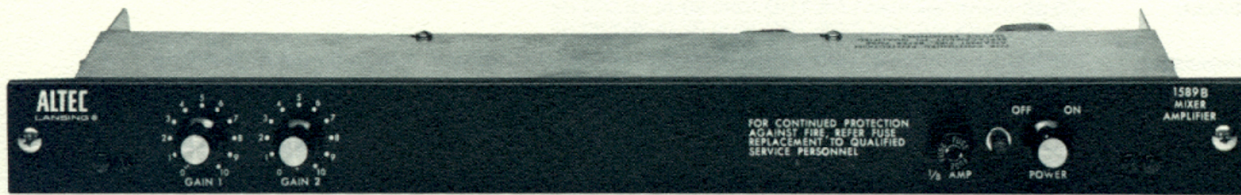


ALTEC 1589B Mixer Amplifier

1589B



Features:

- Solid-State — 100% Silicon
- Self-Contained Power Supply
- Front Panel Controls
- Hinged Front Panel for Easy Maintenance
- Two Independent Inputs with Choice of Plug-in Accessories
- Two Cannon XLR3-31 Input Receptacles
- Two Octal Sockets for Plug-in Accessories
- Power Output +20 dBm
- 150/600 Ohm Transformer-Isolated Line Level Output
- Compact Design
- Quality Construction
- AC or Battery Operation

DESIGNED FOR: CHURCHES, SCHOOLS, THEATRES, PA SYSTEMS, RECORDING STUDIOS, BROADCAST STUDIOS, "GIANT VOICE"® WARNING SYSTEMS, MILITARY COMPLEXES

Ever bent on continuous improvement, ALTEC presents the new ALTEC 1589B Mixer Amplifier with better frequency response, better noise characteristics and better overall performance, using new and improved preamplifier accessory modules.

The ALTEC 1589B Mixer Amplifier is a rugged and compact solid-state unit, occupying only 1-3/4" of vertical space in a standard 19" equipment rack. Two XLR3-31 type receptacles are provided at the rear of the chassis for input connections. Unlike its predecessor (1589A), the 1589B obtains maximum versatility with two octal sockets in the rear of the chassis for any of the following plug-in input accessories: The ALTEC 1579B Equalized Preamplifier (magnetic phono pickup), the ALTEC 1588B Microphone Preamplifier, the ALTEC 15095 Line Transformer (high-level balanced-line bridging input) and the ALTEC 15356 Line Transformer (high-level balanced-line matched input). Detailed descriptions and specifications for these accessories can be obtained from their respective catalog sheets. These accessories are not included in the 1589B and MUST BE ORDERED SEPARATELY. The output of the 1589B is transformer-isolated, providing a balanced 150-ohm or 600-ohm line-level output. The output is terminated at a seven-terminal barrier-type terminal board on the rear of the chassis. Power output is +18 dBm with less than 0.5% total harmonic distortion (THD) from 20 to 20,000 Hz and +20 dBm with less than 1% THD from 20 to 20,000 Hz. Frequency response is ± 1 dB from 20 to 20,000 Hz at line-level output. A self-contained power supply is provided in the 1589B circuitry. It is capable of operating from a 120/240V, 50/60 Hz source or from a 24/28V dc battery source. The front panel contains the mixer gain controls an on-off power switch, a power-on indicator light and an ac line fuse; it is hinged to provide easy accessibility for maintenance.

The ALTEC 1589B Mixer Amplifier permits flexibility of design for sound systems requiring custom assembly. The two independent inputs will complement any existing system and provide for future expansion of inputs and outputs as needed.

The quality of the ALTEC 1589B Mixer Amplifier exceeds all requirements for broadcast and recording studios where sophisticated systems demand top performance.



ALTEC DIVISION OF LANSING ALTEC, INC.

1515 S. Manchester Ave., Anaheim, Calif. 92803

New York

ALTEC 1589B

SPECIFICATIONS

Type:	Mixer amplifier
Gain:	77 dB with 1588B Microphone Preamplifier plug-in accessory module 28 dB with 15095 Line Transformer plug-in accessory module bridging 600-ohm line 42 dB with 15356 Line Transformer plug-in accessory module matching 600-ohm line
Frequency Response:	± 1 dB from 20 to 20,000 Hz
Power Output:	+20 dBm with less than 1.0% THD from 20 to 20,000 Hz +18 dBm with less than 0.5% THD from 20 to 20,000 Hz
Source Impedance:	150/250 ohms nominal with 1588B Microphone Preamplifier plug-in accessory module providing balanced input Up to 50,000 ohms with 1579B Equalized Preamplifier plug-in accessory module for magnetic phono pickup 600 to 15,000 ohms with 15095 Line Transformer plug-in accessory module providing balanced input 150 or 600 ohms with 15356 Line Transformer plug-in accessory module providing balanced input
Load Impedance:	150/600 ohms (transformer-isolated output)
Noise Level:	-124 dBm equivalent input noise (microphone with 1588B module) Output noise at least 85 dB below full output with gain controls closed
Controls:	2 mixer gain potentiometers, continuously variable 1 power on-off switch
Indicators:	1 power-on indicator light, red
Connections –	
Input:	2 XLR3-31 receptacles (at rear of unit)
Output:	7-terminal barrier-type terminal board (at rear of unit)
Power Supply:	120/240V, 50/60 Hz, 5 watts – or 24/28V dc battery with current drain 32 mA at zero signal and 38 mA at +20 dBm output [battery negative (–) is ground]
Dimensions:	1-3/4" H x 19" W x 4-3/4" D
Weight:	4 pounds, 3 ounces
Color:	ALTEC Green
Accessories:	1588B Microphone Preamplifier (microphone) 1579B Equalized Preamplifier (magnetic phono pickup) 15095 Line Transformer (high-level balanced-line bridging input) 15356 Line Transformer (high-level balanced-line matched input)

ARCHITECTS AND ENGINEERS SPECIFICATIONS

The mixer amplifier shall be a solid-state device with all transistors and diodes of the silicon type. It shall contain a power supply that shall be capable of operation from a 120/240V, 50/60 Hz line or from a 24/28V dc battery. The power supply shall require not more than five watts when operated from the ac line and it shall draw not more than 32 mA dc at zero signal nor more than 38 mA dc at +20 dBm output when operated from the battery source. The mixer amplifier shall mount in a standard 19" equipment rack and shall occupy not more than 1-3/4" of vertical space in the rack. The mixer amplifier shall provide two XLR3-31 type receptacles for input connections at the rear of the unit. Each input shall be independently controlled. Both inputs shall be adaptable for a low-impedance microphone, a magnetic phono pickup or high-level source when used with appropriate accessories. The output of the mixer amplifier shall be transformer-isolated for 150-ohm or 600-ohm balanced lines and shall terminate in a 7-terminal barrier-type terminal board at the rear of the unit. The back panel of the mixer amplifier shall provide mounting facilities for optional plug-in accessory modules (specified elsewhere). The front panel of the mixer amplifier shall contain two mixer gain controls (one for each input), a power on-off switch, a power-on indicator light and a protective ac line fuse. The front panel shall be hinged to provide easy accessibility for maintenance. The gain of the mixer amplifier shall be 77 dB when used with a Microphone Preamplifier accessory plug-in module, 28 dB when used with a Line Transformer accessory plug-in module bridging a 600-ohm line, and 42 dB when used with a Line Transformer accessory plug-in module matching a 600-ohm line. The frequency response of the mixer amplifier shall be ± 1 dB from 20 to 20,000 Hz at the line level output. The power output of the mixer amplifier shall be +18 dBm with less than 0.5% THD from 20 to 20,000 Hz and +20 dBm with less than 1% THD from 20 to 20,000 Hz. The mixer amplifier shall have an equivalent input noise level (microphone) of at least -124 dBm. The output noise of the mixer amplifier shall be 85 dB below full output with the gain controls closed.

The mixer amplifier shall be 1-3/4" H x 19" W x 4-3/4" D, its weight shall be not more than 4 pounds, 3 ounces and its color shall be ALTEC green.

Any mixer amplifier not meeting all these requirements shall be unacceptable under these specifications.

Plug-in accessory modules usable with the mixer amplifier shall be the ALTEC 1579B Equalized Preamplifier (magnetic phono pickup), the ALTEC 1588B Microphone Preamplifier, the ALTEC 15095 Line Transformer (high-level balanced-line bridging input) and the ALTEC 15356 Line Transformer (high-level balanced-line matched input).

The mixer amplifier shall be the ALTEC Model 1589B.

NOTICE
We recommend that you obtain your Altec products from factory trained authorized Altec Sound Contractors and Distributors. This will assure you of proper installation, a continuing source of knowledgeable advice, service, and quick warranty protection.

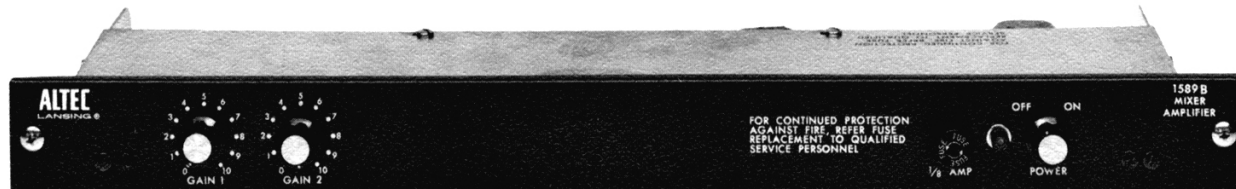
OPERATING
INSTRUCTIONS

Figure 1. 1589B Mixer Amplifier

SPECIFICATIONS

Type:	Mixer amplifier
Gain:	77 dB with 1588B Microphone Pre-amplifier plug-in accessory module 28 dB with 15095A Bridging Transformer plug-in accessory module bridging 600-ohm line 42 dB with 15356 Line Matching Transformer plug-in accessory module matching 600-ohm line
Frequency Response:	±1 dB from 20 to 20,000 Hz
Power Output:	+20 dBm with less than 1.0% THD from 20 to 20,000 Hz +18 dBm with less than 0.5% THD from 20 to 20,000 Hz
Source Impedance:	150/250 ohms nominal with 1588B Microphone Pre-amplifier plug-in accessory module providing balanced input 47,000 ohms with 1579B Equalized Pre-amplifier plug-in accessory module for magnetic phono pickup 600 to 15,000 ohms with 15095A Bridging Transformer plug-in accessory module providing balanced input 150 or 600 ohms with 15356 Line Matching Transformer plug-in accessory module providing balanced input
Load Impedance:	150/600 ohms (transformer-isolated output)
Noise Level:	-124 dBm equivalent input noise (microphone with 1588B module) Output noise at least 85 dB below full output with gain controls closed
Controls:	2 mixer gain potentiometers, continuously variable 1 power on-off switch
Indicators:	1 power-on indicator light, red
Connections —	
Input:	2 XLR-31 receptacles (see Figure 2)
Output:	7-terminal barrier-type terminal board (see Figure 2)

Power Supply:	120/240V, 50/60 Hz, 5 watts — or 24/28V dc battery with current drain 32 mA at zero signal and 38 mA at +20 dBm output [battery negative (-) is ground]
Dimensions:	1-3/4" H x 19" W x 4-3/4"D
Weight:	4 pounds, 3 ounces
Color:	ALTEC Green
Accessories:	1588B Microphone Pre-amplifier (microphone) 1579B Equalized Pre-amplifier (magnetic phono pickup) 15095A Bridging Transformer (high-level balanced-line bridging input) 15356 Line Matching Transformer (high-level balanced-line matched input)

DESCRIPTION

The ALTEC 1589B Mixer Amplifier is a rugged and compact solid-state unit, occupying only 1-3/4" of vertical space in a standard 19" equipment rack. A self-contained power supply, capable of operating from a 120/240V, 50/60 Hz source or from a 24/28V dc battery source is provided in the 1589B circuitry. Operating parameters are as specified above.

The front panel contains the mixer gain controls, a power on-off switch, a power-on indicator light and an ac line fuse. The front panel is hinged to provide easy accessibility for maintenance (see Figure 3).

Most of the circuitry for the 1589B Mixer Amplifier is contained on the printed circuit board (PCB) shown in Figure 3. A detailed layout of the PCB component arrangement is shown in Figure 4. The schematic of the 1589B is shown in Figure 5.

The ALTEC 1589B Mixer Amplifier permits flexibility of design for sound systems requiring custom assembly. The two independent inputs will complement any existing system and provide for future expansion of inputs and outputs as needed.

The quality of the ALTEC 1589B Mixer Amplifier exceeds all requirements for FM broadcasting and is recommended for sophisticated systems that demand top performance.

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

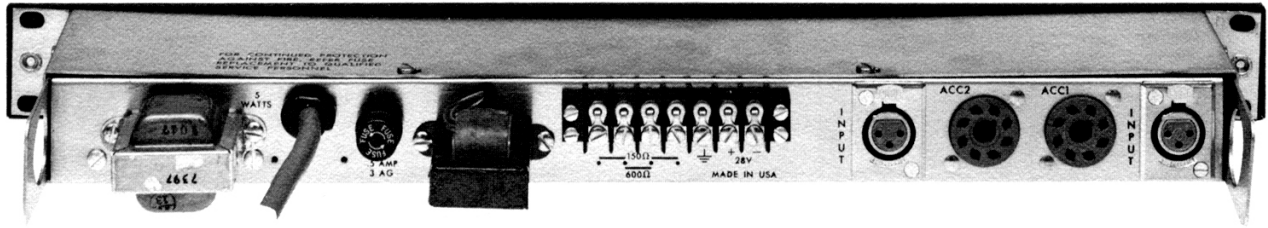


Figure 2. Rear View of 1589B Mixer Amplifier

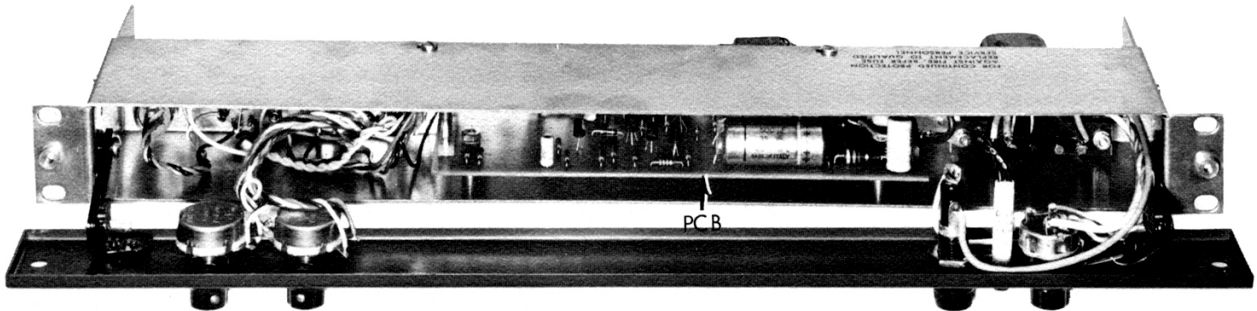


Figure 3. 1589B Mixer Amplifier with Hinged Front Panel Down

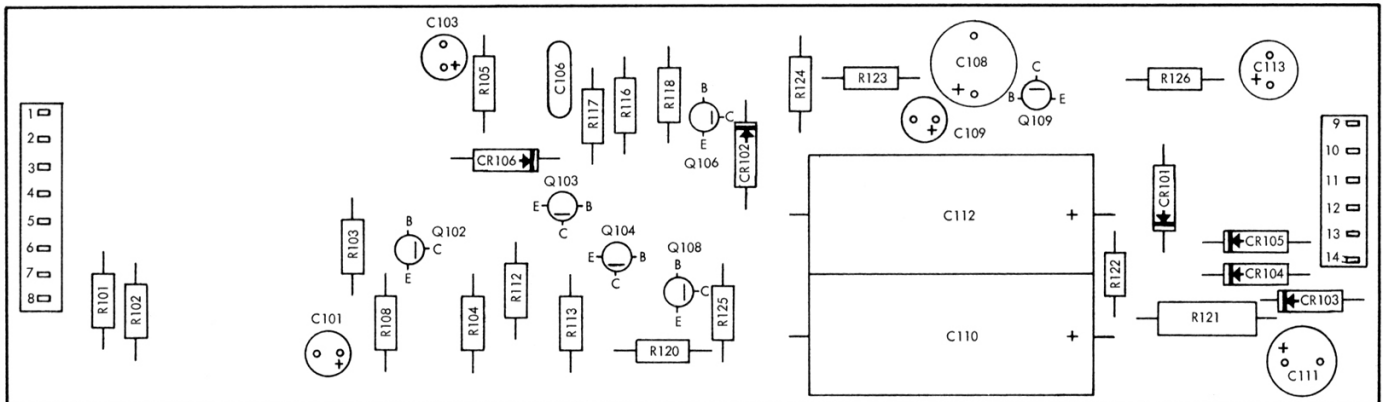


Figure 4. Electronic Part Locations (2D669-1), Mixer Amplifier PCB Assembly

Inputs

Two XLR3-31 receptacles are provided at the rear of the chassis for input connections. Unlike its predecessor (1589A), the 1589B obtains maximum versatility with two octal sockets in the rear of the chassis for any of the ALTEC plug-in input accessory modules specified.

For a balanced low-impedance microphone input of 150/250 ohms, use the 1588B Microphone Preamplifier plug-in accessory module.

For a terminating or bridging balanced-line-level input of 15,000 ohms, use the 15095A Bridging Transformer plug-in accessory module.

For a terminating or balanced-line-level input of 150/600 ohms, use the 15356 Line Matching Transformer plug-in accessory module.

Detailed descriptions, specifications, operating instructions and installation procedures for these accessories can be obtained from their respective catalog sheets and operating instructions. These accessories are not included with the 1589B and **MUST BE ORDERED SEPARATELY.**

Outputs

The output of the 1589B is transformer-isolated, providing a balanced 150-ohm or 600-ohm line-level output. The output is terminated at a seven-terminal barrier-type terminal board on the rear of the chassis.

INSTALLATION

The ALTEC 1589B Mixer Amplifier is installed in a standard 19" equipment rack with four mounting screws supplied with the unit. When installing the 1589B, the hinged front panel must be opened to provide access to the mounting holes. The panel should then be closed after the mounting is completed.

Power Connections

For use with ac power, plug the ac line cord into any 120V, 50/60 Hz line outlet.

For use with dc power, connect a 24/28V dc battery to the battery terminals at the right side of the seven-terminal barrier-type terminal board as shown in Figures 2 and 5. The negative (-) terminal is ground.

Input Connections

Both inputs are XLR3-31 type female connectors adaptable for a low-impedance microphone, a magnetic phono pickup or a high-level source when used with the appropriate accessory plug-in module. An optional accessory plug-in module is required to make each input operational, or if an accessory plug-in module is not used at either input, the octal mounting socket provided for the module should be strapped to provide circuit continuity. An unbalanced, unisolated input of 600/750 ohms may be obtained by strapping pin 7 to pin 1 and pin 6 to pin 8 of the unused socket. Pin 2 of the XLR3-31 input connector becomes signal ground. Any combination of two accessory plug-in modules or strapping may be used.

Care should be used when inserting or removing the accessory plug-in modules to prevent possible damage to the locating key and terminal pins of the plug and/or socket. It is good practice to insert or remove accessory plug-in modules only when no power is applied to the amplifier.

Output Connections

The output of the mixer amplifier is transformer-isolated, terminating at the seven-terminal barrier-type terminal board shown in Figure 2. The output may be strapped for 150-ohm or 600-ohm operation in accordance with Figure 5.

OPERATION OF CONTROLS

Power On-Off Switch

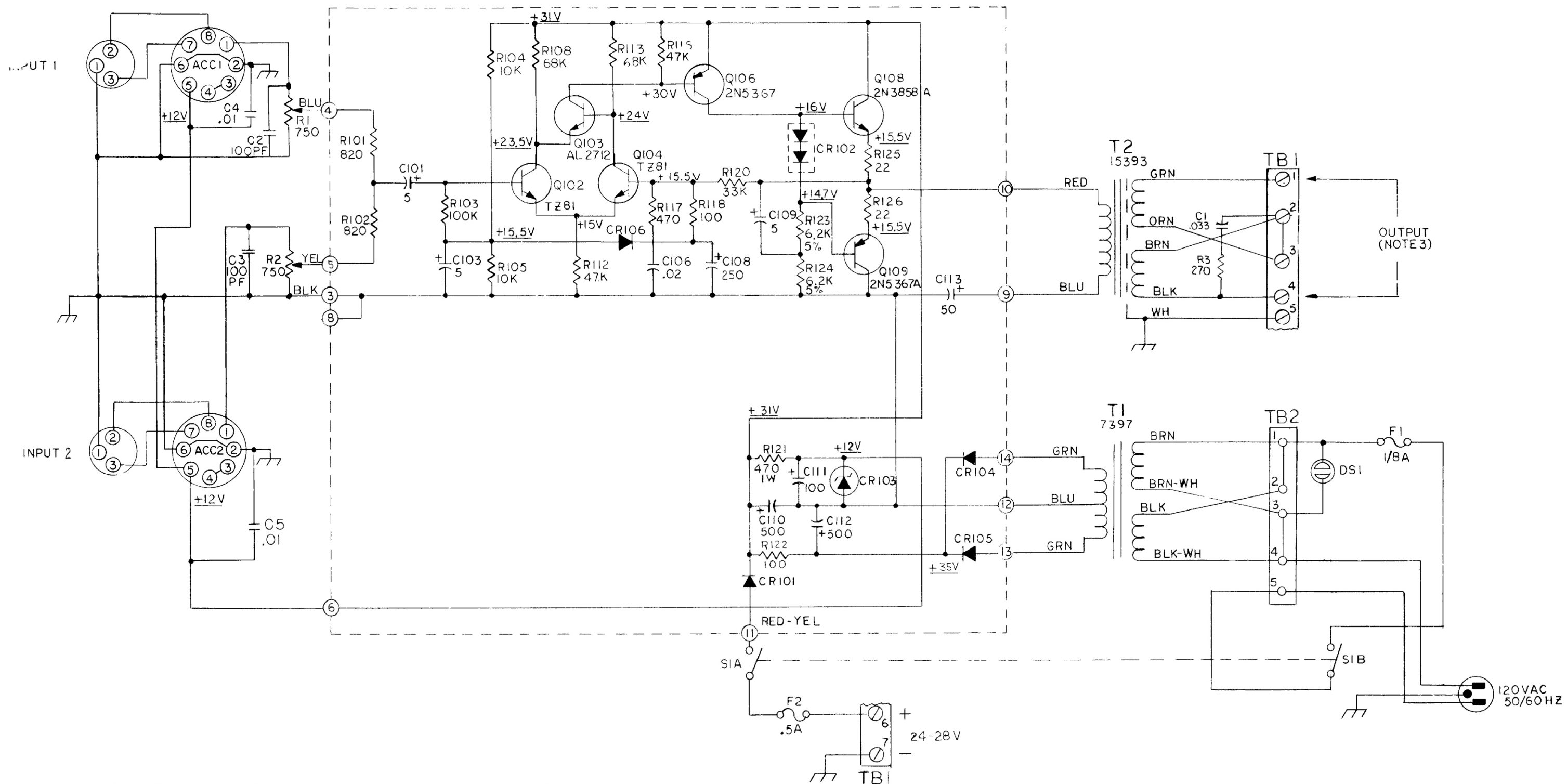
A power on-off switch is located on the right side of the front panel. A red power-on indicator lamp beside the switch illuminates when the switch is in the ON position.

Gain Controls

Two continuously variable gain controls (GAIN 1 and GAIN 2) are located on the left side of the front panel, permitting independent control of each input. Clockwise rotation increases gain of the respective input.

MAINTENANCE

The ALTEC 1589B is designed for a long, trouble-free life. Line fuses protect it against damage from accidental misuse. Fuses should be replaced only with the type and ratings specified in the parts list, and then only after the cause of the blown fuse condition has been identified and corrected. If a malfunction does occur, service should be performed by an authorized ALTEC Qualified Service Representative or ALTEC Sound Contractor. Unauthorized tampering is a violation of ALTEC's warranty. For factory service, package the amplifier in the original carton and ship it prepaid to ALTEC, 1515 South Manchester Avenue, Anaheim, California 92803. The return shipment will be made prepaid if the defect is covered by warranty. For additional information or technical assistance, refer to the Yellow Pages of your telephone directory for the local ALTEC Sound Contractor, or call (714) 774-2900.



4. VOLTAGES SHOWN UNDERScoreD ARE D.C. VOLTAGES MEASURED TO GROUND (CHASSIS) WITH 120VAC LINE VOLTAGE AND ZERO SIGNAL.
3. FOR 600 OHM OUTPUT STRAP TB1 2-3 AS SHIPPED.
FOR 150 OHM OUTPUT STRAP TB1 1-2 & 3-4.
2. CAPACITOR VALUES ARE IN MICROFARADS.
1. RESISTOR VALUES ARE IN OHMS 1/4 WATT 10%.
- NOTES: UNLESS OTHERWISE INDICATED.

Figure 5. Schematic (2D668-4), 1589B Mixer Amplifier

PARTS LIST

Chassis Assembly

Reference Designator	Ordering Number	Name and Description
None	27-01-042499-01	PCB Assembly
ACC1,2	21-02-100973-01	Accessory socket, octal
C1	15-06-100093-01	Cap., 0.033 μ F \pm 10%, 100V
C2,3	15-02-107454-01	Cap., 100 μ F \pm 10%, 100V
C4,5	15-02-100307-01	Cap., 0.01 μ F \pm 20%, 100V
DS1	39-03-110005-01	Pilot lamp, red
F1	51-04-108873-01	Fuse, 1/8A, 3AG
F2	51-04-100463-01	Fuse, 1/2A, 3AG, 250V

Reference Designator	Ordering Number	Name and Description
R1,2	47-06-013600-02	Pot., 750 Ω \pm 20%
R3	47-01-102156-01	Res., 270 Ω \pm 10%, 1/4W
S1	51-01-100988-01	Switch, 125V, 3A, 20V, 5A
T1	56-08-007397-04	Transformer, power
T2	56-05-015393-03	Transformer, output
TB1	21-04-101047-01	Terminal board, 7 terminals
TB2	21-04-101013-01	Terminal board, 5 terminals
INPUT 1,2	21-03-113172-01	Receptacle, 3-terminal

PCB Assembly

Reference Designator	Ordering Number	Name and Description
C101,103,109	15-01-107221-01	Cap., 5 μ F, 25V
C106	15-02-100087-01	Cap., 0.02 μ F \pm 20%, 100V
C108	15-01-113130-01	Cap., 250 μ F, 15V
C110,112	15-01-108699-01	Cap., 500 μ F, 35V
C111	15-01-108605-01	Cap., 100 μ F, 15V
C113	15-01-107523-01	Cap., 50 μ F, 15V
CR101,104,105	48-02-042787-01	Diode, rectifier, 1A, 400V PIV
CR102	48-01-100881-01	Diode, stabistor, 2-junction, 16V
CR103	48-01-100858-01	Diode, Zener, 12V \pm 5%
CR106	48-01-107017-01	Diode, 1N456A, 25V, 100 mA
Q102,104	48-03-109714-01	Transistor, TZ81
Q103	48-03-101098-01	Transistor, 2712

Reference Designator	Ordering Number	Name and Description
Q106,109	48-03-108557-02	Transistor, 2N5367, 0.36W, 40V
Q108	48-03-107317-01	Transistor, 2N3858A
R101,102	47-01-102162-01	Res., 820 Ω \pm 10%, 1/4W
R103	47-01-102187-01	Res., 100K Ω \pm 10%, 1/4W
R104,105	47-01-102175-01	Res., 10K Ω \pm 10%, 1/4W
R108,113	47-01-102185-01	Res., 68K Ω \pm 10%, 1/4W
R112	47-01-102183-01	Res., 47K Ω \pm 10%, 1/4W
R116	47-01-102183-01	Res., 47K Ω \pm 10%, 1/4W
R117	47-01-102159-01	Res., 470 Ω \pm 10%, 1/4W
R118,122	47-01-102151-01	Res., 100 Ω \pm 10%, 1/4W
R120	47-01-102181-01	Res., 33K Ω \pm 10%, 1/4W
R121	47-01-102551-01	Res., 470 Ω \pm 10%, 1W
R123,124	47-01-102097-01	Res., 6.2K Ω \pm 5%, 1/4W
R125,126	47-01-105306-01	Res., 22 Ω \pm 10%, 1/4W