CRAZY CLOWN

JUGGLIN JASPER

TRASHCAN ALLEY

SERVICE MANUAL

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1 This manual is intended as a guide to fault finding and repairs on the CRAZY CLOWN JUGGLIN JASPER and TRASHCAN ALLEY machines.

1.1 The term 'clown' is used in places, but applies to all three types of machines.

1.2 As faults will be attributed to electrical systems, a full set of schematics and wiring diagrams are included.

1.3 This guide is subject to revisions.

1.4 Only qualified service personnel should gain entry to the machine, and no liability is accepted by the auther or Harry Levy Amusement Contractor Ltd for any damage or injury arising from the use of this service manual.

1.5 It is important that the machine operates according to the design criteria. A detailed description of the sequence of events that take place when the machine is working properly is set out in this manual, this may help to highlight faults that may have occured but do not seriously affect the playing of the game.

1.6 For ease of referance the Operators Instructions are included at the back of this manual, and will be refered to during the text.

CREDIT BOARD SWITCH SETTINGS (U.S.A.)

SWITCH 1. PRICE OF PLAY

Pole 1	2	3	4	5	6	Price per game
0	0	0	0	0	0	5 cents
1	0	0	0	0	0	12.5 cents
0	1	0	0	0	0	25 cents
1	1	0	0	0	0	50 cents
0	0	1	0	0	0	75 cents
1	0	1	0	0	0	$1
0	1	1	0	0	0	$1.25
1	1	1	0	0	0	$1.50
0	0	0	1	0	0	$1.75
1	0	0	1	0	0	$2.00
0	1	0	1	0	0	$2.25
1	1	0	1	0	0	$2.50

0 = OFF
1 = ON

SWITCH 2. BONUS GAME SETTINGS

Pole 1	2	3	4	5	6	Bonus games at	Amount
0	0	0	0	0	0	0	ANY
1	0	0	0	0	0	1	$1.25
0	1	0	0	0	0	2	$1.25
1	1	0	0	0	0	3	$1.25
0	0	1	0	0	0	1	$2.50
0	0	0	1	0	0	2	$2.50
0	0	1	1	0	0	3	$2.50
0	0	0	0	1	0	4	$2.50
0	0	1	0	1	0	5	$2.50
0	0	0	1	1	0	6	$2.50
0	0	1	1	1	0	7	$2.50

TRASH CAN ALLEY PCB FL0102

TICKET/JACKPOT SIGNAL SECTION

THESE SECTIONS OPERATE INDEPENDENTLY OF EACH OTHER, BUT BOTH RELATE TO POINTS SCORED IN THE GAME AND ARE IMPLEMENTED AT THE END OF THE GAME.

TICKET PAYOUT: SW1

SCORE	ROTARY SWITCH POSN.									
	0	1	2	3	4	5	6	7	8	9
0	0	0	0	0	0	1	1	5	0	0
1	1	0	0	1	1	5	5	10	0	0
5	5	0	1	2	3	10	10	20	0	0
10	10	1	2	3	5	15	20	30	0	0
15	15	2	3	4	10	20	30	40	0	0
20	20	3	4	5	15	30	40	50	0	0
25	25	4	5	10	20	40	50	75	0	0
30	30	5	10	15	25	50	75	100	0	0

JACKPOT SIGNAL

THIS FEATURE IS DUAL PURPOSE:-

(a) SIGNAL IS ACTIVE WHEN COIN IS ENTERED FOR APPROX 25mS.

(b) SIGNAL IS ACTIVE AT END OF GAME PROVIDED SUFFICIENT POINTS HAVE BEEN SCORED TO EQUAL OR EXCEED THRESHOLD AS SET ON SW2 FOR ABOUT 2.5secs.

ROTARY SWITCH POSN.	0	1	2	3	4	5	6	7	8	9
JACKPOT THRESHOLD POINTS	0	10	15	20	25	26	27	28	29	30

THE SIGNAL OUTPUT IS PROVIDED AT J8. THIS OUTPUT IS OPTICALLY ISOLATED FROM ALL OTHER BOARD SUPPLIES, AND TAKES THE FORM OF AN NPN TRANSISTOR.

PIN 1 COLLECTOR

PIN 2 EMITTER

2 The Attract Sequence

2.1 In attract mode , the blower comes on at intervals, blowing the balls up onto the playfield, the ball agitator operates at a rate of approx once per second, the score lights sequence from 1 to 30, and music plays. After lamp number 30 lights all these functions are disabled and the interval timer starts.

2.2 The interval between the attract activity is adjustable from 5 seconds to 3 minutes using a small flat bladed screwdriver to adjust the trimmer pot RV1, refer to drg HLCL-2924-D.

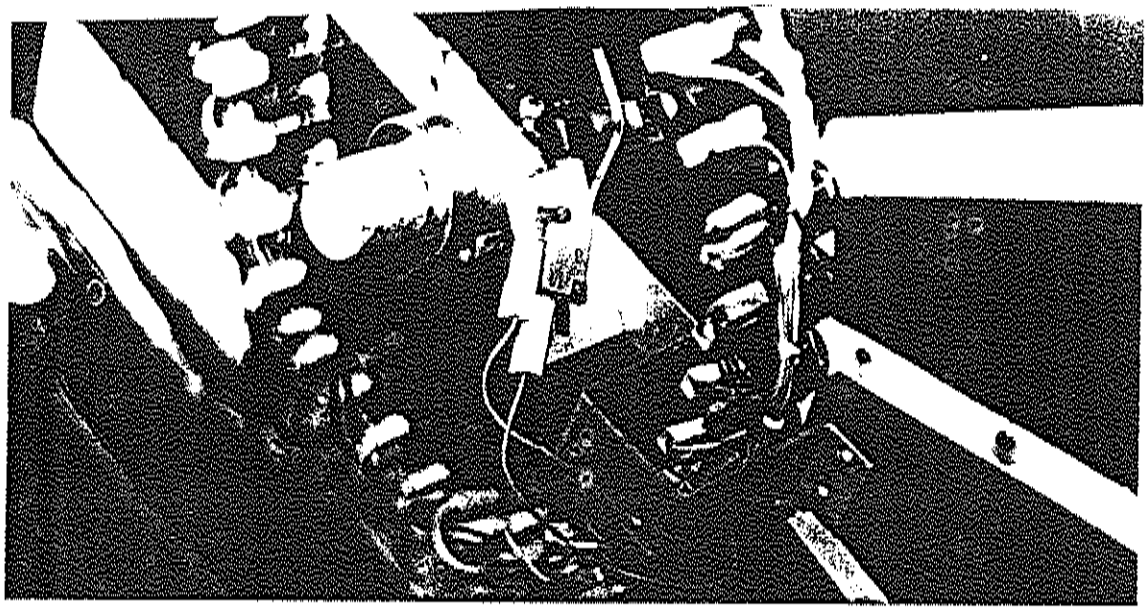
3 The Game Sequence

3.1 Inserting a coin interupts the attract mode and plays the Coin In sound, increments the credit display, the coin entry light is extinguished, and the start lamp lights.

3.2 Pressing the start (lamp) button;-
- starts the blower motor
- starts the 'clock' arrow motor
- enables the ball agitator solenoid
- enables the steering system
- enables the ball catch cup switch
- starts the music
- decrements the credit display

3.3 The game duration is adjustable from 30 seconds to 3 minutes approx using control RV3,refer drg HLCL-2924-D. This sets the speed of the arrow motor.

3.4 The game is stopped by the switch on the back of the arrow, ie one revolution of the arrow. Picture 1.



Picture 1

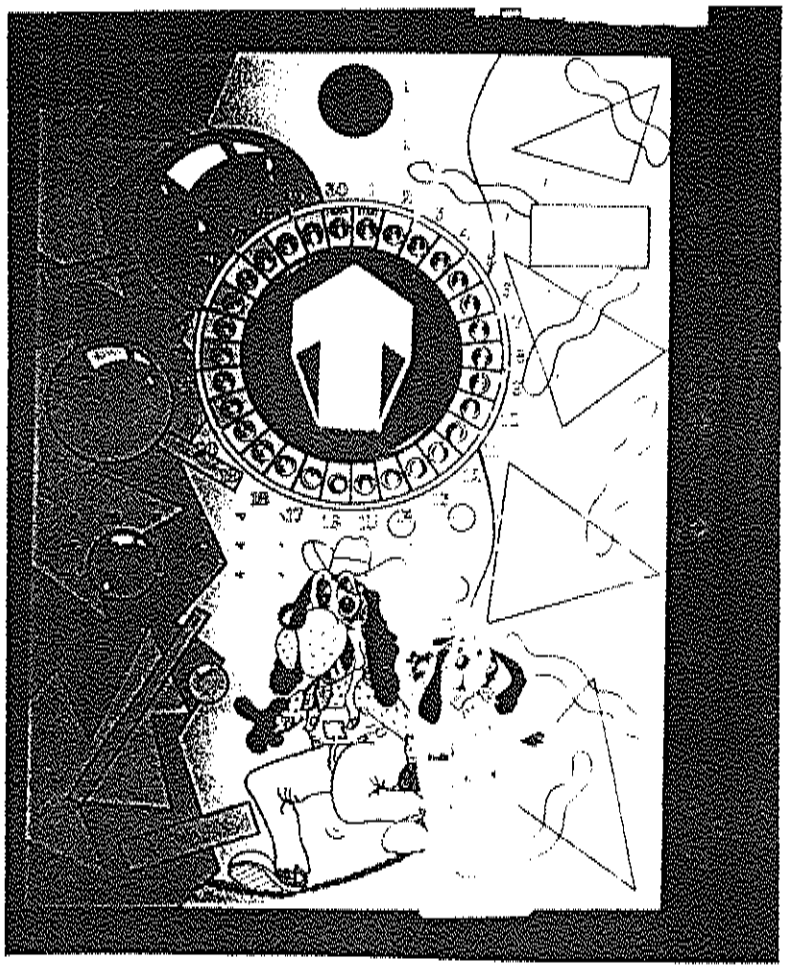
3.5 The steering wheel operates the clown motor, which moves the clown from side to side. Catching a ball will sound a 'beep' or catch noise (later machines) and light the next light in the circle of soore lights around the arrow.

3.6 At the end of the game the arrow stops,
the blower stops
the catch cup switch is disabled
the steering is disabled
tickets are awarded
music changes to the payout sound

3.7 The ticket award is according to the schedule displayed on the playfield. (picture 2). If the award is incomplete an alarm sounds, feed tickets into the machine to complete the award. The ticket holder is fitted with a low level switch, refill with tickets to de-activate the alarm.

3.7.1 At the end of the award the start lamp will light if there are still credits available, or the coin entry lamp lights if there are no credits left, in which case the attract mode re-starts.

3.8 Check that all these various functions are working at the correct times as stated above.



Award schedule

Picture 2

4 General

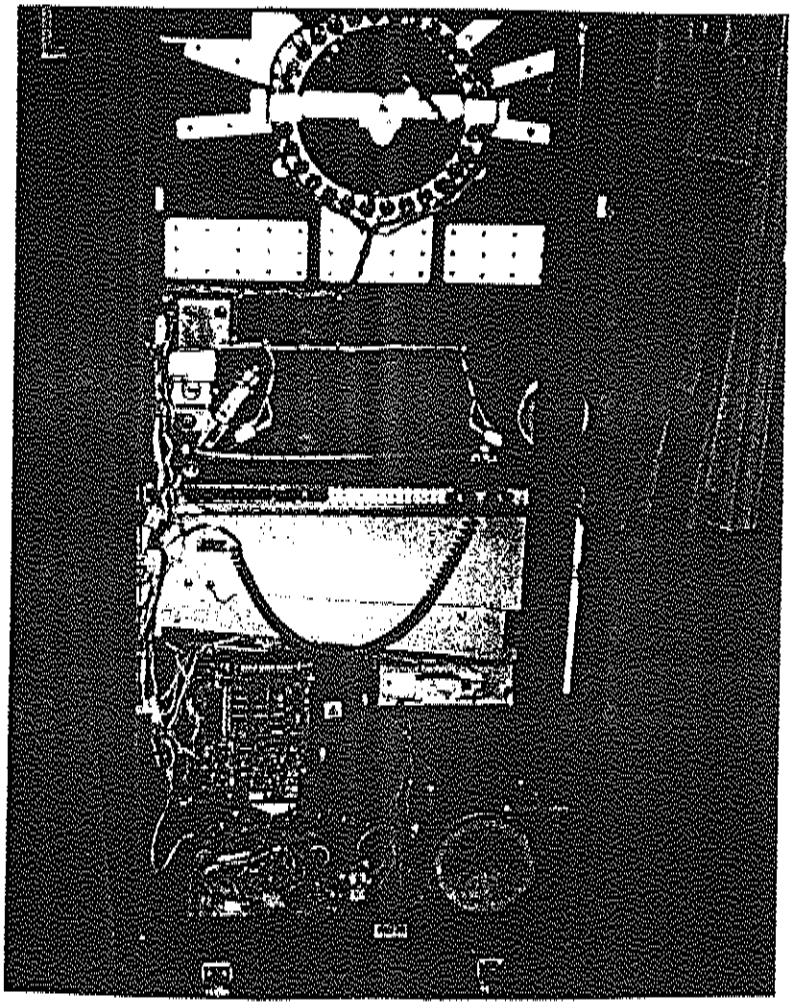
4.1 Note that there have been two different sound systems installed in these machines, Early versions play a series of one line tunes only in the attract mode and when awarding tickets, later versions include a tune playing during the game, a coin entry sound and a ticket award sound.

4.2 Basically the machine has electrical and mechanical systems. The mechanical system comprises the following;-

Blower motor and pipes. Picture 3
The moving clown with pulleys, belt, motor and accuride. Picture 12
Ball agitator solenoid and flap in the ball box. Picture 19
Clock arrow and motor. Picture 12
Steering gear. Picture 11
Ticket dispenser.
Coin acceptor mechanism.

4.3 If a mechanical system fails for any reason, it may be either an electrical or mechanical fault, but usually electrical.

4.4 In general, disconnect the device from the electrical supply, check the physical condition and operation of the device (remove it from the machine if necessary, refer section 9 access), then bench test if possible.



Picture 3

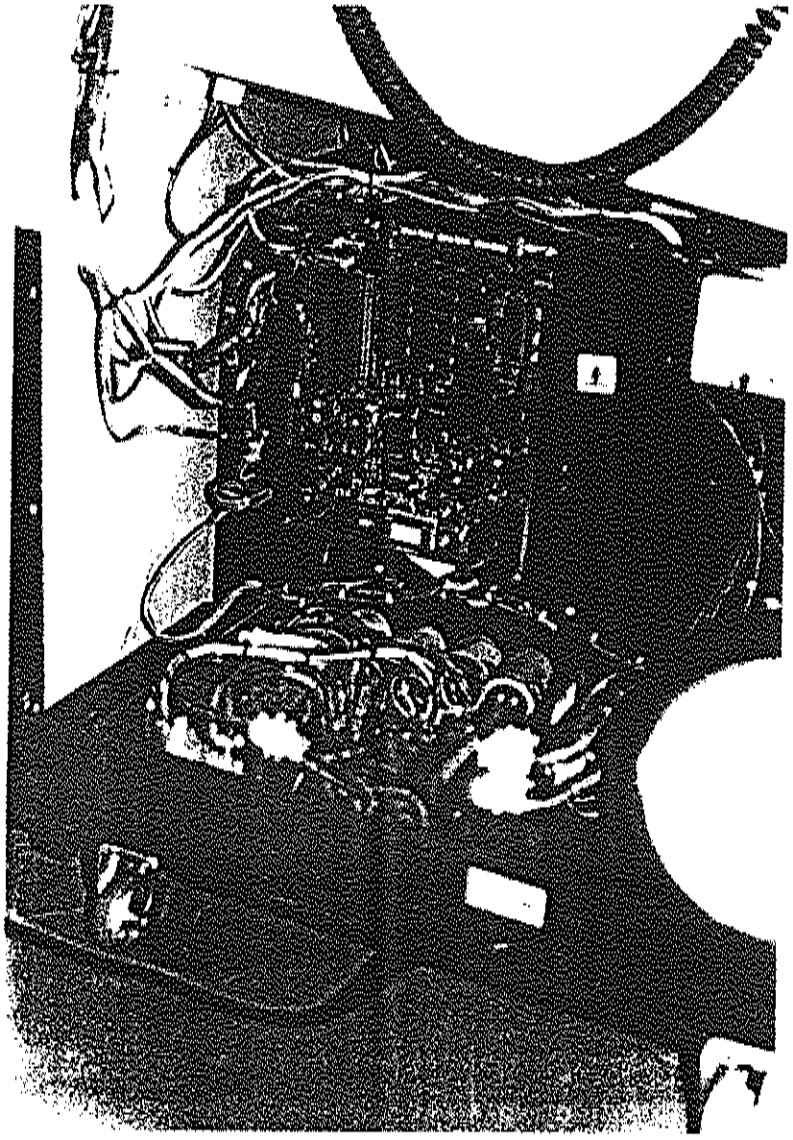
5 The main electrical systems

5.1 Power supply unit

This is located on the floor in the back of the machine. Picture 4. It may have a laminated transformer (picture 8) or a toroidal type (picture 9).

5.2 Main logic board. FL006 (early version)
FL0084 (later version post april 1992)

The size and connector layouts are the same on both boards. The logic board is located vertically above the power supply unit. Picture 4.

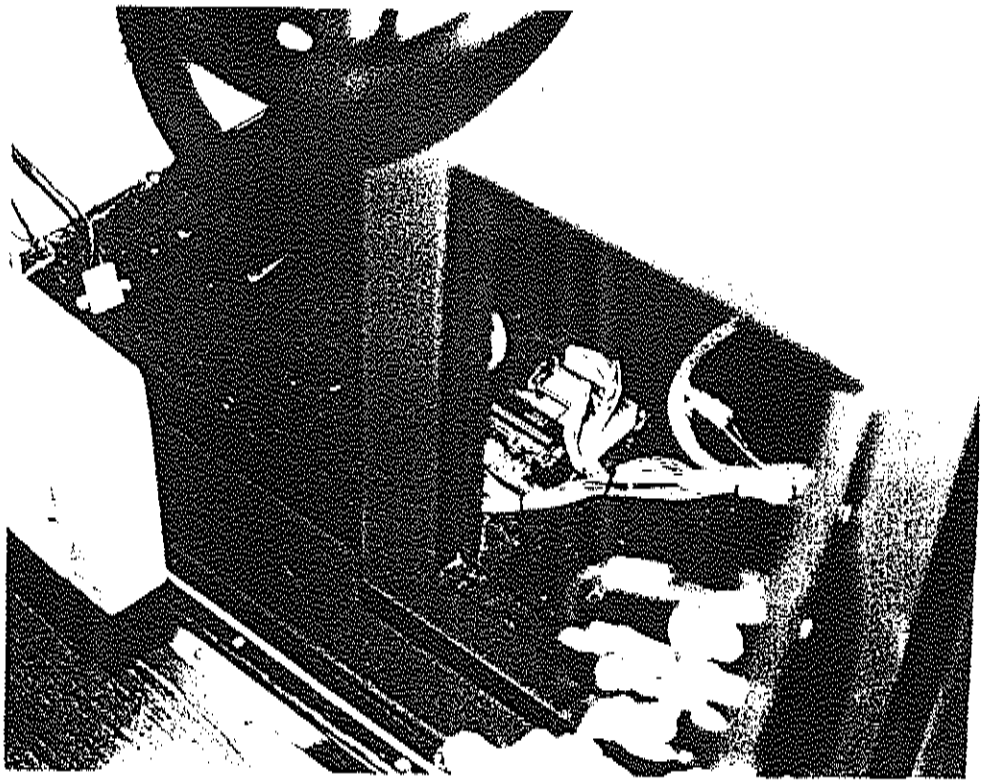


Main logic board

Power supply unit

Picture 4.

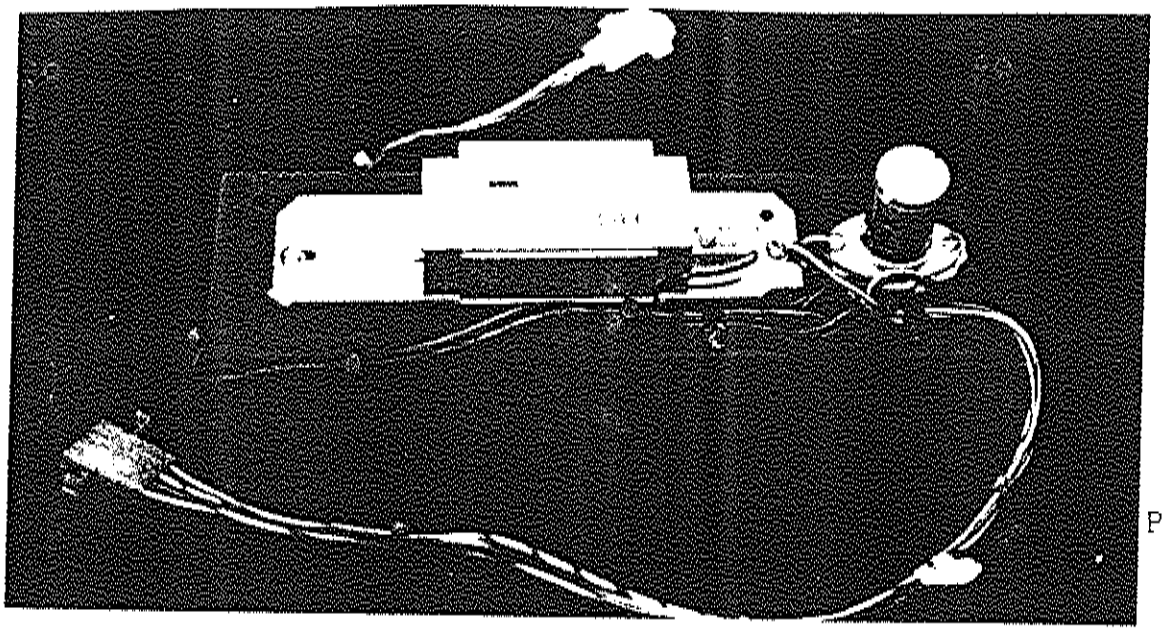
5.3 Credit handling board. FL0012.
This is located centrally inside the front of the machine.
Picture 5



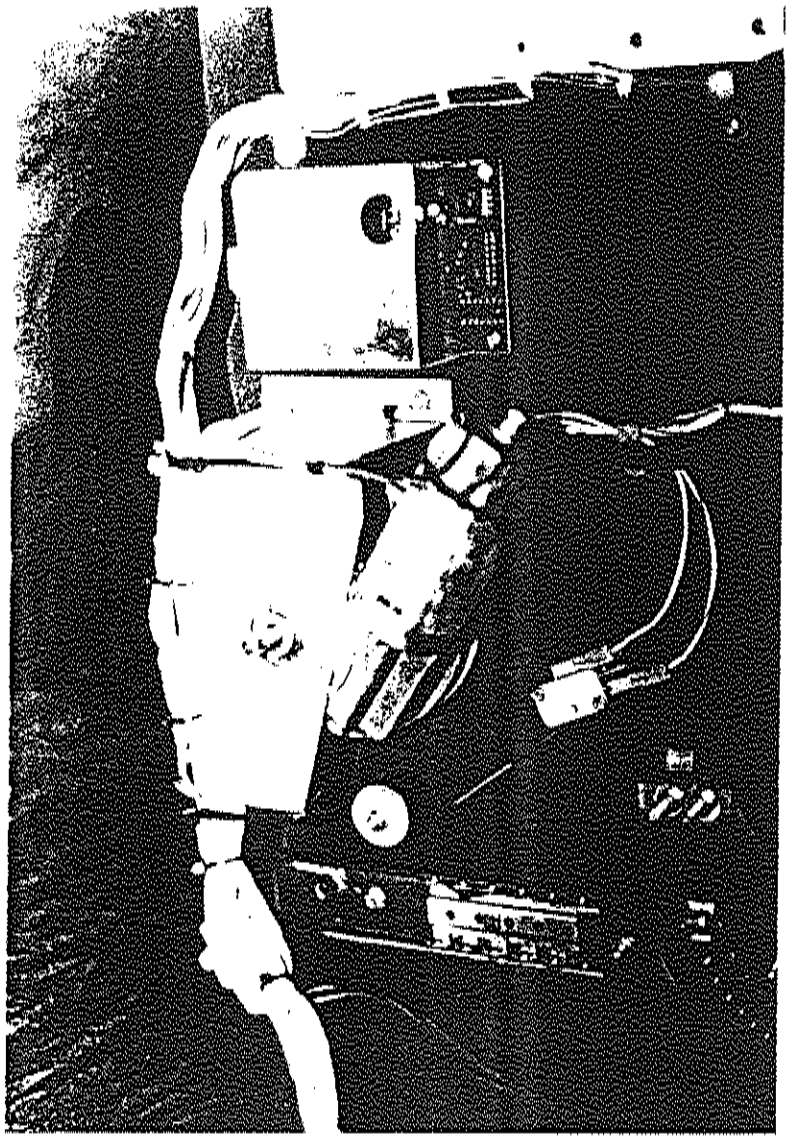
View through coin door to credit board

Picture 5

5.4 Lighting.
The mains light board is located to the right of the logic board, above the blower. Picture 6.
The low voltage flashing light driver board No 84185 is located on the back left of the playfield above the clown motor. Picture 7.



Picture 8



Flashing light driver board

Clown limit microswitch

Picture 7

6 General wiring faults.

6.1 If faults occur with any electrical system, first check that:-

a) All wires are properly secured to their respective terminals.
b) All plugs and sockets are correctly mated.
c) No wires are damaged or broken.

6.1.1 A visual inspection will reveal the general condition of the wires. A more thorough test using a continuity tester will be needed to check apparently intact wires.
However, once a machine has been played successfully, wiring is very rarely a cause for concern.

6.1.2 The exception to this is if some plugs have been disconnected then reconnected wrongly.

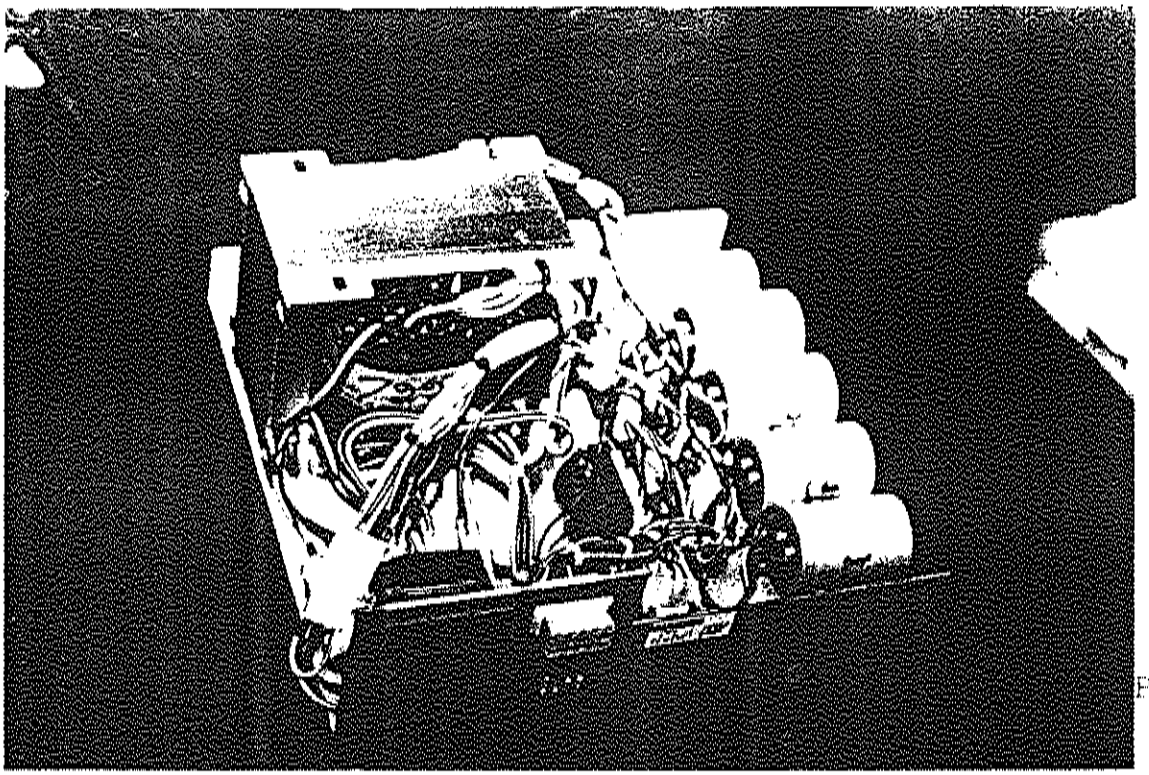
6.2 Power supply unit.
The power supply is designed to operate one machine only. There is no spare capacity for providing a low voltage supply for any add-on extras.
If the power supply develops a fault it is usually serious and the machine will not function correctly, if at all.
Refer Power supply schematic HLCL-3292-C.

6.2.1 Low voltage check.
Unplug the 15 way low voltage connector from the power supply. Switch on supply. Drawing No.HL CC 3294 D shows minimum DC voltages to be expected by measuring with a digital voltmeter.

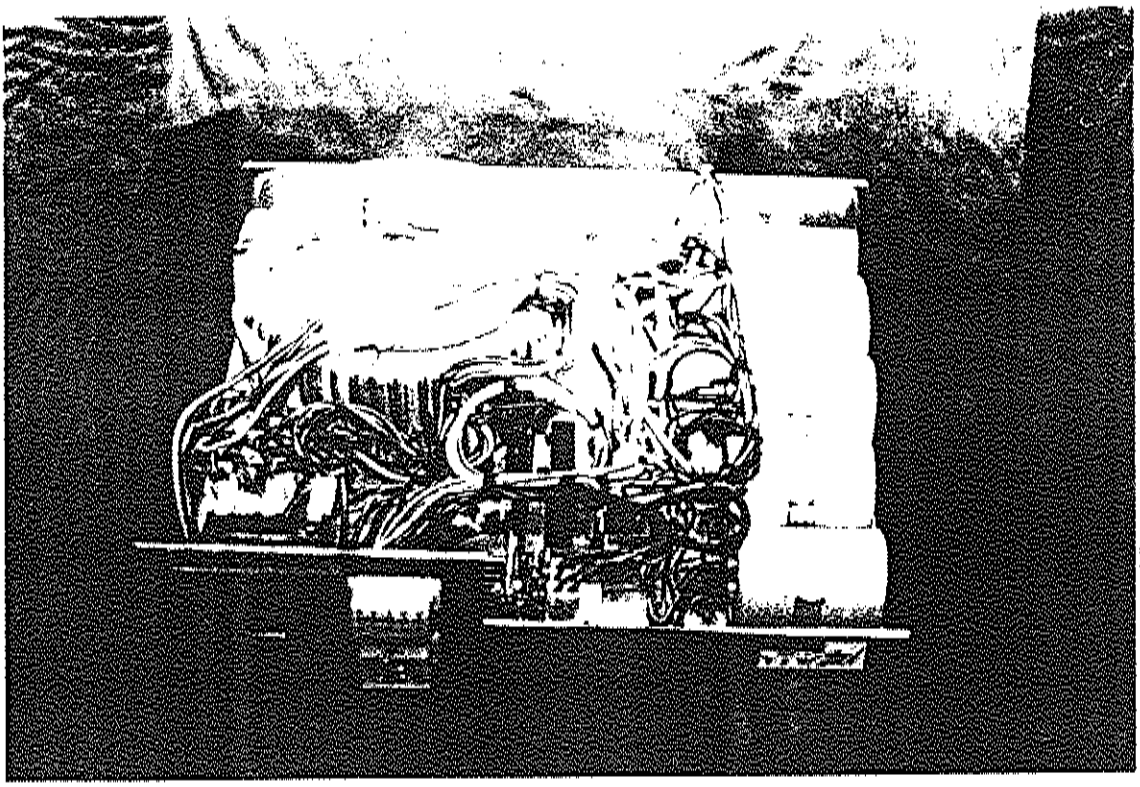
6.2.2 Typical voltages may exceed these values by a volt or two. If all or most of the voltages are less than the minimum, the machine may work all right but intermittent faults may develop. If all or most of the voltages are too high, excessive heat may build up.

6.2.3 In either case, a different tapping on the transformer should be selected. Refer Input voltage adjustment, in the Operators Instrutions at the back of this manual.

6.2.4 If any individual voltage is low, this indicates a failure of either a rectifier or capacitor, or both. It is best to replace them as a pair as a matter of course. See drawing No. HL CC 3294 D where the supplies are numbered.



Picture 6



Picture 8

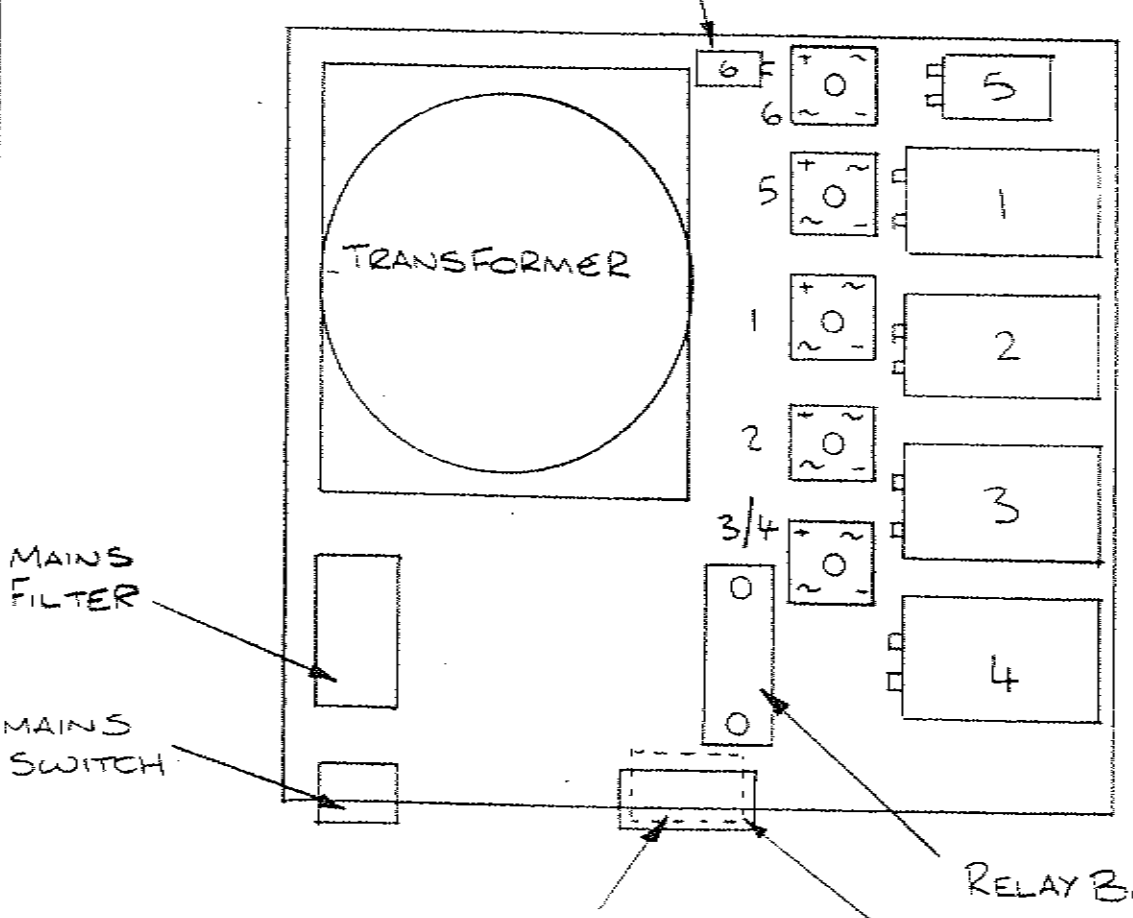
PART OF

DO NOT SCALE

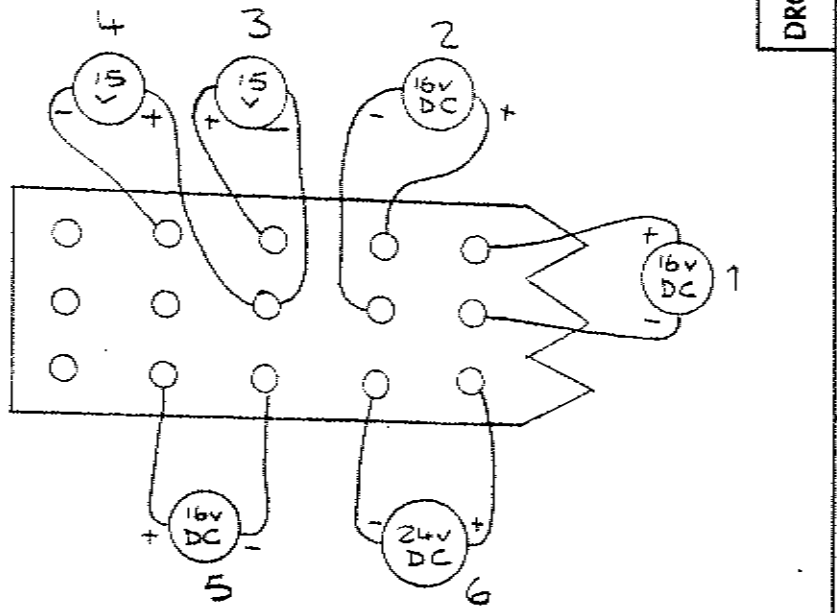
SHEET OF

DRG. No. 3294

NUMBERS INDICATE RECTIFIER WITH ASSOCIATED CAPACITOR



15WAY D.C CONNECTOR ON TOP



D.C. CONNECTOR

ISSUE	DESCRIPTION	APPD	DATE
3	NUMBER NOTE ADDED	BW	19-11-92

DEV
PROD

TITLE

POWER SUPPLY DETAIL

DRAWN	TRACED	CHECKED	APPROVED	DATE
BW				13-11-92

DRAWING No. HL CL-3294-D

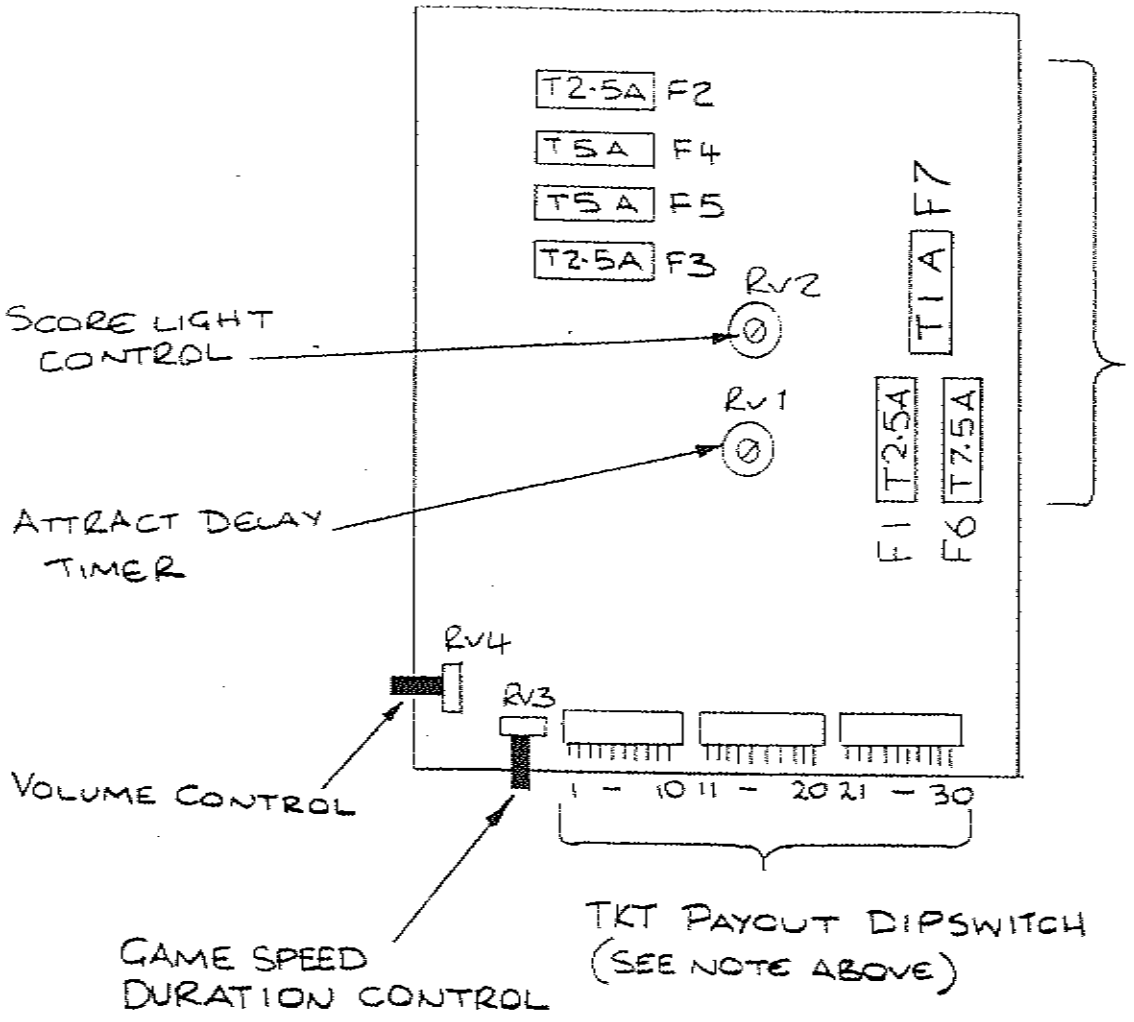
PART OF

DO NOT SCALE

SHEET OF

DRG. No. 2924

NOTE : TICKETS WILL BE PAID OUT ON EVERY SWITCH THAT IS SET ON WHEN THE SCORE REACHES THAT NUMBER



FUSE ARRANGEMENT

F1 = FLASHER UNIT

F2 = 16V SUPPLY TO BD THEN REGULATED TO 12V. CONTROLS :– START LAMP, COIN COUNTER, TICKET MACHINE, CYBERTONE AND ARROW M/SWITCH.

F3 = MAIN LOGIC AND 5V

F4 = +17V } STEERING DRIVE

F5 = –17V } AND SOUND

F6 = SCORE LIGHTS

F7 = 24V LINE TO POINTER ARROW (GAME TIME) MOTOR

ISSUE	DESCRIPTION	APPD	DATE
2	EXTRA DETAIL ADDED	BW	3/7

DEV
PROD
SHOP. F

TITLE: LOGIC BOARD INSTRUCTIONS

DRAWN	TRACED	CHECKED	APPROVED	DATE
BW				7/5/92

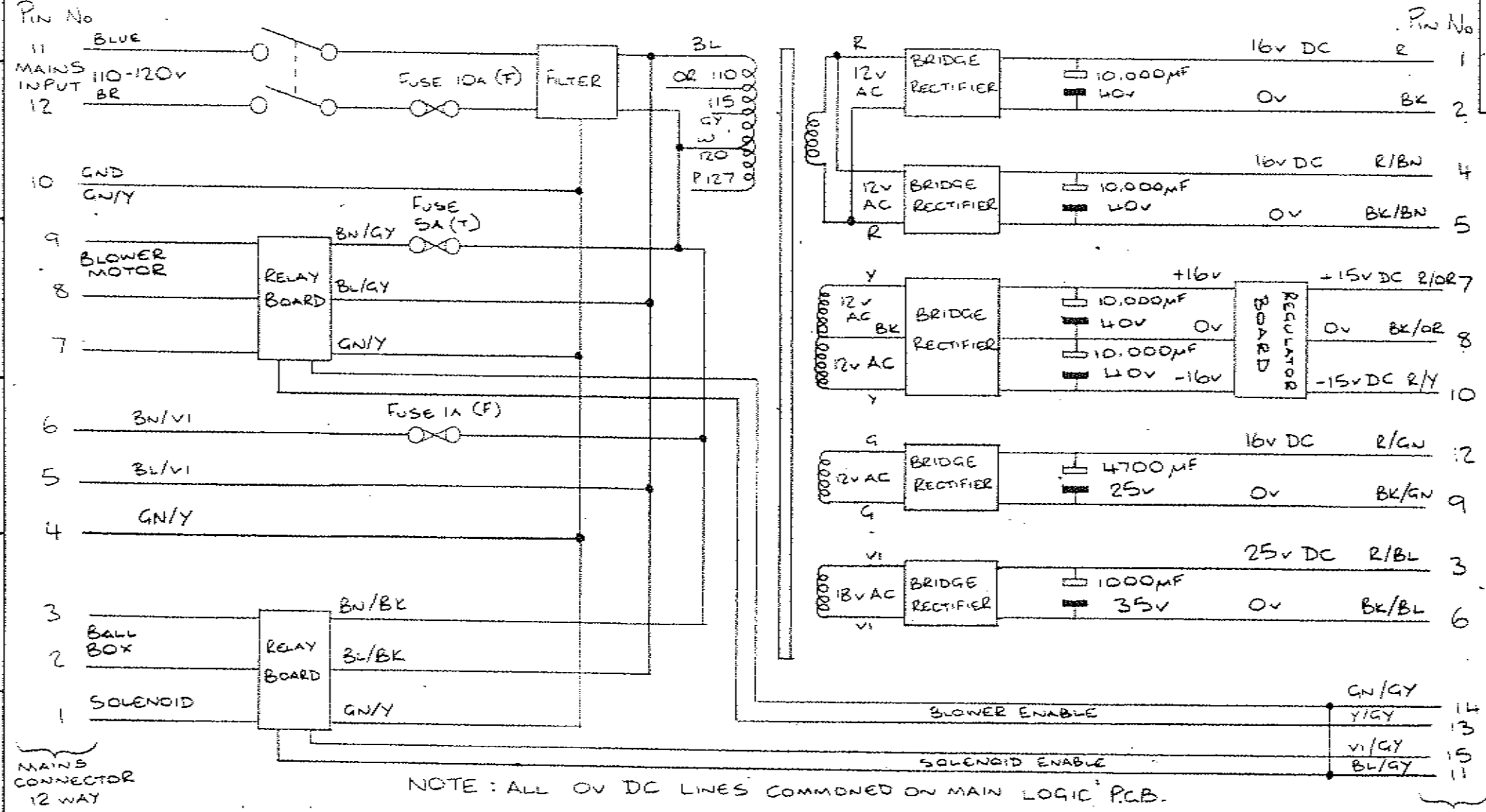
DRAWING No. HL CL-2924-D

PART OF

DO NOT SCALE

SHEET OF

DRG. No. 3292



NOTE : ALL 0v DC LINES COMMONED ON MAIN LOGIC P.C.B.

BK = BLACK, BN = BROWN, R = RED, OR = ORANGE, Y = YELLOW, GN = GREEN, BL = BLUE, VI = VIOLET, GY = GREY

ISSUE	DESCRIPTION	APPD	DATE
2	CONNECTOR NOTES ADDED	BW	9-11-92

DEV

PROD

TITLE: POWER SUPPLY SCHEMATIC (USA 110v)

DRAWN	TRACED	CHECKED	APPROVED	DATE
BW				8-11-92

DRAWING No. HLCL - 3292 - C

6.2.5 Supplies 1 and 2 are derived from a single secondary winding, and should read identical voltages. They have an in-line fuse in the red secondary wire from the transformer rated 15 A slow blow, (anti-surge).
This supplies the following:-

- 30 lamps arround arrow
- Flasher unit supplying 54 lamps in 1 of 6 sequence.
- Ticket dispenser.
- Ticket counter.
- Start and coin entry lamps.
- Alarm sounder.

If the fuse blows continually, replace the rectifiers and capacitors; and consider selecting a higher primary tapping. For details refer Operators Instructions at the back of the manual.

6.2.6 Supplies 3 and 4 are a split supply pair, feeding the clown steering motor and sound system. They have Zener diode clamping voltage regulators to avoid exceeding the supply for the sound amplifier. The Regulator transistors,diodes etc. are located on the small p.c.board FL0039 in the middle of the unit. Early versions have the regulators on a piece of stripboard in the wiring loom.

6.2.7 Supply 5 is for the logic board, credit board and small steering board located on the steering gear behind the front panel.

6.2.8 Supply 6 is for the arrow motor only.

6.3 The mains input/output is via the 12 way connector on the power supply housing. The supply lines are both switched. The live is fused,5A slow blow, and the supply filtered before distribution.
Refer to Drawing No.HLCL-3292-C showing the supply to the:-

- Transformer
- Blower motor
- Ball agitator solenoid
- Light board and flourescent light

6.4 The Blower motor and ball agitator solenoid are switched via solid state relays on the relay board in the centre of the power supply. Should a relay fail, either replace the board, or change the relay. (Unsolder the 4 legs and replace with the same specification component).

6.4.1 The ball agitator enable signal is derived from one of the output lines from the flashing light unit. The speed of flashing is controlled by a trimmer knob on the flasher p.c board on the back of the playfield. (Picture 7).If the flashing speed is set too fast, the ball agitator will not work. The flashing speed should be set to flash any bulb once every second (approx) which will ensure an enable signal of sufficient duration to drive the agitator solenoid in the ball box.

6.5 The light board drives a single flourescent tube lighting the front of the playfield, and comprises a choke and a starter.

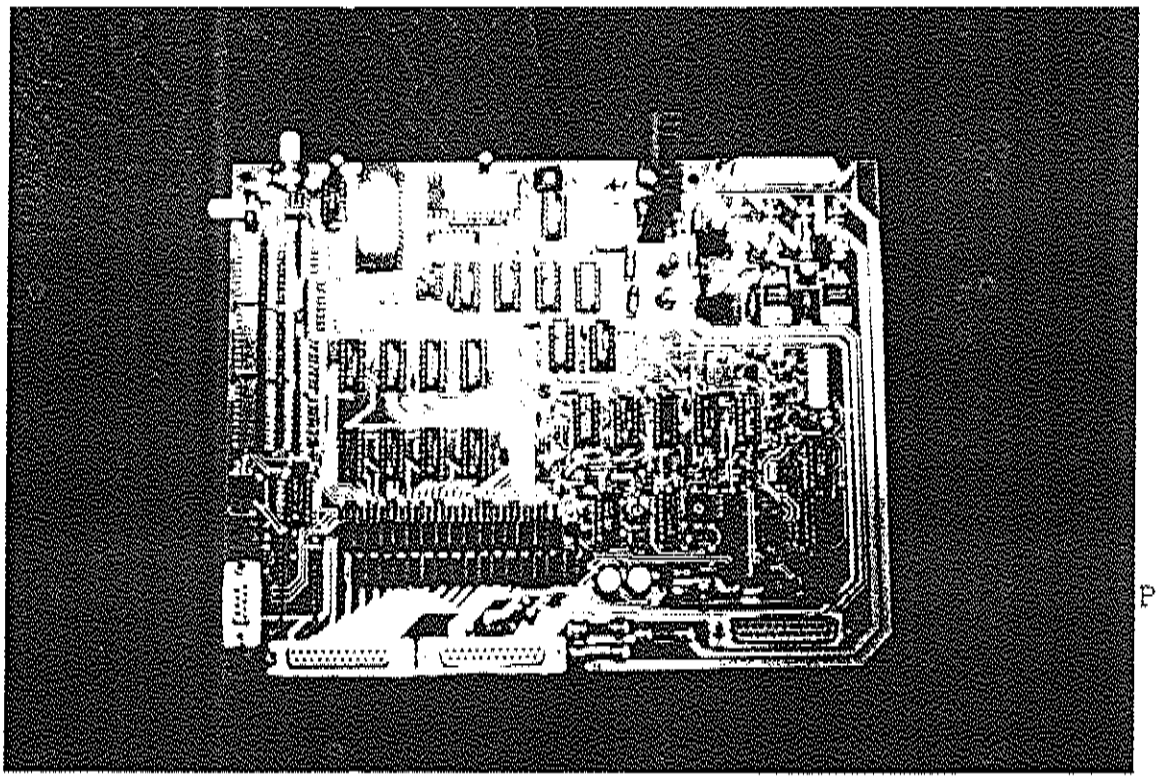
7 Main Logic Picture 10

7.1 The game logic is controlled by hard wired CMOS logic devices.
There is a small microcontroller which performs the attract motion of the clown, allowing 'soft start' facilities for the clown motor.

7.1.1 Early versions incorporated a musical tune I.C AY-3 1350, U28; later versions (post april 92) included tunes and sounds recorded on eprom U32 and played by a microcontroller U28.
The rest of the board is pure logic, driving open collector transistors for most outputs e.g. lights. This makes the various game and attract sequences virtually immune to electrical noise.
The main logic supply is 12v d.c.regulated, with a 5v d.c.supply for the sound I.C.s and the steering p.c.b. All I.C.s are mounted on carriers making replacement easy.

7.2 Logic peripherals.
If changing the logic board fails to cure a fault, then either the wiring or a peripheral component (from a bulb to a ticket machine), must be at fault. As mentioned before, wiring is not usually a problem so changing the suspect device should cure the fault.

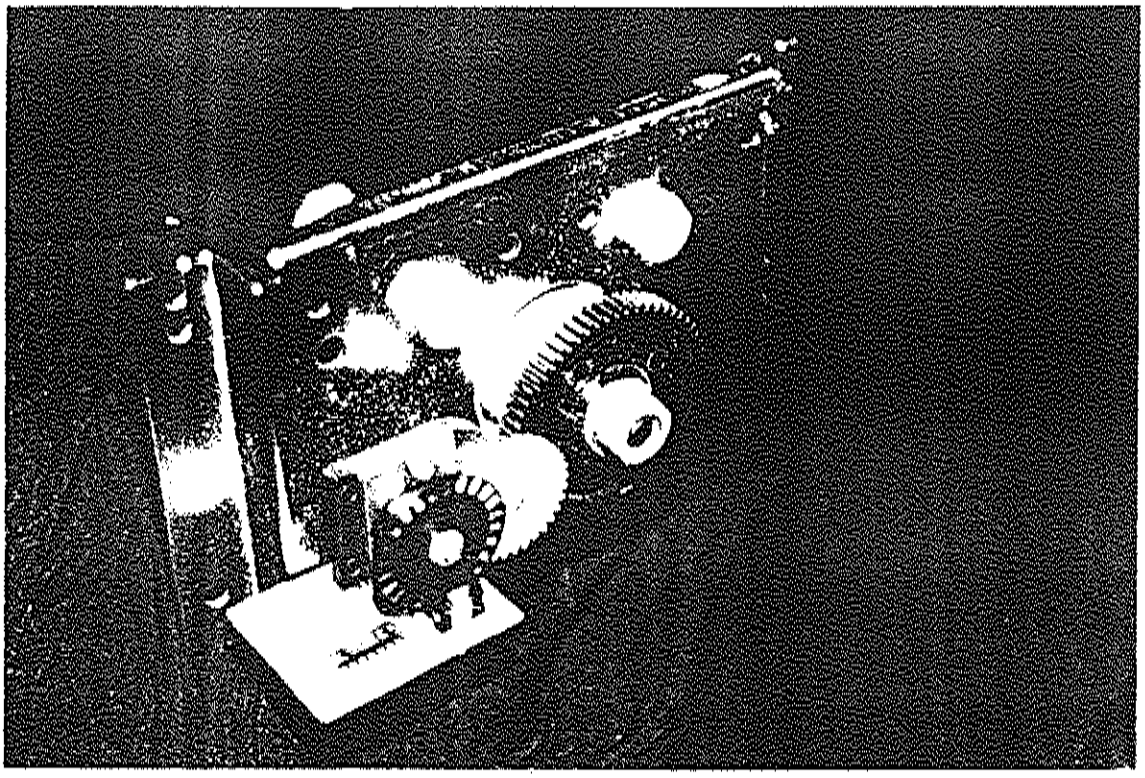
7.2.1 There are various fuses on the board to protect against overload in case of short circuits. Drawing No. HL CL 2924 D identifies these and shows their positions.
A blown fuse will often point to the source of a fault.



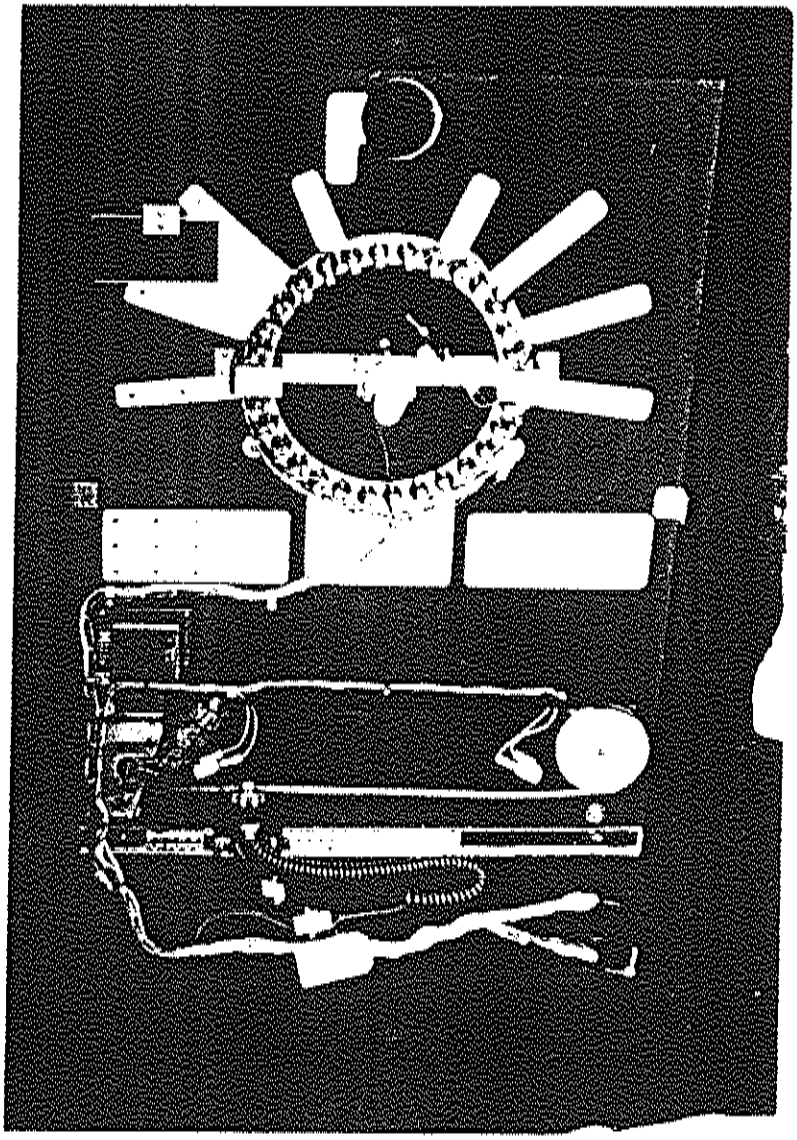
Picture 10

6.8 The following lists possible faults and remedies associated with the power supply unit.

Symptom	Possible fault	Remedy
6.8.1 Blower not working or blower stays on	Fuse	Check centre fuse 5A slow blow
	Relay	Change relay or relay board
	Wiring	Check connections inside motor housing
	Logic board	Check U24 or change logic board
6.8.2 Ball agitator solenoid not working	Solenoid	Check. Replace if necessary
	Relay	Change relay or board
	Enable signal	Check flashing light signal. Adjust as outlined above.
6.8.3 Flourescent light not working.	Fuse	Check Right hand fuse 1A slow blow
	Tube	Replace if necessary
	Starter	Replace if necessary
	Choke	Replace if necessary



Picture 11



Picture 12

8 Credit Handling.

8.1 Credit Boss P.c.b No. FL0012. Picture 13.
This system is operated by a microcontroller and performs the following functions:-

Monitors the mechanical coin entry switches, or multiple coin mechanism outputs when fitted.

Operates the coin entry and start lamps.

Monitors the start switch.

Stores and processes credits and outputs to the display.

Sends a 'game start' pulse to the main logic board.

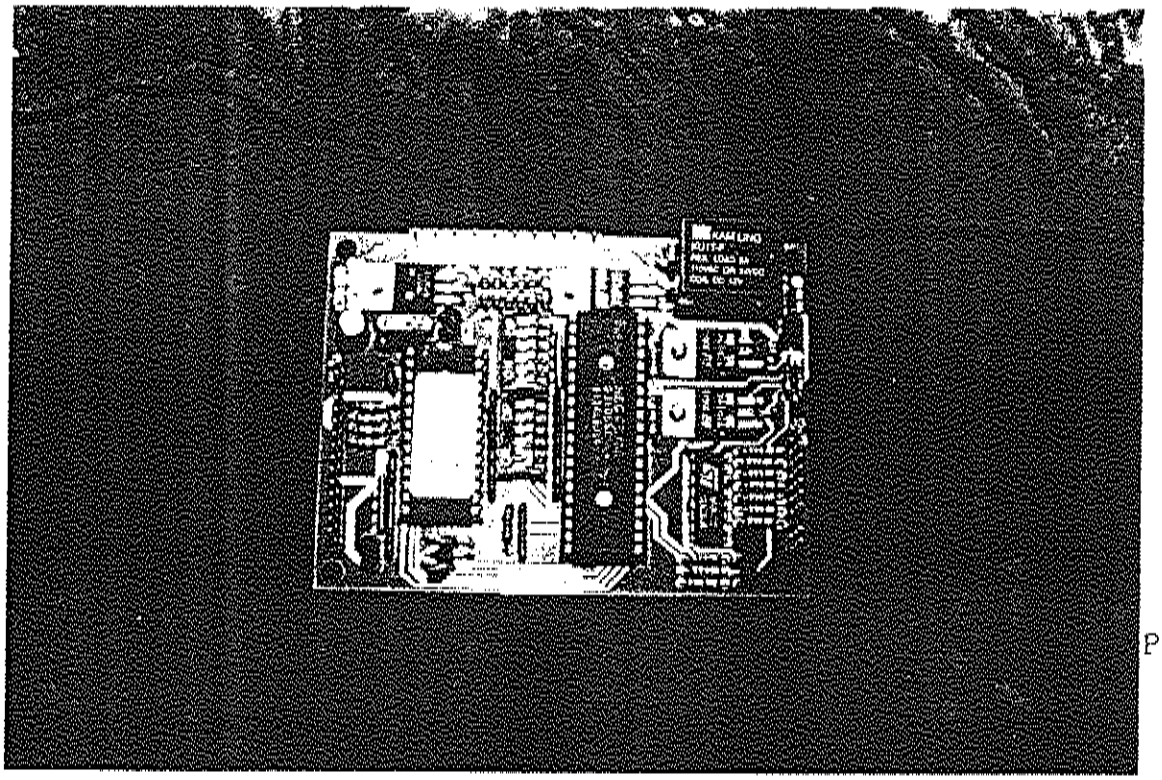
Receives a 'game over' signal from the main logic board.

The 'insert coin lamp' signal is also used as a game/attract signal by the main logic. Lamp on = machine in attract mode: lamp off = machine in game mode.

8.2 NOTE:-
The credit boss board has a 10 way 0.156" connector. The wiring loom has a 9 way plug and care should be taken to ensure that this plug is always re-connected in the correct position - the free pin is towards the front of the machine.

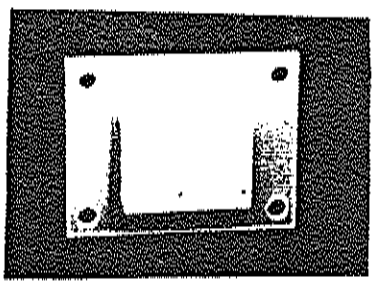
8.3 In general, the credit boss board is reliable and should give no trouble. However, changing the board will show whether this is the case or if further investigation is required.

Changing the logic board may also show similar results.



Picture 13

symptom	Possible fault	Remedy.
8.3.1 Coins rejected.	Fuse	Check F3.
	Mech. switches.	Check operation of lock-out coil. (see below)
	Multicoin mechs.	Check condition of mech.and connector.
	Low tickets.	Fill with tickets.
	Credits full.	Check display not above 90 credits.
	Logic board.	Check Q48,U22.
8.3.2 Coins accepted but not credited.	Mechanical mech switch.	Check operation of mech. switches.
	Multicoin mechs.	Check operation of mech.
	Display board.	Replace.(Picture 14)
8.3.3 Wrong credits shown.	Dipswitch settings.	Set as required.(ref. Operator Instructions
	Display board.	Replace.(Picture 14)
8.3.4 Unable to start game.	Game start switch.	Check switch.
	Credit board relay.	Replace credit board.
	Logic.	Check U1,U2.
8.3.5 Game hangs up at end.	No tickets.	Fill with tickets.
	No 'game over' signal.	Check U4,Q35.
8.3.6 Arrow does not stop.	Arrow switch. (Picture 1)	Manually operate arrow switch several times. This starts and stops the arrow motor. Bend switch actuator so that perspex step stops arrow pointing vertically. Replace switch if necessary.
	Driver.	Check Q33.
	Logic.	Check U1,U2.



Picture 14

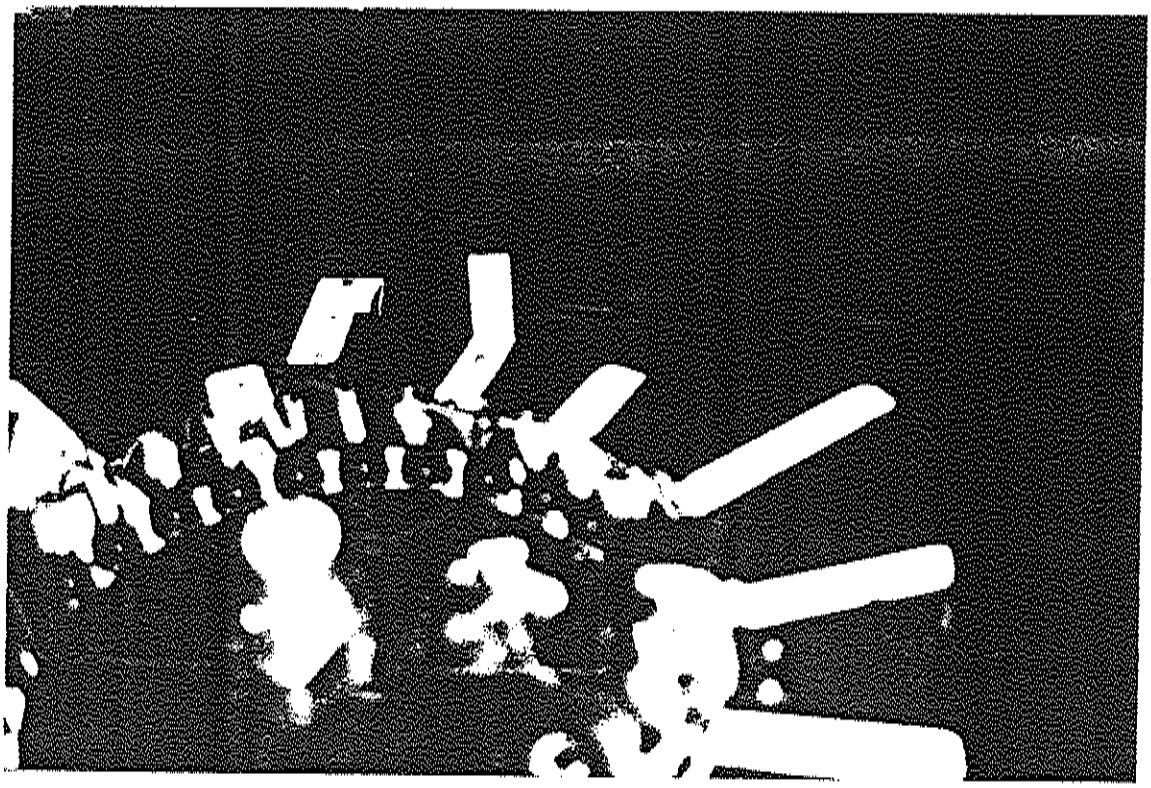
9 Access

IMPORTANT Disconnect the machine from the mains supply

9.1 The three locked front doors will give access to the ticket machine and ticket holder, the coin mech(s) and credit board, and the cashbox.

9.2 Dismantling rear.

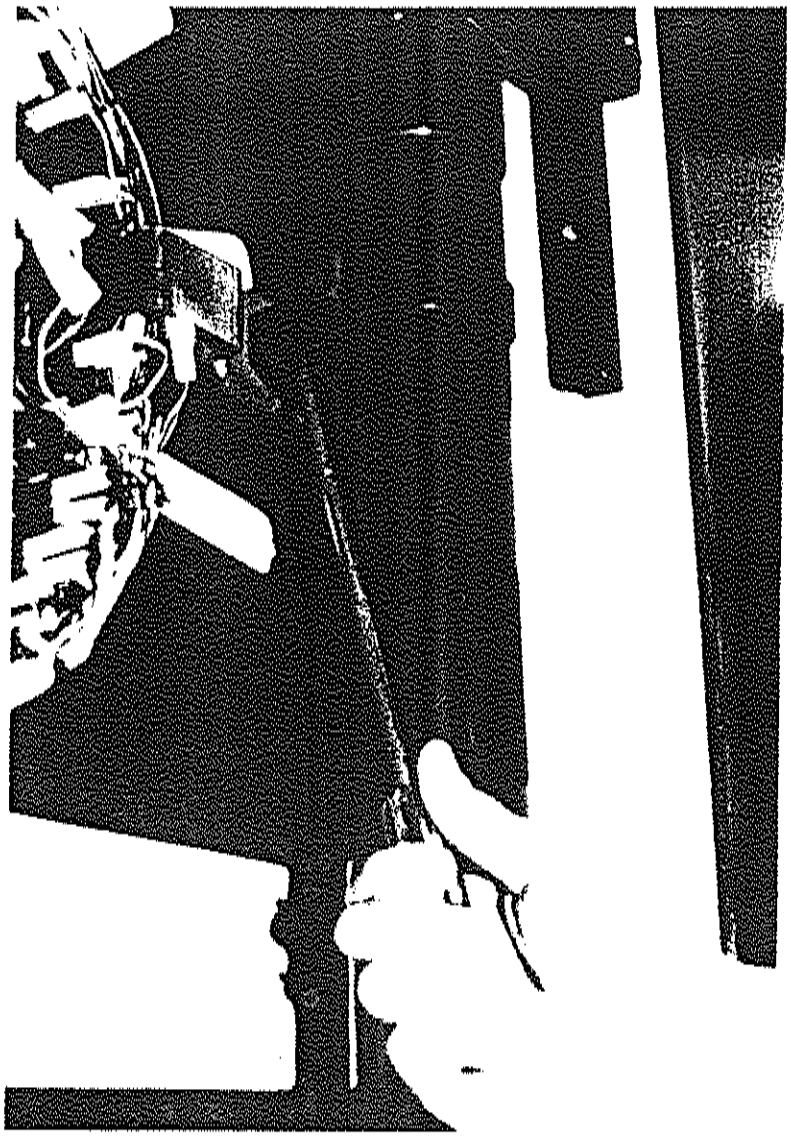
9.2.1 Ball pipe removal. (ref. Picture 15)
Remove the locked back door.
Remove lower screw from upper pipe clamp located above lamp nos.1 and 30. Loosen upper screw. Rotate clamp 1/2 turn anticlockwise.



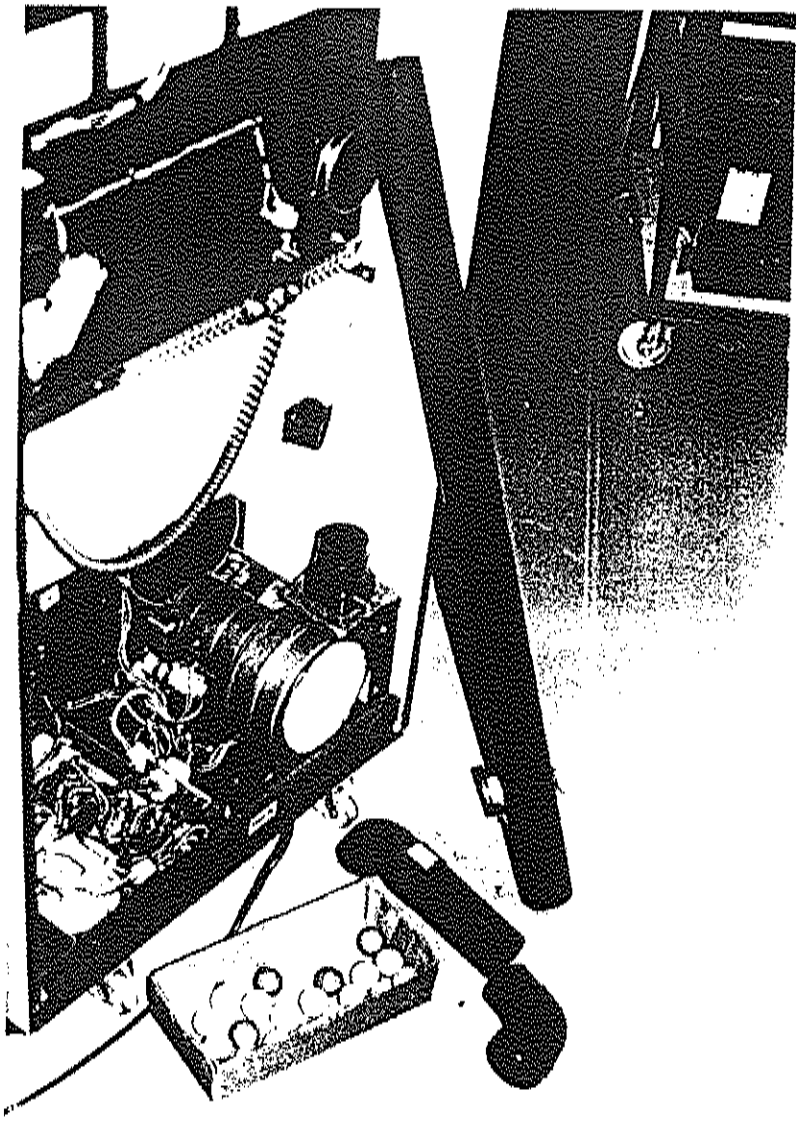
Picture 15

9.2.2 Revolve the pipe end section until the ball exit hole faces down. Remove the angled end of pipe. Remove the next straight piece of pipe, complete with the angle join.

9.2.3 Picture 16. Unhook the upright pipe clamp by inserting a screwdriver in the slot from beneath and twisting. Provide a box to catch the balls that will fall from the ball box, then remove the upright pipe. Leave the small square end section in the blower mouth. See picture 17.



Picture 16



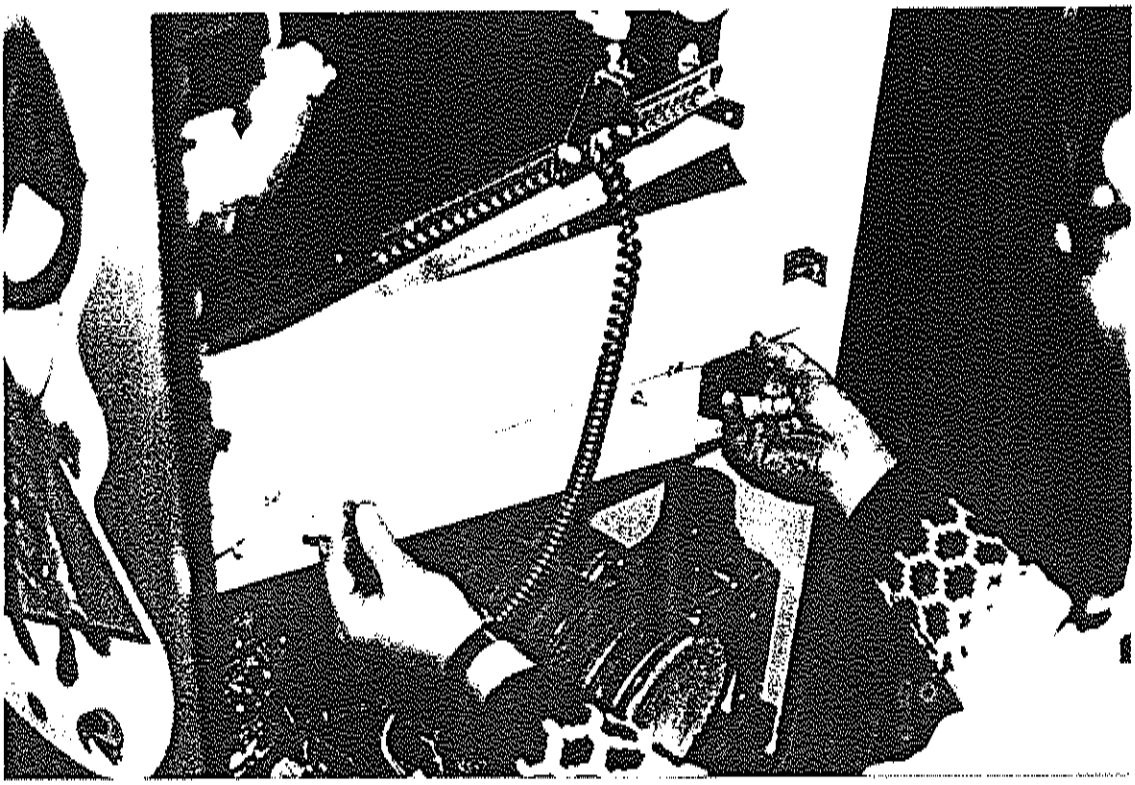
Picture 17

9.3 Ball box.

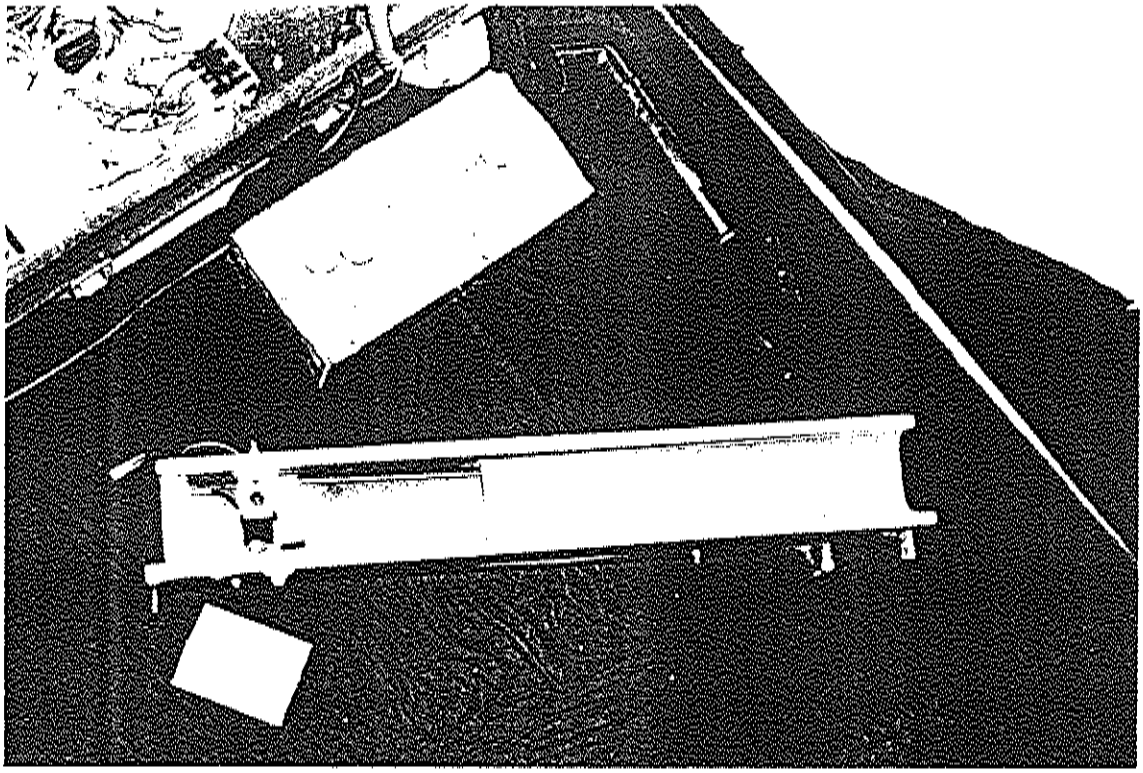
9.3.1 Disconnect the coiled cable from the clips on the ball box and unplug its connector.

9.3.2 Remove the two screws from the ball box brackets, one on each side, then, (see picture 18) pull the right hand side of the box towards you. Ease out the left hand side until the wire stops further movement. Again ease out right hand side until free. Support the box and unplug the connector at the left hand rear of the box, (the supply for the agitator solenoid).

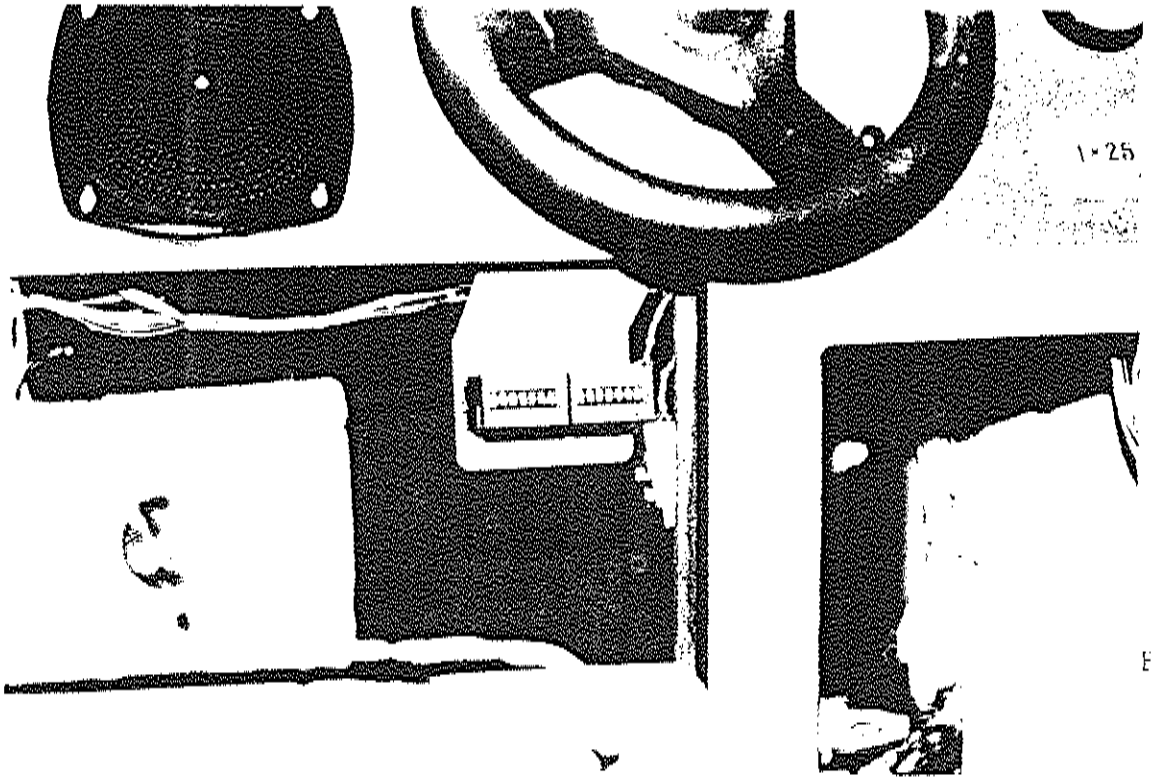
9.3.3 Picture 19. For access to the solenoid, remove the short length of plastic gutter covering it. Test the action and movement of the ball channel by hand.



Picture 18



Picture 19



Picture 20

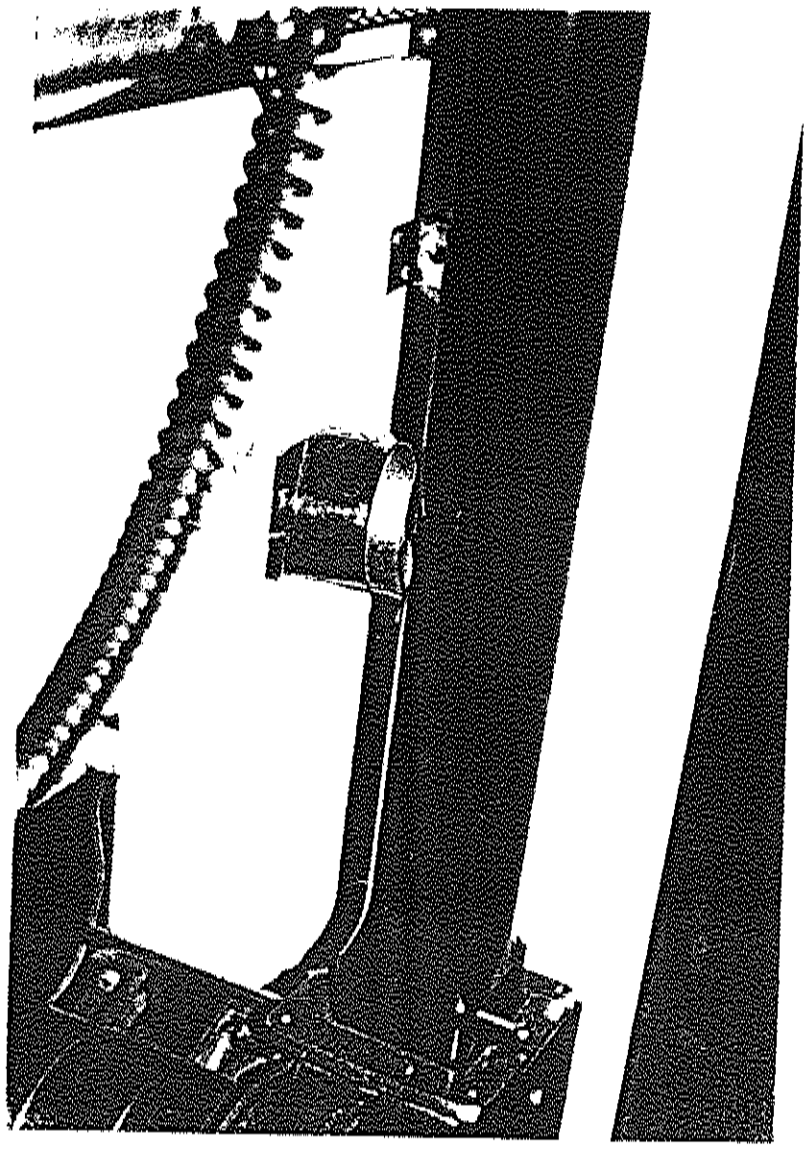
Ticket and coin counters accessible through the ticket door.

9.4 Main playfield.

9.4.1 Cut the cable ties holding the wiring together on the left hand side, below the clown motor. Unplug the connectors in the looms and unplug the two 'D' connectors from the main logic board.

9.4.2 Remove two screws in each batten holding the top of the playfield in position.
Remove the two screws from the side support brackets.
Lift the bottom edge of playfield from its supports.
Lower the playfield down gently, keeping loose wiring out of the way.

9.5 Reassemble all parts in reverse order, taking care with the alignment of the 'bridge' from the ball box to the vertical pipe, (see picture 21), and load the 15 balls into the vertical pipe before fitting the top pipe sections.



Picture 21

9.6 Dismantling the front of the machine - access to playfield front for cleaning.

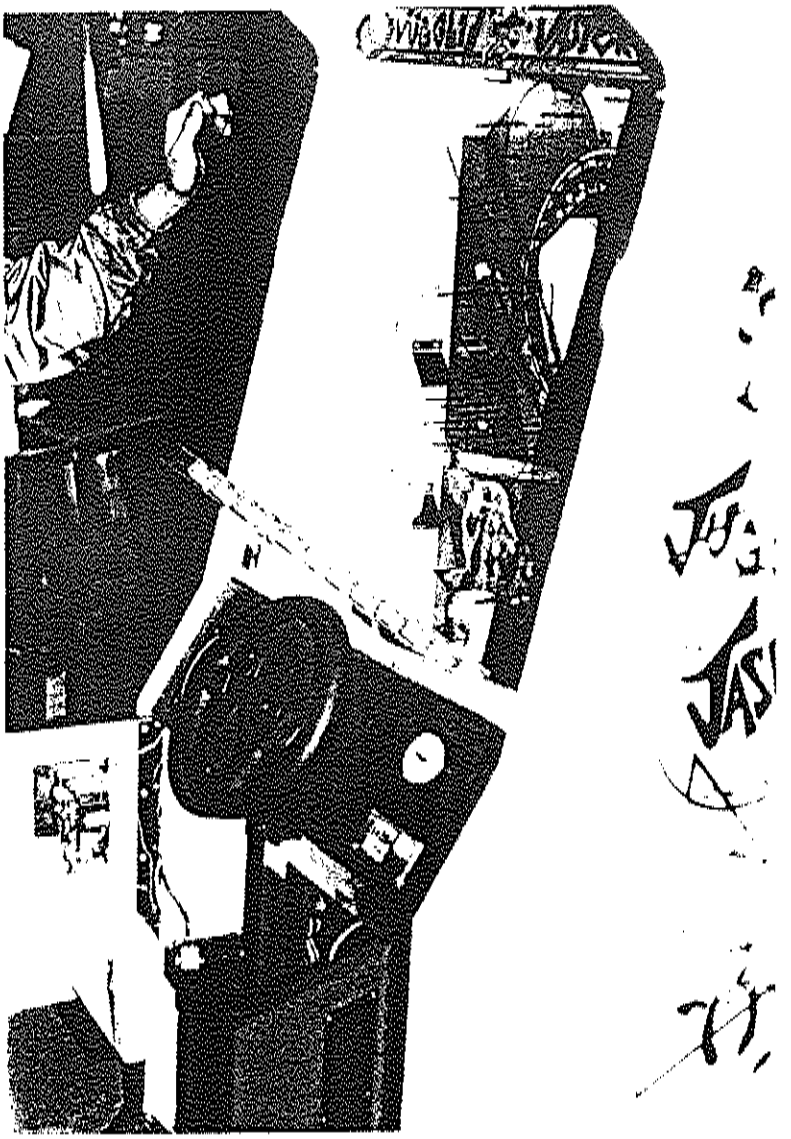
9.6.1 Unlock the two front glass locks. Picture 22. Lift out the glass and rest it on the steering boss. Pull the top of the glass towards you, then lift out and store safely.

9.6.2 Remove two screws from the top of flashing light channels. Lift the channels upwards then outwards. Rest them 'cross-legged' on the sloping inner panel. Picture 23. Lift out inner glass and store safely.

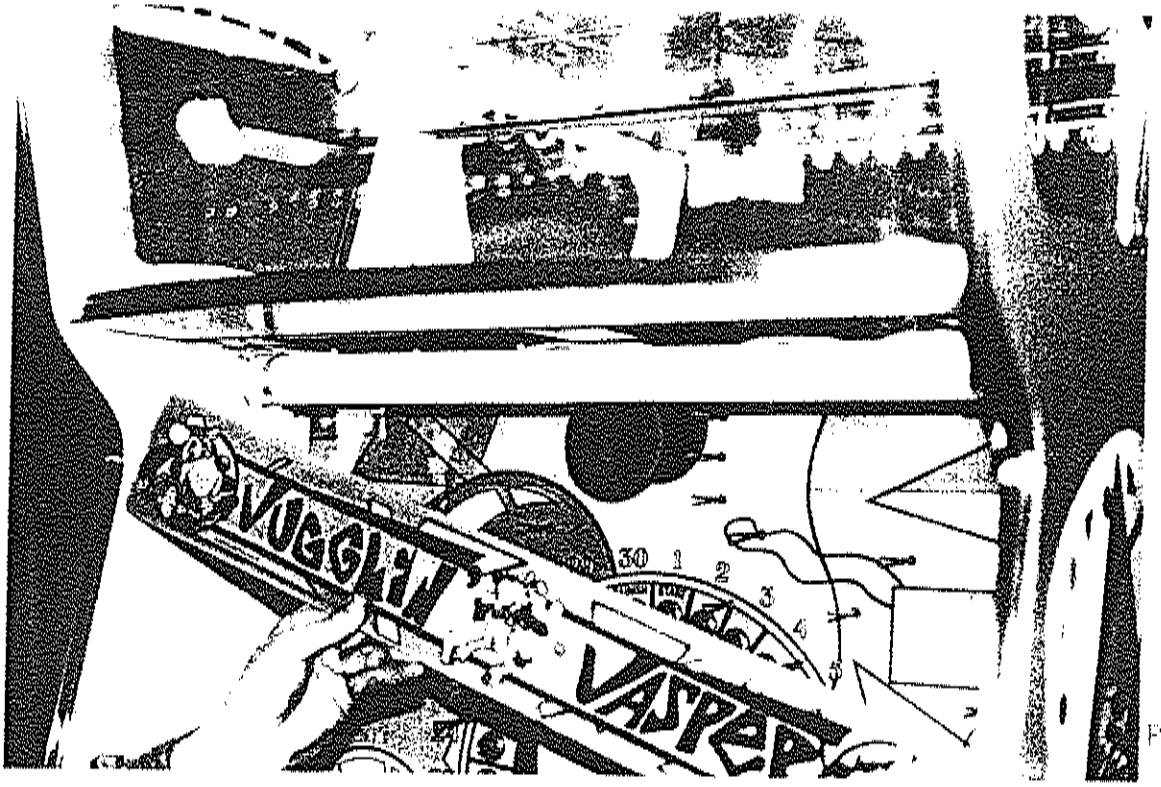
9.6.3 Remove the two screws from the name artwork panel, and remove the artwork to expose the flourescent tube. Picture 24.

9.7 Reassemble all parts in reverse order.

Picture 22



Picture 20



Picture 21

7.3 Symptom	Possible Fault	Remedy
7.3.1		
Ticket machine not working; running continuously; or wrong ticket award.	Ticket M/c p.c.b.	Replace ticket p.c.b.
	Ticket M/c motor	Replace ticket M/c.
	Ticket spring	Check spring clip is holding tickets firmly against side with opto sensor.
	No supply voltage	Check fuse F2.
	No enable or ticket notch signal	Check Q41,U4.replace if necessary.
(Refer to Deltronics Ticket Dispenser Manual)		
7.3.2		
Clown not moving or moves one way only.	Fuse	Check fuses F4,F5
	Motor	Check motor.
	Driver transistors.	Check Q42,Q43.
	Logic.	Check U30,U7,U25.
	Limit switches.	Check switches by clown limit stops.
	(Refer picture 7 showing R.H. switch)	
7.3.3		
Clown moves in attract mode but incorrectly in game mode.	Steering board.	Replace steering bd. (picture 11)
	Logic.	Check U7,U25.
7.3.4		
Arrow not turning	Fuse	Check F7.
	Arrow Motor.	Check motor.Picture 1
	Driver.	Check Q33.
	Logic.	Check U6.
7.3.5		
Arrow Does not stop.	Arrow switch. (Picture 1)	Check action of arrow switch - see 8.3.6.
	Driver.	Check Q33.
	Logic.	Check U1,U2.
7.3.6		
Caught balls not scoring, or count twice	Catch switch.	Check catch switch.
	Logic.	Check U5.
	RV2	Adjust RV2 (See 7.4)
7.3.7		
No sound.	RV4	Turn up volume RV4.
	Fuses.	Check F4,F5.
	Speaker.	Check speaker.
	Driver.	Check U29.
7.3.8		
No alarm	Low ticket switch	Check switch on side of ticket box.
	Logic	Check Q36.
7.3.9		
No flashing lights.	Fuse.	Check F1.
	Flasher unit.	Check flasher p.c.b.

7.4 NOTE RV2 controls a timer speed and is factory set. This is the speed at which the 30 lights are lit in attract mode.

However, its main function is in the game mode. It should:-

a) prevent double scoring as the catch switch wire returns.

b) allow two closely following balls both to score.

RV2 should be set to approx its mid position. Experiment to find the best position.

PART OF

DO NOT SCALE

SHEET OF

30 SCORE LAMPS L1-L30
5x 4175 , 30x TIP121
30x 47K , 30x 100nF
30x IN4148, 4175 U9-U16
4047 U5

+16V

+12V

CLOWN CATCH J7/21 µSWITCH (OFF-BOARD)

J7/8

'M'

L1 L2 L3 L4 L5 L6 L7 L8 L29 L30

J7/23 J7/12 J7/13 J7/24 J6/1 J7/25 J6/2 J6/4 J6/11 J6/23

4x TIP121

Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q29 Q30

R62 R63 R64 R65 R66 R67 R68 R69 R90 R91

4047 U5

40175 U9

40175 U10

40175 U16

R61 470K

C5 100nF

1M RV2

'D' Mode

R50 47K

R72 47K

C73

C1 100nF

C25 C26 C27 C28 C29 C30 C31 C32 C51 C52

RN 47K

IN4148 D8 D9 D10 D11 D12 D13 D14 D15 D37 D38

'E' RESET

'A' REFER PART 2

SW1 SW3

FULL SCORE LIMIT

ATTRACT DELAY

DRG. No. 2094

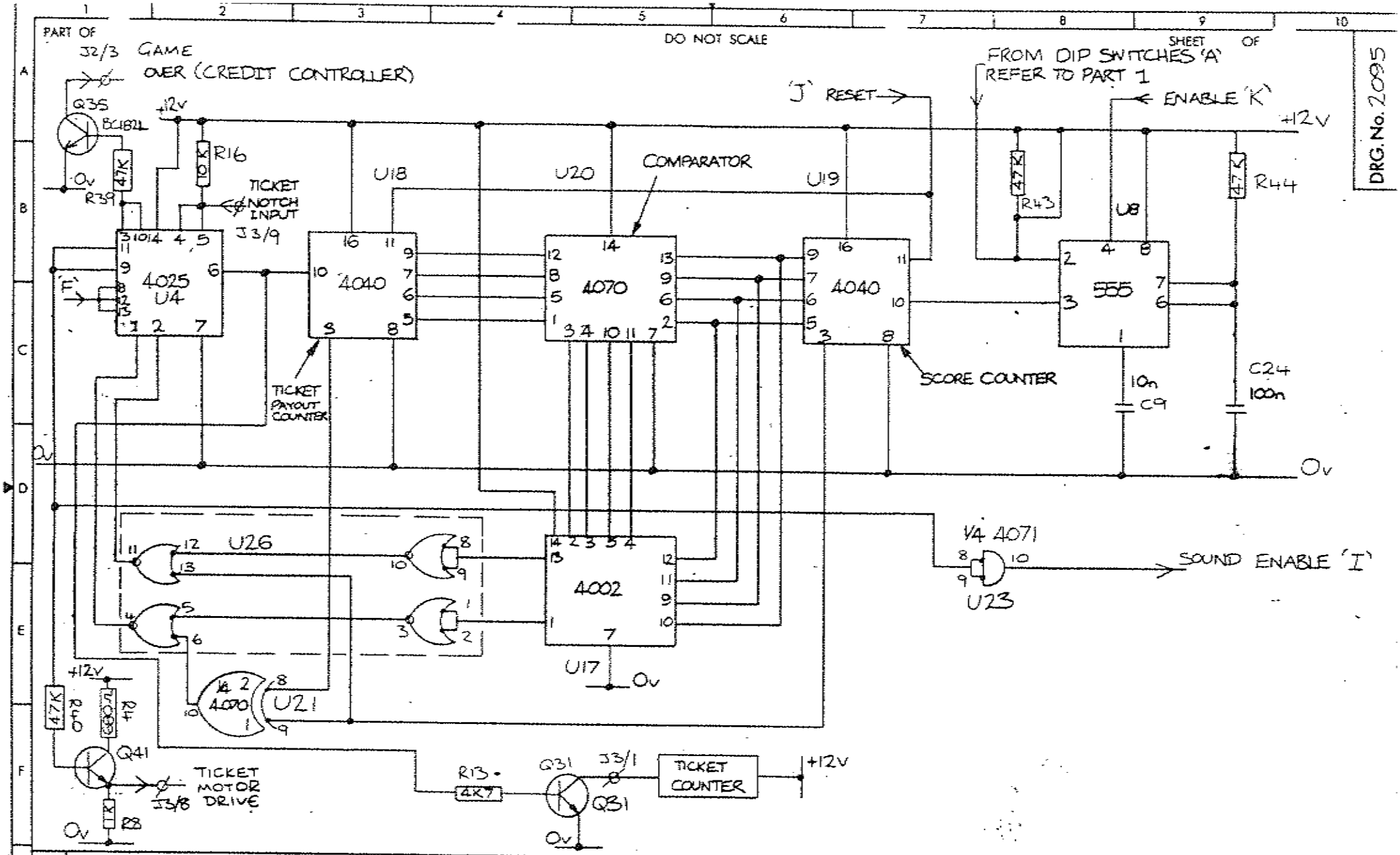
ISSUE	DESCRIPTION	APPD	DATE
2	PARTS ADDED (4175-4047)	PC	7-12-90
3	'M' & 'C' ADDED	PC	3-1-91
4	EXTRA DETAIL ADDED	BW	12-11-92

DEV PROD

TITLE
CLOWN SCHEMATIC
PART 1
SCORE REGISTERS

DRAWN	TRACED	CHECKED	APPROVED	DATE
PC				15-12-90

DRAWING No. HLCL-2094-C



ISSUE	DESCRIPTION	APPD	DATE
2	SOUND + CREDIT ADDED.	PC	19-8-90
3	F,J,K,I ADDED	PC	3-1-91
4	EXTRA DETAIL ADDED	BW	11-11-92

Dev
Prod

TITLE
CLOWN SCHEMATIC
PART 2
OUTPUT REGISTERS

DRAWN	TRACED	CHECKED	APPROVED	DATE
PC				17-12-90

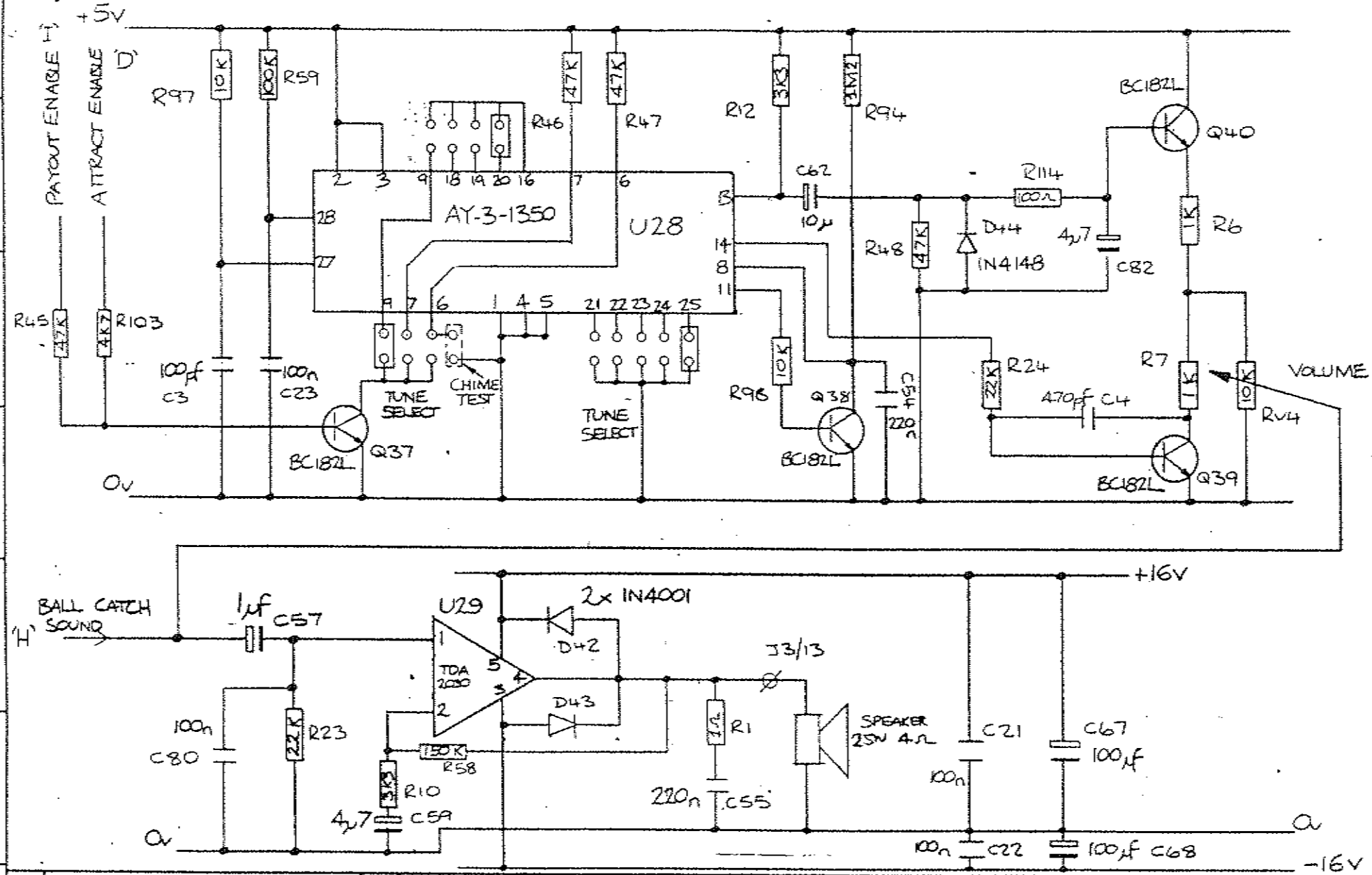
DRAWING No. HLCL-2095-C

PART OF

DO NOT SCALE

SHEET OF

DRG. No. 2102



ISSUE	DESCRIPTION	APPD	DATE
2	'I', 'D', 'H' ADDED	PC	3-1-91
3	EXTRA DETAIL ADDED	BW	13-11-92

DEV

PROD

TITLE

CRAZY CLOWN SCHEMATIC SOUND SYSTEM

DRAWN	TRACED	CHECKED	APPROVED	DATE
PC				19-12-90

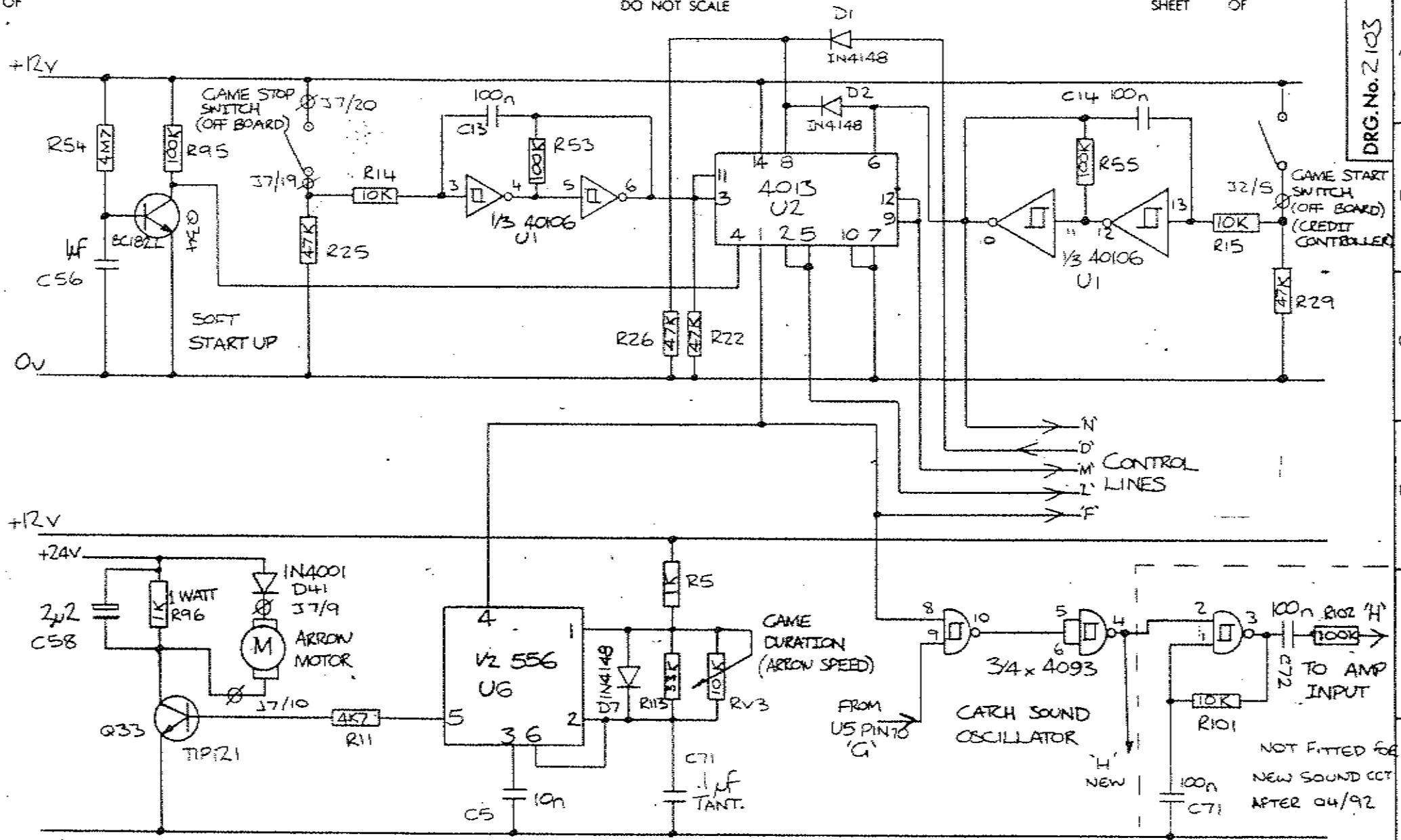
DRAWING No. HLCL-2102-C

PART OF

DO NOT SCALE

SHEET OF

DRG. No. 2103



ISSUE	DESCRIPTION	APPD	DATE
2	EXTRA DETAIL ADDED	BW	12-11-92

DEV
PROD

TITLE
CLOWN SCHEMATIC
GAME START/STOP
CONTROLLER

DRAWN	TRACED	CHECKED	APPROVED	DATE
PC				19-12-90

DRAWING No. HLCL-2103-C

PART OF

DO NOT SCALE

SHEET OF

DRG. No. 2104

+12V

INSERT COIN LAMP

R30 47K

R35 47K

R36 47K

R37 47K

U6

D3

D4

2x IN4148

R38 47K

RV1 1M

GAME OVER SIGNAL (FROM CREDIT CONTROLLER) J2/4

U27

J3/2

R31 47K

TIP121 Q32

100n C15

R100 470K

C70 100n

C16 100n

1/2 556

10n C6

C63 47µF TANT.

0V

ATTRACT DELAY TIMER.

U3 1/3 4025

'K' 'B'

'C'

'L'

'D'

+12V (4025 = U3)

R33 47K

1/6 U1

'J'

'E'

C18 100n

IN4148 D6

R34 47K

R93 47K

C74 100n

'N'

CONTROL LINES

FROM U2 PIN 1 'F'

ATTRACT GAME

1/4 4071 U23

+12V

TO RELAY BOARD 'P'

R9 2K2

J3/4

U24 741

0V

ISSUE	DESCRIPTION	APPD.	DATE
2	LETTERS ADDED	PC	3-1-91
3	EXTRA DETAIL ADDED	BW	12-11-92

DEV

PROD

TITLE

CLOWN SCHEMATIC ATTRACT/DELAY CONTROLLER

DRAWN	TRACED	CHECKED	APPROVED	DATE
PC				19-12-90

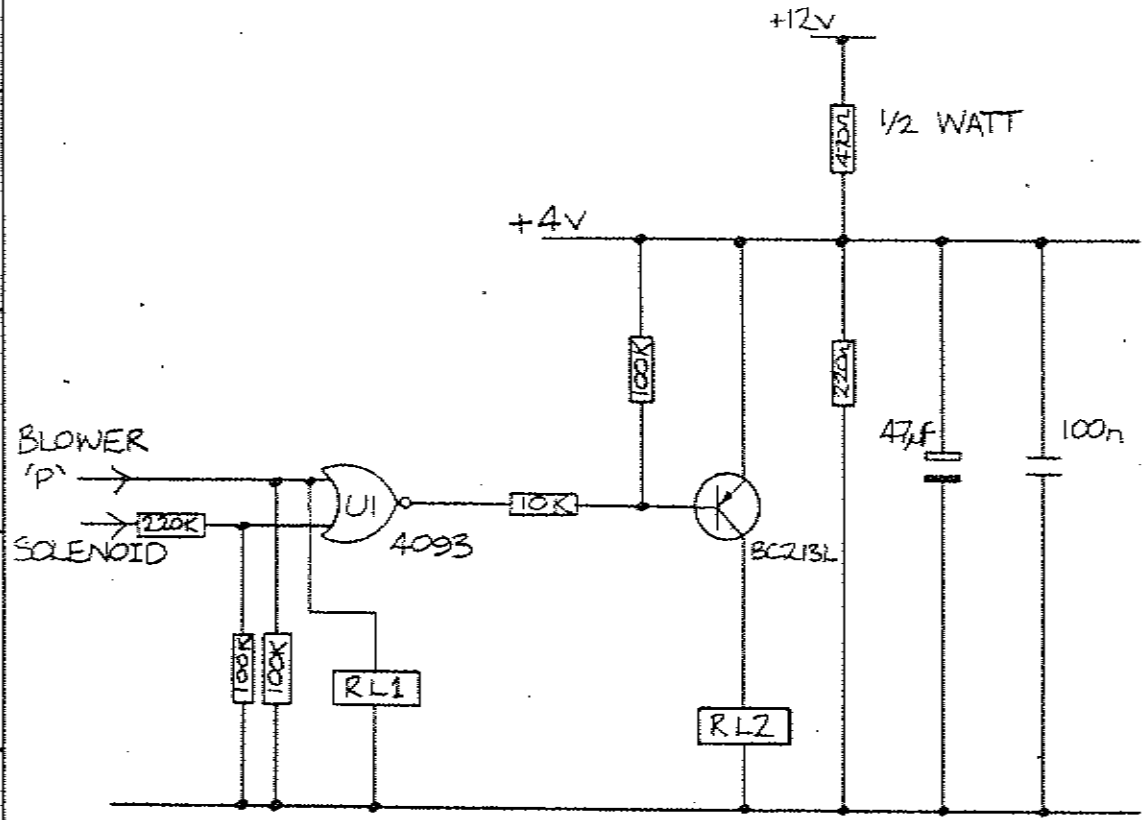
DRAWING No. HLCL - 2104-C

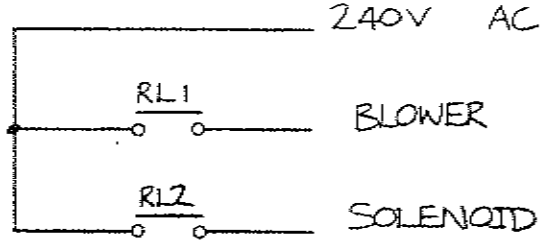
PART OF

DO NOT SCALE

SHEET OF

DRG. No. 2105





SOLENOID INPUT FROM ONE LINE OF FLASHING LIGHT LOOM

ISSUE	DESCRIPTION	APPD	DATE
2	'P' ADDED	PC	3/91

DEV PROD

TITLE: CLOWN SCHEMATIC RELAY BOARD

DRAWN	TRACED	CHECKED	APPROVED	DATE
PC				19-12-90

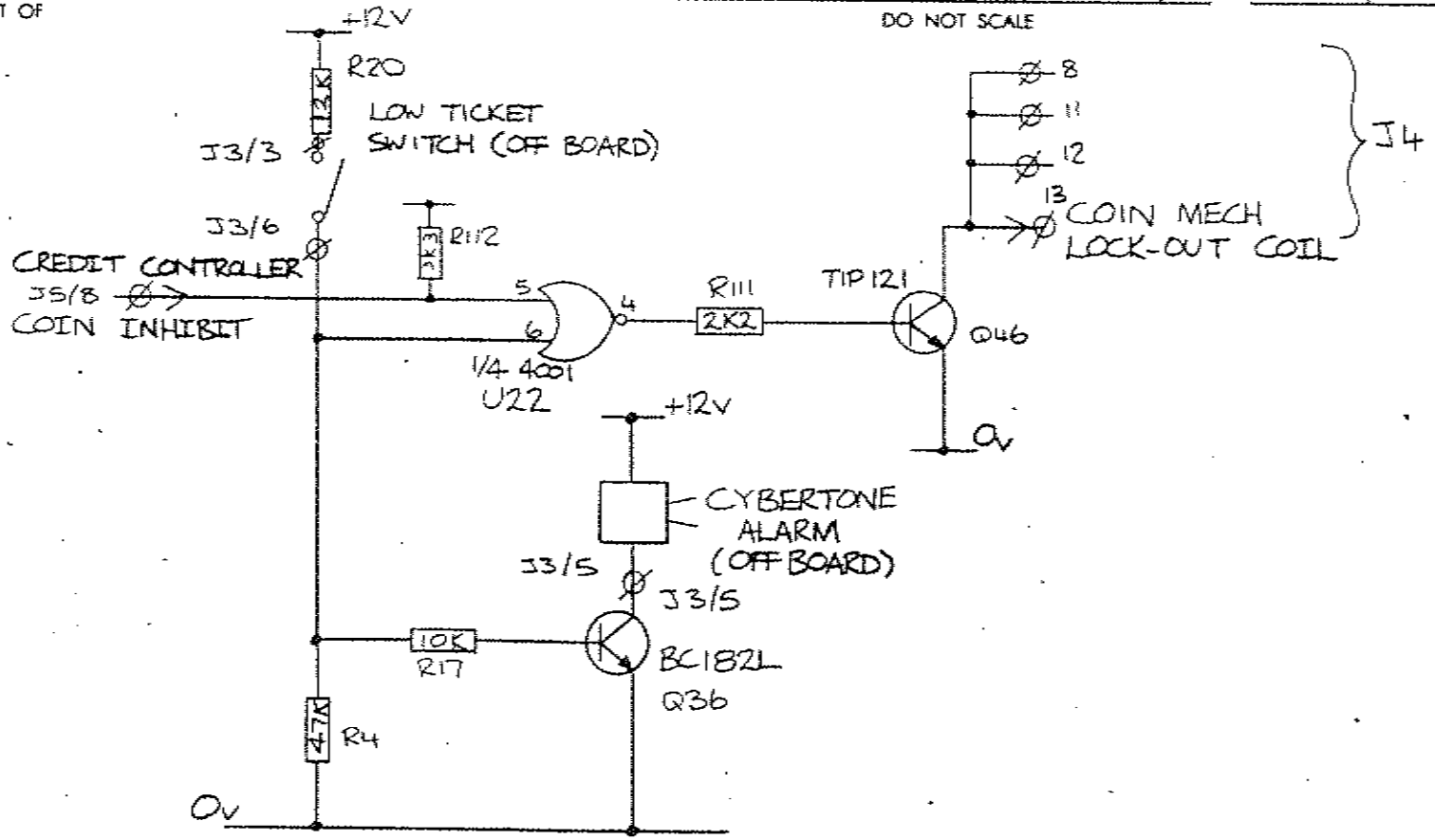
DRAWING No. HLCL-2105-C

PART OF

DO NOT SCALE

SHEET OF

DRG. No. 2106



ISSUE	DESCRIPTION	APPD	DATE
2	EXTRA DETAIL ADDED	BW	19-12-90

Dev
Prod

TITLE

CLOWN SCHEMATIC
LOW TICKET ALARM

DRAWN	TRACED	CHECKED	APPROVED	DATE
PC				19-12-90

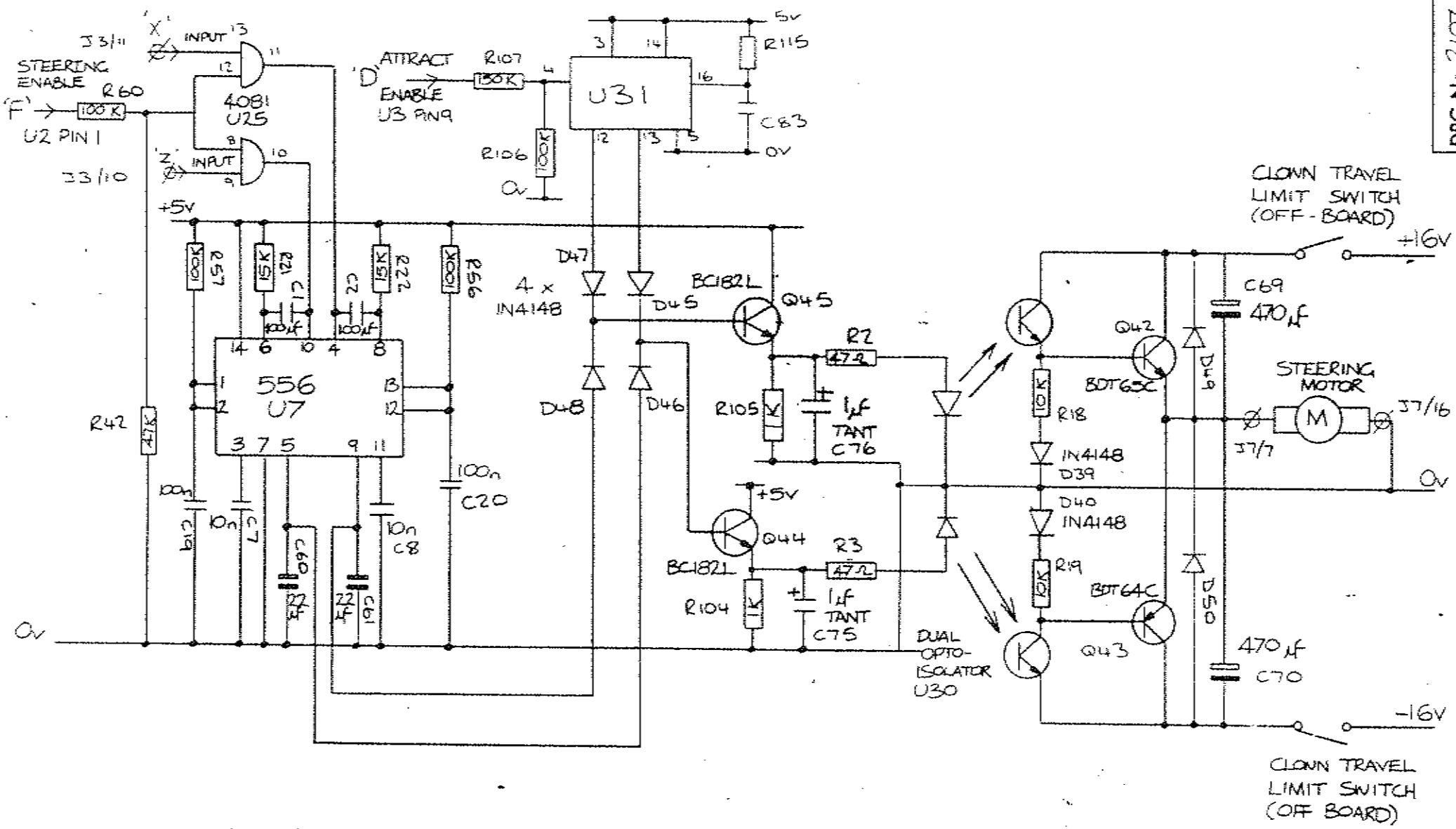
DRAWING No. HLCL-2106-C

PART OF

DO NOT SCALE

SHEET OF

DRG. No. 2107



ISSUE	DESCRIPTION	APPD.	DATE
2	'F', 'D', ADDED	PC	31-1-91
3	EXTRA DETAIL ADDED	BW	21-11-92

DEV
PROD

TITLE
CLOWN SCHEMATIC STEERING

DRAWN	TRACED	CHECKED	APPROVED	DATE
PC				2-1-91

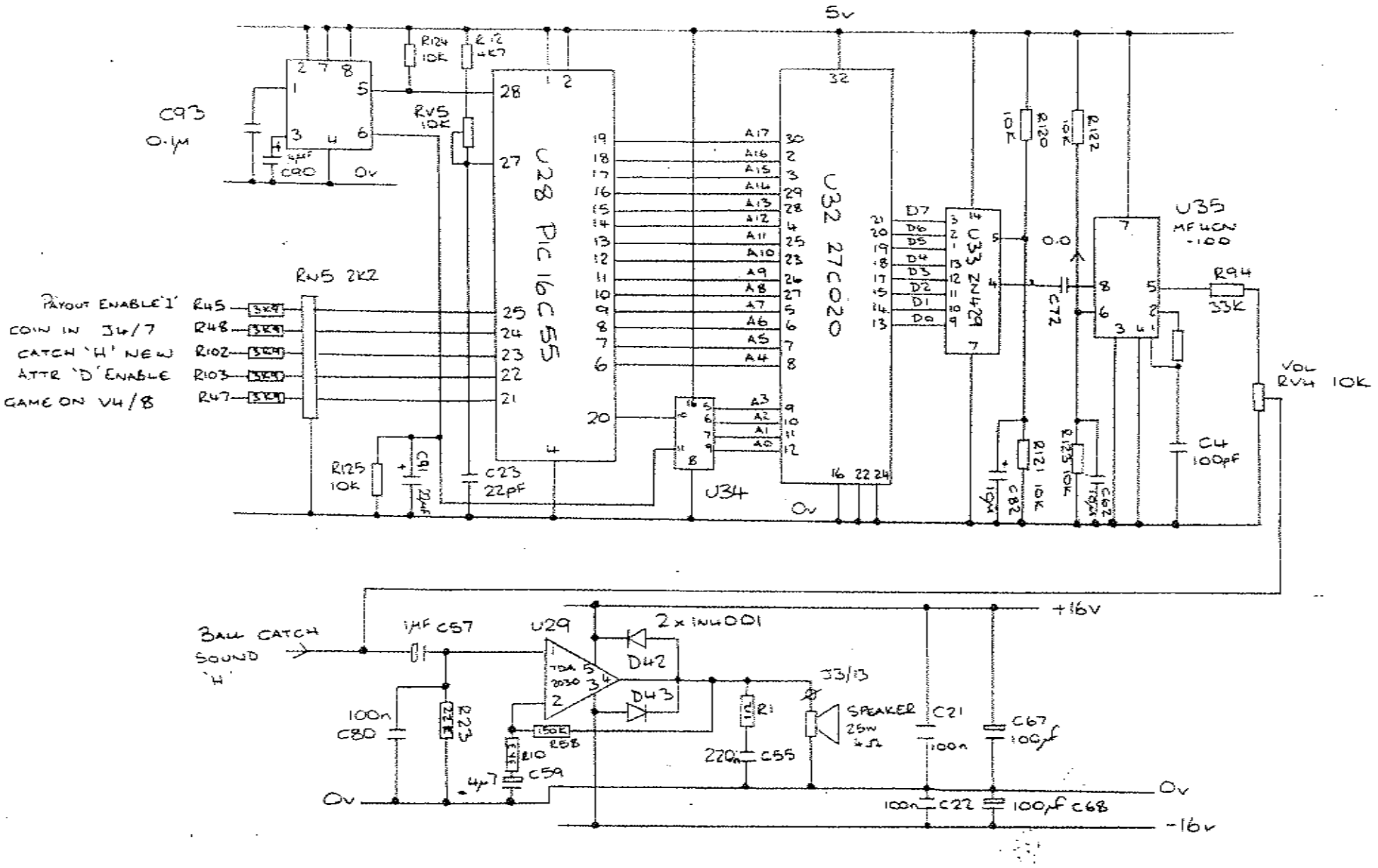
DRAWING No. HLCL-2107-C

PART OF

DO NOT SCALE

SHEET OF

DRG. No. 3291



ISSUE	DESCRIPTION	APPD	DATE

Dev
Prod

TITLE
CRAZY CLOWN SCHEMATIC
SOUND SYSTEM
NEW POST 04/92

DRAWN	TRACED	CHECKED	APPROVED	DATE
BW				13-11-92

DRAWING No. HLCL-3291-C

	REF	DESCRIPTION	STOCK No.
		PCB FL0084 UNPOPULATED	
1	U1	I.C. 40106	
1	U2	I.C. 4013	
2	U3,4	I.C. 4025	
1	U5	I.C. 4047	
2	U6,7	I.C. 556	
1	U8	I.C. 555	
8	U9-16	I.C. 40175	
1	U17	I.C. 4002	
3	U18,19,34	I.C. 4040	
2	U20,21	I.C. 4070	
1	U23	I.C. 4071	
1	U24	I.C. 741	
1	U25	I.C. 4081	
2	U22,26	I.C. 4001	
1	U27	I.C. 4093	
1	U28	I.C. PIC16C55 RC/P	
1	U29	I.C. TDA 2030V	
1	U30	I.C. MCT 6	
1	U31	I.C. PIC16C54 RC/P	
1	U32	I.C. 27C020	
1	U33	I.C. ZN429E -8	
1	U35	I.C. MF4CN -100	
4	U8,24 U30,35	I.C. SOCKET 8 WAY	
16		I.C. SOCKET 14 WAY	
11	U9-16 U18,19,34	I.C. SOCKET 16 WAY	
1	U31	I.C. SOCKET 18 WAY	

FRONTLINE
ELECTRONICS

NO: FL0084 REV: 0

DESCRIPTION

CRAZY CLOWN LOGIC PCB
SHT 1 OF 4

	REF	DESCRIPTION	STOCK No.
	U28	I.C. SOCKET 28 WAY	
1	U32	I.C. SOCKET 32 WAY	
1	VR1	VOLTAGE REGULATOR 78T12	
1	VR2	VOLTAGE REGULATOR 78S12	
1	VR3	VOLTAGE REGULATOR 78S05	
34	Q1-33 Q46	TRANSISTOR TIP 121	
6	Q34-36 Q41,44,45	TRANSISTOR BC183L	
1	Q42	TRANSISTOR BDT 65C	
1	Q43	TRANSISTOR BDT 64C	
		HEATSINK TV1505	
40	D1-4,6-37 D45-48	DIODE 1N 4148	
5	D39-43	DIODE 1N 4001	
2	D49,50	DIODE 1N 4006	
3	F1-3	FUSE T2.5A 20mm	
2	F4,5	FUSE T5.0A 20mm	
1	F7	FUSE T1.0A 20mm	
1	F6	FUSE T8.0A 20mm	
14	F1-7	FUSE CLIP 20mm	
2	J1,3	CONNECTOR 25 WAY D PLUG PCB STRAIGHT	
	J2	CONNECTOR 9 WAY D SOCKET PCB STRAIGHT	
2	J6,7	CONNECTOR 25 WAY D SOCKET PCB STRAIGHT	
1	J4	PINSTRIP HDR 0.1" 15 WAY	
1	J5	PINSTRIP HDR 0.1" 10 WAY	
7		SCREW M3 x 6 PAN POZI	
7		NUT M3 FULL	
7		WASHER M3 SHAKEPROOF	
5PR		SCREWLOCK FEMALE 13mm	

FRONTLINE ELECTRONICS

NO: FL0084

REV: 0

DESCRIPTION

CRAZY CLOWN LOGIC PCB
SHT 2 OF 4

	REF	DESCRIPTION	STOCK No.
	RV1	PRESET 4m7 PT10LV	
1	RV2	PRESET 1MO PT10LV	
2	RV3,4	PRESET 10K PT15LH WITH SPINDLE	
1	RV5	PRESET 10K PT10LV	
1	R96	RESISTOR CR100 1KO	
1	R1	RESISTOR CR25 1RO	
2	R2,3	RESISTOR CR25 47R	
1	R4	RESISTOR CR25 680R	
4	R5,8 R104,105	RESISTOR CR25 1KO	
2	R9,111	RESISTOR CR25 2K2	
2	R10,112	RESISTOR CR25 3K3	
3	R11,13 R103	RESISTOR CR25 4K7	
13	R14-19 R115,120-125	RESISTOR CR25 10K	
2	R20,24	RESISOTR CR25 12K	
2	R21,22	RESISTOR CR25 15K	
1	R23	RESISTOR CR25 22K	
22	R25-31,33-44 R49,50,99	RESISOTR CR25 47K	
7	R53,55-57 R60,95,106	RESISTOR CR25 100K	
2	R61,100	RESISTOR CR25 470K	
30	R62-91	RESISTOR CR25 27K	
1	R93	RESISTOR CR25 1MO	
4	R45, 47. R102,48	RESISTOR CR25 3K9	
1	R54	RESISTOR CR25 4M7	
2	R58,107	RESISTOR CR25 150K	
1	R113	RESISTOR CR25 33K	
1		HEATSINK ABL 305AB0750B	
10		SPACER M3 x 6 CLR	

NO: FLOO84

REV: O

DESCRIPTION

CRAZY CLOWN LOGIC PCB
SHT 3 OF 4

FRONTLINE
ELECTRONICS

	REF	DESCRIPTION	STOCK No.
3	SW1-3	DIPSWITCH 10 WAY 90°	
4	RN1-4	RESISITOR NETWORK 47K 8/9	
3	C1,2,4	CAPACITOR 100pf CERAMIC	
5	C5-9	CAPACITOR 10nF POLY BOX 5mm	
5	C10-12 C21,22	CAPACITOR 0.1uF 368 10mm POLY	
44	C13-20 C24-53 C73,74,80,81	CAPACITOR 0.1uF CERAMIC AXIAL	
1	C55	CAPACITOR 0.22uF 368 10mm POLY	
4	C56,71 C75,76	CAPACITOR 1uF 35V TANT BEAD	
2	C23,83	CAPACITOR 22pF CERAMIC	
2	C59,90	CAPACITOR 4u7 25V E.R.	
3	C60,61,91	CAPACITOR 22uF 25V E.R.	
1	C63	CAPACITOR 47uF 16V TANT BEAD	
5	C64-68	CAPACITOR 100uF 25V E.R.	
2	C69,70	CAPACITOR 470uF 25V E.R.	
16	C92-95 DC	CAPACITOR 0.1uF 25V DISC CERAMIC	
1	C58	CAPACITOR 2u2 63V E.R.	
2	C62,82	CAPACITOR 10uF 35V E.R.	
1	C57	CAPACITOR 1u 35V E.R.	
1	C72	CAPACITOR 0.01uF DISC CERAMIC	
1	RN5	RESISTOR NETWORK 2K2 8/9	
1	R94	RESISTOR CR25 6K8	
1	R12	RESISTOR CR25 1K8	
1	U36	TL7705	

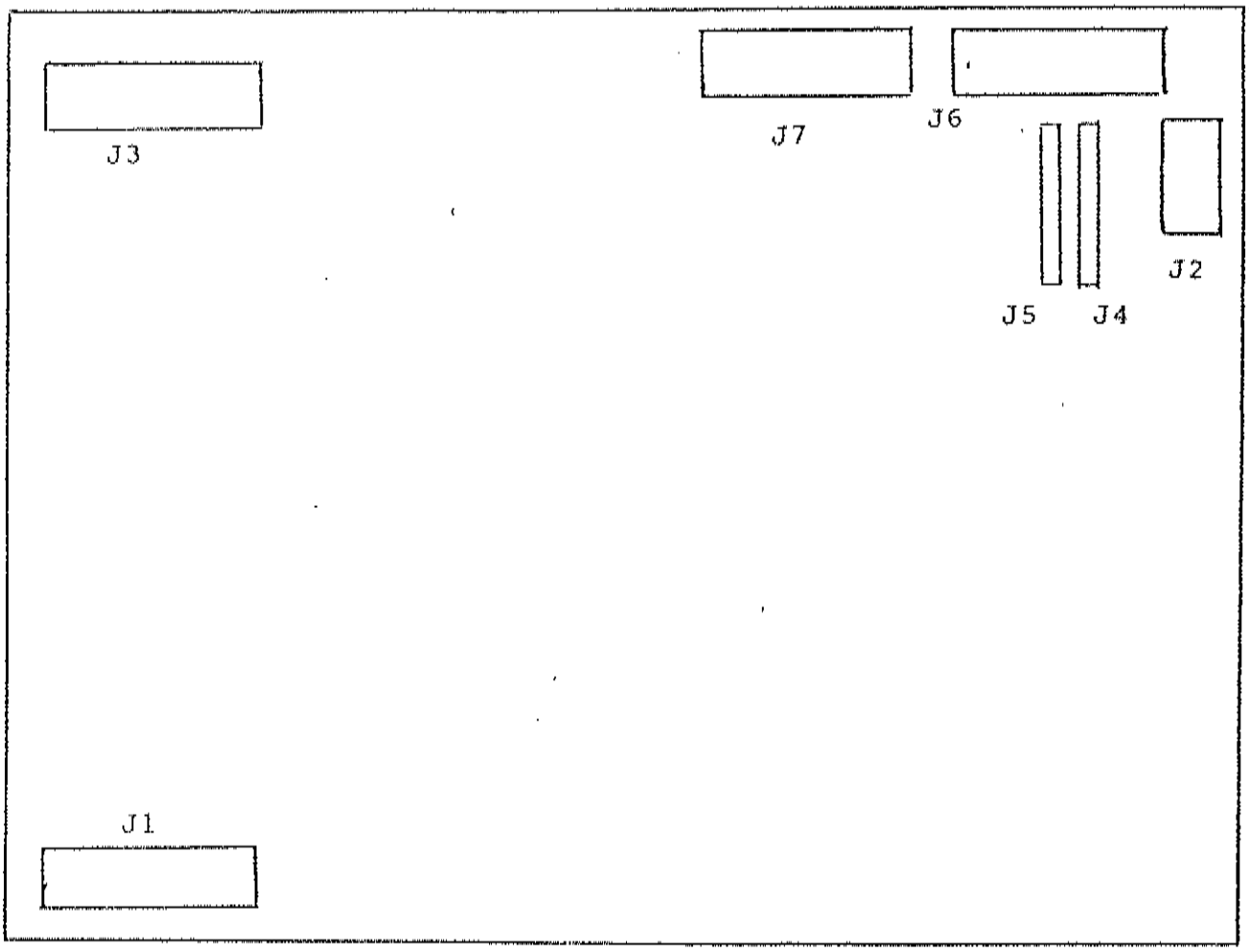
NO: FL0084 REV:0

DESCRIPTION

FRONTLINE ELECTRONICS

CRAZY CLOWN LOGIC PCB
SHT 4 OF 4

PCB FL0006 CRAZY CLOWN



J1 Power

1,2	24V in
3,4,5,6	16V in
7,8,9,14 15,16,17 18,19,20	
21	0V in
11,23	+16V in
12,24	-16V in
13,25	16V(2.5A) in

J2 Maximiser

1,2	12V
3	I2
4	OA
5	CM
6,7,8,9	0V

J3 Lower Loom

1	Ticket counter
2	Insert coin lamp
3,6	Low ticket switch
4	Blower relay
5	Cybertone enable
7	Piezo enable
8	Ticket payout enable
9	Ticket payout notch
10	Steering Z
11	Steering X
12	5V (steering)
13	Speaker
14,15 16,17	
18	0V
19,20 21,22 23,24	
25	12V

J6 Upper loom Score lamps

Pin	Lamp
1	5
2	7
3	9
4	11
5	17
6	19
7	21
8	23
9	25
10	27
11	29
12	16
13	15
14	8
15	10
16	12
17	18
18	20
19	22
20	24
21	26
22	28
23	30
24	13
25	14

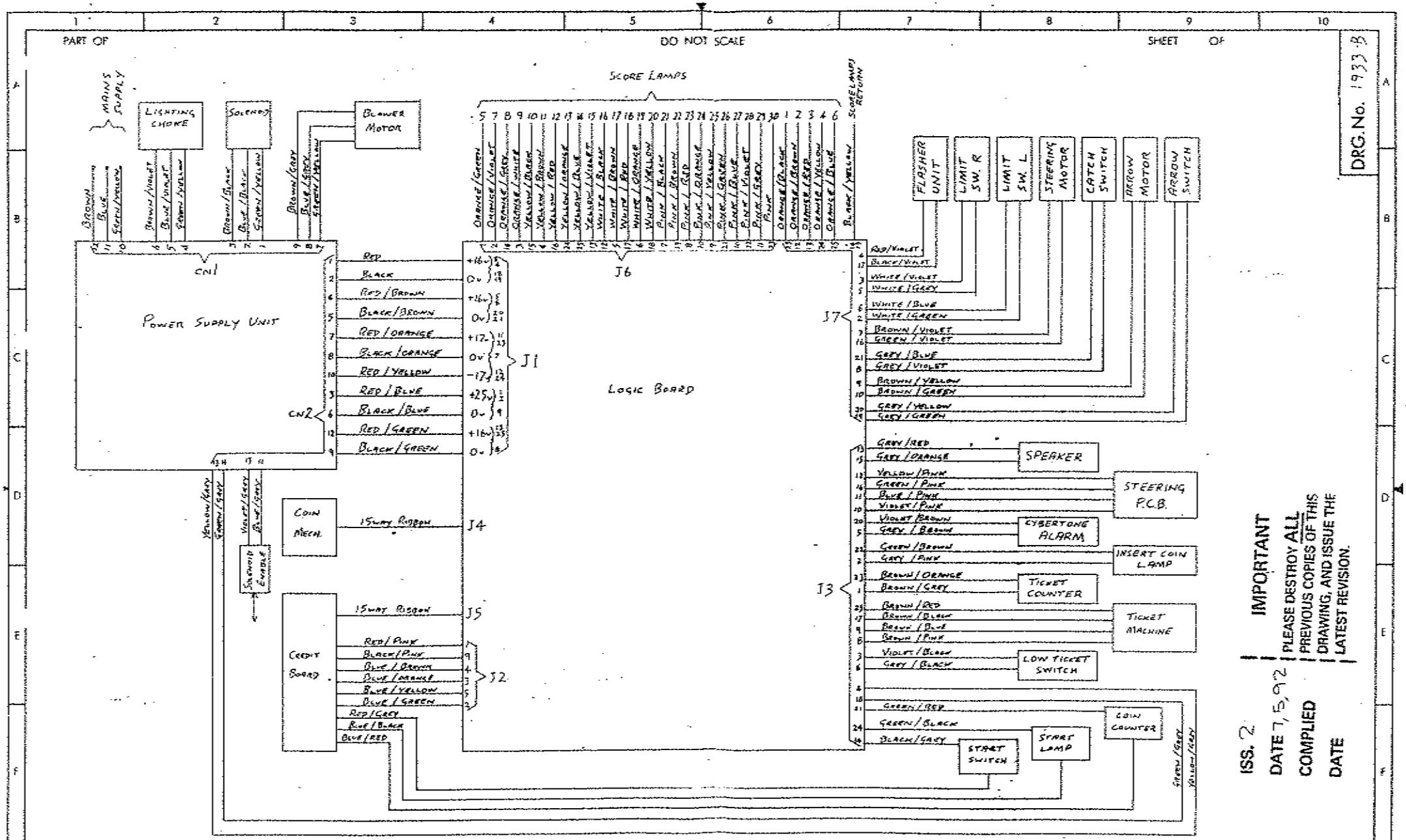
J7 Upper loom

Pin	Lamp
12	2
13	3
23	1
24	4
25	6

1,14,15	Score lamp supply
3,5	Limit switch (+)
2,6	Limit switch (-)
4,17	Flashing light supply
7,16	Steering Motor
8,21	Catch switch
9,10	Pointer motor
11	not used
18	not used
19,20	Game stop switch
22	not used

CONNECTOR TYPES AS FITTED TO PCB

J1	25 way D Plug
J2	9 way D Socket
J3	25 way D Plug
J4,5	13 way 0.1" pin header
J6,7	25 way D Socket



ISSUE	DESCRIPTION	APPD.	DATE
2	VOLTAGE VALUE FROM MAINS SUPPLY REMOVED	BW	7-5-92

DEV
PROD
SHOP. F

TITLE
'CRAZY CLOWN' WIRING SCHEMATIC

DRAWN	TRACED	CHECKED	APPROVED	DATE
PB				4-10-90

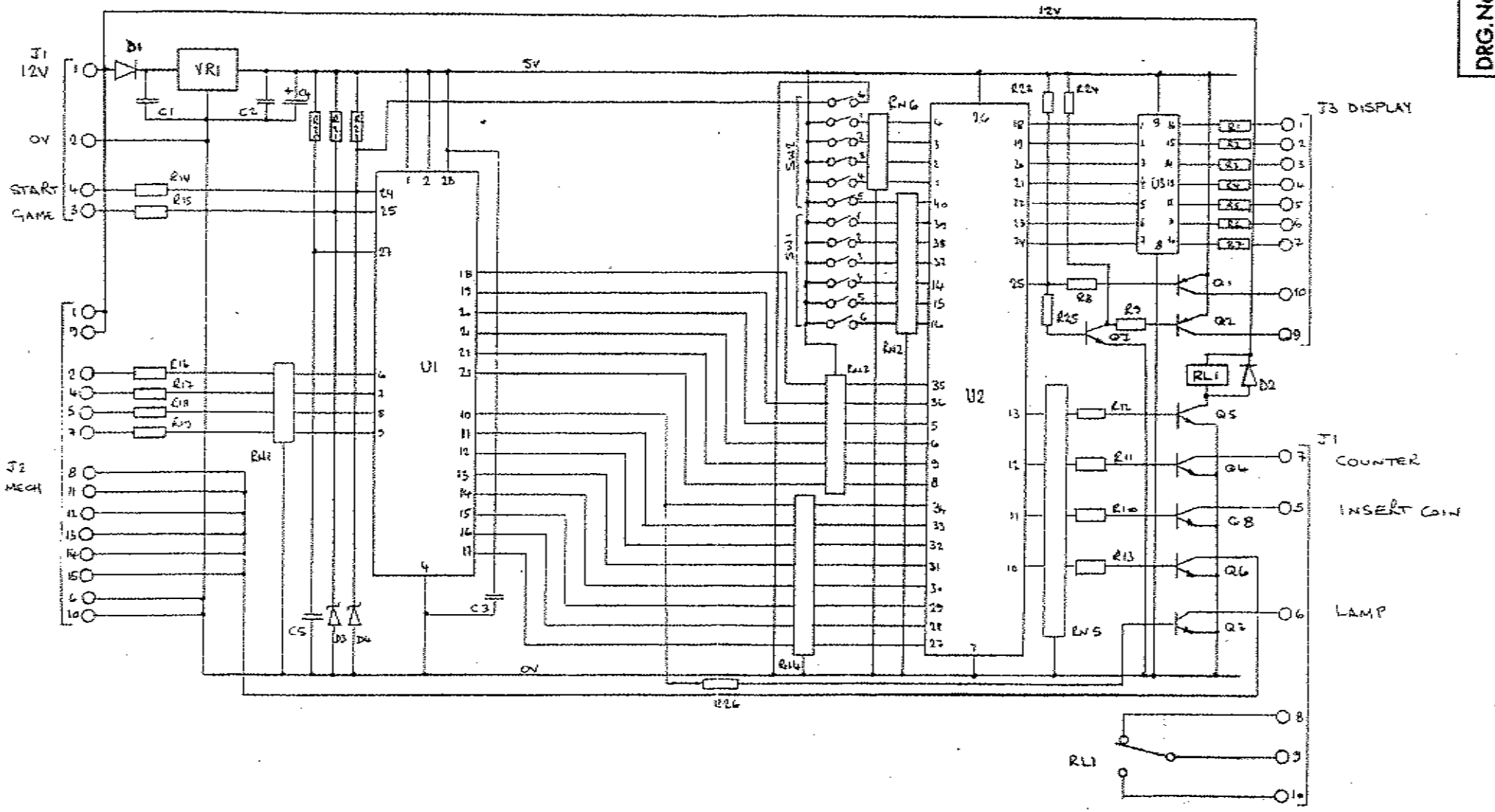
DRAWING No. HLCL-1933-B

PART OF

DO NOT SCALE

SHEET OF

DRG. No.



ISSUE	DESCRIPTION	APPD	DATE
0	ISSUED FOR MANUFACTURE	AMH	7.90

TITLE

CREDITBOSS

DRAWN	TRACED	CHECKED	APPROVED	DATE
AMH				6.7.90

DRAWING No. FL0012

BS 3611-432

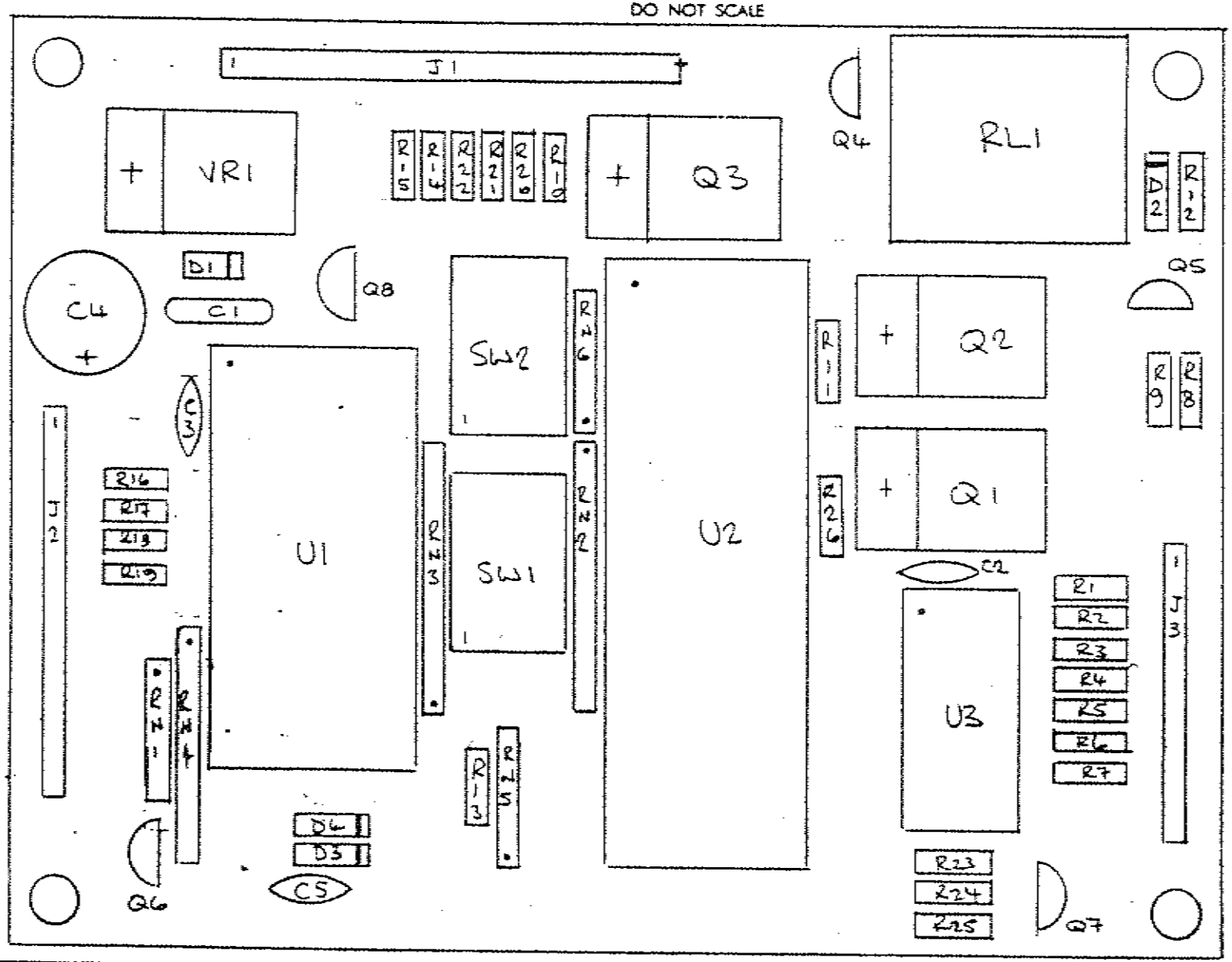
297 x 420mm A3

PART OF

DO NOT SCALE

SHEET OF

DRG. No.



ISSUE	DESCRIPTION	APPD	DATE
0	ISSUED FOR MANUFACTURE	AMH	8.90

TITLE

CREDITBOSS

DRAWN	TRACED	CHECKED	APPROVED	DATE
AMH				2.8.90

DRAWING No. FL0012

RS 561-448

210 x 297mm A4

QTY	REF	DESCRIPTION	STOCK No.
		PCB FL0012 unpopulated	
1	U1	PIC 16 C55 RC	
1	U2	710 55	
1	U1	I. C SKT 28 PIN STD.	
1	U2	I. C SKT 40 PIN STD.	
1	VR1	7805 Regulator	
2	D1,2	D10 DE 1N4001	
2	D3,4	D10 DE, Zener BZx85 5V6	
2	Q1,2	Transistor Tip 126	
1	Q3	Transistor Tip 121	
1	Q4	Transistor MPSA 12/13	
4	Q5-8	Transistor BC183L	
1	U3	Transistor Array ULN 2003	
1	RL1	Relay Fujitsu FBR 111CD 12VDC or equiv.	
1	J1	Connector 10way 0.156" header	
1	J2	Connector 15 way 0.1" header	
1	J3	Connector 10way 0.1" header	
7	R1-7	Resistor CR25 68R	
4	R8,9,11 R20	Resistor CR25 10K	
	R10,12 13,25,26	Resistor CR25 4K7	
2	R14,15	Resistor CR25 220R	
4	R16-19	Resistor CR25 3K9	
4	R21-24	Resistor CR25 2K2	
3	RN1,5,6	Resistor Network 2K2 4ELE 5Pin	
3	R2-4	Resistor Network 2K2 8ELE 9Pin	
1	C1	Capacitor 0.22uF 368 Type 100v	
2	C2,3	Capacitor 0.1uF DISC CERAMIC	

FRONTLINE ELECTRONICS

NO: FL0012 REV: 0

DESCRIPTION

CREDIT BOSS

QTY	REF	DESCRIPTION	STOCK No.
1	C4	Capacitor 100uF 25v E.R.	
1	C5	Capacitor 22PF Plate or Disc Ceramic	
2	SW1,2	Dipswitch 6 Pole	
4		Screw M3 x6 Pan Pozi	
4		Nut M3 Full	
4		Washer M3 Shakeproof	

FRONTLINE ELECTRONICS

NO: FL0012 REV: 0

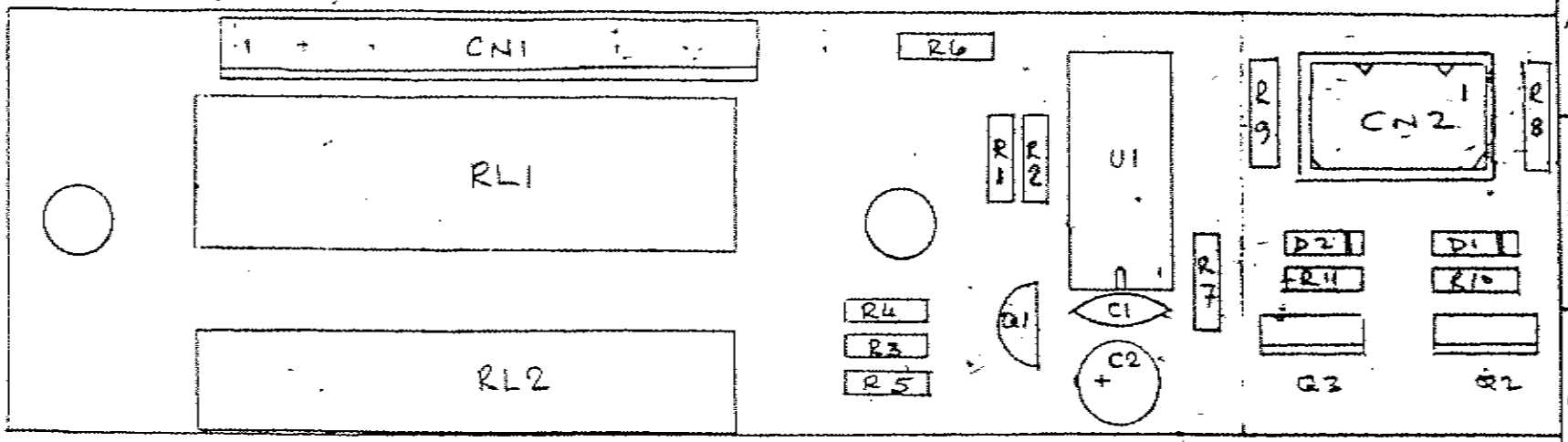
DESCRIPTION

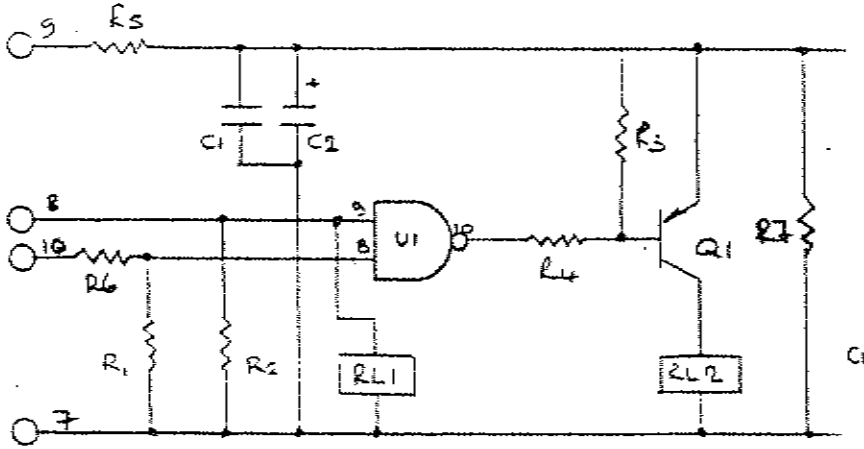
CREDIT BOSS

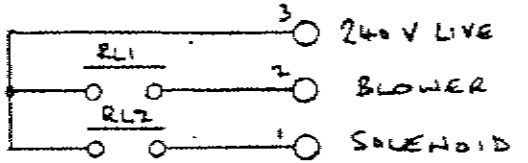
PART OF

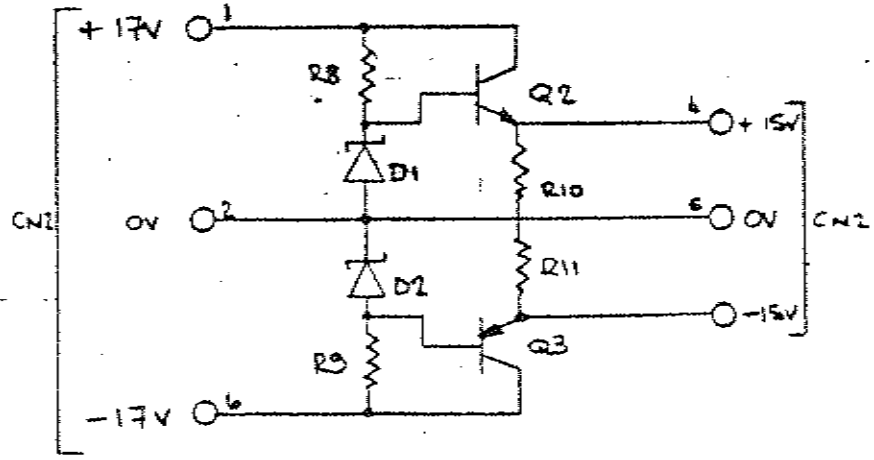
DO NOT SCALE

SHEET OF









ISSUE	DESCRIPTION	APPD	DATE
3			

TITLE

RELAY PCB

DRAWN	TRACED	CHECKED	APPROVED	DATE

DRAWING No. FL0039

Amusement Machine Manufacturer & Distributor

Harry Levy
Amusement Contractor Ltd.
Units 1 - 4 Patricia Way, Pysons Road Industrial Estate
Broadstairs, Kent CT10 2LF England
Telephone: (0843) 866464 Fax: (0843) 860144

U.S.A. OPERATORS INSTRUCTIONS FOR ;
JUGGLIN JASPER CRAZY CLOWN TRASHCAN ALLEY

fit a suitable plug to the mains lead using a 10 Amp fuse.
The wire colourings are;-

BROWN	- HOT (LIVE)
BLUE	- NEUTRAL
GREEN/YELLOW	- EARTH

This machine must have an EARTH connection.

IMPORTANT

Personnel other than skilled service engineers should disconnect the machine from the mains supply before gaining access for servicing.

ATTRACT MODE

On both sides of the playfield and in the prize display area, there is a continuously running light display.
At regular intervals the blower will start, and blow the balls over the playfield. At the same time the score lights will reset and then switch on in sequence, while the driven clown will automaticaly move left and right to simulate catching the balls. Music is played while this is going on.

THE GAME

Insert coin/s (makes a sound on coin entry), the display shows the credits given and the start button illuminates. Press the start button and the game music starts, the blower starts to deliver the balls to the playfield, and the time clock (arrow in the middle of the playfield) starts to countdown the duration of the game.
The table tennis balls fall through the playfield pins and the player has to catch them by 'driving' the mobile clown (jasper) left and right. Each ball caught registers with a sound, and lights one of the circle of 30 score lamps.
At the end of the game the appropriate tickets will be dispensed while a tune is played.

For information on fuse ratings, the game time control, the ticket payout settings, and volume control, refer to drawing HLCL-2924-D, enclosed.

ACCESS TO THE DISPLAY AREA

Access is gained via the locked door at the rear of the machine.

ACCESS TO THE PLAYFIELD

Unlock the front window and lower onto the steering wheel shaft, then pull the top edge of the window out, until it can be lifted clear.
To remove the playfield inner glass, unscrew the single fixing screw at the top of each strip of flashing lights, do NOT attempt to remove the lights from the machine as they are connected permenantly by the cable, just lay both strips down in a cross on the inner shelf. The inner glass can now be lifted out.

ACCESS TO THE BLOWER AND BALL SYSTEM

Switch the machine OFF at the mains supply.

Remove the large back door. This gives access to the blower, the power supply unit, the ball feed system, the flashing light driver, the game control P.C.B. and the motors for the time clock and Clown (Jasper) movement.

To access the ball system, unscrew the top (metal) pipe bracket, and remove the top 3 pieces of pipework. The pipe fixing of the long vertical section of pipe unclips by putting a screwdriver blade into the slot on the lefthand side, and twisting. This allows the long pipe to be removed (and the balls fall out!).
To remove the ball run box, unplug the electrical connectors to it, and unscrew the fixing into each side of the cabinet. The box will now slide out R.H. end first. (Replace L.H. end first).

The number of balls should be maintained at 15 in the system to ensure correct operation. Load into the top of the long upright pipe when re-assembling.

ALARM

An alarm will sound when the ticket level is so low that the low level microswitch under the ticket stack operates.

INTERNAL MAINS SWITCH

The mains switch is fitted to the power supply unit, with access via the large back door. It is a rocker switch type with integral neon lamp to indicate switch status. Neon lit indicates it is switched ON.

Before servicing disconnect the machine from the mains supply.

POWER SUPPLY FUSE RATINGS

There are 3 fuses located just above the mains switch, they are 20 mm type, as viewed the lefthand is 10 Amp, centre is 5 Amp, and righthand is 2 Amp.
There is also an in-line fuse on one of the transformer RED low voltage output wires, this is 10 Amp rated, 1.25 inch type.

ALWAYS switch the machine OFF before checking or changing fuses.

INPUT VOLTAGE ADJUSTMENT

There are a number of colour coded tappings on the transformer and it is in the owners interest to select the tap corresponding to the local voltage supply.

Neutral - BLUE
110 V - ORANGE
115 V - GREY
120 V - WHITE
127 V - PINK

The machine is shipped ex U.K. set at 120 V AC.
To change the input tap, DISCONNECT the machine from the mains supply.
Unplug the 9 way molex connector in the power supply unit.
Remove the Brown/yellow input wire from the 9 way housing, leaving the Brown/yellow loop intact.
Select the hole corresponding to the required voltage by reference to the other half of the connector, and push home the removed wire. Rejoin the connector. Replace the back door, and switch on.

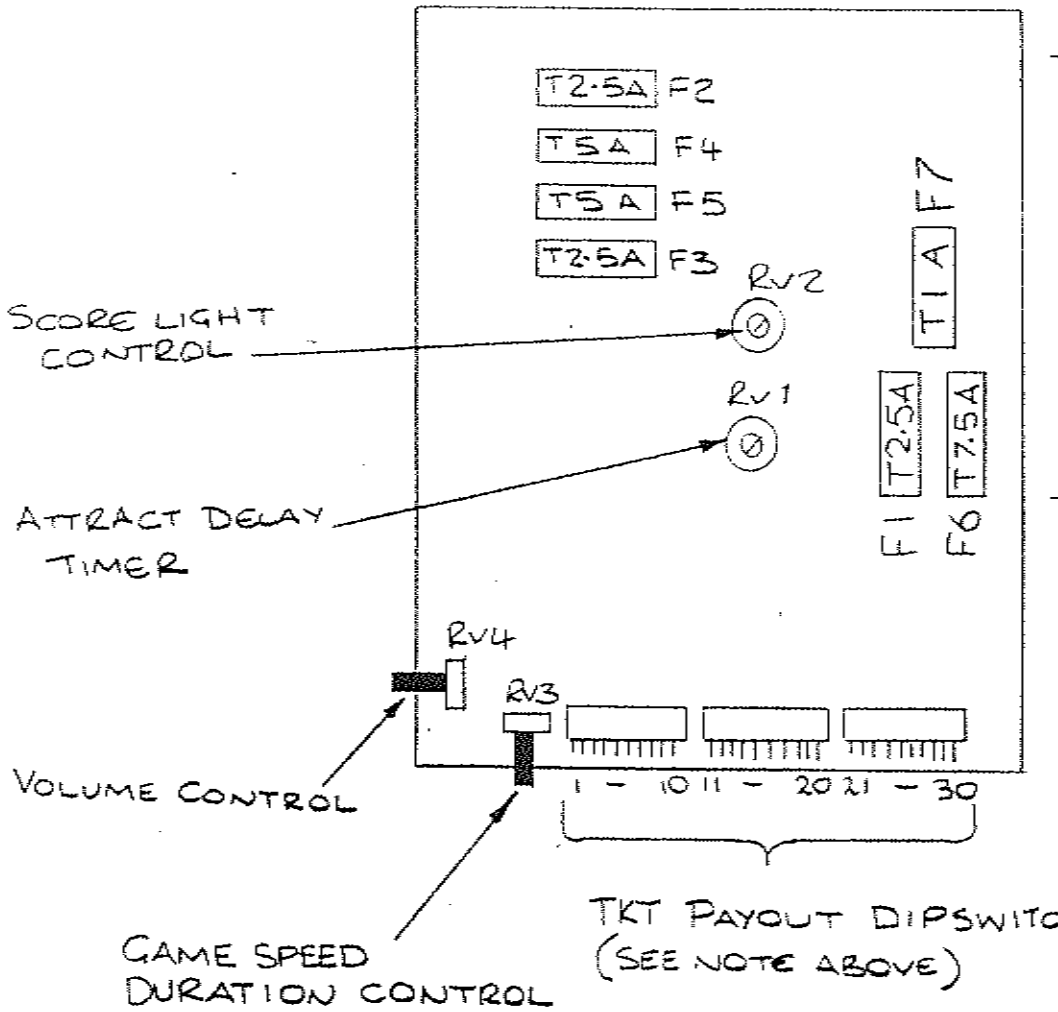
PART OF

DO NOT SCALE

SHEET OF

DRG. No. 2924

NOTE : TICKETS WILL BE PAID OUT ON EVERY SWITCH THAT IS SET ON WHEN THE SCORE REACHES THAT NUMBER



FUSE ARRANGEMENT

F1 = FLASHER UNIT

F2 = 16V SUPPLY TO BD THEN REGULATED TO 12V. CONTROLS :— START LAMP, COIN COUNTER, TICKET MACHINE, CYBERTONE AND ARROW M/SWITCH.

F3 = MAIN LOGIC AND 5V

F4 = +17V } STEERING DRIVE

F5 = −17V } AND SOUND

F6 = SCORE LIGHTS

F7 = 24V LINE TO POINTER ARROW (GAME TIME) MOTOR

ISSUE	DESCRIPTION	APPD	DATE
2	EXTRA DETAIL ADDED	BW	3/7/92

DEV
PROD
SHOP. F

TITLE: LOGIC BOARD INSTRUCTIONS

DRAWN	TRACED	CHECKED	APPROVED	DATE
BW				7.5.92

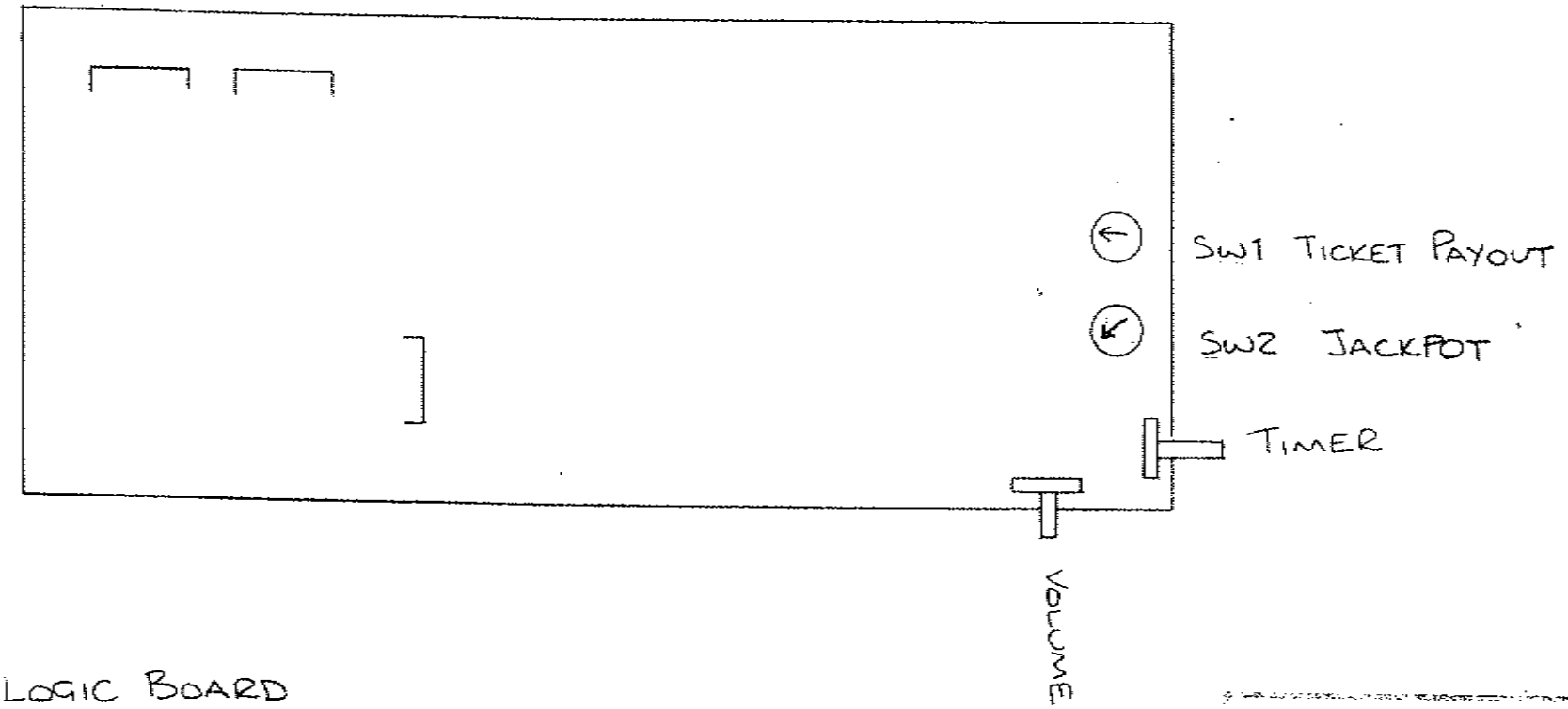
DRAWING No. HL CL-2924-D

PART OF

DO NOT SCALE

SHEET OF

DRG. No. 4585



LOGIC BOARD
FL0084

ISSUE	DESCRIPTION	APPD	DATE

DEV/
PROD

TITLE
SWITCH
LAYOUT

DRAWN	TRACED	CHECKED	APPROVED	DATE
BW				25-7-94

DRAWING No. HLTA-4585-D

QTY	REF	DESCRIPTION	STOCK No.
1		PCB FL0039 Unpopulated	
1	RL1	Solid state relay FR ZPV6004A	
1	RL2	Solid state relay D2W 202F	D2W202F
1	U1	4093 TOSHIBA ONLY	
1	Q1	BC213L	
3	R1-3	RESISTOR CR25 100k	
1	R4	RESISTOR CR25 10k	
1	C1	CAPACITOR 0.1uF 25V DISC CERAMIC	
1	C2	CAPACITOR 47uF 25V E.R	
1	R5	RESISTOR CR50 470R	
	R6	RESISTOR CR25 220K	
1	R7	RESISTOR CR25 220R	
1	CN1	CONNECTOR 10 WAY 0.156" HEADER	
1	CN2	CONNECTOR 6 POLE PLUG HSG	
6	CN2	MALE PIN PCB	
1	Q2	TRANSISTOR BDT65C	
1	Q3	TRANSISTOR BDT64C	
2	D1,2	DIODE ZENER BZX85 16V	
2	R8,9	RESISTOR CR50 390R	
2	R10,11	RESISTOR CR25 4K7	
1		I.C. SKT 14 PIN	
2	Q2,3	HEATSINK SHS21	
2	Q2,3	SCREW M3X6 PAN POZI	
2	Q2,3	NUT M3	
2	Q2,3	WASHER M3 SHAKEPROOF	

FRONTLINE ELECTRONICS

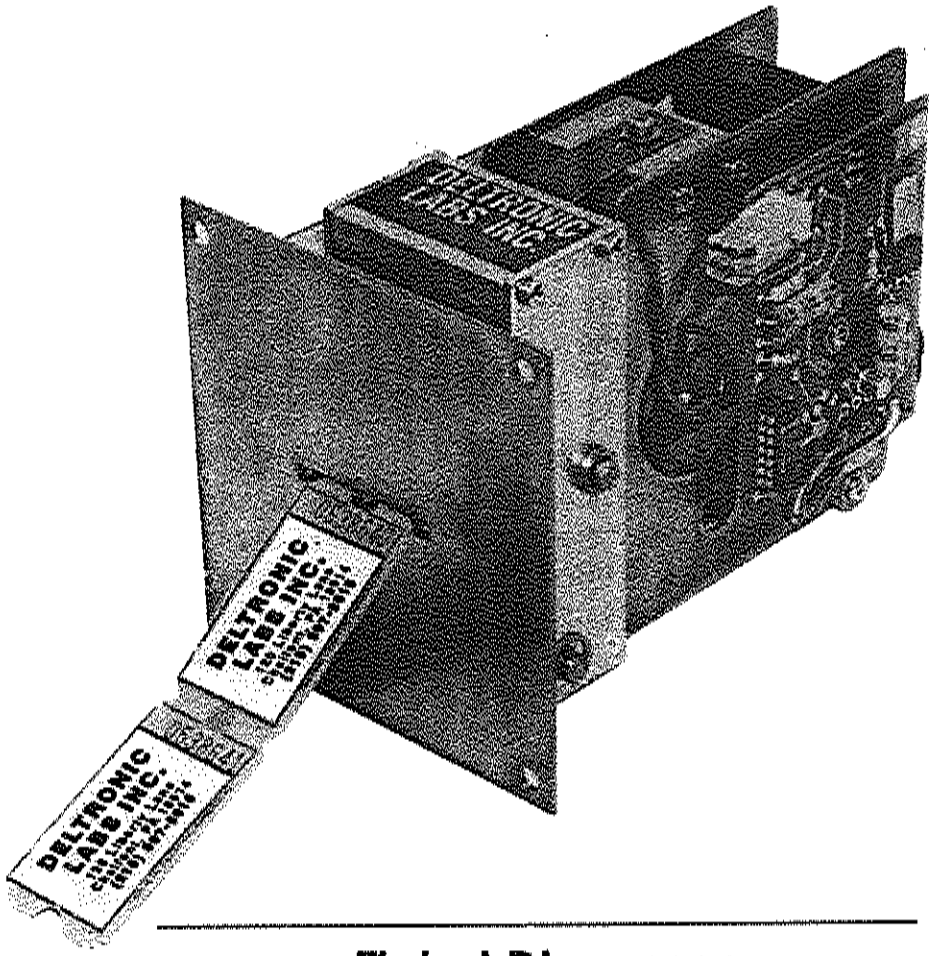
NO: FL00039 REV: 2

DESCRIPTION

Relay PCB

(CRAZY CLOWN)

Ticket Dispenser MANUAL



Ticket Dispenser

Another quality product from Deltronic Labs Inc.
. . . the industry leader in ticket dispensers

Deltronic Labs inc.
120 Liberty Lane, Chalfont, PA 18914
215-997-8616 • FAX # 215-997-9506

DELTRONIC LABS INC.

Ticket Dispenser

PATENT NO. 4272001

1. Loading Of Tickets with Ticket Advance Switch

Tickets are inserted into rear of ticket chute and pushed forward to rollers. Push ticket advance switch until you see edge of ticket.

2. Manual Loading Of Tickets

Tickets are inserted into the rear of ticket chute and pushed forward. The power driven roller will be spring loaded against the idler roller and tickets will not pass until rollers are clear of each other. This is accomplished by use of thumb and index finger, one placed on the block to which spring is attached, the other on the pivot bracket assembly, then squeeze. Push tickets through until you see edge of ticket. Machine is now ready to operate.

3. Electronic System

Attached to the ticket machine is a solid state motor controller, which provides dynamic braking to ensure accurate and repeatable ticket stopping after issuing any number of tickets. Included as part of the controller is ticket sensing by means of an opto-electronic beam breaker sensor, which detects the notch between tickets. The output of the ticket sensing circuitry is an open collector transistor.

4. Roller Tension Spring

The roller tension spring keeps constant tension on tickets, which insures proper delivery and prevents tickets from being pulled through when the dispenser is idle. To increase tension, loosen screw and move spring forward. Tension is adjusted correctly when tickets cannot be pulled from dispenser.

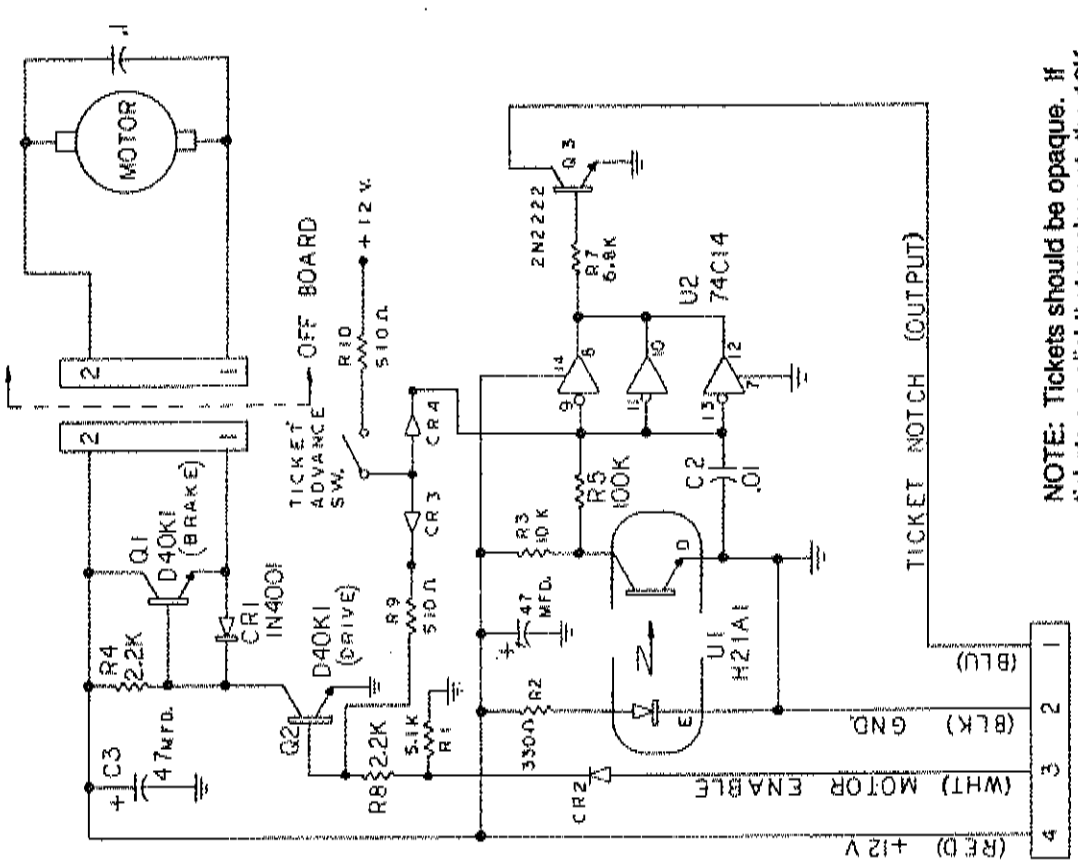
5. Ticket Guide Spring

The ticket guide spring insures that the notches in the tickets pass through the opto-beam breaker sensor. To decrease tension, loosen screw and move outer spring up. This changes the tension on the inner spring. Tickets should be snug between spring and side plate but not deformed by excess tension. The spring is adjusted at the factory for 1 5/32" wide tickets.

6. Ticket Stop Adjustment

The ticket stop adjustment allows positioning of tickets while the machine is off. The ticket should protrude through the slot approximately 1/16". The ticket dispenser P.C. board is mounted with 2 screws in 2 slotted holes. Loosening the screws and moving the board forward, will allow the tickets to stop farther out beyond the edge of the slot.

Control Board
DL-1275

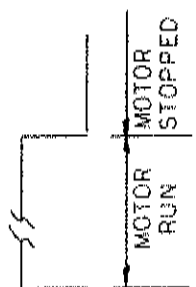


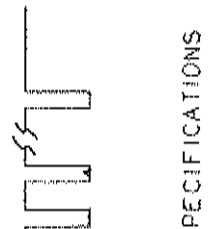
NOTE: Tickets should be opaque. If tickets are slightly translucent, the 10K collector resister of the H21A1 sensor can be lowered in value to allow sensor to work correctly.

Connector
Molex # 03-09-2041

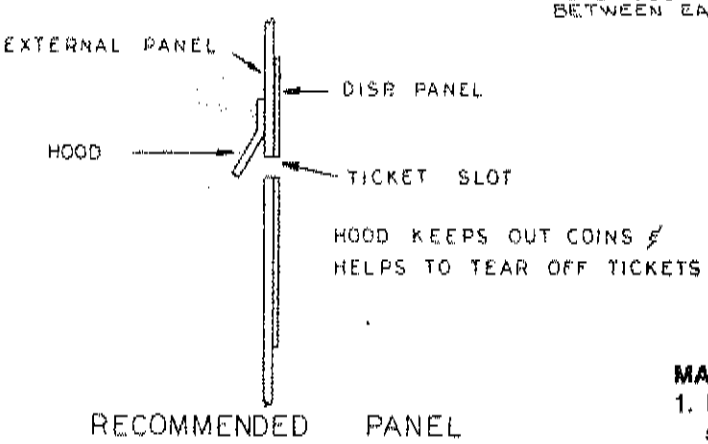
INTERFACE SPECIFICATIONS

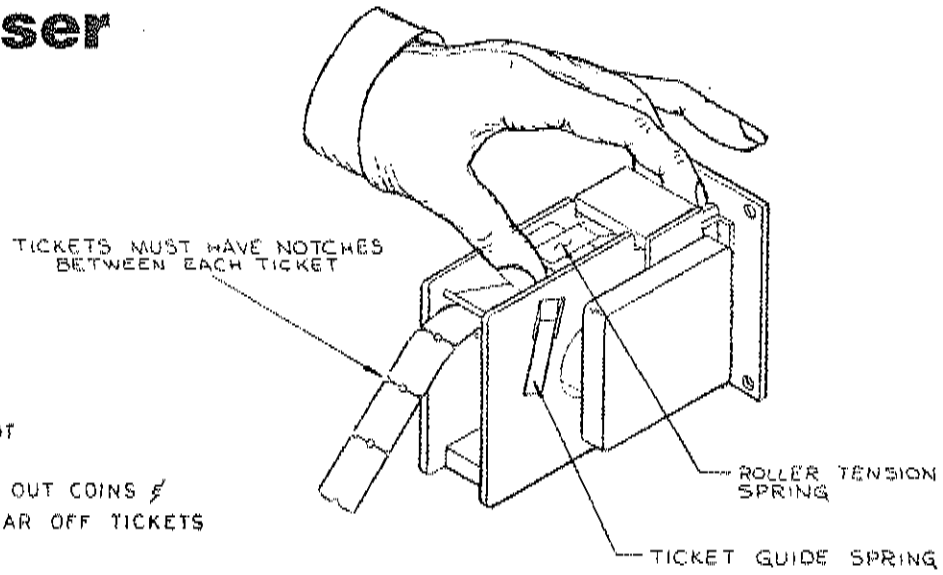
	MIN.	TYP.	MAX.
MOTOR SUPPLY — V	11 V	12 V	13 V
I (START)	1.3 A	1.5 A	1.7 A
(RUN)	—	.4 A	.85 A
(STANDBY)	—	—	30 MA
MOTOR ENABLE ON — V	+ 2.5 V	—	+ 12 V
I	250μA	—	2.5 MA
MOTOR ENABLE OFF — V	—	—	1.0 V
I	—	—	0
TICKET NOTCH — SINK — I	—	—	50 MA
V PULL-UP	—	—	30 V





Ticket Dispenser



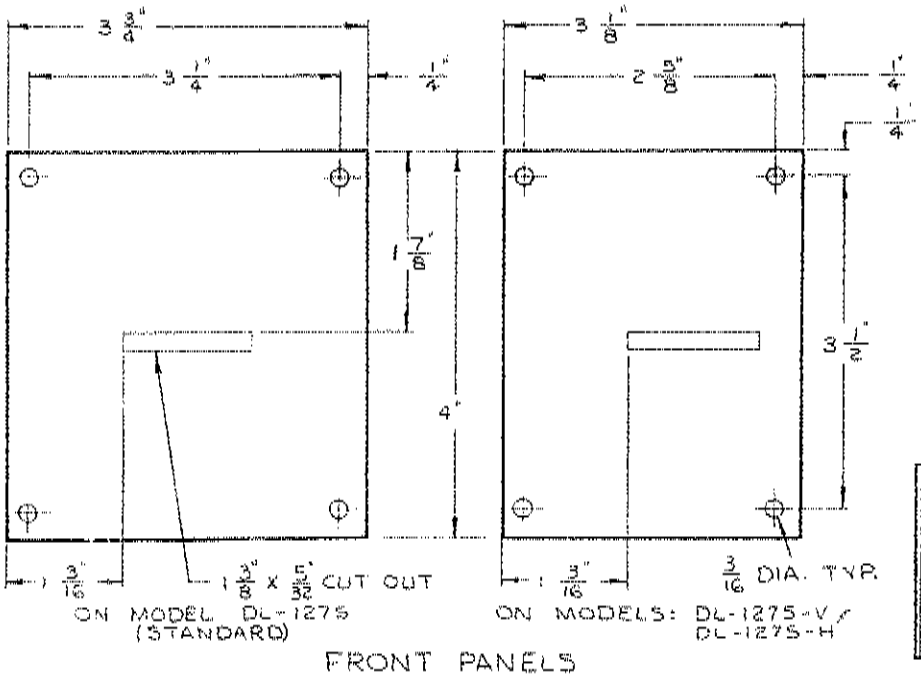


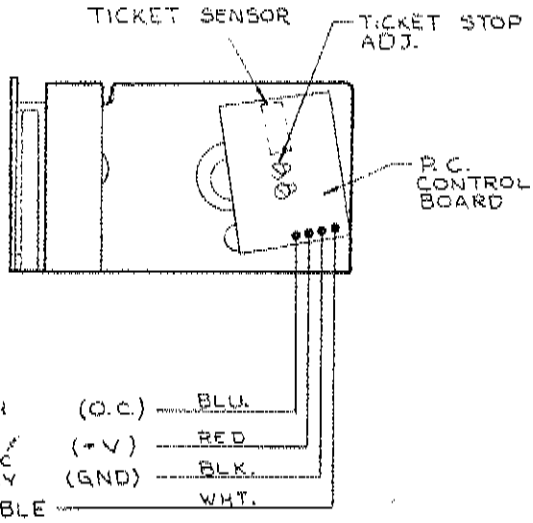
MANUAL TICKET LOADING DIRECTIONS:

1. Insert tickets as indicated and feed tickets past the ticket guide spring until they stop.
2. Place fingers as indicated and squeeze, this opens the feed rollers.
3. Feed tickets until the first ticket protrudes approx. 1/16" beyond the dispatch slot.
4. Release rollers. Ticket Dispenser is now loaded and ready for use.

TICKET LOADING WITH ADVANCED TICKET SWITCH:

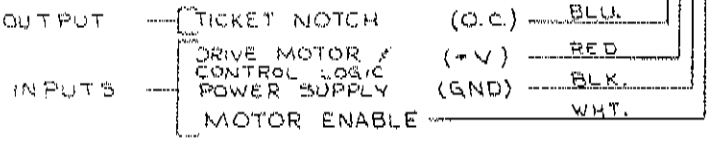
1. Insert tickets into rear of ticket chute and push forward to rollers.
2. Push ticket advance switch until you see edge of ticket
3. Release switch. Ticket Dispenser is now loaded and ready for use.



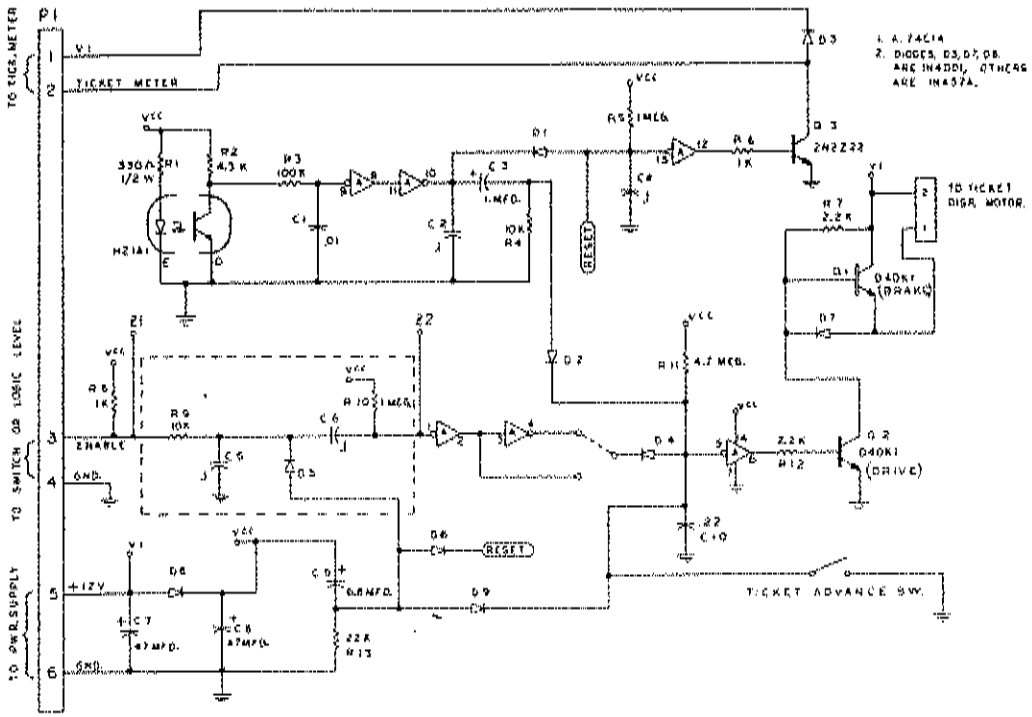


TICKET DISPENSER DIMENSIONS

LENGTH:	5-1/2"
HEIGTH:	4"
WIDTH:	3-1/8"



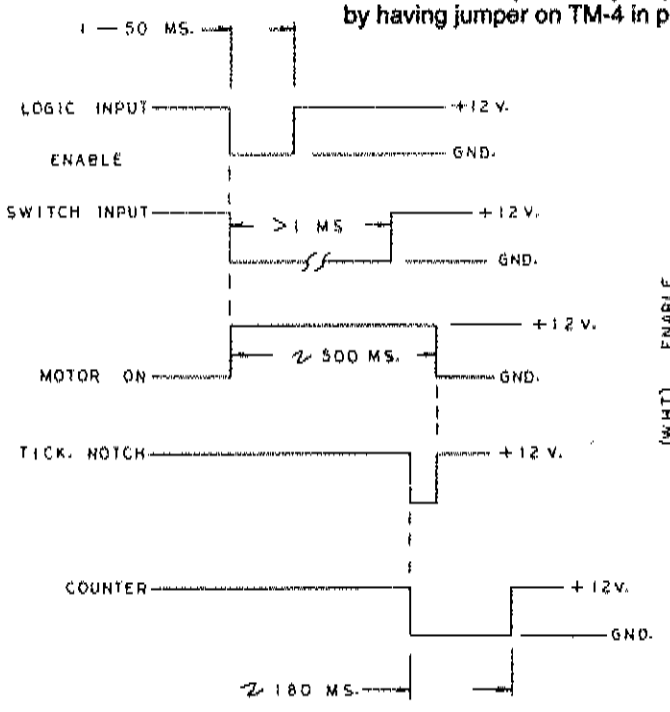
Control Board
DL-4-S-S DL-4-P-S

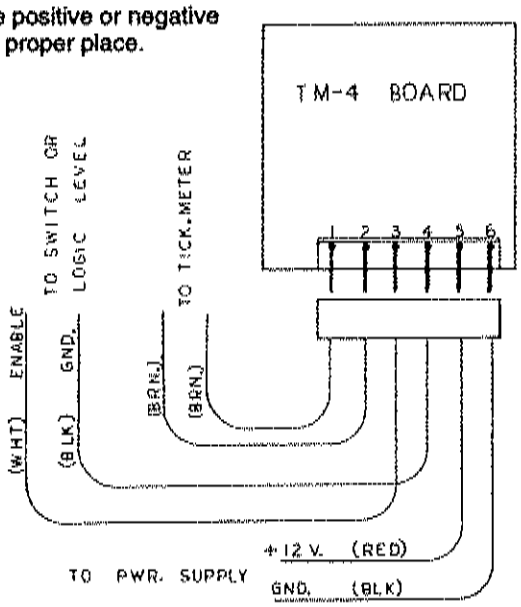


Model # DL-4-S-S, SW Input
Model # DL-4-P-S, Logic Input

NOTE: With logic input, components in dotted lines are omitted and Z1 is jumpered to Z2.

NOTE: Enable pulse may be positive or negative by having jumper on TM-4 in proper place.

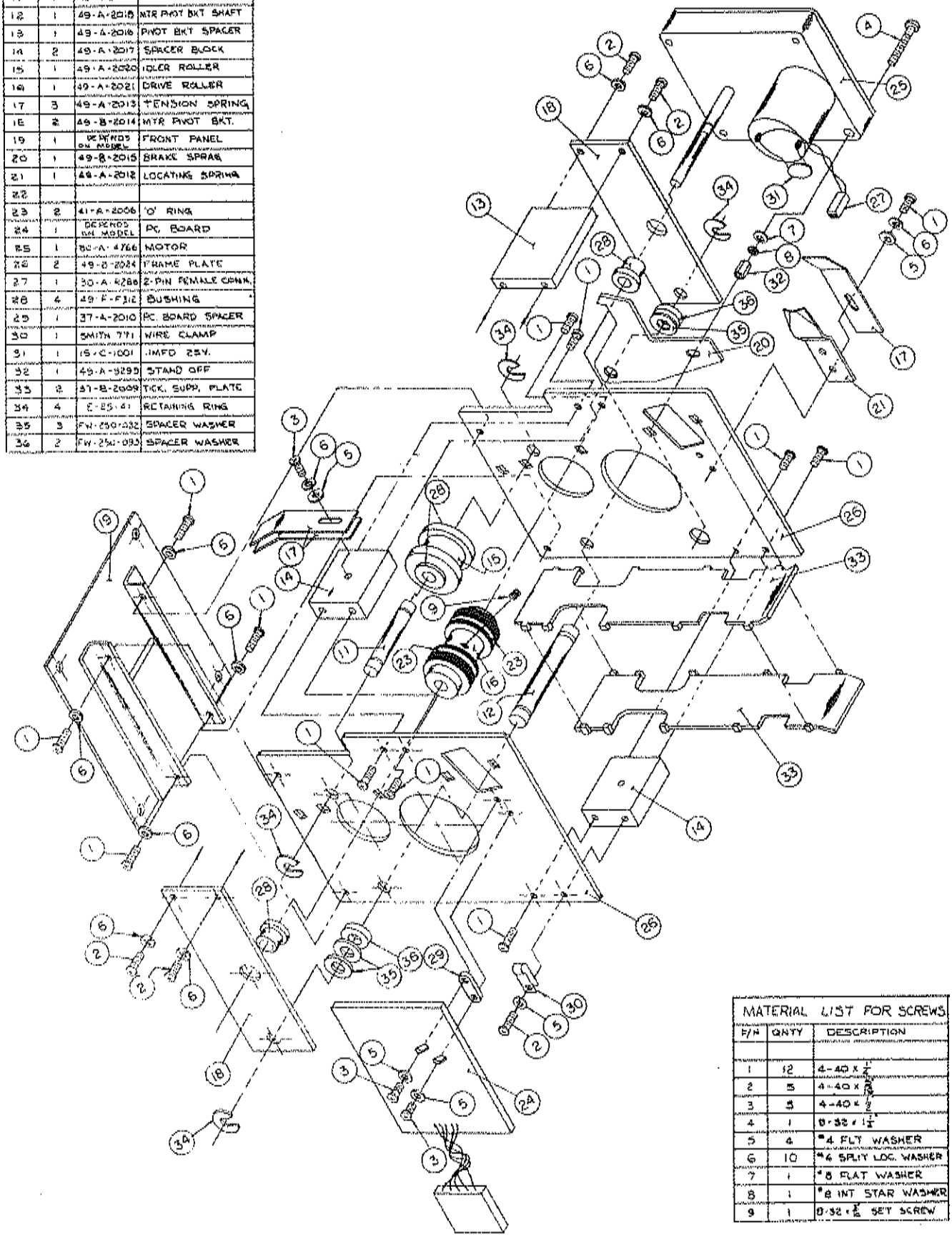




Model # DL-4-S-S
Model # DL-4-P-S

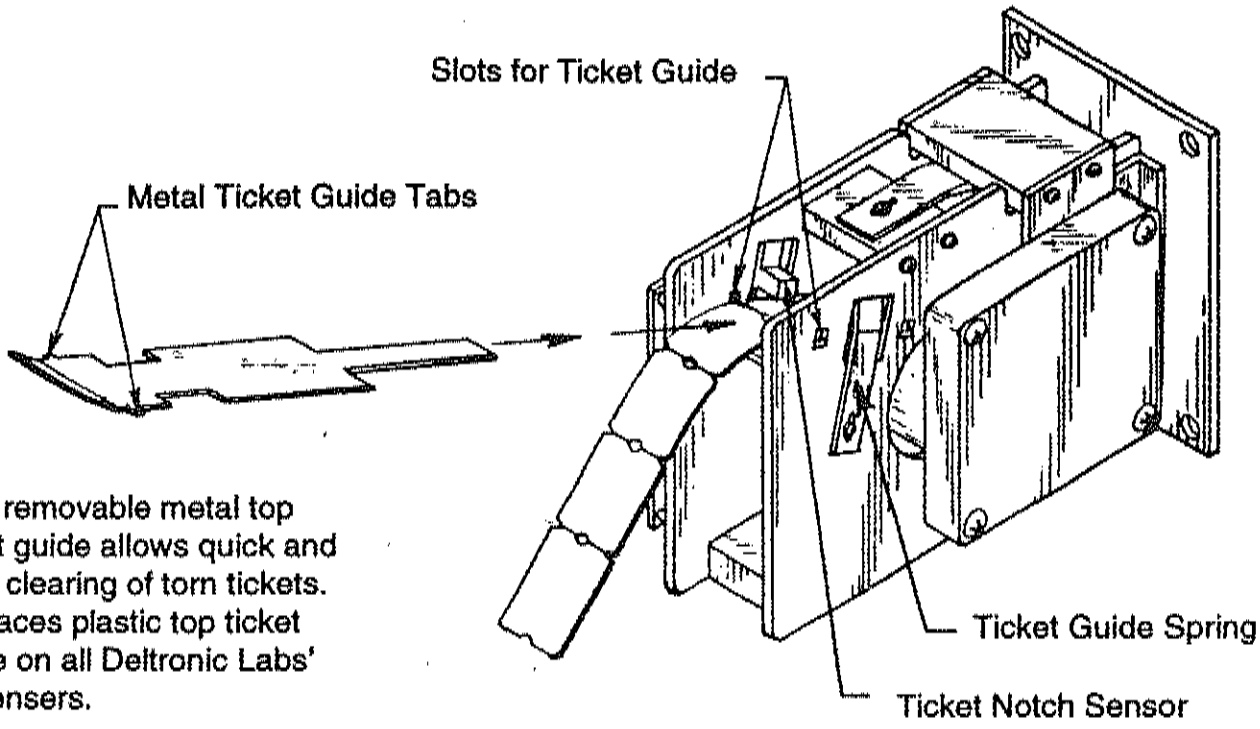
Ticket Dispenser Assembly

DETAILS OF PARTS			
F/N	QNTY	DELTRONIC LABS P/N	NAME
11	1	49-A-2019	IDLER ROLLER SHAFT
12	1	49-A-2018	MTR PIVOT BKT SHAFT
13	1	49-A-2016	PIVOT BKT SPACER
14	2	49-A-2017	SPACER BLOCK
15	1	49-A-2020	IDLER ROLLER
16	1	49-A-2021	DRIVE ROLLER
17	3	49-A-2013	TENSION SPRING
18	2	49-B-2014	MTR PIVOT BKT.
19	1	DEPENDS ON MODEL	FRONT PANEL
20	1	49-B-2015	BRAKE SPRAG
21	1	49-A-2012	LOCATING SPRING
22			
23	2	41-A-2006	'O' RING
24	1	DEPENDS ON MODEL	PC. BOARD
25	1	80-A-4766	MOTOR
26	2	49-B-2024	FRAME PLATE
27	1	30-A-4286	2-PIN FEMALE CONN.
28	4	49-F-F12	BUSHING
29	1	37-A-2010	PC. BOARD SPACER
30	1	SMITH 771	WIRE CLAMP
31	1	15-C-1001	.1MFD 25V.
32	1	49-A-9295	STAND OFF
33	2	37-B-2009	TICK. SUPP. PLATE
34	4	E-25-41	RETAINING RING
35	3	FW-250-032	SPACER WASHER
36	2	FW-250-093	SPACER WASHER



MATERIAL LIST FOR SCREWS		
F/N	QNTY	DESCRIPTION
1	12	4-40 x 1/4
2	5	4-40 x 3/8
3	3	4-40 x 1/2
4	1	8-32 x 1 1/2
5	4	#4 FLT WASHER
6	10	#4 SPLIT LOC. WASHER
7	1	#8 FLAT WASHER
8	1	#8 INT STAR WASHER
9	1	8-32 x 1/4 SET SCREW

Quick Release Metal Ticket Guide



New removable metal top ticket guide allows quick and easy clearing of torn tickets. Replaces plastic top ticket guide on all Deltronic Labs' dispensers.

Instructions: STEP 1. Remove Top Plastic Ticket Guide
STEP 2. Insert Metal Guide parallel to bottom plastic Guide, above sensor and ticket guide spring until Guide tabs touch rear of frame sides. Slightly twist Guide clockwise until right tab slides within frame sides. Continue sliding guide parallel. When cut-outs on Ticket Guide align with sensor tabs engage with mounting slots in frame sides. Make sure that the front of the Guide extends thru the slot in front panel of dispenser.

To Remove Metal Guide: Spread frame sides slightly and twist Guide clockwise. Remove guide by reversing Step 2.

Ticket Dispenser Validation Kit

Function: As tickets pass through the dispenser, they are indented by coarse "diamond" knurls. The metal ticket guide can be snapped out and in again for servicing idler and drive rollers.

Retrofits existing rollers and top plastic ticket guide in all Deltronic dispensers.

Contents:
1 knurled metal drive roller - replaces present drive roller
2 knurled metal idler rollers - replaces present idler roller
1 metal ticket guide - replaces top plastic guide, bottom plastic guide remains

More quality products from Deltronic Labs . . . the industry leader in ticket dispensers

Our Standard Dispenser - the DL-1275

Our most popular unit known as the "industry standard" and used by the largest number of manufacturers. This dispenser is controlled by the game software. The game turns on the dispenser with a logic high signal and monitors a return notch signal from the ticket dispenser to turn it off. It will dispense as many tickets as game options allow.

M-300-20 Interface Board for quicker pulses

The **M-300-20** is an interface logic board that enables the DL-1275 ticket dispenser to accept quicker pulses than the DL-4-S-S, and stores up to 256 pulses. Switches are used to set the number of tickets per pulse from 1 to 16.

SC700 or "Yogi" Interface Board for versatility

The **SC700** is an interface logic board that is controlled by a microprocessor allowing the program to be changed. This board is made for video poker type games, since it will vend an adjustable number of tickets. Various counts from 1 to 4,096 pulses can be set using 12 option switches. It also dispenses between 1 and 16 tickets determined by four option switches.

One Pulse Ticket Dispenser - the DL-4-S-S

This is a one pulse-one ticket dispenser. The game pulses the dispenser once and one ticket is vended. This frees the game from having to count ticket notch pulses. A switch wired to its input is closed so that the game doesn't need to monitor any return signal. However, the game must insure that the switch will not be activated more than twice per second.

Input Coupler Option: The **DL-4-P-S** uses a logic input rather than a switch.

Optical Coupler Option: The **DL-4-O-S** uses an optical coupler input instead of a switch or logic.

Our Ticket Eater™

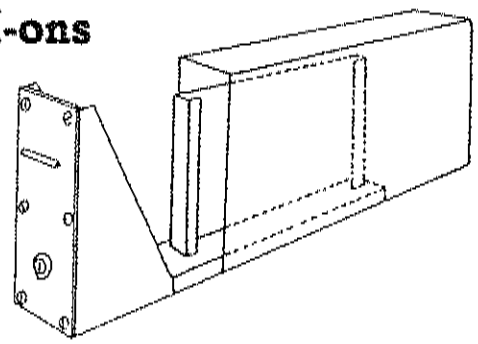
Count and destroy redemption tickets in one fast operation

An electronic counter speeds through piles of tickets at the rate of 13 per second for faster and more accurate counts. Then each redeemed ticket is automatically destroyed preventing re-use. Plus an internal, non-resetable counter can be used to balance inventory.

Ticket Dispenser Validation Kit

Retrofits existing rollers and top plastic ticket guide. As tickets pass through, they are indented by coarse "diamond" knurls. This differentiates them from tickets in inventory, protecting you from misuse.

Add-ons



Enclosure A steel housing for ticket dispenser and ticket bin, mounts on the outside of a game.

Ticket Bin Holds 2000 tickets

Mounting Plate A stainless steel plate that fits over the front of our ticket dispenser and allows for direct mounting to your game.

For specifications, and/or more information about any of our products, please call **215-997-8616.**