

SKILL - FLIGHT + (oben)

Durchführung des SELBSTTESTS und Auslesen der Buchhaltungsdaten.

Der schwarze Knopf auf der Innenseite der Kassentür dient zum Weiterschalten in die nächsten Teststufen.

Der rote Knopf ist zum Löschen der einzelnen Spieleinstellungen und der Buchhaltungsdaten.

Mit der Kredittaste können die Werte neu eingestellt werden.

<u>Funktion:</u>			<u>TESTSTUFE</u>	(Anzeige auf dem BALL IN PLAY Display)
1	x drücken	= Lampentest	-	
2	x drücken	= Display-Test	-	
3	x drücken	= Spulentest	-	Spulen-Nr. in Spieler Displays
4	x drücken	= Soundmodultest	-	
5	x drücken	= Kontakttest	blinkende 0	= alle Kontakte offen
6	x drücken	= 1. FREISPIEL	01	
7	x drücken	= 2. FREISPIEL	02	
8	x drücken	= 3. FREISPIEL	03	
9	x drücken	= Tages-High Score	04	
10	x drücken	= gespeicherte Kredite	05	
11	x drücken	= Gesamtspiele	06	
12	x drücken	= Freispiele	07	
13	x drücken	= Freispiele in %n	08	
14	x drücken	= wie oft Tages-High Score übertroffen	09	
15	x drücken	= 1,- DM Einwurf	10	
16	x drücken	= 5,- DM Einwurf	11	
17	x drücken	= 2,- DM Einwurf	12	
18	x drücken	= Anzahl der erreichten SPECIALS	13	
19	x drücken	= Spielzeit gesamt	14	
20	x drücken	= Anzahl der Service Kredite	15	
21	x drücken	= Einstellung Freispiel/Freikugel bei "SPECIAL"	16	03 = Freispiel 02 = Extra Ball 01 = 50.000 Punkte 00 = keine Funktion
22	x drücken	= Einstellung Freispiel/Freikugel bei Überschreiten "HIGH SCORE"	17	03 = Freispiel 02 = Extra Ball 01 = 25.000 Punkte 00 = keine Funktion
In Verbindung mit den Testschritten 16 und 17 ist DIP SW 29 auf ON zu stellen, damit mehr als 1 Replay gewährt wird.				
23	x drücken	= Soundeinstellung	18	03 = 3 Freispiele 02 = 2 Freispiele 01 = 1 Freispiel 00 = kein Freispiel
24	x drücken	= Anzahl d. Freispiele bei Erreichen des High Scores	19	03 = 3 Freispiele 02 = 2 Freispiele 01 = 1 Freispiel 00 = kein Freispiel
25	x drücken	= Rückstellung in Normalspiel (Einschalttest)	-	

Bitte denken Sie daran, daß die Spielfeldneigung mindestens 6° sein soll. Sind die Beinschrauben angezogen? Ist die Kugel-Tiltvorrichtung optimal eingestellt? Ist der Münzeinwurf geprüft?

Einstellmöglichkeiten am Flipper

"S K I L L F L I G H T"

mit Hilfe der DIP Schalter 1 - 32

Schalter Nr.	Normal- einstell.	
1	OFF)	<u>1,- DM Einwurf</u> (links)
2	OFF)	
3	OFF)	Hier: 1,-DM = 1 Kredit
4	OFF)	
5	OFF)	Andere Kredite siehe Anlage "Game Adjustmen
6	OFF	<u>Special linke + rechte Kugelauslaufbahn</u> Beleuchtet nachdem "Landing Bonus Special" gegeben wurde <u>ON:</u> Zur gleichen Zeit, wie "Landing Bonus Special" beleuchtet
7	ON	<u>One Million Target</u> Wird im 3. Ball kurz beleuchtet <u>OFF:</u> Wird nicht gegeben
8	OFF	<u>Landing Bonus Special</u> Beleuchtet nach 39.000 Bonuspunkten. Rücksprung auf 20.000 Bonuspunkte. Beim nochmaligen Erreichen von 39.000 Bonus punkten wird 1 Special gegeben. <u>ON:</u> Special wird mit Erreichen von 39.000 Bonuspunkten gegeben.
9	OFF)	<u>2,- DM Einwurf</u> (rechts)
10	ON)	
11	OFF)	Hier: 2,-DM = 3 Kredite
12	OFF)	
13	OFF)	Andere Kredite siehe Anlage "Game Adjustmen
14	ON	<u>Looping Bonus</u> Zählt bis 23.000 Bonuspunkte (12 K + 11 K) <u>OFF:</u> Zählt bis 12.000 Bonuspunkte
15	OFF	<u>Helikopter Target</u> Start mit beleuchtetem 15 K Licht <u>ON:</u> Start bei 0
16	ON	<u>Game over Verhalten</u> Licht- und Sound-Effekte <u>OFF:</u> Keine Effekte
17	OFF)	<u>5,- DM Einwurf</u> (mitte)
18	ON)	
19	OFF)	Hier: 5,-DM = 10 Kredite
20	ON)	Andere Kredite siehe Anlage "Game Adjustmen
21	OFF	<u>Looping Multiplier</u> Wird nicht für den nächsten Ball gespeichert <u>ON:</u> Wird gespeichert

Schalter Normal-
Nr. einstell.

- 22 ON Runway Rampen Memory
 Die Bereitschaft, die Kugeln zu halten, wird
 für den nächsten Ball gespeichert.
 OFF: Wird nicht gespeichert.
- 23 ON Memory der 3 roten + 3 blauen Targets
 Beleuchtete Targets werden für den nächsten
 Ball gespeichert.
 OFF: Werden nicht gespeichert.
- 24 ON Ruhezeit der 1. Kugel in einem der Runway-Löcher
 Kugel wird nach ca. 30 Sek. ausgeworfen, wenn
 keine 2. Kugel deponiert wurde. Auf der Kredit-
 anzeige findet währenddessen ein blinkender
 "Count Down" von 10 bis 0 statt.
 OFF: Kugel bleibt bis Spielende im Runway-Loch
 liegen, wenn keine 2. Kugel deponiert wurde.
- 25 ON) Maximale Kredite
 26 ON) Hier: 40
 OFF) = 10 ON) = 15 OFF) = 25
 OFF) OFF) ON)
- 27 ON Kreditanzeige
 Kredit wird angezeigt.
 OFF: Wird nicht angezeigt.
- 28 ON Match
 Match ein.
 OFF: Match aus.
- 29 ON Freispiele pro Spiel
 Alle Freispiele werden gegeben.
 OFF: Nur 1 Freispiel pro Spiel.
- 30 ON Looping Bonus Feature
 Bonus wird gegeben.
 OFF: Wird nicht gegeben.
- 31 OFF) Kugeln pro Spiel
 32 OFF) Hier: 3 Kugeln
 ON) = 2 OFF) = 4 ON) = 5
 ON) ON) OFF)

 * W I C H T I G E R H I N W E I S *
 * * * * *

Das Spiel kann nur gestartet werden,
 wenn sich alle 3 Kugeln in der
 Outhole-Kugelrinne befinden !!!

GAME ADJUSTMENTS

A. Back Box Game Adjustments:

Each game has thirty-two switches located on A4, the MPU module, located in the back box, that allow play to be customized to the location. Credits per coin, credit display, and baser per game, are selectable by means of the switches. The switches are contained in four-sixteen lead packages numbered S1-8, S9-16, S17-24, and S25-32 for easy identification. The "ON" toggle position is marked on the assembly. Turn off power before making adjustments.

Credits/Coin Adjustments:

The credits per coin are selectable by means of S17-S20 for coin chute #2 (Center). The switch settings and resultant credits/coin are as follows:

S20	S19	S18	S17	Credits/Coin	S20	S19	S18	S17	Credits/Coin
OFF	OFF	OFF	OFF	Same as Coin Chute #1 Settings	ON	OFF	OFF	OFF	8/1 Coin
OFF	OFF	OFF	ON	1/1 Coin	ON	OFF	OFF	ON	9/1 Coin
OFF	OFF	ON	OFF	2/1 Coin	ON	OFF	ON	OFF	10/1 Coin
OFF	OFF	ON	ON	3/1 Coin	ON	OFF	ON	ON	11/1 Coin
OFF	ON	OFF	OFF	4/1 Coin	ON	ON	OFF	OFF	12/1 Coin
OFF	ON	OFF	ON	5/1 Coin	ON	ON	OFF	ON	13/1 Coin
OFF	ON	ON	OFF	6/1 Coin	ON	ON	ON	OFF	14/1 Coin
OFF	ON	ON	ON	7/1 Coin	ON	ON	ON	ON	15/1 Coin

The credits given are selectable by means of switches 1-5 incl., for coin chute #1 and switches 9-13 incl., for coin chute #3. Thirty-one different credit ratios are available for each coin chute. The switch settings and resultant credits/coin are listed below.

CREDITS/COIN ADJUSTMENTS

COIN CHUTE	SWITCHES					CREDITS	CREDITS	CREDITS	CREDITS	CREDITS	TOTAL CREDITS/COIN
#1 (HINGE SIDE) OR #3 (RIGHT SIDE)	5	4	3	2	1						
	13	12	11	10	9						
OFF	OFF	OFF	OFF	OFF	OFF	1/1 Coin					
OFF	OFF	OFF	OFF	OFF	ON	2/1 Coin					
OFF	OFF	OFF	OFF	ON	OFF	3/1 Coin					
OFF	OFF	OFF	ON	ON	ON	4/1 Coin					
OFF	OFF	ON	OFF	OFF	OFF	5/1 Coin					
OFF	OFF	ON	OFF	ON	ON	6/1 Coin					
OFF	OFF	ON	ON	ON	OFF	7/1 Coin					
OFF	OFF	ON	ON	ON	ON	8/1 Coin					
OFF	ON	OFF	OFF	OFF	OFF	9/1 Coin					
OFF	ON	OFF	OFF	ON	ON	12/1 Coin					
OFF	ON	OFF	ON	OFF	OFF	14/1 Coin					
OFF	ON	OFF	ON	ON	ON	1/2 Coins*					
OFF	ON	ON	OFF	OFF	OFF	2/2 Coins*					
OFF	ON	ON	OFF	ON	ON	3/2 Coins*					
OFF	ON	ON	ON	ON	OFF	4/2 Coins*					
OFF	ON	ON	ON	ON	ON	5/2 Coins*					
ON	OFF	OFF	OFF	OFF	OFF	6/2 Coins*					
ON	OFF	OFF	OFF	ON	ON	7/2 Coins*					
ON	OFF	OFF	ON	ON	OFF	8/2 Coins*					
ON	OFF	ON	OFF	OFF	OFF	9/2 Coins*					
ON	OFF	ON	OFF	ON	ON	12/2 Coins*					
ON	OFF	ON	OFF	ON	ON	14/2 Coins*					
ON	OFF	ON	ON	ON	OFF	1/1st Coin	2/2nd Coin				3/2
ON	OFF	ON	ON	ON	ON	0/1st Coin*	1/2nd Coin	1/3rd Coin	1/4th Coin		3/4
ON	ON	OFF	OFF	OFF	OFF	0/1st Coin*	1/2nd Coin	0/3rd Coin**	2/4th Coin		3/4
ON	ON	OFF	OFF	ON	ON	1/1st Coin	1/2nd Coin	1/3rd Coin	2/4th Coin		5/4
ON	ON	OFF	ON	ON	OFF	1/1st Coin	2/2nd Coin	1/3rd Coin	3/4th Coin		7/4
ON	ON	OFF	ON	ON	ON	1/1st Coin	2/2nd Coin	2/3rd Coin	2/4th Coin		7/4
ON	ON	ON	OFF	OFF	OFF	0/1st Coin***	0/2nd Coin***	1/3rd Coin			1/3
ON	ON	ON	OFF	ON	ON	0/1st Coin***	0/2nd Coin**	0/3rd Coin**	1/4th Coin		1/4
ON	ON	ON	ON	ON	OFF	0/1st Coin****	0/2nd Coin****	0/3rd Coin****	0/4th Coin****	1/5th Coin	1/5
ON	ON	ON	ON	ON	ON	0/1st Coin****	0/2nd Coin****	1/3rd Coin	0/4th Coin****	1/5th Coin	2/5

*No Credits until 2nd coin is dropped

**No Credits until 4th coin is dropped.

***No Credits until 3rd coin is dropped.

****No Credits until 5th coin is dropped.

LANDING SPECIAL

SW 8

LIBERAL SPECIAL 39.000 points + one target

ON

CONSERVATIVE SPECIAL lit at 39.000 point but

the player win after ather 39.000

OFF

(Bonus second time start with 20.000 lit)

LANDING SPECIAL ADVANCE WITH:

RED TARGETS

BLUE TARGETS

EXTRA BALL HOLE

HELICOPTER TARGET

LANDING MULTIPLIER ADVANCE WITH

EXTRA BALL HOLE

SPECIAL OUTLANE

SW 6

LIBERAL lit with landing special

ON

CONSERVATIVE lit after landing special

OFF

LOOPING BONUS

SW 14

LIBERAL arrive at 23.000

ON

CONSERVATIVE arrive at 12.000

OFF

LOOPING BONUS ADVANCE WITH

THE TWO

STARS ON TOP

LOOPING MULTIPLIER ADVANCE

WHEN YOU PUSH THE TWO STARS

LOOPING BONUS

SW 30

LIBERAL give the points when the ball go in hole

ON

CONSERVATIVE don't give the points

OFF

GAME OVER ATTRACT ADJUSTMENT

SW 16.

SOUND AND LIGHT

YES

ON

NO

OFF

LOOPING MULTIPLIER	SW 21
LIBERAL rest in memory for the next ball	ON
CONSERVATIVE start again	OFF —
 HELICOPTER TARGET	 SW 15
CONSERVATIVE start to 0	ON
LIBERAL start to 15K <i>Life</i>	OFF —
 3 RED TARGETS AND 3 BLUE TARGETS	 SW 23
LIBERAL the targets lites rest in memory for next ball	ON —
CONSERVATIVE don't rest in memory	OFF
 NUMBER OF GAMES REPLAYS PER GAME ADJUSTMENT	 SW 29
LIBERAL all replay earned will be collected	ON
CONSERVATIVE only 1 replay per player per game	OFF —
 QUALIFY RAMP FOR CAPTURE REST IN MEMORY FOR NEXT BALL	 SW 22
YES	ON —
NO	OFF
 ONE MILLION TARGET (IS CAMING 3° BALL ONLY)	 SW 7
YES LIBERAL	ON —
NO CONSERVATIVE	OFF

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*****
*          IMPORTANT          *
*          FOR START THE GAME THE 3 BALLS *
*          MUST BE IN OUTHOLE          *
*          *****          *
*****

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SW 24 Times Run in way ON —

SOLENOID DRIVER LOCATION

TRANSISTOR	DESCRIPTION	JACK	PIN NO	TEST NUMBER
4	2° OUT HOLE	PL 1	2	01
3	KNOCKER	CAB	3	02
9	BUMPER LEFT	PL 2	6	03
10	BUMPER RIGHT	PL 2	11	04
12	BUMPER DOWN	PL 2	12	05
11	SLING SHOOT LEFT	PL 2	13	06
16	" " RIGHT	PL 2	14	07
5	SAUCER	PL 1	5	08
2	1° OUT HOLE	PL 1	8	09
8	RAMP LEFT	PL 2	5	10
13	RAMP RIGHT	PL 2	3	11
14	ONE MILLION DROP	PL 2	2	12
	TARGET			
18	GATE	PL 2	15	13
15	RELE'			14

LAMP DRIVER LOCATION

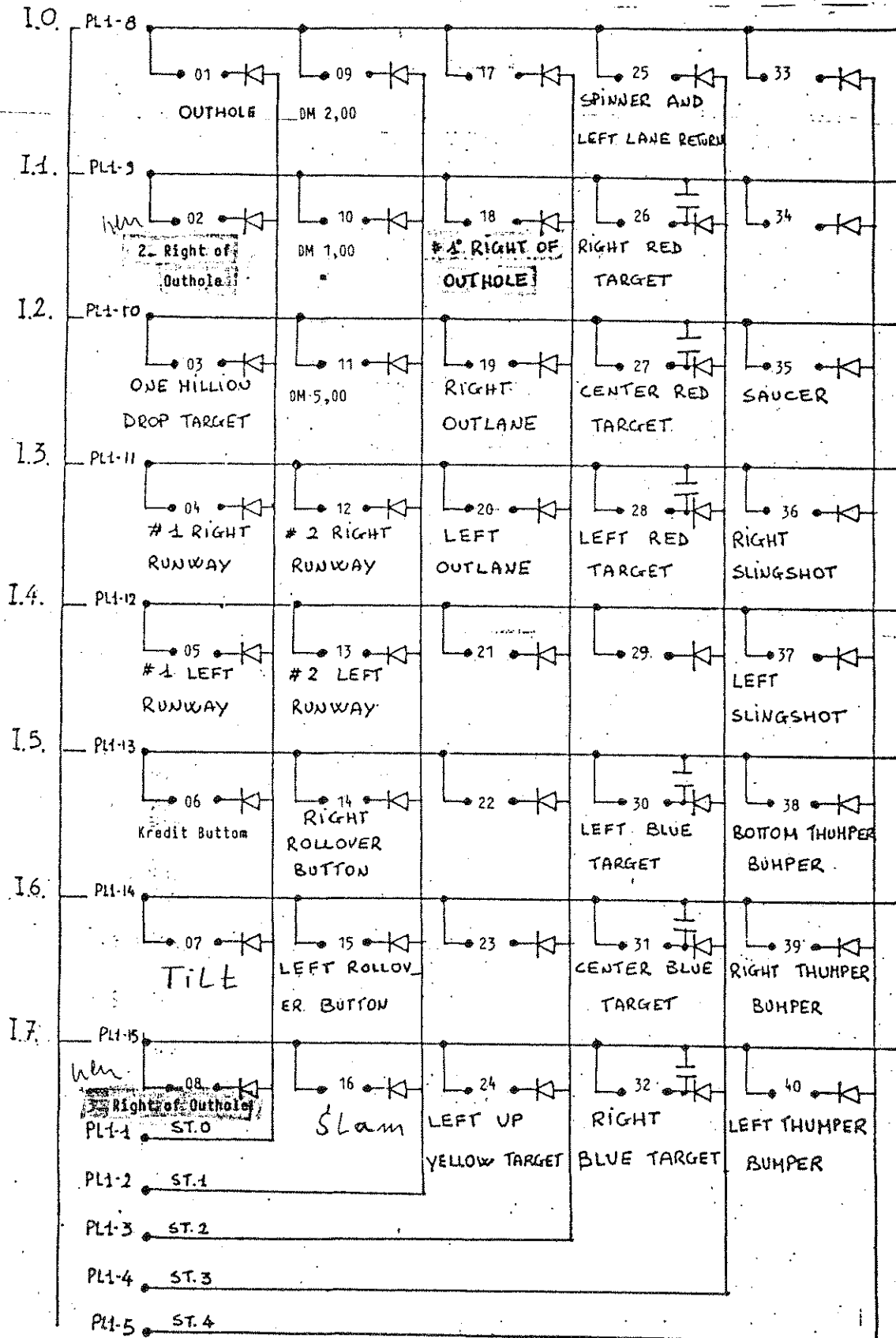
SCR	DESCRIPTION
13	1K LANDING BONUS
28	2K " "
43	3K " "
58	4K " "
14	5K " "
29	6K " "
44	7K " "
59	8K " "
15	9K " "
30	10K " "
45	20K " "
61	30K " "
60	SPECIAL LANDING BONUS
53	FLIGHT AGAIN
71	OUTLINE SPECIAL LEFT
56	OUTLINE SPECIAL RIGHT
22	BLUE TARGET RIGHT
21	BLUE TARGET CENTER
36	BLUE TARGET RIGHT
34	RED TARGET RIGHT
49	RED TARGET CENTER
64	RED TARGET LEFT
72	EXTRA BALL
57	BUMPER LEFT
42	BUMPER RIGHT
27	BUMPER CENTER

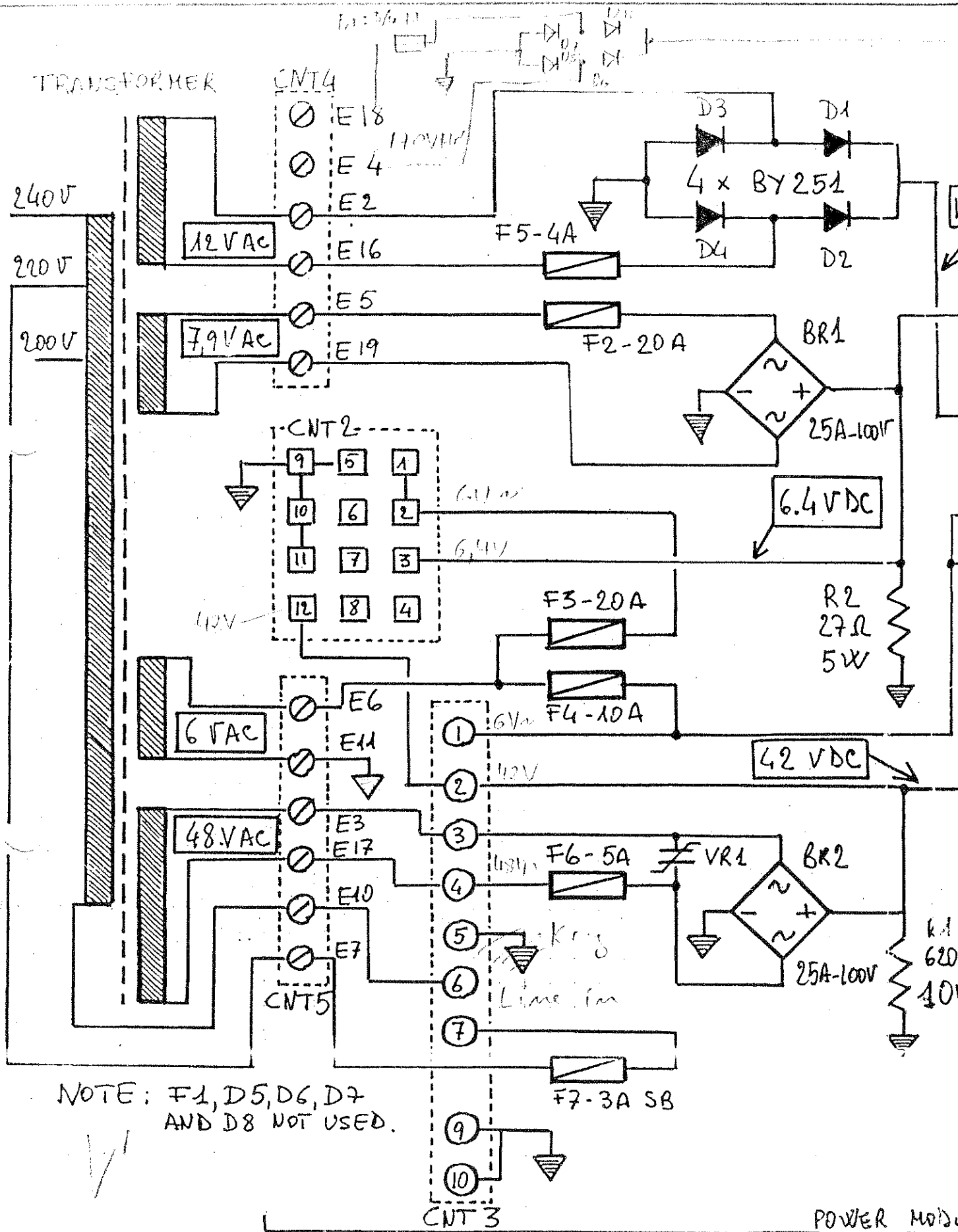
SCR	DESCRIPTION
18	15K HELICOPTER TARGET
33	30K " "
48	50K " "
66	65K " "
51	95K " "
63	SPECIAL HELICOPTER TARGET
17	X 2 LOOPING MULTIPLIER
32	X 3 " "
47	X 4 " "
62	X 5 " "
1	1K LOOPING BONUS
4	2K " "
7	3K " "
10	4K " "
2	5K " "
5	6K " "
8	7K " "
11	8K " "
3	9K " "
6	10K " "
9	11K " "
12	12K " "
16	X 2 LANDING MULTIPLIER
31	X 3 " "
46	X 4 " "
50	4 COVERS RED ON PALYFIELD
69	HELICOPTER MOTOR
41	TOP ILLUMINATION PLAYFIELD
38	SKILL BACKGLASS
25	LIGHT ON TOP CABINET
26	2 LIGHT ON FRONT BACKGLASS
40	FLIGHT BACKGLASS
39	ONE MILLION TARGET

WIRE COLOR

WIRE COLOR

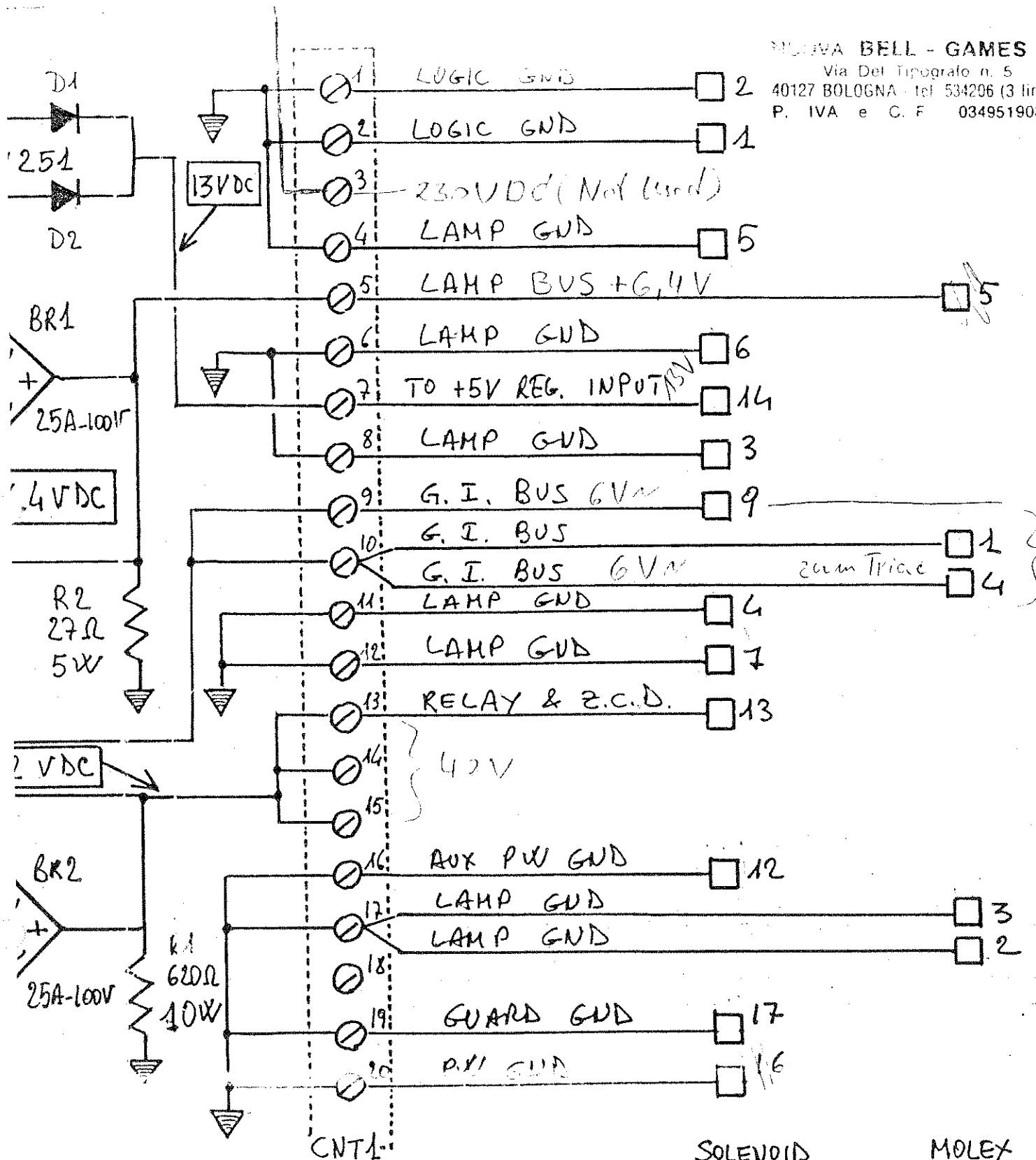
PL1-1 WHITE/RED PL1-4 WHITE/YELLOW PL1-9 YELLOW/BROWN PL1-12 BROWN
 PL1-2 ORANGE PL1-5 YELLOW/RED -10 GRAY/BLACK PL1-13 BROWN/RED
 PL1-3 GRAY/YELLOW PL1-8 PINK/ORANGE PL1-11 ORANGE/BLACK PL1-14 GRAY/RED
 PL1-15 WHITE/BLACK





MODIVA BELL - GAMES

Via Del Tipografo n. 5
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P. IVA e C. F. 034951903

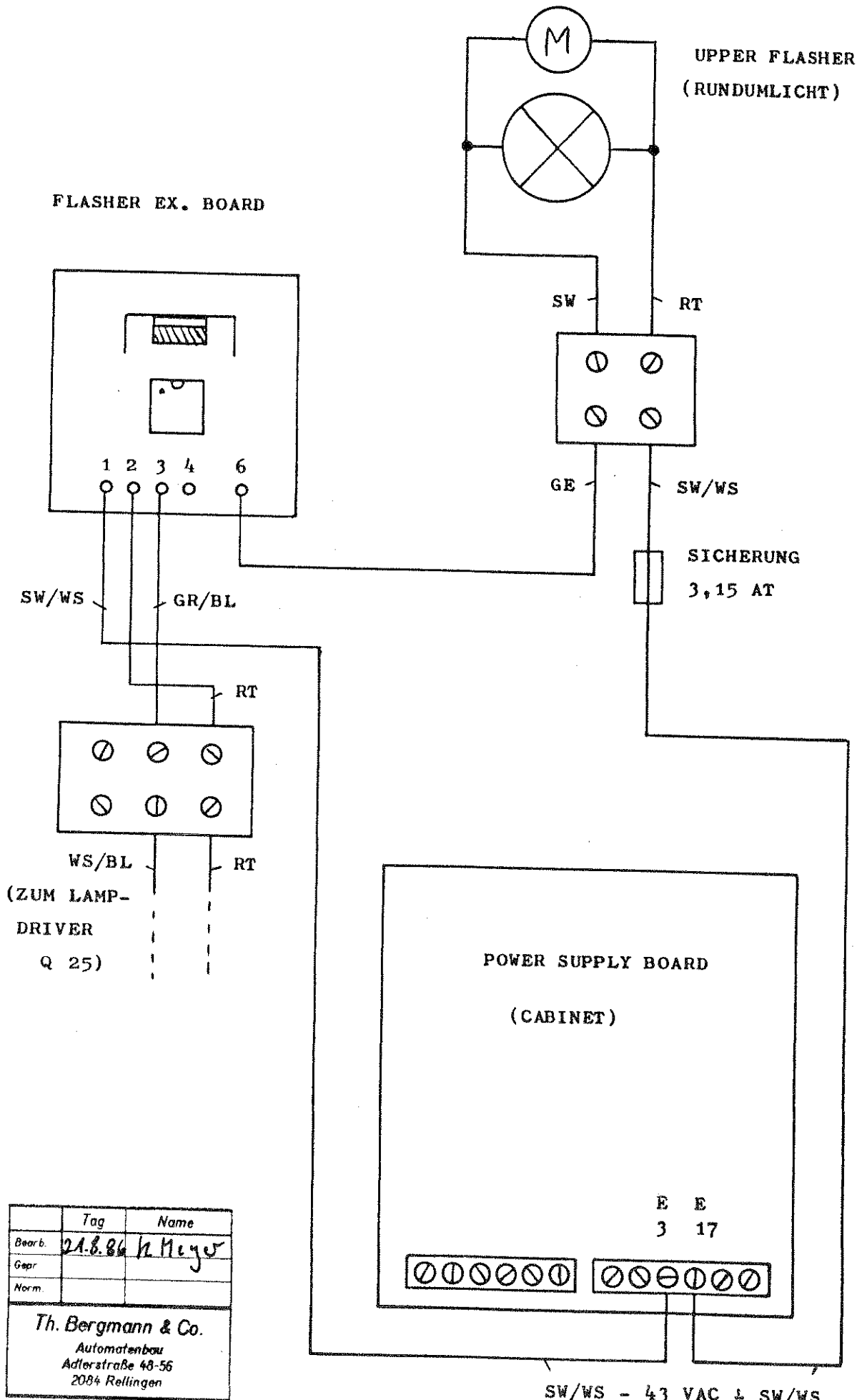


POWER MODULE PM 148.2

SOLENOID
REGULATOR
BOARD
Power mod.
conn.

MOLEX
CONN.
(Back b

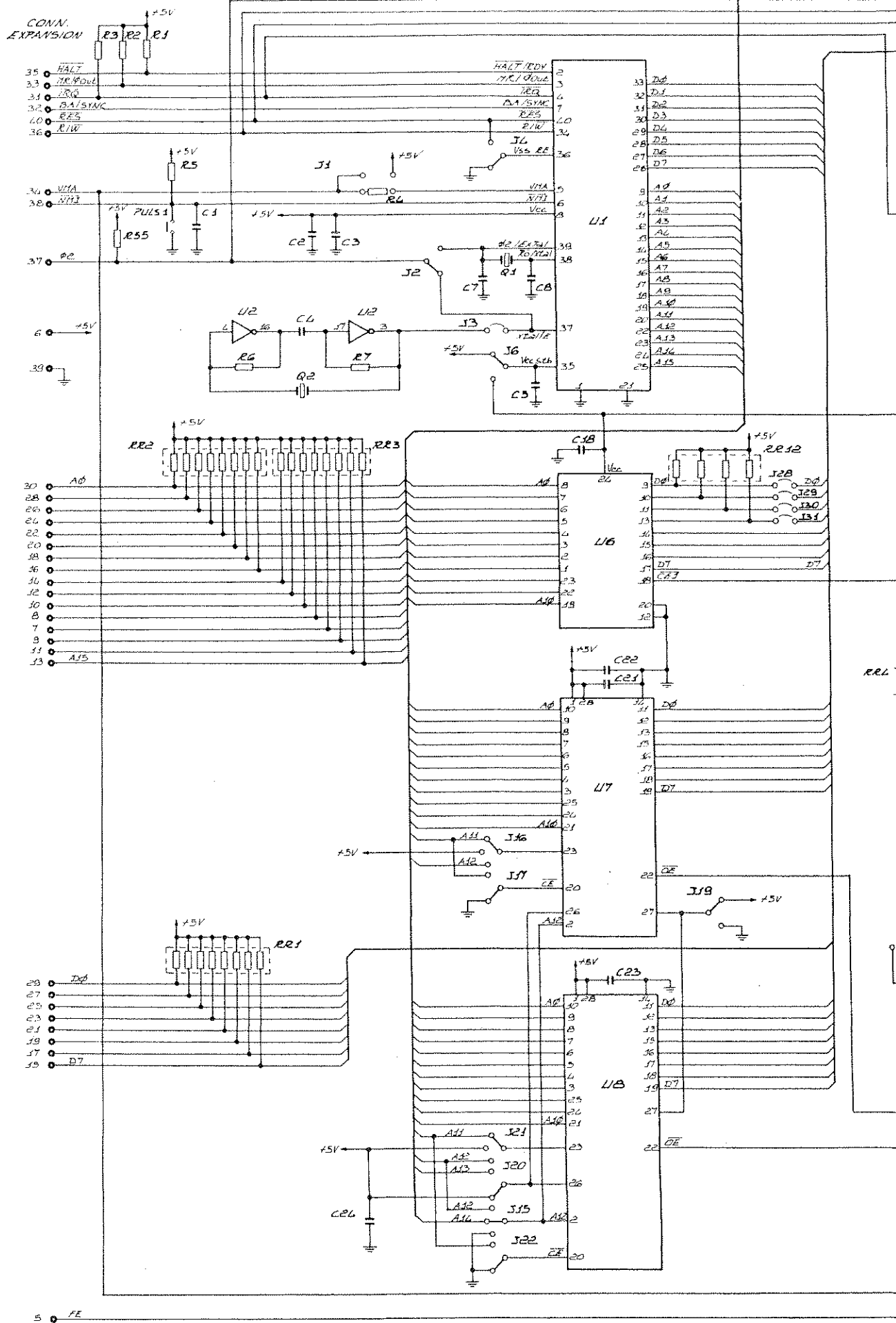
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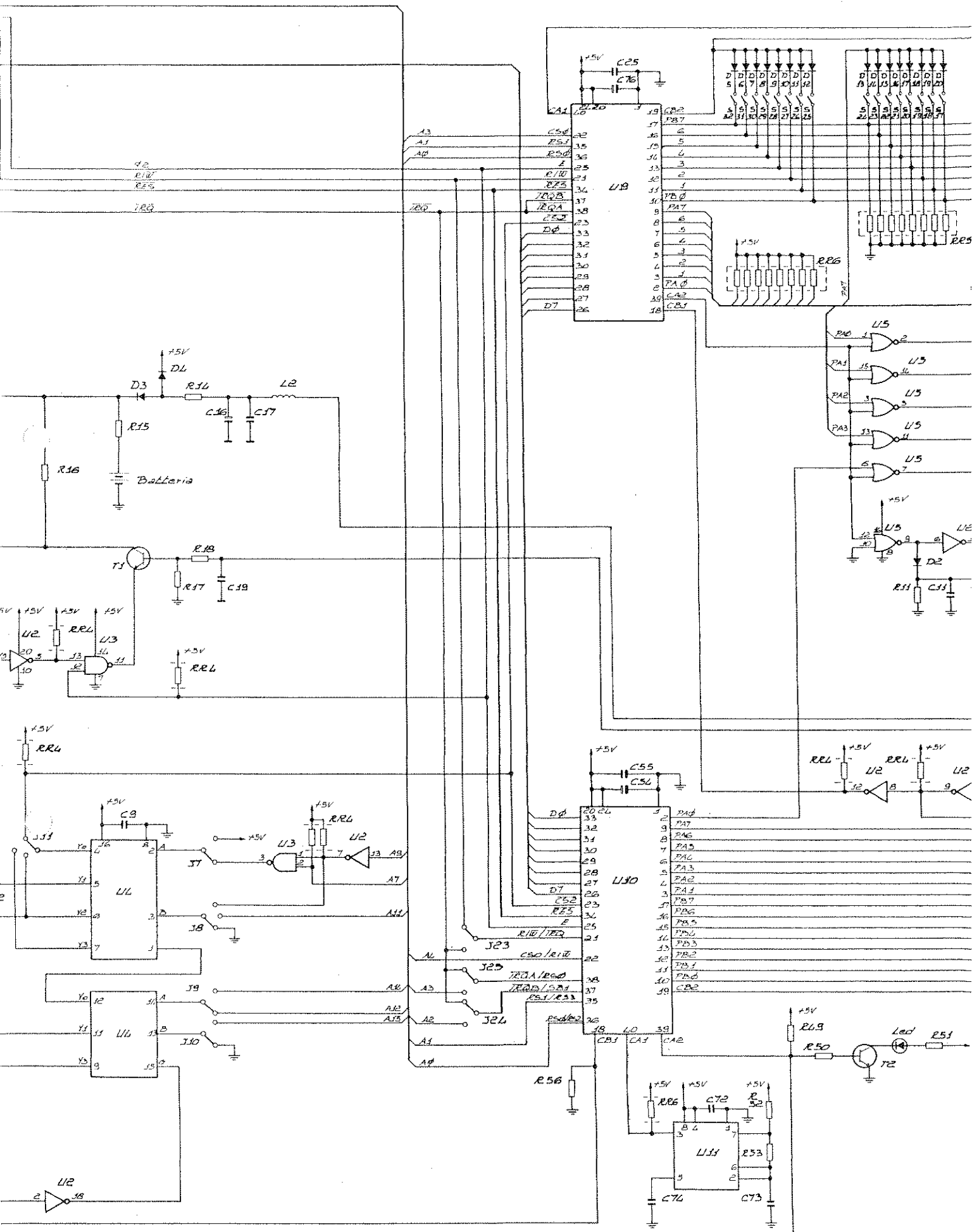


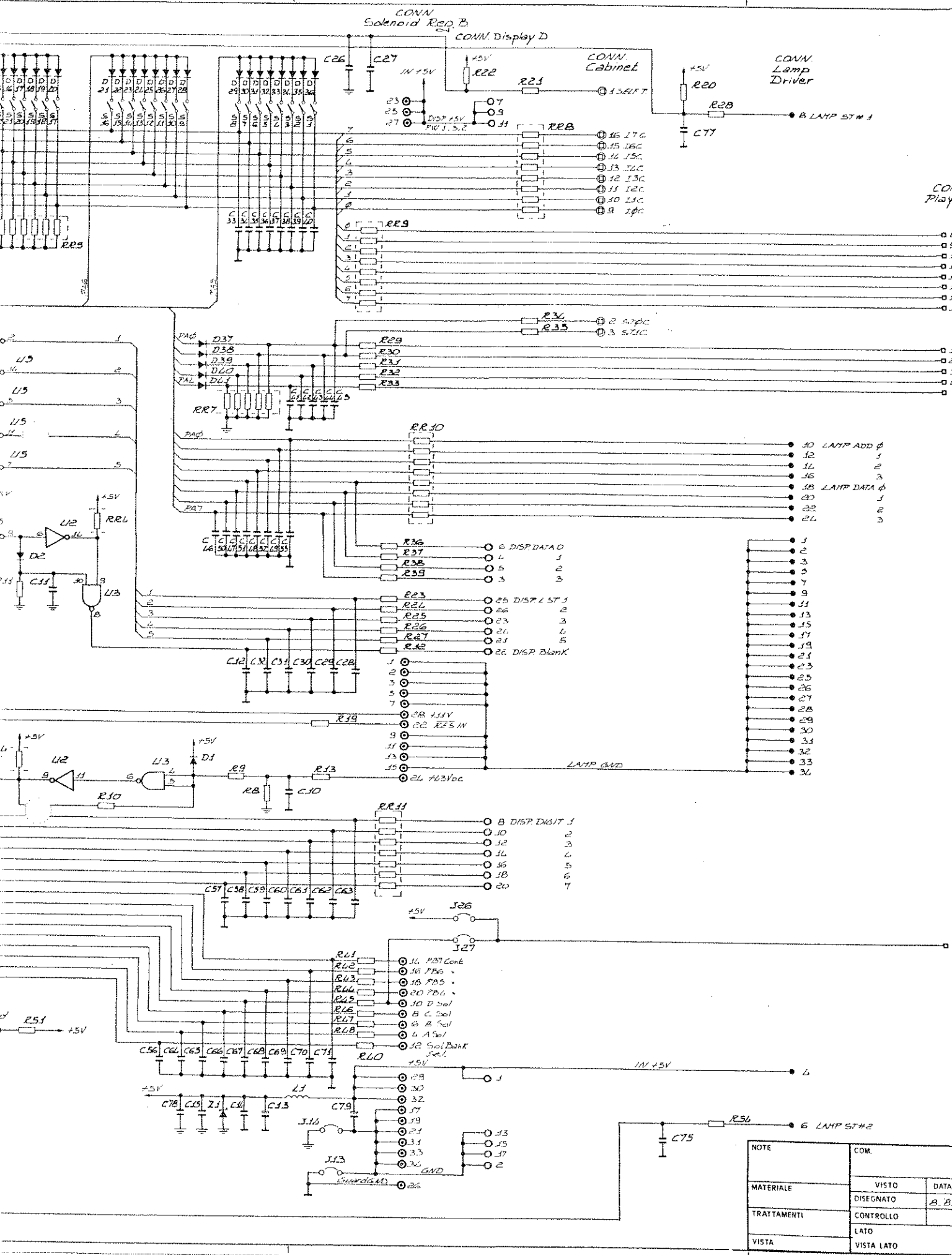
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Norm.		

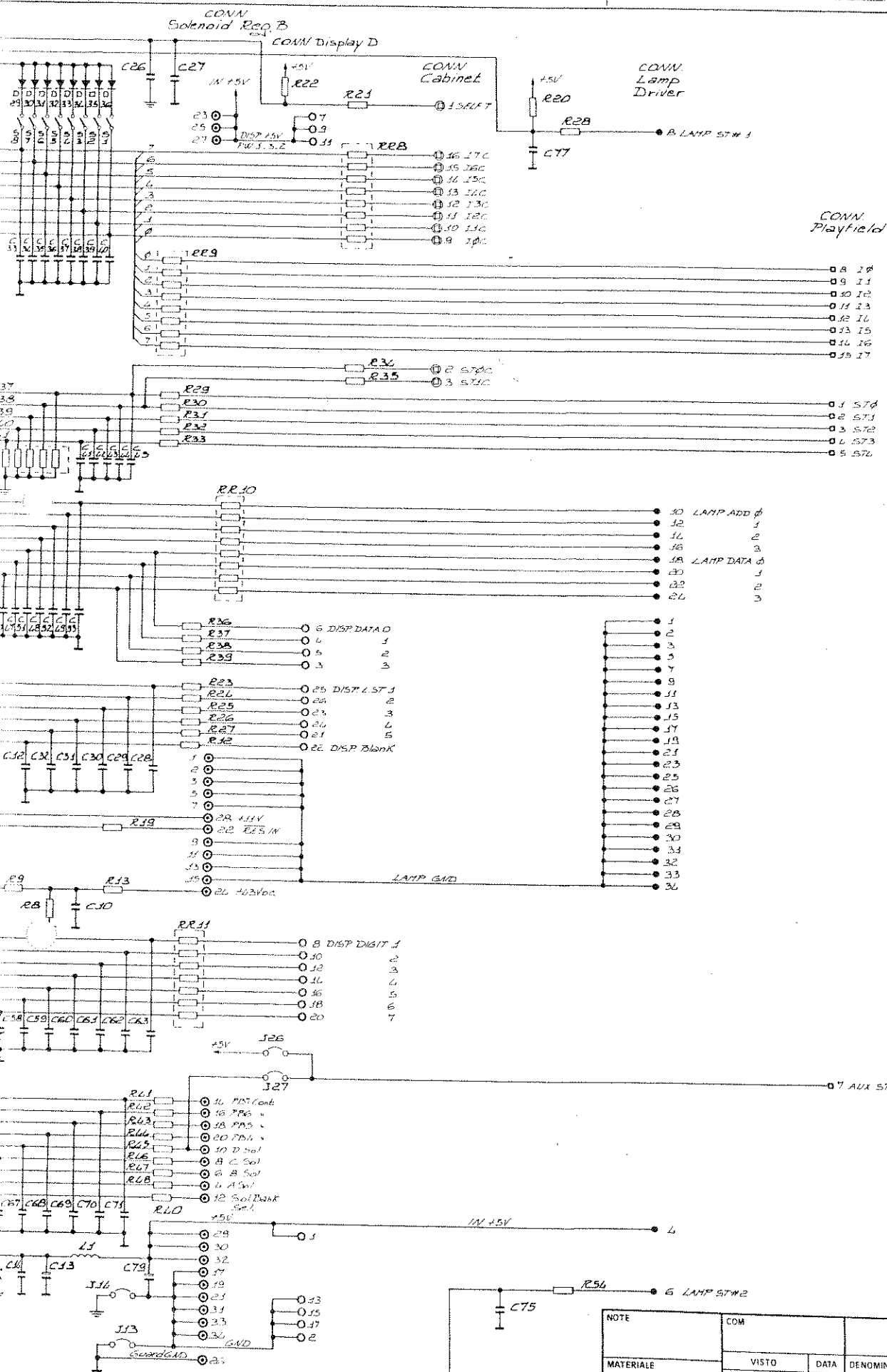
Th. Bergmann & Co.
 Automatenbau
 Adlerstraße 48-56
 2084 Rellingen

SW/WS - 43 VAC ± SW/WS









NOTE	COM				
MATERIALE	VISTO	DATA	DENOMINAZIONE <i>Schema Elettrico</i> <i>Scheda: "MPU"</i>		
	DISGNATO	<i>9.25</i>			
TRATTAMENTI	CONTROLLO		CODICE		
	LATO				
VISTA	VISTA LATO		DIS. NO.		REV
			SCALA	FOGLIO <i>1 di 1</i>	



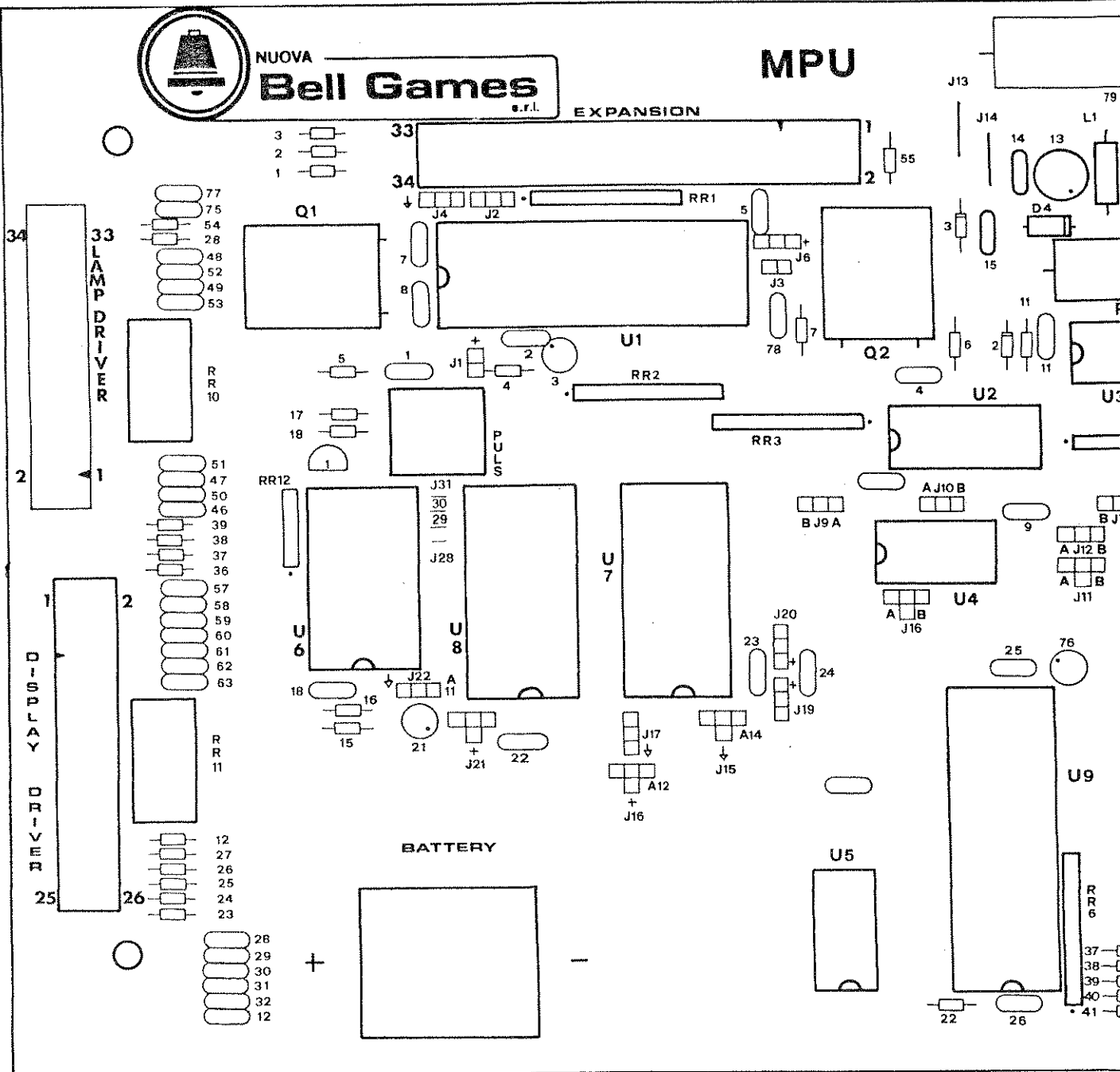
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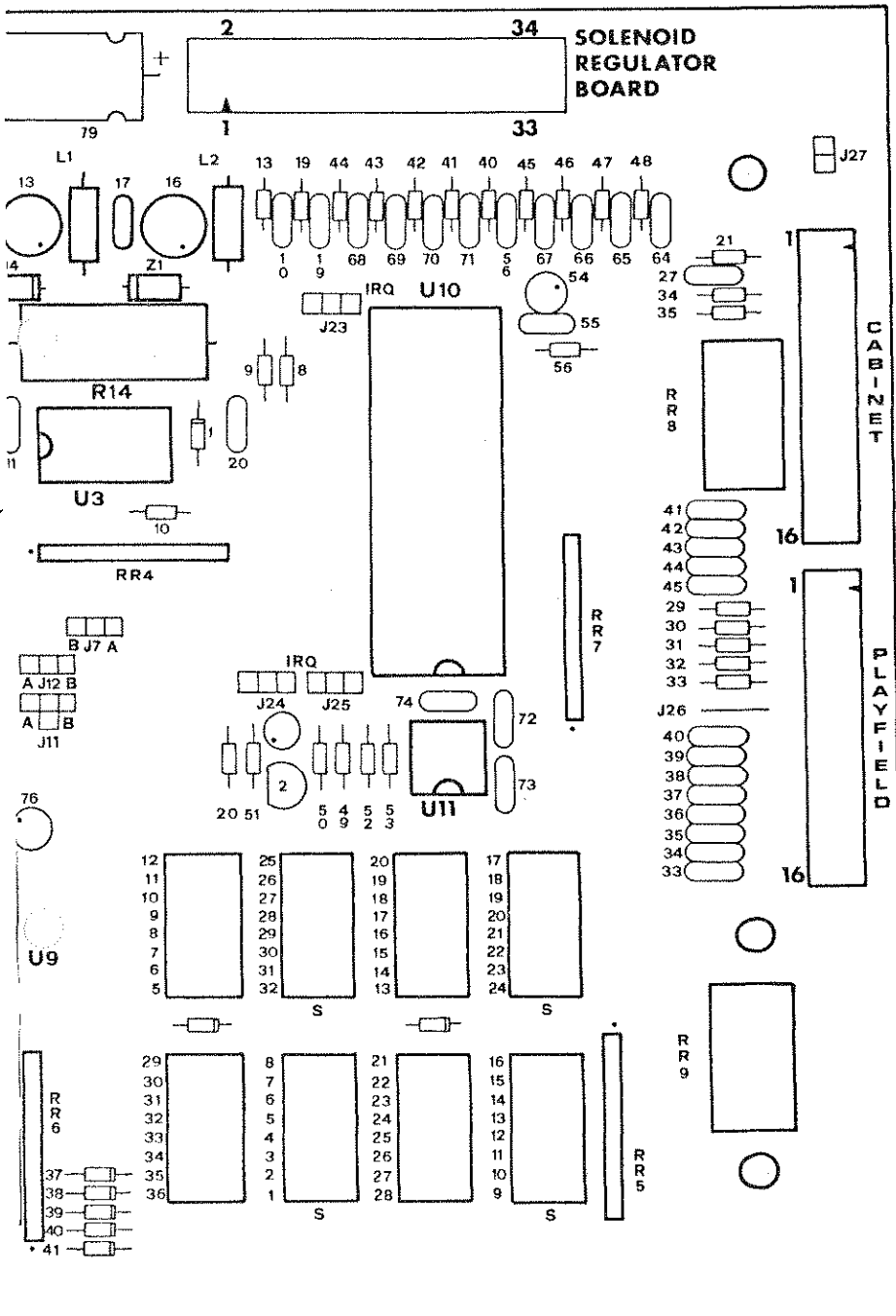
Bell Games

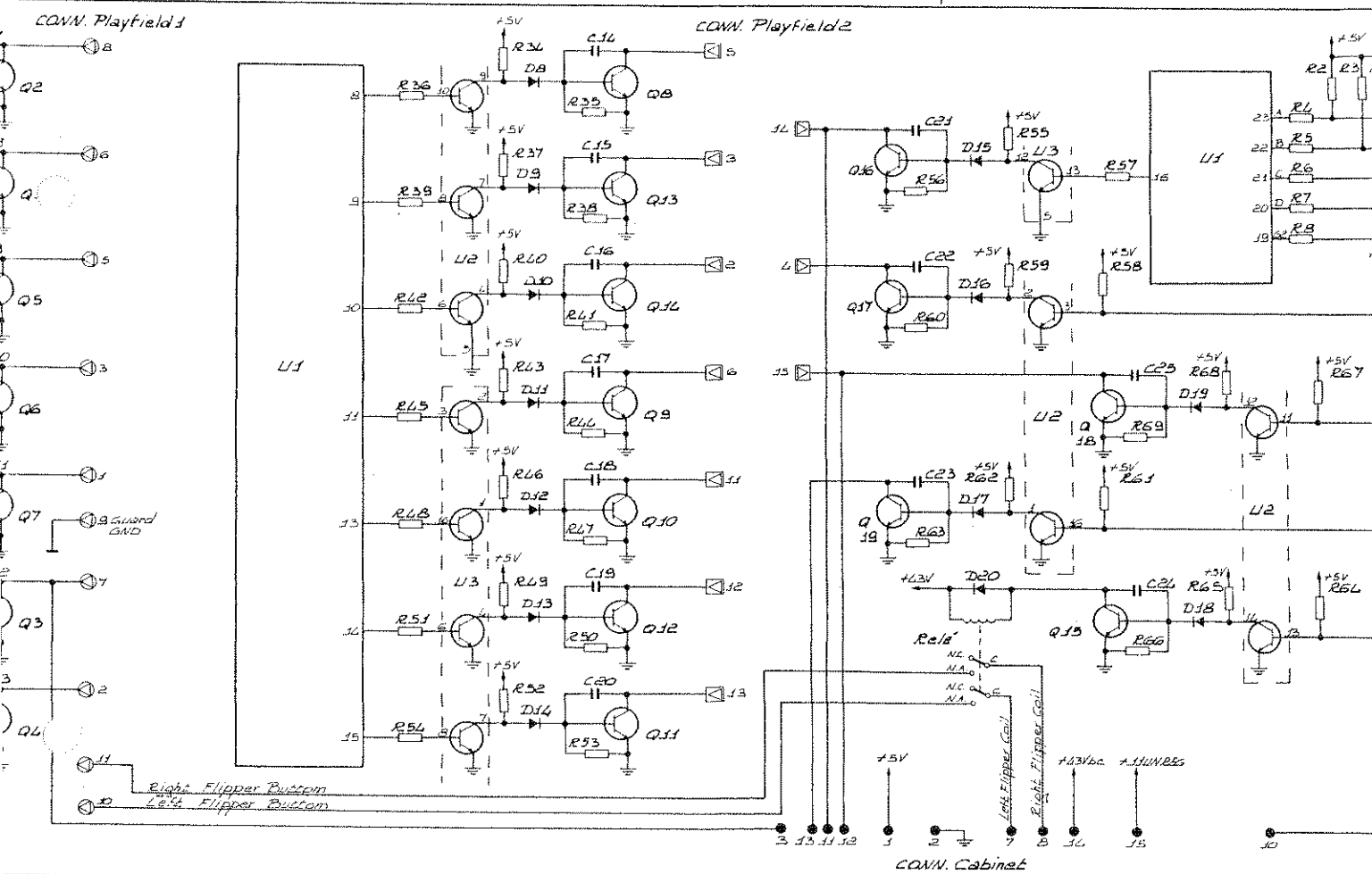
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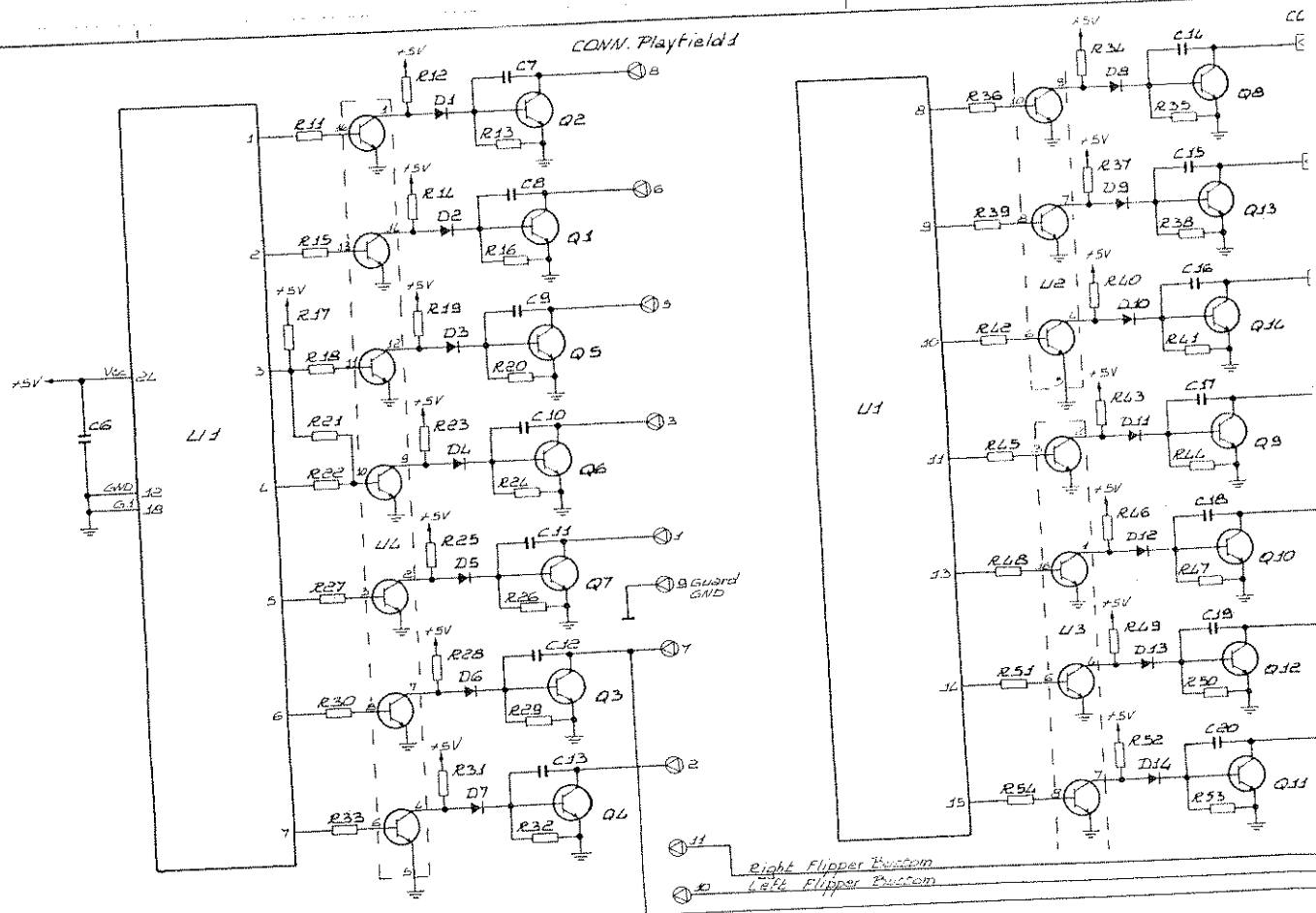
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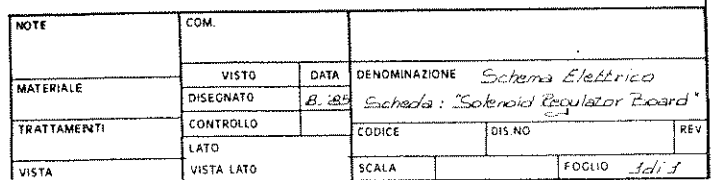
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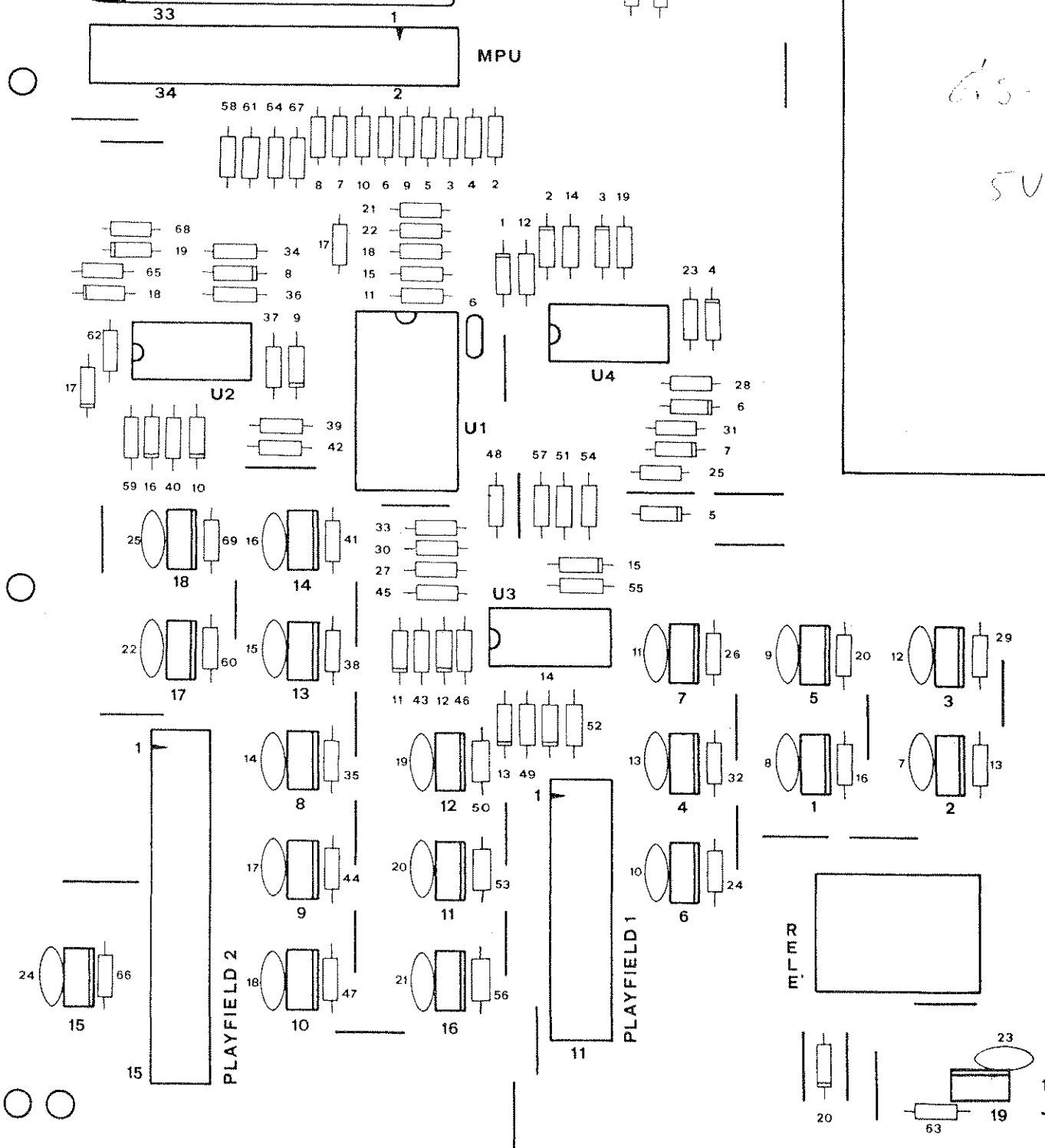


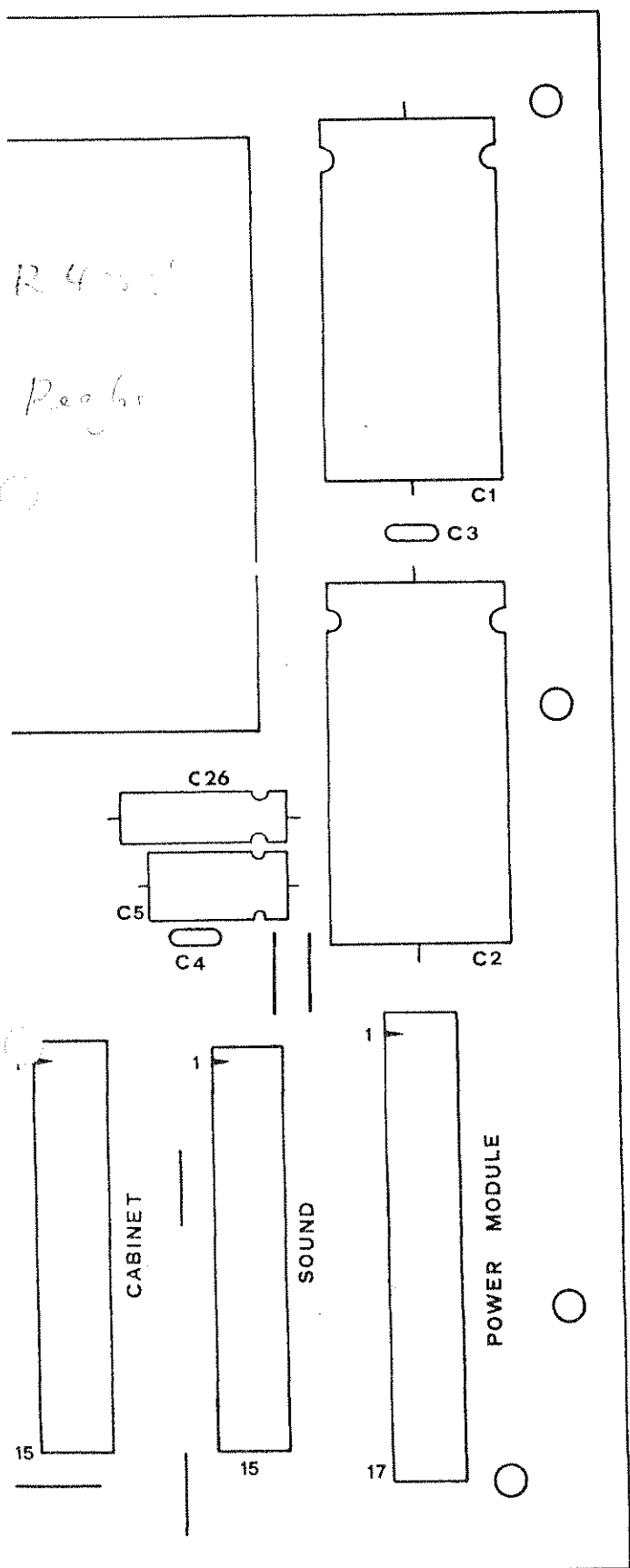


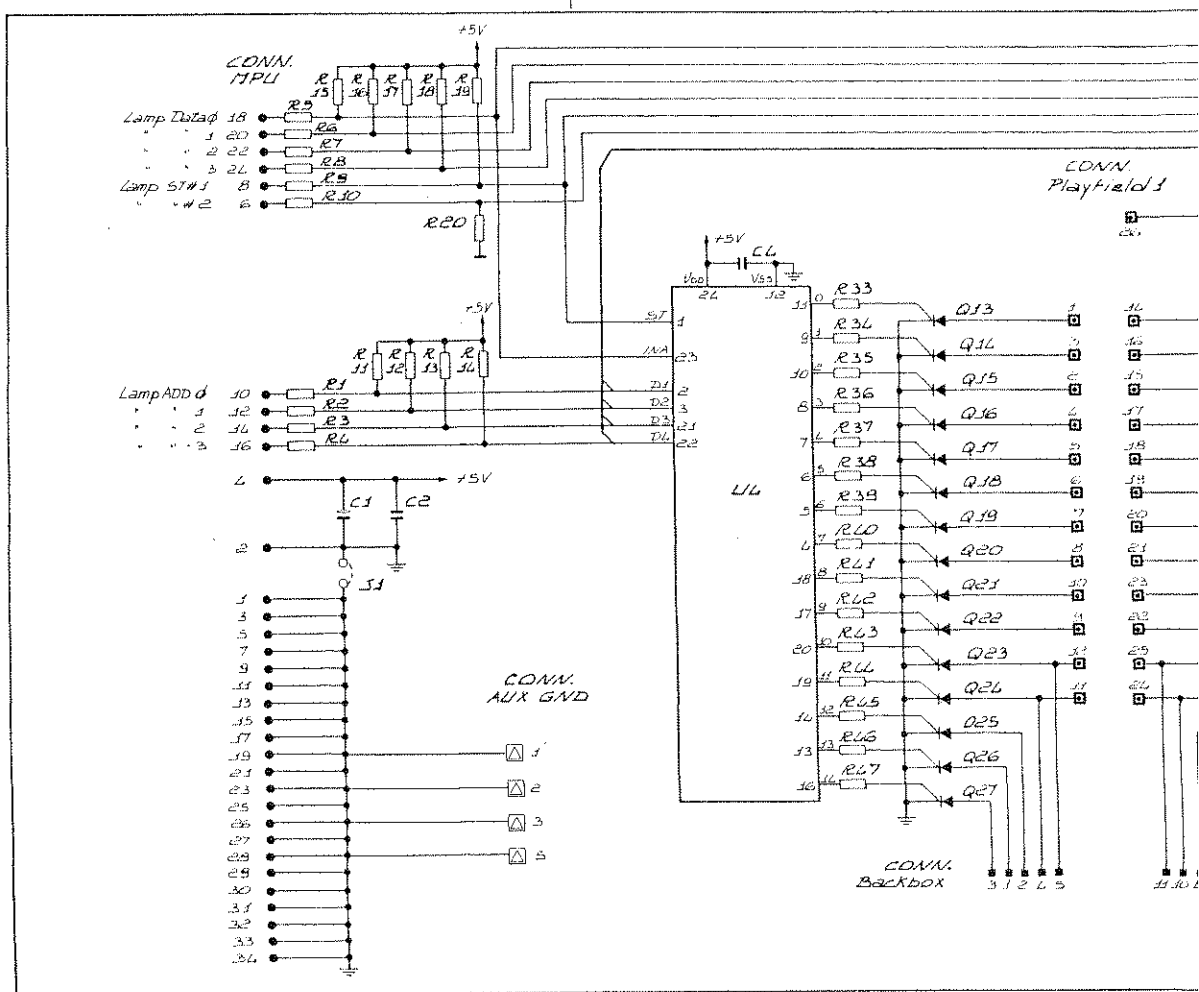


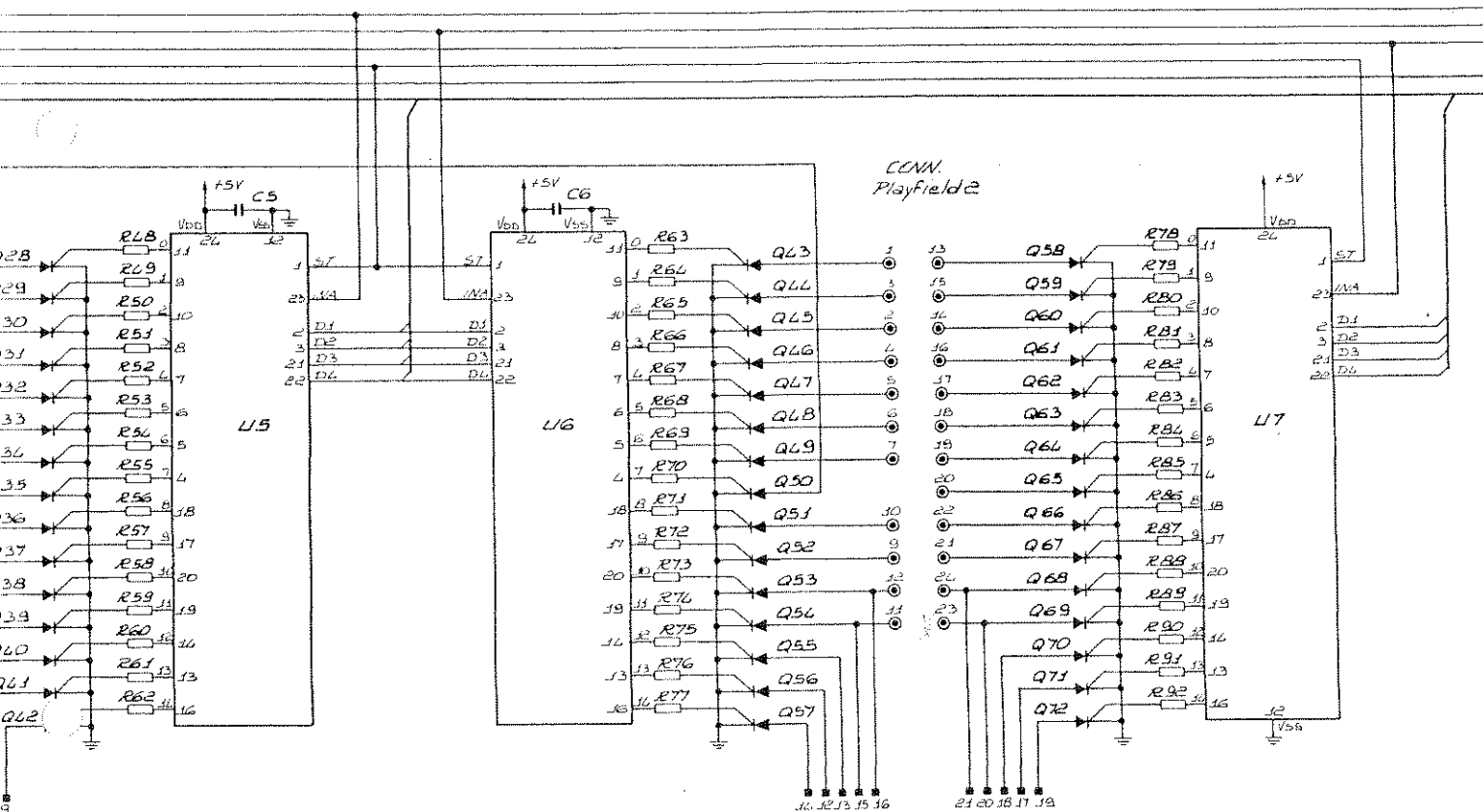


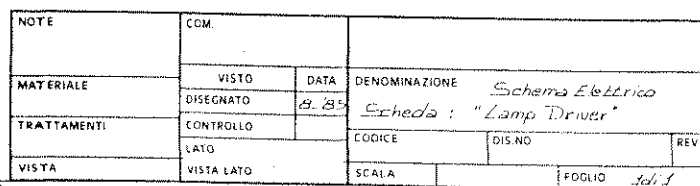


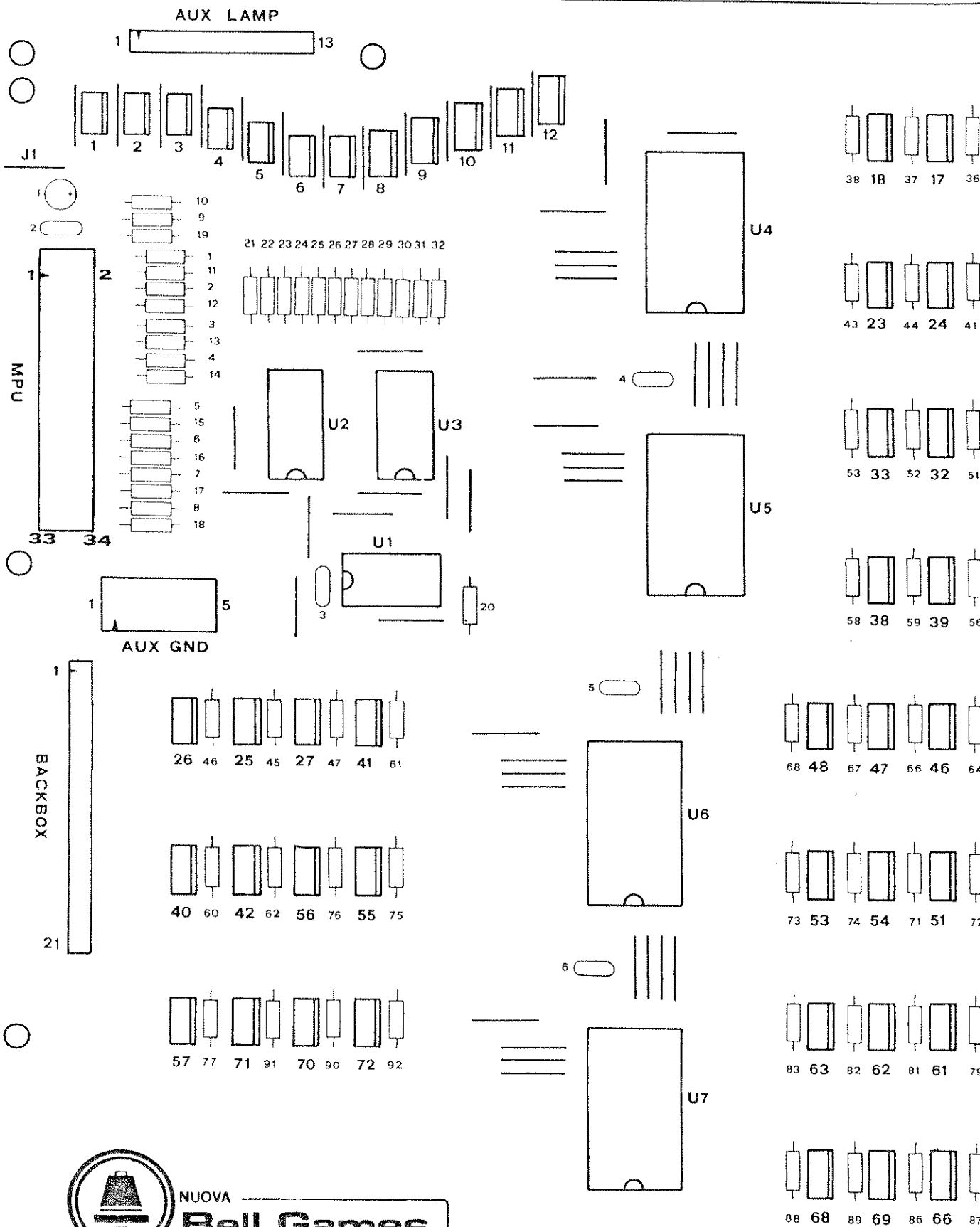








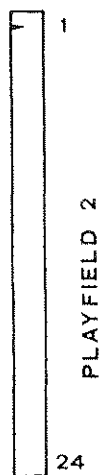
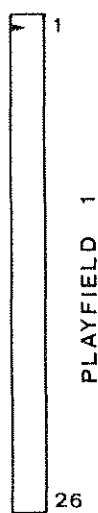
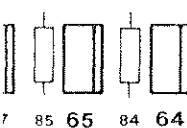
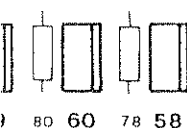
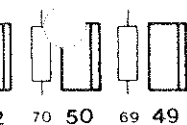
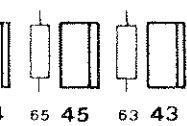
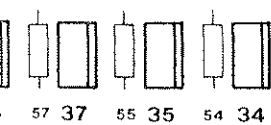
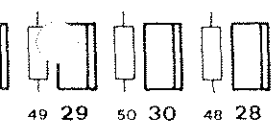
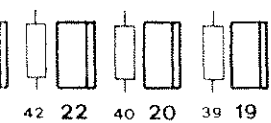
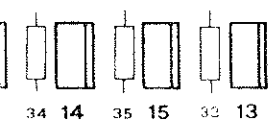




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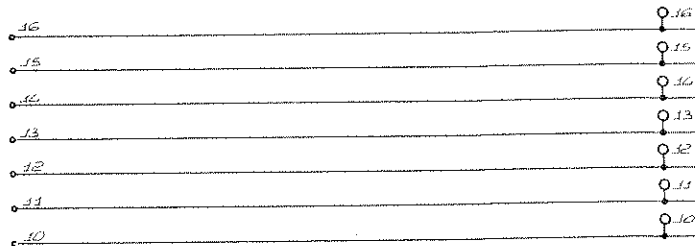
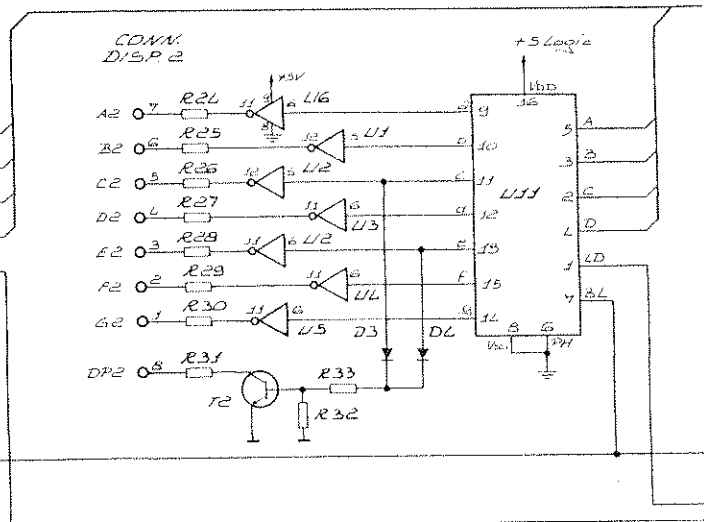
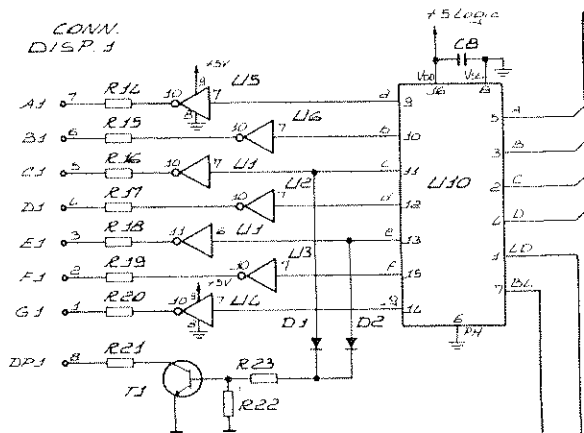
Bell Games

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1. Sp

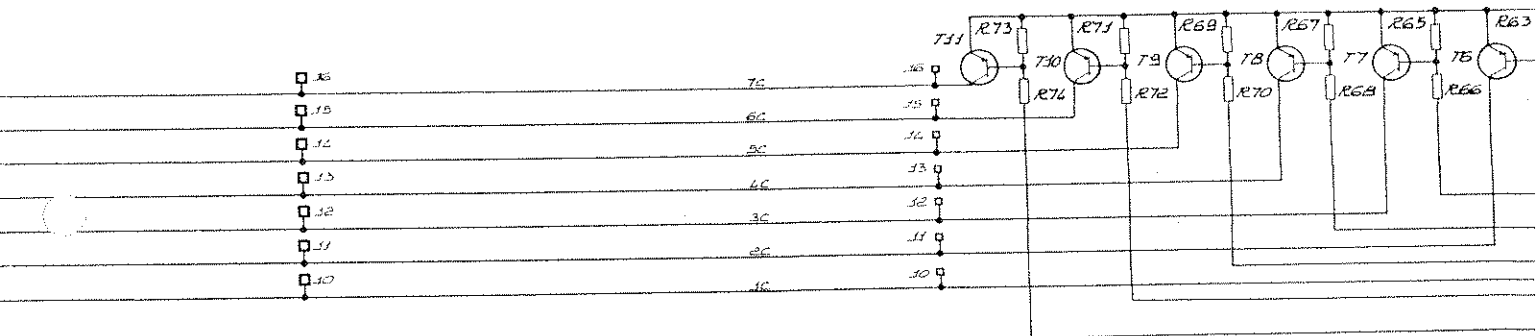
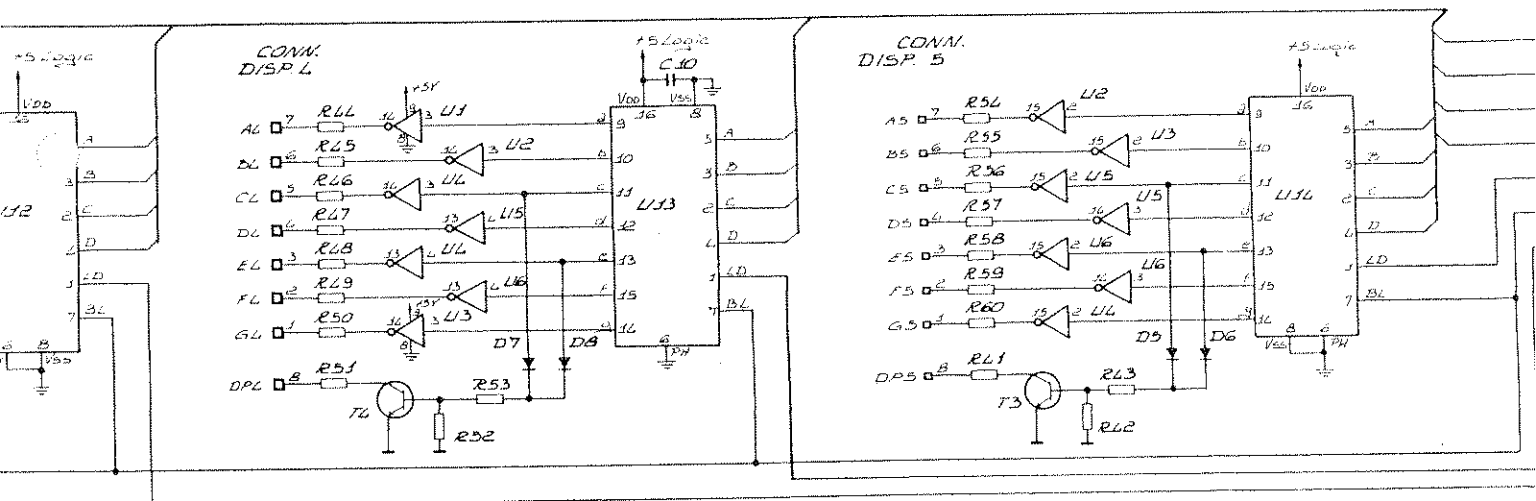
2. Sp



4. Sp

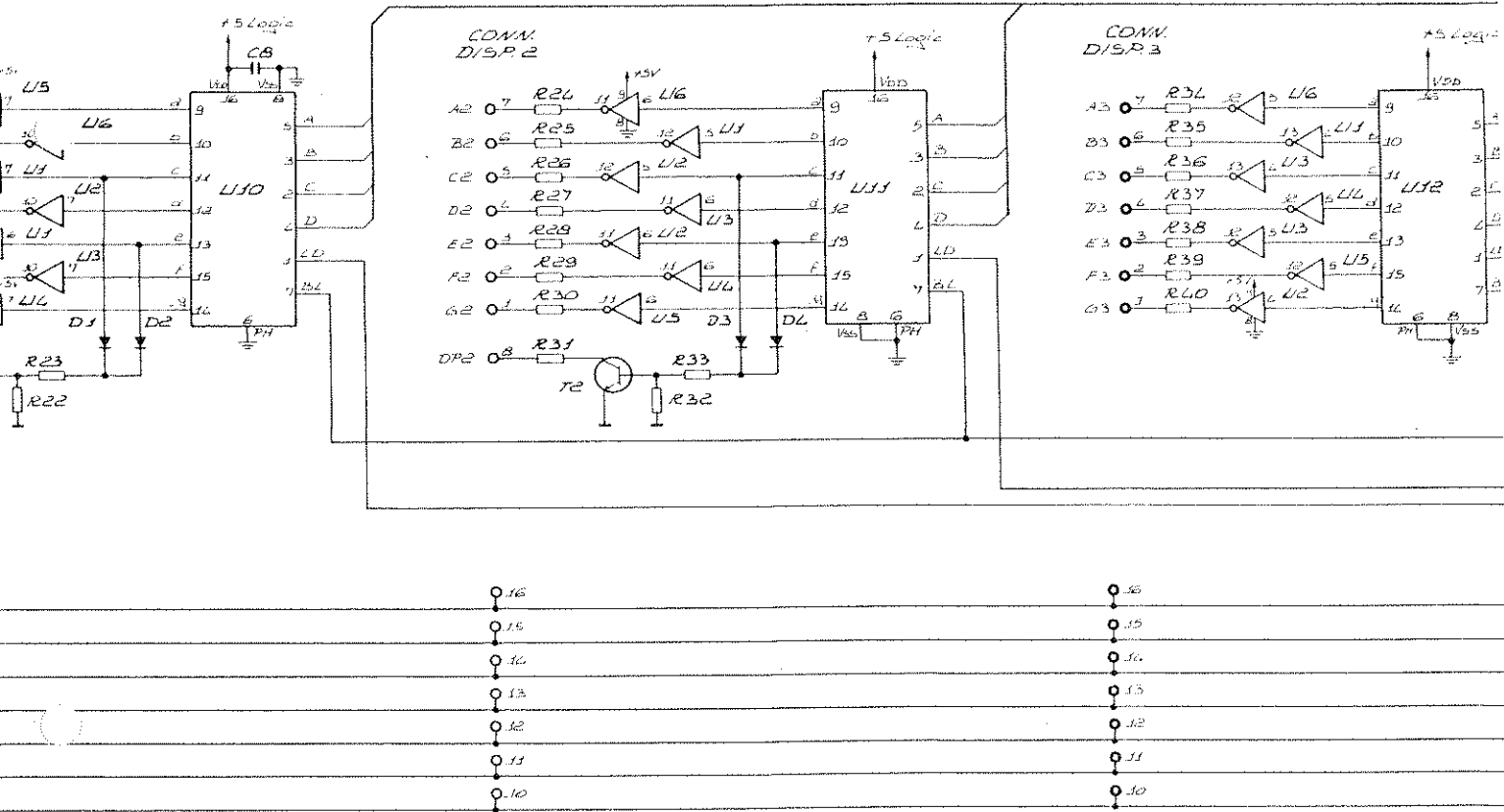
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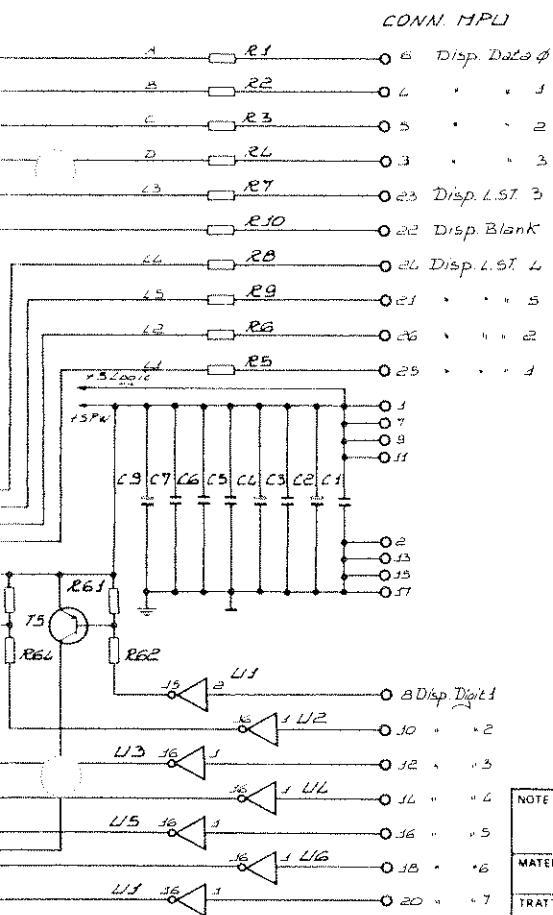
5. Sp



2-5p

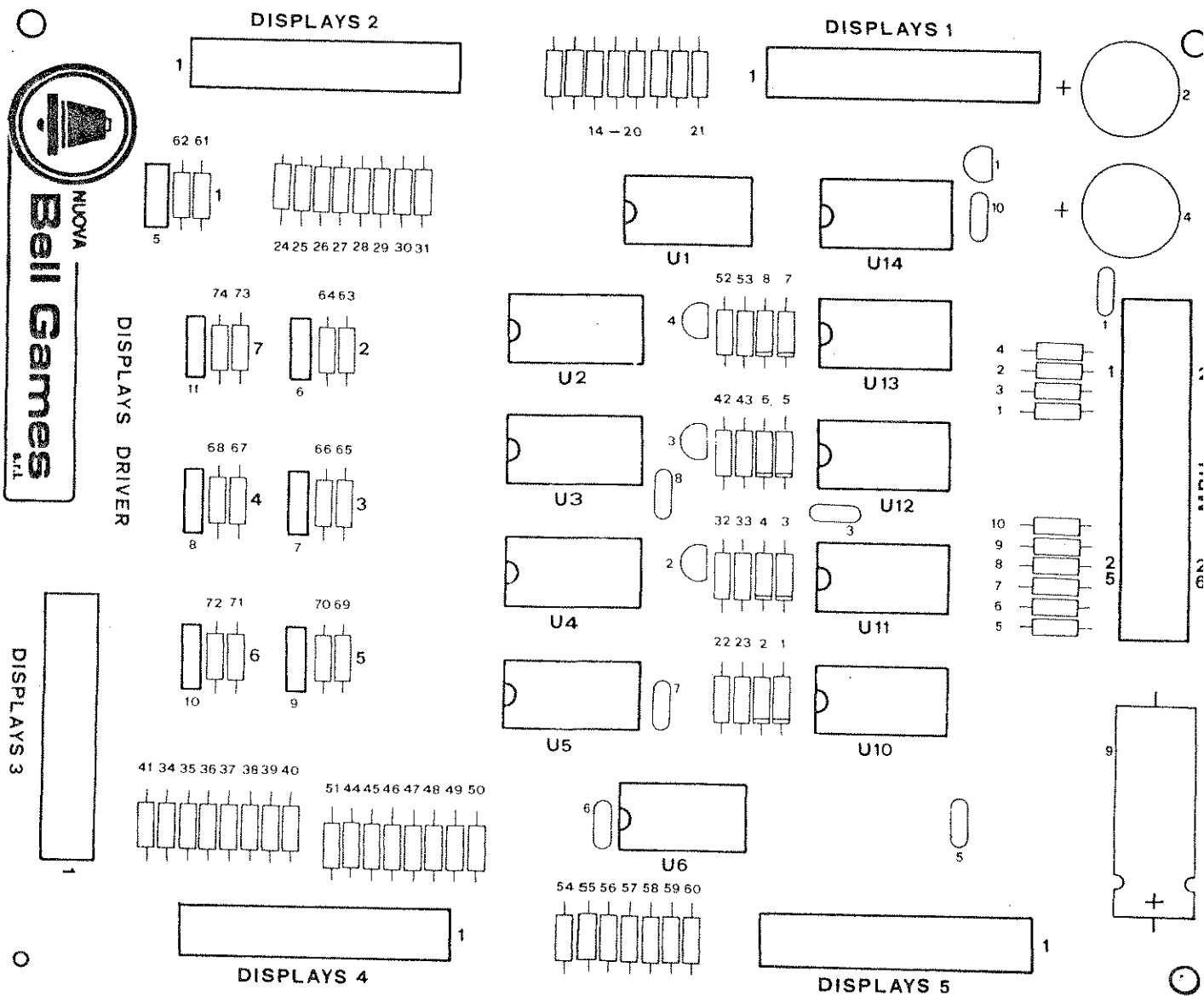
Rev. 1.0

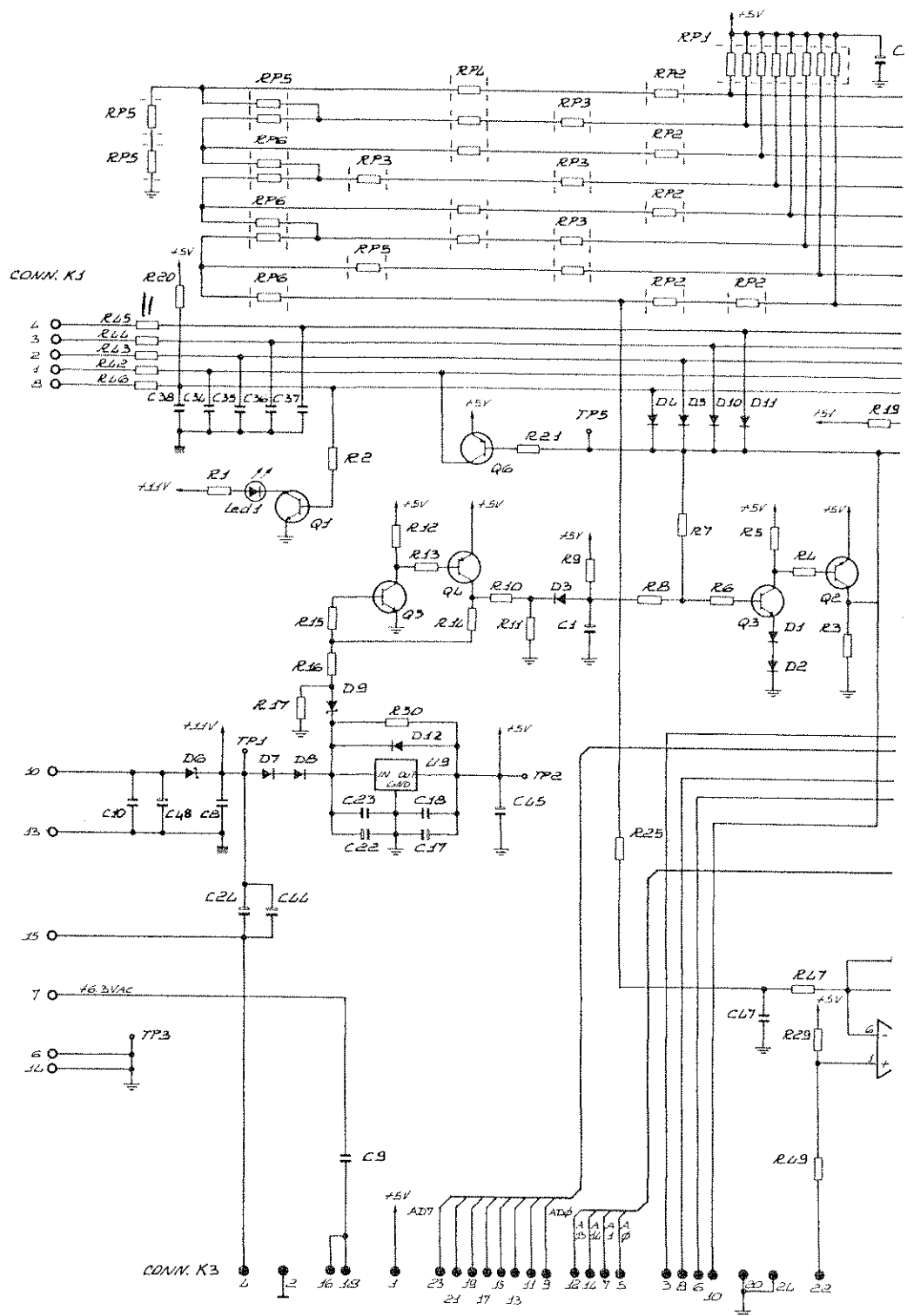


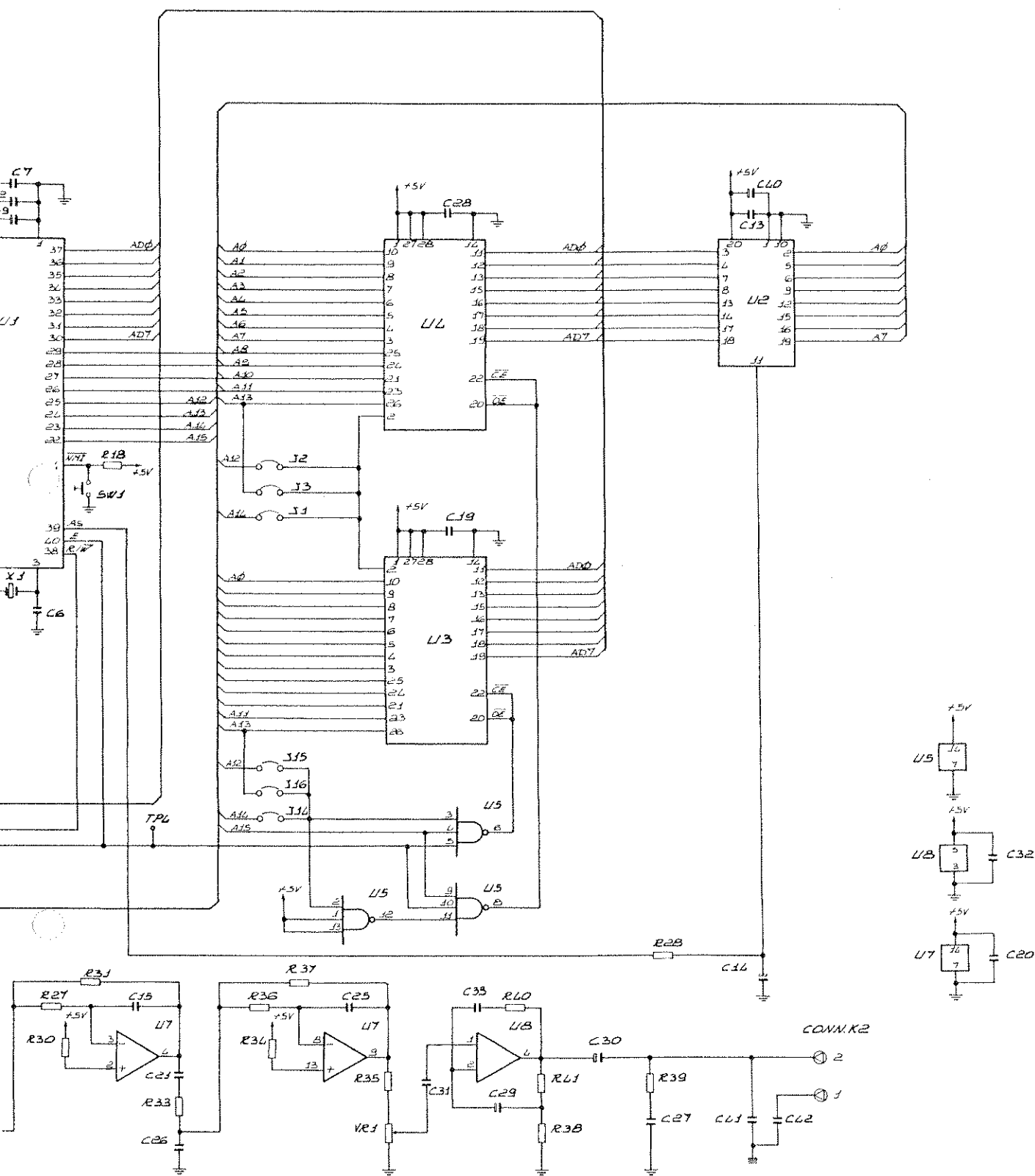


NOTE	COM.		DENOMINAZIONE <i>Schema Elettrico</i> <i>Schena : "Display Driver"</i>		
	VISTO	DATA			
MATERIALE	DISEGNATO	B.B.S.			
TRATTAMENTI	CONTROLLO		CODICE	DIS NO	REV
VISTA	VISTA LATO		SCALA		FOLIO <i>sch.1</i>

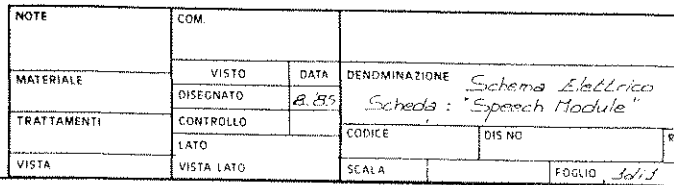
Display Driver



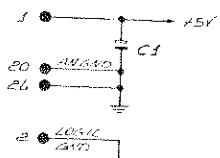
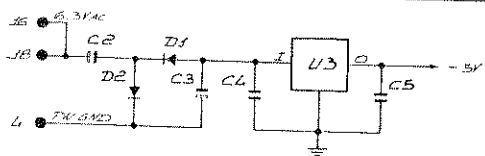
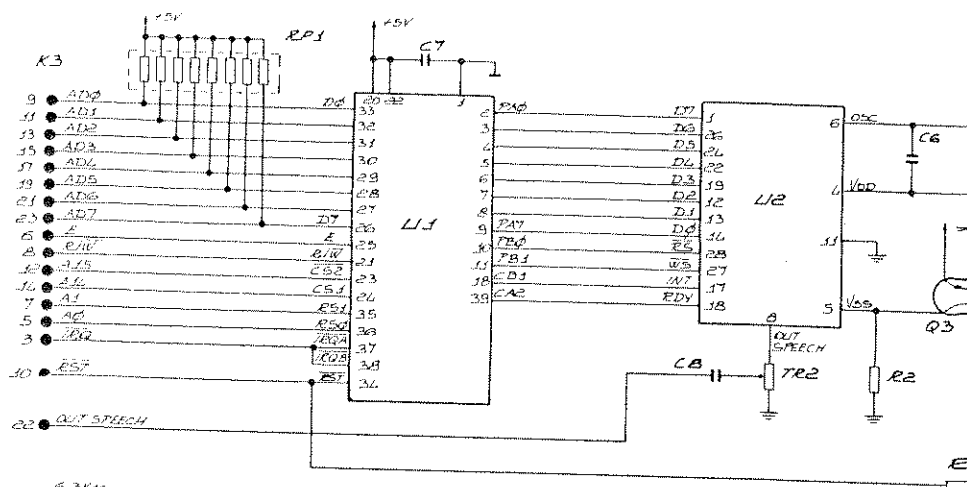




NOTE	COM.		DENOMINAZIONE <i>Schema Elettrico</i> <i>Scheda: "Sound Module"</i>		
	VISTO	DATA			
MATERIALE	DISegnATO	9.85	CODICE		
TRATTAMENTI	CONTROLLO				
VISTA	LATO		SCALA		FOLGIO <i>1 di 1</i>
	VISTA LATO				

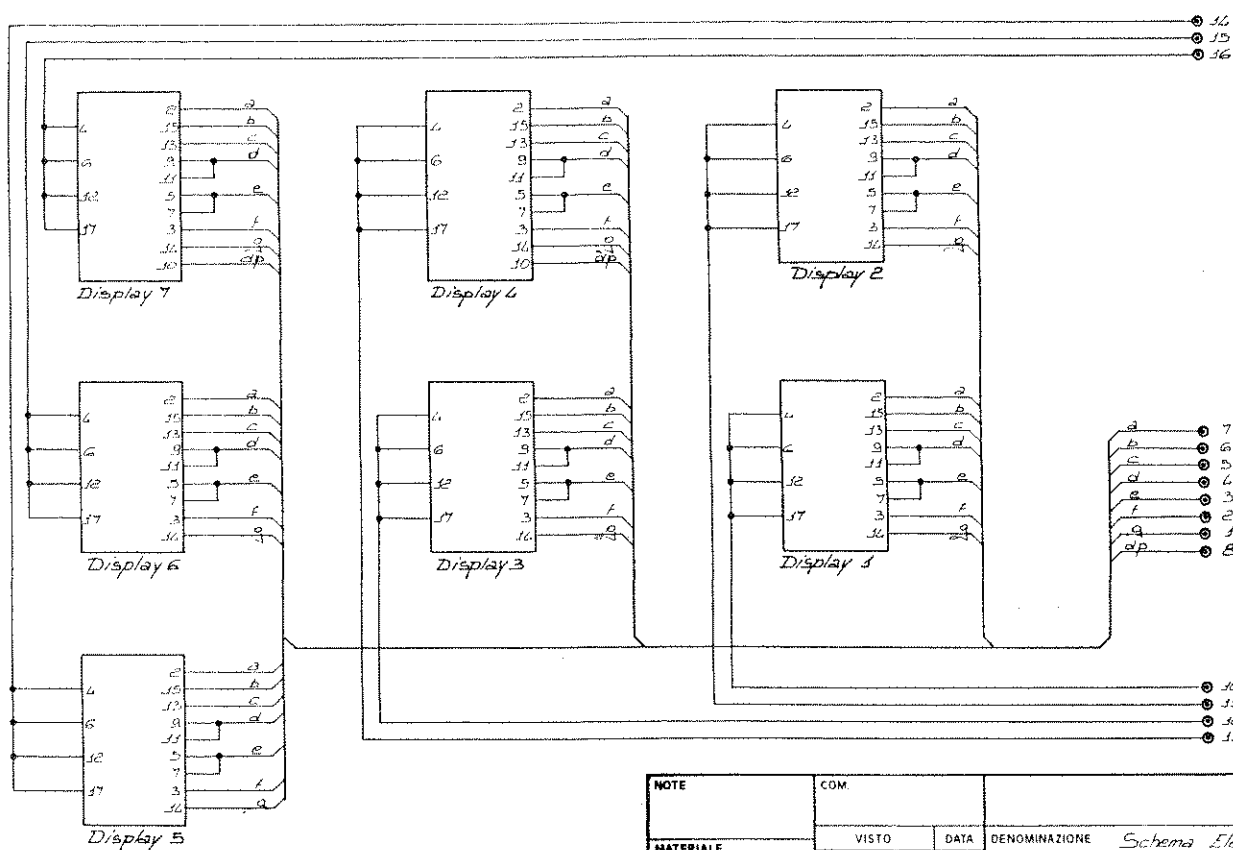


Speech

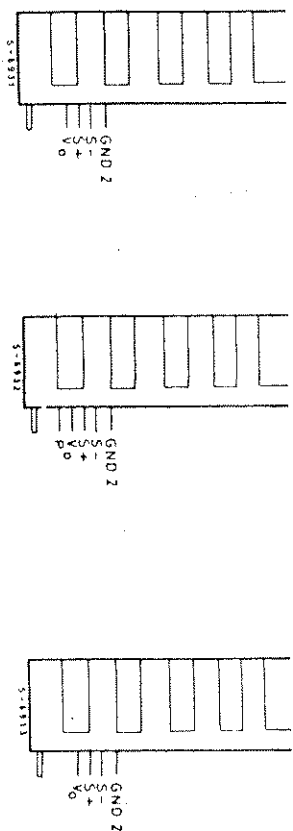


NOTE	COM.
MATERIALE	VISTO
TRATTAMENTI	DISEGNATO
	CONTROLLO
VISTA	LATO
	VISTA LATO

Display



NOTE	COM.		DENOMINAZIONE	
	VISTO	DATA		
MATERIALE	DISEGNATO	B. 85	Schema Elettronico Scheda "Display Board"	
TRATTAMENTI	CONTROLLO		CODICE	DIS. NO.
	LATO			
VISTA	VISTA LATO		SCALA	FOGLIO 10/1



PIN FUNCTIONS

PIN	FUNCTION
INH - Inhibit	TTL compatible input. A logic high level signal on this pin disables the module. To be connected to ground when not used.
RT - Reset Output	Available on GS-R405S only. Reset voltage is high (5 V) when output voltage reaches nominal value (5 V) and it is generated with a fixed 100 ms delay.
V _i - Input voltage	Unregulated DC voltage input. Maximum voltage must not exceed 48 V. Recommended maximum operating voltage is 46 V.
GND ₁ - Ground	Common ground for input voltage.
GND ₂ - Ground	Common ground of high current path. The case of the module must be isolated from ground.
S ₋ - Sensing Negative	For connection to remote load, this pin senses the actual ground of the load itself. To be connected to GND ₂ when not used.
S ₊ - Sensing Positive	For connection to remote loads this pin allows voltage sensing on the load itself. To be connected to V ₀ when not used.

MODULE OPERATION

The GSR400 series is a family of step down switching mode voltage regulators.

Unregulated DC input voltage must be higher than nominal output voltage by, at least, 3 V. Minimum input voltage is therefore 8 V for GS-R405S and GS-R405, maximum input voltage is 48 V for all the types.

Output voltage is fixed or adjustable (GS-R400V). Maximum current delivered by the output pin is 4 A. A minimum output current of 200 mA is required for proper module operation. In no load condition the module still works, but switching frequency varies and electrical characteristics are slightly modified VS. specifications.

To prevent output over currents at switch on, a soft start function is provided. Nominal output voltage is approached gradually in about 25 ms. The module can be inhibited by a TTL, N MOS and C MOS compatible voltage applied to the

CONNECTION BETWEEN THIS PIN AND A CELL ADJUST THE output voltage.

INH pin. When this voltage is at high level, module is switched off; if inhibit signal goes to high to low level, the module restarts softly. Maximum DC voltage applicable to this pin is 15 V. When remote control (inhibit) of the module is not used, the INH pin must be connected to ground.

The remote load sensing is another feature provided in all the models.

This function is performed by two pins (S₊, S₋) that can monitor the voltage directly across the load when this load is connected to the module by long wires; voltage drop on these wires is automatically compensated.

The case of the module is internally connected to S₋. Therefore the case must be able to be isolated from ground.

The switching frequency of the module is 15 KHz. To prevent EMI, the module is contained in a metal box that provides, in the meantime, shielding and heatsink.

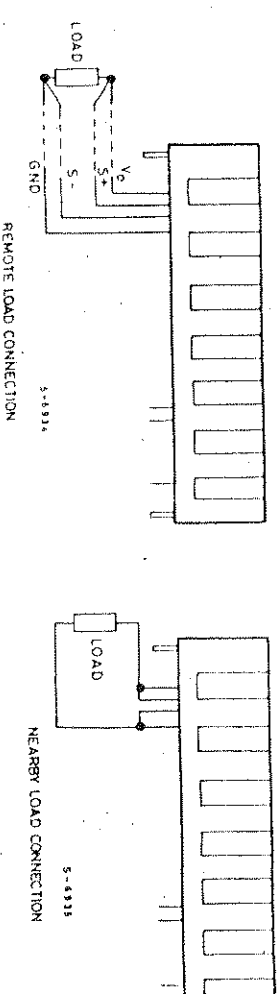
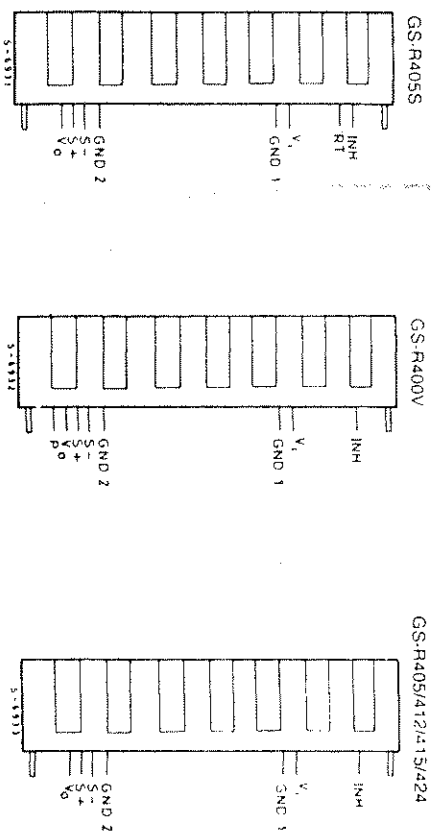


Fig. 1 - Shows how to connect the module to remote or nearby loads

CONNECTION DIAGRAM (lateral view)



PIN FUNCTIONS

PIN	FUNCTION
INH - Inhibit	TTL compatible input. A logic high level signal on this pin disables the module. To be connected to ground when not used.
RT - Reset Output	Available on GS-R405S only. Reset voltage is high (5 V) when output voltage reaches nominal value (5 V) and it is generated with a fixed 100 ms delay.
V _i - Input voltage	Unregulated DC voltage input. Maximum voltage must not exceed 48 V. Recommended maximum operating voltage is 46 V.
GND ₁ - Ground	Common ground for input voltage.
GND ₂ - Ground	Common ground of high current path. The case of the module must be isolated from ground.
S ⁻ - Sensing Negative	For connection to remote load, this pin senses the actual ground of the load itself. To be connected to GND ₂ when not used.
S ⁺ - Sensing Positive	For connection to remote loads this pin allows voltage sensing on the load itself. To be connected to V ₀ when not used.

PIN FUNCTIONS (Continued)

PIN	FUNCTION
V ₀ - Output voltage	Regulated and stabilized DC voltage is available on this pin. Max output current is 4 A. The device is protected against short circuit of this pin to ground or to supply.
P - Output Voltage Regulation	Available on GS-R400V only. A variable resistor (18 KΩ) max connected between this pin and S ⁺ can adjust the output voltage.

MODULE OPERATION

The GSR400 series is a family of step down switching mode voltage regulators. Unregulated DC input voltage must be higher than nominal output voltage by, at least, 3 V. Minimum input voltage is therefore 8 V for GS-R405S and GS-R405; maximum input voltage is 48 V for all the types.

Output voltage is fixed or adjustable (GS-R400V). Maximum current delivered by the output pin is 4 A. A minimum output current of 200 mA is required for proper module operation. In no load condition the module still works, but switching frequency varies and electrical characteristics are slightly modified VS. specifications.

To prevent output over currents at switch on, a soft start function is provided. Nominal output voltage is approached gradually in about 25 ms. The module can be inhibited by a TTL, NMOS and C MOS compatible voltage applied to the

INH pin. When this voltage is at high level, the module is switched off; if inhibit signal goes from high to low level, the module restarts softly. Maximum DC voltage applicable to this pin is 15 V. When remote control (inhibit) of the module is not used, the INH pin must be connected to ground.

The remote load sensing is another feature provided in all the models.

This function is performed by two pins (S⁺, S⁻) that can monitor the voltage directly across the load when this load is connected to the module by long wires: voltage drop on these wires automatically compensated.

The case of the module is internally connected to S⁻. Therefore the case must be always isolated from ground.

The switching frequency of the module is 100 KHz. To prevent EMI, the module is contained in a metal box that provides, in the meantime, shielding and heatsink.

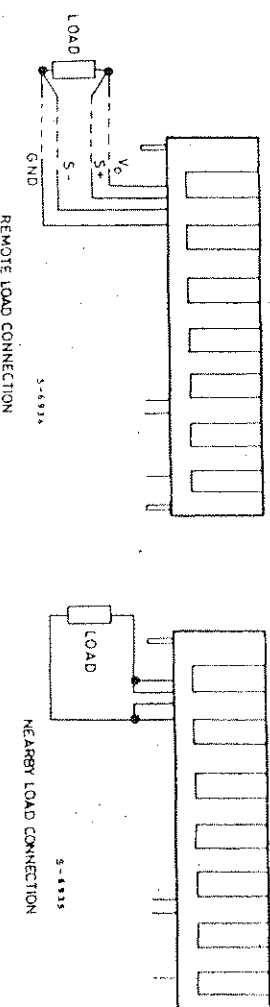
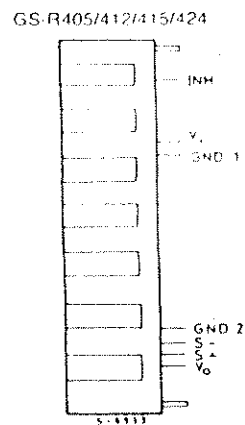
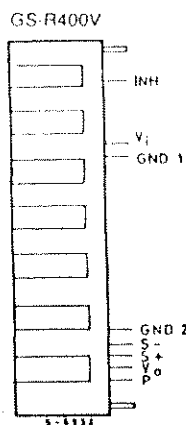
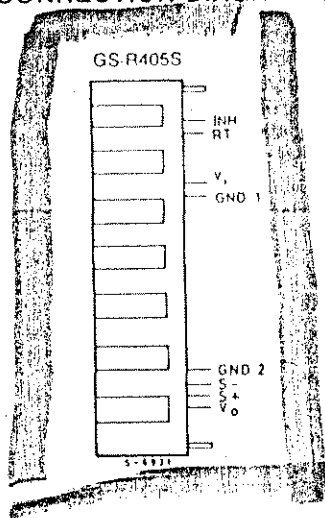


Fig. 1 - Shows how to connect the module to remote or nearby loads

CONNECTION DIAGRAM (lateral view)



GS R405S

PIN FUNCTIONS

PIN	FUNCTION
INH - Inhibit	TTL compatible input. A logic high level signal on this pin disables the module. To be connected to ground when not used.
RT - Reset Output	Available on GS-R405S only. Reset voltage is high (5 V) when output voltage reaches nominal value (5 V) and it is generated with a fixed 100 ms delay.
V _i - Input voltage	Unregulated DC voltage input. Maximum voltage must not exceed 48 V. Recommended maximum operating voltage is 46 V.
GND ₁ - Ground	Common ground for input voltage.
GND ₂ - Ground	Common ground of high current path. The case of the module must be isolated from ground.
S ⁻ - Sensing Negative	For connection to remote load, this pin senses the actual ground of the load itself. To be connected to GND ₂ when not used.
S ⁺ - Sensing Positive	For connection to remote loads this pin allows voltage sensing on the load itself. To be connected to V ₀ when not used.