AT 100 MODULES MANUAL

597-6000-002
JANUARY, 1995

IMPORTANT INFORMATION

EQUIPMENT LOST OR DAMAGED IN TRANSIT

When delivering the equipment to you, the truck driver or carrier's agent will present a receipt for your signature. Do not sign it until you have (a) inspected the containers for visible signs of damage and (b) counted the containers and compared with the amount shown on the shipping papers. If a shortage or evidence of damage is noted, insist that notation to that effect be made on the shipping papers before you sign them.

Further, after receiving the equipment, unpack it and inspect thoroughly for concealed damage. If concealed damage is discovered, immediately notify the carrier, confirming the notification in writing, and secure an inspection report. This item should be unpacked and inspected for damage WITHIN 15 DAYS after receipt. Claims for loss or damage will not be honored without proper notification of inspection by the carrier.

TECHNICAL ASSISTANCE AND REPAIR SERVICE

Technical assistance is available from Broadcast Electronics by letter or prepaid telephone or telegram. Equipment requiring repair or overhaul should be sent by common carrier, prepaid, insured and well protected. Do not mail equipment. We can assume no liability for inbound damage, and necessary repairs become the obligation of the shipper. Prior arrangement is necessary. Contact Customer Service Department for a Return Authorization.

FOR TECHNICAL ASSISTANCE DURING 8:00 AM TO 5:00 PM CENTRAL TIME

Digital Product Customer Service – Phone (217) 224–9600

RF/Studio Product Customer Service – Phone (217) 224–9617

FOR TECHNICAL ASSISTANCE DURING NON–BUSINESS HOURS

Phone (217) 224–9600 Customer Service

FOR DIGITAL PRODUCTS BULLETIN BOARD SERVICE

Phone (217) 224–1926

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Broadcast Electronics, Inc. warranty is included in the Terms and Conditions of Sale. In the event of a warranty claim, replacement or repair parts will be supplied F.O.B. factory. At the discretion of Broadcast Electronics, the customer may be required to return the defective part or equipment to Broadcast Electronics, Inc. F.O.B. Quincy, Illinois. Warranty replacements of defective merchandise will be billed to your account. This billing will be cleared by a credit issued upon return of the defective item.

RETURN, REPAIR AND EXCHANGES

Do not return any merchandise without our written approval and Return Authorization. We will provide special shipping instructions and a code number that will assure proper handling and prompt issuance of credit. Please furnish complete details as to circumstances and reasons when requesting return of merchandise. All returned merchandise must be sent freight prepaid and properly insured by the customer.

REPLACEMENT PARTS

Emergency and Warranty Replacement Parts may be ordered from the address below. Be sure to include equipment model and serial number and part description and part number. Non–Emergency Replacement Parts may be ordered directly from the Broadcast Electronics stock room by Fax at the number shown below.

EMERGENCY AND WARRANTY REPLACEMENT PARTS
Broadcast Electronics, Inc.
4100 N. 24th St. P.O. BOX 3606
Quincy, Illinois 62305
Tel: (217) 224–9600 Digital Products (8 AM to 5 PM Central Time)
Tel: (217) 224–9617 RF/Studio Products (8 AM to 5 PM Central Time)
Tel: (217) 224–9600 (Non–Business Hours)
Telex: 25–0142
Fax: (217) 224–9607

NON–EMERGENCY REPLACEMENT PARTS
FAX (217) 224–9609

PROPRIETARY NOTICE

MODIFICATIONS

Broadcast Electronics, Inc. reserves the right to modify the design and specifications of the equipment in this manual without notice. Any modification shall not adversely affect performance of the equipment so modified.

STEREO/PARAMETRIC EQUALIZER MODULES.

1–1. INSTALLATION PROCEDURES.

1–2. INSTALLATION.

1–3. The stereo equalizer module may be placed in any convenient accessory module location. The modules are secured to the chassis mainframe with two hex button–head screws.

1–4. STEREO/PARAMETRIC EQUALIZER CONNECTIONS.

1–5. The stereo/parametric equalizer modules are designed for connection to a channel patch point network or an output bus. Refer to the PATCH POINT interfacing information in AT–90/AT–100 manual 597–6000–001 and Figure 1–1 to connect a stereo or parametric equalizer module to the desired patch point network. Construct the interfacing cables using the wiring kit supplied with the unit and the specified Belden audio cable or equivalent.

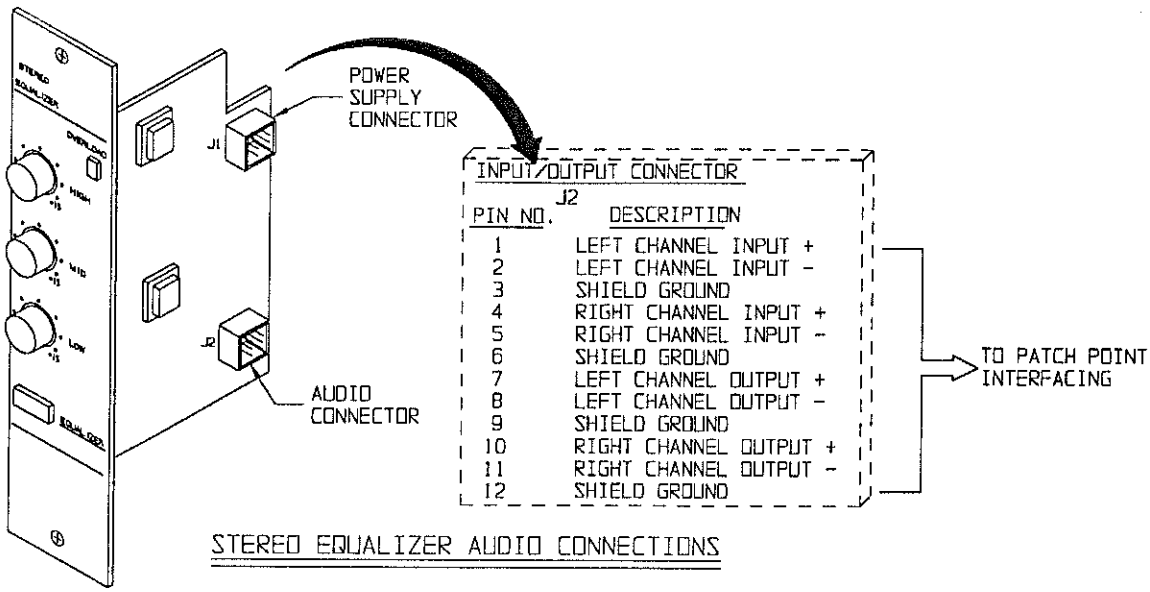
1–6. OPERATING PROCEDURES.

1–7. CONTROLS AND INDICATORS.

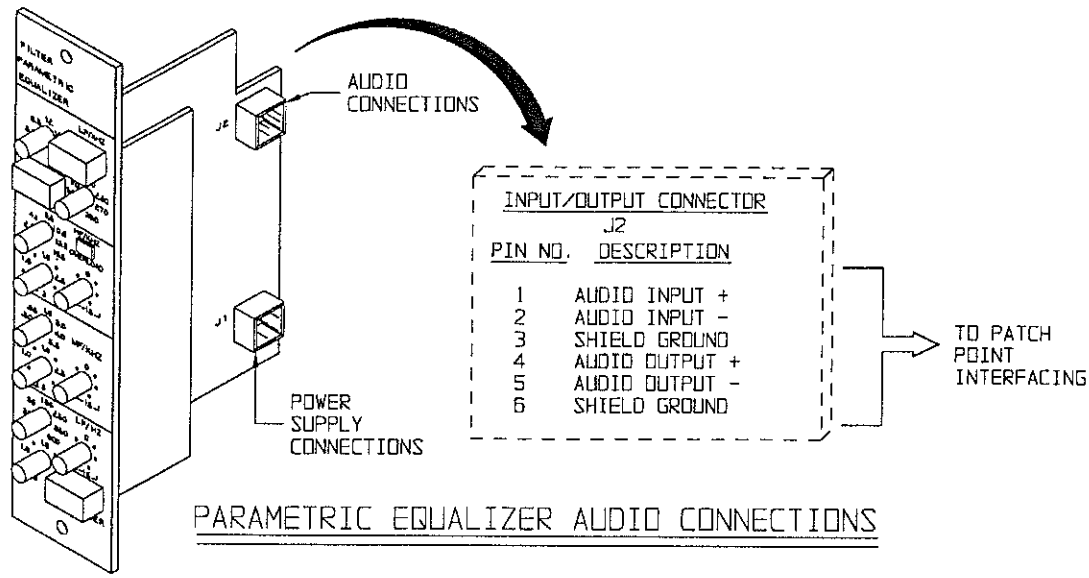
1–8. Refer to Figure 1–2 for the location of all controls and indicators associated with the stereo equalizer module. The function of each control or indicator is described in Table 1–1.

TABLE 1–1. STEREO EQUALIZER MODULE CONTROLS AND INDICATORS

INDEX NO.	NOMENCLATURE	FUNCTION
1	**OVERLOAD** Indicator	Illuminates to indicate excessive audio input, low–band equalization, mid–band equalization, or high–band equalization conditions.
2	**HIGH** Equalization Control	Provides equalization control for a high–band of audio frequencies. The control amplitude range is from –15 dB to +15 dB. The high–band frequency range is from 2.5 kHz to 20 kHz.
3	**MID** Equalization Control	Provides equalization control for a middle–band of audio frequencies. The control amplitude range is from –15 dB to +15 dB. The middle–band is designed with a center frequency of 1 kHz and a frequency range from 250 Hz to 2.5 kHz.
4	**LOW** Equalization Control	Provides equalization control for a low–band of audio frequencies. The control amplitude range is from –15 dB to +15 dB. The low–band frequency range is from 20 Hz to 250 Hz.
5	**EQUALIZER** Switch/ Indicator	SWITCH: Provides on/off control of the program equalizer module audio circuitry. INDICATOR: Illuminates to indicate the program equalizer module audio circuitry is enabled.



STEREO EQUALIZER AUDIO CONNECTIONS



PARAMETRIC EQUALIZER AUDIO CONNECTIONS

POWER SUPPLY DISTRIBUTION CIRCUIT BOARD CONNECTIONS J2 THRU J7

PIN NO.	DESCRIPTION
1	CONSOLE +24V dc SUPPLY
2	AUDIO POWER GROUND
3	AUDIO POWER GROUND
4	CONSOLE -24V dc SUPPLY

POWER SUPPLY CONNECTOR J1

PIN NO.	DESCRIPTION
1	+24V DC SUPPLY
2	GROUND
3	GROUND
4	-24V DC SUPPLY

STEREO/PARAMETRIC EQUALIZER POWER SUPPLY CONNECTIONS

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FIGURE 1-1. STEREO/PARAMETRIC EQUALIZER CONNECTIONS

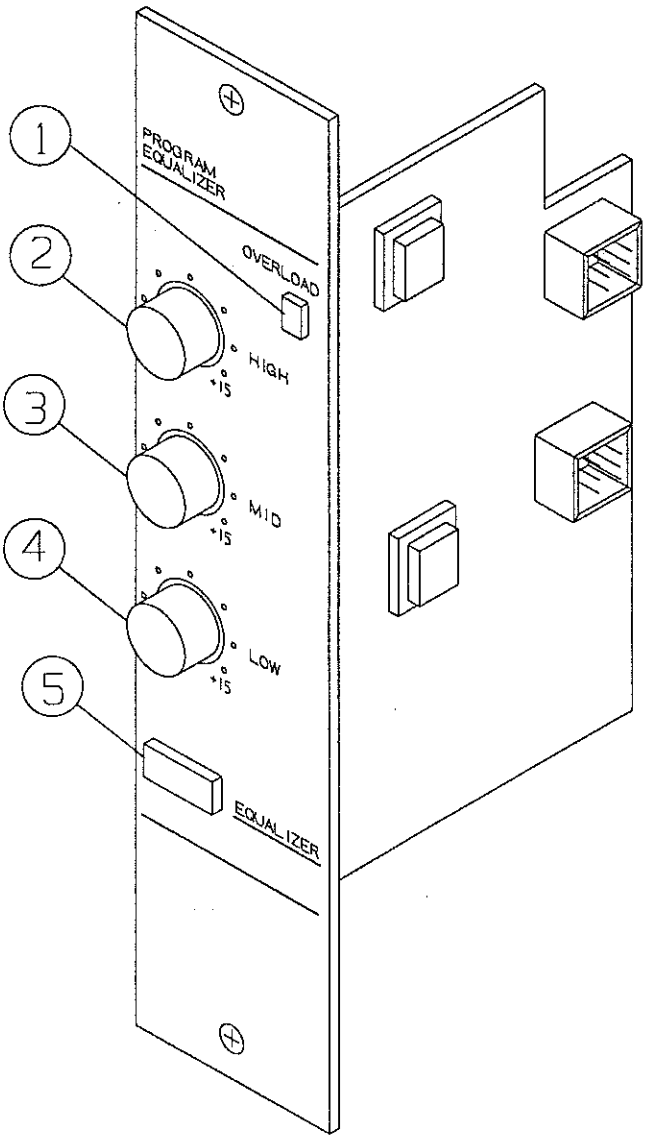

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FIGURE 1-2. STEREO EQUALIZER MODULE CONTROLS AND INDICATORS

1–9. **OPERATION.**

1–10. The following text presents procedures for specific stereo equalizer operating functions. Perform the appropriate procedure for the type of operation desired.

1–11. **MODULE ON/OFF CONTROL.** Enable the module by depressing the **EQUALIZER** switch/indicator to illuminate the switch/indicator. Disable the module by depressing the **EQUALIZER** switch/indicator to extinguish the switch/indicator.

1–12. **EQUALIZATION CONTROL.** Operate the **HIGH** equalization control to boost/cut frequencies from 2.5 kHz to 20 kHz. Operate the **MID** equalization control to boost/cut frequencies from 250 Hz to 2.5 kHz. Operate the **LOW** equalization control to boost/cut frequencies from 20 Hz to 250 Hz. The boost/cut amplitude range for the **HIGH, MID,** and **LOW** equalization controls is from –15 dB to +15 dB. The overload indicator will illuminate to indicate excessive equalization conditions.

1–13. THEORY OF OPERATION.

1–14. The following text provides detailed theory of operation for the Mix–Trak 90 series console stereo and parametric equalizer modules.

1–15. The following text provides detailed theory of operation for the Mix–Trak 90 series console stereo equalizer module. A detailed block diagram of the stereo equalizer module is presented in Figure 1–3. Refer to Figure 1–3 as required for the following circuit discussion. The stereo equalizer module left and right channel audio circuits are identical, therefore only the left channel will be discussed.

1–16. STEREO EQUALIZER MODULE FUNCTIONAL DESCRIPTION.

1–17. INPUT CIRCUIT.

1–18. Balanced left channel audio from a console patch point transmitting stage is applied to integrated circuit U4A. U4A is configured as a differential amplifier with a gain of approximately 8 dB and provides balanced–to–unbalanced signal conversion. The output of U4A is routed to integrated circuit U4B. U4B is configured as an audio inverting stage. The output of U4B is routed for application to the bass, mid–band, and treble equalization circuits.

1–19. BASS EQUALIZATION CIRCUIT.

1–20. Left channel audio from U4B is applied to a passive single pole low–pass filter consisting of resistor R2 and capacitor C1. The low–pass filter is designed to attenuate frequencies above 250 Hz. The output of the low–pass filter is applied to operational voltage controlled element (OVCE) U1. U1 is a unique semiconductor device equipped with voltage–controlled–amplifier circuitry and a dual output network.

1–21. In the bass equalization circuit, OVCE U1 is configured as a voltage–controlled–amplifier. The operation of U1 is directed by front–panel bass control R8. R8 is designed with a dc control range from approximately –1 to +1 volts. This dc control range establishes a –15 to +15 dB operating response for OVCE U1. Additional operating characteristics of OVCE U1 such as stabilization, compensation, and gain are established by two RC support networks.

1–22. The dual outputs from OVCE U1 are routed to separate inverting buffer stages. One output is routed through a summing resistor to inverting buffer U4B. The second output is also routed through a summing resistor to inverting buffer stage U5A. Together, inverting buffer stages U4B and U5A function as a summing network to combine the output signals and establish closed–loop operation for the boost/cut of frequencies below 250 Hz.

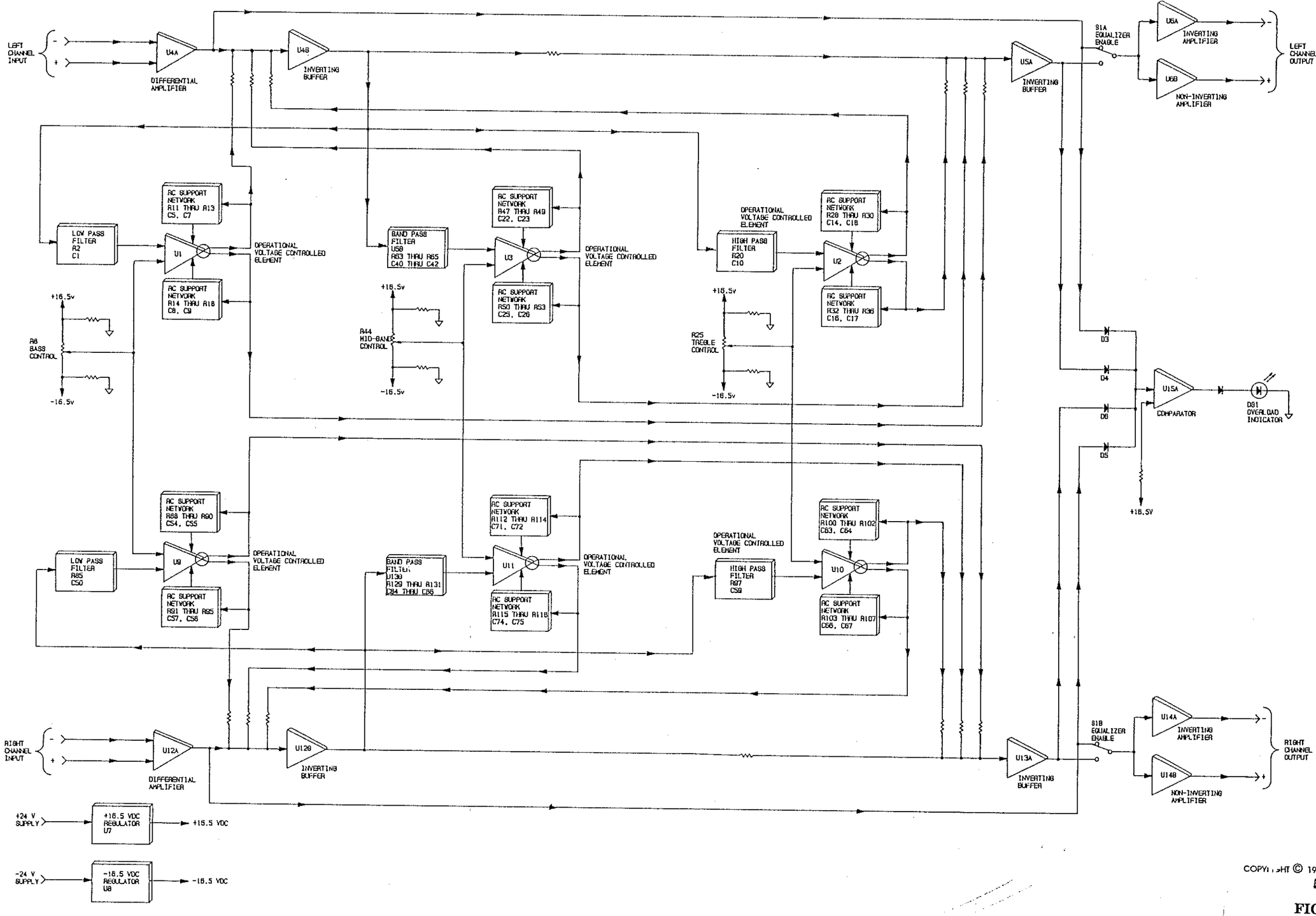

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FIGURE 1-3.
STEREO EQUALIZER MODULE
DETAILED BLOCK DIAGRAM

BROADCAST ELECTRONICS INC

1–23. **MID–BAND EQUALIZATION CIRCUIT.**

1–24. The mid–band equalization circuit operates in an identical manner as the bass equalization circuit with the exception of the filter. The mid–band equalization circuit is equipped with a single pole active band–pass filter circuit consisting of: 1) integrated circuit U5B, 2) resistors R63 thru R65, and 3) capacitors C40 thru C42. The filter is designed to pass frequencies from 250 Hz to 2.5 kHz. For a detailed explanation of the equalization circuit operation, refer to the BASS EQUALIZATION CIRCUIT description in the preceding text.

1–25. **TREBLE EQUALIZATION CIRCUIT.**

1–26. The treble equalization circuit operates in an identical manner as the bass equalization circuit with the exception of the filter. The treble equalization circuit is equipped with a single pole passive high–pass filter circuit consisting of resistor R20 and capacitor C10. The filter is designed to attenuate frequencies below 2.5 kHz. For a detailed explanation of the equalization circuit operation, refer to the BASS EQUALIZATION CIRCUIT description in the preceding text.

1–27. **OUTPUT CIRCUIT.**

1–28. The output circuit consists of an equalizer on/off control switch and an output amplifier network. Left channel equalized audio from inverting buffer U5A and left channel non–equalized audio from inverting buffer U4A are applied to equalizer enable switch S1. S1 enables/disables the circuitry by selecting either equalized or non–equalized audio for application to the output amplifier network.

1–29. The output amplifier network consists operational amplifiers U6A and U6B. U6A is configured as an inverting amplifier stage. U6B is configured an a non–inverting amplifier stage. U6A and U6B operate in association to function as a balanced output amplifier with a gain of –8 dB and a 600 Ohm output impedance. The output amplifier stage is designed with a –8 dB gain to compensate for an 8 dB increase in the operating level of the equalization circuit. The increased operating level allows the equalization circuit to obtain optimum signal–to–noise performance.

1–30. **OVERLOAD INDICATOR CIRCUIT.**

1–31. The left channel input audio and the audio from the equalization circuitry is monitored for overload conditions by the overload indicator circuit. The audio is half–wave rectified and summed by diodes D3 and D4. The half–wave rectified audio from D3/D4 is applied to overload comparator U15A. When either the input audio level or the audio level from the equalization circuitry increases above approximately 20 dBu, the output of comparator U15A will go HIGH. Overload indicator DS1 will illuminate to indicate an excessive input audio or audio equalization level conditions.

1–32. **POWER SUPPLY.**

1–33. DC operating potentials for application to the stereo equalizer module components are generated by a regulator network. Unregulated ±24V dc supplies from the console power supply module are applied to +16.5 volt dc regulator U7 and –16.5 volt dc regulator U8. U7/U8 are three terminal adjustable regulators containing internal thermal and short–circuit current limiting features. The regulated ±16.5 volt outputs from U7 and U8 are routed for application to the circuit board audio components.

1–34. MAINTENANCE.

1–35. **GENERAL.**

1–36. The stereo and parametric equalizer modules should be periodically cleaned of accumulated dust using a nylon–bristle brush and vacuum cleaner. The modules should also be inspected for loose connections and components.

1–37. TROUBLESHOOTING.

1–38. The troubleshooting philosophy for the stereo and parametric equalizer modules consists of isolating a problem to a specific circuit or group of components. Troubleshooting information for stereo equalizer modules is presented in Figure 1–4. Once trouble is isolated and power is totally deenergized, refer to the appropriate schematic diagram and the theory of operation to assist in problem resolution. The defective component may be repaired locally or the entire module may be returned to Broadcast Electronics for repair or replacement.

STEREO EQUALIZER MODULE TROUBLESHOOTING

SYMPTOM	SOLUTION
NO EQUALIZER MODULE OPERATION	1. CHECK EQUALIZER ENABLE SWITCH S1. 2. CHECK CONNECTOR J1. 3. CHECK REGULATORS U7 AND U8.
NO LEFT CHANNEL OUTPUT	1. CHECK INTEGRATED CIRCUITS U4 AND U5. 2. CHECK INTEGRATED CIRCUIT U6.
NO RIGHT CHANNEL OUTPUT	1. CHECK INTEGRATED CIRCUITS U12 AND U13. 2. CHECK INTEGRATED CIRCUIT U14.
NO BASS EQUALIZATION	1. CHECK POTENTIOMETER R8. 2. CHECK INTEGRATED CIRCUITS U1 AND U9.
NO MID-BAND EQUALIZATION	1. CHECK POTENTIOMETER R44. 2. CHECK INTEGRATED CIRCUITS U3 AND U11.
NO TREBLE EQUALIZATION	1. CHECK POTENTIOMETER R25. 2. CHECK INTEGRATED CIRCUITS U2 AND U10.
NO OVERLOAD INDICATIONS	1. CHECK INDICATOR DS1. 2. CHECK INTEGRATED CIRCUIT U15.

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FIGURE 1–4. STEREO EQUALIZER MODULE TROUBLESHOOTING

1–39. PARTS LIST.

1–40. This section provides descriptions and part numbers of electrical components and assemblies required for maintenance of the stereo equalizer module. Each table entry in this section is indexed by the reference designators appearing on the applicable schematic diagram.

TABLE 1-2. STEREO EQUALIZER CIRCUIT BOARD ASSEMBLY – 951–0026
(Sheet 1 of 6)

REF. DES.	DESCRIPTION	PART NO.	QTY.
C1	Capacitor, Mylar, 0.22 uF ±10%, 100V	030–2253	1
C2	Capacitor, Monolythic Ceramic, 0.0015 uF ±5%, 100V	003–1523	1
C3	Capacitor, Mica, 68 pF ±5%, 500V	040–6813	1
C4	Capacitor, Monolythic Ceramic, 0.1 uF ±20%, 50V	003–1054	1
C5	Capacitor, Mica, 150 pF ±5%, 500V	040–1522	1
C6	Capacitor, Monolythic Ceramic, 0.1 uF ±20%, 50V	003–1054	1
C7	Capacitor, Mica, 680 pF ±5%, 300V	040–6824	1
C8	Capacitor, Mica, 10 pF ±5%, 500V	042–1012	1
C9	Capacitor, Mica, 680 pF ±5%, 300V	040–6824	1
C10	Cacpaitor, Polyester, 0.015 uF ±10%, 100V	030–1532	1
C11	Capacitor, Monolythic Ceramic, 0.0015 uF ±5%, 100V	003–1523	1
C12	Capacitor, Mica, 68 pF ±5%, 500V	040–6813	1
C13	Capacitor, Monolythic Ceramic, 0.1 uF ±20%, 50V	003–1054	1
C14	Capacitor, Mica, 150 pF ±5%, 500V	040–1522	1
C15	Capacitor, Monolythic Ceramic, 0.1 uF ±20%, 50V	003–1054	1
C16	Capacitor, Mica, 680 pF ±5%, 300V	040–6824	1
C17	Capacitor, Mica, 10 pF ±5%, 500V	042–1012	1
C18	Capacitor, Mica, 680 pF ±5%, 300V	040–6824	1
C19	Capacitor, Monolythic Ceramic, 0.0015 uF ±5%, 100V	003–1523	1
C20	Capacitor, Mica, 68 pF ±5%, 500V	040–6813	1
C21	Capacitor, Monolythic Ceramic, 0.1 uF ±20%, 50V	003–1054	1
C22	Capacitor, Mica, 150 pF ±5%, 500V	040–1522	1
C23	Capacitor, Mica, 680 pF ±5%, 300V	040–6824	1
C24	Capacitor, Monolythic Ceramic, 0.1 uF ±20%, 50V	003–1054	1
C25	Capacitor, Mica, 680 pF ±5%, 300V	040–6824	1
C26	Capacitor, Mica, 10 pF ±5%, 500V	042–1012	1
C27	Capacitor, Monolythic Ceramic, 0.1 uF ±20%, 50V	003–1054	1
C28	Capacitor, Electrolytic, 33 uF, 25V, Non–Polarized	020–3374	1
C29	Capacitor, Silvered Mica, 100 pF ±5%, 500V	040–1022	1
C30	Capacitor, Monolythic Ceramic, 0.1 uF ±20%, 50V	003–1054	1
C31	Capacitor, Silvered Mica, 100 pF ±5%, 500V	040–1022	1
C32	Capacitor, Monolythic Ceramic, 0.1 uF ±20%, 50V	003–1054	1
C33	Capacitor, Electrolytic, 33 uF, 25V, Non–Polarized	020–3374	1
C34	Capacitor, Silvered Mica, 100 pF ±5%, 500V	040–1022	1
C35	Capacitor, Mica, 150 pF ±5%, 500V	040–1522	1
C36,C37	Capacitor, Monolythic Ceramic, 0.1 uF ±20%, 50V	003–1054	2
C38,C39	Capacitor, Mica, 330 pF ±5%, 500V	042–3322	2

TABLE 1-2. STEREO EQUALIZER CIRCUIT BOARD ASSEMBLY - 951-0026
(Sheet 2 of 6)

REF. DES.	DESCRIPTION	PART NO.	QTY.
C40	Capacitor, Mylar Film, 0.0033 uF ±10%, 200V	030-3333	1
C41	Capacitor, Mylar, 0.01 uF ±10%, 100V	031-1043	1
C42	Capacitor, Electrolytic, 10 uF, 35V, Non-Polarized	023-1075	1
C43	Capacitor, Monolythic Ceramic, 0.1 uF ±20%, 50V	003-1054	1
C44 THRU C49	Capacitor, Electrolytic, 10 uF, 50V	023-1076	6
C50	Capacitor, Mylar, 0.22 uF ±10%, 100V	030-2253	1
C51	Capacitor, Monolythic Ceramic, 0.0015 uF +5%, 100V	003-1523	1
C52	Capacitor, Mica, 68 pF ±5%, 500V	040-6813	1
C53	Capacitor, Monolythic Ceramic, 0.1 uF ±20%, 50V	003-1054	1
C54	Capacitor, Mica, 150 pF ±5%, 500V	040-1522	1
C55	Capacitor, Mica, 680 pF ±5%, 300V	040-6824	1
C56	Capacitor, Monolythic Ceramic, 0.1 uF ±20%, 50V	003-1054	1
C57	Capacitor, Mica, 680 pF ±5%, 300V	040-6824	1
C58	Capacitor, Mica, 10 pF ±5%, 500V	042-1012	1
C59	Capacitor, Polyester, 0.015 uF ±10%, 100V	030-1532	1
C60	Capacitor, Monolythic Ceramic, 0.0015 uF ±5%, 100V	003-1523	1
C61	Capacitor, Mica, 68 pF ±5%, 500V	040-6813	1
C62	Capacitor, Monolythic Ceramic, 0.1 uF ±20%, 50V	003-1054	1
C63	Capacitor, Mica, 150 pF ±5%, 500V	040-1522	1
C64	Capacitor, Mica, 680 pF ±5%, 300V	040-6824	1
C65	Capacitor, Monolythic Ceramic, 0.1 uF ±20%, 50V	003-1054	1
C66	Capacitor, Mica, 680 pF ±5%, 300V	040-6824	1
C67	Capacitor, Mica, 10 pF ±5%, 500V	042-1012	1
C68	Capacitor, Monolythic Ceramic, 0.0015 uF ±5%, 100V	003-1523	1
C69	Capacitor, Mica, 68 pF ±5%, 500V	040-6813	1
C70	Capacitor, Monolythic Ceramic, 0.1 uF ±20%, 50V	003-1054	1
C71	Capacitor, Mica, 150 pF ±5%, 500V	040-1522	1
C72	Capacitor, Mica, 680 pF ±5%, 300V	040-6824	1
C73	Capacitor, Monolythic Ceramic, 0.1 uF ±20%, 50V	003-1054	1
C74	Capacitor, Mica, 680 pF ±5%, 300V	040-6824	1
C75	Capacitor, Mica, 10 pF ±5%, 500V	042-1012	1
C76,C77	Capacitor, Monolythic Ceramic, 0.1 uF ±20%, 50V	003-1054	2
C78	Capacitor, Electrolytic, 33 uF, 25V, Non-Polarized	020-3374	1
C79,C80	Capacitor, Silvered Mica, 100 pF ±5%, 500V	040-1022	2
C81,C82	Capacitor, Monolythic Ceramic, 0.1 uF ±20%, 50V	003-1054	2
C83	Capacitor, Electrolytic, 33 uF, 25V, Non-Polarized	020-3374	1
C84	Capacitor, Mylar Film, 0.0033 uF ±10%, 200V	030-3333	1
C85	Capacitor, Mylar, 0.01 uF ±10%, 100V	031-1043	1
C86	Capacitor, Electrolytic, 10 uF, 35V, Non-Polarized	023-1075	1
C87	Capacitor, Silvered Mica, 100 pF ±5%, 500V	040-1022	1
C88,C89	Capacitor, Monolythic Ceramic, 0.1 uF ±20%, 50V	003-1054	2
C90	Capacitor, Mica, 150 pF ±5%, 500V	040-1522	1
C91,C92	Capacitor, Mica, 330 pF ±5%, 500V	042-3322	2
C93 THRU C95	Capacitor, Monolythic Ceramic, 0.1 uF ±20%, 50V	003-1054	3
D1,D2	Diode, 1N4005, Silicon, 600V @ 1 Ampere	203-4005	2
D3 THRU D7	Diode, 1N4148, Silicon, 75V @ 0.3 Amperes	203-4148	5
DS1	LED, Red, MV57124, 3V @ 20 mA Maximum	323-7124	1
J1	Socket, 4-Pin	418-0255	1
J2	Receptacle, 12-Pin	417-1276	1
R2	Resistor, 9.09 k Ohm ±1%, 1/4W	103-9041	1

TABLE 1–2. STEREO EQUALIZER CIRCUIT BOARD ASSEMBLY – 951–0026
(Sheet 3 of 6)

REF. DES.	DESCRIPTION	PART NO.	QTY.
R3	Resistor, 2.4 k Ohm ±5%, 1/4W	100–2443	1
R4	Resistor, 3.3 k Ohm ±5%, 1/4W	100–3343	1
R5	Resistor, 13 k Ohm ±5%, 1/4W	100–1353	1
R6	Resistor, 16 k Ohm ±5%, 1/4W	100–1653	1
R7	Resistor, 1.2 k Ohm ±5%, 1/4W	100–1243	1
R8	Potentiometer, 50 k Ohm ±10%, 1/2W	178–5056	1
R9	Resistor, 1.2 k Ohm ±5%, 1/4W	100–1243	1
R10	Resistor, 16 k Ohm ±5%, 1/4W	100–1653	1
R11	Resistor, 43 k Ohm ±5%, 1/4W	100–4353	1
R12	Resistor, 680 Ohm ±5%, 1/4W	100–6833	1
R13	Resistor, 22 k Ohm ±5%, 1/4W	100–2253	1
R14	Resistor, 22.1 k Ohm ±1%, 1/4W	103–2211	1
R15,R16	Resistor, 100 k Ohm ±1%, 1/4W	103–1062	2
R17	Resistor, 1.5 k Ohm ±5%, 1/4W	100–1543	1
R18	Resistor, 22 k Ohm ±5%, 1/4W	100–2253	1
R20	Resistor, 2.74 k Ohm ±1%, 1/4W	103–2744	1
R21	Resistor, 2.4 k Ohm ±5%, 1/4W	100–2443	1
R22	Resistor, 13 k Ohm ±5%, 1/4W	100–1353	1
R23	Resistor, 16 k Ohm ±5%, 1/4W	100–1653	1
R24	Resistor, 1.2 k Ohm ±5%, 1/4W	100–1243	1
R25	Potentiometer, 50 k Ohm ±10%, 1/2W	178–5056	1
R26	Resistor, 1.2 k Ohm ±5%, 1/4W	100–1243	1
R27	Resistor, 16 k Ohm ±5%, 1/4W	100–1653	1
R28	Resistor, 43 k Ohm ±5%, 1/4W	100–4353	1
R29	Resistor, 680 Ohm ±5%, 1/4W	100–6833	1
R30	Resistor, 22 k Ohm ±5%, 1/4W	100–2253	1
R31	Resistor, 3.3 k Ohm ±5%, 1/4W	100–3343	1
R32	Resistor, 22.1 k Ohm ±1%, 1/4W	103–2211	1
R33	Resistor, 100 k Ohm ±1%, 1/4W	103–1062	1
R34	Resistor, 1.5 k Ohm ±5%, 1/4W	100–1543	1
R35	Resistor, 22 k Ohm ±5%, 1/4W	100–2253	1
R36	Resistor, 100 k Ohm ±1%, 1/4W	103–1062	1
R37	Resistor, 2.4 k Ohm ±5%, 1/4W	100–2443	1
R38	Resistor, 22.1 k Ohm ±1%, 1/4W	103–2211	1
R39	Resistor, 3.3 k Ohm ±5%, 1/4W	100–3343	1
R40	Resistor, 12 k Ohm ±5%, 1/4W	100–1253	1
R41	Resistor, 13 k Ohm ±5%, 1/4W	100–1353	1
R42	Resistor, 16 k Ohm ±5%, 1/4W	100–1653	1
R43	Resistor, 1.2 k Ohm ±5%, 1/4W	100–1243	1
R44	Potentiometer, 50 k Ohm ±10%, 1/2W	178–5056	1
R45	Resistor, 1.2 k Ohm ±5%, 1/4W	100–1243	1
R46	Resistor, 16 k Ohm ±5%, 1/4W	100–1653	1
R47	Resistor, 43 k Ohm ±5%, 1/4W	100–4353	1
R48	Resistor, 680 Ohm ±5%, 1/4W	100–6833	1
R49	Resistor, 22 k Ohm ±5%, 1/4W	100–2253	1
R50	Resistor, 1.5 k Ohm ±5%, 1/4W	100–1543	1
R51	Resistor, 22 k Ohm ±5%, 1/4W	100–2253	1
R52,R53	Resistor, 43.2 k Ohm ±1%, 1/4W	103–4325	2
R54	Resistor, 604 Ohm ±1%, 1/4W	100–6031	1
R55,R56	Resistor, 10 k Ohm ±1%, 1/4W	100–1051	2

TABLE 1–2. STEREO EQUALIZER CIRCUIT BOARD ASSEMBLY – 951–0026
(Sheet 4 of 6)

REF. DES.	DESCRIPTION	PART NO.	QTY.
R57,R58	Resistor, 25.5 k Ohm ±1%, 1/4W	103–2551	2
R59	Resistor Network,10 k Ohm ±2%, 1W Resistors, Single In–Line Package, 8–Pin	226–1051	1
R60	Resistor, 2.4 k Ohm ±5%, 1/4W	100–2443	1
R61	Resistor Network,10 k Ohm ±2%, 1W Resistors, Single In–Line Package, 8–Pin	226–1051	1
R62	Resistor, 2 k Ohm ±5%, 1/4W	100–2043	1
R63	Resistor, 12.1 k Ohm ±1%, 1/4W	103–1215	1
R64	Resistor, 61.9 k Ohm ±1%, 1/4W	103–6195	1
R65	Resistor, 62 k Ohm ±5%, 1/4W	100–6253	1
R66	Resistor, 100 k Ohm ±5%, 1/4W	100–1063	1
R67	Resistor, 25.5 k Ohm ±1%, 1/4W	103–2551	1
R68	Resistor, 10 k Ohm ±1%, 1/4W	100–1051	1
R69	Resistor, 7500 Ohm ±5%, 1/4W	100–7543	1
R70	Resistor, 10 k Ohm ±1%, 1/4W	100–1051	1
R71	Resistor, 15.4 k Ohm ±1%, 1/4W	103–1551	1
R72	Resistor, 6.2 k Ohm ±5%, 1/4W	100–6243	1
R73,R74	Resistor, 150 Ohm ±5%, 1/4W	100–1533	2
R75	Resistor, 604 Ohm ±1%, 1/4W	100–6031	1
R76,R77	Resistor, 150 Ohm ±5%, 1/4W	100–1533	2
R78,R79	Resistor, 10 Ohm ±5%, 1/4W	100–1024	2
R80	Resistor, 1.47 k Ohm ±1%, 1/4W	103–1474	1
R81	Resistor, 121 Ohm ±1%, 1/4W	100–1231	1
R82	Resistor, 1.47 k Ohm ±1%, 1/4W	103–1474	1
R83	Resistor, 121 Ohm ±1%, 1/4W	100–1231	1
R85	Resistor, 9.09 k Ohm ±1%, 1/4W	103–9041	1
R86	Resistor, 2.4 k Ohm ±5%, 1/4W	100–2443	1
R87	Resistor, 3.3 k Ohm ±5%, 1/4W	100–3343	1
R88	Resistor, 43 k Ohm ±5%, 1/4W	100–4353	1
R89	Resistor, 680 Ohm ±5%, 1/4W	100–6833	1
R90	Resistor, 22 k Ohm ±5%, 1/4W	100–2253	1
R91	Resistor, 22.1 k Ohm ±1%, 1/4W	103–2211	1
R92	Resistor, 100 k Ohm ±1%, 1/4W	103–1062	1
R93	Resistor, 1.5 k Ohm ±5%, 1/4W	100–1543	1
R94	Resistor, 100 k Ohm ±1%, 1/4W	103–1062	1
R95	Resistor, 22 k Ohm ±5%, 1/4W	100–2253	1
R97	Resistor, 2.74 k Ohm ±1%, 1/4W	103–2744	1
R98	Resistor, 2.4 k Ohm ±5%, 1/4W	100–2443	1
R99	Resistor, 3.3 k Ohm ±5%, 1/4W	100–3343	1
R100	Resistor, 43 k Ohm ±5%, 1/4W	100–4353	1
R101	Resistor, 680 Ohm ±5%, 1/4W	100–6833	1
R102	Resistor, 22 k Ohm ±5%, 1/4W	100–2253	1
R103	Resistor, 22.1 k Ohm ±1%, 1/4W	103–2211	1
R104	Resistor, 100 k Ohm ±1%, 1/4W	103–1062	1
R105	Resistor, 1.5 k Ohm ±5%, 1/4W	100–1543	1
R106	Resistor, 100 k Ohm ±1%, 1/4W	103–1062	1
R107	Resistor, 22 k Ohm ±5%, 1/4W	100–2253	1
R108	Resistor, 2.4 k Ohm ±5%, 1/4W	100–2443	1
R109	Resistor, 22.1 k Ohm ±1%, 1/4W	103–2211	1
R110	Resistor, 12 k Ohm ±5%, 1/4W	100–1253	1
R111	Resistor, 3.3 k Ohm ±5%, 1/4W	100–3343	1

TABLE 1–2. STEREO EQUALIZER CIRCUIT BOARD ASSEMBLY – 951–0026
(Sheet 5 of 6)

REF. DES.	DESCRIPTION	PART NO.	QTY.
R112	Resistor, 43 k Ohm ±5%, 1/4W	100–4353	1
R113	Resistor, 680 Ohm ±5%, 1/4W	100–6833	1
R114	Resistor, 22 k Ohm ±5%, 1/4W	100–2253	1
R115	Resistor, 43.2 k Ohm ±1%, 1/4W	103–4325	1
R116	Resistor, 1.5 k Ohm ±5%, 1/4W	100–1543	1
R117	Resistor, 43.2 k Ohm ±1%, 1/4W	103–4325	1
R118	Resistor, 22 k Ohm ±5%, 1/4W	100–2253	1
R119	Resistor, 604 Ohm ±1%, 1/4W	100–6031	1
R120,R121	Resistor, 10 k Ohm ±1%, 1/4W	100–1051	2
R122,R123	Resistor, 25.5 k Ohm ±1%, 1/4W	103–2551	2
R124	Resistor Network, 10 k Ohm ±2%, 1W Resistors, Single In–Line Package, 8–Pin	226–1051	1
R125	Resistor, 2.4 k Ohm ±5%, 1/4W	100–2443	1
R126	Resistor Network, 10 k Ohm ±2%, 1W Resistors, Single In–Line Package, 8–Pin	226–1051	1
R127	Resistor, 2 k Ohm ±5%, 1/4W	100–2043	1
R128	Resistor, 100 k Ohm ±5%, 1/4W	100–1063	1
R129	Resistor, 12.1 k Ohm ±1%, 1/4W	103–1215	1
R130	Resistor, 61.9 k Ohm ±1%, 1/4W	103–6195	1
R131	Resistor, 62 k Ohm ±5%, 1/4W	100–6253	1
R132	Resistor, 25.5 k Ohm ±1%, 1/4W	103–2551	1
R133	Resistor, 10 k Ohm ±1%, 1/4W	100–1051	1
R134,R135	Resistor, 150 Ohm ±5%, 1/4W	100–1533	2
R136	Resistor, 604 Ohm ±1%, 1/4W	100–6031	1
R137	Resistor, 7500 Ohm ±5%, 1/4W	100–7543	1
R138	Resistor, 10 k Ohm ±1%, 1/4W	100–1051	1
R139	Resistor, 15.4 k Ohm ±1%, 1/4W	103–1551	1
R140	Resistor, 6.2 k Ohm ±5%, 1/4W	100–6243	1
R141,R142	Resistor, 150 Ohm ±5%, 1/4W	100–1533	2
R143 THRU R146	Resistor, 100 k Ohm ±5%, 1/4W	100–1063	4
R147	Resistor, 1 Meg Ohm ±5%, 1/4W	100–1073	1
R148	Resistor, 20 k Ohm ±5%, 1/4W	100–2053	1
R149	Resistor, 24 k Ohm ±5%, 1/4W	100–2453	1
R150	Resistor, 1.5 k Ohm ±5%, 1/4W	100–1543	1
S1	Switch, 1 Section DPDT Pushbutton, White/Green Indications (**EQUALIZER** Switch)	340–0102	1
U1 THRU U3	Integrated Circuit, SSM–2014, Operational Voltage Controlled Element, 16–Pin DIP	221–2014	3
U4 THRU U6	Integrated Circuit, NE5532AP, Dual Low Noise Operational Amplifier, 8–Pin DIP	221–5532–001	3
U7	Integrated Circuit, LM317T, Adjustable Positive Voltage Regulator, 1.2V to 37V, 1.5 Ampere, TO–220 Case	227–0317	1
U8	Integrated Circuit, LM337T, Adjustable Negative Voltage Regulator, 1.2V to 37V, 1.5 Ampere, TO–220 Case	227–0337	1
U9 THRU U11	Integrated Circuit, SSM–2014, Operational Voltage Controlled Element, 16–Pin DIP	221–2014	3
U12 THRU U14	Integrated Circuit, NE5532AP, Dual Low Noise Operational Amplifier, 8–Pin DIP	221–5532–001	3
U15	Integrated Circuit, TL072CP, Dual JFET–Input Operational Amplifier, 8–Pin DIP	221–0072	1
XDS1	Panel Mounting Grommet, MP65, for Rectangular Lamps	481–0034	1
XU1 THRU XU3	Socket, 16–Pin DIP	417–1604	3

TABLE 1–2. STEREO EQUALIZER CIRCUIT BOARD ASSEMBLY – 951–0026
(Sheet 6 of 6)

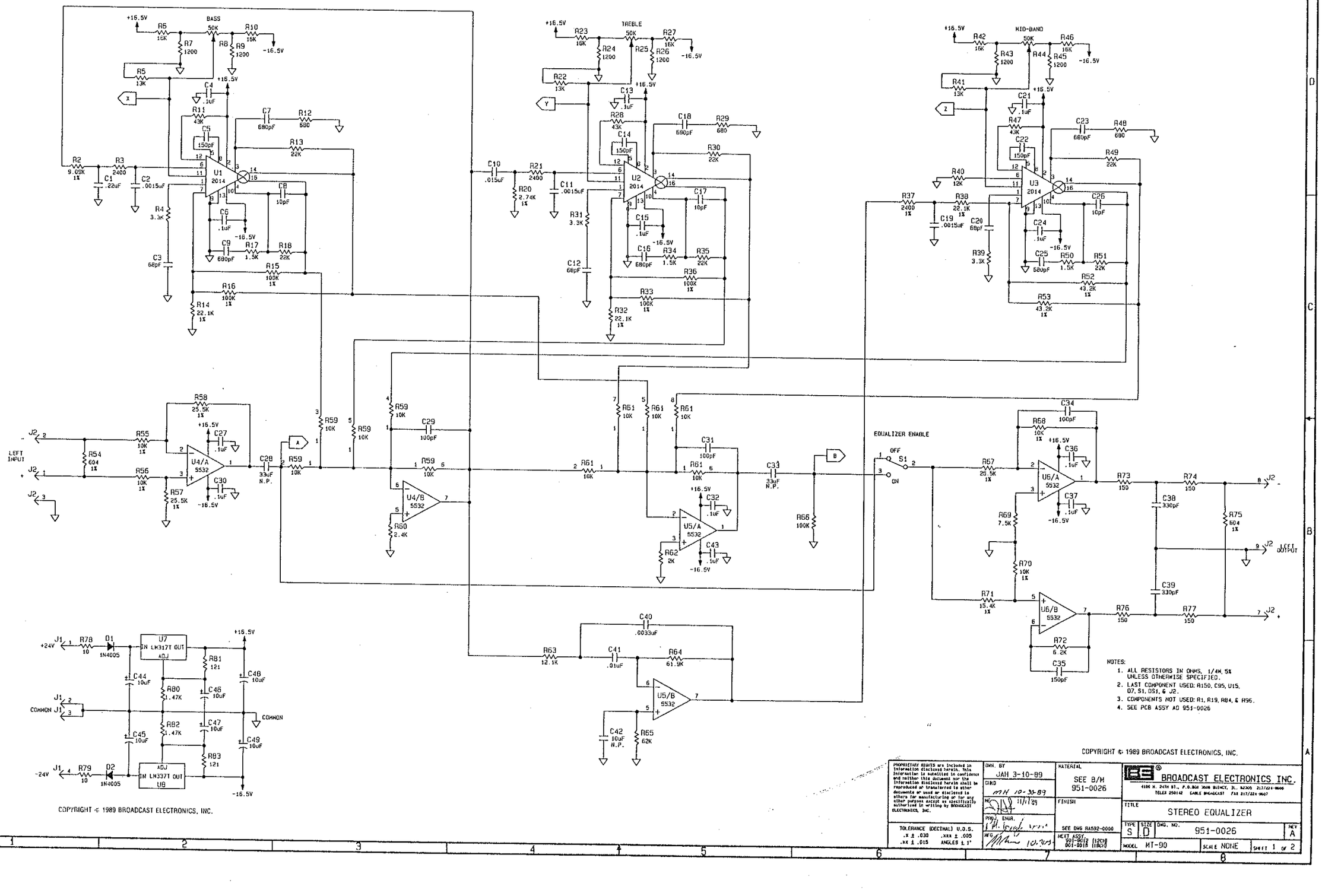
REF. DES.	DESCRIPTION	PART NO.	QTY.
XU4 THRU XU6	Socket, 8–Pin DIP	417–0804	3
XU9 THRU XU11	Socket, 16–Pin DIP	417–1604	3
XU12 THRU XU15	Socket, 8–Pin DIP	417–0804	4
——	Cap, Knob, Yellow, 11mm W/Spot C112	481–0029	1
——	Cap, Knob, Green, 11mm W/Spot C112	481–0035	1
——	Cap, Knob, Orange, 11mm W/Spot C112	481–0027	1
——	Nut Cover, Black, 11mm W/Line N111	481–0030	3
——	Knob, Collect, Black, 11mm W/Line SP111–125	481–0033	3
——	Overlay, Stereo Equalizer	595–0090	1
——	Stereo Equalizer Cable Assembly	941–0028	1
——	Blank Stereo Equalizer Module Circuit Board	511–0026	1

TABLE 1–3. STEREO EQUALIZER CABLE ASSEMBLY – 941–0028

REF. DES.	DESCRIPTION	PART NO.	QTY.
——	Connector, Housing, 12–Pin	418–1271	2
——	Pins, Connector	417–0053	31
——	Plug, Housing, 4–Pin	418–0240	1

1–41. DRAWINGS.

FIGURE	TITLE	NUMBER
1–5	SCHEMATIC DIAGRAM, STEREO EQUALIZER MODULE	SD951–0026
1–6	ASSEMBLY DIAGRAM, STEREO EQUALIZER MODULE	AC951–0026



NOTES:

1. ALL RESISTORS IN OHMS, 1/4W, 5% UNLESS OTHERWISE SPECIFIED.
2. LAST COMPONENT USED: R150, C95, U15, D7, S1, DS1, & J2.
3. COMPONENTS NOT USED: R1, R19, R84, & R96.
4. SEE PCB ASSY AD 951-0026

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TOLERANCE (DECIMAL) U.O.S.
.X ± .030 .XXX ± .005
.XX ± .015 ANGLES ± 1°

DWN. BY JAH 3-10-89
CHKD MH 10-30-89
ENG. 11/1/89
PROJ. ENGR.
MFG 10-30-89

MATERIAL SEE B/M 951-0026
FINISH
SEE DWG RA592-0000
NEXT ASSY. 001-0012 (220)
001-0015 (180)

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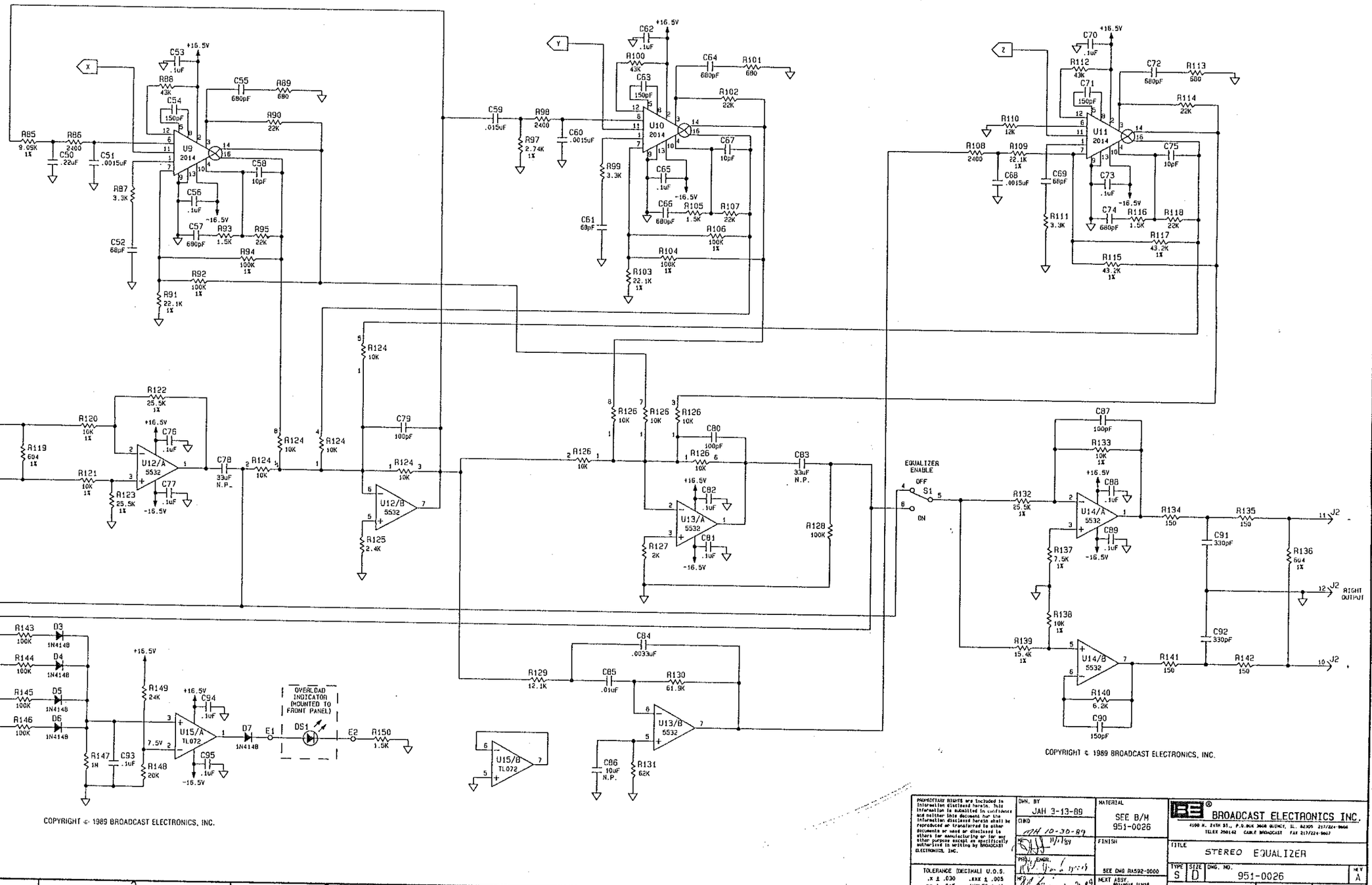
4100 N. 24TH ST., P.O.BOX 3606 QUINCY, IL. 62305 217/224-9600
TELEX 250142 CABLE BROADCAST FAX 217/224-9607

TITLE STEREO EQUALIZER

TYPE S | SIZE D | DWG. NO. 951-0026 | REV A

MODEL MT-90 | SCALE NONE | SHEET 1 OF 2



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TOLERANCE (DECIMAL) U.O.S.
.X ± .030 .XXX ± .005
.XX ± .015 ANGLES ± 1°

DWN. BY JAH 3-13-89
CHKD JAH 10-30-89
MFG.
PROJ. ENGR.
MFG.

MATERIAL SEE B/M 951-0026
FINISH
SEE CHG RA592-0000
NEXT ASSY.

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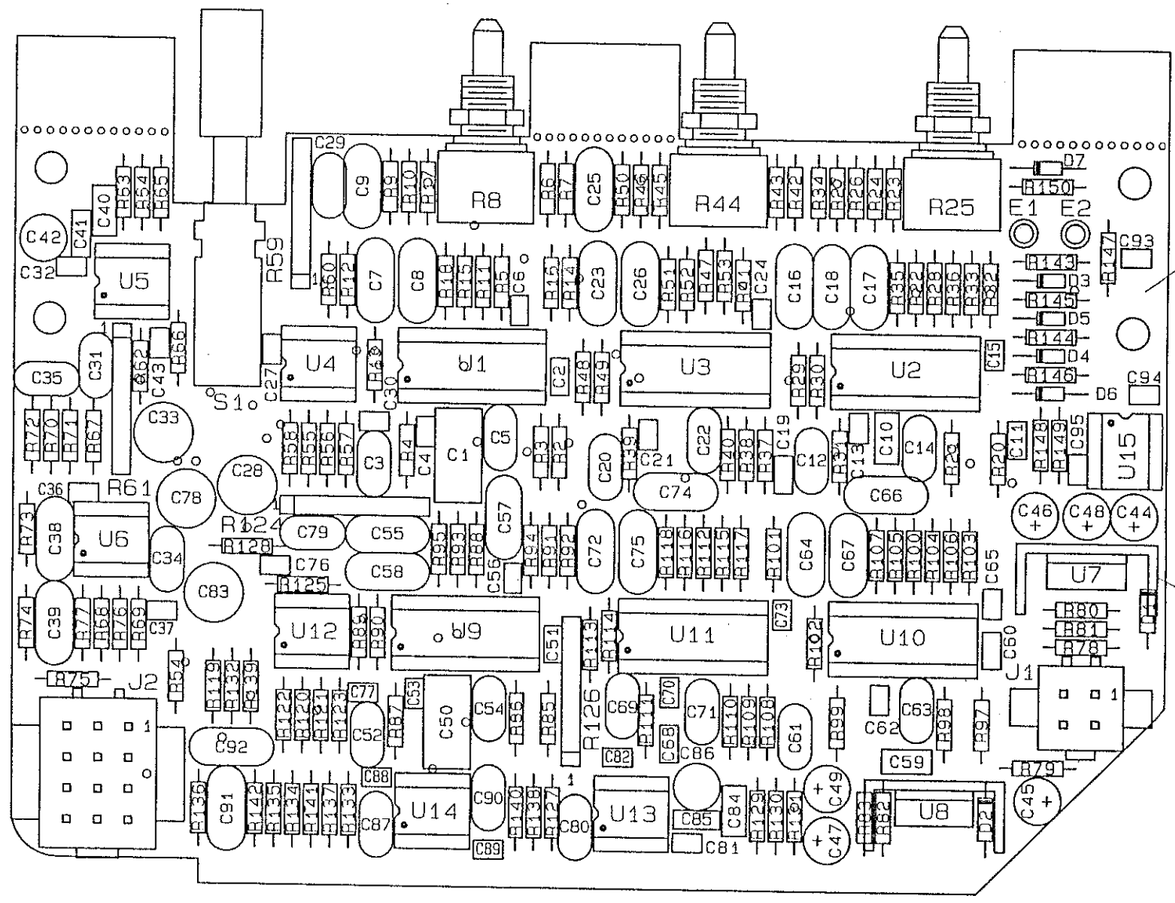
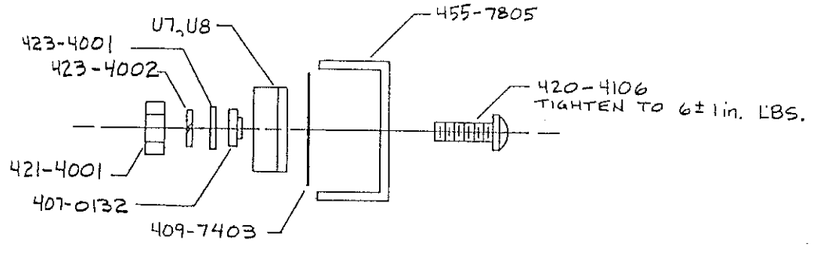
TELEX 250142 CABLE BROADCAST FAX 217/224-9607

TITLE STEREO EQUALIZER

TYPE	SIZE	DWG. NO.	REV
S	D	951-0026	A

MODEL MT-90 SCALE NONE SHEET 2 OF 2



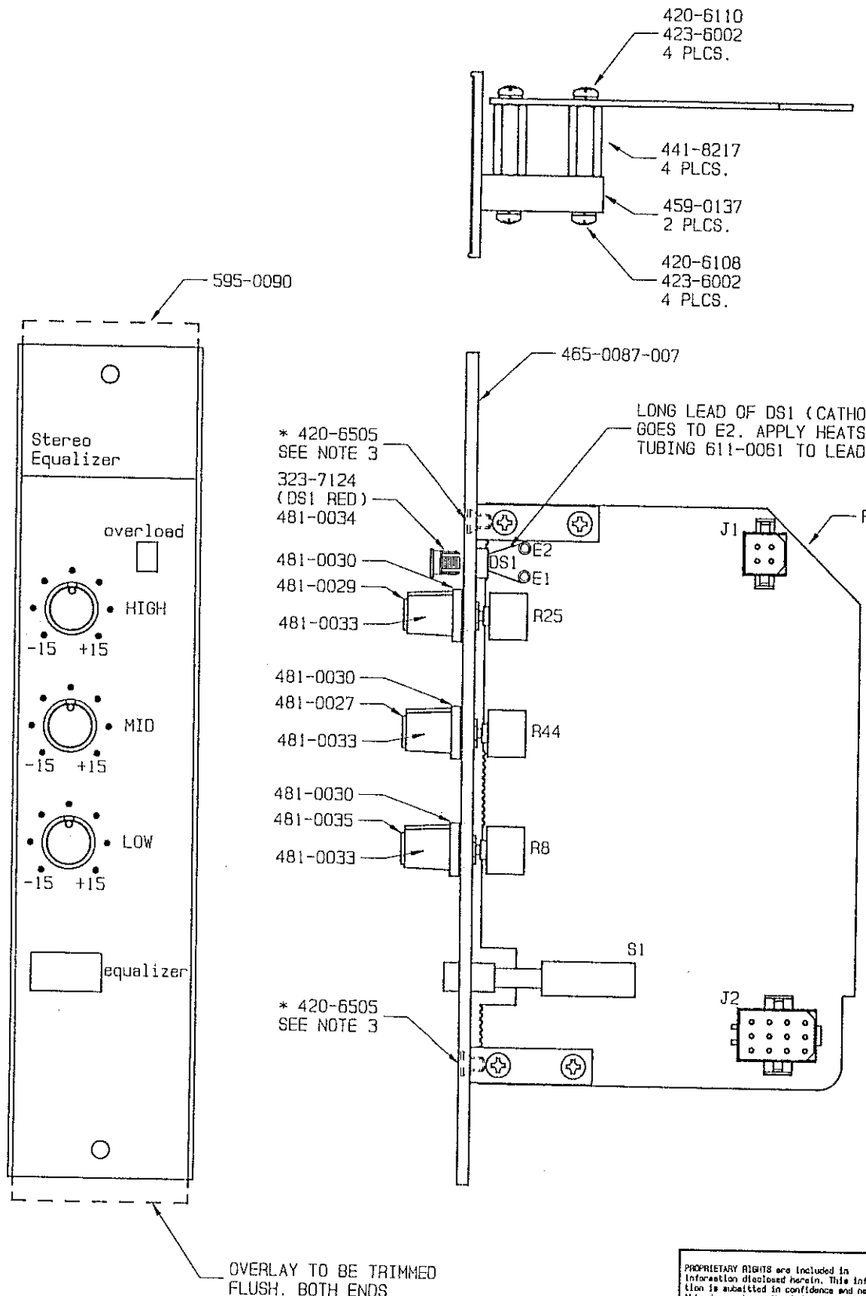


DETAIL "A"
TYP. 2 PLCS

NOTE:
1. SEE SCHEMATIC SD951-0026

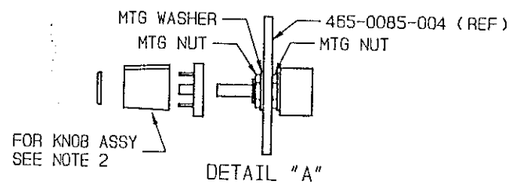
TOLERANCE DECIMAL U.O.S.
.X ± .030 .XXX ± .005
.XX ± .015 ANGLES ± 1°

DWN BY MERK 4-5-89	MATERIAL SEE B/M 951-0026	BROADCAST ELECTRONICS INC.
CHKD MH 10-30-89	FINISH	4100 N.24TH ST., P.O.BOX 3606 QUINCY, IL 62305 217/224-9600 TELEX 250142 CABLE BROADCAST FAX 217/224-9607
ME 11/1/89		TITLE PCB ASSEMBLY- STEREO EQUALIZER
PROJ ENGR. 10-30-89		TYPE A SIZE C DWG.NO. 951-0026 REV B
MFG 10-31-89	NEXT ASSY	MODEL MT90 SCALE 2/1 SHEET 1 OF 2



NOTE:

1. ON RESISTORS R8, R25, R44 ASSEMBLE ACCORDING TO DETAIL "A".



2. SHAFTS MUST BE TURNED FULLY CCW, AND KNOB POINTERS POSITIONED AT DOT NEAREST TO THE FULLY CCW POSITION. KNOB CAN THEN BE TIGHTENED AND CAP PRESSED INTO PLACE.

3. ASSY 459-0137 TO 465-0087-007 WITH 420-6505 BEFORE INSTALLING OVERLAY.

TOLERANCE (DECIMAL) U.O.B.
.x ± .030 .xxx ± .005
.xx ± .015 ANGLES ± 1°

DWN. BY ELP 8-29-89
CHKD MH 10-30-89
ME 11/1/89
PROJ. ENGR. 10-30-89
MFG 10-30-89

MATERIAL SEE B/M 951-0026
FINISH
SEE DWG RA502-0000
NEXT ASSY. 901-9012 (12CH) 901-9018 (18CH)

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TELEX 250142 CABLE BROADCAST FAX 217/224-9607

TITLE STEREO EQUALIZER MODULE
TYPE A | SIZE C | DWG. NO. 951-0026 | REV B
MODEL MIX TRAK 90 | SCALE 1/1 | SHEET 2 OF 2

MICROPHONE PROCESSOR MODULE.

1–42. INSTALLATION PROCEDURES.

1–43. INSTALLATION.

1–44. The microphone processor module may be placed in any convenient location. The module is secured to the chassis mainframe with two hex button–head screws.

1–45. INTERFACING.

1–46. The microphone processor module requires interfacing to the ORBAN 7087A microphone processor. The module is interfaced to the processor using a 4–conductor telephone cable with standard USOC number RJ11C telephone jacks. Create a telephone cable with jacks or purchase the cable at a local electronic supply company and connect the cable between the microphone processor module and the 7087A microphone processor. Interfacing information for the microphone processor module is also presented in the ORBAN 7087A microphone processor instruction manual. Refer to the instruction manual and review the interfacing procedures.

1–47. OPERATION.

1–48. Refer to the ORBAN 7087A microphone processor instruction manual for microphone processor module operating procedures.

1–49. PARTS LIST.

1–50. The following text presents the microphone processor module parts list.

MICROPHONE PROCESSOR MODULE – 951–0040

REF. DES.	DESCRIPTION	PART NO.	QTY.
——	ORBAN, No. 05079.001, Microphone Processor Remote Kit	550–0001	1
——	Overlay, Microphone Processor Module	595–0091	1

1–51. The circuit board parts list for the microphone processor module are presented in the ORBAN 7087A microphone processor instruction manual. Refer to 7087A instruction manual for the microphone processor module parts list.

1–52. DRAWINGS.

1–53. The schematic and assembly drawings for the microphone processor module are presented in the ORBAN 7087A microphone processor instruction manual. Refer to the 7087A instruction manual for the microphone processor module schematic and assembly drawings.

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INPUT EXPANDER MODULE

1–54. INSTALLATION PROCEDURES.

1–55. INSTALLATION.

1–56. The input expander module is designed for control of additional audio sources. The module may be placed in any convenient accessory module location. The module is secured to the chassis mainframe with two hex button–head screws.

1–57. INPUT EXPANDER MODULE CONNECTIONS.

1–58. The input expander module interfaces to an associated input module to provide control of additional audio sources. Refer to Figure 1–1 to connect the audio sources to the input expander module. Construct the interfacing cables using the wiring kit supplied with the console and the specified Belden cable or equivalent.

1–59.. OPERATING PROCEDURES.

1–60. CONTROLS AND INDICATORS.

1–61. Refer to Figure 1–2 for the location of all controls and indicators associated with the input expander module. The function of each control or indicator is described in Table 1–1.

TABLE 1–1. INPUT EXPANDER MODULE CONTROLS AND INDICATORS

INDEX NO.	NOMENCLATURE	FUNCTION	
1	Input Select Switch/Indicators 1 Through 8	SWITCHES:	Selects audio sources 1 through 8 for application to the input module.
		INDICATORS:	Illuminates blue to indicate the associated audio source is selected for application to the input module.

1–62. OPERATION.

1–63. **INPUT SELECTION.** Select the desired input for application to the module circuitry by depressing input switch/indicators 1 through 8 as required to illuminate the switch/indicator blue.

1–64. THEORY OF OPERATION.

1–65. The following text provides detailed theory of operation for the Mix–Trak 90 series audio console input expander module. A detailed block diagram of the input expander module is presented in Figure 1–3. Refer to Figure 1–3 as required for the following circuit discussion.

1–66. FUNCTIONAL DESCRIPTION.

1–67. INPUT EXPANDER MODULE.

1–68. Additional input source selection and control capabilities for Mix–Trak 90 input modules is provided by the input expander module. The input expander module consists of eight color–coded switch/indicators designed to accept and control eight balanced stereophonic audio sources. The switch/indicators select an input source and route the audio for application to the associated line or microphone input module.

1–69. MAINTENANCE.

1–70. GENERAL.

1–71. The input expander module should be periodically cleaned of accumulated dust using a nylon–bristle brush and vacuum cleaner. The module should also be periodically inspected for loose wiring and components.

1–72. AUDIO SWITCHES.

1–73. The input expander module is equipped with ITT Shadow Inc. audio switches. The switches are sealed for low–noise long–life operation and do not permit cleaning. If a switch becomes noisy or defective, the switch will require replacement.

1–74. COMPONENT REPLACEMENT.

1–75. Component replacement procedures for the console modular assemblies are presented in SECTION II, MAINTENANCE. Refer to SECTION II as required for the replacement procedures.

1–76. PARTS LIST.

1–77. The following information provides descriptions and part numbers of electrical components and assemblies required for maintenance of the input expander module. Each table entry in this section is indexed by the reference designators appearing on the applicable schematic diagram.

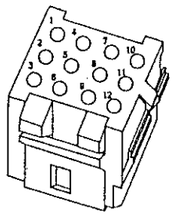
TABLE 1–2. INPUT EXPANDER MODULE CIRCUIT BOARD ASSEMBLY – 951–0018

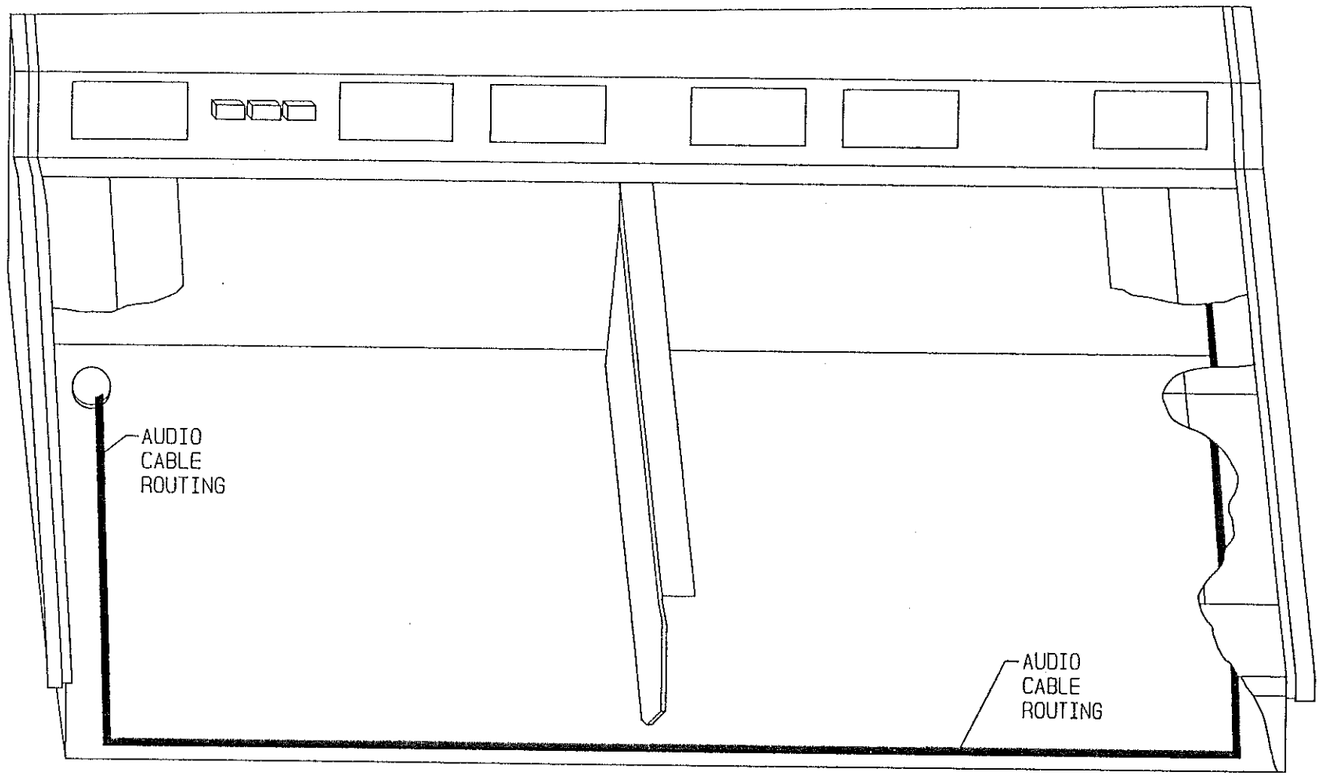
REF. DES.	DESCRIPTION	PART NO.	QTY.
J1 THRU J5	Receptacle, 12–Pin	417–1276	5
S1	Switch, 8 Section, 4PDT Pushbutton, Out Position White, In Position Blue	340–0114	1
——	Connector Housing, 12–Pin	418–1271	5
——	Pins, Connector	417–0053	65
——	Blank Input Expander Module Circuit Board	511–0018	1

1–78. DRAWINGS.

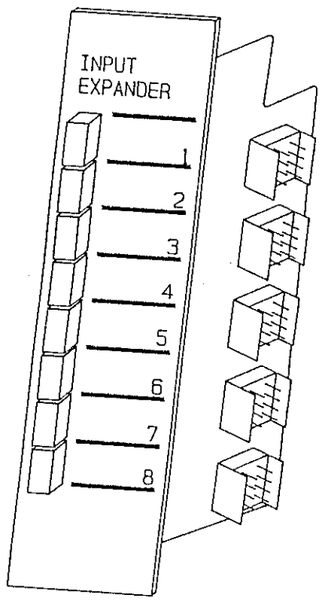
FIGURE	TITLE	NUMBER
1–4	SCHEMATIC DIAGRAM, INPUT EXPANDER MODULE	SC951–0018
1–5	ASSEMBLY DIAGRAM, INPUT EXPANDER MODULE	AC951–0018

MATING CONNECTOR





AUDIO CABLE ROUTING (NOT APPLICABLE FOR AT-100 CONSOLES)



J1 ← AUDIO INPUTS 1 AND 2

J2 ← AUDIO INPUTS 3 AND 4

J3 ← AUDIO INPUTS 5 AND 6

J4 ← AUDIO INPUTS 7 AND 8

J5 → AUDIO OUTPUT

INPUT EXPANDER MODULE

* AUDIO INPUT CONNECTOR J1

PIN NO.	DESCRIPTION
1	INPUT 2, LEFT CHANNEL +
2	INPUT 2, LEFT CHANNEL -
3	SHIELD GROUND
4	INPUT 2, RIGHT CHANNEL +
5	INPUT 2, RIGHT CHANNEL -
6	SHIELD GROUND
7	INPUT 1, LEFT CHANNEL +
8	INPUT 1, LEFT CHANNEL -
9	SHIELD GROUND
10	INPUT 1, RIGHT CHANNEL +
11	INPUT 1, RIGHT CHANNEL -
12	SHIELD GROUND

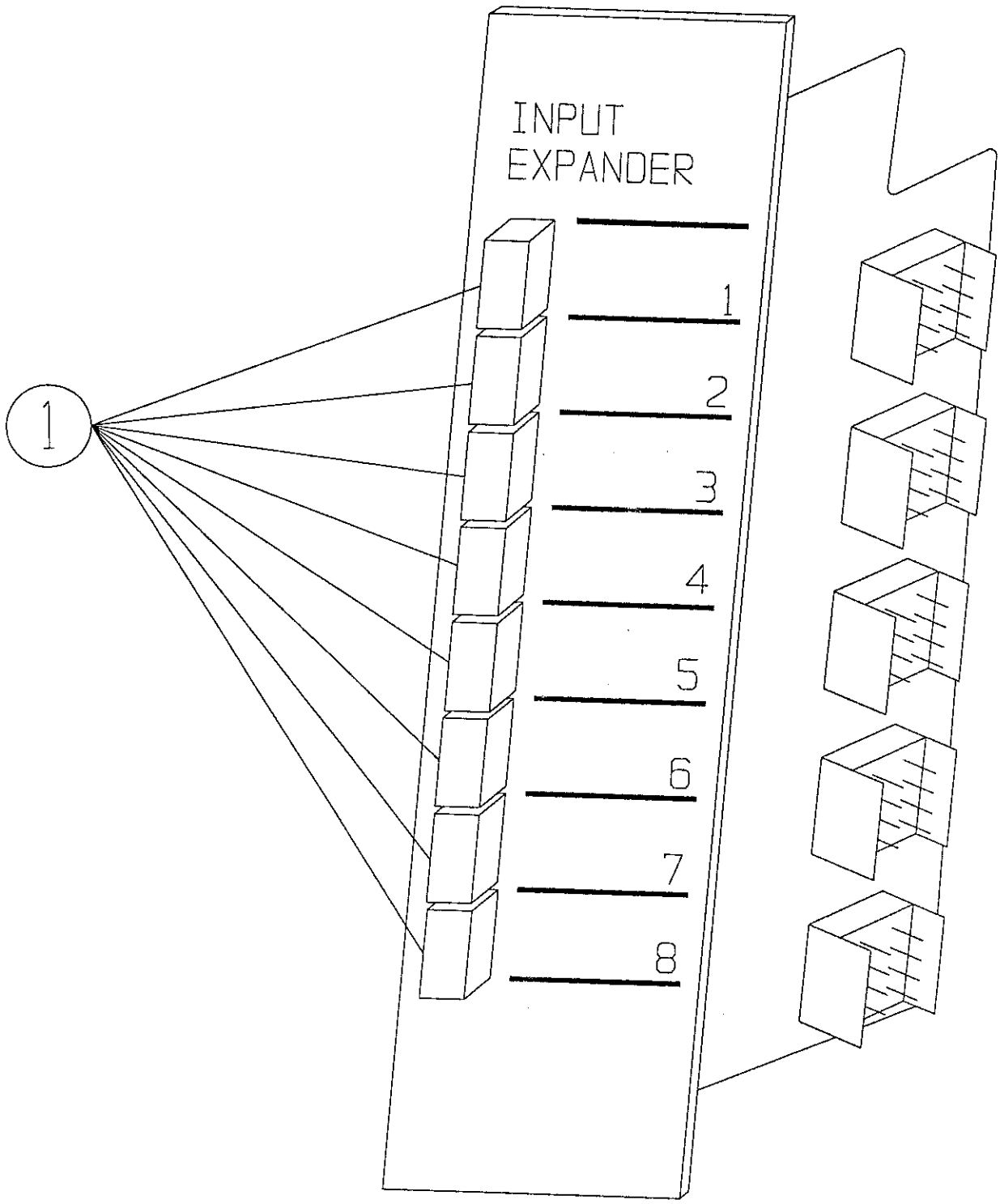
* NOTE: AUDIO INPUT CONNECTOR J1 SHOWN. CONNECTORS J2 THROUGH J4 ARE IDENTICAL.

AUDIO OUTPUT CONNECTOR J5

PIN NO.	DESCRIPTION
1	LEFT CHANNEL +
2	LEFT CHANNEL -
3	SHIELD GROUND
4	RIGHT CHANNEL +
5	RIGHT CHANNEL -
6	SHIELD GROUND
7	LEFT CHANNEL +
8	LEFT CHANNEL -
9	SHIELD GROUND
10	RIGHT CHANNEL +
11	RIGHT CHANNEL -
12	SHIELD GROUND

597-9012-31

FIGURE 1-1.
INPUT EXPANDER MODULE INTERFACING



597-9012-61

FIGURE 1–2. INPUT EXPANDER MODULE CONTROLS AND INDICATORS

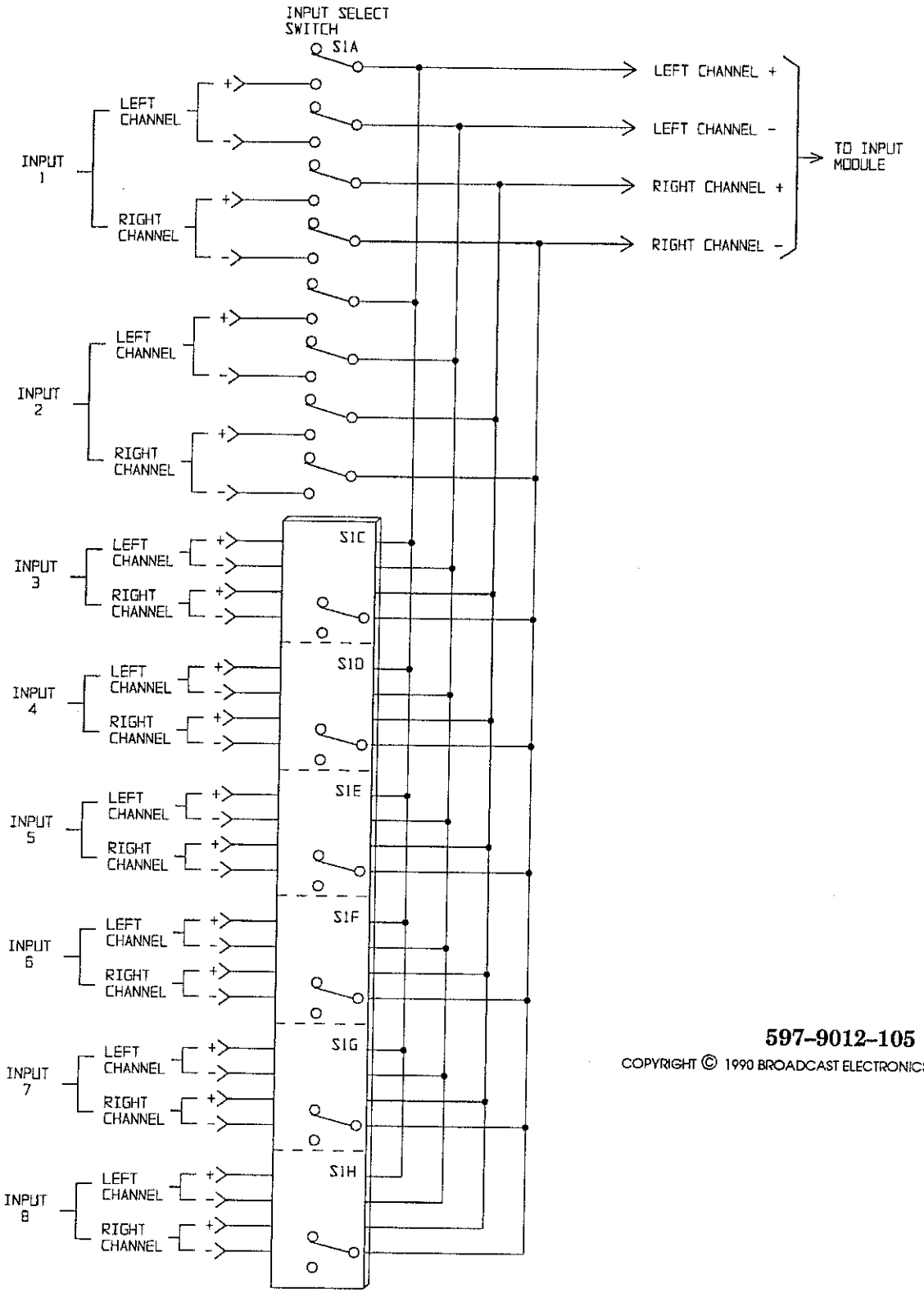
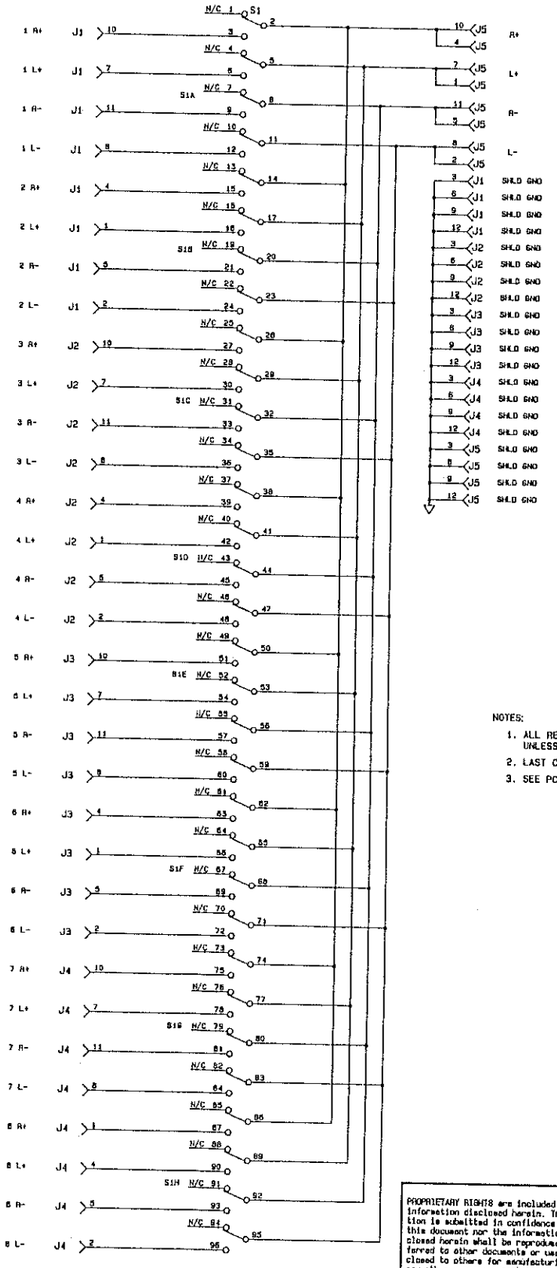


FIGURE 1-3. INPUT EXPANDER MODULE DETAILED BLOCK DIAGRAM



NOTES:

1. ALL RESISTORS IN OHMS, 1/4W, 5% UNLESS OTHERWISE SPECIFIED.
2. LAST COMPONENTS USED: S1, & J5
3. SEE PCB ASSEMBLY: AC 951-0018

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TOLERANCE (DECIMAL) U.O.S.
.X ± .030 .XXX ± .005
.XX ± .015 ANGLES ± 1°

DWN. BY JAH 6-22-88
CHKD MH 8-22-88
ME
PROJ. ENGR. 8-22-88
MFG.

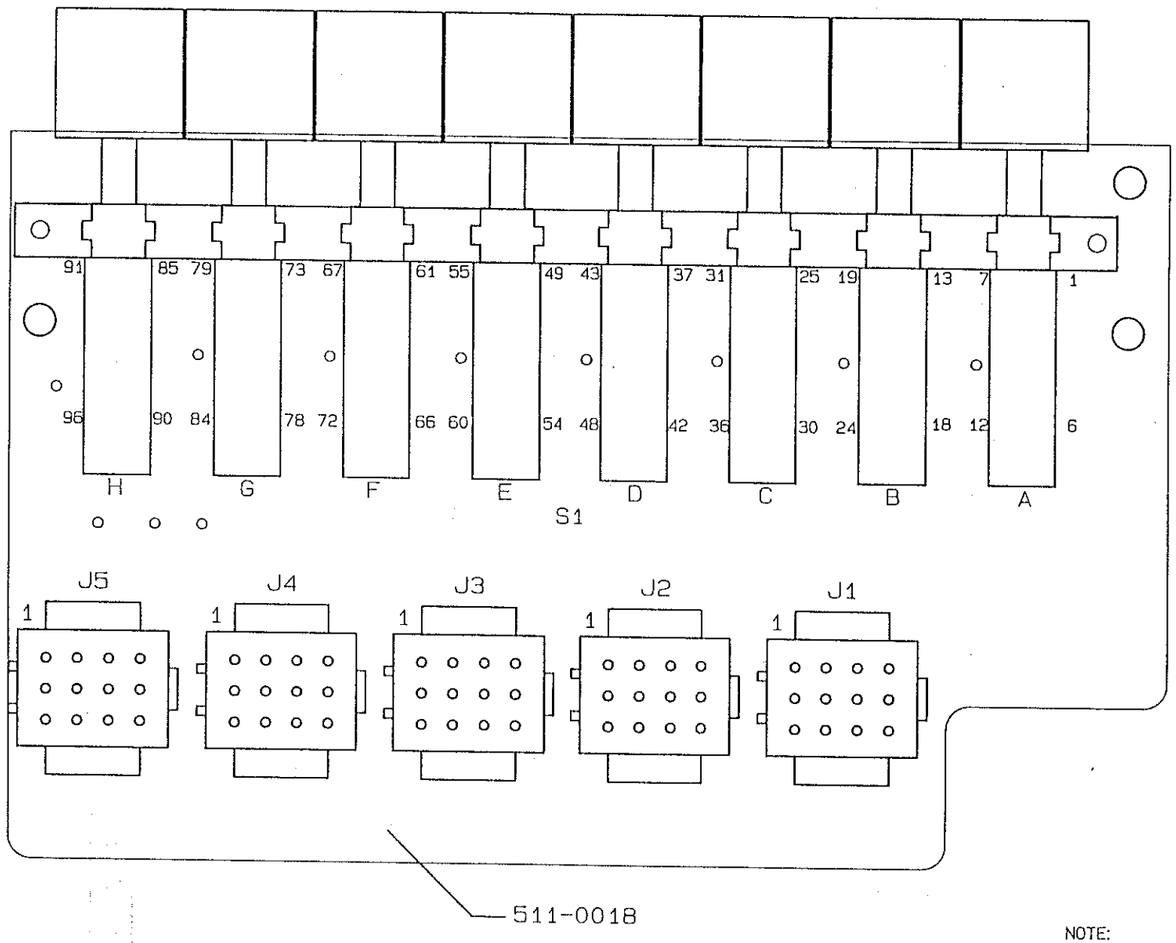
MATERIAL SEE B/M 951-0018
FINISH SEE DWG RA502-0000
NEXT ASSY. 901-0012 (12CH) 901-0018 (18CH)

BROADCAST ELECTRONICS INC.
4100 N.24TH ST.,P.O.BOX 3606 QUINCY,IL 62305 217/224-9600
TELEX 250142 CABLE BROADCAST FAX 217/224-9607

TITLE INPUT EXPANDER MODULE

TYPE S | SIZE C | DWG. NO. 951-0018 | REV A

MODEL MT-90 | SCALE NONE | SHEET 1 OF 1



PCB ASSEMBLY

NOTE:

1. REFER TO SHEET 2 FOR MODULE ASSEMBLY
2. SEE SCHEMATIC SC951-0018

TOLERANCE DECIMAL U.O.S.
.X ± .030 .XXX ± .005
.XX ± .015 ANGLES ± 1°

DWN BY MERK 10-5-87
CHKD MH 8-22-88
ME 8/22/88
PROJ ENGR
MFG

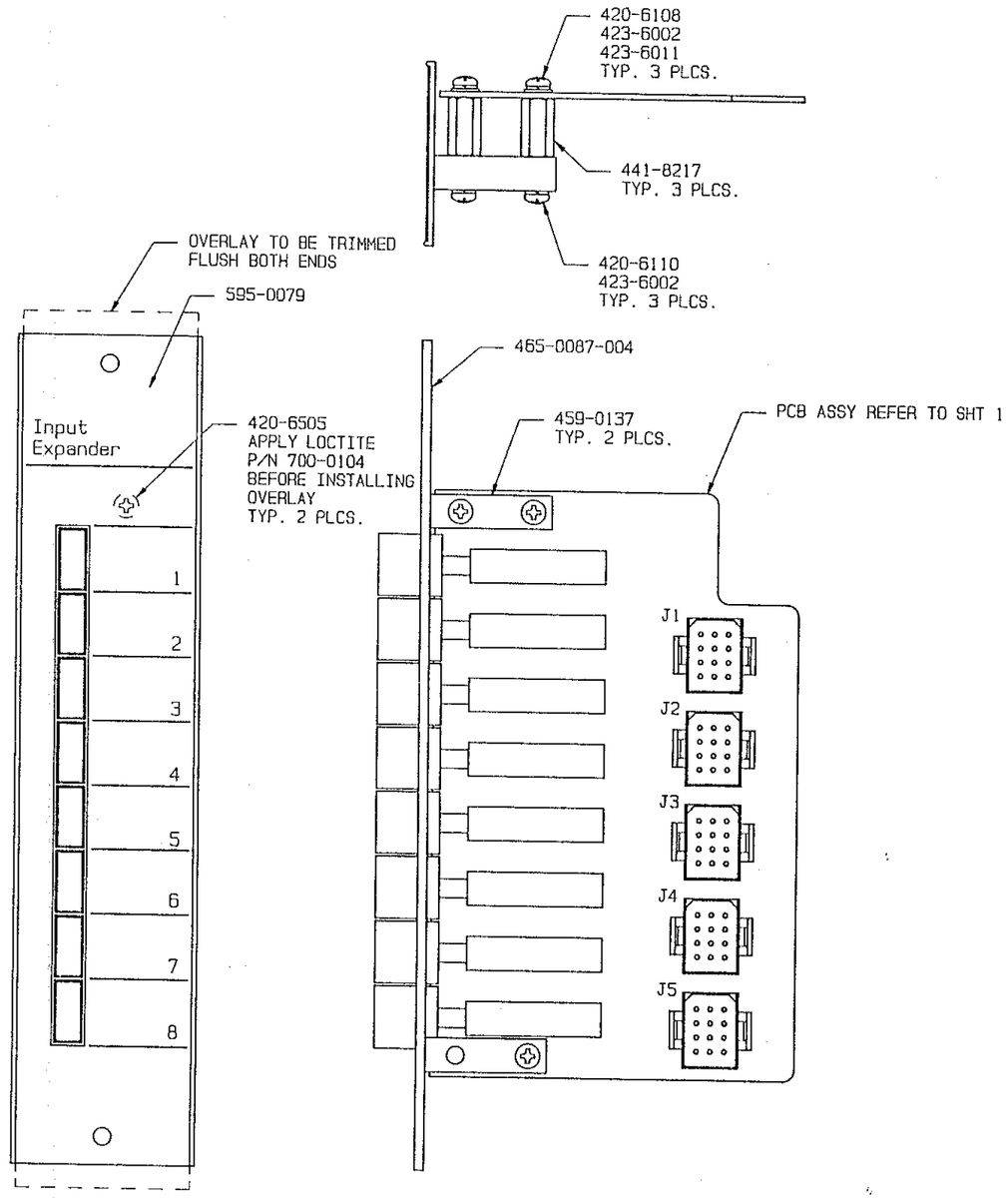
MATERIAL SEE B/M 951-0018
FINISH
NEXT ASSY 901-9012 "12CH" 901-9018 "18CH"

BROADCAST ELECTRONICS INC.
4100 N.24TH ST., P.O.BOX 3606 QUINCY, IL 62305 217/224-9600
TELEX 250142 CABLE BROADCAST FAX 217/224-9607

TITLE
INPUT EXPANDER MODULE

TYPE	SIZE	DWG.NO.	REV
A	C	951-0018	A

MODEL MT90 SCALE 2/1 SHEET 1 OF 2



TOLERANCE (DECIMAL) U.O.S.
.x ± .030 .xxx ± .005
.xx ± .015 ANGLES ± 1°

DWN. BY JAH 2-19-88
CHKD MN 8-22-88
ME 8/22/88
PROJ. ENGR. 8-22-88
MFG

MATERIAL
SEE B/M
951-0018

FINISH

DCE DWG RA502-0000

NEXT ASSY.
901-9012 (12CH)
901-9018 (18CH)

BROADCAST ELECTRONICS INC.
4100 N.24TH ST., P.O.BOX 3606 QUINCY, IL 62305 217/224-9600
TELEX 250142 CABLE BROADCAST

TITLE
INPUT EXPANDER MODULE

TYPE	SIZE	DWG. NO.	REV
A	C	951-0018	A

MODEL MIX TRAK 90 | SCALE 1/1 | SHEET 2 OF 2

TAPE/CART SOURCE REMOTE CONTROL MODLE AND UNIVERSAL REMOTE CONTROL MODULE

1–79.. INSTALLATION PROCEDURES.

1–80. TAPE/CART SOURCE REMOTE SWITCH MODULE CONNECTIONS.

1–81. The tape and cart remote switch modules must be interfaced to the associated audio source. For tape/cart source remote switch modules with solder connections, refer to Figure 1–1 and interface the module to the appropriate audio source. For cart source remote switch modules equipped with modular connectors, refer to cart remote control schematic diagram SA951–0090–19. For tape source remote switch modules equipped with modular connectors, refer to cart remote control schematic diagram SA951–0090–17. Construct the interfacing cables as required using 18 to 24 gauge wire.

1–82. UNIVERSAL REMOTE SWITCH MODULE CONNECTIONS.

1–83. The universal remote switch module must be interfaced to the associated audio source. Refer to universal remote control schematic diagram SA951–0090 and to Figure 1–1 for the power supply distribution circuit board connector pin descriptions.

1–84. OPERATING PROCEDURES.

1–85. UNIVERSAL REMOTE CONTROL SWITCH MODULE.

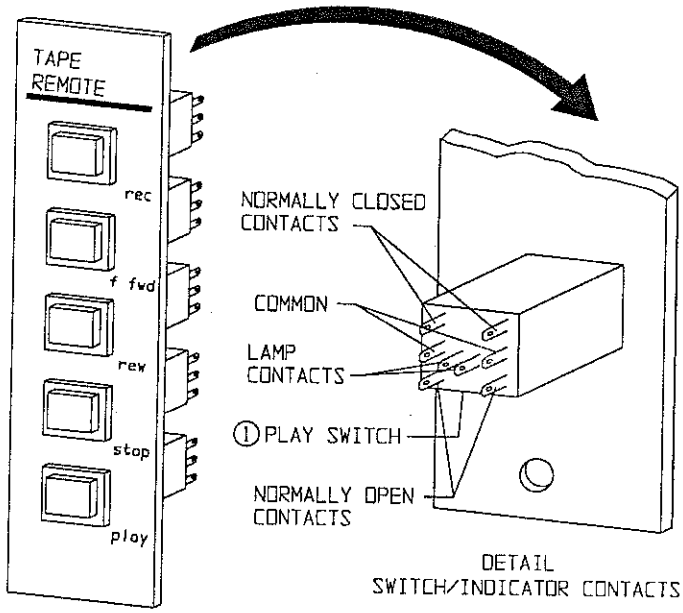
1–86. **SOURCE CONTROL.** To initiate operation of a source, depress the **START** switch/indicator to illuminate the switch/indicator. To terminate operation of a source, depress the **STOP** switch/indicator to illuminate the switch/indicator.

1–87. CART SOURCE REMOTE SWITCH MODULE.

1–88. **CONTROLS AND INDICATORS.** Refer to Figure 1–2 for the location of all controls and indicators associated with the cart source remote switch module. The function of each control or indicator is described in Table 1–1.

TABLE 1–1. CART SOURCE REMOTE SWITCH MODULE CONTROLS AND INDICATORS

INDEX NO.	NOMENCLATURE	FUNCTION
1	**REC** Switch/ Indicator	SWITCH: Configures the cartridge machine to the record mode.
		INDICATOR: Illuminates to indicate the cartridge machine is configured to the record mode.
2	**SEC** Switch/ Indicator	SWITCH: Configures the cartridge machine to record a secondary cue tone.
		INDICATOR: Illuminates to indicate the cartridge machine is configured to record a secondary cue tone.



NOTES:

① PLAY SWITCH SHOWN. ALL SWITCH/INDICATORS ARE IDENTICAL.

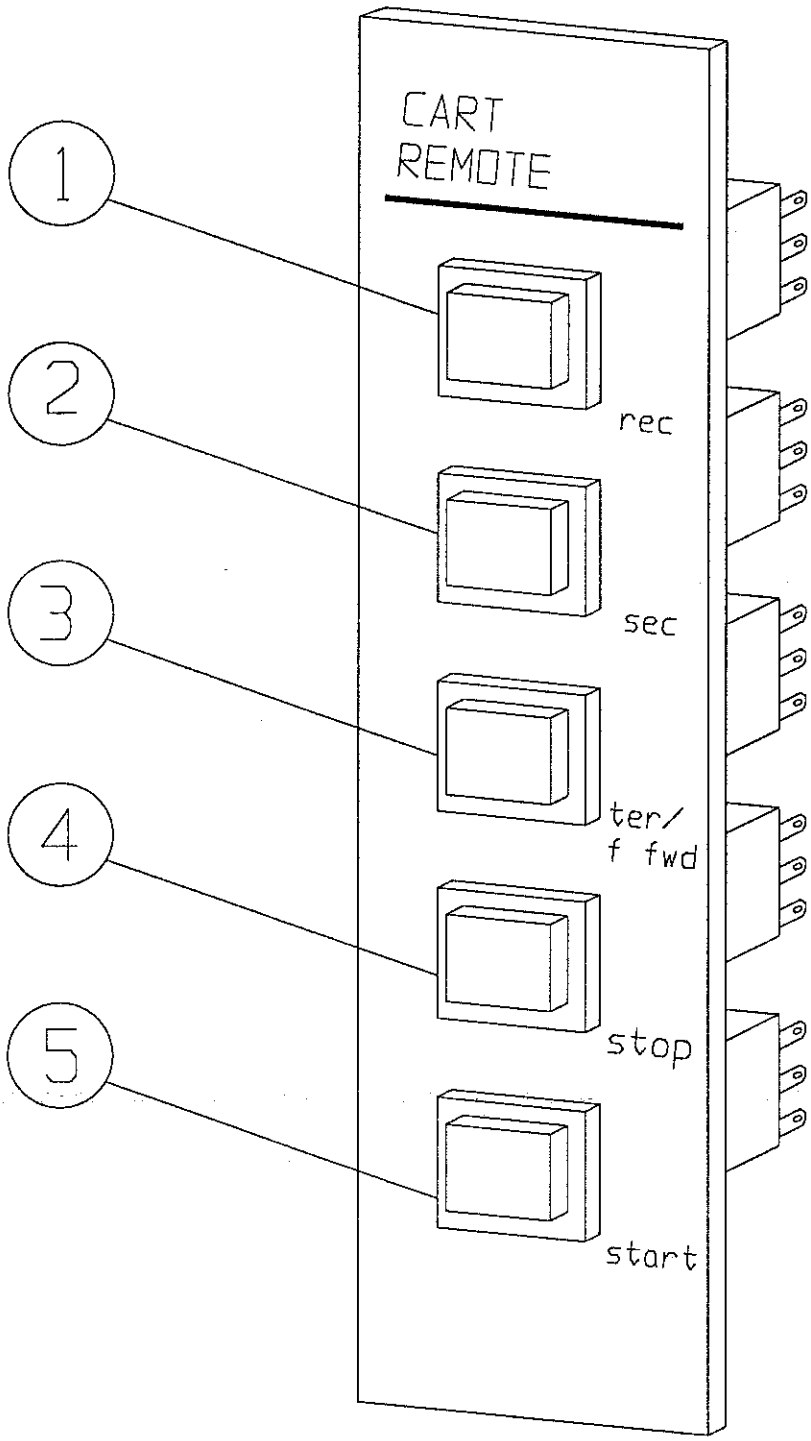
② TAPE SOURCE REMOTE SWITCH MODULE SHOWN. CART SOURCE REMOTE SWITCH MODULE IS IDENTICAL.

POWER SUPPLY DISTRIBUTION CIRCUIT BOARD CONNECTIONS J2 THRU J7

PIN NO.	DESCRIPTION
1	CONSOLE +24V dc SUPPLY
2	AUDIO POWER GROUND
3	AUDIO POWER GROUND
4	CONSOLE -24V dc SUPPLY

597-9012-71A

FIGURE 1-1 TAPE/CART REMOTE SWITCH MODULE INTERFACING



597-9012-60A

FIGURE 1-2. CART SOURCE REMOTE SWITCH MODULE CONTROLS AND INDICATORS

TABLE 1–1. CART SOURCE REMOTE SWITCH MODULE CONTROLS AND INDICATORS (CONT'D)

INDEX NO.	NOMENCLATURE	FUNCTION
3	**TER/F FWD** Switch/Indicator	SWITCH: Configures the cartridge machine to record a tertiary cue tone or to fast forward advance.
		INDICATOR: Illuminates to indicate the cartridge machine is configured to record a tertiary cue tone or to fast forward advance.
4	**STOP** Switch/ Indicator	SWITCH: Terminates cartridge machine operation.
		INDICATOR: Illuminates to indicate the termination of cartridge machine operation.
5	**START** Switch/ Indicator	SWITCH: Initiates cartridge machine operation.
		INDICATOR: Illuminates to indicate the cartridge machine is enabled.

1–89. **OPERATION.** The following text presents procedures for specific cart source remote switch panel operations. Perform the appropriate procedure for the type of operation desired.

1–90. **STOP/START CONTROL.** To initiate operation of the cartridge machine, depress the **START** switch/indicator to illuminate the switch/indicator. To terminate operation of the cartridge machine, depress the **STOP** switch/indicator to illuminate the switch/indicator.

1–91. **RECORD CONTROL.** To configure the cartridge machine for record operations, depress the **REC** switch/indicator to illuminate the switch/indicator.

1–92. **SECONDARY CUE TONE RECORD CONTROL.** To configure the cartridge machine to record a secondary cue tone, depress the **SEC** switch/indicator to illuminate the switch/indicator.

1–93. **TERTIARY CUE TONE RECORD OR FAST FORWARD CONTROL.** To configure the cartridge machine for tertiary cue tone record operations or to fast forward advance, depress the **TER/F FWD** switch/indicator to illuminate the switch/indicator.

1–94. **TAPE SOURCE REMOTE SWITCH MODULE.**

1–95. **CONTROLS AND INDICATORS.** Refer to Figure 1–3 for the location of all controls and indicators associated with the tape source remote switch module. The function of each control or indicator is described in Table 1–2.

TABLE 1–2. TAPE SOURCE REMOTE SWITCH MODULE CONTROLS AND INDICATORS

INDEX NO.	NOMENCLATURE	FUNCTION
1	**REC** Switch/ Indicator	SWITCH: Configures the tape source to the record mode.
		INDICATOR: Illuminates to indicate the tape source is configured to the record mode.
2	**F FWD** Switch/ Indicator	SWITCH: Configures the tape source to fast forward advance.
		INDICATOR Illuminates to indicate the tape source is configured to fast forward advance.
3	**REW** Switch/ Indicator	SWITCH: Configures the tape source for rewind operations.
		INDICATOR: Illuminates to indicate the tape source is configured for rewindoperations.
4	**STOP** Switch/ Indicator	SWITCH: Terminates tape source operation.
		INDICATOR: Illuminates to indicate the termination of tape source operation.
5	**PLAY** Switch/ Indicator	SWITCH: Initiates tape source operation.
		INDICATOR: Illuminates to indicate the tape source is enabled.

1–96. **OPERATION.**

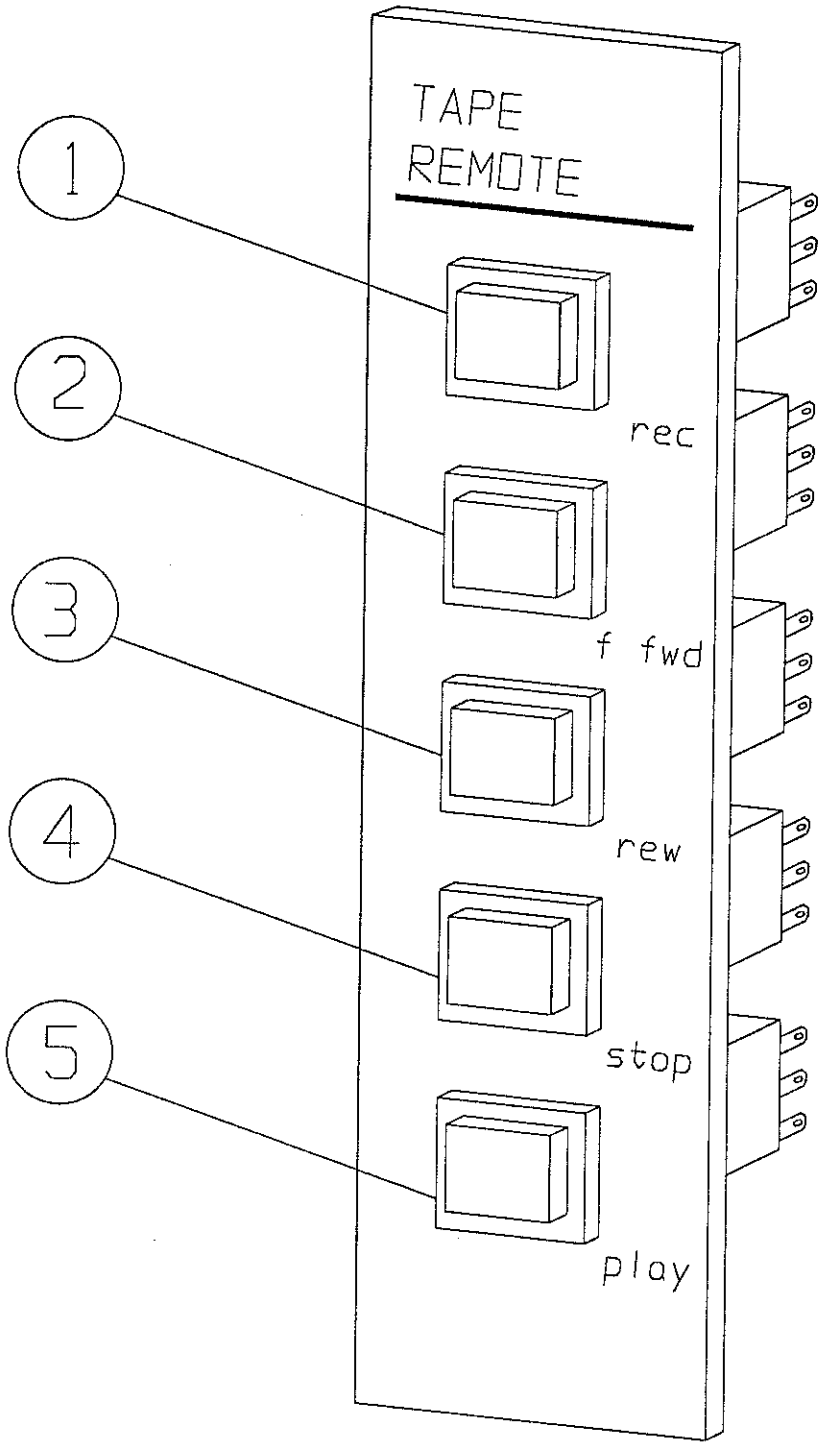
1–97. The following text presents procedures for specific tape source remote switch panel operations. Perform the appropriate procedure for the type of operation desired.

1–98. **STOP/PLAY CONTROL.** To initiate operation of the tape source, depress the **PLAY** switch/indicator to illuminate the switch/indicator. To terminate operation of the tape source, depress the **STOP** switch/indicator to illuminate the switch/indicator.

1–99. **RECORD CONTROL.** To configure the tape source for record operations, depress the **REC** switch/indicator to illuminate the switch/indicator.

1–100. **REWIND CONTROL.** To configure the tape source for rewind operations, depress the **REW** switch/indicator to illuminate the switch/indicator.

1–101. **FAST FORWARD CONTROL.** To configure the tape source to fast forward advance, depress the **F FWD** switch/indicator to illuminate the switch/indicator.



597-9012-60

FIGURE 1–3.
TAPE SOURCE REMOTE SWITCH MODULE CONTROLS AND INDICATORS

1–102. THEORY OF OPERATION.

1–103. The following text provides detailed theory of operation for the Mix–Trak 90 series audio console tape and cart source remote switch modules. A diagram of the tape, cart, and universal remote switch modules is presented in Figure 1–4 Refer to Figure 1–4 as required for the following circuit discussion.

1–104. UNIVERSAL SOURCE REMOTE SWITCH MODULE FUNCTIONAL DESCRIPTION.

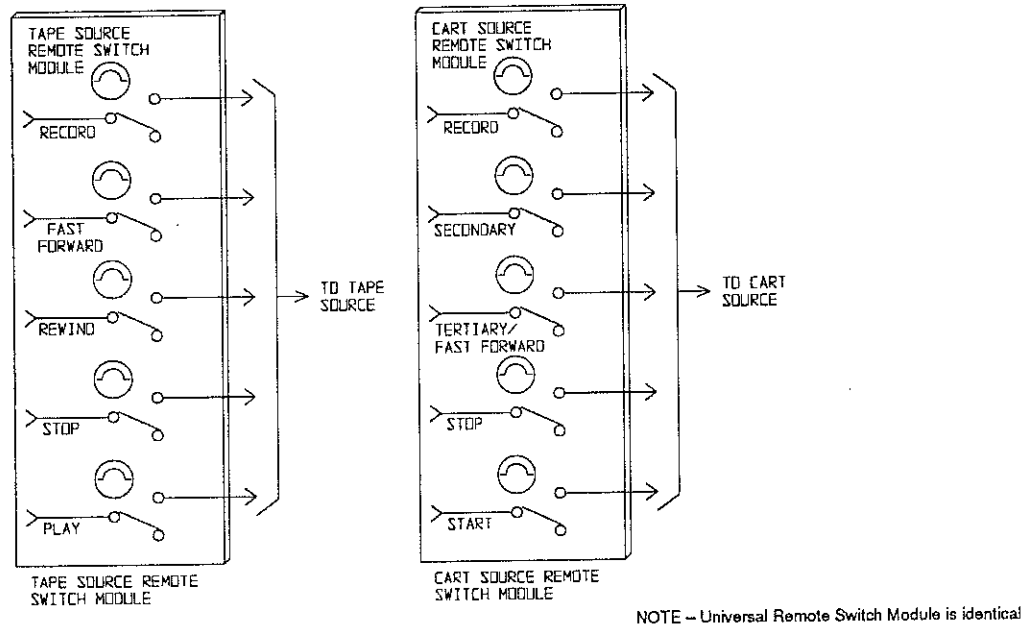
1–105. The universal source remote switch module consists of five momentary contact switch/indicators for the remote control of a cartridge machine source. The switches will provide control signals for basic operating functions such as record, secondary cue tone record, tertiary cue tone record/fast forward, stop, and stop.

1–106. TAPE SOURCE REMOTE SWITCH MODULE FUNCTIONAL DESCRIPTION.

1–107. The tape source remote switch module consists of five color–coded momentary contact switch/indicators for the remote control of a tape source such as a reel–to–reel machine. The switches will provide control signals for basic operating functions such as record, fast forward, rewind, stop, and stop.

1–108. CART SOURCE REMOTE SWITCH MODULE FUNCTIONAL DESCRIPTION.

1–109. The cart source remote switch module consists of five color–coded momentary contact switch/indicators for the remote control of a cartridge machine source. The switches will provide control signals for basic operating functions such as record, secondary cue tone record, tertiary cue tone record/fast forward, stop, and stop.



NOTE – Universal Remote Switch Module is identical

597–9012–103

FIGURE 1–4. TAPE AND CART SOURCE REMOTE SWITCH MODULE DETAILED BLOCK DIAGRAM

1–110. MAINTENANCE.

1–111. The source remote switch modules should be periodically cleaned of accumulated dust using a nylon–bristle brush and vacuum cleaner. The modules should also be periodically inspected for loose wiring, otherwise no special maintenance procedures need be performed.

1–112. PARTS LIST.

1–113. The following text provides descriptions and part numbers of electrical components and assemblies required for maintenance of the source remote switch modules.

TABLE 1–3. TAPE SOURCE REMOTE SWITCH MODULE – 951–0017

REF. DES.	DESCRIPTION	PART NO.	QTY.
S1 THRU S5	Switch, Push, Illuminated, 2PDT, Square, Momentary Contact, 3A @ 125V ac	343–0042	5
——	Lamp, No. 85, Wedge Base, 28V @ 0.04 Amperes	321–0085	5
——	Switch Cap, Blue, Square (for **FAST FORWARD** and **REWIND** Switches)	340–0059	2
——	Switch Cap, Red, Square (for **RECORD** Switch)	343–0043	1
——	Switch Cap, White, Square (for **STOP** Switch)	340–0049	1
——	Switch Cap, Green, Square (for **PLAY** Switch)	340–0019	1

TABLE 1–4. CART SOURCE REMOTE SWITCH MODULE – 951–0019

REF. DES.	DESCRIPTION	PART NO.	QTY.
S1 THRU S5	Switch, Push, Illuminated, 2PDT, Square, Momentary Contact, 3A @ 125V ac	343–0042	5
——	Lamp, No. 85, Wedge Base, 28V @ 0.04 Amperes	321–0085	5
——	Switch Cap, Blue, Square (for **TERTIARY/FAST FORWARD** Switch)	340–0059	1
——	Switch Cap, Red, Square (for **RECORD** Switch)	343–0043	1
——	Switch Cap, White, Square (for **SECONDARY** Switch)	340–0049	1
——	Switch Cap, Yellow (for **STOP** Switch)	340–0014	1
——	Switch Cap, Green, Square (for **START** Switch)	340–0019	1

TABLE 1–5. TAPE SOURCE REMOTE SWITCH MODULE WITH MODULAR CONNECTORS – 951–0090–017

REF. DES.	DESCRIPTION	PART NO.	QTY.
P1 thru P4	Connector, Housing, 12–Pin	418–1271	4
S1 THRU S5	Switch, Push, Illuminated, 2PDT, Square, Push On/Off, 3A @ 125V ac	340–0144	5
——	Lamp, No. 73, 14 V @ 0.08 A, T–1 3/4 Bulb, Wedge Base	320–0007	5
——	Switch Cap, Blue, Square	340–0059	2
——	Switch Cap, Red, Square	343–0043	1
——	Switch Cap, White, Square	340–0049	1
——	Switch Cap, Green, Square	340–0019	1
——	Socket, Connector	417–0053	50
——	Overlay, Tape Remote	595–0081	1
——	Universal Remote Control Circuit Board Assembly	911–0090	1

TABLE 1–6. CART SOURCE REMOTE SWITCH MODULE WITH MODULAR CONNECTORS – 951–0090–019

REF. DES.	DESCRIPTION	PART NO.	QTY.
P1 thru P4	Connector, Housing, 12–Pin	418–1271	4
S1 THRU S5	Switch, Push, Illuminated, 2PDT, Square, Push On/Off, 3A @ 125V ac	340–0144	5
——	Lamp, No. 85, Wedge Base, 28V @ 0.04 Amperes	321–0085	5
——	Switch Cap, Yellow	340–0014	1
——	Switch Cap, Blue, Square	340–0059	1
——	Switch Cap, Red, Square	343–0043	1
——	Switch Cap, White, Square	340–0049	1
——	Switch Cap, Green, Square	340–0019	1
——	Socket, Connector	417–0053	50
——	Overlay, Cart Remote	595–0087	1
——	Universal Remote Control Circuit Board Assembly	911–0090	1

TABLE 1–7. UNIVERSAL SOURCE REMOTE SWITCH MODULE – 951–0090

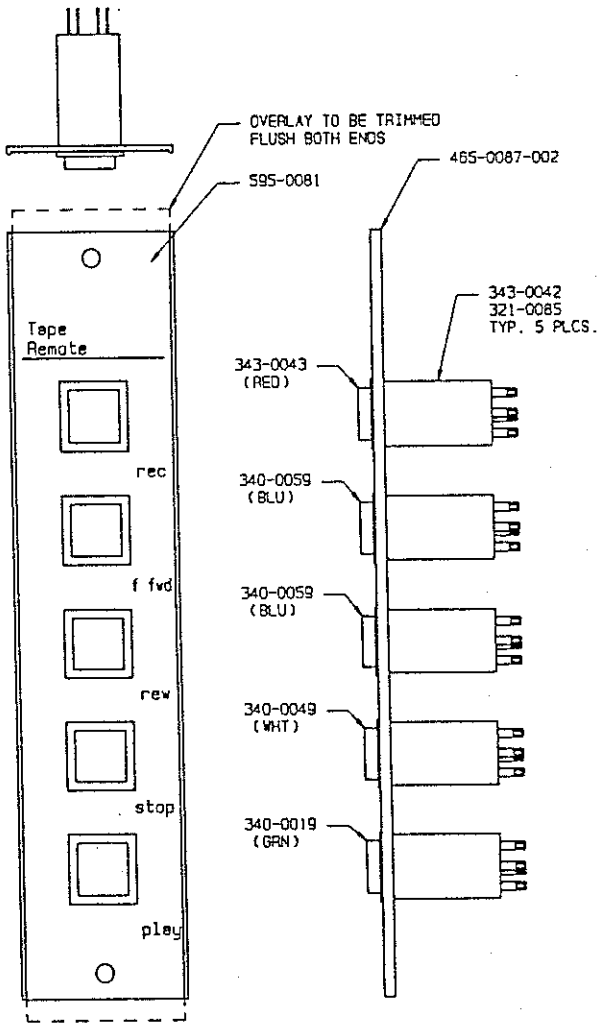
REF. DES.	DESCRIPTION	PART NO.	QTY.
P1 thru P4	Connector, Housing, 12–Pin	418–1271	4
S1 THRU S5	Switch, Push, Illuminated, 2PDT, Square, Push On/Off, 3A @ 125V ac	340–0144	5
——	Lamp, No. 85, Wedge Base, 28V @ 0.04 Amperes	321–0085	5
——	Switch Cap, Clear	340–0020	5
——	Socket, Connector	417–0053	50
——	Overlay, Universal Remote	595–0104	1
——	Universal Remote Control Circuit Board Assembly	911–0090	1

TABLE 1–8. UNIVERSAL SOURCE REMOTE SWITCH CIRCUIT BOARD – 911–0090

REF. DES.	DESCRIPTION	PART NO.	QTY.
J1 thru J4	Receptacle, 12–Pin	417–1276	4
——	Socket, Connector	417–0198	40
——	Blank Universal Remote Control Circuit Board	511–0090	1

1–114. DRAWINGS.

FIGURE	TITLE	NUMBER
1–5	ASSEMBLY DIAGRAM, TAPE SOURCE REMOTE SWITCH MODULE	AC951–0017
1–6	ASSEMBLY DIAGRAM, CART SOURCE REMOTE SWITCH MODULE	AC951–0019
1–7	SCHEMATIC DIAGRAM, CART SOURCE REMOTE SWITCH MODULE WITH MODULAR CONNECTORS	SA951–0090–017
1–8	ASSEMBLY DIAGRAM, CART SOURCE REMOTE SWITCH MODULE WITH MODULAR CONNECTORS	AC951–0090–017
1–9	SCHEMATIC DIAGRAM, TAPE SOURCE REMOTE SWITCH MODULE WITH MODULAR CONNECTORS	SA951–0090–019
1–10	ASSEMBLY DIAGRAM, TAPE SOURCE REMOTE SWITCH MODULE WITH MODULAR CONNECTORS	AC951–0090–019



DWN. BY	JAH 6-20-88
CHKD	MH 8-22-88
ENG.	
PROJ. ENGR.	
MFR.	
MATERIAL	SEE B/M 951-0017
FINISH	
NEXT ASSY	951-0012 (120V) 951-0013 (180V)

TOLERANCE (DECIMAL) U.O.S.
.x ± .030 .xxx ± .005
.xx ± .010 ANGLES ± 1°

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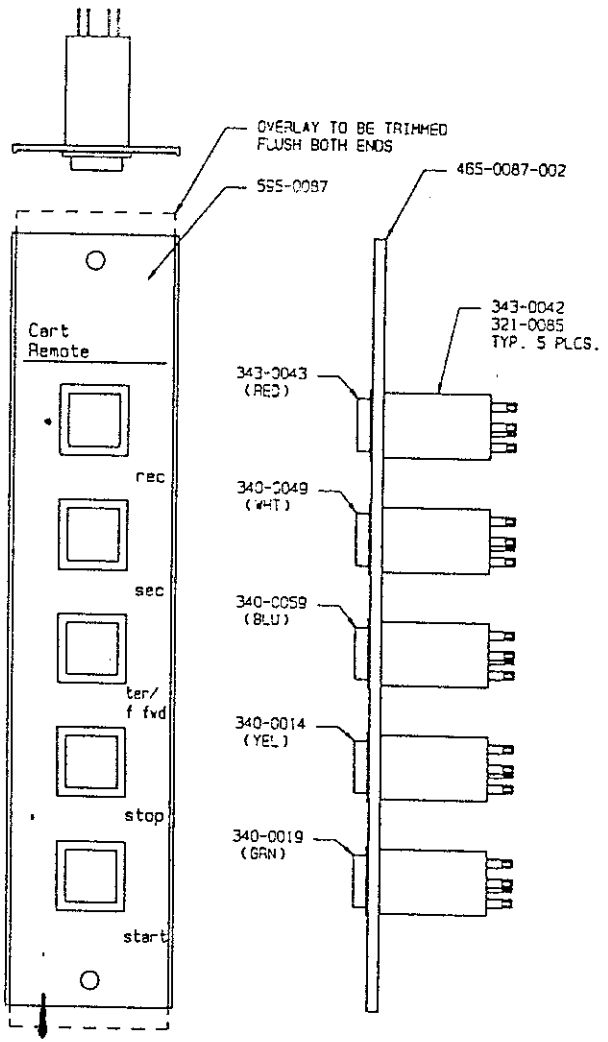
4100 N. 24TH ST., P.O. BOX 7606 QUINCY, IL 62305 217/224-9600
TELEX 250142 CABLE BROADCAST FAX 217/224-9607

TITLE: TAPE SOURCE REMOTE SWITCH MODULE

TYPE	SIZE	DWG. NO.	REV
A	C	951-0017	A

MODEL MT-90 | SCALE 1=1 | SHEET 1 of 1



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DWN. BY JAH 6-20-88
CHKD MH 6-22-88
ENG.
PROJ. ENGR.
APPR.
MATERIAL SEE B/M 951-0019
FINISH
NEXT ASSY. 951-9012 (12CH) 951-9018 (18CH)

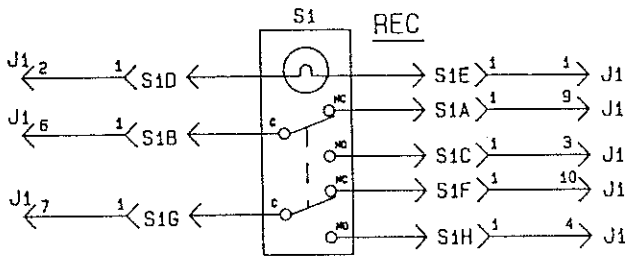
BROADCAST ELECTRONICS INC.
4100 N. 24TH ST., P.O. BOX 3606 QUINCY, IL 62305 217/224-9600
TELEX 250142 CABLE BROADCAST FAX 217/224-9607

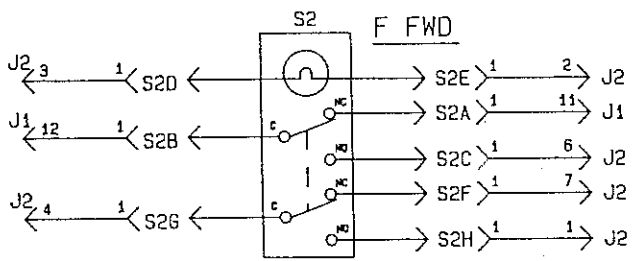
TITLE CART SOURCE REMOTE SWITCH MODULE

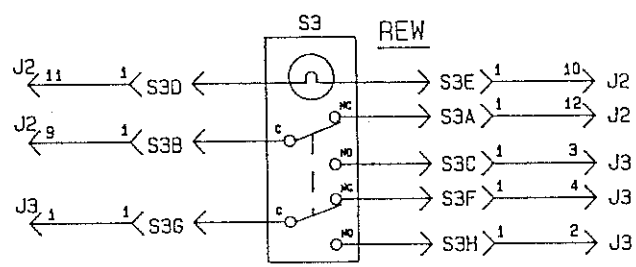
TYPE A | SIZE C | DWG. NO. 951-0019 | REV A

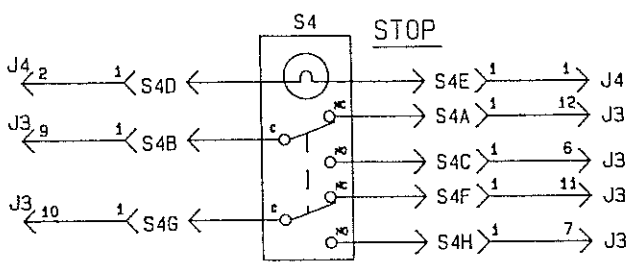
MODEL MT-90 | SCALE 1=1 | SHEET 1 OF 1

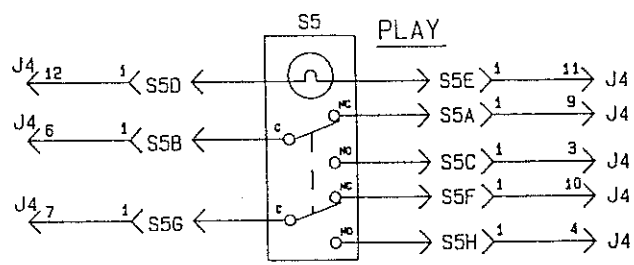
REVISIONS					
REV	DATE	DESCRIPTION	DFTSMN	ENGR	ECN
A	2-25-93	ENGINEERING RELEASE.	MH		------











TOLERANCE (DECIMAL) U.O.S.
.x ± .030 .xxx ± .005
.xx ± .015 ANGLES ± 1°

DWN. BY 2-25-93
M. HAYDEN
CHKD
ME
PROJ. ENGR.
MFG.

MATERIAL
SEE B/M
951-0090-017

FINISH

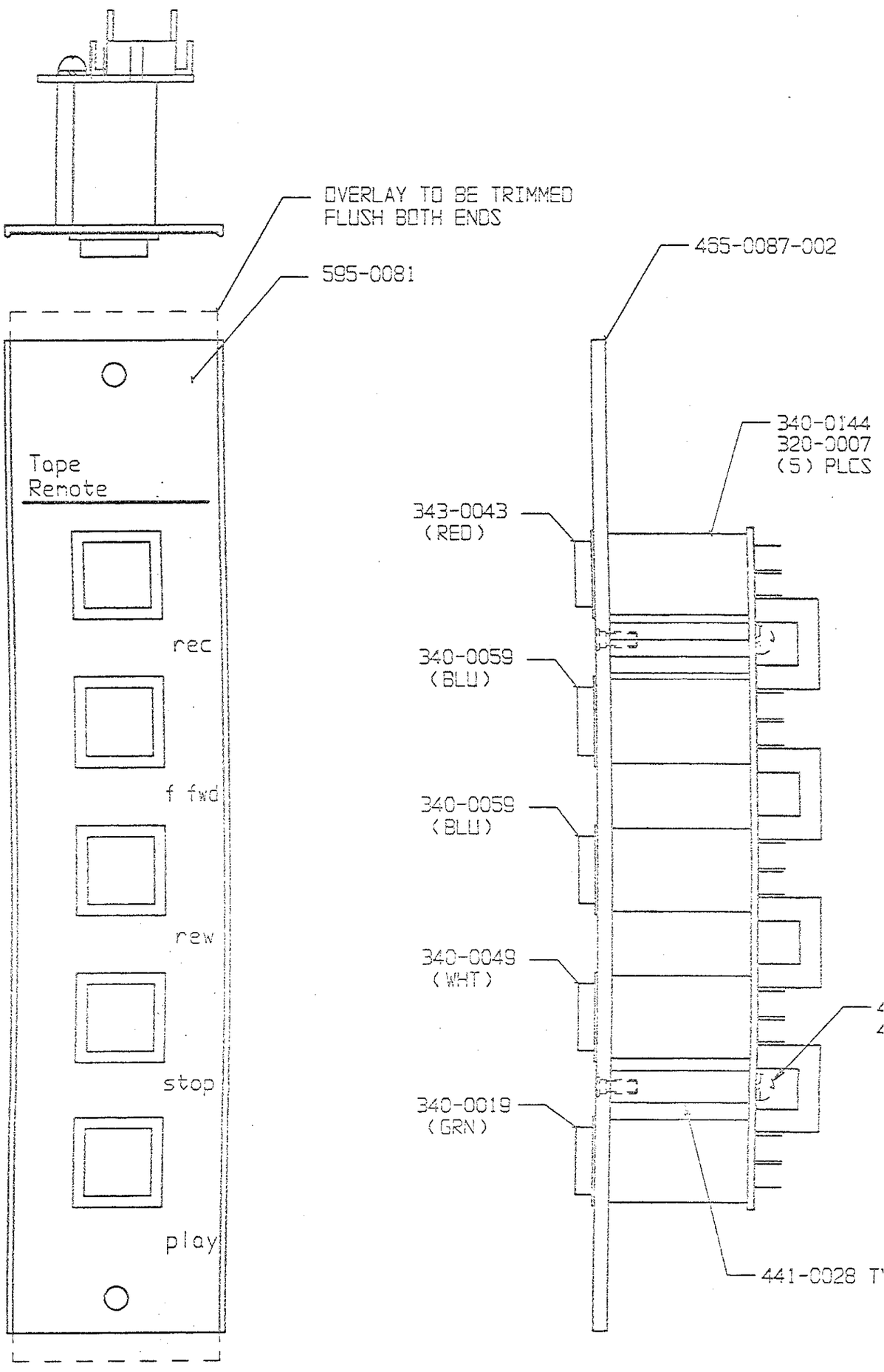
SEE DWG RA592-0000
NEXT ASSY.

BROADCAST ELECTRONICS INC.
4100 N. 24TH ST., P.O.BOX 3606 QUINCY, IL. 62305 217/224-9600
TELEX 250142 CABLE BROADCAST FAX 217/224-9607

TITLE
SCHEMATIC
TAPE REMOTE CONTROL

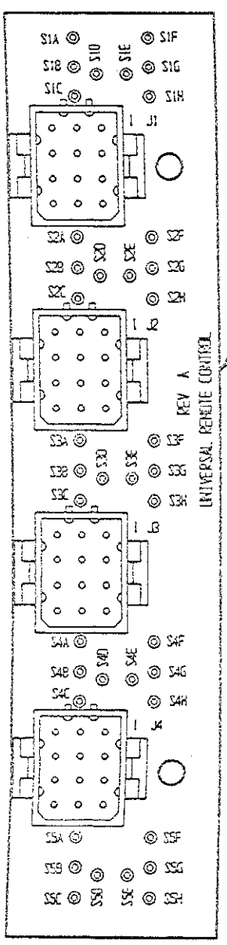
TYPE	SIZE	DWG. NO.	REV
S	A	951-0090-017	A

MODEL CONSOLES | SCALE NONE | SHEET 1 OF 1



REVISIONS					
REV	DATE	DESCRIPTION	DRAFTER	APPROVED	ECN
A	3-22-93	ENGINEERING RELEASE	WLF	AB	
B	1-4-94	340-0019 WAS 343-0018, 911-0090 WAS 511-0090	WLF	AB	9129
C	8-23-94	465-0087-002 WAS 465-0087-013	WLF	AB	9269

(NOTE ORIENTATION OF PIN HOLES
BEFORE INSTALLING SWITCH.)



420-6106 QTY (2)
423-6002 QTY (2)

TYP (2) PLCS.

TOLERANCE (DECIMAL) U.O.S.
.x ± .030 .xxx ± .005
.xx ± .015 ANGLES ± 1°

DWN. BY: WLF 2-18-93
DESIGNER(S):
PROJ. LEADER:
MFG.

MATERIAL: SEE B/M 951-0090-017
FINISH: SEE DWG RA592-0000
NEXT ASSY.

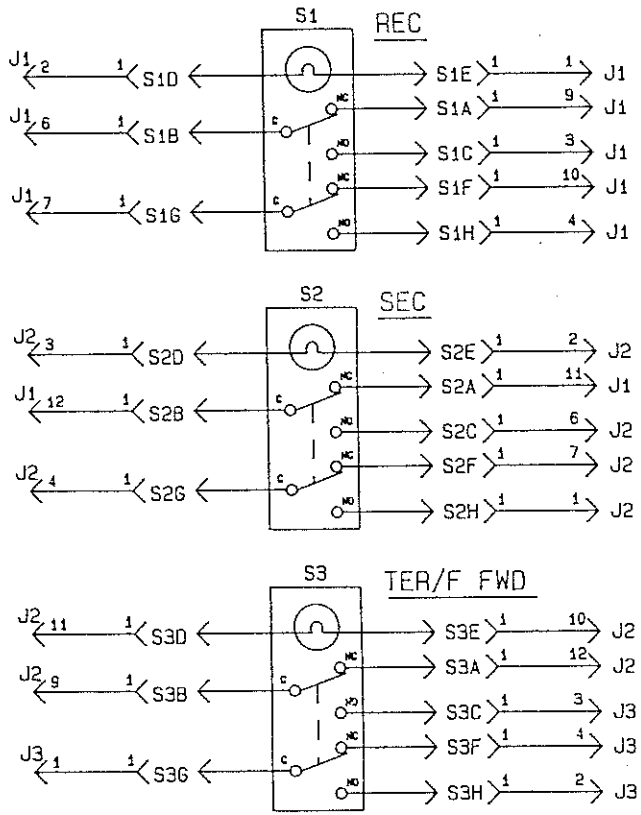
BROADCAST ELECTRONICS INC.
4100 N.24TH ST.,P.O.BOX 3606 QUINCY,IL 62305 217/224-9600
TELEX 250142 CABLE BROADCAST FAX 217/224-9607

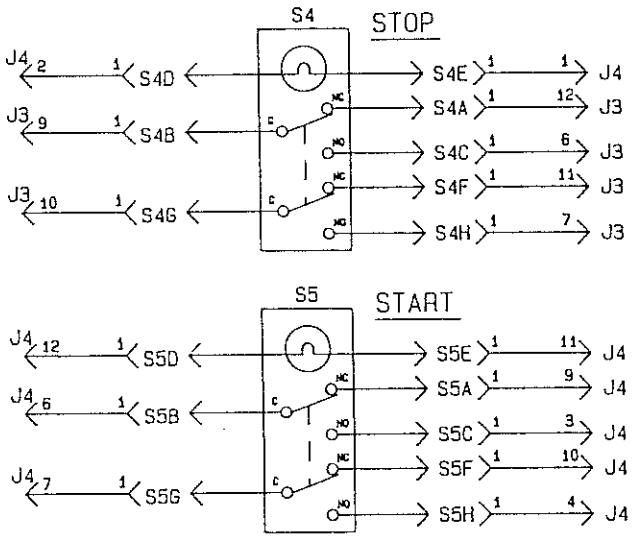
TITLE: REMOTE CONTROL, TAPE MACHINE 5 POSITION

TYPE	SIZE	DWG. NO.	REV
A	C	951-0090-017	C

MODEL MT-90 | SCALE 1=1 | SHEET 1 OF 1

REVISIONS					
REV	DATE	DESCRIPTION	DFTSMN	ENGR	ECN
A	2-25-93	ENGINEERING RELEASE.	MH		----





TOLERANCE (DECIMAL) U.O.S.
.x ± .030 .xxx ± .005
.xx ± .015 ANGLES ± 1°

DWN. BY 2-25-93
M. HAYDEN
CHKD
ENG
PROJ. ENGR.
MFG.

MATERIAL
SEE B/M
951-0090-019

FINISH

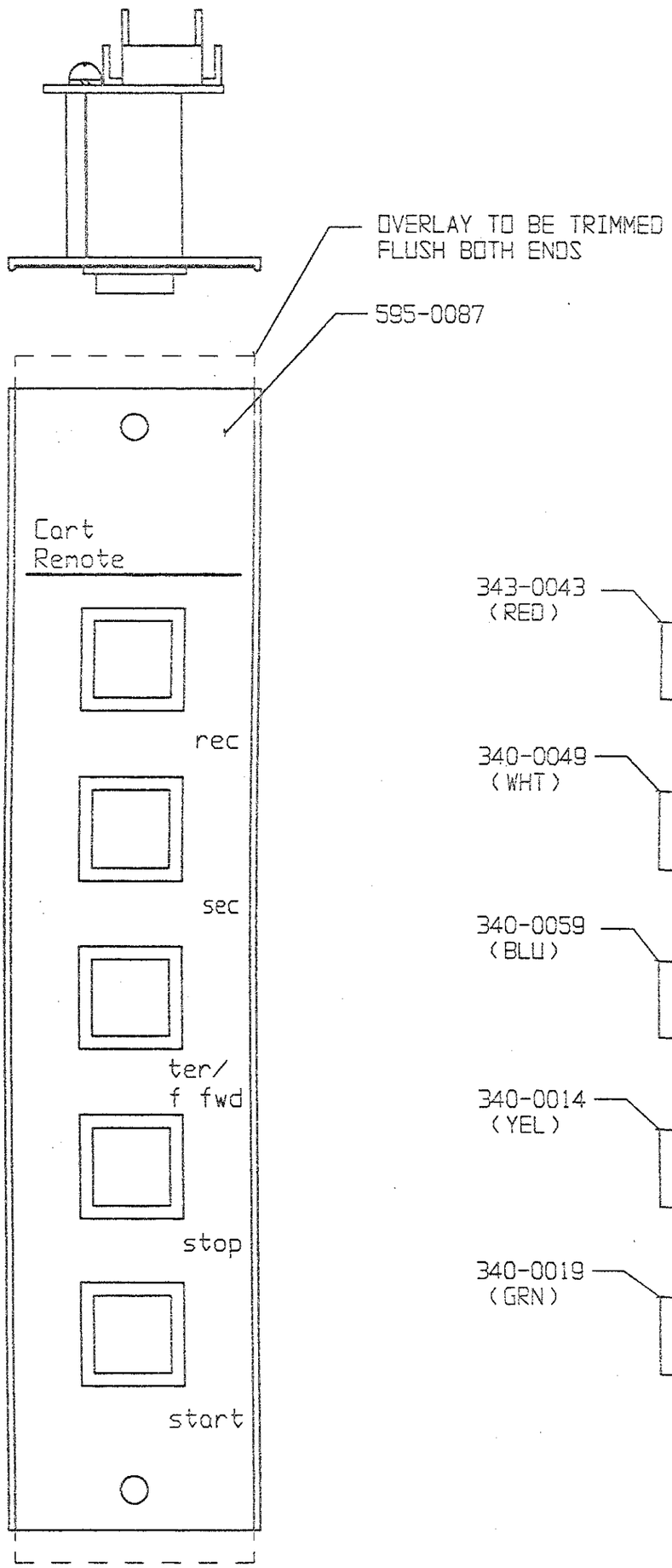
SEE DWG RA592-0000
NEXT ASSY.

BROADCAST ELECTRONICS INC.
4100 N. 24TH ST., P.O.BOX 3606 QUINCY, IL. 62305 217/224-9600
TELEX 250142 CABLE BROADCAST FAX 217/224-9607

TITLE
SCHEMATIC
CART REMOTE CONTROL

TYPE	SIZE	DWG. NO.	REV
S	A	951-0090-019	A

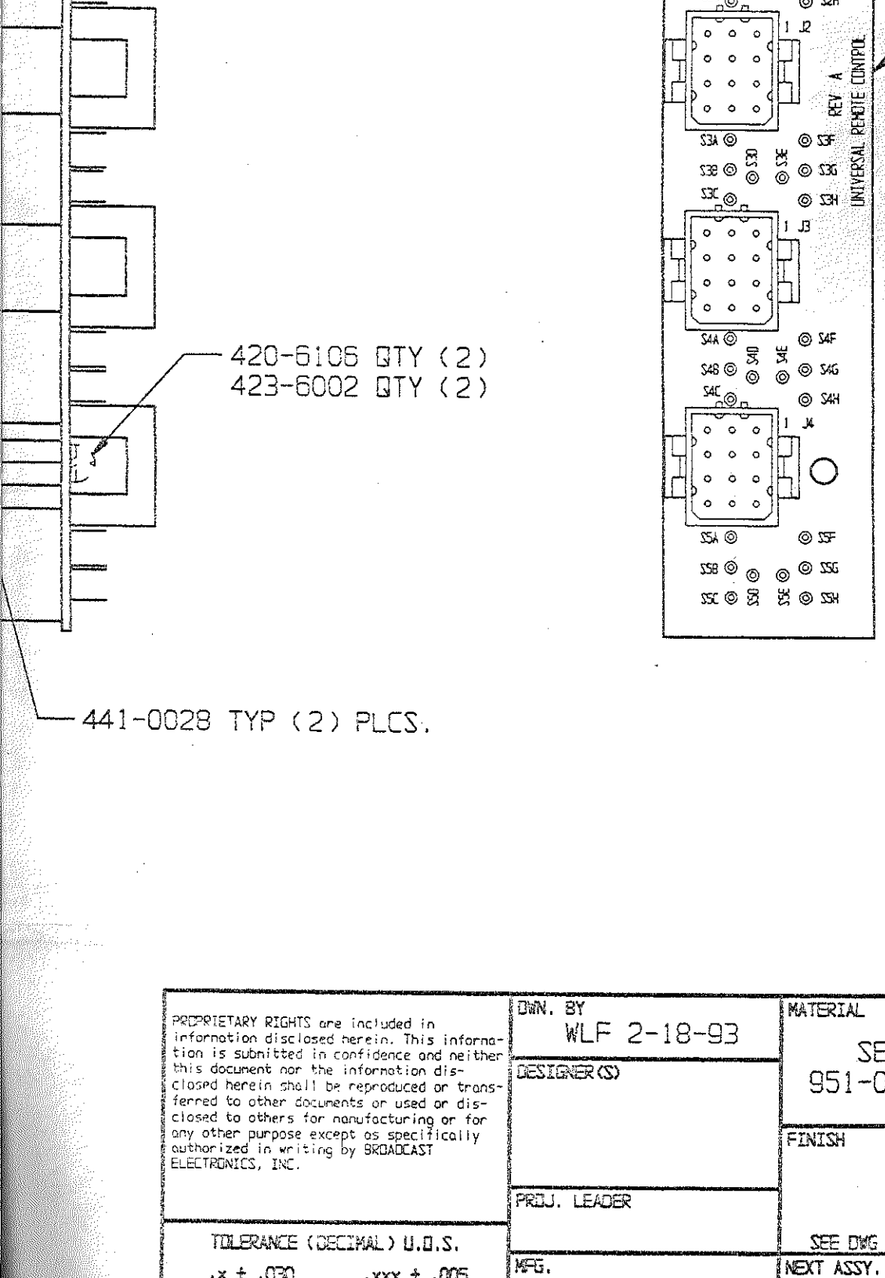
MODEL CONSOLES | SCALE NONE | SHEET 1 OF 1



REVISIONS					
REV	DATE	DESCRIPTION	DRAFTER	APPROVED	ECN
A	3-22-93	ENGINEERING RELEASE	WLF	AB	
B	1-4-94	340-0019 WAS 343-0018, 911-0090 WAS 511-0090	WLF	AB	9129
C	8-23-94	465-0087-002 WAS 465-0087-013	WLF	AB	9269

465-0087-002

340-0144 (NOTE ORIENTATION OF PIN HOLES
321-0085 BEFORE INSTALLING SWITCH.)
(5) PLCS



911-0090

420-6106 QTY (2)
423-6002 QTY (2)

441-0028 TYP (2) PLCS.

TOLERANCE (DECIMAL) U.O.S.
.x ± .030 .xxx ± .005
.xx ± .015 ANGLES ± 1°

DWN. BY WLF 2-18-93
DESIGNER(S)
PROJ. LEADER
MFG.

MATERIAL SEE B/M 951-0090-019
FINISH SEE DWG RA592-0000
NEXT ASSY.

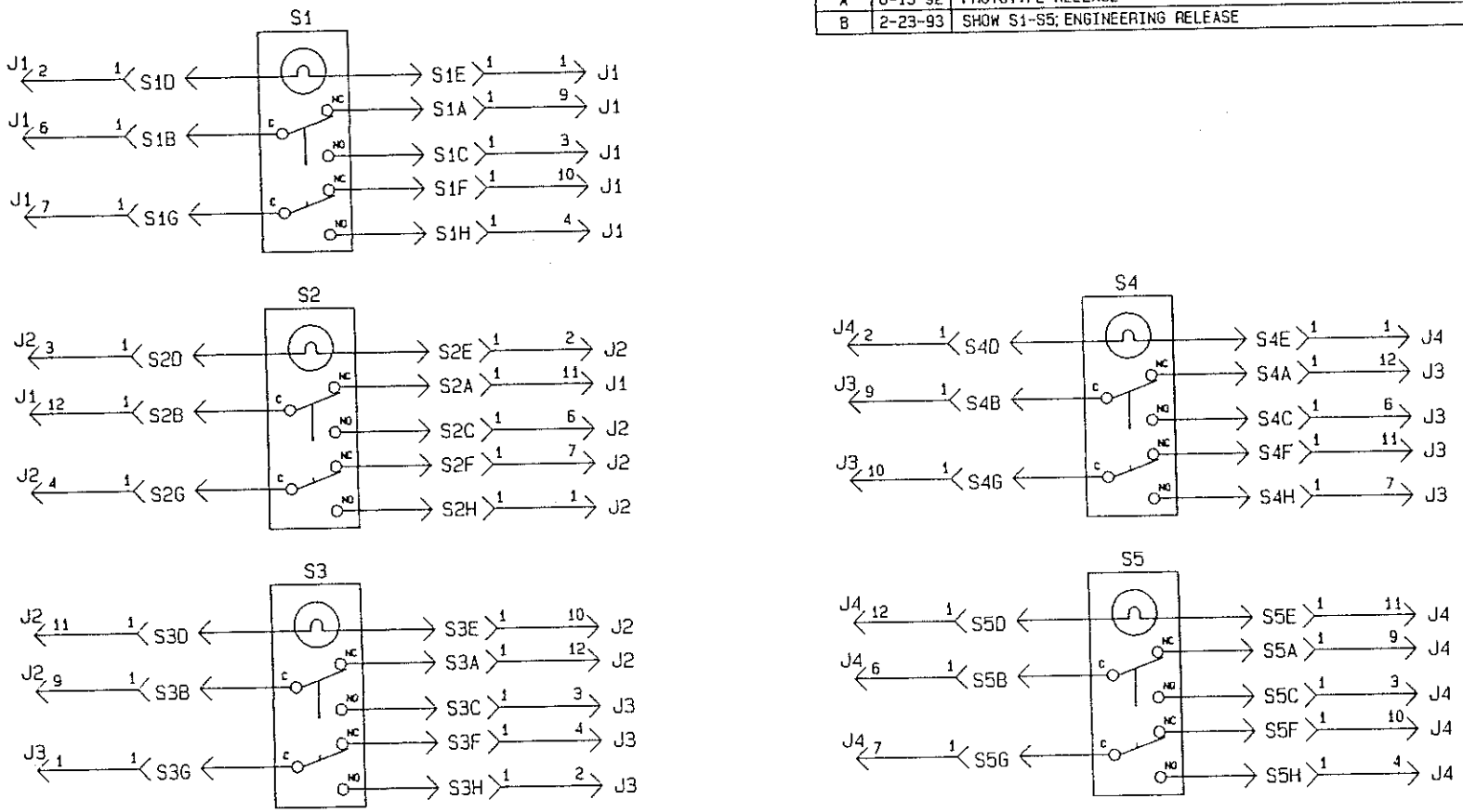
BROADCAST ELECTRONICS INC
4100 N.24TH ST.,P.O.BOX 3606 QUINCY,IL 62305 217/224-9600
TELEX 250142 CABLE BROADCAST FAX 217/224-9607

TITLE REMOTE CONTROL, CART MACHINE 5 POSITION

TYPE	SIZE	DWG. NO.	REV
A	C	951-0090-019	C

MODEL MT-90 SCALE 1=1 SHEET 1 OF 1

REVISIONS					
REV	DATE	DESCRIPTION	DFTSMN	ENGR	ECN
A	6-15-92	PROTOTYPE RELEASE	MH	AB	----
B	2-23-93	SHOW S1-S5; ENGINEERING RELEASE	MH		----



TOLERANCE (DECIMAL) U.O.S.
.x ± .030 .xxx ± .005
.xx ± .015 ANGLES ± 1°

DWN. BY M. HAYDEN 6-15-92
CHKD
ME
PROJ. ENGR.
MFG.

MATERIAL SEE B/M 951-0090
FINISH
SEE DWG RA592-0000
NEXT ASSY.

BROADCAST ELECTRONICS INC.
4100 N. 24TH ST., P.O.BOX 3606 QUINCY, IL. 62305 217/224-9600
TELEX 250142 CABLE BROADCAST FAX 217/224-9607

TITLE SCHEMATIC
UNIVERSAL REMOTE CONTROL

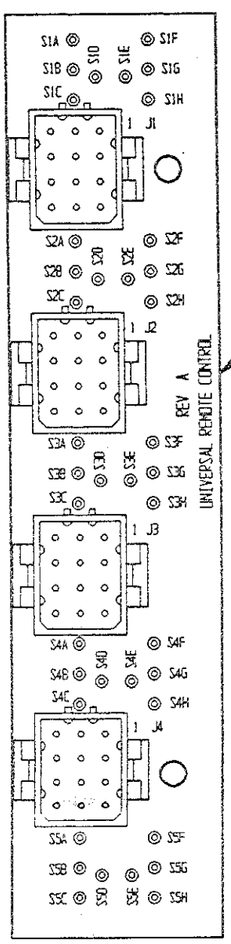
TYPE	SIZE	DWG. NO.	REV
S	A	951-0090	B

MODEL CONSOLES SCALE NONE SHEET 1 OF 1

REVISIONS					
REV	DATE	DESCRIPTION	DRAFTER	APPROVED	ECN
A	3-18-93	ENGINEERING RELEASE	WLF	AB	
B	1-4-94	911-0090 WAS 511-0090	WLF	AB	9129
C	8-23-94	465-0087-002 WAS 465-0087-013	WLF	[illegible]	9269

7-002

340-0144 (NOTE ORIENTATION OF PIN HOLES
320-0007 BEFORE INSTALLING SWITCH.)
(5) PLCS



911-0090

420-6106 QTY (2)
423-6002 QTY (2)

41-0028 TYP (2) PLCS.

NOTES:

1. SEE SCHEMATIC SB 951-0090

TOLERANCE (DECIMAL) U.O.S.
.x ± .030 .xxx ± .005
.xx ± .015 ANGLES ± 1°

DWN. BY WLF 3-18-93

DESIGNER(S)

PROJ. LEADER

MFG.

MATERIAL SEE B/M 951-0090

FINISH

SEE DWG RA592-0000

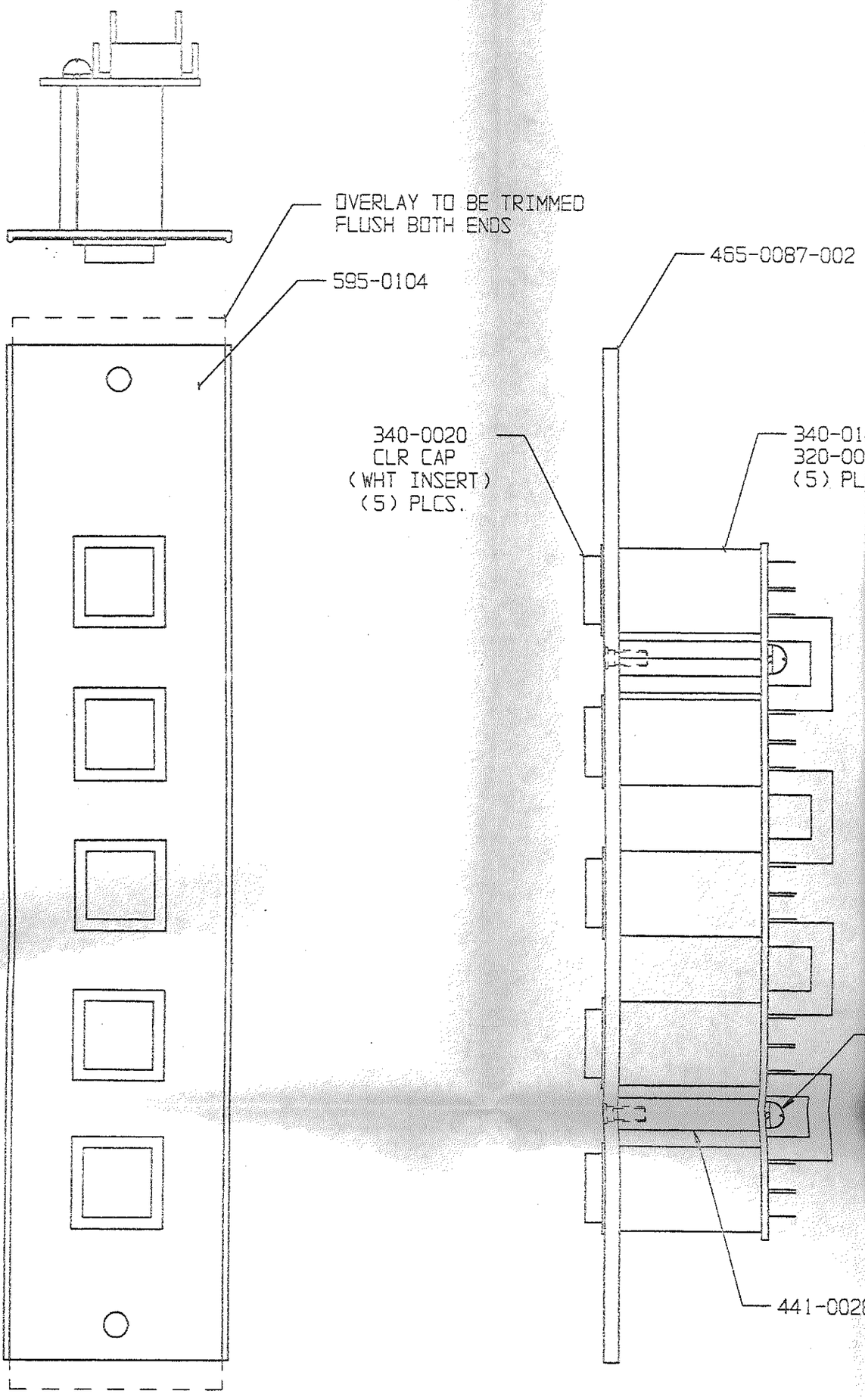
NEXT ASSY.

BROADCAST ELECTRONICS INC.
4100 N.24TH ST.,P.O.BOX 3606 QUINCY,IL 62305 217/224-9600
TELEX 250142 CABLE BROADCAST FAX 217/224-9607

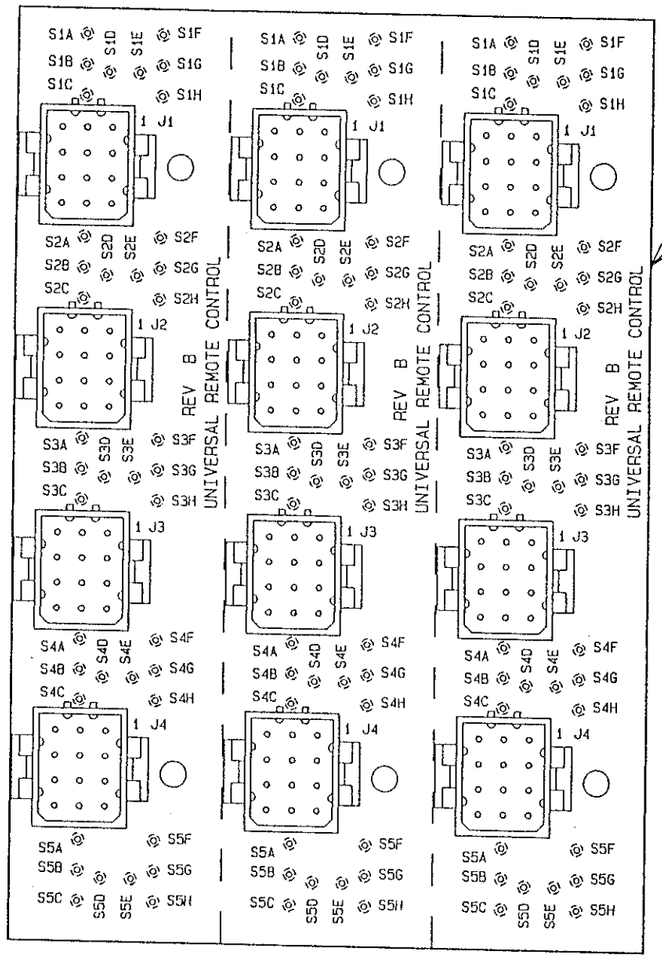
TITLE REMOTE CONTROL,UNIVERSAL 5 POSITION

TYPE A | SIZE C | DWG. NO. 951-0090 | REV C

MODEL MT-90 | SCALE 1=1 | SHEET 1 OF 1



REVISIONS					
REV	DATE	DESCRIPTION	DFTSMN	ENGR	ECN
A	6-1-92	PROTOTYPE RELEASE	MH	AB	----
B	4-12-93	ENGINEERING RELEASE	MH		----



NOTES:

1. SEE SCHEMATIC SA 951-0090.

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TOLERANCE (DECIMAL) U.O.S.
.X ± .030 .XXX ± .005
.XX ± .015 ANGLES + 1°

DWN. BY 6-1-92
M. HAYDEN

CHKD

ME

PROJ. ENGR. 6-1-92
AUDIE BREEDEN

MFG.

MATERIAL
SEE B/M
911-0090

FINISH

~~-SEE DWG RA592-0000-~~

NEXT ASSY.
951-0090/-017, -019
951-0090-300

BROADCAST ELECTRONICS INC.
4100 N.24TH ST. P.O.BOX 3606 QUINCY, IL. 62305 PH. 217/224-9600
TELEX 250142 CABLE BROADCAST FAX 217/224-9607

TITLE
PCB ASSEMBLY
UNIVERSAL REMOTE CONTROL

TYPE	SIZE	DWG No.	REV
A	B	911-0090	B

MODEL CONSOLES | SCALE 1=1 | SHEET 1 OF 1

PRODUCT WARRANTY

LIMITED TWO YEAR

While this warranty gives Purchaser specific legal rights, which terminate two (2) years (one year on cartridge and blower motors) from the date of shipment, Purchaser may also have other rights which vary state to state.

Broadcast Electronics, Inc. ("Seller") hereby warrants cartridge machines, consoles, and other new Equipment manufactured by Seller against any defects in material or workmanship at the time of delivery thereof, that develop under normal use within a period of two (2) years (one year for cartridge and blower motors) from the date of shipment, as such term is defined herein. Other manufacturer's and suppliers' Equipment and services, if any, including electronic tubes, solid state devices, transmission line, antennas, towers, related equipment and installation and erection services, shall carry only such manufacturer's or suppliers' standard warranty. This warranty extends to the original user and any subsequent purchaser during the warranty period. Seller's sole responsibility with respect to any equipment or parts not conforming to this warranty is to replace such equipment or parts upon the return thereof F.O.B. Seller's factory or authorized repair depot within the period aforesaid.

In the event of replacement pursuant to the foregoing warranty, only the unexpired portion of the warranty from the time of the original purchase will remain in effect for any such replacement. However, the warranty period will be extended for the length of time that Purchaser is without the services of the Equipment due to its being serviced pursuant to this warranty. The terms of the foregoing warranty shall be null and void if the Equipment has been altered or repaired without specific written authorization of Seller, or if Equipment is operated under environmental conditions or circumstances other than those specifically described in Seller's product literature or instruction manual which accompany the Equipment. Seller shall not be liable for any expense of any nature whatsoever incurred by the original user without prior written consent of Seller.

Seller shall not be liable to Purchaser for any and all incidental or consequential damages for breach of either expressed or implied warranties. However, some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to Purchaser. All express and implied warranties shall terminate at the conclusion of the period set forth herein. Any card which is enclosed with the equipment will be used by Seller for survey purposes only.

If the Equipment is described as used, it is sold as is and where is. If the contract covers equipment not owned by Seller at this date, it is sold subject to Seller's acquisition of possession and title.

EXCEPT AS SET FORTH HEREIN, AND EXCEPT AS TO TITLE, THERE ARE NO WARRANTIES, OR ANY AFFIRMATIONS OF FACT OR PROMISES BY SELLER, WITH REFERENCE TO THE EQUIPMENT, OR TO MERCHANTABILITY, FITNESS FOR A PARTICULAR APPLICATION, SIGNAL COVERAGE, INFRINGEMENT, OR OTHERWISE, WHICH EXTEND BEYOND THE DESCRIPTION OF THE EQUIPMENT ON THE FACE HEREOF.

BROADCAST ELECTRONICS, INC.
4100 North 24th Street, P.O. Box 3606, Quincy, Illinois 62305