Eurocoin Technical Support Document

Product Description
MEI Cashflow 1xx

Original Manufacturer	Eurocoin Part Number	Current Revision	Date of Release
MEI	2587xxxx	G2	Feb 98

Document Content Summary
Design Guide: Product Range, Product Operation, Interfaces, Mechanical Drawings, Routing Configuration.

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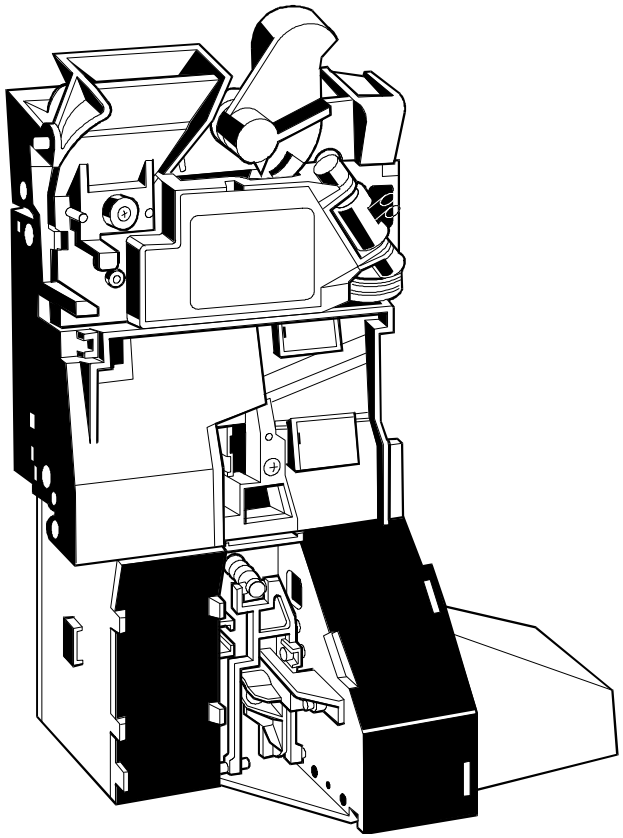
The

CASHFLOW® 126 AND 129

4-WAY AND 8-WAY SELECTORS

DESIGN GUIDE



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CashFlow® 126 and CashFlow® 129 selectors Design Guide

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SAFETY

Warning
Before cleaning, servicing, removing or replacing CashFlow® units, **ALWAYS SWITCH OFF** or **ISOLATE** the **ELECTRICITY SUPPLY** to the machine.

Caution
This guide is for use only by personnel trained to carry out electrical installation.

Dangerous Environments
Do not operate the unit in the presence of flammable gasses or fumes, or after the entry of fluid into the machine.

Disposal of Product
If necessary, always dispose of defective units according to local regulations.

Conformance to International Standards
When installed and operated according to the instructions provided for the particular unit, CashFlow® products meet the applicable national and international safety standards for any country in which they are used.

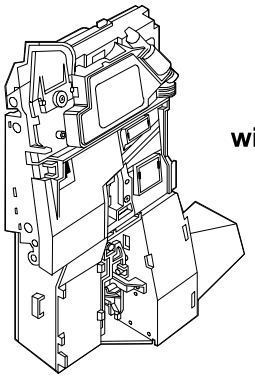
Safety
All electrical connections to the product must be rated according to the requirements for “Accessible SELV” circuits as defined in EN60335-1. The product is therefore suitable for use in a class 2 (non-earthed or non-grounded) appliance.
Over current protection is not included in the product and should be provided as part of the machine. The recommended fuse value at the rated supply of 12V is:

3A Slow blow (to EN60127)

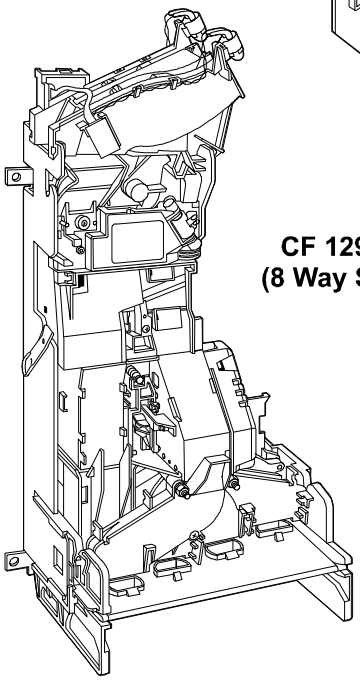
Other protection methods may be used providing their over current characteristics remain within the overall operating characteristics of the above fuse.

PRODUCT RANGE

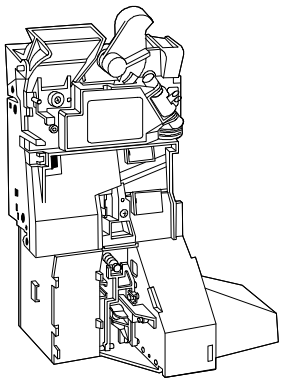
Mars Electronics International (MEI) manufactures coin mechanisms compatible with gaming and amusement machines. The functionality of the range has been enhanced to match market needs while maintaining mechanical compatibility. The product detailed in this book are the CashFlow® 126 and 129 series. Use the following pages to check you have the right product for your application.



CF126 Side Entry with 4 Way Separator



CF 129 System (8 Way Separation)

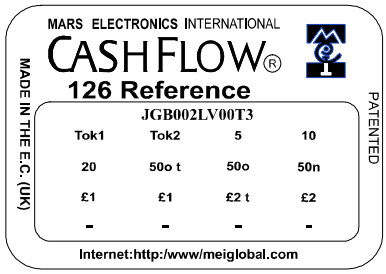


CF126 Top Entry With 4 Way Separator

PRODUCT IDENTIFICATION

Each CashFlow® 126 and CashFlow® 129 variant is identified with the use of a profile number. This consists of a twelve digit alphanumeric number located on the validator coinset label.

For example: J GB 002 L V 00 T 3 represents a CashFlow® 126 4 way separation system for Great Britain, which is programmed with coinset number 002 and also accepts tokens.

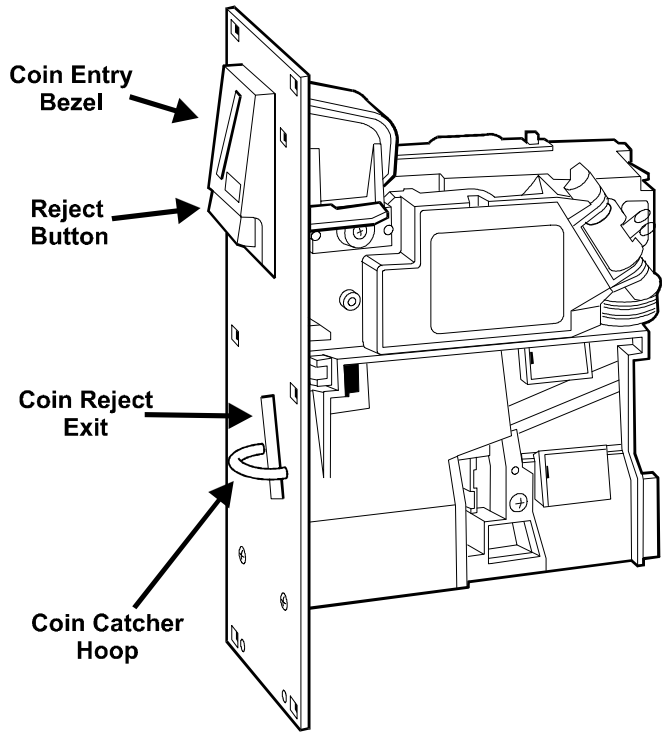


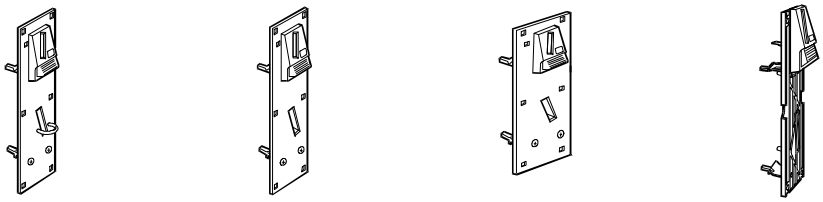
Typical GB coin set label

Digit	Description	Available Options
1	Product Code	J = CF126 S = CF129
2 & 3	Country Code	For example; GB = Britain, DE = Germany, IT = Italy, ZA = South Africa
4,5 & 6	Coinset Number	001 to 999
7	Operating Voltage	L = 12v DC
8	Mechanical Variant	L = CF126 4 Way Separator, Side Entry “A” Reject Cover N = CF126 4 Way Separator, Side Entry “C” Reject Cover V = CF126 4 Way Separator, Top Entry “B” Reject Cover G = CF126 4 Way Separator, Top Entry “B” Reject Cover, Single Coin Entry Bezel & Guide Plate H = CF126 4 Way Separator, Top Entry “B” Reject Cover, Dual Coin/Token Entry Bezel & Guide Plate P = CF129 8 Way Separator, Top Entry “B” Reject Cover, Single Coin Entry Bezel & Guide Plate R = CF129 8 Way Separator, Top Entry “B” Reject Cover, Dual Coin / Token Entry Bezel & Guide Plate
9 & 10	Factory Set Software options	00 to 99 (contact MEI for more information)
11	Tokens Programmed	0 = No T = Yes
12	MEI CashFlow® Series	3 = CashFlow® Product Series

More information is available on the 3 type of reject cover (A, B and C) in Product Options; Reject Covers.

PRODUCT OPTIONS; FRONT PLATES





7802

This model has a brushed stainless steel front plate suitable for external surface mounting.
It is supplied complete with a coin catcher hoop, a coin entry bezel and a coin mechanism mounting plate assembly.

7804

This front plate is of mild steel painted black and is a standard assembly suitable for internal mounting.
It is not supplied with a coin catcher hoop but if required it can be ordered using Pt. No. 28-13-0136.

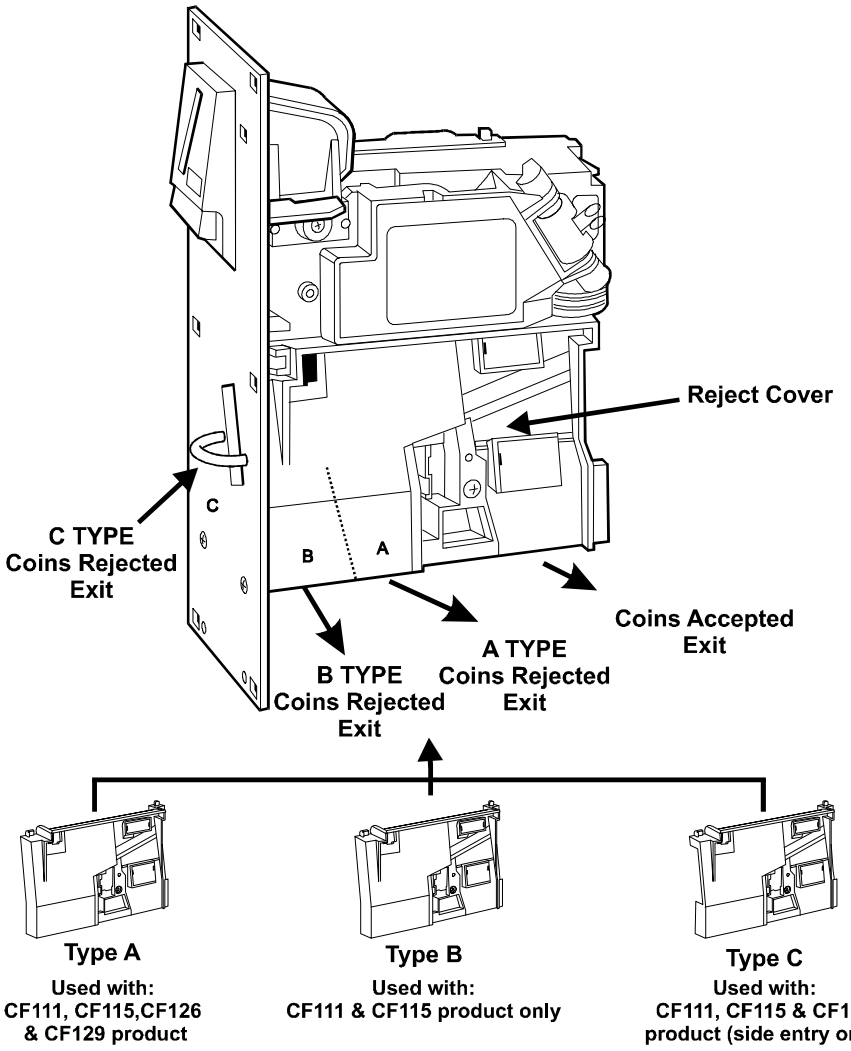
7805

This model consists of the same parts as the 7804 except that the black mild steel front plate is wider and slightly shorter.

7819

This is the basic coin mechanism mounting plate assembly made from clear polycarbonate and is supplied with the standard coin entry bezel assembly.

PRODUCT OPTIONS; REJECT COVERS



Type A

Used with:
CF111, CF115,CF126 & CF129 product

This type of reject cover is used on validators which are fitted with separators.
Accepted coins are routed to the right and down.
Rejected coins are routed to the bottom centre of the reject cover.

Type B

Used with:
CF111 & CF115 product only

This type of reject cover is used on validators which are fitted to small channels.
Accepted coins are routed to the right and down.
Rejected coins are routed to the bottom left of the reject cover.

Type C

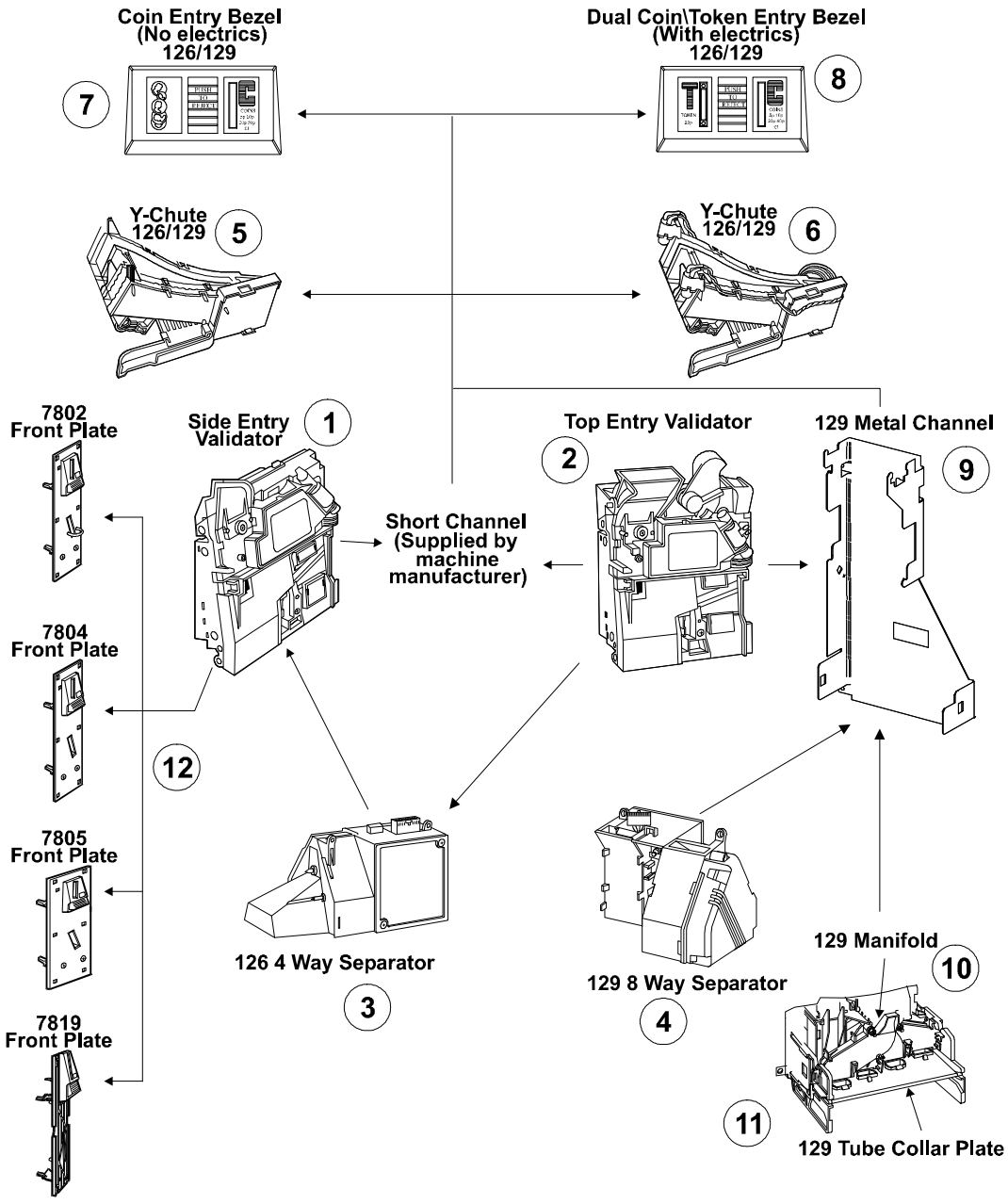
Used with:
CF111, CF115 & CF126 product (side entry only)

This type of reject cover is used on validators which are fitted to front plates.
Accepted coins are routed to the right and down.
Rejected coins are routed to the left-hand side of the reject cover.

PRODUCT BUILD OPTIONS

Each product variant is made from the following module parts

CashFlow® 126 Side Entry System	1 + 3 + 12
CashFlow® 126 Top Entry System	2 + 3 & 5 + 7 or 6 + 8
CashFlow® 129 System	2 + 4 + 9 + 10 + 11 & 6 + 8 or 5 + 7



DESCRIPTION & OPERATION

Introduction
This section describes the CashFlow® 126 with a 4 way separator and the CashFlow® 129 with an 8 way separator system.

Description
The CashFlow® 126 and 129 system range of products are electronic coin and token handling systems for use in gaming and amusement machines. The CashFlow® 126 can validate up to 14 coins coins and 2 tokens. The 126 product can separate the accepted coins into 4 ways and the 129 product 8 ways.

Operation
Coin validation parameters are factory programmed for optimum acceptance of up to 14 coins and 2 tokens When a coin or token is inserted the validator senses a range of parameters to see if it recognises the coin/token as part of its pre-programmed set.

If variations are required to the programmed coin set please refer to the CashFlow® 126 and 129 Operators Handbook for details.

NOTE: In the table below the features of the CF126 Token product are shown separartely from the CF126. In reality this is one CF126 product, but are shown here to indicate the availability of profile options, particularly regarding dual and single coin entry.

Product Features

STD = Available as Standard Feature
N/A = Not Applicable
OPT = Optional

Features	CF129	CF126Tkn	CF126
Number of Active Coins	Up to 16	Up to 16	Up to 16
Number of Active Tokens	2	2	2
Number of Pre-programmed Tokens	Up to 16	Up to 16	0
Operating Voltage	12V D.C.	12V D.C.	12V D.C.
Number of Coin Outputs (Parallel mode)	6	6	6
Individual Electronic Coin Inhibits	6	6	6
Parallel Interface (Industry standard)	STD	STD	STD
Binary Coded Output B.C.O (BACTA Standard)	STD	STD	STD
Auto Mode (Parallel / B.C.O. Interface)	STD	STD	STD
4 Way Separator	N/A	STD	STD
8 Way Separator	STD	N/A	N/A
Token Teaching	STD	STD	STD
Token Group Select	STD	STD	N/A
LED Diagnostics	STD	STD	STD
Default Route (Programmable)	STD	STD	STD
Routing Plug	STD	STD	STD
Alarm Output Feature	STD	STD	STD
Side Entry	N/A	OPT	OPT
Top Entry	STD	STD	STD
Coin Only Entry Bezel	OPT	OPT	STD
Dual Coin/Token Entry Bezel	OPT	STD	OPT
Long Channel Mounted	STD	N/A	N/A
Manifold	STD	N/A	N/A
Tube Collar	STD	N/A	N/A
Coinless Programming	STD	STD	STD
Market Application	AWP	AWP/SWP	AWP/SWP

PRODUCT OPERATION

Accepted Coins

If a coin or token is recognised by the validator the accept gate will then be activated and the coin/token routed along the accept path to enter the separator which consists of a number of solenoid operated gates to route the coin/token to a pre-programmed exit.

The CashFlow® validator has the capability to sense the direction of a coin. An alarm output will be given if a coin does not follow the correct validation sequence.

Inhibited Coins

Acceptance of one or more coin types can be inhibited, causing them to be rejected. This can be done by using the coin inhibit lines of the validator machine interface connector 1 or by programming the validator to reject specific coin types.

Rejected Coins

The validator will reject any coin/token that does not match pre-programmed limits, or, if no power is supplied to the validator, the accept gate will remain closed and the coin will be routed via the reject route.

If a coin or token jams at the entry point, it can be freed by opening the validator reject flap which releases the coin to the reject path. Side entry mechanisms fitted to the front plates have an in built reject button that opens the validator reject flap when pressed.

The host machine is required to provide a suitable mounting facility for top entry versions.

Signals to and from the machine

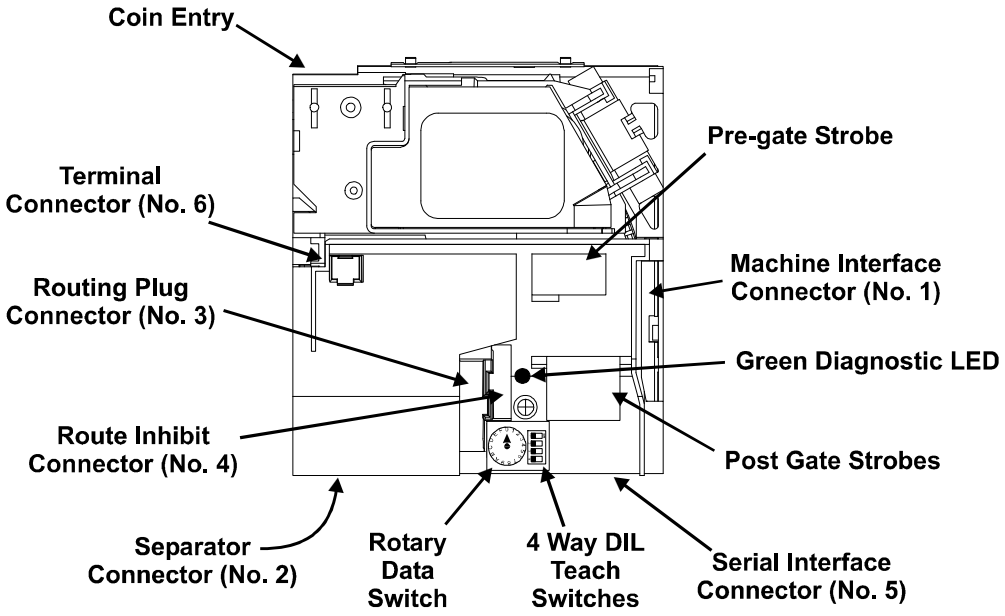
Communication between the validator and the machine is made through the validator machine interface and the Y-chute interface connector (dual coin/token entry version only).

Once through the validator, the value of the accepted coin is signalled directly to the machine using the appropriate coin output line (or lines in BCO mode).

Multi-Pulse

Factory set option designed for backward compatibility gives a GB 50p coin output (on a GB profile) four times on validation of a GB £2 coin Only in parallel output mode.

PRODUCT OPERATION, ELECTRICAL.



Validator Connector 1, Machine Interface

The interface to the machine is provided by Connector 1 of the validator. The functions provided are: Coin outputs A, B, C, D, E, F. The unit will operate in one of three Coin Output modes:

Fixed Parallel.
Fixed Binary Coded Output (BCO).
Automatic - Selects BCO or Parallel Interfaces.

More detail on these modes are given later.

Validator Connector (2), CF126 / 129 Separator

This connector is used to connect the validator to the separator. No customer connections are available on this port. ME Series, Active 126 and high security separators are not compatible with this interface and must not be connected, otherwise damage to the validator may result.

Validator Connector (3), Routing Plug

This connector is used by the customer to control the separator. Once it is fitted to the product all factory set routing will be overridden and all routing will be controlled by the routing plug. The extra two pins on this routing plug allow for additional coin positions, G and H, to be accommodated.

Validator Connector (4), Dynamic Route Inhibit

This is a 9 pin connector which is an input from the machine to the validator and its function is to divert coin routing. When a specific exit is full with coins, the host machine sends a signal to the validator which will direct future coins to an overflow route.

Validator Connector (5), Serial Port (Future use only)
This 10 pin connector, accessible from the bottom of the validator, provides for a potential serial communication to a service tool. At present this connector serves no function.
Customers ***should not connect anything*** to this connector.

Validator Connector (6), (Future use only)
A 6-way connector used for a Mars® Route Alpha hand held service tool. At present this connector serves no function.
Customers ***should not connect anything*** to this connector.

Rotary Data and 4 Way DIL Teach Switches
In place of the option links used on an ME126 and ME129 a rotary data switch and a 4-way DIL switch have been provided. These are accessible through the opening in the reject cover.

The rotary data switch will enable data input to the teach functions i.e. Token Selection.

The 4-way DIL switch can be used to enable or disable the alarm by using switch 1 of the DIL switch or various teach functions which are accessed via switches 2, 3 & 4.

Diagnostic LED
The LED displays a sequence of flash codes to indicate the current operation of the validator, and can be used for fault diagnosis when inserting coin or when teaching functions as shown below.

Flash Code Sequence:

Constantly ON	Validator power on
1 Flash	Coin accepted / Reject lever pressed
2 Flashes	Coin not recognised and rejected
3 Flashes	Coin rejected by validator 4th sensor
4 Flashes	Coin recognised but not accepted due to inhibit setting

Pre-Gate Strobes
This is an integral part of the validator which detects obstructions around the accept gate. If an obstruction is detected then coin acceptance is inhibited.

Post-Gate Strobes
The strobes are used for added security to the validator. These detect coins which enter the validator using the wrong direction e.g. from the bottom of the validator upwards. If this movement is detected the alarm will sound.

PRODUCT CONFIGURATION

Using the Rotary Data Switch and the 4-Way DIL Switches the product can be re-configured.
Further details regarding the settings shown below can be obtained from the CashFlow® 126 and 129 Operators Handbook.

4-Way DIL Switches				Configuration Mode Selected	Rotary Switch position/s required
1	2	3	4		
OFF	X	X	X	Alarm Dis-abled	X
ON	X	X	X	Alarm Enabled	X
X	OFF	OFF	ON	Default Overflow Route	0 - 7
X				Machine Interface Type	C - F
X	OFF	ON	OFF	Inhibit Coin/Token Teach	0 - F
X	ON	OFF	OFF	Enable Coin/Token Teach	0 - F
X	OFF	ON	ON	Token Group Select for Channel 0	0 - D
X				Self Teach a Token into Channel 0	E - F
X	ON	ON	OFF	Token Group Select for Channel 1	0 - D
X				Self Teach a Token into Channel 1	E - F
X	ON	OFF	ON	Discriminator Node ID Select	0 - 6
X				Fraud Defence Teach to Channel 0	E - F
X	ON	ON	ON	Normal Operation	X
X	OFF	OFF	OFF	Normal Operation	X

To commence any changes firstly the power should be removed, the required settings made on the rotary switch, the DIL switch settings are set and then the unit is powered up again. At this point the LED will start flashing. Returning the DIL switches to either all OFF or all ON will commit the changes to non-volatile memory.
Tests should then be conducted to confirm that the changes are satisfactory, including the relevant flash sequences of the LED, as described later.

If a teach mode is entered inadvertently then either switch off power or just leave for 30 seconds (when the LED will stop flashing), otherwise a teach function may be set that was not intended.

PRODUCT INTERFACES

Introduction

The standard interfaces available on CashFlow® 126/129 validators are Parallel and Binary Coded Output (B.C.O.). The validator is supplied in Automatic Mode which senses the type of interface selected by the host machine via pin 8 (Output Mode Select) of the machine interface connector. The product can be taught to ignore the state of this line by changing the machine interface type as above.

Parallel Mode

This type of interface is a standard 6 coin parallel output interface as used in the ME126/129 (Dual Polarity).

For a GB profile the coin outputs are activated as follows:

Coin Output							
Alarm O/P	Coins	A	B	C	D	E	F
	5p	3					
	Token		3				
	10p			3			
	20p				3		
	50p (Old)					3	
	50p (New)					3	
	£1 (1983)						3
	£2					Multi Pulse (4 pulses)	
Enabled Outputs		3	3	3	3	3	3

The coin outputs for A and C can be combined (e.g. A + C, B, D, E, F) to give compatibility with 5 coin ME126B1 validators. This option is set by programming the validator. The coin outputs are factory defined but can be modified via an MEI service tool, e.g. Mars® Service Alpha.

If an alarm condition occurs all coin outputs will be activated simultaneously for >600ms.

Multi-Pulse

This will only operate when in parallel mode. This factory set option will pulse the GB 50p coin output (of a GB profile) four times on validation of a GB £2 coin. This option can be disabled using the Service Alpha.

Coin validation Inhibits A, B, C, D, E, F
To inhibit coin acceptance the CashFlow® validator offers six individual inhibit inputs.

These inhibits operate for each mode as detailed in the following text.

Parallel Output mode inhibits
The channels that activate the associated coin output will be inhibited when the inhibit is held High, (e.g. Inhibit A will inhibit coin output A channels).

The default settings for the GB profiles are:

Inhibit Line	Coins Inhibited
A	5p
B	Token
C	10p
D	20p
E	50p old & new £2
F	£1

Coin Output Common Line
This line allows for operation with positive or negative common systems. The interface self-configures by sensing the output common voltage supplied by the machine on the coin output common line, (pin 2 for a 15 way machine interface connector, or pin 3 for a 17 way connector).

All potentials are relative to the 0 volt return line to the machine. pin 11 for a 15 way connector and pin 12 for a 17 way machine interface connector. Negative common operation is selected when pin 2 output common is 0 volts or negative with respect to pin 11.

Positive common is selected when pin 2 is more positive than +7 volts with respect to pin 11.

Binary Coded Output (BCO)
Defined by the validator coin output map. When in BCO mode coin output A is permanently set active to indicate that the BCO feature is available.

Coin output A will have a high impedance (approx. 1M Ohm to 0v) if coin output common is allowed to float. If an alarm condition occurs coin outputs B, D, E and F will be activated.

Coin Output							
Enabled Outputs	Coins	A	B	C	D	E	F
	5p	1	0	1	0	0	0
	10p	1	1	1	1	0	0
	20p	1	0	1	0	1	1
	50p (Old)	1	1	1	0	0	1
	50p (New)	1	0	1	1	0	1
	£1 (1983)	1	1	1	0	1	0
	£2	1	1	1	1	1	1
	Token	1	0	1	1	1	0
Alarm Output		1	1	0	1	1	**1**

Coin Validation Inhibits A, B, C, D, E, F
To inhibit coin acceptance the CashFlow® validator offers six individual inhibit inputs.

These inhibits operate for each mode as detailed in the following text.

Binary Coded Output Mode Inhibits

The channels inhibited, for a given inhibit line going high are factory set by the validators coin inhibit map option. When inhibit (A to F) is active, then coins for the channels specified in the map will be inhibited. The default settings for the GB profile are:

Inhibit Line	Coins inhibited
A	£2
B	Token
C	Reserved
D	20p
E	5p, 10p, 50p old & new
F	£1

Automatic Mode - Parallel or BCO Selection

In this mode the status of the output mode input (on pin 8 of the 17 way connector, or pin 7 for the 15 -way connector of the machine interface) selects either the parallel or the binary coded output interface standards.

A logic high signal to this pin will select parallel mode, setting pin 8 to a logic low will select BCO mode. If there is no connection made to pin 8 the interface will default to parallel mode.

ELECTRICAL INTERFACES

Introduction

This section gives the pin assignments for all connector interfaces used on the CashFlow® validators and it also includes timing diagrams of the signals appearing on the input and output lines.

Connector 1, Machine Interface.

The interface to the validator from the machine is exactly the same as those which apply to the MS/ME series validators, with the exception of pin 8 of the 17-way connector.

Connector 1 can accept either 15 pin or 17 pin interface connectors.

17 Way Connector	15 Way Connector	Functions (Dual Polarity)	Input or Output	PIN No.	(BACTA Standard) Function Definition
1	-	A Coin Output	O	1	Ident signal
2	1	B Coin Output	O	2	Accept Output 5
3	2	Coin Output Common	I	3	Accept Output Common
4	3	F Coin Output	O	4	Accept Output 1
5	4	Polarising Key 1	-	5	Polarising Key
6	5	E Coin Output	O	6	Accept Output 2
7	6	D Coin Output	O	7	Accept Output 3
8	7	Output Mode Select	I	8	Select Line
9	8	C Coin Output	O	9	Accept Output 4
10	9	C Coin Inhibit	I	10	Inhibit 4
11	10	+12V Supply	I	11	+12V Supply
12	11	0V Supply	I	12	0V Supply
13	12	D Coin Inhibit	I	13	Inhibit 3
14	13	E Coin Inhibit	I	14	Inhibit 2
15	14	F Coin Inhibit	I	15	Inhibit 1
16	15	B Coin Inhibit	I	16	Inhibit 5
17	-	A Coin Inhibit	I	17	Inhibit 6

Connector types used:- 15 Way Molex SIL 6471 or 17 Way Molex SIL 6471.

Separator Connector (2)
This connector is used for connection to the CashFlow® 126 4 way or CashFlow® 129 8 way separators only.

Function	Pin No.	Pin No.	Function
Solenoid 3	1	2	Solenoid 1
Unused	3	4	+12V
Unused	5	6	Solenoid 2
Unused	7	8	Unused
Data	9	10	Ground
Busy	11	12	Ground
Reset	13	14	Ground
Unused	15	16	Ground
V Reference	17	18	+ 5V
+ 12V	19	20	+ 12V

Connector type used:- 20 way Molex DIL 901-42-0020.

WARNING:
Do not connect ME129, ME126 Active or ME126 Security separators to this product or damage may result.

Routing Plug Connector (3)
A 22 way connector located on the front of the validator. It is used to accept a plug containing wire links or diodes that define the routing and exit path of validated coins. The routing plug is similar to that of the ME126 Active and ME129 products, but with 2 extra pins added toaccommodate coin routing for outputs G & H.
NOTE: These outputs must not be confused with the outputs on Conn. 1.

Connector type used: Molex 22 - way DIL 90142.

NOTE: Neither the 14 nor the 18 pin routing plugs used with the MS/ME series products are compatible with the CashFlow® 126/129 products. However, it is possible for customers to source an adaptor loom, to MEI drawing no. 709856001. For detail please contact MEI Technical Support.

Function	Pin No.	Pin No.	Function
Route 7 (B)	1	2	Route 7 (B)
Route 6 (D)	3	4	Route 6 (D)
Route 5 (C)	5	6	Route 5 (C)
Route 4 (b)	7	8	Route 4 (b)
Route 3 (a)	9	10	Route 3 (a)
Route 2 (c)	11	12	Route 2 (c)
Route 1 (d)	13	14	Route 1 (d)
Coin Output A	15	16	Coin Output B
Coin Output C	17	18	Coin Output D
Coin Output E	19	20	Coin Output F
Coin Output G	21	22	Coin Output H

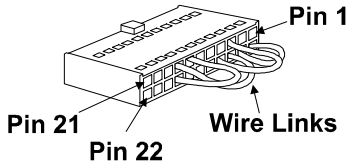
There are 7 exits (pins 1 to 14) labelled route 1 to 7, and 8 coin outputs (pins 15 to 22) labelled coin output A to H.

GB Coinset Detail

COIN OUTPUT	COIN/TOKEN VALUE
A	5P
B	TOKEN
C	10P
D	20P
E	50P old
F	1P
G	50p new
H	2P

CashFlow® 126/129 separators provide control over the exit path taken by a validated coin. This is referred to as routing and is accomplished by inserting wire links into a 22 way routing plug which is inserted into connector 3 of the validator.

22 Way Routing Plug



NOTE: Fitting a routing plug to the validator will overide all factory routing settings as long as more than one link is fitted between a coin output and data pin on this connector.

126 ROUTING PLUG PINOUTS AND FUNCTIONS				129 ROUTING PLUG PINOUTS AND FUNCTIONS				
Function	**Pin No.**	**Pin No.**	**Function**	**Function**	**Pin No.**	**Pin No.**	**Function**	
Coin H	22	21	Coin G	Coin H	22	21	Coin G	
Coin F	20	19	Coin E	Coin F	20	19	Coin E	
Coin D	18	17	Coin C	Coin D	18	17	Coin C	**Coin Exit Route Priority Order**
Coin B	16	15	Coin A	Coin B	16	15	Coin A	
(Exit 'd')	14	13	(Exit 'd')	Route 1	14	13	**Route 1**	**Highest**
(Exit 'c')	12	11	(Exit 'c')	Route 2	12	11	**Route 2**	
(Exit 'a')	10	9	(Exit 'a')	Route 3	10	9	**Route 3**	
(Exit 'b')	8	7	(Exit 'b')	Route 4	8	7	**Route 4**	
Exit C	6	5	Exit C	Route 5	6	5	**Route 5**	
Exit D	4	3	Exit D	Route 6	4	3	**Route 6**	
Exit B	2	1	Exit B	Route 7	2	1	**Route 7**	**Lowest**

Routing Plug Signals

The eight coin output signal lines, A, B, C, D, E, F, G and H correspond to up to fourteen possible coin types. The mapping of coin channels is channel set dependent. These lines signal the arrival of valid coins.

Links between the coin output signal inputs and the coin route lines specify the exit paths to be taken by the coins.

Route Input Lines - Routes 1-7

The CF129 exit routes are marked as Route (1, 2, 3, 4, 5, 6 & 7) with (8) being the default exit route, as standard.

Routes 1-7 on CF129 refer to the coin routes 1 to 7, with 1 having high priority and 7 low priority.

Routes 1-7 on CF126 refer to the 4 coin route outputs A, B, C and D as shown in the following table.

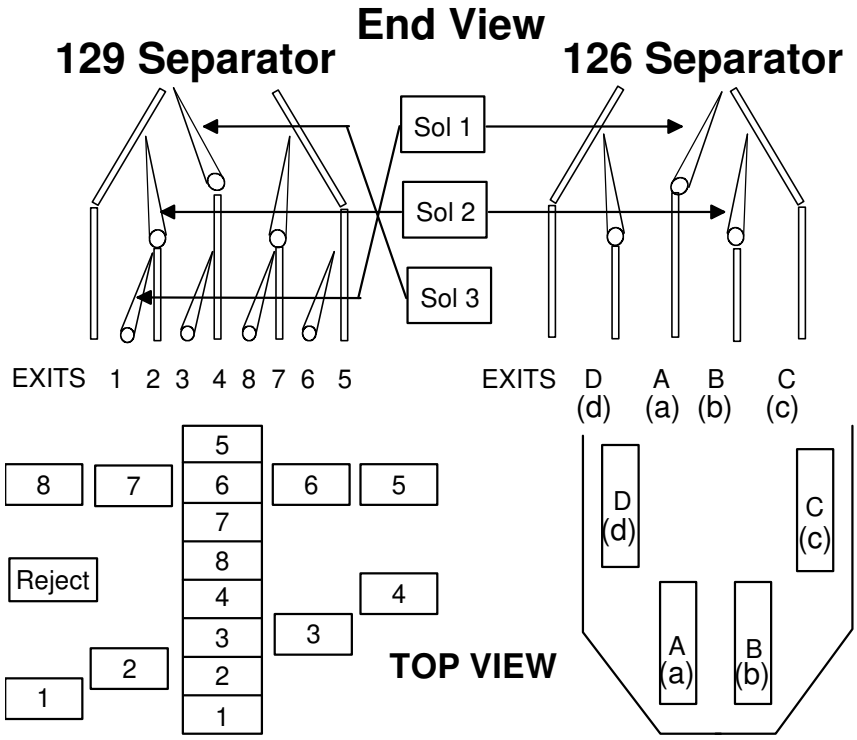
Note: (d) is the same route as D but has a higher priority.

The CF129 exit routes are marked as Route (1, 2, 3, 4, 5, 6 & 7) with (8) being the default exit route.

Solenoid 3	Solenoid 2	Solenoid 1		129 Route	126 Route
1	1	0		1	(d)
1	1	1		2	(c)
1	0	0		3	(a)
1	0	1		4	(b)
0	1	1		5	C
0	1	0		6	D
0	0	1		7	B
0	0	0		8	A

ROUTING CONFIGURATION

The CF126 exits routes are marked as (B, C & D) with (A) being the default exit route.



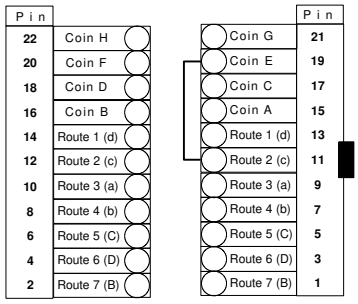
ROUTING CONFIGURATION EXAMPLES

When a routing plug is connected the routes will be set up as designated by the plug links and routing plug outputs.

Where two or more exit routes are specified for a given coin, the highest priority will be chosen by the validator unless that exit route is being inhibited by a low voltage signal on its position within the dynamic route inhibit connector.

Here are listed the three most commonly used routing plug configurations.

1. Single coin to one Exit.
2. Single coin to two Exits.
3. Two coins to the same Exit.



Routing Plug Viewed From Wire Links End

Example 1

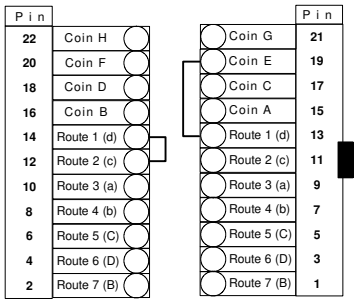
Example 1:-

This shows a single coin to one exit. In this example coin E goes to exit C by linking pin 19 to pin 11 using a wire link.

All other coins go to default route.

Example 2:-

Shows a single coin to two exits. In this example coin E goes to exit D then overflows to exit C.
By linking pin 19 to pin 13 & pin 14 to pin 12 using wire links.
All other coins go to default.

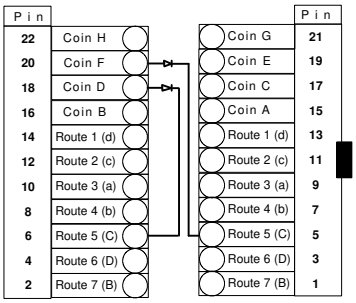


Routing Plug Viewed From Wire Links End

Example 2

Example 3:-

This shows how two coins can be routed to the same exit. In this example coins F and D both are routed to exit C. By linking pin 20 to pin 5 and pin 18 to pin 6 using diode links (the anode of the diode should be connected to the coin pin).
Where a default route is required, teaching the default route will alleviate the need to use too many diodes.



Routing Plug Viewed From Wire Links End

Example 3

Connector 4, Dynamic Route Inhibit

This direct input from the machine to the front reject cover of the validator is knows as the Dynamic Route Inhibit. The inhibit placed via this connector indicates that a specific route is full. To Inhibit a route this has to be grounded (i.e. active low to inhibit a route).

Connector type used:- 9 pin SIL - AMP 925366.

Route Inhibit Connector Pin No.	CF129 8 Way Separator Exit Route	CF126 4 Way Separator Exits	Coin Exit Priorities
1	Divert to Route 1	Exit (d) = Priority 1	HIGHEST
2	Divert to Route 2	Exit (c)= Priority 2	
3	Divert to Route 3	Exit (a) = Priority 3	
4	Divert to Route 4	Exit (b) = Priority 4	
5	Divert to Route 5	Exit C = Priority 5	
6	Divert to Route 6	Exit D = Priority 6	
7	Divert to Route 7	Exit B = Priority 7	LOWEST
8	Route 8 is the Default	Exit A is the Default	
9	Ground	Ground	

Coin Exit Priorities

If an exit is required to be inhibited, the alternative route/exit must be of a lower priority.

For example:-

If a route inhibit is applied to route 5 (for the 8 way separator or exit C for the 4 way separator)then routing can only be diverted to routes 6, 7 or 8 the default route on 8 way separators or exits D,B or A for the 4 way separator.

If route D is required to be diverted to route C on the 126 product then route 1 (d) should be used, which can then be diverted to any output.

Connector 5, Serial Interface

Provision has been made for future access to a comprehensive interface facility, but at the present time this connector serves no function.

Customers ***should not connect anything*** to this connector.

Y-chute Interface Connector

Connections to the Y-chute is made with a Molex type 6471 19-way. This connector is fitted to the dual entry (coin and token) system only. It provides an interface for the machine to inhibit acceptance of any coin/token and also gives a signal to the validator to inhibit coins during token input and to inhibit tokens during coin input.

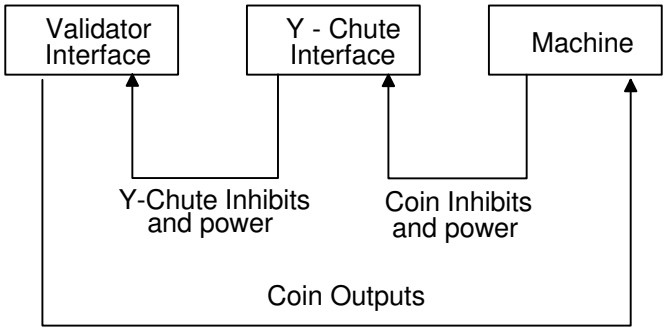
This interface is not supplied with the single entry system.

Pin No.	Function	Input / Output	Notes
1	12 Volts	Output	12 volts supply to the validator
2	Inhibit F	Output	Inhibit signals to the validator
3	Inhibit E	Output	
4	Inhibit D	Output	
5	Inhibit C	Output	
6	Polarisation	-	-
7	Inhibit B	Output	Inhibit signals to the validator
8	Not Used	-	-
9	Not Used	-	-
10	0 Volts	Output	0 volts common to the validator
11	0 Volts	Input	0 volts common input to Y-chute
12	Polarisation	-	-
13	Not Used	-	-
14	Inhibit B	Input	Inhibit signal from the machine
15	Inhibit C	Input	
16	Inhibit D	Input	
17	Inhibit E	Input	
18	Inhibit F	Input	
19	12 Volts	Input	12 volts input to the Y-chute

In dual entry systems the Y-chute forms the interface between the validator, Y-chute and the machine. The latter uses the Y-chute interface and the validator interface as its main connection points. The coin outputs are signalled from the validator interface. The coin inhibits are connected

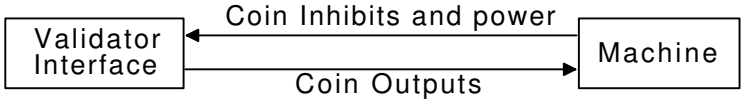
to the Y-chute interface, and the inhibit signals are fed back to the validator interface by the host machine interface wiring, as shown below.

Dual Entry System (Coin and Token)



With single entry systems the interface is between the validator and the machine only, with no electronics fitted to the Y-chute.

Single Entry System (Coin Only)

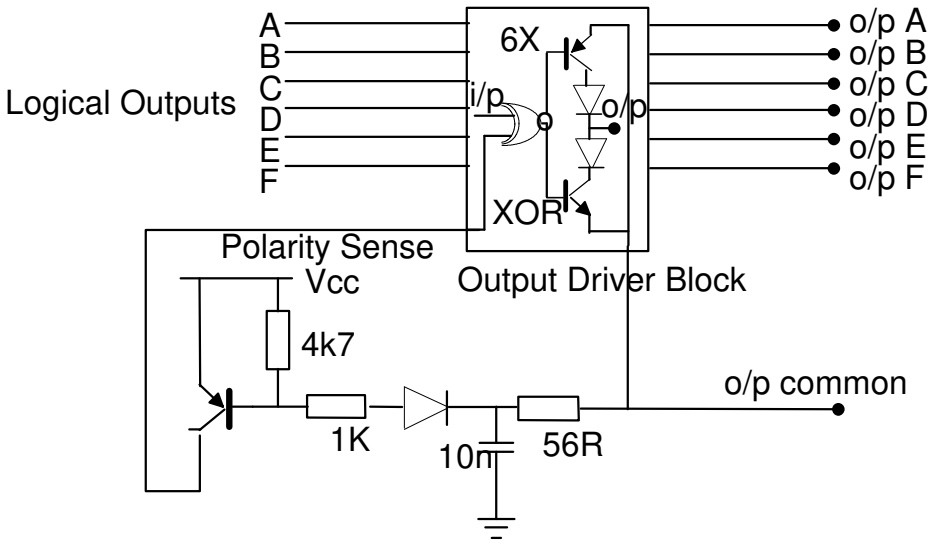


NOTE:
When an old, (pre-March 1997), Y chute is used with a BACTA standard machine interface (BCO) the mode of operation of the Y chute needs to be changed. (Consult with MEI technical support for further details).

ELECTRICAL SPECIFICATION

Voltage Range	12V (+ 3V maximum, -2V minimum)
Current Consumption;	Quiesent (Idle) - 35mA
	Coin Flight - 65 mA
	Accept Gate only - 800 mA
	2 Routing Solenoids - 2,300 mA for 320mS
	3 Routing Solenoids - 3000 mA for 320 mS

Coin Output Electrical Specification

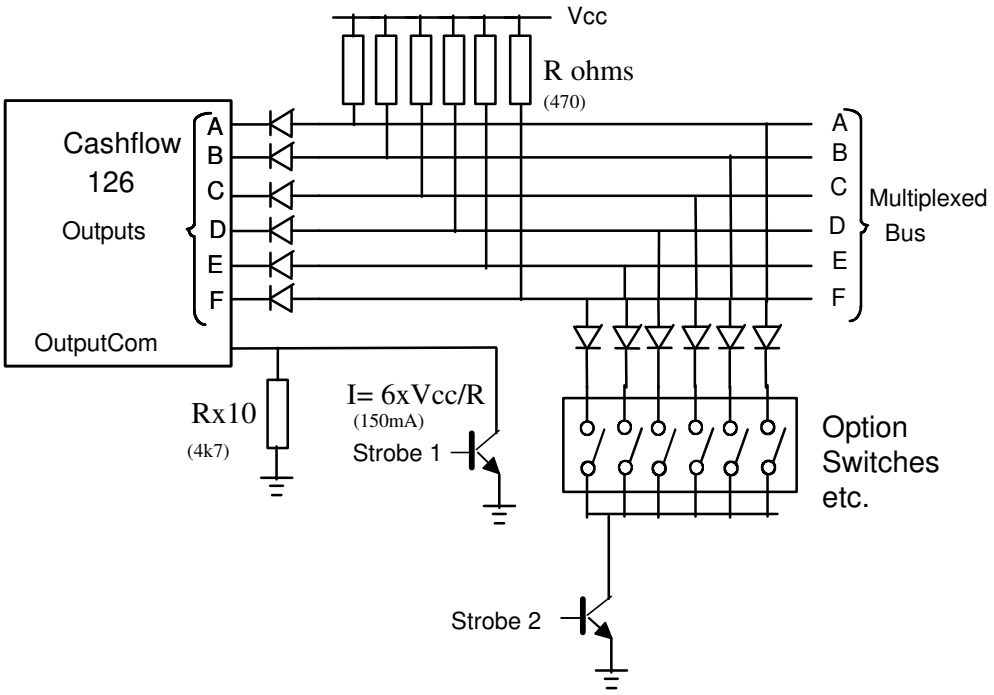


Output Circuit Block Diagram

Absolute Maximum Ratings

Output Current	(O/PA) - F)	± 30 mA
Maximum Voltage	(O/PA) - F)	± 32 V w.r.t. 0V

Output Common Specification



Sample multiplexed implementation - Negative Common Strobe

If output common (OPcom) is left floating then it is possible that the output configuration could change.

When the OPcom is redefined, then, if the output configuration has to change, then there is a maximum delay of 15us before the coin outputs will be valid. Before this time the outputs will be indeterminate.

To prevent this happening a resistor should be added to OPcom to define the level during the multiplexing off period. The value should be large enough so as not to interfere with the normal interplexing operation. In this case the maximum delay between Opcom and coin outputs is 1us.

NOTE: Should an alarm situation be detected, all outputs in parallel mode will go true. Any multiplexing device must be capable of sinking or sourcing sufficient current (i.e. 6 x single output current) to keep the output common voltage within the maximum or minimum specification for that configuration.

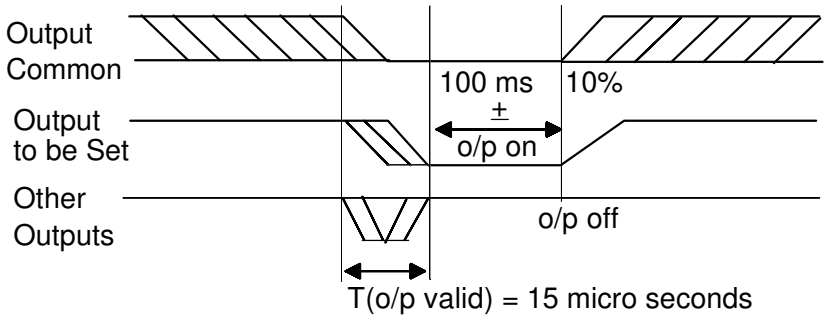
Negative Common Voltage Range
This interface is selected when pin 3 is <2.5V with respect to pin 12. (0V)

Negative Common Outputs:
On: Maximum current = 30mA

O/P saturation voltage (Coin O/P - Opcom) <1.5V

Off: 10 uA maximum at 27 volts (Coin O/P - OPcom)

Pulse Width: Switched on for between 80 and 120 ms
on acceptance of the appropriate coin.



Negative Output Common Timing Circuit

Positive Common Voltage Range

Positive Common Operation (O/P Common)

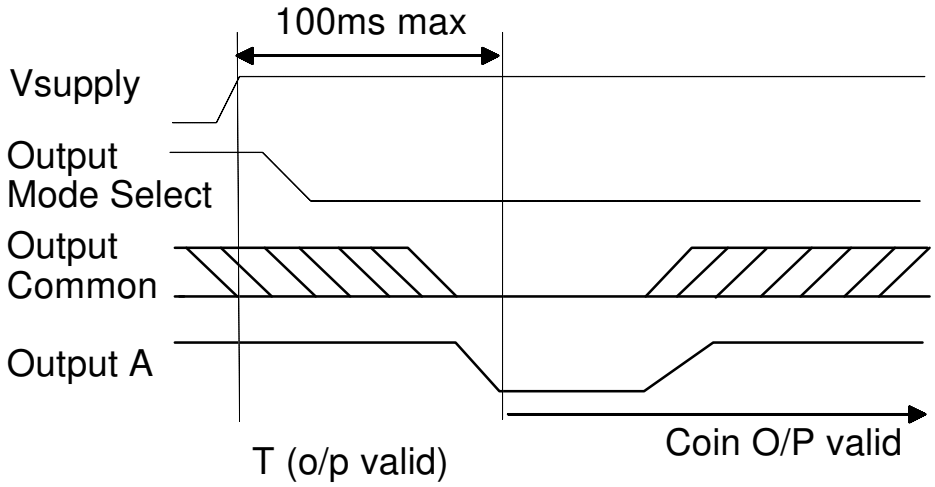
This interface is selected when pin 3 is greater than +4.5 volts with respect to pin 12. (0V)

Output Common Voltage:

+7 volts to +26 volts with respect to pin 12.

Positive Common Outputs:

On:	Maximum current = 40mA
	Saturation voltage (Opcom - Coin O/P) <1.5V
Off:	10uA maximum at +27 volts (Opcom - Coin O/P)
Pulse Width:	Switched on for between 80 and 120ms on acceptance of appropriate coin.



BCO Output Indication from "Power ON"

Binary Coded Output (BCO)

BCO mode is indicated by the A output being permanently active. This indicator can take up to 100 milliseconds to be established from power up.

In order to ensure reliable operation of the machine the state of this output should be regularly polled (as the coin validator could be reconfigured without the power being removed).

As there are often long machine interface leads involved in coin mechanism interfaces, it is recommended that the coin outputs should be de-bounced in software to reduce the effect of glitches.

Coin Inhibits

Input voltage to enable channels (logic 0)) <1.0V
Input voltage to inhibit channels (logic 1) >4.0V

Input impedance 12 Kohms to +5v.

MECHANICAL INTERFACE DRAWINGS

The following drawings are included in this section:

CF126 Front Plate Dimensions
Drawing Number 32780 Front plate mounting detail.

Drawing Number 32799 Standard front plate dimensions.

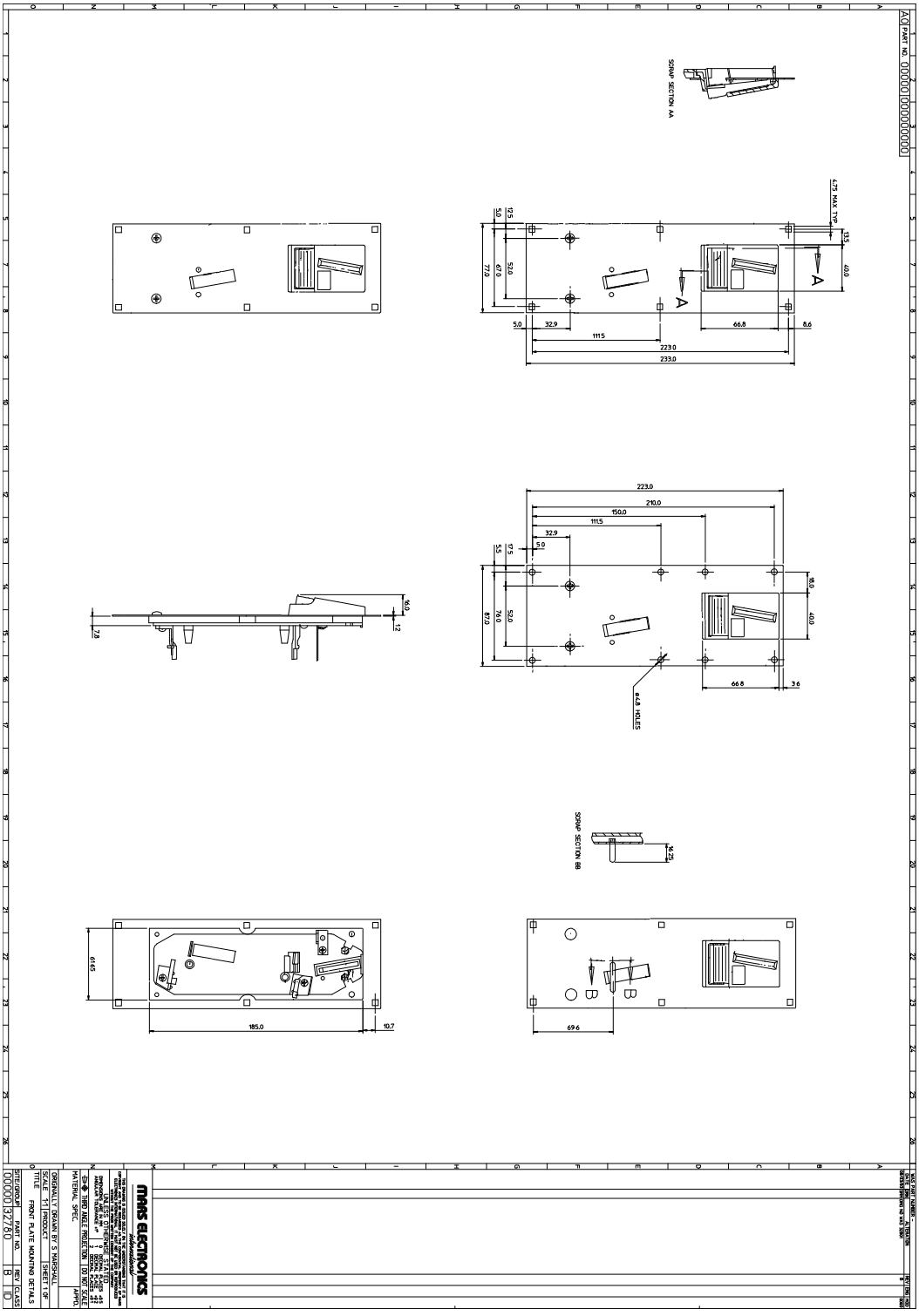
Drawing Number 35811 Side entry space envelope.

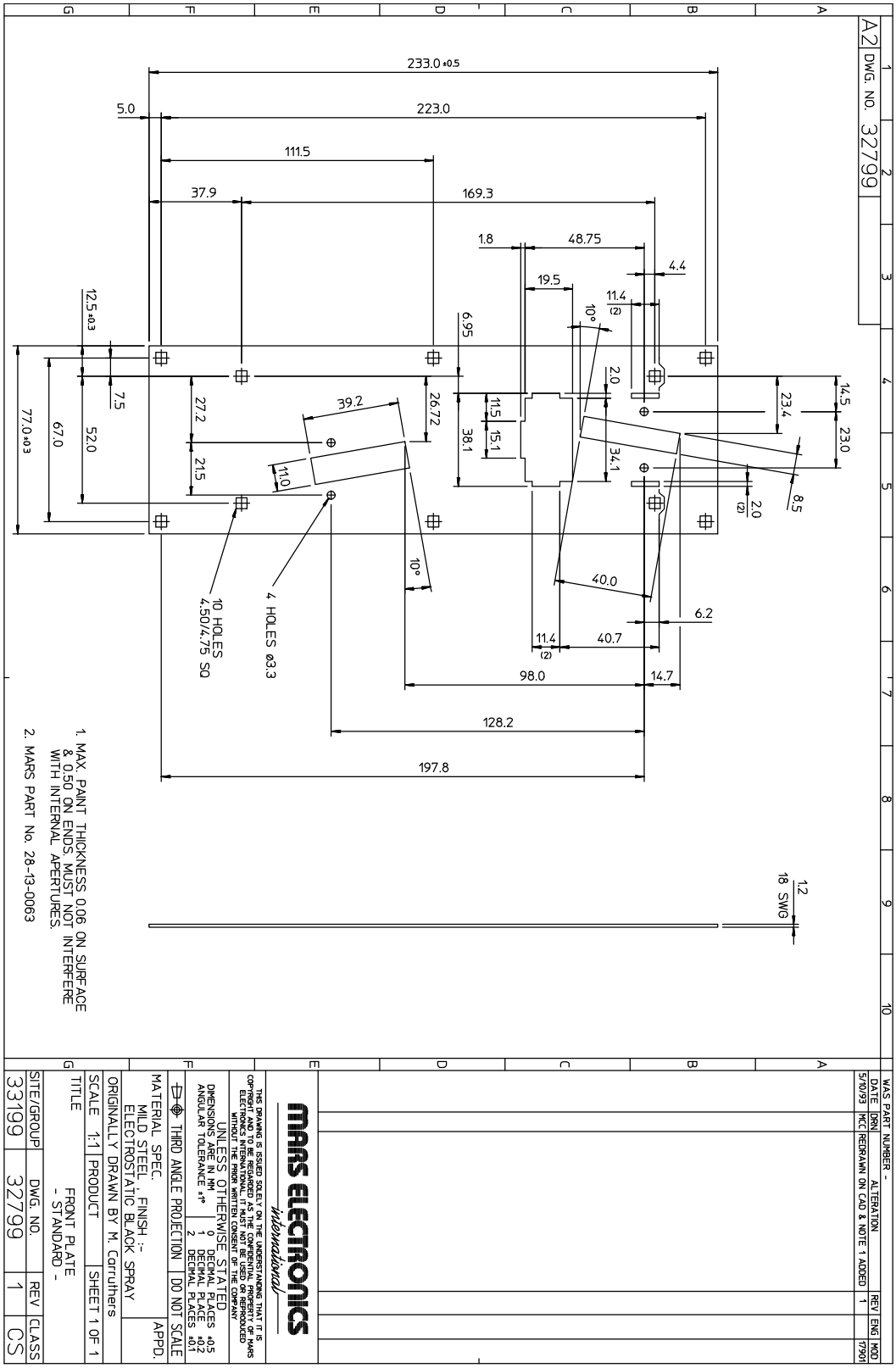
CF126 Top Entry Mounting Space Envelope
Drawing Number 35812.

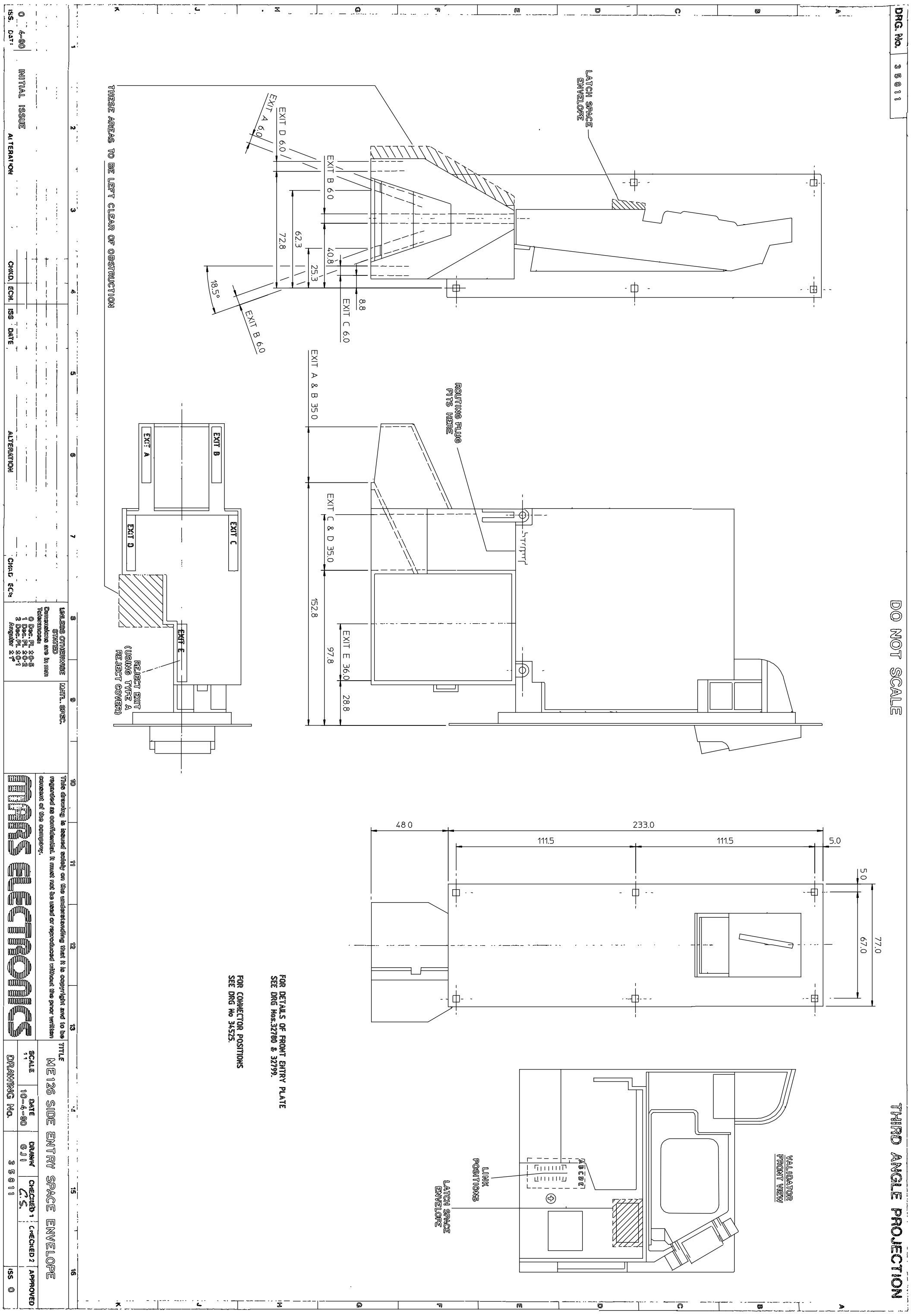
CF129 Long Channel Mounting Space Envelope
Drawing Number 35824 Long channel dimensions.

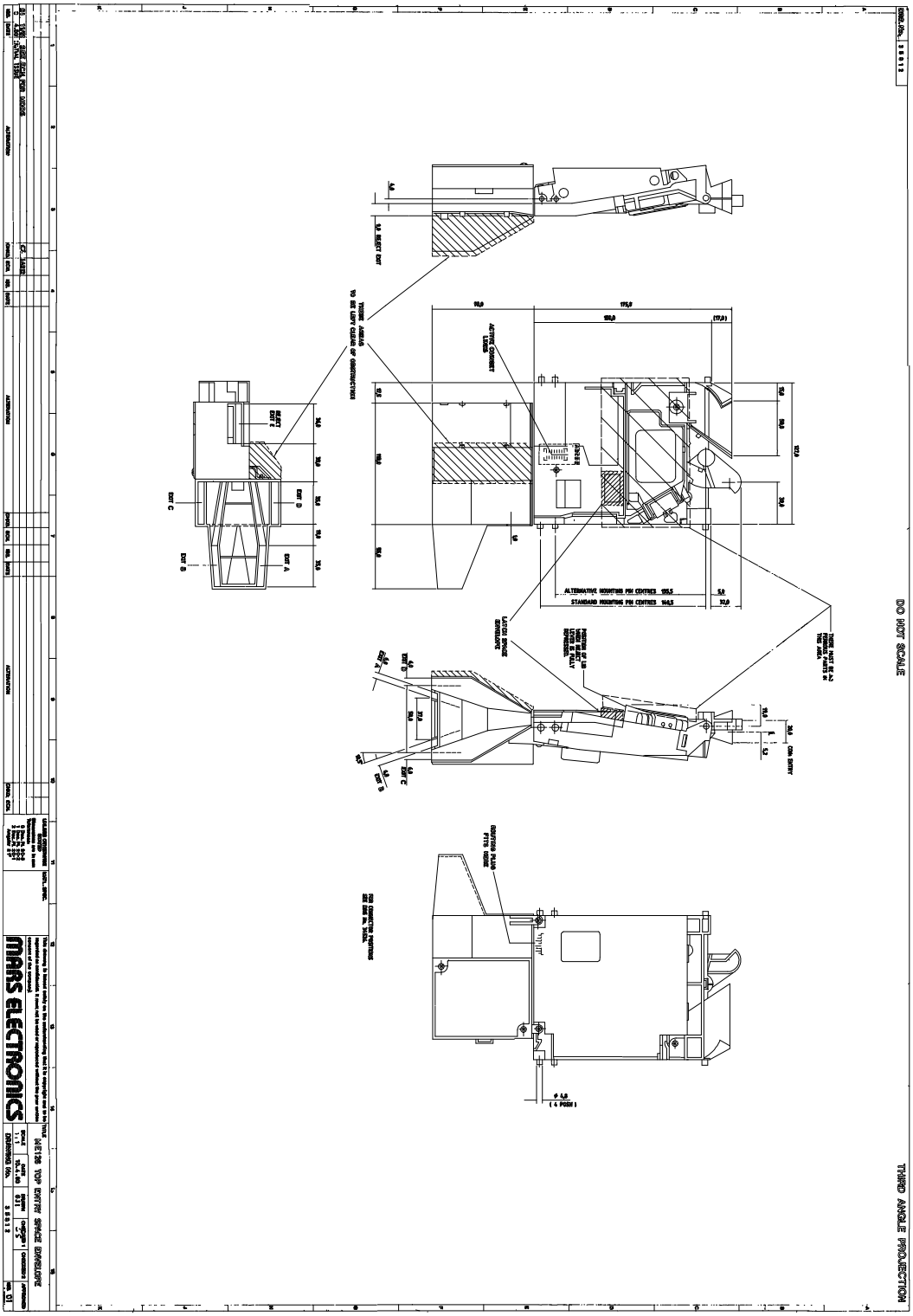
Drawing Number 35954 CF129 system installation dimensions.
(Fitted with Long manifold)

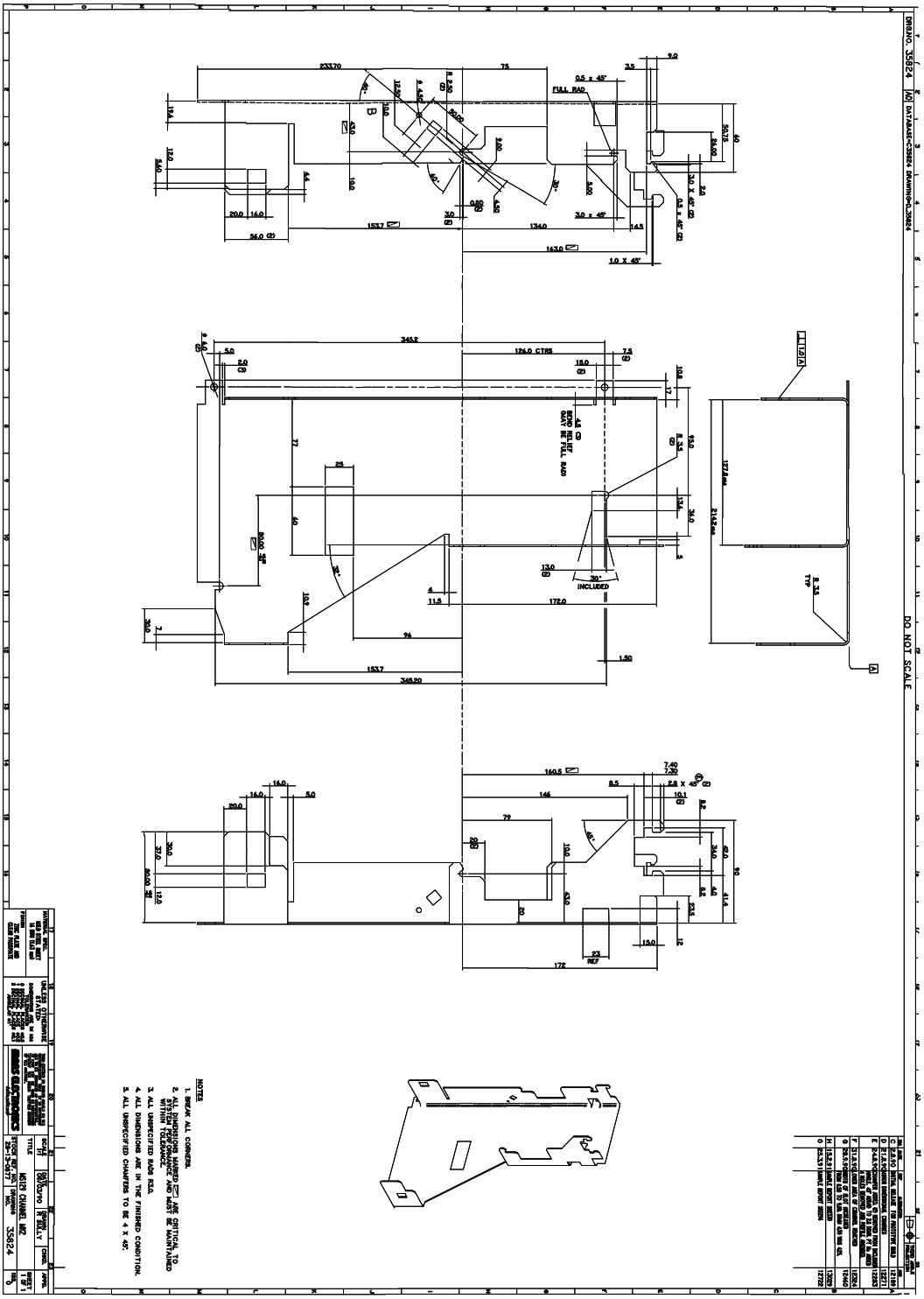
Drawing Number 35961 CF129 system installation dimensions.
(Fitted with Short manifold)

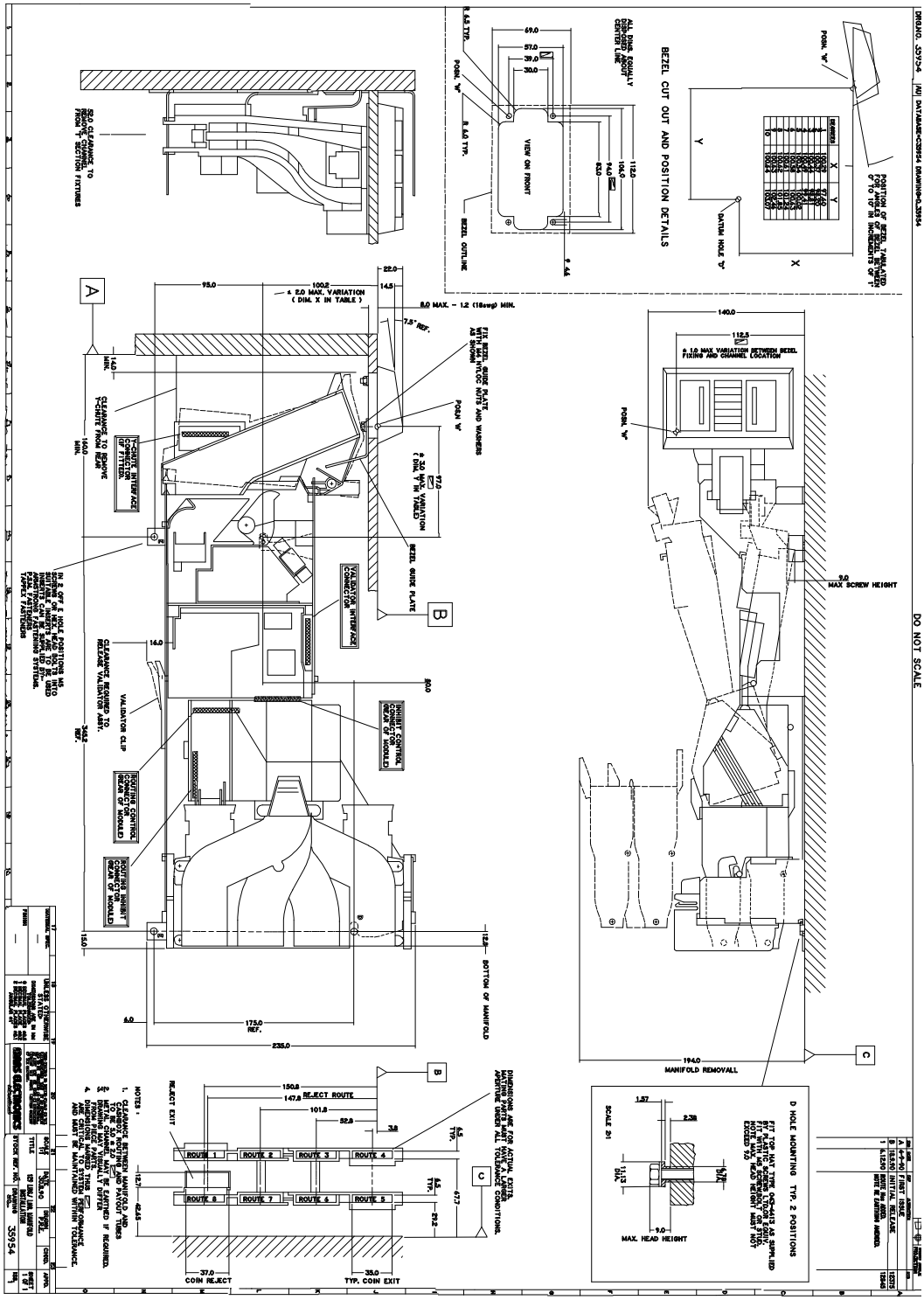

A0 PART NO. 00000 00000000
SCRAP SECTION AA
4.75 MAX THK
13.5
5.0
12.5
52.0
67.0
77.0
40.0
A
A
5.0
32.9
111.5
223.0
233.0
66.8
8.6
223.0
210.0
150.0
111.5
32.9
5.0
17.5
5.5
18.0
40.0
52.0
74.0
67.0
66.8
3.6
6x4.8 HOLES
16.0
1.2
7.8
SCRAP SECTION BB
9.25
61.95
185.0
10.7
69.6
B
B
MARS ELECTRONICS
International
ORIGINALLY DRAWN BY S MARSHALL
SCALE 1:1 PRODUCT
SHEET 1 OF
TITLE FRONT PLATE MOUNTING DETAILS
SIZE/GROUP PART NO. REV CLASS
00000 32780 B 10
MATERIAL SPEC.
APPD.
THIRD ANGLE PROJECTION DO NOT SCALE

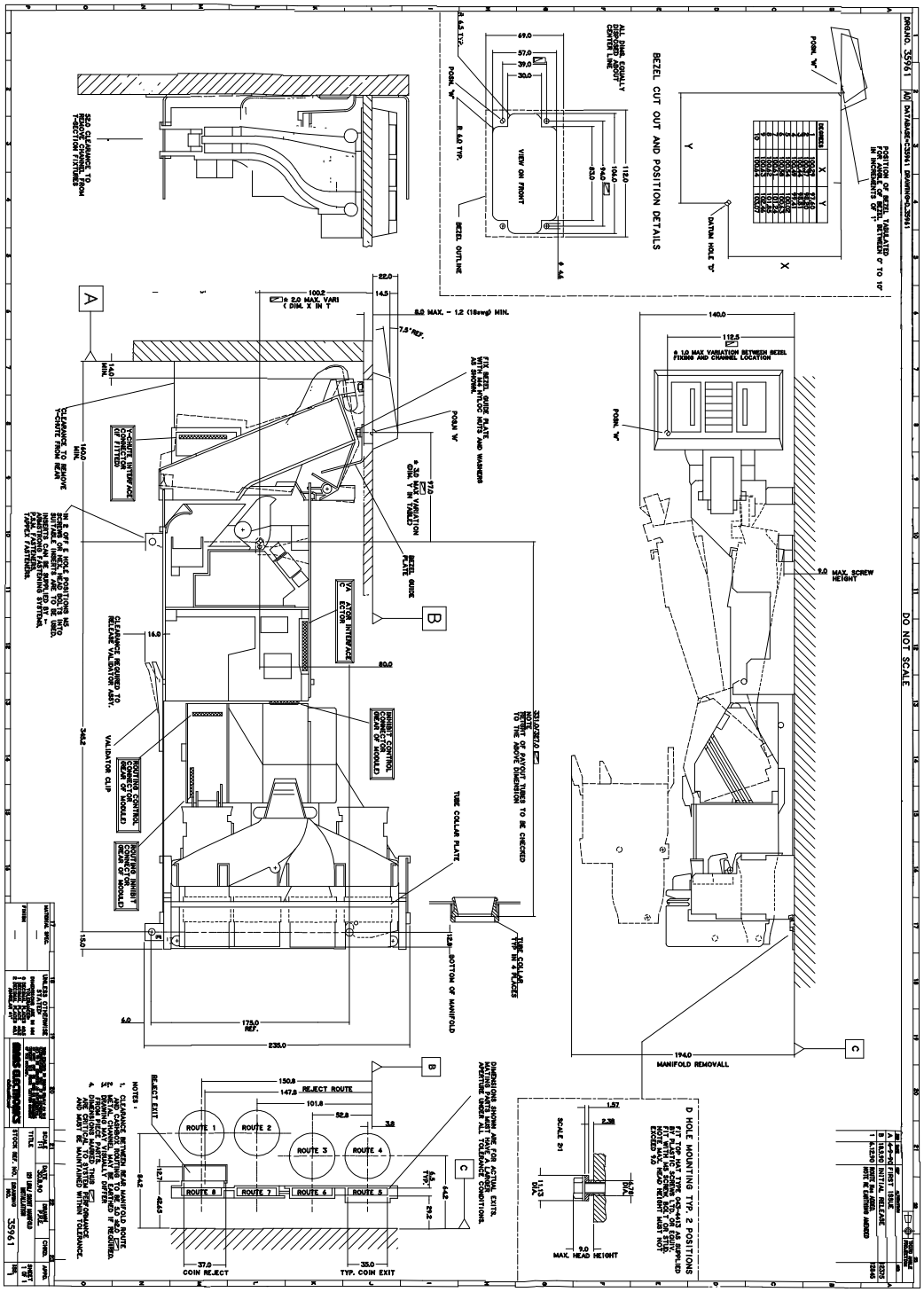



DRG. No. 35611
LATCH SPACE ENVELOPE
THESE AREAS TO BE LEFT CLEAR OF OBSTRUCTION
EXIT A 6.0
EXIT D 6.0
EXIT B 6.0
EXIT C 6.0
EXIT A & B 35.0
EXIT C & D 35.0
EXIT E 36.0
ROUTING PLUG FITS HERE
REJECT EXIT (USING TYPE A REJECT COVER)
DO NOT SCALE
FOR DETAILS OF FRONT ENTRY PLATE SEE DRG Nos.32780 & 32779.
FOR CONNECTOR POSITIONS SEE DRG No 34525.
VALIDATOR FRONT VIEW
LINK POSITIONS
THIRD ANGLE PROJECTION
ME126 SIDE ENTRY SPACE ENVELOPE
MARS ELECTRONICS
INITIAL ISSUE
ALTERATION




DO NOT SCALE
NOTES
1. BREAK ALL CORNERS.
2. SURFACES MARKED ARE CRITICAL TO SYSTEM PERFORMANCE AND MUST BE MAINTAINED WITHIN TOLERANCE.
3. ALL UNSPECIFIED RADII R3.0.
4. ALL DIMENSIONS ARE IN THE FINISHED CONDITION.
5. ALL UNSPECIFIED CHAMFERS TO BE 4 X 45°.




BEZEL CUT OUT AND POSITION DETAILS
VIEW ON FRONT
BEZEL OUTLINE
DATUM HOLE 'D'
POSITION OF BEZEL VARIABLE FOR USE OF BEZEL BETWEEN 0° TO 10° IN INCREMENTS OF 1°
DO NOT SCALE
MANIFOLD REMOVALL
COIN REJECT
TYP. COIN EXIT
REJECT ROUTE
ROUTE 1
ROUTE 2
ROUTE 3
ROUTE 4
ROUTE 5
ROUTE 6
ROUTE 7
ROUTE 8
MAX. HEAD HEIGHT
SCALE 2:1

COMPATIBILITY

Compatibility	CashFlow® 126	ME126 Standard	ME126 Active	MS126 & B1
Coin Entry Path	Yes	Yes	Yes	Yes
Coin Exit Path	Yes	Yes	Yes	Yes
Mechanical Mounting	Yes	Yes	Yes	Yes
12 Volts DC	Yes	Yes	Yes	Yes
Machine Interface	Yes	Yes (*)	Yes (*)	Yes (*)
4 Way Separator (ME or CF126)	Yes	Yes	No	Yes
4 Way Separator (ME 126 Active)	No	Yes	Yes	No
8 Way Separator (ME129)	No	Yes	Yes	No
8 Way Separator (CF129)	Yes	No	No	No
Parallel Coin Output	Yes	Yes	Yes	Yes
Serial Output	Yes	No	No	No
Binary Coded Output (BCO)	Yes	No	No	No
18 Way Routing Plug	No	Yes	No	Yes
20 Way Routing Plug	Yes	No	Yes	No
22 Way Routing Plug	Yes	No	No	No

NOTE:

(*) = Remove polarising pin 8 from your existing machine interface loom

PERFORMANCE STANDARDS

POWER SUPPLY

Operating Voltage: +12V tolerance = (+ 3V) (- 2V)
Supply Voltage Ripple Within Vmin to Vmax up to 100Hz
250mV pk - pk for F>100Hz
Current consumption:
Quiescent current: 35mA Max
Max current: 2.5A Max (4 solenoids active)

COMPLIANCE CLASSIFICATIONS

The product is designed to the following standards for sale into European markets and will carry the “CE” mark.

Electromagnetic Conformance (EMC)

The product is designed to comply with the following European standards:
EN50082-1 1992 Electromagnetic Compatibility Generic Immunity Standard
EN55022 1995 Limits and methods of measurement of radio disturbance characteristics of information technology equipment.

Safety

The product is intended for use in machines which are designed to comply with;
a) EN60335-1, 3rd Edition, Safety of household and similar electrical appliances, Part 1, General Requirements.”
b) BS3456, Safety of household and similar electrical appliances, Part 1, General Requirements.
c) BS EN60950 1992, Safety of Information Technology Equipment, including electrical business equipment.

The product is suitable for use in a class 2 (non-earthed or non-grounded) appliance as defined in EN60335.
All electrical connections to the acceptor must be rated according to the requirements for “Accessible SELV” circuits as defined in EN60335.

When used in applications where compliance to BS EN60950:1992 is necessary, the host machine power supply must additionally meet the requirements for SELV limited power supplies as defined in BS EN60950. For these applications, the coin mechanism should be installed so that it is external to any fire enclosure.

Flammability
All major plastic parts will be moulded in materials with a flammability rating of 94 V-2 / IEC 707 FV2 or better. Some small parts are moulded in materials with a flammability rating of 94 HB / IEC 707 FH2.

Power Supply Input Protection
Overcurrent protection is not included in the product and must be provided as part of the machine.
Recommended fuse rating at the rated supply of 12V is:

3A Slow blow EN60127

Other protection methods may be used providing their over current characteristics remain within the overall operating characteristics of the above fuse.

Mechanical Parts
The product will not contain mechanically moving parts, or sharp edges, which can prevent a hazard in normal use.

Coin Sizes
CashFlow® 126 and CashFlow® 129 will be able to validate and route coins within the following range:
Circular coins, in the range 15mm to 31.5 mm in diameter.
Circular coins, in the range 1.1mm to 3.2mm in thickness.
Faceted coins within the relevant coinsets will also be handled.
Damaged, bent or very distorted coins may not be validated.

Coin Acceptance Rate
The acceptor will validate coins at up to 3 coins per second, when linearly separated i.e. >330 ms apart. After a coin has been rejected, no further coins will be accepted for a period of 0.5 seconds. Should a further coin be entered during this period, the reject period will be reinitiated.

Fraud Performance
Dual post gate strobes are fitted to give protection against COAS and Strimmer type frauds. A pre-gate strobe is fitted for protection against “Spoon” fraud.
Provision has been made on the PCB for a COAS detector. If the input is seen to go active, the alarm will be sounded.

Where machines do not recognise an all outputs ON as an alarm indication the alarm should be disabled by switching option switch 1 to OFF, otherwise false credit may be given in the event of a fraud attack.

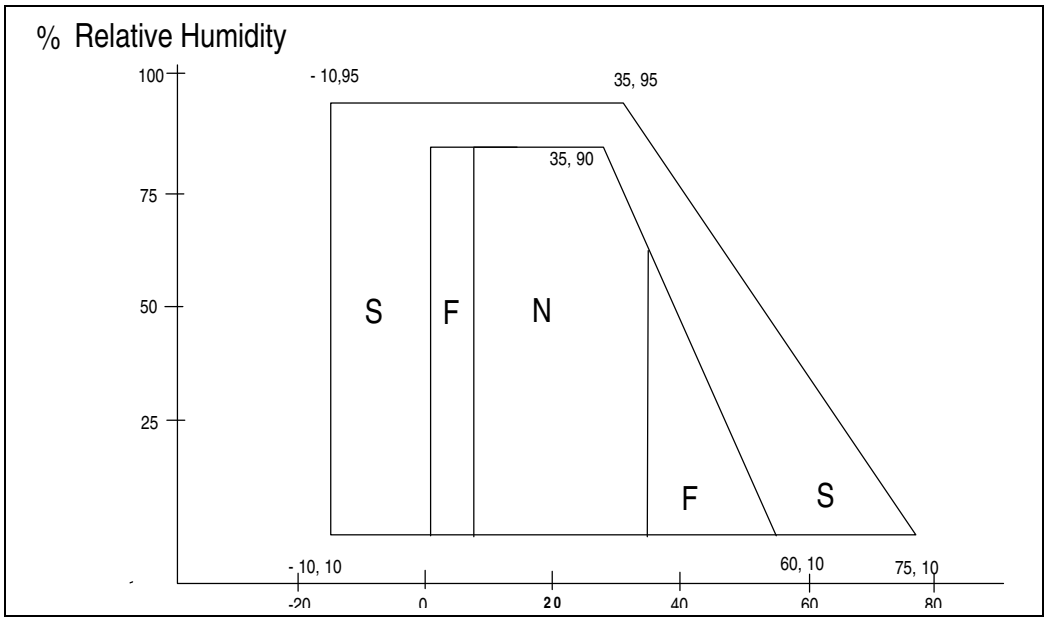
ENVIRONMENTAL PERFORMANCE

Temperature Range

Normal operational range 10°C to 40°C
Full operational range 0°C to 60°C
Storage range -10°C to 75°C
Max. rate of change 10°C/hr, non condensing

Humidity Range

Operational 10%RH - 90%RH, non condensing
Storage 5%RH to 95%RH, non condensing



Temperature / Humidity specification

Temperature oC
N = Normal operating range
F = Full operating range
S = Storage range

Thermal shock

Sudden changes of temperature may cause temporary degradation of performance. For continuous operation and specified performance within the full operational temperature range, the rate of change of temperature should not be greater than 10°C per hour, non condensing
Vibration (through machine mounting)
Vibration 0.25g at 5Hz to 500Hz - pseudo random, flat bandwidth
Coin validation will not be affected.

TRANSPORTATION

The following apply to fully packaged units:

Shock	Half sine, 30g shock, 18ms dur BS 2011 Part 2.1 EA : 1977
Bump	1000 bumps 6ms duration at 25g BS 2011 Part 2.1 b : 1977
Drop - Free Fall	2 drops from 1m onto each face BS 2011 Part 2.1 ED : 1977
Drop and Topple	50mm drop onto each corner BS2011 Part 2.1 EC : 1977

LIQUID

CashFlow® 100 series validators PCB's are fitted with splash protection shields to protect against fluid intrusion. However, prolonged exposure to a salt laden atmosphere, or liquids which dry onto the surface of the PCB could cause malfunction.

MEI MAIN AND REGIONAL OFFICES

GREAT BRITAIN
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ESKDALE ROAD
WINNERSH TRIANGLE
WOKINGHAM
BERKSHIRE, RG41 5AQ
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FACSIMILE: 0118 - 9446412

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AUBURN
NEW SOUTH WALES, 2144
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FACSIMILE: 2 - 97375399

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FACSIMILE: 610 - 4302694

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