

# **Tong Electronic**

# **Beezer**

## **INSTALLATION**

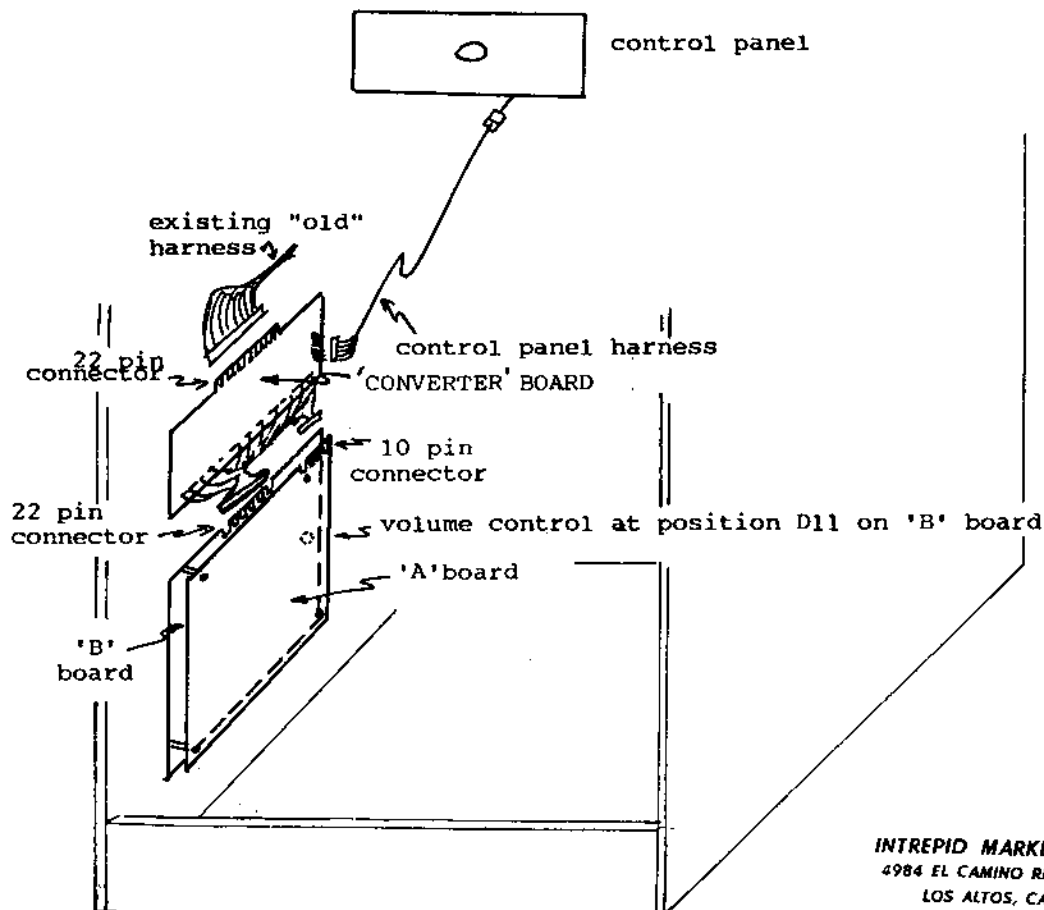
\*\*\*BEEZER\*\*\*

### INSTALLING CIRCUIT BOARDS

1. Remove old circuit boards, save all mounting brackets.
2. Relocate upper brackets to fit larger boards.
3. Secure 'A' and 'B' boards to side of game.
4. Connect 'CONVERTER' board to 'A/B' boards as shown in diagram below.
5. Connect old main harness to 'CONVERTER' board as old set of boards you removed.
6. Assemble control panel and connect to 'CONVERTER' board at connector shown in diagram.

#### NOTE !!

The potentiometer on the 'CONVERTER' board is VOLTAGE ADJUSTMENT. PRE-SET AT FACTORY, TECHNICIAN ADJUST ONLY!!!  
The potentiometer on 'B' board at D11 is VOLUME control



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\*\*\*BEEZER\*\*\*

| B. BOARD             |       |                |   |       | A. BOARD       |       |                |    |   |          |
|----------------------|-------|----------------|---|-------|----------------|-------|----------------|----|---|----------|
| SOLDERING SIDE       |       | COMPONENT SIDE |   |       | SOLDERING SIDE |       | COMPONENT SIDE |    |   |          |
| +5V                  | (B1)  | 22             | Z | (A1)  | +5V            | GND   | (1)            | 10 | L | (1) GND  |
|                      | (B2)  | 21             | Y | (A2)  |                | BLUE  | (2)            | 9  | K | (2)      |
| +12V                 | (B3)  | 20             | X | (A3)  |                | GREEN | (3)            | 8  | J | (3)      |
|                      | (B4)  | 19             | W | (A4)  | GND            | RED   | (4)            | 7  | H | (4)      |
|                      | (B5)  | 18             | V | (A5)  |                |       | (5)            | 6  | F | (5)      |
|                      | (B6)  | 17             | U | (A6)  |                | SYNC  | (6)            | 5  | E | (6)      |
| -5V                  | (B7)  | 16             | T | (A7)  | -5V            |       | (7)            | 4  | D | (7)      |
| +12V                 | (B8)  | 15             | S | (A8)  | +12V           | +12V  | (8)            | 3  | C | (8) +12V |
| SPEAKER (+)          | (B9)  | 14             | R | (A9)  |                | -5V   | (9)            | 2  | B | (9) -5V  |
|                      | (B10) | 13             | P | (A10) | SPEAKER (-)    | +5V   | (10)           | 1  | A | (10) +5V |
| GND                  | (B11) | 12             | N | (A11) | GND            |       |                |    |   |          |
|                      | (B12) | 11             | M | (A12) | -5V            |       |                |    |   |          |
|                      | (B13) | 10             | L | (A13) |                |       |                |    |   |          |
| PLAY 1 (DO TEST)     | (B14) | 9              | K | (A14) |                |       |                |    |   |          |
| PLAY 2 (SELECT TEST) | (B15) | 8              | J | (A15) |                |       |                |    |   |          |
| COIN                 | (B16) | 7              | H | (A16) |                |       |                |    |   |          |
| SLAM                 | (B17) | 6              | F | (A17) |                |       |                |    |   |          |
| Y <sub>3</sub>       | (B18) | 5              | E | (A18) | X <sub>3</sub> |       |                |    |   |          |
| Y <sub>2</sub>       | (B19) | 4              | D | (A19) | X <sub>2</sub> |       |                |    |   |          |
| Y <sub>1</sub>       | (B20) | 3              | C | (A20) | X <sub>1</sub> |       |                |    |   |          |
| Y <sub>0</sub>       | (B21) | 2              | B | (A21) | X <sub>0</sub> |       |                |    |   |          |
| GND                  | (B22) | 1              | A | (A22) | GND            |       |                |    |   |          |

NITE:

- (A4) is the audio enable ground, should connect to (A11) or (A22).
- Board A., board B. & mini track ball board's ground should connect together.
- Mini track ball board's X<sub>0</sub>-X<sub>3</sub>, Y<sub>0</sub>-Y<sub>3</sub> connect to board B.'s X<sub>0</sub>-X<sub>3</sub>, Y<sub>0</sub>-Y<sub>3</sub>.
- Mini track ball board's X<sub>A</sub>, X<sub>B</sub>, Y<sub>A</sub>, Y<sub>B</sub> should connect to track ball, X<sub>A</sub>, X<sub>B</sub> are horizontal control, Y<sub>A</sub>, Y<sub>B</sub> are vertical control.
- The audio amplifier is bridge output. Do not connect speaker to ground.
- Audio level potentiometer is at position D11.

GALAXIAN (TO BEEZER)

|                 |    |   |                      |
|-----------------|----|---|----------------------|
| GND             | 22 | Z | GND                  |
| GND             | 21 | Y | GND                  |
|                 | 20 | X | AC 12V               |
|                 | 19 | W | AC 12V               |
| AUDIO (+)       | 18 | V | AUDIO (-)            |
| SYNC            | 17 | U | BLUE                 |
| GREEN           | 16 | T | RED                  |
| GND             | 15 | S | GND                  |
|                 | 14 | R |                      |
|                 | 13 | P |                      |
|                 | 12 | N |                      |
|                 | 11 | M |                      |
|                 | 10 | L |                      |
| SERVICE SW.     | 9  | K |                      |
|                 | 8  | J | COIN SW.             |
| JUMPER TOGETHER | 7  | H | COIN METER (-)       |
|                 | 6  | F |                      |
|                 | 5  | E | COIN METER (+) (12V) |
|                 | 4  | D | AC 7V                |
|                 | 3  | C | AC 7V                |
| GND             | 2  | B | GND                  |
| GND             | 1  | A | GND                  |

CONVERT BOARD TO CONTROL PANEL

1. GROUND (BLACK) TO MINI TRACK BALL BLACK WIRE.
2. X<sub>A</sub> (GREEN) TO WICO TRACK BALL GREEN WIRE.
3. X<sub>B</sub> (YELLOW) TO WICO TRACK BALL YELLOW WIRE.
4. Y<sub>A</sub> (PURPLE) TO WICO TRACK BALL PURPLE WIRE.
5. Y<sub>B</sub> (BLUE) TO WICO TRACK BALL BLUE WIRE.
6. GROUND (BLACK) TO 1P, 2P SWITCH COMMON.
7. 1 PLAY (WHITE) TO 1P SWITCH.
8. 2 PLAY (BROWN) TO 2P SWITCH.
9. +5V OUT (RED) TO WICO TRACK BALL RED WIRE.
10. +5V OUT (RED) TO WICO TRACK BALL RED WIRE.
11. SPARE (GRAY) NOT USED.
12. SPARE (ORANGE) NOT USED.

TRACKBALL INTERFACE & COUNTER DRIVER.

| SOLDERING SIDE                          | <u>B</u> | <u>A</u> | COMPONENT SIDE                          |
|---|----------|----------|---|
| + 5V                                    | 10       | L        | + 5V                                    |
| GND                                     | 9        | K        | GND                                     |
| COIN METER                              | 8        | J        | COIN OUT (CONNECT TO B BOARD B16)       |
| (CONNECT TO B BOARD B18) Y <sub>3</sub> | 7        | H        | X <sub>3</sub> (CONNECT TO B BOARD A18) |
| (CONNECT TO B BOARD B19) Y <sub>2</sub> | 6        | F        | X <sub>2</sub> (CONNECT TO B BOARD A19) |
| (CONNECT TO B BOARD B20) Y <sub>1</sub> | 5        | E        | X <sub>1</sub> (CONNECT TO B BOARD A20) |
| (CONNECT TO B BOARD B21) Y <sub>0</sub> | 4        | D        | X <sub>0</sub> (CONNECT TO B BOARD A21) |
| SERVICE                                 | 3        | C        | COIN IN                                 |
| DOWN (FROM TRACKBALL) Y <sub>B</sub>    | 2        | B        | X <sub>B</sub> (FROM TRACKBALL) RIGHT   |
| UP (FROM TRACKBALL) Y <sub>A</sub>      | 1        | A        | X <sub>A</sub> (FROM TRACKBALL) LEFT    |

\* Voltage control potentiometer is preset do not adjust!

ADJUSTMENT SWITCHES

A SET OF DIP SWITCHES ARE LOCATED ON THE GAME LOGIC BOARD TO ADJUST FOR COINS.

\* NOTE: MAKE SURE POWER IS OFF BEFORE MAKING THESE ADJUSTMENTS.

SWITCH SETTING:

SWITCH B:

|                           | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   |
|---------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| 1 COIN 1 CREDIT           | OFF | OFF |     |     |     |     |     |     |
| 2 COIN 1 CREDIT           | ON  | OFF |     |     |     |     |     |     |
| FREE PLAY                 | ON  | ON  |     |     |     |     |     |     |
| 3 BEEZER START            |     |     | OFF |     |     |     |     |     |
| 4 BEEZER START            |     |     | ON  |     |     |     |     |     |
| ATTRACT MODE<br>SOUND ON  |     |     |     | OFF |     |     |     |     |
| ATTRACT MODE<br>SOUND OFF |     |     |     | ON  |     |     |     |     |
| NO BONUS                  |     |     |     |     | OFF | OFF |     |     |
| BONUS AT 90,000<br>POINTS |     |     |     |     | ON  | ON  |     |     |
| BONUS AT 60,000<br>POINTS |     |     |     |     | OFF | ON  |     |     |
| BONUS AT 30,000<br>POINTS |     |     |     |     | ON  | OFF |     |     |
| EASY                      |     |     |     |     |     |     | OFF | OFF |
| MEDIUM EASY               |     |     |     |     |     |     | ON  | OFF |
| HARD                      |     |     |     |     |     |     | ON  | ON  |
| MEDIUM HARD               |     |     |     |     |     |     | OFF | ON  |

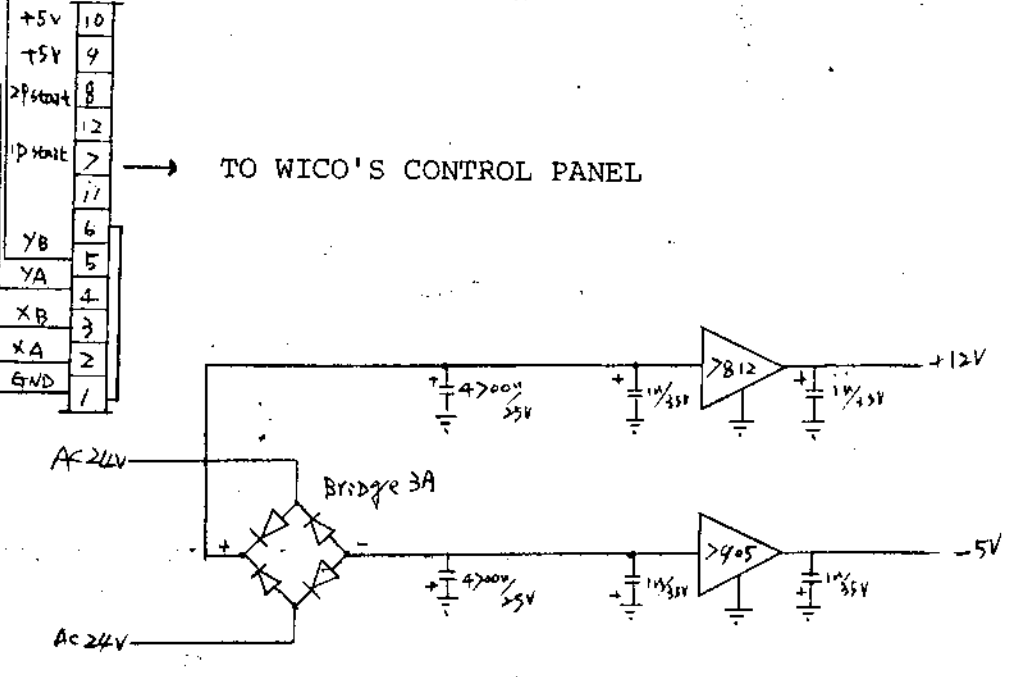
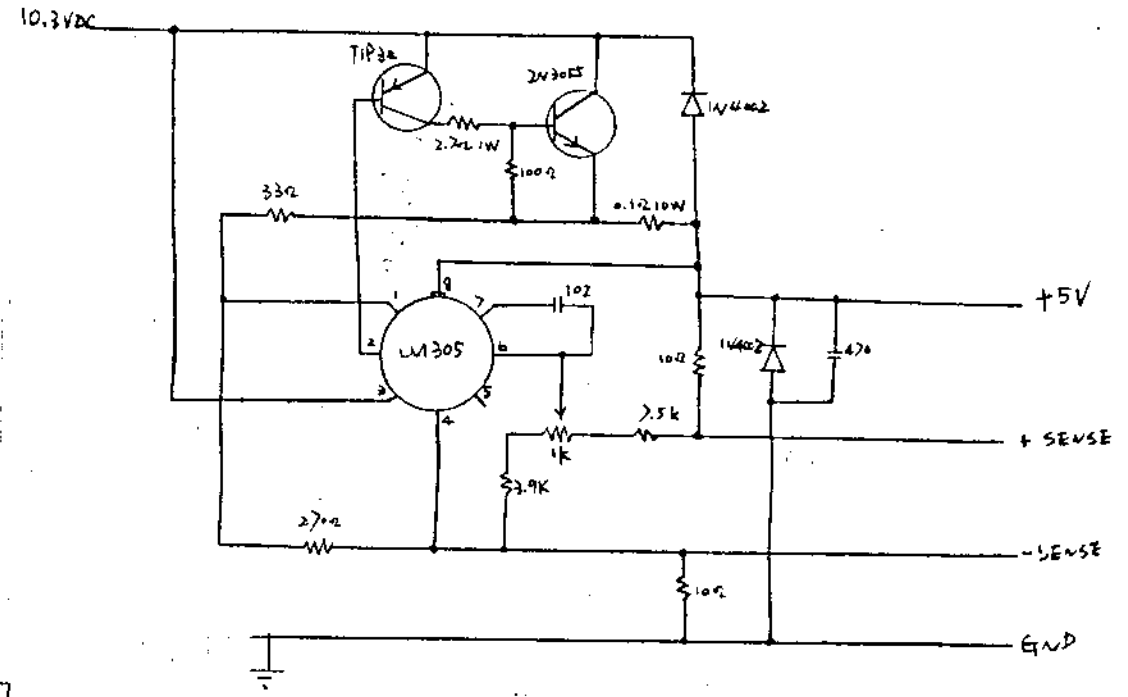
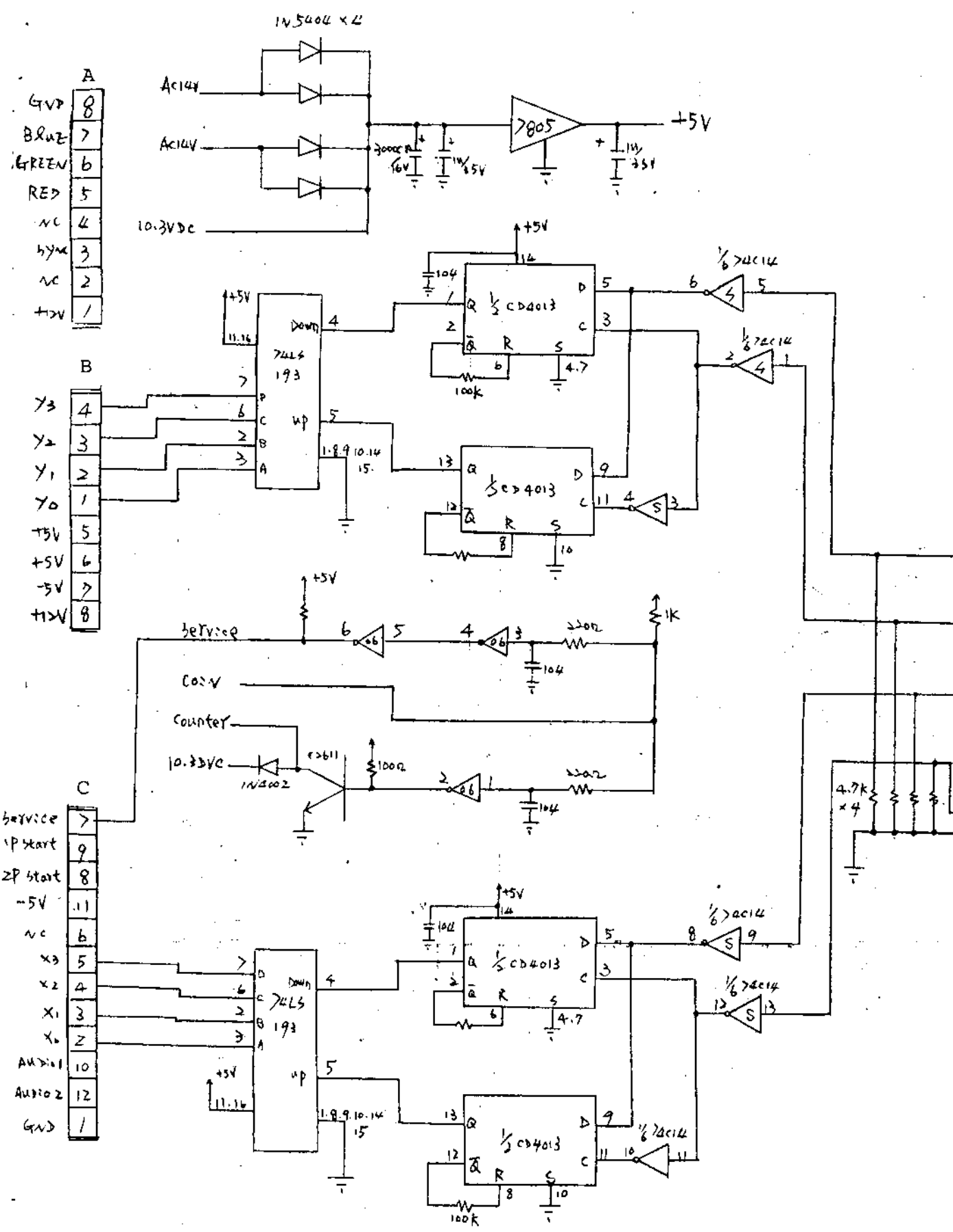
SWITCH A:

|          |
|----------|
| NOT USED |
|----------|

INSTRUCTION FOR TEST MODE:

- (1) To enter test mode:
  - (a) Power down
  - (b) Turn on while holding down  
1P / 2P start switches
- (2) Now in test mode. If not, repeat (1) (a) and (1) (b).
- (3) Test manuel on screen:
  - (a) cycle to required item using 1P button
  - (b) enter specific test using 2P button
  - (c) cycle next test using 1P button
  - (d) leave test by cycling to start or  
turn off/on.



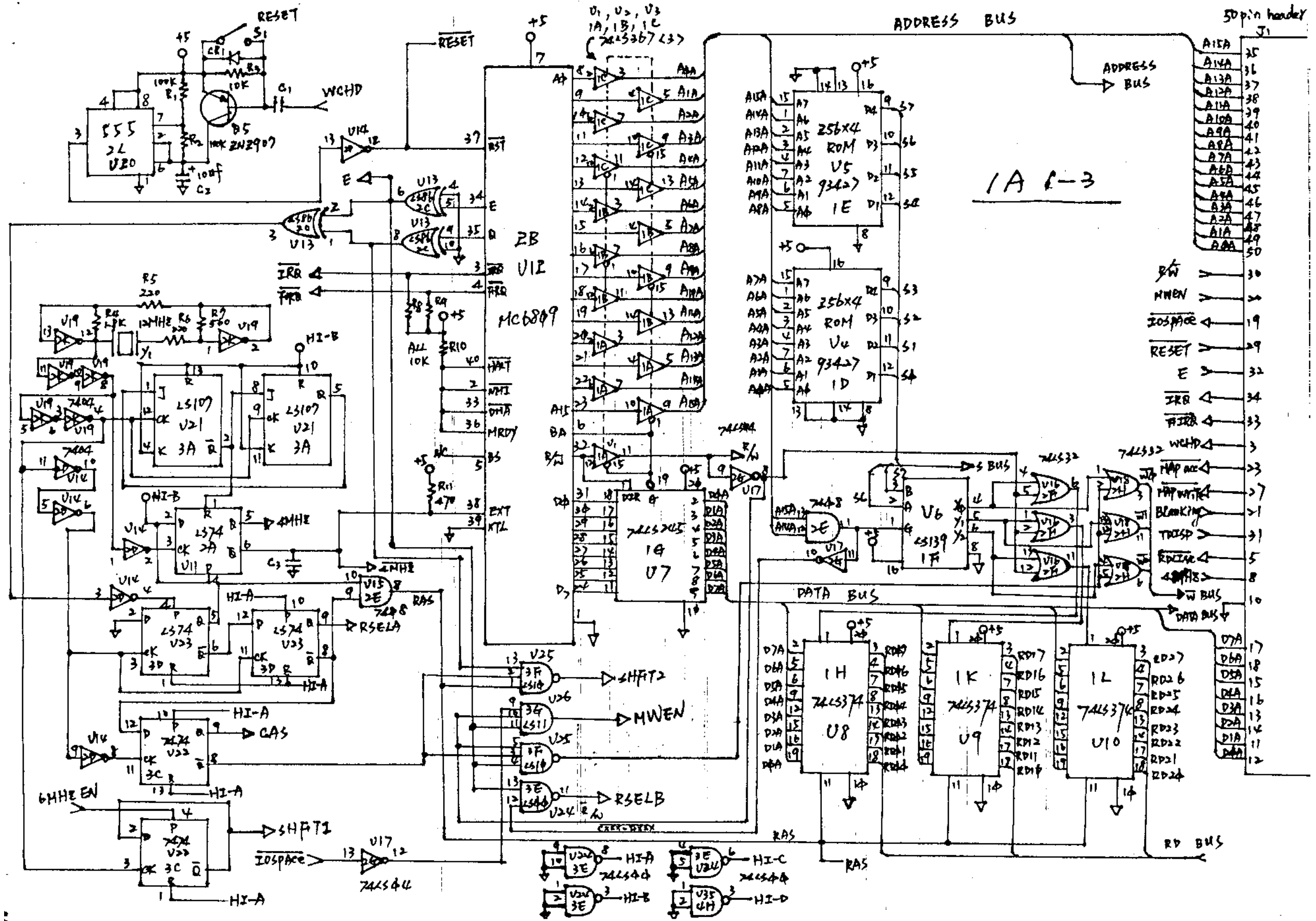


- A
- 8 GVP
- 7 BLUE
- 6 GREEN
- 5 RED
- 4 NC
- 3 5V
- 2 NC
- 1 +5V
- B
- 4 Y3
- 3 Y2
- 2 Y1
- 1 Y0
- 5 +5V
- 6 +5V
- 7 -5V
- 8 +12V
- C
- 7 Service
- 9 IP start
- 8 ZP start
- 11 -5V
- 6 NC
- 5 X3
- 4 X2
- 3 X1
- 2 X0
- 10 AUX1
- 12 AUX2
- 1 GND

- 10 +5V
- 9 +5V
- 8 +12V
- 7 IP start
- 6 YB
- 5 YA
- 4 XB
- 3 XA
- 2 GND
- 1

TO WICO'S CONTROL PANEL

CONVERT BOARD



1A 1-3

50 pin header J1

|      |    |
|------|----|
| A15A | 35 |
| A14A | 36 |
| A13A | 37 |
| A12A | 38 |
| A11A | 39 |
| A10A | 40 |
| A9A  | 41 |
| A8A  | 42 |
| A7A  | 43 |
| A6A  | 44 |
| A5A  | 45 |
| A4A  | 46 |
| A3A  | 47 |
| A2A  | 48 |
| A1A  | 49 |
| A0A  | 50 |

|          |    |
|----------|----|
| RW       | 30 |
| MWEN     | 36 |
| I/Ospace | 19 |
| RESET    | 29 |
| E        | 32 |
| IRB      | 34 |
| WRB      | 33 |
| WCHD     | 3  |
| MAPacc   | 23 |
| MAPwrite | 27 |
| BLANKING | 21 |
| TRASP    | 21 |
| RDEN     | 5  |
| WRDEN    | 8  |
| DATA BUS | 10 |

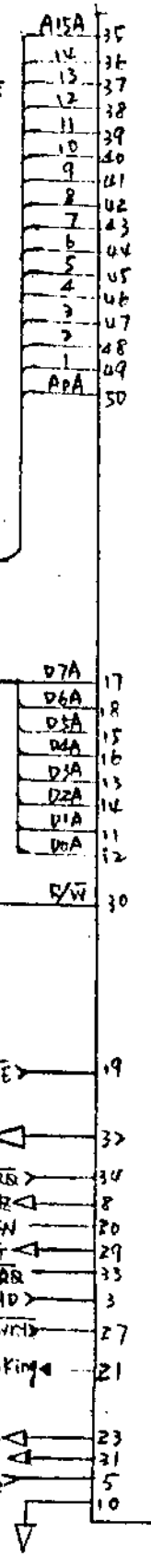
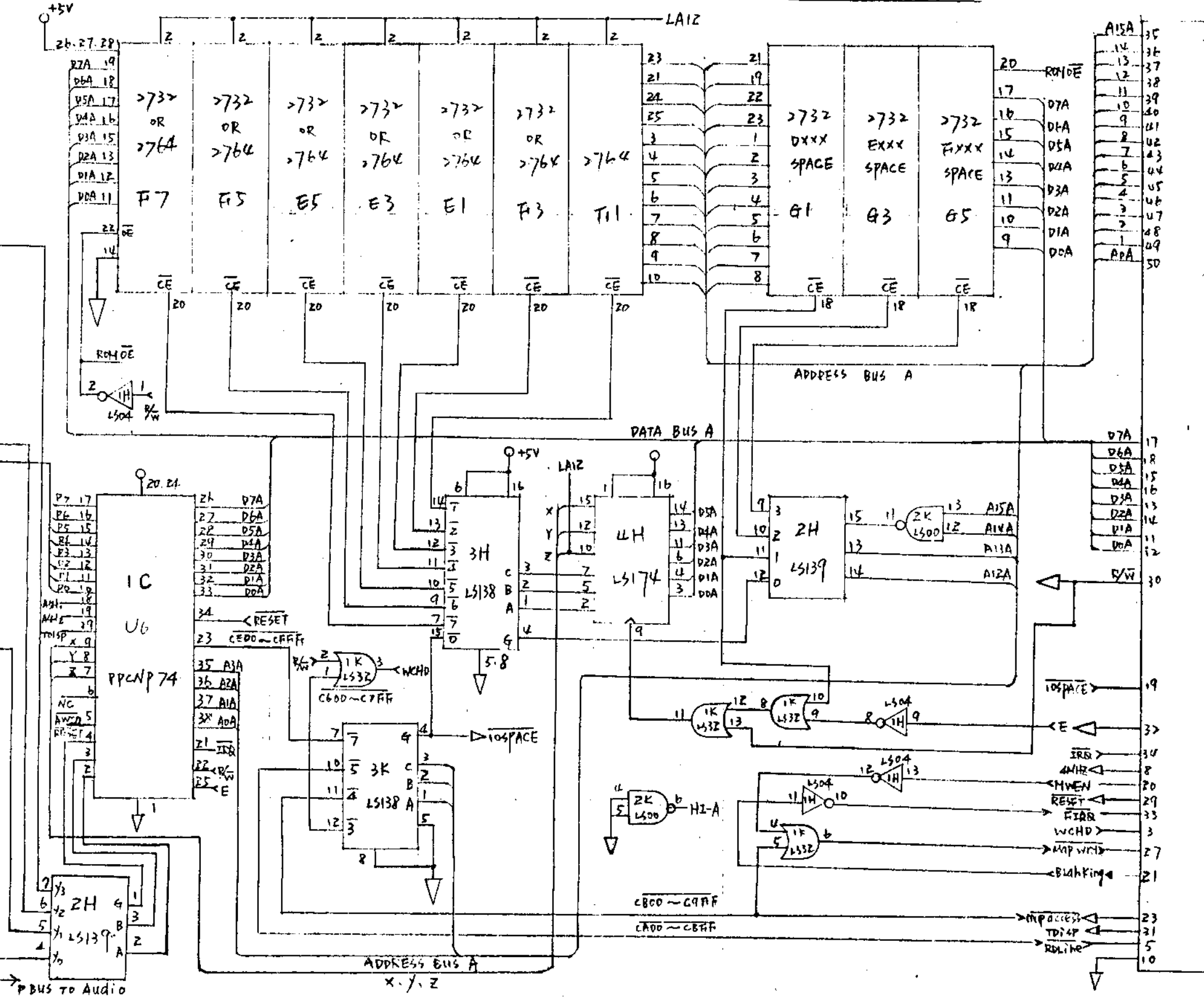
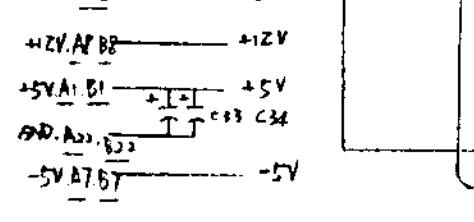
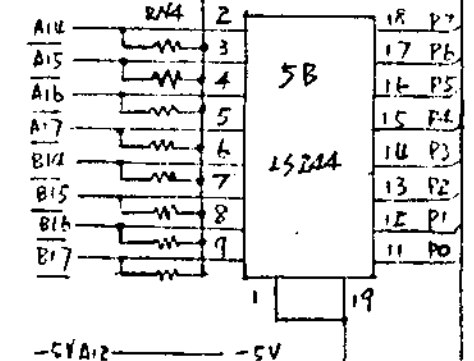
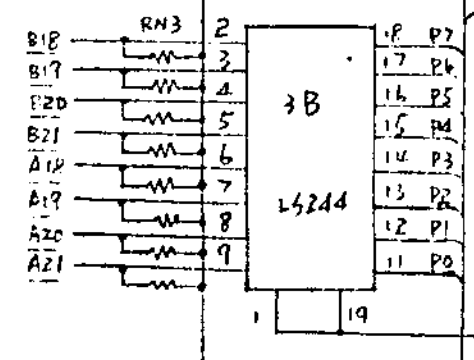
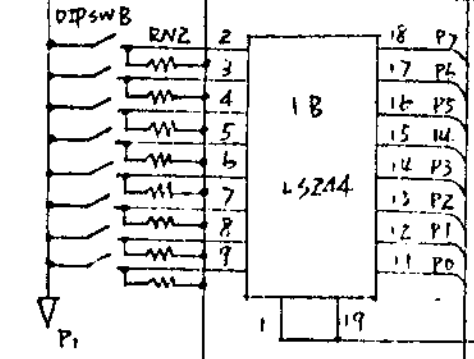
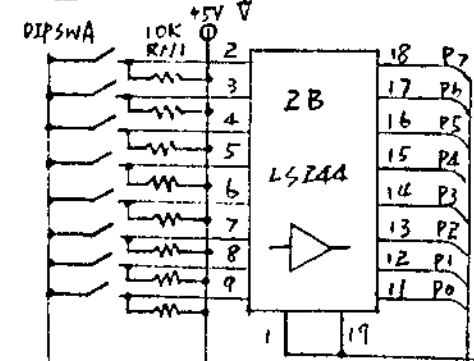
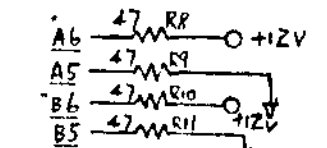
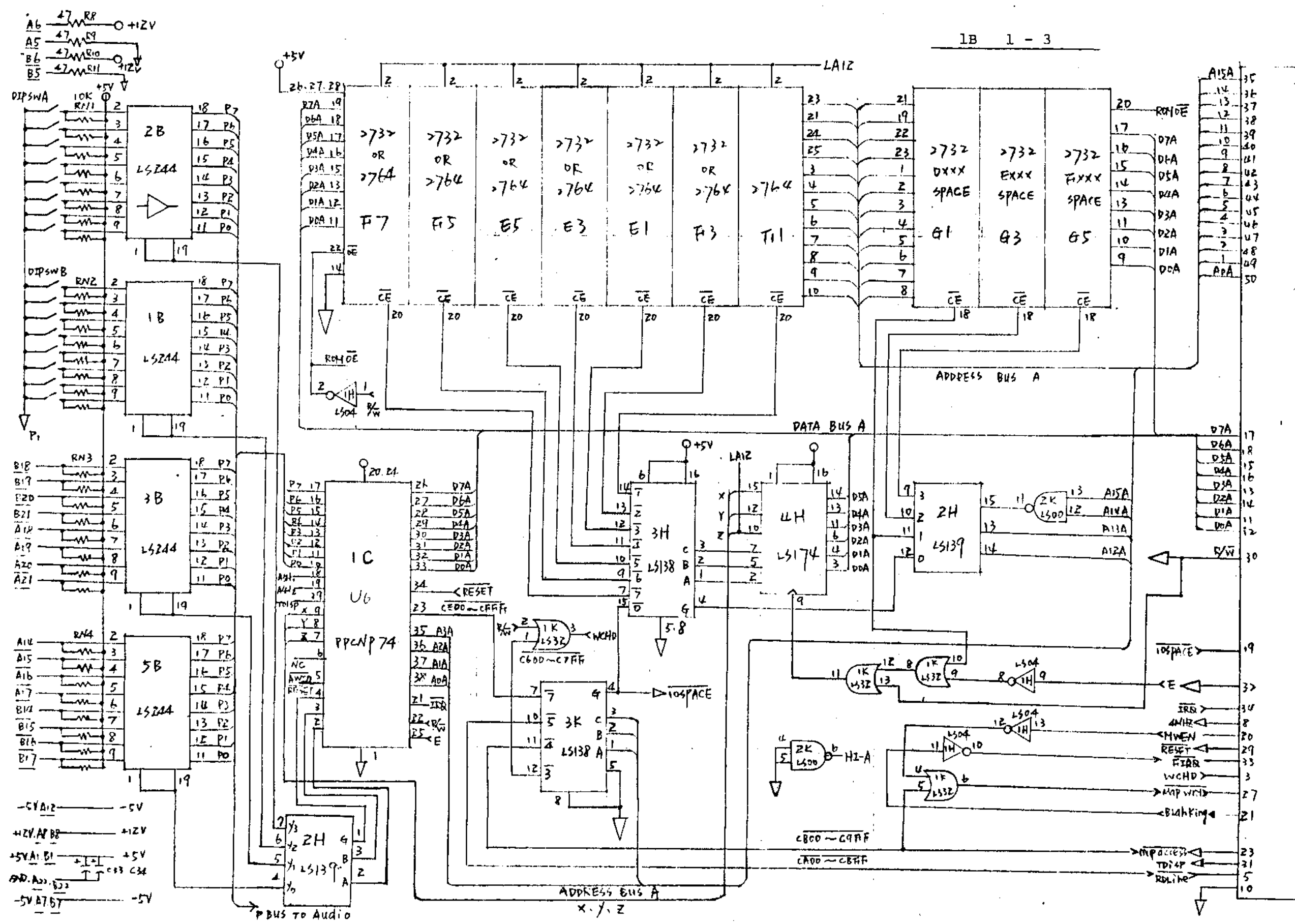
|     |    |
|-----|----|
| D7A | 17 |
| D6A | 18 |
| D5A | 15 |
| D4A | 16 |
| D3A | 13 |
| D2A | 14 |
| D1A | 11 |
| D0A | 12 |

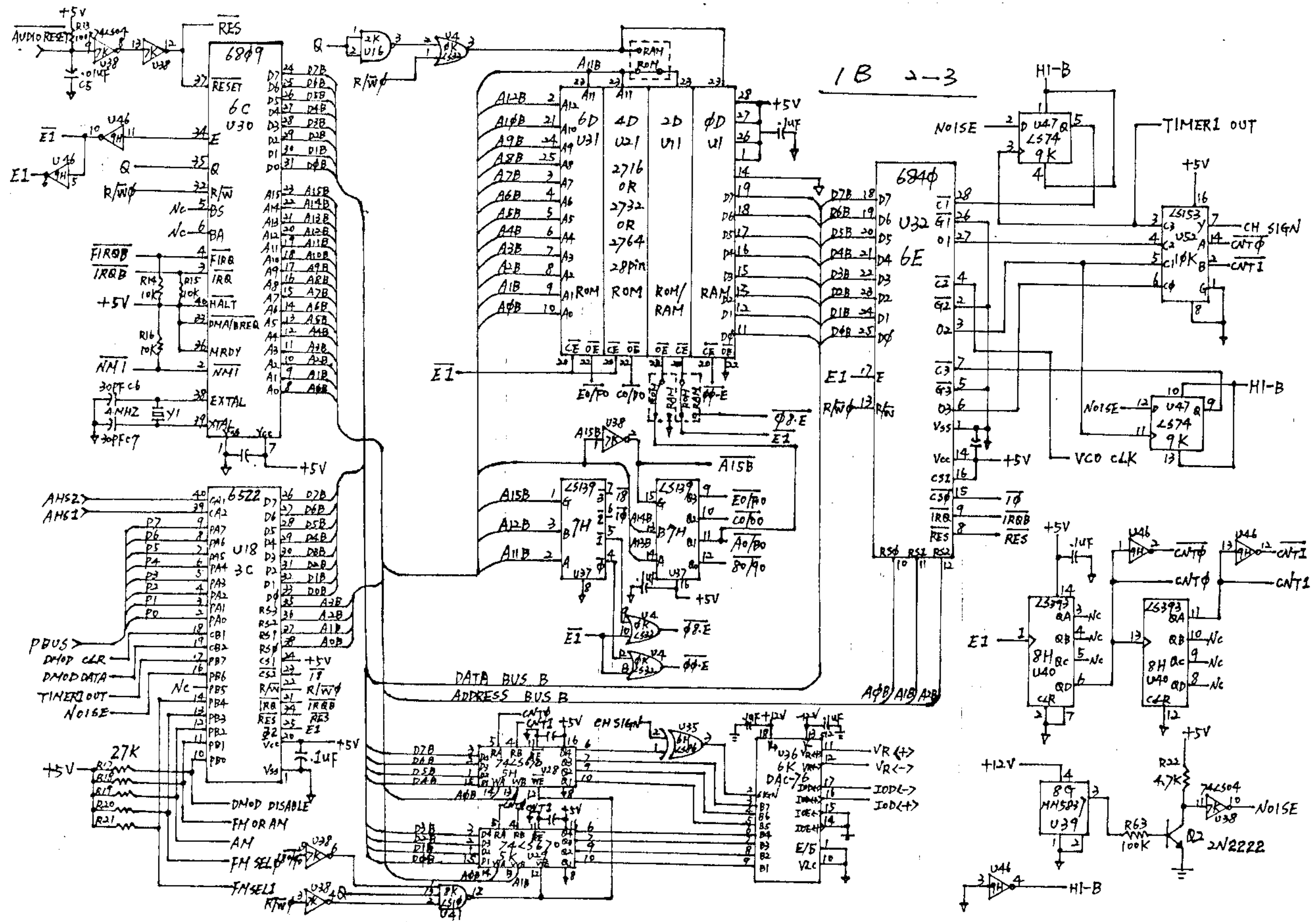
|      |    |
|------|----|
| RD27 | 3  |
| RD26 | 4  |
| RD25 | 7  |
| RD24 | 8  |
| RD23 | 13 |
| RD22 | 14 |
| RD21 | 17 |
| RD20 | 18 |

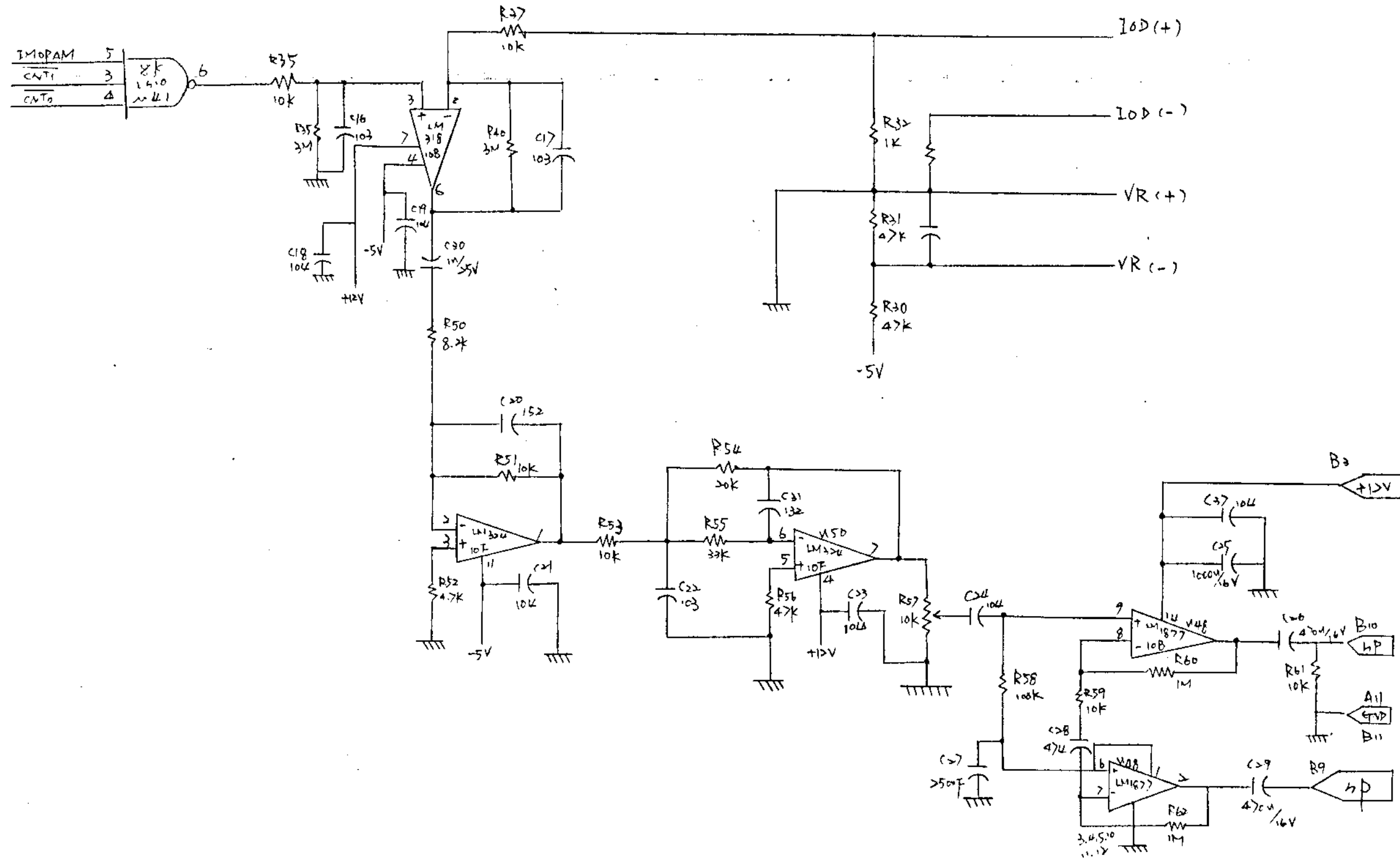
|        |      |
|--------|------|
| U20 3E | HI-A |
| U20 3E | HI-B |
| U20 3E | HI-C |
| U20 3E | HI-D |

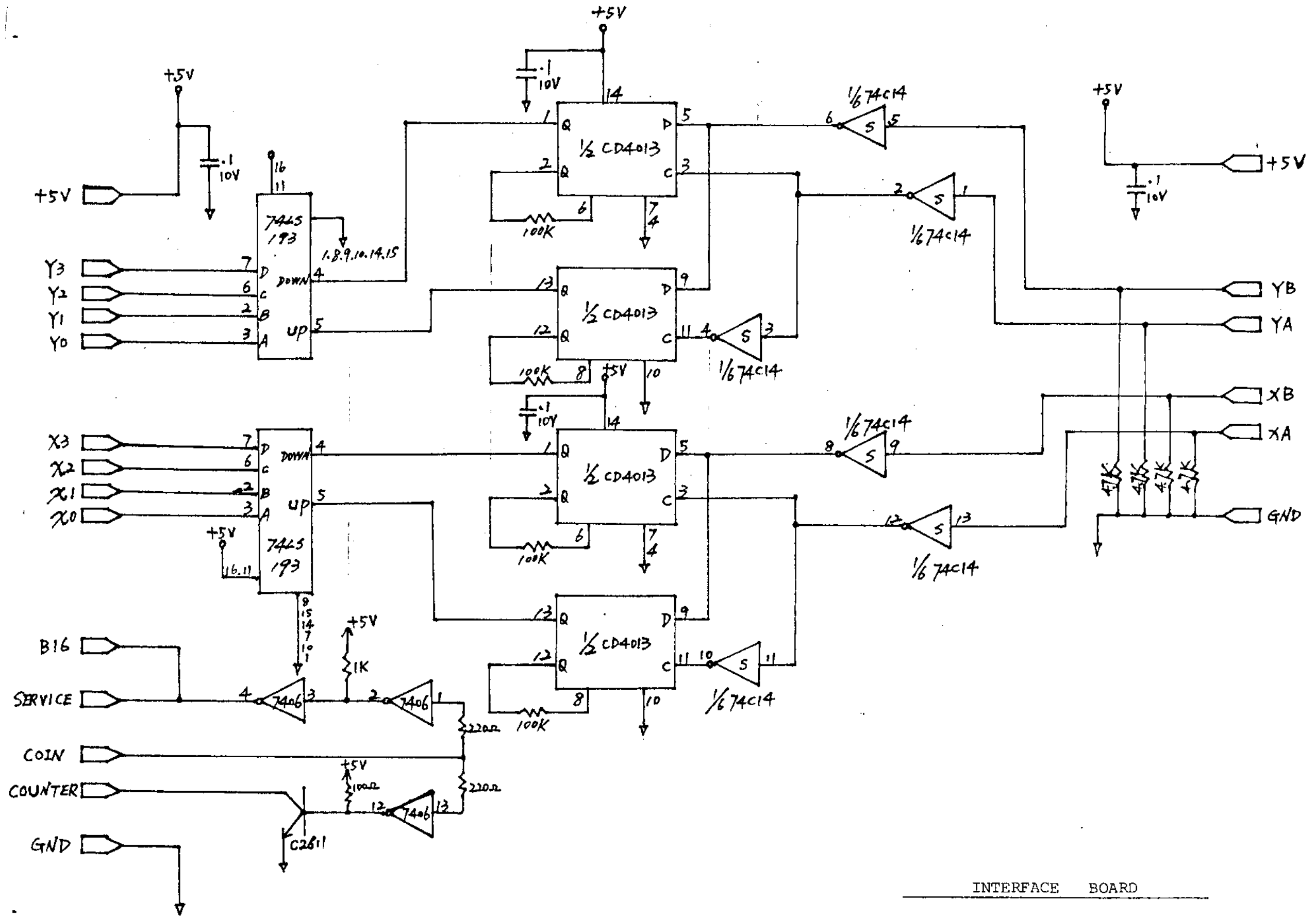












INTERFACE BOARD