



instruction book

Cedar Rapids Division | Collins Radio Company, Cedar Rapids, Iowa

**808A-1
Console**

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- (D) Number of hours of service
- (E) Nature of trouble
- (F) Cause of trouble if known
- (G) Part number (9 or 10 digit number) and name of part thought to be causing trouble
- (H) Item or symbol number of same obtained from parts list or schematic
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INFORMATION NEEDED:

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- (B) Collins part number (9 or 10 digit number) and description
- (C) Item or symbol number obtained from parts list or schematic
- (D) Collins type number, name and serial number of principal equipment
- (E) Unit subassembly number (where applicable)



instruction book

808A-1 Console

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oscillator as on bulb #1

TABLE OF CONTENTS

Section		Page
I	GENERAL DESCRIPTION	1-1
	1.1 Purpose of Instruction Book	1-1
	1.2 Purpose of Equipment	1-1
	1.3 Equipment Capabilities	1-1
	1.4 Equipment Supplied	1-1
	1.5 Equipment Required but not Supplied	1-1
	1.6 Characteristics	1-1
	1.7 Semiconductor and Fuse Complement	1-3
II	INSTALLATION	2-1
	2.1 Unpacking	2-1
	2.2 Installation	2-1
	2.2.1 Legs	2-1
	2.2.2 Cables and Lines	2-1
	2.3 Adjusting the Stylus Pressure	2-1
	2.4 Cartridge and Styli Replacement	2-2
III	OPERATION	3-1
	3.1 General	3-1
	3.2 Controls and Indicators	3-1
	3.3 Prebroadcast Adjustments	3-1
IV	PRINCIPLES OF OPERATION	4-1
	4.1 General	4-1
	4.2 Network Description	4-1
V	MAINTENANCE	5-1
	5.1 General	5-1
	5.2 Definitions	5-1
	5.2.1 RIAA	5-1
	5.2.2 Noise	5-1
	5.2.3 0 DBM	5-1
	5.3 Test Equipment Required	5-1
	5.4 Control Settings	5-2
	5.5 Tests	5-2
	5.5.1 D-C Measurements	5-2
	5.5.2 Amplifier Test and Adjustments	5-2
	5.5.2.1 Test Setup	5-2
	5.5.2.2 Noise Level	5-2
	5.5.2.3 Frequency Response	5-2
	5.5.2.4 Distortion	5-2
	5.5.2.5 Headphone and PA Output	5-3
	5.5.2.6 Turntable Response	5-3
	5.5.2.7 Turntable Distortion	5-3
	5.5.2.8 Turntable Cue	5-3
	5.6 Servicing Transistor Circuits	5-3
	5.6.1 General	5-3
	5.6.2 Test Equipment	5-3
	5.6.2.1 Transformerless Power Supplies	5-3
	5.6.2.2 Line Filter	5-3

TABLE OF CONTENTS (Cont)

Section		Page
5.6.2.3	Low-Sensitivity Multimeters	5-4
5.6.2.4	Power Supply	5-4
5.6.3	Electric Soldering Irons.	5-4
5.6.3.1	Leakage Current	5-4
5.6.3.2	Iron Size	5-4
5.6.4	Servicing Practices	5-4
5.6.4.1	Heat-Sink When Soldering	5-4
5.6.4.2	Removal of Transistors From Operating Circuits	5-4
5.6.4.3	Plug-In Transistors.	5-4
5.6.4.4	Resistance Measurements In Transistor Circuits	5-4
5.6.4.5	Power Transistor Heat Sinks	5-4
5.6.4.6	Test Prods.	5-4
5.6.5	Trouble Shooting	5-5
5.6.5.1	Ohmmeter Test of Transistors	5-5
5.7	Turntable Maintenance and Adjustments	5-5
5.7.1	Adjustments	5-5
5.7.2	Lubrication	5-5
5.7.3	Cleaning	5-5
5.8	Stylus Removal and Installation	5-5
5.9	Stylus Holder Removal and Installation	5-6
VI	PARTS LIST	6-1
VII	ILLUSTRATIONS	7-1

LIST OF ILLUSTRATIONS

Figure		Page
1-1	808A-1 Console, Over-all View (C795-03-P)	1-0
2-1	808A-1 Console, Outline and Mounting Dimensions (C795-13-4)	2-0
2-2	808A-1 Console, Rear View (C795-05-P)	2-1
3-1	808A-1 Console, Operating Controls and Indicators (C795-06-P)	3-1
4-1	808A-1 Console, Block Diagram (C795-02-5)	4-0
5-1	Test and Adjustment Points (C795-07-P)	5-2
6-1	808A-1 Console, Top View with Component Identification (C795-10-P)	6-3
6-2	808A-1 Console, Top View with Turntables Removed for Component Identification (C795-11-P)	6-4
6-3	808A-1 Console, Rear View of Front Panel with Component Identification (C795-04-P)	6-5
6-4	808A-1 Console, Rear View with Component Identification (C795-08-P)	6-6
6-5	808A-1 Console, Bottom View with Component Identification (C795-09-P)	6-6
6-6	808A-1 Console, Bottom View, Amplifier Boards with Component Identification (C795-12-P)	6-7
7-1	808A-1 Console, Schematic Diagram (C795-01-6)	7-1

LIST OF TABLES

Table		Page
1-1	Equipment Supplied	1-1
1-2	Equipment Required but not Supplied	1-1
1-3	Semiconductor and Fuse Complement	1-3
2-1	Replacement Styli and Cartridge	2-2
5-1	Test Equipment Required	5-1

SECTION I
General Description



Figure 1-1. 808A-1 Console, Over-all View

SECTION I GENERAL DESCRIPTION

1.1 PURPOSE OF INSTRUCTION BOOK.

This instruction book presents information pertinent to installation, operation, and maintenance of the 808A-1 Console.

1.2 PURPOSE OF EQUIPMENT.

The 808A-1 Console, Collins part number 522-2609-00, is a portable, dual-turntable console that will feed program material from a remote location to the broadcast station via telephone lines.

1.3 EQUIPMENT CAPABILITIES.

The 808A-1 Console can simultaneously combine the two turntable outputs with any one of the three external inputs. The 808A-1 requires only headphones, 120-volt, 60-cps power, remote signal lines, and microphone for remote console operation.

The built-in phono equalization meets RIAA standards. A built-in VU meter is provided for monitoring program level. The light which illuminates the VU meter indicates when the power to the 808A-1 is turned on. A headphone jack is provided for program monitoring and indicator lights show which turntable is energized.

The self-storing legs can be detached and stored beneath the cabinet when the 808A-1 is being transported or used on a table. The bottom dust cover can be removed for maintenance. This cover protects the lower portions of the turntables, cables, and amplifiers.

The preamplifiers are attached to the control panel. The control panel can be removed for maintenance of the preamplifiers.

Panel controls include an external input selector which selects one of the external signal sources, MIKE 1, MIKE 2, or NEMO; two motor power switches; cue switches which are ganged to the off position of the FADE and MICROPHONE controls; three separate fade controls for the three inputs; MASTER GAIN, which controls the over-all output signal level; PUBLIC ADDRESS GAIN, which allows independent adjustment of the public address feed or other remote feed; headphone gain; and turntable shift levers for selecting turntable speeds of 33-1/3, 45, or 78 rpm.

1.6 CHARACTERISTICS.

Type of service	Continuous, local control.		
Size (inches)	HEIGHT	WIDTH	DEPTH
Table top installation	8-1/2	33-1/2	20-1/2
Legs extended	33	33-1/2	20-1/2

The amplifiers use six low-level modules and one line-amplifier module. Bias is stabilized over a wide temperature range by a germanium diode. The turntable preamplifiers conform to RIAA specifications and contain a feedback design which yields stable performance.

1.4 EQUIPMENT SUPPLIED.

Table 1-1 lists the equipment supplied with the 808A-1 Console.

TABLE 1-1
EQUIPMENT SUPPLIED

EQUIPMENT	COLLINS PART NUMBER
808A-1 Console and power cable, 115 volts, 60 cps	522-2609-00

1.5 EQUIPMENT REQUIRED BUT NOT SUPPLIED.

Table 1-2 lists the equipment required to place the 808A-1 Console in operation but not supplied with the 808A-1.

TABLE 1-2
EQUIPMENT REQUIRED BUT NOT SUPPLIED

EQUIPMENT
Power source, 120 volts, 60 cps
External signal inputs
Public address system and/or program line
Microphone, low impedance, with XLR-3-12C connector
Headphones, with phone plug

SECTION I

General Description

Weight 78 pounds.
Type construction Steel and aluminum.
Type mounting On self-supporting legs or table top.
Audible noise Negligible.
Finish White and grey baked enamel, brushed-aluminum panel and trim strip.

Service conditions

Ambient temperature range +15°C to +45°C (+59°F to +113°F).
Ambient humidity range Up to 95 percent.
Altitude Up to 15,000 feet.
Shock conditions Normal handling and transportation.
Vibration Normal handling and transportation.
Power source 120 volts a-c, 60 cps, single phase.

Power output

Program line +8 vu (+18 dbm) into 600 ohms.
Public address Microphone level.
Distortion 2 percent maximum, 50 to 15,000 cps at +8 dbm.
Frequency response 50 to 15,000 cps ±2 db (1000 cps reference) at ±8 dbm.
Gain Nominal 110 db minimum at +25°C (+77°F) on microphone input.

Balanced inputs

Mike 1 50 ohms, -55 dbm nominal.
Mike 2 50 ohms, -55 dbm nominal.
NEMO (600 ohms 40-db pad) -15 dbm nominal.
Duty cycle. Continuous.
Phono equalization Per RIAA standards.

NOTE

The equalization limits are met only for the cartridges supplied with this unit from the factory. Equalization of other cartridges is available upon special request.

Noise -110 dbm equivalent input noise level or less (with -55 dbm microphone input and +18 dbm line output, the signal-to-noise ratio is at least 55 db).

Monitoring Devices

Program level VU meter.
Aural program and cue Headphone jack.

Operational aids VU meter lights, motor on lights.

Transistor classification Commerical.

Connections

Program line Binding terminal post.

Public address system feed Headphone type jack.

External inputs Female Cannon (XLR-3-31) jack.

A-c input Hubble twist lock.

2 program monitors Headphone jack.

Ground Binding post.

Fusing A-c line.

Phono pickup and cartridge Supplied with modified Rek-O-Kut S320 pickup arm,
and GE cartridge 4GD-01S-02S with sapphire stylus.

1.7 SEMICONDUCTOR AND FUSE COMPLEMENT.

Table 1-3 lists the fuse and semiconductors used in the 808A-1.

TABLE 1-3. SEMICONDUCTOR AND FUSE COMPLEMENT

SYMBOL	TYPE	FUNCTION
A1Q1	2N1175A	Microphone preamplifier
A2Q1	2N1175A	Pickup preamplifier and equalizer
A3Q1	2N1175A	Pickup preamplifier and equalizer
A4Q1	2N1175A	Booster amplifier
A5Q1	2N1175A	Monitor amplifier
A6Q1	2N1175A	Monitor output amplifier
A7Q1	2N1175A	Program amplifier booster
A7Q2	2N1175A	Program amplifier driver
A7Q3	2N651	Program output amplifier
A7Q4	2N651	Program output amplifier
CR101	1N1488	Power rectifier
CR102	1N1488	Power rectifier
F1	MDL 1-1/2 (for 120-volt operation)	A-c power fuse

SECTION II
Installation

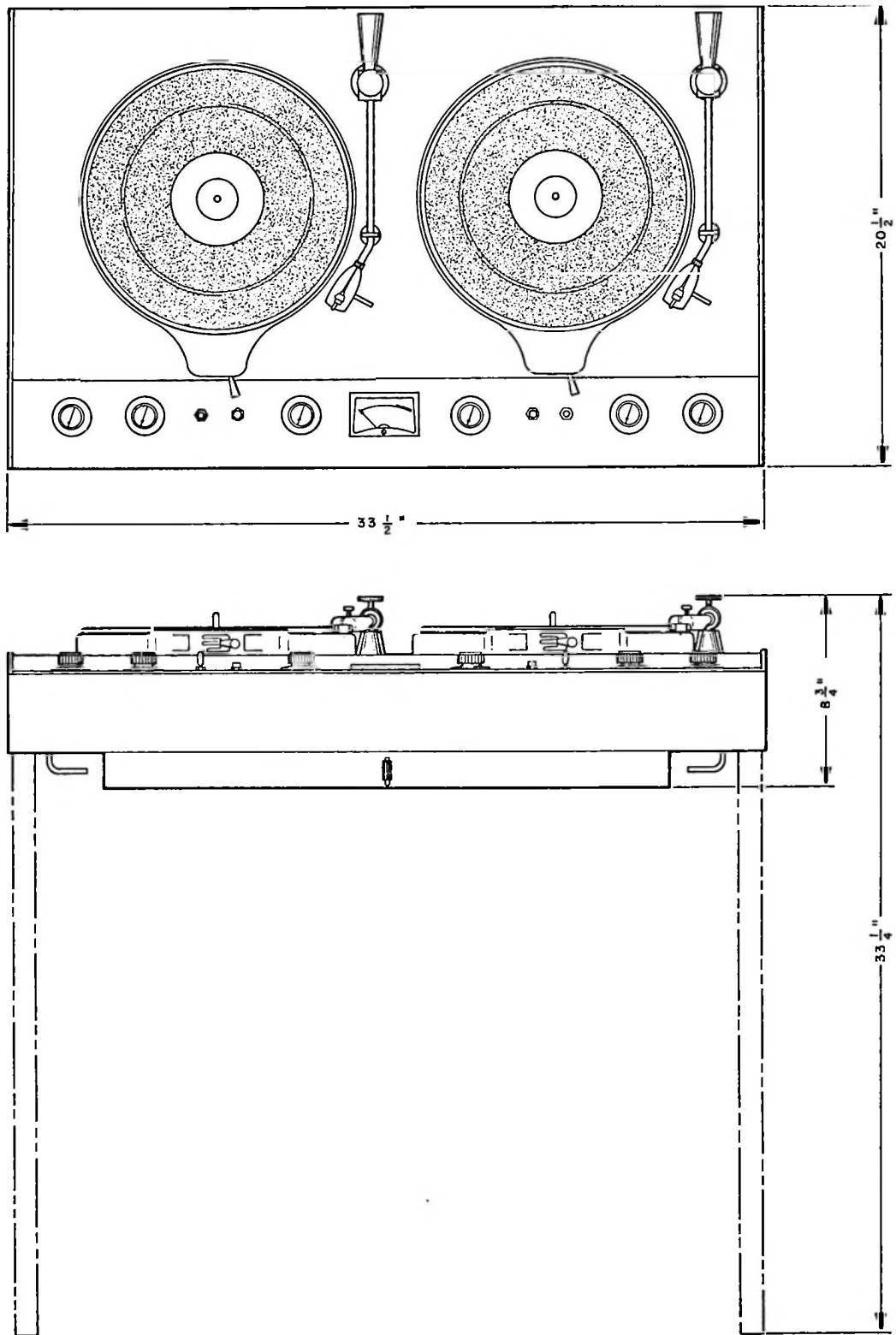


Figure 2-1. 808A-1 Console, Outline and Mounting Dimensions

SECTION II INSTALLATION

2.1 UNPACKING.

Remove all packing material, and carefully lift the 808A-1 Console from its shipping container. Check the equipment against the packing slip and list of equipment supplied (table 1-1 of this book). Inspect the unit for physical damage. If damage exists, save the packing materials and packing containers to substantiate the claim with the transportation agency.

2.2 INSTALLATION.

2.2.1 LEGS.

Refer to figure 2-1. Hold the four legs in the stowed position. Pull out and turn the leg retaining arm 90 degrees clockwise. The retaining arm is located under the control panel. Remove the four legs from their position under the control panel. Turn the retaining arm 90 degrees counterclockwise (to the original vertical position) and allow it to retract. Set the leg locking levers (located adjacent to the leg mounting holes) to the unlocked position. Insert the legs fully into the holes provided at each corner of the 808A-1 and swing the locking levers a little past the position where the first resistance is felt. The legs are thus locked in place. If the surface upon which the 808A-1 Console is set is not level, one or more legs may be released, extended to the surface, and relocked.

2.2.2 CABLES AND LINES.

See figure 2-2. Connect a ground wire to the rear binding post marked PROGRAM GROUND. Connect the program lines (or telephone lines) to the binding posts marked PROGRAM LINE. Connect the microphone(s) and NEMO cables to the jacks marked MIKE 1, MIKE 2, and NEMO. Plug the public address amplifier cable to the PA OUTPUT. Plug the headphones

to be used for monitoring into the MONITOR PHONES jack. Check the fuse, F1. Connect the 60-cps power cable between the POWER AC jack and the 120-volt, 60-cps power source.

2.3 ADJUSTING THE STYLUS PRESSURE.

For proper record wear, stylus life and sound reproduction, the amount of weight placed by the stylus on the record is important. Since the amount of weight is a function of the cartridge used, the pressure on the stylus must be individually adjusted after cartridge installation. The Micropoise arm takes the guesswork out of stylus pressure adjustment with the easily adjustable counterweight and the new Micropoise balance control with reference line centered through the knob's letter "O" in REK-O-KUT.

- a. Rotate the Micropoise balance control knob fully counterclockwise before adjusting the counterweight.
- b. Rotate the counterweight either forward or backward until the arm floats just above the record surface. A movement of the counterweight away from the cartridge will tend to raise the arm while a movement of the counterweight toward the cartridge will tend to lower the arm.

NOTE

If proper balance cannot be achieved by movement of the counterweight, the brass weight located in the cartridge shell should be removed. A heavy cartridge will not balance until the brass weight is removed. Remove snap cover at top of cartridge shell and remove brass weight. Replace snap cover.

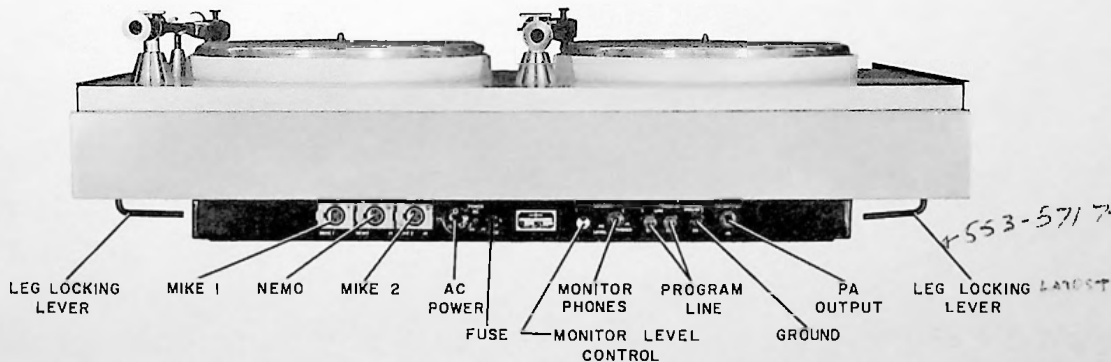


Figure 2-2. 808A-1 Console, Rear View

SECTION II
Installation

c. The Micropoise balance control has been designed so that the first rotation of the knob clockwise produces no change in weight on the stylus (0 grams of stylus pressure). Each succeeding full rotation provides one gram of weight on the stylus. Proper stylus pressure, as recommended by the cartridge manufacturer, can be achieved by rotating the

Micropoise balance control the proper number of turns clockwise.

2.4 CARTRIDGE AND STYLI REPLACEMENT.

Table 2-1 identifies the cartridges and styli supplied with the 808A-1.

TABLE 2-1. REPLACEMENT STYLI AND CARTRIDGE

ITEM	GENERAL ELECTRIC PART NUMBER	COLLINS PART NUMBER
0.001 Stylus	4G-01S	097-3851-00
0.0025 Stylus	4G-02S	097-3852-00
Cartridge (includes both styli)	4GD-01S-02S	270-1594-00

SECTION III OPERATION

3.1 GENERAL.

Refer to paragraph 2.2, installation, for leg attachment and line connections.

3.2 CONTROLS AND INDICATORS.

See figure 3-1. The external input selector is used to select MIKE 1, MIKE 2, or NEMO. Separate motor power switches are used to control the turntable motors. The CUE switches are ganged to the counterclockwise position of the FADE and MICROPHONE controls. Three separate fade controls are provided for the input sources. The MASTER GAIN controls the over-all output signal level. The PUBLIC ADDRESS GAIN control allows independent adjustment of the public address or other remote feeds. The MONITOR LEVEL controls the headphone signal level. Separate indicator lights show which turntable motor is energized. The VU meter is illuminated when the 808A-1 power is turned on. Turntable shifting levers are provided to select turntable speeds of 33-1/3, 45, or 78 rpm.

3.3 PREBROADCAST ADJUSTMENTS.

a. Set the FADE and MICROPHONE controls on the control panel fully counterclockwise.

b. Set the MONITOR LEVEL on the rear apron fully clockwise.

c. Turn on the a-c power by turning the PUBLIC ADDRESS GAIN control on the control panel slightly clockwise.

d. Select a disc recording and place it on TURN-TABLE ONE.

e. Select the turntable speed compatible with the recording by engaging the TURNTABLE ONE speed-selecting lever in the proper slot.

f. Set the stylus needle of the tone arm on the lead-in groove of the recording.

g. Start TURNTABLE ONE by moving the motor control switch to ON position.

h. Set the MASTER GAIN control on the control panel to 26.

i. Adjust the TURNTABLE ONE FADE to obtain 0 vu peaks indicated on the VU meter.

j. Adjust the MONITOR LEVEL control on the rear apron to obtain a comfortable listening level on the headset.

k. Adjust the PUBLIC ADDRESS GAIN control to obtain a usable public address volume level without causing acoustical feedback when microphone input is used.

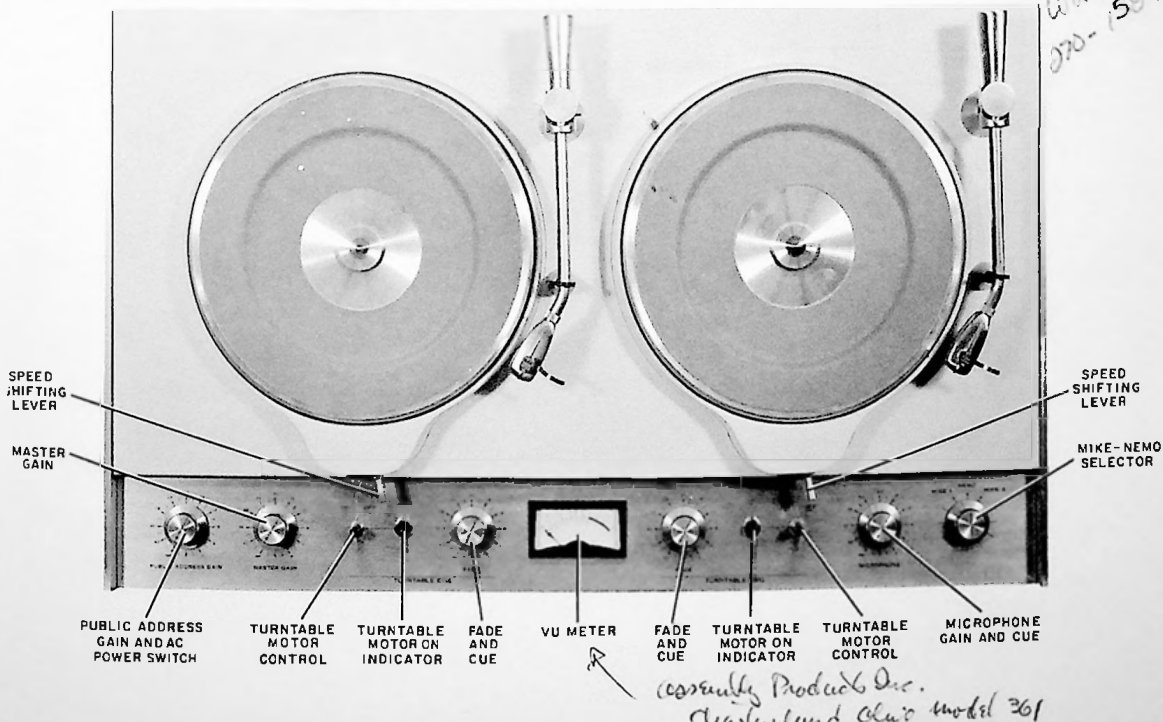


Figure 3-1. 808A-1 Console, Operating Controls and Indicators

SECTION IV
Principles of Operation

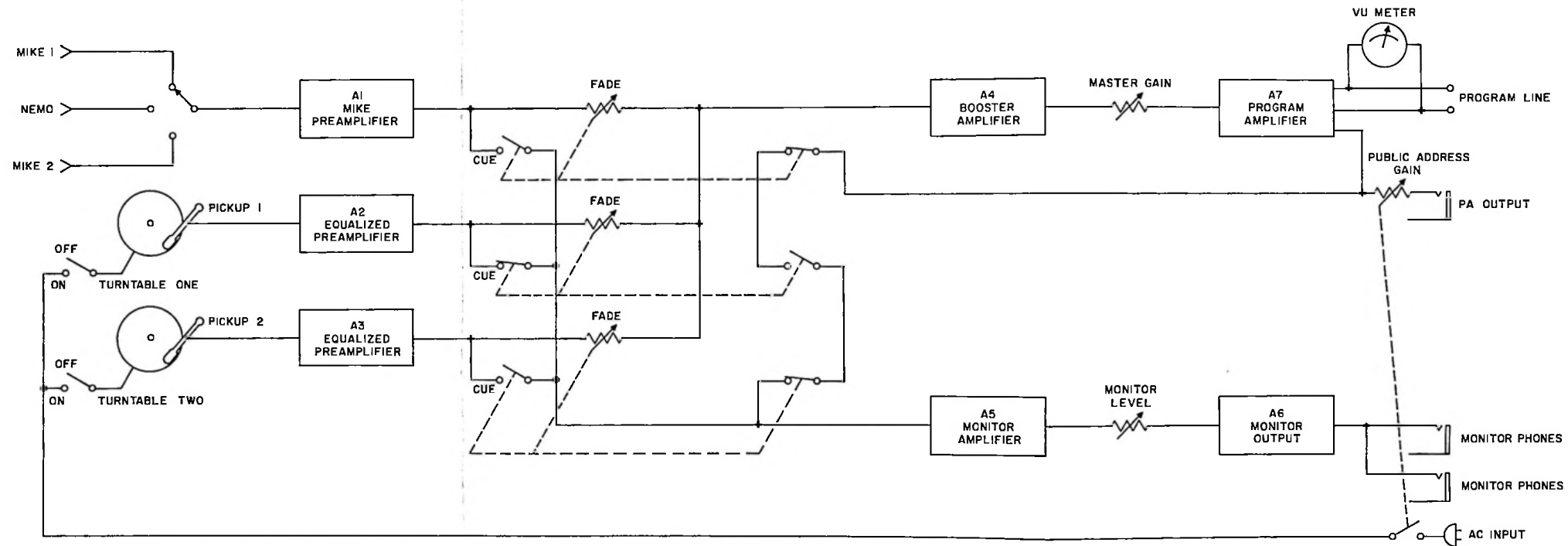


Figure 4-1. 808A-1 Console, Block Diagram

SECTION IV PRINCIPLES OF OPERATION

4.1 GENERAL.

The 808A-1 Console uses semiconductors throughout the unit; no vacuum tubes are used. The 808A-1 has seven amplifier modules and one power supply module. Figure 4-1 is a block diagram of the 808A-1 Console.

4.2 NETWORK DESCRIPTION.

Input signal from the NEMO jack is coupled through a 40-db pad to input selector S4. The balanced microphone inputs are also coupled to input selector S4. The selected input is coupled to A1T1 of the microphone preamplifier. The signal through A1T1 undergoes a voltage step-up of approximately 2.8 to 1 due to the 8-to-1 impedance transformation of A1T1. The signal from the output of A1T1 produces signal voltage across A1R1; this signal is applied to the base of transistor A1Q1 via capacitor A1C1. A1R2 and A1R3 form a voltage divider which, with A1R5 and A1R6, establishes the operating bias for the base of A1Q1. Degenerative feedback is provided by the unbypassed emitter resistor A1R5. A1R4 is the collector load resistor across which the output voltage is developed. The output voltage of A1Q1 is coupled through A1C3 to the FADE control, R1A and R1B. The same signal voltage is coupled through limiting resistor R21 to CUE switch S1-1.

The operation of equalized preamplifiers A2 and A3 is similar except that the input signals for the equalized amplifiers are derived from the turntable tone arms. The signals from the tone arms are coupled through the frequency compensating networks composed of A2R7, A2C4, and A2R8, and A3R7, A3C4, and A3R8 to the respective bases of A2Q1 and A3Q1. Degenerative feedback is not provided in A2 or A3.

The output signals from the three preamplifiers are coupled through their respective FADE controls to a common line which is connected to the input of booster amplifier A4. The FADE controls are connected in a manner such that there is very little interaction between controls.

Booster amplifier A4 is essentially the same as microphone preamplifier A1 except the input signal is coupled directly from the common FADE controls output line. The output of booster amplifier A4 is coupled to the MASTER GAIN control, R4A and R4B.

From the MASTER GAIN control the signal is coupled through A7C1 to the base of A7Q1 in program amplifier A7. Bias for A7Q1 is provided by voltage divider A7R1 and A7R3 and emitter resistor A7R2. Emitter resistor A7R2 is bypassed by A7C2. Degenerative feedback in

this stage is provided by connecting A7R3 to the collector side of the collector load, A7R4. The output of A7Q1 is coupled through A7C3 to the gain adjusting potentiometer, A7R6, in the base network of A7Q2.

Bias for the base of A7Q2 is provided by the voltage divider A7R8, A7R6 and A7R7, and by A7CR1 and emitter resistor A7R9. A7R9 and A7CR1 are bypassed by A7C4. Degenerative feedback is provided by connecting A7R8 from the collector of A7Q2 to the base of the same transistor. The output signal from A7Q2 is coupled to the push-pull amplifier via A7T1. The primary winding 1 to 2 of A7T1 is swamped by A7R10 to broaden the frequency response.

The voltage divider composed of A7R33 and the temperature-sensitive diode, A7CR1, controls the bias on A7Q2 and push-pull amplifier A7Q3-A7Q4 to prevent gain variation due to temperature changes. A7Q3 and A7Q4 are driven in push-pull via A7T1. The push-pull stage is balanced by adjusting emitter potentiometer A7R12 to obtain minimum even order distortion. A7R11 and A7R13 help provide bias for A7Q3 and A7Q4. The collectors of A7Q3 and A7Q4 are connected to output transformer A7T2. A7R14 is used to swamp the primary of A7T2.

The secondary winding 4 to 5 of A7T2 is used to provide negative feedback to the base of A7Q1 via the frequency compensating network composed of A7R16 through A7R21, A7R34, and A7C7 through A7C11. A voltage divider composed of A7R22 and A7R23 is directly across the winding 4 to 5 of A7T2. From the junction of the voltage dividing resistors A7R22 and A7R23 a sample signal voltage is coupled to the PUBLIC ADDRESS GAIN control, R6, and through the interlocking cue switches and R22 to monitor amplifier A5. The variable tap on potentiometer R6 is coupled through isolating resistor R17 to the PA OUTPUT jack on the rear of the 808A-1 Console. The other secondary winding 6 to 7 of A7T2 is coupled through a 3-db pad to the program line terminals of the 808A-1. The same secondary winding is coupled through an 8-db pad to the VU meter. A7C6, A7R5, and A7C5 are decoupling components.

When one of the cue switches is closed, the output of the associated preamplifier is coupled to the monitor amplifier A5 and the cue interlock switch is opened disconnecting the program monitor feeds. The signal is applied to the base of A5Q1 via A5C1. Bias for A5Q1 is provided by the voltage divider A5R2 and A5R3 and emitter resistors A5R5 and A5R6. Emitter A5R6 is bypassed by A5C2. A5R5 is not bypassed and thus this stage is provided with degenerative feedback. A5R4 is the collector load resistor, and A5C3 is the collector blocking capacitor through which cue signal is coupled to the MONITOR LEVEL control, R5A and

SECTION IV
Principles of Operation

R5B. The signal from the MONITOR LEVEL control is coupled through A6C1 to the base of A6Q1 in the monitor output module.

The monitor output module, A6, is identical to the monitor amplifier module, A5. The output signal from A6 is coupled to the MONITOR PHONES jack, J6, on the rear panel of the 808A-1 Console. When a FADE control is moved to the CUE position, the input of the monitor channel is disconnected from the program line and connected to the CUE bus.

The main a-c power switch, S7, is ganged to the PUBLIC ADDRESS GAIN control. The turntable switches are S5 and S6 on the schematic diagram, figure 7-1.

The power supply uses a full-wave rectifier. The input a-c is fed to the parallel primary windings of T101 (for 220-volt amplifier operation the windings are connected in series).

CAUTION

For 220-volt operation, 220-volt turntable motors or a suitable step-down transformer for turntable power must be used.

CR101 and CR102 rectify the secondary current. R101, R102, L101, C101, C102, and C103 form the filter network. R103 is the bleeder resistor.

SECTION V MAINTENANCE

5.1 GENERAL.

Transistors are very reliable devices and normally do not require replacement unless they have been subjected to overvoltage, abnormal heat or cold, or excessive shock. For this reason transistors should not be removed and checked for routine preventive maintenance or trouble shooting.

5.2 DEFINITIONS.

5.2.1 RIAA.

RIAA is the lateral modulation of a disc playback response characteristic (expressed as a velocity ratio) with a constant voltage applied to the recording bus. Reference to RETMA Standard REC-146, dated September 1955, or NAB Handbook.

5.2.2 NOISE.

Output noise is measured with the input and output terminated in 600 ohms, microphone input level of -45 dbm, master gain control set at 26, and the microphone gain control set to obtain +18 dbm output at the program line output terminals. Signal-to-noise ratio (S/N) is referenced to +18 dbm output.

5.2.3 0 DBM.

0 dbm equals one milliwatt across 600 ohms.

5.3 TEST EQUIPMENT REQUIRED.

Table 5-1 lists the test equipments or equivalents required to perform the tests outlined in this section.

TABLE 5-1. TEST EQUIPMENT REQUIRED

EQUIPMENT	DESCRIPTION
Distortion and noise meter	General Radio, 1932A
Audio oscillator	Hewlett-Packard, 200CD
Attenuator	Daven, T693R; input type 6813, output type 6853
Attenuator	Daven, HA 740B; input type 7333, output type 7381
A-c vtvm	Hewlett-Packard, 400D
Oscilloscope	Heathkit, O-1
Volt-ohm-milliammeter	Triplet, 630
Simulated playback cartridge (low impedance broadcast type)	One 150-mh toroid, Collins part number 240-0276-00; one 100-mh toroid, Collins part number 240-2074-00; one 422-ohm, one-percent resistor; all in series
Headphones	High impedance
Test record	Clarkston 2001S, RIAA frequency response
Microphone	Low impedance
Load resistors	600 ohms for program line 10,000 ohms for PA OUTPUT 10,000 ohms for MONITOR PHONES output

5.4 CONTROL SETTINGS.

Unless otherwise specified, the controls should be set as follows:

- MICROPHONE FADE . . . counterclockwise, out of CUE detent.
- TURNTABLE ONE FADE . . counterclockwise, out of CUE detent.
- TURNTABLE TWO FADE . . counterclockwise, out of CUE detent.
- MASTER GAIN. 26.
- PUBLIC ADDRESS GAIN . . counterclockwise, a-c on.
- MIKE 1-NEMO-MIKE 2 . . . MIKE 1.

5.5 TESTS.

5.5.1 D-C MEASUREMENTS.

The voltage limits given in the following tests are typical values obtained when the 808A-1 Console is operating with an output of +8 dbm and the PROGRAM LINE is terminated in a 600-ohm nonreactive load. Measure the d-c voltage between terminal E104 (see figure 5-1) and E3. It should be 18.5 volts \pm 10 percent. Measure the d-c voltage between terminal E101 (see figure 5-1) and E3. It should be 14.5 volts \pm 10 percent.

5.5.2 AMPLIFIER TEST AND ADJUSTMENTS.

5.5.2.1 TEST SETUP. Connect the audio oscillator through the Daven balanced attenuator to the MIKE 1 input on the rear apron of the 808A-1. Connect the distortion and noise meter to the PROGRAM LINE terminals on the rear apron of the 808A-1. Set the controls as outlined in paragraph 5.4.

5.5.2.2 NOISE LEVEL. Perform the procedures of paragraph 5.5.2.1.

- a. Connect a jumper across the VU meter terminals. (The bottom cover of the 808A-1 Console must be removed to jumper the VU meter.)
- b. Set the frequency of the audio oscillator to 1000 cps.
- c. Set the audio oscillator output and attenuator level to obtain -45 dbm input to the 808A-1.
- d. Adjust the MICROPHONE gain control of the 808A-1 to obtain +18 dbm output as indicated on the distortion and noise meter, and calibrate the noise and distortion analyzer for a noise check.
- e. Disconnect the audio oscillator from the MIKE 1 input, and connect the 600-ohm load to the MIKE 1 input.
- f. Measure the output level using the distortion and noise meter. The output level should be at least 55 db below output reference level (+18 dbm).

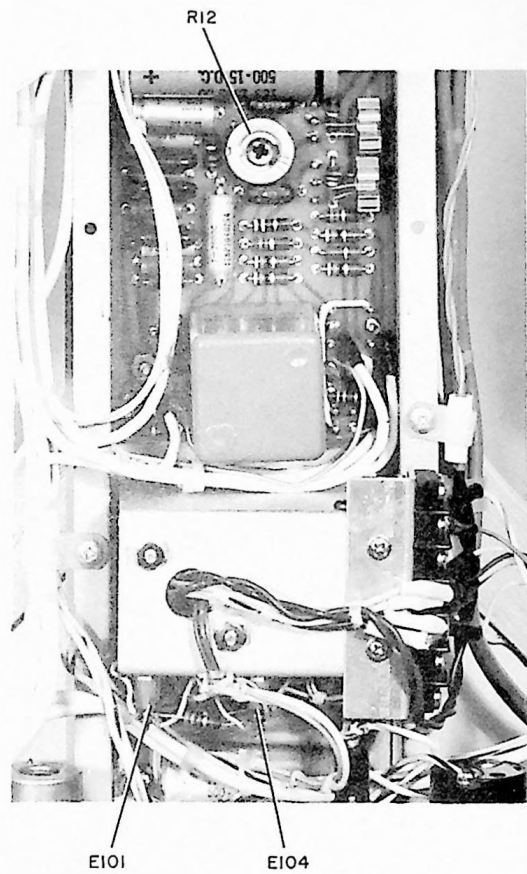


Figure 5-1. Test and Adjustment Points

g. Repeat the above procedure with the audio oscillator connected to the MIKE 2 input on the rear apron of the 808A-1.

h. Set the audio oscillator output level to -15 dbm, and repeat the above procedure with the audio oscillator connected to the NEMO input on the rear apron of the 808A-1.

5.5.2.3 FREQUENCY RESPONSE. Perform the procedures of paragraph 5.5.2.1.

- a. Connect a jumper across the VU meter terminals.
- b. Maintain an audio input level of -55 dbm throughout the test.
- c. Adjust the MICROPHONE gain control to obtain +8 dbm output at 1000 cps. Do not move the MICROPHONE gain control during the test.
- d. The output measured on the distortion and noise meter should be +8 \pm 2 dbm from 50 cps to 15 kc.
- e. Repeat the above test using the NEMO input. The audio oscillator should be maintained at a level of -15 dbm input to the NEMO connector.

5.5.2.4 DISTORTION. Perform the procedures of paragraph 5.5.2.1.

- a. Connect a jumper across the VU meter terminals.
- b. Set the frequency of the audio oscillator to 1000 cps.
- c. Set the audio oscillator output level to obtain -55 dbm input to the 808A-1.
- d. Adjust the MICROPHONE gain control to obtain +8 dbm output as indicated on the distortion and noise meter.
- e. Measure the distortion using the distortion and noise meter.
- f. If the harmonic distortion (not hum) is greater than 2 percent, adjust potentiometer R12 (see figure 5-1) to obtain minimum distortion as indicated on the noise and distortion meter.

5.5.2.5 HEADPHONE AND PA OUTPUT. Perform the procedures of paragraph 5.5.2.1.

- a. Set the audio oscillator frequency to 1000 cps.
- b. Set the output level of the audio oscillator to obtain -55 dbm input to the 808A-1.
- c. Adjust the MICROPHONE gain control to obtain 0 vu as indicated on the VU meter of the 808A-1.
- d. Set the MONITOR LEVEL on the rear apron of the 808A-1 fully clockwise.
- e. Measure the a-c voltage across the MONITOR PHONES jacks (J6 and J7). It should be 1.5 volts minimum across a 10-kilohm load.
- f. Move the MICROPHONE gain control to CUE, and measure the a-c voltage across the MONITOR PHONES jacks. The voltage should be 1.5 volts minimum across a 10-kilohm load.
- g. Turn the PUBLIC ADDRESS GAIN control fully clockwise and measure the voltage across the PA OUTPUT jack. It should be 5 millivolts minimum across a 10-kilohm load.

5.5.2.6 TURNTABLE RESPONSE. Set the controls of the 808A-1 Console as outlined in paragraph 5.4.

- a. Using the test record on TURNTABLE ONE, adjust the TURNTABLE ONE FADE control to set the output level to 0 vu as indicated on the VU meter. The level should be set with the 500-cps tone of the test record.
- b. Allow the test record to play while observing the indications on the VU meter. With each tone the VU meter should indicate 0 ± 3 vu.
- c. Repeat the above test on TURNTABLE TWO.

5.5.2.7 TURNTABLE DISTORTION. Set the controls as outlined in paragraph 5.4.

- a. Disconnect the cartridge head from the tone arm of TURNTABLE ONE.
- b. Connect the audio oscillator and unbalanced attenuator through the low impedance cartridge simulator to the tone arm input.
- c. Set the audio oscillator frequency to 1000 cps.
- d. Set the MASTER GAIN control to 26.
- e. Set the TURNTABLE ONE FADE control to 32.
- f. Adjust the audio oscillator output level to obtain 0 vu indicated on the VU meter.

- g. Measure the distortion using the noise and distortion meter. The distortion should be less than 2 percent.
- h. Repeat the above procedure for TURNTABLE TWO.

5.5.2.8 TURNTABLE CUE. Set the controls as outlined in paragraph 5.4.

- a. Place records on both turntables.
- b. Set the MASTER GAIN control to 26.
- c. Adjust the TURNTABLE ONE FADE to obtain 0 vu indicated on the VU meter of the 808A-1.
- d. Connect a headset to the MONITOR PHONES jack, and adjust the MONITOR LEVEL to a comfortable listening level.
- e. Move the TURNTABLE ONE FADE control to CUE. There should be no change in the headphone level.
- f. Repeat the above procedure for TURNTABLE TWO.
- g. With both turntables operating, move one FADE control to CUE while the other FADE control is adjusted for an output indication of 0 vu. Reverse the FADE settings. Observe that the headset responds to the turntable with the FADE control in the CUE position and that the turntable with the FADE control out of CUE position feeds the program line. Observe that when all FADE controls are out of CUE position, the headphones respond to the program line signal.

5.6 SERVICING TRANSISTOR CIRCUITS.

5.6.1 GENERAL.

The servicing procedures and test equipments that have been used in the past with other types of electronic gear, for the most part, may be used with transistor circuits. The cases where special precautions must be used are listed below. If the equipment under test contains transistors, even though they may not be in the circuits under test, the precautions should be observed because of the possibility of accidentally contacting a transistor circuit.

5.6.2 TEST EQUIPMENT.

The damage to transistors by test equipment is usually the result of accidentally applying too much current or voltage to the transistor elements. The following are common sources of damage from test equipment.

5.6.2.1 TRANSFORMERLESS POWER SUPPLIES. One source of such current is from the power line when test gear with transformerless power supply is used. This type of test gear can be used by employing an isolation transformer in the power line.

5.6.2.2 LINE FILTER. It is still possible to damage transistors from line current, even though the test gear has a power transformer in the power supply, if the test gear is equipped with a line filter. This filter may act like a voltage divider and apply 55

SECTION V Maintenance

volts a-c to the transistor. To eliminate trouble from this situation, connect a ground wire from the chassis of the test gear to the chassis of the equipment under test before any other connections are made.

5.6.2.3 LOW-SENSITIVITY MULTIMETERS. Another source of transistor damage is a multimeter that requires excessive current for adequate indications. Multimeters that have sensitivities of less than 5000 ohms per volt should not be used. A multimeter with lower sensitivity will draw too much current through many types of transistors and damage them. Use of 20,000-ohm-per-volt meters or vacuum-tube voltmeters is recommended. Check the ohmmeter circuits (even those in vtvm's) on all scales with an external, low-resistance milliammeter in series with the ohmmeter leads. If the ohmmeter draws more than one milliampere on any range, this range cannot be used safely on small transistors.

5.6.2.4 POWER SUPPLY. Always use fresh batteries of the proper value for the equipment under test in test power supplies. Never use battery eliminators because the regulation of these devices is poor at the current values drawn by transistor circuits. Be certain about identification of polarity before attaching the battery to the equipment under test; polarity reversal may damage the transistor.

5.6.3 ELECTRIC SOLDERING IRONS.

The following are possible sources of transistor damage from soldering irons.

5.6.3.1 LEAKAGE CURRENT. Electric soldering irons may damage transistors through leakage current. To check a soldering iron for leakage current, connect an a-c voltmeter between the tip of the iron and a ground connection (water pipe or line ground), allow the iron to heat up, then check for a-c voltage with the meter. Reverse the plug in the a-c receptacle and again check for voltage. If there is any indication on the meter, isolate the iron from the line with a transformer. The iron may be used without the isolation transformer if the iron is plugged in and brought to temperature and then unplugged for the soldering operation. It is also possible to use a ground wire between the tip of the iron and the chassis of the equipment being repaired to prevent damage from leakage current.

5.6.3.2 IRON SIZE. Light-duty soldering irons of 20- to 25-watt capacity are adequate for transistor work and should be used. If it is necessary to use a heavier duty iron, wrap a piece of number 10 copper wire around the tip of the iron and make it extend beyond the tip of the iron. Tin the end of the piece of copper wire and use it as the soldering tin.

5.6.4 SERVICING PRACTICES.

5.6.4.1 HEAT-SINK WHEN SOLDERING. When installing or removing a soldered-in transistor, grasp

the lead to which heat is being applied, between the solder joint and the transistor, with long-nosed pliers to bleed off some of the heat that conducts into the transistor from the soldering iron. Make sure the wires that are being soldered to transistor terminals are properly pretinned so that the connection can be made quickly. Excessive heat will permanently damage a transistor.

5.6.4.2 REMOVAL OF TRANSISTORS FROM OPERATING CIRCUITS. Never remove or replace a plug-in transistor when the supply voltage is turned on. Transients thus produced may damage the transistor or others remaining in the circuit. If a transistor is to be evaluated in an external test circuit, be sure that no more voltage is applied to the transistor than is normally used in the circuit from which it came.

5.6.4.3 PLUG-IN TRANSISTORS. When servicing equipment that uses plug-in transistors, it is good practice to remove the transistors from their sockets and reinsert them to break down any film of corrosion or dirt that may have formed.

5.6.4.4 RESISTANCE MEASUREMENTS IN TRANSISTOR CIRCUITS. When measuring resistances of circuits containing transistors or semiconductor diodes, remember that these components are polarity and voltage sensitive. Any capacitors used in transistor circuits are usually of large values (especially in audio, servo, or power circuits) and it takes time to charge these capacitors when an ohmmeter is connected to a circuit in which they appear; thus, any reading obtained is subject to error if the capacitor is not allowed time to fully charge. In some cases, it may be best to isolate the components in question and individually measure them.

5.6.4.5 POWER TRANSISTOR HEAT SINKS. In some cases, power transistors are mounted on heat sinks that are designed to carry heat away from them, and in some power circuits, the transistor must also be insulated from ground. This insulating is done by means of insulating washers made of fiber and mica. When replacing transistors of this nature, be sure that the insulating washers are replaced in proper order. Before installing the mica washers, treat them with a film of silicone fluid, Collins part number 005-0273-00, or equivalent. This treatment helps in the transfer of heat. After the transistor is mounted and before making any connections to it, check from the case to ground with an ohmmeter to see that the insulation is effective.

5.6.4.6 TEST PRODS. Test prods should be clean and sharp. Because many of the resistors used in transistorized equipments are of low values, when checking resistance values any additional resistance produced by a dirty test prod will make a good resistor appear to be out of tolerance. In miniaturized equipment the clearance between socket terminals, wires, and other components is usually very small. Because of this, it is easy to cause accidental short circuits with a test prod using a long, exposed needle in the end.

Short circuits can be very destructive to transistors, therefore it is a good practice to cover all of the exposed tip of the test prod, except about 1/8 inch, with plastic tape or other insulation.

5.6.5 TROUBLE SHOOTING.

The usual trouble-shooting practices apply to transistors. Be sure the test equipment and tools meet the requirements outlined in the above paragraphs. It is recommended that transistor testers be used to evaluate the transistor.

5.6.5.1 OHMMETER TEST OF TRANSISTORS. If a transistor tester is not available, a good ohmmeter may be used for testing. Be sure the ohmmeter meets the requirements as set forth in the paragraph on test equipment, above. To check a PNP transistor, connect the positive lead of the ohmmeter to the base and the negative lead to the emitter. (The red lead is not necessarily the positive lead on all ohmmeters.) Generally, a resistance reading of 50,000 ohms or more should be obtained. Connect the negative lead to the collector; again a reading of 50,000 ohms or more should be obtained. Reconnect the circuit with the negative lead of the ohmmeter to the base. With the positive lead connected to the emitter, a value of resistance in the order of 500 ohms or less should be obtained. Likewise, with the positive lead connected to the collector, a value of 500 ohms or less should be obtained. Similar tests made on an NPN transistor produce results as follows: With the negative ohmmeter lead connected to the base, the value of resistance between the base and the emitter and between the base and the collector should be high. With the positive lead of the ohmmeter connected to the base, the value of resistance between the base and the emitter and between the base and collector should be low. If the readings do not check out as indicated, the transistor probably is defective and should be replaced.

CAUTION

If a defective transistor is found, make sure that the circuit is in good operating order before inserting the replacement transistor. If a short circuit exists in the circuit, plugging in another transistor will most likely result in another burned out transistor. Do not depend upon fuses to protect transistors.

Make sure that the bias resistors in series with the various transistor elements are correct. The transistor is very sensitive to improper bias voltages; therefore, a short or open circuit in the bias resistors may damage the transistor. For this reason, do not trouble-shoot by shorting various points in the circuit to ground and listening for clicks.

5.7 TURNTABLE MAINTENANCE AND ADJUSTMENTS.

CAUTION

The turntables are equipped with double ball thrust bearings. One is attached to each platter shaft and one is loose in each shaft well. Use caution when inverting the 808A-1 Console to ensure that the loose ball bearings do not fall out and become lost.

5.7.1 ADJUSTMENTS.

Each of the slots for the speed-shifting levers is equipped with an adjustable stop. The stops should be adjusted to allow the least amount of pressure to be applied to the idler wheel and yet maintain sufficient driving power. Too much pressure will cause incorrect speed, vibration, and idler wear. If sufficient driving power cannot be obtained with the shifting lever stop adjustments, loosen the motor hanger bolts, move the motor to a position where adequate driving power can be obtained, and tighten the hanger bolts.

5.7.2 LUBRICATION.

The motors are self-lubricating types and require no periodic lubrication. Use light machine oil on other moving parts of the turntables and semisolid lubricant on the idler shaft. Do not overlubricate.

5.7.3 CLEANING.

Clean the idler and inside rim of the turntable platter with methyl alcohol. During the first few weeks of operation, the idler and inside rim of the platter should be cleaned weekly. If the idler or rim becomes contaminated with oil, clean it with detergent and hot water.

5.8 STYLUS REMOVAL AND INSTALLATION.

Press the stylus quick-change knob on the top of the pickup and turn it 90 degrees. Grasp the slip-in stylus with the thumb and forefinger and slide the stylus out of the holder.

To replace the stylus, press the stylus quick-change knob on the top of the pickup and turn it 90 degrees so that the holder channel is accessible from both ends. Grasp the stylus with the thumb and forefinger and slide the stylus into the holder. Turn the change knob on the top of the pickup and allow the spring to return the stylus holder into place between the pickup magnets.

NOTE

The end of the stylus-holder channel which has the hole (visible only when the stylus is removed) is the end into which the 1-mil stylus should be placed.

SECTION V
Maintenance

**5.9 STYLUS HOLDER REMOVAL AND
INSTALLATION.**

Pull off the quick-change knob on the top of the pickup. Compress the spring slightly and remove the C-washer. Remove the spring and flat washer and slide the stylus holder out of the cartridge.

To replace the stylus holder, insert the stylus-holder shaft into the cartridge as far as it will go. Place the flat washer and spring over the stylus-holder shaft, compress the spring, and insert the C-washer into the slot provided. Install the quick-change knob on the top of the pickup. Be sure that the key in the knob matches the slot in the stylus-holder shaft.

SECTION VI
PARTS LIST

ITEM	DESCRIPTION	COLLINS PART NUMBER
808A-1 CONSOLE		522-2609-00
B1	MOTOR: 115 v, 60 cycle, 4 pole, no load input power, 31 watt; General Industries part no. D-10-CCW	936-0476-00
E2	MOTOR: same as B1	
DS1	INDICATOR LIGHT ASSEMBLY: neon lamp, red lens, panel mtg w/ built-in resistor; 0.1 w at 115 v, 0.2 w at 230 v; Industrial Devices, Inc., part no. 1010C1	262-1167-00
DS2	INDICATOR LIGHT ASSEMBLY: same as DS1	262-1167-00
DS3	LAMP, INCANDESCENT: pilot light w/ miniature bayonet base; 6.3 v, 0.150 amp, T-3-1/4 bulb; General Electric part no. 47	262-3240-00
E1	POST, BINDING: w/ banana plug jack, red nylon insulation; 1000 vdcw; 30 amp current; 3/4 in. lg; Superior Electric Co. part no. DFN 30 RC	372-1062-00
E2	POST, BINDING: same as E1	372-1062-00
E3	POST, BINDING: same as E1	372-1062-00
E4	TERMINAL, STUD: single ended w/ metal base, 1/4 in. hex head, 5/8 in. lg; Armel Electronics part no. RTMT-12M	306-0976-00
E5 thru E10	TERMINAL, STUD: same as E4	306-0976-00
E11	TERMINAL, LUG: phosphor bronze, for #6 screw; Shakeproof locking hole; Shakeproof, Inc., part no. 2104-06-02-2520	304-0318-00
E12	TERMINAL, LUG: same as E11	304-0318-00
E13	TERMINAL, LUG: same as E11	304-0318-00
E14	TERMINAL, LUG: phosphor bronze, for #4 screw; Shakeproof locking hole; Shakeproof, Inc., part no. 2104-04-01-2520	304-0317-00
E15	TERMINAL, LUG: same as E14	304-0317-00
E16	TERMINAL, LUG: same as E14	304-0317-00
E17	TERMINAL, LUG: same as E14	304-0317-00
E18	TERMINAL, LUG: same as E14	304-0317-00
E19	TERMINAL, LUG: same as E11	304-0318-00
E20	TERMINAL, LUG: same as E11	304-0318-00
F1	FUSE, CARTRIDGE: brass, nickel plated, glass enclosed, time tag, 1.5 amp, 125 v max; 0.250 in. dia by 1-1/4 in. lg	264-0007-00
H1	CLAMP, CABLE-NYLON: straight flexible nylon clamp designed to surround cable or group of hook-up wires; Thomas & Betts Co. part no. TY-15	435-1031-00
H2	CLAMP, LOOP-NYLON: straight flexible nylon clamp designed to surround group of hook-up wires; Thomas & Betts Co. part no. TY-5	435-1026-00
J1	CONNECTOR, RECEPTACLE, ELECTRICAL: 3 contact, socket insert, 15 amp; Cannon Electric Co. part no. XLR-3-31	369-0011-00
J2	CONNECTOR, RECEPTACLE, ELECTRICAL: same as J1	369-0011-00
J3	CONNECTOR, RECEPTACLE, ELECTRICAL: same as J1	369-0011-00
J4	CONNECTOR, RECEPTACLE, ELECTRICAL: 2 wire polarized twist-lock, flush base, 10 amp, 250 v; 15 amp, 125 v; 15/16 in. w by 1-5/8 in. dia overall	549-1011-002
J5	JACK, TELEPHONE: midget phone jack, for 2 conductor plug w/ 1/4 in. dia barrel; 15/16 in. dia by 1-5/16 in. lg overall; Switchcraft part no. 2J-1182	358-1080-00
J6	JACK, TELEPHONE: same as J5	358-1080-00
J7	JACK, TELEPHONE: same as J5	358-1080-00
M1	METER, AUDIO LEVEL: VU meter for u/ in equipments exposed to environments; background color, white	456-0056-00
MP1	SHOCKMOUNT: Q. R. K. Electronic Products part no. 127-12A	900-1091-00
MP2	PLATTER AND BEARING: 12 in. (matched pair only); Q. R. K. Electronic Products part no. 127-10	935-0380
MP3	IDLER: Q. R. K. Electronic Products part no. 112-1	
MP4	IDLER SHAFT ASSEMBLY: 12 in. ungrooved shaft; Q. R. K. Electronic Products part no. 112-15B	

ITEM	DESCRIPTION	COLLINS PART NUMBER
MP5	IDLER THRUST WASHER: Q. R. K. Electronic Products part no. 128-08	
MP6	IDLER RETAINING RING: 12 in. ungrooved shaft; Q. R. K. Electronic Products part no. 127-07	
MP7	COMPRESSION SPRING: shift mechanism; Q. R. K. Electronic Products part no. 127-22	
MP8	EXPANSION SPRING: 12 in. turntable; Q. R. K. Electronic Products part no. 127-05	
MP9	SHIFT ARM: Q. R. K. Electronic Products	
MP10	SHIFT-ARM, KNOB: Q. R. K. Electronic Products	
MP11	IDLER ADJUSTING SCREW: Q. R. K. Electronic Products part no. 112-33	
MP12	PULLEY, MOTOR: Q. R. K. Electronics Products	935-0412-00
O1	KNOB ASSEMBLY: c/o black phenolic shell, aluminum skirt, 1.562 in. dia & black plastic set-screw knob w/ metal insert; 1-9/16 in. dia by 49/64 in. w overall	549-1023-003
O2 thru O6	KNOB ASSEMBLY: same as O1	549-1023-003
O7	KNOB: phenolic, round, push-on type w/ white filled index line & spun satin chrome top insert	281-0415-00
P1	CONNECTOR, RECEPTACLE, ELECTRICAL: 2 female contacts; 10 amp, 250 v; 15 amp, 125 v	368-0010-00
PU1	ARM, SOUND REPRODUCER: tone arm; +15°C to +45°C; Rek-O-Kut Corp. Model S-320 (Mod)	270-1589-00
PU2	ARM, SOUND REPRODUCER: same as PU1	270-1589-00
R1	RESISTOR, VARIABLE, COMPOSITION: dual resistor; sec. A, 10,000 ohms ±20%, 1/4 w; section B, 5000 ohms ±20%, 1/4 w; includes S1	376-2167-00
R2	RESISTOR, VARIABLE, COMPOSITION: same as R1, includes S2	376-2167-00
R3	RESISTOR, VARIABLE, COMPOSITION: same as R1, includes S3	376-2168-00
R4	RESISTOR, VARIABLE, COMPOSITION: dual section; sec. A, 10,000 ohms ±20%, 1/4 w; sec. B, 5000 ohms ±20%, 1/4 w	376-2168-00
R5	RESISTOR, VARIABLE, COMPOSITION: same as R4	376-2168-00
R6	RESISTOR, VARIABLE, COMPOSITION: 5000 ohms 1/4 w; includes S7	376-7207-00
R7	RESISTOR, FIXED, COMPOSITION: 270 ohms ±10%, 1/2 w	745-1328-00
R8	RESISTOR, FIXED, COMPOSITION: 22 ohms ±10%, 1/2 w	745-1282-00
R9	RESISTOR, FIXED, COMPOSITION: 10 ohms ±10%, 1/2 w	745-1268-00
R10	NOT USED	
R11	NOT USED	
R12	NOT USED	
R13	NOT USED	
R14	NOT USED	
R15	RESISTOR, FIXED, COMPOSITION: same as R7	745-1328-00
R16	RESISTOR, FIXED, COMPOSITION: same as R8	745-1282-00
R17	RESISTOR, FIXED, COMPOSITION: 6800 ohms ±10%, 1/2 w	745-1387-00
R18	RESISTOR, FIXED, COMPOSITION: 1500 ohms ±10%, 1/2 w	745-1359-00
R19	RESISTOR, FIXED, COMPOSITION: same as R18	745-1359-00
R20	RESISTOR, FIXED, COMPOSITION: 4300 ohms ±5%, 1/2 w	745-1378-00
R21	RESISTOR, FIXED, COMPOSITION: 22,000 ohms ±10%, 1/2 w	745-1408-00
R22	RESISTOR, FIXED, COMPOSITION: 3300 ohms ±10%, 1/2 w	745-1373-00
R23	NOT USED	
R24	NOT USED	
R25	RESISTOR, FIXED, COMPOSITION: 10,000 ohms ±10%, 1/2 w	745-1394-00
R26	RESISTOR, FIXED, COMPOSITION: same as R9	745-1268-00
R27	RESISTOR, FIXED, COMPOSITION: same as R9	745-1268-00
S1	P/O R1	
S2	P/O R2	
S3	P/O R3	
S4	SWITCH, ROTARY: 2 circuit, 2 pole, 3 position, 1 section; 2 moving, 8 fixed contacts	259-1508-00
S5	SWITCH, LEVER: one locking position & neutral, spst normally open; form "A" type contact, lever to lock w/ contacts in closed position	375-0198-00

SECTION VI
Parts List

808A-1 Console

ITEM	DESCRIPTION	COLLINS PART NUMBER
S6	SWITCH, LEVER: same as S5	375-0198-00
S7	P/O R6	
TBI	NOT USED	
TB2	TERMINAL BOARD: phenolic w/ 4 solder-lug terminals; 1 1/16 in. w by 1-1/2 in. lg; Cinch Mfg. Corp. part no. 1532-A	306-9032-00
TT1	TURNTABLE: 31 free watts w/ no load applied to motor; 125 v ac, 60 cps; Q. R. K. Electronic Products part no. TT200 (Mod)	270-1585-00
TT2	TURNTABLE: same as TT1	270-1585-00
XDS1	NOT USED	
XDS2	NOT USED	
XDS3	LAMPHOLDER: miniature bayonet base, clip bracket pilot light socket; 1-1/8 in. w by 7/8 in. h; Drake Mfg. Co. part no. 204AH	262-1240-00
XF1	FUSEHOLDER: extractor post fuse holder w/ test probe hole in knob; 15 amp, 250 v; for w/w 1-1/4 in. by 1/4 in. fuses; Bussman Fuse Co. part no. HKP-HJR	265-1019-00
POWER SUPPLY		549-1042-00
C101	CAPACITOR, FIXED, ELECTROLYTIC: 500 uf -15% +100%, 25 vdcw; Cornell-Dubilier part no. BRH 10156V	183-1208-00
C102	CAPACITOR, FIXED, ELECTROLYTIC: 500 uf -10% +100%, 25 vdcw	183-1788-00
C103	CAPACITOR, FIXED, ELECTROLYTIC: same as C102	183-1788-00
CR101	SEMICONDUCTOR DEVICE, DIODE: silicon, hermetically sealed; 200 v peak inverse voltage; Motorola part no. 1N1488	353-1657-00
CR102	SEMICONDUCTOR DEVICE, DIODE: same as CR101	353-1657-00
E101	TERMINAL, STUD: single ended w/ metal base; 1/4 in. hexhead, 5/8 in. lg; Arnel Electronics part no. RTMT 12M	306-0976-00
E102 thru E107	TERMINAL, STUD: same as E101	306-0976-00
E108	NOT USED	
E109 thru E115	TERMINAL, STUD: same as E101	306-0976-00
L101	REACTOR: 2.0 hys, 35 ma dc, 80 to 105 ohms resistance, 500 v rms; 100/120 cps; Chi. Std. Trans. Corp. part no 24022	668-0197-00
R101	RESISTOR, FIXED, COMPOSITION: 10 ohms ±10%, 2 w	745-5568-00
R102	RESISTOR, FIXED, COMPOSITION: 680 ohms ±10%, 1/2 w	745-1345-00
R103	RESISTOR, FIXED, COMPOSITION: 15,000 ohms ±10%, 1/2 w	745-1401-00
T101	TRANSFORMER, POWER, STEP-DOWN: pri #1, 120 v, pri #2, 240 v; sec. #1, 34 v, CT; sec. #2, 6.3 v, 150 ma; 50/60 cps; continuous duty cycle; Chi. Std. Trans. part no. 31000	662-0042-00
TB101	TERMINAL BOARD: phenolic, 5 terminals, 7/8 in. w by 2-1/4 in. lg; Howard Jones part no. 353-11-05-001	367-0120-00
PREAMPLIFIER SUBASSEMBLY, A1		549-0618-003
A1C1	CAPACITOR, FIXED, ELECTROLYTIC: 30 uf -10% to +100%, 10 vdcw	183-1377-00
A1C2	CAPACITOR, FIXED, ELECTROLYTIC: 100 uf -10% to +100%, 6 vdcw; Sprague Electric part no. 30D135A1	183-1168-00
A1C3	CAPACITOR, FIXED, ELECTROLYTIC: 50 uf -10% to +100%, 15 vdcw; Sprague Electric part no. 30D170A1	183-1157-00
A1Q1	TRANSISTOR: hermetically sealed, PNP germanium alloy; General Electric part no. 2N1175A	352-0315-00
A1R1	RESISTOR, FIXED, FILM: 1960 ohms ±1%, 1/4 w	705-7110-00
A1R2	RESISTOR, FIXED, FILM: 17,800 ohms ±1%, 1/4 w	705-7156-00
A1R3	RESISTOR, FIXED, FILM: 6190 ohms ±1%, 1/4 w	705-7134-00
A1R4	RESISTOR, FIXED, FILM: 10,000 ohms ±1%, 1/4 w	705-7144-00
A1R5	RESISTOR, FIXED, FILM: 61.9 ohms ±1%, 1/4 w	705-7038-00
A1R6	RESISTOR, FIXED, FILM: 7500 ohms ±1%, 1/4 w	705-7138-00
A1T1	TRANSFORMER, AUDIO FREQUENCY: pri 100 ohms, CT; sec. 800 ohms; 50/15,000 cps; continuous duty cycle; Chi. Std. Trans. part no. 30878	667-0050-00

ITEM	DESCRIPTION	COLLINS PART NUMBER
EQUALIZED PREAMPLIFIER, A2 AND A3		549-1025-003
C1	CAPACITOR, FIXED, ELECTROLYTIC: 30 uf -10% to +100%, 10 vdcw	183-1377-00
C2	CAPACITOR, FIXED, ELECTROLYTIC: 100 uf -10% to +100%, 6 vdcw; Sprague Electric part no. 30D135A1	183-1168-00
C3	CAPACITOR, FIXED, ELECTROLYTIC: 50 uf -10% to +100%, 15 vdcw; Sprague Electric part no. 30D170A1	183-1157-00
C4	CAPACITOR, FIXED, ELECTROLYTIC: 3.3 uf ±10%, 15 vdcw; Sprague Electric part no. 150D335X9015A2	184-7718-00
Q1	TRANSISTOR: hermetically sealed; PNP germanium; General Electric part no. 2N1175A	352-0315-00
R1	RESISTOR, FIXED, FILM: 1960 ohms ±1%, 1/4 w	705-7110-00
R2	RESISTOR, FIXED, FILM: 17,800 ohms ±1%, 1/4 w	705-7156-00
R3	RESISTOR, FIXED, FILM: 6190 ohms ±1%, 1/4 w	705-7134-00
R4	RESISTOR, FIXED, FILM: 10,000 ohms ±1%, 1/4 w	704-7144-00
R5	RESISTOR, FIXED, FILM: 61.9 ohms ±1%, 1/4 w	705-7038-00
R6	RESISTOR, FIXED, FILM: 7500 ohms ±1%, 1/4 w	705-7138-00
R7	RESISTOR, FIXED, FILM: 3830 ohms ±1%, 1/8 w	705-6624-00
R8	RESISTOR, FIXED, FILM: 110 ohms ±1%, 1/8 w	705-6458-00
PREAMPLIFIER SUBASSEMBLY, A4, A5, AND A6		549-0619-003
C1	CAPACITOR, FIXED, ELECTROLYTIC: 30 uf -10% to +100%, 10 vdcw	183-1377-00
C2	CAPACITOR, FIXED, ELECTROLYTIC: 100 uf -10% to +100%, 6 vdcw; Sprague Electric part no. 30D135A1	183-1168-00
C3	CAPACITOR, FIXED, ELECTROLYTIC: 50 uf -10% to +100%, 15 vdcw; Sprague Electric part no. 30D170A1	183-1157-00
Q1	TRANSISTOR: hermetically sealed; PNP germanium; General Electric Co. part no. 2N1175A	352-0315-00
R1	RESISTOR, FIXED, FILM: 1960 ohms ±1%, 1/4 w	705-7110-00
R2	RESISTOR, FIXED, FILM: 17,800 ohms ±1%, 1/4 w	705-7156-00
R3	RESISTOR, FIXED, FILM: 6190 ohms ±1%, 1/4 w	705-7134-00
R4	RESISTOR, FIXED, FILM: 10,000 ohms ±1%, 1/4 w	705-7144-00
R5	RESISTOR, FIXED, FILM: 61.9 ohms ±1%, 1/4 w	705-7038-00
R6	RESISTOR, FIXED, FILM: 7500 ohms ±1%, 1/4 w	705-7138-00
AMPLIFIER, A7		549-0625-005
A7C1	CAPACITOR, FIXED, ELECTROLYTIC: 50 uf -10% to +100%, 15 vdcw; Sprague Electric part no. 30D170A1	183-1157-00
A7C2	CAPACITOR, FIXED, ELECTROLYTIC: 300 uf -10% to +100%, 3 vdcw; Sprague Electric part no. 30D118A1	183-1191-00
A7C3	CAPACITOR, FIXED, ELECTROLYTIC: same as A7C1	183-1157-00
A7C4	CAPACITOR, FIXED, ELECTROLYTIC: same as A7C2	183-1191-00
A7C5	CAPACITOR, FIXED, ELECTROLYTIC: 50 uf -10% to +100%, 25 vdcw; Sprague Electric part no. 30D186A1	183-1158-00
A7C6	CAPACITOR, FIXED, ELECTROLYTIC: 500 uf -20°C to +85°C oper. temp; 15 vdcw	183-1303-00
A7C7	CAPACITOR, FIXED, MICA: 2200 uuf ±5%, 500 vdcw; Electro Motive part no. DM20F222J	012-3339-00
A7C8 thru A7C10	CAPACITOR, FIXED, MICA: same as A7C7	012-3339-00
A7C11	CAPACITOR, FIXED, PAPER: 0.10 uf ±20%, 200 vdcw	931-5942-00
A7CR1	SEMICONDUCTOR DEVICE, DIODE: germanium, hermetically sealed; RCA part no. 1N2326	353-2038-00
A7Q1	TRANSISTOR: hermetically sealed; PNP germanium. General Electric part no. 2N1175A	352-0315-00
A7Q2	TRANSISTOR: same as A7Q1	352-0315-00
A7Q3	TRANSISTOR: hermetically sealed; PNP germanium, Motorola, Inc. part no. 2N651	352-0194-00
A7Q4	TRANSISTOR: same as A7Q3	352-0194-00
A7R1	RESISTOR, FIXED, COMPOSITION: 10,000 ohms ±10%, 1/2 w	745-1394-00
A7R2	RESISTOR, FIXED, FILM: 3160 ohms ±1%, 1/4 w	705-7120-00
A7R3	RESISTOR, FIXED, COMPOSITION: 22,000 ohms ±10%, 1/2 w	745-1408-00
A7R4	RESISTOR, FIXED, COMPOSITION: same as A7R1	745-1394-00

808A-1 Console

ITEM	DESCRIPTION	COLLINS PART NUMBER
A7R5	RESISTOR, FIXED, COMPOSITION: 680 ohms $\pm 10\%$, 1/2 w	745-1345-00
A7R6	RESISTOR, VARIABLE, COMPOSITION: 5000 ohms $\pm 20\%$, 1/4 w	376-2540-00
A7R7	RESISTOR, FIXED, COMPOSITION: 18,000 ohms $\pm 10\%$, 1/2 w	745-1405-00
A7R8	RESISTOR, FIXED, COMPOSITION: 0.18 megohms $\pm 10\%$, 1/2 w	745-1447-00
A7R9	RESISTOR, FIXED, COMPOSITION: 1000 ohms $\pm 10\%$, 1/2 w	745-1352-00
A7R10	RESISTOR, FIXED, COMPOSITION: 27,000 ohms $\pm 10\%$, 1/2 w	745-1412-00
A7R11	RESISTOR, FIXED, WIREWOUND: 4.0 ohms $\pm 5\%$, 2.5 w, Dale Products part no. RSM2C/4R0H	747-5312-00
A7R12	RESISTOR, VARIABLE, WIREWOUND: 6 ohms $\pm 20\%$, 1.5 w	377-0567-00
A7R13	RESISTOR, FIXED, WIREWOUND: same as A7R11	747-5312-00
A7R14	RESISTOR, FIXED, COMPOSITION: same as A7R10	745-1412-00
A7R15	RESISTOR, FIXED, COMPOSITION: 3600 ohms $\pm 5\%$, 1/2 w	745-1375-00
A7R16	RESISTOR, FIXED, COMPOSITION: same as A7R11	745-1394-00
A7R17	RESISTOR, FIXED, FILM: 825 ohms $\pm 1\%$, 1/4 w	705-7092-00
A7R18	RESISTOR, FIXED, FILM: 61.9 ohms $\pm 1\%$, 1/4 w	705-7038-00
A7R19	RESISTOR, FIXED, FILM: 147 ohms $\pm 1\%$, 1/4 w	705-7056-00
A7R20	RESISTOR, FIXED, FILM: 19,600 ohms $\pm 1\%$, 1/4 w	705-7158-00
A7R21	RESISTOR, FIXED, FILM: same as A7R20	705-7158-00
A7R22	RESISTOR, FIXED, COMPOSITION: 15,000 ohms $\pm 10\%$, 1/2 w	745-1401-00

ITEM	DESCRIPTION	COLLINS PART NUMBER
A7R23	RESISTOR, FIXED, COMPOSITION: 100 ohms $\pm 10\%$, 1/2 w	745-1310-00
A7R24	RESISTOR, FIXED, COMPOSITION: 47 ohms $\pm 10\%$, 1/2 w	745-1296-00
A7R25	RESISTOR, FIXED, COMPOSITION: same as A7R24 thru A7R27	745-1296-00
A7R28	RESISTOR, FIXED, COMPOSITION: 1500 ohms $\pm 10\%$, 1/2 w	745-1359-00
A7R29	RESISTOR, FIXED, COMPOSITION: 3900 ohms $\pm 10\%$, 1/2 w	745-1377-00
A7R30	RESISTOR, FIXED, COMPOSITION: 560 ohms $\pm 10\%$, 1/2 w	745-1342-00
A7R31	RESISTOR, FIXED, COMPOSITION: same as A7R30	745-1342-00
A7R32	NOT USED	
A7R33	RESISTOR, FIXED, COMPOSITION: 8200 ohms $\pm 10\%$, 1/2 w	745-1391-00
A7R34	RESISTOR, FIXED, COMPOSITION: 18 ohms $\pm 10\%$, 1/2 w	745-1279-00
A7T1	TRANSFORMER, AUDIO FREQUENCY: pri 8000 ohms; sec. 300 ohms, 50 to 15,000 cps; continuous duty cycle, Chi. Std. Trans. part no. 30658	667-0051-00
A7T2	TRANSFORMER, AUDIO FREQUENCY: pri 2000 ohms CT; sec. #1, 150 ohms; sec. #2, 600 ohms, 50 to 15,000 cps; continuous duty cycle, Chi. Std. Trans. part no 30659	667-0052-00

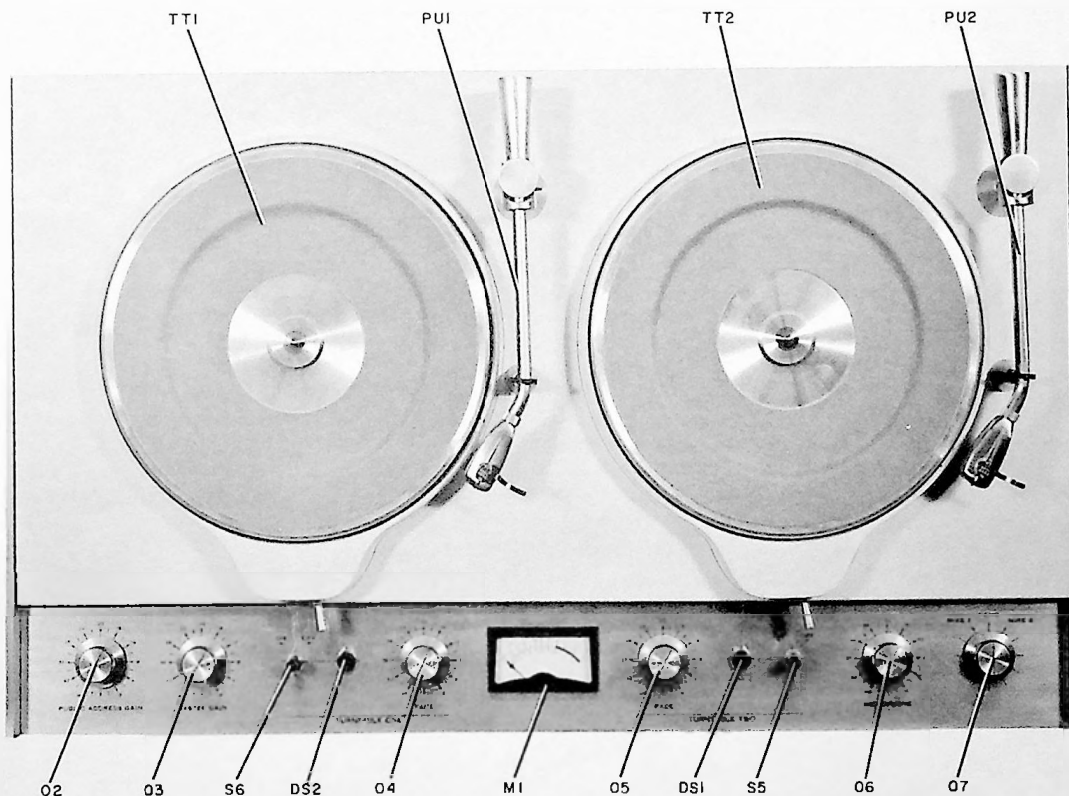


Figure 6-1. 808A-1 Console, Top View with Component Identification

SECTION VI
Parts List

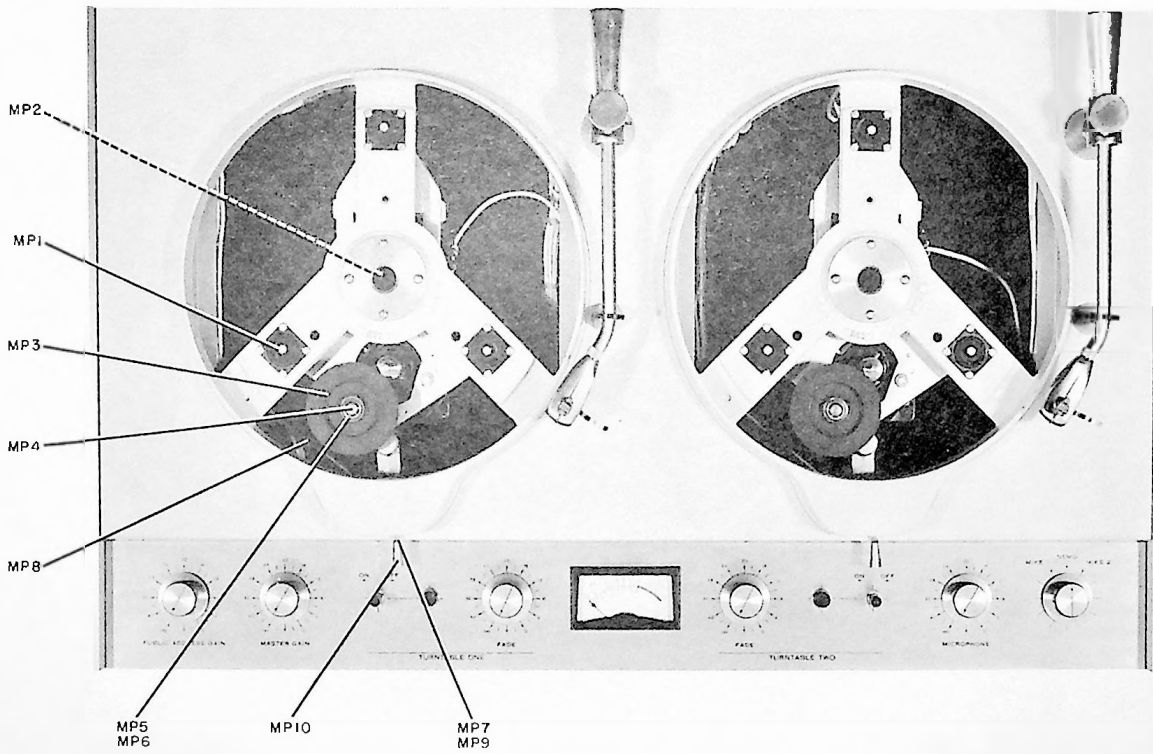


Figure 6-2. 808A-1 Console, Top View with Turntables Removed for Component Identification

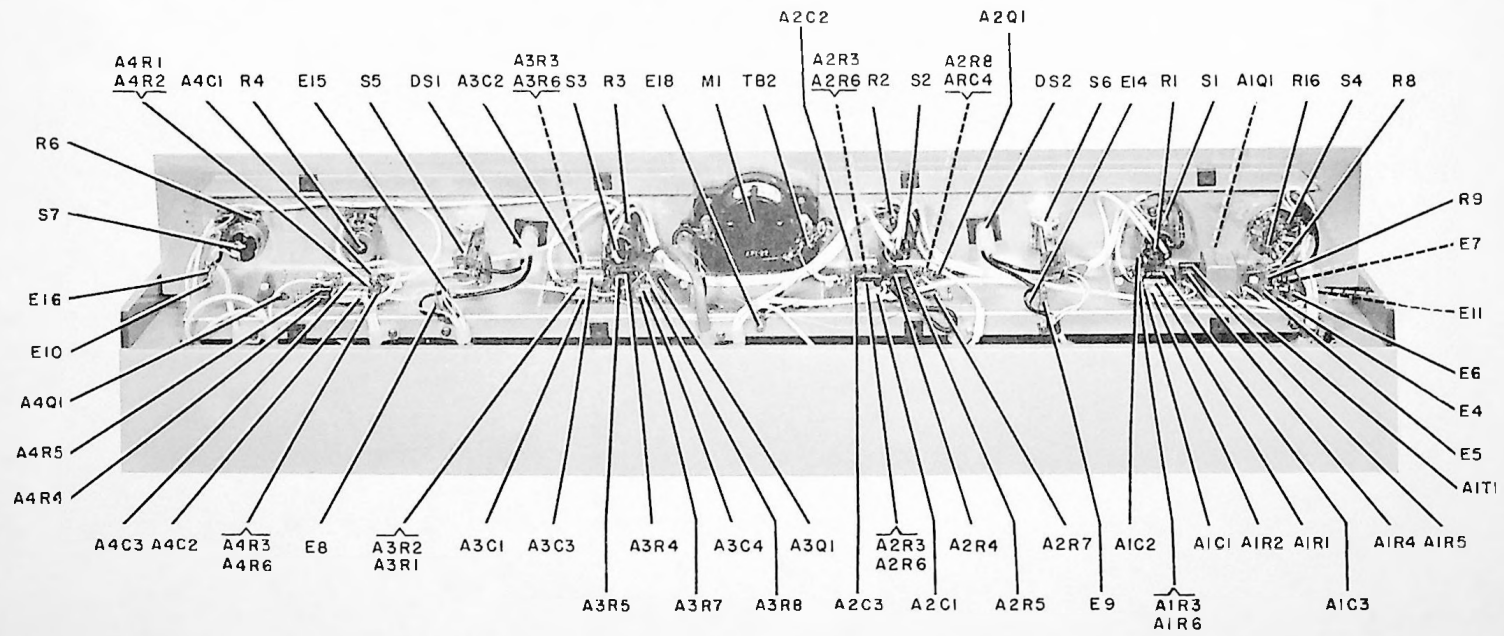


Figure 6-3. 808A-1 Console, Rear View of Front Panel
with Component Identification

SECTION VI
Parts List

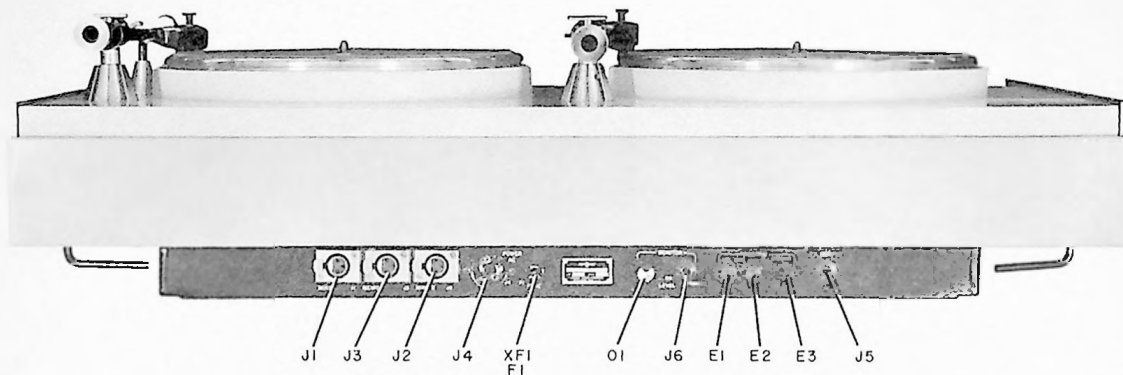


Figure 6-4. 808A-1 Console, Rear View with Component Identification

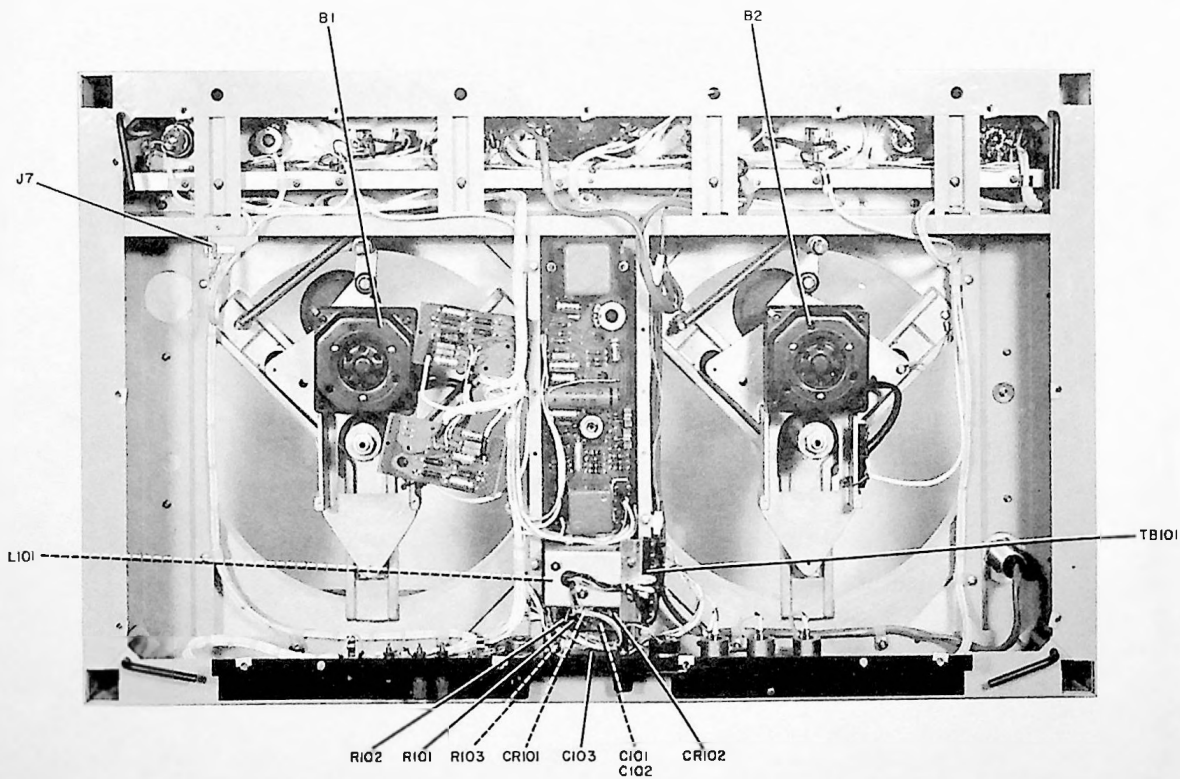


Figure 6-5. 808A-1 Console, Bottom View with Component Identification

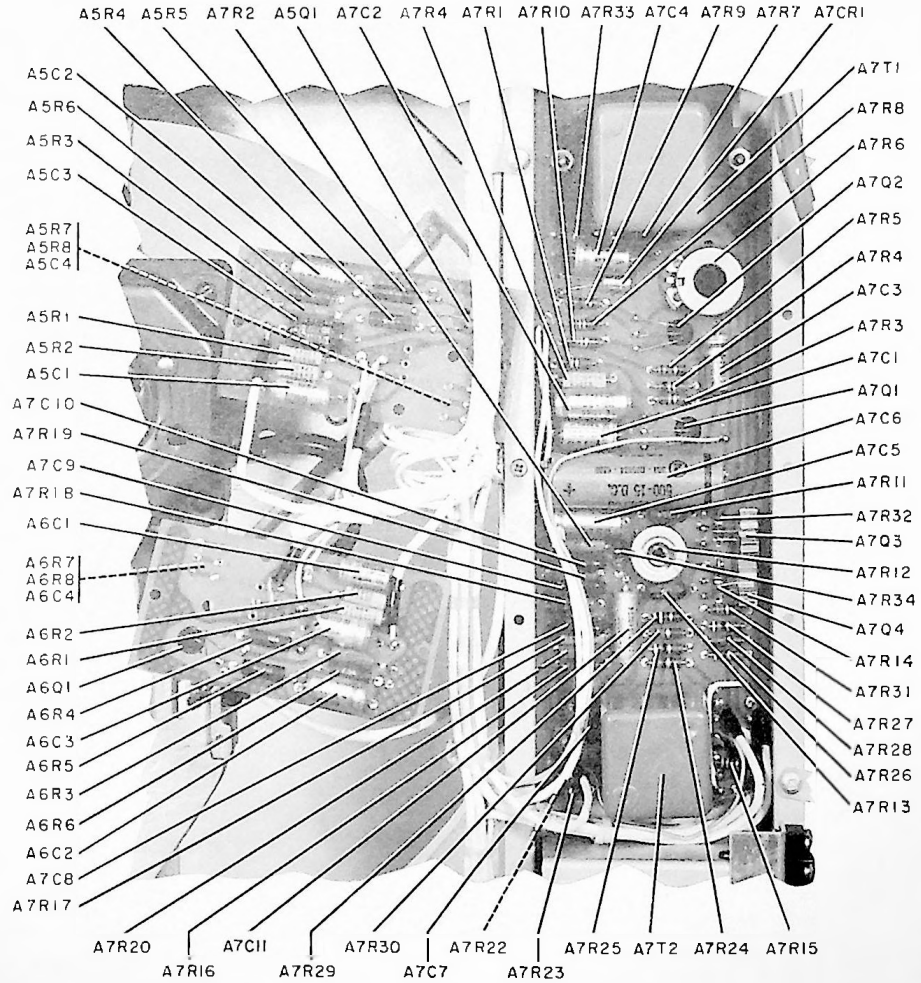


Figure 6-6. 808A-1 Console, Bottom View, Amplifier Boards with Component Identification

*Leg Corner
Old Style*

549-1036-003

Roller
549-1014-002

Pressed shaft collar
553-4461-003

New Corner ok on dwg
553-5717-802

Plastic feet for legs
015-14109-000

Legs 549-1013-00

SECTION VII
ILLUSTRATIONS

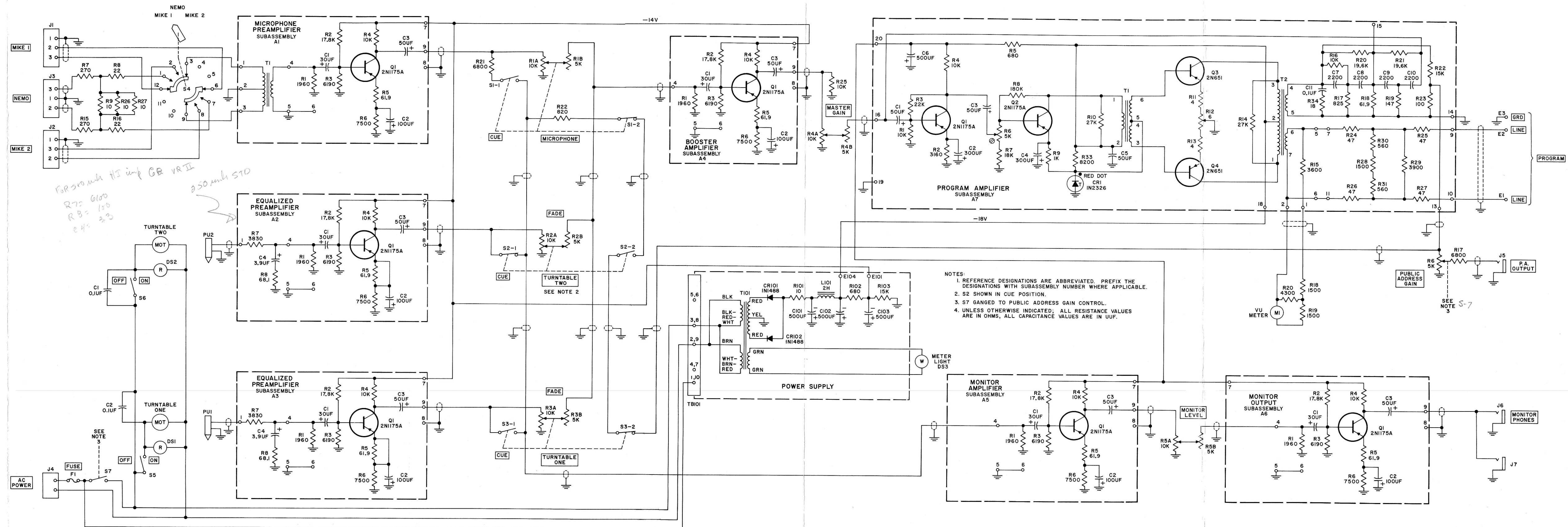


Figure 7-1. 808A-1 Console, Schematic Diagram

COLLINS RADIO COMPANY*Field Service Department**Cedar Rapids, Iowa***SERVICE BULLETIN**

EQUIPMENT SERIES: 808A BULLETIN NO. 1

DATE: 8-27-63

Page 1 of 6

EQUIPMENT TYPE: 808A-1 CONSOLE

SUBJECT: ELIMINATION OF OSCILLATIONS THAT OCCUR UNDER ABNORMAL OPERATING CONDITIONS IN SOME AMPLIFIERS

The modification in this bulletin is to eliminate oscillations that occur in some amplifiers under abnormal operating conditions in which the fader and master gain controls simultaneously are turned to maximum. Most amplifiers have not had, nor will they ever have these oscillations. This modification is directed to installations which have experienced these oscillations, evidenced by an excessive meter reading with no audio input or an audible motorboating sound.

This modification will be factory installed in 808A-1 consoles with MCN above 153. The estimated time required to perform this modification is 45 minutes.

MODIFICATION PROCEDURE:

1. Turn unit on back side, and remove legs.
2. Set unit on front edge. Be careful that turntable platens do not fall out of their bearings or front edge become scratched.
3. Remove bottom cover by removing 17 screws retaining it.
4. Locate and drill 5/32-inch (0.156) holes in rear panel as shown in figure 1.
5. Mount terminal strip TB4 (306-9033-00), using 6-32 screw (343-0168-00), no. 6 lock washer (310-0282-00), and 6-32 nut (313-0002-00) in newly drilled hole nearest outside edge of panel.
6. Install capacitor mounting bracket (139-0090-00), using 6-32 screw (343-0168-00) and self locking nut (333-0368-00). Insert 500-uf capacitor C3 (183-1788-00) in mounting bracket and connect leads to terminal 1 of TB4 and ground terminal of J5. Connect positive (+) lead to J5 and negative (-) lead to terminal 1. See figure 3 for TB4 terminal numbers.
7. Install 220-ohm resistor R10 (745-1324-00) between terminals 1 and 3 of TB4.
8. Cut and remove the no. 26 AWG yellow wire connected between the equalized preamplifier subassembly A3 terminal 7 and the booster amplifier subassembly A4 terminal 7. (Refer to figures 2 and 3.)
9. Add 16 inches of no. 26 yellow wire (422-0798-00) from terminal 3 of TB4 to power supply terminal E101.

10. Add 3.5 feet of no. 26 yellow wire (422-0798-00) from terminal 1 of TB4 to the equalized preamplifier subassembly A3 terminal 7. Route wire along main cable and cable from which wire was removed. Tie newly added wires to cable.
11. Reassemble unit and return to operation.

PARTS REQUIRED:

<u>Qty</u>	<u>Description</u>	<u>Collins Part Number</u>	<u>Price</u>
1	Resistor, 220 ohm $\pm 10\%$, 1/2 watt fixed composition R10	745-1324-00	\$.17
1	Capacitor, 500 uf -10 +100%, 25 wvdc, fixed electrolytic C3	183-1788-00	2.59
1	Terminal strip, 3 solder lugs, Cinch Mfg. Co., Chicago, Ill. Vendor P/N 1520-A, TB4	306-9033-00	.10
1	Nut, plain hex no. 6-32	313-0002-00	.21
1	Washer, no. 6 lock	310-0282-00	.14
2	Screw, machine no. 6-32 x 5/16	343-0168-00	.29
1	Bracket, capacitor mounting 1 to 1-1/16 diameter, Prestole Corp., Toledo, Ohio, Vendor P/N comm	139-0090-00	.06
1	Nut, self locking, 6-32 UNC	333-0368-00	.36
5 ft	Wire, no. 26 AWG yellow Teflon insulated	422-0798-00	.04/ft

The above parts should be available through local sources; if not, they may be obtained from Collins Radio Company, Service Parts Department, Cedar Rapids, Iowa at the prices indicated. All orders should specify the Collins part number of the components required and make reference to 808A Service Bulletin No. 1. The prices indicated are subject to change without notice.

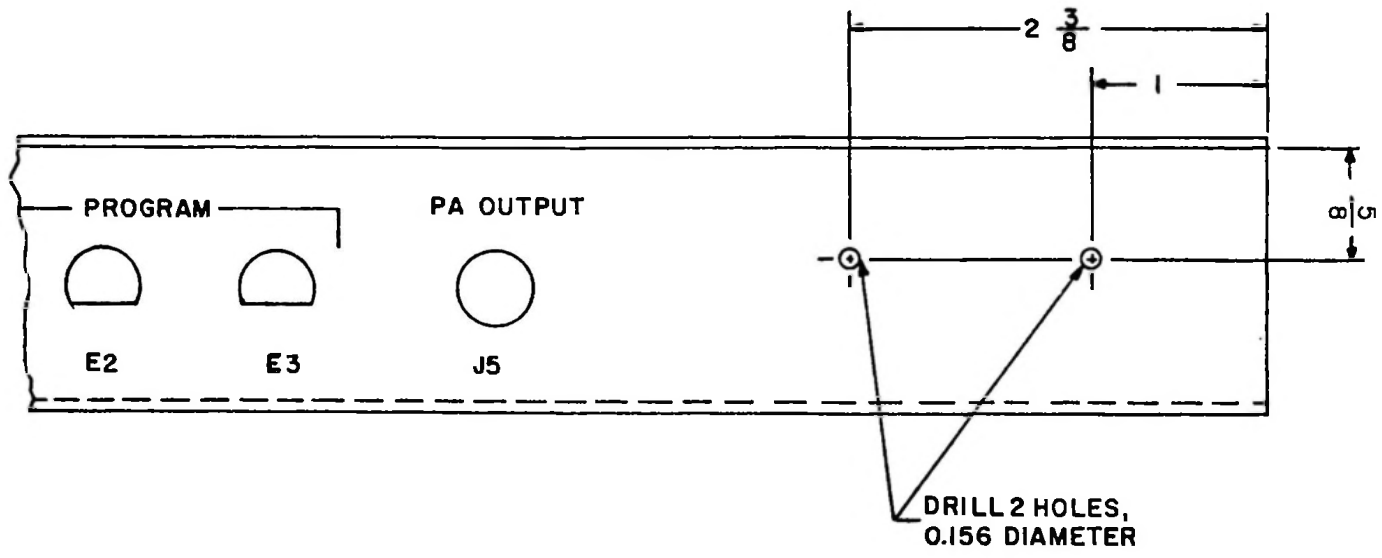


Figure 1. Partial View of Rear Panel of 808A-1 Console

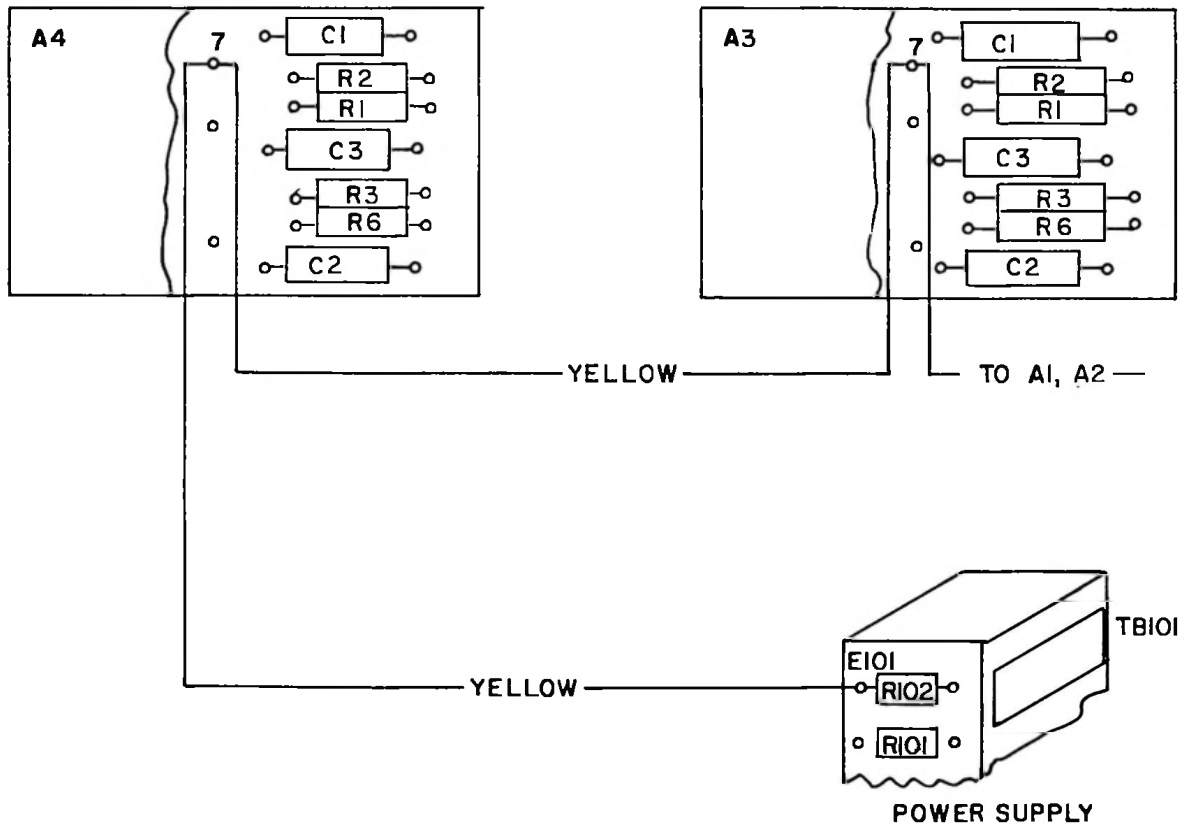


Figure 2. Partial Pictorial View of 808A-1 Console - Before Modification

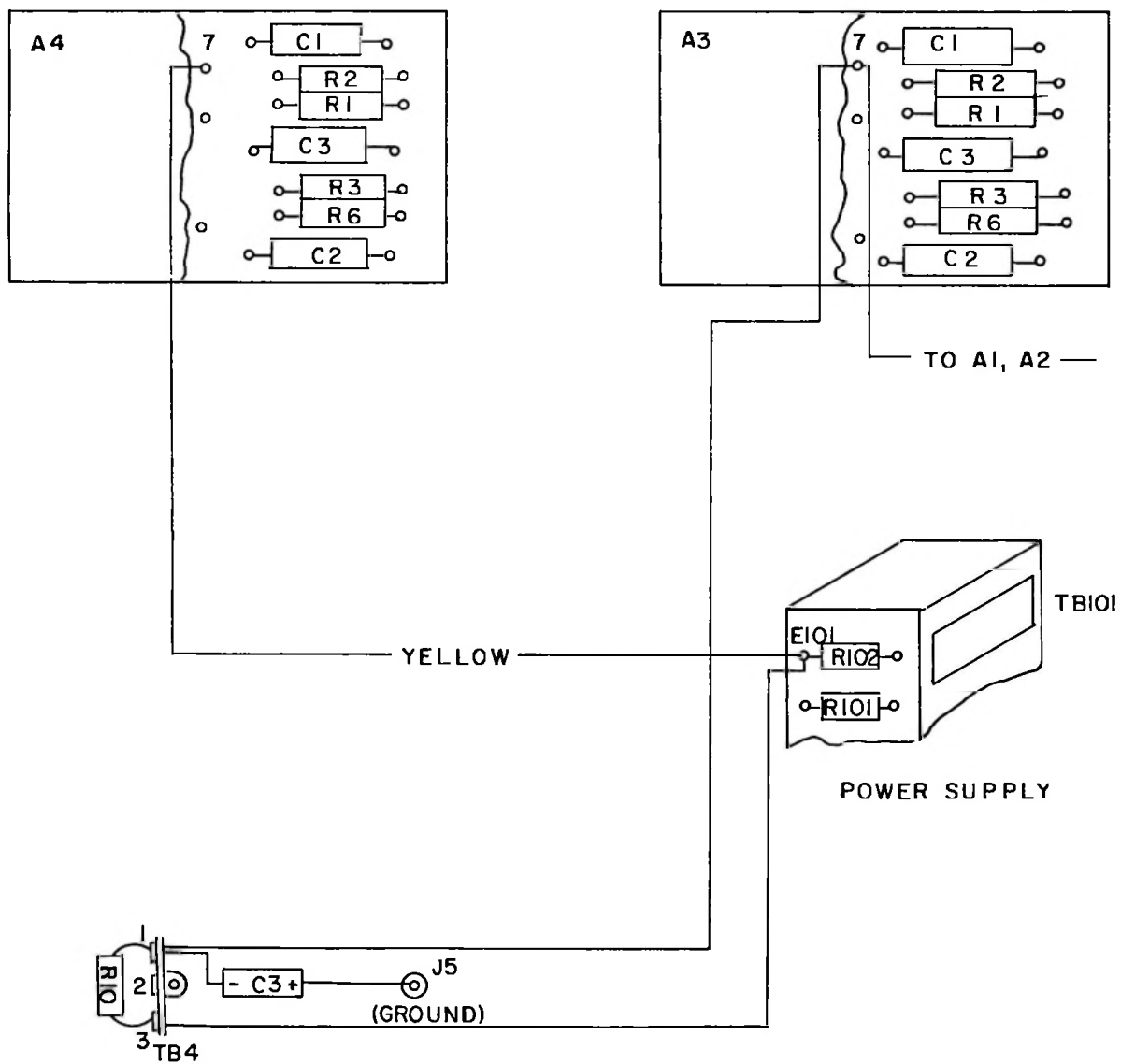
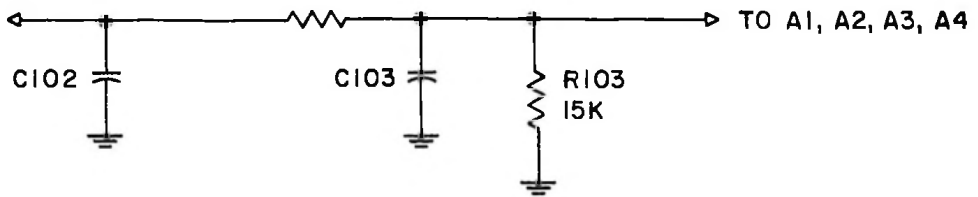
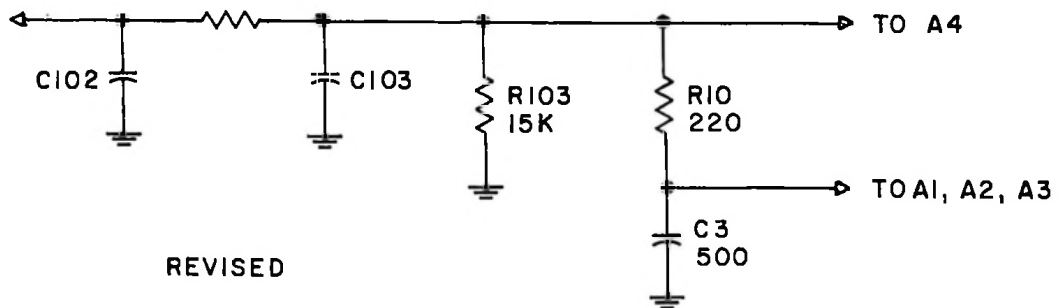


Figure 3. Partial Pictorial View of 808A-1 Console - After Modification



ORIGINAL



REVISED

Figure 4. Schematic Diagram of Changes to 808A-1 Circuitry

Electrical Wire Code

EXAMPLES:

DA 92	UNSHIELDED WIRE, POLYVINYL, NO. 22 AWG, WHITE WITH A RED TRACER			
	<u>D</u> Type of Wire	<u>A</u> Size of Wire	<u>9</u> Color of Body	<u>2</u> Color of Tracers
DAS 9123	SHIELDED WIRE (SINGLE) POLYVINYL, NO. 22 AWG, WHITE BODY WITH BROWN, RED AND ORANGE TRACERS			
	<u>D</u> Type of Wire	<u>A</u> Size of Wire	<u>S</u> Shielded	<u>9</u> Color of Body
				<u>123</u> Color of Tracers
DASJ (9) (92)	SHIELDED AND JACKETED WIRE (MULTIPLE), POLYVINYL, NO. 22 AWG, WHITE AND WHITE WITH RED TRACER			
	<u>D</u> Type of Wire	<u>A</u> Size of Wire	<u>SJ</u> Shielded and Jacketed	<u>(9)</u> First Conductor
				<u>(92)</u> Second Conductor
A2A 91	UNSHIELDED WIRE, IRRADIATED POLYOLEFIN, NO. 22 AWG, WHITE WITH BLACK TRACER			
	<u>A2</u> Type of Wire	<u>A</u> Size of Wire	<u>9</u> Color of Body	<u>1</u> Color of Tracer

TYPE OF WIRE CODE		SIZE OF WIRE		COVERING OF WIRE	COLOR CODE	
CODE	DESCRIPTION	CODE	SIZE		CODE	TYPE
A	Cotton Braid Over Plastic	A	No. 22 AWG		0	Black
A2	Irradiated Modified Polyolefin, (300 Volts)	B	No. 20		1	Brown
A3	Irradiated Modified Polyolefin, (600 Volts)	C	No. 18		2	Red
A4	Irradiated Modified Polyolefin, (1000 Volts)	D	No. 16		3	Orange
A5	Irradiated Modified Polyolefin, (3000 Volts)	E	No. 14		4	Yellow
B	Busswire, Round Tinned	F	No. 12		5	Green
C	Polyvinyl Chloride, MIL-W-16878, Type B (600 Volts) (No. 20-18-16)	G	No. 10		6	Blue
D	Polyvinyl Chloride, MIL-W-16878, Type B (600 Volts) (No. 22-26-28)	H	No. 8		7	Violet
E	Vinyl, MIL-W-5086, Type I (600 Volts)	J	No. 6		8	Gray (Slate)
E2	Vinyl, MIL-W-5086, Type II (600 Volts) (No. 22-12) Note 1	K	No. 4		9	White
E3	Vinyl, MIL-W-5086, Type II (600 Volts) (No. 0000-10) Note 2	L	No. 2		a	Clear
E4	Vinyl, MIL-W-5086, Type III (600 Volts) (No. 12-22) Note 3	M	No. 1		b	Tan
E5	Vinyl, MIL-W-5086, Type III (600 Volts) (No. 0000-10) Note 4	N	No. 0		c	Pink
G		P	No. 00		d	Maroon
H	Kel-F (Monochlorotrifluoroethylene)	Q	No. 000		e	Light Green
I	Not Available	R	No. 0000	S	f	Light Blue
J		T	No. 28			
K	Neon Sign Cable (15,000 Volts)	V	No. 26	SJ		
L	Silicone, MIL-W-16878, Type FF (600 Volts)	W	No. 24			
L2	Silicone, MIL-W-16878, Type FFW (1000 Volts)	X	No. 18			
L3	Silicone, Non-MIL (5000 Volts)	Y	No. 30			
L4	Silicone, Non-MIL (10,000 Volts)	Z				
L5	Silicone, Non-MIL (15,000 Volts)					
M						
N	Single Conductor Stranded (Non-Rubber)					
O	Not Available					
P	Single Conductor Stranded (Rubber Covered)					
Q						
R	Polyvinyl Chloride, MIL-W-16878, Type C (1000 Volts)					
S	Not Available					
T	Teflon (TFE), MIL-W-16878, Type E (600 Volts) Stranded					
U	Not Available					
V	Polyvinyl Chloride, MIL-W-16878, Type D (3000 Volts)					
W	Teflon (TFE), MIL-W-16878, Type EE (1000 Volts)					
X	Teflon (TFE), MIL-W-16878, Type ET (250 Volts)					
X2	Teflon (FEP), MIL-W-16878, Type K (600 Volts)					
X3	Teflon (FEP), MIL-W-16878, Type KT (250 Volts)					
X4	Teflon (TFE), Non-MIL (3000 Volts)					
Y	Telephone Type, Polyvinyl					
Y1	Teflon (TFE), Non-MIL; Solid Conductor					
Z	Telephone Type, Braided Yarn					

- Note 1 - Extruded nylon over fiber glass braid.
- Note 2 - Braided, lacquered nylon over fiber glass braid.
- Note 3 - Extruded nylon over secondary vinyl over fiber glass over primary vinyl.
- Note 4 - Lacquered extruded nylon over secondary vinyl over fiber glass over primary vinyl.



A

7

8