CASHFLOW® 9520 / 9524 / 9528

SELECTOR SYSTEMS

DESIGN GUIDE

PUBLISHED BY:

MEI CashFlow® 9520 / 9524 / 9528 Design Guide

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CashFlow® 9520 / 9524 / 9528 Selector Design Guide

This edition (March 2003)   Printed in the United Kingdom.

Note: Your product may differ slightly from some of the illustrations in this document.

CONTENTS

SAFETY

Warning

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

Caution

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

Maximum Operating Voltage

Do not apply more than the voltage specified on the unit, and within the following:

Full Operating Voltage range:	+10V to +15V DC (+12V nominal)
Supply Voltage Ripple:	Within Vmin to Vmax up to 100Hz, <250mV pk - pk for Frequency>100Hz
Current consumption:	• Quiescent current: 100mA Max • Max current: 3A Max (4 solenoids active, Cashflow® 9524)

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

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 international and national 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.

Overcurrent protection is not included in the product and should be provided as part of the host 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 overcurrent characteristics remain within the overall operating characteristics of the above fuse.

Warning: This is a class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.

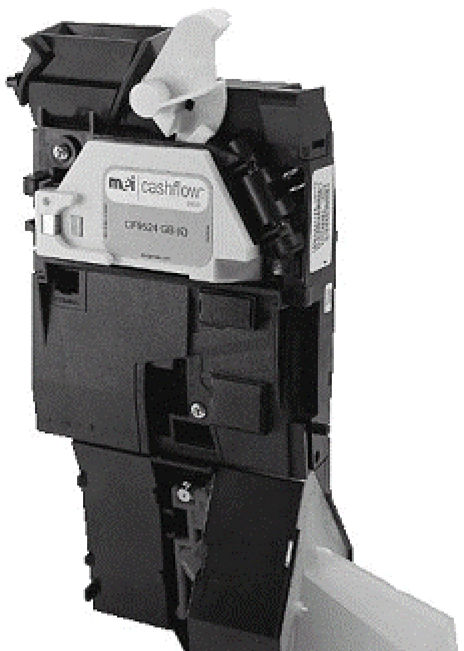
PRODUCT IDENTIFICATION

MEI has manufactured coin mechanisms compatible with gaming and amusement machines for a number of years. Over this time the functionality of the range has been enhanced to match the market needs and whilst maintaining mechanical compatibility.

The products detailed in this handbook relate to the CashFlow® 952x Series. To ensure you have the right product for your application please read this section.

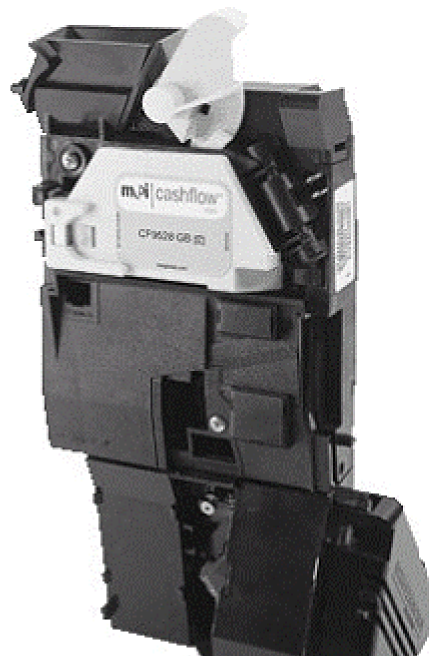
CashFlow® 9520

- Supports 4 way Separator (optional)
- Supports 8 way Separator (optional)
- Available as Side Entry or Top Entry



CashFlow® 9524

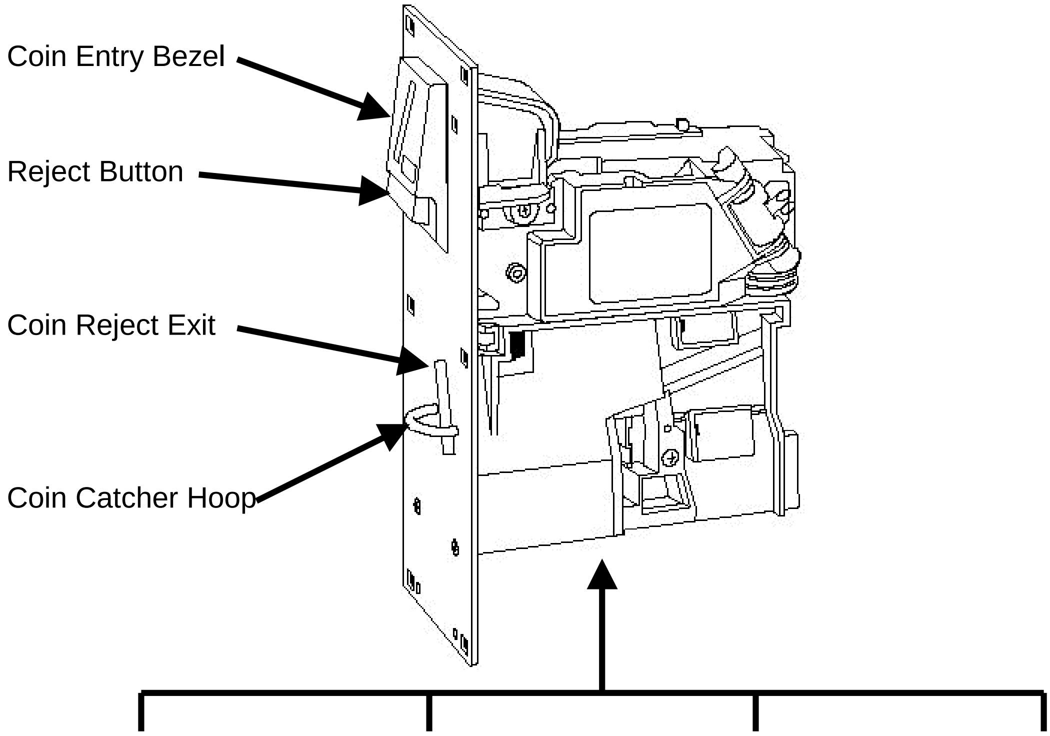
- Comprising of CashFlow® 9520 plus
- 4 way Separator, available as Side Entry, Top Entry or System Product



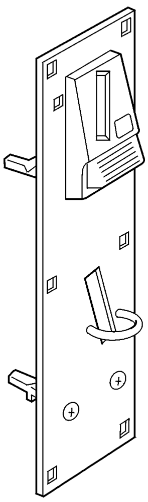
CashFlow® 9528

- Comprising of CashFlow® 9520 plus
- 8 way Separator, available as Top Entry or System Product

Product Options; Front Plates



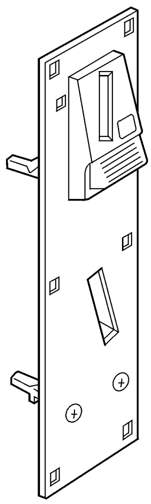
7802



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.

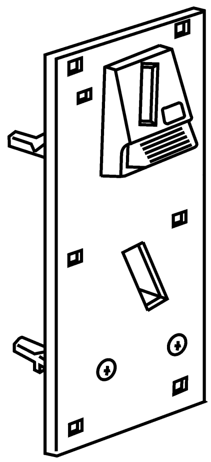
7804



This front plate is made of mild steel painted black and is a standard assembly suitable for internal mounting.

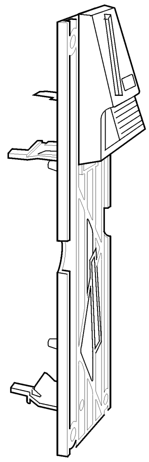
It is not supplied with a coin catcher hoop.

7805



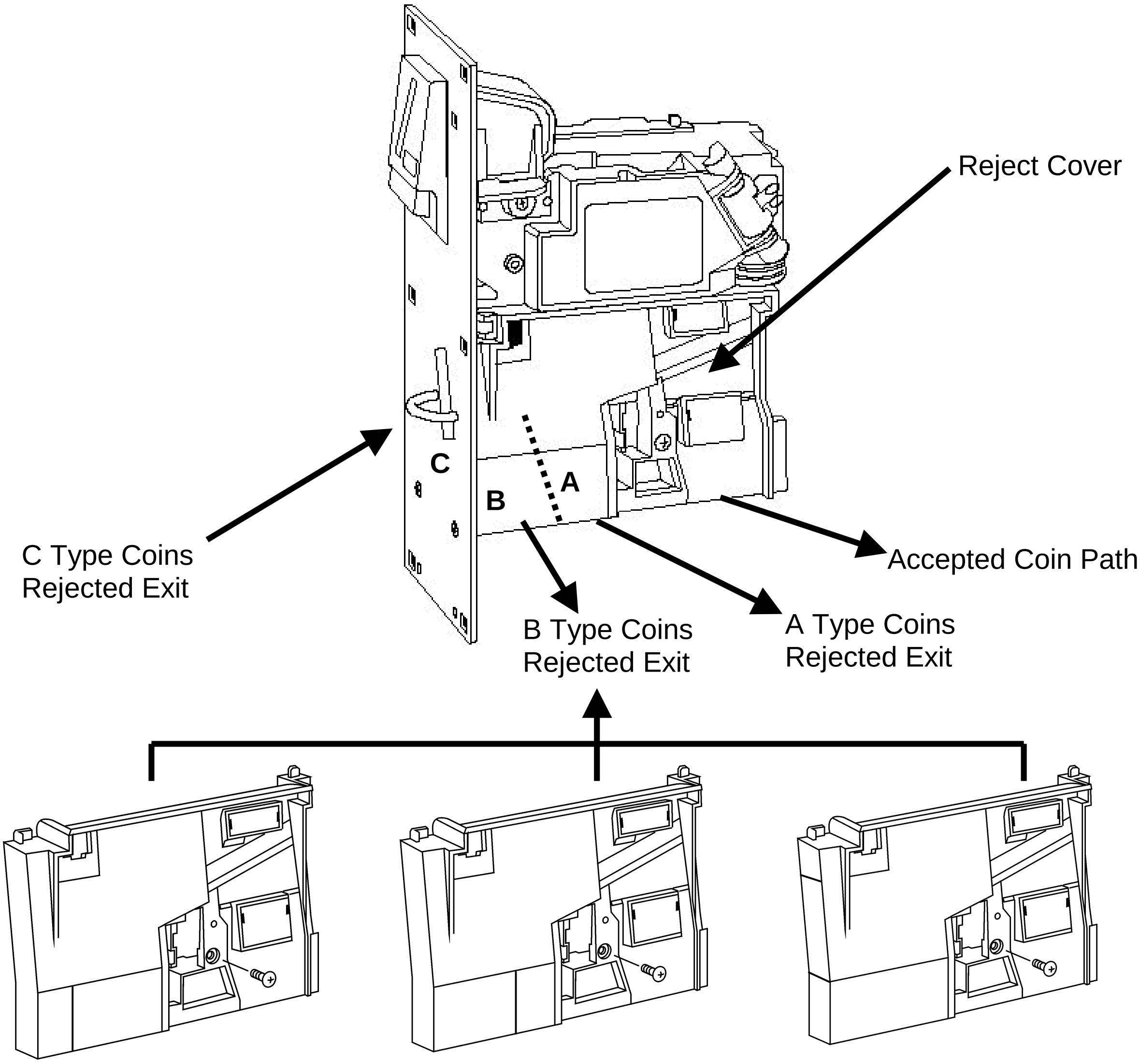
This model consists of the same parts as the 7804 except that the black mild steel front plate is wider and slightly shorter.

7819



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

Product Options; Reject Covers

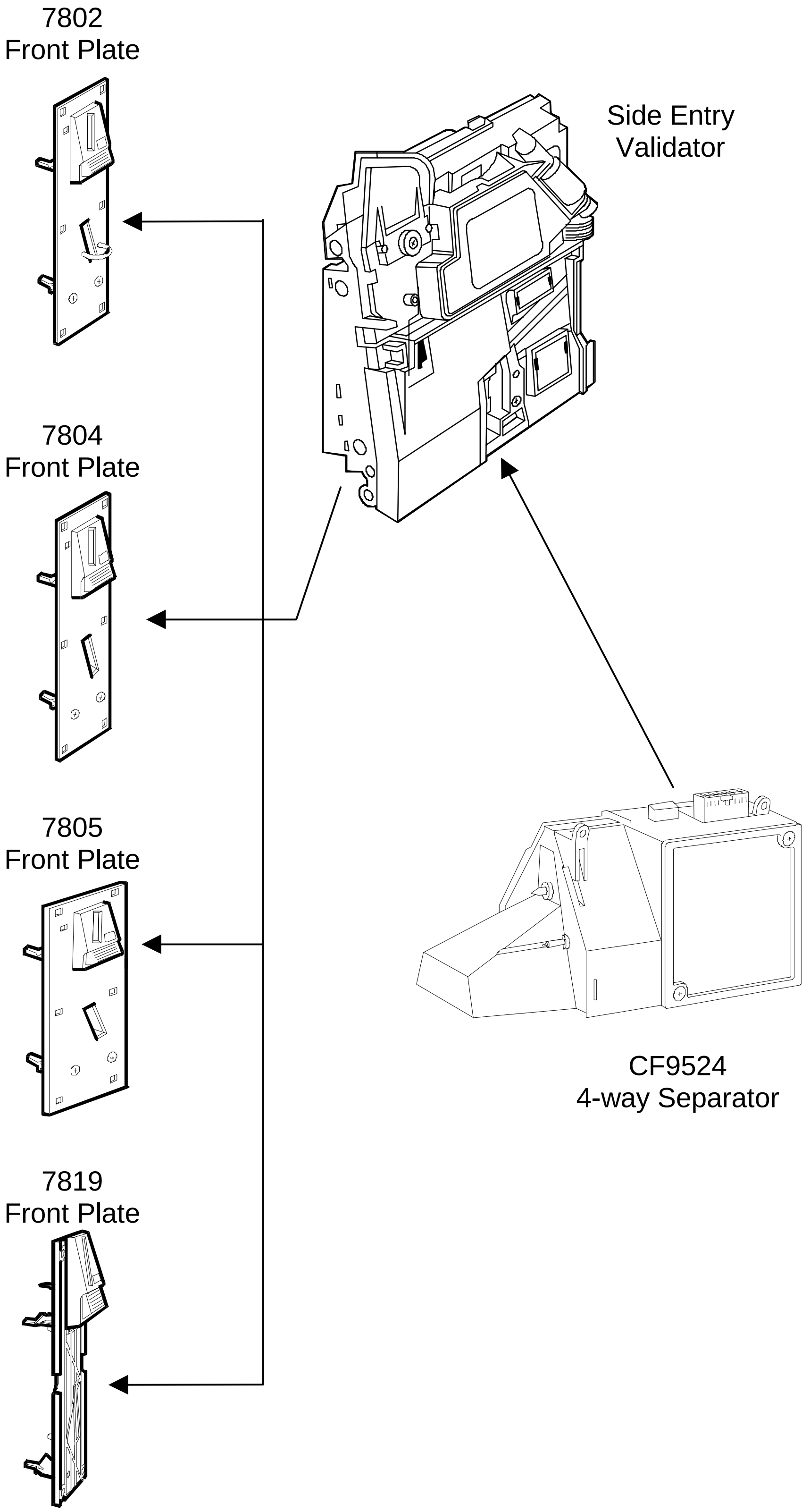


Type A	Type B	Type C
Used with: CashFlow® 9520 CashFlow® 9524 CashFlow® 9528	Used with: CashFlow® 9520	Used with: CashFlow® 9520 CashFlow® 9524
This type of reject cover is used on validators that are fitted with separators.	This type of reject cover is used on validators that are fitted to small channels.	This type of reject cover is used on validators that are fitted to front plates.
Accept coins are routed to the right and down.	Accepted coins are routed to the right and down.	Accepted coins are routed to the right and down.
Rejected coins are routed to the bottom centre of the reject cover.	Rejected coins are routed to the bottom left of the reject cover.	Rejected coins are routed to the left-hand side of the reject cover.

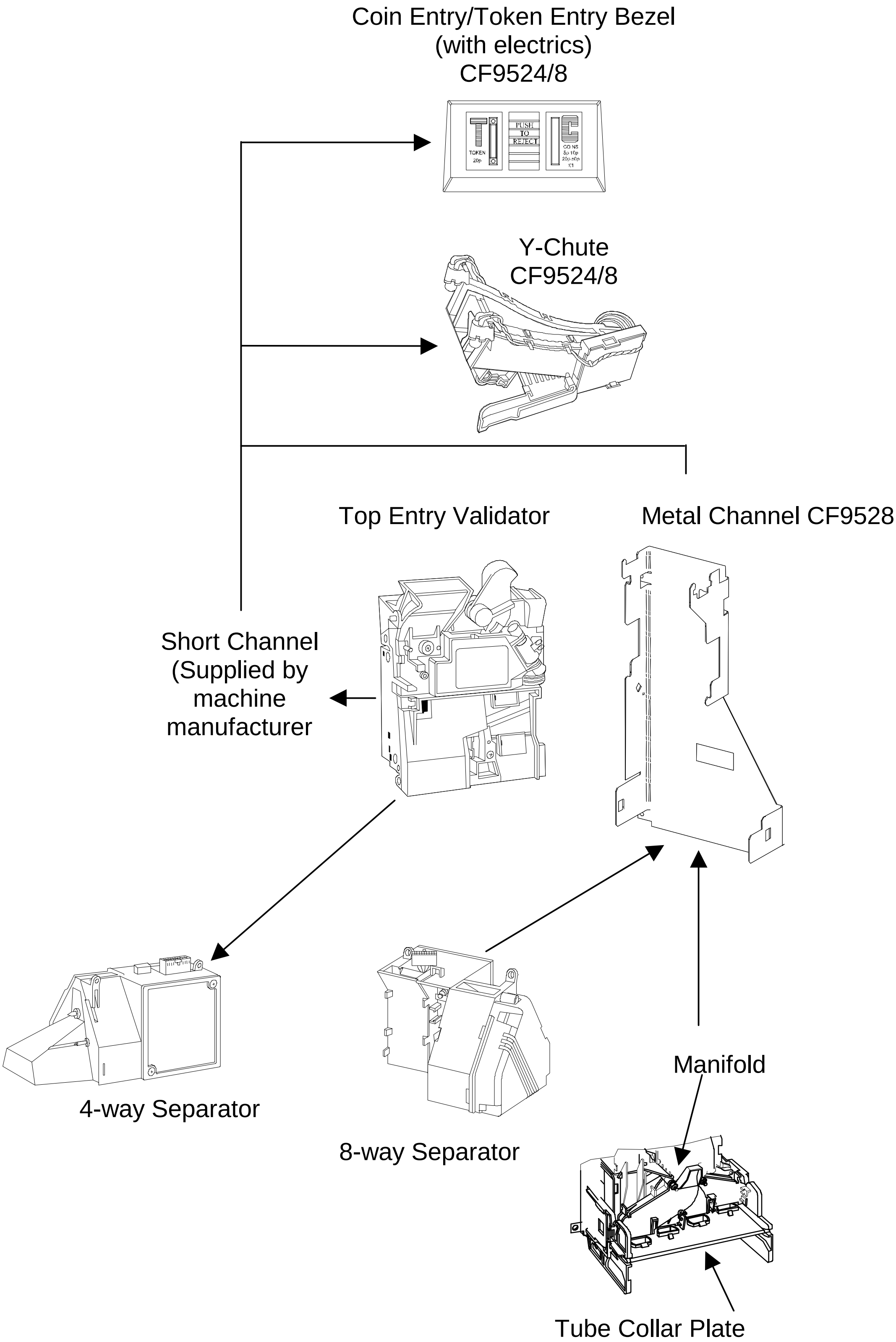
Product Build Options

Each product variant is made from the following components:

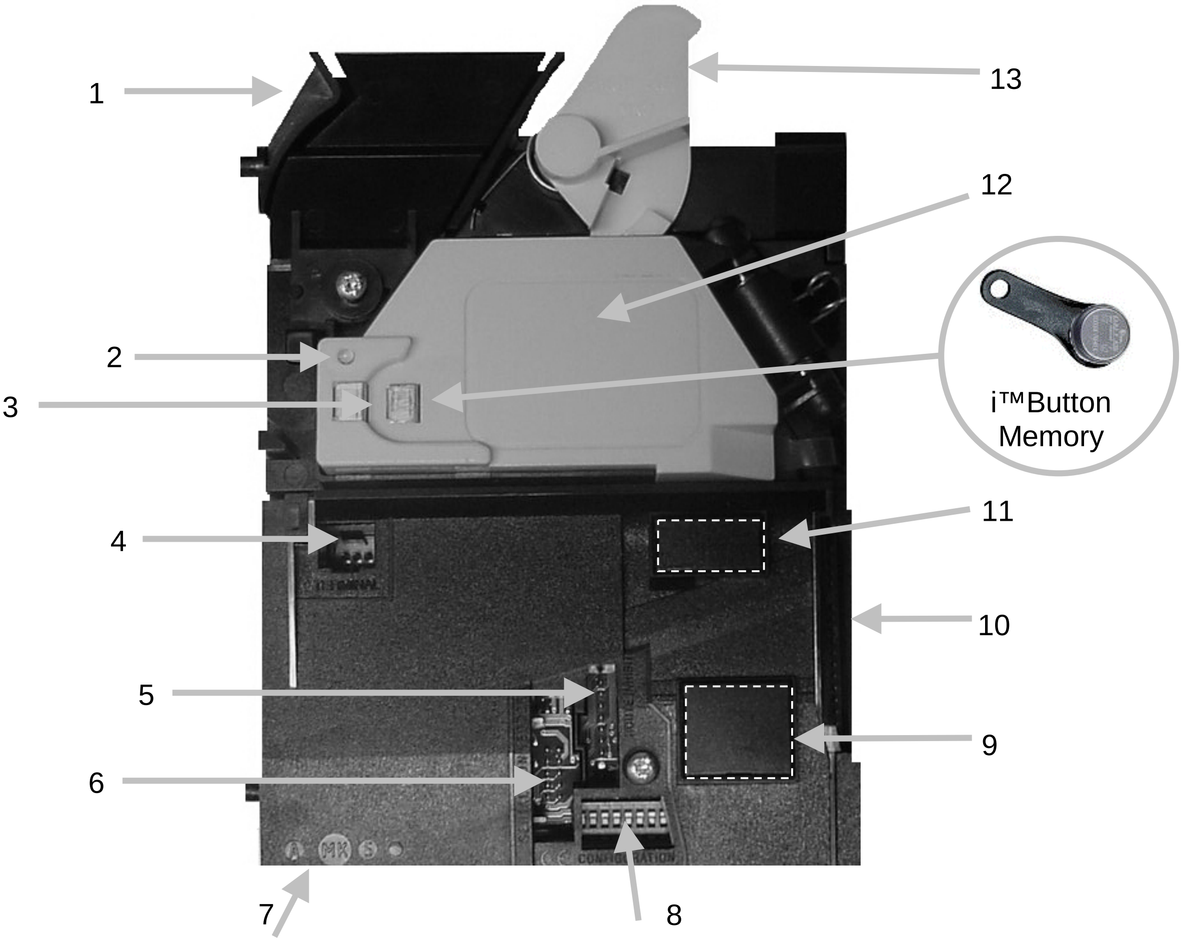
Side Entry Product



Top Entry Product



DESCRIPTION & OPERATION



Key:

1	Coin Entry
2	Diagnostic ‘Bi-Colour’ LED
3	i-Button Memory Contacts
4	Support Tool Connector (CPM) CashFlow® Programming Module
5	Route Inhibit Connector
6	Serial Interface Connector (HII)
7	Separator Connector
8	8-way DIP Switch
9	Post Gate Strobes
10	Dual Polarity and BCO Interface Connector
11	Pre-Gate Strobes
12	Validator Lid
13	Reject Lever

Coin Entry (1)

There are two types of coin entry available. Top entry and Side entry.

- Top entry: The validator is mounted into the Channel and Coins enter through to top of the validator.
- Side Entry: The validator is mounted onto the front plate and coins enter through the side of the validator.

Diagnostic 'Bi-Colour' LED (2)

The bi-colour LED displays a sequence of flash codes to indicate the current operation status of the validator, and can be used for fault diagnosis when inserting a coin or when in teaching functions.

Flash Code Sequence:	Description:
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.
4 Flashes	Coin recognised but not accepted (due to inhibit setting).

i-Button Memory Contacts (3)

This connector enables the i-button to communicate with the product. i-button activity is indicated by the illumination status of the LED.

Support Tool Connector (CPM) (4)

This 6-way connector is used for a MEI Support Tools, such as the CPM (CashFlow® programming Module).

Route Inhibit Connector (5)

This is a 9-pin connector that provides input from the machine to the validator. Its function is to modify coin routing. When a specific exit is full, the host machine will signal to the validator to redirect subsequent coins to an overflow route.

Serial Interface Connector (HII) (6)

This 10-pin connector provides a serial interface to an HII interface.

Separator Connector (7),

This connector is used to connect the validator to the separator.

8 Way DIP switch (8)

This switch is used as an easy configuration tool for the product. The 8-way switch can be used to change common settings such as enabling/inhibiting coins and setting coin routing.

Post-Gate Strobes (9)

The strobes are used to detect the direction & presence of coins passing through the validator.

Dual Polarity and BCO Interface Connector (10)

When in NON SERIAL mode, this interface is used to connect to the host machine. The functions provided are:

- Coin outputs A, B, C, D, E, F.
- Coin inhibits A, B, C, D, E, F.
- Coin common output
- Output mode selection

The acceptor will operate in one of two Coin Output modes:

- Parallel - can be positive or negative common
- Binary Coded Output (BCO)

These will be automatically selected by the “Output mode select” line, if nothing is connected to the output line then the acceptor will default to parallel mode.

Pre-Gate Strobes (11)

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.

Validator Lid (12)

This lid opens outwards when the reject lever is pressed. It allows for clearance of coins jams and also provides access for cleaning the coin entry paths. It is also used in some product configuration modes.

Reject Lever (13)

This lever can be pressed to clear any coins that might have got stuck inside the validator lid.

PRODUCT INTERFACES

Standard Interfaces

The standard interfaces available on CashFlow® 9520/9524/9528 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.

Parallel Mode

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

The coin outputs for A and C can be combined (e.g. A + C, B, D, E, F) to give compatibility with ME126 validators and can be set by programming the validator. The coin outputs are factory defined.

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.

Coin validation Inhibits A, B, C, D, E, F

To inhibit coin acceptance the CashFlow® validator offers six individual inhibit inputs. These inhibits operate differently for each mode as detailed in the following section.

Parallel Output mode inhibits

The channels that activate the associated coin output will be inhibited when the inhibit is held High or no connection is made to the relevant input, (e.g. Inhibit A will inhibit coin output A channels).

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 0V 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 between 0V to +1.0V.

Positive common is selected when pin 2 is greater than +7.0 volts (Max 12V) with respect to pin 11.

Binary Coded Output (BCO) - UK

Defined by the validator coin output map. When in BCO mode coin output A is permanently set active to indicate to the host machine that the BCO feature is set.

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.

(BCO - UK) 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

Binary Coded Output (BCO) - Euro

Gaming

The BCO codes operate in a similar way to those used in the UK. Coin output A is active to indicate to the machine that the Acceptor is in BCO Mode. Coin output C is active when a correct code is given to the machine. This effectively becomes the check used by the machine to authenticate that a current shown code is correct. If this value is not active then the machine will ignore the codes. B, D, E and F become the 4 code states indicating which coin is accepted.

(BCO - EURO) Coin Output							
Coin No.	Value	A	B	C	D	E	F
Coin 1	Token 1	1	0	1	0	0	0
Coin 2	Token 2	1	0	1	0	0	1
Coin 3	1c	1	0	1	0	1	0
Coin 4	2c	1	0	1	0	1	1
Coin 5	5c	1	0	1	1	0	0
Coin 6	10c	1	0	1	1	0	1
Coin 7	20c	1	0	1	1	1	0
Coin 8	50c	1	0	1	1	1	1
Coin 9	1Eu	1	1	1	0	0	0
Coin 10	2EU	1	1	1	0	0	1
Coin 11	5Eu	1	1	1	0	1	0

Vending

The BCO codes operate in a similar way to those used in Italy. Coin output A is active to indicate to the machine that the Acceptor is in BCO Mode. Coin output E is active when a correct code is given to the machine. This effectively becomes the Parity used by the machine to authenticate that a current shown code is correct. This should be used in Even Parity. Coin outputs B, C, E and D become the 4 code states indicating which coin is accepted.

(BCO - EURO) Coin Output							
Coin No.	Value	A	B	C	F	D	E
Coin 1	1c	1	1	0	0	0	1
Coin 2	2c	1	0	1	0	0	1
Coin 3	5c	1	1	1	0	0	0
Coin 4	10c	1	0	0	1	0	1
Coin 5	20c	1	1	0	1	0	0
Coin 6	50c	1	0	1	1	0	0
Coin 7	1Eu	1	1	1	1	0	1
Coin 8	2EU	1	0	0	0	1	1
Coin 9	5Eu	1	1	0	0	1	0

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 - UK

The channels inhibited, for a given inhibit line becoming active are factory set by the validator 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

Binary Coded Output Mode Inhibits - Euro

(BCO - EURO) Coin Inhibit							
Coin No.	**Value**	**A**	**B**	**C**	**D**	**E**	**F**
Coin 1	Token 1		1	X			
Coin 2	Token 2		1	X			
Coin 3	1c	1*		X			
Coin 4	2c	1*		X			
Coin 5	5c	1*		X			
Coin 6	10c	1*		X			
Coin 7	20c	1*		X			
Coin 8	50c			X	1		
Coin 9	1Eu			X		1	
Coin 10	2EU			X			1
Coin 11	5Eu	1*		X			

X= RESERVED
*= GROUPED INHIBIT INPUT

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.

Mechanical

Interface connections are via a 17-way header from the standard PCB. This header is single row of 17 pins on a 0.1 inch x 0.1-inch grid, with a pin size of 0.025-inch square. The complete interface connector (connector 1) functions are shown on the next page.

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 that 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)	GB Coins	Input or Output	PIN No.	BCO Function Definition
1	-	A Coin Output	5p	O	1	Ident signal
2	1	B Coin Output	Token	O	2	Accept Output 5
3	2	Coin Output Common		I	3	Accept Output Common
4	3	F Coin Output	£1	O	4	Accept Output 1
5	4	Polarising Key 1		-	5	Polarising Key
6	5	E Coin Output	50p (£2=x4)	O	6	Accept Output 2
7	6	D Coin Output	20p	O	7	Accept Output 3
8	7	Output Mode Select		I	8	Select Line (Output mode)
9	8	C Coin Output	10p	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® 9524 4-way or CashFlow® 9528 8-way separators only. This is identified by a grey panel on the separator.

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. This is identified by a panel that has the facility to fit a route plug into the separator.

Route Input Lines - Routes 1-7

The CF9528 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 CF9528 refer to the coin routes 1 to 7, with 1 having high priority and 7 low priority.

Routes 1-7 on CF9524 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.

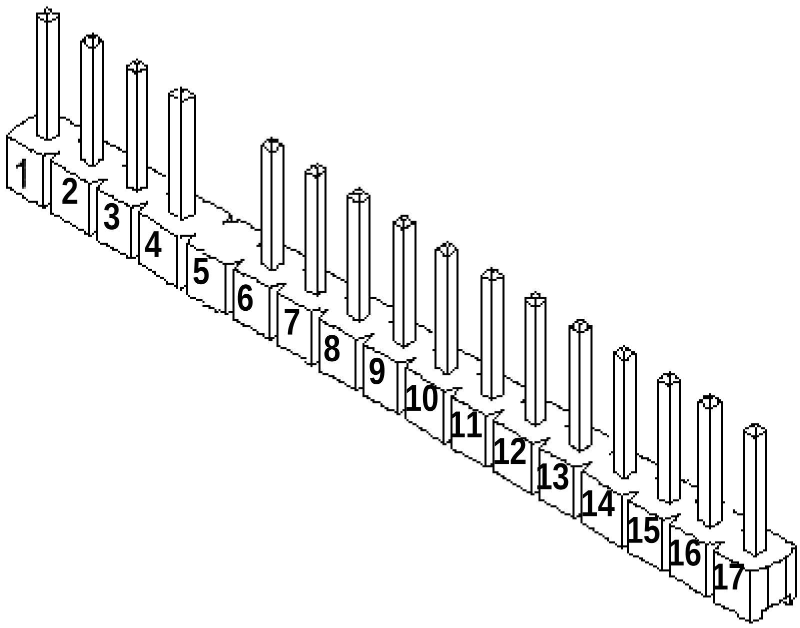
The CF9528 exit routes are marked as Route (1, 2, 3, 4, 5, 6 & 7) with (8) being the default exit route.

Solenoid 3	Solenoid 2	Solenoid 1		9528 Route	9524 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

Machine interface connector (Connector 1)

Interface connections are via a 17-way header from the standard PCB. This header is a single row of 17 pins on a 0.1 inch grid. The pin size is 0.025 inch square. Figure 1 shows the interface connector and pin out

Figure 1

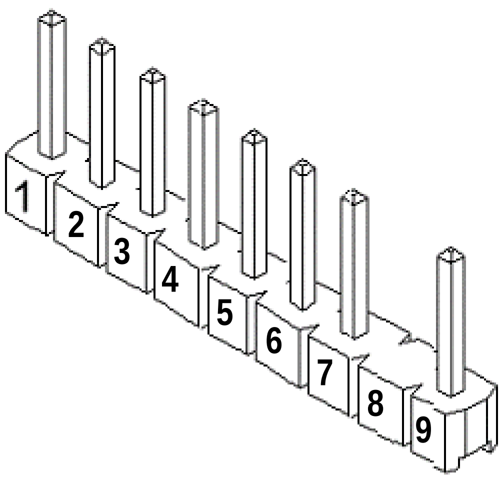


1	Output Coin A
2	Output Coin B
3	Output Common
4	Output Coin F
5	n.c.
6	Output Coin E
7	Output Coin D
8	Output Mode Select
9	Output Coin C
10	Inhibit Coin C
11	Power in +12v
12	Ground (0v)
13	Inhibit Coin D
14	Inhibit Coin E
15	Inhibit Coin F
16	Inhibit Coin B
17	Inhibit Coin A

Dynamic route inhibit (Connector 4)

Route inhibit connections are via a 9-way header from the standard PCB. This header is a single row of 9 pins on a 0.1 inch grid. The pin size is 0.025 inch square. Figure 2 shows the interface connector and pin out.

Figure 2



1	Full 1
2	Full 2
3	Full 3
4	Full 4
5	Full 5
6	Full 6
7	Full 7
8	n.c.
9	Ground (0v)

Full = 0 to 1.0V wrt pin 9

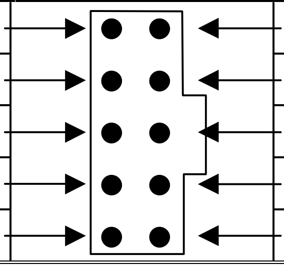
Empty = +3.5V

Support Tool Connector (6-way)

This connector can be found on the front of the acceptor and is used to reconfigure the validator using a MEI support tool e.g. (CPM) CashFlow® Programming Module.

Serial (HI^2) Connector (10 - way)

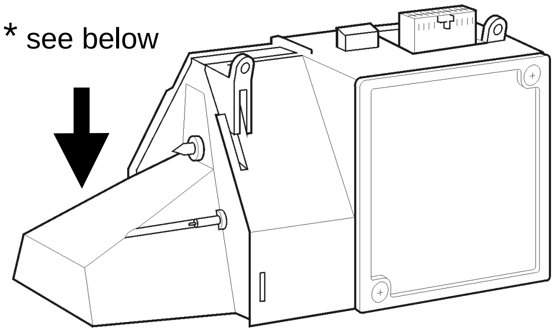
The position of this connector has been moved from the previous CF126 product and can now be found on the front face of the CF95xx. This provides easier access.

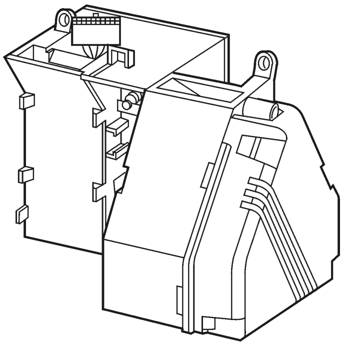
Function	PIN	10 Way Connector	PIN	Function
DATA	1		2	GND
BUSY	3		4	GND
RESET	5		6	NC.
VIN (12V)	7		8	VNEG (0V)
NC.	9		10	VSOL

10-way Hi^2 serial connections

ROUTING CONFIGURATION

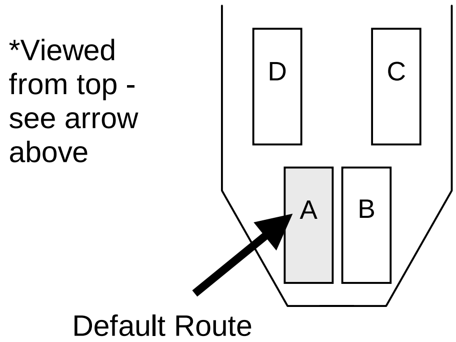
The CF9524 exits routes are marked as (B, C & D) with (A) being the default exit route

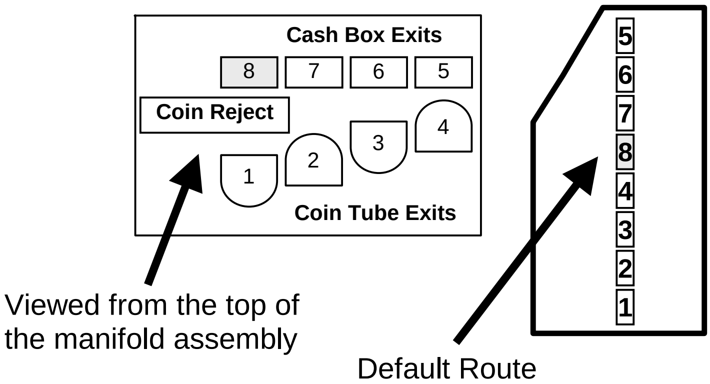




CF9524 4-WAY SEPARATOR
Default Route = A

CF9528 8-WAY SEPARATOR
Default Route = 8



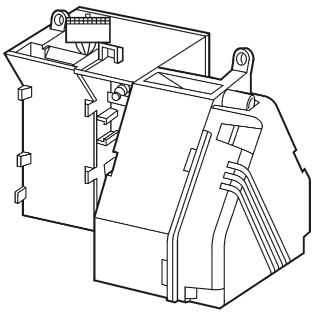


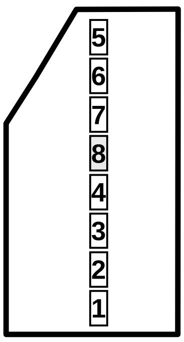
Coin Routing Priority

The CashFlow® 9524/9528 differs from the CF 126/129 with regard to coin routing priority. Coins can be routed to any exit as primary and secondary route. The product defines the exit depending on the type being set as primary or secondary.

Example: If the chosen Primary Route = (a), the only Secondary routes available can only be (b), C, D or B. Therefore (d) and (c) cannot be used as a secondary route.

CF9528 8-WAY SEPARATOR
Default Route = 8





Coin Route Priority	
1	Highest
2	↓
3	
4	
5	
6	
7	
-	Lowest

The CF952x Series can support two types of separator, a 4-way and an 8-way.

Connector 4, Dynamic Route Inhibit

This input from the host machine to the front reject cover of the validator is known as the Dynamic Route Inhibit. This inhibit signal indicates that a specific route has become full. To Inhibit a route the relevant pin should be grounded (i.e. active low to inhibit a route).

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

Route Inhibit Connector Pin No.	CF9528 8 Way Separator Exit Route	CF9524 4 Way Separator Exits
1	Route 1	Exit (d) = 1
2	Route 2	Exit (c)= 2
3	Route 3	Exit (a) = 3
4	Route 4	Exit (b) = 4
5	Route 5	Exit C = 5
6	Route 6	Exit D = 6
7	Route 7	Exit B = 7
8	Route 8 is the Default	Exit A is the Default
9	Ground (0v)	Ground (0v)

Note: Care must be taken to apply a Route full signal to the correct pin. For example of Exit D is selected then the signal should be directed to Pin 6 (D). Likewise Pin 1 (d) should be used of Primary Route (d) is selected.

Y-chute Interface Connector

Connections to the Y-chute are 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.

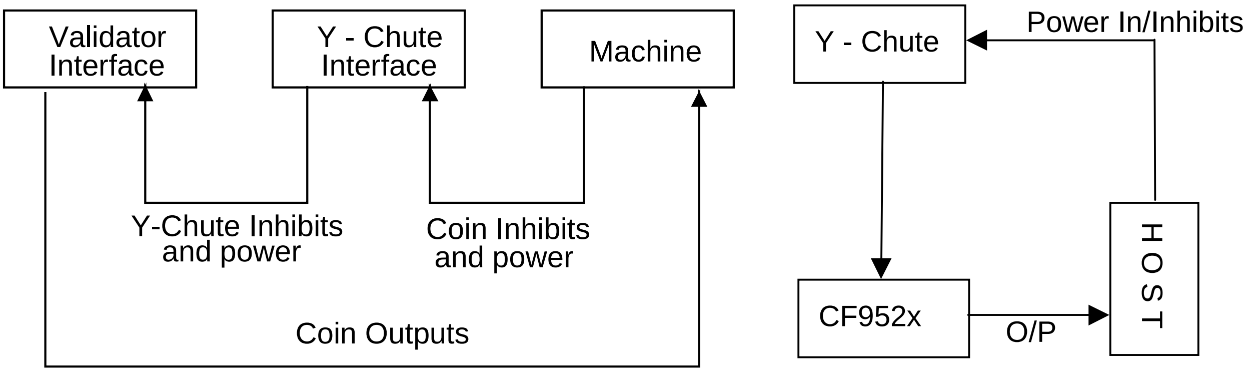
Pin No.	Function	Input / Output	Notes
1	12 Volts	Output	12 volts supply to the validator
2	Inhibit F	Output	Inhibit signals to the validator
3	Inhibit E	Output	
4	Inhibit D	Output	
5	Inhibit C	Output	
6	Polarisation	-	-
7	Inhibit B	Output	Inhibit signals to the validator
8	Not Used	-	-
9	Not Used	-	-
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

Dual Entry System

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.

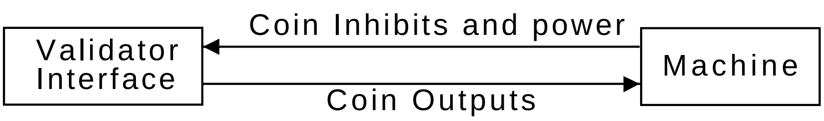
The coin inhibits are connected to the Y-chute interface and the inhibit signals are fed back to the validator interface by the host machine interface wiring, as shown below.

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)

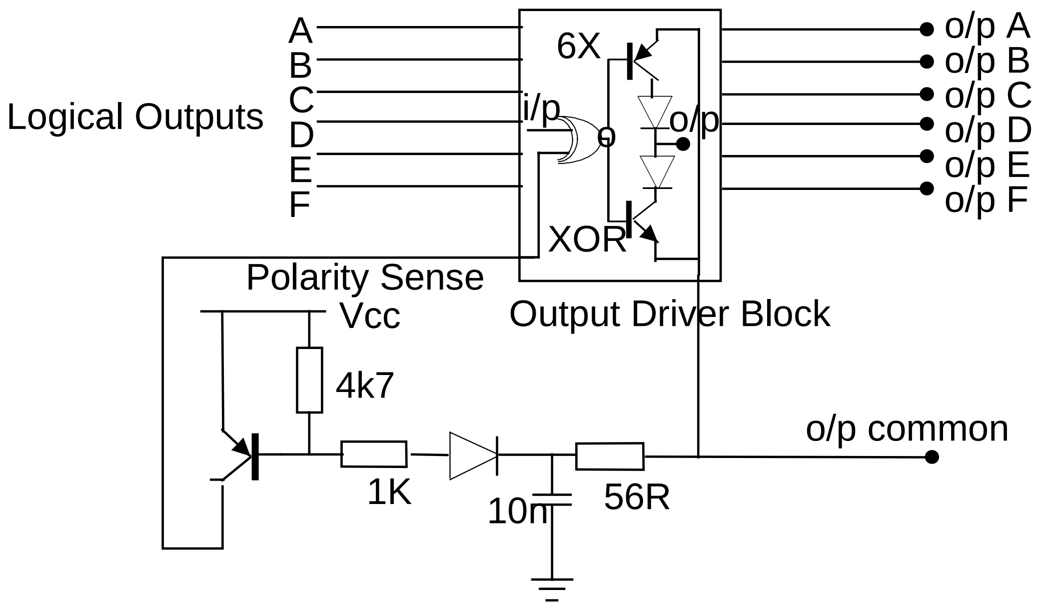


NOTE: When an old, (pre-March 1997), Y chute is used with a BACTA standard machine interface (BCO) the mode of operation of the Y chute needs to be changed. (Consult with MEI technical support for further details).

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

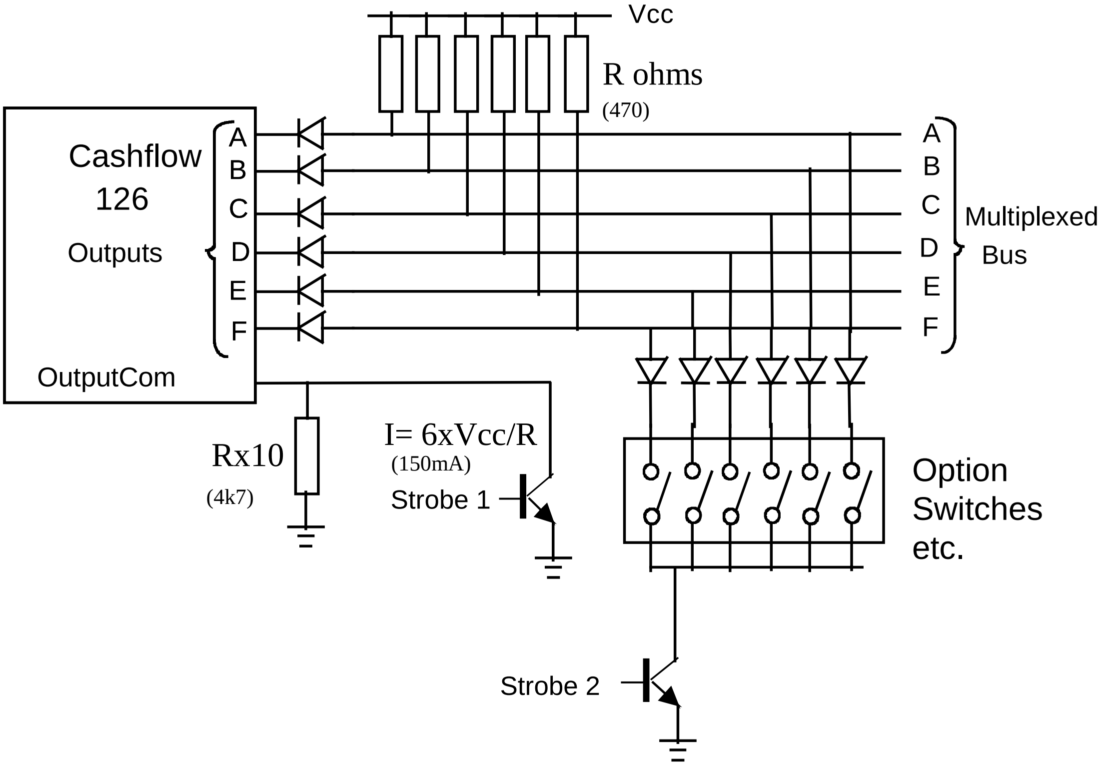


Output Circuit Block Diagram

Absolute Maximum Ratings

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

Output Common Specification

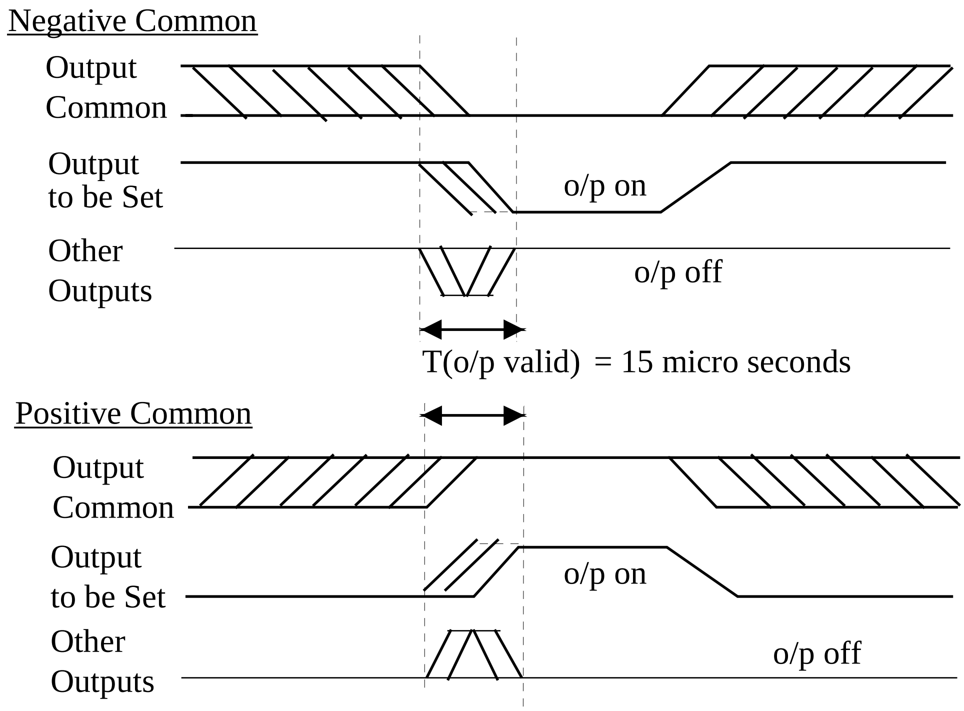


Sample multiplexed implementation - Negative Common Strobe

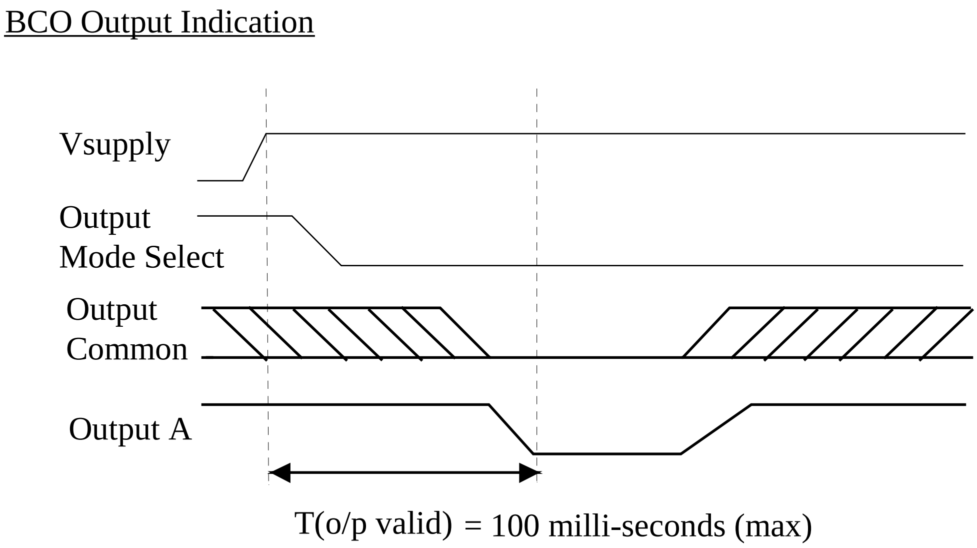
Output common can be left floating for multiplexed implementations. However the minimum turn on time when output common was floating is 15 micro seconds. If the polarity is established on output common by means of a weak pull up (for -ve com) or pull down (-ve com) the turn on time can be reduced. In the case above, the maximum time from the output common being strobed to the output being true is approximately 1 micro second. See the diagrams below for sample multiplexing implementation.

If output common is changed form negative to positive common (or vice versa) during polling, the state of any coin output cannot be guaranteed for 15us.

Output Timings



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 host machine (i.e. coin mech. might be changed without powering down) the state of this output should be regularly polled. As long leads are often involved in a coin mechanism interfaces, it is recommended that the input should be de-bounced in software to avoid glitches.



Coin Inhibits

High = Coin inhibit

Low = Coin enable

Maximum input voltage to enable channels (logic 0)	<1.0V
Minimum input voltage to inhibit channels (logic 1)	>4.0V
Input impedance	12Kohms to +5v.

Positive Common Voltage Range

Positive Common Operation (O/P Common)

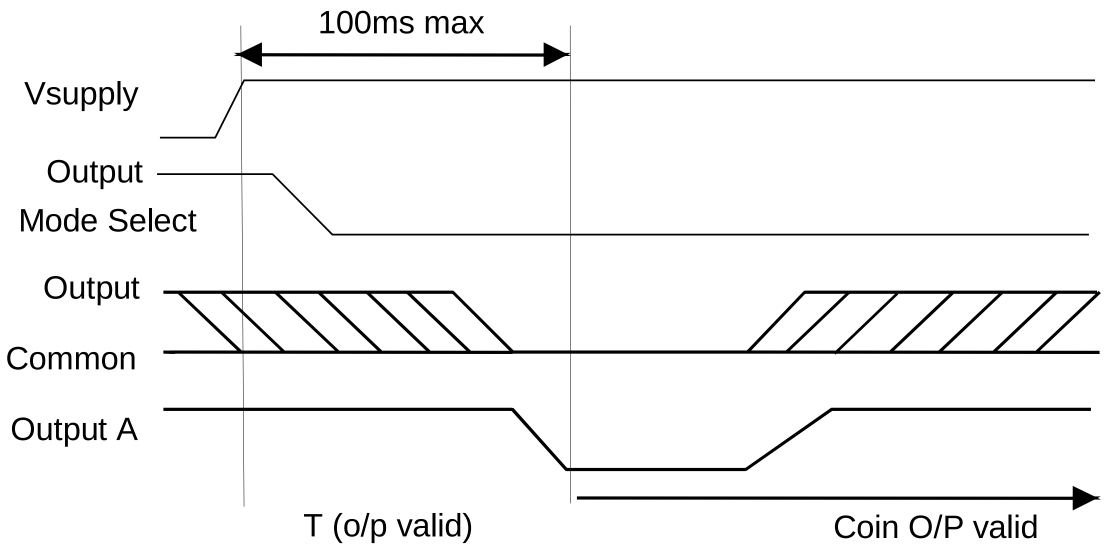
This interface is selected when pin 3 is greater than +4.5 volts with respect to pin 12. (0V)

Output Common Voltage:

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

Positive Common Outputs:

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



BCO Output Indication from "Power ON"

Negative Common Voltage Range

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

Negative Common Outputs:

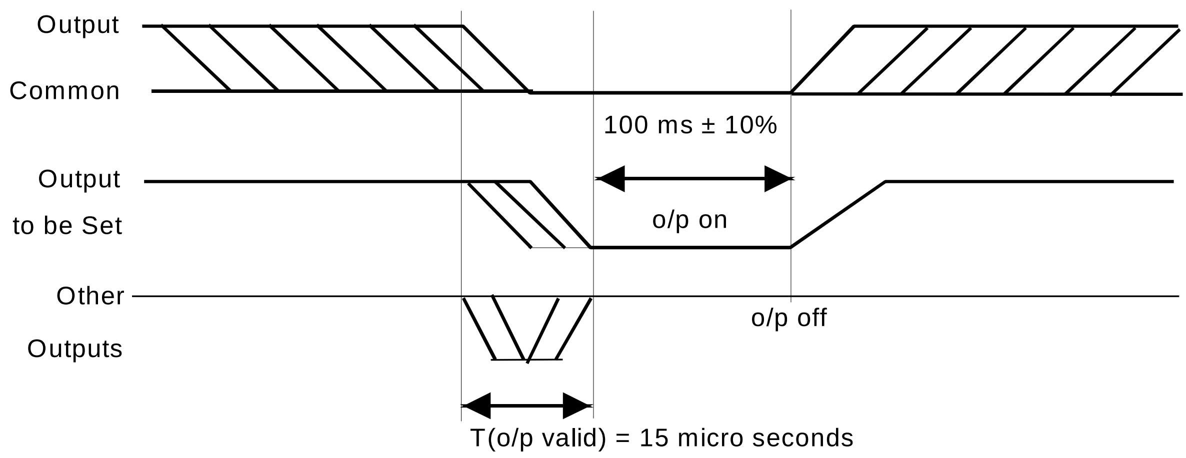
On: Maximum current = 30mA

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.



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:

CF9524 Front Plate Dimensions

Drawing Number 32780 Front plate mounting detail.

Drawing Number 32799 Standard front plate dimensions.

Drawing Number 35811 Side entry space envelope.

CF9524 Top Entry Mounting Space Envelope

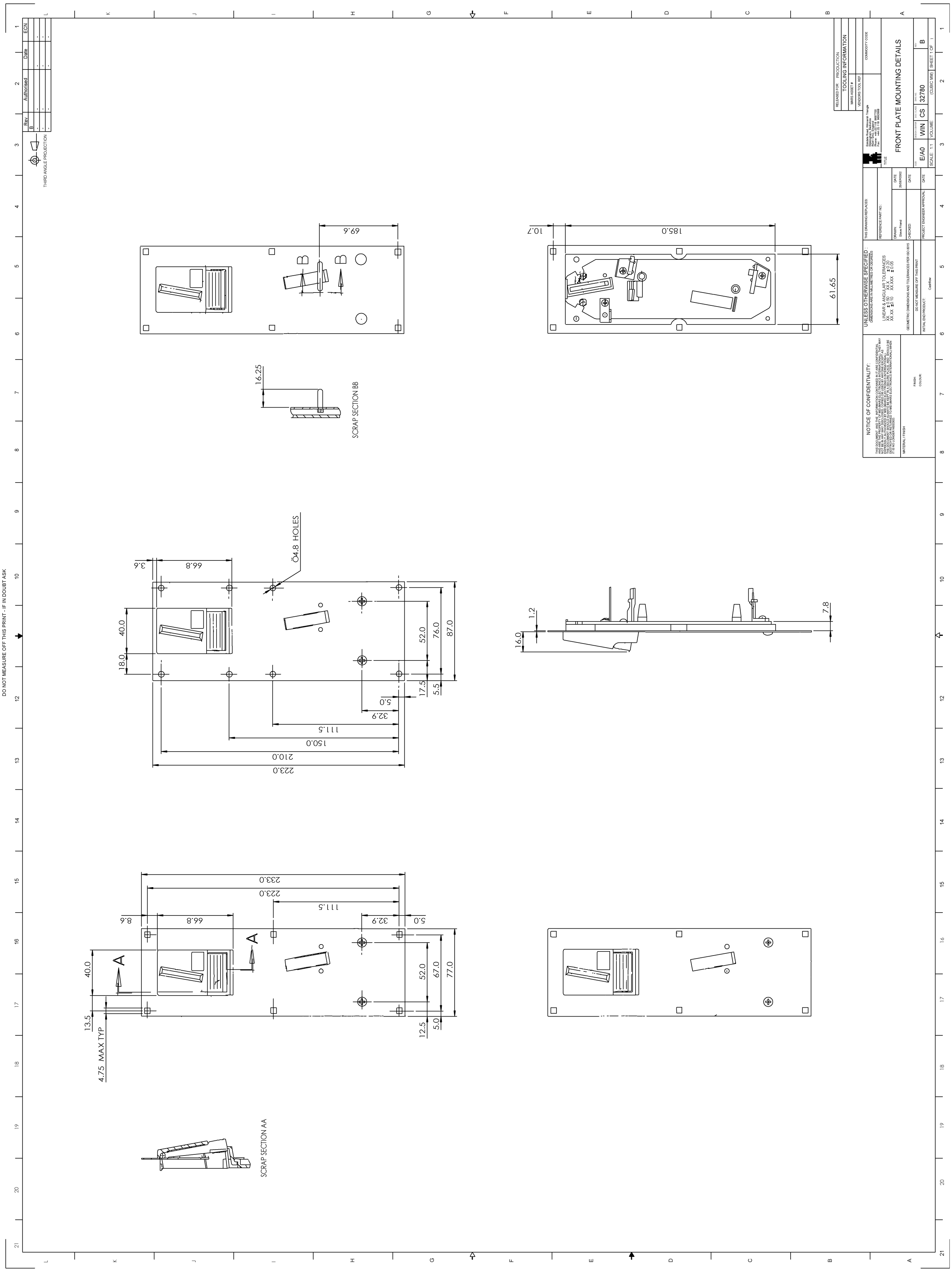
Drawing Number 35812.

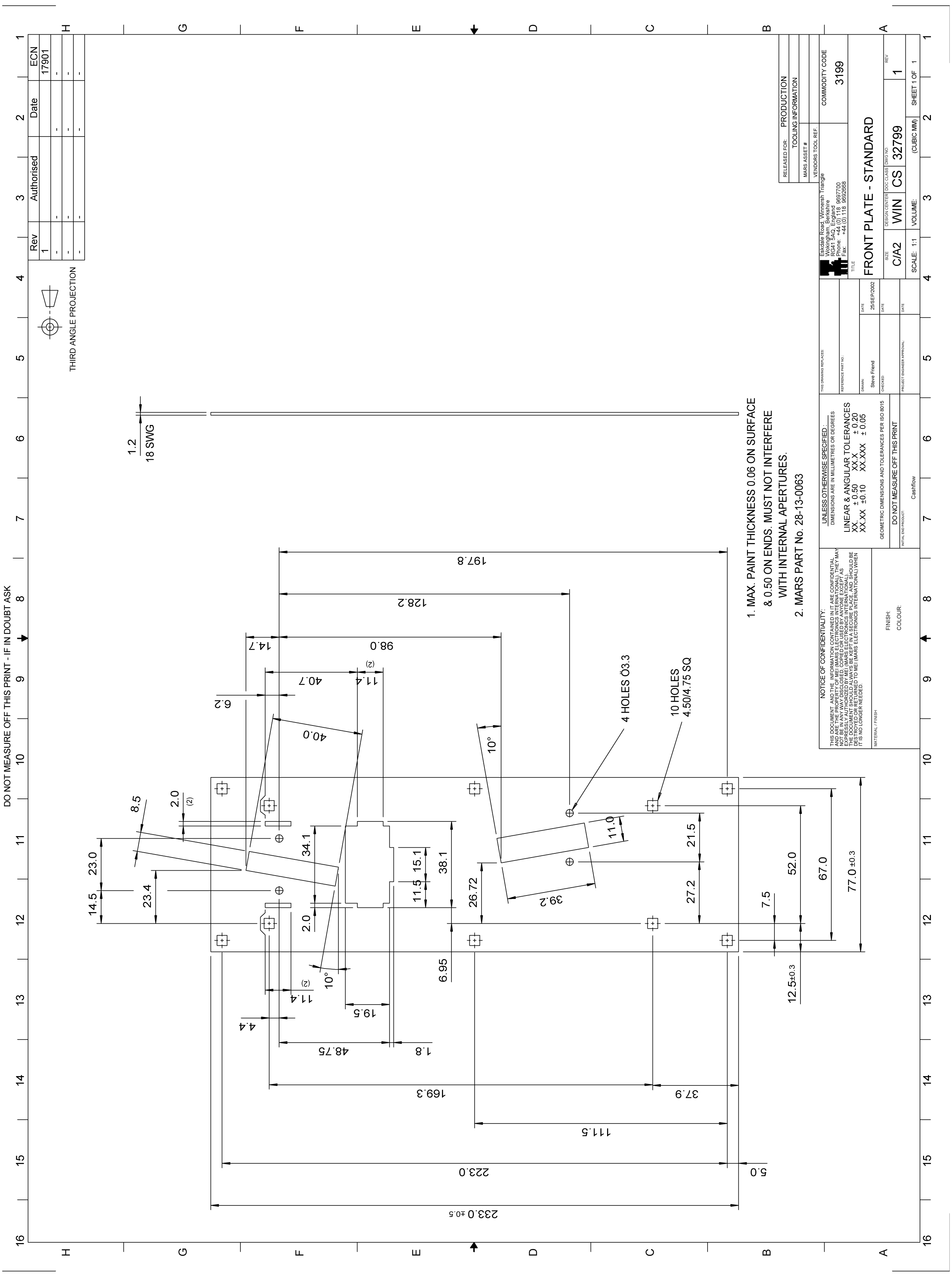
CF9528 Long Channel Mounting Space Envelope

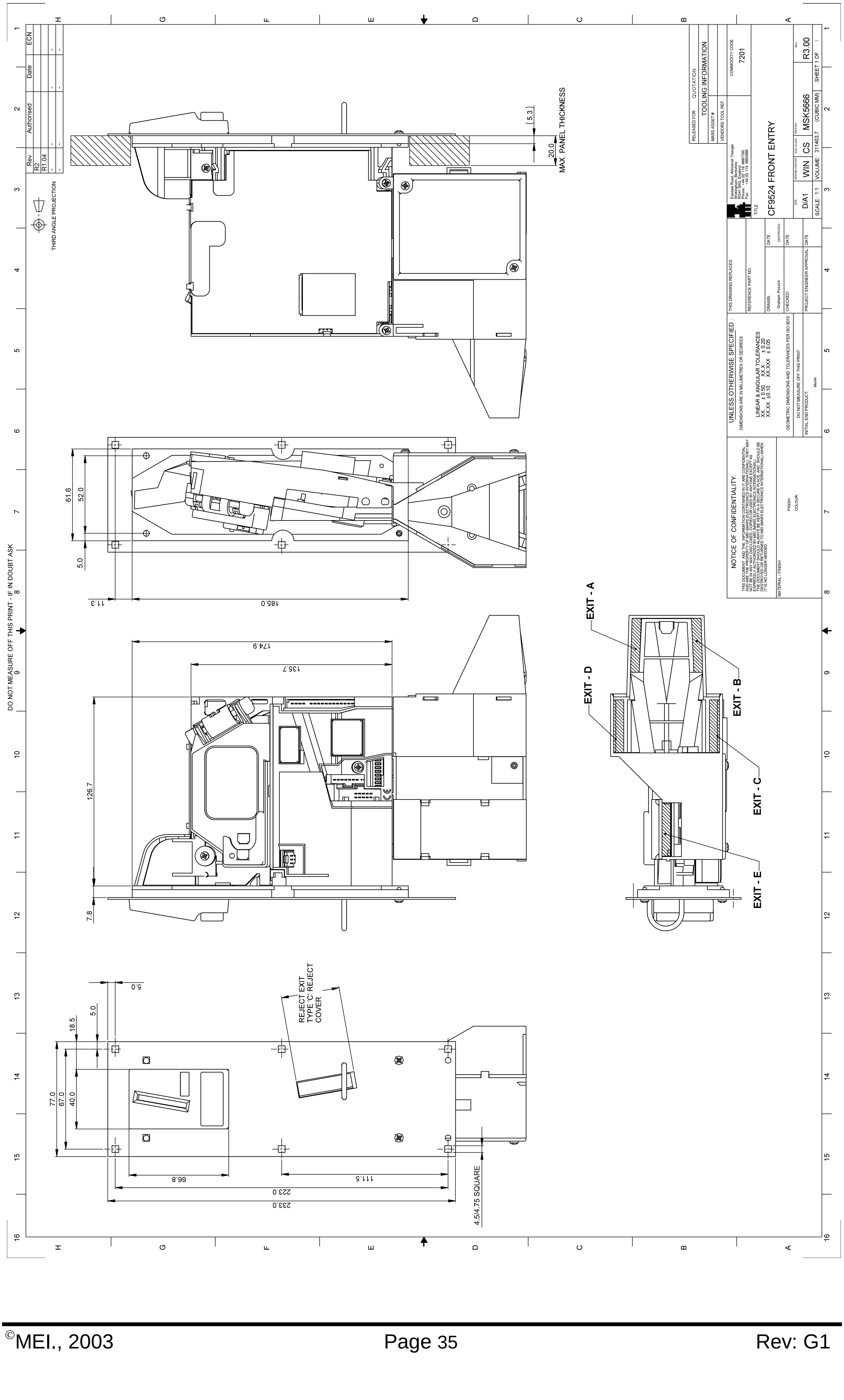
Drawing Number 35824 Long channel dimensions.

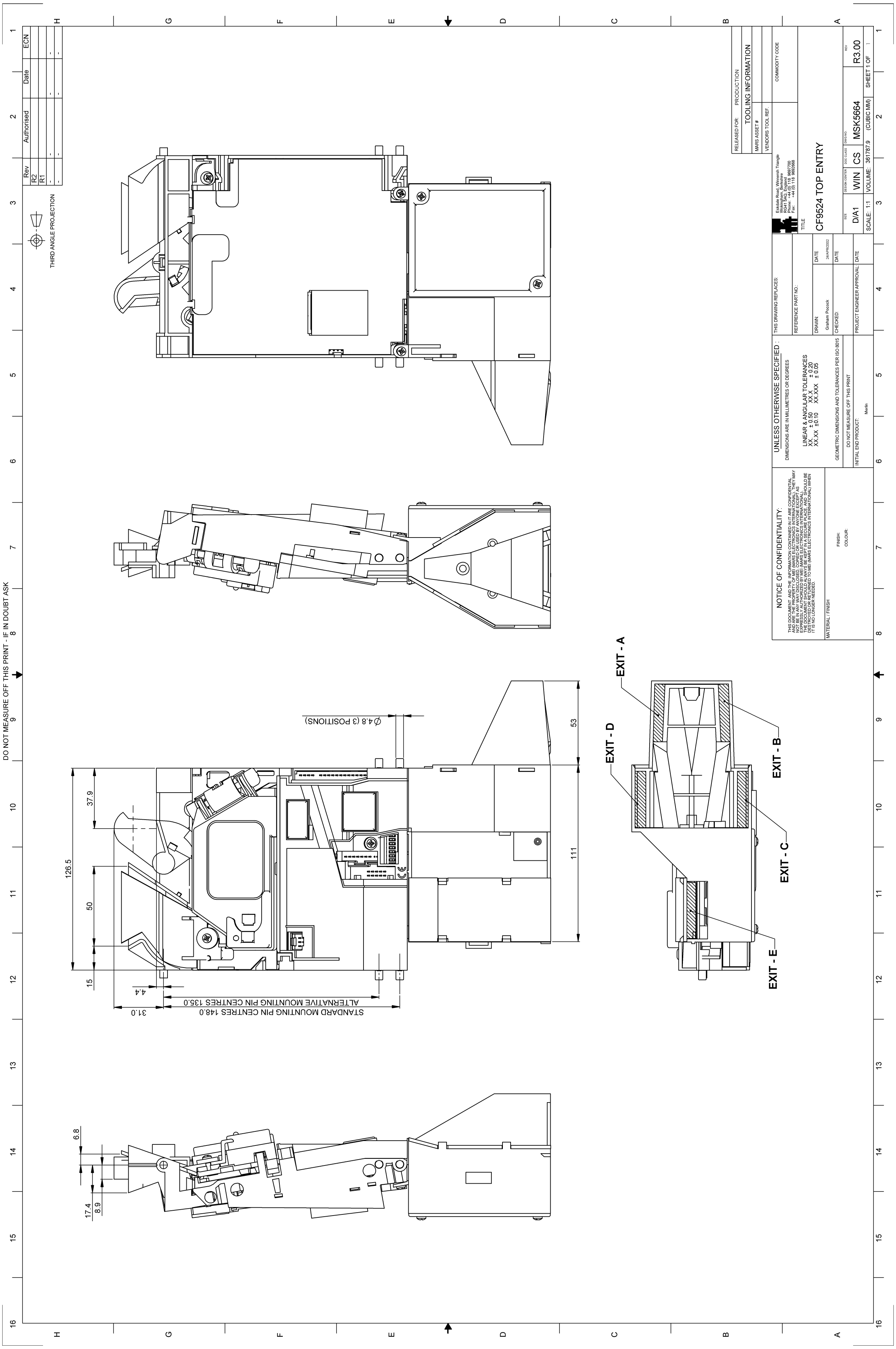
Drawing Number 35954 CF9528 system installation dimensions. - (Fitted with Long manifold)

Drawing Number 35961 CF9528 system installation dimensions. - (Fitted with Short manifold).

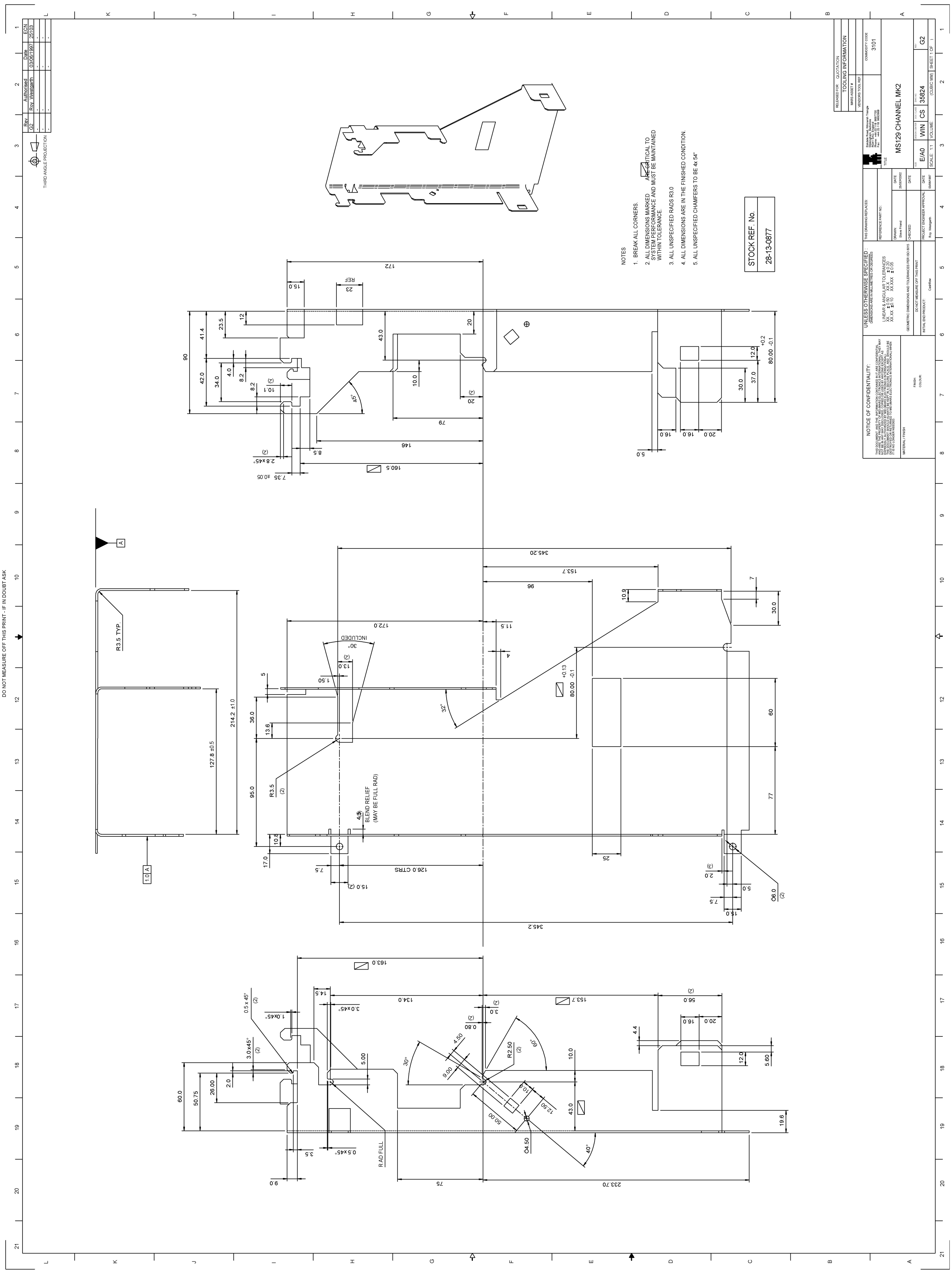

FRONT PLATE MOUNTING DETAILS
SCRAP SECTION BB
SCRAP SECTION AA
Ø4.8 HOLES
4.75 MAX TYP
DO NOT MEASURE OFF THIS PRINT - IF IN DOUBT ASK

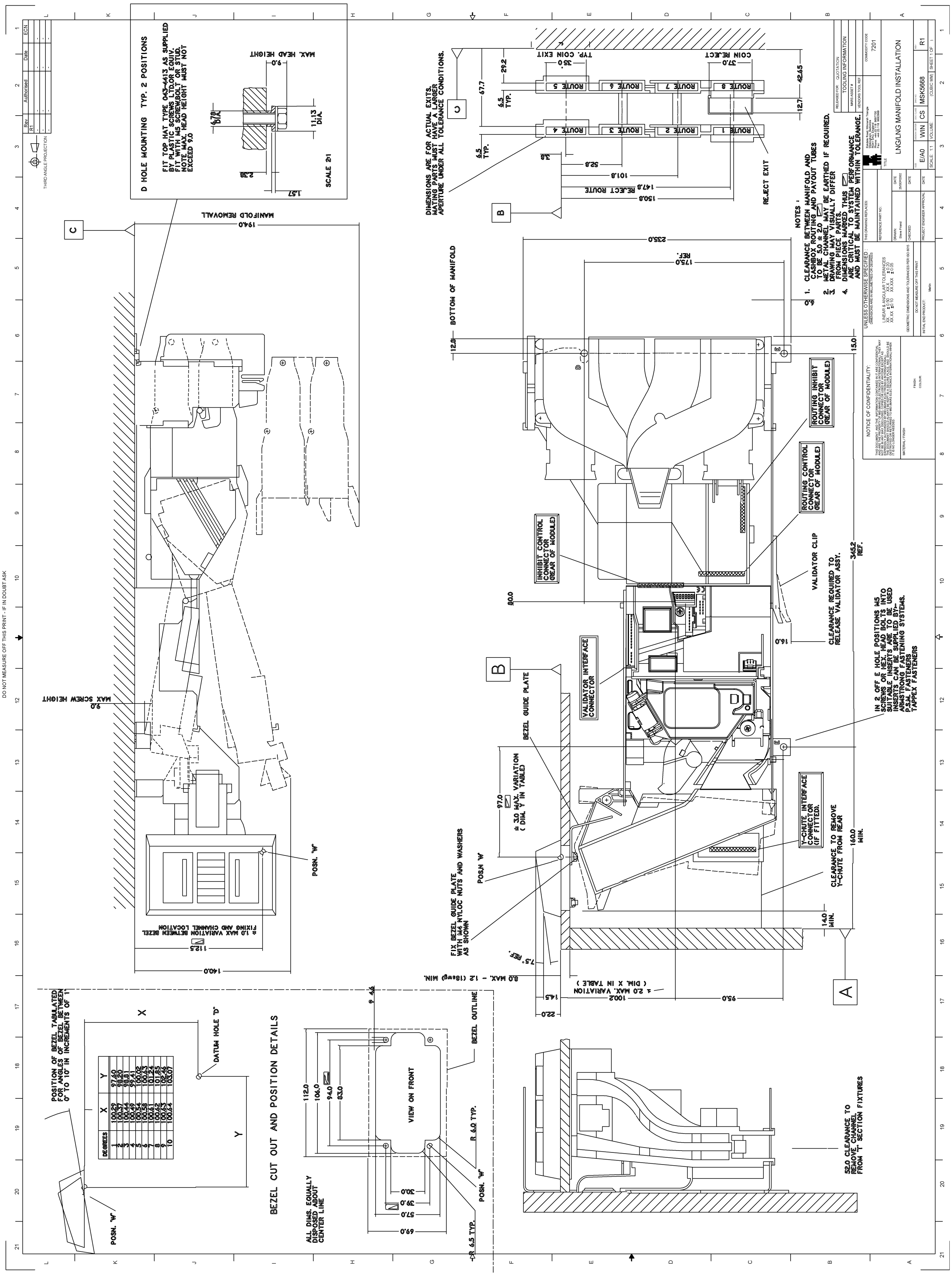

DO NOT MEASURE OFF THIS PRINT - IF IN DOUBT ASK
THIRD ANGLE PROJECTION
Rev
Authorised
Date
ECN
17901
1.2
18 SWG
1. MAX. PAINT THICKNESS 0.06 ON SURFACE
& 0.50 ON ENDS. MUST NOT INTERFERE
WITH INTERNAL APERTURES.
2. MARS PART No. 28-13-0063
4 HOLES Ø3.3
10 HOLES
4.50/4.75 SQ
197.8
128.2
98.0
14.7
40.7
11.4
6.2
40.0
10°
39.2
11.0
21.5
27.2
52.0
67.0
77.0 ±0.3
7.5
12.5±0.3
23.0
14.5
23.4
8.5
2.0
34.1
15.1
11.5
38.1
26.72
6.95
19.5
4.4
48.75
1.8
169.3
37.9
111.5
223.0
5.0
233.0 ±0.5
NOTICE OF CONFIDENTIALITY:
UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETRES OR DEGREES
LINEAR & ANGULAR TOLERANCES
XX. ± 0.50 XX.X ± 0.20
XX.XX ± 0.10 XX.XXX ± 0.05
GEOMETRIC DIMENSIONS AND TOLERANCES PER ISO 8015
DO NOT MEASURE OFF THIS PRINT
Cashflow
FINISH:
COLOUR:
Steve Friend
25/SEP/2002
RELEASED FOR: PRODUCTION
TOOLING INFORMATION
COMMODITY CODE
3199
FRONT PLATE - STANDARD
C/A2
WIN
CS
32799
1
SCALE: 1:1
VOLUME:
(CUBIC MM)
SHEET 1 OF 1

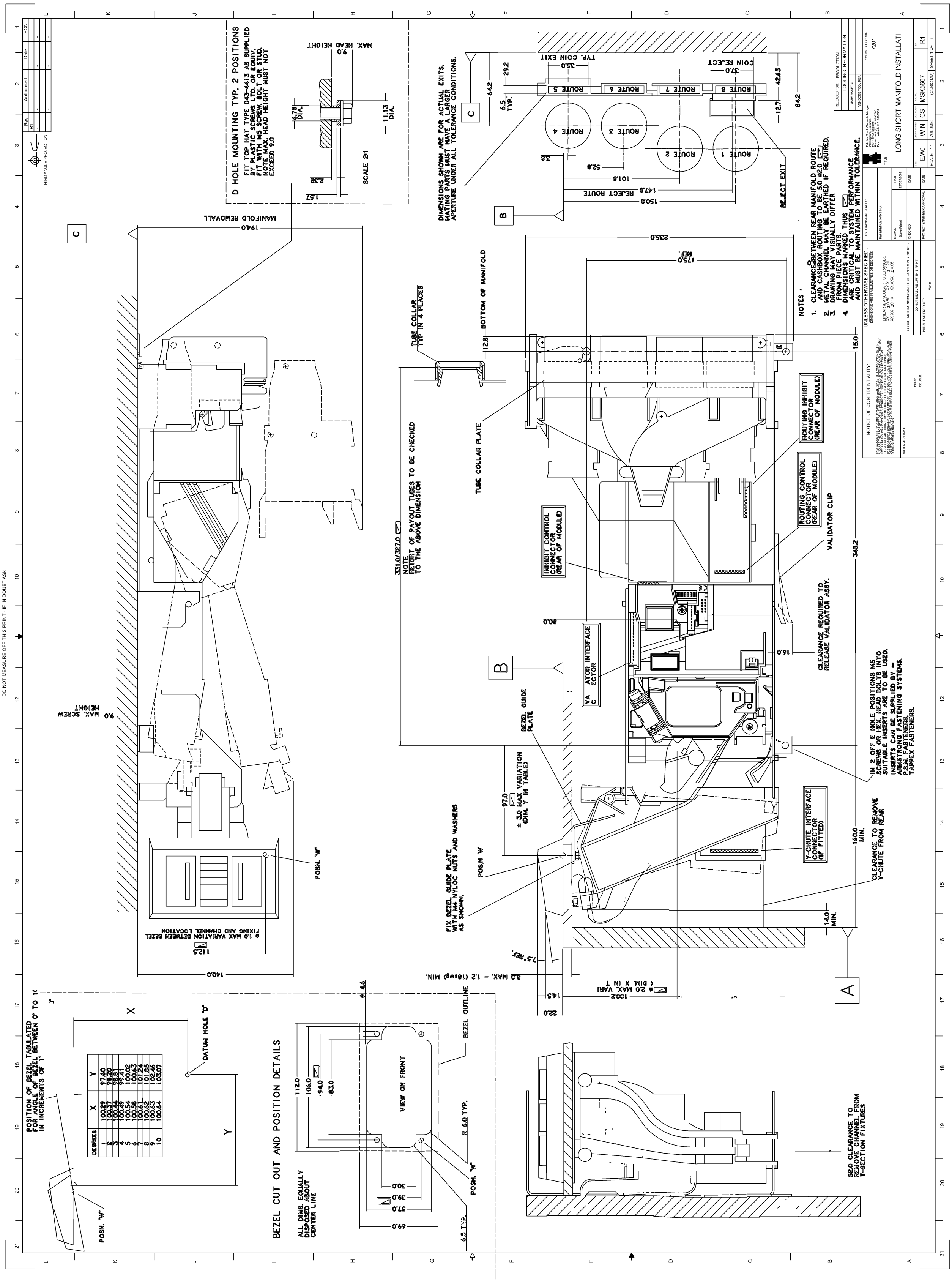

CF9524 FRONT ENTRY
MSK5666
R3.00
TOOLING INFORMATION
UNLESS OTHERWISE SPECIFIED :
NOTICE OF CONFIDENTIALITY:
THIRD ANGLE PROJECTION
DO NOT MEASURE OFF THIS PRINT - IF IN DOUBT ASK
MAX. PANEL THICKNESS
20.0
5.3
EXIT - A
EXIT - B
EXIT - C
EXIT - D
EXIT - E
REJECT EXIT
TYPE 'C' REJECT
COVER
4.5/4.75 SQUARE
233.0
223.0
111.5
66.8
185.0
174.9
135.7
126.7
77.0
67.0
40.0
61.6
52.0
18.5
11.3
7.8
5.0



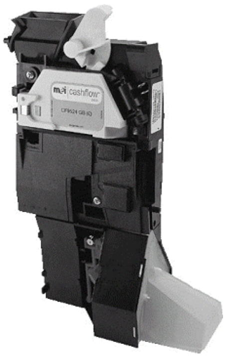
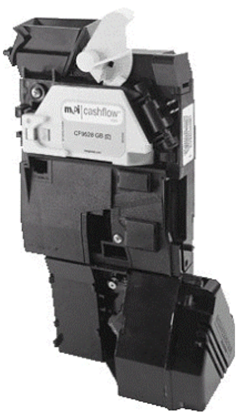
EXIT - A
EXIT - B
EXIT - C
EXIT - D
EXIT - E
CF9524 TOP ENTRY
MSK5664
R3.00
TOOLING INFORMATION
THIRD ANGLE PROJECTION
DO NOT MEASURE OFF THIS PRINT - IF IN DOUBT ASK
STANDARD MOUNTING PIN CENTRES 148.0
ALTERNATIVE MOUNTING PIN CENTRES 135.0
∅4.8 (3 POSITIONS)
UNLESS OTHERWISE SPECIFIED :
NOTICE OF CONFIDENTIALITY:


NOTES
1. BREAK ALL CORNERS.
2. ALL DIMENSIONS MARKED ARE CRITICAL TO SYSTEM PERFORMANCE AND MUST BE MAINTAINED WITHIN TOLERANCE
3. ALL UNSPECIFIED RADS R3.0
4. ALL DIMENSIONS ARE IN THE FINISHED CONDITION.
STOCK REF. No.
28-13-0877
MS129 CHANNEL MK2
DO NOT MEASURE OFF THIS PRINT - IF IN DOUBT ASK


LNG/LNG MANIFOLD INSTALLATION
MSK5668
THIRD ANGLE PROJECTION
DO NOT MEASURE OFF THIS PRINT - IF IN DOUBT ASK
D HOLE MOUNTING TYP. 2 POSITIONS
MANIFOLD REMOVAL
BOTTOM OF MANIFOLD
REJECT EXIT
COIN REJECT
TYP. COIN EXIT
VALIDATOR CLIP
BEZEL CUT OUT AND POSITION DETAILS


LONG SHORT MANIFOLD INSTALLATI
MSK5667
BEZEL CUT OUT AND POSITION DETAILS
VIEW ON FRONT
D HOLE MOUNTING TYP. 2 POSITIONS
TUBE COLLAR PLATE
BOTTOM OF MANIFOLD
VALIDATOR CLIP
REJECT EXIT
DO NOT MEASURE OFF THIS PRINT - IF IN DOUBT ASK

COMPATIBILITY

Previously Used		New Product Equivalent		
CashFlow® 111 & CashFlow® 115	→	CashFlow® 9520	→	
CashFlow® 126	→	CashFlow® 9524	→	
CashFlow® 129	→	CashFlow® 9528	→	

PERFORMANCE STANDARDS

Power Supply

Full Operating Voltage range:	+10V to +15V DC (+12V nominal)
Supply Voltage Ripple:	Within Vmin to Vmax up to 100Hz, <250mV pk - pk for Frequency>100Hz
Current consumption:	• Quiescent current: 120mA Max • Max current: 3A Max (4 solenoids active, Cashflow® 9528)

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 that 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® 9524 and CashFlow® 9528 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.

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

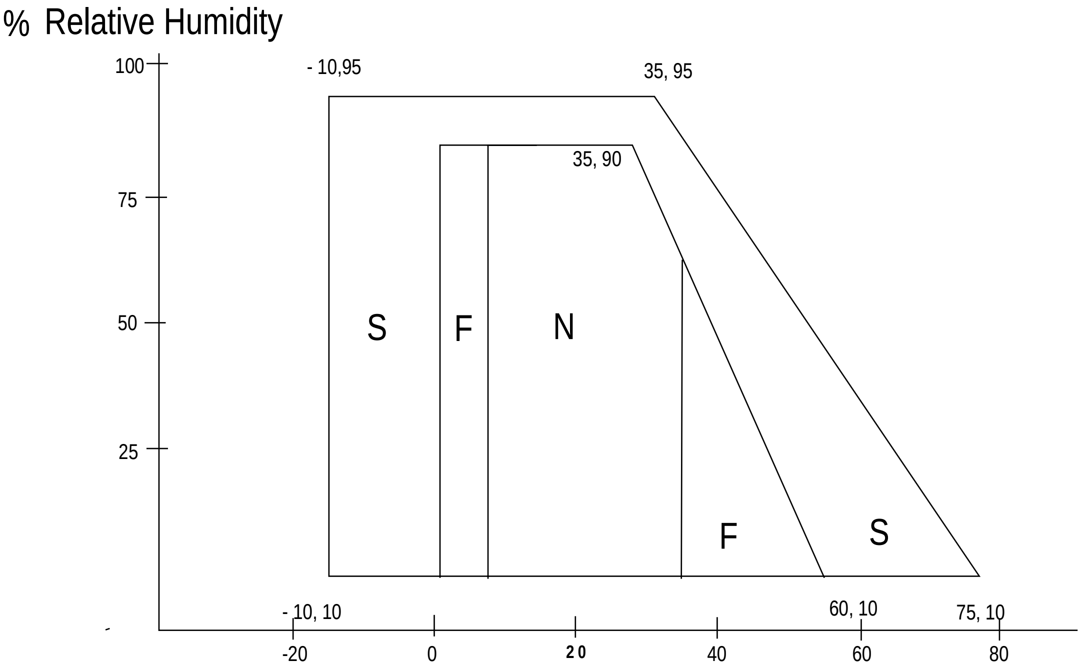
Max. rate of change 10°C/hr, non condensing

Humidity Range

Operational 10%RH - 90%RH, non condensing

Storage 5%RH to 95%RH, non condensing

Temperature / Humidity specification



Temperature ^{o}C

- 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

PRODUCT SUPPORT

In addition to the MEI offices around the world an international network of Distributors and Approved Service Centres can offer you technical support and other services as well.

These services include repairs, re-programming of your Cashflow® products with new coinsets, replacing damaged modules, and the supply of a range of spare parts.

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Fax: +49 61 816 216 1

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Fax: +49 24 317 613 7

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Via della Misericordia 45
20057 Vedano Al Lambro (MI)
Contact: Marco Porro
Tel: +39 039 2495678
Fax: +39 039 2495679

ITALY

s.a.s. ERREMA di Temporiti & C
Via dell'Industria 5-5/A
20094 Corsico MI
Contact: Felice Penzo
Tel: +39 02 45 869762
Fax: +39 02 45 869784

V.A.T. Srl
VENDING ASSISTANCE TEAM
VIA BENADIR, 14
20132 MILAN
ITALY
Contact: Mr. Franco Cantore
Tel: +39 02 28040704 / +39 02 45470928
Fax: +39 02 28001971

V.M.V. S.r.l.
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37047 S. Bonifacio (VR)
Contact: Marco Mion
Tel: +39 045 6 103288
Fax: +39 045 6 103289

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c/ Gonzalaz Davila, 20-2 0planta
Poligono Industrial De Vallecas
28031 Madrid
Contact: AndrŽs Martinez
Tel: +34 91 3802200 (Service Centre only)
Fax: +34 91 3802652

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Barcelona
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Tel: +34 93 564 7800

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GREAT BRITAIN

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Fortune House
Moxon Street
Barnet
Herts
Contact: Steve Smith
Tel: 0208 275 3000
Fax: 0208 275 3030

EUROCOIN LTD
Fortune House
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Barnet
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Contact: Steve Smith
Tel: 0208 275 3000
Fax: 0208 275 3030

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Farnborough
Hampshire GU14 6TG
Contact: Mike Clokie
Tel: 01252 375302
Fax: 01252 541615

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Fax: +47 66 80 63 71

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BELGIUM

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1860, MEISE
Tel: +32 22 68 1369
Fax: +32 22 68 6502

HELPING YOU DELIVER

YOUR REPRESENTATIVE