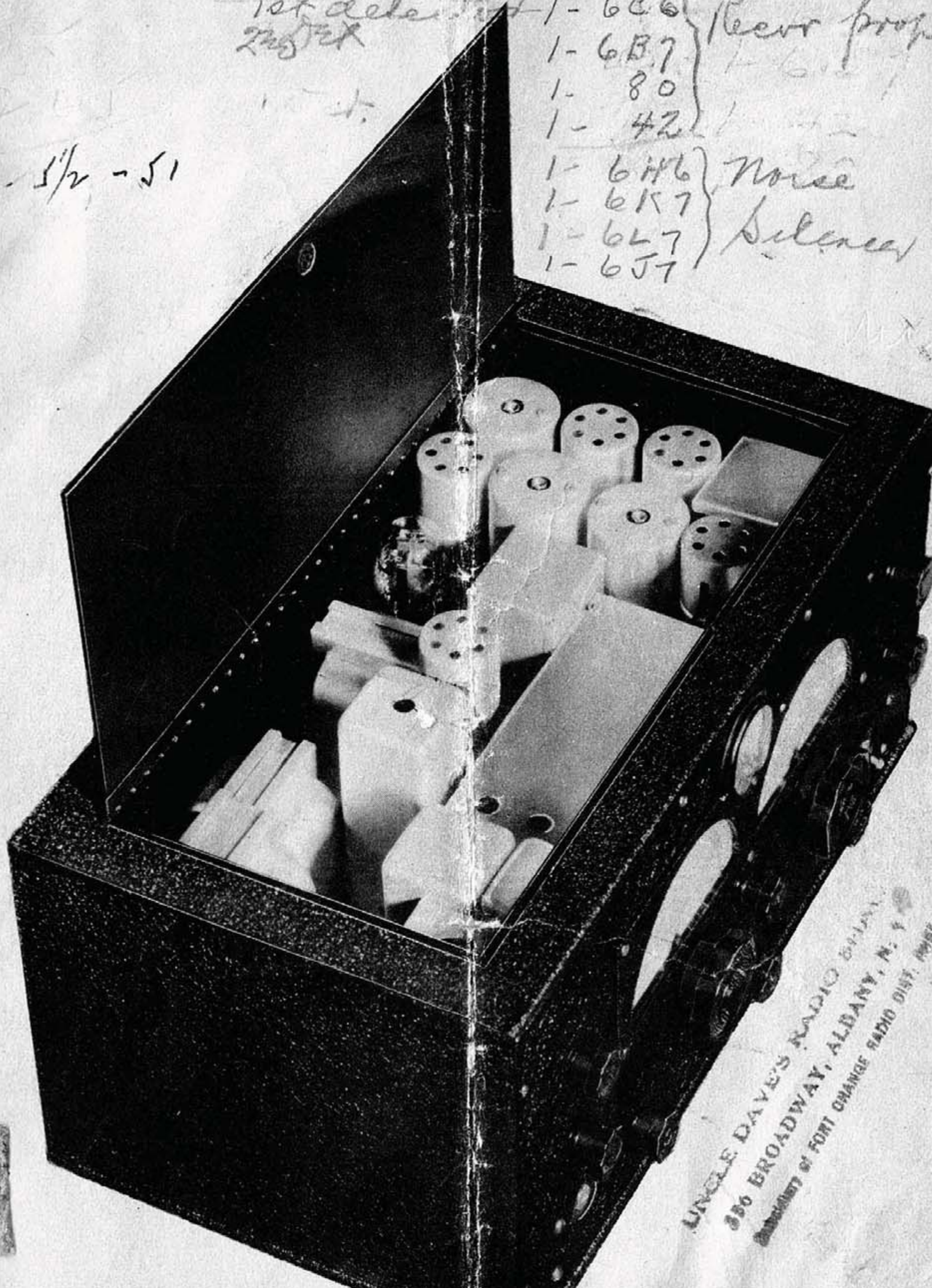
R7
Het Osc

3 6D6
1- 6C6
1- 6B7
1- 80
1- 42
Recvr proper

-3- 5½ -51

1- 6H6
1- 6K7
1- 6L7
1- 6J7
Noise Silencer



UNCLE DAVE'S RADIO SHA...
356 BROADWAY, ALBANY, N. Y.
Subsidiary of FORT ORANGE RADIO DIST. CORP.

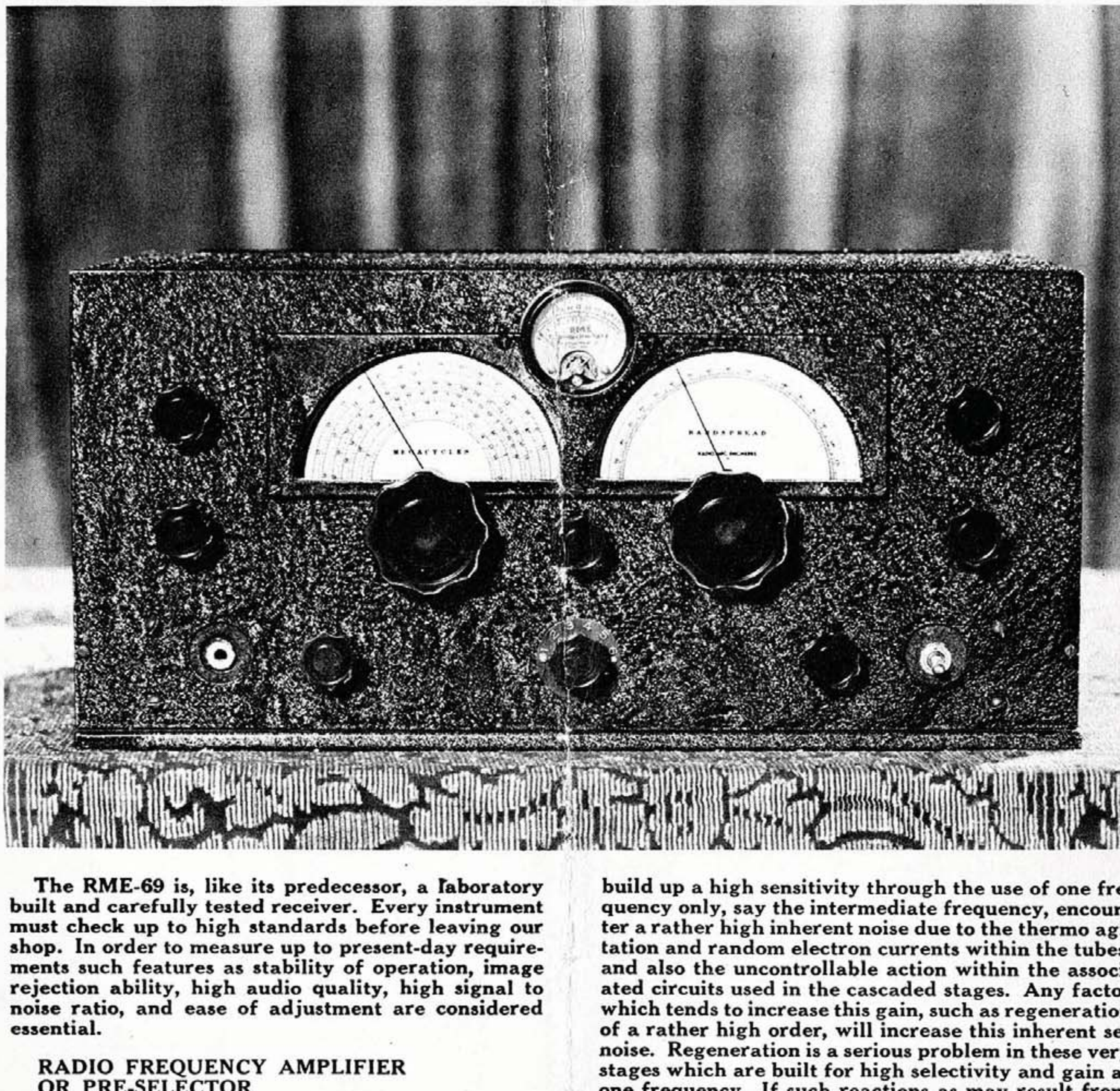
J. S. Robinson

PRICE 10c

RME-69

RME-69 SINGLE SIGNAL SUPER

FREQUENCY RANGE 550 KC TO 32000 KC



The RME-69 is, like its predecessor, a laboratory built and carefully tested receiver. Every instrument must check up to high standards before leaving our shop. In order to measure up to present-day requirements such features as stability of operation, image rejection ability, high audio quality, high signal to noise ratio, and ease of adjustment are considered essential.

RADIO FREQUENCY AMPLIFIER OR PRE-SELECTOR

The radio frequency amplifier stage which precedes the first detector stage in a superheterodyne receiver must be recognized as important. It forms a necessary and complete element in a properly designed high frequency receiver. The incorporation of a radio frequency stage in the RME-69 as an integral part of the complete instrument was decided upon, even to the exclusion of the practice of building a separate unit for connection to the receiver, primarily because of the efficiency which may be obtained by bringing these circuits in proper relation to each other and also to minimize the number and complexity of tuning controls.

A radio frequency amplifier ahead of the first detector solves two important problems: first, it builds up a high ratio of received signal to noise intensity; and second, it reduces the image frequency response to a minimum. Receivers which attempt to build up a high sensitivity through the use of one frequency only, say the intermediate frequency, encounter a rather high inherent noise due to the thermo agitation and random electron currents within the tubes, and also the uncontrollable action within the associated circuits used in the cascaded stages. Any factor which tends to increase this gain, such as regeneration of a rather high order, will increase this inherent set noise. Regeneration is a serious problem in these very stages which are built for high selectivity and gain at one frequency. If such reactions as may result from either electro-static, electro-magnetic, or other coupling, or a combination of these, are found in a receiver it becomes unstable and breaks into oscillations readily. Such conditions tend to lower the amplification and naturally must be avoided. Too much gain at any one frequency sets up an undesirable circle of causes and effects, and defeat every purpose aimed at. For this reason the incorporation of a well designed radio frequency stage in a receiver allows the use of a somewhat lower gain in the intermediate frequency unit and consequently reduces materially the difficulties so often encountered in other methods of design. By building up the received signal before detection, namely in the pre-selector stage, sufficient amplitude is obtained to override any receiver back-ground noise when it is operating at maximum sensitivity. By thus dividing the gain in the receiver between the radio frequency and the intermediate frequency stages we obtain a condition which permits not only a very high

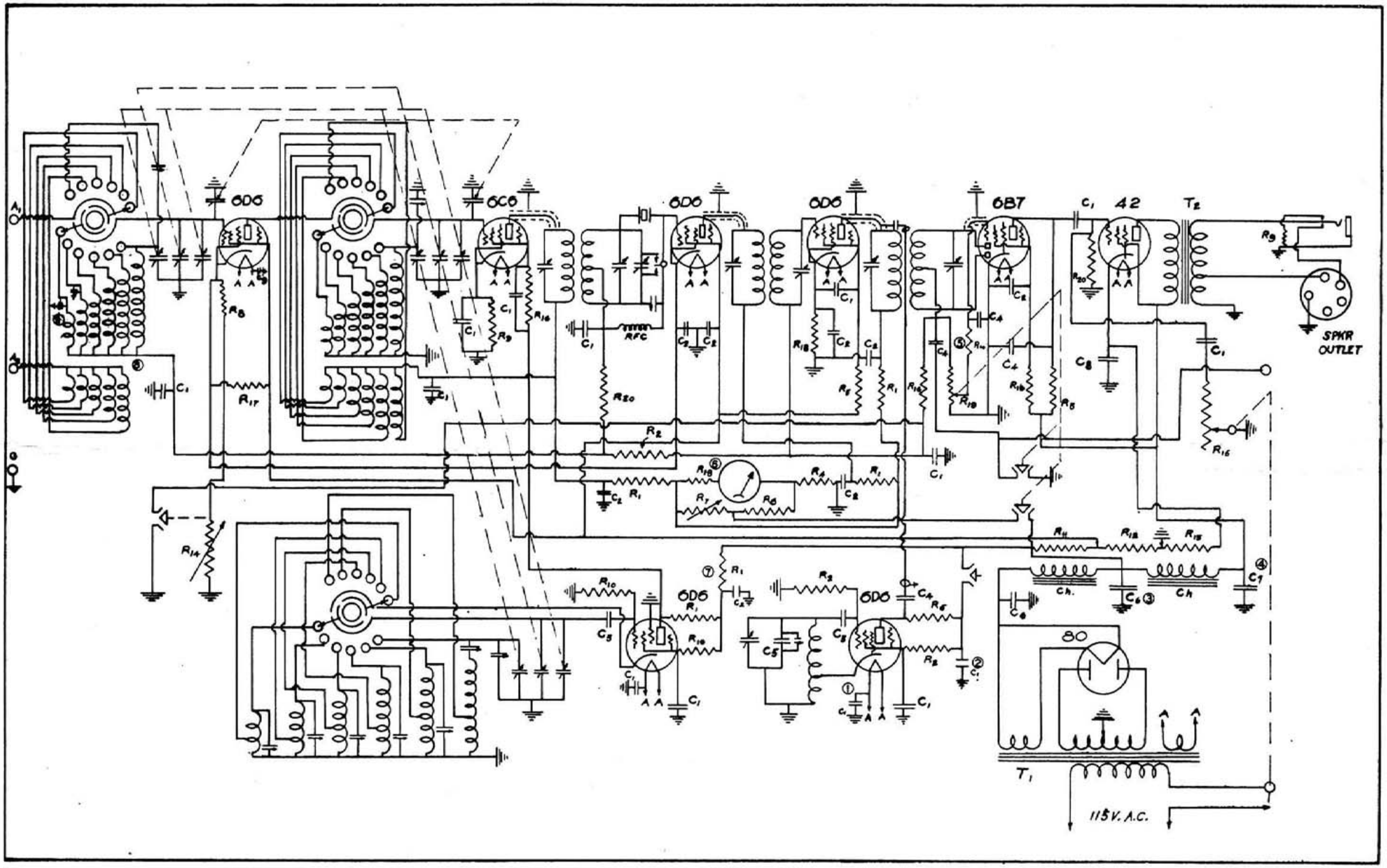


Fig. 2. Circuit diagram of the RME-69 Single Signal Super.

RME-69 SINGLE SIGNAL SUPER

FREQUENCY RANGE 550 KC TO 32000 KC

gain but also a very low back-ground noise.

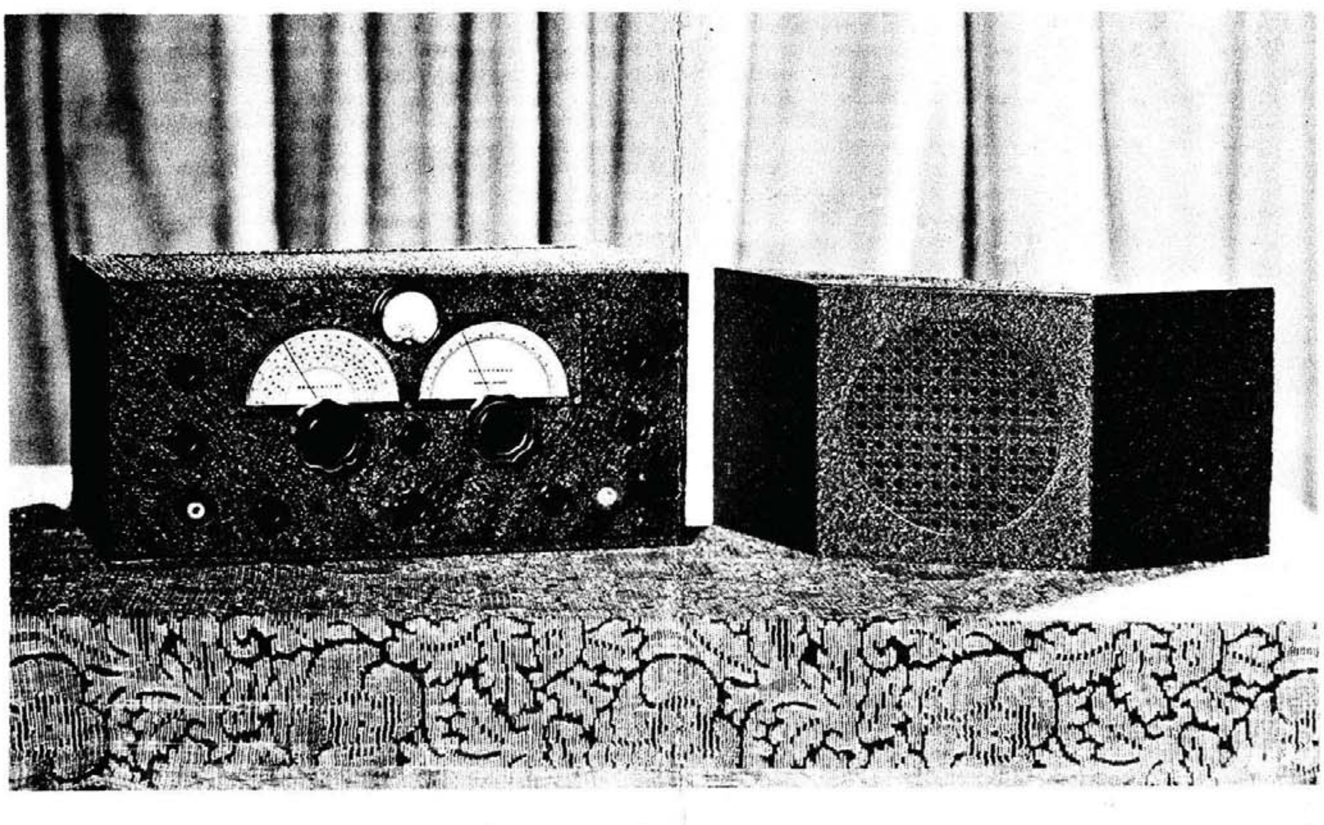
The other very important factor for wanting a radio frequency stage in a high class receiver is the rejection ability of image signal response. Many high frequency receivers are made practically useless through interference encountered because of image pick-up on these high frequencies. Nothing which can be done to a receiver following the first detector, with the exception of increasing the chosen frequency of the intermediate stages, will alter the ability of a receiver to reject image signals. The problem thus resolves itself into one of so designing the radio frequency amplifier stage that its selective characteristic be adequate in coping with image interference. A rather high gain is also desired. In the radio frequency amplifier of the RME-69 this gain is unusually high even at 15 megacycles. The image frequency ratio is of the order of 200 to 1 at 15 MC. 6D6 type tube is used for the radio frequency stage providing a gain of from 6 to 15 over the entire frequency range covered by the receiver. Additional voltage boosting is obtained through the resonant rise ratio in the antenna to grid input circuit. The radio frequency inductors, nine in all, separately shielded and rigidly mounted, have been designed with a great deal of care and consequently have a high degree of efficiency. The resultant low power factors are conducive to good selectivity in the radio frequency amplifier, which fact is of much importance in the suppression of image frequency response.

SELECTIVITY

Selectivity is a term which expresses the relation between wanted and unwanted signals going through a receiver. Referring to Fig. 3, this term may be defined as the width of the resonance curve of the receiver at a certain signal amplitude, expressed as a ratio, to the sensitivity of the receiver. We observe from the diagram that the steeper the curve the better the ratio of the impressed to the resonant signal amplitude. Selectivity depends upon several factors to be chosen by the designer of the receiver. In a superheterodyne most of the high frequency selectivity is to be found in the intermediate frequency stages. It is for this reason that superheterodynes have become the most used type of radio receiver. The question of: what intermediate frequency is best suited for the receiver being designed depends primarily upon

1. What frequency gives a high degree of selectivity;
2. Which frequency provides a high signal to image ratio.

We have noted that a pre-selector stage is a necessary part of a well designed superheterodyne because it gives a high signal to image ratio. In choosing the intermediate frequency the signal to image ratio is still farther increased as the IF frequency increases, but the sensitivity of a set is improved as the intermediate frequency is decreased. Obviously some compromise must be made and a frequency chosen which gives all-around good performance. Experimental tests have shown that maximum results from a high frequency receiver, designed to tune to the range of frequencies chosen for the RME-69, are obtained with an intermediate frequency between 450 KC and 500 KC. Assuming a very efficient intermediate transformer, an IF of 465 KC gives all-around excellent results. IF transformers must be built accurately in order to obtain the desired results. In the RME-69 Super these IF transformers are built in our own laboratories and from the curve, Fig. 3, which represents the selectivity of the IF stages only, it will be noted that a



RME-69 SINGLE SIGNAL SUPER

FREQUENCY RANGE 550 KC TO 32000 KC

resonance characteristic of 35 KC wide is obtained, when the signal amplitude is 10,000 times resonant value. The transformers have coupling coefficients of .8% and are honey-comb wound of 10/41 Litz wire. Their "Q" value, namely Lw/R, is considered excellent in every respect. The trimmer condensers used in connection with these coils are built on exceptionally heavy and sturdy isolantite forms and give stable and permanent operation. Special compression type mica units, in which the spring tension is provided for by double edged bearings, make them very positive in their adjustments. All of our tests and their use by those who own the RME-69 Super, have shown conclusively that humidity and temperature effects do not disturb them. Because of their unique type of construction they will withstand more vibration and jarring than any other type used to date. All adjustments on the IF trimmers are made from the top of the receiver. The **RME-69** uses three of these transformers in the two stages.

CRYSTAL FILTER UNIT

For extreme interference conditions the use of a quartz filter for knife-edge selectivity is essential: The circuit, Figure 4, employed in the **RME-69** receiver adequately provides for such selectivity. In using the filter for the reception of CW signals it is possible to copy stations 100% through heavy QRM when ordinary reception would fail utterly. The effective band width, using a quartz filter in the series position, sharpens down to 50 cycles or less, depending upon adjustments; and when used normally in this series position is suitable only for single frequency reception, namely, an unmodulated carrier with steady note. To one who

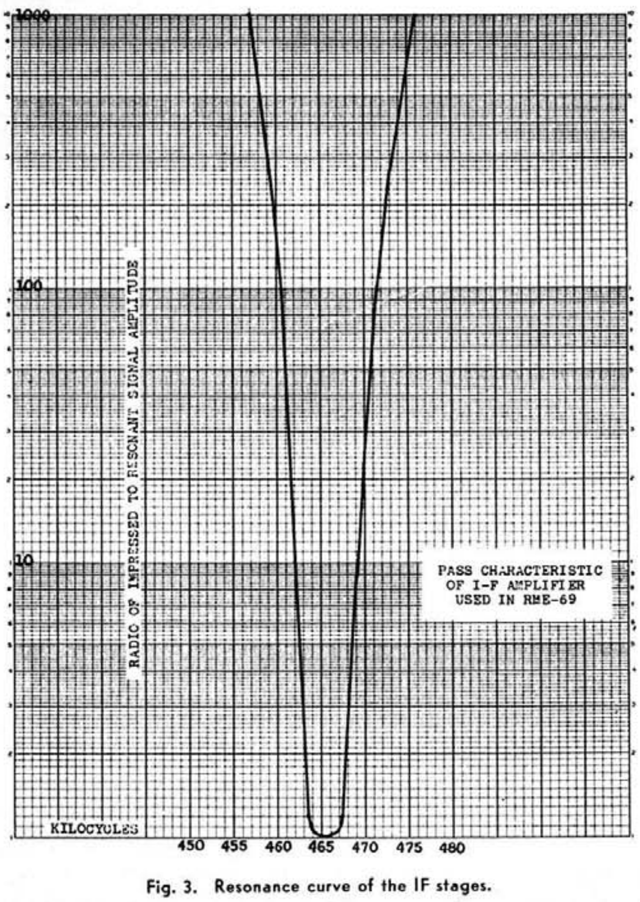


Fig. 3. Resonance curve of the IF stages.

never has used a quartz filter the use of this device is a revelation. With the provision of an added control on the RME-69 (Fig. 5, E) it is possible to utilize the

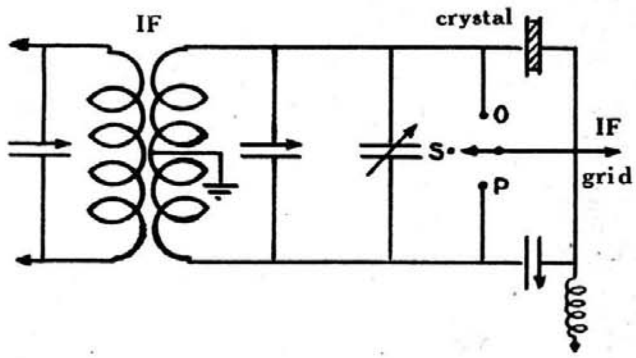


Fig. 4. Circuit of the three position quartz crystal filter.

crystal circuit quite satisfactorily for the reception of modulated carriers, voice in particular. This added selectivity control on the front panel makes possible the broadening out of the resonance characteristic of the crystal circuit for intelligible phone reception and thus eliminates a great deal of interference otherwise caused by stations very close in frequency. On varying the control, either a reactive or a resistive circuit is produced, thus dampening the crystal to somewhat broaden the resonance characteristic. Since the intermediate frequency is 465 KC, the crystal frequency naturally must correspond to the same value. Any variation found in either of these two cases cannot be tolerated. For this reason it is preferable to have the IF transformer adjustments made to coincide with the particular crystal being used with the receiver. Consequently the crystal is furnished as part of each instrument. The particular use of a variable control for the purpose of changing the resonance condition of a crystal has been demonstrated repeatedly and it is very evident that a quartz filter with such an adjustment provided is invaluable for phone reception as well as for CW work. A switch control on the panel (Fig. 5, B) allows the use of the crystal in either an "off", "series", or "parallel" position. In the parallel position a crystal filter serves to remove bothersome heterodynes. In the "off" position the filter is removed entirely from the circuit and normal IF selectivity is used for general reception.

SENSITIVITY

The sensitivity to be used in a receiver cannot be an arbitrary value. In every instance the absolute sensitivity required or usable is dictated by the receiving conditions existing at the particular time and locality. At times a sensitivity of ½ microvolt may be usable. At other times this value may be greater or less depending largely upon the atmospheric and other noise levels. The **RME-69** Super has a maximum sensitivity falling below one microvolt absolute. For those not familiar with the method of expressing sensitivity, the definition is quoted as follows: When given a sensitivity of one microvolt, a receiver can produce an audio output of 50 milliwatts assuming a 30% modulated carrier, having a radio frequency voltage of one-millionth of a volt impressed on the antenna. To attempt to increase tne sensitivity beyond this point has consistenly been shown to be of no practical value. This extreme sensitivity found in the **RME-69** is smoothly handled by means of the automatic volume control circuit embodied in the receiver. Any desired

RME-69 SINGLE SIGNAL SUPER

FREQUENCY RANGE 550 KC TO 32000 KC

volume level can be obtained and maintained through the setting of the volume control adjustment on the panel (Fig. 5, H). Manual control is provided for when control (Fig. 5, F) is turned on. The beat oscillator control (Fig. 5, C) is on the front of the panel and may be adjusted for the most desirable position, depending on the character and quality of the carrier signal tuned to. With the added use of the quartz filter for single signal reception it is possible to use the added degree of sensitivity previously referred to and illustrated, since the pass characteristic of this mechanical filter is so sharply defined that only a very narrow band of frequencies is permitted to operate the IF amplifier. This will naturally exclude the greater bulk of such spurious frequencies from the RME-69 receiver which contribute almost exclusively to producing so much hiss and bothersome background noise. CW reception is made a real pleasure with the RME-69 Super Single Signal Receiver.

BAND-SPREAD ARRANGEMENT REPLACES PLUG-IN COILS

Plug-in coils have been discarded in the RME-69 receiver. They are not as efficient and do not meet the demands of present day requirements. Their constant handling, corrosion of contacts in vital parts of the circuit, and their consumption of time in making quick changes have made them no longer desirable. The built-in coil arrangement, with wiping silvered contacts on all of the switches, assures the same high accuracy and precision as obtained in other quality instruments. With a permanent coil assembly, adequately and permanently shielded, with every unit designed and built into an efficient and compact system, the RME-69 receiver has become a pace-setter in the adaptation of switching from one frequency band to another. All of the tuning circuits are ganged together and very rigidly mounted. The operation of one single control (Fig. 5, G) accomplishes the tuning over the total range of frequencies from 550 KC to 32,000 KC. And the losses due to this type of construction are considerably lower than can be accomplished with any system of plug-in coil arrangement ever devised.

By means of a six position band selector switch on the front panel of the receiver (Fig. 5, H) any frequency band may be selected instantly. The following tabulation gives the range of each position setting of the knob:

Position 1	550 KC	to	1500 KC
Position 2	1400 KC	to	3100 KC
Position 3	3000 KC	to	6800 KC
Position 4	6200 KC	to	13000 KC
Position 5	12000 KC	to	20000 KC
Position 6	17000 KC	to	32000 KC

A novel circuit arrangement allows the use of high ratio L/C circuits throughout the frequency range, in order to provide high gain and consequent greater reduction in the possibility of image frequency interference. This is accomplished by the use of a ganged split stator variable tuning condenser, permitting only part of the total capacity to be used for covering the high frequency ranges. The selection of any particular section is automatically obtained when the band selector switch is operated.

Band-spread tuning is continuous over the entire range of frequencies. In tuning with the band spread dial ALL of the high frequency circuits are adjusted as a unit instead of tuning only the oscillator, as is so often the case in other circuit arrangements. This method allows the receiver to operate at peak response at all times. An idea of the band-spread latitude may be obtained from the fact that the amateur band beween 3500 KC and 4000 KC covers the entire 180° of the band-spread scale, amounting to an actual pointer travel of 7.85 inches. The regular tuning dial is calibrated accurately in megacycles which is an unusual feature in a receiver of this type. Accurate logging of stations is provided for at all times.

Four of the amateur bands, namely, 160 m., 80 m., 40 m., and 20 m., have their tuning range closely grouped in their respective angular positions on the main tuning dial so that they may be tuned to at random by only slight adjustments of the main tuning dial whenever shifting from band to band. The 28 mc. band is displaced somewhat from this grouping but is easily and quickly tuned to with a few turns of the main tuning dial.

The dial actions are positive and can be set with the same degree of accuracy on the very high frequencies as is possible on the lower range.

Due to the flexible nature of the band-spread device in the RME-69, band-spread tuning is not limited to any pre-determined tuning range. Band-spread can be utilized at any desired point without changing the circuits of the receiver in any way—that is, there is no need for changing the characteristics of any coils or condensers in order to use the band-spread. It is a constant feature ready for use at any time by merely tuning the band-spread tuning dial.

THE RESONATOR CONTROL

In order to have accurate alignment for wide range tracking in the RME-69 receiver a small gang trimmer is provided. Very little adjustment is found necessary for any one band. This trimmer serves as a resonator for the high frequency RF circuits. Simplicity of construction and stability of operation determined the use of this small gang condenser for trimming the RF circuits. Its variation in no way throws the tuning control out of adjustment. Its adaptation eliminates all of the grief found in the use of a multiplicity of fixed trimmer condensers, which are usually inaccessible and always difficult to keep in exact balance. The resonator is set for any one tap and can be left in this position for the entire range.

THE MONITOR CIRCUIT

An additional feature of the RME-69 Super is the incorporation of a novel modulation monitor for the purpose of judging the quality of the audio equipment in a phone transmitter. No additional separate control knob is provided for operating this device. By merely pulling out on the automatic volume control knob (Fig. 5, H), until it snaps into the monitor position, a linear rectifier is inserted in the circuit to demodulate the strong signal of the transmitter near the receiver. The audio potential thus obtained is fed to the regular audio frequncy amplifier of the receiver. The volume level of the monitor is adjusted by the rotation of the automatic volume control knob. While this is being done the receiving circuit amplifiers ahead of the second detector have been suppressed by removing the potential from the plate circuits.

A small terminal post on the rear apron of the chassis near the regular antenna and ground terminals is used to feed the required amount of radio frequency energy into the monitor circuit from the transmitter. The length of the short antenna or pick-up wire to be connected depends on the power of the transmitter and also upon the proximity of the transmitter to be monitored. For rather high-powered stations and

RME-69 SINGLE SIGNAL SUPER

FREQUENCY RANGE 550 KC TO 32000 KC

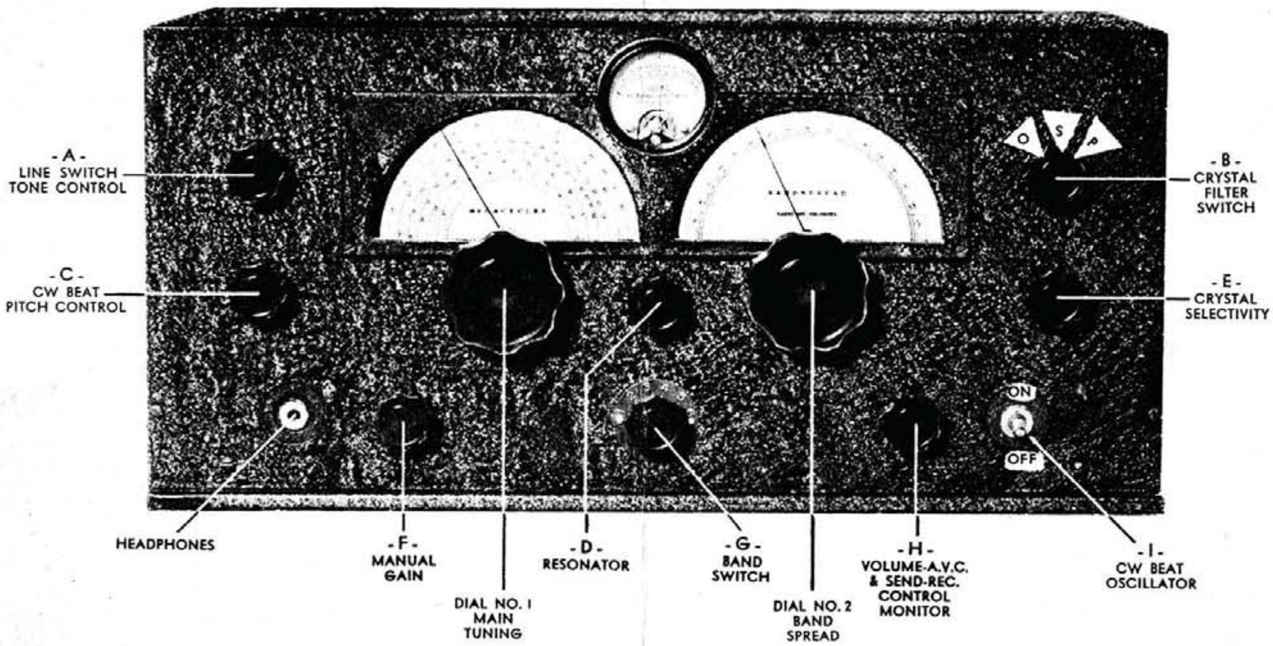


Fig. 5. Front panel schematic layout of the RME-69.

where the receiver and transmitter are rather close together, a few feet of wire may be sufficient. For other circumstances a longer wire may be necessary. Sometimes it is advisable to fasten a small piece of wire to this terminal and run it together with the receiving antenna lead for a few inches. In all cases the amount of wire paralleling the antenna lead will be determined by the pick-up obtained. In one instance, during the testing of this unit, a 750 watt transmitter was located 12 feet from the receiver. The monitor antenna lead was short and laced tightly to the main antenna lead for a distance of three inches. This proved sufficient for monitoring the transmitter being used. For best results, when using the arrangement just mentioned, the band selector switch knob is set in position ONE (broadcast band), in order to reduce the load on the antenna and increase the signal potential therein, which is the case when the transmitter frequency is high, say 14 megacycles. When using a separate antenna or feed wire to the monitor antenna terminal, such adjustment of the frequency band selector knob has no beneficial effects. The monitor has but one control, namely the volume level adjustment. Consequently a modulated carrier of any frequency can be listened to. For CW monitoring, all that is necessary is to turn on the audio beat oscillator together with the manual volume control and pick up the beat note of the transmitter frequency. In this way the CW signals of the transmitter may be monitored for steadiness of tone and quality.

R-METER INDICATING CARRIER LEVELS

The meter on the front of the panel is used to indicate the amplitude of the received carrier. It is arbitrarily calibrated in R units and also in decidels . The quantitative definition for an R unit is not known and at present varies greatly with every operator and every receiver. For instance, with a receiver giving full output when 500 microvolts are impressed on the antenna circuit, an R-9 report will mean one thing. Something entirely different is meant when an operator, whose receiver only requires 100 microvolts on the antenna for his receiver, reports an R-9. In the RME-69 Super the term "R-9" indicates a carrier, which when modulated 30% will give full speaker output of 3 watts. This will correspond to a signal strength of 100 microvolts at the antenna (approximately), differing somewhat for the various bands used. With a lower value of carrier amplitude, modulated 90%, R-9 results may also be obtained. In the RME-69 Super receiver ONLY THE CARRIER STRENGTH is indicated by the R-meter. The audibility is then determined by the modulation factor. If, for instance, a carrier of 33.3 microvolts, modulated 90%, is picked up, the audio effect in the receiver will be the same as picking up a 100 microvolt carrier modulated 30%. Thus, judging R values from the audio output is not a suitable method of observing the received signal. The CARRIER AMPLITUDE is the quantity to be measured. The "QSA" factor can be used to apply to the audio output. This factor refers to the intelligibility and the relative degree of modulation, in other words, quality and quantity of audio signal.

The above discussion has been entirely with reference to phone reception and transmission. For CW reception the automatic volume control is not used. The automatic operation of the R-meter is thus suppressed, since it is not required. However, any variation of the manual volume control to decrease the receiver gain will increase the R-meter reading. When the manual volume control is rotated clockwise to decrease gain to a point where the signal can just be clearly and satisfactorily read, the R value of that signal is indicated by the final position of rest of the R-meter.

Operating example: Suppose we wish to use the receiver for CW reception. If the beat oscillator is not

RME-69 SINGLE SIGNAL SUPER

FREQUENCY RANGE 550 KC TO 32000 KC

used at first and sufficient ripple modulation is found on the carrier to make it distinguishable, the signal may be tuned to in the regular phone manner. In this case, with the beat oscillator off, the automatic volume control is functioning, and the R-meter shifts back and forth attempting to indicate the carrier level. However, the R-meter mechanism has a certain maximum fluctuation period far below the rapidly varying carrier amplitude of a keyed transmitter. Consequently, for even slow telegraphy the meter could not indicate any readable, accurate carrier amplitude, since its mechanism would not allow it to keep in step with the keyed carrier. If the carrier is on steady for any period of time in order to give the R-meter an opportunity to come to rest a true indication of the carrier strength is measured.

Not only for better amplitude measurement of the CW signal, but also for readability, the beat oscillator should be turned on. The keyed signal thus receives a more pure and steady note—the quality naturally depending principally upon the purity of the plate supply at the transmitter end. Rotating the manual control knob to the position where the receiver output is low, the regular level control knob (Fig. 5, H) turned to maximum clockwise position, the meter will indicate a certain value, indicative of the received signal. A very convenient and reliable method of judging CW signal strength is consequently provided.

GENERAL

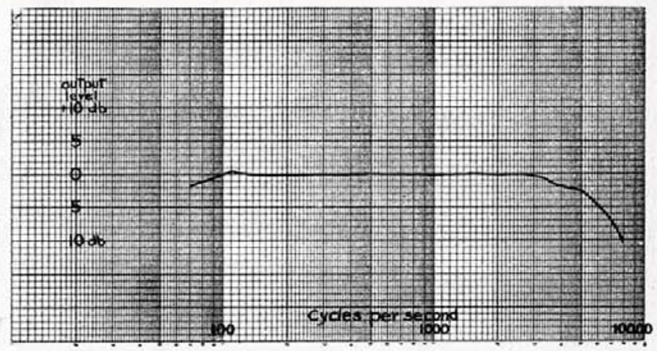
The RME-69 Single Signal Super receiver has incorporated all these mentioned features as not only desirable but rather as necessary requirements in all receiving stations where an operator wishes to do reliable communication work. In this day of expert operating, when the amateur and professional operator alike demand complete control of their reception equipment, such devices as the signal strength meter and the monitor circuit are invaluable and their absence usually conducive to uncertain operation.

All control elements are on the operating panel and are at the operator's finger tips. These controls are shown diagramatically in Figure 5.

The heterodyne oscillator as well as the tone beat oscillator are electronic coupled, thus avoiding in general operation the undesirable effects of wide variations in the voltage of the AC line to which the receiver is connected. The heterodyne oscillator is coupled into the first detector through the screen grid circuit. With this design no interlocking effects occur even at frequencies as high as 20 megacycles. The high-frequency oscillator and signal tuning circuits are entirely enclosed in an aluminum catacomb which provides a maximum of shielding and stability. The first detector is a 6C6 type tube and is used because of its exceptional conversion efficiency at low signal amplitudes. The heterodyne oscillator is a 6D6 type tube and the beat oscillator a 6D6 tube.

The second detector utilizes the diode elements of a 6B7 tube for full wave diode detection in a circuit designed to give high fidelity at high percentages of modulation. The rectified diode current is used also to automatically control the gain of the receiver. The tetrode elements of the second detector tube are used to resistance couple the demodulated carrier into a 42 output tube. The load circuit of this output tube is coupled to the tube through a special high-fidelity output transformer, having a 4000 ohm and 600 ohm output. A jack is provided to automatically disconnect the 4000 ohm speaker load when the headphones are inserted.

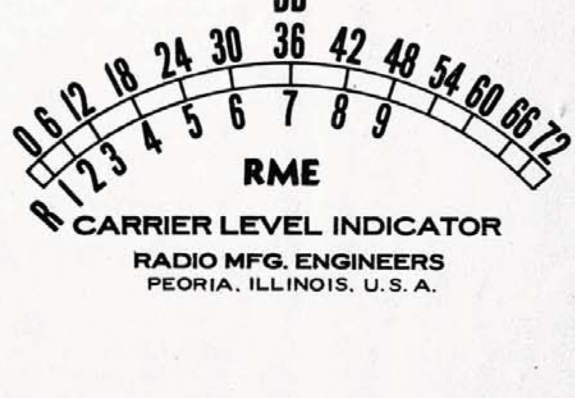
The power supply for the receiver is an integral part of the whole unit. With the exception of the speaker the receiver is complete in one cabinet. To



Overall Audio Frequency Response Characteristics

insure against climatic effects under every condition to be met, the metal elements are all aluminum or zinc alloy, with the exception of the transformer components. The receiver is housed in a well ventilated cabinet of furniture steel, with a fine coat of black crinkle finish baked on. Output connections as well as antenna input connections are in the rear of the cabinet and easily accessible. Head phone jack is on the front panel.

A solid, cast aluminum frame has been chosen for the chassis in order to insure absolute rigidity and continued alignment for various circuit elements. This has been found to be one of the most important features in the construction of the RME-69. Other parts of the chassis utilize a cadmium plated steel mounting plate and similar parts for shielding. Differences of ground potentials of the order of 10 microvolts were found to exist between input and output of circuits even with the most accurate type of construction, due to choice of metals and random ground connections. These had to be totally eliminated and precautions established to prevent their occurrence during the life of the receiver. Consequently the choice of shielding metals and the ground connections to the chassis had to be made carefully.



The calibrated R-meter and decidel scale of the RME-69.

RME-69 SINGLE SIGNAL SUPER

FREQUENCY RANGE 550 KC TO 32000 KC

	List	Net
The RME-69 Single Signal Super Receiver, complete with furniture steel cabinet, black crinkle finish, with Bliley BC-3 crystal (465 KC) 110 volt, 60 cycle	$198.00	$118.80
Same as above, but for 25-60 cycle operation and for voltages of either 110, 125, 220, or primary	208.00	124.80
The RME-69 Single Signal Super Receiver, complete with furniture steel cabinet, black crinkle finish, with Bliley BC-3 crystal (465 KC) battery model	198.00	118.80
Same as above, but for combination of either 110 volt, 60 cycle operation, or battery operation	228.00	136.80
Complete set of nine tubes, Hygrade-Sylvania, 5—6D6, 1—6C6, 1—6B7, 1—42, 1—80	9.25	5.00
Rola permanent magnet dynamic speaker, 8″ diameter, dust proof model, speaker cord attached, housed in crinkle finish steel cabinet	18.50	11.10
Same as above, but without baffle cabinet	12.75	7.65
Speaker baffle cabinet, black crinkle finish	5.75	3.45
The RME-69 Super Receiver, complete with crystal, set of tubes, 8″ Rola speaker housed in baffle, black crinkle finish. Nothing else to buy	225.75	134.90
The RME-69 Super Receiver, complete with crystal, set of tubes, mounted on 19″ x 8¾″ x 3/16″ aluminum panel, either in satin aluminum or black crinkle finish	213.25	~~127.95~~ 127.40
Protecting shield cover for above, matched finish. Size 6½″ x 10″ x 17½″	13.50	8.10
Rola permanent magnet dynamic speaker, 8″ diameter, dust proof model, mounted on 19″x8¾″x3/16″ aluminum panel, either in satin aluminum or black crinkle finish	27.75	16.65

	List	Net
RME-69 furniture steel cabinet, black crinkle finish. Standard	$ 10.00	$ 6.00
Special finishes made to order. Add	5.00	3.00
RME-69 Super Receiver equipped with extra pair of binding posts on rear of chassis apron and wired to open B-supply circuit when working break-in. Add	2.00	1.20
RME-69 Super Receiver equipped with extra pair of binding posts on rear of chassis apron and special relay control contacts provided on monitor switch for special break-in operation to control transmitter. Add	4.50	2.70
ACCESSORIES:		
LS-1 Noise silencer, specifically designed to fit into the present RME-69 Receiver. Complete with four metal tubes—6L7, 6J7, 6K7, 6H6	19.00	11.40
LS-1 Noise silencer. Less tubes	12.00	7.20
LS-2 Noise silencer, contained in black crinkle finish cabinet, 5″ wide, 9″ high, 7″ deep, adaptable to practically any receiver. Complete with three metal tubes, 6L7, 6J7, 6H6	25.60	15.36
LS-2 Noise silencer. Less tubes	20.35	12.21
OA-1 Oscilloscope amplifier, providing means whereby a standard cathode ray oscilloscope may be connected to the RME-69 Receiver for visual monitoring of signals. Black crinkle cabinet; including 6D6 tube	13.50	8.10
Relay rack frame. 19⅛″ wide, 17¾″ high, 10¾″ deep, to house the standard RME-69 relay rack model receiver. Finished in black crinkle	11.50	6.90

ALL PRICES SUBJECT TO CHANGE WITHOUT PRIOR NOTICE

Changes desired in the RME-69 Receiver, such as special band-spread provision, special finishes, special rack installations, etc., may be had on request. Write for prices relative to such changes desired. We make every effort to comply with the wishes of the customer.

151.90

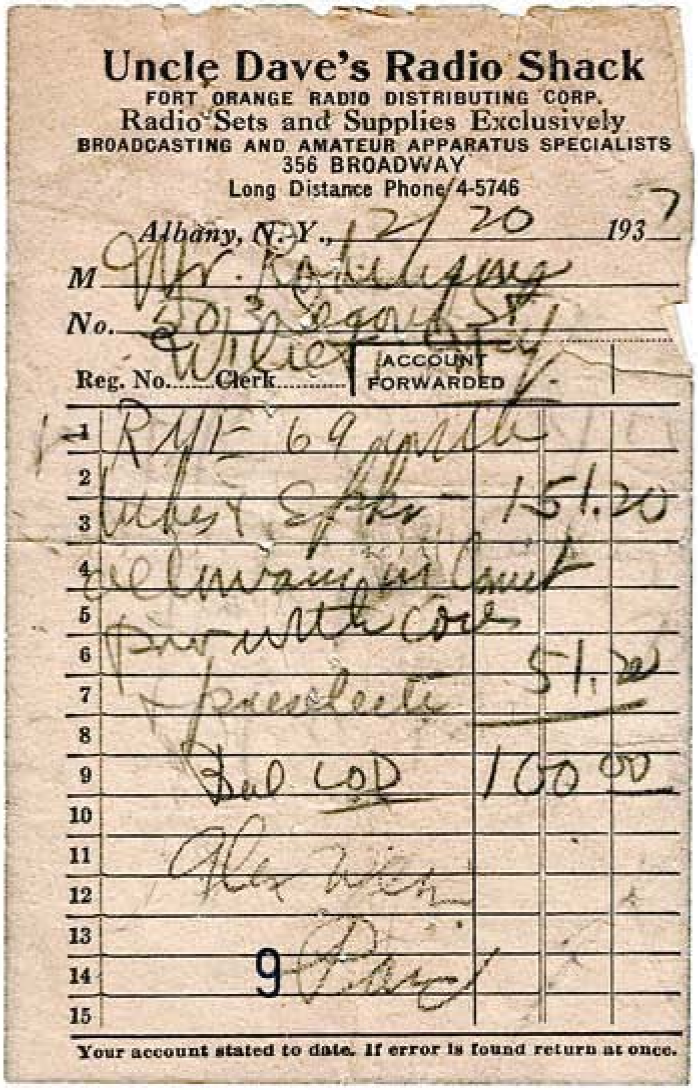
NOTE: It is our desire to supply tubes with every receiver. We may then be in a position to test the receiver with the tubes in place and make shipment without removing them. This procedure assures that all gains of component stages are up to standard values and that the operation of the receiver is uniform throughout.

RADIO MFG. ENGINEERS, Inc.

306 FIRST AVENUE PEORIA, ILLINOIS, U.S.A.

The RME-69 Single Signal Super receiver is a custom-built, precision instrument. Its design and construction, including final calibration, is not a routine factory job, but comes under the class of model laboratory equipment. It is offered to those amateurs, experimenters, and engineers, who desire only the most up-to-date and complete high frequency receiver which an organization can produce. Each instrument is unconditionally guaranteed.

Purchase documents:
T.S. Robinson, Watervleit, NY (Just north of Albany)

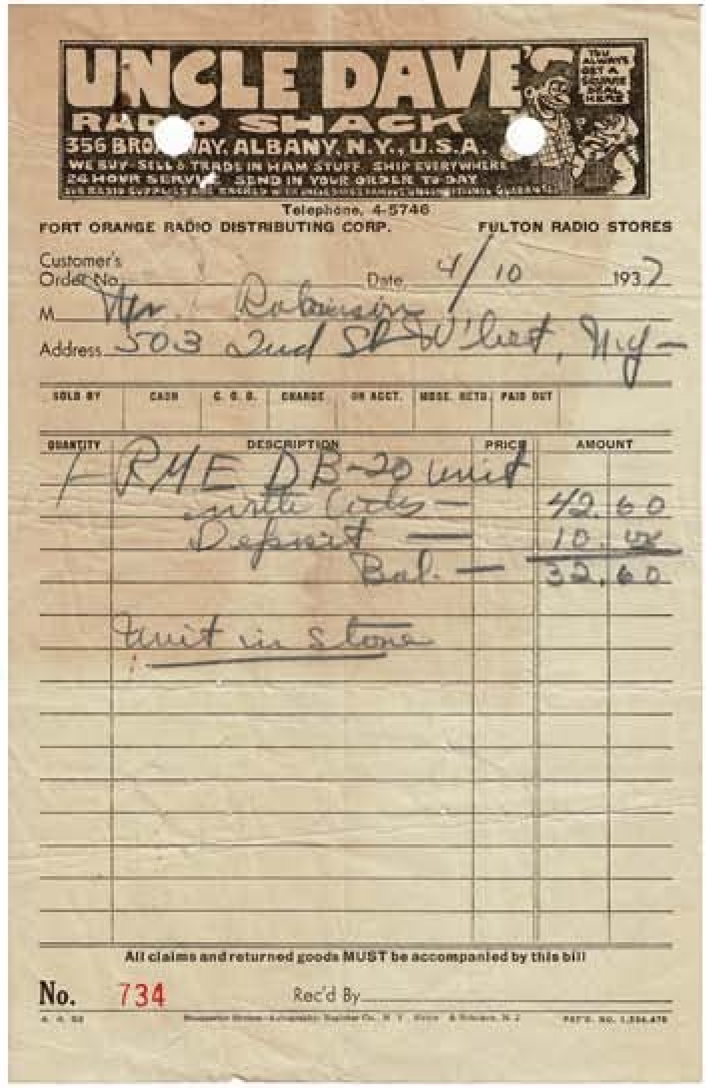


Uncle Dave's Radio Shack
FORT ORANGE RADIO DISTRIBUTING CORP.
Radio Sets and Supplies Exclusively
BROADCASTING AND AMATEUR APPARATUS SPECIALISTS
356 BROADWAY
Long Distance Phone 4-5746

Albany, N.Y., 12/20 1937
M Mr. Robinson
No. 503 Second St
W'liet
Reg. No. ...... Clerk ...... ACCOUNT FORWARDED

1	RME 69 with	
2		
3	tubes & spkr	151.20
4	Ellwanger Coil	
5	Bar with coils	
6		51.20
7	preselector	
8		
9	Bal COD	100.00
10		
11		
12		
13		
14	9	
15		

Your account stated to date. If error is found return at once.



UNCLE DAVE'S RADIO SHACK
356 BROADWAY, ALBANY, N.Y., U.S.A.
WE BUY-SELL & TRADE IN HAM STUFF. SHIP EVERYWHERE
24 HOUR SERVICE. SEND IN YOUR ORDER TO-DAY
Telephone, 4-5746
FORT ORANGE RADIO DISTRIBUTING CORP. FULTON RADIO STORES

Customer's Order No. Date 4/10 1937
M Mr. Robinson
Address 503 2nd St W'liet, N.Y.

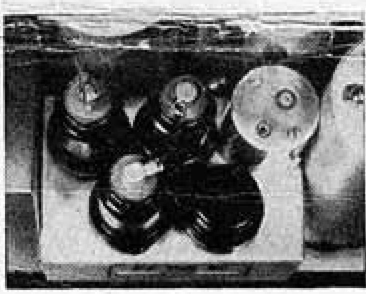
SOLD BY	CASH	C.O.D.	CHARGE	ON ACCT.	MDSE. RETD.	PAID OUT

QUANTITY	DESCRIPTION	PRICE	AMOUNT
1	RME DB-20 unit		
	with tubes —		42.60
	Deposit —		10.00
	Bal. —		32.60
	Unit in store		

All claims and returned goods MUST be accompanied by this bill

No. 734 Rec'd By

Mr. Robinson's radio included the Lamb noise silencer option.



THE RME LS-1 NOISE SUPPRESSOR

The unit shown illustrates the [illegible] of the [illegible] noise suppressor in the RME-69 Receiver. Small, compact, and well-designed, it fits into the position ordinarily occupied by the first and second IF tubes (2-6D6s). For proper installation and functioning this unit **must** be built in at the factory. Its purpose is to effectively cope with the ignition type of interference and similar electrical disturbances especially on the higher frequencies. When properly operated it effectively reduces the noise level and permits copying of an otherwise smothered signal. The low cost coupled with the advantages derived from this circuit makes the installation of the LS-1 suppressor well worth while.

LS-1 Noise Suppressor complete with tubes, 1-6K7, 1-6J7, 1-6L7, 1-6H6, initially installed in new receiver at factory. CODE—DI AR .... Net $11.40

Extra cost for installation of -1 noise suppressor in receiver already sold, add to above. Net $4.00

Prices subject to change without notice)

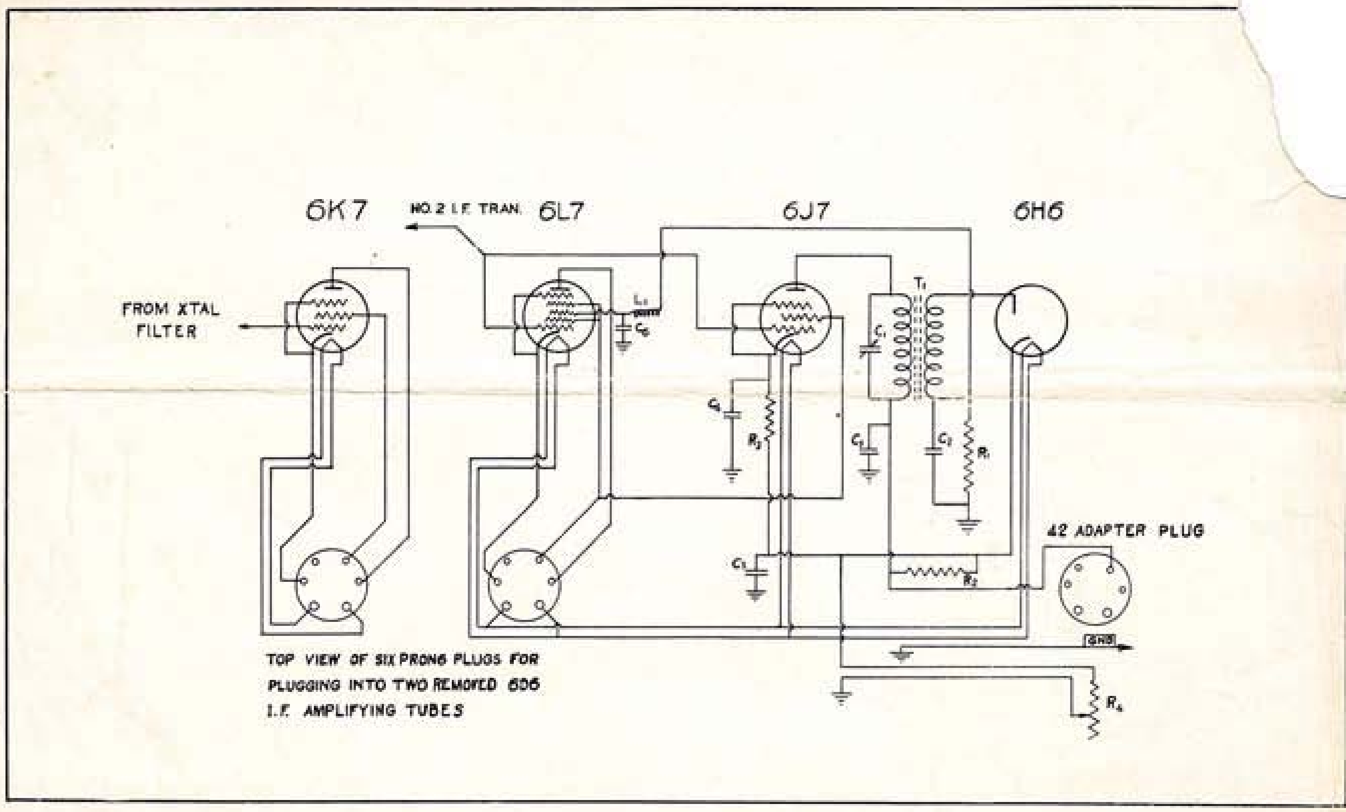


Fig. 14. Schematic Diagram of the RME LS-1 Noise Suppressor