R-30/150

RECEIVER

WARRANTY:

Except as otherwise provided in this section, the equipment described herein is sold under the following guarantee:

Marti agrees to repair or replace within a one (1) year period and without charge, any equipment or parts which are defective as to workmanship or material and which are returned to Marti at its factory, transportation prepaid and properly insured, provided:

(a) Notice of the claimed defect is given Marti within one (1) year from date appearing on invoice and goods are returned in accordance with Marti instructions.

(b) Equipment, accessories, tubes and batteries not manufactured by Marti are subject to only such adjustments as Marti may obtain from the supplier thereof.

(c) Equipment or accessories shall not be deemed to be defective if, after examination by Marti or its appointed representative, the equipment evidences damage from moisture, improper handling, installation or operation.

(d) In the event that Marti is required to demonstrate equipment capability either as to specifications or defects in parts or workmanship and where it is found that the equipment meets specifications, Marti shall be entitled to collect all reasonable expenses from the Buyer including but not limited to, travel, per diem living expenses and hourly wage rates which have been established by Marti and which are in effect at the time.

Marti further guarantees that any radio transmitter described herein will deliver specified radio frequency power output at the antenna lead when connected to a suitable load, but such guarantee shall not be construed as a guarantee of any definite coverage or range of said apparatus. The guarantee of these paragraphs is void if equipment is altered or repaired by others than Marti or its authorized service Representative, or unless specifically authorized in writing by Marti. No other warranties, expressed or implied, shall be applicable to any equipment sold hereunder, and the foregoing shall constitute the Buyer's sole right and remedy under the agreements contained in this paragraph. In no event shall Marti have any liability for consequential damages, or for loss, damage or expense directly or indirectly arising from the use of the products, or any inability to use them either separately or in combination with other equipment or materials, or from any other cause.

R-30/150
RECEIVER

MARTI ELECTRONICS
Cleburne, Texas

SPECIFICATIONS

Application	Crystal controlled FM receiver for broadcast remote pickup. Mates with RPT-40 transmitter.
Carrier Frequency Range	150-172 MHz.
Dual Frequency Operation	Dual frequency operation is available on special order. The second crystal adjusted to specified frequency and switch assembly are optional at additional cost.
Sensitivity	0.5 microvolt for 20 db quieting. Six tuned RF circuits. FET RF amplifiers for low cross mod.
Input Impedance	50 ohms.
Frequency Stability	$\pm$ .0005%, -30°C to +50°C.
Selectivity	10.7/F30 filter module band width: 6 db at $\pm$ 17.5 KHz., 60 db at $\pm$ 22.0 KHz., 90 db at $\pm$ 23.5 KHz., 100 db + ultimate. (Optional filters available.)
Spurious Response	At least 95 db.
Audio Output	Balanced 600 ohms + 8 dbm.
Squelch	Adjustable squelch provides audio muting plus auxiliary contacts for external signal circuit.
RF Filtering	Extensive RF filtering and shielding for use in high RF fields.
Power Requirements	115/230 VAC, 50/60 Hz., 30 watts.
AC Power Supply	Precision, electronically regulated integrated circuit, with current limiting. Plug-in module.
Metering	Precision taut-band meter with front panel test selector switch. Tests signal strength, discriminator zero, power supply audio level.
Solid State Devices	17 transistors, 22 diodes, 2 IC's.
Dimensions	8-3/4" high x 19" wide x 8-1/4" deep.
Weight	Net 16 lbs., gross 20 lbs.

SECTION II
INSTALLATION

2.1 UNPACKING AND INSPECTING

This equipment was packed and delivered to the carrier with utmost care. Do not accept shipment from carrier which evidences damage or shortage until the carrier's agent endorses a statement of the irregularity on the face of the carrier's receipt. Without documentary evidence, a claim cannot be filed.

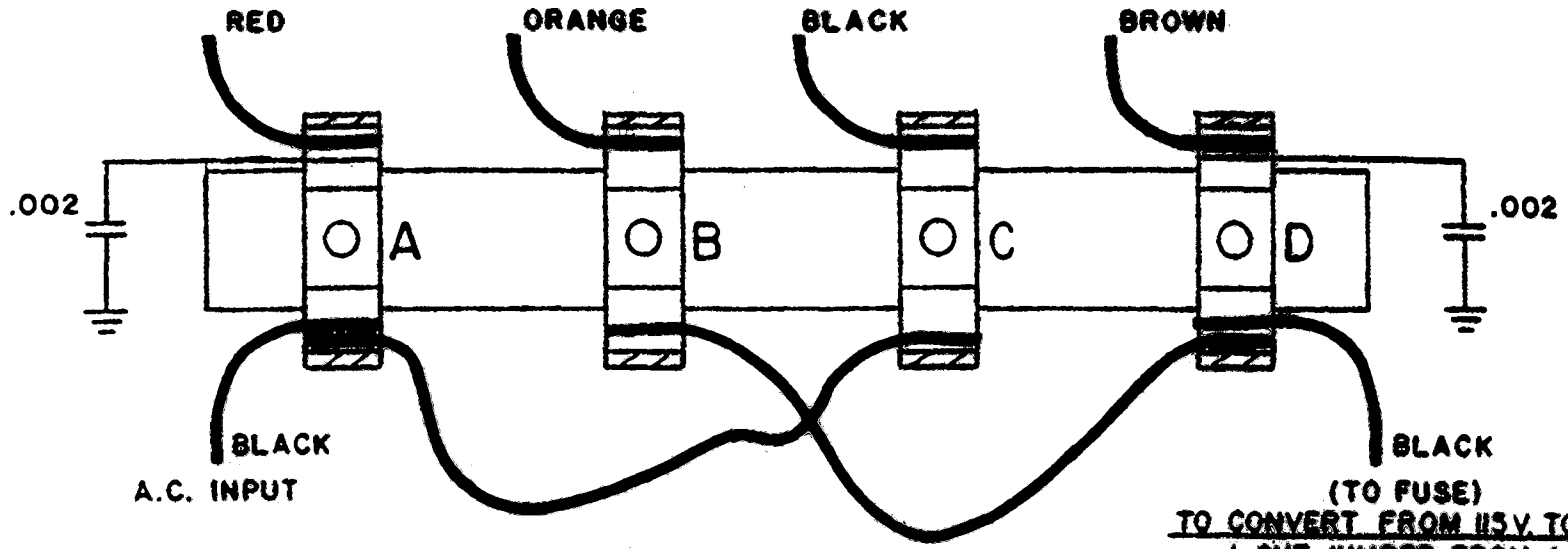
Unpack equipment immediately upon receipt and thoroughly inspect for concealed damage. If damage is discovered, cease further unpacking and request immediate inspection by local agent of carrier. A written report of the agent's findings, with his signature is necessary to support claim.

Check your shipment against the shipping papers for possible shortage. Do not discard any packing material until all items are accounted for. Small items are often thrown away with packing material.

2.2 PLACEMENT OF EQUIPMENT

Install rack-mounted equipment in a well-ventilated, well grounded and shielded rack cabinet. Do not locate solid state equipment in a rack above tube-type equipment which produces high temperatures.

Problems can also be avoided by locating this unit away from other equipment which has transformers that produce strong magnetic fields. These fields can induce hum and noise into the Marti Equipment thus reducing performance. Also, strong radio frequency fields should be avoided where possible.

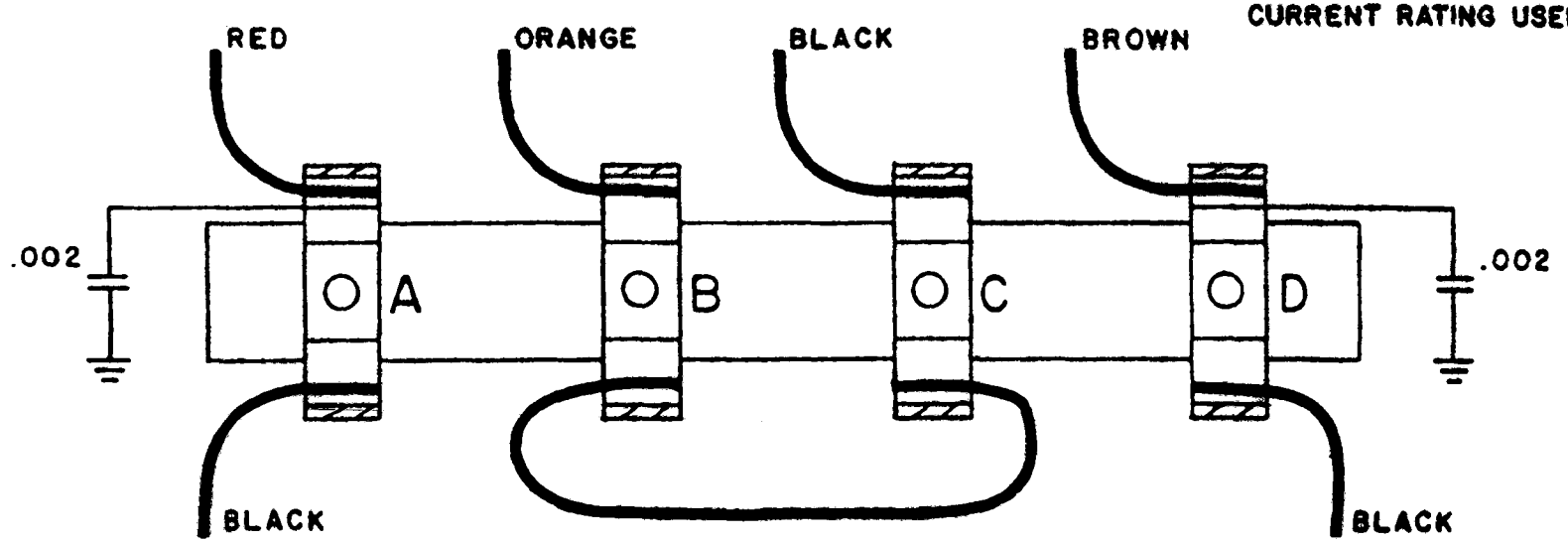


CONNECTION FOR 115V. OPERATION

TO CONVERT FROM 115 V TO 230 V.:

1. CUT JUMPER FROM A TO C.
2. CUT JUMPER FROM B TO D.
3. CONNECT JUMPER TO B AND C.
4. INSTALL FUSE OF HALF THE CURRENT RATING USED FOR 115 V.

R-SERIES RECEIVERS



CONNECTION FOR 230 V. OPERATION

DWG. NO. 700-110-2	MARTI *Electronics, Inc.*	115 V. / 230 V. CONVERSION FOR R-SERIES RECEIVERS

SECTION IV

PRINCIPLES OF OPERATION

GENERAL The Marti Model R-30/150 is a single conversion, crystal controlled VHF superhetrodyne FM receiver. It applies the latest technology for the achievement of maximum audio fidelity from the allocated bandwidth.

OPERATING PRINCIPLE A signal flow block diagram is shown on Drawing No. 700-110-3. From this drawing, it can be seen that the receiver is divided into five functioned blocks. These blocks also describe "modules" in the actual receiver. The functions of these modules is as follows:

CONVERTER MODULE (Schematic Drawing No. 700-105-4). The signal from the receiving antenna is connected to J1. Resonators LC1, LC2, and LC4 are tuned to the desired received signal frequency to limit the spectrum of RF signals applied to gate No. 1 of dual gate FET Q1. LC3 is an absorption trap to attenuate any signal appearing on a frequency 4.35 MHz (one-half of the IF frequency) below the desired receive frequency. This is necessary to prevent a spurious response at that frequency. The three pre-selector circuits are sufficient to reject the immage response. The output of Q1 is fed to resonators LC5 and LC6 which are lightly coupled by C11. The purpose of these resonators is to provide additional selectivity at the receive frequency and to match the drain impedance of Q1 to the gate No. 1 impedance of mixer Q2.

The local oscillator for the converter is transistor Q3. The frequency of the crystal which controls the frequency of this oscillator is given by the formula:

$$\text{XTAL FREQ.} = \frac{\text{RECEIVE FREQ.} - 10.7}{3}$$

Resonators LC7 and LC8 are tuned to three times the crystal frequency, and their function is to attenuate all components of the oscillator output except the third harmonic, and to match the collector impedance of Q3 to the gate No. 2 impedance of mixer transistor Q2. The output of mixer Q2 is the IF frequency 10.7 MHz.

IF FILTER The receiver bandwidth is set by a crystal filter (FL-1 in schematic drawing No. 800-026-3). This filter is inserted between the mixer output of the converter and the input connector of the IF amplifier. L-C circuits at the input and output of the filter are used to match the filter impedances.

IF AMPLIFIER The IF Amplifier is shown in schematic drawing No. 800-022-1. Transistor Q1 is a pre-amplifier which drives IC-1 integrated circuit. IC-1 provides over 50 db gain and symmetrical amplitude limiting for noise and AM rejecti

PRINCIPLES OF OPERATION

IF AMPLIFIER (continued)

The limited output of IC-1 is band-pass filtered by an LC circuit and applied to the base of transistor Q2. The function of Q2 is to provide a RF level sufficient to drive the Ratio Detector L203. The detected output of L203 is fed to the base of audio preamplifier Q5. Output of Q5 is taken from both the emitter and collector. The emitter output (J8A) is used for the main audio channel, and the collector output, which has been amplified by about 10 db, is used for recovery of low level encoding tones or other optional signaling (J7A).

Transistors Q3 and Q4 form a linear amplifier circuit used in conjunction with detector diodes D3, D4 (SIG. 2) and D5, D6 (SIG. 1) to provide signal level metering. Detectors D7, D8 are used to provide a DC level to the squelch relay driver.

PSF-8K/12K MODULE Drawing No. 800-023-2 is the schematic for this module. It contains the following functions:

POWER SUPPLY Integrated circuit IC-1 is a precision voltage regulator which provides a regulated and filtered +12.6 volts for the receiver.

SQUELCH AMPLIFIER Transistors Q1 and Q2 are in a DC Amplifier Circuit. The detected signal from the IF amplifier jack labeled "SQ. OUT" is fed to the squelch adjustment potentiometer, then to pin 4 of the PSF-8K/12K module labeled "SQ.IN". The purpose of the squelch amplifier is to amplify the detected DC to a level necessary to close squelch relay RY-1, which has its coil connected in series with the collector of transistor Q2.

FILTER The main audio from J8A of the IF Amplifier is connected to pin 8 of the PSF-8K/12K Module. R12, C6, C7 form a de-emphasis circuit. The de-emphasized audio then passes through a low pass filter consisting of L1, L2 and associated capacitors, then to audio output terminal No. 9.

LA-20 AUDIO AMPLIFIER MODULE The schematic drawing for this amplifier is No. 800-005-1. The audio from the filter described above is fed to audio level potentiometer R2 (drawing 700-110-2) then to pin No. 5 of the LA-20 module. The basic LA-20 Amplifier consists of transistors Q2, Q3, Q4 and Q5 in a three stage DC coupled circuit. Pre-Amplifier Q1 is not used in receiver applications. The output of the amplifier (pin 9) goes to the primary of output transformer T2, then to the 600 ohm line terminals of the receiver.

PRINCIPLES OF OPERATION

LA-20E When audio equalization is required because of phase modulator response in the transmitter, the LA-20E module (drawing no. 800-005-3) must be used. This amplifier delivers about 15 db boost at 50 Hz to compensate for the corresponding deficiency in phase modulated transmitters.

TOOLS AND TEST EQUIPMENT FOR STL-SERIES [illegible]

RECOMMENDED TEST EQUIPMENT FOR STL [illegible]

1. Audio Osc. HP-204C
2. Audio Attenuator HP-350D
3. VOM-Simpson 260
4. Watt Meter, Bird Model 043
   a. STL-8 - Bird Model 10E 400-1000MHz
   b. STL-15 - Bird Model 25D 200-500 MHz
   c. STL-18 - Bird Model 25D 200-500 MHz
   d. STL-25, 18, 15, 8 - Bird Model 50C 100-250 MHz
5. 50 ohm 50 W dummy load Bird 8130
6. Counter HP-5327C or equivalent
7. Spectrum Analizer 10-1000 MHz

TEST EQUIPMENT FOR R-SERIES RECEIVERS

1. Noise and Distortion Meter HP 333A
2. Electronic Voltmeter
3. Standard RF signal generator 10-1000 MHz
   a. 6 db pad Measurements 480-ZHP
   b. Double shielded cable with Type "N" Connectors
4. 10.7 Xtal Osc.

TUNING TOOLS

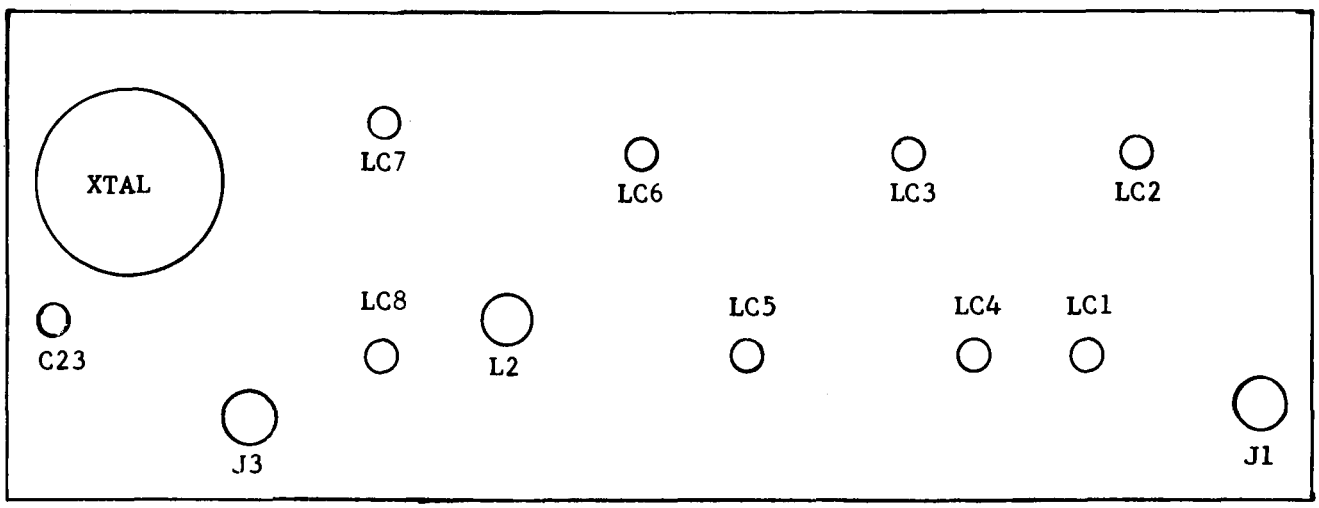
Insulated Screwdriver GC8727
Screwdriver XCELITE #R-184
Tool (HEX) GC#9300
3/16" Hex Nut Driver #8 XCELITE
Tool (Blade-Slot) GC 8282
Tool (OSC. Tuning GC 8867

SECTION V

5.2 CONVERTER ADJUSTMENTS FOR VHF RECEIVERS

Applicable to the following receiver serial numbers and larger: R-200/100 S/N 31, R-30/150 S/N 466, R-50/150 S/N 20, R-200/150 S/N 466, R-100/215 S/N 104, R-200/215 S/N 104, R-200/950 S/N 754.

*NOTE: Refer to VHF Converter sketch for adjustment location.



VHF CONVERTER

1. Tune LC7 and LC8 for maximum reading in Test Meter Position "U-1".

2. Insert Receiver frequency from a signal Generator into Receiver at J1. Connect J2 (see drawing 700-105-4) of VHF Converter to J6A of IF Amplifier, (see drawing 800-022-1).

3. Tune LC1, LC2, LC4 through LC8, and L2 of VHF Converter for maximum reading in Test Meter Position "Sig 1".

4. Tune L201 and L202 for maximum reading in Test Meter Position "Sig 1". (See "IF Amplifier" sketch for adjustment locations.)

5. Repeat steps 3 and 4 until a signal to noise ratio of -20 DB quieting at 1 microvolt is obtained.

6. Connect J1 of 10.7 MHz IF Filter (See IF Filter sketch for adjustment locations) to J2 of the VHF Converter. Connect J2 of 10.7 MHz IF Filter to J6A IF Amplifier.

7. Tune L1, L2 and L3 of 10.7 MHz IF Filter for maximum reading on Test Meter Position "Sig 1".

8. Tune L1, L2 and L3 of 10.7 MHz IF Filter for minimum distortion; being careful not to allow the reading in Test Meter Position "Sig 1" to drop. Repeat this step until less than 2% distortion for R-30, .5% distortion for R-200 is obtained and a signal to noise ratio of 20 DB of quieting at .5 microvolts is obtained.

5.2 (continued)

9. FOR R-30/150 ONLY: Tune LC3 of VHF Converter, which is the spurious trap, for minimum reading in Test Meter Position "Sig 1" at 5.35 MHz below the receive frequency.

10. Using a Transmitter or Signal Generator tuned to the exact Receiver frequency, apply a 100 uv signal 100% modulated to the Receiver RF Input. Connect a Distortion Analizer to Receiver Output (+10 DBM). Adjust C23 for minimum distortion. Distortion should be less than 2% for R-30/---- Series Receiver and less than .5% for the R/200/---- Series Receiver.

11. If a Distortion Meter is not available, adjust C23 to read crystal frequency measured at J3 of VHF Converter.

EXAMPLE FOR COMPUTING CRYSTAL FREQUENCY

161.64 - 10.7 = 150.94
(Rec. Freq) - (IF Freq) = (3 Times Crystal Freq)

150.94 - 3 = 50.31333
3 Times Crystal freq. ÷ 3 = Crystal

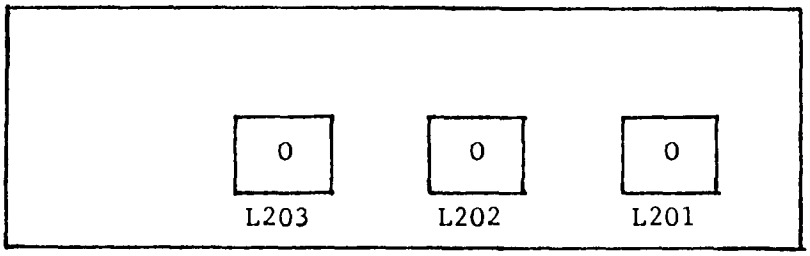
NOTE: The measured frequency at J3 will be either the crystal frequency, twice the crystal frequency or three times the crystal frequency according to which harmonic your counter reads.

5.3 10.7 MHz IF AMPLIFIER ADJUSTMENTS

Applicable to the following receiver serial number and larger: R-200/100 S/N 31, R-30/150 S/N 466, R-50/150 S/N 20, R-200/150 S/N 466, R-100/215 S/N 104, R-200/215 S/N 104, R-200/950 S/N 754.

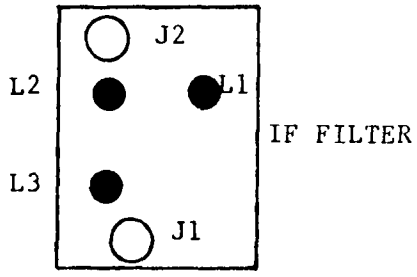
NOTE: Refer to IF Filter and IF Amplifier sketch for adjustment locations.

IF AMPLIFIER



1. Insert 10.7 MHz (Crystal control ± .001%) into J6A. Tune Top Slug of L203 for zero (0) reading in both +Disc and -Disc.
2. Re-connect Converter to IF Amplifier J6A. Tune L201 and L202 for maximum reading in Test Meter Position "Sig 1".
3. Tune Bottom Slug of L203 for maximum audio out of Receiver.
4. Repeat step 2 along with procedure for tuning Converter until 20 DB of quieting at 1 microvolt is obtained.

5.4 IF FILTER ADJUSTMENT



1. Connect Output of Converter to J1 of 10.7 MHz. IF Filter. Connect J6A of IF Amplifier to J2 of 10.7 MHz. IF Filter.
2. Tune L1, L2 and L3 of 10.7 MHz. IF Filter for maximum reading on Test Meter Position "Sig 1".
3. Tune L1, L2 and L3 of 10.7 MHz. IF Filter or lowest distortion being careful not to allow Test Meter Position "Sig 1" to drop.
4. Repeat step 3 until distortion is below 2% for R-30/150, R-50/450 and .5% for R-100/----- and R-200/-----.
5. Repeat tuning procedure for IF Amplifier and Converter until proper signal to noise ratio is obtained.

5.5 PSF-8K PSF-12K PSF-15K PSF-15K 951 MODULE ADJUSTMENTS

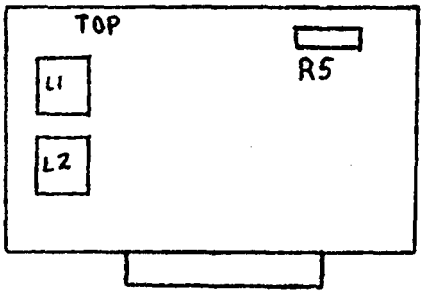
*NOTE: A ten conductor module extender board (Marti MX-10) is required to provide access to these adjustments.

1. Adjust R5 for a 12.6V DC reading for Pin 3 of PSF to ground.

2. PSF-8K and PSF-12K LOW PASS FILTER ADJUSTMENT

Using a RPU Transmitter radiating to the Receiver, or an FM signal generator modulated 100% at the following test frequencies, adjust coils L1 and L2 for maximum receiver audio output using the receiver VU meter (+10 DBM).

MODULE	TEST FREQUENCY
PSF-8K	7 KHz.
PSF-12K	10.5 KHz.



PSF-15K (951)

3. PSF-15K and PSF-15K (951) LOW PASS FILTER ADJUSTMENTS

Use STL Transmitter radiating to the receiver or FM signal generator as RF signal source. Apply the following test frequencies into the STL Transmitter audio input terminals at +10 DBM level or modulate the signal generator at 100% specified FM deviation for the receiver. Connect an audio voltmeter having a sensitivity of -60 DBM to the receiver 600 ohm audio output terminals. Set receiver audio output level control near maximum.

Set audio test signal to 21.5 KHz. and adjust L1 (lower coil) on PSF-15K or PSF-15K (951) module for minimum indication on the audio voltmeter. Next set audio test signal to 39 KHz. and adjust 12 (upper coil) on PSF-15K or PSF-15K (951) module for minimum indication on the audio voltmeter.

5.6 FREQUENCY RESPONSE CORRECTION FOR R- SERIES RECEIVERS

1. Connect 600 ohm audio test oscillator having constant output with frequency ± 0.1 DB to transmitter audio input terminals.

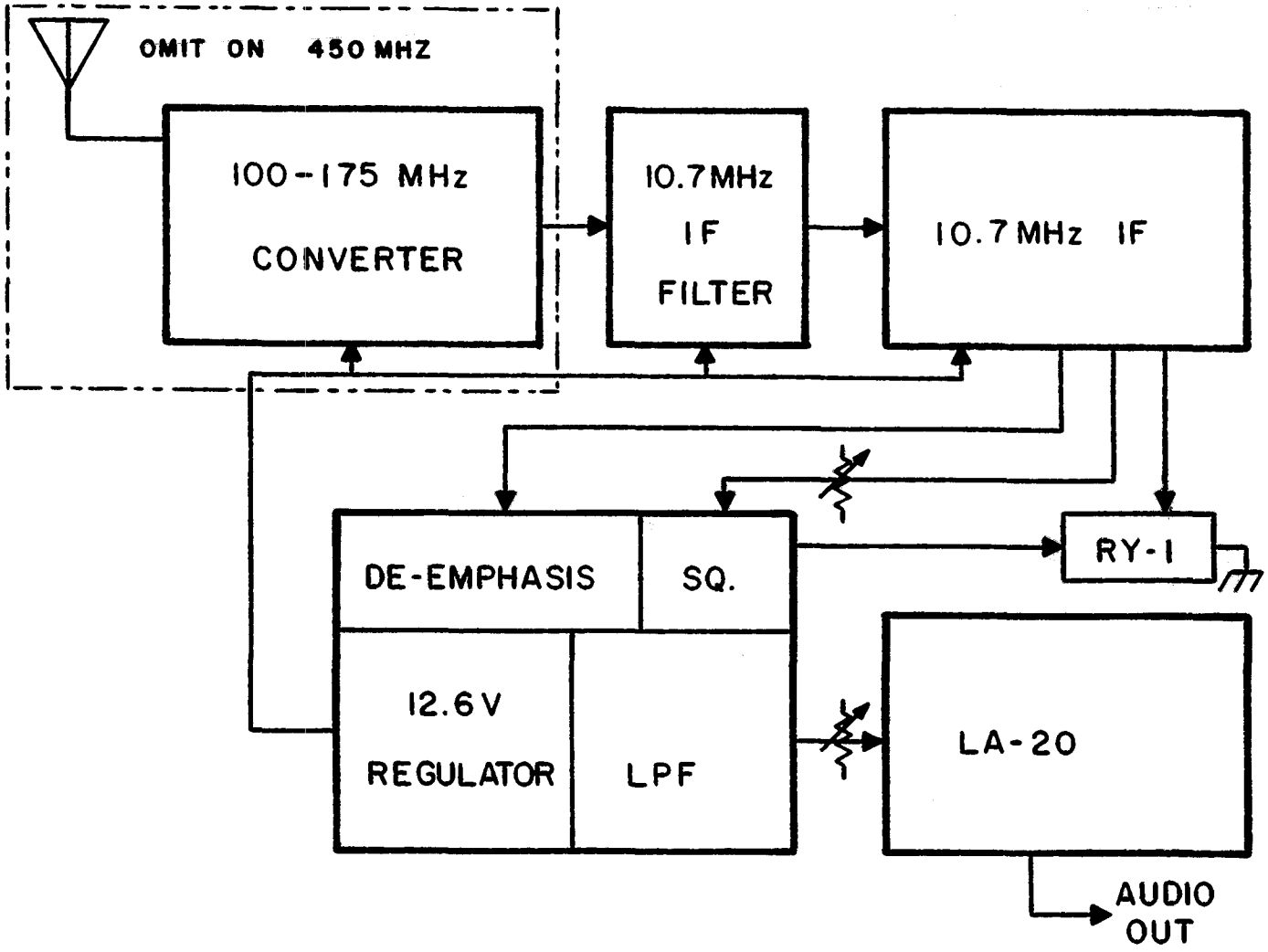
2. Connect audio voltmeter to receiver audio output terminals.

3. With transmitter radiating to the receiver to produce full receiver quieting, establish a reference modulation level at 100% modulation at 400 Hz. Set receiver output level into 600 ohm load resistor of +10 DBM. Reduce transmitter audio input level 20 DB (to -10 DBM). This is the test level for frequency response test to prevent over modulation of transmitter at 15 KHz.

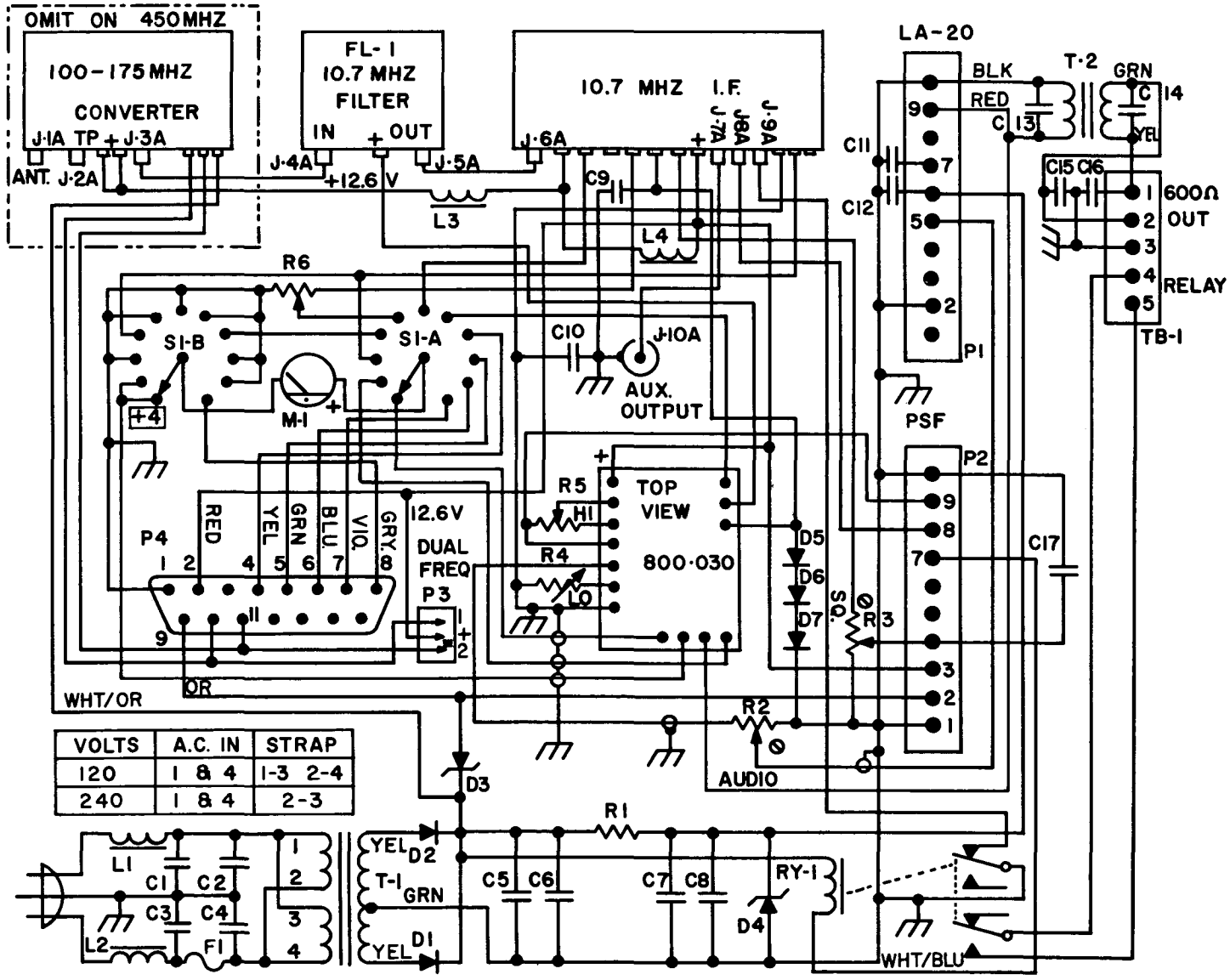
4. Make slight adjustment of test signal level to produce exactly -10 DBM reference level at 400 Hz. Next set test signal to 15 KHz.

   (R-100 and R-200 Receivers ONLY)
   If receiver output level changes more than ±0.3 DB, adjust R101 on receiver chassis (Main Frame) for exact reference level.

5. Set audio test signal to 50 Hz and observe receiver output level. level is more than 0.3 DB from the 400 Hz. reference level, adjust R102 for exact level.



DWG. [redacted]00-110-3	MARTI Electr[redacted]s, Inc.	R- MAIN FRAME BLOCK D[redacted]

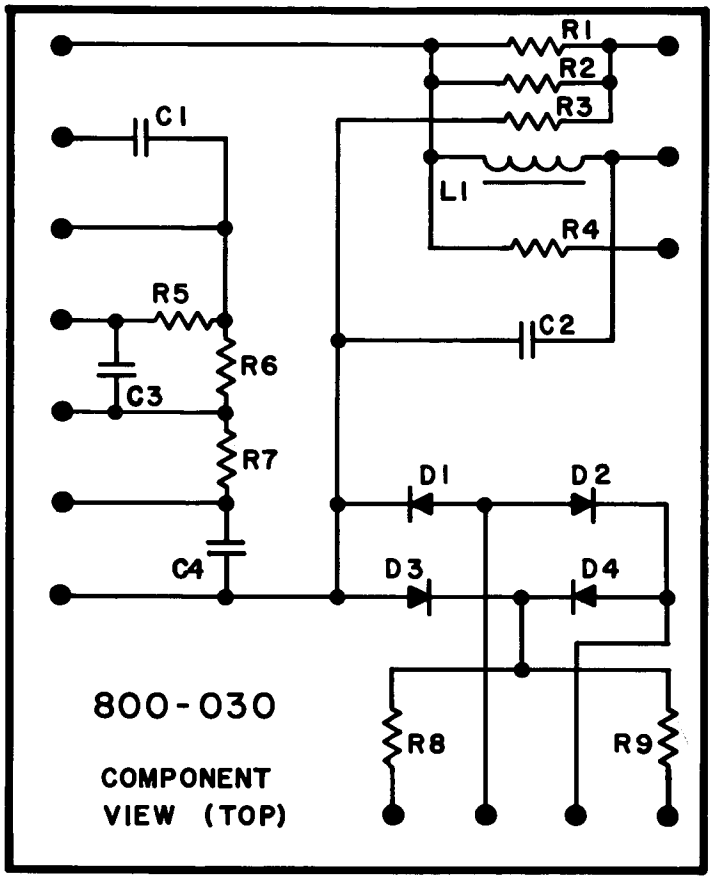


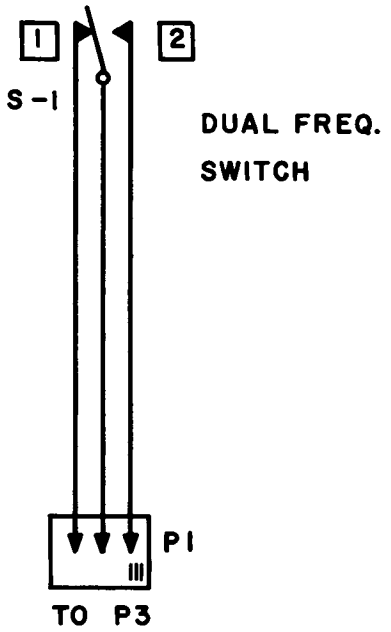
DWG. 700-110-2	MARTI Electronics, Inc.	R- MAIN FRAME

PARTS LIST
R-SERIES RECEIVER
MAIN FRAME

THIS PARTS LIST APPLIES TO THE FOLLOWING RECEIVER MODELS AND SERIAL NUMBERS AND ABOVE: R-30/150 S/N 148, R-50/450 S/N 199, R-200/100 S/N 41, R-200/150 S/N 58, R-100/216 S/N 154, R-200/300 S/N 59, R-200/950 S/N 902.

ITEM	PART NO.	DESCRIPTION
C1	297-202	Capacitor, .002 uf/2KV Disc.
C2	297-202	Capacitor, .002 uf/2KV Disc.
C3	297-202	Capacitor, .002 uf/2KV Disc.
C4	297-202	Capacitor, .002 uf/2KV Disc.
C5	219-401	Capacitor, 400 uf/40V Electrolytic
C6	219-401	Capacitor, 400 uf/40V Electrolytic
C7	219-401	Capacitor, 400 uf/40V Electrolytic
C8	219-401	Capacitor, 400 uf/40V Electrolytic
C9	226-224	Capacitor, .002/100V
C10	255-180	Capacitor, 18 pf Disc.
C11	215-103	Capacitor, 10,000 pf Polystyrene
C12	226-224	Capacitor, 0.22/100V
C13	256-471	Capacitor, 470 pf Disc.
C14	268-102	Capacitor, 0.001 Disc.
C15	255-750	Capacitor, 75 pf Disc.
C16	255-750	Capacitor, 75 pf Disc.
C17	253-502	Capacitor, .005 Disc.
D1	413-193	Diode, 1N3193 or 1N4007
D2	413-193	Diode, 1N3193 or 1N4007
D3	410-270	Diode, 2.7 V Zener
D4	410-220	Diode, 24 V Zener
D5	410-914	Diode, 1N4148
D6	410-914	Diode, 1N4148
D7	412-494	Diode, S-579
J-10A	550-015	Jack, BNC Chassis Mount
L1	330-011	Choke, Z-50
L2	330-011	Choke, Z-50
L3	330-004	Choke, 100 uh
L4	330-004	Choke, 100 uh
M-1	030-017	Meter, 200 ua
P1	500-059	Plug, 10 pin PC
P2	550-059	Plug, 10 pin PC
P3	560-026	Plug, 2 contacts (Pins 550-003)
P4	550-030	Plug, 15 Pin Cinch
R1	125-820	Resistor, 82 ohm, 2 W. 10%
R2	100-512	Resistor, 5K POT
R3	100-263	Resistor, 25K POT
R4	100-103	Resistor, 10K POT
R5	100-213	Resistor, 10K POT
R6	100-213	Resistor, 10K POT
RY-1	570-011	Relay, 1000 ohm
S-1	530-014	Switch, 11 pos.
T1	320-019	Transformer, Power
T2	310-010	Transformer, Audio Output
TB-1	511-021	Terminal 5 p

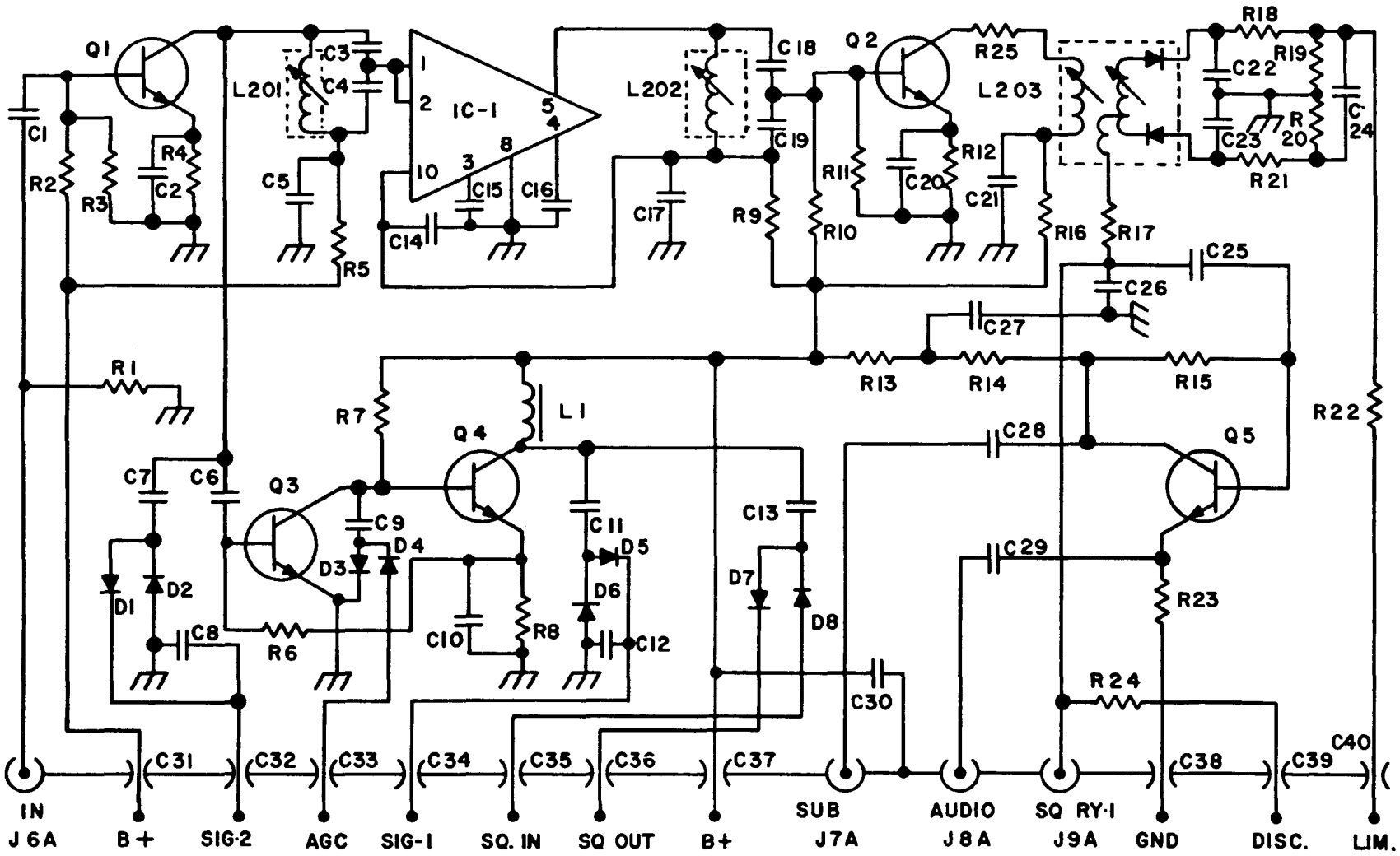




DWG. 700·110·2A	MARTI *Electronics, Inc.*	EQUILIZATION / METERING BOARD

PARTS LIST
EQUALIZATION METERING BOARD
800-030

ITEM	PART NO.	DESCRIPTION
C1	215-622	Capacitor, 6200 pf Polystyrene
C2	217-104	Capacitor, 0.01 Disc
C3	256-301	Capacitor, 300 pf Disc
C4	226-010	Capacitor, 1 uf Mylar
D1	412-494	Diode, 1N270
D2	412-494	Diode, 1N270
D3	412-494	Diode, 1N270
D4	412-494	Diode, 1N270
L1	330-004	Choke, 100 uf
P1	550-001	Plug, 3 Contacts (Pins 550-003)
R1	105-104	Resistor, 100K, ½ watt 5%
R2	105-223	Resistor, 22K, ½ watt 5%
R3	105-471	Resistor, 470 ohm, ½ watt 5%
R4	105-103	Resistor, 10K, ½ watt 5%
R5	145-152	Resistor, 1.5K, ½ watt 5%
R6	145-300	Resistor, 30 ohm, ½ watt 5%
R7	105-562	Resistor, 5.6K, ½ watt 5%
R8	105-102	Resistor, 1K, ½ watt 5%
R9	105-562	Resistor, 5.6K, ½ watt 5%



DWG. 800·022·1	MARTI *Electronics, Inc.*	I. F. AMPLIFIER

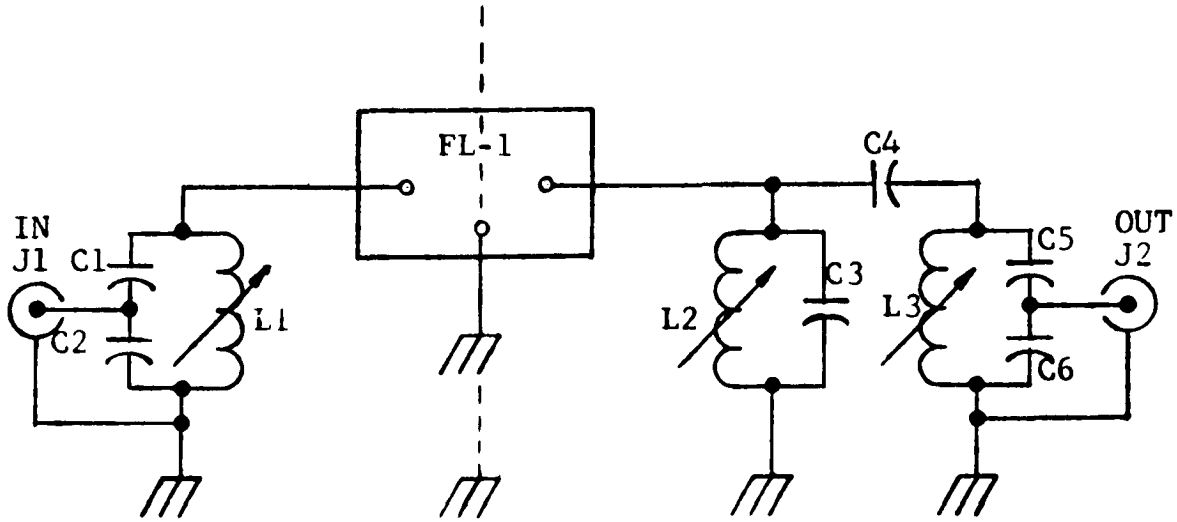
PARTS LIST
I.F.AMPLIFIER 10.7 MHz.
Module Assembly

ITEM	PART NO.	DESCRIPTION
C1	268-102	Capacitor, .001 uf Disc. 1 KV Z5U
C2	217-103	Capacitor, 0.1 uf Disc. 1 KV Z5U
C3	256-151	Capacitor, 150 pf JL Disc. 500V 5%
C4	256-301	Capacitor, 300 pf JL Disc. 500V 5%
C5	268-103	Capacitor, 0.01 uf Disc. 25V Z5U
C6	255-050	Capacitor, 5 pf UPO Disc. 500V 5%
C7	255-050	Capacitor, 5 pf UPO Disc. 500V 5%
C8	217-104	Capacitor, 0.01 uf Disc. 25V Z5U
C9	255-150	Capacitor, 15 pf UPO Disc. 500V 5%
C10	217-103	Capacitor, 0.1 uf Disc. 25V Z5U
C11	256-131	Capacitor, 130 pf JL Disc. 500V 5%
C12	217-104	Capacitor, 0.01 uf Disc. 25V Z5U
C13	255-470	Capacitor, 47 pf N330 Disc. 500V 5%
C14	217-103	Capacitor, 0.1 uf Disc. 25V Z5U
C15	217-103	Capacitor, 0.1 uf Disc. 25V Z5U
C16	217-103	Capacitor, 0.1 uf Disc. 25V Z5U
C17	217-103	Capacitor, 0.1 uf Disc. 25V Z5U
C18	256-151	Capacitor, 150 pf JL Disc. 500V 5%
C19	256-301	Capacitor, 300 pf JL Disc. 500V 5%
C20	217-104	Capacitor, 0.1 uf Disc. 25V Z5U
C21	268-103	Capacitor, 0.01 uf Disc. 25V Z5U
C22	256-301	Capacitor, 300 pf JL Disc. 500V 5%
C23	256-301	Capacitor, 300 pf JL Disc. 500V 5%
C24	219-200	Capacitor, 22 uf/25V Elect.
C25	226-224	Capacitor, 0.22/100V 10%
C26	256-301	Capacitor, 300 pf Disc. 500V 5%
C27	219-200	Capacitor, 22 uf/25V Elect.
C28	253-502	Capacitor, 0.005 Disc. Z5U
C29	219-200	Capacitor, 22 uf/25V Elect.
C30	217-104	Capacitor, 0.01 uf Disc. 25V Z5U
C31	266-102	Capacitor, 1000 pf feed through
C32	266-102	Capacitor, 1000 pf feed through
C33	266-102	Capacitor, 1000 pf feed through
C34	266-102	Capacitor, 1000 pf feed through
C35	266-102	Capacitor, 1000 pf feed through
C36	266-102	Capacitor, 1000 pf feed through
C37	266-102	Capacitor, 1000 pf feed through
C38	266-102	Capacitor, 1000 pf feed through
C39	266-102	Capacitor, 1000 pf feed through
C40	266-102	Capacitor, 1000 pf feed through
D1	412-494	Diode, 1N270
D2	412-494	Diode, 1N270
D3	412-494	Diode, 1N270
D4	412-494	Diode, 1N270
D5	412-494	Diode, 1N270

PARTS LIST
I.F. AMPLIFIER 10.7 MHz.
MODULE ASSEMBLY (continued)

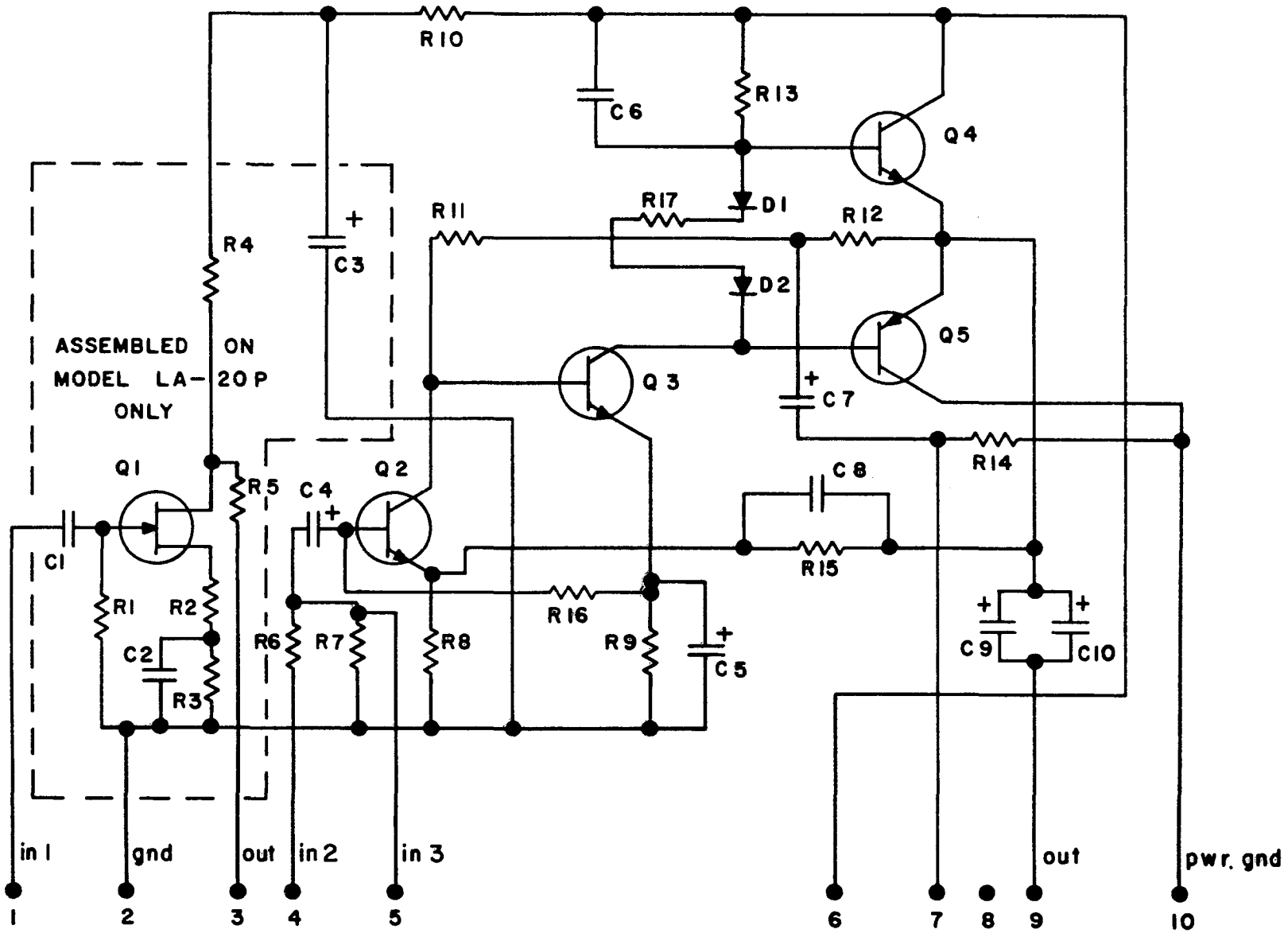
ITEM	PART NO.	DESCRIPTION
D6	412-494	Diode, 1N270
D7	412-494	Diode, 1N270
D8	412-494	Diode, 1N270
IC-1	403-012	Integrated Circuit, CA3012
J	550-039	All phono jacks solder in.
L1	330-012	Choke, 18 uh
L201	350-025	Coil, 387-3
L202	350-025	Coil, 387-3
L203	350-032	Coil Ratio Detector
Q1	440-245	Transistor, 2N4252 or MRF 502
Q2	440-245	Transistor, 2N4252 or MRF 502
Q3	440-245	Transistor, 2N4252 or MRF 502
Q4	440-245	Transistor, 2N4252 or MRF 502
Q5	423-391	Transistor, 2N3391
R1	145-102	Resistor, 1K ½W. 5%
R2	145-103	Resistor, 10K ½w. 5%
R3	145-222	Resistor, 2.2K ½W. 5%
R4	145-152	Resistor, 1.5K ½W. 5%
R5	145-102	Resistor, 1K ½W. 5%
R6	145-103	Resistor, 10K ½W. 5%
R7	145-102	Resistor, 1K
R8	145-561	Resistor, 560 ohm ½W. 5%
R9	105-331	Resistor, 330 ohm ½W. 5%
R10	145-332	Resistor, 3.3K ½W. 5%
R11	145-561	Resistor, 560 ohm ½W. 5%
R12	145-561	Resistor, 560 ohm ½W. 5%
R13	145-102	Resistor, 1K ½W. 5%
R14	105-392	Resistor, 3.9K ½W. 5%
R15	145-105	Resistor, 1 meg. ½W. 5%
R16	145-681	Resistor, 680 ohm ½W. 5%
R17	145-680	Resistor, 68 ohm ½W. 5%
R18	145-681	Resistor, 680 ohm ½W. 5%
R19	145-562	Resistor, 5.6K ½W. 5%
R20	145-562	Resistor, 5.6K ½W. 5%
R21	145-681	Resistor, 680 ohm ½W. 5%
R22	145-223	Resistor, 22K ½W. 5%
R23	145-102	Resistor, 1K ½W. 5%
R24	145-333	Resistor, 33K ½W. 5%
R25	145-471	Resistor, 470 ohm ½W. 5%

PARTS LIST
10.7 MHz IF FILTER



ITEM	PART NO.	DESCRIPTION
C1	256-131	Capacitor, 130 pf, JL 500 V. 10%
C2	256-471	Capacitor, 470 pf, JL 500 V. 10%
C3	256-131	Capacitor, 130 pf, JL 500 V. 10%
C4	255-100	Capacitor, 10 pf, NPO 500 V. 5%
C5	255-470	Capacitor, 47 pf, N330, 500 V. 5%
C6	256-131	Capacitor, 130 pf, JL 500 V. 10%
FL1	360-023	Filter, 30 KHz Bandwidth
	360-024	Filter, 50 KHz Bandwidth
	360-025	Filter, 100 KHz Bandwidth
	360-016	Filter, 200 KHz Bandwidth
L1	350-025	Inductor, Variable 1.5-3 uh
L2	350-025	Inductor, Variable 1.5-3 uh
L3	350-025	Inductor, Variable 1.5-3 uh

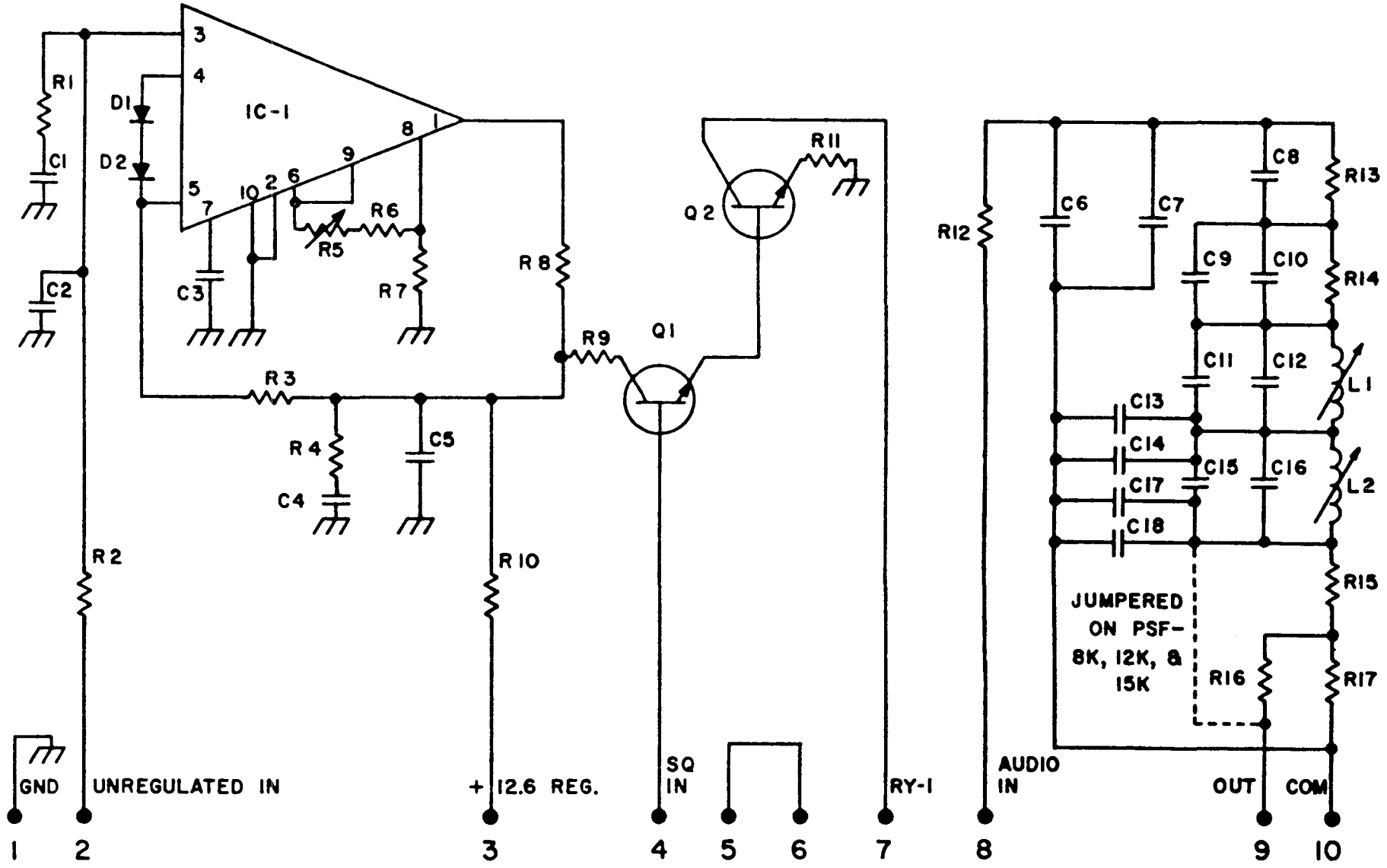
10.7 MHz IF FILTER | MARTI ELECTRONICS, INC. | DWG. 800-026-3



DWG 800-005-1	MARTI *Electronics, Inc.*	LINE AMPLIFIER LA-20/12

PARTS LIST
AMPLIFIER MODULE
MODEL NO. LA-20

ITEM	PART NO.	DESCRIPTION
(C1-C3, Q1, and R1-R5 are on LA-20P only.)		
C4	219-200	Capacitor, 22 mf, 25 V.
C5	209-401	Capacitor, 470 mf, 6.3 V.
C6	256-301	Capacitor, 300 pf, Type JL
C7	219-121	Capacitor, 150 mf, 25 V.
C8	255-270	Capacitor, 27 pf, NPO, 1KV.
C9	219-121	Capacitor, 150 mf, 25 V.
C10	219-121	Capacitor, 150 mf, 25 V.
D1	413-754	Diode, D1 300A
D2	413-754	Diode, D1 300A
Q2	420-549	Transistor, BC549B
Q3	423-391	Transistor, 2N3391A
Q4	450-001	Transistor, SPS-1761
Q5	450-002	Transistor, SPS-1762
R6	105-472	Resistor, 4.7K, ½ W. 5%
R7		
R8	105-221	Resistor, 220 ohms, ½ W. 5%
R9	105-102	Resistor, 1 K, ½ W. 5%
R10		
R11	105-472	Resistor, 4.7 K, ½ W. 5%
R12	105-472	Resistor, 4.7 K, ½ W. 5%
R13	105-103	Resistor, 10 K, ½ W. 5%
R14	105-221	Resistor, 220 ohms, ½ W. 5%
R15	105-184	Resistor, 180 K, ½ W. 5%
R16	105-184	Resistor, 180 K, ½ W. 5%
R17		Resistor, 22-47 ohms, ¼ W. 5%, factory selected
	800-005	Board, Circuit LA-20
	700-024	Module Metal Assembly



DWG 800·023·2	MARTI *Electronics, Inc.*	PSF- 8K / 12K / 15K / 15K (951)

PARTS LIST
PSF-8K/12K/15K/15K(951) MODULE

ITEM	PART NO.	DESCRIPTION
C1	217-104	Capacitor, 0.1 MF Mylar
C2	217-103	Capacitor, 0.1 MF Disc
C3	226-104	Capacitor, 0.1 MF Mylar
C4	226-103	Capacitor, 0.1 MF Disc
C5	219-500	Capacitor, 50 uf-40V Electrolytic
C6	215-223	Capacitor, 6800 pf Polystyrene
C7	215-153	Capacitor, 33000 pf Polystyrene
PSF-8K		
C8		Not used
C9	215-622	Capacitor, 6200 pf Polystyrene
C10	215-242	Capacitor, 2400 pf Polystyrene
C11		Not used
C12		Not used
C13	215-392	Capacitor, 3900 pf Polystyrene
C14		Not used
C15	215-622	Capacitor, 6200 pf Polystyrene
C16		Not used
C17	215-242	Capacitor, 2400 pf Polystyrene
C18		Not used
PSF-12K		
C8		Not used
C9	215-292	Capacitor, 3900 pf Polystyrene
C10	215-122	Capacitor, 1200 pf Polystyrene
C11		Not used
C12		Not used
C13	215-392	Capacitor, 3900 pf Polystyrene
C14		Not used
C15	215-242	Capacitor, 2400 pf Polystyrene
C16		Not used
C17	215-122	Capacitor, 1200 pf Polystyrene
C18		
PSF-15K & 15K (951)		
C8	215-392	Capacitor, 3900 pf Polystyrene
C9	215-392	Capacitor, 3900 pf Polystyrene
C10		Not used
C11	256-471	Capacitor, 470 pf 10% Type JL
C12		Not used
C13	215-242	Capacitor, 2400 pf Polystyrene
C14	256-471	Capacitor, 270 pf 10% Type JL
C15	215-242	Capacitor, 2400 pf Polystyrene
C16		Not used
C17	215-122	Capacitor, 1200 pf Polystyrene
C18		Not used
D1	410-914	Diode, 1N4148
D2	410-914	Diode, 1N4148

IC-1	401-461	Integrated Circuit MC-1461G

PSF-8K

L1	350-032	Inductor 387-150M
L2	350-027	Inductor 387-60M

PSF-12K & 15K(951)

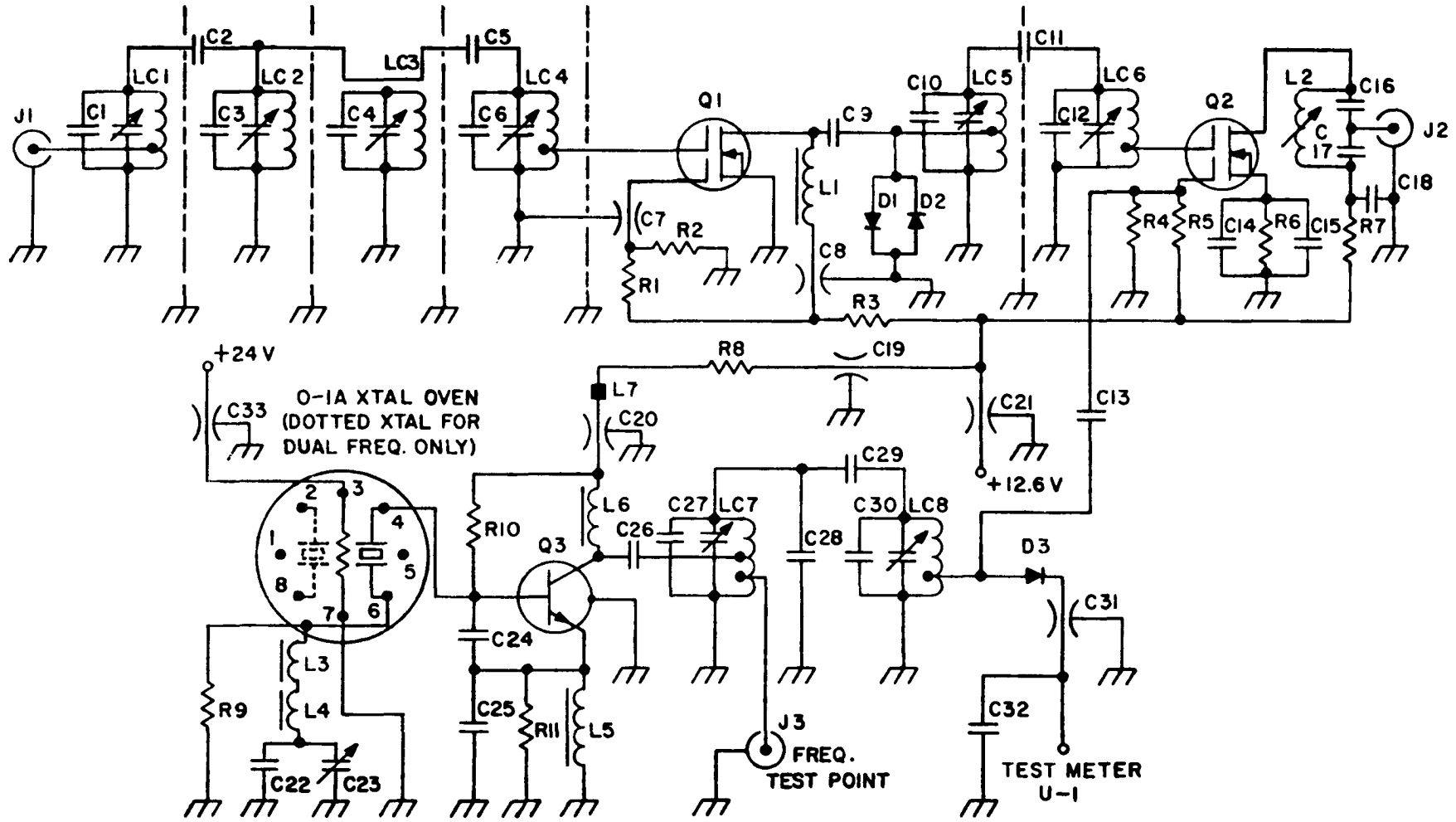
L1	350-027	Inductor, 387-60M
L2	350-027	Inductor, 387-60M
Q1	423-391	Transistor, 2N3391
Q2	423-391	Transistor, 2N3391
R1	105-030	Resistor, 3.3 ohm, ½W., 5%
R2	105-030	Resistor, 3.3 ohm, ½W., 5%
R3	105-100	Resistor, 10 ohm, ½W., 5%
R4	105-030	Resistor, 3.3 ohm, ½W., 5%
R5	100-522	Resistor, 5K, ¼W POT
R6	105-682	Resistor, 18K ohm, ½W., 5%
R7	105-100	Resistor, 68K ohm, ½W., 5%
R8	105-100	Resistor, 10 ohm, ½W., 5%
R9	105-100	Resistor, 10 ohm, ½W., 5%
R10	105-030	Resistor, 3.3 ohm, ½W., 5%
R11	105-100	Resistor, 10 ohm, ½W., 5%
R12	105-222	Resistor, 2.2K ½W., 5%
R13	145-222	Resistor, 2.2K ¼W., 5%
R14	145-222	Resistor, 2.2K ¼W., 5%

PSF-8K/12K/15K

R15	145-300	Resistor, 30 ohm, ¼W., 5%
R16	145-300	Resistor, 30 ohm, ¼W.,5%
R17		Not used

PSF-15K (951)

R15	145-332	Resistor, 3.3K, ¼W., 5%
R16	145-472	Resistor, 2.7K, ¼W., 5%
R17	145-472	Resistor, 4.7K, ¼W., 5%



DWG. 700-105-4	MARTI *Electronics, Inc.*	VHF CONVERTER

PARTS LIST
VHF CONVERTER
MODEL NO. 700-105-4

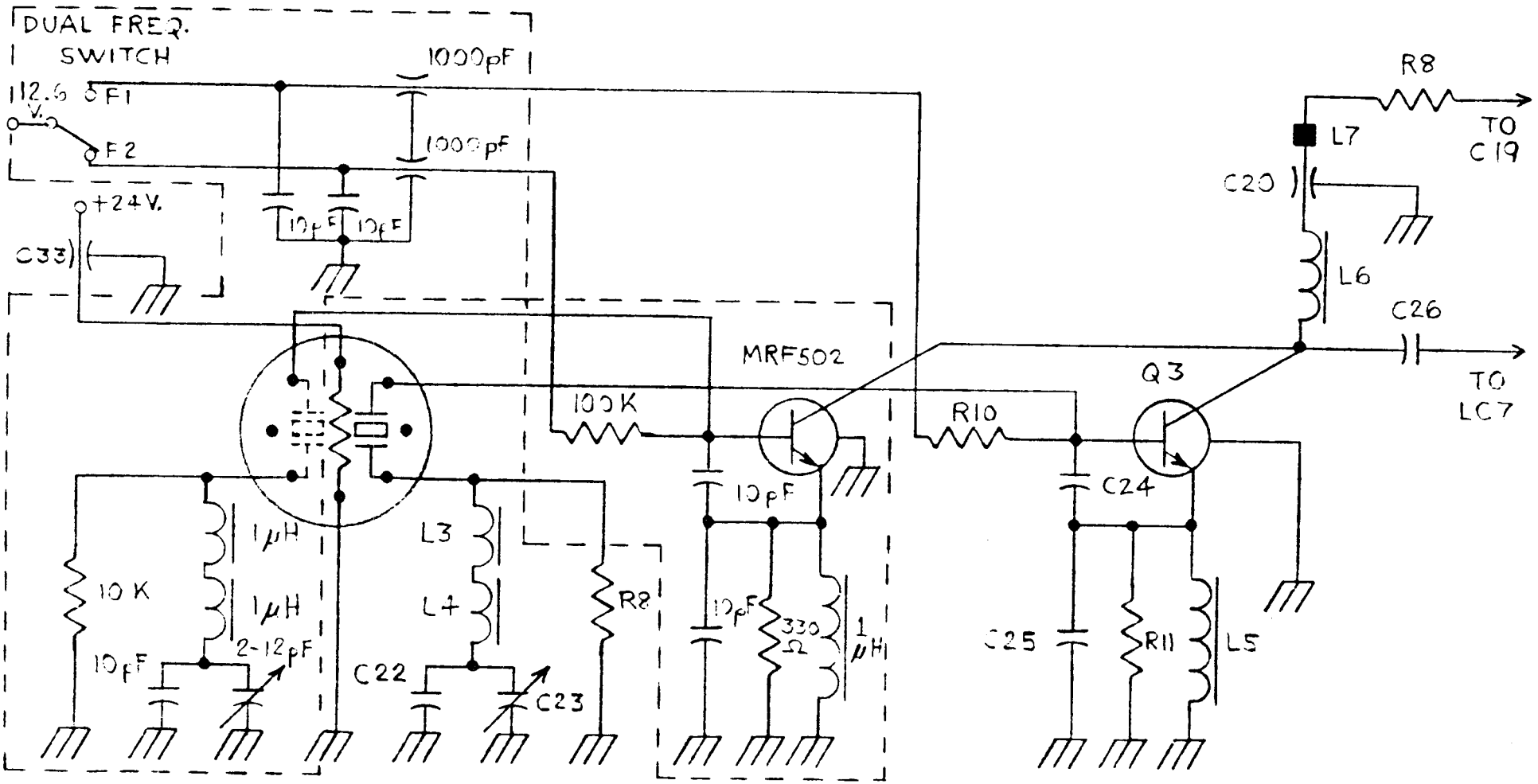
APPLICABLE TO THE FOLLOWING RECEIVER SERIAL NUMBERS AND LARGER:
R-200/100 S/N 31, R-30/150 S/N 466, R-50/150 S/N 20, R-200/150 S/N 466, R-100/215 S/N 104, R-200/215 S/N 104, R-200/950 S/N 754.

ITEM	PART NO.	DESCRIPTION
C1	255-100	Capacitor, *10 pf, NPO, 500V. 5%
C2	255-003	Capacitor, 0.27 pf, 500V. 5%
C3	255-100	Capacitor, *10pf, NPO, 500V. 5%
C4	255-100	Capacitor, *10pf, NPO, 500V. 5%
C5	255-003	Capacitor, 0.27 pf, 500V. 5%
C6	255-100	Capacitor, *10 pf, NPO, 500V. 5%
C7	236-501	Capacitor, 500 pf, 350V.
C8	266-102	Capacitor, Feed-thru, 1000 pf, 500V.
C9	253-471	Capacitor, 470 pf, Z5U, 500V.
C10	255-100	Capacitor, *10 pf, NPO, 500V. 5%
C11	255-003	Capacitor, 0.27 pf, 500V. 5%
C12	255-100	Capacitor, *10 pf, NPO, 500V. 5%
C13	255-150	Capacitor, 15 pf, NPO, 500V. 5%
C14	253-471	Capacitor, 470 pf, Z5U, 500V.
C15	217-103	Capacitor, .1 uf, 25V.
C16	255-470	Capacitor, 47 pf, N330, 500V. 5%
C17	256-151	Capacitor, 150 pf, JL, 500V. 10%
C18	217-103	Capacitor, .1 uf, 25V.
C19	266-102	Capacitor, Feed-thru, 1000 pf, 500V.
C20	266-102	Capacitor, Feed-thru, 1000 pf, 500V.
C21	266-102	Capacitor, Feed-thru, 1000 pf, 500V.
C22	255-100	Capacitor, 10 pf, NPO, 500V. 5%
C23	250-120	Capacitor, Variable, 2-12 pf, 500V.
C24	255-100	Capacitor, 10 pf, NPO, 500V. 5%
C25	255-750	Capacitor, 75 pf, JL, 500V. 5%
C26	253-471	Capacitor, 470 pf, Z5U, 500V.
C27	255-100	Capacitor, *10 pf, NPO, 500V. 5%
C28	255-100	Capacitor, 10 pf, NPO, 500V. 5%
C29	255-003	Capacitor, 0.27 pf, 500V. 5%
C30	255-100	Capacitor, *10 pf, NPO, 500V. 5%
C31	266-102	Capacitor, Feed-thru, 1000 pf, 500V.
C32	226-224	Capacitor, .22 uf 100V. 10%
C33	266-102	Capacitor, Feed-thru, 1000 pf, 500V.
D1	410-666	Diode, FDH 666
D2	410-666	Diode, FDH 666
D3	412-494	Diode, S-579
L1	330-014	Choke, 4.7 uh 5%
L2	350-030	Inductor, Variable, 7 uh
L3	330-010	Choke, 1 uh 5%
L4	330-010	Choke, 1 uh 5%
L5	330-010	Choke, 1 uh 5%
L6	330-004	Choke, 100 uh 5%

* Used on 88 - 108 MHz. models only.

PARTS LIST
VHF CONVERTER (continued)
MODEL NO. 700-105-4

ITEM	PART NO.	DESCRIPTION
LC1	250-220	L-C Tuner
LC2	250-220	L-C Tuner
LC3	250-220	L-C Tuner
LC4	250-220	L-C Tuner
LC5	250-220	L-C Tuner
LC6	250-220	L-C Tuner
LC7	250-220	L-C Tuner
LC8	250-220	L-C Tuner
Q1	430-201	Transistor, 3N201
Q2	430-201	Transistor, 3N201
Q3	440-245	Transistor, MRF502
R1	145-333	Resistor, 33K, ¼W, 5%
R2	145-333	Resistor, 33K, ¼W, 5%
R3	145-181	Resistor, 180 ohm, ¼W, 5%
R4	145-331	Resistor, 330 ohm, ¼W, 5%
R5	145-683	Resistor, 68K, ¼W, 5%
R6	145-221	Resistor, 220 ohm, ¼W, 5%
R7	145-151	Resistor, 150 ohm, ¼W, 5%
R8	145-331	Resistor, 330 ohm, ¼W, 5%
R9	145-103	Resistor, 10K, ¼W, 5%
R10	145-104	Resistor, 100K, ¼W, 5%
R11	145-331	Resistor, 330 ohm, ¼W, 5%



CIRCUIT WITHIN DOTTED LINES ON DUAL FREQ. MODELS ONLY.

MARTI Electronics, Inc. PO BOX 661 CLEBURNE, TX 76031	DRAWING NO	REV.	DATE	APPROVED	USED ON	TITLE
	700-105-5	A	12-7-77		R SERIES	DUAL FREQUENCY OPTION

910-004

PARTS LIST
LA-20E EQUALIZING AMPLIFIER
LA-20/HPF AMPLIFIER-HIGH PASS FILTER

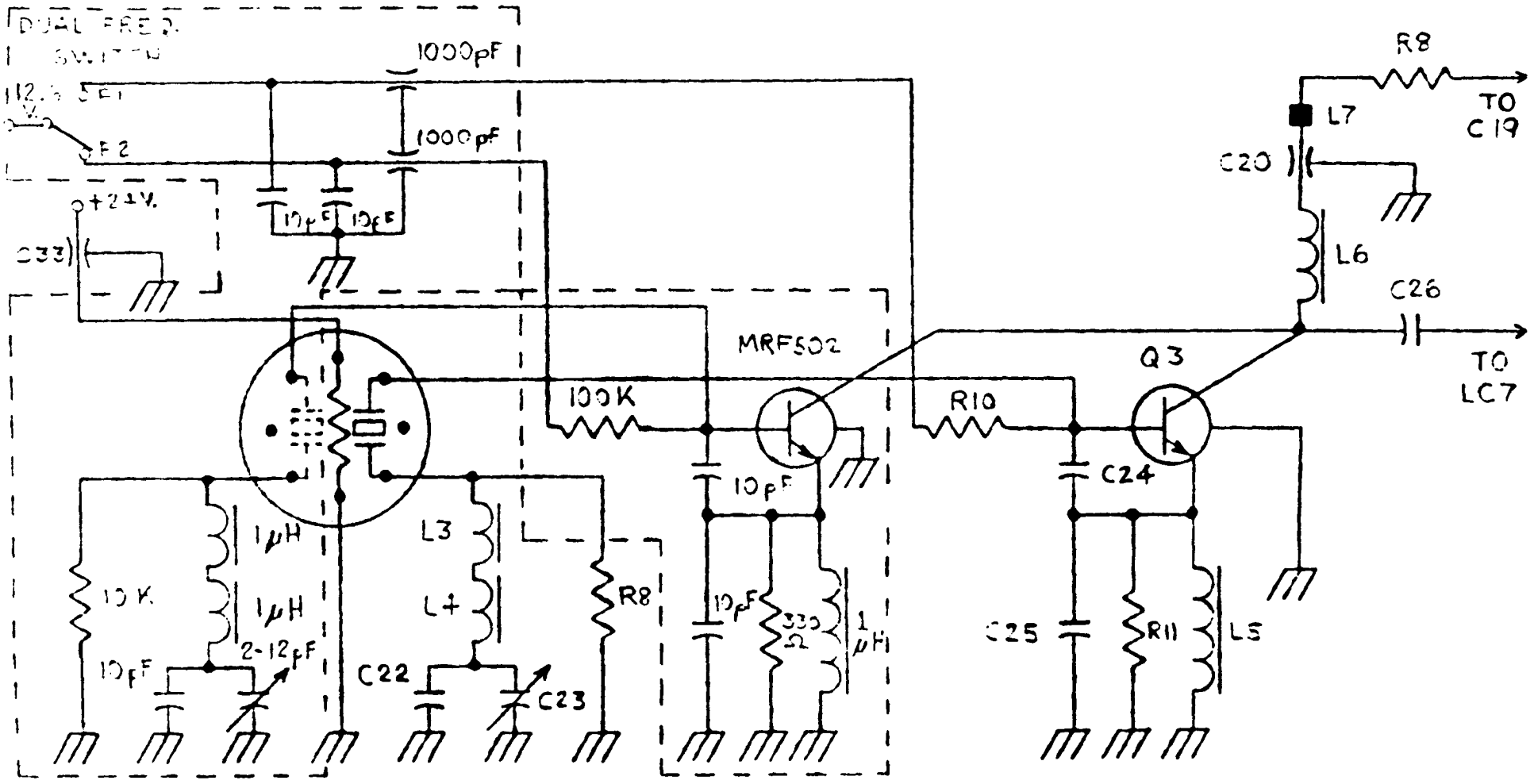
MARTI ELECTR
CLEBURNE, T
REVISED 11-2

ITEM	PART NO.	DESCRIPTION
C1	215-223	Capacitor, 22,000 pF, Mial
C2	215-103	Capacitor, 10,000 pF, Mial
C3	215-223	Capacitor, 22,000 pF, Mial
C4	215-223	Capacitor, 22,000 pF, Mial
C5	219-121	Capacitor, 150 uF Electrolytic, 25 V.
C6	219-080	Capacitor, 10 uF Electrolytic, 63 V.
C7	219-080	Capacitor, 10 uF Electrolytic, 63 V.
C8	255-470	Capacitor, 470 pF, Type JL Disc
C9	219-500	Capacitor, 47 uF Electrolytic, 63 V.
C10	215-682	Capacitor, 6800 pF, Mial (on LA-20 E only)
C11	226-104	Capacitor, .1 Mylar (on LA-20 E only)
C12	209-401	Capacitor, 470 uF Electrolytic, 6.3 V.
C13	255-470	Capacitor, 47 pF, Disc (on LA-20/HPF-50 only)
C14	219-121	Capacitor, 150 uF Electrolytic, 25 V.
C15	219-121	Capacitor, 150 uF Electrolytic, 25 V.
C16	255-470	Capacitor, 470 pF, Type JL Disc
C17	215-242	Capacitor, 2400 pF, Mial
C18	219-200	Capacitor, 22 uF Electrolytic, 25V.
C19	226-274	Capacitor, .27 uF Mylar, 100 V., 10%
D1	413-754	Diode, D1300A
D2	413-754	Diode, D1300A
IC-1	403-900	Integrated circuit, LM3900 or MC3401
Q1	240-549	Transistor, BC549B
Q2	423-391	Transistor, 2N3391
Q3	450-001	Transistor, SPS1761
Q4	450-002	Transistor, SPS1762
R1	145-225	Resistor, 2.2M, ¼W. 5%
R2	145-105	Resistor, 1M, ¼W., 5%
R3	100-123	Resistor, 100K POT
R4	145-272	Resistor, 2.7K, ¼W, 5%
R5	100-123	Resistor, 100K POT
R6	105-684	Resistor, 680K, ½W., 5%
R7	105-684	Resistor, 680K, ½W., 5%
R8	105-684	Resistor, 680K, ½W., 5%
R9	105-471	Resistor, 470 ohm, ½W., 5%
R10	145-680	Resistor, 68 ohm, ¼W., 5%
R11	145-562	Resistor, 5.6K, ¼W., 5%
R12	145-472	Resistor, 4.7K, ¼W., 5%
R13	145-220	Resistor, 22 ohm, ¼W., 5%
R14	145-103	Resistor, 10K, ¼W., 5%
R15	145-472	Resistor, 4.7K, ¼W., 5%
R16	145-221	Resistor, 220 ohm, ¼W., 5% (on LA-20/HPF-50 only
R16	145-030	Resistor, 3.3 ohm, ¼W., 5% (on LA-20E only)

PARTS LIST
LA-20 EQUALIZING AMPLIFIER
LA-20/HPF AMPLIFIER-HIGH PASS FILTER

REVISED 11-29-76

ITEM	PART NO.	DESCRIPTION
R17	145-104	Resistor, [illegible] K, ¼W., 5%
R18	145-102	Resistor, [illegible] W., 5%
R19	145-683	Resistor, [illegible] K, ¼W., 5% (on LA-20 E only)
R20	145-104	Resistor, [illegible] K, ¼W., 5% (on LA-20/HPF-30 only)
R21	145-221	Resistor, [illegible] ohm, ¼W., 5%
R22	145-561	Resistor, [illegible] ohm, ¼W., 5% (on LA-20E only)
R23	145-272	Resistor, [illegible] K, ¼W., 5%
R24	145-050	Resistor, 5.1 ohm, ¼W., 5% (on LA-20E only)



CIRCUIT WITHIN DOTTED LINES ON DUAL FREQ. MODELS ONLY.