AIR RM (RIGHT RACK)

AM PRESELECTORS

MODELS 754/755

TFT

TIME AND FREQUENCY TECHNOLOGY, INC.

Instrument Serial No._____
Manual Revision_____B___

AM PRESELECTORS

MODELS 754/755

TIME AND FREQUENCY TECHNOLOGY, INC.
3000 OLCOTT STREET
SANTA CLARA, CA 95051
408-246-6365

Ron Blassing

TABLE OF CONTENTS

SECTION 1

GENERAL INFORMATION

1.1 General Description.

The Models 754 and 755 AM Preselectors, when used with the Model 753 AM Modulation Monitor, allow off-the-air measurement of the modulation percentage of a selected transmitter carrier in the frequency range of 500 kHz to 1.99 MHz.

The Model 754 also provides a carrier frequency error measurement capability, and a means of presetting four frequencies for monitoring, so that a competitive comparison can be made of the performance of any four broadcast transmitters within receiving range by merely selecting each frequency in turn with pushbutton switches.

Three options are available, all field installable:

a. Narrow-Band IF Filter. This filter has a 3-dB bandwidth of ±10 kHz. When it is installed, either narrow-band or standard wide-band reception can be selected by the front-panel BANDWIDTH switch.

b. Carrier Frequency Alarm (Model 754 only). Actuates an external alarm when the carrier being monitored departs more than a specified amount from its assigned frequency.

c. BCD Frequency Output (Model 754 only). Makes a BCD readout of frequency error available at a rear-panel connector for operation of external logging or other equipment.

1.2 Specifications.

1.2.1 Models 754 and 755.

Frequency Range	500 kHz to 1.99 MHz
RF Sensitivity	100uV for 35 dB SNR, 1mV for 50 dB SNR, referred to 100%
Input Impedance	50 ohms (nominal)
Tuning	3-digit thumbwheel switch, 10-kHz resolution
Bandwidth (wideband standard)	± 10 kHz, 1 dB; ± 20 kHz, 3 dB; ±40kHz, 40 dB
Transient Response	3% overshoot for 25-us rise and fall times on RF envelope.

Bandwidth (narrowband optional selectable by front-panel switch)	±5 kHz, 1 dB; ±10 kHz, 3 dB; ±20 kHz, 40 dB
Transient Response	3% overshoot for 50-us rise and fall times on RF envelope.
Image Rejection	60 dB
AGC Range	50 dB (100 uV to 32 mV)
Output	450 kHz, 1V RMS into 50 ohms.
Power Requirement (independent from Model 753)	117 VAC, 50-400 Hz, 15 VA (230 VAC available)
Operating Temperature	0°C to 50°C

1.2.2 Model 754 Only.

Frequency Counter

Accuracy	±2 Hz per year aging
	±2 Hz variation from 0°C to 50°C
Range	±199 Hz about dialed-in frequency
Tuning	Determined by pushbutton selection of one of four sets of thumbwheel switches

1.3 Warranty.

TIME & FREQUENCY TECHNOLOGY, INC., warrants each of the instruments of its manufacture to be produced to meet the specifications delivered to the BUYER; and to be free from defects in material and workmanship and will repair or replace, at its expense, for a period of one year from the date of delivery of equipment, any parts which are defective from faulty material or poor workmanship.

Instruments found to be defective during the warranty period shall be returned to the factory with transportation charges prepaid by BUYER. It is expressly agreed that replacement and repair shall be the sole remedy of BUYER with respect to any nonconforming equipment and parts thereof and shall be in lieu of any other remedy available by applicable law. All returns to the factory must be authorized by the SELLER, prior to such returns. Upon examination by the factory, if the instrument is found to be defective, the unit will be repaired and returned to the BUYER, with charges prepaid by SELLER.

Transportation charges for instruments found to be defective within the first thirty (30) days of the warranty period will be paid both ways by the SELLER.

Transportation charges for warranty returns, wherein failure is found not to be the fault of the SELLER, shall be paid both ways by the BUYER.

This warranty does not apply to instruments which, in the opinion of the SELLER have been altered or misused.

NO OTHER WARRANTY IS EXPRESSED OR IMPLIED. TFT IS NOT LIABLE FOR CONSEQUENTIAL DAMAGES.

1.4 Claim for Damage in Shipment.

Your instrument should be inspected and tested as soon as it is received. The instrument is insured for safe delivery. If the instrument is damaged in any way or fails to operate properly, file a claim with the carrier, or if insured separately, with the insurance company.

WE SINCERELY PLEDGE OUR IMMEDIATE AND FULLEST COOPERATION TO ALL USERS OF OUR PRECISION ELECTRONIC INSTRUMENTS.

PLEASE ADVISE US IF WE CAN ASSIST YOU IN ANY MANNER

Time & Frequency Technology, Inc.
3000 Olcott Street
Santa Clara, CA 95051
408-246-6365

SECTION 2

INSTALLATION

2.1 Unpacking and Inspection.

Upon receiving the instrument, inspect the packing box and instrument for signs of possible shipping damage. Operate the instrument in accordance with the procedures of Section 3 of this manual. If the instrument is damaged or fails to operate properly, file a claim with the transportation company, or with the insurance company if insured separately.

2.2 Power Requirements.

Both AM Preselectors derive their power from a 117-volt AC source, 50 to 400 hertz, and requires 15 volt-amperes. The Model 754/755 can also be wired to operate from a 230-VAC source on special order.

2.3 Installation and Connections.

The connection instructions in this section refer only to the Models 754 and 755. For information on connecting the Model 753 Monitor, refer to the Model 753 instruction manual.

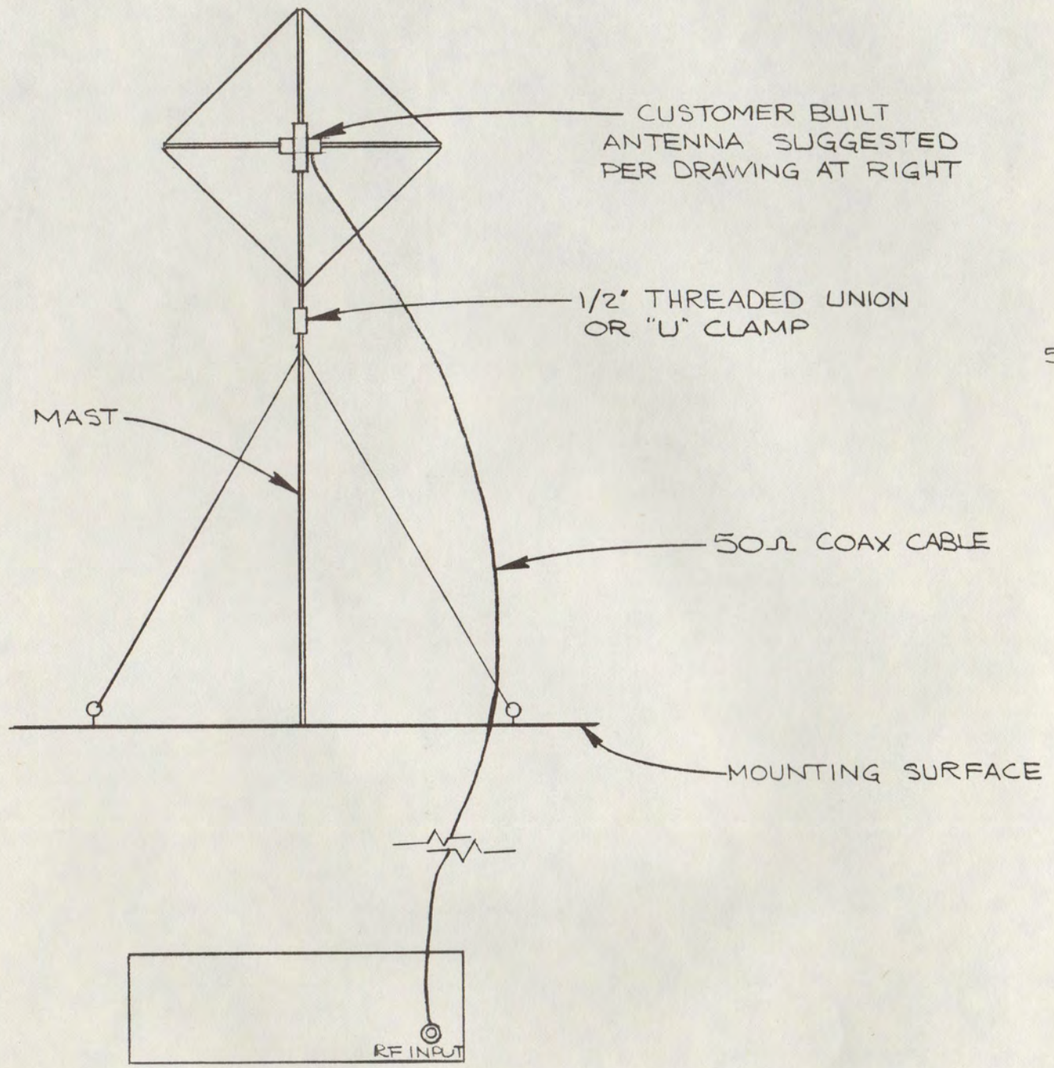
When either the Model 754 or Model 755 is ordered with the Model 753 Monitor, the Preselector is factory installed in the same chassis as the Monitor. Only two connections are required:

a. Connect the 450 kHz OUTPUT connector at the rear of the Preselector to RF INPUT connector J3 at the rear of the Monitor with the short coax cable provided.

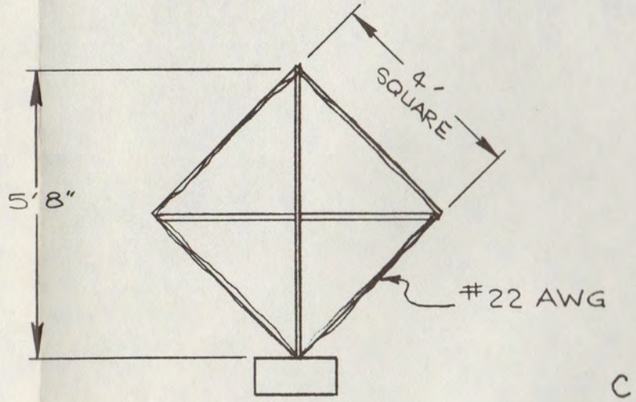
b. Connect a rooftop antenna to the RF INPUT connector at the rear of the Preselector. Where a strong signal can be expected (greater than 4 mV/meter), a Resonant Loop Antenna can be used, (see Fig. 2-1). In low signal locations, a long wire (approximately 200 feet) can be used with good results. When the Resonant Loop Antenna is used, connect the antenna to the Preselector with a 50-ohm coaxial cable. When a long wire is used, it can be connected directly to the RF INPUT connector of the Preselector; a 51-ohm resistor should also be connected from the input to chassis ground.

When the Preselector is located in a very strong RF field, it is recommended that a notch filter be constructed and installed between the antenna and the RF input of the Preselector. The circuit of Figure 2-2 provides a 20-dB notch at the frequency determined by L and C, with 6 dB attenuation at other frequencies.

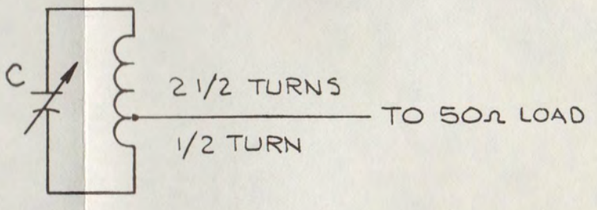
DWG. NO.		
NEXT ASSY	USED ON	REVISIONS
	754	SYM | DESCRIPTION | DR | CHK | AUTH | DATE



MODEL 754/755
REAR PANEL



CUSTOMER BUILT



TUNE C SO THAT ANTENNA
RESONATES AT DESIRED FREQ.

1600 KHz C ≈ 30pf
540 KHz C ≈ 600pf

FIG. 2-1

ITEM NO.	EN NO.	PART NO.	DESCRIPTION	REF. DES.
QTY PER ASSY	LIST OF MATERIALS			

REMOVE ALL BURRS AND SHARP EDGES

TOLERANCES UNLESS OTHERWISE SPECIFIED
.XX ±
.XXX ±
ANGULAR ±

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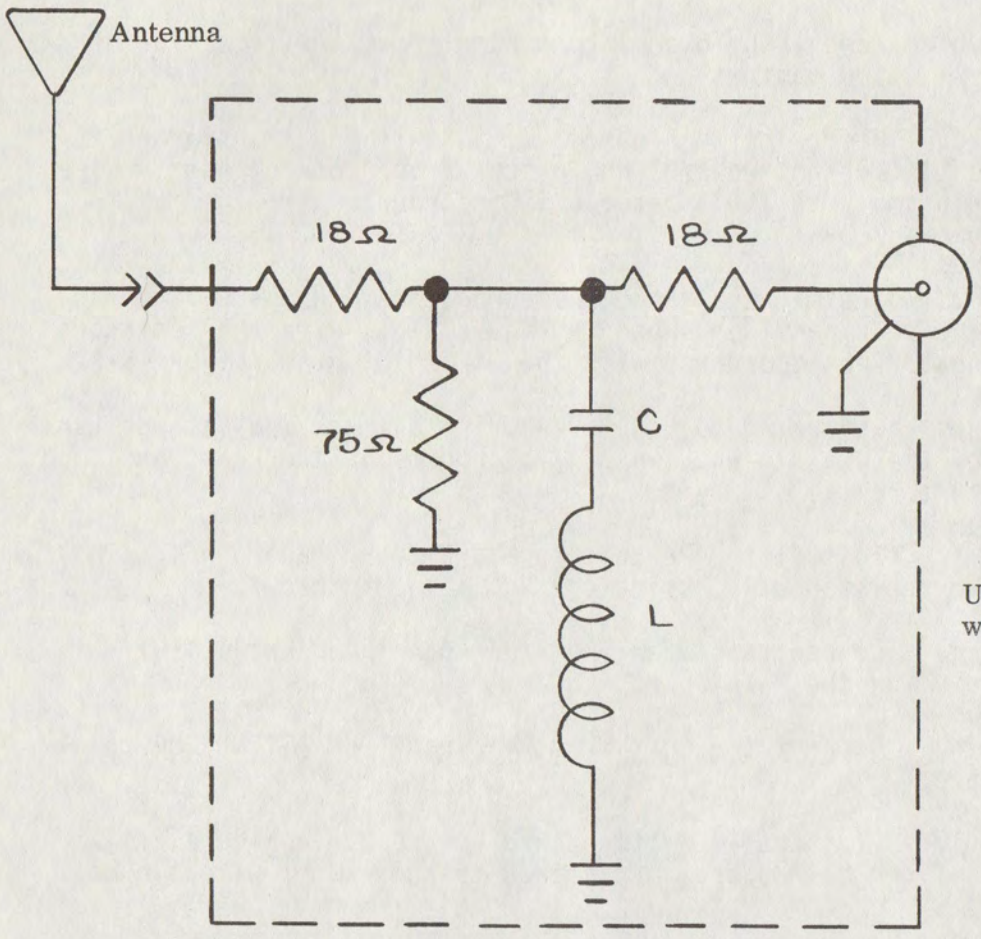
TITLE
SUGGESTED ANTENNA SET-UP 754/755

SIZE	DRAWING NO.	REV.
B	6600-0007	C

SCALE N/A SHT. 1 OF 1



L = 40 - 50 μHy
Q ≥ 50
Miller 4629 or equivalent

$$C = \frac{1}{(2\pi F)^2 L}$$

F = Frequency of signal to be rejected.

FIGURE 2-2
R.F. Notch Filter

2.4 Field Installation of the Model 755 in the Model 753 Cabinet.

a. Remove the top cover from the instrument.

b. Remove the blank front panel from the left side of the cabinet.

c. Referring to Figure 2-3, install the transformer provided in the kit, using two 3/8" No. 6 screws and locking nuts. Wire the transformer primary to the AC source in accordance with the schematic, Figure 6-2.

d. Install the three BNC connectors and the RF attenuator on the rear panel as shown in Figure 2-3. Wire the resistors on the RF attenuator in accordance with the wiring diagram, Figure 6-2.

e. Referring to Figure 2-3, install six 7/8" standoffs on the bottom of the chassis and two 7/8" standoffs on the rear panel, using 3/8" No. 4 screws.

f. Install the Preselector Main Board (Board No. 1 in Figure 2-4) onto the standoffs, using six No. 4, 3/8" screws.

g. Connect the coax from rear-panel 450 kHz OUTPUT connector J5 to J6 on the Main Board.

h. Connect the coax from rear-panel RF ATTENUATOR to J1 on the Main Board.

i. Plug the IF Filter Board (Board A2 in Figure 2-4) into J2 and J4 of the Main Board, and attach to rear-panel with two No. 4 screws.

j. Plug the Standard 5-Mhz Oscillator Board (Board A3 in Figure 2-4) into J10 on Main Board.

k. Install the Preselector front panel, using the two No. 6 screws that were used for the false panel. Make sure that the overload LED (CR2) protrudes through the OVERLOAD hole in the front panel. Bend up the other LED (CR16) to keep it behind and away from the front panel, as it is not used in the Model 755.

l. Plug the cable from the front panel into J9 on the Main Board.

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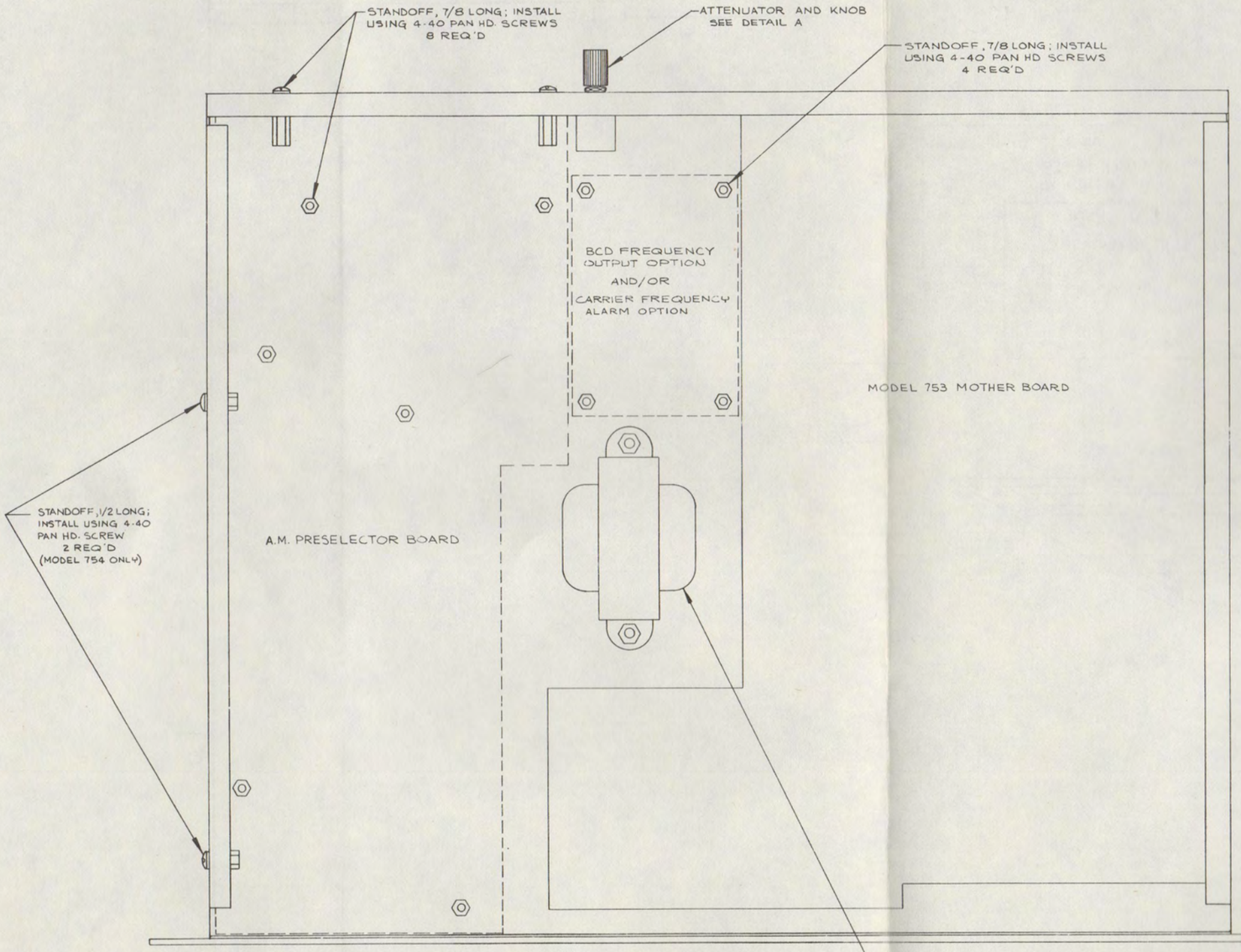

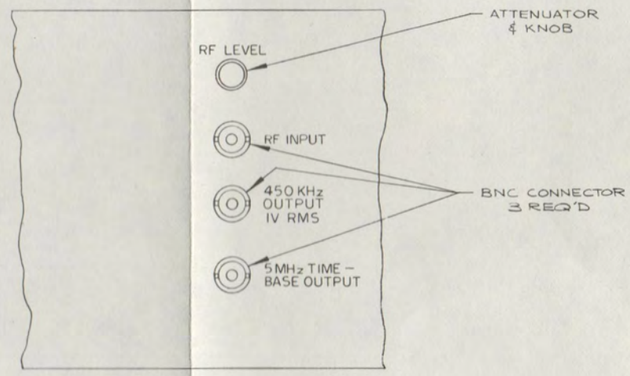

DETAIL A
REAR PANEL

ITEM NO.	EN NO.	PART NO.	DESCRIPTION	REF. DES.
QTY PER ASSY		LIST OF MATERIALS		

REMOVE ALL BURRS AND SHARP EDGES

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TITLE FIGURE 2-3
MODEL 754/755
FIELD INSTALLATION

SIZE D | DRAWING NO. 6600-1050 | REV.
SCALE [ ] | SHT 1 OF 1

DWG. NO.

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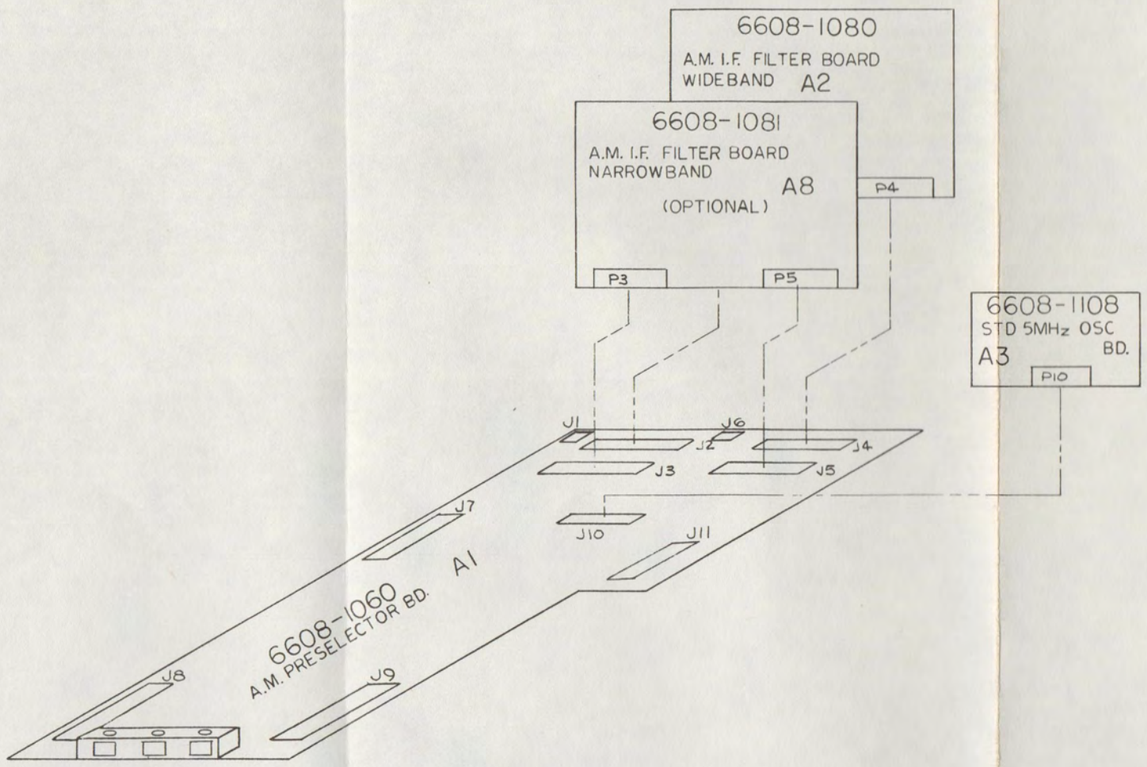

ITEM NO.	EN NO.	PART NO.	DESCRIPTION	REF. DES.
QTY PER ASSY		LIST OF MATERIALS		

REMOVE ALL BURRS AND SHARP EDGES

TOLERANCES UNLESS OTHERWISE SPECIFIED
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ANGULAR ±

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TITLE
FIGURE 2-4
FIELD INSTALLATION
OF MODEL 755

SIZE C | DRAWING NO. 6600-1060 | REV. A

SCALE | SHT. OF

DWG. NO.

m. Plug the 6-pin connector on the transformer cable into J11 on the Main Bard.

n. Reinstall the top cover on the instrument.

o. Refer to Section 2.3 for external connections.

2.5 Field Installation of the Model 754 in the Model 753 Cabinet.

a. Remove the top cover from the instrument.

b. Remove the blank front panel from the left side of the cabinet.

c. Referring to Figure 2-3, install the transformer provided in the kit, using two 3/8" No. 6 screws and locking nuts. Wire the transformer primary to the AC source in accordance with the schematic, Figure 6-2.

d. Install the three BNC connectors and the RF attenuator on the rear panel as shown in Figure 2-3. Wire the resistors on the RF attenuator in accordance with the wiring diagram, Figure 6-2.

e. Referring to Figure 2-3, install six 7/8" standoffs on the bottom of the chassis, two 7/8" standoffs on the rear panel, and two 1/2" standoffs on the side panel, using 3/8" No. 4 screws.

f. Install the Preselector Main Board (Board A1 in Figure 2-5) onto the standoffs, using No. 4 screws.

g. Connect the coax from rear-panel RF attenuator to J1 on the Main Board.

h. Connect the coax from the rear-panel RF ATTENUATOR to J1 on the Preselector board.

i. Plug the IF Filter Board (Board A2 in Figure 2-5) into J2 and J4 of the Main Board, and attach to rear panel using two 4-40 screws.

j. Plug the Counter Board (Board A4 in Figure 2-5) into J7 and J8 on the Main Board. Secure the Counter Board to the side panel using two No. 4 screws.

k. Plug the Temperature Controlled Crystal Oscillator Board (Board A3 in Figure 2-5) into J10 of the Main Board.

l. Before installing the three thumbwheel switch boards (item A5 in figure 2-5) hold each board up to the 754 front panel with the thumbwheel switch protruding through it's appropriate cut-out.

2.5 Continued.

Align the LED adjacent to the thumbwheel switch so that it protrudes through the hole to the left of the thumbwheel switch cut-out.

m. Plug the three Thumbwheel Switch Boards (Boards A5 in Figure 2-5) into J8A, J8B and J8C on the Counter Board (Board A3 in Figure 2-5) as shown in Figure 2-5.

n. Plug the Display Board (Board A6 in Figure 2-5) into J3 on the Counter Board.

o. Let the Channel Selector Board (Board A7 in Figure 2-5) rest on the Main Board, with P9 of Board 7 aligned with J9 of Board 1, but do not plug Board 7 into Board 1. Lift up all three Thumbhweel Switch Boards and mate their connectors P9A, P9B and P9C with J9A, J9B, and J9C of Board 7. Then push Board 7 down into J9 on the Main Board, and make sure that all three Thumbwheel Switch Boards are completely plugged into connectors on Board 7.

p. Install the Preselector front panel, making sure that all five LEDs and all thumbwheel switches protrude through holes in the panel. Secure the panel with the two No. 6 screws that were used for the false panel.

q. Install the plastic window in the rectangular hole in the front panel. Secure it on the left-hand side with a No. 4 screw and nut. On the right-hand side, use 2 No. 4 screws, but put a spacer on the screw between the window and the Display Board (Board A6). See Figure 2-6.

r. Install two screws and a spacer into the pushbutton switch bracket, above the pushbutton switches.

s. Plug the 6-pin connector on the transformer cable into J11 on the Main Board.

t. Reinstall the top cover on the instrument.

u. Refer to Section 2.3 for external connections.

2.6 Field Installation of the Narrow-Band IF Filter Option.

a. Remove the top cover from the instrument.

b. Mount the two furnished 1-3/8" standoffs into the lower holes on the Wideband IF Filter (Board A2 in Figures 2-4 and 2-5.

NEXT ASSY	USED ON

REVISIONS					
SYM	DESCRIPTION	DR	CHK	AUTH	DATE
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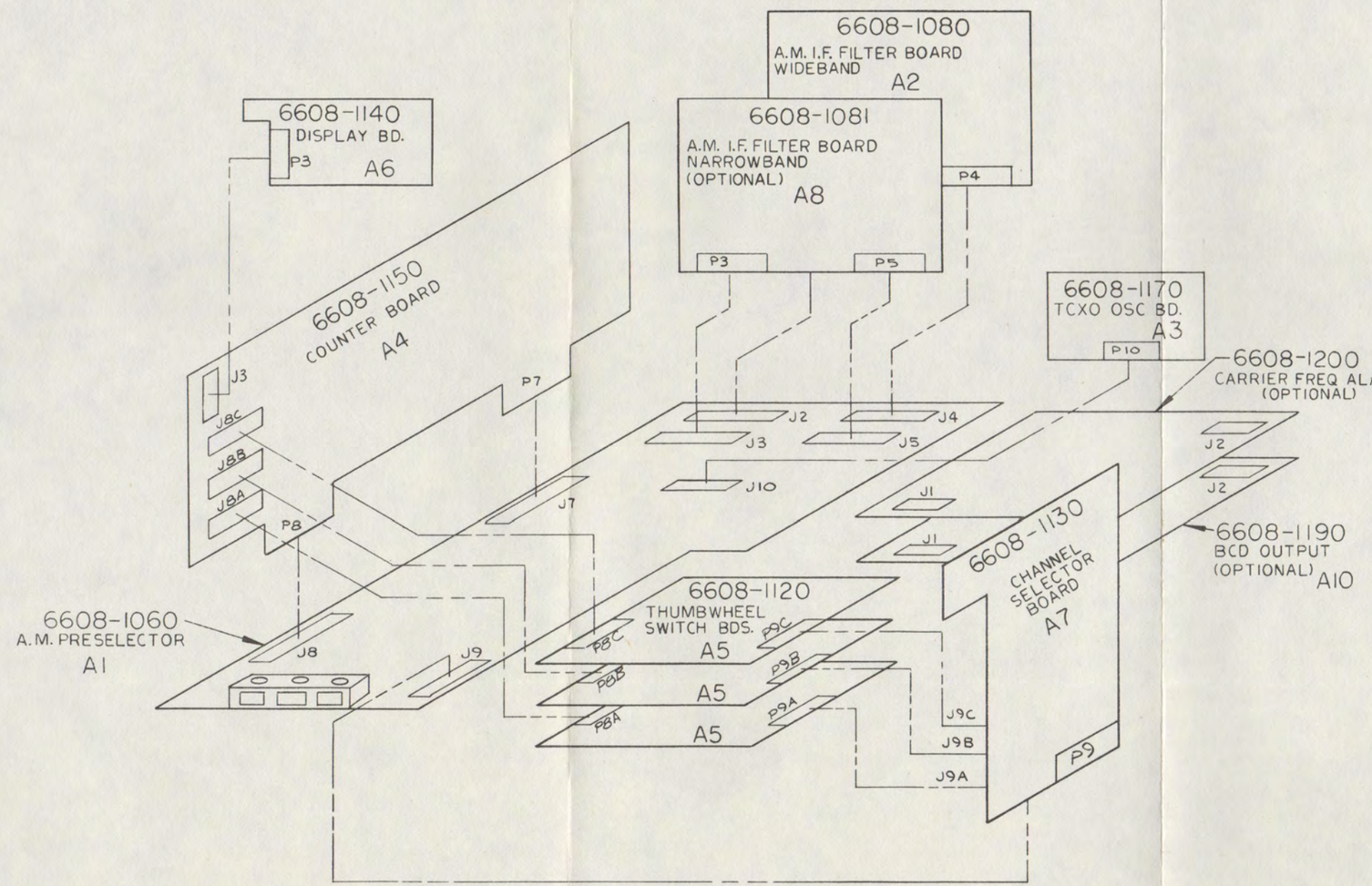

ITEM NO.	EN NO.	PART NO.	DESCRIPTION	REF. DES.
QTY PER ASSY		LIST OF MATERIALS		

REMOVE ALL BURRS AND SHARP EDGES

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TITLE: FIGURE 2-5 FIELD INSTALLATION OF MODEL 754

SIZE	DRAWING NO.	REV.
C	6600-1070	A

SCALE | SHT OF

DWG. NO.

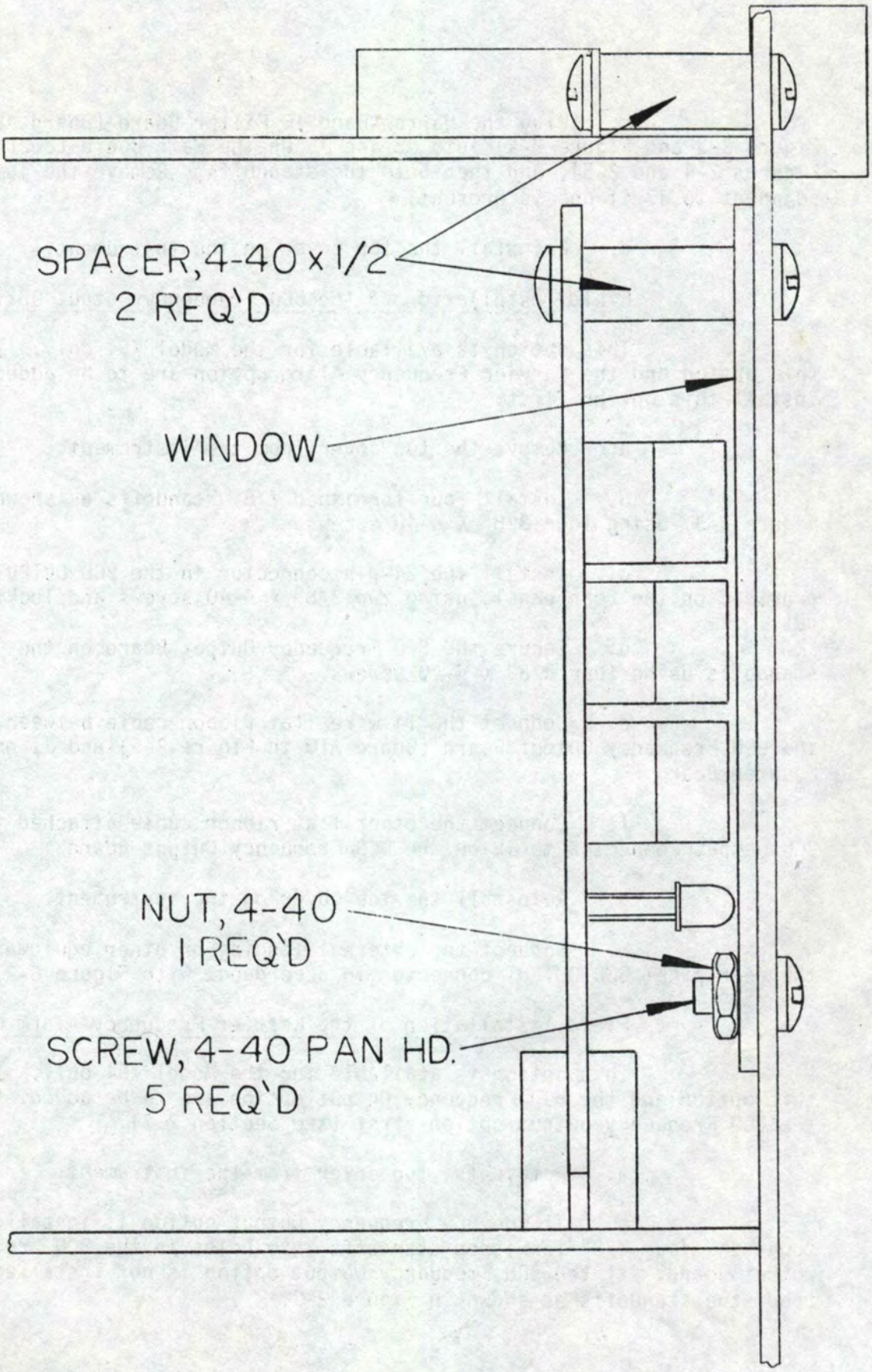

Figure 2-6
MODEL 754 FRONT PANEL DETAIL

c. Plug the Narrow-Band IF Filter Board (Board A8 in Figure 2-3 and Figure 2-4) into J3 and J5 on the Main Board (Board 1 in Figures 2-4 and 2-5), and then onto the standoffs. Remove the jumper adjacent to J3 if one is present.

d. Reinstall the top cover on the instrument.

2.7 Field Installation of the BCD Frequency Output Option.

This option is available for the Model 754 only. If both this option and the Carrier Frequency Alarm option are to be added, install this option first.

a. Remove the top cover from the instrument.

b. Install four furnished 7/8" standoffs as shown in Figure 2-3, using four 3/8" X 4-40 screws.

c. Install the 24-pin connector in the BCD OUTPUT hole provided on the rear panel, using two 3/8" X 4-40 screws and locking nuts.

d. Secure the BCD Frequency Output Board on the standoffs using four 3/8" X 4-40 screws.

e. Connect the 14-wire flat ribbon cable between J1 on the BCD Frequency Output Board (Board A10 in Figure 2-5) and J1 on the Counter Board.

f. Connect the other flat ribbon cable attached to the BCD output connector to J2 on the BCD Frequency Output Board.

g. Reinstall the top cover on the instrument.

h. Connect the external logging or other equipment to the rear-panel BCD OUTPUT connector in accordance with Figure 6-2.

2.8 Field Installation of the Carrier Frequency Alarm Option.

This option is available for the Model 754 only. If both this option and the BCD Frequency Output option are to be added, install the BCD Frequency output option first (see Section 2.7).

a. Remove the top cover from the instrument.

b. If the BCD Frequency Output option is installed, mount the four 7/8" furnished standoffs into holes in the BCD Frequency Output Board. If the BCD Frequency Output option is not installed, mount the standoffs as shown in Figure 2-3.

c. If a 24-pin connector is not already mounted in the BCD OUTPUT position on the rear panel, install the furnished connector in that position using two 3/8" No. 4 screws and locking nuts.

d. Secure the Carrier Frequency Alarm Board to the standoffs using four No. 4 screws.

e. Connect the flat ribbon cable from J1 on the Carrier Frequency Alarm Board to J1 on the Counter Board.

f. Connect two wires from J2 on the Carrier Frequency Alarm Board to the rear-panel BCD OUTPUT connector in accordance with Figure 6-12.

g. Reinstall the top cover on the instrument.

h. Connect the external alarm circuit to the rear-panel BCD OUTPUT connector in accordance with Figure 6-12. This is an open collector output, with a maximum rating of 50 mA at 30 V.

SECTION 3

OPERATION

3.1 General.

The Models 754 and 755 AM Preselectors allow off-the-air operation of the Model 753 AM Modulation Monitor. In addition, the Model 754 enables measurement of carrier frequency error.

3.2 Turn-On and Warm-Up.

The Preselectors contain no on-off switch. They derive their power (117VAC, 15VA) from the Model 753 power line cord, and so are on whenever the Model 753 is plugged into an appropriate power source. Either Preselector can be used for monitoring after a 1-minute warm-up.

3.3 Controls, Connectors, and Indicators.

3.3.1 Model 754.

Front Panel

Fig. 3-1

Ref.No.	NAME	FUNCTION
1	GATE lamp	In normal operation, flashes for 1/2 second every 4 seconds to indicate proper counter operation.
2	FREQUENCY ERROR - Hz indicator	Indicates difference between frequency of monitored carrier and the frequency set up on the selected thumbwheel switches. The + or - at the left of the display indicates that the error is above or below nominal frequency, respectively.
3	BANDWIDTH switch	When the optional narrow-band filter is installed, placing this switch in the NARROW position inserts the filter in the 2nd IF amplifier to provide a ±20 kHz bandwidth.

3.3.1 Continued.

Fig. 3-1 Ref. No.	NAME	FUNCTION
4	Station selector	Depressing one of these switches selects the frequency set up on the thumbwheel switches in the same row.
5	FREQUENCY thumbwheel switches	The four rows of thumbwheel switches allow presetting four carrier frequencies.
6	Station selector lamp	The lighted lamp indicates which frequency has been selected.
7	OVERLOAD lamp	When lit, this lamp indicates that the RF input is too high for proper operation. The RF input can be adjusted by the rear-panel RF LEVEL control.

Rear Panel

Fig. 3-2 Ref. No.	NAME	FUNCTION
1	RF LEVEL control	Adjusts the RF input to the proper level for Preselector operation. Clockwise rotation increases the level into the Preselector.
2	RF INPUT connector J4	Used to connect an antenna to the Preselector.
3	450 kHz OUTPUT connector J5	Used to connect the Preselector output to the Model 753 RF INPUT.

3.3.1 Continued.

Fig. 3-2 Ref. No.	NAME	FUNCTION
4	BCD OUTPUT	Provides a BCD output of the frequency error for logging or other equipment when the BCD Output option is installed. Also provides an alarm signal when the Off-Frequency Alarm option is installed. See Figure 6-2 for pin connections.
5	5 mHz Timebase Output J8	Provides a 5 mHz output for calibrating internal timebase.

3.3.2 Model 755.

Front Panel

Fig. 3-3 Ref. No.	NAME	FUNCTION
1	BANDWIDTH switch	Selects either the standard wideband (±20 kHz -3 dB) IF filter, or the optional narrow band (±10 kHz -3 dB) filter. If the narrowband filter is not installed, the bandwidth switch must be in the wideband mode for the preselector to operate.
2	FREQUENCY thumbwheel switches	Used to tune the Preselector to the frequency to be monitored.
3	OVERLOAD lamp	When lit, this lamp indicates that the RF input is too high for proper operation. The RF input can be adjusted by the rear-panel RF LEVEL control.

NEXT ASSY	USED ON
	754

REVISIONS					
SYM	DESCRIPTION	DR	CHK	AUTH	DATE
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B	REV. PER ECO 329	TD			6-15-76

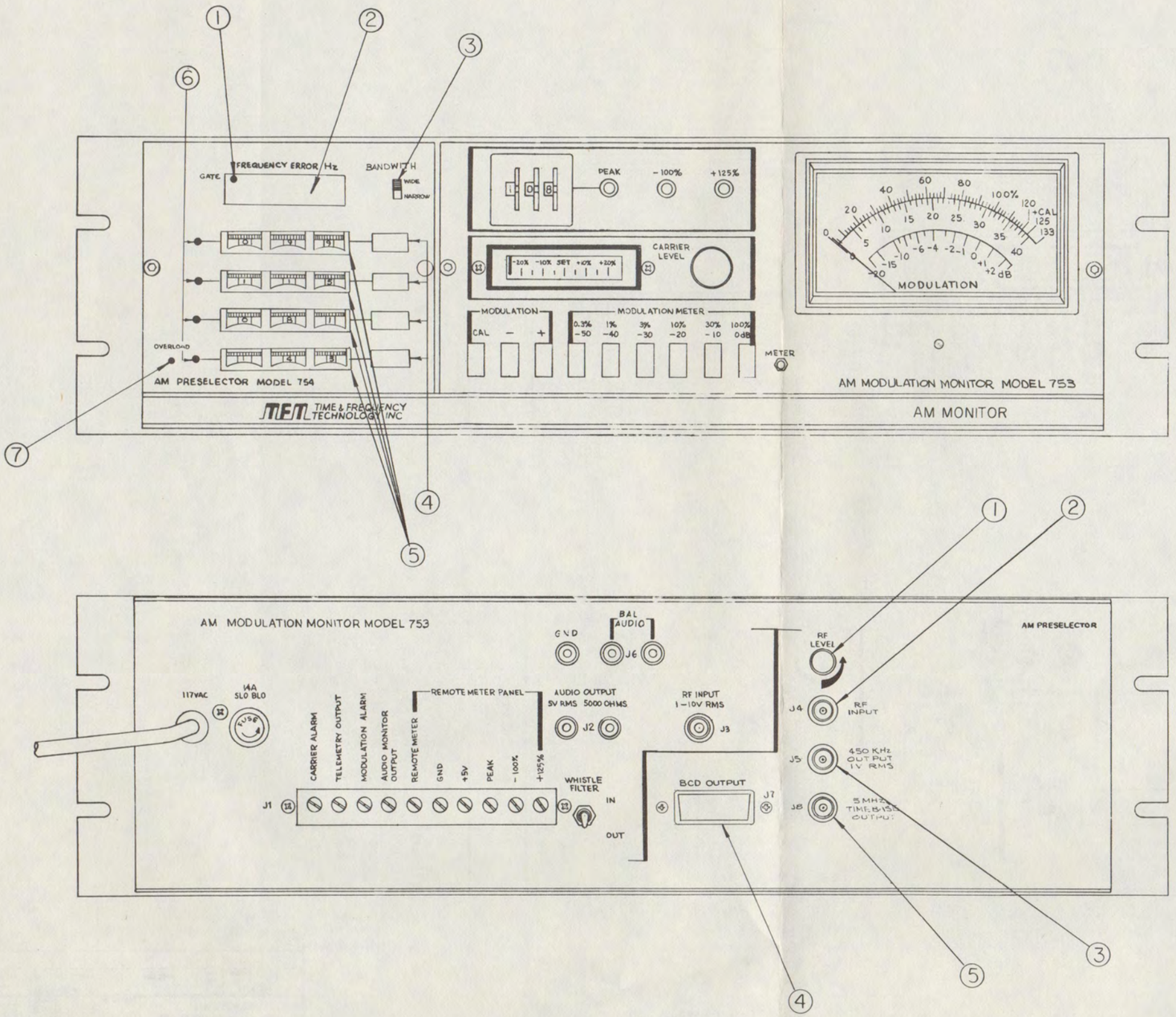

FIGURE 3-1

FIGURE 3-2

ITEM NO.	EN NO.	PART NO.	DESCRIPTION	REF DES.	QTY PER ASSY

LIST OF MATERIALS

REMOVE ALL BURRS AND SHARP EDGES

TOLERANCES UNLESS OTHERWISE SPECIFIED
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.XXX ±
ANGULAR ±

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TITLE PANEL, FRONT/REAR AM PRESELECTOR MODEL 754

SIZE D | DRAWING NO. 6600-1040 | REV. B

SCALE 1:1 | SHT 1 OF 1

DWG. NO. 6600-1040

NEXT ASSY	USED ON
	755

REVISIONS					
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B	REV PER ECO 329	BS			5-15-76

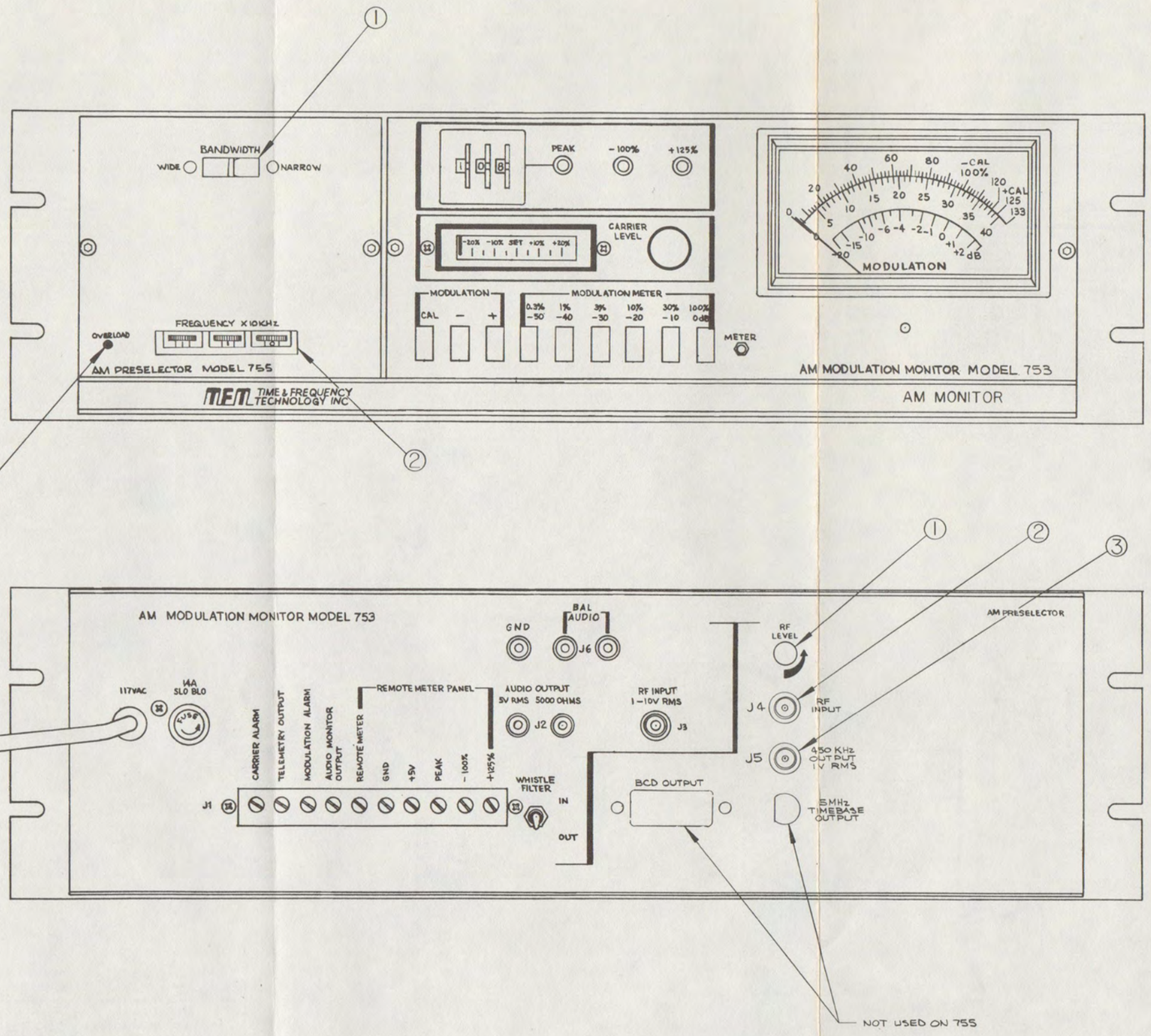

FIGURE 3-3

FIGURE 3-4

ITEM NO.	EN NO.	PART NO.	DESCRIPTION	REF. DES.	QTY PER ASSY

LIST OF MATERIALS

REMOVE ALL BURRS AND SHARP EDGES

TOLERANCES UNLESS OTHERWISE SPECIFIED
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MFG. ENG.		
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APPD.		
BCD NO.		

TIME & FREQUENCY TECHNOLOGY INC.
3000 Olcott St., Santa Clara, California 95050
(408) 246-6565

TITLE: PANEL, FRONT/REAR AM PRESELECTOR MODEL 755

SIZE D | DRAWING NO 6600-1030 | REV B

SCALE 1:1 | SHT 1 OF 1

DWG NO 6600-1030

Rear Panel

Fig. 3-4 Ref. No.	NAME	FUNCTION
1	RF LEVEL control	Adjusts the RF input to the proper level for Preselector operation. Clockwise rotation increases the input level.
2	RF INPUT connector J4	Used to connect an antenna to the Preselector.
3	450 kHz OUTPUT connector J5	Used to connect an antenna to the Preselector output to the Model 753 RF INPUT.

3.4 Preselector Operating Procedures.

3.4.1 Model 754

a. Set each row of thumbwheel switches to a carrier frequency to be monitored.

b. Rotate the rear-panel RF LEVEL control fully counterclockwise for maximum signal attenuation. Then rotate the control clockwise until the front-panel OVERLOAD lamp lights, and counterclockwise until the lamp just goes off. If the OVERLOAD lamp does not light when the RF LEVEL control is fully clockwise, leave the control in that position.

c. Select one of the carrier frequencies by depressing the associated pushbutton, and read the frequency error of this carrier on the FREQUENCY ERROR display.

NOTE

The GATE lamp will flash briefly every 4 seconds to indicate normal counter operation. The Preselector contains a circuit to disable the frequency counter when negative overmodulation is present on the carrier to prevent erroneous readings; in such cases, the GATE lamp will not flash and the display will indicate the carrier frequency error present just before the overmodulation. When the overmodulation ceases, the counter will resume normal operation and the GATE lamp will flash.

3.4.2 Model 755.

a. Set the thumbwheel switches for the carrier frequency to be monitored.

b. Rotate the rear-panel RF LEVEL control fully counterclockwise for maximum signal attenuation. Then rotate the control clockwise until the front-panel OVERLOAD lamp lights, and counterclockwise until the lamp just goes off. If the OVERLOAD lamp does not light when the RF LEVEL control is fully clockwise, leave the control in that position.

3.5 Use of the Preselectors With the Model 753.

When the Preselectors are operated as described in Section 3.4, the needle on the Model 753 CARRIER LEVEL meter should be at the SET mark. If it is not, adjust the CARRIER LEVEL control on the Model 753. When changing stations on the Model 754, the CARRIER LEVEL meter may require 5 to 10 seconds to return to the set mark on the 753 CARRIER LEVEL meter.

The calibration procedure for the Model 753 is not affected by the setting of any of the Preselector controls.

For information on the operation of the Model 753, refer to its instruction manual.

3.6 Narrow-Band IF Filter (Optional).

When this option is installed, narrow-band operation is selected by placing the front-panel BANDWIDTH switch in the NARROW position. This causes rejection of signals more than ±20 kHz away from the monitored carrier, as opposed to normal wide-band operation which rejects signals more than ±40 kHz away from the monitored carrier.

3.7 Carrier Frequency Alarm (Optional).

This option is available for the Model 754 only. It actuates an alarm connected to the rear-panel BCD OUTPUT connector (see Section 2.8) when the carrier being monitored departs by more than a specified amount from its assigned frequency. The frequency error to trigger the alarm is factory set, and is specified when the option is ordered. No operating controls are involved.

3.8 BCD Frequency Output (Optional).

This option, available for the Model 754 only, provides a BCD readout of frequency error to external equipment connected to the rear-panel BCD OUTPUT connector (see Section 2.7). No operating controls are involved. The frequency range of the BCD OUTPUT is ±999 Hz from the dialed in center frequency.

SECTION 4

THEORY OF OPERATION

4.1 Block Diagram Discussion (Figure 6-1).

The Models 754 and 755 AM Preselectors are double-conversion superheterodyne receivers. The incoming RF is first passed through a 50-ohm attenuator to reduce very strong signals that would overload the first mixer. It is then passed through a 1-MHz lowpass filter and upconverted to 4.55 MHz, thus eliminating the need for a tuned RF stage to reject images. The 4.55-MHz IF is then downconverted to the standard 450-kHz IF, where most of the bandshaping is done, then amplified and fed to the output connector. An AGC circuit controls the gain of the first IF amplifier to maintain an output level of 1 volt RMS at the rear-panel.

The local-oscillator input for both mixers is derived from a crystal oscillator. For the Model 754, it is a 10-MHz temperature-controlled crystal oscillator whose output is divided by 2 to obtain a 5-MHz signal. For the Model 755, it is a 5-MHz crystal oscillator. For both models, the 5-MHz signal is used as the LO input to the second mixer.

The 5-MHz output is also divided by 500 to obtain a 10-kHz signal which is used to phase-lock a synthesized LO in 10-kHz steps between 5.05 MHz and 6.54 MHz. The synthesizer consists of a divide-by-N phase-locked loop which locks the frequency of a voltage-controlled oscillator with the same accuracy as the temperature-controlled time base. Thumbwheel switches permit setting the oscillator frequency 4.55 MHz above the desired RF, for use as the LO input to the first mixer. The Model 755 has one set of thumbwheel switches, as shown in Figure 6-1. The Model 754 has four such sets, to permit presetting four transmitter frequencies to be monitored; any one of these four can then be selected by means of pushbutton switches to tune the local oscillator.

An overload detector at the input to the first mixer lights the OVERLOAD lamp whenever the incoming signal exceeds 100 mV. By reducing the signal level to less than 100 mV with the input attenuator, intermodulation distortion caused by other AM stations is held to a minimum.

The circuitry for driving the frequency error display in the Model 754 is shown within dashed lines in Figure 6-1. The time base for the error counter is obtained by dividing the precision 10-kHz frequency derived from the temperature-controlled crystal oscillator. The Preselector output, nominally 450 kHz, is stripped of its modulation in a limiting amplifier, and the carrier frequency is counted in the error counter. Any difference from 450 kHz is displayed. Since a given error in the carrier RF produces the same error in the IF, the displayed error is also that of the carrier RF.

The Model 754, as well as the Model 755, has its own power supply furnishing +12 volts, +5 volts, and -12 volts, all regulated.

4.2 Lowpass Filter and Overload Detector (Figure 6-3).

The input 2-MHz lowpass filter, consisting of L1, L2 and associated capacitors, provides more than 60 dB image rejection. With the upconversion scheme used, all incoming signals capable of producing image interference are above 9 MHz, and so are rejected.

The output of overload detector CR1 is compared in operational amplifier Z3 with a fixed voltage which is factory adjusted so that any signal greater than 100 mV drives the amplifier output low to turn on OVERLOAD LED CR2. Resistors R2, R4, and R7 set the threshold. R4 provides hysteresis, so that once the LED is on, the signal must drop at least 6 dB to turn it off; this prevents flickering of the LED caused by a signal just at threshold.

4.3 Timebase and Local Oscillator (Figure 6-3).

The timebase for the Model 754 Preselector is shown in Figure 6-6. It consists of a 10-MHz temperature-controlled crystal oscillator followed by a divide-by-two flip-flop to give a highly stable 5-MHz output. The Model 755 timebase consists of a 5-MHz crystal oscillator, as shown in Figure 6-5.

The 5-MHz timebase output enters the Main Board through pin 2 of J10 (Figure 6-3). After buffering by Q7, the 5 MHz is divided by 500 in Z6, Z7, and Z8 to give a 10-kHz output at pin 1 of J7, which is used as the timebase for the counter circuits in the Model 754. Pin 12 of Z8 in the divider chain also provides a 10-kHz output for phase detector Z9.

The local oscillator for first mixer Z20 is a voltage-controlled oscillator (VCO) (Q9) in a phase-locked loop. The VCO frequency is buffered by Q10 and Q12, and divided down to 10 kHz in a divide-by-N circuit (Z10, Z11, Z13, Z14, Z15-8). It is then compared in phase detector Z9 with the 10-kHz reference obtained from the timebase, as described in the preceding paragraph. The phase detector produces a DC voltage at pin 8 which varies with the phase difference between the two incoming frequencies; this is applied to varicap CR6 to tune the VCO in a direction to reduce the phase difference to zero. The VCO output at the collector of buffer Q10 is fed to the local-oscillator input (pin 1) of mixer Z20 through emitter follower Q11.

The value of N for the divide-by-N circuit is selected to provide a 10-kHz input to the phase detector when the VCO frequency is 4.55 MHz above the frequency dialed in on the thumbwheel switches.

To accomplish this, the circuit consisting of Z12, Z16, Z17 and Z18 presets the divide-by-N counter to the nines complement of the dialed-in frequency. The divide-by-N counter then counts up to 999, resets to 0 and counts up to 455 (for the IF offset), at which time a pulse is produced at pin 6 of Z14. If the VCO frequency is precisely 4.55 MHz above the dialed-in frequency, the pulse repetition frequency at pin 6 of Z14 will be precisely 10 kHz.

For example, if a frequency of 1600 kHz is dialed in, the thumbwheel switches would preset the divide-by-N counter to 999-160=839. The counter would then count to 999, reset to 0, and count to 455 for a total count of 615. Thus an output pulse would be produced every 615 counts; that is, N = 615. If the VCO is operating at the required frequency of 1.600 + 4.550 = 6.150 MHz, dividing by 615 produces the required 10 kHz.

The Model 754 requires three Thumbwheel Switch Boards (Figure 6-7) and one Channel Selector Board (Figure 6-8) to accomodate the channel selector switches and the three additional sets of thumbwheel switches. The Channel Selector Board plugs into J9 of the Main Board, and the Thumbwheel Switch Boards plug into J9A, J9B, and J9C of the Channel Selector Board. The Thumbwheel Switch Boards also plug in, through their 10-pin connectors P8A, P8B, P8C to J8A, J8B, and J8C on the Counter Board. The tuning frequency is determined by closing one of the four front-panel channel selector switches, S1-A through S1-D, shown in Figure 6-8. This applies -0.6 volts to the common bus of the selected row of thumbwheel switches, allowing the required input lines to the nines complement circuit to be set low, corresponding to the thumbwheel switches that are closed. The common bus for the thumbwheel switches is held at -0.6V instead of 0V because, if 0V were used, the isolation diodes associated with the thumbwheel switches would hold the selected input lines to the divide-by-N counter at +0.6V instead of 0V. For good noise immunity, the input lines must be at 0V. The -0.6V level is furnished by Q6 and associated components (Figure 6-3). This voltage also lights the LED (CR16 on the Main Board, CR10 on the plug-ins) mounted alongside the selected row of thumbwheel switches.

In the Model 755, pins 1 and 2 of J9 on the Main Board are connected together, thus applying -0.6 volts to the thumbwheel switch common bus.

4.4 First Mixer and 4.55-MHz IF Amplifier (Figure 6-3).

The first mixer, Z20, is a double balanced ring modulator for good intermodulation distortion. The incoming RF is applied to pin 7 and the L.O. applied at pin 1. The difference product of the L.O. and R.F. is 4.55 MHz, and is amplified by the 4.55 MHz IF chain consisting

of two dual-gate FET's Q1 and Q2. Dual-gate FET's are used for low noise and wide dynamic range (i.e. low intermodulation distortion). Tank circuits consisting of L3, L5, and L7 are sync. tuned to 4.55 MHz. Tank circuits L4, and L17 are tuned to 5.45 MHz. A signal at 5.45 MHz going into the input on the second mixer would produce a 450 kHz product commonly called a 2nd I.F. image. Tank circuits L4, and L17 are traps for this frequency.

4.5 Second Mixer, 450-kHz IF Amplifier, and AGC (Figure 6-3).

The second mixer, Z4, is an active mixer. The 4.55-MHz first IF is applied to pin 1, and the fixed 5-MHz local oscillator freqeuncy from the time base through buffer Q8 is applied to pin 7. The 450-kHz output appears at both pin 9 and pin 6. From pin 6, it goes through a wide-band IF filter-amplifier (see Figure 6-4) which plugs into J2 and J4 on the Main Board. The filtered and amplified output at J4-3 is amplified by Q3, Q4, and Q5 to furnish the Preselector output of 1 volt RMS at J6-2.

The output of amplifier Q4/Q5 is also fed back to AGC detector CR4. Its DC output controls the gain of first IF amplifier Q1 and Q2 to maintain a constant Preselector output. The AGC voltage is adjusted by R36 for a Preselector output level of 1 volt RMS.

The IF Filter Board (see Figure 6-4) contains a two-section wide-band filter (FL1), with a two-stage amplifier (Q1, Q2) between the sections, and an output amplifier (Q3). +12 volts DC is applied to pin 1 of P4 on the Wide-Band Filter Board only when the front-panel BANDWIDTH switch is in the WIDE position; in the NARROW position, -0.6 volts is applied. Isolation diode CR1 prevents +12 volts DC on the Narrow-Band Filter Board from entering the Wide-Band IF Filter Board when narrow-band operation is selected. The Narrow-Band IF board operates similarly except the input connector is P3 and output connector is P5, +12V is applied to the Narrow-IF Board when the bandwidth switch is in the NARROWBAND position.

4.6 Power Supply (Figure 6-3).

A transformer external to the Main Board supplies AC to pins 1, 2, 5, and 6 of J11. Full-wave diode rectifiers CR19 through CR24 and regulators Z1, Z2, and Z21 develop +5 volts, +12 volts, and -12 volts as shown in Figure 6-3. Unregulated +5 volts and +12 volts are delivered to pins 7 and 8 of J7.

4.7 Counter Circuits (Model 754 Only) (Figure 6-9).

The counter board plugs into the Main Board, and the IF input to be counted, nominally 450 kHz, enters the Counter Board at pin 5 of P7. Limiting amplifier Z15 strips off the amplitude modulation to

ensure an accurate count of the carrier frequency; the counting circuit can operate with as much as 99% negative peak modulation. The IF signal is then amplified by Q1 and its frequency is divided by 4 in the two Z11 flip-flops. This is necessary because some of the comparison and transfer functions in counter module Z12 cannot be done when the counter is operating at a 450 kHz counting rate. The time base applied to the counter is 4 seconds rather than 1 second, so that if the IF is precisely 450 kHz, the counter will have counted 450,000 counts in the 4-second period. The divided-down signal is applied through gate Z10-4 to the count input (pin 36) of counter Z12.

The counter time base comes from the timebase divider on the main board through P7-1. This 10-kHz input is divided by decade dividers Z1 through Z4 to obtain 1 Hz, and then further divided by 4 in flip-flops Z5-15 and Z5-11 to produce a 1/4-Hz (4-second period) time base.

The 4-second waveform at pin 11 of Z5 is processed by Z6-3, Z6-6, Z8-11, Z16-6, and Z10-10 to produce a preset pulse at the counter load input (pin 31) of counter Z12; this allows presetting the counter to a count of 450,000. The same 4-second waveform is also processed by Z6-3, Z6-6, Z8-11, Z16-8, Q3, and Z10-13 to produce a store pulse which is applied to pin 15 of counter Z12 to store the count at the end of the 4-second counting period into the register of Z12.

Module Z12 is a six-decade, up-down, presettable counter. At the start of each 4-second counting period, the counter is preset to 450,000. It then starts counting down toward zero. If there is no error in the IF signal, the count at the end of 4 seconds will be zero. If the IF is less that 450 kHz, an error count will remain at the end of 4 seconds. If the IF is greater than 450 kHz, the counter will count through 0; when it does, an output is produced at pin 39 of Z12, which sets flip-flop Z9-15 high and sends a logic 1 to the counter's up/down control (pin 40) to cause the counter to start counting up from 0. In this case the counter will again end the 4-second period with an error count. When Z9-15 is set high, it also applies the appropriate levels to J and K of Z9-11 so that when the store pulse is received at the end of the 4-second period, pin 11 of Z9 goes high to forward bias Q4 and turn on the vertical segments of the $\pm$ display, thus indicating a frequency higher than the nominal IF. (The horizontal segments are on at all times, thus indicating a - frequency error when the vertical segments are not lighted.)

At the end of the 4-second period, the store pulse applied to pin 15 of Z12 causes the count present in the counter at that time to be entered into the display register, which is a part of Z12. Z12 then strobes the display digits by producing an output at pins 24

(LSD) through 29 (MSD) in sequence, to turn on power to each of the digits through transistors Q12 through Q23. (Only digits 1 through 3 are used in the Model 754.) As each digit is switched on, the BCD count for that digit is taken from the display register and decoded to light the display segments which will produce the required numeral. These segment outputs appear at pins 4 through 10 of Z12, and are delivered to the displays through drivers Q5 through Q11, which ground the appropriate segments.

Diodes CR7, CR9 and CR10 supply the positive voltages (logic ones) required for the BCD representations for digits 4 and 5 when the counter is being preset to 450,000. Counter pin 19 is the LSB and pin 17 is the MSB for this three-bit notation.

If the Model 753 Modulation Monitor measures a modulation peak of -100% or greater, it delivers a logic 0 to pin 3 of flip-flop Z8, which drives pin 15 of Z8 low and so disables the store pulse. This prevents transferring an erroneous count into the storage register during negative overmodulation.

The front-panel GATE lamp, located on the Display Board, is driven by the store pulse through one-shot Z17, which stretches the store pulse to approximately 500 milliseconds. Thus the GATE lamp will flash every 4 seconds to indicate normal counter operation.

The Counter Board contains two voltage regulators, Z13 and Z14, to furnish regulated DC voltage for the counter circuits. They operate on unregulated power supplied from the Main Board.

The Display Board (Figure 6-10) contains the three LED displays, which can indicate a frequency error from -199 Hz to +199 Hz. DS1 displays the + or - and the most significant digit, which can be only 1 or blank. DS2 and DS3 display the other two digits of the frequency error. R1 through R8 are current-limiting resistors for the LEDs. CR2 and CR3 keep the 1 in DS1 lighted when the frequency error exceeds 199 Hz. CR1 is the GATE LED.

4.8 Narrow-Band IF Filter(Optional) (Figures 6-4 and 6-8).

The optional Narrow-Band IF Filter Board, which plugs into connectors J3 and J5 on the Main Board, is the same as the IF Filter Board described in Section 4.5, except that Module FL1 is a narrow-band filter instead of the wide-band filter of the standard board. When this option is installed, the IF filter is selected by the front-panel BANDWIDTH switch.

4.9 Carrier Frequency Alarm (Optional) (Figure 6-11).

When this option is selected, the customer specifies the frequency error (within the range of 0 to 20 Hz) which is to trigger the alarm. This error is factory-preset in BCD form into the counter register (pins 32 through 35 of Z12, Figure 6-9). The counter will then deliver an EQUAL pulse to pin 23 of Z12 whenever the count is equal to the preset count.

There are three possible situations for the Carrier Frequency Alarm:

a. If the IF being measured is lower than 450 kHz by more than the preset error, counter Z12 on the Counter Board, which starts counting down from 450,000 at the start of each timebase cycle, will never reach the preset count, and no EQUAL pulse will be generated.

b. If the IF is within tolerance (i.e., between the - preset error and the + preset error), one EQUAL pulse will be generated as the counter goes through the - preset error.

c. If the IF is higher than 450 kHz by more than the preset error, two EQUAL pulses will be generated as the counter counts down through 0 and back up again past the + preset error.

The Carrier Frequency Alarm Board plugs into J1 on the Counter Board. Pins 13 through 16 of J1 are the BCD lines into the register, while pins 1, 4, 5, and 6 are the digit strobes. The diodes are factory-installed to furnish the required BCD count for each digit. The EQUAL pulse at pin 12 of J1 clocks flip-flop Z1-15 so that, in combination with a SET pulse at the start of each timebase, the output at pin 11 of Z1 is high if no or two EQUAL pulses are received during a timebase period, but low if one EQUAL pulse is received. This allows Q3 to ground an external circuit when the IF is lower or higher than the preset tolerance. Q3 is capable of sinking a maximum of 50 mA at 30 V.

4.10 BCD Frequency Output (Optional) (Figures 6-9 and 6-12).

When the BCD Frequency Output option is selected, the BCD and digit strobe outputs of counter Z12 are furnished to the BCD Output Board through J2 of the Counter Board. As each strobe line is enabled in turn, from the lease significant digit (LSD) (Z12-24) to the most significant digit (MSD) (Z12-29), the corresponding BCD readout for that digit appears at pins 11 through 14 of Z12 (pin 11 is the least significant bit), and is loaded into the register (Z2, Z3, or Z4) on the BCD Output Board that receives a LOAD pulse from the strobe. The content of each register is amplified by Z6 and Z7, and delivered to the rear-panel BCD OUTPUT connector through J2 of the BCD Output Board.

SECTION 5

MAINTENANCE

5.1 General.

Since the Models 754 and 755 Preselectors are solid-state instruments and their power requirements are low, no maintenance problems due to high temperature should be encountered, provided the instrument is installed well away from vacuum-tube and other heat-generating equipment. Likewise, because the operating voltages are low, excessive dust accumulation associated with high-voltage devices should not occur.

Access to components and periodic maintenance are covered in Sections 5.2 and 5.3. Three methods of calibrating the TCXO are described in Section 5.4 Receiver performance checks are covered in Section 5.5, and troubleshooting procedures are given in Section 5.6.

Refer to the Model 753 instruction manual for maintenace procedures pertaining to the AM Modulation Monitor.

5.2 Access.

To gain access to the Preselector components, remove six screws from the top cover and then remove the cover.

To remove PC boards and other assemblies from the chassis, proceed as follows:

a. Remove the two screws holding the front panel to the chassis.

b. Remove the screws that hold the PC board to the standoffs mounted on the chassis. See Figure 2-3 for location of screws.

c. Unplug the cables attached to the PC board.

d. Pull out the PC board.

5.3 Periodic Maintenance.

Except for the Model 754 TCXO calibration described in Section 5.4, the only periodic maintenance required is cleaning. Once a year, or more often in dusty locations, remove the printed-circuit boards and blow off the dust with compressed air.

5.4 TCXO Timebase Calibration (Model 754 Only).

The 10-MHz TCXO should be calibrated periodically. The aging rate of the oscillator is typically 1 ppm per year. For a monitored frequency of 1600 kHz, the typical error would be 1.6 Hz per year. Thus, calibration once every 5 years should ensure keeping the monitor's error well within the FCC allowable transmitter frequency end of the AM band.

Three calibration methods are described in Sections 5.4.1, 5.4.2, and 5.4.3 For all methods, to adjust the TCXO frequency remove the top cover, as described in Section 5.2. The frequency adjustment screw is located on the side of the TCXO nearest the center of the Preselector, and can be turned with a small screwdriver.

5.4.1 Calibration Using a Secondary Standard.

A secondary standard such as the HP Model 5245 counter or the HP 105A quartz oscillator can be used to calibrate the TCXO.

a. Remove the instrument from the rack and remove the top cover.

b. Connect the 5-MHz output of the secondary standard to the external sync input of a 10-MHz oscilloscope. Adjust the oscilloscope for external sync.

c. Connect the 5-MHz OUTPUT connector on the rear panel of the Model 754 to the vertical input of the oscilloscope.

d. Adjust the oscilloscope vertical gain for full-scale deflection and adjust the horizontal sweep speed to 0.1 microsecond per centimeter.

e. Adjust the Model 754 TCXO frequency for the least movement of the oscilloscope display.

5.4.2 Calibration Using a WWVB Receiver.

a. Connect the rear panel 5-MHz OUTPUT connector to the WWVB receiver.

b. Refer to the WWVB receiver instructions for the proper setup and method of calibrating the TCXO.

5.4.3 Calibration Using a Highly Accurate Standard.

The 5-MHz output of the TCXO can be compared with the 5-MHz output of a rubidium or other highly accurate standard. This is the most accurate way to calibrate the TCXO.

5.4.3 (Continued).

The TCXO and standard frequencies can be compared in an oscilloscope in any of three ways:

a. Apply the TCXO output of the Model 754 rear panel 5-MHz OUTPUT connector to the vertical input of the oscilloscope and apply the 5-MHz output of the standard to the horizontal input of the oscilloscope. Adjust the TCXO frequency for a steady lissajous pattern.

b. Using a dual-trace oscilloscope, apply the TCXO output from the rear panel 5-MHz OUTPUT connector to one oscilloscope channel, and apply the 5-MHz output of the standard to the other channel, triggering the oscilloscope sweep from the standard frequency. Adjust the TCXO frequency until the TCXO waveform is steady or moves very slowly with respect the standard waveform.

c. Using the output from the frequency standard as the oscilloscope trigger, apply the TCXO output from the rear-panel 5-MHz OUTPUT connector to the vertical input of the oscilloscope. Adjust the TCXO frequency for a steady pattern.

5.5 Receiver Performance Checks.

To determine whether the receiver circuits of the Preselector are operating satisfactorily, proceed as follows:

a. Connect the output of an appropriate signal generator to the rear panel RF INPUT connector, and set the signal generator to some frequency in the band from 540 to 1600kHz

b. Set the RF LEVEL control on the Preselector rear panel fully clockwise (minimum attenuation).

c. Adjust the signal generator output to a minimum, and then increase the output until the carrier level meter on the 753 comes up to the SET MARK. The signal generator output for this condition should be 100 microvolts or less. (Make sure the R.F. attenuator on the 753 is at its minimum attenuation position).

d. With no modulation on the signal from the signal generator, an the output level set for 100 microvolts, the residual noise measured by the Model 753 should be less than 35 dB. (Refer to the Model 753 instruction manual for the method of measuring residual noise.)

e. Increase the signal generator output to 1 millivolt. The residual noise should drop to less than 50 dB.

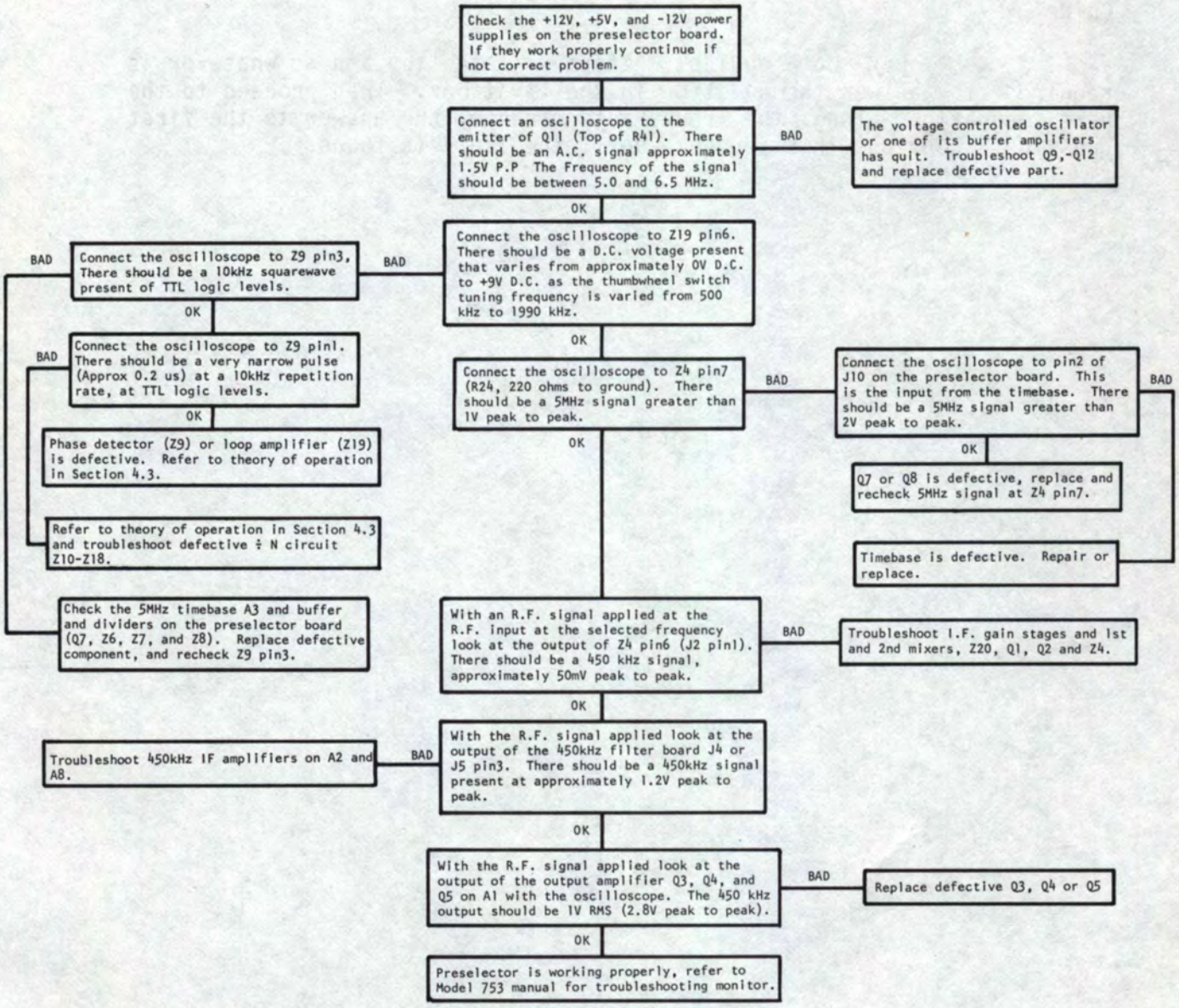
If the Model 755 receiver circuits pass this test, the Preselector is operating satisfactorily. If the Model 754 receiver circuits pass this test and if the counter indicates the correct frequency of the signal generator output, the Model 754 is operating satisfactorily.

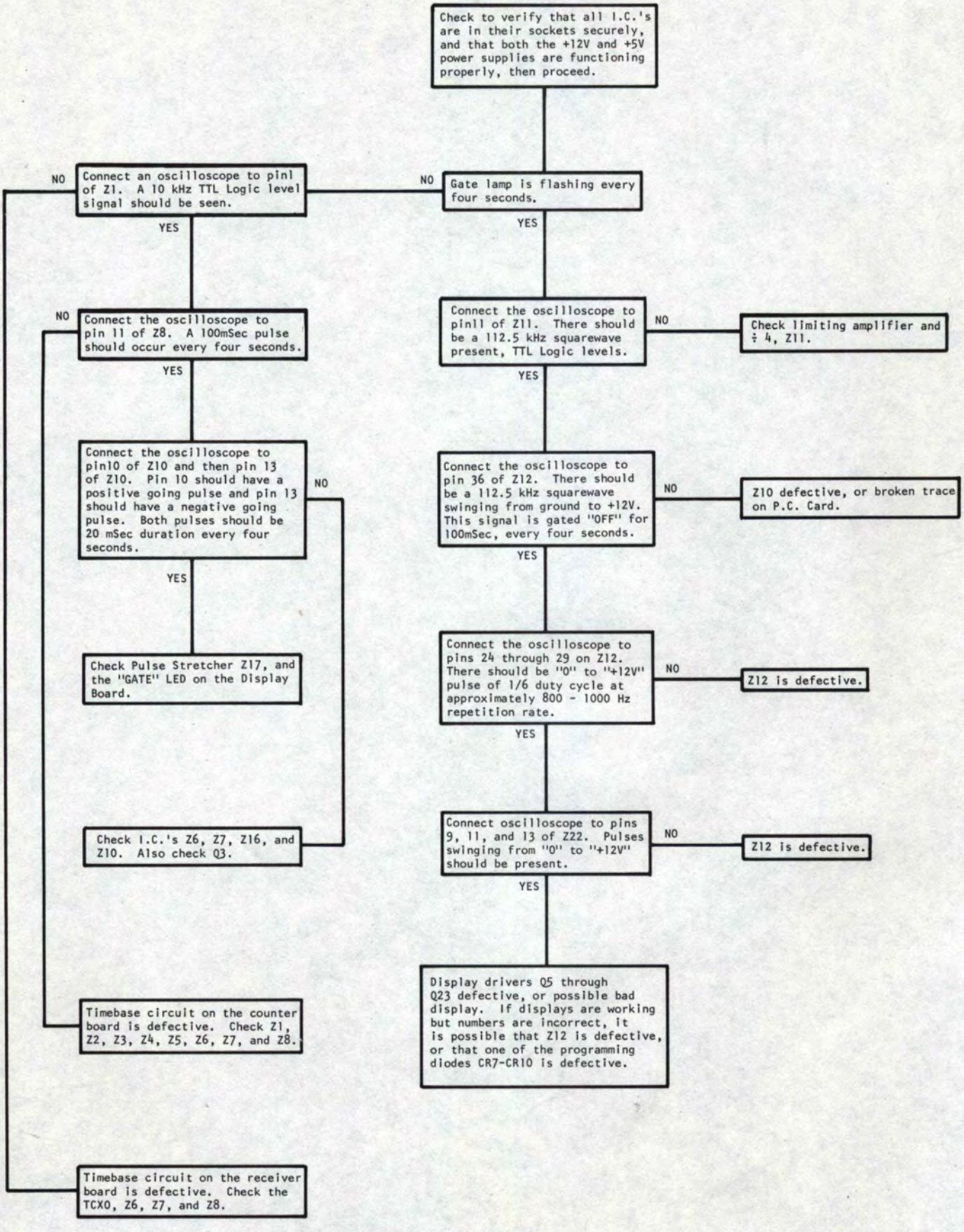
5.6 Troubleshooting Guides.

Two troubleshooting trees are presented here as an aid to isolating the cause of a failure. The Receiver Troubleshooting Guide (5.6.1) is applicable to both the Model 754 and the Model 755. If the Model 754 is malfunctioning, go directly to the Counter Troubleshooting Guide.

For both guides, start at the top and do whatever is required to answer the question in the first box. Then proceed to the next operation along the route determined by the answer to the first question. Continue this sequence until the fault is found.

5.6.1 Receiver Does Not Work





DWG. NO. 6600-1010

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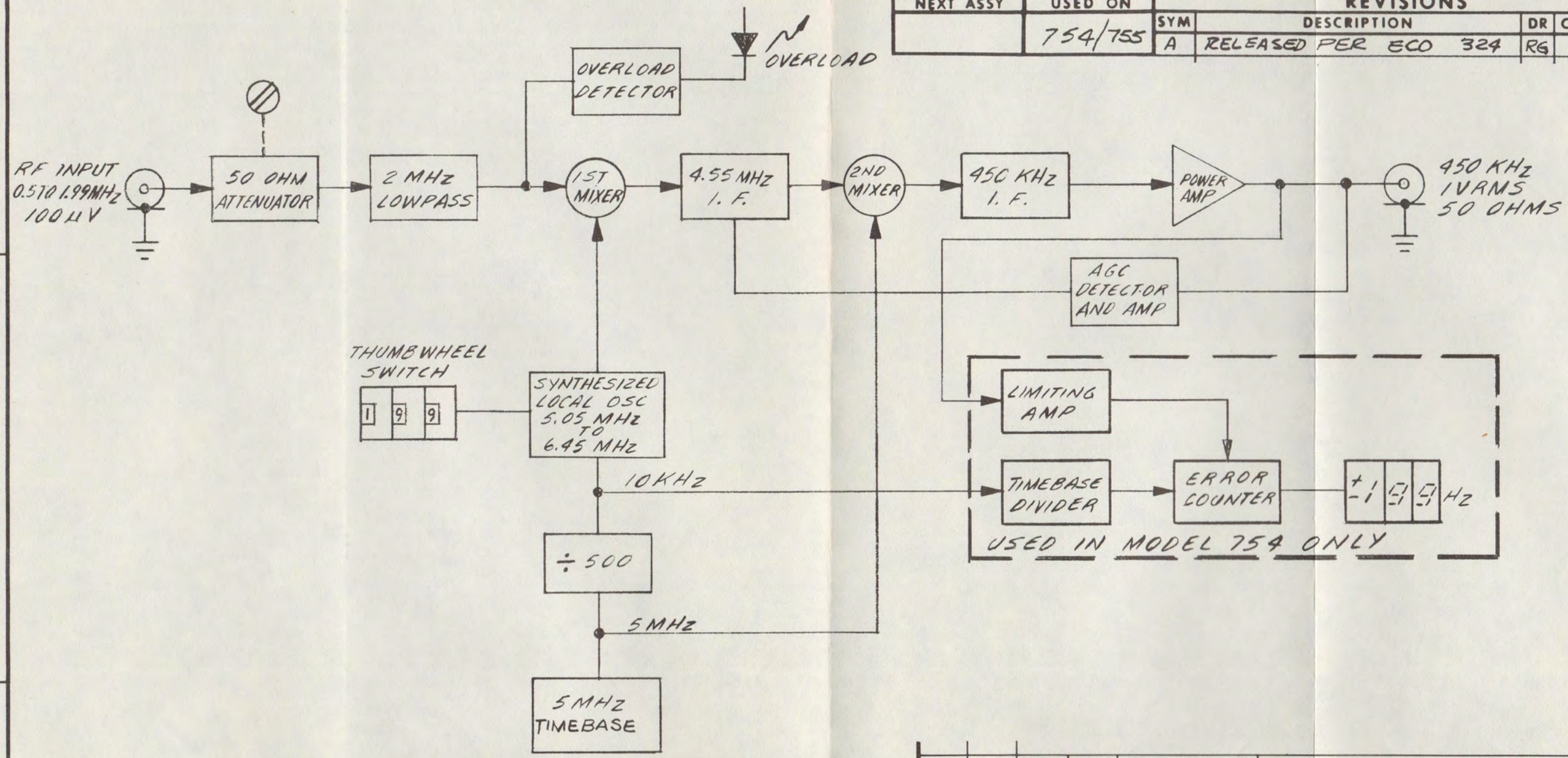

ITEM NO.	EN NO.	PART NO.	DESCRIPTION	REF. DES.
QTY PER ASSY	LIST OF MATERIALS			

REMOVE ALL BURRS AND SHARP EDGES

TOLERANCES UNLESS OTHERWISE SPECIFIED
.XX ±
.XXX ±
ANGULAR ±

DO NOT SCALE THIS PRINT

		DATE
DRAWN BY	KK	3/25/76
CHK. BY	[illegible]	3/4/77
PROJ. ENG.	DWE	3/4/77
MFG. ENG.		
APPD.		
APPD.		
ECO NO.		

TFT TIME & FREQUENCY TECHNOLOGY INC.
3000 Olcott St., Santa Clara, California 95050
(408) 246-6365

TITLE FIGURE 6-1 BLOCK DIAGRAM MODEL 754/755

SIZE	DRAWING NO.	REV.
B	6600-1000	A

SCALE NONE SHT. 1 OF 1

NEXT ASSY	USED ON
N/A	753

REVISIONS -					
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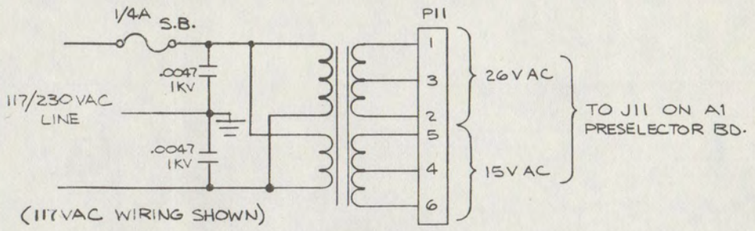
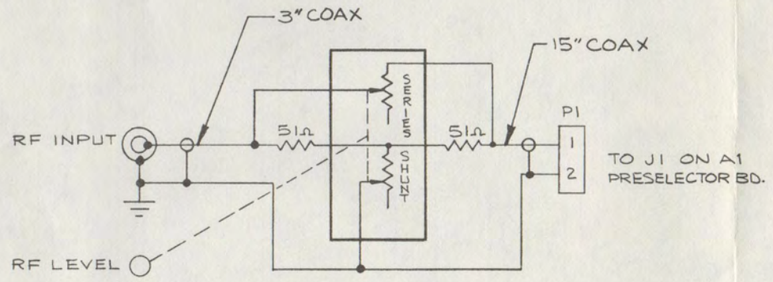
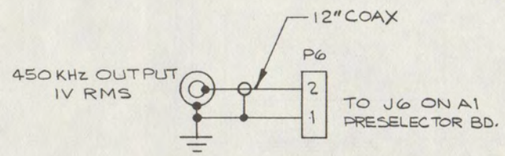
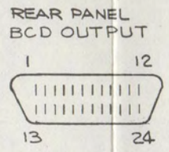
A	REL TO PRODUCTION	FD			3-20-78





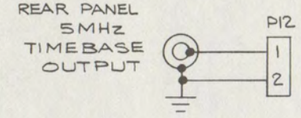


754 & 755

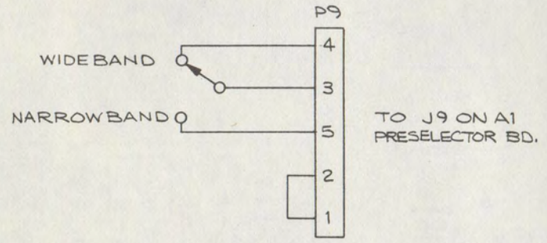


PIN#	FUNCTION	PIN#	FUNCTION
1	A_1	13	+
2	B_1	14	—
3	C_1	15	
4	D_1	16	GND
5	A_{10}	17	
6	B_{10}	18	
7	C_{10}	19	
8	D_{10}	20	
9	A_{100}	21	
10	B_{100}	22	
11	C_{100}	23	FREQ ALRM*
12	D_{100}	24	GND

*30V DC, SAME MAXIMUM LOAD, SEE SCHEMATIC



754 ONLY



755 ONLY

ITEM NO.	EN NO.	PART NO.	DESCRIPTION	REF. DES.
QTY PER ASSY		LIST OF MATERIALS		

REMOVE ALL BURRS AND SHARP EDGES

TOLERANCES UNLESS OTHERWISE SPECIFIED
.xx ±
.xxx ±
ANGULAR ±

DO NOT SCALE THIS PRINT

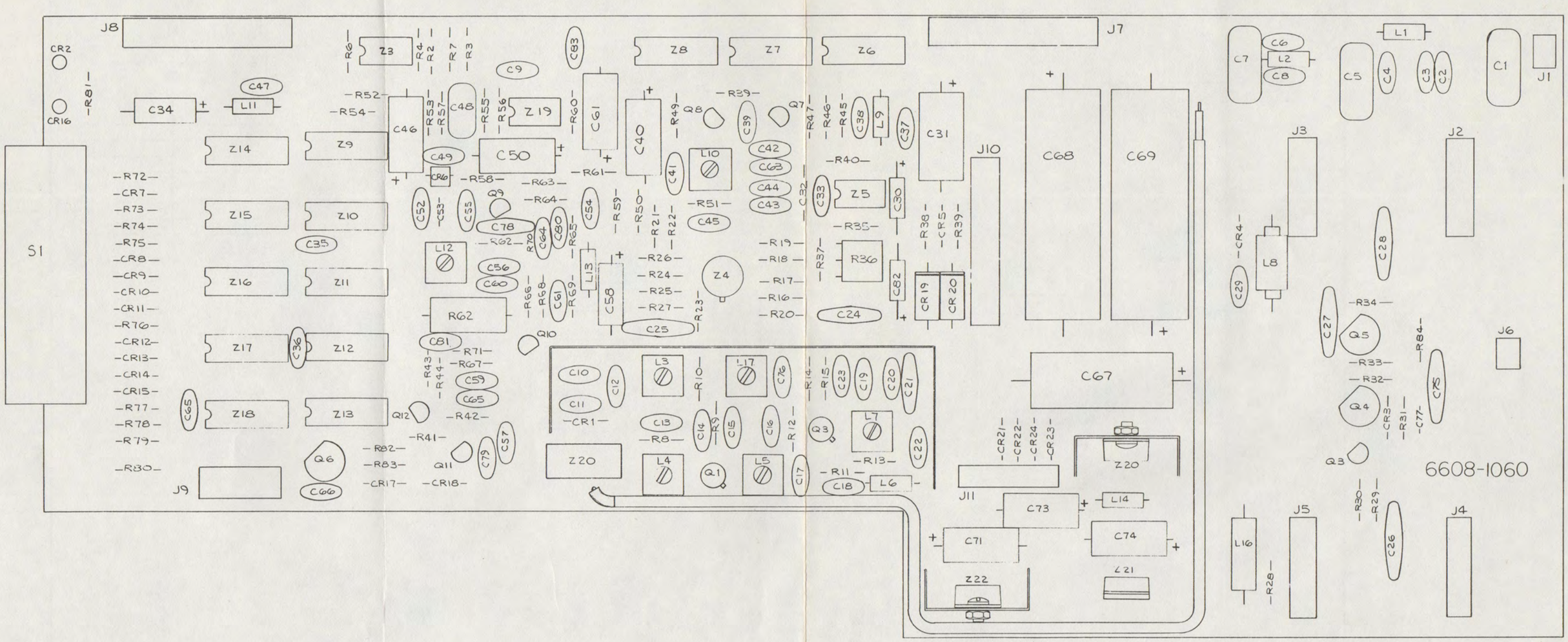
		DATE
DRAWN BY		
CHK. BY		3/4/77
PROJ. ENG.		3/4/77
MFG. ENG.		
APPD.		
APPD.		
ECO NO.		

TFT TIME & FREQUENCY TECHNOLOGY, INC.
3000 Olcott St., Santa Clara, California 95050
(408) 246-6365

TITLE FIGURE 6-2
CHASSIS WIRING
MODELS 754 & 755

SIZE C | DRAWING NO. 6600-1130 | REV. A
SCALE N/A | SHT. 1 OF 1

DWG. NO.



PC BD AM Preselector 754/755 Assembly # 6608-1060

Ckt. Ref.	Description	TFT Stock No.
C1	Cap Mica 2000 pF	1001-0202
C2	Cap Mica 390 pF	1001-0391
C3	Cap Mica 82 pF	1001-0820
C4	Cap Mica 910 pF	1001-0911
C5	Cap Mica 2700 pF	1001-0272
C6	Cap Mica 200 pF	1001-0201
C7	Cap Mica 2000 pF	1001-0202
C8	Cap Mica 200 pF	1001-0201
C9	Cap Mica 1000 pF	1001-0102
C10	Cap Mica 1000 pF	1001-0102
C11	Cap Mica 200 pF	1001-0201
C12	Cap Mica 330 pF	1001-0331
C13	Cap Mica 200 pF	1001-0201
C14	Cap Cer Disc .05 MFD	1005-5039
C15	Cap Mica 560 pF	1001-0561
C16	Cap Mica 620 pF	1001-0621
C17	Cap Cer Disc .05 MFD	1005-5039
C18	Cap Cer Disc .05 MFD	1005-5039
C19	Cap Mica 820 pF	1001-0821
C20	Cap Mica 510 pF	1001-0511
C21	Cap Mica 2700 pF	1001-0272
C22	Cap Cer Disc .05 MFD	1005-5039
C23	Cap Cer Disc .05 MFD	1005-5039
C24	Cap Cer Disc .2 MFD	1005-2029
C25	Cap Cer Disc .2 MFD	1005-2029
C26	Cap Cer Disc .2 MFD	1005-2029
C27	Cap Cer Disc .2 MFD	1005-2029
C28	Cap Cer Disc .2 MFD	1005-2029
C29	Cap Cer Disc .01 MFD	1005-1039
C30	Cap Electrolytic 10 MFD	1008-0101
C31	Cap Electrolytic 100 MFD	1010-0101
C32	Cap Electrolytic 2.2 MFD	1008-0022
C33	Cap Cer Disc .2 MFD	1005-2029
C34	Cap Electrolytic 15 MFD	1010-0150
C35	Cap Cer Disc .05 MFD	1005-5039
C36	Cap Cer Disc .05 MFD	1005-5039
C37	Cap Mica Disc 750 pF	1001-0751
C38	Cap Cer Disc .05 MFD	1005-5039
C39	Cap Cer Disc .05 MFD	1005-5039
C40	Cap Electrolytic 15 MFD	1010-0150
C41	Cap Cer Disc .05 MFD	1005-5039
C42	Cap Mica 300 pF	1001-0301
C43	Cap Mica 200 pF	1001-0201

PC BD AM Preselector 754/755 Assembly # 6608-1060

Ckt. Ref.	Description	TFT Stock No.
C44	Cap Mica 1000 pF	1001-0102
C45	Cap Cer Disc .05 MFD	1005-5039
C46	Cap Electrolytic 10 MFD	1008-0100
C47	Cap Cer Disc .05 MFD	1005-5039
C48	Cap Poly .0022 MFD	1002-0222
C49	Cap Cer Disc .05 MFD	1005-5039
C50	Cap Electrolytic 15 MFD	1010-0150
C51	Cap Electrolytic 15 MFD	1010-0150
C52	Cap Cer Disc .05 MFD	1005-5039
C53	Cap Tub Cer 8.2 pF	1000-0082
C54	Cap Cer Disc .05 MFD	1005-5039
C55	Cap Mica 150 pF	1001-0151
C56	Cap Mica 150 pF	1001-0151
C57	Cap Cer Disc .05 MFD	1005-5039
C58	Cap Electrolytic 15 MFD	1010-0150
C59	Cap Cer Disc .2 MFD	1005-2029
C60	Cap Cer Disc .05 MFD	1005-5039
C61	Cap Cer Disc .05 MFD	1005-5039
C62	Cap Electrolytic 15 MFD	1010-0150
C63	Cap Mica 5 pF	1001-0050
C64	Cap Cer Disc .05 MFD	1005-5039
C65	Cap Cer Disc .05 MFD	1005-5039
C66	Cap Cer Disc .05 MFD	1005-5039
C67	Cap Electrolytic 1000 MFD	1010-0102
C68	Cap Electrolytic 500 MFD	1010-0501
C69	Cap Electrolytic 500 MFD	1010-0501
C70	Cap Electrolytic 15 MFD	1010-0150
C71	Cap Electrolytic 15 MFD	1010-0150
C72	Cap Electrolytic 15 MFD	1010-0150
C73	Cap Cer Disc .05 MFD	1005-5039
C74	Cap Cer Disc .05 MFD	1005-5039
C75	Cap Cer Disc .2 MFD	1005-2029
C76	Cap Mica 200 pF	1001-0201
C77	Cap Mica 3.3 pF	1000-0033
C78	Cer Disc .05 MFD	1005-5039
C79	Cer Disc .05 MFD	1005-5039
C80	Cer Disc .05 MFD	1005-5039
C81	Cer Disc .05 MFD	1005-5039
C82	Cap Tant 10 MFD	1008-0101
C83	Cer. Disc .05 MFD	1005-5039
CR1	DIO IN 281	1280-0281
CR2	DIO Led HP 5082-4487	1285-4487
CR3	DIO IN3064	1281-3064

PC BD AM Preselector 754/755 Assembly # 6608-1060

Ckt. Ref.	Description	TFT Stock No.
CR4	DIO IN3064	1281-3064
CR5	DIO IN3064	1281-3064
CR6	DIO MV3102 Varicap	1290-3102
CR7	DIO IN3064	1281-3064
CR8	DIO IN3064	1281-3064
CR9	DIO IN3064	1281-3064
CR10	DIO IN3064	1281-3064
CR11	DIO IN3064	1281-3064
CR12	DIO IN3064	1281-3064
CR13	DIO IN3064	1281-3064
CR14	DIO IN3064	1281-3064
CR15	DIO IN3064	1281-3064
CR16	DIO Led HP 5082-4487	1285-4487
CR17	DIO IN3064	1281-3064
CR18	DIO IN4002	1281-3064
CR19	DIO MR501	1281-0501
CR20	DIO MR501	1281-0501
CR21	DIO IN4002	1284-4002
CR22	DIO IN4002	1284-4002
CR23	DIO IN4002	1284-4002
CR24	Diode, IN4002	1284-4002
J1	Plug, 2Pin	2250-6002
J2	Plug, 6Pin	2250-6506
J3	Plug, 6Pin	2250-6506
J4	Plug, 6Pin	2250-6506
J5	Plug, 6Pin	2250-6506
J6	Plug, 2Pin	2250-6002
J7	Plug, 10Pin	2250-6410
J8	Plug, 10Pin	2250-6410
J9	Plug, 10Pin	2250-6505
J10	Plug, 5Pin	2250-6510
J11	Plug, 6Pin	2250-6506
L1	Choke, RF 5.6 uH	1530-0056
L2	Choke, RF 5.6 uH	1530-0056
L3	IND Var 4.3 uH	1550-0004
L4	IND Var 4.3 uH	1550-0004
L5	IND Var 4.3 uH	1550-0004
L6	Choke, RF 15 uH	1530-0150
L7	IND Var 1.75 uH	1550-0016
L8	Choke, RF 22 uH	1530-0223
L9	Choke, RF 15 uH	1530-0150
L10	IND Var 4.3 uH	1550-0004
L11	Choke, RF 15 uH	1530-0150

PC BD AM Preselector 754/755 Assembly # 6608-1060

Ckt. Ref.	Description	TFT Stock No.
L12	IND Var 36 uH	1550-0066
L13	Choke, RF 15 uH	1530-0150
L14	Choke, RF 100 uH	1530-0101
L16	Choke, RF 4.7 mH	1530-4704
L17	IND Var 4.3 uH	1550-0004
Q1	Transistor 40673	1271-4067
Q2	Transistor 40673	1271-4067
Q3	Transistor 2N3563	1271-3563
Q4	Transistor 2N3645	1271-3645
Q5	Transistor 2N3643	1271-3643
Q6	Transistor 2N3645	1271-3645
Q7	Transistor 2N4275	1271-4275
Q8	Transistor 2N3563	1271-3563
Q9	Transistor 2N3563	1271-3563
Q10	Transistor 2N3563	1271-3563
Q11	Transistor 2N3563	1271-3563
Q12	Transitor 2N4275	1271-4275
R1	Res Car Comp 1/4W, 5% 51 ohm	1065-0051
R2	Res Car Comp 1/4W, 5% 330K	1065-3303
R3	Res Car Comp 1/4W, 5% 10K	1065-1002
R4	Res Car Comp 1/4W, 5% 270K	1065-2703
R5	Res Car Comp 1/4W, 5% 180K	1065-1803
R6	Res Car Comp 1/4W, 5% 1K	1065-1001
R7	Res Car Comp 1/4W, 5% 470	1065-0470
R8	Res Car Comp 1/4W, 5% 1.2K	1065-1201
R9	Res Car Comp 1/4W, 5% 390K	1065-3903
R10	Res Car Comp 1/4W, 5% 8.2K	1065-8201
R11	Res Car Comp 1/4W, 5% 470	1065-0470
R12	Res Car Comp 1/4W, 5% 1K	1065-1001
R13	Res Car Comp 1/4W, 5% 470	1065-0470
R14	Res Car Comp 1/4W, 5% 390K	1065-3903
R15	Res Car Comp 1/4W, 5% 8.2K	1065-8201
R16	Res Car Comp 1/4W, 5% 220	1065-0220
R17	Res Car Comp 1/4W, 5% 51	1065-0051
R18	Res Car Comp 1/4W, 5% 220	1065-0220
R19	Res Car Comp 1/4W, 5% 4.7K	1065-4701
R20	Res Car Comp 1/4W, 5% 4.7K	1065-4701
R21	Res Car Comp 1/4W, 5% 1.8K	1065-1801
R22	Res Car Comp 1/4W, 5% 2.2K	1065-2201
R23	Res Car Comp 1/4W, 5% 2.2K	1065-2201
R24	Res Car Comp 1/4W, 5% 220	1065-0220
R25	Res Car Comp 1/4W, 5% 220	1065-0220
R26	Res Car Comp 1/4W, 5% 3.9K	1065-3901

PC BD AM Preselector 754/755 Assembly # 6608-1060

Ckt. Ref.	Description	TFT Stock No.
R27	Res Car Comp 1/4W, 5% 8.2K	1065-8201
R28	Res Car Comp 1/4W, 5% 1K	1065-1001
R29	Res Car Comp 1/4W, 5% 220	1065-0220
R30	Res Car Comp 1/4W, 5% 2.7K	1065-2701
R31	Res Car Comp 1/4W, 5% 1K	1065-1001
R32	Res Car Comp 1/4W, 5% 10	1065-0010
R33	Res Car Comp 1/4W, 5% 10	1065-0010
R34	Res Car Comp 1/4W, 5% 1K	1065-1001
R35	Res Car Comp 1/4W, 5% 100K	1065-1003
R36	Pot PL MT 1K	1072-1001
R37	Res Car Comp 1/4W, 5% 6.8K	1065-6801
R38	Res Car Comp 1/4W, 5% 1K	1065-1001
R39	Res Car Comp 1/4W, 5% 12K	1065-1202
R40	Res Car Comp 1/4W, 5% 820K	1065-8203
R41	Res Car Comp 1/4W, 5% 100	1065-0100
R42	Res Car Comp 1/4W, 5% 1K	1065-1001
R43	Res Car Comp 1/4W, 5% 6.8K	1065-6801
R44	Res Car Comp 1/4W, 5% 2.2K	1065-2201
R45	Res Car Comp 1/4W, 5% 1K	1065-1001
R46	Res Car Comp 1/4W, 5% 6.8K	1065-6801
R47	Res Car Comp 1/4W, 5% 2.2K	1065-2201
R48	Res Car Comp 1/4W, 5% 2.2K	1065-2201
R49	Res Car Comp 1/4W, 5% 1K	1065-1001
R50	Res Car Comp 1/4W, 5% 470	1065-0470
R51	Res Car Comp 1/4W, 5% 470	1065-0470
R52	Res Car Comp 1/4W, 5% 4.7K	1065-4701
R53	Res Car Comp 1/4W, 5% 330	1065-0330
R54	Res Car Comp 1/4W, 5% 2.7K	1065-2701
R55	Res Car Comp 1/4W, 5% 1K	1065-1001
R56	Res Car Comp 1/4W, 5% 22K	1065-2202
R57	Res Car Comp 1/4W, 5% 10K	1065-1002
R58	Res Car Comp 1/4W, 5% 1.8K	1065-1801
R59	Res Car Comp 1/4W, 5% 10K	1065-1002
R60	Res Car Comp 1/4W, 5% 10K	1065-1002
R61	Res Car Comp 1/4W, 5% 2.7K	1065-2701
R62	Res Car Comp 1/4W, 5% 330	1065-0330
R63	Res Car Comp 1/4W, 5% 1.8K	1065-1801
R64	Res Car Comp 1/4W, 5% 7.5K	1065-7501
R65	Res Car Comp 1/4W, 5% 1K	1065-1001
R66	Res Car Comp 1/4W, 5% 4.7K	1065-4701
R67	Res Car Comp 1/4W, 5% 3.3K	1065-3301
R68	Res Car Comp 1/4W, 5% 10K	1065-1002
R69	Res Car Comp 1/4W, 5% 12K	1065-1202

PC BD AM Preselector 754/755 Assembly # 6608-1060

Ckt. Ref.	Description	TFT Stock No.
R70	Res Car Comp 1/4W, 5% 330	1065-0330
R71	Res Car Comp 1/4W, 5% 1K	1065-1001
R72	Res Car Comp 1/4W, 5% 4.7K	1065-4701
R73	Res Car Comp 1/4W, 5% 4.7K	1065-4701
R74	Res Car Comp 1/4W, 5% 4.7K	1065-4701
R75	Res Car Comp 1/4W, 5% 4.7K	1065-4701
R76	Res Car Comp 1/4W, 5% 4.7K	1065-4701
R77	Res Car Comp 1/4W, 5% 4.7K	1065-4701
R78	Res Car Comp 1/4W, 5% 4.7K	1065-4701
R79	Res Car Comp 1/4W, 5% 4.7K	1065-4701
R80	Res Car Comp 1/4W, 5% 4.7K	1065-4701
R81	Res Car Comp 1/4W, 5% 390 ohm	1065-0390
R82	Res Car Comp 1/4W, 5% 120	1065-0120
R83	Res Car Comp 1/4W, 5% 3.3K	1065-3301
R84	Res Car Comp 1/4W, 5% 180	1065-0180
S1	Thumbwheel Switch Assy	1875-0004
Z1	I/C LM340-05	1100-7805
Z2	I/C LM341P-12	1100-4212
Z3	I/C LM741CN	1100-0741
Z4	I/C UA796	1100-0796
Z5	I/C LM741CN	1100-0741
Z6	I/C SN74LS90	1101-7490
Z7	I/C SN74LS90	1101-7490
Z8	I/C SN74LS90	1101-7490
Z9	I/C MC4044	1100-4044
Z10	I/C SN74LS196	1101-7496
Z11	I/C SNLS196	1101-7496
Z12	I/C SN74LS10	1101-7410
Z13	I/C SN74LS196	1101-7496
Z14	I/C SN7472	1100-7472
Z15	I/C SN74LS10	1101-7410
Z16	I/C SN74LS00	1101-7400
Z17	I/C SN74LS04	1101-7404
Z18	I/C LM741CN	1100-0741
Z20	Mixer MD108	4500-0001
Z21	I/C LM320MP-12	1100-2012
	Socket, I/C 14Pin	2250-1014
	Socket, I/C 8Pin	2250-1008
	Spreader I/C 10Pin	1150-0010
	Coax, Preselector Input	4750-0012
	Shield, RF	2001-1010
	Heatsink	2010-6030
	PCB AM Preselector	1600-1060 REV D

NEXT ASSY	USED ON
6608-1060	754 755

REVISIONS					
SYM	DESCRIPTION	DR	CHK	AUTH	DATE
B	RELEASED PER ECO 329	RG			4-9-76
C	REV PER ECO 329	TD			6-6-77
D	REV PER ECO 360	TD			8-17-77

2 MHz LOWPASS

OVERLOAD DET

4.55 MHZ IF

2ND MIXER

RF INPUT FROM REAR PANEL ATTENUATOR

J1

C1 2000pf C2 390 pf C3 82pf C4 910pf C5 2700pf C6 200pf C7 200pf C8 20pf

L1 5.6 L2 5.6

E1 E2

CR1 IN281

R2 330K R3 10K C9 1000 Pf

Z3 741 +12V

CR2 OVERLOAD

R6 1K

L6 15

R4 270K R7 470

FIRST MIXER

Z20

R11 470 R13 470

+5VDC TO +10VDC

C16 620pf C15 560 pf C17 .05 L5 4.3 C18 .05 C76 200 pf L7 1.75 C20 510 Pf C21 2700 Pf C19 820 pf

L17 4.3

Q1 40673 Q2 40673

L13 15

R65 1K C78 .05 C79 .05 C80 .05 C81 .05 R71 1K

R62 330

R67 3.3K Q11 2N 3563

C57 .05 1VPP R41 100

L4 4.3 C13 200Pf C12 350 Pf C10 1000 Pf C11 200 Pf L3 4.3

R8 1.2K R9 390K R10 8.2K C14 .05

R12 1K R14 390K R15 8.2K C23 .05

R16 220 R18 220 R17 51 Z4 796

R23 2.2K R25 220 R24 220 TP1 1VPP

J3 INPUT, 450KHZ IF FILTER NARROW BAND 50 MVPP A8P3

J2 INPUT, 450 KHZ IF FILTER WIDEBAND 50 MVPP A2P2

SEE NOTE 6

C58 15 R64 7.5K C54 .05

Q9 2N3563

C60 .05 R66 4.7K R68 10K C65 .05

C55 150Pf C53 8.2pF R63 1.8K C64 .05 R70 330 C56 150 L12 36

C62 15 R69 12K C61 .05

R42 1K R43 6.8K Q12 2N4275

PHASE DETECTOR

L11 15 R44 2.2K C47 .05

Z9 MC 4044

C46 10 R53 330 R54 2.7K

R52 4.7K

AGC AMPLIFIER

C33 .2 C32 2.2 R40 820K C30 C82 R35 100K CR4 IN3064 C28 .2

Z5 741 +0.6V R36 1K LEVEL

R37 6.8K C29 .01 R38 1K L8 22 mHy

TO COUNTER P/O J7 1 10KHz

C48 .0022 C52 .05 R57 10K R56 22K C83 .05 R60 10K

CR6 MV3102

Z17 741

R55 1K

C49 .05 R58 1.8K C50 15 R59 10K

R61 2.7K C61 15 C34 15 C35 .05 C36 .05

CR16 R81

R39 12K C31 100 CR5 IN 3064

L14 100 C27 .2 R34 1K Q5 2N3643 R33 10

+7.6VDC +7VDC

P/O J7 5 450 KHz TO COUNTER A4P7

E3

C75 .2 J6 2 1 PRE SELECTOR OUTPUT 1 VRMS (REAR PANEL)

R51 470 +10.5V C43 C44 1000 Pf C45 .05 L10 4.3 C42 300 Pf C63 5pf

R31 1K CR3 IN 3064 Q4 2N3645 R32 10 R84 180

C77 3.3PF Q3 2N3563 P/O J9 SEE WIRING DIAGRAM FIGURE 6-2 A7P9

R30 2.7K R29 220

C26 .2 1.2VPP J5 J4 WIDEBAND FILTER OUTPUT A2P4

R28 1K L16 4.7

NARROWBAND FILTER OUTPUT A8P5 C66 .05

OUTPUT AMP

Q8 2N3563 5MHz L.O. AMP

R49 1K R50 470 C41 .05 C40 15

C39 .05 R48 2.2K R47 2.2K R46 6.8K Q7 2N4275 5 MHz BUFFER R45 1K

3VPP

L9 15

TIMEBASE DIVIDER

Z14 7472

Z15 Z15 7410

Z12 7410 Z16 7404 Z16 7400 Z12 Z18 Z18 7400

Z10 7476 Z11 7476 Z13 7476

÷N COUNTER

Z8 7490 Z7 7490 Z6 7490

C38 .05

POWER SUPPLIES

CR19 MR501 CR20 MR501 Z20 LM340-5 C67 1000 C70 15 C73 .05

CR21 IN4002 CR22 IN4002 CR23 IN4002 CR24 IN4002 Z22 LM341-12 C68 1000 C71 15 Z21 LM320-12 C69 1000 C72 15 C74 .05

P/O J7 6 +10V 7 8 +10V TO A4P7

P/O J10 1 10 9 2 FROM CRYSTAL OR TCXO TIMEBASE A3P10

P/O J11 6 5 2 1 3 4 15VAC 26VAC FROM POWER TRANSFORMER

R72-80 L→R 4.7K

J8 TO ADDITIONAL THUMBWHEEL SWITCHES IN MODEL 754 ONLY A4 P8

CR7-15 L→R IN3064

S1,A 1 MHZ | B 4 2 1 KHZ X100 | B 4 2 1 KHZ X10

S1,B S1,C

THUMBWHEEL SWITCH

P/O J9 1 2 TO CHANNEL SELECTOR BD. ON MODEL 754 (SEE WIRING DIAGRAM FOR MODEL 755 CONNECTIONS) A7P9

Q6 2N3645 -0.6V CR17 IN3064 CR18 IN3064 R82 120 R83 3.3K

VCO

COMPONENT DESIGNATOR		
FROM	TO	DELETED
C1	C77	
CR1	CR24	
L1	L17	L15
Q1	Q12	
R2	R84	R1
S1	S1	
Z1	Z21	

NOTES; UNLESS OTHERWISE SPECIFIED:
1. RESISTORS - VALUES IN OHMS ±5%, ¼ WATT.
2. CAPACITORS - VALUES IN MICROFARADS.
3. INDUCTORS - VALUES IN MICROHENRYS ±10%.
4. *FACTORY SELECT VALUE. TYPICAL VALUE SHOWN.
5. VOLTAGES ARE DC CONDITIONS.
6. JUMPER WIRE INSTALLED WHEN NARROW BAND FILTER NOT USED.

ITEM NO.	EN NO.	PART NO.	DESCRIPTION	REF. DES.
QTY PER ASSY		LIST OF MATERIALS		

REMOVE ALL BURRS AND SHARP EDGES

TOLERANCES UNLESS OTHERWISE SPECIFIED .xx ± .xxx ± ANGULAR ±

DO NOT SCALE THIS PRINT

		DATE
DRAWN BY		
CHK. BY		3/4/77
PROJ. ENG.		3/4/77
MFG. ENG.		
APPD.		
APPD.		
ECO NO.		

TFT TIME & FREQUENCY TECHNOLOGY INC.
3000 Olcott St., Santa Clara, California 95050
(408) 246-6365

TITLE SCHEMATIC: A1 AM PRESELECTOR FIGURE 6-3

SIZE D | DRAWING NO. 6601-1060 | REV D

SCALE | SHT. 1 OF 1

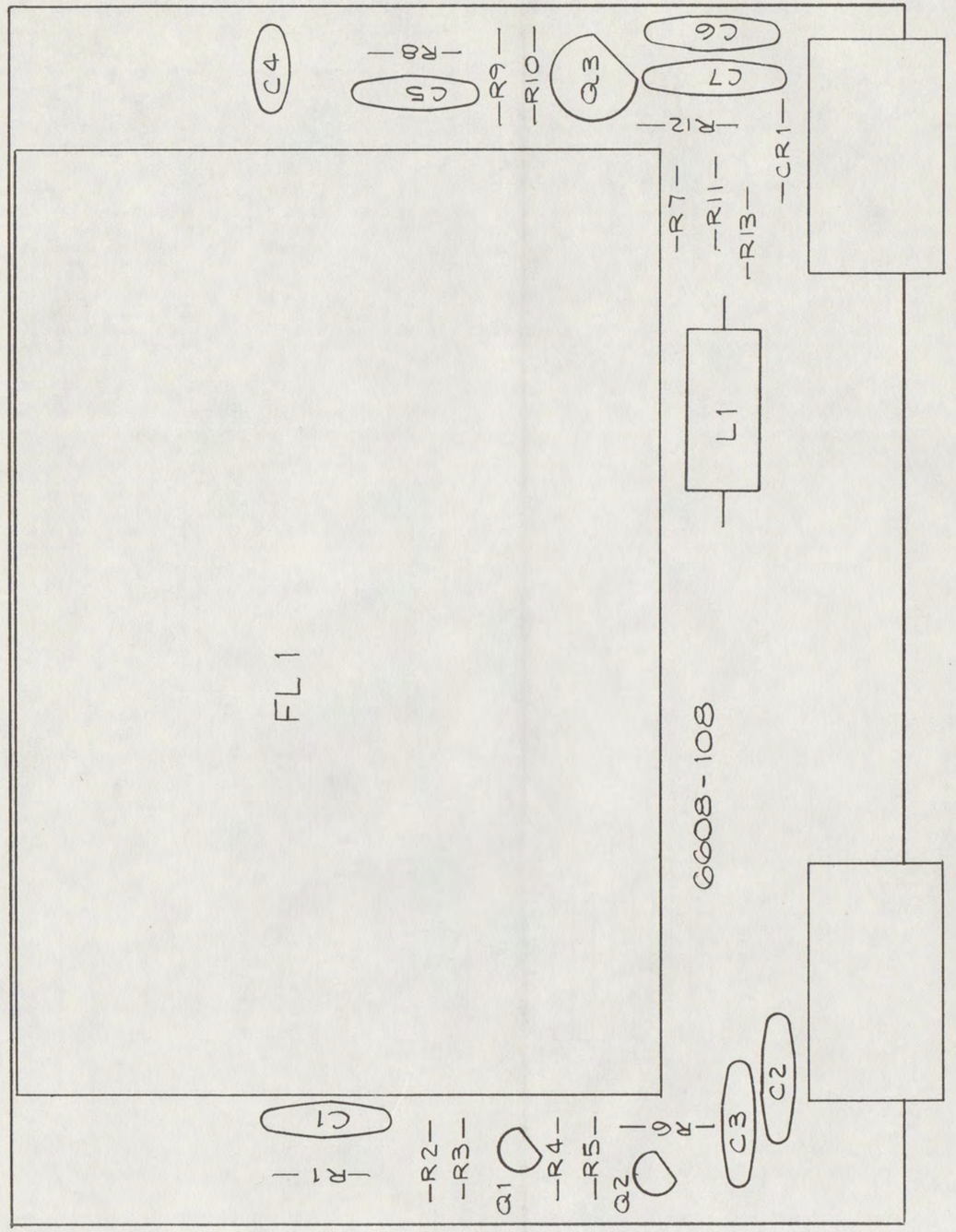
DWG NO. 6601-1060

PC BD AM IF Filter Wideband Assembly # 6608-1080

Ckt. Ref.	Description	TFT Stock No.
C1	Cap Cer Disc .2 uFD	1005-2029
C2	Cap Cer Disc .2 uFD	1005-2029
C3	Cap Cer Disc .2 uFD	1005-2029
C4	Cap Cer Disc .2 uFD	1005-2029
C5	Cap Mica 10 pF	1001-0100
C6	Cap Cer Disc .2 uFD	1005-2029
C7	Cap Cer Disc .2 uFD	1005-2029
C8	Cap Cer Disc .2 uFD	1005-2029
CR1	DIO IN 3064	1281-3064
FL1	Filt. R.F. Wide-Band	1052-1107
L	Choke, R.F. 4.7 MH	1530-4704
Q1	Transistor 2N3563	1271-3563
Q2	Transistor 2N3563	1271-3563
Q3	Transistor 2N3643	1271-3643
R1	Res, Car Comp 1/4W, 5% 1.8K	1065-1801
R2	Res, Car Comp 1/4W, 5% 120K	1065-1203
R3	Res, Car Comp 1/4W, 5% 33K	1065-3302
R4	Res, Car comp 1/4W, 5% 2.7K	1065-2701
R5	Res, Car Comp 1/4W, 5% 2K	1065-2001
R6	Res, Car Comp 1/4W, 5% 2K	1065-2001
R7	Res, Car Comp 1/4W, 5% 220	1065-0220
R8	Res, Car Comp 1/4W, 5% 1.8K	1065-1801
R9	Res, Car Comp 1/4W, 5% 100K	1065-1003
R10	Res, Car Comp 1/4W, 5% 27K	1065-2702
R11	Res, Car Comp 1/4W, 5% 220	1065-0220
R12	Res, Car Comp 1/4W, 5% 470	1065-0470
R13	Res, Car Comp 1/4W, 5% 1K	1065-1001
R14	Res, Car Comp 1/4W, 5% 2K	1065-2001
	P.C. Board	1600-1080 REV B

PC BD AM IF Filter Narband Assembly # 6608-1081

Ckt. Ref.	Description	TFT Stock No.
C1	Cap Cer Disc 0.2 uFD	1005-2029
C2	Cap Cer Disc 0.2 uFD	1005-2029
C3	Cap Cer Disc 0.2 uFD	1005-2029
C4	Cap Cer Disc 0.2 uFD	1005-2029
C5	Cap Mica Disc 10 pF	1001-0100
C6	Cap Cer Disc 0.2 MFD	1005-2029
C7	Cap Cer Disc 0.2 uFD	1005-2029
C8	Cap Cer Disc 0.2 uFD	1005-2029
CR1	DIO IN3064	1281-3064
FL1	RF Filter Narrow Band	1052-0114
J1	Socket 6Pin Locking	2250-5206
J2	Socket 6Pin Locking	2250-5206
L1	Choke 4.7 uH	1530-4704
Q1	Transistor 2N3563	1271-3563
Q2	Transistor 2N3563	1271-3563
Q3	Transistor 2N3643	1271-3643
R1	Res Car Comp 1/4W 5% 1.8K	1065-1801
R2	Res Car Comp 1/4W 5% 120K	1065-1203
R3	Res Car Comp 1/4W 5% 33K	1065-3302
R4	Res Car Comp 1/4W 5% 2.7K	1065-2701
R5	Res Car Comp 1/4W 5% 2K	1065-2001
R6	Res Car Comp 1/4W 5% 2K	1065-2001
R7	Res Car Comp 1/4W 5% 220	1065-0220
R8	Res Car Comp 1/4W 5% 1.8K	1065-1801
R9	Res Car Comp 1/4W 5% 100K	1065-1003
R10	Res Car Comp 1/4W 5% 2.7K	1065-2701
R11	Res Car Comp 1/4W 5% 220	1065-0220
R12	Res Car Comp 1/4W 5% 470	1065-0470
R13	Res Car Comp 1/4W 5% 1K	1065-1001
R14	Res Car Comp 1/4W 5% 2K	1065-2001
	P.C. Board	1600-1080 REV B

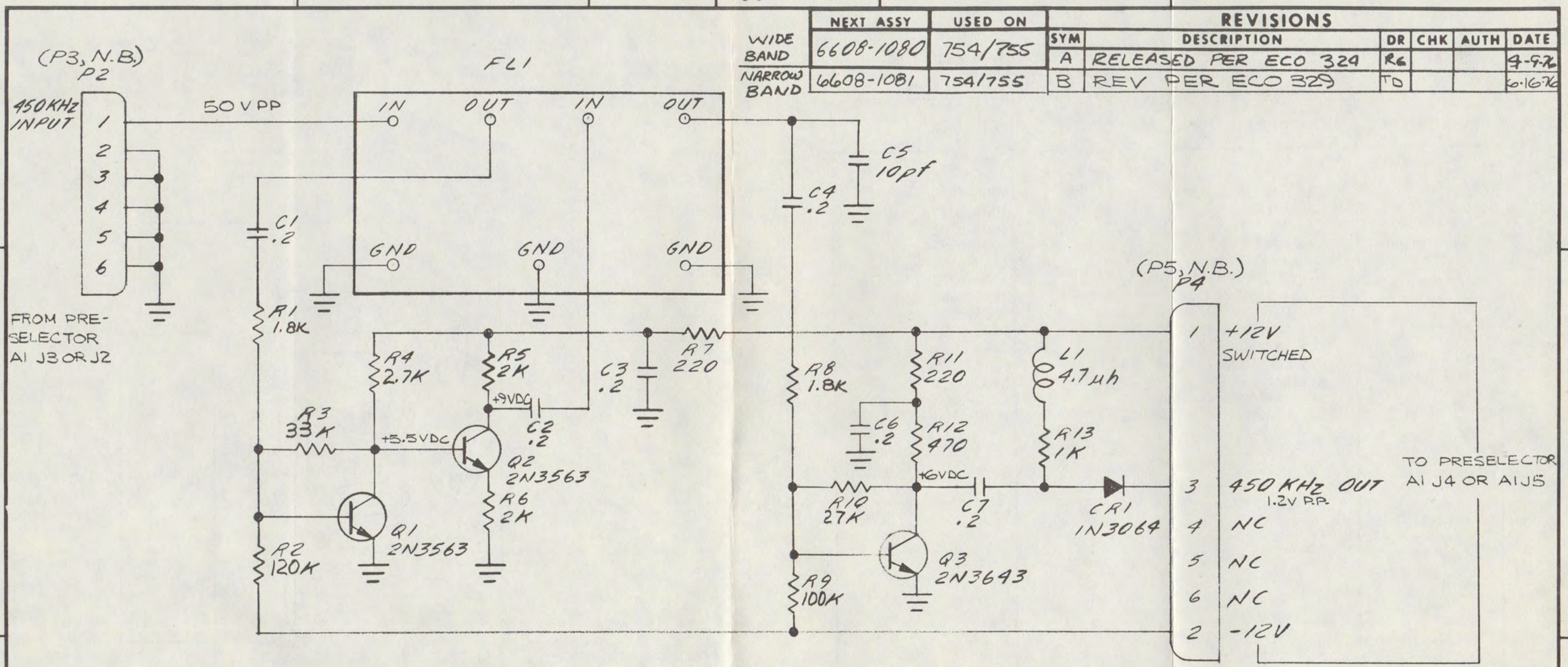


DWG. NO. 6601-1630

	NEXT ASSY	USED ON
WIDE BAND	6608-1080	754/755
NARROW BAND	6608-1081	754/755

REVISIONS

SYM	DESCRIPTION	DR	CHK	AUTH	DATE
A	RELEASED PER ECO 324	RG			4-9-76
B	REV PER ECO 329	TO			6-16-76



NOTES; UNLESS OTHERWISE SPECIFIED:

1. RESISTORS - VALUES IN OHMS ±5%, ¼ WATT.
2. CAPACITORS - VALUES IN MICROFARADS.
3. INDUCTORS - VALUES IN MICROHENRYS ±10%.
4. *FACTORY SELECT VALUE. TYPICAL VALUES SHOWN.
5. VOLTAGES ARE DC CONDITIONS.
6. FOR WIDEBAND FILTER REFER TO MAT'L LIST 6608-1080 & 6608-1081 FOR NARROWBAND.

ITEM NO.	EN NO.	PART NO.	DESCRIPTION	REF. DES.
QTY PER ASSY		LIST OF MATERIALS		

REMOVE ALL BURRS AND SHARP EDGES

TOLERANCES UNLESS OTHERWISE SPECIFIED
.XX ±
.XXX ±
ANGULAR ±

DO NOT SCALE THIS PRINT

		DATE
DRAWN BY	ICK	3/24/76
CHK. BY		3/4/77
PROJ. ENG.		3/4/77
MFG. ENG.		
APPD.		
APPD.		
ECO NO.		

TFT TIME & FREQUENCY TECHNOLOGY INC.
3000 Olcott St., Santa Clara, California 95050
(408) 246-6365

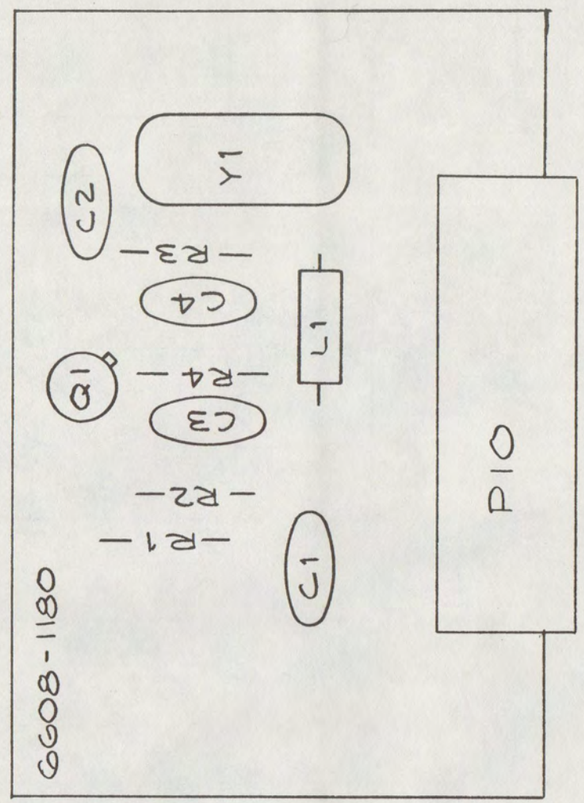
TITLE FIGURE 6-4
AM IF FILTER BD
A2 AND A8 BOARD

SIZE B | DRAWING NO. 6601-1630 | REV. B

SCALE NONE | SHT. 1 OF 1

Model 755 PC BD STD 5MHz OSC Assembly # 6608-1180

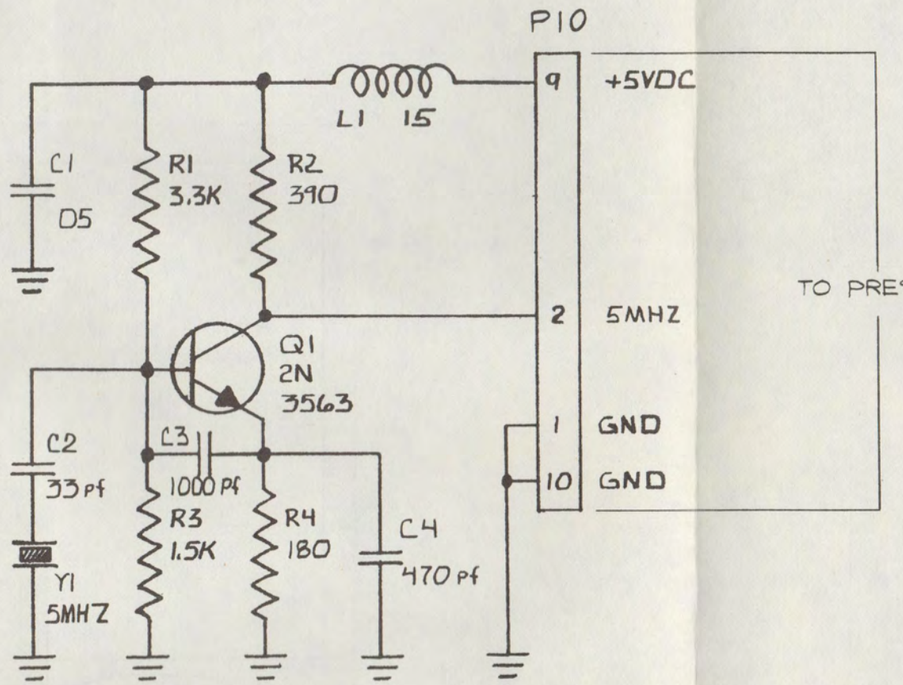
Ckt. Ref.	Description	TFT Stock No.
C1	Cap Cer Disc .05MFD	1005-5039
C2	Cap Mica 33 pF	1001-0330
C3	Cap Mica 1000 pF	1001-0102
C4	Cap Mica 470 pF	1001-0471
L1	Choke RF 15 MH	1530-0150
P10	Plug, 10Pin	2250-5210
Q1	Transistor 2N3563	1271-3563
R1	Res Car Comp 1/4W 5% 3.3k	1065-3301
R2	Res Car COmp 1/4W 5% 390	1065-0390
R3	Res Car Comp 1/4W 5% 1.5k	1065-1501
R4	Res Car Comp 1/4W 5% 180	1065-0180
Y1	Crystal 5 MHz	2400-0502
	Transistor Socket 3Pin	1150-0001
	P.C. Board STD 5 MHz OSC	1600-1180 REV A



DWG. NO. 6601-1580

NEXT ASSY	USED ON
6608-1180	755

REVISIONS					
SYM	DESCRIPTION	DR	CHK	AUTH	DATE
A	RELEASED PER ECO 324	RG			4-9-76



NOTES; UNLESS OTHERWISE SPECIFIED:

1. RESISTORS - VALUES IN OHMS ±5%, 1/4 WATT.
2. CAPACITORS - VALUES IN MICROFARADS.
3. INDUCTORS - VALUES IN MICROHENRYS ±10%
4. *FACTORY SELECT VALUE. TYPICAL VALUE SHOWN.
5. VOLTAGES ARE DC CONDITIONS.

ITEM NO.	EN NO.	PART NO.	DESCRIPTION	REF. DES.
QTY PER ASSY	LIST OF MATERIALS			

REMOVE ALL BURRS AND SHARP EDGES

TOLERANCES UNLESS OTHERWISE SPECIFIED
.XX ±
.XXX ±
ANGULAR ±

DO NOT SCALE THIS PRINT

DRAWN BY RAM	DATE 3-18-76	
CHK. BY Stan	1/18/77	
PROJ. ENG. TAE	1/4/77	
MFG. ENG.		
APPD.		
APPD.		
ECO NO.		

TFT TIME & FREQUENCY TECHNOLOGY INC.
3000 Olcott St., Santa Clara, California 95050
(408) 246-6365

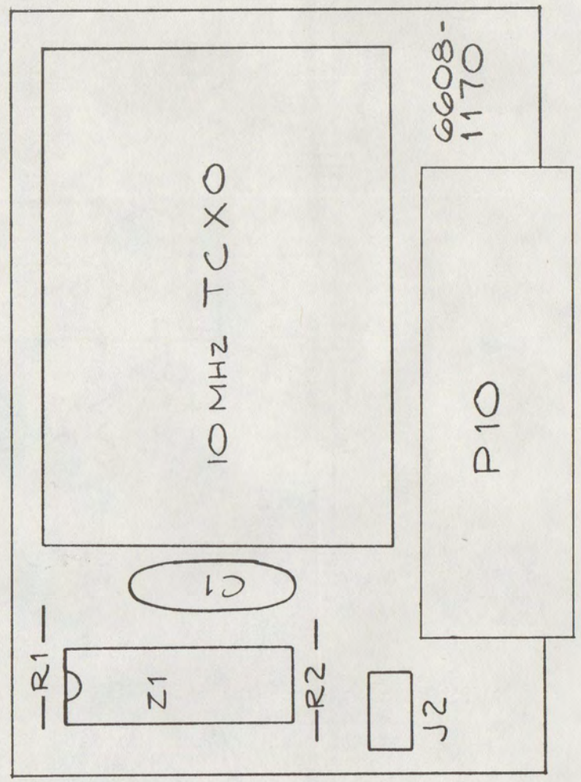
TITLE FIGURE 6-5
STANDARD 5MHZ
OSCILLATOR A3

SIZE B | DRAWING NO. 6601-1580 | REV.

SCALE ~ | SHT. 1 OF 1

Model 754 PC BD TCXO 5MHz OSC 754 Assembly # 6608-1170

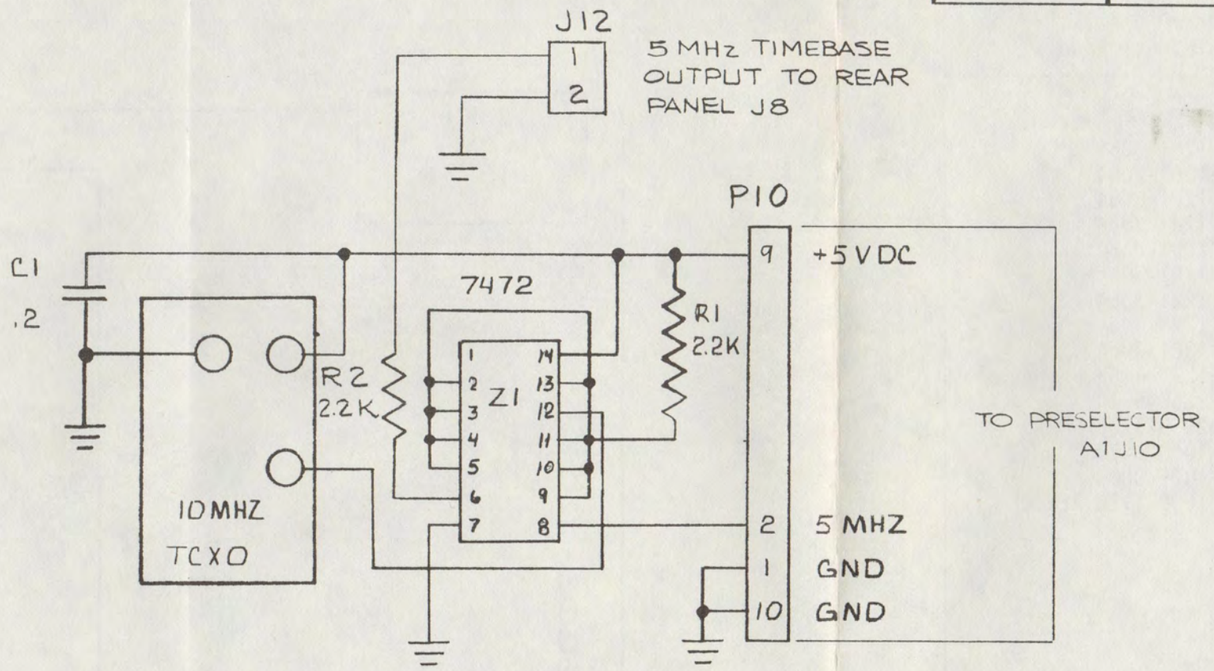
Ckt. Ref.	Description	TFT Stock No.
C1	Cap Cer Disc .2MFD	1005-2029
J12	Molex Connector 09-60-1021	2250-6002
P10	Socket, I/C 14Pin	2250-1014
R1	Res Car Comp 1/4W, 5%, 2.2K	1065-2201
R2	Res Car Comp 1/4W, 5%, 2.2K	1065-2201
Z1	I/C SN7472N	1100-7472
	Socket, I/C 14Pin	2250-1014
	TCXO, 10MHz	2450-1002
	P.C. Board TCXO 5MHz OSC	1600-1170 REV C



DWG. NO. 6601-1590

NEXT ASSY	USED ON
6608-1170	754

REVISIONS					
SYM	DESCRIPTION	DR	CHK	AUTH	DATE
A	RELEASED PER ECO 324	RS			4-9-76
B	REV PER ECO 329	TD			6-16-76



NOTES; UNLESS OTHERWISE SPECIFIED:

1. RESISTORS - VALUES IN OHMS ±5%, 1/4 WATT.
2. CAPACITORS - VALUES IN MICROFARADS
3. INDUCTORS - VALUES IN MICROHENRYS ±10%
4. *FACTORY SELECT VALUE. TYPICAL VALUE SHOWN.
5. VOLTAGES ARE DC CONDITIONS.

ITEM NO.	EN NO.	PART NO.	DESCRIPTION	REF. DES.	QTY PER ASSY

LIST OF MATERIALS

REMOVE ALL BURRS AND SHARP EDGES

TOLERANCES UNLESS OTHERWISE SPECIFIED
.XX ±
.XXX ±
ANGULAR ±

DO NOT SCALE THIS PRINT

	DRAWN BY	DATE
	RAM	3-18-76
CHK. BY	Jim	11/18/77
PROJ. ENG.	DWE	11/14/77
MFG. ENG.		
APPD.		
APPD.		
ECO NO.		

TFT TIME & FREQUENCY TECHNOLOGY INC.
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(408) 246-6365

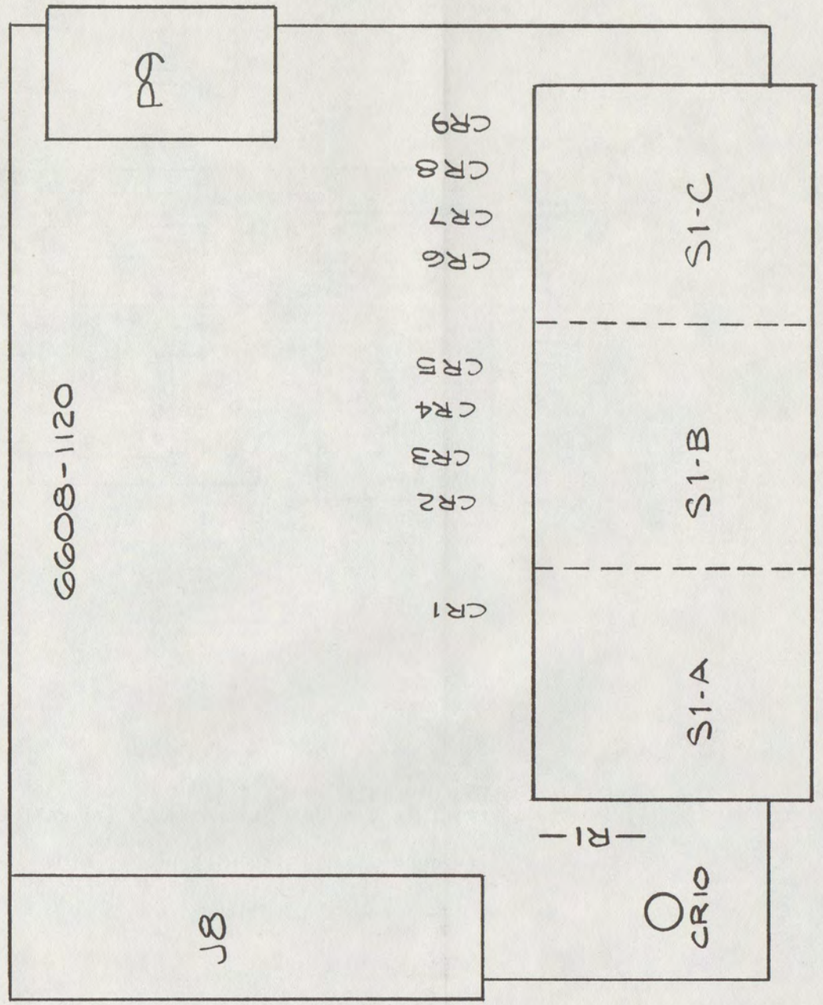
TITLE FIGURE 6-6
TCXO 5 MHZ
OSCILLATOR AB

SIZE	DRAWING NO.	REV.
B	6601-1590	B

SCALE ~ SHT. 1 OF 1

Model 754 PC BD Thumbwheel Switch Assembly # 6608-1120

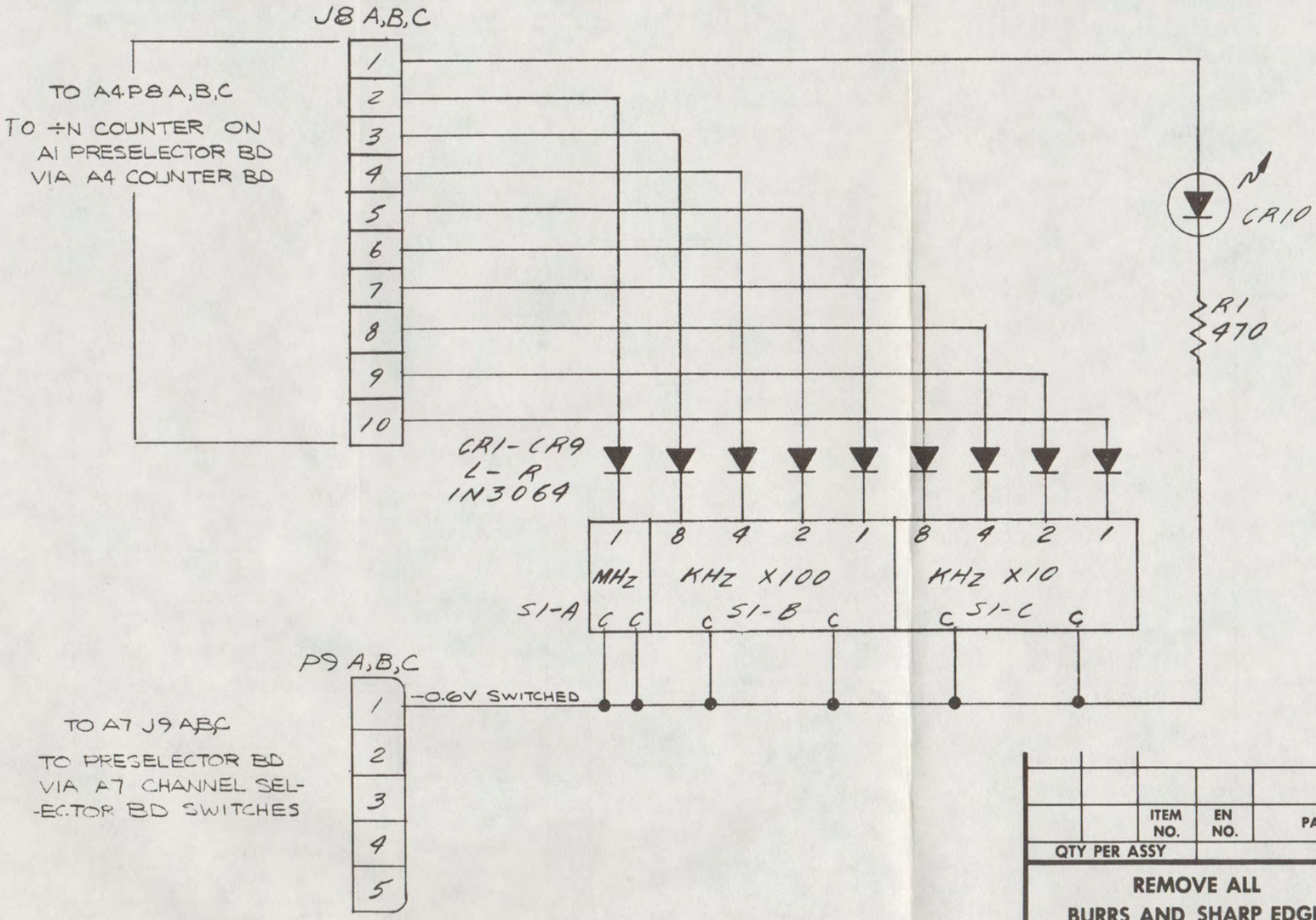
Ckt. Ref.	Description	TFT Stock No.
CR1	DIO, IN3064	1281-3064
CR2	DIO, IN3064	1281-3064
CR3	DIO, IN3064	1281-3064
CR4	DIO, IN3064	1281-3064
CR5	DIO, IN3064	1281-3064
CR6	DIO, IN3064	1281-3064
CR7	DIO, IN3064	1281-3064
CR8	DIO, IN3064	1281-3064
CR9	DIO, IN3064	1281-3064
CR10	LED, HP 5082-4487	1285-4487
J1	Socket, 10Pin	2250-5210
P1	Socket, 5Pin	2250-5205
R1	Res Car Comp, 1/4W 5% 470	1065-0470
S1	Switch, 3 Station, Thumbwheel	1875-0004
	P.C. BD Thumbwheel Switch	1600-1120 REV C



DWG. NO. 6601-1610

NEXT ASSY	USED ON
6608-1120	754

REVISIONS					
SYM	DESCRIPTION	DR	CHK	AUTH	DATE
A	RELEASED PER ECO 324	RG			4-9-76



NOTES; UNLESS OTHERWISE SPECIFIED:

1. RESISTORS - VALUES IN OHMS +5%, 1/4 WATT.
2. CAPACITORS - VALUES IN MICROFARADS
3. INDUCTORS - VALUES IN MICROHENRYS +10%
4. *FACTORY SELECT VALUE. TYPICAL VALUE SHOWN.
5. VOLTAGES ARE DC CONDITIONS.

ITEM NO.	EN NO.	PART NO.	DESCRIPTION	REF. DES.
QTY PER ASSY		LIST OF MATERIALS		

REMOVE ALL BURRS AND SHARP EDGES

TOLERANCES UNLESS OTHERWISE SPECIFIED
.XX ±
.XXX ±
ANGULAR ±

DO NOT SCALE THIS PRINT

DRAWN BY	KK	DATE 3-22-76
CHK. BY	JTan	3/4/77
PROJ. ENG.	CWE	3/4/77
MFG. ENG.		
APPD.		
APPD.		
ECO NO.		

TFT TIME & FREQUENCY TECHNOLOGY INC.
3000 Olcott St., Santa Clara, California 95050
(408) 246-6365

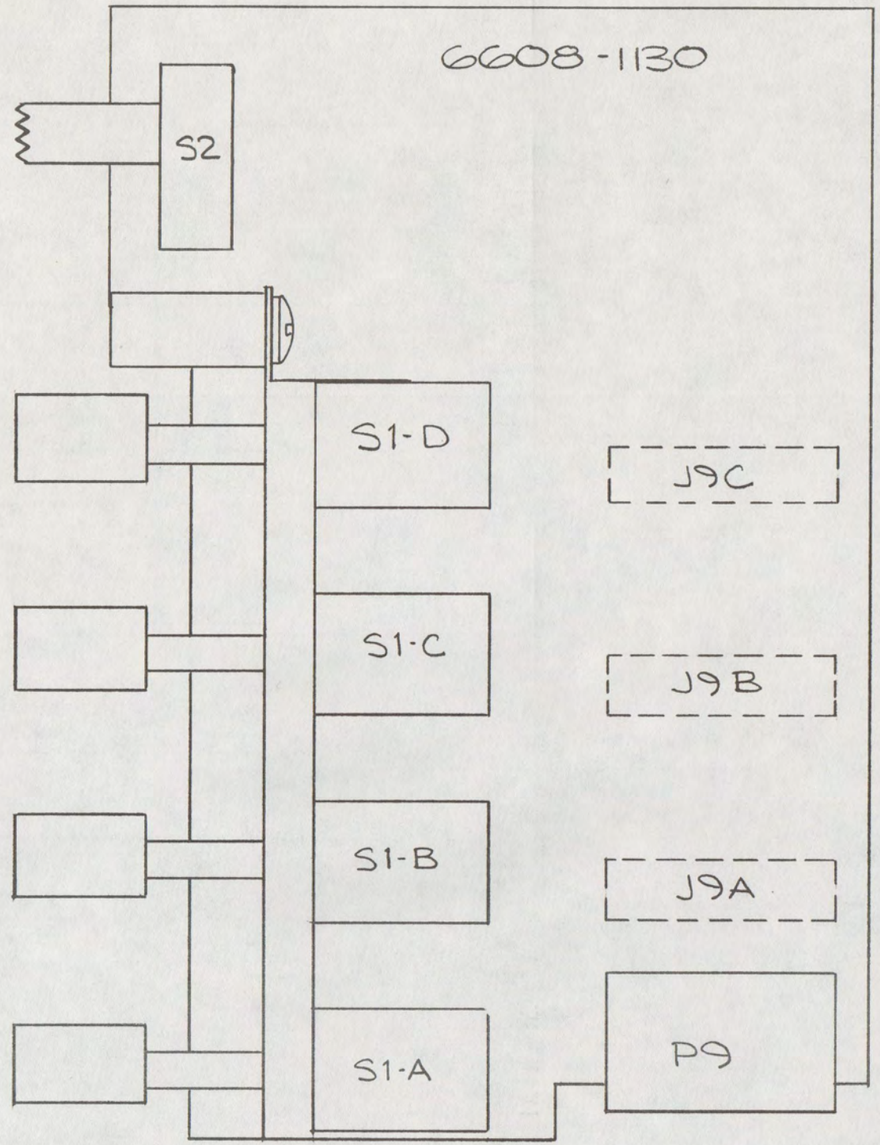
TITLE FIGURE 6-7
THUMBWHEEL SWITCH A5

SIZE	DRAWING NO.	REV.
B	6601-1610	A

SCALE NONE SHT. 1 OF 1

Model 754 PC BD Channel Selector Assembly # 6608-1130

Ckt. Ref.	Description	TFT Stock No.
J1	Socket, 5Pin	2250-6505
J2	Socket, 5Pin	2250-6505
J3	Socket, 5Pin	2250-6505
P9	Plug, 5Pin	2250-5205
S1	Switch, 4 Station Pushbutton PB17.5 Series	1850-1004
S2	Switch, DPDT Slide Switch	1840-2250
	P.C. Board Channel Selector	1600-1130 REV B

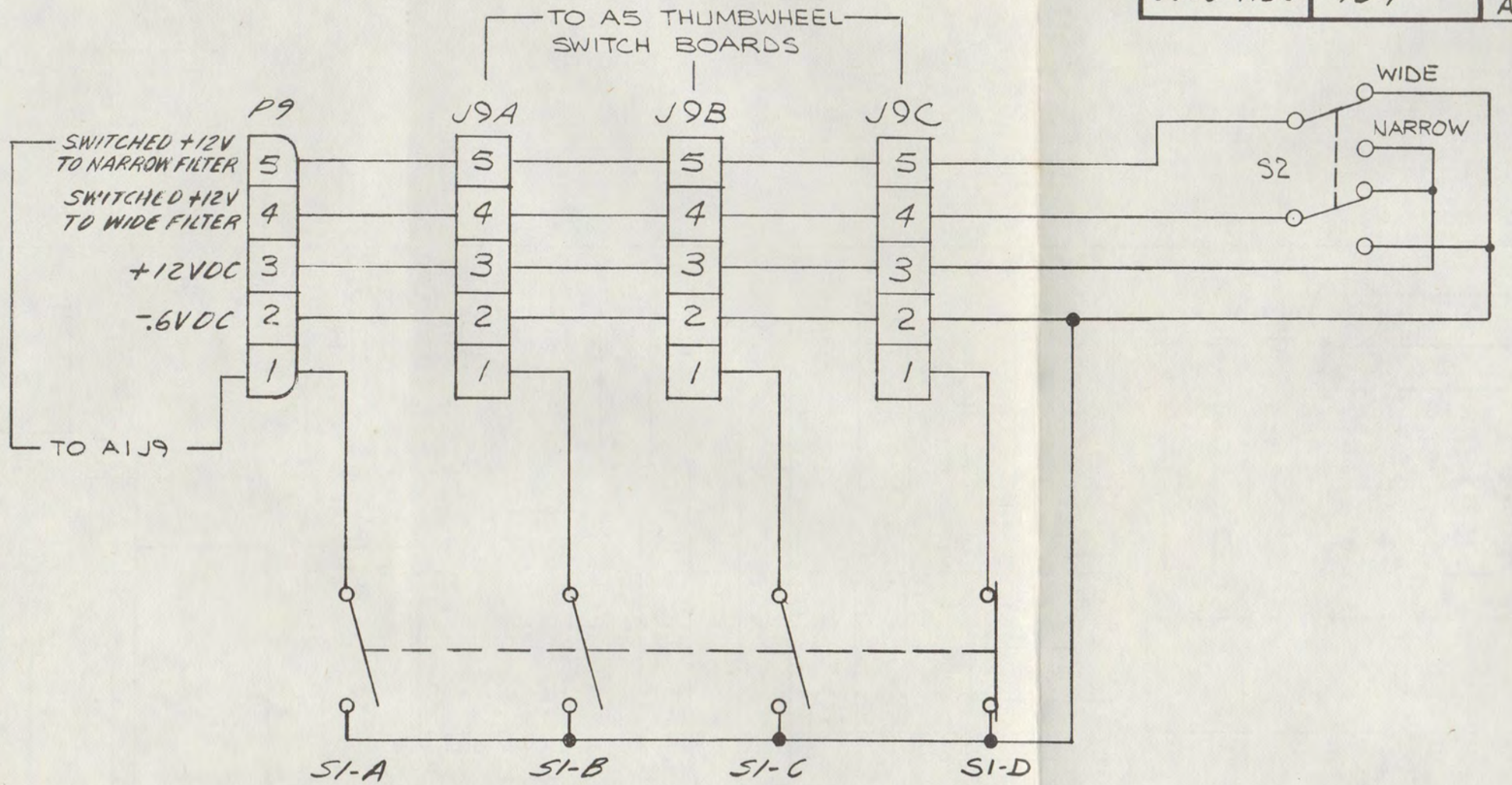


DWG. NO. 6601-1600

NEXT ASSY	USED ON
6608-1130	754

REVISIONS

SYM	DESCRIPTION	DR	CHK	AUTH	DATE
A	RELEASED PER ECO 329	RG			4-9-76



NOTES; UNLESS OTHERWISE SPECIFIED:

1. RESISTORS - VALUES IN OHMS +5%, 1/4 WATT.
2. CAPACITORS - VALUES IN MICROFARADS
3. INDUCTORS - VALUES IN MICROHENRYS +10%
4. *FACTORY SELECT VALUE. TYPICAL VALUE SHOWN.
5. VOLTAGES ARE DC CONDITIONS.

ITEM NO.	EN NO.	PART NO.	DESCRIPTION	REF. DES.
QTY PER ASSY		LIST OF MATERIALS		

REMOVE ALL BURRS AND SHARP EDGES

TOLERANCES UNLESS OTHERWISE SPECIFIED
.XX ±
.XXX ±
ANGULAR ±

DO NOT SCALE THIS PRINT

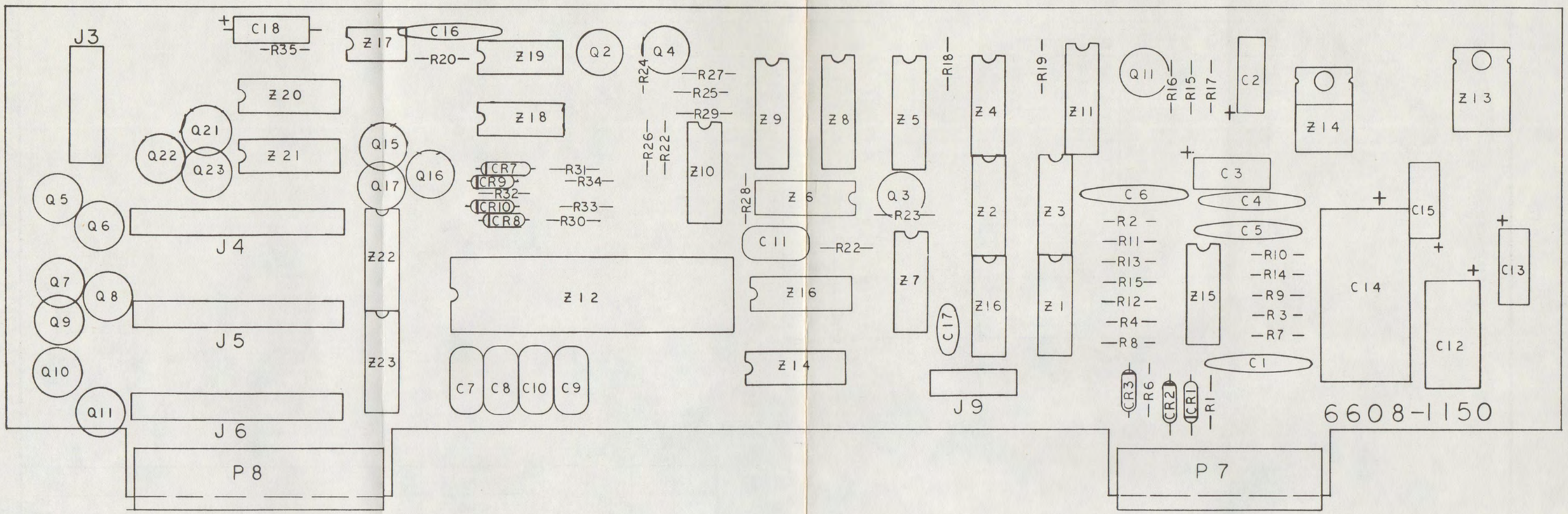
		DATE
DRAWN BY	EK	3/23/76
CHK. BY	Jim	3/4/76
PROJ. ENG.	ONE	3/4/77
MFG. ENG.		
APPD.		
APPD.		
ECO NO.		

TFT TIME & FREQUENCY TECHNOLOGY INC.
3000 Olcott St., Santa Clara, California 95050
(408) 246-6365

TITLE FIGURE 6-8
CHANNEL SELECTOR A7

SIZE	DRAWING NO.	REV.
B	6601-1600	A

SCALE NONE SHT. 1 OF 1



Model 754 PC BD Counter Assembly # 6608-1150

Ckt. Ref.	Description	TFT Stock No.
C1	Cap Cer Disc .2 uFD	1010-0150
C2	Cap Elect 15 uFD 25V	1010-0150
C3	Cap Elect 15 uFD 25V	1010-0150
C4	Cap Cer Disc .2 uFD	1005-2029
C5	Cap Cer Disc .2 uFD	1005-2029
C6	Cap Cer Disc .2 uFD	1005-2029
C7	Cap Mica 150 pF	1001-0151
C8	Cap Mica 150 pF	1001-0151
C9	Cap Mica 150 pF	1001-0151
C10	Cap Mica 150 pF	1001-0151
C11	Cap Mica 470 pF	1001-0471
C12	Cap Elect 100 uF 25V	1010-0101
C13	Cap Tant 10 uF 20V	1008-0101
C14	Cap Elect 1000 uF 15V	1010-0102
C15	Cap Tant 10 uF 20V	1008-0101
C16	Cap Cer Disc .2 uFD	1005-2029
C17	Cap Cer Disc .05 uFD	1005-5039
C18	Cap Tant 10 uF 20V	1008-0101
CR1	DIO IN281	1280-0281
CR2	DIO IN281	1280-0281
CR3	DIO IN4735	1283-4735
CR7	DIO IN3064	1281-3064
CR9	DIO IN3064	1281-3064
CR10	DIO IN3064	1281-3064
Q1	Xistor 2N3643	1271-3643
Q2	Xistor 2N4275	1271-4275
Q3	Xistor 2N4275	1271-4275
Q4	Xistor 2N4275	1271-4275
Q5	Xistor 2N3643	1271-3643
Q6	Xistor 2N3643	1271-3643
Q7	Xistor 2N3643	1271-3643
Q8	Xistor 2N3643	1271-3643
Q9	Xistor 2N3643	1271-3643
Q10	Xistor 2N3643	1271-3643
Q11	Xistor 2N3643	1271-3643
Q15	Xistor 2N3643	1271-3643
Q16	Xistor 2N3643	1271-3643
Q17	Xistor 2N3643	1271-3643
Q21	Xistor 2N3645	1271-3645
Q22	Xistor 2N3645	1271-3645
Q23	Xistor 2N3645	1271-3645
R1	Res Car Comp 1/4W 5% 560	1065-0560
R2	Res Car Comp 1/4W 5% 560	1065-0560

Model 754 PC BD Counter Assembly # 6608-1150

Ckt. Ref.	Description	TFT Stock No.
R3	Res Car Comp 1/4W 5% 470	1065-0470
R4	Res Car Comp 1/4W 5% 470	1065-0470
R5	Res Car Comp 1/4W 5% 2.2K	1065-2201
R6	Res Car Comp 1/4W 5% 3.9K	1065-3901
R7	Res Car Comp 1/4W 5% 1K	1065-1001
R8	Res Car Comp 1/4W 5% 1K	1065-1001
R9	Res Car Comp 1/4W 5% 3.3K	1065-3301
R10	Res Car Comp 1/4W 5% 470	1065-0470
R11	Res Car Comp 1/4W 5% 1K	1065-1001
R12	Res Car Comp 1/4W 5% 1K	1065-1001
R13	Res Car Comp 1/4W 5% 1K	1065-1001
R14	Res Car Comp 1/4W 5% 1K	1065-1001
R15	Res Car Comp 1/4W 5% 1K	1065-1001
R16	Res Car Comp 1/4W 5% 10K	1065-1002
R17	Res Car Comp 1/4W 5% 1K	1065-1001
R18	Res Car Comp 1/4W 5% 4.7K	1065-4701
R19	Res Car Comp 1/4W 5% 4.7K	1065-4701
R20	Res Car Comp 1/4W 5% 2.4MEG	1065-2404
R21	Res Car Comp 1/4W 5% 10K	1065-1002
R22	Res Car Comp 1/4W 5% 4.7K	1065-4701
R23	Res Car Comp 1/4W 5% 2.2K	1065-2201
R24	Res Car Comp 1/4W 5% 4.7K	1065-4701
R25	Res Car Comp 1/4W 5% 10K	1065-1002
R26	Res Car Comp 1/4W 5% 10K	1065-1002
R27	Res Car Comp 1/4W 5% 2.2K	1065-2201
R28	Res Car Comp 1/4W 5% 4.7K	1065-4701
R29	Res Car Comp 1/4W 5% 10K	1065-1002
R30	Res Car Comp 1/4W 5% 22K	1065-2202
R33	Res Car Comp 1/4W 5% 22K	1065-2202
R34	Res Car Comp 1/4W 5% 22K	1065-2202
R35	Res Car Comp 1/4W 5% 470	1065-0470
R36	Res Car Comp 1/4W 5% 4.7K	1065-4701
Z1	I/C SN74LS90	1101-7490
Z2	I/C SN74LS90	1101-7490
Z3	I/C SN74LS90	1101-7490
Z4	I/C SN74LS90	1101-7490
Z5	I/C SN74LS76	1101-7476
Z6	I/C SN74LS76	1101-7476
Z7	I/C SN74LS00	1101-7400
Z8	I/C SN74LS76	1101-7476
Z9	I/C SN74LS76	1101-7476
Z10	I/C SN74LS01	1101-7402
Z11	I/C SN74LS76	1101-7476

Model 754 PC BD Counter Assembly # 6608-1150

Ckt. Ref.	Description	TFT Stock No.
Z12	I/C MK50395	1100-5039
Z13	I/C LM342-12	1100-4212
Z14	I/C LM341-5	1100-4105
Z15	I/C CA 3054	1100-3054
Z16	I/C SN 74LS20	1101-7420
Z17	I/C LM 555C	1100-0555
Z18	Resistor Network 10K	1073-1002
Z19	Resistor Network 10K	1073-1002
Z20	Resistor Network 1.5K	1073-1501
Z21	Resistor Network 1.5K	1073-1501
Z22	Resistor Network 4.7K	1073-4701
Z23	Resistor Network 4.7K	1073-4701
	Socket Xistor	1150-0001
	Socket I/C 8Pin	2250-1008
	Socket I/C 14Pin	2250-1014
	Socket I/C 16Pin	2250-1016
	Socket I/C 40Pin	2250-1040
	Socket P/C Mount 10Pin	2250-5210
	Plug P/C Mount 4Pin	2250-6004
	Socket 18Pin EDJE	2250-0018
	Plug, P/C Mount 10Pin	2250-6510
	Screw 4-40 X 1/4Inch Long	2111-0001
	Kep Nut 4-40	2110-0001
	P.C. Bd Counter	1600-1150 REV C

NEXT ASSY	USED ON
6608-1150	754

REVISIONS					
SYM	DESCRIPTION	DR	CHK	AUTH	DATE
A	RELEASED PER ECO 824	RS			4-9-76

TIMEBASE GENERATOR

10KHz FROM A1 J7

LIMITING AMPLIFIER

÷4

PULSE STRETCHER

GATE TO A6P3

TO A10P2

TO A9

TO A9P1

TO DIGITS TO A6P3

TO SEGMENTS TO A6P3

TO PRESELECTOR BOARD CONNECTOR J8

J8C J8B J8A P8

SEE NOTE 8

NOT USED ON 754/755

POWER SUPPLIES

FROM A1J7 450KHz

+15V UNREG

+10V UNREGULATED

+10V UNREG

+5V

Q1 2N3643

Q2 2N4275

Q3 2N4275

Q4 2N4275

Q5 Q11 2N3643

Q12-Q17 2N3643

Q18-Q23 2N3645

Z12 MK50395

Z15 CA3054

Z13 LM342-12

Z14 LM341-5

Z22

Z23

CR1 IN281

CR2 IN281

CR3 IN4735

CR7 THRU CR10 ARE IN3064

IN3064 TYP 3 PLCS

R30 THRU R34, 22K TYP 5 PLCS

C7 THR C10, (150pF) TYP 4 PLCS

NOTES: UNLESS OTHERWISE SPECIFIED:
1. RESISTORS - VALUES IN OHMS ±5%, 1/4 WATT.
2. CAPACITORS - VALUES IN MICROFARADS.
3. INDUCTORS - VALUES IN MICROHENRYS ±10%
4. *FACTORY SELECT VALUE. TYPICAL VALUE SHOWN.
5. VOLTAGES ARE DC CONDITIONS.
6. TRANSISTORS Q5 THRU Q17 ARE 2N3643.
7. TRANSISTORS Q18 THRU Q23 ARE 2N3645.
8. THESE COMPONENTS NOT USED ON MODEL 754.

COMPONENT DESIGNATOR		
FIRST	LAST	DELETED
C1	C18	
R1	R36	
Z1	Z23	
CR1	CR10	CR4,5,6,8
Q1	Q23	Q12,13,14,18,19,20
J1	J9	
P7		

ITEM NO.	EN NO.	PART NO.	DESCRIPTION	REF. DES.
QTY PER ASSY			LIST OF MATERIALS	

REMOVE ALL BURRS AND SHARP EDGES

TOLERANCES UNLESS OTHERWISE SPECIFIED .xx ± .xxx ± ANGULAR ±

DO NOT SCALE THIS PRINT

DRAWN BY	RK	3/29/77
CHK. BY	JT	3/31/77
PROJ. ENG.	CLIVE	3/4/77
MFG. ENG.		
APPD.		
APPD.		
ECO NO.		

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TITLE FIGURE 6-9 A4 PRESELECTOR COUNTER BOARD

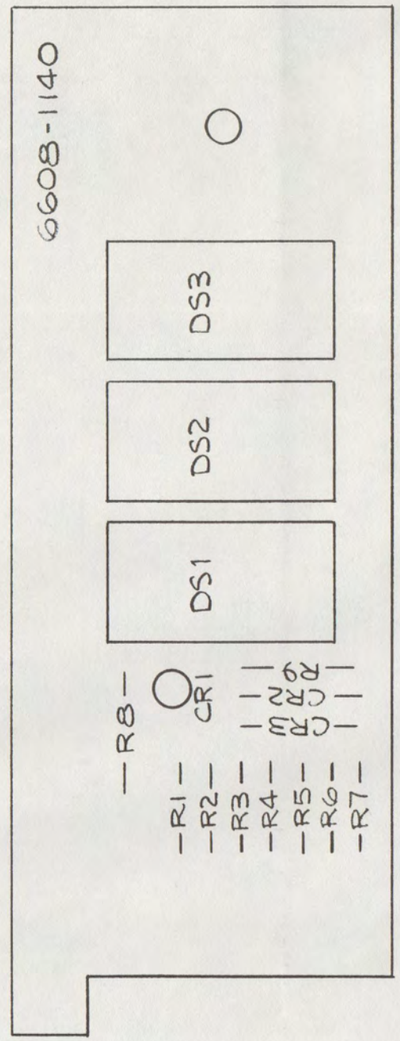
SIZE D | DRAWING NO. 6601-1690 | REV. A

SCALE NONE | SHT 1 OF 1

DWG. NO. 6601-1690

PC BD Display 754 Assembly # 6608-1140

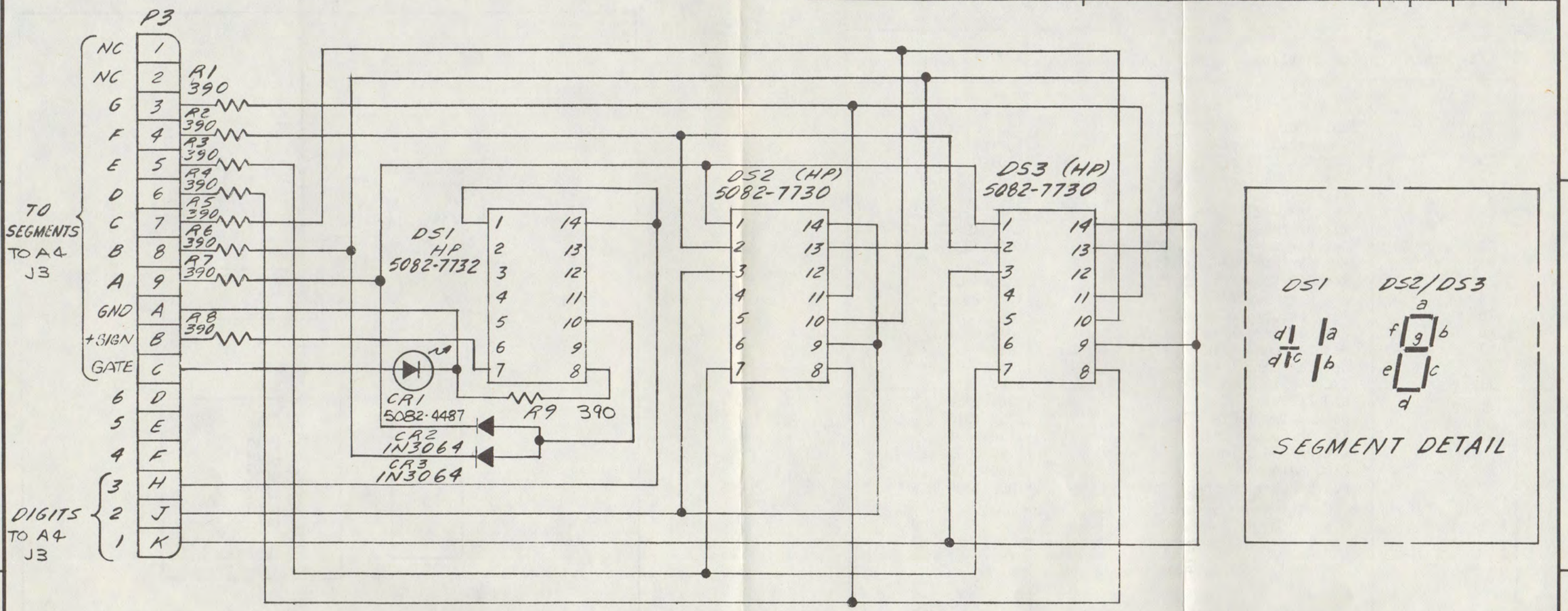
Ckt. Ref.	Description	TFT Stock No.
CR1	LED HP 5082-4487 Clear	1285-4487
CR2	DID IN3064	1281-3064
CR3	DID IN#064	1281-3064
DS1	LED HP 5082-7732 +1	1285-7732
DS2	LED HP 5082-7730 8	1285-4404
DS3	LED HP 5082-7730 8	1285-4404
R1	Res Car Comp 1/4W 5% 390	1065-0390
Z1	Resistor Network 390 3'M	1073-3900
	Socket I/C 14Pin	2250-1014
	PC BD 754 Display A	1600-1140 REV D



DWG. NO. 6601-1620

NEXT ASSY	USED ON
6608-1140	754

REVISIONS					
SYM	DESCRIPTION	DR	CHK	AUTH	DATE
A	RELEASED PER ECO 324	RG			4-9-76



NOTES; UNLESS OTHERWISE SPECIFIED:
1. RESISTORS - VALUES IN OHMS +5%, 1/4 WATT.
2. CAPACITORS - VALUES IN MICROFARADS.
3. INDUCTORS - VALUES IN MICROHENRYS +10%
4. *FACTORY SELECT VALUE. TYPICAL VALUE SHOWN.
5. VOLTAGES ARE DC CONDITIONS.

ITEM NO.	EN NO.	PART NO.	DESCRIPTION	REF. DES.	QTY PER ASSY

LIST OF MATERIALS

REMOVE ALL BURRS AND SHARP EDGES

TOLERANCES UNLESS OTHERWISE SPECIFIED
.XX ± ——
.XXX ± ——
ANGULAR ± ——

DO NOT SCALE THIS PRINT

	DRAWN BY	DATE
	KK	9/23/76
	CHK. BY JTam	3/4/77
	PROJ. ENG. DME	3/4/77
	MFG. ENG.	
	APPD.	
	APPD.	
	ECO NO.	

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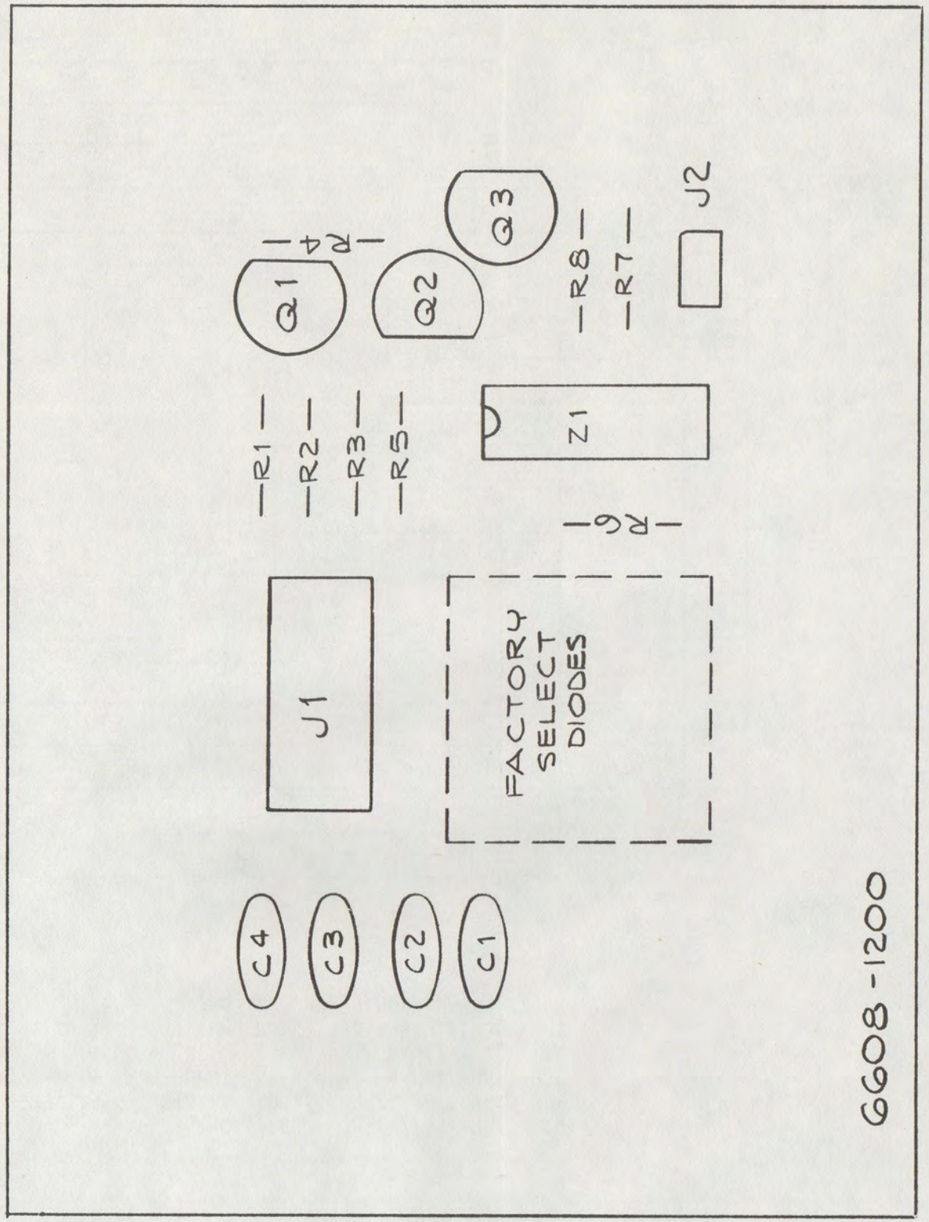
TITLE FIGURE 6-10
P.C. Bd DISPLAY A6

SIZE B | DRAWING NO. 6601-1620 | REV. A

SCALE NONE | SHT. 1 OF 1

PC BD Carr Frequency Alarm OPT Assembly # 6608-1200

Ckt. Ref.	Description	TFT Stock No.
C1	Cap Mica 150 pF	1001-0151
C2	Cap Mica 150 pF	1001-0151
C3	Cap Mica 150 pF	1001-0151
C4	Cap Mica 150 pF	1001-0151
Q1	Xistor 2N4275	1271-4275
Q2	Xistor 2N4275	1271-4275
Q3	Xistor 2N3643	1271-3643
R1	Res Car Comp 1/4W 5% 10K	1065-1002
R2	Res Car Comp 1/4W 5% 4.7K	1065-4701
R3	Res Car Comp 1/4W 5% 2.2K	1065-2201
R4	Res Car Comp 1/4W 5% 1K	1065-1001
R5	Res Car Comp 1/4W 5% 2.2K	1065-2201
R6	Res Car Comp 1/4W 5% 4.7K	1065-4701
R7	Res Car Comp 1/4W 5% 4.7K	1065-4701
R8	Res Car Comp 1/4W 5% 4.7K	1065-4701
Z1	I/C 74LS76	1101-7476
	DIO IN3064	1281-3064
	Socket I/C 16Pin	2250-1016
	Xistor Socket 3Pin	1150-0001
	Xistor Pad 3Pin	1150-0003
	Plug 2Pin	2250-6002
	P.C.B. Carrier Freq. Opt.	1600-1200 REV A

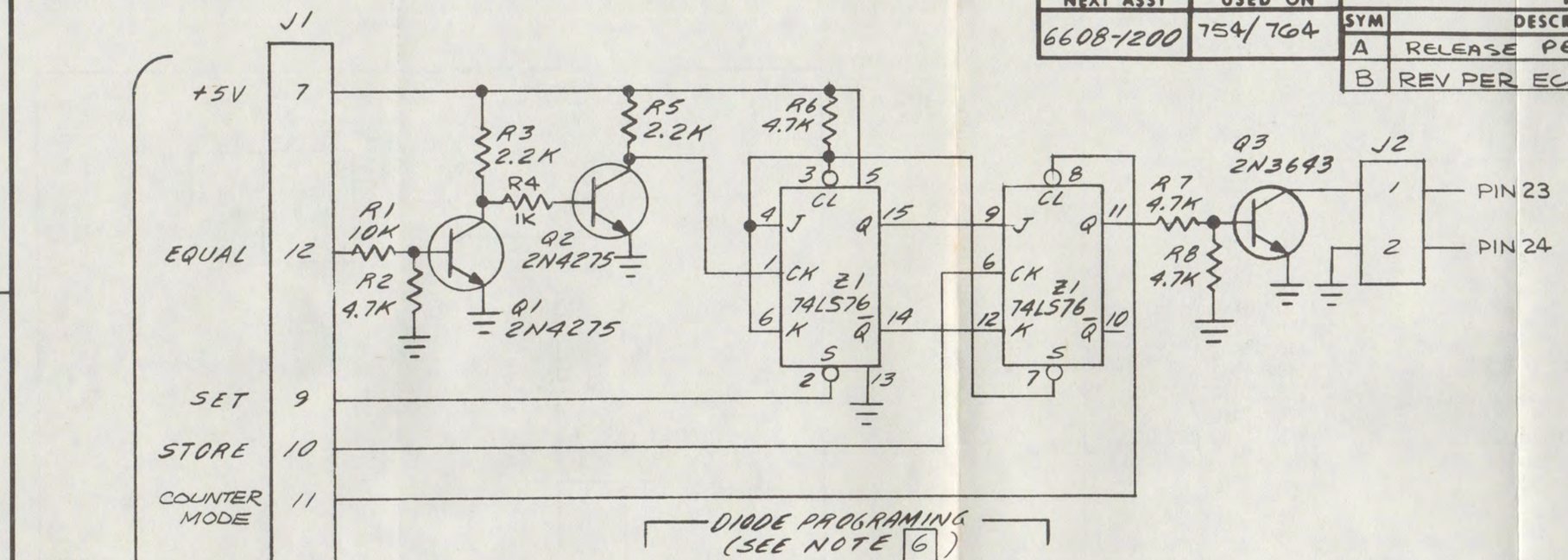


DWG. NO. 6601-1680

NEXT ASSY	USED ON
6608-1200	754/764

REVISIONS

SYM	DESCRIPTION	DR	CHK	AUTH	DATE
A	RELEASE PER ECO 324	RG			4-1-76
B	REV PER ECO 329	TD			6-17-76



REAR PANEL
TO BCD OUTPUT CONN
30V DC., 50MA MAX.

NOTES; UNLESS OTHERWISE SPECIFIED:
1. RESISTORS - VALUES IN OHMS +5%, 1/4 WATT.
2. CAPACITORS - VALUES IN MICROFARADS.
3. INDUCTORS - VALUES IN MICROHENRYS +10%.
4. *FACTORY SELECT VALUE. TYPICAL VALUE SHOWN.
5. VOLTAGES ARE DC CONDITIONS.
6. PROGRAMMING DIODES ARE FACTORY INSTALLED.

ITEM NO.	EN NO.	PART NO.	DESCRIPTION	REF. DES.	QTY PER ASSY

LIST OF MATERIALS

REMOVE ALL BURRS AND SHARP EDGES

TOLERANCES UNLESS OTHERWISE SPECIFIED
.XX ±
.XXX ±
ANGULAR ±

DO NOT SCALE THIS PRINT

DRAWN BY	RR	DATE 9/14/76
CHK. BY	Stan	1/19/77
PROJ. ENG.	P&E	1/19/77
MFG. ENG.		
APPD.		
APPD.		
ECO NO.		

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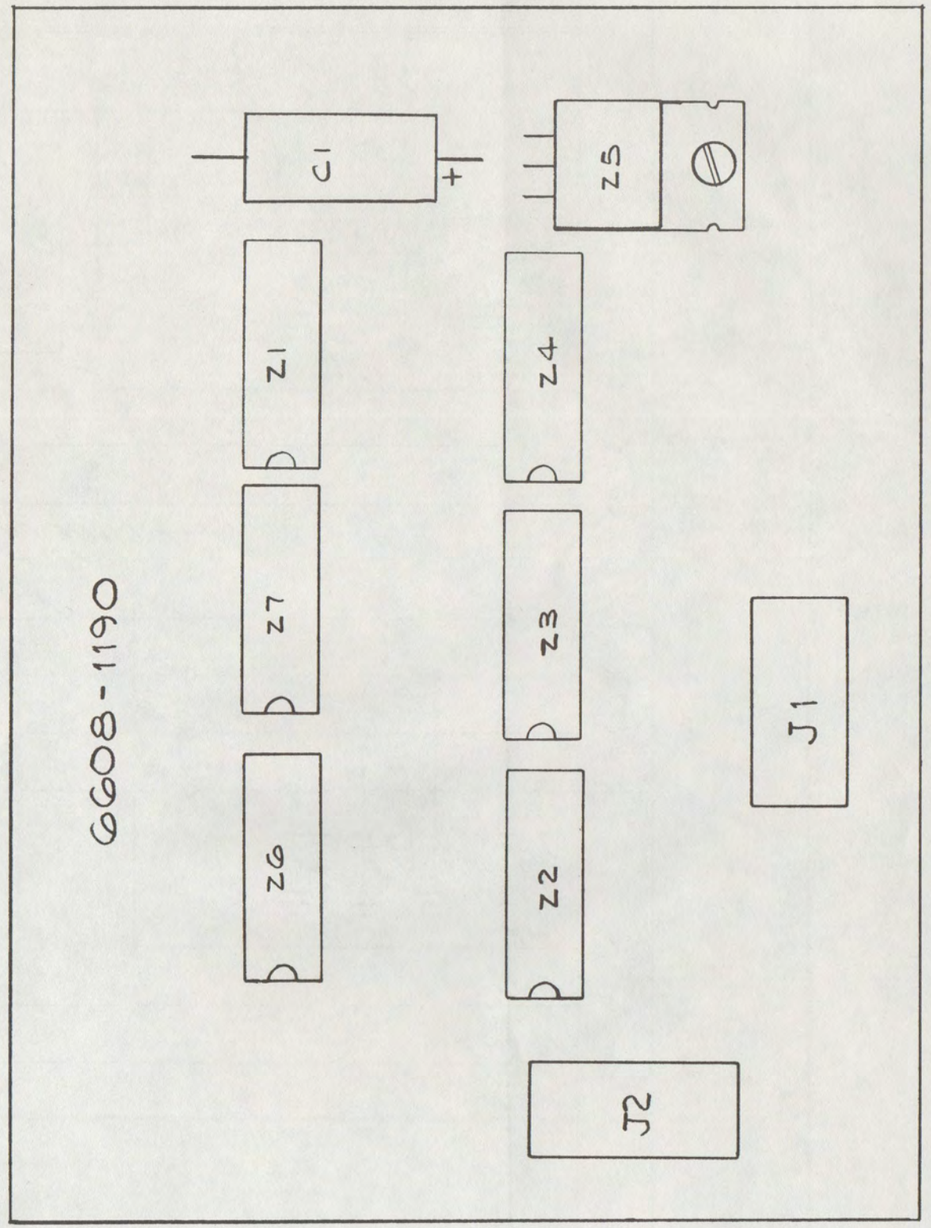
TITLE FIGURE 6-11 A9
CARRIER FREQUENCY ALARM
MODEL 754 (OPTIONAL)

SIZE B | DRAWING NO. 6601-1680 | REV. B

SCALE NONE | SHT. 1 OF 1

PC BD BCD Output Assembly # 6608-1190

Ckt. Ref.	Description	TFT Stock No.
C1	Cap Tan 10MFD 20V	1008-0101
Z1	I/C MM74C04	1102-7404
Z2	I/C MM74C105	1102-4195
Z3	I/C MM74C195	1102-4195
Z4	I/C MM74C195	1102-4195
Z5	I/C LM342-5	1100-4205
Z6	I/C MM74C902	1102-4902
Z7	I/C MM74C902	1102-4902
	I/C 14Pin	2250-1014
	I/C 16Pin	2250-1016
	P.C. Board BCD Output	1600-1190 REV B

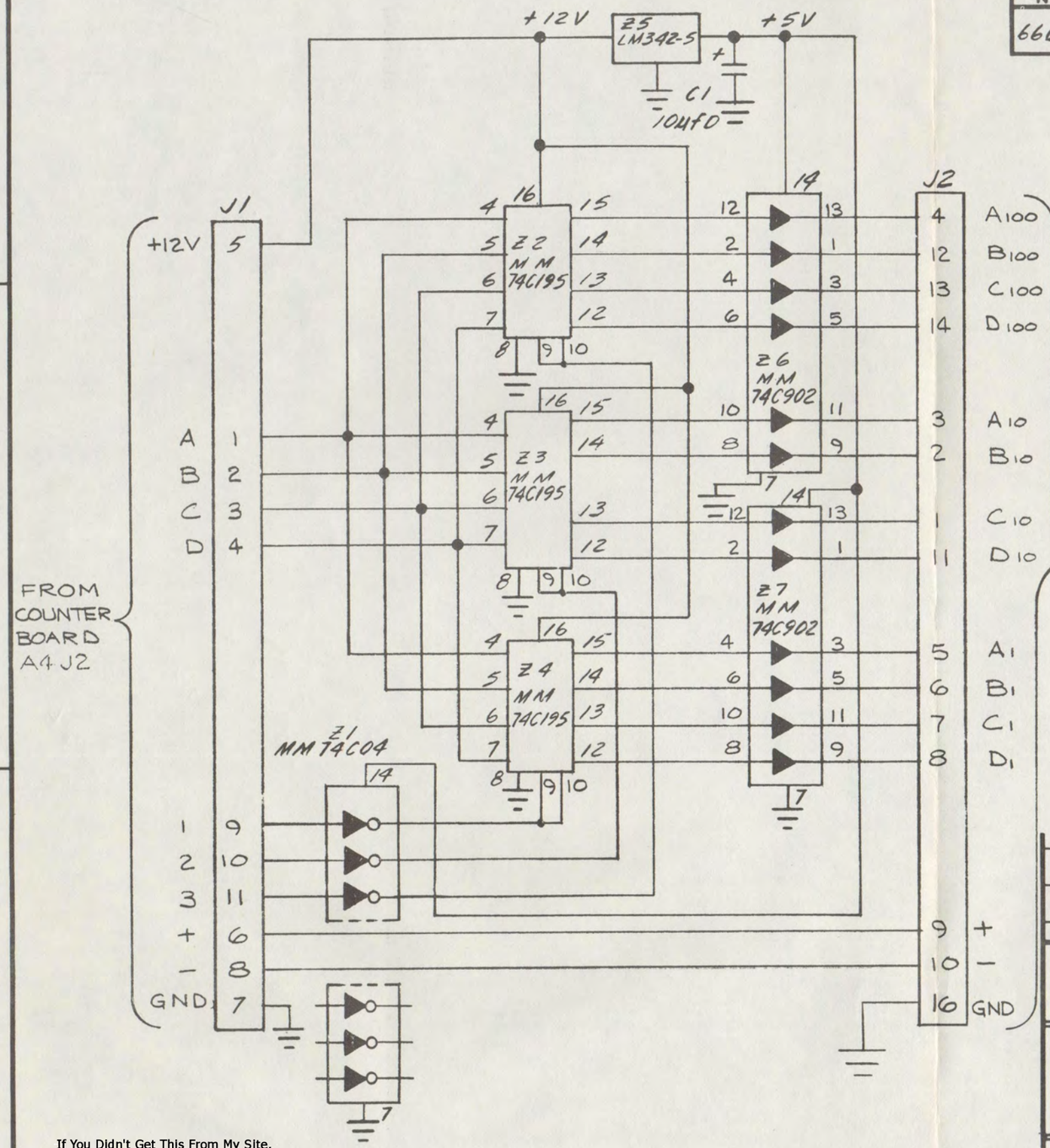


DWG. NO. 6601-1670

NEXT ASSY	USED ON
6608-1190	754

REVISIONS

SYM	DESCRIPTION	DR	CHK	AUTH	DATE
A	RELEASED PER ECO 324	RG			4-9-76
B	REV PER ECO 329	TD			6-16-76



PIN#

1	A_1	13	+
2	B_1	14	−
3	C_1	15	
4	D_1	16	GND
5	A_{10}	17	
6	B_{10}	18	
7	C_{10}	19	
8	D_{10}	20	
9	A_{100}	21	
10	B_{100}	22	
11	C_{100}	23	FREQ ALARM
12	D_{100}	24	GND.

ITEM NO.	EN NO.	PART NO.	DESCRIPTION	REF. DES.

QTY PER ASSY — LIST OF MATERIALS

REMOVE ALL BURRS AND SHARP EDGES

TOLERANCES UNLESS OTHERWISE SPECIFIED
.XX ±
.XXX ±
ANGULAR ±

DO NOT SCALE THIS PRINT

		DATE
DRAWN BY	LK	4/15/76
CHK. BY	Stan	3/4/77
PROJ. ENG.	DWE	3/4/77
MFG. ENG.		
APPD.		
APPD.		
ECO NO.		

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TITLE FIGURE 6-12
BCD OUTPUT
MODEL 754 A10

SIZE B | DRAWING NO. 6601-1670 | REV. B

SCALE NONE | SHT. 1 OF 1