

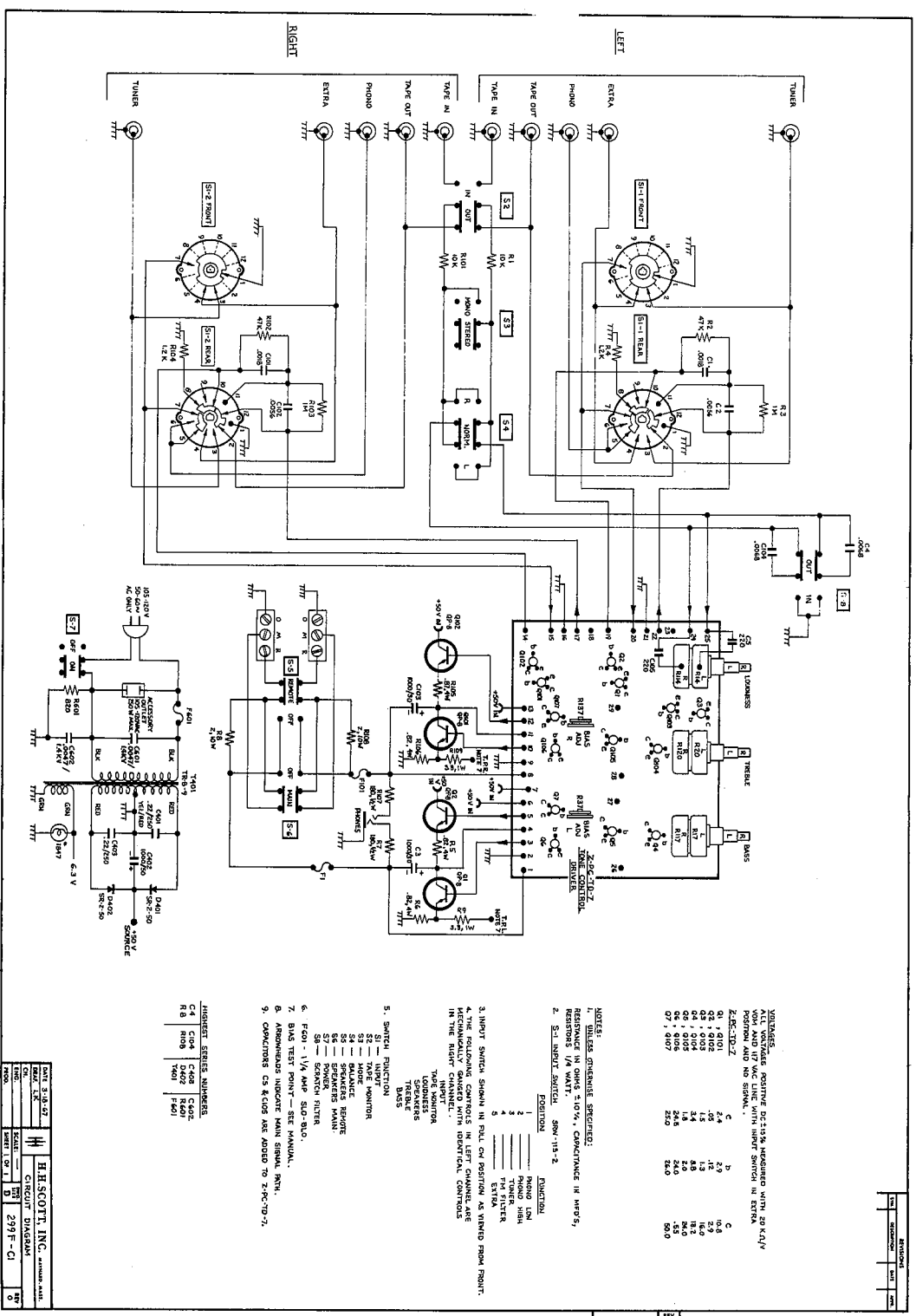
1. **Bias and Balance Settings and Voltage Checks**
Turn unit ON - watch carefully for any signs of voltage shorts. With bias pots (1k) still full ccw (from top of unit), check supply for 48 to 50. Now adjust balance pots (10k) for app. 25 volts from GEM each 1000/50 to ground. Adjust bias pots for .8 ma. current from each test point in the rear of the unit to ground
Check tone control supply for 25V (±10%)
2. **Sensitivity Check**
 - a. Audio Oscillator to EXTRA at .3 (±2 db) input. Connect 8 ohm load to Main speaker taps. Turn loudness pot to maximum. Observe output of 18 watts (12V). Check tape output jack with trouble shooting lead for the same output as input signal. At this point recheck bias for .8 ma.
 - b. Audio Oscillator to Tuner at .35 (±2 db) input. Connect 8 ohm to Main Speaker taps. Turn Loudness pot to maximum. Observe Output of 18 watts (12V).
3. **Distortion Check**
At 12V output, max. distortion .6%.
4. **Tape Monitor Switch Check**
Audio Oscillator to EXTRA at .3 input to L channel. Note output at left channel speaker terminal. Put Tape Monitor switch in the IN position. Note loss of output. Connect cable from L channel tape out to L channel tape in. Note restoration of signal out. Repeat process for R channel then return tape monitor to OUT position.
5. **Speakers Switch Check and Phone Jack Check**
Speakers switch to OFF position. Note complete loss of signal. Loudness to min., insert phone plug to phone jacks, remove speaker leads and connect to phone plug leads. Loudness to max., note drop of 26 ±2 db. Switch main speakers on, note restoration of signal. Switch remote speakers on, note drop in output of 1 to 2 db. Repeat for remote speaker terminals.
6. **Crosstalk and Stereo Switch Check**
At 1kc, turn loudness pot to #10 flat - return input voltage to .3. Mono-Stereo switch to Stereo. Balance switch to bal. L, note drop of 0 db. Balance switch to bal. R, note additional drop of 50 db. Return input voltage to previous setting Loudness pot to max., output to 0 db on Lv scale.
7. **Tone Control Check ("0" db lv scale)**

Bass	Treble
Boost 10 db ± 2 db	Boost 10 db ± 2 db
Cut 15 db ± 2 db	Cut 10 db ±2 db
8. **Frequency Response Check**
3 db down @ 20 cps or lower
3 db down @ 30 kc
9. **Regulation Check**
At 1 kc, load out - output rise 1 db maximum
10. **Noise Filter Check**
At 5 kc noise filter to "in" note 4 ±2 db drop.
11. **Preamplifier Gain Check**
Attenuate input 35 db from .3 at 1 kc input switch to phono high, input leads to phono, note output of 12v. Attenuate 5 db more, input switch to phono low, note 12V output.
12. **Preamplifier Frequency Response Check**
 - a. **Tuner**
3 db down @ 20 cps or lower, 1 db down @ 15 kc.
Sharp drop off beginning @ 17 to 20 kc bottoming at 35 to 38 kc (approx. 40 db down).
 - b. **Phono**

1 kc	0 db (REF.)
10 kc	-12 ±2 db
100 cps	+13 ±2 db
13. **Hum Checks**

Position	Loudness Pot	Max. Hum
Extra	0	3 mV
Extra	10	5 mV
Phono High	10	30 mV
Phono Low	10	30 mV
Tuner	10	10 mV
14. Repeat Steps 2 through 13 for R channel.

SERVICE BULLETIN
FOR
MODEL 299F SOLID STATE STEREO AMPLIFIER



NOTES: RESISTORS SHOWN IN FULL OHM POSITION AS VIEWED FROM FRONT.

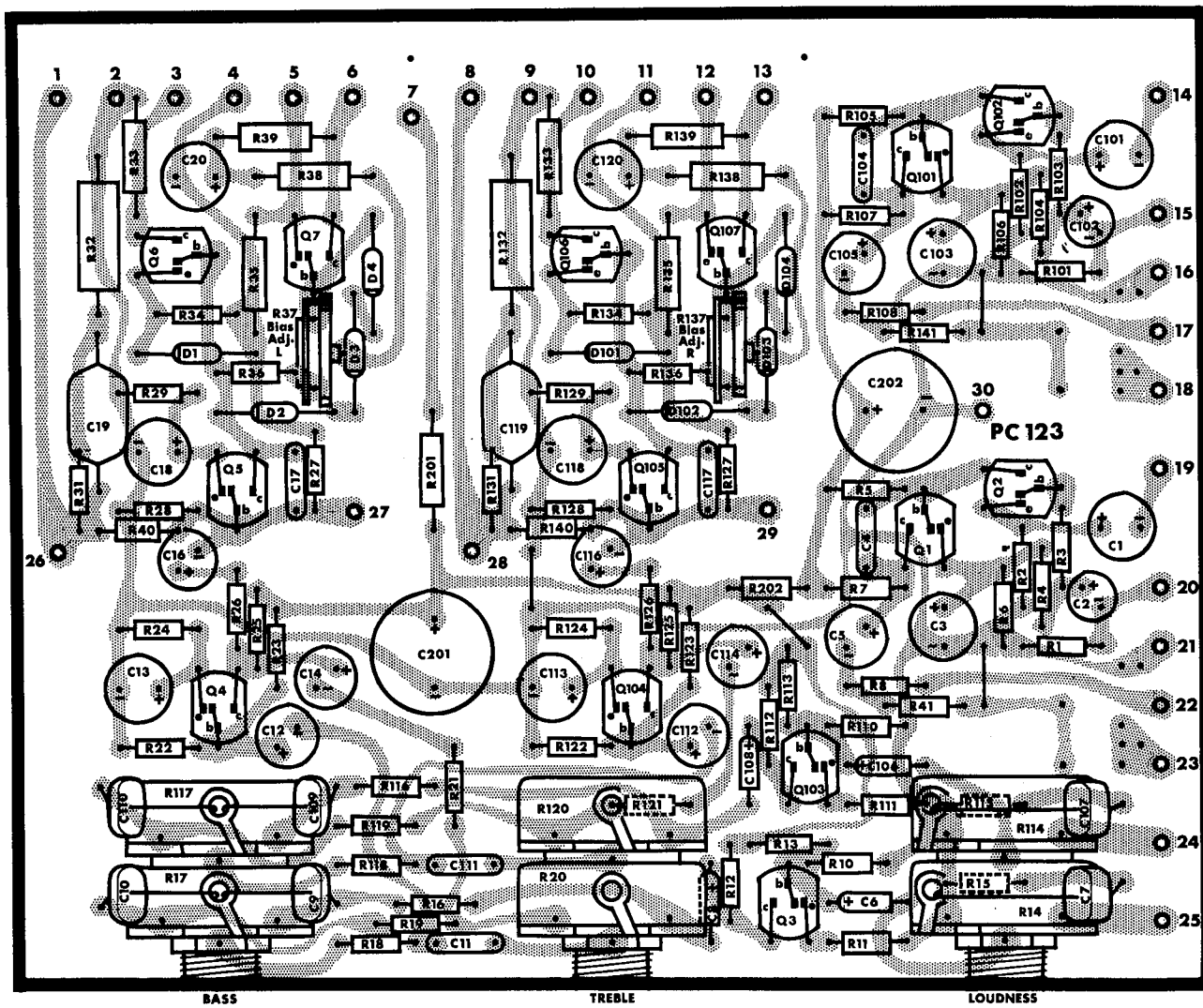
RESISTOR	FUNCTION
1	INPUT
2	TUNER
3	PHONO
4	EXTRA
5	TAPE
6	COMMON

1. INPUT SWITCH SHOWN IN FULL OHM POSITION AS VIEWED FROM FRONT.
2. TUNER VOLUME CONTROL IN LEFT CHANNEL AND IN THE RIGHT CHANNEL.
3. BALANCE CONTROL IN LEFT CHANNEL AND IN THE RIGHT CHANNEL.
4. TUNER TAP POINTS IN LEFT CHANNEL AND IN THE RIGHT CHANNEL.
5. SWITCH FUNCTION:
S1 - INPUT
S2 - MODE
S3 - BASS
S4 - BALANCE
S5 - SPEAKERS
S6 - REMOTE
S7 - REVERSE
S8 - REVERSE
S9 - REVERSE
S10 - REVERSE
6. FEM - 1/4 AMP SLD-SLD.
7. BAL TEST POINT - SEE MANUAL.
8. AMPERAGES INDICATE MAIN SIGNAL ONLY.
9. CONNECTIONS C2 & C108 ARE ADDED TO 299F-7.

RESISTOR SERIES NUMBERS

RESISTOR	FUNCTION
C1	100
C2	100
C3	100
C4	100
C5	100
C6	100
C7	100
C8	100
C9	100
C10	100
C11	100
C12	100
C13	100
C14	100
C15	100
C16	100
C17	100
C18	100
C19	100
C20	100
C21	100
C22	100
C23	100
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C27	100
C28	100
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C90	100
C91	100
C92	100
C93	100
C94	100
C95	100
C96	100
C97	100
C98	100
C99	100
C100	100

DATE	3-9-67
BY	H.S.
CHKD.	H.S.
APP.	H.S.
REV.	1
SCALE	1:1
CIRCUIT	299F-C1
DESIGNED BY	H.S.
CHECKED BY	H.S.
APPROVED BY	H.S.
DATE	3-9-67



- Q1 QA-14
- Q101 QA-14
- Q2 QA-12
- Q102 QA-12
- Q3 QA-14
- Q103 QA-14
- Q4 QA-14
- Q104 QA-14
- Q5 QA-16
- Q105 QA-16
- Q6 QA-11
- Q106 QA-11
- Q7 QA-10
- Q107 QA-10

TONE CONTROL - DRIVER Z-PC-TD-7

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