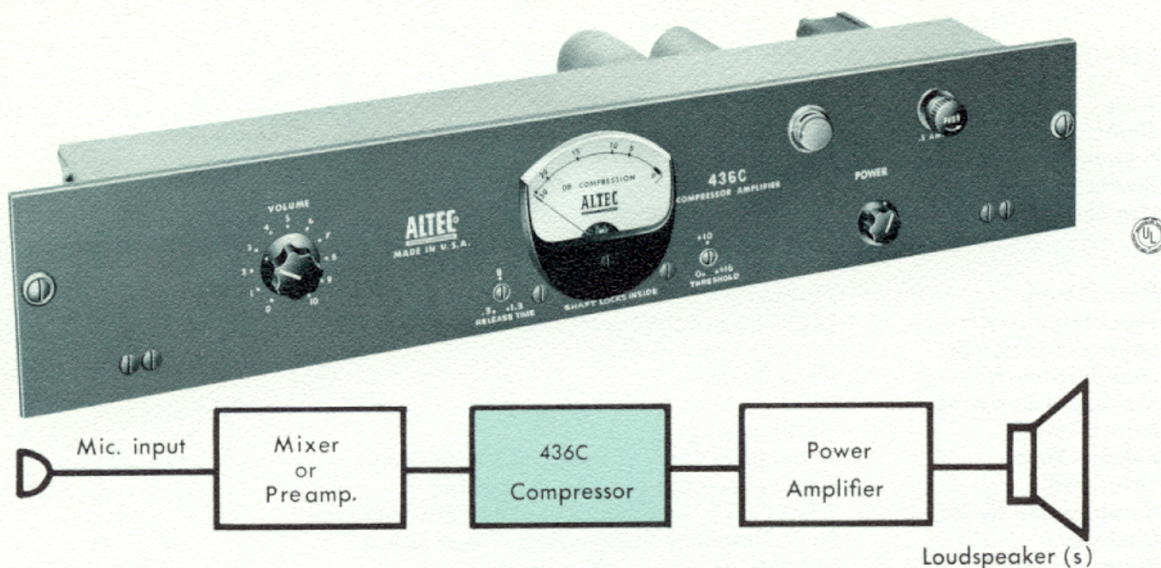


# 436C Compressor Amplifier

# 436C



## Features

- Variable Compression
- Ratio, Threshold, and Release Time.
- Fast attack
- Smooth recovery
- Wide frequency response
- 30 db of compression
- Balanced input
- Input gain control
- Compact
- Self powered
- Rack or table mount
- Simple installation

The 436C Compressor Amplifier is a self-powered, level-controlling amplifier with a versatility which makes it a desirable part of most audio installations. In response to a strong input signal, it will reduce gain up to 30 db automatically, rapidly, and quietly, without the introduction of thumps.

The 436C utilizes variable threshold/compression ratio and release time controls, permitting maximum flexibility in virtually any type of installation.


The 436C Amplifier is intended for use in automatic level-control applications in recording, TV broadcasting and public address systems. Level differences caused by individual voice intensities and unequal distances of performers from the microphone can be minimized by its use. The bridging input permits the 436C Compressor to be used to control level differences between two or more program sources or for automatic fading for voice-over-music announcements. In industrial locations where sudden high-level sounds might cause "blasting" with attendant danger to amplifiers and loudspeakers, the 436C Amplifier will prevent such overloading. Altec compressor amplifiers are also being used in TV broadcast pickup of variety, dramatic, musical and operatic productions to minimize level disparities and to relieve the control operator from the need for over-compensating for unpredictable bursts of volume.

The front panel contains all controls, fuse, and a meter which indicates db of compression. The front panel is hinged and, when open, provides ready access to all components and wiring for easy service. For economical installation, all connections are made to simple barrier-type terminals on the rear of the amplifier. A three-conductor power cord is pre-wired to the unit. For those installations where compression is desired only part of the time, this unit will also operate as a straight high-quality line amplifier when the 6AL5 tube is removed from its socket. A gain control is provided at the input, and the input and output transformers permit use on balanced lines.

The 436C occupies only 3½" of rack space in the standard Altec relay rack or may be mounted in the Altec 12495 Cabinet for table installations. For remote monitoring of compression, the Altec 6049 Meter may be ordered for installation in the control console or at the announcing position.

The wide range of application and excellent performance of this new Altec compressor amplifier will make it a valuable part of any good sound system.



A Division of  Ling Altec, Inc.

1515 S. Manchester Ave., Anaheim, Calif.  
New York



# ALTEC 436C

## PERFORMANCE SPECIFICATIONS:

<b>Type:</b>	Compressor Amplifier
<b>Gain:</b>	56 db from 15,000 ohm source; 40 db bridging 600 ohm line
<b>Frequency Response:</b>	$\pm 1.5$ db, 30-15,000 cycles
<b>Power Output:</b>	+24 dbm (as straight amplifier)
<b>Harmonic Distortion:</b>	At 25 db of compression: Less than 1.5%, 35-15,000 cycles; At 30 db of compression: Less than 2.5%, 25-10,000 cycles; (0 db threshold setting)
<b>Noise Level:</b>	74 db below rated output ( $-111$ dbm equivalent input noise)
<b>Input Impedance:</b>	15,000 ohms bridging transformer (ungrounded)
<b>Source Impedance:</b>	Any up to 15,000 ohms
<b>Load Impedance:</b>	150/600 ohms
<b>Maximum Compression:</b>	30 db
<b>Attack Time:</b>	50 milliseconds
<b>Release Time:</b>	Adjustable: .3 to 1.3 seconds (63% recovery)
<b>Threshold:</b>	Adjustable: 0 dbm to +16 dbm output
<b>Compression Ratio:</b>	2:1 at 0 dbm threshold; 4:1 at +16 dbm threshold
<b>Controls:</b>	Gain, Threshold, Release Time, Power Switch
<b>Power Supply:</b>	117 volts, 60 cycles, 20 watts
<b>Tubes:</b>	6BC8, 6CG7, 6AL5
<b>Dimensions:</b>	19" Long; 3½" High; 6" Deep
<b>Color:</b>	Dark Green
<b>Weight:</b>	8½ lbs.
<b>Special Features:</b>	Compression meter; shaft locks for threshold and release time controls

## ACCESSORIES

12495 Cabinet, 6049 Meter

## ARCHITECTS AND ENGINEERS SPECIFICATIONS

The compressor amplifier shall have a frequency response of  $\pm 1.5$  db from 30 to 15,000 cycles. It shall be capable of delivering a power output of +24 dbm as a straight amplifier. With 25 db of compression, distortion shall not exceed 1.5% over the frequency range from 35 to 15,000 cycles and at 30 db of compression, less than 2.5% from 35 to 10,000 cycles. The threshold shall be adjustable from 0 to +16 dbm output; maximum compression provided by the amplifier shall be 30 db. Attack time shall be fixed at 50 milliseconds; release time shall be adjustable from .3 to 1.3 seconds for 63% recovery.

The gain of the amplifier shall be 56 db from a 15,000 ohm signal source or 42 db bridging a 600-ohm line. Input noise shall not exceed  $-111$  dbm. The signal-to-noise ratio shall be at least 74 db.

The input impedance shall be 15,000 ohms (ungrounded); the load impedance shall be 150 or 600 ohms. The amplifier shall operate from a 115 VAC, 60 cycle supply and shall be provided with a panel meter reading in db of compression. The amplifier shall be of the rack-mounting type and shall also have provisions for mounting in a desk-top type cabinet for remote operation, where required. The unit shall measure 3½" high, 19" long, 6" deep and weigh in the order of 8½ pounds. The tube complement shall consist of one 6BC8, one 6CG7, and one 6AL5. The hinged front panel shall be finished in dark green and shall provide access to the shaft locks of the threshold and release time controls.

Any compressor not meeting these specifications as to the amount of compression, variable threshold, compression ratio, and release time controls, or that does not permit the use of the compressor unit as a straight amplifier by the removal of one vacuum tube, shall be deemed unacceptable under these specifications.

The compressor amplifier shall be Altec Lansing model 436C.

### 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.



**ALTEC**  
LANSING

# 436C AMPLIFIER

## OPERATING INSTRUCTIONS



### SPECIFICATIONS

Type:	Compressor Amplifier	Attack Time:	50 milliseconds
Gain:	56 db from 15,000 ohm source 40 db bridging 600 ohm line	Release Time:	Adjustable: .3 seconds to 1.3 seconds (63% recovery)
Frequency Response:	$\pm 1.5$ db, 30-15,000 cycles	Threshold:	Adjustable: 0 dbm to +16 dbm output
Power Output:	+24 dbm (as straight amplifier)	Compression Ratio:	2:1 at 0 dbm threshold; 4:1 at +16 dbm threshold
Harmonic Distortion:	At 25 db of compression: Less than 1.5%, 35-15,000 cycles; At 30 db of compression: Less than 2.5%, 25-10,000 cycles. (0 db threshold setting)	Controls:	Input gain control Threshold control Release time control AC power switch
Noise Level:	74 db below rated output (-111 dbm equivalent input noise)	Power Supply:	117 volts, 60 cycles, 20 watts
Input Impedance:	15,000 ohms bridging transformer (ungrounded)	Tubes:	6BC8, 6CG7, 6AL5
Source Impedance:	Any up to 15,000 ohms	Dimensions:	19" long; 3 1/2" high; 6" deep
Load Impedance:	150/600 ohms	Color:	Dark green
Maximum Compression:	30 db	Weight:	8 1/2 lbs.
		Special Features:	Compression meter; shaft locks for threshold and recovery time controls

### DESCRIPTION

The 436C Compressor Amplifier is designed for use in professional recording, PA, and sound reinforcement systems wherein varying amounts of compression, threshold, and release time are required. The unit operates from a 115-volt, 60 cycle AC source and occupies 3 1/2 inches of rack mounting space. The input source (to the bridging transformer) may have an impedance from 600 to 15,000 ohms; output loads of 150 to 600 ohms may be accommodated. All indicators and controls are mounted on a hinged front panel.

### APPLICATIONS

The 436C may be employed wherever it is desired to maintain a relatively uniform level of reproduced sound, regardless of the differences in the audio input signal level. Such variations are caused, in part, by varying distances of performers from a single microphone, together with extreme changes in the level of the sound source itself.

The 436C also finds use in those applications (primarily the recording of sound) wherein optimum dynamic range must be preserved, while maintaining a higher average recording level without causing overmodulation of the recording medium. Because of the unusually wide latitude afforded by the variable compression ratio, threshold, input gain, and release time controls, the 436C may be adjusted for optimum performance in virtually any application. The compressor-amplifier may also be used to advantage in instances requiring automatic fading of background music for voice announcements.

The unit may be employed as a 'straight' line amplifier, with a power output of +24 dbm, simply by removing the 6AL5 tube from its socket.



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1515 S. Manchester Ave., Anaheim, Calif.  
New York

14291-1 Price \$.14

Litho in U.S.A. C/P 2/65

## INSTALLATION

The design of the 436C compressor amplifier provides considerable versatility of connection when used with other components of the 1500 series. The bridging input has sufficiently high impedance that it may be directly connected to the output of the Altec 1566A, 1567A, or 1563A line amplifiers without the use of line transformers in these units. When the transformers are desired to provide balance and isolation from ground, a 560 ohm resistor is used across the 436C input terminals to provide proper termination for the line transformer.

The output transformer of the 436C provides load impedances of 150 and 600 ohms and is well balanced. Because of the transformer configuration and amplifier power capability, it is suitable for directly feeding transmission lines or combinations of one or more power amplifiers.

## OPERATION AND USE OF CONTROLS

The 436C compressor amplifier has four controls, all mounted on the front panel:

- 1: Input gain control
- 2: Threshold control
- 3: Release time control
- 4: AC power switch

### 1: Input Gain Control:

This control is used to adjust the input level to provide the desired average compression as indicated on the compression meter.

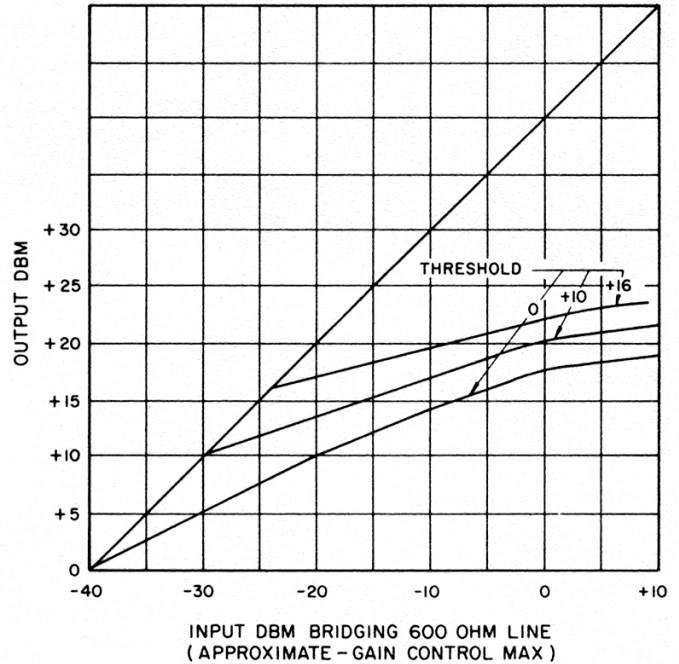
### 2: Threshold Control:

The output level at which compression commences, together with the compression ratio, is adjustable by means of this control. In the maximum counter-clockwise position, compression begins when the output is approximately zero level. An increase in input level of 20 db at this point results in an output level increase of 10 db, giving a compression ratio of 2:1. At maximum clockwise rotation, compression starts when the output is approximately +16 dbm; an increase in input level of 20 db at this point, results in an output level increase of 5 db, giving a compression ratio of 4:1 (Maximum compression before distortion is 22 db at this setting). The higher threshold and flatter output characteristics may be more desirable in applications, such as the recording of sound, where the adjustment can be such that the majority of the material operates the amplifier in the linear transfer region and the occasional peak is compressed sufficiently (by the higher compression ratio) to prevent overmodulation of the recording mechanism.

For background music control, on the other hand, where the compressor function is to equalize differences in recording level and program dynamics, the zero level threshold and 2:1 ratio are more desirable. In this application, "average" level material is used to set the compressor, for 10 to 15 db of compression, and expansion or compression results for material of lower or higher level than the standard "average." Input-output characteristics are shown in more detail on the accompanying "transfer graph" for three settings of the threshold control.

### 3: Release Time Control

The time interval required to restore full gain following a condition of compression is adjustable in the range of .3



seconds to 1.3 seconds by means of this control. In applications such as sound recording, where only an occasional peak actuates the compressor, the faster release times will be found desirable.

For public-address usage, where the compressor is utilized as an averaging device to compensate for variances in microphone and speech levels, the longer release time will be found desirable.

### 4: AC Power Switch:

This control operates the power switch (Altec 12180-1), turning the compressor amplifier on and off, as indicated by the front panel pilot light.

## CONTROL LOCKS

Both the threshold and release time controls are of the screwdriver adjustment type and are mounted flush with the front panel. A 1/2" open end wrench is required for loosening and tightening the shaft locks before and after adjustment. (The front panel must be dropped to gain access to the locks.)

## COMPRESSION METER

It is usually desirable to have the compression meter visible from the operating position. When conditions dictate a remote location for the compressor amplifier, an Altec 6049 meter is connected in parallel with the front panel by means of a pair of wires extended to the console location.

## SERVICING

All circuit components are easily reached by opening the hinged front panel of the unit. Normal servicing may be done with a voltmeter; all pertinent information is shown on the accompanying schematic.



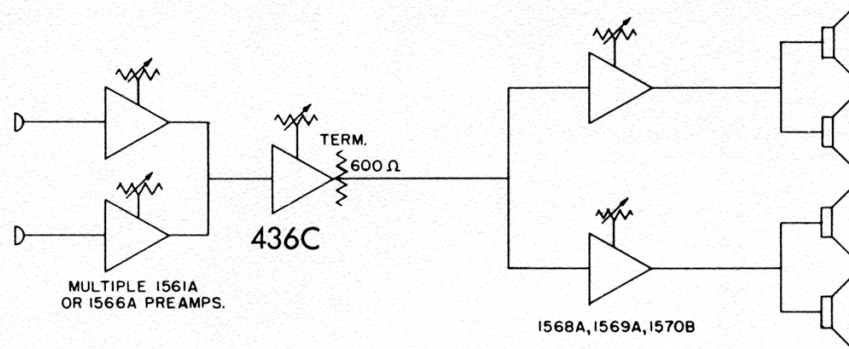


Figure 2

The 436C Compressor Amplifier connected to the high impedance input of the Altec 1568A, 1569A, or 1570B: Terminate 436C with 600 ohms. Line to power amplifiers may be 1,000 feet of 30 mmf/ft cable for 1 db loss at 10 kc.

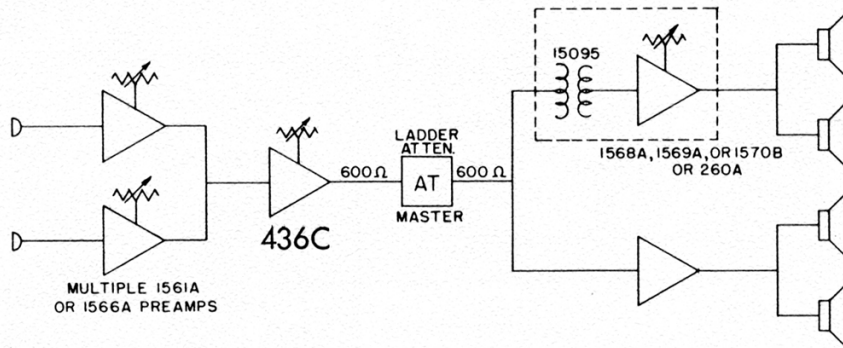
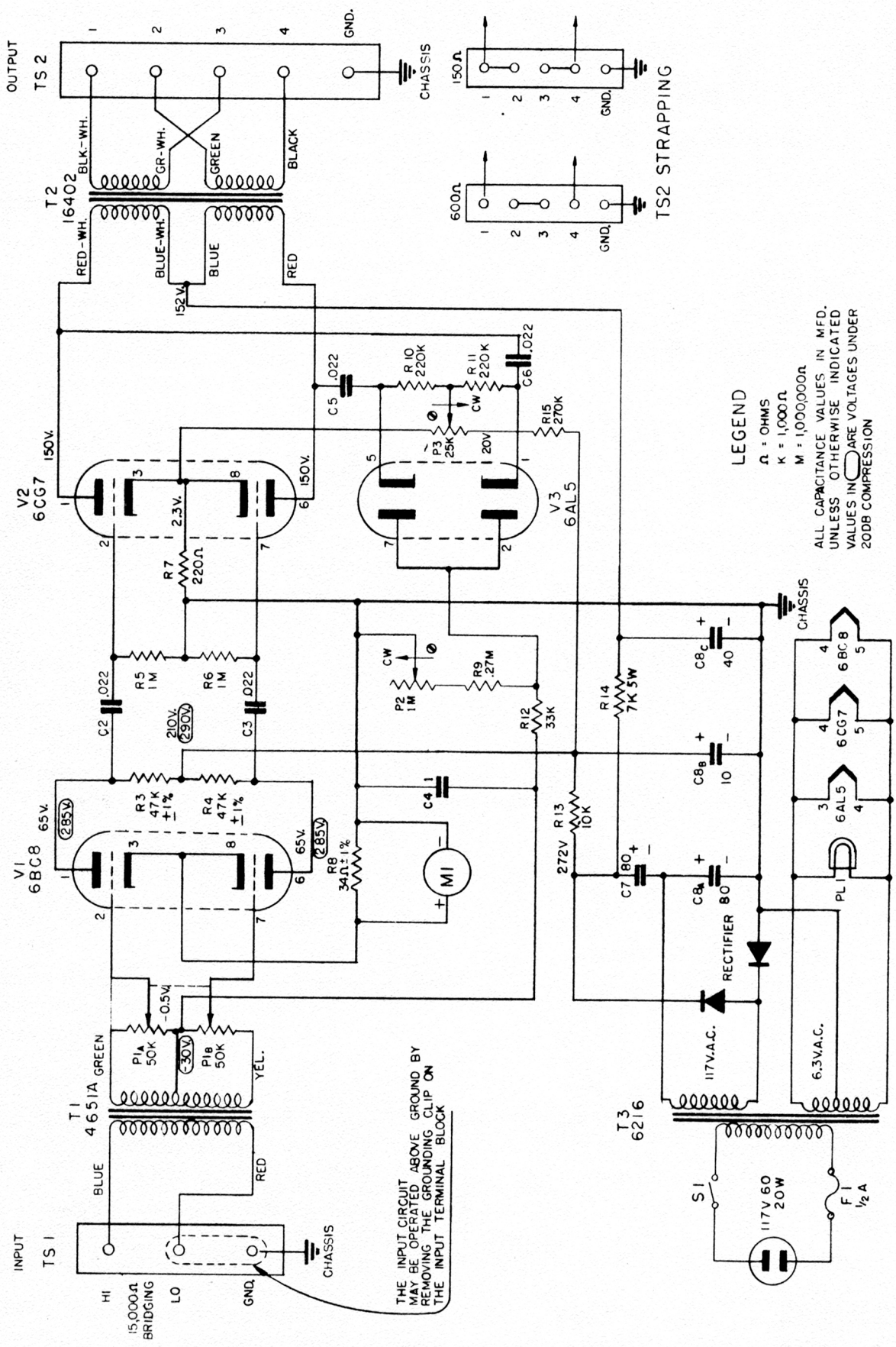


Figure 3

Illustrating the use of a master in compressor output of 436C for control of volume. Added control is essential when Altec 260A amplifier is used.

### PARTS LIST

C2,3,5,6	.022mfd, 400v., Micamold Tropicap IMP4-S22	R14	7,000 ohms, 5 watt; axial leads
C4	1mfd, 200v., Hopkins (1P2D)	P1,A-B	Volume Control, Altec 13021-1
C7	80mfd, 350v., Mallory FP-138	P2	Pot., 1 megohm; Altec 14289-1
C8	8-40-10mfd, 200-450-450v., Mallory FP-370	P3	Pot., 25,000 ohms; Altec 14288-1
R3,4	47,000 ohms, $\pm 1\%$ , 1/2 watt, deposited carbon	T1	Input transformer; Altec 4651A
R5,6	1 megohm, $\pm 10\%$ , 1/2 watt	T2	Output transformer; Altec 16402
R7	220 ohms, $\pm 10\%$ , 1/2 watt	T3	Power transformer; Altec 6216
R8	34 ohms, $\pm 1\%$ , 1/2 watt, deposited carbon	M1	Meter, Altec 6049
R9	270,000 ohms, $\pm 10\%$ , 1/2 watt	PL1	Pilot Lamp; Mazda #44
R10, 11	220,000 ohms, $\pm 10\%$ , 1/2 watt	F1	1/2 ampere; 3AG Fuse
R12	33,000 ohms, $\pm 10\%$ , 1/2 watt	S1	Power Switch; Altec 12180-1
R13	10,000 ohms, $\pm 10\%$ , 1/2 watt	Rectifier	Sarkes-Tarzian 58-D
		V1	6BC8 Vacuum Tube
		V2	6CG7 Vacuum Tube
		V3	6AL5 Vacuum Tube



THE INPUT CIRCUIT MAY BE OPERATED ABOVE GROUND BY REMOVING THE GROUNDING CLIP ON THE INPUT TERMINAL BLOCK

LEGEND  
 Ω = OHMS  
 K = 1,000 Ω  
 M = 1,000,000 Ω

ALL CAPACITANCE VALUES IN MFD. UNLESS OTHERWISE INDICATED VALUES IN CAPACITORS UNDER 20DB COMPRESSION

FIRST MADE FOR TOLRANCES EXCEPT AS NOTED. PRACT. 5 1/16" DEC. 5 1/16" OVER 1/16" 5 1/16" OVER 1/16" 5 1/16" OVER 1/16"

**ALTEC**  
 ANAHEIM, CALIFORNIA  
 SCHEMATIC  
 436C AMPLIFIER  
 No. 47 C.W.L. 8192-1

# ALTEC LANSING 436C COMPRESSOR AMPLIFIER