CHUCK E. CHEESE'S GRAND SLAM OPERATOR'S MANUAL

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OPERATOR'S MANUAL

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1. Introduction.

This manual is intended to act as a guide to the operation of the CHUCK E. CHEESE GRAND SLAM machine. The list of contents shows the layout of the manual. Should repairs be necessary, there is a Parts List of components that are normally considered replaceable. Recommendations are made throughout the manual and for safety reasons it is essential that these be followed.

1.1 Warnings, Cautions and Notes

"WARNING": refers to essential safety precautions that must be taken to avoid a potential hazard to health.

"CAUTION": refers to precautions that must be taken to avoid damage to the equipment.

"NOTE": refers to advisory information, normally to assist in performing tasks.

1.1.1 SAFETY PRECAUTIONS

The following general safety precautions apply to all Operators and Engineers and must be complied with at all times. More specific warnings and cautions are also provided in the manual where they apply.

WARNING:

1. IT IS ESSENTIAL THAT ONLY SUITABLY QUALIFIED PERSONNEL CARRY OUT MAINTENANCE AND REPAIR OPERATIONS.
2. TO PREVENT INJURY AND ELECTRIC SHOCK, SWITCH OFF AND DISCONNECT ALL ELECTRICAL POWER SUPPLIES BEFORE OPENING DOORS AND PANELS AND STARTING WORK ON THE MACHINE.
3. TO PREVENT ELECTRIC SHOCK DURING OPERATION, A SECURE, EARTHED ELECTRICAL PLUG MUST BE FITTED.
4. USE ONLY THE SPECIFIED ELECTRICAL FUSES SHOWN IN THE PARTS LIST. REPLACEMENT FUSES MUST MATCH THOSE TO BE REPLACED IN FUSE TYPE AND RATING. THE FUSE COVER (WHERE APPLICABLE) MUST BE IN PLACE BEFORE SWITCHING THE MACHINE ON.
5. TO MAINTAIN THE SAFE AND EFFICIENT OPERATION OF THE MACHINE, USE ONLY CROMPTONS APPROVED PARTS.

CAUTION:

1. Many electrical plugs are keyed to fit one way. Note orientation before removal.
2. Before handling a PCB or its component parts, take full anti-static precautions.
3. Wait for at least one minute after switching the machine OFF, to enable the capacitors to fully discharge before switching back ON. Failure to do so may result in a loss of functionality.

1.2 Standard Abbreviations

Units used are the standard SI units, e.g. grams "g", volts "V", etc

Abbreviations

Assy.	Assembly
CW	Clockwise
DIP	Dual In-line Package
EMC	Electro Magnetic Compatibility.
GRP	Glass Reinforced Plastic.
ICE	Interactive Concepts in Entertainment
JST	Japanned Solderless Terminal
LED	Light Emitting Diode.
PCB	Printed Circuit Board.
PSU	Power supply unit.
TBD	To be done.
VFD	Vacuum Fluorescent Display (green)
CDS	Coin Delivery System

1.3 Standard Terms

Coin	Coin or Token (metal or plastic).
Comparitor	CM CC-40 Coin Comparitor
Fixings	Small pieces of metalwork, etc used for assembly
Slug	Counterfeit Coin or Token

2. Description and Gameplay

Figure 1 Machine Functional Areas

2.1 Description

Grand Slam is a single-player machine with a moving belt which has four coloured Win 'Target' areas, three with direct payouts and the fourth the player gets to play the bonus feature .

The structure is divided into four levels:

- Top Sign
- Playfield
- Payout
- Cashbox.

When a Section has not been played for 30 seconds, a sequence of lights and sounds is initiated to attract a player to the machine.

If an attempt is made to defraud the machine, either physically or electrically, an alarm condition is set. The machine is fitted with four non re-settable electro mechanical meters which show Coin in, Ticket out, and Feature Hits.

2.2 Gameplay

The aim of the game is to deliver coins on to 'Win' values on the moving belt by use of the coin delivery system. As a skill element to the game the player can time the delivery of the coins to hit the moving catchers mit, this will give them a bonus win.

Each unit has two coin entry slots and a flipper handle: the flipper handle operation does not allow a variation in the ejection force applied to the coin. The handle is pulled fully back and the CDS then automatically release the coin(s).

There are two ways to win:

1. If a coin comes to rest within the borders of one of the coloured rectangles with a fixed value shown, the value is then paid out.
2. If a coin hits the Bonus Mit Win 'Target', the Bonus Feature is triggered and a set of 11 sequentially activated, translucent panels on the Bonus feature start to flash. Each of the panels is given a prize value varying from "No Win" to a maximum value. Following a brief run the sequence is stopped at a randomly selected position on the Bonus feature; the panel for that position is lit along with the panels values on either side of it flashing.

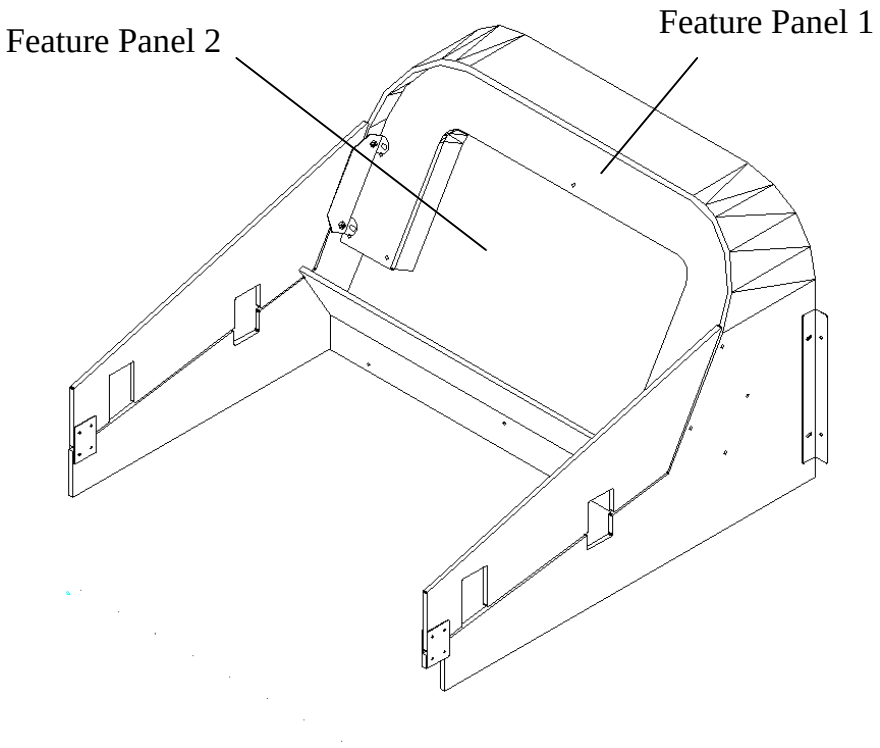


Figure 2 Bonus feature Assembly

3. Installation

CAUTION:

1. The machine must be installed on a stable, level surface for indoor use only.
2. The machine must not be exposed to extremes of temperature or humidity or to a high concentration of airborne particles.
3. Do not use the Paytrays to lift or move the machine as damage may occur.

3.1 Unpacking

1. Remove the machine from the shipping crate and check that it is complete. Check that any special instructions and the entry keys are attached to the outer surface of the machine. Ensure that any special instructions are followed before proceeding.
2. Open all doors and panels and check that all parts and connectors are secure and have not become loose during transit.

   Note: The playfield halogen lamps are not fitted at the factory, but are stored inside the machine.
3. Remove from the Cashbox the Mains power lead, the Manual and any Fixings, etc.
4. Close and lock all doors and panels.

Note: Do not load any coins at this time.

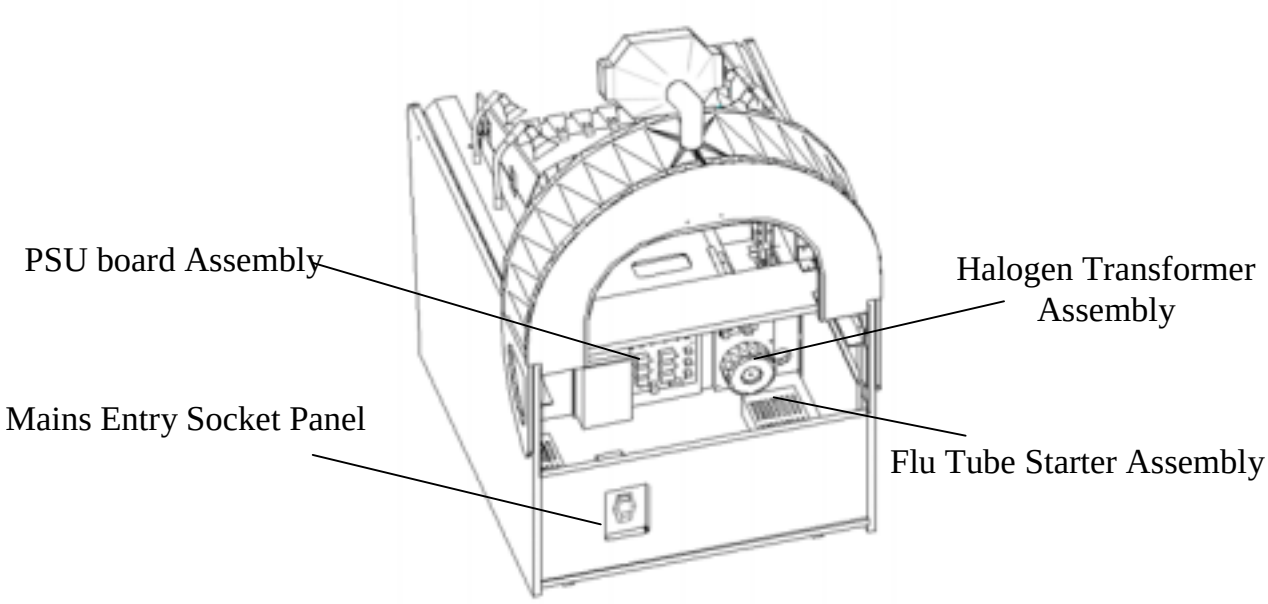


Figure 3 Machine Rear view

3.2 Electrical Supply

1. Ensure that the mains electrical supply is earthed and conforms to the specification shown on the machine's Identification Label.
2. Connect the machine to the mains electrical supply as shown in figure 4.
3. Switch ON the electrical supply by operating the Power ON switch located inside the Payout door on the right side as shown in figure 5. Wait for 30 seconds to allow the initialisation procedure to execute; watch the VFD to verify initialisation.
4. Check that all lights are working and that the Playfield is operating satisfactorily.

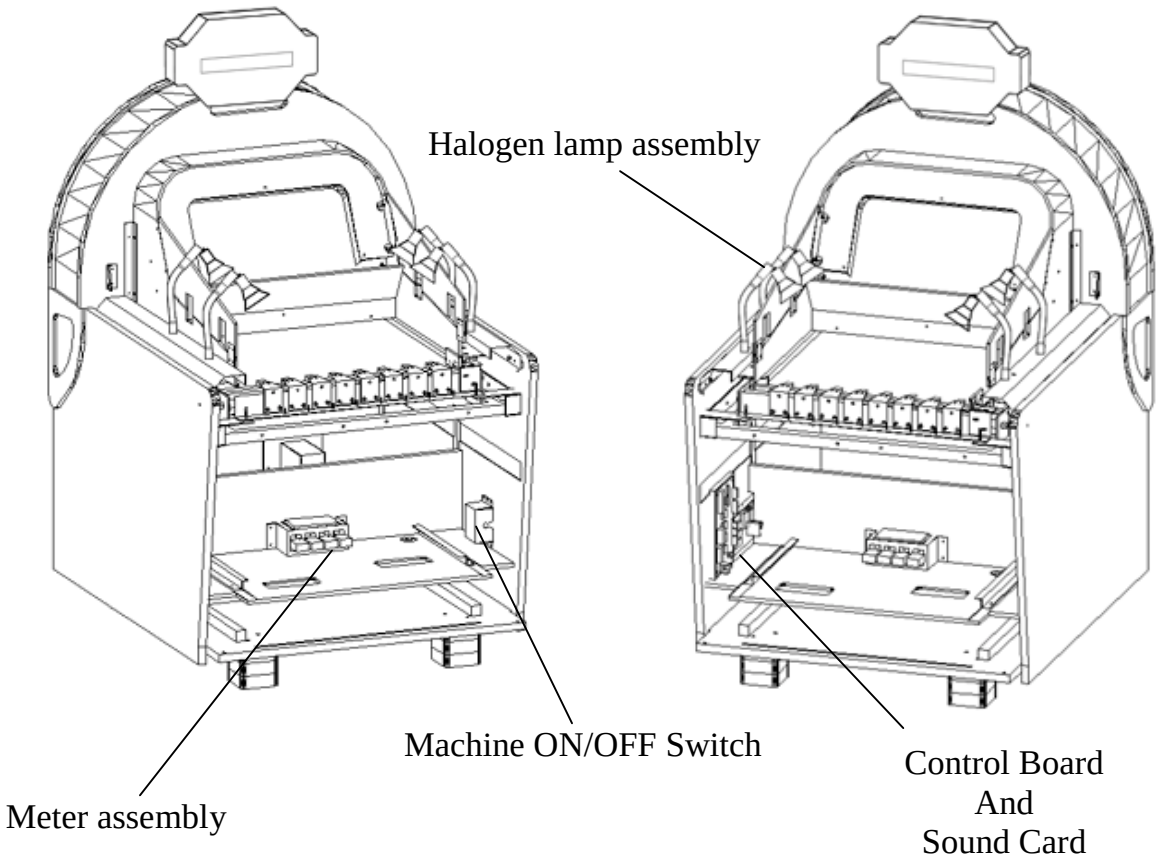


Figure 4 Machine front view

3.2.1 SETTING THE SOUND VOLUME

WARNING:

CARE MUST BE TAKEN WHEN WORKING IN EXPOSED COMPARTMENTS OR WHEN WORKING IN THE PLAYFIELD AREA WHILE THE GAME IS RUNNING WITH THE PLAYFIELD MOVING.

Set the sound volume to the desired level. The sound card is located inside the Payout Door on the left-hand side.

An array of four pushbuttons allows the volume of Channel One and Channel Two to be independently controlled (see figure 13 page 20).

4. Preparation to Play.

4.1 Access to the Coin Comparitors

Open the Flipper CDS access door using the key provided. The door is fitted with two locks, one on either side of the CDS unit and is hinged on its bottom edge.

Remove the two Cross knob screws that secure the CDS unit to its bed.

To unplug the CDS loom the ticket door must be removed.

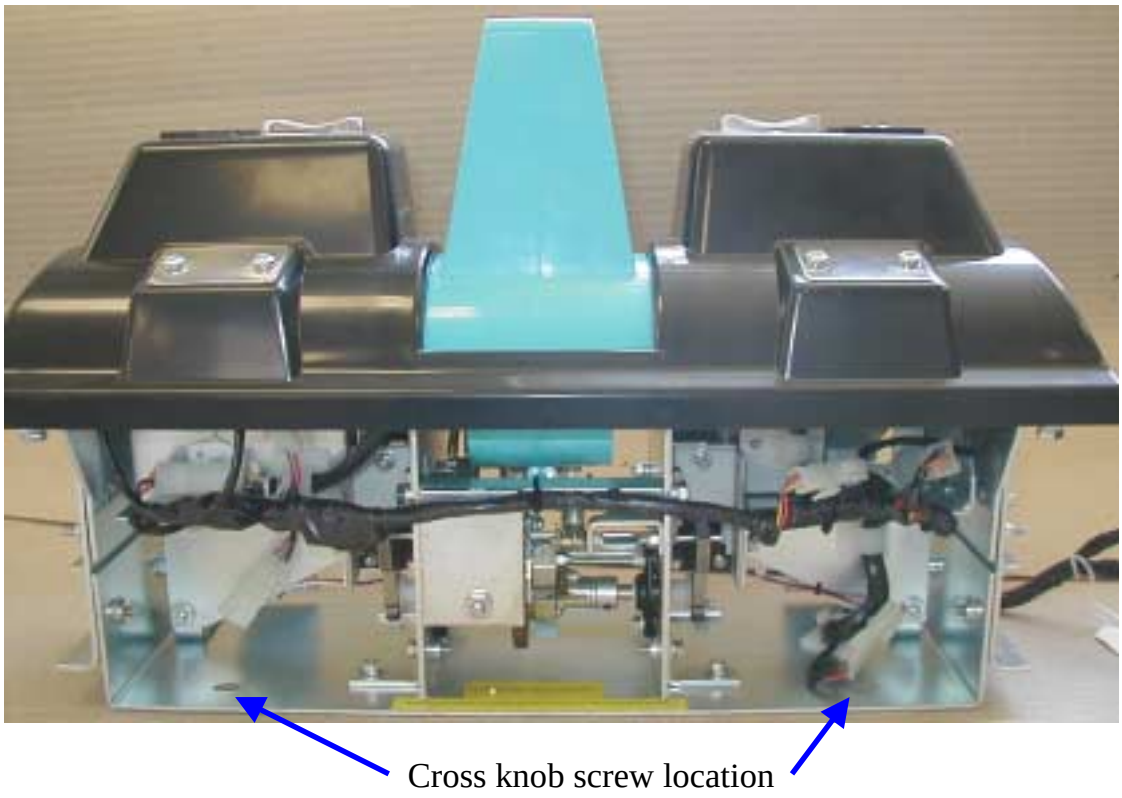


Figure 5 CDS Unit

Caution:

If the CDS is pulled out beyond the base retaining guides and is not properly supported, it could fall to the floor.

Carefully slide the CDS unit out about two inches to gain access to the CDS Cover securing clips.

The two catches will be visible, one on either side of the CDS Unit facing the Playfield. These catches secure the Flipper cover in place.

4.2 Removal of the Flipper CDS Cover

1. Operate both catches by pushing each of them backwards and downwards.

Note: The above action will hold the catches in the open position.

2. Carefully lift the coin Flipper CDS Cover sufficiently to reveal the four electrical looms attached to the underside of the cover.
3. Disconnect the looms from the cover and carefully lift the cover clear.

4.3 Coin Comparitors Setup (see Appendix)

1. With the Flipper CDS Cover removed, the Coin Comparitors can be set up.
2. To set up the Coin Comparitors, pull back the Coin Holder on each Comparitor and insert sample coins of the coin of play.
3. Install the CDS Unit in its original operating position and secure by using the cross knob screws.
4. Test the Coin Flipper CDS to check that the Comparitors are operating correctly.

Note: Access to the adjustment screw on the left Comparitor will require the removal of the Playfield panel.

5. Adjust the sensitivity dial on the bottom right corner of the Comparitor to suit the play coin condition. Turning the dial in the plus direction will increase the coins reject rate and turning the dial in the minus direction will decrease the coin reject rate.

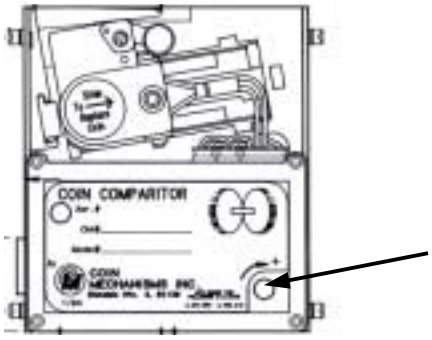


Figure 6 CC40 Coin Comparitor

Caution:

When fitting the Coin Flipper cover care should be taken not to trap the looms or to force the cover into place.

Note: The CDS Unit will have to be pulled back to fit the cover.

6. Refit the CDS Cover.
7. Push the CDS back into the home position.
8. Secure in place with the two cross knob screws.
9. Close and lock the CDS Unit door.

4.4 Filling Ticket Dispenser Versions

Remove the Payout Door. Place the block of folded tickets in the Ticket Box so that the feed will be in correct orientation. Feed the Tickets into the Ticket Dispenser.

Switch the power supply ON (if not already on) and press the advance button on the side of the dispenser until tickets appear at the Payout Slot.

Tear off any excess tickets and replace the Payout Door. Take care not to trap the tickets.

4.5 Tickets Reload Sequence

When a section runs out of tickets, the display will show…

"TICKETS EMPTY PLEASE CALL ATTENDANT"

…and the alarm will sound.

To pay out any remaining tickets, carry out the following steps (see Step 4.4 Filling Ticket Dispenser Versions).

1. Feed the tickets into the ticket dispenser. When the first ticket is detected, the display will show…

   "TICKETS DETECTED".

2. Following detection of the first ticket, an eight-second delay is invoked to enable correct positioning of the tickets. After eight seconds any tickets owing will be paid out and the game can continue.

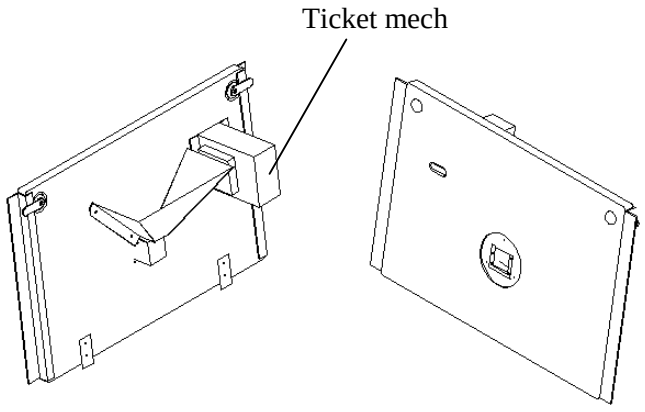


Figure 7 Ticket mech Location

4.6 Tilt Mechanisms

The machine is protected by three a Tilt Bob. This will require adjustment before play can take place, following initial installation.

4.6.1 ADJUSTMENT OF TILT BOB

1. Isolate electrical power to the machine.
2. Remove the rear door with use of the key provided.
3. The Tilt Bob operates under gravity by making contact between the free swinging bob and the metal frame, whenever the machine is tilted above a pre-set angle.

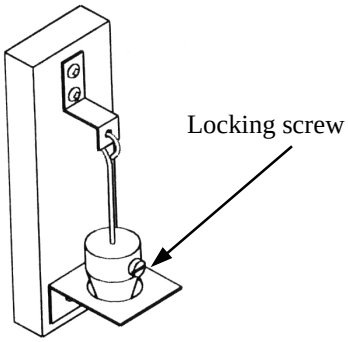


Figure 8 Tilt Bob Mechanism

To adjust the tilt angle:

1. Loosen the locking screw on the side of the bob.
2. Move the bob down the shaft to increase the sensitivity or upwards to reduce it.

Test the operation of the Tilt Bob on completion of the adjustment.

5. Audio Level.

The audio level can be increased by pressing test switch three and reduced by pressing test switch 4. Background music is played at half normal volume and alarms are sounded at a slightly increased volume level. Audio level settings are stored in battery backed memory and restored on power up.

5.1.1 BACKGROUND MUSIC

If switch SW1-1 is set to the on position then a tune will be played on channel 2. The volume of this tune is set by the system to be half that of the foreground sounds. If the switch is set to the off position then background music is not played.

6. Win Detection.

The belt is checked by the system every 2ms (500Hz) for winning coins. The system can make it easier or more difficult to win by being more or less strict as to whether a coin is over the edge of the brick.

SW1-3	**SW1-2**	**Effect**
Off	Off	Hardest
Off	On	Hard
On	Off	Easy
On	On	Easiest

7. Meter Mode

Meter mode is only accessible when the game is in attract i.e. Not displaying either INSERT COINS NOW or FIRE COINS NOW.
Enter meter mode by pressing test switch #1. There are two sets of meters, long term & short term. Meters are displayed on the VFD, on at a time by repeatedly pressing test switch #1. The short-term meters can be reset to zero by keeping test switch 2 depressed for 5 seconds.

8. System Messages and Alarms

8.1 Visible Warning Messages.

These messages will be displayed on the four panels that are located, one on each side of the central pyramid assembly.

Message	Meaning
Tickets empty, please call the Attendant	The Ticket Dispenser is empty
Tickets overpay, please call the Attendant	The Ticket Dispenser has overpaid
Initialisation sensor fail, please call Attendant	Initialisation sensor has failed to read the belt
Brick count sensor fail, please call Attendant	Brick count sensor has failed to read the belt
Playfield fail, please call Attendant	Playfield movement can not be detected

Table 1 Visible Warning Messages

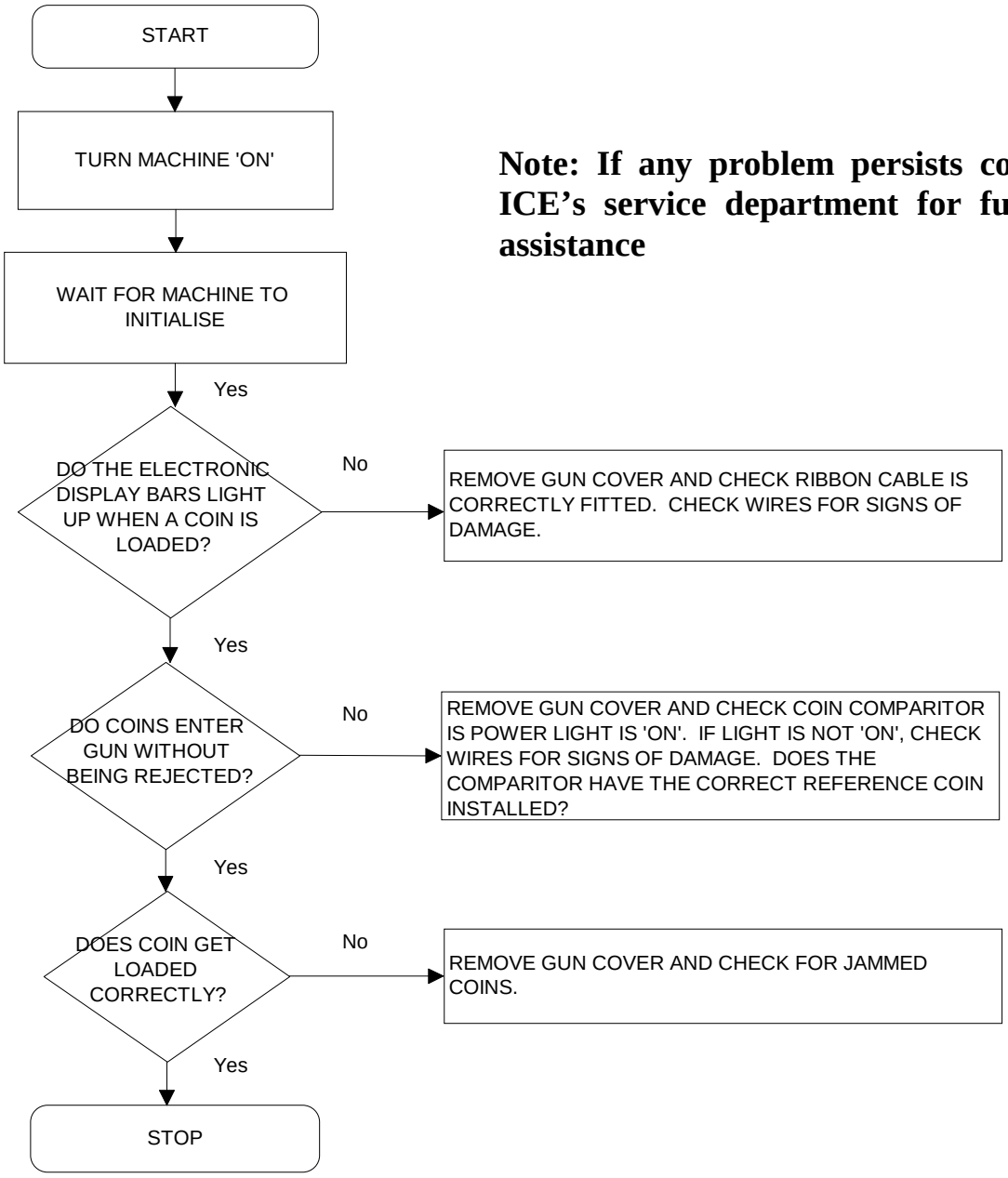
8.2 Audible Warning

Sound	Meaning
Two-tone alarm	The Tilt mechanism has operated.

Table 2 Audible Warning Message

9. Troubleshooting guide

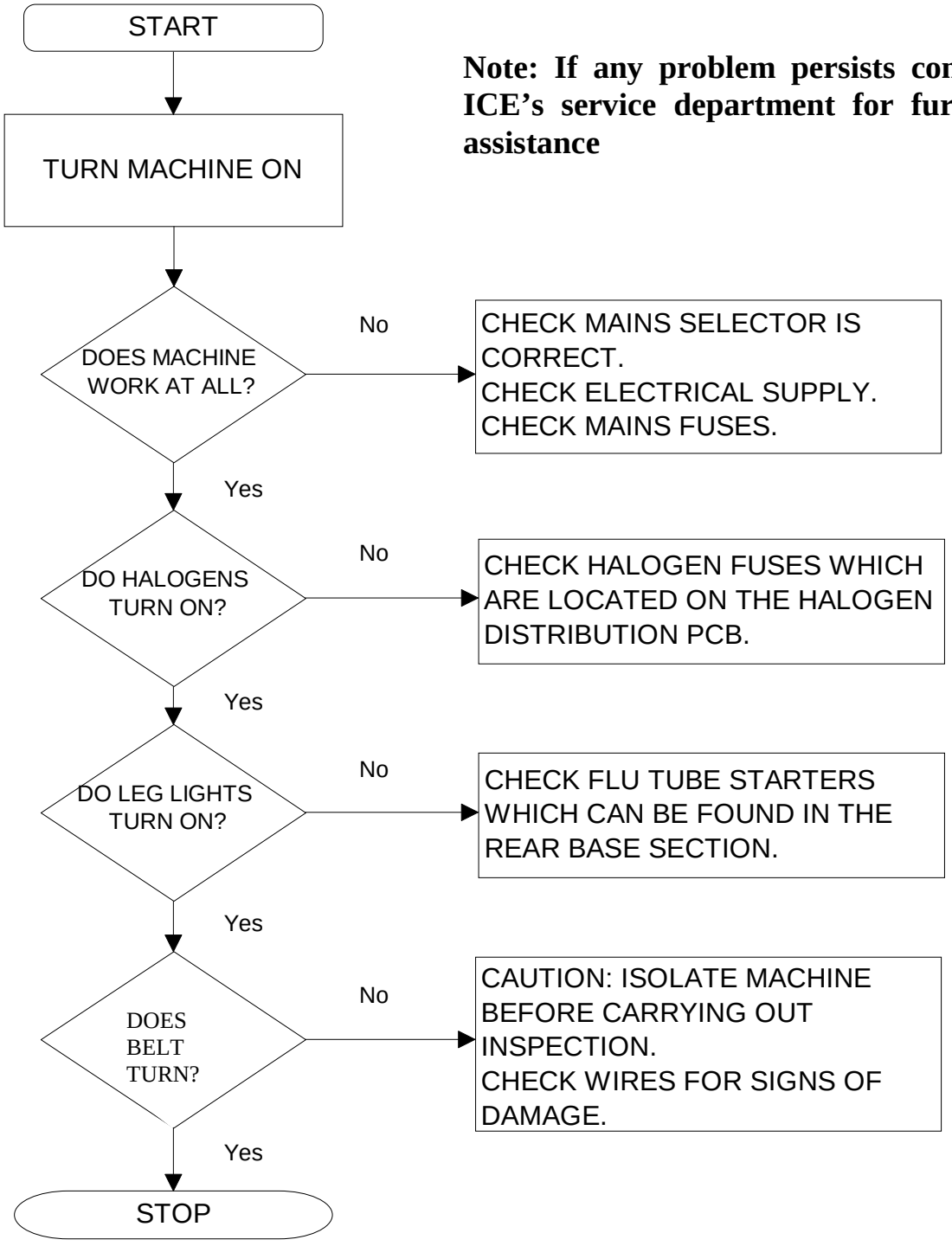
9.1 CDS Trouble Shooting Guide



Note: If any problem persists contact ICE's service department for further assistance

Figure 9 CDS Trouble Shooting Flowchart

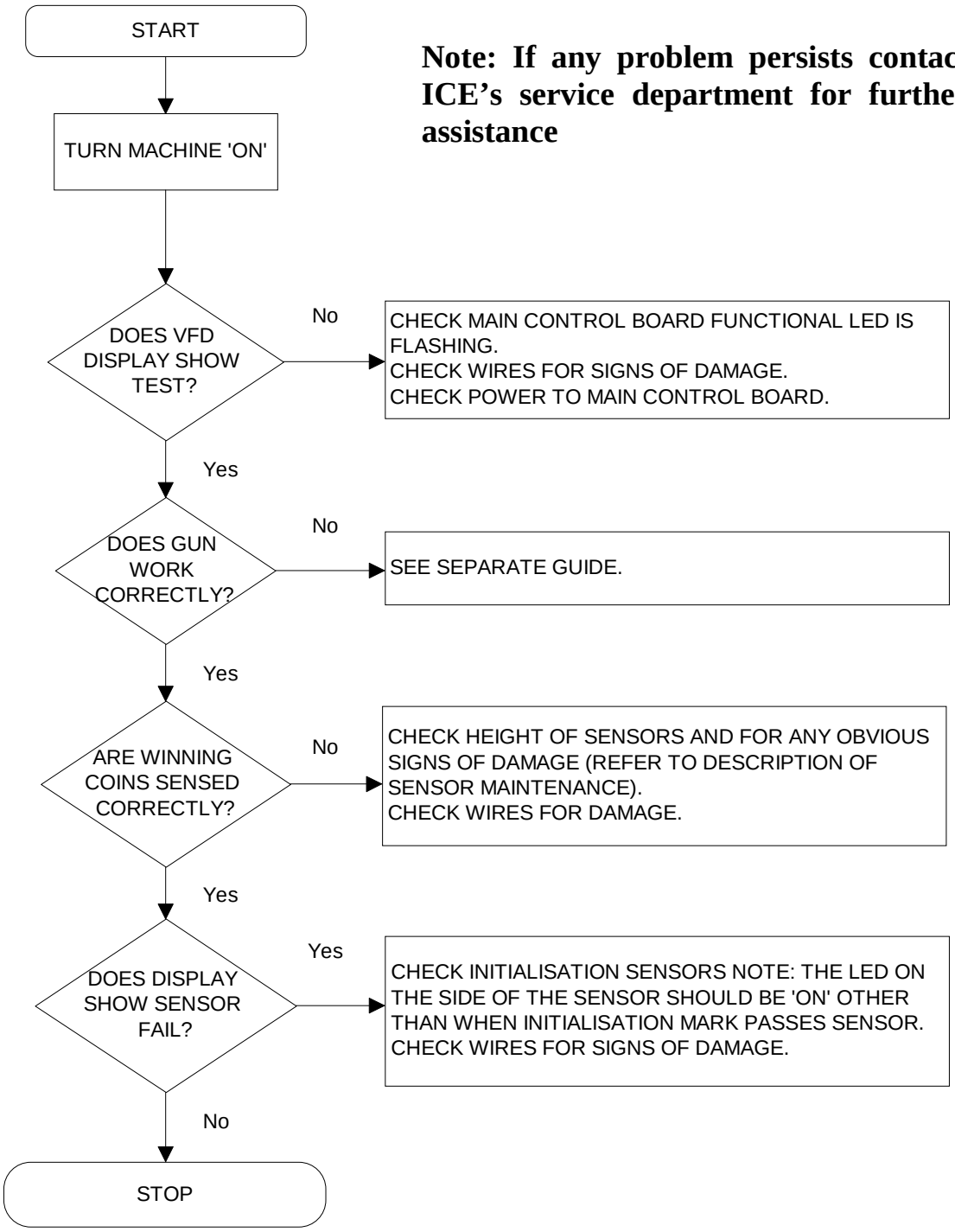
9.2 Mains Electrical Trouble Shooting Guide



Note: If any problem persists contact ICE's service department for further assistance

Figure 10 Mains Electrical Trouble Shooting Flowchart

9.3 Function Trouble Shooting Guide



Note: If any problem persists contact ICE's service department for further assistance

Figure 11 Function Trouble Shooting Flowchart

10. Routine Maintenance

10.1 Recommended Daily Inspection

Switch the machine ON and allow 30 seconds to initialise the Setup procedure.

Check that the machine is clean inside and out and is not damaged in any way.

Check that all the lamps are working.

Check the operation of the coin Flipper CDSs. Look for jammed coins and check that the coin throw is effective for all coins of the designated denomination.

Check the operation of the Playfield; it should have a smooth operation with no bumps or jolts.

Check that the Ticket Boxes are charged with a sufficient number of tickets and that they are functioning correctly.

Note: If any problem is found, refer to the "Troubleshooting Guide".

11. Maintenance Tasks

11.1 Warnings and Cautions

WARNING:

1. IT IS ESSENTIAL THAT ONLY SUITABLY QUALIFIED PERSONNEL CARRY OUT MAINTENANCE AND REPAIR OPERATIONS.
2. TO PREVENT INJURY AND ELECTRIC SHOCK, SWITCH OFF AND DISCONNECT ALL ELECTRICAL POWER SUPPLIES BEFORE OPENING DOORS AND PANELS AND STARTING WORK ON THE MACHINE.
3. TO PREVENT ELECTRICAL SHOCK, A SECURE, EARTHED ELECTRICAL PLUG MUST BE FITTED.
4. USE ONLY THE SPECIFIED ELECTRICAL FUSES SHOWN IN THE PARTS LIST. REPLACEMENT FUSES MUST MATCH THOSE TO BE REPLACED IN FUSE TYPE AND RATING. THE FUSE COVER (WHERE APPLICABLE) MUST BE IN PLACE BEFORE SWITCHING THE MACHINE BACK ON.
5. TO MAINTAIN THE SAFE AND EFFICIENT OPERATION OF THE MACHINE, USE ONLY PARTS THAT HAVE BEEN SUPPLIED BY CROMPTONS, OR ARE CROMPTONS APPROVED.

CAUTION:

1. Many electrical plugs are keyed to fit one way. Note orientation before removal.
2. Before handling a PCB or its component parts, take full anti-static precautions.
3. Wait for at least one minute after switching the machine OFF, to enable the capacitors to fully discharge before switching it back ON. Failure to do so may result in a loss of functionality.

11.2 Playfield Section

The Playfield Section incorporates:

1. The Bonus Panel Assembly.
2. The Moving Playfield Table.
3. The Win/Lose Sensor Rack.
4. The Flipper CDS Unit.
5. The Machine Cooling fan.

WARNING:

THE MACHINE MUST BE ISOLATED ELECTRICALLY, BEFORE ANY WORK IS CARRIED OUT.

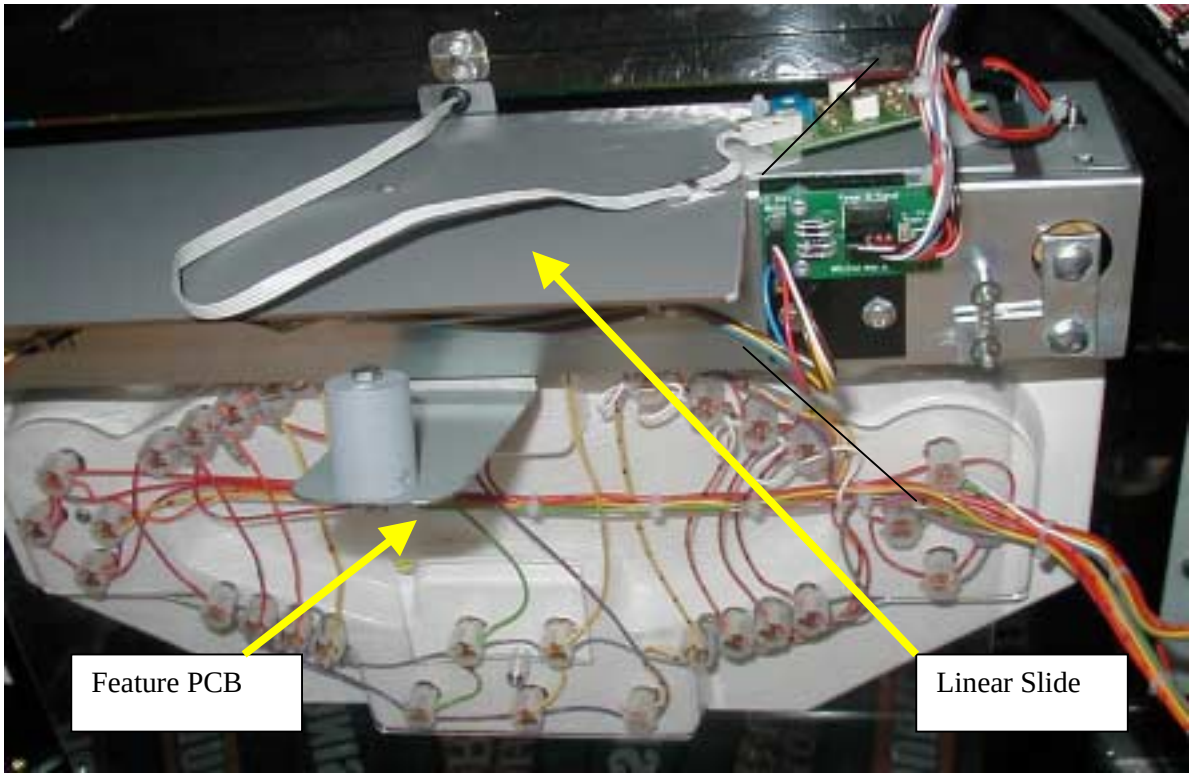


Figure 12 The Bonus Panel.

11.2.1 THE BONUS PANEL ASSEMBLY

The Bonus Panel Assembly comprises of the two feature PCB's, the first used to gain feature wins and the second shows when direct Playfield wins are obtained and also when the bonus feature is activated. It also has incorporated within it the Linear Slide Assembly that moves the Mit. With the machine switched 'ON' check that when in attract mode each lamp illuminates.

To gain access:

1. Isolate electrical power supplies to the machine.
2. Remove the rear access door.

CAUTION:

There are electrical connections to the rear of the display panels that have to be disconnected before the panel can be completely removed.

With a Bonus Panel removed:

3. Check the security of all electrical connections.
4. Replace any bulbs which were seen to have blown.

11.2.2 LINEAR SLIDER MOTOR REPLACEMENT

1. Remove the Bonus Panel Assembly from the machine.
2. Press the Belt Tensioner to slacken the belt, and remove the belt from the pulley and Slider Bracket. Visually check that the belt is in good condition.
3. Loosen the grubscrew securing the motor driveshaft to the Drive Pulley, after making the position of the Pulley relative to the driveshaft. Remove the Drive Pulley.
4. Remove the 2 screws securing the Motor.
5. Disconnect the electrical plug that leads to the Main Controller PCB and remove the motor.
6. Installing the new motor is a reversal of the removal procedure. Use "loctite 242" or equivalent thread-locking adhesive on the grubscrew threads, and engage the grubscrew on the flat spot on the driveshaft. Ensure that the Drive Pulley is aligned with the Driven Pulley.

   NOTE: The new motor should be supplied with a flat spot machined on to the driveshaft, to engage the grubscrew. If this is missing cut a flat spot on the driveshaft, using the old motor as a pattern.
7. Install the Linear Slider Belt
8. Install the Bonus Panel Assembly.

11.2.3 LINEAR SLIDER BELT REPLACEMENT

1. Remove the Bonus Panel Assembly from the machine.
2. Press the Belt Tensioner to slacken the belt, and remove the belt from the pulleys and Slider Bracket.

3. Install the replacement belt in the same way, ensuring that the belt is positioned on the Slider Bracket so that it is aligned with the pulleys.
   NOTE: The drive mechanism sets it's stroke by sensing the position of the slider bracket, so further set-up is not necessary.
4. Install the Bonus Panel Assembly.

11.2.4 THE MOVING PLAYFIELD

The Playfield moves, carrying the play coins from the back of the Playfield to the Win/Lose Sensor racks.

A motorised roller that is at the back of the Playfield assembly generates the movement.

With the rear access door or Playfield dome removed:

1. Check the operation of the play table.
2. Check the condition of the surface.
3. Check for any obstruction to the table rotation.

11.3 Overhaul of the Playfield Assembly

11.3.1 REMOVAL OF PLAYFIELD FRAME ASSEMBLY

1. All safety instructions must be observed.
2. Ensure machine is switched off using switch in rear right access door. (Fig 4, Page 11)
3. Ensure 240v power supply lead is unplugged from socket at rear of machine. (Fig 3, Page 10)
4. Unlock and remove the front paytray door.
5. Using an 8mm socket or appropriate spanner, remove the M5 retaining bolts from the front corners of the playfield frame, (1 at each corner).
6. Remove the rear access door.
7. Unplug the 2-pin 24v supply to the playfield frame.
8. Using an 8mm socket or appropriate spanner, remove the M5 retaining bolts from the rear corners of the playfield frame, (1 at each corner, see Fig 12). Note the position of the green/yellow earth wire.

Figure 13 Rear left Playfield retaining bolt

9. Carefully slide the playfield frame out, from behind, ensuring that the rear edge is adequately supported throughout. Care must be taken to ensure that any trailing wires do not catch on the frame during removal.
10. Place playfield frame on a table or suitable work surface.

11.3.2 REMOVAL OF BELT AND ROLLERS

1. Using an 8mm socket or appropriate spanner, remove the 3 x M5 retaining bolts, on each belt guide and remove the guides.
2. Remove the spacers immediately beneath the belt guides. (Fig 13)

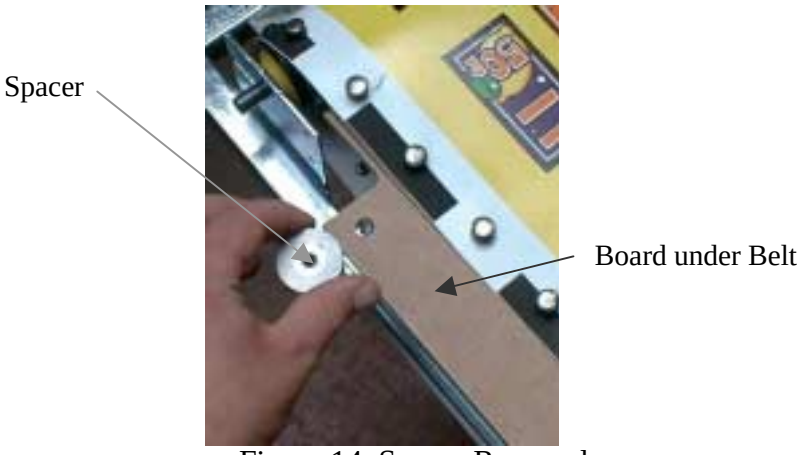


Figure 14 Spacer Removal

3. Using an indelible pen, mark the position of the 2 side belt adjusters. (Fig 14)

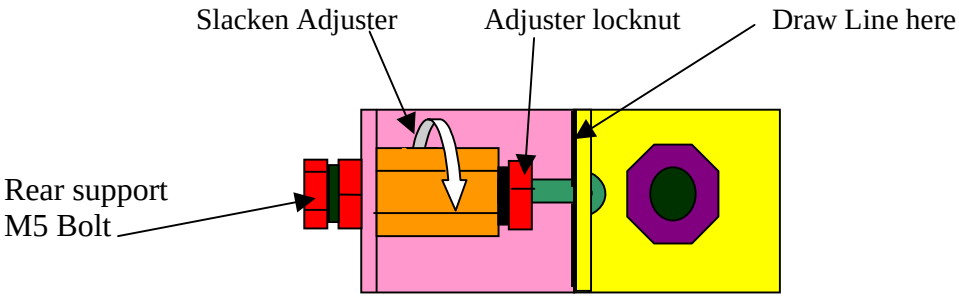


Figure 15 Showing position of Belt Adjuster

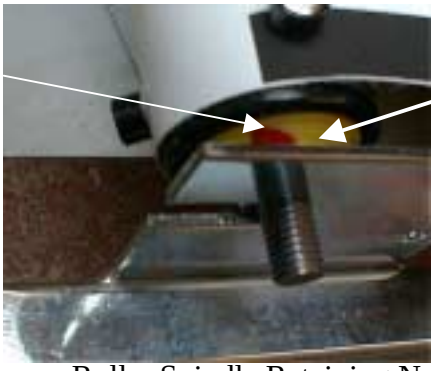
4. Measure and note the distance between the belt and frame on each side of the dummy roller.
5. Using an 8mm spanner, loosen the rear support M5 bolt of the left and right belt tension adjusters. (See Fig 14).

6. Using an 8mm spanner, loosen the M5 adjuster locknut on the left and right belt tension adjusters, then fully remove the rear support bolt, at each side. (Fig 15)

Figure 16 Removal of Belt Adjuster M5 Support Bolt

7. Fully slacken the belt adjusters. (Fig 14).
8. Using a 19mm spanner, remove the motor roller spindle retaining nut and lock washer. If exceptionally tight then a thin 19mm open ended spanner must be used to hold the bearing adjusting nut on the inside of the frame.
9. Remove the belt adjusters.
10. Remove the board from beneath the belt. (Fig 13).
11. Using a 19mm spanner, remove the spindle retaining nuts and lock washers from the ends of the dummy roller. If exceptionally tight then a thin 19mm open ended spanner must be used to hold the bearing adjusting nut on the inside of the frame (Fig 16).

Red spot on Dummy Roller



Bearing adjusting nut behind frame here

Figure 17 Dummy Roller Spindle Retaining Nut removed

12. Depress the spring-loaded shaft at the end of the motor roller and carefully push the sprung end in towards the dummy roller.
13. Withdraw the threaded spindle of the motor roller from the other end of the frame. **Note**: If the motor roller is to be replaced, the 2 power plug pins must be withdrawn from the plug, to enable the wire to be passed through the frame. Ensure the plug and wires are marked prior to removal to ensure correct polarity on re-assembly. A simple pin removal tool, available from any reputable electrical store may have to be purchased if not available.
14. The dummy roller and belt can now be removed.

11.3.3 EXAMINATION OF COMPONENTS

1. The belt must be inspected for any signs of fraying or stretching, if damage is found the belt should be replaced.
2. The guide studs on the belt should be examined for security.
3. The ends of the dummy roller are factory spot marked with a red dot (See Figure 16).
4. The rollers must be free to turn, if tight spots are encountered the rollers should be replaced.
5. If the roller shaft has end-float then the bearing adjusting nuts should be tightened sufficiently to allow free rotation, do not over-tighten or excessive wear will occur.
6. The frame should be examined for any signs of damage such as burrs, which should be removed prior to reassembly.
7. The motor roller wires should be examined for signs of fraying and repaired prior to reassembly.

11.3.4 REASSEMBLY

1. Reassemble rollers and belt as a reversal of the dismantling procedure, ensuring belt design faces the coin chute in the frame. **Do not tighten anything at this stage.**
2. Ensuring the dummy roller is fully home in frame slots and washers correctly positioned, tighten the spindle retaining nuts.
3. Reassemble pins ensuring correct polarity in the 24v power plug.
4. Refit board under belt.
5. Reassemble the belt adjusters, adjusting each side equally until original marks line up.
6. Tighten the motor roller spindle retaining nut ensuring the washers are correctly positioned.
7. Roll belt several times to seat belt, then check side measurements correspond with original measurements, if belt does not run centrally then adjustments must be carried out until this is achieved (See Para 9.3.6). It is important not to over-tension the belt. (If required, the playfield can be connected up to the 24v power plug at the rear of the machine and power rolled to check belt alignment and correct direction of travel).
8. Fully tighten adjuster locking bolts using an 8mm spanner.
9. Lightly grease the inner face of the belt guides.
10. Reassemble belt guides not forgetting to place the spacers under the guide holes.

11.3.5 REFITTING PLAYFIELD FRAME

1. Slide playfield into runners at rear of machine, ensuring that trailing wires do not catch on frame during insertion.
2. Refit frame corner bolts not forgetting to replace the earth wires correctly.
3. Reconnect 24v power plug.
4. Refit front and rear access doors.
5. Reconnect the 240v power supply and check machine functions correctly.

11.3.6 TENSIONING THE PLAYFIELD BELT

The tension of the belt is important to maintain correct operation. The following adjustment procedure should be carried out if adjustment is required, if in any doubt a Cromptons approved Engineer should be contacted

With the Playfield glass removed:

1. Check the operation of the play table.

2. Check the condition of the surface.
3. Check for any obstruction to the table rotation.
4. Remove the side belt guides using an 8mm spanner taking care to ensure that the spacers beneath are not dropped.
5. To adjust the tension the Motorised Roller spindle fixing bolt should be loosened, the adjusters then need to be slackened off so the assembly can be slid backwards and forwards.
6. The Motorised Roller should be positioned initially at approximately the mid position and the fixing bolt nipped up to retain position.

IMPORTANT: Extreme care should be taken when performing the above task, and between adjustments the machine must be switched 'OFF'.

11.3.7 WIN SENSORS

The win sensors are located in front of the CDS beneath a cover. There are eight proximity sensors and one opto sensor. The proximity sensors check for valid coins and the opto sensor checks for the beginning of the belt and also which is the current win brick number.

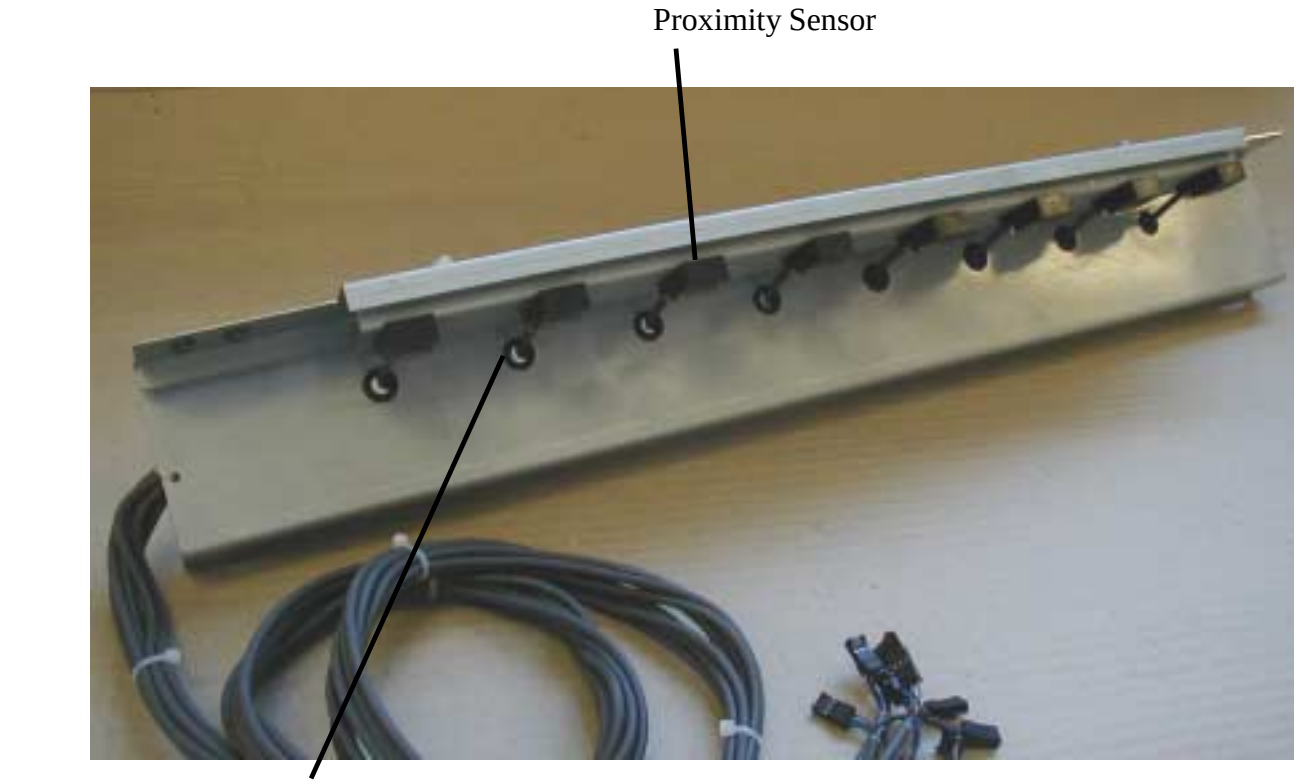


Figure 18 Sensor Rack Assembly

11.4 Sensor Rack Adjustment

The sensor rack can be adjusted for both the proximity and initialisation sensors. Extreme care must be taken as these sensors affect the whole operation of the machine.

11.4.1 PROXIMITY SENSOR ADJUSTMENT

The proximity sensors are used to sense if the coins played are wins or loses. The sensors should be approximately one and half times the thickness of the coin of play from the Playfield. The centre of the win bricks should be in the centre of the sensor. Also wins should be sensed equally at the front and back of the Win 'Bricks'. The sensors can be moved forwards and backwards, and also up and down. To adjust loosen the adjustment screws and gently move the sensor in the desired direction, before nipping the screws up. Check operation before tightening screws.

11.4.2 INITIALISATION SENSOR ADJUSTMENT

The initialisation sensor is used to sense where the belt is in relation to the sensor rack. The sensor can be moved up and down, and also back and forward. To adjust, loosen the adjustment screws and gently move the sensors in the desired direction, before nipping the screws up. Check operation before tightening screws.

11.4.3 COIN FLIPPER CDS MAINTENANCE

The most likely causes of CDS failure will be jammed coins, dirt or a broken spring. To gain access for maintenance, carry out the following steps:

1. Isolate all electrical power to the machine.
2. Open the Flipper CDS service door with the key supplied. The door is fitted with two locks, hinged on the bottom edge, one on each side of the CDS unit.
3. Remove the two Knurled Knob screws that secure the CDS unit to its bed.
4. Remove the Payout Door to unplug the CDS loom.

CAUTION:

If the CDS is not supported and pulled out beyond the base retaining guides, it could fall to the floor.

1. Carefully slide the CDS unit out about two inches to gain access to the CDS Cover securing clips
2. The two catches will be visible, one on either side of the CDS unit facing the Playfield. These catches secure the Flipper cover in place.
3. Remove the Flipper CDS Cover by releasing the two catches. The catches are released by pushing each catch backward and downward. This action will hold the latches in the open position.
4. Lift the CDS Cover just far enough to expose the four electrical looms which are connected to the cover underside. Disconnect these looms and lift the cover clear.
5. Check wiring security and condition.
6. Slide the CDS unit out from its housing.
7. Disconnect the coin Comparitors and remove them from the CDS Assembly by releasing the securing latch and lifting out the Comparitor unit.
8. Check for jammed coins, remove any found in the system.
9. Clean out any dirt that may be present.

Replacing a Broken Spring

If a spring fails, it is most likely to be either the Hammer Spring or the Handle Tension Spring. The replacement procedure for each spring is similar, so only one procedure (the Hammer Spring replacement) will be described here.

1. Remove the Clevis Clip.
2. Carefully slide the Spring bracket to the right a little. This will enable the Clevis pin to be withdrawn to the left of the bracket sufficiently to allow the swivel loop end of the spring to be eased off the pin.
3. Similarly, remove the other end of the spring,
4. Refit a replacement spring in the reverse order for removal.

Note: The use of a Spring Hook may simplify the fitting of the spring over the Clevis Pin.

CAUTION:

When refitting the CDS Cover, do not force it in to place. It is an accurate fit and must be replaced with care.

5. Refit the looms, replace the CDS Cover and re-engage the latches.
6. Slide the CDS unit back into the housing.
7. Secure the unit using the two Knurled Knobs that screw that the CDS unit to the bed.
8. Close the Flipper CDS service door and lock it.
9. Re-connect the electrical power to the machine.
10. Test operation of unit and note any faults.
11. Refit the Payout Door.

11.4.4 MACHINE COOLING FAN

The machine is fitted with a cooling fan that is positioned inside the rear access door. Removal of the door will allow access to the Fan. To keep the machine functioning correctly the fan must be fully operational.

11.4.5 PAYOUT SECTION

A self-contained modular Tray Assembly is located behind the removable Payout Door.

After disconnection of the electrical looms, the Modular Tray can easily be removed from the machine for maintenance.

The Ticket dispenser is mounted on the Payout Door.

A Payout distribution PCB is mounted and distributes 24V to the Ticket dispenser in addition to a 12V signal supply. The PCB is fitted with two fuses, a 12V signal supply and a 24V power supply. Two LEDs are fitted adjacent to the fuses. LED 1 illuminates if the 24V supply is functioning and the fuse is intact. LED 2 acts in a similar way for the 12V supply. If the appropriate LED is not working first check the adjacent fuse.

11.4.6 MAINTENANCE ON TICKET DISPENSER

1. Isolate electrical power supplies to machine.
2. Carefully remove paytray door taking care to disconnect any electrical looms that may be connected to the rear of the door.
3. Check security and condition of electrical cables and looms.
4. Replenish Ticket Dispenser.
5. Check operation of Ticket Dispenser.

11.5 Main Control PCB

The Main Control PCB is accessible on the left side panel, inside the payout Door. This PCB has two LED's incorporated. The first should be permanently lit and indicates the

12V supply is functioning correctly. The second LED flashes to show that the machine software is running. Press the Reset Button to reset the program - this is preferable to switching the machine off and on again.

11.5.1 MAIN CONTROL PCB DIPSWITCH SETTINGS

The Dipswitches are located in two banks on the Main Control PCB labelled "SW1" and "SW2". The switches themselves are labelled with the numbers 1 to 8 and the "ON" position is shown. The Dipswitch settings take effect only at Power-On or after the Main Control PCB Reset button for the play section has been pressed.

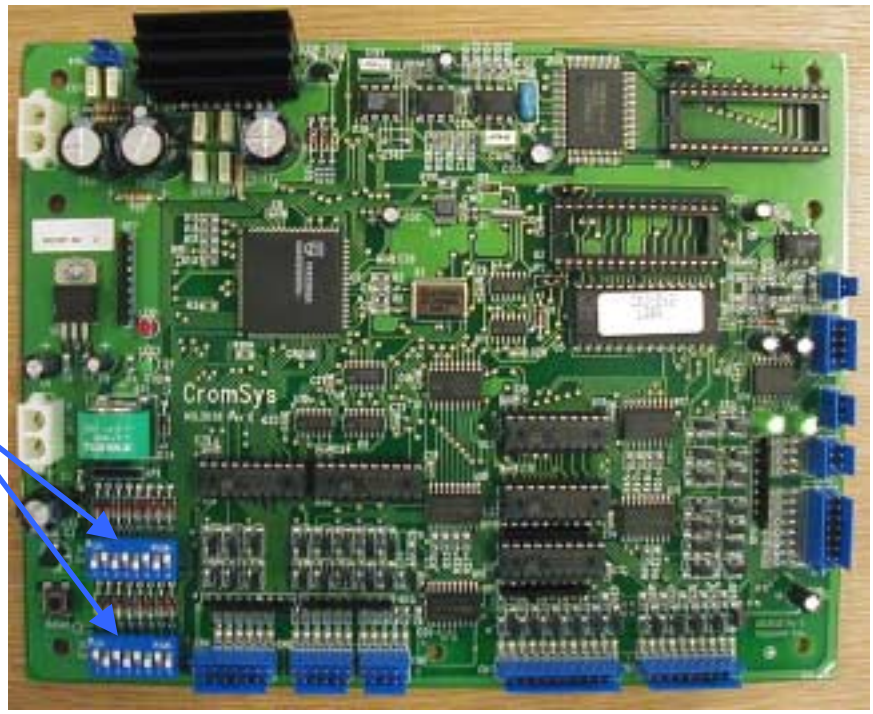


Fig. 19
Main Control PCB

The Dipswitch functions are listed on the Software Specification Sheet that is attached to the baseboard inside the payout door. The sheet also shows the default settings that are set before the machine leaves the factory.

11.6 Cashbox Section

11.6.1 CASHBOX LEVEL

At the bottom of each machine, the Cashbox door can be found. For security reasons this door is fitted with two locks which are different from the other locks fitted to the rest of the machine.

To gain access to the cash box:

1. Turn both keys to unlock
2. Lift the door to remove the Cashbox.

12. Parts List

12.1 Introduction

Spare parts, coin conversion and a range of enhancement kits, can be obtained from the Cromptons USA Distributor ICE.

When ordering parts, please specify the following information:

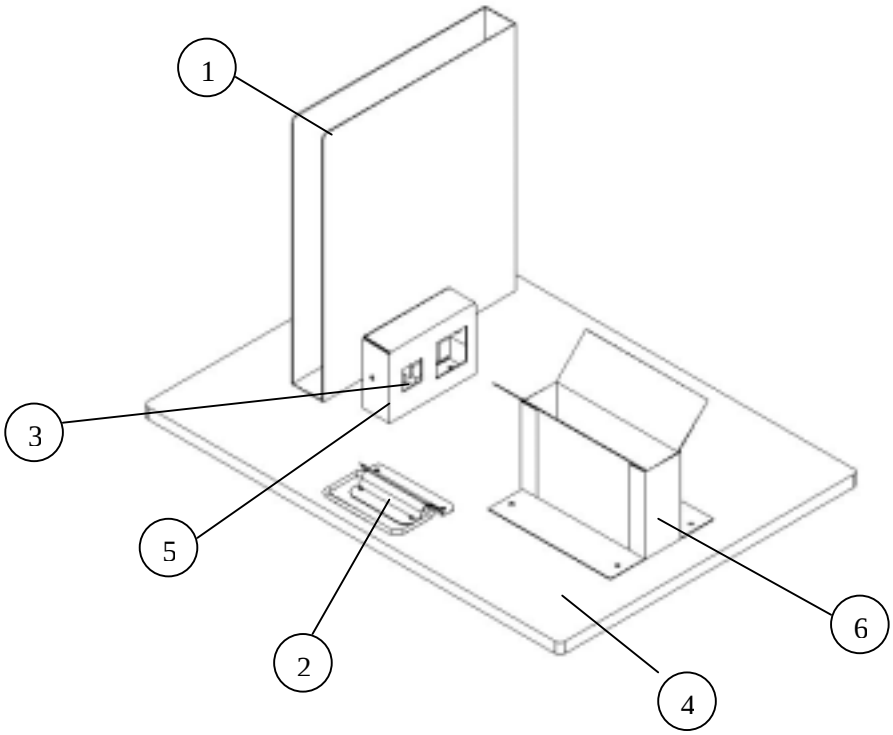
1. Name of machine and serial number. Refer to the Identification Label fixed to the outside of the machine, just above floor level to the right of Section One.

2. Any additional information that may help to specify the part e.g. Voltage or type of coinage.

The Parts List contains all the spares which it is anticipated might be required during the normal course of operations.

12.2 Parts Listing

12.2.1 BASE BOARD ASSEMBLY

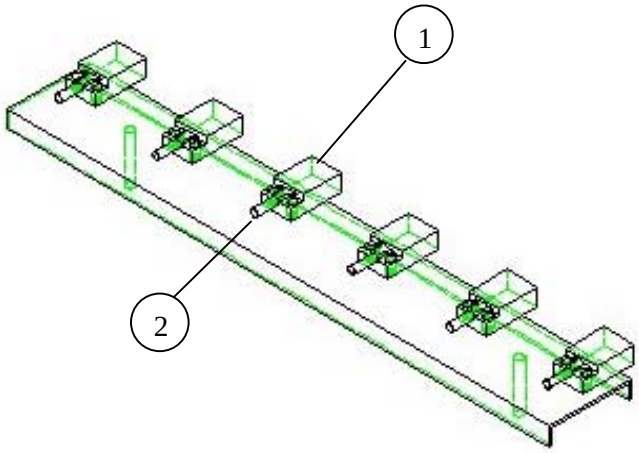


Item	Part Name.	Qty.	Part No.
1	Ticket box large	1	0301784
2	Protex handle	1	080001
3	ZF024 Hopper control PCB	1	130649
4	Ticket base board	1	0002371
5	Hopper distribution PCB cover	1	0501618
6	Coin chute catcher	1	0502866

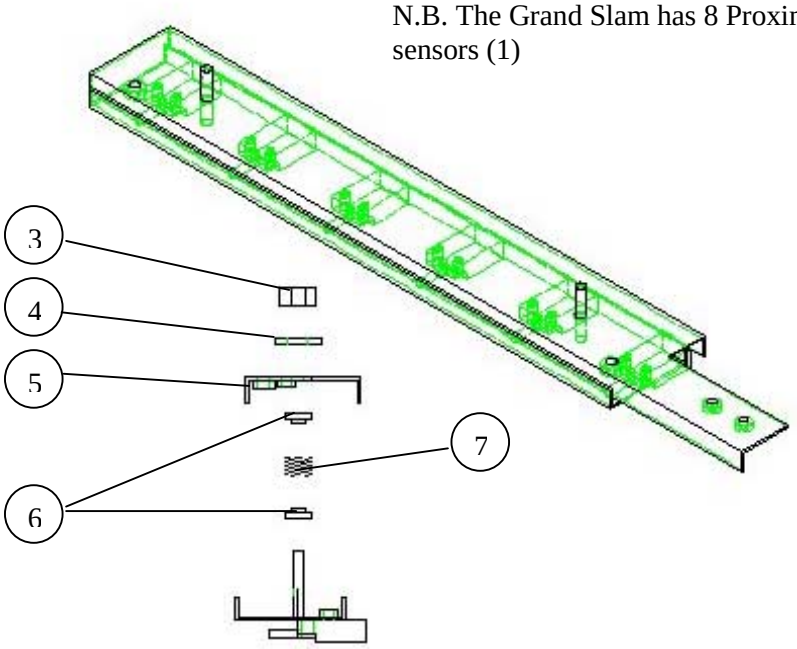
12.2.2 PAYTRAY DOOR ASSEMBLY – TICKET VERSION

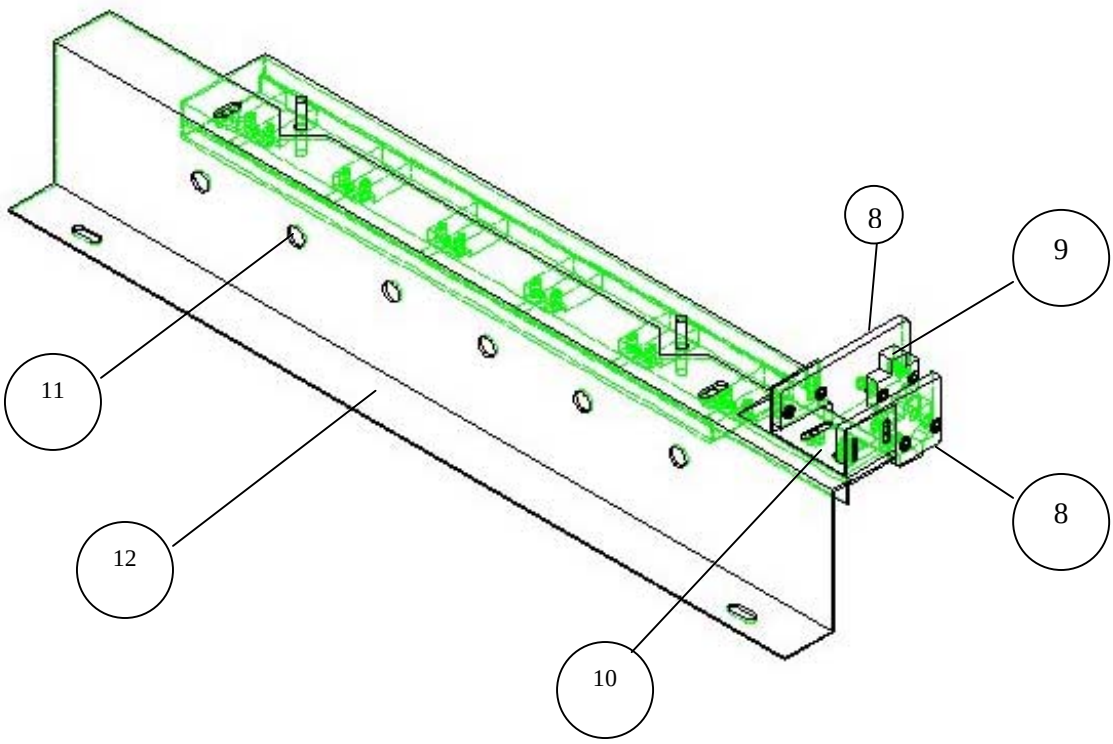
Item	Part Name.	Qty.	Part No.
1	Showbiz lock and key	1	080026
2	Ticket dispenser	1	070037
3	Reject cup	1	0502559
4	Ticket payout door	1	0002564
5	Reject coin chute	1	0305347
6	Payout door sides	2	1901338

12.2.3 SENSOR RACK ASSEMBLY



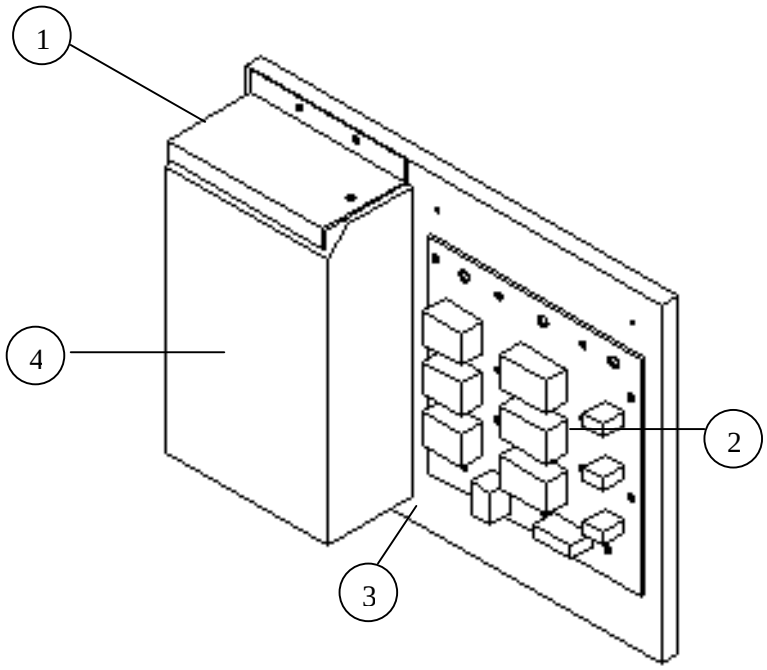
N.B. The Grand Slam has 8 Proximity sensors (1)





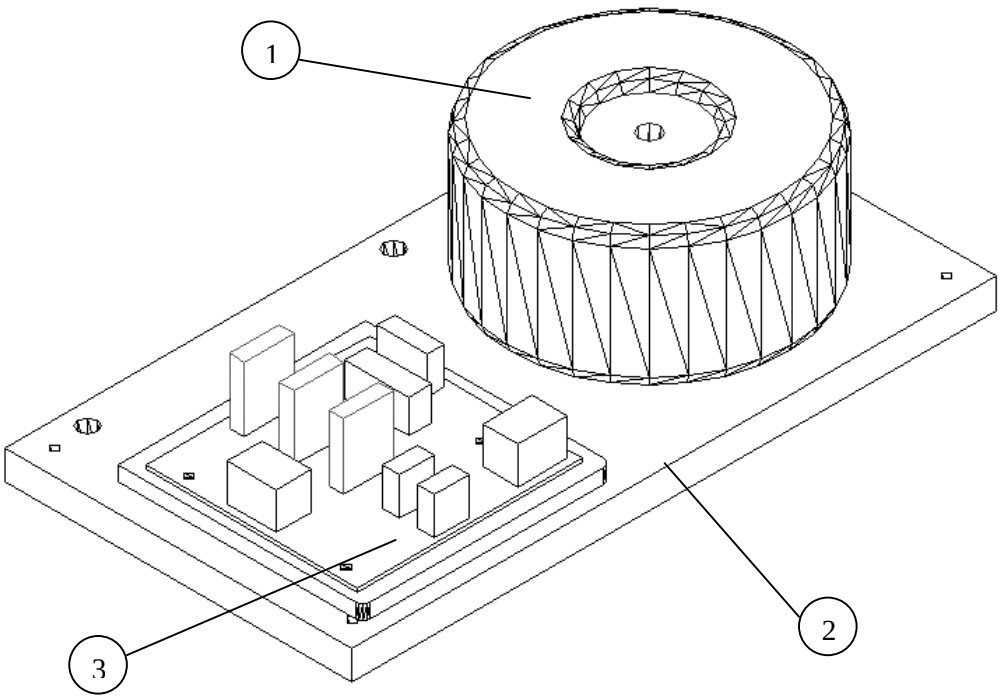
Item	Part Name.	Qty.	Part No.
1	Proximity Sensor	8	130248
2	Sensor Rack Mounting Bracket	1	0305544
3	M5 Full nut	2	150323
4	M5 Form C Washer	2	150322
5	Sensor Rack Support Bracket	1	0305546
6	Insulation Sleeve	4	150671
7	Compression Spring	2	110030
8	Timing Sensor Perspex	1	0503573
9	Photo Electric Sensor	1	130586
10	Sensor Rack Timing Bracket	1	0305580
11	Grommet	8	090088
12	Sensor Rack Main Bracket	1	0305545

12.2.4 PSU CIRCUIT BOARD ASSEMBLY



Item	Part Name.	Qty.	Part No.
1	PSU Power lead cover	1	0304959
2	PSU Distribution board B0306	1	130753
3	PSU Board	1	0002342
4	PSU NFS 110-7602P	1	130517

12.2.5 TRANSFORMER BOARD ASSEMBLY



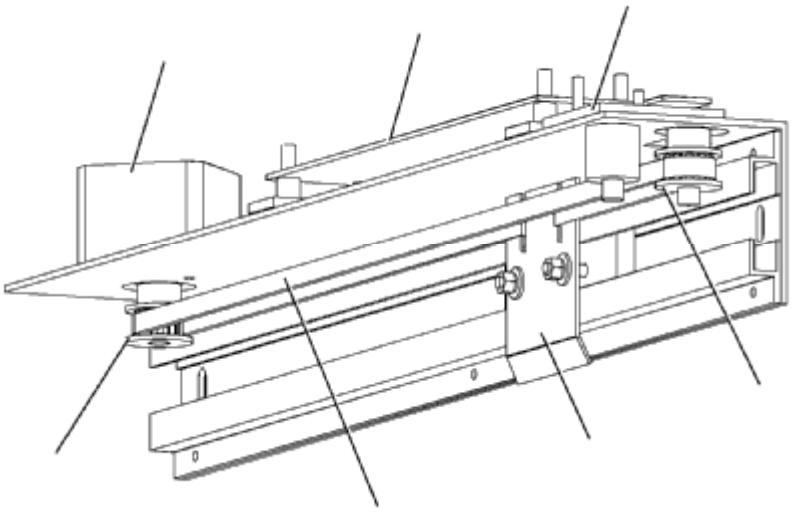
Item	Part Name.	Qty.	Part No.
1	110V Transformer	1	130630
2	Transformer base	1	0001634
3	B0233 Transformer PCB	1	130625

12.2.6 MAIN CONTROL ASSEMBLY

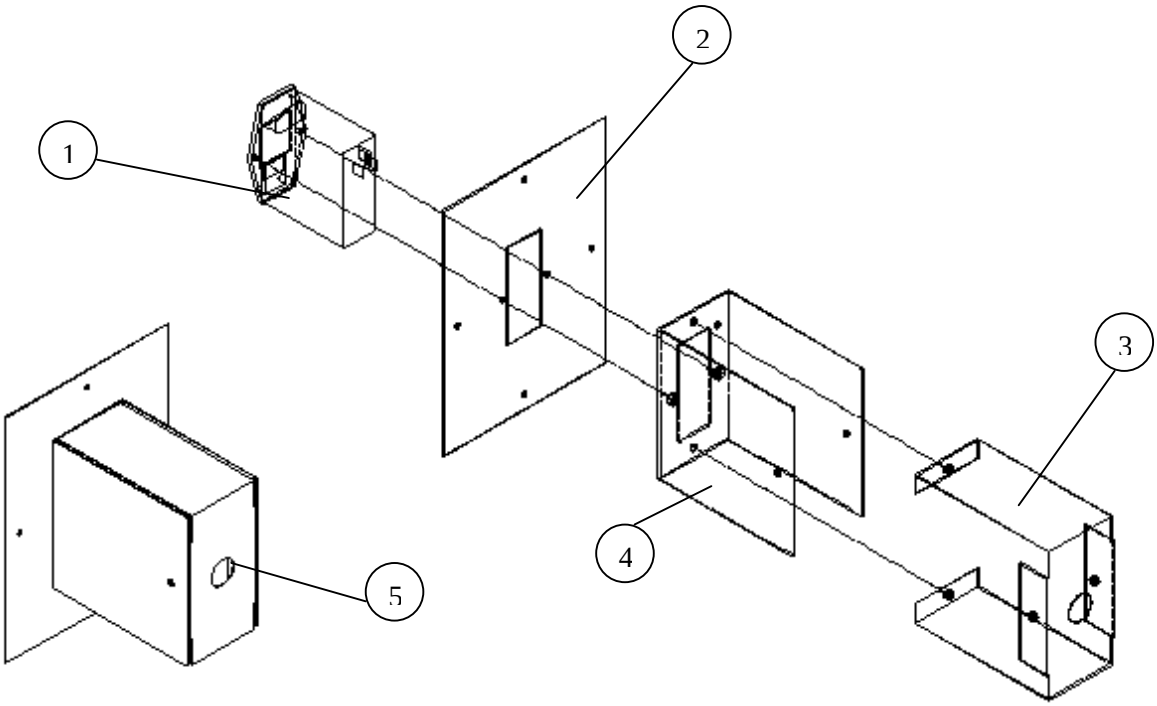
Item	Part Name.	Qty.	Part No.
1	XA3 Controller PCB Assembley	1	130792

12.2.7 LINEAR SLIDE ASSEMBLY

Item	Part Name.	Qty.	Part No.
1	Motor 12v	1	010142
2	Pulley	1	020042
3	Idler Pulley	1	020041
4	Belt	1	020043

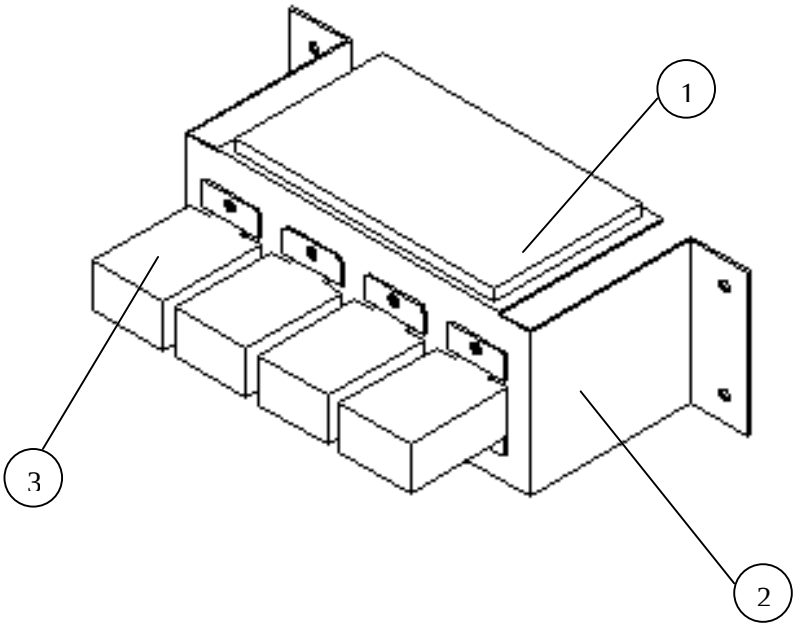


12.2.8 MAINS ENTRY ASSEMBLY



Item	Part Name.	Qty.	Part No.
1	Mains entry filter	1	130703
2	Fixing plate	1	0304941
3	Rear entry plate	1	0304940
4	Top entry cover	1	0304466
5	Rubber Grommet	1	090119

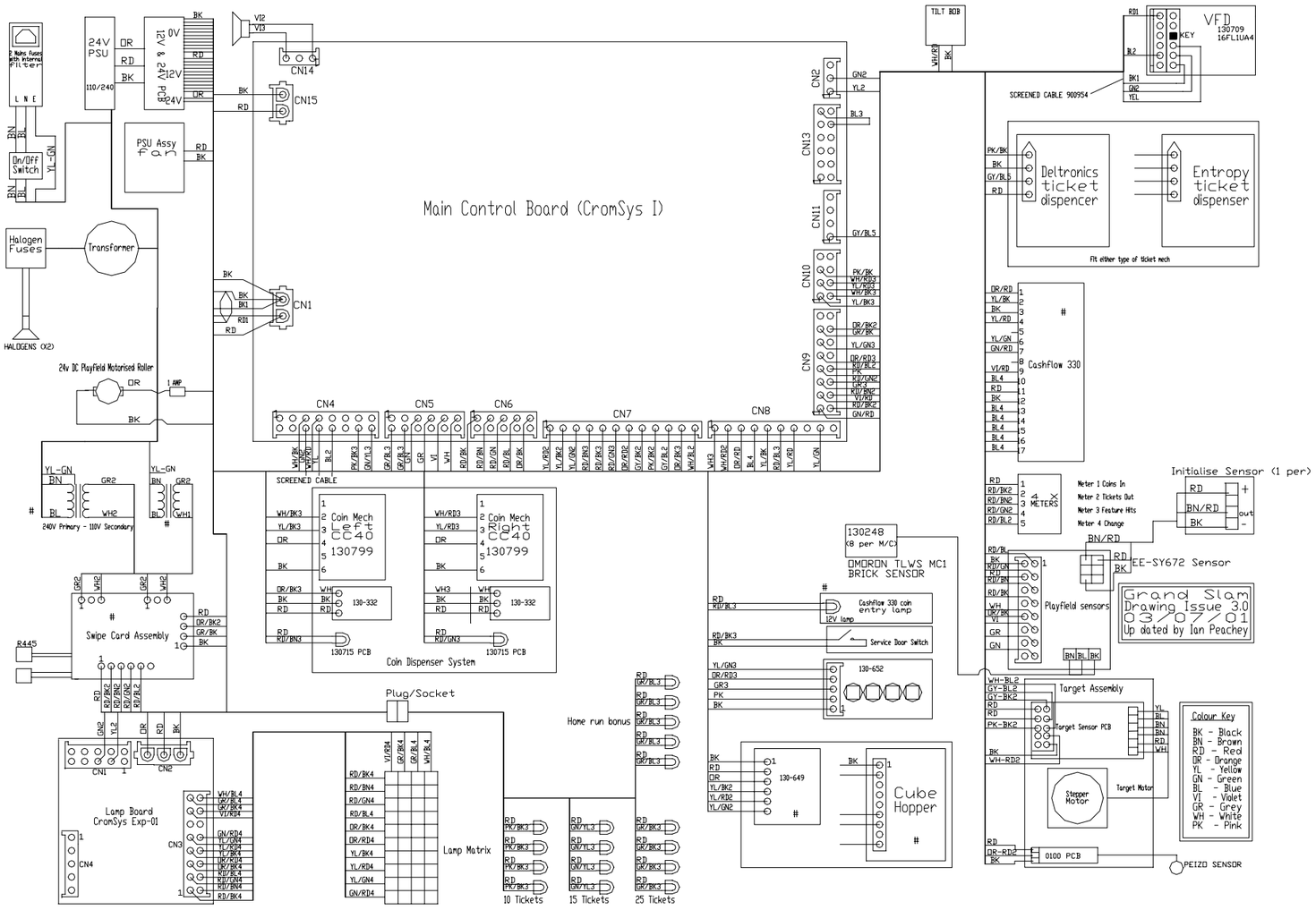
12.2.9 METER ASSEMBLY



Item	Part Name.	Qty.	Part No.
1	PCB 0091	1	130251
2	Meter bracket	1	0305008
3	Meter	4	130147

10.2.11 Miscellaneous Spares

Part Name.	Qty.	Part No.
Castor fixed	2	060070
Halogen lamp 12V 35W	4	100137
Flexible Flood light stand	4	0305098
Flu tube 5/8" Diameter	2	100089
Bob tilt PCB B0307	1	130754
Feature PCB B0291	1	130729
Feature PCB B0299	1	130746
VFD (16LF01UA4)	1	130709
VFD buffer PCB	1	130714
Slam tilt assembly	3	910068
Fan (Papst 612GM)	1	130696
Choke 13 Watt (110V)	2	100099
Choke 13 Watt (240V)	2	100064
Capacitor	2	100016
Starter	2	100050
ON/OFF Switch	1	130363
Playfield Belt	1	0503342
Motorised Roller	1	130751
Dummy Roller	1	130752



signifies NOT ON THE CHUCK E GRAND SLAM

13. Wiring Diagrams

13.1 General Schematic Figure 16

13.2 CDS Assembly Wiring Diagram

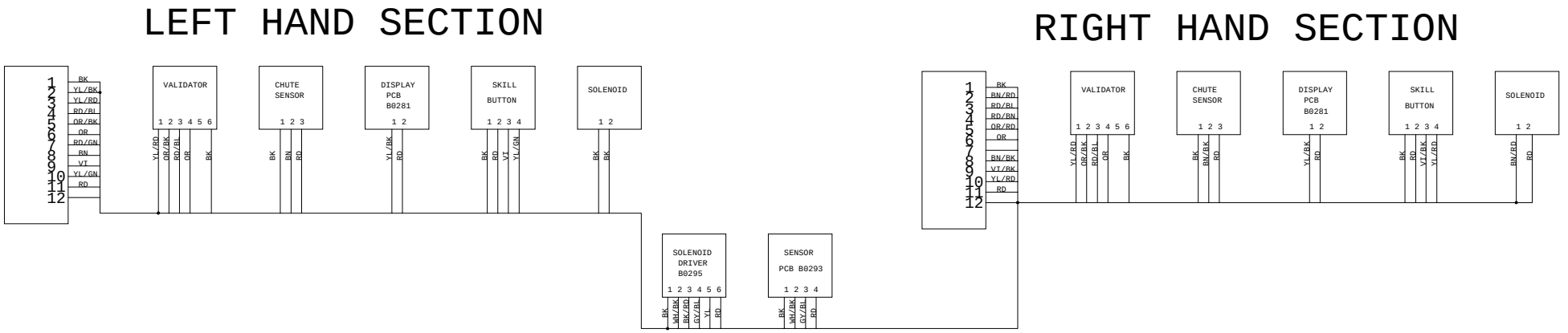


Figure 17 Wiring Diagram - CDS Assembly (SCM0095A)

Appendix 1 The CM Coin Comparitor CC40

1.1 Description

A sample coin of play is positioned in the Comparitor and subjected to an electromagnetic field. When the coin under test is passed through a similar (adjacent) field, a null point is developed in the field, which is detected by the use of strategically placed sensor coils. The "correctness" of the test coin (with regard to mass and conductivity) is assessed by measuring the duration of the null period.

A differentiated, square-wave signal is fed through the sensor coils. This signal, characteristically, contains a wide range of frequencies, from the basic square-wave frequency upwards. The higher frequencies are attenuated by test coins made from poor conductors, e.g. lead, whereas good conductors affect the lower frequencies. Therefore, a test coin made with physical properties similar to those for the sample coin, but made from a different material, can be easily detected and rejected.

Following acceptance by the magneto-electronic sensors, the test coin travels through an optical detector. The coin must be seen to be travelling in the correct direction within a predetermined time-interval to avoid production of the "Tilt" condition. This will also be generated if an optical detector fails.

1.1.1 INSTALLING SAMPLE COIN

1. Without lifting, slide the Sensor Coil assembly to the right, as viewed from the front.
2. Remove the sample coin (if necessary) and fit the required sample coin from above.
3. Carefully release the Sensor Coil assembly.

The coin should automatically seat itself, resting parallel with the Sensor Coils and with the coin edge lying between the ribs on the rail insert.

1.1.2 SWITCHING ON

1. Check the Entry Chute alignment, by inserting a proper coin. The coin should fall freely through the Comparitor without stopping, and be rejected out of the machine.
2. Switch Mains power ON. The LED on the front panel will light if the applied voltage is satisfactory.
3. Drop good coins. They should be recognised by the Comparitor and accepted.
4. Repeat step 3 until confidence in the operation of the Comparitor is established.

1.1.3 SETTING UP

To adjust "Slug" discrimination for optimum performance, perform the following steps:

1. Set the potentiometer (recessed on the front panel) fully anti-clockwise.
2. Slowly adjust the potentiometer clockwise, until a high quality "Slug" is rejected.
3. Drop good coins to ensure accurate acceptance.
4. Repeat steps 2 and 3, if necessary.

1.1.4 INHIBIT INPUT CIRCUIT

The Inhibit feature allows the Comparitor mechanism to be disabled without the need to remove mains power.

When enabled, operation of the Accept Coil armature is inhibited: this will cause coins to be rejected even if they have been detected as being good.

1.2 Specification

1.2.1 DIMENSIONS

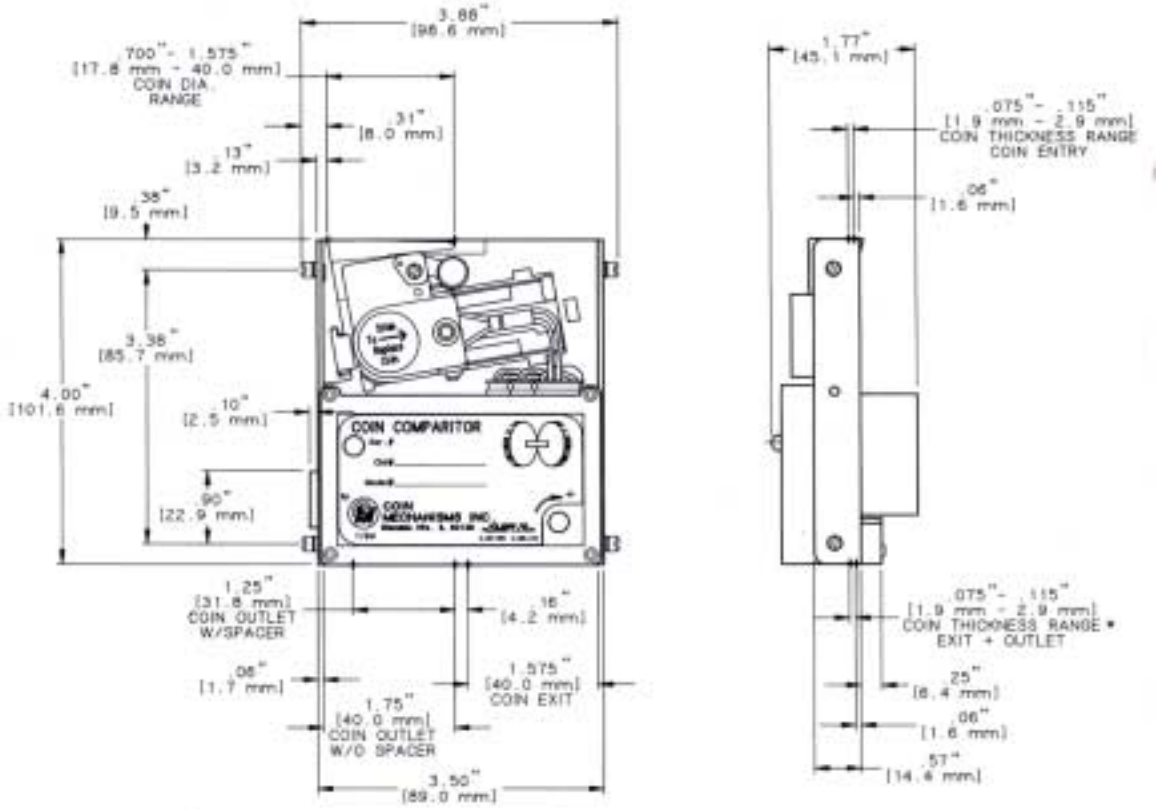


Figure 18 CC40 Coin Comparitor Dimensions

1.2.2 ELECTRICAL - POWER REQUIREMENTS

The requirement is for a nominal supply of 24 volt d.c.

Pin	VDC min	VDC max	Idle Current	Peak Current	Current	Pulsewidth
1 Tilt					600 mA	0.65-13 sec
2 +10mA Pullup					+10 mA	-
3 Credit					600 mA	11.5-70 ms
4 Vin 24 VAC/DC	19	32	50-130 mA	100-210 mA		
5 Vin 12 VAC/DC	15	20	45-95mA	115-200 mA		
6 Ground	-	-	-	-	-	-

1.2.3 FEED RATE

Good coin acceptance should be better than 98%, at a coin feed rate of seven coins per second.

1.2.4 PARTS LIST

The CM CC-40 Coin Comparitor is normally returned to the supplier if a repair or modification becomes necessary.

Details of Part Numbers, etc. may be obtained from Cromptons Leisure Machines Ltd.