

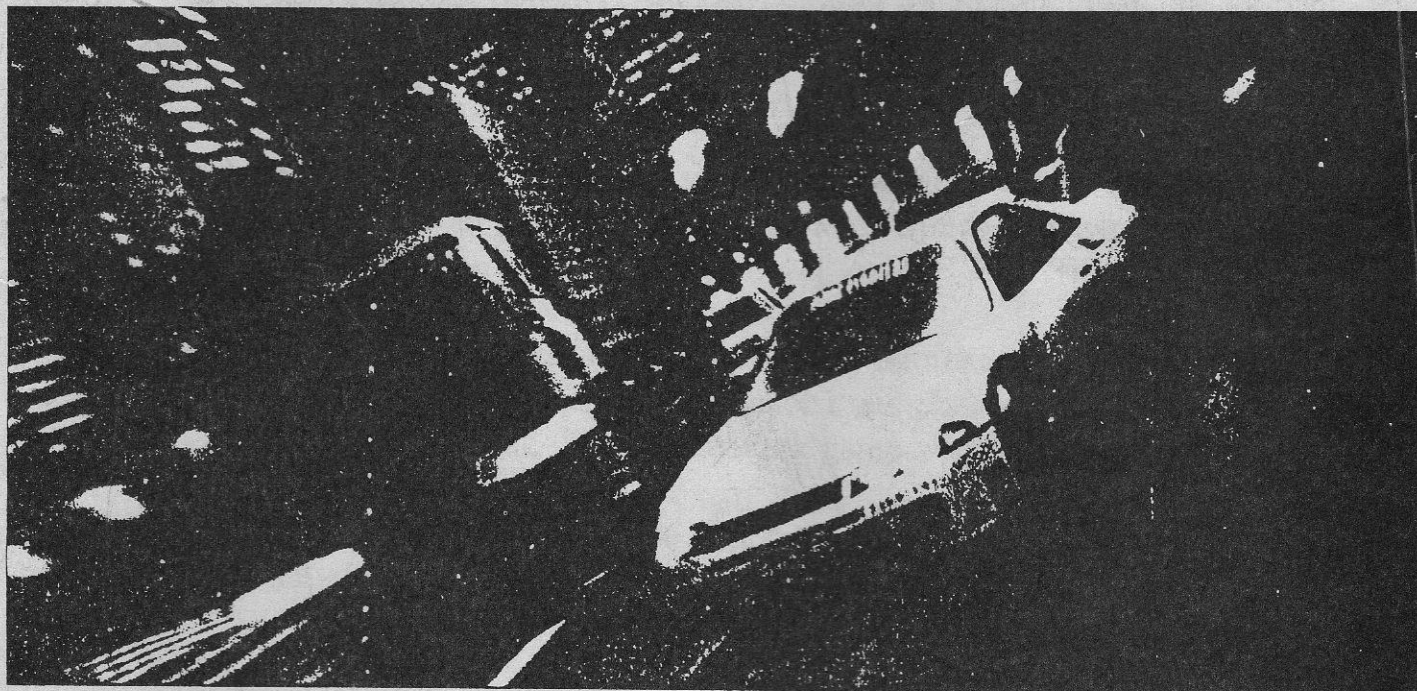


KONAMI®

ORIGINAL RACING VIDEO GAME

MIDNIGHT RUN™

© 1995 KONAMI ALL RIGHTS RESERVED.

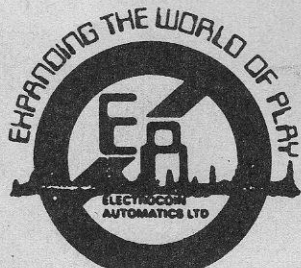


OPERATOR'S MANUAL

WARNING

MIDNIGHT RUN™ IS AN ORIGINAL GAME DEVELOPED BY KONAMI CO., LTD. KONAMI CO., LTD. RESERVES ALL THE COPYRIGHTS, TRADEMARKS AND OTHER INDUSTRIAL PROPERTY RIGHTS WITH RESPECT TO THIS GAME.

MANUFACTURED IN THE UK BY ELECTROCOIN



PART NUMBER: 64314
ISSUE: 1.

IMPORTANT!

NETWORKING FAULTS.

If when four Midnight Run machines (Two Twins) are showing the message NETWORK ERROR CALL THE CLARK, after initial game play, the following actions should be taken:

- 1) Switch the direction of the data signal e.g. rename the master machine or remove the boards from numbers two and three machines in networking series and swap them around.
- 2) If the problem still persists insert the comms termination phono plugs (included in the kit of parts) into phono socket 1 and phono socket 8 (please refer to section 6.1 of the manual, "How to network game machines.
- 3) If the problem continues contact after sales on the address given on the rear of the manual

CONTENTS

- 1. About this product and EMC information**
- 2. Precautions for use**
- 3. Specifications**
- 4. Location of main machine parts**
 - 4.1 Location of main machine parts**
 - 4.2 Steering wheel unit**
 - 4.3 Gear shift unit**
 - 4.4 Pedal unit**
- 5. How to play**
- 6. Networking game machines and PCB settings**
 - 6.1 How to network game machines**
 - 6.2 Initializing the PCB**
 - 6.3 PCB start-up check (self test)**
 - 6.4 Adjusting game position (manual test)**
 - 6.5 Networking precautions**
 - 6.6 Inspection procedure when there is a network abnormality**
- 7. Assembly of the game machine.**
 - 7.1 Assembly procedure and part numbers**
 - 7.2 Fixing of top box and play panel.**
 - 7.3 Assembly of main machine parts / coin tower assy.**
- 8. Maintenance**
 - 8.1 How to replace and adjust the steering wheel potentiometer**
 - 8.2 Inspecting and replacing the pedal potentiometer**
 - 8.3 Replacing the gear shift unit switch**
 - 8.4 Replacing fluorescent light**
 - 8.5 Replacing fuses.**
- 9. Schematic wiring diagram. Monitor specifications.**

1

About this product

Thank you for purchasing this Konami product. This manual explains how to correctly and safely operate your game machine. Failing to operate the machine correctly could result in malfunction or accident, so please read the manual carefully before commencing operation.

Note

Please refer to section 7.3 for information regarding arming and disarming the alarm system.

CRITICAL EMC PARTS

THE FOLLOWING PARTS ARE CRITICAL TO THE MACHINE THIS MEANS THAT TO CONTINUE TO COMPLY WITH THE EMC DIRECTIVES YOU SHOULD ONLY REPLACE PARTS WITH THE SAME PART. FAILURE TO DO THIS CAN CAUSE DAMAGE TO OTHER EQUIPMENT.

CRITICAL PARTS.

PART NUMBER	DESCRIPTION
80082	NOISE FILTER
14029	SWITCH MODE
162503	MAIN LOOM WITH FERRITE
53065	FAN 12V DC
10204	27 INCH MONITOR
381711	STEERING ASSEMBLY
11313	PCB MOTOR STEERING
11312	GAME PCB
381685	TOP BOX ASSEMBLY
EP1004	CREDIT CONTROL PCB
12532	

Failure to comply with the above items will invalidate the CE mark. This machine has been tested to EMC directives.

For specific parts please contact Electrocoin after sales at the address supplied on the rear of this manual.

WARNING

This equipment must not be modified in any way without the written permission of Konami (UK) LTD. Failure to do so will invalidate the CE marking

Precautions for use

This manual contains detailed information concerning the use of "Midnight Run," an original product of Konami, LTD. BE sure to read through the manual before attempting to use this product.

Unauthorized reproduction of this document or any of its contents are strictly forbidden. We reserve the right to revise equipment specifications or contents of the software without prior notice.

The contents of this game, its main data and design are protected by copyright law and industrial property law.

For the best results, get a good understanding of the information contained in this manual in order to use the product properly.

SAFETY PRECAUTIONS.

Please heed the following suggestions in order to ensure your safety when using the product. Be sure to read and get a good understanding of the following items.

DANGER!

indicates a situation where disregarding suggestions could result in death or serious injury.

CAUTION!

indicates a situation where disregarding suggestions could result in injury or product damage.

Setting Up.

This machine should not be moved or transported by anyone other than an industry specialist. doing so could result in injury or product damage.

When moving, lift the adjusters all the way up. Failing to do so may cause the adjuster and game machine mounting sections damaged.

This product is an indoor game machine. Absolutely DO NOT set up the game machine outside.

setting up this product outside could result in equipment failure.

Do not set up the game machine near emergency exits. Doing so could block exits in time of emergency and could result in death or serious injury.

Do not set up the game machine:

- a) in a place exposed to rain or moisture.
 - b) in a place exposed to direct sunlight
 - c) in a place exposed to direct heat from a heater, etc
 - d) near hazardous substances
 - e) on an uneven floor
 - f) near fire extinguishing equipment
 - g) in a place exposed to strong vibration
 - h) in a place exposed to excessive dust.
-

Do not place heavy objects on the game machine or place flowerpots, planters, cups, or containers holding chemicals or water near the game machine.

Electrical shock or damage could be caused by spilled or dropped water.

Do not place heavy objects on the drive unit. Also do not use the game machine with the wiring exposed.

Doing so could cause malfunctions.

Do not place items near the ventilating holes.

doing so could cause internal temperature to rise excessively, resulting in equipment failure.

Do not place heavy objects on the power cord.

Doing so could damage the cord and could result in fire or electric shock.

Never unplug by pulling on the power cord; unplug from the plug itself.

Doing so could damage the cord, and could result in electric shock.

Use an earthing band or similar method of discharging static electricity when adjusting the PCB switches.

If not discharged, static electricity could damage the electronic components on the board.

CAUTION!

Absolutely **do not plug more than one cord at a time in the electrical receptacle.**

Doing so could result in fire, electrical shock or equipment failure.

Be sure to use indoor wiring within the specified voltage range. For extension cords, use wiring rated 20 A or more.

Using cords outside these specifications could result in electrical shock.

Be sure to use within specified voltage range.

Do not run the power cord across passages where pedestrians feet could get caught on the cord.

Using outside this range could result in equipment failure or accident.

This could cause pedestrians to fall and injure themselves.
Be sure the game machine is grounded to the ground terminal.

Operation.

DANGER!

Do not attempt to repair the game machine yourself.
Doing so could result in malfunction.

Do not use the main line anywhere except an industrial area.
Using in a residential area or area next to a residential area could affect signal reception to radios, television, telephones, etc.

DANGER!

The following users should not play the game:

- a) Those under the influence of alcohol,
Doing so could result in accident or illness.
- b) Those who are pregnant or think they may be pregnant.
- c) Those suffering from or being treated for arm or wrist ailments.
- d) Those who are in poor physical condition.

Do not plug or unplug the power cord with wet hands.
Doing so could result in electrical shock.

Do not damage, modify, bend excessively, twist, pull, bind, sandwich or heat the power cord.
Doing so could result in fire or electric shock.

If the power cord becomes damaged (core exposed, broken etc.), please contact your nearest dealer for replacement.

Using a damaged power cord could result in fire or electrical shock.

Do not place items or heavy loads on any moulding.

Doing so could damage the moulding, or the objects could fall off. Placing a load on or providing a strong impact to the moulding could crack the moulding or cause bodily harm.

Inspection and Cleaning

DANGER!

Be sure to unplug the power cord from the receptacle before inspecting or cleaning.

Possibility of electric shock exists as long as the power cord is not unplugged.

When placing parts, be sure to use those specified in the spare parts list.

Failing to do so could result in fire or equipment failure.

Do not disassemble, remodel or modify the game machine.

Doing so could result in fire or electrical shock.

To clean the game machine, wipe with a soft cloth dampened in a natural detergent and wrung out.

Using organic solvents such as thinner may decompose the material.

Moving and Transport

DANGER!

The game machine contains parts such as a 27 inch monitor which are sensitive to vibration and impact. You should therefore be very careful when moving or transporting the game machine. Be sure not to let the machine tip over.

The PCB inside the game machine uses precision components. You should therefore be careful when handling the machine.

Rough handling could result in equipment failure.

Release the twelve level adjusters before moving the game machine.

Failing to do so could result in equipment failure or accident.

Be sure to turn the power off before moving the game machine.

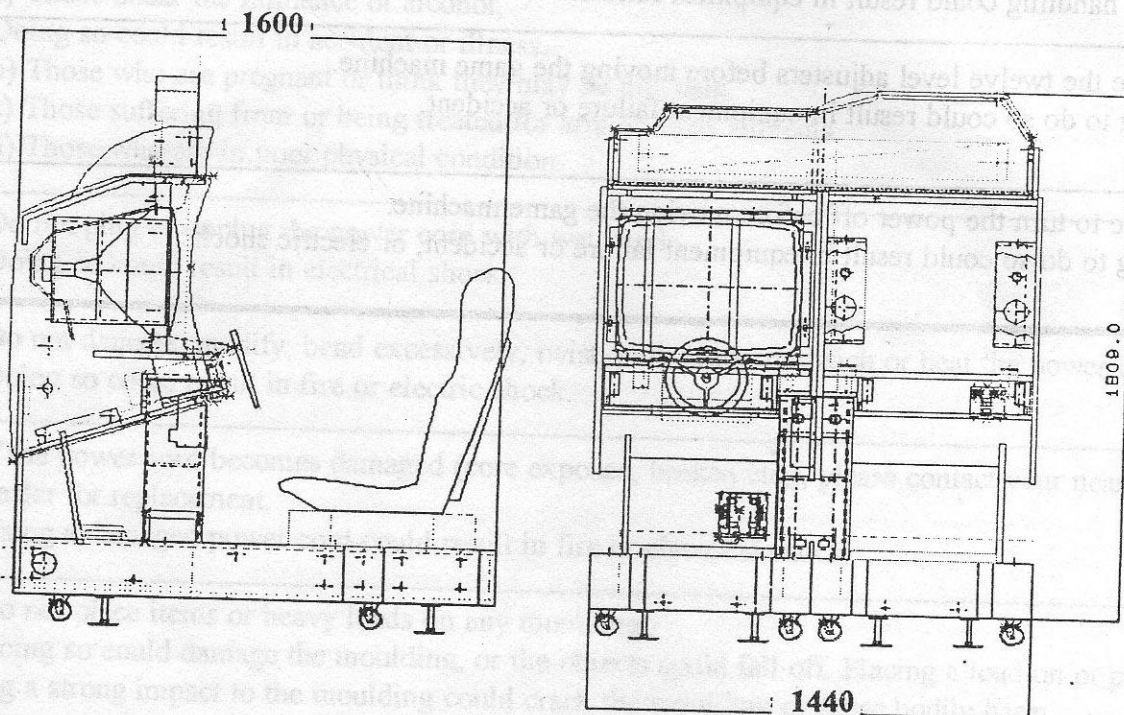
Failing to do so could result in equipment failure or accident, or electric shock.

3

Specifications

Operating power: Depends on shipment destination

Dimensions: 1440 x 1600 x 1895



Inspection and Cleaning

Be sure to unplug the power cord from the receptacle before inspecting or cleaning. The possibility of electric shock exists as long as the power cord is not unplugged. When plugging cords, be sure to use the type specified in the spare parts list. Failure to do so could result in fire or equipment failure.

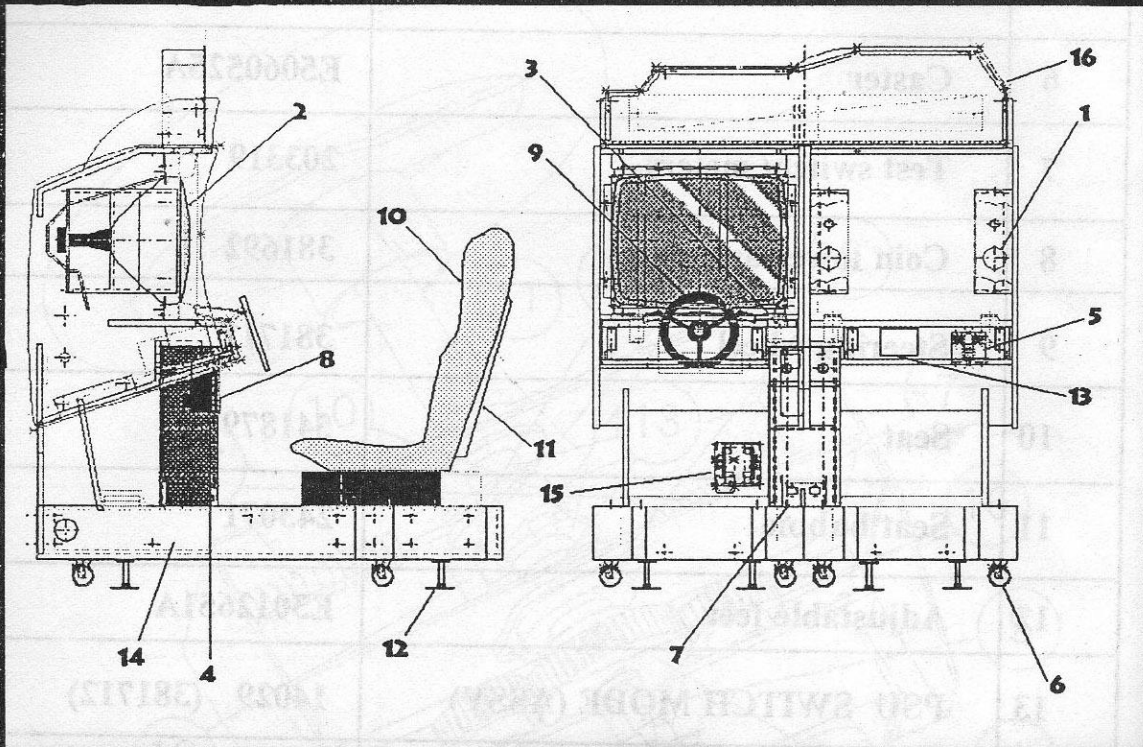
Do not disconnect or replace the game machine

Do not touch the screen or the control panel

Do not use a vacuum cleaner or a high-pressure water spray to clean the machine. Use a soft cloth to wipe the machine.

4

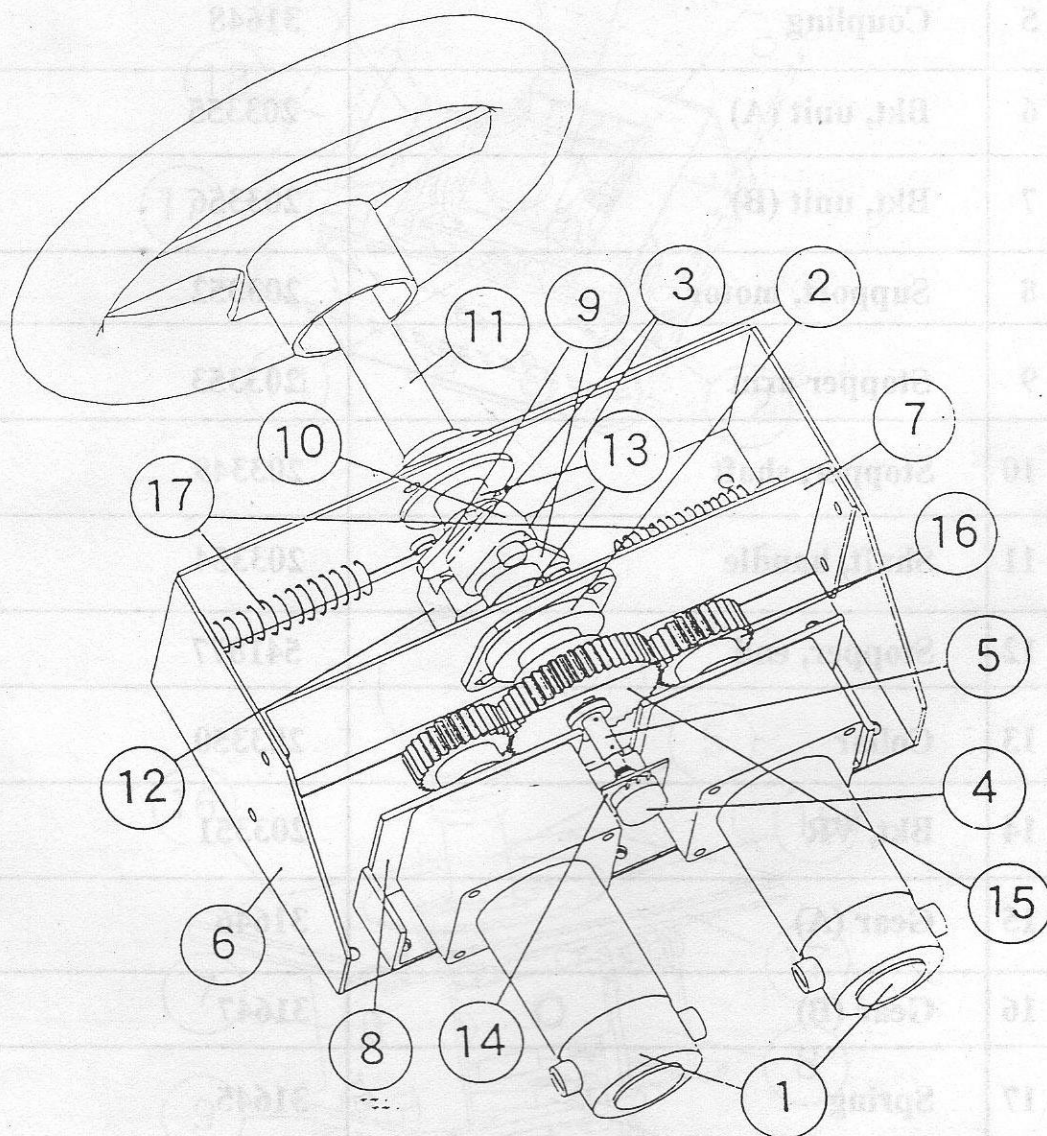
Location of main machine parts



No	PART NAME	PART#
1	Speaker	56006
2	Monitor	10204
3	V.S. switch	22479
4	Coin door unit	50572
5	Mains plate	203394
6	Caster	E5060525A
7	Test switch/ meters	203319
8	Coin tower assembly	381692
9	Steering wheel	381711
10	Seat	541879
11	Seat bubble	243071
12	Adjustable feet	E3012651A
13	PSU SWITCH MODE (ASSY)	14029 (381712)
14	MAIN PCB & DRIVER	11312 / 11313
15	PEDAL ASSEMBLY	381703
16	TOP BOX ASSEMBLY	381685

4.2

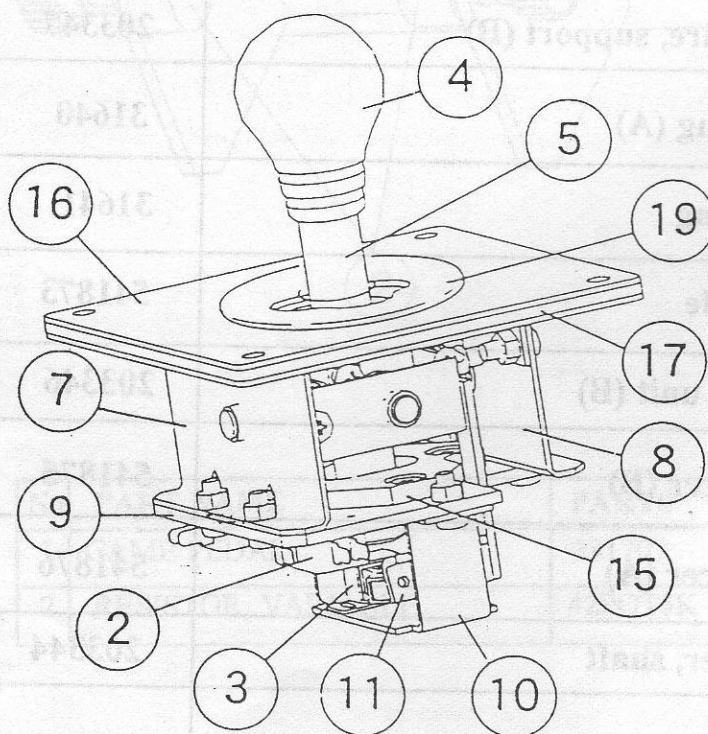
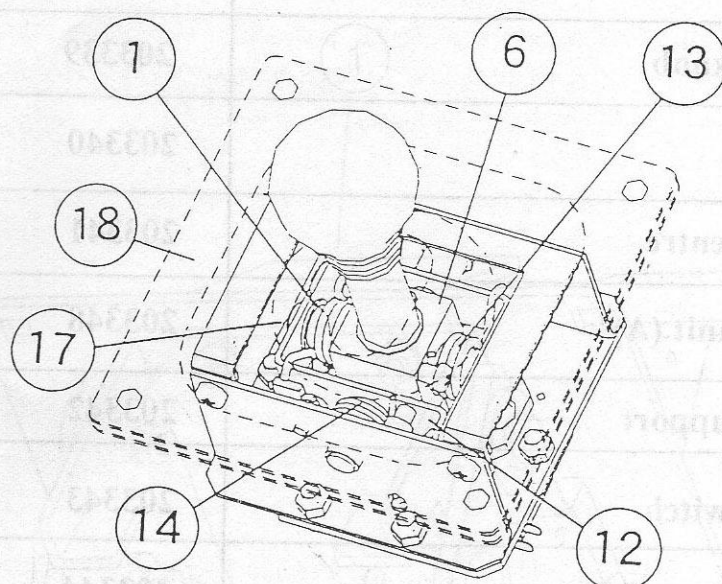
Steering wheel unit



No	PART NAME	PART#
1	Motor	51028
2	Bearing	31649
3	Bush	31650
4	Resistor, variable	42POT5K
5	Coupling	31648
6	Bkt, unit (A)	203355
7	Bkt, unit (B)	203356
8	Support, motor	203352
9	Stopper arm	203353
10	Stopper, shaft	203349
11	Shaft, handle	203354
12	Stopper, end	541877
13	Collar	203350
14	Bkt, VR	203351
15	Gear (A)	31646
16	Gear (B)	31647
17	Spring	31645

4.3

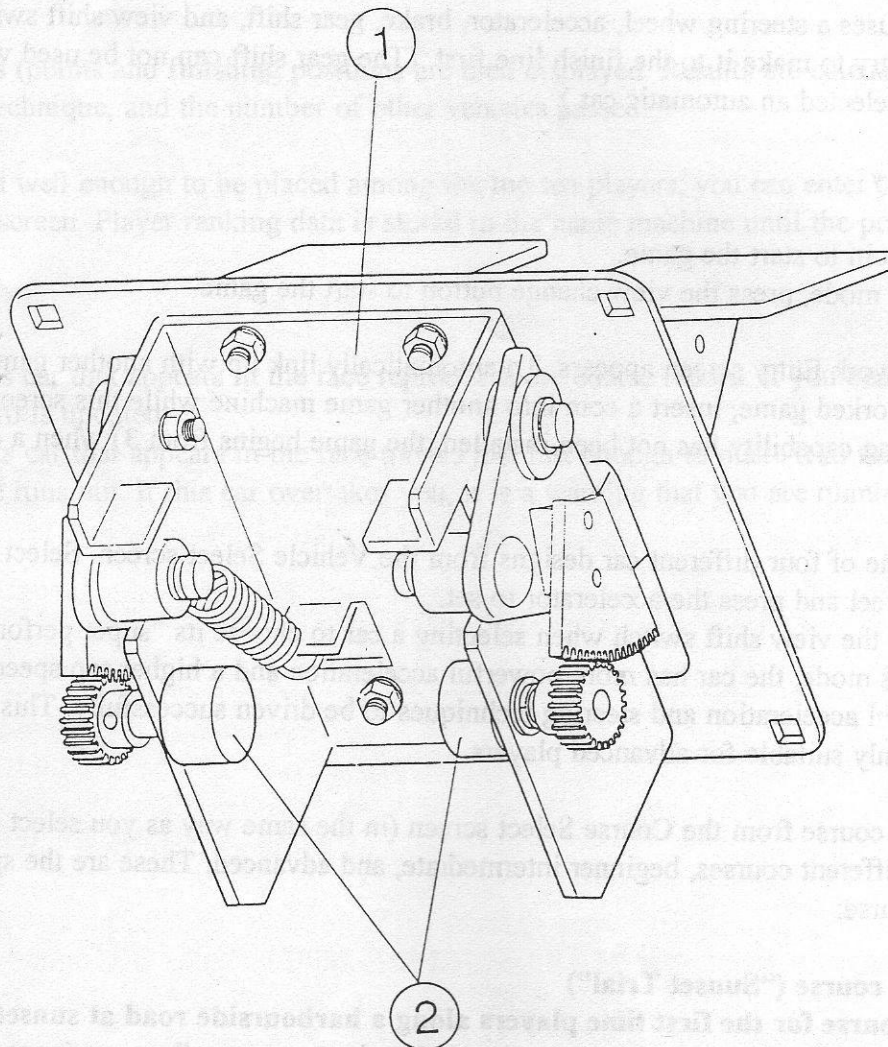
Gear shift unit



No	PART NAME	PART#
1	Bush	31642
2	Micro switch	45A042
3	Roller catch	31643
4	Shift knob	203339
5	Shaft	203340
6	Pin, centre	203341
7	Bkt, unit (A)	203348
8	Bkt support	203342
9	Bkt switch	203343
10	Plate, cover	203344
11	Fixture, support (A)	203345
12	Fixture, support (B)	203347
13	Spring (A)	31640
14	Spring	31641
15	Guide	541873
16	Bkt, unit (B)	203346
17	Spacer (B)	541875
18	Spacer (A)	541876
19	Cover, shaft	203344

4.4

Pedal unit



No	PART NAME	PART#
1	GAME PEDAL	381703
2	RESISTOR, VARIABLE.	42POT5K

Game description

This is a game that takes place at night on a highway crowded with taxis, buses and trucks and other cars. The player drives a sports car with high powered acceleration and cruise capacities, and races against other vehicles using overtaking and cornering techniques.

The player uses a steering wheel, accelerator, brake, gear shift, and view shift switch to control the car and try to make it to the finish line first. (The gear shift can not be used when the player has selected an automatic car.)

How to play

1) Input a coin to start the game.

In free play mode, press the view change button to start the game.

2) The Network Entry screen appears. To automatically link up with another game machine and play a networked game, insert a coin into another game machine while this screen is displayed. If networking capability has not been installed, the game begins from 3) when a coin is inserted.

3) Select one of four different car designs from the Vehicle Select screen. Select a car with the steering wheel and press the accelerator to set.

Hold down the view shift switch when selecting a car to choose its "super performance" version. In this mode, the car has more powerful acceleration and a higher top speed, but requires more skillful acceleration and steering techniques to be driven successfully. This mode is therefore only suitable for advanced players.

4) Select a course from the Course Select screen (in the same way as you select a car). There are three different courses, beginner intermediate, and advanced. These are the special features of each course:

Beginners course ("Sunset Trial")

An easy course for the first time players along a harbourside road at sunset. The road is wide and there are many ordinary cars, so the player can easily experience the thrills of overtaking and slipping between other cars.

Intermediate course ("Starlight Heat")

A course of medium difficulty running mainly through the centre of town. There are special hidden short-cuts for the player to find, for exciting and enjoyable racing.

Advanced Course ("Midnight Run")

In this course the player must handle difficult corners one after another, making it a race only the toughest will be able to handle. Only the most skilled players will be able to complete this course in a "super performance" car.

The game begins when all the selections above have been made. The race starts from the

countdown.

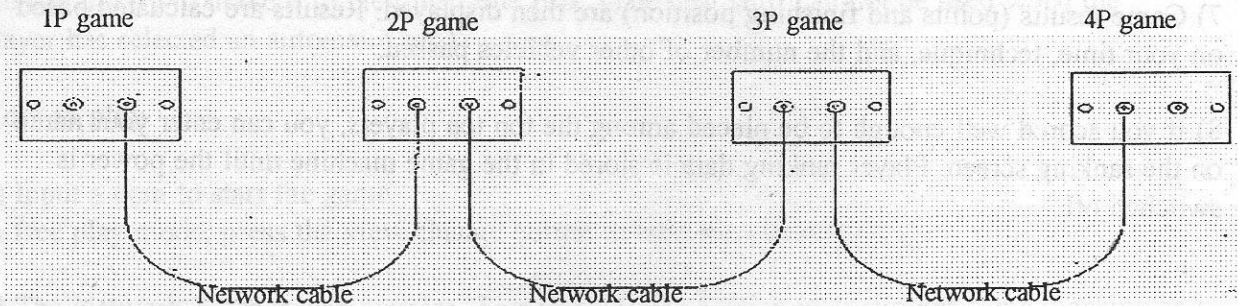
- 5) Everytime you pass one of the checkpoints located along the course, extra time is added to your total remaining time.
- 6) The game ends when you have completed the required number of laps, or when the timer reaches zero.
- 7) Game results (points and finishing position) are then displayed. Results are calculated based on your time, technique, and the number of other vehicles passed.
- 8) If you scored well enough to be placed among the top ten players, you can enter your name on the ranking screen. Player ranking data is stored in the game machine until the power is switched off.

The black sports car that appears in the race reproduces the course record. If you beat this car, the course record is updated.

The white sports car that appears in the race travels just fast enough to make it to the finish line before time runs out. If this car overtakes you, it is a warning that you are running out of time.

6.1 How to network game machines

The specifications of the main game machine PCB allow up to four game machines to be networked so players can enjoy versus games. To network, connect the networking cord supplied with each game machine to the "Network pin jack" of the drive unit.



Notes:

When networking game machines, set the PCB main board dip switch network ID setting to 1 for the first game machine, to 2 for the second, and so on in numerical order. (Please refer to section 6.4, "Game position adjustments (dip switch settings)" for more information on settings.)

Game machines are linked together in a chain with the networking cords. Do not, however, connect anything to the first and last jack pin in the chain.

Accessing dip switches

When setting dip switches follow the procedures described below to access them. Be sure to undertake all the steps in the correct order.

1. Turn the main power switch OFF and unplug the power cord.
2. Remove back door using key supplied.
3. Remove all fastenings around the tray holding the PCB and remove PCB.
4. Remove the 8 screws holding the sheet metal cover protecting the PCB. The dip switches are located bottom right of the PCB.

Note: Please refer to I/O checks for dip switch settings.

6.2 Initializing the PCB

Be sure to conduct the following procedure after installing the game machine to ensure proper functioning of the game.

1. Keeping the test switch pressed down, switch off the power (please refer to page 30). **Note:** this will return all manual test settings to the original factory settings at the time of shipment.
2. Initialization is complete once the "EPROM BIT CHECK OK" and then the "EPROM INITIALIZE COMPLETE" messages have appeared on the screen. If the test switch is not released, the "TEST SWITCH IS STILL ON> PLEASE RELEASE IT OR REPAIR" message will appear. Release the switch to clear the message and continue.

6.3 PCB startup check (self test)

After the game machine has been installed and the power switched on the self test is conducted automatically.

If test is ok	The position of the steering wheel, accelerator and brake is then corrected
If an abnormality is detected.	Test results are displayed on screen and the check is repeated.

What to do if abnormality is detected:

If the message "ROM 20E/M BAD" is displayed on the screen, switch the power off, then hold down the test switch and switch the power back on again. This will return all manual test settings to the original factory settings at time of shipment.

After the self test is completed, the position of the steering wheel, accelerator, and the brake is corrected. The message "DO NOT TOUCH THE STEERING WHEEL AND THE ACCELERATOR AND BRAKE PEDAL WHEN THE MACHINE IS BEING INITIALIZED" will appear on the screen and the steering wheel, accelerator and brake positions will be corrected automatically. Do not touch the steering wheel, accelerator or brake while correction is taking place.

If messages appear on screen asking you to adjust the steering wheel, accelerator, and/or brake mechanically, correction cannot be conducted automatically. Please refer to section 8 Maintenance, in this manual, and make the necessary adjustments mechanically.

If everything is normal, the Game Mode screen will then appear.

6.4

Adjusting game position (manual test)

Checks and changes for screen displays and game content.

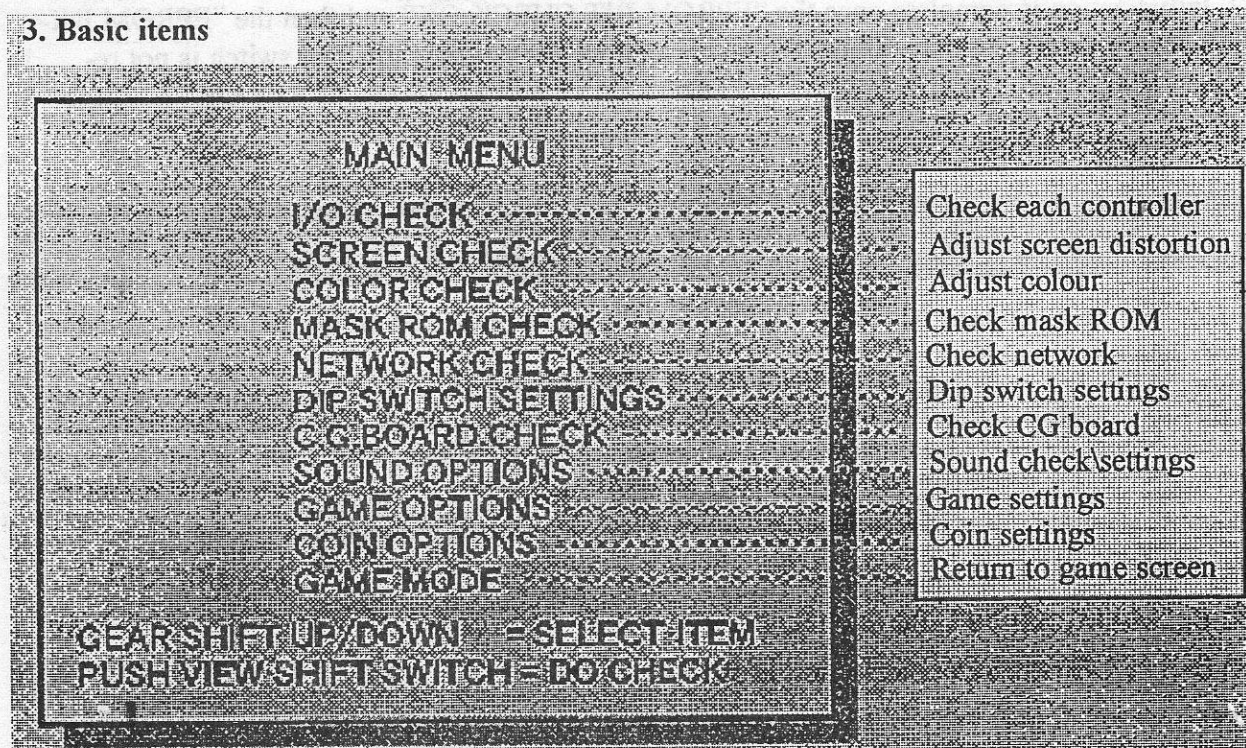
1. Starting the test

Press the test switch during the game demo to enter manual test mode and bring up the main menu screen. Controls are shown on each screen.

2. Setting changes

Select "GAME MODE" from the main menu, and press the view shift to set.

3. Basic items



4. Main menu items

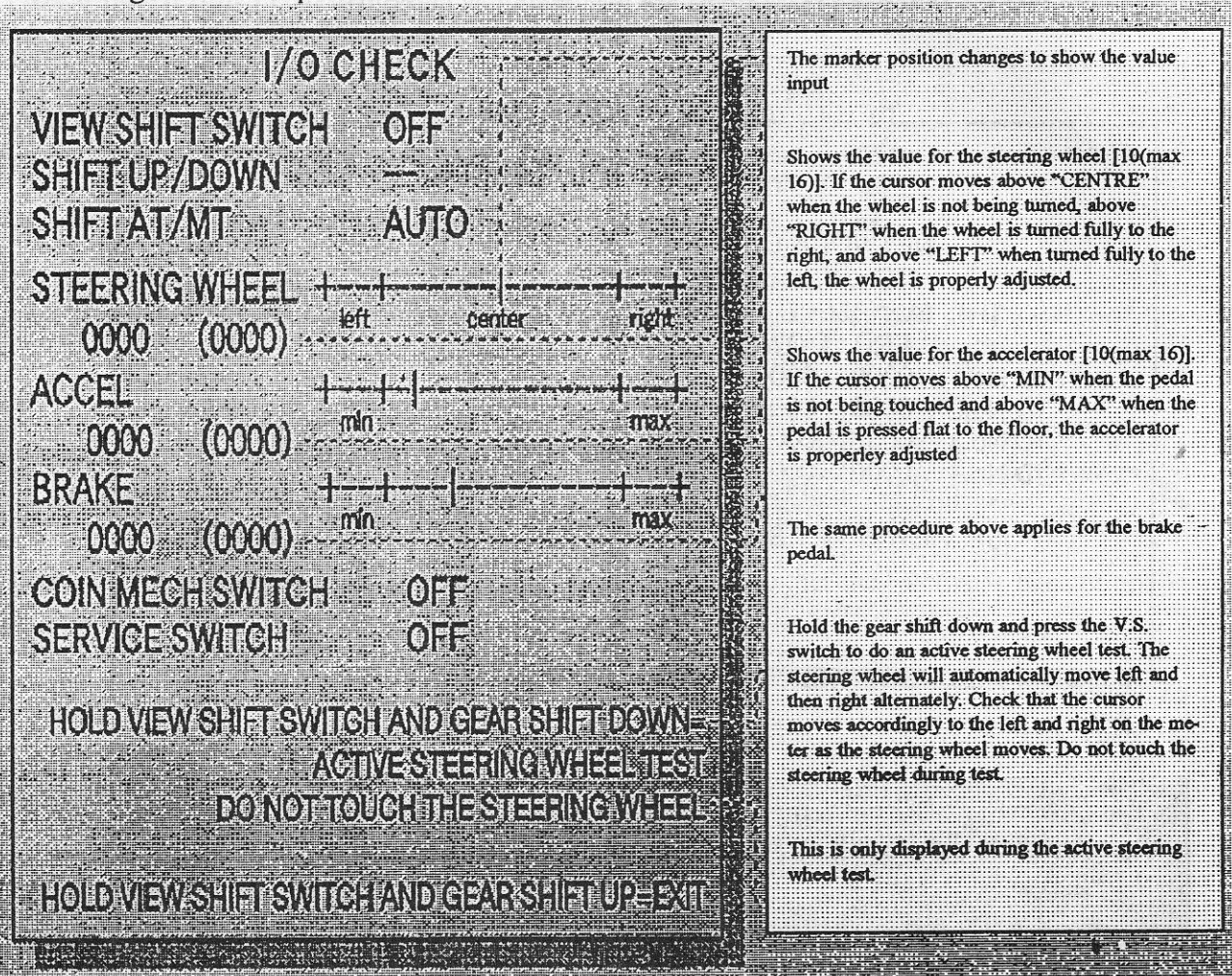
Select an item from the main menu to bring up the Settings screen for that item. Move the gear shift up or down to select an item, and press V.S to set. Original factory settings at time of shipment are displayed in green, and changed settings are displayed in red. Select "SAVE AND EXIT" and press the V.S switch to quit. This saves changed settings automatically and returns you to the main menu.

If you select "EXIT" instead of "SAVE AND EXIT", the message "YOU DID NOT SAVE. DO YOU WANT TO SAVE? YES/NO" will appear. If you select "YES", the message "NOW SAVING" will appear; your settings will then be saved and you will be returned to the menu. If you select "NO", the message "NO MODIFICATION" will appear, and your settings will not be saved.

Select "FACTORY SETTING" and press the V.S switch to change all the settings back.

1. I/O check.

The check mode for the controls. To return to the main menu, hold down the V.S. button and move the gear switch up.



If the steering wheel or the accelerator are not properly adjusted, please refer to section 8, “Maintenance”. Be sure to do a self-test after completing maintenance (see section 6-3 “PCB startup check (self test)” for details).

2. Screen check.

The check mode for the screen display. Adjust the focus, distortion and size of the screen while looking at the grille screen. Use the control knob on the screen adjustment PCB to make adjustments.

3. Colour check.

The check mode for colour display. Adjust the control knob on the projector adjustment PCB so that the colour bar is displayed at the optimum level.

4. Mask ROM check.

This checks each ROM in order, and displays “OK” or “BAD” at the end of the check.

5. Network check.

The network communications check mode. Observe the check screen for at least one minute to make sure that the following three items are responding as described:

NETWORK CHECK			
THIS BOARD-ID IS 00			
	ERR	DOWN	STATUS
ID No.1	0000	0000	
ID No.2	0000	0000	
ID No.3	0000	0000	DNC
ID No.4	0000	0000	DNC
PUSH VIEW SHIFT SWITCH = EXIT			

A number from 1 to 4 appears

"DNC" (did not connect) appears if connection can not be made

1. Check that the cursor in the status column is moving from left to right at a fixed speed
2. Check that the value in the ERR column is below 10 after one minute.
3. Check that the value in the DOWN column does not change from 0000

If all three items respond correctly, network communications are functioning normally. If any items respond incorrectly, it indicates a possible communications malfunction. Do not operate the machine until the problem is corrected, as doing so may cause damage to the unit or serious accident.

6. Dip switch settings

This shows the dip switch settings. Refer to the chart below when changing settings

Main board (top PCB) dip SW.		SW.1	SW.2	SW.2	SW.4
C.G board setting specifications		Always off			
AT/MT switching specifications			Always off		
Network ID	1			off	off
2	2			on	off
3	3			off	on
4	4			on	on

Be sure to keep dip switch 1 for the C.G. board setting specifications OFF

Be sure to keep dip switch 2 for the AT/MT switching specifications OFF

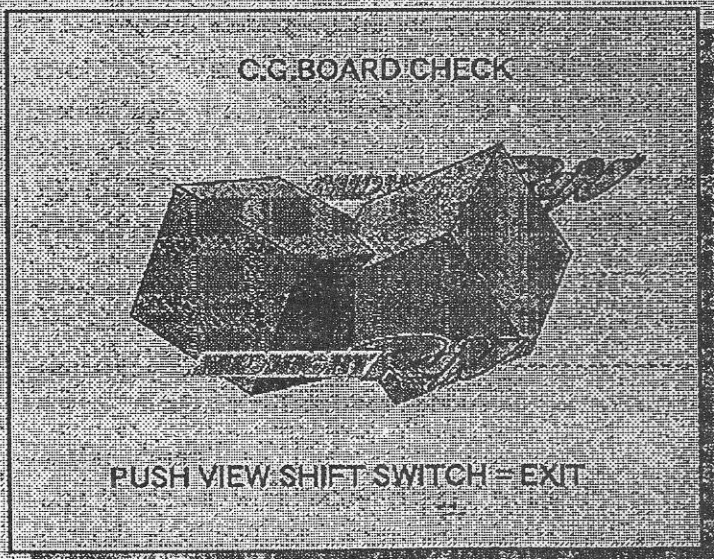
C.G. board (lower PCB) dip SW	SW.1	SW.2	SW.3	SW.4
	OFF	OFF	OFF	OFF

When networking game machines, set dip switches 3 and 4 so that their network IDs are not duplicated.

Switch the power off, then on again.

7. C.G. board check

A screen like the one shown below appears when this item is selected.



Checks whether the C.G. board is functioning properly. Check that each item below is displayed as described.

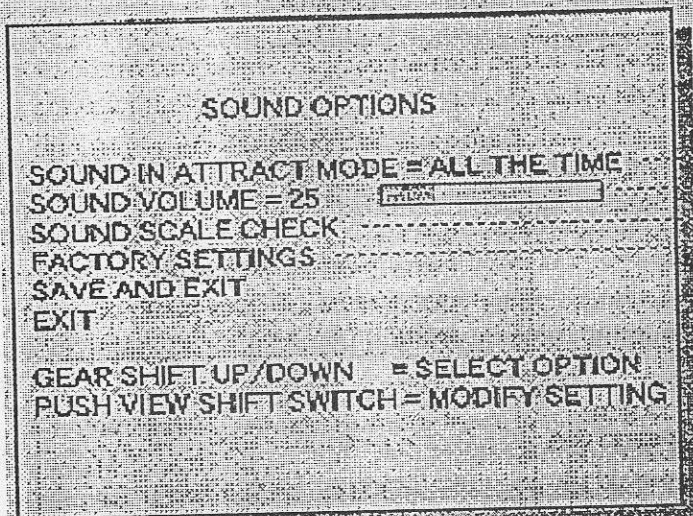
The "Midnight Run" logo behind the cubes should scroll horizontally.

The two cubes should rotate.

The "Midnight Run" logo should appear in front of the cubes.

8. Sound options

A screen like the one shown below appears when selected.



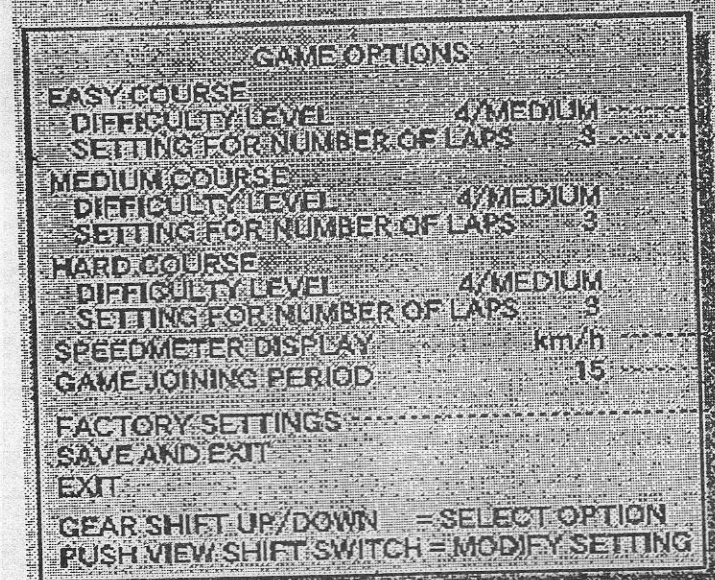
Turns the demo play sound ON or OFF.
ALL THE TIME: Sound always on
ONCE EVERY FOUR CYCLES: Sound on once every four cycles.
COMPLETELY OFF: Sound always off

Can be adjusted from 0 to 30. Hold the gear stick in automatic and press the V.S. switch to Lower the volume.

You will hear a do-re-mi musical scale from the left and then the right, repeated twice.

Returns all settings to original factory settings.

9. Game options



Difficulty level settings

1. EASIEST
2. VERY EASY
3. EASY
4. MEDIUM
5. MEDIUM HARD
6. HARD
7. VERY HARD
8. HARDEST

Lap number settings 3-5 laps
 You can set a different level of difficulty and number of laps for each course.

Changes the speedometer display. Choose from km/h or mph.

Sets the game joining period length 5, 10, or 20.

Returns all settings to original factory settings at time of shipment.

* When a number of game machines are networked, make sure that PCB settings are the same on all units.

10 COIN OPTIONS

A screen like the one shown below appears when this item is selected.

COIN OPTIONS

FREE PLAY NO

COIN MECHANISM INDEPENDENT

COIN SLOTS 1 COIN 1 CREDIT

FACTORY SETTINGS

SAVE AND EXIT

EXIT

GEAR SHIFT UP/DOWN = SELECT OPTION

PUSH VIEW SHIFT SWITCH = MODIFY SETTING

Always keep this set to INDEPENDENT

Sets the number of credits each coin is worth. When FREE PLAY is set to YES, the COIN MECHANISM and COIN SLOT options do not appear.

Returns all settings to original factory settings at time of shipment.

Credit number settings

No. of coins	1	1	1	1	1	1	1	2	2	2	3	3	3	4	4	4
No. of credits	1	2	3	4	5	6	7	1	3	5	1	2	4	1	3	5

6.5 Networking precautions (manual test)

Follow the precautions below when networking game machines.

Network manual test

As the network test must be carried out on all monitors at the same time, please conduct the manual test in the following order and check that the network is functioning properly when installing the game machines. First do the manual test network check on all monitors. If the screens are as shown below, the test is OK.

• Networking two game machines (2 projectors and 2 drive units)

Player 1 projector

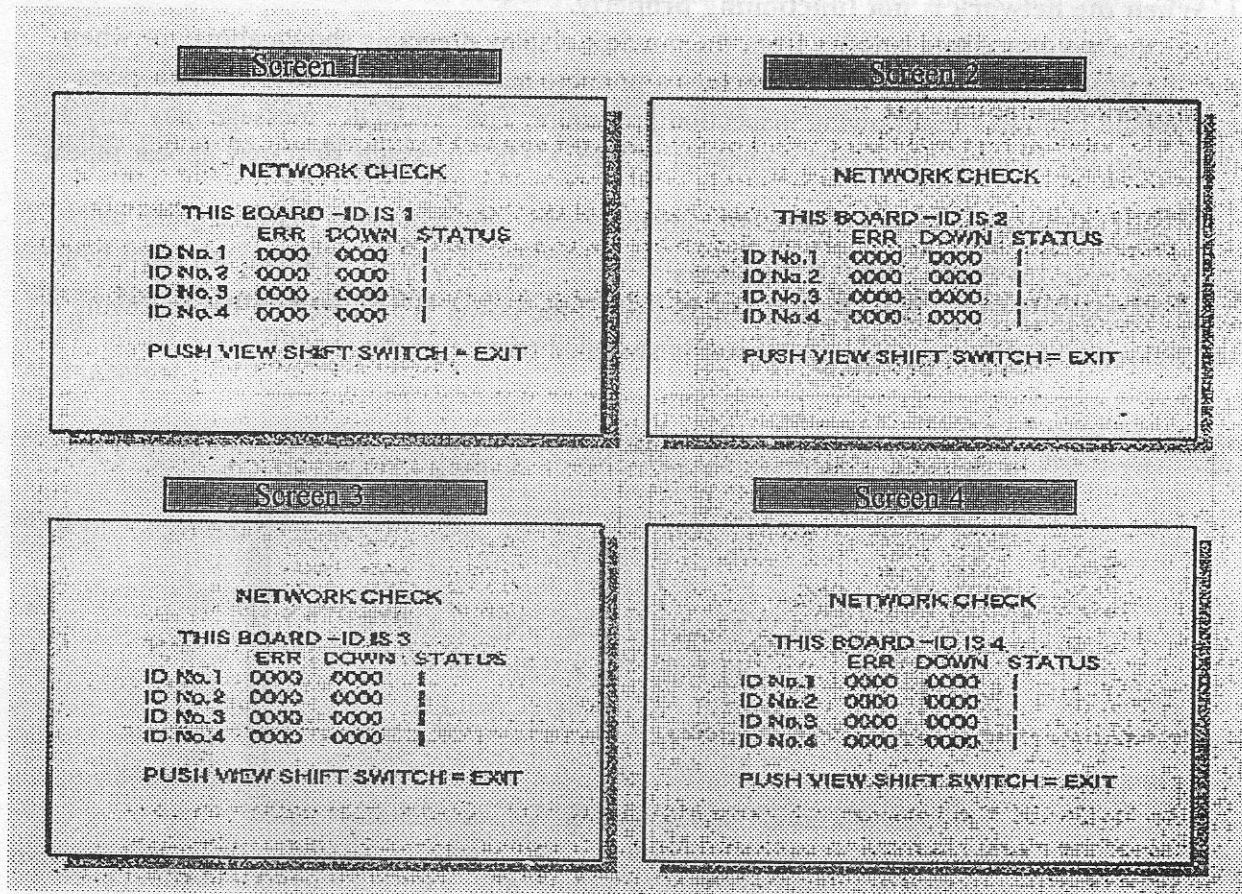
NETWORK CHECK				
THIS BOARD-ID IS 1				
	ERR	DOWN	STATUS	
ID No.1	0000	0000		
ID No.2	0000	0000		
ID No.3	0000	0000	DNC	
ID No.4	0000	0000	DNC	
PUSH VIEW SHIFT SWITCH = EXIT				

Player 2 projector

NETWORK CHECK				
THIS BOARD-ID IS 2				
	ERR	DOWN	STATUS	
ID No.1	0000	0000		
ID No.2	0000	0000		
ID No.3	0000	0000	DNC	
ID No.4	0000	0000	DNC	
PUSH VIEW SHIFT SWITCH = EXIT				

If the test is OK, the cursor will move from left to right. Check both monitors to see whether the cursor is moving back and forth at a regular speed. (Continue checking for at least one minute.) If everything is normal, press the V.S. button on each unit to return to the manual test main menu, then select GAME MODE to return to game mode.

Networking four game machines (4 monitors and 4 drive units)



In the same way as for a two unit network, the cursor will move from left to right if the test is OK. Check both monitors to see whether the cursor is moving back and forth at a regular speed. Continue checking for at least one minute. If everything is normal, press the V.S. button on each unit to return to the manual test main menu, then select GAME MODE to return to game mode.

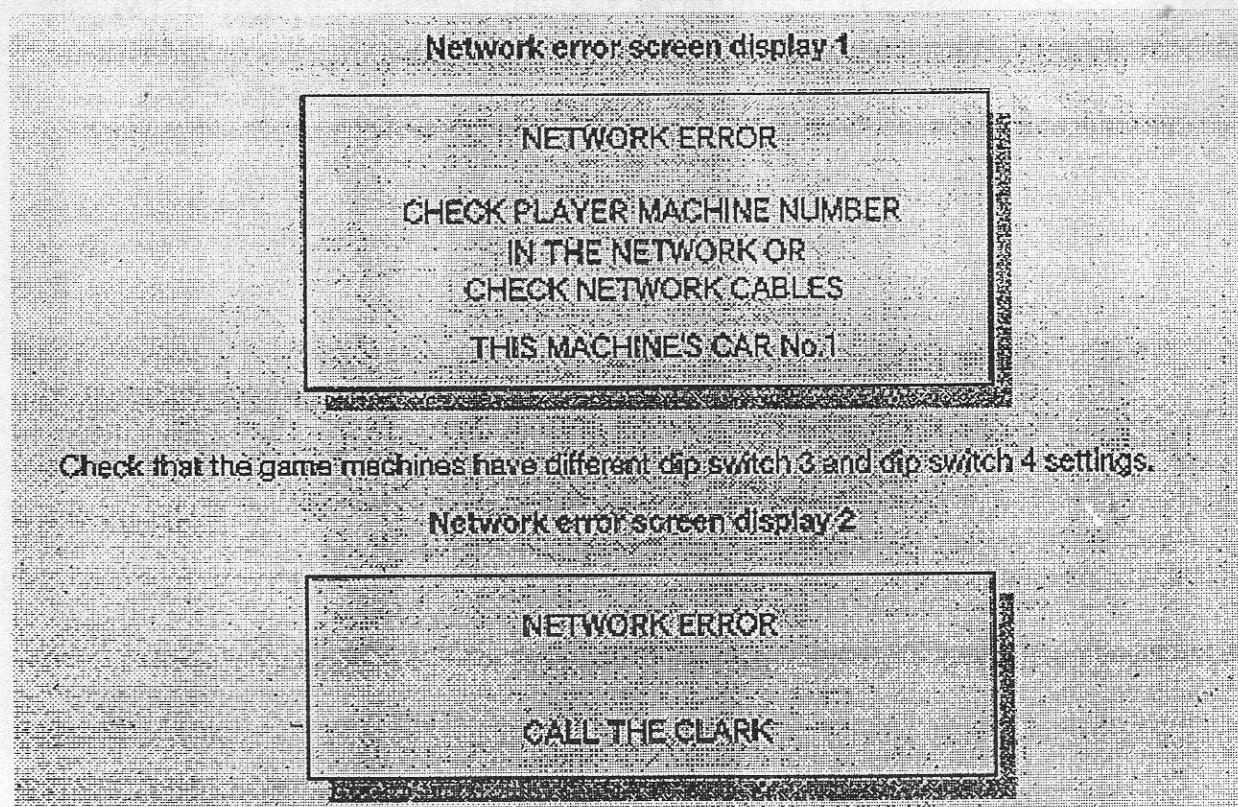
6.6 Inspection procedure when there is a network abnormality

1. When the network is not functioning properly.

When the monitor displays differ from the monitor display diagrams shown above, or when the "ERROR" message appears, it indicates a possible network abnormality. In these cases you should conduct the following inspection procedure. The "ERROR" message may only appear when the abnormality occurs instead of "CHECK OK" message, or it may appear repeatedly.

2. When "NETWORK ERROR" appears

The "NETWORK ERROR" message appears when the power is switched on the following error messages may appear when the power is switched on:



This is displayed when a network error occurs during game play (for example, when cords become burnt out or disconnected, or when one game machine goes into manual test mode.)

Note: When you press the test button to go into manual test mode, check that the other networked game machines are in demo mode.

If abnormalities continue after checking, follow the procedure below in "inspection items" to check the network cables.

Inspection items

If the network is not functioning properly inspect the game machines for the following items:

1. Switch off the power, then check whether all networking cords are properly connected, and whether pin jacks that are not in use are free of dust or dirt.
2. when using a single game machine, check whether the spare networking cord has been dislodged from the jack pin, (if not, disconnect the cord and store for future use.) When game machines are networked, check that they are connect as shown in section 6.1 as if the cables are not properly connected to the correct socket or are loose the machine will not function with this arrangement.
3. Use only the networking cord supplied with each game machine to network game machines.
4. If one networking cord burns out, use the spare networking cord as a replacement.

1	30004	Washer M6 plain	1	302307	Plate centre joint
1	30332	Washer 14mm OD	1	303377	Plate blank
4	30037	Screw M6x25 but hd	12	30626	M6x35 but hd hex
2	30634	Bolt M6x35 but hd	12	30171	Washer M8 plain
4	30178	Screw M6x10 but hd	1	30031	Bolt M6x25 hex
1	66140	M6 allen key	1	06007	M6 allen key

7

Assembly of game machine

Follow the instructions below in order to assemble the game machine. In order that no faults occur follow the procedure step by step.

7.1

Assembly procedure and part numbers

The following are the assembly instructions for the Midnight run:

1. Place the left hand and right hand cabinets alongside each other respectively making sure, there are no obstructions to the rear or under the feet of the machine.
2. Open the upper back door of both cabinets using a posidrive screw driver and insert the M6x55mm coach bolt into the holes directly inside the cabinet approximately half way up the internal sides of the cabinet behind the monitor.

Install the coin tower (part# 381692), centre joining plate (part# 203307) and back plate (part# 203377) using 12 M8x35 button head screws and washers. Tighten central coach bolt with M6 nut and penny washer. Use the M8 allen provided and securely tighten.

4. Lower the adjustable feet by turning the locking nuts anti-clockwise in order to lower the foot plate towards the ground. Make sure the machine is level and free from obstruction.

5. Remove bezels and perspex from top header box (see section 7.2) and fit with M6x10mm button head screws using the M6 allen key provided. Place top header box assembly on top of assembled machine and attach the right and left hand cheeks. Connect the cord leading to the flourescent tube via the connecting block. Run the cable through the holes on the top of the cabinet inside the back door and connect to the mains unit at the base of the cabinet..

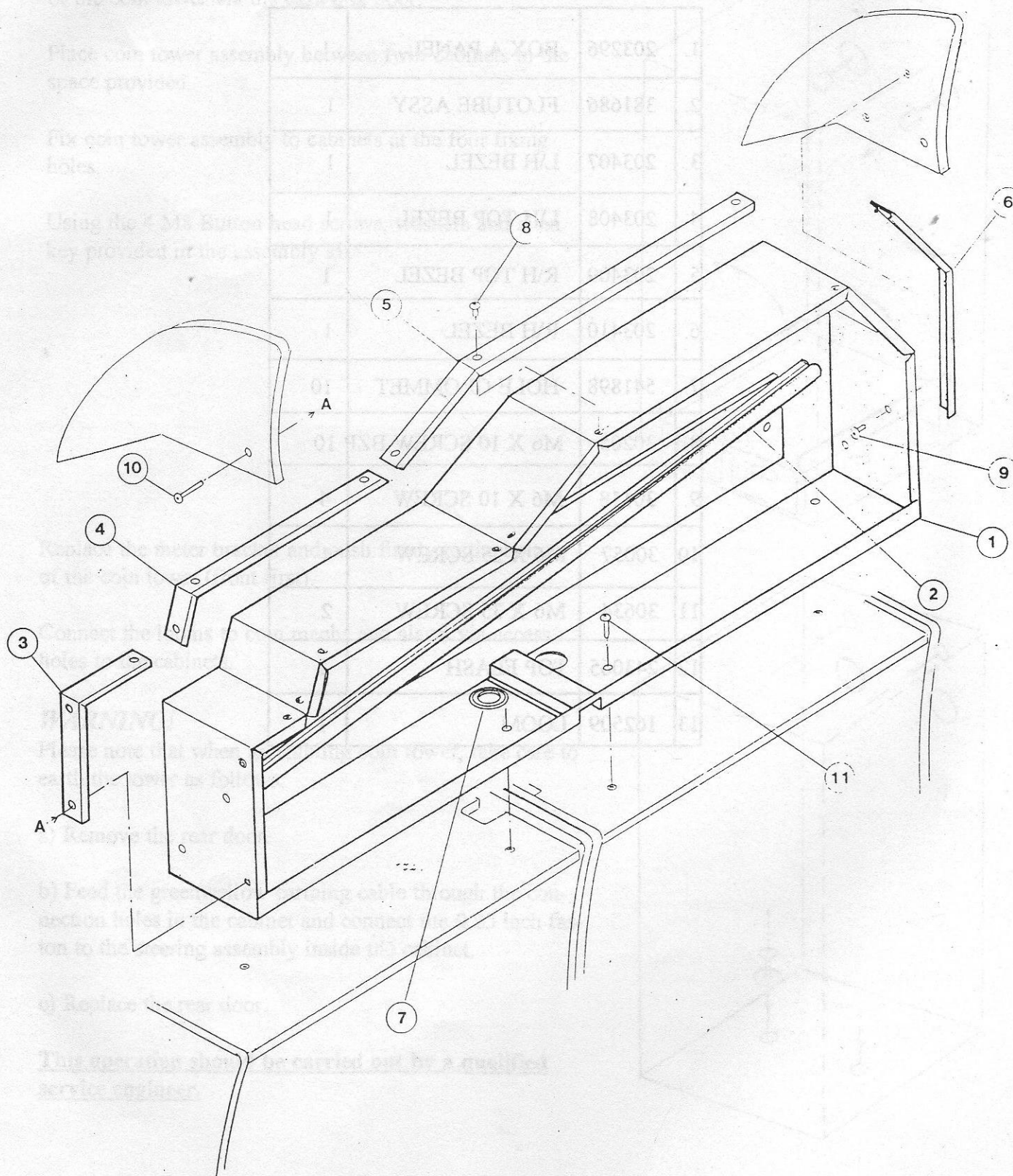
Replace the perspex and bezels fasten with bright zinc M6 screws.

Assembly kit part numbers

Plate centre joint	203307	1	Washer M6 plain	30004	1
Plate blank	203377	1	Washer 14mm O/D	30372	1
M8x35 but hd bzp	30656	12	Screw M6x25 but hd	30057	4
Washer M8 plain	30171	12	Bolt M6x35 but hd	30634	2
Bolt M6x56 coach	30051	1	Screw M6x10 but hd	30118	4
M6 allen key	66093	1	M8 allen key	66140	1

7.2 . FIXING OF TOP BOX AND PLAY PANEL

1. Fixings for top box.



	PART#	TITLE	QTY.
--	-------	-------	------

1.	203296	BOX A PANEL	1
2.	381686	FLOTUBE ASSY	1
3.	203407	L\H BEZEL	1
4.	203408	L\H TOP BEZEL	1
5.	203409	R\H TOP BEZEL	1
6.	203410	R\H BEZEL	1
7.	541898	HOLE GROMMET	10
8.	30205	M6 X 10 SCREW BZP	10
9.	30118	M6 X 10 SCREW	4
10	30057	M6 X 25 SCREW	4
11	30634	M6 X 35 SCREW	2
12	243065	TOP FLASH	1
13	162509	LOOM	1

7.3

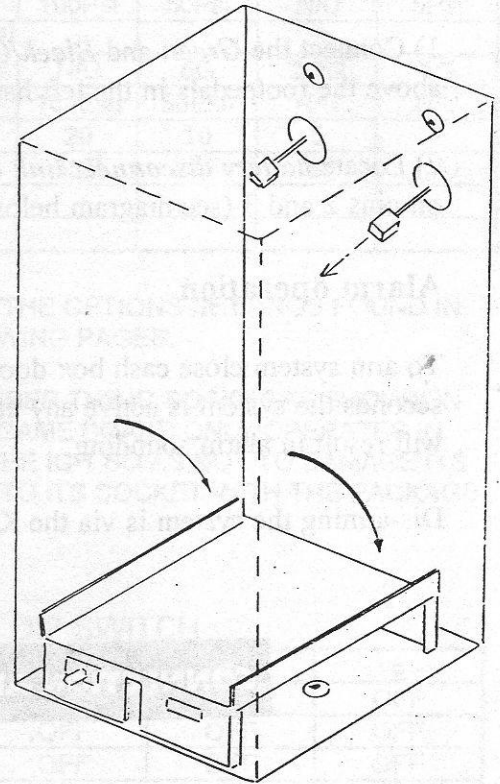
Fixing coin door assembly

Remove meter bracket and cash box from the lower half of the coin tower via the cash box door.

Place coin tower assembly between twin cabinets in the space provided.

Fix coin tower assembly to cabinets at the four fixing holes.

Using the 4 M8 Button head screws, washers and allen key provided in the assembly kit.



Replace the meter bracket and push firmly to the bottom of the coin tower (front first).

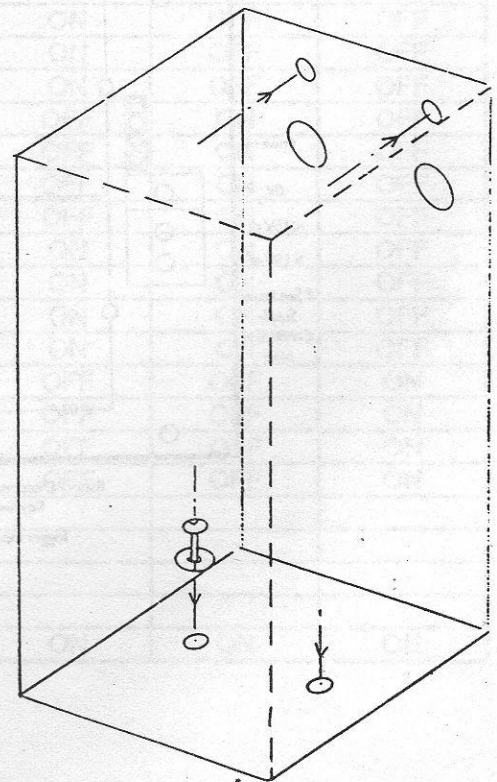
Connect the looms to coin mechs and alarm via access holes to the cabinets.

WARNING!

Please note that when assembling coin tower, take care to earth the tower as follows:

- Remove the rear door.
- Feed the green/yellow earthing cable through the connection holes in the cabinet and connect the 0.25 inch faston to the steering assembly inside the cabinet.
- Replace the rear door.

This operation should be carried out by a qualified service engineer.



Alarm system

The alarm system fitted as standard to Midnight Run, has a battery back-up facility; so for practical reasons the unit is despatched in a de-activated state.

To re-activate alarm:

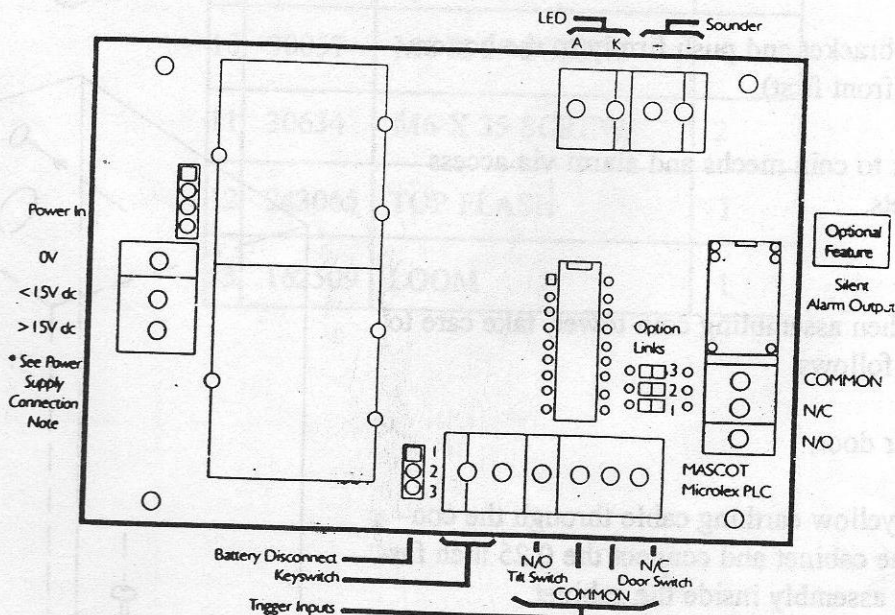
- 1) Connect the **Green** and **Black/Grey** wires from the alarm PCB to the Key Switch situated above the footpedals in the left hand cabinet.
- 2) Locate **battery disconnect link** on Alarm PCB, remove link from pins 1 and 2 and replace on pins 2 and 3 (see diagram below). The alarm is now activated honest!

Alarm operation

To arm system close cash box door and remove key from Key Switch. After approximately 10 seconds the system is active any attempt to open the cash door without the key switch inserted will result in alarm sounding.

Dis-arming the system is via the Key Switch.

CONNECTION AND CONFIGURATION



KLINGON CREDIT BOARD SETTINGS

DIL SWITCH 2 (UNDER IC SOCKET)

SW1	SW2	SW3	SW4	OPTIONS	COIN 1 F	COIN 2 E	COIN 3 D	COIN 4 C
OFF	OFF	OFF		UK COIN SETTINGS	£1	50p	20p	10p
ON	OFF	OFF		BELGIUM COIN SETTINGS	N/U	50Bf	20Bf	25Pst
OFF	ON	OFF		SPANISH COIN SETTINGS	100Pst	50Pst	N/U	5Pst
ON	ON	OFF		GERMAN COIN SETTINGS USING NRI				
OFF	OFF	ON		HOLLAND COIN SETTINGS	N/U	5G	2.5G	1G
ON	OFF	ON		PORTUGAL COIN SETTINGS	100Esu	50Esu	N/U	N/U
OFF	ON	ON		AUSTRIA COIN SETTINGS	20	10	5	1
ON	ON	ON		SWITZERLAND COIN SETTINGS	5SF	2SF	1SF	N/U
			OFF	DIRECT MODE				
			ON	2 CHANNEL MODE				

SET DIL SWITCHES (DIL-1) SW-1 TO SW-5 ACCORDING TO THE OPTIONS SETTINGS FOUND IN THE RELEVANT PRICE OF PLAY SETTINGS TABLE ON THE FOLLOWING PAGES.

SET DIL SWITCHES (DIL-2) ON THE KLINGON BOARD LOCATED UNDER THE IC SOCKET AS SHOWN IN THE TABLE ABOVE. SW-4 MUST ALWAYS BE SET TO 'ON' AS THE GAME BOARD ONLY OPERATES IN COMMON MODE. CARE MUST BE EXERCISED WHEN REMOVING THE IC-1 SO AS NOT TO DAMAGE ITS LEADOUT PINS. AFTER SETTING THE SWITCHES RETURN THE IC TO ITS SOCKET WITH THE PACKAGE INDENT MARK ADJACENT TO THE BOARD EDGE.

PRICE OF PLAY SETTINGS FOR THE UK

DIP SWITCH

			1	2	3	4	5
10p PLAY	50p=5	£1=10	OFF	OFF	OFF	OFF	OFF
10p PLAY	50p=5	£1=11	ON	OFF	OFF	OFF	OFF
10p PLAY	50p=6	£1=12	OFF	ON	OFF	OFF	OFF
20p PLAY	50p=2 1/2	£1=5	ON	ON	OFF	OFF	OFF
20p PLAY	50P=3	£1=6	OFF	OFF	ON	OFF	OFF
20p PLAY	50p=3	£1=7	ON	OFF	ON	OFF	OFF
30p PLAY	50P=1 2/3	£1=1 1/3	OFF	ON	ON	OFF	OFF
30p PLAY	50p=2	£1=4	ON	ON	ON	OFF	OFF
30p PLAY	50p=2	£1=5	OFF	OFF	OFF	ON	OFF
40p PLAY	50p=1 1/4	£1=2 1/2	ON	OFF	OFF	ON	OFF
40p PLAY	50p=1 1/4	£1=3	OFF	ON	OFF	ON	OFF
50p PLAY	50P=1	£1=2	ON	ON	OFF	ON	OFF
50p PLAY	50p=1	£1=3	OFF	OFF	ON	ON	OFF
60p PLAY	50P=5/6	£1=1 2/5	ON	OFF	ON	ON	OFF
60p PLAY	50p=5/6	£1=2	OFF	ON	ON	ON	OFF
80p PLAY	50p=5/8	£1=1 1/4	ON	ON	ON	ON	OFF
£1 PLAY	50p=1/2	£1=1	OFF	OFF	OFF	OFF	ON
£1 PLAY	50p=1/2	£1=1 £2=3	ON	OFF	OFF	OFF	ON
£2 PLAY	50p=1/4	£1=1/2	OFF	ON	OFF	OFF	ON
£2 PLAY	50p=1/4	£5=3	ON	ON	OFF	OFF	ON
FREE PLAY OPTION			ON	ON	ON	ON	ON

CREDIT BOARD SETTINGS

PRICE OF PLAY SETTINGS FOR SPAIN

DIP SWITCH

			1	2	3	4	5
25Pst PLAY	50Pst=2	100Pst=4	OFF	OFF	OFF	OFF	OFF
25Pst PLAY	50Pst=2	100Pst=5	ON	OFF	OFF	OFF	OFF
			OFF	ON	OFF	OFF	OFF
50Pst PLAY	100Pst=2		ON	ON	OFF	OFF	OFF
50Pst PLAY	100Pst=3		OFF	OFF	ON	OFF	OFF
50Pst PLAY	100Pst=3	200Pst=7	ON	OFF	ON	OFF	OFF
75Pst PLAY	100Pst=2/3		OFF	ON	ON	OFF	OFF
75Pst PLAY	100Pst=2/3	200Pst=3	ON	ON	ON	OFF	OFF
75Pst PLAY	200Pst=3	400Pst=7	OFF	OFF	OFF	ON	OFF
100Pst PLAY			ON	OFF	OFF	ON	OFF
100Pst PLAY	200Pst=3		OFF	ON	OFF	ON	OFF
200Pst PLAY			ON	ON	OFF	ON	OFF
200Pst PLAY	500Pst=3		OFF	OFF	ON	ON	OFF
300Pst PLAY			ON	OFF	ON	ON	OFF
300Pst PLAY	500Pst=2		OFF	ON	ON	ON	OFF
400Pst PLAY			ON	ON	ON	ON	OFF
400Pst PLAY	1000Pst=3		OFF	OFF	OFF	OFF	ON
COIN METERING 1 PULSE = 25Pst							
FREE PLAY OPTION			ON	ON	ON	ON	ON

PRICE OF PLAY SETTINGS FOR PORTUGAL

DIP SWITCH

			1	2	3	4	5
10Esc PLAY	50Esc=5	100Esc=10	OFF	OFF	OFF	OFF	OFF
10Esc PLAY	50Esc=5	100Esc=11	ON	OFF	OFF	OFF	OFF
10Esc PLAY	50Esc=6	100Esc=12	OFF	ON	OFF	OFF	OFF
20Esc PLAY	50Esc=2 1/2	100Esc=5	ON	ON	OFF	OFF	OFF
20Esc PLAY	50Esc=3	100Esc=6	OFF	OFF	ON	OFF	OFF
20Esc PLAY	50Esc=3	100Esc=7	ON	OFF	ON	OFF	OFF
30Esc PLAY	50Esc=1 2/3	100Esc=1 1/3	OFF	ON	ON	OFF	OFF
30Esc PLAY	50Esc=2	100Esc=4	ON	ON	ON	OFF	OFF
30Esc PLAY	50Esc=2	100Esc=5	OFF	OFF	OFF	ON	OFF
40Esc PLAY	50Esc=11/4	100Esc=2 1/2	ON	OFF	OFF	ON	OFF
40Esc PLAY	50Esc=1 1/4	100Esc=3	OFF	ON	OFF	ON	OFF
50Esc PLAY	50Esc=1	100Esc=2	ON	ON	OFF	ON	OFF
50Esc PLAY	50Esc=1	100Esc=3	OFF	OFF	ON	ON	OFF
60Esc PLAY	50Esc=5/6	100Esc=1 2/5	ON	OFF	ON	ON	OFF
60Esc PLAY	50Esc=5/6	100Esc=2	OFF	ON	ON	ON	OFF
80Esc PLAY	50Esc=5/8	100Esc=1 1/4	ON	ON	ON	ON	OFF
100Esc PLAY	50Esc=1/2	100Esc=1	OFF	OFF	OFF	OFF	ON
100Esc PLAY	50Esc=1/2	100Esc=1 200Esc=3	ON	OFF	OFF	OFF	ON
200Esc PLAY	50Esc=1/4	100Esc=1/2	OFF	ON	OFF	OFF	ON
200Esc PLAY	50Esc=1/4	100Esc=1/2 500Esc=3	ON	ON	OFF	OFF	ON
FREE PLAY OPTION			ON	ON	ON	ON	ON

CREDIT BOARD SETTINGS

PRICE OF PLAY SETTINGS FOR ~~AUSTRIA~~ FRANCE

DIP SWITCH

			1	2	3	4	5
1Sch PLAY	5Sch=5	10Sch=10	OFF	OFF	OFF	OFF	OFF
1Sch PLAY	5Sch=5	10Sch=11	ON	OFF	OFF	OFF	OFF
1Sch PLAY	5Sch=6	10Sch=12	OFF	ON	OFF	OFF	OFF
2Sch PLAY	5Sch=2 1/2	10Sch=5	ON	ON	OFF	OFF	OFF
2Sch PLAY	5Sch=3	10Sch=6	OFF	OFF	ON	OFF	OFF
2Sch PLAY	5Sch=3	10Sch=7	ON	OFF	ON	OFF	OFF
3Sch PLAY	5Sch=1 2/3	10Sch=3 1/3	OFF	ON	ON	OFF	OFF
3Sch PLAY	5Sch=2	10Sch=4	ON	ON	ON	OFF	OFF
3Sch PLAY	5Sch=2	10Sch=5	OFF	OFF	OFF	ON	OFF
4Sch PLAY	5Sch=1 1/4	10Sch=2 1/2	ON	OFF	OFF	ON	OFF
4Sch PLAY	5Sch=1 1/4	10Sch=3	OFF	ON	OFF	ON	OFF
5Sch PLAY	5Sch=1	10Sch=2	ON	ON	OFF	ON	OFF
5Sch PLAY	5Sch=1	10Sch=3	OFF	OFF	ON	ON	OFF
6Sch PLAY	5Sch=5/6	10Sch=1 2/5	ON	OFF	ON	ON	OFF
6Sch PLAY	5Sch=5/6	10Sch=2	OFF	ON	ON	ON	OFF
8Sch PLAY	5Sch=5/8	10Sch=1 1/4	ON	ON	ON	ON	OFF
10Sch PLAY	5Sch=1/2	10Sch=1	OFF	OFF	OFF	OFF	ON
10Sch PLAY	5Sch=1/2	10Sch=1 20Sch=3	ON	OFF	OFF	OFF	ON
20Sch PLAY	5Sch=1/4	10Sch=1/2	OFF	ON	OFF	OFF	ON
20Sch PLAY	5Sch=1/4	10Sch=1/2 50Sch=3	ON	ON	OFF	OFF	ON
30Sch PLAY	NO BONUSES		OFF	OFF	ON	OFF	ON
30Sch PLAY	5Sch=3		ON	OFF	ON	OFF	ON
50Sch PLAY			OFF	ON	ON	OFF	ON
50Sch PLAY		100Sch=3	ON	ON	ON	OFF	ON
FREE PLAY OPTION			ON	ON	ON	ON	ON

COIN ASSIGNMENT COIN 1 = 20Sch, COIN 2 = 10Sch, COIN 3 = 5Sch, COIN 4 = 1Sch

PRICE OF PLAY SETTINGS FOR FRANCE/SWITZERLAND

DIP SWITCH

			1	2	3	4	5
1F PLAY	5F=5	10F=10	OFF	OFF	OFF	OFF	OFF
1F PLAY	5F=5	10F=11	ON	OFF	OFF	OFF	OFF
1F PLAY	5F=6	10F=12	OFF	ON	OFF	OFF	OFF
2F PLAY	5F=2 1/2	10F=5	ON	ON	OFF	OFF	OFF
2F PLAY	5F=3	10F=6	OFF	OFF	ON	OFF	OFF
2F PLAY	5F=3	10F=7	ON	OFF	ON	OFF	OFF
3F PLAY	5F=1 2/3	10F=3 1/3	OFF	ON	ON	OFF	OFF
3F PLAY	5F=2	10F=4	ON	ON	ON	OFF	OFF
3F PLAY	5F=2	10F=5	OFF	OFF	OFF	ON	OFF
4F PLAY	5F=1 1/4	10F=2 1/2	ON	OFF	OFF	ON	OFF
4F PLAY	5F=1 1/4	10F=3	OFF	ON	OFF	ON	OFF
5F PLAY	5F=1	10F=2	ON	ON	OFF	ON	OFF
5F PLAY	5F=1	10F=3	OFF	OFF	ON	ON	OFF
6F PLAY	5F=5/6	10F=1 2/5	ON	OFF	ON	ON	OFF
6F PLAY	5F=5/6	10F=2	OFF	ON	ON	ON	OFF
8F PLAY	5F=5/8	10F=1 1/4	ON	ON	ON	ON	OFF
10F PLAY	5F=1/2	10F=1	OFF	OFF	OFF	OFF	ON
10F PLAY	5F=1/2	10F=1 20F=3	ON	OFF	OFF	OFF	ON
20F PLAY	5F=1/4	10F=1/2	OFF	ON	OFF	OFF	ON
20F PLAY	5F=1/4	10F=1/2 50F=3	ON	ON	OFF	OFF	ON
FREE PLAY OPTION			ON	ON	ON	ON	ON

CREDIT BOARD SETTINGS

PRICE OF PLAY SETTINGS FOR BELGIUM

DIP SWITCH

			1	2	3	4	5
5F PLAY	20F=4	50F=10	OFF	OFF	OFF	OFF	OFF
5F PLAY	20F=	50F=11	ON	OFF	OFF	OFF	OFF
5F PLAY	20F=5	50F=12	OFF	ON	OFF	OFF	OFF
10F PLAY	20F=2	50F=5	ON	ON	OFF	OFF	OFF
10F PLAY	20F=2	50F=5	OFF	OFF	ON	OFF	OFF
10F PLAY	20F=3	50F=7	ON	OFF	ON	OFF	OFF
15F PLAY	20F=1 1/3	50F=3 1/3	OFF	ON	ON	OFF	OFF
15F PLAY	20F=1 1/3	50F=4	ON	ON	ON	OFF	OFF
15F PLAY	20F=2	50F=5	OFF	OFF	OFF	ON	OFF
20F PLAY		50F=2 1/2	ON	OFF	OFF	ON	OFF
20F PLAY		50F=3	OFF	ON	OFF	ON	OFF
20F PLAY	50F=3	100F=7	ON	ON	OFF	ON	OFF
25F PLAY	20F=4/5	50F=2	OFF	OFF	ON	ON	OFF
25F PLAY	20F=4/5	50F=2 100F=5	ON	OFF	ON	ON	OFF
25F PLAY	20F=4/5	50F=3 100F=6	OFF	ON	ON	ON	OFF
30F PLAY	20F=2/3	50F=1 1/2	ON	ON	ON	ON	OFF
30F PLAY	20F=2/3	50F=1 1/3 100F=4	OFF	OFF	OFF	OFF	ON
30F PLAY	20F=2/3	50F=2 100F=4	ON	OFF	OFF	OFF	ON
40F PLAY	20F=1/2	50F=1 1/4	OFF	ON	OFF	OFF	ON
40F PLAY	20F=1/2	50F=2 1/4 100F=3	ON	ON	OFF	OFF	ON
FREE PLAY OPTION			ON	ON	ON	ON	ON

PRICE OF PLAY SETTINGS FOR HOLLAND

DIP SWITCH

			1	2	3	4	5
1G PLAY	NO BONUS		OFF	OFF	OFF	OFF	OFF
1G PLAY	2.5G=3	5G=6	ON	OFF	OFF	OFF	OFF
1G PLAY	2.5G=3	5G=7	OFF	ON	OFF	OFF	OFF
2G PLAY	NO BONUS	50F=5	ON	ON	OFF	OFF	OFF
2G PLAY	5G=3		OFF	OFF	ON	OFF	OFF
2G PLAY	5G=3	10G=7	ON	OFF	ON	OFF	OFF
3G PLAY	NO BONUS		OFF	ON	ON	OFF	OFF
3G PLAY	5G=2		ON	ON	ON	OFF	OFF
3G PLAY	5G=2	10G=5	OFF	OFF	OFF	ON	OFF
4G PLAY	NO BONUS		ON	OFF	OFF	ON	OFF
4G PLAY	10G=3		OFF	ON	OFF	ON	OFF
5G PLAY	NO BONUS	100F=7	ON	ON	OFF	ON	OFF
5G PLAY	10G=3		OFF	OFF	ON	ON	OFF
6G PLAY	NO BONUS		ON	OFF	ON	ON	OFF
6G PLAY	15G=3	50F=3 100F=6	OFF	ON	ON	ON	OFF
8G PLAY	NO BONUS		ON	ON	ON	ON	OFF
8G PLAY	20G=3	50F=1 1/3 100F=4	OFF	OFF	OFF	OFF	ON
10G PLAY	NO BONUS		ON	OFF	OFF	OFF	ON
10G PLAY	20G=3		OFF	ON	OFF	OFF	ON
FREE PLAY OPTION			ON	ON	ON	ON	ON

1 METER PULSE = 0.5G

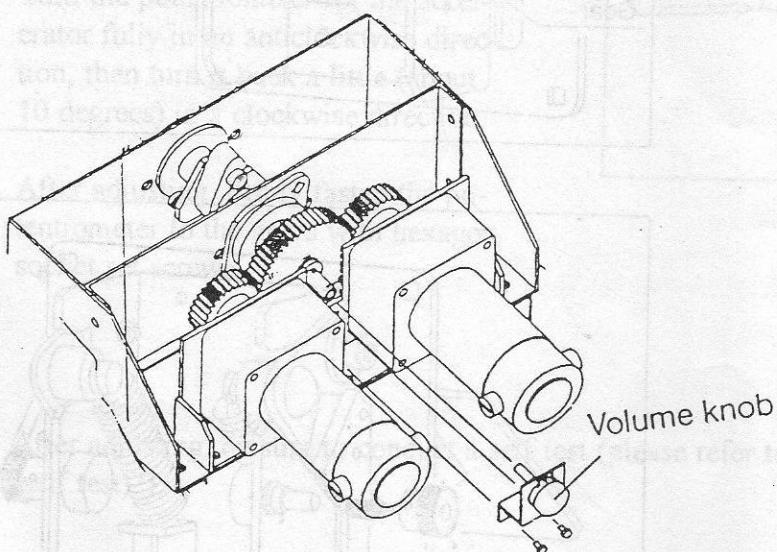
COIN ASSIGNMENT

COIN 1=N/U, COIN 2=5G, COIN 3=2.5G, COIN 4=1G

This game machine contains precision parts. It is adjusted and settings made for optimal performance at time of shipment, but adjustment of controls may need to be made after installation, depending on installation conditions and location. The game machine should also be periodically inspected and adjusted to ensure trouble free operation.

8.1 How to replace the potentiometer.

Turn the main power switch OFF, and unplug the power cord. Unscrew the 8 screws on the play panel and slide out the steering unit.

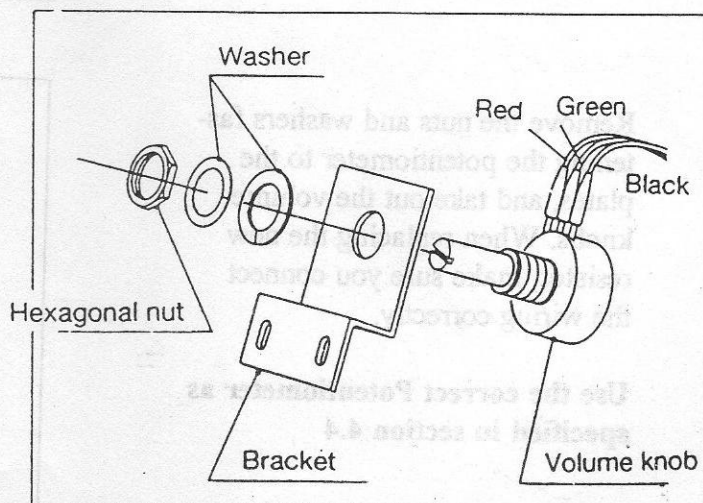


After sliding out the steering unit, the potentiometer can be found at the rear of the steering wheel unit. Disconnect the wiring, then loosen the fixings fastening the tip of the volume knob. Unscrew the bracket holding the resistor in place and lift both the bracket and the potentiometer clear of the unit.

Remove the hexagonal nut and 2 washers holding the potentiometer to the bracket, and remove the resistor.

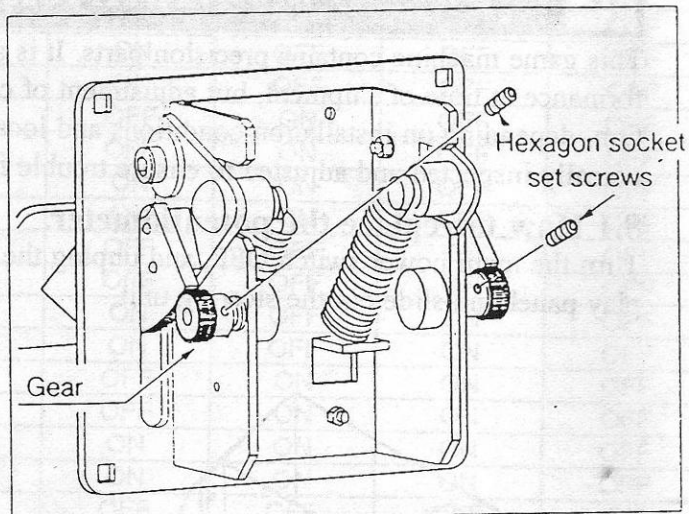
When replacing the potentiometer, please **use only** the type specified in Section 4.2

After replacing the potentiometer, be sure to adjust it as described on the next page.

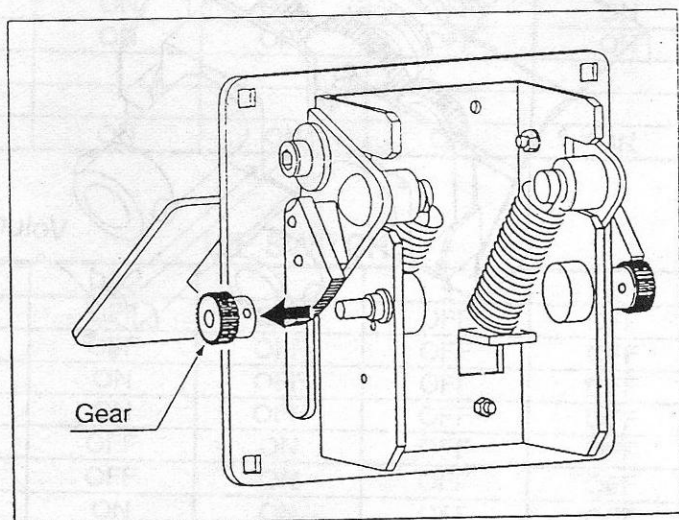


8.2 Inspecting and replacing the pedal Potentiometer

Loosen the hexagonal socket set on the gears (to which the potentiometer are attached) to release the potentiometer. If the screws are hard to loosen, put pressure on the accelerator to move the gears to a position from which it is easier to loosen the screws.

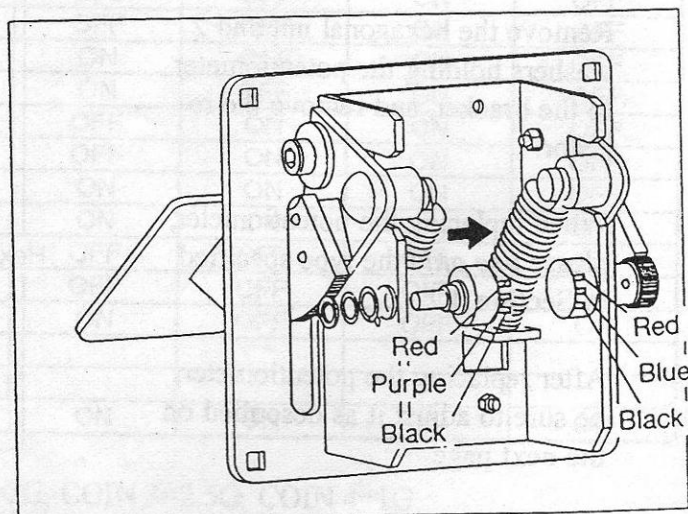


Loosen the hexagon socket set screws holding the potentiometer in place, and remove the gears.



Remove the nuts and washers fastening the potentiometer to the plates, and take out the volume knobs. When replacing the new resistor, make sure you connect the wiring correctly.

Use the correct Potentiometer as specified in section 4.4



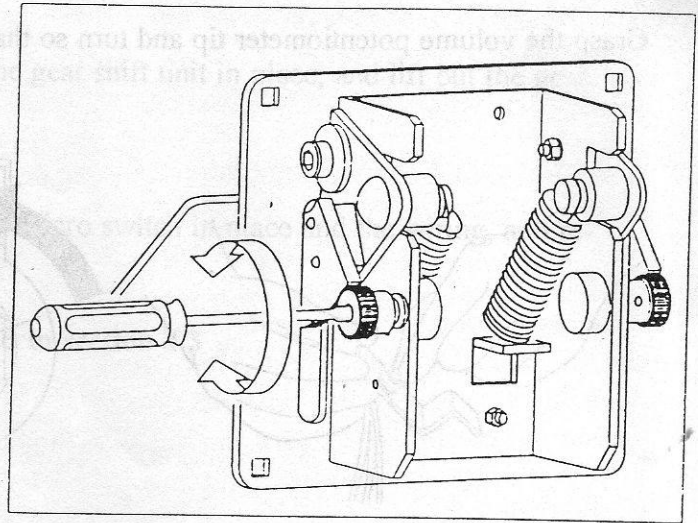
How to adjust the Potentiometer

Without touching the pedal, adjust the tip of each potentiometer with a minus screwdriver.

Turn the potentiometer for the brake fully in a clockwise direction, then turn it back a little (about 10 degrees) in an anti clockwise direction.

Turn the potentiometer for the accelerator fully in an anticlockwise direction, then turn it back a little (about 10 degrees) in a clockwise direction.

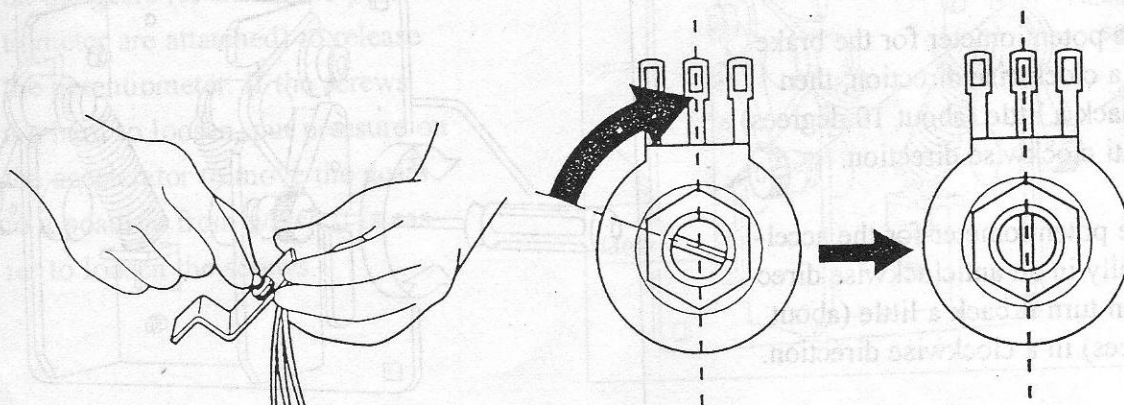
After adjusting, firmly fasten the potentiometer to the gears with hexagon socket set screws.



After adjusting, be sure to conduct a self test (please refer to section 6.3, "PCB startup check (self test)").

How to adjust the Potentiometer

Grasp the volume potentiometer tip and turn so that the marker is aligned at the centre



Adjust so that the long groove is parallel to the terminals.

After adjusting, be sure to conduct a self-test (refer to section 6.3 "PCB startup check (self test)").

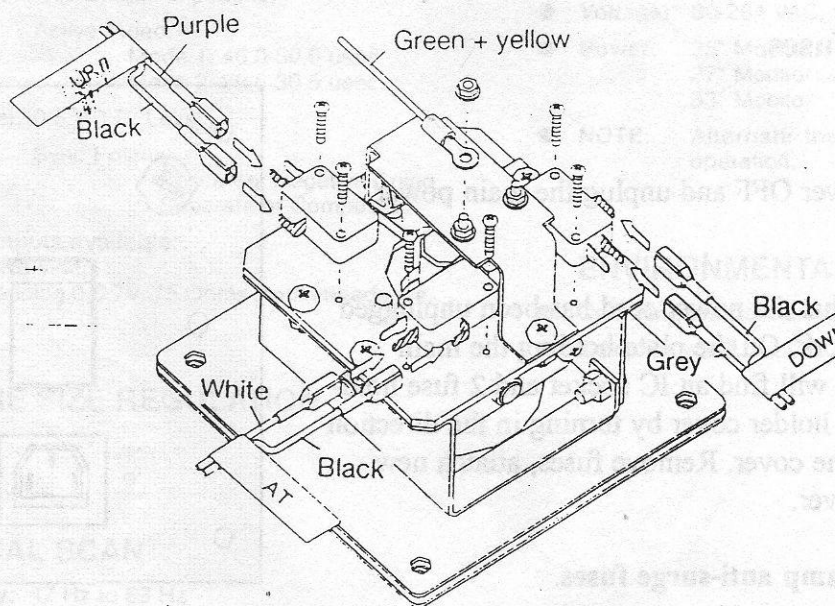
8.3 Replacing the gear shift unit switch

Turn the main power switch OFF, and unplug the power cord.

Remove the four button head bolts holding the gear shift unit in place, and lift out the gear shift unit.

Remove the screws holding the gear shift unit micro switch in place and the wiring, and replace the new micro switch.

Please use correct micro switch as specified in section 4.3



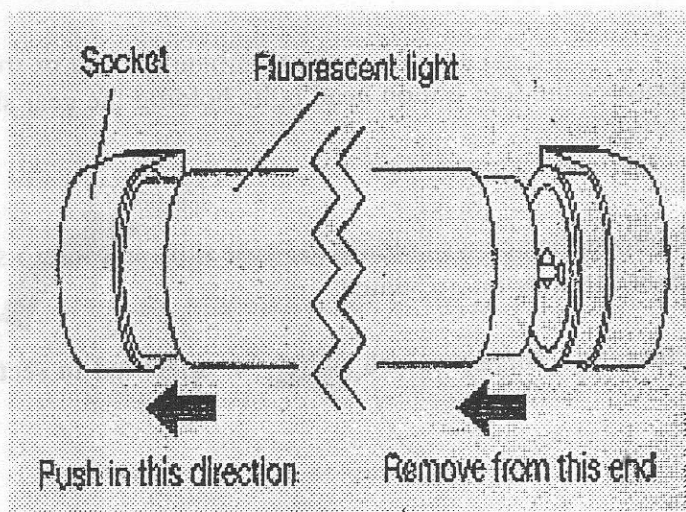
8.4 Replacing fluorescent light.

Turn the main power switch OFF, and unplug the power cord

Remove the 10 screws holding the top box glass in place. Carefully slide off the glass to expose the fluorescent tube..

Flourescent light type: Straight tube
20w.

Push the flourescent light in the direction of the socket, and carefully pull out from the opposite end in a diagonal direction. Be careful not to catch the flourescent light wiring when replacing the sheet metal cover.

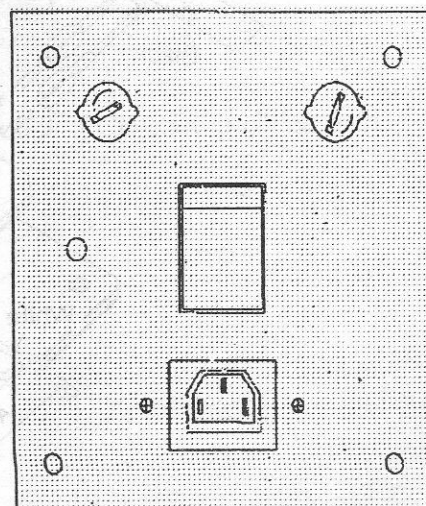


8.5 Replacing fuses.

Turn the main power OFF and unplug the main power cord.

Be sure to check that the power cord has been unplugged before beginning work. On the plate holding the main power switch, you will find an IC socket and 2 fuse holders. Open the fuse holder cover by turning in the direction of the arrows on the cover. Remove fuses, attach new fuses and close cover.

Note: only use 8 amp anti-surge fuses.



Monitor Specifications

CRT

- 25", 27" or 33" diagonal measure.
- Polished faceplate with P22 phosphor.
- Striped trio spacings (standard): 0.82 mm

HORIZONTAL SCAN

- Frequency: Mode 1: 15.1 kHz. to 18.0 kHz.
Mode 2: 24.5 kHz. to 28.5 kHz.
- Linearity: $\pm 5\%$

INPUT SIGNAL

- Video: RGB analog
1V to 4V p-p (adjustable with contrast control)
1.0 k Ohms input impedance.
- Active Video:
Mode 1: 46.0-50.0 usec.
Mode 2: 29.5-30.5 usec.
- Sync Level: 0-5 V TTL Level
- Sync Polarity:
Positive or Negative Going
Separate or Composite.
- Optional inputs available:
Negative video.
RGB analog 0-0.7V, 75 Ohms input impedance.

PICTURE SIZE REGULATION

- 2%

VERTICAL SCAN

- Frequency: 47 Hz to 63 Hz
- Linearity: $\pm 5\%$

GEOMETRIC DISTORTION

- $\pm 2\%$ (max)

VIDEO CHARACTERISTICS

- Bandwidth (-3dB): 15 MHz typical
- Rise Time: Less than 23 nanoseconds
- Overshoot (max): 5%

MECHANICAL

- The 25" comes standard in a F25M4 frame assembly. Custom frames can be furnished upon request. Contact your sales representative for details.

USER ADJUSTABLE REMOTE CONTROLS

- Brightness, Contrast, Horizontal Hold, Horizontal Size, Horizontal Video Position, Vertical Hold, Vertical Size, Vertical Raster Position.

POWER SUPPLY

- Type: Switch Mode Power Supply (No Isolation Transformer Required).
- Voltage: 90-264 VAC, 50-60 Hz.
- Power:
25" Monitor 100W (max).
27" Monitor 100W (max).
33" Monitor 130W (max).
- NOTE: Alternate thermistor needed for 220V operation.

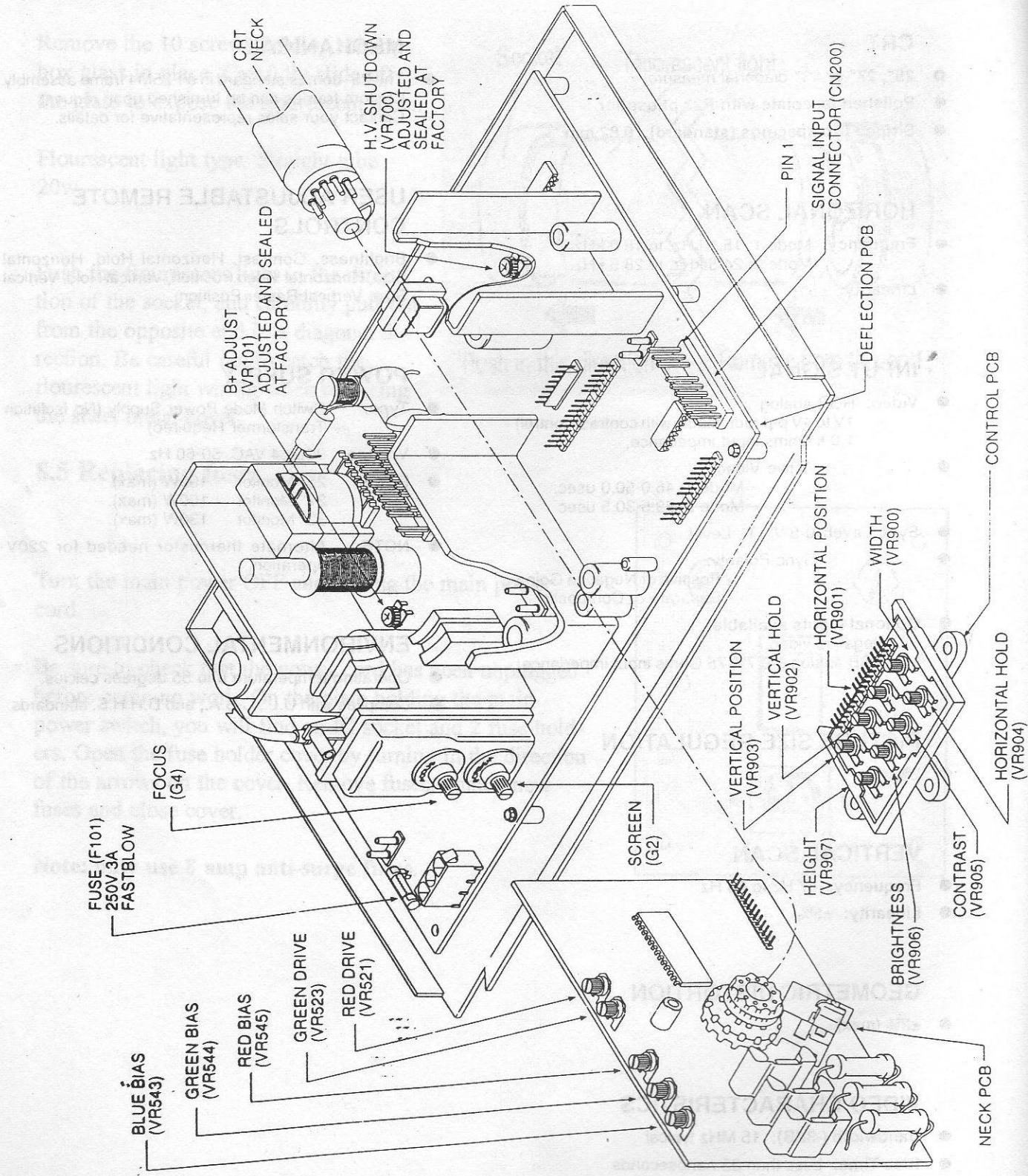
ENVIRONMENTAL CONDITIONS

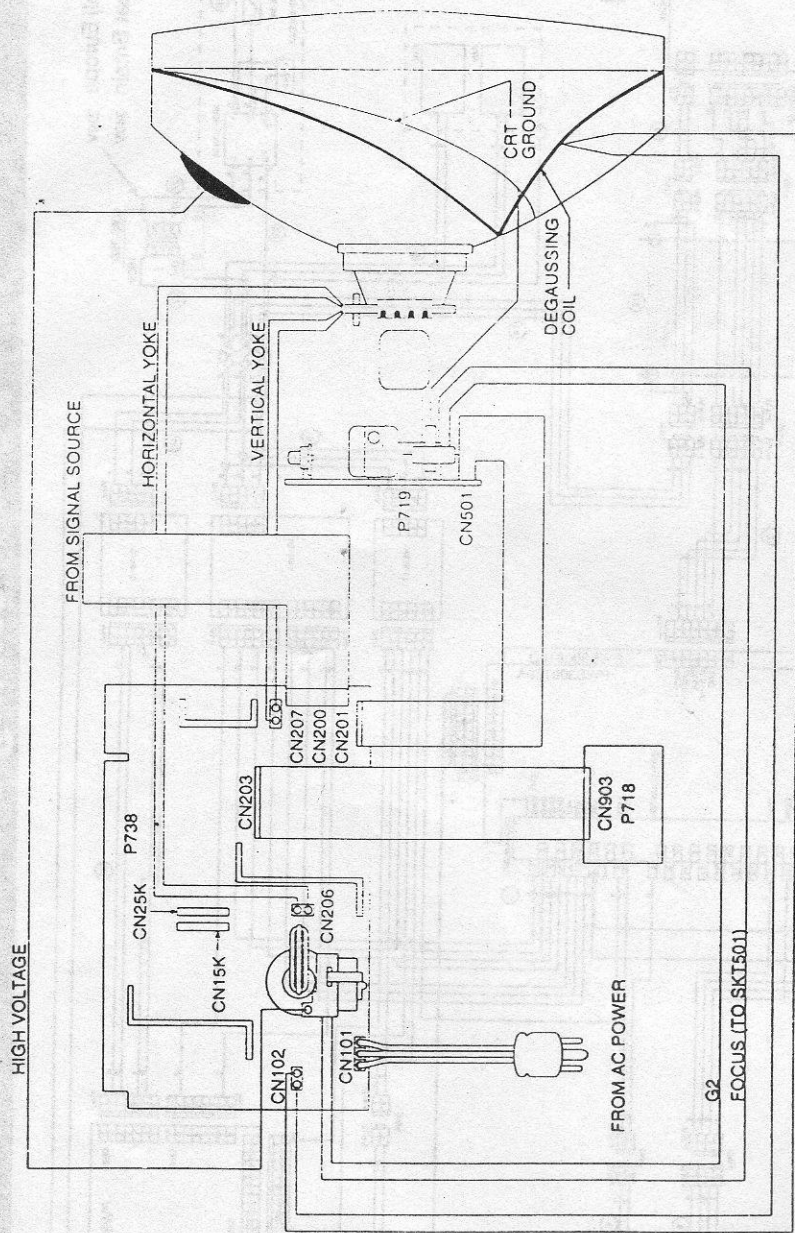
- Operating temperature 0 to 55 degrees celcius.
- Complies with U.L., C.S.A., and D.H.H.S. standards.

Monitor Specifications

8.4 Replacing Fluorescent Lamp

Turn the main power switch OFF, and unplug the power cord.





AC INPUT CONNECTOR: CN101

Amp type 350760-4
Mating Amp type 1-480700-0

Pin	Description
1	AC hot
2	Earth gnd
3	AC neutral

MODE SELECTION CONNECTORS

CN15K 15kHz Operation
CN25K 25kHz Operation

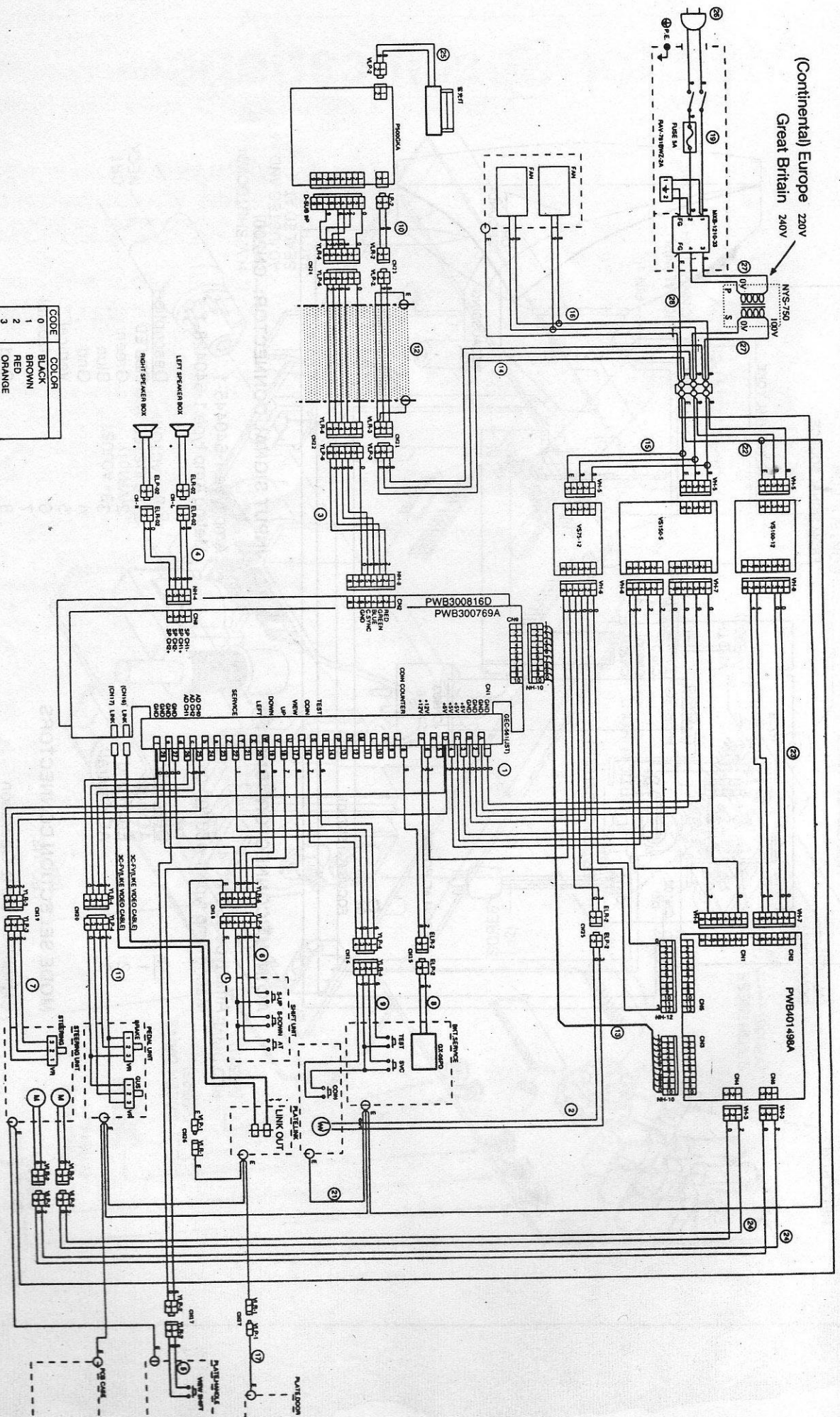
INPUT SIGNAL CONNECTOR: CN200

Amp type 1-640445-1
Mating Amp type 1-640428-1

Pin	Description
1	Red
2	Green
3	Blue
4	Gnd
5	Vertical
6	Horizontal
7	
8	Gnd
9	Vertical
10	Horizontal

Wiring chart For:(Continental)Europe / Great Britain

(Continental) Europe 220V
Great Britain 240V



CODE	COLOR
0	BLACK
1	BROWN
2	RED
3	ORANGE
4	YELLOW
5	GREEN
6	BLUE
7	PURPLE
8	GREY
9	WHITE
E	GREEN/YELLOW



MIDNIGHT RUNTM

**ELECTROCOIN AFTER SALES,
UNIT 10, STUART CLOSE,
PENARTH ROAD,
CARDIFF.
CF1 7QF.**

TELEPHONE 01222 343888.