode by pressing the red button on the VMC circuit board and then accessing the appropriate operation. Price setting, coin value setting, motor operation and vend-credit criteria can be read and adjusted from here. The user can also perform tests for the motor operation through this mode.

Operation

1. Enter Service Mode by pressing the Red Button on the VMC Circuit board Displays Er. ""
   Any faults that have occurred will be displayed as a two-digit code""
   If there are no errors the Display will automatically go to Audit Mode Au

2. Each Service Code can then be accessed by repeat pressing of the Service Button

Pressing Red Button (AUDIT)	Displays Au.—
Pressing Red Button (PRICE SETTING)	Displays PS.--
Pressing Red Button (COIN VALUE SETTING)	Displays Cn.—
Pressing Red Button (CONTROL WORD SETTING)	Displays Ct.""
	Where "" is current word
Pressing Red Button (ASSIGNMENT)	Displays AS.—
	Where "" is current motor vending
Pressing Red Button (APPLICATIONS)	Displays AP.—
Pressing Red Button (EXIT Version #)	Displays F". "" to 00.00

3. Service Mode can be exited by pressing the Red Service Button, the Reject button or automatically if the LCD Display has remained idle in service mode for up to 60 seconds.

Notes:
- *If a selection button/service button is not pressed within 45 seconds then the Display will automatically exit from Service Mode.*
- *If a selection button is pressed, the Display will automatically exit from Service Mode 60 seconds after the last button pressed.*
- *Pressing the reject button also exits the Display from Service Mode*

Audit

Within Service Code AU (Audit) readings can be taken from the Display with regards to cash taken, and number of products vended. The following details can be obtained on the Display.

1. Total Cash Taken (up to 9999.99)
2. Total Product Vended (up to 9999)
3. Individual Product Vended (from each selection) up to 999

I. Press the Red Service Button repeatedly till the LCD Displays Au.—
   You are now in Audit Mode
II. Press Selection 1 to reveal the total cash ($/£/€) and (c/p) taken Displays """"and--. ""
III. Press Selection 2 to reveal the total product vended Displays """"
iv. Press Selection 3 to reveal the individual product vended
   The display scrolls through each selection displaying the quantity vended 1."" to 12.""
   Returns to Au— at end of routine.
v. Press Selection 4 to clear all the Total Sales Results Displays clr
vi. Press Red Service Button to scroll to exit or press Reject Button to exit.

Price Setting

Price Setting can be done by entering Service Code PS. Each selection can be allocated any price from 00.01 to 99.99, and is achieved by inserting coins to vend amount and allocating the amount to each selection.

I. Press the Red Service Button repeatedly till the LCD Displays PS.—
   You are now in Price Setting Mode

II. Insert coins to first desired price (for simplicity set the lowest price first)
III. Credit will accumulate on the display Displays **. **
Iv. Press desired selection button to store displayed credit to that selection Displays p.set
v. Insert additional coins if required.
vi. Press Red Service Button to scroll to exit or press Reject Button to exit.

Notes:

- *Prices may be set from 00.01 to 99.99 (depending upon coin vales)*
- *It is not possible to set a zero price.*
- *The default price setting is 99.99*

Coin Value Setting

Coin Value setting allows for the changing of validator or Acceptors with different output maps. The machine is capable of accepting up to 15 different coin values. Values can be adjusted from 00.00 to 99.99.

1.Press the Red Service button repeatedly until Displays Cn.—
You are now in the Coin Value setting Mode
You first need to set the value for the coin
2. Press Selection Button 1 to increment the --.** Value Displays 00.**
3. Press Selection Button 2 to decrement the --.** Value Displays 00.**
That is the cent/pence value set, now we need the dollar/euro/pound value
4. Press Selection Button 3 to increment the **.— Value Displays **.??
5. Press Selection Button 4 to decrement the **.— Value Displays **.??
Now with the value on the display, insert the coin for which the value must be assigned to.
6. Insert Required Coin until it is accepted to store value to that coin
Displays *.set
[Where * represents the coin identity a-l]
7. Repeat steps 3 to 7 till coins are set.
8. Press Red Button to exit or press Reject Button to exit.

Coin Output Map

No	IDENT	1	2	3	4	5	6	Default	Adjustable
1	A	X						01.00	YES
2	B		X					00.20	YES
3	C			X				02.00	YES
4	D				X			00.50	YES
5	E					X		00.10	YES
6	F						X	00.05	YES
7	G	X	X					01.00	YES
8	H		X	X				00.20	YES
9	I			X	X			02.00	YES
10	J	X		X				00.50	YES
11	K	X			X			00.10	YES
12	L		X	X	X			00.05	YES
13	M		X	X	X	X		10.00	NO
14	N		X	X			X	20.00	NO
15	O		X					50.00	NO

Notes:

- *Coin Values between 00.00 and 99.99 can be set to any coin*
- *Setting a value of 00.00 to a coin still allows the coin to be accepted.*
- *The machine will automatically exit from Coin Value Setting within 60 seconds unless a button hasn't been pressed or coin inserted in that time.*
- *All the variable coin values may be set at the same value if required.*

Control Word Setting

This is essentially to do with the Coin handling and Vend-credit status. The Control Word is a two (2)-digit number used to indicate to the vendor the required method of operation. This controls the operators desired relationship between coins inserted and vend price depending upon the power supply. The code is input within the Service Code count

CONTROL WORD MAP

Code	Battery	Mains	Escrow	Credit Vs Vend Price (before vend is performed)	Excess Credit (difference between credit and vend price)
01	X	X	X	CREDIT= VEND PRICE	None
02	X	X	X	0.99> (CREDIT-VEND PRICE)> 0	Excess Credit Cancels [if any]
03	X	X	X	CREDIT> VEND PRICE	Excess Credit Cancels [if any]
04	X	X	X	CREDIT> VEND PRICE	Excess Credit Carried Forward
05	X	X	X	CREDIT> VEND PRICE	Excess Credit Carried Forward for 60 sec
06	X	X	X	FREE VEND – NO CREDIT REQUIRED	None
07	X	X	X	TEST VEND- NO CREDIT REQUIRED	None

Press the red service button repeatedly until Displays Ct.""
(where "" is current value)
You are now in Control Word Setting
To change the current value, we first need to adjust the displayed code
Press Selection Button 1 to increment the --."" value Displays Ct.""
Press Selection Button 2 to decrement the --."" Value Displays Ct.""
That is the control word set; now we need to store it
Press Selection Button 4 to store the new Control Word Displays Cntr set
Press Red Service Button to exit or Press Reject Button to exit.

Notes: *The default Control Word is '03' – (Excess Credit Cancels)*
Codes 05 (Multi-vend with Time out) allows for the excess credit to be carried forward on the credit for up to 60 seconds. This time is prolonged if a coin is inserted or a selection is pressed for a further 60 seconds from that input. After 60 seconds the excess is cancelled.
The time out canceling only applies to excess credit (surplus credit after a vend) and not credit inserted prior to any vend.
The setting of a Control Word outside of the allocated codes, results in the machine reverting back to its original code (not default)
The machine will return to Normal Code (00.00) 60 seconds after the last button has been pressed unless the Red Service Button has been pressed or the reject is pressed.

During 'Free Vend' the machine will display " FrEE'
- All selections will vend without coins
- Prices can be set during Free Vend
- Appropriate Audit Registers will be incremented (Product sales)
- There is no automatic exit from this mode, this must be done through Service Code Ct

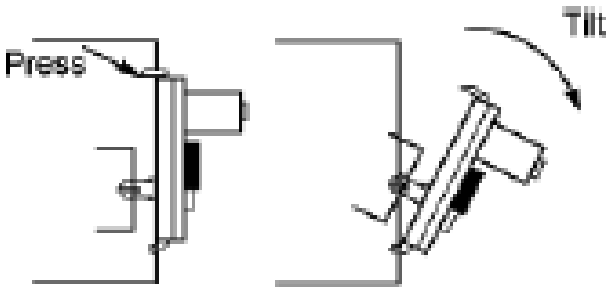
During 'Test Vend' the Machine will display 'tES'
- All selections will vend without coins
- Appropriate Audit Registers will not be incremented
- Coin input is enabled with coins inserted being displayed for 1 second only
- Prices cannot be set during Test Vend
- There is no automatic exit from this mode, this must be done through Service Code Ct

Motor Assignment

Each selection of the SL3000 is vended by action of the Driver Motor. The SL3000 has Twelve [12] Driver Motors. The Driver Motors are clipped to the rear of each Helix coil support tray.
To Remove a Driver Motor:

1. Unplug vendor,
2. Remove the screws from the panel cover of the Driver motors, and open the panel
3. Disconnect the wiring harness from the motor
4. Remove Helix Coil from Driver by lifting the front end of the coil up with one hand while guiding the rear of coil with the other hand.
5. Depress the top tab on the Driver Motor, tilt the motor backwards and lift the Driver Motor free

Fig. 2 Remove a Driver Motor



6.To Replace Driver Motor repeat the above procedure in reverse order

Test Sequence

This tests the operation of all the motors in the machine. This is useful to re-align any jammed motors.

1. Press the Red Service Button to Enter Service Mode to scroll to — Displays AP.–
   You are now in applications Mode
2. Press Selection 1 to activate test sequence — Displays test
   The machine will now perform a test as outlined below any faults that occurred will be indicated by a 2 digit code at the end of the Test Sequence. — Displays Er."" where "" may be a 2 digit code
3. Press Red Service Button to exit or Press Reject Button to exit.

Notes: - *The test sequence may activate a motor for two cycles; this is normal.*
- *If after a test a fault code appears, correct the fault and test again.*
- *The Display will return Normal Mode 60 seconds after the last button has been pressed unless the Red Service has been pressed or the reject is pressed.*

Test Code Map

	TEST	WHAT IS VISIBLE	ACTION
1 2	Escrow Return Power	Displays ' TEST"	Escrow Return Opens [if present] Power Status Checked
3 4	LEDS Price Setting	Displays ' 88.88 ' all Column LEDS on	Ensure all LED Segments Illuminate Confirm Prices are set
5 6	Escrow Keep	Displays PL."" [Timing Value]	Escrow Keep Opens [if present] Confirms Coin Values
7 8	Motor 1 Control word	Displays 01.-" where " Is motor Version	Motor 1 operates [if present] Confirms that a valid control word is set
9 10	Motor 2 Motor Assignment	Displays 02.-" where " Is motor Version	Motor 2 operates [if present] Confirms that a valid motor assignment is set
11 12	Motor 3 Coin count value	Displays 03.-" where " Is motor Version	Motor 3 operates Confirm that a valid coin count value is set
13 14	Motor 4 Audit	Displays 04.-" where " Is motor Version	Motor 4 operate [if present] Confirms that all audit registers are valid
15 16	Motor 5 Timing belt	Displays 05.-" where " Is motor Version	Motor 5 operates [if present] Confirms that valid timing belt value is set
17	Motor 6 Etc Motor 16	Displays 06.-" where " Is motor Version	Motor 6 operates [if present]
18	End of Test	Displays 0-.""	Where "" is a fault found during test

Section 4 Fault Analysis

Within the machine there is an internal fault analysis. Every 0.1 second the machine will do a self analysis test. This test does not affect the normal operation of the machine. There will be no change of status of the machine from a users point of view. The machine will still accept coins, display prices and vend products even during self analysis test. If the machine observes a problem it will double verify the cause and store the error, which will be displayed during service mode. To display an error code, simply enter service mode by pressing the red button. The error code will be displayed intermittently. To clear an error code, simply exit service mode (rectify error if necessary).

Note: If more than 5 normal error codes have been detected the machine will assume 'Fatal error' status putting the machine 'Out of Ord(e)r'.

Fault Code Map

Code	Description	Remedy
--	No error present	None
00	Empty Error Location	None
01	Motor 1 Error	Remove Jam-Activate Test Sequence-Exit Service Mode
02	Motor 2 Error	Remove Jam-Activate Test Sequence-Exit Service Mode
03	Motor 3 Error	Remove Jam-Activate Test Sequence-Exit Service Mode
04	Motor 4 Error	Remove Jam-Activate Test Sequence-Exit Service Mode
05	Motor 5 Error	Remove Jam-Activate Test Sequence-Exit Service Mode
06	Motor 6 Error	Remove Jam-Activate Test Sequence-Exit Service Mode
07	Motor 7 Error	Remove Jam-Activate Test Sequence-Exit Service Mode
08	Motor 8 Error	Remove Jam-Activate Test Sequence-Exit Service Mode
09	Motor 9 Error	Remove Jam-Activate Test Sequence-Exit Service Mode
10	Motor 10 Error	Remove Jam-Activate Test Sequence-Exit Service Mode
11	Motor 11 Error	Remove Jam-Activate Test Sequence-Exit Service Mode
12	Motor 12 Error	Remove Jam-Activate Test Sequence-Exit Service Mode
13	Motor 13 Error	Remove Jam-Activate Test Sequence-Exit Service Mode
14	Motor 14 Error	Remove Jam-Activate Test Sequence-Exit Service Mode
15	Motor 15 Error	Remove Jam-Activate Test Sequence-Exit Service Mode
16	Motor 16 Error	Remove Jam-Activate Test Sequence-Exit Service Mode
30	Zero Price Setting	Reset all prices - Exit Service Mode
31	Zero Coin Count Value	Reset Coin Count Value - Exit Service Mode
32	Zero Control Word	Reset Control Word Value - Exit Service Mode
33*	Zero Coin Value	Reset Coin Value - Exit Service Mode
35	Incorrect Motor Version	Motor Version outside of norm. Confirm Motor Version
40	Data Corrupt Price	Reset all Prices [Fatal error] - Exit Service Mode
41	Data Corrupt Coin	Reset Coin Values [Fatal error] - Exit Service Mode
42	Data Corrupt Control	Reset Control Code [Fatal error] - Exit Service Mode
43	Data Corrupt Selection	Reset Motor selection [Fatal error] - Exit Service Mode
44	Fatal Power Up	Confirm Prices, Product codes and Coin values - Exit Service Mode
45	Power Interrupt	Possible Fraud attempt - Exit Service Mode
46	Invalid Coin Output Code	Replace/Reprogram Coin Acceptor
47*	Button Panel fault	Check all buttons are operating currently - Exit Service Mode
48	Coin Validator Error/Fault	Check operation of Coin acceptor - Exit Service Mode
49*	Coin Validator alarm	Possible fraud on Coin acceptor – Check operation of Coin Acceptor
51	Battery Low	Replace Battery - Exit Service Mode – Press any selection button 5 times
52	Coin Acceptor Rate Low	Check Coin Acceptor- Check battery - Exit Service Mode
53	Battery Dead	Replace Battery - Exit Service Mode - Press any selection button 5 times
55*	Printer Communication Error	Check Printer operation – Disconnect printer
56*	Change giver Comm's Error	Check Change giver operation
57*	Modem Communication Error	Check Modem Operation
58*	Note/Bill reader Comm's Error	Check Note/Bill reader operation
59*	Cash-Less device Comm's error	Check Cash-Less device operation
60*	External Alarm Activation	Alarm has been activated – check for machine tampering
61*	Escrow Keep Time-out	Check Escrow Unit- Activate Test Sequence – Exit Service Mode
62*	Escrow Return Time-out	Check Escrow unit- Activate Test Sequence – Exit Service Mode
70*	EEPROM Write Error	Check Prices and Coin data
71*	EEPROM Read Error	Check Prices and Coin data
99*	Machine Lock-up	Code Required-Consult Machine Supplier

Not available in SL3000

Note: * Reserved Codes – Not present in current SL3000 model

FACTORY DEFAULT SETTING

The SL3000 can be reverted back to factory defaults by the user by entering service code 6. Care must be taken while doing this as all data will be lost and will have to be entered again.

A list of factory defaults is as follows:

DATA	DEFAULT VALUE	TO CHANGE
Standard Audit Totals	0000.00	
Prices	99.99 [all selections]	Service Code PS
Coin Value Settings	As per Coin Output Map	Service Code Cn
Coin Count Value	15 [if escrow present] 99 [if no escrow present]	Service Code Cn
Credit [Display]	00.00	
Control Word	3 [excess credit cancels]	Service Code Ct
Motor Version	Version 1 [all motors]	Service Code AS
Motor Timing Value	7	Service Code AS
Motor Assignment	Selection 1 – Motor 1 etc	Service Code AS
Motor Backup	No-Individual Assignment (1)	Service Code AS

1. Press the Red Service Button to enter Application Mode — Displays Ap.-
   You are now in application mode
2. Press and hold selection 2 for seconds till — Displays set
   The machine will automatically exit from service mode and display ' Out Of Ord(e)r '

3. Press Red Service Button to re-enter Service Mode and re-configure settings.

TROUBLESHOOTING

Listed below are some of the common Faults along with their remedies. Always, if possible, perform a machine test to see if a fault rectifies itself.

Motor does not work at all and - Sold Out Displays on button press	Product has Jammed - Remove any jam and enter and exit Service Mode to remove error code Connecting Cable has dislodged - Ensure all cable are inserted correctly Price setting set to zero - Reset prices for desired selection Selection button assigned to wrong motor - Reset Selection Assignment Machine Has experienced a ' Fatal Error ' - Enter Service Mode to view error and remedy accordingly
- Display shows Vend Price on selection press - Column empty switch - Display shows '- - . - - ' Temporarily - No change in Display occurs on selection press	Inserted credit is outside of the boundary of the control word setting - Inserted Credit below the vend price - Confirm and reset 'Control Word' Power not being supplied to motor - Check that all cables are inserted correctly - Replace Motor/or connecting cable Problem with Selection Panel Button - Ensure that all cables are inserted correctly - Replace Selection Panel
The Incorrect Motor Spins on selection press	Motor back up in operation - Reset Motor back up
The Machine will not vend but displays --.—on the Display on button press	Power not been applied to motor-error with dispensing motor - Replace motor

	- Replace cabling
The Display is illegible	Machine entered a 'loop' state - Reset control board by pressing Black Reset Button
The Machine will not power up and the display is blank	Machine entered a loop state - Reset Control Board by pressing Black Reset Button Power lost to machine - Confirm that power is going to machine HOW ? - Check to see if AC/DC adapter is warm. If its cold then this would indicate that power is not going to the machine - Check that Fuse on Circuit Board is not Blown - Check that all connectors are fully in place Battery is completely dead - Replace Battery and depress the Black ' Reset' Button Power is not applied to circuitry - Replace Control Board
Pressing a selection button gets no reaction of the display [either the price or sold out]	Loose connection - Check that all connectors from the panel are plugged in correctly at both the panel end and the circuit board Button panel is faulty - Replace panel
An inserted coin is continually rejected	The machine entered a "Loop" state - Reset Control Board by pressing Black reset Button A fatal error has occurred - Enter Service Mode to view error and remedy accordingly Coin Mechanism is blocked or dirty - Remove Power and clean Acceptor - Replace Acceptor if necessary Coin Mechanism connection lead is disconnected The coin inserted is not valid coin accepted by acceptor The coin acceptor inhibit function is incorrectly set
An inserted coin is accepted but gives no credit or incorrect credit	An incorrect coin value setting has been entered - Reset Coin Value setting HOW ? - Press Red Service Button till Cn.- - - Reset coin values The Machine entered a 'Loop' state - Reset Control Board by pressing Black Reset Button
The Display counts up credit or does not cancel a credit	Credit may have remained after a vend - Press Black [Reset] Button to Clear Credit - Confirm that proper Control Word has been set Coin Validator Connector inserted in-correctly - Check Connector
During price setting machine does not hold credit but returns to 2-.- -	Machine set to test mode - Change control word
Credit cancels and/or escrow opens after a certain number of coins have been inserted	An incorrect coin count value has been set - Reset coin count value to a higher setting Machine assumes an escrow is present and over-loaded with coins - Confirm that correct 'Control Word' is set for the machine

An incorrect set-up was performed and now the user is confused and frustrated I have tried all of the above. I still cannot get the machine to work as desired.	- Do not panic - Activate the default settings on the machine HOW? Press the red Service Button till AP - - - Hold down Button 2 till [set] appears - Press the Black Reset Button [out of ordr] - Activate the Test Sequence - Test Operation in test vend mode