

Figure 1-1. Federal Models SCC3 and TCC3 Control Centers.

SECTION I GENERAL DESCRIPTION

The Federal Models SCC3 and TCC3 Control Center (figure 1-1) provide a convenient location for the control of Federal Models USA1 and USA2 Electronic Sirens. Both control centers are functionally similar. However, the SCC3 is capable of controlling a siren only while the TCC3 can control a siren as well as the vehicle warning lights if the optional Relay Board is installed in the siren.

Compactness and light weight make it practical to mount either model in a variety of locations and positions, as well as simplify installation. In addition, the small size of the unit minimizes the obstruction of other control devices that may be in the vehicle. The front panel of the unit is fully illuminated by non-glare lighting.

The SCC3 or TCC3 and the siren can be used with an optional Federal Model MNCT Microphone or in common with the microphone included with the two-way radio installed in the vehicle. The Model MNCT Microphone is a transistorized, noise cancelling microphone that has the characteristics necessary to drive the audio amplifier in the siren.

In common microphone operation, an optional adapter module connects the control center to the two-way radio. The common microphone is electrically connected to the two-way radio in all control functions except PA. When the RAD/PA (Radio/Public Address) switch is set to PA, the microphone is connected to the siren amplifier so that announcements can be made over the siren speaker system.

Both control centers are equipped with a spring loaded MAN/AUX (Manual/Auxiliary) rocker switch. On the SCC3, when the rotary switch is set to MAN or STBY, depressing the MAN side of the rocker switch causes the siren to produce a "peak and hold" signal until the rocker switch is released. The signal then "coasts down" and ceases. Similarly, on the TCC3, the MAN side of the switch initiates the "peak and hold" signal when the rotary switch is set to PRI (Primary), SEC (Secondary), or STBY (Standby).

Depressing the AUX side of the MAN/AUX rocker switch causes the optional Auxiliary Sound Board to produce its output signal until the switch is released. The signal produced by the Auxiliary Sound overrides any other signal that may be in progress.



SECTION II SPECIFICATIONS

2-1. ELECTRICAL.

Input Voltage 10Vdc to 16Vdc (16Vdc operation limited to 15 min.)

Polarity Negative or Positive Ground

Standby Current 10mA. (excl. panel lamp)

2-2. PHYSICAL.

Dimensions (HWD - excluding knob) 2 3/4" x 4 7/8" x 2 3/8"
(70 mm x 124 mm x 60 mm)

Weight (approx.) 9 oz. (255 gm.)

2-3. ACCESSORIES (OPTIONAL).

| | |
|--------------|---|
| Model MNCT | Transistorized Noise Cancelling Microphone |
| Model FN1001 | Federal Model MNC or MR Microphone Adapter Module |
| Model FN1003 | Motorola Microphone Adapter Module |
| Model FN1004 | Motorola Micor Microphone Adapter Module |
| Model FN1006 | RCA 500 Microphone Adapter Module |
| Model FN1007 | GE Microphone Adapter Module |
| Model FN1008 | GE Master II Microphone Adapter Module |
| Model FN1011 | Aerotron MPAC6, 7, or 8 Microphone Adapter Module |
| Model FN1013 | Motorola "Converta-Com" Microphone Adapter Module |
| Model FN1014 | Motorola Maxar 80, TMN6134B Microphone Adapter Module |
| Model FN1015 | RCA Veetac, TAC-200, TAC-400, MCA, Series MI-594000 Microphone Adapter Module |

INSTALLATION

3-1. UNPACKING.

After unpacking the control center inspect it for damage that may have occurred in transit. If the unit has been damaged, file a claim immediately with the carrier, stating the extent of the damage. Carefully check all envelopes, shipping labels and tags before removing or destroying them. All small parts and accessories are packed in a plastic bag.

3-2. PHYSICAL INSTALLATION.

The SCC3 and TCC3 are equipped with a right angle bracket and a selection of mounting hardware and adhesive pads.

This makes it possible to mount the control center in a variety of positions using several different methods.

As indicated in figure 3-1A, the control center can be mounted above or below any relatively flat horizontal surface, such as the vehicle dash, with the use of the right angle bracket. If desired, the right angle bracket can be attached to the mounting surface by means of the adhesive pads in the accessory kit.

As shown in figure 3-1B, the unit can also be attached directly to a vertical mounting surface by means of 8-18 x 3/4"

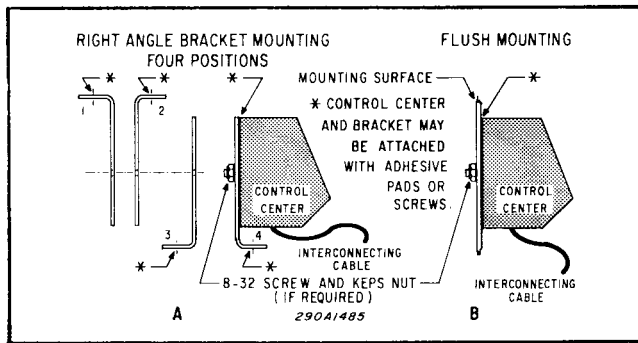


Figure 3-1. Attachment of Control Center to Right Angle Bracket.

thread forming screws, 8-32 x 1 1/4" pan head screws and KEPS nuts, or the adhesive pads in the accessory kit.

The surfaces to which the adhesive pads are applied must be clean and dry for proper adhesion. If necessary, use isopropyl alcohol and water (rubbing alcohol) to clean the mounting surfaces.

Direct sunlight causes the adhesive pads to deteriorate in a relatively short period of time. Therefore, do not use the adhesive pads to mount the control center in a location that receives continuous or intense sunlight.

A microphone jack bracket is also supplied with the control center for optional use. This bracket can be attached to the mounting surface, using four 8-18 x 1/2" phillips pan head screws or adhesive pads.

If screws are to be used to mount the control center, use the back of the unit or the right angle bracket, as appropriate, as a template and scribe screw position marks on the mounting surface. Drill holes at the position marks.

CAUTION

When drilling holes in ANY part of a vehicle, ALWAYS ensure that both sides of the mounting surface are clear of parts that could be damaged; such as brake lines, electrical wiring, or other vital parts.

Mount the control center and microphone jack bracket, if desired, using the selected method. The microphone jack bracket is at switched ground potential. Take care to ensure that the bracket does not come in contact with the vehicle chassis ground system. To install the

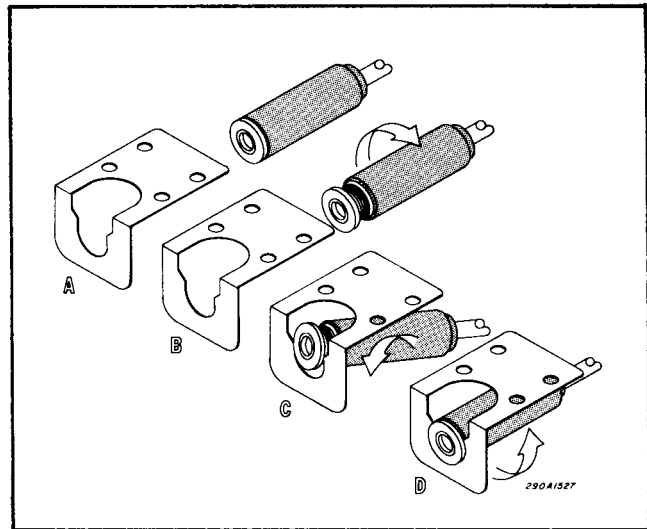


Figure 3-2. Installation of Microphone Jack in Microphone Jack Bracket.

microphone jack in the microphone jack bracket, proceed as follows(see figure 3-2).

1. The microphone jack is part of the interconnecting cable. Completely unscrew the sleeve from the microphone jack.
2. Insert the jack, edge first, into the wide section of the large hole in the microphone jack bracket.
3. Tilt the jack 90° and slide it until it rests in the rounded section of the jack bracket hole.
4. Replace the sleeve on the jack. Tighten the sleeve securely to ensure that the jack is held tightly in the bracket.

3-3. ELECTRICAL CONNECTIONS.

A. General

The siren interconnecting cable and the control center interconnecting cable are equipped with insulated bullet connectors. These connectors greatly simplify the splicing of the two cables and make it unnecessary for the installer to insulate the splices. In addition, most of the color coded wires in both cables are clearly labelled to indicate their functions. If a given wire in one cable has a counterpart in the other cable, they are always joined and, in most cases, the color of the wires in both cables is the same.

Before proceeding with the electrical interconnections, install the siren, following the instructions in the siren service manual.

B. SCC3

1. Connect the wires in the control center and siren interconnecting cables as follows:

MIC HI to MIC HI; PTT to PTT; 1 to 1; 2 to 2; MAN to MAN; PEAK to PEAK and AUX to AUX. If desired, the wiring and connections may be bundled together by the spiral wrap provided.

2. Connect the RADIO SPKR (speaker) leads across the speaker in the two-way radio. If necessary, splice additional installer supplied, two conductor "zip" cord on the RADIO SPKR leads. Insulate the splices.

3. If the vehicle is equipped with a negative ground electrical system, connect the fused red lead (IGN) to the switched side of the ignition switch. Connect the negative (-) lead on both the control center and siren interconnecting cables to the vehicle chassis.

In positive ground electrical systems, connect the fused red lead (IGN) to the vehicle chassis. Connect the negative (-) lead in the control center and siren interconnecting cables to the switched side of the ignition switch.

4. Perform the gain adjustment procedure in the siren service manual.

5. See figure 3-3. Remove the chassis from the housing. Use a small screw driver to adjust R2 so that the sound level of the radio audio is approximately equal to that of the PA audio. R2 is accessible from the rear of the board.

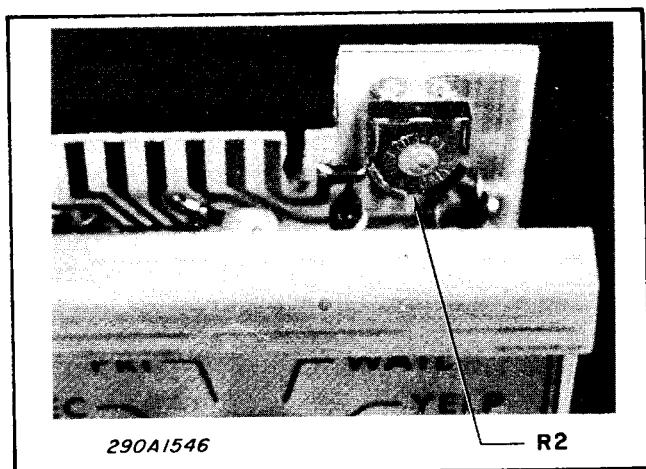


Figure 3-3. R2 Location.

C. TCC3

1. Complete the connections described in paragraph 3-3.B.1.

2. The TCC3 has provisions for controlling the vehicle warning light system when the optional Relay Board is installed in the siren. Therefore, if the optional Relay Board is not already installed in the siren, install the board at this time. The TCC3 is set up to have the secondary lights remain on in the PRI, WAIL, YELP and HI-LO positions. If secondary lights are not desired in these positions, cut JU10 on the P.C. Board.

3. Connect the control center and siren interconnect wires A to A and B to B.

4. Complete the connections in paragraph 3-3.B.

5. Perform the gain adjustment procedure in the siren service manual.

6. See figure 3-3. Use a small screwdriver to adjust R2 so that the sound level of the radio audio is approximately equal to that of the PA audio.

3-4. ADAPTER MODULES.

NOTE

If the control center siren system is to be used in PA override operation with the Model MNCT Microphone, disregard the procedure in the paragraph, plug the microphone into the microphone jack, and proceed directly to the gain adjustment procedure in the siren service manual. If common microphone operation with radio rebroadcast is to be used, follow the procedure in this paragraph.

If separate instructions are supplied with the adapter module, install the module following those instructions. However, if separate instructions are NOT supplied with the module, proceed as follows:

1. Insert the phone plug, on the module, into the microphone jack supplied with the control center interconnect cable.

2. Connect the power lead to the switched side of the ignition switch.

Insert the two-way radio microphone connector into the matching receptacle on the adapter module.

4. Insert the connector, on the short length of cable attached to the adapter module, into the microphone receptacle on the two-way radio.

5. Perform the gain adjustment procedure in the siren service manual.

6. Set the RAD/PA switch to RAD, and turn on the two-way radio.

7. If necessary, remove the front panel from the control center.

8. See figure 3-3. Using a very small screwdriver, adjust R2 on the circuit board for the desired listening level outside the vehicle. R2 is accessible through a hole in the circuit board.

9. Reassemble the control center.

SECTION IV OPERATION

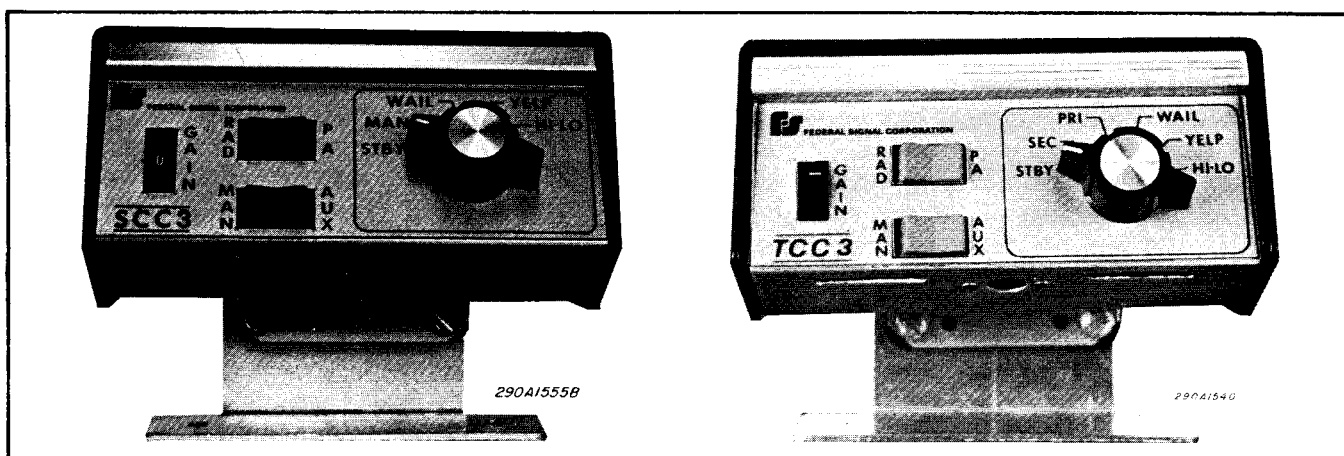


Figure 4-1. SCC3 and TCC3 Front Panels.

4-1. GENERAL.

The control center front panel controls that are used in the operation of the siren are shown in figure 4-1. As shown in the figure, the operating controls consist of several rocker switches, a rotary switch, and a thumbwheel control. The functions of the various switch positions and the thumbwheel control will be described separately.

4-2. SWITCH FUNCTIONS.

A. RAD/PA (Radio/Public Address) SWITCH

1. RAD

Setting the switch to the RAD position allows incoming radio messages to be amplified by the siren amplifier and rebroadcast over the siren speaker system. The level of the output sound is determined by the setting of the front panel GAIN control.

If the control center is connected for PA override operation, depressing the microphone push-to-talk (PTT) switch overrides radio rebroadcast. Releasing the PTT switch allows radio rebroadcast to resume. In common microphone operation, the microphone is connected to the two-way radio.

2. PA

In common microphone operation, setting the switch to PA connects the two-way radio microphone to the siren amplifier so that announcements can be made over the siren speaker system.

3. CENTER-OFF

Both the PA and radio rebroadcast functions are disabled. The switch must pass through this position when being switched from RAD to PA or vice versa. If the system is wired for common microphone operation, the microphone is connected to the two-way radio.

B. MAN/AUX (Manual/Auxiliary)

1. MAN

Depressing the MAN side of this switch causes the siren signal to "peak and hold" until the switch is released. Releasing the pushbutton allows the signal to "coast down" and cease.

2. AUX

When the AUX side of the switch is pressed, the optional Auxiliary Sound Board is activated. The Auxiliary Sound Board output signal overrides any other signal that may be in progress.

C. ROTARY SWITCH

1. MAN (SCC3 Only)

In this rotary switch position, the siren produces no sound unless the MAN/AUX rocker switch is depressed. The MAN position of the rocker switch causes the siren signal to "peak and hold" as already described.

2. STBY (Standby)

In Standby, the siren has no sound unless the MAN position of the rocker switch initiates the "peak and hold" signal, as already described, except that the signal ceases immediately upon release of the MAN rocker switch.

3. WAIL

This position of the rotary switch causes the siren to produce a continuous Wailing sound.

4. YELP

The YELP position enables the siren to produce a continuous Yelping signal.

5. HI-LO

Setting the rotary switch to HI-LO causes the siren to produce a signal that alternates between two tones.

6. PRI (Primary - TCC3 Only)

The PRI position energizes the primary warning light or warning light circuit.

7. SEC (Secondary - TCC3 Only)

Setting the rotary switch to SEC activates the secondary warning light or warning light circuit.

D. GAIN

The Thumbwheel GAIN control controls the output sound level (volume) of radio rebroadcast and PA audio. Rotating the thumbwheel down increases signal volume; rotating the control up, decreases volume. The GAIN control has no effect on the volume of siren signals.

SECTION V THEORY OF OPERATION

5-1. GENERAL.

Most of the circuitry in the control center consists of an audio preamplifier. Refer to the schematic diagram, figure 6-1, while reading the circuit description that follows.

5-2. PREAMPLIFIER CIRCUIT DESCRIPTION.

The control center preamplifier accepts audio from the two-way radio receiver or from the microphone. The audio input is selected by the RAD/PA (Radio/Public Address) switch, SW1, on the front panel.

As shown in figure 6-1, SW1 is set to its center-off position. Consequently, Q1 is saturated applying ground potential to IC1(A)-2. This prevents any audio that may be present from being applied to IC1-2. IC1B then amplifies the signal and applies it to the siren as already described. The amplitude of the amplified audio (radio or PA) is determined by the setting of the front panel GAIN control, R13.

The center also includes several switching circuits for siren control and warning light control (TCC3 only). These switches are connected to their respective circuits and devices through the interconnecting cable.

SECTION VI

SERVICE AND MAINTENANCE

Most of the electronic components used in the SCC3 and TCC3 are standard parts that are available at almost any radio or electronics supply outlet.

Federal can and will service your equipment or provide technical assistance with problems that cannot be handled satisfactorily and promptly locally.

If any unit is returned for adjustment or repair, it can be accepted only if we are notified by mail or telephone in advance of its arrival. Such notice should clearly indicate the service requested and give all pertinent information regarding the nature of the malfunction and, if possible, its cause.

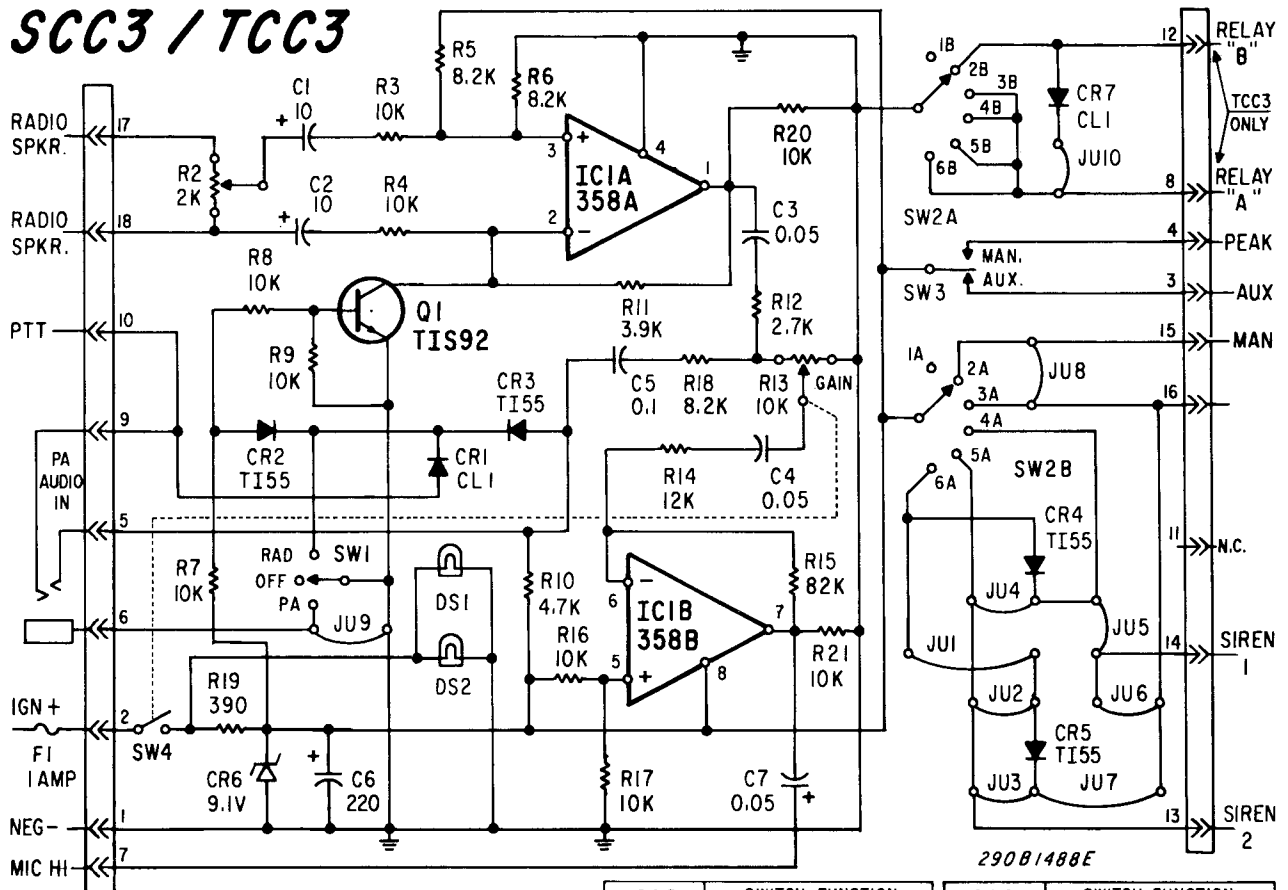
Address all communications and shipments to:

Service Department
Signal Division
Federal Signal Corporation
2645 Federal Signal Drive
University Park, IL 60466

SCC3/TCC3 PARTS LIST

| Schematic Symbol | Description | Part No. | Schematic Symbol | Description | Part No. |
|--------------------------------|---|-------------|------------------|--|---------------------|
| | RESISTORS (See Note) | | | CAPACITORS (continued) | |
| R2 | Potentiometer, 2K Ohm | 106A203A-01 | C6 | Capacitor, 220UF, 16 V electrolytic | 108A152 |
| R3, 4, 7, 8, 9, 16, 17, 20, 21 | 10K Ohm | 100A207 | | SEMICONDUCTORS | |
| R5, 6, 18 | 8.2K Ohm | 100A268 | CR1, 7 | Diode, ED3002S (CL1) | 115B301 |
| R10 | 4.7K Ohm | 100A224 | CR2, 3 | Diode, TI55 | 115B101 |
| R11 | 3.9K Ohm | 100A273 | 4, 5 | | |
| R12 | 2.7K Ohm | 100A206 | CR6 | Diode, zener, 9.1V, 1N960B | 115A210 |
| R13, SW4 | Potentiometer thumb-wheel, 10K with switch | 104B116 | Q1 | Transistor, NPN, TIS92 | 125B132 |
| R14 | 12K Ohm | 100A269 | IC1 | Integrated Circuit LM358B | 128A045 |
| R15 | 82K Ohm | 100A230 | | MISCELLANEOUS | |
| R19 | 390 Ohm | 100A283 | JU1-8 | DIP Shunt, 8 position | 128A075 |
| | Note : Unless otherwise specified, all resistors are fixed composition, 10% , 1/4 watt. | | SW1 | Switch, rocker, SPDT, center off | 122B190 |
| | CAPACITORS | | SW2 | Switch, rotary, 2P6T | 122B195A-06 |
| C1,2 | Capacitor, 10UF, 10V tantalum | 107A634 | SW3 | Switch, rocker, SPDT, momentary, center-off | 122B191 |
| C3, 4, 7 | Capacitor, .05UF, 25V disc | 107A214 | DS1, 2 | Lamp, subminiature Circuit Board (without parts) | 149A117 130C262C |
| C5 | Capacitor, .1UF, 100V mylar | 107A406 | | Circuit Board (Complete, with parts installed) | 200C781 |

SCC3 / TCC3



NOTES:

1. UNLESS OTHERWISE SPECIFIED:
ALL RESISTORS ARE 1/4 WATT, ±10%, K=1000.
ALL CAPACITORS ARE IN MICROFARADS.
2. JU1, JU3, JU5, AND JU8 ARE PRESENT ONLY ON TCC3.
3. JU1, JU2, JU5, AND JU7 ARE PRESENT ONLY ON SCC3.

| SW2 POSITION | SWITCH FUNCTION | |
|--------------|-----------------|-----------|
| | SCC3 | TCC3 |
| 1 | — | STANDBY |
| 2 | MANUAL | SECONDARY |
| 3 | WAIL | PRIMARY |

| SW2 POSITION | SWITCH FUNCTION | |
|--------------|-----------------|-------|
| | SCC3 | TCC3 |
| 4 | YELP | WAIL |
| 5 | HI-LO | YELP |
| 6 | — | HI-LO |

Figure 6-1. SCC3/TCC3 Schematic Diagram.

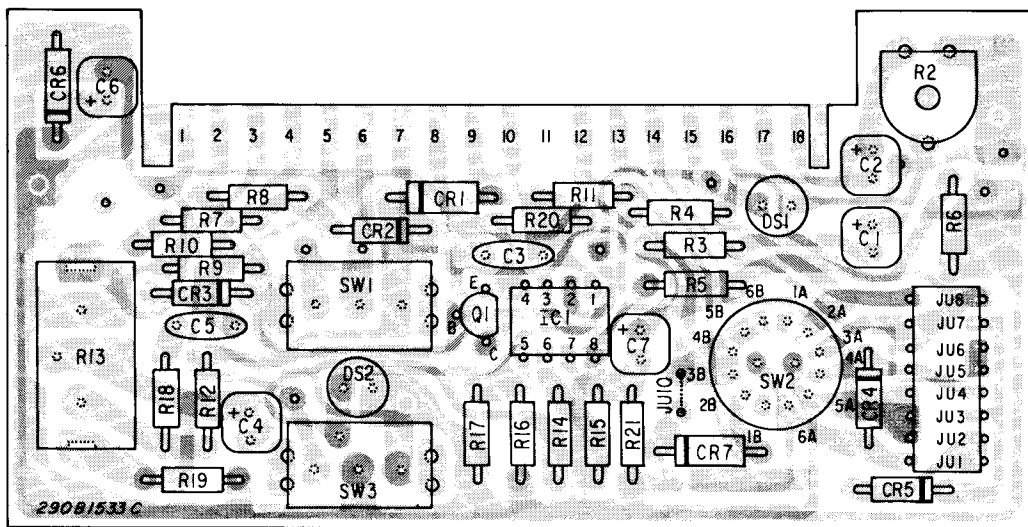


Figure 6-2. SCC3/TCC3 Parts Location Diagram.