

Instrument Serial No. \_\_\_\_\_

Manual Revision Level     A    

FM PRESELECTOR  
MODEL 785 MANUAL

Time and Frequency Technology, Inc.  
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TFT OPERATION MANUAL ADDENDUM

MODEL 785 MANUAL REVISION LEVEL A EFFECTIVITY S/N 206-2

IMPORTANT MANUAL CHANGES

Technical modifications made in our FM Preselector Model 785 necessitated us to make some corresponding changes in the operation manual. Such changes are incorporated in this addendum. The two major modifications in the design are: 1) The Power Transformer (T3) and Bridge Rectifier (CR1, CR2, CR3 and CR4) are removed from the Model 785. The present power input is from the Bridge Rectifier of the Model 763. 2) The Carrier Detector Alarm is no longer included in the Model 785; instead, its function is now performed by the Carrier Detector Alarm of the Model 763.

To assure proper understanding and smooth operation of the Model 785, this addendum must be used as a supplement to the Manual.

Date Aug. 8/30/79

## SECTION 1

### GENERAL INFORMATION

#### 1.1 General Description

Paragraph 1, line 5

Change 88 MHz frequency range to: 88 - 108 MHz frequency range. Change the paragraph to: The FM Preselector Model 785 is hooked up to the Carrier Detect Alarm of the Model 763. This feature actuates an external alarm when the RF level of the carrier being monitored drops below a selected level.

#### 1.2 Specifications

RF Sensitivity

$\leq 100\mu\text{V}$  for 56 dB S/N

(75 usec De-Emphasis)

$\leq 250\mu\text{V}$  for 66 dB S/N

AGC Range

$> 45$  dB (+30 dB Manual Attenuation)

SECTION 2  
INSTALLATION

2.2            Power Requirements

Paragraph 1

Change the paragraph to: The Model 785 FM Preselector derives its power from the Model 763, and requires about 2 watts of power for operation.

2.3            Installation and Connections

Paragraph 2, line 3

Change to: The only external connection necessary is from the Preselector rear panel 10 MV MAX (BNC) to an FM antenna using a 75-ohm coaxial cable. If the AGC meter indicates a higher than normal reading, connect the antenna to 300 MV MAX (BNC).

2.4            Field Installation of the Model 785 in the Model 763 Cabinet

- c. Change to: Install the 3 BNC connectors and the toggle switch on the rear panel as shown in Figure 2-1.
- f. Change to: Use cable assembly WC 5 to interconnect J5 of the Model 785 to J19 of the Model 763.
- g. Change RF INPUT BNC to 10 MV MAX BNC.
- h. Change to: Connect the shielded cable provided from the Model 785, J3 to PRESELECTOR OUTPUT (BNC) on the rear panel.
- i. Change to: Connect the 80.6 ohm resistors and the 11.5 K ohm resistor as shown in figure 2-2.
- j. Omit.

2.5            Field Installation of the Carrier Detect Alarm Option

Omit a to e.

SECTION 3

OPERATION

3.1 General

Line 4 Delete the word "option".

3.2 Turn-On and Warm-Up

Line 2 Change to: Its power requirements (2 Watts) is derived from the Model 763 bridge rectifier, which means it is turned on when the Model 763...

3.3.2 Model 785 Rear Panel

Omit 3.3.2, and use the following revision instead:

Fig. 2-1

<u>Ref. No.</u>	<u>Name</u>	<u>Function</u>
1	RF Level switch	Selects either the 10 MV MAX or 300 MV MAX RF input.
2	RF INPUT	Used to connect an antenna to the Preselector.
3	PRESELECTOR OUTPUT	Used to connect the Preselector output to the Model 763 INPUT FROM PRESELECTOR.

3.5 Carrier Detect Alarm (Optional)

Delete (Optional)

Paragraph 1

Change the paragraph to: This allows the use of an external alarm to alert the operator to a reduction, or loss, of carrier level. The alarm threshold is factory set to 250uV. If the Model 785 is field installed, the threshold may be set as described in section 5.4 (f).

SECTION 4

THEORY OF OPERATION

4.1 Block Diagram Discussion (Figure 6-1)

Paragraph 2, line 2

Change to: First, the tuning meter circuit output controls the front panel AGC meter deflection. This output also goes to the CARRIER DETECT ALARM of the Model 763. Second, the RF Amplifier AGC output controls the input RF level to prevent overloading of the input circuits by strong signals. The third output is the amplified 10.7 MHz IF signal which is applied to the Second Mixer. The L.O. input to the Second Mixer is a precision 10 MHz (crystal controlled) oscillator output. When mixed, the signal's difference frequency of 700 KHz is selected and filtered to remove unwanted mixing components. The 700 KHz is then amplified and applied to the PRESELECTOR OUTPUT BNC at the rear panel.

4.2.1 FM Preselector (Figure 6-4)

Paragraph 5, line 8

Change to: The 700 kHz Preselector output is then transferred by shielded cable from J3 to PRESELECTOR OUTPUT BNC at rear panel.

Paragraph 6

Omit.

4.2.2 Carrier Detect Alarm (Optional) (Figure 6-4)

Omit.

SECTION 5

MAINTENANCE

5.4

Receiver Performance Checks

- b. Change 50 uV to 100uV
- f. (Note: The Model 785 is not equipped with a Carrier Detect Alarm; instead, it is incorporated in the Model 763. Instruction (f) can be applied to the Carrier Detect Alarm of the Model 763). Change R35 to R5.

SECTION 6

DIAGRAMS

Figure 6-1

Delete: U5

Figure 6-3 and 6-4

Delete: T3, C52, CR1, CR2, CR3,  
CR4, U5, R35, R36, R37, R38,  
R39, C55, C56, CR5, Q4.



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SECTION 1  
GENERAL INFORMATION

1.1            General Description

The TFT Model 785 FM Preselector is a sensitive dual-conversion superheterodyne receiver. Used with the Model 763 FM Modulation Monitor, it provides the capability of off-the-air remote monitoring of the modulation characteristics of a selected frequency in the 88 MHz frequency range.

The remote monitoring capability of the Model 785 allows a TFT Model 763 user to monitor a customer selected FM frequency at any distance to 10 miles from the transmitter. This provides greater flexibility in testing an 88 MHz to 108 MHz FM transmitter's carrier modulation performance.

An optional Carrier Detect Alarm is available as a factory or field installation. This feature actuates an external alarm when the RF level of the carrier being monitored drops below a selected level.

1.2            Specifications

Frequency Range	88 MHz - 108 MHz
RF Sensitivity	≤ 50uV for 56 dB S/N; ≤ 250uV for 66 dB S/N
Stereo Separation	≈ 40 dB
Input Impedance	50-75 ohms
AGC Range	> 45 dB
IF & Image Rejection	> 60 dB
Output Frequency	700 KHz
Carrier Detect Alarm Threshold	Adjustable

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.

### 1.3 Warranty (Continued)

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 transportation 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.  
3090 Oakmead Village Dr.  
Santa Clara, Ca. 95051

(408) 727-7272

## SECTION 2 INSTALLATION

### 2.1 Unpacking and Inspection

Upon receiving the instrument, inspect the packing box and instrument for signs of possible shipping damage. After installing the instrument as described in this section, operate it in accordance with the procedure of Section 3. 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

The Model 785 FM Preselector derives its power from a 120-volt AC source, 50 to 400 hertz, and requires about 4 watts of power for operation. The Preselector can also be wired for 240-volt operation at customer request.

### 2.3 Installation and Connections

The connection instructions in this section refer only to the Model 785 FM Preselector. For information on connecting the Model 763 Monitor, refer to the Model 763 instruction manual.

When the Model 785 is ordered with the Model 763 Monitor, the Preselector is factory installed in the space provided in the Monitor chassis. The only external connection necessary is from the Preselector rear panel RF INPUT (BNC) to an FM antenna using a 75-ohm coaxial cable.

### 2.4 Field Installation of the Model 785 in the Model 763 Cabinet

a. Remove six screws from the Model 763 top cover and remove the cover.

b. Remove the two No.6 screws holding the blank front panel to the left side of the Model 763 cabinet and remove the panel.

c. Install the "RF input" BNC connector on the rear panel as shown in Figure 2-1.

d. Referring to Figure 2-1, install standoffs on the bottom chassis using 3/8" No. 4 screws.

e. Install the Model 785 FM Preselector P.C. board on the standoffs using 3/8" No.4 screws.

2.4 Field Installation of the Model 785 in the Model 763 Cabinet (Continued)

f. Wire the transformer primary to the Model 763 120-volt AC input. Connect jumpers on the transformer primary as shown in the Schematic Diagram, Figure 6.4, for 120-volt AC (jumper from E1 to E3 and E2 to E4) or 240-volt AC (jumper E2 to E3) power source as required.

g. Connect the coaxial cable provided from Model 785, J1 to the RF INPUT BNC on the rear panel.

h. Connect the coaxial cable provided from Model 785, J3 to J15 on the Model 763 Main PC board.

i. If the Carrier Detect Alarm option is not installed go to step (k). Otherwise, proceed with step j.

j. Connect the Model 785 J5 cable assembly from J5 to pins 9 and 10 of J3, J4 or J13 on the Model 763 PC board.

k. Secure the Model 785 FM Preselector front panel to the cabinet front panel opening using the two No.6 screws removed from the blank panel. Plug the AGC meter cable assembly into the Model 785, J2 connector.

l. Reinstall the top cover on the instrument.

m. Refer to section 2.3 for external connections.

2.5 Field Installation of the Carrier Detect Alarm Option

The components necessary to modify the Model 785 FM Preselector P.C. board to give an alarm at the loss of the input carrier signal are optionally available from TFT on customer request. Installation is as follows:

a. Remove the top cover from the Model 763.

b. Refer to Figure 6.3 PC board Loading Diagram, and install I.C. U5 (TFT Part No. 1100-3401).

c. Refer to Figure 6.2, Wiring Diagram, and install WC5.

d. Adjust R35 to set the Carrier Detect Alarm threshold as described in Section 5.4 (f).

e. Reinstall the top cover on the instrument.

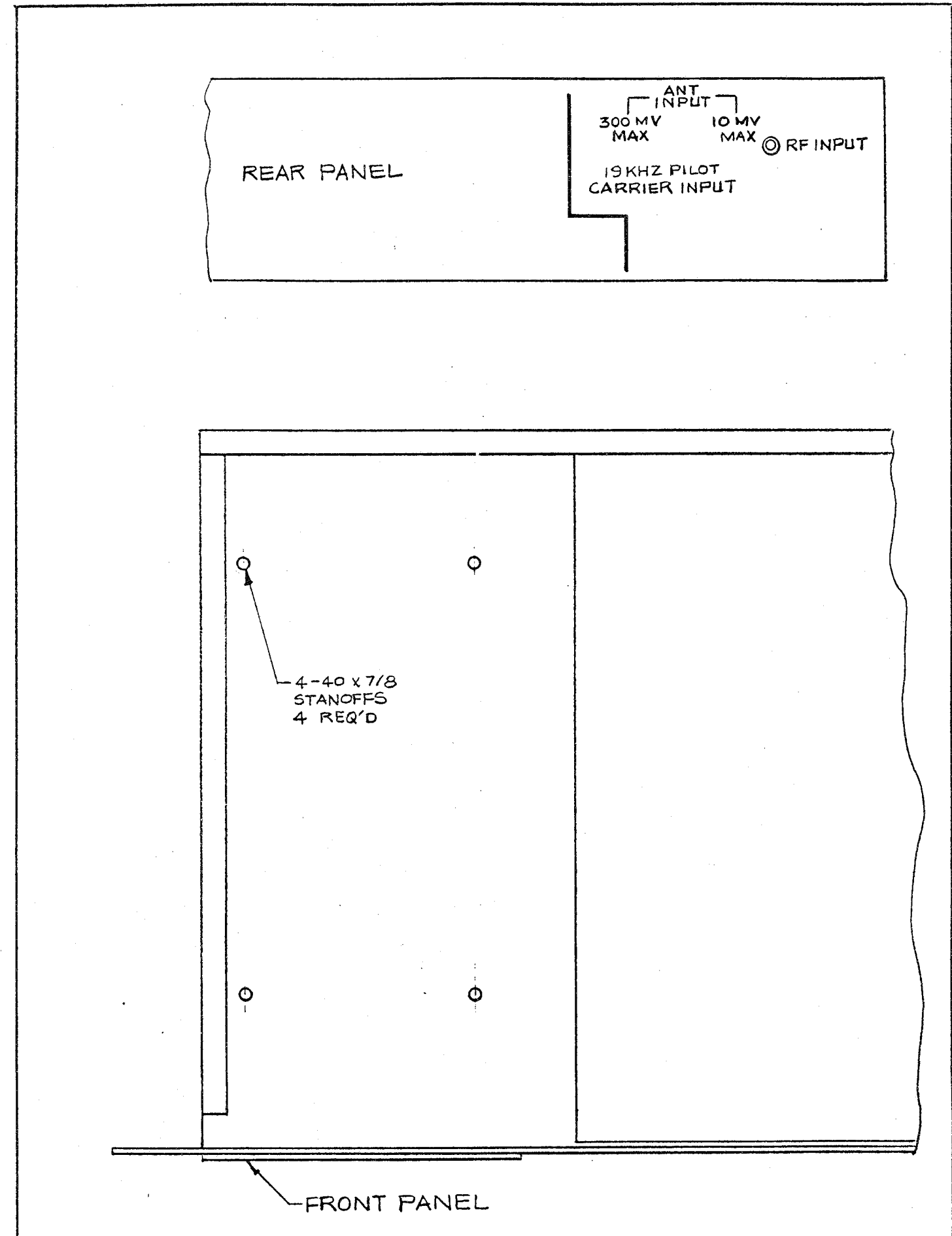


FIGURE 2-1

SECTION 3

OPERATION

3.1 General

The Model 785 FM Preselector adds to the Model 763 FM Modulation Monitor the added capability of off-the-air remote monitoring of a specified single FM carrier frequency in the 88 MHz to 108 MHz frequency range. With the addition of the Carrier Detect Alarm option, it can be quickly determined if a loss of modulation is accompanied by a loss of the carrier. This reduces troubleshooting and, consequently, down time of the transmitter.

3.2 Turn-On and Warm-up

There is no separate power switching on the Model 785 Preselector. Its primary AC (4 watt) power requirement is derived from the Model 763 power line input cord, which means it is turned on when the Model 763 Monitor is plugged into an appropriate power source. The Model 785 Preselector can be used for monitoring after a 1-minute warm-up.

3.3 Controls, Connectors, and Indicators

3.3.1 Model 785 Front Panel

Fig. 3-1  
Ref. No.

<u>Name</u>	<u>Function</u>
1 AGC Meter	Provides a display of the relative strength of the RF input signal. Instrument measurements are valid if needle is in white zone of meter display.

3.3.2 Model 785 Rear Panel

Fig. 3-2  
Ref. No.

<u>Name</u>	<u>Function</u>
1 RF INPUT Connector	Used to connect an external antenna to the Preselector input.

3.4 Use of the Preselector with the Model 763

The Model 785 Preselector permits operation of the Model 763 FM Modulation Monitor as described in the Model 763 instruction manual with the added capability of remote monitoring of an FM transmitter. No additional control settings need be made.

### 3.5

#### Carrier Detect Alarm (Optional)

This option allows the use of an external alarm to alert the operator to a reduction, or loss, of carrier level. The alarm threshold is factory set if the option is ordered with the Model 785. If field installed, the threshold may be set as described in Section 5.4 (f).

## SECTION 4

### THEORY OF OPERATION

#### 4.1 Block Diagram Discussion (Figure 6-1)

The RF input to the Model 785 FM Preselector is a customer specified frequency in the 88 MHz to 108 MHz frequency range. Amplified by the input RF amplifier, it is applied to the First Mixer with an L.O. signal derived from a crystal controlled oscillator. The L.O. output is at a frequency 10.7 MHz above the input RF frequency. When mixed, the L.O. output and RF input signals provide a difference frequency of 10.7 MHz at the First Mixer output. The mixer output is filtered to remove mixing components other than 10.7 MHz and applied to an FM frequency IF Amplifier System I.C.

Three outputs of the IF Amplifier System I.C. are used in the Model 785. First, the tuning meter circuit output controls the front panel AGC meter deflection. If the Carrier Detect Alarm option is ordered, this output also goes to a positive threshold level detector I.C. The detector output is amplified and applied to the Model 763 rear panel CARRIER ALARM terminals. Second, the RF Amplifier AGC output controls the input RF level to prevent overloading of the input circuits by strong signals. The third output is the amplified 10.7 MHz IF signal which is applied to the Second Mixer. The L.O. input to the Second Mixer is a precision 10 MHz (crystal controlled) oscillator output. When mixed, the signal's difference frequency of 700 kHz is selected and filtered to remove unwanted mixing components. The 700 kHz is then amplified and applied to the Model 763 P.C. board Preselector input.

#### 4.2 Detailed Circuit Description

##### 4.2.1 FM Preselector (Figure 6-4)

The RF input amplifier, Q1, takes the 88 MHz to 108 MHz FM antenna input and amplifies it to be applied to the U1 First Mixer differential input. The U2, pin 15 RF AGC output is applied to Q1 to prevent large signal levels from overloading the RF amplifier input.

The L.O. input to U1 comes from Q2, a crystal controlled oscillator. Crystal Y1 of the oscillator is chosen to operate at a frequency of one-half the sum of the customer specified Preselector input frequency ( $F_{in}$ ) plus 10.7 MHz. For example, if it is desired to monitor an FM transmitter operating at 101.3 MHz, Y1 frequency would be one-half of  $101.3 \text{ MHz} + 10.7 \text{ MHz}$ , or 56 MHz. Tank circuits C38, L1 and C43, L2 select the second harmonic of the oscillator output to be applied to First Mixer U1, (in this case, 112 MHz.) The output of the mixer is the difference frequency 10.7 MHz, and goes to FL 1 where harmonics and mixer products are removed from the signal.

#### 4.2.1 FM Preselector (Figure 6-4) (Continued)

The 10.7 MHz intermediate frequency is now applied to the IF input of U2, an integrated circuit which contains FM IF system functions. There are three output signals taken from U2. The AGC meter deflection is controlled by the tuning meter circuit output, pin 13.

The second output from U2 is the delayed AGC output for the RF amplifier taken from pin 15. The AGC voltage level is programmable by the setting of potentiometer R12 at pin 16. The pin 15 output is applied through the damping circuit C45-46, R29-30 to the RF input amplifier Q1.

The third output of U2 is the amplifier 10.7 MHz output at pin 8, which goes to the Second Mixer, U3. Also going to the Second Mixer is the 10 MHz crystal controlled L.O. output of oscillator Q3. The 10 MHz L.O. and 10.7 MHz IF frequencies are mixed in U3 and the difference frequency of 700 kHz extracted. The lowpass filter made up of L5-6, and C27-29 is used to remove all harmonics and mixing components from 700 kHz signal, which is then amplified by FM If Amplifier, U4. The 700 kHz Preselector output is then transferred by coaxial cable from J3 to J15 on the Model 763 Main P.C. board.

Also on the Model 785 FM Preselector board are the components which make up the + 12v power supply used to operate the Preselector. Transformer T3 takes the 120-volt or 240-volt input power and transfers the power to the secondary windings. Diodes CR1-4 are connected as a full-wave bridge rectifier circuit which transforms the AC voltage from the transformer secondary windings to the DC necessary for FM Preselector operation. Filter capacitors C52-54 reduce the AC ripple on the DC voltage, while + 12v output remains constant with normal changes in line voltage.

#### 4.2.2 Carrier Detect Alarm (Optional) (Figure 6-4)

When this option is installed, the tuning meter circuit output U2, pin 13 is used to detect the absence of a carrier signal.

The output of U2, pin 13 goes to the inverting input of threshold detector U5. Potentiometer R35, on the non-inverting input, is used to set a positive voltage reference level. If the U2, pin 13 output of U5 will be negative, and Q4 will not conduct. However, if U2, pin 13 output becomes less than the reference level (as it would if the carrier has been lost) the U5 output will go positive, and Q4 will conduct. The CARRIER ALARM terminals on the Model 763 rear panel would be activated, triggering the alarm connected to those terminals.

#### NOTE

THE CARRIER ALARM TERMINALS ARE DRIVEN BY AN OPEN COLLECTOR DRIVER. MAXIMUM VOLTAGE ACROSS THE TERMINALS IS 40 VDC, AND THE MAXIMUM ALLOWABLE CURRENT IS 200 MA.

## SECTION 5

### MAINTENANCE

#### 5.1 General

The Model 785 FM Preselector is a solid-state instrument which uses little power for operation, and therefore has none of the maintenance problems occurring in instruments which generate high temperatures in operation. There is no fan used in the Model 785 or Model 763 Monitor, so problems associated with fan maintenance, such as excessive dust accumulation, vibration, and increased component failure, are eliminated.

Access to components is covered in Section 5.2, and periodic maintenance requirements are listed in Section 5.3. Receiver performance checks are given in Section 5.4, and a troubleshooting guide for possible troubles is covered in Section 5.5.

Refer to the Model 763 instruction manual for maintenance requirements and procedures for the FM Modulation Monitor.

#### 5.2 Access

To gain access to the Preselector components, remove six screws from the Model 763 top cover and then remove the cover.

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

- a. Remove the two No. 6 screws holding the front panel to the chassis. Unplug the AGC meter from Model 785 connector J2. Remove the panel.
- b. Remove the screws that hold the Model 785 FM Preselector P. C. board to the standoffs mounted on the chassis. Refer to Figure 2-1 for location of the screws.
- c. Unplug all cables attached to the P.C. board.
- d. Remove the P.C. board.

#### 5.3 Periodic Maintenance

The only periodic maintenance required for the Model 785 Preselector is cleaning. At least once a year, or more often in dusty environments, remove the P.C. board from the instrument and blow off the dust with compressed air.



5.4

Receiver Performance Checks

To determine whether the Model 785 FM Preselector circuits are operating correctly, proceed as follows:

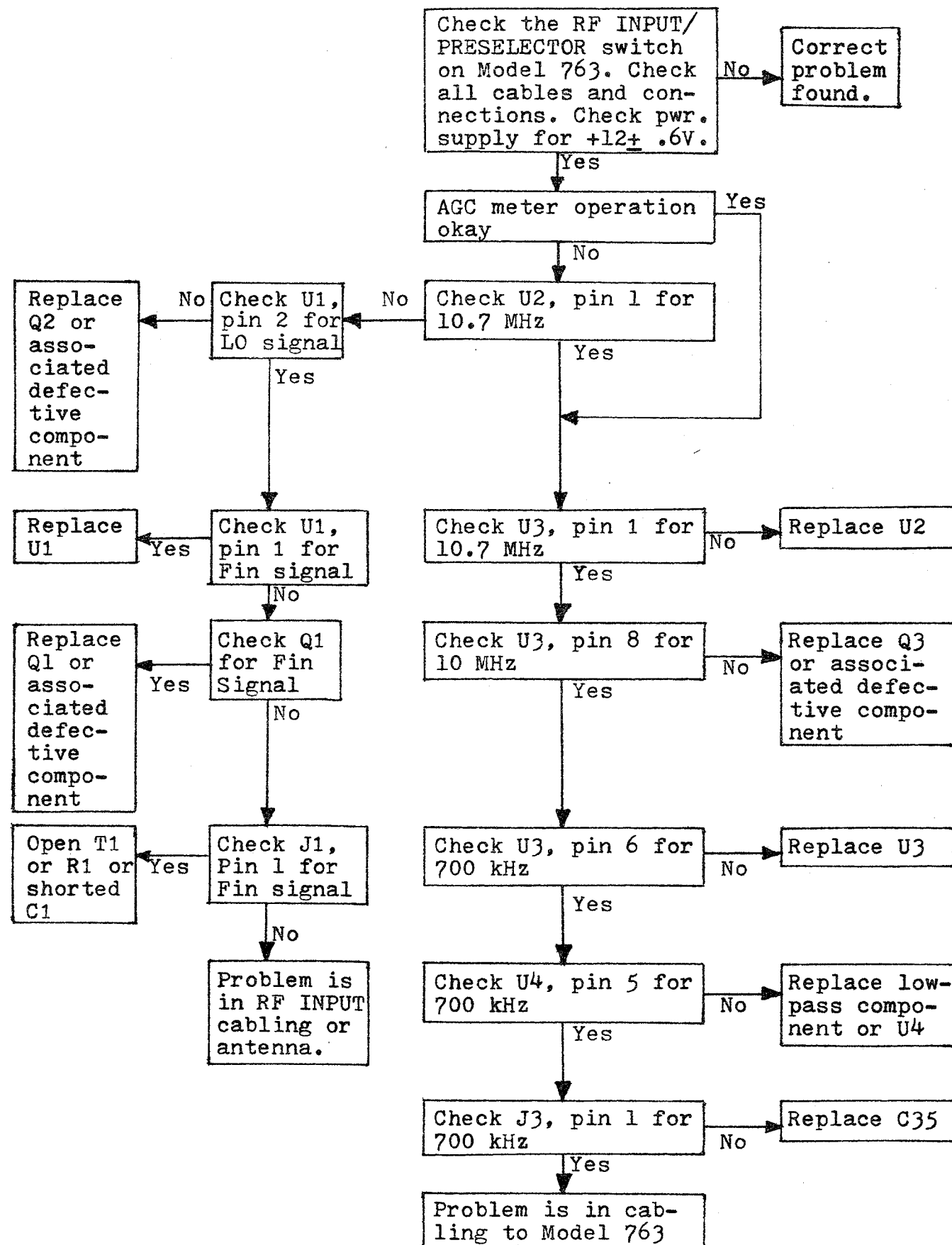
- a. Plug the instrument into an appropriate AC power source (120 volt AC, or if wired for it, 240 volt AC).
- b. Connect an RF Signal Generator to the Model 785 rear panel RF INPUT connector. Set the signal generator to the selected input frequency, unmodulated, and adjust the output level to 50 uv.
- c. Note the Model 785 front panel AGC meter. The needle should be in the white zone and steady.
- d. Refer to the Model 763 instruction manual for the proper method, and measure the received signal residual noise. It should be less than 56 dB.
- e. Increase the signal generator output level to 1 mV. The front panel AGC meter should remain in the white zone at this level, and measured residual noise less than 66 dB.
- f. To set the Carrier Detect Alarm threshold, set the signal generator output level to the level desired to actuate the Carrier Detect Alarm. Remove the instrument top cover. Adjust potentiometer R35 until the Carrier Detect Alarm output is just actuated. Replace the instrument top cover.

5.5

Troubleshooting Guide

The troubleshooting tree presented here is designed as an aid to locating problems which might occur in the Model 785 circuits. The problems and their solutions are designed as a generalized guide, and should not be taken as the only problems and solutions which might be found.

5.5.1 Preselector Troubleshooting Tree



SECTION 6

DIAGRAMS

6.1 Section 6 includes the diagrams and schematics necessary for maintenance, troubleshooting, and repair of the Model 785 FM Preselector.

Figure 6.1 Block Diagram Single Channel RF Preselector

Figure 6.2 Chassis Wiring for 785

Figure 6.3 FM Preselector Board Assembly Drawing and Parts list

Figure 6.4 FM Preselector Model 785 Schematic

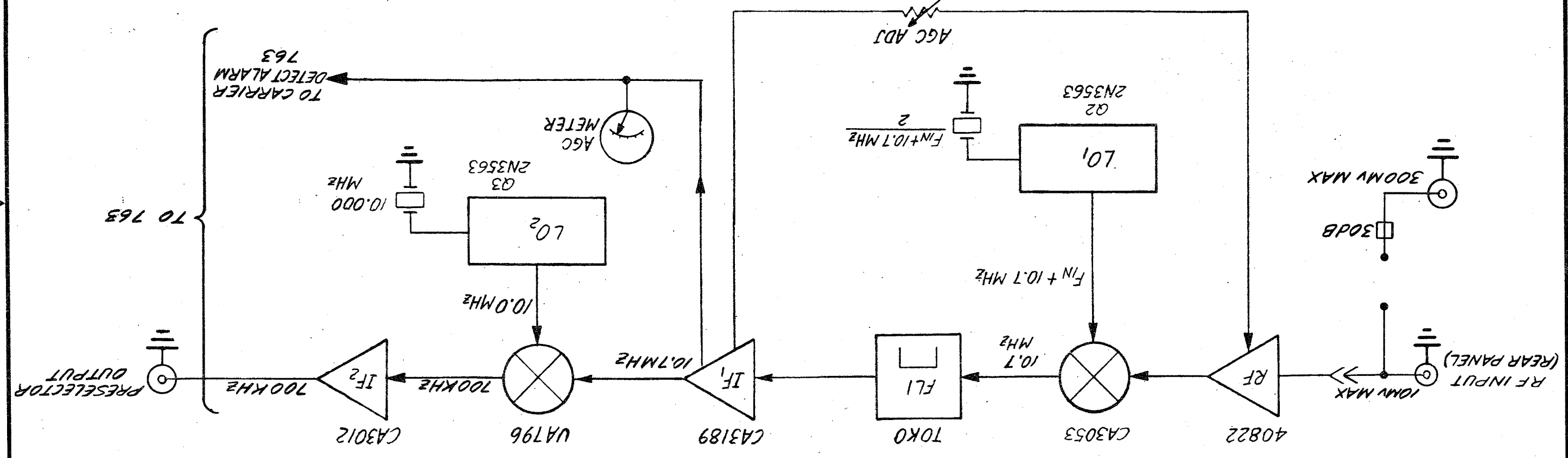
Figure 6.5 Model Assembly Drawing and Parts List

APPLICATION		DO NOT SCALE DRAWING	
NEXT ASSY	USED ON	FINISH	SCALE NONE
5004-0785	785	~	SHEET 1 OF 1
MATERIAL		APPROVALS	DATE
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS .XX ± DECIMALS .XXX ± ANGLES ~		APPROVED H. Becker 6/2/79	6-25-79
CONTRACT NO.		ISSUED	SIZE
		1/5/79	B
DWG. NO. 6600-2110		FSCM NO.	REV. B

$LO_1 = \text{CRYSTAL OSCILLATOR } F = F_{IN} + 10.7 \text{ MHz}$   
 $LO_2 = 10 \text{ MHz CRYSTAL OSCILLATOR}$   
 $IF_1 = 10.7 \text{ MHz}$   
 $IF_2 = 700 \text{ KHz}$   
 $FL_1 = 10.7 \text{ MHz, 6-POLE TOKO LINEAR PHASE FILTER}$

QTY	CODE	RECD	IDENT	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SPECIFICATION

FIG. 6-1



REV.	DESCRIPTION	DATE	APPROVED
A	RELEASED FOR PRODUCTION	6/25/79	H. Becker
B	REVISED PER ECO 1238	9/2/80	KK

TFT PART NO.		DESCRIPTION		APPLICATION		DO NOT SCALE DRAWING		SCALE NONE		SHEET 1 OF 1	
4750-0040		WC 6 EXTERNAL JUMPER CABLE		5102-3269				7-5-79			
4750-0404		WC 5 CARRIER DETECTOR CABLE ASSY		785				7-5-79			
4750-0403		WC 4 METER CABLE ASSY						7-3-79			
4750-0402		WC 3 700 KC OUTPUT CABLE ASSY						7-3-79			
4750-0401		WC 2 RF INPUT CABLE ASSY						7-5-79			
4700-0000		AC INPUT CABLE						7-5-79			

APPROVED		DATE		APPROVED		DATE	
APPROVED		7-16-79		APPROVED		7-16-79	
APPROVED		7-16-79		APPROVED		7-16-79	

PARTS LIST		ON DESCRIPTION		PART NO.		QTY		RECD		RECD	

MATERIAL		NOMENCLATURE		PART NO.		QTY		RECD		RECD	

MATERIAL		NOMENCLATURE		PART NO.		QTY		RECD		RECD	

MATERIAL		NOMENCLATURE		PART NO.		QTY		RECD		RECD	

MATERIAL		NOMENCLATURE		PART NO.		QTY		RECD		RECD	

MATERIAL		NOMENCLATURE		PART NO.		QTY		RECD		RECD	

MATERIAL		NOMENCLATURE		PART NO.		QTY		RECD		RECD	

MATERIAL		NOMENCLATURE		PART NO.		QTY		RECD		RECD	

MATERIAL		NOMENCLATURE		PART NO.		QTY		RECD		RECD	

MATERIAL		NOMENCLATURE		PART NO.		QTY		RECD		RECD	

MATERIAL		NOMENCLATURE		PART NO.		QTY		RECD		RECD	

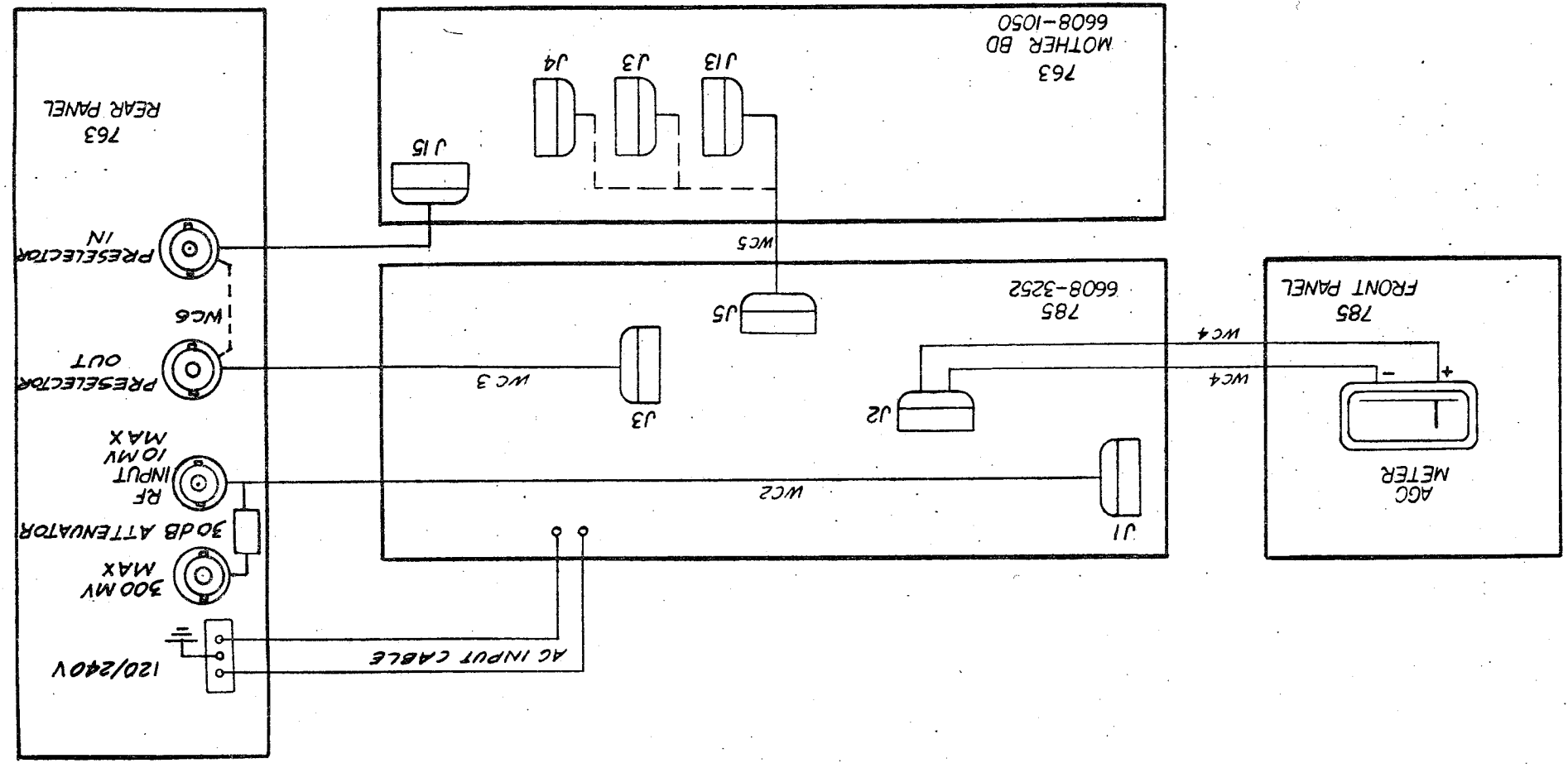


FIG 6-2

DWG. NO. 6600-2113

REV 1

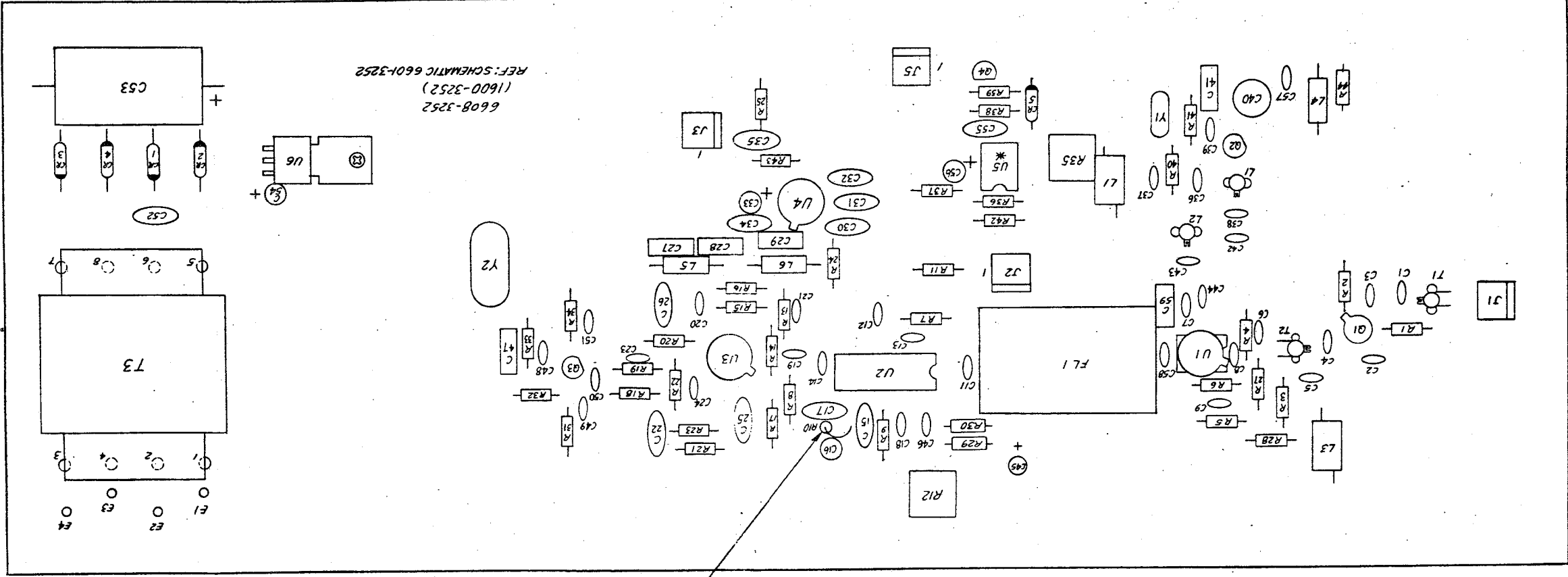
SH 1

REV	DATE	DESCRIPTION
A	7/3/79	RELEASED TO PRODUCTION
B	8/8/79	REVISED/ECO 826

REV	DESCRIPTION	DATE
785	RELEASED FOR PRODUCTION	12-27-78
785	REVISIONS	
785	USED ON	
785	DATE	

502-1910  
 NEXT ASSY  
 USED ON  
 DATE

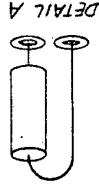
DR CMR AUTH DATE



REF: SCHEMATIC 6601-3252  
 6608-3252 (1600-3252)

NOTE: \*IC 15 IS USED WITH CARRIER DETECT ALARM OPTION ONLY.

STAND UP RESISTOR



DWG. NO. 6608-3252

REV	DESCRIPTION	DATE
785	RELEASED FOR PRODUCTION	12-27-78
785	REVISIONS	
785	USED ON	
785	DATE	

REV	DESCRIPTION	DATE
785	RELEASED FOR PRODUCTION	12-27-78
785	REVISIONS	
785	USED ON	
785	DATE	

FIG. 6-3

REV	DESCRIPTION	DATE
785	RELEASED FOR PRODUCTION	12-27-78
785	REVISIONS	
785	USED ON	
785	DATE	

REV	DESCRIPTION	DATE
785	RELEASED FOR PRODUCTION	12-27-78
785	REVISIONS	
785	USED ON	
785	DATE	

REV	DESCRIPTION	DATE
785	RELEASED FOR PRODUCTION	12-27-78
785	REVISIONS	
785	USED ON	
785	DATE	

REV	DESCRIPTION	DATE
785	RELEASED FOR PRODUCTION	12-27-78
785	REVISIONS	
785	USED ON	
785	DATE	

REV	DESCRIPTION	DATE
785	RELEASED FOR PRODUCTION	12-27-78
785	REVISIONS	
785	USED ON	
785	DATE	

REV	DESCRIPTION	DATE
785	RELEASED FOR PRODUCTION	12-27-78
785	REVISIONS	
785	USED ON	
785	DATE	

REV	DESCRIPTION	DATE
785	RELEASED FOR PRODUCTION	12-27-78
785	REVISIONS	
785	USED ON	
785	DATE	

REV	DESCRIPTION	DATE
785	RELEASED FOR PRODUCTION	12-27-78
785	REVISIONS	
785	USED ON	
785	DATE	

REV	DESCRIPTION	DATE
785	RELEASED FOR PRODUCTION	12-27-78
785	REVISIONS	
785	USED ON	
785	DATE	

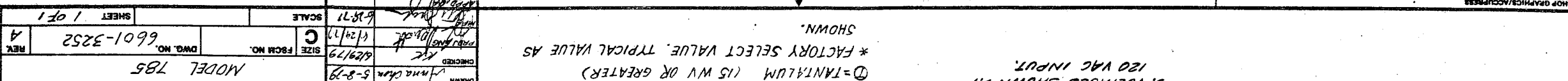
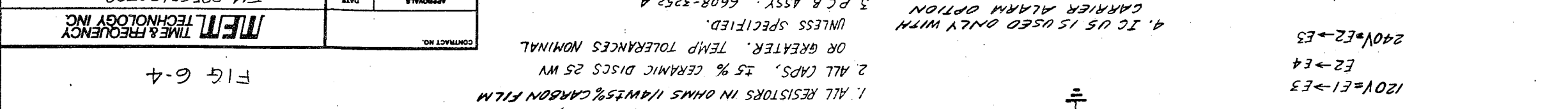
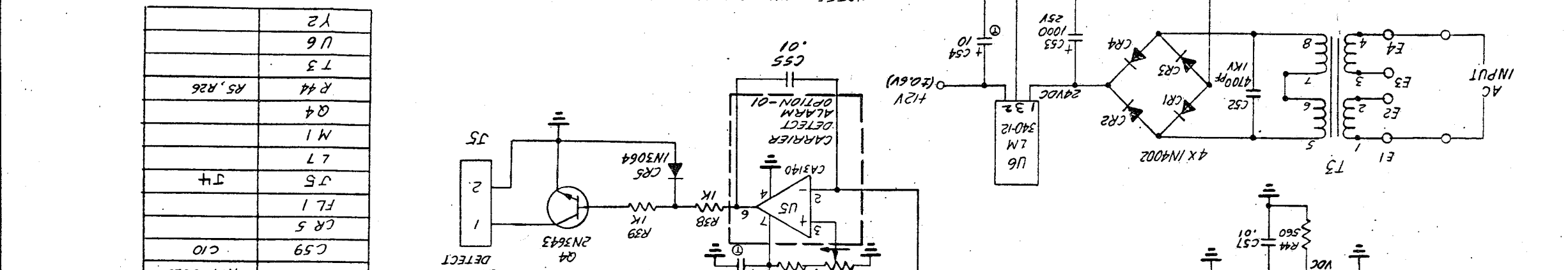
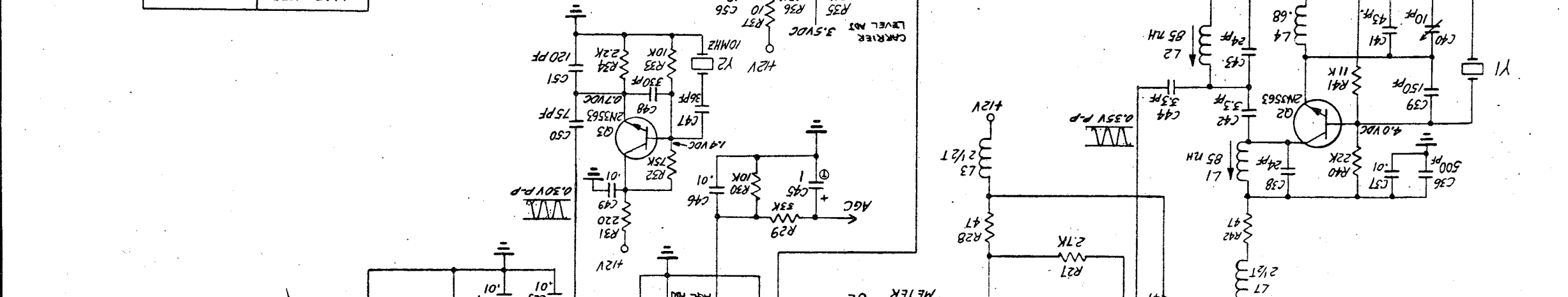
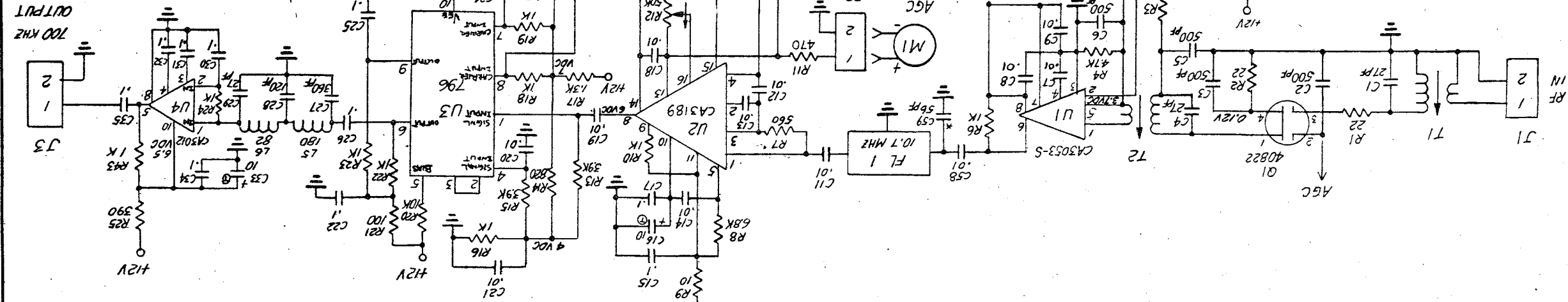
REV	DESCRIPTION	DATE
785	RELEASED FOR PRODUCTION	12-27-78
785	REVISIONS	
785	USED ON	
785	DATE	

REV	DESCRIPTION	DATE
785	RELEASED FOR PRODUCTION	12-27-78
785	REVISIONS	
785	USED ON	
785	DATE	

REV	DESCRIPTION	DATE
785	RELEASED FOR PRODUCTION	12-27-78
785	REVISIONS	
785	USED ON	
785	DATE	

REV	DESCRIPTION	DATE
785	RELEASED FOR PRODUCTION	12-27-78
785	REVISIONS	
785	USED ON	
785	DATE	

ZONE	REV.	DESCRIPTION	DATE	APPROVED
K	1	REMOVED SK. REL. TO PRODUCTION	5/15/77	828



REV.	SH.	REV.	DATE	APPROVALS	DATE	DRAWN	CHECKED	SCALE	SHEET	NO.
A	1	1	5-8-79			John Chan		6-29-79	1 of 1	6601-3252

FIG 6-4

ITEM	DESCRIPTION	QUANTITY
C10	NOT USED	
CR5	NOT USED	
FL1	10.7 MHZ	1
J5	CONNECTOR	1
J4	CONNECTOR	1
M1	AGC METER	1
Q4	2N3643	1
R5, R26	RESISTORS	2
T3	TRANSFORMER	1
U6	LM340-12	1
Y2	CRYSTAL	1

NOTES: UNLESS OTHERWISE SPECIFIED,  
 1. ALL RESISTORS IN OHMS 1/4W 5% CARBON FILM  
 2. ALL CAPS, 5% CERAMIC DISCS 25 WV  
 OR GREATER, TEMP TOLERANCES NOMINAL  
 UNLESS SPECIFIED.  
 3. P.C.B. ASSY: 6608-3252 A  
 4. IC U5 IS USED ONLY WITH  
 CARRIER ALARM OPTION  
 5. VOLTAGES SHOWN AT  
 120V=E1→E3  
 E2→E4  
 240V=E2→E3

\* FACTORY SELECT VALUE, TYPICAL VALUE AS  
 SHOWN.

REVISIONS

REMOVED SK. REL. TO PRODUCTION

5/15/77

828

REV	DESCRIPTION	DATE	BY	CHK
1	785	5/19/88		

5102-3296	785	REVISIONS
USED ON		
DR	CHK	AUTH
DATE		

DWG. NO. 5102-3296

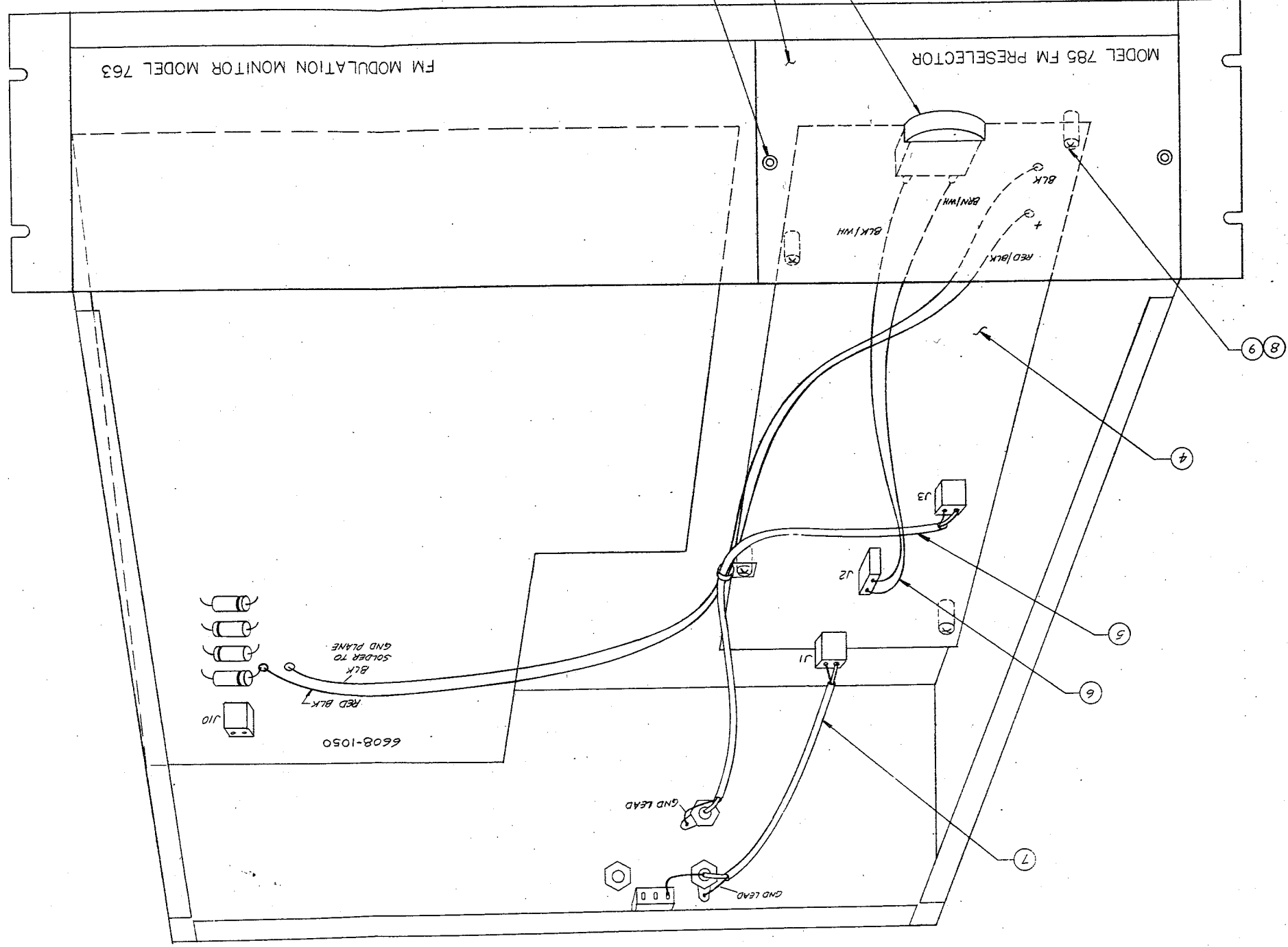


FIG 6-5

QTY PER ASSY	ITEM NO.	PART NO.	DESCRIPTION
8	9	2104-4068	SCREW PH 4-40 X 3/8
4	8	2130-8219	STANDOFF 4-40 X 7/8 HEX NYLON
1	7	4750-0901	WC2 RF INPUT CABLE ASSY
1	6	4750-0903	WC4 METER CABLE ASSY
1	5	4750-0902	WC3 TONEC OUTPUT CABLE ASSY
1	4	6608-3252	PCB ASSY FM PRESELECTOR
2	3	2106-3198	SCREW SOCKET PH CAP 6-32
1	2	1400-0010	METER
1	1	2000-0905	FRONT PANEL 785

REMOVE ALL BURS AND SHARP EDGES

DO NOT SCALE THIS PRINT

TOLERANCES UNLESS OTHERWISE SPECIFIED

XXX ± ANGULAR

XXX ±

PROJ. ENG. \_\_\_\_\_

MFG. ENG. \_\_\_\_\_

APPRO. \_\_\_\_\_

SCALE: D 5102-3296

SIZE: 8 1/2 X 11

REV: B

SMT / OF 1

NEPT TIME & FREQUENCY TECHNOLOGY INC.

3000 OCHT ST. SANTA CRUZ, CALIFORNIA 95060

(408) 246-8985

DATE: 5/17/88

CHK BY: \_\_\_\_\_

DRAWN BY: \_\_\_\_\_

CKT REF	DESCRIPTION	QTY	TFT STOCK NO.
C1	Cap Cer Disc 27 PF	1	1005-0270
C2	Cap Cer Disc 500 PF	1	1005-0501
C3	Cap Cer Disc 500 PF	1	1005-0501
C4	Cap Cer Disc 27 PF	1	1005-0270
C5	Cap Cer Disc 500 PF	1	1005-0501
C6	Cap Cer Disc 500 PF	1	1005-0501
C7	Cap Cer Disc .01 MFD	1	1005-1039
C8	Cap Cer Disc .01 MFD	1	1005-1039
C9	Cap Cer Disc .01 MFD	1	1005-1039
C10	Not Used		
C11	Cap Cer Disc .01 MFD	1	1005-1039
C12	Cap Cer Disc .01 MFD	1	1005-1039
C13	Cap Cer Disc .01 MFD	1	1005-1039
C14	Cap Cer Disc .01 MFD	1	1005-1039
C15	Cap Cer Disc 0.1 MFD	1	1005-0100
C16	Cap Tant 10 MFD	1	1008-0100
C17	Cap Cer Disc .1 MFD	1	1005-0100
C18	Cap Cer Disc .01 MFD	1	1005-1039
C19	Cap Cer Disc .01 MFD	1	1005-1039
C20	Cap Cer Disc .01 MFD	1	1005-1039
C21	Cap Cer Disc .01 MFD	1	1005-1039
C22	Cap Cer Disc .1 MFD	1	1005-0100
C23	Cap Cer Disc .01 MFD	1	1005-1039
C24	Cap Cer Disc .01 MFD	1	1005-1039
C25	Cap Cer Disc .1 MFD	1	1005-0100
C26	Cap Cer Disc .1 MFD	1	1005-0100
C27	Cap Mica 360 PF	1	1001-0361
C28	Cap Mica 120 PF	1	1001-0121
C29	Cap Mica 27 PF	1	1001-0270
C30	Cap Cer Disc .1 MFD	1	1005-0100
C31	Cap Cer Disc .1 MFD	1	1005-0100
C32	Cap Cer Disc .1 MFD	1	1005-0100
C33	Cap Tant 10 MFD	1	1008-0100
C34	Cap Cer Disc .1 MFD	1	1005-0100
C35	Cap Cer Disc .1 MFD	1	1005-0100
C36	Cap Cer Disc 500 PF	1	1005-0501
C37	Cap Cer Disc .01 MFD	1	1005-1039
C38	Cap Cer Disc 24 PF (NPO)	1	1005-0024
C39	Cap Cer Disc 150 PF	1	1005-0151
C40	Cap Trimmer 3-10 PF	1	1012-0310
C41	Cap Ceramic Disc 43 PF (NPO)	1	1005-0043
C42	Cap Cer Disc 3.3 PF (NPO)	1	1005-0033



CKT REF	DESCRIPTION	QTY	TFT STOCK NO.
C43	Cap Cer Disc 24 PF (NP0)	1	1005-0024
C44	Cap Cer Disc 3.3 PF (NP0)	1	1005-0033
C45	Cap Tant 1 MFD	1	1008-0011
C46	Cap Cer Disc .01 MFD	1	1005-1039
C47	Cap Cer Disc 36 PF (NP0)	1	1005-0036
C48	Cap Cer Disc 330 PF	1	1005-0331
C49	Cap Cer .01 MFD	1	1005-1039
C50	Cap Cer Disc 75 PF	1	1005-0750
C51	Cap Cer Disc 120 PF	1	1005-0121
C52	Cap Cer Disc 4700 PF 1K	1	1005-4749
C53	Cap Elect 1000 UF 25 VDC	1	1010-1001
C54	Cap Tant 10 MFD	1	1008-0100
C55	Cap Cer Disc .01 MFD	1	1005-1039
C56	Cap Tant 10 MFD	1	1008-0100
C57	Cap Cer Disc .01 MFD	1	1005-1039
C58	Cap Cer Disc .01 MFD	1	1005-1039
C59	Cap Cer Disc 33 PF	1	1005-0330
CR1	Diode IN4002	1	1284-4002
CR2	Diode IN4002	1	1284-4002
CR3	Diode IN4002	1	1284-4002
CR4	Diode IN4002	1	1284-4002
CR5	Diode IN3064	1	1281-3064
FL1	10.7 MHZ Bandpass Filter	1	1052-0053
J1	Plug 2 Pin (Molex)	1	2250-6002
J2	Plug 2 Pin (Molex)	1	2250-6002
J3	Plug 2 Pin (Molex)	1	2250-6002
J4	Plug 2 Pin (Molex)	1	2250-6002
J5	Plug 2 Pin (Molex)	1	2250-6002
L1	Coil 85 UH	1	1501-0085
L2	Coil 85 UH	1	1501-0085
L3	Choke 2 1/2 Turn	1	1530-0025
L4	Choke .68 UH	1	1530-0680
L5	Choke 180 UH	1	1530-0180
L6	Choke 82 UH	1	1530-0820
L7	Choke 2 1/2 Turn	1	1530-0025
Q1	Transistor 40822	1	1271-4082
Q2	Transistor 2N3563	1	1271-3563
Q3	Transistor 2N3563	1	1271-3563
Q4	Transistor 2N3643	1	1271-3643

CKT REF	DESCRIPTION	QTY	TFT STOCK NO.
R1	Res Car Comp 22 1/4W ±5%	1	1065-0022
R2	Res Car Comp 22 1/4W ±5%	1	1065-0022
R3	Res Car Comp 47 1/4W ±5%	1	1065-0047
R4	Res Car Comp 4.7K 1/4W ±5%	1	1065-4701
R5	Not Used		
R6	Res Car Comp 1K 1/4W ±5%	1	1065-1001
R7	Res Car Comp 560 1/4W ±5%	1	1065-0560
R8	Res Car Comp 6.8K 1/4W ±5%	1	1065-6801
R9	Res Car Comp 10 1/4W ±5%	1	1065-0010
R10	Res Car Comp 1K 1/4W ±5%	1	1065-1001
R11	Res Car Comp 470 1/4W ±5%	1	1065-1001
R12	Res Var 50K	1	1069-5002
R13	Res Car Comp 3.9K 1/4W ±5%	1	1065-3901
R14	Res Car Comp 820 1/4W ±5%	1	1065-0820
R15	Res Car Comp 3.9K 1/4W ±5%	1	1065-3901
R16	Res Car Comp 1K 1/4W ±5%	1	1065-1001
R17	Res Car Comp 1.3K 1/4W ±5%	1	1065-1301
R18	Res Car Comp 1K 1/4W ±5%	1	1065-1001
R19	Res Car Comp 1K 1/4W ±5%	1	1065-1001
R20	Res Car Comp 10K 1/4W ±5%	1	1065-1002
R21	Res Car Comp 100 1/4W ±5%	1	1065-0100
R22	Res Car Comp 1K 1/4W ±5%	1	1065-1001
R23	Res Car Comp 1K 1/4W ±5%	1	1065-1001
R24	Res Car Comp 1K 1/4W ±5%	1	1065-1001
R25	Res Car Comp 390 1/4W ±5%	1	1065-0390
R26	Not Used		
R27	Res Car Comp 2.7K 1/4W ±5%	1	1065-2701
R28	Res Car Comp 47 1/4W ±5%	1	1065-0047
R29	Res Car Comp 33K 1/4W ±5%	1	1065-3302
R30	Res Car Comp 10K 1/4W ±5%	1	1065-1002
R31	Res Car Comp 220 1/4W ±5%	1	1065-0220
R32	Res Car Comp 75K 1/4W ±5%	1	1065-7502
R33	Res Car Comp 10K 1/4W ±5%	1	1065-1002
R34	Res Car Comp 2.2K 1/4W ±5%	1	1065-2201
R35	Res Var 2K	1	1069-0202
R36	Res Car Comp 4.7K 1/4W ±5%	1	1065-4701
R37	Res Car Comp 10 1/4W ±5%	1	1065-0010
R38	Res Car Comp 1K 1/4W ±5%	1	1065-1001
R39	Res Car Comp 1K 1/4W ±5%	1	1065-1001
R40	Res Car Comp 22K 1/4W ±5%	1	1065-2202
R41	Res Car Comp 11K 1/4W ±5%	1	1065-1102
R42	Res Car Comp 47 1/4W ±5%	1	1065-0047
R43	Res Car Comp 11K 1/4W ±5%	1	1065-1001
R44	Res Car Comp 560 1/4W ±5%	1	1065-0560

Model 785

FM Preselector Board

Assembly #6608-3252  
Rev A

CKT REF	DESCRIPTION	QTY	TFT STOCK NO.
T1	RF Transformer	1	1501-0005
T2	RF Transformer	1	1501-0006
T3	Transformer, Power	1	1500-0350
U1	Integrated Circuit, CA 3053-S	1	1100-3053
U2	Integrated Circuit, CA3189E	1	1100-3189
U3	Integrated Circuit, UA796	1	1100-0796
U4	Integrated Circuit, CA3012	1	1100-3012
U5	Integrated Circuit, CA3140	1	1100-3140
U6	Integrated Circuit, LM340T-12	1	1100-0340
Y1	Crystal, To Frequency	1	2400-XXXX
Y2	Crystal, 10 MHz	1	2400-1002
	Nut Kep 4-40	1	2111-0001
	PCB	1	1600-3252
	Screw 4-40 x 1/4	1	2140-0008
	Socket, I.C., 8 Pin	2	2250-1008
	Socket, I.C., 16 Pin	1	2250-1016
	Jack, Solder Mount	2	2140-0007
ASCH	Schematic Diagram	Ref	6601-3252
ATPR	Test Procedure	Ref	5104-0139
ATDS	Test Data Sheet	Ref	5108-0139

Model 785

FM Preselector Board

Assembly #6608-3252

Rev A

CKT REF	DESCRIPTION	QTY	TFT STOCK NO.
T1	RF Transformer	1	1501-0005
T2	RF Transformer	1	1501-0006
T3	Transformer, Power	1	1500-0350
U1	Integrated Circuit, CA 3053-S	1	1100-3053
U2	Integrated Circuit, CA3189E	1	1100-3189
U3	Integrated Circuit, UA796	1	1100-0796
U4	Integrated Circuit, CA3012	1	1100-3012
U5	Integrated Circuit, CA3140	1	1100-3140
U6	Integrated Circuit, LM340T-12	1	1100-0340
Y1	Crystal, To Frequency	1	2400-XXXX
Y2	Crystal, 10 MHz	1	2400-1002
	Nut Kep 4-40	1	2111-0001
	PCB	1	1600-3252
	Screw 4-40 x 1/4	1	2140-0008
	Socket, I.C., 8 Pin	2	2250-1008
	Socket, I.C., 16 Pin	1	2250-1016
	Jack, Solder Mount	2	2140-0007
ASCH	Schematic Diagram	Ref	6601-3252
ATPR	Test Procedure	Ref	5104-0139
ATDS	Test Data Sheet	Ref	5108-0139