

**MODEL 895A
LINEAR PHASE/
TIME COMPARATOR**

OPERATION AND
SERVICE MANUAL

6913F

Tracor Instruments

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SERVICE MANUAL

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Tracor Instruments

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SECTION I
INTRODUCTION

1-1 The TRACOR Model 895 Linear Phase/Time Comparator (figures 1-1 and 1-2) is designed to measure the relative phase or time difference between two signals. Because of its resolution and wide range, this instrument can be used for a variety of time and frequency measurements.

1-2 In its two modes of operation, the Model 895A provides a front panel meter readout of the time difference between the two input signals on full-scale ranges of 0.1, 1.0 or 10 microseconds, or the phase difference between the two input signals on full-scale ranges of 1.0, 10 or 100 cycles. By virtue of its extreme resolution (1 nanosecond in the microsecond mode at 0.1 microsecond full scale), the TRACOR Model 895A facilitates rapid, accurate adjustment of high quality frequency standards. When twenty-four hour averaging is employed, resolution of the Model 895A is adequate to allow comparison of atomic frequency standard signals with a resolution of approximately one part in 10^{14} .

1-3 Front or back panel Record Outputs may be used for evaluating precision oscillator performance, or as a continuous check of time difference between a clock system and a standard time source.

1-4 A front panel MONITOR connector provides phase or time difference outputs suitable for display on an oscilloscope. This allows magnification of the Model 895A output and makes possible very rapid adjustments of oscillators.

1-5 The Model 895A input accepts frequencies from 1 cps to 1 mc in the $\Delta\theta$ Mode and any integer submultiples of 10 mc from 100 kc to 5 mc in the Δt Mode. Input frequencies need not be the same in the Δt Mode.

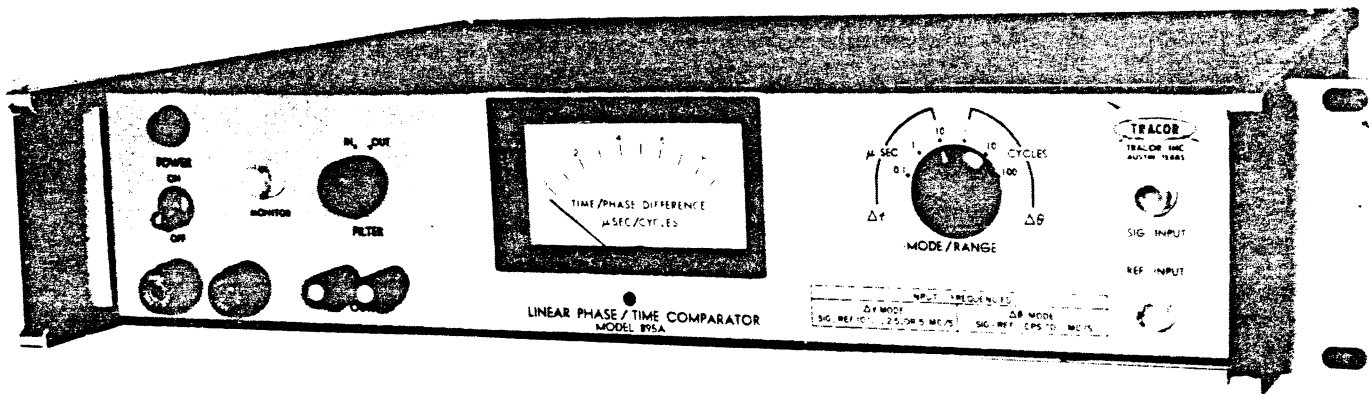


Figure 1-1. Linear Phase/Time Comparator Model 895A

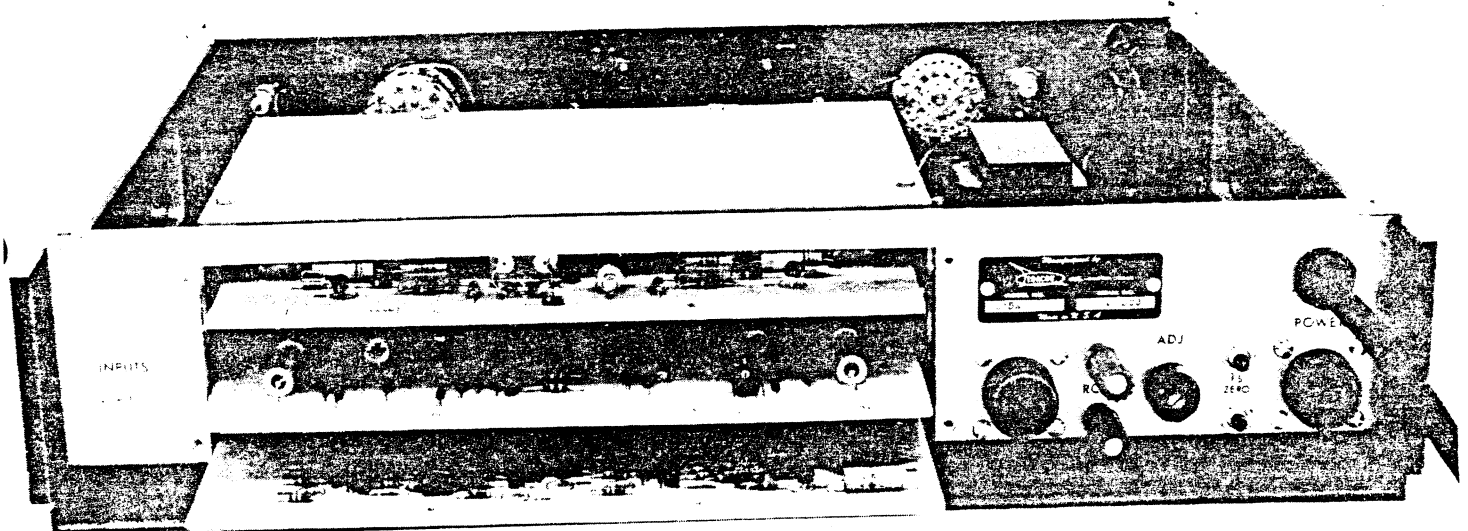


Figure 1-2. Linear Phase/Time Comparator, Rear View

SECTION II
SPECIFICATIONS2-1 Electrical

Power Input	105-130 volts ac, 60 cps, 7.5 watts; 12-24 volts dc, 0.27 ampere.
Input Frequencies	<u>$\Delta\theta$ mode</u> : 1 cps to 1 mc <u>Δt mode</u> : any integer submultiple of 10 mc, from 100 kc through 5 mc inclusive.
Input Voltages	1-10 volts rms at any frequency.
Input Impedance	Approximately 600 ohms.
Comparator Linearity	<u>Δt mode</u> : $\pm 1\%$ of full scale for any input. <u>$\Delta\theta$ mode</u> : $\pm 1\%$ of full scale in the range 1 cps to 100 kc. At 1 mc the $\pm 1\%$ figure holds between the 10% and 90% points of the scale.
FULL-SCALE Ranges	<u>Δt mode</u> : 0.1 μ sec, 1 μ sec and 10 μ sec full scale. <u>$\Delta\theta$ mode</u> : Full-scale ranges are 1 cycle, 10 cycles and 100 cycles of the input signal.
FRONT PANEL METER	Accuracy is $\pm 2\%$ of indicated phase or time. The METER readout is useable for input frequencies above 100 cps.

RECORD Output

DC current proportional to front-panel meter reading is available on front and rear-panel binding posts.

Any 1 ma recorder with less than 2K resistance can be calibrated with the rear-panel ADJ potentiometer and the ZERO and FS (fullscale) pushbutton switches.

2-2 Mechanical

Physical Data

3 1/2 inches high; 12 3/4 inches deep; 19 inches wide (bench model is 16 7/8 inches wide). Weight is 14 lbs.

Temperature Range

0-60°C

SECTION III
INSTALLATION

3-1 INSTALLATION PROCEDURES

Unpack the instrument and carefully inspect it for possible damage incurred during shipment. If damage is found, immediately file a claim with the carrier.

- a. Mount the Model 895A in the desired location.
- b. Set the POWER switch to OFF.
- c. Connect a 12 to 24 volt dc source, if such standby power is to be provided.
- d. Plug the ac power into a 105-130 volt 60 cps source.
- e. Connect the signal sources that are to be compared to the SIG and REF input connectors.

SECTION IV
OPERATION

4-1 The FILTER switch selects the time constant of the front panel meter and the record output. This switch should be placed to the IN position when the following conditions exist:

- a. Input frequency is less than 100 cps and MODE/RANGE is $\Delta\theta = 1$.
- b. Input frequency is less than 1000 cps and MODE/RANGE is $\Delta\theta = 10$.
- c. Input frequency is less than 10,000 cps and MODE/RANGE is $\Delta\theta = 100$.

4-2 The MODE/RANGE switch selects both the mode of operation and the full-scale range of the meter and record outputs.

(a) MODE/RANGE in Δt positions. Operation in the Δt positions may be used for inputs in the 100 kc to 5 mc range that are integer submultiples of 10 mc.

4-3 Three positions denoting full-scale ranges of 0.1 μ sec, 1 μ sec, and 10 μ sec are available and indicate the phase difference in real time units independent of the input frequencies.

(b) MODE/RANGE in $\Delta\theta$ positions. Operation in the $\Delta\theta$ positions may be used for all signals from 1 cps to 1 mc.

4-4 Three positions denoting full-scale phase differences of 1 cycle, 10 cycles, and 100 cycles are available.

(c) For certain of the lower frequency submultiples of 10 mc (100, 200, 500 kc, 1 mc, etc.) either the $\Delta\theta$ or the Δt mode may be used. This permits a wide choice of full-scale ranges for those particular frequencies. For example, if the inputs are 100 kc the following full-scale ranges are available at the noted switch positions:

<u>MODE/RANGE switch position</u>	<u>Resulting full-scale time for 100 kc inputs.</u>
$\Delta\theta = 1$	10 μ sec
$\Delta\theta = 10$	100 μ sec
$\Delta\theta = 100$	1000 μ sec
$\Delta t = 0.1$	0.1 μ sec
$\Delta t = 1$	1 μ sec
$\Delta t = 10$	10 μ sec

4-5 Thus a five decade range of full-scale ranges is available for 100 kc inputs.

4-6 The ac line cord (back panel) may be connected to any source capable of delivering 105-130 volts ac at 7.5 watts and 60 cps.

4-7 Standby power connections are available on the back panel. Any 12-24 volt dc source capable of delivering 0.27 amperes may be used.

4-8 The fuse holders are located on the front panel and require a 3AG, 1/4A, Slo-Blo for the ac line and a 3AG, 1/2A, instrument fuse for the standby source.

4-9 Operating Procedure

4-10 The $\Delta\theta$ mode is primarily intended for phase comparison of two signals of the same frequency within the range 1 cps to 1 mc. Signals of different frequencies may be compared provided the ratio of the frequencies is an integer. As an example, assume the ratio of f_1 to f_2 is equal to n , where $n = 1, 2, 3, \dots$. In that case the total excursion of the meter will be $1/n$ of full scale since the meter is calibrated for a 1:1 frequency ratio. In the case of a specific ratio, the total excursion will correspond to one cycle of the higher frequency signal.

4-11 To compare two signals of the same frequency within the range 1 cps to 1 mc:

(a) Set the POWER switch to ON.

(b) Connect the two signals to either the front or back panel SIG and REF input connectors.

(c) Set FILTER switch to proper position. In general, the filter should be used whenever the input frequency is so low that a noticeable vibration of the meter pointer occurs. The filter may be used at any input frequency to remove rapidly varying phase components from the output.

4-12 Choice of full scale range.

4-13 For absolute phase angle measurements, always use the 1 cycle position. Full scale then corresponds to 360° , or a number of seconds equal to the period of the input wave.

4-14 For recording relative phase between the inputs over a period of time, the choice of full scale range will

depend on the specific application. The following points should be considered:

(a) The initial absolute phase angle can be obtained using the 1 cycle position.

(b) The degree of resolution available at every point on a chart record will depend on the full-scale range used, since the resolution is $\pm 1\%$ of that range.

(c) If cycles of relative phase drift are to be recorded, the 10 cycle or 100 cycle scales will result in a record with fewer full-scale excursions.

(d) The same degree of accuracy between initial and final points on a chart record can be obtained regardless of which sensitivity position is used if initial and final readings on each of the scales (1 cycle, 10 cycle and 100 cycle scales) are taken.

4-15 Since the scales are related by factors of 10, the most significant digit obtained from the 1 cycle scale will be the second most significant digit on the 10 cycle scale. Thus, the 1 cycle scale acts as a magnifier of the 10 cycle scale, displaying $1/10$ of the 10 cycle scale. Similarly, the 10 cycle scale magnifies the 100 cycle scale. Therefore, each digit of relative phase indication can be obtained with great accuracy by switching ranges. The total phase drift will be the final reading, minus the initial reading, plus the number of complete cycles indicated between the initial and the final readings (See figure 4-1).

4-16 To compare Standard Frequencies:

4-17 The Δt mode of operation is used for precise measurement of relative phase drift but does not encompass measurement of absolute phase angle. The chart record full-scale calibration is fixed in the Δt mode at 0.1 μ sec, 1.0 μ sec, or 10 μ sec and is not determined by the input frequencies.

(a) Set the POWER switch to ON.

(b) Connect the standard frequencies to the SIG and REF inputs. Any two standard frequencies can be compared and the two signals need not have the same frequency. (A standard frequency is defined as any integer submultiple of 10 mc, from 100 kc to 5 mc inclusive.)

(c) Set the Filter switch to OUT, provided no rapidly varying phase components are to be filtered.

(d) Set the MODE/RANGE switch to a Δt position.

Choice of position should be made with the following considerations in mind:

(1) The full-scale range determines the degree of resolution at every point on a chart record. Resolution is $\pm 1\%$ of full scale.

(2) Accuracy of measurement of phase drift from the initial point to the final point is independent of the scale used, provided initial and final readings are obtained on the 0.1, 1.0, and 10.0 μ sec ranges.

Full scale ranges are related by factors of 10.

4-18 At a point on the 10 μ sec or 1 μ sec range, the phase may be read with great accuracy by taking the first significant digit from the range in use, then switching to a more sensitive range to get the next most significant digit. For example,

if the 10 μ sec range is in use, the most significant digit is taken from that range, and the second most significant digit of the indicated phase can be read as the most significant digit on the 1 μ sec range. Reading this second digit from the 1 μ sec range rather than the 10 μ sec range results in improved accuracy, since scale resolution is increased by a factor of 10.

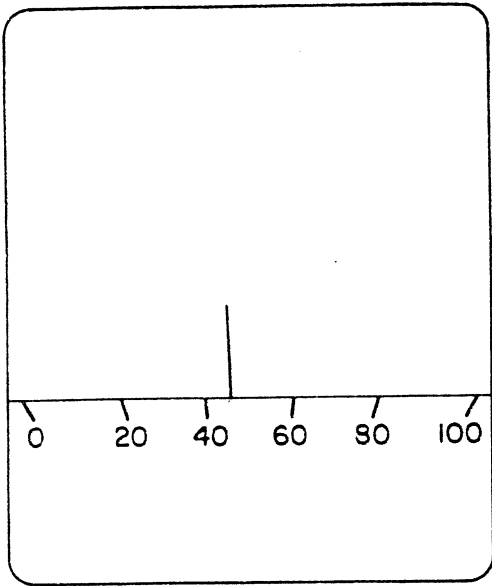
4-19 Sample Problem

4-20 The chart record shown in figure 4-1A was made using two 1 mc input signals. The Δt mode with a full-scale range of 10 μ sec was used. Note that initially the slope is positive, indicating that the SIG input signal is higher in frequency than the REF input signal. The signals then drifted until the slope was zero, indicating identical input frequencies. The last half of the record exhibits negative slope; the SIG input had drifted below the frequency of the REF input.

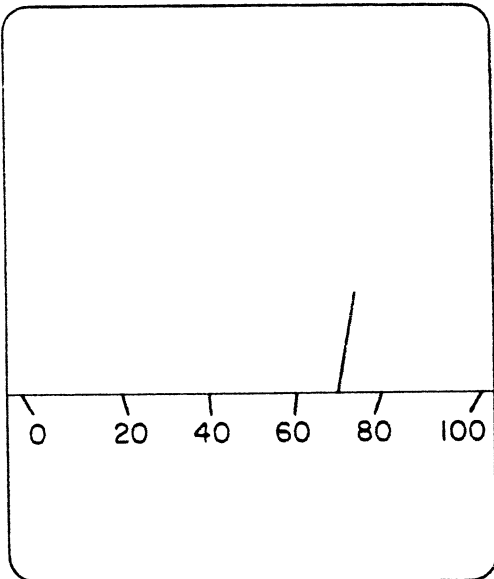
4-21 The following example illustrates the method used in calculating the frequency error indicated by the recording.

4-22 Suppose that initial readings are made at point "I" on the record and final readings at point "F". From the record itself $I = 2.7 \mu$ sec since full scale range is 10 μ sec for this recording. For better accuracy the initial digits could be read individually from the 0.1, 1 and 10 μ sec ranges at the beginning of the recording period.

4-23 Switching temporarily to the 0.1 μ sec scale, the indication shown in figure 4-1B is obtained. Here it is evident that



B
0.1 μ SEC SCALE
(0.045 μ SEC)



C
1 μ SEC SCALE
(0.7 μ SEC)

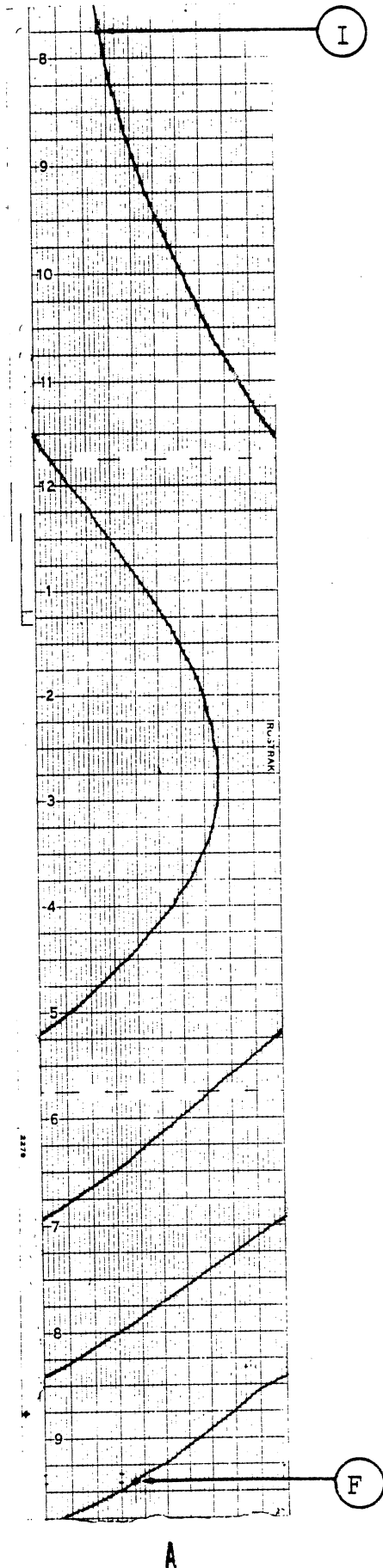


Figure 4-1. Sample Problem Solution

the least significant digits are 0.045 μ sec. Switching to the 1 μ sec range (figure 4-1C), the digit is 0.7 μ sec. Thus, the initial reading is 2.745 μ sec. Similarly, the final reading at point F is 3.582.

4-24 The expression for fractional frequency error is $\frac{\Delta F}{F} = \Delta t/T \times 10^{-6}$ where $\frac{\Delta F}{F}$ is the fractional error in frequency setting between the inputs, Δt is the indicated phase drift expressed in microseconds and T is the elapsed time in seconds. Some related conversion factors are listed here to facilitate calculation:

Time Conversion:

1 minute = 60 sec.

1 hour = 3600 sec.

1 day = 8.64×10^4 sec.

Fractional Frequency Error:

1 μ sec/min = 1.667×10^{-8}

1 μ sec/hr = 2.78×10^{-10}

1 μ sec/day = 1.16×10^{-11}

4-25 To measure the instantaneous fractional frequency error, a tangent line is constructed on the record at the point of interest. Calculations are made using the slope of the tangent line. The total elapsed times may be used for calculating average fractional frequency errors over an extended period. The average slope between end points of the record is the slope of the straight line connecting the end points, regardless of the actual shape of the curve. This is not true when discontinuities are present. The average slope between points

I and F of figure 4-1A may be determined as follows:

(a) To find the total elapsed μsec of phase drift, adopt a sign convention where + time is phase drift with a positive slope. If the record traverses the full-scale range a number of times, count the number of full-scale excursions for the elapsed time. Add to this time the difference between the final value and the initial value to get the total elapsed phase shift: $\Delta t \mu\text{sec}$.

(b) The elapsed clock time for the section of record being used is available from the time scale on the chart paper. This time should be expressed in seconds.

(c) Evaluate $\frac{\Delta t}{t} \times 10^{-6} = \frac{\Delta f}{f}$ to get the average fractional frequency error between signals over the observation interval. Referring to figure 4-1A, there are two full-scale excursions in the record which have negative slope. This is $-20 \mu\text{sec}$ of drift. The difference between final and initial readings is $(3.582 - 2.745) \mu\text{sec}$ or $+0.837 \mu\text{sec}$. The total accumulated drift is $(-20 + 0.837) \mu\text{sec}$ or $-19.163 \mu\text{sec}$. So it can be seen that on the average the SIG input has been low in frequency compared to REF input. The observation period is taken from the chart time scale and shows thirteen hours forty minutes, or 49,200 seconds. The average fractional frequency error is then given by:

$$\frac{\Delta f}{f} = \frac{\Delta t \mu\text{sec}}{t \text{ sec}} \times 10^{-6} = \frac{-19.163}{49,200} \times 10^{-6} = \frac{-19.163 \times 10^{-6}}{4.92 \times 10^4} = -3.89 \times 10^{-10}$$

Recalling that the inputs were nominally 1 mc signals, the difference in frequency between inputs has averaged 3.89×10^{-4} cps over the observation period.

SECTION V

CIRCUIT DESCRIPTION

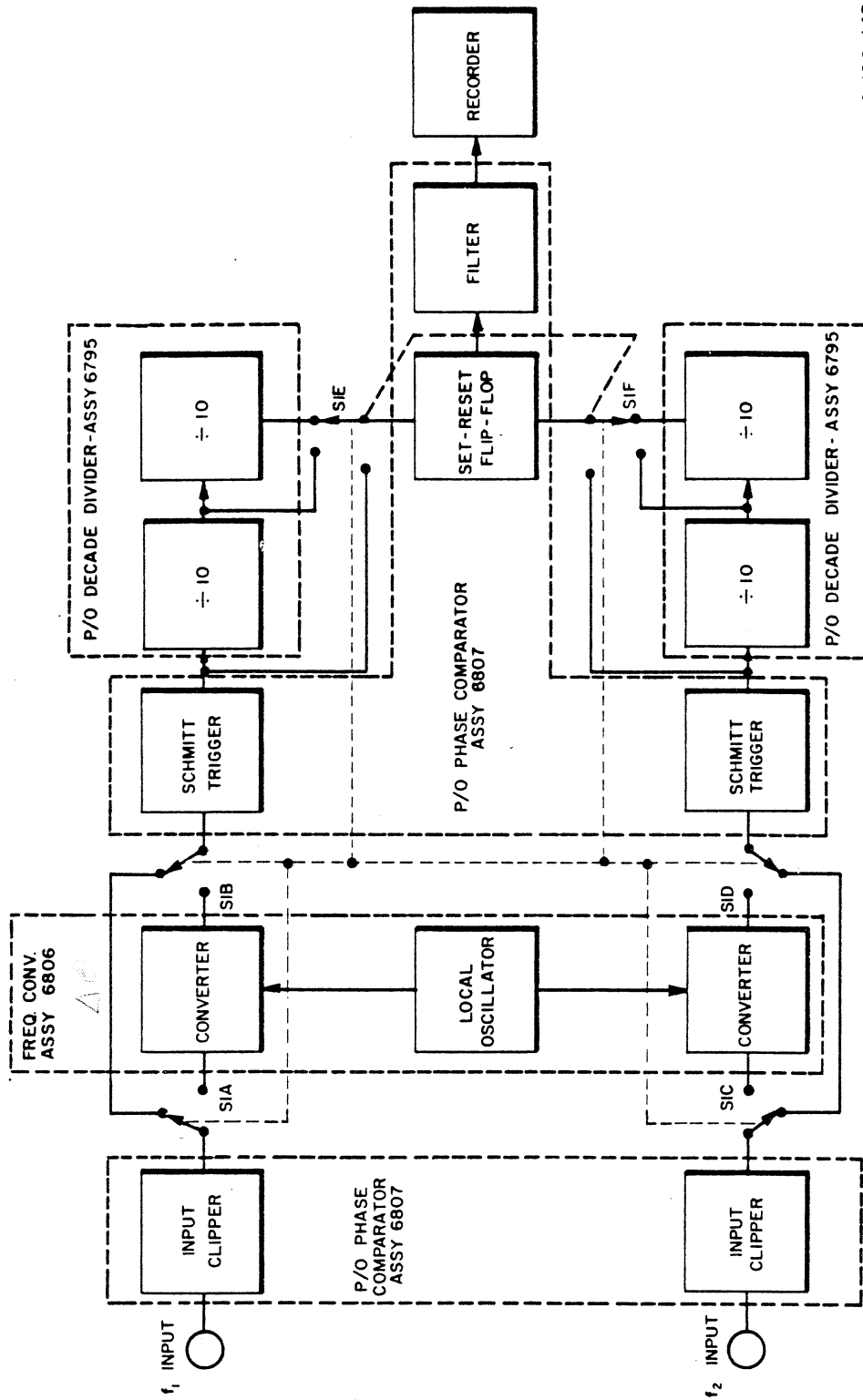
5-1 General

5-2 Figure 5-1 is a simplified block diagram of the TRACOR Model 895A Linear Phase/Time Comparator. Input signals to the unit are shaped by the input clipper circuit so that, despite input levels, a low voltage is delivered to the following circuits.

5-3 Switch S1 determines signal routing from the clipper. In the Δt mode, the clipped signals are applied through the frequency converter to the Schmitt trigger. In the $\Delta \theta$ position of S1, the frequency converter is bypassed and the signals are applied directly to the Schmitt trigger.

5-4 The signals appearing at the Schmitt trigger are converted to a pulse train (essentially a square wave) that drives the decade frequency dividers. Switch S1 selects the signals that will drive the set-reset flip flop, thus determining the full-scale range.

5-5 The set-reset flip flop serves as the phase-comparing element, converting the phase difference between inputs into a proportional average dc voltage. Since the duty cycle of the flip flop pulse train output is a linear function of the time interval between set and reset pulses, the average dc level is also linearly related to this time interval. The phase difference between input signals determines the time interval between set and reset pulses.



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Figure 5-1. Linear Phase/Time Comparator, Block Diagram

5-6 As the phase difference between the input signals varies from 0° to 360° , the average dc value of the flip flop pulse train varies from 0 volts to a voltage near the collector supply potential. The average dc output of the flip flop is thus a simple and direct indication of input phase difference, with full-scale deflection corresponding to 360° or one period.

5-7 It has been pointed out that the average dc level of the flip flop corresponds to angles from 0° to 360° of the input cycle, or to one period of input expressed in time units. If the frequency of both set and reset pulse trains is divided by 10, the flip flop output full-scale excursion will correspond to 10 of the original periods, i.e., the full-scale range will be increased by ten. Similarly, frequency multiplication may be used to decrease the full-scale range in time units with full-scale excursion corresponding to a fraction of the original period. Two decades of division are provided in the Model 895A so that full-scale ranges of one, ten and one hundred periods of the input signal are available.

5-8 The set-reset flip flop can be used as a linear phase comparator only if the flip flop switching times are negligible fractions of the output period. However, when comparing frequencies above 1 mc these switching times are not negligible. In the Model 895A, the frequency converters first multiply the input to 10 mc. If this 10 mc signal were applied directly to the set-reset flip flop, the full-scale range would be 0.1 μ sec, but the linearity would be very poor. Therefore, the 10 mc signal is mixed with a 9.990 mc local oscillator signal to produce a beat frequency at 10 kc. Because the same local oscillator is used for both channels, the effects of oscillator drift

cancel; the amount of phase drift in cycles between the 10 kc signals is the same as the number of cycles of drift between the 10 mc signals. That is, one cycle of 10 mc phase drift results in one cycle of 10 kc phase drift. The full-scale range remains 0.1 μ sec and good linearity is obtained since 10 kc signals are applied to the set-reset flip flop.

5-9 Component Description

5-10 Power Supplies (Interconnecting Diagram 6809)

5-11 The primary power source on PCB Assembly 6794 is a + 10 volt dc regulated supply. Power transformer T1 supplies power through a full-wave bridge (CR2, CR3, CR4, and CR5) to the + 10 volt dc regulator. Capacitor C3 provides filtering at the input of the regulator. Transistor Q1 functions as a series regulator and is driven from a differential amplifier on PCB Assembly 6807. Reference voltage is developed across zener diode VR1. The error signal appears at the base of Q8 through voltage divider R24 and R25. Capacitor C2, PCB Assembly 6794, filters the output of the + 10 volt dc regulator.

5-12 A + 4.5 volt dc source on PCB Assembly 6806 is used in the frequency converter circuit. This voltage is derived from the + 10 volts dc source through a regulator consisting of Q13, Q14 and Q15. Q15 is a series regulator driven by differential amplifier Q13 and Q14. Reference is the voltage at the base of Q14.

5-13 Input Clipper, PCB Assembly 6807, Schematic 6005

5-14 An input clipper circuit is provided for both channels. The clipper for one channel consists of C1, C2, C3, R1, R2 and CR1 through CR4. The coupling capacitors are large, to provide effective operation down to 1 cps. The clipping level is determined by R1, R2 and the resistance connected to the output side of C3. When the input voltage rises above the voltage at the junction of CR2, CR4, and C3, diodes CR1 and CR4 are cut off, disconnecting the source from the clipper output. The upper switching voltage is determined by the ratio of R1 to the clipper load resistance. Similarly, when the input goes below a voltage determined by R2 and the clipper load, CR2 and CR3 are cut off.

5-15 Schmitt Triggers, PCB Assembly 6807

5-16 Each channel is provided with a conventional Schmitt trigger to convert any input waveform to a train of square pulses. The output of each of the regenerative switches is coupled to following stages through a buffer amplifier. One switch consists of Q1, Q2 and associated components. The buffer is Q3. The other switch is Q4, Q5 and associated components, with Q6 the buffer amplifier.

5-17 Decade Divider, PCB Assembly 6791, Schematic 6808

5-18 The decade divider PC board comprises four decade dividers that are split into two channels. Each decade divider consists of four binary flip flops and an amplifier. Since each divider is identical, only the first divider of channel A is discussed in detail.

5-19 A pulse train from buffer amplifier Q6 in the phase comparator is the input to least significant digit (LSD) flip flop Q1-Q2. The four flip flops initially count to 15 (1111). On the 16th pulse, the divider is reset to a count of 6 (0110)

by feedback from Q8. The flip flops continue counting to 15 and are reset to a count of 6 each time, providing one pulse to amplifier Q9 for every 10 input pulses to LSD flip-flop Q1-Q2.

5-20 The output of Q9 is applied through switch S1 to set-reset flip flop Q9-Q10 on PC board 6807. The output of flip flop Q7-Q8 is applied to a second 4-stage divider that further divides by a factor of 10. This second decade divider provides one pulse out for every 100 pulses to LSD flip flop Q1-Q2. The output is applied through S1 to the set-reset flip flop.

5-21 Set-Reset Flip Flop, PCB Assembly 6807

5-22 The flip flop is a conventional bistable circuit consisting of Q9, Q10 and associated components. Triggering pulses are derived from the differentiation of the Schmitt trigger (or decade counter) square-wave outputs. One differentiator consists of C9, R36 and the input impedance of Q11. The other is C11, R41 and the Q12 input impedance. The flip flop is triggered through transistors Q11 and Q12.

5-23 Local Oscillator, PCB Assembly 6806, Schematic 6004

5-24 The local oscillator utilizes a common base amplifier Q16 and frequency control element Y1. Tuning is accomplished with variable capacitor C26. The local oscillator output is buffered through emitter follower Q17.

5-25 Frequency Converter, PCB Assembly 6806

5-26 Only the channel 1 converter will be described in detail. The first operation performed in the converter is a frequency multiplication to 10 mc. The input waveform is converted to a square pulse train by a Schmitt trigger consisting of Q1, Q2 and associated components. The Schmitt trigger drives a common emitter amplifier Q3 that is switched rapidly

between saturation and cutoff. The tuned circuit consisting of L1 and C5 resonates at 10 mc. When Q3 is saturated, the tuned circuit charges and any ringing that occurs is heavily damped. When Q3 cuts off, the tuned circuit that has been charged is allowed to ring freely for several cycles. Thus the waveform at the base of emitter follower Q4 is a pulse train in which each pulse consists of several cycles of a 10 mc damped sine wave. The repetition rate of the pulse train depends on the input frequency. As a result, the phase of the 10 mc component of the signal advances or retards with the input signal. However, the frequency of each individual burst of 10 mc oscillation is independent of the input signal.

5-27 The local oscillator signal at 9.990 mc and the 10 mc signal from Q4 are mixed in Q5. The collector circuit of Q5 is a 10 kc filter consisting of C7, L2, L3, L4 and C10. Output from this stage is a 10 kc sine wave. Emitter follower Q6 serves as a buffer stage at the output of the converter.

SECTION VI
MAINTENANCE

6-1 Table 6-1 is a list of recommended test equipment. Other test instruments having performance comparable to those listed may be used.

TABLE 6-1
Recommended Test Equipment

INSTRUMENT TYPE	RECOMMENDED INSTRUMENT
Oscilloscope	Tektronix Type
D.C. Voltmeter	Simpson Model 260
Signal Source	Any standard frequency
	signal source
Circuit Extender Board	

6-2 Removal of Cover

6-3 Loosen and remove the four 4-40 binding head screws at the top of the unit. Slide the top cover toward the back and lift off.

6-4 Normal Waveforms

6-5 Waveforms and voltages listed in Table 6-2 are obtained under the following operating conditions:

- a. Unit operating from 105-130 volts ac power.
- b. Inputs are standard frequency, 100 kc. (Voltages that depend on the input frequency are specified for several different frequencies.)
- c. MODE/RANGE set to $\Delta t = 10 \mu\text{sec}$.
- d. FILTER set to OUT.

TABLE 6-2
 DC Supply Voltages

TEST POINT	VOLTAGE
PCB Assembly 6794, Q1 collector	9.9-11.7VDC
PCB Assembly 6806, Q13 Base	4.6-5.6VDC

6-6 WAVEFORMS:

6-7 The following waveforms are those for operation with 100 kc inputs, standard mode, and full-scale range at 0.1 μ sec.

Test Point

PCB Assembly 6806, Q6 and Q12
 Emitters (See Figure 6-1)

PCB Assembly 6806, L1 and L5
 (See Figure 6-1)

PCB Assembly 6806, Q17 emitter
 (See Figure 6-1)

PCB Assembly 6807, Q9 and Q10
 Collectors (See Figure 6-1)

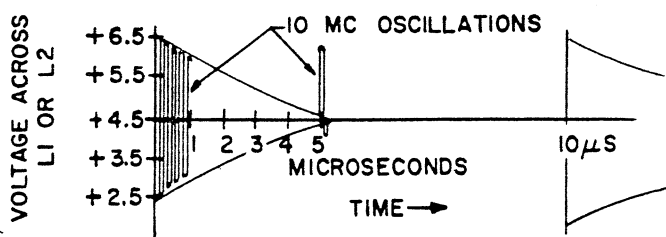
Waveform

10 kc, 0.7-2.5 volts
 p-p (3.2 volts p-p
 for 1 mc inputs).
 DC level, 4.5 volts.

Pulses of damped
 sine wave. See
 sketch below.

9.99 mc, 2.5-7.5
 volts p-p. DC level,
 4.5 volts.

Square Pulse Train
 of variable duty
 cycle; 5.6 volts max;
 0.2 volts min.
 Rise time 75 ns.
 Fall time 40 ns.



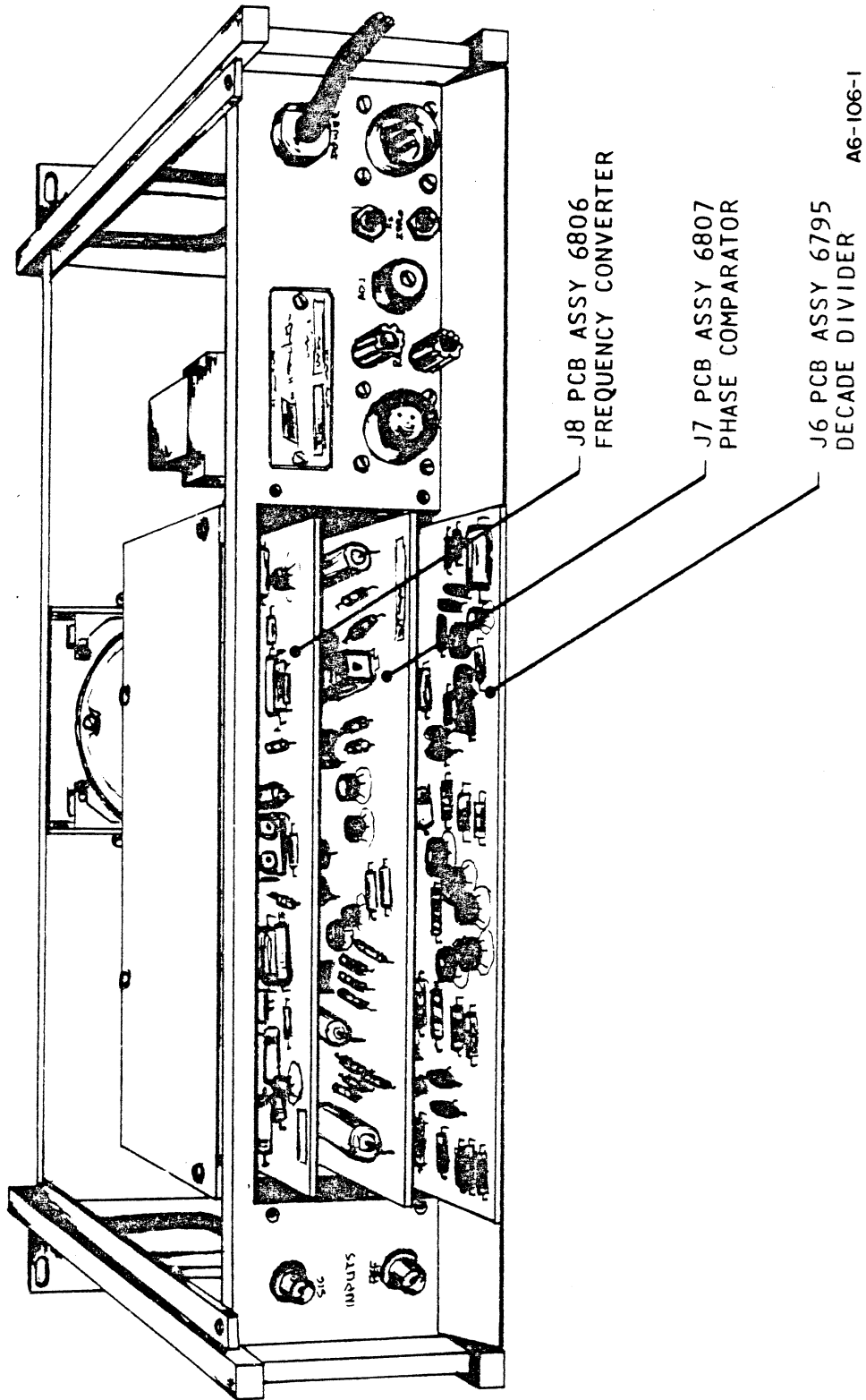


Figure 6-1. Linear Phase/Time Comparator,
Assembly Location

6-8 Paper Loading Instructions

- a. Insert hub (no gear) into full paper roll from perforated side.
- b. Remove tape and save. Hold supply roll in left hand with back side up and unreel approximately 8 inches of paper. Loop paper under brake shoe, over main spacer and time drum, between pointer and striker bar, behind pointer guard, then over top roller, all of this to be done with L.H. paper edge only about one inch to the left of R.H. side plate. Then slide paper into place from right to left.
- c. Insert paper supply roll under brake shoe and into slots. Align paper holes into time drum projections and take up slack to supply roll.
- d. Insert hub (with gear) into cardboard tube. Place reroll assembly in slots and check placement of springs at end of roller. Both springs should bear on roller shaft.
- e. To set time, push gear assembly (on L.H. side) in direction of arrow and hold. This disengages gear train to motor, allowing time drum to rotate freely. Pull paper over top roller until the correct time line minus 2 hours just comes into view at top roller. Allow gear train to re-engage.
- f. Cut or tear off excess paper, leaving just enough to reach to the approximate center of the re-roll spool. Tape this end to re-roll spool. Use tape retained in Step 2. Keep edges of paper even with edges of re-roll spool and reasonably straight and true.
- g. Recheck paper hole alignment with time drum projections; make paper snug all the way through. (Take up slack on both sides of time drum by hand-turning appropriate roll.)

h. Recheck time. Fine adjustment may be made now by disengaging gear train (L.H. side) and hand-turning appropriate roller (supply roll or take-up roll). Again check slack and time drum projection alignment; also check that gear train is engaged. If large changes in time are to be made it is best to remove the re-roll spool as well as releasing the gear assembly. This, of course, disengages the gear train going to the re-roll spool. For advancing time (moving paper through in the forward direction) it is most desirable to remove re-roll spool.

6-9 Following above directions will insure proper paper feed. There is no other attention necessary until paper supply runs out. We suggest that, approximately 15 minutes after reloading, a check be made to see that the paper is traveling properly.

SECTION VII

REPLACEABLE PARTS

7-1. SCOPE OF SECTION.

7-2. This section provides the necessary information for identification of all replaceable parts for the Linear Phase/Time Comparator Model 895A. The section consists of an item reference designation index, a list of replaceable parts, a list of federal supply codes for manufacturers, and ordering information.

7-3. ITEM/REFERENCE DESIGNATION.

7-4. An index of item/reference designations for the Linear Phase/Time Comparator is presented in Table 7-1. Information in the table includes item number, reference designation, TRACOR stock number, description, and assembly stock number, presented in that order.

7-5. ITEM NUMBER.

7-6. An Item Number is assigned to identify each part in a particular assembly from other parts within that same assembly. Identical parts within an assembly have the same Item Number. Item Numbers are shown encircled on the assembly drawings in Section VIII and point to the part that they identify.

7-7. REFERENCE DESIGNATION.

7-8. The Reference Designation is an alpha numeric assigned to each assembly and to electrical components within an assembly.

Reference Designations are obtained by referring to the schematic diagram or assembly drawings in Section VIII, or by markings on the assembly.

7-9. TRACOR STOCK NUMBER.

7-10. A TRACOR Stock Number is assigned to every replaceable part on the instrument. Identical parts have identical stock numbers.

7-11. PART DESCRIPTION.

7-12. All parts are described using the noun-modifier method. For example, a 2000 ohm variable resistor is described as: resistor, variable, 2K.

7-13. ASSEMBLY STOCK NUMBER.

7-14. The Assembly Stock Number is the number assigned to a particular assembly to identify it from other assemblies within the instrument. Assembly Stock Numbers are identical to assembly drawing numbers and are listed on the assembly drawings in Section VIII.

7-15. USE OF ITEM/REFERENCE DESIGNATION INDEX.

7-16. The Item/Reference Designation Index is divided into subsections which correspond to each assembly in the instrument. The subsections are listed in numerical order by Assembly Stock Number. Parts are listed in each subsection as follows:

1. Parts having no Reference Designation assigned are listed first, in numeric order, by Item Number.
2. Parts having Reference Designations assigned are

listed last, in alpha-numeric order, by Reference Designation.

7-17. To locate a specific part within the Item/Reference Designation Index (Table 7-1), proceed as follows:

- a. Obtain the number and/or the name of the assembly that contains the part. (Refer to the assembly drawing in Section VIII.)
- b. Obtain the Reference Designation or the Item Number for the part. (Refer to the schematic diagram or assembly drawing in Section VIII.)
- c. Locate the subsection which corresponds to the assembly in the Item/Reference Designation Index.
- d. Locate the part within the subsection by Item Number or Reference Designation.

NOTE

The use of an opaque straight-edge, ruler, or sheet of paper under the row being examined will reduce reading errors in multi-column indexes.

7-18. REPLACEABLE PARTS.

7-19. A list of replaceable parts for the Linear Phase/Time Comparator is presented in Table 7-2. Information in the table includes the TRACOR Stock Number, part description, manufacturer code, manufacturer part number, and the total quantity and unit of measure for a given part in the complete instrument, presented in that order. The parts are listed in numerical order by TRACOR Stock Number.

- 7-20. To locate a part in the List of Replaceable Parts (Table 7-2), proceed as follows:
- a. Obtain the TRACOR Stock Number by referring to the Item/Reference Designation Index (Table 7-1). See paragraph 7-17.
 - b. Locate the TRACOR Stock Number in the appropriate column of the List of Replaceable Parts.

NOTE

Units with serial number 895A-030 and below may utilize 1N662 diode, TRACOR Stock Number 800-0662, rather than diode 1N914, TRACOR Stock Number 800-0914, as listed in Table 7-2.

7-21. LIST OF FEDERAL SUPPLY CODES FOR MANUFACTURERS.

7-22. A list of federal supply codes for manufacturers supplying parts for the Linear Phase/Time Comparator is provided in Table 7-3. Information in the table includes the manufacturer code number, manufacturer's name, and manufacturer's address, presented in that order. The manufacturers are listed in numerical order by code number.

- 7-23. To locate the manufacturer of a part, proceed as follows:
- a. Obtain the manufacturer code number by referring to the List of Replaceable Parts (Table 7-2).
 - b. Locate the code number in the appropriate column of the List of Federal Supply Codes for Manufacturers (Table 7-3).

7-24. ORDERING INFORMATION.

7-25. Address orders or inquiries either to an authorized TRACOR, Inc. Sales Representative or to:

Customer Services
TRACOR, Inc.
6500 Tracor Lane
Austin, Texas 78721

7-26. To insure prompt service, orders must include the following information:

1. Name, model and serial number of the instrument.
2. Assembly or sub-assembly name and/or number.
3. Reference Designation. If no reference designation is listed, include the Item Number.
4. The TRACOR Stock Number.
5. The full description of the Part.

7-27. Item 1 is found on the instrument; item 2 may be found on either the assembly itself or in the pertinent section of the Item/Reference Designation Index (Table 7-1); and items 3, 4, and 5 are found in the Item/Reference Designation Index.

7-28. The part numbers shown will change occasionally as manufacturers' items are re-evaluated or as improved components become available. The component shipped will be the component used in production at the time the order is received, and it will be equivalent to the component it replaces in both dimensions and performance.

Table 7-1. Item/Reference Designation Index

ITEM NUMBER	REFERENCE DESIGNATION	T R A C O R STOCK NUMBER	DESCRIPTION	STOCK NUMBER USED ON
			BOARD PC ASSY PWR SUP	6794
1		175-0024	SCR BND HD 4 40X3/8	6794
3		610-0154	TERMINAL SOLDER	6794
4		617-0256	WASHER FLAT	6794
5		620-0123	WASHER INT LOCK NO 4	6794
8		3326-0043	RIVET POP	6794
9		3331-0036	NUT CLINCH	6794
11		3571-0753	STRAP	6794
14		5596-0048	STANDOFF 1/4DX3/4	6794
15		6792	BOARD PRINTED CIRCUIT	6794
16		6A00	BRACKET	6794
17		175-0020	SCR BND HD 4-40X5/16	6794
18		3763-0021	WASHER SHOULDER	6794
19		617-0277	WASHER FLAT	6794
20		649-0164	NUT HEX	6794
21		643-0014	WASHER FLAT	6794
22		649-0074	NUT 4-40	6794
10	C 1	3354-9102	CAP FXD MYLAR 600V	6794
12	C 2	3890-0033	CAP 1000MF 25V	6794
12	C 3	3890-0033	CAP 1000MF 25V	6794
7	Q 1	900-2552	TSTR 2N2552	6794
2	R 2	200-0101	RES 100 OHM 1/4 W	6794
13	T 1	3891-0001	XFMR 115V 12X6CT SEC	6794
0	CR 1	800-4001	DIODE 1N4001	6794
6	CR 2	800-4001	DIODE 1N4001	6794
6	CR 3	800-4001	DIODE 1N4001	6794
6	CR 4	800-4001	DIODE 1N4001	6794
0	CR 5	800-4001	DIODE 1N4001	6794
			PCB ASSY DECADE DIV	6795
10		3326-0046	POP RIVET	6795
11		6791	BOARD PRINTED CIRCUIT	6795
16		8819-0022	WIRE BUS AWG 22	6795
15	C 1	27512-0220	CAP 22PF 500V	6795
15	C 2	27512-0220	CAP 22PF 500V	6795
15	C 3	27512-0220	CAP 22PF 500V	6795
15	C 4	27512-0220	CAP 22PF 500V	6795
15	C 5	27512-0220	CAP 22PF 500V	6795
15	C 6	27512-0220	CAP 22PF 500V	6795
15	C 7	27512-0220	CAP 22PF 500V	6795
15	C 8	27512-0220	CAP 22PF 500V	6795
15	C 9	27512-0220	CAP 22PF 500V	6795
15	C 10	27512-0220	CAP 22PF 500V	6795
15	C 11	27512-0220	CAP 22PF 500V	6795
15	C 12	27512-0220	CAP 22PF 500V	6795
15	C 13	27512-0220	CAP 22PF 500V	6795
15	C 14	27512-0220	CAP 22PF 500V	6795
15	C 15	27512-0220	CAP 22PF 500V	6795
15	C 16	27512-0220	CAP 22PF 500V	6795
15	C 17	27512-0220	CAP 22PF 500V	6795
15	C 18	27512-0220	CAP 22PF 500V	6795
15	C 19	27512-0220	CAP 22PF 500V	6795
15	C 20	27512-0220	CAP 22PF 500V	6795
15	C 21	27512-0220	CAP 22PF 500V	6795
15	C 22	27512-0220	CAP 22PF 500V	6795
15	C 23	27512-0220	CAP 22PF 500V	6795
15	C 24	27512-0220	CAP 22PF 500V	6795
15	C 25	27512-0220	CAP 22PF 500V	6795
15	C 26	27512-0220	CAP 22PF 500V	6795
15	C 27	27512-0220	CAP 22PF 500V	6795
15	C 28	27512-0220	CAP 22PF 500V	6795
15	C 29	27512-0220	CAP 22PF 500V	6795
15	C 30	27512-0220	CAP 22PF 500V	6795
15	C 31	27512-0220	CAP 22PF 500V	6795
15	C 32	27512-0220	CAP 22PF 500V	6795
15	C 33	27512-0220	CAP 22PF 500V	6795
15	C 34	27512-0220	CAP 22PF 500V	6795
15	C 35	27512-0220	CAP 22PF 500V	6795
15	C 36	27512-0220	CAP 22PF 500V	6795
15	C 37	27512-0220	CAP 22PF 500V	6795
15	C 38	27512-0220	CAP 22PF 500V	6795
15	C 39	27512-0220	CAP 22PF 500V	6795

Table 7-1. Continued

ITEM NUMBER	REFERENCE DESIGNATION	T R A C O R STOCK NUMBER	DESCRIPTION	STOCK NUMBER USED ON
15	C 40	27512-0220	CAP 22PF 500V	6795
15	C 41	27512-0220	CAP 22PF 500V	6795
15	C 42	27512-0220	CAP 22PF 500V	6795
15	C 43	27512-0220	CAP 22PF 500V	6795
15	C 44	27512-0220	CAP 22PF 500V	6795
15	C 45	27512-0220	CAP 22PF 500V	6795
15	C 46	27512-0220	CAP 22PF 500V	6795
15	C 47	27512-0220	CAP 22PF 500V	6795
15	C 48	27512-0220	CAP 22PF 500V	6795
15	C 49	27512-0220	CAP 22PF 500V	6795
15	C 50	27512-0220	CAP 22PF 500V	6795
15	C 51	27512-0220	CAP 22PF 500V	6795
15	C 52	27512-0220	CAP 22PF 500V	6795
15	C 53	27512-0220	CAP 22PF 500V	6795
15	C 54	27512-0220	CAP 22PF 500V	6795
15	C 55	27512-0220	CAP 22PF 500V	6795
15	C 56	27512-0220	CAP 22PF 500V	6795
15	C 57	27512-0220	CAP 22PF 500V	6795
15	C 58	27512-0220	CAP 22PF 500V	6795
15	C 59	27512-0220	CAP 22PF 500V	6795
15	C 60	27512-0220	CAP 22PF 500V	6795
15	C 61	27512-0220	CAP 22PF 500V	6795
15	C 62	27512-0220	CAP 22PF 500V	6795
15	C 63	27512-0220	CAP 22PF 500V	6795
15	C 64	27512-0220	CAP 22PF 500V	6795
15	C 65	27512-0220	CAP 22PF 500V	6795
15	C 66	27512-0220	CAP 22PF 500V	6795
15	C 67	27512-0220	CAP 22PF 500V	6795
15	C 68	27512-0220	CAP 22PF 500V	6795
15	C 69	27512-0220	CAP 22PF 500V	6795
15	C 70	27512-0220	CAP 22PF 500V	6795
15	C 71	27512-0220	CAP 22PF 500V	6795
15	C 72	27512-0220	CAP 22PF 500V	6795
15	C 73	27512-0220	CAP 22PF 500V	6795
15	C 74	27512-0220	CAP 22PF 500V	6795
15	C 75	27512-0220	CAP 22PF 500V	6795
15	C 76	27512-0220	CAP 22PF 500V	6795
14	C 77	8918-0560	CAP 56MFD 6V	6795
13	C 78	8917-0101	CAP 100MFD 10V	6795
9	P 1	3318-0028	CONNECTOR	6795
8	Q 1	900-3646	TSTR 2N3646 NPN S1	6795
8	Q 2	900-3646	TSTR 2N3646 NPN S1	6795
8	Q 3	900-3646	TSTR 2N3646 NPN S1	6795
8	Q 4	900-3646	TSTR 2N3646 NPN S1	6795
8	Q 5	900-3646	TSTR 2N3646 NPN S1	6795
8	Q 6	900-3646	TSTR 2N3646 NPN S1	6795
8	Q 7	900-3646	TSTR 2N3646 NPN S1	6795
8	Q 8	900-3646	TSTR 2N3646 NPN S1	6795
8	Q 9	900-3646	TSTR 2N3646 NPN S1	6795
8	Q 10	900-3646	TSTR 2N3646 NPN S1	6795
8	Q 11	900-3646	TSTR 2N3646 NPN S1	6795
8	Q 12	900-3646	TSTR 2N3646 NPN S1	6795
8	Q 13	900-3646	TSTR 2N3646 NPN S1	6795
8	Q 14	900-3646	TSTR 2N3646 NPN S1	6795
8	Q 15	900-3646	TSTR 2N3646 NPN S1	6795
8	Q 16	900-3646	TSTR 2N3646 NPN S1	6795
8	Q 17	900-3646	TSTR 2N3646 NPN S1	6795
8	Q 18	900-3646	TSTR 2N3646 NPN S1	6795
8	Q 19	900-3646	TSTR 2N3646 NPN S1	6795
8	Q 20	900-3646	TSTR 2N3646 NPN S1	6795
8	Q 21	900-3646	TSTR 2N3646 NPN S1	6795
8	Q 22	900-3646	TSTR 2N3646 NPN S1	6795
8	Q 23	900-3646	TSTR 2N3646 NPN S1	6795
8	Q 24	900-3646	TSTR 2N3646 NPN S1	6795
8	Q 25	900-3646	TSTR 2N3646 NPN S1	6795
8	Q 26	900-3646	TSTR 2N3646 NPN S1	6795
8	Q 27	900-3646	TSTR 2N3646 NPN S1	6795
8	Q 28	900-3646	TSTR 2N3646 NPN S1	6795
8	Q 29	900-3646	TSTR 2N3646 NPN S1	6795
8	Q 30	900-3646	TSTR 2N3646 NPN S1	6795
8	Q 31	900-3646	TSTR 2N3646 NPN S1	6795
8	Q 32	900-3646	TSTR 2N3646 NPN S1	6795
8	Q 33	900-3646	TSTR 2N3646 NPN S1	6795
8	Q 34	900-3646	TSTR 2N3646 NPN S1	6795
8	Q 35	900-3646	TSTR 2N3646 NPN S1	6795
8	Q 36	900-3646	TSTR 2N3646 NPN S1	6795
1	R 1	200-0100	RES 10 1/4W	6795

Table 7-1. Continued

ITEM NUMBER	REFERENCE DESIGNATION	T R A C O R STOCK NUMBER	DESCRIPTION	STOCK NUMBER USED ON
5	R 2	200-0472	RES 4X7K 1/4W	6795
2	R 3	200-0103	RES 10K 1/4W	6795
2	R 4	200-0103	RES 10K 1/4W	6795
4	R 5	200-0223	RES 22K 1/4W	6795
5	R 6	200-0472	RES 4X7K 1/4W	6795
2	R 7	200-0103	RES 10K 1/4W	6795
2	R 8	200-0103	RES 10K 1/4W	6795
4	R 9	200-0223	RES 22K 1/4W	6795
5	R 10	200-0472	RES 4X7K 1/4W	6795
2	R 11	200-0103	RES 10K 1/4W	6795
6	R 12	200-0473	RES 47K 1/4W	6795
2	R 13	200-0103	RES 10K 1/4W	6795
4	R 14	200-0223	RES 22K 1/4W	6795
5	R 15	200-0472	RES 4X7K 1/4W	6795
2	R 16	200-0103	RES 10K 1/4W	6795
4	R 17	200-0223	RES 22K 1/4W	6795
2	R 18	200-0103	RES 10K 1/4W	6795
5	R 19	200-0472	RES 4X7K 1/4W	6795
2	R 20	200-0103	RES 10K 1/4W	6795
6	R 21	200-0473	RES 47K 1/4W	6795
2	R 22	200-0103	RES 10K 1/4W	6795
4	R 23	200-0223	RES 22K 1/4W	6795
5	R 24	200-0472	RES 4X7K 1/4W	6795
2	R 25	200-0103	RES 10K 1/4W	6795
2	R 26	200-0103	RES 10K 1/4W	6795
4	R 27	200-0223	RES 22K 1/4W	6795
5	R 28	200-0472	RES 4X7K 1/4W	6795
2	R 29	200-0103	RES 10K 1/4W	6795
2	R 30	200-0103	RES 10K 1/4W	6795
4	R 31	200-0223	RES 22K 1/4W	6795
5	R 32	200-0472	RES 4X7K 1/4W	6795
2	R 33	200-0103	RES 10K 1/4W	6795
2	R 34	200-0103	RES 10K 1/4W	6795
4	R 35	200-0223	RES 22K 1/4W	6795
5	R 36	200-0472	RES 4X7K 1/4W	6795
2	R 37	200-0103	RES 10K 1/4W	6795
5	R 38	200-0472	RES 4X7K 1/4W	6795
2	R 39	200-0103	RES 10K 1/4W	6795
4	R 40	200-0223	RES 22K 1/4W	6795
2	R 41	200-0103	RES 10K 1/4W	6795
5	R 42	200-0472	RES 4X7K 1/4W	6795
2	R 43	200-0103	RES 10K 1/4W	6795
4	R 44	200-0223	RES 22K 1/4W	6795
2	R 45	200-0103	RES 10K 1/4W	6795
5	R 46	200-0472	RES 4X7K 1/4W	6795
2	R 47	200-0103	RES 10K 1/4W	6795
6	R 48	200-0473	RES 47K 1/4W	6795
2	R 49	200-0103	RES 10K 1/4W	6795
4	R 50	200-0223	RES 22K 1/4W	6795
5	R 51	200-0472	RES 4X7K 1/4W	6795
2	R 52	200-0103	RES 10K 1/4W	6795
4	R 53	200-0223	RES 22K 1/4W	6795
2	R 54	200-0103	RES 10K 1/4W	6795
5	R 55	200-0472	RES 4X7K 1/4W	6795
2	R 56	200-0103	RES 10K 1/4W	6795
6	R 57	200-0473	RES 47K 1/4W	6795
2	R 58	200-0103	RES 10K 1/4W	6795
4	R 59	200-0223	RES 22K 1/4W	6795
5	R 60	200-0472	RES 4X7K 1/4W	6795
2	R 61	200-0103	RES 10K 1/4W	6795
4	R 62	200-0223	RES 22K 1/4W	6795
2	R 63	200-0103	RES 10K 1/4W	6795
5	R 64	200-0472	RES 4X7K 1/4W	6795
2	R 65	200-0103	RES 10K 1/4W	6795
2	R 66	200-0103	RES 10K 1/4W	6795
4	R 67	200-0223	RES 22K 1/4W	6795
5	R 68	200-0472	RES 4X7K 1/4W	6795
2	R 69	200-0103	RES 10K 1/4W	6795
4	R 70	200-0223	RES 22K 1/4W	6795
2	R 71	200-0103	RES 10K 1/4W	6795
5	R 72	200-0472	RES 4X7K 1/4W	6795
2	R 73	200-0103	RES 10K 1/4W	6795
5	R 74	200-0472	RES 4X7K 1/4W	6795
2	R 75	200-0103	RES 10K 1/4W	6795
2	R 76	200-0103	RES 10K 1/4W	6795
4	R 77	200-0223	RES 22K 1/4W	6795
5	R 78	200-0472	RES 4X7K 1/4W	6795

Table 7-1. Continued

ITEM NUMBER	REFERENCE DESIGNATION	T R A C O R STOCK NUMBER	DESCRIPTION	STOCK NUMBER USED ON
2	R 79	200-0103	RES 10K 1/4W	6795
4	R 80	200-0223	RES 22K 1/4W	6795
2	R 81	200-0103	RES 10K 1/4W	6795
5	R 82	200-0472	RES 4X7K 1/4W	6795
2	R 83	200-0103	RES 10K 1/4W	6795
6	R 84	200-0473	RES 47K 1/4W	6795
2	R 85	200-0103	RES 10K 1/4W	6795
4	R 86	200-0223	RES 22K 1/4W	6795
5	R 87	200-0472	RES 4X7K 1/4W	6795
2	R 88	200-0103	RES 10K 1/4W	6795
4	R 89	200-0223	RES 22K 1/4W	6795
2	R 90	200-0103	RES 10K 1/4W	6795
5	R 91	200-0472	RES 4X7K 1/4W	6795
2	R 92	200-0103	RES 10K 1/4W	6795
6	R 93	200-0473	RES 47K 1/4W	6795
2	R 94	200-0103	RES 10K 1/4W	6795
4	R 95	200-0223	RES 22K 1/4W	6795
5	R 96	200-0472	RES 4X7K 1/4W	6795
2	R 97	200-0103	RES 10K 1/4W	6795
4	R 98	200-0223	RES 22K 1/4W	6795
2	R 99	200-0103	RES 10K 1/4W	6795
5	R 100	200-0472	RES 4X7K 1/4W	6795
2	R 101	200-0103	RES 10K 1/4W	6795
2	R 102	200-0103	RES 10K 1/4W	6795
4	R 103	200-0223	RES 22K 1/4W	6795
5	R 104	200-0472	RES 4X7K 1/4W	6795
2	R 105	200-0103	RES 10K 1/4W	6795
4	R 106	200-0223	RES 22K 1/4W	6795
2	R 107	200-0103	RES 10K 1/4W	6795
5	R 108	200-0472	RES 4X7K 1/4W	6795
2	R 109	200-0103	RES 10K 1/4W	6795
5	R 110	200-0472	RES 4X7K 1/4W	6795
2	R 111	200-0103	RES 10K 1/4W	6795
2	R 112	200-0103	RES 10K 1/4W	6795
4	R 113	200-0223	RES 22K 1/4W	6795
5	R 114	200-0472	RES 4X7K 1/4W	6795
2	R 115	200-0103	RES 10K 1/4W	6795
4	R 116	200-0223	RES 22K 1/4W	6795
2	R 117	200-0103	RES 10K 1/4W	6795
5	R 118	200-0472	RES 4X7K 1/4W	6795
2	R 119	200-0103	RES 10K 1/4W	6795
6	R 120	200-0473	RES 47K 1/4W	6795
2	R 121	200-0103	RES 10K 1/4W	6795
4	R 122	200-0223	RES 22K 1/4W	6795
5	R 123	200-0472	RES 4X7K 1/4W	6795
2	R 124	200-0103	RES 10K 1/4W	6795
4	R 125	200-0223	RES 22K 1/4W	6795
2	R 126	200-0103	RES 10K 1/4W	6795
5	R 127	200-0472	RES 4X7K 1/4W	6795
2	R 128	200-0103	RES 10K 1/4W	6795
6	R 129	200-0473	RES 47K 1/4W	6795
2	R 130	200-0103	RES 10K 1/4W	6795
4	R 131	200-0223	RES 22K 1/4W	6795
5	R 132	200-0472	RES 4X7K 1/4W	6795
2	R 133	200-0103	RES 10K 1/4W	6795
4	R 134	200-0223	RES 22K 1/4W	6795
2	R 135	200-0103	RES 10K 1/4W	6795
5	R 136	200-0472	RES 4X7K 1/4W	6795
2	R 137	200-0103	RES 10K 1/4W	6795
2	R 138	200-0103	RES 10K 1/4W	6795
4	R 139	200-0223	RES 22K 1/4W	6795
5	R 140	200-0472	RES 4X7K 1/4W	6795
2	R 141	200-0103	RES 10K 1/4W	6795
4	R 142	200-0223	RES 22K 1/4W	6795
2	R 143	200-0103	RES 10K 1/4W	6795
5	R 144	200-0472	RES 4X7K 1/4W	6795
2	R 145	200-0103	RES 10K 1/4W	6795
3	R 146	200-0180	RES 18 1/4W	6795
6	R 147	200-0473	RES 47K 1/4W	6795
6	R 148	200-0473	RES 47K 1/4W	6795
6	R 149	200-0473	RES 47K 1/4W	6795
6	R 150	200-0473	RES 47K 1/4W	6795
7	CR 1	800-0914	DIODE IN914	6795
7	CR 2	800-0914	DIODE IN914	6795
7	CR 3	800-0914	DIODE IN914	6795
7	CR 4	800-0914	DIODE IN914	6795
7	CR 5	800-0914	DIODE IN914	6795

Table 7-1. Continued

ITEM NUMBER	REFERENCE DESIGNATION	T R A C O R STOCK NUMBER	DESCRIPTION	STOCK NUMBER USED ON
7	CR 6	800-0914	DIODE IN914	6795
7	CR 7	800-0914	DIODE IN914	6795
7	CR 8	800-0914	DIODE IN914	6795
7	CR 9	800-0914	DIODE IN914	6795
7	CR 10	800-0914	DIODE IN914	6795
7	CR 11	800-0914	DIODE IN914	6795
7	CR 12	800-0914	DIODE IN914	6795
7	CR 13	800-0914	DIODE IN914	6795
7	CR 14	800-0914	DIODE IN914	6795
7	CR 15	800-0914	DIODE IN914	6795
7	CR 16	800-0914	DIODE IN914	6795
7	CR 17	800-0914	DIODE IN914	6795
7	CR 18	800-0914	DIODE IN914	6795
7	CR 19	800-0914	DIODE IN914	6795
7	CR 20	800-0914	DIODE IN914	6795
7	CR 21	800-0914	DIODE IN914	6795
7	CR 22	800-0914	DIODE IN914	6795
7	CR 23	800-0914	DIODE IN914	6795
7	CR 24	800-0914	DIODE IN914	6795
7	CR 25	800-0914	DIODE IN914	6795
7	CR 26	800-0914	DIODE IN914	6795
7	CR 27	800-0914	DIODE IN914	6795
7	CR 28	800-0914	DIODE IN914	6795
7	CR 29	800-0914	DIODE IN914	6795
7	CR 30	800-0914	DIODE IN914	6795
7	CR 31	800-0914	DIODE IN914	6795
7	CR 32	800-0914	DIODE IN914	6795
7	CR 33	800-0914	DIODE IN914	6795
7	CR 34	800-0914	DIODE IN914	6795
7	CR 35	800-0914	DIODE IN914	6795
7	CR 36	800-0914	DIODE IN914	6795
7	CR 37	800-0914	DIODE IN914	6795
7	CR 38	800-0914	DIODE IN914	6795
7	CR 39	800-0914	DIODE IN914	6795
7	CR 40	800-0914	DIODE IN914	6795
			FNL ASSY MODEL 895A	6796
2		147-0024	SCREW FH 8-32X3/8	6796
3		142-0020	SCREW FH 2-56X5/16	6796
4		175-0016	SCREW BH 4-40X1/4	6796
5		175-0024	SCREW BH 4-40X3/8	6796
6		177-0032	SCREW BH 6-32X1/2	6796
8		617-0256	WASH FLAT NO 4	6796
10		620-0123	WASH LOCK INT NO 4	6796
11		620-0125	WASH LOCK INT NO 6	6796
12		649-0074	NUT HEX 4-40	6796
13		649-0114	NUT HEX 6-32	6796
14		658-0016	SCR FH UNCT 4-40X1/4	6796
15		3326-0032	RIVET POP 3/32X212	6796
16		3326-0046	RIVET POP 1/8X481	6796
17		3331-0027	NUT CLINCH 4-40/2	6796
18		3331-0037	NUT CLINCH 6-32	6796
20		3455-0834	CLAMP CABLE 5/16 IN	6796
21		3458-0024	KNOB	6796
22		3458-0188	KNOB W/POINTER	6796
23		3467-0028	CABLE POWER VINYL	6796
24		3472-0001	LOCK SHAFT BLACK	6796
25		3486-0027	LUG SOLDER 3/8 ID	6796
28		3624-0006	LUG SOLDER	6796
29		3625-2002	NUT CLINCH 4-40	6796
33		3805-0031	BOLT SPADE 4-40	6796
36		3892-0005	GUIDES PCB	6796
37		5002	PLATE SIDE	6796
40		6034	HANDLE	6796
41		11392	BRACKET MOUNTING	6796
42		6059	COVER	6796
43		6060	COVER SIDE PLATE	6796
44		6152	PLATE IDENTIFICATION	6796
47		6797	RACK CARD	6796
48		6798	TRAY COMPONENT	6796
49		6799	SHIELD/BRACE	6796
50		6801	SHIELD	6796
51		11399	PANEL FRONT	6796
52		6803	PANEL REAR	6796
53		6804	PLATE COVER	6796

Table 7-1. Continued

ITEM NUMBER	REFERENCE DESIGNATION	T R A C O R STOCK NUMBER	DESCRIPTION	STOCK NUMBER USED ON
63		32115-0062	CLAMP CABLE	
66		3326-0042	RIVET POP 1/8X212	6796
54	A 1	6805	HARNESS WIRING ASSY	6796
45	A 2	6794	PCB ASSY POWER SUPPLY	6796
46	A 3	6795	PCB ASSY DECADE DIV	6796
55	A 4	6806	PCB ASSY FREQ CONV	6796
56	A 5	6807	PCB ASSY COMPARATOR	6796
60	A 6	6912	ACCESSORY PARTS SET	6796
66	A 7	8861	PCB ASSY FILTER	6796
19	F 1	334A-9502	FUSE 1/2 A 3AG	6796
19	F 2	334B-9502	FUSE 1/2 A 3AG	6796
65	J 1	33747	CONNECTOR UG 625/U	6796
65	J 2	33747	CONNECTOR UG 625/U	6796
30	J 3	3629-0102	RINDING POST RED	6796
31	J 4	3629-0103	RINDING POST BLACK	6796
65	J 5	33747	CONNECTOR UG 625/U	6796
65	J 9	33747	CONNECTOR UG 625/U	6796
65	J 10	33747	CONNECTOR UG 625/U	6796
30	J 12	3629-0102	RINDING POST RED	6796
31	J 13	3629-0103	RINDING POST BLACK	6796
59	M 1	6835	METER 1MA W/ 1/2 BEZ	6796
7	R 2	200-0102	RES 1K	6796
27	S 2	3573-0002	SWITCH PR NC	6796
27	S 3	3573-0002	SWITCH PR NC	6796
32	S 3	3639-2002	SWITCH ROTARY DPST	6796
1	DS 1	87-0374	LAMP MINAT 14 V	6796
26	XF 1	348A-0001	FUSEHOLDER	6796
26	XF 2	348A-0001	FUSEHOLDER	6796
64	XDS 1	33687-4500	LAMPHOLDER GREEN	6796
			HARNESS WIRING ASSY	6805
1		704-0010	WIRE 20 AWG BLK	6805
2		704-0210	WIRE 20 AWG RED	6805
3		704-0310	WIRE 20 AWG ORN	6805
4		704-0410	WIRE 20 AWG YEL	6805
5		704-0510	WIRE 20 AWG GRN	6805
6		704-0610	WIRE 20 AWG BLU	6805
7		704-0710	WIRE 20 AWG VIO	6805
8		705-0010	WIRE 22 AWG BLK	6805
9		705-0110	WIRE 22 AWG BRN	6805
10		705-0210	WIRE 22 AWG RED	6805
11		705-0310	WIRE 22 AWG ORN	6805
12		705-0410	WIRE 22 AWG YEL	6805
13		705-0510	WIRE 22 AWG GRN	6805
14		705-0610	WIRE 22 AWG BLU	6805
15		705-0710	WIRE 22 AWG VIO	6805
16		705-0810	WIRE 22 AWG GRY	6805
17		705-0900	WIRE 22 AWG WH/BLK	6805
18		705-0901	WIRE 22 AWG WH/BRN	6805
19		705-0902	WIRE 22 AWG WH/RED	6805
20		705-0903	WIRE 22 AWG WH/ORN	6805
21		705-0904	WIRE 22 AWG WH/YEL	6805
22		705-0905	WIRE 22 AWG WH/GRN	6805
23		705-0906	WIRE 22 AWG WH/BLU	6805
24		705-0907	WIRE 22 AWG WH/VIO	6805
25		705-0908	WIRE 22 AWG WHT/GRY	6805
26		705-0910	WIRE 22 AWG WHITE	6805
28		3388-0092	IN CABLE COAX RG178	6805
29		3389-0009	IN CORD LACING	6805
32	E 2	3613-0010	STRIP TERMINAL	6805
32	E 3	3613-0010	STRIP TERMINAL	6805
27	J 6	3318-5016	CONNECTOR 22 PIN PCB	6805
27	J 7	3318-5016	CONNECTOR 22 PIN PCB	6805
27	J 8	3318-5016	CONNECTOR 22 PIN PCB	6805
34	J 11	3817-2002	CONNECTOR	6805
35	P 1	3817-2003	CONNECTOR	6805
31	R 1	3522-0502	RESISTOR VARIABLE 5K	6805
33	S 1	3799-0004	SWITCH ROTARY SPECIAL	6805
30	S 2	3490-0002	SWITCH TOGGLE DPST	6805
			ASSY PCB FREQ CONV	6806
29		3326-0046	POP RIVET	6806
37		6008	BOARD PRINTED CIRCUIT	6806

Table 7-1. Continued

ITEM NUMBER	REFERENCE DESIGNATION	T R A C O R STOCK NUMBER	DESCRIPTION	STOCK NUMBER USED ON
45		8819-0022	WIRE BUS AWG 22	6806
46		173-0016	SCR BND HD 2-56X1/4	6806
47		649-0034	NUT HEX 2-56	6806
48		617-0248	WASHER FLAT NO 2	6806
39	C 1	8916-9331	CAP 3X3 UF	6806
39	C 2	8916-9331	CAP 3X3 UF	6806
39	C 3	8916-9331	CAP 3X3 UF	6806
39	C 4	8916-9331	CAP 3X3 UF	6806
41	C 5	27512-0121	CAP 120PF 500V	6806
39	C 6	8916-9331	CAP 3X3 UF	6806
27	C 7	3324-9273	CAP X027MFD 200V	6806
28	C 8	3324-9563	CAP X056MFD 200V	6806
39	C 9	8916-9331	CAP 3X3 UF	6806
27	C 10	3324-9273	CAP X027MFD 200V	6806
39	C 11	8916-9331	CAP 3X3 UF	6806
39	C 12	8916-9331	CAP 3X3 UF	6806
39	C 14	8916-9331	CAP 3X3 UF	6806
39	C 16	8916-9331	CAP 3X3 UF	6806
41	C 17	27512-0121	CAP 120PF 500V	6806
27	C 18	3324-9273	CAP X027MFD 200V	6806
27	C 19	3324-9273	CAP X027MFD 200V	6806
28	C 20	3324-9563	CAP X056MFD 200V	6806
43	C 21	27512-0270	CAP 27PF 500V	6806
39	C 22	8916-9331	CAP 3X3 UF	6806
39	C 23	8916-9331	CAP 3X3 UF	6806
42	C 24	27512-0221	CAP 220PF 500V	6806
44	C 25	27512-0391	CAP 390PF 500V	6806
35	C 26	3632-0021	CAP VAR 1 12PF 750V	6806
38	L 1	7024	INDUCTOR VAR	6806
32	L 2	3422-0822	INDUCTOR 8200UH	6806
31	L 3	3422-0222	INDUCTOR 2200UH	6806
30	L 4	3422-0103	INDUCTOR 10000UH	6806
38	L 5	7024	INDUCTOR VAR	6806
32	L 6	3422-0822	INDUCTOR 8200UH	6806
31	L 7	3422-0222	INDUCTOR 2200UH	6806
30	L 8	3422-0103	INDUCTOR 10000UH	6806
30	L 9	3422-0103	INDUCTOR 10000UH	6806
26	P 1	3318-0028	CONNECTOR	6806
24	Q 1	900-3646	TSTR 2N3646 SI NPN	6806
24	Q 2	900-3646	TSTR 2N3646 SI NPN	6806
25	Q 3	900-3906	TSTR SI PNP 2N3906	6806
25	Q 4	900-3906	TSTR SI PNP 2N3906	6806
25	Q 5	900-3906	TSTR SI PNP 2N3906	6806
24	Q 6	900-3646	TSTR 2N3646 SI NPN	6806
24	Q 7	900-3646	TSTR 2N3646 SI NPN	6806
24	Q 8	900-3646	TSTR 2N3646 SI NPN	6806
25	Q 9	900-3906	TSTR SI PNP 2N3906	6806
25	Q 10	900-3906	TSTR SI PNP 2N3906	6806
25	Q 11	900-3906	TSTR SI PNP 2N3906	6806
24	Q 12	900-3646	TSTR 2N3646 SI NPN	6806
25	Q 13	900-3906	TSTR 2N3906 SI PNP	6806
25	Q 14	900-3906	TSTR 2N3906 SI PNP	6806
23	Q 15	900-2270	TSTR 2N2270 SI NPN	6806
24	Q 16	900-3646	TSTR 2N3646 SI NPN	6806
24	Q 17	900-3646	TSTR 2N3646 SI NPN	6806
3	R 1	200-0102	RES 1K 1/4W	6806
3	R 2	200-0102	RES 1K 1/4W	6806
21	R 3	211-7500	RES 750	6806
20	R 4	211-5111	RES 5X11K 1/8W	6806
19	R 5	211-4221	RES 4X22K	6806
18	R 6	211-1101	RES 1X1K	6806
16	R 7	200-0821	RES 820 1/4W	6806
5	R 8	200-0121	RES 120 1/4W	6806
10	R 9	200-0272	RES 2X7K 1/4W	6806
7	R 10	200-0472	RES 4X7K 1/4W	6806
15	R 11	200-0682	RES 6X8K 1/4W	6806
15	R 12	200-0682	RES 6X8K 1/4W	6806
4	R 13	200-0103	RES 10K 1/4W	6806
3	R 14	200-0102	RES 1K 1/4W	6806
3	R 15	200-0102	RES 1K 1/4W	6806
3	R 16	200-0102	RES 1K 1/4W	6806
21	R 17	211-7500	RES 750	6806
20	R 18	211-5111	RES 5X11K 1/8W	6806
19	R 19	211-4221	RES 4X22K	6806
18	R 20	211-1101	RES 1X1K	6806
16	R 21	200-0821	RES 820 1/4W	6806
5	R 22	200-0121	RES 120 1/4W	6806

Table 7-1. Continued

ITEM NUMBR	REFERENCE DESIGNATION	T R A C O R STOCK NUMBER	DESCRIPTION	STOCK NUMBER USED ON
10	R 23	200-0272	RES 2X7K 1/4W	6806
7	R 24	200-0472	RES 4X7K 1/4W	6806
15	R 25	200-0682	RES 6X8K 1/4W	6806
15	R 26	200-0682	RES 6X8K 1/4W	6806
3	R 27	200-0102	RES 1K 1/4W	6806
4	R 28	200-0103	RES 10K 1/4W	6806
12	R 29	200-0471	RES 470 1/4W	6806
6	R 30	200-0122	RES 1X2K 1/4W	6806
18	R 31	211-1101	RES 1X1K 1/8W	6806
18	R 32	211-1101	RES 1X1K 1/8W	6806
14	R 33	200-0561	RES 560 1/4W	6806
8	R 34	200-0150	RES 15 1/4W	6806
16	R 35	200-0821	RES 820 1/4W	6806
11	R 36	200-0391	RES 390 1/4W	6806
11	R 37	200-0391	RES 390 1/4W	6806
14	R 38	200-0561	RES 560 1/4W	6806
1	R 39	200-0100	RES 10 1/4W	6806
17	R 40	200-9271	RES 2X7 1/4W	6806
1	R 41	200-0100	RES 10 1/4W	6806
17	R 42	200-9271	RES 2X7	6806
9	R 43	200-0221	RES 220	6806
9	R 44	200-0221	RES 220	6806
14	R 45	200-0561	RES 560	6806
13	R 46	200-0560	RES 56	6806
13	R 47	200-0560	RES 56	6806
14	R 48	200-0561	RES 560	6806
14	R 49	200-0561	RES 560	6806
2	R 50	200-0101	RES 100	6806
33	Y 1	3630-0003	XTAL QUARTZ 9X990MC	6806
22	CR 1	800-0914	DIODE 1N914	6806
22	CR 2	800-0914	DIODE 1N914	6806
34	XY 1	3631-0001	HOLDER XTAL	6806
49		82	INSULATOR TSTR	6806
			PCB ASSY PHASE COMP	6807
31		3326-0046	POP RIVET	6807
34		6007	BOARD PRINTED CIRCUIT	6807
36	C 1	8918-0331	CAP 330MF 6V	6807
36	C 2	8918-0331	CAP 330MF 6V	6807
36	C 3	8918-0331	CAP 330MF 6V	6807
36	C 4	8918-0331	CAP 330MF 6V	6807
36	C 5	8918-0331	CAP 330MF 6V	6807
36	C 6	8918-0331	CAP 330MF 6V	6807
38	C 7	27512-0121	CAP 120PF 500V	6807
38	C 8	27512-0121	CAP 120PF 500V	6807
38	C 9	27512-0121	CAP 120PF 500V	6807
35	C 10	8916-9331	CAP 3X3UF 15V	6807
38	C 11	27512-0121	CAP 120PF 500V	6807
35	C 12	8916-9331	CAP 3X3UF 15V	6807
35	C 13	8916-9331	CAP 3X3 UF 15V	6807
36	C 14	8918-0331	CAP 330UF 6V	6807
37	C 15	8918-0560	CAP 56UF 6V	6807
37	C 16	8918-0560	CAP 56UF 6V	6807
36	C 17	8918-0331	CAP 330UF 6V	6807
39	C 18	27512-0220	CAP 22PF 500V	6807
39	C 19	27512-0220	CAP 22PF 500V	6807
39	C 20	27512-0220	CAP 22PF 500V	6807
40	C 21	27512-0470	CAP 47 PF 500V	6807
41	C 22	27512-0470	CAP 47 PF 500V	6807
30	P 1	3318-0028	CONNECTOR	6807
28	Q 1	900-3705	TSTR 2N3705 S1 NPN	6807
28	Q 2	900-3705	TSTR 2N3705 S1 NPN	6807
28	Q 3	900-3705	TSTR 2N3705 S1 NPN	6807
28	Q 4	900-3705	TSTR 2N3705 S1 NPN	6807
28	Q 5	900-3705	TSTR 2N3705 S1 NPN	6807
28	Q 6	900-3705	TSTR 2N3705 S1 NPN	6807
26	Q 7	900-2270	TSTR 2N2270 S1 NPN	6807
26	Q 8	900-2270	TSTR 2N2270 S1 NPN	6807
27	Q 9	900-3646	TSTR 2N3646 S1 NPN	6807
27	Q 10	900-3646	TSTR 2N3646 S1 NPN	6807
27	Q 11	900-3646	TSTR 2N3646 S1 NPN	6807
27	Q 12	900-3646	TSTR 2N3646 S1 NPN	6807
29	Q 13	900-3906	TSTR 2N3906 S1 PNP	6807
29	Q 14	900-3906	TSTR 2N3906 S1 PNP	6807
27	Q 15	900-3646	TSTR 2N3646 S1 NPN	6807
27	Q 16	900-3646	TSTR 2N3646 S1 NPN	6807

Table 7-1. Continued

ITEM NUMBER	REFERENCE DESIGNATION	T R A C O R STOCK NUMBER	DESCRIPTION	STOCK NUMBER USED ON
19	R 1	211-1621	RES 1X62K 1/8W	6807
19	R 2	211-1621	RES 1X62K 1/8W	6807
19	R 3	211-1621	RES 1X62K 1/8W	6807
19	R 4	211-1621	RES 1X62K 1/8W	6807
13	R 5	211-1102	RES 11K 1/8W	6807
16	R 6	211-2151	RES 2X15K 1/8W	6807
12	R 7	211-1101	RES 1X1K	6807
3	R 8	200-0102	RES 1K 1/4W	6807
22	R 9	211-8251	RES 8X25K	6807
15	R 10	211-1781	RES 1X78K	6807
17	R 11	211-2870	RES 287	6807
6	R 12	200-0222	RES 2X2K	6807
13	R 13	211-1102	RES 11K 1/8W	6807
16	R 14	211-2151	RES 2X15K 1/8W	6807
12	R 15	211-1101	RES 1X1K	6807
3	R 16	200-0102	RES 1K 1/4W	6807
22	R 17	211-8251	RES 8X25K	6807
15	R 18	211-1781	RES 1X78K	6807
17	R 19	211-2870	RES 287	6807
6	R 20	200-0222	RES 2X2K	6807
2	R 21	200-0101	RES 100	6807
3	R 22	200-0102	RES 1K 1/4W	6807
5	R 23	200-0221	RES 220 1/4W	6807
18	R 24	211-3160	RES 316 1/8W	6807
21	R 25	211-4640	RES 464 1/8W	6807
6	R 26	200-0222	RES 2X2K 1/4W	6807
8	R 27	200-0392	RES 3X9K 1/4W	6807
8	R 28	200-0392	RES 3X9K 1/4W	6807
3	R 29	200-0102	RES 1K 1/4W	6807
3	R 30	200-0102	RES 1K 1/4W	6807
6	R 31	200-0222	RES 2X2K 1/4W	6807
32	R 32	3596-0202	RES VAR 2K	6807
3	R 33	200-0102	RES 1K	6807
3	R 34	200-0102	RES 1K	6807
3	R 35	200-0102	RES 1K	6807
3	R 36	200-0102	RES 1K 1/4W	6807
3	R 37	200-0102	RES 1K 1/4W	6807
7	R 38	200-0223	RES 22K 1/4W	6807
7	R 39	200-0223	RES 22K 1/4W	6807
3	R 40	200-0102	RES 1K 1/4W	6807
3	R 41	200-0102	RES 1K 1/4W	6807
1	R 42	200-0100	RES 10	6807
1	R 43	200-0100	RES 10	6807
1	R 44	200-0100	RES 10	6807
4	R 45	200-0181	RES 180	6807
4	R 46	200-0181	RES 180	6807
14	R 47	211-1471	RES 1X47K	6807
20	R 48	211-4221	RES 4X22K	6807
10	R 49	200-0682	RES 6X8K	6807
11	R 50	200-0822	RES 8X2K	6807
6	R 51	200-0222	RES 2X2K	6807
11	R 52	200-0822	RES 8X2K	6807
11	R 53	200-0822	RES 8X2 K 1/4W	6807
2	R 54	200-0101	RES 100	6807
2	R 55	200-0101	RES 100	6807
2	R 56	200-0101	RES 100	6807
3	R 57	200-0102	RES 1K	6807
9	R 58	200-0680	RES 68	6807
23	CR 1	800-0914	DIODE IN914	6807
23	CR 2	800-0914	DIODE IN914	6807
23	CR 3	800-0914	DIODE IN914	6807
23	CR 4	800-0914	DIODE IN914	6807
23	CR 5	800-0914	DIODE IN914	6807
23	CR 6	800-0914	DIODE IN914	6807
23	CR 7	800-0914	DIODE IN914	6807
23	CR 8	800-0914	DIODE IN914	6807
23	CR 9	800-0914	DIODE IN914	6807
23	CR 10	800-0914	DIODE IN914	6807
23	CR 11	800-0914	DIODE IN914	6807
23	CR 12	800-0914	DIODE IN914	6807
25	VR 1	801-0753	DIODE ZENER IN753A	6807
24	VR 2	801-0752	DIODE ZENER IN752A	6807
42		82	INSULATOR TSTR	6807
			ACCESSORY PARTS SET	6912
1		87-0374	LAMP MINAT 14 V	6912

Table 7-1. Continued

ITEM NUMBER	REFERENCE DESIGNATION	T R A C O R STOCK NUMBER	DESCRIPTION	STOCK NUMBER USED ON
2		175-0028	SCR 4 40X7/16	6912
3		187-0024	SCR PAN HD 8 32X3/8	6912
4		617-0267	WASHER FLAT NO 6	6912
5		3348-9502	FUSE FAST X5 AMP	6912
6		3666-0003	RUBBER BUMPER FEET	6912
7		6913	MANUAL OPS/SER 895A	6912
8		6914	EXTRACTOR CARD	6912
			ASSY INDUCTOR	7024
1		3501-0032	IN WIRE AWG 32	7024
2		3569	GLUE	7024
3		3668-0001	ROBRIN	7024
4		3669-0103	CORE PAIR	7024
5		3670-0001	ADJUSTMENT ASSY	7024
6		3671	PLATE	7024
7		3674	CLAMP	7024
8		3675-0002	PAINT RED AS REQD	7024
9		3675-0004	PAINT YELLOW AS REQD	7024
10		3675-0007	PAINT VIOLET AS REQD	7024
11		3675-0010	PAINT BLACK AS REQD	7024
12		3677-0008	IN TAPE 1/8 WIDE	7024
			PCB ASSY FILTER	8861
1		8772	BOARD PC FILTER	8861
4		3326-0042	RIVET POP	8861
5		3783-0213	BRACKET ANGLE	8861
2	C 1	3354-9102	CAP X1 UF 600 V	8861
2	C 2	3354-9102	CAP X1 UF 600 V	8861
2	C 3	3354-9102	CAP X1 UF 600 V	8861
3	L 1	4467-0101	CHOKE 100 UH	8861
3	L 2	4467-0101	CHOKE 100 UH	8861

Table 7-2. List of Replaceable Parts

T R A C O R STOCK NUMBER	DESCRIPTION	MFGR CODE	MANUFACTURER PART NUMBER	TOTAL QUANTITY	U/M
87-0374	LAMP BULB INCD 1.12W	08806	330	3.	EA
142-0020	SCR FLT HD 2-56X5/16	73734	3122	4.	EA
147-0024	SCR FLAT HD 8-32X3/8	73734	3163	4.	EA
173-0016	SCR BND HD 2-56X1/4	73734	4002	1.	EA
175-0016	SCR BND HD 4-40X1/4	73734	4022	28.	EA
175-0020	SCR BND HD 4-40X5/16	73734	4023	2.	EA
175-0024	SCR BND HD 4-40X3/8	73734	4024	10.	EA
175-0028	SCR BND HD 4-40X7/16	73734	4025	4.	EA
177-0032	SCR BND HD 6-32X1/2	73734	4036	6.	EA
187-0024	SCR PAN HD 8-32X3/8	73734	12064	4.	EA
200-0100	RES FXD COMP 10 OHM	01121	RC07GF100K (MIL-R-11/8)	6.	EA
200-0101	RES FXD COMP 100 OHM	01121	RC07GF101K (MIL-R-11/8)	6.	EA
200-0102	RES FXD COMP 1 K	01121	RC07GF102K (MIL-R-11/8)	20.	EA
200-0103	RES FXD COMP 10 K	01121	RC07GF103K (MIL-R-11/8)	70.	EA
200-0121	RES FXD COMP 120 OHM	01121	RC07GF121K (MIL-R-11/8)	2.	EA
200-0122	RES FXD COMP 1.2 K	01121	RC07GF122K (MIL-R-11/8)	1.	EA
200-0150	RES FXD COMP 15 OHM	01121	RC07GF150K (MIL-R-11/8)	1.	EA
200-0180	RES FXD COMP 18 OHM	01121	RC07GF180K (MIL-R-11/8)	1.	EA
200-0181	RES FXD COMP 180 OHM	01121	RC07GF181K (MIL-R-11/8)	2.	EA
200-0221	RES FXD COMP 220 OHM	01121	RC07GF221K (MIL-R-11/8)	3.	EA
200-0222	RES FXD COMP 2.2 K	01121	RC07GF222K (MIL-R-11/8)	5.	EA
200-0223	RES FXD COMP 22 K	01121	RC07GF223K (MIL-R-11/8)	34.	EA
200-0272	RES FXD COMP 2.7 K	01121	RC07GF272K (MIL-R-11/8)	2.	EA
200-0391	RES FXD COMP 390 OHM	01121	RC07GF391K (MIL-R-11/8)	2.	EA
200-0392	RES FXD COMP 3.9 K	01121	RC07GF392K (MIL-R-11/8)	2.	EA
200-0471	RES FXD COMP 470 OHM	01121	RC07GF471K (MIL-R-11/8)	1.	EA
200-0472	RES FXD COMP 4.7 K	01121	RC07GF472K (MIL-R-11/8)	38.	EA
200-0473	RES FXD COMP 47 K	01121	RC07GF473K (MIL-R-11/8)	12.	EA
200-0560	RES FXD COMP 56 OHM	01121	RC07GF560K (MIL-R-11/8)	2.	EA
200-0561	RES FXD COMP 560 OHM	01121	RC07GF561K (MIL-R-11/8)	5.	EA
200-0680	RES FXD COMP 68 OHM	01121	RC07GF680K (MIL-R-11/8)	1.	EA
200-0682	RES FXD COMP 6.8 K	01121	RC07GF682K (MIL-R-11/8)	5.	EA
200-0821	RES FXD COMP 820 OHM	01121	RC07GF821K (MIL-R-11/8)	3.	EA
200-0822	RES FXD COMP 8.2 K	01121	RC07GF822K (MIL-R-11/8)	3.	EA
200-9271	RES FXD COMP 2.7 OHM	01121	RC07GF2R7K (MIL-R-11/8)	2.	EA
211-1101	RES FXD FILM 1.1 K	96214	RN55D1101F (MIL-R-10509/7)	6.	EA
211-1102	RES FXD FILM 11 K	07115	RN55D1102F (MIL-R-10509/7)	2.	EA
211-1471	RES FXD FILM 1.47 K	07115	RN55D1471F (MIL-R-10509/7)	1.	EA
211-1621	RES FXD FILM 1.62 K	07115	RN55D1621F (MIL-R-10509/7)	4.	EA
211-1781	RES FXD FILM 1.78 K	07115	RN55D1781F (MIL-R-10509/7)	2.	EA
211-2151	RES FXD FILM 2.15 K	07115	RN55D2151F (MIL-R-10509/7)	2.	EA
211-2870	RES FXD FILM 287 OHM	07115	RN55D2870F (MIL-R-10509/7)	2.	EA
211-3160	RES FXD FILM 316 OHM	96214	RN55D3160F (MIL-R-10509/7)	1.	EA
211-4221	RES FXD FILM 4.22 K	07115	RN55D4221F (MIL-R-10509/7)	3.	EA
211-4640	RES FXD FILM 464 OHM	96214	RN55D4640F (MIL-R-10509/7)	1.	EA
211-5111	RES FXD FILM 5.11 K	07115	RN55D5111F (MIL-R-10509/7)	2.	EA
211-7500	RES FXD FILM 750 OHM	07115	RN55D7500F (MIL-R-10509/7)	2.	EA
211-8251	RES FXD FILM 8.25 K	07115	RN55D8251F (MIL-R-10509/7)	2.	EA
610-0154	TERMINAL	71279	2034-3	11.	EA
617-0248	WASHER FLAT NO 2	73734	1400 STL CAD PL	1.	EA
617-0256	WASHER FLAT NO 4	73734	1402 STL CAD PL	8.	EA
617-0267	WASHER FLAT NO 6	73734	1404 STL CAD PL	8.	EA
617-0277	WASHER FLAT NO 10	73734	1411 STL CAD PL	1.	EA
620-0123	WASHER LOCK INT NO 4	73734	1302	32.	EA
620-0125	WASHER LOCK INT NO 6	73734	1304	10.	EA
643-0014	WASHER MICA	86928	5624-9-5	1.	EA
649-0034	NUT HEX 2-56X3/16 AF	73734	8000 STL CAD PL	1.	EA
649-0074	NUT HEX 4-40X1/4 AF	73734	8003 STL CAD PL	10.	EA
649-0114	NUT HEX 6-32X5/16 AF	73734	8005 STL CAD PL	4.	EA
649-0164	NUT HEX 10-32X3/8 AF	73734	8011 STL CAD PL	1.	EA
658-0016	SCR FLT HD 4-40X1/4	73734	4-40X1/4 UND STL CAD PL	8.	EA
704-0010	WIRE 20AWG BLK STRD	70331	1856-BLK (MIL-W-16878)	REF	IN
704-0210	WIRE 20AWG RED STRD	70331	1856-RED (MIL-W-16878)	REF	IN
704-0310	WIRE 20AWG ORN STRD	70903	8502-ORN (MIL-W-16878)	REF	IN
704-0410	WIRE 20AWG YEL STRD	70903	8502-YEL (MIL-W-16878)	REF	IN
704-0510	WIRE 20AWG GRN STRD	70903	8502-GRN (MIL-W-16878)	REF	IN
704-0610	WIRE 20AWG BLU STRD	70903	8502-BLU (MIL-W-16878)	REF	IN
704-0710	WIRE 20AWG VIO STRD	70903	8502-VIO (MIL-W-16878)	REF	IN
705-0010	WIRE 22AWG BLK STRD	70903	8503 BLK (MIL-W-16878)	REF	IN
705-0110	WIRE 22AWG BRN STRD	70903	8503 BRN (MIL-W-16878)	REF	IN
705-0210	WIRE 22AWG RED STRD	70903	8503 RED (MIL-W-16878)	REF	IN
705-0310	WIRE 22AWG ORN STRD	70903	8503 ORN (MIL-W-16878)	REF	IN
705-0410	WIRE 22AWG YEL STRD	70903	8503 YEL (MIL-W-16878)	REF	IN
705-0510	WIRE 22AWG GRN STRD	70903	8503 GRN (MIL-W-16878)	REF	IN
705-0610	WIRE 22AWG BLU STRD	70903	8503 BLU (MIL-W-16878)	REF	IN
705-0710	WIRE 22AWG VIO STRD	70903	8503 VIO (MIL-W-16878)	REF	IN
705-0810	WIRE 22AWG GRY STRD	70903	8503 GRY (MIL-W-16878)	REF	IN

Table 7-2. Continued

T R A C O R STOCK NUMBER	DESCRIPTION	MFGR CODE	MANUFACTURER PART NUMBER	TOTAL QUANTITY	U/M
705-0900	WIRE 22AWG WHT/BLK	70903	8503 WHT/BLK (MIL-W-16878)	REF	IN
705-0901	WIRE 22AWG WHT/BRN	70903	8503 WHT/BRN (MIL-W-16878)	REF	IN
705-0902	WIRE 22AWG WHT/RED	70903	8503 WHT/RED (MIL-W-16878)	REF	IN
705-0903	WIRE 22AWG WHT/ORN	70903	8503 WHT/ORN (MIL-W-16878)	REF	IN
705-0904	WIRE 22AWG WHT/YEL	70903	8503 WHT/YEL (MIL-W-16878)	REF	IN
705-0905	WIRE 22AWG WHT/GRN	70903	8503 WHT/GRN (MIL-W-16878)	REF	IN
705-0906	WIRE 22AWG WHT/BLU	70903	8503 WHT/BLU (MIL-W-16848)	REF	IN
705-0907	WIRE 22AWG WHT/VIO	70903	8503-WHT/VIO (MIL-W-16878)	REF	IN
705-0908	WIRE 22AWG WHT/GRY	70903	8503-WHT/GRY (MIL-W-16878)	REF	IN
705-0910	WIRE 22AWG WHT STRD	70903	8503-WHT (MIL-W-1687A)	REF	IN
800-0914	DIODE 1N914	01295	1N914	54.	EA
800-4001	DIODE 1N4001	01295	1N4001	5.	EA
801-0752	DIODE 1N752A	01295	1N752A	1.	EA
801-0753	DIODE 1N753A	01295	1N753A	1.	EA
900-2270	TSTR 2N2270	01295	2N2270	3.	EA
900-2552	TSTR 2N2552	96214	2N2552	1.	EA
900-3646	TSTR 2N3646	13715	2N3646	50.	EA
900-3705	TSTR 2N3705	01295	2N3705	6.	EA
900-3906	TSTR 2N3906	01295	2N3906	10.	EA
3318-0028	CONN PLUG ELEC 22 PIN	02660	133-022-03	3.	EA
3318-5016	CONN RECP ELEC 22 PIN	02660	143-022-01	3.	EA
3324-9273	CAP FXD MYL .027 MFD	56289	192P27392	4.	EA
3324-9563	CAP FXD MYL .056 MFD	56289	192P56392	2.	EA
3326-0072	RIVET POP 3/32X212	07707	AD32RS	2.	EA
3326-0042	RIVET POP 1/8X232	07707	AD42RS	6.	EA
3326-0043	RIVET POP 1/8X294	07707	AD43RS	2.	EA
3326-0046	RIVET POP 1/8X481	07707	AD46RS	8.	EA
3326-0145	RIVET POP 1/8X419	07707	AD45ARS	4.	EA
3331-0027	NUT CLINCH 4-40	46384	CL-440-2 STL CAD PL	16.	EA
3331-0036	NUT CLINCH 6-32	46384	CL-632-2 ST	2.	EA
3331-0037	NUT CLINCH 6-32	46384	CL-632-2 STL CAD PL	6.	EA
3348-9502	FUSE .5 A 250 VOLT	71400	AGC 1/2	4.	EA
3354-9102	CAP FXD MY/PA .1 MFD	56289	220P10496	4.	EA
3388-0092	CABLE COAXIAL	70903	RG-178B/U (MIL-C-17/93)	REF	FT
3389-0009	TAPE LACING	70331	LC-132WH	REF	IN
3422-0103	INDUCTOR 10000 UH	99800	2500-76	3.	EA
3422-0222	INDUCTOR 2200 UH	99800	2500-44	2.	EA
3422-0822	INDUCTOR 8200 UH	99800	2500-72	2.	EA
3455-0834	CLAMP CABLE 5/16	83330	834	2.	EA
3458-0024	KNOR	94144	70-2-26 OR (MS91528-102B)	1.	EA
3458-0186	KNOR	94144	70-3-26 OR (MS91528-1F2B)	1.	EA
3467-0028	CABLE POWER	70903	17239	1.	EA
3472-0001	SHAFT LOCK BLACK	94144	SL-100B	1.	EA
3486-0027	LUG TERMINAL 3/8	73734	118100	5.	EA
3488-0001	HOLDER FUSE	71400	HKP	2.	EA
3490-0002	SWITCH TOGGLE DPST	72653	34-182	1.	EA
3501-0032	WIRE MAGNET 32 AWG	09040	SOLDFREZE SIZE 32	REF	IN
3522-0502	RES VAR COMP 5 K	01121	RV4LAYSAS02A (MIL-R-94/5)	1.	EA
3569	ADHESIVE	74364	910	REF	GM
3571-0753	STRAP TIE DOWN	98159	2829-75-3	4.	EA
3573-0002	SWITCH PUSHBUTTON NC	81073	30-2	2.	EA
3596-0202	RES VAR WW 2 K	80294	3067P-1-202	1.	EA
3613-0010	TERMINAL STRIP 3 PIN	83330	864	2.	EA
3624-0006	LUG SOLDER NO 6	73734	38-111	1.	EA
3625-2002	NUT CLINCH 4-40	46384	F-440-2	12.	EA
3629-0102	POST BINDING RED	74970	111-102	2.	EA
3629-0103	POST BINDING BLK	74970	111-103	2.	EA
3630-0003	CRYSTAL 9990 KC	00815	NE 6A 9990 KC	1.	EA
3631-0001	HOLDER CRYSTAL	91506	R000-DG1	1.	EA
3632-0021	CAP VAR 1-12 PFD	73A99	VC586	1.	EA
3639-2002	SWITCH ROTARY 2 POLE	71590	PA-2002	1.	EA
3666-0003	BUMPER RUBBER	83330	2194	4.	EA
3668-0001	BORBIN	T0007	R65522-A0000-P001	1.	EA
3669-0103	CORE POT	T0007	B65521-J0040-A001	1.	EA
3670-0001	TRIMMER CORE ASSY	T0007	B65529-KIA	1.	EA
3671	PLATE BASE	T0007	C60358-R3052-C106	2.	EA
3674	CLAMP	T0007	C60358-R3052-C102	4.	EA
3675-0002	PAINT RED	T0010	ENAMEL-RED	REF	GM
3675-0004	PAINT YELLOW	T0010	ENAMEL-YELLOW	REF	GM
3675-0007	PAINT VIOLET	T0010	ENAMEL-VIOLET	REF	GM
3675-0010	PAINT BLACK	T0010	ENAMEL-BLACK	REF	GM
3677-0008	TAPE MYLAR 1/8 WIDE	88301	7300-02-05 1/8 WIDE	REF	IN
3763-0021	WASHER SHOULDER NO 10	86928	5604-21	1.	EA
3783-0213	BRACKET ANGLE	72653	6261	2.	EA
3799-0004	SWITCH ROTARY	19397	3799-0004	1.	EA
3805-0031	BOLT SPACE 4-40	73734	52130	4.	EA
3817-2002	CONN MS3102A-14S-2S	02660	MS3102A-14S-2S	1.	EA

Table 7-2. Continued

T R A C O R STOCK NUMBER	DESCRIPTION	MFGR CODE	MANUFACTURER PART NUMBER	TOTAL QUANTITY	U/M
3817-2003	CONN MS3102A-14S-1P	02660	MS3102A-14S-1P	1.	EA
3890-0033	CAP FXD ELEC 1000 MFD	14655	BR1000-25	2.	EA
3891-0001	TRANSFORMER POWER	81095	F-25X	1.	EA
3892-0005	GUIDE PCB	91662	63 9016 1205	6.	EA
4467-0101	CHOKE 100 UH	76493	5250	2.	EA
5002	PLATE	19397	5002	2.	EA
5596-0048	STANDOFF R 4-40X3/4	06540	8159-A-0440-18	2.	EA
6007	BOARD PRINTED CIRCUIT	19397	6007	1.	EA
6008	BOARD PRINTED CIRCUIT	19397	6008	1.	EA
6034	HANDLE	19397	6034	2.	EA
6059	COVER	19397	6059	2.	EA
6060	COVER	19397	6060	2.	EA
6152	PLATE IDENT	19397	6152	1.	EA
6791	PTD CIRCUIT BOARD	19397	6791	1.	EA
6792	PTD CIRCUIT BOARD	19397	6792	1.	EA
6794	PCB ASSY POWER SUPPLY	19397	6794	1.	EA
6795	PCB ASSY DECADE DIV	19397	6795	1.	EA
6797	RACK CARD	19397	6797	1.	EA
6798	TRAY COMPONENT	19397	6798	1.	EA
6799	SHIELD/BRACE	19397	6799	1.	EA
6800	BRACKET	19397	6800	1.	EA
6801	SHIELD	19397	6801	1.	EA
6803	PANEL REAR	19397	6803	1.	EA
6804	PLATE COVER	19397	6804	1.	EA
6805	HARNESS WIRING ASSY	19397	6805	1.	EA
6806	PCB ASSY FREQ CONV	19397	6806	1.	EA
6807	PCB ASSY COMPARATOR	19397	6807	1.	EA
6835	METER IMA W/ 1/2 REZ	19397	6835	1.	EA
6912	ACCESSARY PARTS SET	19397	6912	1.	EA
6913	MAN, OPT AND SER	19397	6913 (MODEL 895A)	2.	EA
6914	EXTRACTOR CARD	19397	6914	1.	EA
7024	ASSY INDUCTOR	19397	7024	2.	EA
8772	BOARD PC FILTER	19397	8772	1.	EA
8819-0022	WIRE BUS BAR 22 AWG	70903	8021	REF	IN
8861	PCB ASSY FILTER	19397	8861	1.	EA
8916-9331	CAP FXD TA 3.3 MFD	05397	CS13BD335K (MIL-C-26655/2)	15.	EA
8917-0101	CAP FXD TA 100 MFD	05397	CS13BC107K (MIL-C-26655/2)	1.	EA
8918-0331	CAP FXD TA 330 MFD	05397	CS13RB337K (MIL-C-26655/2)	8.	EA
8918-0560	CAP FXD TA 56 MFD	05397	CS13BB566K (MIL-C-26655/2)	3.	EA
11392	BRACKET MOUNTING	19397	11392	2.	EA
11399	PANEL FRONT	19397	11399	1.	EA
27512-0121	CAP FXD MICA 120 PFD	00853	CM05F121G03 (MIL-C-5/18)	6.	EA
27512-0220	CAP FXD MICA 22 PFD	00853	CM05E220J03 (MIL-C-5/18)	79.	EA
27512-0221	CAP FXD MICA 220 PFD	00853	CM05F221G03 (MIL-C-5/18)	1.	EA
27512-0270	CAP FXD MICA 27PFD	00853	CM05E270G03 (MIL-C-5/18)	1.	EA
27512-0391	CAP FXD MICA 390 PFD	00853	CM05F391G03 (MIL-C-5/18)	1.	EA
27512-0470	CAP FXD MICA 47 PFD	00853	CM05E470G03 (MIL-C-5/18)	2.	EA
32115-0062	CLAMP CABLE	28520	SR-6P-1	1.	EA
33687-4500	HOLDER LAMP GRN LENS	72765	5131-038-303 GREEN	1.	EA
33747	CONNECTOR BNC	02660	5575	5.	EA
82	INSULATOR TSTR			3.	EA

Table 7-3. List of Federal Supply Codes For Manufacturers

CODE NO.	MANUFACTURER	ADDRESS
T0002	LANSDALE TRANSISTOR COPP	LANSDALE PA
T0003	PAMOTOR INC	SAN FRANCISCO CALIF
T0004	PATEK PHILIPPE	GENEVA, SWITZERLAND
T0005	RUSSELL INDUSTRIES INC	LYNBROOK, L. I., N. Y.
T0006	TRINITY CAPACITOR CO	TRINITY, TEXAS
T0007	SIEMENS AMERICA INC	WHITE PLAINS, N. Y.
T0008	SOUTHWEST ELECTRONICS INC	HOUSTON TEX
T0009	MOLECU-WIRE CORP.	SCOBEEVILLE, ILL
T0010	PACTKA-CHEMICAL CO INC	LOS ANGELES CALIFORNIA
T0011	FPCO	FLINT, MICH
T0012	DABURN ELECTRONICS AND CABLE CORPORATION	NEW YORK N Y
T0013	GRAYSON-STADLER	WEST CONCORD MASS
T0014	PEEPLISS IMPERIAL CO	NEWARK N J
T0015	GENERAL PACKAGING CORP	DALLAS TEX
T0016	A-1 PLASTICS	DALLAS TEX
T0017	I SQUARE ELEMENT CO	TONAWANDA N Y
T0018	SHAEVITZ ENGINEERING CO	CAMDEN N J
T0019	ACCEL ELECTRONIC PRODUCTS	SOUTH SAN GABRIEL CALIF
T0020	VICTOR WIRE AND CABLE CO	LOS ANGELES CALIF
T0021	UNIFORM TUBES INC	COLLEGEVILLE P A
T0022	LONE STAR PAPER CO	AUSTIN TEX
T0023	NATIONWIDE PAPERS	AUSTIN, TEX
T0024	RADIOEAR CORP.	CANONSBURG PENN
T0025	RING CHEMICAL CO	HOUSTON TEXAS
T0026	TACONIC PLASTICS	PETERSBURG N Y
T0027	ORGANIC PRODUCTS CO	IRVING TEX
T0028	AVCO CORP	WILMINGTON MASS
T0029	APPLIED RESEARCH ASSOC	AUSTIN TEX
T0030	SENNHEISER ELECTRONIC CORP	NEW YORK N Y
T0031	PRECISION SAMPLING CORP	BATON ROUGE LA
T0032	KURTZ INC	HOUSTON TEX
T0033	T AND T CONTROLS	ADDRESS UNKNOWN
T0034	HOUSTON OMNIGRAPHIC CORP	HOUSTON TEX
T0035	NUCLEONICS PRODUCTS INC - CANCELED SEE 08257	
T0037	MULTICORE SALES CORP	WESTBURY NY
T0038	DELTA-CHICAGO, INC.	FRANKLIN PARK ILL
T0039	BOSCO BOLT NUT AND SCREW CO	HOUSTON TEX
T0040	ELECTRO-MECHANISMS INC.	MONROVIA CALIF
00141	PIC DESIGN CORP	EAST ROCKAWAY N Y
00327	WELWYN INTERNATIONAL INC	WESTLAKE OHIO
00328	STERLING INST DIV OF DESIGNATRONICS INC	MINEOLA LONG ISLAND N Y
00348	MICROTRAN CO INC	VALLEY STREAM N Y
00544	METAL CAL A DIVISION OF AVERY ADHESIVE PRODUCTS INC	INGLEWOOD CALIF
00656	AEROVOX CORP	NEW BEDFORD MASS
00774	AMP INC	HARRISBURG PA
00781	AIRCRAFT RADIO CORP	BOONTON N J
00615	NORTHERN ENGINEERING LABORATORIES INC	BURLINGTON WIS
00835	HEUSER MFG CO	CHICAGO ILL
00853	SANGAMO ELECTRIC CO PICKENS DIVISION	PICKENS S C
00906	SCAICO DIVISION OF WAVETRONICS INDUSTRIES INC	WEST PITTSBURG PA
01009	ALDEN PRODUCTS CO	BROCKTON MASS
01121	ALLEN-BRADLEY CO	MILWAUKEE WIS
01139	GENERAL ELECTRIC SILICONE PRODUCTS DEPT	WATERFORD, NEW YORK
01170	HELLOFRAM CORP	BURLINGTON MASS
01281	TRW SEMICONDUCTORS INC	LAWDALE CALIF
01285	SAFETY FLATON INC	CHICAGO ILL
01295	TEXAS INSTRUMENTS INC SEMICONDUCTOR-COMPONENTS DIVISION	DALLAS TEX
01298	OGDEN CORP	NEW YORK N Y
01351	DYNAMIC GEAR CO INC	AMITYVILLE N Y
01364	ALLIED RADIO CORP	CHICAGO ILL
01490	REZOLIN INC	SANTA MONICA CALIF
01561	CHASSIS-TRAK CORP - CANCELED SEE 06666	
01766	INTERNATIONAL CRYSTAL	OKLAHOMA CITY OKLA
01807	PETERSEN RADIO CO INC	COUNCIL BLUFFS IOWA
01930	AMEROCK CORP	ROCKFORD ILL
01947	WEAVER MAILING ENVELOPE AND BOX CO	PHILADELPHIA PA
02111	SPECTROL ELECTRONICS CORP	CITY OF INDUSTRY CALIF
02114	FERROXCUBE CORP OF AMERICA	SAUGERTIES N Y
02161	SAN ANTONIO MACHINE AND SUPPLY CO	SAN ANTONIO TEX
02195	AMERICAN FORK AND HOE CO - CANCELED SEE 89753	
02376	CONSOLIDATED AVIONICS DIVISION OF CONDEC CORP	WESTBURY N Y
02570	SWAGELOCK (CRAWFORD FITTING CO)	OLON OHIO
02570	CRAWFORD FITTING CO(SWAGELOK)	OLON OHIO
02622	AMERICAN OPTICAL CO.	SOUTHBRIDGE MASS
02640	TORWICO ELECTRONICS INC	LAKEWOOD N J
02660	AMPHENOL-BORG ELECTRONICS CORP	BROADVIEW ILL

Table 7-3. Continued

CODE NO.	MANUFACTURER	ADDRESS
02733	PENN AIRCRAFT PRODUCTS INC	DAYTON, OHIO
02735	RADIO CORP OF AMERICA COMM REC TURE AND SEMICONDUCTOR DIV	SOMERVILLE N J
02768	FASTEX DIV OF ILLINOIS TOOL WORKS	DES PLAINES ILL
02770	BRISTOL MOTORS DIV OF VOCALINE CO OF AMERICA	OLD SAYBROOK, CONN
02777	HOPKINS ENGINEERING CO	SAN FERNANDO CALIF
02811	METALPHOTO CORP	CLEVELAND OHIO
02833	ANTENNA SPECIALISTS CO	CLEVELAND OHIO
02863	EMCOR DIV OF INGERSOL PRODUCTS - CANCELED SEE 85005	
02875	HUDSON TOOL AND DIE CO INC	NEWARK N J
02918	MARKITE CORP	NEW YORK N Y
02929	NEWARK ELECTRONICS CORP	CHICAGO ILL
02954	PREMIER METAL PRODUCTS CO INC	NEW YORK N Y
03007	H A GUDEN CO, INC.	LONG ISLAND NY
03038	LONG-LOK CORP	LOS ANGELES CAL
03058	AVIATION INDUSTRIES CORP	ELIZABETH N J
03171	ELECTRONIC PRODUCTION AND DEVELOPMENT INC	HAWTHORNE CALIF
03296	NYLON MOLDING CORP	SPRINGFIELD N J
03481	GOODRICH B F CO AFROSPACE AND DEFFENSE PRODUCTS DIVISION	AKRON OHIO
03508	GENERAL ELECTRIC SEMICONDUCTOR PRODUCTS	SYRACUSE N Y
03558	VANGUARD ELECTRONICS CO	INGLEWOOD CALIF
03743	APPELTON ELECTRIC	CHICAGO ILL
03756	APPLIED RESEARCH LABORATORIES	GLENDALE CALIF
03765	AUTOMATIC COIL CO	MINEOLA N Y
03797	ELDEMA CORP	COMPTON, CALIF
03843	TAGLIARUE DIVISION OF MARSHALLTOWN MFG INC	MARSHALLTOWN IOWA
03877	TRANSITRON ELECTRONIC CORP	WAKEFIELD MASS
03878	SIGNAL MFRG COMPANY	LYNN MASS
03890	MARCEL L FRANK AND SONS	NORRISTOWN, PA
03911	CLAIREX CORP	NEW YORK N Y
03945	WHITE INSTRUMENT LABORATORIES	AUSTIN TEX
03984	GENERAL ELECTRIC CO, SEMI-CONDUCTOR PROD DEPT	CLYDE N Y
04009	ARROW-HART AND HEGEMAN ELECTRIC CO	HARTFORD CONN
04013	METRON INC-NOW TAURUS CORP	LAMBERTVILLE N J
04013	TAURUS CORP-FORMERLY METRON INC	LAMBERTVILLE N J
04099	CAPCO CAPACITORS	IRVING TEX
04151	MONCRIEFF CO	BURBANK CALIF
04264	CIRCON COMPONENT CORP	GOLETA CALIF 93017
04298	ELGIN NATIONAL WATCH CO ELECTRONICS DIV	BURBANK CALIF
04314	GENERAL ELECTRIC CO APPLIANCE CONTROL DEPT	BRIDGEPORT CONN
04347	HYSOL CORP	OLEAN N Y
04426	LICON SWITCH & CONTROL DIV OF ILLINOIS TOOL WORKS	CHICAGO ILL
04552	EMERSON AND CUMING INC	CANTON MASS
04618	AMERICAN PAMCOR INC (API)	PAOLI PA
04618	API (AMERICAN PAMCOR INC)	PAOLI PA
04713	MOTOROLA INC SEMICONDUCTOR PRODUCTS DIVISION	PHOENIX ARIZONA
04773	AUTOMATIC ELECTRIC CO	NORTHLAKE ILL
04814	CHATHAM CONTROLS CORP	CHATHAM N J
05010	THERMISTOR DIVISION OF GULTON INDUSTRIES INC	METUCHEN N J
05236	JONATHAN MFG CO	FULLERTON CALIF
05245	COMPONENTS CORP	CHICAGO ILL
05255	PENNSYLVANIA PERLITE CORP	ALLEN TOWN PA
05276	POMONA ELECTRONICS CO INC	POMONA CALIF
05277	WESTINGHOUSE ELECTRIC CORP SEMI-CONDUCTOR DEPARTMENT	YOUNGWOOD PA
05301	ENGELHARD INDUSTRIES	NEWARK N J
05397	KEMET CO NOW UNION CARBIDE CORP LINDE DIV KEMET DEPT	
05397	UNION CARBIDE COPP LINDE DIVISION KEMET DEPT	
05442	FARRELOY CO	CLEVELAND OHIO
05464	INDUSTRIAL ELECTRONIC ENGINEERS INC	PHILADELPHIA PA
05574	VIKING INDUSTRIES INC	VAN NUYS CALIF
05593	ILLUMITRONIC ENGINEERING CO	CHATSWORTH CALIF
05614	ALTEC LANSING CORP	SUNNYVALE CALIF
05624	BARBER-COLMAN CO	ANAHEIM CALIF
05820	WAKEFIELD ENGINEERING INC	ROCKFORD ILL
05963	ALOE DIVISION-BRUNSWICK CORP	WAKEFIELD MASS
05972	LOCTITE CORP-FORMERLY AMERICAN SEALANTS CO	ST LOUIS MO
05972	AMERICAN SEALANTS CO-NOW LOCTITE CORP	NEWINGTON CONN
06004	BASSICK CO THE	NEWINGTON CONN
06008	NEW DEPARTURE - CANCELED SEE 43334	BRIDGEPORT CONN
06229	ELECTROVERT INC	MOUNT VERNON N Y
06247	GENERAL ELECTRIC CO LAMP METALS AND COMPONENTS DEPT	CLEVELAND OHIO
06317	BERMITE POWDER CO	SAUGUS CALIF
06341	PRODUCTS TECHNIQUES INC	DOWNEY CAL
06383	PANDUIT CORP.	TINLEY PARK ILL
06531	REXTON DICKINSON & CO	RUTHERFORD N J
06540	AMATON ELECTRONIC HARDWARE CO INC	NEW ROCHELLE N Y
06542	FEDERAL STANDARDS	GENERAL SERVICES ADMINISTRATION
06549	UNITED STATES CORP - CANCELED SEE 98571	

Table 7-3. Continued

CODE NO.	MANUFACTURER	ADDRESS
06555	PELDE ELECTRICAL INSTRUMENT CO	PENACOOK N H
06666	GENERAL DEVICES CO INC	INDIANAPOLIS IND
06668	TEXAS INSTRUMENTS INC APPARATUS DIV	HOUSTON TEX
06682	MAGNETIC SHIELD DIVISION OF PERFECTION MICA CO	CHICAGO ILL
06751	SEMCOR DIVISION COMPONENTS INC	PHOENIX ARIZ
06812	TORRINGTON MFG CO WESTERN DIV	VAN NUYS CALIF
06915	RICHCO PLASTIC CO	CHICAGO ILL
07047	ROSS MILTON CO	SOUTHAMPTON PA
07065	LINE ELECTRIC CO	ORANGE N J
07088	KELVIN ELECTRIC CO	VAN NUYS CAL
07115	CORNING GLASS WORKS - CANCELED SEE 14674	
07126	DIGITMAN CO	
07183	DECCO INC	PASADENA CALIF
07261	AVIET CORP	DALLAS TEX
07263	FAIRCHILD CAMERA AND INST CORP SEMICONDUCTOR DIV	CULVER CITY CALIF
07322	MINNESOTA RUBBER CO	MOUNTAIN VIEW CALIF
07514	YARDLEY PRECISION PRODUCTS CO	MINNEAPOLIS MINN
07623	ECK AND KRERS INC	YARDLEY PA
07633	EPOXY PRODUCTS INC	LONG ISLAND CITY N Y
07707	UNITED SHOE MACHINERY CORP FASTENER DIVISION	IRVINGTON N J
07776	MCDANEL REFRACTORY PROCELAIN CO	SHELTON CONN
07812	NOPCO CHEMICAL CO	BEAVER FALLS PA
07829	RODINE ELECTRIC CO	NORTH ARLINGTON N J
07843	LEAR SIEGLER INC ROGEN COMMUNICATION DIV	CHICAGO ILL
07886	NATIONAL RADIO CO INC	PARAMUS N J
07910	CONTINENTAL DEVICE CORP	MELROSE MASS
07933	RAYTHEON MFG CO SEMICONDUCTOR DIVISION	HAWTHORNE CAL
08018	ROG-WARNER CORP.	MOUNTAIN VIEW CALIF
08242	THETA INSTRUMENT CORP	CHICAGO, ILL.
08257	NUCLEONICS PRODUCTS CO INC	SADDLE BROOK N J
08261	SPECTRA-STRIP WIRE AND CABLE CORP	LOS ANGELES CALIF
08289	FLINN DELBERT CO	GARDEN GROVE CALIF
08536	CHICAGO DYNAMIC INDUSTRIES INC	POMONA CALIF
08726	UNIVERSAL TRANSFORMER CO INC	CHICAGO ILL
08736	VEMALINE PRODUCTS CO	WYLIE TEX
08779	SIGNAL TRANSFORMER CO	FRANKLIN LAKES N J
08795	RAYCLAD TUBES INC	BROOKLYN NY
08800	GENERAL ELECTRIC CO INSULATING MATERIALS DEPT	REDWOOD CITY CALIF
08806	GENERAL ELECTRIC CO MINIATURE LAMP DEPT	SCHENECTADY N Y
08811	G L ELECTRONICS DIVISION OF G L INDUSTRIES	CLEVELAND OHIO
08928	ABBOTT SCREW AND MFG CO	WESTVILLE N J
08987	HONEYWELL INC INDUSTRIAL PRODUCTS DIVISION	CHICAGO ILL
08987	BROWN INSTRUMENTS-NOW HONEYWELL INC INDUSTRIAL PRODUCTS DIVISION	FORT WASHINGTON PA
08987	HONEYWELL INC PHILADELPHIA DIVISION	
09040	PHELPS DODGE COPPER PRODUCTS CORP	PHILADELPHIA PA
09106	NLAMAN M M CORP	FORT WAYNE IND
09134	TEXAS CAPACITOR CO	MARBLEHEAD MASS
09145	ATOHM ELECTRONICS	HOUSTON TEX
09214	GENERAL ELECTRIC CO SEMICONDUCTOR PRODUCTS DEPT	SUN VALLEY CALIF
09353	C AND K COMPONENTS INC	AUBURN N Y
09709	FULLDOG ELECTRIC PRODUCTS INC	NEWTON MASS
09795	PENNSYLVANIA FLOURCARBON CO INC	DETROIT MICH
09808	STOCKER HINGE MFG CO	CLIFTON HEIGHTS PA
09823	BURGESS BATTERY CO DIV SERVEL INC	BROOKFIELD, ILL 60513
09922	BURNDY CORP	FREEMPORT ILL
10108	HURST MFG CORP	NORWALK CONN
10110	SCIENTIFIC-ATLANTA INC	PRINCETON, IND
10257	CAHN A L AND SONS	ATLANTA GA
11139	DEUTSCH CO ELECTRONIC COMPONENTS DIVISION	NEW YORK N Y
11147	EPOXYLITE CORP	BANNING CALIF
11279	ROEHR PRODUCTS CO	SOUTH EL MONTE, CALIF
11352	TRANSFORMER ELECTRONICS CO	WATERBURY CONN
11649	CAJON CO	BOULDER COLO
11700	J B ELECTRONIC TRANSFORMERS INC	SOLOH OHIO
11707	IDEAL PRECISION METER CO INC	CHICAGO ILL
11783	NY-GLASS INC	BROOKLYN N Y
11884	GENERAL MILLS, INC CHEMICAL DIV	PARAMOUNT CALIF
11907	CALFAX INC	KANKAKEE ILL
12040	NATIONAL SEMICONDUCTOR CORP.	REDONDO BEACH CALIF
12045	ELECTRONIC TRANSISTORS CORP	DANBURY, CONN
12060	DIODES INC	FLUSHING N Y
12136	PHILADELPHIA HANDLE CO.	CANOGA PARK CALIF
12360	ALBANY PRODUCTS CO INC	CAMDEN, N. J.
12405	HYSOL CORP OF CALIFORNIA	SOUTH NORWALK CONN
12515	THERMATICS INC	EL MONTE CALIF
12599	FLUOROCARBON CO	ELM CITY N C
12623	WHITEY RESEARCH TOOL CO.	ANAHEIM CALIF
		EMERYVILLE CALIF

Table 7-3. Continued

CODE NO.	MANUFACTURER	ADDRESS
12697	CLAROSTAT MFG CO INC	DOVER N H
12744	INDEPENDENT INK CO	GARDENA CALIF
12760	OWEN-CORNING FIBERGLAS CORP	SANTA CLARA CALIF
12770	ARNOLD ENGINEERING CO PACIFIC DIVISION	FULLERTON CALIF
12856	MICROMETALS	SIERRA MADRE CALIF
12954	DICKSON ELECTRONICS CORP	SCOTTSDALE ARIZ
12969	UNITRODE CORP	WATERTOWN MASS
13103	THERMALLOY CO	DALLAS TEX
13113	SHEPHERD CASTERS INC	BENTON HARBOR MICH
13148	VOGUE INSTRUMENT CORP	PLAINVIEW N Y
13209	RENDIX CORP THE SEMICONDUCTOR DIVISION	HOLMDEL N J
13327	SOLITRON DEVICES INC	TAPPAN N Y
13440	AMERICAN PACKING AND GASKET CO	HOUSTON TEX
13550	ATLAS CONNECTORS CO	EL MONTE CALIF
13715	FAIRCHILD CAMERA & INSTRUMENT CORP	SAN RAFAEL CALIF
13812	DIALCO ELECTRIC CORP - CANCELED SEE 72619	
13850	TECHNIPOWER INC	SOUTH NORWALK, CONN.
13934	MIDWEC CORP	OSHKOSH NEBR
14099	SEMTECH CORP	NEWBURY PARK CALIF
14136	AIRWORK CORP	MIAMI FLA
14193	CALIFORNIA RESISTOR CORP	SANTA MONICA, CALIF
14195	ELECTRONIC CONTROLS INC	WILTON CONN
14433	IIT SEMICONDUCTORS	WEST PALM BEACH FLA
14604	ELMWOOD SENSORS INC	CRANSTON R I
14655	CORNELL-DUBILIER ELECTRIC CORP	NEWARK N J
14674	CORNING GLASS WORKS	CORNING N Y
14735	FERROTRAN ELECTRONICS CO INC	NEW YORK N Y
14841	WARD LEONARD ELECTRIC CO	HAGERSTOWN MD
14869	RUSTRAK - CANCELED SEE 96853	
14907	CRAMER DIV OF GIANNINI CONTROLS	OLD SAYBROOK, CONN.
14959	CRANE CO	CHICAGO ILL
15235	CROUSE-HINDS CO	SYRACUSE N Y
15481	CURTIN W H AND CO	HOUSTON, TEX
15584	RIEDON DIV OF ON-MARK ENGR CO	NORTH HOLLYWOOD CALIF
15605	CUTLER-HAMMER INC	MILWAUKEE WIS
15653	KAYLOCK DIVISION, KAYNAR MFG. CO.	FULLERTON, CALIF.
15686	DISC INSTRUMENT CO INC	SANTA ANA CALIF
15801	FENWALL ELECTRONICS INC	FRAMINGHAM MASS
15849	USECO INC	MT VERNON N Y
15909	DAVEN DIVISION THOMAS A EDISON INDUSTRIES MCGRAW EDISON CO	LIVINGSTON N J
15957	TOR MFG CO	IRVINDALE CALIF
16059	DEVCON CORP	DANVERS MASS
16089	MICRO TEK INSTRUMENTS INC	BATON ROUGE LA
16129	CAPACITOR MOUNTING CLIP CORP	DALLAS TEX
16228	RREVEL PRODUCTS CORP	CARLSTADT N J
16231	PARKER INSTRUMENT CORP	STAMFORD CONN
16238	LORD MFG CO INC.	SOUTH LANCASTER MASS
16245	CONAP INC	ALLEGANY N Y
16332	MILWAUKEE RELAYS INC	CEDARBURG WIS
16339	PHOTO CHEMICAL PRODUCTS	SANTA MONICA CALIF
16352	COMPUTER DIODE CORP	LODI N J
16363	SHARPE E J INSTRUMENTS OF CANADA LTD	ONTARIO CANADA
16741	TRIAD TRANSFORMER CORP - CANCELED 81095	
16772	MARTIN-SENOUR	CHICAGO ILL
16956	DENNISON MANUFACTURING COMPANY	FARMINGHAM MASS
17069	CIRCUIT STRUCTURES LAB	SANTA ANA CALIF
17109	THERMONETICS INC	SANTA MONICA CALIF
17276	NEXUS RESEARCH LABORATORY INC	CANTON MASS
17397	BURGESS BATTERY CO	NEW YORK N Y
17414	ROWAN CONTROLLER CO	RED BANK N J
17771	SINGER CO THE DIEHL DIVISION	SOMERVILLE N J
17771	DIEHL DIVISION OF THE SINGER CO	SOMERVILLE N J
17856	SILICONIX INC	SUNNYVALE CAL
17864	CAMPBELL INDUSTRIES	DOVER N H
17994	WILLSON PRODUCTS DIVISION	READING PA
18034	NUCLEAR PRODUCTS CO	CLEVELAND OHIO
18154	FLO-LOK INC	HOUSTON TEX
18324	SIGNETICS CORP	SUNNYVALE CALIF
18598	MILLER-STEPHENSON CHEMICAL CO	DANBURY CONN
18626	DRIVER HARRIS CO	HARRISON N J
18643	ETHYLENE CORP	MURRAY HILL N J
18677	SCANBE MFG CORP	MONTEREY PARK CALIF
18702	DUCCOMMUN METALS AND SUPPLY CO	LOS ANGELES CALIF
18873	DU PONT E I DE NEMOURS AND CO INC	WILMINGTON DEL
18911	DURANT MFG CO	MILWAUKEE WIS
18915	BIRTCHEP CORP THE INDUSTRIAL DIVISION	MONTEREY PARK CALIF
19141	CAL-VAL R AND D CORP ISOMODE DIVISION	BURBANK, CALIF

Table 7-3. Continued

CODE NO.	MANUFACTURER	ADDRESS
19291	ECLIPSE FUEL ENGR CO	ROCKFORD ILL
19396	PAKTRON DIV. OF ILLINOIS TOOL WORKS INC	ALEXANDRIA VA
19397	TRACOR INC	AUSTIN TEX
19397	TRACOR INC (HORT L STONE DIV)	AUSTIN TEX
19477	ELECTRO-TECHNIQUES	LA HABRA CALIF
19701	ELECTRA MFG CO	INDEPENDENCE KANS
20093	ELECTRICAL INDUSTRIES DIV OF PHILIPS ELECTRONICS	MURRAY HILL N J
20512	SARGENT E H CO	SPRINGFIELD N J
21520	FANSTEEL METALLURGICAL CORP	NORTH CHICAGO ILL
21649	OTTO CONTROLS	MORTON GROVE ILL 60053
21926	GENERAL TECHNOLOGY CORP.	TORRANCE, CALIF
22234	MI-KRO CONNECTOR CORP	LONG ISLAND CITY N Y
22474	NESSCO INSTRUMENT DIV OF DATAPULSE INC	INGLEWOOD CALIF
22582	HAMILTON CO	WHITTIER CAL
22835	TWA-CON INC	MEDFORD MASS
22893	SHELL CHEMICAL CO	PITTSBURG, CALIF
23050	PRODUCT COMPONENTS CORPORATION	HASTINGS-ON-HUDSON N Y
23092	MILLAFLOW CORP	RICHMOND CALIF
23347	ROTO ACTUATOR CORP	ST CLAIR SHORES MICH
23732	TRACOR INC (SULZER DIV.)	ROCKVILLE, MD
24152	SEI MANUFACTURING CO	NORTHBRIDGE CALIF
24211	GRIGSBY-BARTON INC	ARLINGTON HEIGHTS ILL
24355	ANALOG DEVICES INC	CAMBRIDGE MASS
24446	GENERAL ELECTRIC CO	SCARSDALE NY
24453	GENERAL ELECTRIC DISTRIBUTING CORP	BROOKLYN CONN
24618	TRANSCON MFG. CO.	DALLAS TEX
24655	GENERAL RADIO CO	WEST BARNSTABLE MASS
25709	GOW MACK INSTRUMENT CO	MADISON N J
25795	GRAINGER W W INC	CHICAGO ILL
26844	INJECTION MOLDERS SUPPLY CO INC	CLEVELAND OHIO
28480	HEWLETT-PACKARD CO	PALO ALTO CALIF
28520	HEYMAN MFG CO	KENILWORTH N J
29424	HOSKINS MFG CO	DETROIT MICH
30119	IDEAL INDUSTRIES INC	SYCAMORE ILL
30327	IMPERIAL EASTMAN CORP	CHICAGO ILL
31356	J B T INSTRUMENTS INC	NEW HAVEN CONN
35009	IRC RESISTOR DIV OF RENFREW ELECTRIC CO LTD	TORONTO ONTARIO CANADA
35529	LEEDS AND NORTHRUP	PHILADELPHIA PA
37942	MALLOY P R AND CO INC	INDIANAPOLIS IND
38056	MANNING MAXWELL AND MOORE DIV OF DRESSER IND INC	STRATFORD CONN
38443	MARLIN-ROCKWELL CORP	JAMESTOWN N Y
39428	MC MASTER-CARR SUPPLY CO	CHICAGO ILL
39861	METAL GOODS CORP	ST LOUIS MO
40920	MINIATURE PRECISION BEARINGS INC	KEENE N H
41387	MOORE PRODUCTS CO	SPRING HOUSE PA
42190	MUTER CO	CHICAGO ILL
42498	NATIONAL CO INC	MELROSE MASS
42679	NATIONAL LEAD COMPANY	NEW YORK NY
43334	NEW DEPARTURE DIVISION GENERAL MOTORS	BRISTOL CONN
44038	NORTH ELECTRIC CO	GALION OHIO
44197	NORTON CO	WORCESTER MASS
44655	OHMITE MFG CO	SKOKIE ILL
45681	PARKER HANNIFIN CORP.	CLEVELAND OHIO
46384	PENN ENGINEERING AND MFG CORP	DOYLESTOWN PA
52660	RYERSON JOSEPH T AND SON INC	CHICAGO ILL
53629	SCIENTIFIC GLASS APPARATUS CO	BLOOMFIELD N J
53800	SEARS ROEBUCK AND CO	CHICAGO ILL
54294	SHALLCROSS MFG CO	SELMA N C
54636	SHERWIN-WILLIAMS	CLEVELAND OHIO
54715	SHURE BROS INC	EVANSTON ILL
55026	SIMPSON ELECTRIC CO	CHICAGO ILL
55130	SKINNER PRECISION INDUSTRIES INC	NEW BRITAIN CONN
55814	SOLA ELECTRIC CO	ELK GROVE ILL
56289	SPRAGUE ELECTRIC CO	NORTH ADAMS MASS
56574	STANDARD BRASS AND MFG CO	PORT ARTHUR TEX
56631	STANDARD ELECTRIC TIME CO	SPRINGFIELD MASS
56878	STANDARD PRESSED STEEL CO PRECISION FASTNERS	JENKINTOWN PA
57163	STARRETT, L.S. CO.	ATHOL MASS
57771	STIMPSON EDWIN B CO	BROOKLYN N Y
58474	SUPERIOR ELECTRIC CO	BRISTOL CONN
58553	SUPERIOR VALVE AND FITTINGS CO	PITTSBURGH PA
59446	TELEX INC	ST PAUL MINN
59730	THOMAS AND BETTS CO	ELIZABETH N J
60380	TORRINGTON COMPANY	TORRINGTON CONN
60741	TRIPLETT ELECTRICAL INSTRUMENT CO	BLUFFTON OHIO
61349	UNITED STATES GAUGE DIV OF AMETEK	SELLERSVILLE PA
62119	UNIVERSAL ELECTRIC CO	OWOSSO MICH

Table 7-3. Continued

CODE NO.	MANUFACTURER	ADDRESS
63060	VICTOREEN INSTRUMENT CO	CLEVELAND OHIO
64484	WELCH SCIENTIFIC CO THE	SKOKIE ILL
65092	WESTON INSTR, INC.	NEWARK N J
65586	WIEGAND EDWIN L CO	PITTSBURGH PA
70119	ADVANCE ELECTRIC AND RELAY - CANCELED SEE 04298	
70269	ALLEGHENY LUDLUM STEEL CORP	PITTSBURGH, PA
70276	ALLEN MFG CO	HARTFORD CONN
70309	ALLIED CONTROL CO INC	NEW YORK N Y
70318	ALLMETAL SCREW PRODUCTS COMPANY INC	GARDEN CITY N Y
70331	ALPHA WIRE CORP - CANCELED SEE 92194	
70371	AMERICAN LAVA CORP	CHATTANOOGA TENN
70472	ASSOCIATED SPRING CORP	BRISTOL CONN
70485	ATLANTIC INDIA RUBBER WORKS INC	CHICAGO ILL
70528	ATLAS TACK CORP	FAIRHAVEN MASS
70563	AMPERITE CO	UNION CITY N J
70661	ATLAS SOUND DIV OF AMERICAN TRADING AND PRODUCTION CORP	BROOKLYN N Y
70777	AUTOMATIC LOCKING DEVICES INC	BRIDGEPORT CONN
70884	BAYSTATE STAMPING CO	WORCESTER MASS
70892	BEAD CHAIN MFG CO	BRIDGEPORT CONN
70903	BELDEN MFG CO	CHICAGO ILL
71002	RIRNBACH RADIO CO INC	NEW YORK N Y
71034	BLILEY ELECTRIC CO INC	ERIE PA
71041	BOSTON GEAR WORKS DIVISION OF MURRAY CO OF TEXAS	ST QUINCY MASS
71087	ROOTS AIRCRAFT NUT DIV TOWNSEND CO	NORWALK CONN
71098	BRISTOL CO READ INDUSTRIAL INSTRUMENT DIV	WATERBURY CONN
71191	BROWN, ANDREW CO.	LOS ANGELES CALIF
71218	BUD RADIO INC	WILLOUGHBY OHIO
71279	CAMBRIDGE THERMIONIC CORP	CAMBRIDGE MASS
71286	CAMLOC FASTNER CORP	PARAMUS N J 07652
71365	CENTRAL LABORATORIES - CANCELED SEE 80737	
71400	RUSSMAN MFG DIVISION OF MCGRAW-EDISON CO	ST LOUIS MO
71450	CTS CORP	ELKHART IND
71468	IIT CANNON FLECTRIC CO	LOS ANGELES CALIF
71482	CLARE C P AND CO	CHICAGO ILL
71568	COLONIAL BRONZE CO	TORRINGTON CONN
71590	CENTRAL* B DIVISION OF GLOBE-UNION INC	MILWAUKEE WIS
71707	COTO-COIL CO INC	PROVIDENCE R I
71729	CRESCENT BOX CORP	PHILADELPHIA PA
71744	CHICAGO MINIATURE LAMP WORKS	CHICAGO ILL
71785	CINCH MFG CO AND HOWARD B JONES DIV	CHICAGO ILL
71913	DE-STA-CO CORP	DETROIT MICH
71984	DOW CORNING CORP	MIDLAND MICH
72005	DRIVER, WILBER B CO	NEWARK N J
72041	EAGLE ELECTRIC MFG CO	LONG ISLAND CITY N Y
72136	ELECTRO MOTIVE MFG CO	WILLIMANTIC CONN
72228	CONTINENTAL SCREW CO	NEW BEDFORD MASS
72259	NYTRONICS INC	BERKELEY HEIGHTS N J
72271	EUTECTIC WELDING ALLOYS CORP	FLUSHING N Y
72307	FAHNESTOCK ELECTRIC CO	LONG ISLAND CITY NY
72354	FAST JOHN E CO DIVISION OF VICTOREEN INSTRUMENT CO	CHICAGO ILL
72512	DAVIES, HARRY MOLDING CO	CHICAGO ILL
72619	DIALIGHT CORP	BROOKLYN NY
72653	G C ELECTRONICS MFG CO	ROCKFORD ILL
72656	INDIANA GENERAL CORP ELECTRONICS DIVISION	KEASBY N J
72688	DOLPH JOHN C CO	MONMOUTH JUNCTION N J
72699	GENERAL INSTRUMENT CORP	NEWARK N J
72765	DRAKE MFG CO	CHICAGO ILL
72794	DZUS FASTENER CO INC	WEST ISLIP N Y
72825	EBY HUGH H INC	PHILADELPHIA PA
72913	GRIGOLEIT CO THE	DECATUR ILL
72962	ELASTIC STOP NUT CORP OF AMERICA	UNION N J
72982	ERIE TECHNOLOGICAL PRODUCTS INC	ERIE PA
73061	HANSEN MFG CO INC	PRINCETON IND
73076	HARPER, H M CO	CHICAGO ILL
73138	BECKMAN INSTRUMENT INC HELIPOT DIVISION	FULLERTON CALIF
73160	FEDERAL MOGUL DIV.OF FEDERAL MOGUL CORP.	WARREN MICH
73219	FISKE BROS REFINING	NEWARK N J
73293	HUGHES PRODUCTS DIV OF HUGHES AIRCRAFT CO	NEWPORT BEACH CALIF
73432	AMERICAN MICROPHONE CO	ROCKFORD ILL
73445	AMPEREX ELECTRONIC CO DIV OF NORTH AMERICAN PHILIPS CO INC	HICKSVILLE N Y
73506	BRADLEY SEMICONDUCTOR CORP	NEW HAVEN CONN
73559	CARLING ELECTRIC INC	HARTFORD CONN
73734	FEDERAL SCREW PRODUCTS CORP	CHICAGO ILL
73774	GENERAL ELECTRIC SUPPLY - CANCELED SEE 24453	
73779	GENERAL MOLDED PRODUCTC INC	DES PLAINES ILL
73793	GENERAL INDUSTRIES CO	ELYRIA OHIO
73803	METALS AND CONTROLS INC, DIV OF TI	ATTLEBORO, MASS

Table 7-3. Continued

CODE NO.	MANUFACTURER	ADDRESS
73899	J F D ELECTRONICS CORP	BROOKLYN N Y
73949	GUARDIAN ELECTRIC MFG CO	CHICAGO ILL
73977	HANDY AND HARMON	NEW YORK N Y
73988	HARRINGTON AND KING PERFORATING CO INC	CHICAGO ILL
74042	MERIT COIL AND TRANSFORMER CORP	HOLLYWOOD FLORIDA
74193	HEINEMANN ELECTRIC CO	TRENTON N J
74199	QUAM NICHOLS CO	CHICAGO ILL
74200	HEINZE ELECTRIC CO	LOWELL MASS
74364	EASTMAN CHEMICAL PRODUCTS INC	KINGSPORT TENN
74400	HGRBS JOHN W CORP	SPRINGFIELD ILL
74438	HOLLINGSHEAD R M CORP	CAMDEN N J
74445	HOLO-KROME SCREW CORP.	HARTFORD, CONN
74542	HOYT ELECTRICAL INSTRUMENT WORKS	PENACOOK N H
74545	HUBBELL HARVEY INC	BRIDGEPORT CONN
74840	ILLINOIS CONDENSER CO	CHICAGO ILL
74900	INTERNATIONAL NICKEL CO INC	NEW YORK N Y
74970	JOHNSON E F CO	WASECA MINN
75042	INTERNATIONAL RESISTANCE CO	PHILADELPHIA PA
75165	JOHNS MANVILLE CORP	NEW YORK, NY
75263	KEYSTONE CARBON CO INC	ST MARYS PA
75285	KEENEY CAR LINER AND RAG CO INC	SHELBYVILLE IND
75297	KESTER SOLDER COMPANY	CHICAGO ILL
75358	KNAPE AND VOGT MFG CO	GRAND RAPIDS MICH
75376	KURZ-KASCH INC	DAYTON OHIO
75378	KNIGHTS JAMES CO THE	SANDWICH ILL
75382	KULKA ELECTRIC MFG CO	MOUNT VERNON N Y
75582	LEVITON MFG CO	BROOKLYN N Y
75915	LITTELFUSE INC	DES PLAINES ILL
76005	LORD MFG CO	ERIE PA
76101	MAICO ELECTRONICS	MINNEAPOLIS MINN
76323	M AND T CHEMICALS	CARTERET N J
76381	MINNESOTA MINING AND MFG CO	ST PAUL, MINN
76487	MILLEN JAMES MFG CO INC	MALDEN MASS
76493	MILLER J W CO	LOS ANGELES CALIF
76545	MUELLER ELECTRIC CO	CLEVELAND OHIO
76854	OAK MFG CO	CRYSTAL LAKE ILL
76871	OHIO NUT AND BOLT CO	BEREA OHIO
77247	PERMATEx CO INC	HUNTINGTON STATION N Y
77308	PLASTIC AND RUBBER PRODUCTS	LOS ANGELES CALIF
77342	AMERICAN MACHINE AND FOUNDRY CO POTTER AND BRUMFIELD DIV	PRINCETON IND
77342	POTTER BRUMFIELD DIV OF AMF	PRINCETON IND
77820	BENDIX CORP. SCINTILLA DIV.	SIDNEY N Y
77969	RUBBERCRAFT CORP	TORRANCE CALIF
78189	SHAKEPROOF DIVISION OF ILLINOIS TOOL WORKS	ELGIN ILL
78277	SIGMA INSTRUMENTS INC	SO BRAintree MASS
78290	STRUTHERS-DUNN INC	PITMAN N J
78488	STACKPOLE CARBON CO	ST MARYS PA
78553	TINNERMAN PRODUCTS INC	CLEVELAND OHIO
78580	STERLING VARNISH CO.	SWICKLEY PENN
78696	TAYLOR CORP	VALLEY FORGE PA
78711	TELEPHONICS CORP	HUNTINGTON NY 11743
78947	UCINITE CO THE	NEWTONVILLE MASS
78976	UNGAR ELECTRIC TOOLS DIV OF ELDON INDUSTRIES	HAWTHORNE CALIF
79061	VACO PRODUCTS INC	CHICAGO ILL
79136	WALDES KOHINOOR INC	LONG ISLAND CITY N Y
79142	VEEDER ROOT INC	HARTFORD CONN
79221	WATLOW ELECTRIC MFG CO	ST LOUIS MO
79405	WOOD ELECTRIC CORP.	ST. LYNN MASS
79409	WOODHEAD, DANIEL CO	CHICAGO ILL
79436	WORNOW PROCESS PAINT CO	LOS ANGELES CALIF
79687	WILLSON PRODUCTS INC	READING PA
79725	WIREMOLD CO THE	HARTFORD CONN
79727	CONTINENTAL-WIRT ELECTRONICS CORP	PHILADELPHIA PA
79963	ZIERICK MFG CORP	NEW ROCHELLE N Y
80103	LAMBDA ELECTRONICS CORP	HUNTINGTON N Y
80145	ASSEMBLY PRODUCTS INC	CHESTERLAND OHIO
80183	SPRAGUE PRODUCTS CO	NORTH ADAMS MASS
80185	DUMONT CORP	GREENFIELD MASS
80195	ETNYRE E D AND CO INC	OREGON ILL
80223	UNITED TRANSFORMER CO	NEW YORK N Y
80251	FORMICA CORP	CINCINNATI OHIO
80294	BOURNS LABORATORIES INC	RIVERSIDE CALIF
80411	ACRO DIV OF ROBERTSHAW CONTROLS	COLUMBUS OHIO
80583	HAMMARLUND CO INC	NEW YORK N Y
80599	MCGRAW-EDISON	ELGIN ILL
80640	STEVENS ARNOLD CO INC	BOSTON MASS
80737	CHAPMAN CHEMICAL CO	MEMPHIS TENN

Table 7-3. Continued

CODE NO.	MANUFACTURER	ADDRESS
80740	BECKMAN INSTRUMENTS INC	FULLERTON CALIF
80798	CABOT CORP	BOSTON MASS
80813	DIMCO GRAY CO	DAYTON OHIO
80868	PHOTOCON RESEARCH PRODUCTS CO	PASADENA CALIF
81030	INTERNATIONAL INSTRUMENTS INC	ORANGE CONN
81073	GRAYHILL INC	LA GRANGE ILL
81083	KREGGER L F MFG CO	CHICAGO ILL
81095	TRIAD TRANSFORMER CORP	VENICE CALIF
81134	ELECTRO-VOICE INC	BUCHANAN MICH
81150	CEMCO MFG CO	COLUMBUS OHIO
81312	WINCHESTER ELECTRONIC DIV OF LITTON INDUSTRIES	OAKVILLE CONN
81348	FEDERAL SPECIFICATIONS	GENERAL SERVICES ADMINISTRATION
81349	MILITARY SPECIFICATIONS	STD DIV DIR OF LOG SER DSA
81350	JOINT ARMY-NAVY SPECIFICATIONS	STD DIV DIR OF LOG SER DSA
81453	RAYTHEON CO INDUSTRIAL COMPONENTS DIVISION - CANCELED SEE 94144	
81483	INTERNATIONAL RECTIFIER CORP	EL SEGUNDO CALIF
81541	AIRPAX ELECTRONICS INC	CAMBRIDGE MD
81640	CONTROLS COMPANY OF AMERICA	SELMA, NC
81646	IDEAL CORP	BROOKLYN N Y
81697	ESTERHROOK PEN COMPANY	CAMDEN N J
81812	TRIMM INC	LIBERTYVILLE ILL
81840	LEDEX INC	DAYTON OHIO
81904	CLOVER INDUSTRIES INC	TONAWANDA N Y
82106	BERTEA PRODUCTS INC	PASADENA CALIF
82107	AMERLINE CORP	CHICAGO ILL
82227	HAYDON A W CO	WATERBURY CONN
82389	SWITCHCRAFT INC	CHICAGO ILL
82766	PHILLIPS-ADVANCE CONTROL CO DIV OF PHILLIPS-ECKARDT ELECT CORP	JOLIET ILL
82877	ROTRON MFG CO INC	WOODSTOCK N Y
82879	ROYAL ELECTIC CORP	PAWTUCKET, RHODE ISLAND
82893	VECTOR ELECTRONIC CO	GLENDALE CALIF
83008	STACO INC	DAYTON OHIO
83014	HARTWELL CORP	LOS ANGELES CALIF
83125	GENERAL INSTRUMENT CORP CAPACITOR DIVISION	DARLINGTON S C
83186	VICTORY ENGINEERING CO	SPRINGFIELD N J
83241	FUSITE CORP	CINCINATI OHIO
83330	SMITH HERMAN H INC	BROOKLYN N Y
83332	TECH LABORATORIES INC	PALISADES PARK N J
83574	PRODUCTS RESEARCH CO.	BURBANK CALIF
83594	BUKROUGHS CORP ELECTRONIC TUBE DIVISION	PLAINFIELD N J
83740	UNION CARBIDE CORP CONSUMER PRODUCTS DIV	NEW YORK N Y
83777	MEMCOR INC	HUNTINGTON IND
83833	THOMAS AND SKINNER INC	INDIANAPOLIS IND
83880	PRECISION STEEL WAREHOUSE INC.	FRANKLIN PARK ILL
84171	ARCO ELECTRONICS INC	GREAT NECK N Y
84411	GOOD-ALL ELECTRIC MFG CO	OGALLALLA NEBR
84561	HANNIFIN CYLINDER DIV PARKER HANNIFIN CORP	DES PLAINES ILL
84830	LEE SPRING CO., INC.	BROOKLYN, NEW YORK
84970	SARKES TARZIAN INC	BLOOMINGTON IND
84971	TA MFG CORP	LOS ANGELES CALIF 90039
85005	INGERSOLL PRODUCTS DIVISION OF BORG-WARNER CORP	CHICAGO ILL
85480	BRADY, W.H. CO.	MILWAUKEE WISC
85599	GENERAL ELECTRIC CO TUBE DEPT	SCHENECTADY N Y
85925	ELECTRO MECHANICAL INSTRUMENT CO	PERKASIE PA
86104	CELLUPLASTIC CORP	NEWARK N J
86335	GLENCO CORP	METUCHEN N J
86415	PAWTUCKET SCREW COMPANY	PAWTUCKET R I
86445	PENN FIBRE AND SPECIALTY CO	PHILADELPHIA PA
86577	PRECISION METAL PRODUCTS CO	STONEHAM MASS
86603	PROTECTION PRODUCTS MFG CO [WELWOOD CEMENT]	KALAMAZOO, MICH
86797	ROGAN BROS	SKOKIE ILL
86928	SEASTROM MFG CO INC	GLENDALE CALIF 91201
86961	SHELL CHEMICAL CO	NEW YORK N Y
87034	MARCO-OAK INDUSTRIES A DIV OF ELECTRO/NETICS CORP	ANAHEIM CALIF
87187	KRYLON INC	NORRISTOWN PENN
87216	PHILCO CORP LANSDALE DIVISION	LANSDALE PA
87308	SOUTHERN SCREW CO	STATESVILL N C
87569	STEMCO CORP	CLEVELAND, OHIO
88044	AIR FORCE-NAVY AERONAUTICAL STD (AN) DWGS	DEPTS OF NAVY AND AIR FORCE
88145	IDEAL CORP - CANCELED SEE 81646	
88220	GOULD-NATIONAL BATTERIES INC	ST PAUL MINN
88245	U S ENGINEERING CO	VAN NUYS CALIF
88301	MYSTIK TYPE INC	NORTHFIELD, ILL
88303	PHILLIPS PROCESS CO.	ROCHESTER NY
88499	STAYTITE PRODUCTS CO	CLEVELAND, OHIO
88920	GRAPHIC CONTROLS CORP DETROIT DIV	LATHRUP VILLAGE MICH
89307	SPRAGUE ENGINEERING DIVISION OF TELEDYNE INC	GARDENA CALIF

Table 7-3. Continued

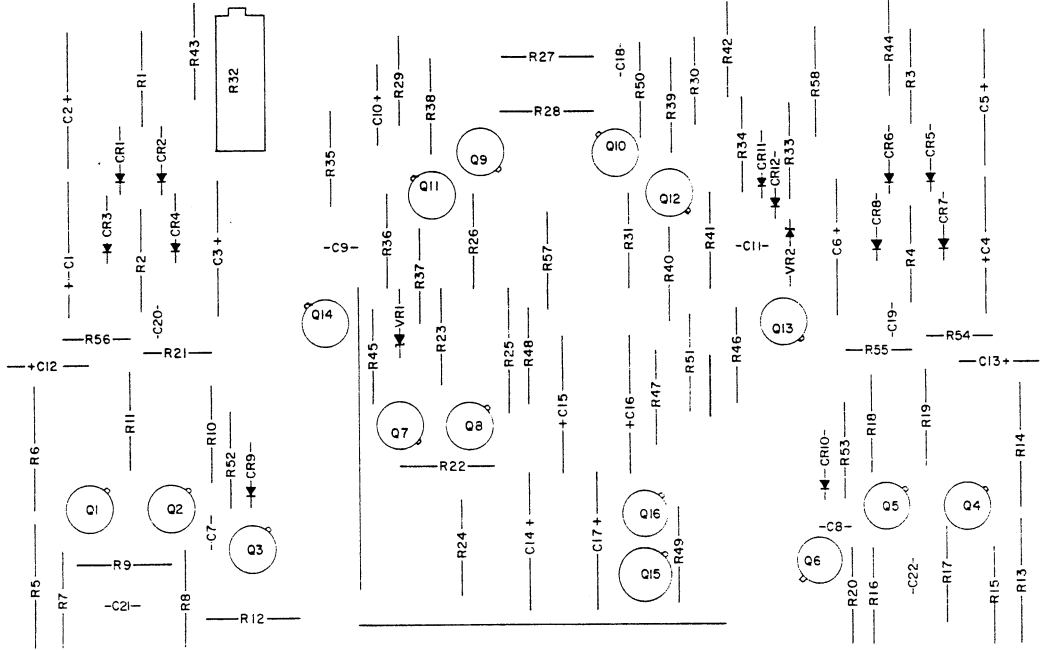
CODE NO.	MANUFACTURER	ADDRESS
89469	BUCKEYE MOLDING CO	MIAMISBURG OHIO
89482	HGLTZER CABOT CORP	BOSTON MASS
89698	REES MACKWORTH G INC	DETROIT MICH
89753	TRUE TEMPER CORP	CLEVELAND OHIO
89904	WESTINGHOUSE ELECTRIC CORP LAMP DIVISION	TRENTON N J
90052	BOSTON GEAR WORKS DIV OF MURRAY CO OF TEXAS	PHILADELPHIA PA
90070	CONOFLOW CORP	PHILADELPHIA PA
90095	TECHNITROL ENGINEERING CO	PHILADELPHIA PA
90101	ADYU ELECTRONICS LAB, INC	PASSAIC NJ
90174	U.S. RUBBER CO. MECH. GOODS DIV.	PASSAIC NEW JERSEY
90411	PRISCOE MFG CO	COLUMBUS OHIO
90634	GULTON INDUSTRIES INC	METUCHEN N J
90797	MAGNETICS INC	BUTLER PA
91407	SUPERIOR ELECTRIC CO - CANCELED SEE 58474	
91506	AUGAT INC	ATTLEBORO MASS
91556	BROOKS INSTRUMENTS CO	HATFIELD PA
91637	DALE ELECTRONICS INC	COLUMBUS NEBR
91662	ELCO CORP	WILLOW GROVE PA
91767	HELI-COIL CORP	DANBURY CONN
91821	JOHNSON BRONZE CO	NEW CASTLE PA
91833	KEYSTONE ELECTRONICS CORP	NEW YORK N Y
91861	MAGNETIC METALS CO	CAMDEN N J
91886	MALCO MFG CO	CHICAGO ILL
91927	MICRO METAL PRODUCTS INC	LOS ANGELES CALIF
91929	MINNEAPOLIS HONEYWELL MICROSWITCH DIV	FREEPORT ILL
92194	ALPHA WIRE CORP	ELIZABETH N J
92215	VOI-SHAN MFG CO	CULVER CITY CALIF
92264	ENGINEERED PRODUCTS CO	FLINT MICHIGAN 48501
92607	TENSOLITE INSULATED WIRE CO INC	TARRYTOWN N Y
92798	JOHNS-MANVILLE	MANVILLE NJ
92966	HUDSON LAMP COMPANY	KEARNY N J
93308	CLARK ELECTRONICS LABORATORIES	PALM SPRINGS CALIF
93332	SYLVANIA ELECTRONICS DIV	WOBURN MASS 01801
93460	WHITE SS DENTAL MFG CO	PRINCE BAY STATEN ISLAND NY 10309
93768	GORDON CLAUD S CO	RICHMOND HILL ILL
93908	CARLON PRODUCTS CORP	AURORA OHIO
93990	CLIMAX METAL PRODUCTS	CLEVELAND, OHIO
93994	CHART PAK INC	LEEDS MASS
94139	KEYSTONE ELECTRONICS CO	NEWARK N J
94144	RAYTHEON CO COMPONENTS DIV INDUSTRIAL COMPONENTS OPERATION	QUINCY MASS
94222	SOUTH CHESTER CORP	CHESTER, PA
94310	TRU-OHM PRODUCTS MEMCOR COMPONENTS DIVISION	HUNTINGTON IND
94499	ALPHA MOLYKOTE CORP	STANFORD CONN
94696	MAGNECRAFT ELECTRIC CO	CHICAGO ILL
95023	PHILBRICK GEORGE A RESEARCHES INC	BOSTON MASS
95146	ALCO ELECTRONICS MFG CO	LAWRENCE, MASS
95263	LEECRAFT MFG CO, INC.	LONG ISLAND CITY NEW YORK
95265	NATIONAL COIL CO	SHERIDAN WYO
95275	VITRAMON INC	BRIDGEPORT CONN
95303	RADIO CORP OF AMERICA RECEIVING TURE AND SEMICONDUCTOR DIV	CINCINNATI OHIO
95348	GORDOS CORP	BLOOMFIELD N J
95354	METHODE MANUFACTURING CO	CHICAGO ILL
95406	EVERHOT PRODUCTS CO	CHICAGO ILL
95640	WESTRONICS	FORTWORTH TEX
95696	CADILLAC PLASTIC AND CHEMICAL CO	DETROIT MICH
96096	AMERICAN CARBONIC ENGINEERING CO	NEW YORK N Y
96182	MASTER SPECIALTIES CO.	COSTA MESA CALIF
96214	TEXAS INSTRUMENTS INC APPARATUS DIVISION	DALLAS TEX
96256	THORDARSON-MEISSNER INC	MT CARMEL ILL
96336	ENSIGN-BICKFORD PRODUCTS	SIMSBURY CONN
96341	MICROWAVE ASSOCIATES INC	BURLINGTON MASS
96467	SUPERIOR MFG AND INSTRUMENT CORP	LONG ISLAND CITY N Y
96613	ALPHA METALS INC.	GERSEY CITY N J
96791	AMPHENOL CORP AMPHENOL CONTROLS DIVISION	JANESVILLE WIS
96820	JOHNS-MANVILLE PRODUCTS CORP	HOUSTON TEX
96853	RUSTRAK INSTRUMENT CO INC	MANCHESTER N H
96906	MILITARY STANDARD (MS) DRAWINGS	STD DIV DIR OF LOG SER DSA
97049	WELLER ELECTRIC CORP	EASTON PA
97393	SHUR-LOK CORP	SANTA ANA CALIF
97464	INDUSTRIAL RETAINING RING CO	IRVINGTON N J
97539	A P M CORP	ENGLEWOOD N J
97814	SEALTRON CO	CINCINNATI OHIO
97852	STAR STAINLESS SCREW CO	PATTERSON N J
97954	U S COMPONENTS INC	NEW YORK N Y
97965	STANCOR ELECTRONICS INC	CHICAGO ILL
98159	RUBBER TECK INC	GARDENA CALIF
98278	MICRODOT INC	SOUTH PASADENA CALIF

Table 8-1. Continued

DRAWING NO.	DESCRIPTION	PAGE NO.
8861	Filter P.C. Board, Assembly Drawing	8-6
6809	Linear Phase/Time Comparator, Interconnecting Diagram	8-7
6008	Frequency Converter P.C. Board, Assembly Drawing	8-9
6004	Frequency Converter, Schematic Diagram	8-9
6007	Phase Comparator P.C. Board, Assembly Drawing	8-11
6005	Phase Comparator, Schematic Diagram	8-11
6791	Decade Divider P.C. Board, Assembly Drawing	8-13
6808	Decade Divider, Schematic Diagram	8-13

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100

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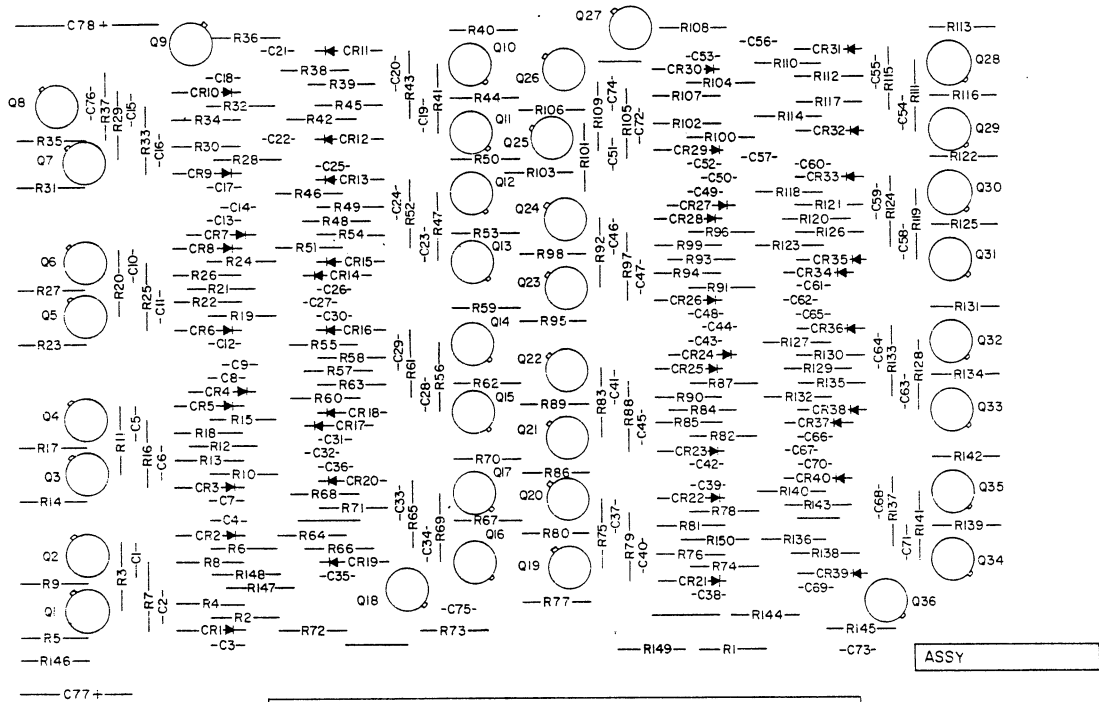


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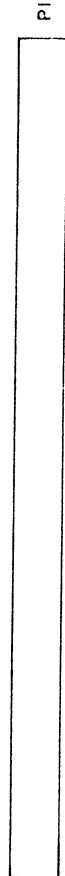
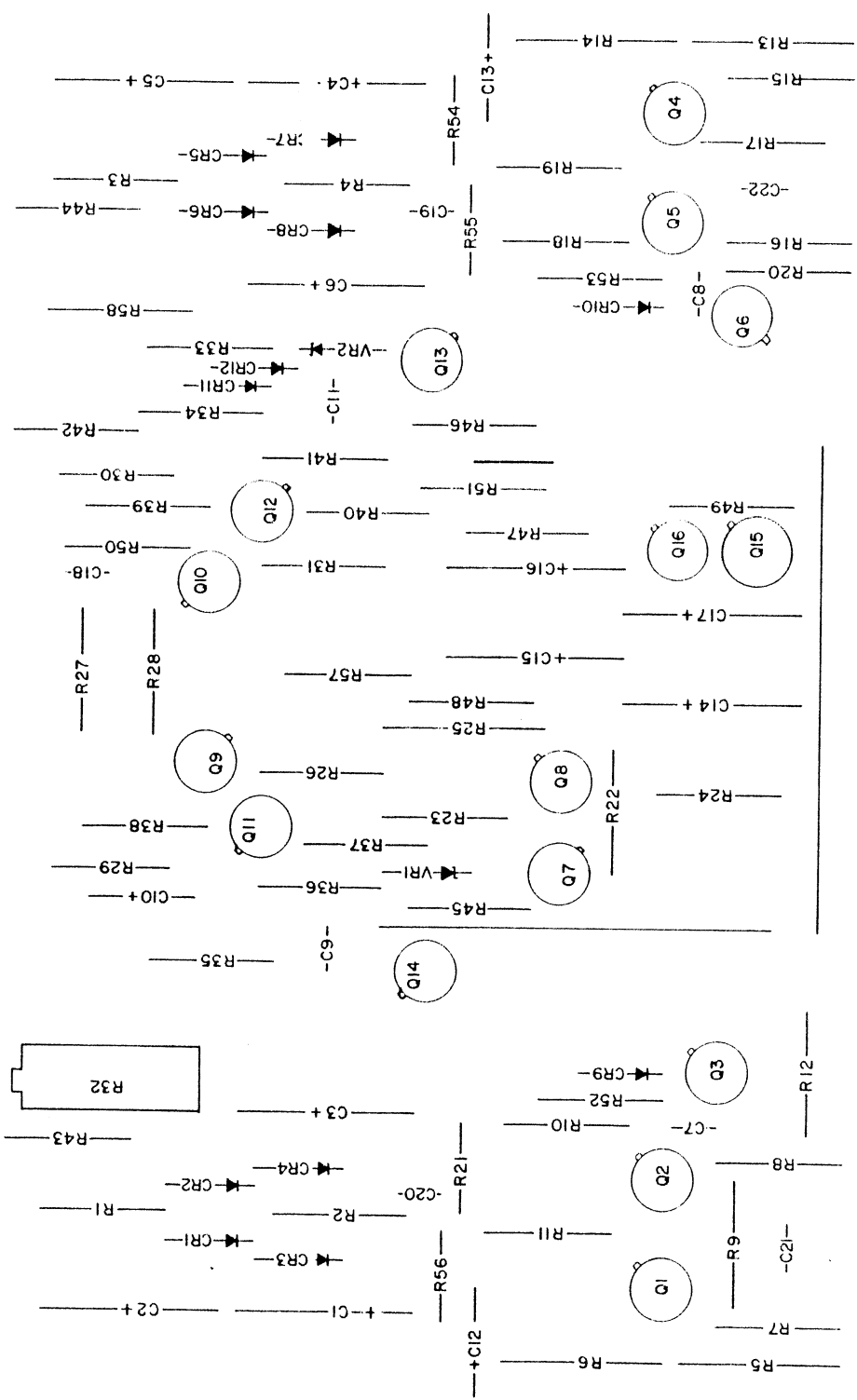
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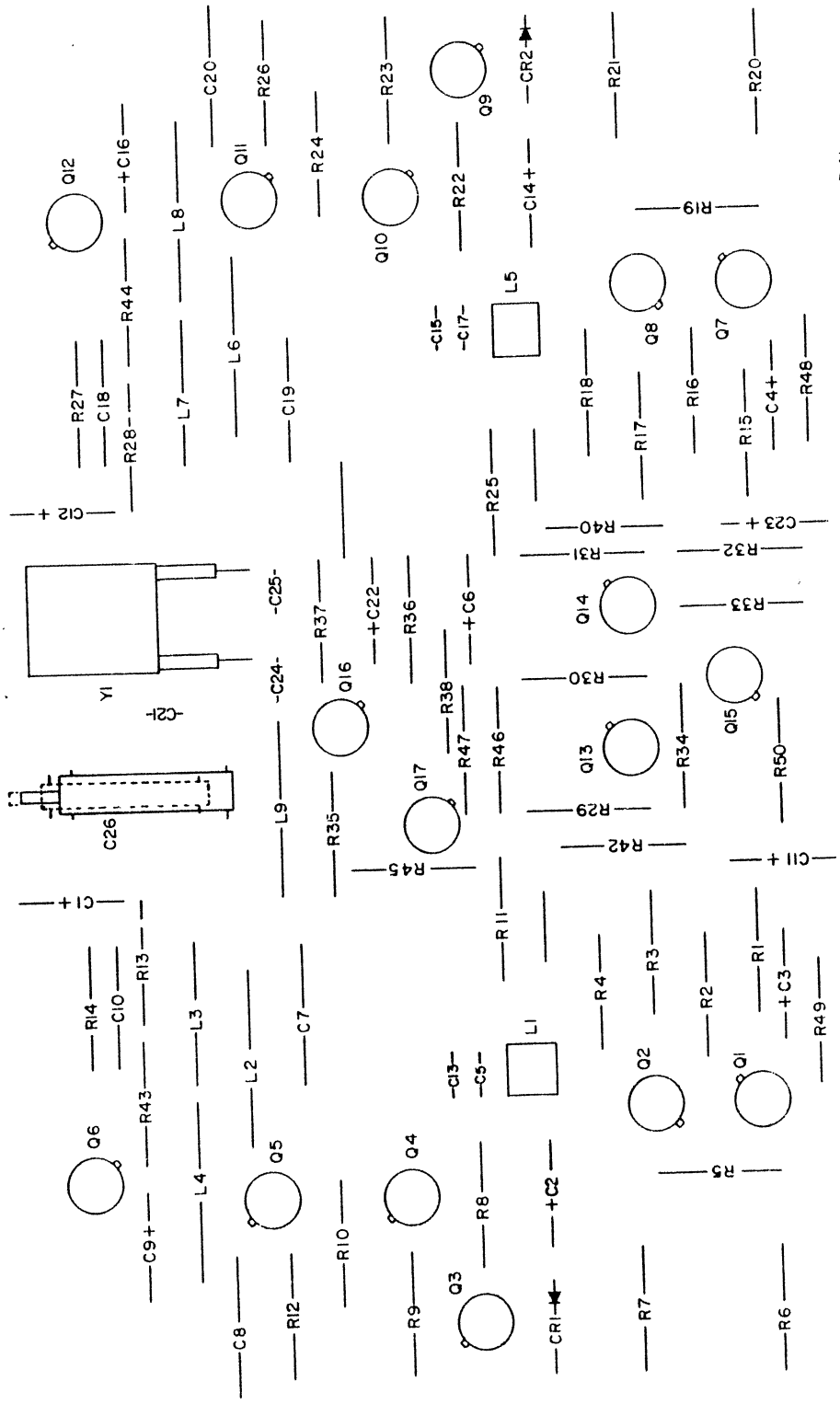
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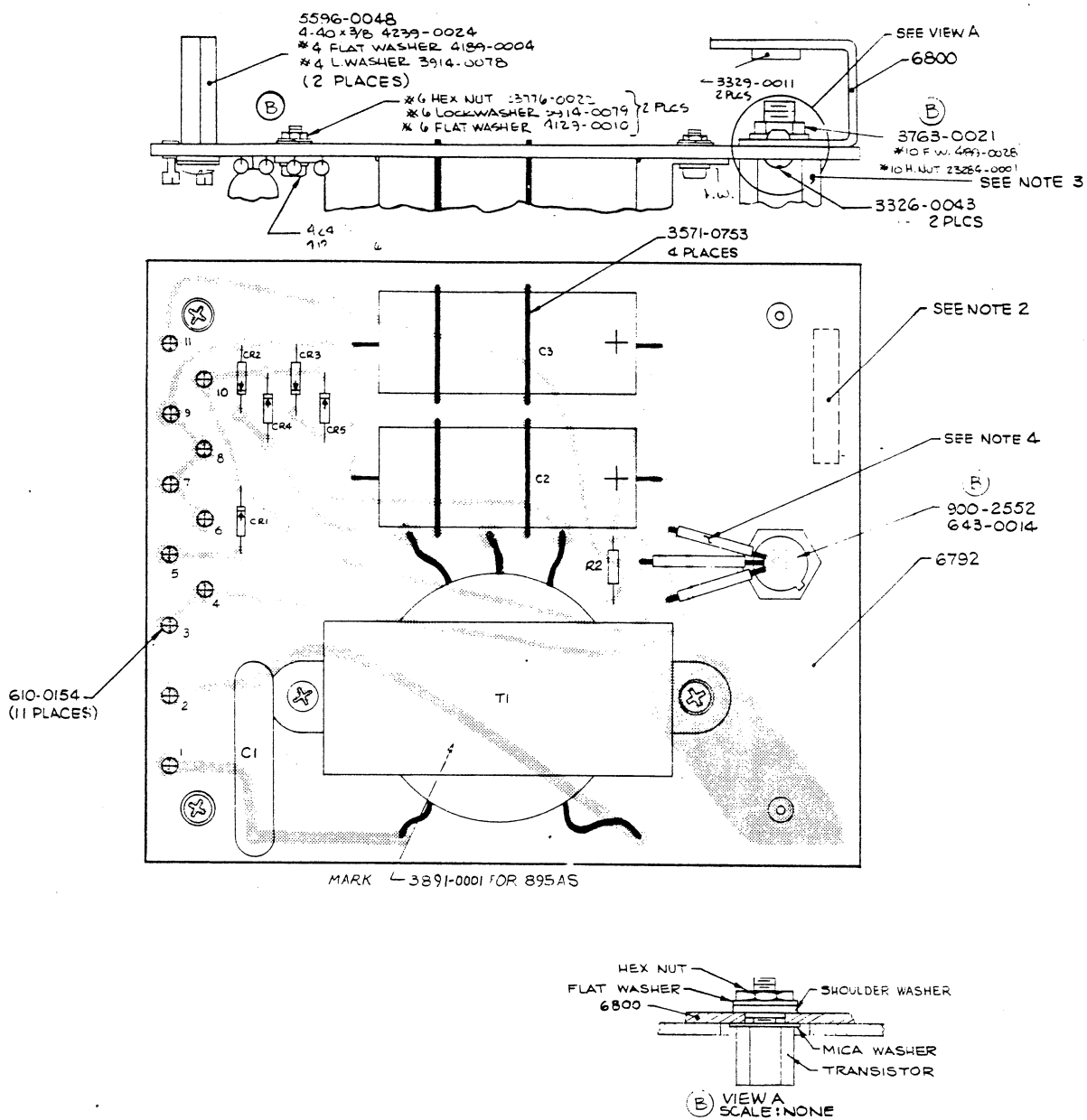
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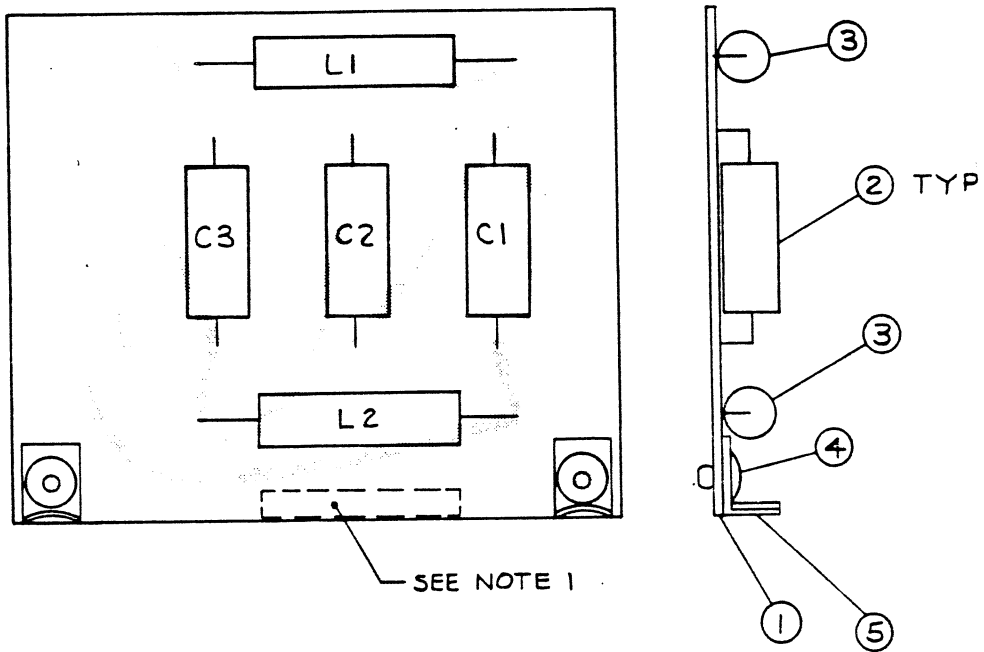
6913



4. TRANSISTOR LEADS COVERED WITH TEFLON SLEEVING, ALL LEADS.
 3. TRANSISTOR IS INSULATED FROM P/N6800 MOUNTING INSULATING HARDWARE MUST BE USED
 2. AFTER ASSEMBLY, MARK ASSY 6794 AND APPLICABLE REVISION LETTER IN 1/8" CHARACTERS IN APPROXIMATE LOCATION SHOWN.
 1. FOR A DETAIL LIST OF MATERIALS SEE PL 6794.
- NOTES:

Power Supply P.C. Board, Assembly Drawing 6794F

6913



2. SEE SEPARATE PL FOR COMPLETE LIST OF MATERIAL
1. IDENTIFY ASSY AS TRACOR STK. NO. 8861 AND
REVISION LETTER OF ASSOCIATED PL IN LOCATION
SHOWN

NOTES:

Filter P.C. Board, Assembly Drawing 8861-

SECTION VIII

SCHEMATIC DIAGRAMS

<u>Dwg No.</u>	<u>Description</u>
6004A	Diagram, Schematic, Frequency Converter
6005	Diagram, Schematic, Comparator
6808	Diagram, Schematic, Decade Divider
6809A	Diagram, Schematic, Interconnection and wiring.

REVIEWED BY DATA CONTROL

PL 17885-0001 REV DESCRIPTION - PCH ASSY DIVIDER TRACOR INC CODE PAGE 4
 DWG NO DASH 5568-0151 AUSTIN TEXAS IDEN1 19397 DATE 06/05/69

STOCK NO	DASH	QTY	U/M	DESCRIPTION	REF	DES	ITM	NO.	D	COST			EXTENSION		
										L	M	P	L	M	P
3568-0151		1.	EA	INDUCTOR 150 UH	L	1	33	5							
3568-0220		1.	EA	INDUCTOR 22 UH	L	2	34	5							
3568-0220		1.	EA	INDUCTOR 22 UH	L	3	34	5							
TOTAL		2.													
3596-0101		1.	EA	RES VAR WW 100 OHM	R	20	18	5							
8914-0150		1.	EA	CAP FXD TA 15 MFD	C	8	20	5							
8918-0470		1.	EA	CAP FXD TA 47 MFD	C	11	21	5							
17859		1.	EA	BOARD PC			2	4							
17895		REF	EA	DIAGRAM SCHEMATIC			1	2							
21485-9101		1.	EA	CAP FXD TA 1 MFD	C	3	22	5							
27512-0181		1.	EA	CAP FXD MICA 180 PFD	C	2	23	5							
27512-0680		1.	EA	CAP FXD MICA 68 PFD	C	4	24	5							
27513-0102		1.	EA	CAP FXD MICA 1000 PFD	C	1	25	5							
27513-0102		1.	EA	CAP FXD MICA 1000 PFD	C	7	25	5							
TOTAL		2.													
27513-0471		1.	EA	CAP FXD MICA 470 PFD	C	5	26	5							
27513-0471		1.	EA	CAP FXD MICA 470 PFD	C	6	26	5							
TOTAL		2.													



STOCK NO	NUMBER	DASH	QTY	U/M	DESCRIPTION	REF LTR	DES NO.	ITM NO.	D P L	COST M	EXTENSION L M P
212-1332	1.	EA	RES FXD FILM 13.3 K	R 10	12 5						
212-2000	1.	EA	RES FXD FILM 200, OHM	R 11	13 5						
212-2430	1.	EA	RES FXD FILM 243, OHM	R 7	14 5						
212-3830	1.	EA	RES FXD FILM 383, OHM	R 21	15 5						
212-4220	1.	EA	RES FXD FILM 422, OHM	R 19	16 5						
212-7322	1.	EA	RES FXD FILM 73.2 K	R 13	17 5						
900-1304	1.	EA	TSTR 2N1304	Q 10	27 5						
900-1305	1.	EA	TSTR 2N1305	Q 9	28 5						
900-2270	1.	EA	TSTR 2N2270	Q 5	29 5						
900-2270	1.	EA	TSTR 2N2270	Q 7	29 5						
TOTAL		2.									
900-3638	1.	EA	TSTR 2N3638	Q 4	30 5						
900-3638	1.	EA	TSTR 2N3638	Q 6	30 5						
TOTAL		2.									
900-3904	1.	EA	TSTR 2N3904	Q 8	31 5						
900-3906	1.	EA	TSTR 2N3906	Q 1	32 5						
900-3906	1.	EA	TSTR 2N3906	Q 2	32 5						
900-3906	1.	EA	TSTR 2N3906	Q 3	32 5						
TOTAL		3.									
3321-9102	1.	EA	CAP FXD CER .1 MFD	C 9	19 5						
3321-9102	1.	EA	CAP FXD CER .1 MFD	C 10	19 5						
TOTAL		2.									



PL 17885-0001 REV DESCRIPTION PCB ASSY DIVIDER TRACOR INC CODE AUSTIN TEXAS IDENT 19397 PAGE 2 DATE 06/05/69

STOCK NO	NUMBER	DASH	QTY	U/M	DESCRIPTION	REF	DES	ITM	NO.	D	COST			EXTENSION			
											L	M	P	L	M	P	
17885-0001	REF	EA	1.	EA	PCB ASSY DIVIDER	R	15	0	0								
200-0101		EA	1.	EA	RES FXD COMP 100. OHM	R	15	3	5								
200-0102		EA	1.	EA	RES FXD COMP 1.00 K	R	1	4	5								
200-0102		EA	1.	EA	RES FXD COMP 1.00 K	R	2	4	5								
200-0102		EA	1.	EA	RES FXD COMP 1.00 K	R	4	4	5								
200-0102		EA	1.	EA	RES FXD COMP 1.00 K	R	16	4	5								
TOTAL			4.														
200-0152		EA	1.	EA	RES FXD COMP 1.50 K	R	5	5	5								
200-0152		EA	1.	EA	RES FXD COMP 1.50 K	R	18	5	5								
TOTAL			2.														
200-0221		EA	1.	EA	RES FXD COMP 220. OHM	R	17	6	5								
200-0471		EA	1.	EA	RES FXD COMP 470. OHM	R	9	7	5								
200-0471		EA	1.	EA	RES FXD COMP 470. OHM	R	12	7	5								
TOTAL			2.														
200-0472		EA	1.	EA	RES FXD COMP 4.70 K	R	14	8	5								
200-0681		EA	1.	EA	RES FXD COMP 680. OHM	R	3	9	5								
200-0822		EA	1.	EA	RES FXD COMP 8.20 K	R	22	10	5								
212-1181		EA	1.	EA	RES FXD FILM 1.18 K	R	6	11	5								
212-1181		EA	1.	EA	RES FXD FILM 1.18 K	R	8	11	5								
TOTAL			2.														



DESCRIPTION	DATE	APPROVED												
<table border="1"> <tr> <td>NEXT ASSEMBLY</td> <td>USED ON</td> <td>LTR</td> <td>DESCRIPTION</td> <td>DATE</td> <td>APPROVED</td> </tr> <tr> <td></td> <td>895 AM</td> <td>-</td> <td>RELEASED PER DRN 1139</td> <td>6-6-69</td> <td><i>[Signature]</i></td> </tr> </table>	NEXT ASSEMBLY	USED ON	LTR	DESCRIPTION	DATE	APPROVED		895 AM	-	RELEASED PER DRN 1139	6-6-69	<i>[Signature]</i>		
NEXT ASSEMBLY	USED ON	LTR	DESCRIPTION	DATE	APPROVED									
	895 AM	-	RELEASED PER DRN 1139	6-6-69	<i>[Signature]</i>									

TRACOR, INC.		AUSTIN, TEXAS	
ENGINEER	<i>[Signature]</i>	6-6-69	
CHECKED	<i>[Signature]</i>	6-6-69	
DRAFTSMAN	<i>R. Compton</i>	5-22-69	
BOARD ASSY, - 1 MHZ-40 KHZ DIVIDER		SIZE	CODE IDENT NO.
		A	19397
		PL	17885-0001
		SHEET	OF 4
		REV	-

TRACOR STOCK NO. 7242

(C)

REVIEWED BY DATA CONTROL

PL 17884-0001 REV DESCRIPTION A PCB ASSY MULTIPLIER TRACOR INC CODE IDENT 19397 PAGE 4 DATE 06/27/69

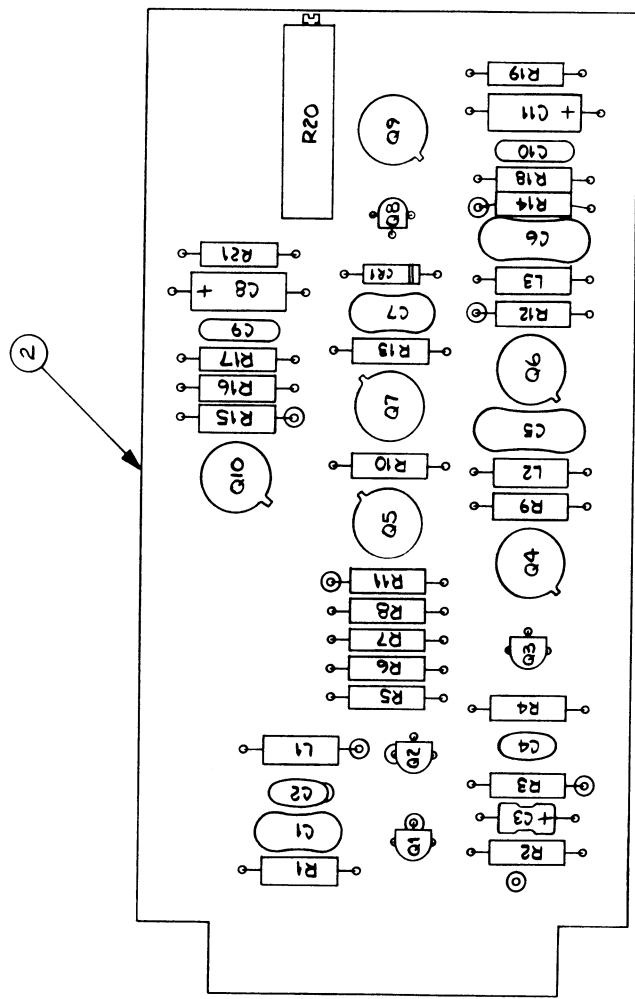
STOCK NUMBER	QTY	U/M	DESCRIPTION	REF LTR	DES NO.	ITM NO.	D P L	COST M	EXTENSION M
3326-0032	1.	EA	RIVET POP 3/32X212	Y	1	3	5	.	.
3630-0016	1.	EA	CRYSTAL 40 KC			5	5	.	.
3631-0002	1.	EA	HOLDER CRYSTAL			4	5	.	.
3923-0031	1.	EA	CAP VAR CER MINAT	C	7	23	5	.	.
3923-0031	1.	EA	CAP VAR CER MINAT	C	8	23	5	.	.
TOTAL		2.							
8914-0150	1.	EA	CAP FXD TA 15 MFD	C	1	24	5	.	.
17858	1.	EA	BOARD PC			2	4	.	.
17862	1.	EA	SPEC, INDUCTOR ASSY	L	1	6	3	.	.
17894	REF	EA	DIAGRAM SCHEMATIC			1	2	.	.
21485-9101	1.	EA	CAP FXD TA 1 MFD	C	12	25	5	.	.
23195-0028	1.	EA	CAP FXD TA 33 MFD	C	11	22	5	.	.
23195-0035	1.	EA	CAP FXD TA 47.0 MFD	C	10	34	5	.	.
27512-0181	1.	EA	CAP FXD MICA 180 PFD	C	9	26	5	.	.
27512-0392	1.	EA	CAP FXD MICA 3900 PFD	C	6	28	5	.	.
27513-0102	1.	EA	CAP FXD MICA 1000 PFD	C	4	27	5	.	.
27513-0681	1.	EA	CAP FXD MICA 680 PFD	C	5	29	5	.	.
27513-0821	1.	EA	CAP FXD MICA 820 PFD	C	16	30	5	.	.

D

C

B

A



-0001

TRACOR, INC. AUSTIN, TEXAS		BOARD ASSY, 1 MHz - 40 KHz DIVIDER	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES DO NOT SCALE DRAWINGS	ENGINEER CHECKED DRAFTSMAN	SIZE C	CODE IDENT NO. 19397
TOLERANCES UNLESS OTHERWISE SPECIFIED	DECIMALS FRACTIONS ANGLES	MATERIAL: 895AM USED ON NEXT ASSY	
APPLICATION		SCALE 2/1	SHEET OF
2. SEE SEPARATE PL FOR COMPLETE LIST OF MATERIALS 1 * IDENTIFY ASSY AS TRACOR STOCK NO. 17885 WITH DASH NO. AND REV LTR OF ASSOC PL NOTES:		17885 * -	

(C)

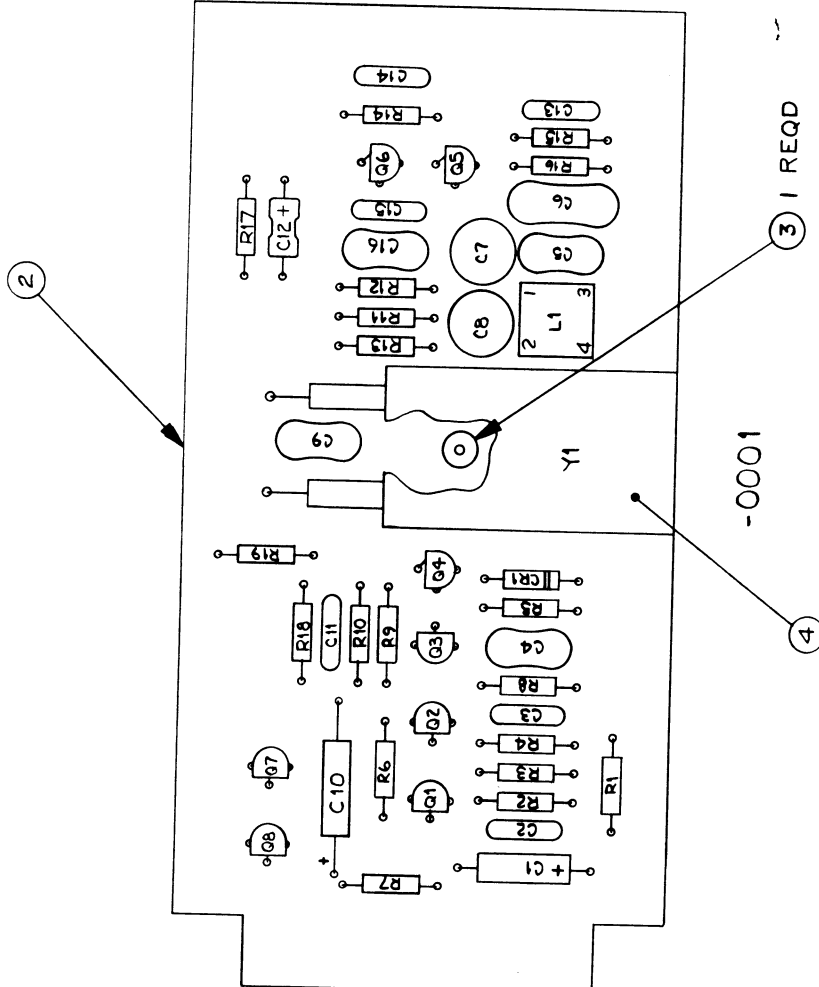
D

C

B

A

DATE APPROVED	6-16-69
BY	J. J. [Signature]
RELEASSED PER [Signature]	6-16-69
CHANGE PER ECO 5303	



2. SEE SEPARATE PL FOR A COMPLETE LIST OF MATERIALS
 1* IDENTIFY ASSY AS TRACOR STK NO. 17884 WITH DASH NO. AND REV LTR OF ASSY PL.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES DO NOT SCALE DRAWINGS		TOLERANCES UNLESS OTHERWISE SPECIFIED	
DECIMALS	FRACTIONS	ANGLES	
MATERIAL:			
895 AI/			
NEXT ASSY	USED ON	APPLICATION	
TRACOR, INC. AUSTIN, TEXAS		BOARD, ASSY - 800Hz - 40KHz MULTIPLIER	
ENGINEER	CHECKED	DRAFTSMAN	DATE
			10 MAY 69
SIZE	CODE IDENT NO.	SCALE	SHEET OF
C	19397	2/1	17884 * A

DATE	APPROVED
6-17-69	[Signature]
6-17-69	[Signature]
6-17-69	[Signature]
6-17-69	[Signature]
6-17-69	[Signature]

RELEASED PER DRN	17894
CHANGES TO DWG PER ECO 5303	



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES DO NOT SCALE DRAWINGS

TOLERANCES UNLESS OTHERWISE SPECIFIED

DECIMALS	FRACTIONS	ANGLES

MATERIAL:

17884 895 AM

NEXT ASSY USED ON

APPLICATION

3. DESIGNATOR Y1 IS TRACOR PN 3630-0016, L1 IS TRACOR PN 17862

2. REFERENCE DESIGNATOR C10 NOT USED

1. UNLESS OTHERWISE SPECIFIED: ALL RESISTORS ARE 1/4W ±10% TOL WITH VALUES IN OHMS; CAPACITOR VALUES ARE IN MICROFARADS

NOTES:

TRACOR STOCK NO. 3397

TRACOR, INC. AUSTIN, TEXAS

DIAGRAM, SCHEMATIC

800 Hz TO 40 KHz

MULTIPLIER

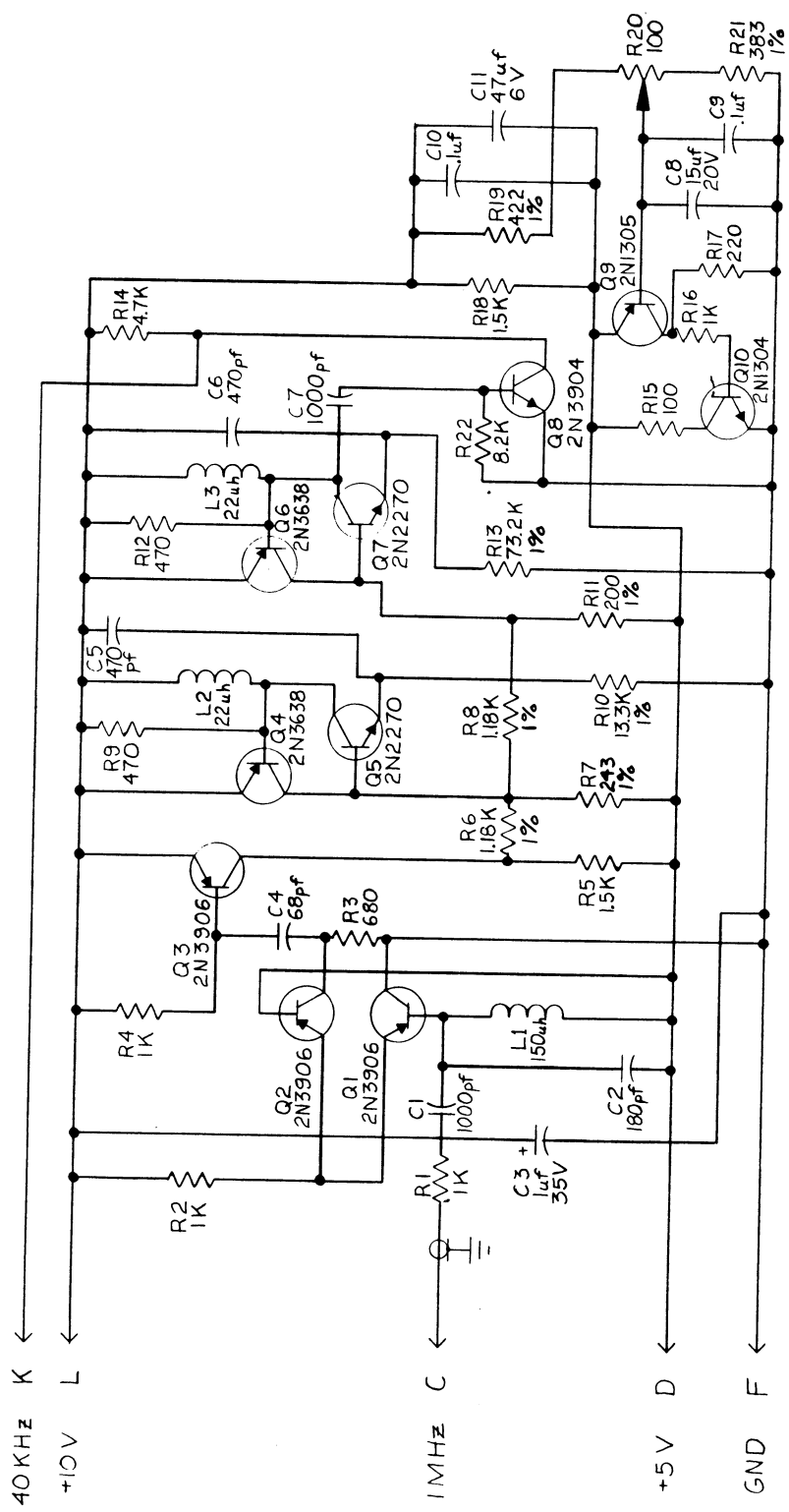
SIZE CODE IDENT NO. 17894

19397

SCALE

SHEET OF

ZONE/LTR	DESCRIPTION	DATE	APPROVED
-	RELEASED PER DRN 1127		



40 KHZ K
+10V L
1 MHz C
+5V D
GND F

TRACOR, INC. AUSTIN, TEXAS

DIAGRAM, SCHEM, 1MHz TO 40 KHz DIVIDER

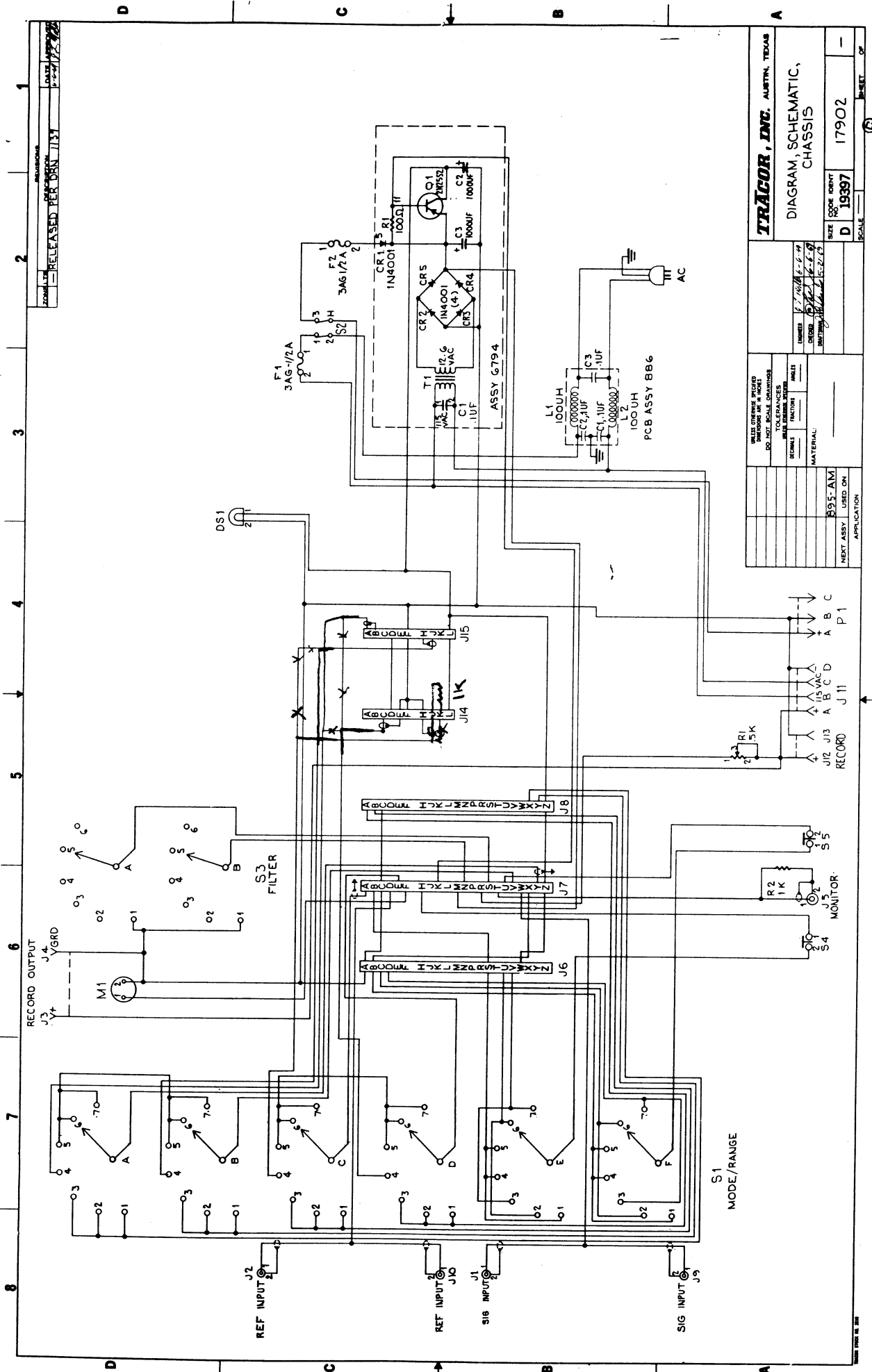
SIZE CODE IDENT NO. **C 19397** 17895

SCALE --- SHEET --- OF ---

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES DO NOT SCALE DRAWINGS	
TOLERANCES UNLESS OTHERWISE SPECIFIED	
DECIMALS	FRACTIONS
ANGLES	
MATERIAL:	
17-1	B95-AM
NEXT ASSY	USED ON
APPLICATION	

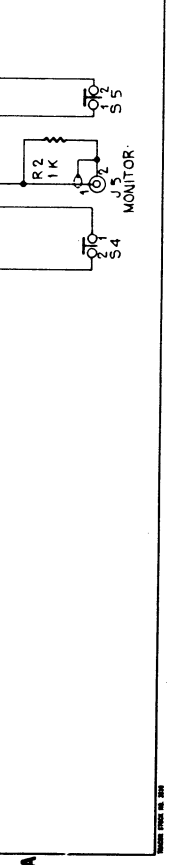
1. UNLESS OTHERWISE SPECIFIED RESISTOR VALUES ARE IN OHMS, 1/4 WATT ±10%

NOTES:



TRACOR, INC. AUSTIN, TEXAS	
DIAGRAM, SCHEMATIC, CHASSIS	
NUMBER	17902
DATE	1-2-59
DESIGNER	J. J. ...
CHECKED	...
APPROVED	...
SCALE	17902
SIZE	D
CODE	19397
PROJECT	...

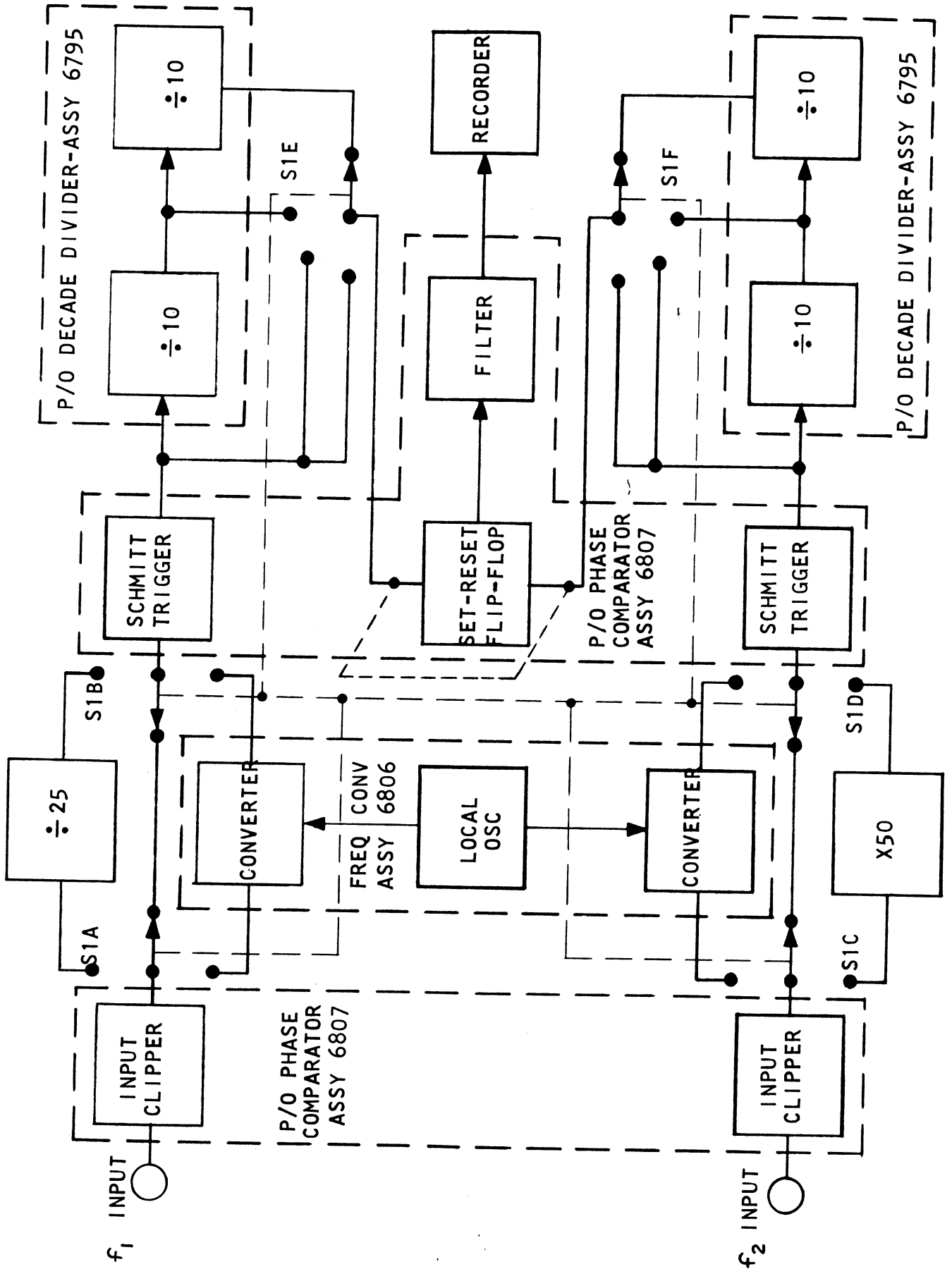
WELLS	...
DO NOT SCALE DRAWINGS	...
TOLERANCES	...
UNLESS OTHERWISE SPECIFIED	...
FORMS	...
MATERIAL	...
955-AM	...
NEXT ASSY USED ON	...
APPLICATION	...

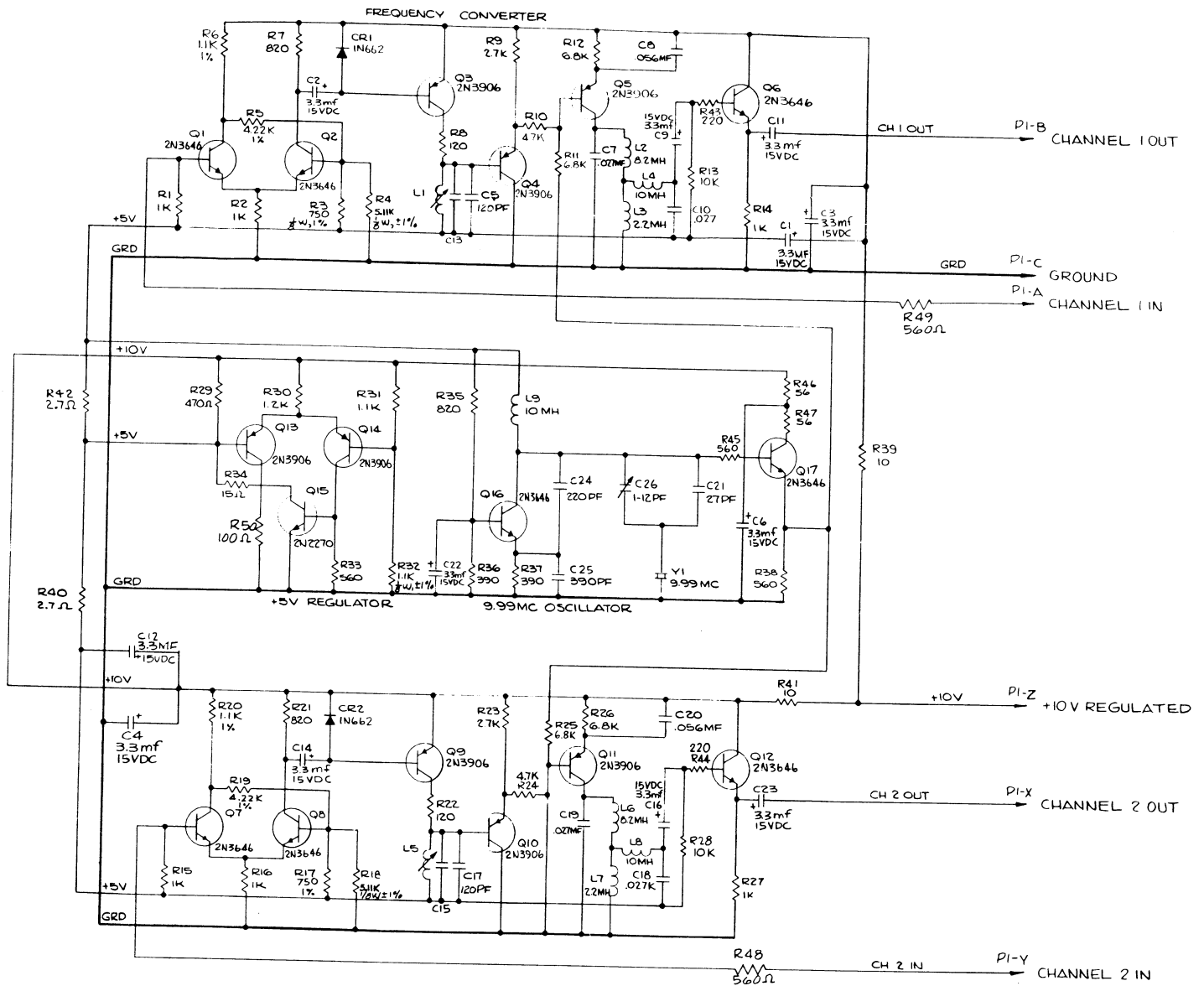


1 2 3 4 5 6 7 8

D C B A

FIGURE 1. P/O PHASE/TIME COMPARATOR, BLOCK DIAGRAM





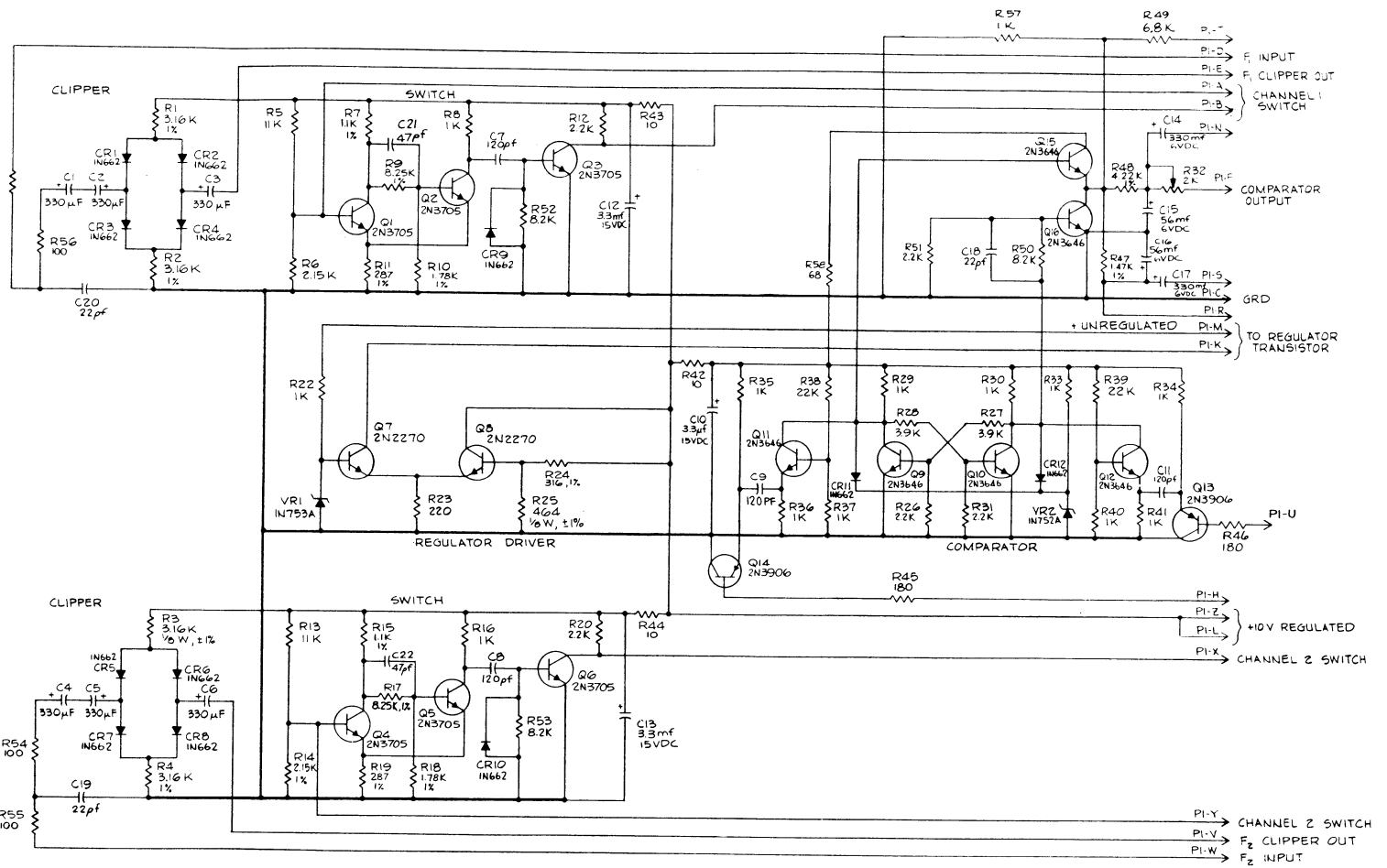
NOTES:

1. LAST REFERENCE DESIGNATORS USED:
P1, Y1, Q17, R50, L9, CR2, & C26.
2. UNLESS OTHERWISE SPECIFIED, ALL RESISTORS
ARE $\frac{1}{4}$ W, $\pm 10\%$, COMPOSITION.

DIAGRAM, SCHEMATIC
FREQUENCY CONVERTER
6004
Rev. A

6913B

8-2

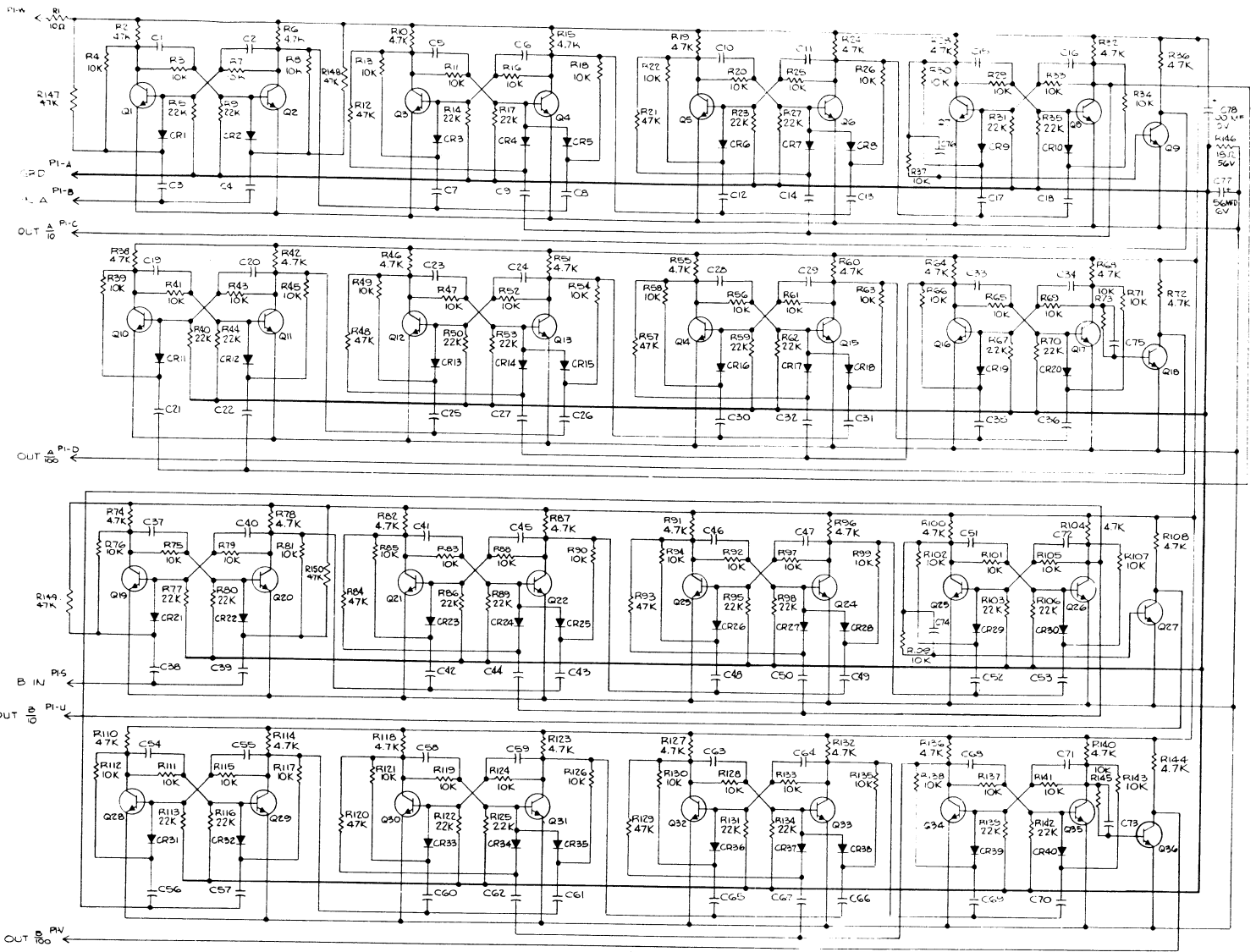


NOTES:
 1. UNLESS OTHERWISE SPECIFIED, ALL RESISTORS ARE 1/4W, ±10%; ALL 1% RESISTORS ARE 1/8W
 2. LAST REFERENCE DESIGNATORS USED:
 Q1G, R56, C20, CR12, VR2 & P1
 C21

DIAGRAM, SCHEMATIC,
 COMPARATOR
 6005

6913B

8-3

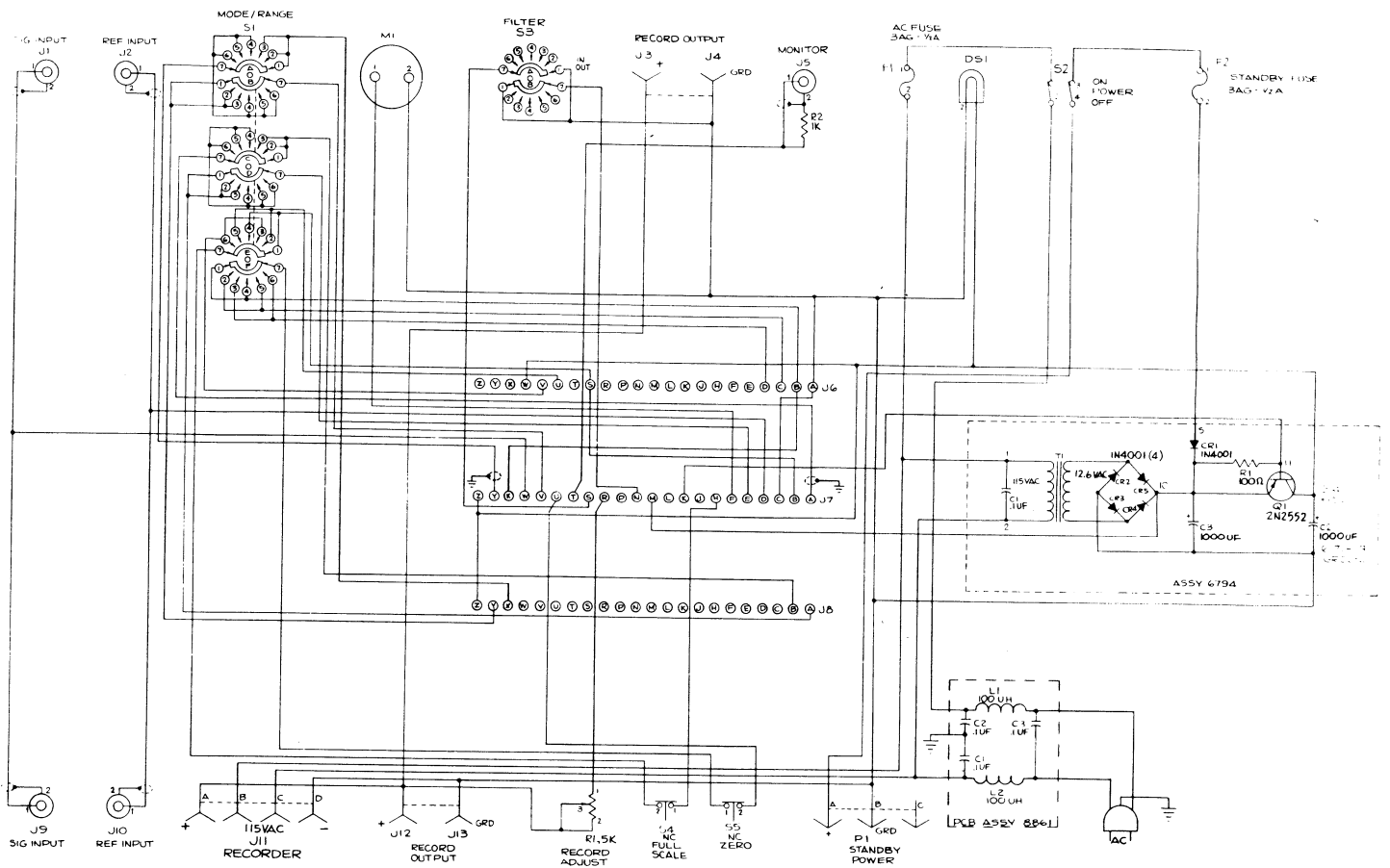


- NOTES:
- 1 ALL TRANSISTORS ARE 2N3646
 - 2 ALL RESISTORS ARE 1W 10%
 - 3 ALL DIODES ARE 1N662
 - 4 LAST REFERENCE DESIGNATORS USED ARE R146, Q36, CR40, C78.
 - 5 ALL CAPACITORS ARE 22 pf UNLESS OTHERWISE NOTED.

DIAGRAM, SCHEMATIC,
 DECADE DIVIDER
 6808

6913B

8-4



DIAGRAM, INTERCONNECTING &
WIRING

6809

Rev. A

6913B

8-5