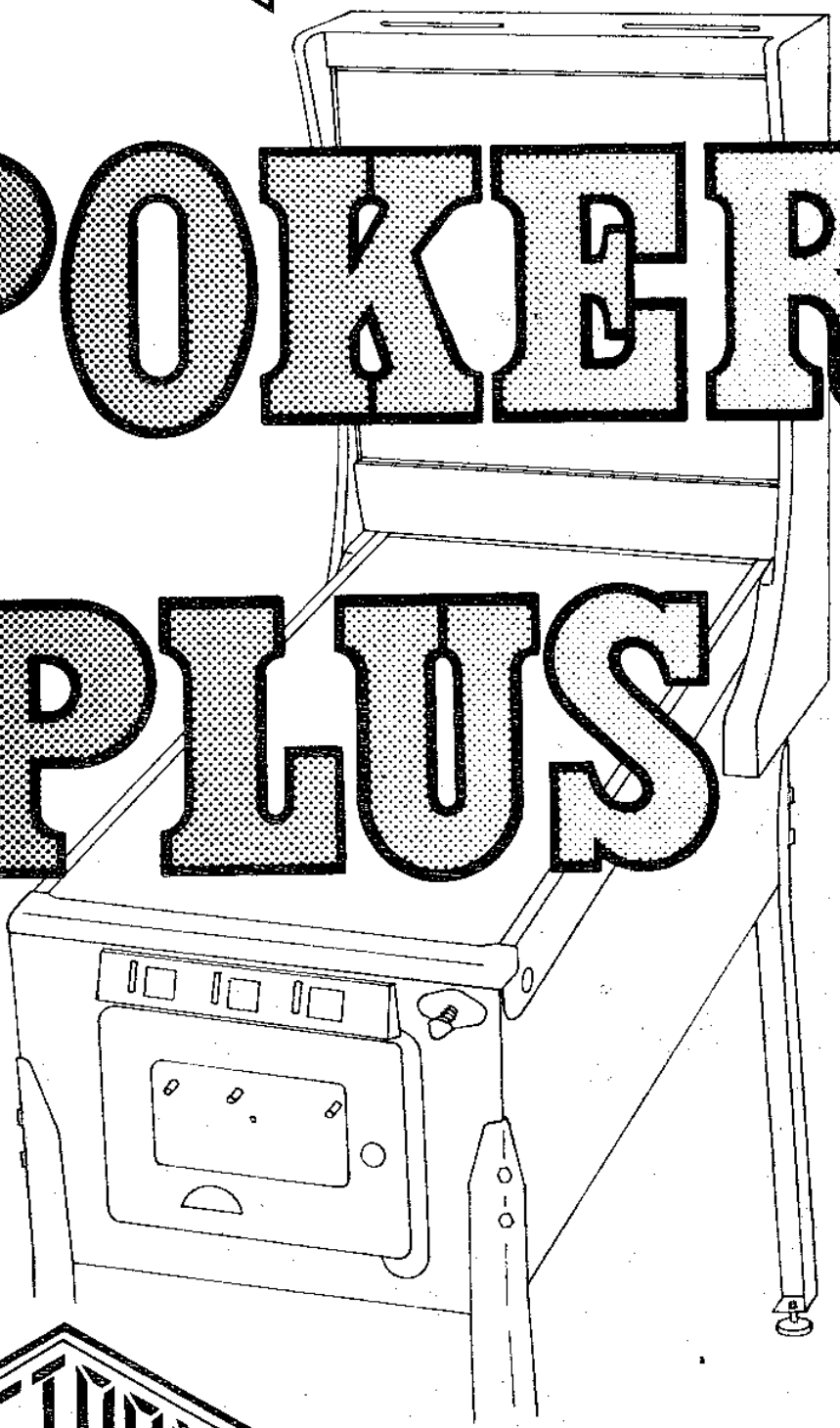
EURO

REGEL SPAIN S.A.
Manufactured in Madrid

FLIP

POKER PLUS



ELECTRONIC SYSTEM

SERVICE MANUAL

ELECTRONIC DIVISION

DOCUMENT NR.035-613

MR. OPERATOR

We would advise you of the importance of reading this Manual, which will help you to obtain the very best efficiency in our electronic Pin-Ball.

SECTION A

GENERAL INFORMATION

"SYSTEM III" represents the most advanced application of electronics technology in the pin-ball industry. Its performance betters all previous system possibilities with surprising simplicity, offering in addition such a quantity of information that opens up a new era in coin operated games, thus allowing a strict and programmed control over the performance of every machine in all aspects (coin collection, faults, game behaviour, timing, etc.).

All the information supplied by the machine (which is printed out) can be fed into a main computer, which will file and process all data, giving out percentages, averages, statistics, and activate alarms when some parameter suffers a deviation greater than the set values.

GENERAL CHARACTERISTICS

* Processor in use: ROCKWELL PPS-4
* Intelligent system assembled on just 1 (one) module
* General wiring system: flat tape
* Data memory maintained when machine is switched off
* 4 counters of $6\frac{1}{2}$ digits
* Different handicap for each player
* 3 and 5 balls
* 3 adjustable coin rejectors
* Electronics-digital sound
* 2 types of game with extra play
* 3 types of game with extra ball
* Limit on extra play = 9 (separate from credit display)
* Limit on extra ball = 9 (with display for this use)
* Credit limit adjustable from 9 through 99
* Electronic match number
* Adjustments and rules contained in memory (without switches)
* Model and serial number register
* Register code of the last printer used for coin collection
* Data or number register of last coin collection
* Game Over machine time register
* Machine "In Play" time register
* Coin meter for 1st coin rejector
* Coin meter for 2nd coin rejector
* Coin meter for 3rd coin rejector
* Extra ball meter
* Extra game meter
* Total service meter
* Total play meter

.../...

* 4 extra meter for use in the game or for any other use
* Display presentation of all above mentioned data
* Print-out of all data on portable mini-printer
* Charge and/or zeroing of registers and meters with printer
* Data collection from mini-printer can be fed to central computer
* Power supply (adjustable) - 95 - 110 - 125 - 145 - 190 - 205 - 220 - 240 V. (50 cycles) A.C.
* Consumption 110 Watts (at rest)
  280 Watts (maximum)
* Playfield inclination: 5^{o} ÷ 10^{o} (adjustable)
* Dimensions when mounted: 1190 mm deep
  650 mm wide
  1800 mm high
* Dimensions in transport: 1310 mm deep
  660 mm wide
  610 mm high
* Nett weight: 105 kgs.

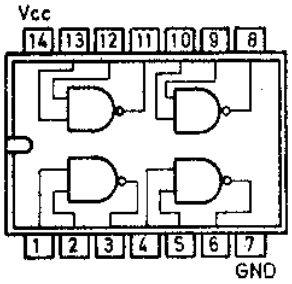
NOTE

RECEL S.A. reserves the right to change whatever specification of its product that it sees fit without prior notification.

RECEL S.A. assumes no responsibility as to the use of the information contained herein.

CHIPS UTILIZED

SN7400N



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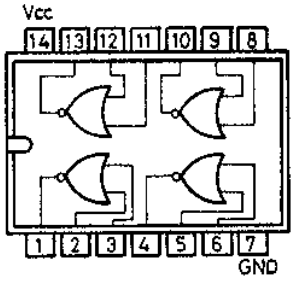

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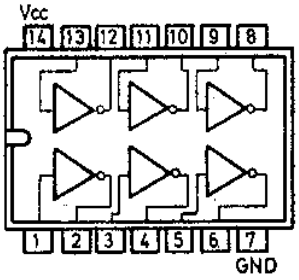

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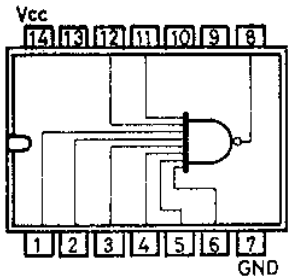

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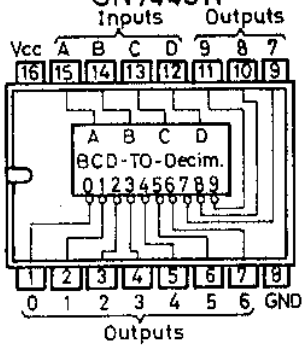

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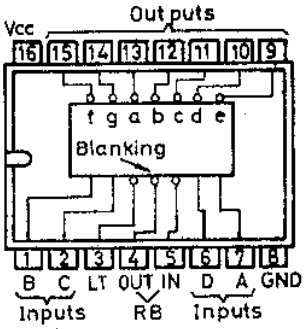

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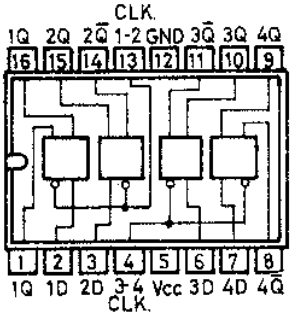

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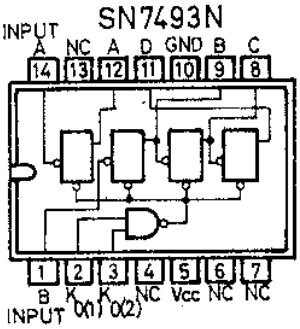

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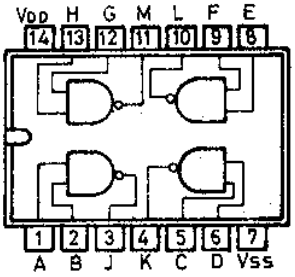

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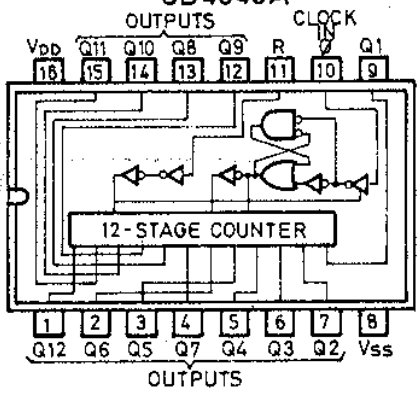

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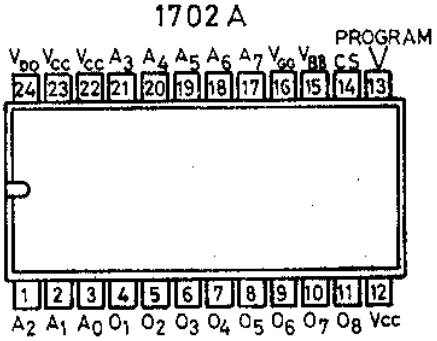

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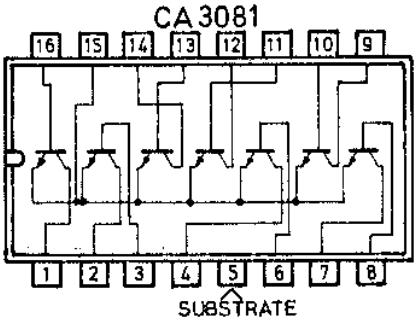

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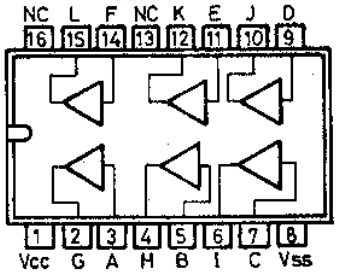
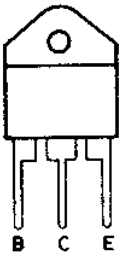


COMPONENTS UTILIZED



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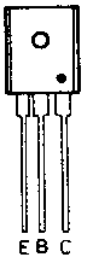
TIP142



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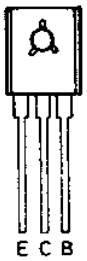
MC150



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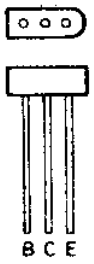
BD137
BD138



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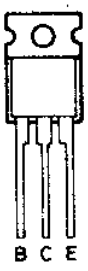
SC109
2N4291



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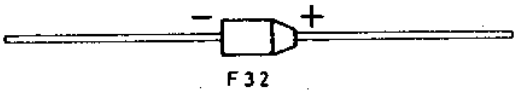
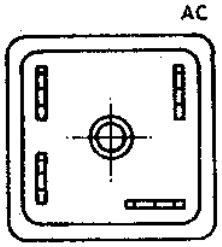
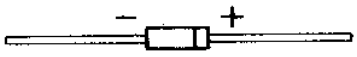
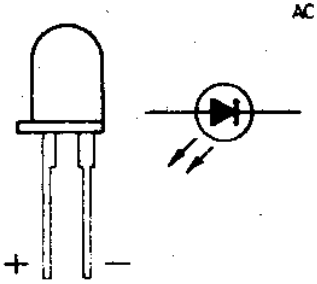




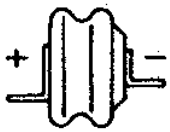
AC BRIDGE 25 A





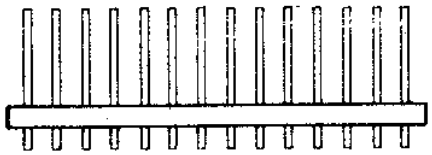
LEDS

RESISTOR ARRAY 15K x 9

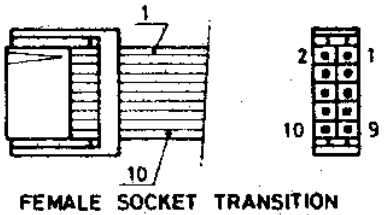


BATTERY 2x1,2V.

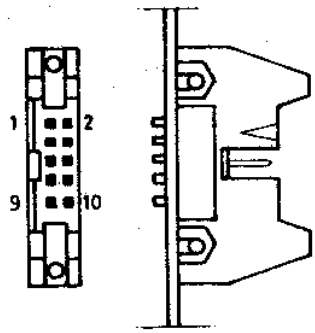
CONNECTORS



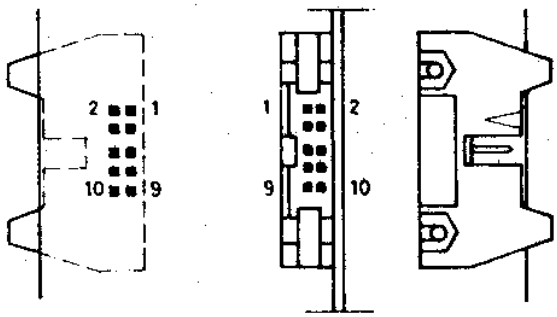
MOLEX



FEMALE SOCKET TRANSITION

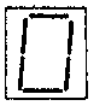
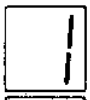


ANSLEY WITH RIGHT CONTACTS



ANSLEY WITH STRAIGHT CONTACTS

DECIMAL/EXADECIMAL/BINARY TABLE

DECIMAL	EXADE-CIMAL	DISPLAY PRES.	BINARY
			DCBA
0	0		0000
1	1		0001
2	2		0010
3	3		0011
4	4		0100
5	5		0101
6	6		0110
7	7		0111

DECIMAL	EXADE - CIMAL	DISPLAY PRES.	BINARY
			DCBA
8	8		1000
9	9		1001
10	A		1010
11	B		1011
12	C		1100
13	D		1101
14	E		1110
15	F		1111

SHORT FOR COLOURS

COLOUR	SHORT
BLACK	BLK
BROWN	BRN
RED	RED
ORANGE	ORG
YELLOW	YEL

COLOUR	SHORT
GREEN	GRN
BLUE	BLU
PURPLE	PUR
SLATE	SLT
WHITE	WHT

SECTION B

GENERAL FUNTIONS

A normal Pin-ball machine, in four player version, must offer and offers the following characteristics : coin-slot operation, adjustable tariffs, an indication of the games paid for, four score counters, 3 or 5 balls, start button, fault and tilt contacts and indicators, extra ball, free plays obtained from the score (adjustable), match number and flexibility in the system to give any game on the playfield.

The SYSTEM III pin-ball complies with the above mentioned specification and also offers the following feature :

SELF - CHECK

As soon as the machine is connected (using the switch on the right hand underside of the table), an Auto-Check routine starts covering the electric and electronic systems, indicating any fault and identifying the same; if this routine detects a "major" fault (e.g. a short circuit in the coils, driver or I/O RAM failure, etc.), it decides not to continue operating but indicates this fault. Should a "minor" fault be detected (e.g. coil out, I/O open circuit, short in I/O lamp, etc.), the system will indicate the fault and automatically continue carrying out its function.

The Auto-Check consists of 6 steps and the results will be indicated on the display corresponding to Player Nº 2.

1. Lite Box Display and Indicators

   All displays and indicators mounted in the lite-box, will be lit up in sequence in all their combinations. When completed, you will see the indication Ø Ø Ø.

2. RAM Memory

   This function inspects word by word all the RAM (shared between the chips 1 and 2). If everything is in order, you will see the indication 9 Ø Ø.

If it detects a fault in any of the 256 positions, it will indicate such a fault in the two digits following the number 9, e.g.: position 87 is faulty; the system will indicate 9.8.7.

3. PIO (Chip controlling Sound, Coil and General Indicators in the Playfield).

If everything is in order, this will indicate 8.Ø.Ø. If there is a faulty output, it will indicate X.X.X, specifying via the X which is the faulty output and what is the actual fault.

4. ROM I/O

Two chips incorporating the ROM memory, RAM CMOS control outputs and playfield lamp control outputs. This function analyzes one by one all the inputs and outputs. If everything is in order, it will indicate 2.4. . If the fault lies in chip 1, it will indicate 1.X.X., and if the fault is to be found in chip 2, 2.X.X. The last two digits indicate the output which is at fault, and the reason why.

5. Sound, coil drivers and coils

This check is made by reading the consumption at the power play supply source, and will indicate, as a "major" fault, the lack of tension, a short circuit in the driver and a short circuit in the coil; and as a "minor" fault, those channels which do not provoke any consumption of the above mentioned supply source (sound, unused channels and drivers or disconnected or cut-off coils). As always the channel and problem will be indicated.

6. RAM CMOS

This function individually checks the 1024 bits of the memory. If all is well, it will indicate 5.Ø.Ø. If a fault is discovered, it will indicate the byte which is at fault.

SELFCHECK TABLE

STEP	FUNCTION	DISPLAY	COMMENT
1	TEST DISPLAY	Ø Ø Ø	END OF TEST DISPLAY
2	RAM MEMORY	9 X X	FAULT DETECTED THE LAST TWO DIGITS INDICATE POSITION AT FAULT
2	RAM MEMORY	9 Ø Ø	END OF TEST. RAM O.K
3	PIO	X X X	1ST DIGIT INDICATES FROUT 3-4-5-6-7-8 2ND DIGIT INDICATES THE DEFECTIVE BIT 3ND DIGIT INDICATES DEFECTIVE CONFIGURATION
3	PIO	Ø Ø Ø	END OF TEST. PIO O.K.
4	ROM I/O	1 7 X	SHORT IN OUTPUT X AT -12V (CHIP-1)
4	ROM I/O	1 4 X	SHORT IN OUTPUT X AT +5V (CHIP-1)
4	ROM I/O	2 7 X	SHORT IN OUTPUT X AT -12V (CHIP-2)
4	ROM I/O	2 4 X	SHORT IN OUTPUT X AT +5V (CHIP-2)

STEP	FUNCTION	DISPLAY	COMMENT
4	ROM I/O	2 4	END OF TEST ROM O.K
5	40 V VOLTAGE	2 4 6	40 V VOLTAGE FAULT
5	DRIVER	2 4 5	SHORT IN DR./BR
5	BUMPER	X 4 7	OUTPUT X OPEN
5	BUMPER	X 4 4	SHORT IN OUTPUT X
5	DR/BU	3 Ø Ø	END OF TEST DR/BU O.K NO GRAVE FAULTS DETECTED
6	RAM CMOS	8 X X	FAULT DETECTED THE LAST TWO DIGITS INDICATE THE DEFECTIVE WORD
6	RAM CMOS	5 Ø Ø	END OF TEST CMOS O.K

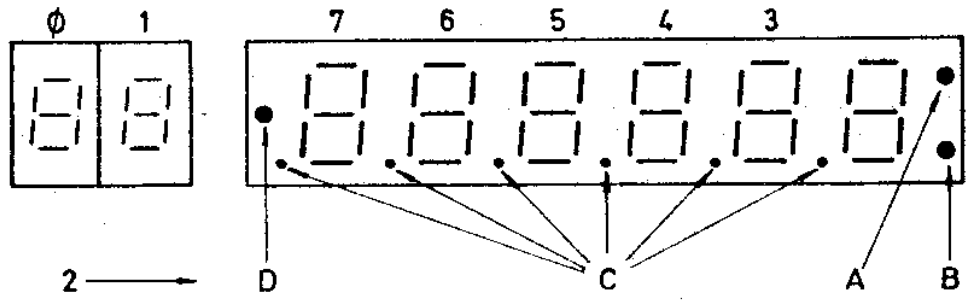
IF THE OUTPUT IS OPEN CIRCUITED IT WILL INDICATE +5

REPRESENTATION AREAS

Areas of representation for the totalizers and RAM memory registers: As stated before, the SYSTEM III accumulates a quantity of information, up to now unknown in the field of pin-ball machines. All this information is represented on the displays as follows: whilst the door is shut, the display always represents that shown in Area 4 which corresponds to the actual play data, and when you reach Game Over, it will alternatively flash data on the last score and last handicap.

On opening the door, the start button will stop working as such and will serve to change the Area representation on the displays. There are 16 representation areas on the RAM (see page B-4). In order to advance from one area to the next representation area, you need only press the button once for each advance of area representation. Whilst the button is pressed down, all the lite box displays will indicate the number of the area which is going to be represented. Then on releasing the button, the displays will show the data corresponding to each new area. If we press the button just once (starting from mode 4), it will stay in area 5 representation, but this will have been inverted; i.e. the information that was previously in the upper displays, will now be shown in the lower displays and vice-versa, (we will understand the advantages of this in the ADJUSTMENT section).

In representation area Nº 9, we can see the state of the playfield contacts, which are indicated in the displays for Free Plays, Extra Ball and 1st Player (see values in the table on page C-21).



On closing the door, the machine automatically stays ready for play, returning to the preselected mode if the door were to be opened again before pressing the start button. When started, the selected area stays at 4.

REPRESENTATION TABLE

AREA	4	5	6	7	8	9	⊏	⊐	⊔	⊑	⊧		Ø	1	2	3	4

AREA	READ OUT
4	FREE PLAY (COUNTER)
5	CREDIT (COUNTER)
6	1ST REPLAY PER ▮00000
8	EXTRA BALL PER ▮00000
⊏	1ST COIN REJECTOR (ADJ.)
⊧	
ϕ	
2	CREDIT LIMIT

AREA	READ OUT
4	EXTRA BALL (COUNTER)
5	CREDIT (COUNTER)
6	1ST REPLAY PER 0▮0000
8	EXTRA BALL PER 0▮0000
⊏	2ND COIN REJECTOR (ADJ.)
⊧	
ϕ	
2	

4	PLAYER N° 1 (COUNTER)
5	PLAYER N° 4 (COUNTER)
6	HANDICAP PLAYER N° 1
8	TOTAL 1ST COIN REJECTOR
⊏	TOTAL EXTRA BALL
⊧	PLAYBOARD CONTACTS STATE
ϕ	WORKING REGISTERS
2	MODEL OF GAME

4	PLAYER N° 2 (COUNTER)
5	PLAYER N° 3 (COUNTER)
6	HANDICAP PLAYER N° 2
8	TOTAL 2ND COIN REJECTOR
⊏	TOTAL FREE PLAY
⊧	TOTAL SPECIAL
ϕ	WORKING REGISTERS
2	SERIAL NUMBER

4	PLAYER N° 3 (COUNTER)
5	PLAYER N° 2 (COUNTER)
6	HANDICAP PLAYER N° 3
8	TOTAL 3RD COIN REJECTOR
⊏	TOTAL PLAYS PAID FOR
⊔	EXTRA BALL FOR COMBINATION
⊧	TOTAL DOUBLE BONUS
ϕ	LAST PRINTER N°
2	TIME IN PLAY

4	PLAYER N° 4 (COUNTER)
5	PLAYER N° 1 (COUNTER)
6	HANDICAP PLAYER N° 4
8	DATE OF LAST PRINT-OUT
⊏	TOTAL OF PLAYS "PLAYED"
⊧	PLAYBOARD CONTACTS TIME
ϕ	PLAYBOARD REGISTER STATE
2	TIME GAME OVER

4	CREDIT (COUNTER)
5	FREE PLAYS (COUNTER)
6	2ND REPLAY PER ▮00000
8	FORM OF PLAY ▮0
⊏	3RD COIN REJECTOR (ADJ.)
⊧	
ϕ	
2	CENTESIMAL SEC. TIMER ▮0

4	CREDIT (COUNTER)
5	EXTRA BALLS (COUNTER)
6	2ND REPLAY PER 0▮0000
8	FORM OF PLAY ▮0
⊏	MODE OF PLAY (ADJ.)
⊧	
ϕ	
2	DECIMAL SEC. TIMER 0▮

HANDICAP

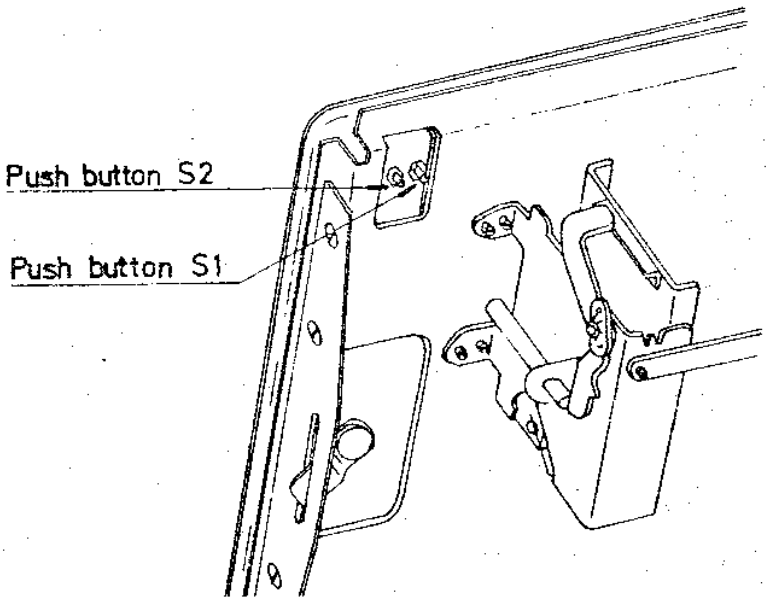
During the time that the machine is at Game Over, the Handicap of each player will be flashed on the displays. It will also be displayed whilst the start button is held down (assuming that the door is closed). The machine leaves the factory with a Handicap for each player of 1.000.000. This value is altered as soon as it is beaten. When the new Handicap exceeds 2.000.000, the respective handicap register stays at 1.000.000, and in this way the machine incorporates an automatic resetting device should the handicap become excessively high.

ADJUSTMENT

SPARE ADJUSTING RELAY RUBBER INSERT BETWEEN MICROSWITCH & DOOR (PLACED TO PREVENT ACCIDENTAL ADJUSTMENT)

There are three RAM memory areas where you will find the various system adjustments.

To gain access to alter any of these, simply select the relevant representation area on the credit displays (with the door open and by pressing the start button). When set in this position, press the buttons S1 or S2 which are mounted on the inside of the door, in order to change the left or right hand digits, thereby altering the reading to the desired value. Once the adjustments have been set as required, start the machine in the normal way (with the door shut), so that the new values will be recorded in the RAM CMOS memory.



ADJUSTMENT TABLE

A B.

AREA	4	5	6	7	8	9	⊏	⊐	⊔	⊑	⊧		Ø	1	2	3	4

AREA	READ OUT
6	1ST. REPLAY PER ▮□□□□□
7	2ND. REPLAY PER ▮□□□□□
8	PLAYBOARD ADJUSTMENT
9	EXTRA BALL PER ▮□□□□□
⊏	3RD. COIN REJECTOR (TABLE)
⊐	1ST. COIN REJECTOR (TABLE)
3	CREDIT LIMIT

CREDIT

AREA	READ OUT
6	1ST. REPLAY PER □▮□□□□
7	2ND. REPLAY PER □▮□□□□
8	PLAYBOARD ADJUSTMENT
9	EXTRA BALL PER □▮□□□□
⊏	MODE OF PLAY
⊐	2ND COIN REJECTOR (TABLE)
⊐	1EXTRA PLAY WITH THE 2ND.COIN

THE AREA 4 IS SHOWN WHEN YOU OPEN THE FRONT DOOR FOR THE FIRST TIME AFTER PLAYING ON THE MACHINE.

IN ORDER TO MOVE ON TO THE NEXT AREA YOU HAVE TO PRESS THE START BUTTON WHILST MAINTAINING THE DOOR OPEN.

TO CHANGE THE ADJUSTMENTS (IN THE CREDIT DISPLAYS) PRESS BUTTONS S1 AND S2 ON THE DOOR.

IN ORDER TO REGISTER ANY ADJUSTMENTS IN THE MEMORY PRESS THE START BUTTON WHILST THE DOOR IS CLOSE.

1ST. COIN REJECTOR

MODE	COINS	PLAYS
8	2	1
9	2	2
⊏	2	3
⊐	2	4
⊔	1	1
⊑	1	2
⊧	1	3
	1	4

2ND. COIN REJECTOR

MODE	COINS	PLAYS
Ø	1	1
1	1	2
2	1	3
3	1	4
8	1	1
9	1	2
⊏	1	3
⊐	1	4

3RD. COIN REJECTOR

Nº OF MODE (Ø-9) = Nº OF PLAYS PER COIN.

MODE OF PLAY

MODE		EXTRA BALL		EXT.PLAY
5 BALLS 3		REPETIT.	ACUMUL.	REPETIT.
Ø	8	NO	NO	NO
1	9	YES	NO	NO
2	⊏	YES	YES	NO
3	⊐	—	—	—
4	⊔	NO	NO	YES
5	⊑	YES	NO	YES
6	⊧	YES	YES	YES
7		—	—	—

E B - 550,000
1 - 760,000
2 - 920,000

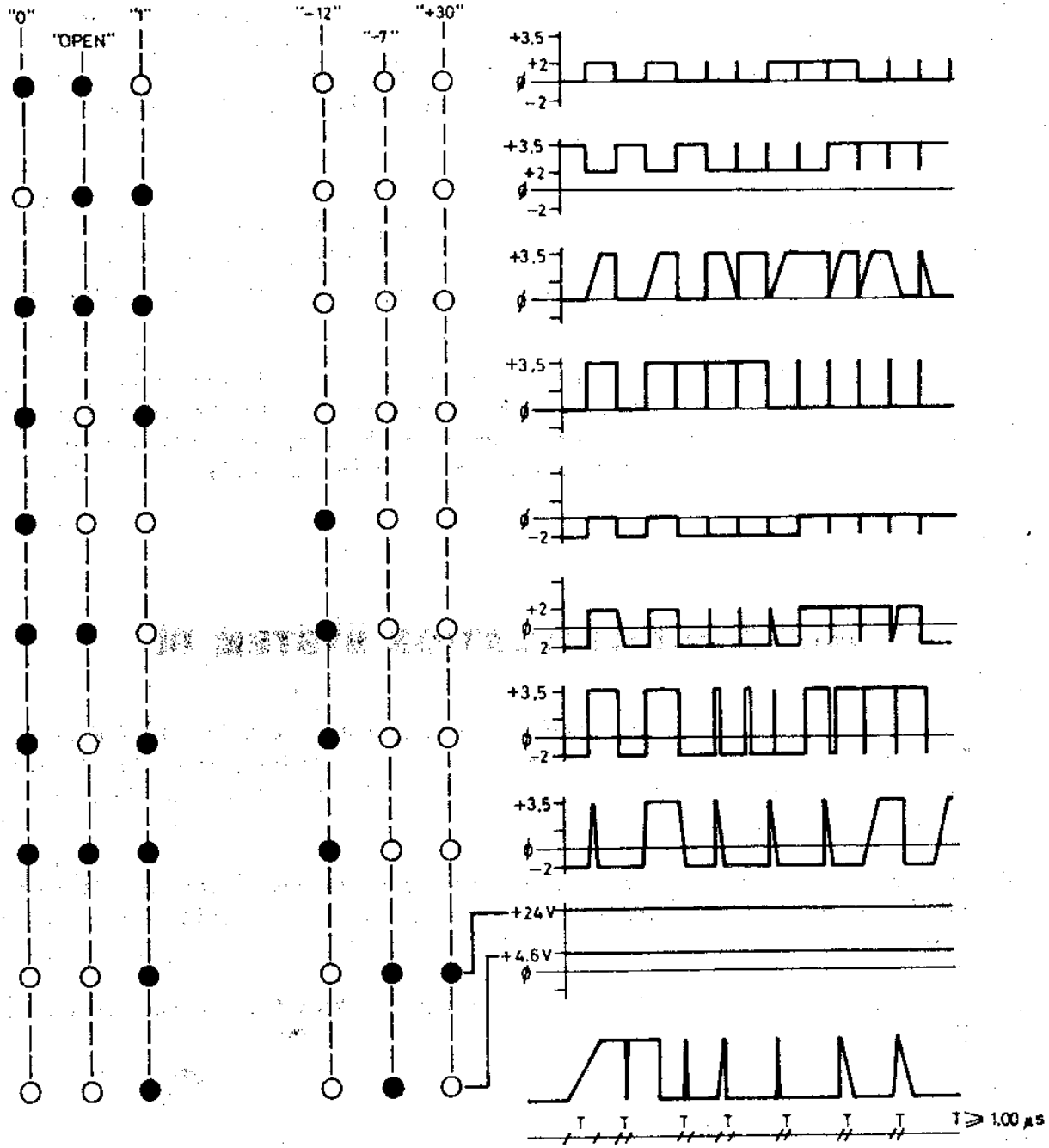
1 EXTRA PLAY WITH THE 2ND. COIN

(THIS STATE AFFECTS ALL 3 COIN REJECTORS)

LOGIC DETECTOR Ø94-ØØ1

(LEVELS INDICATOR – PULSE DETECTOR)

INDICATION	SIGNAL DETECTED



NOTE:- A DETECTION MORE THAN 1.00 µs. WILL PROMOTE A FLASH OF 50 msg. (INDICATOR "X")
INPUT IMPEDANCE=100K TO ϕV

PRINTER

Correct use of our Printer, model 2056A, constitutes a really valuable advantage to gain the most from the special characteristics incorporated in the SYSTEM III.

The printer should be used in the following way: Firstly, switch off the machine or unplug it from the mains. Secondly, plug in the printer to the point provided in the Master Unit - Connector MD - to be found in the lite-box. Replug in the machine and wait for it to finish the Auto-check routines; check that the resettable date and printer number registers have absorbed the new values correctly; press the start button; switch off or unplug the machine; unplug the printer (all data is printed out and stored in the printer memory).

If you wish to use the printer merely to obtain data but without it being necessary to reset any of the registers, then you should not press the start button, but switch off the machine and unplug the printer instead. The data is now in the printer, and the machine registers have not suffered any alteration.

The modifications that the printer creates over the registers and totalizers in the machine are programmed in advance within the printer itself, and come into effect when you press the start button, and selecting only the date or coin collection number (if this is the object).

SELF-CHECK-SIMULATION SYSTEM III

The checking simulator 1030/III makes it possible to check, analyse and simulate all components on our System III electronic pin-ball. It has an internal capacity to simulate and control 16 games which may be increased by external blocks of 16.

Also it contains the necessary connections to enable the substitution of all parts of the machine and to start functioning any unit of the laboratory.

The simulator 1030/III is supplied with its own full technical manual.

SECTION C

GENERAL CIRCUITS

In section "C" we have shown a break-down of the circuits in the machine, and at the same time the relationship between each one of them by virtue of the connectors listed in each circuit which are illustrated in more detail on pages C-2 and C-6 (MACHINE DIAGRAM AND POWER DIAGRAM), respectively.

Generally speaking each circuit is made up of its relevant board and components, together with the corresponding schematics, as well as the external elements which are included within the actual circuit.

OBSERVATIONS

* Whenever it is necessary to replace any components or boards, it is essential that you switch off the machine beforehand by means of the switch at the right hand side underneath the table; in this way the service plug will continue to function at the normal mains voltage.

* When replacing parts or components, use only those which comply with the characteristics specified in each case, respecting the polarity or position in all those parts where this is required.

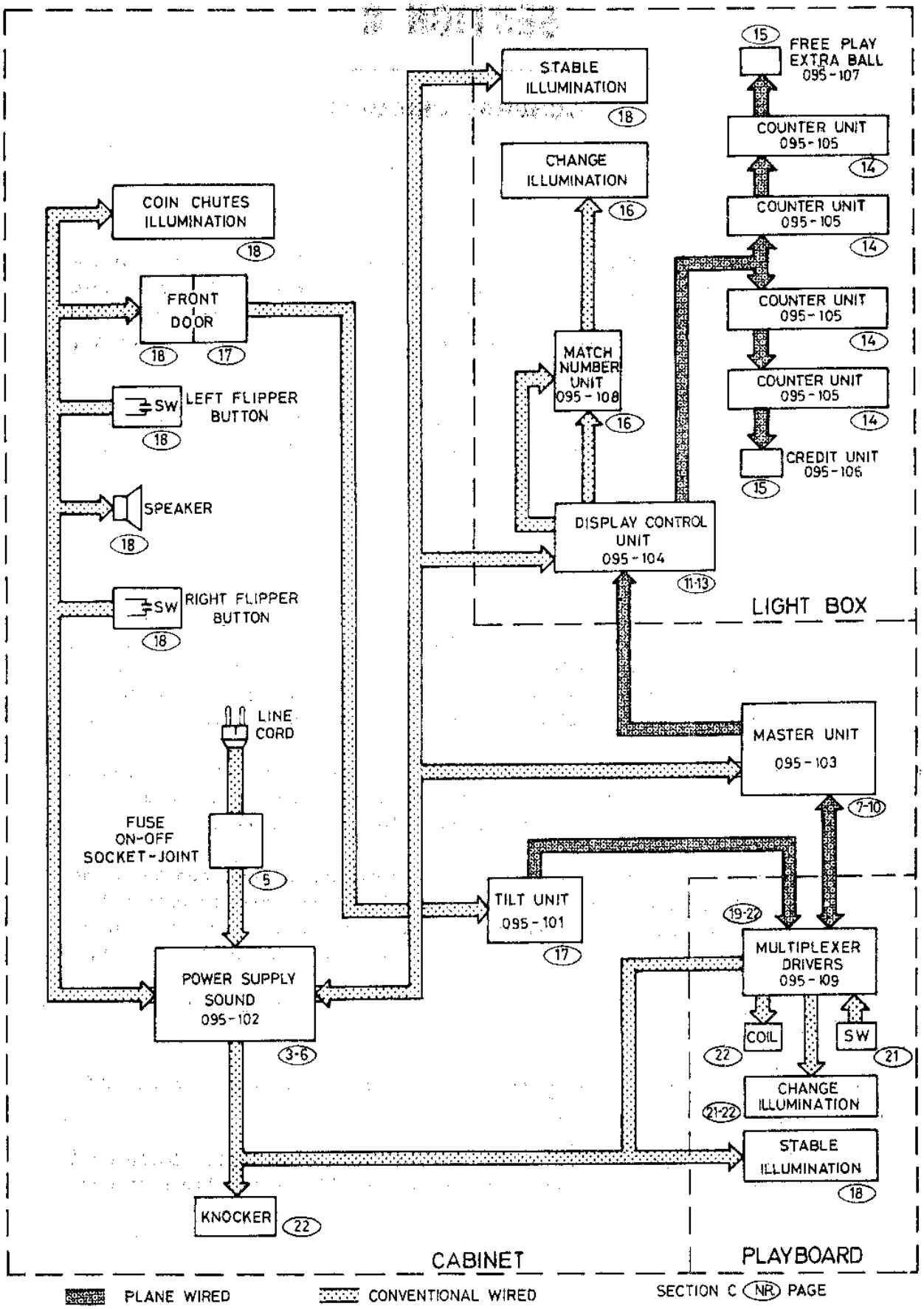
* Do not neglect those faults which apparently do not seem to be very important, such as : fused lamps, displays with the segments cut, faulty contacts, etc., because both the appearance and functioning will suffer, with the result that the cash returns will fall off.

* Use the SELF-CHECK systems to trace any kind of fault that might occur and to repair it. (094-003).

* Use a multimeter and detector 094-001 or its equivalent when taking any measurements.

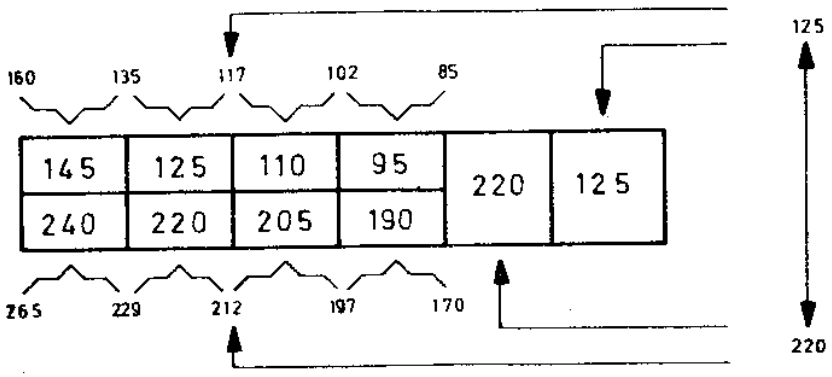
* For a complete revision in a laboratory, the 1030/III simulator is the only equipment capable of simulating all the functions of our SYSTEM III.

MACHINE DIAGRAM



POWER SUPPLY AND SOUND
095-102

The power supply board is equipped with a transformer primary with the necessary terminals to allow the machine to work correctly at any mains voltage. The terminal position for 125 volts, covers a range from 85 to 160 v., and the 220 v. position covers from 170 to 265 volts.



The secondary positions in the transformer supply the necessary voltages to obtain :

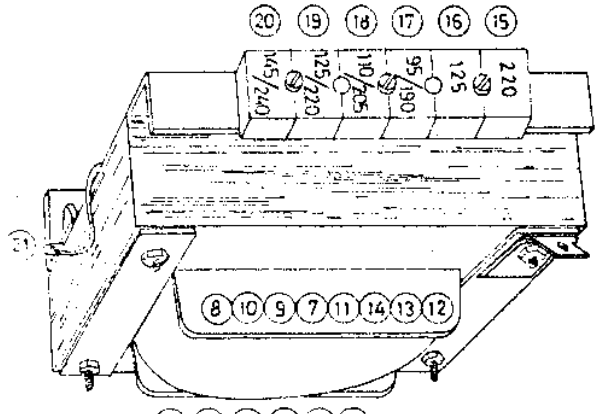
5 v. AC	Lamps for lighting up the coin rejectors.
6,3 v. AC	Stable illumination on the playfield and lite box.
+ 7,5 v. DC	Change illumination on the playfield and rejector coil.
+ 7 v. DC (E)	Stabilized display - lite box.
+ 13 v. DC	(with the Master Unit off) To obtain 5 v. DC stabilized current for the electronic logic.
- 20 v. DC	(with the Master Unit off) To obtain -12 v. stabilized current for the MOS circuits.
Power-Play	(adjustable) To feed the playboard coils.

The Play Power is controlled by the K relay which will cut this power when no "In Play" signal is received. The K contact works in parallel with a 39 ohm. resistor which allows the processor to determine the state of the coils and drivers during the "self-check" sequence.

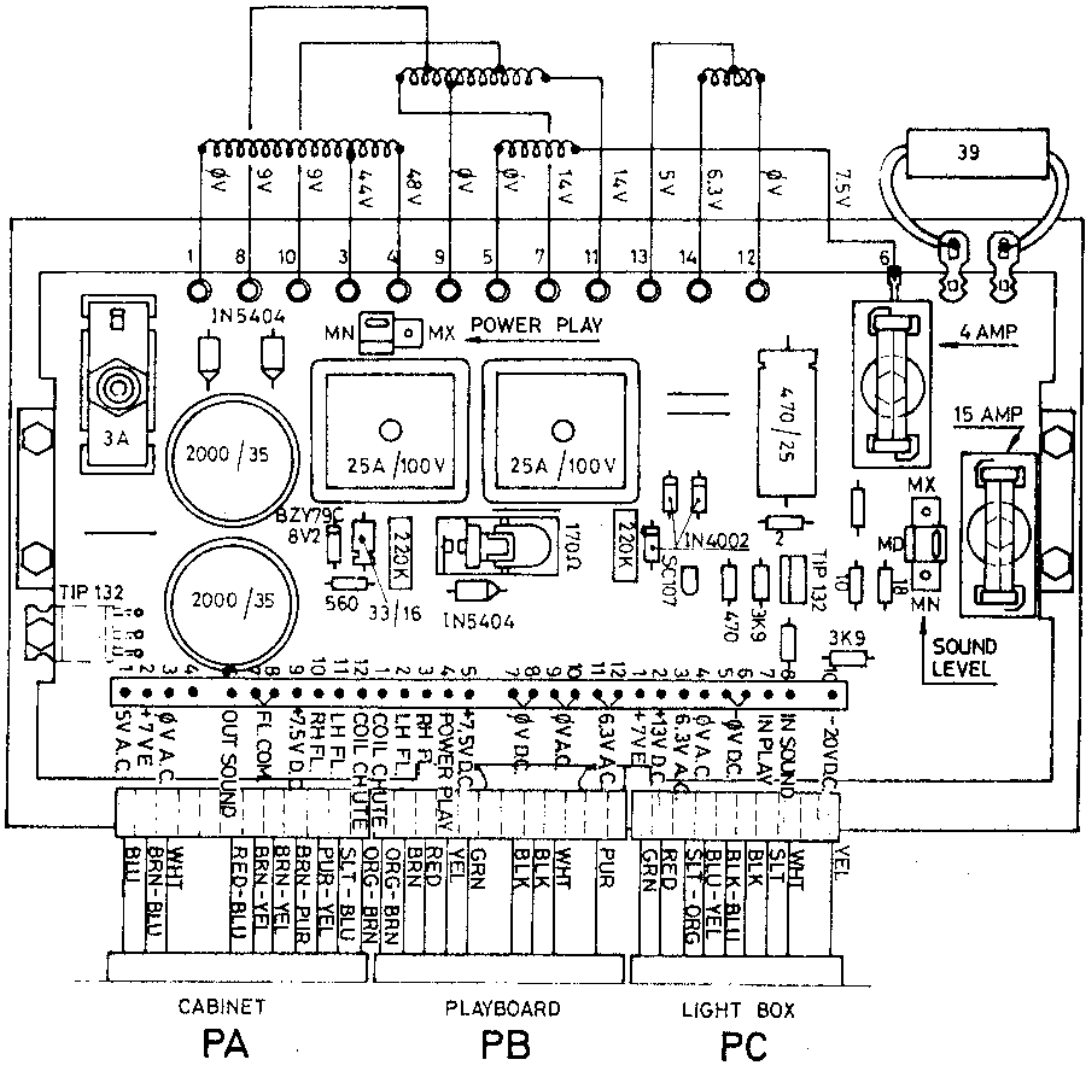
The sound power unit is also to be found in this assembly, and comprises a TIP 131 transistor and a series damper composed of three resistors, by means of which the sound level can be adjusted to Maximum (Mx.) Medium (Md) or Minimum (Mn).

There is also a series of interconnected pins which allow a better distribution of the cable harness, individualizing the connectors of the Cabinet, Playboard and Lite-box.

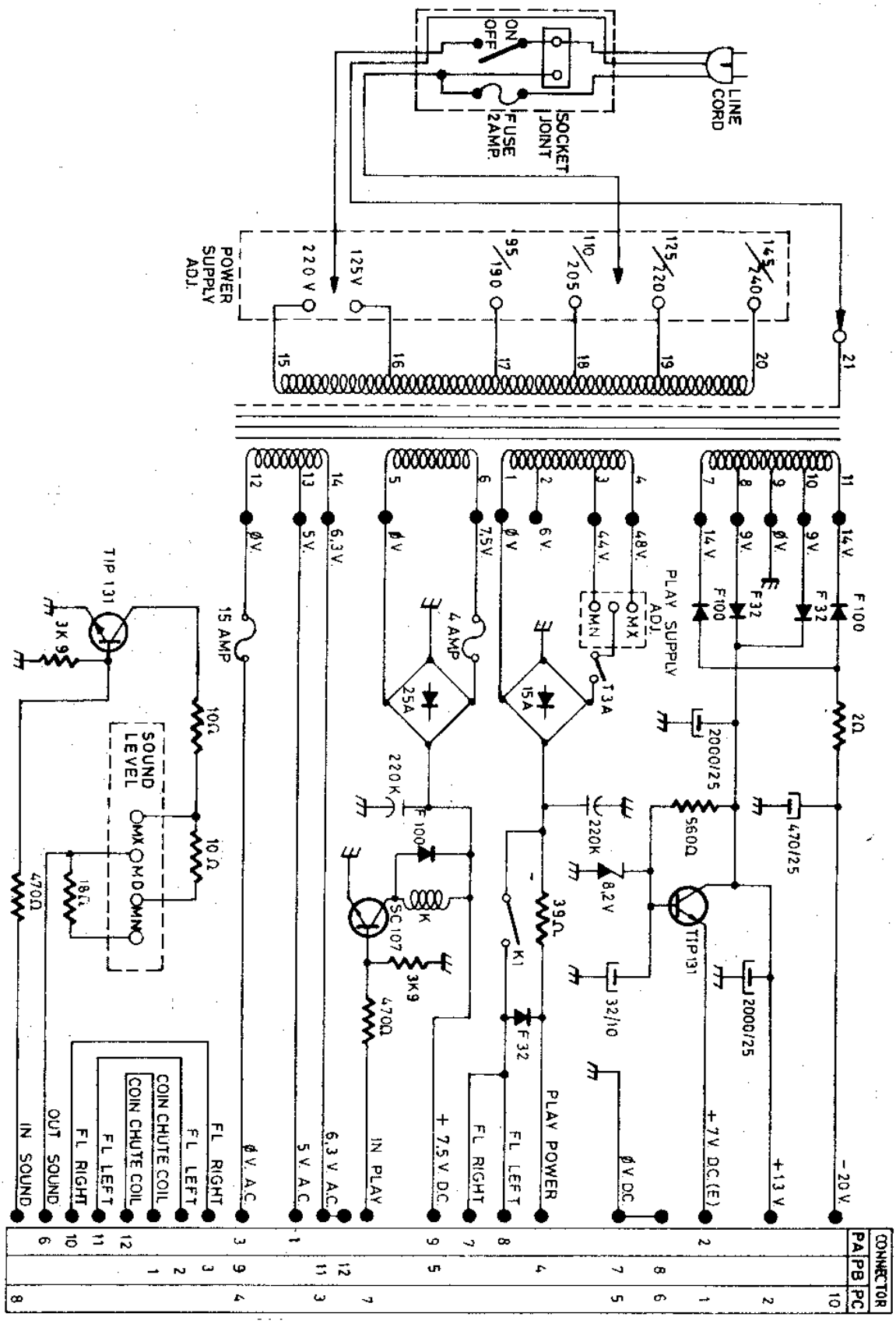
POWER SUPPLY AND SOUND
ø95-1ø2



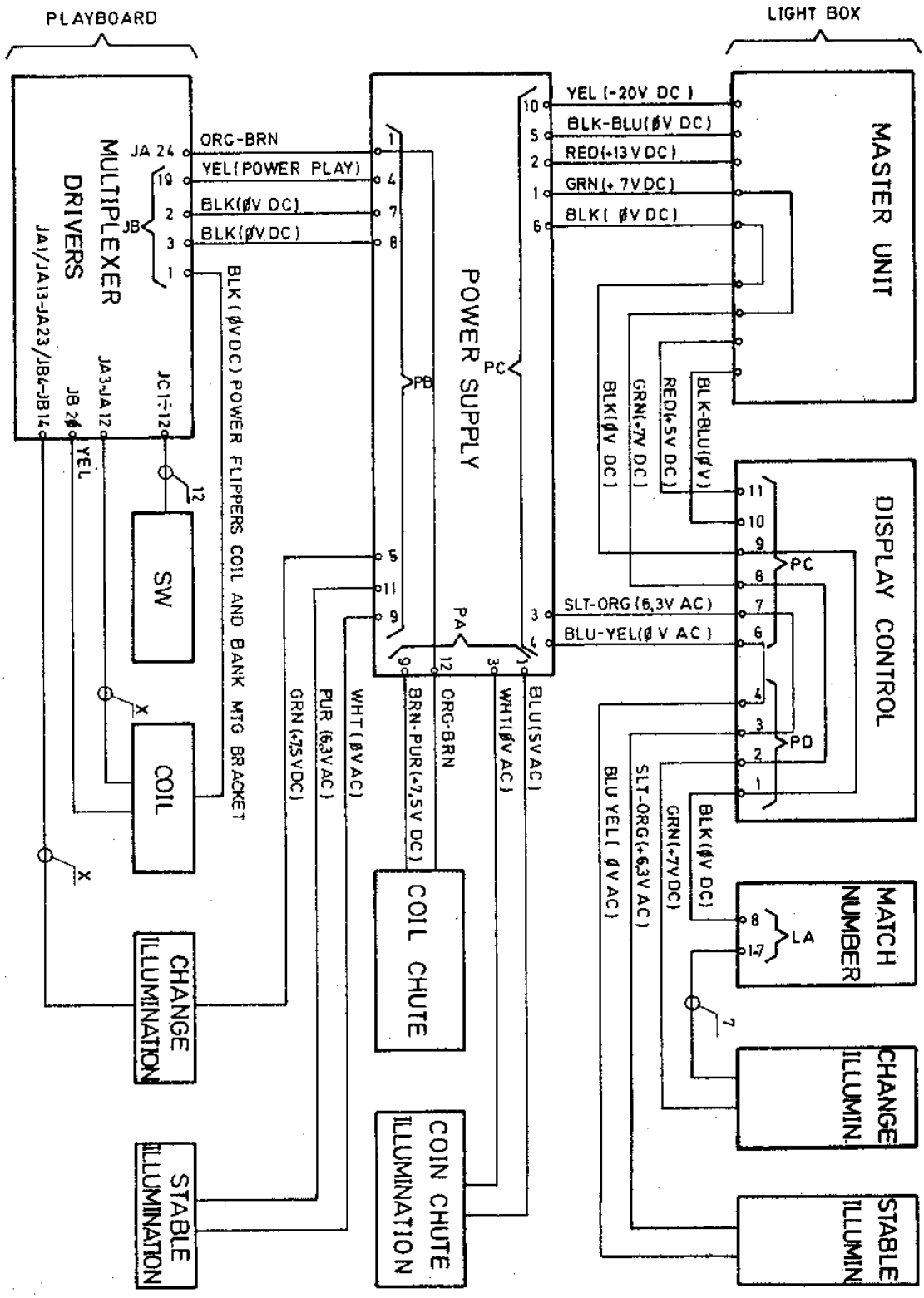
Can't be 6 5 4 3 2 1 4/9/2006 Lynn



POWER SUPPLY, SOUND Ø95-1Ø2 AND FUSE, ON-OFF, SOCKET-JOINT



POWER DIAGRAM



MASTER UNIT Ø95 1Ø3

The MASTER UNIT needs a working tension of + 13 volts and - 20 volts. These voltages are stabilized by the circuit LM 327, which controls a driver MC 140 (output - 12 volts 500 mA max.) and a TIP 3055 (output 5 volts 4 amp. max.). Both outputs are protected against short circuits, automatically restricting the maximum current to 500 mA and 4 amp. respectively, thereby avoiding any destruction of the output transistors should any short circuiting occur.

On the tension of + 5 volts and using the union of two F32 diodes, we obtain 6,4 volts which are used to recharge the battery which feeds the HM 6.508-9 memory (RAM CMOS) and its auxiliary circuits.

If you remove a battery, you will lose the data contained in the memory. (RAM CMOS).

The - 12 volt tension is required, along with the + 5 volt tension, in order to work the N-MOS chips existing on the board (CPU, PIO, ROM RAM/I-O, GPKD, BICS and EPROM).

All the other chips on the board (TTL and Buffer CMOS 4050), as well as those in the Display Control unit and Multiplexer Driver, use only the + 5 volt tension.

The RAM CMOS memory controlled via the 0 - 6 outputs on RAM-ROM/I-O 1 (A 2361), and after carrying out all the Autocheck routines, delivers its contents to the working memory RAM (contained in chips A 2361 and A 2362). Then the entire contents of the working memory RAM is again loaded on to the CMOS each time that the machine is at the start position or whenever a ball is introduced into the Ball Return Kicker hole. This means that the RAM CMOS can hold all the definitive data and recover this after a power cut. As a result of this feature, it is possible to control the totalizers, adjustments and other registers in the machine (all contained in the memory), and also check their functioning without suffering alterations. If the machine is switched off after carrying out all the necessary tests, without reaching the start position or ball return state, then the data stored in the CMOS will be the same as before carrying out the tests; none of the test alterations will have been memorized.

Whilst extracting the data from RAM CMOS, this information is transferred to the memory of the "Printer" if this is connected, feeding the working memory RAM with the serial number of the printer in use, and this is then passed on to the RAM CMOS once the start position is reached.

Once the Auto-check routines have been completed, the main program begins and the machine is ready for normal functioning.

In order to control the indicators in the lite-box, a GPKD is used as a peripheral element (display controller), to which all the data contained in the area of the memory selected is transferred at the rate of 10 times per second; if the front door is closed, the area selection has no effect and the transfer area will be "ØA" (play area). By transferring the data at the rate of 10 c/sec., the displays are subject to a smooth but attractive fluctuation.

The GPKD feeds the information to the display control unit in two groups of data, each one of them formed by 16 displays or other types of indicator. The column selection is carried out by means of 8 strobe lines and 1 group selection.

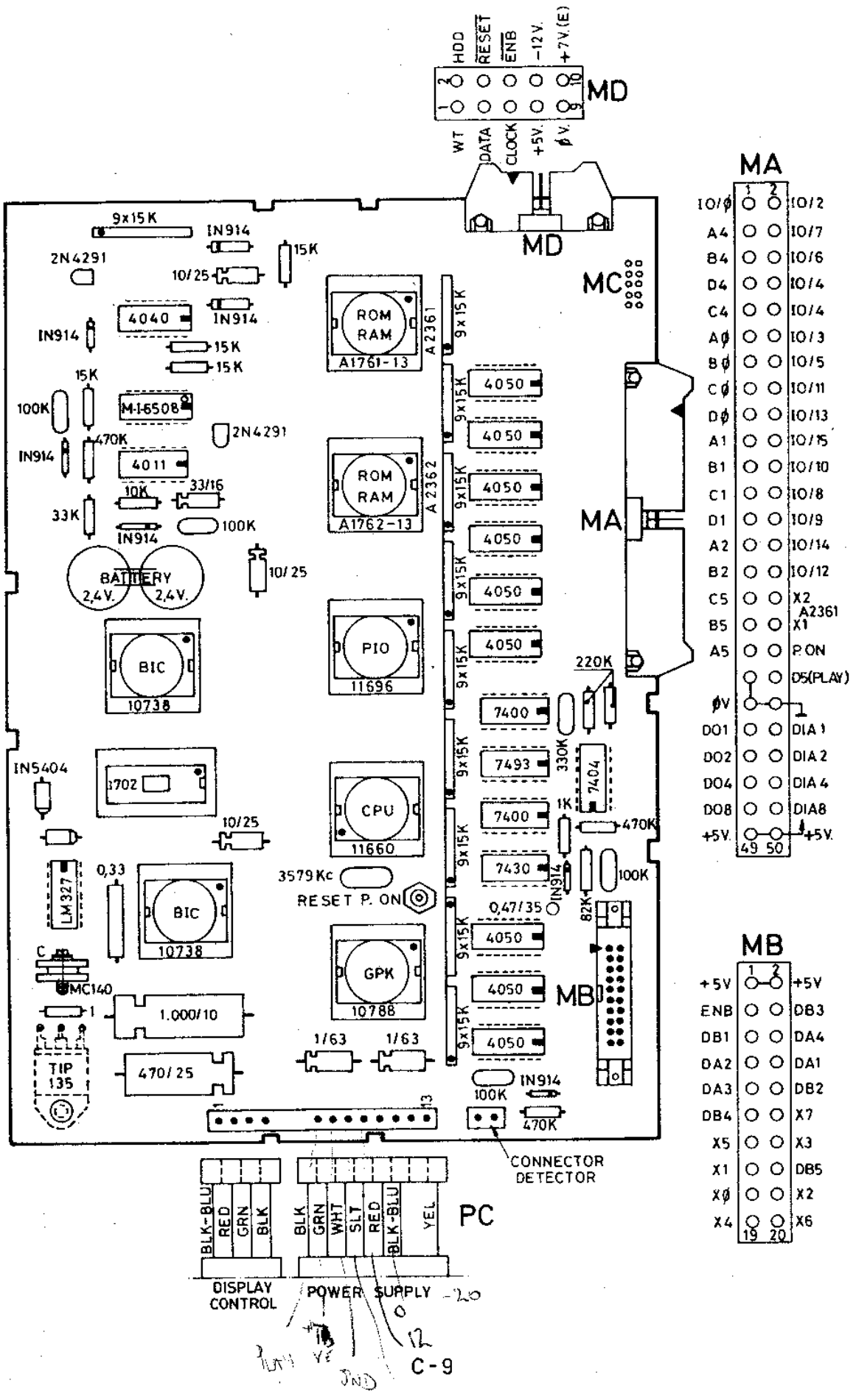
Control of the playboard elements is carried out by means of the PIO peripheral (programable input-output) and the 16 outputs contained in the ROM-RAM/I-O 2 (A 2362).

The PIO has 24 outputs; numbers 0 to 5 control the sound circuit, composed of three gates, an oscillator and a TTL counter and mounted on the Master Unit; output nº 6 controls the Knocker, nº 7 the ball return driver; outputs 8 to 15 are planned to control other electrical elements on the playboard, and outputs 16 to 23 are used to lite up or switch off the playboard indicators (8).

The 16 outputs on the I-O 2 (A 2362) are also planned to control the lites on the playboard.

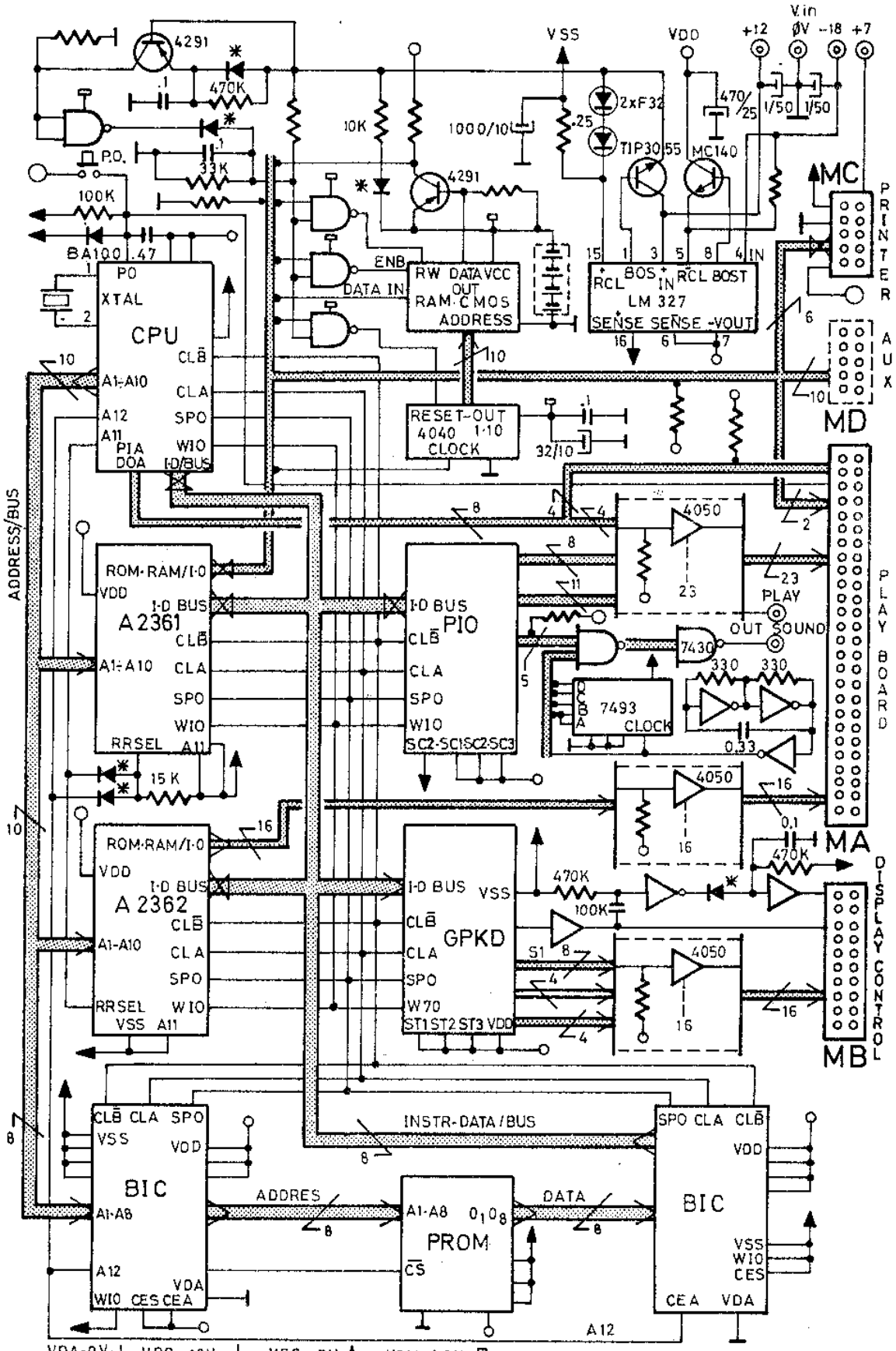
The I-O 1 (A 2361) is also equipped with 16 inputs-outputs, of which six are used to control the memory RAM CMOS and the "Printer" whilst the remaining ten are also available to control elements on the playfield. Therefore there is a maximum of 8 + 8 + 16 + 10 = 42 outputs which can be used for elements and indicators particular to the game.

MASTER UNIT Ø95-1Ø3

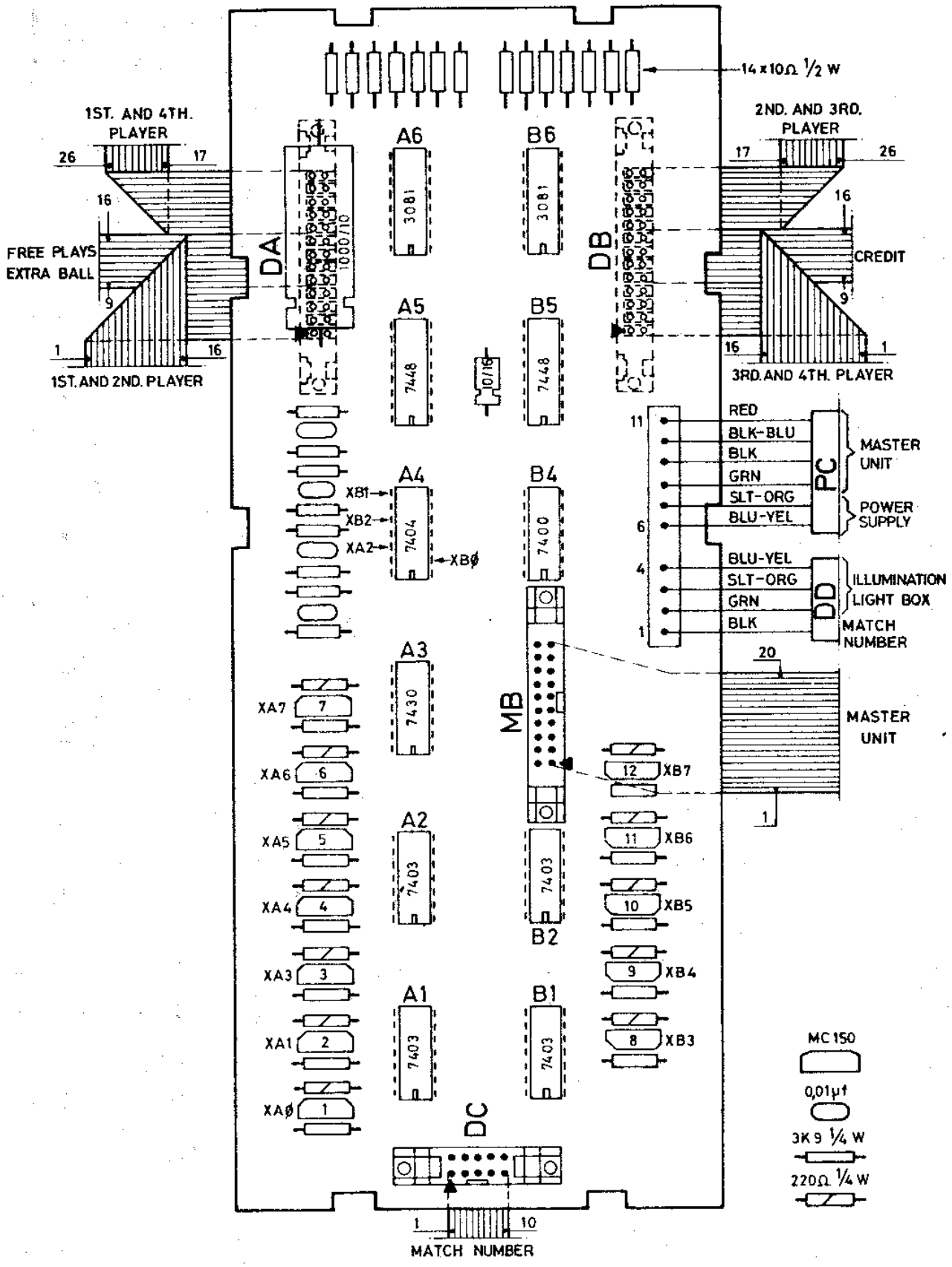


C-9

MASTER UNIT Ø95·1Ø3

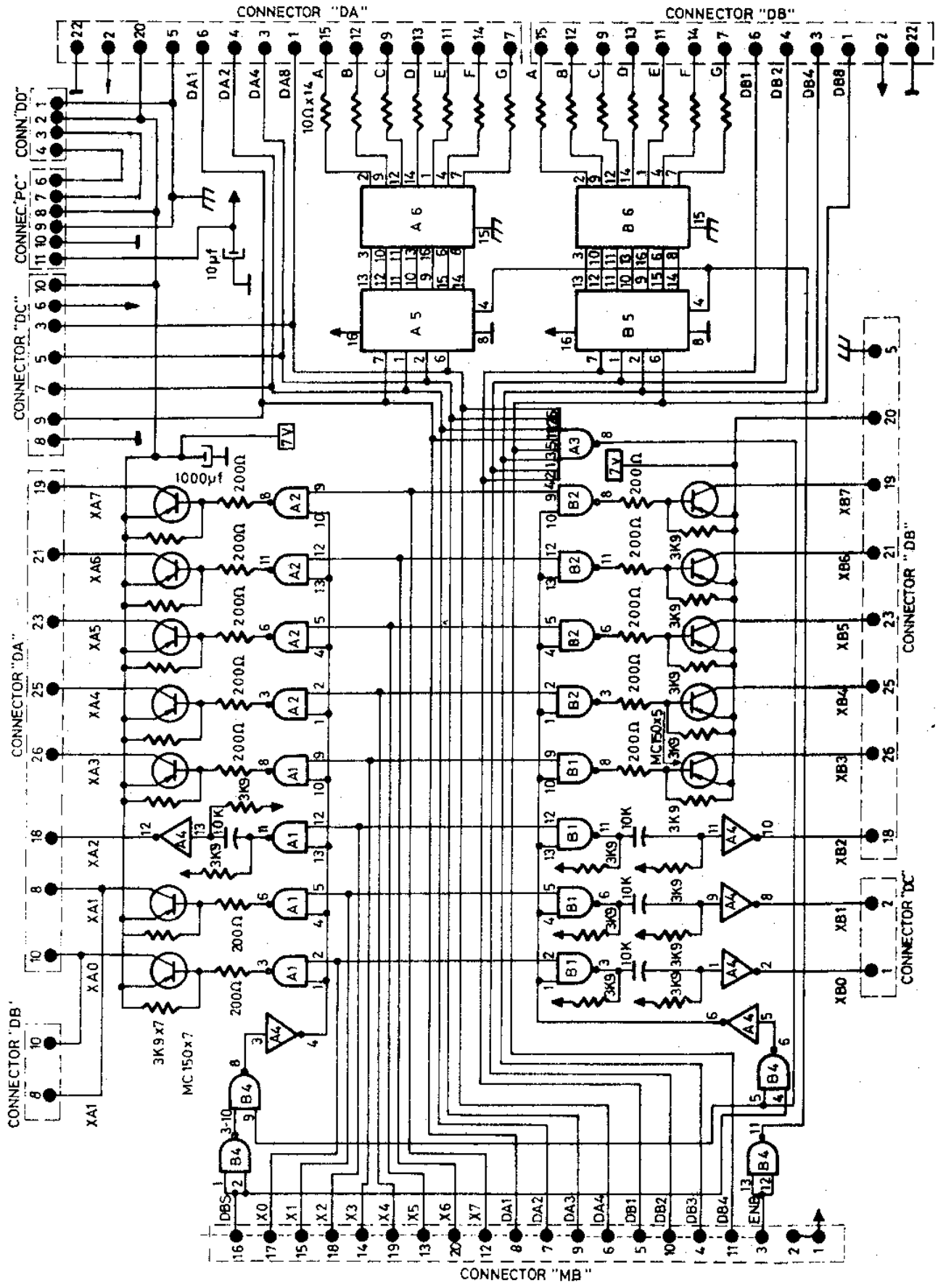


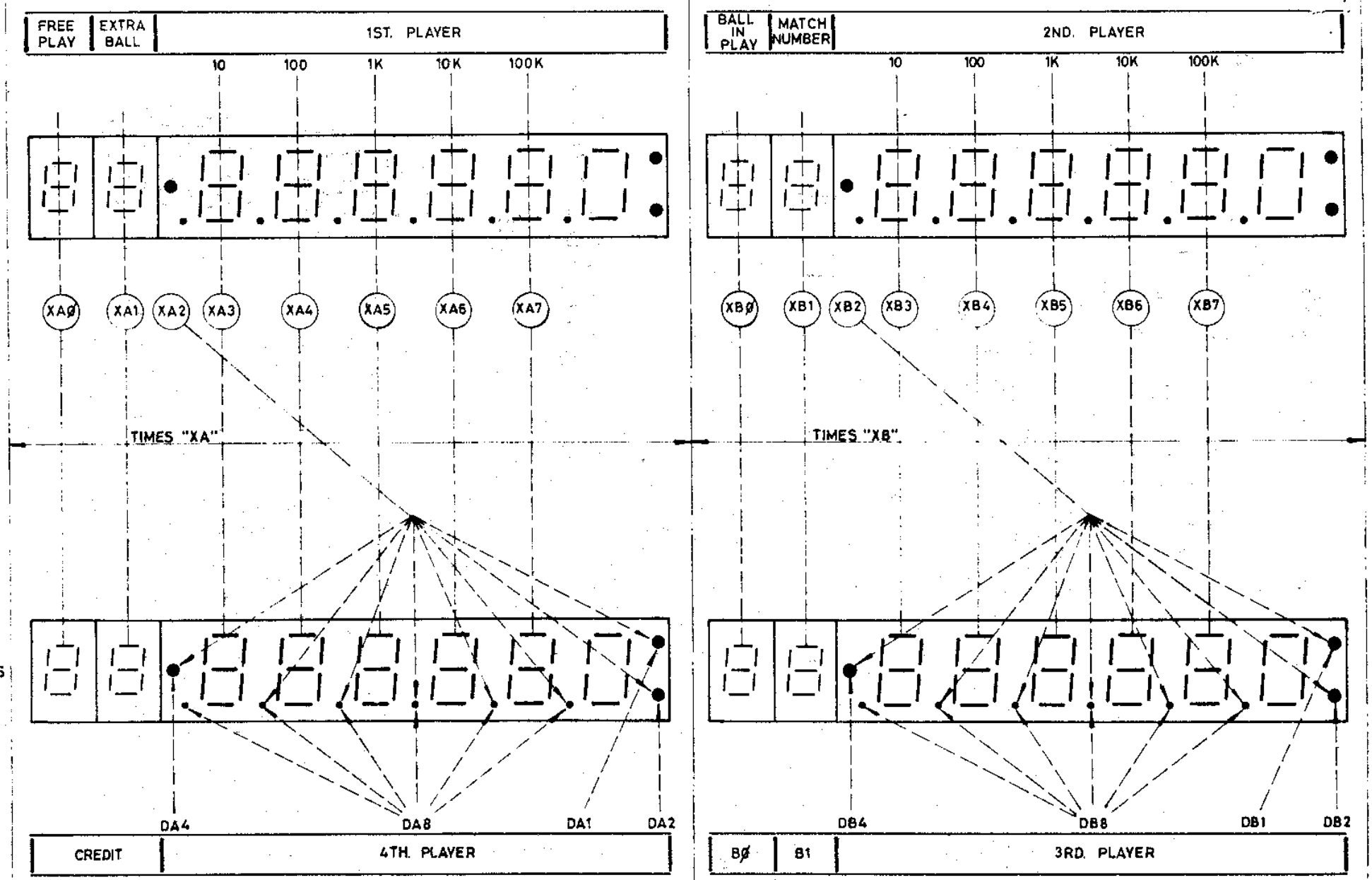
DISPLAY CONTROL Ø95-1Ø4



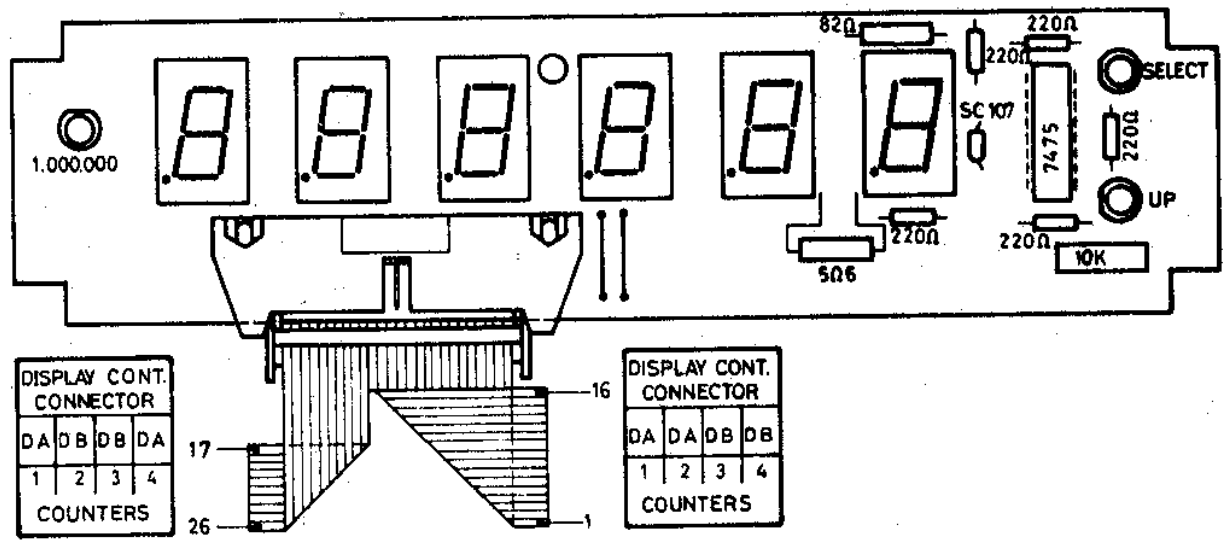
4293988 MARTIN

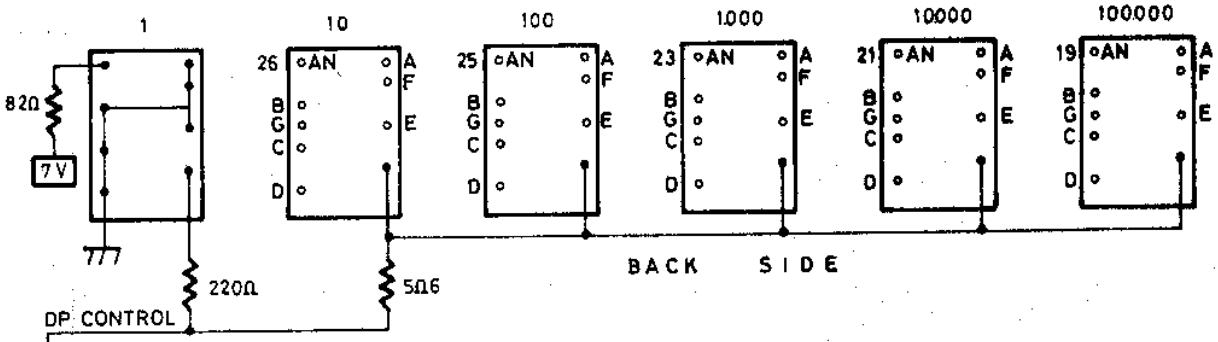
DISPLAY CONTROL Ø95-1Ø4

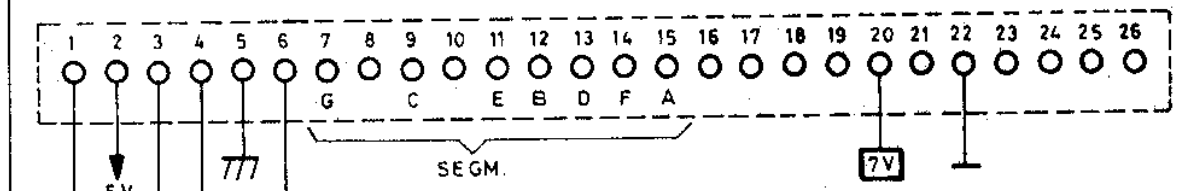


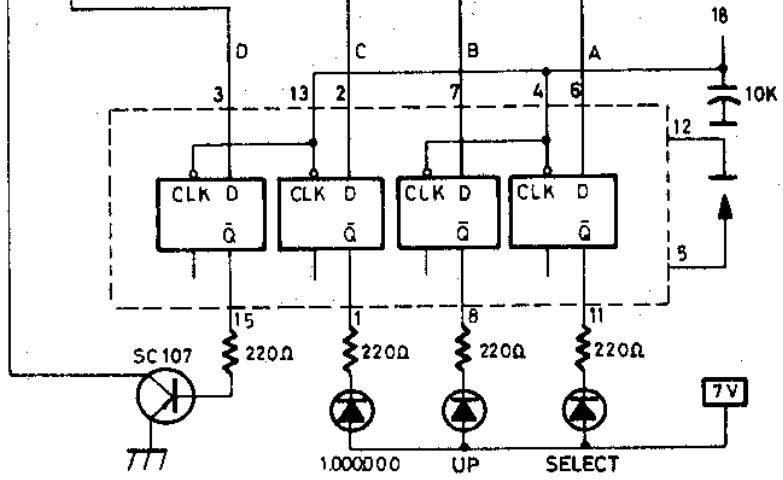

FREE PLAY
EXTRA BALL
1ST. PLAYER
10
100
1K
10K
100K
DBS
XAØ
XA1
XA2
XA3
XA4
XA5
XA6
XA7
TIMES "XA"
DBS
DA4
DA8
DA1
DA2
CREDIT
4TH. PLAYER
BALL IN PLAY
MATCH NUMBER
2ND. PLAYER
10
100
1K
10K
100K
XBØ
XB1
XB2
XB3
XB4
XB5
XB6
XB7
TIMES "XB"
DB4
DB8
DB1
DB2
BØ
B1
3RD. PLAYER

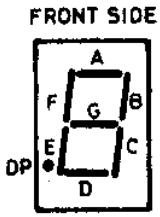
COUNTER UNIT Ø95-1Ø5

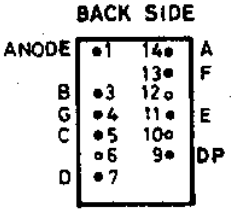








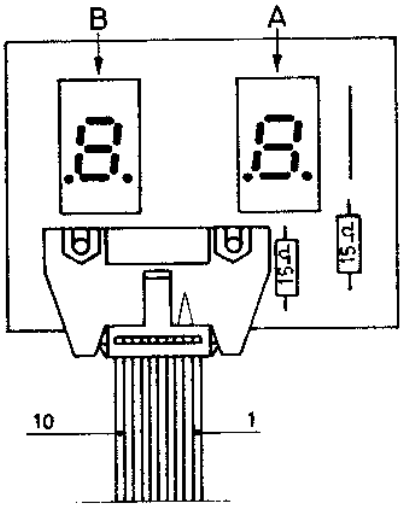




CREDIT, FREE PLAY AND EXTRA BALL UNIT
ø95-1ø6/ø95-1ø7

FREE PLAY - EXTRA BALL UNIT

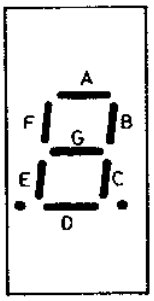
095-107



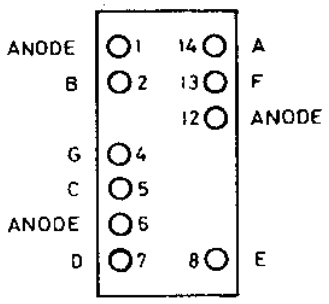
DISPLAY CONTROL

DA

FRONT SIDE

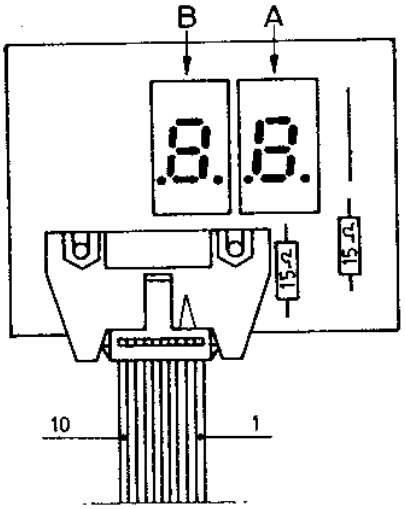


BACK SIDE



CREDIT UNIT

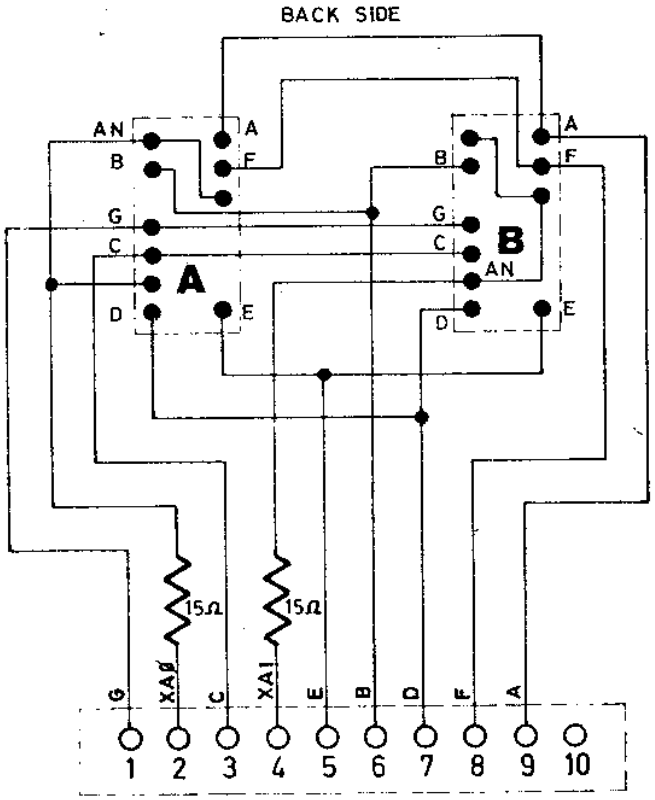
095-106



DISPLAY CONTROL

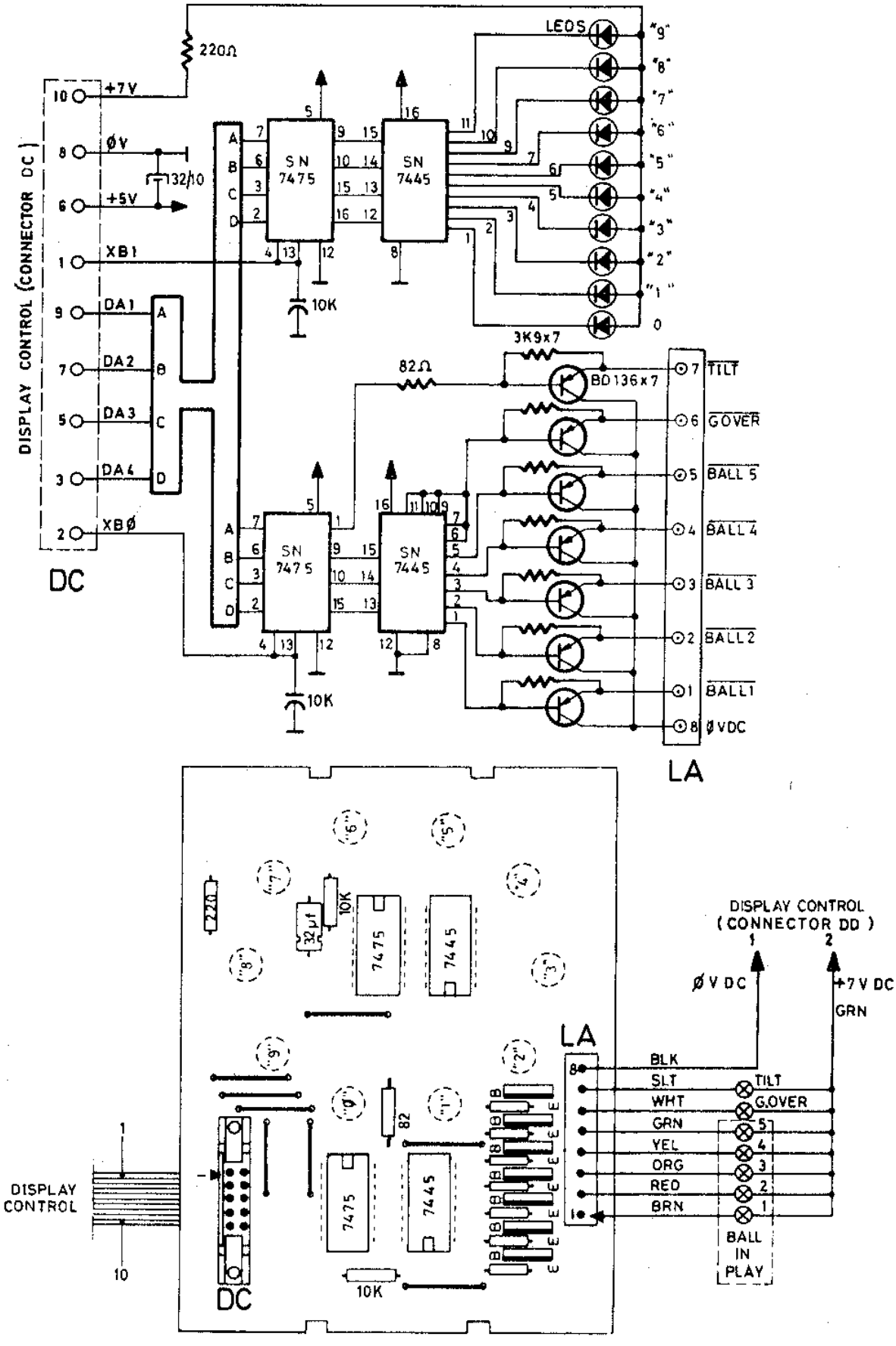
DB

BACK SIDE

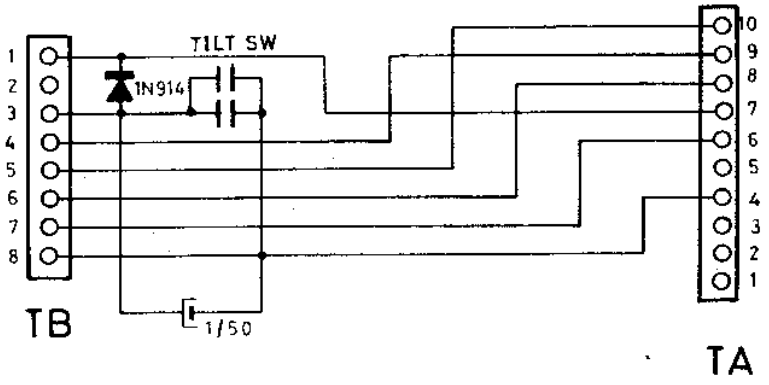


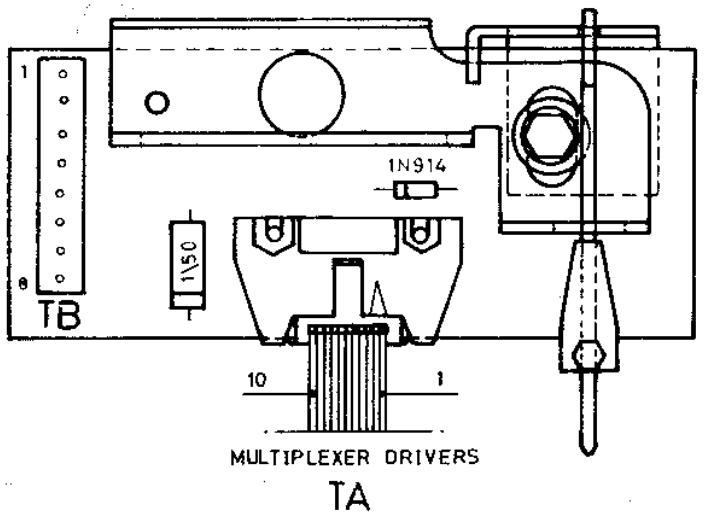
FP/EB	DA	7	8	9	10	11	12	13	14	15	16	DISPLAY CONTROL
CREDIT	DB	7	8	9	10	11	12	13	14	15	16	
UNIT	CONNECTOR	CONNECTOR POSITION										

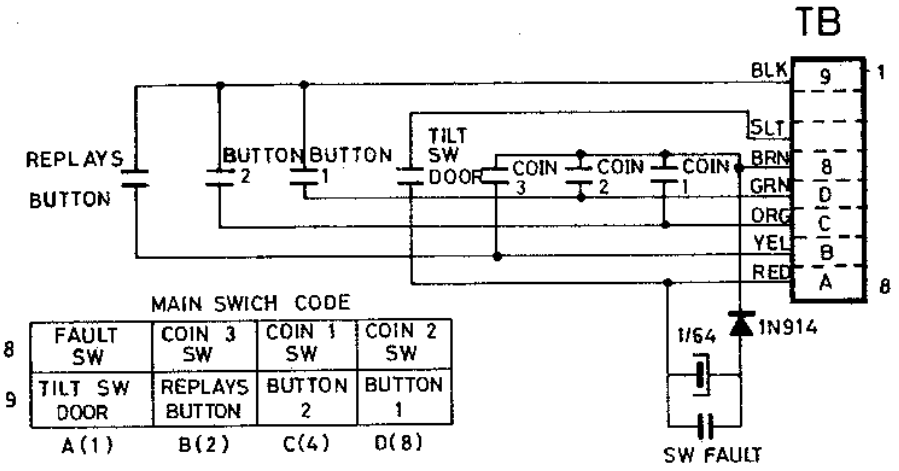
MATCH NUMBER UNIT ø95-1ø8 AND CHANGE ILLUMINATION



TILT UNIT Ø95-1Ø1
AND FROND DOOR





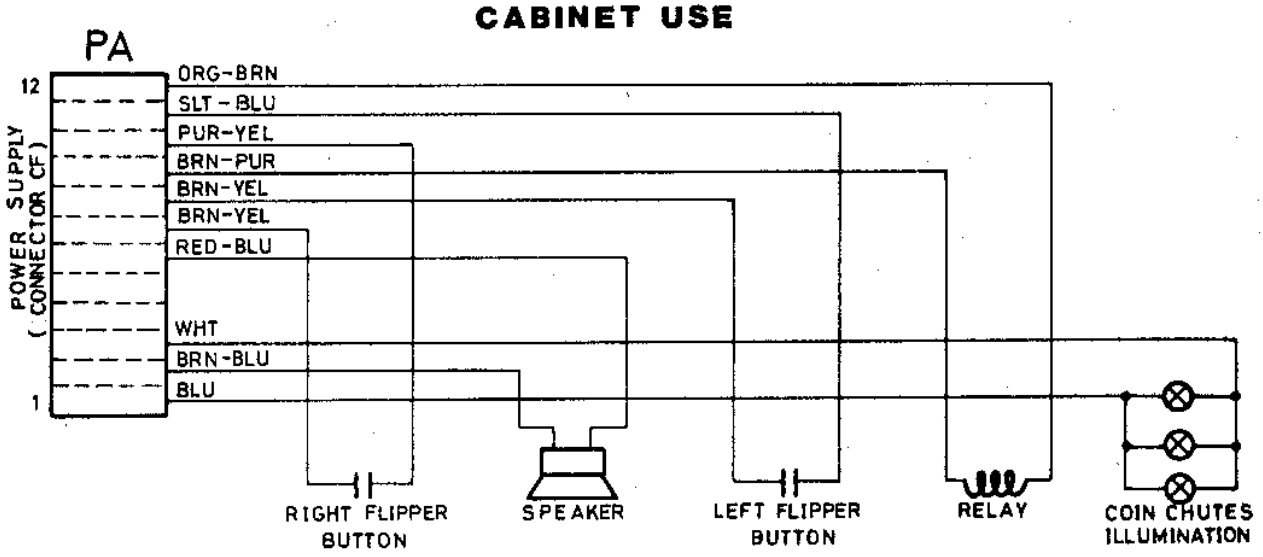


MAIN SWICH CODE

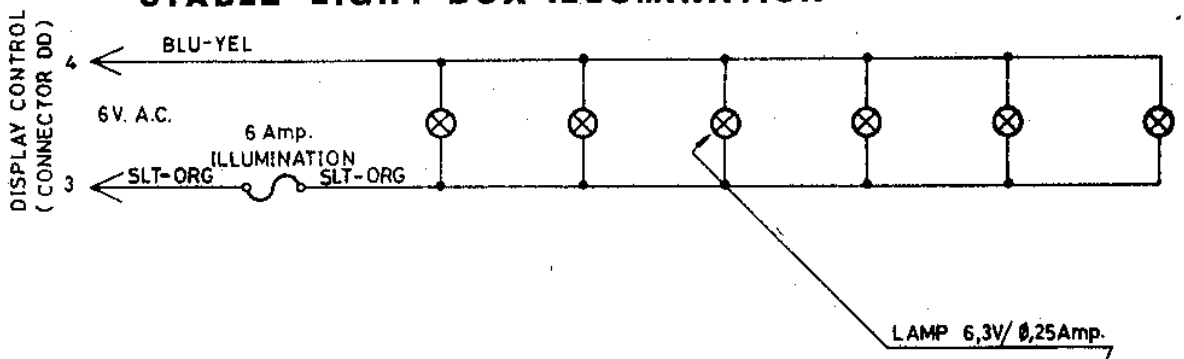
8	FAULT SW	COIN 3 SW	COIN 1 SW	COIN 2 SW
9	TILT SW DOOR	REPLAYS BUTTON	BUTTON 2	BUTTON 1
	A(1)	B(2)	C(4)	D(8)

PLAYBOARD, LIGHT BOX ILLUMINATION AND CABINET USE

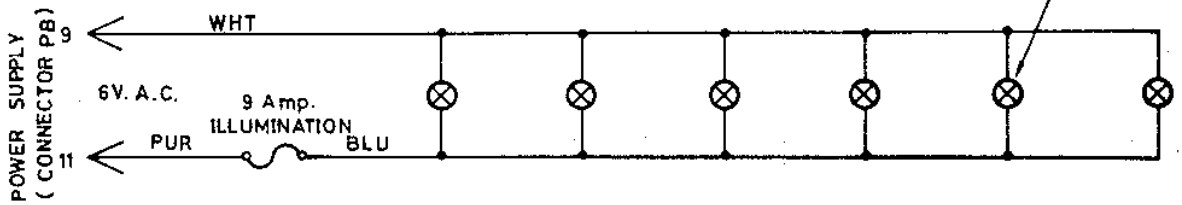
CABINET USE



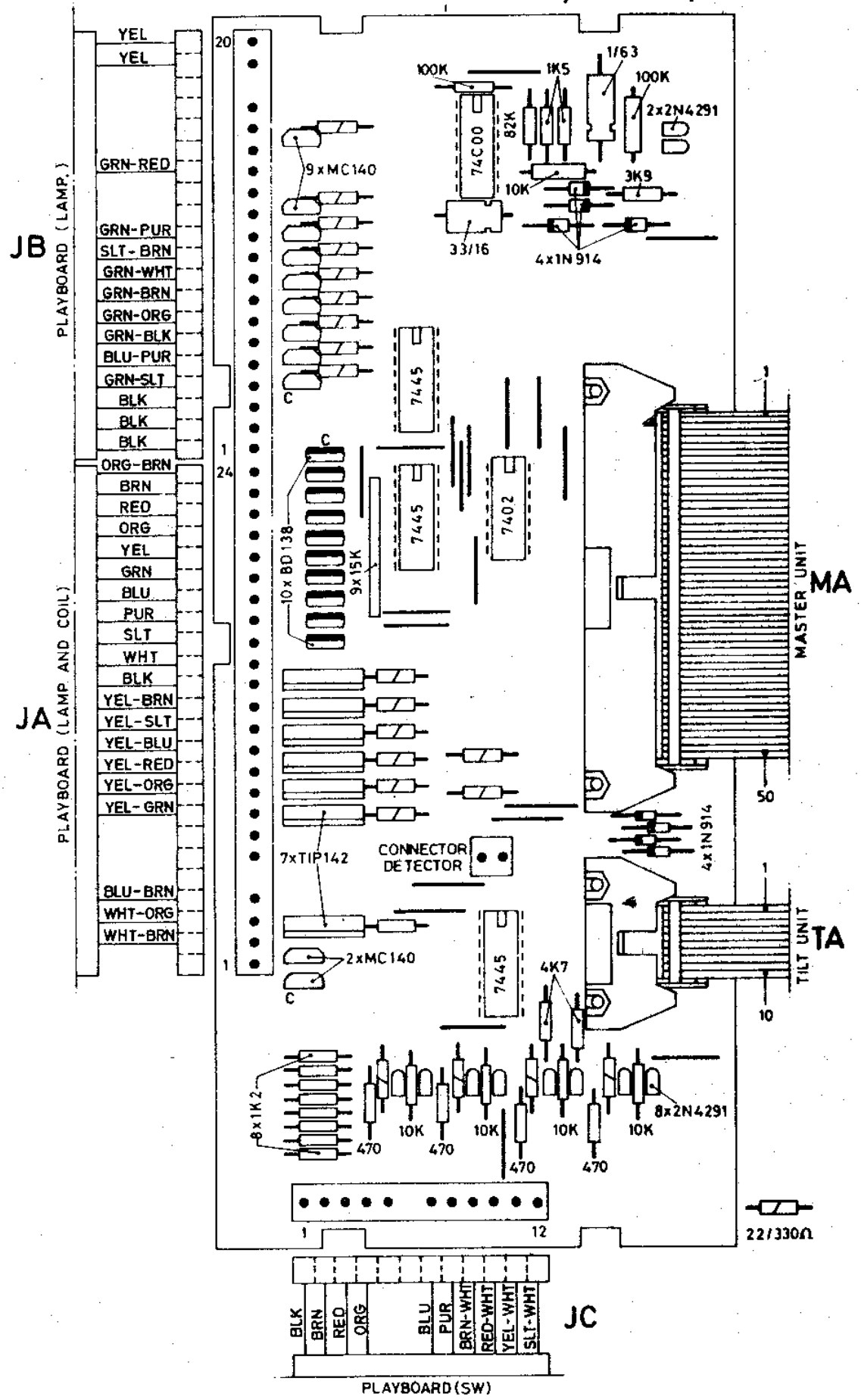
STABLE LIGHT BOX ILLUMINATION



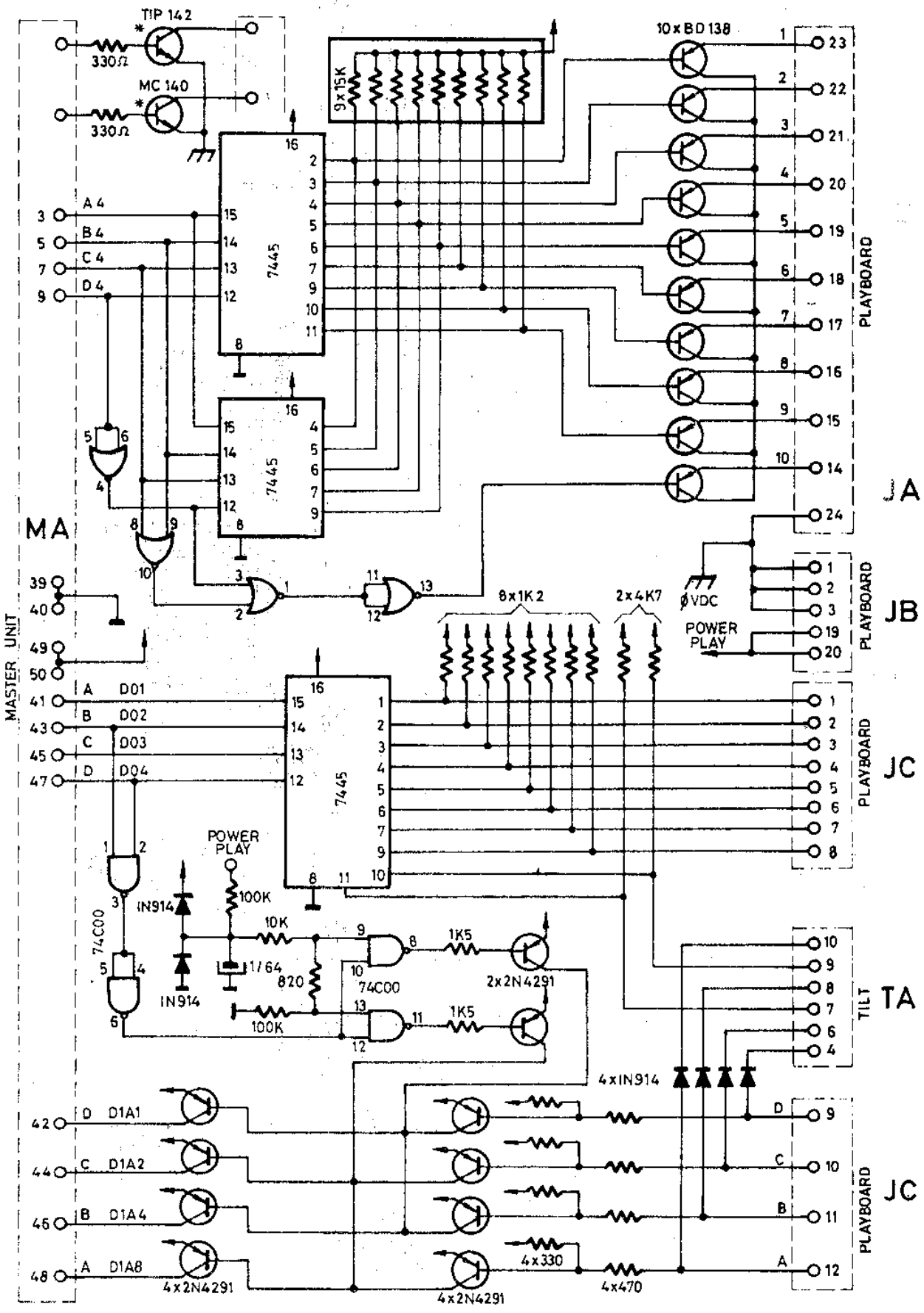
STABLE PLAYBOARD ILLUMINATION



MULTIPLEXER-DRIVERS (Ø95 - 1Ø9)

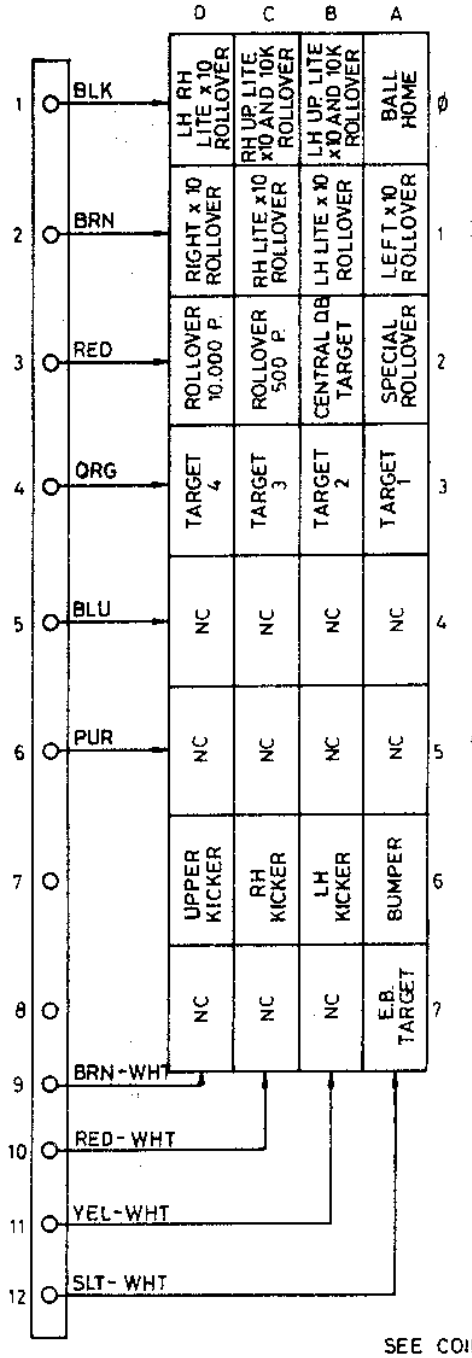


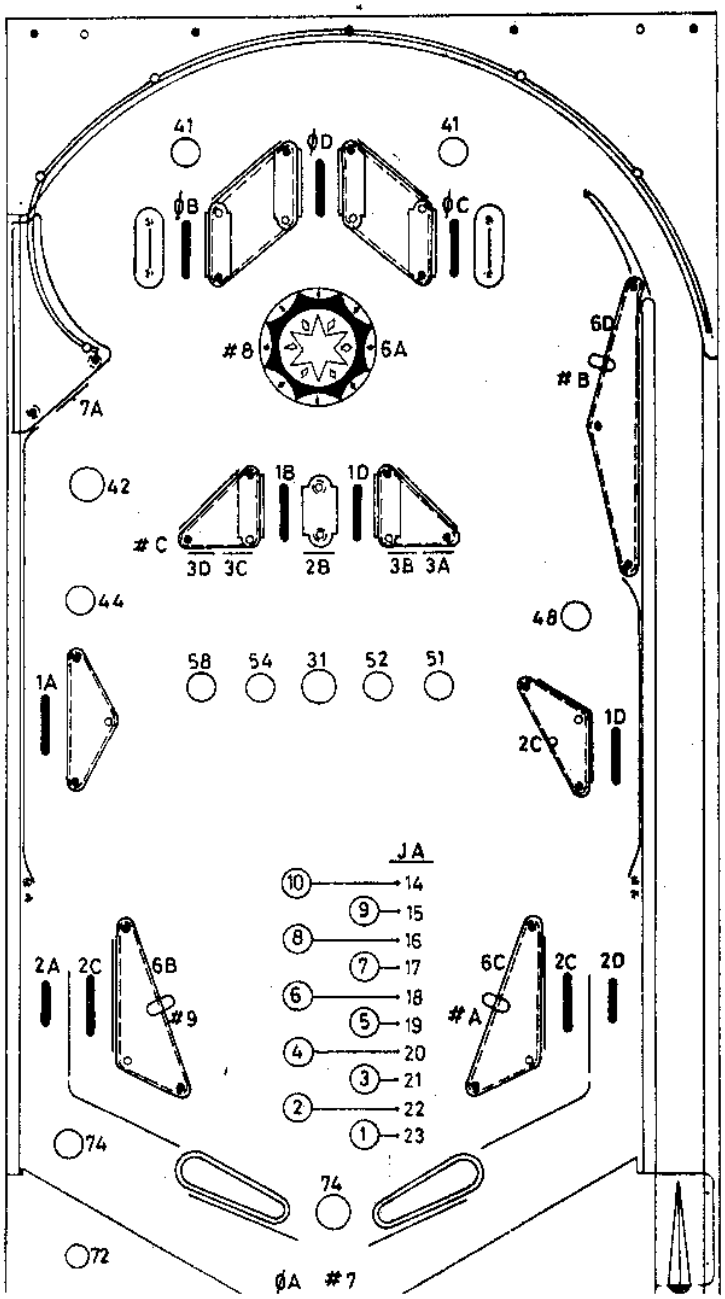
MULTIPLEXER DRIVERS Ø95 - 1Ø9 AND CHANGE ILLUMINATION



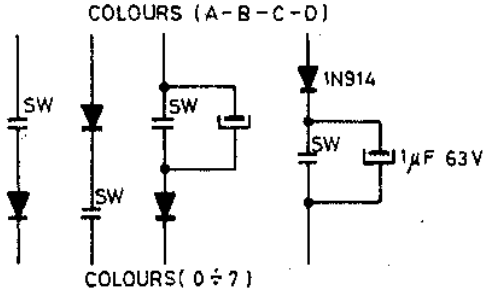
* SEE DRIVERS TABLE (PAGE C-22)

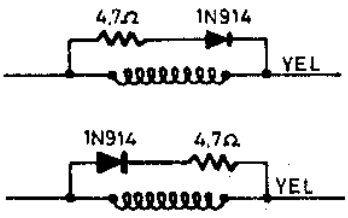
MULTIPLEXER DRIVERS Ø95-1Ø9
CODE OF CONTACTS



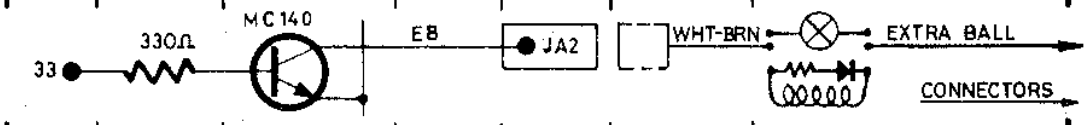


SEE COIL AND LAMP TABLE ON PAGE C-22





MULTIPLEXER DRIVERS Ø95-1Ø9
— DRIVERS TABLE —

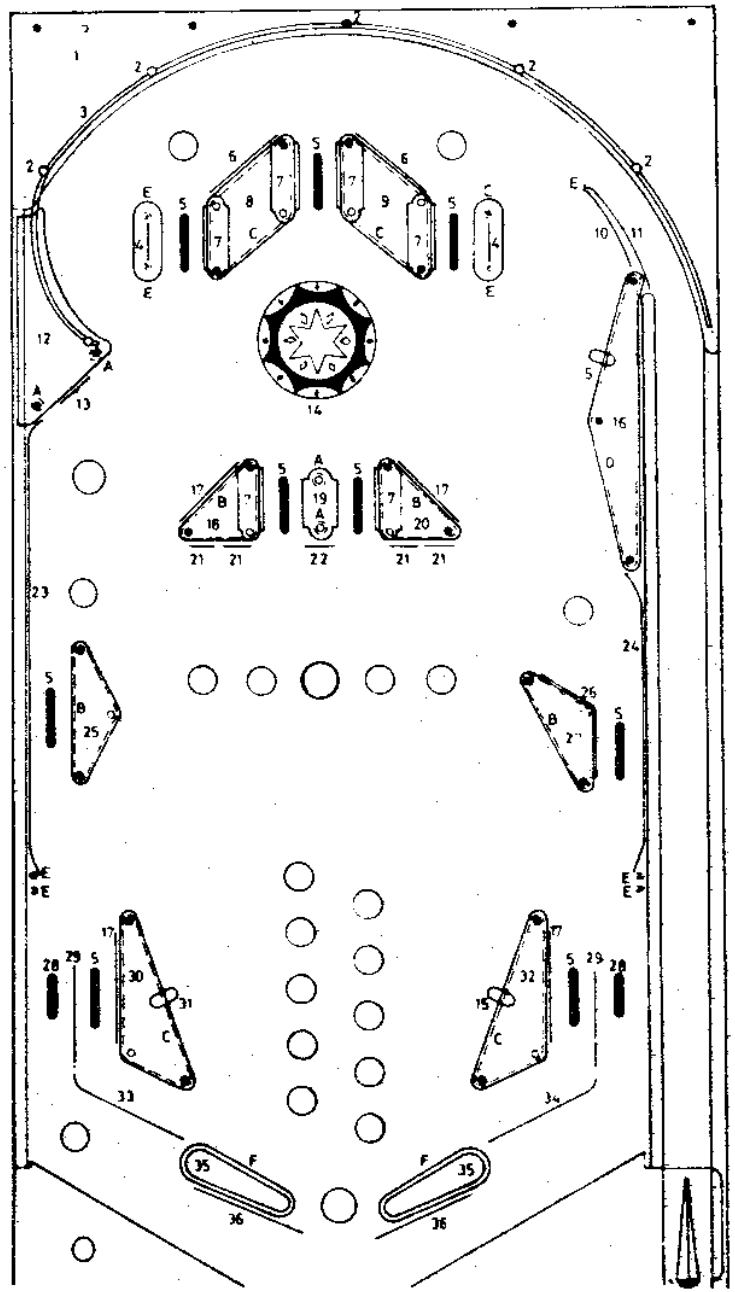


CONNEC. MA	RESISTOR	DRIVER	REGISTER	CONNECT. JA - JB	COLOUR	LAMP COIL USE
31			SP	JA 1		
33	330 Ω	MC 140	EB	JA 2	WHT-BRN	LAMP - EXTRA BALL
35	330Ω	MC 140	DB	JA 3	WHT-ORG	LAMP - DOUBLE BONUS - SPECIAL
29	330Ω	TIP 142	6	JA 4	BLU-BRN	COIL - KNOCKER
11			D	JA 5		
13			E	JA 6		
15			F	JA 7		
17	330Ω	TIP 142	C	JA 8	YEL-GRN	COIL - RESET BANK
19	330Ω	TIP 142	8	JA 9	YEL-ORG	COIL - UPPER KICKER
27	330Ω	TIP 142	7	JA10	YEL-RED	COIL - BALL RETURN
25	330Ω	TIP 142	8	JA11	YEL-BLU	COIL - BUMPER
23	330Ω	TIP 142	9	JA12	YEL-SLT	COIL - LEFT KICKER
21	330Ω	TIP 142	A	JA13	YEL-BRN	COIL - RIGHT KICKER
1	330Ω	MC 140	51	JB 4	GRN-SLT	LAMP - TARGET 1
2	330Ω	MC 140	54	JB 5	BLU-PUR	LAMP - TARGET 3
4	330Ω	MC 140	48	JB 6	GRN-BLK	LAMP - X10 RIGHT
6	330Ω	MC 140	44	JB 7	GRN-ORG	LAMP - X10 LEFT
8	330Ω	MC 140	41	JB 8	GRN-BRN	LAMP - 50.000 PTS.
10	330Ω	MC 140	52	JB 9	GRN-WHT	LAMP - TARGET 2
12	330Ω	MC 140	58	JB10	SLT-BRN	LAMP - TARGET 4
14	330Ω	MC 140	42	JB11	GRN-PUR	LAMP - EXTRA BALL
16			38			
22			34			
24	330Ω	MC 140	31	JB14	GRN-RED	LAMP - DBL.BONUS
26			32			
30			21			
32			tr			

050-205

C50-303
D60-1000
050-205
050-205
050-205
050-205
050-205

(FLIPPER COILS 050-205
B45-1000.)



A	Rubber Ring Nº 1	015-021
B	Rubber Ring Nº 3	015-025
C	Rubber Ring Nº 4	015-026
D	Rubber Ring Nº 4½	015-027
E	Rubber Ring Nº 0	015-020
F	Flipper Rubber Ring	015-046
1	Plastic Shield	020-261
2	Post for supporting guide rail	018-106
3	Nylon Guide	018-109
4	White Channel Guide	018-180
5	RH Rollover Wire Form	017-018
6	Metal Guide	001-202
7	White Channel Guide	018-155
8	Plastic Shield	020-263
9	Plastic Shield	020-264
10	Metal Guide	001-210
11	Metal Guide	001-211
12	Plastic Shield	020-262
13	Octgl. Red Target	051-072
14	Red Bumper Body	018-352
	Red Bumper Cap	018-374
15	LH Contact Kicker	057-002
16	Plastic Shield	020-265
17	Metal Guide	001-196
18	Plastic Shield	020-266
19	White Channel Guide	018-143
20	Plastic Shield	020-267
21	Drop Target	018-482
22	Drop Target	018-481
23	Metal Guide	001-166
24	Metal Guide	001-171
25	Plastic Shield	020-268
26	Metal Guide	001-239
27	Plastic Shield	020-269
28	RH Rollover Wire Form	017-020
29	Metal Guide	001-197
30	Plastic Shield	020-270
31	RH Contact Kicker	057-005
32	Plastic Shield	020-271
33	Metal Guide	001-229
34	Metal Guide	001-230
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PLAYBOARD PARTS

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POKER PLUS 1.051 - E

SERVICE MANUAL (035-613)

MADRID JANUARY — 1.978