ALTEC LANSING

M49, M50, M51, M52 CONDENSER MICROPHONE

OPERATING INSTRUCTIONS

M49, M50 CARDIOID TYPE MICROPHONE SYSTEM
M51 AND M52 OMNIDIRECTIONAL TYPE MICROPHONE SYSTEM

SPECIFICATIONS

Model M49, M50, M51, M52

Type: . . . . . Condenser

Frequency Response: . 20 to 20,000 Hz

Output Level: . . . -53 dBm re 10 dynes/cm^2

Output Configuration: 2 - Wire shielded. Balanced from the power supply.

Loaded Impedance: . 150/250 Ω

Circuitry: . . . . Solid State

Operating Temperature: 55° C maximum

Connector: . . . . XLR3-12 on Base, XLR3-11C and XLR3-12 on Power Supply.

Pin Connection: . 1 - shield.
2 - signal, Black
3 - signal, White

Size: . . . . . 0.75" diameter by 3.5" long (195A base with 28A or 29B microphone).

Finish: . . . . . Base: Non-reflective electroless nickel.
Power Supply: Chrome.

Weight: . . . . . Base: 2.2 Ounces, Power Supply: 24 Ounces.

Cable: . . . . . 194A Cable Set, 25' cable with connectors attached. One XLR3-11C furnished.

Windscreen: . . . . Model 192A Wind/Pop Screen supplied with microphone (2-9/16" h x 1-1/2" diameter).

Holder: . . . . . Model 193A Holder supplied with each microphone.

Accessories: . . . . 179A Shockmount includes 41076-1 Cable Clip.

Model M49, M51

Power Supply: . . . Ac (117 V ac) Model 539A 1-1/2" d x 3-3/8" sq. and 5-3/8" between the ends of the top and bottom connectors. (See Figure 4).

Specifications and components subject to change without notice. Overall performance will be maintained or improved.

Model M50, M52

Power Supply: . . . . Dc (battery operated) Model 540A. 1-1/2" d x 3-3/8" sq. and 5-3/8" between ends of the top and bottom connectors. (See Figure 4).

Repl. Batteries: . . . Altec 40935-2 (8.4 V) 1 req.
Altec 40936-2 (63 V) 1 req.

Discrimination: . . . 20 dB (See curve).

Battery Indicator: . . Meter shows battery condition.

Battery Disconnect: . . Recessed switch on power supply, or by removing the 195A Base.

System Description and Number*		
	AC Power Supply	DC Power Supply
Cardioid Microphone	M49 System	M50 System
Omnidirectional Microphone	M51 System	M52 System

*A 194A cable Set, Model 192A Wind/Pop Screen, Model 193A Holder and one XLR3-12 connector is furnished with each system ordered.

A M49 System consists of a 29B Cardioid Microphone, 195A Base and Model 539A ac Power Supply. A M50 System consists of a 29B Cardioid Microphone, 195A Base and Model 540A dc Power Supply. A M51 System consists of a 28A Omnidirectional Microphone, 195A Base and Model 539A ac Power Supply. A M52 System consists of a 28A Omnidirectional Microphone, 195A Base and Model 540A dc Power Supply. All systems include the 194A Cable Set, Model 192A Wind/Pop Screen and Model 193A Holder.

GENERAL DESCRIPTION

The four Altec solid state condenser microphone systems: M49, M50, M51 and M52 are designed to work with any existing Preamplifier regardless of the input impedance. Aside from the superlative performance of the 28A and 29B microphones, an outstanding difference from the conventional is the internal power source of the M50 and M52 systems. The M50 and M52 systems are powered by the battery powered Altec 540A Power Supply and M49 and M51 systems are powered by the Altec 539A ac Power Supply energized from a 117 V, 50-60 Hz source. In both systems, the power supply is connected between the Altec 195A Base containing the 28A or 29B Microphones and the preamplifier.

CABLE SET

The Altec 194A Cable Set consists of a 25-foot length of two-wire shielded, jacketed microphone cable equipped with one XLR-12 and one XLR3-11C connector. This cable may be used between the base and the power supply, the power supply and the amplifier, or in multiples as extensions. Up to 1000' of cable may be inserted between the power supply and the base.

28 A AND 29B MICROPHONES

The 28A Microphone used in the M51 and M52 is similar to the 29B except that it has an omnidirectional pickup pattern. The Altec 29B condenser microphone is a single diaphragm, directional (cardioid) type. The microphone produces voltages in response to sound pressure because of the variation of capacity between a moving diaphragm and a stationary electrode connected to a source of polarizing voltage passed through high resistance. The biasing potential of the microphones is 63 Volts. The output is proportional to the diaphragm displacement independent of frequency for all frequencies above those at which the microphone reactance is commensurate with the charging resistance. The capacitance of the condenser is approximately 30 mmF. A field-effect transistor, which serves as an impedance transformer, is used in close proximity to the microphone.

To achieve a uniform cardioid characteristic, the sound pressure acting on the backside of the diaphragm passes through a multiple acoustic phase-shifting network. This network allows optimum phase shift adjustment over the entire frequency range. To provide maximum sensitivity, the diaphragm is made of aluminized 0.0015 Mylar®, stretched to a resonance frequency of approximately 1500 Hz. The movement of the diaphragm is resistance-controlled by the thin air film between the diaphragm and backplate.

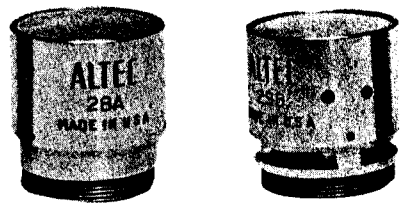

Figure 1. 28A Omnidirectional and 29B Cardioid Microphone Elements (Actual Size)

195A BASE

The 195A Base, in its small size of 0.75 x 2.812 inches, contains a field-effect transistor, 3 resistors, a tantalum capacitor and houses a standard 3-pin XLR-12 connector. No RF or balanced bridge arrangements critical of adjustment are used. The field-effect transistor converts the extremely high impedance of the microphone to a level suitable for connection to a standard 2-conductor microphone cable. One conductor of the cable carries both signal current and dc current for the field-effect transistor. The second conductor provides microphone polarizing potential of 63 Volts. Both dc and ac returns are through the cable shield. Output from the base is unbalanced until it joins the power supply where a balanced output of 150/250 Ω is provided.

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539A AND 540A POWER SUPPLIES

540A Power Supply

A rugged die-cast housing measuring 1-1/2" d x 3-3/8" sq. and 5-3/8" between the ends of the top and bottom connectors contains the elements of the 540A Power Supply. The housing is equipped with 3-pin XLR male and female connectors to allow its insertion at any point in the microphone line. Power is supplied by two mercury batteries (8.4 and 63 Volts). The batteries should be changed after 2500 hours of operation or one year of normal service. Battery drain is suspended by disconnecting the base from the power supply or by means of a recessed power switch mounted on the power supply housing. An additional feature of the system is a meter which shows the battery condition when the base is connected and turned on. The final element of the 540A Power Supply is a transformer which provides balanced output for standard 150/250 Ω microphone pre-amplifier inputs.

539A Power Supply

The 539A Power Supply is an ac operated power supply. It is identical to the 540A in size, but does not have the meter or the power switch.

MAINTENANCE

Battery Changing

To remove and change the batteries in the 540A Power Supply, proceed as follows:

1. Remove the four Phillips head 6-32 x 3/4" screws from the back of the unit and remove the back cover.
2. Remove the screws holding the battery wire lugs in place on the terminal block and remove batteries.
3. Replace the Altec 40935-2 (8.4 V) battery, first making certain end of battery opposite the battery wires is in slot provided. Attach battery wires to terminal block as indicated. Place the Altec 40936-2 (63 V) battery on top of the 8.4 V battery and attach wires to terminal block. Replace the back cover.

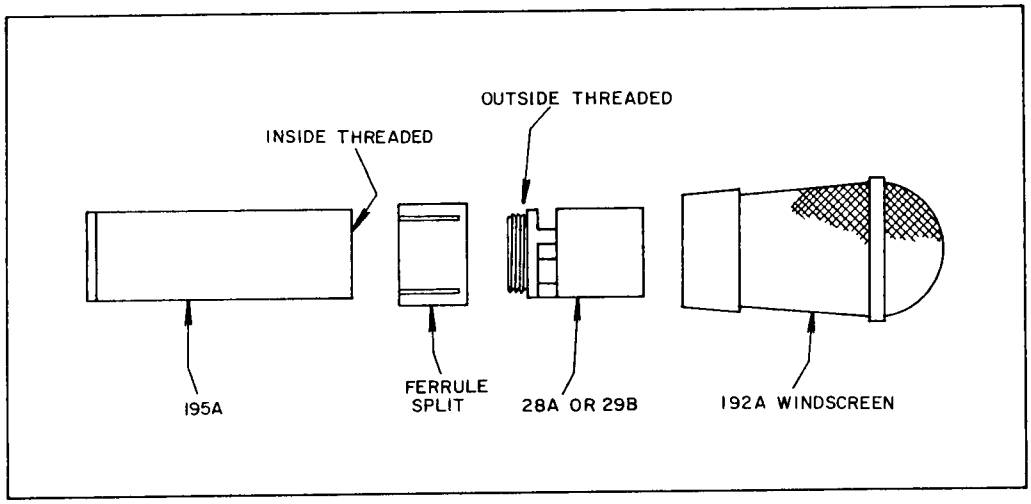

Figure 2. Windscreen Installation

192A WIND/POP SCREEN

The 192A Wind/Pop Screen has been developed for the M49, M50, M51 and M52 Altec Microphone Systems. It is extremely effective in wind noise and "Pop" elimination. The 192A Wind Screen will attenuate wind noise approximately 24 dB without deteriorating the HF response or discrimination.

The "Pop" or explosive sound produced by most people when pronouncing the letter "P" and sometimes "B" in certain words, is effectively reduced with the 192A Wind Screen and therefore, greatly increases the ease of close proximity work.

Windscreen Installation

An exploded view (Figure 2) is shown to aid in the installation of the 192A Windscreen. Remove the condenser microphone from its base by unscrewing it counterclockwise.

CAUTION

The microphone units 28A and 29B are precision elements and normal care should be exercised in handling. The microphone units should be kept dry and free from dirt.

Slip the split ferrule over the base with the split end toward the male connector on the base. Replace the condenser microphone in the base, inside the ferrule. The windscreen may now be slid over the condenser microphone and onto the ferrule until it "bottoms". It will be noted that the ferrule is split to provide tension on the windscreen and holds it firmly in place regardless of the position of the microphone. If, for any reason, it should be desired to operate either microphone system without the 192A windscreen (after it has been installed), it may be removed without detaching the split ferrule.

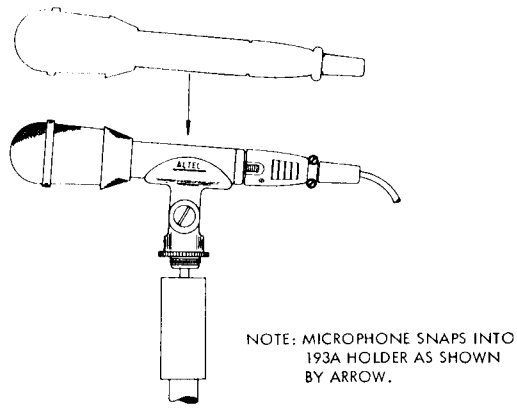

Figure 3. Snap-on Holder

193A HOLDER

The 193A Holder, made of high impact cycolac plastic, grips the 195A Base and provides a light streamlined swivel attachment with 5/8"-27 thread which may be attached to a floor or desk stand. The holder is of the slip-on type which holds the microphone securely, yet permits immediate release for maximum flexibility of microphone usage. It is not necessary to disconnect the cord assembly when removing the microphone from the holder.

179A SHOCKMOUNT

The Altec 179A Shockmount insulates the microphone effectively from mechanical noises transmitted through the floor stand or microphone boom. It is equipped with 5/8"-27 threads to mount the 193A Holder. In order to prevent cable noise, the cable is inserted into 41076-1 Cable Clip. The clip is placed on the threads on top of the microphone stand and held in place by screwing the shockmount firmly in place. (See Figure 4).

MICROPHONE POSITIONING

A cardiod microphone's maximum sensitivity is on its frontal area and should be 'aimed' at the source. It must be positioned as shown in Figure 4 for optimum results. An omnidirectional microphone is sensitive to sound in a 360 degree spherical pattern. For optimum results, the microphone should be set in either of the positions indicated in Figure 4.

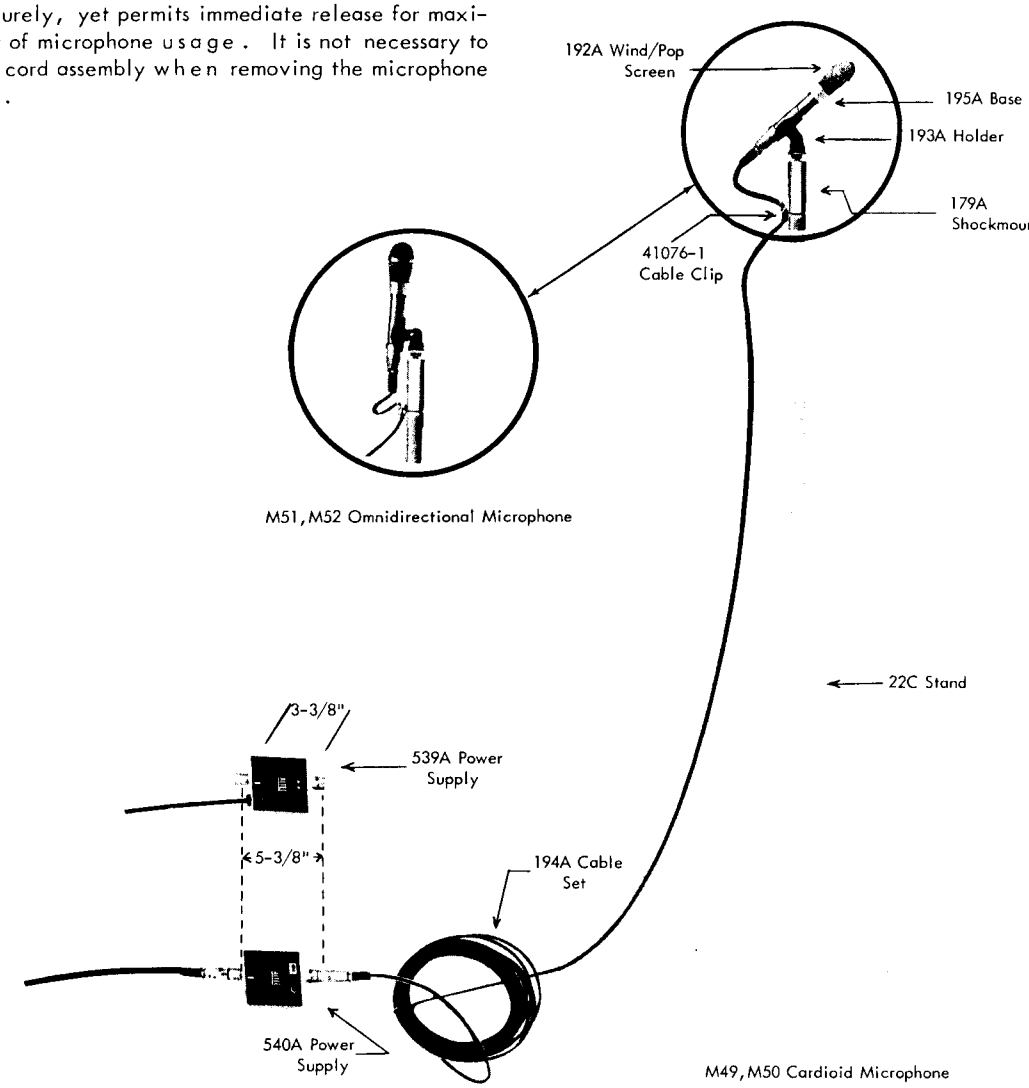

Figure 4. M49, M50, M51 and M52 Microphones

PARTS LIST
539A

C2	Condenser, 100MFD, 20V (Callins #9-85 PSS 10-20)
C3	Condenser, 250MFD, 75V (Mallory TCW type with Mylar Sleeve (57/64 x 1-5/8)
C4, 5	Condenser, 35MFD, 75V (Callins #11-85PS535-75)
CR1	Zener diode, 12V +5% (Semcor M4Z12A)
R3	Resistor, 8.2K ±10%, 1/4W (Allen Bradley)
R4	Resistor, 39K ±10%, 1/4W (Allen Bradley)
R5	Resistor, 1M ±10%, 1/4W (Allen Bradley)
R6	Resistor, 10K ±10%, 1/4W (Allen Bradley)
R7	Resistor, 4.7K ±10%, 1/4W (Allen Bradley)
SR1-2	Rectifier (diode) (Diodes Inc. #TS2)
T1	15354 Transformer, Output (Peerless)
T2	7152 Transformer, Power (Peerless)

PARTS LIST
540A

BT1	Altec 40935-2 Battery (8.4V)
BT2	Altec 40936-2 Battery (63V)
M1	Meter, P202 International Electronics
R3	Resistor, 220 Ω ±10%, 1/4W (Allen Bradley)
R4	Resistor, 4.7K ±10%, 1/4 W (Allen Bradley)
S1	Slide Switch, Miniature DPDT, Continental Wirt G 126
T1	15132 Transformer (Peerless)

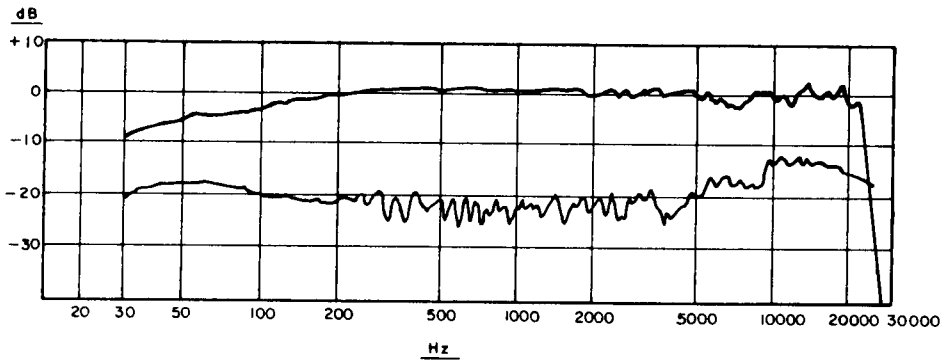

Figure 5. M49, M50 System Frequency Response
(Showing Front to Back Discrimination)

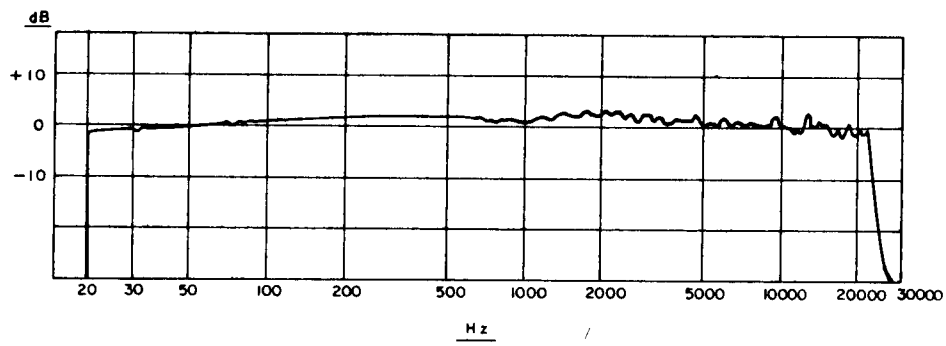

Figure 6. M51, M52 System Frequency Response

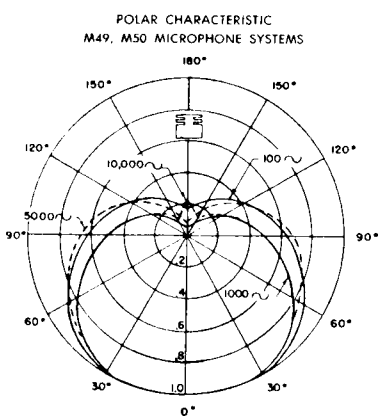

Figure 7. Polar Characteristics M49, M50 System

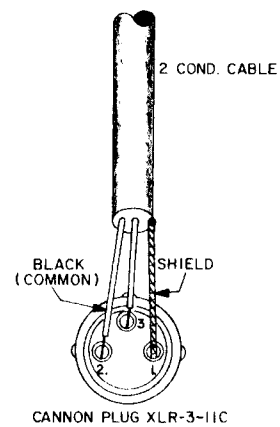

Figure 8. Microphone Cable Connection

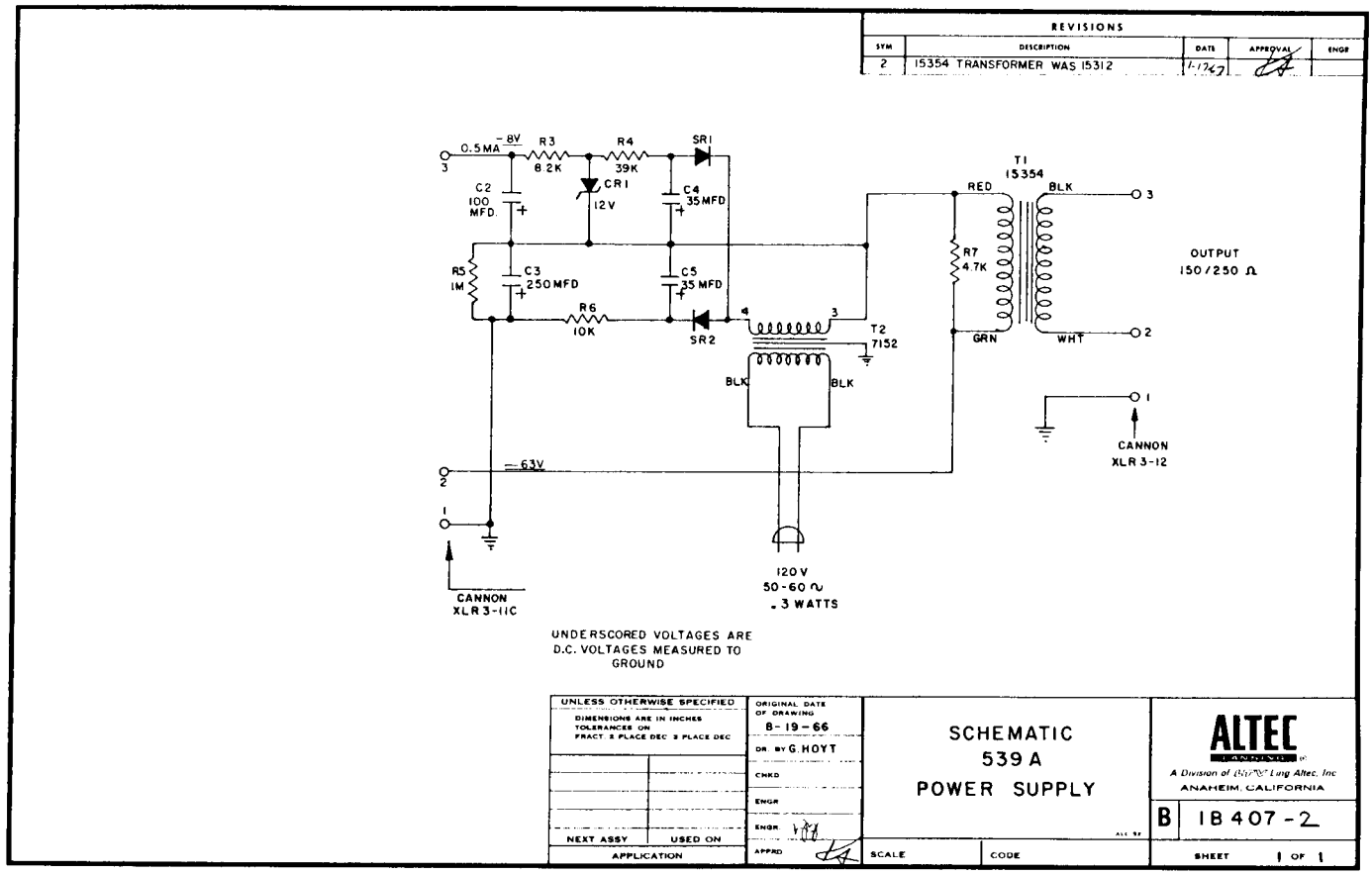

Figure 9

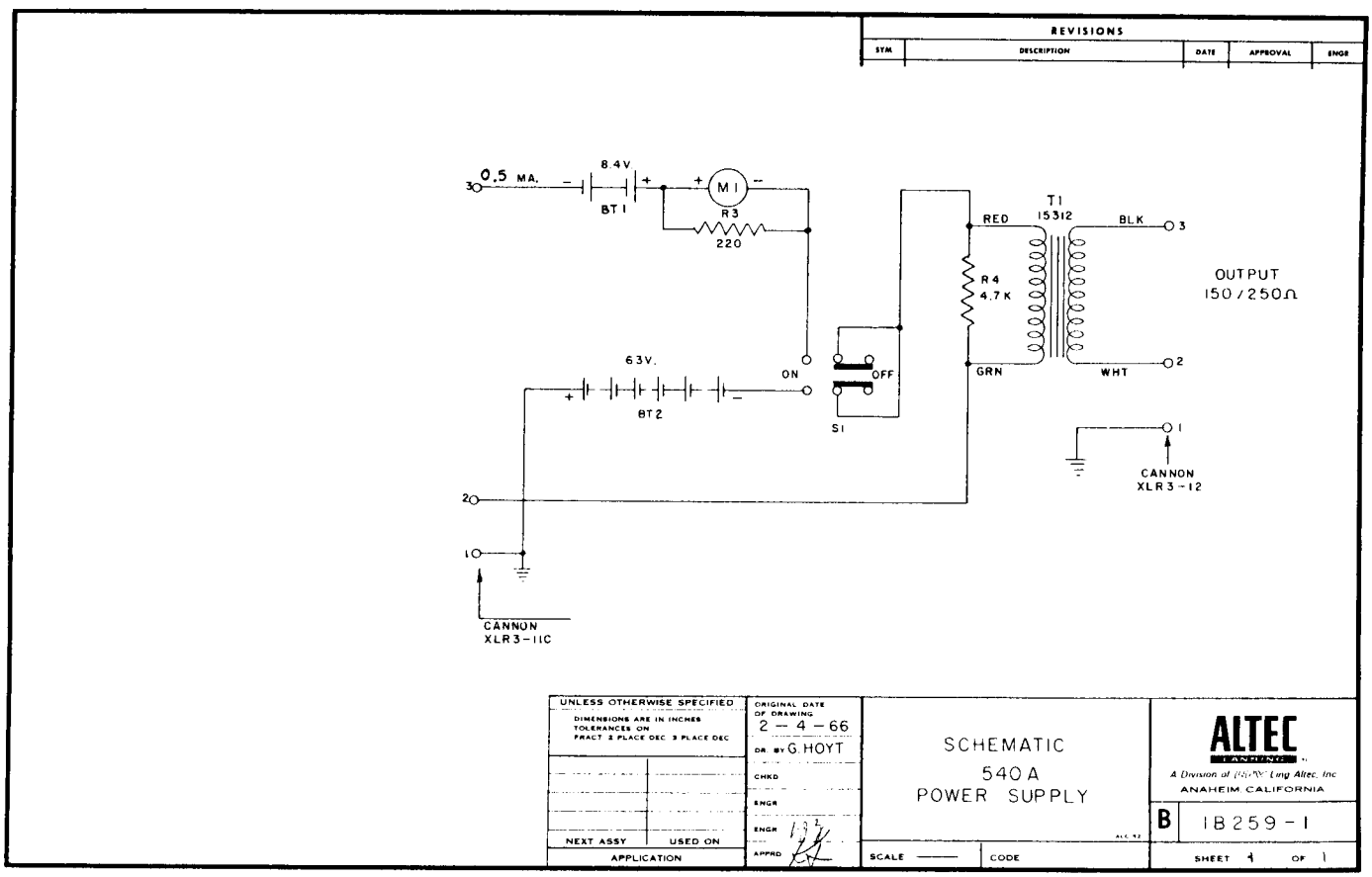

Figure 10