

RECEIVER

MODEL MB-6



MR3

GENERAL

The MB6 receiver is designed primarily for mobile service, however, when used as a home receiver, excellent performance is also achieved. Mobile receivers have the same basic requirements as fixed station receivers but with the additional requirements of a squelch, noise suppression, mechanical and electrical stability, and compactness.

BANDS

The MB6 receiver tunes the five amateur bands, 75-40-20-15-10 meters. Each band is spread across the entire dial scale. When a band is selected by the band switch, the proper dial scale is brought into view.

TUNING

A tuning ratio of 22 to 1 is obtained by the use of spring loaded gears, eliminating back lash and allowing precise control of frequency.

100 K.C.

Dial calibration and tracking are carefully controlled in manufacture and test. Long term calibration is assured by the use of a calibrator compensator and built in 100 KC frequency standard.

SENSITIVITY

The receiver will hear the weakest signals because of the excellent signal to signal plus noise ratio. At 29 MC - 1 microvolt for a ratio of 20 DB or better. In other words, a signal of 1 micro volt, modulated 30% is 20 DB above the internal receiver noise. For comparison purposes, a poor receiver is 0-3 DB and a mediocre unit is 6-10 DB, while the best, MB-6, is 20 DB or above.

ANTENNA INPUT

The antenna input circuit is carefully designed for an input impedance of 50-70 ohms, a coax line impedance. The antenna trimmer is omitted because there is no need for it when the front end is properly designed. All that is necessary is for the operator to change bands and start tuning.

FIRST I.F.

The IF amplifier is a dual frequency unit or dual conversion. The first frequency is 1690 KC. This high frequency helps suppress the image frequency. The second mixer is crystal controlled for better stability.

SECOND I.F.

The second IF amplifier is tuned to 220 KC. This frequency is low enough to get good selectivity and at the same time high enough to allow the 1690 KC amplifier to suppress the second image. The selectivity is 4 KC - at 6 DB. This allows separating stations and at the same time does not seriously de-rate the natural tone or sound of the station being received.

B.F.O.

The beat frequency oscillator is injected into the second detector at a level that allows good CW and single side-band reception. The BFO is stabilized for voltage changes such as when the car generator cuts in or out. When tuning SSB stations, the BFO can be moved off the IF pass band to allow the full IF band width to pass the modulation of the SSB signal. The RF gain control can be adjusted at any time and not change the BFO or any other oscillator frequency, which allows easy SSB tuning.

AUDIO

The audio amplifier is conventional except the frequency response is limited for best communications pass band. Both the lower and higher frequencies are suppressed.

SQUELCH

The Squelch is a special Morrow development and has the characteristic of opening on weakest signal, however, it will not open on noise alone. The squelch is two circuits. The basic circuit takes the AVC voltage to control a DC amplifier. The DC amplifier turns the first AF stage, either on or off. If there is a signal the amplifier is on and if the signal is gone the amplifier is off. This action will occur on a small fraction of a micro volt change from no signal condition. This basic circuit is all that is found in the average receiver and the reason it is not enough is that it cannot differentiate between AVC voltage developed by a signal or by noise. In other words, a signal or a noise will open the squelch.

This condition in a mobile receiver makes a squelch just about worthless as it will open on noise alone.

To overcome this condition, the MB6 has a special high frequency or noise only amplifier. The output of the amplifier is rectified and the D.C. component is placed in series with the AVC voltage with reverse polarity.

When the squelch is adjusted to "just closed" with no signal, it will open as soon as a weak signal comes on, however, if when driving down the road, a noisy area is approached, the signal will be compared to the noise and if the noise is greater than the signal the squelch will close. If no signal is on the air, the noise amplifier will keep the squelch closed until a readable signal is on and then it will open.

NOISE LIMITER

The automatic noise limiter is between the second detector and the first audio amplifier. It is automatic in operation and very effective on burst or spike noise, such as spark plug noise.

Just because the noise limiter is very effective, do not expect it to eliminate the need for motor noise suppression on the engine when the equipment is installed in the car. Use the limiter for noise you cannot control, such as other cars.

"S" METER

The "S" meter is a vacuum tube volt meter reading the second detector diode load voltage. With the function switch on AVC it reads signal strength as on any receiver. In the MANUAL position, it is a very sensitive field strength meter.

F.S.

When the function switch is in F.S. position, the meter is a field strength meter useful for tuning the transmitter to maximum output. In this position a sampling antenna feeds R.F. voltage to diode where it is rectified and the D.C. component is read by the "S" meter. The meter reading is a direct function of the amount of pick-up by the sample antenna.

6-12 DC POWER SUPPLY

The receiver is designed for 6 or 12 volt D.C. service. An external vibrator power supply model RVP-260 is designed to be used with the MB6 receiver. The model RVP-260B is used for the receiver power supply when a MB-565 transmitter is used. The RVP-260B is identical to the RVP-260 except a 75 volt bias supply is added for the transmitter.

6-12 CONVERSION

6 or 12 volt conversion of the receiver is taken care of by the cable connection in the power supply.

115V 60 cps POWER SUPPLY

The MB6 may be used for a home station, when used with a Morrow RAP-250S. When the MB6 is used with the MB-565 transmitter, a combination Power Supply, model RTS600, is available. This power unit supplies all power necessary for operation of both pieces of equipment, and includes a speaker.

OPERATION AND CONTROLS

The receiver should be allowed 20-30 minutes to come up to temperature for greatest stability, however it can be tuned in cold to a SSB station and stay on frequency to a reasonable degree.

The controls on the front of the receiver are all that are necessary because the two back controls are fixed once they are set when installed.

BAND SWITCH

The control marked 75-40-20-15-10 is the wave band switch. Set to the desired band.

TUNE

The tune knob is the tuning control.

OFF-100KC

Off-100KC is a switch to turn on the 100 KC-Frequency standard for calibration purposes.

CAL-TRIM

Cal-Trim is a vernier capacitor across the oscillator. Set the tune control to some 100 KC interval, turn on the 100 KC standard, adjust trim cal. control to center the 100 KC marker in the receiver pass band. The dial is now calibrated.

OFF-STBY-RECV-LIM

In the first position the receiver is off. Second position STBY, heaters are on B+, off, in standby condition. Third position RECV, the receiver is on, noise limiter is off. The LIM position turns on the noise limiter.

BFO

BFO is the BEAT FREQUENCY OSCILLATOR pitch control. Normal or center frequency is with dot up. This control can also be used for fine tuning of S.S.B. stations. When used for S.S.B. better results can be had by setting control off center frequency allowing the receiver pass band to accept all the one side band.

VOLUME

Volume is the audio gain control. For A.M. reception it is usually set at 9-11 o'clock. For S.S.B. it should be set at 3-5 o'clock.

SQUELCH

Squelch is set in the following manner:

Assuming the set is adjusted for normal A.M. reception, tune dial off a station. Adjust control clockwise until squelch just closes.

NOISE BALANCE

If the noise balance control has not been set proceed as follows:

Tune dial off the station. Have RF gain full clockwise. AVC-ON. Noise balance control in back of set, full clockwise when viewed from the back. Remove antenna. Have volume approximately 12 o'clock, adjust squelch until it is just closed (background noise will stop). Plug in antenna and background noise will appear. Adjust noise balance until background noise disappears. The squelch and noise balance are now adjusted. Some interaction will be noted on the controls. The object is to set the noise balance control to just off-set the AVC produced by the noise. When properly set very weak signals will open the squelch if no noise is present.

If a noise appears louder than the signal the squelch will close. Some juggling will probably be required of the two controls to get the desired balance.

R.F. GAIN

RF gain is the sensitivity control and for A.M. is usually run full on (clockwise). For S.S.B. and C.W. set the volume higher and cut back on the RF gain. Use RF gain for volume control on S.S.B. or C.W.

AVC-MAN-BFO-FS

Use AVC position for A.M., MAN for manual gain control, AVC is off. B.F.O. is for CW S.S.B. reception. F.S. is Field Strength position, useful for adjusting transmitter, see general information.

"S" ZERO-ADJUST

"S" meter zero adjust is on back of receiver. To adjust have RF gain full on. Antenna removed and adjust for -0- "S" meter reading.

INSTALLATION

MOBILE RECEIVER

1. The MB6 receiver is usually mounted under the dash of the automobile in a location that can be easily reached by the operator. By the use of Morrow jiffy mounts, Part #JM or the jiffy mounts with handle, Part #JMH, the receiver may be slid into place and connected in a few minutes. The easy removal and installation makes the MB6 very useful for mobile, portable or as a fixed station receiver.
2. When the MB6 receiver is used with the MB-565 transmitter, it is usually mounted on top. Use jiffy mount bars and receptacles between the bottom of the receiver and the top of the transmitter. Both units are suspended by the top of the receiver.
3. While there are many possible ways of actually mounting the receiver, we will discuss only the jiffy mount method since it is neat, simple and has proven very satisfactory.
4. Four holes in the top of the cabinet are fitted with special fixed 6-32 receptacles. The two jiffy mount bars are fastened to these receptacles with flat head 6-32 screws. The bars should be spaced off the cabinet about 1/8 inch.

The jiffy mount slide bar receptacles and mount plate should be fastened to the lower edge of the dash.

At times it may be necessary to space the plate away from the dash. The back of the plate should be secured to the fire wall of the car or made rigid in some manner. Do not let the receiver flop around loose and do not try to shock mount it. See the illustration on mounting in this book.

The RVP-260 or 260B power supply may be mounted any place within reach of the power cable #010-009. Be sure the power supply case is grounded to the metal of the car. Scrape paint and oxide if necessary.

The supply power lead should connect to the car battery direct or to the ammeter or power junction point. Do not use ignition switch.

Plug the power cable #010-009 into the receiver and power supply receptacles. Be sure a jumper is between #2 and 3 pins on the power supply 7 pin socket if the transmitter is not installed. (This completes the B+ circuit)

ANTENNA

The antenna input impedance of the receiver is approximately 50-70 ohms. This is the impedance of a properly matched whip when used on it's operating frequency.

If the MB-565 transmitter is used, connect the receiver antenna jack to the receiver jack on the transmitter with RG59U coax or something similar. Standard auto radio antenna fittings are used on this cable. If a transmitter is not used, connect the receiver to the antenna with 50-70 ohm cable.

If only the receiver is used the antenna should be a regular transmitting type.

It will be found the receiver will have far better performance when, for example, a 75 meter antenna is used when listening to the 75 meter band. For that matter signal strengths will be down 2-4 "S" units if the antenna is tuned to 3970 KC while the receiver is tuned to 3825 KC. While this is not a serious problem it is noticeable and should be considered. For maximum results the antenna should be tuned to the receiver frequency.

An antenna designed for 75 or 40 meters should not be used when trying to copy signals on 20-15 or 10 meters. The loading coil acts as an RF choke and suppresses the higher frequency signals. If a low frequency antenna is to be used when listening on 20-15 or 10, short out the loading coil with a jumper. The improved performance is amazing.

A 10-15 or 20 meter antenna can be used with fair results on 40 or 75 however, the receiver performance will be down several "S" units.

If you have a transmitter in the car by all means use an antenna relay for switching the antenna to the receiver. All Morrow transmitters have the relay built in, but most other transmitters do not.

A broadcast antenna is just about worthless when used on a MB6 receiver. They are very high impedance devices and the MB6 is low impedance.

An antenna tuner is available to tune the 75 or 40 meter antenna across the band. It's number is MLV-50, made by MORROW. The MLV-50 not only tunes the antenna, it also matches the low antenna impedance, (approximately 12 ohms on 75 meters) to the 50 ohm cable.

Be sure all coax cables are used. Do not use open wire in an automobile. Be sure the cable shield is well grounded to the car body at the base of the antenna. Use proper fittings. Haywire at this point will spoil a good receiver.

MOTOR NOISE

Motor noise is the limiting factor in mobile receiving. This noise comes from two primary sources, distributors and generators, and several secondary sources such as gas gauge, oil gauge, heater fans and electric wiper motors, etc.

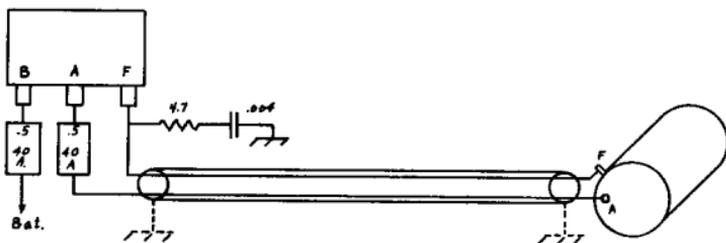
The distributor and spark plug noise is the number one problem.

Be sure the plugs have the proper gap and that the porcelain is clean. Check wire and replace those not in good condition. Install suppressor in center lead to distributor.

Special plug wire is available with built-in suppressors for each plug. Resistor type plugs are available and these are suggested for maximum performance. A .5 or .25 mfd feed through capacitor can be installed on the coil primary lead close to the coil in some cases. The generator and regulator are the next offenders and sometimes a little difficult to cure.

The usual capacitor on the generator many times is all that is necessary on 40 and 75 meters and a Morrow GC-10 filter for 10 meter suppression of generator noise. If these do not stop the noise the following steps will.

Use feed through capacitors on the regulator. One capacitor on the battery wire and one on the armature wire. The field wire is bypassed to ground by a .004 mica condenser in series with a 4.7 ohm resistor. Shield the cable connecting the regulator to the generator. If this is in a common cable, make up a special one for this job. Ground the shield at one end only.



Gas gauge and fan motors usually can be quieted by the installation of a .5 mfd capacitor to ground on each unit. Be sure the capacitor is on the sensing unit of the gauges and not on the indicator. Motor noise can be radiated to the base of the antenna in the trunk by tail light and stop light wires. Bypassing of the wires will help in many cases.

Curing motor noise is a cut and try operation and no one can tell exactly what is needed. Some noises can be found by using a coax lead from the receiver as a probe for finding noises.

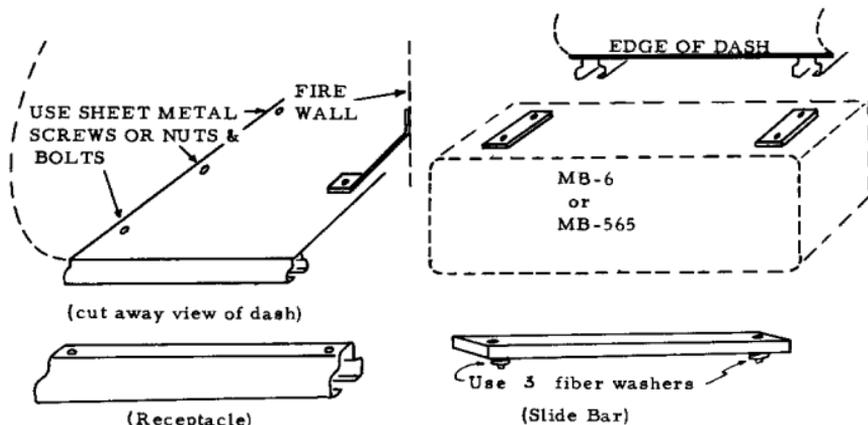
- A. Bonding of the hood to the car can be of help. Bonding of all control shafts and cables running through the dash is needed in some cases. The steering post is another offender, this is often in need of a bond.

B. WHEEL AND TIRE STATIC: Wheel static will show up with the car in motion and not while it is standing still. The automotive or radio distributors stock special springs to mount in the wheel bearing caps to ground the wheels. Tire static is developed from the tires running on pavement and this type of trouble can be stopped by pumping a special powder into the tire when it is inflated. This material is available from the same source as the spring above.

Some of the above steps may appear to be quite extensive and they were mentioned only as a guide. If the job is completed as indicated, the noise will be down to a very low level.

We suggest the ARRL Handbook for other noise elimination suggestions.

MOUNTING ILLUSTRATIONS



The slide bars are spaced from the chassis by 3 fibre washers and they are attached by flat headed screws enclosed. The receptacles are attached to the mounting plate by filister head screws. The mounting plate is mounted underneath the dash as shown in a convenient location for use of the MB-6 receiver. The receiver will then slide into place and can readily be removed for home or portable use. The companion MB-565 can be mounted directly below the MB--6.

THE MB-6 RECEIVER WAS CAREFULLY ALIGNED BEFORE SHIPPING FROM THE FACTORY AND THE ALIGNMENT SHOULD NOT BE TAMPERED WITH UNLESS THE NEED IS DEFINITE, AND THEN ONLY QUALIFIED PERSONS SHOULD ATTEMPT THE JOB.

The equipment needed is listed below:

1. Signal generator with output on 220 KC, 1690 KC, 3.5 to 4 MC 7.0 to 7.3 MC, 14.0 to 14.35 MC, 21 to 21.45 MC, and 28.0 to 29.7 MC.
2. A BC221 or other good frequency standard for calibration of the signal generator.
3. A D-C Vacuum Tube Voltmeter with low range scales in the order of 2.5 to 10 volts full scale.

When aligning the receiver the chassis should be removed from the cabinet and the receiver should be warm, or operating for 15 minutes.

OSCILLATOR

The equipment needed is a D-C VTVM with a 20 volt range. A 2.2 meg resistor should be in series with the probe.

1. Attach VTVM to V₄ grid pin #1 to check the crystal osc. The voltage should be approximately 10 volts.

220 KC AMPLIFIER

Equipment needed: Signal generator with 220 KC output. VTVM with a 2.5 to 3 volt scale.

1. Connect VTVM to diode load at junction of R10-R11-R13, located on the front part of resistor board.
2. Use 0.1 mfd condensers in series with signal generator and connect hot lead to V5 pin #1, and ground lead to chassis. With modulation off, set generator to exactly 220 KC.
3. Set RF gain control full on. Set AVC Switch on manual. Set audio gain full on. Squelch control off, counter clockwise.
4. Always use lowest output from generator that will give a reliable VTVM reading and adjust cores in T5 for maximum reading.
5. Move generator to grid of V₄, pin #7. Adjust cores in T3 and T4 for maximum reading. Readjust core in T3-T4-T5 for maximum reading. Use lowest generator output.

ADJUSTMENT OF B.F.O.

6. Set B.F.O. trimmer to one half capacity and be sure that dot on knob is vertical. Turn on B.F.O. switch on front and adjust core in T6 for zero beat. Turn B.F.O. switch back to manual position.

ADJUSTMENT OF 1690 KC AMPLIFIER

Equipment needed: Signal generator with 1690 KC output. VTVM with 2.5 to 3 volt scale.

7. With VTVM connected as in (1) above, connect signal generator to grid of V2A, or tuning condenser center stator. Set generator to 1690 KC and adjust cores in T2 and T1 for maximum VTVM reading.

ADJUSTMENT OF 1690 KC TRAP

8. Connect generator to antenna connector. Increase generator output for VTVM reading. Adjust 1690 KC trap core, L11, for MINIMUM VTVM reading. Trap located on mixer section, core access hole on side of shield.

ADJUSTMENT FOR 100 KC CALIBRATOR

9. The 100 KC calibrator is carefully set at the factory to frequency and should not need attention. In case the frequency wants to be checked it should be compared to WWV on 5-10-15 MC. The calibrator may be coupled to another receiver by running a wire from the MB-6 antenna socket to the receiving antenna. It will be noted the calibrator is connected to the receiving antenna circuit, as per the diagram thru capacitor C46, C48 on the tuner section chassis will allow the zero beating of the crystal to WWV. An error in setting of this capacitor will be multiplied on the higher frequency bands and it must be set as near to zero beat as possible. If there is a preference 15 MC should be chosen as the test frequency.

ADJUSTMENT OF THE HIGH FREQUENCY BANDS

Equipment needed: A signal generator covering 75-40-20-15 and 10 meter bands. A VTVM with a 2.5 to 3 volts scale. Plastic core wrench, general cement tool #9091.

GENERAL INFORMATION

1. The oscillator is always on the high side of the signal.
2. The oscillator capacitors adjust the high end of the band.
3. The oscillator cores adjust the low end of the band.
4. The dial pointer should be at the low end of the dial and 1/8 inch past the last mark when the tuning condenser is closed.

5. The oscillator is compensated for temperature and once set, should need no further adjustment. Every precaution has been taken in the manufacture of the MB-6 receiver to make it as stable as possible and the calibration will be found to be very close when aligned as per the instructions below.
6. In all adjustments below be sure the calibrate trimmer marked "Cal" is set with the dot vertical when the trimmer is in the one half capacity position. This trimmer should be set and then not touched until all the following steps are completed.
7. Any band may be adjusted without affecting any other band.
8. Very little if any oscillator pulling will be noted on any of the low frequency bands. However, on the high bands some may be experienced when the mixer trimmer is adjusted and allowance should be made for this. Sometimes the mixer should be adjusted for maximum noise rather than be tuned for maximum when on signal.
9. The 100 KC calibrator should be used for frequency check on the high frequency bands and do not depend upon the calibration of the signal generator, other than for the first rough calibration.

** NOTE: All Bands

When adjusting antenna and mixer coils, tune dial down in frequency approximately 30% (on 75 from 4.0 MC to 3.8 MC) and adjust cores for maximum signal.

Turn off generator and peak cores for maximum background noise.

The above step will insure correct setting, free from oscillator pulling.

75 Meters

1. Feed 4 MC signal into antenna socket. Set dial to 4. MC.
2. Adjust 75 meter oscillator trimmer to frequency. Adjust antenna and mixer coil cores for maximum AVC.
3. See **NOTE.
4. Set generator to 3.5 MC and dial to 3.5 MC.
5. Adjust 75 meter oscillator coil core to frequency.
6. Repeat until calibration is correct on both ends of the scale.

40 Meters

1. Feed 7.3 MC signal into antenna socket. Set dial to 7.3 MC.
2. Adjust 40 meter oscillator trimmer to frequency. Adjust antenna and mixer coil cores for maximum AVC.
3. See **NOTE.
4. Set generator to 7.0 MC and dial to 7.0 MC.
5. Adjust 40 meter oscillator coil core to frequency.
6. Repeat until calibration is correct on both ends of the scale.

20 Meters

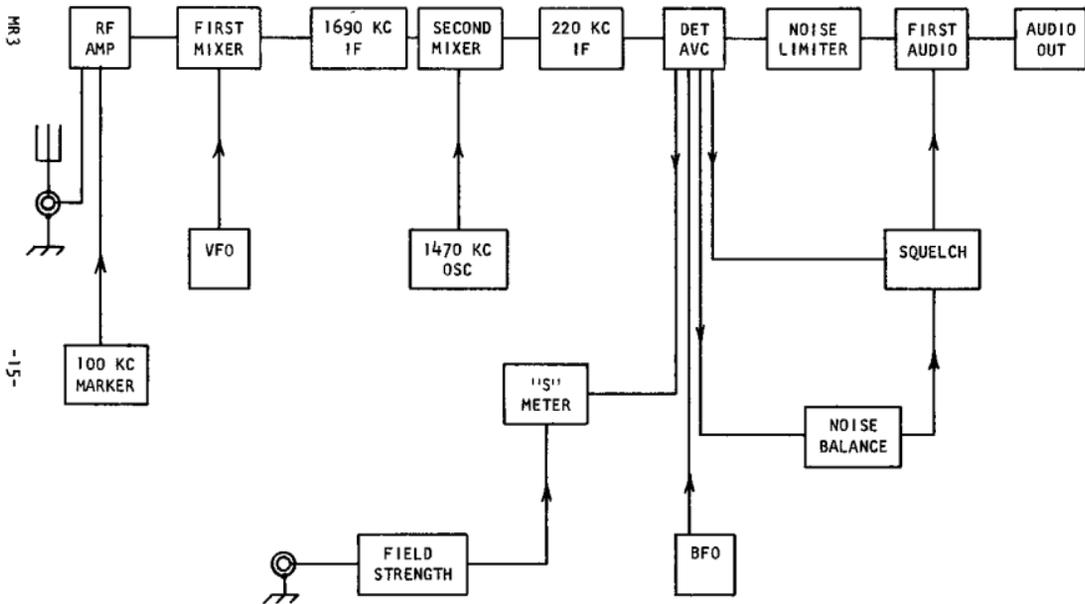
1. Feed 14.35 MC signal into antenna socket. Set dial to 14.35 MC.
2. Adjust 20 meter oscillator trimmer to frequency. Adjust antenna and mixer coil cores for maximum AVC.
3. See **NOTE.
4. Set generator to 14.0 MC and dial to 14.0 MC.
5. Adjust 20 meter oscillator coil core to frequency.
6. Repeat until calibration is correct on both ends of the scale.

15 Meters

1. Feed 21.45 MC signal into antenna socket. Set dial to 21.45 MC.
2. Adjust 15 meter oscillator trimmer to frequency. Adjust antenna and mixer coil cores for maximum AVC.
3. See **NOTE.
4. Set generator to 21.0 MC and dial to 21.0 MC.
5. Adjust 15 meter oscillator coil core to frequency.
6. Repeat until calibration is correct on both ends of the scale.

10 Meters

1. Feed 29.7 MC signal into antenna socket. Set dial to 29.7 MC.
2. Adjust 10 meter oscillator trimmer to frequency. Adjust antenna and mixer coil cores for maximum AVC.
3. See **NOTE.
4. Set generator to 28. MC and dial to 28. MC.
5. Adjust 10 meter oscillator coil core to frequency.
6. Repeat until calibration is correct on both ends of the scale.

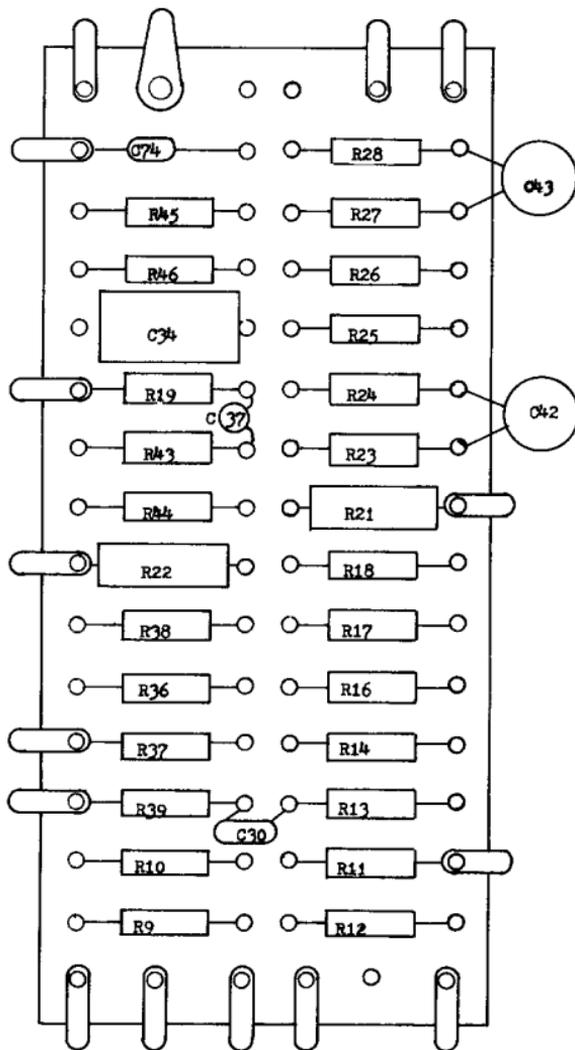


PIN #	MB-6 VOLTAGE CHART									
	1	2	3	4	5	6	7	8	9	
V1-6BZ6	-.4	1.3	0	6.3	235	72	1.3	---	---	RF
V2-12AT7	235	---	7.2	0	0	240	-7.5	0	6.3	Mix.
V3-6BJ6	-.5	2.2	6.3	0	277	72	2.2	---	---	1st I.F.
V4-6BE6	-11	0	6.3	12.6	277	72	0	---	---	2nd Mixer
V5-6BA6	-.45	2.2	12.6	6.3	277	72	2.2	---	---	2nd I.F.
V6-6T8	---	-.6	0	6.3	12.6	---	0	A-7	A270	DET.-BFO.
V7-6BJ6 (B)	-28	4.4	0	6.3	125	70	4.4	---	---	100 KC STND.
V8-12AT7	137	-.3	1.5	12.6	12.6	87	0	1.8	6.3	N.B.A. S Meter
V9-6AL5	.3	-.5	0	6.3	.2	--	.2			Noise Rect.
V10-6AL5	<u>C.1</u>	0	0	5	0	0	<u>C.2</u>			NL-DET.
V11-12AX7	245	27	29.5	0	0	27.5	.25	1	6.3	SQ & 1st A.F.
V12-6C4	110	--	12.6	6.3	---	0	4	---	---	2 N.A.F.
V13-6AQ5	---	16.5	12.6	6.3	265	275	0	---	---	Power Output

CONDITIONS OF TEST

POWER SOURCE	RTS-600S
VTVM HEWLETT PACKARD 410B	
BAND SWITCH	75 METER
DIAL	3.85 M.C.
RF GAIN	FULL ON
AVC	ON
NOISE LIMITER	OFF
SQUELCH	JUST OPEN
(A) BFO	ON
(B) 100 KC	ON
(C) NOISE LIMITER	ON

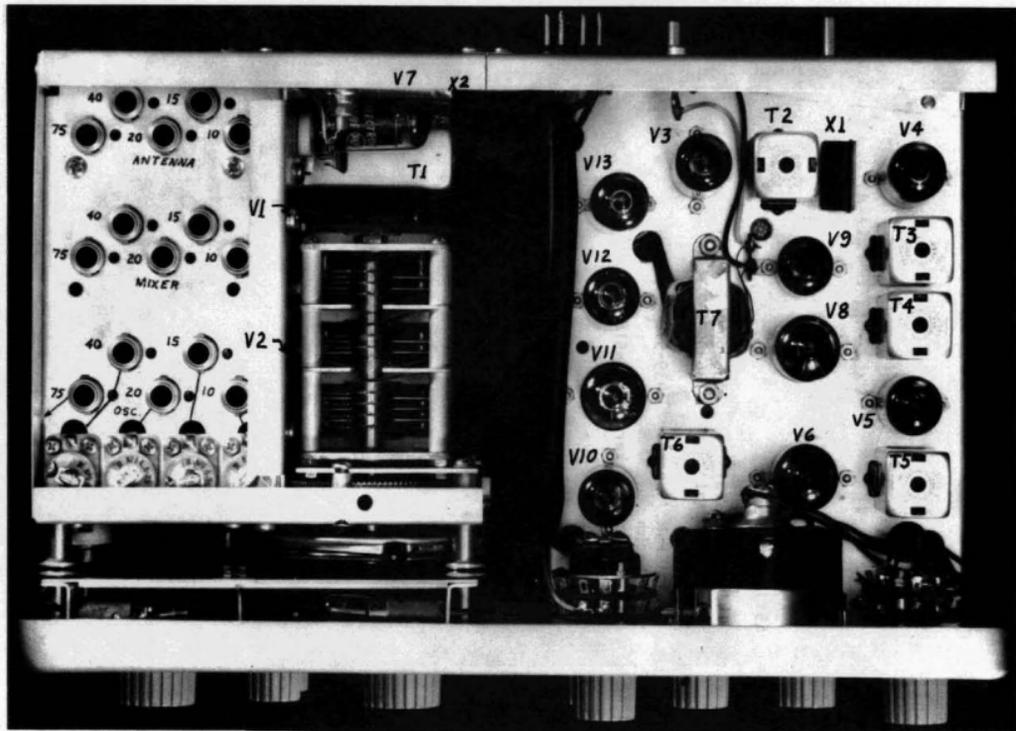
ALL - 6.3 & 12.6 READING 60 CYCLE.

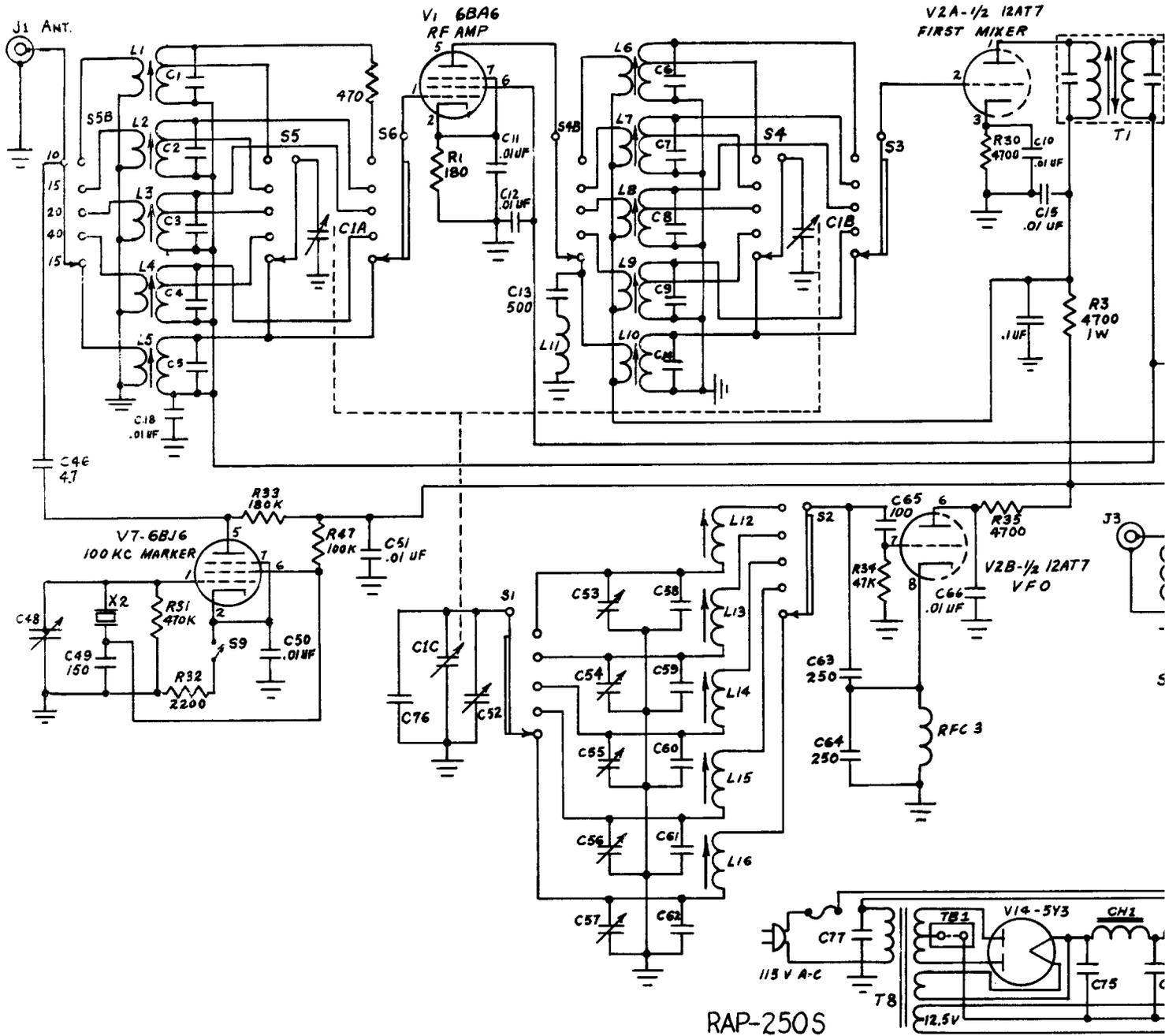


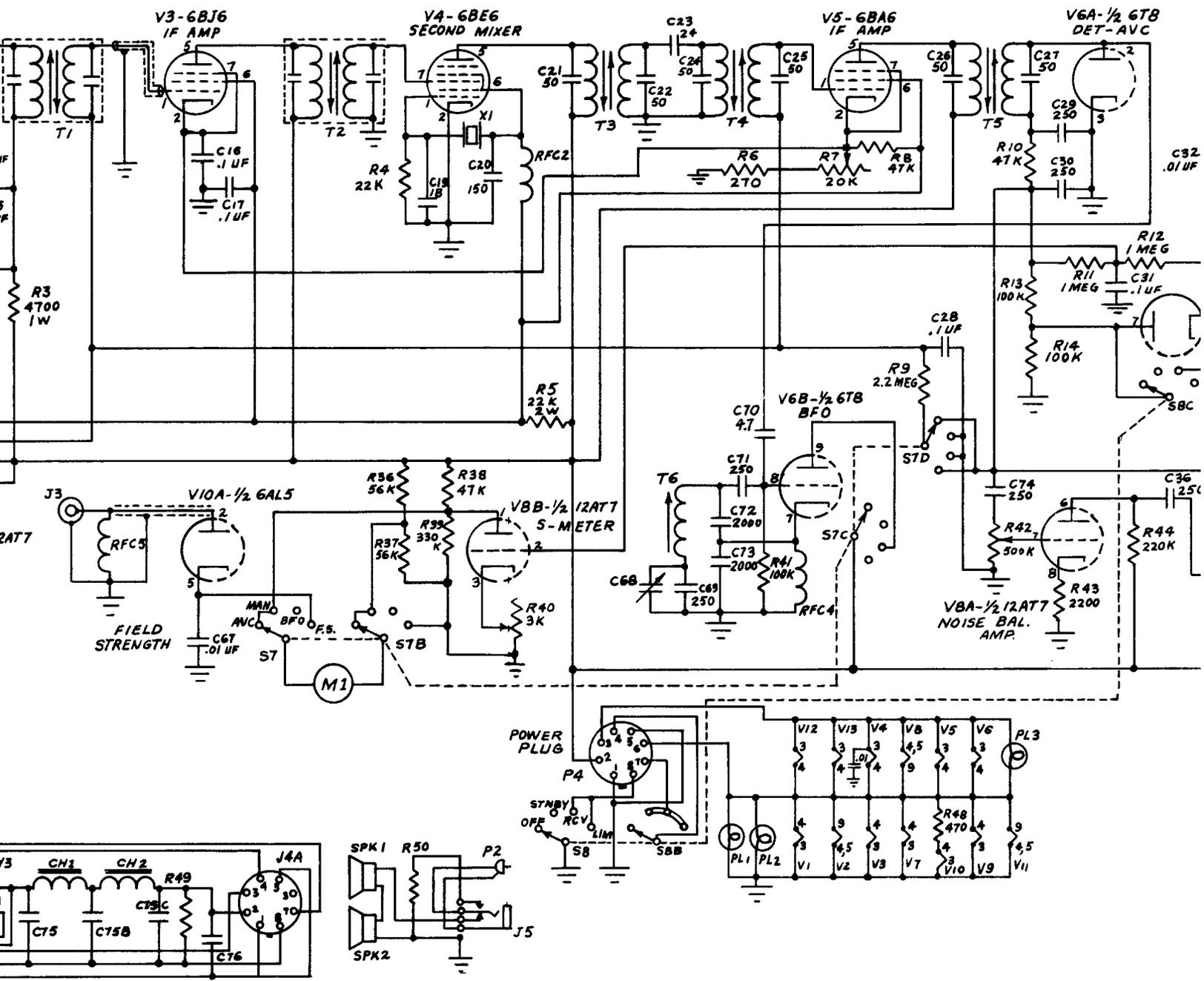
SYM.	VALUE	S.N.	SYM.	VALUE	S.N.
R1	180	302-181	C1A	RF Section Tuning	
R2	OMIT		C1B	Mixer Section Tuning	
R3	4700-1W	304-472	C1C	Osc. Section Tuning	283-301
R4	220K	302-224	C1	10 S.M.	281-405
R5	22K-2W	306-223	C2	50N330	281-107
R6	270	302-271	C3	50N330	281-107
R7	20K Pot	311-005	C4	50N330	281-107
R8	47K	302-473	C5	15N750	281-110
R9	2.2 Meg.	302-226	C6	10 SM	281-405
R10	47K	302-473	C7	50N330	281-107
R11	1 Meg.	302-106	C8	50N330	281-107
R12	1 Meg.	302-106	C9	33N330	281-103
R13	100K	302-104	C10	.01 Disc. 500V	281-306
R14	100K	302-104	C11	.01 Disc. 500V	281-306
R15	500K Pot	311-007	C12	.01 Disc. 500V	281-306
R16	470K	302-474	C13	500 SM	281-410
R17	470K	302-474	C14	6.8 NPO	281-312
R18	10K	302-103	C15	.01 Disc. 500V	281-306
R19	470K	302-474	C16	.1/200V Paper	281-605
R20	20K Pot	311-005	C17	.1/200V Paper	281-605
R21	82K-1W	304-823	C18	.01 Disc. 500V	281-306
R22	180K-1W	304-184	C19	18SM	281-412
R23	100K	302-104	C20	150 SM	281-404
R24	180K	302-184	C21	50 SM	281-411
R25	47K	302-473	C22	50 SM	281-411
R26	2200	302-222	C23	24 SM	281-400
R27	100K	302-104	C24	50 SM	281-411
R28	330K	302-334	C25	50 SM	281-411
R29	470-1W	304-471	C26	50 SM	281-411
R30	4700	302-472	C27	50 SM	281-411
R31	47K	302-474	C28	.1/200V Paper	281-605
R32	2200	302-222	C29	250 Disc. 500V	281-209
R33	180K	302-184	C30	250 Disc. 500V	281-209
R34	47K	302-474	C31	.1/200V Paper	281-605
R35	4700	302-472	C32	.01 Disc. 500V	281-306
R36	56K	302-563	C33	.01 Disc. 500V	281-306
R37	56K	302-563	C34	.25/200V Paper	281-609
R38	47K	302-473	C35	.1 200V Paper	281-605
R39	330K	302-334	C36	250 Disc 500V	281-209
R40	3K Pot	311-004	C37	.002 Disc. 500V	281-303
R41	100K	302-104	C38	.1 200V Paper	281-605
R42	500K Pot	311-007	C39	10/50V Paper	281-601
R43	2200	302-222	C40	.002 Disc. 500V	281-303
R44	220K	302-224	C41	15/25 V Paper	281-700
R45	470K	302-474	C42	.01 Disc. 500V	281-306
R46	470K	302-474	C43	.01 Disc. 500V	281-306
R47	100K	302-104	C44	15/25V Paper	281-700
R48	470	302-471	C45	.1 400V Paper	281-607
R49	25K-10W	308-023	C46	Omit	
R50	47-1W	304-470	C47	4.7 Disc. 500V	281-201

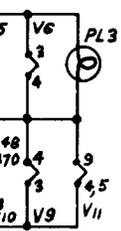
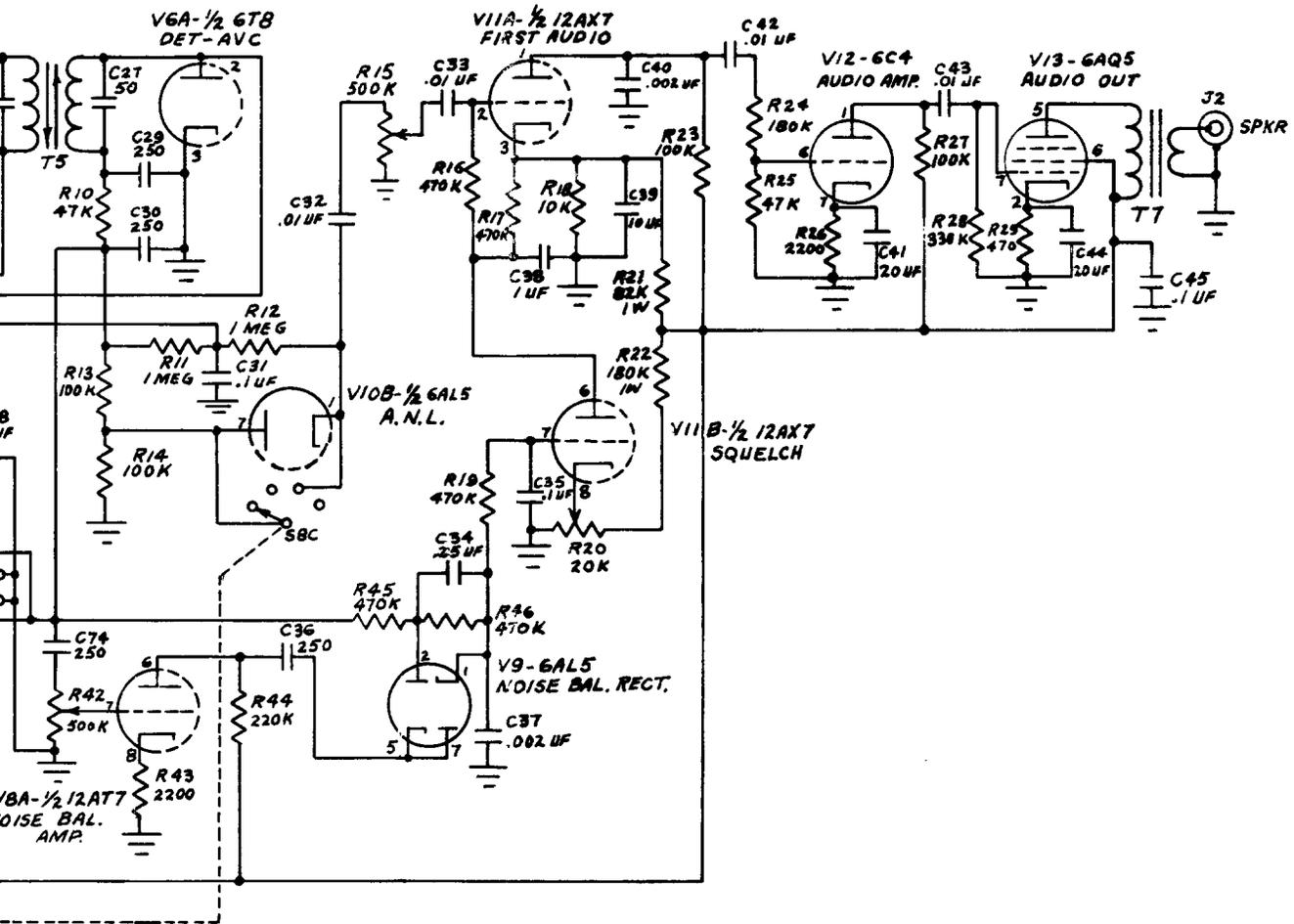
C48	NPO 5-25	281-808	L12	10 meter osc coil	108-082
C49	150 SM	281-404	L13	15 meter osc coil	108-083
C50	.01 Disc 500V	281-306	L14	20 meter osc coil	108-084
C51	.01 Disc 500V	281-306	L15	40 meter osc coil	108-085
C52	APC 15 uuf	281-811	L16	75 meter osc coil	108-086
C53	NPO 4.5-25	281-809	RFC1	OMIT	
C54	NPO 4.5-25	281-809	RFC2	460 mh choke	108-501
C55	NPO 4.5-25	281-809	RFC3	460 mh choke	108-501
C56	NPO 4.5-25	281-809	RFC4	460 mh choke	108-501
C57	NPO 4.5-25	281-809			
C58	50N150	281-112	J1	Antenna Socket	136-012
C59	50N150	281-112	J2	Speaker Socket	136-036
	83N330	281-113	J3	Field Str. Antenna	136-012
C60	50N330	281-107	J4A	Power Plug 8 Pin	136-022
	83N330	281-113	J5	Earphone Socket	134-046
C61	33N470	281-111			
	50N330	281-107	P2	Audio-in Plug	134-034
C62	15N750	281-110	P4	Power Plug 8 Pin	134-013
C63	250 SM	281-406			
C64	250SM	281-406	T1	1690 KC IF	108-509
C65	100 SM	281-403	T2	1690 KC IF	108-509
C66	.01 Disc.500V	281-306	T3	220 KC IF	108-507
C67	.01 Disc 500V	281-306	T4	220 KC IF	108-507
C68	CTIE075	281-813	T5	220 KC IF	108-507
C69	250 SM	281-406	T6	BFO Can	108-080
C70	4.7 Disc 500V	281-201	T7	5000 ohm to 3.4 ohm	120-056
C71	250 SM	281-406	T8	Power Trans.	120-112
C72	2000 SM	281-401			
C73	2000 SM	281-401	S1,2	1 pole, 5 position 3,6 shorting wafer	260-014
C74	250 Disc.500V	281-209			
C75	10-10-10 450V	283-106	S4,4B	2 pole, 5 position non-shorting wafer	260-013
C76	.01 Disc	281-306			
C77	.1-400	281-607	S5,5B	2 pole, 5 position non-shorting wafer	260-013
C78	15N750	281-110			
			S7,B,	AVC. BFO, C,D Meter Sw.	260-030 260-031
L1	10 meter ant. coil	108-092	S8	SEND RECV	260-028
L2	15 meter ant. coil	108-093	S8B	ON-OFF power Sw.	
L3	20 meter ant. coil	108-094	S8C	Noise Limiter Sw.	
L4	40 meter ant. coil	108-095	S9	Calibrator ON-OFF Switch	260-026
L5	75 meter ant coil	108-096	CH1	9 Henry 90 MA	120-055
L6	10 meter mix coil	108-087	CH2	9 Henry 90 MA	120-055
L7	15 meter mix coil	108-088	PL1	GE#47 Bulb	159-077
L8	20 meter mix coil	108-089	PL2	GE#47 Bulb	159-077
L9	40 meter mix. coil	108-090	PL3	GE#47 Bulb	159-077
L10	75 meter mix coil	108-091	M	0-1 MA Meter	189-007
L11	1670 KC trap coil	108-097			

V1	6BZ6	
V2	12AT7	
V3	6BJ6	
V4	6BE6	
V5	6BA6	
V6	6T8	
V7	6BJ6	
V8	12AT7	
V9	6AL5	
V10	6AL5	
V11	12AX7	
V12	6C4	
V13	6AQ5	
V14	5Y3	
X1	1470 KC Crystal	136-009
X2	100 KC Crystal	136-009
SPK1	3½ In. P.M. Speaker 3.5 ohm	439-518
SPK2	3½ In. P.M. Speaker 3.5 ohm	439-518









<h2>MODEL MB-6 RADIO RECEIVER</h2>	
DRAWN: DES	DATE: 12-27-57
CHECKED: NAT	No: MR35
APPROVED: W. W. W.	

S P E C I F I C A T I O N S

FREQUENCY: 3.5-4 MC - 7-7.3 MC - 14-14.4 MC
21.0 - 21.45 MC - 28 - 29.7 MC

SENSITIVITY: 1 microvolt - 20 DB Signal to Signal & Noise

SQUELCH OPENING: 1/2 microvolt

BAND WIDTH: 4 KC at 6 DB down

AUDIO POWER OUTPUT: 2.5 watts

AUDIO OUTPUT IMPEDENCE: 3.4 ohms

"S" METER: 0-9-0-40 DB

DIAL DRIVE: spring loaded gear, 22 to 1 ratio

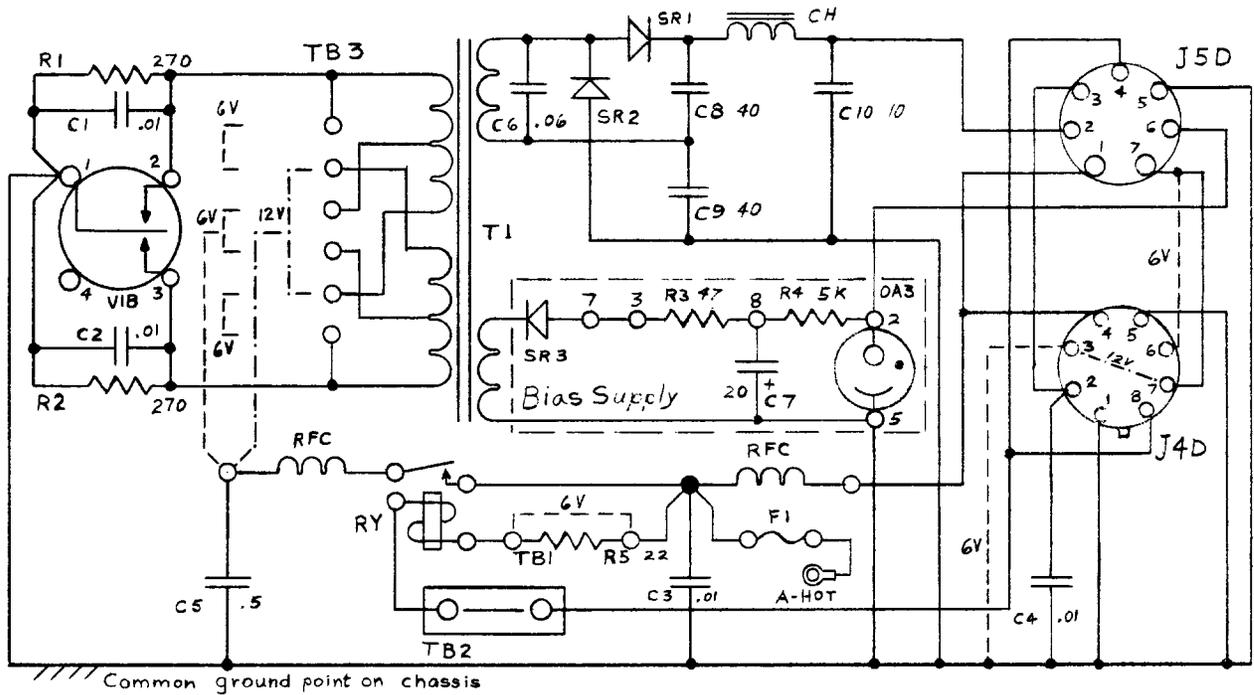
POWER REQUIREMENTS WITH D-C POWER PACK: 6 volts: 10.5 amperes
or 12 volts: 6.0 amperes 275 - D-C volts at 74 Milliamperes

POWER REQUIREMENTS WITH A-C POWER PACK: 6 volts: 4.0 amperes
or 12 volts: 6.0 amperes 275 0-C volts at 74 Milliamperes

SIZE: 4" High 7" Deep 11-3/4" Long

FINISH: Grey Hammertone Baked Enamel

VIBRATOR POWER SUPPLY MODEL RVP-260/260B INSTRUCTIONS



MODEL RVP-260 IS WITHOUT BIAS SUPPLY SECTION

NOMINAL RATING 6 or 12 V. INPUT
275 V. 100 MA OUTPUT

MODEL RVP-260B IS WITH BIAS SUPPLY SECTION

NOMINAL RATING 6 or 12 V. INPUT
275 V. 100 MA OUTPUT No.1
NEG. 75 V. BIAS OUTPUT No.2

PARTS LIST

C1,2-0.01 mfd disc 500v	R1,2-270 ohm $\frac{1}{2}$ W.
C3,4-0.01 mfd disc 500v	R3 -47 ohm $\frac{1}{2}$ W.
C5 -0.5 mfd paper 100v	R4 -5K 1 W.
C6 -0.06 mfd paper 1000v	R5 -22 ohm 2 W.
C7 -20 mfd Electro 150v	RFC -Hash Filter 108-079
C8 -40 mfd Electro 250v	RY -6V DC Relay SPST
C9 -40 mfd Electro 350v	SR1,2-Sel Rect 100 MA 160V 106-004
C10 -10 mfd Electro 350v	SR3 -Sel Rect 65 MA 135V 106-001
CH -9 Hy 90 MA choke	T1 -Transf. Vib. 120-128
F1 -15A on 6v	VIB -Vib 6 volt: Mallory 659 CD 8301
F1 -7.5A on 12v	VIB -Vib 12 volt: Mallory G659 CD G8301
J4D -8 pin socket 77-MIP-8	
J5D -7 pin socket 77-MIP-7S	
OA3 -75 volt VR tube	

MODEL RVP-260-260B INSTRUCTIONS (cont.)

- Note 1: Pins 2 to 3 must be jumpered on J5D except when the RVP-260B is used to supply exciter voltage to a transmitter. (B plus output to exciter and T-R relay on J5D #2; B plus return from T-R relay on J5D #3)
- Note 2: The jumper connections for 6 volt operation are shown in DASHED lines. The jumper connections for 12 volt operation are shown in DASH DOT lines. When changing operating voltage of the RVP-260B, the jumpers on TB1, TB3 and J4D must be changed.
- Note 3: Terminal board TB2 is provided in order that an external transmit-receive switch or relay may be used to mute the receiver. The two terminals must be jumpered when the RVP-260B is used with the MB-565 Transmitter.

J4D CONNECTIONS:

1. Ground
2. B plus 275V to Rcvr.
3. Rcvr Htr. (12V conn.)
4. Rcvr. OFF-ON Sw. input
5. Ground
6. Rcvr. Htr. (6V Conn)
7. Rcvr. OFF-ON Sw. output
8. B plus RY Keying

J5D CONNECTIONS:

1. Htr. Voltage output (Aux)
2. B plus 275V to Ex.
3. B plus Return from T-R Ry.
4. B plus RY Keying (Aux)
5. Ground
6. Bias Neg 75V
7. OFF-ON Sw. output (Aux)

STANDARD FORM WARRANTY

ADOPTED by the RADIO MANUFACTURERS ASSOCIATION, INC.

This equipment is warranted to be free from defective material and workmanship and repair or replacement will be made of any part which under normal installation, use and service discloses defect, provided the unit is delivered by the owner to the manufacturer or through the authorized radio dealer or wholesaler from whom purchased, intact, for examination, with all transportation charges prepaid to the factory, within ninety days from the date of original purchase from the dealer, and provided that such examination discloses in the manufacturer's judgement that it is thus defective.

This warranty does not extend to any radio products which have been subjected to misuse, neglect, accident, incorrect wiring, improper installation, or to use in violation of instructions furnished by the manufacturer, nor extend to units which have been repaired or altered outside of the factory, nor to cases where the serial number thereof has been removed, defaced or changed, nor to accessories used therewith of other manufacture.

Any part of a unit approved for remedy or exchange hereunder will be remedied or exchanged by the authorized radio dealer or wholesaler without charge to the owner.

This warranty is in lieu of all other warranties expressed or implied and no representative or person is authorized to assume for the manufacturer any other liability in connection with the sale of their radio products.

Morrow Radio Mfg. Co. reserves the right to make any changes in design or to make addition to, or improvements in, its products without imposing any obligations upon itself to install them in its products previously manufactured.