INSTALLATION MANUAL

FOR

ELECTRONIC SIREN

MODEL

SA-450-90 14V

NOTICE TO INSTALLER

Before installation and use -- Read all instructions and warnings.
Deliver this manual to the end user of this equipment.

SOUTHERN VEHICLE PRODUCTS, INC.
P.O. BOX 97, ODESSA, FL 33556
TELEPHONE NUMBER: (813) 926-2888

SA-450-90 14V
SPECIFICATIONS

INPUT:	11-16 Volts DC (Red Lead Positive)
OUTPUT:	Yelp mode with 15.0VDC input, 100W speaker One speaker - 105 Watts RMS
SIREN FREQUENCY:	450Hz - 1500Hz Nominal
SWEEP RATES:	WAIL - 14 cycles/min YELP - 190 cycles/min PHASER - 15 cycles/sec
AUDIO RESPONSE:	200Hz - 10KHz +/-3db Harmonic Distortion Less than 3% @ 1KHz
RADIO INPUT SENSITIVITY:	0.75VAC Input For 40 Watts RMS Output
OPERATING TEMPERATURE:	-15° F to +140° F
SIZE:	5-1/8" Wide X 2-3/8" High X 5-7/8" Deep
WEIGHT:	5 pounds

SPECIFICATIONS AND INFORMATION
SUBJECT TO CHANGE WITHOUT NOTICE

For Warranty, Parts, or Service Contact:

Southern Vehicle Products, Inc.
Telephone Number: (813) 926-2888

Ship To:
1611 Gunn Hwy., Odessa, FL 33556

INTRODUCTION

The siren amplifier is designed to allow easy access to the controls, with a back-lighted front panel for night visibility. A 6-position rotary function switch is provided to select the output tone or operating mode. The operating modes available are Wail, Yelp, Phaser, Manual, Air-Horn, and Radio Repeat. A Public Address Override is available in all modes except Radio Repeat. A volume control is provided on the front panel to adjust the Public Address output level. The power is controlled by a rocker switch. A Manual mode control button is provided for control of the output tone when in the Manual mode, and control of Air-Horn and Yelp Overrides, depending on the function switch setting. The Public Address microphone is permanently attached to the amplifier to help prevent loss.

The compact size of the siren amplifier, along with the wide operating temperature range allows for maximum installation location flexibility. The unit may be mounted close to heating and air-conditioning vents with no effect of performance. The unit may even be mounted on the dash, where temperatures may exceed 140° F.

The siren amplifier is designed with many protection features to provide exceptional field service. High voltage detection (above 16 volts) will disable siren output to protect both the amplifier and the speaker. Amplifier design provides inherent protection against damage from accidental shorting or opening of the output leads. Protection is also provided against reverse polarity of input power. These protection features will not guard against overload or inadequate wiring.

MECHANICAL SIREN INSTALLATION

The siren package comes with a microphone and amplifier mounted in a case, a "U" bracket with mounting hardware, a microphone holder, and a wiring harness for all external connections.

Mount the "U" bracket loosely to the case with the hardware provided (the bracket may be mounted either on the top or the bottom of the unit). Determine the location to mount the amplifier keeping in mind ease of operation for the driver. Provide enough room at the rear of the siren for the wiring harness and plug.

Mark the outline of the bracket, then remove the bracket from the case. Using the bracket as a template mark the slot locations. After checking for obstructions behind the mounting hole locations two holes should be drilled (up to 1/4" diameter) to mount the bracket to the vehicle.

Using appropriate hardware (not supplied) mount the bracket to the vehicle. Make sure the hardware does not interfere with the case and amplifier chassis. Then mount the case to the bracket with the supplied hardware. **Note:** Use only the hardware supplied when mounting the case to the "U" bracket. Use of longer screws may not allow clearance inside the case for the amplifier chassis.

The microphone holder should be mounted to the vehicle with the hardware provided. Choose a mounting location convenient to the operator.

ELECTRICAL SIREN INSTALLATION

Important Notice: The short-circuit protection feature of the siren amplifier is derived from the ability of the amplifier to deliver very high current to the speaker in the event of a short. This current may exceed 10 amps at the output. In this short-circuit condition the amplifier will require as much as 40 amps from the input power supply until the fuse ruptures. Therefore the power supply input and speaker output wiring must be adequate for these high current levels. Use of wiring smaller than the sizes indicated may cause siren failure in the event of a shorted speaker (a common problem).

The vehicle battery should be disconnected before electrical connections are installed. Any unused leads should be cut short and the ends covered with electrical tape. See diagram (Fig. 2) for wiring.

Due to the high current requirements of the siren amplifier the power leads should be connected either directly to the battery or to a high current power buss. The circuit must have a 50 amp capacity. Connection to the radio power circuits is not recommended. If the siren power is to be controlled by an auxiliary circuit a 50 amp power relay should be used. Connection to the radio power circuits is not recommended.

BLACK LEAD: Connect to the negative battery connector or to chassis ground. Extend with #12AWG lead wire.

RED LEAD: Connect to the positive battery connector or to a high current power buss. A power relay may be used. (See above) Extend with #12AWG lead wire.

BROWN LEADS (2): Both leads must be used. Connect 1 lead to each terminal or lead of the speaker. Extend with #16AWG lead wire.

Optional Connections

BLUE LEADS (2): Used for Radio Repeat. Connect 1 lead to each terminal of the radio speaker or output connector. The input is isolated and polarity is not important. Extend with #18AWG lead wire.

WHITE LEAD: Used for Manual control. Performs same function as Manual control button. Connect to normally open switch or horn ring circuit. Circuit may connect to either positive or negative. When connected to horn ring circuit, use a SPDT switch to connect horn ring to either vehicle horn or to manual control circuit. (See Fig. 1) Note: The auxiliary circuit will operate from 0 to 1.2VDC and from 9 to siren input VDC.

Do not re-connect vehicle battery at this time.

FIG. 1

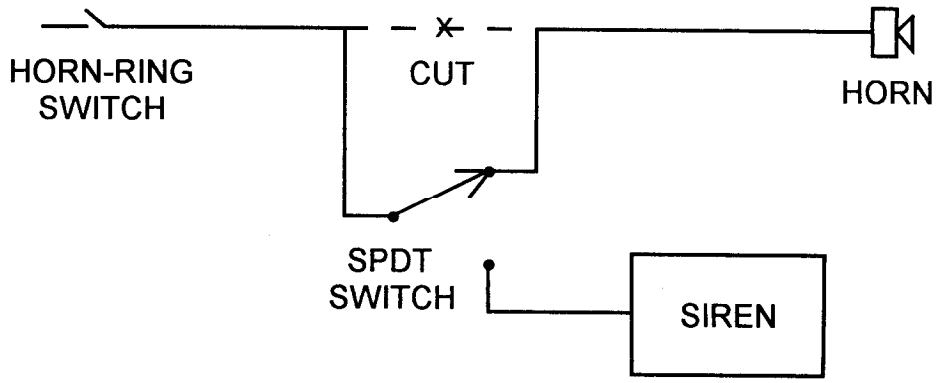


FIG. 2
(REAR VIEW)

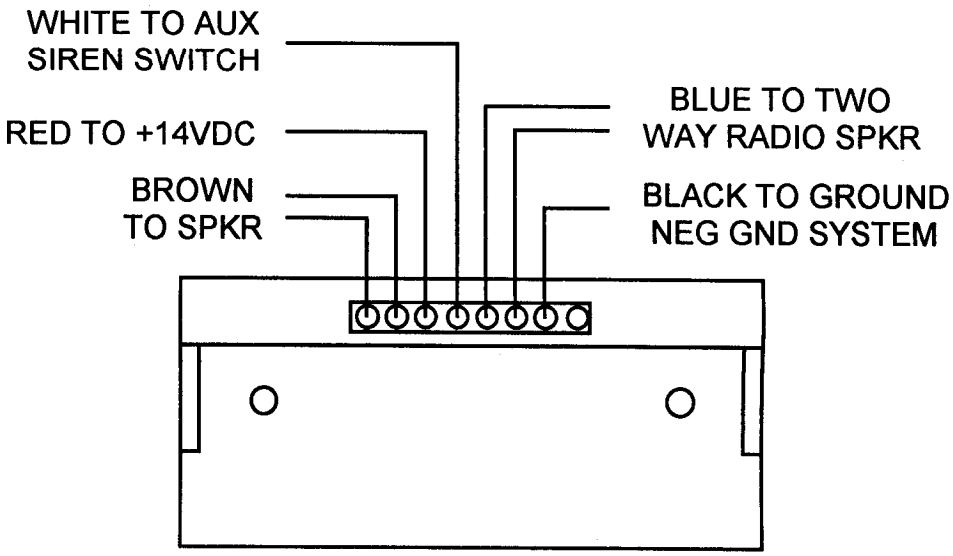
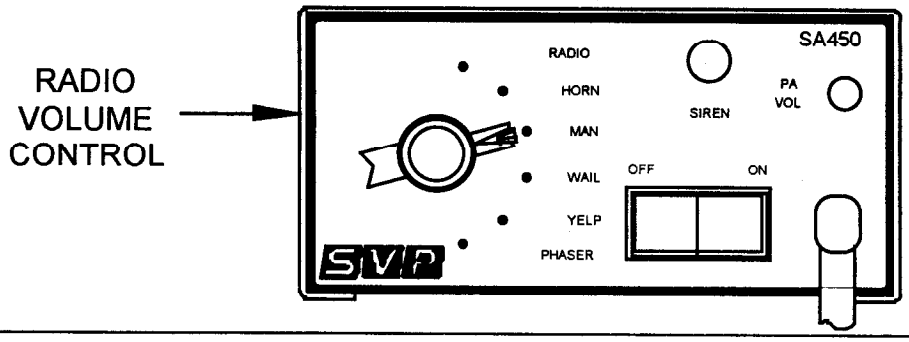


FIG. 3
(FRONT VIEW)



SIREN TESTING

Before re-connecting the battery in the vehicle make sure that the siren is turned off. Observe polarity when re-connecting.

Caution: Hearing protection should always be used when testing any siren, especially indoors. The sound levels produced by the speaker may cause hearing loss.

The following procedure should be used to test the siren:

1. With the function selector set to Air-Horn mode, turn on the power switch. A sharp "click" should be heard from the speaker.

2. Press the Manual control button. The speaker should emit a simulated air-horn sound while the button is pressed. (If the auxiliary lead is used check the appropriate switch and/or horn-ring operation. The result should be the same.)

3. Test the microphone operation by pressing the microphone button and speaking. Use the volume control to adjust the sound level.

4. If the Radio Repeat input leads are connected test this function by setting the function switch to this setting. The sound level is set by adjusting a control on the left side of the siren. Use a small screwdriver. (See Fig. 3)

OPERATING THE SIREN

Caution: Never operate the siren in an enclosed area except when testing as described earlier.

The POWER SWITCH is used to turn the siren power on. The siren may be left on any time the vehicle is in operation. The power should be turned off when vehicle is not being used to conserve battery power.

The FUNCTION SWITCH is used to select various operating modes. These modes are as follows:

PHASER - The siren produces a very fast warble tone. This mode should be used at intersections or in highly congested areas. Air-Horn and Microphone Override available in this mode.

YELP - The siren produces a moderate warble tone. This mode should be used in lightly congested areas. Air-Horn and Microphone Override available in this mode.

WAIL - The siren produces a normal rise-fall tone pattern. This mode should be used on highways or areas with constant traffic flow. Yelp and Microphone Override available in this mode.

MANUAL - The siren tone is controlled by the MANUAL control button. It may also be controlled by an external switch or by the horn-ring. (See electrical installation options.) Microphone Override is available in this mode.

AIRHORN - Also considered a standby mode. Air-Horn and Microphone Override available in this mode.

RADIO - This mode is used to reproduce, or repeat, the output of a radio in the vehicle. The radio must be connected as previously described for this mode to function. No overrides are available in this mode.

OVERRIDE FUNCTIONS

PUBLIC ADDRESS (P.A.)
OVERRIDE - By pressing the microphone button any siren tone output is turned off, allowing the operator to use the siren as a public address amplifier. The siren tone resumes when the button is released. (Hold the microphone close to your lips for proper operation.)

AIR-HORN
OVERRIDE - By pressing the MANUAL control button (or activating the auxiliary circuit) the siren tone output is replaced by a simulated air-horn tone. The siren tone resumes when the button is released. (This feature is not available in the Wail mode setting.

YELP
OVERRIDE - Available only in the WAIL mode. By momentarily pressing the MANUAL control button the siren tone output is switched to the YELP tone. Pressing the button again switches the siren tone output back to WAIL.

SERVICING THE AMPLIFIER

The siren amplifier is designed for years of trouble-free service under normal operating conditions. When replacing the chassis use caution when re-connecting the wiring harness, especially if the vehicle battery has not been disconnected. Return defective units to Southern Vehicle Products for repair.

A ruptured fuse may occur in the event of a shorted speaker driver. Once the driver and fuse are replaced the unit should resume normal function under most conditions. The 15 amp fuse is available at many automotive supply stores. The fuse is located on the right side of the circuit board inside siren.

The following chart can be used to solve most problems that are normally associated with the siren:

Problem	Possible Cause
No sound	Wiring harness connections Bad speaker driver High input voltage (greater than 16V) Fuse ruptured (short circuit)
No siren tones	Microphone button pressed High input voltage (greater than 16V)
Distorted sound	Bad speaker driver Damaged or loose speaker housing or tip
Weak P.A.	Microphone not held close to mouth
Intermittent	High input voltage (greater than 16V) Loose wiring harness connection Self-resetting breaker overload Bad speaker driver Unused auxiliary wire touching vehicle ground or supply

SA450-90 14VOLT PARTS LIST

C210V050CA	Capacitor,	Ceramic,	0.001	uF @	50V	+/-10%
C322V050CA	Capacitor,	Ceramic,	0.022	uF @	50V	+/-5%
C410V050CA	Capacitor,	Ceramic,	0.1	uF @	50V	+/-10%
C522V050ER	Capacitor,	Electrolytic,	2.2	uF @	50V	+/-20%
C610V050ER	Capacitor,	Electrolytic,	10	uF @	50V	+/-20%
C715V016ER	Capacitor,	Electrolytic,	150	uF @	16V	+/-20%
C722V050ER	Capacitor,	Electrolytic,	220	uF @	50V	+/-20%

NOTE: All electrolytic capacitors are rated -40° C to +80° C

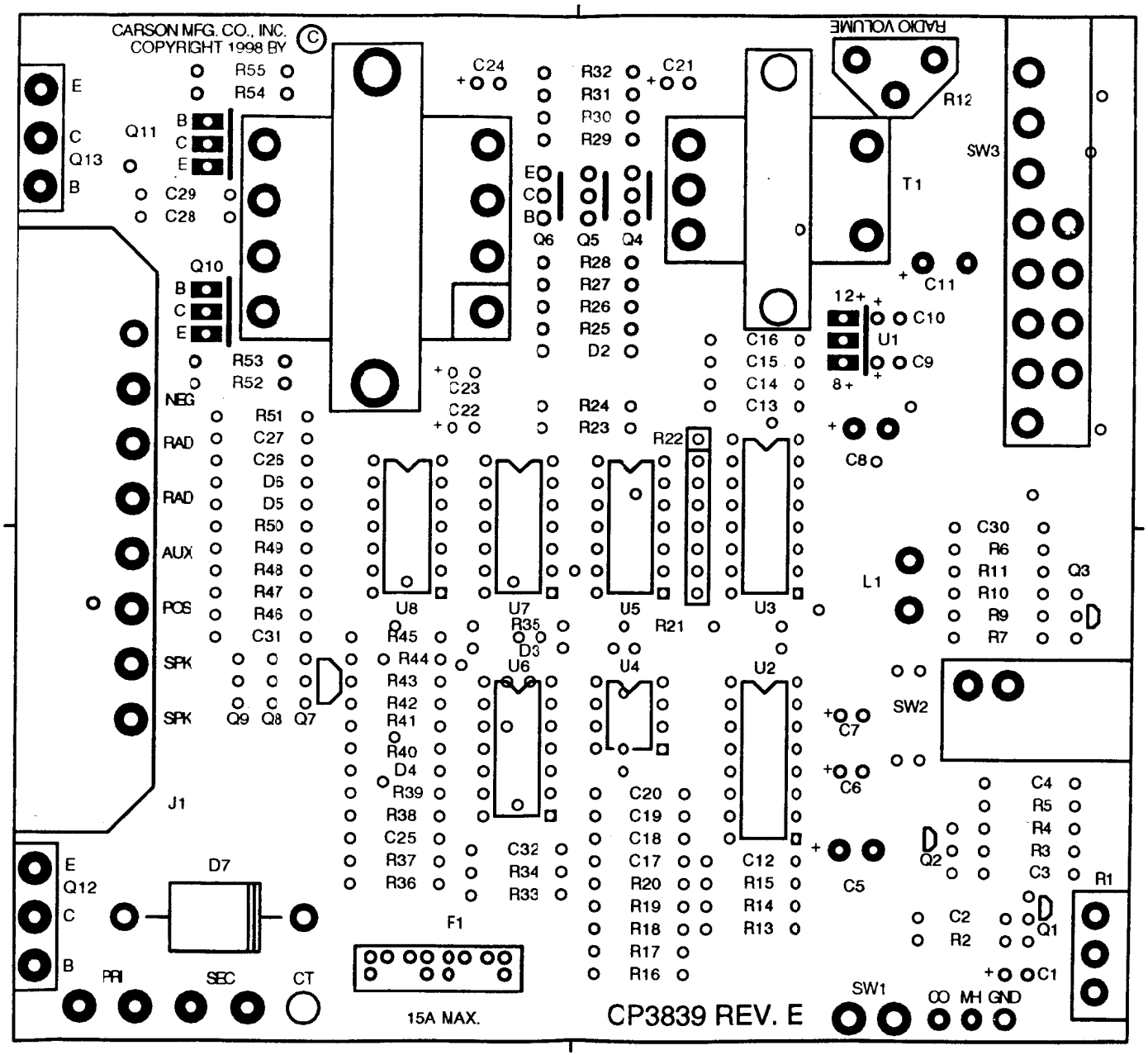
CP3547	Control, 350 Ohm Mini-Pot
X201R102B	Control, 1K Ohm Trimpot Vertical
1N4003	Diode, 300V 1A
1N4148	Diode, 100V 0.25A
6A1	Diode, 100V 6A
LM339N	Integrated Circuit, Quad Comparator
MC14011BCP	Integrated Circuit, Quad Nand Gate
MC14013BCP	Integrated Circuit, Cmos Dual 'D' Flip-Flop
MC14052BCP	Integrated Circuit, Cmos Dual Multiplexer
MC14532BCP	Integrated Circuit, 8-Bit Priority Encoder
MC1455PL	Integrated Circuit, Linear Timer
MC7808CT	Integrated Circuit, Linear 8V Regulator
R002W.2T05	Resistor, 2 Ohm, 1/4W, +/-5%
R027W.2T05	Resistor, 27 Ohm, 1/4W, +/-5%
R110W.2T05	Resistor, 100 Ohm, 1/4W, +/-5%
R122W.2T05	Resistor, 220 Ohm, 1/4W, +/-5%
R133W.2T05	Resistor, 330 Ohm, 1/4W, +/-5%
R147W.2T05	Resistor, 470 Ohm, 1/4W, +/-5%
R182W.2T05	Resistor, 820 Ohm, 1/4W, +/-5%
R210W.2T05	Resistor, 1K Ohm, 1/4W, +/-5%
R222W.2T05	Resistor, 2.2K Ohm, 1/4W, +/-5%
R227W.2T05	Resistor, 2.7K Ohm, 1/4W, +/-5%
R247W.2T05	Resistor, 4.7K Ohm, 1/4W, +/-5%
R310W.2T05	Resistor, 10K Ohm, 1/4W, +/-5%
R312W.2T05	Resistor, 12K Ohm, 1/4W, +/-5%
R322W.2T05	Resistor, 22K Ohm, 1/4W, +/-5%
R333W.2T05	Resistor, 33K Ohm, 1/4W, +/-5%
R336W.2T05	Resistor, 36K Ohm, 1/4W, +/-5%
R415W.2T05	Resistor, 150K Ohm, 1/4W, +/-5%
R422W.2T05	Resistor, 220K Ohm, 1/4W, +/-5%
C08-1-472-G	Resistor, Network 4.7K Ohm 8-P SIP

SA450-90 14VOLT PARTS LIST

CP3548	Switch, Rotary 6-Pos. 3-Pole
CP3962	Switch, SPST Power Rocker ON-OFF
L111132MV02Q	Switch, SPST Momentary Push Button
MJE182	Transistor, NPN 3A 80V
MPS2222	Transistor, NPN 0.6A 30V
MPS4123	Transistor, NPN 0.1A 40V
MPS4125	Transistor, PNP 0.1A 40V
CP4119 (TIP36)	Transistor, PNP 25A 80V
TIP42B	Transistor, PNP 6A 80V
CP2739	Transformer, 14V Driver
CP2806	Transformer, Standard Input
7319	Transformer, 14V 100W Output

Miscellaneous

CP3967	Button, Black for Momentary Switch
CP3886	Cable, Outside Wiring Harness
640584-1	Connector, 8 Pin P.C.B. Mount
ATO/ATC 15A	Fuse, 15A Automotive (ATO)
CP4228	Knob, PA Volume
CP4227	Knob, Function Switch
#73 Lamp	Lamp, 14V Mini Wedge Base
4142 Socket	Socket, Mini Wedge Base Lamp Solderable
CP3691	Microphone
CP3969	Microphone Clip and Mounting Screws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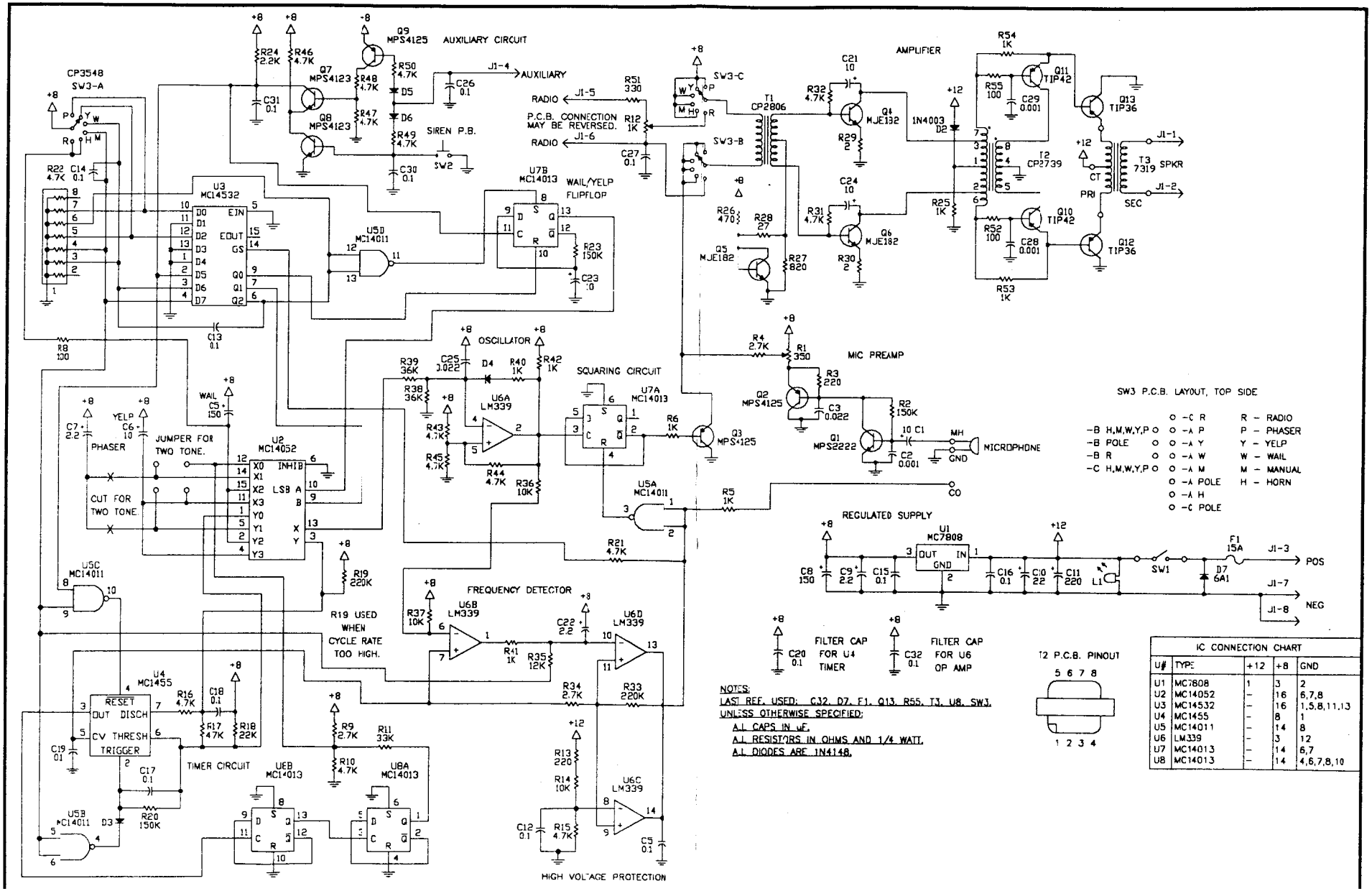
RADIO VOLUME
R12
SW3
T1
C11
C10
C9
C8
U1
12+
8+
C24
C21
R32
R31
R30
R29
Q6
Q5
Q4
R28
R27
R26
R25
D2
R24
R23
C23
C22
R22
C16
C15
C14
C13
R55
R54
Q11
B
C
E
C29
C28
Q10
R53
R52
R51
C27
C26
D6
D5
R50
R49
R48
R47
R46
C31
Q9
Q8
Q7
NEG
RAD
RAD
AUX
POS
SPK
SPK
J1
U8
U7
U5
U3
R45
R44
R43
R42
R41
R40
D4
R39
R38
C25
R37
R36
R35
D3
U6
U4
U2
R21
C32
R34
R33
C20
C19
C18
C17
R20
R19
R18
R17
R16
C12
R15
R14
R13
C30
R6
R11
R10
R9
R7
Q3
L1
SW2
C7
C6
C5
C4
R5
R4
R3
C3
Q2
R1
C2
R2
Q1
C1
E
Q12
C
B
D7
PRI
SEC
CT
F1
15A MAX.
CP3839 REV. E
SW1
MH
GND



NOTES:
LAST REF. USED: C32, D7, F1, Q13, R55, T3, U8, SW3.
UNLESS OTHERWISE SPECIFIED:
ALL CAPS IN uF.
ALL RESISTORS IN OHMS AND 1/4 WATT.
ALL DIODES ARE 1N4148.

IC CONNECTION CHART				
U#	TYPE	+12	+8	GND
U1	MC7808	1	3	2
U2	MC14052	-	16	6,7,8
U3	MC14532	-	16	1,5,8,11,13
U4	MC1455	-	8	1
U5	MC14011	-	14	8
U6	LM339	-	3	12
U7	MC14013	-	14	6,7
U8	MC14013	-	14	4,6,7,8,10