LPB

AM-30P Series AM Transmitter

Manual

Model: AM-30P

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INSTRUCTION MANUAL

LPB MODEL AM-30P TRANSMITTER

CARRIER CURRENT and RADIATING CABLE SYSTEMS

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CARRIER CURRENT and RADIATING CABLE SYSTEMS

Revised MAY 2006

1.0 INTRODUCTION

Low Power AM Transmitters are the product of LPB's nationally recognized broadcast experience since 1960- This P version solid state transmitters utilizes state-of-the-art technology and has been Type Approved for licensed use under Part 73 of the FCC Rules and Regulations. The transmitter power output (TPO) is adjustable down to about 2 watts. This freedom allows greater flexibility of system design,

2.0 Warranty and Service Information

2.1 Limited Warranty

We guarantee that you will find the appearance, workmanship and standards of material and construction of this equipment in keeping with the application and with good standards of commercial practice.

For a period of one year from date of delivery, we guarantee this equipment against any form of failure provided that, in the opinion of the manufacturer, no improper use of or modification to this equipment is at fault. The guarantee also requires that the equipment is properly installed and operated within stated parameters. During this period, LPB will furnish materials and labor in our shops to correct any failure. Shipping charges are the responsibility of the customer. After warranty expiration, service will continue to be available from LPB.

2.2 Service

This equipment is designed and constructed for optimum results and minimum failure. If any problem or question should arise, please call or write LPB Customer Service immediately. Identification information which you should provide when calling or writing includes, model number, serial number, operating frequency and date of purchase. This information is found on the Identification label on the Transmitter.

This equipment, in general IS NOT USER SERVICEABLE. If a malfunction arises or is suspected, we urge you to return the equipment to the factory for proper repair.

If the need for service arises contact LPB's Customer Service Department for a Material Return Authorization (MRA) and shipping instructions before shipment. The MRA number must appear on the shipping label.

LPB Communications, Inc.

Phone 856-365-8585 Fax 856-365-8999

3.0 APPLICABLE FCC RULES -WARNING!!!!

In paragraph 10 of *Report and Order in the matter of MM Docket 85-125 adopted December 20, 1985,* the commission amended Part 73.58 to read as follows:

" However, auxiliary transmitters with nominal power ratings of 100 watts or less are not required to be equipped with instruments to determine power by the indirect method provided that the licensee can determine the antenna input power at all times."

The Relative Power Output meter in the LPB AM-30P transmitter does not satisfy this metering requirement. We suggest the licensee employ an Antenna Current Meter, such as the Simpson model 37 (3 ½) RF Ammeter. When looking into a 50 ohm load, the 30-watt transmitter needs a 0-1A full-scale ammeter.

It should be noted that the Commission does not require the RF ammeter meter to be in the circuit at all times, however, you must have and use this capability to measure the output.

3.1 ADVISING THE FCC

When installing a transmitter for use with low power authorization, the user must advise the Commission, in writing of this action. The make and model number of the transmitter must be submitted.

4.0 CIRCUIT DESCRIPTION

We do not recommend user repair of this equipment but furnish the following theory of operation information for those interested. It will assist in isolating a problem. Furthermore, refer to the troubleshooting guide in Section 7.0 and to the block diagrams and schematics in this manual,

4.1 Summary

(REFER TO TRANSMITTER BLOCK DIAGRAM, FIG. 1]

The transmitter uses an integrated circuit technique to generate a high-stability signal at six times the carrier frequency. A digital countdown circuit produces the carrier frequency, which is then amplitude modulated at a low level. A linear RF power amplifier increases the output to full rated TPO. The linear RF amplifier allows output power adjustment down to about 10% of rated TPO. The internal meter is used to measure Modulation and Relative RF Power Output.

4.2 Power Supply

(Refer to Power Supply Fig. 2 and schematic) (Parts List = 60 10-F)

The low voltage secondary of power transformer (T1) feeds a standard full-wave diode bridge (CR1) Diode CR2 and transistor Q1 provide regulation and ripple rejection. CR3 provides half-wave rectification for the 15vDC supply. Both primary AC and B- voltages are fused (F1 & F2). A metal oxide varistor V1 shunts the low voltage secondary of T1 to protect against damage from voltage transients,

4.3 Exciter

(Refer to Exciter Fig. 3 and schematic) (Parts List = 60 10-F)

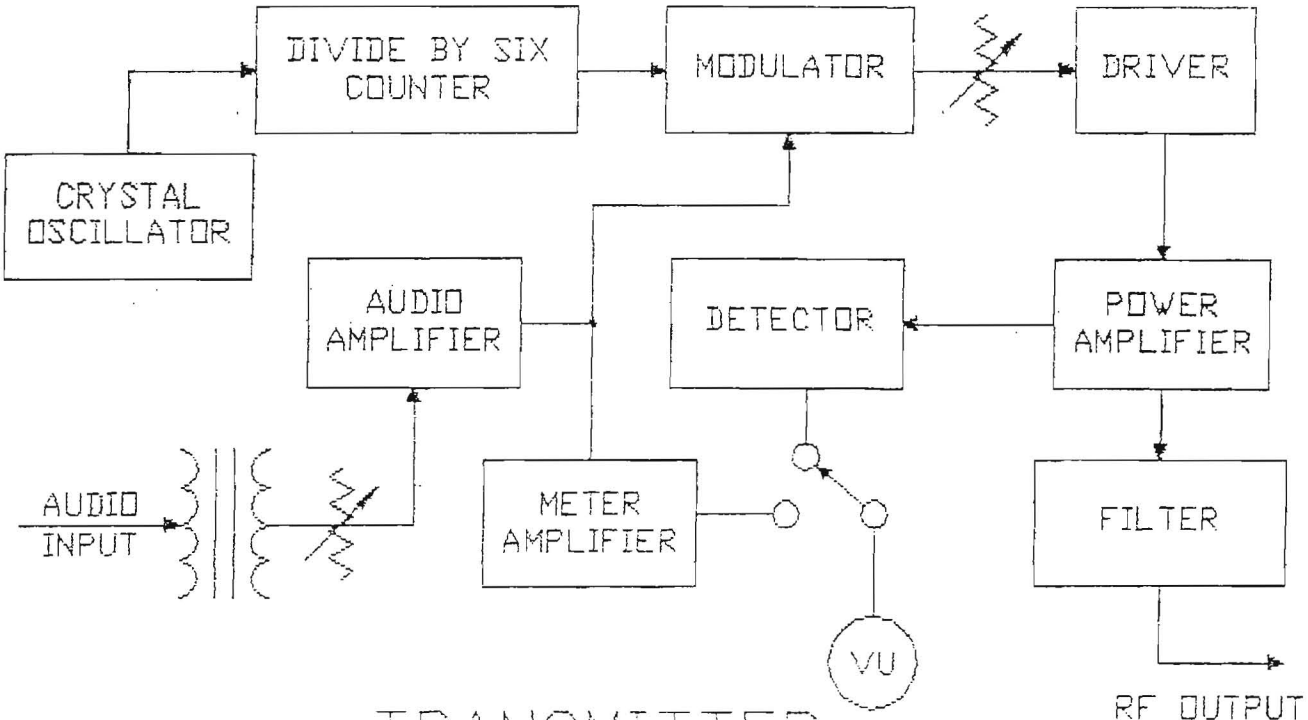
4.3.1 Audio

The audio section utilizes input transformer T2 to provide isolation and balanced 600 ohm line input. The transformer secondary drives operational amplifier A1 in the inverting mode. This feeds an integrated circuit balanced modulator A4 and the input of the meter amplifier A6. The meter is calibrated to indicate 0 VU at 100% modulation with a tone input [1 kHz standard) connected to the transmitter audio input.

Balanced modulation A4 provides a low level amplitude modulated signal. This output is square wave, rich in harmonics. DC voltage for the audio input stage, meter amplifier and modulator is provided from a sub-regulated power supply for high stability.

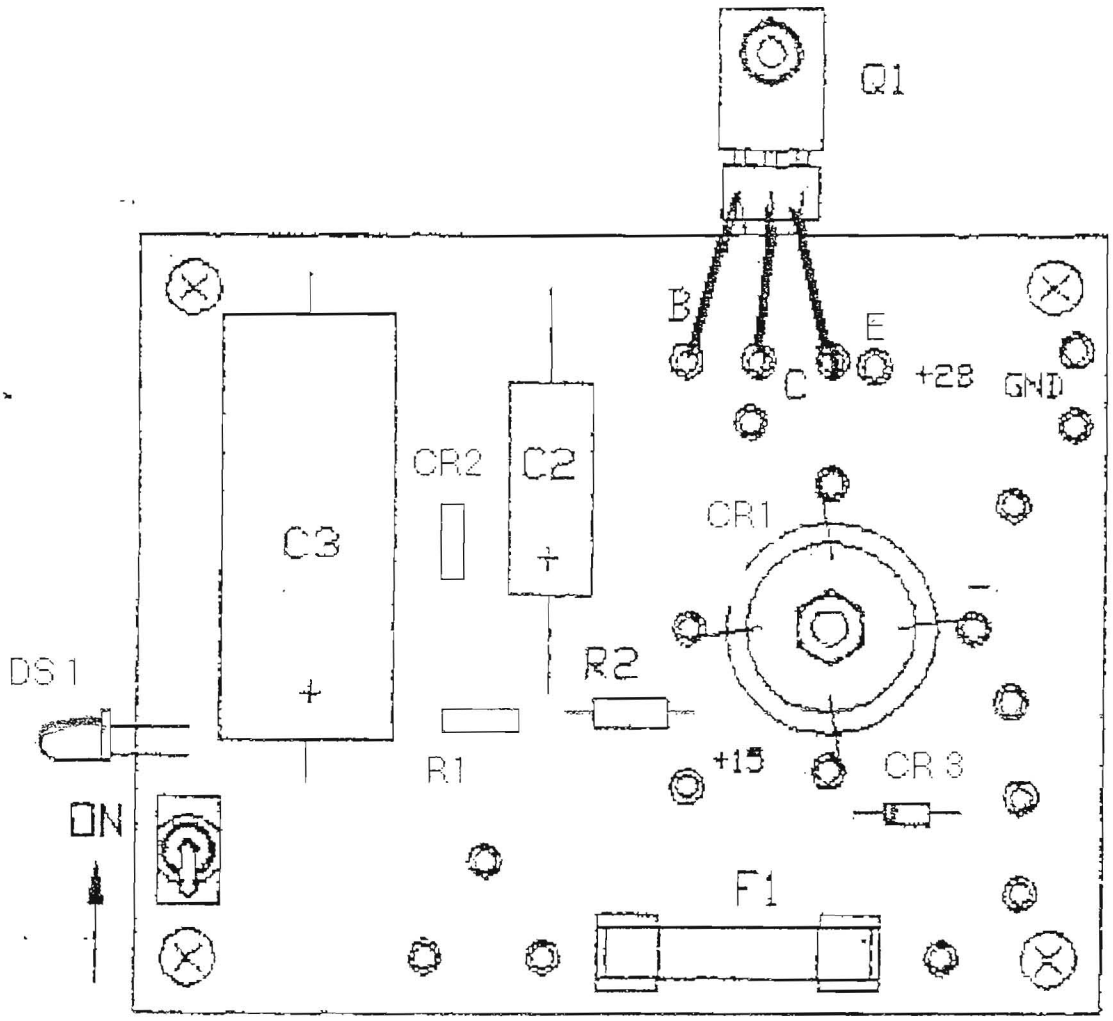
4.3.2 Oscillator

A precision crystal is used in the integrated circuit oscillator A2. It operates at six times (he transmitter carrier frequency for maximum stability. The oscillator output drives- a divide-by-six counter A3, This output is square wave at the carrier frequency and is applied to the modulator A4.



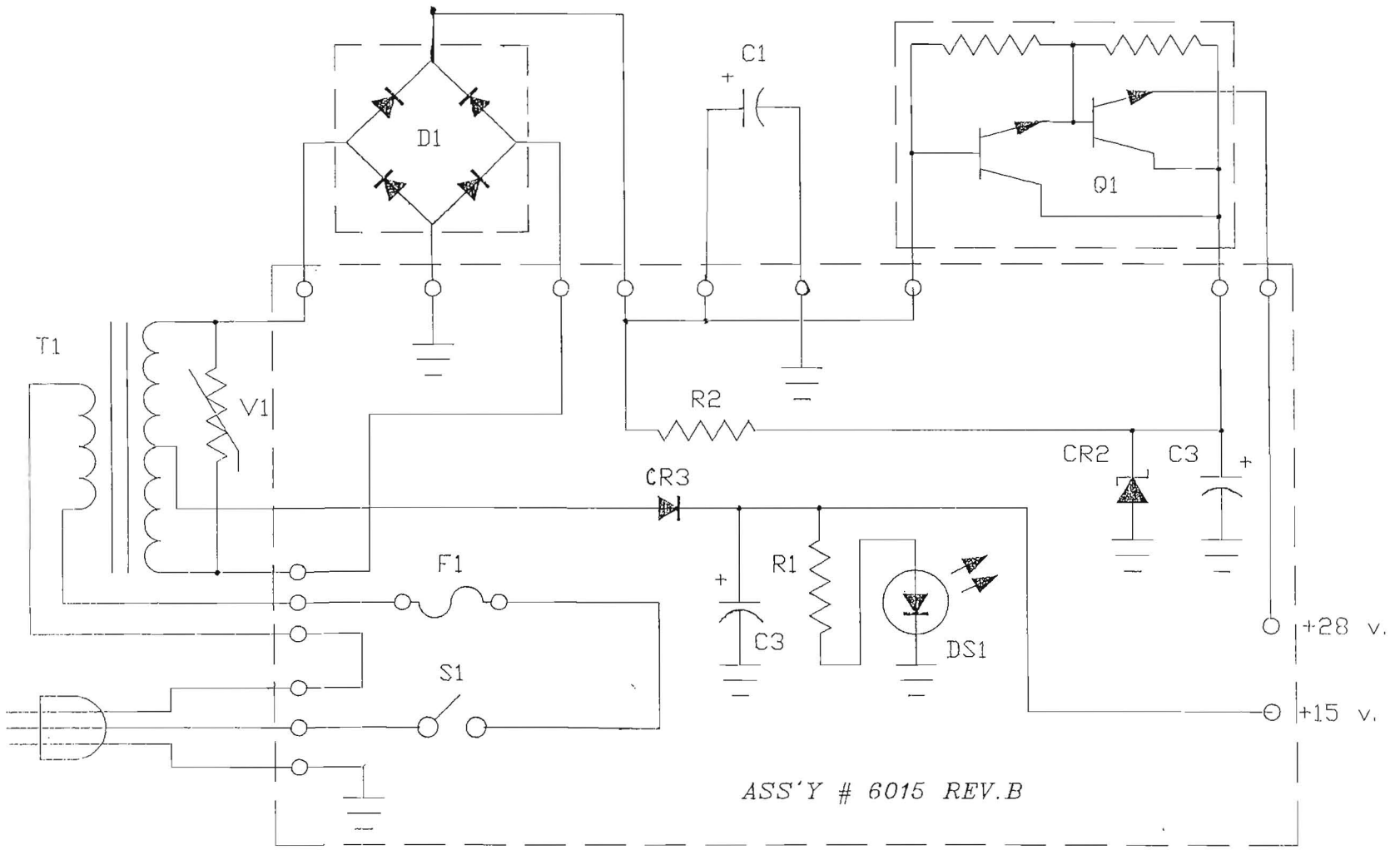
TRANSMITTER BLOCK DIAGRAM

FIG. 1



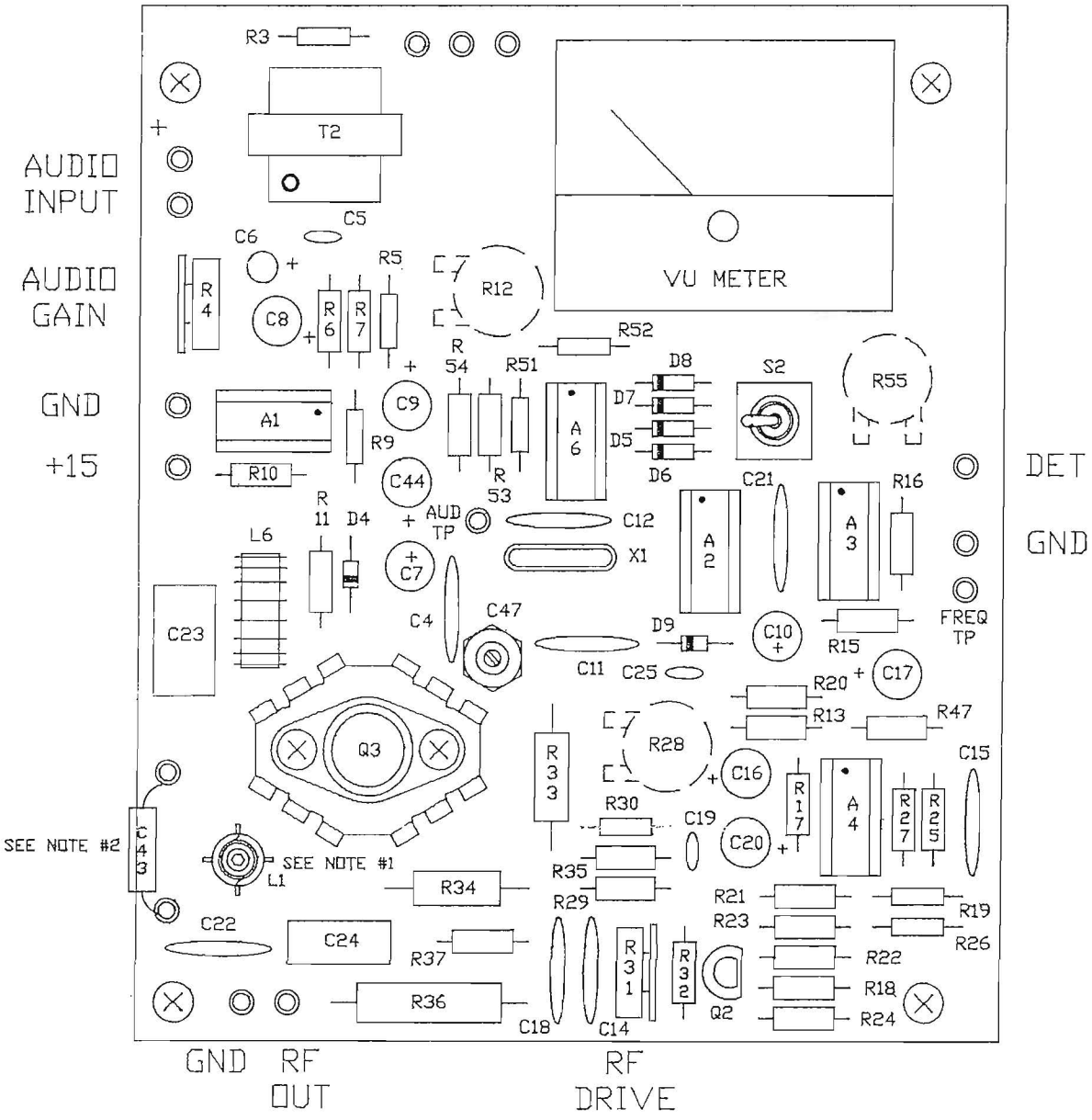
POWER SUPPLY Component Layout

FIGURE 2



AM-30P/60P/100P POWER SUPPLY #6016 REV.B

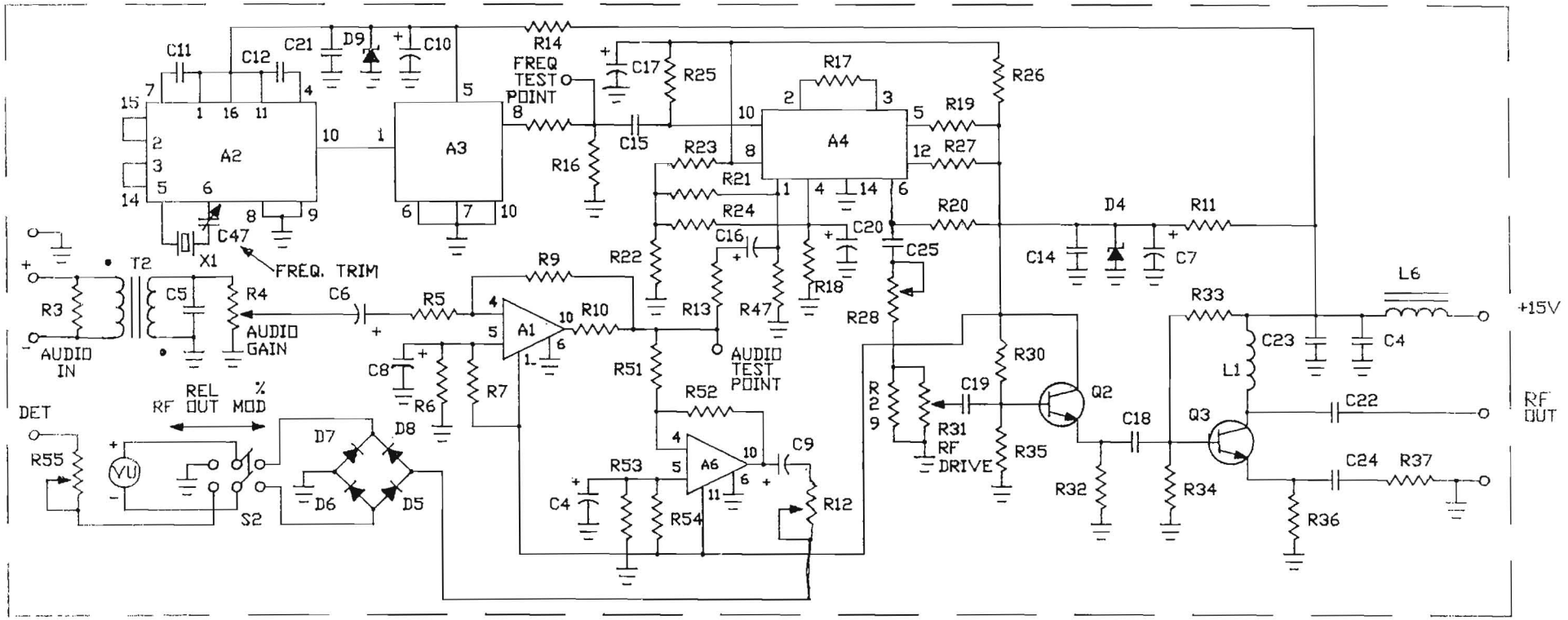
NOTE: RESISTOR R14 IS MOUNTED ON BACK OF BOARD.



NOTE #1: L1 IS FACTORY ADJUSTED
NOTE #2: C43 IS FACTORY SELECTED

FIG. 3

AM-30 P EXCITER
COMPONENT LAYOUT



NOTES:

1. R12, R28, R55 are factory set.
2. REFER TO PARTS LIST # 6010 REV. F FOR COMPLETE LIST OF EXCITER COMPONENTS

'P' VERSION
EXCITER BOARD SCHEMATIC
AM-30P/60P/100P
DWG. 6094 REV. F

4.3 RF Pre-Driver and Driver Stage

RF from the output drives the pre-driver amplifier consisting of an emitter follower Q2 which drives the power transistor Q3 operating Class A. The RF drive level control R31 in the pre-driver adjusts the output power of the transmitter. The driver amplifier provides input to the final power amplifier.

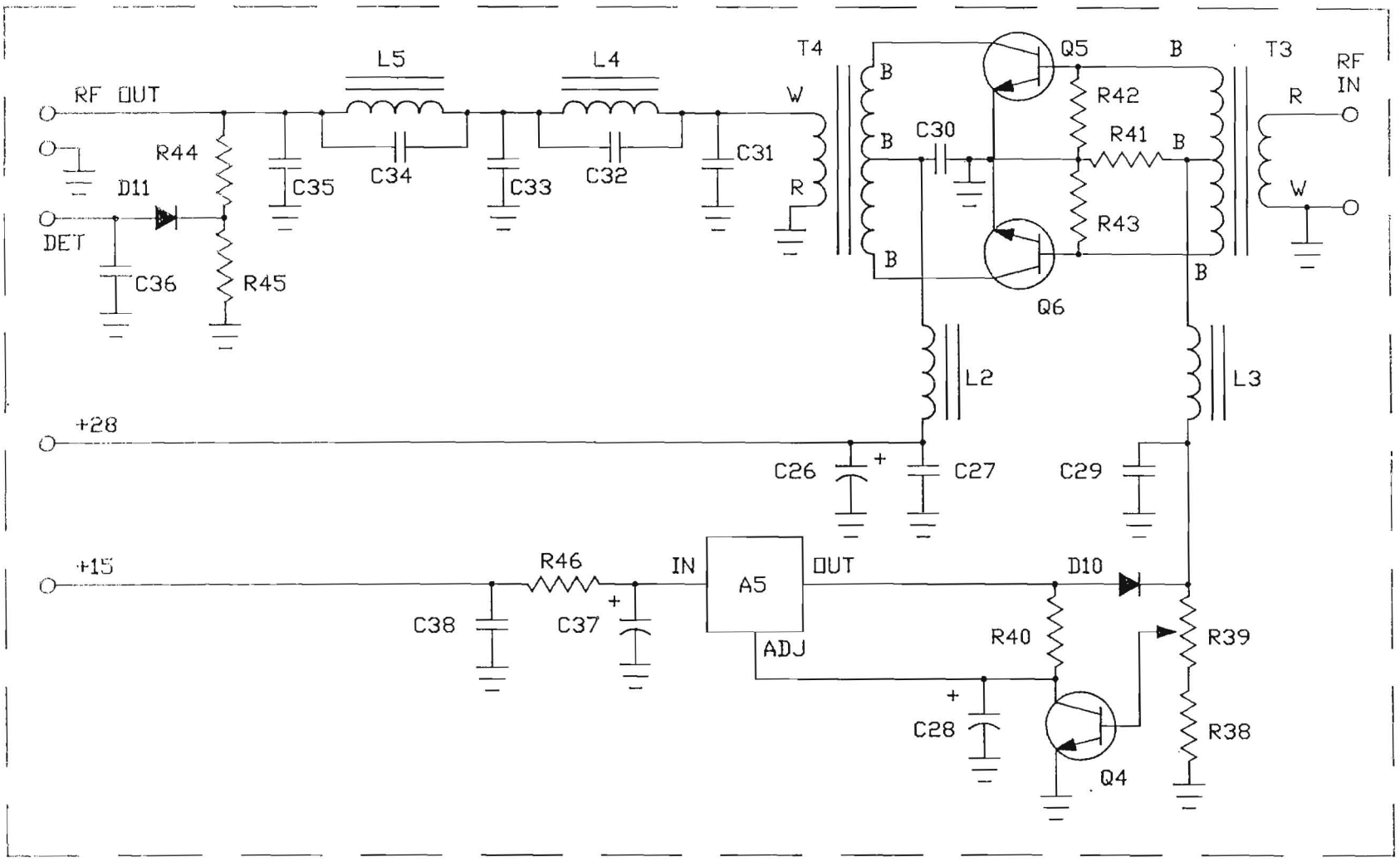
4.4 RF Power Amplifier

(Refer to RF Amplifier Fig. 4 and schematic) (Parts List s 6005-A]

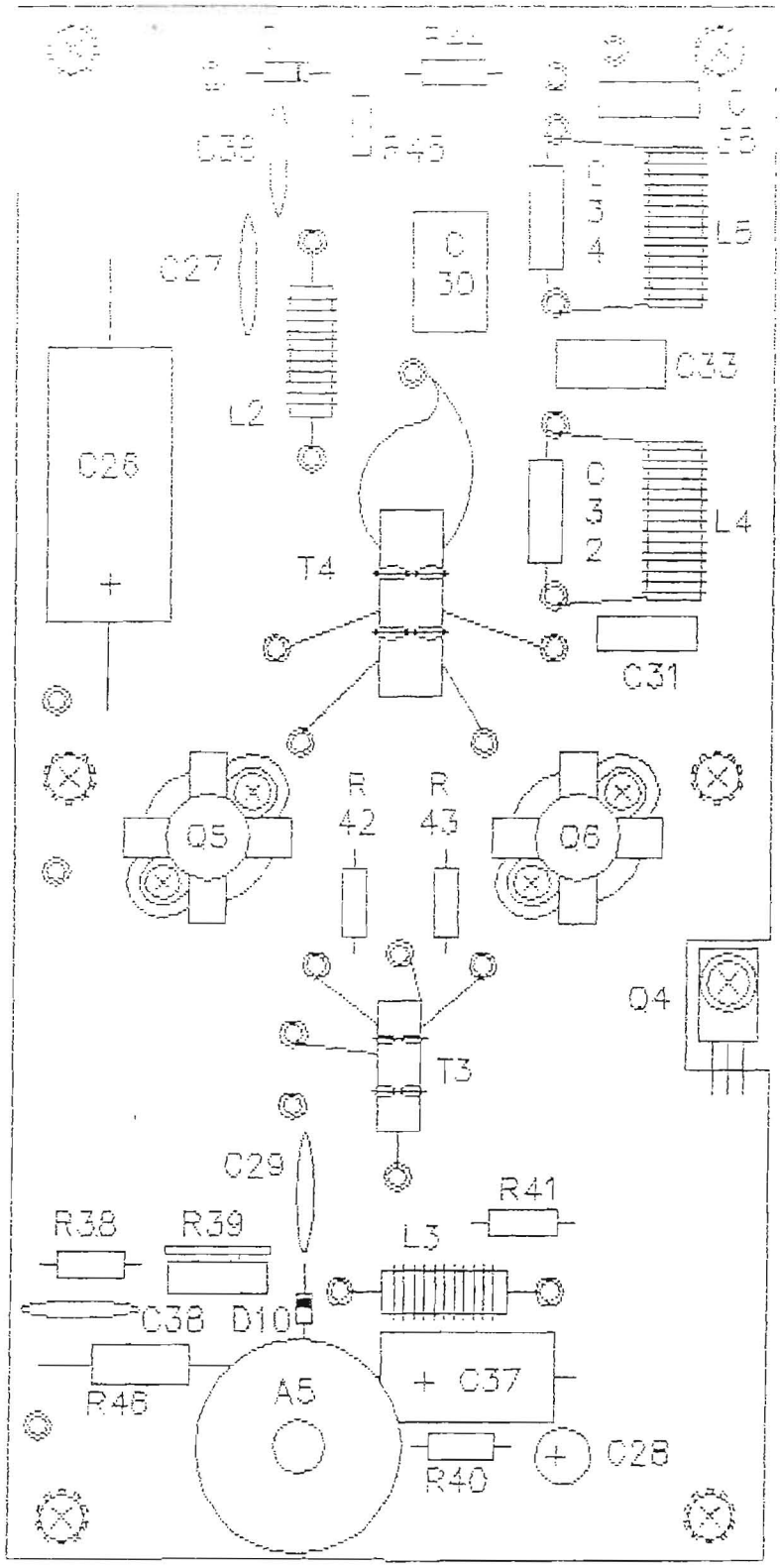
The final power amplifier utilizes a matched pair of balanced emitter transistors Q5 and Q6. Bias must be supplied for linear AM amplification. This operating bias is developed in a series regulated bias supply whose main components are A5 and Q4, Because the power amplifier is push-pull and the transistors are matched, a high degree of second harmonic rejection is automatically achieved. An elliptic function filter (C31 thru C35, L4 & L5) at the power amplifier output rejects higher order harmonics. Transmitter RF output is sampled to present Relative RF Output on the VU meter with the switch (S2), on the exciter, in the REL RF OUT position.

The elliptic filter is designed to operate over one-third (1/3) of the 530 kHz to 1710 kHz AM band. Sectioning the band with different filters is necessary because of the width of the band. For example; the second harmonic of 530 kHz falls within the band at 1060 kHz, and the third harmonic at 1590 kHz is also within the band. The low-band filter covers 530 kHz to 830 kHz, mid-band 840 kHz to 1270 kHz and high-band 1280 kHz to 1710 kHz.

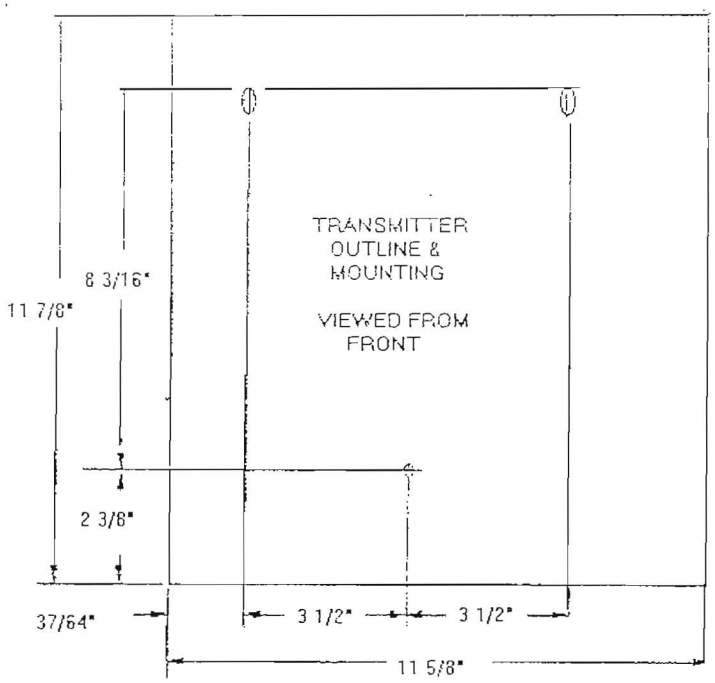
Any field change of frequency will be restricted to the operating range of the filter. For example: a 640 kHz transmitter can be changed to operate on 710 kHz by simply changing the crystal, but it cannot be operated above 830 kHz without first being returned to the factory for a new elliptic output filter and adjustment of the power amplifier.



AM-30P/60P/100P
RF POWER AMP MODULE RFA-30 SCHEMATIC
Dwg. No. 6006 REV. A



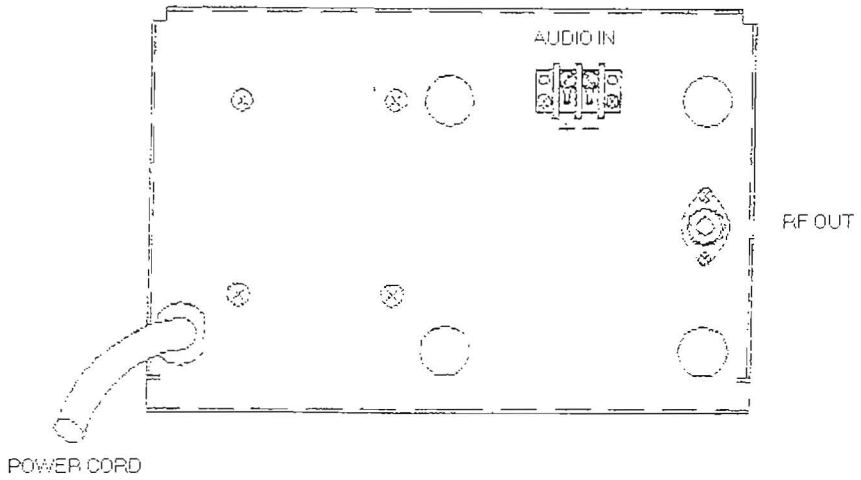
RF POWER AMP C 0 M P 0 N E N T L A YO U T FIG. 4



TRANSMITTER MOUNTING

DIMENSIONS

FIG. 7



CHASSIS VIEWED FROM BOTTOM

TRANSMITTER CONNECTIONS

FIG. 8

5.1 Location and Mounting

Select a location which will provide several inches of clearance on all sides of the transmitter. Clearance around the heat sink is especially important. Do not block the vent holes on the top and bottom of the chassis. Do not shelf-mount the transmitter as this will block the vent holes and interrupt the air circulation.

Do not mount the transmitter to an electrically conductive surface. We recommend a wood or similar backboard.

Holes are provided in the rear of the chassis for three (3) screws to mount the transmitter to a vertical surface. Screws, #10 x 5/8", are supplied. Refer to Fig. 7 for proper mounting.

5.2 Interfacing the Transmitter

AC power: The transmitter requires a standard 117 VAC, 50/60 Hz. outlet A 6 foot, 3 conductor line cord with 3 pin AC plug is supplied, **DO NOT REMOVE GROUND PIN FROM PLUG.**

AUDIO: The audio input impedance is 600-ohm transformer balanced. Any input level between -15 dBm and +15 dBm (0.14 Vrms to 4.3 Vrms) will provide 100% modulation (with the Audio Gain control R4 property set). Connect the audio feed line to the AUDIO IN terminal block on the bottom of the transmitter chassis. (see fig. 8)

RF Output: The RF output impedance is industry-standard 50 ohms, unbalanced, using an SO-239 UHF type connector (see Fig, 8). The RF output cable must be 50 ohm coaxial. Type RG-8/U is recommended. For short runs, type RG-58/U is acceptable.

NOTE: A strong RF field exists within a few feet of the transmitter and may affect the operation of other equipment located in close proximity to the transmitter.

6.0 CONTROL SETTINGS AND OPERATION

6.1 User Control Descriptions and Locations

A number of trim pots are located inside the transmitter. Some are factory set and sealed. Removing any of the seals will void the warranty.

User adjustable controls include :

Power Switch (S1) located on the power supply board. The red LED will be on when power is applied.

Meter Switch (S2) located below the meter on the exciter board. This switch selects the function of the meter to indicate Relative RF Power Output or Percent Modulation, [see section 4.3.1 and 4.4)

Audio Gain (R4) located on the upper left comer of the exciter. This adjusts the audio gain of the transmitter to provide 100% modulation for any audio input level between -15 dBm and +15 dBm.

RF Drive (R31) located lower center of exciter board. This control adjusts the RF drive to the final power amplifier for the desired RF output power between 10% and 100% of rated TPO.

6.2 Setup and Operation

Refer to section 6.1 of this manual and the operating instructions located on the inside of the transmitter front panel. With power switch (S1) off (down position) make sure RF Drive level (R31) and Audio Gain (R4) are at MINIMUM (full counter-clockwise).

1. Be sure all connections to and from the transmitter are secure,
2. Turn transmitter power switch on.
3. Place Meter Function Switch in the Relative RF Output position (REL. RF OUT).

[illegible] the Relative RF Output Meter. This meter reads RF output voltage referenced to full TPO. To convert the meter reading to power out in watts use the following equation:

(METER READING 100) X RATED TPO = WATTS (APPROX.)

Example: Meter reads- 70. TPO = 30 watts (70 /100)²x30 =14.7 watts

5. Apply program material (audio source] to transmitter Set Meter Function Switch to percent modulation position (% MOD).

6 Adjust Audio Gain Control (R4). Set gain so that meter reads no higher than 50% during loudest program material peaks.

NOTE: Modulation can also be set using an oscilloscope by connecting the scope probe across the RF output. Adjust the Audio Gain (R4) so that the negative modulation peaks are just beginning to pinch off the carrier, then back off Rl4 slightly. At a short distance from the transmitter, use any AM radio to listen for distortion and check the quality of the audio. Placing the radio close to the transmitter may cause input overloading to the radio and result in a misleading interpretation of signal quality.

7.0 BASIC TROUBLESHOOTING GUIDE

PROBLEM	POSSIBLE CAUSES
LED power indicator does not light	No Power on AC receptacle or F1 blown
No RF output indication	Fuse F1 and/or F2 blown.
	Drive control R31 set to minimum
	Meter switch (S2) in % MOD position
RF output reads off scale when control (R31) is advanced	Open RF output cable
Fuse (F2) blows after a short period of Operation	Defective Q1
No modulation indication with RF output	Audio GAIN control (R4) set to minimum
	No Audio from source.
Audio distortion heard on radio	Audio Gain set to high.
	Receiver is to close to transmitter.

8.0 MAINTENANCE

These transmitters are designed for continuous 24-hour service. Periodic checks of the transmitter and associated equipment are recommended to catch any problems that may rise.

10 PARTS LIST AND SCHEMATICS

Following this section is a complete set of parts list and schematics, along with a mainframe schematic. Refer to these lists for individual part values and LPB numbers

LPB PARTS LISTS

Shelf assembly – Assembly Number 6001-A

Symbol	Qty	Description	Part #
1	1	AM-30 FINAL ASSEMBLY	6002-A
1	1	RF FRONT PANEL	521-6034-A
3	2	LATCH GROMET-NYLON	309-1021
4	2	LATCH PLUNGER	309-1020
5	1	3' RG-58A/U COAX, W/PL-259	933-1040
6	1	AM-30/60 INSTRUCTION SHEET	441-6004-A
7	3	# 10 X ½" HEX HS SHEET MTL SCREW	301-6412
8	2	FORK LUG, # 6 STUD 22-18 GA WIRE	195-1015

RF POWER AMPLIFIER P/N 6005-A

1	1	POWER AMP PCB	671-6008
R39	1	TRIMPOT, 1K OHM	775-1080
R40	1	RES. 680 R, 1/2W, 5%	762-2117
R41	1	RES. 4.7 R, 1/2W, 5%	762-2065
R42, 43	2	RES. 22 R, 1/2W, 5%	762-2081
C27,29, 38	3	CAP. .1 UF, CER DISC 50V	174-2197
C28	1	CAP. 22UF, RADIAL 63V 20%	172-1067
C30	1	CAP. .33UF, MYLAR 100V 10%	175-1091
C37	1	CAP. 470 UF AL CAP AXIAL 50V	172-2153
A5	1	LM317T (TO-202)	363-1001
D10	1	DIODE, 1N4007	781-1037
Q4	1	TRANSISTOR, 2N5190	781-1004
Q5, Q6	2	PWR TRANSISTOR, SD-1407	782-1211
L2,L3,T3	3	FERRITE TORROID .75"	201-1005

T4	1	FERRITE TORROID [illegible]	201-1006
2	1	HEATSINK	333-6035-A
3	1	HEATSINK TO-202 PRESS ON	332-1005
4	5	SCREW, 4-40 X 3/8 PH PHILIPS	301-1108
5	6	SCREW, 6-32 X 1 /2 PH PHILIPS	301-1212
6	6	LOCKWASHER, EXT # 6	303-1010
7	6	KEPS NUT, 10-24	302-6020
9	4	LOCK WASHER, # 4	302-1004
11	1	MICA INSULATOR	789-1021
12-17		HOOK UP WIRE	931-10**
C31 Thru C35		SEE NOTES	
L4, L5		SEE NOTES	

NOTES.....

1. USE A THIN COST OF THERMAL HEATSINK COMPUND BETWEEN COMPONENT AND HEATSINK. SCRAPE PAINT IF REQUIRED.
2. 52 UH FERRITE CORE TORROIDAL – SEE SCD # 184-1005
3. RF TORROIDAL TRANSFORMER INPUT TRIFIAL- SEE SCD #865 1005
4. RF TORROIDAL TRASNFORMER OUTPUT –SEE SCD # 865-1010
5. QUANTITY EQUALS LENGTH IN INCHES
6. FILTER COMPONENT VALUES VS FREQUENCY RANGE

	-------- LOW BAND ----------	MID BAND----------	HIGH BAND ----------
	C31 3600PF (171-1218)	2400PF (171-1202)	2000PF (171-1197)
7.	C32 1000PF (171-1176)	680PF (171-1164)	200PF (171-1120)
8.	C33 5600PF (171-1236)	3600PF (171-1218)	3300PF (171-1215)
9.	C34 3300PF (171-1215)	2200PF (171-1200)	750PF (171-1167)
10.	C35 2200PF (171-1200)	1500PF (171-1188)	1600PF (171-1191)
11.	L4 9.3UH SCD #184-1032	6.1 UH SCD #184-1023	5.5UH SCD # 184-1021
12.	L5 5.8UH SCD #184-1024	8UH SCD #184-1018	4.0UH SCD # 184-1018

EXCITER BOARD ASSEMBLY P/N 6815-A

Symbol	Qty	Description	Part #	Notes
1	1	PCB, EXCITER- AM30/60/100	671-6013	
R3	1	RES. 620 OHM 1/2W, 5%	762-2116	
R4,R31	2	TRIMPOT, 10K VT	775-1130	
R5,R19,R51	3	RES. 10K OHM,1/2W, 5%	762-2145	
R6,R7,R47,	5	RES. 47K OHM 1/2W, 5%	762-2161	
R53,R54				
R16, R17,R22	3	RES. 1K OHM, 1/2W, 5%	762-2121	
R33, R34,	2	RES. 1K OHM 2W, 5%	762-4121	2
R9,R30	2	RES. 100K OHM 1/2W, 5%	762-2169	
R10,R11,R14	5	RES. 100 OHM 1/2W, 5%	763-4097	2(r14)
R21,R24				
R12,R55	2	TRIMPOT, 1K HZ	775-1085	1
R13,R18	2	RES. 1.8K OHM 1/2W, 5%	762-2127	
R20,R27	2	RES. 3K OHM 1/2W, 5%	762-2132	
R15,R23	2	RES. 820 OHM 1/2W, 5%	762-2119	
R25	1	RES. 47 OHM 1/2W, 5%	762-2089	
R26	1	RES. 1.3K OHM 1/2W, 5%	762-2124	
R28	1	TRIMPOT, HZ TMWHEEL	775-1135	1
R29	1	RES. 2.2K OHM 1/2W, 5%	762-2129	
R30	1	RES. 300 OHM 1/2W, 5%	762-2108	
R35	1	RES. 220K OHM 1/2W 5%	762-2177	
R36	1	RES. 50 OHM 5W, 5%	765-1247	2
R37	1	RES. 3.3 OHM 1/2W, 5%	762-2061	
R52	1	RES. 22K, 1/2W, 5%	762-2153	
C4,11,12, 14	7	CAP .1UF CER DISK 50V	174-1254	
C15, 18, 21				
C22.				
C5, C19, C25	3	CAP .001 UF CER DISK 1000V	174-1155	

[illegible]	[illegible]	CAP [illegible] AL CAP 50V –10,+75%	172-1117	
C7,C8,C9,C10, C16,C17, C20, C44	6	CAP 100UF AL CAP 25V –10,50%	172-1117	
C23	1	CAP .33 UF MYLAR 100V 10%	175-1091	

CONTINUED....

Symbol	Qty	Description	Part #	Notes
C24	1	CAP .15 UF MYLAR 100V 10%	175-1091	
A1,A6	2	IC RM741DC (14 PIN DIP)	361-1013	
A2	1	IC MC12061P (16 PIN DIP)	361-1005	
A3	1	IC LM7492PC (14 PIN DIP)	364-1001	
A4	1	IC MC1496P (14 PIN DIP)	361-1023	
D4	1	DIODE 1N4742A-12V	781-1072	
D5,6,7,8	4	DIODE, ZENER 1N270	781-1015	
D9	1	DIODE, ZENER 1N4733A-5.1V 1W	781-1063	
T2	1	TRANSFORMER, LINE IN	863-1075	
L1	1	FERRITE CORE 330 UH	184-1330	
L6	1	FERRITE TORROID .075"	201-1005	3
2	14	MAGNET, 20 AWG	939-1012	4
S2	1	SWITCH, DPDT	821-1013	
Q2	1	TRANSISTOR, 2N3904	782-1072	
Q3	1	TRANSISTOR, 2N3879	782-1069	5
X1	1	CRYSTAL		6
3	1	CRYSTAL SOCKET	216-1002	
4	1	VU METER, 1.5"	541-1001	
5	1	COPPER BUSS WIRE 20 AWG	935-1016	4
6	1	SOCKET, TRANSISTOR 3 PIN	789-1001	
7	1	HEATSINK, TO-66 PC MT	331-1012	
8	3	SOCKET, IC 14 PIN	365-1003	
9	1	SOCKET HEADER, 14 PIN	365-1010	
10	1	SOCKET, IC 16 PIN	365-1005	
11	2	SCREW 6-32 X 3/8 PH PHILIPS	301-1208	
12	2	NUT, 4-40 HEX	302-1005	
14	2	NUT W/LOCKWASHER KEPS	302-6018	
15	2	COPPER WIRE, 18 AWG	935-1017	4
16	1	PVC TUBING, CLEAR 20 AWG	936-1003	4

NOTES

1. MOUNT ON BOTTOM OF PCB
2. MOUNT SO BODY OF COMPONENT IS 1/8" TO 3/16" ABOVE PCB
3. 52 UH FERRITE CORE TORROIDAL SCG # 184-1005
4. QUANTITY EQUALS LENGTH IN INCHES
5. USE A THIN COAT OF THERMAL HEATSINK COMPOUND
6. 6X CRYSTAL, STANDARD TOLERANCE, 10KHZ SPACING

POWER SUPPLY ASSEMBLY P/N 6807-A

Symbol	Qty	Description	Part #
1	1	POWER SUPPLY PCA	671-6018
R1	1	RES. 1K OHM 1/2W, 5%	762-2121
R2	1	RES. 390 OHM 1/2W, 5%	762-2111
CR2	1	DIODE, ZENER 1N4751A-30	781-1081
CR3	1	RECTIFIER, 1N4007-1000V	781-1037
DL	1	LED, T 1 ¾ RED	473-1006
C2	1	CAP 220UF AL CAP 50V -10/+50%	172-2132
C3	1	CAP 6800UF AL CAP 25V –10/+50%	172-2228
F1	1	FUSE 2 ½ AMP, 250V SLOW BLOW	691-1017
	1	QUICK FIT FUSE COVER	699-1020
2	2	FUSE CLIPS, PC MOUNT	699-1001

CHASSIS ASSEMBLY P/N 6715-A

Symbol	Qty	Description	Part #	Note
1	1	RF CHASSIS	521-6036-C	
C1	1	CAP 9600UF AL CAP 50V	172-3040	
V1	1	VARISTOR 40VAC PEAK	695-1020	
T1	1	TRANSFORMER, POWER 56V 2A	861-1065	
2	1	MOUNTING BRACKET FOR CAP	172-3043	
	1	POWER CORD, 3 CNDCTR	939-1003	
4	3	SCREW, 6-32X 3/8 PH PHLIPS	301-1208	
5	1	SCREW, 6-32 X 5/8 PH PHLIPS	301—1214	
6	4	SCREW, 10-32 X 1/2PH PHLIPS	301-1512	
8	4	HEX NUT, W/LOCKWASHER 6-32	302-6018	
9	4	HEX NUT, 10-32	302-1020	
12	4	LOCKWASHER, EXR TOOTH # 10	303-1020	
13	2	SOLDER LUG, # 10	306-1020	
14	4	1" NYLON VENT PLUG	309-7025	
15	25	18 AWG HOOK UP WIRE BLACK	931-1021	
16	10	18 AWG HOOK UP WIRE RED	931-1022	
17	3	20 AWG PVC TUBING	936-1003	
	1	TERM BLOCK, 2 SCR	191-1003	
	1	CONNECRTOR, SO-239 UHF	194-1006	

Note: wire quantity is in inches

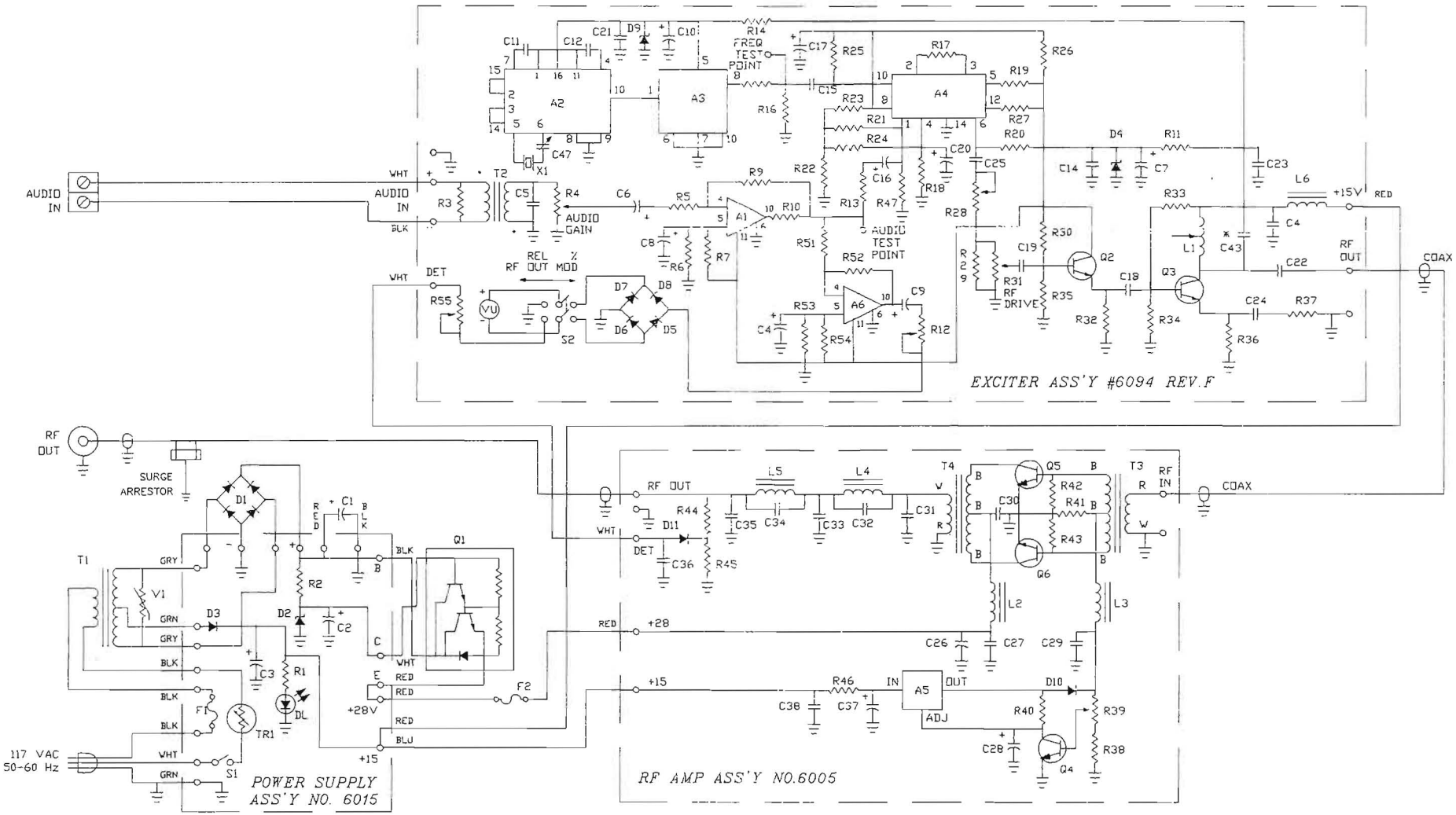
SIDE PANEL ASSEMBLY P/N 6710-A

Symbol	Qty	Description	Part #	Notes
1	1	Power supply assembly	6015-A	
2	1	RF side panel, drilled	521-6033-C	1
Q1	1	TSTR, NPN DARLINGTON MJF-6388	782-1127	2
D1	1	BRIDGE RECTIFIER 50V-6A	781-1155	2
S1	1	SWITCH, SPDT TOGGLE	821-1005	
4	1	SCREW, 4-40X 3/8 PH PHILLIPS	301-1108	
5	8	SCREW, 6-32X1/4 PH PHILLIPS	301-1204	
6	1	SCREW, 6-32X3/8 PH PHILLIPS	301-1208	
7	1	SCREW, 6-32X5/8 PH PHILLIPS	301-1214	
8	1	HEX NUT 4-40	302-1005	
9	2	KEPS NUT W/WASHER 6-32	302-6018	
10	1	LOCKWASHER, # 4	303-1005	
11	9	LOCKWASHER, # 6	303-1010	
12	4	SPACER, HEX 6-32X3/8	304-1078	
13	1	SOLDER LUG # 6	306-1010	
18	4	22 AWG HOOK UP WIRE BLACK	931-1002	3
19	9	22 AWG HOOK UP WIRE GREEN	931-1004	3
20	18	22 AWG HOOK UP WIRE BLUE	931-1006	3
21	4	18 AWG HOOK UP WIRE WHITE	931-1020	3
22	40	18 AWG HOOK UP WIRE BLACK	931-1021	3
23	48	18 AWG HOOK UP WIRE RED	931-1022	3
24	19	18 AWG HOOK UP WIRE GRAY	931-1029	3
25	3	18 AWG TINNED COPPER BUS	935-1017	3

27	5	6" SELF LOCKING TY WRAP	937-1004
28	1	1" ADHESIVE BASE TIE WRAP HLDR	937-1012

NOTES

1. REMOVE PAINT UNDER D1 & Q1 MTG LOCATION IF NECESSARY, APPLY A THIN COAT OF THERMAL HEATSINK COMPOUND
2. USE A THIN COAT OF THERMAL HEATSINK COMPOUND BETWEEN COMPONENT AND HEATSINK.. SCRPAE PAINT IF NECESSARY
3. QUANTITY EQUALS LENGTH IN INCHES



MODEL AM-30P TRANSMITTER SCHEMATIC
DRAWING # 6096 REV.C

NOTE.

1. R12, R28, R55 ON EXCITER ARE FACTORY SET
2. C43 IS FACTORY SELECTED