MAINTENANCE MANUAL

AD SERIES

MODELS: AD-8115A/B

A & D COMPANY, LTD.
A & D ENGINEERING, INC.

mono-EXY-A-008a/b-v.1

C O N T E N T S

I. Visual Check

II. Main Unit Check

III. Power Source Check (PZ697)

IV. After checking the power source, connect the following boards and connectors:

V. Normal Printing Operation

VI. Option 01

VII. Adjustment Operation

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I. Visual Check

Check both main unit and printed circuit boards visually.

Major Check Point

Pay special attention to the wiring of the AC input.
Also, check the transformer tap and voltage selector carefully.
Set the voltage selector switch (located under the bottom) to the correct input voltage.

II. Main Unit Check

Turn on the power to the main unit with no printed circuit boards mounted.
Check the pin voltages of the mother board.

Pin No.	Voltage	Remarks	Common
J6-12AB	+5V (4.75~5.25V)	Logic power source	Main unit C4 6800uF 16V- J6-1AB
J5-1~3AB	+30V (+26V~35V)	Rectification voltage for +24V	Main unit C4 4700uF 35V- J5-4~6AB

III. Power Source Check (PZ697)

Connect PZ697 power source printer drive board to the main unit.
When this is done, do not connect J7 (connector to the printer mechanism).

Check the voltages of the check terminal and following positions on the board and adjust with VRs. (Common : C3-lead)

Check Position	Adjusting VR	Adjusted Voltage
TP1 - C3 Minus	VR1 2K	+24V±0.5V
U2-1 - C3 Minus lead	VR2 2K	+1.4V±0.02V
U2-3 - C3 Minus lead	VR3 5K	+1.35V±0.02V

IV. After checking the power source, connect the following boards and connectors:

PZ697, PZ698 For 8115A ; Key unit (J1)
For 8115B ; Key unit (J1, J2)

Connect with the printer mechanism ; J7
Connect AD4316/21 to DATAIN.
Plug Z80 and ROM into sockets.
For DIP switches, turn on No. 8 only.
For the HEX switch, adjust to 1.
Turn on the power, set paper and proceed with the adjustment operation mentioned on the next page.
Make checks 1 through 8 because no option has been connected yet.

V. Normal Printing Operation

Turn off all DIP switches. Connect AD4316/21.

For 8115A; Press the PRINT button and check that the following is printed.

WEIGHT
Printing

```
WEIGHT          216Kg
SEQ.#             1
08:55PM 20/07/84
```

For 8115B; 1 Press the MEMORY button 1. Check that the relevant LED flickers.
2 Press the PRINT button.

The following is printed out:

WEIGH IN
Printing

```
WEIGH-IN        216Kg
MEM.#             1
08:55PM 20/07/84
```

3 Press the MEMORY button 1. Check that the relevant LED flickers.
4 Press the PRINT button.

The following is printed out:

NET
Printing

```
GROSS           241Kg
 TARE           216Kg
  NET            25Kg
SEQ.#             1
08:56PM 20/07/84
```

5 Press the TOTAL button.

TOTAL
Printing

```
TOTAL

#   1    NET          25Kg
#   1 WEIGHT         216Kg
```

VI. Option 01

For an option 01 test, prepare RS232C data reception terminal or connect an AD8116 printer.
Also, make 8114B ready. Mount 8115 OP-02 board.
Turn on 8116, pressing FEED. MODE is 1.
Set adjustment mode by the DIP switches. Turn on the DIP switch No. 8 only, set the HEX switch to 8 and press the PRINT button of the key unit.
The following is output as output data of Option 01. Press the PRINT button of 8114B. When this is done, switch over the HEX switch with a screwdriver.

HEX Switch		Output Data
0	-	0
1	-	10
2	+	100
3	-	100
4	+	1000
5	+	10000
6	+	100000
7	+	500000
8	-	200
9	-	1 0500
A	-	2000
B	-	1 2000
C	+	5 5 5
D	+	543210
E	+	987654 ← Red printing
F	+	500000

Make 8114 print the data.

VII. Adjustment Operation

Make adjustment by using the DIP switches, HEX switch and PRINT switch. Turn on the DIP switch No. 8 and press the PRINT switch of the key unit A/B. Depending on HEX switch setting, 16 kinds of adjustments are made. When adjustment operation does not automatically end, press the PRINT switch again.
After completing adjustment, set the DIP switches again.

HEX Switch		Function	End Commands		Option	Remarks
			Auto	Print		The READY LED switches off during adjustment operation.
Adjustment Operations	0					
	1	Paper feed		○		Executed about every 10 minutes.
	2	H printing		○		
	3	Column, character and model	○			
	4	AD4316 /4321 data	○			In case of a data check error, an error code is input to the header 2.
	5	DIP switches	○			
	6	Clock data	○			
	7	AD8115B switch → LED		○		

An adjusting function with an option cannot be executed without specifying it.

Note : Copy of printed-out paper

[Paper feed]

[H printing]

```
HHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHH
```

[Column]

```
12345678901234567890123456
```

[Character]

```
 !"#$%&'()*+,-./
0123456789:;<=>?
@ABCDEFGHIJKLMNO
PQRSTUVWXYZ[\]^_
```

[Model]

```
SLIP PRINTER
AD-8115
REV 1.1 (84/05/13)
```

—— Depends on the ROM version.

[AD4316/4321 data]

```
ST,NT,+003.024Kg
```

[DIP switches]

```
DIP SW CHECK
 NO.76543210
 ST.10000000
```

[Clock data]

```
DATE DATA       = 20/07/84
TIME DATA       = 08:37PM
```

Key Test of 8115B

The LED corresponding to a pressed button must light up. Pressing the button again turns off the LED. If the TOTAL button is pressed, the POWER LED will light up.

The above-mentioned printing can be executed even when the READY LED is off.

Submit printing results together with a check list to an inspection. Check all dIP switches by turning them on (No. 1 through 8) bit by bit sequentially.

Next, turn on the DIP switch No. 8 only, set the HEX switch to 9 and turn on the power. If the PRINT button is pressed, the data will be output to 8114 in the following order. Make sure this is printed.

Output Data
0 0 0 0 0 0
1 1 1 1 1 1
2 2 2 2 2 2
3 3 3 3 3 3
4 4 4 4 4 4
5 5 5 5 5 5
6 6 6 6 6 6
7 7 7 7 7 7
8 8 8 8 8 8
9 9 9 9 9 9
A A A A A A
B B B B B B
C C C C C C
D D D D D D
E E E E E E
F F F F F F

When testing RS232C, check whether or not the same data are printed by normal printing operation in VII.
After completing the test, turn off all DIP switches.

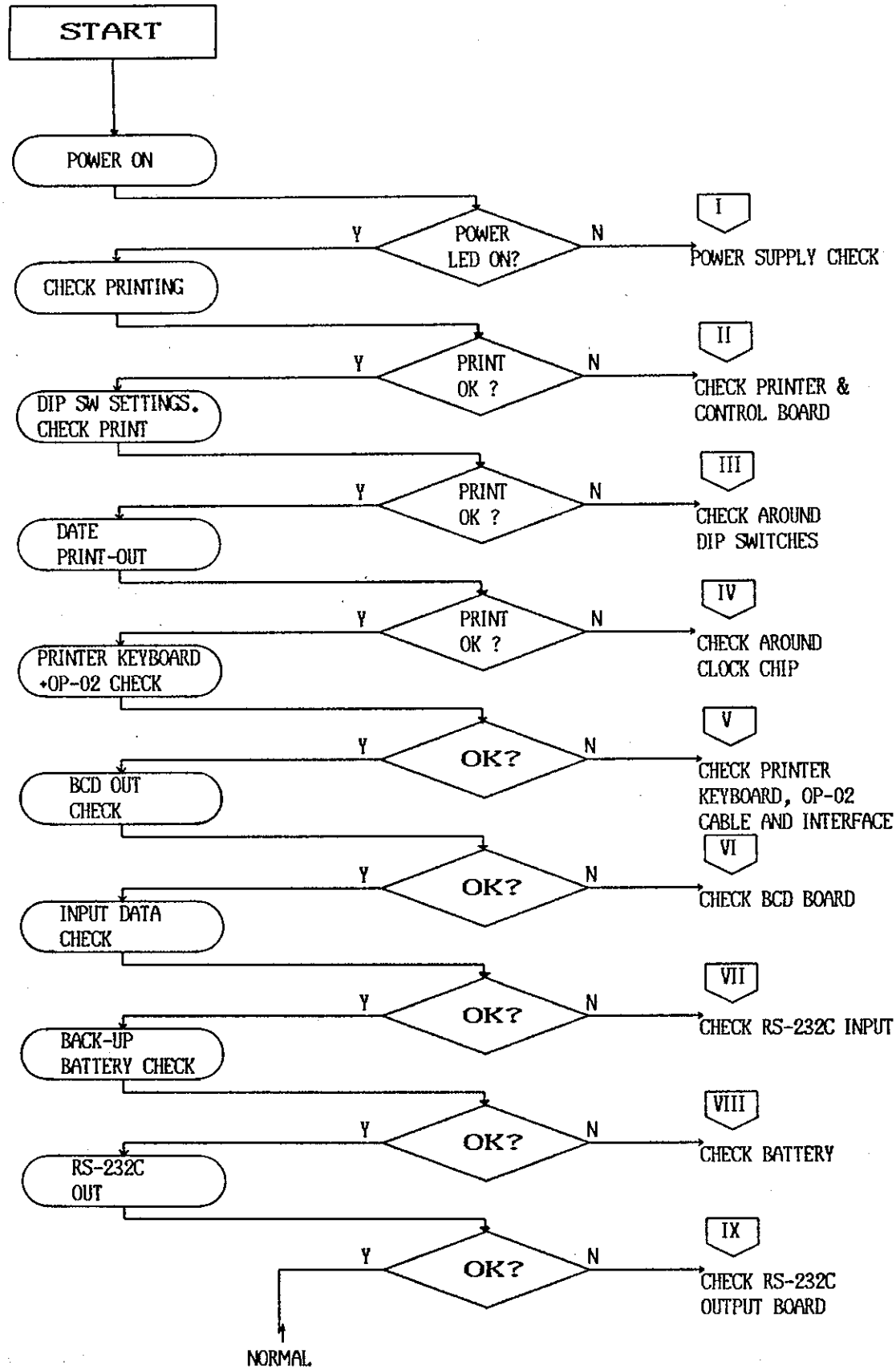
Adjustment of OP-02 Key Unit

The key unit OP-02 of AD8115 consists of a keyboard, cables and a memory board (PZ700). Fix the memory board to the rear panel of the main unit with screws. Connect with a cable between the memory board and CPU board. Connect with a flat cable between the memory board and keyboard.
Turn on the DIP switch No. 8, set the HEX switch to B and turn on the power. After a while, "Key Check" will be displayed on the LCD DISPLAY unit.

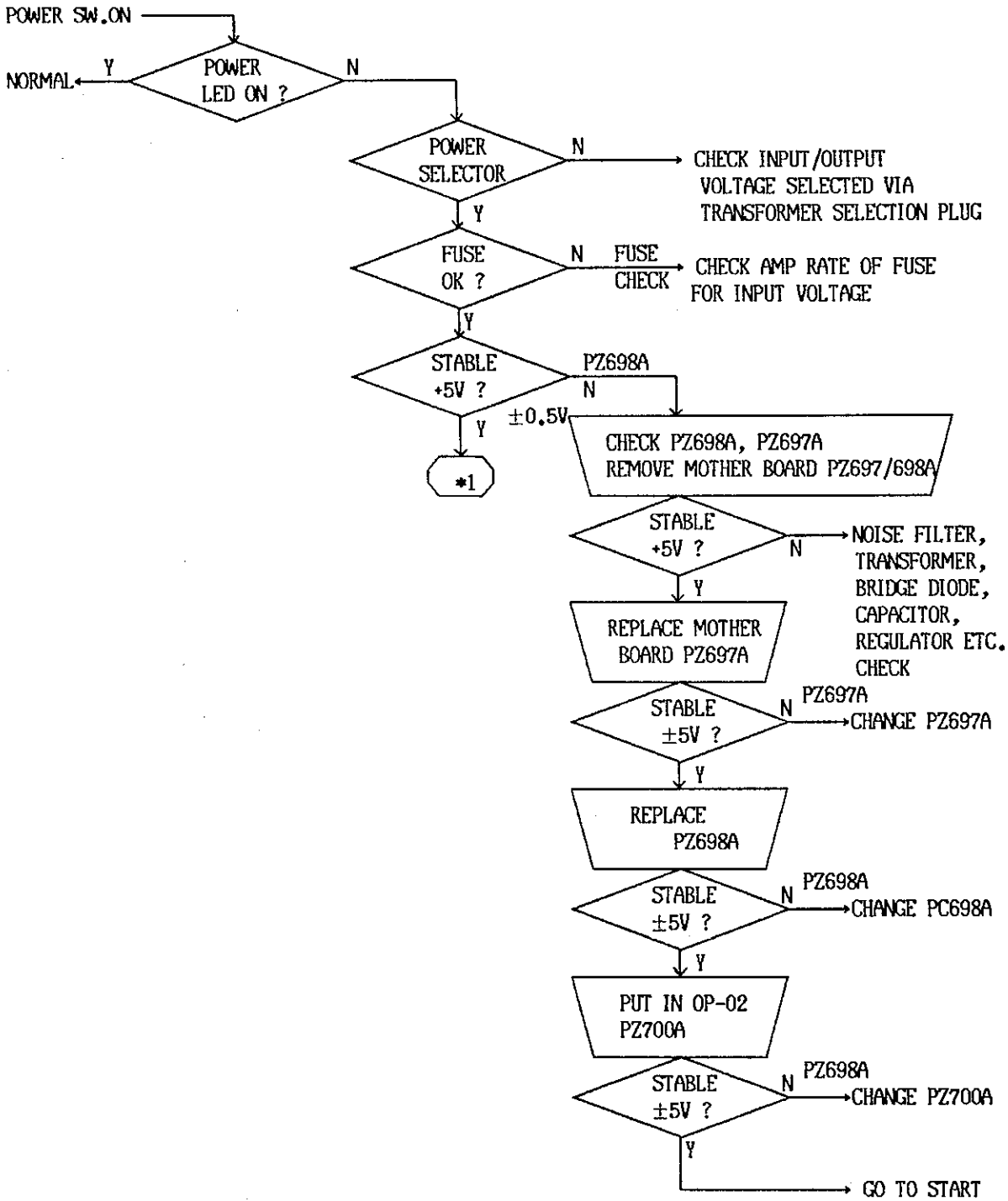
If a character or numeric key is pressed, the same character will be displayed on the LCD DISPLAY unit. Check all characters and numerals of key switches in this mode. If the C key is pressed at this time, one character on the left side will be deleted. Check that the buzzer sound is emitted when each function key is pressed. Check all function keys in this way.

Next, set the HEX switch to E and turn on the power. Thereafter, pressing the PRINT button causes the LED to flash. Test the LED in this way.

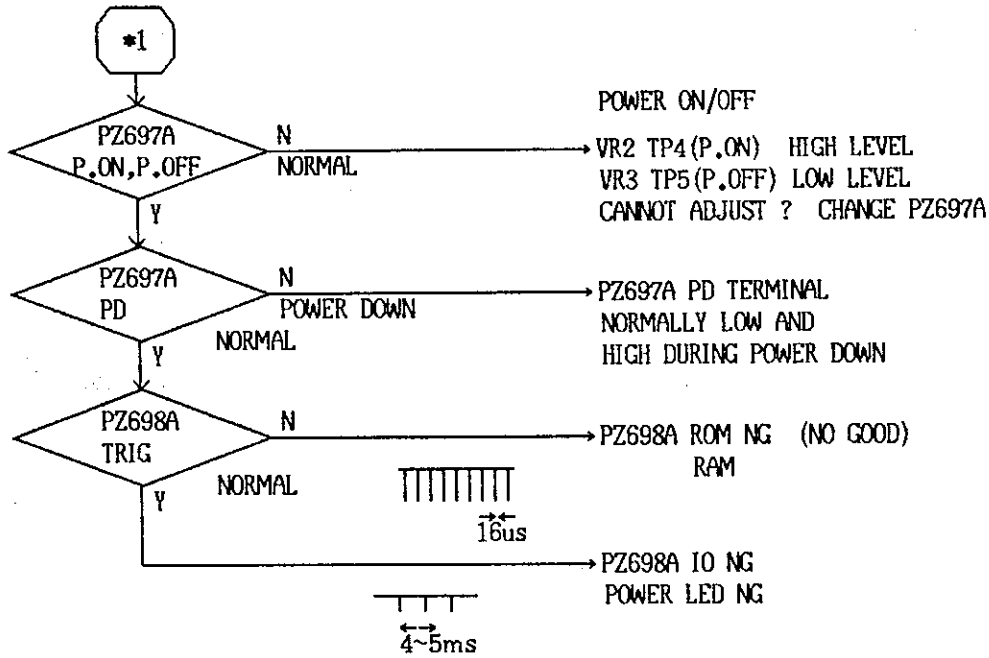
VIII. Repair


START
POWER ON
POWER LED ON?
Y
N
I
POWER SUPPLY CHECK
CHECK PRINTING
PRINT OK ?
II
CHECK PRINTER & CONTROL BOARD
DIP SW SETTINGS. CHECK PRINT
PRINT OK ?
III
CHECK AROUND DIP SWITCHES
DATE PRINT-OUT
PRINT OK ?
IV
CHECK AROUND CLOCK CHIP
PRINTER KEYBOARD +OP-02 CHECK
OK?
V
CHECK PRINTER KEYBOARD, OP-02 CABLE AND INTERFACE
BCD OUT CHECK
OK?
VI
CHECK BCD BOARD
INPUT DATA CHECK
OK?
VII
CHECK RS-232C INPUT
BACK-UP BATTERY CHECK
OK?
VIII
CHECK BATTERY
RS-232C OUT
OK?
IX
CHECK RS-232C OUTPUT BOARD
NORMAL

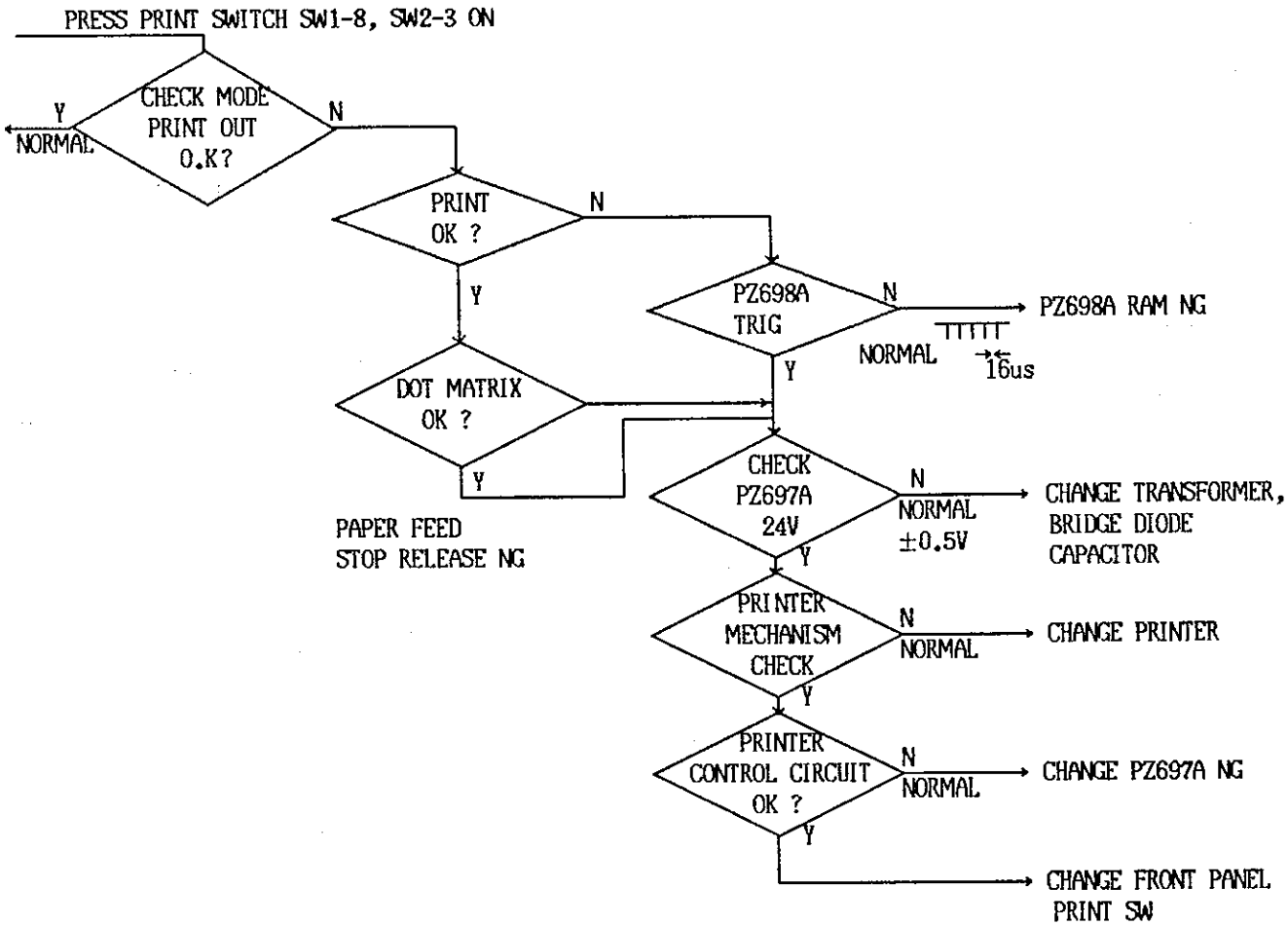
I POWER SUPPLY CHECK (1)



I POWER SUPPLY CHECK (CONTINUED)

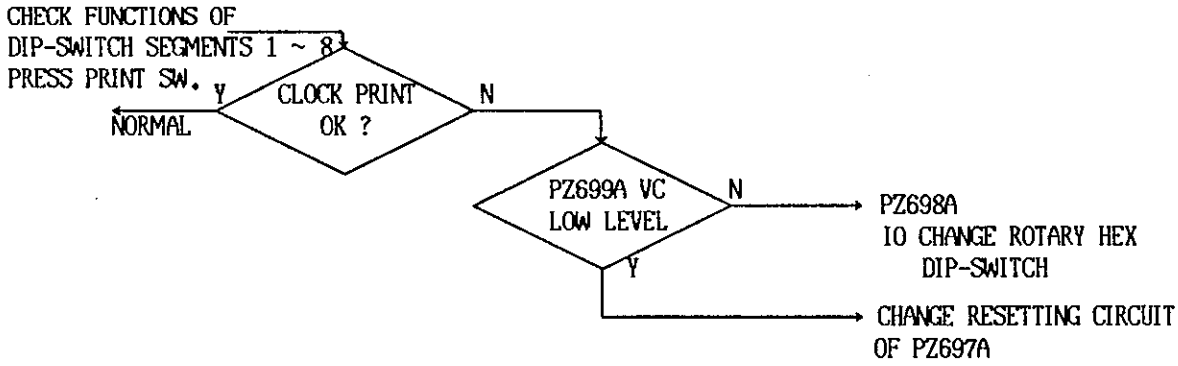


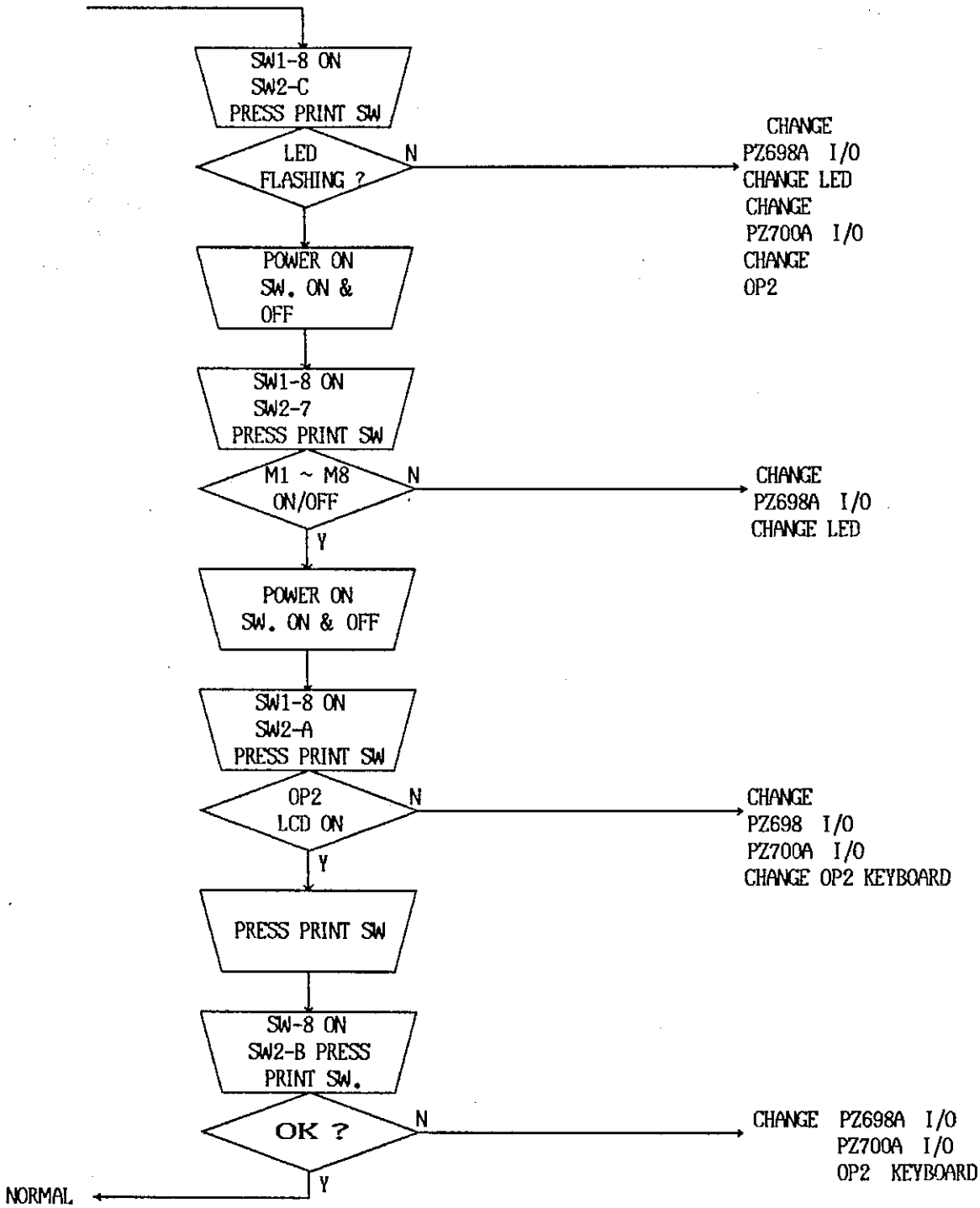
II PRINTER & CONTROL BOARD



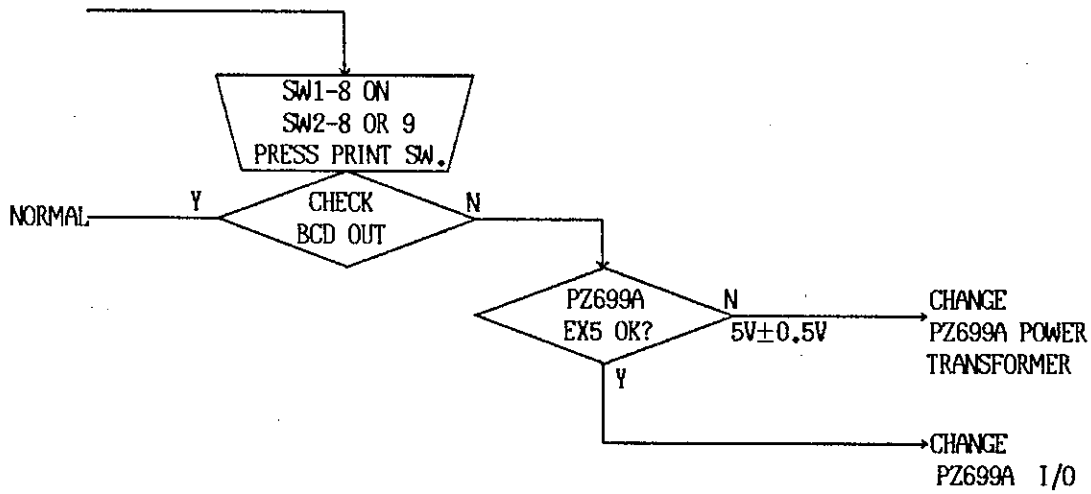
III DIP - SWITCHES

IV CLOCK CHIP

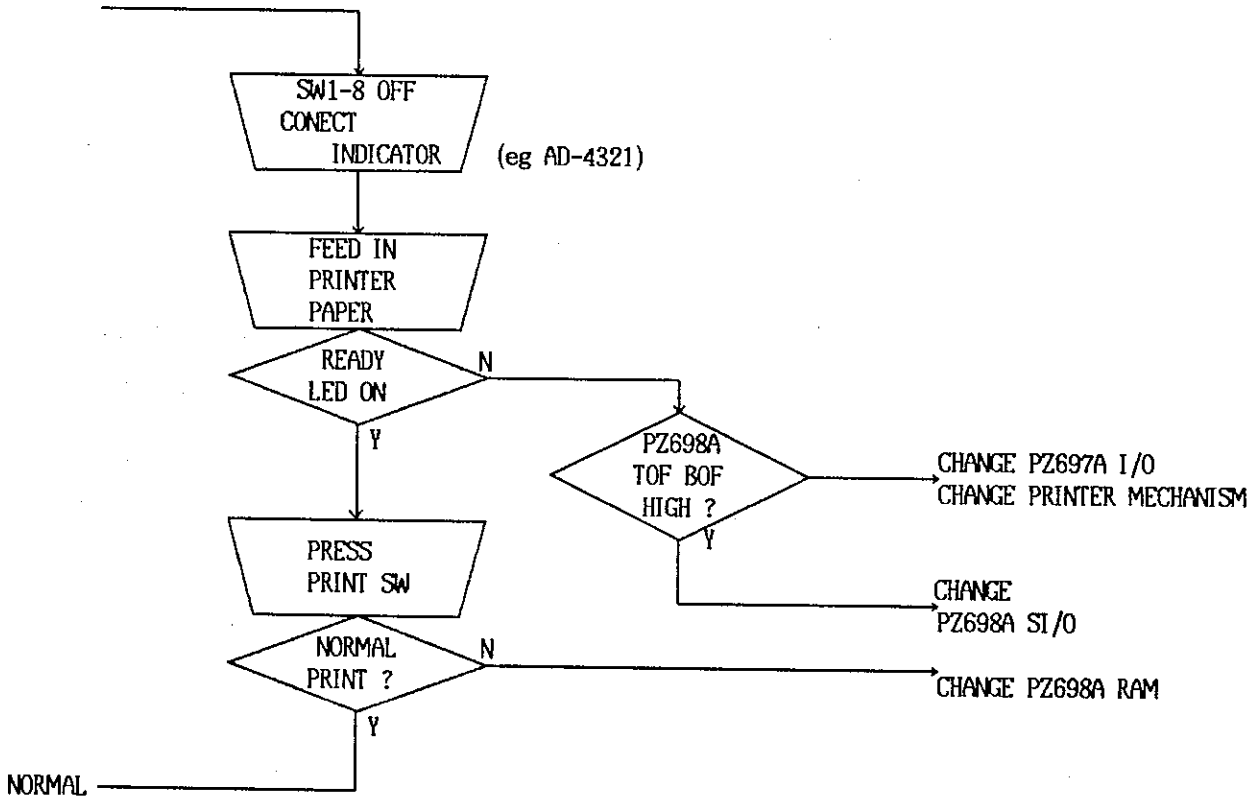



SW1-8 ON
SW2-C
PRESS PRINT SW
LED FLASHING ?
N
CHANGE PZ698A I/O CHANGE LED CHANGE PZ700A I/O CHANGE OP2
POWER ON SW. ON & OFF
SW1-8 ON
SW2-7
PRESS PRINT SW
M1 ~ M8 ON/OFF
N
CHANGE PZ698A I/O CHANGE LED
Y
POWER ON SW. ON & OFF
SW1-8 ON
SW2-A
PRESS PRINT SW
OP2 LCD ON
N
CHANGE PZ698 I/O PZ700A I/O CHANGE OP2 KEYBOARD
Y
PRESS PRINT SW
SW-8 ON
SW2-B PRESS PRINT SW.
OK ?
N
CHANGE PZ698A I/O PZ700A I/O OP2 KEYBOARD
Y
NORMAL

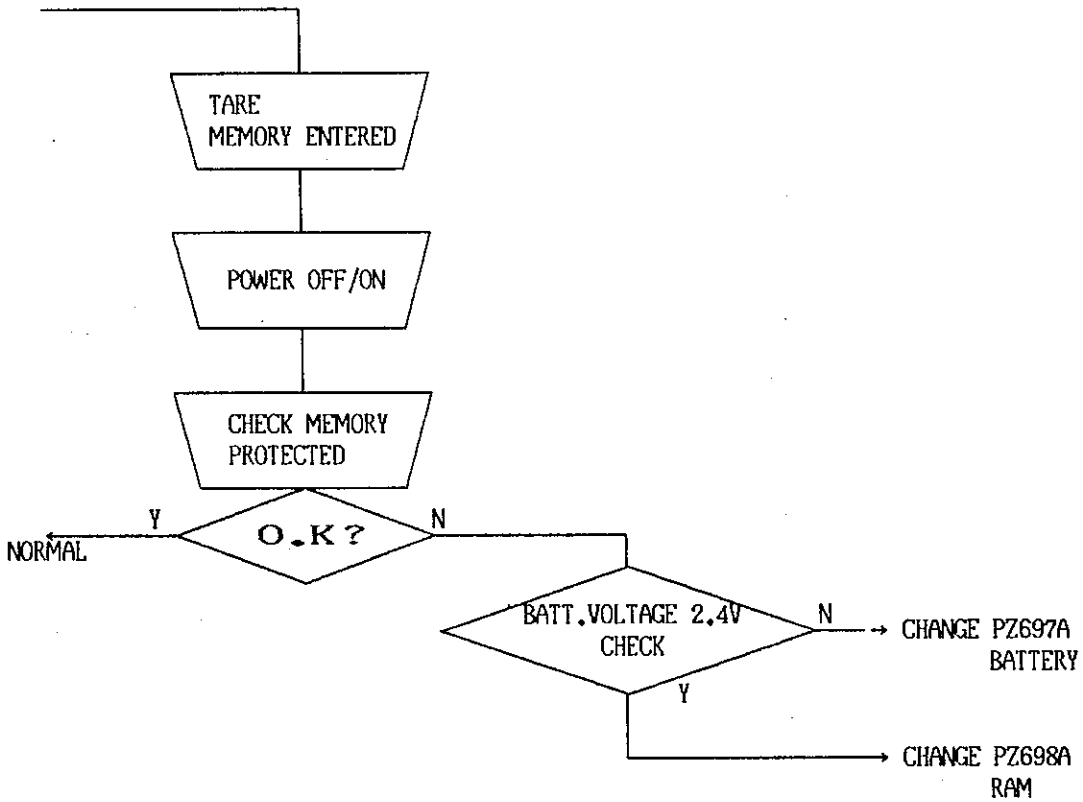
VI BCD BOARD (OP-01)



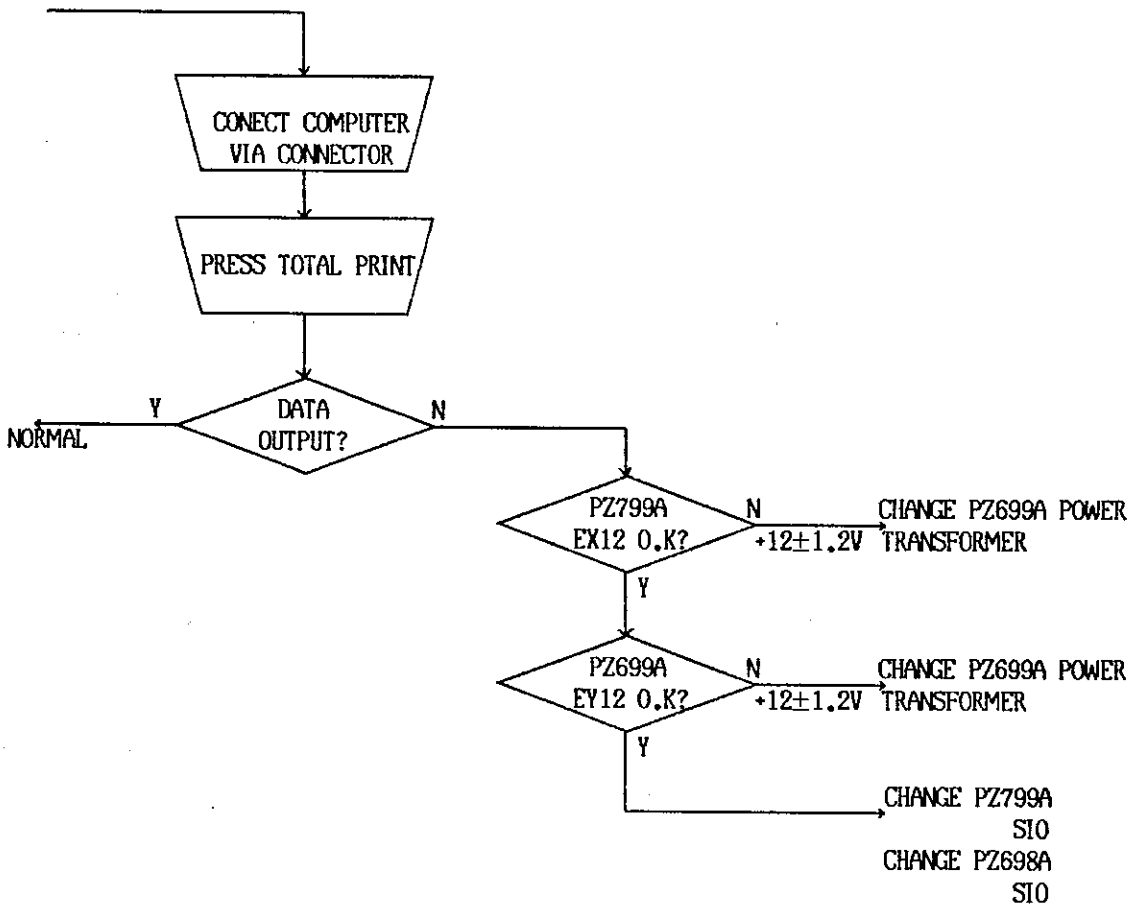
VII RS-232C INPUT



VIII BACK-UP BATTERY



IX RS-232C OUTPUT (OPTION-01)



IX. Parts List

MAIN BOARD

CIRCUIT SYMBOL OR DRWG. NO.	LOCATION	PARTS NAME	DESCRIPTION	Q'TY
	PZ:698	PZ:698	MAIN BOARD FULLY ASSEMBLED	
	"	PC:698A	PRINTED CIRCUIT BOARD	
	"	CC:0.001U	CAPACITOR 0.001μF 50V	2
C2~5,	"	CC:0.022U	" 0.022μF 50V	14
C10	"	CC:10P	" 10pF 50V	1
C9	"	CD:10C030D5	" 33pF	1
	"	CK:SM10VB47	" 47μF 10V	1
C6,7	"	CT:1C100	" 10μF 16V	2
C8	"	CV:ECVIZW30X32E	"	1
D1~3	"	DI:1SS53	DIODE	3
J6	"	JI:364J048-AG	CONNECTOR	1
J9	"	JI:704P034-AU/M	"	1
(U13)	"	JS:10328-01-445	IC SOCKET	1
(U19)	"	JS:10340-01-445	" "	1
J5	"	JT:171825-7	CONNECTOR	1
Q1	"	QT:C1815Y	TRANSISTOR	1
R14	"	RC:1/21M	RESISTOR 1M ½W	1
R16	"	RC:1K	" 1K	1
R11	"	RC:10K	" 10K	1
R19	"	RC:22K	" 22K	1
R13,15,17,20	"	RC:3.3K	" 3.3K	4
R1~10	"	RC:330R	" 330Ω	10
R12	"	RC:4.7K	" 4.7K	1
R18	"	RC:47K	" 47K	1
R21~34	"	RN:IHR-4-223MA	RESISTOR NET WORK 22K×4,1/8W	14
SW2	"	SD:KDR16		1
SW1	"	SD:KTD08	DIP SWITCH (8POS)	1
	"	TM:CP-10	TEST PIN	8
U20		UC:D1990C	CMOS	1
U13		UC:40H032	HCMOS	1
U22		UC:4049	CMOS	1
U9		UC:5516	RAM	1
U16		UN:8251	S10	1
U1		UT:LS02	TTL	1
U7		UT:LS08	"	1
U3		UT:LS112	"	1
U5		UT:LS138	"	1
U21		UT:LS139	"	1
U6,8,11,14		UT:LS251	"	4
U2,4,15,17		UT:LS259	"	4
U10,13,18		UT:LS32	"	3
U23		UT:LS393	"	1
X1		XT:9102	X TAL 32.768kHz	1
X2		XT:9104	X TAL 4.9152kHz	1

POWER BOARD - 1/2

CIRCUIT SYMBOL OR DRWG. NO.	LOCATION	PARTS NAME	DESCRIPTION	Q'TY
	PZ:697	PZ:697	POWER BOARD FULLY ASSEMBLED	
	"	PC:697A	PRINTED CIRCUIT BOARD	
C9		CC:0.001U	CAPACITOR 0.001μF 50V	1
C8		CC:0.0047U	" 0.0047μF 50V	1
C2,5,7,18,19,20		CC:0.022U	" 0.022μF 50V	6
C6		CC:100P	" 100pF 50V	1
C1		CC:330P	" 330pF 50V	1
C4		CK:SM10VB47	" 47μF 10V	1
C3		CK:SM35VB2200	" 2200μF 35V	1
C10~17		CM:E1474KN	" 0.47μF 100V	8
D1,2		DI:SM-1-08	DIODE	2
D3~6		DI:1SS53	"	4
DZ1		DZ:05Z11	ZENER DIODE	1
BT1		EB:N-SB2	NiCd BATTERY	1
J1		JA:U-PC2802A	CONNECTOR	1
J5		JI:365P048-AG	"	1
		PC:697A		1
Q4,5		QT:A1015Y	TRANSISTOR	2
Q11		QT:B595	"	1
Q2,3,7,8,12		QT:C1815Y	"	5
Q6,9		QT:C982TM	"	2
Q1,10,13		QT:D525	"	3
R48~54,62		RC:1.2K	RESISTOR 1.2K	8
R34		RC:1.5K	" 1.5K	1
R1		RC:1.8K	" 1.8K	1
R22,23		RC:1/22.2K	" 2.2K ½W	2
R55~61,63		RC:1/268R	" 68ohm ½W	8
R9,12,15,33,35, 37,38,40		RC:10K	" 10K	9
R31	PZ:697	RC:100K	" 100K	1
R5,13,27		RC:100R	" 100Ω	3
R30		RC:2.2K	" 2.2K	1
R43,46		RC:2.7K	" 2.7K	2
R21,24,26,28,29		RC:22K	" 22K	5
R32,36,41,45		RC:3.3K	" 3.3K	4
R42		RC:3.9K	" 3.9K	1
R10,11,19		RC:4.7K	" 4.7K	3
R39		RC:560K	" 560K	1
R44,47		RC:560R	" 560Ω	2
R20,25,64		RC:6.8K	" 6.8K	3
R14		RC:820R	" 820Ω	1
R4		RE:RGB20.22R	"	1
R7,16		RM:1KF	" 1K,¼W,±100PPM/°C	2
R3		RM:10KF	" 10K, "	1
R2,17		RM:12KF	" 12K, "	2
R18		RM:3.9KF	" 3.9K, "	1
R8		RM:330RF	" 330Ω , "	1
R6		RM:4.7KF	" 4.7K, "	1
VR1,2		RV:V202	POTENTIOMETER	2
VR3		RV:V502	"	1
TP1,3~8		TM:CP-10	TEST PIN	7
U1		UA:C301AC	OP AMP	1
U7		UA:C339C	OP AMPS	1
U5,6		UA:FT5758M		2

POWER BOARD - 2/2

CIRCUIT SYMBOL OR DRWG. NO.	LOCATION	PARTS NAME	DESCRIPTION	Q'TY
U2		UA:MB3761	VOLTAGE COMPARATOR	1
U3,4	PZ:697	UT:LS09		2
		04:A44507	CONNECTOR CLAMP	1
		05:A40416	36.5mm SPACER	4
		UN:2764	ROM	

MOTHER BOARD

CIRCUIT SYMBOL OR DRWG. NO.	LOCATION	PARTS NAME	DESCRIPTION	Q'TY
	PZ:762	PZ:762		
		PC:762	PRINTED CIRCUIT BOARD	
J5		JI:364J048-AG	CONNECTOR	1
J6		JI:365P048-AG	"	1
J1~3		JT:1-171825-2	"	3
J4		JT:171825-3	"	1
L1		LR:H5AT7-14-3.5	COIL	1

BCD OUT UNIT BOARD (OP-01)

CIRCUIT SYMBOL OR DRWG. NO.	LOCATION	PARTS NAME	DESCRIPTION	Q'TY
	PZ:699	PZ:699	OPTION-01 FULLY ASSEMBLED	
		PC:699A	PRINTED CIRCUIT BOARD	
		CC:0.022U	CAPACITOR 0.022μF 50V	8
C2		CK:SM35VB220	" 220μF 35V	1
C1		CK:SM35VB470	" 470μF 35V	1
C3~5		CT:1C100	" 10μF 16V	3
PHC1,2		DF:TLP521-2	PHOTO COUPLER	2
D1		DI:W02	DIODE BRIDGE	1
J1		JA:25-30-335S	CONNECTOR	1
J2		JA:57-40500-D39	"	1
J4		KO:102-3S10	CONNECTOR CABLE	1
J3		KO:102-7S10	" "	1
R1~4		RC:330R	RESISTOR 330Ω	4
RA1		RN:IHR-4-223MA	RESISTOR NET WORK 22K×4,1/8W	1
TP1~8		TM:CP-10	TEST PIN	8
U5,8,10,12		UC:4094	CMOS	4
U3		UR:MC7912CT	VOLTAGE REGULATOR -12V,1A	1
U2		UR:TA78L005AP	" " 5V,1A	1
U1		UR:TA78012AP	" " 12V,1A	1
U7,9,11,13		UT:LS04	TTL	4
U6		UT:LS14	"	1
U4		UT:75150P	"	1
		04:A32807	BOARD MOUNT PLATE	1

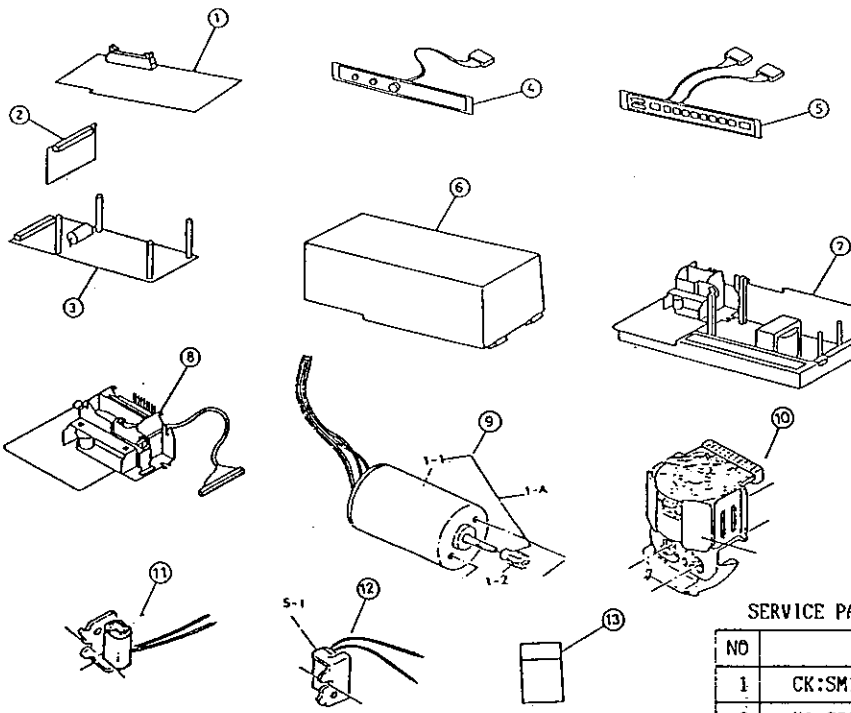
INTERFACE BOARD (OP-02)

CIRCUIT SYMBOL OR DRWG. NO.	LOCATION	PARTS NAME	DESCRIPTION	Q'TY
	PZ:700	PZ:700		
		PC:700B	PRINTED CIRCUIT BOARD	
C8,9,10		CC:0.022U	CAPACITOR 0.022μF 50V	8
C1,2		CT:1C100	" 10μF 16V	2
		JI:700A2		1
		JI:704P034-AU/M		1
(U8)		JS:10328-01-445		1
		KO:252A		1
		LR:H5AT7-14-3.5		1
		PC:700B		1
R1,2		RC:4.7K	RESISTOR 4.7K	2
R3,4		RN:IHR-4-223MA	RESISTOR NET WORK 22K×4, $^1/_8$W	2
U4		UC:40H244	HCMOS	1
U6,7		UC:5516	RAM	2
U1~3		UT:LS259	TTL	3
U5		UT:LS32	TTL	1
		05:A40198	9m/m SPACER	4

X. Exploded View

S P A R E U N I T S L I S T

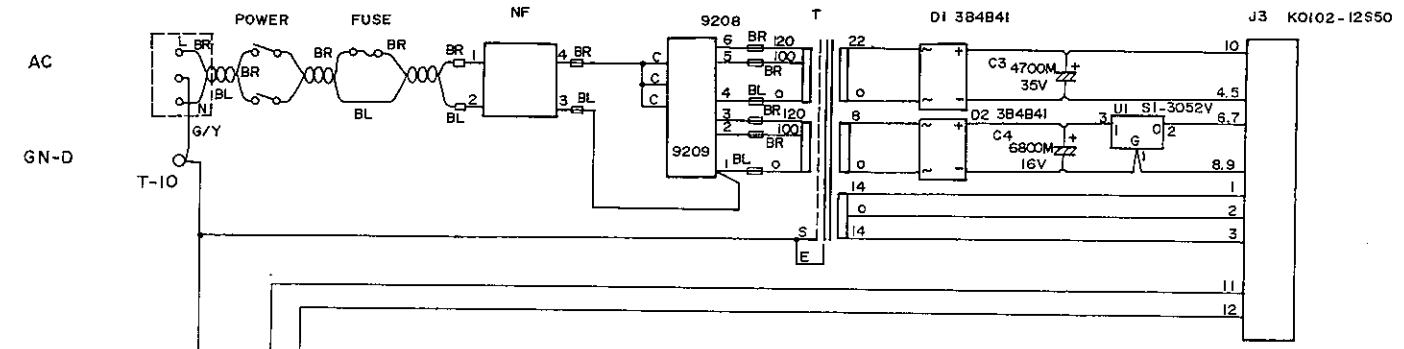
NO	ORDER NO	PARTS DESCRIPTION	UNIT COST¥	ADJUSTMENT REQUIRED?	STOCK 10-100 UNITS
1	7PZ:698	CPU BOARD UNIT		YES	1
2	7PZ:762	MOTHER BOARD UNIT		NO	1
3	7PZ:697	POWER SUPPLY BOARD UNIT		YES	1
4	7PA:8115-2	AD-8115A SWITCH UNIT		NO	1
5	SW:A32829A	AD-8115B SWITCH UNIT		NO	1
6	7PM:8115-A	COVER UNIT		NO	1
7	7PA:8115-1	MAIN UNIT 8115A/B		NO	1
8	EP:MODEL 240	PRINTER MECHA UNIT		NO	1－2
9	710:F203211000	MOTOR UNIT		NO	
10	710:F203610001	DOT HEAD UNIT		NO	
11	710:F203523000	PAPER TRIGGER UNIT A		NO	
12	710:F203411000	PAPER TRIGGER UNIT B		NO	
13	7PA:AD8115-SPP	SERVICE PARTS PACKET			1－2

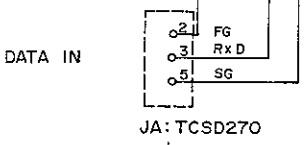


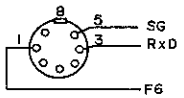
SERVICE PARTS PACKET LIST

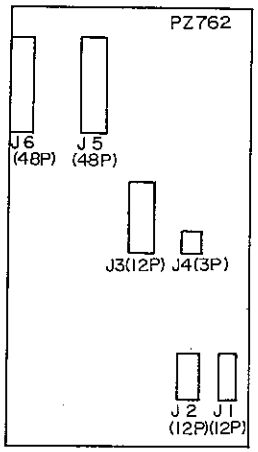
NO		DESCRIPTION	QTY
1	CK:SM10VB47	CAPACITOR 47μF 10V	1
2	UA:C339C	OP AMPS	1
3	QT:C982TM	TRANSISTER	1
4	UA:FT5758M	TRANSISTER NET WORK	1
5	QT:D525	TRANSISTER	1
6	EB:N-SB2	NiCd BATTERY	1
7	SD:KDR16	DIP SWITCH	1

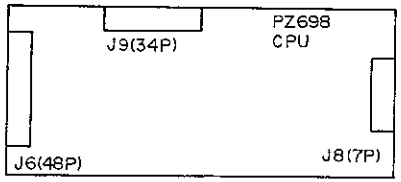
XI. Schematics

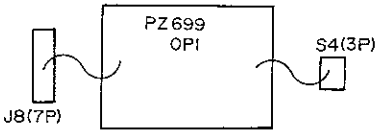


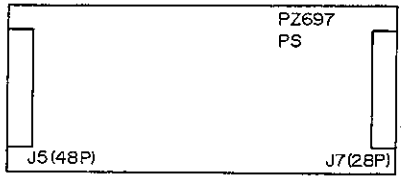


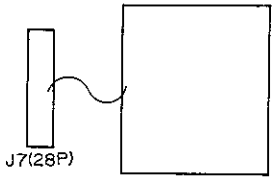


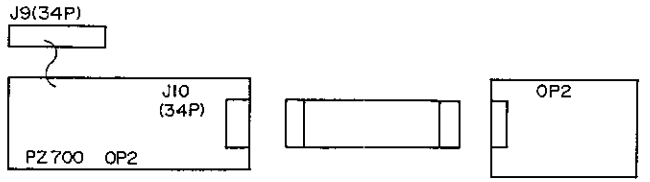


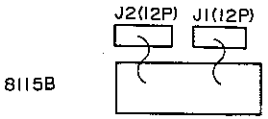












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SYMBOL	DATE	BY	REVISION NO.	DESCRIPTION	POWER UNIT CIRCUIT
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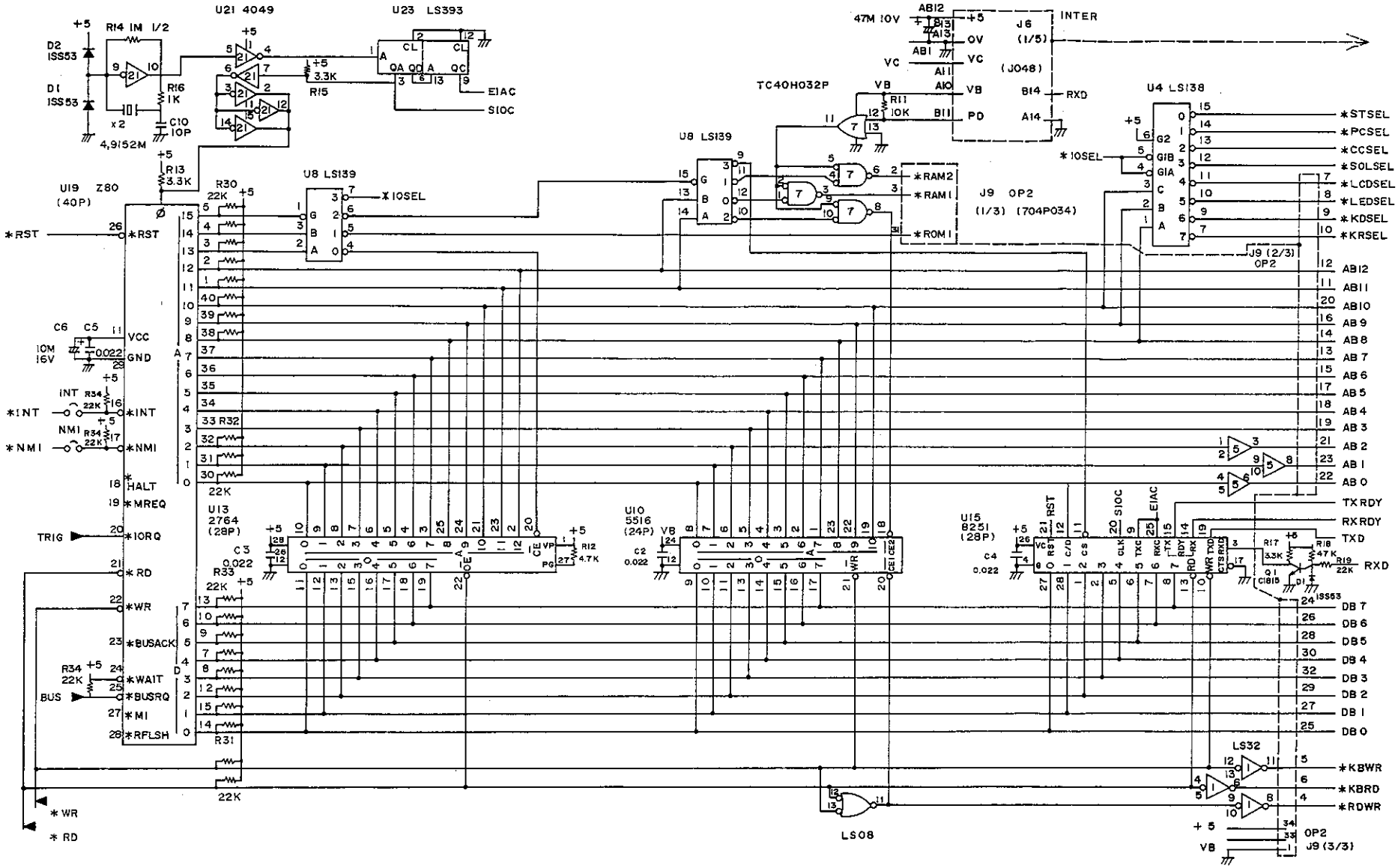
				DRWG. NO.	



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SYMBOL	DATE	BY	REVISION NO.	DESCRIPTION	CPU-IO BOARD
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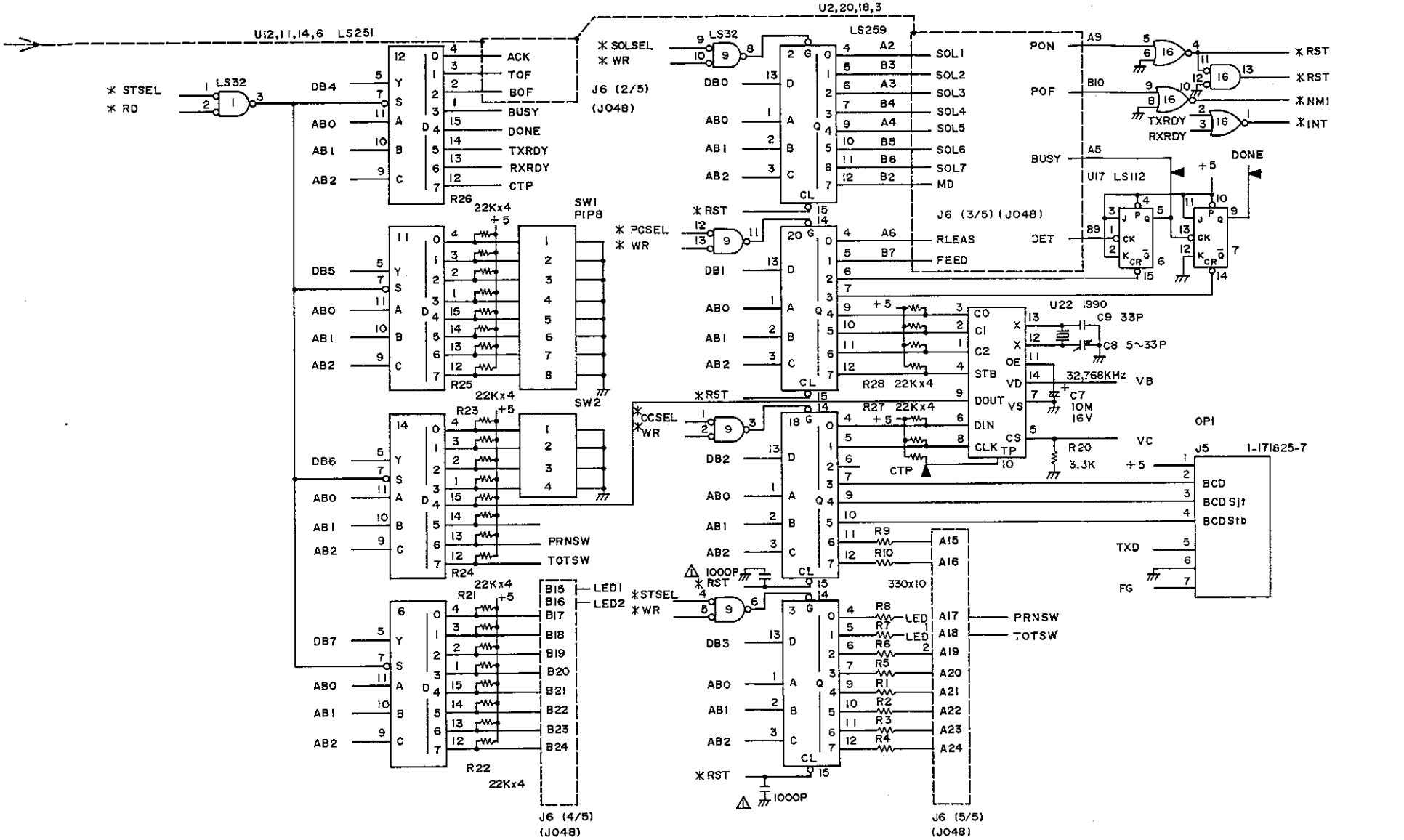
				DRWG. NO.	



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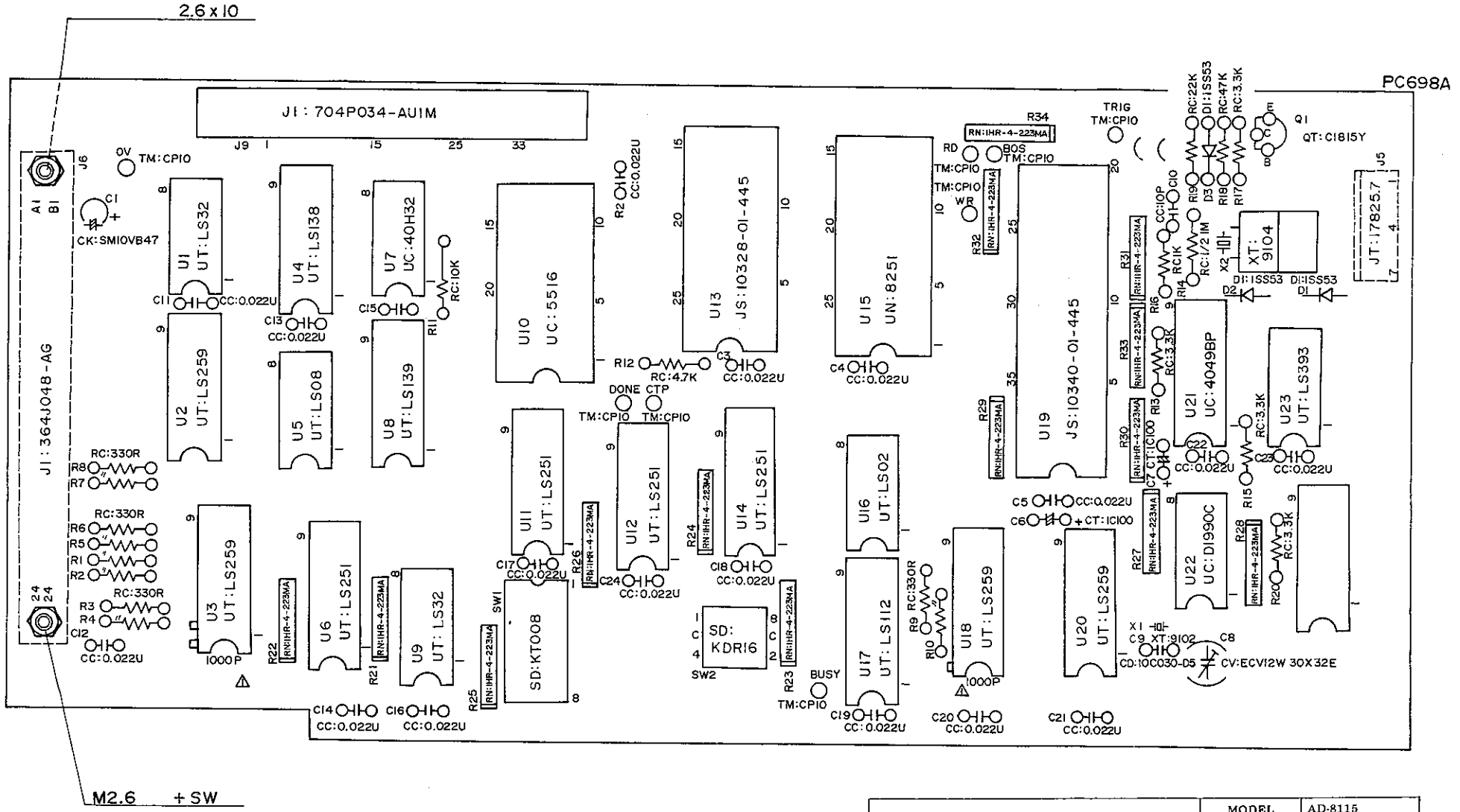
				DRWG. NO.	



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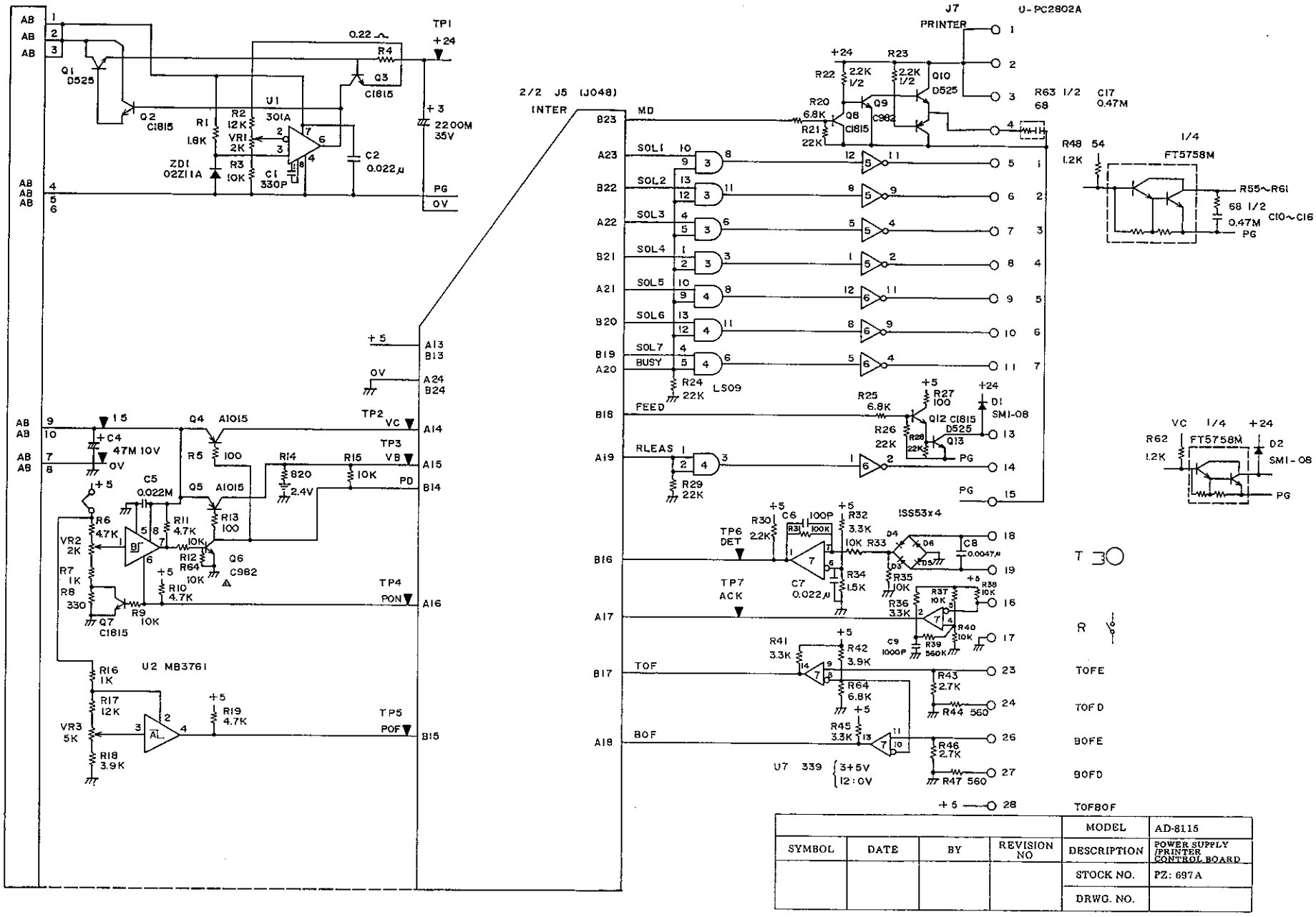

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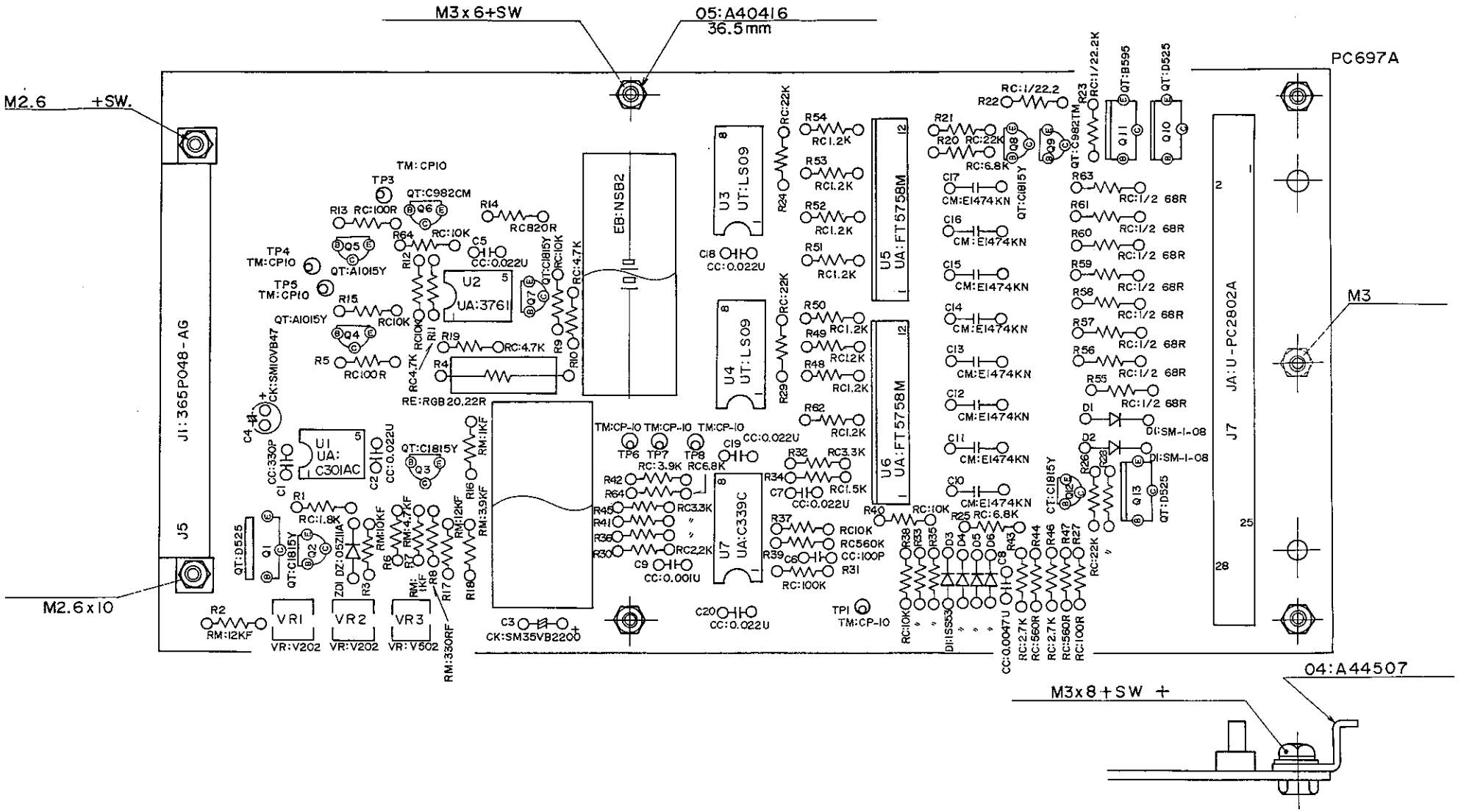
SYMBOL	DATE	BY	REVISION NO	DESCRIPTION	POWER SUPPLY /PRINTER CONTROL BOARD
				STOCK NO.	PZ: 697A
				DRWG. NO.	



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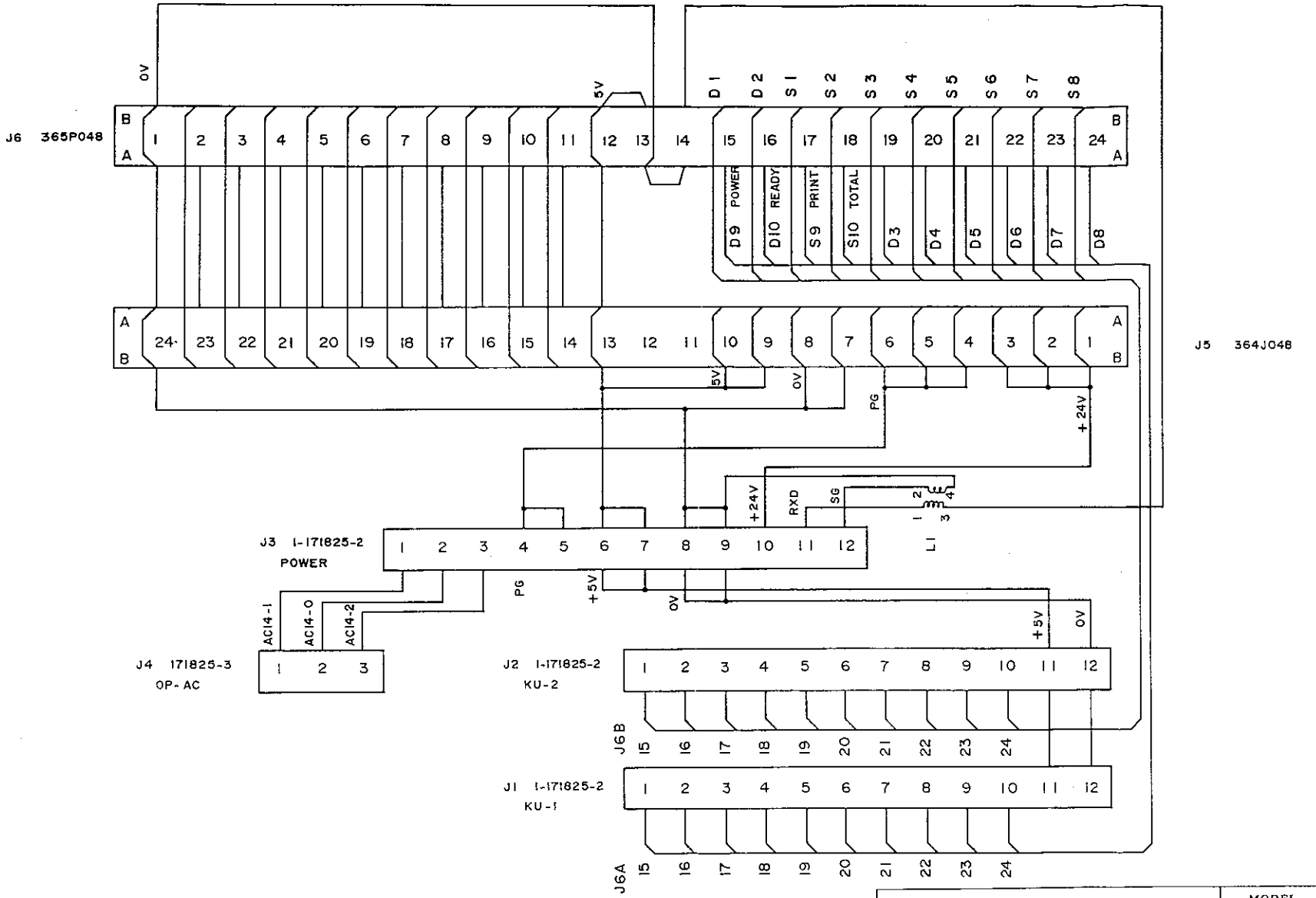
SYMBOL	DATE	BY	REVISION NO.	DESCRIPTION	POWER SUPPLY /PRINTER CONTROL BOARD
				STOCK NO.	PZ: 697
				DRWG. NO.	KZ_3-0037



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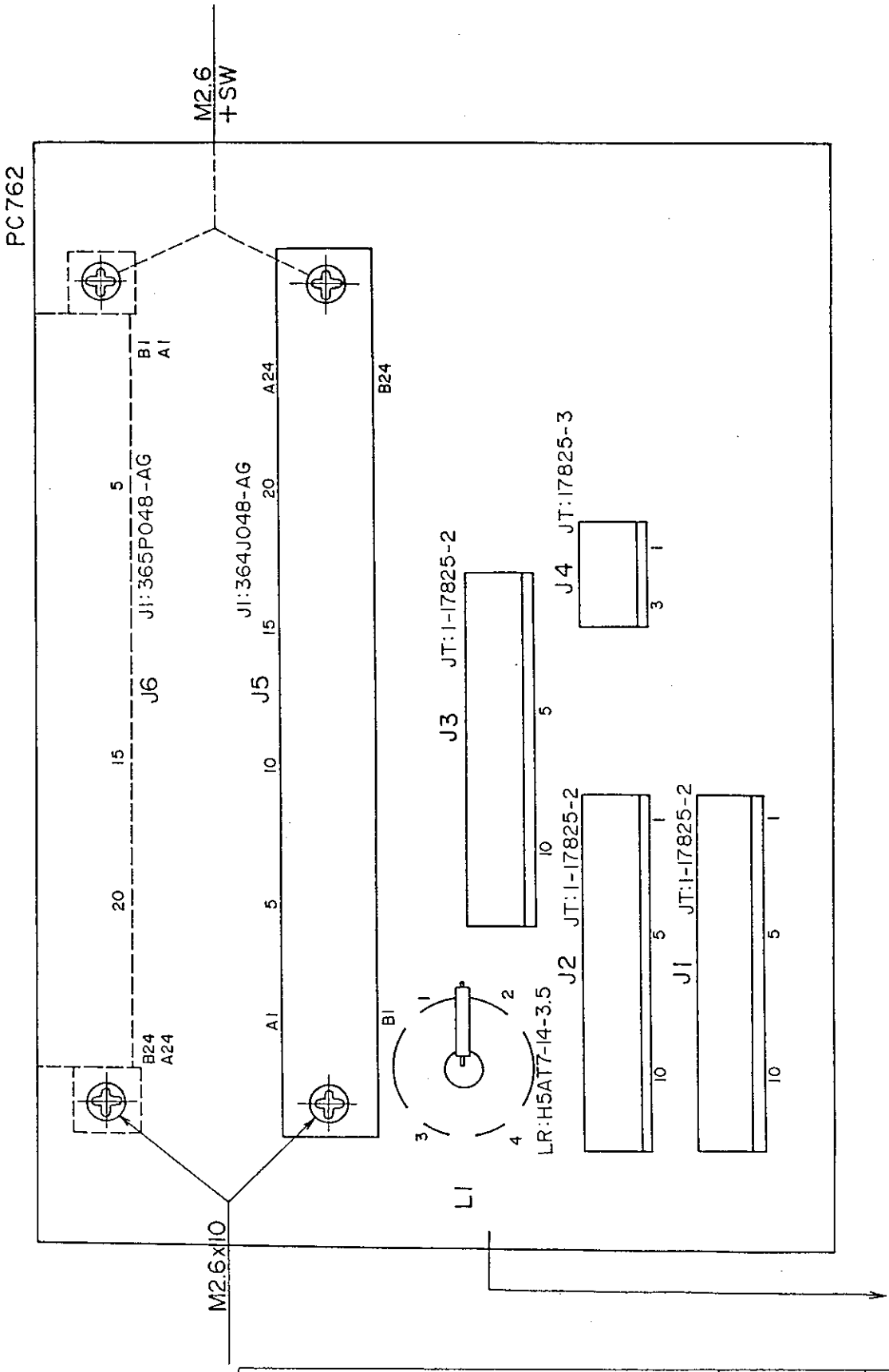
SYMBOL	DATE	BY	REVISION NO.	DESCRIPTION	MOTHER BOARD
				STOCK NO.	PZ: 762
				DRWG. NO.	



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SYMBOL	DATE	BY	REVISION NO.	DESCRIPTION	MOTHER BOARD
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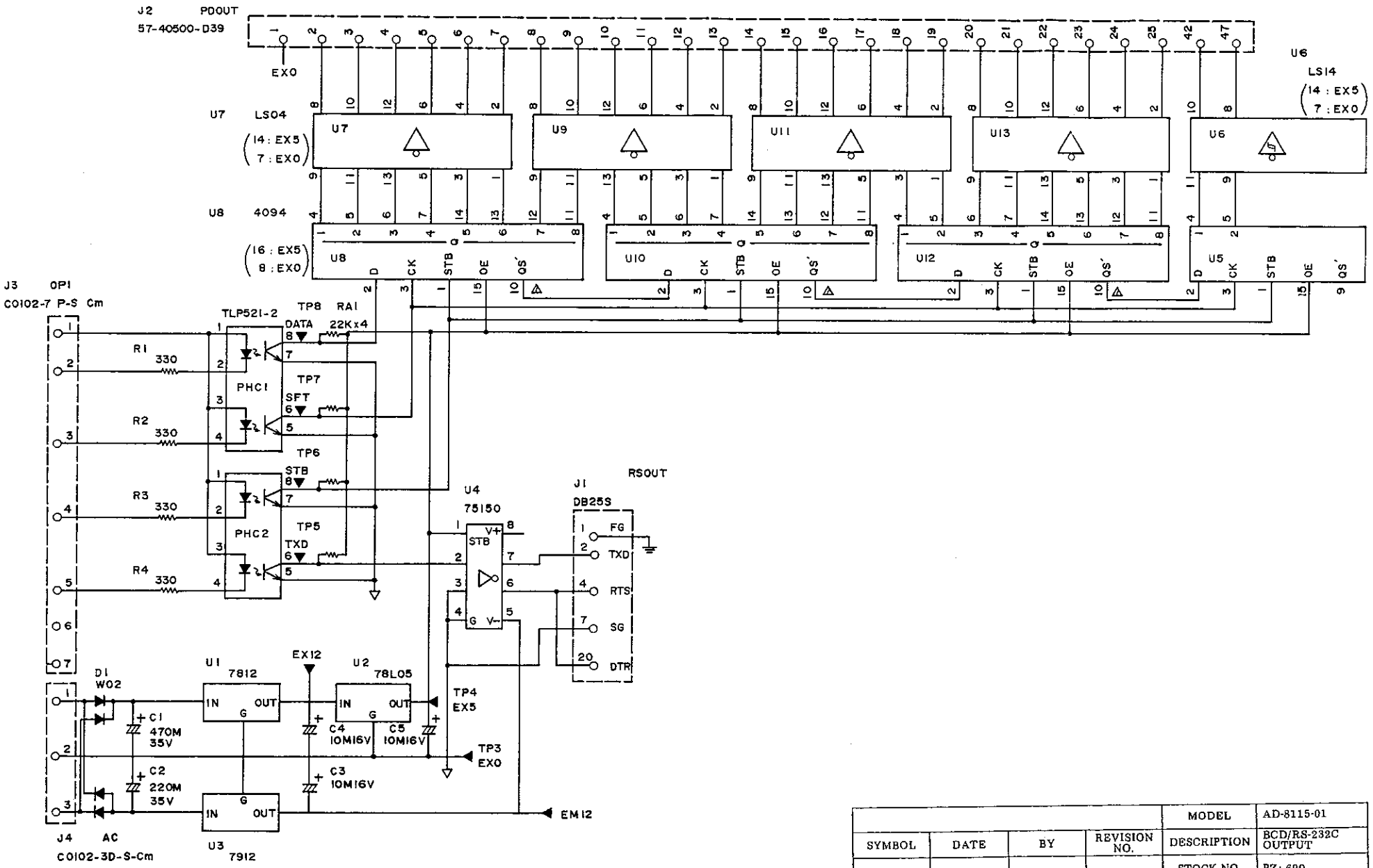

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SYMBOL	DATE	BY	REVISION NO.	DESCRIPTION	BCD/RS-232C OUTPUT
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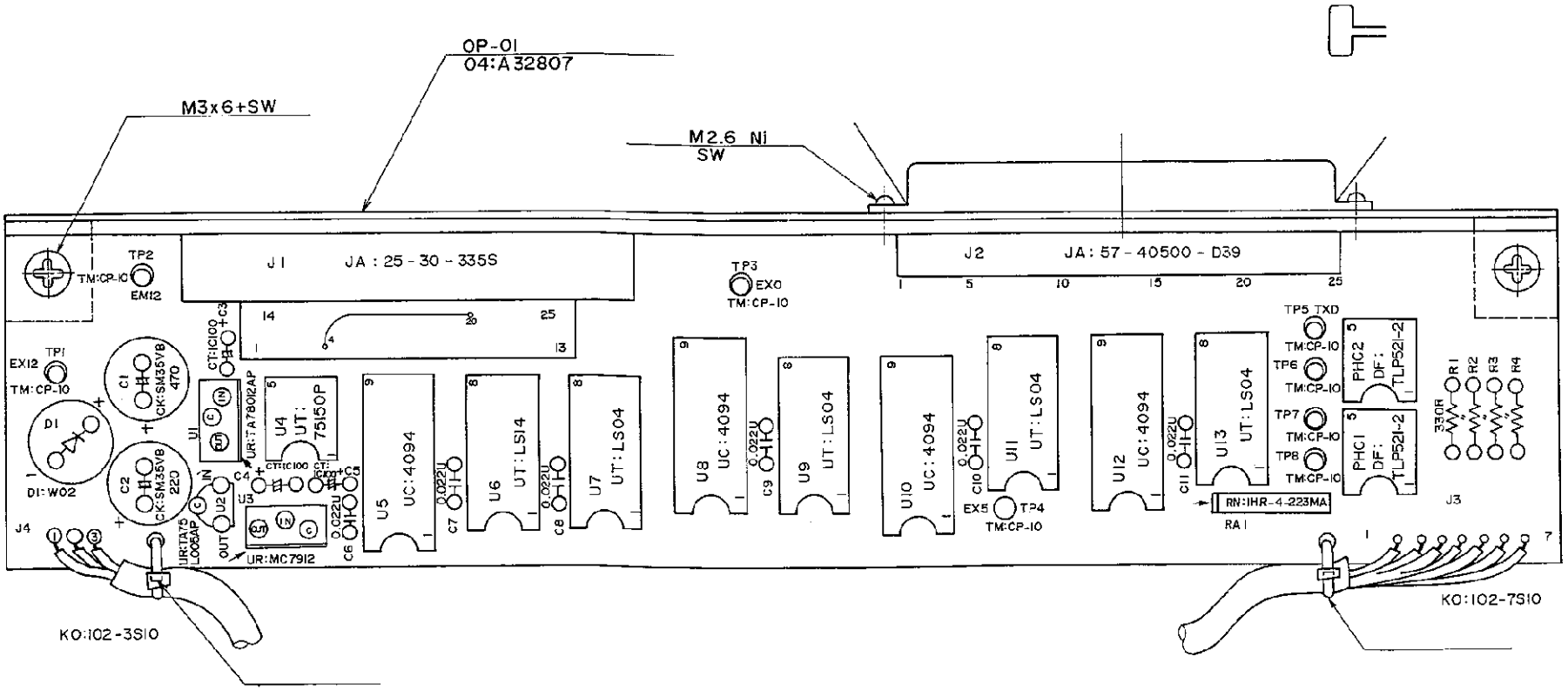
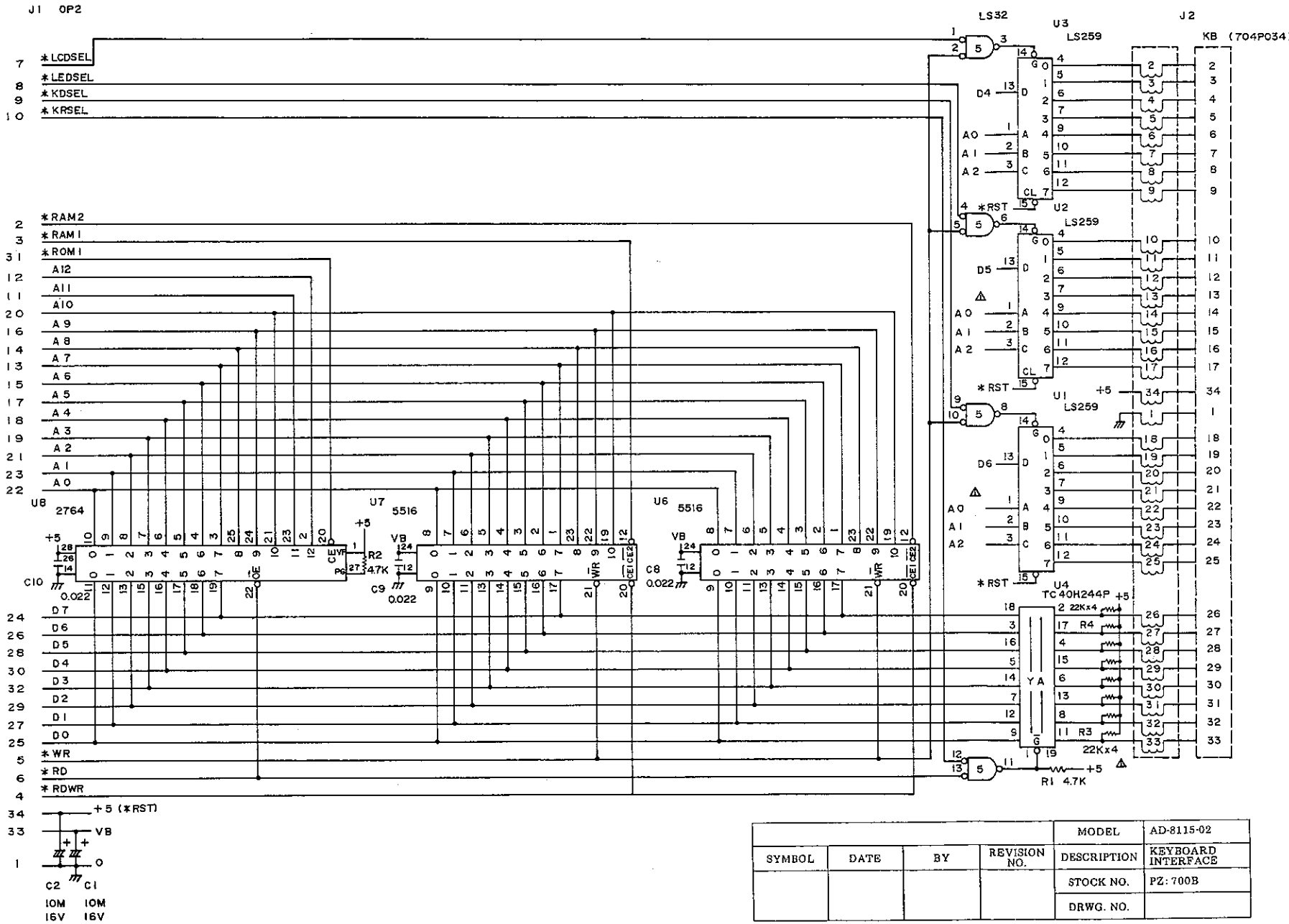
				DRWG. NO.	



PC:699A

				MODEL	AD-8115
SYMBOL	DATE	BY	REVISION NO.	DESCRIPTION	BCD/RS-232C OUTPUT
				STOCK NO.	PZ: 699
				DRWG. NO.	



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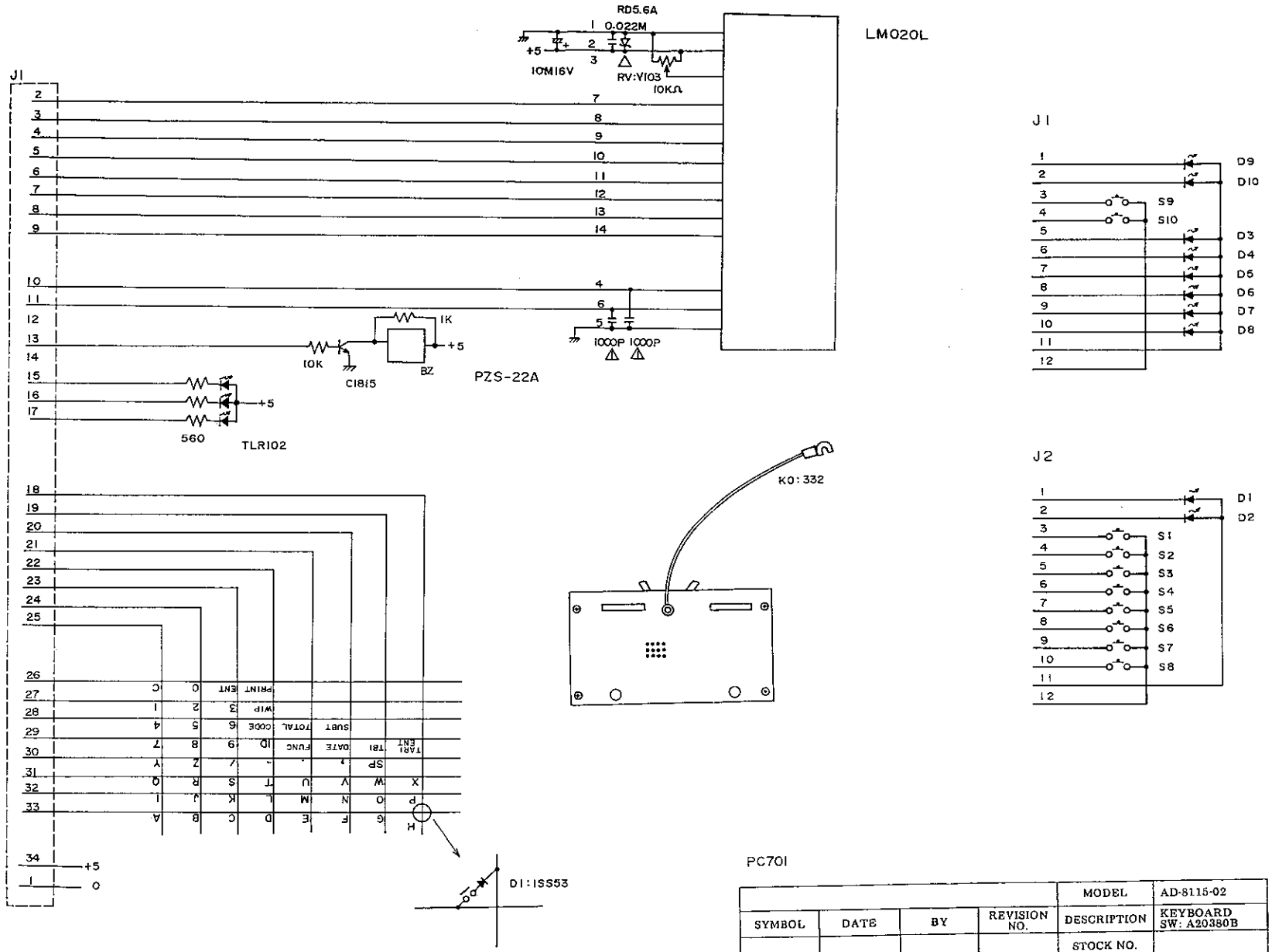
SYMBOL	DATE	BY	REVISION NO.	DESCRIPTION	KEYBOARD INTERFACE
				STOCK NO.	PZ: 700B
				DRWG. NO.	



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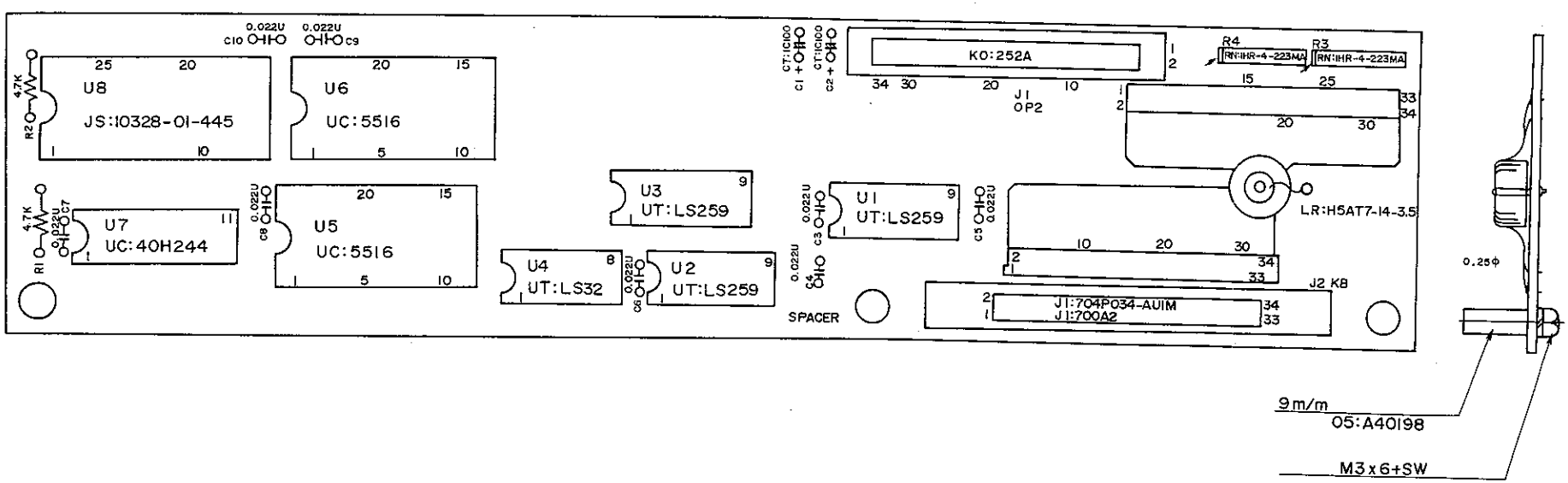
SYMBOL	DATE	BY	REVISION NO.	DESCRIPTION	KEYBOARD SW: A20380B
				STOCK NO.	
				DRWG. NO.	



PC 700B

				MODEL	AD-8115-02
SYMBOL	DATE	BY	REVISION NO.	DESCRIPTION	KEYBOARD INTERFACE
				STOCK NO.	PZ: 700B
				DRWG. NO.	KZ_2-00249