RCA

Tom Mooney

BTA-5SS

RCA

Broadcast
Equipment

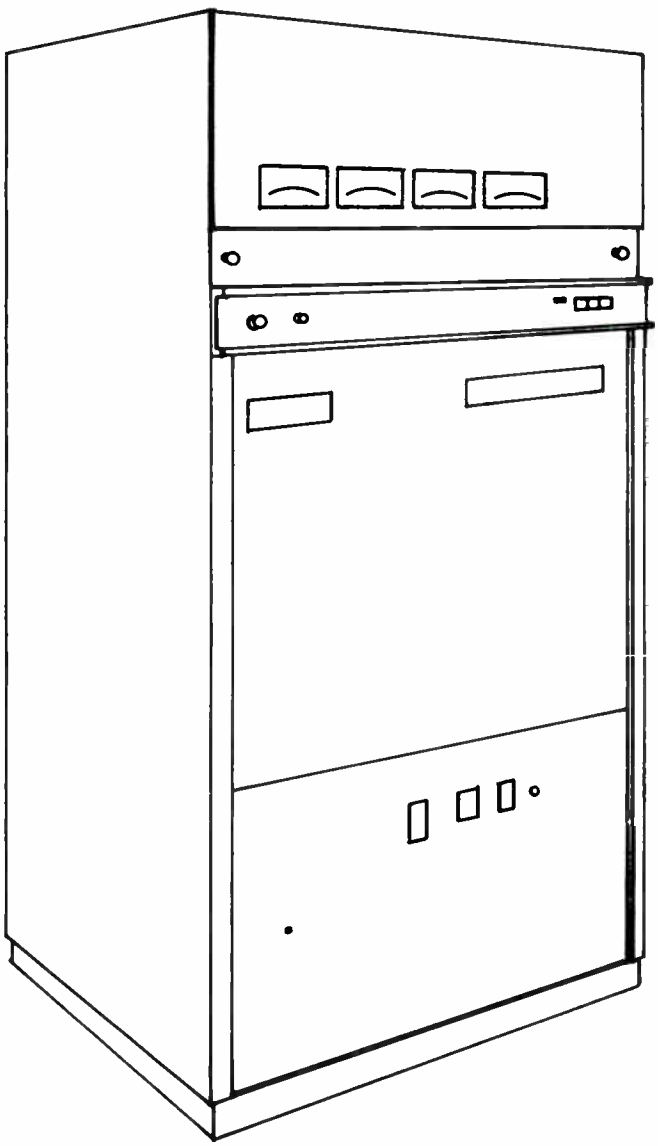
BTA-5SS
AM TRANSMITTER
INSTRUCTIONS

ES-560988

IB-8025270PA

RCA

Broadcast Equipment



BTA-5SS

AM TRANSMITTER INSTRUCTIONS

ES-560988

Commercial Communications Systems Division/Front and Cooper Streets/Camden, New Jersey, U.S.A., 08102

PRINTED IN U.S.A.

DL871M

IB-8025270PA

WARNING

VOLTAGES THAT ARE DANGEROUS TO LIFE ARE INVOLVED IN THE OPERATION OF THIS ELECTRONIC EQUIPMENT. OPERATING PERSONNEL MUST AT ALL TIMES OBSERVE ALL SAFETY REGULATIONS. DO NOT CHANGE TUBES OR MAKE ADJUSTMENTS INSIDE THE EQUIPMENT WITH VOLTAGES APPLIED. DANGEROUS CONDITIONS MAY EXIST IN CIRCUITS WITH POWER CONTROLS IN THE OFF POSITION DUE TO CHARGES RETAINED BY CAPACITORS, ETC. ALWAYS DISCHARGE AND GROUND CIRCUITS PRIOR TO TOUCHING THEM TO AVOID PERSONAL INJURY OR LOSS OF LIFE.

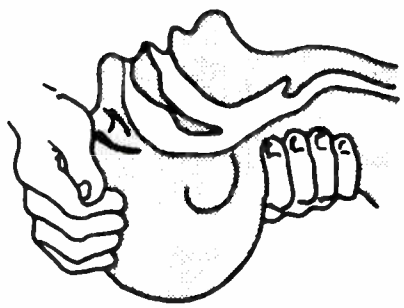
EMERGENCY
FIRST AID INSTRUCTIONS

Personnel engaged in the installation, operation, or maintenance of this equipment or similar equipment are urged to become familiar with the following rules both in theory and practice. It is the duty of all operating personnel to be prepared to give adequate Emergency First Aid and thereby prevent avoidable loss of life.

RESCUE BREATHING

1. Find out if the person is breathing.

   You must find out if the person has stopped breathing. If you think he is not breathing, place him flat on his back. Put your ear close to his mouth and look at his chest. If he is breathing, you can feel the air on your cheek. You can see his chest move up and down. If you do not feel the air or see the chest move, he is not breathing.



2. If he is not, open the airway by tilting his head backward.

   Lift up his neck with one hand and push down on his forehead with the other. This opens the airway. Sometimes doing this will let the person breathe again by himself. If it does not, begin rescue breathing.

3. If he is still not breathing, begin rescue breathing:

   Keep his head tilted backward.
   Pinch his nose shut.
   Put your mouth tightly over his mouth.
   Blow into his mouth once every five seconds.
   Do Not Stop Rescue Breathing Until Help Comes.

LOOSEN CLOTHING – KEEP WARM

Do this when the victim is breathing by himself or help is available. Keep him quiet as possible and from becoming chilled. Otherwise, treat him for shock.

BURNS

SKIN REDDENED: Apply ice cold water to burned area to prevent burn from going deeper into skin tissue. Cover area with clean sheet or cloth to keep away air. Consult a physician.

SKIN BLISTERED OR FLESH CHARRED: Apply ice cold water to burned area to prevent burn from going deeper into skin tissue. Cover area with clean sheet or cloth to keep away air. Treat victim for shock and take to hospital.

EXTENSIVE BURN-SKIN BROKEN: Cover area with clean sheet or cloth to keep away air. Treat victim for shock and take to hospital.

WARRANTY ITEMS

Particular parts and/or equipment covered by warranty are specifically stated as such in the warranty or contract given to the customer at the time of sale. The warranty or contract also stipulates the conditions under which the warranty may be exercised.

To obtain a new replacement for such warranty items, contact your local RCA sales office and please supply Product Identification (including the Original Invoice Number, MI Number, Type Number, Model Number, and Serial Number) and Replacement Part Identification (including Stock Number and Description). Requests for warranty replacements may be unduly delayed if all this information is not supplied.

Direct all requests for Warranty Replacement Parts to TECH ALERT or your local RCA Sales Representative or his office.

EQUIPMENT LOST OR DAMAGED IN TRANSIT

When delivering the equipment to you, the truck driver or carrier's agent will present a receipt for your signature. Do not sign it until you have (a) inspected the containers for visible signs of damage and (b) counted the containers and compared with the amount shown on the shipping papers. If a shortage or if evidence of damage is noted, insist that notation to that effect be made on the shipping papers before you sign them.

Further, after receiving the equipment, unpack it and inspect thoroughly for concealed damage. If concealed damage is discovered, immediately notify the carrier, confirming the notification in writing, and secure an inspection report. This item should be unpacked and inspected for damage WITHIN 15 DAYS after receipt. Report all shortages and damages to RCA, Commercial Communication Systems Division – Camden, New Jersey 08102.

RCA will file all claims for loss and damage on this equipment so long as the inspection report is obtained. Disposition of the damaged item will be furnished by RCA.

FIELD ENGINEERING SERVICE

RCA Field Engineering Service is available at current rates. Requests for field engineering service may be addressed to your RCA Broadcast Field Representative or the RCA Service Company, Incorporated — 102 Gaither Drive — Mt. Laurel, New Jersey 08054. Telephone (609) 778-0770.

TECH ALERT

Emergency 24 hour telephone consultation service for technical problems is available. Call TECH ALERT at (609) 338-3434. Telex messages will be forwarded to the addressee upon receipt. Western Union telex number is 83-4450.

FACTORY REPAIR OR EQUIPMENT REFURBISHING

Factory repair or refurbishing of customer owned equipment is available. Request for this service may be arranged through RCA Customer Repair and Engineering — 5815 Magnolia Avenue — Pennsauken, New Jersey 08109. Telephone (609) 338-5779.

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

LIST OF TABLES

LIST OF REVISED, ADDED OR DELETED PAGES

The following is a list of the pages in this Instruction Book that have been Revised, Added, or Deleted with their effective date of change:

Cover Page	Revised 8-81
Title Page	Revised 8-81
Pages i through v	Original
Pages vi, vii	Revised 8-81
Pages viii, ix	Original
Pages x, 1	Revised 8-81
Pages 2, 3	Original
Page 4	Revised 8-81
Pages 5 through 8	Original
Page 9	Revised 8-81
Page 10	Original
Pages 11, 12, 13	Revised 8-81
Page 14	Original
Page 15	Revised 8-81
Pages 16 through 22	Original
Page 23	Revised 8-81
Pages 24 through 33	Original
Page 34	Revised 8-81
Page 35	Original
Page 36	Revised 8-81
Pages 37 through 48	Original
Pages 49 through 53	Revised 8-81
Pages 54 through 67	Original
Pages 68 through 72	Revised 8-81
Pages 73 through 78	Original

CHANGED PAGES

CHANGE SYMBOL

Changed text including legends, figure titles, and deletion notes, are indicated by a 1/16 - inch black vertical line in the outer margins, approximately 1/16" from the text.

CHANGED PAGES

Changed pages carry in the lower right hand corner of even numbered pages or in the lower left hand corner of odd numbered pages the change date.

TECHNICAL DATA

ELECTRICAL SPECIFICATIONS

Frequency Range	525 kHz to 1625 kHz
Power Output, Nominal	5000 watts
Power Output, Reserve Capacity	5500 watts
Impedance	50 ohms, unbalanced, resistive standard Optional 40 to 300 ohms, unbalanced
Connector	Specify bowl insulator, 1-5/8" EIA flange, 1-5/8" EIA pressurized flange, or 1-5/8" flexible line
RF Harmonics	Meets or exceeds FCC and CCIR specifications
Frequency Stability	±3.5 Hz
Carrier Shift	Less than 1.5% at 100% modulation
Audio Frequency Response	±1.0 dB, 20 to 12,000 Hz
Audio Frequency Distortion	3% Max. 30 to 12,000 Hz (reference 95% at 1 kHz modulation)
Noise (Unweighted)	-60 dB or better at 100% modulation
Positive Peak Capability	125% positive peak modulation capability at 5.5 kW
Overall Efficiency	60% or better
Audio Input:	
Level	+ 10 dBm ±1 dB
Impedance	600 ohms balanced or unbalanced. Isolation transformer
Modulation	Pulse linear
Synchronization	2 kHz audio circuits
Monitor Output	10V pp rf at 50-70 ohms
Remote Control	Normal interfaces
Power Requirements	
Line	208/240 volts, or optional 380/415 volts, ±5%
Frequency	47 to 63 Hz
Type	3 phase, 3 wire
Power Factor	95% or better
Power Consumption (Estimate) at 5 kW:	
At 0% Modulation	8.3 kW
At 85% Modulation	10.5 kW
At 100% Modulation	11.4 kW

MECHANICAL SPECIFICATIONS

Height	77 inches (195.6 cm)
Width	36 inches (91.4 cm)
Depth	36 inches (91.4 cm)
Weight, Net (Approximate)	776 lbs. (352 kg)
Weight, Shipping (Approximate)	1050 lbs. (476 kg)
Ambient Temperature Range	-20°C to 50°C
Altitude	Sea level to 7500 feet (2286 m)
Cooling	Ambient air 500 ft/min^3

8/81

EQUIPMENT LIST
ES-560988

Quantity	Description	Reference
1	BTA-5SS Solid State AM Transmitter	MI-563500
1	High Current Supply Transformer NOTE: Use MI-563503-1 for 208/240V input Use MI-563503-2 for 380/415V input	SEE NOTE
1*	Circuit Breaker Kit	MI-563501-1
1**	Conversion Kit for 380/415V 4 Wire Operation NOTE: When this kit is used, delete high current transformer and circuit breaker kit above	ES-560988
1	RF Output Connection (A10J1) NOTE: Supply 1 of the following, as specified by sales order: MI-19406A Dome insulator for open line MI-34613-1 Adapter for flexible 7/8" line MI-34613-2 Adapter for rigid 1 5/8" line MI-34613-3 Adapter for pressurized flexible 7/8" line	SEE NOTE
2	Instruction Book	IB-8025270
1*	Nameplate	MI-563388
1	Touch Up Kit	MI-563299
1*	RF Combining Transformer NOTE: Supply 1 of the following, depending on frequency: MI-563506-1 for 525 - 775 kHz MI-563506-2 for 776 - 1569 kHz MI-563506-3 for 1570 - 1705 kHz	SEE NOTE
1*	Set of Frequency Determining Parts NOTE: Supply 1 of the following, depending on operating frequency: ES-563025- 10, FD Parts, 525 to 550 kHz, 50 ohm output ES-563025- 20, FD Parts, 551 to 560 kHz, 50 ohm output ES-563025- 30, FD Parts, 561 to 570 kHz, 50 ohm output ES-563025- 40, FD Parts, 571 to 595 kHz, 50 ohm output ES-563025- 50, FD Parts, 596 to 625 kHz, 50 ohm output ES-563025- 60, FD Parts, 626 to 630 kHz, 50 ohm output ES-563025- 70, FD Parts, 631 to 645 kHz, 50 ohm output ES-563025- 80, FD Parts, 646 to 650 kHz, 50 ohm output ES-563025- 90, FD Parts, 651 to 675 kHz, 50 ohm output ES-563025-100, FD Parts, 676 to 680 kHz, 50 ohm output ES-563025-110, FD Parts, 681 to 690 kHz, 50 ohm output ES-563025-120, FD Parts, 691 to 700 kHz, 50 ohm output ES-563025-130, FD Parts, 701 to 710 kHz, 50 ohm output ES-563025-140, FD Parts, 711 to 760 kHz, 50 ohm output ES-563025-150, FD Parts, 761 to 850 kHz, 50 ohm output ES-563025-160, FD Parts, 851 to 880 kHz, 50 ohm output ES-563025-170, FD Parts, 881 to 930 kHz, 50 ohm output ES-563025-180, FD Parts, 931 to 950 kHz, 50 ohm output ES-563025-190, FD Parts, 951 to 1000 kHz, 50 ohm output ES-563025-200, FD Parts, 1001 to 1020 kHz, 50 ohm output ES-563025-210, FD Parts, 1021 to 1050 kHz, 50 ohm output ES-563025-220, FD Parts, 1051 to 1100 kHz, 50 ohm output ES-563025-230, FD Parts, 1101 to 1140 kHz, 50 ohm output ES-563025-240, FD Parts, 1141 to 1150 kHz, 50 ohm output	SEE NOTE

EQUIPMENT LIST (Cont.)

Quantity	Description	Reference
	ES-563025-250, FD Parts, 1151 to 1160 kHz, 50 ohm output	
	ES-563025-260, FD Parts, 1161 to 1250 kHz, 50 ohm output	
	ES-563025-270, FD Parts, 1251 to 1280 kHz, 50 ohm output	
	ES-563025-280, FD Parts, 1281 to 1300 kHz, 50 ohm output	
	ES-563025-290, FD Parts, 1301 to 1320 kHz, 50 ohm output	
	ES-563025-300, FD Parts, 1321 to 1350 kHz, 50 ohm output	
	ES-563025-310, FD Parts, 1351 to 1375 kHz, 50 ohm output	
	ES-563025-320, FD Parts, 1376 to 1440 kHz, 50 ohm output	
	ES-563025-330, FD Parts, 1441 to 1450 kHz, 50 ohm output	
	ES-563025-340, FD Parts, 1451 to 1550 kHz, 50 ohm output	
	ES-563025-350, FD Parts, 1551 to 1569 kHz, 50 ohm output	
	ES-563025-360, FD Parts, 1570 to 1650 kHz, 50 ohm output	
	ES-563025-370, FD Parts, 1651 to 1705 kHz, 50 ohm output	
1*	PW Board, PA Balance (A8A4)	SEE NOTE
	NOTE: Supply 1 of the following, depending on frequency:	
	MI-563511-1 for 525 - 694 kHz	
	MI-563511-2 for 695 - 919 kHz	
	MI-563511-3 for 920 - 1216 kHz	
	MI-563511-4 for 1217 - 1705 kHz	
1**	Power Cutback Kit	MI-563509
1**	Remote Power Adjust Kit	MI-563513
1**	Extension Metering Panel	MI-563508
1**	Local Control Panel	MI-563512
7*	RF Amplifier Board (A6A1, A6A4-9)	SEE NOTE
	NOTE: Use MI-563505-1 below 1000 kHz Use MI-563505-2 above 1000 kHz	
***	Spare RF Amplifier Board (A6A1, A6A4-9)	MI-563505
***	Spare Modulator Driver Board (A5A1)	MI-563504
***	Spare Modulator Board (A5A2-5)	MI-563510
***	Spare Offset Regulator Board (A2A5)	MI-563527-1
***	Spare Modulation Generator Board (A2A1)	MI-563527-2
***	Spare RF Pre-Driver Board (A2A3)	MI-562527-3
***	Spare Linearity Power Supply Board (A9A1)	MI-563527-4
***	Spare PA Drive Detector Board (A6A2)	MI-563527-5
***	Spare RF Generator Board (A2A2)	MI-563527-6
***	Spare Transmitter Control Interface Board (A4A1A)	MI-563527-8
***	Spare Control Logic Board (A4A1B)	MI-563527-9
***	Spare Opto/Metering Board (A8A1)	MI-563527-10
***	Spare PA Balance Board (A8A2)	MI-563527-11
***	Spare PA Linearity Connector Board (A6A3)	MI-563527-13
***	Spare RF Pre-Driver Power Supply Board (A10A2)	MI-563527-14
***	Spare Power Cutback Board (A2A4)	MI-563527-15
***	Spare Modulator Sample Board (A8A5)	MI-563527-16
***	Spare Logic Baby Board (A4A3)	MI-563527-17
***	Spare Overload Board (A2A6)	MI-563527-18

* Items that are shipped installed in the transmitter, when transmitter is factory tuned.

** Optional items supplied in quantity shown only if specified on sales order.

*** Optional items supplied only if specified and in quantities shown on sales order.

RECOMMENDED TEST EQUIPMENT

Manufacturer & Model*	Equipment
Tektronix 7603	Oscilloscope Main Frame
Tektronix 7A13 & 7A18, 7B50	Plug-Ins for above
Tektronix P6022/134	Current Probe and Amplifier
Tektronix P6303/TM501/AM503	Current Probe and Amplifier
Pearson Model 110	Current Transformer
Tektronix 7L5 Option 25	Spectrum Analyzer Plug-in
Hewlett Packard 4815A	Vector Impedance Meter
Hewlett Packard 3465B	Multimeter
(See Figure 12)	PA Voltage Filter
RCA BW-52	Modulation Monitor
Marconi TF2000	Audio Generator
Hewlett Packard 334A	Distortion Analyzer
Bird 8738	RF Load, 50 OHM, 10 KW, water cooled
120 OHM, 1/2 W, Film	Resistor
Hewlett Packard 5314A	Counter
Delta TCA-10/20 EXR	RF Current Meter
Delta OIB-1	Operating Bridge

* or equivalent

TABLE 1. INSTALLATION AND OPERATING DRAWING LIST

3478214	Rev 1	Installation
3749702	Rev 2	System (Assembly)
3478316	Rev 0	Block Diagram

For list of Schematics, see table 4.

INSTALLATION PLANNING

GENERAL

The first step in the installation of the BTA-5SS AM Transmitter is to determine the equipment layout and to make provisions for the necessary external connections. Outline dimensions and input/output points are shown on the Installation Drawing (3478214).

Factors to be considered in layout are incoming power lines, accessibility of a good station ground, in-the-floor wire ducts and the route for the transmission line to the antenna. The room in which the transmitter is to be installed should be well enough ventilated to insure that the ambient temperature range listed in the TECHNICAL SUMMARY will not be exceeded.

Since some of the optional and associated items include their own instruction books, the installation procedure for these units will not be repeated. Reference should be made to the Instruction Book accompanying such equipment.

Disconnect switches and wiring must be provided for items such as the transmitter room exhaust fan and monitoring racks. The tower lighting circuit should also be planned. No material is provided for these items.

Wiring to and from the transmitter should be carried in a conduit or a trench beneath the transmitter. The Installation Drawing (3478214) indicates where this wiring should enter the transmitter. The transmitter ground connection must be connected to station ground using a four-inch wide copper strap or equivalent.

It is not intended that these instructions shall supersede any applicable local codes. Where the instructions in this book conflict with any local electrical, construction or building codes, the provisions of the applicable codes should be followed.

POWER LINE TRANSIENT ARRESTORS

Modern broadcast engineering is making the maximum utilization of solid state devices. The many advantages of using these devices is well known, and it is generally well known that solid state devices are much more vulnerable to transient overvoltage conditions than are tubes and electromechanical relays. There are numerous causes of transient voltage surges on power lines, the most common of which is probably lightning; however, since we have no control over the cause, we must concern ourselves with possible means of preventing the detrimental effects.

There are some devices, known as secondary arrestors, which can protect your equipment from most transient surges which might be encountered on a power line. If you do not have such protection on your power line, it is recommended that you take steps to have it installed.

Also, it is recommended that arrestors be installed on any power line leaving the transmitter building and extending up the tower, such as tower lighting circuits and antenna deicer power lines. Transients are very likely to be induced into these circuits from lightning hits to the tower or hits at distances up to several miles away, and from static discharges from low clouds even when electrical storms are non-existent. These transients can feed back into other equipment which is connected across the same phase of the power line.

There are numerous types of arrestors available at a wide range in prices. The manufacturers of these devices will gladly supply you with literature describing the application of their particular units. Listed in table 2 are several manufacturers who can be contacted for recommendations of what to use on your particular power line. This information is not intended in any way to be an endorsement of any of the listed vendors, nor to exclude any other vendors who may have a similar product to sell. It is only intended to advise you of known sources of information, engineering assistance, and available arrestors. The decision of which product to buy should be made on the advice of your power company and/or electrical contractor.

TABLE 2. TRANSIENT ARRESTOR MANUFACTURERS

Dale Electronics P.O. Box 180 Yankton, SD 57078 Phone: 605-665-9301	Lightning Elimination Associates 12516 Lakeland Road Santa Fe Springs, CA 90670 Phone: 213-944-0916
Wilkinson Electronics Inc. 701 Chestnut Street Trainer, PA 19013 Phone: 215-497-5100	Transtector Associates 532 Monterey Pass Road Monterey, CA 91754 Phone: 800-648-3387
Joslyn Electronic Systems Santa Barbara Research Park P.O. Box 817 Goleta, CA 93017 Phone: 805-968-3551	General Electric Company W. Genesee Street Auburn, NY 13021 Phone: 315-253-7321

AC INPUT WIRING

The information in table 3 and the attached curves are supplied for proper co-ordination of the branch circuit serving the transmitter with the transmitter protection. It is important that the fault current available from the branch circuit be limited to the "Breaker Interrupting Rating" to prevent damage to the BTA-5SS Main Breaker should a fault occur in the transmitter. The circuit protection must be chosen so that the turn-on surge of the transmitter can be accommodated. In addition, it is usually desirable that the fuse or circuit breaker used in the branch circuit be chosen so that the main breaker in the transmitter will open under an overcurrent condition, before the branch circuit protection opens. This latter requirement is not

as important if the location of the branch circuit fuse or circuit breaker is such that it is as easily accessible to the transmitter operator as the transmitter breaker.

Figure 1A shows a typical installation with the fuse sized so that it will suitably limit the available fault current to the transmitter, yet allow the transmitter breaker to open at moderate values of overload.

Figure 1B uses a smaller fuse which will still limit the fault current to 10,000 amps. However, the time characteristic of the fuse is such that it may blow under overload before the transmitter breaker operates. Note that the use of a smaller amperage fuse permits the installation to be made with smaller wire sizes.

TABLE 3. POWER INPUT DATA

Phase to Phase Voltage	208	240	380	415
Phase Amps at 0% Mod	23	20	13	12
Phase Amps at 100% Mod	31	27	17	16
Phase Amps at Turn-On (for 10 millisec)	700	600	378	350
Breaker Interrupting Rating (Symmetrical rms Amps)	10,000	10,000	14,000	14,000
Main Breaker in Transmitter (Amps)	50	50	30	30

VENTILATION REQUIREMENTS

Maximum temperature of air entering the transmitter through air filters must not exceed 50°C (122°F).Temperature rise in the transmitter room due to the BTA-5SS will be minimal since less than 5,000 watts are dissipated in the transmitter as heat under normal conditions.

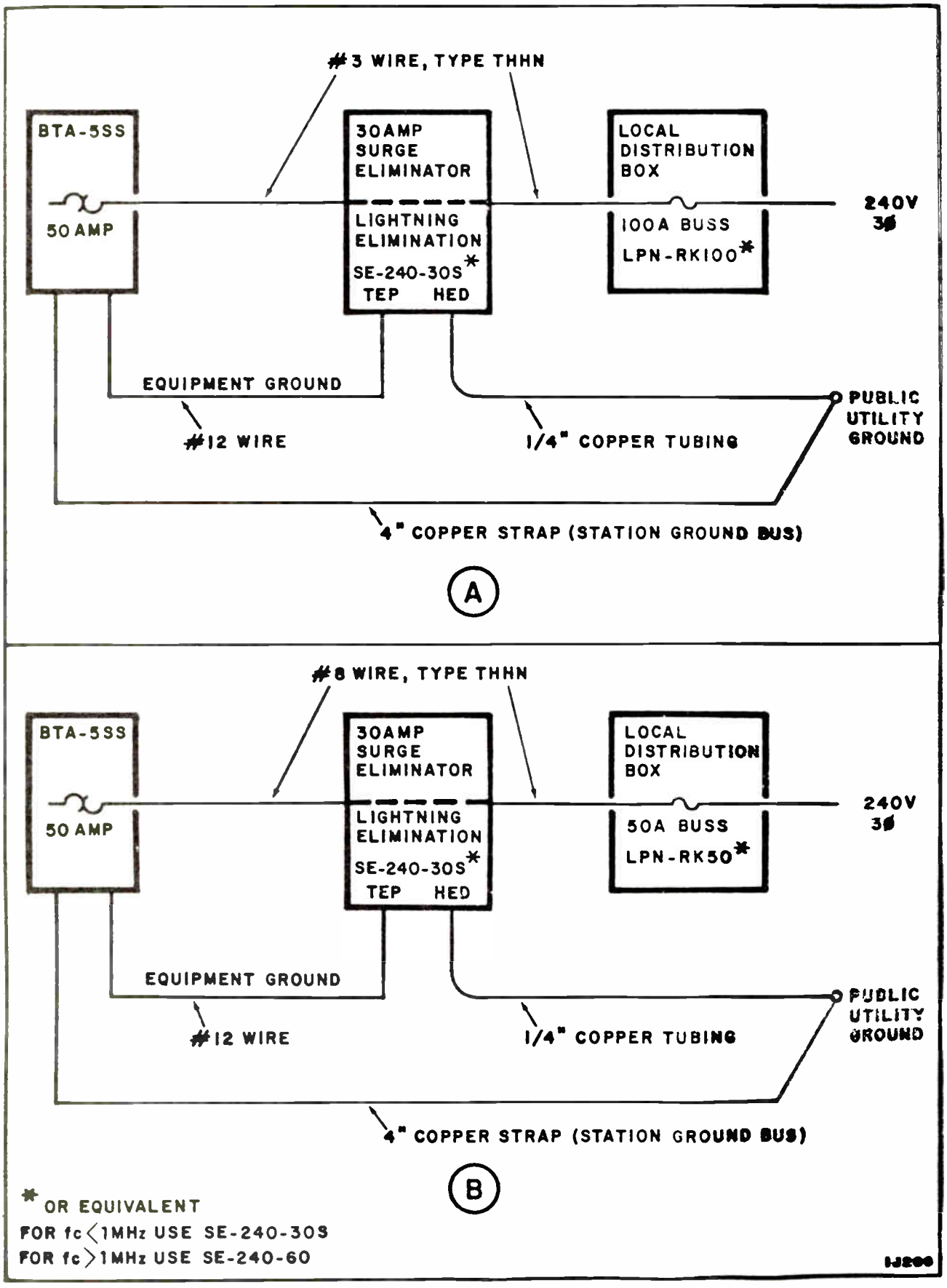


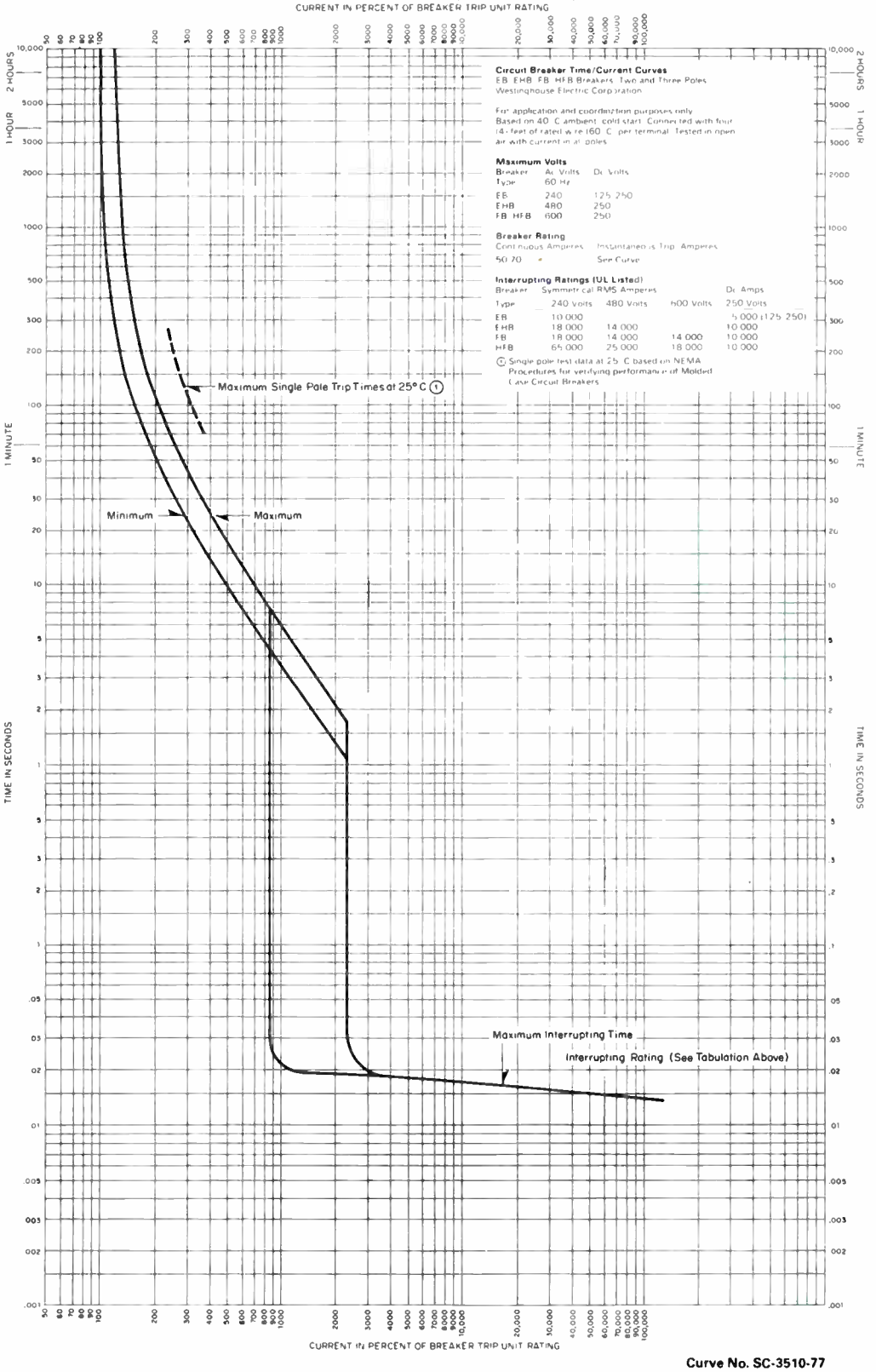
Figure 1. Transmitter Installation Wiring

Application Data
29-161

AB DE-ION® CIRCUIT BREAKERS

Types EB, EHB, FB, MARK 75® HFB

Type EB: 50-70 Amperes, 2 and 3 Poles, 240 Volts Ac Max.
Type EHB: 50-70 Amperes, 2 and 3 Poles, 480 Volts Ac Max.
Type FB: 50-70 Amperes, 2 and 3 Poles, 600 Volts Ac Max.
Type HFB: 50-70 Amperes, 2 and 3 Poles, 600 Volts Ac Max.



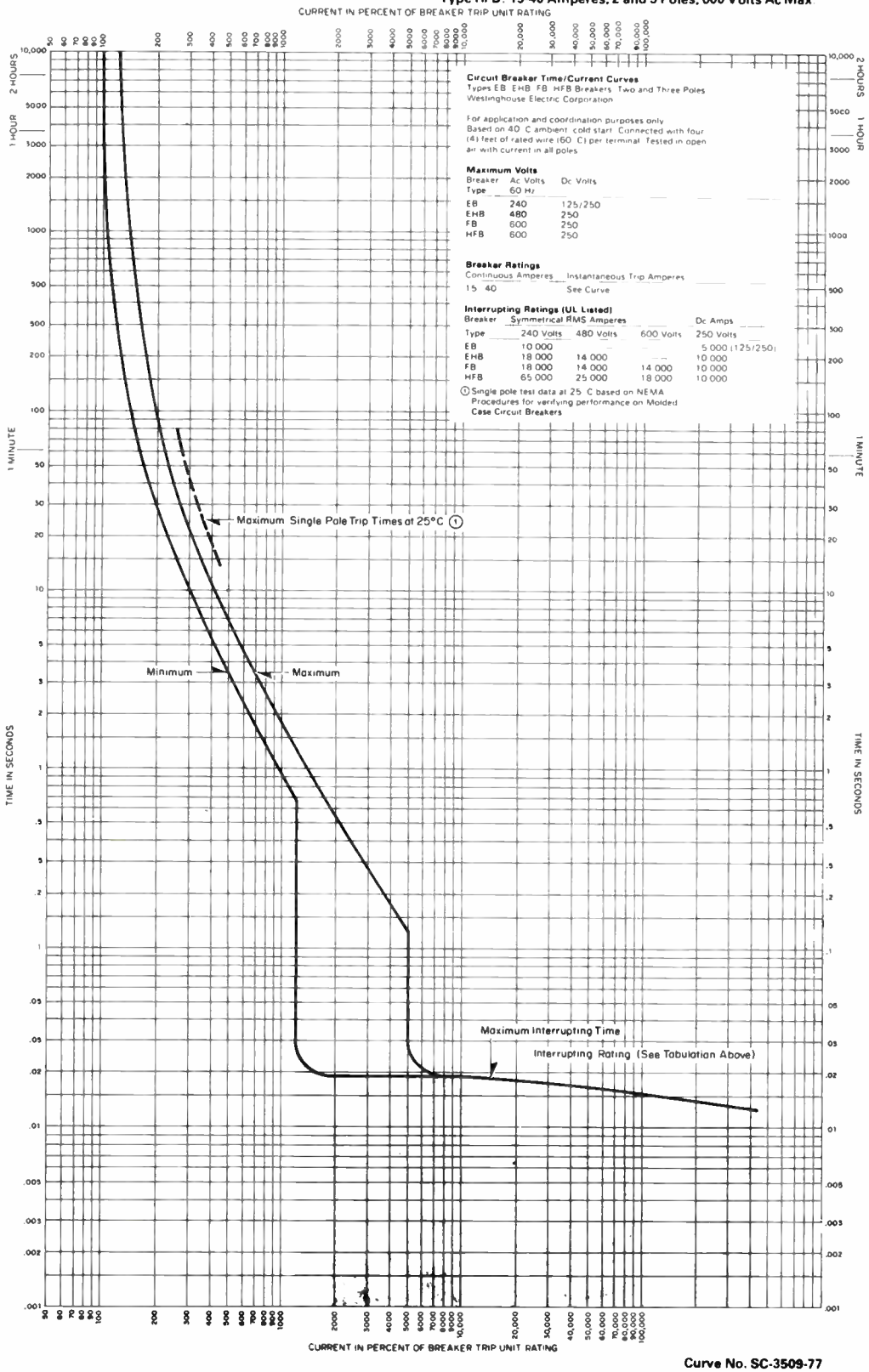
Curve No. SC-3510-77
January, 1977

Figure 2. Circuit Breaker Interrupt Rating-208/240 V

AB DE-ION® CIRCUIT BREAKERS

Types EB, EHB, FB, MARK 75® Type HFB

Type EB: 15-40 Amperes, 2 and 3 Poles, 240 Volts Ac Max.
Type EHB: 15-40 Amperes, 2 and 3 Poles, 480 Volts Ac Max.
Type FB: 15-40 Amperes, 2 and 3 Poles, 600 Volts Ac Max.
Type HFB: 15-40 Amperes, 2 and 3 Poles, 600 Volts Ac Max



Curve No. SC-3509-77
January, 1977

Figure 3. Circuit Breaker Interrupt Rating-380/415 V

INSTALLATION PROCEDURE

COMPONENT DESIGNATION SYSTEM

To locate and identify the various assemblies, subassemblies, and components in the transmitter, a system of prefixes is utilized. The first prefix designates the primary location, and the second prefix identifies the assembly, as follows:

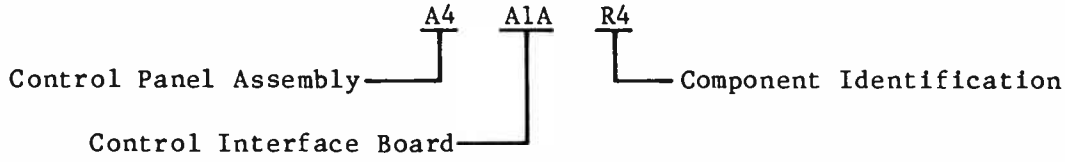


TABLE 4. IDENTIFICATION BY PREFIX *

Prefix	Assembly	MI No.	Schematic	Rev.
A1	TRANSMITTER MAINFRAME	MI-563500	3478213	6
A2	TOP SLOPE PANEL	---	---	
A2A1	Modulation Generator	MI-563527-2	3478064	4
A2A2	RF Generator	MI-563527-6	3478065	1
A2A2G1	Voltage Controlled Oscillator	---	3478065	1
A2A2G2	Crystal Oscillator, 10 MHz	---	3727072-8	31
A2A3	RF Predriver	MI-563527-3	3749490	2
A2A4	Power Cutback Kit	MI-563509	3749302	2A
A2A5	Offset Regulator	MI-563527-1	3743809	2
A2A6	Fault/Overload Board	MI-563527-18	3749940	1
A3	METER PANEL ASSEMBLY	---	---	
A4	CONTROL PANEL ASSEMBLY	---	---	
A4A1A	Control Interface Board	MI-563527-8	3749489	5
A4A1B	Control Logic Board	MI-563527-9	3478084	6
A4A2	Remote Power Adjust Kit	MI-563513	3735666	
A4A3	Logic Baby Board	MI-563527-17	3735896	0A
A5	MODULATOR BOX ASSEMBLY	---	**	
A5A1	Modulator Driver	MI-563504	3749461	2A
A5A2,3, 4,5	Modulator	MI-563510	3749973	0
A6	RF BOX	---	---	
A6A1	RF Driver	MI-563505-***	3477920	5
A6A2	Drive Detector	MI-563527-5	3751769	2
A6A3	Linearity Corrector	MI-563527-13	3743823	5
A6A4-6A9	RF Amplifier	MI-563505-***	3477920	5
A7	BREAKER PANEL ASSEMBLY	---	---	
A8	VERTICAL DIVIDER PANEL ASSY	---	---	
A8A1	Opto/Metering Board	MI-563527-10	3478310	0
A8A2	PA Balance (Mother Board)	MI-563527-11	3742986	1
A8A3	Lin Cor Output Circuit	---	3735925	0
A8A4	PA Balance (Baby Board)	MI-563511-***	3735716	1A
A8A5	Modulator Sample Board	MI-563527-16	3753263	1
A9	REAR HORIZONTAL SHELF ASSEMBLY	---	---	
A9A1	Linearity Power Supply Board	MI-563527-4	3735665	4

TABLE 4. IDENTIFICATION BY PREFIX* (Cont.)

A9PS1	-5V HI Power Supply	---	3729822	0
A9PS2	+12V HI Power Supply	---	3729824	1
A9PS3	Linearity Power Supply	---	3735682	2
A10	TOP COVER ASSEMBLY	---	---	
A10A1	Reflectometer	---	**	
A10A2	Pre-driver Pwr Supply Board	MI-563527-14	3735912	0
A10PS1	Pre-driver Pwr Supply	---	3735912	0
A10PS2	Logic Power Supply	---	3749968	0

* For location, see BTA-5SS System Drawing No. 3749702.
** See BTA-5SS Schematic, Drawing 3478213.
*** MI dash number varies, depending on frequency

UNPACKING

An understanding of the shipping system will be of assistance in unpacking the equipment and locating items. Each RCA shipment is accompanied by a shipping invoice which lists the complete contents of the shipment by "Master Item" or MI number. This shipping invoice is usually attached to one of the cartons, appropriately marked. Each master item (MI) containing two or more items normally contains a packing list (MI sheet).

The complete equipment for the BTA-5SS AM Transmitter is listed on ES-560988, which references the major items of the shipment and their MI number.

The equipment should be carefully unpacked and inspected to make certain that no damage has been incurred during shipment. Any visible damage or shortage should be noted on the shipping papers before signing. After unpacking the equipment inspect all items for concealed damage. If such damage is apparent, notify the carrier immediately in writing, and insist on an inspection report. File a claim for the damage. All shipping papers, letters, and invoices should be saved until it is determined that all equipment was delivered in satisfactory condition, or until any damage claim has been adjusted.

GENERAL

The procedure following applies to transmitters that have been factory tuned at the customer's frequency. Some steps, however, will verify proper factory installation and enable station personnel to become more familiar with the transmitter.

1. Position the transmitter as desired, allowing at least 36 inches (91.4 cm) both in front of the transmitter for clearance for the front door and at the back of the transmitter. See the BTA-5SS Installation Plan, drawing 3478214.

2. Remove the panels from the back of the transmitter cabinet.

3. Tap adjustments are necessary on the High Current Supply transformer A1T1 (MI-563503), depending on the phase to phase voltage available, and the carrier frequency at which the transmitter operates. Two moveable links and a moveable transformer tap lead are provided for each phase of the transformer. One link connects the unmarked common terminal to either the 208, 240, 380, or 415 terminal. The other link connects from the unmarked common terminal to the +30, +11, 0, or -11 terminal. The flexible primary tap connects to either +11, 0, or -11. See table 5 for proper hookup. Repeat identical connection for all three phases.

4. Install High Current Transformer A1T1 in the base of the cabinet as indicated in the Installation Drawing. Transformer terminals should be toward the center of the cabinet.

5. Connect the copper ground strap shipped in place to the frame electrostatic shield connection (ground stud) on A1T1. Location of this terminal is behind the right hand end of the terminal board. See the High Current Transformer A1T1 Schematic, figure 10.

6. Connect High Current Transformer A1T1 as indicated in table 6.

TABLE 5. A1T1 CONNECTIONS

Transformer	Voltage Line to Line	All Carrier Link #1*	Primary Voltage Tap	F_c<1000kHz Link #2	F_c>999kHz Link #2
MI-563503-1	197	208	-11	+30	-11
	208	208	0	+30	0
	219	208	+11	+30	+11
	229	240	-11	+30	-11
	240	240	0	+30	0
	251	240	+11	+30	+11
MI-563503-2	369	380	-11	+30	-11
	380	380	0	+30	0
	391	380	+11	+30	+11
	404	415	-11	+30	-11
	415	415	0	+30	0
	426	415	+11	+30	+11

* Link #1 is not used if transmitter is to operate at more than one power level. In that case, this link is replaced with connections provided in MI-563509 Power Cutback Kit.

TABLE 6. A1T1 INSTALLATION

INPUT CABLES	
Connect Cable/Wire No.	To Terminal
7 & 525*	H1
8 & 526*	H2
9 & 527*	H3
531*	Voltage tap (ø1)**
532*	Voltage tap (ø2)**
533*	Voltage tap (ø3)**
OUTPUT WIRES	
16	R6
12	R3
15	R5
11	R2
14	R4
10	R1
122	N

*Wires used only if MI-563509 Power Cutback Kit is installed.
**Use appropriate voltage tap as follows:
208 - for 197/208/219 line
240 - for 229/240/251 line
380 - for 369/380/391 line
415 - for 404/415/426 line

7. Install output connector J1 (dome insulator or coax line) in the top cover of the transmitter with the hardware shipped with the connector if not already installed.

8. Connect strap (wire #42) from A10L6 to output connector J1 center conductor.

9. Connect the transmitter to station ground by connecting a strap or cable from the ground studs in the base of the transmitter to the station ground. Material for this connection is not supplied. Refer to the BTA-5SS Installation Drawing 3478214. A 4" wide copper strap (or one with a comparable surface area) should be used.

10. Run the three phase input power to the transmitter through floor duct or overhead conduit or wire trough as desired. See the BTA-5SS Installation Drawing and figure 1.

11. Remove mounting screws from circuit breaker panel and fold out. Connect power input wiring to A7S1. See BTA-5SS System Drawing 3749702 and Schematic 3478213. In 380 or 415 volt input systems, connect the neutral input to A7TB2.

12. Connect buck/boost transformer A7T3 as indicated in table 7, depending on the input voltage to the transmitter. This will provide a nominal output voltage of 230 volts across A7R1.

TABLE 7. A7T3 CONNECTIONS

Input Voltage	Connect Wire 89 To	Connect Output* To
197	4TB1-1	4TB1-5
208	4TB1-1	4TB1-4
219	4TB1-1	4TB1-3
229	4TB1-2	4TB1-5
240	4TB1-2	4TB1-4
251	4TB1-2	4TB1-3
369	4TB1-3	4TB1-5
380	4TB1-3	4TB1-4
391	4TB1-3	4TB1-3
404	4TB1-2	4TB1-5
415	4TB1-2	4TB1-4
426	4TB1-2	4TB1-3

*Output consists of Wire Nos 140 to 143 and one side of Varistor A7R1.

13. Verify that wire 75 (A7S2 power) and 76 (A7T1 input) are properly connected for the station input voltage as follows:
For 197 to 251 volts - connect wire 75 to contactor A7K1-L2
For 197 to 251 volts - connect wire 76 to contactor A7K1-T2
For 369 to 426 volts - connect wires 75 and 76 to A7TB2 (neutral)

14. Connect audio input line to A2TB3 terminals 9 and 10. Connect shield to terminal 8. The transmitter provides a 600 ohm termination to the audio input line.

15. If remote control facilities are to be used, connect to A2TB2 and A27B3, using information in table 8.

16. If no external interlock connections are used, verify that jumper wire #364 is in place from A2TB2-6 to A2TB2-7.

17. Install crystal oscillator A2A2G2 near the top of the A2A2 RF Generator PWB. This board is located behind the fold-down front panel of the transmitter. See sheet 2 of the transmitter System Drawing 3749702 for location of the A2A2 RF Generator board.

TABLE 8. REMOTE CONTROL/ATS FACILITIES

Terminal	Function	Characteristics
TB2-1,2	Metering, PA Amps	1.5 VDC @ 5Ma Max = 100 amps
TB2-3,4	Metering, PA Volts	1.5 VDC @ 1 K ohm impedance = 150 volts
TB3-4,1	Metering, HV Supply	6 VDC @ 1K ohm impedance = 300 volts (May be scaled lower by loading)
TB3-16,17	Metering, RF Amps	1.0 to 2.5 VDC @ 42 Microamps = rated RF current
TB2-6	Control Voltage	24 VAC
TB2-14	Control Enable	24 VAC
TB2-15	Control, TX off Mode	Momentary closure to Control Common
TB2-16	Control, Standby Mode	Momentary closure to Control Common
TB2-17	Control, RF ON/Overload Reset	Momentary closure to Control Common
TB2-18	Control, High Power Mode	Momentary closure to Control Common
TB2-19	Control, Med Power Mode	Momentary closure to Control Common
TB2-20	Control, Low Power Mode	Momentary closure to Control Common
TB3-3	Control, Power Lower	Close to Control Common to adjust
TB3-2	Control, Power Higher	Close to Control Common to adjust
TB2-7	Interlock	Maintained Contact to Control Voltage
TB2-9,13	Logic Power Supply	+5 VDC
TB2-8	Control, Interrupt	TTL low or close to logic supply return to interrupt transmitter output
TB2-12	Status, Overload alarm	Normal = TTL high @ 220 ohm impedance Overload = TTL low @ 220 ohm impedance, 8 Ma Max.
TB3-20	Status, RF on	RF off = TTL low @ 6.4 Ma Max. RF on = TTL high @ 360 microamp Max.
TB3-18,19	Status, HV on	Contact Closure when HV on
TB3-12,13	Status, TX off	Contact Closure in off mode

NOTE: In some installations, circuits shown above may be connected to equipment other than the remote control system (i.e. to the antenna pattern switches).

18. Install air sensor A5S1 from the front of the transmitter below blower A5B1. See sheet 1 of the transmitter System Drawing 3749702 for location of A5S1.

A. Remove the plexiglas cover from in front of this (A8) compartment and retain the plexiglas and mounting hardware.

B. Install air sensor A5S1 in socket A5XS1 with the arrow on the end of the switch pointing up, in the direction of air flow.

C. Replace the plexiglas cover removed in step 18A with the original mounting hardware.

D. Remove filter from lower rear panel and coat evenly and lightly with filter coat spray supplied as MI-563500 item 23. Save filter coat spray to renew filter effectiveness later.

19. Install air sensor A6S1 above blower A6B1 at the front of the transmitter. See sheet 1 of the transmitter System Drawing 3749702 for location.

A. Remove A6C1A (if installed) and move to the right.

B. Install air sensor A6S1 in socket A6XS1 with the arrow on the end of the switch pointing up, in the direction of air flow.

C. Replace A6C1A with the hardware removed in step 19A.

In some cases, particularly when the transmitter is under remote control, it may not be desirable to reset these lamps via the overload reset circuit. In this case, the existing reset circuit is disconnected, and a separate reset switch is added to the control logic board for this function. To accomplish this, perform the following steps:

20. Obtain a small, momentary, normally open switch, such as C & K P8121C or JB7 PB-126 (available from RCA Distributor and Special Products Division, Deptford, NJ). Mount switch at the lower end of the stiffner channel attached to the control logic board.

21. Solder one wire from the switch (NO) to the track on the logic board that is connected to J1 pin 29. Solder the other wire from the switch to ground (the stiffner channel is mounted on a grounded track of the board).

22. On the Control Logic board, remove jumper W1.

23. Pressing the switch will now reset any of the fault lights (assuming the fault has been cleared).

SEE DRAWING
3478316

Figure 4. BTA-5SS Block Diagram

DESCRIPTION

GENERAL

The BTA-5SS is a 5 kilowatt AM broadcast transmitter designed to operate within the 525-1605 kHz AM broadcast band. This 100% solid state transmitter operates from 208/240 volt or optionally from 380/415 volt, 50/60 hertz, 3 phase input. Nominal power output is 5000 watts, however, power capability is 5500 watts, to compensate for losses in the transmission line and antenna tuning unit. Power Cutback Kit MI-563509 is available as an option to permit transmitter operation at three preselected power levels. The transmitter may be controlled either locally or by a remote control system.

The transmitter control system and fault control system provide control and protection for the transmitter. A Local/Remote switch is provided for safety of operating personnel. Transmitter control is provided by control logic circuitry and three operating controls--OFF, STANDBY, and RF ON/RESET. Either single or multiple overload recycle control may be selected, and a digital counter may be set to the number of overload steps for shutdown in the multiple cycle. Factory tuned transmitters are normally wired for multiple cycle shutdown after 5 faults in a 15 second time frame.

Following an overload, rf drive will be reapplied at a low level and will automatically ramp back up to full power. A master overload LED is provided on the control panel. Individual LED overload indicators on the inside of the control panel indicates the circuit that had the overload.

Power output may be set by a potentiometer on the front panel either locally or by remote control (using Remote Power Adjust Kit MI-563513). Once the power level is set, automatic circuitry takes control to maintain this level until changed.

CIRCUIT DESCRIPTION

RF GENERATOR

Refer to the RF Generator Simplified Block Diagram, figure 5, and to RF Amplifier Schematic, Drawing 3478065. The transmitter output frequency is provided by G1, the Voltage Controlled Oscillator (VCO), which generates a signal two times the output frequency (2 F_c). Frequency of this signal is determined by L1, L2, L3, and voltage controlled capacitors CR1 and CR2. Frequency stability of the VCO is controlled by the 10 MHz Temperature Compensated Crystal Oscillator G2. Output of G2 is divided down to 2 kHz by dividers U8, U9, U10, and U11, and is fed to the reference input of Phase/Frequency Detector U-15. Output of G1, the VCO is divided by programmable divider U5, U6, and U7 down to 2 kHz and fed to U15 variable input. These two 2 kHz inputs to U15 are detected and fed through U16 back to voltage controlled capacitor CR2 of the VCO in a phase locked loop configuration.

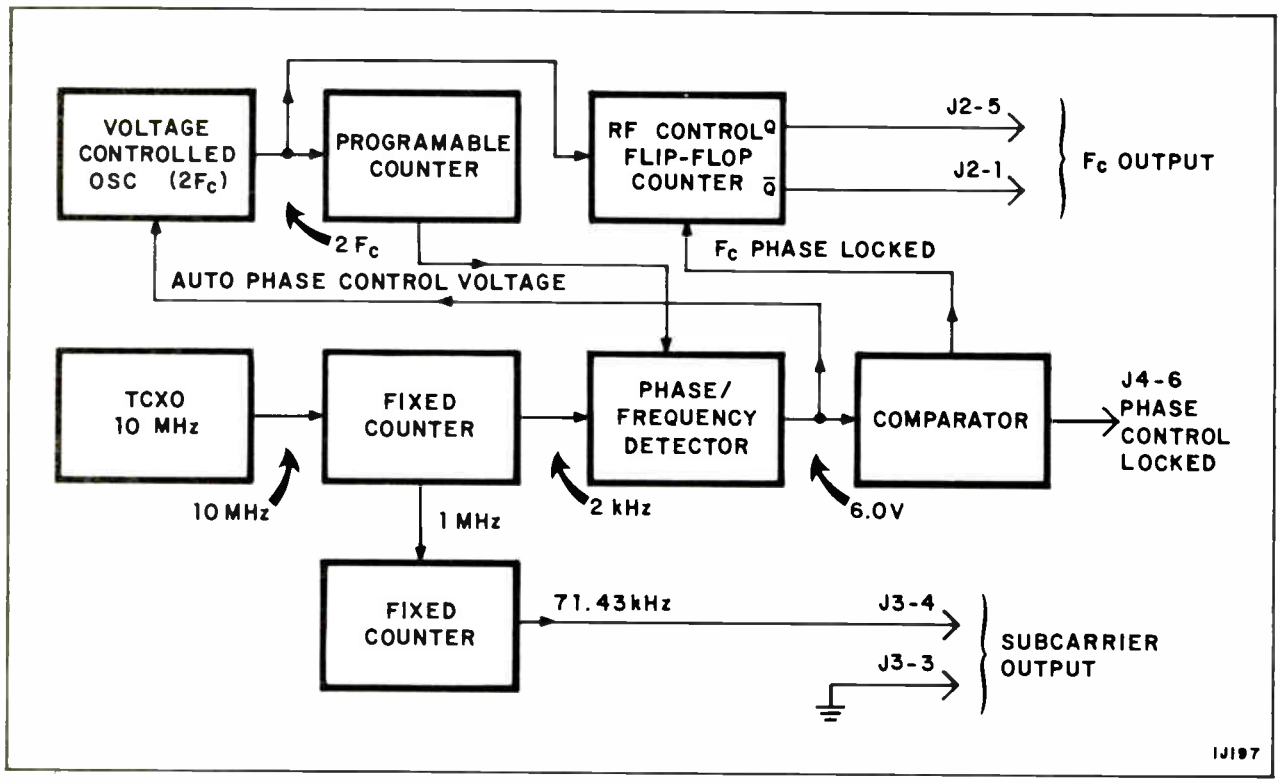


Figure 5. RF Generator Simplified Block Diagram

The normal 6 volt output of U16 is reduced to 2.9 volts by the voltage divider composed of R28 and R29, and fed to comparator U17. As long as the input to comparator U17 is between 2.1 and 3.6 volts, U14B output is high and U18 output fed to U2 reset input and to Phase Control Locked output at J4-6 is high. The duration of any off-frequency low fed from comparator U17 is extended by U2 to about 300 milliseconds.

Output of the Voltage Controlled Oscillator G2 is fed through Schmitt triggers and JK flipflop U2B to driver U4, then to J2-1 and J2-5. This is the carrier frequency which will be amplitude modulated by the transmitter. A low fed to U2B reset input from the F_c phase locked circuit will interrupt rf output from U2B. A low fed into U2B J and K inputs from RF Kill input at J4-7 will also interrupt rf output for the duration of the low.

Output of the 10 MHz Temperature Compensated Crystal Oscillator is counted down by U8, U13, and U9 to provide a 71.43 kHz subcarrier output at J3-4. This subcarrier signal will be pulse width modulated by the modulator circuitry.

RF PRE-DRIVER

See the BTA-5SS Block Diagram, figure 4 and the RF Pre-driver Schematic, Drawing 3749490. RF at the output frequency is fed through pre-driver T1 to cascade transistors Q1 and Q2. The signal is then fed through C6, resistors R27 through R35, and T2 to pre-driver output transistors Q3 through Q6. Proper drive level of the pre-driver is accomplished through the series limiting resistor network R27 through R35, and frequency range is determined by C13, C13A, and L4 setting. Refer to the table on the schematic for proper jumper and tap settings and for values of C13 and C13A. In factory tuned transmitters, these adjustments and settings will have been completed.

Modulation is fed into the pre-driver output transistors to provide low level modulation of the carrier at output jacks J2 and J3. Output of the pre-driver is fed to the RF Driver A6A1.

RF DRIVER

See the RF Amplifier Schematic 3477920 and BTA-5SS Block Diagram, figure 4. The RF Driver amplifies the pre-driver output and feeds it to the RF Amplifier. Gain of this stage is determined by the setting of Driver Power Supply Transformer T1 setting, which controls driver voltage.

The carrier is modulated by modulation applied to the RF Driver supply voltage at P4. Transistor fault indicators DS1, DS2, and DS3 indicate a shorted transistor in that respective bank of transistors. The four banks of transistors in the RF Driver are connected in a bridge arrangement, with rf output at P2 and P3.

PA LINEARITY CORRECTOR

At the peak negative swing of the modulator output, voltage applied to the RF Driver bridge through P4 can reach a low level. At low emitter to collector potential, the beta of the transistors decreases, so the PA Linearity Corrector causes the voltage applied to the RF Driver bridge collectors to move in a positive direction, overcoming this undesirable feature. See the PA Linearity Corrector Schematic, Drawing 3743823, the PA Linearity Corrector Output Schematic, Drawing 3735681, and the BTA-5SS Schematic, Drawing 3478213.

Modulation is fed through PA Linearity Corrector J1-7 to the 1st GAIN control, R2, which controls the amount of linearity correction. The 1st THRESH control selects the point at which linearity correction begins.

The modulation is fed from the 1st GAIN control to Q1 base, to Q2 emitter, then Q2 collector to the gates of the linearity output transistors. Q3 extends the linearity correction capability, and is adjusted by 2nd GAIN control R13 and 2nd THRESH control R20. Overdriving or overloading the linearity output transistors is prevented by the overload circuit composed of U1, Q4, Q5, and associated components. A sample of the linearity output drive is developed across R3 in the output circuit, adjusted by R22 and applied to U1. CR2 prevents reverse bias from being applied to U1.

Positive drive applied to linearity output transistors Q1 and Q2 drive their source in a positive direction, causing a more positive voltage to be applied to the RF Driver bridge through TB1-5A and P1.

PA DRIVE DETECTOR

The PA Drive Detector (Schematic 3749461) samples rf output of the RF Driver, and will remove high voltage from the RF Driver and RF Amplifiers in case of a loss of rf signal at this point. This protects the RF Driver and RF Amplifiers in case of loss of rf drive.

RF AMPLIFIER

The RF Amplifier is composed of six bridge type rf amplifier boards connected in parallel. These boards are identical to the RF Driver board. See the BTA-5SS Block Diagram, figure 4, and the Schematic Drawing 3477920.

As with the RF Driver, modulation is applied to the high voltage input at P4. P1 is returned to ground. The output of these boards is applied to Combining Transformer A2T1.

Output of each RF Amplifier board is also fed to the PA Balance board A8A2.

PA BALANCE

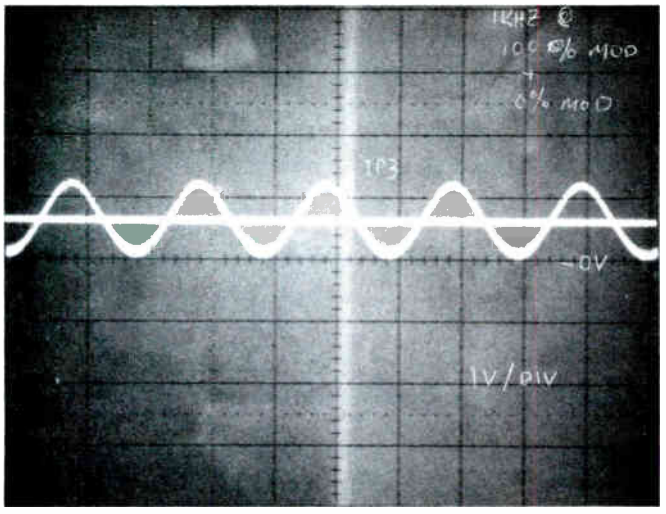
A portion of the output of each rf amplifier board is fed through the PA Balance Baby board Drawing 3735716 to the PA Balance Mother board 3742986. Here this sample from each board is detected and fed to the Control Logic circuitry. An imbalance in the output of the rf amplifier boards will cause the transmitter to cycle off, then back on. If the imbalance is still present, the transmitter will cycle off 3 or 5 times (as selected by the control logic board) within a 20 second window, the subcarrier will be removed, turning off rf drive and output. This will latch the BALANCE light and ALARM light and keep the transmitter off the air until the RESET button on the front panel is pressed.

MODULATION GENERATOR

The BTA-5SS Transmitter employs pulse linear modulation at the subcarrier frequency of 71.43 kHz for both power output control and audio modulation. See the Modulation Generator Schematic, drawing 3478064 and Modulator Waveforms, figure 6.

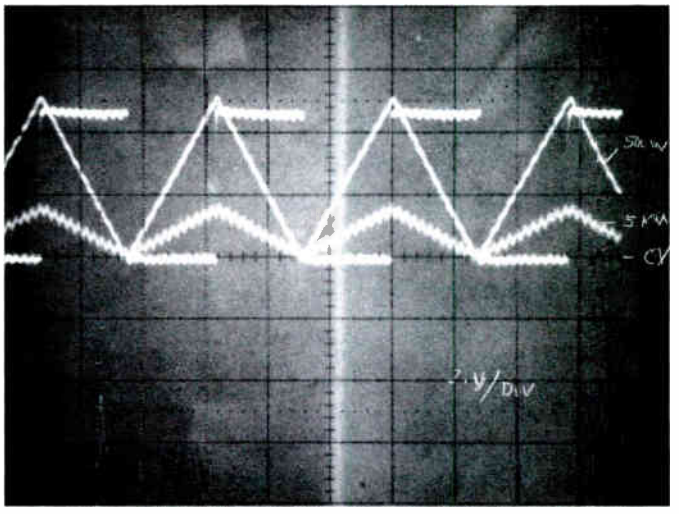
The subcarrier (71.43 MHz) is fed into the Modulation Generator at J4-2. It is then fed through U3A and Q2 to sawtooth generator U7, with the subcarrier drive voltage level determined by Q3.

A forward power sample from the reflectometer in the transmitter output line is fed to the Power Detector, then through J3-14 (TP12) and H1 PWR SET control R63 to U9 positive input. The lower the voltage at U9 positive input, the higher the power output. Other inputs to U9 positive input are the (optional) Power Cutback inputs at J2-8 and J2-9 and the subcarrier logic signal applied at J3-7. During normal operation, the logic level at the SC



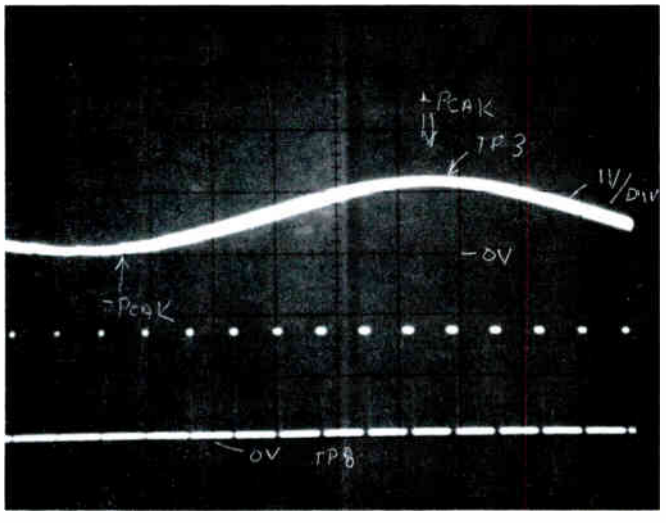
A

1 kHz audio signal at TP3.



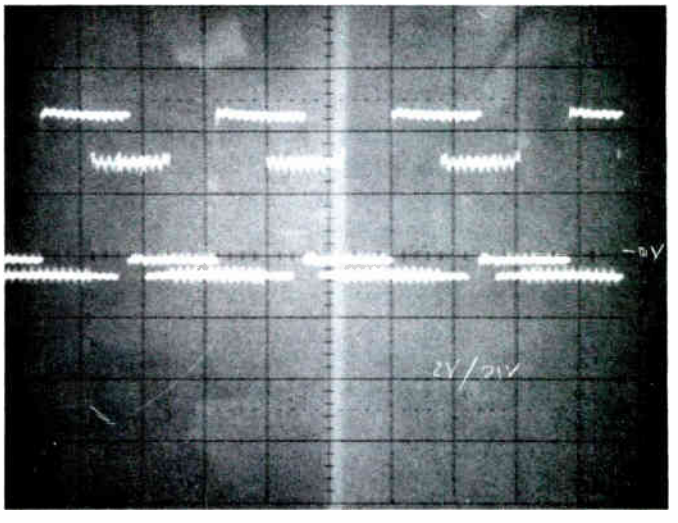
B

Triangular shaped waveform at TP10 for 500 W and 5 kW output.



C

Audio waveform at TP3 (top) and modulation pulses at TP8.



D

Modulation pulses at TP4 and TP8.

Figure 6. Modulator Waveforms

ON input at J3-7 is high, U1A output to U1B is high, and U1B output to U10C is high. U10C inverts this signal and the low output reverse biases CR16, having no effect on U9-3 input. A logic low at J3-7, however, would cause U10D output to go high, removing transmitter rf output. The U9 negative input (reference level) is set by the PWR ADJ input at J2-2. The AIR LOSS PWR SET control sets the level at which the transmitter will operate in case of a failure of either blower (factory set at 500 watts).

Output of U9 is fed to Q3, which controls the collector voltage on Q2, thereby controlling the subcarrier square wave amplitude to U7. The MAX PWR control R64 selects the minimum voltage that may be applied to Q3 base, thereby determining the maximum transmitter output. Applying a logic high to Bypass/HV off input at J2-4 causes Q3 to saturate and pull Q2 collector voltage to ground potential, cutting off the subcarrier input to U7 and cutting off transmitter rf output.

Output of U7 (at TP10) is shown in figure 6B. The high amplitude triangular waveform is present with 500 watts output and the low amplitude waveform is present at 5 kW output. The triangular waveform is continuously variable to provide from no output to 5.5 kW rf output.

Audio input to the modulator is a balanced floating input at J1-5, J1-6, and J1-7. See figure 6A. The jumper from E1 to E2 or E3 is positioned where adjustment of HUM BAL control R85 will give maximum hum suppression.

Amplifier U11 utilizes negative feedback for fidelity, while positive feedback predistorts the positive peak of the signal to compensate for the distortion caused by the filter composed of L1 and C11 through C15. THRESH control R23 sets the threshold level and STRETCH control R21 controls the amount of stretch added to the positive peaks. See figure 7. K1 will disable the stretch circuit during cutback power operation when the optional Power Cutback Kit is installed.

The audio signal is fed to U4 positive input, where it also controls the width of the positive pulse out of U4. The audio signal is also fed to Q4 emitter. R87 is adjusted to limit positive modulation of the rf signal to 130% as read on the modulation monitor. The pulse width now varies at an audio rate as shown in figure 6C (TP8).

Schmitt triggers U3D and U3E amplify and square the 71.43 kHz pulse output of U4, and U5 and U2A delay these pulses approximately 4.3 microseconds. Figure 6D presents the modulating pulses at TP4 and TP8, showing this delay. In case of an SC alarm, a logic low would be applied at J3-6, turning off U1B and U1C, cutting off modulating pulses. A low applied at SC on input at J3-7 would also turn off U1A, U1B, and U1C, removing modulating pulses. Removing modulating pulses kills rf output.

Output of the Modulation Generator is 71.43 kHz pulses fed from output integrated circuit U6 through J4-5 to the Modulator Driver J1-2. Width of these pulses determines transmitter power output.

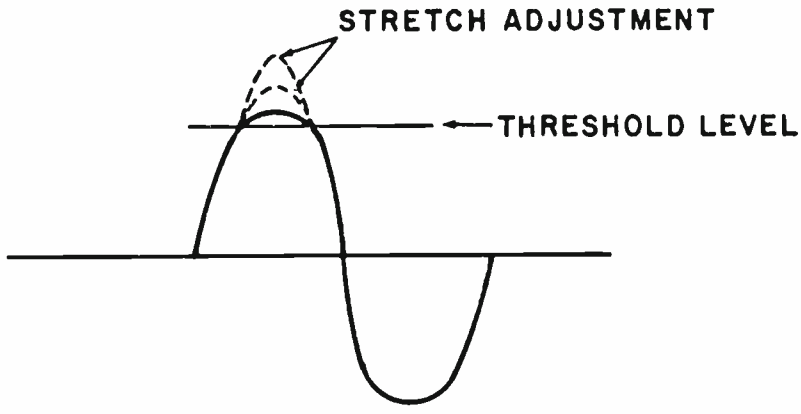


Figure 7. Audio Signal Showing Stretch and Threshold Adjustment

MODULATOR DRIVER

The Modulation Generator output is fed through J2-2 of the Modulator Driver to U1. The pulses are amplified by U2, Q1 through Q4, and Q29, which drives Q5-Q8 connected in parallel. Output of Q5-Q8 drives four parallel amplifiers, which outputs at J3, J4, J5, and J6 each drive one of the modulator boards. Each of these modulator board outputs is also fed to J2, which may be used for test purposes.

MODULATOR AND OFFSET REGULATOR

Modulator Driver signal is fed into the Modulator(s) at J2. (See Modulator Schematic, drawing 3743948.) From J2 it goes through CR5-CR8 to the base of 24 transistors connected in parallel. Output of the Modulator board is applied through P3 to the Subcarrier Filter and through P2 to the Offset Regulator. See the Modulator and RF Output Circuit Functional, figure 11. The Offset Regulator enables the output voltage to swing from the applied voltage (-265 volts) to +10 volts. See the Offset Regulator schematic, drawing 3743809.

When the modulator pulses cut off the modulator transistor bank, the inductive kick from the Subcarrier Filter causes current to flow through the zener diode CR2 and diodes CR9-CR12. Current flow through the zener diode turns on the transistors in the Offset Regulator, limiting the positive voltage swing at the output to 10 volts.

SUBCARRIER FILTER

The Modulator output passes through the Subcarrier Filter and is applied to the RF Pre-Driver, RF Driver, Linearity Corrector, and RF Amplifiers. The Subcarrier Filter is a 15 kHz lowpass filter, that will pass the audio (through 12 kHz) without attenuation, but remove subcarrier frequency of 71.43 kHz so only the modulation envelope is fed to the rf circuits.

POWER CUTBACK KIT

The optional Power Cutback Kit MI-563509 will provide three power levels of operation from either local or remote positions. The HI level is set for the transmitter rated power output, while the MED and LO positions are set for progressively lower power levels. See the Power Cutback schematic diagram, drawing 3749302. The power cutback relays K1 and K2 are magnetic latching relays, so they will remain in the selected position in case of a power failure. Power level is controlled locally by the PWR CUTBACK switches on the front panel.

TRANSMITTER OUTPUT

Transmitter output from the RF Amplifier Combining Transformer is fed through Loading Coil A2L1 and the Reflectometer to the Harmonic Filter. See the BTA-5SS Block Diagram, figure 4 and the Transmitter Schematic, drawing 3478213. Capacitors A10C1A and A10C1B are FD parts and match the 85 ohm output of the transmitter to the 50 ohm antenna. The rf output passes through the PI filter composed of A10C1, A10L1, and A10C2, and the 2F TRAP composed of A10L2 and A10C4, which is tuned to the second harmonic of F_O. The 3F trap, a series tuned circuit composed of A10L4 and A10C3 pass the third harmonic of F_O to ground. The rf output then passes through A10L6 to the output connector J1.

CHECKOUT AND FINAL TUNING

Before operation of the BTA-5SS transmitter after installation, the following checkout and tuning procedure must be performed.

1. Set MAIN (A7S1) and CONTROL (A7S4) Breakers on the transmitter to ON. Set LOW VOLTAGE/COOLING (A7S2) breaker to OFF. Set HIGH VOLTAGE switch (A7S3) to DISABLE.

2. Apply power to transmitter. Green TX OFF indicator should light. Press OFF button if necessary to illuminate.

3. Set LOW VOLTAGE/COOLING breaker to ON. Press STANDBY button (A4S3). Both Cooling fans will come on. HV ON indicator will blink. Use multimeter to check for +12V HI, -5V HI, and LIN SUPPLY voltages. Open control panel and check to see that no fault indicators, except RF OFF, are illuminated.

4. Press RF ON button (A4S4). RF OFF fault indicator extinguishes and RF ON indicator (on front panel) illuminates. Verify that the RF switching waveform is available at RF Pre-driver (A2A3) TP2.

5. Set HI PWR pot R63 on Modulation Generator (A2A1) to the maximum CCW position.

6. Press OFF button (A4S2). Set HIGH VOLTAGE switch (A7S3) to ON. Press STANDBY button (A4S3) and check for fault indicators as before.

6A. Turn front panel MULTIMETER switch to monitor the driver supply voltage (DRIVER V). Check this reading with the voltage recorded on Factory Test Data. If different, adjust DRIVER VOLTAGE ADJUST variac A7T1 (located on left of breaker panel) to obtain the recorded voltage in the Factory Test Data sheets.

7. Press RF ON button (A4S4). Bring up HI PWR pot until 1 kW power output is measured at common point. Check driver voltage using transmitter multimeter. It should approximate value shown on final test data sheet.

8. Output tuning is accomplished by inserting an Operating Bridge into the two positions shown in figure 8. Position 1 is created by disconnecting strap #31 from A10C1 and inserting bridge. Position 2 is created by disconnecting strap #38 from A10L6 and inserting bridge.

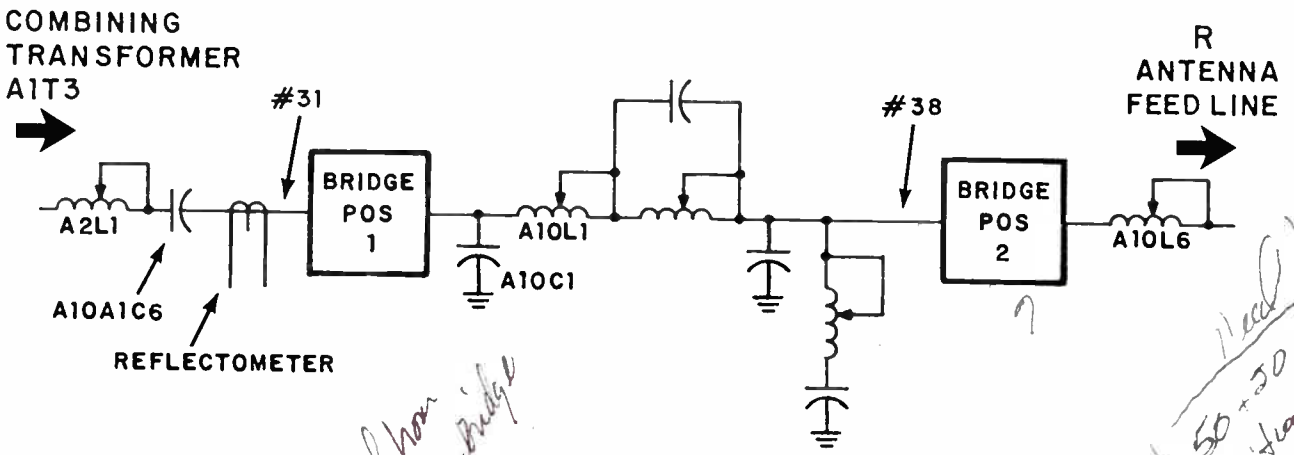


Figure 8. Transmitter Final Tuning

9. Use HI Pwr pot to limit output power ≈1 kW*. Set Multimeter switch to + Probe and connect probe to TP13 on Control Interface board A4A1A.

10. With Delta in position 2, adjust A10L6 so that the Delta Bridge reads $R + JX_S$ where $X_S = \sqrt{R(97 - R)}$. $(45 < R < 60)$

11. Move Delta to position 1. Adjust A10L1 so that the Delta measures 85 + J0. Multimeter should null.

12. If position 1 is not able to be adjusted to 85 + J0, adjust A10L6 until Delta in position 1 reads 85 + J0.

13. Measure position 2. Adjust if necessary to $R + JX_S$.

14. Check position 1 for exactly 85 + J0. Multimeter should null.

    NOTE: If R exceeds $45 < R < 60$, output load matching is required.

15. Set MAX PWR pot R64 on Modulation Generator (A2A1) fully CCW. Set HI PWR pot fully CW. Bring up MAX PWR pot until power is 500 watts over authorized power. Set HI PWR pot for authorized power.

16. Modulate the transmitter with program material at the desired maximum modulation. Set the REFL TRIP pot R105 on the Control Interface board to a point slightly above the trip off point. This will result in the most sensitive VSWR protection.

*According to power of operating bridge (Do not exceed 1 kW or VSWR will trip.).

OPERATION

CAUTION

Transmitter CHECKOUT and FINAL TUNING must be performed before OPERATION or damage to the transmitter may result.

The BTA-5SS AM Transmitter is controlled and protected by solid state control logic circuitry. The Control Logic PWB and Control Interface PWB are located on the back side of the fold-down A4 Control Panel at the front of the transmitter. See drawing 3749702.

The transmitter primary power switch A7S1 MAIN is located on the lower front panel of the transmitter. For normal operation A7S1 MAIN will be ON, A7S2 LOW VOLTAGE/COOLING will be ON, A7S3 HIGH VOLTAGE ON/HIGH VOLTAGE DISABLE will be in the HIGH VOLTAGE ON position, and A7S4 CONTROL will be in the ON position.

The MAIN switch (A7S1) controls all power into the transmitter, and LOW VOLTAGE/COOLING switch A7S2 controls power to modulator blower A5B1, rf blower A6B1, and power supplies A10PS2 (12, 5, -5 V), A10PS1 (36 V), A9PS3 (52 V), A9PS2 (+12 V HI), and A9PS1 (-5 V HI). The HIGH VOLTAGE ON/HIGH VOLTAGE DISABLE switch A7S3 permits the transmitter to operate with all systems operating except for the HV Power Supply, RF Driver, RF Amplifiers, and Modulators. Switch A7S4 provides 24 volts AC to the Control Interface and Control Logic printed wiring boards. The VERNIER PWR control A4R1 or optional PWR RAISE/LOWER switch A4S8 permits adjustment of power output of the transmitter. The DRIVER VOLTAGE ADJUST control A7T1 is a fine driver saturation adjustment. The MULTIMETER switch A4S1 enables monitoring selected voltages and currents within the transmitter.

With primary power being applied to the transmitter and the MAIN switch ON, the transmitter may be turned on by pressing the HV ON switch S3 on the control (A4) panel, then pressing the RF ON switch S4. When the HV ON switch is pressed, the yellow STANDBY light below the HV ON switch will light. When the RF ON switch is pressed, the STANDBY light stays on, indicating high voltage is on and the red RF ON/RESET light will light. The transmitter immediately ramps up to the selected power output. Transmitter shutdown is accomplished by pressing the TX OFF pushbutton A4S2 on the control panel, lighting the green TX OFF indicator after high voltage has dropped below 50 volts and the blowers have been turned off.

The FAULT indicator A4DS1 indicates the occurrence or presence of a fault as presented in table 9. To reset the front panel FAULT indicator and the Control Logic board fault indicator lights, press RF ON switch A4S9. If the fault has been corrected, pressing the RF ON switch will return the transmitter to the air after a Refl (VSWR), PA Balance, PA Overload, or Modulator Fault overload.

TABLE 9. FAULT INDICATORS

Light	A2 Panel	Transmitter Status** HV	RF Drive	Subcarrier & RF Output	Fault Light	Alarm Ind.*	Transmitter Shutdown
A4DS1	LV	X	X	X	L	L	Momentary
A4DS2	Intlk	X	X	X	L	L	Momentary
A4DS3	Air				L	D	Momentary
A4DS4	Freq			X	D	D	Momentary
A4DS5	Intrpt			X	D	D	Momentary
A4DS6	Lin PS				D	D	Self Reset
A4DS7	Drvr PS	X	X	X	D	D	#
A4DS8	Overtemp			X	L	D	Momentary
A4DS9	OL PA	X	X	X	L	L	Reset
A4DS10	Low Dr			X	L	L	Momentary
A4DS11	HV OV			X	L	D	Momentary
A4DS12	RF Off						***
A4DS13	Bal		X	X	L	L##	Reset if
A4DS14	Refl		X	X	L	L##	Max Count is reached, else restore after 0.5 seconds Off Time
A4DS15	Mod Fault			X	L	D	Momentary
A1DS1	SC Fail			X	L	D	Momentary
	HV Disable				D###	D###	Reset
A6DS1	Mod Fault	X	X	X	L	D	
A6DS2	Input Ovld	Indicates excessive audio input					Momentary

* L = Latch on, M = Momentary on, D = Duration of fault
** X = Shutdown or turnoff
*** When lighted, indicates RF ON relay not closed
\# Shut down until thermocouple resets. Returns to PA ovld condition.
If 3 (or 5) counts within 15 seconds
1. FAULT and STANDBY indicators will blink alternately in HV ON condition with A7S3 in the HIGH VOLTAGE DISABLE position, and HV actually on.
2. FAULT and STANDBY indicators will blink simultaneously in HV ON condition with A7S3 in the HIGH VOLTAGE DISABLE position and HV disabled or off, due to a fault.

NOT AVAILABLE AT TIME
OF PRINTING

Figure 9. High Current Transformer AlTl Outline

NOT AVAILABLE AT TIME
OF PRINTING

Figure 10. High Current Transformer AlTl Schematic

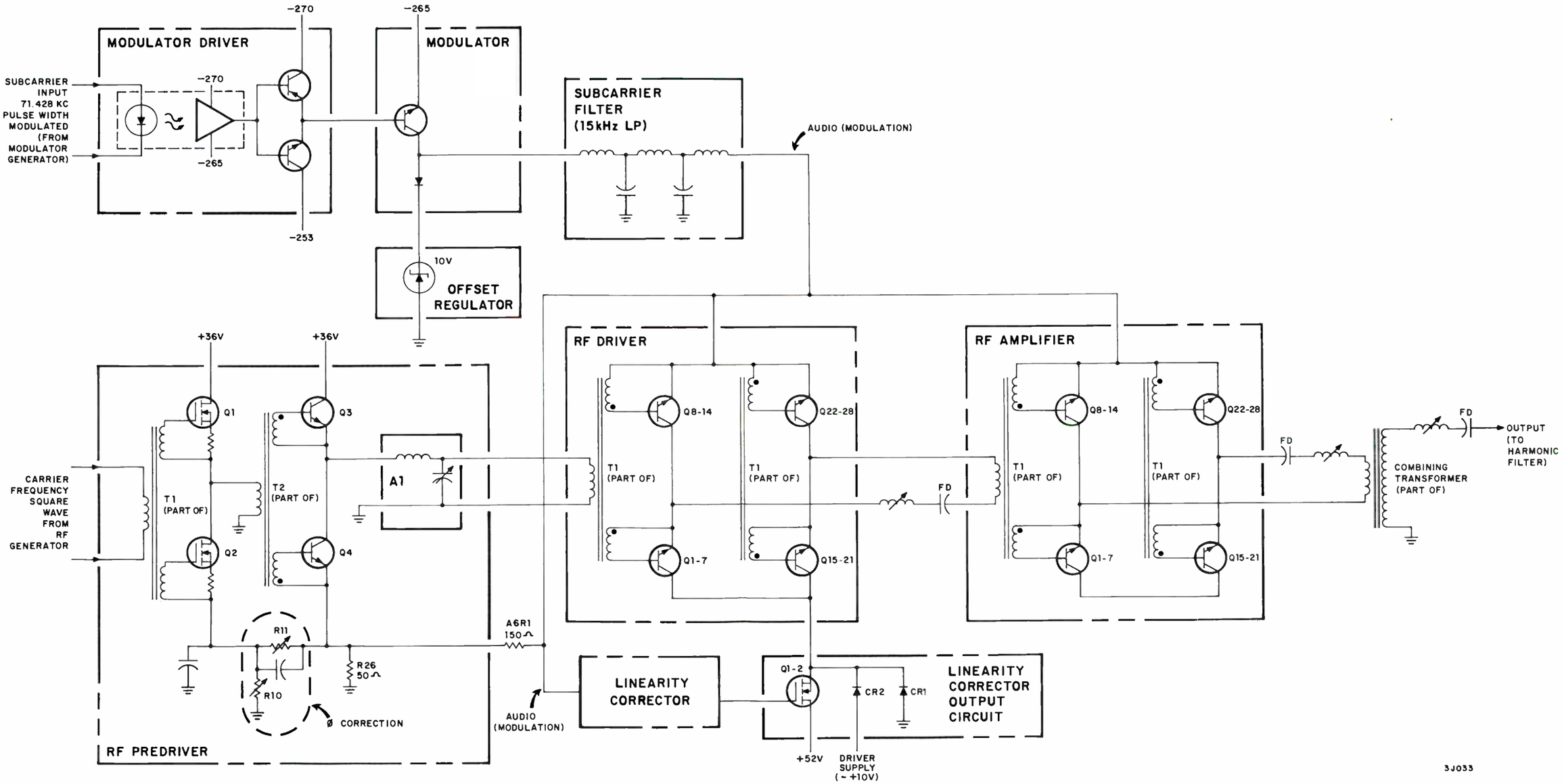


FIGURE 11. MODULATOR AND RF OUTPUT CIRCUIT FUNCTIONAL

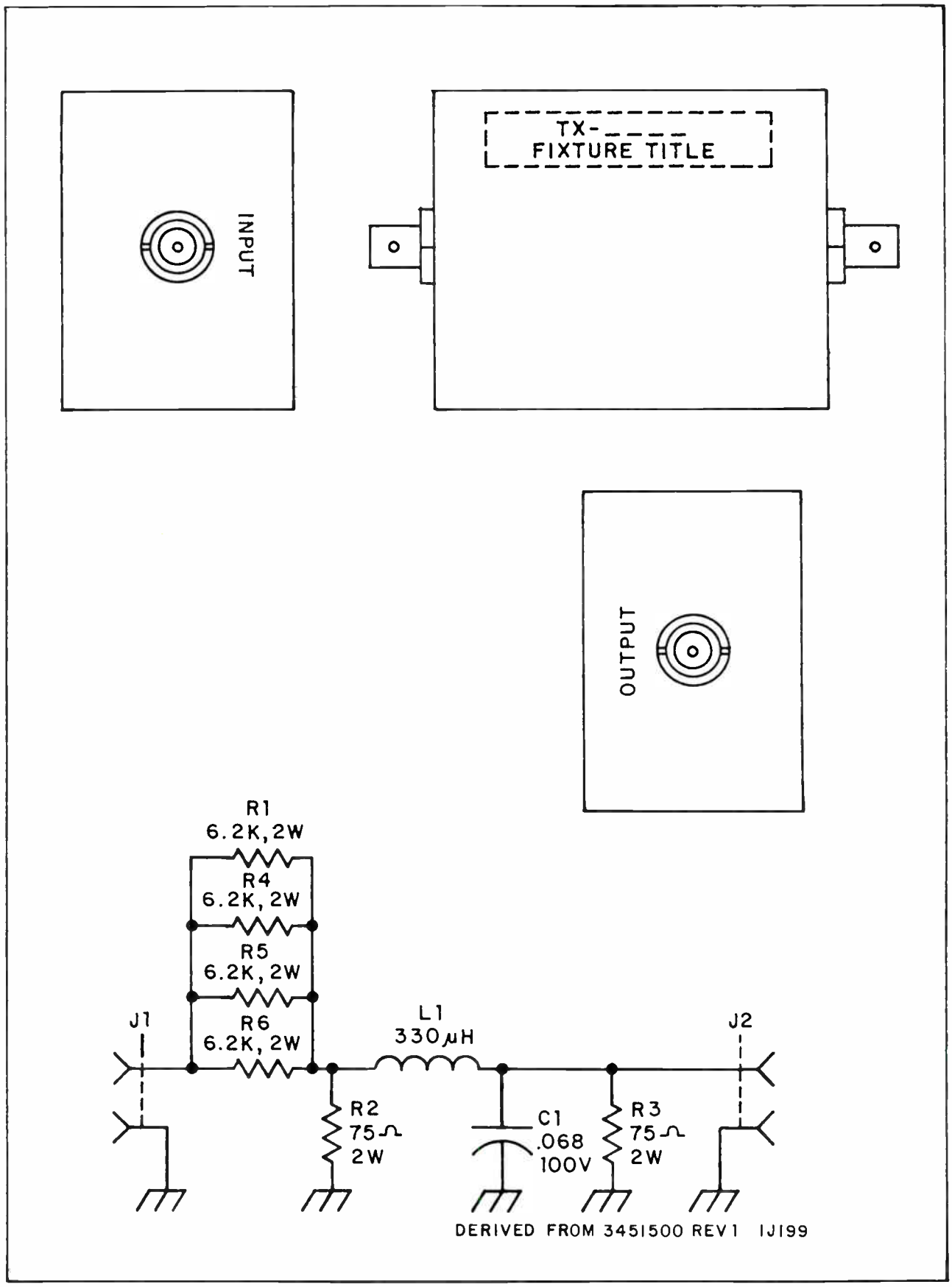


Figure 12. PA Voltage Filter (Test Fixture)

FREQUENCY DETERMINED CONNECTIONS

RF GENERATOR

TABLE A

FREQUENCY JUMPER -- VOLTAGE CONTROLLED OSCILLATOR (G1)

CARRIER FREQUENCY BAND	JUMPER
525 - 699 kHz	NONE
700 - 999 kHz	J2 TO J3
1000 - 1705 kHz	J1 TO J3

NOTE: ON SOME TRANSMITTERS, IT MAY BE NECESSARY TO CHANGE JUMPER TO ADJACENT FREQUENCY BAND (DETERMINED DURING TESTING)

TABLE B

COUNTING JUMPERS FOR NON-STANDARD FREQUENCIES

1. N1 -- SELECT LARGEST VALUE LISTED THAT IS LESS THAN OR EQUAL TO CARRIER FREQUENCY (fc)

VALUE OF N1	J14	J16	J17
1792	A-B	B-C	B-C
1536	A-C	B-C	B-C
1280	A-B	B-C	A-C
1024	A-C	B-C	A-C
768	A-B	A-C	B-C
512	A-C	A-C	B-C

2. N2 -- SELECT LARGEST VALUE LISTED THAT IS LESS THAN OR EQUAL TO (fc - N1)

VALUE OF N2	J10	J12	J13	J15
240	A-B	A-B	B-C	B-C
224	A-B	A-C	B-C	B-C
208	A-B	A-B	B-C	A-C
192	A-B	A-C	B-C	A-C
176	A-B	A-B	A-C	B-C
160	A-B	A-C	A-C	B-C
144	A-B	A-B	A-C	A-C

Figure 13. Programmable Counter Connections

2. N2 -- SELECT LARGEST VALUE LISTED THAT IS LESS THAN OR EQUAL TO (fc - N1) (Continued)

128	A-B	A-C	A-C	A-C
112	A-C	A-B	B-C	B-C
96	A-C	A-C	B-C	B-C
80	A-C	A-B	B-C	A-C
64	A-C	A-C	B-C	A-C
48	A-C	A-B	A-C	B-C
32	A-C	A-C	A-C	B-C
16	A-C	A-B	A-C	A-C
0	A-C	A-C	A-C	A-C

3. N3 -- SELECT VALUE THAT EQUALS fc - (N1 + N2)

VALUE OF N3	J7	J8	J9	J11
15	A-B	A-B	B-C	B-C
14	A-B	A-C	B-C	B-C
13	A-B	A-B	B-C	A-C
12	A-B	A-C	B-C	A-C
11	A-B	A-B	A-C	B-C
10	A-B	A-C	A-C	B-C
9	A-B	A-B	A-C	A-C
8	A-B	A-C	A-C	A-C
7	A-C	A-B	B-C	B-C
6	A-C	A-C	B-C	B-C
5	A-C	A-B	B-C	A-C
4	A-C	A-C	B-C	A-C
3	A-C	A-B	A-C	B-C
2	A-C	A-C	A-C	B-C
1	A-C	A-B	A-C	A-C
0	A-C	A-C	A-C	A-C

4. CHECK -- N1 + N2 + N3 MUST EQUAL fc

Figure 13. Programmable Counter Connections (Continued)

TABLE 10. FD PARTS
ES-563025-120

Qty	Reference	Description	Symbol
2	MI-563502-12	Capacitor, 4,300 Pf, 3 kV	A6C1
2	MI-563502-8	Capacitor, 2,000 Pf, 5 kV	A6C2
1	MI-563502-22	Capacitor, 470 Pf, 5 kV	A8C33
24	MI-563502-6	Capacitor, 1,300 Pf, 5 kV	A8C10-15
1	MI-563507-5	Capacitor, 3,900 Pf	A2A3C13
1	MI-563507-8	Capacitor, 6,800 Pf	A2A3C13
1	MI-563507-12	Capacitor, 1,200 Pf	A2A3A1C2
1	MI-563522-1	Capacitor, 2,200 Pf, 6 kV	A10C4
2	MI-563522-6	Capacitor, 1,300 Pf, 10 kV	A10C2
2	MI-563522-2	Capacitor, 820 Pf, 6 kV	A10C1
2	MI-563522-13	Capacitor, 750 Pf, 10 kV	A10A1C6

PARTS ORDERING INFORMATION

REPLACEMENT PARTS

Replacement parts bearing a Stock Number should be ordered by Item, Description, and Stock Number from RCA, Distributor and Special Products Division, Deptford, New Jersey 08096. Items listed under a Master Item (MI) Number should be ordered from RCA, Commercial Communications Systems Division, Camden, NJ 08102.

Because of possible products modifications and/or the unavailability of parts, the item which will be supplied against an order for a replacement part may not be an exact duplicate of the original part. As a result, some of the replacement parts received may require a mounting modification of the customer's design. In some cases, parts and/or instructions for adapting the substitute parts will be supplied. In no way will the substitute parts impair the operation or performance of the equipment.

For information regarding the use of any parts received, write RCA, Tech Alert, Bldg. 2-8, Camden, NJ 08102, or call (609) 338-3434.

EMERGENCY PART SERVICE

For emergency part service during working hours, contact RCA Distributor and Special Products Division, telephone (609) 848-5900 or (609) 541-3636 extension 2234 or 2235. After working hours (Eastern time) telephone (609) 853-0560.

LOCATION	ORDERING INSTRUCTIONS
Continental United States, including Alaska and Hawaii	Replacement Parts bearing a STOCK NUMBER should be ordered from RCA Distributor and Special Products Division – 2000 Clements Bridge Road – Deptford, NJ 08096.
	Replacement Parts bearing a MASTER ITEM (MI) NUMBER should be ordered from RCA, Commercial Communcations Systems Division – Camden, NJ 08102 or your nearest RCA Regional Office.
	Replacement Parts with NO STOCK or MASTER ITEM (MI) NUMBER are standard components. They are not stocked by RCA and should be obtained from your local electronics distributor.
Dominion of Canada	Order from your local RCA Sales Representative or his office or from: RCA Victor Limited, 1001 Lenoir Street, Montreal, Quebec.
Outside of Continental United States, Alaska, Hawaii, and the Dominion of Canada	Order from your local RCA Sales Representative or from: RCA International Division, Clark, New Jersey – U.S.A. – Wire: RADIOINTER
	Emergency: Cable RADIOPARTS, DEPTFORD, NJ

TABLE 11. PARTS LIST INDEX

MI Number	Symbol	Description	Drawing Number	Page
MI-563500	A1	BTA-5SS AM Transmitter Cabinet	3751612-0501	37
	A4	Control Panel Assembly	3751076-0501	37
	A2	Top Slope Panel Assembly	3751612-0502	38
	A3	Meter Panel Assembly	3751612-0503	39
	A5	Modulator Box Assembly	3751612-0505	39
	A6	RF Box Assembly	3751612-0506	39
	A7	Circuit Breaker Panel Assembly	3753018-0501	40
	A8	Vertical Divider Panel Assembly	3751612-0508	40
	A8A3	Linearity Corrector Power Output	3751835-0501	40
	A9	Horizontal Shelf Assembly	3751612-0509	41
	A9PS1	Power Supply, -5V HI	3729585-2	41
	A9PS2	Power Supply, +12V HI	3729585-4	42
	A9PS3	Linearity Power Supply	3751792-0501	42
	A10	Top Cover Assembly	3751612-0510	42
	A10A1	Reflectometer Assembly	3729828-0501	42
	A10PS1	Pre-Driver Power Supply	3751834-0501	43
	A10PS2	Logic Power Supply	3751832-1	43
		Cable Harness Assembly	3751979-0501	43
MI-563527-2	A2A1	Modulation Generator	3751073-0501	45
MI-563527-6	A2A2	RF Generator	3751074-0501	49
MI-563527-3	A2A3	RF Pre-Driver	3751441-0501	52
MI-563509	A2A4	Power Cutback Kit (Optional)	3751488-0501	54
MI-563527-1	A2A5	Offset Regulator	3751463-0501	55
MI-563527-8	A4A1A	Transmitter Control Interface	3751076-0502	56
MI-563527-9	A4A1B	Control Logic	3751076-0503	60
MI-563527-13	A6A3	Linearity Corrector	3751758-0501	61
MI-563510	A5A2-5	Modulator	3751405-0501	62
MI-563504	A5A1	Modulator Driver	3751393-0502 /3/4	64
MI-563505	A6A4-9	RF Amplifier	3751336-0501	66
MI-563527-2	A6A2	PA Drive Detector	3751768-0501	68
MI-563513	A4A2	Remote Power Adjust Assembly	3751747-0501 /2	69
MI-563527-10	A8A1	Opto/Metering Assembly	3751461-0501	70
MI-563527-11	A8A2	PA Balance	3751604-0501	72
MI-563527-4	A9A1	Linearity Power Supply	3751792-0502	73
MI-563527-14	A10A2	RF Pre-Driver Power Supply	3751835-0502	74
MI-563512		Local Control Panel (Optional)	3751900-0501	74
MI-563508		Extension Metering Panel (Optional)	3751902-0501	75
MI-563511-1	A8A4	PA Balance Baby Board 525-694 kHz	3751882-0501	75
MI-563511-2	A8A4	PA Balance Baby Board 695-919 kHz	3751882-0502	76
MI-563511-3	A8A4	PA Balance Baby Board 920-1216 kHz	3751882-0503	76
MI-563511-4	A8A4	PA Balance Baby Board 1217-1705 kHz	3751882-0504	76

REPLACEMENT PARTS

Symbol	Stock No.	Drawing No.	Description
			MI-563500 BTA-5SS AM TRANSMITTER
1		3751612-0501	BTA-5SS SOLID STATE AM TRANSMITTER SEE BREAKDOWN BELOW
2			MI563527-2 SEE SEPARATE BREAKDOWN
3			MI563527-6 SEE SEPARATE BREAKDOWN
4			MI563527-3 SEE SEPARATE BREAKDOWN
5			MI563527-1 SEE SEPARATE BREAKDOWN
6			MI563527-8 SEE SEPARATE BREAKDOWN
7			MI563527-9 SEE SEPARATE BREAKDOWN
8			MI563510 SEE SEPARATE BREAKDOWN
9			MI563504 SEE SEPARATE BREAKDOWN
10			MI563505 SEE SEPARATE BREAKDOWN
11			MI563527-5 SEE SEPARATE BREAKDOWN
12			MI563527-13 SEE SEPARATE BREAKDOWN
13			MI563527-10 SEE SEPARATE BREAKDOWN
14			MI563527-11 SEE SEPARATE BREAKDOWN
15			MI563527-4 SEE SEPARATE BREAKDOWN
16			MI563527-14 SEE SEPARATE BREAKDOWN
17	450811	3729637-0103	SCALE RF AMMETER 0-6 AMP
18	450810	3729637-0102	SCALE RF AMMETER 0-8 AMP
19	450809	3729637-0101	SCALE RF AMMETER 0-12 AMP
		3751612-0501	TRANSMITTER ASSEMBLY REV-33
A1CR1	449418	3729586-0004	RECTIFIER, ASSEMBLY - SILICON POWER
A1CR2	449418	3729586-0004	RECTIFIER, ASSEMBLY - SILICON POWER
A1R1	450043	3751738-0012	VARISTOR
A1S1	449417	3724238-0001	SWITCH PUSHBUTTON SPST
A1T1		3734432-0501	TRANSFORMER - MI-563503-1
A1T2	450599	3751800-0004	TRANSFORMER - RECTIFIER POWER
A7R3	450043	3751738-0012	VARISTOR 30V RMS
23		3751076-0501	PANEL CONTROL ASSEMBLY SEE BREAKDOWN BELOW
24		3751612-0502	TOP SLOPE PANEL ASSEMBLY SEE BREAKDOWN BELOW
25		3751612-0503	METER PANEL ASSEMBLY SEE BREAKDOWN BELOW
26		3751612-0505	MOD BOX ASSEMBLY SEE BREAKDOWN BELOW
27		3751612-0506	RF BOX ASSEMBLY SEE BREAKDOWN BELOW
28		3753018-0501	BREAKER PANEL ASSEMBLY SEE BREAKDOWN BELOW
29		3751612-0508	VERT DIV PANEL ASSEMBLY SEE BREAKDOWN BELOW
30		3751612-0509	HORIZ SHELF ASSEMBLY SEE BREAKDOWN BELOW
31		3751612-0510	TOP COVER ASSEMBLY SEE BREAKDOWN BELOW
32		3751979-0501	CABLE HARNESS ASSEMBLY SEE BREAKDOWN BELOW
133	450600	3724067-0011	FILTER, AIR
206	427847	3460078-0001	TERMINAL, QUICK DISCONNECT
232	449223	418072-0503	HOOK GROUNDING
247	450957	3751888-0506	CONNECTOR ASSEMBLY
23			PANEL CONTROL ASSEMBLY 3751076-501 REV-22
A4A1A			TX CONTROL/INTERFACE BD MI-563527-8

Symbol	Stock No.	Drawing No.	Description
A4A1B			CONTROL LOGIC BD MI-563527-9
A4A2			REMOTE POWER CONTROL MI-563513
P8			CONSISTS OF ITEMS 57,62,63
P9			CONSISTS OF ITEMS 56,62,63
P10			CONSISTS OF ITEMS 58,62,63
P11			CONSISTS OF ITEMS 59,62,63
DS1	450045	3751848-0201	DIODE, LIGHT EMITTING MASTER ALARM
R1	437982	3726469-0012	250 OHM 20% 2W
R2	434836	990696-0401	10000 OHM 1% 1/2W
S1	450836	3751784-0001	SWITCH ROTARY 2 POLE 2-12 POS
S2	449830	3751848-0001	SWITCH MOM-PUSH LED TX OFF GREEN
	450835		LENS GREEN FOR ABOVE SWITCH
S3	449830	3751848-0002	SWITCH MOM-PUSH LED STBY YELLOW
	450834		LENS YELLOW FOR ABOVE SWITCH
S4	449830	3751848-0003	SWITCH MOM-PUSH LED RF ON/OL RESET
	450833		LENS RED FOR ABOVE SWITCH
S5	449830	3751848-0001	SWITCH MOM-PUSH LED POWER CUTBACK
	450835		LENS FOR ABOVE SWITCH
S6	449830	3751848-0001	SWITCH MOM-PUSH LED POWER CUTBACK
	450835		LENS FOR ABOVE SWITCH
S7	449830	3751848-0001	SWITCH MOM-PUSH LED POWER CUTBACK
	450835		LENS FOR ABOVE SWITCH
S8	450832	3751796-0001	SWITCH TOGGLE SPDT MOM-OFF-MOM CUT
41	450842	3414765-0607	KNOB
42	450844	3414765-0642	POINTER LARGE
43	450843	3414765-0622	CAP KNOB
46	441739	3414765-0405	KNOB
47	444138	3414765-0442	POINTER LARGE
48	430372	3414765-0422	CAP KNOB
51	450837	3751848-0101	PUSHBUTTONS FOR S2,S3,S4
56	445956	3729316-0004	HOUSING,RECEPTACLE 4 POS
57	446821	3729316-0005	HOUSING,RECEPTACLE 5 POS
58	445781	3729316-0006	HOUSING,RECEPTACLE 6 POS
59	445805	3729316-0007	HOUSING,RECEPTACLE 7 POS
62	442940	3727158-0601	RECEPTACLE HIGH PRESSURE
63	445792	3729316-0102	PLUG,KEYING
24			TOP SLOPE PANEL ASSEMBLY 3751612-502 REV-33
A2A1		3751073-0501	MODULATION GENERATOR MI-563527-2
A2A2		3751074-0501	R F GENERATOR MI-563527-6
A2A3		3751441-0501	R F PREDRIVER MI-563527-3
A2A4		3751488-0000	POWER CUTBACK KIT MI-563509
A2A5		3751463-0501	OFFSET REGULATOR MI-563527-1
A2L1	432688	8911553-0013	COIL RF PA LOADING MI-561386-3
A2C1	449421	3729111-0001	1300 UF +50-10% 450V
A2E1	450598	3751452-0001	TEST PROBE
A2R1	240033	3462695-0002	0.07 OHM 155W WW
A2R2	240033	3462695-0002	0.07 OHM 155W WW
A2R3	240033	3462695-0002	0.07 OHM 155W WW
A2T1		3749708-0000	TRANSFORMER, RF COMBINING MI-56350L
A2TB1	450601	3751829-0001	TERMINAL BLOCK POWER DISTRIBUTION
A2TB2	450602	990630-0060	TERMINAL BLOCK REMOTE CONTROL
A2TB3	450602	990630-0060	TERMINAL BLOCK REMOTE CONTROL
95	249336	1510032-0027	GROMMET

Symbol	Stock No.	Drawing No.	Description
112	241121	7862770-0009	FUSE CLIP A2R1,A2R3,A8R1
176	436886	3450825-0004	TERMINAL A2E1
236	450603	3751888-0504	CONNECTOR ASSEMBLY A2L1,A10L1,A10L2
25			METER PANEL ASSEMBLY 3751612-503 REV-33
A3M1	449415	3729637-0004	METER 0-200UA MULTI
A3M2	449414	3729637-0005	METER 0-150V PA VOLTS
A3M3	449413	3729637-0001	METER 0-100A PA CURRENT
A3M4	449772	3729637-0007	METER 0-12A RF AMP
A3C1	441690	1510003-0037	0.01 +80-20% 500V
A3C2	441690	1510003-0037	0.01 +80-20% 500V
A3C3	441690	1510003-0037	0.01 +80-20% 500V
A3C4	441690	1510003-0037	0.01 +80-20% 500V
A3DS1	443073	990692-0051	LAMP, INCANDESCENT 28V
A3CR1	229936	3415872-0001	DIODE - TYPE 1N914
A3CR2	229936	3415872-0001	DIODE - TYPE 1N914
A3R1	450040	3729307-0003	20000 OHM 10% 1/2W VARIABLE
A3R2	239463	990413-0256	20000 OHM 5% 1/4W FIXED
A3XDS1	450604	3753012-0001	INDICATOR, INCANDESCENT
226	246822	999699-0011	LOGO
227	246816	990502-0125	RETAINER
249	450605	3753012-0101	LENSES FOR A3XDS1
26			MOD BOX ASSEMBLY 3751612-505 REV-33
A5A1		3751405-0501	MODULATOR BD MI-563510
A5A2		3751405-0501	MODULATOR BD MI-563510
A5A3		3751393-0502	MODULATOR DRIVE BD MI-563504
A5A4		3751405-0501	MODULATOR BD MI-563510
A5A5		3751405-0501	MODULATOR BD MI-563510
A5B1	449416	3751823-0001	FAN
A5S1	450606	3751605-0002	SENSOR,AIR FLOW
A5XS1	450607	737870-0002	SOCKET,TUBE
234	239141	1510032-0006	GROMMET
235	921839	1510032-0016	GROMMET
27			RF BOX ASSEMBLY 3751612-506 REV-33
A6A1		3751336-0501	RF AMP PW BD MI-563505
A6A2		3751768-0501	RF DRIVE DETECTOR MI-563527-5
A6A3		3751758-0501	PA LINEARITY CORRECT MI-563527-13
A6A4		3751336-0501	RF AMP PW BD MI-563505
A6A5		3751336-0501	RF AMP PW BD MI-563505
A6A6		3751336-0501	RF AMP PW BD MI-563505
A6A7		3751336-0501	RF AMP PW BD MI-563505
A6A8		3751336-0501	RF AMP PW BD MI-563505
A6A9		3751336-0501	RF AMP PW BD MI-563505
A6B1	449416	3751823-0001	FAN

Symbol	Stock No.	Drawing No.	Description
A6C1A		990703-0000	CAP FDP PA DRIVE
A6C1B		990703-0000	CAP FDP PA DRIVE
A6C1C		990703-0000	CAP FDP PA DRIVE
A6C2A		990703-0000	CAP FDP PA DRIVE
A6C2B		990703-0000	CAP FDP PA DRIVE
A6C2C		990703-0000	CAP FDP PA DRIVE
A6L1	450609	3743915-0501	COIL PA DRIVE
A6R1	449419	3724284-0006	150 OHM 175W
A6S1	450606	3751605-0002	SENSOR AIR FLOW
A6XS1	450607	737870-0002	SOCKET,TUBE
105	210281	426767-0109	INSULATOR
137	242882	1510032-0004	GROMMET
146	921838	1510032-0002	GROMMET
148	449409	3743947-0001	CONNECTOR RF AMPLIFIER
149	449410	3743947-0002	CONNECTOR RF AMPLIFIER
153	449411	3743947-0003	CONNECTOR RF AMPLIFIER
154	449412	3743947-0004	CONNECTOR RF AMPLIFIER
234	239141	1510032-0006	GROMMET
235	921839	1510032-0016	GROMMET
239	450610	3751888-0502	CONNECTOR ASSEMBLY A6L1
28			BREAKER PANEL ASSEMBLY 3753018-501 REV 5
A7K1	449408	3729590-0001	CONTACTOR HV
A7K2	449407	3732456-0003	CONTACTOR LV
A7K3	449406	3720170-0015	RELAY HV AUX
A7K4	449405	3720170-0014	RELAY LV AUX
A7K5	449404	3729591-0001	RELAY OVERLOAD DRIVER VOLTAGE
A7HR1	243451	3456491-0030	HEATER FOR A7K5 5 AMP
A7S1	420844	3730271-0004	CIRCUIT BREAKER MAIN/HV 50 AMP
A7S2	449425	3729775-0110	CIRCUIT BREAKER LV BLOWER
A7S2	450611	3751828-0003	SWITCH TOGGLE HV BYPASS
A7S4	449426	3729775-0019	CIRCUIT BREAKER CONTROL VOLTAGE
A7S5	449427	3751825-0001	SWITCH INTERLOCK FOR A7K1
A7S6	449427	3751825-0001	SWITCH INTERLOCK FOR A7K2
A7S7			PART OF A7K2
A7S8	449427	3751825-0001	SWITCH INTERLOCK FOR A7K1
A7R1	450041	3729229-0014	VARISTOR 275V RMS
A7R2	450043	3751738-0012	VARISTOR 30V RMS
A7T1	449430	457084-0003	TRANSFORMER VARIABLE
A7T2	449429	3729584-0001	TRANSFORMER CONTROL
A7T3	448698	3751800-0003	TRANSFORMER LV BOOST/BUCK
A7TB1	450849	990630-0310	TERMINAL BOARD LV
29			VERT DIV PANEL ASSEMBLY 3751612-508 REV-33
A8A1		3751461-0501	PW BD OPTO/METERING MI-563527-10
A8A2		3751604-0501	PW BD PA BALANCE MI-563527-11
A8A3			LINEARITY CORR POWER OUTPUT 3751835-501 REV 3
C1	233732	8959154-0189	5UF 100V ELECTROLYTIC
C2	449403	3410948-0077	0.068 200V FILM

Symbol	Stock No.	Drawing No.	Description
CR1	449348	3751822-0105	DIODE - TYPE 1N3210
CR2	441516	3729252-0101	DIODE - TYPE 1N3893
Q1	449347	3751813-0001	TRANSISTOR
Q2	449347	3751813-0001	TRANSISTOR
R1	502210	82283-0159	1000 OHM 5% 1/2W
R2	502210	82283-0159	1000 OHM 5% 1/2W
R3	449401	3726923-C499	0.5 OHM 1% 10W WW
TB1	450527	990630-0258	TERMINAL BOARD
XQ1	232360	3726342-0001	SOCKET - TRANSISTOR
XQ2	232360	3726342-0001	SOCKET - TRANSISTOR
A8A4			PA BALANCE BABY BOARD FDP
A8C1	449423	3729113-0014	5UF 5% 1000V FILM
A8C2	448824	3729113-0013	3UF 5% 1000V FILM
A8C3	237580	3729113-0009	1UF 5% 1000V FILM
A8C4	449424	3729113-0008	0.68UF 5% 1000V FILM
A8C5	449423	3729113-0014	5UF 5% 1000V FILM
A8C6	237580	3729113-0009	1UF 5% 1000V FILM
A8C7	237580	3729113-0009	1UF 5% 1000V FILM
A8C8	449424	3729113-0008	0.68UF 5% 1000V FILM
A8C9	449424	3729113-0008	0.68UF 5% 1000V FILM
A8C16 THRU A8C31	449421	3729111-0001	1300UF +50-10% 450V
A8C32	427826	3729111-0008	5800UF +75-10% 40V
A8L1	450846	3743945-0501	COIL-MODULATOR-FILTER
A8L2	450847	3743945-0502	COIL-MODULATOR-FILTER
A8L3	450846	3743945-0501	COIL-MODULATOR-FILTER
A8L4	450847	3743945-0502	COIL-MODULATOR-FILTER
A8L5	450848	3749238-0502	COIL-MODULATOR-FILTER
A8L6	450857	3749238-0503	COIL-MODULATOR-FILTER
A8L7 THRU A8L12	450845	3735663-0001	COIL,TRAY-TUNING
A8R1	449557	3459805-0017	250 OHM 225W
A8R2	449556	3751814-0001	SHUNT-METER 100MV/50A SUPPLY 1
A8R3	449555	3751814-0002	SHUNT-METER 100MV/100A
98	430954	1510050-0001	CLAMP 6AC32
136	439043	426767-0112	INSULATOR .75 DIA X 2.00
137	242882	1510032-0004	GROMMET
147	229166	3743947-0001	CONNECTOR - RF AMPLIFIER
238	450597	3751888-0501	CONNECTOR ASSEM A8L7 THRU A8L12
30			HORIZ SHELF ASSEMBLY 3751612-509 REV-33
A9A1		3751792-0502	LINEARITY PWR SUPPLY MI-563527-4
A9C1	449422	3729111-0007	15000UF +50-10% 75V
A9C2	449422	3729111-0007	15000UF +50-10% 75V
A9CR1	449554	3751806-0002	RECTIFIER FULLWAVE SINGLE - SPECIAL
A9CR2	441516	3729252-0010	RECTIFIER - TYPE 1N3893
A9PS1			POWER SUPPLY -5V HI 3729585-2 NEED B/D FROM LAMBDA

Symbol	Stock No.	Drawing No.	Description
A9PS2			POWER SUPPLY +12V HI 3729585-4 NEED B/D FROM LAMBDA
A9PS3			LINEARITY POWER SUPPLY 3751792-501 REV 9
C1	420293	3729111-0005	15000UF 100V
CR1	449533	3751831-0002	DIODE - TYPE MDA3501
Q1	450839	3751799-0001	TRANSISTOR - TYPE MJ802
Q2	450839	3751799-0001	TRANSISTOR - TYPE MJ802
Q3	2N4347	3751802-0001	TRANSISTOR - TYPE 2N4347
R1	502122	82283-0143	220 OHM 5% 1/2W
T1	450851	3751800-0005	TRANSFORMER
XQ1	232360	3726342-0001	SOCKET - POWER TRANSISTOR
XQ2	232360	3726342-0001	SOCKET - POWER TRANSISTOR
XQ3	232360	3726342-0001	SOCKET - POWER TRANSISTOR
14	450838	3751808-0101	HEATSINK
16	229166	1510032-0011	GROMMET
20	446267	3410550-C001	MICA INSULATING WAFER
21	138227	990164-0170	COMPOUND - HEATSINK
30	447494	1510050-0005	CLAMP - CAPACITOR
37	444681	993216-0061	TERMINAL - QUICK DISC
A9R1	229896	8491308-0003	0.5 OHM 1% 90W
A9R2	522347	99126-0082	47000 OHM 10% 2W
A9R3	522347	99126-0082	47000 OHM 10% 2W
A9TB1	450613	990605-0101	TERMINAL BOARD
96	430954	1510050-0003	TERMINAL
118	439048	426767-0103	INSULATOR
			TOP COVER ASSEMBLY 3751612-510 REV-33
A10A1			REFLECTOMETER ASSEMBLY VSWR 3729828-501 REV-6
C1	452018	990703-0264	5100PF 5% 3000V
C2	449611	990702-0229	180PF 2% 3000V
C3	449611	990702-0229	180PF 2% 3000V
C4	449611	990702-0229	180PF 2% 3000V
C5	234444	993025-0461	1000PF 5% 100V
CR1	424863	3414728-0035	DIODE - TYPE 1N4148
R1	449601	990736-0209	121 OHM 1% 2W
R2	449601	990736-0209	121 OHM 1% 2W
R3	449601	990736-0209	121 OHM 1% 2W
R4	449601	990736-0209	121 OHM 1% 2W
R5	434836	990696-0401	10000 OHM 1% 1/2W
J1	921358	1510013-0162	JACK BNC
J2	921358	1510013-0162	JACK BNC
T1	449623	3729486-0502	TRANSFORMER

Symbol	Stock No.	Drawing No.	Description
A10C3	449670	990704-0239	470PF 6000V
A10L1	432934	8911553-0013	COIL RF PI FILTER MI-561386-3
A10L2	432934	8911553-0013	COIL RF PI FILTER MI-561386-3
A10L4	450614	3469665-0502	COIL RF 3F TRAP
A10L6	432935	8911553-C011	COIL RF OUTPUT LOADING MI-561386-2
A10J1			OUTPUT CONNECTOR MI-19406A
A10J2	438004	1510013-0183	CONNECTOR
A10T3	452019	3735843-0001	COIL
A10PS1			POWER SUPPLY RF PRE-DRIVER ADJ 3751834-501 REV 4
C1	420293	3729111-0005	15000UF 100V
CR1	449533	3751831-0002	DIODE - TYPE MDA 3501
Q1	450839	3751799-0001	TRANSISTOR - TYPE MJ802
T1	450850	3751800-0002	TRANSFORMER
XQ1	232360	3726342-0001	SOCKET - POWER TRANSISTOR
14	447494	1510050-0005	CLAMP - CAPACITOR
15	450852	3751816-0101	HEATSINK
16	446267	3410550-0001	MICA INSULATOR WAFER
17	138227	990164-0170	COMPOUND - HEATSINK
A10PS2			POWER SUPPLY 3751832-1 NEED B/D FROM VENDOR POWER COMPONENTS CO PART # CBT
105	210281	426767-0109	INSULATOR
236	450603	3751888-0504	CONNECTOR ASSEM A2L1,A10L1,A10L2
237	450841	3751888-0505	CONNECTOR ASSEM A10L6
240	450840	3751888-0503	CONNECTOR ASSEM A10L4
261	242872	1510032-0029	GROMMET
32			CABLE HARNESS ASSEMBLY 3751979-501 REV 16
5	442889	993216-0022	TERMINAL
6	444681	993216-0061	TERMINAL
7	448233	993216-0064	TERMINAL
8	446897	993216-0021	TERMINAL
18	427847	3460078-0001	TERMINAL
21	442940	3727158-0601	RECEPTACLE
22	435211	3460078-0020	TERMINAL
23	446841	993216-0062	TERMINAL
42	445792	3729316-0102	PLUG - KEYING
43	436886	3450825-0004	RECEPTACLE
44	424244	993147-0001	CONNECTOR BNC
A2A1P1	445782	3729316-0008	HOUSING - RECEPTACLE 8 POSITION
A2A1P2	445783	3729316-0014	HOUSING - RECEPTACLE 14 POSITION
A2A1P3	447070	3729316-0015	HOUSING - RECEPTACLE 15 POSITION
A2A1P4	445781	3729316-0006	HOUSING - RECEPTACLE 6 POSITION
A2A2P1	445805	3729316-0007	HOUSING - RECEPTACLE 7 POSITION
A2A2P2	446821	3729316-0005	HOUSING - RECEPTACLE 5 POSITION
A2A2P3	445782	3729316-0008	HOUSING - RECEPTACLE 8 POSITION
A2A2P4	445805	3729316-0007	HOUSING - RECEPTACLE 7 POSITION
A2A2P5	446843	3729316-0010	HOUSING - RECEPTACLE 10 POSITION

Symbol	*Stock No.*	*Drawing No.*	*Description*
A2A2P6	446821	3729316-0005	HOUSING - RECEPTACLE 5 POSITION
A2A3P1	446843	3729316-0010	HOUSING - RECEPTACLE 10 POSITION
A4A1P2	450608	3729316-0017	HOUSING - RECEPTACLE 17 POSITION
A4A1P3	445783	3729316-0014	HOUSING - RECEPTACLE 14 POSITION
A4A1P4	445781	3729316-0006	HOUSING - RECEPTACLE 6 POSITION
A4A1P5	445783	3729316-0014	HOUSING - RECEPTACLE 14 POSITION
A4A1P6	445783	3729316-0014	HOUSING - RECEPTACLE 14 POSITION
A4A1P7	445782	3729316-0008	HOUSING - RECEPTACLE 8 POSITION
A5A1P1	446821	3729316-0005	HOUSING - RECEPTACLE 5 POSITION
A5A2P1	446821	3729316-0005	HOUSING - RECEPTACLE 5 POSITION
A5A3P1	446821	3729316-0005	HOUSING - RECEPTACLE 5 POSITION
A5A4P1	446821	3729316-0005	HOUSING - RECEPTACLE 5 POSITION
A5A5P1	446821	3729316-0005	HOUSING - RECEPTACLE 5 POSITION
A6A2P1	446821	3729316-0005	HOUSING - RECEPTACLE 5 POSITION
A6A3P1	445782	3729316-0008	HOUSING - RECEPTACLE 8 POSITION
A6A3P2	446843	3729316-0010	HOUSING - RECEPTACLE 10 POSITION
A8A1P1	446843	3729316-0010	HOUSING - RECEPTACLE 10 POSITION
A8A1P2	447070	3729316-0015	HOUSING - RECEPTACLE 15 POSITION
A8A1P3	449573	3729316-0012	HOUSING - RECEPTACLE 12 POSITION
A8A1P4	447070	3729316-0015	HOUSING - RECEPTACLE 15 POSITION
A8A1P5	445782	3729316-0008	HOUSING - RECEPTACLE 8 POSITION
A8A1P6	445781	3729316-0006	HOUSING - RECEPTACLE 6 POSITION
A8A1P7	446821	3729316-0005	HOUSING - RECEPTACLE 5 POSITION
A8A2P8	446821	3729316-0005	HOUSING - RECEPTACLE 5 POSITION

Symbol	Stock No.	Drawing No.	Description
			MI-563527-2 MODULATION GENERATOR A2A1 P/L 3751073-501 REV 9
C1	449287	3733558-0042	22UF +50-10% 25V ELECT
C2	433440	3723487-0006	220000PF 20% 50V CER
C3	449287	3733558-0042	22UF +50-10% 25V ELECT
C4	425377	993025-0453	470PF 5% 100V MICA
C5	449287	3733558-0042	22UF +50-10% 25V ELECT
C6	449287	3733558-0042	22UF +50-10% 25V ELECT
C7	425353	3723487-0003	100000 PF +80-20% 50V CER PLATE
C8	449287	3733558-0042	22UF +50-10% 25V ELECT
C9	449287	3733558-0042	22UF +50-10% 25V ELECT
C10	433440	3723487-0006	220000PF 20% 25V CER
C11	245886	993025-0872	3000PF 1%, 100V., MICA
C12	245886	993025-0872	3000PF 1%, 100V., MICA
C13	430603	993025-0848	300PF 1% 100V MICA
C14	236779	993025-0904	62,000PF 1%, 100V., MICA
C15	449286	993025-0895	27000PF 1% 100V MICA
C16	224630	993025-0436	91PF 2%, 500V., MICA
C17	224630	993025-0436	91PF 2%, 500V., MICA
C18	425353	3723487-0003	100000 PF +80-20% 50V CER PLATE
C19	425353	3723487-0003	100000 PF +80-20% 50V CER PLATE
C20	425353	3723487-0003	100000 PF +80-20% 50V CER PLATE
C21	428487	993025-0439	120PF 2% 100V MICA
C22	425353	3723487-0003	100000 PF +80-20% 50V CER PLATE
C23	425353	3723487-0003	100000 PF +80-20% 50V CER PLATE
C24	242446	993025-0444	200PF 1% 500V MICA
C27	432513	3720532-0011	10000 PF 20% 50V CER
C28	425353	3723487-0003	100000 PF +80-20% 50V CER PLATE
C29	433440	3723487-0006	27000PF 1% 100V MICA
C30	425353	3723487-0003	100000 PF +80-20% 50V CER PLATE
C31	425353	3723487-0003	100000 PF +80-20% 50V CER PLATE
C32	449287	3733558-0042	22UF +50-10% 25V ELECT
C33	238820	993025-0445	220PF 1%, 100V., MICA
C34	234444	993025-0461	1000 PF 1% 100V MICA
C35	433440	3723487-0006	27000PF 1% 100V MICA
C36	425377	993025-0453	470PF 5% 100V MICA
C37	226976	3733558-0032	100UF 16V
C38	436354	3723487-0004	470000PF 10% 50V CER
C39	436354	3723487-0004	470000PF 10% 50V CER
C40	239971	993025-0475	3900PF 5%, 100V., MICA
C41	449306	3733558-0062	10UF -10+50% 35V ELECT
C42	432513	3720532-0011	10000 PF 20% 50V CER
C43	449306	3733558-0062	10UF -10+50% 35V ELECT
C44	432513	3720532-0011	10000 PF 20% 50V CER
C45	449306	3733558-0062	10UF -10+50% 35V ELECT
C46	432513	3720532-0011	10000 PF 20% 50V CER
C47	425353	3723487-0003	100000 PF +80-20% 50V CER PLATE
C48	425353	3723487-0003	100000 PF +80-20% 50V CER PLATE
C49	425353	3723487-0003	100000 PF +80-20% 50V CER PLATE
C50	425353	3723487-0003	100000 PF +80-20% 50V CER PLATE
C51	425353	3723487-0003	100000 PF +80-20% 50V CER PLATE
C52	425353	3723487-0003	100000 PF +80-20% 50V CER PLATE
C53	449287	3733558-0042	22UF +50-10% 25V ELECT
C54	425353	3723487-0003	100000 PF +80-20% 50V CER PLATE
C56	443745	3723487-0006	220000PF 20% 50V CER
C57TO C66	443744	3723487-0004	470000PF 20% 50V CER
CR1	242522	3464611-0001	DIODE - TYPE SPECIAL
CR2	242522	3464611-0001	DIODE - TYPE SPECIAL
CR3	242522	3464611-0001	DIODE - TYPE SPECIAL
CR4	242522	3464611-0001	DIODE - TYPE SPECIAL
CR5	242522	3464611-0001	DIODE - TYPE SPECIAL
CR6	242522	3464611-0001	DIODE - TYPE SPECIAL
CR9	242522	3464611-0001	DIODE - TYPE SPECIAL

Symbol	Stock No.	Drawing No.	Description
CR10	242522	3464611-0001	DIODE - TYPE SPECIAL
CR11	242522	3464611-0001	DIODE - TYPE SPECIAL
CR12	242522	3464611-0001	DIODE - TYPE SPECIAL
CR13	242522	3464611-0001	DIODE - TYPE SPECIAL
CR14	242522	3464611-0001	DIODE - TYPE SPECIAL
CR15	242522	3464611-0001	DIODE - TYPE SPECIAL
CR16	242522	3464611-0001	DIODE - TYPE SPECIAL
DS1	443794	3729606-0002	DIODE - TYPE LED (RED)
E1	228124	3450797-0003	CONTACT
E2	228124	3450797-0003	CONTACT
E3	228124	3450797-0003	CONTACT
E4	228124	3450797-0003	CONTACT
E5	228124	3450797-0003	CONTACT
E6	228124	3450797-0003	CONTACT
E7	228124	3450797-0003	CONTACT
K1	449766	3726301-0003	RELAY
L1	451140	3735664-0501	FILTER ASSEMBLY
Q1	431013	3729249-0002	TRANSISTOR - TYPE 2N2905
Q2	428451	3412889-0003	TRANSISTOR - TYPE 2N2222A
Q3	428185	3412889-0002	TRANSISTOR - TYPE 2N2906
Q4	431013	3729249-0002	TRANSISTOR - TYPE 2N2905
R1	249554	990413-0225	1000 OHM 1% 1/4W FILM
R2	435515	990413-0249	10000 OHM 5% 1/4W FILM
R3	427657	990413-0236	3000 OHM 1/4W 2%, FILM
R4	435739	990413-0260	30000 OHM 5% 1/4W FILM
R5	440710	990413-0187	27 OHM 5% 1/4W FILM
R6	418861	990413-0194	51 OHMS 5% 1/4W FILM
R7	427658	990413-0218	510 OHM 2% 1/4W FILM
R8	240575	990413-0215	390 OHM 5% 1/4W FILM
R9	240575	990413-0215	390 OHM 5% 1/4W FILM
R10	249554	990413-0225	1000 OHM 1% 1/4W FILM
R11	424926	990413-0210	240 OHM 5%, 1/4W., FILM
R12	424926	990413-0210	240 OHM 5%, 1/4W., FILM
R13	249438	990413-0219	560 OHM 2% 1/4W FILM
R14	435515	990413-0249	10000 OHM 5% 1/4W FILM
R15	239463	990413-0256	20000 OHM 5% 1/4W FILM
R16	428740	990413-0270	75000 OHM 1% 1/4W FILM
R17	218762	99206-0231	1000000 OHM 5% 1/4W COMP
R18	440710	990413-0187	27 OHM 5% 1/4W FILM
R19	435515	990413-0249	10000 OHM 5% 1/4W FILM
R20	435515	990413-0249	10000 OHM 5% 1/4W FILM
R21	449285	3458861-0014	100000 OHM LINEAR VARIABLE
R22	249553	990413-0201	100 OHM 1% 1/4W FILM
R23	430331	3458861-0009	5000 OHMS 200V FIG 3 VARI
R24	249554	990413-0225	1000 OHM 1% 1/4W FILM
R25	249554	990413-0225	1000 OHM 1% 1/4W FILM
R26	249554	990413-0225	1000 OHM 1% 1/4W FILM
R27	249554	990413-0225	1000 OHM 1% 1/4W FILM
R28	440710	990413-0187	27 OHM 5% 1/4W FILM
R29	440710	990413-0187	27 OHM 5% 1/4W FILM
R30	249554	990413-0225	1000 OHM 1% 1/4W FILM
R31	241859	990413-0245	6800 OHM 5% 1/4W FILM
R32	249554	990413-0225	1000 OHM 1% 1/4W FILM
R33	249554	990413-0225	1000 OHM 1% 1/4W FILM
R34	435515	990413-0249	10000 OHM 5% 1/4W FILM
R35	436144	990413-0253	15000 OHM 5% 1/4W
R36	430331	3458861-0009	5000 OHMS 200V FIG 3 VARI
R37	436469	990413-0221	680 OHMS 2% 1/4W FILM
R38	435515	990413-0249	10000 OHM 5% 1/4W FILM
R39	418861	990413-0194	51 OHMS 5% 1/4W FILM
R40	245925	990413-0209	220 OHM 5% 1/4W FILM
R41	249262	990413-0257	22000 OHM 5% 1/4W FILM
R42	249554	990413-0225	1000 OHM 1% 1/4W FILM
R43	249554	990413-0225	1000 OHM 1% 1/4W FILM

Symbol	Stock No.	Drawing No.	Description
R44	437646	990413-0193	47 OHM 5% 1/4W FILM
R45	428115	990413-0213	330 OHM 1/4W 2%, FILM
R46	240996	990413-0211	270 OHM 5% 1/4W FILM
R47	245918	990413-0231	1800 OHM 5% 1/4W FILM
R48	239950	990413-0227	1200 OHM 2% 1/4W FILM
R49	249261	990413-0255	18000 OHM 2% 1/4W FILM
R50	249261	990413-0255	18000 OHM 2% 1/4W FILM
R51	440710	990413-0187	27 OHM 5% 1/4W FILM
R52	440710	990413-0187	27 OHM 5% 1/4W FILM
R53	418962	990413-0259	27000 OHM 2% 1/4W FILM
R54	428595	990413-0284	300,000 OHM 1/4W 2%, FILM
R55	428595	990413-0284	300,000 OHM 1/4W 2%, FILM
R56	436141	990413-0273	100000 OHM 1% 1/4W FILM
R57	249554	990413-0225	1000 OHM 1% 1/4W FILM
R58	239955	990413-0248	9100 OHM 2% 1/4W FILM
R59	249554	990413-0225	1000 OHM 1% 1/4W FILM
R62	435739	990413-0260	30000 OHM 5% 1/4W FILM
R63	433290	3458861-0011	20000 OHM LINEAR VAR
R64	433289	3458861-0007	1000 OHM LINEAR VAR
R65	430838	990413-0185	22 OHM 1/4W 5%, FILM
R66	239954	990413-0243	5600 OHM 2% 1/4W FILM
R67	433289	3458861-0007	1000 OHM LINEAR VAR
R68	428596	990413-0235	2700 OHM
R69	428107	990413-0216	430 OHM 5% 1/4W FILM
R70	430330	3458861-0008	2000 OHMS LINEAR VARI
R71	430330	3458861-0008	2000 OHMS LINEAR VARI
R72	239950	990413-0227	1200 OHM 2% 1/4W FILM
R73	249554	990413-0225	1000 OHM 1% 1/4W FILM
R74	435515	990413-0249	10000 OHM 5% 1/4W FILM
R75	420022	990413-0258	24000 OHM 5% 1/4W FILM
R76	249432	990413-0240	4300 OHM 5% 1/4W FILM
R77	218762	99206-0231	1000000 OHM 5% 1/4W COMP
R78	422460	990413-0217	470 OHM 2% 1/4W FILM
R79	439884	990413-0280	200000 OHM 5% 1/4W FILM
R80	426910	990413-0237	3300 OHM 2% 1/4W FILM
R81	249554	990413-0225	1000 OHM 1% 1/4W FILM
R82	430331	3458861-0009	5000 OHMS 200V FIG 3 VARI
R83	444882	990401-0476	60400 OHM 1% 1/4W FILM
R84	249554	990413-0225	1000 OHM 1% 1/4W FILM
R85	433289	3458861-0007	1000 OHM LINEAR VAR
R86	249554	990413-0225	1000 OHM 5% 1/4W FILM
R87	438437	3458862-0106	5000 OHM 10% 1/2W LINEAR VAR
R88	249554	990413-0225	1000 OHM 5% 1/4W FILM
TP1	242732	3457645-0002	CONTACT
TP2	242732	3457645-0002	CONTACT
TP3	242732	3457645-0002	CONTACT
TP4	242732	3457645-0002	CONTACT
TP5	242732	3457645-0002	CONTACT
TP6	242732	3457645-0002	CONTACT
TP7	242732	3457645-0002	CONTACT
TP8	242732	3457645-0002	CONTACT
TP9	242732	3457645-0002	CONTACT
TP10	242732	3457645-0002	CONTACT
TP11	242732	3457645-0002	CONTACT
TP12	242732	3457645-0002	CONTACT
TP13	242732	3457645-0002	CONTACT
TP14	242732	3457645-0002	CONTACT
TP15	242732	3457645-0002	CONTACT
TP16	242732	3457645-0002	CONTACT
TP17	242732	3457645-0002	CONTACT
TP18	242732	3457645-0002	CONTACT
TP19	242732	3457645-0002	CONTACT
TP20	242732	3457645-0002	CONTACT
TP21	242732	3457645-0002	Contact
U1	441584	3427994-0011	I C - TYPE SN74LS11N
U2	437991	3427994-0074	I.C. - TYPE SN74LS74N
U3	436444	3427994-0014	I C - TYPE SN74LS14N

Symbol	*Stock No.*	*Drawing No.*	*Description*
U4	426918	3729710-0001	I.C. - TYPE UA710PC
U5	438173	3729694-0001	I.C. - TYPE 9602PC
U6	426918	3729710-0001	I.C. - TYPE UA710PC
U7	432233	3729429-0001	I C - TYPE MC1741SG
U8	426918	3729710-0001	I.C. - TYPE UA710PC
U9	432340	3726908-0001	I.C. - TYPE MC1741CP1
U10	444949	3427994-0005	I.C.-TYPE SN74LS05N
U11	432340	3726908-0001	I.C. - TYPE MC1741CP1
11	444858	3727158-0307	POST
13	247544	3458378-0001	PAD
24	228192	3450825-0001	RECEPTACLE E1-E3

Symbol	Stock No.	Drawing No.	Description
			MI-563527-6 R F GENERATOR PW BOARD A2A2 P/L 3751074-501 REV-9
C1	442452	3723487-0103	100000 PF 20% 50V CER
C2	443744	3723487-0104	470000 PF 20% 50V CER
C3	431266	8959154-0174	10UF 12V., ELECT.
C4	219039	8959154-0110	25UF 25V., ELECT.
C5	442452	3723487-0103	100000 PF 20% 50V CER
C6	442452	3723487-0103	100000 PF 20% 50V CER
C7	442452	3723487-0103	100000 PF 20% 50V CER
C8	138923	8959154-0155	1UF 50V TUB. ELECT.
C9	442452	3723487-0103	100000 PF 20% 50V CER
C10	443744	3723487-0104	470000 PF 20% 50V CER
C11	445988	3723487-0102	22000PF 20% 50V CER
C12	442452	3723487-0103	100000 PF 20% 50V CER
C13	235503	8959154-0180	75UF 10% 12V ELECT
C14	138923	8959154-0155	1UF 50V TUB. ELECT.
C15	138923	8959154-0155	1UF 50V TUB. ELECT.
C16	443744	3723487-0104	470000 PF 20% 50V CER
C17	442452	3723487-0103	100000 PF 20% 50V CER
C18	219039	8959154-0177	25UF 25V., ELECT.
C19	443744	3723487-0104	470000 PF 20% 50V CER
C20	224358	8959154-0113	75UF 25V., ELECT.
C21	445988	3723487-0102	22000PF 20% 50V CER
C25	217350	8959154-0108	10UF 25V., ELECT.
C26	217350	8959154-0108	10UF 25V., ELECT.
C27	442452	3723487-0103	100000 PF 20% 50V CER
C28	442452	3723487-0103	100000 PF 20% 50V CER
C29	420116	8959154-0175	15UF 12V., ELECT.
C30	442452	3723487-0103	100000 PF 20% 50V CER
C31	137903	3723487-0105	1000000PF 20% 50V CER
C32	443744	3723487-0104	470000 PF 20% 50V CER
C33	443744	3723487-0104	470000 PF 20% 50V CER
C34	442452	3723487-0103	100000PF 20% 50V CER
C35	443744	3723487-0104	470000 PF 20% 50V CER
C36	442452	3723487-0103	100000 PF 20% 50V CER
C37	442452	3723487-0103	100000 PF 20% 50V CER
C38	442452	3723487-0103	100000 PF 20% 50V CER
C39	443744	3723487-0104	470000 PF 20% 50V CER
C40	442452	3723487-0103	100000 PF 20% 50V CER
C41	442452	3723487-0103	100000 PF 20% 50V CER
C42	442452	3723487-0103	100000 PF 20% 50V CER
C43	442452	3723487-0103	100000 PF 20% 50V CER
C44 THRU C48	442452	3723487-0103	100000 PF 20% 50V CER
CR1	418674	3416269-0208	DIODE - TYPE 1N4732A
CR2	418674	3416269-0208	DIODE - TYPE 1N4732A
CR3	430999	3416269-0216	DIODE - TYPE 1N4740A
CR4	249603	3458490-0008	DIODE - TYPE MPD300
CR5	426226	3416269-0207	DIODE - TYPE 1N4731
CR6	229936	3415872-0001	DIODE - TYPE 1N914
CR7	421611	3721929-0001	DIODE - TYPE SPECIAL
CR8	421611	3721929-0001	DIODE - TYPE SPECIAL
G1		3751827-0501	OSCILLATOR ASSEM
C1	138923	8959154-0155	1UF 50V ELECT
C2	442452	3723487-0103	100000 PF 20% 50V CER
C3	442452	3723487-0103	100000 PF 20% 50V CER
C4	432327	990693-0225	33 PF 5% 300V MICA
C5	442452	3723487-0103	100000 PF 20% 50V CER
C6	442452	3723487-0103	100000 PF 20% 50V CER
C7	137903	3723487-0105	1000000 PF 20% 50V CER
C8	442452	3723487-0105	100000 PF 20% 50V CER
C9	431266	8959154-0174	10UF 12V ELECT

Symbol	Stock No.	Drawing No.	Description
C11	442452	3723487-0103	100000 PF 20% 50V CER
C13	443744	3723487-0104	470000 PF 20% 50V CER
C14	443744	3723487-0104	470000 PF 20% 50V CER
C15	442452	3723487-0103	100000 PF 20% 50V CER
CR1	433045	3729130-0003	DIODE - TYPE MV1404
CR2	439963	3729130-0001	DIODE - TYPE MV1401
CR4	139343	3416269-0209	DIODE - TYPE 1N4733A
L1	444745	3330847-0128	COIL 18 UH 2% .145 AMP
L2	441379	3330847-0131	COIL 33 UH 5% .13 AMP
L3	432271	3330847-0134	COIL 56 UH 5% .10 AMP
L4	452566	3330847-0148	COIL 820 UH 5% .029 AMP
L5	425967	3330847-0025	COIL 10 UH 10% .13 AMP
Q1	428451	3726706-0001	TRANSISTOR - TYPE 2N2222A
R1	442214	990413-0218	510 OHM 1% 1/4W FILM
R2	442228	990413-0238	3600 OHM 1% 1/4W FILM
R3	442228	990413-0238	3600 OHM 1% 1/4W FILM
R4	427906	3724128-0035	5000 OHM LINEAR VAR
R5	442231	990413-0241	4700 OHM 1% 1/4W FILM
R13	249555	990413-0249	10000 OHM 1% 1/4W FILM
R14	502062	82283-0130	62 OHM 5% 1/2W COMP
U1	449212	3726644-0010	I C - TYPE 78M08C
U2	443921	3729208-0001	I C - TYPE MC1648P (SPECIAL)
G2	643172	3751448-0001	CRYSTAL TCXO
Q1	428451	3726706-0001	TRANSISTOR - TYPE 2N2222A
Q2	428451	3726706-0001	TRANSISTOR - TYPE 2N2222A
Q3	244871	3458914-0004	TRANSISTOR - TYPE 2N5089
R1	424926	990413-0210	240 OHM 5% 1/4W FILM
R2	424926	990413-0210	240 OHM 5% 1/4W FILM
R3	249554	990413-0225	1000 OHM 1% 1/4W FILM
R4	249554	990413-0225	1000 OHM 1% 1/4W FILM
R5	522116	99126-0140	160 OHMS 5% 2W COMP.
R6	522116	99126-0140	160 OHMS 5% 2W COMP.
R7	249439	990413-0222	750 OHM 5% 1/4W FILM
R8	249554	990413-0225	1000 OHM 1% 1/4W FILM
R9	249553	990413-0201	100 OHM 2% 1/4W FILM
R10	428880	990413-0212	300 OHM 5% 1/4W FILM
R11	239955	990413-0248	9100 OHM 2% 1/4W FILM
R12	249441	990413-0230	1600 OHMS 5% 1/4W FILM
R13	249553	990413-0201	100 OHM 1% 1/4W FILM
R14	239955	990413-0248	9100 OHM 2% 1/4W FILM
R15	249441	990413-0230	1600 OHMS 5% 1/4W FILM
R16	249553	990413-0201	100 OHM 1% 1/4W FILM
R17	249554	990413-0225	1000 OHM 1% 1/4W FILM
R18	418963	990413-0262	36,000 OHM 2%, 1/4W., FILM
R19	435515	990413-0249	10000 OHM 5% 1/4W FILM
R20	435515	990413-0249	10000 OHM 5% 1/4W FILM
R21	427658	990413-0218	510 OHM 2% 1/4W FILM
R22	249554	990413-0225	1000 OHM 1% 1/4W FILM
R23	249438	990413-0219	560 OHM 2%, 1/4W., FILM
R24	435515	990413-0249	10000 OHM 5% 1/4W FILM
R25	428116	990413-0241	4700 OHM 2% 1/4W FILM
R26	428594	990413-0221	180 OHM 2% 1/4W FILM
R27	418861	990413-0194	51 OHMS 5% 1/4W FILM
R28	420000	990401-0366	4750 OHM 1% 1/4W FILM
R29	425848	990401-0362	4320 OHM 1% 1/4W FILM
R30	249554	990401-0301	1000 OHM 1% 1/4W FILM
R31	249554	990401-0301	1000 OHM 1% 1/4W FILM
R32	419997	990401-0318	1500 OHM 1% 1/4W FILM
R33	249554	990413-0225	1000 OHM 1% 1/4W FILM
R34	428150	990413-0263	39000 OHM 2% 1/4W FILM
R35	249554	990413-0225	1000 OHM 1% 1/4W FILM

Symbol	Stock No.	Drawing No.	Description
R36 THRU R38	430838	990413-0185	22 OHM 5% 1/4W FILM
R40	449320	3456544-0013	6.2 OHM 5% 11W W W
U1	436444	3427994-0014	I C - TYPE SN74LS14N
U2	433393	3427994-0073	I.C. - TYPE SN74LS73AN
U3	436444	3427994-0014	I C - TYPE SN74LS14N
U4	442117	3729205-0002	I C - TYPE SN75451BP
U5	443912	3726206-0006	I.C. - TYPE MC74418P(SPECIAL)
U6	443912	3726206-0006	I.C. - TYPE MC74418P(SPECIAL)
U7	443912	3726206-0006	I.C. - TYPE MC74418P(SPECIAL)
U8	449211	3427994-0090	I C - TYPE 74LS90
U9	449211	3427994-0090	I C - TYPE 74LS90
U10	449211	3427994-0090	I C - TYPE 74LS90
U11	449211	3427994-0090	I C - TYPE 74LS90
U12	436444	3427994-0014	I C - TYPE SN74LS14N
U13	444112	3427994-0161	IC - TYPE SN74LS161N
U14	438173	3729694-0001	I.C. - TYPE 9602PC
U15	433764	3724989-0005	I C - TYPE MC4044P
U16	432340	3726908-0001	I.C. - TYPE MC1741CP1
U17	449210	3726551-0002	I C -TYPE LM319
U18	436444	3427994-0014	I.C. - TYPE SN74LS14N
U19	430248	3726085-0008	I.C. - TYPE LM340-05K
Y1		3751450-0001	CRYSTAL 10 MHZ THIS CRYSTAL IS NOT FIELD REPAIRABLE REPLACE WITH COMPLETE UNIT G2 STOCK # 643172 WHEN ORDERING STATE STK# & MEGHERTZ STK 643172 AND 10.00000 MHZ
19	437199	3457645-0010	CONTACT
26	228124	3450797-0003	CONTACT
28	450547	3727158-0306	POST
29	444858	3727158-0307	POST

Symbol	Stock No.	Drawing No.	Description
			MI-563527-3 R F PRE-DRIVER A2A3 P/L 3751441-501 REV-12
A1			PREDRIVER BABY BOARD P/L 3751441-502 REV-12
C1	433771	3456852-0036	390-1400 PF VAR
L1	450998	3751873-0001	COIL 15UH 5% 1 AMP
L2	450998	3751873-0001	COIL 15UH 5% 1 AMP
39	228124	3450797-0003	CONTACT
			P/L 3751441-501 REV-12
C1	433439	3721990-0036	100000PF 5% 100V CER
C2	430309	3721990-0026	15000PF 10% 100V CER
C3	430309	3721990-0026	15000PF 10% 100V CER
C4	429703	3457081-0074	0.15UF 10% 400V FILM
C5	429703	3457081-0074	0.15UF 10% 400V FILM
C6	231384	3457081-0178	0.068UF 10% 400V FILM
C7	231384	3457081-0178	0.068UF 10% 400V FILM
C8	429703	3457081-0074	0.15UF 10% 400V FILM
C9	449332	3721990-0044	470000PF 10% 100V CER
C10	134752	8959154-0726	30UF 10% 100V ELECT
C11	429703	3457081-0074	0.15UF 10% 400V FILM
C14	433771	3456852-0036	390-1400 PF VARI
C16	431270	3457081-0077	0.22UF 5% 100V FILM
C17	433283	3721990-0028	22000PF 10% 100V CER
C18	429673	3721990-0032	47000PF 10% 100V CER
C19	143522	1441585-0013	10000PF 20% 1000V CER
C20	143522	1441585-0013	10000PF 20% 1000V CER
C21	433440	3720532-0022	220000PF 5% 50V CER
CR1	449284	3751238-0001	DIODE - TYPE 1OD4
CR2	449284	3751238-0001	DIODE - TYPE 1OD4
J2	449333	3726876-0001	RECEPTACLE
J3	449333	3726876-0001	RECEPTACLE
L2	450998	3751873-0001	COIL 15UH 5% 1 AMP
L3	449338	3729486-0501	INDUCTOR - TOROID
Q1	443799	3729716-0001	TRANSISTOR - TYPE VN46AF
Q2	443799	3729716-0001	TRANSISTOR - TYPE VN46AF
Q3	449296	3751445-0303	TRANSISTOR - TYPE SDT12303
Q4	449296	3751445-0303	TRANSISTOR - TYPE SDT12303
R1	502147	82283-0151	470 OHM 5% 1/2W COMP
R2	502110	82283-0135	100 OHM 5% 1/2W COMP
R3	502322	82283-0191	22000 OHMS 5% 1/2W COMP.
R4	449337	3722472-0010	4 OHM 1% 3W WW
R5	502110	82283-0135	100 OHM 5% 1/2W COMP
R6	502147	82283-0151	470 OHM 5% 1/2W COMP
R7	502322	82283-0191	22000 OHMS 5% 1/2W COMP.
R8	449337	3722472-0010	4 OHM 1% 3W WW
R9	502036	82283-0124	36 OHMS 5% 1/2W COMP.
R10	439983	3751849-0001	500 OHM LINEAR VARI
R11	449402	3751849-0002	1000 OHM LINEAR VARI
R12	502120	82283-0142	200 OHMS 5% 1/2W COMP.
R13	502175	82283-0156	750 OHM 5% 1/2W COMP

Symbol	Stock No.	Drawing No.	Description
R14	502022	82283-0119	22 OHM 5% 1/2W COMP
R15	219045	993257-0192	.1 OHM 1% 1W WW
R16	219045	993257-0192	.1 OHM 1% 1W WW
R17	219045	993257-0192	.1 OHM 1% 1W WW
R18	502022	82283-0119	22 OHM 5% 1/2W COMP
R19	219045	993257-0192	.1 OHM 1% 1W WW
R26	449339	3751850-0001	50 OHM 1% 10W WW
R27	502012	82283-0113	12 OHM 5% 1/2W FILM
R28	502012	82283-0113	12 OHM 5% 1/2W FILM
R29	512010	90496-0111	10 OHM 5% 1W FILM
R30	512010	90496-0111	10 OHM 5% 1W FILM
R31	522010	99126-0111	10 OHM 5% 2W FILM
R32	522039	99126-0125	39 OHM 5% 2W FILM
R33	522039	99126-0125	39 OHM 5% 2W FILM
R34	502012	82283-0113	12 OHM 5% 1/2W FILM
R35	502012	82283-0113	12 OHM 5% 1/2W FILM
R36	425743	3465422-0049	50 OHM 5% 20W WW
T1	449340	3735667-0501	TRANSFORMER ASSEM
T2	449335	3742946-0502	TRANSFORMER ASSEM
19	419039	3450797-0011	CONTACT
20	228124	3450797-0003	CONTACT
21	443739	3457645-0004	PIN CONTACT
38	228192	3450825-0001	RECEPTACLE

Symbol	*Stock No.*	*Drawing No.*	*Description*
			MI-563509 POWER CUTBACK KIT A2A4 P/L 3751488-501 REV-6
J5	438004	1510013-0183	CONNECTOR
J6	438004	1510013-0183	CONNECTOR
K1	449621	3729719-0002	RELAY
K2	449621	3729719-0002	RELAY
K3	449405	3720170-0014	RELAY
K4	449405	3720170-0014	RELAY
R7	434464	480308-0025	200 OHM 10% 25W WW
R8	434464	480308-0025	200 OHM 10% 25W WW
14	446821	3729316-0005	RECEPTACLE
15	446897	993216-0021	TERMINAL
16	444682	3729316-0103	KEYING PLUG
19	442940	3727158-0601	TERMINAL
4		3751488-0502	PRINTED WIRING BOARD ASSEM
CR1 TO CR12 CR13 TO CR16	246572	3731229-0001	DIODE - TYPE 1N5059
	448090	3416269-0133	DIODE - TYPE 1N4757
R1	502127	82283-0145	270 OHM 5% 1/2W COMP
R2	502213	82283-0162	1300 OHM 5% 1/2W COMP
R3	449591	3456544-0015	50 OHM 5% 11W WW
R4	502127	82283-0145	270 OHM 5% 1/2W COMP
R5	502213	82283-0162	1300 OHM 5% 1/2W COMP
R6	502213	82283-0162	1300 OHM 5% 1/2W COMP
XK1	437974	3729309-0010	SOCKET, RELAY
XK2	437974	3729309-0010	SOCKET, RELAY
8	444858	3727158-0307	POST
C1 TO C4	436943	3751707-0016	100UF 25V ELECT.
2			POWER CUTBACK SWITCH ASSEM P/L 3751488-503
S5	449830	3751848-0001	SWITCH-PUSH
S6	449830	3751848-0001	SWITCH-PUSH
S7	449830	3751848-0001	SWITCH-PUSH
			CABLE HARNESS ASSEMBLY 3751979-503
6	444681	993216-0061	TERMINAL
21	442940	3727158-0601	CONNECTOR
42	445792	3729316-0102	PIN
A2A4P1	446844	3729316-0013	HOUSING
A2A4P2	445782	3729316-0008	HOUSING
A2A4P4	445781	3729316-0006	HOUSING

MI-563527-1
OFFSET REGULATOR A2A5
P/L 3751463-501
REV 5

Symbol	Stock No.	Drawing No.	Description
C1	235003	3729245-0001	1UF 10% 400V FILM
C2	235003	3729245-0001	1UF 10% 400V FILM
C3	235003	3729245-0001	1UF 10% 400V FILM
C4	235003	3729245-0001	1UF 10% 400V FILM
C5	235003	3729245-0001	1UF 10% 400V FILM
CR1	449535	3729252-0020	DIODE - TYPE 1N3913
CR2	449534	3751820-0102	DIODE - TYPE 1N3309A
Q1 TO Q12	420506	3729739-0001	TRANSISTOR - TYPE 2N5038
R1	522210	99126-0159	1000 OHM 5% 2W COMP
R2	436976	990474-0192	0.1 OHM 5% 2W WW
R3	436976	990474-0192	0.1 OHM 5% 2W WW
R4	436976	990474-0192	0.1 OHM 5% 2W WW

Symbol	Stock No.	Drawing No.	Description
			MI-563527-8 TRANSMITTER CONTROL INTERFACE A4A1A P/L 3751076-502 REV 20
C1	234444	993025-0461	1000 PF 1% 100V MICA
C2	449307	3733558-C092	100UF 10% 50V ELECT
C3	433440	3720532-C022	220000PF 5% 50V CER
C4	432513	3720532-C011	10000 PF 20% 50V CER
C5	432513	3720532-0011	10000 PF 20% 50V CER
C6	442277	3733558-0018	330UF 6.3V ELECT
C7	442268	3733558-C046	47UF -10+50% 25V ELECT
C8	432513	3720532-C011	10000 PF 20% 50V CER
C9	449306	3733558-0062	10UF -10+50% 25V ELECT
C10	432513	3720532-0011	10000 PF 20% 50V CER
C11	449307	3733558-C092	100UF 10% 50V ELECT
C12	433440	3720532-0022	220000PF 5% 50V CER
C13	449306	3733558-0062	10UF -10+50% 25V ELECT
C14	432513	3720532-C011	10000 PF 20% 50V CER
C15	436354	3720532-0025	470000PF 10% 50V CER
C16	436354	3720532-0025	470000PF 10% 50V CER
C17	449306	3733558-0062	10UF -10+50% 25V ELECT
C18	432513	3720532-C011	10000 PF 20% 50V CER
C19	436354	3720532-0025	470000PF 10% 50V CER
C20	436354	3720532-0025	470000PF 10% 50V CER
C21	449306	3733558-C062	10UF -10+50% 25V ELECT
C22	432513	3720532-0011	10000 PF 20% 50V CER
C23	429691	3720532-C016	47000PF 10% 50V CER
C24	433170	3720532-0018	100000PF 10% 50V CER
C25	433170	3720532-0018	100000PF 10% 50V CER
C26	432513	3720532-C011	10000 PF 20% 50V CER
C27	432513	3720532-0011	10000 PF 20% 50V CER
C28	433170	3720532-0018	100000PF 10% 50V CER
C29	137903	3723487-C105	1000000PF 20% 50V CER
C30	432513	3720532-C011	10000 PF 20% 50V CER
C31	433170	3720532-0018	100000PF 10% 50V CER
C32	433170	3720532-0018	100000PF 10% 50V CER
C33	432513	3720532-0011	10000 PF 20% 50V CER
C34	436354	3720532-0025	470000PF 10% 50V CER
C35	225624	993025-0473	3300PF
C36	433170	3720532-0018	100000PF 10% 50V CER
C37	433170	3720532-0018	100000PF 10% 50V CER
C38	224287	993025-0423	27PF 5% 100V MICA
C39	234444	993025-0461	1000 PF 1% 100V MICA
C40	234444	993025-0461	1000 PF 1% 100V MICA
C41	433170	3720532-C018	100000PF 10% 50V CER
C42	233350	993025-0437	100PF 1% 500V MICA
C43	436354	3720532-0025	470000PF 10% 50V CER
C44	219039	8959154-0177	25UF 12V ELECT
C45	219039	8959154-0177	25UF 12V ELECT
C46	443726	993209-0125	470000PF 20% 100V CER
C47	443726	993209-0125	470000PF 20% 100V CER
C49	146824	3733558-C060	4.7UF 35V ELECT
C48	226976	3733558-C032	100UF 16V ELECT
C50	433440	3720532-0022	220000PF 5% 50V CER
C51TO			
C61	433170	3720532-C018	100000PF 10% 50V CER
C62	215380	993025-0467	1800PF 5% 500V MICA
C63	442265	3733558-C026	22UF 16V ELECT
C64	433440	3720532-C022	220000PF 5% 50V CER
C65	442265	3733558-0026	22UF 16V ELECT
C66	433440	3720532-0022	220000PF 5% 50V CER
CR1	246572	3731229-0001	DIODE - TYPE 1N5059
CR2	246572	3731229-0001	DIODE - TYPE 1N5059
CR3	246572	3731229-0001	DIODE - TYPE 1N5059
CR4	246572	3731229-0001	DIODE - TYPE 1N5059
CR5	246572	3731229-0001	DIODE - TYPE 1N5059

Symbol	Stock No.	Drawing No.	Description
CR6	246572	3731229-0001	DICDE - TYPE 1N5059
CR7	246572	3731229-0001	DICDE - TYPE 1N5059
CR8	246572	3731229-0001	DICDE - TYPE 1N5059
CR9	246572	3731229-0001	DICDE - TYPE 1N5059
CR10	246572	3731229-0001	DICDE - TYPE 1N5059
CR11	427632	99202-0111	DIODE - TYPE 1N4735
CR12	427632	99202-0111	DIODE - TYPE 1N4735
CR13	427632	99202-0111	DICDE - TYPE 1N4735
CR14	427632	99202-0111	DIODE - TYPE 1N4735
CR15	246572	3731229-0001	DICDE - TYPE 1N5059
CR16	242522	3464611-0001	DIODE - TYPE SPECIAL
CR17	418811	99202-0106	DIODE - TYPE 1N4730
CR18	242522	3464611-0001	DICDE - TYPE SPECIAL
CR19	242522	3464611-0001	DIODE - TYPE SPECIAL
CR20	242522	3464611-0001	DIODE - TYPE SPECIAL
CR21	242522	3464611-0001	DICDE - TYPE SPECIAL
CR22	242522	3464611-0001	DICDE - TYPE SPECIAL
CR23	242522	3464611-0001	DIODE - TYPE SPECIAL
CR24	449303	99202-0125	DICDE - TYPE 1N4749
CR25	246572	3731229-0001	DIODE - TYPE 1N5059
CR26	418811	99202-0106	DIODE - TYPE 1N4730
CR27	242522	3464611-0001	DIODE - TYPE SPECIAL
CR31	242522	3464611-0001	DIODE - TYPE SPECIAL
CR32	418811	99202-0106	DICDE - TYPE 1N4730
CR33	418811	99202-0106	DIODE - TYPE 1N4730
CR34	242522	3464611-0001	DICDE - TYPE SPECIAL
CR35	242522	3464611-0001	DIODE - TYPE SPECIAL
CR36	242522	3464611-0001	DICDE - TYPE SPECIAL
CR37	242522	3464611-0001	DIODE - TYPE SPECIAL
CR38	242522	3464611-0001	DIODE - TYPE SPECIAL
CR39	246572	3731229-0001	DICDE - TYPE 1N5059
CR40	246572	3731229-0001	DICDE - TYPE 1N5059
CR41	449304	3415395-0009	DIODE - TYPE 1N5341B
CR42	449304	3415395-0009	DICDE - TYPE 1N5341B
CR43	246572	3731229-0001	DICDE - TYPE 1N5059
CR44	246572	3731229-0001	DICDE - TYPE 1N5059
CR45	242522	3464611-0001	DIODE - TYPE SPECIAL
CR46	246572	3731229-0001	DICDE - TYPE 1N5059
CR47	246572	3731229-0001	DICDE - TYPE 1N5059
Q1	449305	3729723-0003	THYRISTOR - TYPE 2N6070
Q2	245048	3729724-0001	RECTIFIER - TYPE 2N5060
Q3	449350	3721933-0001	TRANSISTOR - TYPE 2N1711
Q4	449350	3721933-0001	TRANSISTOR - TYPE 2N1711
K1	449329	3751455-0001	RELAY
K2	449328	3751451-0001	RELAY
R1	249554	990413-0225	1000 OHM 1% 1/4W FILM
R2	512124	90496-0144	240 OHMS 5% 1W COMP.
R3	245925	990413-0209	220 OHM 5% 1/4W FILM
R4	135726	990413-0177	10 OHMS 5% 1/4W FILM
R5	427658	990413-0218	510 OHM 2% 1/4W FILM
R6	436141	990413-0273	100000 OHM 1% 1/4W FILM
R7	249554	990413-0225	1000 OHM 1% 1/4W FILM
R8	436144	990413-0253	15000 OHM 1% 1/4W FILM.
R9	249554	990413-0225	1000 OHM 1% 1/4W FILM
R10	245925	990413-0209	220 OHM 5% 1/4W FILM
R11	512112	90496-0137	120 OHMS 5% 1W COMP.
R12	512124	90496-0144	240 OHMS 5% 1W COMP.
R13	249554	990413-0225	1000 OHM 1% 1/4W FILM
R14	249554	990413-0225	1000 OHM 1% 1/4W FILM
R15	502022	82283-0119	22 OHM 5% 1/2W COMP
R16	249553	990413-0201	100 OHM 1% 1/4W FILM
R17	422460	990413-0217	470 OHM 2% 1/4W FILM
R18	449591	3456544-0015	50 OHM 5% 11W WW
R19	422463	990413-0267	56000 OHM 2% 1/4W FILM
R20	418861	990413-0194	51 OHMS 5% 1/4W FILM
R21	433289	3458861-0007	1000 OHM LINEAR VAR

Symbol	Stock No.	Drawing No.	Description
R22	502118	82283-0141	180 OHMS 5% 1/2W COMP.
R23	428880	990413-0212	300 OHM 5% 1/4W FILM
R24	428880	990413-0212	300 OHM 5% 1/4W FILM
R25	246408	990413-0269	68000 OHMS 1/4 WATT 5%
R26	249554	990413-0225	1000 OHM 1% 1/4W FILM
R27	424927	990413-0228	1300 OHM 5%, 1/4W., FILM
R28	420701	990413-0268	62000 OHMS 5% 1/4W FILM
R29	248706	990413-0236	3000 OHMS 5% 1/4W FILM
R30	249554	990413-0225	1000 OHM 1% 1/4W FILM
R31	245925	990413-0209	220 OHM 5% 1/4W FILM
R32	428563	990413-0189	33 OHM 5% 1/4W FILM
R33	240575	990413-0215	390 OHM 5% 1/4W FILM
R34	449762	3456544-0014	120 OHM 5% 11W WW
R35	427657	990413-0236	3000 OHM 2% 1/4W FILM
R36	422460	990413-0217	470 OHM 2% 1/4W FILM
R37	248706	990413-0236	3000 OHMS 5% 1/4W FILM
R38	422460	990413-0217	470 OHM 2% 1/4W FILM
R39	441527	990401-0213	133 OHM 1% 1/4W FILM
R40	436555	990401-0291	866 OHMS 1% 1/4W FILM
R41	436469	990413-0221	680 OHM 2% 1/4W FILM
R42	502118	82283-0141	180 OHMS 5% 1/2W COMP.
R43	249554	990413-0225	1000 OHM 1% 1/4W FILM
R44	240996	990413-0211	270 OHM 5% 1/4W FILM
R45	422460	990413-0217	470 OHM 2% 1/4W FILM
R46	433325	990401-0278	634 OHMS 1% 1/4W FILM
R47	438680	990401-0255	365 OHM 1% 1/4W FILM
R48	436469	990413-0221	680 OHMS 2% 1/4W FILM
R49	246408	990413-0269	68000 OHMS 1/4 WATT 5%
R50	246408	990413-0269	68000 OHMS 1/4 WATT 5%
R51	239952	990413-0224	910 OHM 2%, 1/4W., FILM
R52	239952	990413-0224	910 OHM 2%, 1/4W., FILM
R53	239952	990413-0224	910 OHM 2%, 1/4W., FILM
R54	239952	990413-0224	910 OHM 2%, 1/4W., FILM
R55	241859	990413-0245	6800 OHM 5% 1/4W FILM
R56	241859	990413-0245	6800 OHM 5% 1/4W FILM
R57	241859	990413-0245	6800 OHM 5% 1/4W FILM
R58	241859	990413-0245	6800 OHM 5% 1/4W FILM
R59	427658	990413-0218	510 OHM 2% 1/4W FILM
R60	430331	3458861-0009	5000 OHM VAR LINEAR
R61	239953	990413-0232	2000 OHM 2%, 1/4W., FILM
R61	239953	990413-0232	2000 OHM 2%, 1/4W., FILM
R62	246408	990413-0269	68000 OHMS 1/4 WATT 5%
R63	239953	990413-0232	2000 OHM 2%, 1/4W., FILM
R64	433285	3458861-0007	1000 OHM LINEAR VAR
R66	419997	990413-0229	1500 OHM 5% 1/4W FILM
R67	246408	990413-0269	68000 OHMS 1/4 WATT 5%
R68	249553	990413-0201	100 OHM 1% 1/4W FILM
R69	502143	82283-0150	430 OHMS 5% 1/2W COMP.
R70	435515	990413-0249	10000 OHM 5% 1/4W FILM
R71	502143	82283-0150	430 OHMS 5% 1/2W COMP.
R72	435515	990413-0249	10000 OHM 5% 1/4W FILM
R73	249439	990413-0222	750 OHM 5% 1/4W FILM
R74	428107	990413-0216	430 OHM 5% 1/4W FILM
R75	249554	990413-0225	1000 OHM 1% 1/4W FILM
R76	249554	990413-0225	1000 OHM 1% 1/4W FILM
R77	245925	990413-0209	220 OHM 5% 1/4W FILM
R78	249554	990413-0225	1000 OHM 1% 1/4W FILM
R79	249554	990413-0225	1000 OHM 1% 1/4W FILM
R80	249554	990413-0225	1000 OHM 1% 1/4W FILM
R81	249554	990413-0225	1000 OHM 1% 1/4W FILM
R82	439884	990413-0280	200000 OHM 1% 1/4W FILM
R83	435402	3458861-0008	2000 OHM LINEAR VAR
R84	440710	990413-0187	27 OHM 5% 1/4W FILM
R85	440710	990413-0187	27 OHM 5% 1/4W FILM
R86	429863	3458861-0010	10000 OHM LINEAR VARI
R87	422462	990413-0214	360 OHM 5% 1/4W FILM
R88	422462	990413-0214	360 OHM 5% 1/4W FILM
R89	249554	990413-0225	1000 OHM 1% 1/4W FILM
R90	249554	990413-0225	1000 OHM 1% 1/4W FILM

Symbol	Stock No.	Drawing No.	Description
R92	237916	990413-0247	8200 OHMS 1/4W 2% FILM
R93	428596	990413-0235	2700 OHM 2% 1/4W FILM
R94	249554	990413-0225	1000 OHM 1% 1/4W FILM
R95	435515	990413-0249	10000 OHM 5% 1/4W FILM
R96	435515	990413-0249	10000 OHM 5% 1/4W FILM
R97	433289	3458861-0007	1000 OHM LINEAR VAR
R98	435515	990413-0249	10000 OHM 5% 1/4W FILM
R99	433289	3458861-0007	1000 OHM LINEAR VAR
R100	435515	990413-0249	10000 OHM 5% 1/4W FILM
R101	435515	990413-0249	10000 OHM 5% 1/4W FILM
R102	239465	990413-0265	47000 OHM 5% 1/4W FILM
R103	249554	990413-0225	1000 OHM 1% 1/4W FILM
R104	249554	990413-0225	1000 OHM 1% 1/4W FILM
R105	433289	3458861-0007	1000 OHM LINEAR VAR
R106	245925	990413-0209	220 OHM 5% 1/4W FILM
R107	428116	990413-0241	4700 OHM 2% 1/4W FILM
R108	418962	990413-0259	27000 OHM 2% 1/4W FILM
R109	422463	990413-0267	56000 OHM 5% 1/4W FILM
R110	436469	990413-0221	680 OHMS 2% 1/4W FILM
R111	512124	90496-0144	240 OHMS 5% 1W COMP.
R112	449341	990696-0493	90900 OHM 1% 1/2W FILM
R113	428597	990413-0242	5100 OHM 1/4W 2%, FILM
R114	502136	82283-0148	360 OHMS 5% 1/2W COMP.
R115	502110	82283-0135	100 OHM 5% 1/2W COMP
R116	422460	990413-0217	470 OHM 2% 1/4W FILM
R117	249554	990413-0225	1000 OHM 1% 1/4W FILM
R118	442244	990413-0261	33000 OHM 2% 1/4W FILM
R120	449762	3456544-0014	120 OHM 5% 11W WW
R121	424927	990413-0228	1300 OHM 5% 1/4W FILM
R122	245925	990413-0209	220 OHM 5% 1/4W FILM
R123	239953	990413-0232	2000 OHM 2%, 1/4W., FILM
R124	239953	990413-0232	2000 OHM 2%, 1/4W., FILM
R125	239953	990413-0232	2000 OHM 2%, 1/4W., FILM
R126	239953	990413-0232	2000 OHM 2%, 1/4W., FILM
R127	435515	990413-0249	10000 OHM 5% 1/4W FILM
R128	236584	3331583-0393	9090 OHM 1% 1W FILM
R129	419536	990401-0257	383 OHM 1%, 1/4W., FILM
R130	239465	990413-0265	47000 OHM 5% 1/4W FILM
R131	449828	990696-0393	9090 OHM 1% 1/2W FILM
R132	439884	990413-0280	200000 OHM 1% 1/4W FILM
S1	449344	990453-0252	SWITCH DPDT
S2	449345	990453-0242	SWITCH SPDT
U1	436507	3427994-0004	I C - TYPE SN74LS04N
U2	449214	3729707-0001	I C - TYPE MC14490VP
U3	445795	3729708-0001	I C - TYPE 75451ATC
U4	429782	3724947-0002	I C - TYPE 4N25
U5	449213	3729709-0003	I C - TYPE H113
U6	438173	3729694-0001	I.C. - TYPE 9602PC
U7	436444	3427994-0014	I C - TYPE SN74LS14N
U8	436719	3729705-0002	I.C. - TYPE MC3302P
U9	441592	3427994-0032	I C - TYPE SN74LS32N
U10	445795	3729708-0001	I C - TYPE 75451ATC
U11	436719	3729705-0002	I.C. - TYPE MC3302P
U12	426918	3729710-0001	I.C. - TYPE UA710PC
U13	426918	3729710-0001	I.C. - TYPE UA710PC
U14	436507	3427994-0004	I C - TYPE SN74LS04N
U15	432233	3729429-0001	I.C. - TYPE MC1741SG
26	444858	3727158-0307	POST
28	242732	3457645-0002	CONTACT

Symbol	Stock No.	Drawing No.	Description
			MI-563527-9 CONTROL LOGIC A4A1B P/L 3751076-503 REV-21
C1	449306	3733558-C062	10UF +50-10% 35V ELECT
C2	432513	3720532-C011	10000 PF 20% 50V CER
C3	449306	3733558-C062	10UF +50-10% 35V ELECT
C4	436354	3720532-0025	470000PF 10% 50V CER
C5	433800	3720532-C027	1000000PF 10% 50V CER
C6	449306	3733558-0062	10UF +50-10% 35V ELECT
C7	437387	3733558-0028	33UF -10%+50% 16V ELECT
C8	433170	3720532-0018	100000PF 10% 50V CER
C9	432513	3720532-C011	10000 PF 20% 50V CER
C10 THRU C36	433170	3720532-0018	100000PF 10% 50V CER
CR1 THRU CR6	242522	3464611-0001	DIODE - TYPE SPECIAL
DS1 THRU DS15	443794	3729606-0002	DICDE - TYPE LED (RED)
R1	239954	990413-C243	5600 OHM 2% 1/4W FILM
R2	249554	990413-0225	1000 OHM 1% 1/4W FILM
R3	428150	990413-0263	39000 OHM 2% 1/4W FILM
R4	418962	990413-0259	27000 OHM 2% 1/4W FILM
R5	442422	990401-C585	750000 OHM 1% 1/4W FILM
R6	428595	990413-C284	300,000 OHM 1/4W 2%, FILM
R7	435056	990401-C601	1000000 OHM 1% 1/4 FILM.
R8	239954	990413-0243	5600 OHM 2% 1/4W FILM
R9	239465	990413-0265	47000 OHM 5% 1/4W FILM
R10 THRU R23	245925	990413-0209	220 OHM 5% 1/4W FILM
R24	249554	990413-0225	1000 OHM 1% 1/4W FILM
R25	249554	990413-C225	1000 OHM 1% 1/4W FILM
R26	245925	990413-0209	220 OHM 5% 1/4W FILM
R27	249554	990413-0225	1000 OHM 1% 1/4W FILM
U1	437735	3427994-0020	I C - TYPE SN74LS20N
U2	441584	3427994-0011	I C - TYPE SN74LS11N
U3	437613	3427994-0008	I.C. - TYPE SN74LS08N
U4 THRU U6	441584	3427994-0011	I C - TYPE SN74LS11N
U7	437613	3427994-0008	I.C. - TYPE SN74LS08N
U8	437735	3427994-0020	I C - TYPE SN74LS20N
U9	441592	3427994-0032	I C - TYPE SN74LS32N
U10	437780	3427994-0002	I C - TYPE 74LS02
U11	437991	3427994-C074	I.C. - TYPE SN74LS74N
U12	438173	3729694-0001	I.C. - TYPE 9602PC
U13	438173	3729694-0001	I.C. - TYPE 9602PC
U14	433674	3729696-0001	I.C. - TYPE SN74193N
U15	437735	3427994-0020	I C - TYPE SN74LS20N
U16	443942	3729802-0001	I.C. - TYPE LM556CN
U17	436507	3427994-0004	I C - TYPE SN74LS04N
U18	437991	3427994-0074	I.C. - TYPE SN74LS74N
U19	444030	3729594-C002	IC - TYPE SN74LS279N-10 (SPECIAL)
U20	444030	3729594-C002	IC - TYPE SN74LS279N-10 (SPECIAL)
U21	444030	3729594-0002	IC - TYPE SN74LS279N-10 (SPECIAL)
U22	441584	3427994-C011	I C - TYPE SN74LS11N
19	228124	3450797-0003	CONTACT
20	421629	3450797-C016	CONTACT

Symbol	Stock No.	Drawing No.	Description
22	228192	3450825-0001	RECEPTACLE A,B,C,D
			MI-563527-13 PA LINEARITY CORRECTOR A6A3 P/L 3751758-501 REV 5
C1	231027	8959154-0114	100UF 25V ELECT
C2	433170	3720532-0018	100000PF 10% 50V CER
C3	433170	3720532-0018	100000PF 10% 50V CER
C4	219040	8959154-0181	100UF 12V ELECT
C5	426980	1443418-0007	100UF 75V ELECT
C6	426980	1443418-0007	100UF 75V ELECT
C7	426980	1443418-0007	100UF 75V ELECT
C8	233732	8959154-0189	5UF 10% 100V ELECT
C9	433439	993209-0118	100000PF 5% 100V CER
C10	219039	8959154-0110	25UF 25V ELECT
CR1	420923	3722719-0001	DIODE - TYPE FD600
CR2	420923	3722719-0001	DIODE - TYPE FD600
CR3	229936	3454179-0001	DIODE - TYPE 1N914
DS1	431693	3729202-0003	DIODE - TYPE LED (RED)
Q1	230214	3751879-0001	TRANSISTOR - TYPE 2N2102
Q2	230214	3751879-0001	TRANSISTOR - TYPE 2N2102
Q3	431013	3729249-0002	TRANSISTOR - TYPE 2N2905
Q4	428451	3412889-0003	TRANSISTOR - TYPE 2N2222
Q5	449620	3729716-0003	TRANSISTOR - TYPE VN88AF
R1	502330	82283-0194	30000 OHM 5% 1/2W COMP
R2	449679	3458861-0214	100000 OHM LINEAR VAR
R3	502210	82283-0159	1000 OHM 5% 1/2W COMP
R4	502247	82283-0175	4700 OHM 5% 1/2W COMP
R5	435878	3458861-0207	1000 OHM LINEAR VAR
R6	512068	90496-0131	68 OHM 5% 1W COMP
R7	522133	99126-0147	330 OHM 5% 2W COMP
R8	522136	99126-0148	360 OHM 5% 2W COMP
R9	502210	82283-0159	1000 OHM 5% 1/2W COMP
R10	502210	82283-0159	1000 OHM 5% 1/2W COMP
R11	502320	82283-0190	20000 OHM 5% 1/2W COMP
R12	502327	82283-0193	27000 OHM 5% 1/2W COMP
R13	449679	3458861-0214	100000 OHM LINEAR VAR
R14	502210	82283-0159	1000 OHM 5% 1/2W COMP
R15	502020	82283-0118	20 OHM 5% 1/2W COMP
R16	502210	82283-0159	1000 OHM 5% 1/2W COMP
R17	502222	82283-0167	2200 OHM 5% 1/2W COMP
R18	502256	82283-0177	5600 OHM 5% 1/2W COMP
R19	502211	82283-0160	1100 OHM 5% 1/2W COMP
R20	429862	3458861-0209	5000 OHM LINEAR VAR
R21	502211	82283-0160	1100 OHM 5% 1/2W COMP
R22	435878	3458861-0207	1000 OHM LINEAR VAR
R23	449678	3729513-0002	1000 OHM 10% 2W LINEAR VAR
U1	429782	3724947-0002	I C - TYPE 4N25
14	444858	3727158-0307	POST
20	443739	3457645-0004	CONTACT PIN TP1-TP4

MI 563510
MODULATOR PW BOARD A5A2 - A5A5
P/L 3751405-501
REV-8

Symbol	Stock No.	Drawing No.	Description
C1	450530	3729734-0067	220 UF 25V ELECT
C2	449299	3727765-0653	2UF 400V MYLAR
C3	449299	3727765-0653	2UF 400V MYLAR
C4	443743	3723487-0101	10000 PF 20% 50V CER
C5	450530	3729734-0067	220 UF 25V ELECT
C6	450530	3729734-0067	220 UF 25V ELECT
CR1	146320	3416269-0109	DIODE-TYPE ZENER
CR2 THRU CR4	441516	3729252-0010	DIODE - TYPE 1N3893
CR5 THRU CR8	433138	3729266-0001	DIODE-TYPE 1N3611
CR9 THRU CR12	450528	3729426-0001	DIODE - TYPE SVD400-12
DS1	431693	3729202-0003	DIODE - TYPE LED
Q1 THRU Q24	449297	3751444-0301	TRANSISTOR-TYPE SDT13301
R1	502127	82283-0055	270 OHM 5% 1/2W COMP
R2	219045	993257-0192	0.1 OHM 1%, 1W., WW
R3	219047	3416249-0201	1 OHM 5% 5W
R4	449301	3751443-0001	2.7 OHM 10% WW
R5	512333	90496-0022	33000 OHMS 5% 1W COMP.
R6	219045	993257-0192	0.1 OHM 1%, 1W., WW
R7	219047	3416249-0201	1 OHM 5% 5W
R8	449301	3751443-0001	2.7 OHM 10% WW
R9	512333	90496-0022	33000 OHMS 5% 1W COMP.
R10	219045	993257-0192	0.1 OHM 1%, 1W., WW
R11	219047	3416249-0201	1 OHM 5% 5W
R12	449301	3751443-0001	2.7 OHM 10% WW
R13	512333	90496-0022	33000 OHMS 5% 1W COMP.
R14	219045	993257-0192	0.1 OHM 1%, 1W., WW
R15	219047	3416249-0201	1 OHM 5% 5W
R16	449301	3751443-0001	2.7 OHM 10% WW
R17	512333	90496-0022	33000 OHMS 5% 1W COMP.
R18	219045	993257-0192	0.1 OHM 1%, 1W., WW
R19	219047	3416249-0201	1 OHM 5% 5W
R20	449301	3751443-0001	2.7 OHM 10% WW
R21	512333	90496-0022	33000 OHMS 5% 1W COMP.
R22	219045	993257-0192	0.1 OHM 1%, 1W., WW
R23	219047	3416249-0201	1 OHM 5% 5W
R24	449301	3751443-0001	2.7 OHM 10% WW
R25	512333	90496-0022	33000 OHMS 5% 1W COMP.
R26	512333	90496-0022	33000 OHMS 5% 1W COMP.
R27	219047	3416249-0201	1 OHM 5% 5W
R28	449301	3751443-0001	2.7 OHM 10% WW
R29	219045	993257-0192	0.1 OHM 1%, 1W., WW
R30	512333	90496-0022	33000 OHMS 5% 1W COMP.
R31	219047	3416249-0201	1 OHM 5% 5W
R32	449301	3751443-0001	2.7 OHM 10% WW
R33	219045	993257-0192	0.1 OHM 1%, 1W., WW
R34	512333	90496-0022	33000 OHMS 5% 1W COMP.
R35	219047	3416249-0201	1 OHM 5% 5W
R36	449301	3751443-0001	2.7 OHM 10% WW
R37	219045	993257-0192	0.1 OHM 1%, 1W., WW
R38	512333	90496-0022	33000 OHMS 5% 1W COMP.

Symbol	Stock No.	Drawing No.	Description
R39	219047	3416249-0201	1 OHM 5% 5W
R40	449301	3751443-0001	2.7 OHM 10% WW
R41	219045	993257-0192	0.1 OHM 1%, 1W., WW
R42	512333	90496-0022	33000 OHMS 5% 1W COMP.
R43	219047	3416249-0201	1 OHM 5% 5W
R44	449301	3751443-0001	2.7 OHM 10% WW
R45	219045	993257-0192	0.1 OHM 1%, 1W., WW
R46	512333	90496-0022	33000 OHMS 5% 1W COMP.
R47	219047	3416249-0201	1 OHM 5% 5W
R48	449301	3751443-0001	2.7 OHM 10% WW
R49	219045	993257-0192	0.1 OHM 1%, 1W., WW
R50	219045	993257-0192	0.1 OHM 1%, 1W., WW
R51	449301	3751443-0001	2.7 OHM 10% WW
R52	219047	3416249-0201	1 OHM 5% 5W
R53	512333	90496-0022	33000 OHMS 5% 1W COMP.
R54	219045	993257-0192	0.1 OHM 1%, 1W., WW
R55	449301	3751443-0001	2.7 OHM 10% WW
R56	219047	3416249-0201	1 OHM 5% 5W
R57	512333	90496-0022	33000 OHMS 5% 1W COMP.
R58	219045	993257-0192	0.1 OHM 1%, 1W., WW
R59	449301	3751443-0001	2.7 OHM 10% WW
R60	219047	3416249-0201	1 OHM 5% 5W
R61	512333	90496-0022	33000 OHMS 5% 1W COMP.
R62	219045	993257-0192	0.1 OHM 1%, 1W., WW
R63	449301	3751443-0001	2.7 OHM 10% WW
R64	219047	3416249-0201	1 OHM 5% 5W
R65	512333	90496-0022	33000 OHMS 5% 1W COMP.
R66	219045	993257-0192	0.1 OHM 1%, 1W., WW
R67	449301	3751443-0001	2.7 OHM 10% WW
R68	219047	3416249-0201	1 OHM 5% 5W
R69	512333	90496-0022	33000 OHMS 5% 1W COMP.
R70	219045	993257-0192	0.1 OHM 1%, 1W., WW
R71	449301	3751443-0001	2.7 OHM 10% WW
R72	219047	3416249-0201	1 OHM 5% 5W
R73	512333	90496-0022	33000 OHMS 5% 1W COMP.
R74	512333	90496-0022	33000 OHMS 5% 1W COMP.
R75	449301	3751443-0001	2.7 OHM 10% WW
R76	219047	3416249-0201	1 OHM 5% 5W
R77	219045	993257-0192	0.1 OHM 1%, 1W., WW
R78	512333	90496-0022	33000 OHMS 5% 1W COMP.
R79	449301	3751443-0001	2.7 OHM 10% WW
R80	219047	3416249-0201	1 OHM 5% 5W
R81	219045	993257-0192	0.1 OHM 1%, 1W., WW
R82	512333	90496-0022	33000 OHMS 5% 1W COMP.
R83	449301	3751443-0001	2.7 OHM 10% WW
R84	219047	3416249-0201	1 OHM 5% 5W
R85	219045	993257-0192	0.1 OHM 1%, 1W., WW
R86	512333	90496-0022	33000 OHMS 5% 1W COMP.
R87	449301	3751443-0001	2.7 OHM 10% WW
R88	219047	3416249-0201	1 OHM 5% 5W
R89	219045	993257-0192	0.1 OHM 1%, 1W., WW
R90	512333	90496-0022	33000 OHMS 5% 1W COMP.
R91	449301	3751443-0001	2.7 OHM 10% WW
R92	219047	3416249-0201	1 OHM 5% 5W
R93	219045	993257-0192	0.1 OHM 1%, 1W., WW
R94	512333	90496-0022	33000 OHMS 5% 1W COMP.
R95	449301	3751443-0001	2.7 OHM 10% WW
R96	219047	3416249-0201	1 OHM 5% 5W
R97	219045	993257-0192	0.1 OHM 1%, 1W., WW
R98	522022	99126-0119	22 OHMS 5% 2W COMP.
R99	522022	99126-0119	22 OHMS 5% 2W COMP.
R100	502168	82283-0060	680 OHM 5% 1/2W COMP
R101	232205	99206-0561	2.7 OHM 5% 1/4W COMP
R102	502239	82283-0173	3900 OHM 5% 1/2W COMP
10	444858	3727158-0307	POST
17	450529	3751460-0002	HEATSINK

Symbol	Stock No.	Drawing No.	Description
			MI-563504 MODULATOR DRIVER A5A1 P/L 3751393-502 REV-12
2			3751393-503 REV-12
C1	165286	3733558-C049	200UF 25V ELECT
C2	165286	3733558-0049	200UF 25V ELECT
C3	433170	3720532-C018	100000PF 10% 50V CER
C4	165286	3733558-C049	200UF 25V ELECT
C5	433440	3720532-C022	220000PF 5% 50V CER
C6	165286	3733558-C049	200UF 25V ELECT
C7	436354	3720532-0025	470000PF 10% 50V CER
C8 THRU C15	165286	3733558-0049	200UF 25V ELECT
C16	432513	3720532-C011	10000 PF 20% 50V CER
C17	239377	8959154-C725	290UF 12V ELECT
CR1	244785	3458443-C005	DICDE - TYPE 1N4005
CR2	224110	3721932-C006	DIODE - TYPE 1N649
CR3	224110	3721932-0006	DIODE - TYPE 1N649
CR4	447999	99202-C204	DICDE - TYPE 1N4728A
J1	433765	3726655-0005	BOARD
J2	433767	3726655-C008	BOARD
Q1	233649	3412888-0015	TRANSISTOR - TYPE 2N2219A
Q2	233649	3412888-C015	TRANSISTOR - TYPE 2N2219A
Q3	423923	3729249-0D08	TRANSISTOR - TYPE 2N2905A
Q4 THRU Q8	449270	3751459-0001	TRANSISTOR-TYPE 2N6470
Q9	449269	3751456-0001	TRANSISTOR-TYPE 2N6469
Q10 THRU Q13	449270	3751459-0001	TRANSISTOR-TYPE 2N6470
Q14	449269	3751456-0001	TRANSISTOR-TYPE 2N6469
Q15 THRU Q18	449270	3751459-0001	TRANSISTOR-TYPE 2N6470
Q19	449269	3751456-0001	TRANSISTOR-TYPE 2N6469
Q20 THRU Q23	449270	3751459-C001	TRANSISTOR-TYPE 2N6470
Q24	449269	3751456-0001	TRANSISTOR-TYPE 2N6469
Q25 THRU Q28	449270	3751459-0001	TRANSISTOR-TYPE 2N6470
Q29	423923	3729249-C008	TRANSISTOR-TYPE 2N2905A
R1	502251	82283-0176	5100 OHMS 5% 1/2W COMP.
R2	502212	82283-0161	1200 OHM 5% 1/2W COMP
R3	522118	99126-0141	180 OHMS 5% 2W COMP.
R4	522110	99126-0135	100 OHM 5% 2W COMP
R5	522110	99126-C135	100 OHM 5% 2W COMP
R6	449301	3751443-C001	2.7 OHM 10% WW
R7 THRU R14	219045	993257-0192	0.1 OHM 1%, 1W., WW
R15	450349	3721963-0004	.5 OHM 1% 10W WW
R18 THRU R66	219045	993257-0192	0.1 OHM 1%, 1W., WW
R70	502130	82283-0146	300 OHMS 5% 1/2W COMP.

Symbol	*Stock No.*	*Drawing No.*	*Description*
R71	502210	82283-0159	1000 OHM 5% 1/2W CCMP
R71	502210	82283-0159	1000 OHM 5% 1/2W CCMP
R72	502118	82283-0141	180 OHMS 5% 1/2W CCMP.
R73	427574	82283-0561	2.7 OHM 5% 1/2W COMP
U1	449216	3751841-0001	I C - TYPE HCPL-2601
U2	445795	3729708-0001	I C - TYPE 75451ATC
3			3751393-504 REV-12
R16 R28 THRU R69	450350	3456235-0024	60HM 5% 50W WW
	450351	3456235-0025	10HM 5% 50W WW
29	442885	993216-0022	TERMINAL

MI-563505
RF AMPLIFIER A6A1, A6A4 - A6A9
P/L 3751336-501
REV-11

Symbol	Stock No.	Drawing No.	Description
C1	442452	3723487-0103	100000 PF 20% 50V CER
C2	429703	3457081-0074	0.15UF 10% 400V FILM
C3	429703	3457081-0074	0.15UF 10% 400V FILM
C4	442452	3723487-0103	100000 PF 20% 50V CER
C5	429703	3457081-0074	0.15UF 10% 400V FILM
C6	429703	3457081-0074	0.15UF 10% 400V FILM
C7	442452	3723487-0103	100000 PF 20% 50V CER
CR1	441516	3729252-0010	DIODE - TYPE 1N3893
CR2TO			
CR8	449284	3751238-0001	DIODE - TYPE 10D4
CR9	139343	3416269-0109	DIODE - TYPE 1N4733
CR10	441516	3729252-0010	DIODE - TYPE 1N3893
CR11TO			
CR17	449284	3751238-0001	DIODE - TYPE 10D4
CR18	441516	3729252-0010	DIODE - TYPE 1N3893
CR19TO			
CR25	449284	3751238-0001	DIODE - TYPE 10D4
CR26	139343	3416269-0109	DIODE - TYPE 1N4733
CR27	441516	3729252-0010	DIODE - TYPE 1N3893
CR28			
TO			
CR34	449284	3751238-0001	DIODE - TYPE 10D4
CR35	139343	3416269-0109	DIODE - TYPE 1N4733
DS1	431693	3729202-0003	DIODE - TYPE LED (RED)
DS2	431693	3729202-0003	DIODE - TYPE LED (RED)
DS3	431693	3729202-0003	DIODE - TYPE LED (RED)
F1	430935	8845660-0009	FUSE - 20 AMP 250V
F2	430935	8845660-0009	FUSE - 20 AMP 250V
L1	449338	3729486-0501	COIL TOROID
Q1TO			
Q28	449296	3751445-0303	TRANSISTOR - TYPE SDT12303
R1	113152	990474-0208	.47 OHM 10% 2W WW
R2	449283	993257-0208	.47 OHM 1W WW
R3	219045	993257-0192	.1 OHM 1% 1W WW
R4	113152	990474-0208	.47 OHM 10% 2W WW
R5	449283	993257-0208	.47 OHM 1W WW
R6	502315	82283-0076	15000 OHMS 5% 1/2W COMP.
R7	219045	993257-0192	.1 OHM 1% 1W WW
R8	113152	990474-0208	.47 OHM 10% 2W WW
R9	449283	993257-0208	.47 OHM 1W WW
R10	502315	82283-0076	15000 OHMS 5% 1/2W COMP.
R11	219045	993257-0192	.1 OHM 1% 1W WW
R12	113152	990474-0208	.47 OHM 10% 2W WW
R13	449283	993257-0208	0.47 OHM 1% 1W WW
R14	502315	82283-0076	15000 OHMS 5% 1/2W COMP.
R15	219045	993257-0192	.1 OHM 1% 1W WW
R16	113152	990474-0208	0.47 OHM 5% 2W WW
R17	449283	993257-0208	.47 OHM 1W WW
R18	502315	82283-0076	15000 OHMS 5% 1/2W COMP.
R19	219045	993257-0192	.1 OHM 1% 1W WW
R20	113152	990474-0208	.47 OHM 10% 2W WW
R21	449283	993257-0208	.47 OHM 1W WW
R22	502315	82283-0076	15000 OHMS 5% 1/2W COMP.
R23	219045	993257-0192	.1 OHM 1% 1W WW
R24	113152	990474-0208	.47 OHM 10% 2W WW
R25	449283	993257-0208	.47 OHM 1W WW

Symbol	Stock No.	Drawing No.	Description
R26	502315	82283-0076	15000 OHMS 5% 1/2W COMP.
R27	219045	993257-0192	.1 OHM 1% 1W WW
R28	502315	82283-0076	15000 OHMS 5% 1/2W COMP.
R29	502127	82283-0055	270 OHM 5% 1/2W COMP
R30	113152	990474-0208	.47 OHM 10% 2W WW
R31	449283	993257-0208	.47 OHM 1W WW
R32	113152	990474-0208	.47 OHM 10% 2W WW
R33	449283	993257-0208	.47 OHM 1W WW
R34	502315	82283-0076	15000 OHMS 5% 1/2W COMP.
R35	219045	993257-0192	.1 OHM 1% 1W WW
R36	113152	990474-0208	.47 OHM 10% 2W WW
R37	449283	993257-0208	.47 OHM 1W WW
R38	502315	82283-0076	15000 OHMS 5% 1/2W COMP.
R39	219045	993257-0192	.1 OHM 1% 1W WW
R40	113152	990474-0208	.47 OHM 10% 2W WW
R41	449283	993257-0208	.47 OHM 1W WW
R42	502315	82283-0076	15000 OHMS 5% 1/2W COMP.
R43	219045	993257-0192	.1 OHM 1% 1W WW
R44	113152	990474-0208	.47 OHM 10% 2W WW
R45	449283	993257-0208	.47 OHM 1W WW
R46	502315	82283-0076	15000 OHMS 5% 1/2W COMP.
R47	219045	993257-0192	.1 OHM 1% 1W WW
R48	113152	990474-0208	.47 OHM 10% 2W WW
R49	449283	993257-0208	.47 OHM 1W WW
R50	502315	82283-0076	15000 OHMS 5% 1/2W COMP.
R51	219045	993257-0192	.1 OHM 1% 1W WW
R52	113152	990474-0208	.47 OHM 10% 2W WW
R53	449283	993257-0208	.47 OHM 1W WW
R54	502315	82283-0076	15000 OHMS 5% 1/2W COMP.
R55	219045	993257-0192	.1 OHM 1% 1W WW
R56	502315	82283-0076	15000 OHMS 5% 1/2W COMP.
R57	219045	993257-0192	.1 OHM 1% 1W WW
R58	113152	990474-0208	.47 OHM 10% 2W WW
R59	449283	993257-0208	.47 OHM 1W WW
R60	502315	82278-0076	15000 OHM 5% 1/2W
R61	113152	990474-0208	.47 OHM 10% 2W WW
R62	449283	993257-0208	.47 OHM 1W WW
R63	219045	993257-0192	.1 OHM 1% 1W WW
R64	113152	990474-0208	.47 OHM 10% 2W WW
R65	449283	993257-0208	.47 OHM 1W WW
R66	219045	993257-0192	.1 OHM 1% 1W WW
R67	502315	82278-0076	15000 OHM 5% 1/2W
R68	113152	990474-0208	.47 OHM 10% 2W WW
R69	449283	993257-0208	.47 OHM 1W WW
R70	219045	993257-0192	.1 OHM 1% 1W WW
R71	502315	82278-0076	15000 OHM 5% 1/2W
R72	113152	990474-0208	.47 OHM 10% 2W WW
R73	449283	993257-0208	.47 OHM 1W WW
R74	219045	993257-0192	.1 OHM 1% 1W WW
R75	502315	82278-0076	15000 OHM 5% 1/2W
R76	113152	990474-0208	.47 OHM 10% 2W WW
R77	449283	993257-0208	.47 OHM 1W WW
R78	219045	993257-0192	.1 OHM 1% 1W WW
R79	502315	82278-0076	15000 OHM 5% 1/2W
R80	113152	990474-0208	.47 OHM 10% 2W WW
R81	449283	993257-0208	.47 OHM 1W WW
R82	219045	993257-0192	.1 OHM 1% 1W WW
R83	502315	82278-0076	15000 OHM 5% 1/2W
R84	219045	993257-0192	.1 OHM 1% 1W WW
R85	502315	82278-0076	15000 OHM 5% 1/2W
R86	502127	82283-0055	270 OHM 5% 1/2W COMP
R87	449283	993257-0208	0.47 OHM 1W WW
R88	449283	993257-0208	.47 OHM 1W WW
R89	219045	993257-0192	.1 OHM 1% 1W WW
R90	113152	990474-0208	.47 OHM 10% 2W WW
R91	449283	993257-0208	.47 OHM 1W WW
R92	502315	82283-0076	15000 OHMS 5% 1/2W COMP.
R93	219045	993257-0192	.1 OHM 1% 1W WW
R94	113152	990474-0208	.47 OHM 10% 2W WW

Symbol	Stock No.	Drawing No.	Description
R95	449283	993257-0208	.47 OHM 1W WW
R96	502315	82283-0076	15000 OHM 5% 1/2W COMP.
R97	219045	993257-0192	.1 OHM 1% 1W WW
R98	113152	990474-0208	.47 OHM 10% 2W WW
R99	449283	993257-0208	.47 OHM 1W WW
R100	502315	82283-0076	15000 OHMS 5% 1/2W COMP.
R101	113152	990474-0208	.47 OHM 10% 2W WW
R102	449283	993257-0208	.47 OHM 1W WW
R103	502315	82283-0076	15000 OHMS 5% 1/2W COMP.
R104	219045	993257-0192	.1 OHM 1% 1W WW
R105	113152	990474-0208	.47 OHM 10% 2W WW
R106	449283	993257-0208	.47 OHM 1W WW
R107	219045	993257-0192	.1 OHM 1% 1W WW
R108	502315	82278-0076	15000 OHM 5% 1/2W
R109	113152	990474-0208	.47 OHM 10% 2W WW
R110	449283	993257-0208	.47 OHM 1W WW
R111	219045	993257-0192	.1 OHM 1% 1W WW
R112	502315	82278-0076	15000 OHM 5% 1/2W
R113	219045	993257-0192	.1 OHM 1% 1W WW
R114	502315	82278-0076	15000 OHM 5% 1/2W
R115	502127	82283-0055	270 OHM 5% 1/2W COMP
T1	449336	3742946-0501	TRANSFORMER
TP1	245564	3450797-0004	CONTACT
TP2	245564	3450797-0004	CONTACT
16	245564	3450797-0004	CONTACT
22	432716	990639-0001	CLIP

MI-563527-5
PA DRIVE DETECTOR A6A2
P/L 3751768-501
REV-3

C1	225627	993025-0462	1100PF 5% 100V MICA
C2	249939	3720532-0013	22000PF 20% 50V CER
CR1	229936	3464611-0001	DIODE - TYPE 1N914
J1	433765	3726655-0005	CONNECTOR
R1	433904	3331583-0201	100 OHM 1% 1W FILM
R2	502222	82283-0167	2200 OHM 5% 1/2W COMP
T1	449338	3729486-0501	CURRENT TRANSFORMER

Symbol	Stock No.	Drawing No.	Description
			MI563513 REMOTE POWER ADJUST ASSEM A4A2 P/L 3751797-501 REV 6
A1		3751047-0504	VARIABLE RESISTOR (MOTOR OPERATED)
3	443432	3729788-0001	MOTOR (B1)
7	443923	3729374-0002	COUPLING
11	431437	3726469-0011	VARIABLE RES 250 OHM 20% (R1)
14	444624	3726655-0064	RECEPTACLE
16	445956	3729616-0004	HOUSING (P1)
17	445792	3729316-0102	KEY
C1	447081	3729794-0344	9UF 10% 35V TANT (NP)
J1	449575	3457934-0012	POST (MOUNTED IN NYLON HOUSING)
J2	449574	3457934-0004	POST (MOUNTED IN NYLON HOUSING)
CR1 THRU	449573	3729316-0012	HOUSING 12-POS
CR4	450567	3416269-0034	DIODE - TYPE 1N4758
R1	512047	90496-0046	47 OHM 5% 1W COMP
2			SWITCH ASSEM P/L 3751797-502 Rev 6
S1	449829	990737-0312	SWITCH SPDT
P1			CONSISTS OF THE FOLLOWING
16	449573	3729316-0012	HOUSING 12-POS
17	442940	3727158-0601	TERMINAL
			CABLE HARNESS P/L 3751979-504 REV-19
6	444681	993216-0061	TERMINAL - QUICK DISCONNECT
21	442940	3727158-0601	RECEPTACLE
42	445792	3729316-0102	KEY
A4A2P1	449573	3729316-0012	HOUSING

Symbol	Stock No.	Drawing No.	Description
			MI-563527-10 OPTO METERING BOARD A8A1 P/L 3751461-501 REV-9
C1	433440	3720532-0022	220000PF 5% 50V CER
C2	237909	8959154-0128	75UF 10V., ELECT.
C3	433440	3720532-0022	220000PF 5% 50V CER
C4	237909	8959154-0128	75UF 10V., ELECT.
C5	433440	3720532-0022	220000PF 5% 50V CER
C6	237909	8959154-0128	75UF 10V., ELECT.
C7	433440	3720532-0022	220000PF 5% 50V CER
C8	237909	8959154-0128	75UF 10V., ELECT.
C9	217350	8959154-0106	10UF 25V., ELECT.
C10	91391	8958264-0090	100F 450V., ELECT.
C11 THRU C14	432513	3720532-0011	10000 PF 20% 50V CER
C15	431266	8959154-0174	10UF 12V, ELECT.
C16	432513	3720532-0011	10000 PF 20% 50V CER
C17	219352	3410948-0893	0.47UF 10%, 400V., FILM
C18	421721	8959154-0165	35UF 50V., ELECT.
C19	450788	3728120-0107	60F-10+50% 200V ELECT
C20	241058	8959154-0717	25UF 50V., ELECT.
C21	433440	3720532-0022	220000PF 5% 50V CER
C22	433440	3720532-0022	220000PF 5% 50V CER
C23	442421	3720532-0017	68000PF 5% 100V CER
C24 THRU C32	432513	3720532-0011	10000 PF 20% 50V CER
C33	433170	3720532-0018	100000PF 10% 50V CER
C34	419946	8959154-0416	150UF 16V., ELECT.
C35	433440	3720532-0022	220000PF 5% 50V CER
C36	432513	3720532-0011	10000 PF 20% 50V CER
CR1 THRU CR4	242522	3464611-0001	DIODE - TYPE SPECIAL
CR5	452707	99202-0206	DIODE-TYPE 1N4730A (SPECIAL)
CR6 THRU CR10	242522	3464611-0001	DIODE - TYPE SPECIAL
CR11	449517	3729740-0001	DIODE-TYPE A115M
CR12	219245	3404510-0630	DIODE - TYPE 1N2071
CR13	449517	3729740-0001	DIODE-TYPE A115M
CR14	246572	3731229-0001	DIODE - TYPE 1N5059
CR15	242522	3464611-0001	DIODE - TYPE SPECIAL
CR16	242522	3464611-0001	DIODE - TYPE SPECIAL
CR17	137652	3458443-0003	DIODE - TYPE 1N4003
Q1	428451	3412889-0003	TRANSISTOR - TYPE 2N2222A
Q2	421947	3729455-0003	SCR - TYPE 2N4443
Q3	428451	3412889-0003	TRANSISTOR - TYPE 2N2222A
R1 THRU R4	502236	82283-0172	3600 OHM 5% 1/2W COMP
R5	447918	3331583-0247	301 OHMS 1% 1W FILM
R6	502110	82283-0135	100 OHM 5% 1/2W COMP
R7	502024	82283-0120	24 OHMS 5% 1/2W COMP.
R8	502118	82283-0141	180 OHMS 5% 1/2W COMP.
R9	502111	82283-0160	1100 OHMS 5% 1/2W COMP.
R10	221888	3331583-0501	100,000 OHM 1%, 1W., FILM
R11	221888	3331583-0501	100,000 OHM 1%, 1W., FILM
R12	522124	99126-0144	240 OHMS 5% 2W COMP.
R13	230878	3331583-0601	1 MEG OHM 1%, 1W., FILM
R14	236586	3331583-0468	49,900 OHM 1%, 1W., FILM
R15	522447	99126-0223	470000 OHMS 5% 2W COMP.

Symbol	Stock No.	Drawing No.	Description
R16	522222	99126-0167	2200 OHMS 5% 2W COMP.
R17	435407	3458861-0007	1000 OHM LINEAR VAR
R18	502168	82283-0155	680 OHM 5% 1/2W COMP
R19 THRU			
R22	502215	82283-0163	1500 OHM 5% 1/2W COMP
R23	502368	82283-0203	68000 OHMS 5% 1/2W COMP.
R24	502175	82283-0156	750 OHM 5% 1/2W COMP
R25	424426	3724336-0001	10 OHM 5% 5W W.W.
R26	435407	3458861-0007	1000 OHM LINEAR VAR
R27	502168	82283-0155	680 OHM 5% 1/2W COMP
R28	502368	82283-0203	68000 OHMS 5% 1/2W COMP.
R29 THRU			
R31	502147	82283-0151	470 OHM 5% 1/2W COMP
R32	502168	82283-0155	680 OHM 5% 1/2W COMP
R33	502212	82283-0161	1200 OHM 5% 1/2W COMP
R34	449524	3721940-0117	7000 OHM 1% 4W WW
R35	502310	82283-0183	10000 OHM 5% 1/2W COMP
R36	449523	3721963-0032	25 OHM 1% 10W WW
R37	502115	82283-0139	150 OHM 5% 1/2W COMP
R38	419828	990190-0547	301,000 OHM 1%, 2W., FILM
R39	210886	3331583-0568	499000 OHM 1% 1W FILM
R40	431303	3331583-0518	150,000 OHM 1W 1%, FILM
R41	424392	3331583-0485	75000 OHMS 1W 1% FILM
R42	233096	990696-0501	100,000 OHM 2%, 1/2W., FILM
R43	443706	990696-0201	100 OHM 1% 1/2W FILM
R44	522222	99126-0167	2200 OHMS 5% 2W COMP.
R45	434836	990696-0401	10,000 OHM 1% 1/2W METAL FILM
R46	522222	99126-0167	2200 OHMS 5% 2W COMP.
R47	235374	990696-0475	59,000 OHM 1%, 1/2W., FILM
R48	452708	990696-0568	499000 OHM 1% 1/2W FILM
R49 THRU			
R52	502210	82283-0159	1000 OHM 5% 1/2W COMP
R53	502330	82283-0194	30000 OHMS 5% 1/2W COMP.
R54	502027	82283-0121	27 OHM 5% 1/2W COMP
R55	502327	82283-0193	27000 OHM 5% 1/2W COMP
R56	430331	3458861-0009	5000 OHMS 200V VAR
R57	502027	82283-0121	27 OHM 5% 1/2W COMP
R58	232683	99206-0136	110 OHM 5%, 1/4W., COMP.
R59	522151	99126-0152	510 OHMS 5% 2W COMP.
R60	235025	3726923-0285	20000 OHM 5% 5W W.W.
R61	512210	90496-0159	1000 OHM 5% 1W COMP
R62	512210	90496-0159	1000 OHM 5% 1W COMP
R63	502310	82283-0183	10000 OHM 5% 1/2W COMP
R64	502310	82283-0183	10000 OHM 5% 1/2W COMP
R65	502151	82283-0152	510 OHMS 5% 1/2W COMP.
R66	502027	82283-0121	27 OHM 5% 1/2W COMP
R67	502027	82283-0121	27 OHM 5% 1/2W COMP
R68	429863	3458861-0010	10000 OHM LINEAR VAR
R69	502320	82283-0190	20000 OHM 5% 1/2W COMP
R70	502075	82283-0132	75 OHMS 5% 1/2W COMP.
R71	502210	82283-0159	1000 OHM 5% 1/2W COMP
R72	429863	3458861-0010	10000 OHM LINEAR VAR
U1	450267	3751026-0003	I.C.-TYPE LM324
U2	450267	3751026-0003	I.C.-TYPE LM324
U3 THRU			
U7	429782	3724947-0002	I.C. - TYPE 4N25
U8	449213	3729709-0003	I C - TYPE H113
U9	432233	3729429-0001	I C - TYPE MC1741SG
U10	432233	3729429-0001	I C - TYPE MC1741SG
U11	429782	3724947-0002	I.C. - TYPE 4N25
TP1	242732	3457645-0002	CONTACT
TP2	421629	3450797-0016	CONTACT
TP3	242732	3457645-0002	CONTACT

Symbol	Stock No.	Drawing No.	Description
TP4	242732	3457645-0002	CONTACT
14	444858	3727158-0307	POST
15	450547	3727158-0306	POST
			MI-563527-11 P A BALANCE A8A2 P/L 3751604-501 REV 2
C1	219660	993026-0261	1000PF 2% 500V MICA
CR1	242522	3464611-0001	DIODE - TYPE SPECIAL
CR2	242522	3464611-0001	DIODE - TYPE SPECIAL
CR3	242522	3464611-0001	DIODE - TYPE SPECIAL
CR4	242522	3464611-0001	DIODE - TYPE SPECIAL
CR5	242522	3464611-0001	DIODE - TYPE SPECIAL
CR6	242522	3464611-0001	DIODE - TYPE SPECIAL
CR7	242522	3464611-0001	DIODE - TYPE SPECIAL
CR8	242522	3464611-0001	DIODE - TYPE SPECIAL
CR9	242522	3464611-0001	DIODE - TYPE SPECIAL
CR10	242522	3464611-0001	DIODE - TYPE SPECIAL
CR11	242522	3464611-0001	DIODE - TYPE SPECIAL
CR12	242522	3464611-0001	DIODE - TYPE SPECIAL
DS1	443794	3729606-0002	DIODE - TYPE LED (RED)
DS2	443794	3729606-0002	DIODE - TYPE LED (RED)
DS3	443794	3729606-0002	DIODE - TYPE LED (RED)
DS4	443794	3729606-0002	DIODE - TYPE LED (RED)
DS5	443794	3729606-0002	DIODE - TYPE LED (RED)
DS6	443794	3729606-0002	DIODE - TYPE LED (RED)
J1TO			
J7	449331	3457934-0302	POST 2-POS
J8	450990	3457934-0105	POST 5-POS
R1	512027	90496-0121	27 OHMS 5% 1W COMP.
R2	512027	90496-0121	27 OHMS 5% 1W COMP.
R3	512027	90496-0121	27 OHMS 5% 1W COMP.
R4	512027	90496-0121	27 OHMS 5% 1W COMP.
R5	512027	90496-0121	27 OHMS 5% 1W COMP.
R6	512027	90496-0121	27 OHMS 5% 1W COMP.
R7	426635	990413-0233	2200 OHM 2%, 1/4W., FILM
R8	512115	90496-0139	150 OHMS 5% 1W COMP.
R9	512211	90496-0160	1100 OHMS 5% 1W COMP.
R10	449330	3721963-0220	10 OHM 1% 10W WW
R11	512211	90496-0160	1100 OHMS 5% 1W COMP.
R12	449330	3721963-0220	10 OHM 1% 10W WW
R13	512211	90496-0160	1100 OHMS 5% 1W COMP.
R14	449330	3721963-0220	10 OHM 1% 10W WW
R15	512211	90496-0160	1100 OHMS 5% 1W COMP.
R16	449330	3721963-0220	10 OHM 1% 10W WW
R17	512211	90496-0160	1100 OHMS 5% 1W COMP.
R18	449330	3721963-0220	10 OHM 1% 10W WW
R19	512211	90496-0160	1100 OHMS 5% 1W COMP.
R20 TO R28	449330	3721963-0220	10 OHM 1% 10W WW
T1TO T6	449338	3729486-0501	TRANSFORMER, CURRENT
12	228124	3450797-0003	CONTACT

Symbol	Stock No.	Drawing No.	Description
			MI 563527-4 LINEARITY POWER SUPPLY (52V,4A) A9A1 P/L 3751792-502 REV 11
C1	228181	8959154-0192	10UF 100V., ELECT.
C2	424444	993209-0122	220000PF 20% 100V CER
C3	442265	3733558-0026	22MF 16V ELECT
C4	223081	993025-0485	10,000PF 5%, 500V., MICA
C5	228181	8959154-0192	10UF 100V., ELECT.
C6	449306	3733558-0062	10UF +50-10% 35V ELECT
C7	424444	993209-0122	220000PF 20% 100V CER
C8	234444	993025-0461	1000 PF 1% 100V MICA
C9	234444	993025-0461	1000 PF 1% 100V MICA
C10	228181	8959154-0192	10UF 100V., ELECT.
CR1	426763	99202-0116	DIODE - TYPE 1N4740
CR2	427218	99202-0123	DIODE - TYPE 1N4758A
CR3	418674	99202-0127	DIODE - TYPE 1N4732A
CR4	418674	99202-0127	DIODE - TYPE 1N4732A
CR5	418674	99202-0108	DIODE - TYPE 1N4732A
CR6	418674	99202-0108	DIODE - TYPE 1N4732A
CR7	418674	99202-0108	DIODE - TYPE 1N4732A
CR8	242522	3464611-0001	DIODE - TYPE SPECIAL
DS1	443794	3729606-0002	DIODE - TYPE LED (RED)
Q1	2N5415	3412888-0010	TRANSISTOR - TYPE 2N5415
Q2	2N5415	3412888-0010	TRANSISTOR - TYPE 2N5415
Q3	234024	3404520-0300	TRANSISTOR - TYPE 2N2405
Q4	234024	3404520-0300	TRANSISTOR - TYPE 2N2405
Q5	449620	3729716-0003	TRANSISTOR-TYPE VN88AF
Q6	449346	3751838-0003	TRANSISTOR-TYPE 2N6553
R1	449437	3721962-0095	1500 OHM 1% 5W WW
R2	522233	99126-0171	3300 OHM 5% 2W
R3	502351	82283-0200	51,000 OHMS 1/2W 5% COMP.
R4	502412	82283-0087	120000 OHMS 5% 1/2W COMP.
R5	502268	82283-0072	6800 OHM 5% 1/2W COMP
R6	502310	82283-0074	10000 OHM 5% 1/2W COMP
R7	502220	82283-0166	2000 OHM 5% 1/2W COMP
R8	502024	82283-0120	24 OHMS 5% 1/2W COMP.
R9	502024	82283-0120	24 OHMS 5% 1/2W COMP.
R10	428144	3721962-0002	0.2OHM 5W 1% WIRE
R11	428144	3721962-0002	0.2OHM 5W 1% WIRE
R12	502310	82283-0074	10000 OHM 5% 1/2W COMP
R13	502239	82283-0069	3900 OHMS 5% 1/2W COMP.
R14	502310	82283-0074	10000 OHM 5% 1/2W COMP
R15	502251	82283-0176	5100 OHMS 5% 1/2W COMP.
R16	522027	99126-0121	27 OHM 5% 2W COMP
R17	502310	82283-0074	10000 OHM 5% 1/2W COMP
R18	512227	90496-0169	2700 OHM 5% 1W
R19	502327	82283-0079	27000 OHM 5% 1/2W COMP
R20	502256	82283-0071	5600 OHMS 5% 1/2W COMP.
R21	502310	82283-0074	10000 OHM 5% 1/2W COMP
R22	433289	3458861-0007	1000 OHM LINEAR VAR
R23	502239	82283-0069	3900 OHMS 5% 1/2W COMP.
U1	450864	3751839-0003	IC-TYPE LM555CN
U2	429782	3724947-0002	I.C. - TYPE 4N25
U3	429782	3724947-0002	I.C. - TYPE 4N25
31	228124	3450797-0003	CONTACT

Symbol	Stock No.	Drawing No.	Description
			MI-563527-14 RF PRE-DRIVER POWER SUPPLY A10A2 P/L 3751834-502 REV 4
C1	217350	8959154-0108	10UF 25V ELECT
C2	436431	993209-0122	220000PF 10% 100V CER
C3	217350	8959154-0108	10UF 25V ELECT
C4	436431	993209-0122	220000PF 10% 100V CER
CR1	430273	3416269-0125	DIODE - TYPE 1N4749
CR2	436277	3458443-0002	DIODE - TYPE 1N4002
CR3	436277	3458443-0002	DIODE - TYPE 1N4002
CR4	436277	3458443-0002	DIODE - TYPE 1N4002
Q1	449346	3751838-0003	TRANSISTOR - TYPE 2N6553
Q2	234024	3404520-0300	TRANSISTOR - TYPE 2N2405
Q3	2N5415	3412888-0010	TRANSISTOR - TYPE 2N5415
Q4	2N5415	3412888-0010	TRANSISTOR - TYPE 2N5415
Q5	2N5415	3412888-0010	TRANSISTOR - TYPE 2N5415
R1	522233	99126-0016	3300 OHM 5% 2W COMP
R2	502315	82283-0187	15000 OHM 5% 1/2W COMP
R3	502324	82283-0192	24000 OHM 5% 1/2W COMP
R4	502315	82283-0187	15000 OHM 5% 1/2W COMP
R5	502312	82283-0185	12000 OHM 5% 1/2W COMP
R6	429863	3458861-0010	10000 OHM LINEAR VARIABLE
R7	502315	82283-0187	15000 OHM 5% 1/2W COMP
R8	502315	82283-0187	15000 OHM 5% 1/2W COMP
R9	502315	82283-0187	15000 OHM 5% 1/2W COMP
R10	441378	3320015-0009	0.332 OHM 1% 3W WW
R11	502315	82283-0187	15000 OHM 5% 1/2W COMP
			MI563512 LOCAL CONTROL PANEL C/L 3751900-501 REV 2
S1	449830	3751848-0001	SWITCH- MOM/PUSH,LED TX OFF
S2	450044	3751848-0004	SWITCH- MOM/PUSH,STANDBY
S3	450044	3751848-0004	SWITCH- MOM/PUSH,RF ON
S4	450044	3751848-0004	SWITCH- MOM/PUSH,HIGH
S5	450044	3751848-0004	SWITCH- MOM/PUSH,MED
S6	450044	3751848-0004	SWITCH- MOM/PUSH,LOW
S7	432493	990737-0312	SWITCH- TOGGLE SPDT,CTR OFF
7	450837	3751848-0101	BUTTON- PUSH,FOR S1
8	451390	3751848-0102	BUTTON - PUSH,FOR S2-S7
12	448234	993216-0002	TERMINAL - QUICK DISCONNECT

Symbol	Stock No.	Drawing No.	Description
			MI563508 EXTENSION METERING PANEL D/L 3751902-501 REV 2
C1	441690	1510003-0037	10000PF +80-20% 500V CER
C2	441690	1510003-0037	10000PF +80-20% 500V CER
C3	441690	1510003-0037	10000PF +80-20% 500V CER
DS1	450045	3751848-0201	DIODE - TYPE L.E.D.
M1	449413	3729637-0001	METER- PA AMPS
M2	450042	3729637-0008	METER- PA VOLTS
M3	449772	3729637-0007	METER- RF AMPS
R1	450039	3729307-0002	500 OHMS LINEAR VAR
R2	450040	3729307-0003	20000 OHMS LINEAR VAR
R3	450040	3729307-0003	20000 OHMS LINEAR VAR
R4	239463	990413-0256	20000 OHM 5% 1/4W FILM
6	421890	999708-0011	LABEL
11	448234	993216-0002	TERMINAL - QUICK DISCONNECT
			MI-563511-1 PA BALANCE BABY BD A8A4 (525-694 KHZ) P/L 3751882-501 REV-0
C1TC			
C6	449518	993026-0699	39000PF 2% 500V MICA
C7TC			
C12	449521	993026-0696	30000PF 2% 500V MICA
C13TO			
C18	229051	993026-0693	22000PF 2% 500V MICA
J1TC			
J6	228124	3450797-0003	CONTACT PIN
L1TO			
L6	449525	8914884-0002	COIL
L7TO			
L12	449529	8914884-0071	COIL

Symbol	*Stock No.*	*Drawing No.*	*Description*
			MI-563511-2 PA BALANCE BABY BD A8A4 (695-919 KHZ) P/L 3751882-502 REV-0
C1TO C6	449522	993026-0697	33000PF 2% 500V MICA
C7TO C12	221713	993026-0692	20000PF 2% 500V MICA
C13TO C18	449520	993026-0690	16000PF 2% 500V MICA
J1TO J6	228124	3450797-0003	CONTACT PIN
L1TO L6	449526	8914884-0017	COIL
L7TO L12	449530	8914884-0025	COIL
			MI-563511-3 PA BALANCE BABY BD A8A4 (920-1216 KHZ) P/L 3751882-503 REV-0
C1TO C6	449518	993026-0699	39000PF 2% 500V MICA
C13TO C18	449519	993026-0687	12000PF 2% 500V MICA
J1TO J6	228124	3450797-0003	CONTACT PIN
L1TO L6	449527	8914884-0063	COIL
L7TO L12	449532	8914884-0018	COIL
			MI-563511-4 PA BALANCE BABY BD A8A4 (1217-1705 KHZ) 3751882-504 REV-0
C1TO C6	449521	993026-0696	30000PF 2% 500V MICA
C13TO C18	233518	993026-0684	9100PF 2% 500V MICA
J1TO J6	228124	3450797-0003	CONTACT PIN
L1TO L6	449528	8914884-0064	COIL
L7TO L12	449531	8914884-0026	COIL

SEE DRAWING
3478213

Figure 14. BTA-5SS Schematic

WSJS

RCA

Broadcast Equipment

check on negative phase sense device to this unit.

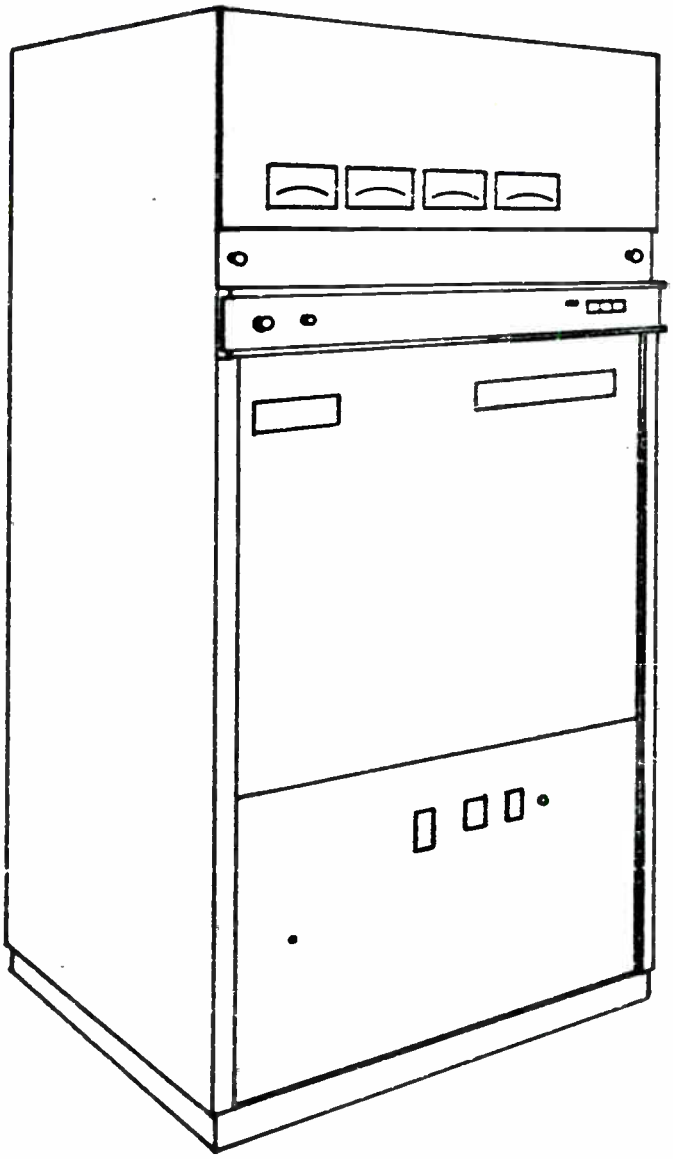
BTA-5SS
AM TRANSMITTER
INSTRUCTIONS

ES-560988

IB-8025270P

RCA

Broadcast Equipment



BTA-5SS

AM TRANSMITTER INSTRUCTIONS

ES-560988

Commercial Communications Systems Division/Front and Cooper Streets/Camden, New Jersey, U.S.A., 08102

PRINTED IN U.S.A.

DL871M

IB-80252709A

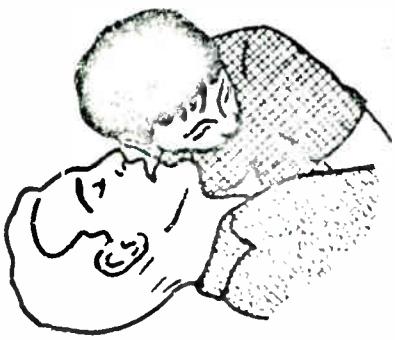
WARNING

VOLTAGES THAT ARE DANGEROUS TO LIFE ARE INVOLVED IN THE OPERATION OF THIS ELECTRONIC EQUIPMENT. OPERATING PERSONNEL MUST AT ALL TIMES OBSERVE ALL SAFETY REGULATIONS. DO NOT CHANGE TUBES OR MAKE ADJUSTMENTS INSIDE THE EQUIPMENT WITH VOLTAGES APPLIED. DANGEROUS CONDITIONS MAY EXIST IN CIRCUITS WITH POWER CONTROLS IN THE OFF POSITION DUE TO CHARGES RETAINED BY CAPACITORS, ETC. ALWAYS DISCHARGE AND GROUND CIRCUITS PRIOR TO TOUCHING THEM TO AVOID PERSONAL INJURY OR LOSS OF LIFE.

EMERGENCY
FIRST AID INSTRUCTIONS

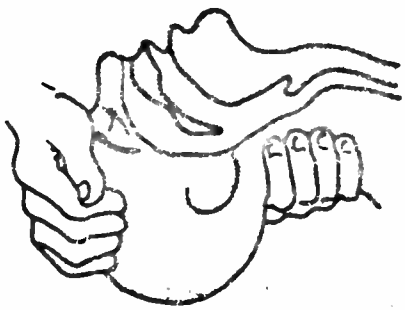
Personnel engaged in the installation, operation, or maintenance of this equipment or similar equipment are urged to become familiar with the following rules both in theory and practice. It is the duty of all operating personnel to be prepared to give adequate Emergency First Aid and thereby prevent avoidable loss of life.

RESCUE BREATHING



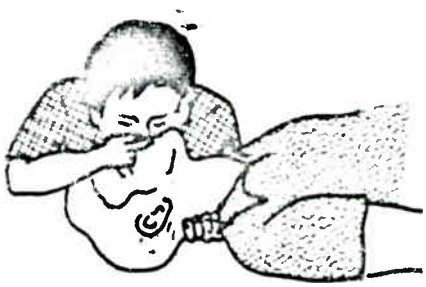
1. Find out if the person is breathing.

   You must find out if the person has stopped breathing. If you think he is not breathing, place him flat on his back. Put your ear close to his mouth and look at his chest. If he is breathing, you can feel the air on your cheek. You can see his chest move up and down. If you do not feel the air or see the chest move, he is not breathing.



2. If he is not, open the airway by tilting his head backward.

   Lift up his neck with one hand and push down on his forehead with the other. This opens the airway. Sometimes doing this will let the person breathe again by himself. If it does not, begin rescue breathing.



3. If he is still not breathing, begin rescue breathing:

   Keep his head tilted backward.
   Pinch his nose shut.
   Put your mouth tightly over his mouth.
   Blow into his mouth once every five seconds.
   Do Not Stop Rescue Breathing Until Help Comes.

LOOSEN CLOTHING – KEEP WARM

Do this when the victim is breathing by himself or help is available. Keep him quiet as possible and from becoming chilled. Otherwise, treat him for shock.

BURNS

SKIN REDDENED: Apply ice cold water to burned area to prevent burn from going deeper into skin tissue. Cover area with clean sheet or cloth to keep away air. Consult a physician.

SKIN BLISTERED OR FLESH CHARRED: Apply ice cold water to burned area to prevent burn from going deeper into skin tissue. Cover area with clean sheet or cloth to keep away air. Treat victim for shock and take to hospital.

EXTENSIVE BURN-SKIN BROKEN: Cover area with clean sheet or cloth to keep away air. Treat victim for shock and take to hospital.

WARRANTY ITEMS

Particular parts and/or equipment covered by warranty are specifically stated as such in the warranty or contract given to the customer at the time of sale. The warranty or contract also stipulates the conditions under which the warranty may be exercised.

To obtain a new replacement for such warranty items, contact your local RCA sales office and please supply Product Identification (including the Original Invoice Number, MI Number, Type Number, Model Number, and Serial Number) and Replacement Part Identification (including Stock Number and Description). Requests for warranty replacements may be unduly delayed if all this information is not supplied.

EQUIPMENT LOST OR DAMAGED IN TRANSIT

When delivering the equipment to you, the truck driver or carrier's agent will present a receipt for your signature. Do not sign it until you have (a) inspected the containers for visible signs of damage and (b) counted the containers and compared with the amount shown on the shipping papers. If a shortage or if evidence of damage is noted, insist that notation to that effect be made on the shipping papers before you sign them.

Further, after receiving the equipment, unpack it and inspect thoroughly for concealed damage. If concealed damage is discovered, immediately notify the carrier, confirming the notification in writing, and secure an inspection report. This item should be unpacked and inspected for damage WITHIN 15 DAYS after receipt. Report all shortages and damages to RCA, Commercial Communication Systems Division – Camden, New Jersey 08102.

RCA will file all claims for loss and damage on this equipment so long as the inspection report is obtained. Disposition of the damaged item will be furnished by RCA.

FIELD ENGINEERING SERVICE

RCA Field Engineering Service is available at current rates. Requests for field engineering service may be addressed to your RCA Broadcast Field Representative or the RCA Service Company, Incorporated – Broadcast Service Division – Camden, New Jersey 08102. Telephone (609) 338-3434.

TECH ALERT

Emergency 24 hour telephone consultation service for technical problems is available. Call TECH ALERT at (609) 338-3434. Telex messages will be forwarded to the addressee upon receipt. Western Union telex number is 83-4450.

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

LIST OF TABLES

LIST OF REVISED, ADDED OR DELETED PAGES

The following is a list of the pages in this Instruction Book that have been Revised, Added, or Deleted with their effective date of change:

Cover Page	Revised 8-81
Title Page	Revised 8-81
Pages i through v	Original
Pages vi, vii	Revised 8-81
Pages viii, ix	Original
Pages x, 1	Revised 8-81
Pages 2, 3	Original
Page 4	Revised 8-81
Pages 5 through 8	Original
Page 9	Revised 8-81
Page 10	Original
Pages 11, 12, 13	Revised 8-81
Page 14	Original
Page 15	Revised 8-81
Pages 16 through 22	Original
Page 23	Revised 8-81
Pages 24 through 33	Original
Page 34	Revised 8-81
Page 35	Original
Page 36	Revised 8-81
Pages 37 through 48	Original
Pages 49 through 53	Revised 8-81
Pages 54 through 67	Original
Pages 68 through 72	Revised 8-81
Pages 73 through 78	Original

TECHNICAL DATA

ELECTRICAL SPECIFICATIONS

Frequency Range	525 kHz to 1625 kHz
Power Output, Nominal	5000 watts
Power Output, Reserve Capacity	5500 watts
Impedance	50 ohms, unbalanced, resistive standard Optional 40 to 300 ohms, unbalanced
Connector	Specify bowl insulator, 1-5/8" EIA flange, 1-5/8" EIA pressurized flange, or 1-5/8" flexible line
RF Harmonics	Meets or exceeds FCC and CCIR specifications
Frequency Stability	±3.5 Hz
Carrier Shift	Less than 1.5% at 100% modulation
Audio Frequency Response	±1.0 dB, 20 to 12,000 Hz
Audio Frequency Distortion	3% Max. 30 to 12,000 Hz (reference 95% at 1 kHz modulation)
Noise (Unweighted)	-60 dB or better at 100% modulation
Positive Peak Capability	125% positive peak modulation capability at 5.5 kW
Overall Efficiency	60% or better
Audio Input:	
Level	+ 10 dBm ±1 dB
Impedance	600 ohms balanced or unbalanced. Isolation transformer
Modulation	Pulse linear
Synchronization	2 kHz audio circuits
Monitor Output	10V pp rf at 50-70 ohms
Remote Control	Normal interfaces
Power Requirements	
Line	208/240 volts, or optional 380/415 volts, ±5%
Frequency	47 to 63 Hz
Type	3 phase, 3 wire
Power Factor	95% or better
Power Consumption (Estimate) at 5 kW:	
At 0% Modulation	8.3 kW
At 85% Modulation	10.5 kW
At 100% Modulation	11.4 kW

MECHANICAL SPECIFICATIONS

Height	77 inches (195.6 cm)
Width	36 inches (91.4 cm)
Depth	36 inches (91.4 cm)
Weight, Net (Approximate)	776 lbs. (352 kg)
Weight, Shipping (Approximate)	1050 lbs. (476 kg)
Ambient Temperature Range	-20°C to 50°C
Altitude	Sea level to 7500 feet (2286 m)
Cooling	Ambient air 500 ft/min^3

8/81

EQUIPMENT LIST
ES-560988

Quantity	Description	Reference
1	BTA-5SS Solid State AM Transmitter	MI-563500
1	High Current Supply Transformer	SEE NOTE
	NOTE: Use MI-563503-1 for 208/240V input Use MI-563503-2 for 380/415V input	
1*	Circuit Breaker Kit	MI-563501-1
1**	Conversion Kit for 380/415V 4 Wire Operation	ES-560988
	NOTE: When this kit is used, delete high current transformer and circuit breaker kit above	
1	RF Output Connection (A10J1)	SEE NOTE
	NOTE: Supply 1 of the following, as specified by sales order: MI-19406A Dome insulator for open line MI-34613-1 Adapter for flexible 7/8" line MI-34613-2 Adapter for rigid 1 5/8" line MI-34613-3 Adapter for pressurized flexible 7/8" line	
2	Instruction Book	IB-8025270
1*	Nameplate	MI-563388
1	Touch Up Kit	MI-563299
1*	RF Combining Transformer	SEE NOTE
	NOTE: Supply 1 of the following, depending on frequency: MI-563506-1 for 525 - 775 kHz MI-563506-2 for 776 - 1569 kHz MI-563506-3 for 1570 - 1705 kHz	
1*	Set of Frequency Determining Parts	SEE NOTE
	NOTE: Supply 1 of the following, depending on operating frequency: ES-563025- 10, FD Parts, 525 to 550 kHz, 50 ohm output ES-563025- 20, FD Parts, 551 to 560 kHz, 50 ohm output ES-563025- 30, FD Parts, 561 to 570 kHz, 50 ohm output ES-563025- 40, FD Parts, 571 to 595 kHz, 50 ohm output ES-563025- 50, FD Parts, 596 to 625 kHz, 50 ohm output ES-563025- 60, FD Parts, 626 to 630 kHz, 50 ohm output ES-563025- 70, FD Parts, 631 to 645 kHz, 50 ohm output ES-563025- 80, FD Parts, 646 to 650 kHz, 50 ohm output ES-563025- 90, FD Parts, 651 to 675 kHz, 50 ohm output ES-563025-100, FD Parts, 676 to 680 kHz, 50 ohm output ES-563025-110, FD Parts, 681 to 690 kHz, 50 ohm output ES-563025-120, FD Parts, 691 to 700 kHz, 50 ohm output ES-563025-130, FD Parts, 701 to 710 kHz, 50 ohm output ES-563025-140, FD Parts, 711 to 760 kHz, 50 ohm output ES-563025-150, FD Parts, 761 to 850 kHz, 50 ohm output ES-563025-160, FD Parts, 851 to 880 kHz, 50 ohm output ES-563025-170, FD Parts, 881 to 930 kHz, 50 ohm output ES-563025-180, FD Parts, 931 to 950 kHz, 50 ohm output ES-563025-190, FD Parts, 951 to 1000 kHz, 50 ohm output ES-563025-200, FD Parts, 1001 to 1020 kHz, 50 ohm output ES-563025-210, FD Parts, 1021 to 1050 kHz, 50 ohm output ES-563025-220, FD Parts, 1051 to 1100 kHz, 50 ohm output ES-563025-230, FD Parts, 1101 to 1140 kHz, 50 ohm output ES-563025-240, FD Parts, 1141 to 1150 kHz, 50 ohm output	

EQUIPMENT LIST (Cont.)

Quantity	Description	Reference
	ES-563025-250, FD Parts, 1151 to 1160 kHz, 50 ohm output	
	ES-563025-260, FD Parts, 1161 to 1250 kHz, 50 ohm output	
	ES-563025-270, FD Parts, 1251 to 1280 kHz, 50 ohm output	
	ES-563025-280, FD Parts, 1281 to 1300 kHz, 50 ohm output	
	ES-563025-290, FD Parts, 1301 to 1320 kHz, 50 ohm output	
	ES-563025-300, FD Parts, 1321 to 1350 kHz, 50 ohm output	
	ES-563025-310, FD Parts, 1351 to 1375 kHz, 50 ohm output	
	ES-563025-320, FD Parts, 1376 to 1440 kHz, 50 ohm output	
	ES-563025-330, FD Parts, 1441 to 1450 kHz, 50 ohm output	
	ES-563025-340, FD Parts, 1451 to 1550 kHz, 50 ohm output	
	ES-563025-350, FD Parts, 1551 to 1569 kHz, 50 ohm output	
	ES-563025-360, FD Parts, 1570 to 1650 kHz, 50 ohm output	
	ES-563025-370, FD Parts, 1651 to 1705 kHz, 50 ohm output	
1*	PW Board, PA Balance (A8A4)	SEE NOTE
	NOTE: Supply 1 of the following, depending on frequency:	
	MI-563511-1 for 525 - 694 kHz	
	MI-563511-2 for 695 - 919 kHz	
	MI-563511-3 for 920 - 1216 kHz	
	MI-563511-4 for 1217 - 1705 kHz	
1**	Power Cutback Kit	MI-563509
1**	Remote Power Adjust Kit	MI-563513
1**	Extension Metering Panel	MI-563508
1**	Local Control Panel	MI-563512
7*	RF Amplifier Board (A6A1, A6A4-9)	SEE NOTE
	NOTE: Use MI-563505-1 below 1000 kHz Use MI-563505-2 above 1000 kHz	
***	Spare RF Amplifier Board (A6A1, A6A4-9)	MI-563505
***	Spare Modulator Driver Board (A5A1)	MI-563504
***	Spare Modulator Board (A5A2-5)	MI-563510
***	Spare Offset Regulator Board (A2A5)	MI-563527-1
***	Spare Modulation Generator Board (A2A1)	MI-563527-2
***	Spare RF Pre-Driver Board (A2A3)	MI-562527-3
***	Spare Linearity Power Supply Board (A9A1)	MI-563527-4
***	Spare PA Drive Detector Board (A6A2)	MI-563527-5
***	Spare RF Generator Board (A2A2)	MI-563527-6
***	Spare Transmitter Control Interface Board (A4A1A)	MI-563527-8
***	Spare Control Logic Board (A4A1B)	MI-563527-9
***	Spare Opto/Metering Board (A8A1)	MI-563527-10
***	Spare PA Balance Board (A8A2)	MI-563527-11
***	Spare PA Linearity Connector Board (A6A3)	MI-563527-13
***	Spare RF Pre-Driver Power Supply Board (A10A2)	MI-563527-14
***	Spare Power Cutback Board (A2A4)	MI-563527-15
***	Spare Modulator Sample Board (A8A5)	MI-563527-16
***	Spare Logic Baby Board (A4A3)	MI-563527-17
***	Spare Overload Board (A2A6)	MI-563527-18

* Items that are shipped installed in the transmitter, when transmitter is factory tuned.

** Optional items supplied in quantity shown only if specified on sales order.

*** Optional items supplied only if specified and in quantities shown on sales order.

RECOMMENDED TEST EQUIPMENT

Manufacturer & Model*	Equipment
Tektronix 7603	Oscilloscope Main Frame
Tektronix 7A13 & 7A18, 7B50	Plug-Ins for above
Tektronix P6022/134	Current Probe and Amplifier
Tektronix P6303/TM501/AM503	Current Probe and Amplifier
Pearson Model 110	Current Transformer
Tektronix 7L5 Option 25	Spectrum Analyzer Plug-in
Hewlett Packard 4815A	Vector Impedance Meter
Hewlett Packard 3465B	Multimeter
(See Figure 12)	PA Voltage Filter
RCA BW-52	Modulation Monitor
Marconi TF2000	Audio Generator
Hewlett Packard 334A	Distortion Analyzer
Bird 8738	RF Load, 50 OHM, 10 KW, water cooled
120 OHM, 1/2 W, Film	Resistor
Hewlett Packard 5314A	Counter
Delta TCA-10/20 EXR	RF Current Meter
Delta OIB-1	Operating Bridge

* or equivalent

TABLE 1. INSTALLATION AND OPERATING DRAWING LIST

3478214	Rev 1	Installation
3749702	Rev 2	System (Assembly)
3478316	Rev 0	Block Diagram

For list of Schematics, see table 4.

INSTALLATION PLANNING

GENERAL

The first step in the installation of the BTA-5SS AM Transmitter is to determine the equipment layout and to make provisions for the necessary external connections. Outline dimensions and input/output points are shown on the Installation Drawing (3478214).

Factors to be considered in layout are incoming power lines, accessibility of a good station ground, in-the-floor wire ducts and the route for the transmission line to the antenna. The room in which the transmitter is to be installed should be well enough ventilated to insure that the ambient temperature range listed in the TECHNICAL SUMMARY will not be exceeded.

Since some of the optional and associated items include their own instruction books, the installation procedure for these units will not be repeated. Reference should be made to the Instruction Book accompanying such equipment.

Disconnect switches and wiring must be provided for items such as the transmitter room exhaust fan and monitoring racks. The tower lighting circuit should also be planned. No material is provided for these items.

Wiring to and from the transmitter should be carried in a conduit or a trench beneath the transmitter. The Installation Drawing (3478214) indicates where this wiring should enter the transmitter. The transmitter ground connection must be connected to station ground using a four-inch wide copper strap or equivalent.

It is not intended that these instructions shall supersede any applicable local codes. Where the instructions in this book conflict with any local electrical, construction or building codes, the provisions of the applicable codes should be followed.

POWER LINE TRANSIENT ARRESTORS

Modern broadcast engineering is making the maximum utilization of solid state devices. The many advantages of using these devices is well known, and it is generally well known that solid state devices are much more vulnerable to transient overvoltage conditions than are tubes and electromechanical relays. There are numerous causes of transient voltage surges on power lines, the most common of which is probably lightning; however, since we have no control over the cause, we must concern ourselves with possible means of preventing the detrimental effects.

There are some devices, known as secondary arrestors, which can protect your equipment from most transient surges which might be encountered on a power line. If you do not have such protection on your power line, it is recommended that you take steps to have it installed.

Also, it is recommended that arrestors be installed on any power line leaving the transmitter building and extending up the tower, such as tower lighting circuits and antenna deicer power lines. Transients are very likely to be induced into these circuits from lightning hits to the tower or hits at distances up to several miles away, and from static discharges from low clouds even when electrical storms are non-existent. These transients can feed back into other equipment which is connected across the same phase of the power line.

There are numerous types of arrestors available at a wide range in prices. The manufacturers of these devices will gladly supply you with literature describing the application of their particular units. Listed in table 2 are several manufacturers who can be contacted for recommendations of what to use on your particular power line. This information is not intended in any way to be an endorsement of any of the listed vendors, nor to exclude any other vendors who may have a similar product to sell. It is only intended to advise you of known sources of information, engineering assistance, and available arrestors. The decision of which product to buy should be made on the advice of your power company and/or electrical contractor.

TABLE 2. TRANSIENT ARRESTOR MANUFACTURERS

Dale Electronics P.O. Box 180 Yankton, SD 57078 Phone: 605-665-9301	Lightning Elimination Associates 12516 Lakeland Road Santa Fe Springs, CA 90670 Phone: 213-944-0916
Wilkinson Electronics Inc. 701 Chestnut Street Trainer, PA 19013 Phone: 215-497-5100	Transtector Associates 532 Monterey Pass Road Monterey, CA 91754 Phone: 800-648-3387
Joslyn Electronic Systems Santa Barbara Research Park P.O. Box 817 Goleta, CA 93017 Phone: 805-968-3551	General Electric Company W. Genesee Street Auburn, NY 13021 Phone: 315-253-7321

AC INPUT WIRING

The information in table 3 and the attached curves are supplied for proper co-ordination of the branch circuit serving the transmitter with the transmitter protection. It is important that the fault current available from the branch circuit be limited to the "Breaker Interrupting Rating" to prevent damage to the BTA-5SS Main Breaker should a fault occur in the transmitter. The circuit protection must be chosen so that the turn-on surge of the transmitter can be accommodated. In addition, it is usually desirable that the fuse or circuit breaker used in the branch circuit be chosen so that the main breaker in the transmitter will open under an overcurrent condition, before the branch circuit protection opens. This latter requirement is not

as important if the location of the branch circuit fuse or circuit breaker is such that it is as easily accessible to the transmitter operator as the transmitter breaker.

Figure 1A shows a typical installation with the fuse sized so that it will suitably limit the available fault current to the transmitter, yet allow the transmitter breaker to open at moderate values of overload.

Figure 1B uses a smaller fuse which will still limit the fault current to 10,000 amps. However, the time characteristic of the fuse is such that it may blow under overload before the transmitter breaker operates. Note that the use of a smaller amperage fuse permits the installation to be made with smaller wire sizes.

TABLE 3. POWER INPUT DATA

Phase to Phase Voltage	208	240	380	415
Phase Amps at 0% Mod	23	20	13	12
Phase Amps at 100% Mod	31	27	17	16
Phase Amps at Turn-On (for 10 millisec)	700	600	378	350
Breaker Interrupting Rating (Symmetrical rms Amps)	10,000	10,000	14,000	14,000
Main Breaker in Transmitter (Amps)	50	50	30	30

VENTILATION REQUIREMENTS

Maximum temperature of air entering the transmitter through air filters must not exceed 50°C (122°F). Temperature rise in the transmitter room due to the BTA-5SS will be minimal since less than 5,000 watts are dissipated in the transmitter as heat under normal conditions.

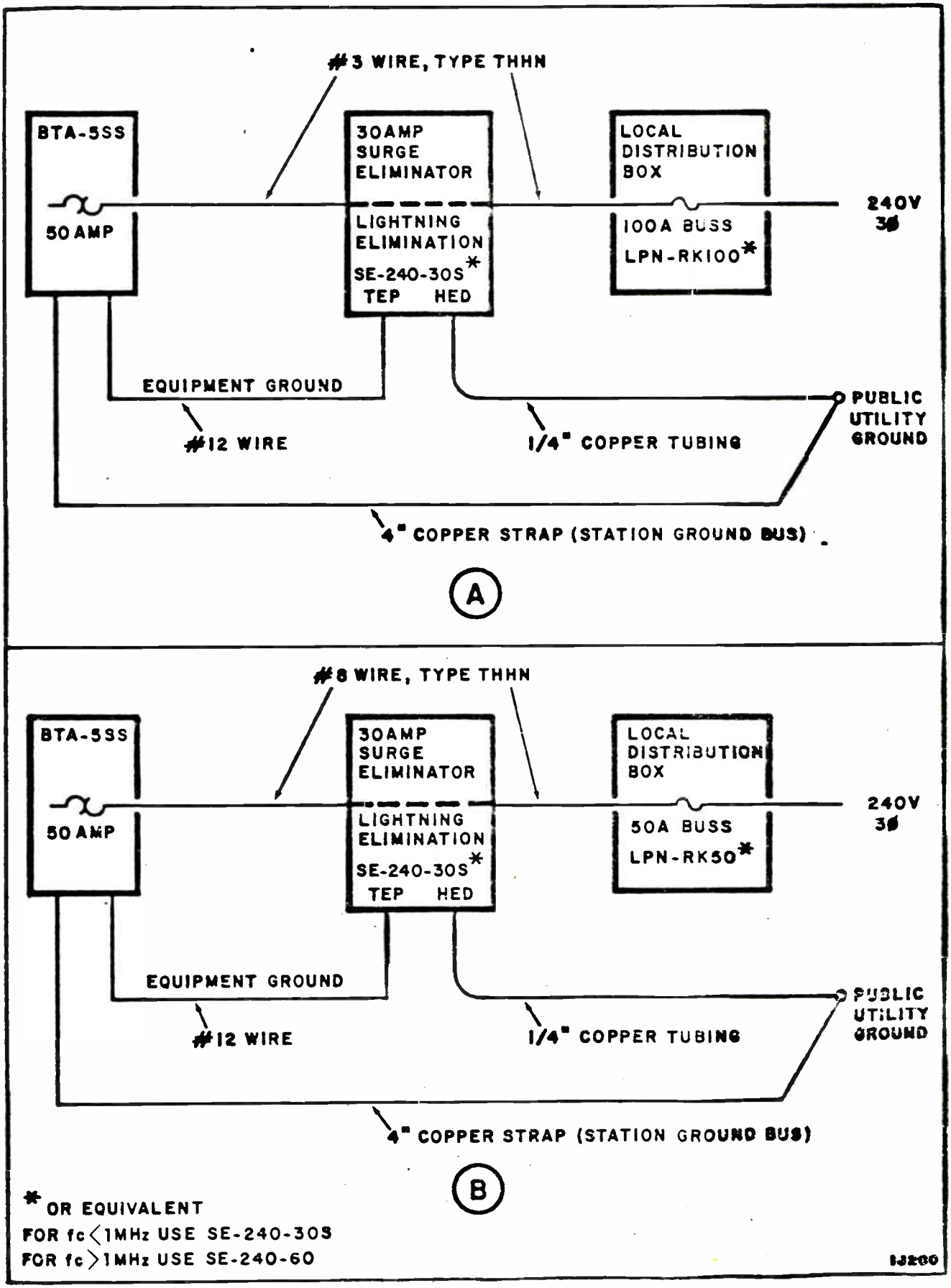
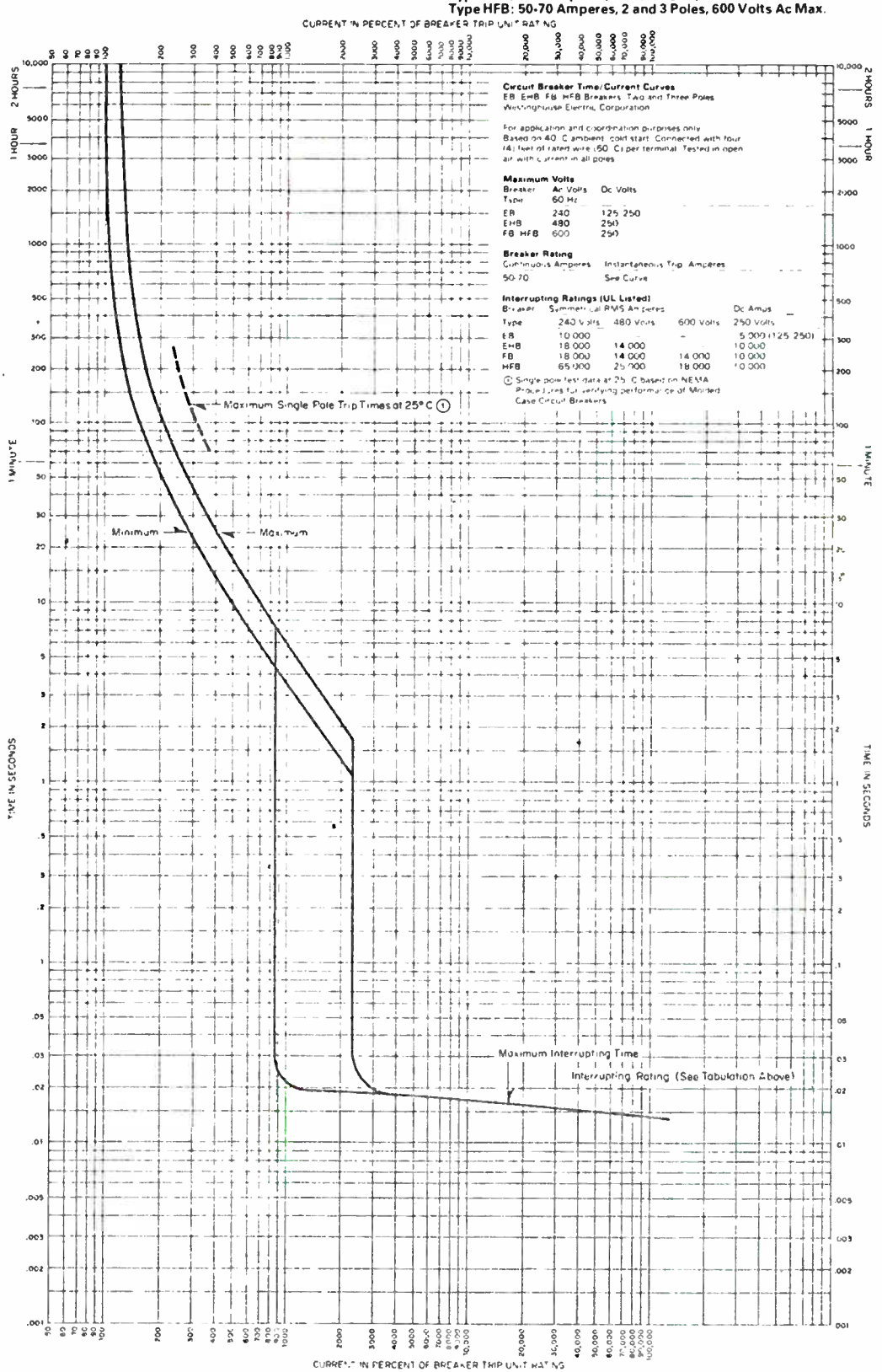


Figure 1. Transmitter Installation Wiring

AB DE-ION® CIRCUIT BREAKERS

Types EB, EHB, FB, MARK 75® HFB

Type EB: 50-70 Amperes, 2 and 3 Poles, 240 Volts Ac Max.
Type EHB: 50-70 Amperes, 2 and 3 Poles, 480 Volts Ac Max.
Type FB: 50-70 Amperes, 2 and 3 Poles, 600 Volts Ac Max.
Type HFB: 50-70 Amperes, 2 and 3 Poles, 600 Volts Ac Max.



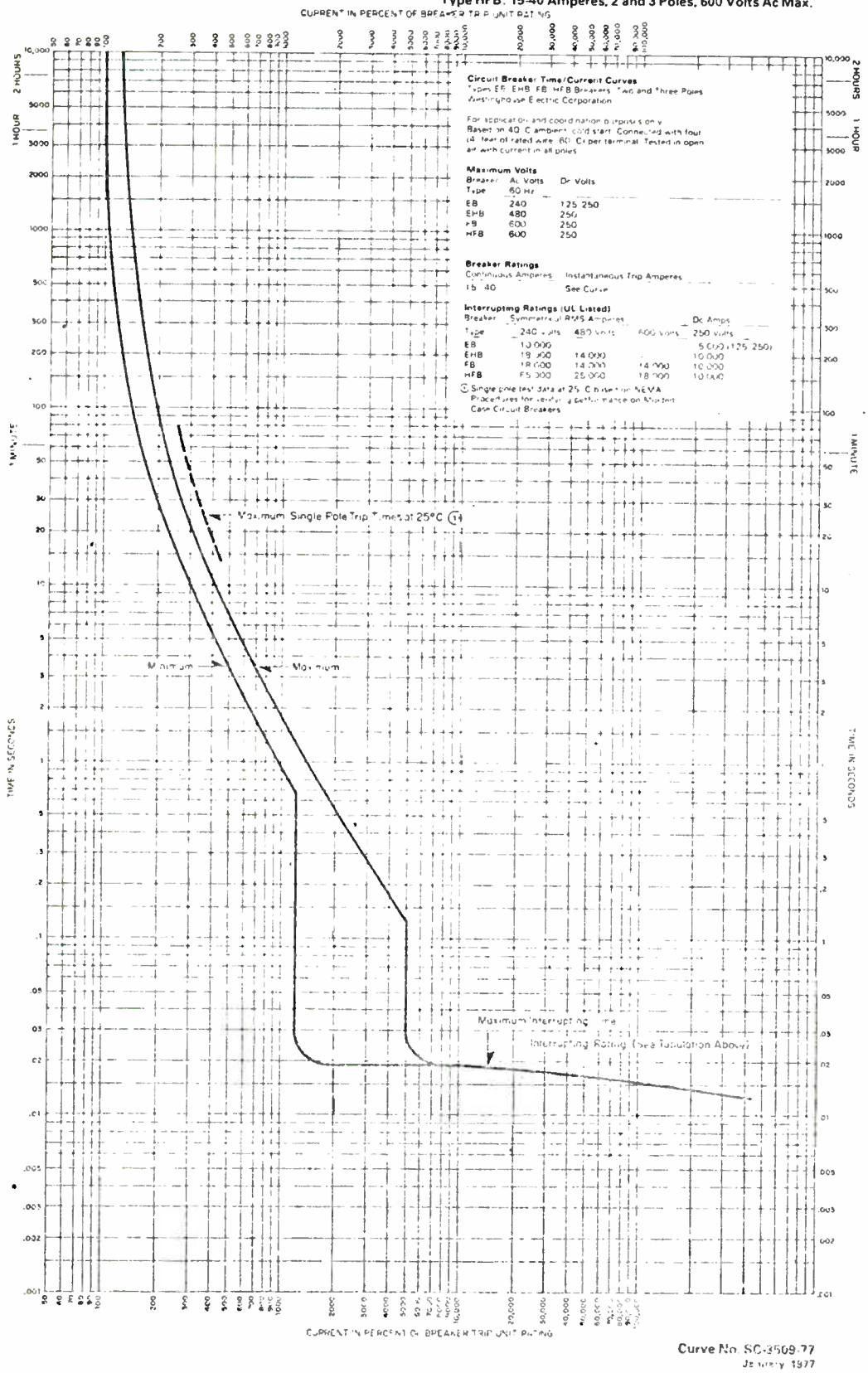
Curve No SC-3510-77
January, 1977

Figure 2. Circuit Breaker Interrupt Rating-208/240 V

AB DE-ION® CIRCUIT BREAKERS

Types EB, EHB, FB, MARK 75® Type HFB

Type EB: 15-40 Amperes, 2 and 3 Poles, 240 Volts Ac Max.
Type EHB: 15-40 Amperes, 2 and 3 Poles, 480 Volts Ac Max.
Type FB: 15-40 Amperes, 2 and 3 Poles, 600 Volts Ac Max.
Type HFB: 15-40 Amperes, 2 and 3 Poles, 600 Volts Ac Max.



Curve No. SC-3509-77
January 1977

Figure 3. Circuit Breaker Interrupt Rating-380/415 V

INSTALLATION PROCEDURE

COMPONENT DESIGNATION SYSTEM

To locate and identify the various assemblies, subassemblies, and components in the transmitter, a system of prefixes is utilized. The first prefix designates the primary location, and the second prefix identifies the assembly, as follows:

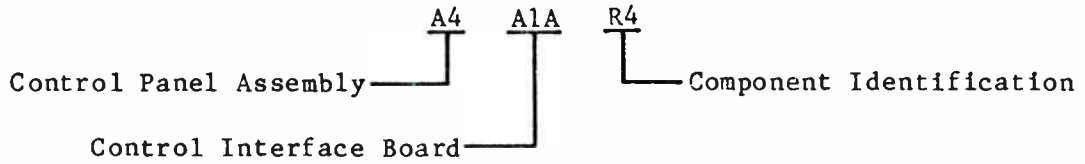


TABLE 4. IDENTIFICATION BY PREFIX *

Prefix	Assembly	MI No.	Schematic	Rev.
A1	TRANSMITTER MAINFRAME	MI-563500	3478213	6
A2	TOP SLOPE PANEL	---	---	
A2A1	Modulation Generator	MI-563527-2	3478064	4
A2A2	RF Generator	MI-563527-6	3478065	1
A2A2G1	Voltage Controlled Oscillator	---	3478065	1
A2A2G2	Crystal Oscillator, 10 MHz	---	3727072-8	31
A2A3	RF Predriver	MI-563527-3	3749490	2
A2A4	Power Cutback Kit	MI-563509	3749302	2A
A2A5	Offset Regulator	MI-563527-1	3743809	2
A2A6	Fault/Overload Board	MI-563527-18	3749940	1
A3	METER PANEL ASSEMBLY	---	---	
A4	CONTROL PANEL ASSEMBLY	---	---	
A4A1A	Control Interface Board	MI-563527-8	3749489	5
A4A1B	Control Logic Board	MI-563527-9	3478084	6
A4A2	Remote Power Adjust Kit	MI-563513	3735666	
A4A3	Logic Baby Board	MI-563527-17	3735896	0A
A5	MODULATOR BOX ASSEMBLY	---	**	
A5A1	Modulator Driver	MI-563504	3749461	2A
A5A2,3, 4,5	Modulator	MI-563510	3749973	0
A6	RF BOX	---	---	
A6A1	RF Driver	MI-563505-***	3477920	5
A6A2	Drive Detector	MI-563527-5	3751769	2
A6A3	Linearity Corrector	MI-563527-13	3743823	5
A6A4-6A9	RF Amplifier	MI-563505-***	3477920	5
A7	BREAKER PANEL ASSEMBLY	---	---	
A8	VERTICAL DIVIDER PANEL ASSY	---	---	
A8A1	Opto/Metering Board	MI-563527-10	3478310	0
A8A2	PA Balance (Mother Board)	MI-563527-11	3742986	1
A8A3	Lin Cor Output Circuit	---	3735925	0
A8A4	PA Balance (Baby Board)	MI-563511-***	3735716	1A
A8A5	Modulator Sample Board	MI-563527-16	3753263	1
A9	REAR HORIZONTAL SHELF ASSEMBLY	---	---	
A9A1	Linearity Power Supply Board	MI-563527-4	3735665	4

TABLE 4. IDENTIFICATION BY PREFIX* (Cont.)

A9PS1	-5V HI Power Supply	---	3729822	0
A9PS2	+12V HI Power Supply	---	3729824	1
A9PS3	Linearity Power Supply	---	3735682	2
A10	TOP COVER ASSEMBLY	---	---	
A10A1	Reflectometer	---	**	
A10A2	Pre-driver Pwr Supply Board	MI-563527-14	3735912	0
A10PS1	Pre-driver Pwr Supply	---	3735912	0
A10PS2	Logic Power Supply	---	3749968	0

* For location, see BTA-5SS System Drawing No. 3749702.
** See BTA-5SS Schematic, Drawing 3478213.
*** MI dash number varies, depending on frequency

UNPACKING

An understanding of the shipping system will be of assistance in unpacking the equipment and locating items. Each RCA shipment is accompanied by a shipping invoice which lists the complete contents of the shipment by "Master Item" or MI number. This shipping invoice is usually attached to one of the cartons, appropriately marked. Each master item (MI) containing two or more items normally contains a packing list (MI sheet).

The complete equipment for the BTA-5SS AM Transmitter is listed on ES-560988, which references the major items of the shipment and their MI number.

The equipment should be carefully unpacked and inspected to make certain that no damage has been incurred during shipment. Any visible damage or shortage should be noted on the shipping papers before signing. After unpacking the equipment inspect all items for concealed damage. If such damage is apparent, notify the carrier immediately in writing, and insist on an inspection report. File a claim for the damage. All shipping papers, letters, and invoices should be saved until it is determined that all equipment was delivered in satisfactory condition, or until any damage claim has been adjusted.

GENERAL

The procedure following applies to transmitters that have been factory tuned at the customer's frequency. Some steps, however, will verify proper factory installation and enable station personnel to become more familiar with the transmitter.

1. Position the transmitter as desired, allowing at least 36 inches (91.4 cm) both in front of the transmitter for clearance for the front door and at the back of the transmitter. See the BTA-5SS Installation Plan, drawing 3478214.

2. Remove the panels from the back of the transmitter cabinet.

3. Tap adjustments are necessary on the High Current Supply transformer A1T1 (MI-563503), depending on the phase to phase voltage available, and the carrier frequency at which the transmitter operates. Two moveable links and a moveable transformer tap lead are provided for each phase of the transformer. One link connects the unmarked common terminal to either the 208, 240, 380, or 415 terminal. The other link connects from the unmarked common terminal to the +30, +11, 0, or -11 terminal. The flexible primary tap connects to either +11, 0, or -11. See table 5 for proper hookup. Repeat identical connection for all three phases.

4. Install High Current Transformer A1T1 in the base of the cabinet as indicated in the Installation Drawing. Transformer terminals should be toward the center of the cabinet.

5. Connect the copper ground strap shipped in place to the frame electrostatic shield connection (ground stud) on A1T1. Location of this terminal is behind the right hand end of the terminal board. See the High Current Transformer A1T1 Schematic, figure 10.

6. Connect High Current Transformer A1T1 as indicated in table 6.

TABLE 5. A1T1 CONNECTIONS

Transformer	Voltage Line to Line	All Carrier Link #1*	Primary Voltage Tap	F_c<1000kHz Link #2	F_c>999kHz Link #2
MI-563503-1	197	208	-11	+30	-11
	208	208	0	+30	0
	219	208	+11	+30	+11
	229	240	-11	+30	-11
	240	240	0	+30	0
	251	240	+11	+30	+11
MI-563503-2	369	380	-11	+30	-11
	380	380	0	+30	0
	391	380	+11	+30	+11
	404	415	-11	+30	-11
	415	415	0	+30	0
	426	415	+11	+30	+11

* Link #1 is not used if transmitter is to operate at more than one power level. In that case, this link is replaced with connections provided in MI-563509 Power Cutback Kit.

TABLE 6. A1T1 INSTALLATION

INPUT CABLES	
Connect Cable/Wire No.	To Terminal
7 & 525*	H1
8 & 526*	H2
9 & 527*	H3
531*	Voltage tap (ø1)**
532*	Voltage tap (ø2)**
533*	Voltage tap (ø3)**
OUTPUT WIRES	
16	R6
12	R3
15	R5
11	R2
14	R4
10	R1
122	N

*Wires used only if MI-563509 Power Cutback Kit is installed.
**Use appropriate voltage tap as follows:
208 - for 197/208/219 line
240 - for 229/240/251 line
380 - for 369/380/391 line
415 - for 404/415/426 line

7. Install output connector J1 (dome insulator or coax line) in the top cover of the transmitter with the hardware shipped with the connector if not already installed.

8. Connect strap (wire #42) from A1OL6 to output connector J1 center conductor.

9. Connect the transmitter to station ground by connecting a strap or cable from the ground studs in the base of the transmitter to the station ground. Material for this connection is not supplied. Refer to the BTA-5SS Installation Drawing 3478214. A 4" wide copper strap (or one with a comparable surface area) should be used.

EARTH GROUND

10. Run the three phase input power to the transmitter through floor duct or overhead conduit or wire trough as desired. See the BTA-5SS Installation Drawing and figure 1.

11. Remove mounting screws from circuit breaker panel and fold out. Connect power input wiring to A7S1. See BTA-5SS System Drawing 3749702 and Schematic 3478213. In 380 or 415 volt input systems, connect the neutral input to A7TB2.

12. Connect buck/boost transformer A7T3 as indicated in table 7, depending on the input voltage to the transmitter. This will provide a nominal output voltage of 230 volts across A7R1.

TABLE 7. A7T3 CONNECTIONS

Input Voltage	Connect Wire 89 To	Connect Output* To
197	4TB1-1	4TB1-5
208	4TB1-1	4TB1-4
219	4TB1-1	4TB1-3
229	4TB1-2	4TB1-5
240	4TB1-2	4TB1-4
251	4TB1-2	4TB1-3
369	4TB1-3	4TB1-5
380	4TB1-3	4TB1-4
391	4TB1-3	4TB1-3
404	4TB1-2	4TB1-5
415	4TB1-2	4TB1-4
426	4TB1-2	4TB1-3

*Output consists of Wire Nos 140 to 143 and one side of Varistor A7R1.

13. Verify that wire 75 (A7S2 power) and 76 (A7T1 input) are properly connected for the station input voltage as follows:
For 197 to 251 volts - connect wire 75 to contactor A7K1-L2
For 197 to 251 volts - connect wire 76 to contactor A7K1-T2
For 369 to 426 volts - connect wires 75 and 76 to A7TB2 (neutral)

14. Connect audio input line to A2TB3 terminals 9 and 10. Connect shield to terminal 8. The transmitter provides a 600 ohm termination to the audio input line.

15. If remote control facilities are to be used, connect to A2TB2 and A27B3, using information in table 8.

16. If no external interlock connections are used, verify that jumper wire #364 is in place from A2TB2-6 to A2TB2-7.

17. Install crystal oscillator A2A2G2 near the top of the A2A2 RF Generator PWB. This board is located behind the fold-down front panel of the transmitter. See sheet 2 of the transmitter System Drawing 3749702 for location of the A2A2 RF Generator board.

TABLE 8. REMOTE CONTROL/ATS FACILITIES

Terminal	Function	Characteristics
TB2-1,2	Metering, PA Amps	1.5 VDC @ 5Ma Max = 100 amps
TB2-3,4	Metering, PA Volts	1.5 VDC @ 1 K ohm impedance = 150 volts
TB3-4,1	Metering, HV Supply	6 VDC @ 1K ohm impedance = 300 volts (May be scaled lower by loading)
TB3-16,17	Metering, RF Amps	1.0 to 2.5 VDC @ 42 Microamps = rated RF current
TB2-6	Control Voltage	24 VAC
TB2-14	Control Enable	24 VAC
TB2-15	Control, TX off Mode	Momentary closure to Control Common
TB2-16	Control, Standby Mode	Momentary closure to Control Common
TB2-17	Control, RF ON/Overload Reset	Momentary closure to Control Common
TB2-18	Control, High Power Mode	Momentary closure to Control Common
TB2-19	Control, Med Power Mode	Momentary closure to Control Common
TB2-20	Control, Low Power Mode	Momentary closure to Control Common
TB3-3	Control, Power Lower	Close to Control Common to adjust
TB3-2	Control, Power Higher	Close to Control Common to adjust
TB2-7	Interlock	Maintained Contact to Control Voltage
TB2-9,13	Logic Power Supply	+5 VDC
TB2-8	Control, Interrupt	TTL low or close to logic supply return to interrupt transmitter output
TB2-12	Status, Overload alarm	Normal = TTL high @ 220 ohm impedance Overload = TTL low @ 220 ohm impedance, 8 Ma Max.
TB3-20	Status, RF on	RF off = TTL low @ 6.4 Ma Max. RF on = TTL high @ 360 microamp Max.
TB3-18,19	Status, HV on	Contact Closure when HV on
TB3-12,13	Status, TX off	Contact Closure in off mode

NOTE: In some installations, circuits shown above may be connected to equipment other than the remote control system (i.e. to the antenna pattern switches).

18. Install air sensor A5S1 from the front of the transmitter below blower A5B1. See sheet 1 of the transmitter System Drawing 3749702 for location of A5S1.

A. Remove the plexiglas cover from in front of this (A8) compartment and retain the plexiglas and mounting hardware.

B. Install air sensor A5S1 in socket A5XS1 with the arrow on the end of the switch pointing up, in the direction of air flow.

C. Replace the plexiglas cover removed in step 18A with the original mounting hardware.

D. Remove filter from lower rear panel and coat evenly and lightly with filter coat spray supplied as MI-563500 item 23. Save filter coat spray to renew filter effectiveness later.

19. Install air sensor A6S1 above blower A6B1 at the front of the transmitter. See sheet 1 of the transmitter System Drawing 3749702 for location.

A. Remove A6C1A (if installed) and move to the right.

B. Install air sensor A6S1 in socket A6XS1 with the arrow on the end of the switch pointing up, in the direction of air flow.

C. Replace A6C1A with the hardware removed in step 19A.

In some cases, particularly when the transmitter is under remote control, it may not be desirable to reset these lamps via the overload reset circuit. In this case, the existing reset circuit is disconnected, and a separate reset switch is added to the control logic board for this function. To accomplish this, perform the following steps:

20. Obtain a small, momentary, normally open switch, such as C & K P8121C or JB7 PB-126 (available from RCA Distributor and Special Products Division, Deptford, NJ). Mount switch at the lower end of the stiffner channel attached to the control logic board.

21. Solder one wire from the switch (NO) to the track on the logic board that is connected to J1 pin 29. Solder the other wire from the switch to ground (the stiffner channel is mounted on a grounded track of the board).

22. On the Control Logic board, remove jumper W1.

23. Pressing the switch will now reset any of the fault lights (assuming the fault has been cleared).

SEE DRAWING
3478316

Figure 4. BTA-5SS Block Diagram

DESCRIPTION

GENERAL

The BTA-5SS is a 5 kilowatt AM broadcast transmitter designed to operate within the 525-1605 kHz AM broadcast band. This 100% solid state transmitter operates from 208/240 volt or optionally from 380/415 volt, 50/60 hertz, 3 phase input. Nominal power output is 5000 watts, however, power capability is 5500 watts, to compensate for losses in the transmission line and antenna tuning unit. Power Cutback Kit MI-563509 is available as an option to permit transmitter operation at three preselected power levels. The transmitter may be controlled either locally or by a remote control system.

The transmitter control system and fault control system provide control and protection for the transmitter. A Local/Remote switch is provided for safety of operating personnel. Transmitter control is provided by control logic circuitry and three operating controls--OFF, STANDBY, and RF ON/RESET. Either single or multiple overload recycle control may be selected, and a digital counter may be set to the number of overload steps for shutdown in the multiple cycle. Factory tuned transmitters are normally wired for multiple cycle shutdown after 5 faults in a 15 second time frame.

Following an overload, rf drive will be reapplied at a low level and will automatically ramp back up to full power. A master overload LED is provided on the control panel. Individual LED overload indicators on the inside of the control panel indicates the circuit that had the overload.

Power output may be set by a potentiometer on the front panel either locally or by remote control (using Remote Power Adjust Kit MI-563513). Once the power level is set, automatic circuitry takes control to maintain this level until changed.

CIRCUIT DESCRIPTION

RF GENERATOR

Refer to the RF Generator Simplified Block Diagram, figure 5, and to RF Amplifier Schematic, Drawing 3478065. The transmitter output frequency is provided by G1, the Voltage Controlled Oscillator (VCO), which generates a signal two times the output frequency (2 F_c). Frequency of this signal is determined by L1, L2, L3, and voltage controlled capacitors CR1 and CR2. Frequency stability of the VCO is controlled by the 10 MHz Temperature Compensated Crystal Oscillator G2. Output of G2 is divided down to 2 kHz by dividers U8, U9, U10, and U11, and is fed to the reference input of Phase/Frequency Detector U-15. Output of G1, the VCO is divided by programmable divider U5, U6, and U7 down to 2 kHz and fed to U15 variable input. These two 2 kHz inputs to U15 are detected and fed through U16 back to voltage controlled capacitor CR2 of the VCO in a phase locked loop configuration.

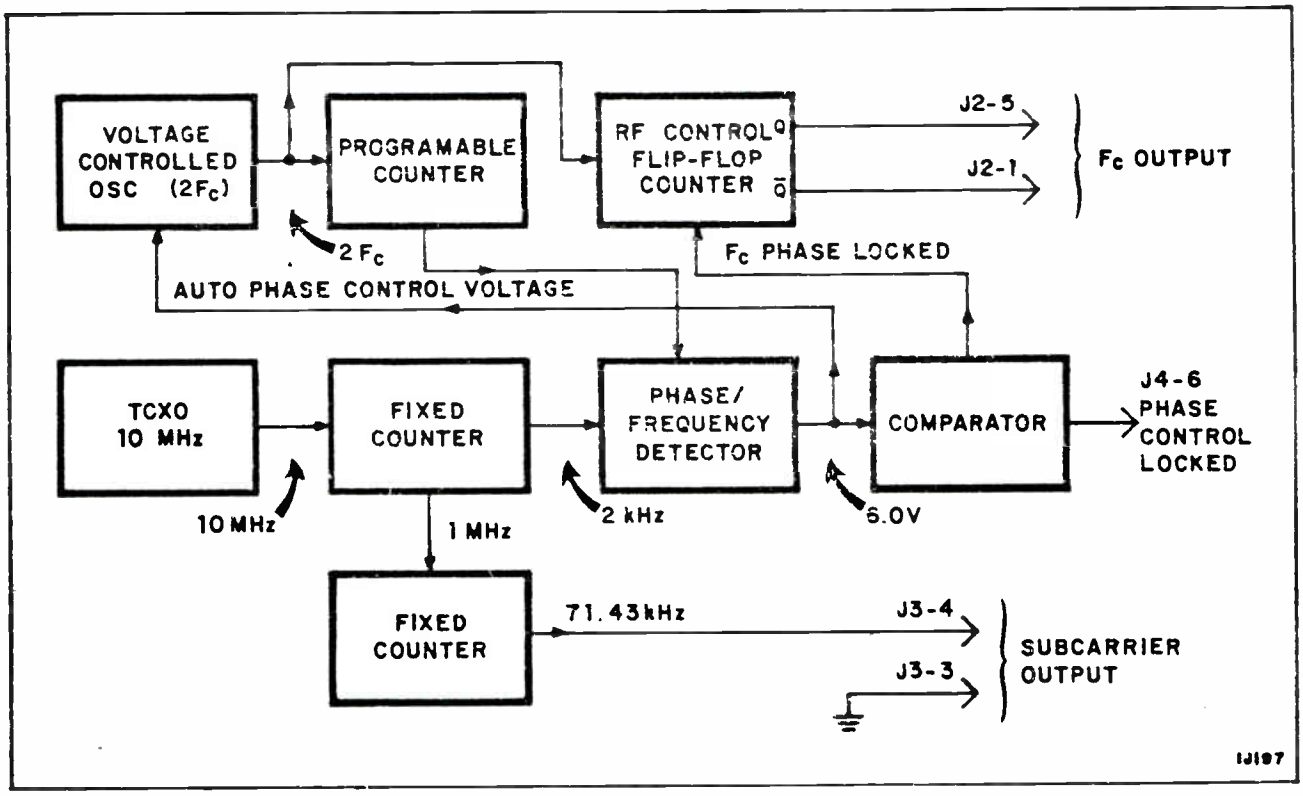


Figure 5. RF Generator Simplified Block Diagram

The normal 6 volt output of U16 is reduced to 2.9 volts by the voltage divider composed of R28 and R29, and fed to comparator U17. As long as the input to comparator U17 is between 2.1 and 3.6 volts, U14B output is high and U18 output fed to U2 reset input and to Phase Control Locked output at J4-6 is high. The duration of any off-frequency low fed from comparator U17 is extended by U2 to about 300 milliseconds.

Output of the Voltage Controlled Oscillator G2 is fed through Schmitt triggers and JK flipflop U2B to driver U4, then to J2-1 and J2-5. This is the carrier frequency which will be amplitude modulated by the transmitter. A low fed to U2B reset input from the F_c phase locked circuit will interrupt rf output from U2B. A low fed into U2B J and K inputs from RF Kill input at J4-7 will also interrupt rf output for the duration of the low.

Output of the 10 MHz Temperature Compensated Crystal Oscillator is counted down by U8, U13, and U9 to provide a 71.43 kHz subcarrier output at J3-4. This subcarrier signal will be pulse width modulated by the modulator circuitry.

RF PRE-DRIVER

See the BTA-5SS Block Diagram, figure 4 and the RF Pre-driver Schematic, Drawing 3749490. RF at the output frequency is fed through pre-driver T1 to cascade transistors Q1 and Q2. The signal is then fed through C6, resistors R27 through R35, and T2 to pre-driver output transistors Q3 through Q6. Proper drive level of the pre-driver is accomplished through the series limiting resistor network R27 through R35, and frequency range is determined by C13, C13A, and L4 setting. Refer to the table on the schematic for proper jumper and tap settings and for values of C13 and C13A. In factory tuned transmitters, these adjustments and settings will have been completed.

Modulation is fed into the pre-driver output transistors to provide low level modulation of the carrier at output jacks J2 and J3. Output of the pre-driver is fed to the RF Driver A6A1.

RF DRIVER

See the RF Amplifier Schematic 3477920 and BTA-5SS Block Diagram, figure 4. The RF Driver amplifies the pre-driver output and feeds it to the RF Amplifier. Gain of this stage is determined by the setting of Driver Power Supply Transformer T1 setting, which controls driver voltage.

The carrier is modulated by modulation applied to the RF Driver supply voltage at P4. Transistor fault indicators DS1, DS2, and DS3 indicate a shorted transistor in that respective bank of transistors. The four banks of transistors in the RF Driver are connected in a bridge arrangement, with rf output at P2 and P3.

PA LINEARITY CORRECTOR

At the peak negative swing of the modulator output, voltage applied to the RF Driver bridge through P4 can reach a low level. At low emitter to collector potential, the beta of the transistors decreases, so the PA Linearity Corrector causes the voltage applied to the RF Driver bridge collectors to move in a positive direction, overcoming this undesirable feature. See the PA Linearity Corrector Schematic, Drawing 3743823, the PA Linearity Corrector Output Schematic, Drawing 3735681, and the BTA-5SS Schematic, Drawing 3473213.

Modulation is fed through PA Linearity Corrector J1-7 to the 1st GAIN control, R2, which controls the amount of linearity correction. The 1st THRESH control selects the point at which linearity correction begins.

The modulation is fed from the 1st GAIN control to Q1 base, to Q2 emitter, then Q2 collector to the gates of the linearity output transistors. Q3 extends the linearity correction capability, and is adjusted by 2nd GAIN control R13 and 2nd THRESH control R20. Overdriving or overloading the linearity output transistors is prevented by the overload circuit composed of U1, Q4, Q5, and associated components. A sample of the linearity output drive is developed across R3 in the output circuit, adjusted by R22 and applied to U1. CR2 prevents reverse bias from being applied to U1.

Positive drive applied to linearity output transistors Q1 and Q2 drive their source in a positive direction, causing a more positive voltage to be applied to the RF Driver bridge through TB1-5A and P1.

PA DRIVE DETECTOR

The PA Drive Detector (Schematic 3749461) samples rf output of the RF Driver, and will remove high voltage from the RF Driver and RF Amplifiers in case of a loss of rf signal at this point. This protects the RF Driver and RF Amplifiers in case of loss of rf drive.

RF AMPLIFIER

The RF Amplifier is composed of six bridge type rf amplifier boards connected in parallel. These boards are identical to the RF Driver board. See the BTA-5SS Block Diagram, figure 4, and the Schematic Drawing 3477920.

As with the RF Driver, modulation is applied to the high voltage input at P4. P1 is returned to ground. The output of these boards is applied to Combining Transformer A2T1.

Output of each RF Amplifier board is also fed to the PA Balance board A8A2.

PA BALANCE

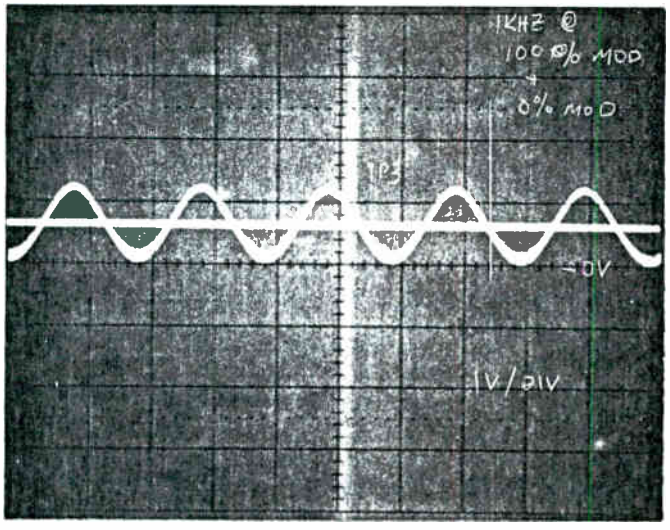
A portion of the output of each rf amplifier board is fed through the PA Balance Baby board Drawing 3735716 to the PA Balance Mother board 3742986. Here this sample from each board is detected and fed to the Control Logic circuitry. An imbalance in the output of the rf amplifier boards will cause the transmitter to cycle off, then back on. If the imbalance is still present, the transmitter will cycle off 3 or 5 times (as selected by the control logic board) within a 20 second window, the subcarrier will be removed, turning off rf drive and output. This will latch the BALANCE light and ALARM light and keep the transmitter off the air until the RESET button on the front panel is pressed.

MODULATION GENERATOR

The BTA-5SS Transmitter employs pulse linear modulation at the subcarrier frequency of 71.43 kHz for both power output control and audio modulation. See the Modulation Generator Schematic, drawing 3478064 and Modulator Waveforms, figure 6.

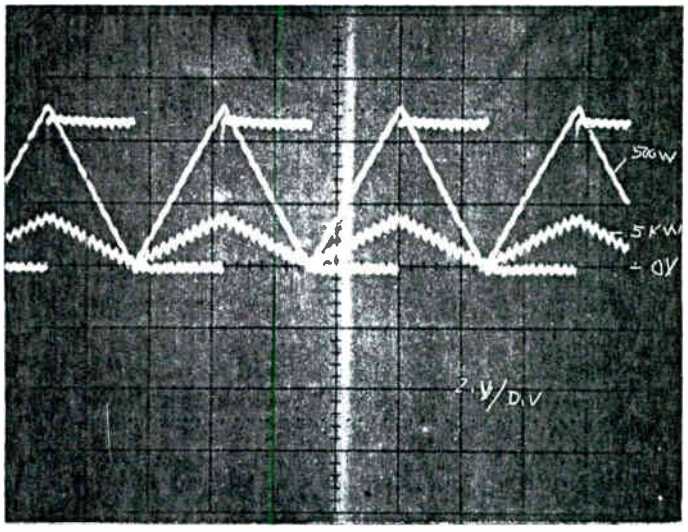
The subcarrier (71.43 MHz) is fed into the Modulation Generator at J4-2. It is then fed through U3A and Q2 to sawtooth generator U7, with the subcarrier drive voltage level determined by Q3.

A forward power sample from the reflectometer in the transmitter output line is fed to the Power Detector, then through J3-14 (1P12) and R1 PWR SET control R63 to U9 positive input. The lower the voltage at U9 positive input, the higher the power output. Other inputs to U9 positive input are the (optional) Power Cutback inputs at J2-8 and J2-9 and the subcarrier logic signal applied at J3-7. During normal operation, the logic level at the SC



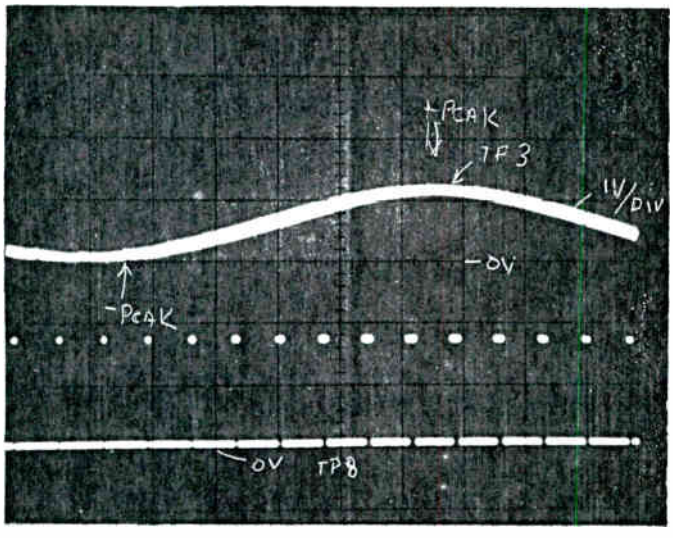
A

1 kHz audio signal at TP3.



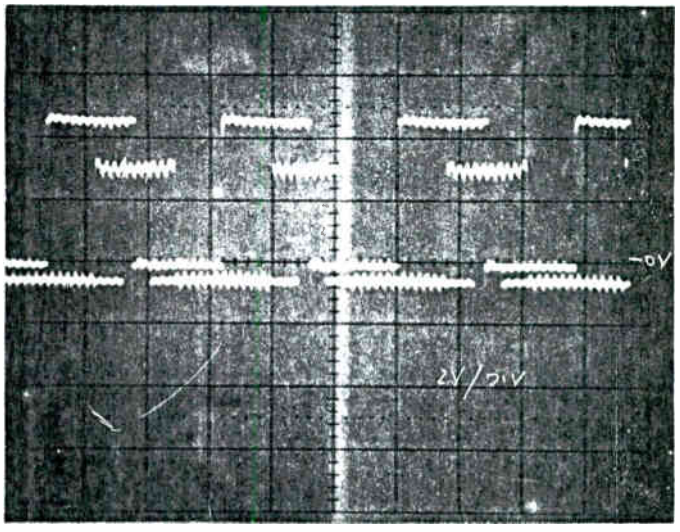
B

Triangular shaped waveform at TP10 for 500 W and 5 kW output.



C

Audio waveform at TP3 (top) and modulation pulses at TP8.



D

Modulation pulses at TP4 and TP8.

Figure 6. Modulator Waveforms

ON' input at J3-7 is high, U1A output to U1B is high, and U1B output to U10C is high. U10C inverts this signal and the low output reverse biases CR16, having no effect on U9-3 input. A logic low at J3-7, however, would cause U10D output to go high, removing transmitter rf output. The U9 negative input (reference level) is set by the PWR ADJ input at J2-2. The AIR LOSS PWR SET control sets the level at which the transmitter will operate in case of a failure of either blower (factory set at 500 watts).

Output of U9 is fed to Q3, which controls the collector voltage on Q2, thereby controlling the subcarrier square wave amplitude to U7. The MAX PWR control R64 selects the minimum voltage that may be applied to Q3 base, thereby determining the maximum transmitter output. Applying a logic high to Bypass/HV off input at J2-4 causes Q3 to saturate and pull Q2 collector voltage to ground potential, cutting off the subcarrier input to U7 and cutting off transmitter rf output.

Output of U7 (at TP10) is shown in figure 6B. The high amplitude triangular waveform is present with 500 watts output and the low amplitude waveform is present at 5 kW output. The triangular waveform is continuously variable to provide from no output to 5.5 kW rf output.

Audio input to the modulator is a balanced floating input at J1-5, J1-6, and J1-7. See figure 6A. The jumper from E1 to E2 or E3 is positioned where adjustment of HUM BAL control R85 will give maximum hum suppression.

Amplifier U11 utilizes negative feedback for fidelity, while positive feedback predistorts the positive peak of the signal to compensate for the distortion caused by the filter composed of L1 and C11 through C15. THRESH control R23 sets the threshold level and STRETCH control R21 controls the amount of stretch added to the positive peaks. See figure 7. K1 will disable the stretch circuit during cutback power operation when the optional Power Cutback Kit is installed.

The audio signal is fed to U4 positive input, where it also controls the width of the positive pulse out of U4. The audio signal is also fed to Q4 emitter. R87 is adjusted to limit positive modulation of the rf signal to 130% as read on the modulation monitor. The pulse width now varies at an audio rate as shown in figure 6C (TP8).

Schmitt triggers U3D and U3E amplify and square the 71.43 kHz pulse output of U4, and U5 and U2A delay these pulses approximately 4.3 microseconds. Figure 6D presents the modulating pulses at TP4 and TP8, showing this delay. In case of an SC alarm, a logic low would be applied at J3-6, turning off U1B and U1C, cutting off modulating pulses. A low applied at SC on input at J3-7 would also turn off U1A, U1B, and U1C, removing modulating pulses. Removing modulating pulses kills rf output.

Output of the Modulation Generator is 71.43 kHz pulses fed from output integrated circuit U6 through J4-5 to the Modulator Driver J1-2. Width of these pulses determines transmitter power output.

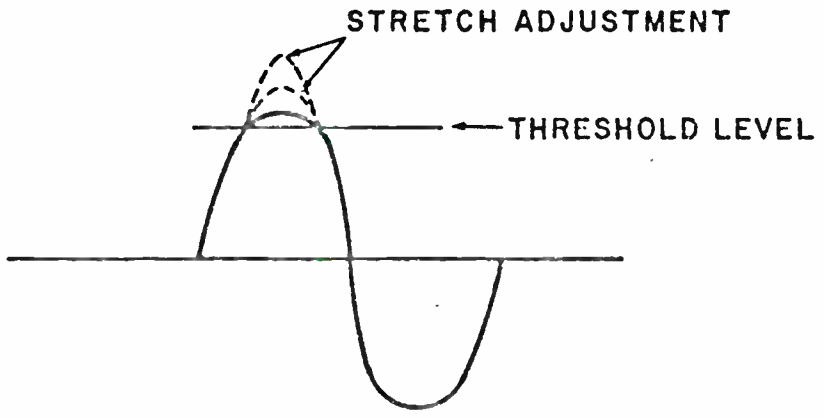


Figure 7. Audio Signal Showing Stretch and Threshold Adjustment

MODULATOR DRIVER

The Modulation Generator output is fed through J2-2 of the Modulator Driver to U1. The pulses are amplified by U2, Q1 through Q4, and Q29, which drives Q5-Q8 connected in parallel. Output of Q5-Q8 drives four parallel amplifiers, which outputs at J3, J4, J5, and J6 each drive one of the modulator boards. Each of these modulator board outputs is also fed to J2, which may be used for test purposes.

MODULATOR AND OFFSET REGULATOR

Modulator Driver signal is fed into the Modulator(s) at J2. (See Modulator Schematic, drawing 3743948.) From J2 it goes through CR5-CR8 to the base of 24 transistors connected in parallel. Output of the Modulator board is applied through P3 to the Subcarrier Filter and through P2 to the Offset Regulator. See the Modulator and RF Output Circuit Functional, figure 11. The Offset Regulator enables the output voltage to swing from the applied voltage (-265 volts) to +10 volts. See the Offset Regulator schematic, drawing 3743809.

When the modulator pulses cut off the modulator transistor bank, the inductive kick from the Subcarrier Filter causes current to flow through the zener diode CR2 and diodes CR9-CR12. Current flow through the zener diode turns on the transistors in the Offset Regulator, limiting the positive voltage swing at the output to 10 volts.

SUBCARRIER FILTER

The Modulator output passes through the Subcarrier Filter and is applied to the RF Pre-Driver, RF Driver, Linearity Corrector, and RF Amplifiers. The Subcarrier Filter is a 15 kHz lowpass filter, that will pass the audio (through 12 kHz) without attenuation, but remove subcarrier frequency of 71.43 kHz so only the modulation envelope is fed to the rf circuits.

POWER CUTBACK KIT

The optional Power Cutback Kit MI-563509 will provide three power levels of operation from either local or remote positions. The HI level is set for the transmitter rated power output, while the MED and LO positions are set for progressively lower power levels. See the Power Cutback schematic diagram, drawing 3749302. The power cutback relays K1 and K2 are magnetic latching relays, so they will remain in the selected position in case of a power failure. Power level is controlled locally by the PWR CUTBACK switches on the front panel.

TRANSMITTER OUTPUT

Transmitter output from the RF Amplifier Combining Transformer is fed through Loading Coil A2L1 and the Reflectometer to the Harmonic Filter. See the BTA-5SS Block Diagram, figure 4 and the Transmitter Schematic, drawing 3478213. Capacitors A10C1A and A10C1B are FO parts and match the 85 ohm output of the transmitter to the 50 ohm antenna. The rf output passes through the PI filter composed of A10C1, A10L1, and A10C2, and the 2F TRAP composed of A10L2 and A10C4, which is tuned to the second harmonic of F_o. The 3F trap, a series tuned circuit composed of A10L4 and A10C3 pass the third harmonic of F_o to ground. The rf output then passes through A10L6 to the output connector J1.

CHECKOUT AND FINAL TUNING

Before operation of the BTA-5SS transmitter after installation, the following checkout and tuning procedure must be performed.

1. Set MAIN (A7S1) and CONTROL (A7S4) Breakers on the transmitter to ON. Set LOW VOLTAGE/COOLING (A7S2) breaker to OFF. Set HIGH VOLTAGE switch (A7S3) to DISABLE.

2. Apply power to transmitter. Green TX OFF indicator should light. Press OFF button if necessary to illuminate.

3. Set LOW VOLTAGE/COOLING breaker to ON. Press STANDBY button (A4S3). Both Cooling fans will come on. HV ON indicator will blink. Use multimeter to check for +12V HI, -5V HI, and LIN SUPPLY voltages. Open control panel and check to see that no fault indicators, except RF OFF, are illuminated.

4. Press RF ON button (A4S4). RF OFF fault indicator extinguishes and RF ON indicator (on front panel) illuminates. Verify that the RF switching waveform is available at RF Pre-driver (A2A3) TP2.

5. Set HI PWR pot R63 on Modulation Generator (A2A1) to the maximum CCW position.

6. Press OFF button (A4S2). Set HIGH VOLTAGE switch (A7S3) to ON. Press STANDBY button (A4S3) and check for fault indicators as before.

6A. Turn front panel MULTIMETER switch to monitor the driver supply voltage (DRIVER V). Check this reading with the voltage recorded on Factory Test Data. If different, adjust DRIVER VOLTAGE ADJUST variac A7T1 (located on left of breaker panel) to obtain the recorded voltage in the Factory Test Data sheets.

7. Press RF ON button (A4S4). Bring up HI PWR pot until 1 kW power output is measured at common point. Check driver voltage using transmitter multimeter. It should approximate value shown on final test data sheet.

8. Output tuning is accomplished by inserting an Operating Bridge into the two positions shown in figure 8. Position 1 is created by disconnecting strap #31 from A10C1 and inserting bridge. Position 2 is created by disconnecting strap #38 from A10L6 and inserting bridge.

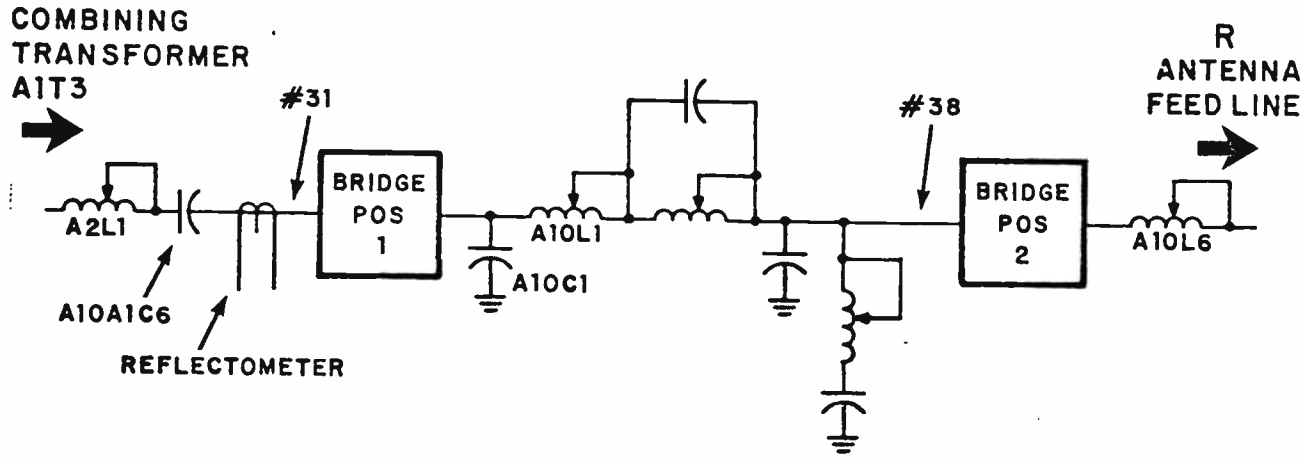


Figure 8. Transmitter Final Tuning

9. Use HI Pwr pot to limit output power $\approx$1 kW*. Set Multimeter switch to + Probe and connect probe to TP13 on Control Interface board A4A1A.

10. With Delta in position 2, adjust A10L6 so that the Delta Bridge reads R + JX_s where $X_s = \sqrt{R(97 - R)}$. (45 < R < 60)

11. Move Delta to position 1. Adjust A10L1 so that the Delta measures 85 + J0. Multimeter should null.

12. If position 1 is not able to be adjusted to 85 + J0, adjust A10L6 until Delta in position 1 reads 85 + J0.

13. Measure position 2. Adjust if necessary to R + JX_s.

14. Check position 1 for exactly 85 + J0. Multimeter should null.

    NOTE: If R exceeds 45 < R < 60, output load matching is required.

15. Set MAX PWR pot R64 on Modulation Generator (A2A1) fully CCW. Set HI PWR pot fully CW. Bring up MAX PWR pot until power is 500 watts over authorized power. Set HI PWR pot for authorized power.

16. Modulate the transmitter with program material at the desired maximum modulation. Set the REFL TRIP pot R105 on the Control Interface board to a point slightly above the trip off point. This will result in the most sensitive VSWR protection.

*According to power of operating bridge (Do not exceed 1 kW or VSWR will trip.).

OPERATION

CAUTION

Transmitter CHECKOUT and FINAL TUNING must be performed before OPERATION or damage to the transmitter may result.

The BTA-5SS AM Transmitter is controlled and protected by solid state control logic circuitry. The Control Logic PWB and Control Interface PWB are located on the back side of the fold-down A4 Control Panel at the front of the transmitter. See drawing 3749702.

The transmitter primary power switch A7S1 MAIN is located on the lower front panel of the transmitter. For normal operation A7S1 MAIN will be ON, A7S2 LOW VOLTAGE/COOLING will be ON, A7S3 HIGH VOLTAGE ON/HIGH VOLTAGE DISABLE will be in the HIGH VOLTAGE ON position, and A7S4 CONTROL will be in the ON position.

The MAIN switch (A7S1) controls all power into the transmitter, and LOW VOLTAGE/COOLING switch A7S2 controls power to modulator blower A5B1, rf blower A6B1, and power supplies A10PS2 (12, 5, -5 V), A10PS1 (36 V), A9PS3 (52 V), A9PS2 (+12 V HI), and A9PS1 (-5 V HI). The HIGH VOLTAGE ON/HIGH VOLTAGE DISABLE switch A7S3 permits the transmitter to operate with all systems operating except for the HV Power Supply, RF Driver, RF Amplifiers, and Modulators. Switch A7S4 provides 24 volts AC to the Control Interface and Control Logic printed wiring boards. The VERNIER PWR control A4R1 or optional PWR RAISE/LOWER switch A4S8 permits adjustment of power output of the transmitter. The DRIVER VOLTAGE ADJUST control A7T1 is a fine driver saturation adjustment. The MULTIMETER switch A4S1 enables monitoring selected voltages and currents within the transmitter.

With primary power being applied to the transmitter and the MAIN switch ON, the transmitter may be turned on by pressing the HV ON switch S3 on the control (A4) panel, then pressing the RF ON switch S4. When the HV ON switch is pressed, the yellow STANDBY light below the HV ON switch will light. When the RF ON switch is pressed, the STANDBY light stays on, indicating high voltage is on and the red RF ON/RESET light will light. The transmitter immediately ramps up to the selected power output. Transmitter shutdown is accomplished by pressing the TX OFF pushbutton A4S2 on the control panel, lighting the green TX OFF indicator after high voltage has dropped below 50 volts and the blowers have been turned off.

The FAULT indicator A4DS1 indicates the occurrence or presence of a fault as presented in table 9. To reset the front panel FAULT indicator and the Control Logic board fault indicator lights, press RF ON switch A4S9. If the fault has been corrected, pressing the RF ON switch will return the transmitter to the air after a Refl (VSWR), PA Balance, PA Overload, or Modulator Fault overload.

TABLE 9. FAULT INDICATORS

Light	A2 Panel	Transmitter Status** HV	RF Drive	Subcarrier & RF Output	Fault Light	Alarm Ind.*	Transmitter Shutdown
A4DS1	LV	X	X	X	L	L	Momentary
A4DS2	Intlk	X	X	X	L	L	Momentary
A4DS3	Air				L	D	Momentary
A4DS4	Freq			X	D	D	Momentary
A4DS5	Intrpt			X	D	D	Momentary
A4DS6	Lin PS				D	D	Self Reset
A4DS7	Drvr PS	X	X	X	D	D	#
A4DS8	Overtemp			X	L	D	Momentary
A4DS9	OL PA	X	X	X	L	L	Reset
A4DS10	Low Dr			X	L	L	Momentary
A4DS11	HV OV			X	L	D	Momentary
A4DS12	RF Off						***
A4DS13	Bal		X	X	L	L##	Reset if
A4DS14	Refl		X	X	L	L##	Max Count is reached, else restore after 0.5 seconds Off Time
A4DS15	Mod Fault			X	L	D	Momentary
A1DS1	SC Fail			X	L	D	Momentary
	HV Disable				D###	D###	Reset
A6DS1	Mod Fault	X	X	X	L	D	
A6DS2	Input Ovld	Indicates excessive audio input					Momentary

* L = Latch on, M = Momentary on, D = Duration of fault
** X = Shutdown or turnoff
*** When lighted, indicates RF ON relay not closed
\# Shut down until thermocouple resets. Returns to PA ovld condition.
If 3 (or 5) counts within 15 seconds
1. FAULT and STANDBY indicators will blink alternately in HV ON condition with A7S3 in the HIGH VOLTAGE DISABLE position, and HV actually on.
2. FAULT and STANDBY indicators will blink simultaneously in HV ON condition with A7S3 in the HIGH VOLTAGE DISABLE position and HV disabled or off, due to a fault.

NOT AVAILABLE AT TIME
OF PRINTING

Figure 9. High Current Transformer A1T1 Outline

NOT AVAILABLE AT TIME
OF PRINTING

Figure 10. High Current Transformer AlTl Schematic

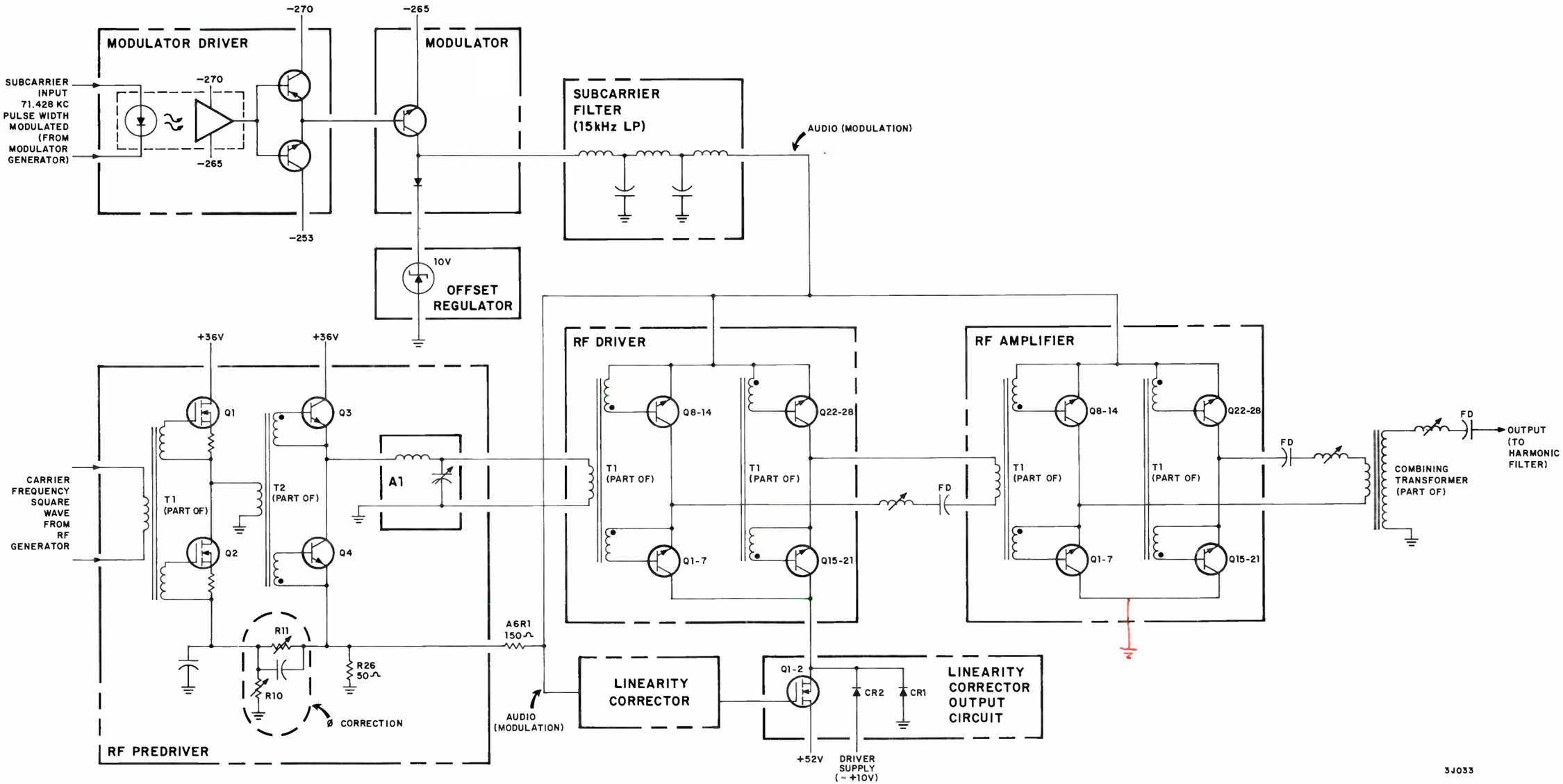


FIGURE 11. MODULATOR AND RF OUTPUT CIRCUIT FUNCTIONAL

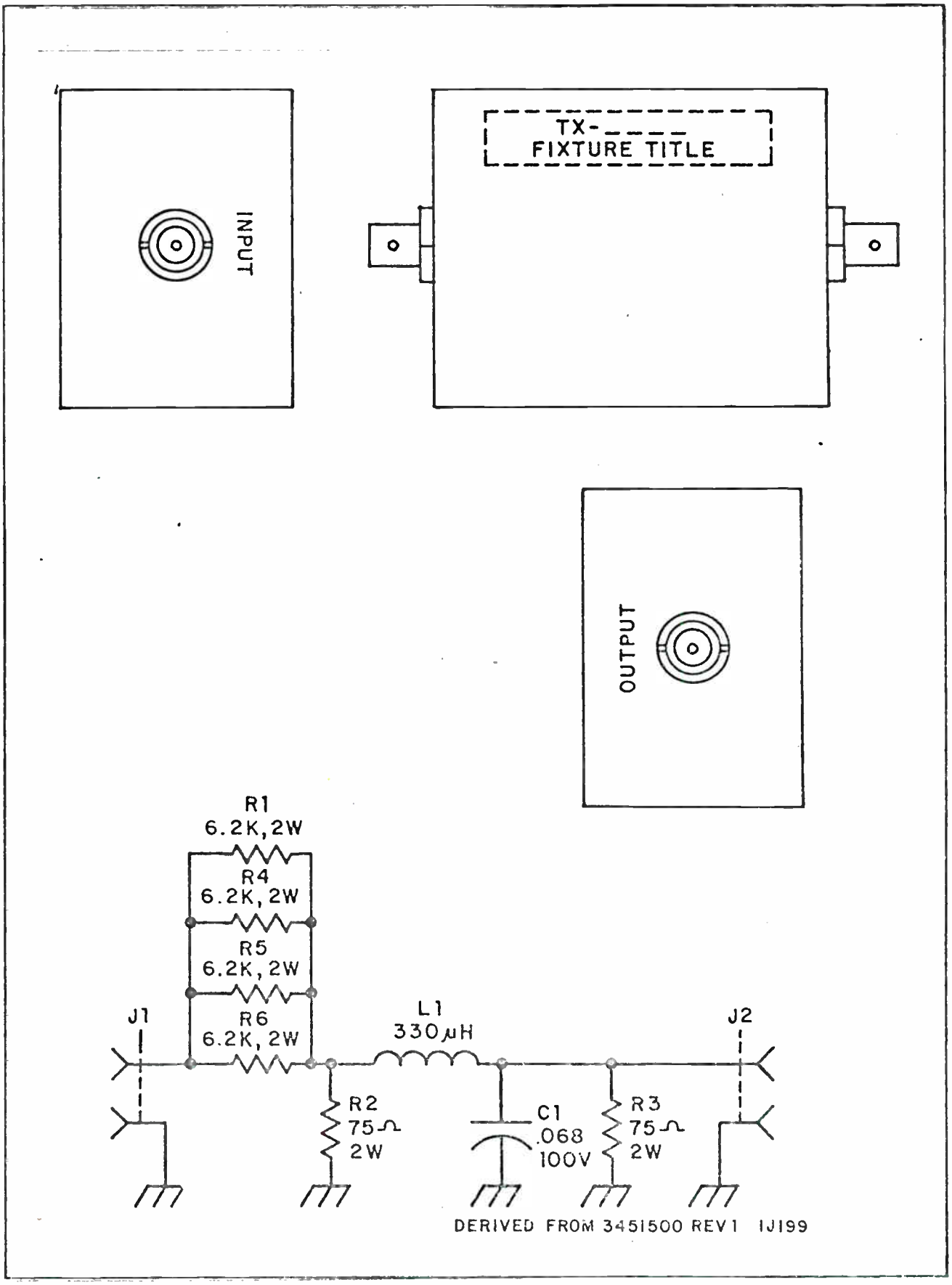


Figure 12. PA Voltage Filter (Test Fixture)

FREQUENCY DETERMINED CONNECTIONS

RF GENERATOR

TABLE A

FREQUENCY JUMPER -- VOLTAGE CONTROLLED OSCILLATOR (G1)

CARRIER FREQUENCY BAND	JUMPER
525 - 699 kHz	NONE
700 - 999 kHz	J2 TO J3
1000 - 1705 kHz	J1 TO J3

NOTE: ON SOME TRANSMITTERS, IT MAY BE NECESSARY TO CHANGE JUMPER TO ADJACENT FREQUENCY BAND (DETERMINED DURING TESTING)

TABLE B

COUNTING JUMPERS FOR NON-STANDARD FREQUENCIES

1. N1 -- SELECT LARGEST VALUE LISTED THAT IS LESS THAN OR EQUAL TO CARRIER FREQUENCY (fc)

VALUE OF N1	J14	J16	J17
1792	A-B	B-C	B-C
1536	A-C	B-C	B-C
1280	A-B	B-C	A-C
1024	A-C	B-C	A-C
768	A-B	A-C	B-C
512	A-C	A-C	B-C

2. N2 -- SELECT LARGEST VALUE LISTED THAT IS LESS THAN OR EQUAL TO (fc - N1)

VALUE OF N2	J10	J12	J13	J15
240	A-B	A-B	B-C	B-C
224	A-B	A-C	B-C	B-C
208	A-B	A-B	B-C	A-C
192	A-B	A-C	B-C	A-C
176	A-B	A-B	A-C	B-C
160	A-B	A-C	A-C	B-C
144	A-B	A-B	A-C	A-C

Figure 13. Programmable Counter Connections

2. N2 -- SELECT LARGEST VALUE LISTED THAT IS LESS THAN OR EQUAL TO (fc - N1) (Continued)

128	A-B	A-C	A-C	A-C
112	A-C	A-B	B-C	B-C
96	A-C	A-C	B-C	B-C
80	A-C	A-B	B-C	A-C
64	A-C	A-C	B-C	A-C
48	A-C	A-B	A-C	B-C
32	A-C	A-C	A-C	B-C
16	A-C	A-B	A-C	A-C
0	A-C	A-C	A-C	A-C

3. N3 -- SELECT VALUE THAT EQUALS fc - (N1 + N2)

VALUE OF N3	J7	J8	J9	J11
15	A-B	A-B	B-C	B-C
14	A-B	A-C	B-C	B-C
13	A-B	A-B	B-C	A-C
12	A-B	A-C	B-C	A-C
11	A-B	A-B	A-C	B-C
10	A-B	A-C	A-C	B-C
9	A-B	A-B	A-C	A-C
8	A-B	A-C	A-C	A-C
7	A-C	A-B	B-C	B-C
6	A-C	A-C	B-C	B-C
5	A-C	A-B	B-C	A-C
4	A-C	A-C	B-C	A-C
3	A-C	A-B	A-C	B-C
2	A-C	A-C	A-C	B-C
1	A-C	A-B	A-C	A-C
0	A-C	A-C	A-C	A-C

4. CHECK -- N1 + N2 + N3 MUST EQUAL fc

Figure 13. Programmable Counter Connections (Continued)

TABLE 10. FD PARTS
ES-563025-40 (Modified)

Qty	Reference	Description	Symbol
1	990703-271	Capacitor, 10,000 Pf, 2 kV	A6C1
1	MI-563502-19	Capacitor, 15,000 Pf, 2 kV	A6C1
1	MI-563502-8	Capacitor, 2,000 Pf, 5 kV	A6C2
1	990703-261	Capacitor, 3,900 Pf, 3 kV	A6C2
1	MI-563502-5	Capacitor, 1,000 Pf, 5 kV	A6C2
1	MI-563502-3	Capacitor, 6,800 Pf, 5 kV	A8C33
18	MI-563502-10	Capacitor, 3,000 Pf, 3 kV	A8C10-15
1	MI-563507-8	Capacitor, 6,800 Pf	A2A3C13
1	993026-484	Capacitor, 9,100 Pf	A2A3C13
1	993026-465	Capacitor, 1,500 Pf	A2A3A1C2
2	MI-563522-1	Capacitor, 2,200 Pf, 6 kV	A10C1-A10C4
1	MI-563522-5	Capacitor, 3,900 Pf, 8 kV	A10C2
1	MI-563522-10	Capacitor, 1,100 Pf, 6 kV	A10C6
1	MI-563522-11	Capacitor, 1,000 Pf, 6 kV	A10C6

PARTS ORDERING INFORMATION

REPLACEMENT PARTS

Replacement parts bearing a Stock Number should be ordered by Item, Description, and Stock Number from RCA, Distributor and Special Products Division, Deptford, New Jersey 08096. Items listed under a Master Item (MI) Number should be ordered from RCA, Commercial Communications Systems Division, Camden, NJ 08102.

Because of possible products modifications and/or the unavailability of parts, the item which will be supplied against an order for a replacement part may not be an exact duplicate of the original part. As a result, some of the replacement parts received may require a mounting modification of the customer's design. In some cases, parts and/or instructions for adapting the substitute parts will be supplied. In no way will the substitute parts impair the operation or performance of the equipment.

For information regarding the use of any parts received, write RCA, Tech Alert, Bldg. 2-8, Camden, NJ 08102, or call (609) 338-3434.

EMERGENCY PART SERVICE

For emergency part service during working hours, contact RCA Distributor and Special Products Division, telephone ~~(609) 848-5900~~ or (609) 541-3600 extension 2234 or 2235. After working hours (Eastern time) telephone (609) 853-0560.

853-2234

LOCATION	ORDERING INSTRUCTIONS
Continental United States, including Alaska and Hawaii	Replacement Parts bearing a STOCK NUMBER should be ordered from RCA Distributor and Special Products Division — 2000 Clements Bridge Road — Deptford, NJ 08096.
	Replacement Parts bearing a MASTER ITEM (MI) NUMBER should be ordered from RCA, Commercial Communications Systems Division — Camden, NJ 08102 or your nearest RCA Regional Office. (609) 435-2949 Ray Burns
	Replacement Parts with NO STOCK or MASTER ITEM (MI) NUMBER are standard components. They are not stocked by RCA and should be obtained from your local electronics distributor.
Dominion of Canada	Order from your local RCA Sales Representative or his office or from: RCA Victor Limited, 1001 Lenoir Street, Montreal, Quebec.
Outside of Continental United States, Alaska, Hawaii, and the Dominion of Canada	Order from your local RCA Sales Representative or from: RCA International Division, Clark, New Jersey — U.S.A. — Wire: RADIOINTER
	Emergency: Cable RADIOPARTS, DEPTFORD, NJ

TABLE 11. PARTS LIST INDEX

REPLACEMENT PARTS

Symbol	Stock No.	Drawing No.	Description
			MI-563500 BTA-5SS AM TRANSMITTER
1		3751612-0501	BTA-5SS SOLID STATE AM TRANSMITTER
			SEE BREAKDOWN BELOW
2			MI563527-2 SEE SEPARATE BREAKDOWN
3			MI563527-6 SEE SEPARATE BREAKDOWN
4			MI563527-3 SEE SEPARATE BREAKDOWN
5			MI563527-1 SEE SEPARATE BREAKDOWN
6			MI563527-8 SEE SEPARATE BREAKDOWN
7			MI563527-9 SEE SEPARATE BREAKDOWN
8			MI563510 SEE SEPARATE BREAKDOWN
9			MI563504 SEE SEPARATE BREAKDOWN
10			MI563505 SEE SEPARATE BREAKDOWN
11			MI563527-5 SEE SEPARATE BREAKDOWN
12			MI563527-13 SEE SEPARATE BREAKDOWN
13			MI563527-10 SEE SEPARATE BREAKDOWN
14			MI563527-11 SEE SEPARATE BREAKDOWN
15			MI563527-4 SEE SEPARATE BREAKDOWN
16			MI563527-14 SEE SEPARATE BREAKDOWN
17	450811	3729637-0103	SCALE RF AMMETER 0-6 AMP
18	450810	3729637-0102	SCALE RF AMMETER 0-8 AMP
19	450809	3729637-0101	SCALE RF AMMETER 0-12 AMP
		3751612-0501	TRANSMITTER ASSEMBLY
			REV-33
A1CR1	449418	3729586-0004	RECTIFIER, ASSEMBLY - SILICON POWER
A1CR2	449418	3729586-0004	RECTIFIER, ASSEMBLY - SILICON POWER
A1R1	450043	3751738-0012	VARISTOR
A1S1	449417	3724238-0001	SWITCH PUSHBUTTON SPST
A1T1		3734432-0501	TRANSFORMER - MI-563503-1
A1T2	450599	3751800-0004	TRANSFORMER - RECTIFIER POWER
A7R3	450043	3751738-0012	VARISTOR 30V RMS
23		3751076-0501	PANEL CONTROL ASSEMBLY
			SEE BREAKDOWN BELOW
24		3751612-0502	TOP SLOPE PANEL ASSEMBLY
			SEE BREAKDOWN BELOW
25		3751612-0503	METER PANEL ASSEMBLY
			SEE BREAKDOWN BELOW
26		3751612-0505	MOD BOX ASSEMBLY
			SEE BREAKDOWN BELOW
27		3751612-0506	RF BOX ASSEMBLY
			SEE BREAKDOWN BELOW
28		3753018-0501	BREAKER PANEL ASSEMBLY
			SEE BREAKDOWN BELOW
29		3751612-0508	VERT DIV PANEL ASSEMBLY
			SEE BREAKDOWN BELOW
30		3751612-0509	HORIZ SHELF ASSEMBLY
			SEE BREAKDOWN BELOW
31		3751612-0510	TOP COVER ASSEMBLY
			SEE BREAKDOWN BELOW
32		3751979-0501	CABLE HARNESS ASSEMBLY
			SEE BREAKDOWN BELOW
133	450600	3724067-0011	FILTER, AIR
206	427847	3460078-0001	TERMINAL, QUICK DISCONNECT
232	449223	418072-0503	HOOK GROUNDING
247	450957	3751838-0506	CONNECTOR ASSEMBLY
23			PANEL CONTROL ASSEMBLY
			3751076-501
			REV-22
A4A1A			TX CONTROL/INTERFACE BD MI-563527-8

Symbol	Stock No.	Drawing No.	Description
A4A1B			CONTROL LOGIC BD MI-563527-9
A4A2			REMOTE POWER CONTROL MI-563513
P8			CONSISTS OF ITEMS 57,62,63
P9			CONSISTS OF ITEMS 56,62,63
P10			CONSISTS OF ITEMS 58,62,63
P11			CONSISTS OF ITEMS 59,62,63
DS1	450045	3751848-0201	DIODE, LIGHT EMITTING MASTER ALARM
R1	437982	3726469-0012	250 OHM 20% 2W
R2	434836	990696-0401	10000 OHM 1% 1/2W
S1	450836	3751784-0001	SWITCH ROTARY 2 POLE 2-12 POS
S2	449830	3751848-0001	SWITCH MOM-PUSH LED TX OFF GREEN
	450835		LENS GREEN FOR ABOVE SWITCH
S3	449830	3751848-0002	SWITCH MOM-PUSH LED STBY YELLOW
	450834		LENS YELLOW FOR ABOVE SWITCH
S4	449830	3751848-0003	SWITCH MOM-PUSH LED RF ON/OL RESET
	450833		LENS RED FOR ABOVE SWITCH
S5	449830	3751848-0001	SWITCH MOM-PUSH LED POWER CUTBACK
	450835		LENS FOR ABOVE SWITCH
S6	449830	3751848-0001	SWITCH MOM-PUSH LED POWER CUTBACK
	450835		LENS FOR ABOVE SWITCH
S7	449830	3751848-0001	SWITCH MOM-PUSH LED POWER CUTBACK
	450835		LENS FOR ABOVE SWITCH
S8	450832	3751796-0001	SWITCH TOGGLE SPDT MOM-OFF-MOM CUT
41	450842	3414765-0607	KNOB
42	450844	3414765-0642	POINTER LARGE
43	450843	3414765-0622	CAP KNOB
46	441739	3414765-0405	KNOB
47	444138	3414765-0442	POINTER LARGE
48	430372	3414765-0422	CAP KNOB
51	450837	3751848-0101	PUSHBUTTONS FOR S2,S3,S4
56	445956	3729316-0004	HOUSING,RECEPTACLE 4 POS
57	446821	3729316-0005	HOUSING,RECEPTACLE 5 POS
58	445781	3729316-0006	HOUSING,RECEPTACLE 6 POS
59	445805	3729316-0007	HOUSING,RECEPTACLE 7 POS
62	442940	3727158-0601	RECEPTACLE HIGH PRESSURE
63	445792	3729316-0102	PLUG,KEYING
24			TOP SLOPE PANEL ASSEMBLY 3751612-502 REV-33
A2A1		3751073-0501	MODULATION GENERATOR MI-563527-2
A2A2		3751074-0501	R F GENERATOR MI-563527-6
A2A3		3751441-0501	R F PREDRIVER MI-563527-3
A2A4		3751488-0000	POWER CUTBACK KIT MI-563509
A2A5		3751463-0501	OFFSET REGULATOR MI-563527-1
A2L1	432688	8911553-0013	COIL RF PA LOADING MI-561386-3
A2C1	449421	3729111-0001	1300 UF +50-10% 450V
A2E1	450598	3751452-0001	TEST PROBE
A2R1	240033	3462695-0002	0.07 OHM 155W WW
A2R2	240033	3462695-0002	0.07 OHM 155W WW
A2R3	240033	3462695-0002	0.07 OHM 155W WW
A2T1		3749708-0000	TRANSFORMER, RF COMBINING MI-563501
A2TB1	450601	3751829-0001	TERMINAL BLOCK POWER DISTRIBUTION
A2TB2	450602	990630-0060	TERMINAL BLOCK REMOTE CONTROL
A2TB3	450602	990630-0060	TERMINAL BLOCK REMOTE CONTROL
95	249336	1510032-0027	GROMMET

Symbol	Stock No.	Drawing No.	Description
112	241121	7862770-0009	FUSE CLIP A2R1,A2R3,A8R1
176	436886	3450825-0004	TERMINAL A2E1
236	450603	3751888-0504	CONNECTOR ASSEMBLY A2L1,A10L1,A10L2
25			METER PANEL ASSEMBLY 3751612-503 REV-33
A3M1	449415	3729637-0004	METER 0-200UA MULTI
A3M2	449414	3729637-0005	METER 0-150V PA VOLTS
A3M3	449413	3729637-0001	METER 0-100A PA CURRENT
A3M4	449772	3729637-0007	METER 0-12A RF AMP
A3C1	441690	1510003-0037	0.01 +80-20% 500V
A3C2	441690	1510003-0037	0.01 +80-20% 500V
A3C3	441690	1510003-0037	0.01 +80-20% 500V
A3C4	441690	1510003-0037	0.01 +80-20% 500V
A3DS1	443073	990692-0051	LAMP, INCANDESCENT 28V
A3CR1	229936	3415872-0001	DIODE - TYPE 1N914
A3CR2	229936	3415872-0001	DIODE - TYPE 1N914
A3R1	450040	3729307-0003	20000 OHM 10% 1/2W VARIABLE
A3R2	239463	990413-C256	20000 OHM 5% 1/4W FIXED
A3XDS1	450604	3753012-0001	INDICATOR, INCANDESCENT
226	246822	999699-0011	LOGO
227	246816	990502-C125	RETAINER
249	450605	3753012-0101	LENSES FOR A3XDS1
26			MOD BOX ASSEMBLY 3751612-505 REV-33
A5A1		3751405-C501	MODULATOR BD MI-563510
A5A2		3751405-0501	MODULATOR BD MI-563510
A5A3		3751393-0502	MODULATOR DRIVE BD MI-563504
A5A4		3751405-0501	MODULATOR BD MI-563510
A5A5		3751405-C501	MODULATOR BD MI-563510
A5B1	449416	3751823-0001	FAN
A5S1	450606	3751605-0002	SENSOR,AIR FLOW
A5XS1	450607	737870-0002	SOCKET,TUBE
234	239141	1510032-0006	GROMMET
235	921839	1510032-0016	GROMMET
27			RF BOX ASSEMBLY 3751612-506 REV-33
A6A1		3751336-0501	RF AMP PW BD MI-563505
A6A2		3751768-0501	RF DRIVE DETECTOR MI-563527-5
A6A3		3751758-0501	PA LINEARITY CORRECT MI-563527-13
A6A4		3751336-0501	RF AMP PW BD MI-563505
A6A5		3751336-0501	RF AMP PW BD MI-563505
A6A6		3751336-0501	RF AMP PW BD MI-563505
A6A7		3751336-0501	RF AMP PW BD MI-563505
A6A8		3751336-0501	RF AMP PW BD MI-563505
A6A9		3751336-0501	RF AMP PW BD MI-563505
A6B1	449416	3751823-0001	FAN

Symbol	Stock No.	Drawing No.	Description
A6C1A		990703-0000	CAP FDP PA DRIVE
A6C1B		990703-0000	CAP FDP PA DRIVE
A6C1C		990703-0000	CAP FDP PA DRIVE
A6C2A		990703-0000	CAP FDP PA DRIVE
A6C2B		990703-0000	CAP FDP PA DRIVE
A6C2C		990703-0000	CAP FDP PA DRIVE
A6L1	450609	3743915-0501	COIL PA DRIVE
A6R1	449419	3724284-C006	150 OHM 175W
A6S1	450606	3751605-0002	SENSOR AIR FLOW
A6XS1	450607	737870-C002	SOCKET,TUBE
105	210281	426767-0109	INSULATOR
137	242882	1510032-0004	GROMMET
146	921838	1510032-0002	GROMMET
148	449409	3743947-0001	CONNECTOR RF AMPLIFIER
149	449410	3743947-C002	CONNECTOR RF AMPLIFIER
153	449411	3743947-0003	CONNECTOR RF AMPLIFIER
154	449412	3743947-0004	CONNECTOR RF AMPLIFIER
234	239141	1510032-0006	GROMMET
235	921839	1510032-0016	GROMMET
239	450610	3751888-C502	CONNECTOR ASSEMBLY A6L1
28			BREAKER PANEL ASSEMBLY 3753018-501 REV 5
A7K1	449408	3729590-C001	CONTACTOR HV
A7K2	449407	3732456-C003	CONTACTOR LV
A7K3	449406	3720170-0015	RELAY HV AUX
A7K4	449405	3720170-C014	RELAY LV AUX
A7K5	449404	3729591-C001	RELAY OVERLOAD DRIVER VOLTAGE
A7HR1	243451	3456491-C030	HEATER FOR A7K5 5 AMP
A7S1	420844	3730271-0004	CIRCUIT BREAKER MAIN/HV 50 AMP
A7S2	449425	3729775-C110	CIRCUIT BREAKER LV BLOWER
A7S2	450611	3751828-0003	SWITCH TOGGLE HV BYPASS
A7S4	449426	3729775-0019	CIRCUIT BREAKER CONTROL VOLTAGE
A7S5	449427	3751825-C001	SWITCH INTERLOCK FOR A7K1
A7S6	449427	3751825-0001	SWITCH INTERLOCK FOR A7K2
A7S7			PART OF A7K2
A7S8	449427	3751825-0001	SWITCH INTERLOCK FOR A7K1
A7R1	450041	3729229-0014	VARISTOR 275V RMS
A7R2	450043	3751738-0012	VARISTOR 30V RMS
A7T1	449430	457084-0003	TRANSFORMER VARIABLE
A7T2	449429	3729584-C001	TRANSFORMER CONTROL
A7T3	448698	3751800-0003	TRANSFORMER LV BOOST/BUCK
A7TB1	450849	990630-0310	TERMINAL BOARD LV
29			VERT DIV PANEL ASSEMBLY 3751612-508 REV-33
A8A1		3751461-0501	PW BD OPTO/METERING MI-563527-10
A8A2		3751604-0501	PW BD PA BALANCE MI-563527-11
A8A3			LINEARITY CORR POWER OUTPUT 3751835-501 REV 3
C1	233732	8959154-0189	5UF 100V-ELECTROLYTIC
C2	449403	3410948-C077	0.068 200V FILM

Symbol	Stock No.	Drawing No.	Description
CR1	449348	3751822-0105	DIODE - TYPE 1N3210
CR2	441516	3729252-0101	DIODE - TYPE 1N3893
Q1	449347	3751813-0001	TRANSISTOR
Q2	449347	3751813-0001	TRANSISTOR
R1	502210	82283-0159	1000 OHM 5% 1/2W
R2	502210	82283-0159	1000 OHM 5% 1/2W
R3	449401	3726923-0499	0.5 OHM 1% 10W WW
TB1	450527	990630-0258	TERMINAL BOARD
XQ1	232360	3726342-0001	SOCKET - TRANSISTOR
XQ2	232360	3726342-0001	SOCKET - TRANSISTOR
A8A4			PA BALANCE BABY BOARD FDP
A8C1	449423	3729113-0014	5UF 5% 1000V FILM
A8C2	448824	3729113-0013	3UF 5% 1000V FILM
A8C3	237580	3729113-0009	1UF 5% 1000V FILM
A8C4	449424	3729113-0008	0.68UF 5% 1000V FILM
A8C5	449423	3729113-0014	5UF 5% 1000V FILM
A8C6	237580	3729113-0009	1UF 5% 1000V FILM
A8C7	237580	3729113-0009	1UF 5% 1000V FILM
A8C8	449424	3729113-0008	0.68UF 5% 1000V FILM
A8C9	449424	3729113-0008	0.68UF 5% 1000V FILM
A8C16 THRU A8C31	449421	3729111-0001	1300UF +50-10% 450V
A8C32	427826	3729111-0008	5800UF +75-10% 40V
A8L1	450846	3743945-0501	COIL-MODULATOR-FILTER
A8L2	450847	3743945-0502	COIL-MODULATOR-FILTER
A8L3	450846	3743945-0501	COIL-MODULATOR-FILTER
A8L4	450847	3743945-0502	COIL-MODULATOR-FILTER
A8L5	450848	3749238-0502	COIL-MODULATOR-FILTER
A8L6	450857	3749238-0503	COIL-MODULATOR-FILTER
A8L7 THRU A8L12	450845	3735663-0001	COIL,TRAY-TUNING
A8R1	449557	3459805-0017	250 OHM 225W
A8R2	449556	3751814-0001	SHUNT-METER 100MV/50A SUPPLY 1
A8R3	449555	3751814-0002	SHUNT-METER 100MV/100A
98	430954	1510050-0001	CLAMP 6AC32
136	439043	426767-0112	INSULATOR .75 DIA X 2.00
137	242882	1510032-0004	GROMMET
147	229166	3743947-0001	CONNECTOR - RF AMPLIFIER
238	450597	3751888-0501	CONNECTOR ASSEM A8L7 THRU A8L12
30			HORIZ SHELF ASSEMBLY 3751612-509 REV-33
A9A1		3751792-0502	LINEARITY PWR SUPPLY MI-563527-4
A9C1	449422	3729111-0007	15000UF +50-10% 75V
A9C2	449422	3729111-0007	15000UF +50-10% 75V
A9CR1	449554	3751806-0002	RECTIFIER FULLWAVE SINGLE - SPECIAL
A9CR2	441516	3729252-0010	RECTIFIER - TYPE 1N3893
A9PS1			POWER SUPPLY -5V HI 3729585-2 NEED B/D FROM LAMBDA

Symbol	Stock No.	Drawing No.	Description
A9PS2			POWER SUPPLY +12V HI 3729585-4 NEED B/D FROM LAMBDA
A9PS3			LINEARITY POWER SUPPLY 3751792-501 REV 9
C1	420293	3729111-0005	15000UF 100V
CR1	449533	3751831-0002	DIODE - TYPE MDA3501
Q1	450839	3751799-0001	TRANSISTOR - TYPE MJ802
Q2	450839	3751799-0001	TRANSISTOR - TYPE MJ802
Q3	2N4347	3751802-0001	TRANSISTOR - TYPE 2N4347
R1	502122	82283-0143	220 OHM 5% 1/2W
T1	450851	3751800-0005	TRANSFORMER
XQ1	232360	3726342-0001	SOCKET - POWER TRANSISTOR
XQ2	232360	3726342-0001	SOCKET - POWER TRANSISTOR
XQ3	232360	3726342-0001	SOCKET - POWER TRANSISTOR
14	450838	3751808-0101	HEATSINK
16	229166	1510032-0011	GROMMET
20	446267	3410550-0001	MICA INSULATING WAFER
21	138227	990164-0170	COMPOUND - HEATSINK
30	447494	1510050-0005	CLAMP - CAPACITOR
37	444681	993216-0061	TERMINAL - QUICK DISC
A9R1	229896	8491308-0003	0.5 OHM 1% 90W
A9R2	522347	99126-0082	47000 OHM 10% 2W
A9R3	522347	99126-0082	47000 OHM 10% 2W
A9TB1	450613	990605-0101	TERMINAL BOARD
96	430954	1510050-0003	TERMINAL
118	439048	426767-0103	INSULATOR
			TOP COVER ASSEMBLY 3751612-510 REV-33
A10A1			REFLECTOMETER ASSEMBLY VSWR 3729828-501 REV-6
C1	452018	990703-0264	5100PF 5% 3000V
C2	449611	990702-0229	180PF 2% 3000V
C3	449611	990702-0229	180PF 2% 3000V
C4	449611	990702-0229	180PF 2% 3000V
C5	234444	993025-0461	1000PF 5% 100V
CR1	424863	3414728-0035	DIODE - TYPE 1N4148
R1	449601	990736-0209	121 OHM 1% 2W
R2	449601	990736-0209	121 OHM 1% 2W
R3	449601	990736-0209	121 OHM 1% 2W
R4	449601	990736-0209	121 OHM 1% 2W
R5	434836	990696-0401	10000 OHM 1% 1/2W
J1	921358	1510013-0162	JACK BNC
J2	921358	1510013-0162	JACK BNC
T1	449623	3729486-0502	TRANSFORMER

Symbol	Stock No.	Drawing No.	Description
A10C3	449670	990704-0239	470PF 6000V
A10L1	432934	8911553-0013	COIL RF PI FILTER MI-561386-3
A10L2	432934	8911553-0013	COIL RF PI FILTER MI-561386-3
A10L4	450614	3469665-0502	COIL RF 3F TRAP
A10L6	432935	8911553-C011	COIL RF OUTPUT LOADING MI-561386-2
A10J1			OUTPUT CONNECTOR MI-19406A
A10J2	438004	1510013-0183	CONNECTOR
A10T3	452019	3735843-0001	COIL
A10PS1			POWER SUPPLY RF PRE-DRIVER ADJ 3751834-501 REV 4
C1	420293	3729111-0005	15000UF 100V
CR1	449533	3751831-0002	DIODE - TYPE MDA 3501
Q1	450839	3751799-0001	TRANSISTOR - TYPE MJ802
T1	450850	3751800-0002	TRANSFORMER
XQ1	232360	3726342-0001	SOCKET - POWER TRANSISTOR
14	447494	1510050-0005	CLAMP - CAPACITOR
15	450852	3751816-0101	HEATSINK
16	446267	3410550-0001	MICA INSULATOR WAFER
17	138227	990164-0170	COMPOUND - HEATSINK
A10PS2			LOGIC POWER SUPPLY 3751832-1 NEED B/D FROM VENDOR POWER COMPONENTS CO PART # CBT
105	210281	426767-0109	INSULATOR
236	450603	3751888-0504	CONNECTOR ASSEM A2L1,A10L1,A10L2
237	450841	3751888-0505	CONNECTOR ASSEM A10L6
240	450840	3751888-0503	CONNECTOR ASSEM A10L4
261	242872	1510032-0029	GROMMET
32			CABLE HARNESS ASSEMBLY 3751979-501 REV 16
5	442889	993216-0022	TERMINAL
6	444681	993216-0061	TERMINAL
7	448233	993216-0064	TERMINAL
8	446897	993216-0021	TERMINAL
18	427847	3460078-0001	TERMINAL
21	442940	3727158-0601	RECEPTACLE
22	435211	3460078-0020	TERMINAL
23	446841	993216-0062	TERMINAL
42	445792	3729316-0102	PLUG - KEYING
43	436886	3450825-0004	RECEPTACLE
44	424244	993147-0001	CONNECTOR BNC
A2A1P1	445782	3729316-0008	HOUSING - RECEPTACLE 8 POSITION
A2A1P2	445783	3729316-0014	HOUSING - RECEPTACLE 14 POSITION
A2A1P3	447070	3729316-0015	HOUSING - RECEPTACLE 15 POSITION
A2A1P4	445781	3729316-0006	HOUSING - RECEPTACLE 6 POSITION
A2A2P1	445805	3729316-0007	HOUSING - RECEPTACLE 7 POSITION
A2A2P2	446821	3729316-0005	HOUSING - RECEPTACLE 5 POSITION
A2A2P3	445782	3729316-0008	HOUSING - RECEPTACLE 8 POSITION
A2A2P4	445805	3729316-0007	HOUSING - RECEPTACLE 7 POSITION
A2A2P5	446843	3729316-0010	HOUSING - RECEPTACLE 10 POSITION

Symbol	Stock No.	Drawing No.	Description
A2A2P6	446821	3729316-0005	HOUSING - RECEPTACLE 5 POSITION
A2A3P1	446843	3729316-0010	HOUSING - RECEPTACLE 10 POSITION
A4A1P2	450608	3729316-0017	HOUSING - RECEPTACLE 17 POSITION
A4A1P3	445783	3729316-0014	HOUSING - RECEPTACLE 14 POSITION
A4A1P4	445781	3729316-0006	HOUSING - RECEPTACLE 6 POSITION
A4A1P5	445783	3729316-0014	HOUSING - RECEPTACLE 14 POSITION
A4A1P6	445783	3729316-0014	HOUSING - RECEPTACLE 14 POSITION
A4A1P7	445782	3729316-0008	HOUSING - RECEPTACLE 8 POSITION
A5A1P1	446821	3729316-0005	HOUSING - RECEPTACLE 5 POSITION
A5A2P1	446821	3729316-0005	HOUSING - RECEPTACLE 5 POSITION
A5A3P1	446821	3729316-0005	HOUSING - RECEPTACLE 5 POSITION
A5A4P1	446821	3729316-0005	HOUSING - RECEPTACLE 5 POSITION
A5A5P1	446821	3729316-0005	HOUSING - RECEPTACLE 5 POSITION
A6A2P1	446821	3729316-0005	HOUSING - RECEPTACLE 5 POSITION
A6A3P1	445782	3729316-0008	HOUSING - RECEPTACLE 8 POSITION
A6A3P2	446843	3729316-0010	HOUSING - RECEPTACLE 10 POSITION
A8A1P1	446843	3729316-0010	HOUSING - RECEPTACLE 10 POSITION
A8A1P2	447070	3729316-0015	HOUSING - RECEPTACLE 15 POSITION
A8A1P3	449573	3729316-0012	HOUSING - RECEPTACLE 12 POSITION
A8A1P4	447070	3729316-0015	HOUSING - RECEPTACLE 15 POSITION
A8A1P5	445782	3729316-0008	HOUSING - RECEPTACLE 8 POSITION
A8A1P6	445781	3729316-0006	HOUSING - RECEPTACLE 6 POSITION
A8A1P7	446821	3729316-0005	HOUSING - RECEPTACLE 5 POSITION
A8A2P8	446821	3729316-0005	HOUSING - RECEPTACLE 5 POSITION

MI-563527-2
MODULATION GENERATOR A2A1
P/L 3751073-501
REV 9

Symbol	Stock No.	Drawing No.	Description
C1	449287	3733558-0042	22UF +50-10% 25V ELECT
C2	433440	3723487-0006	220000PF 20% 50V CER
C3	449287	3733558-0042	22UF +50-10% 25V ELECT
C4	425377	993025-0453	470PF 5% 100V MICA
C5	449287	3733558-0042	22UF +50-10% 25V ELECT
C6	449287	3733558-0042	22UF +50-10% 25V ELECT
C7	425353	3723487-0003	100000 PF +80-20% 50V CER PLATE
C8	449287	3733558-0042	22UF +50-10% 25V ELECT
C9	449287	3733558-0042	22UF +50-10% 25V ELECT
C10	433440	3723487-0006	220000PF 20% 25V CER
C11	245886	993025-0872	3000PF 1%, 100V., MICA
C12	245886	993025-0872	3000PF 1%, 100V., MICA
C13	430603	993025-0848	300PF 1% 100V MICA
C14	236779	993025-0904	62,000PF 1%, 100V., MICA
C15	449286	993025-0895	27000PF 1% 100V MICA
C16	224630	993025-0436	91PF 2%, 500V., MICA
C17	224630	993025-0436	91PF 2%, 500V., MICA
C18	425353	3723487-0003	100000 PF +80-20% 50V CER PLATE
C19	425353	3723487-0003	100000 PF +80-20% 50V CER PLATE
C20	425353	3723487-0003	100000 PF +80-20% 50V CER PLATE
C21	428487	993025-0439	120PF 2% 100V MICA
C22	425353	3723487-0003	100000 PF +80-20% 50V CER PLATE
C23	425353	3723487-0003	100000 PF +80-20% 50V CER PLATE
C24	242446	993025-0444	200PF 1% 500V MICA
C27	432513	3720532-0011	10000 PF 20% 50V CER
C28	425353	3723487-0003	100000 PF +80-20% 50V CER PLATE
C29	433440	3723487-0006	27000PF 1% 100V MICA
C30	425353	3723487-0003	100000 PF +80-20% 50V CER PLATE
C31	425353	3723487-0003	100000 PF +80-20% 50V CER PLATE
C32	449287	3733558-0042	22UF +50-10% 25V ELECT
C33	238820	993025-0445	220PF 1%, 100V., MICA
C34	234444	993025-0461	1000 PF 1% 100V MICA
C35	433440	3723487-0006	27000PF 1% 100V MICA
C36	425377	993025-0453	470PF 5% 100V MICA
C37	226976	3733558-0032	100UF 16V
C38	436354	3723487-0004	470000PF 10% 50V CER
C39	436354	3723487-0004	470000PF 10% 50V CER
C40	239971	993025-0475	3900PF 5%, 100V., MICA
C41	449306	3733558-0062	10UF -10+50% 35V ELECT
C42	432513	3720532-0011	10000 PF 20% 50V CER
C43	449306	3733558-0062	10UF -10+50% 35V ELECT
C44	432513	3720532-0011	10000 PF 20% 50V CER
C45	449306	3733558-0062	10UF -10+50% 35V ELECT
C46	432513	3720532-0011	10000 PF 20% 50V CER
C47	425353	3723487-0003	100000 PF +80-20% 50V CER PLATE
C48	425353	3723487-0003	100000 PF +80-20% 50V CER PLATE
C49	425353	3723487-0003	100000 PF +80-20% 50V CER PLATE
C50	425353	3723487-0003	100000 PF +80-20% 50V CER PLATE
C51	425353	3723487-0003	100000 PF +80-20% 50V CER PLATE
C52	425353	3723487-0003	100000 PF +80-20% 50V CER PLATE
C53	449287	3733558-0042	22UF +50-10% 25V ELECT
C54	425353	3723487-0003	100000 PF +80-20% 50V CER PLATE
C56	443745	3723487-0006	220000PF 20% 50V CER
C57TO C66	443744	3723487-0004	470000PF 20% 50V CER
CR1	242522	3464611-0001	DIODE - TYPE SPECIAL
CR2	242522	3464611-0001	DIODE - TYPE SPECIAL
CR3	242522	3464611-0001	DIODE - TYPE SPECIAL
CR4	242522	3464611-0001	DIODE - TYPE SPECIAL
CR5	242522	3464611-0001	DIODE - TYPE SPECIAL
CR6	242522	3464611-0001	DIODE - TYPE SPECIAL
CR9	242522	3464611-0001	DIODE - TYPE SPECIAL

Symbol	Stock No.	Drawing No.	Description
CR10	242522	3464611-0001	DIODE - TYPE SPECIAL
CR11	242522	3464611-0001	DIODE - TYPE SPECIAL
CR12	242522	3464611-0001	DIODE - TYPE SPECIAL
CR13	242522	3464611-0001	DIODE - TYPE SPECIAL
CR14	242522	3464611-0001	DIODE - TYPE SPECIAL
CR15	242522	3464611-0001	DIODE - TYPE SPECIAL
CR16	242522	3464611-0001	DIODE - TYPE SPECIAL
DS1	443794	3729606-0002	DIODE - TYPE LED (RED)
E1	228124	3450797-0003	CONTACT
E2	228124	3450797-0003	CONTACT
E3	228124	3450797-0003	CONTACT
E4	228124	3450797-0003	CONTACT
E5	228124	3450797-0003	CONTACT
E6	228124	3450797-0003	CONTACT
E7	228124	3450797-0003	CONTACT
K1	449766	3726301-0003	RELAY
L1	451140	3735664-0501	FILTER ASSEMBLY
Q1	431013	3729249-0002	TRANSISTOR - TYPE 2N2905
Q2	428451	3412839-0003	TRANSISTOR - TYPE 2N2222A
Q3	428185	3412839-0002	TRANSISTOR - TYPE 2N2906
Q4	431013	3729249-0002	TRANSISTOR - TYPE 2N2905
R1	249554	990413-0225	1000 OHM 1% 1/4W FILM
R2	435515	990413-0249	10000 OHM 5% 1/4W FILM
R3	427657	990413-0236	3000 OHM 1/4W 2%, FILM
R4	435739	990413-0260	30000 OHM 5% 1/4W FILM
R5	440710	990413-0187	27 OHM 5% 1/4W FILM
R6	418861	990413-0194	51 OHMS 5% 1/4W FILM
R7	427658	990413-0218	510 OHM 2% 1/4W FILM
R8	240579	990413-0215	390 OHM 5% 1/4W FILM
R9	240579	990413-0215	390 OHM 5% 1/4W FILM
R10	249554	990413-0225	1000 OHM 1% 1/4W FILM
R11	424926	990413-0210	240 OHM 5%, 1/4W., FILM
R12	424926	990413-0210	240 OHM 5%, 1/4W., FILM
R13	249438	990413-0219	560 OHM 2% 1/4W FILM
R14	435515	990413-0249	10000 OHM 5% 1/4W FILM
R15	239463	990413-0256	20000 OHM 5% 1/4W FILM
R16	428740	990413-0270	75000 OHM 1% 1/4W FILM
R17	218762	99306-0231	1000000 OHM 5% 1/4W COMP
R18	440710	990413-0187	27 OHM 5% 1/4W FILM
R19	435515	990413-0249	10000 OHM 5% 1/4W FILM
R20	435515	990413-0249	10000 OHM 5% 1/4W FILM
R21	449285	3458861-0014	100000 OHM LINEAR VARIABLE
R22	249553	990413-0201	100 OHM 1% 1/4W FILM
R23	430331	3458861-0009	5000 OHMS 200V FIG 3 VARI
R24	249554	990413-0225	1000 OHM 1% 1/4W FILM
R25	249554	990413-0225	1000 OHM 1% 1/4W FILM
R26	249554	990413-0225	1000 OHM 1% 1/4W FILM
R27	249554	990413-0225	1000 OHM 1% 1/4W FILM
R28	440710	990413-0187	27 OHM 5% 1/4W FILM
R29	440710	990413-0187	27 OHM 5% 1/4W FILM
R30	249554	990413-0225	1000 OHM 1% 1/4W FILM
R31	241859	990413-0245	6800 OHM 5% 1/4W FILM
R32	249554	990413-0225	1000 OHM 1% 1/4W FILM
R33	249554	990413-0225	1000 OHM 1% 1/4W FILM
R34	435515	990413-0249	10000 OHM 5% 1/4W FILM
R35	436144	990413-0253	15000 OHM 5% 1/4W
R36	430331	3458861-0009	5000 OHMS 200V FIG 3 VARI
R37	436469	990413-0221	680 OHMS 2% 1/4W FILM
R38	435515	990413-0249	10000 OHM 5% 1/4W FILM
R39	418861	990413-0194	51 OHMS 5% 1/4W FILM
R40	245925	990413-0209	220 OHM 5% 1/4W FILM
R41	249262	990413-0257	22000 OHM 5% 1/4W FILM
R42	249554	990413-0225	1000 OHM 1% 1/4W FILM
R43	249554	990413-0225	1000 OHM 1% 1/4W FILM

Symbol	Stock No.	Drawing No.	Description
R44	437646	990413-0193	47 OHM 5% 1/4W FILM
R45	428115	990413-0213	330 OHM 1/4W 2%, FILM
R46	240996	990413-0211	270 OHM 5% 1/4W FILM
R47	245918	990413-0231	1800 OHM 5% 1/4W FILM
R48	239950	990413-0227	1200 OHM 2% 1/4W FILM
R49	249261	990413-0255	18000 OHM 2% 1/4W FILM
R50	249261	990413-0255	18000 OHM 2% 1/4W FILM
R51	440710	990413-0187	27 OHM 5% 1/4W FILM
R52	440710	990413-0187	27 OHM 5% 1/4W FILM
R53	418962	990413-0259	27000 OHM 2% 1/4W FILM
R54	428595	990413-0284	300,000 OHM 1/4W 2%, FILM
R55	428595	990413-0284	300,000 OHM 1/4W 2%, FILM
R56	436141	990413-0273	100000 OHM 1% 1/4W FILM
R57	249554	990413-0225	1000 OHM 1% 1/4W FILM
R58	239955	990413-0248	9100 OHM 2% 1/4W FILM
R59	249554	990413-0225	1000 OHM 1% 1/4W FILM
R62	435739	990413-0260	30000 OHM 5% 1/4W FILM
R63	433290	3458861-0011	20000 OHM LINEAR VAR
R64	433289	3458861-0007	1000 OHM LINEAR VAR
R65	430838	990413-0185	22 OHM 1/4W 5%, FILM
R66	239954	990413-0243	5600 OHM 2% 1/4W FILM
R67	433289	3458861-0007	1000 OHM LINEAR VAR
R68	428596	990413-0235	2700 OHM
R69	428107	990413-0216	430 OHM 5% 1/4W FILM
R70	430330	3458861-0008	2000 OHMS LINEAR VARI
R71	430330	3458861-0008	2000 OHMS LINEAR VARI
R72	239950	990413-0227	1200 OHM 2% 1/4W FILM
R73	249554	990413-0225	1000 OHM 1% 1/4W FILM
R74	435515	990413-0249	10000 OHM 5% 1/4W FILM
R75	420022	990413-0258	24000 OHM 5% 1/4W FILM
R76	249432	990413-0240	4300 OHM 5% 1/4W FILM
R77	218762	99206-0231	1000000 OHM 5% 1/4W COMP
R78	422460	990413-0217	470 OHM 2% 1/4W FILM
R79	439884	990413-0280	200000 OHM 5% 1/4W FILM
R80	426910	990413-0237	3300 OHM 2% 1/4W FILM
R81	249554	990413-0225	1000 OHM 1% 1/4W FILM
R82	430331	3458861-0009	5000 OHMS 200V FIG 3 VARI
R83	444882	990401-0476	60400 OHM 1% 1/4W FILM
R84	249554	990413-0225	1000 OHM 1% 1/4W FILM
R85	433289	3458861-0007	1000 OHM LINEAR VAR
R86	249554	990413-0225	1000 OHM 5% 1/4W FILM
R87	438437	3458862-0106	5000 OHM 10% 1/2W LINEAR VAR
R88	249554	990413-0225	1000 OHM 5% 1/4W FILM
TP1	242732	3457645-0002	CONTACT
TP2	242732	3457645-0002	CONTACT
TP3	242732	3457645-0002	CONTACT
TP4	242732	3457645-0002	CONTACT
TP5	242732	3457645-0002	CONTACT
TP6	242732	3457645-0002	CONTACT
TP7	242732	3457645-0002	CONTACT
TP8	242732	3457645-0002	CONTACT
TP9	242732	3457645-0002	CONTACT
TP10	242732	3457645-0002	CONTACT
TP11	242732	3457645-0002	CONTACT
TP12	242732	3457645-0002	CONTACT
TP13	242732	3457645-0002	CONTACT
TP14	242732	3457645-0002	CONTACT
TP15	242732	3457645-0002	CONTACT
TP16	242732	3457645-0002	CONTACT
TP17	242732	3457645-0002	CONTACT
TP18	242732	3457645-0002	CONTACT
TP19	242732	3457645-0002	CONTACT
TP20	242732	3457645-0002	CONTACT
TP21	242732	3457645-0002	Contact
U1	441584	3427994-0011	I C - TYPE SN74LS11N
U2	437991	3427994-0074	I.C. - TYPE SN74LS74N
U3	436444	3427994-0014	I C - TYPE SN74LS14N

Symbol	Stock No.	Drawing No.	Description
U4	426918	3729710-0001	I.C. - TYPE UA710PC
U5	438173	3729694-0001	I.C. - TYPE 9602PC
U6	426918	3729710-0001	I.C. - TYPE UA710PC
U7	432233	3729429-0001	I C - TYPE MC1741SG
U8	426918	3729710-0001	I.C. - TYPE UA710PC
U9	432340	3726908-0001	I.C. - TYPE MC1741CP1
U10	444949	3427994-0005	I.C.-TYPE SN74LS05N
U11	432340	3726908-0001	I.C. - TYPE MC1741CP1
11	444858	3727158-0307	POST
13	247544	3458378-0001	PAD
24	228192	3450825-0001	RECEPTACLE E1-E3

Symbol	Stock No.	Drawing No.	Description
			MI-563527-6 R F GENERATOR PW BOARD A2A2 P/L 3751074-501 REV-9
C1	442452	3723487-0103	100000 PF 20% 50V CER
C2	443744	3723487-0104	470000 PF 20% 50V CER
C3	431266	8959154-0174	10UF 12V., ELECT.
C4	219039	8959154-0110	25UF 25V., ELECT.
C5	442452	3723487-0103	100000 PF 20% 50V CER
C6	442452	3723487-0103	100000 PF 20% 50V CER
C7	442452	3723487-0103	100000 PF 20% 50V CER
C8	138923	8959154-0155	1UF 50V TUB. ELECT.
C9	442452	3723487-0103	100000 PF 20% 50V CER
C10	443744	3723487-0104	470000 PF 20% 50V CER
C11	445988	3723487-0102	22000PF 20% 50V CER
C12	442452	3723487-0103	100000 PF 20% 50V CER
C13	235503	8959154-0180	75UF 10% 12V ELECT
C14	138923	8959154-0155	1UF 50V TUB. ELECT.
C15	138923	8959154-0155	1UF 50V TUB. ELECT.
C16	443744	3723487-0104	470000 PF 20% 50V CER
C17	442452	3723487-0103	100000 PF 20% 50V CER
C18	219039	8959154-0177	25UF 25V., ELECT.
C19	443744	3723487-0104	470000 PF 20% 50V CER
C20	224358	8959154-0113	75UF 25V., ELECT.
C21	445988	3723487-0102	22000PF 20% 50V CER
C25	217350	8959154-0108	10UF 25V., ELECT.
C26	217350	8959154-0108	10UF 25V., ELECT.
C27	442452	3723487-0103	100000 PF 20% 50V CER
C28	442452	3723487-0103	100000 PF 20% 50V CER
C29	420116	8959154-0175	15UF 12V., ELECT.
C30	442452	3723487-0103	100000 PF 20% 50V CER
C31	137903	3723487-0105	1000000PF 20% 50V CER
C32	443744	3723487-0104	470000 PF 20% 50V CER
C33	443744	3723487-0104	470000 PF 20% 50V CER
C34	442452	3723487-0103	100000PF 20% 50V CER
C35	443744	3723487-0104	470000 PF 20% 50V CER
C36	442452	3723487-0103	100000 PF 20% 50V CER
C37	442452	3723487-0103	100000 PF 20% 50V CER
C38	442452	3723487-0103	100000 PF 20% 50V CER
C39	443744	3723487-0104	470000 PF 20% 50V CER
C40	442452	3723487-0103	100000 PF 20% 50V CER
C41	442452	3723487-0103	100000 PF 20% 50V CER
C42	442452	3723487-0103	100000 PF 20% 50V CER
C43	442452	3723487-0103	100000 PF 20% 50V CER
C44 THRU C48	442452	3723487-0103	100000 PF 20% 50V CER
CR1	418674	3416269-0208	DIODE - TYPE 1N4732A
CR2	418674	3416269-0208	DIODE - TYPE 1N4732A
CR3	430999	3416269-0216	DIODE - TYPE 1N4740A
CR4	249603	3458490-0008	DIODE - TYPE MPD300
CR5	426226	3416269-0207	DIODE - TYPE 1N4731
CR6	229936	3415872-0001	DIODE - TYPE 1N914
CR7	421611	3721929-0001	DIODE - TYPE SPECIAL
CR8	421611	3721929-0001	DIODE - TYPE SPECIAL
G1		3751827-0501	OSCILLATOR ASSEM
C1	138923	8959154-0155	1UF 50V ELECT
C2	442452	3723487-0103	100000 PF 20% 50V CER
C3	442452	3723487-0103	100000 PF 20% 50V CER
C4	432327	990693-0225	33 PF 5% 300V MICA
C5	442452	3723487-0103	100000 PF 20% 50V CER
C6	442452	3723487-0103	100000 PF 20% 50V CER
C7	137903	3723487-0105	1000000 PF 20% 50V CER
C8	442452	3723487-0105	100000 PF 20% 50V CER
C9	431266	8959154-0174	10UF 12V ELECT

Symbol	Stock No.	Drawing No.	Description
C11	442452	3723487-0103	100000 PF 20% 50V CER
C13	443744	3723487-0104	470000 PF 20% 50V CER
C14	443744	3723487-0104	470000 PF 20% 50V CER
C15	442452	3723487-0103	100000 PF 20% 50V CER
CR1	433045	3729130-0003	DIODE - TYPE MV1404
CR2	439963	3729130-0001	DIODE - TYPE MV1401
CR4	139343	3416269-0209	DIODE - TYPE 1N4733A
L1	444745	3330847-0128	COIL 18 UH 2% .145 AMP
L2	441379	3330847-0131	COIL 33 UH 5% .13 AMP
L3	432271	3330847-0134	COIL 56 UH 5% .10 AMP
L4	452566	3330847-0148	COIL 820 UH 5% .029 AMP
L5	425967	3330847-0025	COIL 10 UH 10% .13 AMP
Q1	428451	3726706-0001	TRANSISTOR - TYPE 2N2222A
R1	442214	990413-0218	510 OHM 1% 1/4W FILM
R2	442228	990413-0238	3600 OHM 1% 1/4W FILM
R3	442228	990413-0238	3600 OHM 1% 1/4W FILM
R4	427906	3724128-0035	5000 OHM LINEAR VAR
R5	442231	990413-0241	4700 OHM 1% 1/4W FILM
R13	249555	990413-0249	10000 OHM 1% 1/4W FILM
R14	502062	82283-0130	62 OHM 5% 1/2W COMP
U1	449212	3726644-0010	I C - TYPE 78M08C
U2	443921	3729208-0001	I C - TYPE MC1648P (SPECIAL)
G2	643172	3751448-0001	CRYSTAL TCXO
Q1	428451	3726706-0001	TRANSISTOR - TYPE 2N2222A
Q2	428451	3726706-0001	TRANSISTOR - TYPE 2N2222A
Q3	244871	3458914-0004	TRANSISTOR - TYPE 2N5089
R1	424926	990413-0210	240 OHM 5% 1/4W FILM
R2	424926	990413-0210	240 OHM 5% 1/4W FILM
R3	249554	990413-0225	1000 OHM 1% 1/4W FILM
R4	249554	990413-0225	1000 OHM 1% 1/4W FILM
R5	522116	99126-0140	160 OHMS 5% 2W COMP.
R6	522116	99126-0140	160 OHMS 5% 2W COMP.
R7	249439	990413-0222	750 OHM 5% 1/4W FILM
R8	249554	990413-0225	1000 OHM 1% 1/4W FILM
R9	249553	990413-0201	100 OHM 2% 1/4W FILM
R10	428880	990413-0212	300 OHM 5% 1/4W FILM
R11	239955	990413-0246	9100 OHM 2% 1/4W FILM
R12	249441	990413-0230	1600 OHMS 5% 1/4W FILM
R13	249553	990413-0201	100 OHM 1% 1/4W FILM
R14	239955	990413-0248	9100 OHM 2% 1/4W FILM
R15	249441	990413-0230	1600 OHMS 5% 1/4W FILM
R16	249553	990413-0201	100 OHM 1% 1/4W FILM
R17	249554	990413-0225	1000 OHM 1% 1/4W FILM
R18	418963	990413-0262	36,000 OHM 2%, 1/4W., FILM
R19	435515	990413-0249	10000 OHM 5% 1/4W FILM
R20	435515	990413-0249	10000 OHM 5% 1/4W FILM
R21	427658	990413-0218	510 OHM 2% 1/4W FILM
R22	249554	990413-0225	1000 OHM 1% 1/4W FILM
R23	249438	990413-0219	560 OHM 2%, 1/4W., FILM
R24	435515	990413-0249	10000 OHM 5% 1/4W FILM
R25	428116	990413-0241	4700 OHM 2% 1/4W FILM
R26	428594	990413-0221	180 OHM 2% 1/4W FILM
R27	418861	990413-0194	51 OHMS 5% 1/4W FILM
R28	420000	990401-0366	4750 OHM 1% 1/4W FILM
R29	425848	990401-0362	4320 OHM 1% 1/4W FILM
R30	249554	990401-0301	1000 OHM 1% 1/4W FILM
R31	249554	990401-0301	1000 OHM 1% 1/4W FILM
R32	419997	990401-0318	1500 OHM 1% 1/4W FILM
R33	249554	990413-0225	1000 OHM 1% 1/4W FILM
R34	428150	990413-0263	39000 OHM 2% 1/4W FILM
R35	249554	990413-0225	1000 OHM 1% 1/4W FILM

Symbol	Stock No.	Drawing No.	Description
R36 THRU R38	430838	990413-0185	22 OHM 5% 1/4W FILM
R40	449320	3456544-C013	6.2 OHM 5% 11W W W
U1	436444	3427994-0014	I C - TYPE SN74LS14N
U2	433393	3427994-0073	I.C. - TYPE SN74LS73AN
U3	436444	3427994-0014	I C - TYPE SN74LS14N
U4	442117	3729205-0002	I C - TYPE SN75451BP
U5	443912	3726206-0006	I.C. - TYPE MC74418P(SPECIAL)
U6	443912	3726206-0006	I.C. - TYPE MC74418P(SPECIAL)
U7	443912	3726206-0006	I.C. - TYPE MC74418P(SPECIAL)
U8	449211	3427994-0090	I C - TYPE 74LS90
U9	449211	3427994-0090	I C - TYPE 74LS90
U10	449211	3427994-0090	I C - TYPE 74LS90
U11	449211	3427994-0090	I C - TYPE 74LS90
U12	436444	3427994-0014	I C - TYPE SN74LS14N
U13	444112	3427994-0161	IC - TYPE SN74LS161N
U14	438173	3729694-0001	I.C. - TYPE 9602PC
U15	433764	3724989-0005	I C - TYPE MC4044P
U16	432340	3726908-0001	I.C. - TYPE MC1741CP1
U17	449210	3726551-0002	I C -TYPE LM319
U18	436444	3427994-0014	I.C. - TYPE SN74LS14N
U19	430248	3726085-0006	I.C. - TYPE LM340-05K
Y1		3751450-0001	CRYSTAL 10 MHZ THIS CRYSTAL IS NOT FIELD REPAIRABLE REPLACE WITH COMPLETE UNIT G2 STOCK # 643172 - WHEN ORDERING STATE STK# & MEGHERTZ STK 643172 AND 10.00000 MHZ
19	437199	3457645-0010	CONTACT
26	228124	3450797-0003	CONTACT
28	450547	3727158-0306	POST
29	444858	3727158-0307	POST

Symbol	Stock No.	Drawing No.	Description
			MI-563527-3 R F PRE-DRIVER A2A3 P/L 3751441-501 REV-12
A1			PREDRIVER BABY BOARD P/L 3751441-502 REV-12
C1	433771	3456852-0036	390-1400 PF VAR
L1	450998	3751873-0001	COIL 15UH 5% 1 AMP
L2	450998	3751873-0001	COIL 15UH 5% 1 AMP
39	228124	3450797-0003	CONTACT
			P/L 3751441-501 REV-12
C1	433439	3721990-0036	100000PF 5% 100V CER
C2	430309	3721990-0026	15000PF 10% 100V CER
C3	430309	3721990-0026	15000PF 10% 100V CER
C4	429703	3457081-0074	0.15UF 10% 400V FILM
C5	429703	3457081-0074	0.15UF 10% 400V FILM
C6	231384	3457081-0173	0.068UF 10% 400V FILM
C7	231384	3457081-0173	0.068UF 10% 400V FILM
C8	429703	3457081-0074	0.15UF 10% 400V FILM
C9	449332	3721990-0044	470000PF 10% 100V CER
C10	134752	8959154-0726	30UF 10% 100V ELECT
C11	429703	3457081-0074	0.15UF 10% 400V FILM
C14	433771	3456852-0036	390-1400 PF VARI
C16	431270	3457081-0077	0.22UF 5% 100V FILM
C17	433283	3721990-0026	22000PF 10% 100V CER
C18	429673	3721990-0032	47000PF 10% 100V CER
C19	143522	1441585-0013	10000PF 20% 1000V CER
C20	143522	1441585-0013	10000PF 20% 1000V CER
C21	433440	3720532-0022	220000PF 5% 50V CER
CR1	449284	3751238-0001	DIODE - TYPE 1GD4
CR2	449284	3751238-0001	DIODE - TYPE 1GD4
J2	449333	3726876-0001	RECEPTACLE
J3	449333	3726876-0001	RECEPTACLE
L2	450998	3751873-0001	COIL 15UH 5% 1 AMP
L3	449338	3729486-0501	INDUCTOR - TOROID
Q1	443799	3729716-0001	TRANSISTOR - TYPE VN46AF
Q2	443799	3729716-0001	TRANSISTOR - TYPE VN46AF
Q3	449296	3751445-0303	TRANSISTOR - TYPE SDT12303
Q4	449296	3751445-0303	TRANSISTOR - TYPE SDT12303
R1	502147	82283-0151	470 OHM 5% 1/2W COMP
R2	502110	82283-0135	100 OHM 5% 1/2W COMP
R3	502322	82283-0191	22000 OHMS 5% 1/2W COMP.
R4	449337	3722472-0010	4 OHM 1% 3W WW
R5	502110	82283-0135	100 OHM 5% 1/2W COMP
R6	502147	82283-0151	470 OHM 5% 1/2W COMP
R7	502322	82283-0191	22000 OHMS 5% 1/2W COMP.
R8	449337	3722472-0010	4 OHM 1% 3W WW
R9	502036	82283-0124	56 OHMS 5% 1/2W COMP.
R10	439983	3751849-0001	500 OHM LINEAR VARI
R11	449402	3751849-0002	1000 OHM LINEAR VARI
R12	502120	82283-0142	200 OHMS 5% 1/2W COMP.
R13	502175	82283-0156	750 OHM 5% 1/2W COMP

Symbol	Stock No.	Drawing No.	Description
R14	502022	82283-0119	22 OHM 5% 1/2W COMP
R15	219045	993257-0192	.1 OHM 1% 1W WW
R16	219045	993257-0192	.1 OHM 1% 1W WW
R17	219045	993257-0192	.1 OHM 1% 1W WW
R18	502022	82283-0119	22 OHM 5% 1/2W COMP
R19	219045	993257-0192	.1 OHM 1% 1W WW
R26	449339	3751350-0001	50 OHM 1% 10W WW
R27	502012	82283-0113	12 OHM 5% 1/2W FILM
R28	502012	82283-0113	12 OHM 5% 1/2W FILM
R29	512010	90496-0111	10 OHM 5% 1W FILM
R30	512010	90496-0111	10 OHM 5% 1W FILM
R31	522010	99126-0111	10 OHM 5% 2W FILM
R32	522039	99126-0125	39 OHM 5% 2W FILM
R33	522039	99126-0125	39 OHM 5% 2W FILM
R34	502012	82283-0113	12 OHM 5% 1/2W FILM
R35	502012	82283-0113	12 OHM 5% 1/2W FILM
R36	425743	3469427-0049	50 OHM 5% 20W WW
T1	449340	3735667-0501	TRANSFORMER ASSEM
T2	449335	3742946-0502	TRANSFORMER ASSEM
19	419039	3450797-0011	CONTACT
20	228124	3450797-0003	CONTACT
21	443739	3457645-0004	PIN CONTACT
38	228192	3450825-0001	RECEPTACLE

Symbol	Stock No.	Drawing No.	Description
			MI-563509 POWER CUTBACK KIT A2A4 P/L 3751488-501 REV-6
J5	438004	1510013-0183	CONNECTOR
J6	438004	1510013-0183	CONNECTOR
K1	449621	3729719-0002	RELAY
K2	449621	3729719-0002	RELAY
K3	449405	3720170-0014	RELAY
K4	449405	3720170-0014	RELAY
R7	434464	480308-0025	200 OHM 10% 25W WW
R8	434464	480308-0025	200 OHM 10% 25W WW
14	446821	3729316-0005	RECEPTACLE
15	446897	993216-0021	TERMINAL
16	444682	3729316-0103	KEYING PLUG
19	442940	3727158-0601	TERMINAL
4		3751488-0502	PRINTED WIRING BOARD ASSEM
CR1 TO CR12 CR13 TO CR16	246572	3731229-0001	DIODE - TYPE 1N5059
CR16	448090	3416269-0133	DIODE - TYPE 1N4757
R1	502127	82283-0145	270 OHM 5% 1/2W COMP
R2	502213	82283-0162	1300 OHM 5% 1/2W COMP
R3	449591	3456544-0015	50 OHM 5% 11W WW
R4	502127	82283-0145	270 OHM 5% 1/2W COMP
R5	502213	82283-0162	1300 OHM 5% 1/2W COMP
R6	502213	82283-0162	1300 OHM 5% 1/2W COMP
XK1	437974	3729309-0010	SOCKET, RELAY
XK2	437974	3729309-0010	SOCKET, RELAY
8	444858	3727158-0307	POST
C1 TO C4	436943	3751707-0016	100UF 25V ELECT.
2			POWER CUTBACK SWITCH ASSEM P/L 3751488-503
S5	449830	3751848-0001	SWITCH-PUSH
S6	449830	3751848-0001	SWITCH-PUSH
S7	449830	3751848-0001	SWITCH-PUSH
			CABLE HARNESS ASSEMBLY 3751979-503
6	444681	993216-0061	TERMINAL
21	442940	3727158-0601	CONNECTOR
42	445792	3729316-0102	PIN
A2A4P1	446844	3729316-0013	HOUSING
A2A4P2	445782	3729316-0008	HOUSING
A2A4P4	445781	3729316-0006	HOUSING

Symbol	Stock No.	Drawing No.	Description
			MI-563527-1 OFFSET REGULATOR A2A5 P/L 3751463-501 REV 5
C1	235003	3729245-0001	1UF 10% 400V FILM
C2	235003	3729245-0001	1UF 10% 400V FILM
C3	235003	3729245-0001	1UF 10% 400V FILM
C4	235003	3729245-0001	1UF 10% 400V FILM
C5	235003	3729245-0001	1UF 10% 400V FILM
CR1	449535	3729252-0020	DIODE - TYPE 1N3913
CR2	449534	3751820-0102	DIODE - TYPE 1N3309A
Q1 TO Q12	420506	3729739-0001	TRANSISTOR - TYPE 2N5038
R1	522210	99126-0159	1000 OHM 5% 2W COMP
R2	436976	990474-0192	0.1 OHM 5% 2W WW
R3	436976	990474-0192	0.1 OHM 5% 2W WW
R4	436976	990474-0192	0.1 OHM 5% 2W WW

Symbol	Stock No.	Drawing No.	Description
			MI-563527-8 TRANSMITTER CONTPOL INTERFACE A4A1A P/L 3751076-502 REV 20
C1	234444	993025-0461	1000 PF 1% 100V MICA
C2	449307	3733558-C092	100UF 10% 50V ELECT
C3	433440	3720532-C022	220000PF 5% 50V CER
C4	432513	3720532-C011	10000 PF 20% 50V CER
C5	432513	3720532-C011	10000 PF 20% 50V CER
C6	442277	3733558-C018	330UF 6.3V ELECT
C7	442268	3733558-C046	47UF -10+50% 25V ELECT
C8	432513	3720532-C011	10000 PF 20% 50V CER
C9	449306	3733558-C062	10UF -10+50% 25V ELECT
C10	432513	3720532-C011	10000 PF 20% 50V CER
C11	449307	3733558-C092	100UF 10% 50V ELECT
C12	433440	3720532-C022	220000PF 5% 50V CER
C13	449306	3733558-C062	10UF -10+50% 25V ELECT
C14	432513	3720532-C011	10000 PF 20% 50V CER
C15	436354	3720532-C025	470000PF 10% 50V CER
C16	436354	3720532-C025	470000PF 10% 50V CER
C17	449306	3733558-C062	10UF -10+50% 25V ELECT
C18	432513	3720532-C011	10000 PF 20% 50V CER
C19	436354	3720532-C025	470000PF 10% 50V CER
C20	436354	3720532-C025	470000PF 10% 50V CER
C21	449306	3733558-C062	10UF -10+50% 25V ELECT
C22	432513	3720532-C011	10000 PF 20% 50V CER
C23	429691	3720532-C016	47000PF 10% 50V CER
C24	433170	3720532-C018	100000PF 10% 50V CER
C25	433170	3720532-C018	100000PF 10% 50V CER
C26	432513	3720532-C011	10000 PF 20% 50V CER
C27	432513	3720532-C011	10000 PF 20% 50V CER
C28	433170	3720532-C018	100000PF 10% 50V CER
C29	137903	3723487-C105	1000000PF 20% 50V CER
C30	432513	3720532-C011	10000 PF 20% 50V CER
C31	433170	3720532-C018	100000PF 10% 50V CER
C32	433170	3720532-C018	100000PF 10% 50V CER
C33	432513	3720532-C011	10000 PF 20% 50V CER
C34	436354	3720532-C025	470000PF 10% 50V CER
C35	225624	993025-C473	3300PF
C36	433170	3720532-C018	100000PF 10% 50V CER
C37	433170	3720532-C018	100000PF 10% 50V CER
C38	224287	993025-0423	27PF 5% 100V MICA
C39	234444	993025-0461	1000 PF 1% 100V MICA
C40	234444	993025-0461	1000 PF 1% 100V MICA
C41	433170	3720532-C018	100000PF 10% 50V CER
C42	233350	993025-0437	100PF 1% 500V MICA
C43	436354	3720532-C025	470000PF 10% 50V CER
C44	219039	8959154-0177	25UF 12V ELECT
C45	219039	8959154-0177	25UF 12V ELECT
C46	443726	993209-0125	470000PF 20% 100V CER
C47	443726	993209-0125	470000PF 20% 100V CER
C49	146824	3733558-C060	4.7UF 35V ELECT
C48	228976	3733558-C032	100UF 16V ELECT
C50	433440	3720532-0022	220000PF 5% 50V CER
C51TO			
C61	433170	3720532-C018	100000PF 10% 50V CER
C62	215380	993025-0467	1800PF 5% 500V MICA
C63	442265	3733558-C026	22UF 16V ELECT
C64	433440	3720532-C022	220000PF 5% 50V CER
C65	442265	3733558-C026	22UF 16V ELECT
C66	433440	3720532-C022	220000PF 5% 50V CER
CR1	246572	3731229-0001	DIODE - TYPE 1N5059
CR2	246572	3731229-0001	DIODE - TYPE 1N5059
CR3	246572	3731229-0001	DIODE - TYPE 1N5059
CR4	246572	3731229-0001	DIODE - TYPE 1N5059
CR5	246572	3731229-0001	DIODE - TYPE 1N5059

Symbol	Stock No.	Drawing No.	Description
CR6	246572	3731229-0001	DIODE - TYPE 1N5059
CR7	246572	3731229-0001	DIODE - TYPE 1N5059
CR8	246572	3731229-0001	DIODE - TYPE 1N5059
CR9	246572	3731229-0001	DIODE - TYPE 1N5059
CR10	246572	3731229-0001	DIODE - TYPE 1N5059
CR11	427632	99202-0111	DIODE - TYPE 1N4735
CR12	427632	99202-0111	DIODE - TYPE 1N4735
CR13	427632	99202-0111	DIODE - TYPE 1N4735
CR14	427632	99202-0111	DIODE - TYPE 1N4735
CR15	246572	3731229-0001	DIODE - TYPE 1N5059
CR16	242522	3464611-0001	DIODE - TYPE SPECIAL
CR17	418811	99202-0106	DIODE - TYPE 1N4730
CR18	242522	3464611-0001	DIODE - TYPE SPECIAL
CR19	242522	3464611-0001	DIODE - TYPE SPECIAL
CR20	242522	3464611-0001	DIODE - TYPE SPECIAL
CR21	242522	3464611-0001	DIODE - TYPE SPECIAL
CR22	242522	3464611-0001	DIODE - TYPE SPECIAL
CR23	242522	3464611-0001	DIODE - TYPE SPECIAL
CR24	449303	99202-0125	DIODE - TYPE 1N4749
CR25	246572	3731229-0001	DIODE - TYPE 1N5059
CR26	418811	99202-0106	DIODE - TYPE 1N4730
CR27	242522	3464611-0001	DIODE - TYPE SPECIAL
CR31	242522	3464611-0001	DIODE - TYPE SPECIAL
CR32	418811	99202-0106	DIODE - TYPE 1N4730
CR33	418811	99202-0106	DIODE - TYPE 1N4730
CR34	242522	3464611-0001	DIODE - TYPE SPECIAL
CR35	242522	3464611-0001	DIODE - TYPE SPECIAL
CR36	242522	3464611-0001	DIODE - TYPE SPECIAL
CR37	242522	3464611-0001	DIODE - TYPE SPECIAL
CR38	242522	3464611-0001	DIODE - TYPE SPECIAL
CR39	246572	3731229-0001	DIODE - TYPE 1N5059
CR40	246572	3731229-0001	DIODE - TYPE 1N5059
CR41	449304	3415395-0009	DIODE - TYPE 1N5341B
CR42	449304	3415395-0009	DIODE - TYPE 1N5341B
CR43	246572	3731229-0001	DIODE - TYPE 1N5059
CR44	246572	3731229-0001	DIODE - TYPE 1N5059
CR45	242522	3464611-0001	DIODE - TYPE SPECIAL
CR46	246572	3731229-0001	DIODE - TYPE 1N5059
CR47	246572	3731229-0001	DIODE - TYPE 1N5059
Q1	449305	3729723-0003	THYRISTOR - TYPE 2N6070
Q2	245048	3729724-0001	RECTIFIER - TYPE 2N5060
Q3	449350	3721933-0001	TRANSISTOR - TYPE 2N1711
Q4	449350	3721933-0001	TRANSISTOR - TYPE 2N1711
K1	449329	3751455-0001	RELAY
K2	449328	3751451-0001	RELAY
R1	249554	990413-0225	1000 OHM 1% 1/4W FILM
R2	512124	90496-0144	240 OHMS 5% 1W COMP.
R3	245925	990413-0209	220 OHM 5% 1/4W FILM
R4	135726	990413-0177	10 OHMS 5% 1/4W FILM
R5	427658	990413-0218	510 OHM 2% 1/4W FILM
R6	436141	990413-0273	100000 OHM 1% 1/4W FILM
R7	249554	990413-0225	1000 OHM 1% 1/4W FILM
R8	436144	990413-0253	15000 OHM 1% 1/4W FILM.
R9	249554	990413-0225	1000 OHM 1% 1/4W FILM
R10	245925	990413-0209	220 OHM 5% 1/4W FILM
R11	512112	90496-0137	120 OHMS 5% 1W COMP.
R12	512124	90496-0144	240 OHMS 5% 1W COMP.
R13	249554	990413-0225	1000 OHM 1% 1/4W FILM
R14	249554	990413-0225	1000 OHM 1% 1/4W FILM
R15	502022	82283-0119	22 OHM 5% 1/2W COMP
R16	249553	990413-0201	100 OHM 1% 1/4W FILM
R17	422460	990413-0217	470 OHM 2% 1/4W FILM
R18	449591	3456544-0015	50 OHM 5% 11W WW
R19	422463	990413-0267	56000 OHM 2% 1/4W FILM
R20	418861	990413-0194	51 OHMS 5% 1/4W FILM
R21	433289	3458861-0007	1000 OHM LINEAR VAR

Symbol	Stock No.	Drawing No.	Description
R22	502118	82283-0141	180 OHMS 5% 1/2W COMP.
R23	428880	990413-0212	300 OHM 5% 1/4W FILM
R24	428880	990413-0212	300 OHM 5% 1/4W FILM
R25	246408	990413-0269	68000 OHMS 1/4 WATT 5%
R26	249554	990413-0225	1000 OHM 1% 1/4W FILM
R27	424927	990413-0228	1300 OHM 5%, 1/4W., FILM
R28	420701	990413-0268	62000 OHMS 5% 1/4W FILM
R29	248706	990413-0236	3000 OHMS 5% 1/4W FILM
R30	249554	990413-0225	1000 OHM 1% 1/4W FILM
R31	245925	990413-0209	220 OHM 5% 1/4W FILM
R32	428563	990413-0189	33 OHM 5% 1/4W FILM
R33	240575	990413-0215	390 OHM 5% 1/4W FILM
R34	449762	3456544-C014	120 OHM 5% 11W WW
R35	427657	990413-0236	3000 OHM 2% 1/4W FILM
R36	422460	990413-0217	470 OHM 2% 1/4W FILM
R37	248706	990413-0236	3000 OHMS 5% 1/4W FILM
R38	422460	990413-0217	470 OHM 2% 1/4W FILM
R39	441527	990401-0213	133 OHM 1% 1/4W FILM
R40	436555	990401-0291	866 OHMS 1% 1/4W FILM
R41	436469	990413-0221	680 OHM 2% 1/4W FILM
R42	502118	82283-0141	180 OHMS 5% 1/2W COMP.
R43	249554	990413-0225	1000 OHM 1% 1/4W FILM
R44	240996	990413-0211	270 OHM 5% 1/4W FILM
R45	422460	990413-0217	470 OHM 2% 1/4W FILM
R46	433325	990401-0278	634 OHMS 1% 1/4W FILM
R47	438680	990401-0255	365 OHM 1% 1/4W FILM
R48	436469	990413-0221	680 OHMS 2% 1/4W FILM
R49	246408	990413-0269	68000 OHMS 1/4 WATT 5%
R50	246408	990413-0269	68000 OHMS 1/4 WATT 5%
R51	239952	990413-0224	910 OHM 2%, 1/4W., FILM
R52	239952	990413-0224	910 OHM 2%, 1/4W., FILM
R53	239952	990413-0224	910 OHM 2%, 1/4W., FILM
R54	239952	990413-0224	910 OHM 2%, 1/4W., FILM
R55	241859	990413-0245	6800 OHM 5% 1/4W FILM
R56	241859	990413-0245	6800 OHM 5% 1/4W FILM
R57	241859	990413-0245	6800 OHM 5% 1/4W FILM
R58	241859	990413-0245	6800 OHM 5% 1/4W FILM
R59	427658	990413-0218	510 OHM 2% 1/4W FILM
R60	430331	3458861-C009	5000 OHM VAR LINEAR
R61	239953	990413-0232	2000 OHM 2%, 1/4W., FILM
R61	239953	990413-0232	2000 OHM 2%, 1/4W., FILM
R62	246408	990413-0269	68000 OHMS 1/4 WATT 5%
R63	239953	990413-0232	2000 OHM 2%, 1/4W., FILM
R64	433285	3458861-C007	1000 OHM LINEAR VAR
R66	419997	990413-0229	1500 OHM 5% 1/4W FILM
R67	246408	990413-0269	68000 OHMS 1/4 WATT 5%
R68	249553	990413-0201	100 OHM 1% 1/4W FILM
R69	502143	82283-0150	430 OHMS 5% 1/2W COMP.
R70	435515	990413-0249	10000 OHM 5% 1/4W FILM
R71	502143	82283-0150	430 OHMS 5% 1/2W COMP.
R72	435515	990413-0249	10000 OHM 5% 1/4W FILM
R73	249439	990413-0222	750 OHM 5% 1/4W FILM
R74	428107	990413-0216	430 OHM 5% 1/4W FILM
R75	249554	990413-0225	1000 OHM 1% 1/4W FILM
R76	249554	990413-0225	1000 OHM 1% 1/4W FILM
R77	245925	990413-0209	220 OHM 5% 1/4W FILM
R78	249554	990413-0225	1000 OHM 1% 1/4W FILM
R79	249554	990413-0225	1000 OHM 1% 1/4W FILM
R80	249554	990413-0225	1000 OHM 1% 1/4W FILM
R81	249554	990413-0225	1000 OHM 1% 1/4W FILM
R82	439884	990413-0280	200000 OHM 1% 1/4W FILM
R83	435402	3458861-C008	2000 OHM LINEAR VAR
R84	440710	990413-0187	27 OHM 5% 1/4W FILM
R85	440710	990413-0187	27 OHM 5% 1/4W FILM
R86	429863	3458861-C010	10000 OHM LINEAR VARI
R87	422462	990413-0214	360 OHM 5% 1/4W FILM
R88	422462	990413-0214	360 OHM 5% 1/4W FILM
R89	249554	990413-0225	1000 OHM 1% 1/4W FILM
R90	249554	990413-0225	1000 OHM 1% 1/4W FILM

Symbol	Stock No.	Drawing No.	Description
R92	237916	990413-0247	8200 OHMS 1/4W 2% FILM
R93	428596	990413-0235	2700 OHM 2% 1/4W FILM
R94	249554	990413-0225	1000 OHM 1% 1/4W FILM
R95	435515	990413-0249	10000 OHM 5% 1/4W FILM
R96	435515	990413-0249	10000 OHM 5% 1/4W FILM
R97	433289	3458861-0007	1000 OHM LINEAR VAR
R98	435515	990413-0249	10000 OHM 5% 1/4W FILM
R99	433289	3458861-0007	1000 OHM LINEAR VAR
R100	435515	990413-0249	10000 OHM 5% 1/4W FILM
R101	435515	990413-0249	10000 OHM 5% 1/4W FILM
R102	239465	990413-0265	47000 OHM 5% 1/4W FILM
R103	249554	990413-0225	1000 OHM 1% 1/4W FILM
R104	249554	990413-0225	1000 OHM 1% 1/4W FILM
R105	433289	3458861-0007	1000 OHM LINEAR VAR
R106	245925	990413-0209	220 OHM 5% 1/4W FILM
R107	428116	990413-0241	4700 OHM 2% 1/4W FILM
R108	418962	990413-0259	27000 OHM 2% 1/4W FILM
R109	422463	990413-0267	56000 OHM 5% 1/4W FILM
R110	436469	990413-0221	680 OHMS 2% 1/4W FILM
R111	512124	90496-0144	240 OHMS 5% 1W COMP.
R112	449341	990696-0493	90900 OHM 1% 1/2W FILM
R113	428597	990413-0242	5100 OHM 1/4W 2%, FILM
R114	502136	82283-0148	360 OHMS 5% 1/2W COMP.
R115	502110	82283-0135	100 OHM 5% 1/2W COMP
R116	422460	990413-0217	470 OHM 2% 1/4W FILM
R117	249554	990413-0225	1000 OHM 1% 1/4W FILM
R118	442244	990413-0261	33000 OHM 2% 1/4W FILM
R120	449762	3456544-0014	120 OHM 5% 11W WW
R121	424927	990413-0228	1300 OHM 5% 1/4W FILM
R122	245925	990413-0209	220 OHM 5% 1/4W FILM
R123	239953	990413-0232	2000 OHM 2%, 1/4W., FILM
R124	239953	990413-0232	2000 OHM 2%, 1/4W., FILM
R125	239953	990413-0232	2000 OHM 2%, 1/4W., FILM
R126	239953	990413-0232	2000 OHM 2%, 1/4W., FILM
R127	435515	990413-0249	10000 OHM 5% 1/4W FILM
R128	236584	3331583-0393	9090 OHM 1% 1W FILM
R129	419536	990401-0257	383 OHM 1%, 1/4W., FILM
R130	239465	990413-0265	47000 OHM 5% 1/4W FILM
R131	449828	990696-0393	9090 OHM 1% 1/2W FILM
R132	439884	990413-0280	200000 OHM 1% 1/4W FILM
S1	449344	990453-0252	SWITCH DPDT
S2	449345	990453-0242	SWITCH SPDT
U1	436507	3427994-0004	I C - TYPE SN74LS04N
U2	449214	3729707-0001	I C - TYPE MC14490VP
U3	445795	3729708-0001	I C - TYPE 75451ATC
U4	429782	3724947-0002	I C - TYPE 4N25
U5	449213	3729709-0003	I C - TYPE H113
U6	438173	3729694-0001	I.C. - TYPE 9602PC
U7	436444	3427994-0014	I C - TYPE SN74LS14N
U8	436719	3729705-0002	I.C. - TYPE MC3302P
U9	441592	3427994-0032	I C - TYPE SN74LS32N
U10	445795	3729708-0001	I C - TYPE 75451ATC
U11	436719	3729705-0002	I.C. - TYPE MC3302P
U12	426918	3729710-0001	I.C. - TYPE UA710PC
U13	426918	3729710-0001	I.C. - TYPE UA710PC
U14	436507	3427994-0004	I C - TYPE SN74LS04N
U15	432233	3729429-0001	I.C. - TYPE MC1741SG
26	444858	3727158-0307	POST
28	242732	3457645-0002	CONTACT

Symbol	Stock No.	Drawing No.	Description
			MI-563527-9 CONTROL LOGIC A4A1B P/L 3751076-503 REV-21
C1	449306	3733558-C062	10UF +50-10% 35V ELECT
C2	432513	3720532-C011	10000 PF 20% 50V CER
C3	449306	3733558-C062	10UF +50-10% 35V ELECT
C4	436354	3720532-C025	470000PF 10% 50V CER
C5	433800	3720532-C027	1000000PF 10% 50V CER
C6	449306	3733558-C062	10UF +50-10% 35V ELECT
C7	437387	3733558-C028	33UF -10%+50% 16V ELECT
C8	433170	3720532-C018	100000PF 10% 50V CER
C9	432513	3720532-C011	10000 PF 20% 50V CER
C10 THRU C36	433170	3720532-C018	100000PF 10% 50V CER
CR1 THRU CR6	242522	3464611-0001	DIODE - TYPE SPECIAL
DS1 THRU DS15	443794	3729606-0002	DIODE - TYPE LED (RED)
R1	239954	990413-C243	5600 OHM 2% 1/4W FILM
R2	249554	990413-0225	1000 OHM 1% 1/4W FILM
R3	428150	990413-0263	39000 OHM 2% 1/4W FILM
R4	418962	990413-0259	27000 OHM 2% 1/4W FILM
R5	442422	990401-C585	750000 OHM 1% 1/4W FILM
R6	428595	990413-C284	300,000 OHM 1/4W 2%, FILM
R7	435056	990401-C601	1000000 OHM 1% 1/4 FILM.
R8	239954	990413-C243	5600 OHM 2% 1/4W FILM
R9	239465	990413-C265	47000 OHM 5% 1/4W FILM
R10 THRU R23	245925	990413-C209	220 OHM 5% 1/4W FILM
R24	249554	990413-0225	1000 OHM 1% 1/4W FILM
R25	249554	990413-0225	1000 OHM 1% 1/4W FILM
R26	245925	990413-C209	220 OHM 5% 1/4W FILM
R27	249554	990413-0225	1000 OHM 1% 1/4W FILM
U1	437735	3427994-0020	I C - TYPE SN74LS20N
U2	441584	3427994-0011	I C - TYPE SN74LS11N
U3	437613	3427994-0008	I.C. - TYPE SN74LS08N
U4 THRU U6	441584	3427994-0011	I C - TYPE SN74LS11N
U7	437613	3427994-0008	I.C. - TYPE SN74LS08N
U8	437735	3427994-0020	I C - TYPE SN74LS20N
U9	441592	3427994-0032	I C - TYPE SN74LS32N
U10	437780	3427994-0002	I C - TYPE 74LS02
U11	437991	3427994-0074	I.C. - TYPE SN74LS74N
U12	438173	3729694-0001	I.C. - TYPE 9602PC
U13	438173	3729694-0001	I.C. - TYPE 9602PC
U14	433674	3729696-0001	I.C. - TYPE SN74193N
U15	437735	3427994-0020	I C - TYPE SN74LS20N
U16	443942	3729802-0001	I.C. - TYPE LM556CN
U17	436507	3427994-0004	I C - TYPE SN74LS04N
U18	437991	3427994-0074	I.C. - TYPE SN74LS74N
U19	444030	3729594-0002	IC - TYPE SN74LS279N-10 (SPECIAL)
U20	444030	3729594-0002	IC - TYPE SN74LS279N-10 (SPECIAL)
U21	444030	3729594-0002	IC - TYPE SN74LS279N-10 (SPECIAL)
U22	441584	3427994-0011	I C - TYPE SN74LS11N
19	228124	3450797-0003	CONTACT
20	421629	3450797-0016	CONTACT

Symbol	Stock No.	Drawing No.	Description
22	228192	3450825-C001	RECEPTACLE A,B,C,D
			MI-563527-13 LINEARITY CORRECTOR A6A3 P/L 3751758-501 REV 5
C1	231027	8959154-C114	100UF 25V ELECT
C2	433170	3720532-C018	100000PF 10% 50V CER
C3	433170	3720532-C018	100000PF 10% 50V CER
C4	219040	8959154-C181	100UF 12V ELECT
C5	426980	1443418-C007	100UF 75V ELECT
C6	426980	1443418-C007	100UF 75V ELECT
C7	426980	1443418-C007	100UF 75V ELECT
C8	233732	8959154-0189	5UF 10% 100V ELECT
C9	433439	993209-0118	100000PF 5% 100V CER
C10	219039	8959154-C110	25UF 25V ELECT
CR1	420923	3722719-C001	DIODE - TYPE FD600
CR2	420923	3722719-C001	DIODE - TYPE FD600
CR3	229936	3454179-0001	DIODE - TYPE 1N914
DS1	431693	3729202-0003	DIODE - TYPE LED (RED)
Q1	230214	3751879-C001	TRANSISTOR - TYPE 2N2102
Q2	230214	3751879-C001	TRANSISTOR - TYPE 2N2102
Q3	431013	3729249-C002	TRANSISTOR - TYPE 2N2905
Q4	428451	3412889-C003	TRANSISTOR - TYPE 2N2222
Q5	449620	3729716-C003	TRANSISTOR - TYPE VN88AF
R1	502330	82283-0194	30000 OHM 5% 1/2W COMP
R2	449679	3458861-0214	100000 OHM LINEAR VAR
R3	502210	82283-0159	1000 OHM 5% 1/2W COMP
R4	502247	82283-0175	4700 OHM 5% 1/2W COMP
R5	435878	3458861-0207	1000 OHM LINEAR VAR
R6	512068	90496-0131	68 OHM 5% 1W COMP
R7	522133	99126-0147	330 OHM 5% 2W COMP
R8	522136	99126-0148	360 OHM 5% 2W COMP
R9	502210	82283-0159	1000 OHM 5% 1/2W COMP
R10	502210	82283-0159	1000 OHM 5% 1/2W COMP
R11	502320	82283-0190	20000 OHM 5% 1/2W COMP
R12	502327	82283-0193	27000 OHM 5% 1/2W COMP
R13	449679	3458861-0214	100000 OHM LINEAR VAR
R14	502210	82283-0159	1000 OHM 5% 1/2W COMP
R15	502020	82283-0118	20 OHM 5% 1/2W COMP
R16	502210	82283-0159	1000 OHM 5% 1/2W COMP
R17	502222	82283-0167	2200 OHM 5% 1/2W COMP
R18	502256	82283-0177	5600 OHM 5% 1/2W COMP
R19	502211	82283-0160	1100 OHM 5% 1/2W COMP
R20	429862	3458861-0209	5000 OHM LINEAR VAR
R21	502211	82283-0160	1100 OHM 5% 1/2W COMP
R22	435878	3458861-0207	1000 OHM LINEAR VAR
R23	449678	3729513-0002	1000 OHM 10% 2W LINEAR VAR
U1	429782	3724947-0002	I C - TYPE 4N25
14	444858	3727158-0307	POST
20	443739	3457645-0004	CONTACT PIN TP1-TP4

MI 563510
MODULATOR PW BOARD A5A2 - A5A5
P/L 3751405-501
REV-8

Symbol	Stock No.	Drawing No.	Description
C1	450530	3729734-0067	220 UF 25V ELECT
C2	449299	3727765-C653	2UF 400V MYLAR
C3	449299	3727765-C653	2UF 400V MYLAR
C4	443743	3723487-0101	10000 PF 20% 50V CER
C5	450530	3729734-C067	220 UF 25V ELECT
C6	450530	3729734-C067	220 UF 25V ELECT
CR1	146320	3416269-0109	DIODE-TYPE ZENER
CR2 THRU			
CR4	441516	3729252-0010	DIODE - TYPE 1N3893
CR5 THRU			
CR8	433138	3729266-C001	DIODE-TYPE 1N3611
CR9 THRU			
CR12	450528	3729426-0001	DIODE - TYPE SVD400-12
DS1	431698	3729202-0003	DIODE - TYPE LED
Q1 THRU			
Q24	449297	3751444-0301	TRANSISTOR-TYPE SDT13301
R1	502127	82283-0055	270 OHM 5% 1/2W COMP
R2	219045	993257-0192	0.1 OHM 1%, 1W., WW
R3	219047	3416249-0201	1 OHM 5% 5W
R4	449301	3751443-0001	2.7 OHM 10% WW
R5	512333	90496-0022	33000 OHMS 5% 1W COMP.
R6	219045	993257-0192	0.1 OHM 1%, 1W., WW
R7	219047	3416249-0201	1 OHM 5% 5W
R8	449301	3751443-0001	2.7 OHM 10% WW
R9	512333	90496-0022	33000 OHMS 5% 1W COMP.
R10	219045	993257-0192	0.1 OHM 1%, 1W., WW
R11	219047	3416249-0201	1 OHM 5% 5W
R12	449301	3751443-0001	2.7 OHM 10% WW
R13	512333	90496-0022	33000 OHMS 5% 1W.COMP.
R14	219045	993257-0192	0.1 OHM 1%, 1W., WW
R15	219047	3416249-0201	1 OHM 5% 5W
R16	449301	3751443-0001	2.7 OHM 10% WW
R17	512333	90496-0022	33000 OHMS 5% 1W COMP.
R18	219045	993257-0192	0.1 OHM 1%, 1W., WW
R19	219047	3416249-0201	1 OHM 5% 5W
R20	449301	3751443-0001	2.7 OHM 10% WW
R21	512333	90496-0022	33000 OHMS 5% 1W COMP.
R22	219045	993257-0192	0.1 OHM 1%, 1W., WW
R23	219047	3416249-0201	1 OHM 5% 5W
R24	449301	3751443-0001	2.7 OHM 10% WW
R25	512333	90496-0022	33000 OHMS 5% 1W COMP.
R26	512333	90496-0022	33000 OHMS 5% 1W COMP.
R27	219047	3416249-0201	1 OHM 5% 5W
R28	449301	3751443-0001	2.7 OHM 10% WW
R29	219045	993257-0192	0.1 OHM 1%, 1W., WW
R30	512333	90496-0022	33000 OHMS 5% 1W COMP.
R31	219047	3416249-0201	1 OHM 5% 5W
R32	449301	3751443-0001	2.7 OHM 10% WW
R33	219045	993257-0192	0.1 OHM 1%, 1W., WW
R34	512333	90496-0022	33000 OHMS 5% 1W COMP.
R35	219047	3416249-0201	1 OHM 5% 5W
R36	449301	3751443-0001	2.7 OHM 10% WW
R37	219045	993257-0192	0.1 OHM 1%, 1W., WW
R38	512333	90496-0022	33000 OHMS 5% 1W COMP.

Symbol	Stock No.	Drawing No.	Description
R39	219047	3416249-0201	1 OHM 5% 5W
R40	449301	3751443-0001	2.7 OHM 10% WW
R41	219045	993257-0192	0.1 OHM 1%, 1W., WW
R42	512333	90496-0022	33000 OHMS 5% 1W COMP.
R43	219047	3416249-0201	1 OHM 5% 5W
R44	449301	3751443-0001	2.7 OHM 10% WW
R45	219045	993257-0192	0.1 OHM 1%, 1W., WW
R46	512333	90496-0022	33000 OHMS 5% 1W COMP.
R47	219047	3416249-0201	1 OHM 5% 5W
R48	449301	3751443-0001	2.7 OHM 10% WW
R49	219045	993257-0192	0.1 OHM 1%, 1W., WW
R50	219045	993257-0192	0.1 OHM 1%, 1W., WW
R51	449301	3751443-0001	2.7 OHM 10% WW
R52	219047	3416249-0201	1 OHM 5% 5W
R53	512333	90496-0022	33000 OHMS 5% 1W COMP.
R54	219045	993257-0192	0.1 OHM 1%, 1W., WW
R55	449301	3751443-0001	2.7 OHM 10% WW
R56	219047	3416249-0201	1 OHM 5% 5W
R57	512333	90496-0022	33000 OHMS 5% 1W COMP.
R58	219045	993257-0192	0.1 OHM 1%, 1W., WW
R59	449301	3751443-0001	2.7 OHM 10% WW
R60	219047	3416249-0201	1 OHM 5% 5W
R61	512333	90496-0022	33000 OHMS 5% 1W COMP.
R62	219045	993257-0192	0.1 OHM 1%, 1W., WW
R63	449301	3751443-0001	2.7 OHM 10% WW
R64	219047	3416249-0201	1 OHM 5% 5W
R65	512333	90496-0022	33000 OHMS 5% 1W COMP.
R66	219045	993257-0192	0.1 OHM 1%, 1W., WW
R67	449301	3751443-0001	2.7 OHM 10% WW
R68	219047	3416249-0201	1 OHM 5% 5W
R69	512333	90496-0022	33000 OHMS 5% 1W COMP.
R70	219045	993257-0192	0.1 OHM 1%, 1W., WW
R71	449301	3751443-0001	2.7 OHM 10% WW
R72	219047	3416249-0201	1 OHM 5% 5W
R73	512333	90496-0022	33000 OHMS 5% 1W COMP.
R74	512333	90496-0022	33000 OHMS 5% 1W COMP.
R75	449301	3751443-0001	2.7 OHM 10% WW
R76	219047	3416249-0201	1 OHM 5% 5W
R77	219045	993257-0192	0.1 OHM 1%, 1W., WW
R78	512333	90496-0022	33000 OHMS 5% 1W COMP.
R79	449301	3751443-0001	2.7 OHM 10% WW
R80	219047	3416249-0201	1 OHM 5% 5W
R81	219045	993257-0192	0.1 OHM 1%, 1W., WW
R82	512333	90496-0022	33000 OHMS 5% 1W COMP.
R83	449301	3751443-0001	2.7 OHM 10% WW
R84	219047	3416249-0201	1 OHM 5% 5W
R85	219045	993257-0192	0.1 OHM 1%, 1W., WW
R86	512333	90496-0022	33000 OHMS 5% 1W COMP.
R87	449301	3751443-0001	2.7 OHM 10% WW
R88	219047	3416249-0201	1 OHM 5% 5W
R89	219045	993257-0192	0.1 OHM 1%, 1W., WW
R90	512333	90496-0022	33000 OHMS 5% 1W COMP.
R91	449301	3751443-0001	2.7 OHM 10% WW
R92	219047	3416249-0201	1 OHM 5% 5W
R93	219045	993257-0192	0.1 OHM 1%, 1W., WW
R94	512333	90496-0022	33000 OHMS 5% 1W COMP.
R95	449301	3751443-0001	2.7 OHM 10% WW
R96	219047	3416249-0201	1 OHM 5% 5W
R97	219045	993257-0192	0.1 OHM 1%, 1W., WW
R98	522022	99126-0119	22 OHMS 5% 2W COMP.
R99	522022	99126-0119	22 OHMS 5% 2W COMP.
R100	502168	82283-0060	680 OHM 5% 1/2W COMP
R101	232205	99206-0561	2.7 OHM 5% 1/4W COMP
R102	502239	82283-0173	3900 OHM 5% 1/2W COMP
10	444858	3727158-0307	POST
17	450529	3751460-0002	HEATSINK

			MI-563504 MODULATOR DRIVER A5A1 P/L 3751393-502 REV-12
2			3751393-503 REV-12
C1	165286	3733558-C049	200UF 25V ELECT
C2	165286	3733558-C049	200UF 25V ELECT
C3	433170	3720532-C018	100000PF 10% 50V CER
C4	165286	3733558-C049	200UF 25V ELECT
C5	433440	3720532-C022	220000PF 5% 50V CER
C6	165286	3733558-C049	200UF 25V ELECT
C7	436354	3720532-C025	470000PF 10% 50V CER
C8 THRU C15			
C8 THRU C15	165286	3733558-C049	200UF 25V ELECT
C16	432513	3720532-C011	10000 PF 20% 50V CER
C17	239377	8959154-C725	290UF 12V ELECT
CR1	244785	3458443-C005	DIODE - TYPE 1N4005
CR2	224110	3721532-C006	DIODE - TYPE 1N649
CR3	224110	3721532-C006	DIODE - TYPE 1N649
CR4	447999	99202-C204	DIODE - TYPE 1N4728A
J1	433765	3726655-C005	BOARD
J2	433767	3726655-C008	BOARD
Q1	233649	3412888-C015	TRANSISTOR - TYPE 2N2219A
Q2	233649	3412888-C015	TRANSISTOR - TYPE 2N2219A
Q3	423923	3729249-C008	TRANSISTOR - TYPE 2N2905A
Q4 THRU Q8	449270	3751459-C001	TRANSISTOR-TYPE 2N6470
Q9	449269	3751456-C001	TRANSISTOR-TYPE 2N6469
Q10 THRU Q13	449270	3751459-C001	TRANSISTOR-TYPE 2N6470
Q14	449269	3751456-C001	TRANSISTOR-TYPE 2N6469
Q15 THRU Q18	449270	3751459-C001	TRANSISTOR-TYPE 2N6470
Q19	449269	3751456-C001	TRANSISTOR-TYPE 2N6469
Q20 THRU Q23	449270	3751459-C001	TRANSISTOR-TYPE 2N6470
Q24	449269	3751456-0001	TRANSISTOR-TYPE 2N6469
Q25 THRU Q28	449270	3751459-0001	TRANSISTOR-TYPE 2N6470
Q29	423923	3729249-C008	TRANSISTOR-TYPE 2N2905A
R1	502251	82283-0176	5100 OHMS 5% 1/2W COMP.
R2	502212	82283-0161	1200 OHM 5% 1/2W COMP
R3	522118	99126-C141	180 OHMS 5% 2W COMP.
R4	522110	99126-0135	100 OHM 5% 2W COMP
R5	522110	99126-C135	100 OHM 5% 2W COMP
R6	449301	3751443-C001	2.7 OHM 10% 4W
R7 THRU R14	219045	993257-C192	0.1 OHM 1%, 1W., WW
R15	450349	3721563-0004	.5 OHM 1% 10W WW
R16 THRU R66	219045	993257-0192	0.1 OHM 1%, 1W., WW
R70	502130	82283-0146	300 OHMS 5% 1/2W COMP.

Symbol	Stock No.	Drawing No.	Description
R71	502210	82283-0159	1000 OHM 5% 1/2W COMP
R71	502210	82283-0159	1000 OHM 5% 1/2W COMP
R72	502118	82283-0141	180 OHMS 5% 1/2W COMP.
R73	427574	82283-0561	2.7 OHM 5% 1/2W COMP
U1	449216	3751641-C001	I C - TYPE HCPL-2601
U2	445795	3729708-C001	I C - TYPE 75451ATC
3			3751393-504 REV-12
R16 R28 THRU R69	450350	3456235-C024	6OHM 5% 50W WW
	450351	3456235-C025	10HM 5% 50W WW
29	442889	993216-C022	TERMINAL

MI-563505
RF AMPLIFIER
P/L 3751336-501 A6A1, A6A4 - A6A9
REV-11

Symbol	Stock No.	Drawing No.	Description
C1	442452	3723487-0103	100000 PF 20% 50V CER
C2	429703	3457081-0074	0.15UF 10% 400V FILM
C3	429703	3457081-0074	0.15UF 10% 400V FILM
C4	442452	3723487-0103	100000 PF 20% 50V CER
C5	429703	3457081-0074	0.15UF 10% 400V FILM
C6	429703	3457081-0074	0.15UF 10% 400V FILM
C7	442452	3723487-0103	100000 PF 20% 50V CER
CR1	441516	3729252-0010	DIODE - TYPE 1N3893
CR2TO			
CR8	449284	3751238-0001	DIODE - TYPE 1OD4
CR9	139343	3416269-0109	DIODE - TYPE 1N4733
CR10	441516	3729252-0010	DIODE - TYPE 1N3893
CR11TO			
CR17	449284	3751238-0001	DIODE - TYPE 1OD4
CR18	441516	3729252-0010	DIODE - TYPE 1N3893
CR19TO			
CR25	449284	3751238-0001	DIODE - TYPE 1OD4
CR26	139343	3416269-0109	DIODE - TYPE 1N4733
CR27	441516	3729252-0010	DIODE - TYPE 1N3893
CR28			
TO			
CR34	449284	3751238-0001	DIODE - TYPE 1OD4
CR35	139343	3416269-0109	DIODE - TYPE 1N4733
DS1	431693	3729202-0003	DIODE - TYPE LED (RED)
DS2	431693	3729202-0003	DIODE - TYPE LED (RED)
DS3	431693	3729202-0003	DIODE - TYPE LED (RED)
F1	430935	8845660-0009	FUSE - 20 AMP 250V
F2	430935	8845660-0009	FUSE - 20 AMP 250V
L1	449338	3729486-0501	COIL TOROID
Q1TO			
Q28	449296	3751445-0303	TRANSISTOR - TYPE SOT12303S
R1	113152	990474-0208	.47 OHM 10% 2W WW
R2	449283	993257-0208	.47 OHM 1W WW
R3	219045	993257-0192	.1 OHM 1% 1W WW
R4	113152	990474-0208	.47 OHM 10% 2W WW
R5	449283	993257-0208	.47 OHM 1W WW
R6	502315	82283-0076	15000 OHMS 5% 1/2W COMP.
R7	219045	993257-0192	.1 OHM 1% 1W WW
R8	113152	990474-0208	.47 OHM 10% 2W WW
R9	449283	993257-0208	.47 OHM 1W WW
R10	502315	82283-0076	15000 OHMS 5% 1/2W COMP.
R11	219045	993257-0192	.1 OHM 1% 1W WW
R12	113152	990474-0208	.47 OHM 10% 2W WW
R13	449283	993257-0208	0.47 OHM 1% 1W WW
R14	502315	82283-0076	15000 OHMS 5% 1/2W COMP.
R15	219045	993257-0192	.1 OHM 1% 1W WW
R16	113152	990474-0208	0.47 OHM 5% 2W WW
R17	449283	993257-0208	.47 OHM 1W WW
R18	502315	82283-0076	15000 OHMS 5% 1/2W COMP.
R19	219045	993257-0192	.1 OHM 1% 1W WW
R20	113152	990474-0208	.47 OHM 10% 2W WW
R21	449283	993257-0208	.47 OHM 1W WW
R22	502315	82283-0076	15000 OHMS 5% 1/2W COMP.
R23	219045	993257-0192	.1 OHM 1% 1W WW
R24	113152	990474-0208	.47 OHM 10% 2W WW
R25	449283	993257-0208	.47 OHM 1W WW

(Controlled 248 GA1 11-7-84)

Symbol	Stock No.	Drawing No.	Description
R26	502315	82283-0076	15000 OHMS 5% 1/2W COMP.
R27	219045	993257-0192	.1 OHM 1% 1W WW
R28	502315	82283-0076	15000 OHMS 5% 1/2W COMP.
R29	502127	82283-0055	270 OHM 5% 1/2W COMP
R30	113152	990474-0208	.47 OHM 10% 2W WW
R31	449283	993257-0208	.47 OHM 1W WW
R32	113152	990474-0208	.47 OHM 10% 2W WW
R33	449283	993257-0208	.47 OHM 1W WW
R34	502315	82283-0076	15000 OHMS 5% 1/2W COMP.
R35	219045	993257-0192	.1 OHM 1% 1W WW
R36	113152	990474-0208	.47 OHM 10% 2W WW
R37	449283	993257-0208	.47 OHM 1W WW
R38	502315	82283-0076	15000 OHMS 5% 1/2W COMP.
R39	219045	993257-0192	.1 OHM 1% 1W WW
R40	113152	990474-0208	.47 OHM 10% 2W WW
R41	449283	993257-0208	.47 OHM 1W WW
R42	502315	82283-0076	15000 OHMS 5% 1/2W COMP.
R43	219045	993257-0192	.1 OHM 1% 1W WW
R44	113152	990474-0208	.47 OHM 10% 2W WW
R45	449283	993257-0208	.47 OHM 1W WW
R46	502315	82283-0076	15000 OHMS 5% 1/2W COMP.
R47	219045	993257-0192	.1 OHM 1% 1W WW
R48	113152	990474-0208	.47 OHM 10% 2W WW
R49	449283	993257-0208	.47 OHM 1W WW
R50	502315	82283-0076	15000 OHMS 5% 1/2W COMP.
R51	219045	993257-0192	.1 OHM 1% 1W WW
R52	113152	990474-0208	.47 OHM 10% 2W WW
R53	449283	993257-0208	.47 OHM 1W WW
R54	502315	82283-0076	15000 OHMS 5% 1/2W COMP.
R55	219045	993257-0192	.1 OHM 1% 1W WW
R56	502315	82283-0076	15000 OHMS 5% 1/2W COMP.
R57	219045	993257-0192	.1 OHM 1% 1W WW
R58	113152	990474-0208	.47 OHM 10% 2W WW
R59	449283	993257-0208	.47 OHM 1W WW
R60	502315	82278-0076	15000 OHM 5% 1/2W
R61	113152	990474-0208	.47 OHM 10% 2W WW
R62	449283	993257-0208	.47 OHM 1W WW
R63	219045	993257-0192	.1 OHM 1% 1W WW
R64	113152	990474-0208	.47 OHM 10% 2W WW
R65	449283	993257-0208	.47 OHM 1W WW
R66	219045	993257-0192	.1 OHM 1% 1W WW
R67	502315	82278-0076	15000 OHM 5% 1/2W
R68	113152	990474-0208	.47 OHM 10% 2W WW
R69	449283	993257-0208	.47 OHM 1W WW
R70	219045	993257-0192	.1 OHM 1% 1W WW
R71	502315	82278-0076	15000 OHM 5% 1/2W
R72	113152	990474-0208	.47 OHM 10% 2W WW
R73	449283	993257-0208	.47 OHM 1W WW
R74	219045	993257-0192	.1 OHM 1% 1W WW
R75	502315	82278-0076	15000 OHM 5% 1/2W
R76	113152	990474-0208	.47 OHM 10% 2W WW
R77	449283	993257-0208	.47 OHM 1W WW
R78	219045	993257-0192	.1 OHM 1% 1W WW
R79	502315	82278-0076	15000 OHM 5% 1/2W
R80	113152	990474-0208	.47 OHM 10% 2W WW
R81	449283	993257-0208	.47 OHM 1W WW
R82	219045	993257-0192	.1 OHM 1% 1W WW
R83	502315	82278-0076	15000 OHM 5% 1/2W
R84	219045	993257-0192	.1 OHM 1% 1W WW
R85	502315	82278-0076	15000 OHM 5% 1/2W
R86	502127	82283-0055	270 OHM 5% 1/2W COMP
R87	449283	993257-0208	0.47 OHM 1W WW
R88	449283	993257-0208	.47 OHM 1W WW
R89	219045	993257-0192	.1 OHM 1% 1W WW
R90	113152	990474-0208	.47 OHM 10% 2W WW
R91	449283	993257-0208	.47 OHM 1W WW
R92	502315	82283-0076	15000 OHMS 5% 1/2W COMP.
R93	219045	993257-0192	.1 OHM 1% 1W WW
R94	113152	990474-0208	.47 OHM 10% 2W WW

Symbol	Stock No	Drawing No.	Description
R95	449283	993257-0208	.47 OHM 1W WW
R96	502315	82283-0076	15000 OHM 5% 1/2W COMP.
R97	219045	993257-0192	.1 OHM 1% 1W WW
R98	113152	990474-0208	.47 OHM 10% 2W WW
R99	449283	993257-0208	.47 OHM 1W WW
R100	502315	82283-0076	15000 OHMS 5% 1/2W COMP.
R101	113152	990474-0208	.47 OHM 10% 2W WW
R102	449283	993257-0208	.47 OHM 1W WW
R103	502315	82283-0076	15000 OHMS 5% 1/2W COMP.
R104	219045	993257-0192	.1 OHM 1% 1W WW
R105	113152	990474-0208	.47 OHM 10% 2W WW
R106	449283	993257-0208	.47 OHM 1W WW
R107	219045	993257-0192	.1 OHM 1% 1W WW
R108	502315	82278-0076	15000 OHM 5% 1/2W
R109	113152	990474-0208	.47 OHM 10% 2W WW
R110	449283	993257-0208	.47 OHM 1W WW
R111	219045	993257-0192	.1 OHM 1% 1W WW
R112	502315	82278-0076	15000 OHM 5% 1/2W
R113	219045	993257-0192	.1 OHM 1% 1W WW
R114	502315	82278-0076	15000 OHM 5% 1/2W
R115	502127	82283-0055	270 OHM 5% 1/2W COMP
T1	449336	3742946-0501	TRANSFORMER
TP1	245564	3450797-0004	CONTACT
TP2	245564	3450797-0004	CONTACT
16	245564	3450797-0004	CONTACT
22	432716	990639-0001	CLIP

MI-563527-5
PA DRIVE DETECTOR A6A2
P/L 3751768-501
REV-3

C1	225627	993025-0462	1100PF 5% 100V MICA
C2	249939	3720532-0013	22000PF 20% 50V CER
CR1	229936	3464611-0001	DIODE - TYPE 1N914
J1	433765	3726655-0005	CONNECTOR
R1	433904	3331583-0201	100 OHM 1% 1W FILM
R2	502222	82283-0167	2200 OHM 5% 1/2W COMP
T1	449338	3729486-0501	CURRENT TRANSFORMER

Symbol	Stock No.	Drawing No.	Description
			MI563513
			REMOTE POWER ADJUST ASSEM A4A2
			P/L 3751797-501
			REV 6
A1		3751047-C504	VARIABLE RESISTOR (MOTOR OPERATED)
3	443432	3729788-C001	MOTOR (P1)
7	443923	3729374-C002	COUPLING
11	431437	3726469-C011	VARIABLE RES 250 OHM 20% (R1)
14	444624	3726655-0064	RECEPTACLE
16	445956	3729616-C004	HOUSING (P1)
17	445792	3729316-C102	KEY
C1	447081	3729794-0344	9UF 10% 35V TANT (NP)
J1	449575	3457934-C012	POST (MOUNTED IN NYLON HOUSING)
J2	449574	3457934-C004	POST (MOUNTED IN NYLON HOUSING)
CR1 THRU CR4	449573	3729316-0012	HOUSING 12-POS
	450567	3416269-0034	DIODE - TYPE 1N4758
R1	512047	90496-C046	47 OHM 5% 1W COMP
2			SWITCH ASSEM
			P/L 3751797-502
			Rev 6
S1	449829	990737-0312	SWITCH SPDT
P1			CONSISTS OF THE FOLLOWING
16	449573	3729316-0012	HOUSING 12-POS
17	442940	3727158-C601	TERMINAL
			CABLE HARNESS
			P/L 3751979-504
			REV-19
6	444681	993216-C061	TERMINAL - QUICK DISCONNECT
21	442940	3727158-C601	RECEPTACLE
42	445792	3729316-C102	KEY
A4A2P1	449573	3729316-0012	HOUSING

Symbol	Stock No.	Drawing No.	Description
			MI-560527-10 OPTO METERING BOARD A8A1 P/L 3751461-501 REV-9
C1	433440	3720532-0022	220000PF 5% 50V CER
C2	237909	8959154-0128	75UF 10V., ELECT.
C3	433440	3720532-0022	220000PF 5% 50V CER
C4	237909	8959154-0128	75UF 10V., ELECT.
C5	433440	3720532-0022	220000PF 5% 50V CER
C6	237909	8959154-0128	75UF 10V., ELECT.
C7	433440	3720532-0022	220000PF 5% 50V CER
C8	237909	8959154-0128	75UF 10V., ELECT.
C9	217350	8959154-0106	10UF 25V., ELECT.
C10	91391	8958264-0090	10UF 450V., ELECT.
C11 THRU C14	432513	3720532-0011	10000 PF 20% 50V CER
C15	431266	8959154-0174	10UF 12V, ELECT.
C16	432513	3720532-0011	10000 PF 20% 50V CER
C17	219352	3410948-0893	0.47UF 10%, 400V., FILM
C18	421721	8959154-0165	35UF 50V., ELECT.
C19	450788	3728120-0107	60F-10+50% 200V ELECT
C20	241058	8959154-0717	25UF 50V., ELECT.
C21	433440	3720532-0022	220000PF 5% 50V CER
C22	433440	3720532-0022	220000PF 5% 50V CER
C23	442421	3720532-0017	68000PF 5% 100V CER
C24 THRU C32	432513	3720532-0011	10000 PF 20% 50V CER
C33	433170	3720532-0015	100000PF 10% 50V CER
C34	419946	8959154-0416	150UF 16V., ELECT.
C35	433440	3720532-0022	220000PF 5% 50V CER
C36	432513	3720532-0011	10000 PF 20% 50V CER
CR1 THRU CR4	242522	3464611-0001	DIODE - TYPE SPECIAL
CR5	452707	99202-0206	DIODE-TYPE 1N4730A (SPECIAL)
CR6 THRU CR10	242522	3464611-0001	DIODE - TYPE SPECIAL
CR11	449517	3729740-0001	DIODE-TYPE A115M
CR12	219245	3404510-0630	DIODE - TYPE 1N2071
CR13	449517	3729740-0001	DIODE-TYPE A115M
CR14	246572	3731229-0001	DIODE - TYPE 1N5059
CR15	242522	3464611-0001	DIODE - TYPE SPECIAL
CR16	242522	3464611-0001	DIODE - TYPE SPECIAL
CR17	137652	3458443-0003	DIODE - TYPE 1N4003
Q1	428451	3412889-0003	TRANSISTOR - TYPE 2N2222A
Q2	421947	3729455-0003	SCR - TYPE 2N4443
Q3	428451	3412889-0003	TRANSISTOR - TYPE 2N2222A
R1 THRU R4	502236	82283-0172	3600 OHM 5% 1/2W COMP
R5	447918	3331583-0247	301 OHMS 1% 1W FILM
R6	502110	82283-0135	100 OHM 5% 1/2W COMP
R7	502024	82283-0120	24 OHMS 5% 1/2W COMP.
R8	502118	82283-0141	180 OHMS 5% 1/2W COMP.
R9	502211	82283-0160	1100 OHMS 5% 1/2W COMP.
R10	221888	3331583-0501	100,000 OHM 1%, 1W., FILM
R11	221888	3331583-0501	100,000 OHM 1%, 1W., FILM
R12	522124	99126-0144	240 OHMS 5% 2W COMP.
R13	230878	3331583-0601	1 MEG OHM 1%, 1W., FILM
R14	236586	3331583-0468	49.900 OHM 1%, 1W., FILM
R15	522447	99126-0223	470000 OHMS 5% 2W COMP.

Symbol	Stock No.	Drawing No.	Description
R16	522222	99126-0167	2200 OHMS 5% 2W COMP.
R17	435407	3458861-0007	1000 OHM LINEAR VAR
R18	502168	82283-0155	680 OHM 5% 1/2W COMP
R19 THRU			
R22	502215	82283-0163	1500 OHM 5% 1/2W COMP
R23	502368	82283-0203	68000 OHMS 5% 1/2W COMP.
R24	502175	82283-0156	750 OHM 5% 1/2W COMP
R25	424426	3724336-0001	10 OHM 5% 5W W.W.
R26	435407	3458861-0007	1000 OHM LINEAR VAR
R27	502168	82283-0155	680 OHM 5% 1/2W COMP
R28	502368	82283-0203	68000 OHMS 5% 1/2W COMP.
R29 THRU			
R31	502147	82283-0151	470 OHM 5% 1/2W COMP
R32	502168	82283-0155	680 OHM 5% 1/2W COMP
R33	502212	82283-0161	1200 OHM 5% 1/2W COMP
R34	449524	3721940-0117	7000 OHM 1% 4W WW
R35	502310	82283-0183	10000 OHM 5% 1/2W COMP
R36	449523	3721963-0032	25 OHM 1% 10W W.W
R37	502115	82283-0139	150 OHM 5% 1/2W COMP
R38	419828	990190-0547	301,000 OHM 1%, 2W., FILM
R39	210886	3331583-0568	499000 OHM 1% 1W FILM
R40	431303	3331583-0518	150,000 OHM 1W 1%, FILM
R41	424392	3331583-0485	75000 OHMS 1W 1% FILM
R42	233096	990696-0501	100,000 OHM 2%, 1/2W., FILM
R43	443706	990696-0201	100 OHM 1% 1/2W FILM
R44	522222	99126-0167	2200 OHMS 5% 2W COMP.
R45	434836	990696-0401	10,000 OHM 1% 1/2W METAL FILM
R46	522222	99126-0167	2200 OHMS 5% 2W COMP.
R47	235374	990696-0475	59,000 OHM 1%, 1/2W., FILM
R48	452706	990696-0568	499000 OHM 1% 1/2W FILM
R49 THRU			
R52	502210	82283-0159	1000 OHM 5% 1/2W COMP
R53	502330	82283-0194	30000 OHMS 5% 1/2W COMP.
R54	502027	82283-0121	27 OHM-5% 1/2W COMP
R55	502327	82283-0193	27000 OHM 5% 1/2W COMP
R56	430331	3458861-0009	5000 OHMS 200V FIG 3 VARI
R57	502027	82283-0121	27 OHM 5% 1/2W COMP
R58	232683	99206-0136	110 OHM 5%, 1/4W., COMP.
R59	522151	99126-0152	510 OHMS 5% 2W COMP.
R60	235025	3726923-0235	20000 OHM 5% 5W W.W.
R61	512210	90496-0159	1000 OHM 5% 1W COMP
R62	512210	90496-0159	1000 OHM 5% 1W COMP
R63	502310	82283-0183	10000 OHM 5% 1/2W COMP
R64	502310	82283-0183	10000 OHM 5% 1/2W COMP
R65	502151	82283-0152	510 OHMS 5% 1/2W COMP.
R66	502027	82283-0121	27 OHM 5% 1/2W COMP
R67	502027	82283-0121	27 OHM 5% 1/2W COMP
R68	429863	3458861-0010	10000 OHM LINEAR VAR
R69	502320	82283-0190	20000 OHM 5% 1/2W COMP
R70	502075	82283-0132	75 OHMS 5% 1/2W COMP.
R71	502210	82283-0159	1000 OHM 5% 1/2W COMP
R72	429863	3458861-0010	10000 OHM LINEAR VAR
U1	450267	3751026-0003	I.C.-TYPE LM324
U2	450267	3751026-0003	I.C.-TYPE LM324
U3 THRU			
U7	429782	3724947-0002	I.C. - TYPE 4N25
U8	449213	3729709-0003	I C - TYPE H113
U9	432233	3729429-0001	I C - TYPE MC1741SG
U10	432233	3729429-0001	I C - TYPE MC1741SG
U11	429782	3724947-0002	I.C. - TYPE 4N25
TP1	242732	3457545-0002	CONTACT
TP2	421629	3450797-0016	CONTACT
TP3	242732	3457545-0002	CONTACT

Symbol	Stock No.	Drawing No.	Description
TP4	242732	3457645-0002	CONTACT
J4	444858	3727158-0307	POST
J5	450547	3727158-0305	POST
			MI-563527-11 P A BALANCE A8A2 P/L 375160-501 REV 2
C1	219660	993026-0261	1000PF 2% 500V MICA
CR1	242522	3464611-0001	DIODE - TYPE SPECIAL
CR2	242522	3464611-0001	DIODE - TYPE SPECIAL
CR3	242522	3464611-0001	DIODE - TYPE SPECIAL
CR4	242522	3464611-0001	DIODE - TYPE SPECIAL
CR5	242522	3464611-0001	DIODE - TYPE SPECIAL
CR6	242522	3464611-0001	DIODE - TYPE SPECIAL
CR7	242522	3464611-0001	DIODE - TYPE SPECIAL
CR8	242522	3464611-0001	DIODE - TYPE SPECIAL
CR9	242522	3464611-0001	DIODE - TYPE SPECIAL
CR10	242522	3464611-0001	DIODE - TYPE SPECIAL
CR11	242522	3464611-0001	DIODE - TYPE SPECIAL
CR12	242522	3464611-0001	DIODE - TYPE SPECIAL
DS1	443794	3729606-0002	DIODE - TYPE LED (RED)
DS2	443794	3729606-0002	DIODE - TYPE LED (RED)
DS3	443794	3729606-0002	DIODE - TYPE LED (RED)
DS4	443794	3729606-0002	DIODE - TYPE LED (RED)
DS5	443794	3729606-0002	DIODE - TYPE LED (RED)
DS6	443794	3729606-0002	DIODE - TYPE LED (RED)
J1TC			
J7	449331	3457934-0302	POST 2-POS
J8	450990	3457934-0105	POST 5-POS
R1	512027	90496-0121	27 OHMS 5% 1W COMP.
R2	512027	90496-0121	27 OHMS 5% 1W COMP.
R3	512027	90496-0121	27 OHMS 5% 1W COMP.
R4	512027	90496-0121	27 OHMS 5% 1W COMP.
R5	512027	90496-0121	27 OHMS 5% 1W COMP.
R6	512027	90496-0121	27 OHMS 5% 1W COMP.
R7	426635	990413-0233	2200 OHM 2%, 1/4W., FILM
R8	512115	90496-0139	150 OHMS 5% 1W COMP.
R9	512211	90496-0160	1100 OHMS 5% 1W COMP.
R10	449330	3721963-0220	10 OHM 1% 10W WW
R11	512211	90496-0160	1100 OHMS 5% 1W COMP.
R12	449330	3721963-0220	10 OHM 1% 10W WW
R13	512211	90496-0160	1100 OHMS 5% 1W COMP.
R14	449330	3721963-0220	10 OHM 1% 10W WW
R15	512211	90496-0160	1100 OHMS 5% 1W COMP.
R16	449330	3721963-0220	10 OHM 1% 10W WW
R17	512211	90496-0160	1100 OHMS 5% 1W COMP.
R18	449330	3721963-0220	10 OHM 1% 10W WW
R19	512211	90496-0160	1100 OHMS 5% 1W COMP.
R20 TO R28	449330	3721963-0220	10 OHM 1% 10W WW
T1TC			
T6	449338	3729486-0501	TRANSFORMER, CURRENT
J2	228124	3450797-0003	CONTACT

MI 563527-4
LINEARITY POWER SUPPLY (52V,4A) A9A1
P/L 3751792-502
REV 11

Symbol	Stock No.	Drawing No.	Description
C1	228181	8959154-0192	10UF 100V., ELECT.
C2	424444	993209-0122	220000PF 20% 100V CER
C3	442265	3733558-0026	22MF 16V ELECT
C4	223081	993025-0485	10,000PF 5%, 500V., MICA
C5	228181	8959154-0192	10UF 100V., ELECT.
C6	449306	3733558-0062	10UF +50-10% 35V ELECT
C7	424444	993209-0122	220000PF 20% 100V CER
C8	234444	993025-0461	1000 PF 1% 100V MICA
C9	234444	993025-0461	1000 PF 1% 100V MICA
C10	228181	8959154-0192	10UF 100V., ELECT.
CR1	426763	99202-0116	DIODE - TYPE 1N4740
CR2	427218	99202-0123	DIODE - TYPE 1N4758A
CR3	418674	99202-0127	DIODE - TYPE 1N4732A
CR4	418674	99202-0127	DIODE - TYPE 1N4732A
CR5	418674	99202-0108	DIODE - TYPE 1N4732A
CR6	418674	99202-0108	DIODE - TYPE 1N4732A
CR7	418674	99202-0108	DIODE - TYPE 1N4732A
CR8	242522	3464611-0001	DIODE - TYPE SPECIAL
DS1	443794	3729606-0002	DIODE - TYPE LED (RED)
Q1	2N5415	3412888-0010	TRANSISTOR - TYPE 2N5415
Q2	2N5415	3412888-0010	TRANSISTOR - TYPE 2N5415
Q3	234024	3404520-0300	TRANSISTOR - TYPE 2N2405
Q4	234024	3404520-0300	TRANSISTOR - TYPE 2N2405
Q5	449620	3729716-0003	TRANSISTOR-TYPE VN88AF
Q6	449346	3751838-0003	TRANSISTOR-TYPE 2N6553
R1	449437	3721962-0095	1500 OHM 1% 5W WW
R2	522233	99126-0171	3300 OHM 5% 2W
R3	502351	82283-0200	51,000 OHMS 1/2W 5% COMP.
R4	502412	82283-0087	120000 OHMS 5% 1/2W COMP.
R5	502268	82283-0072	6800 OHM 5% 1/2W COMP
R6	502310	82283-0074	10000 OHM 5% 1/2W COMP
R7	502220	82283-0166	2000 OHM 5% 1/2W COMP
R8	502024	82283-0120	24 OHMS 5% 1/2W COMP.
R9	502024	82283-0120	24 OHMS 5% 1/2W COMP.
R10	428144	3721962-0002	0.2OHM 5W 1% WIRE
R11	428144	3721962-0002	0.2OHM 5W 1% WIRE
R12	502310	82283-0074	10000 OHM 5% 1/2W COMP
R13	502239	82283-0069	3900 OHMS 5% 1/2W COMP.
R14	502310	82283-0074	10000 OHM 5% 1/2W COMP
R15	502251	82283-0176	5100 OHMS 5% 1/2W COMP.
R16	522027	99126-0121	27 OHM 5% 2W COMP
R17	502310	82283-0074	10000 OHM 5% 1/2W COMP
R18	512227	90496-0169	2700 OHM 5% 1W
R19	502327	82283-0079	27000 OHM 5% 1/2W COMP
R20	502256	82283-0071	5600 OHMS 5% 1/2W COMP.
R21	502310	82283-0074	10000 OHM 5% 1/2W COMP
R22	433289	3458851-0007	1000 OHM LINEAR VAR
R23	502239	82283-0069	3900 OHMS 5% 1/2W COMP.
U1	450864	3751839-0003	IC-TYPE LM555CN
U2	429782	3724947-0002	I.C. - TYPE 4N25
U3	429782	3724947-0002	I.C. - TYPE 4N25
31	228124	3450797-0003	CONTACT

Symbol	Stock No.	Drawing No.	Description
			MI-563527-14
			RF PRE-DRIVER POWER SUPPLY A10A2
			P/L 3751834-502
			REV 4
C1	217350	8959154-C108	10UF 25V ELECT
C2	436431	993209-C122	220000PF 10% 100V CER
C3	217350	8959154-C108	10UF 25V ELECT
C4	436431	993209-C122	220000PF 10% 100V CER
CR1	430273	3416269-C125	DIODE - TYPE 1N4749
CR2	436277	3458443-C002	DIODE - TYPE 1N4002
CR3	436277	3458443-C002	DIODE - TYPE 1N4002
CR4	436277	3458443-C002	DIODE - TYPE 1N4002
Q1	449346	3751838-C003	TRANSISTOR - TYPE 2N6553
Q2	234024	3404520-C300	TRANSISTOR - TYPE 2N2405
Q3	2N5415	3412888-C010	TRANSISTOR - TYPE 2N5415
Q4	2N5415	3412888-C010	TRANSISTOR - TYPE 2N5415
Q5	2N5415	3412888-C010	TRANSISTOR - TYPE 2N5415
R1	522233	99126-C016	3300 OHM 5% 2W COMP
R2	502315	82283-D187	15000 OHM 5% 1/2W COMP
R3	502324	82283-C192	24000 OHM 5% 1/2W COMP
R4	502315	82283-C187	15000 OHM 5% 1/2W COMP
R5	502312	82283-C185	12000 OHM 5% 1/2W COMP
R6	429863	3458861-C010	10000 OHM LINEAR VARIABLE
R7	502315	82283-D187	15000 OHM 5% 1/2W COMP
R8	502315	82283-C187	15000 OHM 5% 1/2W COMP
R9	502315	82283-C187	15000 OHM 5% 1/2W COMP
R10	441378	3320015-C009	0.332 OHM 1% 3W WW
R11	502315	82283-C187	15000 OHM 5% 1/2W COMP
			MI563512
			LOCAL CONTROL PANEL
			P/L 3751900-501 REV 2
S1	449830	3751848-C001	SWITCH- MOM/PUSH,LED TX OFF
S2	450044	3751848-C004	SWITCH- MOM/PUSH,STANDBY
S3	450044	3751848-C004	SWITCH- MOM/PUSH,SF ON
S4	450044	3751848-C004	SWITCH- MOM/PUSH,HIGH
S5	450044	3751848-C004	SWITCH- MOM/PUSH,MED
S6	450044	3751848-C004	SWITCH- MOM/PUSH,LOW
S7	432493	990737-C312	SWITCH- TOGGLE SPDT,CTR OFF
7	450837	3751848-C101	BUTTON- PUSH,FOR S1
8	451390	3751848-C102	BUTTON - PUSH,FOR S2-S7
12	448234	993216-C002	TERMINAL - QUICK DISCONNECT

Symbol	Stock No.	Drawing No.	Description
			MI5635C8 EXTENSION METERING PANEL D/L 3751902-501 REV 2
C1	441690	1510003-0037	10000PF +80-20% 500V CER
C2	441690	1510003-0037	10000PF +80-20% 500V CER
C3	441690	1510003-0037	10000PF +80-20% 500V CER
DS1	450045	3751848-0201	DIODE - TYPE L.E.D.
M1	449413	3729637-0001	METER- PA AMPS
M2	450042	3729637-0008	METER- PA VOLTS
M3	449772	3729637-0007	METER- RF AMPS
R1	450039	3729307-0002	500 OHMS LINEAR VAR
R2	450040	3729307-0003	20000 OHMS LINEAR VAR
R3	450040	3729307-0003	20000 OHMS LINEAR VAR
R4	239463	990413-0256	20000 OHM 5% 1/4W FILM
6	421890	999708-0011	LABEL
11	448234	993216-0002	TERMINAL - QUICK DISCONNECT
			MI-563511-1 PA BALANCE BABY BD (525-694 KHZ) A8A4 P/L 3751882-501 REV-0
C1TO			
C6	449518	993026-0699	39000PF 2% 500V MICA
C7TO			
C12	449521	993026-0696	30000PF 2% 500V MICA
C13TO			
C18	229051	993026-0693	22000PF 2% 500V MICA
J1TO			
J6	228124	3450797-0003	CONTACT PIN
L1TO			
L6	449525	8914884-0002	COIL
L7TO			
L12	449529	8914884-0071	COIL

Symbol	Stock No.	Drawing No.	Description
			MI-563511-2 PA BALANCE BABY BD A8A4 (695-919 KHZ) P/L 3751882-502 REV-0
C1TO C6 C7TO	449522	993026-C697	33000PF 2% 500V MICA
C12 C13TO	221713	993026-C692	20000PF 2% 500V MICA
C18	449520	993026-C690	16000PF 2% 500V MICA
J1TO J6	228124	3450797-C003	CONTACT PIN
L1TO L6 L7TO	449526	8914884-C017	COIL
L12	449530	8914884-C025	COIL
			MI-563511-3 PA BALANCE BABY BD A8A4 (920-1216 KHZ) P/L 3751882-503 REV-0
C1TO C6 C13TO	449518	993026-C699	39000PF 2% 500V MICA
C18	449515	993026-C687	12000PF 2% 500V MICA
J1TO J6	228124	3450797-C003	CONTACT PIN
L1TO L6 L7TO	449527	8914884-C063	COIL
L12	449532	8914884-C018	COIL
			MI-563511-4 PA BALANCE BABY BD A8A4 (1217-1705 KHZ) 3751882-504 REV-0
C1TO C6 C13TO	449521	993026-C696	30000PF 2% 500V MICA
C18	233518	993026-C684	9100PF 2% 500V MICA
J1TO J6	228124	3450797-C003	CONTACT PIN
L1TO L6 L7TO	449528	8914884-C064	COIL
L12	449531	8914884-C026	COIL

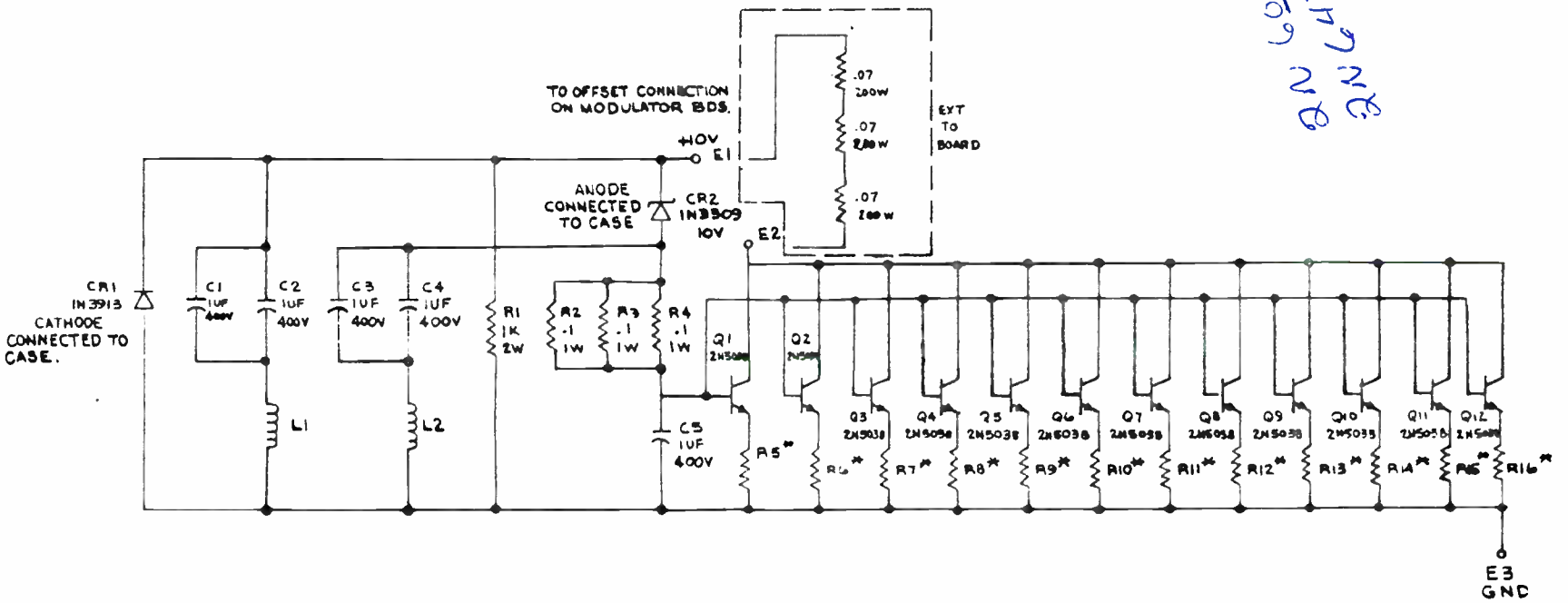
SEE DRAWING
3478213

Figure 14. BTA-5SS Schematic

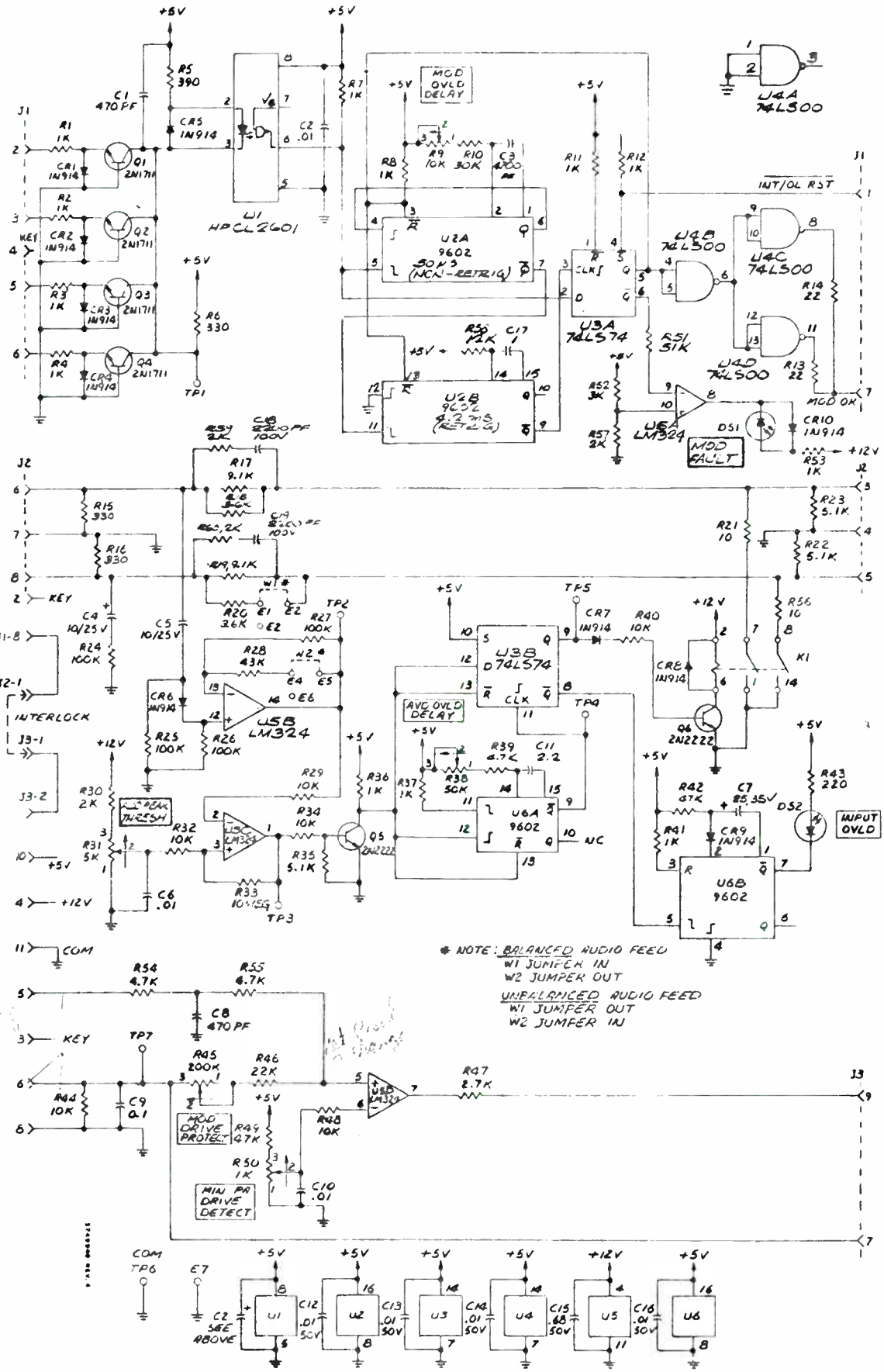
Be sure to
Set Variac on
first turn on or
you will get low Drive
trip. factory turned them down

RCA
Broadcast
Equipment

BTA-5SS
AM TRANSMITTER
SEMINAR



NOTE: * R5 THROUGH R16 ARE EACH 1 INCH OF RESISTANCE WIRE, APPROXIMATELY 0.1 OHM.



, MOD fault
MOD BIAS

fault OVERLOAD BOARD

17

Introductory Review of Logic Symbology

Many transmitter maintenance engineers or technicians are familiar with relay-type control circuits but have not yet become familiar with solid-state logic circuits and the special schematic symbols used for these circuits in modern control-system designs. Detailed treatment of these topics is provided in a booklet by John W. Wentworth entitled "Digital Fundamentals for the Broadcaster", available from RCA's Broadcast Technical Training Department in Camden, New Jersey. A brief synopsis is provided here as an aid to those who need assistance in interpreting the symbols used in BTA-5SS circuitry.

In digital technology, it is common practice to use schematic diagrams which employ standardized symbols for complete circuits capable of performing specific logic operations. This is far more efficient than the conventional practice of using symbols for each individual circuit component, and is particularly appropriate for modern equipment where most of the logic elements are constructed as integrated circuits, and must be installed or replaced as complete functional units. Fortunately, there are only a few basic categories of logic circuits, and thus, there are only a few new symbols to be memorized. The most commonly-encountered symbols are shown on the next page.

Interchangeable symbols for logic INVERTERS are shown as elements 1 and 2. In digital technology, signal levels at any given point in the equipment are allowed to assume only one of two possible values, commonly designated as LOW or HIGH, and a logic inverter is simply a circuit which converts a LOW to a HIGH or vice versa. The specific voltage values may vary with the logic "family" employed (DTL, TTL or COS/MOS).

Symbols having the shape shown at 3 and 4 in the figure represent AND gates, whose practical significance is that of an ENABLE/DISABLE function. Gate 3 will deliver a HIGH to its output terminal (Y) only if HIGHs are present on both inputs (A and B). In other words, gate 3 is fully ENABLED only if both inputs are HIGH. This principle can be extended to any number of inputs. For example, gate 4 is an AND gate that is fully enabled (allowing a HIGH to appear on its Y output) only if all of the four inputs are HIGH.

Symbols 5 and 6 represent OR gates, whose practical significance is that of a COMBINING function. A HIGH will appear at the output of either gate 5 or gate 6 if any one or more of the inputs is HIGH. Stated the other way around, the output of an OR gate can be LOW only if all of the inputs are also LOW.

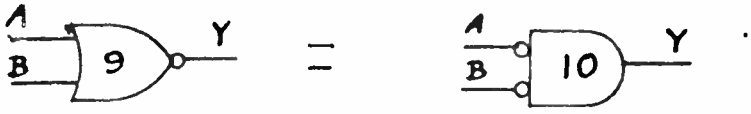
The NAND gate shown as gate 7 is actually the combination of an AND gate with an inverter. In this case, the Y output of gate 7 can go LOW only when the gate is fully enabled by HIGH logic levels at both the A and B inputs. An exactly equivalent logic function is represented by gate 8, but the symbol is drawn as a low-active OR gate to emphasize the point that the Y output will be HIGH if a LOW is present at either (or both) of the A or B inputs. The same bit of logic circuitry may be

INVERTERS

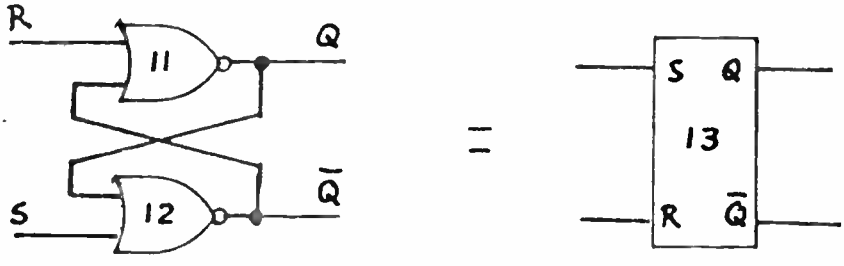
AND GATES

OR GATES

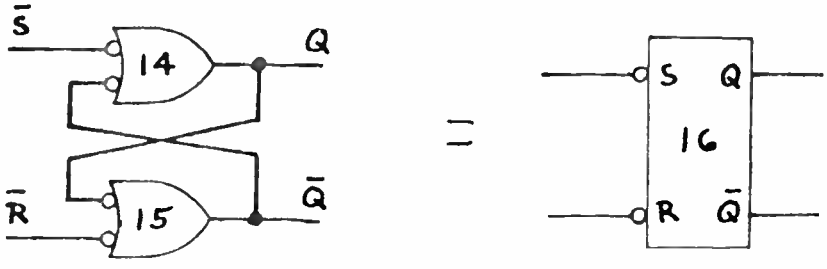
NAND GATES



NOR GATES



S-R FLIP-FLOP (LATCH), HIGH-ACTING INPUTS



S-R FLIP-FLOP (LATCH), LOW-ACTING INPUTS

Fig. C-3. BASIC LOGIC ELEMENTS

employed as an ENABLE/DISABLE function for high-active signals or as a COMBINING FUNCTION for low-active signals. A well-trained draftsman will choose that version of the symbol on a logic diagram which best expresses the intended role of the logic element.

The NOR gate shown as gate 9 is the combination of an OR gate with an inverter. The symbol as drawn at 9 emphasizes the point that the output Y will be LOW if either or both of the A or B inputs is HIGH. An exactly equivalent logic symbol is shown at gate 10. This is also a NOR gate, but it is drawn as a low-active AND gate to emphasize the point that the Y output can go high only if both the A and B inputs are LOW; this is the preferred version of the symbol when the logic element is used as an ENABLE/DISABLE function for low-active signals.

In actual practice, NAND and NOR gates are much more common than AND or OR gates for the simple reason that a polarity (or logic) inversion is intrinsic in most simple transistor amplifiers as used within logic circuits. Practical realization of AND or OR gates usually requires at least one extra transistor, and thus greater expense and power dissipation.

FLIP-FLOPS or electronic LATCHES may be formed by cross-coupling pairs of NOR or NAND gates in the manner illustrated by gates 11, 12, 14 and 15. In such circuits, momentary pulses applied to either SET or RESET terminals will place the flip-flop in one of the two stable states, which will remain until the opposite type of pulse is applied. The output terminals of flip-flops are customarily labeded Q and $\overline{Q}$ (read as "NOT Q " or "Q BAR"); by definition, the Q terminal of a flip-flop is the one which is HIGH when the flip-flop is in the SET state.

A more advanced type of flip-flop used in the BTA-5SS is the J-K Flip-Flop shown in Figure C-4. This flip-flop has a CLOCK or TRIGGER (T) input implemented in such a way that the special SET and RESET inputs (designated J and K, respectively) are "sampled" only during the falling edge of the clock signal. The responses of the flip-flop to the four possible combinations of J and K inputs are shown in a function table to the right of the schematic symbol. Note that a direct CLEAR or RESET input is also shown. A logic LOW on this RESET input will place the flip-flop in the RESET state regardless of the status of the other inputs.

As shown in Figure C-5, the J-K flip-flop can serve as an electronic alternate-action "toggle" by the simple expedient of connecting both the J and K inputs permanently HIGH. This arrangement causes the Q output to go HIGH on alternate negative-going edges of the Trigger or Clock signal.

The circuit shown in Figure C-5 is also the foundation for the BINARY DIVIDER or COUNTER, since it takes two pulses at the input to produce a single complete pulse at the output. Counts by numbers greater than two can be provided by connecting multiple stages in tandem, as shown in Figure C-6; many IC packages are available in which multiple stages are already interconnected on a single silicon chip. This basic type of circuit is used in the BTA-5SS for the various timers and fault counters.

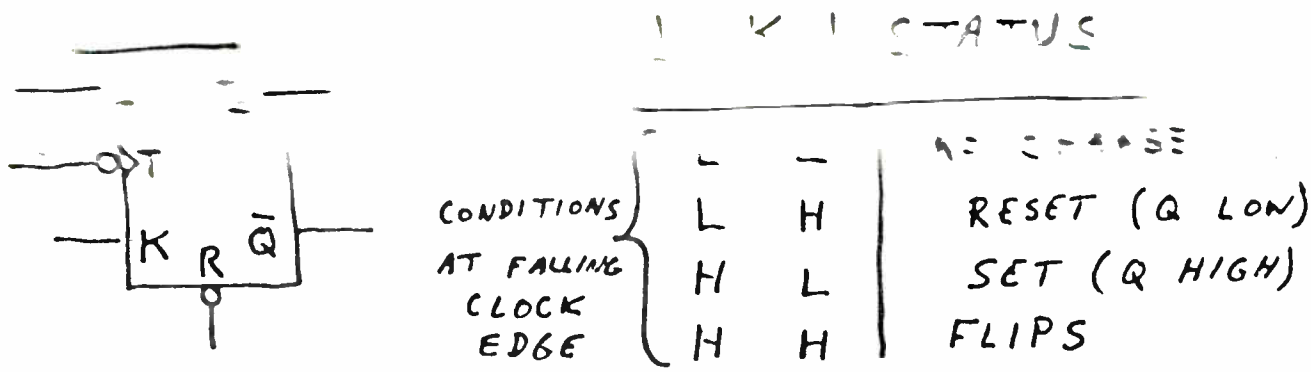


Fig. C-4. J-K FLIP-FLOP WITH DIRECT RESET

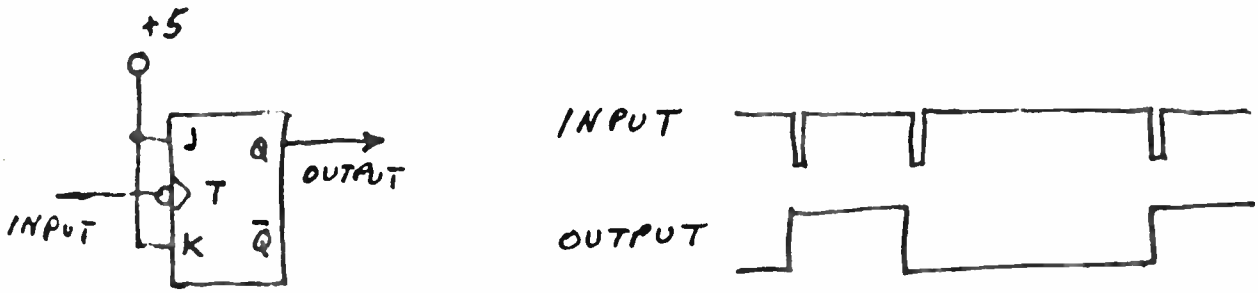


Fig. C-5. J-K FLIP-FLOP USED AS A TOGGLE

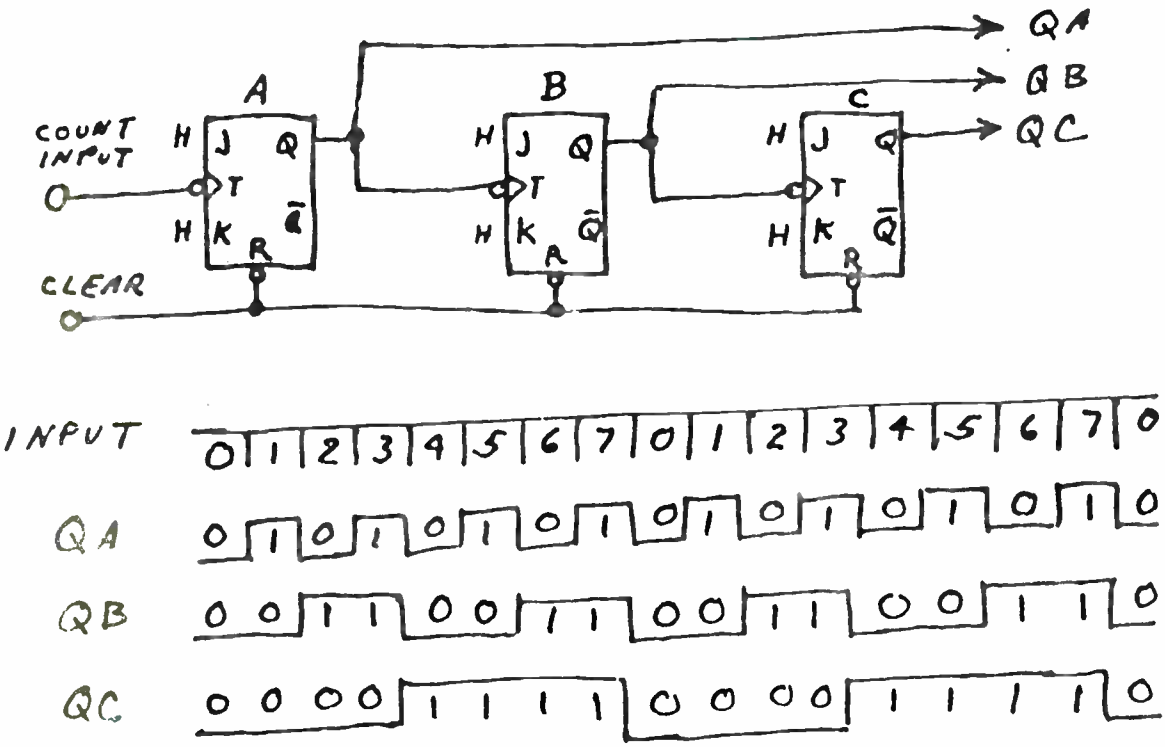


Fig. C-6. TYPICAL 3-BIT (DIVIDE-BY-8) BINARY UP-COUNTER

FAULT INDICATORS

Light	A2 Panel	Transmitter Status** HV	RF Drive	Subcarrier & RF Output	Fault Light	Alarm Ind.*	Transmitter Shutdown
A4DS1	LV	X	X	X	L	L	Momentary
A4DS2	Intlk	X	X	X	L	L	Momentary
A4DS3	Air				L	D	Momentary
A4DS4	Freq			X	D	D	Momentary
A4DS5	Intrpt			X	D	D	Momentary
A4DS6	Lin PS				D	D	Self Reset
A4DS7	Drvr PS	X	X	X	D	D	#
A4DS8	Overtemp			X	L	D	Momentary
A4DS9	OL PA	X	X	X	L	L	Reset
A4DS10	Low Dr			X	L	L	Momentary
A4DS11	HV OV			X	L	D	Momentary
A4DS12	RF Off						***
A4DS13	Bal		X	X	L	L##	Reset if
A4DS14	Refl		X	X	L	L##	Max Count is reached, else restore after 0.5 seconds Off Time
A4DS15	Mod Fault			X	L	D	Momentary
A1DS1	SC Fail			X	L	D	Momentary
	HV Disable				D###	D###	Reset
A6DS1	Mod Fault	X	X	X	L	D	
A6DS2	Input Ovld	Indicates excessive audio input					Momentary

* L = Latch on, M = Momentary on, D = Duration of fault
** X = Shutdown or turnoff
*** When lighted, indicates RF ON relay not closed
\# Shut down until thermocouple resets. Returns to PA ovld condition.
If 3 (or 5) counts within 15 seconds
1. FAULT and STANDBY indicators will blink alternately in HV ON condition with A7S3 in the HIGH VOLTAGE DISABLE position, and HV actually on.
2. FAULT and STANDBY indicators will blink simultaneously in HV ON condition with A7S3 in the HIGH VOLTAGE DISABLE position and HV disabled or off, due to a fault.

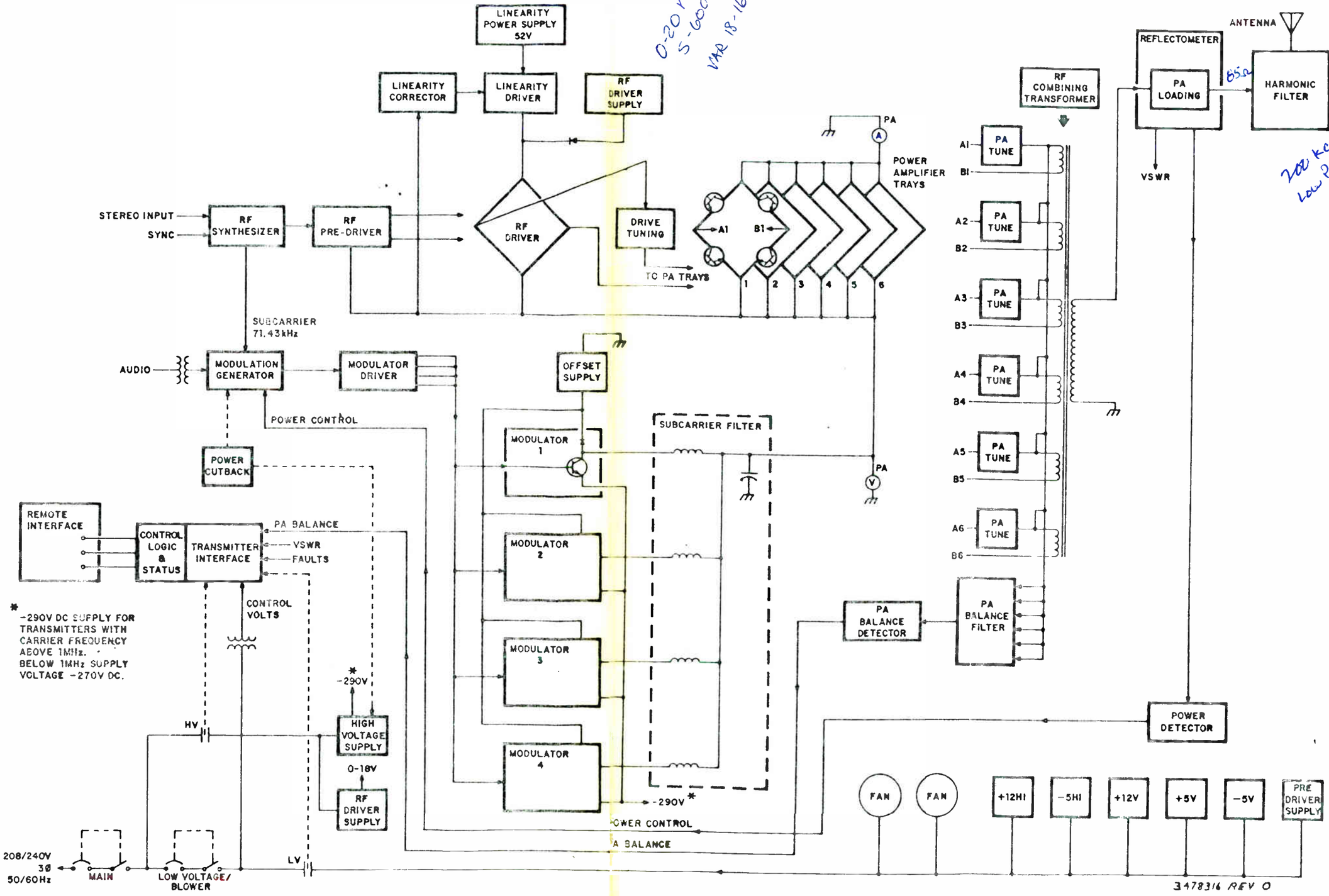
REMOTE CONTROL/ATS FACILITIES

Terminal	Function	Characteristics
TB2-1,2	Metering, PA Amps	1.5 VDC @ 5Ma Max = 100 amps
TB2-3,4	Metering, PA Volts	1.5 VDC @ 1 K ohm impedance = 150 volts
TB3-4,1	Metering, HV Supply	6 VDC @ 1K ohm impedance = 300 volts (May be scaled lower by loading)
TB3-16,17	Metering, RF Amps	1.0 to 2.5 VDC @ 42 Microamps = rated RF current
TB2-6	Control Voltage	24 VAC
TB2-14	Control Enable	24 VAC
TB2-15	Control, TX off Mode	Momentary closure to Control Common
TB2-16	Control, Standby Mode	Momentary closure to Control Common
TB2-17	Control, RF ON/Overload Reset	Momentary closure to Control Common
TB2-18	Control, High Power Mode	Momentary closure to Control Common
TB2-19	Control, Med Power Mode	Momentary closure to Control Common
TB2-20	Control, Low Power Mode	Momentary closure to Control Common
TB3-3	Control, Power Lower	Close to Control Common to adjust
TB3-2	Control, Power Higher	Close to Control Common to adjust
TB2-7	Interlock	Maintained Contact to Control Voltage
TB2-9,13	Logic Power Supply	+5 VDC
TB2-8	Control, Interrupt	TTL low or close to logic supply return to interrupt transmitter output
TB2-12	Status, Overload alarm	Normal = TTL high @ 220 ohm impedance Overload = TTL low @ 220 ohm impedance, 8 Ma Max.
TB3-20	Status, RF on	RF off = TTL low @ 6.4 Ma Max. RF on = TTL high @ 360 microamp Max.
TB3-18,19	Status, HV on	Contact Closure when HV on
TB3-12,13	Status, TX off	Contact Closure in off mode

NOTE: In some installations, circuits shown above may be connected to equipment other than the remote control system (i.e. to the antenna pattern switches).

WA1KSOZO

0-20 V
5-600 KHz
VAR 18-1600 KHz



3478316 REV O

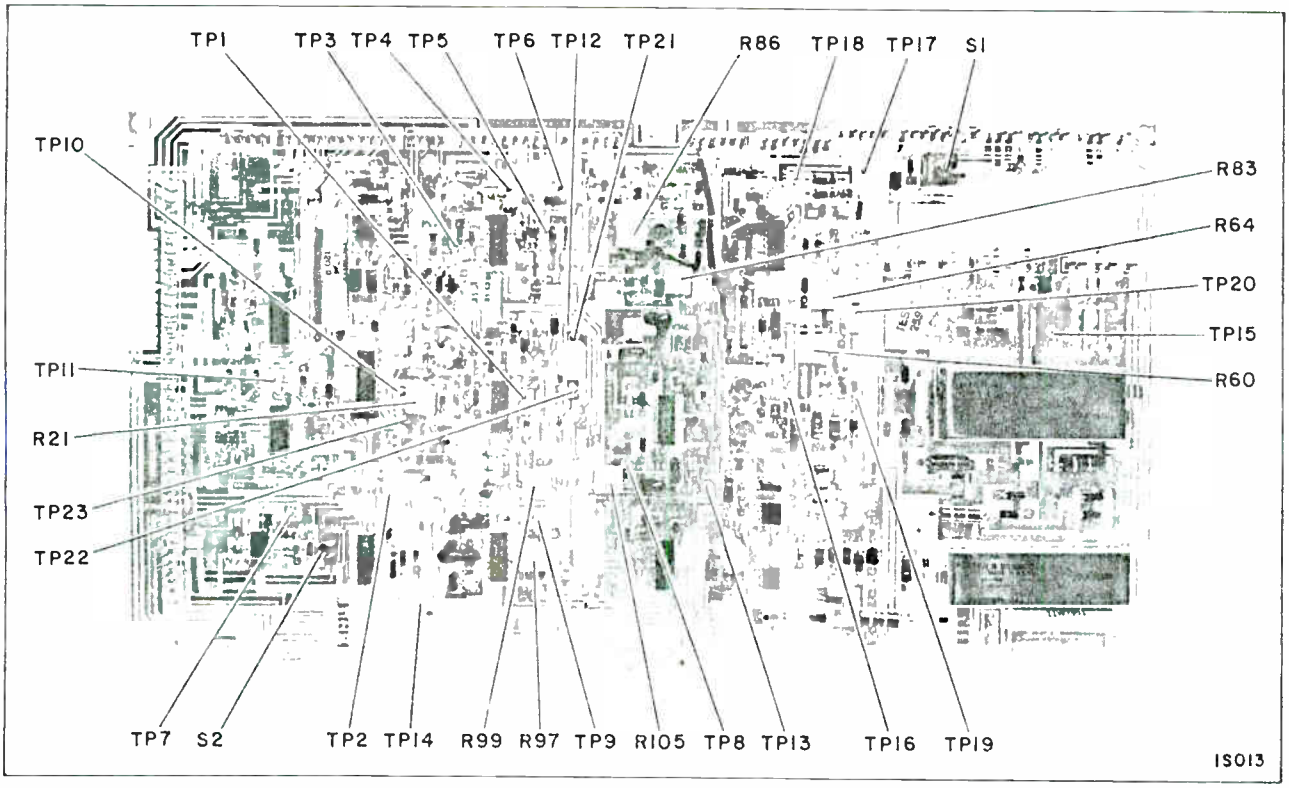
NOTES:

1. UNLESS OTHERWISE SPECIFIED: RESISTANCE IS IN OHMS, CAPACITANCE IS IN MICROFARADS.
2. "403 —14B" INDICATES WIRE NUMBER AND ZONE NUMBER WHERE WIRE CONTINUATION BECOMES.(EXCEPT "A2TB1" LOCATED AT 32-G.)
3. ⊗ INDICATES POSITIONS ASSIGNED ON P.S. DISTRIBUTION BLOCK.
4. THE STANDBY CONDITION (NO RF OUT) -290V, +12VHI AND -5VHI SUPPLY VOLTAGES ARE AS FOLLOWS (WITH RESPECT TO GROUND):

CARRIER FREQUENCY	SCHEMATIC VOLTAGES		
	-290V	+12V HI	-5V HI
1 MHz & UP	-290V	-278V	-295V
BELOW 1 MHz	-270V	-258V	-275V

5. SET THE BOOST/BUCK TRANSFORMER (A7T3) FOR THE ACTUAL INPUT LINE VOLTAGE AS FOLLOWS:

NOMINAL (VOLTS)	ACTUAL (VOLTS)	FOR ACTUAL LINE VOLTAGE	
		CONNECT WIRE 89 TO A7TB1 TERMINAL	CONNECT WIRES 14C, 141, 142, 143 & A7R1 TO A7TB1 TERMINAL
208	191-203	1	5
	202-214	1	4
	213-225	1	3
240	223-235	2	5
	234-246	2	4
	245-257	2	3
380	351-371	3	5
	370-390	3	4
	389-409	3	3
415	386-406	2	5
	405-425	2	4
	424-444	2	3



CONTROL INTERFACE BOARD A4A1A

Control Interface Board Adjustments

R21 HV TRIP-Factory Adjustment-Sets the High Voltage trip at 300 Volts.

R60 +12HI TRIP-Factory Adjustment-This control, now replaced by R17 on the Opto/Metering Board, is set for maximum wiper potential.

R64 PRE-DRIVER SUPPLY TRIP-Factory Adjustment-Sets the Pre-Driver Supply trip to 10% below the factory determined value for this supply. (Pre-Driver Supply voltages range from 24 to 40 volts depending upon the carrier frequency)

R83 HV OVERLOAD GAIN-Factory Adjustment-Sets the High Voltage overload trip point to 70 amps.

R86 HV OVERLOAD NULL-Factory Adjustment-Sets the input offset for U15.

R97 PA UNBALANCE TRIP-Factory Adjustment-The sensitivity to a phase or amplitude unbalance between the six PA trays is set by this control.

R99 PA DRIVE TRIP-Factory Adjustment-This control, now replaced by R45 and R50 on the Fault/Overload Board, is rotated to set the wiper at +5 volts.

R105 REFLECTED TRIP-Customer Adjustment-With normal program level modulation on the transmitter, this pot is adjusted first to a point where the transmitter trips. Then, the control is set slightly less sensitive so the transmitter no longer trips under normal conditions.

S1 REMOTE ENABLE-Customer Adjustment-Sets transmitter for local or remote control.

S2 MANUAL/AUTO-Customer Adjustment-Permits choice of automatic overload resetting allowing multiple trips before shutdown or shutdown after each overload with a manual reset necessary.

See chart next page
SM-3-4-82

THIS IS A TABLE OF SETTINGS MADE TO THE CONTROL INTERFACE CARD (A4A1A) BY RCA FACTORY REP. (CHUCK JONES) WHEN WE REPLACE THE ORIGINAL CARD (3/4/82).

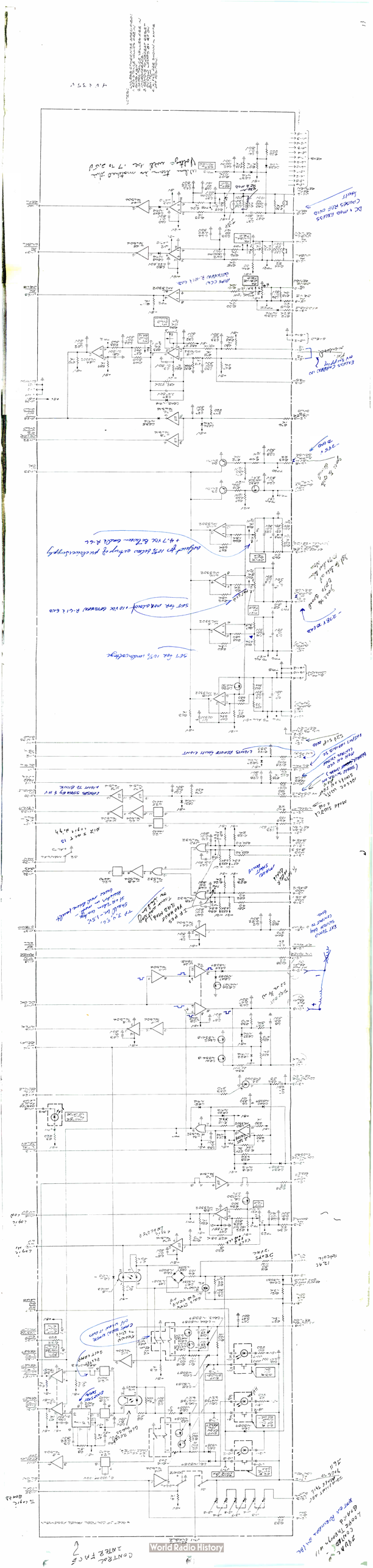
THESE SETTINGS MADE IN STANDBY MODE

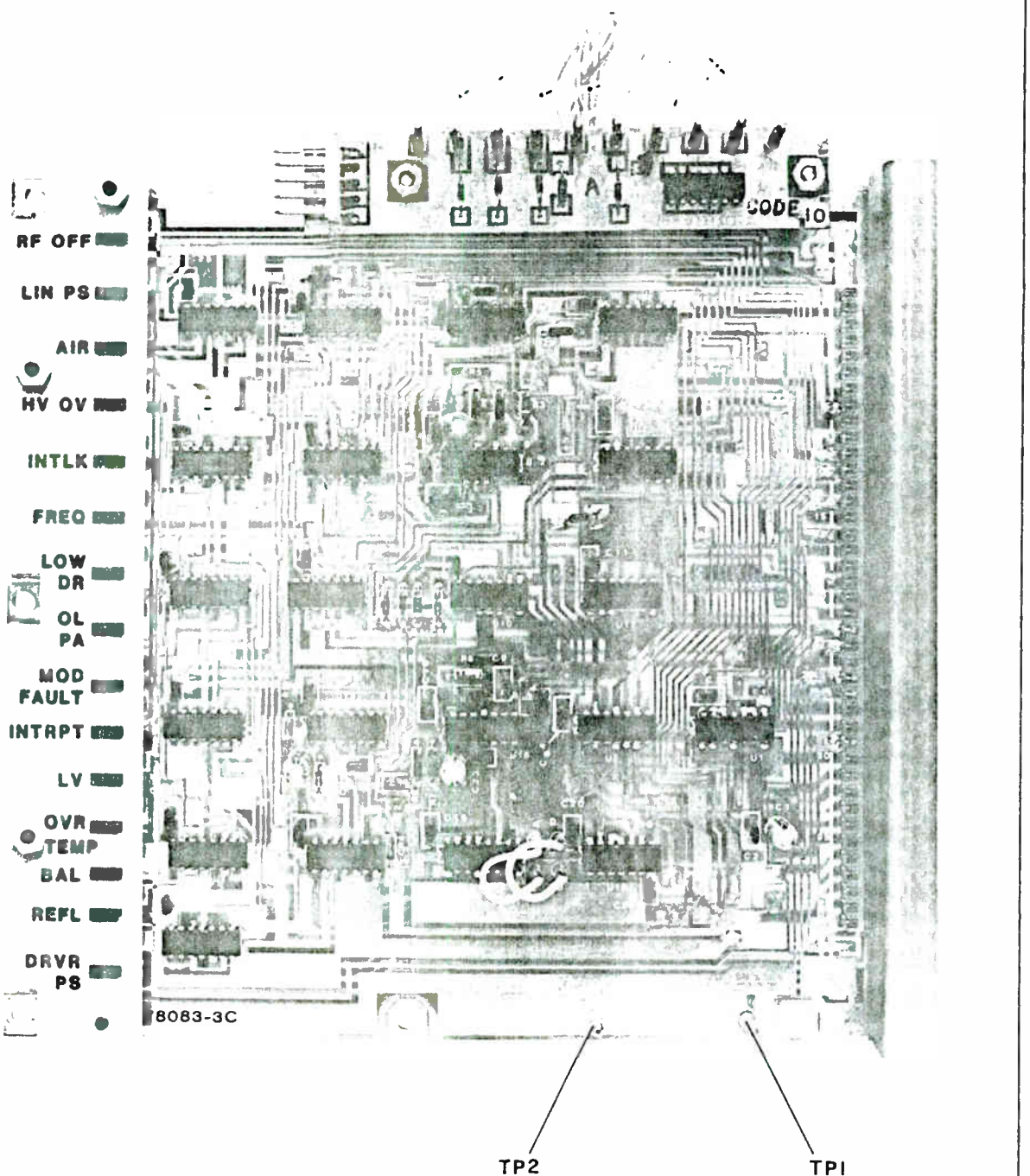
R-64	Pre drive supply trip	+ 4.7 VDC between GND & R-66
R-60	+12 Hi trip	+ 10 VDC between GND & R-61
R-21	HV trip	+ 3.1 VDC between GND & R-23
R-97	PA unblance trip	+ 2.4 VDC between GND & R-96
R-99	PA drive trip	Max CCW between GND & R-101
R-105	Ref trip	2.7 VDC between GND & TP8

THESE SETTINGS MADE IN TRANSMIT MODE

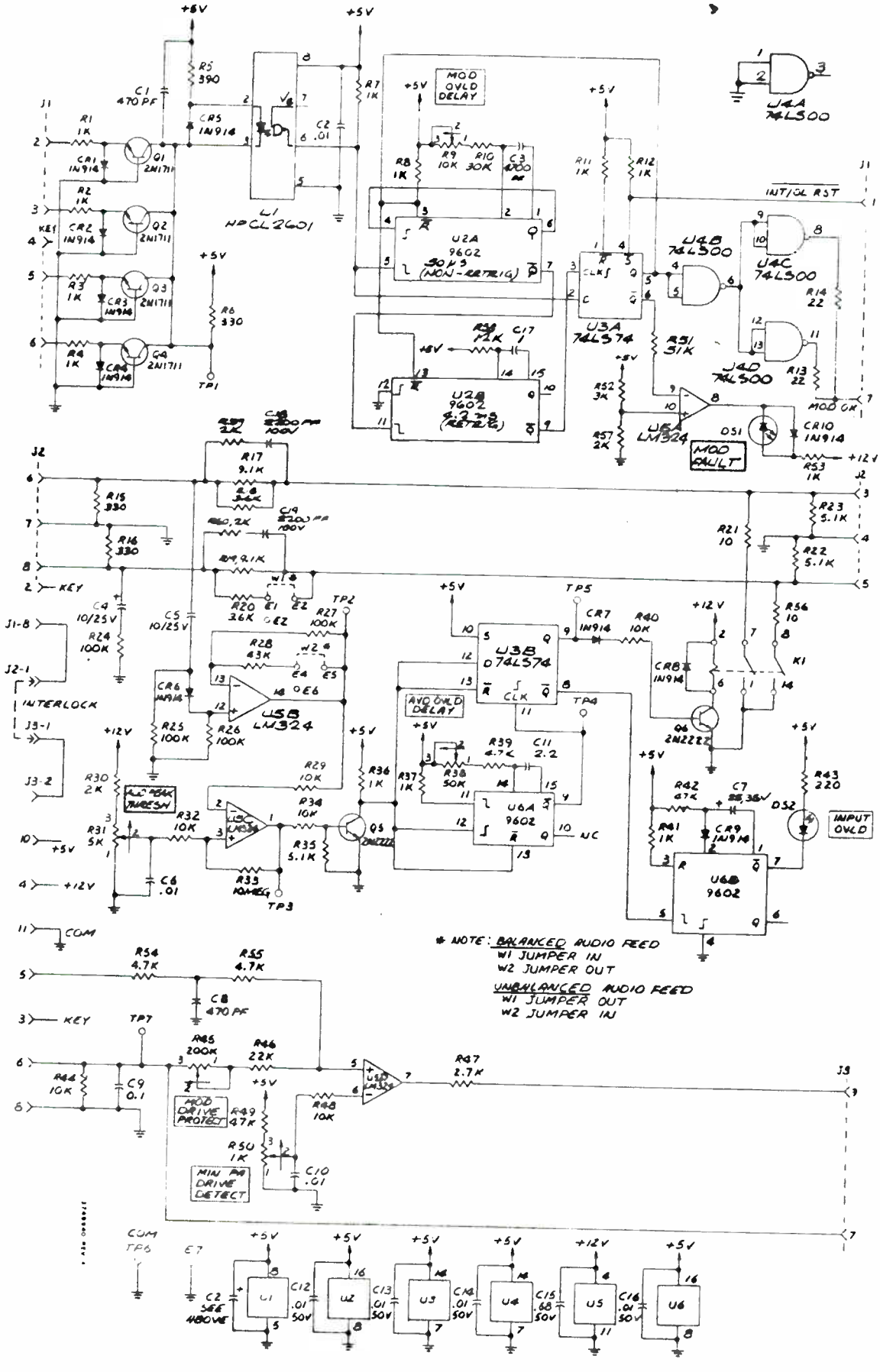
R-83 HV OVLD Gain	+ 2.8 VDC	between GND & R-87
R-86 HV OVLD Null	Min.	between GND & PIN 5 of U-15

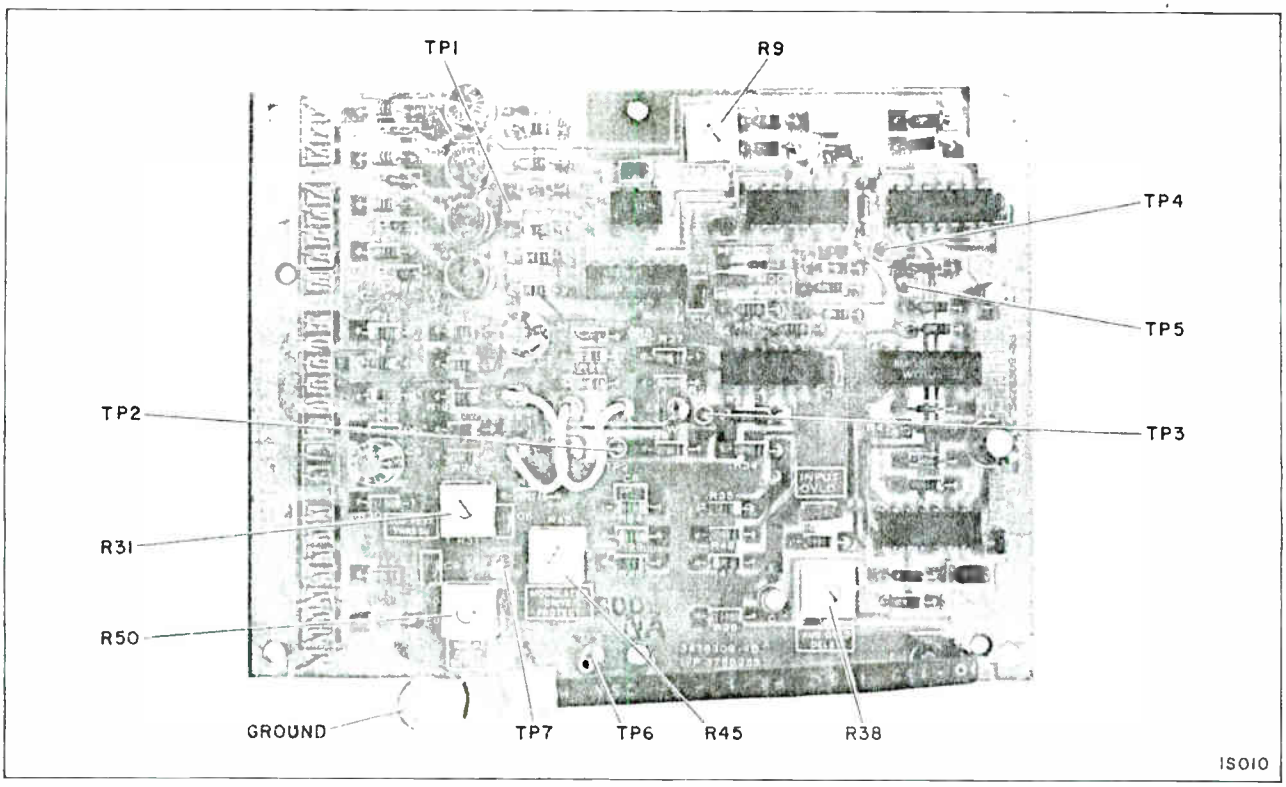
INSTALL 4700 OHM RESISTOR IN PARALLEL WITH R-103 TO DESENSTIZE VSWR PROTECT CIRCUIT AS PER OLD CONTROL INTERFACE CARD.





CONTROL LOGIC BOARD A4A1B/LOGIC BABY BOARD A4A3





FAULT/OVERLOAD BOARD A2A6

Fault/Overload Board Adjustments

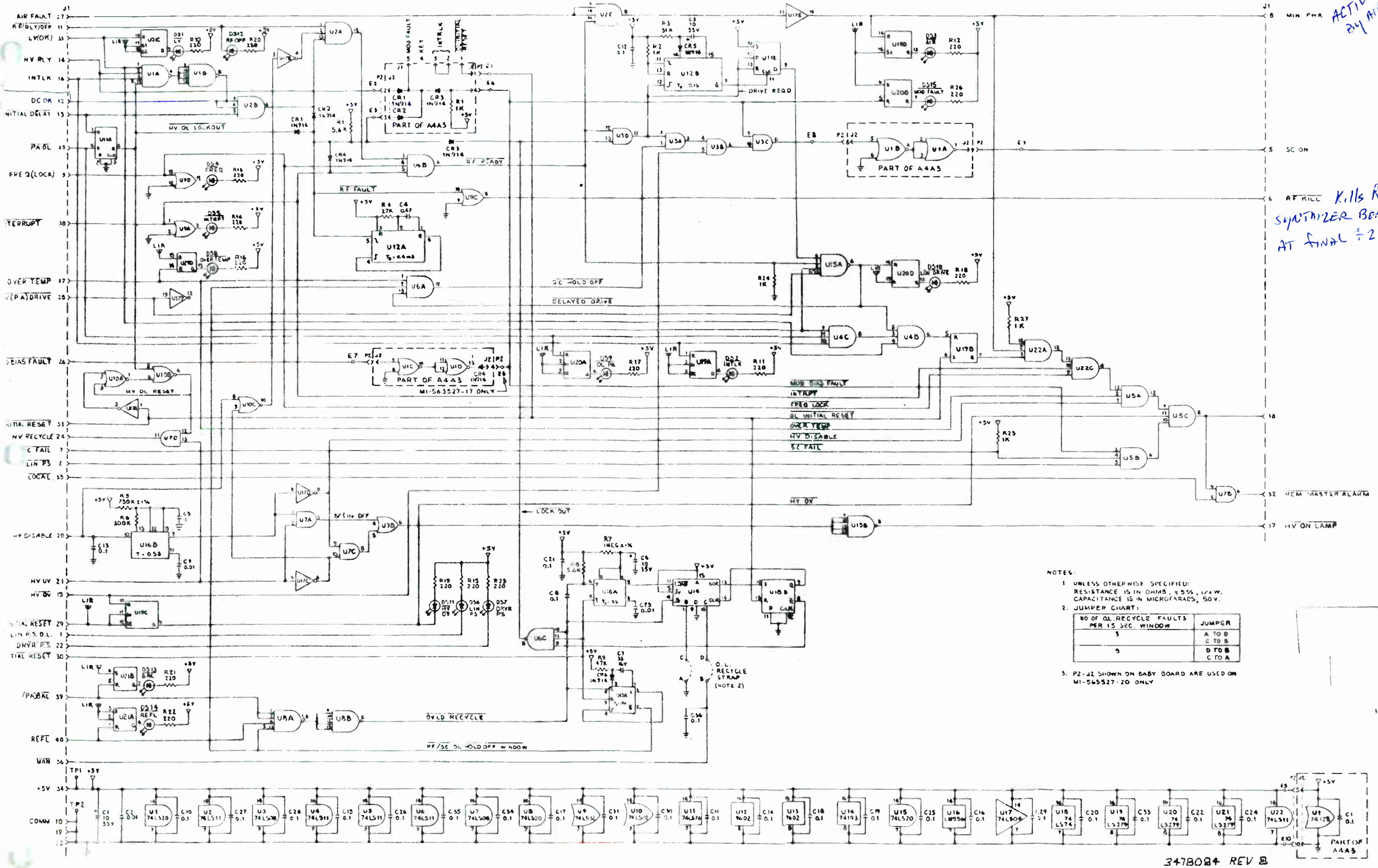
R9 MODULATION OVERLOAD DELAY-Factory Adjustment-Sets the U2A delay to 50 microseconds to give a reliable pulse to trigger U2B. U2A simply acts as a pulse stretcher.

R31 AUDIO PEAK THRESHOLD-Factory Adjustment-This control determines the low frequency overload point.

R38 AUDIO OVERLOAD DELAY-Factory Adjustment-Used to set the duration of a cycle before overload cutoff. This control works along with R31 and is set for a delay of 15 milliseconds.

R45 MODULATION DRIVE PROTECT-Factory Adjustment-Used to set the amount of drive necessary that is in proportion to the transmitter output power as power is ramping up at turn-on.

R50 MINIMUM PA DRIVE DETECT-Factory Adjustment-This control is set to detect the minimum amount of drive that is necessary (in this case it is 500 watts) before the transmitter output is allowed to come up.



NOTES:

1. UNLESS OTHERWISE SPECIFIED:
   RESISTANCE IS IN OHMS, ±5%, 1/4 W.
   CAPACITANCE IS IN MICROFARADS, 50 V.
2. JUMPER CHART:

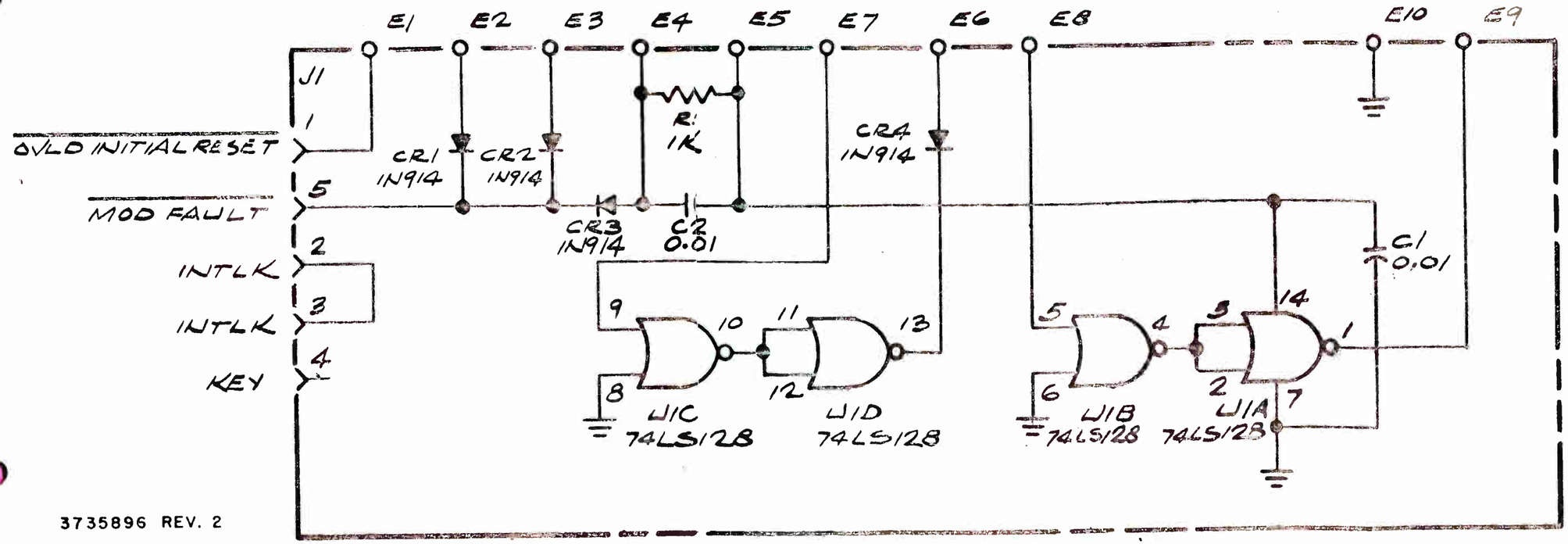
NO OF OL RECYCLE FAULTS PER 15 SEC. WINDOW	JUMPER
3	A TO D C TO B
5	D TO B C TO A

3. P2-J2 SHOWN ON BABY BOARD ARE USED ON MI-565527-20 ONLY

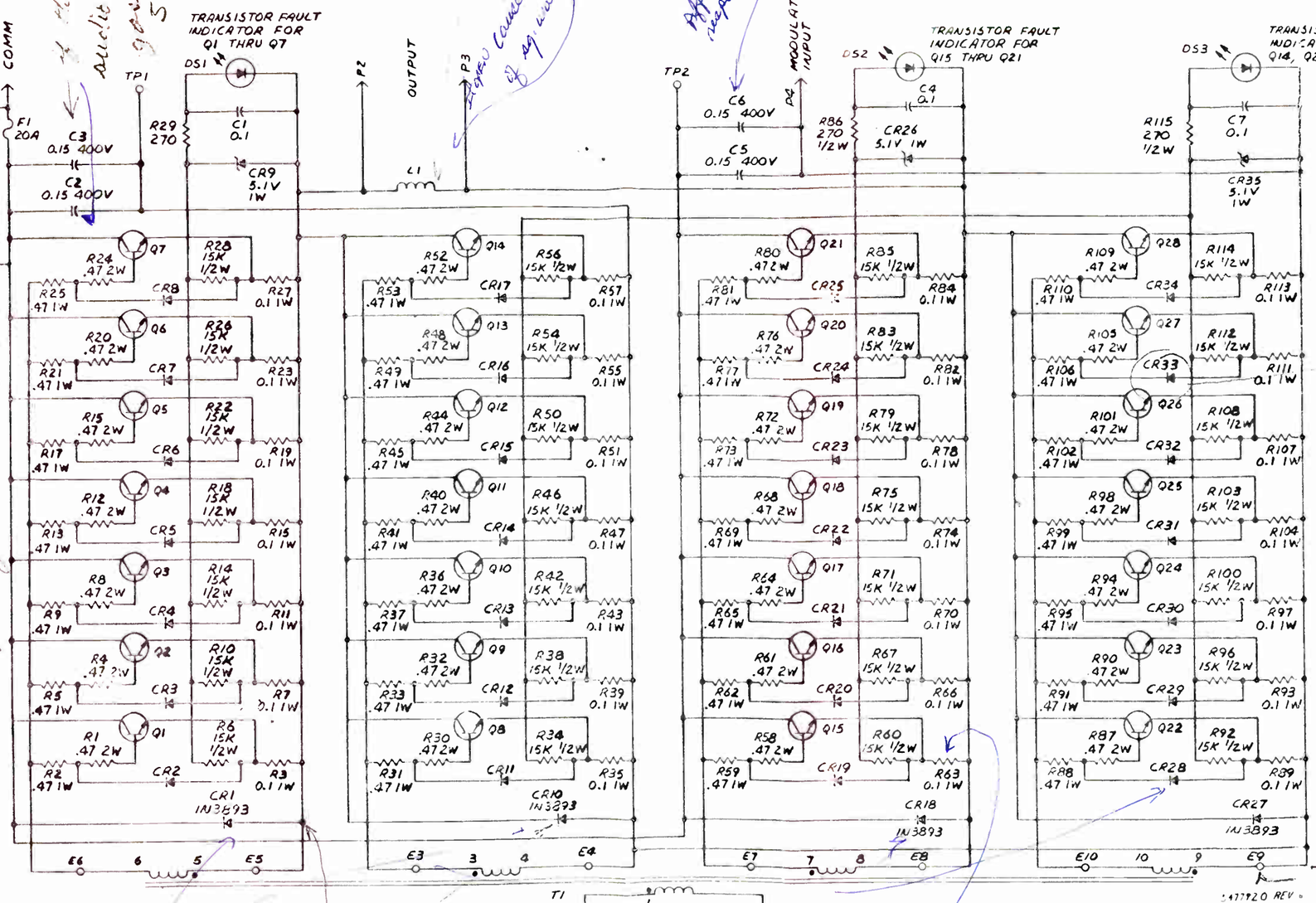
3478084 REV B

ACTIVATED BY AIR LOSS

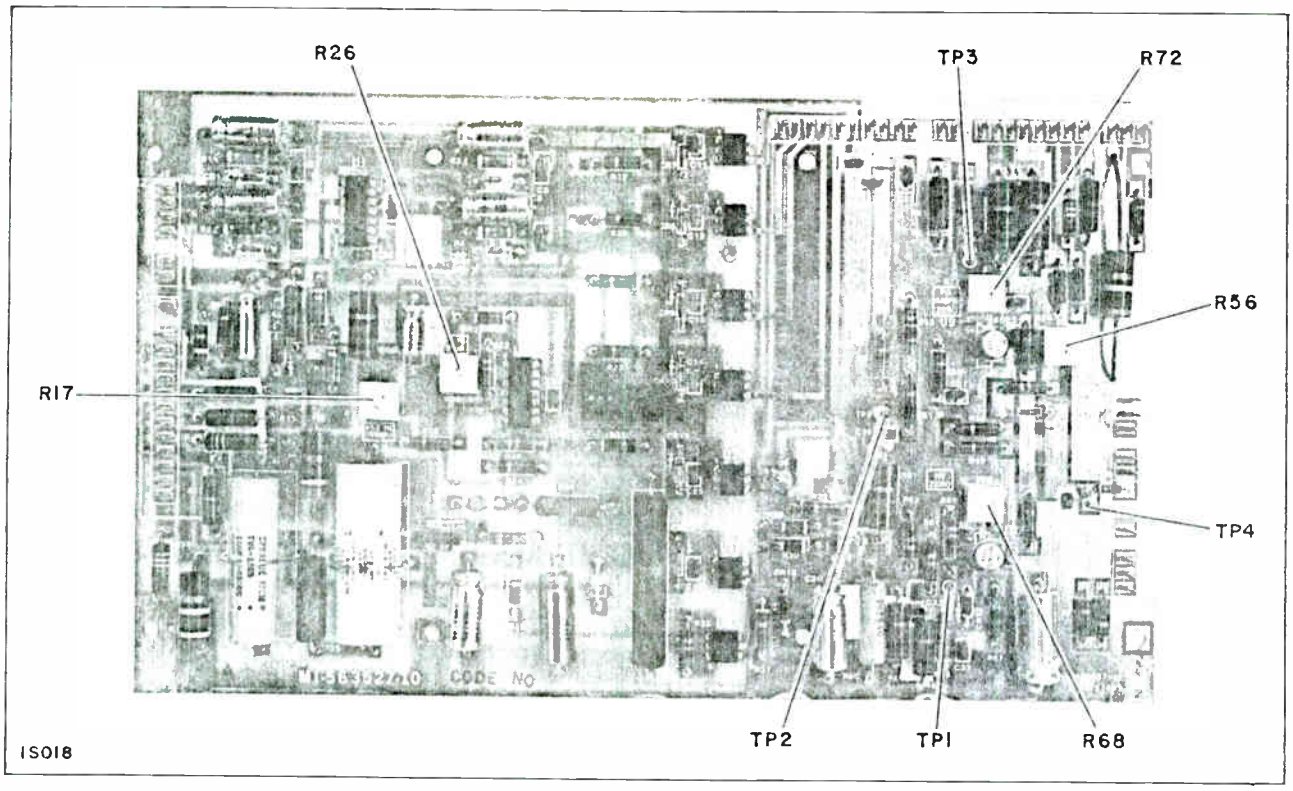
KILLS RF ON SYNTHESIZER BOARD AT FINAL ÷2 GATE



3735896 REV. 2



NOTES:
1. UNLESS OTHERWISE SPECIFIED: RESISTANCE VALUES ARE IN OHMS & 1/2W.
2. TRANSISTORS ARE RCA PART NO. 3751445-303 FOR BOARDS MARKED M1-563505-1; 3751445-403 FOR BOARDS MARKED M1-563505-2.
3. CAPACITOR VALUES ARE IN MICROFARADS.
4. UNLESS OTHERWISE SPECIFIED: ALL DIODES ARE TYPE 1OD4.



OPTO/METERING BOARD A8A1

Opto/Metering Board Adjustments

R17 +12HI TRIP-Factory Adjustment-This control sets the trip point on the +12HI voltage line. The setting is such that a trip will occur whenever this voltage decreases by 10% or more of its normal value.

R26 -5HI TRIP-Factory Adjustment-This control sets the trip point on the -5HI voltage line. The setting is such that a trip will occur whenever this voltage decreases by 10% or more of its normal value.

R56 PA AMPS GAIN-Factory Adjustment- Proper adjustment of this control would give 1.5 volts between J5-1 and Ground for remote metering of the PA current at a PA current value of 100 amps.

R68 HV ZERO-Factory Adjustment-This nulls the input offset on the HV Sample OP Amp.

R72 PA AMPS ZERO-Factory Adjustment-This nulls the input offset on the PA Amps OP amp.

METERING RESISTORS

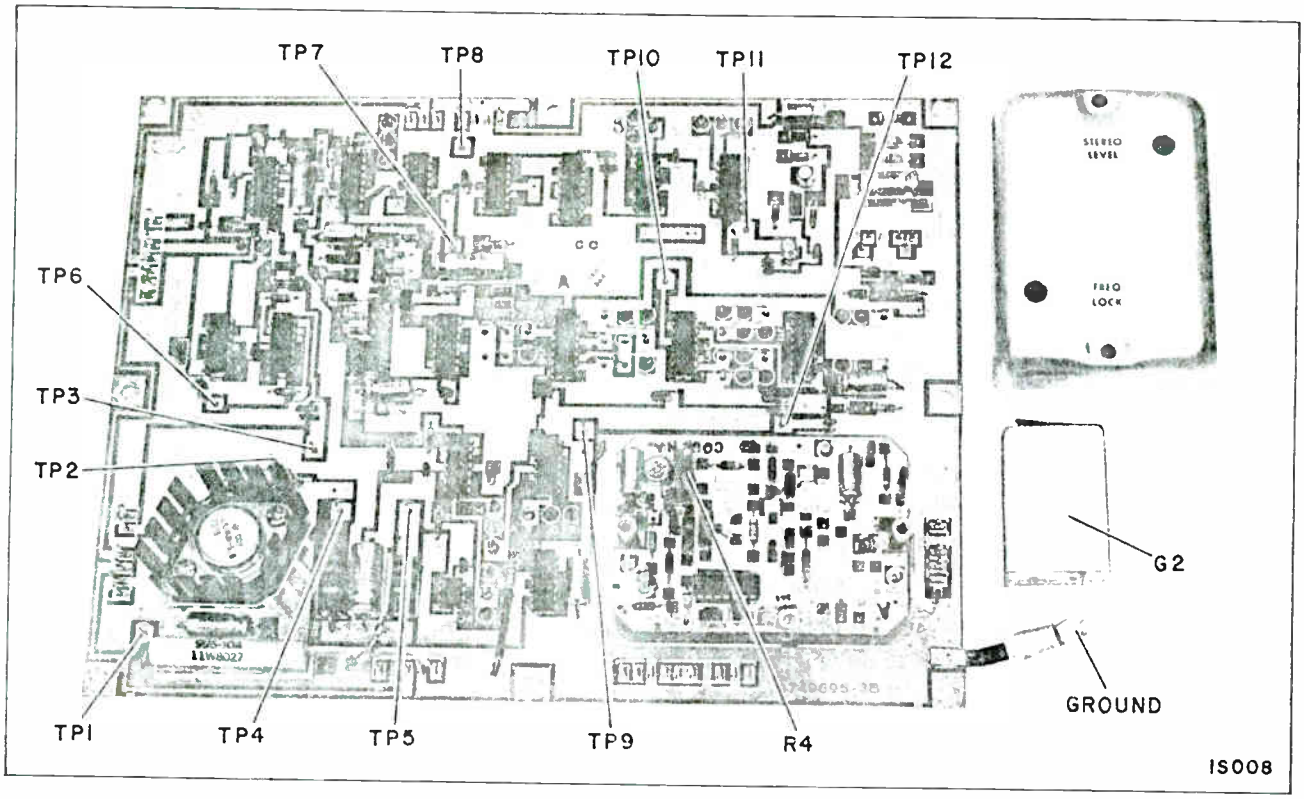
SET FOR BEST DISTORTION IN MODULATOR 13-13.5 V

SET TO TRIP

NOTES:
1. UNLESS OTHERWISE SPECIFIED: RESISTANCE VALUES ARE IN OHMS & 1/2W. CAPACITANCE VALUES ARE IN MICROFARADS.

3478310 REV 2

ADTD METER BOARD



RF GENERATOR A2A2

RF Generator Adjustments and Jumper Settings

R4 FREQUENCY LOCK-Factory Adjustment-This control sets the VCO control voltage on TP-12 to +6 volts DC.

The following are the jumper connections for the normal frequency source as well as for external frequency sources:

Normal 10 Megahertz TCXO (G2):	V connects to Y E connects to F H connects to I X connects to Z
5 Megahertz External Frequency Source: (G2 is not needed in this case)	V connects to X E connects to G H connects to I Y connects to Z
2 Kilohertz External Frequency Source: (G2 is needed in this case)	V connects to Y I connects to J E connects to F X connects to Z

The frequency determined connections for the RF Generator will now be given:

② G1
VOLTAGE CONTROLLED OSCILLATOR
(2 Fc)

Push Pull (SORT OF)

600 kΩ OUT

2X scale

SEE J1-6 ON CONTROL LOGIC ASSY BOARD (A4A1B)

J3-4 = WIRE #258

J3-3 = WIRE #254

TO MOD GEN Bd A2A1

NOTES

1. JUMPERS REQUIRED ON G1 OSCILLATOR BOARD AS FOLLOWS:

CARRIER FREQ:	JUMPER
535 - 700 KHz	NO CONNECTON
700 - 1000 KHz	J2 - J3
1000 - 1850 KHz	J1 - J3

2. SUM OF "N" JUMPERED TO B IN PROGRAMABLE COUNTER CIRCUIT MUST EQUAL CARRIER FREQ. IN KHz (NAMED NUMBER) JUMPER TO GND.
3. ADJUST STEREO LEVEL CONTROL FOR 1250 Hz DEVIATION.
4. ADJUST FREQ LOCK CONTROL FOR 6.0 VDC AT TP12
5. ADJUST G1R6 FOR 4.0 VDC AT G1XB GIP9.
6. ALL RESISTORS ARE ¼W UNLESS OTHERWISE INDICATED
7. FOR TCXO SCHEMATIC, SEE 5727072.
8. UNUSED GATES CONNECT TO +5VDC: U3(5), U12(5)(U18(5))

TABLE I

TEST POINTS / CONNECTORS

TP 1	+12V POWER IN
TP 12	PHASE CONTROL VOLTAGE (6.0 VDC)
TP 2	MAIN CARRIER FREQ OUT (5V P-P)
TP 4	10 MHz REF OSCILLATOR (5 V P-P)
TP 6	71.43 MHz SUBCARRIER (5 V P-P)
TP 10	2 KHz Fc SAMPLE (5V SQUARE)
TP 7	2 KHz REF FREQ SAMPLE (5 V P-P)
TP 3	-5V POWER IN
TP 13	Fc PHASED LOCKED
TP 11	+5V REGULATED POWER
TP 5	MAIN CARRIER FREQ OUT (5V P-P)
TP 8	PHASED LOCKED (HI WHEN Fc LOCKED)
TP 9	2 Fc SAMPLE (4V P-P)
J1	+12V (-8V DC POWER
J2	MAIN CARRIER OUT (5V)
J3	SUBCARRIER OUT (5V) REF FREQ
J4	LOGIC CONTROLS
J5	ALC OUT (+15 V DC)
J6	PHASE MODULATION INPUT

5478065 REV 4

The following is the frequency jumper for the Voltage Controlled Oscillator G1. As a note, on some transmitters, it may have been necessary to change the jumper to an adjacent frequency band. Such a change would have been determined during testing:

CARRIER FREQUENCY BAND	JUMPER
525 - 699 KHz	NONE
700 - 999 KHz	J2 to J3
1000 - 1705 KHz	J1 to J3

The following are the counting jumpers for standard 10 KHz carrier frequencies:

	TERMINALS TO BE JUMPERED										
FREQ	J7	J8	J9	J10	J11	J12	J13	J14	J15	J16	J17
540	A-B	A-C	B-C	A-C	A-C	A-B	A-C	A-C	A-C	A-C	B-C
550	A-C	A-C	B-C	A-C	B-C	A-C	A-C	A-C	B-C	A-C	B-C
560	A-C	A-C	A-C	A-C	A-C	A-B	A-C	A-C	B-C	A-C	B-C
570	A-B	A-C	A-C	A-C	B-C	A-B	A-C	A-C	B-C	A-C	B-C
580	A-C	A-C	B-C	A-C	A-C	A-C	B-C	A-C	A-C	A-C	B-C
590	A-B	A-C	B-C	A-C	B-C	A-C	B-C	A-C	A-C	A-C	B-C
600	A-B	A-C	A-C	A-C	A-C	A-B	B-C	A-C	A-C	A-C	B-C
610	A-C	A-C	A-C	A-C	B-C	A-C	B-C	A-C	B-C	A-C	B-C
620	A-B	A-C	B-C	A-C	A-C	A-C	B-C	A-C	B-C	A-C	B-C
630	A-C	A-C	B-C	A-C	B-C	A-B	B-C	A-C	B-C	A-C	B-C
640	A-C	A-C	A-C	A-B	A-C	A-C	A-C	A-C	A-C	A-C	B-C
650	A-B	A-C	A-C	A-B	B-C	A-C	A-C	A-C	A-C	A-C	B-C
660	A-C	A-C	B-C	A-B	A-C	A-B	A-C	A-C	A-C	A-C	B-C
670	A-B	A-C	B-C	A-B	B-C	A-B	A-C	A-C	A-C	A-C	B-C
680	A-B	A-C	A-C	A-B	A-C	A-C	A-C	A-C	B-C	A-C	B-C
690	A-C	A-C	A-C	A-B	B-C	A-B	A-C	A-C	B-C	A-C	B-C
700	A-B	A-C	B-C	A-B	A-C	A-B	A-C	A-C	B-C	A-C	B-C
710	A-C	A-C	B-C	A-B	B-C	A-C	B-C	A-C	A-C	A-C	B-C
720	A-C	A-C	A-C	A-B	A-C	A-B	B-C	A-C	A-C	A-C	B-C
730	A-B	A-C	A-C	A-B	B-C	A-B	B-C	A-C	A-C	A-C	B-C
740	A-C	A-C	B-C	A-B	A-C	A-C	B-C	A-C	B-C	A-C	B-C
750	A-B	A-C	B-C	A-B	B-C	A-C	B-C	A-C	B-C	A-C	B-C
760	A-B	A-C	A-C	A-B	A-C	A-B	B-C	A-C	B-C	A-C	B-C
770	A-C	A-C	A-C	A-C	B-C	A-C	A-C	A-B	A-C	A-C	B-C
780	A-B	A-C	B-C	A-C	A-C	A-C	A-C	A-B	A-C	A-C	B-C
790	A-C	A-C	B-C	A-C	B-C	A-B	A-C	A-B	A-C	A-C	B-C
800	A-C	A-C	A-C	A-C	A-C	A-C	A-C	A-B	B-C	A-C	B-C
810	A-B	A-C	A-C	A-C	B-C	A-C	A-C	A-B	B-C	A-C	B-C
820	A-C	A-C	B-C	A-C	A-C	A-B	A-C	A-B	B-C	A-C	B-C
830	A-B	A-C	B-C	A-C	B-C	A-B	A-C	A-B	B-C	A-C	B-C
840	A-B	A-C	A-C	A-C	A-C	A-C	B-C	A-B	A-C	A-C	B-C
850	A-C	A-C	A-C	A-C	B-C	A-B	B-C	A-B	A-C	A-C	B-C
860	A-B	A-C	B-C	A-C	A-C	A-B	B-C	A-B	A-C	A-C	B-C
870	A-C	A-C	B-C	A-C	B-C	A-C	B-C	A-B	B-C	A-C	B-C
880	A-C	A-C	A-C	A-C	A-C	A-B	B-C	A-B	B-C	A-C	B-C
890	A-B	A-C	A-C	A-C	B-C	A-B	B-C	A-B	B-C	A-C	B-C
900	A-C	A-C	B-C	A-B	A-C	A-C	A-C	A-B	A-C	A-C	B-C

FREQ	TERMINALS TO BE JUMPERED										
	J7	J8	J9	J10	J11	J12	J13	J14	J15	J16	J17
910	A-B	A-C	B-C	A-B	B-C	A-C	A-C	A-B	A-C	A-C	B-C
920	A-B	A-C	A-C	A-B	A-C	A-B	A-C	A-B	A-C	A-C	B-C
930	A-C	A-C	A-C	A-B	B-C	A-C	A-C	A-B	B-C	A-C	B-C
940	A-B	A-C	B-C	A-B	A-C	A-C	A-C	A-B	B-C	A-C	B-C
950	A-C	A-C	B-C	A-B	B-C	A-B	A-C	A-B	B-C	A-C	B-C
960	A-C	A-C	A-C	A-B	A-C	A-C	B-C	A-B	A-C	A-C	B-C
970	A-B	A-C	A-C	A-B	B-C	A-C	B-C	A-B	A-C	A-C	B-C
980	A-C	A-C	B-C	A-B	A-C	A-B	B-C	A-B	A-C	A-C	B-C
990	A-B	A-C	B-C	A-B	B-C	A-B	B-C	A-B	A-C	A-C	B-C
1000	A-B	A-C	A-C	A-B	A-C	A-C	B-C	A-B	B-C	A-C	B-C
1010	A-C	A-C	A-C	A-B	B-C	A-B	B-C	A-B	B-C	A-C	B-C
1020	A-B	A-C	B-C	A-B	A-C	A-B	B-C	A-B	B-C	A-C	B-C
1030	A-C	A-C	B-C	A-C	B-C	A-C	A-C	A-C	A-C	B-C	A-C
1040	A-C	A-C	A-C	A-C	A-C	A-B	A-C	A-C	A-C	B-C	A-C
1050	A-B	A-C	A-C	A-C	B-C	A-B	A-C	A-C	A-C	B-C	A-C
1060	A-C	A-C	B-C	A-C	A-C	A-C	A-C	A-C	B-C	B-C	A-C
1070	A-B	A-C	B-C	A-C	B-C	A-C	A-C	A-C	B-C	B-C	A-C
1080	A-B	A-C	A-C	A-C	A-C	A-B	A-C	A-C	B-C	B-C	A-C
1090	A-C	A-C	A-C	A-C	B-C	A-C	B-C	A-C	A-C	B-C	A-C
1100	A-B	A-C	B-C	A-C	A-C	A-C	B-C	A-C	A-C	B-C	A-C
1110	A-C	A-C	B-C	A-C	B-C	A-B	B-C	A-C	A-C	B-C	A-C
1120	A-C	A-C	A-C	A-C	A-C	A-C	B-C	A-C	B-C	B-C	A-C
1130	A-B	A-C	A-C	A-C	B-C	A-C	B-C	A-C	B-C	B-C	A-C
1140	A-C	A-C	B-C	A-C	A-C	A-B	B-C	A-C	B-C	B-C	A-C
1150	A-B	A-C	B-C	A-C	B-C	A-B	B-C	A-C	B-C	B-C	A-C
1160	A-B	A-C	A-C	A-B	A-C	A-C	A-C	A-C	A-C	B-C	A-C
1170	A-C	A-C	A-C	A-B	B-C	A-B	A-C	A-C	A-C	B-C	A-C
1180	A-B	A-C	B-C	A-B	A-C	A-B	A-C	A-C	A-C	B-C	A-C
1190	A-C	A-C	B-C	A-B	B-C	A-C	A-C	A-C	B-C	B-C	A-C
1200	A-C	A-C	A-C	A-B	A-C	A-B	A-C	A-C	B-C	B-C	A-C
1210	A-B	A-C	A-C	A-B	B-C	A-B	A-C	A-C	B-C	B-C	A-C
1220	A-C	A-C	B-C	A-B	A-C	A-C	B-C	A-C	A-C	B-C	A-C
1230	A-B	A-C	B-C	A-B	B-C	A-C	B-C	A-C	A-C	B-C	A-C
1240	A-B	A-C	A-C	A-B	A-C	A-B	B-C	A-C	A-C	B-C	A-C
1250	A-C	A-C	A-C	A-B	B-C	A-C	B-C	A-C	B-C	B-C	A-C
1260	A-B	A-C	B-C	A-B	A-C	A-C	B-C	A-C	B-C	B-C	A-C
1270	A-C	A-C	B-C	A-B	B-C	A-B	B-C	A-C	B-C	B-C	A-C
1280	A-C	A-C	A-C	A-C	A-C	A-C	A-C	A-B	A-C	B-C	A-C
1290	A-B	A-C	A-C	A-C	B-C	A-C	A-C	A-B	A-C	B-C	A-C
1300	A-C	A-C	B-C	A-C	A-C	A-B	A-C	A-B	A-C	B-C	A-C
1310	A-B	A-C	B-C	A-C	B-C	A-B	A-C	A-B	A-C	B-C	A-C
1320	A-B	A-C	A-C	A-C	A-C	A-C	A-C	A-B	B-C	B-C	A-C
1330	A-C	A-C	A-C	A-C	B-C	A-B	A-C	A-B	B-C	B-C	A-C
1340	A-B	A-C	B-C	A-C	A-C	A-B	A-C	A-B	B-C	B-C	A-C
1350	A-C	A-C	B-C	A-C	B-C	A-C	B-C	A-B	A-C	B-C	A-C
1360	A-C	A-C	A-C	A-C	A-C	A-B	B-C	A-B	A-C	B-C	A-C
1370	A-B	A-C	A-C	A-C	B-C	A-B	B-C	A-B	A-C	B-C	A-C
1380	A-C	A-C	B-C	A-C	A-C	A-C	B-C	A-B	B-C	B-C	A-C
1390	A-B	A-C	B-C	A-C	B-C	A-C	B-C	A-B	B-C	B-C	A-C
1400	A-B	A-C	A-C	A-C	A-C	A-B	B-C	A-B	B-C	B-C	A-C

FREQ	TERMINALS TO BE JUMPERED										
	J7	J8	J9	J10	J11	J12	J13	J14	J15	J16	J17
1410	A-C	A-C	A-C	A-B	B-C	A-C	A-C	A-B	A-C	B-C	A-C
1420	A-B	A-C	B-C	A-B	A-C	A-C	A-C	A-B	A-C	B-C	A-C
1430	A-C	A-C	B-C	A-B	B-C	A-B	A-C	A-B	A-C	B-C	A-C
1440	A-C	A-C	A-C	A-B	A-C	A-C	A-C	A-B	B-C	B-C	A-C
1450	A-B	A-C	A-C	A-B	B-C	A-C	A-C	A-B	B-C	B-C	A-C
1460	A-C	A-C	B-C	A-B	A-C	A-B	A-C	A-B	B-C	B-C	A-C
1470	A-B	A-C	B-C	A-B	B-C	A-B	A-C	A-B	B-C	B-C	A-C
1480	A-B	A-C	A-C	A-B	A-C	A-C	B-C	A-B	A-C	B-C	A-C
1490	A-C	A-C	A-C	A-B	B-C	A-B	B-C	A-B	A-C	B-C	A-C
1500	A-B	A-C	B-C	A-B	A-C	A-B	B-C	A-B	A-C	B-C	A-C
1510	A-C	A-C	B-C	A-B	B-C	A-C	B-C	A-B	B-C	B-C	A-C
1520	A-C	A-C	A-C	A-B	A-C	A-B	B-C	A-B	B-C	B-C	A-C
1530	A-B	A-C	A-C	A-B	B-C	A-B	B-C	A-B	B-C	B-C	A-C
1540	A-C	A-C	B-C	A-C	A-C	A-C	A-C	A-C	A-C	B-C	B-C
1550	A-B	A-C	B-C	A-C	B-C	A-C	A-C	A-C	A-C	B-C	B-C
1560	A-B	A-C	A-C	A-C	A-C	A-B	A-C	A-C	A-C	B-C	B-C
1570	A-C	A-C	A-C	A-C	B-C	A-C	A-C	A-C	B-C	B-C	B-C
1580	A-B	A-C	B-C	A-C	A-C	A-C	A-C	A-C	B-C	B-C	B-C
1590	A-C	A-C	B-C	A-C	B-C	A-B	A-C	A-C	B-C	B-C	B-C
1600	A-C	A-C	A-C	A-C	A-C	A-C	B-C	A-C	A-C	B-C	B-C

If a non-standard frequency must be programmed into the RF Generator, the following is a method of computing the position of the necessary jumpers:

A. N1 -- Select the largest value listed that is less than or equal to the carrier frequency (fc):

VALUE OF N1	J14	J16	J17
1792	A-B	B-C	B-C
1536	A-C	B-C	B-C
1280	A-B	B-C	A-C
1024	A-C	B-C	A-C
768	A-B	A-C	B-C
512	A-C	A-C	B-C

B. N2 -- Select the largest value listed that is less than or equal to (fc - N1):

VALUE OF N2	J10	J12	J13	J15
240	A-B	A-B	B-C	B-C
224	A-B	A-C	B-C	B-C
208	A-C	A-B	B-C	A-C
192	A-B	A-C	B-C	A-C
176	A-B	A-B	A-C	B-C
160	A-B	A-C	A-C	B-C
144	A-B	A-B	A-C	A-C

Continued on the next page.

B. Continued.

VALUE OF N2	J10	J12	J13	J15
128	A-B	A-C	A-C	A-C
112	A-C	A-B	B-C	B-C
96	A-C	A-C	B-C	B-C
80	A-C	A-B	B-C	A-C
64	A-C	A-C	B-C	A-C
48	A-C	A-B	A-C	B-C
32	A-C	A-C	A-C	B-C
16	A-C	A-B	A-C	A-C
0	A-C	A-C	A-C	A-C

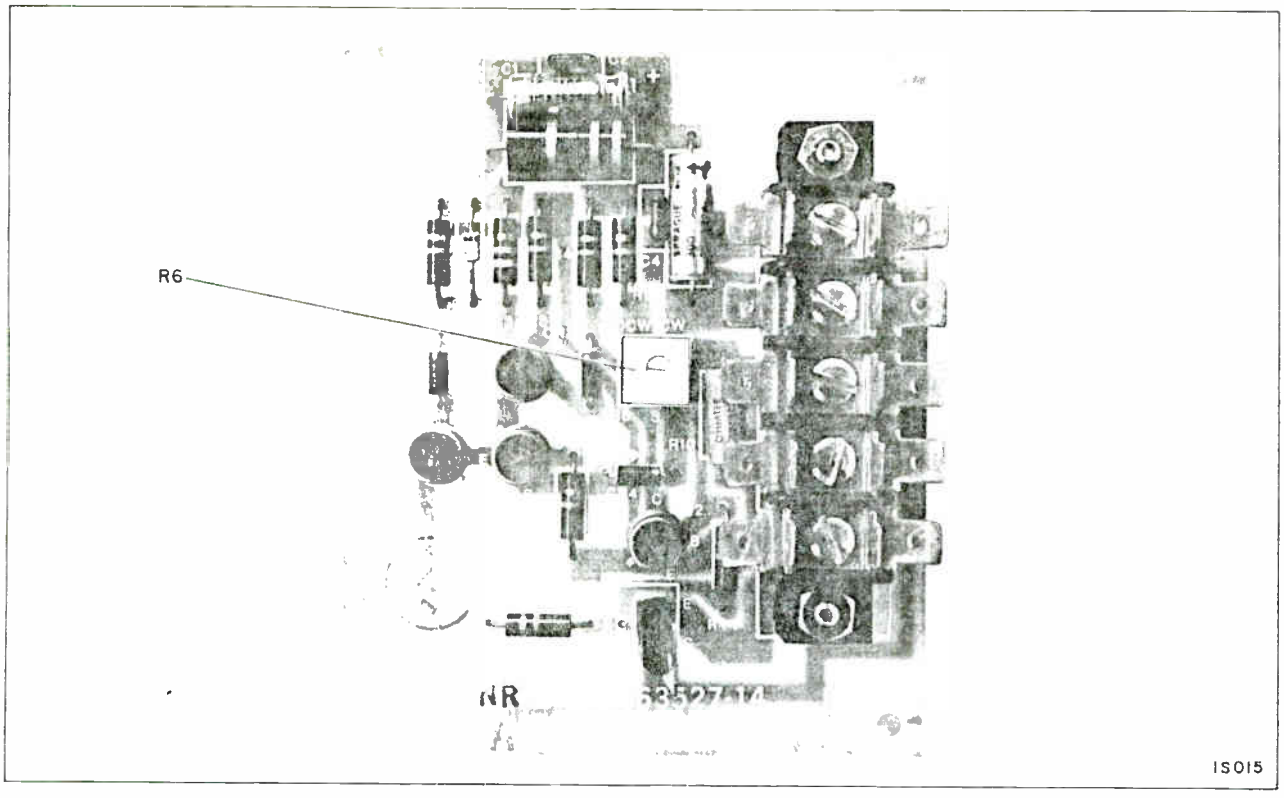
C. N3 -- Select the value that equals fc - (N1 + N2):

VALUE OF N3	J7	J8	J9	J11
15	A-B	A-B	B-C	B-C
14	A-B	A-C	B-C	B-C
13	A-B	A-B	B-C	A-C
12	A-B	A-C	B-C	A-C
11	A-B	A-B	A-C	B-C
10	A-B	A-C	A-C	B-C
9	A-B	A-B	A-C	A-C
8	A-B	A-C	A-C	A-C
7	A-C	A-B	B-C	B-C
6	A-C	A-C	B-C	B-C
5	A-C	A-B	B-C	A-C
4	A-C	A-C	B-C	A-C
3	A-C	A-B	A-C	B-C
2	A-C	A-C	A-C	B-C
1	A-C	A-B	A-C	A-C
0	A-C	A-C	A-C	A-C

D. To check, see if N1 + N2 + N3 equals the carrier frequency (fc)

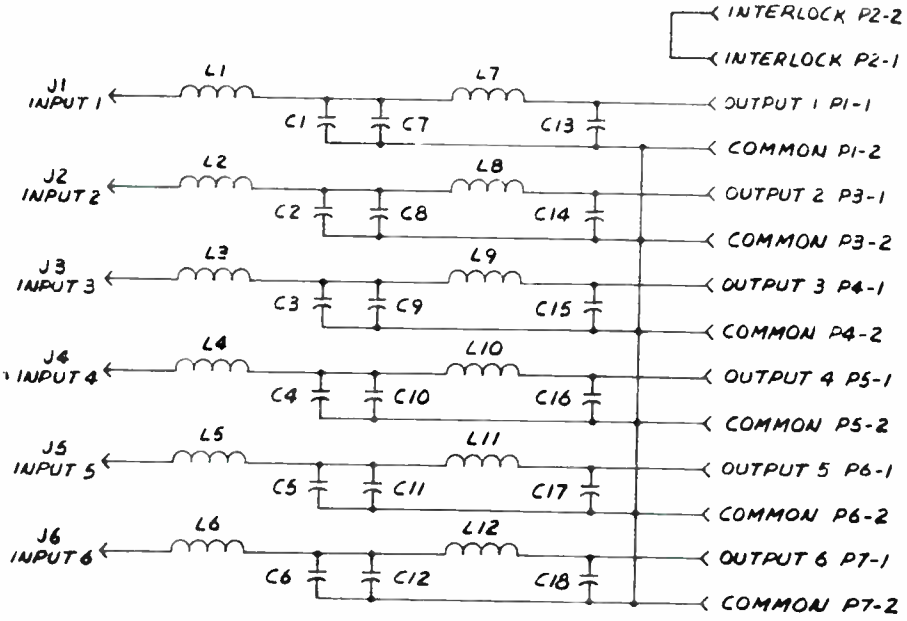
The following are the preset positions for RF coils A8L7 to A8L12. All coils are to be tapped at the same point. This list will provide a starting point. The final setting will be done during the tray tuning.

FREQUENCY (KHZ)	CAPACITORS A8C10-C15(PF)	TURNS A8L7-L12
530-550	9000	10-11
560-570	9000	9-10
580-610	9000	8-9
620-640	9000	7-8
650-690	9000	6-7
700-730	9000	5-6
740-760	9000	4-5
770-820	5200	9-10
830-880	5200	8-9
890-940	5200	7-8
950-1020	5200	6-7
1030-1100	5200	5-6
1110-1140	3280	8-9
1150-1220	3280	7-8
1230-1320	3280	6-7
1330-1430	3280	5-6
1440-1560	3280	4-5
1570-1660	2480	4-5
1670-1700	2480	3-4



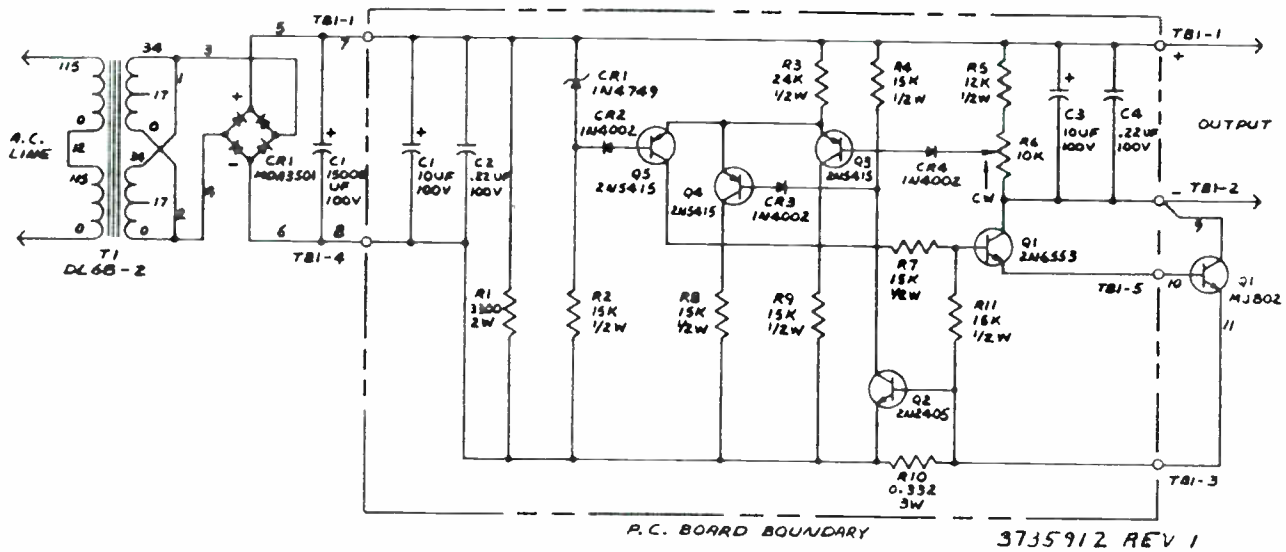
R.F. PRE-DRIVER POWER SUPPLY A1OPS1

The R.F. pre-driver power supply (A1OPS1) is mounted on the inside of the roof and is accessed from the front of the transmitter. It consists of a chassis with a printed wiring board (MI-563527-14) attached to it. It is designed to supply 24-40 volts output (selected by pot R6) at up to 1.5 amps. On the chassis T1, CR1 and C1 make an unregulated supply with approximately 47 volts output. The main path of current flow through the regulator (in the negative leg) is the series pass transistor, Q1 on the chassis and current sensing resistor R10. Voltage regulation is achieved by comparing the reference voltage across CR1 (24 volt zener) with a fraction of the output voltage provided by divider R5 and R6. The two voltages are fed into a differential amplifier made of Q3 and Q5 which drives the Darlington pair of Q1 on the board and Q1 on the chassis to control the output voltage. An over current condition (above approximately 2 amps) will put this supply in the constant current mode. R10 senses the output current and turns Q2 on when the over current condition is reached. This feeds a differential amplifier made of Q4 and Q5 which regulates the current the same way that Q3 and Q5 regulated the voltage in the normal constant voltage mode.

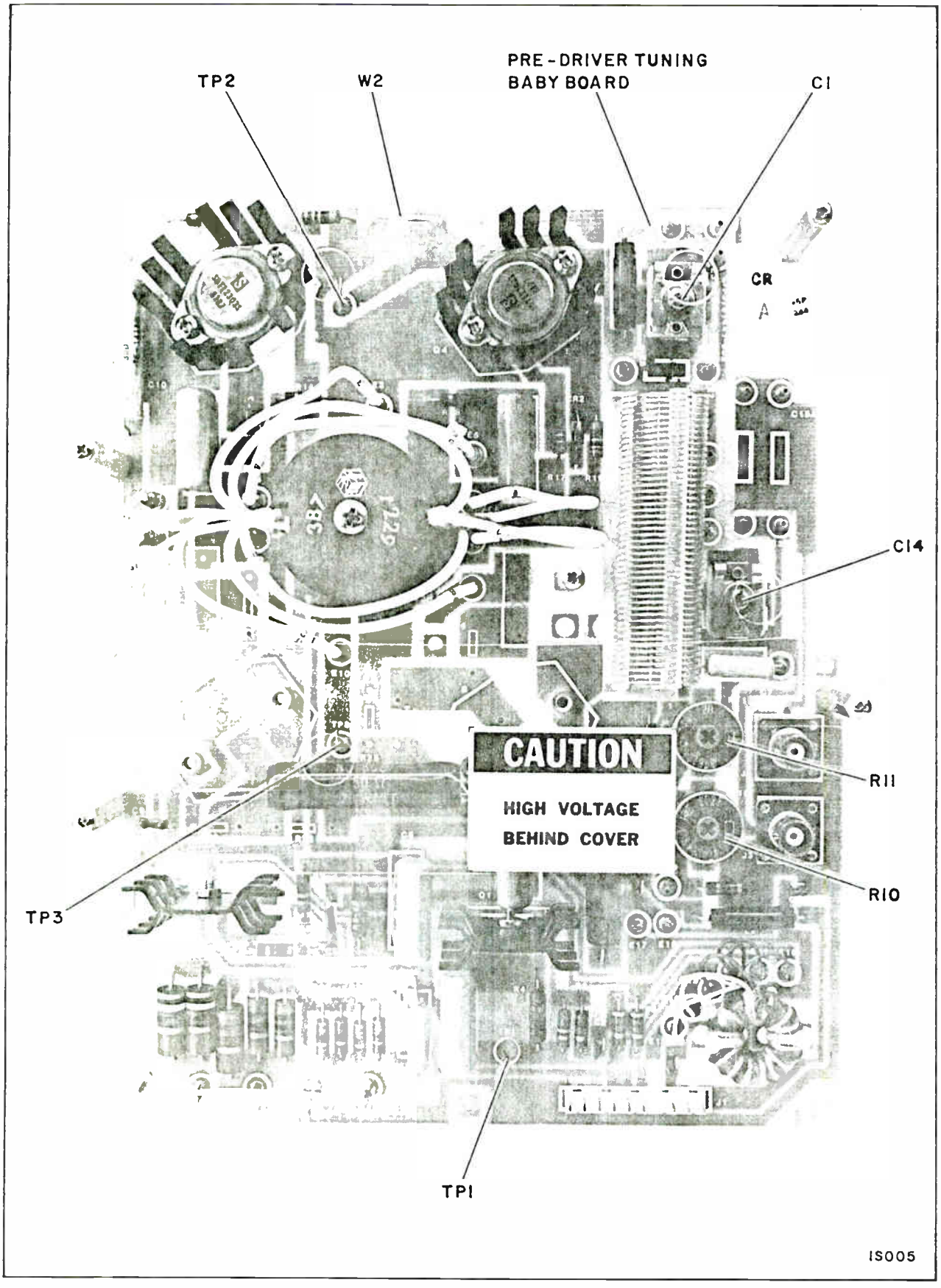


RCA PT. NO.	1	2	3	4	UNITS
MIN. FREQ	525	695	920	1217	KHZ
MAX. FREQ	694	919	1216	1705	KHZ
L1-L6	15	12	10	8	TURNS
	1.6	1.19	0.9	0.67	UHY
L7-L12	13	11	9	7	TURNS
	1.3	1.02	0.77	0.56	UHY
C1-C6	.039	.033	.039	.030	UF
C7-C12	.030	.020	NOT USED	NOT USED	UF
C13-C18	.022	.016	.012	.0091	UF

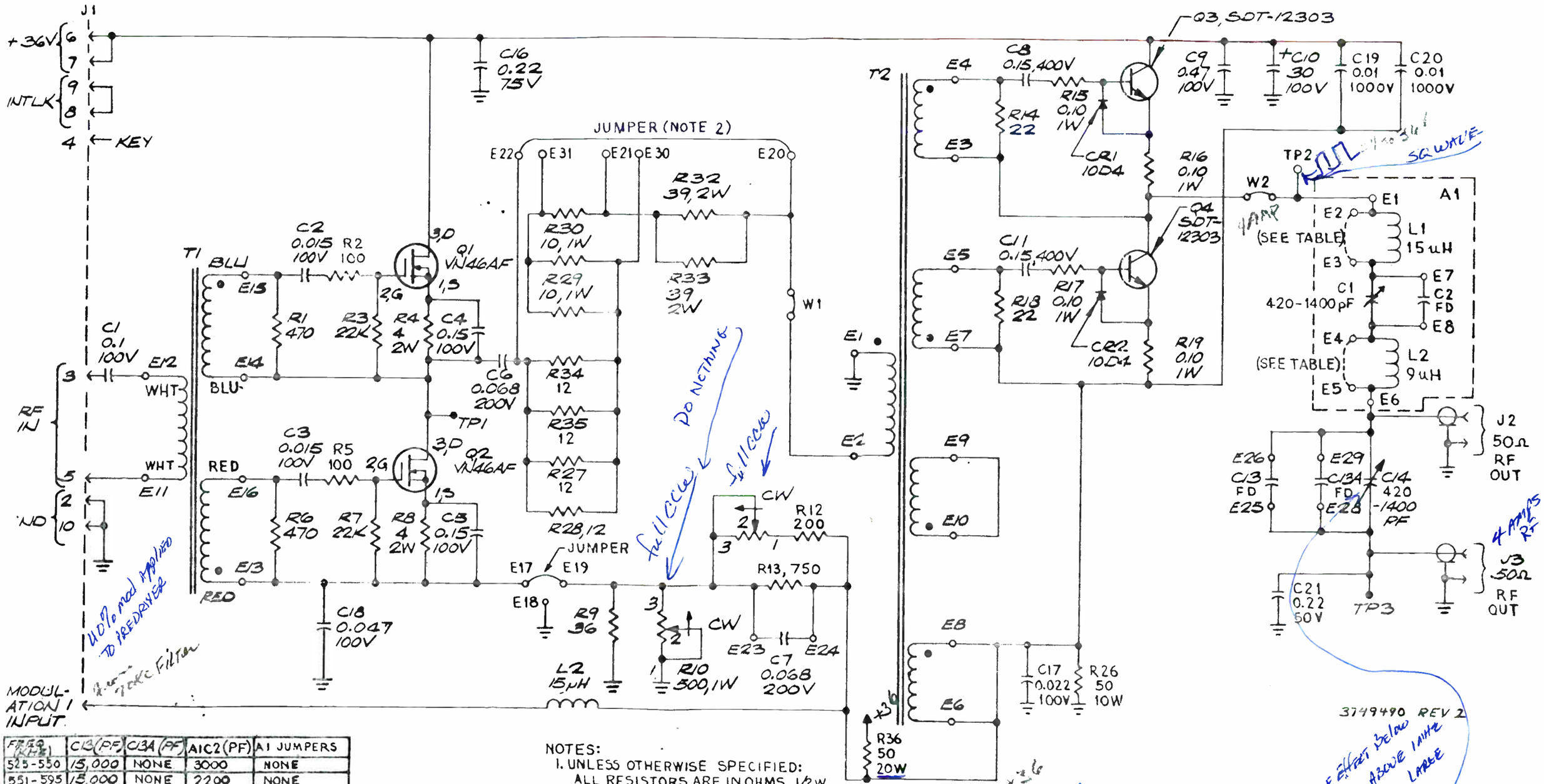
3735714 REV 2



3735912 REV 1



RF PRE-DRIVER A2A3/PRE-DRIVER TUNING BABY BOARD A2A3A1



FREQ (MHz)	C13 (P.F)	C13A (PF)	AIC2 (PF)	A1 JUMPERS
525-550	15,000	NONE	3000	NONE
551-595	15,000	NONE	2200	NONE
596-675	6,800	6,800	1800	NONE
676-760	12,000	NONE	1200	NONE
761-850	4,300	6,800	1800	E4-E5
851-880	4,300	6,800	1200	E4-E5
881-950	3,900	6,800	1200	E4-E5
951-1050	3,900	6,800	620	E4-E5
1051-1160	4,300	4,300	620	E4-E5
1161-1300	7,500	NONE	NONE	E4-E5
1301-1320	6,800	NONE	NONE	E4-E5
1321-1440	6,800	NONE	620	E2-E3
1441-1550	3,000	3,000	620	E2-E3
1551-1705	5,600	NONE	NONE	E2-E3

NOTES:
1. UNLESS OTHERWISE SPECIFIED:
   ALL RESISTORS ARE IN OHMS, 1/2 W.
   ALL CAPACITORS ARE IN MICROFARADS.
2. JUMPER SHOWN FROM E20 TO E22 MAY BE MOVED DURING TUNEUP TO SELECT OPTIMUM DRIVE RESISTANCE.

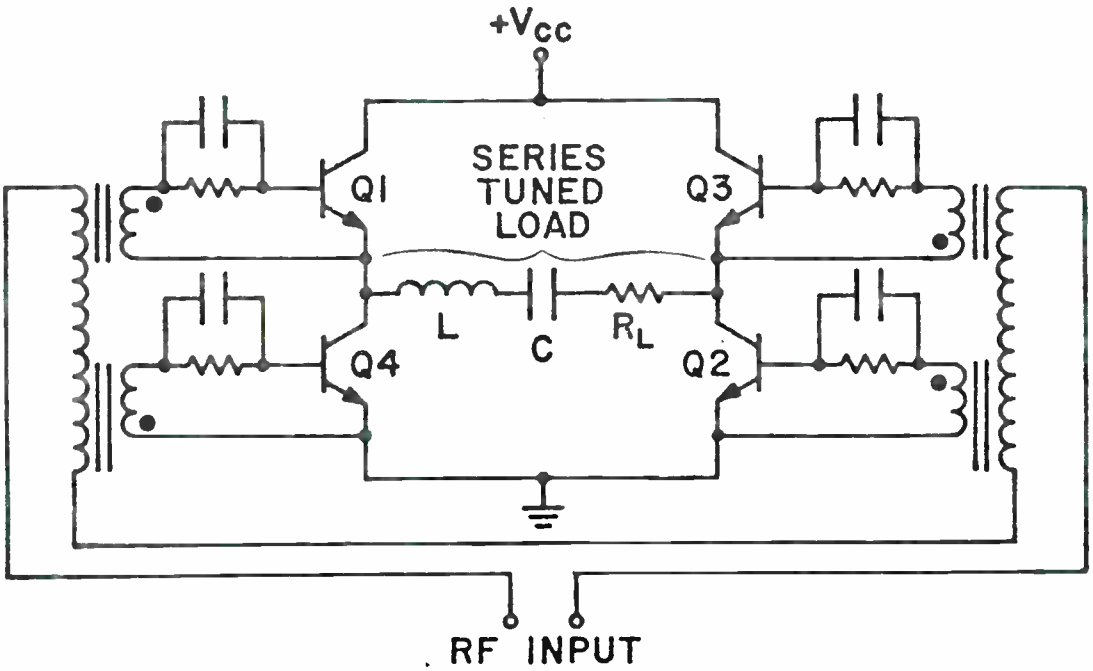
goes to +36 V.D.C. Bus GETS HOW WHEN +36 VOLTS APPLIED

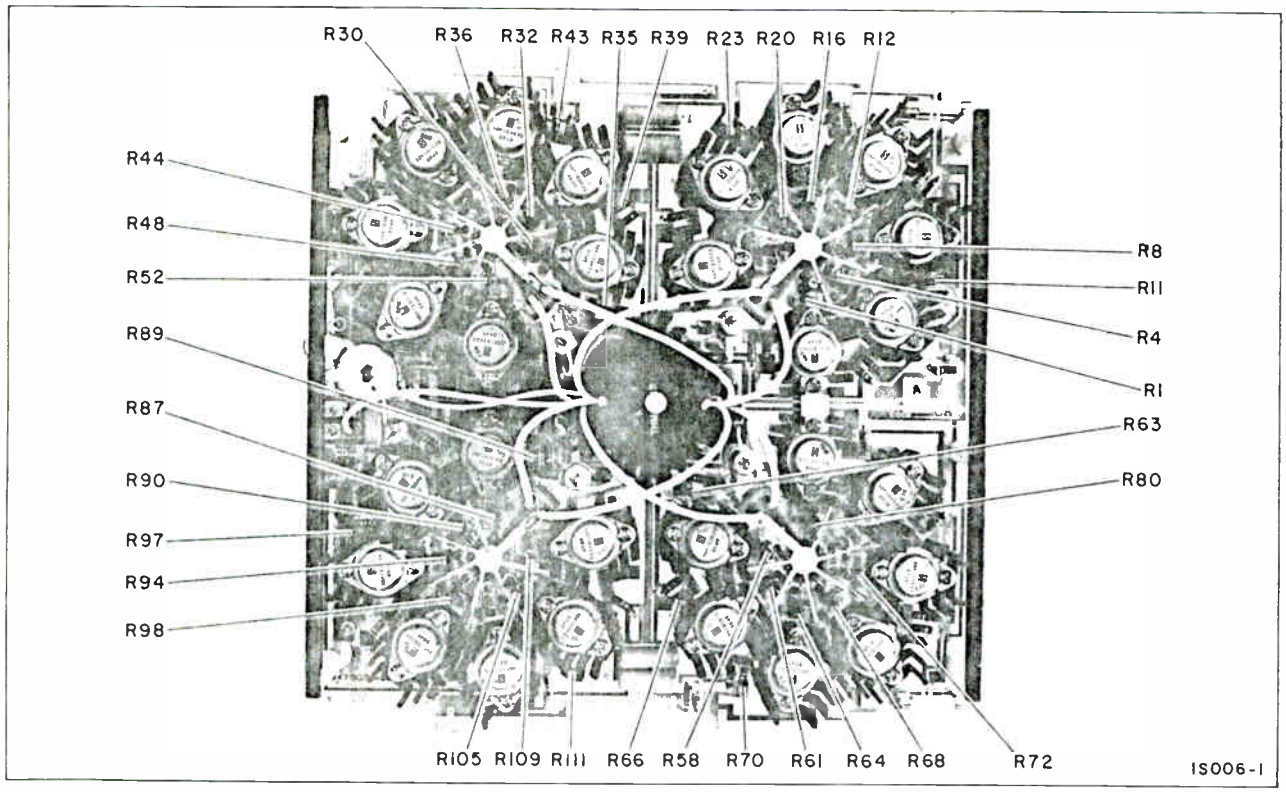
3749490 REV 2

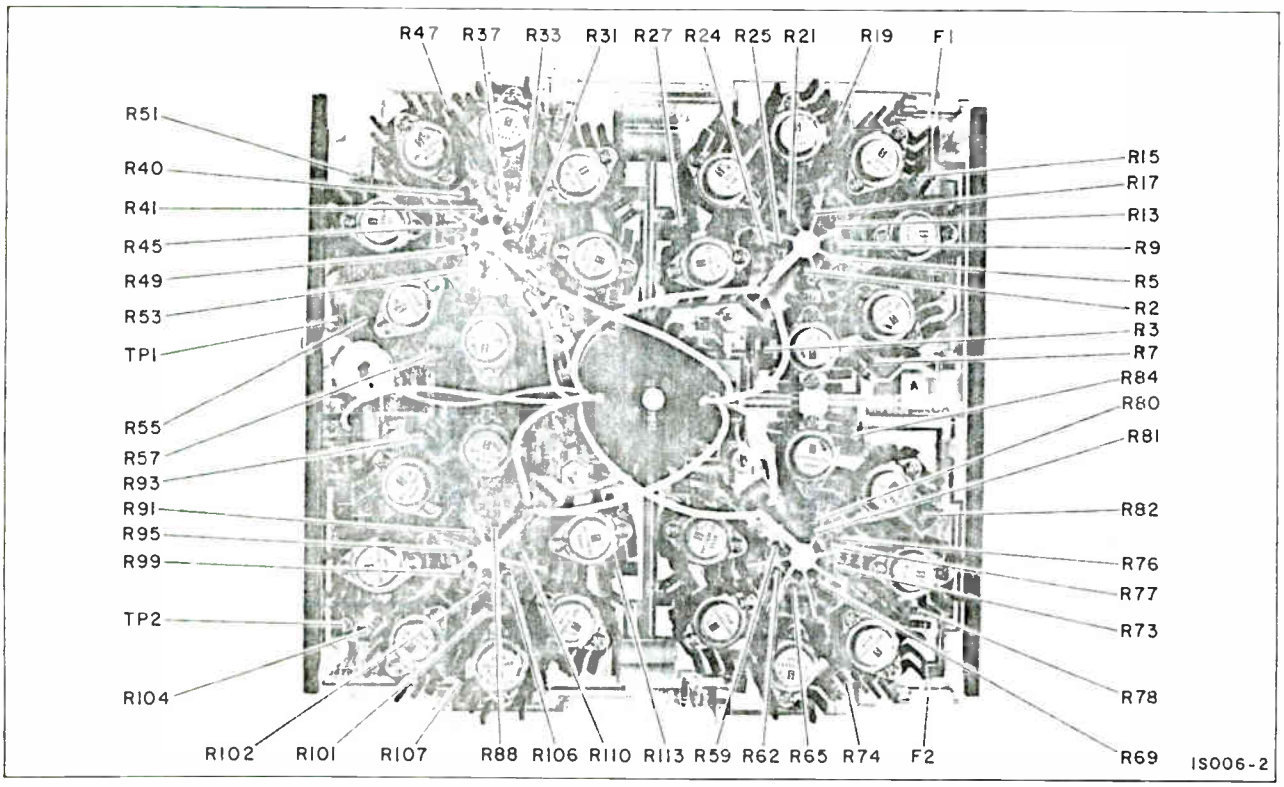
LITTLE EFFECT BELOW 1 MHz., ABOVE 1 MHz PEAKING HAS LARGE EFFECT.

The RF Driver and the RF Amplifiers are all identical circuits. There are six RF amps being fed by the driver. The amplifier itself is a Class D RF bridge amplifier. For the following discussion, the figure below will be used as the model. In the basic Class D RF bridge amplifier, there is a transistor in each arm of the bridge. The RF input to the circuit is by means of an input transformer which has a single primary winding and four independent secondary windings. The polarity of each secondary winding is such that transistors Q1 and Q2 are on and completely saturated for a given half cycle of RF while transistors Q3 and Q4 are turned completely off during the same half RF cycle. When the RF input reverses polarity during the next half cycle, transistors Q3 and Q4 are turned on and transistors Q1 and Q2 are turned off. The time required to turn one set of transistors on and the other set off is extremely short--in the order of a few nanoseconds. During most of the RF cycle, the transistors are turned completely on in a saturated mode or are completely cutoff, and the only time a small amount of power is being lost in the transistors is during the transition period and during the saturation period. The net result is excellent RF power amplifier efficiency which is in the range of 90 to 95 percent. The RC network in the base circuit of each of the transistors produces a small amount of bias to help minimize the storage time effect of the transistors. The voltage produced across the series tuned load network is a square wave and the current through the load resistor, RL, is sinusoidal due to the filtering effect of the series network. The load resistor, having a sine wave of current through it, has a sine wave of voltage across it.

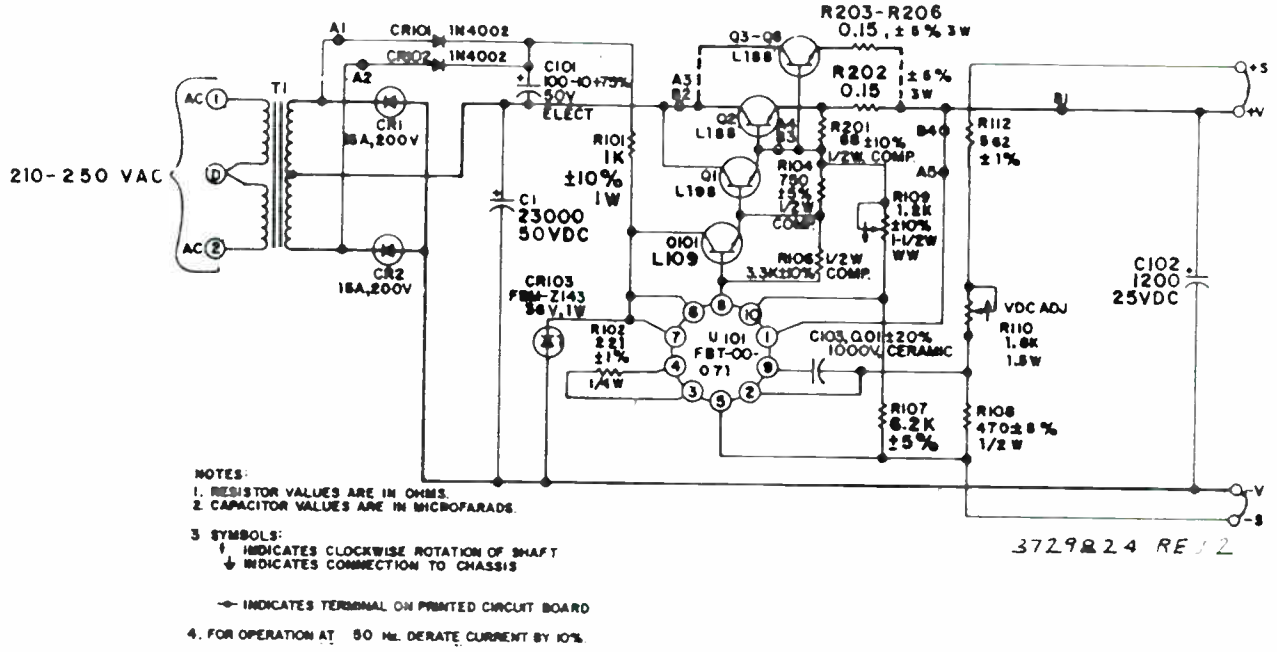
Basic Class D RF Bridge Amplifier







RF DRIVER A6A1/RF AMPLIFIER A6A4-9



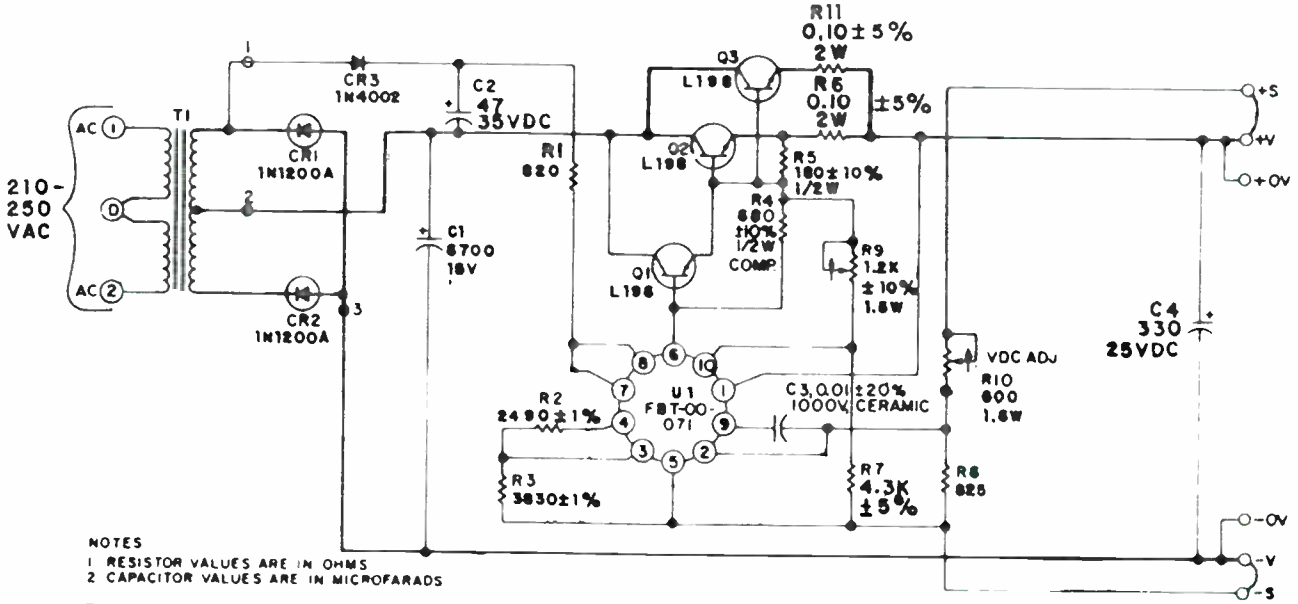
NOTES:
1. RESISTOR VALUES ARE IN OHMS.
2. CAPACITOR VALUES ARE IN MICROFARADS.

3 SYMBOLS:
↑ INDICATES CLOCKWISE ROTATION OF SHAFT
⏚ INDICATES CONNECTION TO CHASSIS

⊸ INDICATES TERMINAL ON PRINTED CIRCUIT BOARD

4. FOR OPERATION AT 50 Hz. DERATE CURRENT BY 10%

3729824 REV 2



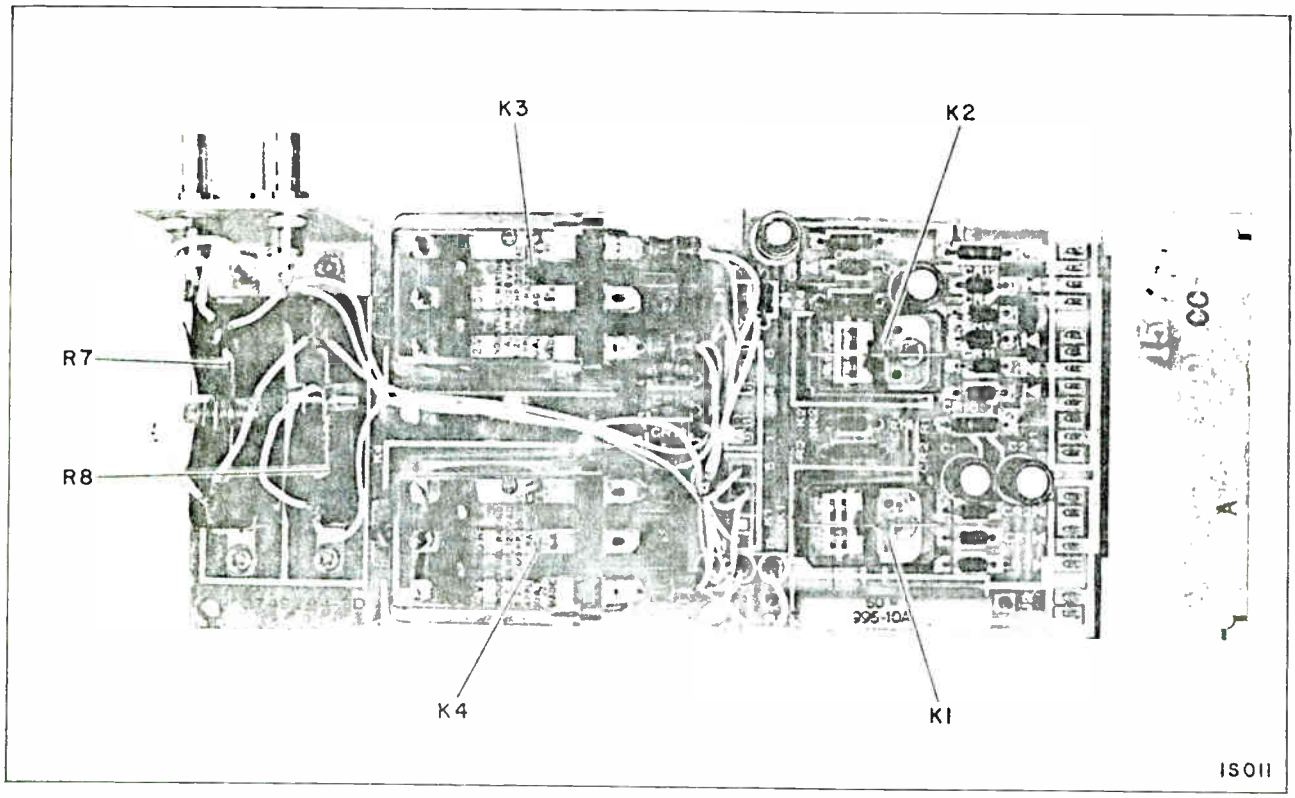
NOTES
1. RESISTOR VALUES ARE IN OHMS
2. CAPACITOR VALUES ARE IN MICROFARADS

3. SYMBOLS
↑ INDICATES CLOCKWISE ROTATION OF SHAFT
⏚ INDICATES CONNECTION TO CHASSIS

⊸ INDICATES TERMINAL ON PRINTED CIRCUIT BOARD

4. FOR OPERATION AT 50 Hz. DERATE CURRENT BY 10%

3729822 REV 1



(OPTIONAL) POWER CUTBACK KIT A2A4

Power Cutback Kit Adjustments and Connections

There are two adjustments on the Power Cutback Kit. The adjustments are made by means of resistors R7 and R8. They are used to keep the sample RF level fed to the modulation monitor at the same level when the power level of the transmitter is changed. The adjustments are as follows:

With the transmitter on low power, the modulation monitor sensitivity pot is adjusted to its proper level. R7 and R8 on the Power Cutback Kit are then adjusted in the following order:

R7 MEDIUM MONITOR LEVEL-Customer Adjustment-At medium power, this resistor is adjusted to give the same level as indicated on the modulation monitor that was set at the low power level.

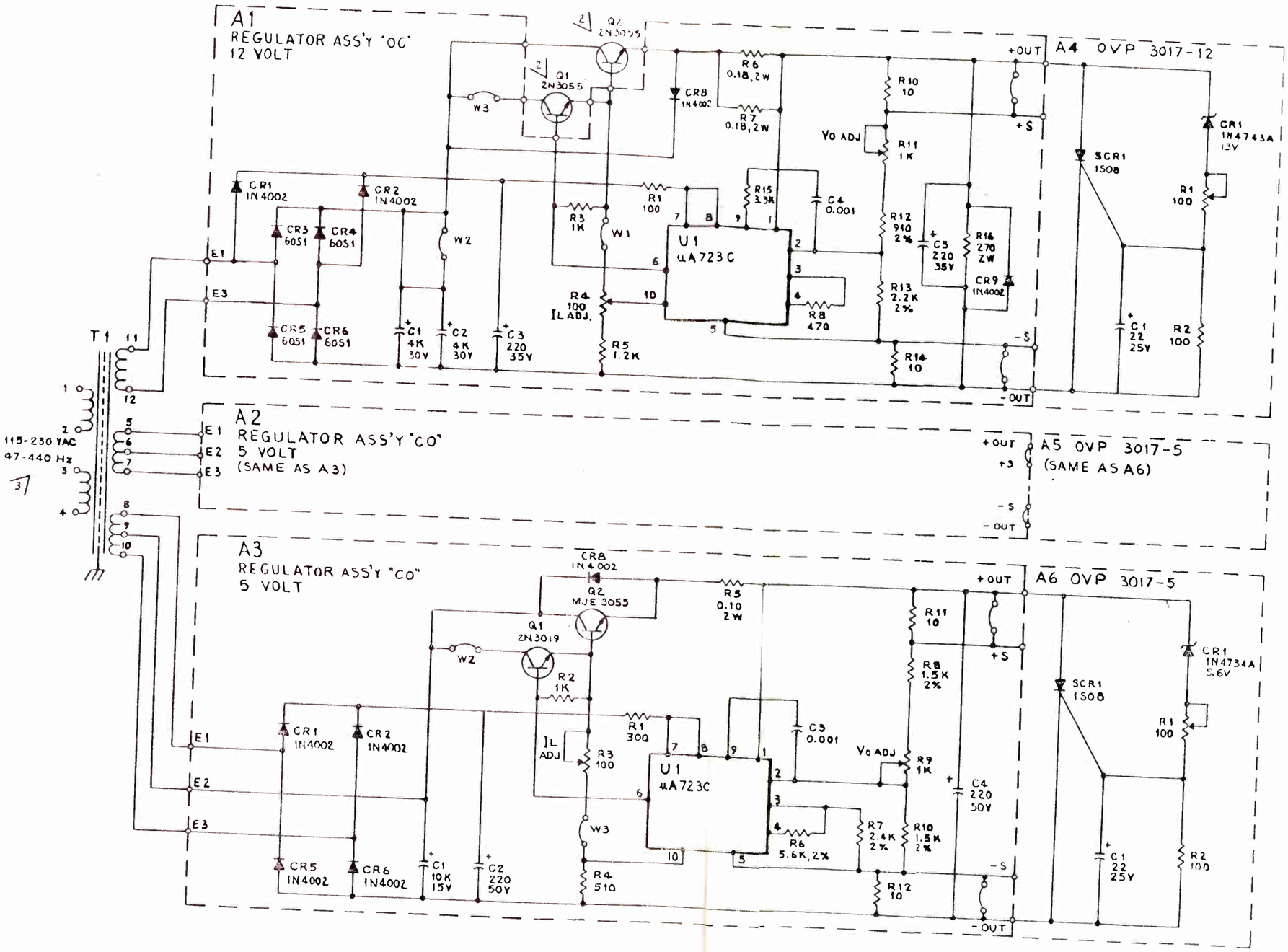
R8 HIGH MONITOR LEVEL-Customer Adjustment-At full power, this resistor is adjusted to give the same level as indicated on the modulation monitor that was set at the low and medium power levels.

The following connection is to be made when the transmitter is used at two power levels:

E1 TO E2 This disables peak stretch when the transmitter is in the low power mode.

following connection is to be made when the transmitter is used at ree power levels:

1 TO E3 This disables peak stretch on medium and low power levels.



NOTES:

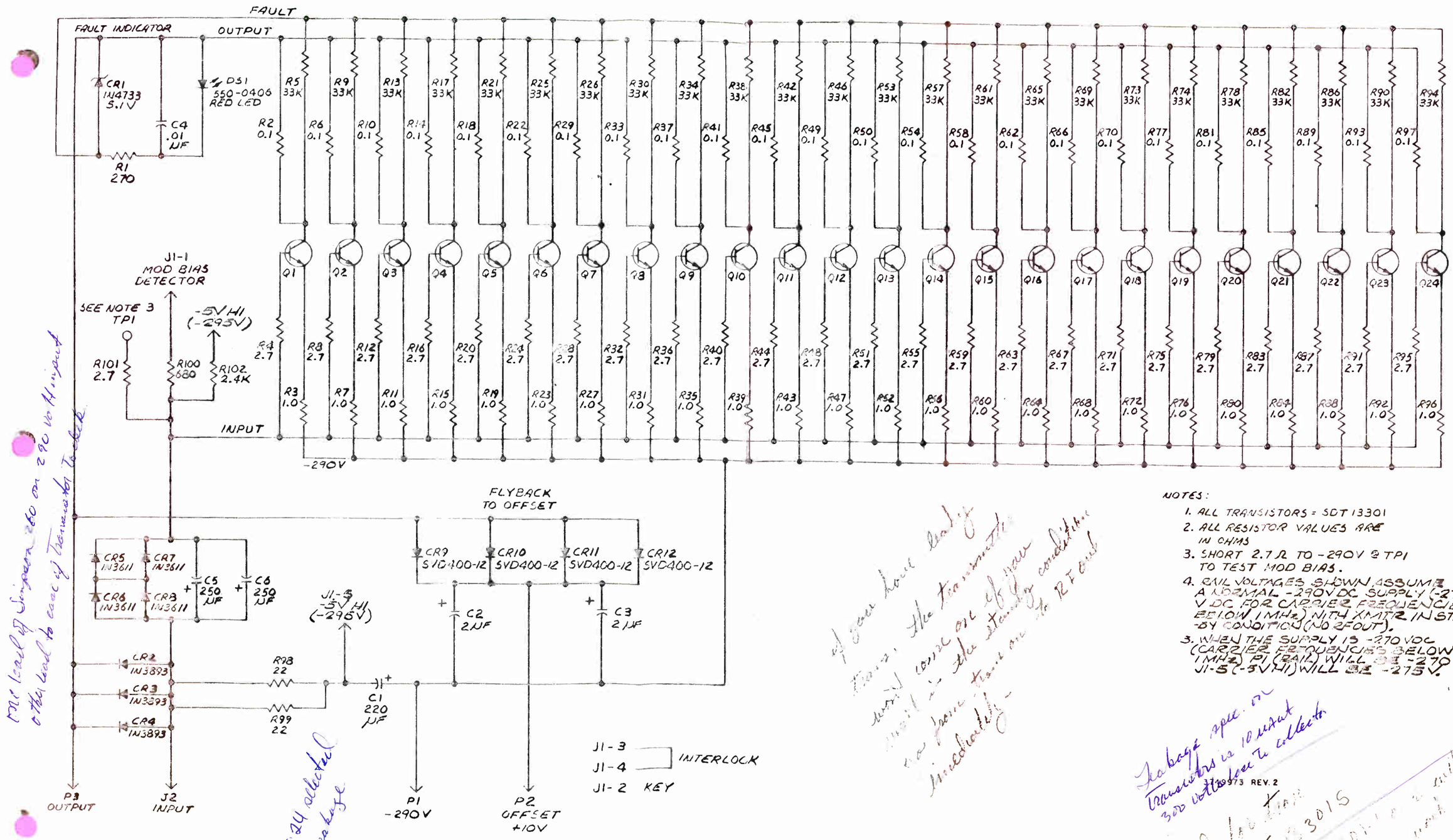
1. UNLESS OTHERWISE SPECIFIED: RESISTORS ARE IN OHMS, 1/2W, ± 5% CAPACITORS ARE IN MICROFARADS.

2. Q1 & Q2 ARE MOUNTED ON CHASSIS.

3.

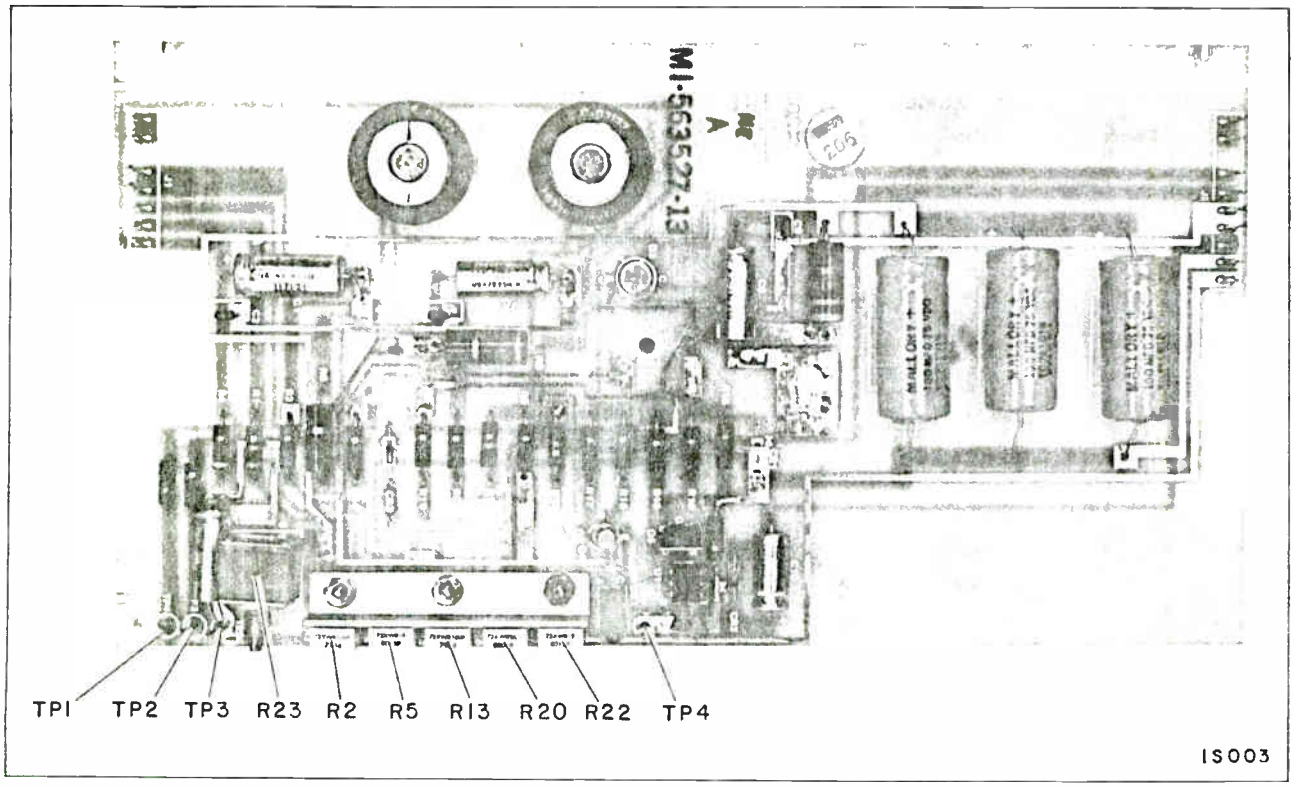
INPUT		JUMPERS	
115VAC	1 & 4	1 TO 3	2 TO 4
230 VAC	1 & 4	2 TO 3	—

3749968 REV 1



NOTES:

1. ALL TRANSISTORS = SDT 13301
2. ALL RESISTOR VALUES ARE IN OHMS
3. SHORT 2.7Ω TO -290V @ TP1 TO TEST MOD BIAS.
4. RAIL VOLTAGES SHOWN ASSUME A NORMAL -290V DC SUPPLY (-270 V DC FOR CARRIER FREQUENCIES BELOW 1 MHz) WITH XMTR IN STAND-BY CONDITION (NO RFOUT).
3. WHEN THE SUPPLY IS -270 VDC (CARRIER FREQUENCIES BELOW 1 MHz) P1 (RAIL) WILL BE -270 V J1-5 (-5V HI) WILL BE -275 V.



LINEARITY CORRECTOR A6A3

Linearity Corrector Adjustments

R2 FIRST GAIN-Factory Adjustment-Controls the amount of gain on the correction. The gain correction starting point for this pot is set by R5.

R5 FIRST THRESHOLD-Factory Adjustment-Sets the first cut-in point for the linearity correction.

R13 SECOND GAIN-Factory Adjustment-Controls the amount of gain of correction starting at the point determined by R20.

R20 SECOND THRESHOLD-Factory Adjustment-Sets the second cut-in point for the linearity correction.

R23 CURRENT-Factory Adjustment-This is the bias setting for the Linearity Corrector circuit. Proper adjustment is such that with no linearity correction, there is no current flow through the Linearity Corrector.

R22 OVERLOAD THRESHOLD-Factory Adjustment-Provides over dissapation protection for the output FETS.

REFERENCE ONLY. SEE A8A3 SCHEMATIC FOR EXACT DETAILS

INPUT FUSE

J1

+12VDC 8

S.C. FILTER AUDIO 7

-5VDC 6

KEY 3

COMM. 4 5

INTLK 1 2

C1 100 25V

C2 0.1 50V

C4 100 12V

C3 0.1 50V

TP3

R1 30K

R24 1K

TP1

R2 100K

1ST GAIN

C11 50 25V

R27 3K

R24 4.7K

R23 1K

1ST THRESH

R6 68 1W

R15 10

Q1 2N2102

Q2 2N2102

R9 1K

R7 330 2W

R23 1K 2W

R8 360 2W

C5 100, 75V

C6 100, 75V

C7 100, 75V

CURRENT

TP2

R23 1K

R20 1K

R11 20K

2ND GAIN

R12 20K CW

R13 100K

CR3 1N914

R14 1K

Q3 2N2905

R21 1.1K

2ND THRESH

R26 1K

TP4

R8 5.6K

Q5 VN88AF

D3

G2

S1

R16 1K

DS1 5082-4670

OVERLOAD

R17 2.2

Q4 2N2222

U1 4N25

OVLD THRESH

R22 1K CW

C10 23 25V

CR2 FD600

+32V.D.

J2

INTLK

.5, 100V

C8 5 100V

C9 0.1 100V

R19 1.1K

D

G

S

1K G

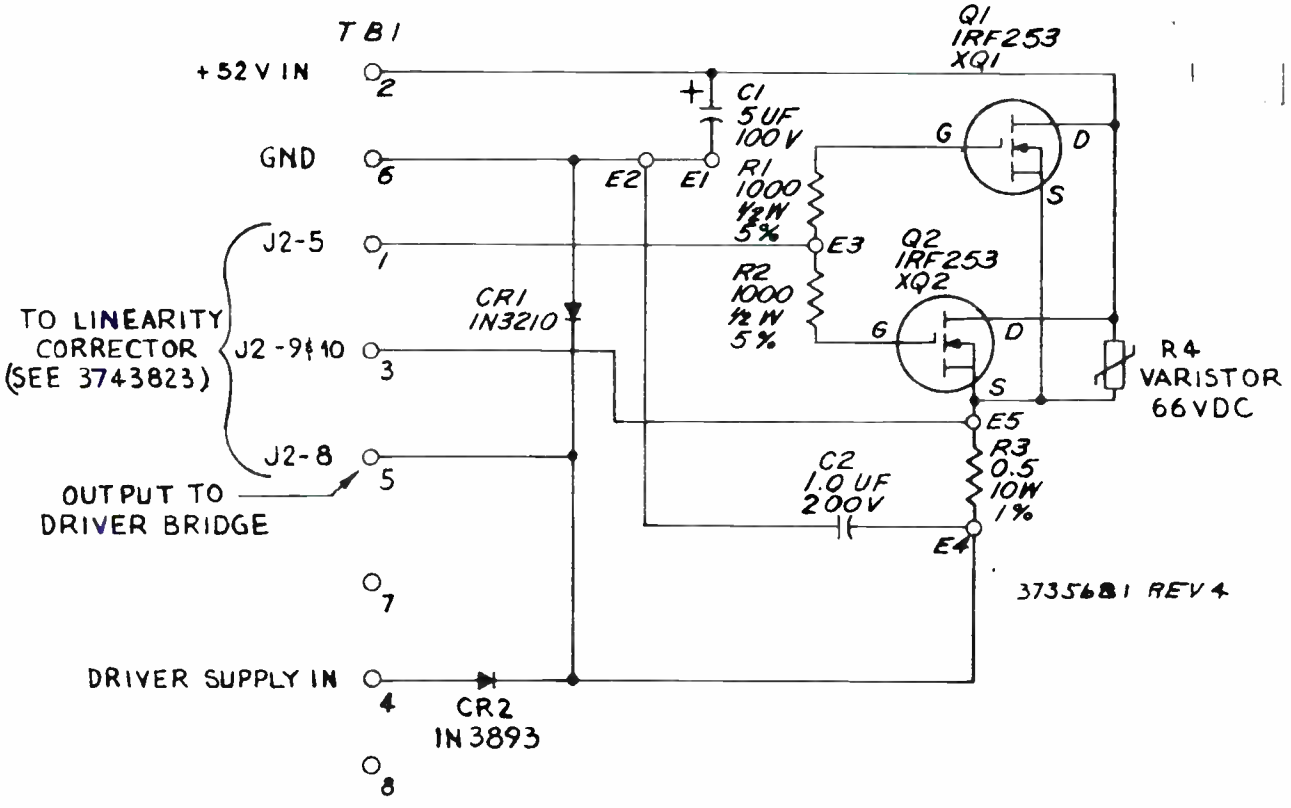
.068 100V

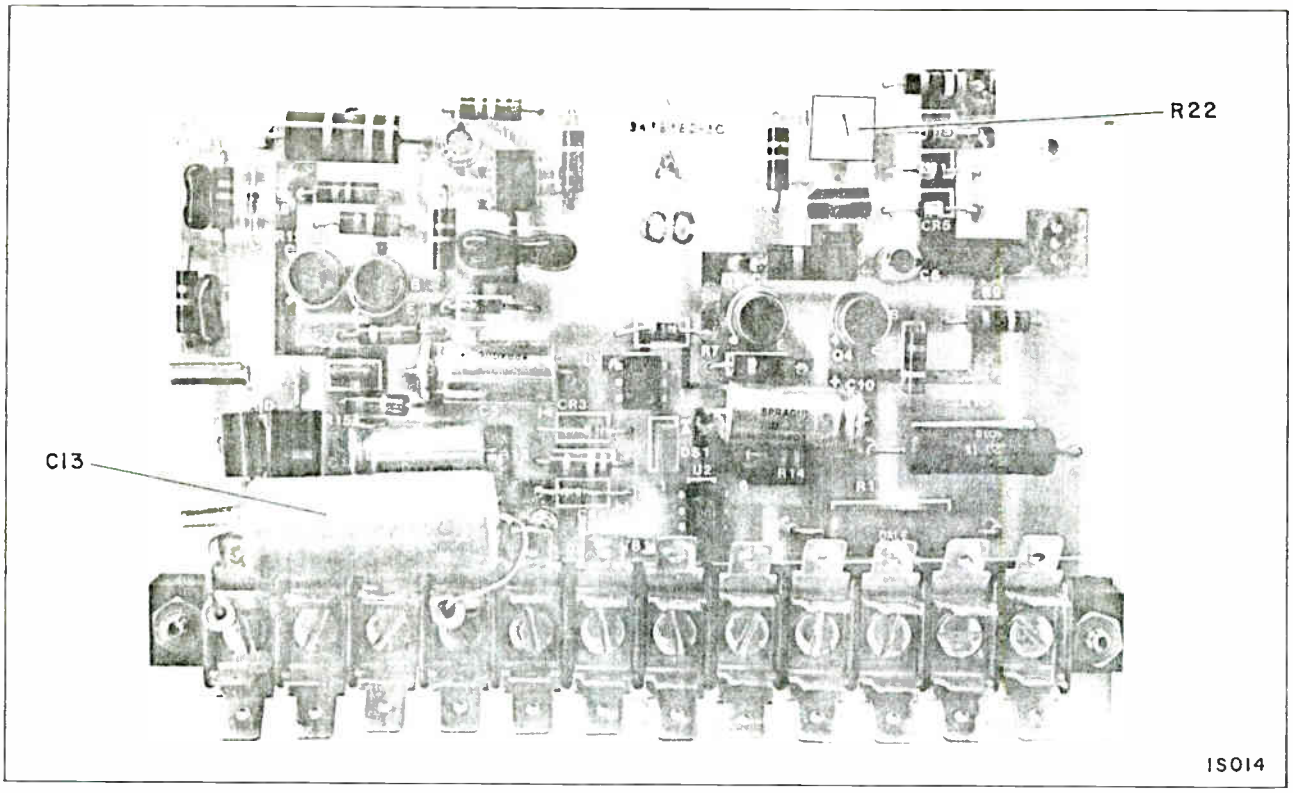
0.5 10W

OUTPUT TO DRIVER

DRIVE SUPPLY

3743823 REV S





LINEARITY POWER SUPPLY A9PS3

The linearity power supply consists of two units, the chassis (A9PS3) and the printed wiring board (A9A1) (MI-563527-4). Both are located on the rear horizontal shelf assembly. T1, CR1 and C1 on the chassis produce an unregulated output of approximately 60 volts D.C. The main path of current flow through the regulator is through Q1 and Q2 on the chassis, parallelled series pass transistors, through R10 and R11 on the board, current sensing resistors and out TB1-9 and TB1-10. Voltage regulation is achieved by using Q6 to compare a reference level consisting of zener diodes CR5, CR6 and CR7 (total reference voltage 14.1 volts) to a fraction of the output voltage selected by R21, R22 and R23. R22 should be adjusted for 52 volts at output TB1-9. Q6 controls the output voltage by driving Q5 which drives Q3 on the chassis which drives the series pass transistors Q1 and Q2. Output current is sensed by R10 and R11. Excess current (between 4 and 5 amps) will turn on Q4 through R8 and R9. When Q4 is turned on, it will light DS1 to indicate the current overload and also turn on opto-isolators U2 (used to signal the logic of the over current condition) and U3 (used to latch the supply in the over current mode through Q3 and fold back the output current to a low value). Both Q3 and Q4 reduce the output voltage through CR8, R17, Q5 and (on the chassis) Q3, Q1 and Q2. Timing circuit U1 output (pin 3) is normally at the unregulated supply voltage (+60 volts). Every approximately two seconds it puts out a pulse (approx. +45 volt level) for approximately 100 milliseconds. This pulse resets the overcurrent mode latch of Q3 and U3 through Q1 and Q2. If an over current still exists, Q4 will limit the output during these pulses. If the excess load is no longer present, these pulses will return the supply to normal operation.

FAULT

FAULT INDICATOR OUTPUT

CR1 1N4733 5.1V

C4 .01 MF

DS1 550-0406 RED LED

R1 270

R2 0.1 R6 0.1 R10 0.1 R14 0.1 R18 0.1 R22 0.1 R29 0.1 R33 0.1 R37 0.1 R41 0.1 R45 0.1 R49 0.1 R50 0.1 R54 0.1 R58 0.1 R62 0.1 R66 0.1 R70 0.1 R77 0.1 R81 0.1 R85 0.1 R89 0.1 R93 0.1 R97 0.1

R5 33K R9 33K R13 33K R17 33K R21 33K R25 33K R26 33K R30 33K R34 33K R38 33K R42 33K R46 33K R53 33K R57 33K R61 33K R65 33K R69 33K R73 33K R74 33K R78 33K R82 33K R86 33K R90 33K R94 33K

Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15 Q16 Q17 Q18 Q19 Q20 Q21 Q22 Q23 Q24

R4 2.7 R8 2.7 R12 2.7 R16 2.7 R20 2.7 R24 2.7 R28 2.7 R32 2.7 R36 2.7 R40 2.7 R44 2.7 R48 2.7 R51 2.7 R55 2.7 R59 2.7 R63 2.7 R67 2.7 R71 2.7 R75 2.7 R79 2.7 R83 2.7 R87 2.7 R91 2.7 R95 2.7

R3 1.0 R7 1.0 R11 1.0 R15 1.0 R19 1.0 R23 1.0 R27 1.0 R31 1.0 R35 1.0 R39 1.0 R43 1.0 R47 1.0 R52 1.0 R56 1.0 R60 1.0 R64 1.0 R68 1.0 R72 1.0 R76 1.0 R80 1.0 R84 1.0 R88 1.0 R92 1.0 R96 1.0

J1-1 MOD BIAS DETECTOR

SEE NOTE 3 TP1

-5V HI (-295V)

R101 2.7 R100 680 R102 2.4K

INPUT

-290V

FLYBACK TO OFFSET

CR9 S10400-12 CR10 SVD400-12 CR11 SVD400-12 CR12 SVD400-12

C2 2MF C3 2MF

CR5 IN3611 CR7 IN3611 CR6 IN3611 CR8 IN3611

C5 250 MF C6 250 MF

J1-3 -5V HI (-295V)

CR2 IN3893 CR3 IN3893 CR4 IN3893

R98 22 R99 22

C1 220 MF

J1-3 J1-4 INTERLOCK

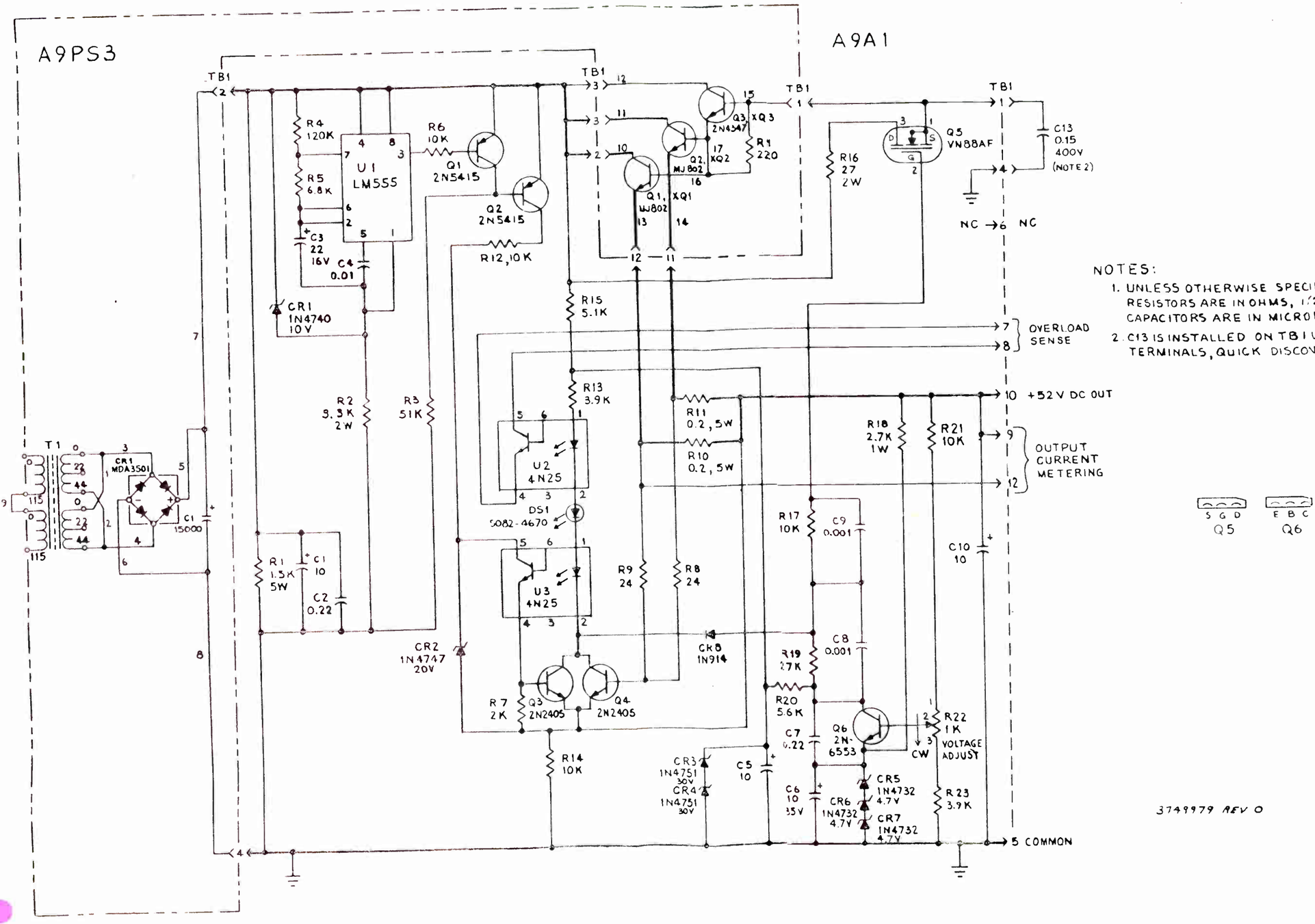
J1-2 KEY

P3 OUTPUT J2 INPUT P1 -290V P2 OFFSET +10V

NOTES:

1. ALL TRANSISTORS = SDT 13301
2. ALL RESISTOR VALUES ARE IN OHMS
3. SHORT 2.7Ω TO -290V @ TP1 TO TEST MOD BIAS.
4. RAIL VOLTAGES SHOWN ASSUME A NORMAL -290V DC SUPPLY (-270 V DC FOR CARRIER FREQUENCIES BELOW 1 MHz) WITH XMTR IN STAND-BY CONDITION (NO RFOUT).
5. WHEN THE SUPPLY IS -270 VDC (CARRIER FREQUENCIES BELOW 1 MHz) P1 (RAIL) WILL BE -270 V J1-5 (-5V HI) WILL BE -275 V.

373973 REV. 2



NOTES:

1. UNLESS OTHERWISE SPECIFIED: RESISTORS ARE IN OHMS, 1/2 W. CAPACITORS ARE IN MICROFARADS, 100 VOLTS.
2. C13 IS INSTALLED ON TB1 USING 2 TERMINALS, QUICK DISCONNECT.

S G D Q5 E B C Q6

3749979 REV O

Modulator Driver Board

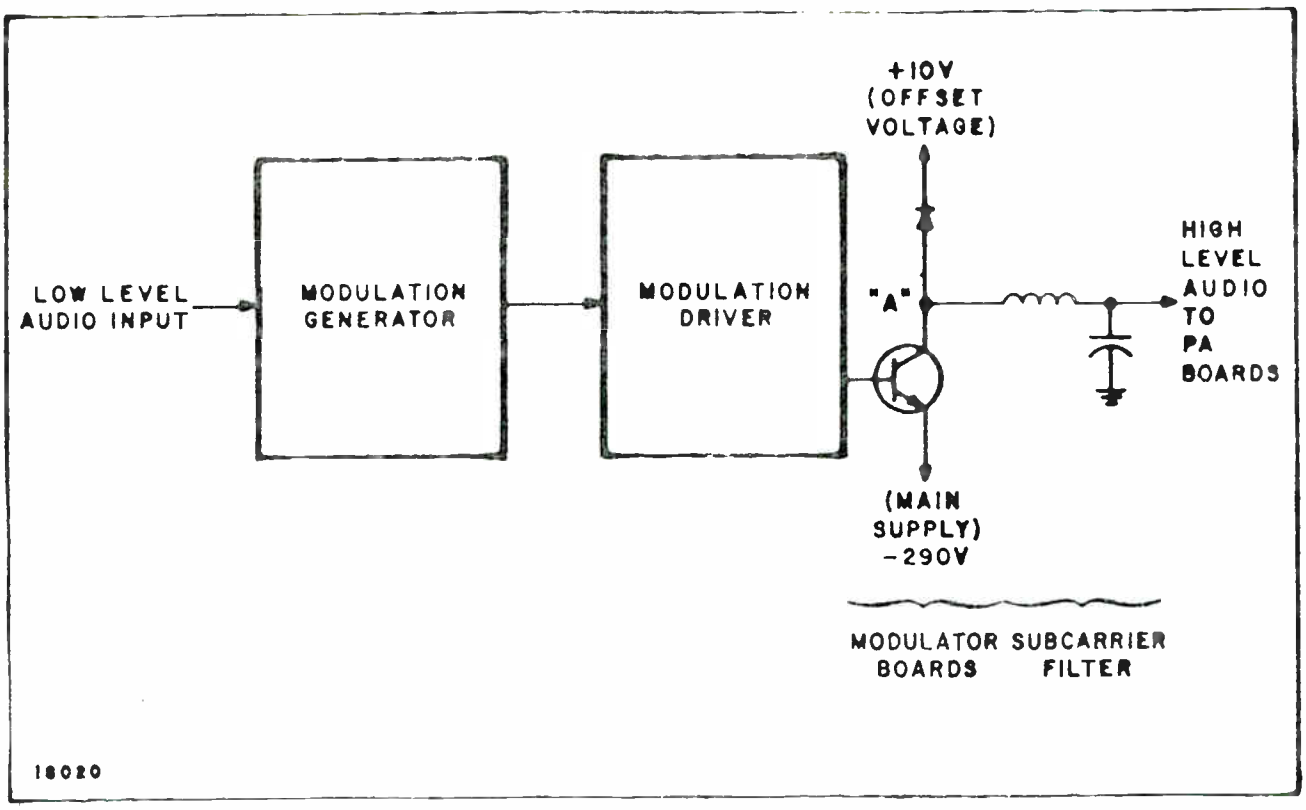
Since the Modulator Generator is referenced to ground and the Modulator Driver and Modulators are referenced to -290 volts, an Opto Isolator is used to change the reference level. The rest of the board consists of a number of stages leading to four outputs. Those outputs drive the four Modulators with -4 volts (with respect to the -290 volt supply) on each of the J2 pins which serve as test points for the outputs to the Modulators (see the list below) when the modulator transistors are off, and +3 volts on those same points when the modulator transistors are on. As these voltages are with respect to the -290 volt supply, USE EXTREME CAUTION WHEN MAKING THESE MEASUREMENTS. The following list will summarize the test points on the Modulator Driver Board:

Test Point Voltages-With Respect to -290 Volts

Test Point	Modulator Transistors Off	Modulator Transistors On
TP1	+12 V	-5 V
TP2	0 V	-5 V
TP3	-5 V	+5 V
TP4	-4 V	+3 V

J2 can also be used for test points. Pins 3, 1, 6, and 7 are the outputs to modulators 1, 2, 3, and 4 respectively. They should have the same level signals as TP4.

MODULATOR SYSTEM

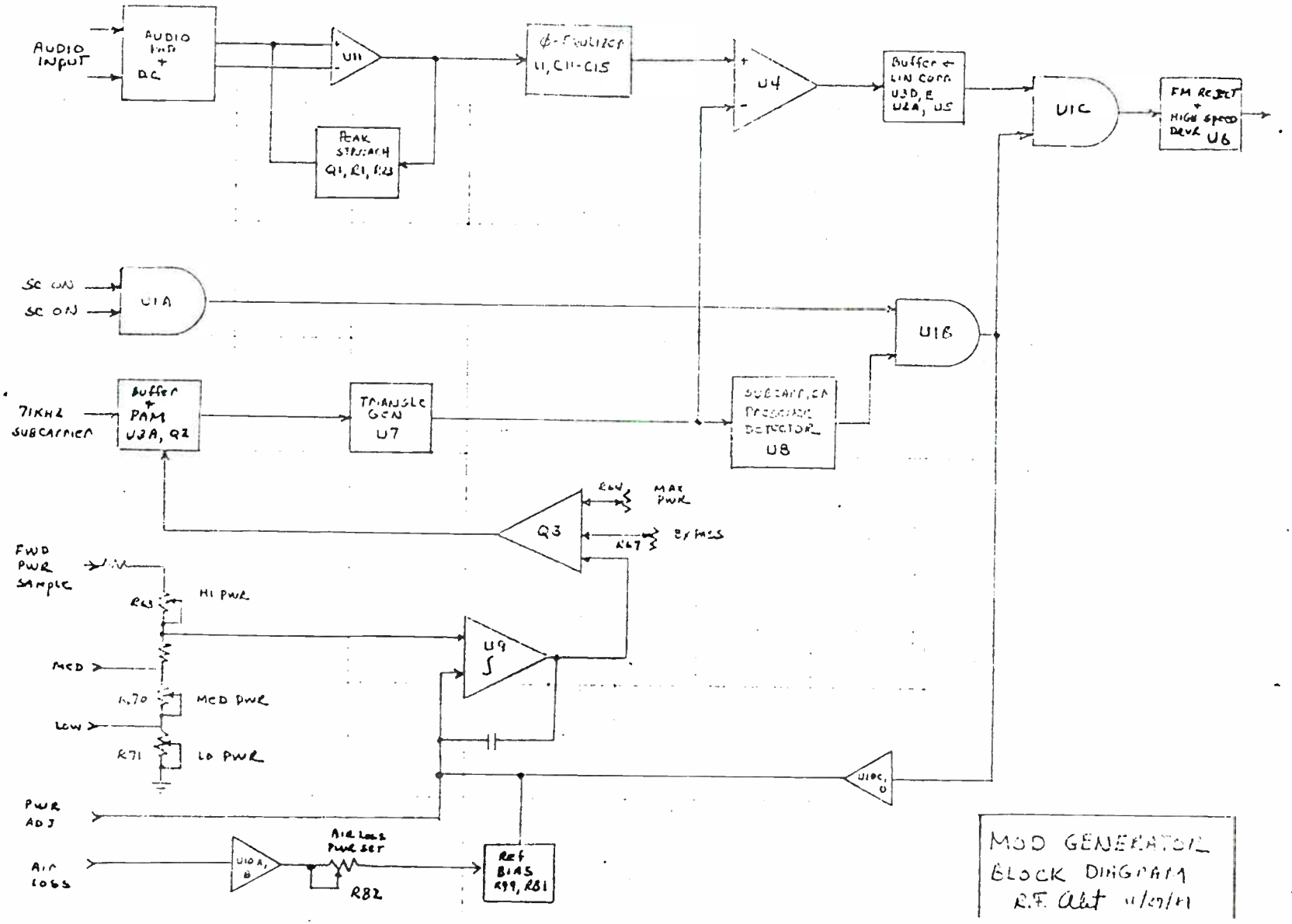


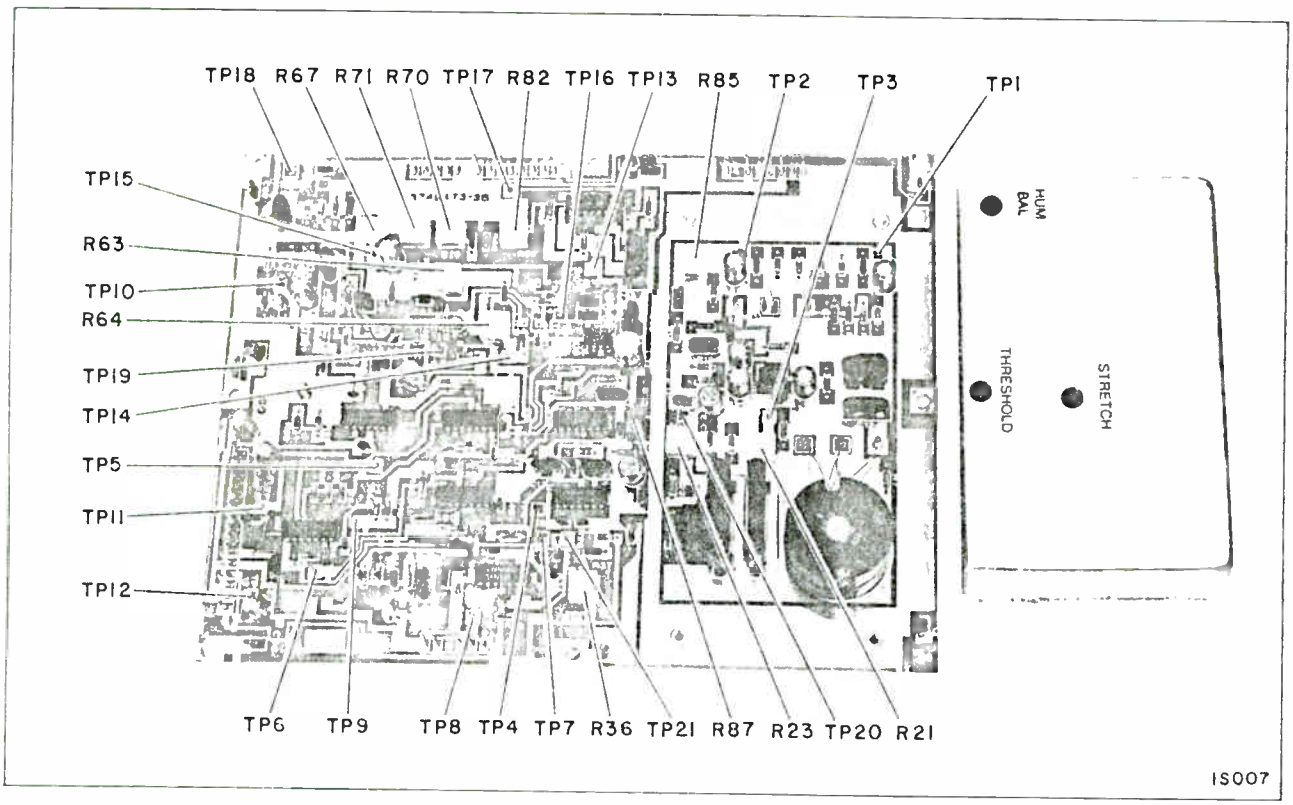
Simplified Drawing of the BTA-5SS Modulator System

GENERAL THEORY

The purpose of the BTA-5SS modulator system is to provide a high level audio signal which will be used by the PA trays as their source of power. At 5 kilowatts carrier power with no audio modulation, the modulator system puts out approximately 105 volts at 60 amps (this input to the P.A. trays causes them to supply 5 kilowatts of R.F. power). Negative modulation causes this voltage to become smaller and positive modulation causes this voltage to be larger. At 95% modulation the negative peak is -105 volts x (1.00-.95) = -5.25 volts and the positive peak is -105 volts x (1.00 + .95) = -204.75 volts. At reduced carrier power levels, all of these values would be proportionally smaller.

Looking at the simplified drawing, the modulator transistor is turned on and off at a 71.43 KHz rate. When it is on, -290 volts is applied to point "A" and the current in the inductor builds up. When it is off, the inductor generates a flyback voltage at point "A" of +10 volts and the diode conducts the inductor current to the offset voltage. Inductor current decreases during this period. For a fixed duty cycle, the capacitor voltage reaches a steady-state level when the output current equals the average inductor current. This would correspond to no audio modulation. When audio modulation is applied, the duty cycle is varied although the switching frequency stays fixed at 71.43 kHz. For negative modulation the percentage on time for the transistor is decreased, decreasing the average inductor current and the capacitor voltage. For positive modulation the percentage on time is increased, increasing the average inductor current and the capacitor voltage.





MODULATION GENERATOR BOARD A2A1

Modulation Generator Board Adjustments

R21 STRETCH-Factory Adjustment-Sets the amount of positive peak correction.
R23 THRESHOLD-Factory Adjustment-Sets the cut-in point of R21's correction.
R36 SUBCARRIER THRESHOLD-Factory Adjustment-Adjusted to minimize FM noise in the modulation caused by switching jitter.
R64 MAXIMUM POWER-Factory Adjustment-Limits the maximum power out of the transmitter in case of loss of the closed loop power limit. This control is not part of that loop. Power is limited by R64 to 6 KW.
R67 HIGH VOLTAGE DISABLE-Customer Adjustment-Controls the subcarrier pulse width on the Modulation Generator Board for troubleshooting, and is active only with the transmitter in the High Voltage Disable position.
R82 AIR LOSS POWER SET-Factory Adjustment-Limits the maximum safe carrier power to 500 watts after an air loss in the RF or Modulator section.
R85 HUM BALANCE-Customer Adjustment-Used with the setting of W1 to cancel hum and null the signal to noise at the transmitter output.
R87 POSITIVE PEAK LIMIT-Factory Adjustment-Limits the peak modulation level to 130% to prevent damage to the solid state devices.

The following are a part of the closed loop power control system and must be adjusted in the order given and at the power level stated:

R63 HIGH POWER SET-Customer Adjustment-(1st)-Sets normal high power level.
R70 MEDIUM POWER SET-Customer Adjustment-(2nd)-Sets medium power level.
R71 LOW POWER SET-Customer Adjustment-(3rd)-Sets low power level.

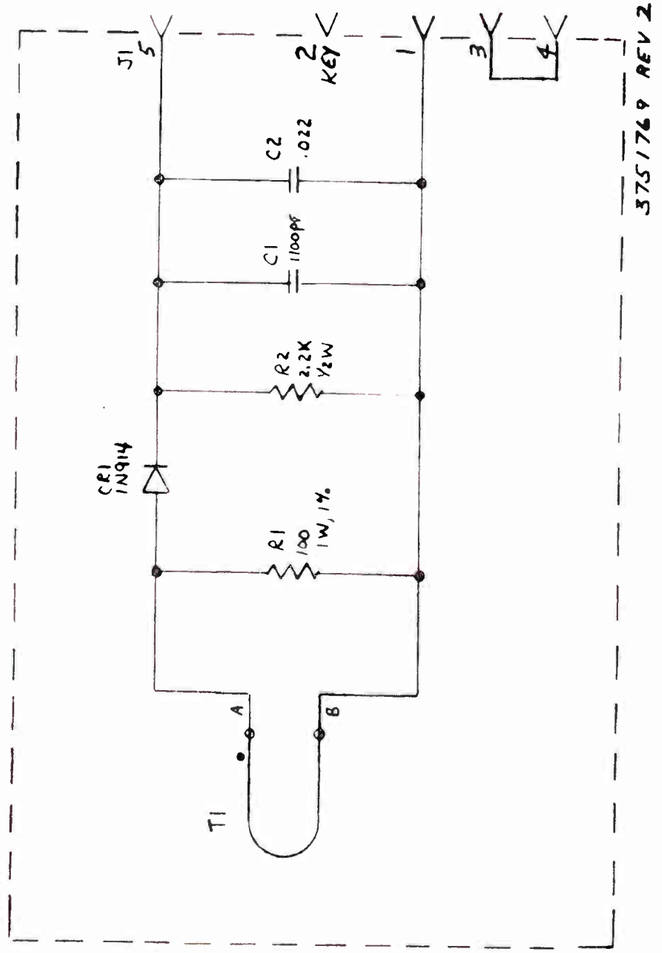
Customer Setting-W1 connects either E1 to E2 or E1 to E3, which ever, along with R85, results in the best signal to noise ratio.

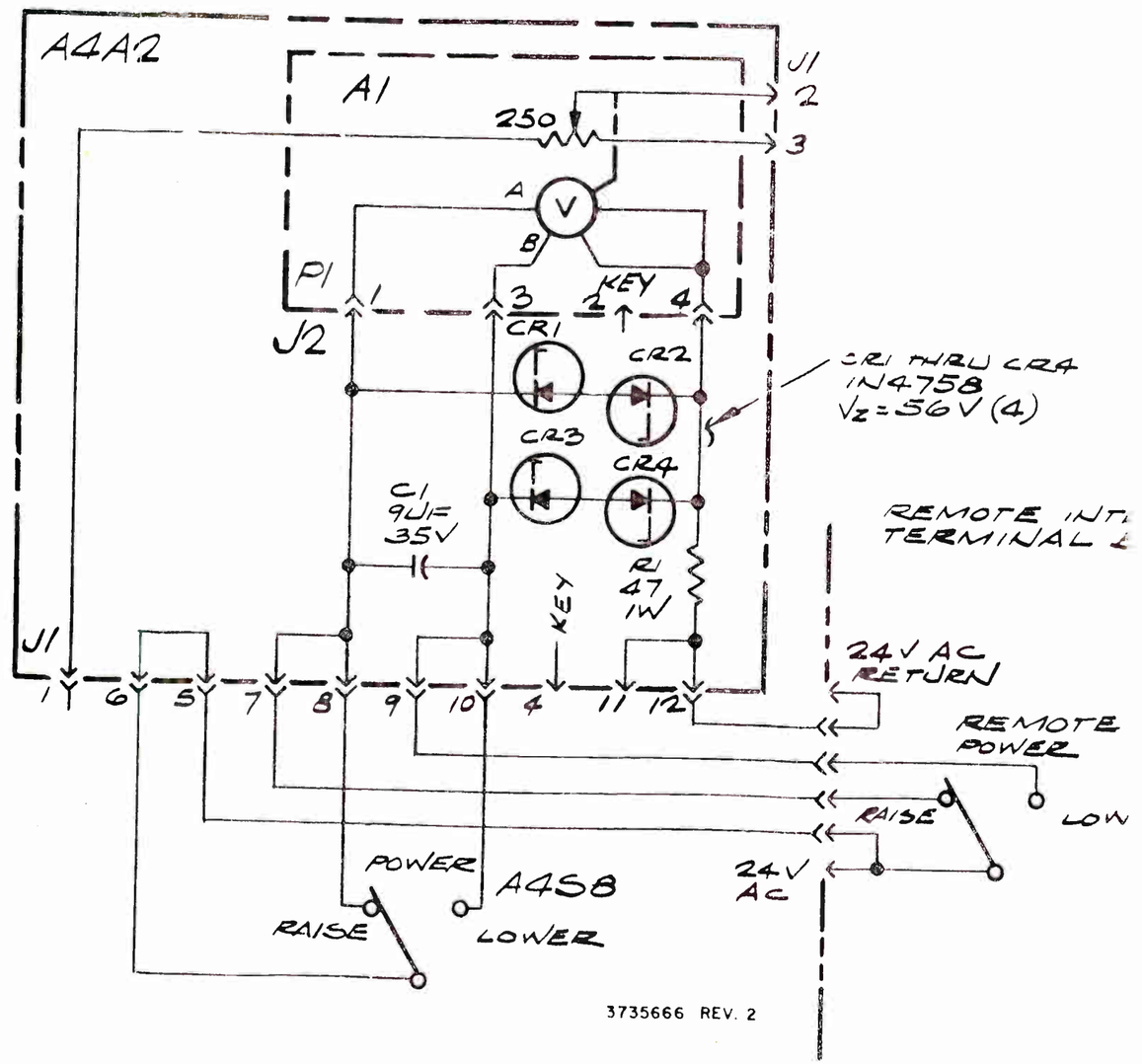
.7V STATIC

TEST POINT	CIRCUIT FUNCTION
TP1	AUDIO IN-HI
TP2	AUDIO IN-LO
TP4	AUDIO AMP OUT
TP4	AUDIO/TRIANGLE COMPARATOR OUT
TP5	
TP6	S.C. +63 μS DELAY
TP7	S.C. DRIVE
TP8	S.C. OUT MODULATED
TP9	S.C. INPUT (71 MHz)
TP10	TRIANGLE OUTPUT
TP11	S.C. AVAILABLE
TP12	FWD PWR SAMPLE (RF)
TP13	FWD PWR D.C.
TP14	MAX PWR
TP15	SIMULATED POWER SAMPLE
TP16	ALC PWR
TP17	AIR
TP18	PWR ADJ
TP19	PWR CONTROL
TP20	PEAK STRETCH THRESHOLD
TP21	S.C. DRIVE THRESH

NOTES:
1. UNLESS OTHERWISE SPECIFIED: RESISTANCE VALUES ARE IN OHMS, 1/4W, CAPACITANCE VALUES ARE IN MICROFARADS.
2. JUMPER J4-1 TO J2-10 TO SET FOR MIN. HUM (MAX S/N).

3478064 REV B





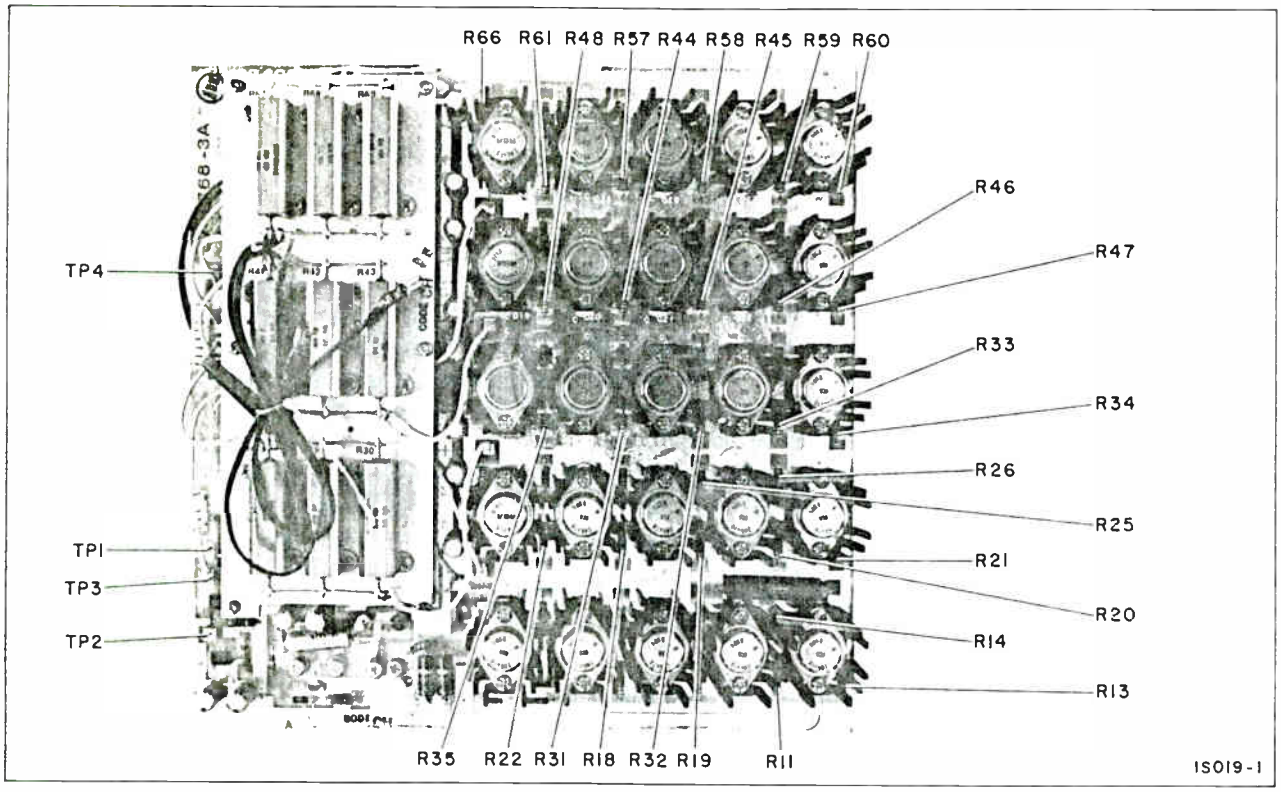
Modulator Driver Board

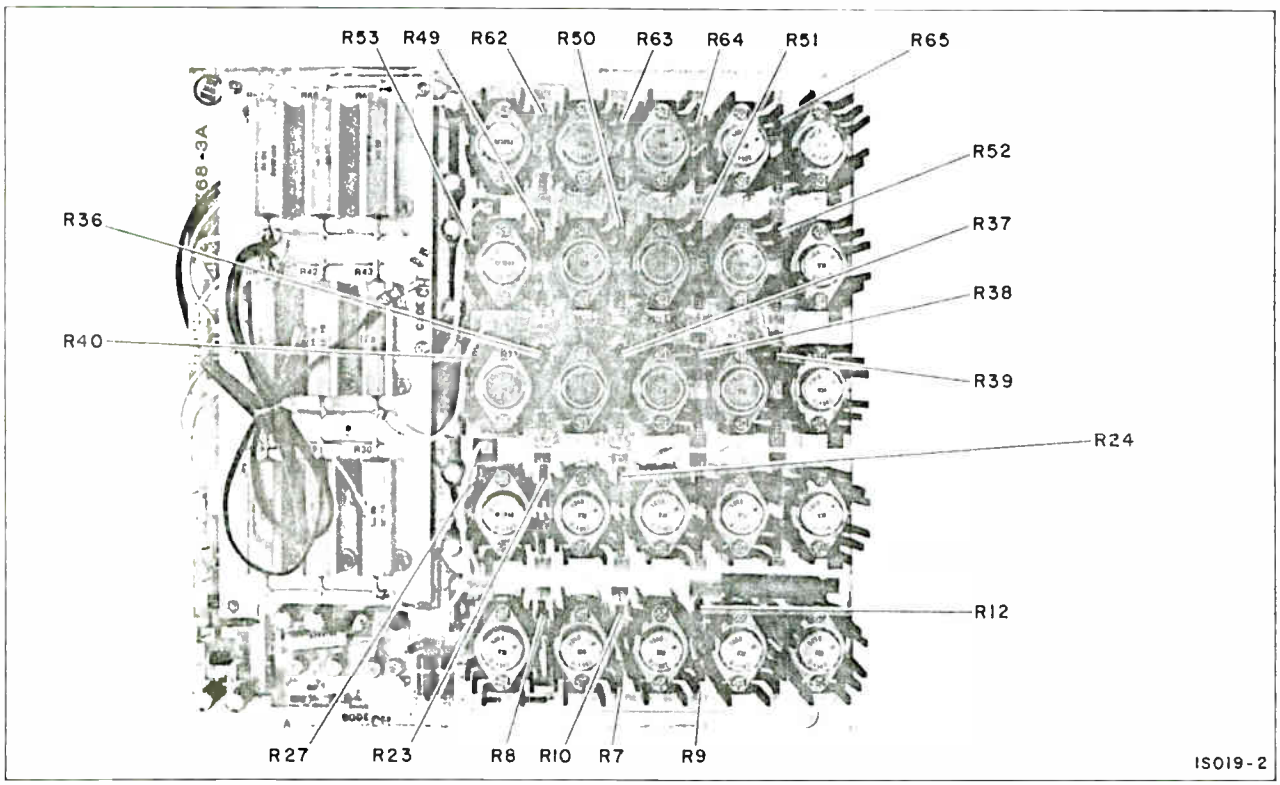
Since the Modulator Generator is referenced to ground and the Modulator Driver and Modulators are referenced to -290 volts, an Opto Isolator is used to change the reference level. The rest of the board consists of a number of stages leading to four outputs. Those outputs drive the four Modulators with -4 volts (with respect to the -290 volt supply) on each of the J2 pins which serve as test points for the outputs to the Modulators (see the list below) when the modulator transistors are off, and +3 volts on those same points when the modulator transistors are on. As these voltages are with respect to the -290 volt supply, USE EXTREME CAUTION WHEN MAKING THESE MEASUREMENTS. The following list will summarize the test points on the Modulator Driver Board:

Test Point Voltages-With Respect to -290 Volts

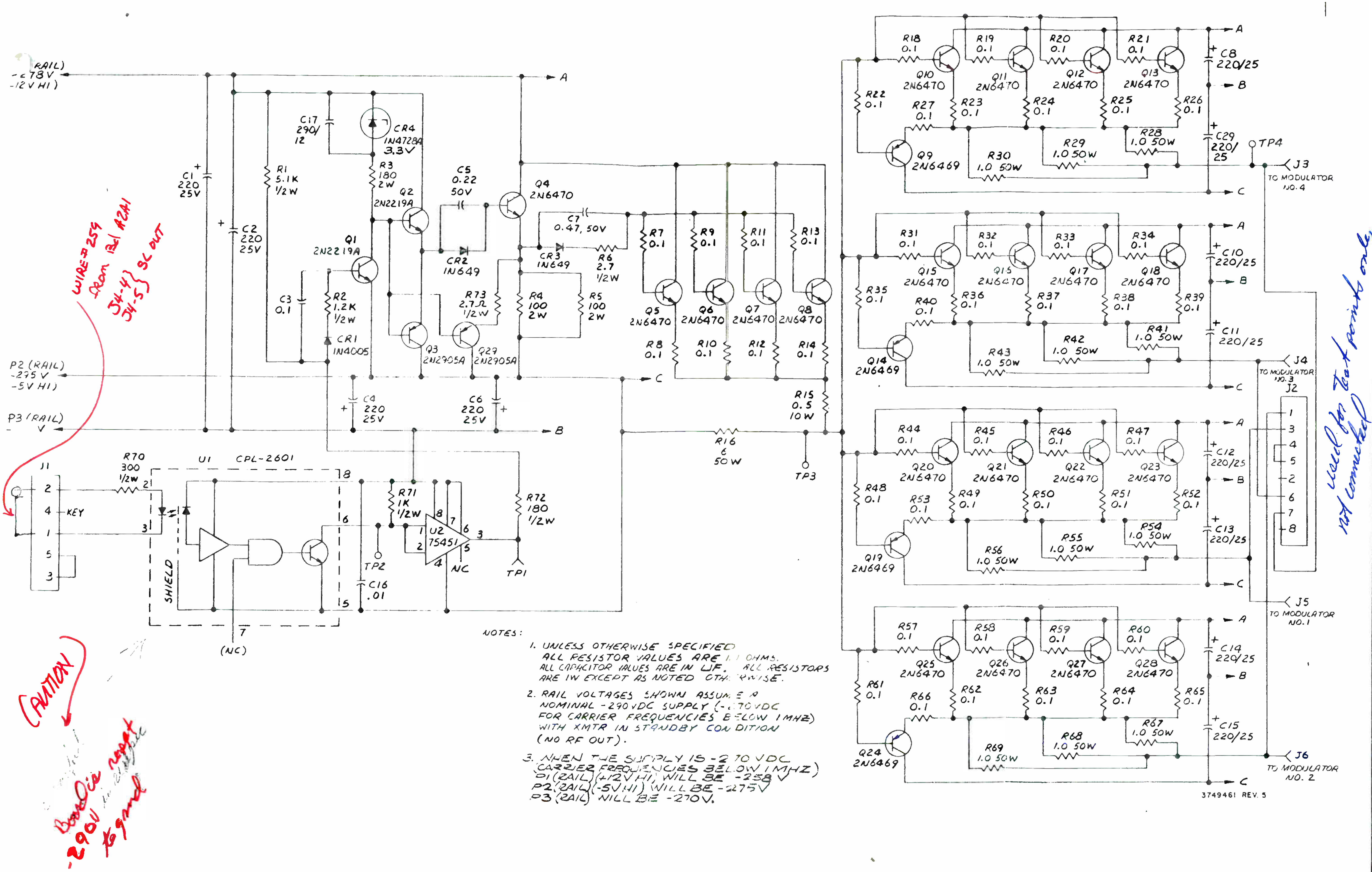
Test Point	Modulator Transistors Off	Modulator Transistors On
TP1	+12 V	-5 V
TP2	0 V	-5 V
TP3	-5 V	+5 V
TP4	-4 V	+3 V

J2 can also be used for test points. Pins 3, 1, 6, and 7 are the outputs to modulators 1, 2, 3, and 4 respectively. They should have the same level signals as TP4.





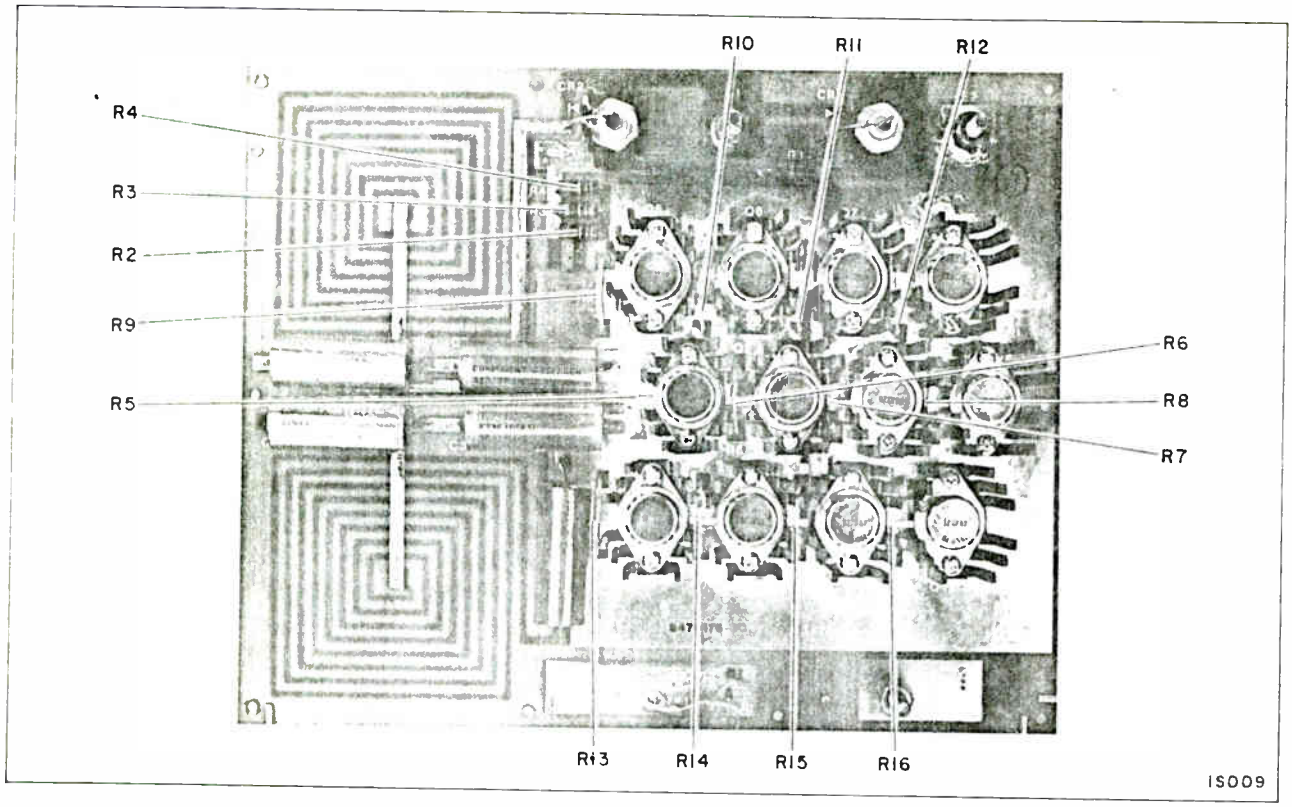
MOD DRIVER A5A1


P1 (RAIL) -278V (-12V HI)
P2 (RAIL) -275V -5V HI)
P3 (RAIL) V
C1 220 25V
C2 220 25V
R1 5.1K 1/2W
C17 290/12
CR4 1N4728A 3.3V
R3 180 2W
Q2 2N2219A
Q1 2N2219A
C3 0.1
R2 1.2K 1/2W
CR1 1N4005
C5 0.22 50V
CR2 1N649
Q3 2N2905A
Q29 2N2905A
R73 2.7Ω 1/2W
Q4 2N6470
C7 0.47, 50V
CR3 1N649
R6 2.7 1/2W
R4 100 2W
R5 100 2W
C4 220 25V
C6 220 25V
R7 0.1
R9 0.1
R11 0.1
R13 0.1
Q5 2N6470
Q6 2N6470
Q7 2N6470
Q8 2N6470
R8 0.1
R10 0.1
R12 0.1
R14 0.1
R15 0.5 10W
R16 6 50W
TP3
J1
KEY
R70 300 1/2W
U1 CPL-2601
SHIELD
(NC)
TP2
C16 .01
R71 1K 1/2W
U2 75451
NC
R72 180 1/2W
TP1
R18 0.1
R19 0.1
R20 0.1
R21 0.1
Q10 2N6470
Q11 2N6470
Q12 2N6470
Q13 2N6470
R22 0.1
R27 0.1
R23 0.1
R24 0.1
R25 0.1
R26 0.1
Q9 2N6469
R30 1.0 50W
R29 1.0 50W
R28 1.0 50W
C8 220/25
C29 220/25
TP4
J3 TO MODULATOR NO. 4
R31 0.1
R32 0.1
R33 0.1
R34 0.1
Q15 2N6470
Q16 2N6470
Q17 2N6470
Q18 2N6470
R35 0.1
R40 0.1
R36 0.1
R37 0.1
R38 0.1
R39 0.1
Q14 2N6469
R43 1.0 50W
R42 1.0 50W
R41 1.0 50W
C10 220/25
C11 220/25
J4 TO MODULATOR NO. 3
J2
R44 0.1
R45 0.1
R46 0.1
R47 0.1
Q20 2N6470
Q21 2N6470
Q22 2N6470
Q23 2N6470
R48 0.1
R53 0.1
R49 0.1
R50 0.1
R51 0.1
R52 0.1
Q19 2N6469
R56 1.0 50W
R55 1.0 50W
R54 1.0 50W
C12 220/25
C13 220/25
J5 TO MODULATOR NO. 1
R57 0.1
R58 0.1
R59 0.1
R60 0.1
Q25 2N6470
Q26 2N6470
Q27 2N6470
Q28 2N6470
R61 0.1
R66 0.1
R62 0.1
R63 0.1
R64 0.1
R65 0.1
Q24 2N6469
R69 1.0 50W
R68 1.0 50W
R67 1.0 50W
C14 220/25
C15 220/25
J6 TO MODULATOR NO. 2
WIRE #259 from 1&1 A2A1 J4-4 J4-5 SC OUT
CAUTION
Board is nearest -290V to gnd
used for test points only not connected

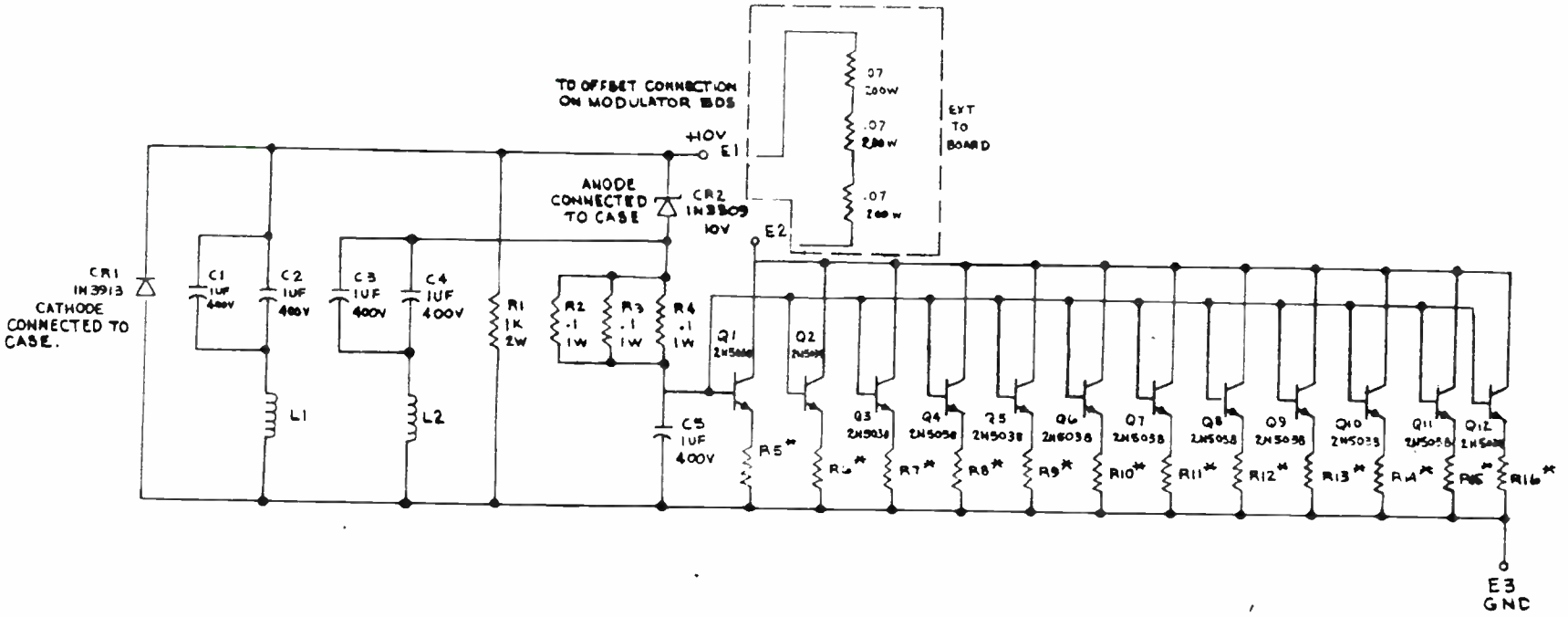
NOTES:

1. UNLESS OTHERWISE SPECIFIED ALL RESISTOR VALUES ARE IN OHMS. ALL CAPACITOR VALUES ARE IN UF. ALL RESISTORS ARE 1W EXCEPT AS NOTED OTHERWISE.
2. RAIL VOLTAGES SHOWN ASSUME A NOMINAL -290 VDC SUPPLY (-270 VDC FOR CARRIER FREQUENCIES BELOW 1 MHZ) WITH XMTR IN STANDBY CONDITION (NO RF OUT).
3. WHEN THE SUPPLY IS -270 VDC (CARRIER FREQUENCIES BELOW 1 MHZ) P1 (RAIL) (+12V HI) WILL BE -258 V P2 (RAIL) (-5V HI) WILL BE -275V P3 (RAIL) WILL BE -270V.

3749461 REV. 5

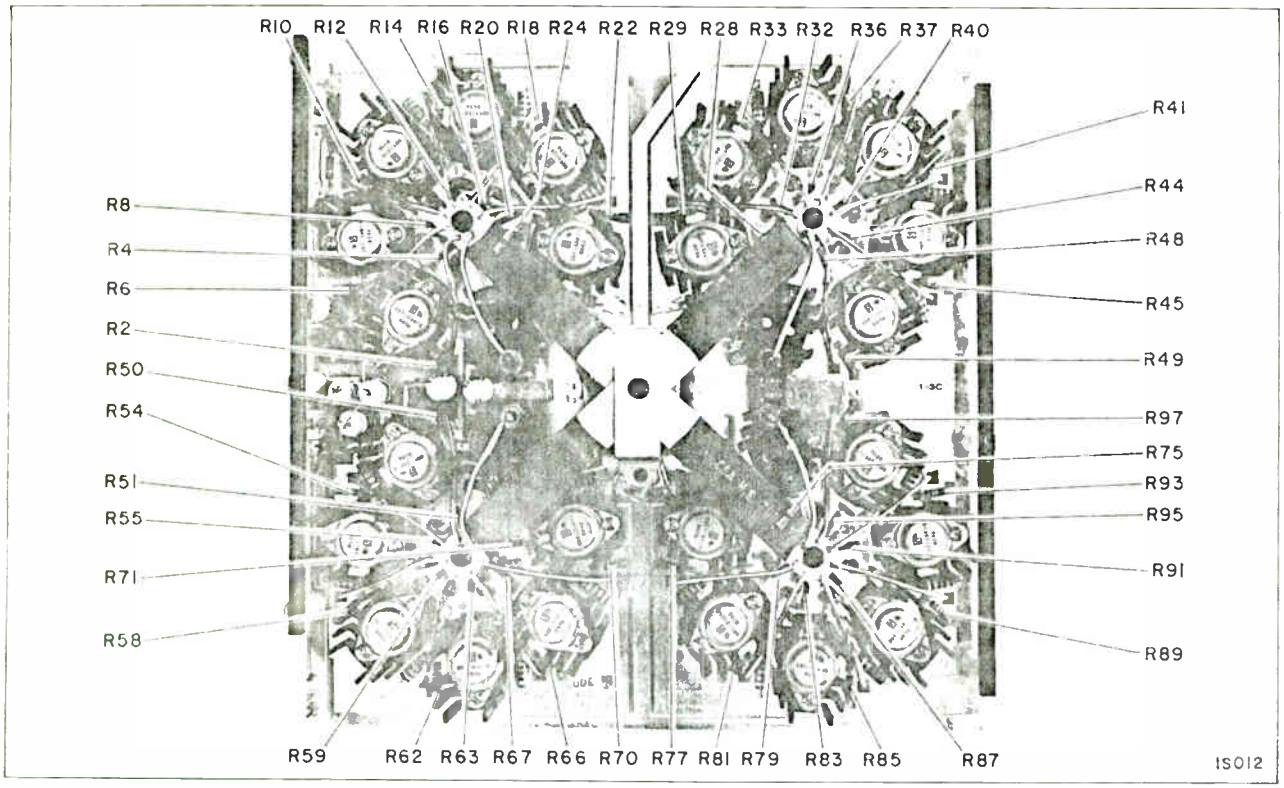


OFFSET REGULATOR A2A5



NOTE: * R5 THROUGH R16 ARE EACH 1 INCH OF RESISTANCE WIRE, APPROXIMATELY 0.1 OHM.

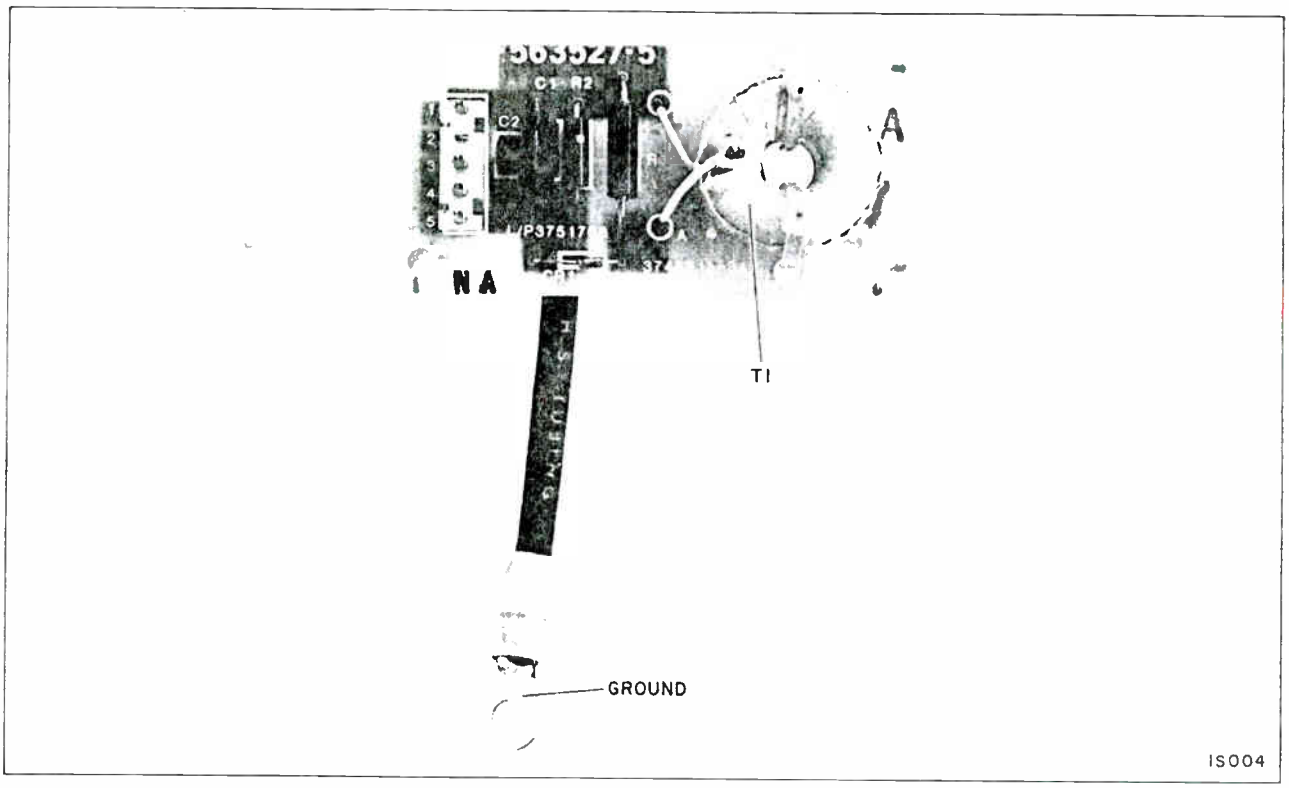
3743B07 REV 2



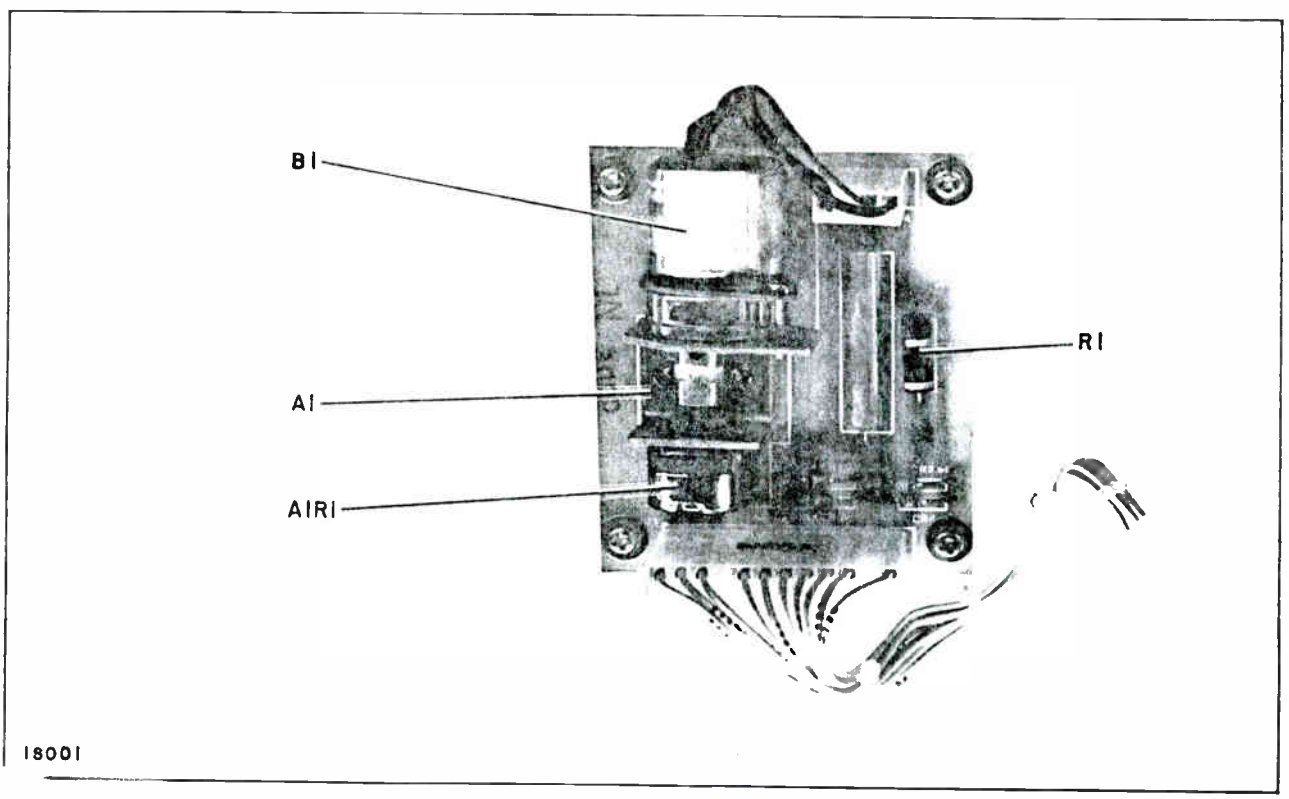
MODULATOR A5A2,3,4,5

Because of the very high currents involved, the transistor shown on the simplified drawing is actually 96 transistors connected in parallel and the diode is actually 16 diodes connected in parallel. These components are mounted on four identical modulator boards located in the modulator box assembly (A5). Each modulator board consists of 24 transistors connected in parallel. Each has a series fusible base resistor (2.7 ohms) and a series fusible collector resistor (0.1 ohms). If an individual transistor fails by shorting all three terminals (the most common failure mode), these resistors will open and disconnect the transistor from the circuit. It will also light L.E.D. DS1 through the 33k ohm collector resistor to indicate the failure since the operation of the transmitter will not be affected by one transistor failure. To determine which transistors have failed, remove the modulator board from the transmitter and connect an ohm meter (X1 scale) one lead to the -290 volts bus (P1) and the other lead to each of the transistor cases one at a time. A low resistance reading shows that transistor has failed. Replace it and its associated fusible resistors (0.1 ohms collector resistor and 2.7 ohm base resistor). Be sure to check all the transistors because sometimes more than one fails.

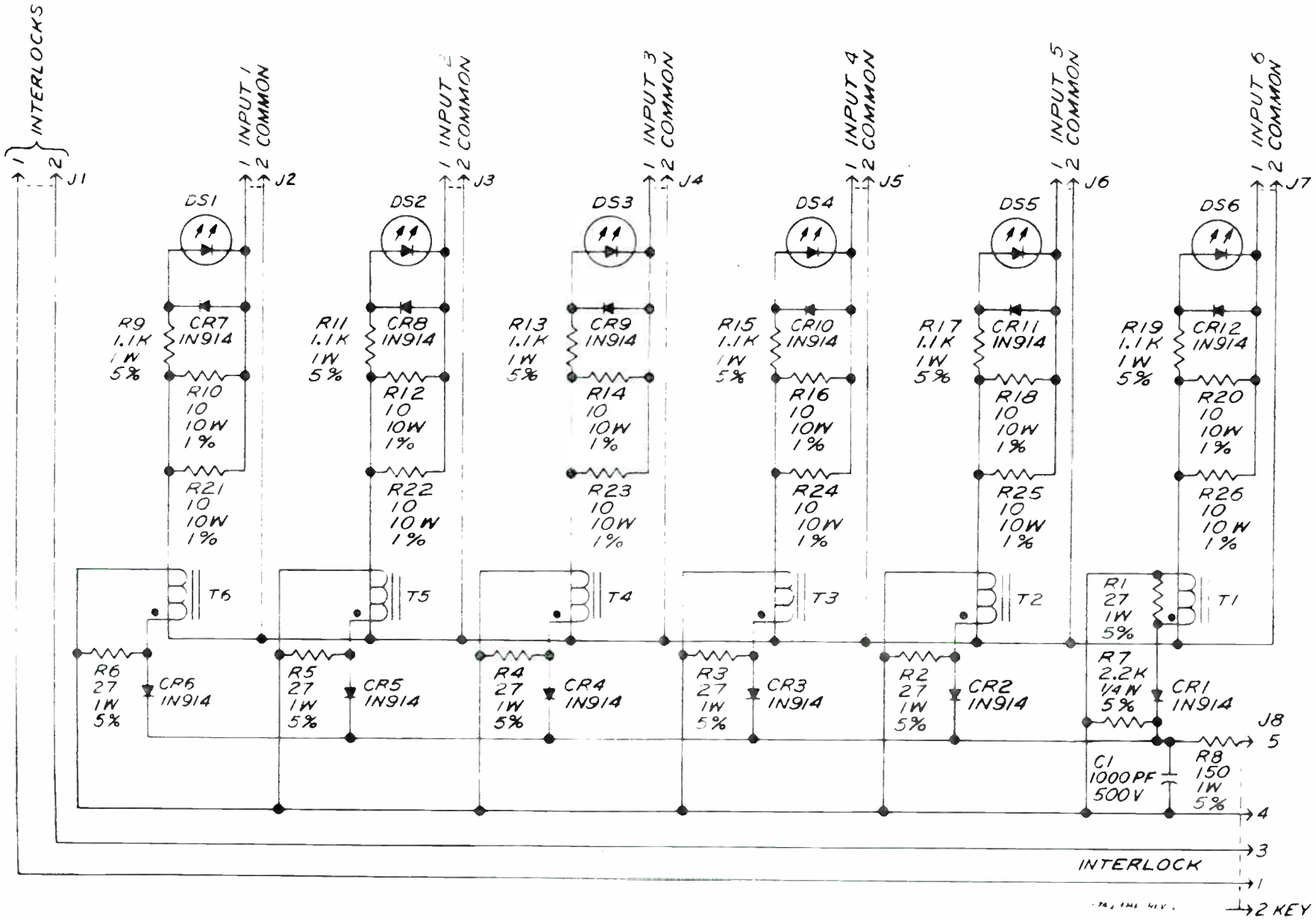
The mod bias detector continuously monitors each modulator board for a mod bias fault (transistors are commanded to be on for too high of a duty cycle or are commanded on continuously). This fault could be caused by a 2.7 ohm fusible base resistor which failed to open after its associated transistor shorted, a shorted transistor or other fault in the modulator driver, a modulator generator fault or too high positive modulation input. This circuit can be tested by connecting TP1 on the modulator board to the -290 volt rail while the transmitter is off. THESE VOLTAGES ARE DEADLY--BE E THE MAIN SUPPLY IS DISCHARGED BY USING THE GROUNDING STICK. Now the nsmitter should not come on and the mod bias fault light should light. peat for each of the other three modulator boards.

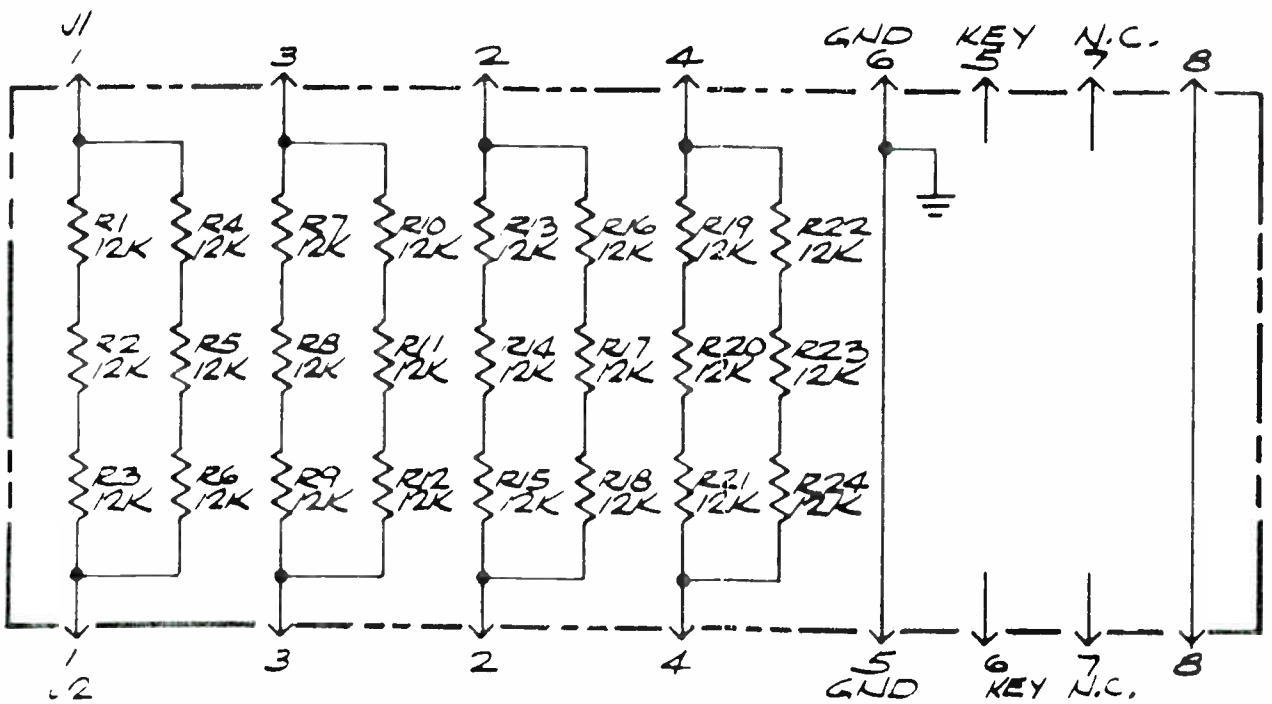


DRIVE DETECTOR A6A2

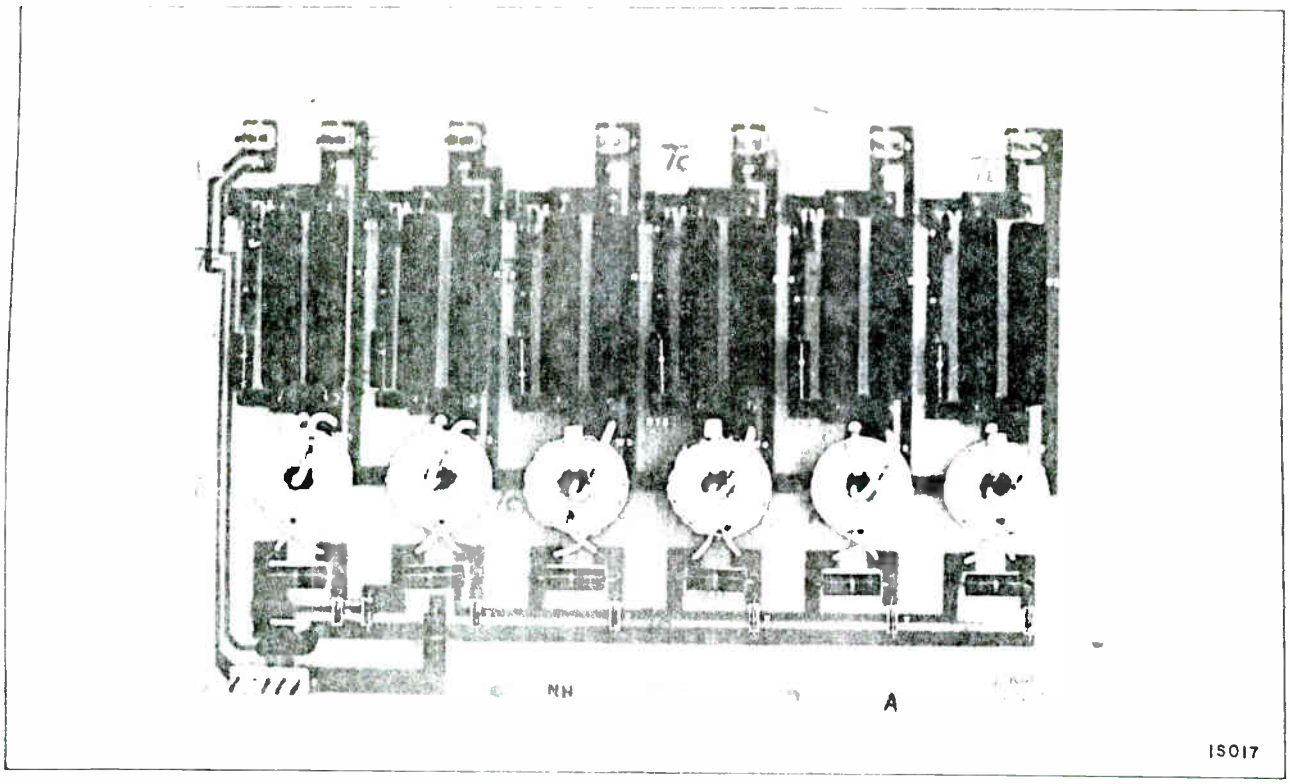


REMOTE POWER ADJUST KIT A4A2

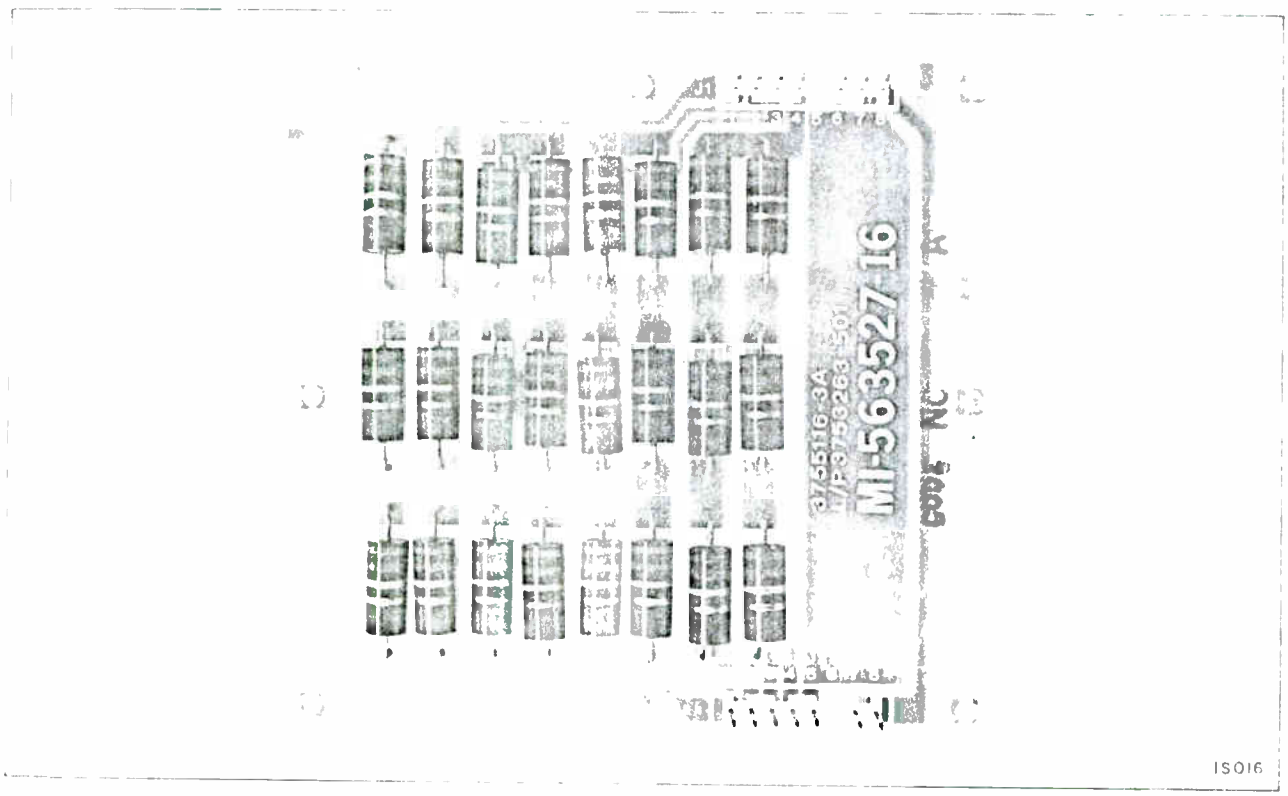




NOTES: 1. UNLESS OTHERWISE SPECIFIED:
RESISTANCE VALUES ARE IN OHMS

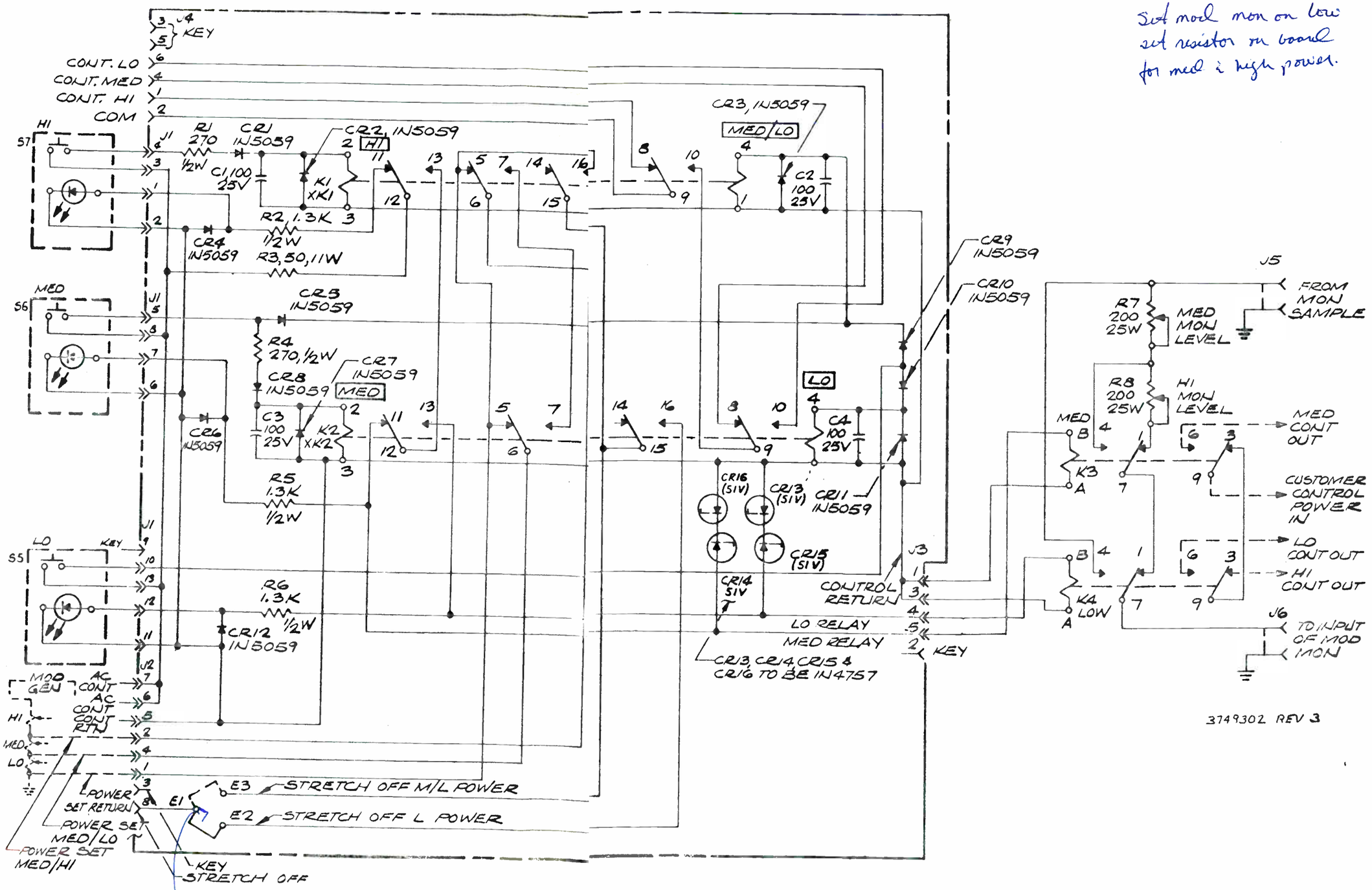


PA BALANCE (MOTHER BOARD) A8A2



MOD SAMPLE BOARD A8A5

Set mod mon on low
set resistor on board
for med & high power.



3749302 REV 3

A 3751979 | SHEET 0 CONTINUED ON SHEET 0 | COMMODITY CODE

LIST OF PARTS

REVISIONS

APPROVED | 0

DATE

KEY LOC. OF IT. A5A3P1 WAS POSITION 2. IT. A2A1P7 REF. NO. WAS 3729316-6 6 POSITION. ADDED NOTE 9. ADDED IT. 13. WIRE LIST WAS AS FOLLOWS:

WIRE NO.	DESIG. TO.
92	A7TB1-5
116	A7K3-1
386	A8A1P1-1
	DESIG. FROM
131	A9TB1-3
138	A9PS3-AC1
	TO TERM
131	12
161	10 (BOTH TERMS)
	CABLE COND.
131	55
161	55
	REMARKS
157-160	BRIDGING COM
161, 162, 131	MOD COM
	CABLE NOTE
298, 299	O
302, 303	O

ECN 27134

E. Junior Bopp — TC

OCT 15, 1980 | 10

GR. 501: IT. 6 QTY. WAS 53; IT. 11 QTY. WAS 11; WIRE NO. 214 "FROM TERM" WAS 11; WIRE NO. 253 "TO TERM" WAS 11.

ECN 27142

TC

Oct 29, 1980. | 11

GR 502: IT. 35, QTY WAS 2; IT. 36, QTY WAS 4 IT. 38, QTY WAS 5, IT. 39, QTY WAS 2; ADDED IT. 25 THRU 29, & 51 THRU 54; WIRE #26, TO DESIG. WAS GROUND, COND. WAS 38; WIRE #27, TO WAS A2L1-1, COND. WAS 38; WIRE #28, FROM WAS A2L1-2, TO WAS C6B-1, COND. WAS 38; WIRE #33, FROM WAS C1B-1, COND. WAS 35; WIRE #34; #35, AND #36, COND. WAS 36; WIRE #38, COND. WAS 37; WIRE #40, FROM WAS C2B-1, COND. WAS 36; WIRE #44, FROM WAS C4-2, TO WAS C1A-1, COND. WAS 38; ADDED WIRE #45; DEL WIRE #43, A10J1-1, A10L5-1, 39, MOD MON PAD. ADDED WIRE #49, GR 502: IT. 30, QTY WAS 75; IT. 31, QTY WAS 33.

ECN 27144

TC

12

GR 501: IT. 6, QTY WAS 55; IT. 9, QTY WAS 7; IT. 11, QTY WAS 9; IT. 18, QTY WAS 30; IT. 21, QTY WAS 230; IT. 23, QTY WAS 4. SH. 4, ADDED NOTE 10. SH. 5, ADDED S7 & S8 TO FIG 2 & 3. LINE 107, TO WAS A8A1P1-6; LINE 153, FROM WAS A10PS1-POS, TERM 9; LINE 154, FROM WAS A10 PS1-NEG, TERM 9; LINE 214, TO WAS A3R1-3; LINE 215, TO WAS A4A1AP2-4, TERM WAS 21; LINE 242, FROM WAS A4S1B-4; LINE 285, ADDED REMARK. ADDED LINES 391 THRU 400.

ECN 27150

W Glanvay — TC

Oct 29, 1980. | 13

GR 503: IT. 6, QTY WAS 3; IT. 21, QTY WAS 20. ADDED WIRE NOS. 500-504, 506-523.

ECN 27151

W Glanvay — TC

Nov. 10, 1980 | 14

GR 504: WIRE 728, TO DESIG. WAS A7TB1-10; WIRE 731, TO DESIG. WAS A7TB1-9.

ECN 27152

W Glanvay — TC

Nov 10, 1980. | 15

GR 501: ADDED WIRE 401; IT. 6, QTY WAS 63; IT. 10 QTY WAS 26.

ECN 27168

W Glanvay — TC

Nov. 10, 1978. | 16

LINE 72, TO DESIGN. WAS A7S6-NC1. LINE 75, FROM DESIGN. WAS A7S2-4 (2 PLACES).

ECN 27167

W Glanvay — TLC

Dec 9, 1980. | 17

GR 503: IT. 5 & 8 & 59 QTY WAS O.

ECN 27182

W Glanvay — TC

Dec 9, 1980. | 18

GR 504: IT. 42 QTY WAS O.

ECN 27198

W Glanvay — TC

Jan 21, 1981 | 19

GR 501: ADDED IT 1 THRU 4; IT. 6, QTY WAS 64; IT. 7, QTY WAS 17, IT. 8, QTY WAS 11; IT. 9, QTY WAS 5; IT. 11, QTY WAS 12, IT. 14, QTY WAS 0; IT. 15, QTY WAS 12; IT. 16, QTY WAS 30; IT. 17 & 29, QTY WAS 4; IT. 18, QTY WAS 33; ADDED IT. 20; IT. 21, QTY WAS 237; IT. 23, QTY WAS 5; IT. 43, REF WAS 3450825-4; ADDED IT. 45; IT. 48, QTY WAS 6; ADDED IT. 61 & 62; IT. A5A3P1, KEY LOC WAS 4; IT. A4A1AP2, REF WAS 3729316-17; IT. A4A1AP3, A4A1AP5 & A4A1AP6, REF WAS 3729316-14; IT. A4A1AP4, REF WAS 3729316-6; IT. A4A1AP7, REF WAS 3729316-8; IT. A5A1P1, KEY LOC WAS 2; ADDED IT. A2A6P1, A2A6P2, A8A5P1, A8A5P2, A8A6P1 & A4A3P1. SH 4: ADDED NOTES 11 & 12. SH. 5; FIG. 2, S6 WAS S5 & S8 WAS S7; FIG. 3, S5 WAS S6 & S7 WAS S8. SH 7 FIG 11, "PRI" & "SEC" NOTATIONS ADDED. FIG IS ADDED. SH 9 THRU 26 - REVISED WITH EXT CHGS. FOR REV 19 SEE INACTIVE FILE

ECN 27338

W Glanvay — JB

May 29, 1981 | 20

GR 502: IT. 42, QTY WAS 4; IT. A2A4P4, QTY WAS 1; SH 4 & 23, WIRE NO GR 503 WAS 500-599. WIRE #518: TO DESIGN. WAS A10T1P1, ADDED NOTE 9. ADDED GR 507 & 508.

ECN 27351

W Glanvay — JB

May 29, 1981. | 21

GR 502: IT. 28, DESC. WAS 17.12; ADDED IT. 41; IT. 53, DESC. WAS 15.62; IT. 54, DESC. WAS 12,62; ADDED IT. 67; ADDED NOTE 13; LINE 31, COND WAS 38; LINE 304-309, ADDED NOTE 13. IT. 66, QTY WAS 10.

ECN 27369

W Glanvay — HN

Jan 22, 1982. | 22

3751979

A 3751979 | SHEET 0 8 CONTINUED ON SHEET 0# | COMMODITY CODE

LIST OF PARTS

REVISIONS

APPROVED W. HALWAY | 0
DATE JUNE 4 1981

GR 501 - IT 21 QTY WAS 270, SHT 4 ADDED NOTE 14. SHT 24 HEADINGS TERM WAS SUFFIX & NOTE WAS CODE. ADDED LINE NO 459, LINE NO 500 & 502 IN HEADING UNDER "NOTE" ADDED 14
ECN 27396
W Halway | JB
June 22, 1981. | 23

GR 501: IT. A8A1P6 WAS 3729316-6, 6 POS, KEY 3; IT. A8A1P5, WAS 3729316-8, 8 POS, KEY 2; IT. A8A1P1 WAS 3729316-10; 10 POS; KEY 5; IT. A8A1P3 WAS 3729316-12, 12 POS, KEY 4; IT. A8A1P4, WAS 3729316-15, 15 POS, KEY 11; IT. A8A1P2 WAS 3729316-15, 15 POS, KEY 14; IT. A1A1P7 QTY WAS 1; IT. A2A6P1, WAS 3729316-16, 16 POS, KEY 5; IT. A2A6P2 WAS 3729316-5, 5 POS: IT. A8 A8A6P1, QTY WAS 1; ADDED IT. A2A6P3.
ECN 27401
W Halway | BRH
July 6, 1981. | 24

GR 508: IT. 6 & 8, QTY WAS 5; IT. 9 & A2A4P4, QTY WAS 1; IT. 21, QTY WAS 3, IT. 42, QTY WAS 2; IT. 55, QTY WAS 20. GR 507: IT. 9, QTY WAS 6; IT. 55, QTY WAS 10. GR 503: IT. 6, QTY WAS 5; ADDED IT. 8 & 9; IT. 21, QTY WAS 22; IT. 42, QTY WAS 2; IT. 55, QTY WAS 75; IT. A2A4P4, QTY WAS 0. SH. 4: GR 507 & 508: DEL. WIRE NO. LISTINGS; GR 503: WAS WIRES 500-524, DEL. (A2A4) FROM DESC. SH 25: NOTE WAS WIRES 500-524. SH 26: NOTE WAS "WIRES 525-543 FOR GR 507, WIRES 544-599 FOR GR 508"
ECN 27391
W Halway | BRH
July 13, 1981 | 25

GR 501: ADDED IT. A2TB2 & A2TB3.
ECN 27392
W Halway | BRH
July 13, 1981. | 26

SH. 4: GR 503 WIRE NOS. WERE FROM 500-599. ADDED GR. 507. SH. 25 & 26: HEADING WAS "FROM WIRES 500 THRU 599 FOR GR 503 ECN 27417
W Halway | BH
August 3, 1981 | 27

WIRES 294, 295, 304-315 & 333: IN "FROM" COL. WIRE DESIGN. "J" WAS "P". WIRES 316-321, IN "FROM" COL. DESIGN. A8A4 WAS A8A2.
ECN 27405
W Halway | LBP
August 18, 1981 | 27

GR. 502 IT. 32 QTY. WAS 1 ADDED NOTE 15. DELETED WIRE 37. WIRES 100-174 176-165-166-167 A8S1 WAS A5S1. WIRE 133 TO WAS A6B1-2. WIRE 134 TO WAS A5B1-2. WIRE 136 TO WAS A10PS2-AC2. WIRE 137 TO WAS A10 PS1-AC2, FROM WAS A10 PS2-AC2. WIRE 140 TO WAS A10PS2-AC1. WIRE 141 TO WAS A5B1-1. WIRE 142 TO WAS A6B1-1 WIRE 146 TO WAS A10PS1-AC1, FROM WAS A10PS2-AC1. WIRE 147 FROM WAS A10PS2-A1POS. WIRE 148 FROM WAS A10PS2-A1NEG. WIRE 151 FROM WAS A10 PS2-A3POS. WIRE 152 FROM WAS A10PS2-A3-NEG. DELETED WIRE 251 WIRE 293 TO WAS A6A1P1 WIRE 285 TO WAS A5C1 WIRE 286 FROM WAS A5C1 WIRE 310 TO WAS H-1A WIRE 311 TO WAS H-2A WIRE 312 TO WAS H-3A WIRE 313 TO WAS H-4A WIRE 314 TO WAS H-5A WIRE 315 TO WAS H-6A WIRE 374 TO WAS H-1 WIRE 375 TO WAS H-2 WIRE 376 TO WAS H-3 WIRE 377 TO WAS H-4 WIRE 378 TO WAS H-5 WIRE 379 TO WAS H-6 SHEET 26 NOTE COL. WAS CODE. WIRE 531 FROM WAS A1T1-TAP-H1. WIRE 532 FROM WAS A1T1-TAP-H2. WIRE 533 FROM WAS A1T1-TAP-H3.
ECN 27414
W Halway | EBW
August 18, 1981. | 28

GR. 501: IT. 14 QTY WAS 1 IT. 15 QTY WAS 23. ADDED WIRE # 460
ECN 27431
W Halway | BH
Sept 24, 1981 | 29

WIRE 22 FROM DESIGNATION WAS A2A5E2. WIRE 23 FROM DESIGNATION WAS A2A5E1.
ECN 27450
W Halway | MR
Oct 7, 1981 | 30

GR. 501 IT 6 QTY WAS 94. IT 8 QTY WAS 17. WIRES 407 THRU 410 "FROM" TERMINATION 6 WAS 8.
ECN 27455
W Halway | MR
Oct 7, 1981 | 31

ITEM 20 QTY WAS 2. ADDED ITEM 68. ADDED NOTES 16 AND 17.

ADDED WIRE #423. SH. 23 "NOTE" COLUMN WAS "CODE" COLUMN. DELETED WIRE #453
ECN 27461
W Halway | MVR
Oct 12, 1981. | 32

GR. 502, IT. 39, P/N WAS 3729882-25, STRAP 12.50 LONG.
ECN 27469
J E Kistler | EMS
Nov. 4, 1981 | 33

FROM DESIGNATION IN LINES 525-526 AND 527 WAS H1, H2 AND H3 RESP. ECN 27486
E. James Bopp | EMS
JAN 5, 1982 | 34

IN GROUP 503, QTY. OF ITEM 6 WAS 10-QTY. OF ITEM 21 WAS 25-NOTE 18 ADDED. -LINE 523, "TO" DESIGNATION WAS A2TB3-11, TERM. 6-LINE 524 ADDED. ECN 27493
E. James Bopp | EMS
JAN 5, 1982 | 35

IN GROUP 502, ITEM 41 QTY. WAS 12-(MI-563500-28) ADDED TO DESCR.-19 ADDED TO NOTE AND DELETED TERM AND COND. TO THE FOLLOWING LINE NOS. 29 TO 32, 39, 45, 294, 297 TO 303, 310 TO 321, 374 TO 379 AND 402 TO 405-NOTE 19 ADDED-IN GROUP 502, QTY. OF ITEMS 25, 33, 34, 35, 38 & 67 WAS 1, 1, 2, 1, 1 AND 12 RESP.-IN GROUP 501, QTY. OF ITEMS 4, 5, 7, 11, 15, 16, 23 & 43 AND 48 WAS 6, 10, 21, 20, 24, 34, 10, 6 AND 16 RESP.- ECN 27494
E. James Bopp | EMS
JAN 5, 1982 | 36

3751979

A SIZE 3751979 | SHEET 1 / CONTINUED ON SHEET 2 | SPARE PARTS LEGEND: D-DOMESTIC I-INTERNATIONAL R-RECOMMENDED

LIST OF PARTS

QUANTITY 510	509	508	507	506	505	504	503	502	501	ITEM OR SYMBOL	DRAWING OR SPECIFICATION	PART OR GROUP	DESCRIPTION	SPARE PARTS D	I	R	NO.	SPEC SYM	MTG LG
									1	1	3728504	3	TERMINAL, QUICK DIS., 250 PAIRING, AWG 22-16						
									1	2	3728504	6	TERMINAL, QUICK DIS., .250 PAIRING, AWG 18-14						
									1	3	993216	42	TERMINAL, QUICK DIS., .205, AWG 22-18						
									1	4	993216	44	TERMINAL, QUICK DIS., .205, AWG 16-14						
									4	5	993216	22	TERMINAL, QUICK DIS, .187 AWG 16-14						
				15		4	9		98	6	993216	61	TERMINAL, QUICK DIS, .250 AWG 22-18				05		
				2					15	7	993216	64	TERMINAL, QUICK DIS, .250 AWG 12-10				05		
				6			5		13	8	993216	21	TERMINAL, QUICK DIS, .187 AWG 22-18				05		
				10			7		23	9	3465145	617	TERMINAL, RING, #6 AWG 22-18				02		
				1					27	10	3465145	619	TERMINAL, RING, #8 AWG 22-18				02		
				1					14	11	3465145	622	TERMINAL, RING, #10 AWG 22-18				02		
									9	12	3465145	626	TERMINAL, RING, .250 AWG 22-18				02		
									2	13	3465145	637	TERMINAL, RING #8 AWG 16-14						
									2	14	3465145	659	TERMINAL, RING, #6 AWG 12-10				02		
				1					18	15	3465145	662	TERMINAL, RING, #8 AWG 12-10				02		
				1					21	16	3465145	666	TERMINAL, RING, #10 AWG 12-10				02		
				4					10	17	3465145	669	TERMINAL, RING, .250 AWG 12-10				02		
									39	18	3460078	1	TERMINAL, QUICK DIS, .187 PAIRING 22-18				05		
										19	993216	64	TERMINAL, QUICK DIS. .250 AWG 12-10				05		
									3	20	2010105**	20	BUS WIRE, #20						
						13	28		272	21	3727158	601	RECEPTACLE, HIGH PRESSURE AWG 22-18				05		
									2	22	3460078	20	TERMINAL QUICK DIS. .187 PAIRING AWG 20-16				05		
				4					9	23	993216	62	TERMINAL, QUICK DIS. .250 AWG 16-14						
									5	24	3465245	3	BUTT SPLICE, AWG 22-16						
										25	3729882	26	STRAP, 2.38 LG.						
								2		26	3729882	27	STRAP, 12.12 LG.						
								1		27	3729882	28	STRAP, 2.87 LG.						
								1		28	3729882	29	STRAP, 30.56 LG.						
								1		29	3729882	30	STRAP, 5.62 LG.						
			20					78		30	3454459*	3	CABLE #4 AWG						
			6					35		31	8898696	4	TERMINAL .250 AWG 4						
										32	3729882	18	STRAP, 2.12 LONG						
										33	3729882	19	3.80 LONG						
										34	3729882	20	4.24 LONG						

REVISIONS: 0 R2 10 11 12 13 14 15 16 17 18 19 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37

3751979

A SIZE 3751979 | SHEET 2 CONTINUED ON SHEET 3 | SPARE PARTS LEGEND: D-DOMESTIC I-INTERNATIONAL R-RECOMMENDED

LIST OF PARTS

QUANTITY 510	509	508	507	506	505	504	503	502	501	ITEM OR SYMBOL	DRAWING OR SPECIFICATION	PART OR GROUP	DESCRIPTION	SPARE PARTS D	I	R	NDA	KEY NO	MTG LG
										35	3729882	21	STRAP, 4.68 LONG						
										36	3729882	22	7.12 LONG						
								1		37	3729882	23	8.38 LONG						
										38	3729882	24	12.12 LONG						
								1		39	3753443	1	18.06 LONG						
									1	40	3729882	1	STRAP, 3.00 LONG						
									X	41	3753330	1	STRAP, 4 HOLE (MI-563500-28)						
						1	4		39	42	3729316	102	PLUG, HOUSING						
										43	3450825	1	RECEPTACLE (ROUND) 22-18 AWG				C2		
							2		5	44	993147	1	CONNECTOR BNC RG 58 C-U						
									6	45	1510032	4	GROMMET						
				1						46	3465145	634	TERMINAL, RING #6 AWG 16-14				C2		
										47	3465145	637	TERMINAL, RING #8 AWG 16-14				C2		
									5	48	3465145	640	TERMINAL, RING #10 AWG 16-14				C2		
										49	3465145	643	TERMINAL, RING .250 AWG 16-14				C2		
									2	50	99061	7	TERMINAL, SOLDER						
								1		51	3729882	31	STRAP, 2.00 LG.						
								1		52	3729882	32	STRAP, 3.12 LG.						
								1		53	3729882	33	STRAP, 14.12 LG.						
								1		54	3729882	34	STRAP, 13.62 LG.						
				36		50	105		Mod	55	372440H*	7	WIRE, #20 AWG (WHITE)				10		
					8				100	56	3724404	13	WIRE, #12 AWG (WHITE)				11		
									31	57	372440H*	14	WIRE, #10 AWG (WHITE)				10		
							9		100	58	345825H*	6	WIRE, SHIELDED PAIR #22 AWG						
										59	2010745*	658	CABLE, COAXIAL RG 58 C/U (50 OHM)						
				16					33	60	372440H*	12	WIRE, #14 AWG (WHITE)				10		
									3	61	2010499*	55	BRAID, FLATTENED						
									3	62	2010969*	124	SLEEVING, HEAT SHRINKABLE, BLACK, .187 ID						
									1	63	2010722*	503	SLEEVING, GREEN .062 ID (HEAT SHRINKABLE)						
									1	64	2010969*	124	SLEEVING, HEAT SHRINKABLE BLACK .187 ID						
									1	65	2010969*	120	SLEEVING, HEAT SHRINKABLE BLACK .125 ID						
								16		66	2010969**	142	SLEEVING, HEAT SHRINKABLE, 1.00 ID						
										A4A2P2	3729316	4	HOUSING, RECEPTACLE, 4 POSITION						
									1	A6A2P1	3729316	5	5 POSITION					2	
									1	A2A2P2	3729316	5	5 POSITION					4	
									1	A5A3P1	3729316	5	5 POSITION					2	
									1	A8A2P8	3729316	5	5 POSITION					2	
									1	A8A1P6	3729316	5	5 POSITION					4	
									1	A2A2P1	3729316	7	7 POSITION					3	
									1	A2A2P4	3729316	7	HOUSING, RECEPTACLE 7 POSITION					2	

REVISIONS 0 A B C D E F G H J K L M N P R S T U V W X Y Z AA BB CC DD EE FF GG HH JJ KK LL MM NN PP QQ RR SS TT UU VV WW XX YY ZZ

3751979

A SIZE 3751979

SHEET 3 CONTINUED ON SHEET 3A

SPARE PARTS LEGEND: D-DOMESTIC I-INTERNATIONAL R-RECOMMENDED

LIST OF PARTS

QUANTITY 510	509	508	507	506	505	504	503	502	501	ITEM OR SYMBOL	DRAWING OR SPECIFICATION	PART OR GROUP	DESCRIPTION	SPARE PARTS D	I	R	KEY LOC	MTG LG
									X	A2A2P6	3729316	5	HOUSING, RECEPTACLE, 5 POSITION				2	
									1	A2A1P4	3729316	6	6 POSITION				3	
									1	A2A2P3	3729316	8	8 POSITION				5	
									1	A8A1P5	3729316	6	6 POSITION				3	
									1	A2A1P1	3729316	8	8 POSITION				2	
									1	A6A3P1	3729316	8	8 POSITION				3	
							1			A2A4P2	3729316	8	8 POSITION				3	
									1	A2A3P1	3729316	10	10 POSITION				4	
									X	A2A2P5	3729316	10	10 POSITION				4	
									1	A5A1P1	3729316	14	14 POSITION				13	
									1	A6A3P2	3729316	10	10 POSITION				7	
									1	A2A1P3	3729316	13	13 POSITION				11	
						1				A4A2P1	3729316	12	12 POSITION				4	
							1			A2A4P1	3729316	13	13 POSITION				9	
									1	A2A1P2	3729316	14	14 POSITION				6	
									1	A8A1P4	3729316	12	12 POSITION				9	
									1	A8A1P2	3729316	7	7 POSITION				3	
									1	A2A1P3	3729316	15	HOUSING, RECEPTACLE, 15 POSITION				4	
							1			A2A4P4	3729316	6	HOUSING, RECEPTACLE 6 POSITION				35	
									1	A4A1AP2	3729316	317	HOUSING RECEPTACLE 17 POSITION				6	
									1	A4A1AP3	3729316	314	HOUSING RECEPTACLE, 14 POSITION				5	
									1	A4A1AP4	3729316	306	HOUSING RECEPTACLE, 6 POSITION				2	
									1	A4A1AP5	3729316	314	HOUSING RECEPTACLE 14 POSITION				7	
									1	A4A1AP6	3729316	314	HOUSING RECEPTACLE 14 POSITION				6	
									1	A4A1AP7	3729316	308	HOUSING RECEPTACLE 8 POSITION				4	
										A4A1AP3	3729316	5	HOUSING, RECEPTACLE, 5 POSITION					
										A8A1P7	3729316	5	HOUSING, RECEPTACLE 5 POSITION				4	
									1	A5A1P1	3729316	5	5 POSITION				4	
									1	A5A2P1	3729316	5					2	
									1	A5A4P1	3729316	5					2	
									1	A5A5P1	3729316	5	HOUSING, RECEPTACLE 5 POSITION				2	
									1	A2A6P1	3729316	8	HOUSING, RECEPTACLE 8 POSITION				4	
									1	A2A6P2	3729316	8	8				2	
									1	A8A5P1	3729316	8	8				5	
									1	A8A5P2	3729316	8	8				6	
										A8A6P1	3729316	16	16				5	
									1	A4A3P1	3729316	305	HOUSING, RECEPTACLE 5 POSITION				4	
									1	A2A6P3	3729316	11	HOUSING, RECEPTACLE 11 POSITION				3	
										67	2010969**	130	SLEEVING, HEAT SHRINKABLE, .375 ID					
						1			1	68	3726265	2	LABEL, SEE NOTE 17					

REVISIONS 0 8 9 10 11 12 13 14 16 17 18 19 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37

3751979

A SIZE 3751979 | SHEET 3A CONTINUED ON SHEET 4 | SPARE PARTS LEGEND: D-DOMESTIC I-INTERNATIONAL R-RECOMMENDED | LIST OF PARTS

QUANTITY 510	509	508	507	506	505	504	503	502	501	ITEM OR SYMBOL	DRAWING OR SPECIFICATION	PART OR GROUP	DESCRIPTION	SPARE PARTS D	I	R	NPA	SPEC SYM	MTG LG
									2	A2TB2	990630	60	TERMINAL BLOCK.				04		
									2	A2TB3	990630	60	TERMINAL BLCOK.				04		

REVISIONS 0 86 27 28 29 30 31 32 33 34 35 36 37

3751979

NOTES:

1 A8C16 THRU A8C31 ARE CONNECTED BY MECHANICAL ASSEMBLY
2 WIRE IS PART OF COMPONENT
3 WIRES #75 & 76 — FIRST CONNECTION FOR 208/240 V; SECOND CONNECTION (A7T82) FOR 380/415 V INPUT.
4 WIRES 219 - 221 REPLACED WITH 732-734 WHEN REMOTE POWER ADJUST OPTION IS INSTALLED.
5 FOR REF ONLY, EXTERNAL WIRING
6 REF ONLY, GEN #1 MODULATOR
7. A5A1J3, A5A2J1, A5A3J1, A5A4J1, AND A5A5 J1 ARE CONNECTED BY MECHANICAL ASSEMBLY.
8. A5A2J2, A5A3J2, A5A4J2, AND A5A5J2 ARE CONNECTED BY MECHANICAL ASSEMBLY.
9. USE DIRECT ROUTING OF THESE WIRES.
10. PAIR WIRE NUMBERS 215 AND 399 INTO SAME TERMINAL, QTY 1 OF ITEM #23.
11. SERVICE BOTH ENDS OF AUDIO CABLE (ITEM 58) USING ITEM 63 SLEEVING OVER DRAIN WIRE AND ITEM 65 HEATSHRINK OVERALL.
12. CONNECT SHIELD CONDUCTOR OF WIRE NOS 205 AND 454 TOGETHER AT A10T1, USING ITEM 24.
13. USE ITEM 41 TO PARALLEL TERMINALS ON A8C10-C15, SECTION A,B,C,D, TERMINALS 1 AND 2.
14. WIRE 459 REPLACED WITH 500 & 502 WHEN POWER CUTBACK OPTION IS INSTALLED.
15. WIRE NOS. 531-533 MAY CONNECT TO 208, 380 OR 415 TAPS, DEPENDING ON AVAILABLE LINE VOLTAGE. LINKS ON A1T1 WHICH ARE NORMALLY CONNECTED TO 208, 240, 380 OR 415 TAPS MUST BE REMOVED WHEN THESE WIRES ARE USED.
16. REMOVE JUMPERS SUPPLIED ON A10PS2, T1-1 TO T1-3 AND T1-2 TO T1-4.
17. APPLY LABEL (IT. 68) TO PLUGS: GR 501; A4A1AP2 THRU A4A1AP7, A4A3P1. GR 504; A4A2P1.
18. FOR THE POWER CUTBACK OPTION REMOVE AND DISCARD WIRE 326 BEFORE INSTALLING WIRES 523 AND 524 IN A2A1P2 AND A2A1P3
19. THIS WIRE IS SUPPLIED IN MI-563500-29

GR. 501 WIRES 100-499 MAIN TX HARNESS
GR. 502 WIRES 4-49 POINT TO POINT WIRING (OVER #10 AWG)
GR. 503 WIRES 500-524, 539-599 POWER CUTBACK OPTION
GR 504 WIRES 700-799 POWER ADJUST OPTION
GR 505 WIRES 600-699 STEREO OPTION
GR 506 WIRES 50-99 BREAKER PANEL
GR 507 WIRES 525-538 PWR CUTBACK OPTION: (POINT TO POINT WIRING)

RCA CORPORATION

A SIZE 3751979

CODE IDENT NO. 49671 SHEET 4 CONT'D ON SH 5

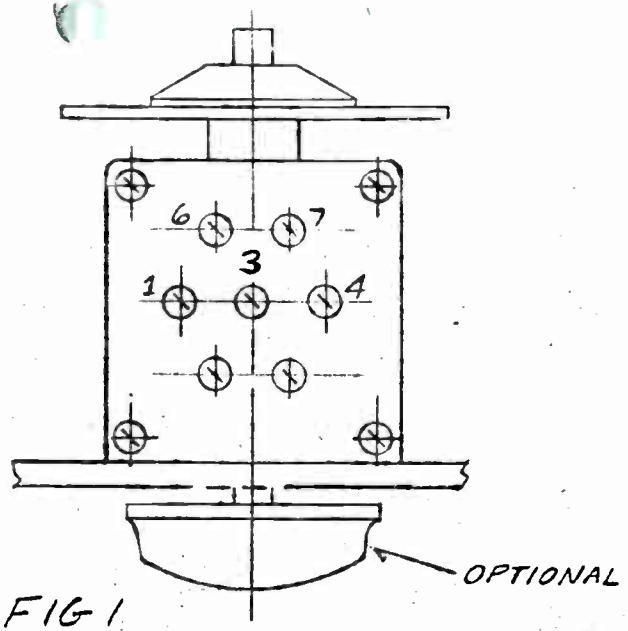


FIG 1
BOTTOM VIEW OF A7T1

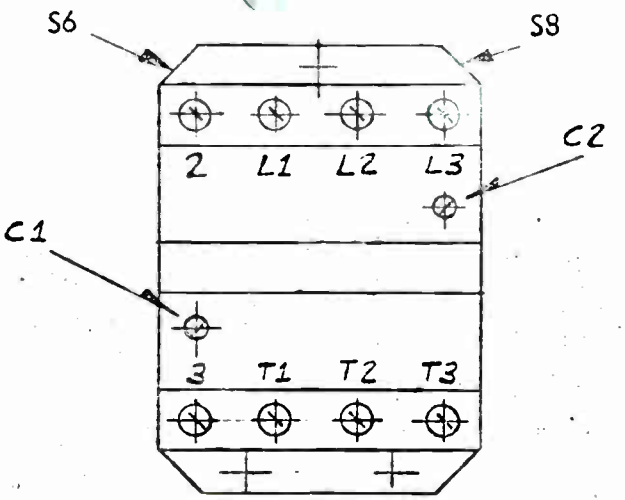


FIG 2
REAR VIEW OF A7K2

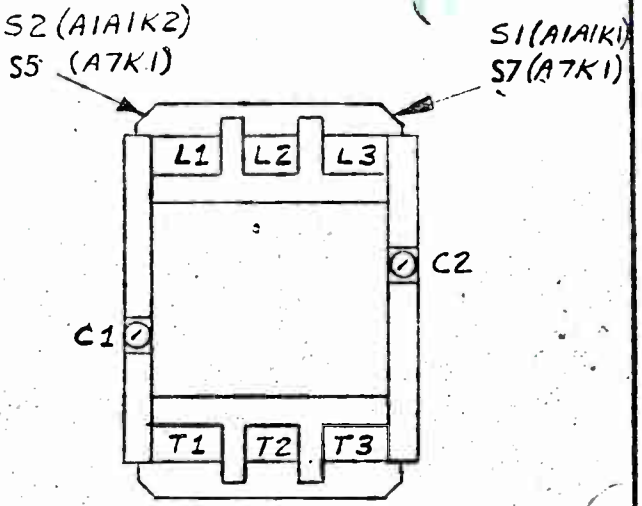
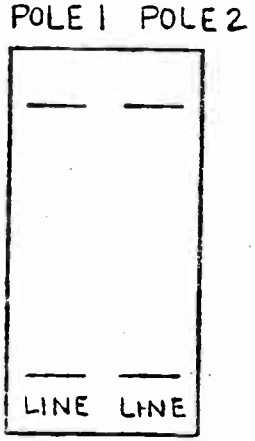
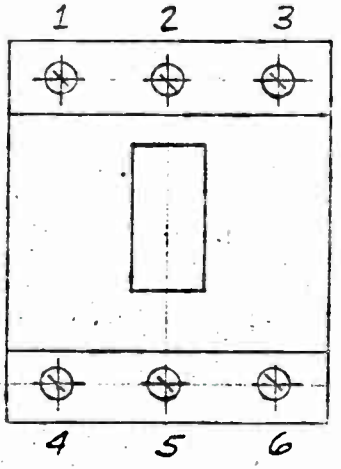


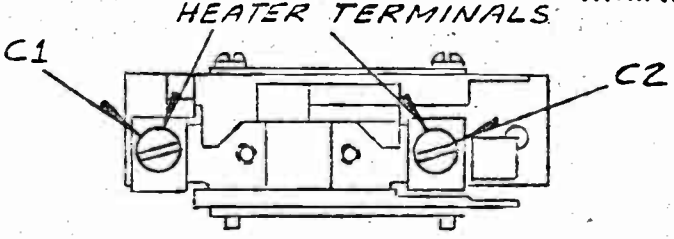
FIG 3
REAR VIEW OF A7K1, A1A1K1, A1A1K2



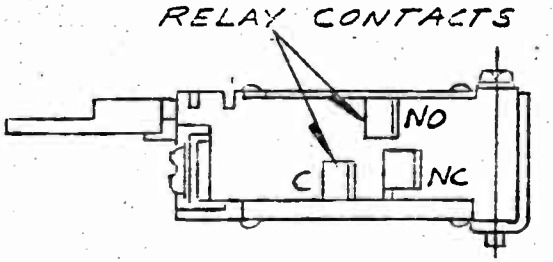
REAR VIEW OF A7S2
FIG 4



FRONT VIEW OF A7S1
FIG 5



REAR VIEW OF A5K5

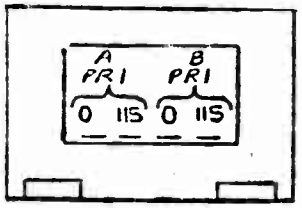


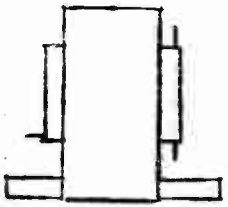
BOTTOM VIEW OF A7K5
FIG 6

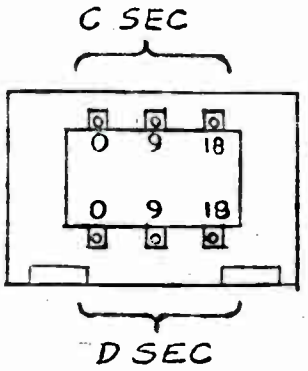
RCA CORPORATION

27	28	29	30	31	32	33	34	35	36	37							
8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25

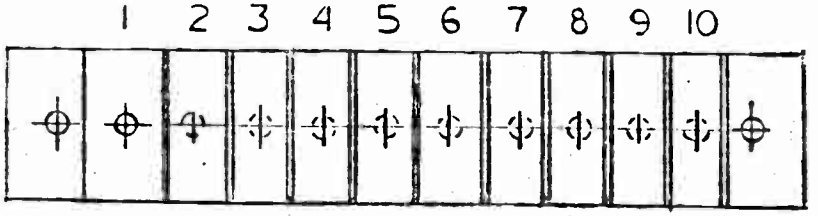
A SIZE 3751979
CODE IDENT NO. 49671 SHEET 5 CONT'D ON SH 6







A7T3
FIG. 11

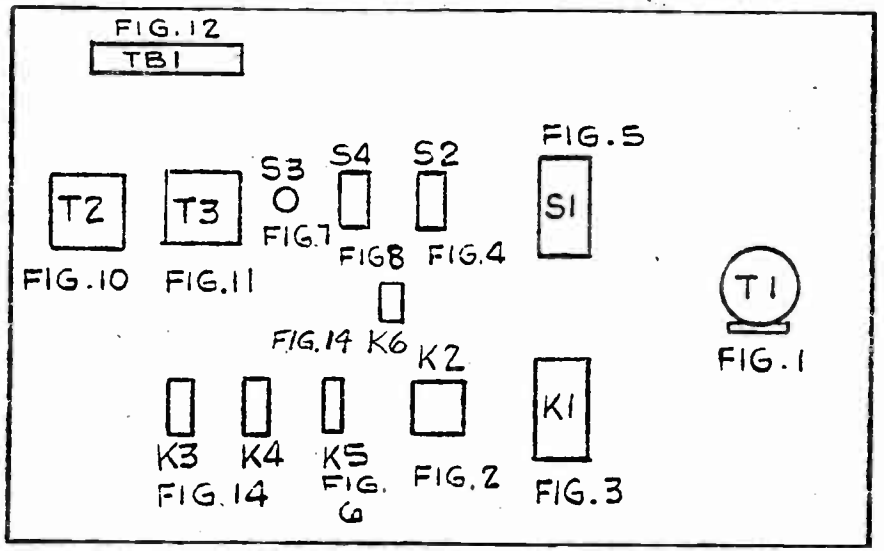


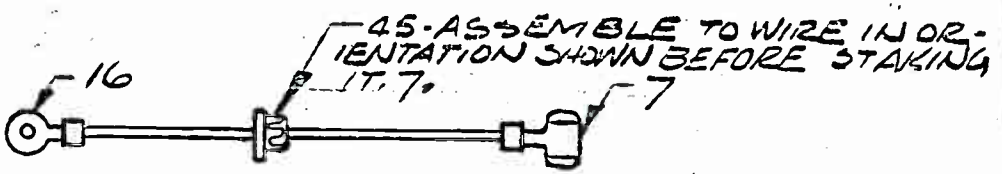
A7TB1
FIG. 12

1	2	3
4	5	6
7	8	9
A		B

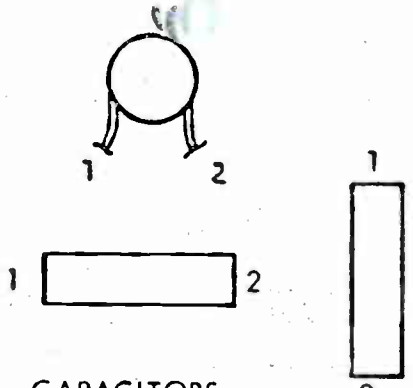
A7K3 & A7K4, A7K6
VIEW FROM BOTTOM
FIG. 14

A7

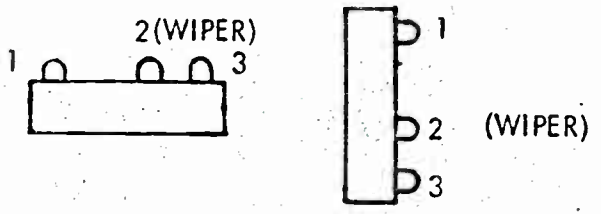




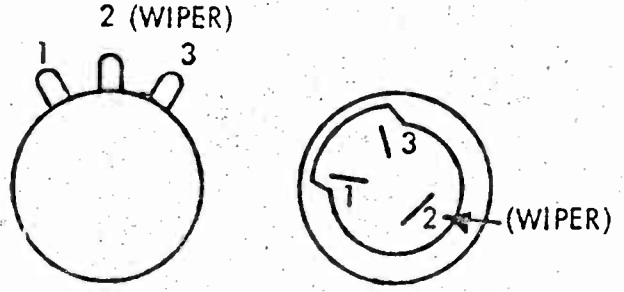
GROMMET ASSEMBLY FOR WIRE NO's 304-309
FIG. 15



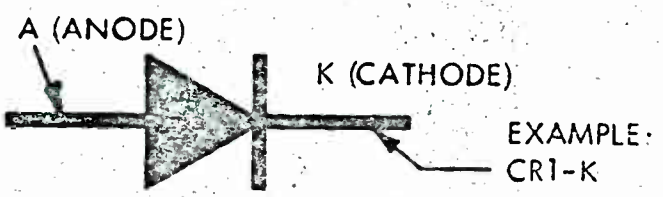
CAPACITORS,
FIXED RESISTORS OR INDUCTORS



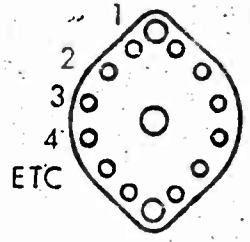
VARIABLE RESISTORS



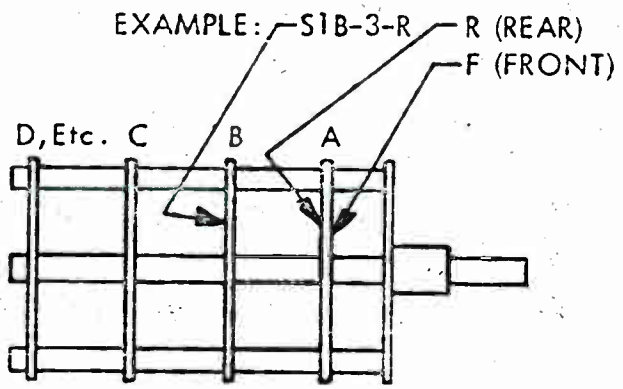
POTENTIOMETERS
(VIEWED FROM REAR)



DIODES

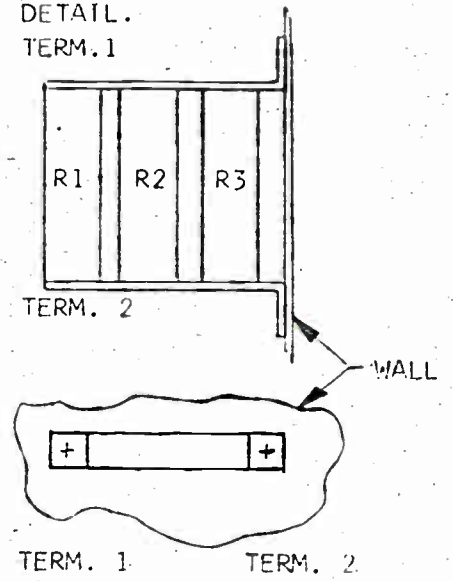


(VIEWED FROM REAR)



ROTARY SWITCHES

WHEN MOUNTING MULTIPLE RESISTORS THEY WILL BE IDENTIFIED AS SHOWN BELOW. HIGHEST RESISTOR NUMBER WILL BE NEAREST THE MOUNTING WALL. TERMINALS WILL BE NUMBERED WITH LOWEST NUMBER AT THE TOP, OR LEFT TO RIGHT AS SHOWN IN BOTTOM DETAIL.



SINGLE & MULTIPLE RESISTOR MTG EXAMPLE

WIRES 4 THRU 49 [illegible] UNLESS NOTED [illegible] ARE ITEMS THIS [illegible]

LINE NO. (4)	FROM PRE	FROM DESIGNATION (16)	FROM TERM (5)	TO PRE	TO DESIGNATION (16)	TO TERM (5)	CABLE COND (7)	CABLE NOTE (4)	REMARKS (18)	FIG. (4)
1				A7	S 1- 1	ST&TIN		5	AC INPUT	5
2				A7	S 1- 2	ST&TIN		5	AC INPUT	5
3				A7	S 1- 3	ST&TIN		5	AC INPUT	5
4	A7	S 1- 4	STRIP	A7	K 1L- 3	STRIP	30		240 VAC	5 3
5	A7	S 1- 5		A7	K 1L- 2	STRIP			240 VAC	5.3
6	A7	S 1- 6		A7	K 1L- 1	STRIP			240 VAC	5.3
7	A7	K 1T- 3		A1	T 1H- 1	31			240 VAC	3
8	A7	K 1T- 2		A1	T 1H- 2	31			240 VAC	3
9	A7	K 1T- 1	STRIP	A1	T 1H- 3	31			240 VAC	3
10	A1	T 1R- 1	31	A1	CR 1 -AC1	31			HV AC	9
11	A1	T 1R- 2	31	A1	CR 1 -AC2	31				9
12	A1	T 1R- 3	31	A1	CR 1 -AC3	31				9
14	A1	T 1R- 4	31	A1	CR 2 -AC1	31				9
15	A1	T 1R- 5	31	A1	CF 2 -AC2	31			HV AC	9
16	A1	T 1R- 6	31	A1	CR 2 -AC3	31			HV DC	9
17	A1	CR 1 -NEG	31	A1	CR 2 -NEG	31				9
18	A1	CR 1 -POS	31	A1	CR 2 -POS	31				9
19	A1	CR 1 -POS	31	A8	C16 THRU 31 POS	31		1		9
20	A1	CR 1 -NEG	31	A8	C16 THRU 31 NEG	31		1	HV DC	
21	A3	R 2- 2	31	A2	A 5E- 3	31			OFFSET RLG	
22	A2	A5-E1	31	A2	K 1- 2	31			[illegible]	
23	A2	A5-E2	31	A2	K [illegible] 1	31			[illegible]	
24	A8	C16 THRU 31 NEG	31	A[illegible]	A3 J1	31		1,7	[illegible]	
25	A2	A 5E 1	31	A[illegible]	A3 J[illegible]	31	30	8	[illegible] SET	

27	28	29	30	31	32	33	34	35	36	37						
8		11	[illegible]	12	13	14	15	16	17	18	19	21	22	23		

RCA

RCA CORPORATION

A 3751979

CODE IDENT NO 49671 SHEET 9 CONT ON SH 9A

LINE NO.	FROM PRE	FROM DESIGNATION		TO PRE	TO DESIGNATION		CABLE COND		REMARKS	FIG
26	A1	T 3 - X 1		A10	C 1 B - 2		28		GND	
27	A1	T 3 - X 1 A		A2	L 1 - 2		53		COM XFRMR [illegible]	
28	A2	L 1 - 1		A10	A1 C6A - 1		54		PA LOADING	
29	A10	A1 C6A - 1		A10	A1 C6B - 1		34 (struck)	19	PA LOADING	
30	A10	A1 C6A - 2		A10	A1 C6B - 2		34 (struck)	19	PA LOADING	
31	A10	A1 C6B - 2		A10	C 1 A - 1		38 & 37 (struck)	19	85 OHM MATCHING	
32	A10	C 1 A - 1		A10	C 1 B - 1		37 (struck)	19	85 OHM MATCHING	
33	A10	C 1 A - 1		A10	L 1 - 1		52		PI [illegible]	
34	A10	L 1 - 2		A10	L 2 - 1		37		"	
35	A10	L 2 - 1		A10	C 4 - 2		29		2F TRAP	
36	A10	L 2 - 2		A10	C 4 - 1		27		"	
37	[illegible]			[illegible]			[illegible]		[illegible]	
38	A10	C 2 A - 1		A10	L 6 - 1		51		[illegible] LOADING	
39	A10	C 2 A - 1		A10	C 2 B - 1		[illegible] (struck)	19	T NETWORK	
40	A10	C 2 A - 1		A10	L 4 - 1		26		3F TRAP	
41	[illegible]	[illegible] - 2		A10	C 3 - 1		40		" "	
42	A10	L 4 - 2		A10	J 1 - 1		39 - 66		[illegible]	
43	[illegible]	[illegible]		[illegible]	[illegible]		39		[illegible]	
44	A10	A1 C4 - 1		[illegible]	C 1 B - 1		26		[illegible]	
45	A10	C 4 - 1		A10	C 2 A - 1		[illegible] (struck)	19	2F TRAP	
46										
47										
48				A7	T B 2 - 1	ST & TIN		5	AC GROUND NEUTRAL	
49	A1	T 1 - SHIELD	31	A1	- CHASSIS	31	30		SAFETY GROUND	

RCA CORPORATION

A 3751979

9A ... 70

WIRES 50 THRU 99 FOR GR 506 UNLESS SPECIFIED, TERM & COND MFG ITEMS THIS M/L

LINE NO.	FROM PRE	FROM DESIGNATION	FROM TERM	TO PRE	TO DESIGNATION	TO TERM	CABLE COND	CABLE NOTE	REMARKS	FIG
50										
51	A7	K 1-L 1	17	A7	S 2- 4	7	57		LV-FANS	5-4
52										
53	A7	S 2- 2	23	A7	K 2-L 2	STRIP	60		LV-FANS	4-2
54	A7	S 2- 1	23	A7	K 2-L 1	STRIP	60		LV-FANS	4-2
55	A7	K 2-L 1	STRIP	A7	K 2-C 1	STRIP	60		LV-FANS	2
56	A7	K 2-L 2	STRIP	A7	T 2-H 1	13	60		CONTROL PRI	2-10
57	A7	T 2-H 1	9	A7	K 1-C 2	STRIP	55		LV-FANS	10-3
58	A7	T 2-H 4	9	A7	K 3- 7	8			LV-FANS	10-14
59	A7	K 2-C 1	STRIP	A7	T 2-H 4	9			CONTROL PRI	2-10
60	A7	K 2-C 2	STRIP	A7	K 4- 6	8			HV BYPASS	2-14
61	A7	K 4- 9	8	A7	K 1-C 2	STRIP			HV ENABLE	2-7
62	A7	K 3- 4	8	A7	S 5-NO 2	STRIP			HV ENABLE	14-3
63	A7	S 5-NO 2	STRIP	A7	S 3- 5	6			HV BYPASS	3-7
64	A7	S 3- 6	6	A7	S 5-NO 1	STRIP			HV ENABLE	7-3
65	A7	S 5-NO 1	STRIP	A7	K 1-C 1	STRIP	55		HV ENABLE	3
66										
67										
68	A7	K 1-T 3	17	A7	HR 1-C 1	16	57		DRVR O/C GRKR	3-6
69	A7	HR 1-C 2	11	A7	T 1- 4	10	55		DRVR ADJ PRI	6-1
70	A7	K 2T- 1	STRIP	A7	T C1- 6	23	60		240 VAC RTN	
71										
72	A7	S 3- 2-	6	A7	S 5-NC 1	STRIP	55		HV BYPASS	7-3
73										
74										
75	A7	S 2- 3	7	A7	K 1-L 2	17	57	3	FOR 220/240 V INPUT	5-4
75	A7	S 2- 3	7	A7	T K2	STRIP	57	3	FOR 110/115 V INPUT	5-4

27	28	29	30	31	32	33	34	35	36	37
8	9	10	11	12	13	14	15	16	17	18

19	20	21	22	23	24	25

RCA CORPORATION

A SIZE 3751979

CODE IDENT NO 49671 SHEET 10 CONT'D ON SH 11

WIRES 51 THRU 99 FOR GR 506 UNLESS SPECIFIED, TERM & COND ARE ITEMS THIS M/L

LINE NO.	FROM PRE	FROM DESIGNATION	FROM TERM	TO PRE	TO DESIGNATION	TO TERM	CABLE COND	CABLE NOTE	REMARKS	FIG
76		A7T1-1	15		A7K1T2	17	57	3	FOR 208/240 V INPUT	3-1
76		A7T1-1	15		A7TB2	STRIP	57	3	FOR 380/415 V INPUT	3-1
77		A7T2-H2	9		A7T2-H3	9	55		CONTROL PRI	10
78		A7T2-X2	9		A7T2-X3	9			CONTROL PRI	10
79		A7T2-X4	9		A7S4-	2			24 VAC CONTROL	10-8
80		A7T2-X1	9		A7TB1-10	6			24 VAC RETURN	10-12
81		A7S4-1	6		A7TB1-8	6			24 VAC CONTROL	8-12
82		A7T2-X1	9		A7K4-A	8			LV AUX RTN.	8-14
83		A7TB1-8	6		A7TB1-9	6	55		24 VAC	12
84										
85										
86		A7K2-T2	STRIP		A7T3-11S-APRI	STRIP	60			12
87		A7K2-T1	STRIP		A7T3-10-BPRI	STRIP	60		BOOST/BUCK PRI	2-11
88		A7T3-0-APRI	STRIP		A7T3-11S-BPRI	STRIP	60		BOOST/BUCK PRI	2-11
89		A7K2-T2	STRIP		A7TB1-2	23	60		BOOST/BUCK PRI	11
90		A7T3-18-OSEC	STRIP		A7TB1-2	6	60		BOOST/BUCK SEC	2-12
91		A7T3-18-OSEC	STRIP		A7TB1-5	6	55		240V DIST	11-12
92		A7T3-9-OSEC	STRIP		A7TB1-4	6			240V DIST -11	11-12
93		A7T3-0-OSEC	STRIP		A7TB1-3	6			240V DIST 0	11-12
94		A7T3-0-OSEC	STRIP		A7T3-18-CSEC	STRIP			240V DIST +11	11-12
95		A7T3-0-CSEC	STRIP		A7TB1-1	6			BOOST/BUCK SEC	11
96		A7TB1-8	6		A7K4-4	8	55		208 DIST	11-12
97									24 VAC	12-14
98										
99										
X		END GROUP 506	X			X	X	X	END GR 506	X
X		BEGIN GROUP 501	X			X	X	X	BEGIN GR 501	X
100	A8	S1-1	STRIP	A6	S1-	STRIP	55		24 VAC	
101	A9	CR1-POS	7	A9	C2-POS	16	51		DRVR DC	
102	A9	CR1-NEG	7	A9	C2-NEG	16	57		DRVR DC	

RCA CORPORATION

27 28 29 30 31 32 33 34 35 36 37

A 3751979

CODE IDENT NO 49671 SHEET 11 CONT'D ON SH 12

SUMMIT COMMUNICATIONS, INC.

PURCHASE ORDER

P 13610

THIS NUMBER MUST APPEAR ON ALL PACKAGES, INVOICES AND SHIPPING DOCUMENTS.

SHIP TO
WSJS/WTQR
875 WEST FIFTH STREET
WINSTON-SALEM, NORTH CAROLINA 27102

INVOICE TO
WSJS/WTQR
POST OFFICE BOX 3018
WINSTON-SALEM, NORTH CAROLINA 27102

ACKNOWLEDGE ORDER AND GIVE SHIP DATE

PLEASE SEND ALL INVOICES IN TRIPLICATE

SHOW PURCHASE ORDER NUMBER ON ALL INVOICES AND SHIPPING DOCUMENTS

Seller agrees to deliver the material or services specified herein, subject to all terms and conditions herewith and on reverse side.

All shipments on this order are to be insured at the minimum valuation in accordance with tariff of carrier.

VENDOR
SOLITRON
1177 BLUE HERON BLVD.
RIVIERA BEACH, FL 33404
ATTN NAT WEST

NOT FOR RESALE (TAXABLE)	
ORIGINAL ORDER	X
CONFIRMING ORDER	

DATE	PERSON REQUESTING	DATE DELIVERY REQUIRED	SHIP VIA	TERMS	VENDOR NO.
11/1/84	MR. SAM MOONEY				

FOLD ▶

GEN. MANAGER APPROVAL	DATE	DIVISIONAL APPROVAL	DATE	FINANCIAL APPROVAL	DATE	EXECUTIVE APPROVAL	DATE

ITEM	QUAN.	OUR STOCK NUMBER	VENDOR STOCK NUMBER	DESCRIPTION	UNIT OF MEAS.	UNIT PRICE	TOTAL
1.	20ea.		SDT12303	SPECIAL TRANS. WITH VCE GREATER THAN 330 VOLTS PARTIAL SHIPMWNT OF 5 OR MORE OVERNITE SHIPMENT IF AVAILABLE NOTE – SAME SPECS AS SDT-12303S (Mfg. for RCA)		20.00	400.00

PROJECT BUDGET CONTROL

AMOUNT THIS PURCH.	
PRIOR PROJ. TOTAL	
NEW PROJ. TOTAL	
BUDGETED TOTAL	
BUDGET REMAINING	

FINANCIAL PLAN YEAR 19 84

PLEASE NOTE:

FOLD ▶

GL ACCOUNT NO. 07-2-04-9064-0

PROJECT NO.

CAPITAL ASSET NO.:

FOLD ▲

ACCOUNTING COPY

SUMMIT COMMUNICATIONS, INC.

REQUEST FOR CHECK

DATE	AMOUNT
11-9-84	$ 415.15

MAKE CHECK PAYABLE TO

U.P.S. / C.O.D.

Solitron
1177 Blue Heron Blvd
Riviera Beach, Fl. 33404

REASON FOR REQUEST

Replacement Parts for RCA BTA5SS Transmitter

ADDITIONAL PROCESSING INFORMATION (IF APPLICABLE)

CHARGE AS FOLLOWS:

ACCOUNT NUMBER	AMOUNT	ACCOUNT NUMBER	AMOUNT	ACCOUNT NUMBER	AMOUNT
07204 90640	415.15				

DATE CHECK IS NEEDED	REQUESTED BY
11-9-84	Mooney

CHECK HERE IF A SEPARATE CHECK IS REQUIRED.

APPROVALS *

* IN ACCORDANCE WITH COMPANY POLICY

WIRES 100 THRU 499 FOR GR 501 UNLESS SPECIFIED. TERM & COND ARE ITEMS THIS M/L

LINE NO.	FROM PRE	FROM DESIGNATION	FROM TERM	TO PRE	TO DESIGNATION	TO TERM	CABLE COND	CABLE NOTE	REMARKS	FIG
103	A9	C 2 - POS	16	A9	R 1 - 1	ST&TIM	57		ORVR DC	
104	A9	R 1 - 2	ST&TIM	A9	C 1 - POS	16	57		ORVR DC	
105	A9	C 2 - NEG	16	A9	C 1 - NEG	16	57		ORVR DC	
106	A9	X F 1 - 1	11	A4	S 1 B - 1	ST&TIM	55		MTR POS 1 DRVR I	
107	A9	X F 2 - 1	11	A8	A 1 P 4 - 2	21	55		OPTO MTR DRVR V	
108	A9	X F 2 - 1	16	A8	A 3 THRU 1 - 4	7	57		DRVR DC	
109	A8	R 2 - 1 POS	9	A4	S 1 A - 10	ST&TIM	55		MTR POS 10 SUP I	
110	A8	R 2 - 2 NEG	9	A4	S 1 B - 10	ST&TIM	↑		MTR POS 10 SUP I	
111	A8	R 3 - 1 POS	9	A3	M 3 - POS	11	↓		PA AMP MTR +	
112	A8	R 3 - 2 NEG	9	A3	M 3 - NEG	11	55		PA AMP MTR -	
113	A6	A 3 P 1 - 5	21	A6	A 3 - CHASSIS	9	55	9	PA LIN COR GND	
114										
115	A8	X F 1 - 2	11	A8	A 1 P 1 - 4	21	55	1	HV BLEEDER NEG	
116	A8	C 16 THRU 31 NEG	23	A7	K 3 - 9	5	60	1	HV BLEEDER NEG	
117	A8	R 1 - 2	ST&TIM	A7	K 3 - 3	5	60		HV BLEEDER POS	
118	A9	X F 3 - 2	11	A8	A 1 P 1 - 6	21	55		HV BLEEDER POS	
119	A8	R 1 - 1	ST&TIM	A8	R 3 - 2	12	↑		HV BLEEDER POS	
120	A8	R 3 - 2	10	A3	M 2 - POS	11			PA VOLTMETER	
121	A3	M 2 - NEG	11	A8	A 1 P 4 - 5	21			PA VOLTMETER	
122	A1	T 1 - NEUTRAL	12	A8	A 1 P 1 - 3	21			Y-NET (-105V)	
123	A1	T 1 - 3	10	A1	T 2 - 0 - APRI	10			[illegible]	1-15
124	A1	T 1 - 4	10	A1	T 2 - 11 5	BPRI	10		DRVR PRI	1-15
125	A1	T 2 - 11 5 - APRI	10	A1	T 2 - 0	&PRI	10	55	DRVR PRI	15
126	A9	C 1 - NEG	16	A8	R 3 - 2	17	57		DRIVER RTN	
127	A8	R 3 - 1 - POS	10	A4	A 1 APS - 2	21	RED 58		HVOL RED	
127	A8	R 3 - 2 NEG	10	A4	A 1 APS - 1	21	BLK 58		HVOL BLK	
127	A8	NO - CONNECTION		A4	A 1 APS - 6	21	SHLD 58		HVOL SHLD	
128	A1	T 2 - 0 - CSEC	15	A1	T 2 - 0 - OSEC	15	57		DRVR SEC	15
129	A1	T 2 - 18 - CSEC	15	A1	T 2 - 18 - OSEC	15	57		DRVR SEC	15
130	A1	T 2 - 0 - CSEC	15	A9	CR 1 - AC 1	7	57		DRVR SEC	15

WIRES 100 THRU 499 FOR GR 501 UNLESS SPECIFIED, TERM & COND ARE ITEMS THIS M/L

LINE NO.	FROM PRE	FROM DESIGNATION	FROM TERM	TO PRE	TO DESIGNATION	TO TERM	CABLE COND	CABLE NOTE	REMARKS	FIG
131	A9	PS2NEG	15	A8C16THRU31, NEG		17	57	1	-265V	
132	A3	R 1- 1	ST&TIN	A3	R 1- 2	ST&TIN	55		RETURN	
133	A7	TB1- 6	6	A6	B 1- 2 (WHT)	24			240 VAC FAN RTN	
134	A7	TB1- 6	6	A5	B 1- 2 (WHT)	24			240 VAC FAN RTN	
135	A7	TB1- 6	6	A9	PS3-AC2	ST&TIN			240 VAC RTN	
136	A7	TB1- 6	6	A10	PS2-AC2 (T1-1)	ST&TIN			240 VAC RTN	
137	A10	PS2-AC2 (T1-1)	ST&TIN	A10	PS1-AC2 (T1-0)	ST&TIN			240 VAC RTN	
138	A9	PS3-AC2	ST&TIN	A9	PS2-AC2	ST&TIN			240 VAC RTN	
139	A9	PS2-AC2	ST&TIN	A9	PS1-AC2	ST&TIN			240 VAC RTN	
140	A7	TB1- 4	6	A10	PS2-AC1 (T1-4)	ST&TIN			240 VAC	
141	A7	TB1- 4	6	A5	B 1- 1 (BLK)	24			240 VAC FAN	
142	A7	TB1- 4	6	A6	B 1- 1 (BLK)	24			240 VAC FAN	
143	A7	TB1- 4	6	A9	PS3-AC1	ST&TIN			240 VAC	
144	A9	PS3-AC1	ST&TIN	A9	PS2-AC1	ST&TIN			240 VAC	
145	A9	PS2-AC1	ST&TIN	A9	PS1-AC1	ST&TIN			240 VAC	
146	A10	PS2-AC1 (T1-4)	ST&TIN	A10	PS1-AC1 (T1-115)	ST&TIN			240 VAC	
147	A10	PS2-A 3-POS	9	A2	TB1- 1	18			LV SUPPLY COM	
148	A10	PS2-A 3-NEG	9	A2	TB1- 2	18			-5V	
149	A10	PS2-A 2-POS	9	A2	TB1- 4	18			+5V	
150	A10	PS2-A 2-NEG	9	A2	TB1- 3	18			LV SUPPLY COM	
151	A10	PS2-A 1-POS	9	A2	TB1- 3	18			+12	
152	A10	PS2-A 1-NEG	9	A2	TB1- 2	18			LV SUPPLY COM	
153	A10	PS1-TB1-1POS	6	A2	TB1- 5	18			+36	
154	A10	PS1-TB1-2NEG	6	A2	TB1- 4	18			LV SUPPLY COM	
155	A9	A 1 TB1- 10	6	A8	A 3 TB1- 2	6			+52	
156	A9	A 1 TB1- 5	6	A8	A 3 TB1- 6	6	55		52V RTN	

RCA CORPORATION

27 28 29 30 31 32 33 34 35 36 37

3 9 10 11 12 13 14 15 16 17 18 19 21 22 23 24 26

A 3751979

SIZE CODE IDENT NO 13611 SHEET 13 CONT'D ON SH 14

A

WIRES 100 THRU 499 FOR GR501 UNLESS SPECIFIED. T... L... COND ARE ITEMS THIS M/L

157	~~A9 TB1 1~~	3		ST&TIN	A9 TB1 -	4		ST&TIN	55		-26.5 V
158	~~A9 TB1 2~~	8		ST&TIN	A9 RS1 -	CHASSIS		50	55		-8 HI CHASSIS
159	A9 PS1 (+V) & (+S)			ST&TIN	A9 CR2 - CATHODE			ST&TIN	55		-26 SV
160	~~A9 TB1 3~~	1		ST&TIN	A9 RS2 -	CHASSIS		50	55		+12 HI CHASSIS
161	A9 PS2		NEG	15	A9 PS1		POS	ST&TIN	57		-26 SV
162	~~A9 DS2~~		~~ANODE~~	10	~~A9 CR2~~	CATHODE		ST&TIN	55		-26 SV
163	~~A9 CR2~~		~~ANODE~~	12	A9 PS1		NEG	16	55		-8 HI
164	A1 T 2 -	18	CSEC	15	A9 CR1 -	AC2		7	57		DRVR SEC
165	A7 K 4 -	7		22	A8 S 1 -	6		ST&TIN	55		24 VAC 14
166	A8 S 1 -	6		ST&TIN	A6 S 1 -	6		ST&TIN			24 VAC
167	A7 TB1 -	10		6	A8 S 1 -	1		ST&TIN			24 VAC 14
168	A7 S 3 -	1		6	A2 TB1 -	40		18			+12
169											
170	A7 S 5 - NC1			STRIP	A4A 1 AP	2 -	14	21			HV BYPASS 7-3
171	A7 S 5 - NC2			STRIP	A4A 1 AP	2 -	14	21			HV BYPASS 3
172	A7 S 6 - NC1			STRIP	A4A 1 AP	3 -	13	21			LV CONT. RTN 2
173	A7 S 6 - NC2			STRIP	A4A 1 AP	3 -	12	21			LV CONT 2
174	A8 S 1 -	4		ST&TIN	A4A 1 AP	3 -	2	21			AIR.
175	A6 S 1 -	8		ST&TIN	A4A 1 AP	3 -	1	21			AIR RTN
176	A6 S 1 -	4		ST&TIN	A8 S 1 -	8		ST&TIN			AIR
177	A7 K 4 -	B		8	A4A 1 AP	5 -	9	21			LV AUX COIL 14
178	A7 K 3 -	8		8	A4A 1 AP	2 -	15	21			HV AUX COIL + 14
179	A7 K 3 -	A		22	A4A 1 AP	2 -	16	21			HV AUX COIL - 14
180	A7 K 3 -	A		8	A8A 1 P6 -	1		21			HV AUX COIL - 14
181	A7 K 5 -	NO		6	A4A 1 AP	2 -	13	21			DRVR PS OVLO 6
182	A1 S 1 -	C		8	A2 TB2 -	7		6	55		HV INTLK 6

27	28	29	30	31	32	33	34	35	36	37
~~8~~	~~9~~	10	11	12	13	14	15	16	17	18

19	21	22	23	24	26
19	21	22	23	24	26

A 3751979

14 15

WIRES 00 THRU 499 FOR GR 501 UNLESS SPECIFIED, TERM & COND ARE ITEMS THIS M/L

FROM				TO				CABLE NO.		ITEM	FIG
183	A7	TB1	- 9								
184	A7	TB1	- 10								
185	A4A	1	AP 6 - 7								
186	A4A	1	AP 6 - 9								
187	A4A	1	AP 6 - 1								
188	A4A	1	AP 6 - 3								
189	A4A	1	AP 2 - 7								
190	A4A	1	AP 2 - 1								
191	A4A	1	AP 2 - 2								
192	A8A	1	P3 - 8								
193	A8A	1	P3 - 6								
194	A8A	1	P3 - 10								
195	A8A	1	P 3 - 7								
196	A8A	1	P 1 - 12								
197	A8A	1	P 1 - 11								
198	A8A	1	P 1 - 10								
199	A8A	1	P 6 - 3								
200	A1S	1	- NO								
201	A4A	1	AP 6 - 14								
202	A7S	5	- NC 2								
203	A2	TB1	- 58								
204											
205	A10T	1	- 1								
205	A10T	1	- 6								
205	A10T	1									
206	A8A	1	P3 - 5								
207	A8A	1	P3 - 9								
208	A8A	1	P6 - 2								
209	A2	TB1	- 22								
210	A2A	1	P 3 - 2								
	6	A4A	1	AP 7 - 2					21	55	24V AC
	6	A4A	1	AP 6 - 8					21		24V AC RTN
	21	A2	TB1	- 23					18		-5
	21	A2	TB1	- 43					18		+5
	21	A2	TB1	- 33					18		+12
	21	A2	TB1	- 53					18		+36
	21	A9A	1	TB1 - 10					6		+52
	21	A9A	1	TB1 - 8					6		+52 CUR. SENS
	21	A9A	1	TB1 - 7					6		+52 CUR. SENS RTN
	21	A2	TB1	- 27					18		-5
	21	A2	TB1	- 47					18		+5
	21	A2	TB1	- 37					18		+12
	21	A2	TB1	- 17					18		SUPPLY COM
	21	A9	XF4	- 1					11		+12 HI
	21	A8	XF1	- 2					11		+12 HI RTN
	21	A5	A1J2						6		-5 HI
	21	A2	TB3	- 4					6		RMT HV SUPPLY
	8	A7K	5	- C					6		HV INTLK
	21	A2	TB1	- 13					18		SUPPLY COM.
STRIP	A2	A	1	P 2 - 4					21	55	HV BYPASS
	18	A7K	5	- C					6	55	+36V
ST&TIN	A2	TB3	- 9								
ST&TIN	A2	TB3	- 10						6	RED 58 11	AUDIO IN
	24	A2	TB3	- 8					6	BLK 58 11	AUDIO IN
	21	A4A	1	AP 6 - 4					6	SHLD 58 11,12	AUDIO IN
	21	A4A	1	AP 6 - 5					21	55	+12 HI SENSE
	21	A4A	1	AP 3 - 3					21		-5 HI SENSE
	18	A2	A	1 P 3 - 1					21		HV SAMPLE
	21	A2	TB1	- 42					21		-5
									18	55	+5

27	28	29	30	31	32	33	34	35	36	37
8	9	10	11	12	13	14	15	16	17	18

A 3751979

15 16

WIRES X THRU 499 FOR GR 501 UNLESS SPECIFIED, TERM & COND ARE ITEMS THIS M/L

LINE NO.	FROM REF DESIGNATION	TO REF DESIGNATION	TERM	CABLE COND	CABLE WIRE	REMARKS	FIG
211	A2 A 1 P 3 - 15	21 A2 TB 1 - 32	18	55		+12	
212	A2 A 1 P 3 - 11	21 A2 TB 1 - 12	18			SUPPLY COM	
213	A2 A 1 P 1 - 18	21 A2 A 1 E - 1	9			CHASSIS GND	
214	A3 M 4 - POS	6 A3 TB 1 - 1	STETIN			RF AMPLIFIER	
215	A2 A 1 P 3 - 7	21 A2 TB 3 - 20	NOTE10			SC ON	
216	A2 A 1 P 3 - 6	21 A4 A 1 AP 2 - 8	21			SC FAIL ALARM	
217	A2 A 1 P 3 - 10	21 A4 A 1 AP 2 - 11	21			LAMP INITIAL RST	
218	A2 A 1 P 2 - 10	21 A4 A 1 AP 2 - 9	21			AIR/MIN PWR	
219	A2 A 1 P 2 - 11	21 A4 R 1 - 3	STETIN		4	PWR ADJ +5V	
220	A2 A 1 P 2 - 2	21 A4 R 1 - 2	STETIN		4	PWR ADJ WIPER	
221	A2 A 1 P 2 - 3	21 A4 R 1 - 1	STETIN	55	4	PWR ADJ COM	
222	A8 A 1 P 3 - 1	21 A4 A 1 AP 3 - 6	21	55		MOD BIAS #1	
223	A8 A 1 P 3 - 2	21 A4 A 1 AP 3 - 4	21	55		MOD BIAS #2	
224	A8 A 1 P 3 - 3	21 A4 A 1 AP 3 - 9	21	55		MOD BIAS #3	
225	A8 A 1 P 3 - 4	21 A4 A 1 AP 3 - 10	21	55		MOD BIAS #4	
226	A8 A 1 P 4 - 8	21 A4 S 1 A - 1	STETIN	55		DRVR SUPPLY	
227	A8 A 1 P 4 - 7	21 A4 S 1 A - 2	STETIN			DRVR V	
228	A8 A 1 P 4 - 1	21 A4 S 1 A - 3	STETIN			DRVR I	
229	A8 A 1 P 1 - 7	21 A4 S 1 A - 6	STETIN			-5 HI	
230	A8 A 1 P 4 - 11	21 A4 S 1 A - 7	STETIN			LIN. SUPPLY	
231	A8 A 1 P 1 - 9	21 A4 S 1 A - 12	STETIN			SUPPLY V	
232	A8 A 1 P 4 - 3	21 A4 S 1 B - 2	STETIN			DRVR V	
233	A8 A 1 P 4 - 12	21 A4 S 1 B - 4	STETIN			OFFSET REG	
234	A8 A 1 P 1 - 8	21 A4 S 1 B - 5	STETIN			+12 HI	
235	A8 A 1 P 1 - 5	21 A4 S 1 B - 6	STETIN			-5 HI	
236	A8 A 1 P 1 - 1	21 A4 S 1 E - 12	STETIN	55		SUPPLY V	
237	A4 A 1 A P 5 - 8	21 A2 A 6 P 3 - 9	21	55		PA DRIVE SENSE	
238							
239	A4 S 1 A - 4	STETIN A4 S 1 A - 8	STETIN	55		OFFSET REG	
240	A4 S 1 A - 5	STETIN A4 S 1 B - 6	STETIN	55		+12 HI	

27	28	29	30	31	32	33	34	35	36	37
8	9	10	11	12	13	14	15	16	17	18

A 3751979

16 17

WIRES 100 THRU 499 FOR GR 501 — UNLESS SPECIFIED, TERM & COND ARE ILLUSTRATED M/L

LINE NO.	FROM PRE	FROM DESIGNATION		TO PRE	TO DESIGNATION		CABLE COND	REMARKS	FIG
241	A4	S 1A- 8	STSTIN	A4	S 1A- 11	STSTIN	55	MTR PROBE +	
242	A4	S 1A- 11	STSTIN	A4	S 1A- 9	STSTIN		OFFSET REF	
243	A4	S 1A- 9	STSTIN	A4	S 1A- 8	STSTIN		MTR PROBE	
244	A4	S 1G- 1	STSTIN	A4	S 1G- 3	STSTIN		DRVR I	
245	A9	A 1TB1- 10	6	A4	S 1B- 7	STSTIN		LIN SUPPLY	
246	A2	TB1- 19	18	A4	S 1B- 9	STSTIN		MTR PROBE -	
247	A4	S 1A- COMMON	STSTIN	A3	M 1 NEG	11		MTR NEG	
248	A4	S 1A- COMMON	STSTIN	A3	M 1 POS	11	55	MTR POS	
249	A9	XF4-1	16	A5	A1J1	7	57	+12 HI	
250	A9	XF5-2	48	A5	A1J2	23	60	-5 HI	
251	~~A2~~	~~A XF P~~	~~NO~~	~~A2~~	~~E~~	~~STSTIN~~	~~55~~	~~IOXXXSEN~~	
252	A2	TB3- 6	6	A3	R 1- 1	STSTIN		REMARK	
253	A2	TB3- 7	6	A3	M 4-NEG	6		REMOTE	
254	A2	A 1P 4- 1	21	A2	A 2P 3- 3	21		BOARD COMMON	
255	A4	S 1A- 9	STSTIN	A2	A 1P 2- 1	21	55	MTR PROBE	
256	A2	A 1P 3- 14	21	A10	A 1P 2	44	CNTR 59	FWD PWR SAMPLE	
256	A2	A 1P 3- 13	21	A10	A 1P 2	44	SHLD 59	FWD PWR RTN	
257	A2	A 1P 1- 4	21	A8	A 1P 1-2	21	CNTR 59	HUMBUCK	
257	A2	A 1P 1- 3	21	A8	NO CONNECTION		SHLD 59	HUMBUCK SHLD	
258	A2	A 1P 4- 2	21	A2	A 2P 3- 4	21	55	SUBCARRIER	
259	A2	A 1P 4- 5	21	A5	A1P1-2	21	CNTR 59	SUBCARRIER OUT	
259	A2	A 1P 4- 4	21	A5	A1P1-1	21	SHLD 59	SUBCARRIER RTN	
260	A2	A6P 3-6	21	A6	A 2P 1- 5	21	CNTR 59	PADRIVE SENSE	
261	A2	A6P 3-8	21	A6	A 2P 1- 1	21	SHLD 59	PADRIVE RTN	
261	A4	A 1AP 2- 5	21	A2	A 2P 4- 7	21	55	RF KILL	
262	A4	A 1AP 2- 10	21	A2	A 2P 4- 6	21		APC LOCK	
263	A2	A 2P 1- 1	21	A2	TB1- 24	18		-5	
264	A2	A 2P 1- 7	21	A2	TB1- 34	18		+12	
265	A2	A 2P 1- 6	21	A2	TB1- 14	18		SUPPLY COM	
266	A2	A 2P 2- 5	21	A2	A 3P 1- 5	21	55	FC Ø1	

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27 28 ~~29~~ 30 31 32 33 34 ~~35~~ ~~36~~ 37

A 3751979

WIRES 100 THRU 499 FOR GR 501 UNLESS SPECIFIED, TERM & COND ARE ITEM THIS M/L

LINE NO.	FROM PRE	FROM DESIGNATION	FROM TERM	TO PRE	TO DESIGNATION	TO TERM	CABLE COND	CABLE NOTE	REMARKS	FIG
267	A2	A 2 P 2 - 1	21	A2	A 3 P 1 - 3	21	55		FC Ø 2	
268	A2	A 3 P 1 - 6	21	A2	TB 1 - 55	18			+36	
269	A2	A 3 P 1 - 2	21	A2	TB 1 - 15	18			SUPPLY COM	
270	A2	A 3 P 1 - 1	21	A6	R 1 - 1	STSTM			SC AUDIO	
271	A6	R 1 - 2	STSTM	A6	J 4 -	12			SC AUDIO	
272	A6	A 3 P 1 - 7	21	A6	XF 1 - 2	11		9	SC AUDIO	
273	A6	A 3 P 1 - 8	21	A2	TB 1 - 36	18			+12	
274	A6	A 3 P 1 - 6	21	A2	TB 1 - 26	18			-5	
275	A6	A 3 P 1 - 4	21	A2	TB 1 - 16	18	55		SUPPLY COM	
276	A2	A 3 P 2	44	A6	A 1 E 1	3	CTR 59		RF	
276	A2	A 3 P 2	44	A6	WIRE 277 SHLD	STSTM	SHLD 59		SHLD	
277	A2	A 3 P 3	44	A6	A 1 E 2	8	CTR 59		RF	
277	A2	A 3 P 3	44	A6	WIRE 276 SHLD	STSTM	SHLD 59		SHLD	
278	A8	A 1 P 2 - 7	21	A5	A 2 P 1 - 1	21	55		MOD BIAS 1	
279	A8	A 1 P 2 - 6	21	A5	A 3 P 1 - 1	21	55		MOD BIAS 2	
280	A8	A 1 P 2 - 5	21	A5	A 4 P 1 - 1	21	55		MOD BIAS 3	
281	A8	A 1 P 2 - 4	21	A5	A 5 P 1 - 1	21	55		MOD BIAS 4	
282	A8	A 1 P 4 - 10	21	A2	A SE 1	12	55		OFFSET REG	
283	A8	A 1 P 4 - 6	21	A6	XF 1 - 2	11	55		PA VOLTS	
284	A4	A 1 AP 4 - 3	21	A8	A 2 P 8 - 5	21	CTR 59		PA BALANCE	
284	A4	A 1 AP 4 - 4	21	A8	A 2 P 8 - 4	21	SHLD 59		PA BALANCE RTN	
285	A8	A 3 TB 1 - 4	8	A8	C 32 - 1	POS 11	55		PA LINEARITY	
286	A8	C 32 - 2 WEG	11	A5	E 1	10			CHASSIS GND	
287	A8	A 3 TB 1 - 2	6	A6	A 3 P 2 - 4	21			LIN SUPPLY	
288	A8	A 3 TB 1 - 6	6	A6	A 3 P 2 - 6	21			SUPPLY COM	
289	A8	A 3 TB 1 - 1	6	A6	A 3 P 2 - 5	21			FET DRIVE	
290	A8	A 3 TB 1 - 3	6	A6	A 3 P 2 - 9	21			GAIN ES	
291	A8	A 3 TB 1 - 3	6	A6	A 3 P 2 - 10	21			OC SENSE +	
[illegible]	A8	A 3 TB 1 - 5	6	A6	A 3 P 2 - [illegible]	21	55		OC SENSE -	

WIRES 100 THRU 499 FOR [illegible] UNLESS SPECIFIED TERM [illegible] LINE LENGTHS [illegible]

LINE NO.	FROM PRE	FROM DESIGNATION	TO PRE	TO DESIGNATION	CABLE COND	CABLE WIRE	REMARKS	FIG
294	A6	A 1 J 2	A6	L1-1		19	DRVR RF OUT	
295	A6	A 1 J 3 23	A6	A 4E-1 4	60		DRVR RF OUT	
296	A6	L 1 - 2 48	A6	C 2 - 1 48	60		DRVR RF OUT	
297	A6	C 2 - 2	A6	A 9E-2		19	DRVR RF	
298	A6	A 4E-2	A6	A 5E-1		19,9	DRVR RF	
299	A6	A 5E-2	A6	A 6E-1		19,9	DRVR RF	
300	A6	A 6E-2	A6	C 1 - 1		19	DRVR RF	
301	A6	C 1 - 2	A6	A 7E-1		19	DRVR RF	
302	A6	A 7E 2	A6	A 8E-1		19,9	DRVR RF	
303	A6	A 8E-2	A6	A 9E-1		19,9	DRVR RF	
304	A6	A 4J 3 7	A8	C 11-2 16	57	13	RF AMP OUTPUT	15
305	A6	A 5J 3 7	A8	C 12-2 16	57	13		15
306	A6	A 6J 3 7	A8	C 13-2 16	57	13		15
307	A6	A 7J 3 7	A8	C 14-2 16	57	13		15
308	A6	A 8J 3 7	A8	C 15-2 16	57	13		15
309	A6	A 9J 3 7	A8	C 10-2 16	57	13		15
310	A6	A 4J 2	A1	T3-H-6A		19		
311	A6	A 5J 2	A1	T3-H-5A		19		
312	A6	A 6J 2	A1	T3-H-4A		19		
313	A6	A 7J 2	A1	T3-H-3A		19		
314	A6	A 8J 2	A1	T3-H-2A		19		
315	A6	A 9J 2	A1	T3-H-1A		19	RF AMP OUTPUT	
316	A8	A 4P 1	A8	C 10-1		19	PA BALANCE	
317	A8	A 4P 2	A8	C 15-1		19	PA BALANCE	
318	A8	A 4P 3	A8	C 14-1		19	PA BALANCE	
319	A8	A 4P 4	A8	C 13-1		19	PA BALANCE	
320	A8	A 4P 5	A8	C 12-1		19	PA BALANCE	
321	A8	A 4P 6	A8	C 11-1		19	PA BALANCE	
322	A4	A 1A P 5-5 21	A4	A 1A P 5-4 21	55		INTLK	
323	A4	A 1A P 3-8 21	A4	A 1A P 3-7 21	55		INTLK	

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27	28	29	30	31	32	33	34	35	36	37
8	9	10	11	12	13	14	15	16	17	18

19	20	21	22	23	24	25

A 3751979

CODE IDENT NO. 19601 SHEET 19 OF SHEETS 20

WIRES 1 THRU 499 FOR GL 501 UNLESS SPECIFIED, TERM & COND ARE ITEM 1 THIS SH

LINE NO.	FROM PRE	FROM DESIGNATION	TO PRE	TO DESIGNATION	CABLE COND	REMARKS	FIG
324	A4	A 1 P 2 - 3	21	A2 A 1 P 1 - 1	21	55	LN INTLK
325	A4	A 1 P 2 - 3	21	A2 A 1 P 1 - 1	21		LV INTLK
326	A2	A 1 P 2 - 13	21	A2 A 1 P 2 - 12	21		INTLK
327	A2	A 1 P 3 - 8	21	A2 A 1 P 3 - 9	21		INTLK
328	A2	A 1 P 4 - 6	21	A2 A 2 P 3 - 7	21		INTLK
329	A4	A 3 P 1 - 2	21	A2 A 2 P 1 - 5	21		INTLK
330	A2	A 2 P 2 - 3	21	A2 A 6 P 1 - 8	21		INTLK
331	A2	A 3 P 1 - 8	21	A8 A 5 P 1 - 8	21		INTLK
332	A2	TB 3 - 14	6	A2 A 1 P 3 - 3	21	55	SC ON RMT 1
333	A8	A 1 P 3 - 12	A6	C 2 - 2	48	60	RTN INTLK
334	A8	A 1 P 3 - 12	21	A8 A 1 P 2 - 1	21	55	INTLK
335	A8	A 1 P 3 - 13	21	A8 A 1 P 2 - 2	21		INTLK
336	A8	A 2 P 8 - 1	21	A8 A 1 P 6 - 5	21		INTLK
337	A8	A 1 P 4 - 2	21	A8 A 1 P 5 - 5	21		~~INTLK~~
338	A8	A 1 P 7 - 14	21	A8 A 2 P 8 - 1	21		~~INTLK~~
339	A2	TB 3 - 15	6	A2 A 1 P 3 - 5	21		SC ON RMT 2
340	A8	A 2 P 8 - 3	21	A6 A 2 P 1 - 3	21		INTLK
341	A6	A 2 P 1 - 4	21	A6 A 3 P 2 - 2	21		INTLK
342	A6	A 3 P 2 - 1	21	A6 A 3 P 1 - 2	21		INTLK
343	A6	A 3 P 1 - 1	21	A4 A 1 A P 6 - 11	21	55	LV INTLK
344	A8	A 2 P 7 - 13	21	A8 A 2 P 9 - 1	21	55	LV INTLK
345	A10	A 1 P 1	44	A4 A 1 A P 4 - 5	21	CTR 59	REFL PWR
345	A10	A 1 P 1	44	A4 A 1 A P 4 - 6	21	SHLD 59	REFL PWR
346	A8	A 2 P 2 - 2	48	A6 A 1 - 1	60	60	RTN INTLK
347	A2	TB 2 - 1	6	A8 A 1 P 5 - 1	21	55	RMT PA AMPS
348	A2	TB 2 - 2	6	A8 A 1 P 5 - 5	21		RMT PA AMPS RTN
349	A2	TB 2 - 3	6	A8 A 1 P 4 - 9	21		RMT PA VOLTS
350	A2	TB P - 4	6	A3 M 2 - POS	11		RMT PA VOLTS
351	A2	TB 2 - 5	6	A7 TB 1 - 10	6	55	CONT AC RTN RMT

WIRES 100 THRU 499 FOR GR 501 UNLESS SPECIFIED. TERM & COND ARE II. IS THIS M/L

LINE NO.	FROM PRE	FROM DESIGNATION	FROM TERM	TO PRE	TO DESIGNATION	TO TERM	CABLE COND	CABLE NOTE	REMARKS	FIG
352	A2	TB2- 6	6	A4	A1AP2- 12	21	55		RMT CONTAC	
353									~~RMT CONTAC~~	
354	A2	TB2- 8	6	A4	A1AP2- 17	21			INTRPT RMT	
355	A2	TB2- 9	6	A2	TB1- 9	18			INTRPT RTN RMT	
356	A2	TB2- 10	6	A4	A1AP5- 13	21			RMT OFF LAMP	
357	A2	TB2- 11	6	A4	A1AP5- 14	21			RMT TX OFF RTN	
358	A2	TB2- 12	6	A4	A1AP7- 5	21			RMT MAS ALARM	
359	A2	TB2- 13	6	A2	TB1- 50	18			+5	
360	A2	TB2- 14	6	A4	A1AP7- 1	21			RMT ENABLE	
361	A2	TB2- 15	6	A4	A1AP7- 7	21			RMT OFF	
362	A2	TB2- 16	6	A4	A1AP7- 6	21			RMT STBY	
363	A2	TB2- 17	6	A4	A1AP7- 8	21			RMT ON/RST	
364	A2	TB2- 6	6	A2	TB2- 7	6			RMT INTLK	
365	A3	XCS1- 1	STGTN	A7	K4- 7	8			24V PWR TO MAP	
366	A3	YCS1- 2	STGTN	A7	TB1- 10	6	55		24V PWR TO MAP	
367	A2	A2P 5- 7	21				CTR 59	5	FREQ MON	
367	A2	A2P 5- 8	21				SHLD 59	5	FREQ MON RTN	
368	A2	C1- POS	16	A2	A5E- 1	17	57		OFFSET REF	
369	A2	C1- NEG	16	A2	A5E- 3	17	57		OFFSET REF	
370	A4	A1AP5- 11	21		NO CONNECTION			5	OVER TEMP	
371										
372	A4	A1AP5- 14	21		NO CONNECTION					
373										
374	A8	L12- 1		A1	T3 -H6			19	COM. XFRMR PRI	
375	A8	L11- 1		A1	T3 -H4			19	COM. XFRMR PRI	
376	A8	L10- 1		A1	T3 -H5			19	COM. XFRMR PRI	
377	A8	L 9- 1		A1	T3 -H2			19	COM. XFRMR PRI	
378	A8	L 8- 1		A1	T3 -H3			19	COM. XFRMR PRI	
379	A8	L 7- 1		A1	T3 -H1			19	COM. XFRMR PRI	
380										

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27 28 29 30 31 32 33 34 35 36 37

8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

A 3751979

CAGE IDENT NO. 99971 SHEET 21 CONTD ON SH 22

WIRES 100 THRU 499 ARE FOR GR. 501 UNLESS SPECIFIED, TERM & COND ARE ITEMS THIS M/L

LINE NO.	FROM PRE	FROM DESIGNATION	FROM TERM	TO PRE	TO DESIGNATION	TO TERM	CABLE COND	CABLE NOTE	REMARKS	FIG
381	A8	R 3 - 1 POS	10	A8	A 1 P 5 - 2	21	RED 58		RMT PA AMPS +	
381	A8	R 3 - 2 NEG	10	A8	A 1 P 5 - 4	21	BLK 58		RMT PA AMPS -	
381	A8	NO CONNECTION		A8	A 1 P 5 - 6	21	SHLD 58		SHIELD	
382	A8	A 5 P 2 - 8	21	A8	A 1 P 1 - 14	21	55		LV INTLK	
383	~~A5~~	~~A 1 P 1 - 8~~	~~21~~	~~A5~~	~~A 2 P 1 - 4~~	~~21~~	~~55~~		~~LV INTLK~~	
384	~~A5~~	~~A 2 P 1 - 2~~	~~21~~	~~A5~~	~~A 4 P 1 - 4~~	~~21~~	~~55~~		~~LV INTLK~~	
385	~~A5~~	~~A 4 P 1 - 3~~	~~21~~	~~A5~~	~~A 5 P 1 - 4~~	~~21~~	~~55~~		~~LV INTLK~~	
386	~~A5~~	~~A 5 P 1 - 3~~	~~21~~	~~A8~~	~~A 1 P 1 - 5~~	~~21~~	~~55~~		~~LV INTLK~~	
387	A5	A 2 P 1 - 5	21	A5	A 1 J 2	6	55		-5 HI	
388	A5	A 3 P 1 - 5	21	A5	A 1 J 2	6	55		-5 HI	
389	A5	A 4 P 1 - 5	21	A5	A 1 J 2	6	55		-5 HI	
390	A5	A 5 P 1 - 5	21	A5	A 1 J 2	6	55		-5 HI	
391	A2	T B 1 - 10	18	A2	T B 1 - 20	18	55		SUPPLY COM	
392	A2	T B 3 - 11	6	A7	T B 1 - 9	6	55		CONT AC (24V)	
393	A8	A 1 - GND	ST&TIN		CHASSIS GND	15	61, 62		OPTO/MTR GND	
394	A3	R 1 - 3	ST&TIN	A3	T B 1 - 1	ST&TIN	55		RF AMMETER	
395	A7	S 8 - NC 1	STRIP	A2	T B 3 - 12	6	55		RMT TX OFF IND	
396	A7	S 8 - NC 2	STRIP	A2	T B 3 - 13	6	55		RMT TX OFF IND	
397	A7	S 7 - NO 1	STRIP	A2	T B 3 - 18	6	55		RMT STBY IND	
398	A7	S 7 - NO 2	STRIP	A2	T B 3 - 19	6	55		RMT STBY IND	
399	A4	A 1 A P 2 - 4	21	A2	T B 3 - 20	NOTE 10	55		RMT R FON IND	
400	A2	T B 1 - 18	18	A2	T B 3 - 1	6	55		SUPPLY COM RET	
401	A2	A 3 T B 1 - 6	6		CHASSIS GND	10	55		LINN CORR GND	
402	A6	C 1 B - 1		A6	C 1 C - 1			19	DRVR RF	
403	A6	C 1 B - 2		A6	C 1 C - 2			19	DRVR RF	
404	A6	C 2 B - 1		A6	C 2 A - 1			19	DRVR RF	
405	A6	C 2 B - 2		A6	C 2 A - 2			19	DRVR RF	
407	A5	A 2 J 3	6	A8	A 5 P 1 - 1	21	55		MOD SAMPLE IN	
408	A5	A 3 J 3	6	A8	A 5 P 1 - 2	21	55		MOD SAMPLE IN	

WIRES 500 THRU 524 FOR GR503/UNLESS SPECIFIED, TERM & COND ARE ITS THIS M/L

LOC	FROM DESIGNATION	FROM SHEET	TO DESIGNATION	TO SHEET	CABLE CODE	CABLE NOTE	CHANGE	ECS
409	A5 A4 J 3	6	A8 A5 P 1 - 3	21	55		MOD SAMPLE IN	
410	A5 A5 J 3	6	A8 A5 P 1 - 4	21	55		MOD SAMPLE IN	
411	A2 A 6 P 1 - 2	21	A8 A 5 P 2 - 1	21	55		MOD SAMPLE OUT	
412	A2 A 6 P 1 - 3	21	A8 A 5 P 2 - 2	21	55		MOD SAMPLE OUT	
413	A2 A 6 P 1 - 5	21	A8 A 5 P 2 - 3	21	55		MOD SAMPLE OUT	
414	A2 A 6 P 1 - 6	21	A8 A 5 P 2 - 4	21	55		MOD SAMPLE OUT	
415	A2 A 6 P 3 - 10	21	A2 T B 1 - 44	18	55		+5	
416	A2 A 6 P 3 - 11	21	A2 T B 1 - 5	18	55		LV SUPPLY COM	
417	A2 A 6 P 3 - 2	21	A2 A 3 P 1 - 9	21	55		LV INTLK	
418								
419	A8 C R 1 - 1	ST&TIN	A6 J 4	17	57	9		
420	A4 A 3 P 1 - 3	21	A2 A 2 P 4 - 4	21	55		LV INTLK	
421	A2 A 6 P 1 - 7	21	A4 A 3 P 1 - 5	21	55		MOD OK	
422	A2 A 6 P 1 - 1	21	A4 A 3 P 1 - 1	21	55		IMIT/OLRST	
423	A10 P S 2 T 1 - 2		A10 P S 2 T 1 - 3		20	16	LOGIC PWR. SUP. AC	
425	A2 A 1 J 3 - 1 3	ST&TIN	A2 A 1 GROUND	9	55		SHIELD GROUND	
434								
435	A9 X F 1 - 2	16	A9 R 1 - 1	ST&TIN	57		MTR POS 1 DRVR I	
436	A9 X F 2 - 2	16	A9 C 1 - P O.S.	16	57		DRVR FUSE LINE	
437	A8 C 1 6 T H R U 3 1 NEG	17	A8 X F 1 - 1	16	57	9	FUSE LINE	

RCA

21 22 23 24 26 27 28 29 30 31 32 33 34 35 36 37

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23 24

WIRES 500 THRU 524 FOR GR503/UNLESS SPECIFIED, TERM & COND ARE ITS THIS M/L

LINE NO.	FROM TYPE	FROM DESIGNATION	FROM TERM	TO TYPE	TO DESIGNATION	TO TERM	CABLE COND	CABLE NOTE	REMARKS	FIG.
438	A8	R 1 - 2	ST&TIN	A9	X F 3 - 1	16	57		FUSE, HV BLEEDER POS	
439	A6	J 4	17	A6	X F 1 - 1	16	57		FUSE LINE	
440	A9	P S 1 - NEG	ST&TIN	A9	X F 5 - 1	16	57		FUSE LINE	
441	A9	P S 2 - POS	15	A9	X F 4 - 2	16	57		FUSE LINE	
442	A9	P S 1 - POS	ST&TIN	A9	E 1	ST&TIN	55	9	-5 HI CAHSSIS	
443	A9	P S 2 - NEG	10	A9	T B 1 - 1	ST&TIN	55	9	+12 HI CHASSIS	
444	A2	A 6 P 3 - 4	21	A2	T B 1 - 3 8	18	55		+12HI	
446	A2	A 6 P 2 - 1	21	A2	A 6 P 3 - 1	21	55		LV INTLK	
447	A2	A 6 P 2 - 3	21	A2	A 1 P 1 - 7	21	RED 58	11	AUDIO IN	
447	A2	A 6 P 2 - 4	21	A2	A 1 P 1 - 6	21	SHLD 58	11	AUDIO IN	
447	A2	A 6 P 2 - 5	21	A2	A 1 P 1 - 5	21	BLK 58	11	AUDIO IN	
448	A6	A 2 - GND	ST&TIN		CHASSIS GND	15	61,62		DRIVE DETECTOR GND	
449	A8	A 2 - GND	ST&TIN		CHASSIS GND	15	61,62		PA BALANCE GND	
450	A2	A 2 - GND	ST&TIN		CHASSIS GND	15	61,62		RF GENERATOR GND	
451	A2	A 3 - GND	ST&TIN		CHASSIS GND	15	61,62		RF PREDRIVER GND	
452	A2	A 6 - GND	ST&TIN		CHASSIS GND	15	61,62		FAULT /0 VID GND	
453	~~A4~~	~~A 1 - GND~~	~~ST&TIN~~		~~CHASSIS GND~~	~~15~~	~~61,62~~		~~CONTROL LOGIC GND~~	
454	A10	T 1 - 7	ST&TIN	A2	A 6 P 2 - 6	21	RED 58	11	AUDIO IN	
454	A10	T 1 - 1 2	ST&TIN	A2	A 6 P 2 - 8	21	BLK 58	11	AUDIO IN	
454	A10	T 1	24	A2	A 6 P 2 - 7	21	SHLD 58	11,12	AUDIO IN	
455	A10	T 1 - 4		A10	T 1 - 3		20		AUDIO TRANSFORMER	
456	A10	T 1 - 9		A10	T 1 - 10		20		AUDIO TRANSFORMER	
457	A9	P S 1 - (- S) & (- V)	ST&TIN	A9	C R 2 - ANODE	ST&TIN	55		-265V	
458	A2	A 6 P 3 - 5	21	A2	T B 2 - 3	1	55		REMOTE PA VOLTS	
459	A2	A 1 P 2 - 7	21	A2	A 1 P 2 - 9	21	55	14	POWER SET	
460	A10	L 6 - 2	15	A10	L 5 - 1	14	57		MOD MON VOLTAGE PICKUP	

RCA

21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37

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LINE NO.	FROM PRE	FROM DESIGNATION	FROM	TO PRE	TO DESIGNATION	TO	CABLE COND	CABLE WIRE	REMARKS	FIG
500	A2	A 4P 2- 2	21	A2	A 1J 2- 9	21	55	14	PWR CUTBACK OPT	
501	A2	A 4P 2- 4	21	A2	A 1J 2- 8	21	55			
502	A2	A 4P 2- 1	21	A2	A 1J 2- 7	21	55	14		
503	A2	A 4P 2- 5	21	A2	TB2- 5	6	55			
504	A2	A 4P 6	44		MOD MONITOR		CTR 59	5		
	A2	A 4P 6	44		MOD MONITOR		SHLD 59	5		
505										
505										
506	A2	A 4P 1- 4	21	A4	S 7-COM	ST&TIN	55			
507	A2	A 4P 1- 3	21	A4	S 7-NO	ST&TIN	55			
508	A2	A 4P 1- 1	21	A4	S 7-POS	ST&TIN	55			
509	A2	A 4P 1- 2	21	A4	S 7-NEG	ST&TIN	55			
510	A2	A 4P 1- 5	21	A4	S 6-COM	ST&TIN	55			
511	A2	A 4P 1- 8	21	A4	S 6-NO	ST&TIN	55			
512	A2	A 4P 1- 7	21	A4	S 6-POS	ST&TIN	55			
513	A2	A 4P 1- 6	21	A4	S 6-NEG	ST&TIN	55			
514	A2	A 4P 1- 10	21	A4	S 5-COM	ST&TIN	55			
515	A2	A 4P 1- 13	21	A4	S 5-NO	ST&TIN	55			
516	A2	A 4P 1- 12	21	A4	S 5-POS	ST&TIN	55			
517	A2	A 4P 1- 11	21	A4	S 5-NEG	ST&TIN	55		PWR CUTBACK OPT	
518	A2	A 4P 5	44	A10	P 2	44	CTR 59	9		
518	A2	A 4P 5	44	A10	P 2	44	SHLD 59	9		
519	A2	TB2- 18	6	A4	S 7-COM	ST&TIN	55			
520	A2	TB2- 19	6	A4	S 6-COM	ST&TIN	55			
521	A2	TB2- 20	6	A4	S 5-COM	ST&TIN	55			
522	A2	A 4P 2- 8	21	A2	A 1P 2- 14	21	55			
523	A2	A 4P 2- 6	21	A2	A 1P 2- 12	21	55	18		
524	A2	A 4P 2- 7	21	A2	A 1P 2- 13	21	55	18	PWR CUTBACK OPT	

RCA CORPORATION

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12 13 14 15 16 17 18 19 21 22 23 24 26

A 3751979

CODE IDENT NO 49671 SHEET 25 CONT'D ON SH 26

WIRES 500-52, 539-599 FOR GR 503
WIRES 525-538 FOR GR 507

UNLESS SPECIFIED, TERM & COND ARE ITEMS THIS M/L

LINE NO.	FROM PRE	FROM DESIGNATION	FROM SUFFIX	TO PRE	TO DESIGNATION	TO SUFFIX	CABLE COND	CABLE NOTE	REMARKS	FIG.
525	A1	T1-H4	31	A1	A1K1-L1	STRIP	30		REDUCED VOLTAGE	
526	A1	T1-H5	31	A1	A1K1-L2	STRIP	30		REDUCED VOLTAGE	
527	A1	T1-H6	31	A1	A1K1-L3	STRIP	30		REDUCED VOLTAGE	
528										
529										
530										
531	A1	T1-240 (H1)	31	A1	A1K1-T1	STRIP	30	15	DELTA	
532	A1	T1-240 (H2)	31	A1	A1K1-T2	STRIP	30	15	DELTA	
533	A1	T1-240 (H3)	31	A1	A1K1-T3	STRIP	30	15	DELTA	
534	A1	A1K1-T1	STRIP	A1	A1K2-T3	STRIP	30			
535	A1	A1K1-T2	STRIP	A1	A1K2-T2	STRIP	30			
536	A1	A1K1-T3	STRIP	A1	A1K2-T1	STRIP	30			
537	A1	A1K2-L1	STRIP	A1	A1K2-L2	STRIP	30		WYE	
538	A1	A1K2-L2	STRIP	A1	A1K2-L3	STRIP	30		WYE	
539	A1	A1K1-C1	9	A1	A1K2-C1	9	55		220V RETURN	
540	A1	A1K1-C1	9	A7	T2-H4	9	55			
541	A1	A1K1-C2	9	A1	A1S2-NC2	STRIP	55		INTERLOCK	
542										
543	A1	A1K2-C2	9	A1	A1S1-NC2	STRIP	55		INTERLOCK	
544	A1	A1S1-NC1	STRIP	A7	K6-4	8	55		REDUCED VOLTS	
545	A7	K6-7	8	A7	T2-H1	9	55		220V HOT	
546	A7	K6-A	8	A7	TB1-10	6	55		24V AC RETURN	
547	A7	TB3-1	6	A2	A4P4-6	21	55		LOW CB POWER	
548	A2	A4P4-2	21	A2	TB3-11	6	55		24 VAC	
549	A2	A4P4-4	21	A7	TB3-2	6	55		MED CB POWER	
550	A7	TB3-3	6	A7	K6-B	8	55		LOW CB POWER	
551	A1	A1S2-NC1	STRIP	A7	K6-1	8	55		FULL VOLTS ENABLE	

WIRES TO MIRO-799 FOR GR 504 UNLESS SPECIFIED, TERMINATE AT ITEMS THIS M/L

LINE NO.	FROM TYPE	FROM DESIGNATION	TO TYPE	TO DESIGNATION	CABLE COND	CABLE SIZE	REMARKS	FIG
725	A4	A 2 P 1 - 8	21	A4 S 8 - 3	S&T	55	RMT PWR RTN	
726	A4	A 2 P 1 - 6	21	A4 S 8 - 2	S&T	55		
727	A4	A 2 P 1 - 10	21	A4 S 8 - 1	S&T	55		
728	A4	A 2 P 1 - 12	21	A2 TB 2 - 5	6	55		
729	A4	A 2 P 1 - 7	21	A2 TB 3 - 2	6			
730	A4	A 2 P 1 - 9	21	A2 TB 3 - 3	6			
731	A4	A 2 P 1 - 5	21	A2 TB 3 - 11	6			
732	A4	A 2 P 1 - 1	21	A2 A 1P 2 - 3	21	4		
733	A4	A 2 P 1 - 2	21	A2 A 1P 2 - 2	21	4		
734	A4	A 2 P 1 - 3	21	A2 A 1P 2 - 11	21	55 4	RMT PWR RTN	

RCA PCA CORPORATION

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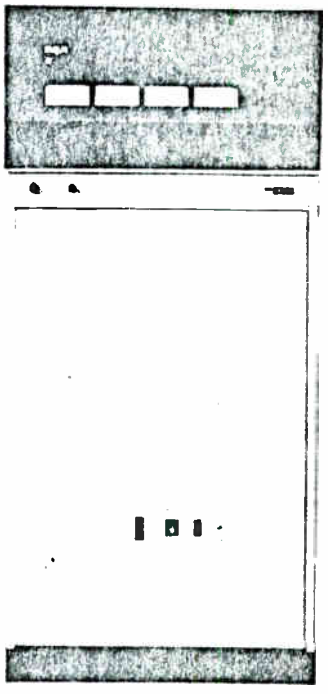
SHT 27

Type BTA-5SS
AM Transmitter—5000 Watts—Solid State



The RCA BTA-5SS is a 5 kilowatt high efficiency AM broadcast transmitter designed for operation in an expanded AM broadcast band of 525-1605 kHz. The transmitter design is 100% solid state. It is lightweight, occupies less space, is easier to install and operates at a lower AC power consumption than that of tube type transmitters.

A new concept, the BTA-5SS has achieved a breakthrough in technical innovation. New Pulse Linear Modulation (PLM) techniques yield bright audio response and low distortion. The wide audio bandwidth capability of the transmitter permits the use of modern audio processing systems to faithfully reproduce the sounds of contemporary AM radio.

In size a further breakthrough is realized. The BTA-5SS occupies about one-half the space of its predecessor. Construction is modularized, allowing the trays and PC boards to be easily accessible and quickly removed for service and maintenance. The BTA-5SS is self-contained, including all power supplies in a single 36 inch wide cabinet. Installation of the basic transmitter takes a matter of hours, eliminating costly assembly and wiring time.

A New Bright Sound

The wideband performance characteristics of the BTA-5SS sets a high standard in sound against which other transmitters will be compared. It has a bright, full dimension sound, made possible by RCA's wideband Pulse Linear Modulation system. The characteristics and performance of the modulators allow passage of audio frequencies up to and including 12.0 kHz with minimum signal degradation. This improvement over other types is consistent with RCA's pacesetting design techniques, giving an RCA sound performance characteristic that is measurable by ear and by instrument.

Reliability and Maintainability

The overall reliability and maintainability features are due to factors inherent to solid-state design. The reliability of an "all-silicon" transmitter is enhanced because of the greatly reduced wearout characteristics of transistors versus vacuum tubes.

As for maintainability the BTA-5SS is largely modular in construction, with four Modulator and six RF power amplifier transistor trays, permitting easy removal.

Solid state reliability is further enhanced by use of low volume cooling fans keeping accumulation of dust at a minimum. Added operating reliability is provided by the characteristic of "graceful degradation". Even if some RF output transistors fail the transmitter will continue to operate at the same RF power output.

Cost of Ownership

The BTA-5SS represents an attractive return on investment with a low cost of ownership in daily and long term operating expense, initial installation and maintenance.

Power savings are substantial compared to tube type transmitters, particularly in terms of total AC power consumption costs.

The reason for this cost improvement in transmitter operating expense is the extremely efficient circuit design. To calculate the power consumption cost per year of any given transmitter simply apply this formula:

Cost per kW hour × hours per year of operation × kW's of power used.

Comparison of power consumed by the RCA BTA-5SS with other 5 kW transmitters will prove the point.

Controls

The Transmitter Control System and the Fault Control System provide control and protection for the transmitter. The control circuit has remote control capability and a remote/local switch is provided for the safety of operating personnel. The main controls are: Transmitter Off, Standby, RF On/Overload Reset. A switch gives the operator the option of either single or multiple overload recycle control and a digital counter is provided in the multiple mode to set the number of overload steps allowed before the transmitter is shut down.

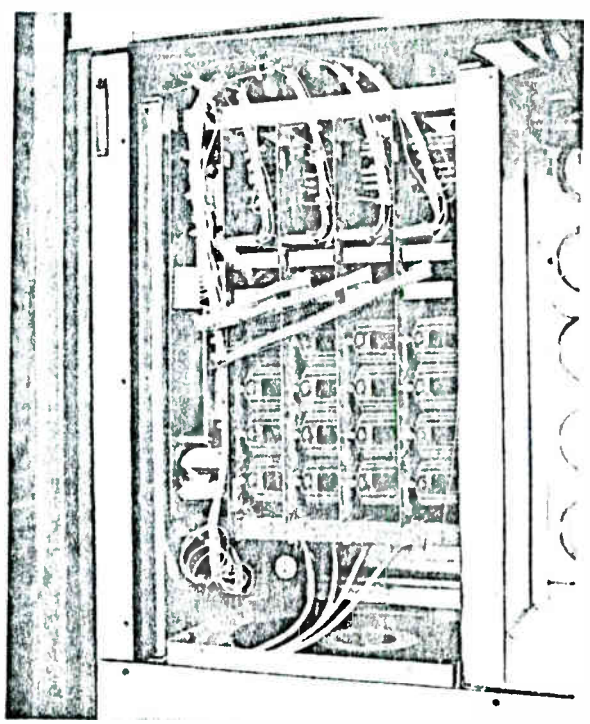
Following an interruption, RF drive will be re-applied at a low level and will automatically ramp back up to full power.

RF and AF low voltage circuitry is mounted behind a hinged front control panel providing ease of access for checking the operation of each section.

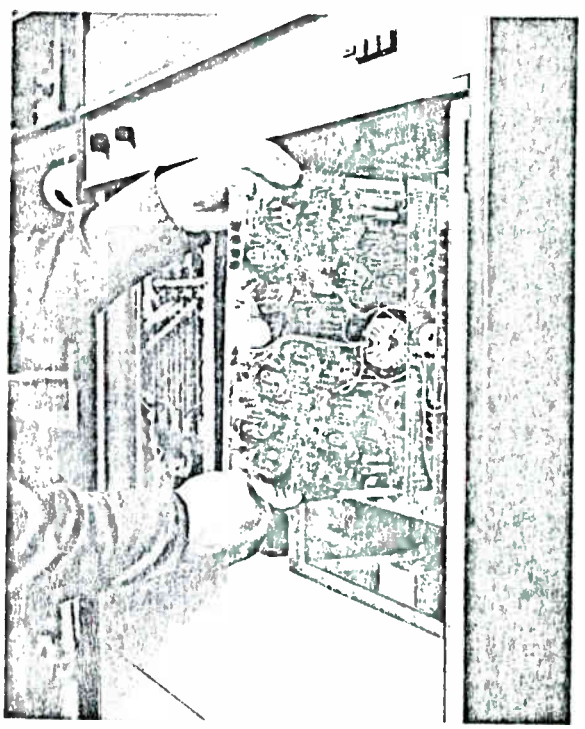
A master overload LED indicator is visible on the front of the control panel. The occurrence of a particular overload or malfunction will activate one of the LED status indicators on the inside of the control panel. The indicators provide information on the status of the Low Voltage, Interlocks, Air Pressure, Automatic Power Control, Remote Control Interrupt, Modulator Bias, Driver Power Supply, Over Temperature, High Voltage, Driver Voltage, RF Off, PA Balance, line power loss, PA over voltage and VSWR Overload.

A power increase/decrease potentiometer control is also located on the control panel and can be adjusted manually or by remote control. Once the power level is set, automatic circuitry takes over to maintain this level until changed. A Power Cutback Kit is available as an optional item to permit three pre-set operational power levels.

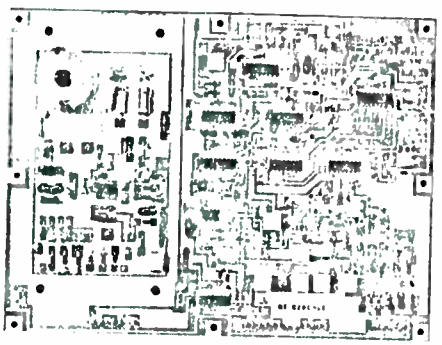
The Transmitter has four front panel meters for PA Voltage, PA Amperes, RF Amperes and Multimeter. The Mul-



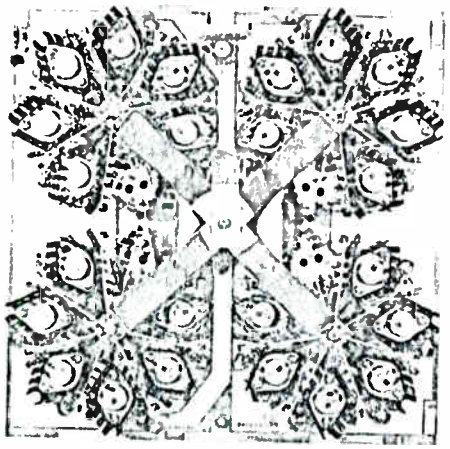
AF Modulator Section



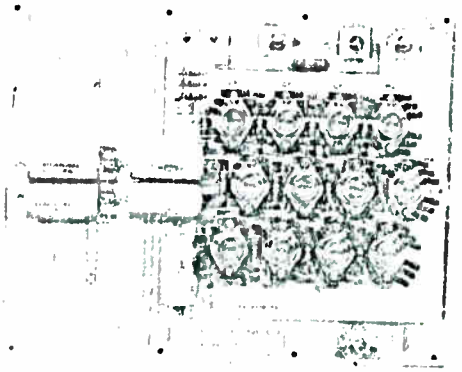
RF Amplifier Section



Modulator Generator Board



Modulator Board



Offset Power Supply Board

timeter switches to monitor eight circuit parameters plus two additional positions connect to a built-in voltage probe for measuring many additional test points at selected circuit locations. The RF Ammeter permits monitoring of the Antenna current feed or common point when driven by an optional Current Sensor.

The RF generator contains a high stability frequency synthesizer which allows the output frequency to be programmed in 1 kHz steps in order to satisfy both domestic and International assignments. The heart of the synthesizer is a temperature compensated 10 MHz (TCXO) oscillator. The RF generator also has provisions for using an external frequency for emergency or for synchronous station equipment.

The RF generator provides excitation to the RF pre-driver which feeds the RF driver tray and, in turn, provides drive to power the six RF amplifier trays. (See Block Diagram.) Each tray provides for separate tuning and balancing for optimum efficiency. After initial tuning at the factory, the only additional tuning normally required during installation are output line loading and harmonic filter matching.

The RF amplifier consists of six Class D bridge amplifier modules which operate at an efficiency of greater than 80%. Overall transmitter efficiency is 60% or better. The special bridge amplifier circuit allows transistors to switch efficiently at frequencies which were previously unattainable with high power solid state design. The bridge circuit consists of four solid state legs with seven transistors in each leg. Should a transistor fail, it will remove itself from the active circuit, and light the appropriate LED status indicator, without interrupting on-air service. During a scheduled maintenance the operator may quickly locate and replace a defective transistor. However, because of the reserve power of the BTA-5SS, transmitter operation will not be degraded if the transistor is not changed immediately. Replacement can take place at the next scheduled maintenance.

The RF power amplifier outputs are summed in the RF combining transformer. This transformer also provides low impedance lightning protection for the amplifiers.

The output of the combining transformer is matched to the antenna or common point impedance through a loading and harmonic filter network. A reflectometer is included to monitor forward power and reflected VSWR and to provide protection by instantly quenching the RF drive when a transmission line disturbance occurs.

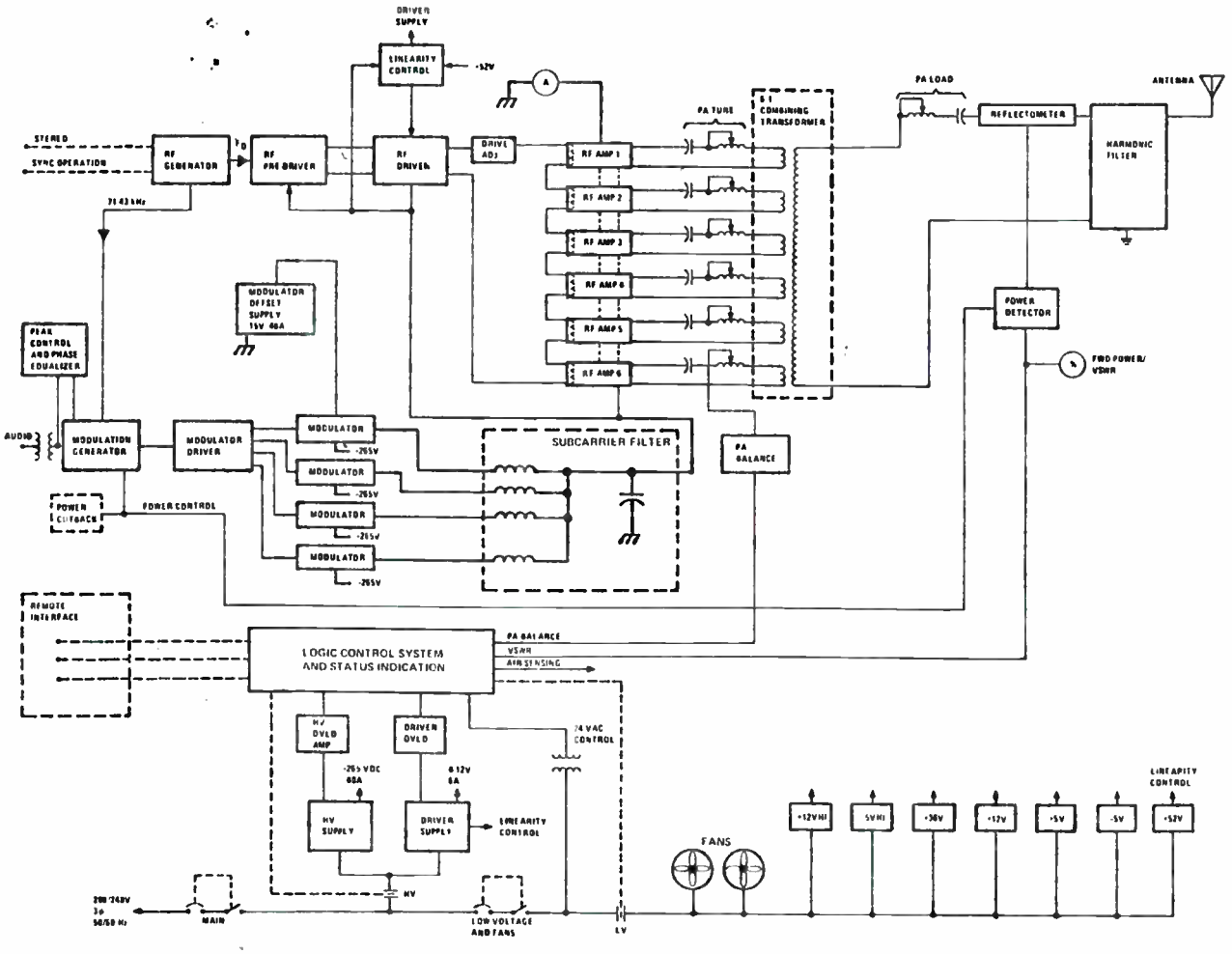
The new Pulse Linear Modulation system (PLM) of the BTA-5SS utilizes a highly refined pulse width modulator using a 71.13 kHz subcarrier. The subcarrier is synchronized with the frequency synthesizer in the RF generator. The resulting accurate control of subcarrier frequency allows stable and consistent system performance. The modulation generator produces a pulse train output with frequency and pulse width variations proportional to the modulating audio signal amplitude and frequency.

Pulse Linear Modulation is an improved pulse width modulation system which introduces an offset voltage at the negative peaks to correct for distortion. Linearity and phase control are also incorporated in the modulation system. The modulation section consists of the Modulation Generator, a Modulation Driver, four parallel Modulator Amplifiers and the Subcarrier Filter. The Modulation Driver and the Modulation Amplifiers consist of transistor arrays which turn on and off at the subcarrier frequency and in accordance with the modulated duty cycle. The subcarrier filter removes the subcarrier frequency and applies the remaining voltage, which varies at an audio rate, to the final RF amplifiers.

The modulation section, including the subcarrier filter, functions as a variable power supply for a series modulation system, without the use of audio or RF feed-back, modulation transformers or reactors.

An Automatic Audio Input Level Control permits changes in power output without a need to adjust the audio input level.

The Pulse Linear Modulation system provides low distortion, wide frequency response, fast transient response, high modulation levels, high efficiency, and a convenient method of adjusting and regulating carrier output power, and audio input levels.



BTA-5SS BLOCK DIAGRAM

Power Output:
- Nominal .....5000 Watts
- Reserve Capacity .....to 5500 Watts
- Impedance .....50 ohms, unbalanced, resistive standard. Optional 40 to 300 ohms, unbalanced
- Connector .....Specify Bowl Insulator, 1⅝" EIA Flange, 1⅝" EIA Pressurized Flange, or 1⅝" Flexible Line

Audio Input:
- Level .....+10 dBm ±1 dB
- Impedance .....600 ohms, Balanced or Unbalanced. Isolation Transformer, optional
- Modulation .....Pulse Linear

Power Input:
- Line .....208/240 Volts, or optional 380/415 Volts, ±5%
- Frequency .....47 to 63 Hz
- Type .....3 phase, 3 wire
- Power Factor .....95% or better

Performance:
- Frequency Range .....525 kHz to 1605 kHz Supplied to one frequency as ordered
- RF Harmonics .....Meets or Exceeds FCC and CCIR Specifications
- Frequency Stability .....±3.5 Hz
- Carrier Shift .....Less than 1.5% at 100% modulation
- Audio Frequency Response .....±1.0 dB, 20 to 12,000 Hz
- Audio Frequency Distortion .....3% Max. to to 12,000 Hz (reference 95% at 1 kHz modulation)
- Noise (Unweighted) ..–60 dB or better at 100% modulation
- Positive Peak Capability ...125% positive peak modulation capability at 5.5 kW
- Overall Efficiency .....60% or better

Power Consumption Estimate (at 5 kW Output):
- At 0% Modulation .....8.3 kW
- At 85% Modulation .....10.5 kW
- At 100% Modulation .....11.4 kW

Provisions:
- Synchronization .....2 kHz Audio Circuits
- Monitor Output .....10V pp RF at 50-70 ohms
- Remote Control .....Normal Interfaces

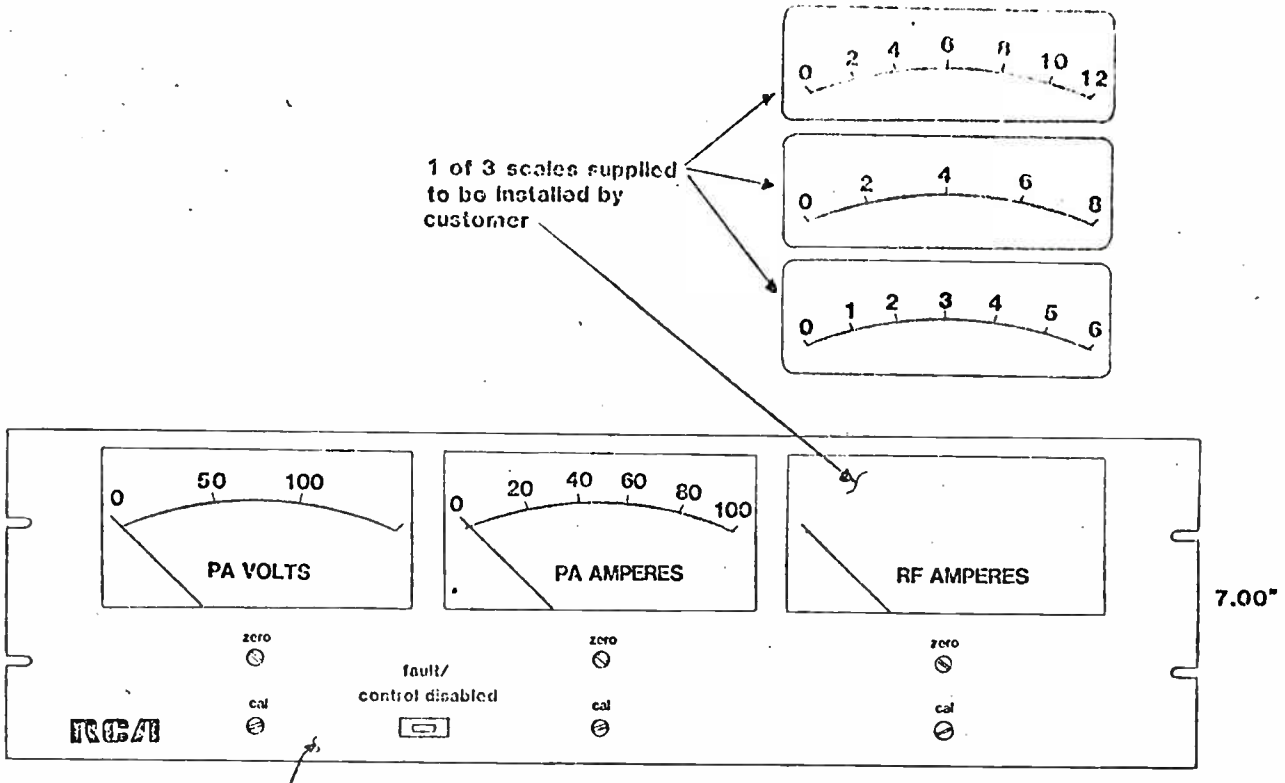
Physical:
- Cabinet Size .....77" high x 36" wide x 36" deep (195.6 cm, 91.4 cm, 91.4 cm)
- Weight (Approx. unpacked) .....776 lb. (352 kg)
- Shipping Weight .....1050 lb. (476 kg)
- Ambient Temperature Range .....–20°C to 50°C
- Altitude .....Sea Level to 7,500 feet (2286 m)
- Cooling .....Ambient Air 500 CFM

5 kW AM Solid State Transmitter ES-560988

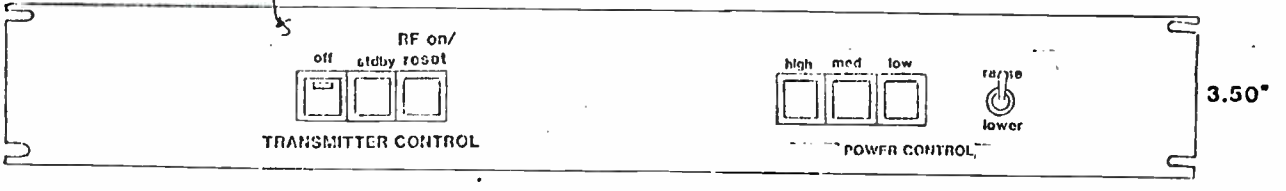
Power Cut-back Kit, Three power levels MI-563509
Remote Power Adjust Kit MI-563513
Extension Meter Panel MI-563508
Local Control Panel MI-563512
Audio Input Isolation Transformer MI-563523
Conversion Kit, 380/415 VAC 50/60 Hz ES-560998

Front and Cooper Streets, Camden, New Jersey 08102, U.S.A.

Broadcast Systems·



MI-563508 EXTENSION METERING PANEL



MI-563512 LOCAL CONTROL PANEL

wlh21480-1 b

BTA-5SS

REMOTE CONTROL/ATS FACILITIES

TERMINAL	FUNCTION	CHARACTERISTICS
TB2-1,2	Metering, PA Amps	1.5 VDC @ 5Ma Max = 100 amps
TB2-3,4	Metering, PA Volts	1.5 VDC @ 1 K ohm impedance = 150 volts
TB3-4,1	Metering, HV Supply	6 VDC @ 1 K ohm impedance = 300 volts (May be scaled lower by loading)
TB3-16,17	Metering, RF Amps	1.0 to 2.5 VDC @ 42 Microamps = rated RF current
TB2-6,14	Control Voltage	24 VAC
TB2-15	Control, TX off Mode	Momentary closure to Control Common
TB2-16	Control, Standby Mode	" " " " "
TB2-17	Control, RF ON/Overload Reset	" " " " "
TB2-18	Control, High Power Mode	" " " " "
TB2-19	Control, Medium Power Mode	" " " " "
TB2-20	Control, Low Power Mode	" " " " "
TB3-2	Control, Power Lower	Close to Control Common to adjust
TB3-3	Control, Power Higher	" " " " " "
TB2-7	Interlock	Maintained Contact to Control Voltage
TB2-9,13	Logic Power Supply	+5 VDC
TB2-8	Control, Interrupt	TTL low or close to logic supply return to interrupt transmitter output
TB2-12	Status, Overload alarm	Normal = TTL high @ 220 ohm impedance Overload = TTL low @ 220 ohm impedance, 8 ma max.
TB3-20	Status, RF on	RF off = TTL low @ 6.4 Ma Max. RF on = TTL high @ 360 microamp Max.
TB3-18,19	Status, HV on	Contact Closure when HV on
TB3-12,13	Status, TX off	Contact Closure in off mode
A4J4	Status, Power Cutback	3 Contact Closures (Hi/Med/Lo)

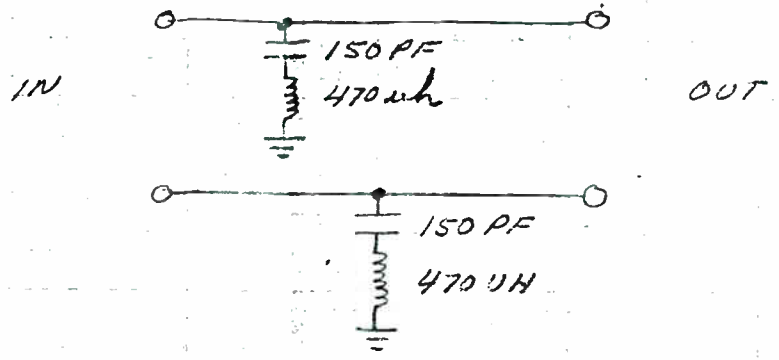
NOTE: In some installations, circuits shown above may be connected to equipment other than the remote control system (i.e. to the antenna pattern switches).

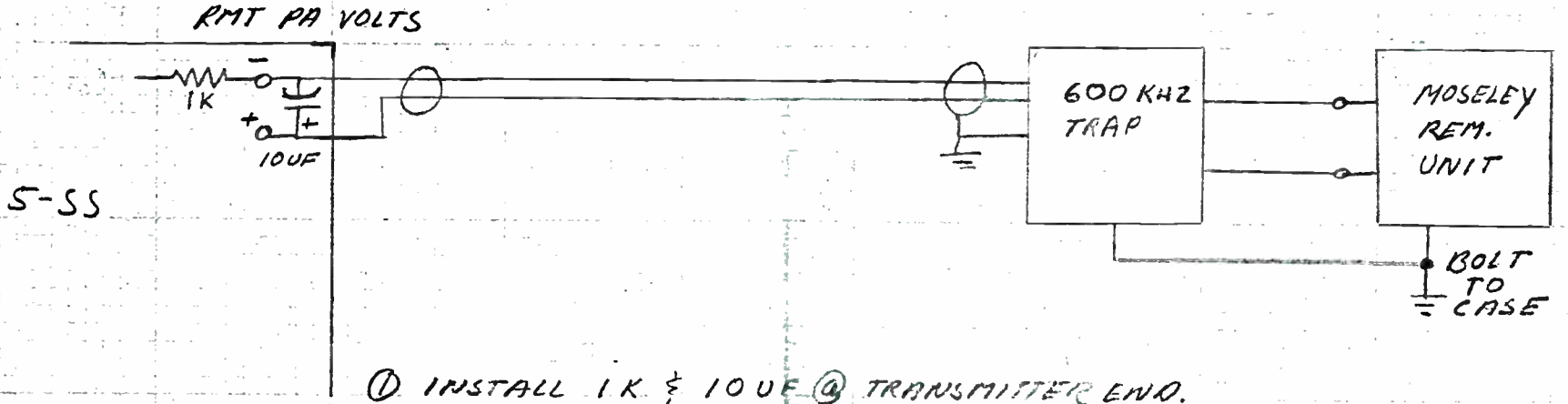
WFH

12-19-80

600 KHZ TRAP

≈ 20Ω @ 600 KHZ





① INSTALL 1K & 10 UF @ TRANSMITTER END.

② GROUND SHIELDED WIRE AT TRAP END FIRST THEN AT TRANSMITTER END. USE BEST METHOD. 1K MAY BE INCREASED TO 10K IF NECESSARY.

WSJS – 600 KHZ

GMJ 10/19/82

RCA

New Concepts In All Solid State AM Broadcast Transmitters

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SYNOPSIS

This paper describes the latest concepts in the design and application of completely solid state AM Broadcast Transmitters, with particular emphasis on the practical operation of such equipment. Advantages to the broadcaster of solid state design versus tube-type transmitters are discussed with emphasis on reliability, economy, and high performance. The common questions regarding lightning protection, operator adjustments, efficiency, and provisions for unattended (automatic) transmitter operation are covered in depth. A look at the state-of-the-art design is given, along with concepts of future designs.

HISTORY

The history of amplitude modulated broadcast transmitters with electronic amplification devices began almost immediately following the invention of the triode vacuum tube around 1906. AM broadcast stations progressed from operating powers of a few watts to fifty thousand watts and higher within a few years as higher power tubes were developed. As the electron tube transmitters grew in power output levels, it was not uncommon to achieve higher power by paralleling several power tubes. One example of this was an early RCA one kilowatt transmitter which utilized four tubes, each rated at two hundred and fifty watts, in a push-pull parallel circuit to achieve the one kilowatt of RF output. Today, a single tube is capable of producing several million watts of radio frequency output.

In the modern world of solid state electronics, transistors have replaced vacuum tubes in more and more applications. The AM broadcast transmitter is now entering the domain of solid state engineering. The design technology necessary for producing an all solid state broadcast transmitter has been available since the early 60's, but it was not until recently that the required higher powered transistors became available. It is now possible to produce large amounts of RF power by combining these solid state devices into transistor arrays.

SOLID STATE VERSUS TUBE TRANSMITTERS

Much can be said about the differences between all solid state broadcast transmitters and vacuum tube transmitters. The size of an all solid state transmitter approaches one-half the size of a tube transmitter of the same power level of recent design.

The signal quality of an all solid state transmitter can be perfected to exceed the transmitted quality of the conventional tube transmitter, especially important now that an emphasis is being placed on hi fidelity AM broadcasting as a prelude to stereophonic broadcasts by AM stations.

The reliability of an "all silicon" transmitter is enhanced because of the greatly reduced wear out characteristics of the transistor versus the vacuum tube. The tube becomes gassy, suffers from decreasing filament emission with age, and has a lower overall power conversion efficiency. The transistor arrays can provide a planned margin of power output capability in the event that a few transistors become inoperative. If the

tube transmitter has but one final RF tube, the transmitter has no output when the final tube fails, but the solid state transmitter can maintain full or reduced output if some of the active output devices fail.

The economy of a solid state transmitter can be realized by its higher efficiency, longer life transistor active elements, and smaller space requirements. The solid state transmitter design can easily implement power reduction without the complexity of high power contactors and power wasting dropping resistors, and a vernier output power control can provide an infinite number of reduced power output levels. By means of this feature, non-standard operating power levels can be easily achieved, and instant on-the-air switching with no program interruption is possible.

Lightning and static discharge can be problems to any transmitter, but careful design can help to minimize possible damage and/or annoying program interruptions. Effective lightning and static protection can take the form of shunt static drain chokes, spark gaps, and reflectometer circuits. In a solid state transmitter, the type of RF amplifier used can also enhance the protection of the overall system. The use of a push-pull bridge, saturated amplifier, commonly called a Class D amplifier, provides a sink to either the power supply or ground for any induced or transient energy.

The basic Class D RF bridge amplifier is shown in Figure 1. Each arm of the bridge contains a transistor, and the RF input to the circuit is by means of an input transformer which has a single primary winding and four independent secondary windings. The polarity of each secondary winding is such that transistors Q1 and Q2 are on and completely saturated for a given half cycle of RF while transistors Q3 and Q4 are turned completely off during the same half RF cycle. When the RF input reverses polarity during the next half cycle, transistors Q3 and Q4 are turned on and transistors Q1 and Q2 are turned off. The time required to turn one set of transistors on and the other set off is extremely short -- in the order of a few nanoseconds. During most of the RF cycle, the transistors are turned completely on in a saturated mode or completely cutoff, and the only time a small amount of power is lost in the transistors is during the nanosecond transition period and the saturation period. The net result of the minimal power loss is excellent RF power amplifier efficiency in the range of 90 to 95 percent. If transistors were available which produced zero transition time and zero saturation voltage, the circuit conversion efficiency would be

100 percent, but the above mentioned circuit losses are ever present in the real world and limit the obtainable efficiency. The RC network in the base circuit of each of the transistors produces a small amount of bias to help minimize the storage time effect of the transistors. The voltage produced across the series tuned load network is a square wave and the current through the load resistor, RL is sinusoidal due to the filtering effect of the series network. The load resistor, therefore, has a sine wave of voltage across it and a sine wave of current through it.

The new generation of transmitters has reduced the operating controls to a minimum, and the familiar tune and load controls are no longer needed because these adjustments are preset at the factory. The basic transmitter operating controls are "On-and-Off" and "Power Level Select."

THE RCA BTA-5SS

The first model in the RCA line of all solid state AM broadcast transmitters is the BTA-5SS. (See Figures 2-5.) This transmitter is a completely self-contained 5 kW carrier power transmitter which features low power consumption, high performance, and high reliability. An overall block diagram of the BTA-5SS is shown in Figure 6.

The RF section of the BTA-5SS consists of the following plug-in modules; the RF Generator, RF Pre-Driver, RF Driver and the RF Power Amplifier Trays. The RF generator module (Figure 7) contains a high stability frequency synthesizer which allows the output frequency to be programmed in 1 kHz steps in order to satisfy both domestic and foreign frequency assignments. The heart of the synthesizer is a precise 5 MHz TCXO. The RF generator also has provisions for using an external frequency reference for synchronous stations and for frequency modulating the carrier for AM stereo applications.

The RF Pre-Driver module (Figure 8) is a buffer power amplifier between the RF Generator and the RF Driver Tray and is comprised of saturated Class D RF amplifiers. The RF Driver Tray (Figure 9) is a plug-in array of transistors in the Class D Bridge Amplifier configuration.

The final RF power amplifier stage consists of six Class D Bridge Power Amplifier Trays (Figure 10) whose outputs are summed by means of a combining transformer. This method of

combining allows the transmitter to maintain its full power output even in the event of an occasional loss of an RF output transistor, and the combining transformer provides a static drain to ground and a twenty to one step down of induced voltage such as lightning.

Each power amplifier tray acts as a constant voltage source to its RF load, and all of the transistors on the tray share the output current demand. A margin of at least 25 percent is provided on each tray in terms of the required number of transistors to supply the required current output. This margin of safety means that at least 25 percent of the transistors on a tray would have to fail before the tray could not maintain its full output. An inoperative transistor is automatically removed from the circuit, and the remaining transistors continue to provide the full output current.

The final link between the combining transformer and the output to the antenna is the impedance matching and harmonic filter RF network. A reflectometer is also included to monitor forward power and VSWR and to provide protection by instantly quenching the RF output when transmission line disturbances occur.

The modulation system of the BTA-5SS utilizes a highly refined pulse width modulator. The subcarrier is directly derived from the frequency synthesizer in the RF generator module, and the resulting precise control of subcarrier frequency allows stable system performance. The modulation generator module (Figure 11) produces a pulse train output with frequency equal to the subcarrier frequency and pulse width variations proportional to the modulating audio signal amplitude and frequency. In the absence of an audio input signal, the unmodulated duty cycle of the entire modulation section of the transmitter generates the required voltage across the final RF stage to produce the unmodulated carrier power output. The modulation section, including the subcarrier filter, functions as a variable power supply and the transmitter's unmodulated carrier level can be adjusted by changing the duty cycle of the modulator pulse train. After the required carrier level has been set, audio can be applied to the modulation generator to modulate the duty cycle at the audio rate to produce a varying voltage across the RF final resulting in amplitude modulation of the carrier output. The entire modulator section consists of the Modulation Generator Module, Modulation Driver Tray, Modulator Power Amplifier Trays, and the Subcarrier Filter. The Modulation Driver Tray (Figure 12) and the Modulator Power Amplifier Tray

(Figure 13) consist of transistor arrays which turn on and off at the subcarrier frequency and in accordance with the modulated duty cycle. The subcarrier filter removes the subcarrier frequency and applies a voltage, which varies at an audio rate, to the final RF amplifier. This modulation system provides low distortion, wide frequency response, fast transient response, high modulation levels, high efficiency, and a convenient method of adjusting and regulating carrier output power.

The Transmitter Control Module (Figure 14) and the Fault Control Module (Figure 15) provide complete control and protection for the transmitter. The modules have remote control capability and a remote/local switch is provided for the safety of operating personnel. The main controls are: Transmitter On, Transmitter Off, RF On, and RF Off. A digital power increase/decrease control is also included and is controlled by two pushbuttons which give eight steps of power increase to 10% above nominal and eight steps of power decrease to 10% below nominal. This digital power control increases or decreases the comparison voltage on the transmitter's automatic power control comparator. The power control comparator then adjusts the amplitude of the subcarrier triangle wave, and the resultant change of the triangle amplitude changes the duty cycle of the pulse width modulator. As described previously, the transmitter's output power is adjusted by this change in duty cycle. A switch gives the operator the option of either automatic or manual overload recycle control, and a digital counter is provided in the automatic mode to set the number of overload steps allowed before the transmitter is shut down. The high voltage supply is protected from overcurrent and undervoltage conditions, such as the loss of a single phase, and either condition shuts the transmitter down. The front panel indicators show the reason for shutdown. The low voltage supplies are undervoltage protected and are current limited. A reflectometer circuit sends a fault pulse to the control logic when a high VSWR condition exists and the transmitter's RF output is instantly cut off. The drive level to the RF power amplifier trays is monitored, and if inadequate drive is present, the transmitter protects itself by turning off. The RF output level of each of the RF PA trays is detected by the tray balance circuit, and if the trays are not properly balanced in output, the transmitter does not allow operation until the tuning on the trays is set properly or the defective tray is repaired. Under normal operation, the tray balance circuit provides a convenient check on tray performance. The temperature of each of the RF power amplifier trays and the modulator power amplifier trays is monitored, and if a tray develops a higher than normal operating temperature due to a

malfunction, the protection control circuitry turns off the system. In the event of a failure of the blower, the air flow detector automatically reduces the transmitter output power and keeps the transmitter on the air. A front panel indicator is turned on when the transmitter is in this mode of operation. The transmitter has four illuminated meters to monitor the RF PA Volts, RF PA Amperes, % Output Power/VSWR, and 20 circuit parameters on a multimeter.

The BTA-5SS offers the broadcaster high performance and economy. Here is a look at some of the transmitter's preliminary specifications. The BTA-5SS modulation system is designed for a low distortion of 2% maximum from 30 to 10,000 hertz at a modulation depth of 95% and a frequency response of 30 to 15,000 hertz which is flat to within $\pm$1.5 dB; a high modulation capability of 125% positive peak modulation at an output power of 5.5 kW and a low noise level of at least 60 dB below 100% modulation. This design will result in a high volume, high fidelity AM broadcast signal, without sacrificing the designed overall system efficiency since the BTA-5SS provides an RF output to AC line input conversion efficiency of 65% or better at 5 kW output. The carrier shift or carrier amplitude regulation of the transmitter is 1.5% or better at 100% modulation, and there is an automatic power control to maintain the transmitter's carrier output at a level which is preset by the broadcaster. In addition, an automatic modulation control circuit will keep the modulation depth at a level preset by the broadcaster as the transmitter's power output is varied to eliminate the need to readjust the modulation level when a switch is made from high to low power or low to high power. The automatic features of the BTA-5SS are designed to make the task of utilizing the FCC's Automatic Transmission System extremely simple.

In the design of a broadcast transmitter, it is very important to provide enough service features for routine inspection, cleaning, and in the event of a failure, easy repair. The BTA-5SS makes use of extensive modular construction, and the low level nest modules shown in Figure 5 are designed so that they may be operated on a module extender. The transmitter cabinet was made large enough to give easy access to all components. A multimeter on the front panel gives operating parameters in 20 different circuits throughout the transmitter, and several illuminated status indicators are provided for instant evaluation of operational status or fault conditions.

THE FUTURE

The future promises even higher power all solid state AM broadcast transmitters, and as the solid state technology advances, powers of greater than 5 kW will be possible. It is expected that we will see a rapid increase in power output density in terms of watts per cubic foot of cabinet space. More self-monitoring and correcting features will be introduced as extensions of the present Automatic Transmissions Systems (ATS) authorized by the Federal Communications Commission.

CONCLUSION

The age of all solid state medium and high power AM broadcast transmitters is here and offers the broadcaster high performance, economy, and reliability.

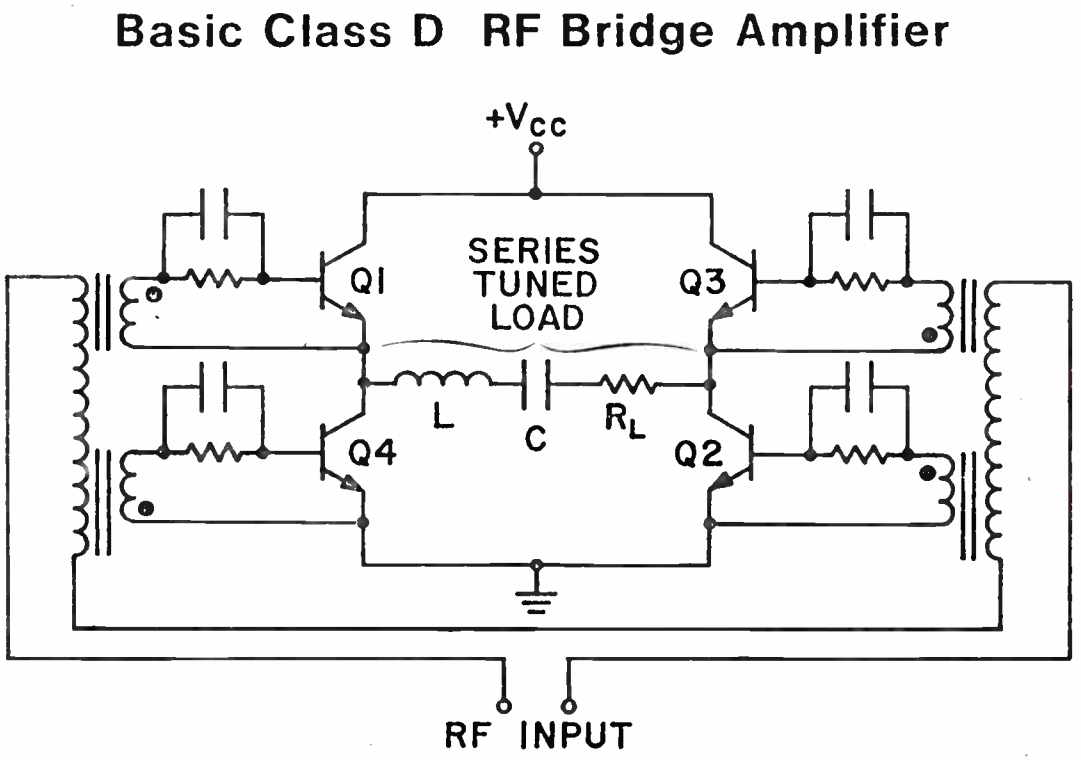
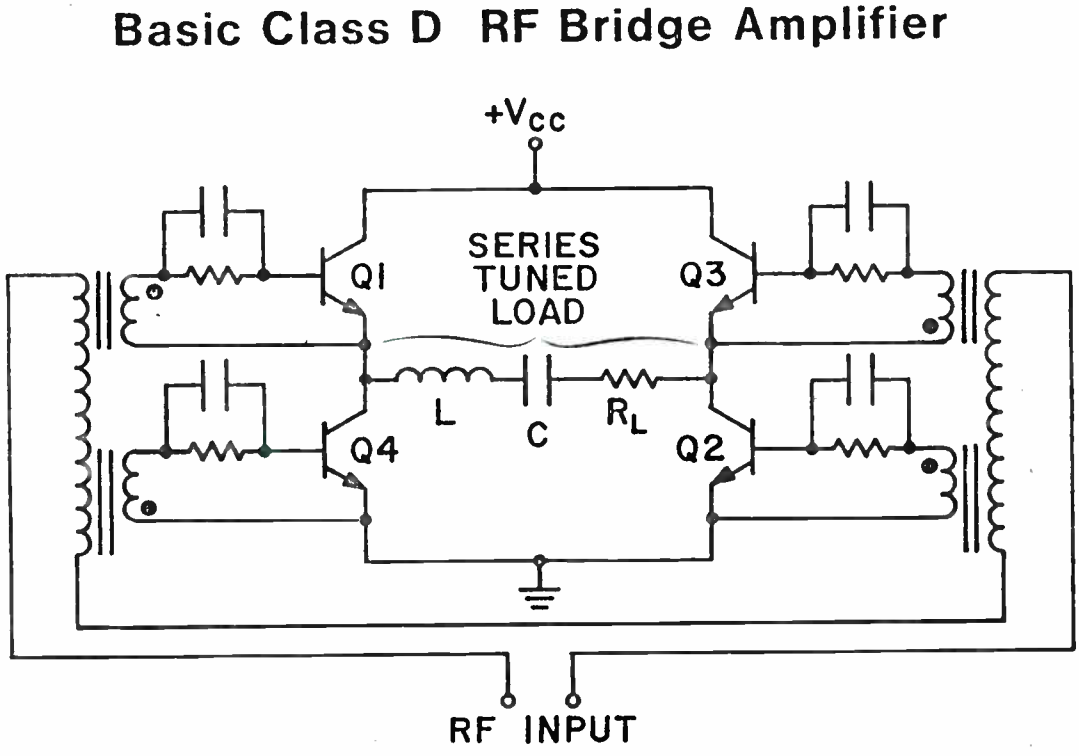


Figure 1. Basic Class D RF Bridge Amplifier Simplified Schematic



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