designed especially for you

the RME 6900

The advanced design of the RME 6900 provides every circuitry and control feature necessary for outstanding performance. To obtain the optimum performance afforded by this design superiority a thorough knowledge of proper operation of the receiver is required. *READ THESE INSTRUCTIONS CAREFULLY!*

RME Electro-Voice®

BUCHANAN, MICHIGAN

RME 6900
SPECIFICATIONS

Sensitivity: 1 microvolt 30% modulation for 50 mw output

Signal-to-Noise Ratio: 10 db at 1 microvolt input (30% modulation)

Audio Output: 1.0 watt

Calibration: .03%

Frequency Drift: Under .005% after 15 minute warmup

Selectivity: Position	AM	SSB	CW
Bandwidth @ 6 DB Attenuation	3.6KC	2KC	500 cycles
Bandwith @ 60 DB Attenuation	11KC	7.3KC	3.3 KC

T-Notch Rejection: Greater than 40 db

S-Meter Calibration: S1 to S9 (6 db steps) plus 10 db units over S9

IF Frequency:
1st IF 2195 KC
2nd IF 57 KC

Image Ratio: Not less than 56 db on any band

Frequency Range:
Range 1: 10.0 — 11.0 mc
Range 2: 3.5 — 4.0 mc
Range 3: 7.0 — 7.3 mc
Range 4: 14.0 — 14.4 mc
Range 5: 21.0 — 21.5 mc
Range 6: 28.0 — 29.7 mc

Tuning Control Ratio: 54:1

Input Requirement: 117 V—50/60 cycle AC

Power Input 55 watts

Transmit Switch 115 V — 1 amp. max.

Tubes:

6BA6	R.F Amp.
6U8A	1st Mixer, Stabilized Osc.
6U8A	2nd Mixer,, Crystal Osc.
6C4	1st I.F. & T Notch driver
6BA6	2nd I.F.
6BA6	3rd I.F.
6AL5	Dynamic Noise Limiter
6T8	2nd Detector, (full wave) 1st Audio AGC Line Charging Diode
6AQ5A	A.F. Output
OB2	Voltage Regulator
6CB6	Crystal Calibrator Osc.
12AT7	Product Detector & B.F.O.

2 type 1N1763 Power Rectifiers

Controls:
a. Tuning
b. AF gain level
c. BFO pitch
d. BFO injection
e. Antenna trimmer
f. Calibration adjust
g. Band selector switch
h. RF gain control—line switch
i. Modemaster switch
AM-Broad
AM-Narrow
SSB-Lower
SSB-Upper
C.W.
j. Stand-by—receive—transmit
k. Heterodyne null
l. ANL—adjust
m. 100 KC calibrator on-off

External Connections: (Rear Chassis)
a. Antenna input—Balanced or Unbalanced lines 50-400 ohms
b. External control terminals for receiver muting
c. Relay control terminals
d. Audio Outputs: 4 ohms and 500 ohms isolated

Dimensions: 17 in. wide x 12⅛ in. deep x 9¾ in. high

Weight: 35 lb net, 39 lb shipping

INTRODUCTION

The RME 6900 Communication Receiver is the product of more than a quarter-century of the design and manufacture of fine communication equipment by Radio Manufacturing Engineers. In contrast to generally available Amateur Communication receivers, the RME 6900 offers unmatched operating ease due, in part, to the fact that the combined experience and desires of many hundreds of seasoned operators were consulted in the determination of even minute details. Styled to compliment the decor of every operating position, the RME 6900 provides optimum performance in all communication modes, AM - SSB - CW, on all amateur frequencies between 3500 kc and 29.7 mc., plus coverage of the 10 - 11 mc. band.

The RME 6900 employs ten multi-purpose tubes (not including voltage regulator or crystal calibrator tubes) doing the work of fifteen individual tubes. Lower ambient operating temperatures and longer component life are achieved through utilization of silicon diode power rectifiers.

Contributing to the utility of this all-new receiver are advanced concepts in circuitry and construction methods. New and versatile approaches toward providing optimum performance under all operating conditions and modes are the Modemaster switch; optimum selectivity, plus a tunable heterodyne rejection filter; improved fast attack AVC circuitry; internal 100kc crystal calibrator; separate detector for SSB; BFO injection for weak signal cw work; noise limiting at the I.F. frequency and, both 500 and 4 ohm audio outputs isolated to make possible simple phone patch and anti-trip VOX operation.

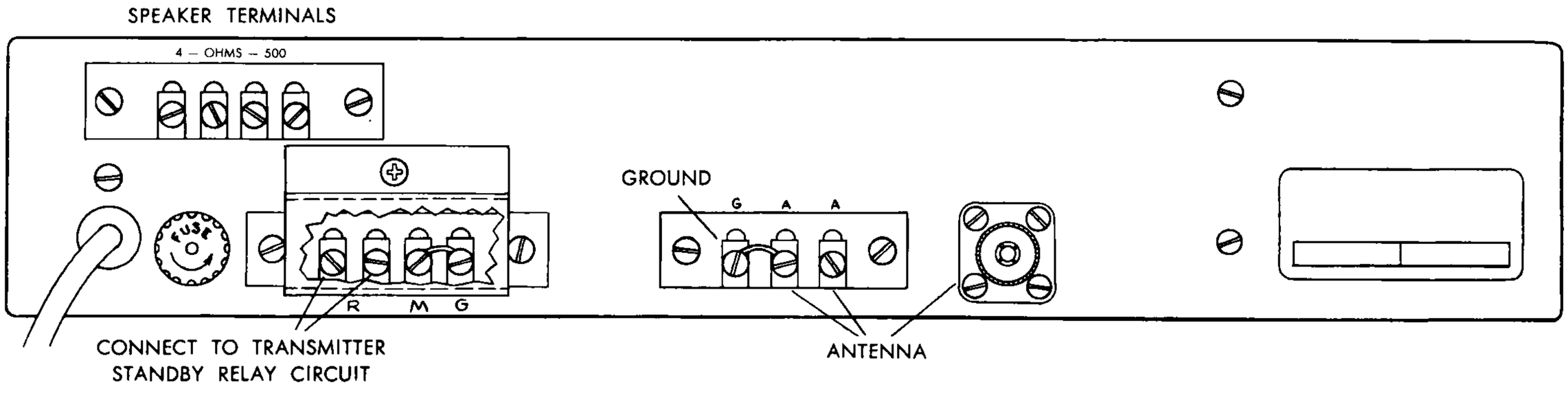
INSTRUCTIONS FOR SET UP

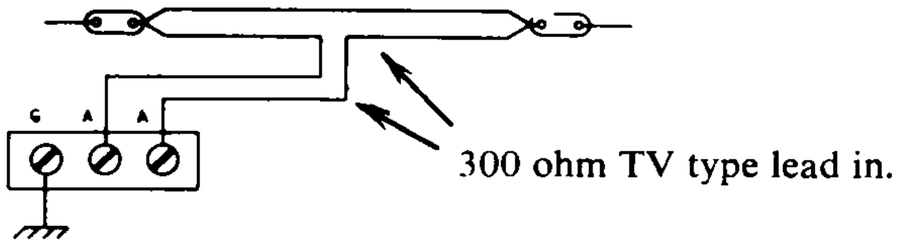
Immediately upon unpacking carefully inspect your RME 6900 for physical damage. If damage is evidenced, notify the dealer from whom the unit was purchased, or the transportation company if the unit was shipped to you. Responsibility for shipping damages lies with the carrier and claim should be made for recovery. On unpacking your new RME 6900 raise the perforated hinged cover of the cabinet and make sure that all tubes and crystals are seated firmly in their sockets. An RME 6901 speaker, or other permanent magnet speaker with a voice coil impedence in the range of 3 to 4 ohms, may be connected to the 4 ohm speaker terminals. If it is desired to use the 500 ohm output winding a matching transformer must be used between receiver and speaker.

The receiver leaves the factory test department with rear chassis connections as shown in Fig. 1. The lower left terminals are normally connected with a jumper across terminals marked "M" and "G." The receiver will not operate without this circuit being closed either with the jumper as shown or with another closed circuit, such as a pair of closed switch or relay contacts. The receiver is muted by opening this circuit.

The terminals "R" are connected to a switching circuit, closed when the stand-by switch is in TRANSMIT position, marked "TR". This circuit will switch a 117 volt, 0.5 ampere relay circuit or a 117 volt, 1.0 amp. non-inductive circuit for transmitter control. No power is supplied by this circuit.

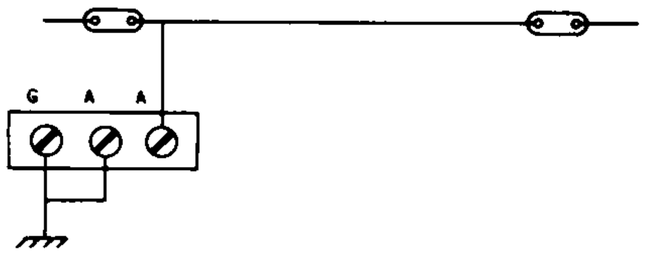
The receiver is shipped with a jumper between the two left terminals (G-A) of the antenna terminal strip. *Except when using balanced antenna transmission lines this jumper should be left in place.* Figure 2 suggests proper antenna connections for various types of transmission line lead-ins.





Simple folded dipole antenna permits balanced feeders of any length. Antenna lengths (L) recommended are as follows:

BAND	CENTER FREQ.	APPROX. LENGTH "L"
80M	3750 Kc	115' 4"
40M	7150 Kc	56' 4"
20M	14100 Kc-CW	28' 8"
20M	14250-Phone	28' 4"
15M	21100-CW	19' 11"
15M	21300-Phone	18' 8"
10M	28500	14' 1"
10M	29000	13'



Suggested all-purpose antenna; lenght is 75 feet including lead-in. The major portion should be 30 to 40 feet above ground.

When using coaxial cable to feed unbalanced doublets, beams, etc., center lead connects to center pin and outer braid to shell of mating PL259 connector. Terminal "G" should be grounded as described below.

REGARDLESS OF THE TYPE OF ANTENNA OR TRANSMISSION LINE A HEAVY WIRE OR BRAID SHOULD BE CONNECTED FROM TERMINAL "G" TO A GOOD ELECTRICAL GROUND. While a copper ground rod is preferable, a convenient WATER pipe scraped clean of paint or oxidization may be used. Make this ground lead as short as possible.

FIGURE 2

OPERATION

Having placed your 6900 in its operating position with speaker and antenna connected as described above, set the following controls as indicated:

A.F. GAIN CONTROL	50% ROTATION
NOISE LIMITER	OFF
ANTENNA TRIM	POINTER STRAIGHT UP
R.F. GAIN	OFF
MODEMASTER/FUNCTION	AM-BROAD
BAND SELECTOR	80 METERS
STAND-BY SWITCH	STAND-BY
CALIBRATION ADJUST	POINTER STRAIGHT UP
CRYSTAL CALIBRATOR	OFF
HET NULL	OFF
BFO PITCH	0
BFO INJECTION	POINTER STRAIGHT UP

Rotate the R.F. GAIN control fully clockwise and check to see that the filaments of all tubes are lighted. Turn the STAND-BY switch to "REC" and the receiver will come to life as evidenced by atmospheric background and/or signal. The ANTENNA TRIMMER should now be adjusted for maximum signal strength or background noise. Repeat this procedure on each band. Now set the BAND SELECTOR to "WWV" and tune for the distinctive signal of the National Bureau of Standards transmitter on 10.0 mc. After peaking the WWV or WWVH signal for maximum strength, switch the MODEMASTER SELECTOR switch to "CW" and tune the Main Tuning Dial for zero beat. Switch the CRYSTAL CALIBRATOR control to position "1". The Crystal Marker signal from the internal calibrator should zero beat the signal from WWV or WWVH. Should the calibrator not be zero beat with the incoming signal on 10.0 mc, adjust trimmer C-26. The calibrator provides accurate check points on all bands and is used to accurately set the dial pointer for correct readings on each band. The dial pointer is positioned for correct calibration by turning the "CAL ADJ" control. A detailed description of the function of other controls follows:

MODEMASTER SELECTOR CONTROL: Exclusively from RME comes the MODEMASTER control which combines five switching functions in a single control. In position "AM-B" the receiver is set up for optimum performance for AM Phone reception and maximum audio frequency response. In this position the I.F. Bandwidth is 3.6 kc, conventional AVC and dual-diode detection are provided. Switching to "AM-N" provides the same operating characteristics except that a narrower I.F. bandwidth of only 2 kc is provided to facilitate operation when severe interference is experienced due to crowded conditions. As indicated below, the "Het Null" control may be utilized to further eliminate heterodyne interference. When switched to "LSB" (Lower Side Band) a product detector is substituted for the diode detector; the AVC is changed to a modified Fast Attack/Slow Decay circuit; the high frequency oscillator and beat frequency oscillator are automatically positioned for proper reception of Lower Side Band only; I.F. bandwidth is maintained at 2 kc. When switched to "USB" (Upper Side Band) the same conditions prevail as in LSB except that the oscillators are positioned for Upper Side Band reception. This position (USB) is recommended for radio telegraph reception when a relatively broad I.F. characteristic and A.V.C. are desired (ie: net operation, etc.)

The BFO PITCH and BFO INJECTION controls are *not* operative in either LSB or USB position. When switched to "CW" the AVC circuit is disabled for optimum characteristics in this mode; the BFO PITCH and BFO INJECTION Controls are made operative and the I.F. bandwidth is reduced to approximately 500 cycles.

HETERODYNE NULL CONTROL: This control provides "T" Notch rejection of undesired signals by effectively bypassing such signals from the I.F. system. Being continuously variable across the I.F. band pass of the receiver, any audible signal may be "notched" out by adjusting the "HET NULL" control.

NOISE LIMITER: The RME 6900 noise limiter operates at an I.F. frequency, in contrast to the conventional audio frequency type of limiter. It is, therefore, very effective in supression of noise pulses regardless of mode of transmission being received. It is necessary only to set the NOISE LIMITER control to the degree of clipping desired. Having once set this level, the limiter will automatically attenuate all noise pulses rising above that reference level.

CRYSTAL CALIBRATOR CONTROL: Unique in the RME 6900 is provision for utilizing the 100 kc crystal calibrator either with the antenna feeding signal to the receiver (position 1) or, with the antenna automatically removed from the input stage (position 2). While Postion 1 would normally be used for frequency spotting and calibration purposes, it is often desirable to inject a marker signal that represent the 200th to 300th harmonic of the 100 kc crystal. Switching the Crystal Calibrator switch to position 2 enables the operator to instantly spot the calibrator marker signal without interference from incoming signals or high background noise levels. Needless to say, this control must remain in Position 1 or its OFF position for reception of incoming signals.

BFO PITCH CONTROL: While normally viewed simply as a control to vary the tone of incoming c.w. signals the BFO PITCH CONTROL may also be used to provide a measure of interference rejection. Judicious use of this control, after having peaked the desired signal, will compliment that signal while not favoring nearby signals.

BFO INJECTION CONTROL: This control varies the amount of BFO signal voltage injected into the I.F. system. It is of great value in weak signal C.W. reception. This control should be set at the point giving most pleasing ratio of received signal to noise. A slight variation in BFO pitch may result from adjustments of the BFO INJ control.

A thorough understanding of the function of each control will greatly enhance the performance that you may obtain from your RME 6900.

ALIGNMENT AND MAINTENANCE DATA

Your RME 6900 has been carefully aligned and tested using high-precision laboratory equipment to insure the highest accuracy. The combination of high quality components and careful design preclude the need for re-alignment unless critical components or tubes have been changed or unless internal adjustments have been tampered with. In no case should re-alignment be attempted unless a critical test indicates a need for same.

In the event that your RME 6900 should require *any* re-alignment, it should be undertaken *only* by a competent technicial with a complete understanding of not only the receiver, but of the specialized test equipment required to properly make required adjustments.

MEASUREMENT CONDITIONS

(VALUES INDICATED MAY VARY ± 15%)

1. D.C. VOLTAGES measured with a VTVM having an input resistance of 11 megohms; A.C. Measurements with 1000 ohm/volt meter.
2. Voltages indicated are measured between point indicated and ground (except filiments).
3. All Filaments are at +80V D.C. potential. Filament voltages measured between junction of R-73 and R-74 and point indicated.
4. ANTENNA DISCONNECTED — No signal tuned — antenna trimmer adjusted for minimum background noise.
5. R.F. GAIN set at maximum gain (maximum c.w. position)
6. Function switch set to "Upper-Side-Band" position.
7. AUDIO GAIN set to minimum.
8. OSCILLATOR grid and cathode voltages measured with 100k resistor in series with the probe.
9. Pin 6 of V10 voltage varies with setting of "INJ." control when in "CW" position.
   V11 (xtal cal) voltages and resistances measured with "XTAL-CAL ON"
11. Depends on setting of band switch.

NECESSARY EQUIPMENT

1. D.C. VTVM with input resistance of 11 megohms or greater.
2. Signal generator or crystal marker supplying 57 KC and 2195 KC, unmodulated, with a high degree of accuracy.
3. Signal generator or multiple crystal markers covering selected frequencies from 3.5 to 29.7 Mc., as indicated in alignment instructions. NOTE: The accuracy of receiver calibration depends upon the accuracy of this generator.

RESISTANCE MEASUREMENTS

SYM.	TUBE	PURPOSE	1	2	3	4	5	6	7	8	9
V1	6BA6	R.F. Amp.	5.3 Meg.	56	80K	80K	22K	27K	56	—	—
V2	6U8A	1st Mixer & OSC.	22K	120K	40K	80K	80K	22K	330	Note 11	100K
V3	6U8A	2nd Mix & XTAL OSC.	64K	3	40K	80K	80K	22K	680	4.7K	52K
V4	6C4	"T" Notch Amp.	26K	∞	80K	80K	26K	15	680	—	—
V5	6BA6	50 kc IF Amp.	7.3 Meg.	68	80K	80K	24K	44K	68	—	—
V6	6BA6	50 kc IF Amp.	7.3 Meg.	150	80K	80K	22K	44K	150	—	—
V7	6AL5	Noise Limiter	22K	22K	80K	80K	∞	0	∞	—	—
V8	6T8	1st Audio, AGC, & 2nd Det.	416K	5.1 Meg.	330K	80K	80K	416K	0	10 Meg.	290K
V9	6AQ5A	Audio Output	270K	330	80K	80K	22K	22K	270K	—	—
V10	12AT7	BFO & Prod. Det.	72K	470K	470	80K	80K	33K	120K	470	80K
V11	6CB6	100 kc XTAL OSC	680K	2.7K	80K	80K	390K	250K	2.7K	—	—
V12	OB2	Voltage Reg.	22K	0	∞	0	22K	∞	0	—	—

VOLTAGE MEASUREMENTS

SYM.	TUBE	PURPOSE	1	2	3	4	5	6	7	8	9
V1	6BA6	R.F. Amp.	-1.0	0.7	fil.	fil.	136	118	.7	—	—
V2	6U8A	1st Mix & OSC.	100	0	80	fil.	fil.	124	1.5	Note 11	Note 11
V3	6U8A	2nd Mix & XTAL OSC.	65	0	108	fil.	fil.	124	2.5	9.0	2.4
V4	6C4	"T" Notch Amp.	115	—	fil.	fil.	115	0	3.0	—	—
V5	6BA6	1st 57 kc IF Amp.	-.9	.48	fil.	fil.	125	78	.48	—	—
V6	6BA6	2nd 57 kc IF Amp.	-.9	1.25	fil.	fil.	140	100	1.25	—	—
V7	6AL5	Noise Limiter	140	140	fil.	fil.	140	0	0	—	—
V8	6T8	1st Audio, 2nd Det. & AGC	-.75	-1.4	-.6	fil.	fil.	-.75	0	-.8	65
V9	6AQ5A	Audio Output	0	7.4	fil.	fil.	140	150	0	—	—
V10	12AT7	BFO & Prod. Det.	80	0	1.7	fil.	fil.	84	-22	1.7	fil.
V11	6CB6	100 kc XTAL CAL.	-12.0	2.0	fil.	fil.	70	38	2.0	—	—
V12	OB2		105	—	—	0	105	—	0	—	—
D-1 D-2	IN1763 IN1763	Rect.	ANODES — 125V A.C. K — 165V D.C.								

6900 ALIGNMENT

INITIAL CONTROL SETTINGS:

Calibrate ..... Midpoint
Het Null ..... OFF
Mode-Master ..... as indicated in chart
BFO Pitch ..... Midpoint
Xtal Cal ..... OFF
Ant. Trim ..... Midpoint
Band Selector 80M
RF Gain ..... as indicated in chart

AF Gain ..... Comfortable listening level
REC-STDBY-TR ..... REC
Noise limiter ..... OFF
BFO INJ ..... MAX
Tuning ..... Gang half meshed

Use just enough input from the signal generator to give reliable readings above noise.

STEP	SIGNAL GENERATOR CONNECTIONS	SIGNAL GENERATOR FREQUENCY	OUTPUT INDICATOR	CONTROL SETTINGS	NOTES
		DETECTOR TRANSFORMER ALIGNMENT (T9)			
1	High side to pin 1 (grid) of 6BA6 (V6) thru .1 mfd. Low side to chassis	57 KC (unmod)	S METER	MODE-MASTER AM-B RF GAIN-MAX	T9 is overcoupled thus one winding must be loaded while the other is adjusted. Connect a 100 K ohm resistor across pins 1 and 4 of T9, adjust the top slug for maximum output. Remove the 100 K ohm resistor and connect it across pins 2 and 3. Adjust the bottom slug for maximum output. Repeat this procedure until no further change of either slug is required.
		57 KC IF ALIGNMENT			
2	High side directly to lug on T4. See illustration on page 10. Low side to chassis.	58 KC (unmod.)	VTVM, DC probe to junction of R61, R62, R63	MODE-MASTER CW RF GAIN, advance just enough to obtain reading of signal on VTVM	Adjust top slug of T5, T6, T7, T8 for maximum indication. Maintain approx 1 volt reading on VTVM.
		PRELIMINARY BFO ADJUSTMENT			
3	Same as Step 2	58.8 KC (Unmod.)	NONE	MODE-MASTER LSB RF GAIN,	Adjust top slug of T10 for zero beat.
		HETERODYNE NULL (T NOTCH) ADJUSTMENT			
4	Same as Step 2	57 KC (Unmod.)	S METER	MODE-MASTER AM-N RF GAIN, Max	Tune generator slowly thru 57 KC to determine IF passband. Then set generator to center of passband. Turn Het Null knob to mid-position. Tune top slug of L19 for minimum reading.
		2.195 MC IF ALIGNMENT			
5	High side directly to center stator of tuning capactior Low side to chassis	2.195 MC (Unmod.)	S METER	MODE-MASTER AM-N RF GAIN, MAX	Tune generator slowly thru 2.195 MC to determine IF passband. Then set generator to center of passband. Adjust top and bottom slugs of T3 and T4 for maximum output.
		BFO SWITCHING FREQUENCY ADJUSTMENT			
6	High side directly to center stator of tuning capacitor. Low side to chassis.	2.195 MC (Unmod.)	NONE	MODE-MASTER (see Remarks) RF GAIN, MAX	Turn Modemaster to LSB. Tune signal generator to zero beat. Switch Modemaster to USB but do not change signal generator frequency. Adjust mica compression trimmer (C99) for zero beat. When the receiver is switched between upper side band and lower side band positions the signal generator and BFO should remain at zero beat. Refer to General Maintenance section for aural method of checking BFO adjustment.

STEP	ANTENNA TRIMMER SETTING	BAND SELECTOR SETTING	GENERATOR & RECEIVER FREQUENCY	ADJUST FOR MAXIMUM
7	12 o'clock	WWV	10.0 MC	L13 (osc. slug) L7 (mixer slug) L1 (ant. slug)
			11.0 MC	C32 (osc. trimmer) C12 (mixer trimmer)
8	2 o'clock	80 M	3.5 MC	L14 (osc. slug) L8 (mixer slug) L2 (ant. slug)
			4.0 MC	C34 (osc. trimmer) C13 (mixer trimmer)
9	12 o'clock	40 M	7.0 MC	L15 (osc. slug) L9 (mixer slug) L3 (ant. slug)
			7.3 MC	C36 (osc. trimmer) C15 (mixer trimmer)
10	12 o'clock	20 M	14.0 MC	L16 (osc. slug) L10 (mixer slug) L4 (ant. slug)
			14.4 MC	C39 (osc. trimmer)
11	1 o'clock	15 M	21.0 MC	L17 (osc. slug) L11 (mixer slug) L5 (ant. slug)
			21.5 MC	C42 (osc. trimmer)
12	1 o'clock	10 M	28.0 MC	L18 (osc. slug) L12 (mixer slug) L6 (ant. slug)
			29.7 MC	C45 (osc. trimmer) C19 (mixer trimmer)

6900 ALIGNMENT

RF ALIGNMENT

A. Check tuning dial indexing. With the "Calibrate" control at midpoint the pointer should line up with the extreme left end of the base line when the tuning gang is fully closed. Reset the mechanical stops so that the pointer may travel beyond the end calibration points but not quite to the ends of the base line.

B. Use either a modulated or unmodulated signal. Use S meter for indicator. The RME 6900 uses a bandpass filter IF so there is no peak in the center. Rock the tuning dal back and forth across the signal to find the edges of the bandpass. Midway between these two points is the calibration frequency.

C. Control settings — Same as in initial alignment except:

Mode-Master	AM-N
Ant. Trim	as indicated in chart
Band Selector	as indicated in chart
RF Gain	Maximum

D. Connect a jumper between antenna terminal G and the nearest A terminal. Connect high side of signal generator to the remaining A terminal thru a 50 ohm (approx.) carbon resistor.

E. The oscillator frequency is higher than the signal frequency on all bands.

CRYSTAL CALIBRATOR ADJUSTMENT

Tune in WWV at 10 MC. Turn Xtal Cal. control to position 1 and adjust C-25 for zero beat, using a non-metallic screwdriver.

S-METER ADJUSTMENT

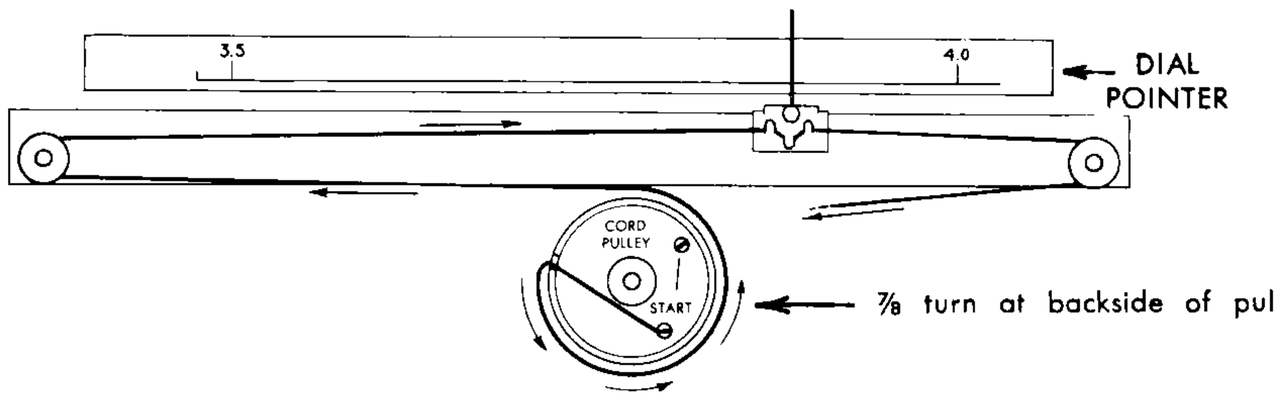
Occasional adjustment of the S-Meter zero set may be required to compensate for the ageing of tubes and very large changes of line voltage. Proceed as follows: Remove antenna and lead-in from terminal strip on rear apron of receiver. Place bandswitch on band 5 and modemaster switch to A M narrow. Detune antenna trimmer for minimum audible background noise. Now open the top hinged cover of the receiver and locate the screwdriver-adjust meter zero potentiometer as shown in the adjustment location diagram. Rotate this potentiometer until the S-Meter reads exactly 0, as viewed from the normal operating position. Reconnect antenna and return controls to normal operating position.

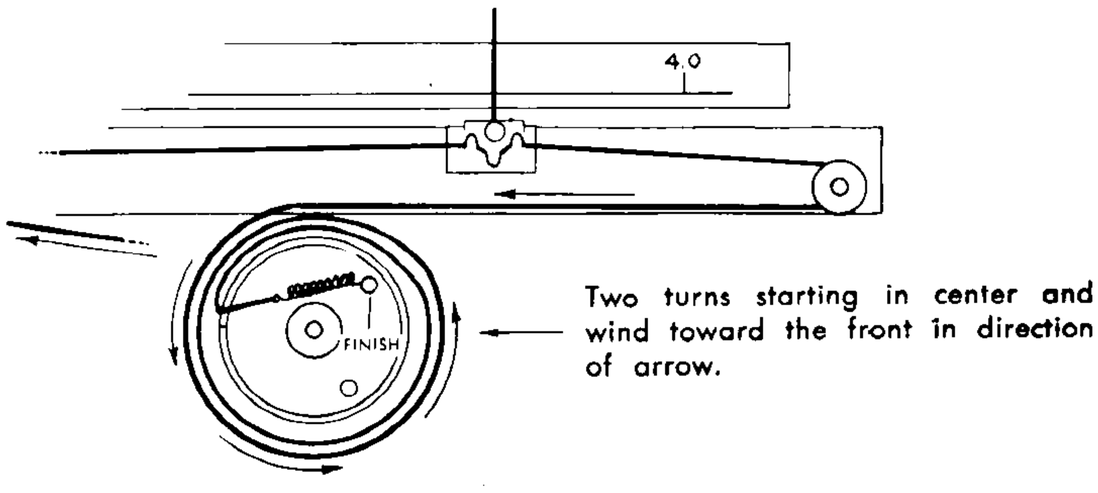
CW PITCH ADJUSTMENT

Turn C98 so that the plates are fully meshed. Put the knob on the shaft with the pointer at 3 o'clock and tighten the setscrew. Now when a CW signal is tuned in for maximum strength the audio beat will correspond approximately to the markings on the panel.

6900 DIAL STRINGING GUIDE

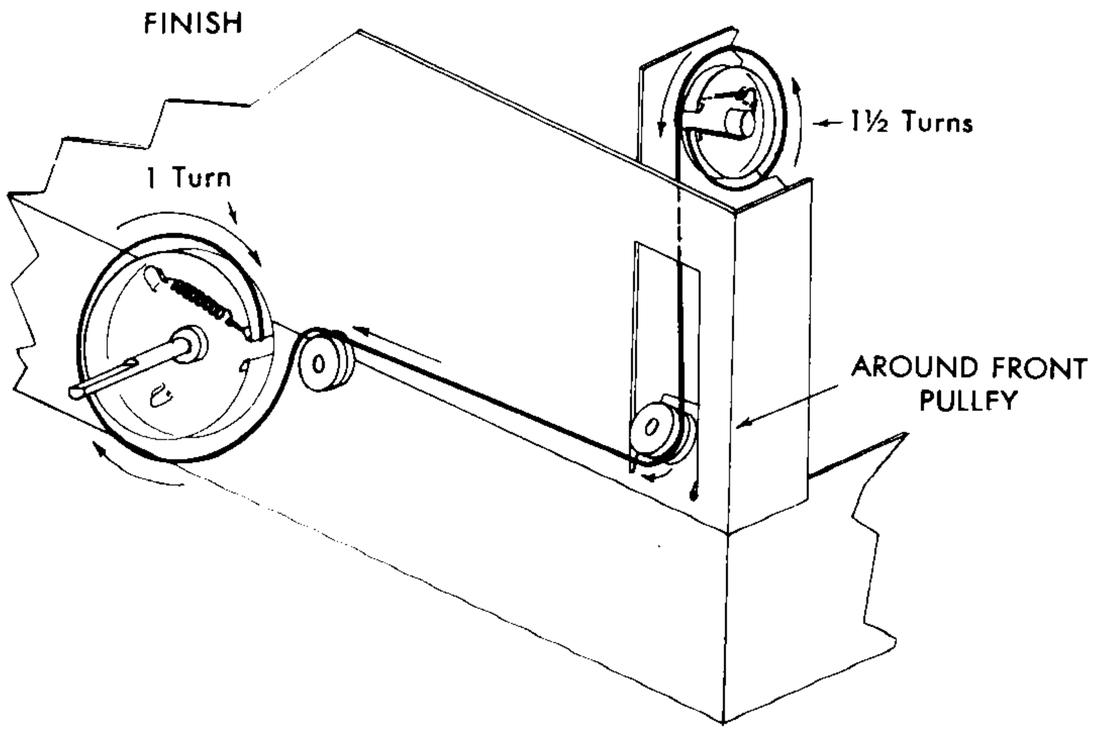
1. Turn the tuning knob until the cord pulley is in the position shown. Slide dial pointer to the extreme right end of base line on the scale. Anchor the cord on the tab marked start, bring it out thru the slot and wind ⅞ turn in the direction shown on the *back* side of the pulley. Continue around the pulley on the slide and thru the tabs on the dial pointer carriage.

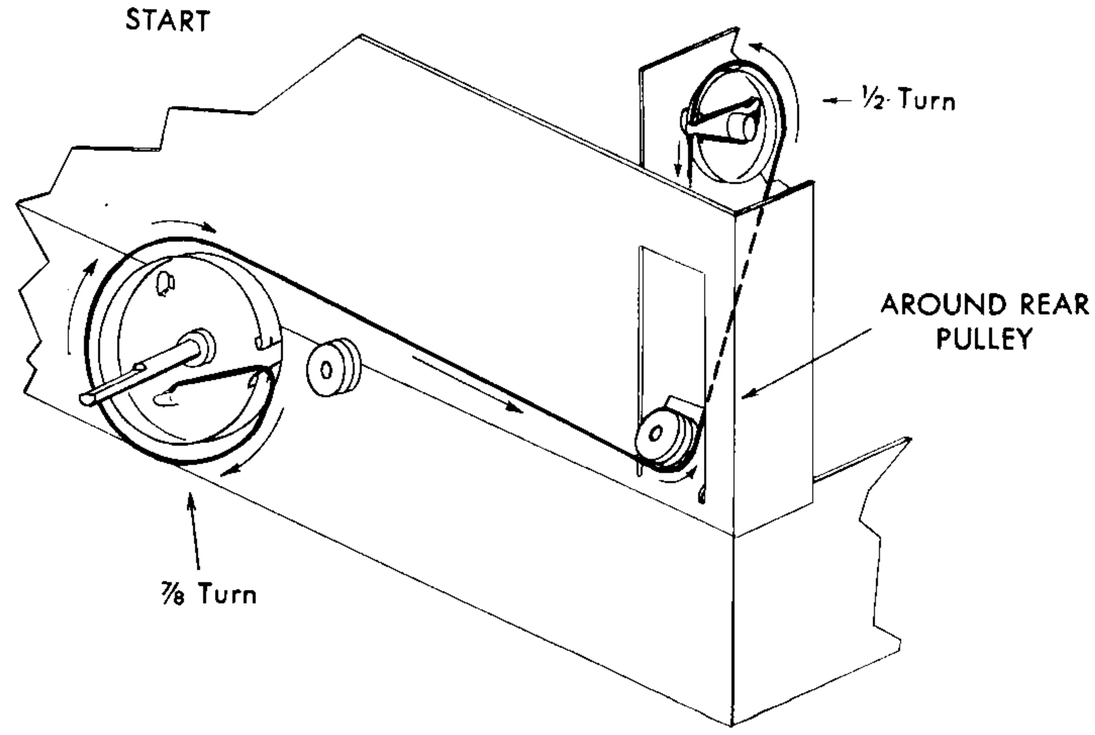




2. Finish widing as shown making sure the spring is stretched enough to keep the cord tight. Put a drop of Duco Cement on each tab of the dial pointer carriage to permanently anchor it to the cord.
   Run the pointer back and forth a few times to make sure that the cord does not wind on top of another turn on the cord pulley. When done correctly, as the cord unwinds to one side it leaves room for the cord to wind up from the other side.

1. Turn bandswitch fully counter-clockwise and fasten pulley on bandswitch shaft as shown.
2. Pulley on dial drum so that the slot is up.
3. String cord as shown.





6900 BAND CHANGE CORD STRINGING GUIDE

PARTS LIST AND DESCRIPTIONS

TUBES

Item No.	*Type*	*Function*	*Base*
V1	6BA6	R.F. AMPLIFIER	7BK
V2	6U8A	1st OSC.-MIXER	9AE
V3	6U8A	2nd OSC.-MIXER	9AE
V4	6C4	HETRO. REJ. AMP.	6BG
V5	6BA6	1st 50 Kc IF AMP.	7BK
V6	6BA6	2nd 50 Kc IF AMP.	7BK
V7	6AL5	NOISE LIMITER	6BT
V8	6T8A	DETECTOR/AUDIO AMP.	9E
V9	6AQ5A	AUDIO OUTPUT	7BZ
V10	12AT7	PRODUCT DETECTOR-BFO	9A
V11	6CB6	100 Kc Crystal OSC.	7CM
V12	OB2	VOLTAGE REGULATOR	5BO

TRANSFORMERS & CHOKES

Item	*Function*	*Ratings*		*RME No.*
		Voltage/Current	*DC Res.*	
T1	POWER	pri: 117v, 60 cycle SEC. #1: 260v .115a SEC. #2: 6v a 4.4a	6.6 ohms 54 ohms c.t. 0.2 ohms	15103
T2	AUDIO OUTPUT	PRI Z: 5100 ohms SEC. #1 Z: 4 ohms SEC. #2 Z: 500 ohms	150 ohms .33 ohms 40.7 ohms	15105
L20	FILTER	5 hy at 115 ma. DC	95 ohms	15104
(NOTE: ABOVE ARE SPECIAL ORDER REPLACEMENTS FROM DISTRIBUTOR BY RME NUMBER ONLY)				

CAPACITORS

(Values are given in mmf for mica and ceramic capacitors below .01 and in mfd for paper and electrolytics.)

Item No.	*Rating* Cap.	Volt.	*Circuit Function*	*RME #*	*Replacement Data*					
						Aerovox #	*Centralab #*	*C—D*	*Sprague #*	
C1	30	500	WWV Ant. Padder	42229		—	—	—	—	± 5%, N330
C2	50	500	40 M. Ant. Padder	42232		—	—	—	—	± 5%, N330
C3	70	500	20 M. Ant. Padder	42233		—	—	—	—	± 5%, N330
C4	100	500	15 M. Ant. Padder	42227		—	TCA 100	—	—	± 2%, N330
C5	47	500	R.F. Signal Input	42211		NPO-DI-47	TCZ 47	C10Q-47C	5TCC-Q47	± 20%, NPO
C6	.01	500	R.F. Cathode By-pass	4252		BPD-01	DD 1032	BYA 10S1	5GA-S1	—
C7	.01	500	R.F. Screen By-pass	4252		BPD-01	DD 1032	BYA 10S1	5GA-S1	—
C8	var.	air	Antenna Trimmer	42017	*E. F. JOHNSON TYPE 25K10		—	—	—	—
C9	.01	500	Mixer Primary By-Pass	4252		BPD-01	DD 1032	BYA 10S1	5GA-S1	—
C10	.01	500	Mixer Primary By-Pass	4252		BPD-01	DD 1032	BYA 10S1	5GA-S1	—
C11	10	500	WWV Mixer Fixed Padder	42231		—	TCA 10	—	—	± 10%, N330
C12	1-9	—	WWV Mixer adj. padder	42018		—	—	—	—	Special
C13	1-9	—	80 M. Mixer adj. padder	42018		—	—	—	—	Special
C14	60	500	40 M. Mixer fixed pad.	42228		—	—	—	—	± 2%, N330
C15	1-9	—	40M. Mixer adj. padder	42018		—	—	—	—	Special
C16	100	500	20 M. Mixer Fixed pad.	42227		—	TCZ 100	C10-TIC	5TCC-T1	± 2%, NPO
C17	100	500	15 M. Mixer Fixed pad.	42227		—	TCZ 100	C10-TIC	5TCC-T1	± 2%, NPO
C18	25	500	10 M. Mixer Fix. Padder	42234		—	—	—	—	± 5%, N330
C19	1-9	—	10 M. Mixer Adj. padder	42018		—	—	—	—	Special
C20	47	500	Input coupl., 1st Mix.	42211		NPO-DI-47	TCZ 47	C10Q-47C	5TCC-Q47	± 20%, NPO
C21	5	500	Osc. Inj., 1st Mixer	42119		—	TCZ 5	C10 V5C	—	± 5%, NPO
C22	.01	500	1st Mixer Cathode By-pass	4252		BPD-01	DD 1032	BYA 10S1	5GA-S1	—
C23	.01	500	1st Mixer Screen By-pass	4252		BPD-01	DD 1032	BYA 10S1	5GA-S1	—
C24	.01	500	1st Mix. Osc. Plate By-p.	4252		BPD-01	DD 1032	BYA 10S1	5GA-S1	—
C25	5	500	Calibrator coupling	42077		—	DD 050	L10Q5	5GA-V5	± 10%
C26	5-25	—	Calibrator Freq. Adj.	42121		—	—	—	—	Special
C27	.01	500	Calibrator Cathode By-p.	4252		BPD-01	DD 1032	BYA 10S1	5GA-S1	—
C28	270	500	Calibrator Screen By-p.	42224		NPO-SI270	TCZ 270	—	5TCC-T27	± 20%, NPO
C29	.01	500	Calibrator Plate By-pass	4252		BPD-01	DD 1032	BYA 10S1	5GA-S1	—
C30	5	500	WWV Osc. Fixed Padder	42119		—	TCZ 5	C10-V5C	—	± 5%, NPO
C31	15	500	WWV Osc. Fixed Padder	42226		N750-DI-15	TCN 15	C10Q15U	5TCU-Q15	± 5%, N750
C32	1-9	—	WWV Osc. Adj. Padder	42018		—	—	—	—	Special*
C33	15	500	80M Osc. Fixed Padder	42226		N750-DI-15	TCN 15	C10Q15U	5TCU-Q15	± 5%, N750
C34	1-9	—	80M Osc. Adj. Padder	42018		—	—	—	—	Special
C35	30	500	40M Osc. Fixed Padder	42087		—	—	—	—	± 2%, N330
C36	1-9	—	40M Osc. Adj. Padder	42018		—	—	—	—	Special
C37	30	500	20M Osc. Fixed Padder	42087		—	—	—	—	± 2%, N330
C38	30	500	20M Osc. Fix. Padder	42105		—	—	—	—	± 2%, N330
C39	1-9	—	20M Osc. Adj. Padder	42018		—	—	—	—	Special
C40	5	500	15M. Osc. Fixed Padder	42119		—	TCZ 5	C10-V5C	—	± 2%, NPO
C41	30	500	15M Osc. Fixed Padder	42087		—	—	—	—	± 2%, N330
C42	1-9	—	15M Osc. Adj. Padder	42018		—	—	—	—	Special
C43	15	500	10M Osc. Fixed Padder	42235		NPO-SI-15	TCZ 15	C10Q15C	5TCC-Q15	± 5%, NPO
C44	20	500	10M Osc. Fixed Padder	42225		—	—	—	—	± 5%, N330
C45	1-9	—	10M Osc. Adj. Padder	42018		—	—	—	—	Special
C46	45	500	Osc. Tank, Fixed	42101		—	—	—	—	± 2%, N330
C47	45	500	Osc. Tank, Fixed	42102		—	—	—	—	± 2%, NPO
C48	30	500	40/20M Osc. Series	42105		—	TCZ 30	C10Q3C	5TCC Q3	± 2%, NPO
C49	15	500	15M Osc. Series	42038		—	TCZ 15	C10Q15C	—	± 2%, NPO
C50	70	500	10M Osc. Series	42212		—	—	—	—	± 2%, NPO
C51	1	500	2Mc I.F. coupling	42006		—	—	—	—	±5%, NPO
C52	.01	500	2 Mc. I.F. Bypass	4252		BPD-01	DD 1032	BYA 10S1	5GA-S1	Ceramic GMV
C53	½	500	2 Mc. Mixer inj. coupl.	42156		—	—	—	—	± 10%, NPO
C54	.1mfd	200	2nd Mix. Cathode By-pass	42208		—	DF 104	—	3GAB-P1	Ceramic GMV
C55	.1mfd	200	2nd Mix. Screen Bypass	42208		—	DF 104	—	3GAB-P1	Ceramic GMV
C56	33	500	2nd Mix. Osc. Coupling	42203		NPO-SI-33	TCZ 33	C10Q33C	5TCC-Q33	± 10%, NPO
C57	33	500	2nd Mix. Osc. Coupling	42203		NPO-SI-33	TCZ 33	C10Q33C	5TCC-Q33	± 10%, NPO
C58	.1mfd	200	2nd Mix. Osc. By-pass	42208		—	DF 104	—	3GAB-P1	Ceramic GMV
C59	100	500	1st 50 KC I.F.	42240		1749-100	—	22R-5T1	MS-31	Silver Mica
C60	20	500	1st 50 KC IF Coupling	42117		NPO-DI-20	TCZ 20	C10Q2C	5TCC-Q2	± 2%, NPO
C61	105	500	1st 50 KC IF Coupling	42248		—	—	—	—	± 2%, NPO Spcl.
C62	200	500	1st 50 KC IF Coupling	42206		—	TCZ 200	—	—	± 5%, NPO
C63	.1	200	1st 50 KC IF Bypass	42208		—	DF 104	—	3GAB-P1	Ceramic GMV
C64	100	500	Het. Rej. coupling	42044		NPO-DI-100	TCZ 100	C10-T1C	5TCC-T1	± 20%, NPO
C65	2400	500	Het. Rej. Tuning	42207		—	—	(Silver Mica, Special ± 2% Tolerance)		
C66	2400	500	Het. Rej. Tuning	42207		—	—	(Silver Mica, Special ± 2% Tolerance)		
C67	10	500	1st IF Coupling	42164		NPO-SI-10	TCZ 10	C10O1C	5TCC-Q1	± 10%, NPO
C68	.1	200	1st IF Screen Bypass	42208		—	DF 104	—	3GAB-P1	Ceramic GMV
C69	70	500	IF Gain Adjust	42242		—	—	—	—	± 10%, NPO

PARTS LIST (Continued)

CAPACITORS

(Values are given in mmf for mica and ceramic capacitors below .01 and in mfd for paper and electrolytics.)

Item No.	Rating Cap.	Rating Volt.	Circuit Function	RME #	Replacement Data	Aerovox #	Centralab #	C—D#	Sprague #	Notes
C70	.1	200	50 KC Gain Adjust	42208		—	DF 104	—	3GAB-P1	Ceramic GMV
C71	200	500	IF Gain Adjust	42243		—	—	—	—	+ 10%, NPO
C72	20	500	50 KC IF Coupling	42117		NPO-SI-20	TCZ 20	C-10Q2C	5TCC-Q2	+ 2%, NPO
C73	105	500	50 KC IF Coupling	42248		—	—	—	—	+ 2%, NPO Spcl.
C74	200	500	50 KC IF Coupling	42206		—	TCZ 200	—	—	+ 5%, NPO
C75	.1	200	2nd 50 KC Bypass	42208		—	DF 104	—	3GAB-P1	—
C76	100	500	IF Output Coupling	42044		NPO-DI-100	TCZ 100	C10 TIC	5TCC-T1	+ 20%, NPO
C77	.1	200	IF B+ Bypass	42208		—	DF 104	—	3GAB-P1	Ceramic, GMV
C78	.1	200	2nd IF Cathode Bypass	42208		—	DF 104	—	3GAB-P1	Ceramic, GMV
C79	.1	200	2nd IG Screen Bypass	42208		—	DF 104	—	3GAB-P1	Ceramic, GMV
C80	.1	200	Noise Limiter	42208		—	DF 104	—	3GAB-P1	Ceramic, GMV
C81	.1	200	Noise Limiter	42208		—	DF 104	—	3GAB-P1	Ceramic, GMV
C82	1.0 Mfd.	200	Noise Lim. Charging Cap.	42237		P84CM-1/200	—	2W1	2TM-M1	—
C83	.1	200	Noise Lim.	42208		—	DF 104	—	3GAB-P1	Ceramic, GMV
C84	.1	200	AGC Charging	42217		P84CM-.1/200	—	2P1	2TM-P1	+ 20%, paper
C85	.05	200	AGC Charging Cap.	42218		P84CM-.05/200	—	2S5	2TM-S5	+ 20%, paper
C86	270	500	AM Det. Filter	42213		BPD-270	DD 271	L10 T27	5GA-T27	+ 20%
C87	270	500	AM Det. Filter	42213		BPD-270	DD 271	L10 T27	5GA-T27	+ 20%
C88	.01	500	Detector-Audio Coupling	4252		BPD-01	DD 1032	BYA 10S1	5GA-S1	—
C89	270	500	Prod. Det. R.F.Filter	42213		BPD-270	DD 271	L10 T27	5GA-T27	+ 20%
C90	270	500	Prod. Det. R.F.Filter	42213		BPD-270	DD 271	L10 T27	5GA-T27	+ 20%
C91	.01	500	Audio Coupling	4252		BPD-01	DD 1032	BYA 10S1	5GA-S1	—
C92	.01	500	Audio Coupling	4252		BPD-01	DD 1032	BYA 10S1	5GA-S1	—
C93	.01	500	Audio Coupling	4252		BPD-01	DD 1032	BYA 10S1	5GA-S1	—
C94	330	500	Audio Amp. Grid Bypass	42215		BPD-330	DD 331	L10 T33	5GA-T33	+ 20%
C95	5 Mfd.	25	Audio Amp. Cathode Bypass	42220		—	—	BR 550	TVA 1203	Electrolytic
C96	.01	500	Audio Amp. Plate Bypass	4257		BPD-01	DD 1032	BYA 10S1	5GA-S1	+ 20%
C97	.01	500	Phone Coupling	4252		BPD-01	DD 1032	BYA 10S1	5GA-S1	—
C98	100	air	C.W. Pitch Control	42210		—	—	—	—	Special
C99	4-40	—	Sideband Freq. Adjust.	4292		—	—	—	—	Mica Comp.
C100	33	500	Sideband Freq. padder	42203		NPO-DI-33	TCZ 33	C10Q33C	5TCC-Q33	+ 10% NPO
C101	270	500	BFO Grid Coupling	42213		BPD-270	DD 271	L10 T27	5GA-T27	+ 20%
C102	.01	500	BFO Plate Coupling	4252		BPD-01	DD 1032	BYA 10S1	5GA-S1	—
C103	12 Mfd.	250	Prod. Det. Bypass	42221		PRS-12/250	—	BR 1225	TVA 1505	Electrolytic
C104	10	500	Prod. Det Input	42164		NPO-SI-10	TCZ 10	C10&IC	5TCC-Q1	+ 10%, NPO
C105	100	500	Prod. Det. Volt. Div.	4281		BPD-100	DD-101	L10 T1	5GA-T1	+ 20%
C106A	40 Mfd.	250	Filter	42222		AFH2-29	—	UP 4425	TVL 2520	Electrolytic
C106B	40 Mfd.	250	Filter							
C107	.01	500	1st Mixer Fil. Bypass	4252		BPD-01	DD 1032	BYA 10S1	5GA-S1	—
C108	.01	500	1st Mixer Fil. Bypass	4252		BPD-01	DD 1032	BYA 10S1	5GA-S1	—
C109	2	500	80 M. Ant. Padder	42247		—	—	—	—	+ 5%, NPO

RESISTORS ALL FIXED RESISTANCES + 10%

Item No.	Resistance	Watts	Function	Part No.	Item No.	Resistance	Watts	Function	Part No.	Item No.	Resistance	Watts	Function	Part No.
R1	15	½	R.F. Grid Series Res.	46069	R37	82K	½	1st 50Kc IF loading	4696	R73	150K	½	Fil Bias	4603
R2	270K	½	R.F. Grid Res.	4669	R38	680	½	6C4 Cathode	46045	R74	150K	½	Fil Bias	4603
R3	56	½	R.F. Cathode Res.	4622	R39	3.3K	½	6C4 Plate	46017	R75	100K	—	BFO Inj.	46154
R4	4.7K	½	R.F. Screen Res.	4675	R40	47K	½	T Notch coupling	4668	R76	47K	½	BFO Inj. Limit	4668
R5	15K	—	R.F. Gain Control	46151	R41	2.2 meg.	½	1st IF Grid	46025	R77	10K	½	BFO Plate Drop	4691
R6	270K	½	Blocking Gias Res.	4669	R42	100K	½	T Notch	4695	R78	3.3K	½	P.D. Plate Decoupl.	46017
R7	820	½	Mixer pri. decoupling	4694	R43	68	½	2nd IF K	4631	R79	47K	½	P.D. Plate decoupl.	4668
R8	330	½	WWV Osc.	4623	R44	22K	½	2nd IF S.G.	4678	R80	120K	½	BFO Grid	4670
R9	1K	½	80M Osc.	4693	R45	82K	½	2nd IF stage loading	4696	R81	470	½	P.D. K	4654
R10	330	½	40M Osc.	4623	R46	27K	½	2nd IF stage loading	4651	R82	470K	½	P.D. G	4650
R11	100	½	20M Osc.	46140	R47	27K	½	2nd IF stage loading	4651					
R12	47	½	15M Osc.	46035	R48	82K	½	2nd IF stage loading	4696					
R13	150	½	10M Osc.	46149	R49	820	½	3rd IF Trans decoupler	4694					
R14	680K	½	Xtal calib. grid	46009	R50	820	½	IF Sub assembly decoupler	4694					
R15	2.7K	½	Xtal calib. cathode	46036	R51	1K	—	S Meter adj.	46153					
R16	120K	½	Xtal calib. Screen Grid	4670	R52	270	½	S Meter sens.*	46034					
R17	270K	½	Xtal calib. Plate	4669	R53	68K	1	S Meter adj. v. dropping	46150					
R18	100K	½	Xtal caib. B+	4695	R54	12K	½	2nd IF S.G.	4649					
R19	39K	2	Manual gain bias	4682	R55	150	½	2nd IF K	46149					
R20	15	½	1st mix S.G.	46069	R56	2.2 meg	½	2nd IF G	46025					
R21	120K	½	1st mix G	4670	R57	820	½	2nd B+ decoupler	4694					
R22	330	½	1st mix K	4623	R58	180K	½	Noise Limiter	4671					
R23	18K	½	1st mix S.G.	46029	R59	5 meg	—	N. L. control	46155					
R24	100K	½	R.F. Osc. G.	4695	R60	330K	½	AGC Bridge	4685					
R25	100	½	R.F. S.G.	46140	R61	4.7 meg	½	AGC Filter	46026					
R26	1K	½	R.F. Plate decoupling	4693	R62	82K	½	AGC Bridge	4696					
R27	820	½	1st mix Plate decouple	4694	R63	4.7K	½	AGC Audio/R.F. Filter	4675					
R28	15K	½	2nd mix S.G.	4653	R64	270K	½	R.F. Filter, P.D. output	4669					
R29	680	½	2nd mix K	46045	R65	2 meg	—	AF Gain	46152					
R30	4.7K	½	2nd mix Osc. K	4675	R66	10 meg	½	1st Audio Grid	46065					
R31	47K	½	2nd mix Osc. G	4668	R67	270K	½	1st Audio P decoupler	4669					
R32	39K	½	2nd mix Plate	4697	R68	270K	½	6AQ5 Grid	4669					
R33	820	½	1st 50Kc IF decoupling	4694	R69	330	1	6AQ5 K	46160					
R34	82K	½	1st 50Kc IF loading	4696	R70	47K	½	Phone tap down	4668					
R35	27K	½	1st 50Kc IF loading	4651	R71	10K	½	Phone tap down	4691					
R36	27K	½	1st 50Kc IF loading	4651	R72	1.5K	5	VR Dropping	46148					

MISCELLANEOUS

ITEM	PART NO.	FUNCTION
J1	17066	Coax, Ant. Jack
J2	17010	phone jack
M1	3213	"S" meter
X1	7148	100 KC crystal
X2	6765	crystal
X3	6766	crystal
F1	20171	1½ A fuse 3AG Slo-Blo
N1	4306	Neon Lamp — NE-2
PL1	4318	Panel Lamp, type 47
PL2	4318	Panel Lamp, type 47
PL3	4318	Panel Lamp, type 47
PL4	4329	Panel Lamp, type 1847
PL5	4329	Panel Lamp, type 1847

Refer to following page for Switch and RF-IF Coil information.

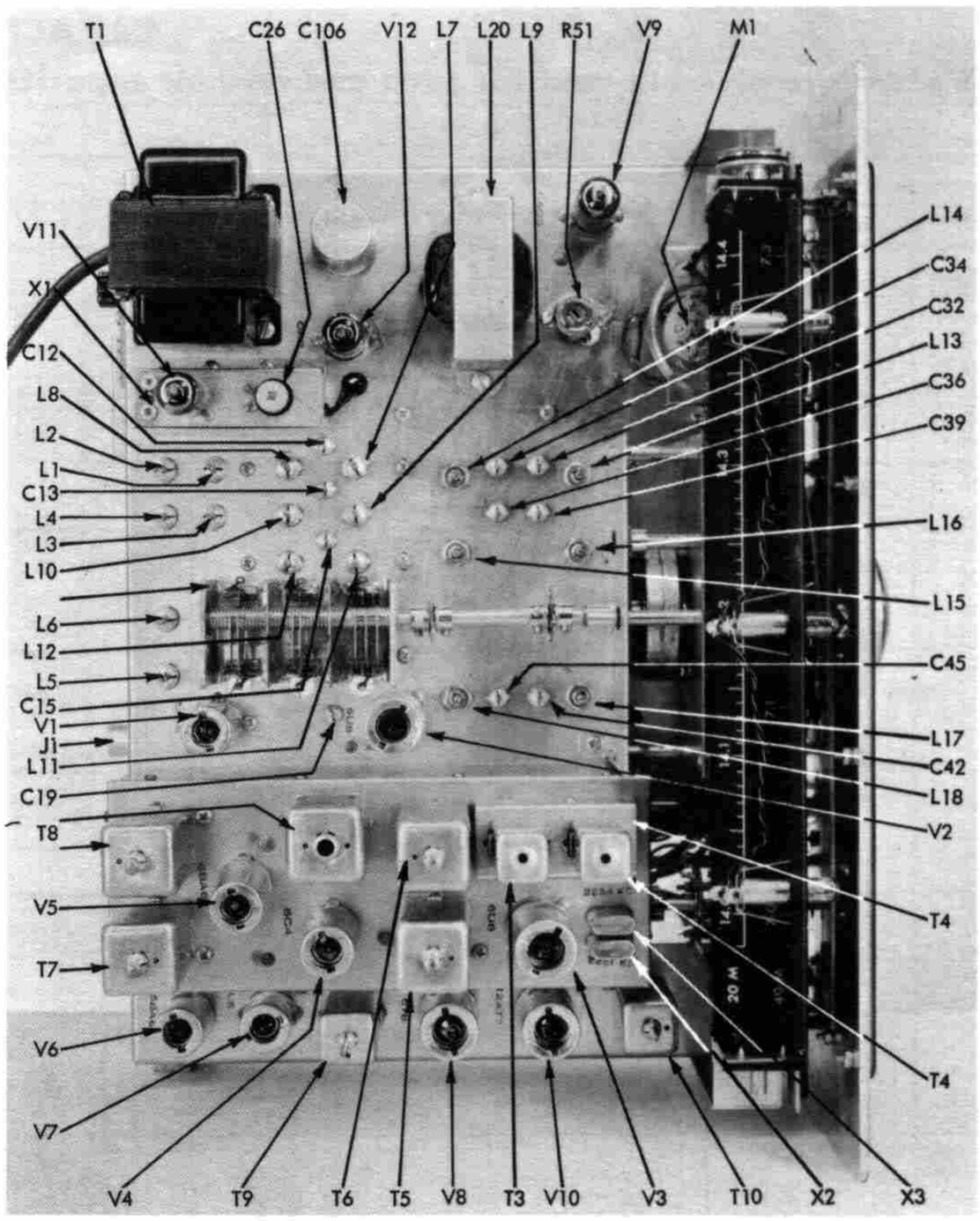
* deleted in late production

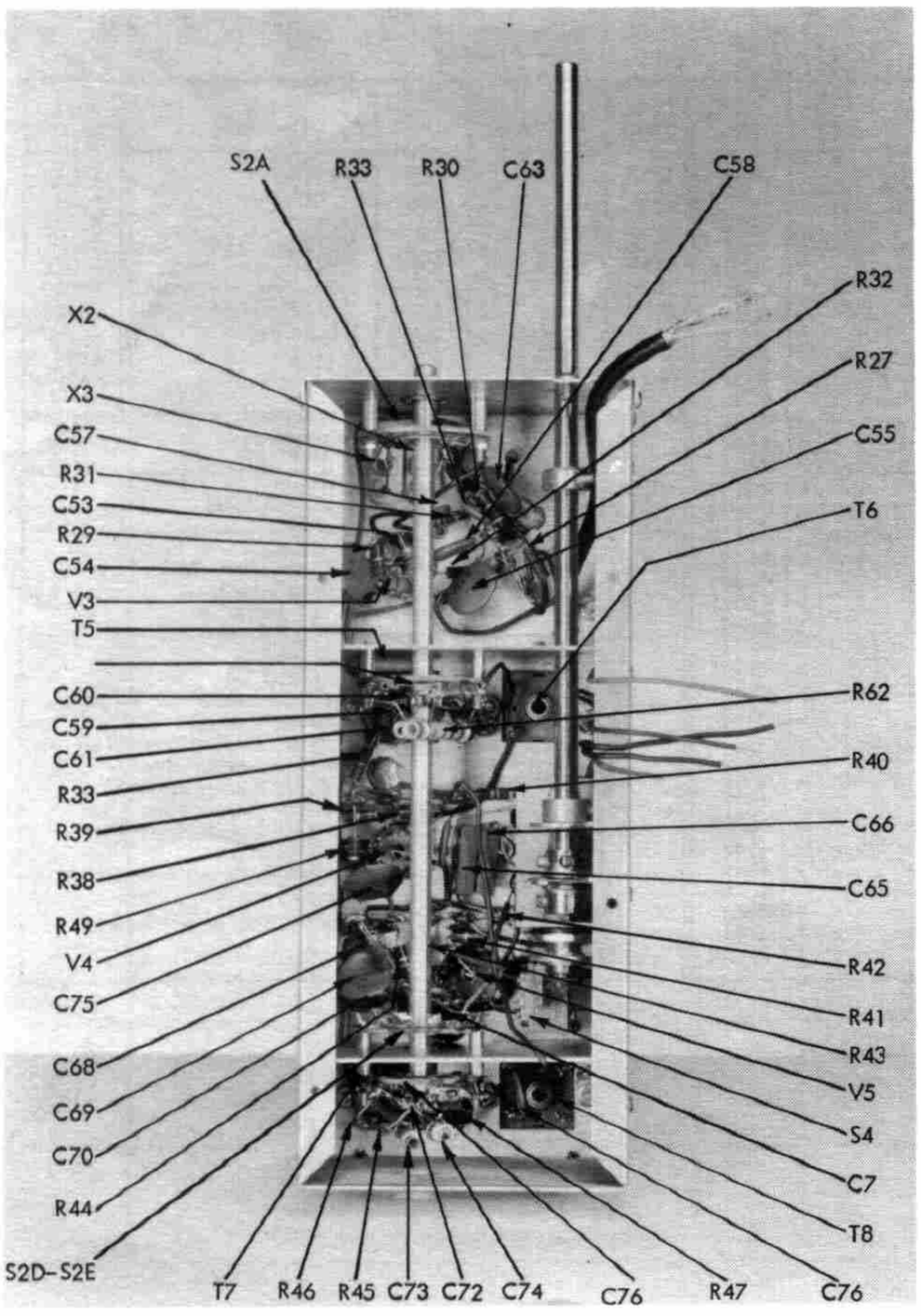
SWITCHES

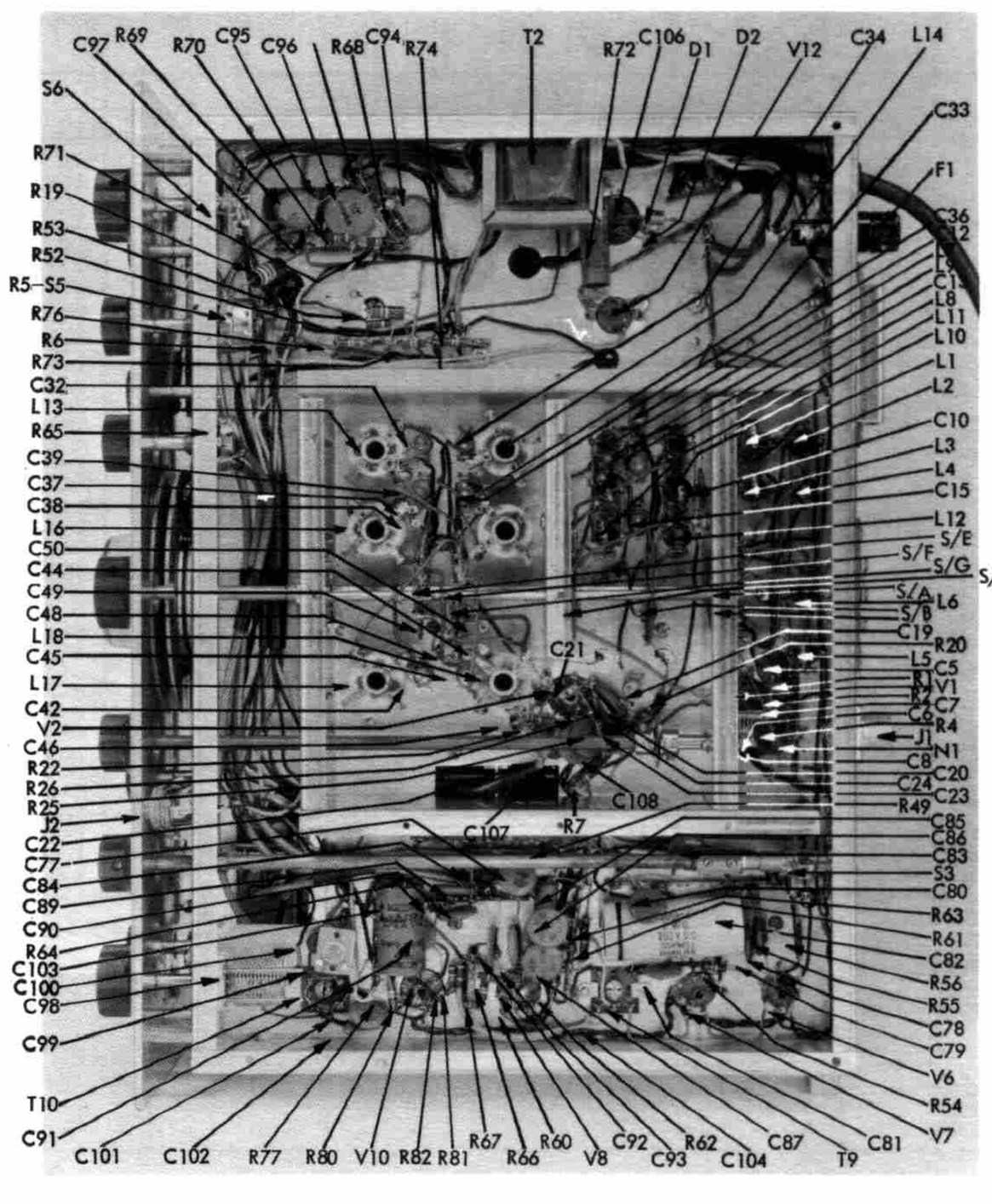
NO.	PART NO.	DESCRIPTION
S1	56023	Switch rotary 7 pole, 6 pos. — Band switch
S2	56022	Switch rotary 4 pole, 5 pos. — IF Bandwidth
S3	56024	Switch rotary 2 pole, 3 pos. — calibrator switch
S4	56021	T notch switch —
S5	—	Part of R5 — AC on-off
S6	A5663	Switch rotary 2 pole, 3 pos. — Rec-T-R
S7	56025	Switch rotary, 4 pole, 5 pos. — Function Switch
S8	—	Part of R59 — Noise Limiter

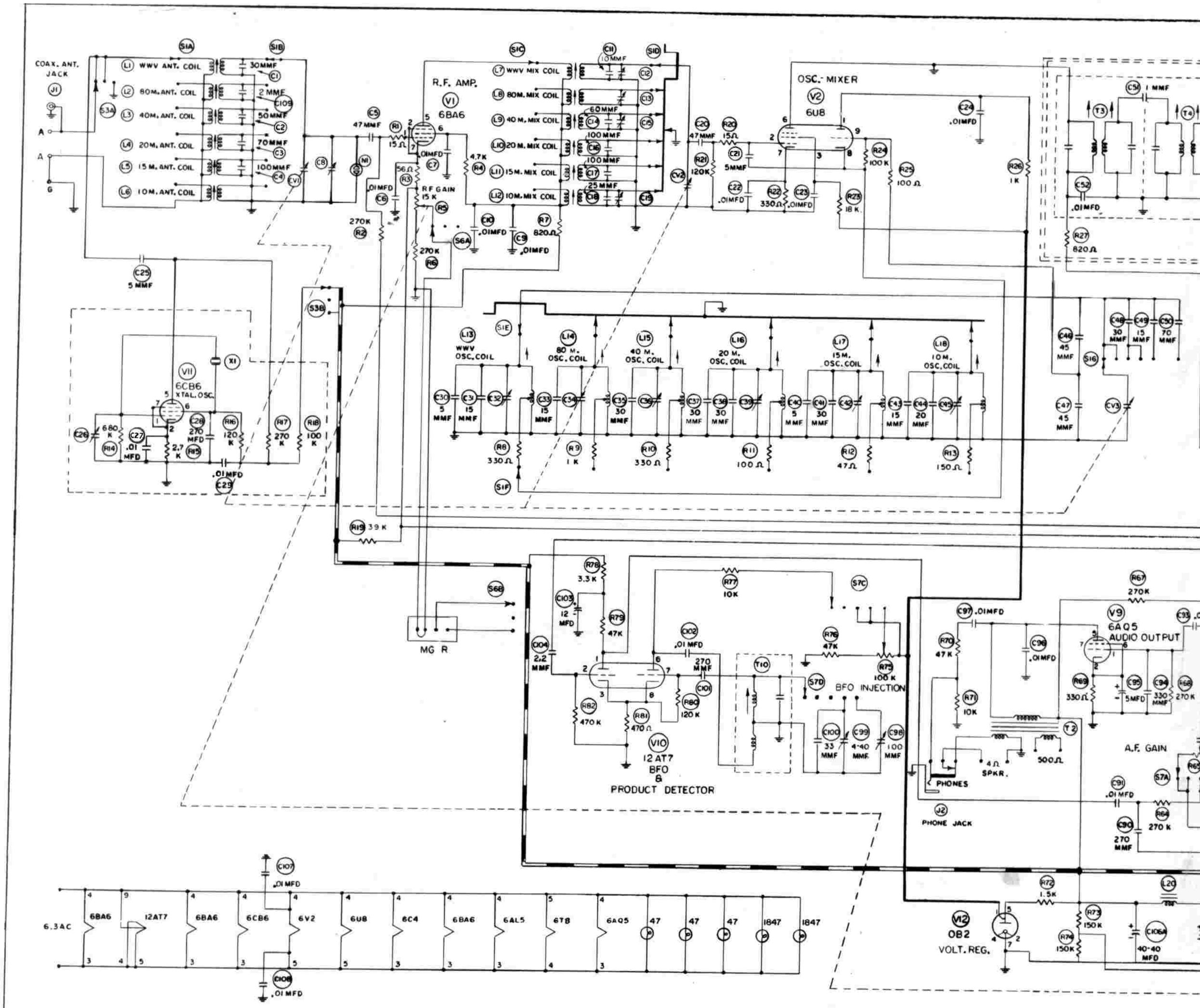
I.F. — R.F. COILS

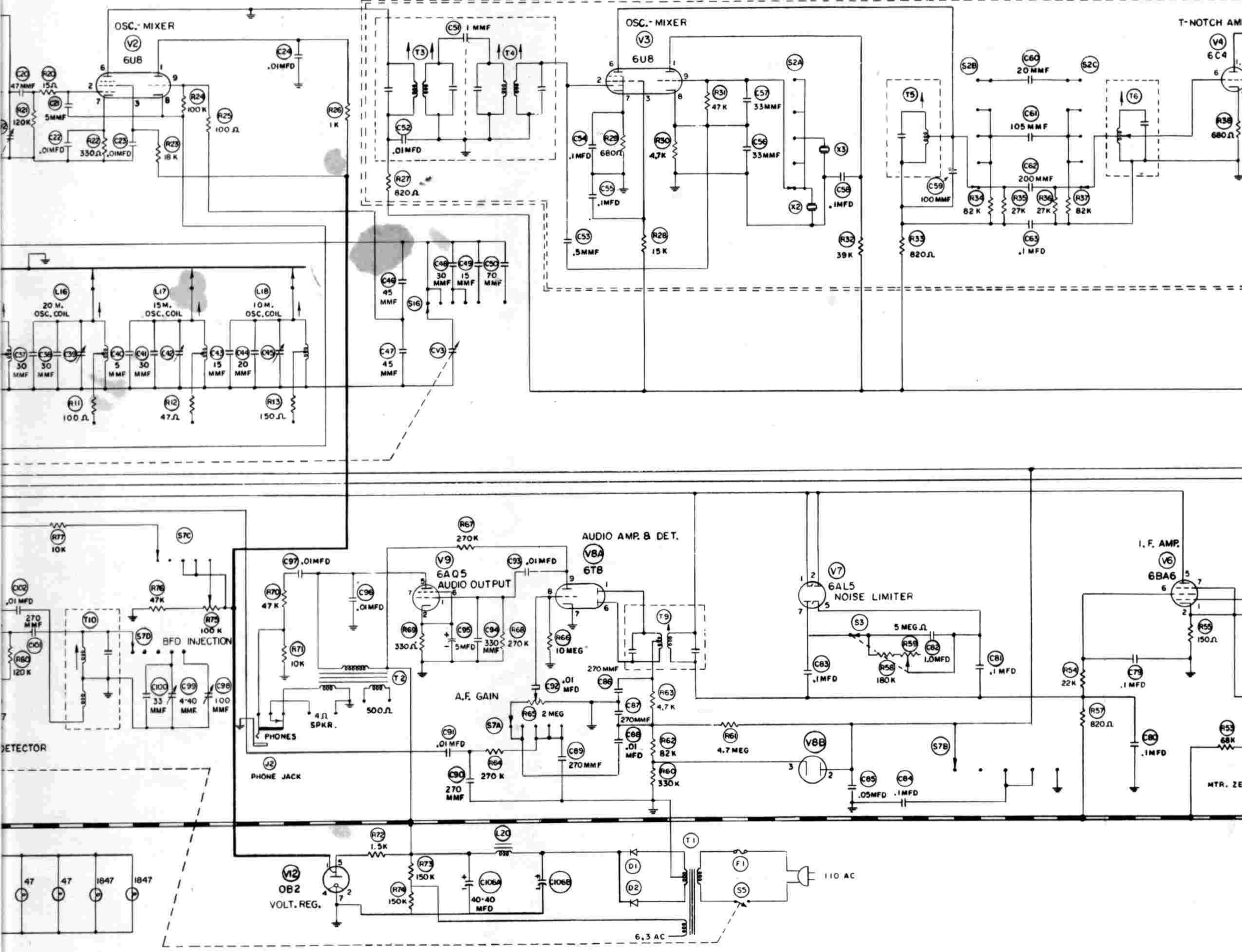
NO.	PART NO.	DESCRIPTION
L1	F3593	Ant. coil (WWV)
L2	A3593	Ant. coil 80M
L3	B3593	Ant. coil 40M
L4	C3593	Ant. coil 20M
L5	D3593	Ant. coil 15M
L6	G3593	Ant. coil 10M
L7	G3594	Mixer coil (WWV)
L8	A3594	Mixer coil 80M
L9	B3594	Mixer coil 40M
L10	C3594	Mixer coil 20M
L11	D3594	Mixer coil 15M
L12	H3594	Mixer coil 10M
L13	F35075	Osc. coil (WWV)
L14	A35075	Osc. coil 80M
L15	B35075	Osc. coil 40M
L16	C35075	Osc. coil 20M
L17	D35075	Osc. coil 15M
L18	E35075	Osc. coil 10M
L19	35074	T-Notch coil
T3	A15031	2.2 MC I. F. Transformer
T4	A15031	2.2 MC I. F. Transformer
T5	35073	50 KC I. F. Transformer
T6	35073	50 KC I. F. Transformer
T7	35073	50 KC I. F. Transformer
T8	35073	50 KC I. F. Transformer
T9	15106	Det transformer
T10	15107	BFO transformer








COAX. ANT. JACK
J1
A
A
G
S1A
S1B
L1 WWV ANT. COIL
L2 80M. ANT. COIL
L3 40M. ANT. COIL
L4 20M. ANT. COIL
L5 15 M. ANT. COIL
L6 10M. ANT. COIL
30MMF C1
2 MMF C10?
50MMF C2
70MMF C3
100MMF C4
S3A
C8
N1
C5 47MMF
R1 15Ω
R.F. AMP.
V1
6BA6
.01MFD C7
56Ω R3
RF GAIN 15 K
R5
270K R2
270K R6
4.7K R4
S6A
C10 .01MFD
C9 .01MFD
R7 820Ω
S1C
S1D
C11 10MMF
L7 WWV MIX COIL
L8 80M. MIX COIL
L9 40 M. MIX COIL
L10 20 M. MIX COIL
L11 15M. MIX COIL
L12 10M. MIX COIL
C12
C13
60MMF C14
C15
100 MMF C16
100 MMF C17
25 MMF C18
C19
CV2
C20 47MMF
R20 15Ω
R21 120K
C21 5MMF
C22 .01MFD
OSC.- MIXER
V2
6U8
R22 330Ω
C23 .01MFD
C24 .01MFD
R24 100 K
R25 100 Ω
R26 1K
R23 18 K.
C51 1 MMF
T3
T4
C52 .01MFD
R27 820Ω
C25 5 MMF
S3B
XI
VII
6CB6
XTAL. OSC.
C26 680 K
R14
C27 .01 MFD
C28 270 MFD
R15 2.7 K
R16 120 K
R17 270 K
R18 100 K
.01MFD C29
L13 WWV OSC. COIL
L14 80 M. OSC. COIL
L15 40 M. OSC. COIL
L16 20 M. OSC. COIL
L17 15 M. OSC. COIL
L18 10 M. OSC. COIL
S1E
C30 5 MMF
C31 15 MMF
C32
C33 15 MMF
C34
C35 30 MMF
C36
C37 30 MMF
C38 30 MMF
C39
C40 5 MMF
C41 30 MMF
C42
C43 15 MMF
C44 20 MMF
C45
R8 330Ω
R9 1 K
R10 330 Ω
R11 100 Ω
R12 47Ω
R13 150Ω
S1F
C46 45 MMF
C48 30 MMF
C49 15 MMF
C50 70 MMF
S1G
C47 45 MMF
CV3
R19 39 K
S6B
MG R
R78 3.3 K
C103 12 MFD
R79 47K
C104 2.2 MMF
C102 .01 MFD
270 MMF C101
R80 120 K
R82 470 K
R81 470Ω
V10
12 AT7
BFO & PRODUCT DETECTOR
T10
S7C
R77 10K
R76 47K
R75 100 K
S7D
BFO INJECTION
C100 33 MMF
C99 4-40 MMF
C98 100 MMF
R67 270K
C97 .01MFD
V9
6AQ5
AUDIO OUTPUT
R70 47 K
R71 10K
C96 .01MFD
R69 330Ω
C95 5MFD
C94 330 MMF
R68 270 K
T2
A.F. GAIN
4Ω SPKR.
500Ω
PHONES
J2
PHONE JACK
C91 .01MFD
R64 270 K
C90 270 MMF
S7A
R63
C107 .01 MFD
C108 .01 MFD
6.3AC
6BA6
12AT7
6BA6
6CB6
6V2
6U8
6C4
6BA6
6AL5
6T8
6AQ5
47
47
47
1847
1847
R72 1.5K
L20
V12
OB2
VOLT. REG.
R73 150 K
R74 150K
C106 40-40 MFD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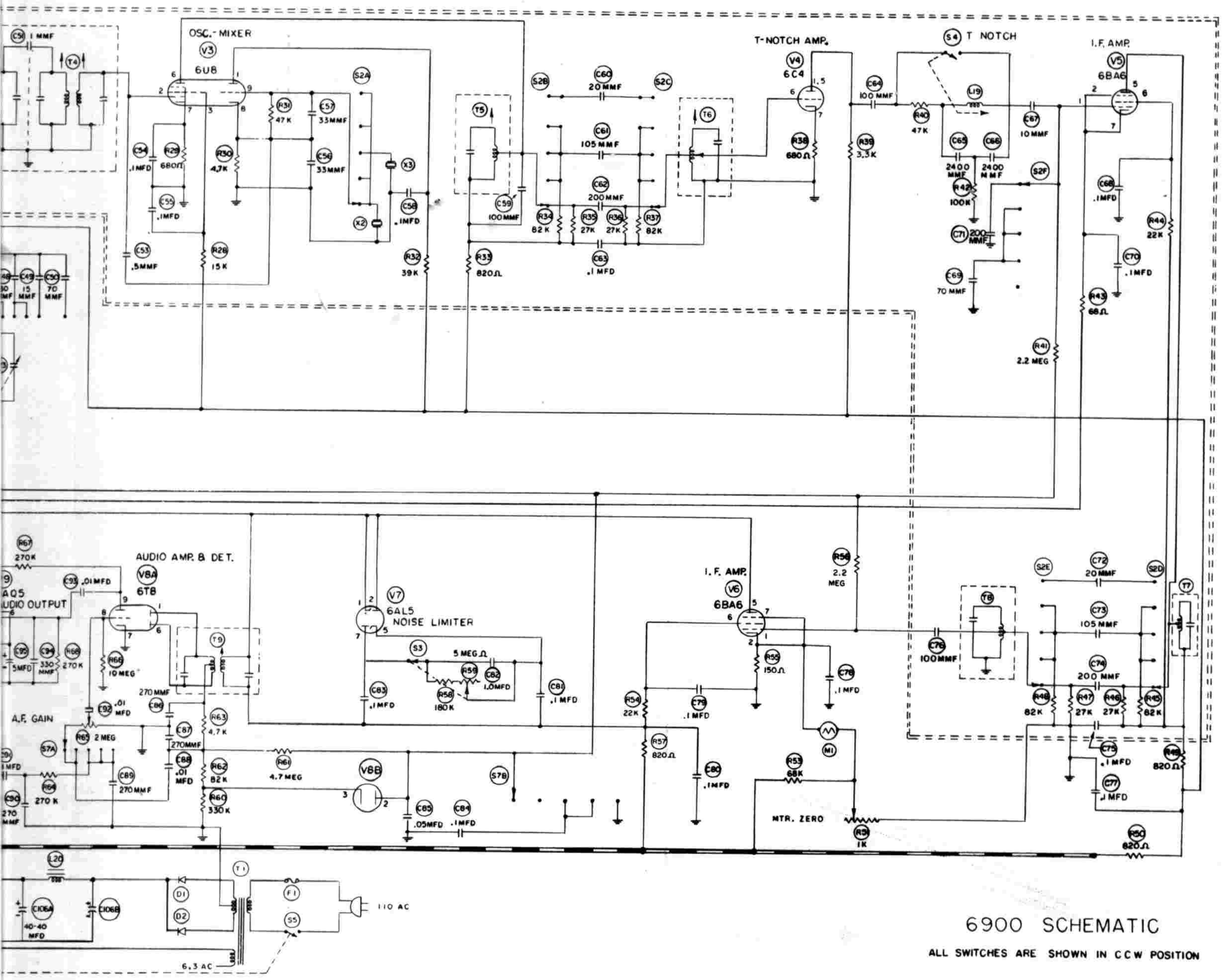
V2
6U8
C24 .01MFD
C20 47MMF
R20 15Ω
C21 120K
C26 5MMF
C22 .01MFD
R22 330Ω
C23 .01MFD
R23 18K
R24 100K
R25 100Ω
R26 1K
C51 1 MMF
T3
T4
C52 .01MFD
R27 820Ω
OSC.- MIXER
V3
6U8
S2A
S2B
S2C
C60 20 MMF
C61 105 MMF
C62 200 MMF
C54 .1MFD
R29 680Ω
C55 .1MFD
C53 .5MMF
R28 15K
R30 4.7K
R31 47K
C57 33MMF
C56 33MMF
X3
X2
C58 .1MFD
R32 39K
T5
T6
C59 100 MMF
R33 820Ω
R34 82K
R35 27K
R36 27K
R37 82K
C63 .1 MFD
T-NOTCH AM
V4
6C4
R38 680Ω
L16 20 M. OSC. COIL
L17 15M. OSC. COIL
L18 10M. OSC. COIL
C37 30 MMF
C38 30 MMF
C40 5 MMF
C41 30 MMF
C43 15 MMF
C44 20 MMF
R11 100Ω
R12 47Ω
R13 150Ω
C46 45 MMF
S1G
C48 30 MMF
C49 15 MMF
C50 70 MMF
C47 45 MMF
CV3
R77 10K
S7C
C102 .01 MFD
270 MMF
C101
R80 120 K
T10
S7D
BFO INJECTION
R76 47K
R75 100 K
C100 33 MMF
C99 4-40 MMF
C98 100 MMF
DETECTOR
4Ω SPKR.
500Ω
PHONES
J2
PHONE JACK
R67 270K
C97 .01MFD
C93 .01MFD
V9
6AQ5
AUDIO OUTPUT
AUDIO AMP. & DET.
V8A
6T8
R70 47K
R71 10K
C96 .01MFD
R69 330Ω
C95 5MFD
C94 330 MMF
R68 270K
R66 10 MEG
T2
T9
A.F. GAIN
C92 .01 MFD
R65 2 MEG
S7A
C91 .01 MFD
R64 270 K
C90 270 MMF
C89 270 MMF
270 MMF
C86
C87 270MMF
C88 .01 MFD
R63 4.7 K
R62 82K
R60 330K
R61 4.7 MEG
V8B
S7B
C85 .05MFD
C84 .1MFD
V7
6AL5
NOISE LIMITER
S3
5 MEG Ω
R59
C82 1.0MFD
R58 180K
C83 .1MFD
C81 .1 MFD
I. F. AMP.
V6
6BA6
R54 22K
C79 .1 MFD
R57 820Ω
C80 .1MFD
R55 150Ω
R53 68K
MTR. ZE
47
47
1847
1847
R72 1.5K
L20
T1
V12
OB2
VOLT. REG.
R73 150K
R74 150K
C106A 40-40 MFD
C106B
D1
D2
F1
S5
110 AC
6.3 AC



6900 SCHEMATIC

ALL SWITCHES ARE SHOWN IN CCW POSITION

NOTES ON RECEIVER OPERATION

Modern receivers with increased selectivity require more attention to proper modes of operation than did those of former years. This is particularly true regarding CW, SSB and narrow AM reception. The following suggestions are presented to help those interested in improving their "Operating technique" with the RME 6900.

SELECTIVITY AND PHONE QUALITY

Due to heavy QRM on the amateur bands a modern receiver must possess a high degree of selectivity in order to give the desired signal all the encouragement possible and make communication possible and enjoyable. The transmission and reception of information via radio does require a certain bandwidth determined largely by the detail or quantity of information to be exchanged. A human voice transmitted via a radio signal requires more bandwidth than CW.

The question as to what constitutes a satisfactory degree of quality of voice transmission gets many answers from operators in the amateur ranks. Telephone quality communication using a bandwidth favoring the human voice is adequate for most speech communications and this bandwidth is used in the RME 6900. Under extreme conditions of heavy QRM receiver selectivity which would permit telephone quality is not good enough and selectivity of higher degree is required. Since increasing selectivity reduces audio response, the amplitude modulated signal will suffer since it requires a bandwidth twice the value of the audio frequency received. Thus when modern receiver circuits designed for SSB and CW reception are used with older tuning techniques, low intelligibility results.

The remedy for this problem is to tune the receiver so that the incoming carrier is at one edge or the other of the receiver passband (an adjustment determined by the point at which the "S" meter reading just starts to fall). With this adjustment the receiver mode becomes "single sideband with-carrier" and the audio response range doubles in frequency. In this adjusted mode in the RME 6900, when the mode switch is set at "AMN" (2KC), the audio response range which with normal tuning (peaked "S" meter reading-carrier in band center) is 1 KC becomes 2 KC and thus greatly improves the intelligibility. If the receiver was center band tuned when the mode switch was set to "AMB" (3.6 KC bandwidth) the audio response range would extend to 1.8 KC less than the side-tuned method, described above, and with less effective selectivity. Try these suggestions when QRM is heavy and reception difficult. The above discussion presupposes the use of the 6901 speaker unit or its acoustic equivalent. The use of large speakers with bass emphasis is not compatible with receivers of this type.

CW OPERATION

The Model RME 6900 receiver was designed with special attention to excellence in CW reception. A filter circuit has been incorporated that provides a passband of only 500 cycles when the receiver is used in the "CW" Mode. When starting to tune make certain that the "Het Null" control is set to "Off" so it will not have been accidently left at a position coinciding to peak CW signal frequency.

Tuning should be done slowly because of the selective nature of the filters and the possibility of passing over the maximum signal response point. All CW signals will be received at the same tone when properly tuned. The frequency of the tone is determined by the "BFO PITCH" control setting-usually between .5 and 1.0 KC. If a signal is not properly tuned it will be heard rather weakly and apparently in the background. If, when a signal is properly tuned at peak amplitude, another signal at a somewhat different frequency is bothersome the "Het Null" control can be

rotated slowly until the undesired signal is greatly reduced or eliminated.

If the foregoing is unnecessary because QRM is not great and interference is not a problem, CW reception can be carried on using either "LSB" or "USB" positions of the Mode switch. Here the passband becomes wider (2 KC) and signals will not require exact tuning. Also they will be received at various audio tones with equal intensity over a 2 KC range. The "Het Null" control will still be effective for interference reduction.

ELECTRO-VOICE, INC./ Buchanan, Michigan

Part No. 53254
March, 1961

Mimeo in U.S.A.