SUZOHAPP

RM5 Evolution

EN

Coin Validator

Operating Manual

CE

GUIDE TO THE SYMBOLS IN THIS MANUAL

The following symbols have been included in this manual to facilitate its consultation.

Important information

Read carefully before use

Caution!

DICHIARAZIONE $C\ \epsilon$ DI CONFORMITÀ

THE MANUFACTURER: Comestero Group S.r.l. via M. Curie 8, 20060 Gessate MI

DECLARES

That the product:RM5

TYPE: Electronic coin mechanism
BRAND: Comestero
MODEL: RM5

Is conform to the following European Directives, including their latest amendments, as well as to the national implementation legislation:

2004/1087CEE

Observing the following indications :

EN 61000-6-1
EN 61000-6-3
EN 60950
EN 55022

Gessate, 15/02/2008
Riccardo Chionna , Amministratore Delegato Comestero Group S.r.l.

SAFETY INFORMATION

To prevent damages caused by short circuits and fires, this device is equipped with safety devices.

These devices must not, under any circumstance, be excluded from the circuit, nor must they be removed
Should they be deactivated to carry out maintenance or repair operations, it is possible to operate on the equipment only in absence of electric power.

The safety devices have been made in compliance with the regulations in force.
The operator must regularly verify the efficiency of the equipment.

Possible hazards from machine use

If kept in good conditions and if installed correctly (according to the indications in this manual), the equipment does not expose the user to any kind of hazards.

Risks from electricity: direct contacts during its connection to the main power supply.
Operations to be carried out by **qualified personnel**.

Risks during installation and preparation of the device.

Follow the installation instructions, in order to minimise risks to people and objects.

Risks from electricity: direct contacts during its connection to the main power supply. Operations to be carried out by **qualified personnel**.

Precautions :

- Make sure that the distribution line is sized according to the intensity of the current absorbed by the equipment.

- Carry out the earth connection before connecting equipment or aggregate devices.

Risks during the maintenance of the device

Risks from electricity: direct contact with live parts inside the electrical components cabinet.
Operations to be carried out by **qualified personnel**.

Precautions :

- Operate on the equipment only after ensuring that the main power switch is turned OFF.

GENERAL WARRANTY CONDITIONS

Please read the following carefully in order to understand the general warranty conditions for this product.

ART. 1 - Scope of application

These general terms and conditions shall apply to all the goods and services provided by our company. Placed orders shall imply the full and unconditional acceptance of these general terms and conditions of sale. The contract of sale shall be considered perfected when the Purchaser receives the order confirmation from the Seller.

ART. 2 - Electromagnetic compatibility and safety

Our company certifies that the supplied goods comply with the standards concerning electromagnetic compatibility and safety; mandatory declarations are indicated in detail in the plates and labels affixed on the products and in the technical documentation attached or available at our premises. The recipients of the supply undertake to use or market the supplied goods, ensuring the integrity, completeness and usability of such information.

ART. 3 – Warranty

Except in cases where the mandatory provisions in Leg. Decree No. 206/2005 ("Consumer Code") or in other relevant laws are to be applied, the goods and services are supplied under warranty by our company for a period of 12 months. This period starts from the date of purchase of the product. The warranty is exclusively limited to the normal operation of the goods supplied and to the result of the service provided. The warranty exclusively involves the repairs or replacement of the goods. Restoration of the goods to their normal operative state shall be carried out in our factory. Although not provided for here, Art. 1512 CC is also applicable in terms of revocation and limitation.

Our company shall not be liable in any way for operation of goods supplied in environmental conditions or technical conditions other than those established by our specifications, usually set out in the technical documentation. Any liability for direct or indirect damage not deriving from a malfunction is expressly excluded.

The warranty is void and null if the purchaser is insolvent in paying the established price.

The warranty does not apply in the following cases:

1. lack of or improper maintenance, even if carried out by qualified personnel;

2. repairs or alterations made by the purchaser on his unilateral initiative;

3. inadequate or irregular voltage in the power lines, insufficient flow rate and abnormal electrical systems;

4. corrosive action of detergents;

5. poor or non-functioning software or hardware or loss of data recorded by the purchaser as a result of storms, lightning, high temperature or voltage variations of the electric current, earthquakes, fire, etc.;

6. with reference to all the electrical components and mechanical plastic moving parts subject to normal wear, which must be replaced during routine maintenance;

7. where the products have been used in conjunction with or incorporated into equipment or materials whose specifications have not been approved in writing by the selling company;

8. tampering with the label showing the serial number of the machine;

9. fault or breakage due to transport, acts of vandalism, natural calamities or wilful damage;

10. wrong or bad installation of the product;

11. carelessness, negligence or lack of skill in using the product;

12. failure to comply with the operating instructions in the technical manual;

13. interventions for alleged defects or casual checks;

14. repairs carried out without our authorization.

Malfunctioning of the machine due to the software not being upgraded is not considered a defect. Comestero is not obliged in any way to upgrade the software free of charge or upgrade the mechanical components which may be necessary due to new coins or banknotes being introduced by the Italian and European authorities, when repairing a product that is covered by the warranty. However, such upgrades could still be requested from Comestero and the company is obliged to send a quotation to the customer prior to intervention.

Any repair or tampering carried out on the supplied goods by subjects who are not authorized by us will render the warranty null and void.

We declare to have carefully considered, to the best of our knowledge and manufacturing practices, the issue related to preventing the goods supplied from being violated by persons who intentionally intend to alter their operation. However, we shall no assume any liability for illegal conduct or damage that may result fraudulent use of the goods supplied. All required repairs not covered by the warranty must be paid for and the Comestero price list shall apply whose updates are regularly communicated.

ART. 4 – Limitation of Liability

Notwithstanding the hypotheses in art. 1229 of the Italian Civil Code and notwithstanding the mandatory provisions of law, for every damage caused directly or indirectly by failures or delays of the Seller or by the purchased products to objects or persons, including but not limited to lost profits and damage to the corporate image, the compensation payable by the Seller shall not exceed, in any case, 10% of the amount paid by the Purchaser for the product that caused the damage.

ART. 5 – Delivery

The goods subject of the supply are considered delivered at the time and in the place they are passed on to the carrier; therefore, our company shall not be held liable for total or partial shortages, damage or delays related to transport. Upon delivery, the recipient must duly note any errors or damage on the bill of lading. The Purchaser's refusal to accept or collect all or part of the ordered goods does not suspend obligation to pay. The terms of delivery indicated in the order confirmation allow for a

grace period of 60 days. Upon delivery, the Purchaser must carry out a complete technical verification of the quality and functionality of the product within eight days. If not, the product shall be considered accepted without reservations or objections by the Purchaser.

ART. 6 - Retention of Title

The supplied goods shall remain the property of our company until full payment of the price has been made. In the event of termination of the contract for non-payment, the Seller is entitled to claim the unpaid items held by the Purchaser, which must be returned at the Purchaser's expense. All sums already paid will be retained by the seller as compensation and penalty.

ART. 7 – Terms of payment

Invoices must be paid in accordance with the agreements and within the deadline specified on the invoice. Any delay in payment will automatically result, without the need of formal notice, the application of interest at the rate stipulated in Legislative Decree no. 231 of 9.10.2002, unless agreed otherwise. If the purchaser delays, each benefit in the terms and conditions that may have been granted shall be deemed null and void and the seller may demand immediate payment of all outstanding amounts as well as of additional orders on receipt of the goods.

ART. 8 – Returns

Return of faulty goods or of goods requiring our assistance must be expressly authorised by us. Therefore, we reserve the right to reject the return or ask you to return the good to another destination other than our headquarters. We shall be liable for the goods only when it will be delivered to the indicated address.

ART. 9 - Applicable law and court of jurisdiction

The supplies regulated by these general terms and conditions are governed by Italian law. Any dispute shall be resolved by the Court of Milan.

Dear customer,
thank you for choosing a Comestero product; by carefully following the indications of this instruction manual, you will be able to appreciate over time, and with much satisfaction, the quality of our equipments.
Please read the use and maintenance instructions carefully and comply with all safety precautions before using the equipment. Keep this manual for future reference.

Table of contents

EN

1. Introduction

This manual and its annexes provide all the necessary information for a correct installation of the product and all its components, as well as for its correct use and maintenance. The information contained in this manual can be modified without prior notice and do not constitute a commitment on behalf of Comestero.
Please refer to our website at http://www.comesterogroup.com/cms/download.html to download the latest version of this manual.
The information contained in this manual has been collected and verified with the utmost care; however, Comestero has no liability arising from its use.
Unless otherwise stated, any reference to companies, names, dates, and addresses is purely coincidental and has the sole purpose to illustrate the use of the product.
The reproduction of any part of this manual without prior authorisation by Comestero is prohibited.

EN

2. Product description

The RM5 validator is the result of the investment made by Comestero to provide the market with a reliable and extremely versatile product. The project started two years before the introduction of the new European currency, the EURO.Many were the investments as well as the visits to the different European mints in order to introduce a decidedly advanced product on the market. Despite our engagement we found out remarkable differences between the different coins produced in the various mints and even among the coins of the same mint. These differences are mainly caused by the alloy, i.e. the metal used. To face this problem, i.e. making the equipment accept the highest number of Euro coins possible, although structurally different, the RM5 coin validator has been equipped with 60 channels, thus increasing the possibility of adjusting up t 59 different coins.
The brand new electronics of the RM5 validator combines the extraordinary selectivity due to seven measuring sensors to the extreme versatility thanks to the CLONING system which allows to duplicate the equipment directly on site within a few seconds.
The series of RM5 electronic coin validators has been designed to fully meet the different requirements of the sectors using this product. In particular:

- automatic distribution.
- gaming and amusement.
- gas stations.
- parking areas.
- photocopiers.
- etc.

The RM5 Evolution series includes 10 versions with different performances to better meet the different requirements.

They all have the following basic features:

	EVOLUTION / E0 / AT	CC TALK VERSION
Acceptance:	59 coins and/or different tokens	16 coins
Maximum acceptance speed:	3 coins/second	3 coins/second
Power supply	+ 12Vdc±10%	+ 12 Vdc / + 24 Vdc±10%
Output signals	NPN open collector BC817 Output level "O" logic < 1.0 V	ccTalk serial protocol
Cloning and reprogramming	via portable programmer or personal computer	NO
Total disabling	High potential on pin 6	High potential on pin 6 or via software
Partial disabling	via DIP-SWITCH -only first 6 channels)	Via software
Size 3.5 inches – See "Size of Coin validator"		

Each version has its specific features that can be enabled or disabled by the customer either via RM5 PROGRAMMER (portable programmer) or PC program.

3. Warnings

Read this manual carefully before installation.
The indications and information contained in this manual are essential for a correct use of the product. Upon receiving your product, make sure it has not been damaged during transport.
Pay attention to the electrical connections. Faults and malfunctions deriving from non-compliance with the instructions contained in this manual are not covered by guarantee.
In this document, symbols are used to highlight important aspects that must be carefully observed.

4. Handling and unpacking

4.1 Delivery of the packaged product

Upon receiving your product, make sure it has not been damaged during transport. Should you notice damage of whatever nature, contact the delivery company and immediately file a complaint.

Following transport, the package must be intact, i.e., it must *not* show :

- dents, signs of knocks, deformation or rupture of the packaging.
- wet or damp patches or signs which indicate that the package has been exposed to rain, frost or heat.
- signs of tampering.

Also, make sure that the content of the packaging corresponds to your order.

4.2 Handling

To prevent any damages to the equipment, we recommend handling it inside its original packaging.
After a first inspection, reinsert the equipment in its packaging to bring it to its point of installation.

We recommend:

- not to knock the equipment.
- not to leave the equipment exposed to weather agents (even if inside its packaging).

4.3 Unpacking

The equipped machine is delivered following commissioning in two types of packaging according to the number of RM5 coin validators required.
Both packaging consist of corrugated cardboard. The packaging materials contained in it are made to meet the standards regarding recycling and disposal (as for disposal, follow the regulations in force in your country).

4.4 Coin validator dimensions

Front View   Left side

Fig. 1

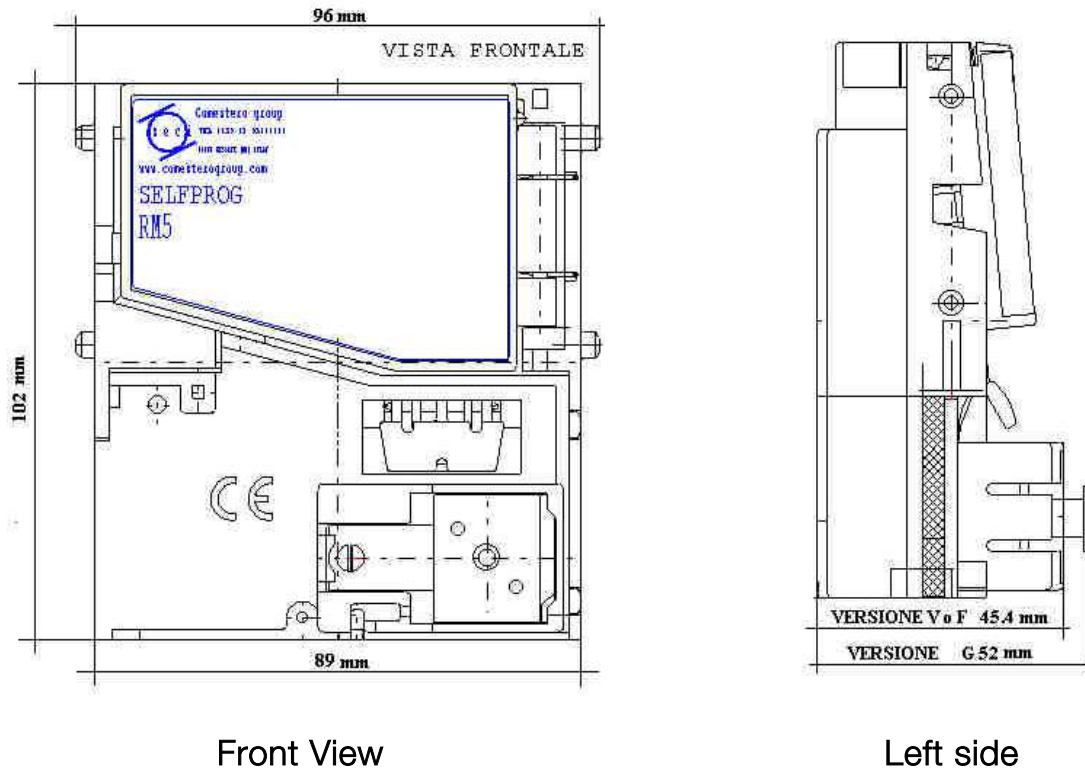## 4.5 Dimensional characteristics of the front panels

RM5 is compatible with front panel F1 and F6 that can be mounted both head on and back panel on any machine. For details on how to install them follow the leaflet attached to each plate.

A. Front panel F1
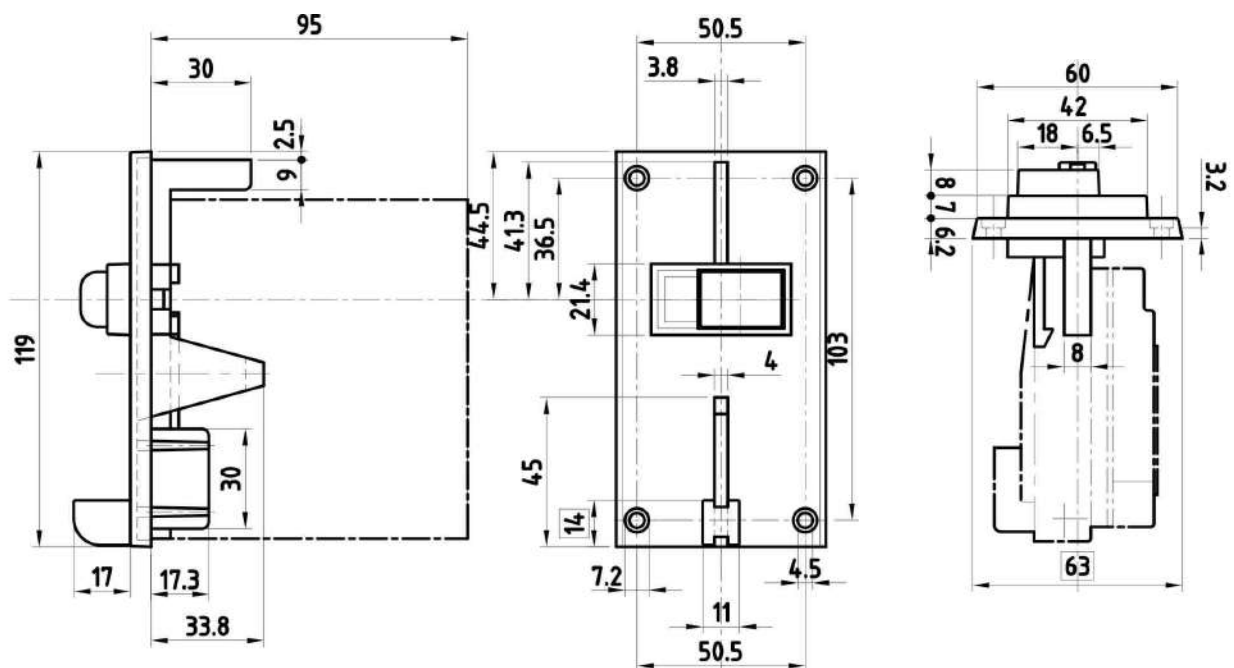
Fig. 2
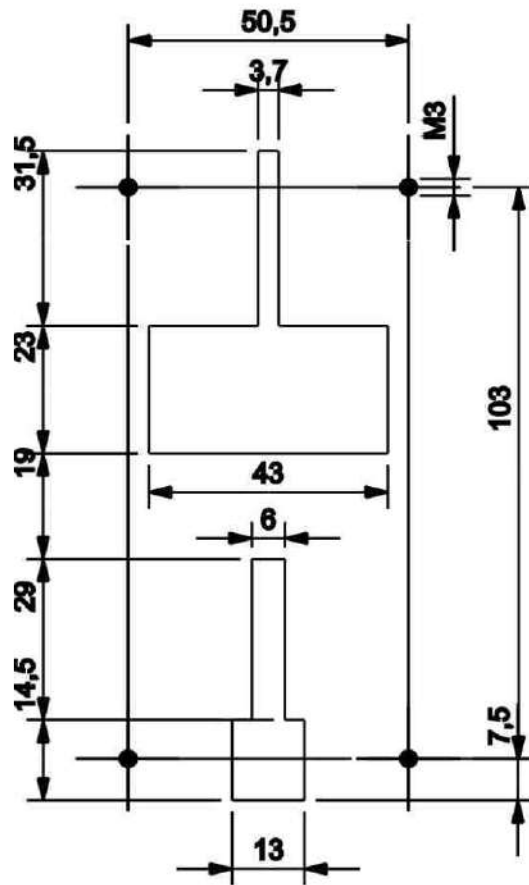
HOLES FOR FRONT PANEL F1

Fig. 3

B. Front panel F6
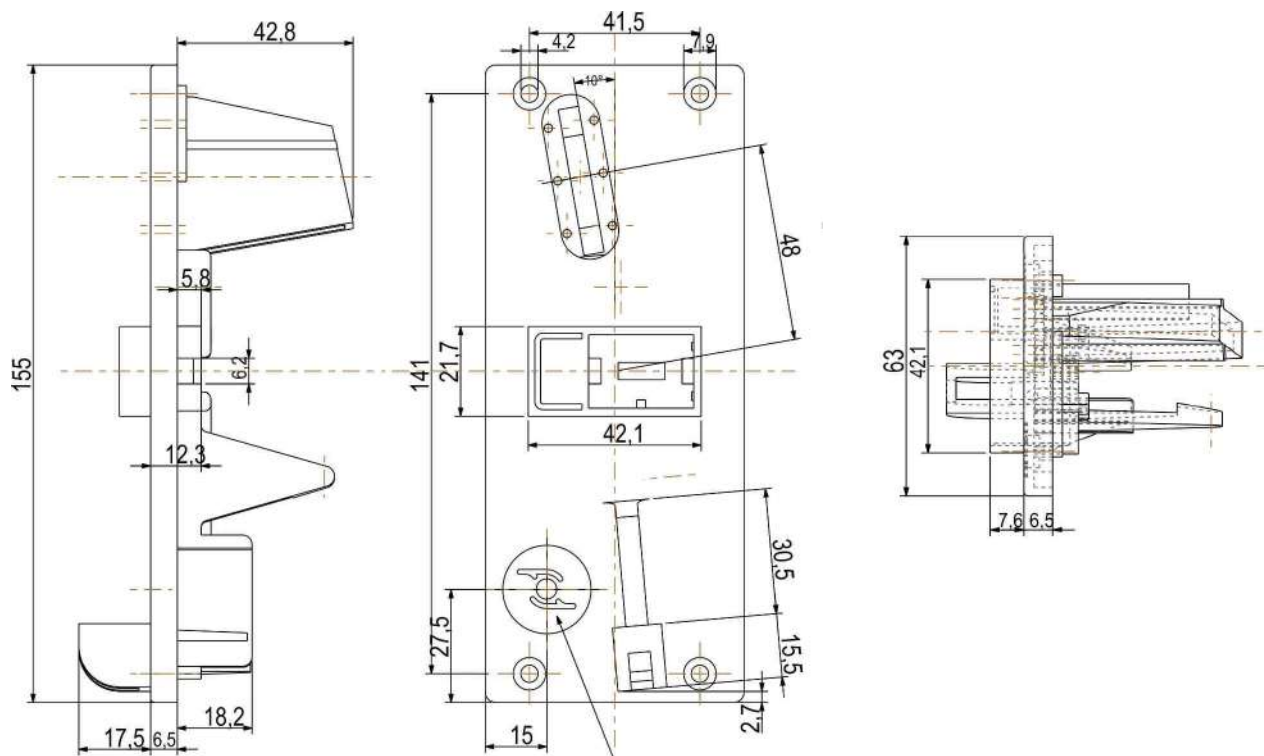
Fig. 4
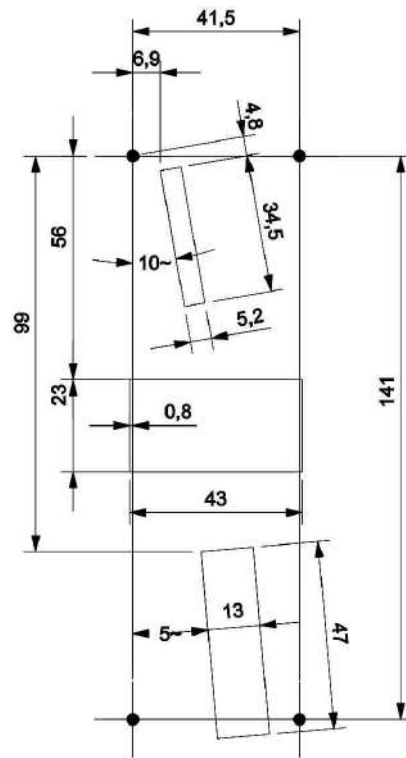
HOLES FOR FRONT PANEL F6

Fig. 5

C. Front panel F3
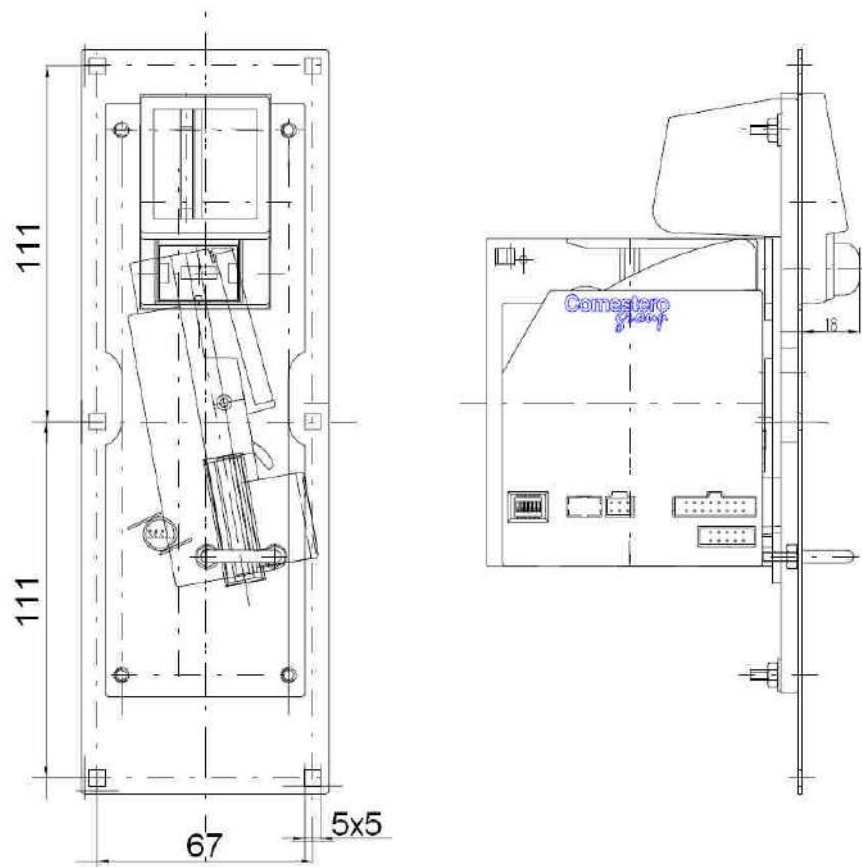
Fig. 6

4.6 Labels

In order to facilitate the validation of the equipment, i.e. of the configuration (operating mode) and of the adjustment (type of coins accepted), below is the graphic representation of the labels on the front or the back of the coin validator subdivided into models.

A. RM5 EVOLUTION

The label identifies:

- The serial number of the equipment.
- The type (V,G,F).
- The configuration.
- The adjustment.
- The value of the coins and the channels adjust.
- The exit of the coin.
- The power supply.

Take as example the label here below.
As you can see the label consists of 10 squares per line (VALUE) preceded by ten rectangles (OUT).
Inside the squares the "value of the coin adjusted" is entered; to identify the channel it is sufficient to read the "Value identifying the first channel of the line" and count the number of squares. For example, the second value on the third line identifies the 22nd channel. The rectangle "OUT" represents the output channel.
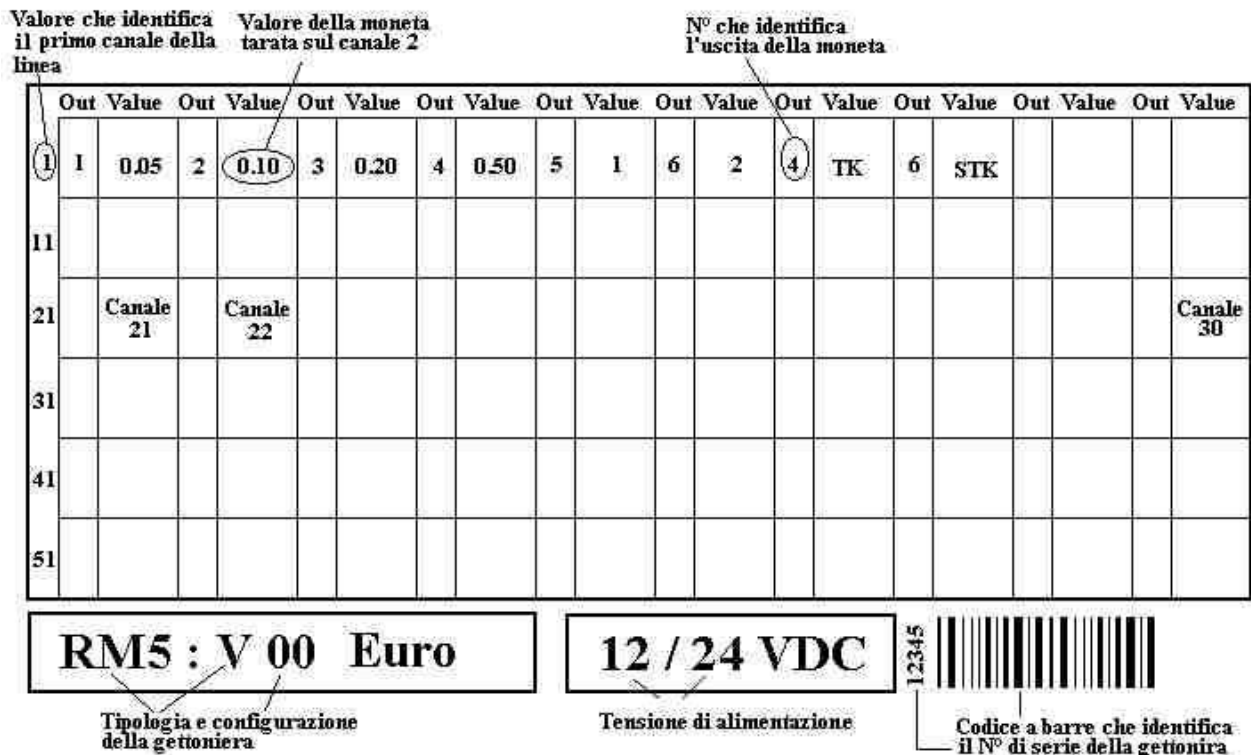
Fig. 7

Translations	
ITALIAN	**ENGLISH**
Valore che identifica il primo canale della linea.	Value identifying the first channel of the line
Valore della moneta tarata sul canale 2	Value of the coin adjusted on channel 2
N° che identifica l'uscita della moneta	No. identifying the coin output
Tipologia e configurazione della gettoniera	Type and configuration of the equipment
Tensione di alimentazione	Power •upplì
Canale	Channel
Codice a barre che identifica il N° di serie della gettoniera	Bar code identifying the serial number of the equipment

B. RM5 CC TALK

The label identifies:
- The serial number of the equipment.
- The type (V,G,F).
- The configuration.
- The value of the coins and the channels adjust.
- The power supply.

Fig. 8

C. RM5 AT

The label identifies:

- The serial number of the equipment.
- The type (V,G,F).
- The configuration.
- The value of the coins and the channels aduste.
- The separator output.
- The power supplì.
- The indication of the first pulse.

D. RM5 E0

The label identifies the following items.

- The serial number of the equipment.
- The type (V,G,F).
- The configuration.
- The value of the coins and the channels adjusted.
- The coin output.
- The separator output.
- The power supply.

5. Installation

5.1 Installation

A. Models

In order to meet the requirements of various markets, Vending, Games, Car wash, etc. the mechanical features of the coin validator come in three different models:

- MODEL V (Vending).
- MODEL F (Reduced front panel).
- MODEL G (Gaming).

Model	Coin entrance	Coin rejected
V	Upper	Frontal
F	Upper or frontal	Frontal
G	Upper	Lower / rear

The two pictures below, show the different coin path used in the two most used versions (Version V and Version G) among the three mentioned above.

V and G coin validator version
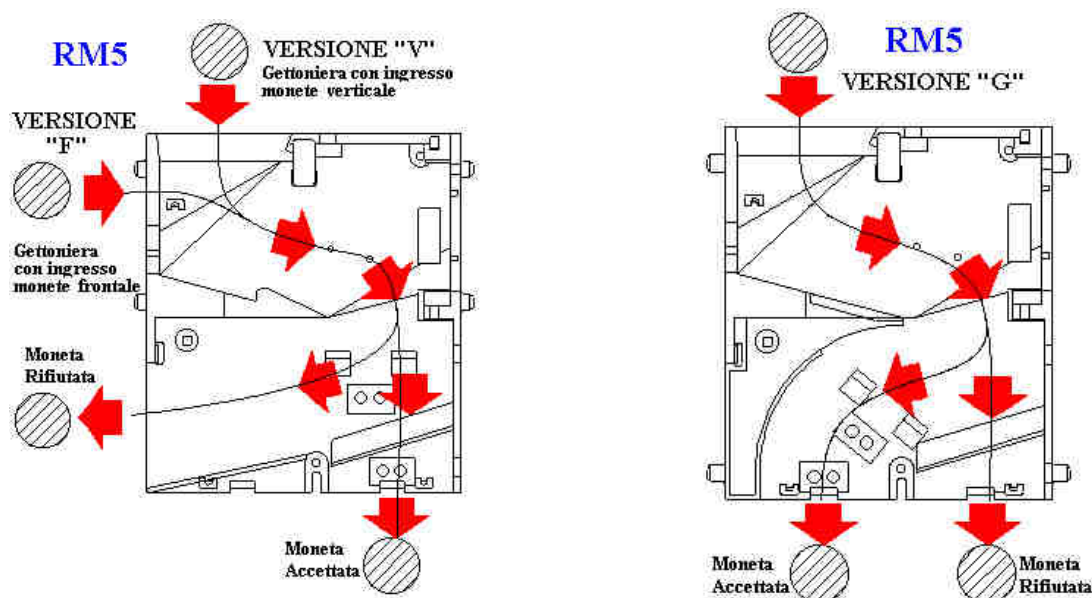
Version V	Version G

Translations	
ITALIAN	ENGLISH
Versione "V"	Version "V"
Gettoniera con ingresso monete verticale	Coin validator with vertical coin insertion
Versione "F"	Version "F"
Versione "G"	Version "G"
Gettoniera con ingresso monete frontale	Coin validator with coins front insertion
Moneta rifiutata	Coin rejected
Moneta accettata	Coin accepted

Models "V" and "F", are identical, as regards coin introduction and rejection. They differ as regards their applications.

Model "V" can be used both for front application featuring the F6 front panel (Code RM F6), see paragraph 4.5 "Dimensional characteristics of the front panels", and for application of traditional 5" placing the specific mechanical adapter (Code RM ADAPTER / 5).

Model "F" can be used only for front application both with F6 front panel and with F1 reduced panel (Code RM F1). See paragraph 4.5 "Dimensional characteristics of the front panels".

Model "G" can be applied on appropriate vertical supports, such as standard video doors or RM37/IL front panels or doors with luminous push button, with coin separator, if any.

5.2 Connections

In order to assure the highest level of compatibility with the currently available systems, the RM5 coin validator in the 12-24Vdc power supply version shown on the label is equipped with a standard 10 Pin connector, usually powered with 12Vdc and one standard 16 Pin conector, usually powered with 24Vdc and also has the opportunity to exploit the same connectors with 12Vdc and 24Vdc power supply. Moreover the programming connector also acts as serial output which responds by sending the value of the introduced coin to the computer.

There are two different Hardware versions: RM5 Evolution (standard) / EO / AT and RM5 CC TALK, please refer to the images below.

The following paragraphs provide the necessary information to connect RM5 using the connectors of which is equipped. RM5 is available in 3 different versions: ccTalk (Full cctalk version), Validator and Totalizer.

In case of inductive load, it is necessary to externally protect outputs by means of clamp diodes (1N4001 or equivalent). Please refer to the diagram.
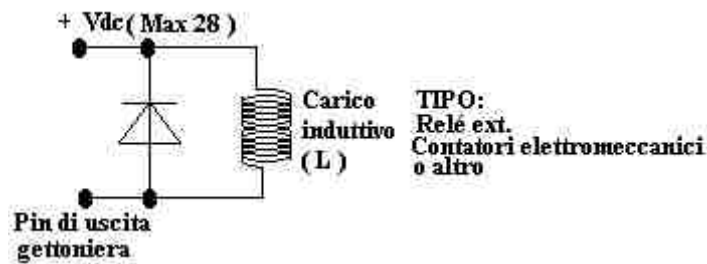
Fig. 9

Translations	
ITALIAN	**ENGLISH**
Carico induttivo (L)	Inductive load (L)
TYIPO : Relè ext.	TYPE: ext, relay
Contatori elettromeccanici o altro	Electromechanical counters or others
Pin di uscita gettoniera	Coin validator output pin

A. Connection of the ccTalk version with sorter (Italy and Full)
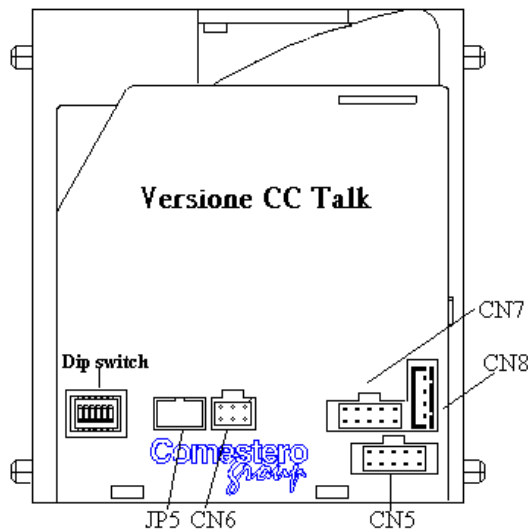
Fig. 10

MEANING OF CONNECTORS
FOR CC TALK COIN VALIDATOR

- JP5 : Empty.
- CN5 : Standard 10 Pin connector.
- CN6 :Programming connector or serial output.
- CN7 : 10 Pin CC Talk Connector.
- CN8 : 4 Pin CC Talk Connector.

B. Evolution version connection /E0 / AT
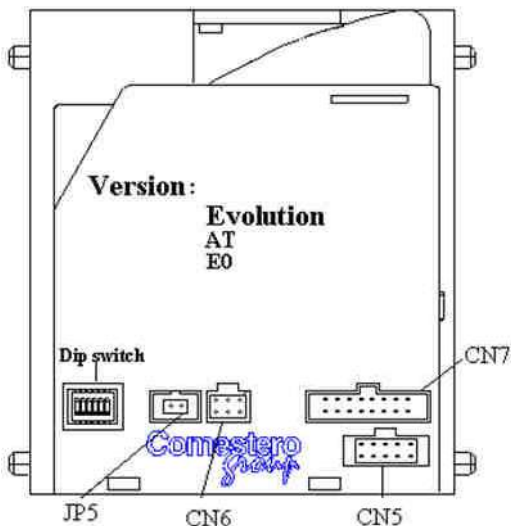
Fig. 11

CONNECTOR MEANING FOR VERSIONS :
EVOLUTION / E0 / AT

- JP5 : Wake-Up connector.
- CN5 : Standard 10 Pin connector.
- CN6 : Programming connector or serial output.
- CN7 : Standard 16 Pin connector.

C. Pin-out of 16 Pin standard connector (valid for evolution version only (CN4))

The 16 Pin standard connector is used in all those applications where it is necessary to interface with a machine using or needing a 16 Pin parallel payment system. Available only for EVOLUTION coin validators.
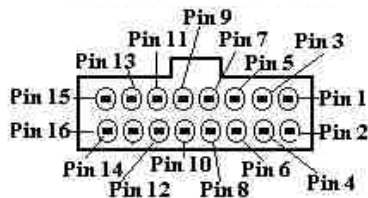
N°Pin	Meaning	N°Pin	Meaning
1	N.U (not used)	9	CH 4
2	N.U (not used)	10	CH 5
3	N.U (not used)	11	CH 6
4	N.U (not used)	12	CH 2
5	N.U (not used)	13	CH 1
6	Inhibit	14	N.U (not used)
7	CH 3	15	N.U (not used)
8	Gnd	16	+ 12 /24 Vdc

D Pin-out of 10 Pin standard connector (CN5)

As the pin meaning varies according to the configuration of the coin validator, please refer to the relevant paragraph.
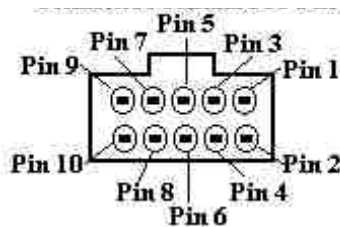
N°Pin	Meaning	N°Pin	Meaning
1	Gnd	6	Inhibit
2	+ 12 /24 Vdc	7	CH 1
3	CH 5	8	CH 2
4	CH 6	9	CH 3
5	N.U (not used)	10	CH 4

E Pin-out of serial connector (valid for all versions (CN6))

Starting from series number 90000, every RM5 electronic coin validator ,with any configuration, is equipped with a serial output: therefore if it is necessary to connect it or operate it via PC, it is sufficient to connect the appropriate interface cable and build the desired software. The transmission protocol is provided on request.
The validator responds to PC by sending the value of the coin introduced.
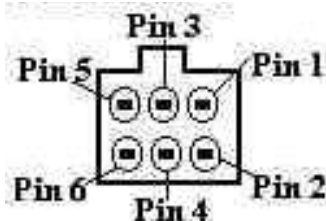
N°Pin	Meaning	N°Pin	Meaning
1	Gnd	4	RX
2	+ 5 Vdc	5	N.U (not used)
3	TX	6	N.U (not used)

F Wake-up connector (valid for Wake-up version only (JP5))

In those applications where an extra low comsumption coin validator is required, on request, it is possible to use a special version with wake-up device.

This special coin validator is usually in a "Stop" status with reduced consumptions, lower than 90 micro Ampere. Further to the introduction of the first coin, the equipment restores its normal functions for a given time, then it returns to "Stop" status.

The coin validator is supplied with a jumper which MUST be used only during the programming phase.

This jumper prevents the equipment from going into low consuption status and therefore it can be adjusted or programming can be modified. Insert jumper between the two pins of WAKE-UP connector as shown in the figure.

Remember not to leave it on, otherwise the equipment will never go to low consumption status and as a consequence the battery will quickly run down.
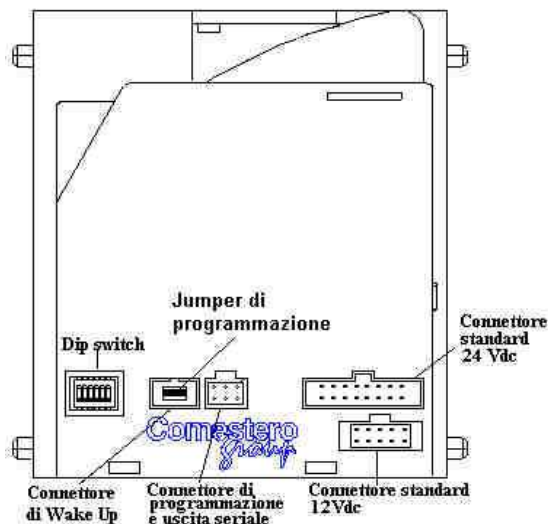
Fig. 12

Translations	
ITALIAN	ENGLISH
Jumper di programmazione	Programming jumper
Connettore standard 24 Vdc (12Vdc)	Standard connector 24 Vdc (12Vdc)
Connettore di programmazione e uscita seriale	Programmino connector and serial output
Connettore di Wake Up	Wake Up connector

Programming jumper

 Programming condition (Jumper ON)

 Work condition (Jumper OFF)
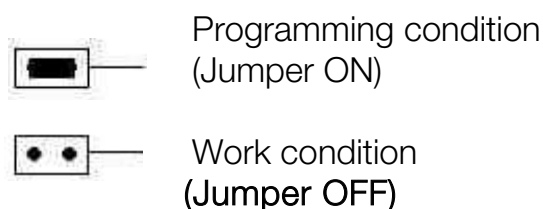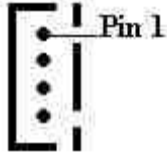
G. ccTalk connections

THE CC TALK VERSION IS PROVIDED WITH THE FOLLOWING CONNECTORS :

- CC TALK 4 Pin CONNECTOR(CN8) Model B 4B-XH-A (JST)

N°Pin	Meaning
1	+V
2	N.U. (not used)
3	0 V
4	Data

- CCTALK VERSION SEPARATOR CONNECTOR (CN5)

The RM5 coin validator can pilot a coin separator through pins 3 and 4 of the 10 pin standard connector. The control consists of a low signal (Open Collector which closes to mass) for a given time of 500 msec that cannot be modified.
For the coin validator to control the separator it is necessary, through CLONE5 PC program, to enable the separator function and to set the desired falling position.
(Please refer to Clone 5 manual).

N°Pin	Meaning	N°Pin	Meaning
1	Gnd	6	Inhibit
2	+ 12 /24 Vdc	7	CH 1
3	CH 5	8	CH 2
4	CH 6	9	CH 3
5	N.U (not used)	10	CH 4

- CC TALK 10 Pin connector (CN7)

N°Pin	Meaning	N°Pin	Meaning
1	Data	6	N.U (not used)
2	N.U (not used)	7	+ V
3	N.U (not used)	8	0 V
4	N.U (not used)	9	N.U (not used)
5	N.U (not used)	10	N.U (not used)

5.3 Dip Switch

The dip-switches can carry out three different functions: STANDARD FUNCTION, 3,3 FUNCTION, 4,2 FUNCTION.

A. Standard function

THIS IS THE DEFAULT FUNCTION.
Using the dip-switch group it is possible to program the equipment in Self-prog mode (**EXCEPT FOR RM5 X CC, RM5 X E0, RM5 X AT**). Please refer to paragraph "PROGRAMMING SYSTEMS" or use the same to manually inhibit five of the first six channels they are associated to.

When the dip-switch in on "ON" the channel is inhibited, when it is on "OFF" (NUMBER SIDE) it is enabled. If for example you do not want the equipment to accept a coin, it is sufficient to look at the adjustment channel on the label and to put the relevant dip-switch on "ON". When you want to re-enable it, just put the dip-switch on "OFF" again.

Channels 3 and 4 inhibited

Channels 1,2,5,6, enabled
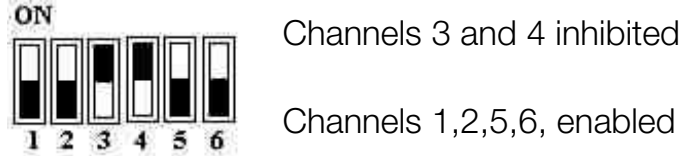
B. 3,3 Function

It is possible to request this function in the purchase order or to set it through "Clone5" (please refer to paragraph "PROGRAMMING SYSTEMS").

Using the dip-switch group, it is possible to program the equipment in Self-Prog mode (please refer to paragraph "PROGRAMMING SYSTEMS).

In the "Totalizer" versions it is possible to set the credit price using the first 3 dip-switches while the other three are used to set a bonus threshold (Version 20, 40, 60) or the service time (Version 30).

- PRICE AND BONUS SETTING VIA DIP-SWITCHES

When the dip-switches are disabled (all on "OFF") the internal programming of the equipment will apply.

When the dip-switches are set the credit cost is equivalent to the binary value of the first three multiplied by the basic value of the equipment, while the last three dip-switches show <u>the number of credits</u> after which 1 bonus is given.

Credit setting
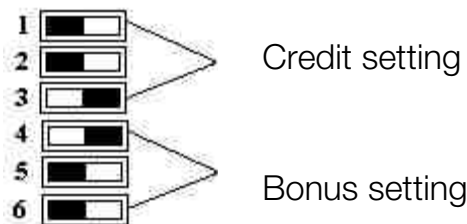
Bonus setting

The difference with respect to the setting with RM5 PROGRAMMER or with CLONE 5 (please refer to paragraph "PROGRAMMING SYSTEMS) is that it is possible to set **only <u>one</u> bonus which must however be a multiple of the basic cost of the credit.**

Example: with X21 validator adjusted on 0,50 ; 1,00 ; 2,00 €.

As shown in the figure the credit is 5 times (expressed in Binary on the first 3 dip-switches) the basic value of the equipment, 5x 0,50 = 1,50

The bonus is given further to an introduction which is twice the credit value. i.e 2x1,50=3,00€.

Therefore when a set of coins is introduced and the credit value is reached, i.e. 1,50€ the coin validator will send a pulse to the machine; if more coins are introduced and the bonus value is reached, i.e. 3,00€ the equipment will send the second pulse plus the bonus pulse. 3,00€=2 pulses x 1,50€ + 1 bonus pulse.
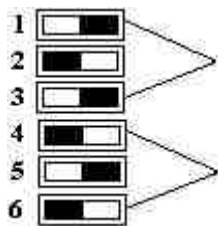
5 binary therefore the credit is 5 times the base value.

2 binary, therefore the bonus is given when the second credit is reached

C. 4,2 function

Similar to the previous function, it is possible to request this function in the purchase order or to set it through "Clone5" (please refer to paragraph "PROGRAMMING SYSTEMS)

Using the dip-switch group, it is possible to program the equipment in Self-Prog mode, (please refer to paragraph "PROGRAMMING SYSTEMS)

In the "Totalizer" versions, it is possible to set the credit price using the first <u>4</u> dip-switches, while with the remaining <u>2</u> it is possible to set a bonus threshold (Version 20, 40, 60) or the service time (Version 30).

BINARY CONVERSION TABLE

(FUNCTION DISABLED FOR : RM5 X CC, RM5 X E0, RM5 X AT)

Example of price setting with DIP-SWITCH on a Euro-adjusted coin validator with base coin 0,05 €

$$0 = \text{Dip on OFF} \qquad\qquad 1 = \text{Dip on ON}$$

CREDIT SETTING

1 2 3 4 5 6

0 0 0 0 0 0	=	DIP OFF	internal programming will apply
1 0 0 0 0 0	=	1 x 0,05 = Prezzo vendita	0,05 €
0 1 0 0 0 0	=	2 x 0,05 = Prezzo vendita	0,10 €
1 1 0 0 0 0	=	3 x 0,05 = Prezzo vendita	0,15 €
0 0 1 0 0 0	=	4 x 0,05 = Prezzo vendita	0,20 €
1 0 1 0 0 0	=	5 x 0,05 = Prezzo vendita	0,25 €
0 1 1 0 0 0	=	6 x 0,05 = Prezzo vendita	0,30 €
1 1 1 0 0 0	=	7 x 0,05 = Prezzo vendita	0,35 €

BONUS SETTING

1 2 3 4 5 6

x x x 1 0 0	=	1 = Bonus credit (2 pulses x credit)
x x x 0 1 0	=	2 = Bonus twice the credit
x x x 1 1 0	=	3 = Bonus 3 times the credit
x x x 0 0 1	=	4 = Bonus 4 times the credit
x x x 1 0 1	=	5 = Bonus 5 times the credit
x x x 0 1 1	=	6 = Bonus 6 times the credit
x x x 1 1 1	=	7 = Bonus 7 times the credit

6. Programming

Thanks to the state-of-the art electronics used, the coin validator can be programmed in three different modes:

- SELF-PROG FUNCTION (FUNCTION DISABLED FOR : RM5 X CC, RM5 X AT, RM5 X E0).

- PORTABLE PROGRAMMER (2 MODELS AVAILABLE, ONE FOR EVOLUTION VERSION AND ONE FOR CC TALK).

- PC KIT (2 PROGRAMS AVAILABLE, ONE FOR EVOLUTION, E0, AT VERSION,ONE FOR CC TALK VERSION).

6.1. Self-prog function

(FUNCTION DISABLED FOR : RM5 X CC, RM5 X AT, RM5 X E0)

The SELF-PROG function is extremely useful in case of programmation of a coin or a token directly on the machine where they are installed as the first six channels of the RM5 validator can be reprogrammed wihout requiring any external equipment. To be noted that , in addition to the programmation of the coin/token on the specific channel, other parameters of the validator may be modified, such as for example the value attribution; in this case it is absolutely necessary to use either the Portable Programmer or the PC Kit.

Programming a token or a coin on channel No. 6

- With machine off, put the 6 DIP-SWITCHES to "ON"

- Energize and insert 15 coins/tokens

- Wait for the double "clack" of programming end

- Put DIP switches to OFF

- Switch off the validator and switch it on again

Programming tokens and/or coins on channels 1 to 5

- With machine off, put the 6 DIP-SWITCHES to "ON"

- Energize and insert 1 or 2 coins

- Leave on ON only the SWITCH corresponding to the channel to be programmed

- Insert coins until the double "clack" of programming end

- Put DIP switches to OFF

- Switch off the validator and switch it on again

NOTE:
At the end of the procedure the first two coins introduced may be rejected. With the operation the new adjustment (coin/token) will keep the previously programmed value. In X 21 configuration the credit will be equal to the previously set game price.

6.2. Portable programmer

The major innovation determining the strong point of the equipment, in particular in this period of major changes, is given by the Portable Programmer: the RM5 PROGRAMMER,which modifies all functions of the equipment on site and also includes the "CLONING" function.

This fuction allows to take the data from one coin validator or from a PC and to transfer them to another coin validator which will therefore be identical to the first one: adjustment, configuration and options incuded.

For the versions RM5 X CC, RM5 X AT, RM5 X E0 it is ONLY POSSIBLE TO READ THE DATA CONTAINED IN THE EQUIPMENT.

There is also a cheaper "EASY"version, not including some of the functions, such as the configuration change and duplication.

For these functions and for the performances provided by the two models, please refer to the manual of the portable programmer.

6.3. PC Kit

The computer kit is certainly the most complete system to adjust and check every single option of the equipment.
It consists of a CD-ROM containing the software, an interface cable containing an SMD board for RS232 connection, a feeder, a validator support, and a test box useful for the power supply and to check the correct operation of the validator.
To this purpose please refer to "CLONE 5" PC kit manual.

For versions RM5 X CC a dedicated program is available.

7. Configuration

Every validator is identified by a code consisting of six characters which determines the configuration, i.e. the operation mode. Reference is now made to the code below which appears on the validator label.

RM5 X nn		
RM5	X	nn
It identifies the type of coin validator	It identifies the type of mechanical set-up V, F, G	It identifies the type of configuration

The currently available versions are:

RM5 X 00: Electronic validator

RM5 X CC: Validator with CC Talk protocol

RM5 X E0: SPAGNA mode validator

RM5 X AT: SPAGNA mode validator with differentiated time pulses

RM5 X B0: Binary validator

RM5 X BC: Confida binary validator

RM5 X 0M: Multipulse validator

RM5 X 10: Dual price totalizer

RM5 X 14: Single price totalizer with internal time reset

RM5 X FD: Totalizer for fountains

RM5 X 20 – RM5 X 21: Credit pulse emission totalizer (RM5 X 20); with possibility of controlling a separator of cashed coins (RM5 X 21).

RM5 X 30: Progressive timer

RM5 X 3R: Progressive timer with on request timed credit emission

RM5 X 3C: Progressive timer with counter output

RM5 X 40: Totalizer with on request credit pulses

RM5 X 60: Totalizer with on request timed credit emission

RM5 X 70: Single price multiple sale totalizer for photocopiers

NOTE:
Versions X 01 and X 21 are identical to X 00 and X 20. except that they have the external separator control function enabled. See relevant paragraph.

7.1 Validator configuration (RM5 X 00)

In standard validator configuration, RM5 can manage up to six different coin values, i.e. up to six different outputs. Standard validator means a validator which further to the introduction of a coin gives as validation signal a pulse to the corresponding output. The standard pulse length is 100 msec (+0% ÷ 2%); nevertheless it can be varied between 10mSec. and 2 sec. NOTE: When a value ranging between 10 and 630 msec is set, the ratio 1 to 4 is guaranteed, i.e.the pulse will be active (low) for the fixed timed, while the pause time between one pulse and the other will be four times as much. When a value higher than 630 msec is set, the pause time will not follow this rule.

To inhibit one or more coins adjusted on the first 6 channels it is sufficient to put the DIP-SWITCH relevant to the channel to be inhibited to "ON". To inhibit the coins programmed in the channels after 6 the PC kit or RM5 PROGRAMMER shall be used.

The coin validator has a general inhibiting pin, PIN 6, (see connector), which when set on HIGH (+5Vdc, +12Vdc.) completely inhibits the coin validator, therefore each coin introduced would always be rejected.This pin is usually controlled by the machine if this is out of order.

There is also the possibility to inhibit the validator after a fixed number of coins introduced by setting, by means of the relevant programming kits (PC Kit or RM5 PROGRAMMER) the "cash limit" function.

Whn the validator reaches the programmed threshold it will be disabled; to be enabled again the machine shall send a reset signal to the validator inhibition pin.

This application is particularly used on "BINGO" machines and small-sized coffee machines and on all machines with a limited number of accepted coins.

To separate coins from tokens a coin separator can be installed. To this purpose the validator shall be programmed, by means of Clone5, to manage the separator (RM5 x 01). When the separator function is enabled, the validator can manage the first 4 channels, as the outputs relevant to channels 5 and 6 (Pin 3 and 4) are used to control the separation coils.

NOTE:
the RM5 X 00 validator is totally interchangeable with NRI G13 validator and with COIN CONTROLS C 120 validator, with AZKOYEN AZ66 validator, Jofemar T11 MS 130 MARS, G18 NRI and FAGE validator. Thanks to the mechanical adapter it can be turned from 3.5" to 5" standard thus becoming also mechanically interchangeable with the abovementioned 24VDC validators when these are installed on an RM1000 support or Juke Boxes with 5" validator. An interface has also been produced to make electronically interchangeable the validator with MARS 111 validators PNP outputs (MRS 111 interface) as well as from a mechanical point of view thanks to the front panel code RM F3 as shown in the paragraph "Front panel size".

PIEDINATURA DEL CONNETTORE 10 PIN DELLA GETTONIERA RM5 X 00

N°Pin	Meaning	N°Pin	Meaning
1	Gnd	6	Inhibit
2	+12 – 24 Vdc	7	CH 1
3	CH 5	8	CH 2
4	CH 6	9	CH 3
5	N.U (not used)	10	CH 4

7.2 ccTalk validator configuration (RM5 X CC)

In validator configuration with CC TALK protocol, RM5 can manage up to sixteen different coin values. The equipment will respond to serial controls described below.
ccTalk is a serial communication protocol providing an excellent balance between easiness and safe information. This protocol was designed for the GAMING industry.
It includes a high number of specific controls, aimed at meeting a high control flexibility by a control unit called Host (Machine Data Sheet)
It was designed to allow the interconnection between different types of money treatment devices simply with a serial cable, shown below.
The use of controls is free and according to the type of application and requirements; anyway all strategies and supervision are carried out by the Host.
The type of connection is called Multidrop, where only the Host can "Ask", all devices "Listen" and only the adressed device "Responds". Communication is of "half duplex"

type, i.e. on the line there is only the request or the answer, never both at the same time (full – duplex).
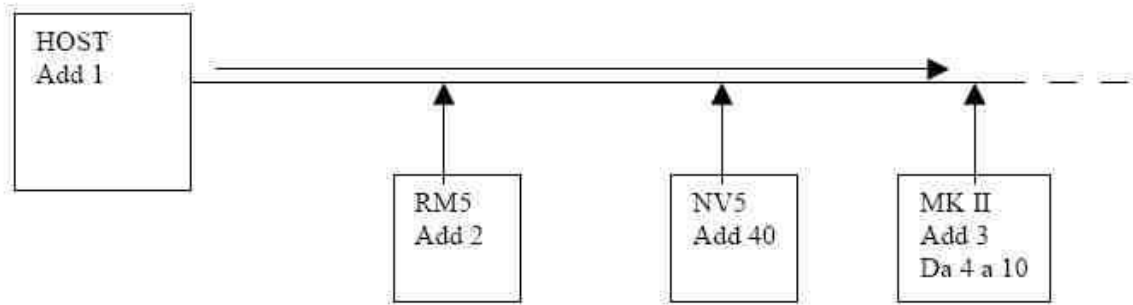
Fig. 13

The protocol provides no procedure to manage peripherals. This is left to the common sense of the Host programmer. For example, if you want to avoid replacing the validator or any other device, it may be sufficient that, when the machine is started up, this requests its peripheral about serial numbers, product code, manufacturer code,etc. If all information received from the peripherals matches the information stored in the host all activities can go on, otherwise these may be ihibited and the necessary measures will be taken.

RM5 X CC implements 35 controls described below.

Comand	Function
254	Simple poll
253	Address poll
252	Address clash
251	Address change
250	Address random
249	Request polling priority
248	Request status
246	Request manufacturer id
245	Request equipment category id
244	Request product code
243	Request database version
242	Request serial number
241	Request software version
240	Test solenoids
238	Test output lines
237	Read input lines
236	Read opto states
233	Latches output lines
232	Perform self check
231	Modify inhibit status
230	Request inhibit status
229	Request Buffered credit or error codes

Comand	Function
227	Request master inhibit status
210	Modify sorter path
209	Request sorter path
197	Calculate rom checksum
196	Request creation date
195	Request last modification date
192	Request build code
184	Request coin id
170	Request base year
169	Request address mode
4	Request comms revision
3	Clear comms status variables
2	Request comms status variables
1	Reset Device

For the detailed description of each control listed above please refer to the CCTALK manual available on this site: www.cctalk.org.

All RM5 coin validators produced by implementing CCTalk protocol are configured as VALIDATORS 00 (please refer to chapter 8.1. VALIDATOR CONFIGURATION). Each of them, in order to meet the requirement of non modifiable condition, is programmed so that nobody can intervene on the settings carried out by Comestero either through the usual management/programming systems (Clone 5 and RM5 Programmer) or by acting on the output connector.The protocol also identifies the type of physical interface to be used and defines the voltage levels and suggests the appropriate circuits.

It suggests the type of connection (connectors). In particular for the coin validator, a 4 Pin and a 10 Pin connectors are suggested (and therefore used by our company) represented in para. 5.2 – G.

7.3 Validator configuration for Spain (RM5 X E0)

In validator configuration with SPAIN protocol, RM5 can manage up to six different coin values, i.e. up to six different outputs. If the equipment has to pilot a coin separator the outputs will be only 4, as two outputs are destined to pilot the separator.

Spagna Validator means a coin validator which, after introducing a coin, before giving the standard 100 msec validation pulse (+0% ÷ 2%), generates a 10msec notice pulse on the output corresponding to the programmed channel. During this time the game board must decide whether to accept the coin and to activate the separator to convey it to the hoppers.

For this operation two inhibition pins are available on the validator, PIN 6 concerning the validator inhibition, PIN 5 concerning the separator inhibition. The board shall keep these 2 pins high (+ 5 Vdc, inhibition status). Further to the insertion of a coin, the validator sends the notice signal to the machine, now the machine can decide whether to accept the coin, placing PIN 6 to mass (validator inhibition) and whether to separate it or convey it to the cash by acting on PIN 5 (separator inhibition).

Validation pulse
Notice pulse
The game board decides to move the separator
The game board decides to accept the coin
Separator control
Separator control

Fig. 14

PIN OUT OF RM5 X E0 COIN VALIDATOR 10 PIN CONNECTOR

N°Pin	Meaning	N°Pin	Meaning
1	Gnd	6	Inhibit RM5
2	+ 12 - 24 Vdc	7	CH 1
3	CH 5	8	CH 2
4	CH 6	9	CH 3
5	Inhibit sorter	10	CH 4

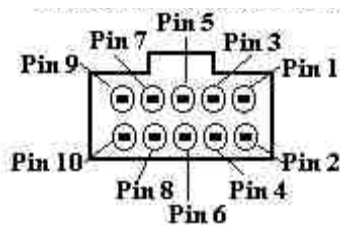## 7.4 Timed pulse validator configuration (RM5 X AT)

In validator configuration – SPAIN mode WITH TIMED OUTPUTS, RM5 can manage up to six different coin values, i.e. up to six different outputs. If the equipment has to pilot a coin separator the outputs will be only 4, as two outputs are destined to pilot the separator.

TIMED Spagna Validator means a coin validator which, after introducing a coin, before giving the validation pulse, generates a 10msec notice pulse on the output corresponding to the programmed channel. During this time the game board must decide whether to accept the coin and to activate the separator to convey it to the hoppers.

For this operation two inhibition pins are available on the validator, PIN 6 concerning the validator inhibition, PIN 5 concerning the separator inhibition. The board shall keep these 2 pins high (+ 5 Vdc, inhibition status). Further to the insertion of a coin, the validator sends the notice signal to the machine, now the machine can decide whether to accept the coin, placing PIN 6 to mass (validator inhibition) and whether to separate it or convey it to the cash by acting on PIN 5 (separator inhibition).

The peculiarity of this version is that the validation pulse of each channel has a different duration. The pulse time related to channel 1 can be factory programmed according to the customer request (10 to 630 msec +0% ÷ 2%), **standard 40 msec**. The following ones have a 20 msec step. This complies with the new regulations requiring the non modifiable condition for the machine, as in the event that the wires

corresponding to the outputs on the parallel connector were inverted, the machine board would detect it.

	On Ch 1 pulse length
	As per request
	On Ch 2 pulse is x+20 msec
	Validation pulse
	The game board decides to move the separator
	The game board decides to accept the coin
	On Ch 4 pulse is "x +60msec"
	Separator control
	Separator control
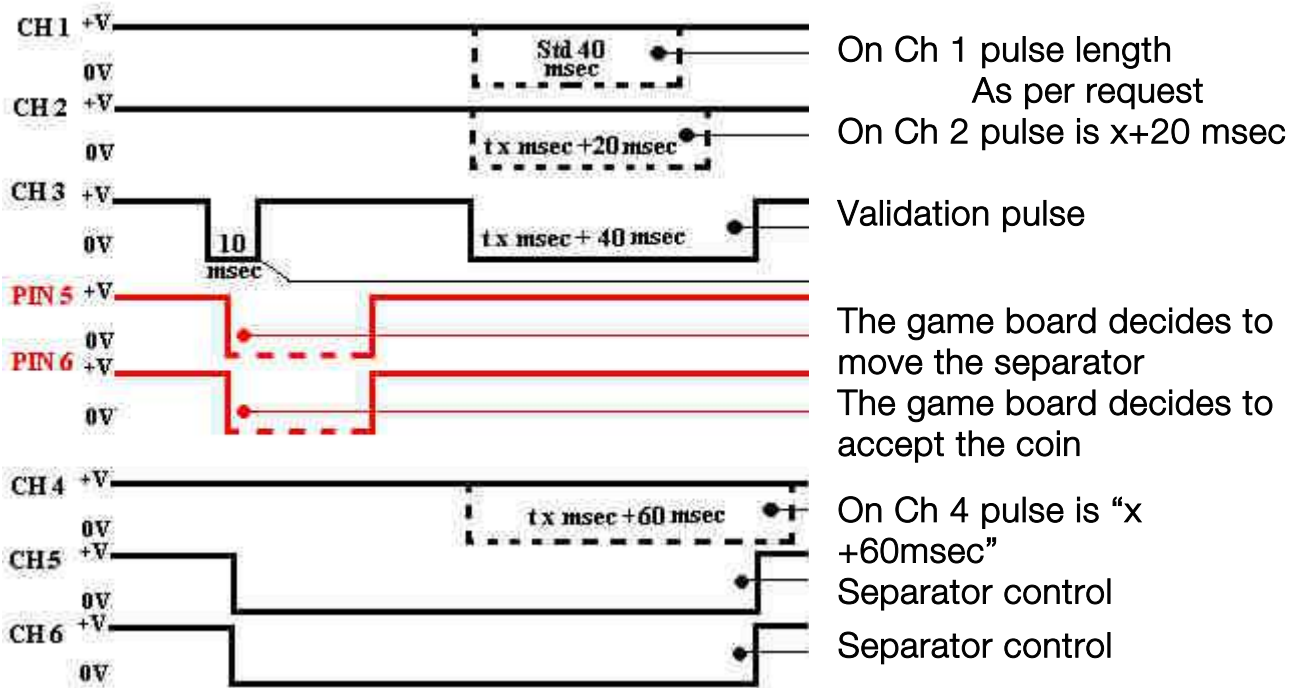
Fig. 15

PIN OUT OF RM5 X AT VALIDATOR 10 PIN CONNECTOR
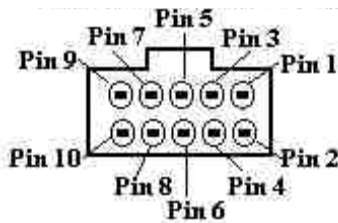
N°Pin	Meaning	N°Pin	Meaning
1	Gnd	6	Inhibit RM5
2	+ 12 - 24 Vdc	7	CH 1
3	CH 5	8	CH 2
4	CH 6	9	CH 3
5	Inhibit sorter	10	CH 4

7.5 Binary validator configuration (RM5 X B0)

In standard validator configuration, RM5 can manage up to fifteen coin values, i.e. up to 59 different coins provided that these are re-addressed to the first 15 channels. When the coin is introduced, the validator will signal in binary code on the first 4 channels the channel on which the coin has been adjusted; at the same time the "data valid" signal will activate on channel 6; this one will activate at every coin introduction.

Output meaning:
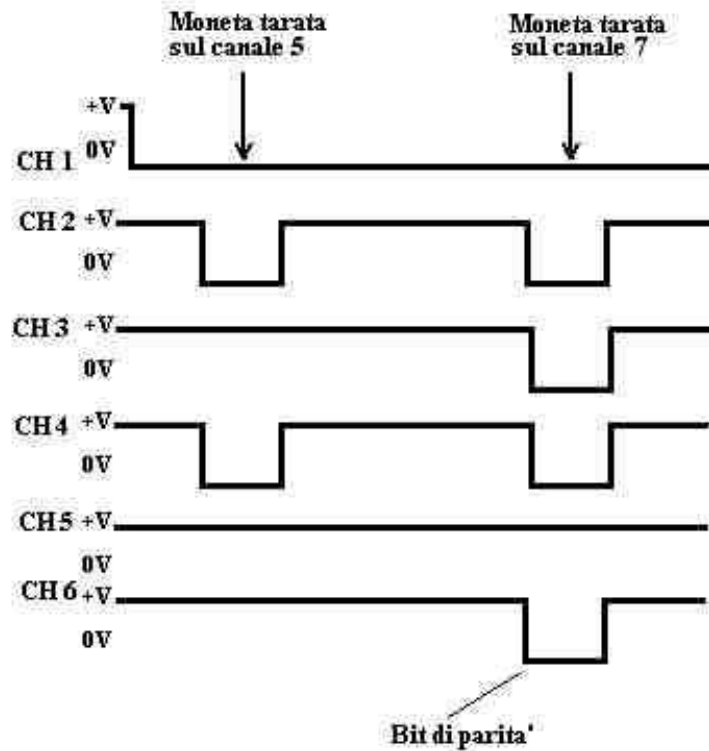
Fig. 16

Translations	
ITALIAN	**ENGLISH**
Moneta tarata sul canale 5	Coin calibrated on channel 5
Moneta tarata sul canale 7	Coin calibrated on channel 7
Bit di parità	Parity bit

NOTE:
in the event of a binary validator, capable of piloting a separator, the "data valid" signal corresponding to channel 6 will be omitted.

PIN OUT OF RM5 X B0 VALIDATOR 10 PIN CONNECTOR

N°Pin	Meaning	N°Pin	Meaning
1	Gnd	6	Inhibit
2	+ 12 - 24 Vdc	7	CH 1
3	N.U (not used)	8	CH 2
4	Data valid	9	CH 3
5	N.U (not used)	10	CH 4

7.6 Confida binary validator configuration (RM5 X BC)

In Confida binary validator configuration, RM5 validator can manage up to fifteen different coin values, i.e. up to 59 different coins provided that these are re-addressed to the first 15 channels. Channel 1 is used to indicate the type of communication

adopted to the machine: if disabled (open collector) the validator uses a standard mode, if enabled (Gnd) the validator uses the confida combinatory mode.

Channel 6 is used as even parity display to increase safety on the value of the combination transmitted to the validator; thanks to this , always more than one line is activated for every communication thus making easier the identification of any illegal combination due to causes of different nature.
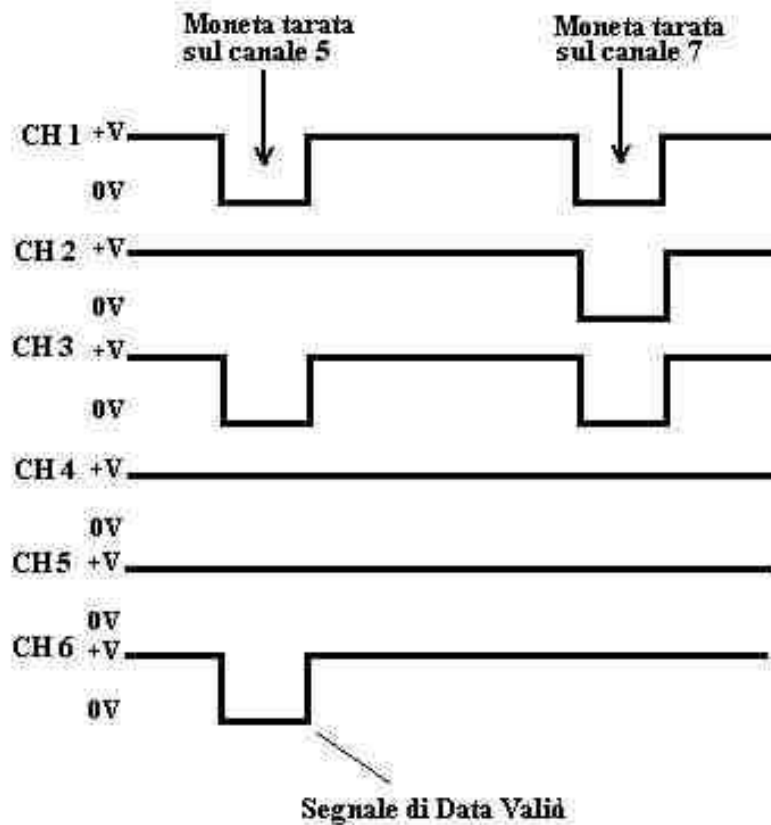
Fig. 17

Translations	
ITALIAN	ENGLISH
Moneta tarata sul canale 5	Coin calibrated on channel 5
Moneta tarata sul canale 7	Coin calibrated on channel 7
Segnale di Data Valid	Data Valid signal

PIN OUT OF RM5 X BC VALIDATOR 10 PIN CONNECTOR

N°Pin	Meaning	N°Pin	Meaning
1	Gnd	6	Inhibit
2	+12 - 24Vdc	7	CH 1
3	N.U. (not used)	8	CH 2
4	Parity bit	9	CH 3
5	N.U. (not used)	10	CH 4

7.7 Multipulse validator configuration (RM5 X 0M)

As known, the standard mode of current validators consists in communicating to the system the collection of a coin by enabling, for a fixed time, the corresponding output: the same operation principle has been used also to communicate the collection of a number higher than 6 of the possible oin values with the output line multiple enabling technique.

Basically the standard enabling of the outputs can be repeated, up to five times, until the total value communicated by the validator corresponds to the actual value of the coin cashed.

Fig. 18

7.8 Dual price totalizer configuration (RM5 X 10)

The validator can recognize 59 coins which can have even 59 different values; it sums them up and directly manages a display to visualize the entered data. When it has acquired a credit equal to the sale price it enables the relevant line which remains enabled until a reset signal is received.

Using the RM5-PROGRAMMER portable programmer different options can be enabled and/or modified such as:

- Sales accounting, the validator has two internal counters, one for each price line.

- Machine Block: one or two sale thresholds can be enabled, one for each price line, and the machine can be stopped when a pre-set sale number has been reached.

- A signal (display flashing) can be enabled when the machine is reaching the sale block

- The validator cannot give change but it will credit the extra coins inserted in the previous sale to the following sale.

- The type of reset can be set.

<div align="center">
INTERNAL timed (RM5 V 14)
EXTERNAL passive
</div>

The validator is usually supplied with passive reset, i.e. if the power supply is stopped for at least 100msec on pin 6. For special applications, i.e. machines which do not manage a reset signal, an internal reset (automatic) can be programmed and its duration defined; when the validator reaches it, it is automatically reset. **(RM5 X 14)**.

- Version Warning: in this configuration only one sale price can be managed.`
- The display can show the introduced coins,increasing from zero up to the sale price or decreasing from the sale price down to zero.
- Modify sale prices.

<div align="center">

PIN OUT OF RM5 X 10 VALIDATOR 10 PIN CONNECTOR

N°Pin	Meaning	N°Pin	Meaning
1	Gnd	6	Inhibit Reset
2	+ 12 - 24 Vdc	7	Display Clock
3	Display Data	8	Price 1
4	Display Enable	9	Price 2
5	N.U (not used)	10	N.U (not used)

</div>

NOTE:
to use the validator on machines provided with "ESTRO" connector, it is necessary to use the RM929 connection interface which make it fully interchangeable with RM4 V1E validator and with NRI DUAL-PRICE G13.

FOUNTAIN TOTALIZER CONFIGURATION (RM5 X FD)

The only difference with RM5 x 14 version lies in the fact that with two identical prices, the line of the second price will be enabled with a 2 sec delay, time necessary to glass dispensing.
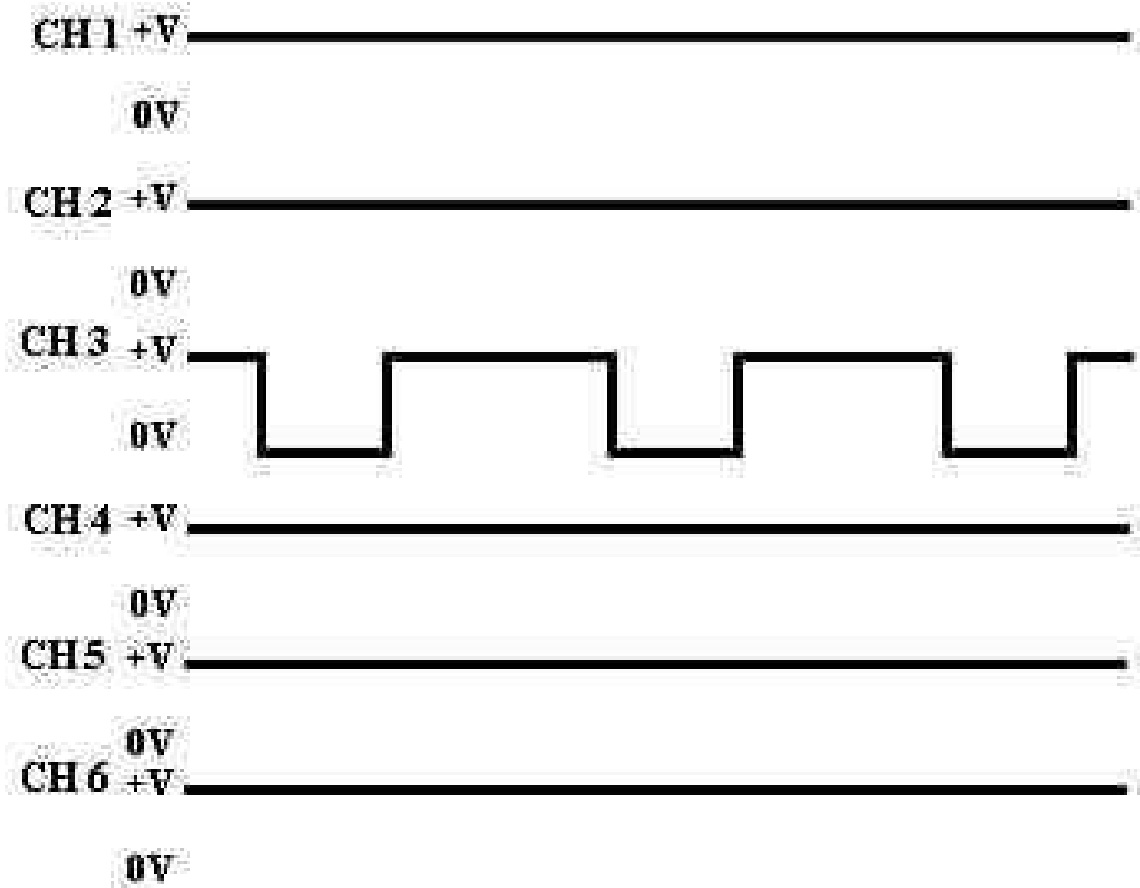
7.9 Credit pulse emisison totalizer configuration (RM5 X 20) (RM5 X 21)

The validator can recognize 59 coins which can have even 59 different values, it sums them up and directly manages a display to visualize the introduced amounts. It has been designed to directly drive the videogames boards.It allows to define a game cost (credit cost) and up to two bonus levels. For example with a credit cost of 0.25, by introducing 1.00 € you can have 5 credits (4 + 1 bonus); by introducing 2.00 € you can set 11 credits (2nd bonus).
When the validator has acquired a value equal to the credit cost, it gives a pulse and when the bonus thresholds are reached, it shows the number of the related credits.

The standard pulse length is 100 msec (+0% ÷ 2%); nevertheless it can be varied between 10mSec. and 2 sec.

Thanks to the RM5-PROGRAMMER portable programmer the following options can be enabled and/or modified:

- enabling the reading of the internal counter for introduced coins and reset

- adjusting pulse length between 10msec and 2 sec (standard signal 100 msec +0% ÷ 2%).

- disabling every single coin acceptance channel

- setting credit cost and bonus levels

To facilitate the installation of this model, an RM927 interface board is provided equipped on one side with a standard container connector for the validator and on the other side with a 5-pole terminal board. See attached diagram.
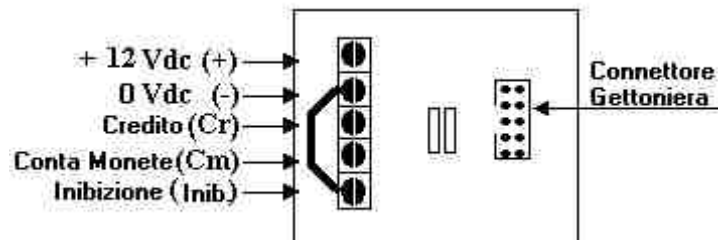
Fig. 19

To inhibit the electronic S.E.C.I. validator using RM 927/N interface board it is sufficient to connect the inhibition wire of the game board to the connector shown below. The game board is provided with an internal pull-up; therefore if you do not want to connect the inhibition pin it is necessary to carry out the abovementioned modification.

If you wish to separate the coins or tokens a coin separator can be installed. To this purpose the validator must be programmed via Clone5, to manage the separator

(RM5 X 21). When the separator function is enabled, the outputs related to channels 5 and 6 (Pin 3 and 4) are used to control the separation coils.

PIN OUT OF RM5 X 20 VALIDATOR 10 PIN CONNECTOR

N°Pin	Meaning	N°Pin	Meaning
1	Gnd	3	Display Data
2	+ 12 - 24 Vdc	4	Display Enable
5	N.U (not used)	8	Coin Counter
6	Inhibit	9	Credit
7	Display Clock	10	N.U (not used)

PIN OUT OF RM5 X 21 VALIDATOR 10 PIN CONNECTOR

N°Pin	Meaning	N°Pin	Meaning
1	Gnd	6	Inhibit
2	+ 12 - 24 Vdc	7	Display Clock
3	Coil separator B	8	Coin Counter
4	Coil separator A	9	Credit
5	N.U (not used)	10	N.U (not used)

7.10 Progressive timer configuration (RM5X30 3R 3C)

A. RM5X30 : Progressive timer

It recognizes 59 coins which can have even 59 different values, it sums them up and when a previously set value is reached (basic service cost), it enables a signal for a defined time (basic service time). When other coins are added, the signal duration is increased proportionally to the value of the coins added.
The validator manages a display that visualizes the introduced coins until the basic cost is reached and then it visualized the time expressed in seconds or minutes.
An output signal is provided to give a notice of the expiry of the available time: the notice time is adjustable.
There is also an input signal (PIN 6) called economizer that stops the time and suspends the relevant output control. When this signal is disabled, the validator will enable the service and the time count again.

By means of the portable programmer the following operations can be carried out:
- Enabling the counting of the introduced coins.
- Setting the basic service cost (P1).
- Setting the minimum amount to be added to have additional time (P2). If P2 is not defined, to have extra time, another amount corresponding to the service cost shall be entered.
- Defining the counting and visualization time unit (seconds or minutes).

- Defining the service duration ranging from 1 to 255 seconds or 1 to 255 minutes (+0% ÷ 2%) according to the time unit selected.
- Setting the notice signal time (always expressed in seconds).
- Enabling the economizer actions.

PIN OUT OF RM5 X 30 VALIDATOR 10 PIN CONNECTOR

N°Pin	Meaning	N°Pin	Meaning
1	Gnd	6	Time inhibition / stop
2	+ 12 - 24 Vdc	7	Display Clock
3	Display Data	8	Timed Output
4	Display Enable	9	Notice
5	N.U (not used)	10	N.U (not used)

B. RM5X3R : On request progressive timer

The only difference with RM5x30 version is that the timed signal will be given only on customer request by pressing a button.

PIN OUT OF RM5 X 3R VALIDATOR 10 PIN CONNECTOR

N°Pin	Meaning	N°Pin	Meaning
1	Gnd	6	Time inhibition / stop
2	+ 12 - 24 Vdc	7	Display Clock
3	Display Data	8	Timed Output
4	Display Enable	9	Notice
5	Credit request	10	N.U (not used)

C. RM5X3C : Progressive timer with counter output

The only difference with RM5 x 30 version is that, in addition to the timed signal, the validator can be directly connected to an electromechanical counter which will store the validator accounting expressed as multiple of the basic value set on the validator.

PIN OUT OF RM5 X 3C VALIDATOR 10 PIN CONNECTOR

N°Pin	Meaning	N°Pin	Meaning
1	Gnd	6	Time inhibition / stop
2	+ 12 - 24 Vdc	7	Display Clock
3	Display Data	8	Timed output
4	Display Enable	9	Counter output
5	N.U. (not used)	10	N.U (not used)

7.11 On request credit emission totalizer configuration (RM5X40)

It recognizes 59 coins that can have even 59 different values, it sums them up;when the validator has acquired a value equal to the credit cost, it accumulates it and the signal is given only on request of the player who sends a credit to the machine by pressing a button.
This validator has been designed to meet the requirements of the manufacturers of Kiddy rides, billiards, table games In general.
The signal can be of two types:

- Adjustable pulse between <u>10 msec and 2 sec</u> (standard 100 msec (+0% ÷ 2%).

- Fixed awaiting a reset on PIN 6.

NOTE:
when a value ranging between 10 and 630 msec is set, the ratio 1 to 4 is guaranteed, i.e.the pulse will be active (low) for the fixed timed, while the pause time between one pulse and the other will be four times as much. When a value higher than 630 msec is set, the pause time will not follow this rule.

The fixed signal is useful when an automatism not equipped with self-supply must be supplied and at the end of the cyle a reset signal will return.
The validator directly controls a display that visualizes the introduced amounts until the value of one credit is reached and then the accumulated credits will be displayed.
Alternatively, i.e. when the use of a display is not provided, the presence of credits can be shown using the signal given by the validator on output on pin 10 which is kept enabled when the validator has at least 1 credit stored.
Also this version has an output for the direct control of an external counter of accepted coins.
By means of the portable programmer the following operations can be carried out:

- Setting the cost of the single credit and the two bonus thresholds.
- Enabling and reading the internal counter of accepted coins.
- Selecting the type of signal: pulse or fixed (standard pulse).
- Adjusting the length between <u>10 msec and 2 sec</u> in the case of a pulse.
- Individual disabling of coin acceptance channels.

PIN OUT OF RM5 X 40 VALIDATOR 10 PIN CONNECTOR

N°Pin	Meaning	N°Pin	Meaning
1	Gnd	6	Inhibit / reset
2	+ 12 - 24 Vdc	7	Display Clock
3	Display Data	8	Coin counter
4	Display Enable	9	Credit
5	Credit request	10	Residual credit signaling

7.12 On request timed credit emission totalizer configuration (RM5X60)

Basically it is equivalent to RM5X40 validator with a built-in timer function. The credit emission is not a simple pulse as in 40 version but a fixed signal with adjustable length.

The display visualizes the coins introduced until at least one credit is reached, then the number of accumulated credits and then, when on request a credit is consumed, it visualizes the passing of time.

This validator has been designed for time table games (billiards, volley,etc.) for Kiddie-Riders,etc.

Also this version is provided with an output for the direct control of an external counter of accepted coins and a signal (PIN 10) which is enabled when the validator has accumulated at least one credit for a credit available signal,if any, in case of lack of display.

By means of the portable programmer the following operations can be carried out:

- Setting the cost of the single credit and the two bonus thresholds

- Defining the counting/visualization time unit (seconds or minutes)

- Defining the length of the credit signal which can range from 1 to 255 sec (+0% ÷ 2%) or 1 to 255 minutes (+0% ÷ 2%) according to the time unit selected

- Enabling and reading the internal counter of accepted coins

- Disabling the single accpetance channels.

PIN OUT OF RM5 X 60 VALIDATOR 10 PIN CONNECTOR

N°Pin	Meaning	N°Pin	Meaning
1	Gnd	6	Inhibit
2	+ 12 - 24 Vdc	7	Display Clock
3	Display Data	8	Coin counter
4	Display Enable	9	Timed credit emission
5	Credit request	10	Residual credit signaling

7.13 Configuration of photocopier single price multiple sale totalizer (RM5X70)

It is a validator designed for photocopying and basically it accomplishes the "KEY-COUNTER" function.

It accepts 59 coins that can have even 59 different values. When it has accumulated at least one value equal to the cost of one photocopy it gives an enabling signal to the machine. It accumulates credits for more photocopies. At every cycle (copy made) of the photocopier it receives a signal (reset) that decrements the accumulated credits. When it arrives to the last copy, it disables the machines. It directly manages a display

showing the money introduced until it has credited at least the value of the cost of one copy and therefore the number of photocopies (credits) acquired.

The cost of a single copy scales down on the basis of the introduced coins.

In addition to an internal counter, the validator directly controls an external counter of accepted coins.

There is also an output signal (PIN 10) which is kept enabled when the validator has availability of credit of at least the cost of one copy. This allows to signal, if you do not want to use the display, the presence of residual credits.

By means of the portable programmer the following operations can be carried out:

- setting the cost of the single copy and the two bonus levels.
- enabling and reading the internal counter of accepted coins.
- disabling the acceptance of the single channels.
- adjusting the delay of photocopier disabling to allow, when the reset signal of the last copy is received, the machine to regularly complete the cycle.

PIN OUT OF RM5 X 70 VALIDATOR 10 PIN CONNECTOR

N°Pin	Meaning	N°Pin	Meaning
1	Gnd	6	Inhibit
2	+ 12 - 24 Vdc	7	Display Clock
3	Display Data	8	Coin Counter
4	Display Enable	9	Sale Enabling
5	Credit request	10	Residual credit signalling

8. Care and maintenance

All maintenance operations on the validator must be carried out when the machine onto which the validator is installed is disconnected from the power supply.

We strongly recommend following these instructions carefully in order to always keep the validator in the best operating conditions and to prevent dangerous situations that would make the guarantee void.

8.1 Maintenance and external cleaning

Always keep the external surfaces of the equipment clean; to do so, we recommend using a damp cloth or a mild detergent. In case of resistant dirt, clean the surface with water and alcohol. Do not use aggressive petroleum or trichlorethylene-based chemical solvents, nor abrasive detergents or sponges that could damage the equipment.

Do not submerge in or expose the equiment to water or other liquids of whatever nature.

Regularly verify the equipment surfaces with special attention to those areas that, due to normal operation conditions, could represent a hazard for the user.

8.2 Maintenance and internal cleaning

The inside of the validator must be cleaned using compressed air only.

Regularly check the cable connections making sure the cables do not have points that are not insulated and are not excessively twisted. Should the cables or connectors present any anomaly, replace them immediately following the indications contained in the "Spare parts" chapter, later this manual.
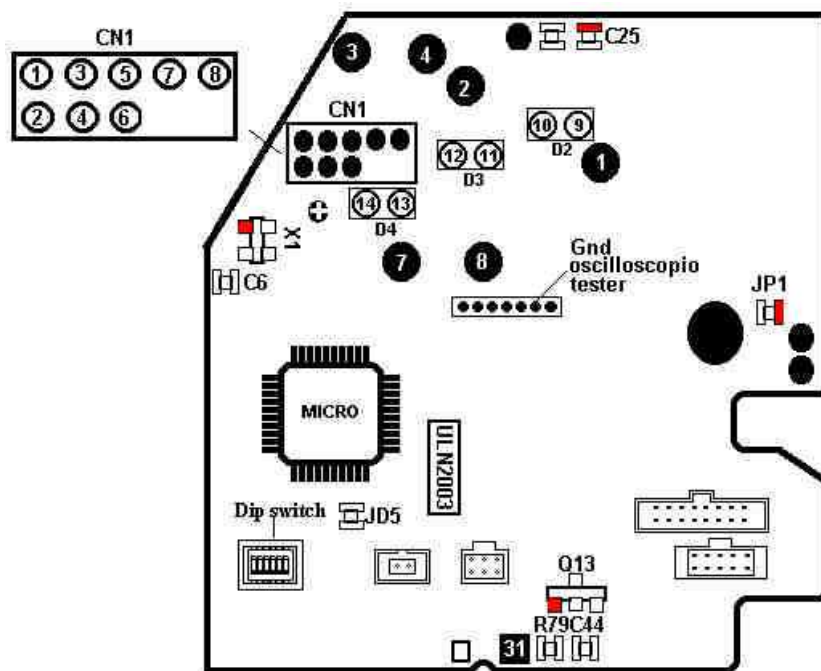
8.3 RM5 repair guide – for evolution version only

Fig. 20

Translations	
ITALIAN	**ENGLISH**
GND Oscilloscopio tester	GND Oscilloscopy tester

TEST PROCEDURE

Connect equipment to PC and open Clone5 program.

A   Make sure that channels are adjusted and enabled.

B   Make sure that the configuration of the equipment is the one requested by the machine.

C   Make sure that for each channel the coin/token value is present.

D   In totalizer versions, check price setting.

E   Check for the presence of a "Limit",if any.

Access HARDWARE menu

A   Out the output test by making sure that the coil correctly trips and the six leds corresponding to the six outputs are lit.

B   Make sure that "Cash" sensor (TLP) is "Disabled". To check operation, insert a coin into the cash slot (see figure in RM5 manual) and press Hardware Test push button: its status will change and "Enabled" will be displayed.

C   Make sure that reference and stand by values of acceptance coils are approximately equal.

Acceptance solenoid does not trip:

Carry out a short circuit between CHECK POINT 31 and X1 red pin. If the solenoid does not trip, replace it otherwise check with Q13 oscilloscopy (red terminal). With the above-mentioned short circuit, it should change its status, if not, try and make weldings again on Q13,R79,C44 or replace these components.

Faulty outputs: VERSION WITH ULN2003

Replace ULN2003, Check continuity between it and pin-out.

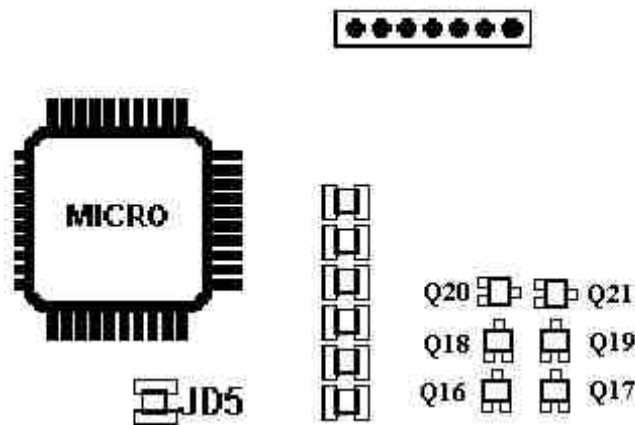## Faulty outputs: VERSION WITH TRANSISTOR

Replace output transistors

Fig. 21

Ch1= Q16; Ch2= Q17; Ch3= Q18; Ch4= Q19; Ch5= Q20; Ch6= Q21;

Q16-Q21= BC817

Faulty coils:

Check and make again weldings related to the check points described below.
Check with tester as Ohmmeter (Coils on board)

Chek point	Check point	Ohm	Component
1	2	50 Ohm	LF
3	4	20 Ohm	HFU
7	8	10 Ohm	HFL

CN1 CONNECTOR (Coils on door)

Chek point	Check point	Ohm	Component
2	8	20 Ohm	LF
4	8	10 Ohm	HFL
6	8	20 Ohm	HFU

If a problem concerning the coils installed on RM5 board is found out, it is advisable to send the coin validator to Comestero for repairs, if a problem is found out on the door coils, it is sufficient to change the door and the relevant flex.

Amplitude:

Check voltage on C25 (Red terminal) it must be 3.5 Vdc.
Check HFL coils (See Faulty coils)

Cash sensor (TLP):

Check continuity on Jumper JD5

Diameter:

Check conditions of the label inside the door.
Carry out door flex continuity.
Check with tester as Volt (diodes on board)

Chek point	Check point	Volt	Component
14	13	1,2 Volt	D4
12	11	1,2 Volt	D3
10	9	1,2 Volt	D2

No communication :

Check voltage on C6 that must be approx. 1 Vdc.
Check HFU coil on door (see faulty coils).
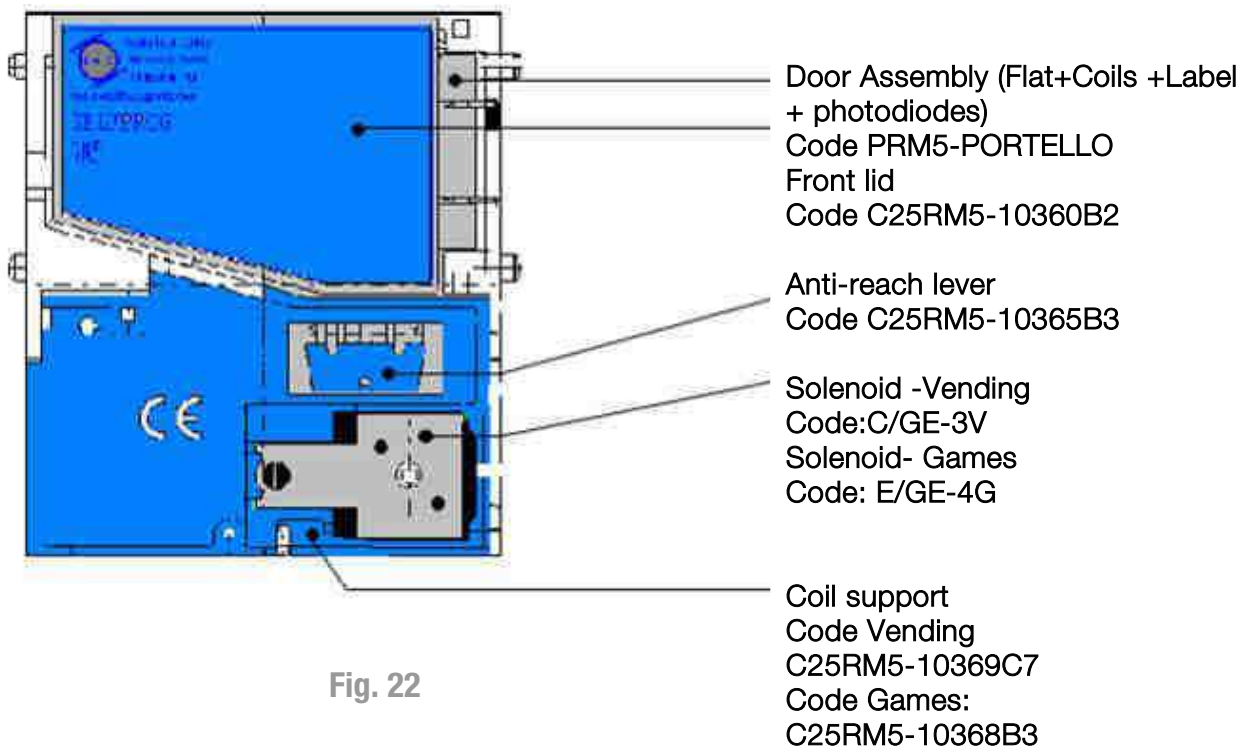Check voltage on JP1 (red terminal) that must be 5 Vdc.

9. Spare Parts

Fig. 22

Door Assembly (Flat+Coils +Label
+ photodiodes)
Code PRM5-PORTELLO
Front lid
Code C25RM5-10360B2

Anti-reach lever
Code C25RM5-10365B3

Solenoid -Vending
Code:C/GE-3V
Solenoid- Games
Code: E/GE-4G

Coil support
Code Vending
C25RM5-10369C7
Code Games:
C25RM5-10368B3

Opening Lever
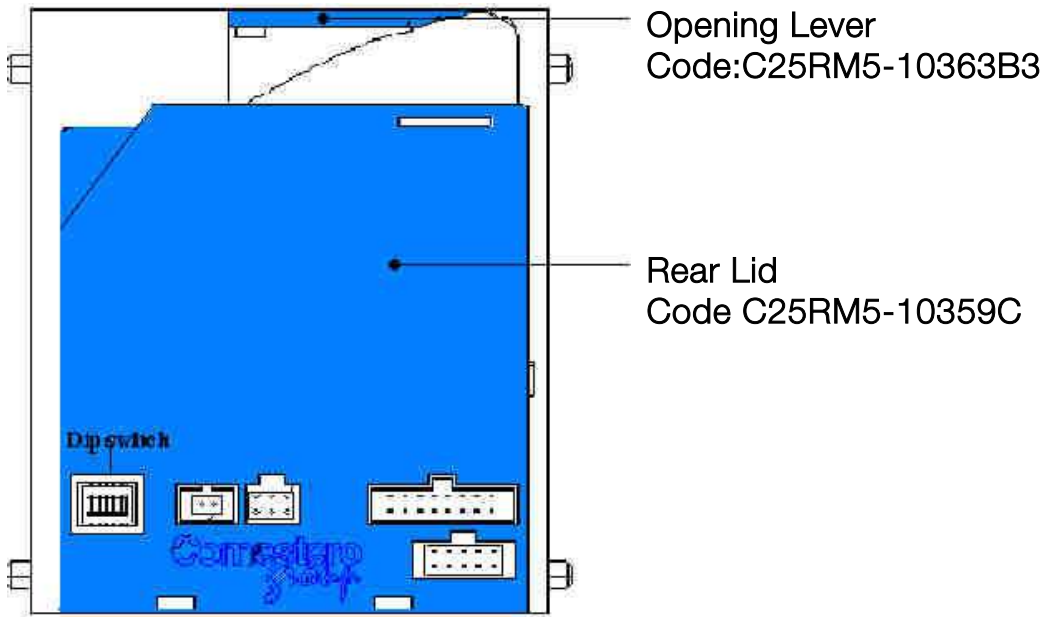Code:C25RM5-10363B3

Rear Lid
Code C25RM5-10359C

Fig. 23

10. Diagnosis and technical assistance

In this section are described the main anomalies that may occur using this product, with the possible solutions to minimise or eliminate machine downtime.

If the problem you are encountering is not described here or should the solution not solve it, please contact our after-sales service at: (+39) 02 95781111.

Problem	Possible cause	Solution
The validator is not functioning	The power supply connector may be disconnected	Make sure all the connections are firmly in place
Low coin acceptance	The optical sensors may be dirty	Clean the sensors with compressed air
The coins get stuck in the acceptance duct	Deposits of dirt or mechanical damage due to fraud	Check lifting the door
Authentic coins not accepted	Configuration error or coin not set	Refer to the Multiconfig on-line manual
No coin recognised	The power supply cable may be disconnected or the validator may be inhibited	Verify the configuration settings

11.Technical Specifications

Size :	Standard 3 Inches and ½ (Ref. page 17)
Weight [g] :	185
Power supply [Vdc] :	12 ÷ 24 (±10%)
Current consumption [mA] :	Stand by Max 35. In acceptance 340 mA Max (Test carried out at 12 Vdc) Coin measurement 50 mA Max
Range of temperature [°C] :	0 ÷ +55
Not condensed humidity [%] :	10 ÷ 75

Output	Low active signal:	< 1.0 Vdc (Open collector NPN)
	V max [Vdc] : I max [mA] :	24±10% Vdc 200 mA (CH1 to CH4) 800 mA (CH5 and CH6) for separator control

Channel NO :	60, 59 can be used (Depending on version)

Coin Size		
Diameter	Minimum [mm] :	Ø 16
	Maximum [mm] :	Ø 31,5
Maximum thickness [mm] :	3,3	

NOTE:
in the event of an inductive load, it is necessary to externally protect outputs with clamp diodes (for any further details, please see 5.2 "Connections" section.

12. Annexes

12.1 Decommissioning and disposal

At the end of its intended life, the product must be decommissioned and disposed of at a recycling site.

Remove the equipment from its installation site, empty all the coins out of it and remove the power supply cable. Contact your dealer to pick up the obsolete equipment.

This equipment must be disposed of in compliance with Legislative Decree No. 151 dated 25/07/2005.

Please read carefully the following information.

As of the 31st December 2006, specific guidelines regarding the disposal of electrical and electronic equipment (WEEE) have been established to protect the environment. This equipment falls into the scope of Legislative Decree 151/2005 Annex 1B art. 2 paragraph 1 being:

7.6   A coin / token machine
10.2   an automatic cash or vending machine

In summary:

- This equipment is not to be disposed of as unsorted municipal waste but must be disposed of separately.

- Dealers will pick up used equipment free of charge and take it to appropriate recycling centres for its correct disassembly and possible recovery of the used materials.

- Special centres have been specifically created for the disposal of electrical and electronic equipment (WEEE). The user can return this used equipment to his/her local dealer when purchasing a new equivalent machine.

- This equipment or parts of it may cause potentially hazardous effects on the environment and on human health if used improperly or if not disposed of in compliance with the procedure described above, due to the presence of some substances in the electronic components.

- The crossed-out wheeled bin symbol printed visibly on this equipment indicates that this product has been placed on the market after 13 August 2005 and must be disposed of separately.
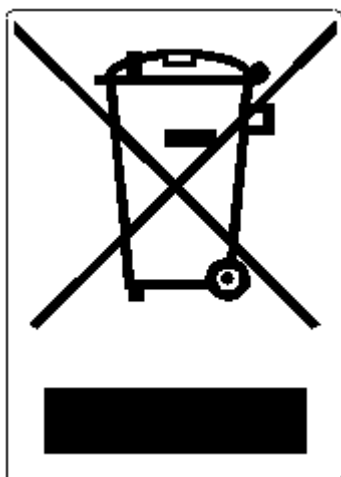
Sanctions in case of illegal disposal of such waste :

1. The distributor who does not retrieve the used electrical or electronic equipment free of charge, as stated in art. 6, paragraph 1, letter b), will be fined between 150 and 400 Euros, for every equipment unretrieved or retrieved not free of charge.

2. Manufacturers who fail to provide a separate professional EEE disposal system in compliance with article 6 –paragraph 3, as well as EEE retrieval, handling, treatment and recycling systems according to article 8 - paragraph 1, article 9 – paragraph 1, 11 – paragraphs 1 and 12 – paragraphs 1, 2 and 3, notwithstanding for the latter operations, agreements concluded in compliance with article 12 – paragraph 6, will be fined between 30.000 and 100.000 Euro.

3. Any manufacturer who after the 13th August 2005 releases electrical or electronic equipment without financial guarantee in compliance with article 11 – paragraph 2 or art. 12 - paragraph 4, will be fined between 200 and 1,000 Euros for every machine released onto the market.

4. Manufacturers who in EEE use instructions do not provide the information as in article 13 – paragraph 1, will be fined between 200 and 5,000 Euros.

5. Manufacturers who, within one year from releasing a new type of EEE , do not make information available to disposal/recycling centres according to article 13 – paragraph 3, will be fined between 5000 and 30,000 Euros.

6. Manufacturers who, after the 13th August 2005, releases EEE without the indications and symbols as in art. 13, paragraphs 4 and 5, are fined between 200 and 1,000 Euros for each equipment released. The same fine is charged should the aforementioned indications and symbols are not conform to the requirements set by art. 13, paragraphs 4 and 5.

7. Manufacturers who releases EEE without having registered with the chamber of commerce in compliance with article 14 – paragraph 2, will be fined between 30,000 and 100,000 Euros.

8. Any manufacturer who, within the time limit established in article 13 – paragraph 8 does not communicate to the national registry concerning the disposal of EEE as stated in article 13 – paragraphs 3, 4 and 5 will be subjected to the foreseen sanctions.

9. Notwithstanding the exceptions as in article 5 – paragraph 2 , anyone releasing EEE containing substances listed in article 5- paragraph 1 after the 1st of July 2006, will be fined between 50 and 500 Euros for each unit released, or between 30,000 and 100,00 Euros.