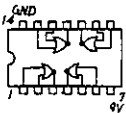


bleeps  
and  
peeps

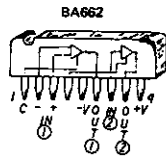
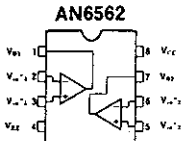
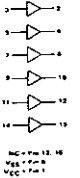
[WWW.BLEEPS-AND-PEEPS.COM](http://WWW.BLEEPS-AND-PEEPS.COM)



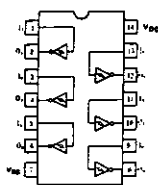
**MC14001B CP**  
Quad 2-input NOR Gate



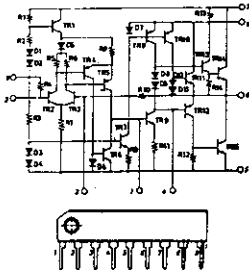
**MC14050B**  
HEX BUFFERS



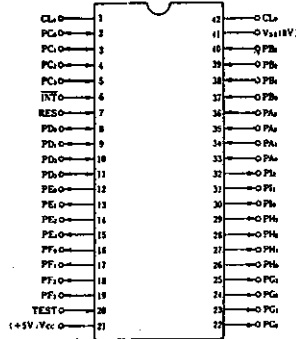
**HD14584B**  
Hex Schmitt Trigger



**LA4140**



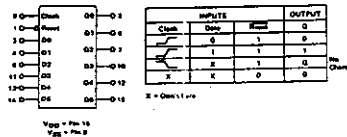
**μPD650C**  
(Top View)



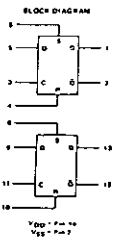
μPD650C-085 FUNCTIONAL DESCRIPTION

| Port | No. | No. | Description   |
|------|-----|-----|---|
| PH   | 0   | 28  | Scanning signal outputs to switches<br>Switching signal buffers to STATUS BUFFER & GATE |
|      | 1   | 27  |   |
|      | 2   | 26  |   |
| PA   | 0   | 32  | Switch scanning signal inputs<br>STATUS (TEMPO CLOCK, START/STOP, TAP) inputs           |
|      | 1   | 34  |   |
|      | 2   | 35  |   |
| PB   | 0   | 37  | Inputs from switch board switches   |
|      | 1   | 38  |   |
|      | 2   | 40  |   |
| PC   | 0   | 22  | Drive signals to switch board LEDs  |
|      | 1   | 23  |   |
|      | 2   | 25  |   |
| PE   | 0   | 12  | MEMORY ADDRESS  |
|      | 1   | 13  |   |
|      | 2   | 15  |   |
| PD   | 0   | 8   | PITCH DATA  |
|      | 1   | 9   |   |
|      | 2   | 11  |   |
| PF   | 0   | 16  | Data Inputs/Outputs   |
|      | 1   | 17  |   |
|      | 2   | 18  |   |
| PI   | 0   | 30  | Memory WE   |
|      | 1   | 31  |   |
|      | 2   | 32  |   |

**MC14174B**  
HEX TYPE D FLIP-FLOP



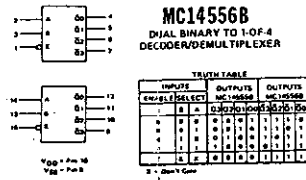
**MC14013B**  
DUAL TYPE D FLIP-FLOP



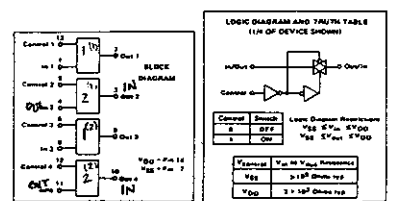
TRUTH TABLE

| INPUTS |      |       | OUTPUTS |    |
|--------|------|-------|---------|----|
| CLOCK  | DATA | RESET | Q       | Q' |
| 0      | X    | X     | Q       | Q' |
| 1      | 0    | 0     | 0       | 1  |
| 1      | 1    | 0     | 1       | 0  |
| 1      | 0    | 1     | 0       | 1  |
| 1      | 1    | 1     | 1       | 0  |

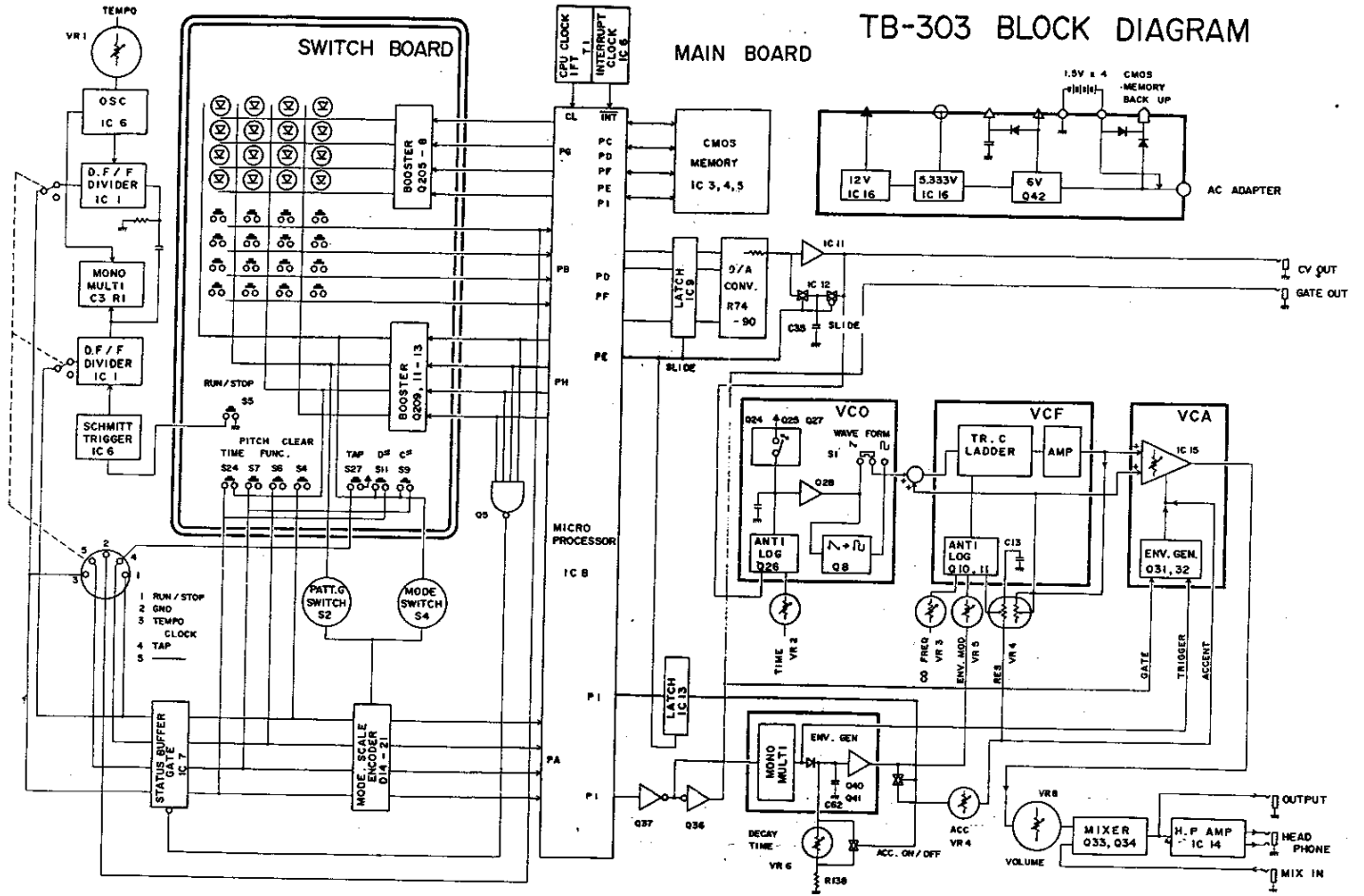
**MC14556B**  
DIAL BINARY TO 1-OF-4  
DECODER/DEMULPLEXER

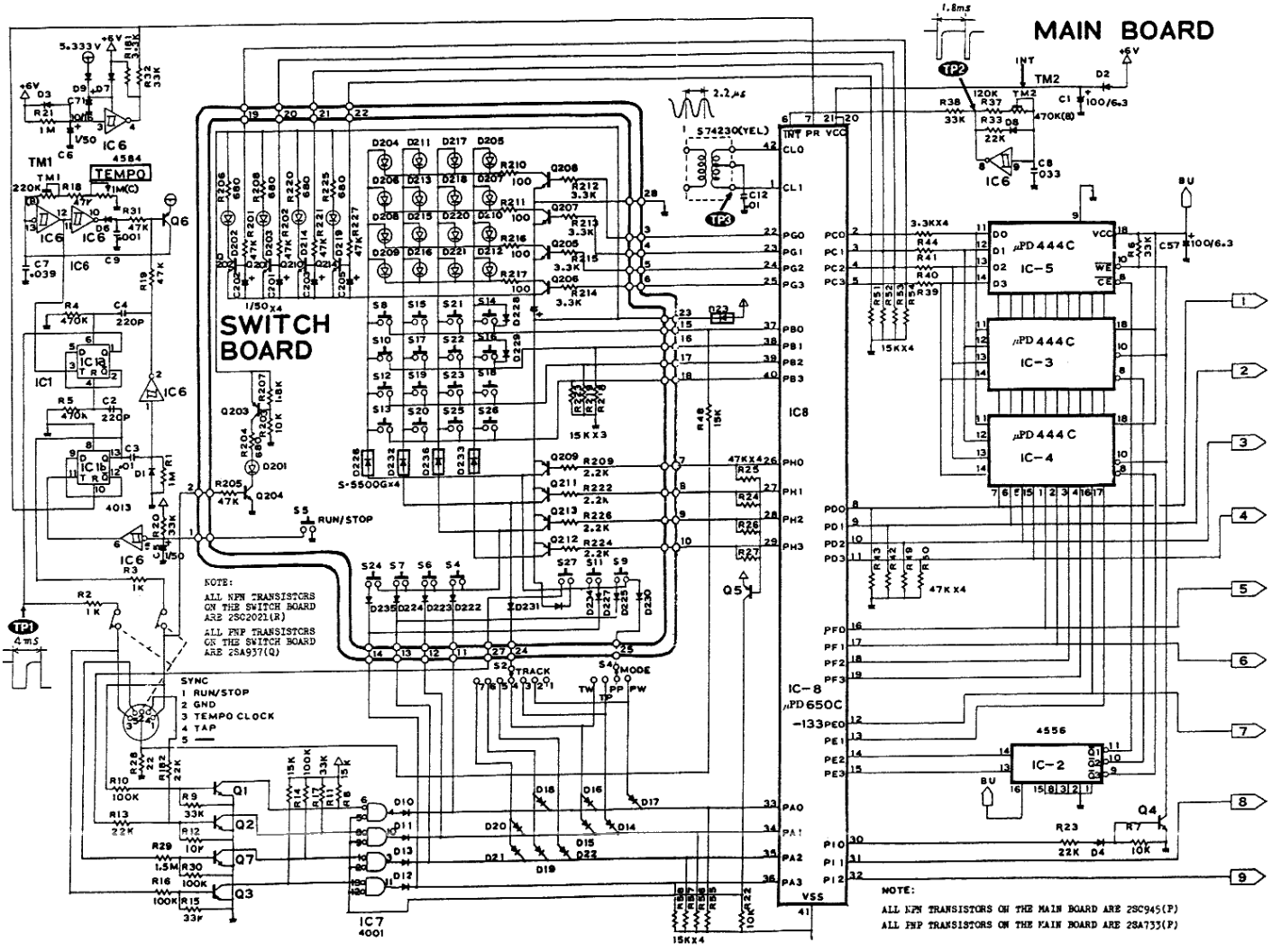


**MC14066B**  
QUAD ANALOG SWITCH  
QUAD MULTIPLEXER



# TB-303 BLOCK DIAGRAM





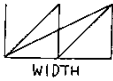


Feb.19,1982

TB-303

VCO

Check point: Q28 source or S1 WAVE-FORM terminal.  
Set TUNE in its middle position.  
With PITCH mode. While tapping CL and CH keys alternately, adjust TM5 WIDTH for 2:1 waveforms:

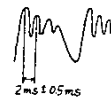


Press A key and adjust TM4 for 110Hz.  
Confirm 4:1±0.5% with CL and CH + TRANSPOSE UP.

VCF

Check point: TP6  
Panel settings:  
CUTOFF FREQ : center  
WAVEFORM : SAWTOOTH  
RES : Full clockwise  
ENV MOD,  
DECAY, ACC : Full counterclockwise

Adjust TM3 for:



View from foil side

PRELIMINARY DIAGNOSIS

BATTERY

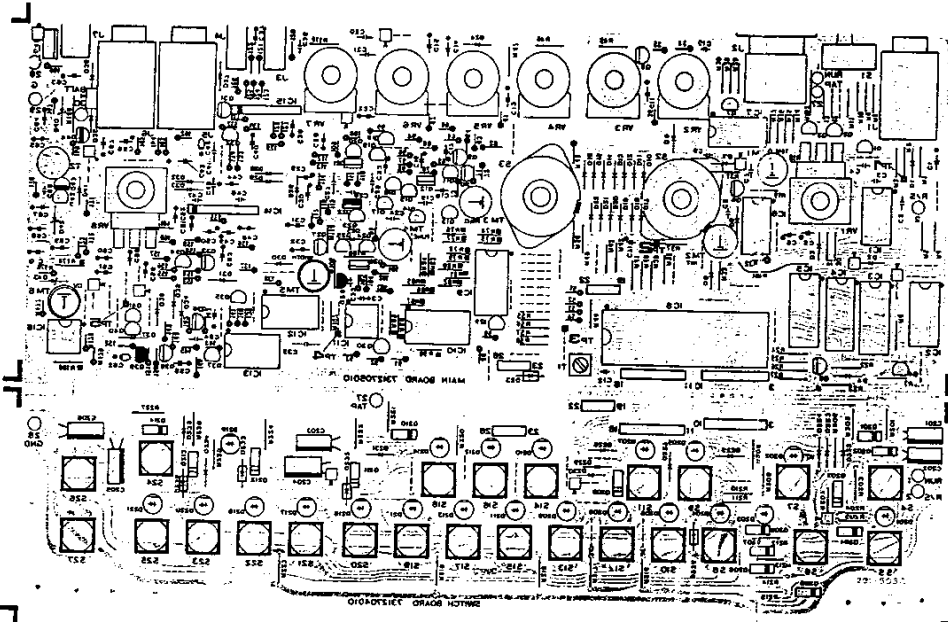
First check the DC voltage.  
Most users are not so familiar with battery operated equipment as to suspect aged dry cells in the malfunctioning (silent) TB-303 when LEDs other than RUN/BATTERY are lit up.

MISOPERATION

The versatile TB-303 inevitably needs to be manipulated according to what is instructed in the TB-303 Owner's manual.  
Symptoms listed below are likely to be found (by the user) in a unit which will be returned for servicing, as an evidence of defect.  
Confirm the operation following to the steps described in the manual — on the page(s) referenced.

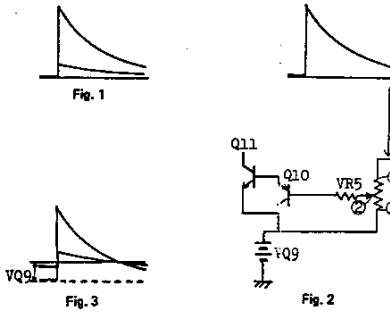
- Patterns (especially note value) are not reproduced as they should be.  
" [4] TO WRITE YOUR OWN BASS LINE" PP. 49-64
- Incorrect PATTERN selection  
"IMPORTANT NOTES" P. 3
- The LED above the selected PATTERN switch does not flush  
" [2] Setting the STEP number" P. 53  
"b. WRITING A BASS PATTERN IN 3/4" PP. 55-57
- TRACK fails to store data being written into it.
- Phrases do not repeat in order in TRACK PLAY mode.  
"SELECTING THE TRACK" PP. 23-32  
"B. TO WRITE YOUR OWN BASS LINE" PP. 64-68
- Melody does not run at the beginning of the 1st measure in TRACK PLAY mode.  
" [4] LET'S PLAY THE TRACK" PP. 31-32

|  |          |
|--|----------|
|  | 2SC536P  |
|  | 2SA733P  |
|  | 2SC2021R |
|  | 2SA937Q  |



VCF ENVELOPE MODULATION

In the conventional VCF configuration, envelope modulation voltages applied to modulation control voltage input of VCF rise from a fixed potential to their values regardless of shape and amount of envelope and fall back to the same potential. Fig. 1. In this setup, an attempt to deepen envelope modulation is increment of control voltage in one direction, only to open up filter. Resultants are; higher the control voltage input, longer the period of time cutoff point travels through higher frequency range in which significant aural sound characteristic changes do not occur, whereas notes are brightened. To compensate for the limitation this impose, there is a gimmick in the TB-303 VCF circuit. The Q9 has a key role in this arrangement. See Fig. 2. It develops bias for Q10 and Q11 to set initial cutoff point at the center of frequency range. Within the range even a small amount of voltage change can create a appreciable modulation.



Rotating wiper ② of VR5 closer to terminal ③ increases ENV MOD voltage being fed to base of Q10 while changing the bias which in turn lowers VCF cutoff frequency. See Fig. 3. This is equal to turning CUTOFF knob counterclockwise and, since Q10 and Q11 in combination convert control voltage to the current in anti-log fashion, the cutoff point stays in an effective frequency range for the most portion of envelope sweeping duration.

PARTS LIST

PANEL

|            |                |       |        |
|------------|----------------|-------|--------|
| 2201061500 | Top case       | N615  | top    |
| 2201061400 | Bottom case    | N-614 | bottom |
| 2202062300 | Battery cover  | N-623 |        |
| 2202062400 | Battery holder | N-624 |        |
| 2221027700 | Sub panel      | N-277 |        |

SOCKET

|          |               |                |            |
|----------|---------------|----------------|------------|
| 13429706 | DIN connector | TCS0737-01-010 | Sync       |
| 13448218 | Jack          | HLJ0306-01-030 | MONO       |
| 13448217 | Jack          | HLJ0305-01-010 | STEREO     |
| 13449401 | Jack          | SG8026         | MINI       |
| 13449706 | Adaptor jack  | HECD470-01-230 | AC adaptor |

TRANSFORMER COIL

|          |          |                 |                 |
|----------|----------|-----------------|-----------------|
| 12449217 | IFT coil | S74230 (yellow) | CPU clock       |
| 12449507 |          | MC102C          | DC-DC converter |

SWITCH

|          |            |        |                                  |
|----------|------------|--------|----------------------------------|
| 13119601 | SRM1017    | rotary | TRACK, INSTRUMENT                |
| 13119303 | SRM1034    | rotary | MODE                             |
| 13129715 | KHC10901   | push   | All switches on the switch board |
| 13159114 | SSFZ-22-07 | slide  | SYNC in/out                      |

SEMICONDUCTOR

|            |                      |                       |  |
|------------|----------------------|-----------------------|--|
| LSI        |                      |                       |  |
| 15179128   | μPCD650C-133         | CMOS CPU              |  |
| 15179305   | μPD444C              | CMOS RAM              |  |
| IC         |                      |                       |  |
| 15159101H0 | HD14001BP            | Quad 2-input NOR gate |  |
| 15159105   | HD14013BP or MN4013B | Dual type D flip-flop |  |
| 15129128   | HD14060BP            | Hex buffers           |  |

|            |           |                       |
|------------|-----------|-----------------------|
| 15159115   | HD14066BP | Quad analog switch    |
| 15159133   | HD14174BP | Quad multiplexer      |
| 15159308   | HD14566BP | Hex type D flip-flop  |
|            |           | Dual binary to 1-of-4 |
|            |           | Decoder/Demultiplexer |
| 15189138   | AN6662    | Dual op amp           |
| 15229802   | BA962(A)  | Variconductance amp   |
| 15159303H0 | HD14584B  | Hex Schmitt tripph    |
| 15199509   | LA4140    | AF Power amp          |

TRANSISTOR

|          |            |         |
|----------|------------|---------|
| 15119105 | 2SA733(P)  |         |
| 15119602 | 2SB647(C)  |         |
| 15119606 | 2SB596(O)  |         |
| 15129602 | 2SD667(C)  |         |
| 15129121 | 2SC2021(R) |         |
| 15129130 | 2SC1583(F) | Dual Tr |
| 15129131 | 2SC2291(F) | Dual Tr |

FET

|          |            |
|----------|------------|
| 15139101 | 2SK30TM(Y) |
| 15139102 | 2SK30TM(O) |

LED

|          |        |
|----------|--------|
| 15029108 | GL3AR2 |
|----------|--------|

DIODE

|          |                       |            |
|----------|-----------------------|------------|
| 15019120 | 1S2473                | Si diode   |
| 15019209 | S-5500G               |            |
| 15019122 | 1S-1887FM             | Ge diode   |
| 15019655 | RD6.8EB-3 or 15019656 | RD6.8EB2-T |
| 15019653 | RD15EB-3              |            |
| 15019126 | 1SS-133               | Si diode   |
| 15019630 | 1SB-46A               |            |

POTENTIOMETER

|          |                       |                            |
|----------|-----------------------|----------------------------|
| 13218333 | K161100FAE-1MC        | tempo                      |
| 13218334 | VM11R851A-5M1411-50KA | master vol. & power switch |
| 13219331 | K16180-50KB           | TUNING, ACCENT             |
| 13219340 | K16180-50KA           | CUT OFF FREQ, ENV MOD      |
| 13219339 | K16180-1MA            | DECAY                      |
| 13219774 | K182700W-50KB x 2     | RESONANCE                  |
| 13299116 | H1051A016-47kB        | trimmer                    |
| 13299118 | H1051A021-220kB       | trimmer                    |
| 13299122 | H1051A023-470kB       | trimmer                    |
| 13299543 | H1021A011-4.7kB       | trimmer                    |

RESISTOR

|          |           |               |
|----------|-----------|---------------|
| 12559708 | FRNB 2.7Ω | Fuse resistor |
|----------|-----------|---------------|

CIRCUIT BOARD ASSEMBLY

|            |              |            |                |
|------------|--------------|------------|----------------|
| 7312705010 | MAIN BOARD   | OP3127-050 | (PCB 291 502C) |
| 7312704010 | SWITCH BOARD | OP3127-040 | (PCB 291 503C) |

KNOB

|            |      |       |                   |
|------------|------|-------|-------------------|
| 2247019400 | Knob | N-194 | master VR & TEMPO |
| 2247019500 | Knob | N-195 | instrument level  |
| 2247019100 | Knob | N-191 | RUN/STOP, TAP     |
| 2247019200 | Knob | N-192 | step number       |
| 2247019800 | Knob | N-198 | rotary switch     |

OTHERS

|            |                 |                |
|------------|-----------------|----------------|
| 1299503    | PCB Holder      | LCBS-12NS      |
| 2219028700 | Holder          | N-287          |
| 2343087600 | Flat cable      | 8-core         |
| 2343087700 | Flat cable      | 4-core         |
| 2345012500 | Terminal board  | Battery + side |
| 2345012600 | Terminal spring | Battery - side |
| 2224011500 | Dust cover      | N-115          |
| 2224050600 | Dust cover      | N-506          |



# MAIN BOARD

# TB-303 POWER SUPPLY

