SG502 Low Distortion Mods

The mods shown will reduce the distortion of the SGt502 to under 0.01%, typically **well** under (0.002% or less).

The single largest contributor of nonlinearity in the unmodified circuit is the T-pad attenuator -> non-ohmic wiper contact resistance -> which can cause 0.05% 3rd harmonic under worst case conditions.

The next most significant source is the high dynamic impedance in the emitter circuit of Q140 which causes primarily 2nd harmonic.

Modify at your own risk because no guarantee is expressed or implied concerning performance!! I am supplying this info as a favor and in no way am I committing Tektronix, Inc. to be responsible. If you encounter problems, please feel free to contact me. The mods have been tried and proven successful by other people.

R95 establishes the settling time of the oscillator. Larger values reduce distortion, but increase settling time. (Possibly to the point of instability) 180k is a good compromise for low distortion but may require 15 seconds to stabilize amplitude.

Good Luck

Bruce E. Hofer
Project Engineer
Tektronix, Inc.

20v
5z1
2k
Q140
Change Q140 emitter circuit

VOLTAGE & WAVEFORM CONDITIONS

* R164, R165A, R165B, R166 COMPRISE A T-BRIDGE ATTENUATOR

VAR AMPLITUDE
*R165A 300K
*R165B 30K
S160 STEP ATTEN
A 10 dB
B 20 dB
C 40 dB
J180 600Ω
EFF: CUSTOMER WIRED SN B060599 & BELOW
EFF: SN B060600 - UP
J210 0-5V 600Ω
P205
27A
28A

Remove T pad (R165) and short across R164, R166

Remove to disable square wave generator. Optional depending upon your needs.

5K VAR AMPL

X

GAIN

Remove R97
Sub 1k2 for C97
Remove C97

Short out C110

3k6

2N3906
1k2

180k (see note)

EFF: SN B070750 & BELOW

EFF: SN B070751 & UP

25A
26A

SEE PARTS LIST FOR EARLIER VALUES AND SERIAL NUMBER RANGES OF PARTS OUTLINED OR DEPICTED IN GREY.

S50 SEE DETAILS MULTIPLIER

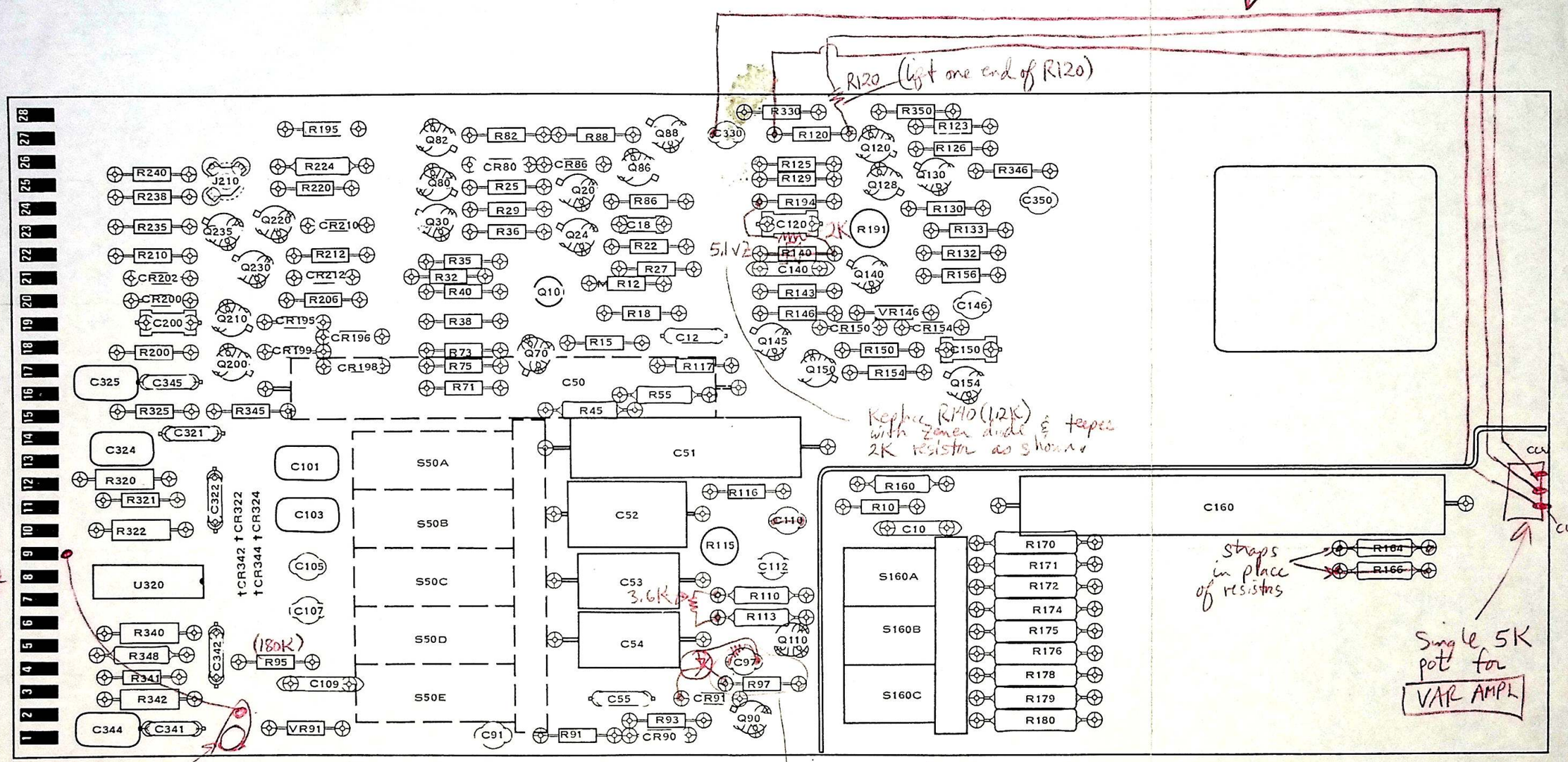
SG 502

1430-09
REV.D, NOV. 1976

RC OSCILLATOR ① DEM 0972

RC OSCILLATOR ①

PARTS LOCATION GRID

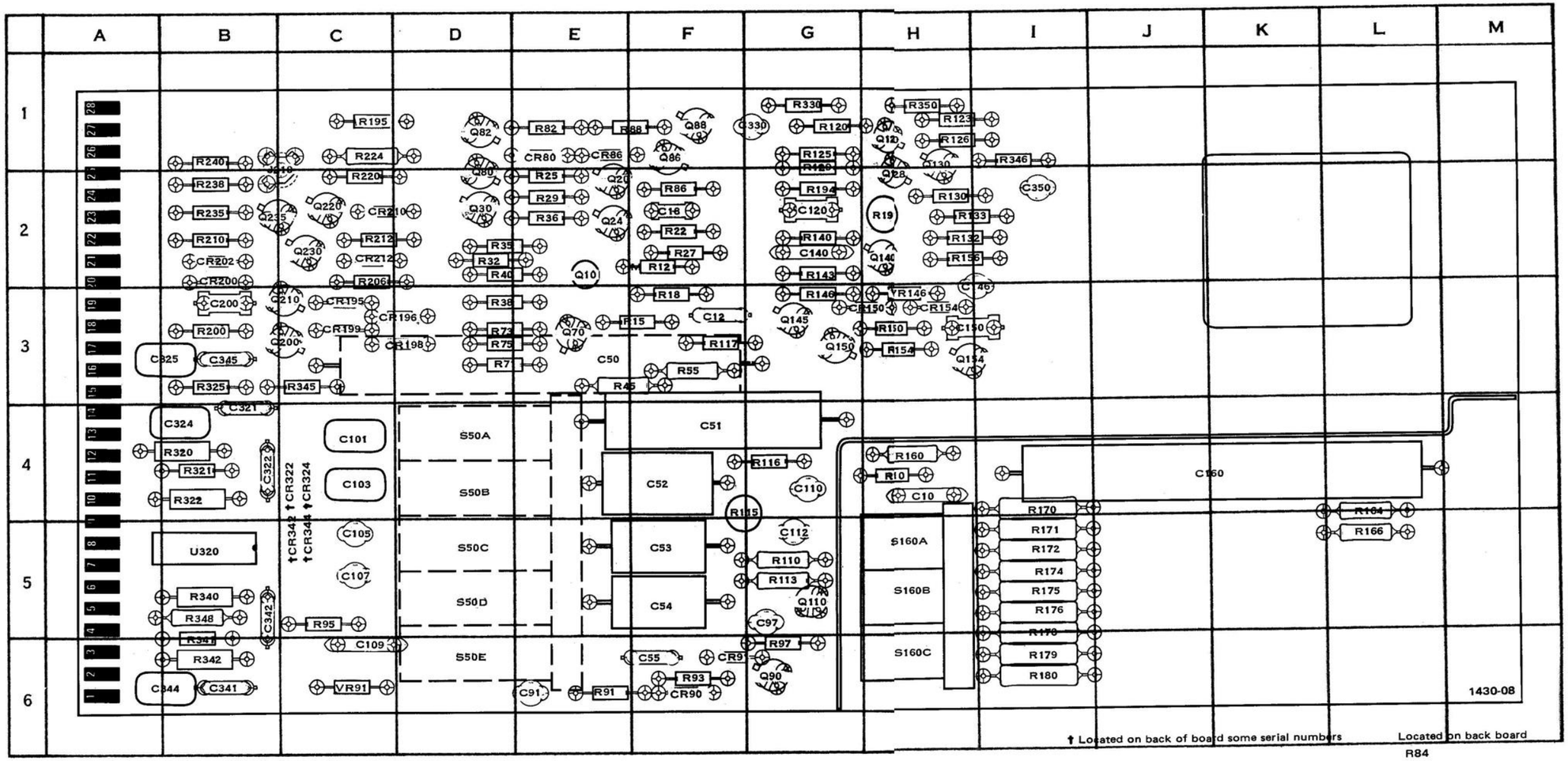


NOTE: COMPONENTS SHOWN WITH DASHED LINES ARE LOCATED ON BACK SIDE OF BOARD.

† Located on back of board some serial numbers

Located on back board
•R84

PARTS LOCATION GRID



† Located on back of board some serial numbers

Located on back board R84

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A1—Main circuit board.