

STANDEL SERVICE INFORMATION

CIRCUIT DESCRIPTION

A modular design concept has been utilized throughout the amplifier in order to provide a unit that may be serviced with a minimum of individual component measurements.

The blue modules are high input impedance pre-amplifiers which amplify the signal from the instrument to a level which is compatible with the tone and volume control circuitry. The tone and volume control components are mounted directly on the terminals of the associated controls.

The output signals from the tone controls of the two channels are resistively mixed by R 11 and R 12 and the composite signal is fed into the green module which serves as an interstage amplifier. It provides the necessary signal gain and impedance level to drive the power output section.

The components of the power output section, which include a drive transistor (Q1), a drive transformer, the power output transistors, and all associated components are mounted directly on the heatsink assembly.

The power amplifier section is operated Class B in a single-ended push-pull configuration, which is similar to a balanced bridge with the speaker connection at approximately zero voltage. The static current is very low until the transistors are switched into a high current condition by the signal applied to the base. Each transistor conducts on alternate signal cycles through the speaker to the ground. Since the internal resistance of the transistor in a conduction state is negligible, the speaker becomes the limiting factor. For this reason extension speakers should not be used.

The red module is the vibrato oscillator and modulator. The speed and intensity controls respectively adjust the frequency of oscillation and the degree of signal modulation.

The yellow module in conjunction with the reverb control, reverb drive circuitry and reverb spring provides the amplifiers reverb capabilities.

The yellow module has two separate functions. One section serves as a reverb drive preamplifier while the other section provides amplification for the signal from the reverb spring. The circuit components for the reverb drive adjustment are located on a terminal board mounted near the yellow module.

The power supply consists of a stepdown isolation transformer, a rectifier bridge, a capacitive input filter and resistance capacitance filtering as required for the various stages of the amplifier.

TROUBLE SHOOTING

Signal tracing methods may be used to isolate the trouble to a module or component. The signal levels indicated at various points on the circuit should result from a 50 mv RMS input of approximately 300 cycles/second.

The signal levels associated with the blue and yellow leads of the yellow module are not indicated, because the output of the reverb spring is extremely variable and cannot be specified. But the signal level on the yellow lead should be approximately 20 times the signal level on the blue lead. (10 mv on blue should cause approximately 200 mv on yellow.) For the same reason, the signal level indicated at the collector of Q4 is valid only if the cable to the reverb spring is disconnected.

The DC levels indicated at various points on the power supply are for no signal conditions, and will average 2 to 5 volts less when the amplifier is operating at full power output.

REVERB ADJUSTMENT

Reverb intensity may vary from one amplifier to another due to variation of circuit tolerances. An internal adjustment has been provide to compensate for this variation.

The miniature control R41 shown on the enclosed drawing may be adjusted to increase or decrease reverb intensity. Care must be taken not to turn the control beyond the stops or it will permanently damaged.

CROSSOVER DISTORTION

In some cases under low power line voltage conditions, the amplifier will develop low level distortion which sounds very much like a bad speaker.

The problem will generally occur at line voltages below 115V when the amplifier is played at low volume levels.

This can be eliminated by replacing resistors R19, R20, R21, and R22 as shown on the schematic diagram. Replacement kit must be obtained from the Stadel company. When ordering replacement kit, please send the model and serial number of the amplifier involved.

PARTS REPLACEMENT AND BIAS SETTING

If it is necessary to replace the power drive transistor or related components, it will be necessary to readjust R 15 as indicated on schematic.

If reverb drive transistor or associated components must be replaced, it will be necessary to reset R 42 as indicated on schematic. The reverb drive transistor Q4 may be removed by disconnecting its leads and unscrewing the top of the heatsink. Silicon grease should be applied to a new transistor prior to installation in the heatsink.

Should it be necessary to replace the power transistors, matched sets should be obtained from the factory and silicon grease should be used between the transistor and heat sink to provide maximum heat transfer. Care should be taken to position the Teflon insulating spacers correctly to avoid shorting the transistors to the chassis.

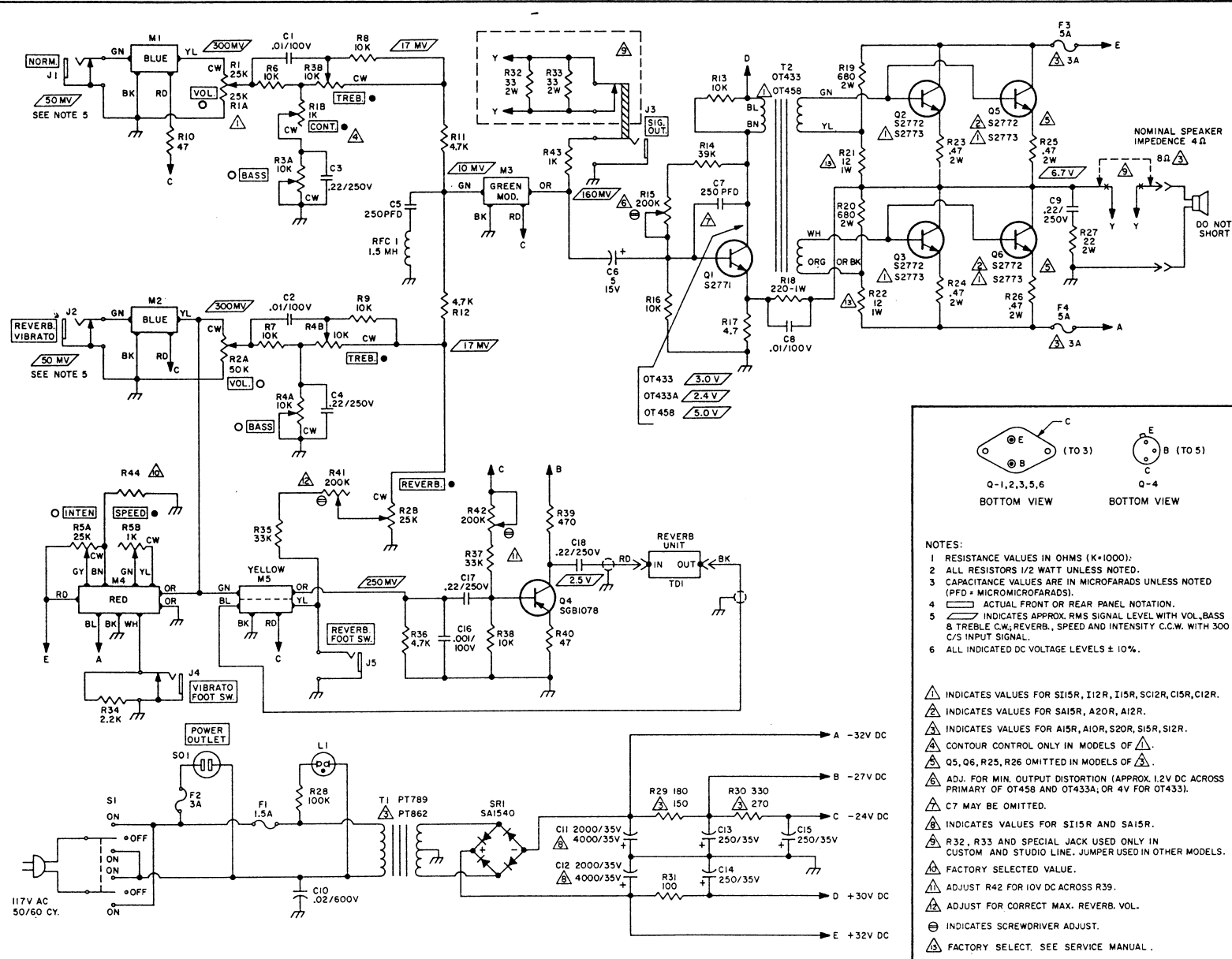
Replacements for faulty modules or components may be ordered from the factory. When ordering replacement parts, please specify the Standel part number of the required parts, as well as the model and year of the unit for which they are required.

If further information is required, contact factory Service Department at the following address:

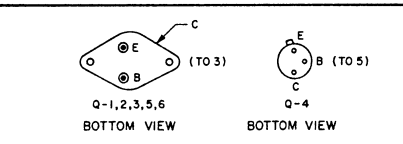
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Solid State Music Systems

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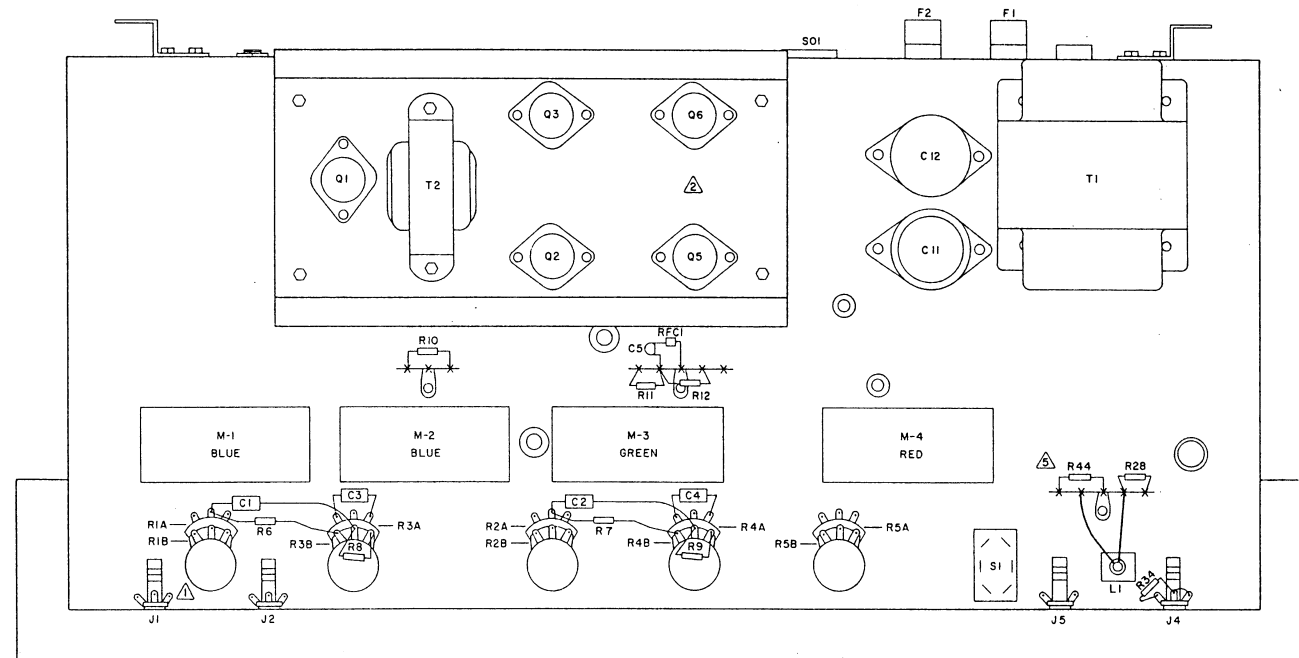
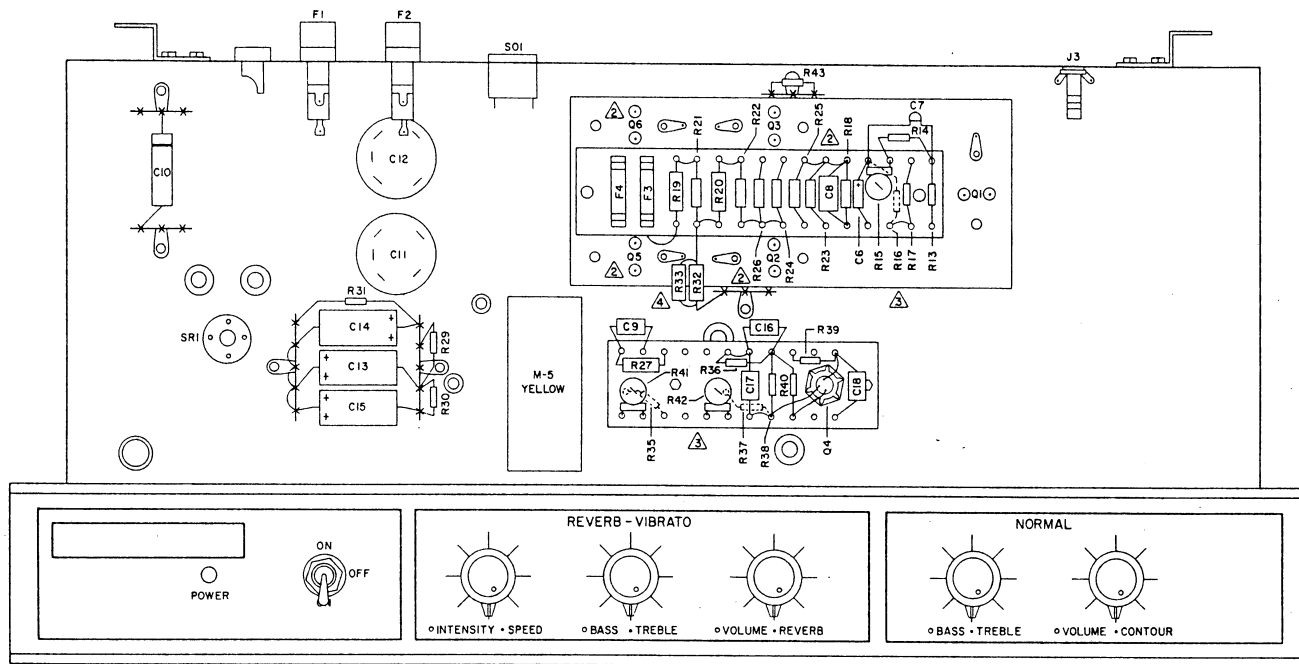


ITEM	STANDEL PART NO.	DESCRIPTION	
R1	10-4	POT	
R1, A-B	10-28	DUAL CONCENTRIC POT	
R2, A-B	10-35		
R3, A-B	10-15		
R5, A-B	10-28		
R6,7,8,9	5-25	RESISTOR	
R10	5-4		
R11,12	5-24		
R13	5-25		
R14	5-32		
R15	10-6		
R16	5-25		
R17	5-3		
R18	5-78	-1 W	
R19,20	5-73	-2 W	
R21,22	5-75	-1 W	
R23,24	5-1	-2 W	
R25,26	5-1	OMIT	
R27	5-74	-2 W	
R28	5-38	-2 W	
R29	5-8	5-7	
R30	5-14	5-12	
R31	5-5		
R32,33	5-72	-2 W	
R34	5-23		
R35	5-30		
R36	5-24		
R37	5-30		
R38	5-28		
R39	5-18		
R40	5-4		
R41,42	10-6	VARIABLE RESISTOR	
R43	5-22	RESISTOR	
R44	5-2		
C1,2	4-16	CAPACITOR	
C3,4	4-12		
C5	4-19		
C6	4-9	ELECTROLYTIC CAPACITOR	
C7	4-19	CAPACITOR	
C8	4-16		
C9	4-12		
C10	4-15		
C11	4-3	ELECTROLYTIC CAPACITOR	
C12	4-4	4-2	
C13,14,15	4-6		
C16	4-21	CAPACITOR	
C17,18	4-12		
J1,2	15-1	CLOSED CIRCUIT JACK	
J3	15-2	15-3 OPEN CKT JK, SPECIAL JK	
J4	15-1	CLOSE CIRCUIT JACK	
J5	15-2	OPEN CIRCUIT JACK	
M1,2	22-1A	BLUE MODULE	
M3	22-2	GREEN MODULE	
M4	22-4	RED MODULE	
M5	22-3	YELLOW MODULE	
F1	17-6	3 AG SLO-BLO FUSE	
F2	17-5	3 AG FUSE	
F3,4	17-101	17-5B 3 AG PIGTAIL FUSE	
Q1	7-14	DRIVER TRANSISTOR	
Q2,3	7-13	7-12 OUTPUT TRANSISTOR	
Q4	7-4	DRIVER TRANSISTOR	
Q5,6	7-13	7-12 OMIT OUTPUT TRANSISTOR	
T1	2-1	2-3 POWER TRANSFORMER	
T2	2-5	2-1 DRIVER TRANSFORMER	
SRI	7-11	BRIDGE RECTIFIER	
L1	13-2	PILOT LIGHT	
S1	8-1	DPDT POWER SWITCH	
SO1	9-2B	POWER OUTLET	
TD1	56-1	REVERB UNIT	
RFC1	2-15	R.F. CHOKE	
SCHEMATIC DIAGRAM 1968 REVERB AMPLIFIERS S15R, I12R, I15R, SC12R, C15R, C12R SA15R, A12R, A15R, A10R, S20R, S15R, S12R, A20R			
DRAFTSMAN I.D.S.	CHECKED M.J.Q.	APP DATE R.E.B. 11-27-67	IDOOI



- NOTES:
- 1 RESISTANCE VALUES IN OHMS (K=1000);
 - 2 ALL RESISTORS 1/2 WATT UNLESS NOTED.
 - 3 CAPACITANCE VALUES ARE IN MICROFARADS UNLESS NOTED (PFD = MICROMICROFARADS).
 - 4 ACTUAL FRONT OR REAR PANEL NOTATION.
 - 5 INDICATES APPROX. RMS SIGNAL LEVEL WITH VOL., BASS & TREBLE C.W., REVERB., SPEED AND INTENSITY C.C.W. WITH 300 C/S INPUT SIGNAL.
 - 6 ALL INDICATED DC VOLTAGE LEVELS ± 10%.

- △ INDICATES VALUES FOR S115R, I12R, I15R, SC12R, C15R, C12R.
- △ INDICATES VALUES FOR SA15R, A20R, A12R.
- △ INDICATES VALUES FOR A15R, A10R, S20R, S15R, S12R.
- △ CONTOUR CONTROL ONLY IN MODELS OF △.
- △ Q5, Q6, R25, R26 OMITTED IN MODELS OF △.
- △ ADJ. FOR MIN. OUTPUT DISTORTION (APPROX. 1.2V DC ACROSS PRIMARY OF OT458 AND OT433A, OR 4V FOR OT433).
- △ C7 MAY BE OMITTED.
- △ INDICATES VALUES FOR S115R AND SA15R.
- △ R32, R33 AND SPECIAL JACK USED ONLY IN CUSTOM AND STUDIO LINE. JUMPER USED IN OTHER MODELS.
- △ FACTORY SELECTED VALUE.
- △ ADJUST R42 FOR 10V DC ACROSS R39.
- △ ADJUST FOR CORRECT MAX. REVERB. VOL.
- ⊖ INDICATES SCREWDRIVER ADJUST.
- △ FACTORY SELECT. SEE SERVICE MANUAL.



- NOTES:
- ⚠ CONTOUR CONTROL (R18) USED ONLY IN S115R, I12R, I15R, SC12R, C15R, C12R.
 - ⚠ Q5, Q6, R25 & R26 OMITTED IN A15R, A10R, S20R, S15R, S12R.
 - ⚠ DASHED PARTS LOCATED BELOW BOARD.
 - ⚠ R32 & R33 USED ONLY IN SC12R, C15R, C12R, S20R, S15R, S12R.
 - ⚠ R44 MAY BE REQUIRED.

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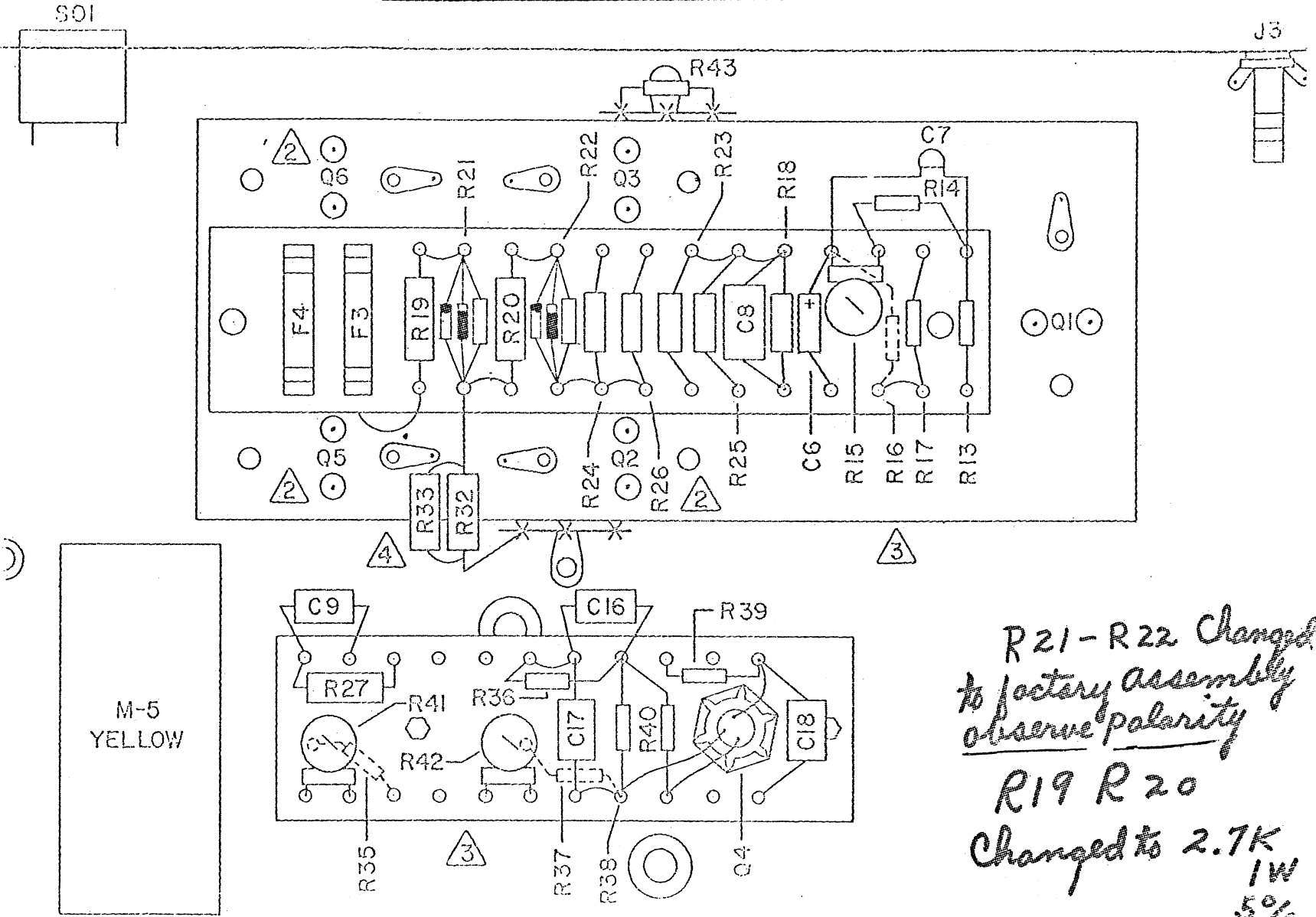
PICTORIAL DIAGRAM
1968

REVERB AMPLIFIERS
S115R, I12R, I15R, SC12R, C15R, C12R, S15R, A20R
A12R, A15R, A10R, S20R, S15R, S12R

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CROSS-OVER CORRECTION FOR 1968 REVERB & BASS AMPLIFIERS

5-148-1A-2A
3/10 268



R21-R22 Changed
to factory assembly
observe polarity

R19 R20
Changed to 2.7K
1W
5%