

W2ADW handled 230 emergency messages at Westampron and Montauk, L. I.



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New Hampshire, Rhode Island and Connecticut. A total of 456 messages were handled in fifty-seven hours.

Hartford

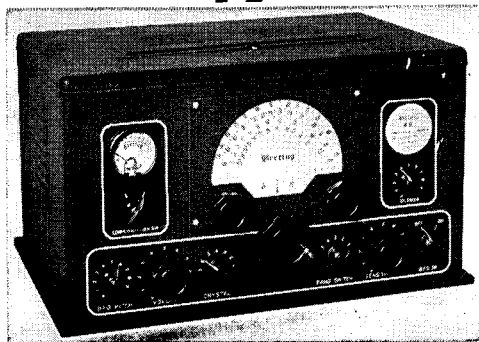
During the peak of the emergency, Hartford's power was preserved but East Hartford was in darkness. The radio section of regimental headquarters company, 169th Connecticut National Guard Infantry, was ordered out on the night of the hurricane to contact authorities at New London.

Using the company calls, W1FE and WXAP, communication was established with Brooklyn (N. Y.) Navy Yard, which in turn QSO'd a destroyer in New London harbor for relay. Frequencies used were 4035 (army), 3763, 3640, 3508, 7056, 7094 and 56 Mc. The unit was on duty for six days and nights and handled 677 flood, fire and hurricane messages between Hartford and New London.

A great deal of Connecticut traffic was pushed through on five meters to W1AOK

"HERE'S VALUE PLUS"

"49"

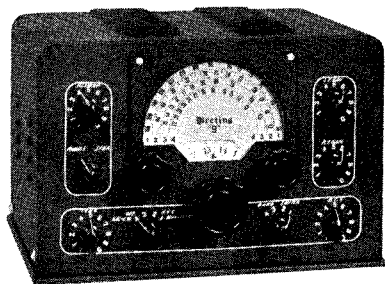


\$99.00

Amateur's Net
13 Tubes
High Q Coils
1560 K.C. I.F.
1852 R.F. Stage
Audio Will Modulate
100 Watts Peak

**B
R
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I
N
G**

"9"



\$54.00

Amateur's Net
9 Tubes
Iron Core I.F.
Noise Silencer
3 Watts Output
360° Bandsread
High Sensitivity

BOTH TUNE
34,000 Kc. to 550 Kc.

BRETING RADIO MFG. CO.

1815 VENICE BLVD.

LOS ANGELES, CALIF.

Dec. 1938 RADIO mag.

who established a five-meter state net. For some time, W1FE was the only Hartford station in touch with Westerly, R. I. and Norwich, Conn. W1FE had a direct route to Boston through shortwave broadcast station, W1XAL, the latter taking many press dispatches and requests to the Boston Army Base for supplies for the Hartford troops.

W1FOO handled traffic at the state police barracks in Hartford and W1HJW operated at the Red Cross headquarters.

Long Island, N. Y.

Portions of Long Island suffered severely. Fashionable resorts were almost totally demolished. At the time of this writing, extensive public works are being projected to restore Fire Island, dear to hearts of the radio old-timers.

At Westhampton, N2ADW set up an antenna on the town hall in thirty-five minutes on the afternoon of September 22 and QSO'd his headquarters, N2KGQ at the post office in Riverhead. Continuous watch was maintained at the town hall until 8 p.m. September 23, when reliable telephone and telegraph service were restored. 118 Red Cross, state police and Western Union messages were handled with the aid of Boy Scout and Sea Scout messengers.

N2ADW moved to the Montauk railroad station on the morning of the twenty-fourth and in forty minutes had established communication with his headquarters from this point. Almost continuous watch was maintained here until 7 p.m. the following day, when telephone service was restored. 112 messages, including a great deal of railroad traffic, were handled from Montauk.

The men who operated both the portable and headquarters stations were NCR members. The portable transmitter was used previously on several NCR problems and consists of a 6L6 Jones regenerative crystal oscillator powered by a battery-driven 250-volt genemotor. The transmitter has a power output of 7 watts; and transmitter, receiver and genemotor are mounted in the same cabinet. The frequency used was 2744 kc.-allocated for NCR drills.

Rye, N. Y.

W2EOA and his x. y. 1. W2HXQ went on the air pointedly on the afternoon of the twenty-first to see if the ninety-mile gale blowing through Rye meant QRR. They operated continuously from that Wednesday until 4 a.m. the following Monday, relieving each other and nursing the two "junior ops" who were both down with chicken pox.

Most of the traffic was cleared on 160 and 75 with W1ADM, W1AR, W1ASD, W1AYS, W1BEJ, W1CBS, W1CPI, W1DAV, W1EL, W1FOF, W1FQV, W1ICY, W1IGS, W1IM, W1IPU, W1KDK, W1KER, W1KSH, W1KTE, W1LGZ, W1SZ, W1ZS, W2IXY, W2JZR, W2KBO, W2KSH, W2KYH and W2LNU. During the interruption of telephone service in New England, W2EOA and W2HXQ ordered typhoid vaccine and other medical supplies for the town of Ware, Mass., which was totally inundated, through W1IGS. They were also the only contact link between seven men marooned in the Ware, Mass. telephone building and their home office in Springfield, Mass. 842 messages were handled for the A. R. R. L., Coast Guard, F. C. C., National Guard and Red Cross.

W2EOA is engineer-announcer for broadcast station WOR and when his station sent a mobile unit (WBAN) into the New England area during the emergency, W2EOA was the medium of contact.

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Breting "12"

Operating Instructions



Breting Radio Mfg. Co.

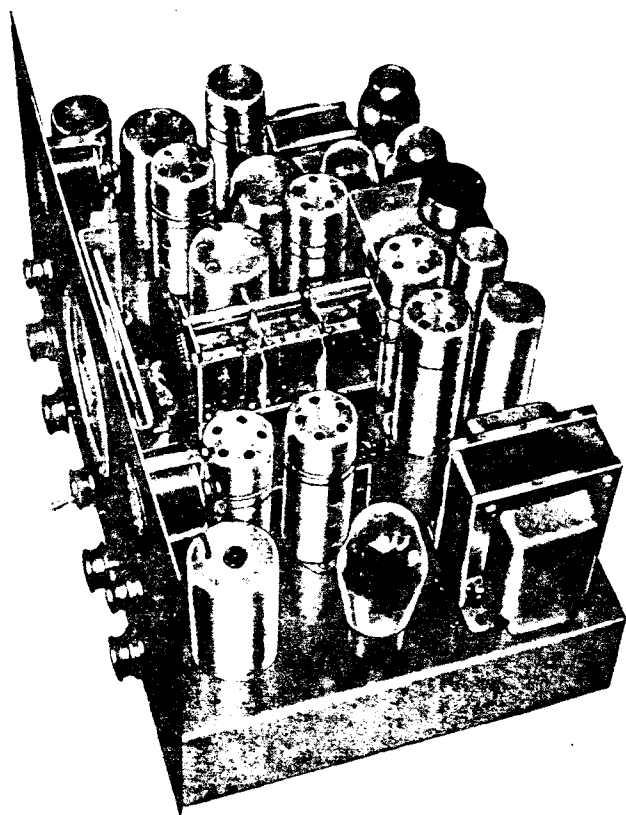
2117 Venice Boulevard

Los Angeles, California

BEAT OSCILLATOR OPERATION: To locate weak stations turn manual volume control knob to the left until switch snaps. This should produce a hissing sound in the speaker, and as the tuning dial is rotated all stations will be heard with a definite squeal. After locating station, turn oscillator off and retune to greatest volume. For Code reception turn automatic volume control full on and use manual volume control.

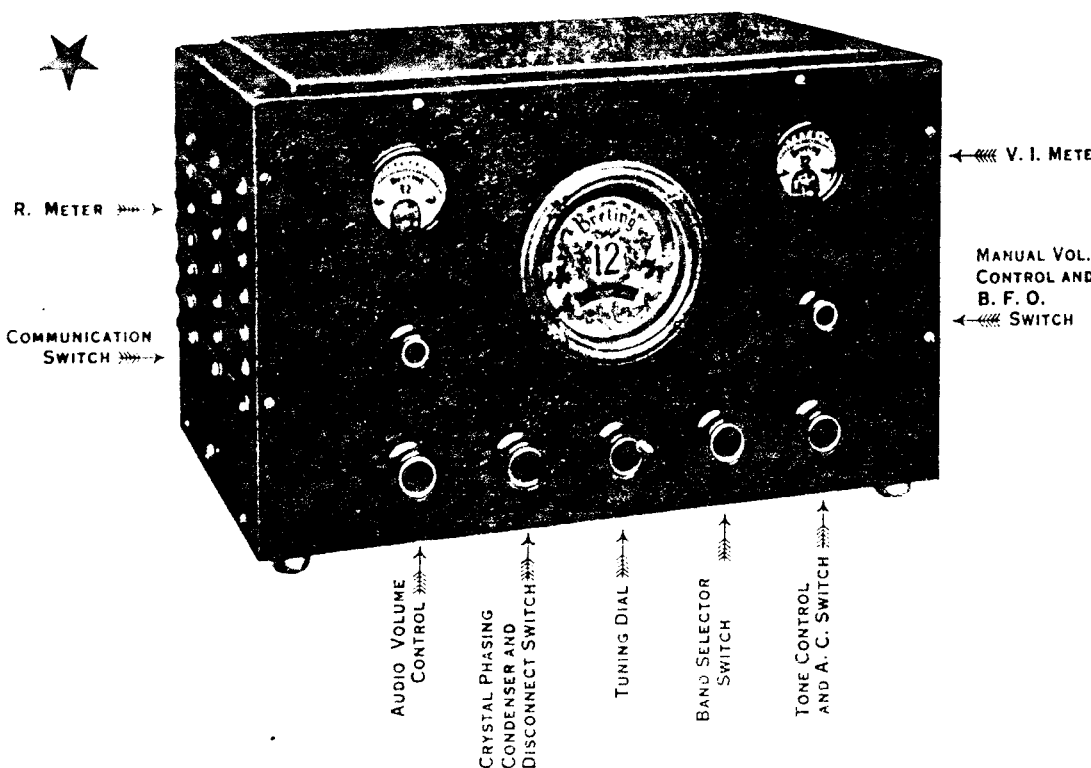
Adjust beat oscillator by turning the condenser shaft extending through the bottom, front, left corner until the desired pitch is obtained.

"R" METER ADJUSTMENT: To adjust the "R" meter, disconnect the antenna and after the receiver has been on a few minutes, turn the control marked "R" METER ADJUSTMENT until the pointer is against the left hand stop. The receiver is set correctly before shipping and should require



only a slight compensation for various line voltages. Do not touch the meter terminals or adjustment screw, as they are 250 volts above ground. Use either an insulated screw driver or pointed stick when making adjustment.

COMMUNICATION SWITCH: The communication switch disconnects the audio amplifier from the radio and connects it to the tip jacks on the rear of the chassis. Receivers are ordinarily supplied with the jacks nearest the



GENERAL

ANTENNA: To insure best results it is absolutely essential that a first class antenna be used. We recommend a single solid wire, 50 to 75 feet in length, including lead-in. Height over any surrounding obstacles is, of course, highly desirable, and should be obtained whenever possible.

When using doublet type antennas, always use an electrostatic shield in the antenna coupling coils. There are numerous different makes to be had on the market. The length of the antenna can be increased when the set is operated remotely from broadcast stations.

SPEAKER BAFFLE: The 12-inch speaker supplied with set requires a baffle of at least 4 feet tone travel. This can be accomplished by mounting on a square board or else in a box type sufficiently large that the sound from the rear of the speaker cone must travel at least four feet before it is allowed to strike the front of the cone. Needless to say, the wall of room makes an ideal baffle. Do not mount the speaker in ceiling. Where the speaker is operated remotely from receiver, twenty-five feet of (four-wire) cable may be added without incurring any losses to effect tone quality. For greater distances install a matching transformer on the speaker and feed it from the 200 ohm winding. See circuit diagram "B" for correct connections.

outside corner of the chassis connected directly to the grid of the 6B7 first audio. The jacks nearest the speaker plug are connected across the 500 ohm output winding. Various circuit diagrams showing ways of connecting communication switch to allow the audio end to be used for different purposes, may be found on the diagram sheet.

VOLUME INDICATOR METER: The V. I. meter is connected across the 200 ohm output winding through the rectifier part of the 6B7 first R.F. stage. To read percentage of modulation, or check a station for future reference, turn the volume control toward the off position until the switch snaps. On 100% modulated signal peaks the V.I. meter and the "R" meter will be equal. Signal strength from a C.W. station can be checked on the V.I. meter.

ANTENNA TRIMMER ADJUSTMENT: Adjust the antenna trimmer on any station around 14 megacycles. Turn screw carefully until greatest signal strength is shown on the "R" meter. **DO NOT ADJUST ANY OTHER TRIMMERS.**

HOW TO USE THE CRYSTAL CIRCUIT: To obtain results with a crystal circuit, a complete understanding of crystal selectivity must be had by the operator.

Let us consider the ordinary C.W. signal as received by a super with the crystal in the off position. The band width of the carrier is about 10,000 cycles and is heard as a series of dot and dash hissing sounds as the receiver is tuned thru the range of the 10,000 cycles. If the beat oscillator is turned on and adjusted when the dial is set to the center of the carrier, you will notice that the C.W. signal becomes a howl and the pitch varies as the beat oscillator adjustment is turned from one side to the other. It starts as an extremely high pitch howl down to a zero beat point and then up the other side until the pitch becomes so high it is lost to the ears.

Now set the beat oscillator until a 1,000 cycle note is heard. Next adjust the crystal trimmer until the background noise is at minimum and a ringing sound is heard in the speaker. The C.W. signal will probably have been lost during this operation and the main dial will have to be readjusted until you find the narrow peak of the signal.

Remember that the peak of the crystal is only 50 cycles wide compared to 10,000 cycles without crystal. You can understand by comparing the above figures why the average amateur never finds the C.W. peak on the crystal and is ready to condemn its performance. The signal strength should not change as the trimmer is turned from the left hand off position to the right hand position.

Greatest selectivity of the crystal will be found as the trimmer is turned about two-thirds of the way to the right. If the signal strength changes as the trimmer is adjusted, the signal is not tuned in on the peak or else the beat oscillator is not adjusted 1,000 cycles to one side of zero beat. Different degrees of selectivity can be obtained on C.W. by not bringing the crystal trimmer in exact phase. The broad positions are on either side of where minimum noise is heard.

For phone reception leave beat oscillator off and keep crystal in either broad position. At best the reception will be poor and we do not advise using the crystal to obtain *variable selectivity*. Pull the crystal holder out at the socket and use the trimmer to control selectivity.

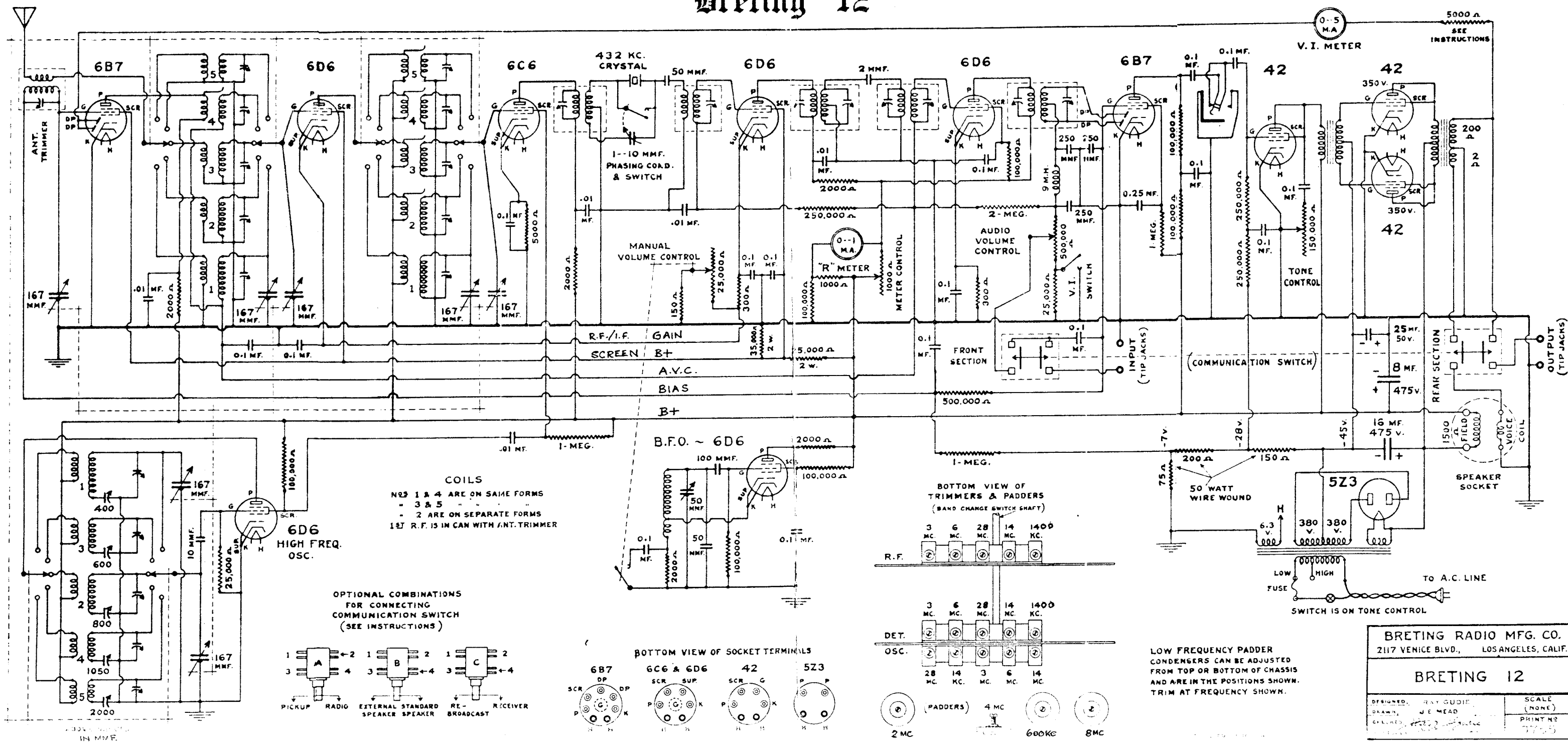
On C.W. turn the volume control three-quarters on and use the manual control to bring up the signal level. Do not advance it too far on the crystal as it will overload the first detector and motor boating will result.

Breting Radio Mfg. Co.

2117 VENICE BLVD.

LOS ANGELES

Breting "12"



The NEW

BRETING

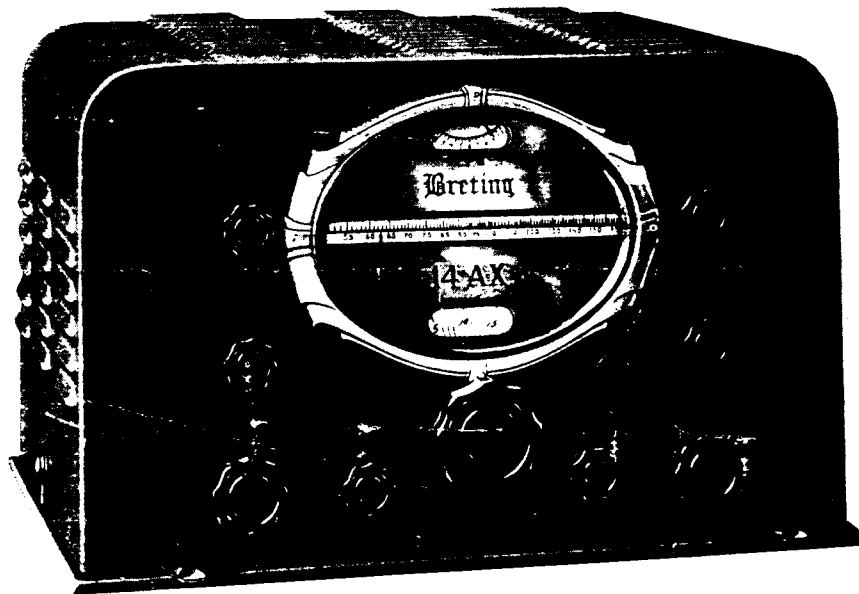
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For

1938

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ENGINEERING

The Breting 14AX latest and greatest development of the Breting engineering laboratories is offered to the amateur and professional experimenter with the assurance that there is provided therein the last word in engineering skill and the latest developments in the science of radio.

Sound engineering has always been the Breting policy and this combined with our unquestioned reputation as manufacturers of quality merchandise is responsible for the continued prestige this company enjoys.

False claims and the use of trick names in advertising are foreign to the Breting Policy and as is commonly known any statements made by us as to the superiority of the product can be depended upon.

The Breting 14AX combines the fine features of its predecessors, the Br12 and Br14, plus the additional developments which have been worked out by our laboratories during the past year. Truly the Radio of tomorrow, Br 14AX will again lead the field in acceptance by the best qualified critics of receiving sets, the American amateur.

No false claims, no use of multiple tubes to deliberately deceive the public, no trick names and gadgets. Just an honest product sincerely offered by an engineering staff second to none in the industry.

For your satisfaction we invite comparison, band for band, with any radio receiver on the market asking only that these essentials be kept in mind.

Quality in Materials

Quality in Workmanship

Efficient Engineering

Price

General Performance On All Bands

Tonal Quality

Appearance

All of these constitute value and we believe that Breting 14AX is a true exponent of all seven points of superiority.

Our best salesmen, the Breting user, will attest to the facts—ask them.

SPECIFICATIONS

FREQUENCY COVERAGE: 34 000 to 550 Kilocycles in five bands as follows:

34 000 KC to 14 500 KC

15 500 KC to 6 800 KC

1 600 KC to 550 KC

7 000 KC to 3 500 KC

3 500 KC to 1 600 KC

Wave length coverage, 9 to 550 meters, and has continuous mechanical band spread allowing accurate logging on any of its five bands.

TUNING UNIT: The tuning condenser is divided into seven sections, paralleling two sections allows full coverage on the broadcast band and on the same set of coils. Individual sections only are used for high frequency tuning to secure the best possible LC ratio.

All coils are individual for each band, and as each set is switched into operating position the dial is automatically rotated to indicate only the band that is actually in use.

All bands use one stage of R.F. with the exception of the 15,500 to 7,000 KC band, which uses two stages. This gives greatest amplification where needed most, the 20 and 40 meter amateur bands.

The first detector and oscillator are of the screen coupled type and work very efficiently on 10 meters.

INTERMEDIATE AMPLIFIER: 432-KC. Two stages. First unit, low impedance transmission line, second unit, four tuned circuit band pass. This gives the ideal type selectivity with a wide top curve, instead of the ordinary sharp peak and wide skirt, so commonly used, which produces critical tuning and poor reactivity. All coils are Litz wound and tuned with non-drifting compression type trimmers. The over all selectivity is approximately 9 KC.

CRYSTAL FILTER: All sets are equipped with crystal filter, the first stage is separated into two units and a low impedance transmission line is used to couple the two circuits. The crystal and phasing condenser operate in series position in the low impedance line. The crystal disconnect switch is operated with the same knob controlling the phasing condenser. All crystals supplied have only one peak.

SECOND DETECTOR: A combination duo-diode pentode controls the A.V.C. as well as providing rectification and is highly filtered to eliminate any R.F. in the audio circuit. The pentode part of the second detector acts as first audio stage and provides tremendous voltage amplification. A phone jack at ground potential is located in the plate circuit of the first audio and positively disconnects the speaker when the head phones are connected.

AUDIO OUTPUT: Two 6F6G tubes driven by a single 6F6G. The final stage is operated with 45 volts fixed bias and 365 volts on the plate, operating Class A at low volume and Class B at high volume, delivering 18 watts to the speaker. The output transformer is mounted in the receiver and carries a 200 ohm winding as well as 8 and 2 ohm voice coil windings.

R METER: The R Meter is mounted as part of the dial assembly and plugs into position very easily. The meter is calibrated to a new standard, enabling the operator to differentiate between a weak 10 W amateur phone and a 500,000 W broadcast station. The R calibrations are selected from the standards published in the amateur call book and have no bearing on any previous R signal standards that everyone knows have been a hindrance rather than a help to the radio amateur operator.

COMMUNICATION SWITCH: The communication switch disconnects the audio amplifier from the receiver and connects it to the posts on the rear of the chassis. This provides the amateur with an audio amplifier with sufficient output to modulate a final amplifier with 100 watts input, or it can be used as driver for any type final amplifier.

For crystal or low level microphones one or two stages preamplification will be required to drive the final tubes to their limit. A gain control is necessary for any type microphone, as the one in the receiver is not in use when the communication switch is in transmit position. Separate terminals are provided on the rear of the chassis to kill the RF portion of the receiver with the transmitter switch if the amateur so desires.

BEAT OSCILLATOR: The B O switch is controlled by a lever in the lower right hand corner. The pitch is controlled by a lever in the lower left hand corner.

CONTROLS: The Controls are placed in such a manner so as to be as convenient to the operator as possible. The Band Spread tuning is done with the left hand and consequently have placed the Audio Volume and RF Gain controls near the right hand operating position resulting in ideal tuning for either the Phone or C W operator.

CABINET: The cabinet, as pictured, is constructed of 18 gauge auto body steel and because of its unique design, is a part of the chassis itself. This feature insures perfect alignment and allows easy removal when making inspection of any part of the receiver. Same is finished in platinum-gray or black crackle of a superior quality. It will be noted that our mechanical engineers have combined beauty as well as practicability in designing the case which houses the instrument itself.

DIMENSIONS: Over all dimensions of the complete set are 17 1/4" wide, 12 1/4" deep and 10 1/2" high. These permit relay rack mounting.

CHASSIS: The Chassis is constructed of reinforced auto body steel and is extremely rigid allowing very little flexing. The ribbed frame is black crackle finished. The top plate is chrome exterior and cadmium interior finish. The unique construction must be seen to be appreciated.

TUBES (14):

- 1 6K7 . . . First RF
- 1 6K7 . . . Second RF
- 1 6J7 . . . Hi Frequency Oscillator
- 1 6J7 . . . First Detector
- 1 6K7 . . . First IF
- 1 6K7 . . . Second IF
- 1 6B8G . . . 2nd Detector-AVC-1st Audio
- 1 6F6G . . . Second Audio
- 2 6F6G . . . Output
- 1 6K7 . . . Noise Silencer
- 1 6K7 . . . Beat Oscillator
- 1 6C5 . . . Vacuum Tube Voltmeter
- 1 5Z3 . . . Rectifier

NOISE SILENCING UNIT: The noise silencer consists of a single 6K7 tube in the Audio portion of the receiver. This silencer will eliminate practically all highly modulated interfering noises when receiving phone signals. Its operation is entirely automatic and works on the principal of levelling off all peaks above modulated levels anyone might wish to receive. On C W the Silencer is turned fully on and reception is in the form of a half wave modulated 400 cycle note. This not only eliminates hiss, Xtal ring and automobile noises but Beat Oscillator noise as well and actually increases the Signal strength 3 D B. Quite a strong statement we will admit but never-the-less true. The silencer control knob is placed on the front panel so that the operator can set the level at any level desired and same is entirely automatic whether receiving a weak or powerful station.

BAND SPREAD: The Band Spread system in the Breting 14AX covers about four times the range of the previous Model Breting 14 and the knob rotation of the band spread wheel is more than sufficient to tune in the most critical C W station when the Crystal is in the most selective position.

DIAL: The band spread wheel is mechanically geared to the main tuning dial through a 25 to 1 gear ratio. The band spread tuning knob is friction operated and has a reduction of 12 to 1. Pushing the band spread control knob disengages that knob and allows easy wheel tuning through the main control making it possible for the operator to cover any band rapidly.

The New



Breting

"14"



USE SILENCER
DISCONNECTING
SWITCH

COMMUNICATION
SWITCH

BFO
SWITCH

RF
GAIN CONTROL

AUDIO
VOLUME
CONTROL

CRYSTAL
PHASING
CONDENSER

TUNING
CONTROL

BAND SELECTOR
SWITCH

tone control
and AC switch

CUSTOM
BUILT... **RADIO**

OPERATING INSTRUCTIONS

A PERSONAL MESSAGE

It is our sincere desire that Breting users obtain from their receiver the utmost in satisfactory performance, and it is with that in mind that we offer the information which is contained in the following paragraphs. We cannot emphasize too strongly the necessity of carefully and thoroughly reading these operating instruction notes, and, even though the operator feels that he might be thoroughly familiar with the operation of this type receiver, we still insist that he should not overlook the importance of giving a few moments' time to this most necessary initial procedure.

We have endeavored to cover a considerable amount of information in this booklet without going into intricate details, but we are confident that the information given will enable the operator to enjoy the satisfaction which this receiver merits if he will follow out the instructions carefully.

Bretling "14"

OPERATING AND GENERAL INSTRUCTIONS

ANTENNA: To insure best results it is absolutely essential that a first-class antenna be used. We recommend a single solid wire, 50-75 feet in length, including lead-in. Height over any obstruction in the immediate vicinity is, of course, highly desirable, and should be obtained whenever possible. An ideal situation with respect to antenna would be the use of two or three antennas running in different directions and using a switch mounted near the radio. This procedure would enable the operator to select the antenna giving the best results in any particular location.

On the higher frequencies a short antenna will usually give better results, and on the 10 meter band a 16 ft. vertical generally proves most efficient.

The only advantage obtained in using a doublet antenna would be to locate the antenna pick-up portion out of a noisy field, such as is usually found in a location near a street car line or much traveled highway. In locations of this kind the antenna proper can be located as far away as possible from the disturbing factor, and the long lead-in can be brought to the receiver without a great amount of loss. Almost all commercially made doublets are furnished with the matching transformer equipped with electro-static shields to eliminate any capacity pick-up in the lead-in. There are many coupling transformers on the market that may be obtained by anyone who desires to construct their own doublet, but when this is done a matching transformer should be used that is equipped with electro-static shield.

SPEAKER BAFFLE: The 12-inch speaker supplied with the receiver requires a baffle of at least 4 ft. tone travel. Needless to say, the wall of a room makes an ideal baffle, but if a wall is used it is important that the rear of the speaker be open to give best possible tone quality. Any kind of soft heavy material such as white pine or Celotex makes an ideal material to use. To add auxiliary speaker, use one of the permanent magnet dynamic type, and connect across the two wires that lead to the small prongs of the speaker plug which is furnished as regular equipment with the receiver.

NOISE SILENCER CONTROL: The noise silencer is equipped with a filament switch that turns the two noise silencer tubes off when in the extreme left position. To operate the silencer the control should be turned to the right, and after the tubes have had sufficient time to heat advancing the control will cause the set to block when a station is tuned in. The point of operation is very critical and just below the blocking point. The weaker the signal the more effective becomes the noise silencer. It is worthless on a strong signal and on certain types of noise. The silencer cannot be used on local or extremely strong signals. The silencer is not a cure-all for static generally speaking, but it is very efficient in eliminating certain types of interference.

COMMUNICATION SWITCH: The communication switch disconnects the audio amplifier from the radio and connects it to the tip jacks on the rear of the chassis. The middle terminals on rear of chassis are connected to the 200 ohm line, the bottom one of which is grounded to the chassis. The terminals nearest the speaker plug when opened break the B+ to the RF portion of the receiver. Needless to say, these terminals are hot

with respect to the chassis. The audio amplifier will drive any type of final amplifier, and if used as a modulator, will modulate approximately 100 watts. When using the receiver as a modulator, a modulation transformer with a 200 ohm primary and a secondary with a correct load to match the transmitter must be used. Numerous speaker transformers when reversed will operate satisfactorily for this purpose and several manufacturers have special transformers expressly made for this service, such as Inca Models N18 and N17.

A large number of amateurs are modulating at speech frequencies, 100W transmitters. In case feed back difficulties are encountered, try reversing connections on the external transformers and shielding all connecting wires. Sometimes a separate switch on the B+ terminals will be necessary while transmitting. A microphone transformer and volume control will be necessary for high level carbon microphones, and a high gain preamplifier is necessary for low level microphones. A single high gain stage is generally sufficient for the diaphragm type crystal microphone.

The filament and plate power for the preamplifier stage can be supplied by the receiver. On rotary type communication switch extra terminals are supplied to turn transmitter on with the communication switch.

AUDIO VOLUME CONTROL: The audio volume control is connected between the first audio and the second detector.

CRYSTAL PHASING CONDENSER: To obtain results with the crystal circuit, a complete understanding of crystal selectivity must be had by the operator.

Let us consider the ordinary C. W. signal as received by a super with the crystal in the off position. The band width of the carrier is about 10,000 cycles and is heard as a series of dot and dash hissing sounds as the receiver is tuned thru the range of the 10,000 cycles. If the beat oscillator is turned on and adjusted when the dial is set to the center of the carrier, you will notice that the C. W. signal becomes a howl and the pitch varies as the beat oscillator adjustment is turned from one side to the other. It starts as an extremely high pitch howl down to a zero beat point and then up the other side until the pitch becomes so high it is lost to the ears.

Now set the beat oscillator until a 1,000 cycle note is heard. Next adjust the crystal trimmer until the background noise is at minimum and a ringing sound is heard in the speaker. The C. W. signal will probably have been lost during this operation and the main dial will have to be readjusted until you find the narrow peak of the signal.

Remember that the peak of the crystal is only 50 cycles wide compared to 10,000 cycles without crystal. You can understand by comparing the above figures why the average amateur never finds the C. W. peak on the crystal and is ready to condemn its performance. The signal strength should not change as the trimmer is turned from the left hand off position to the right hand position.

Greatest selectivity of the crystal will be found as the trimmer is turned about two-thirds of the way to the right. If the signal strength changes as the trimmer is adjusted, the signal is not tuned in on the peak or else the beat oscillator is not adjusted 1,000 cycles to one side of zero beat. Different degrees of selectivity can be obtained on C. W. by not bringing the crystal trimmer in exact

phase. The broad positions are on either side of where minimum noise is heard.

For phone reception leave beat oscillator off and keep crystal in either position. At best the reception will be poor.

On C. W. turn the volume control three-quarters on and use the manual control to bring up the signal level. Do not advance it too far on the crystal as it will overload the first detector and motor boating will result.

TUNING CONTROL: The tuning control has a simplified speed action that automatically goes into high speed after the large knob has been rotated three times in either direction. If fairly slow speed tuning is desired, remove the brass arms behind the large knob. This can be accomplished by merely removing the knob itself.

BAND SWITCH: Trimmers and coils are mounted on the band switch and should not be tampered with. Rotate the band switch slowly to allow the calibrated dial to follow with the least amount of strain and to minimize arcing in the contacts.

STONE CONTROL AND AC SWITCH: The tone control carries the AC switch and turning same to left hand position disconnects the radio from the AC line. It is not necessary to turn any of the other controls to accomplish this purpose. This allows the user to leave the radio tuned to any station and upon returning only the AC switch need be turned.

BEAT FREQUENCY OSCILLATOR SWITCH: The beat oscillator control turns the R meter off and converts the vacuum tube volt meter tube into a beat oscillator. It also shorts out the AVC circuit requiring the manual volume control to be turned to the left to keep from blocking the receiver.

To locate weak stations, turn beat oscillator switch to the right. This should produce a hissing sound in the speaker, and as the tuning dial is rotated, all stations will be heard with a definite squeal. After locating station, retune to greatest volume.

Adjust beat oscillator by turning the condenser shaft extending through the bottom front, left corner until the desired pitch is obtained. To make the beat oscillator adjustable from the front panel solder a heavy wire or handle to the shaft and allow it to extend out under the base pan.

RF GAIN CONTROL OR MANUAL VOLUME CONTROL: The RF gain control is used for code reception and should be rotated to the left when silent tuning is desired.

R METER ADJUSTMENT: To adjust the R meter, disconnect the antenna, and after the receiver has been on a few minutes, turn the control marked "R" METER ADJUSTMENT until the pointer swings to the maximum left hand position. The meter is at ground potential and cannot be damaged except through rough handling in a mechanical way.

ANTENNA TRIMMER ADJUSTMENT: Adjust the antenna trimmer on any station around 14 megacycles. Turn adjusting screw carefully until greatest signal strength is shown on the R meter. DO NOT ADJUST ANY OTHER TRIMMERS. The trimmer is adjusted correctly at the factory and should not require over 1/2 turn in either direction.

GUARANTEE

The manufacturer warrants each new Bretling receiver manufactured by it to be free from defects in material and workmanship under normal use and service, its obligation under the warranty being limited to making good at its factory any part or parts thereof, including tubes and speaker, which shall within ninety (90) days after making delivery of such receiver to the original purchaser be returned to it with transportation charges prepaid, and which its examination shall disclose to its satisfaction to have been thus defective; this warranty being expressly in lieu of all other warranties expressed or implied and of all other obligations or liabilities on its part, and it neither assumes nor authorizes any other person to assume for it any liability in connection with the sale of its receivers. This warranty shall not apply to any receiver which shall have been repaired or altered by anyone outside of ourselves, nor which has been subject to misuse, negligence or accident.

Bretting



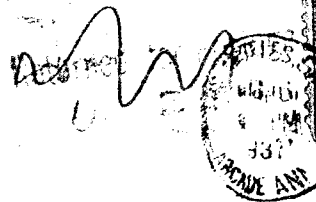
RADIO MANUFACTURING COMPANY

2117 VENICE BOULEVARD • LOS ANGELES, CALIFORNIA

1815 Venice Blvd

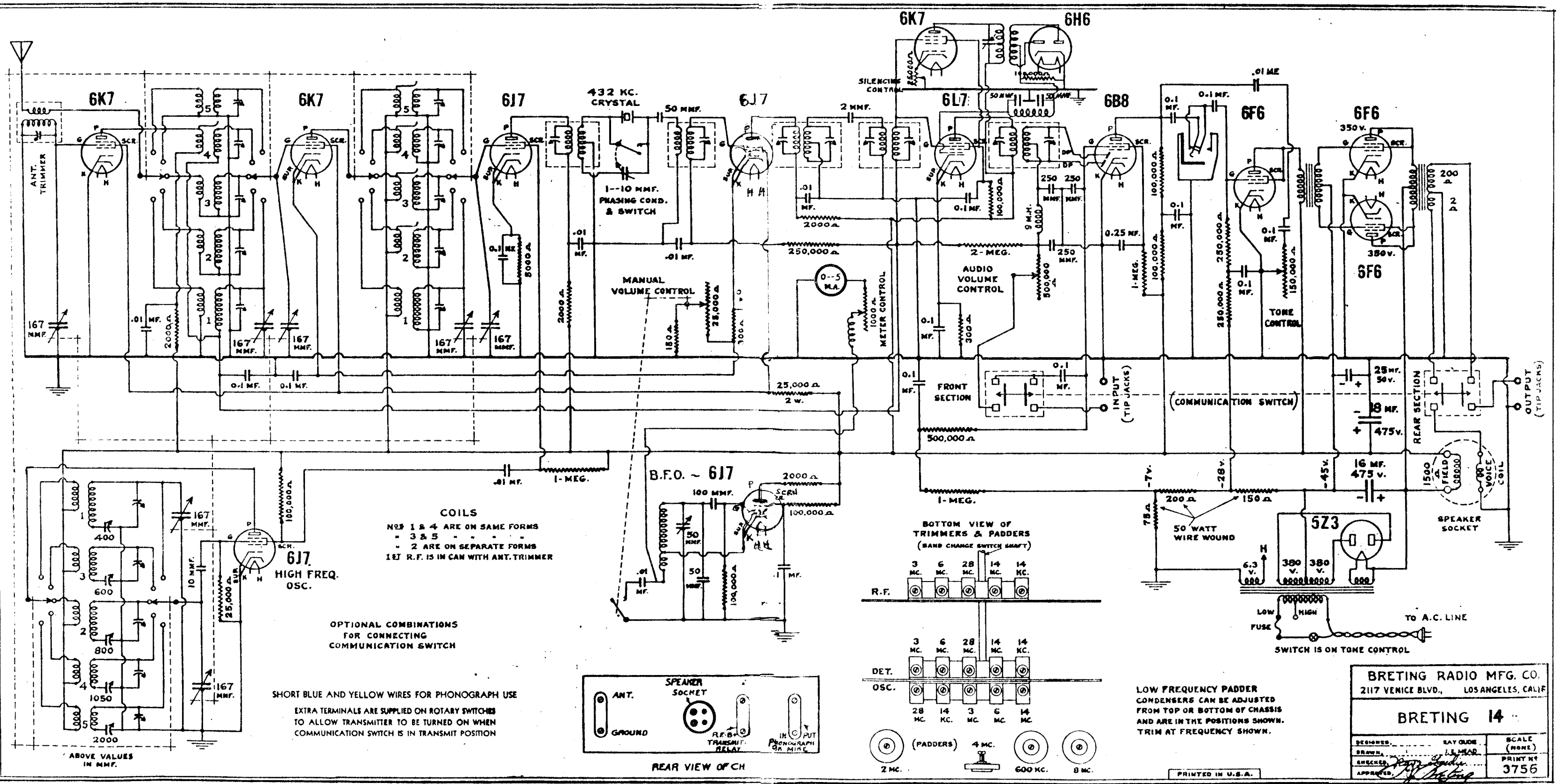
Mr. Vance A. Dewey
W5FYF
1420 N. E. 12th Street
Oklahoma City, Oklahoma

BUY U.S. SAVING
BONDS
ASK YOUR POSTMASTER





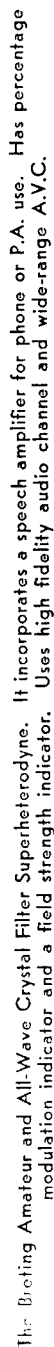
Breting "14"



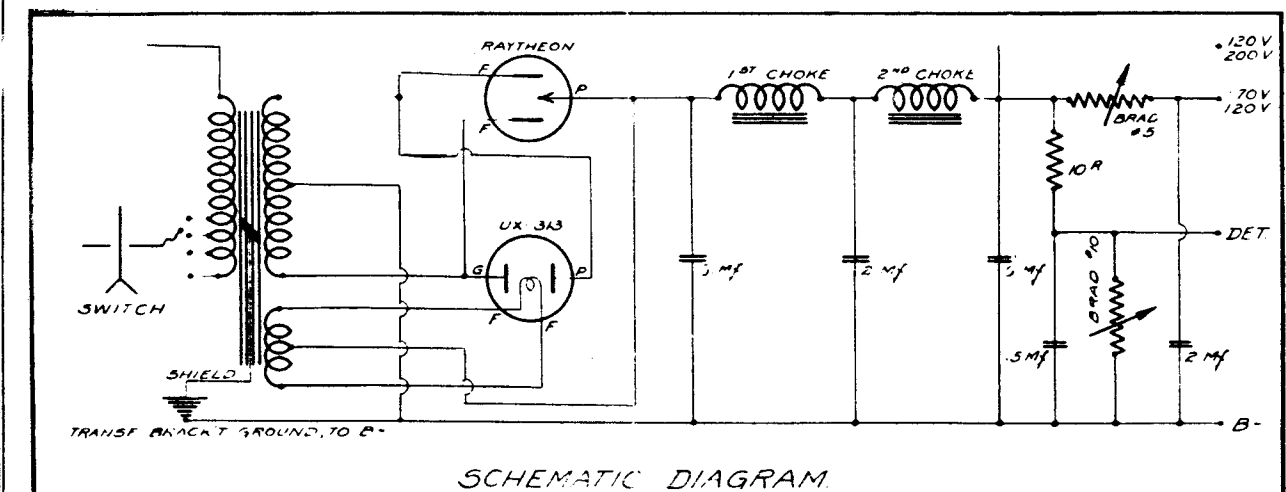
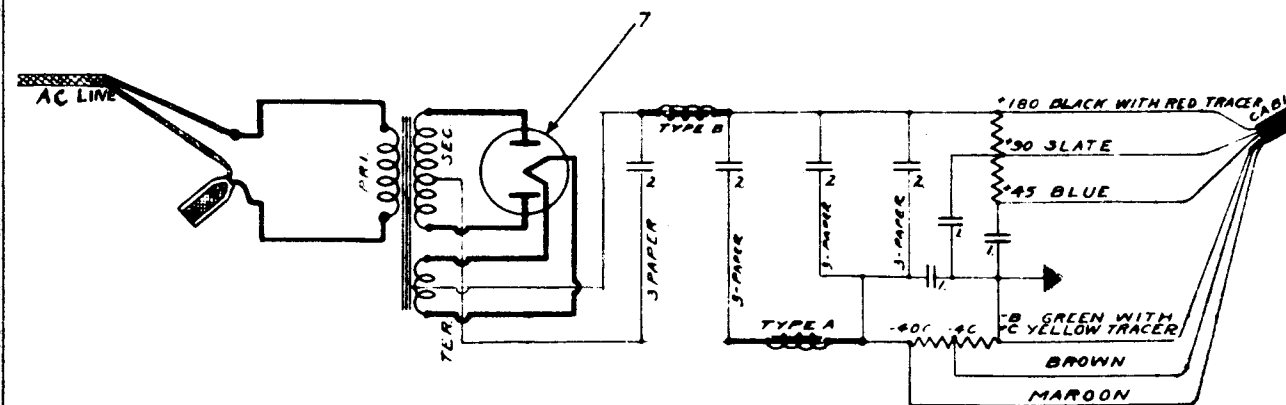
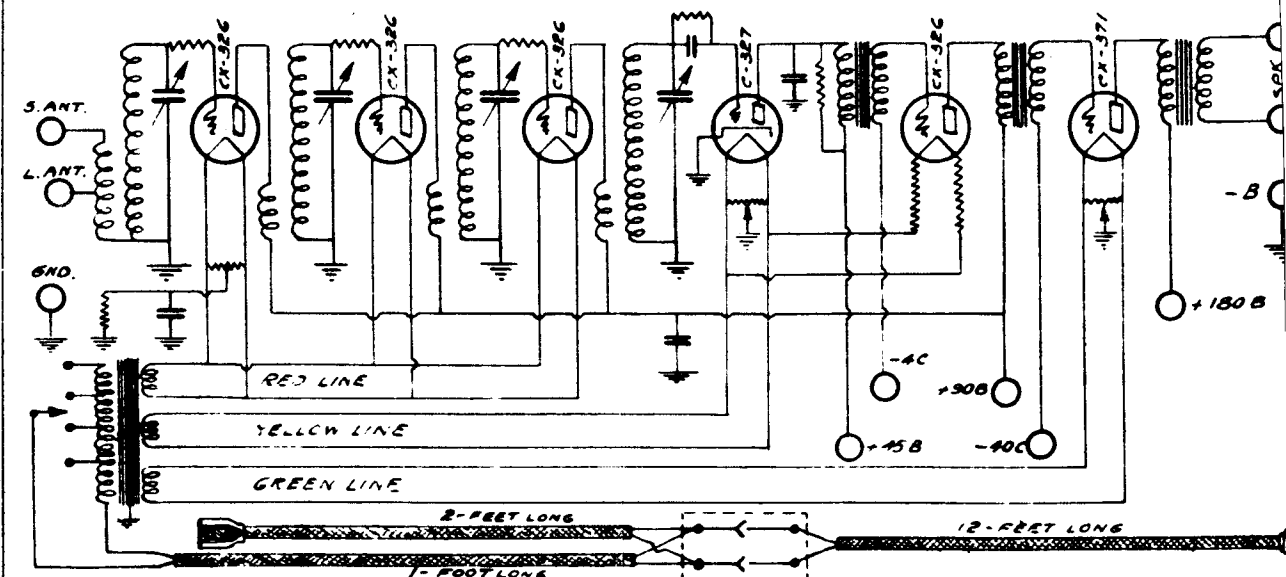
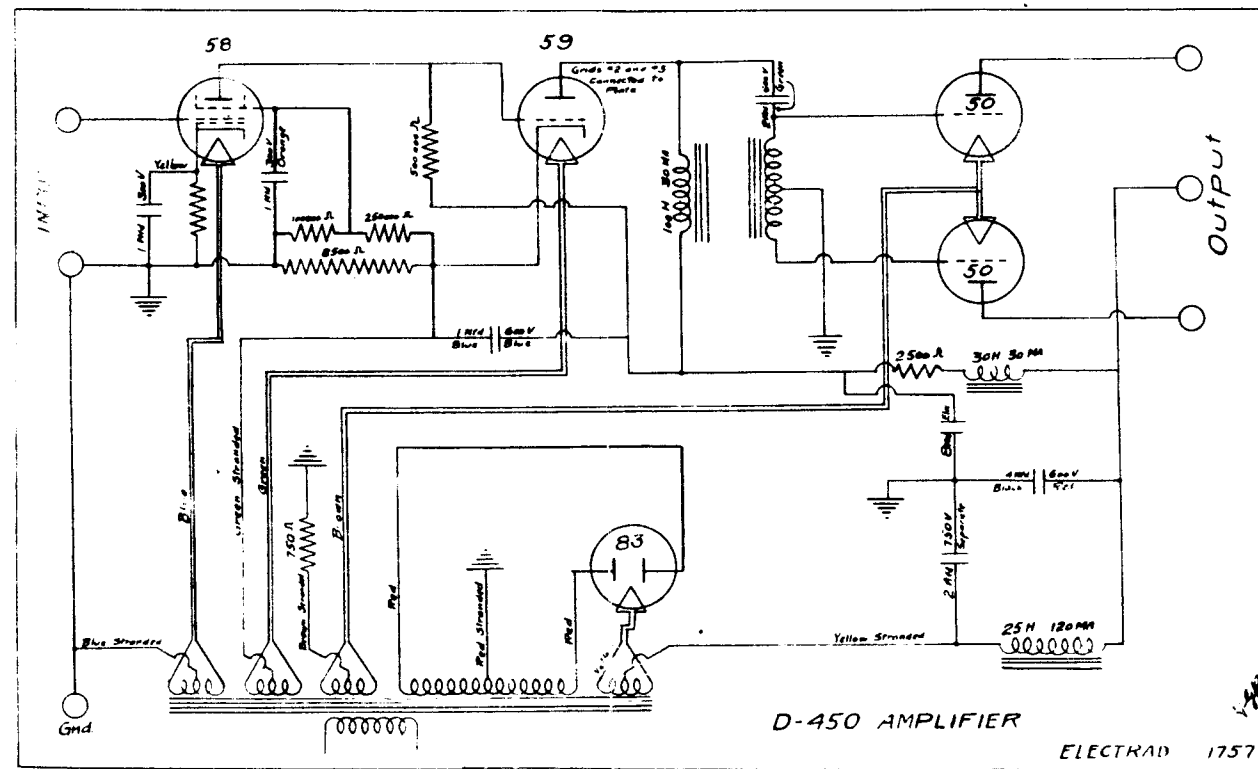
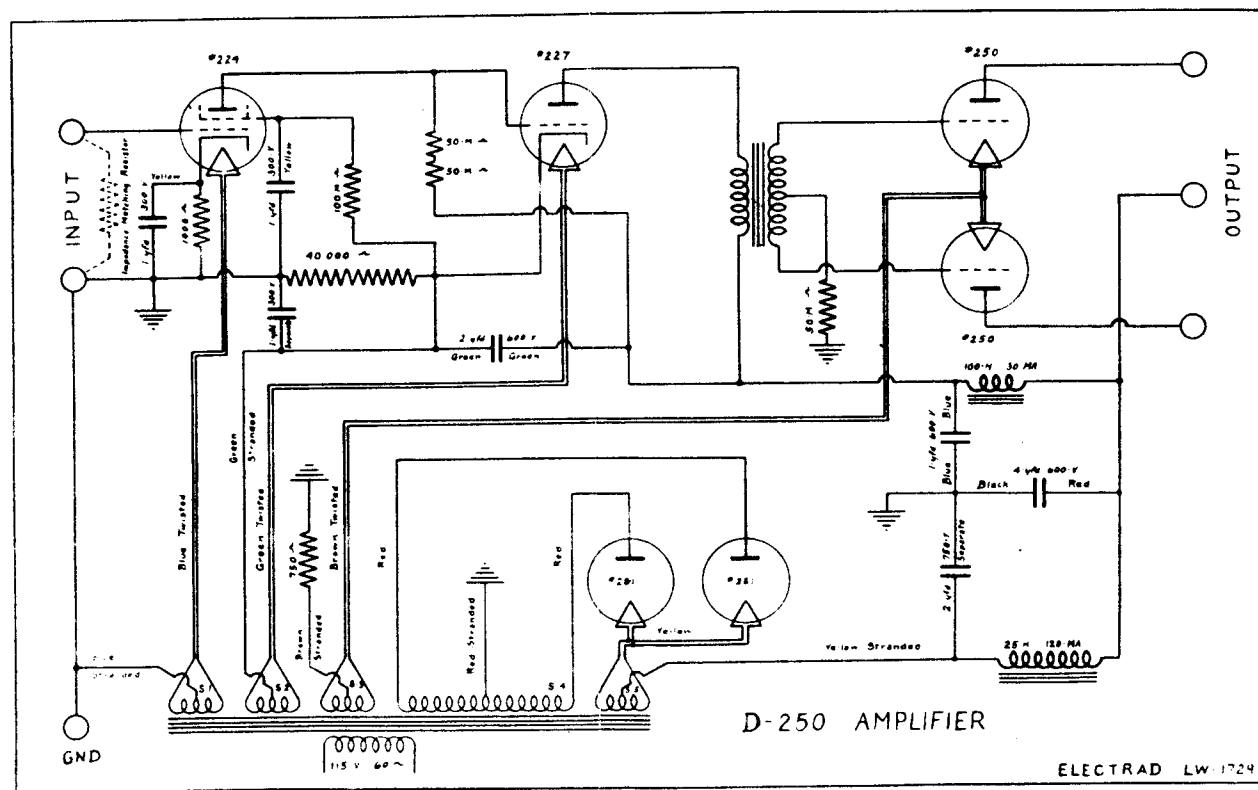
MANUFACTURED BY
BRETING RADIO MANUFACTURING COMPANY
2117 VENICE BOULEVARD
LOS ANGELES

SOLE BY

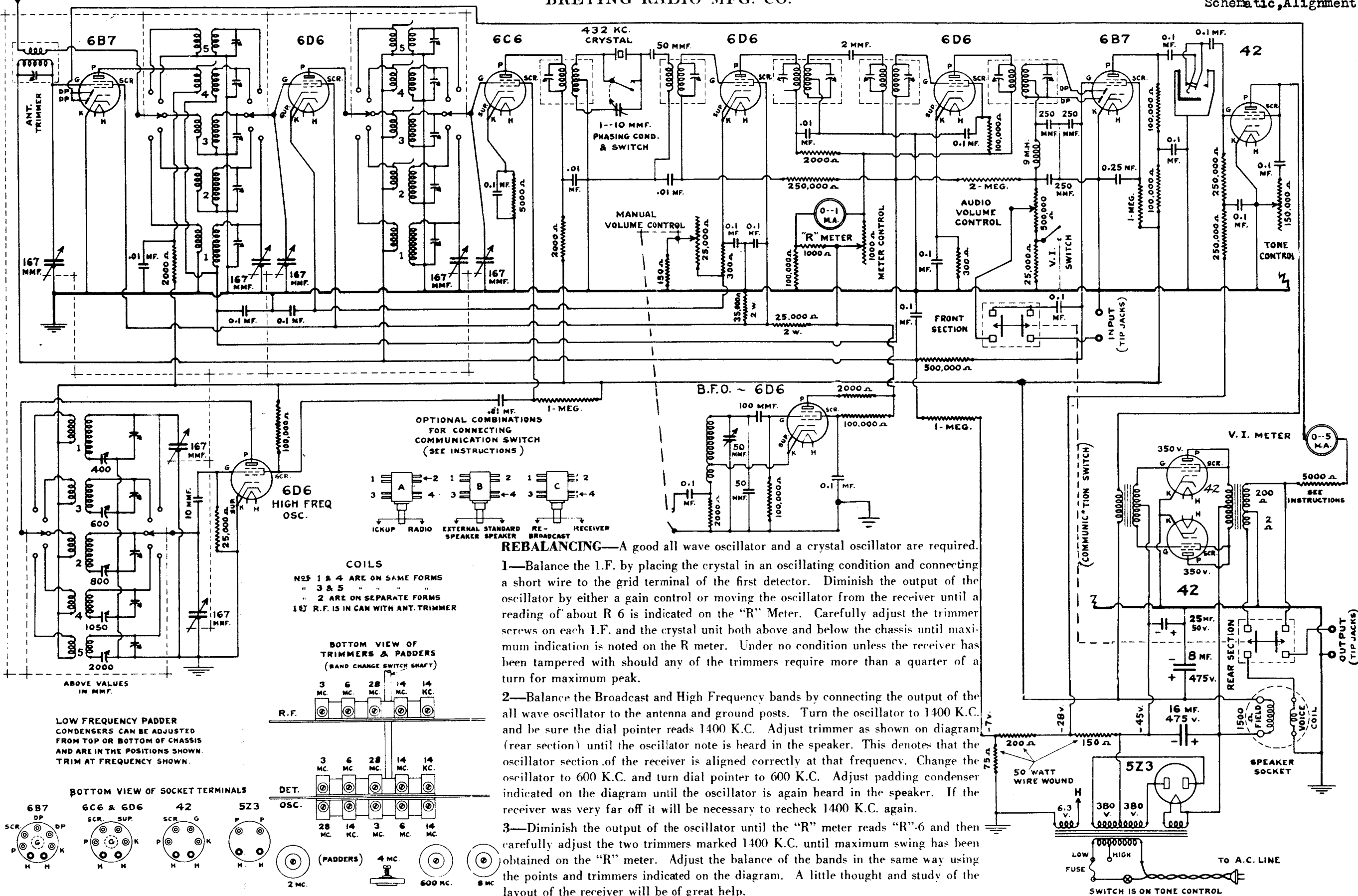
Stal
has two more
JLW



| Model | Power | Frequency | Modulation | Bandwidth | Channels | Features |
|--|-------|--------------|-----------------|-----------|----------|---|
| Thy. Breeling Amateur and All-Wave Crystal Filter Superheterodyne. | 100 W | 535-1600 KHz | AM, FM, SSB, CW | 15 KHz | 2 | It incorporates a speech amplifier for phone or P.A. use. Has percentage modulation indicator and a field strength indicator. |
| Uses high fidelity audio channel and wide-range A.V.C. | | | | | | |



DIAGRAMS for FARRAND "B" ELIMINATOR.



BRETING "9"

COMMUNICATIONS RECEIVER

PRECISION
ENGINEERING

"NO ONE CAN

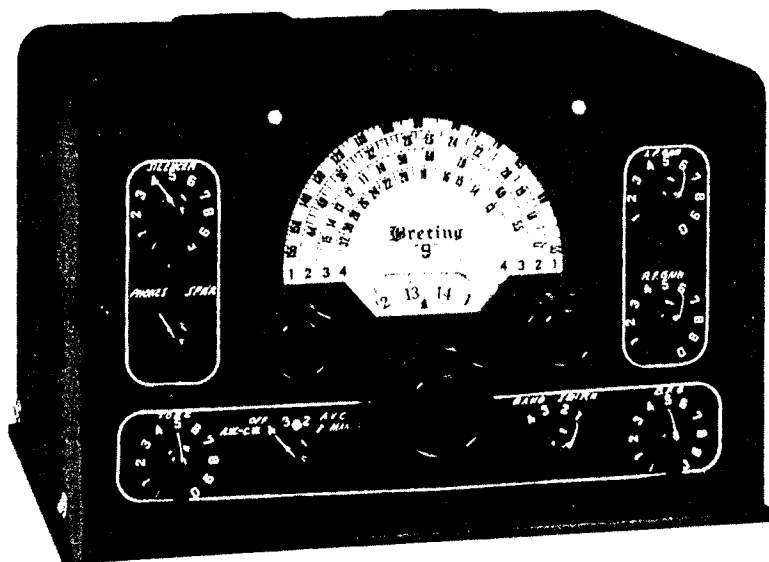
QUALITY
WORKMANSHIP

NOW AFFORD

EFFICIENT
PERFORMANCE

NOT TO OWN

A BRETING"



SPECIFICATIONS

FREQUENCY COVERAGE: 34 MEGS TO 540 KC IN FOUR BANDS AS FOLLOWS:

1600 to 540 KC

5.1 to 1.6 MEGACYCLES

15.8 to 5.1 MEGACYCLES

34 to 13 MEGACYCLES

TUBE COMPLEMENT (9)

- 1 6K7 - - 1st RF Amplifier
- 1 6J7 - - 1st Detector
- 1 6J7 - - High Frequency Oscillator
- 1 6K7 - - Regenerative Iron Core Intermediate Amplifier
- 1 6Q7 - - 2nd Detector and First Audio
- 1 6K7 - - Automatic Noise Silencer
- 1 6F6G - Audio Output
- 1 6C5 - - Beat Oscillator
- 1 80 - - Rectifier

NOISE SILENCING CIRCUIT: The noise silencer circuit is the same as used in Breting 14AX and is extremely efficient on phone as well as CW. It is entirely automatic in operation and may be controlled from the front panel and is independent of signal intensities.

BAND SPREAD: The band spread dial is permanently geared to the tuning condenser and it is calibrated—0 to 200 on 360 degrees.

| | | | |
|-----|-------------------|-------|------------|
| 10 | Meter Band covers | 150 | divisions. |
| 20 | " | " | 60 " |
| 40 | " | " | 85 " |
| 75 | " | Phone | 70 " |
| 75 | " | Total | 240 " |
| 160 | " | Phone | 330 " |
| 160 | " | Total | 500 " |

The vernier knob can be adjusted to have anywhere from 6 to 16 revolutions with one revolution of the band spread wheel.

DIMENSIONS AND WEIGHT: Overall dimensions of the complete set are 14½" wide, 10" deep and 10" high. Shipping weight, 33 lbs.

LIST PRICE

Complete with Metal Cabinet . . . 8" Dynamic Speaker and Tubes

\$90.00

Standard sets built for 105-135 Volts — 50-60 Cycles. For any voltages or frequencies other than Standard, add \$7.50 to List Price.

Radio Supply Presents

A **NEW** Department
COMMUNICATION RECEIVER SERVICE

by

Ray Gudie

Designing Engineer of the Famous

PR 10 - Breting 9 - 12 - 14 Receivers

~~~~~  
NEVER BEFORE HAS SUCH EXPERT SERVICE  
BEEN MADE AVAILABLE TO THE HAM  
~~~~~

If you bring in your set You'll be pleasantly surprised

- ★ At the low charge for this Service.
- ★ At the re-gained Sensitivity you didn't realize you had lost.
- ★ At the way the Crystal Circuit *can* be made to perform.

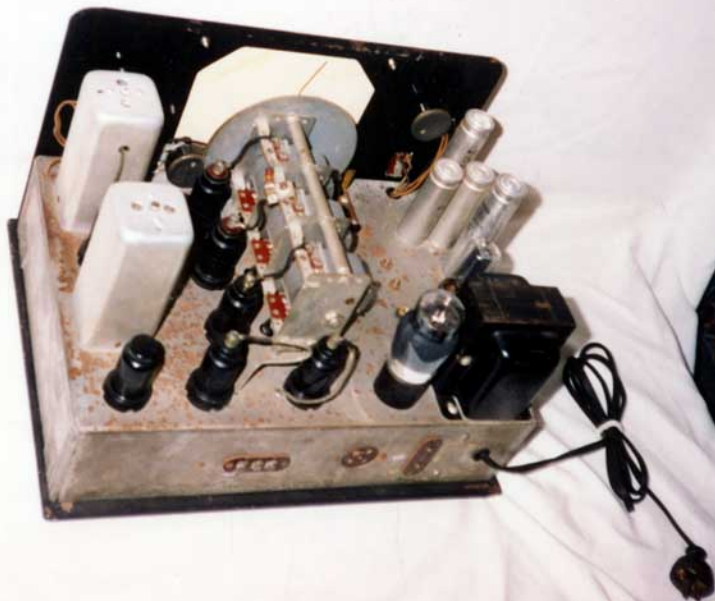
~~~~~  
*Want a noise silencer?*

**SEE RAY — INVESTIGATE**









Radio Supply Presents

*A* **NEW** Department  
COMMUNICATION RECEIVER SERVICE

by

**Ray Gudie**

*Designing Engineer of the Famous*

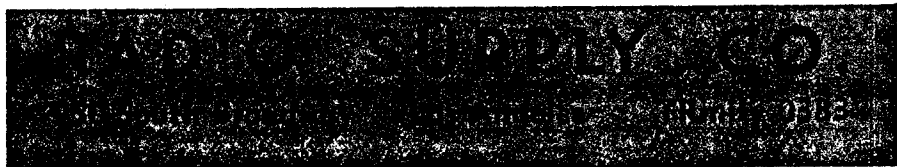
*PR 10 - Breting 9 - 12 - 14 Receivers*

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NEVER BEFORE HAS SUCH EXPERT SERVICE
BEEN MADE AVAILABLE TO THE HAM
~~~~~

If you bring in your set You'll be pleasantly surprised

- ★ At the low charge for this Service.
- ★ At the re-gained Sensitivity you didn't realize you had lost.
- ★ At the way the Crystal Circuit *can* be made to perform.

~~~~~  
Want a noise silencer?
SEE RAY — INVESTIGATE



APR 1939

"73"

TRADE FLASHES

(Continued from Page 9)

The new FCC commercial operators' licensing regulations will go into effect on May first. Procedure and method of examining operators has been radically changed. New setup is claimed to speed up and make exams easier.

Just a prediction, but it's our belief that Major Armstrong's frequency modulation system will revolutionize the entire broadcast structure—more on this later.

The Pierson-DeLane Co. (PR-15), has gone into the transmitter field. They have just completed the installation of the Glendale police transmitter, receivers and two-way units. They also have contracts for two other Southern California cities. Western Electric has issued them a license to cover such construction. Karl Pierson, W6BGH, is Chief Engineer.

"Bill" Miller, of the J. W. Miller Co., coil manufacturers, has been on an extended business trip throughout the East, calling on parts jobbers. Itinerary covers every leading jobber in the United States and Canada. As the trip takes several months, Mrs. M. accompanied him.

Charles Rogers, the radio operator of the ill-fated Morro Castle sea disaster of a few years ago, was recently sentenced to nine years in the New Jersey penitentiary for the attempted murder of his superior operator at the Trenton Police broadcast station where Rogers was assistant operator after his retirement from the sea.

It is predicted that, when the FCC accepts as standard the recommendations made by the IRE standardization committee at its recent Rochester meeting on television, that commercial station licenses will be issued. Early Fall in time for the World's Fairs is the forecast. Speaking of television, the burning question is: will it be magnetic or electrostatic deflection?

POINSETTIA CLUB

(Continued from Page 11)

the club is to be handled by the Board Directors which is composed of the above officers and NXJ, ERU and OWN. ER was chosen as chairman of the board. Permanent Quarters have been secured through the efforts of QKO. A club rig is being planned and things ought to get going in big way soon. Quarters will be located upon county property and we have the promise of a new building in the future. Meetings will be held the first and third Friday of each month at Seaside Park adjacent to the National Guard quarters.

QRM: Gess evy one hr gg screwy ov these new fangled signal shifters. Nu I've got a cuple of xtals which will shi all over the band es they didn't cost mu either! But can't tell where they r gg to shi is the only tng. GRL made vy high sco in DX contest but tnk he is gg to have little talk wid FCC on acct of lil gre QSL. JGQ gone fer 10 fone, hook, line, sinker. Ole "Grid Modulation" Conly, NX still on the recving end of quips fm ERL

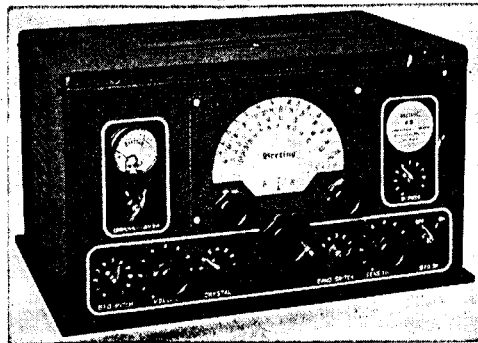
Heard a W6 call CQ 116 times the oth nite before signing. FB, yes I gess no! The writer doesn't claim to be much of a operator but he does try to abide by FCC ruling's. By the way, there are rules governin the number of calls a guy shud make. QI still entertaining the BCLs Hi! OWN s he is getting in the habit of talking to his self fm being on 10 fone so much. "Chunk Hill, LXE, is preparing to get back on tl air soon. Congrats to JGF es hope Rad Supply likes him as well as we did hr.

Oh yes! One of the rules of the new club is tt evy member must abide by ALL rules of the FCC. And if a member persists in breacking the regs he will be delt with accordingly. And that applies to AMOUNT C POWER, NOTES, CLICKS, BCL INTEL FERENCE, BOOTLEGGING and PROCEDURE. That means some of us have mend our ways.

W1, gess tts abt the dope except this; some of the rotten operating dont cea pretty sn I tnk we ought to have a lic page in "73" giving at least two letters of tl offenders call. Might serve to help us all do a btrr job on the ham bands. Or mayl its just sumpin i et wat makes me feel th way. 73 es BCNU.

"HERE'S) VALUE PLUS"

"49"



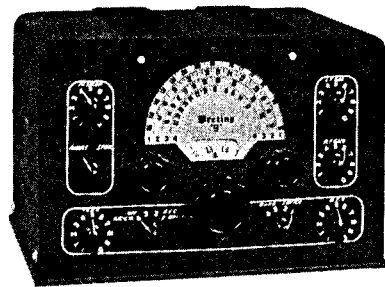
\$99.00

Amateur's Net
13 Tubes
High Q Coils
1560 K.C. I.F.
1852 R.F. Stage
Audio Will Modulate
100 Watts Peak

**B
R
E
T
I
N
G**

BOTH TUNE
34,000 Kc. to 550 Kc.

"9"



\$54.00

Amateur's Net
9 Tubes
Iron Core I.F.
Noise Silencer
3 Watts Output
360° Bandspread
High Sensitivity

BRETING RADIO MFG. CO.

1815 VENICE BLVD.

LOS ANGELES, CALIF.

Dec. 1938 RADIO mag.

ANNOUNCING THE NEW

BRETING-"49"

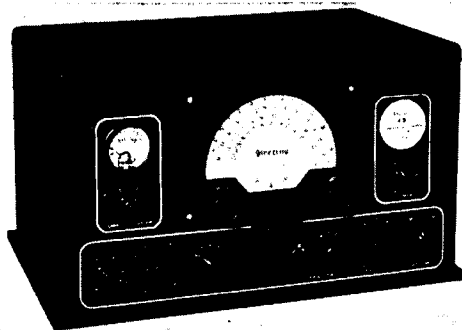
COMMUNICATIONS RECEIVER 13 TUBES

Frequency Coverage 34,000 to 550 Kc.
in 5 Bands

FEATURING

- HIGH-Q COILS
- 1560-KC. I.F.
- NEW 1852 IN R.F. STAGE
- EFFICIENT IMAGE REJECTIVITY

①



PLACE ORDERS WITH YOUR JOBBER FOR NOVEMBER DELIVERY

BRETING RADIO MANUFACTURING CO.

1815 VENICE BLVD.

Los Angeles

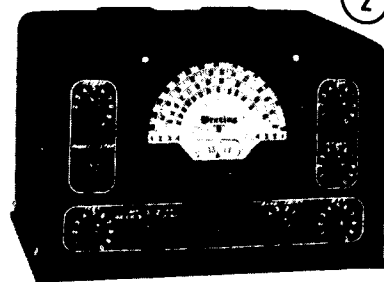
1938

U. S. A.

IN NOV 38 RAN - AD SAID "SIMILAR IN APPEARANCE TO
P25 9 TUBE MODEL" 9.P.

THE NEW BRETING "9"

②



Communications Receiver

- Variable Gain I. F.
- Iron Core I. F.'S
- Doublet Input 1939
- High Q Coils
- New Noise Silencer
- Fool Proof Filter
- Phone Plug
- 8" Speaker
- 360° Bandspread
- High Sensitivity
- 34 Megs. to 540 KC.
- Body Steel Chassis
- Quality Construction
- New Type Dial
- Panel B. F. O. Control
- Audio Output 3 Watts

Amateur's Net Price
\$54.

Immediate Delivery

For further particulars,
see your jobber or write

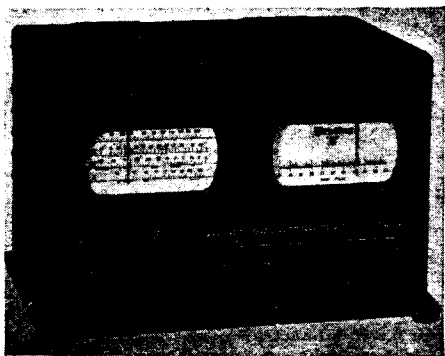
BRETING

Radio Manufacturing Co.

1815 Venice Blvd., Los Angeles, Cal.

THE SENSATIONAL, NEW BRETING "6"

COMMUNICATIONS RECEIVER



AMATEUR'S NET PRICE

32.40

COMPLETE!

③

FEATURING

- Electrical Band Spread
- Iron Core IF
- Separate High Q Coils (each band)
- Separate BFO Tube
- Doublet Input 1939
- Built-in Speaker

Unsurpassed for quality, workmanship, engineering and design, this receiver has a frequency coverage of 550KC to 30 megacycles in four bands. Dimensions are 8x8x12. For further particulars see your jobber or write.

BRETING RADIO MANUFACTURING COMPANY

1815 Venice Boulevard

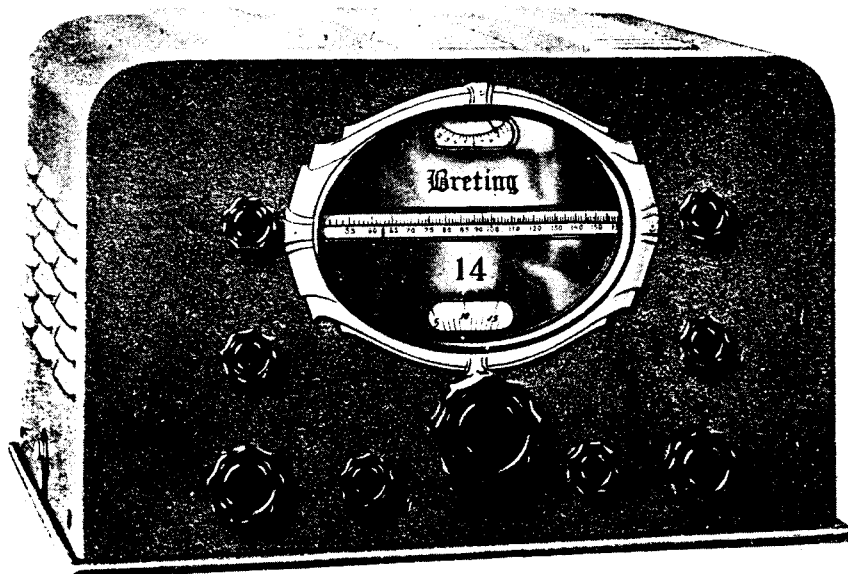
Los Angeles, California

The New



Breting

14"



NOISE SILENCER
AND DISCONNECTING
SWITCH

COMMUNICATION
SWITCH

BFO
SWITCH

RF
GAIN CONTROL

Audio
VOLUME
CONTROL

CRYSTAL
PHASING
CONDENSER

TUNING
CONTROL

BAND SELECTOR
SWITCH

tone CONTROL
AND AC SWITCH

CUSTOM
BUILT... **RADIO**

OPERATING INSTRUCTIONS

A PERSONAL MESSAGE

It is our sincere desire that Breting users obtain from their receiver the utmost in satisfactory performance, and it is with that in mind that we offer the information which is contained in the following paragraphs. We cannot emphasize too strongly the necessity of carefully and thoroughly reading these operating instruction notes, and, even though the operator feels that he might be thoroughly familiar with the operation of this type receiver, we still insist that he should not overlook the importance of giving a few moments' time to this most necessary initial procedure.

We have endeavored to cover a considerable amount of information in this booklet without going into intricate details, but we are confident that the information given will enable the operator to enjoy the satisfaction which this receiver merits if he will follow out the instructions carefully.

Bretting "14"

OPERATING AND GENERAL INSTRUCTIONS

ANTENNA: To insure best results it is absolutely essential that a first-class antenna be used. We recommend a single solid wire, 50-75 feet in length, including lead-in. Height over any obstruction in the immediate vicinity is, of course, highly desirable, and should be obtained whenever possible. An ideal situation with respect to antenna would be the use of two or three antennas running in different directions and using a switch mounted near the radio. This procedure would enable the operator to select the antenna giving the best results in any particular location.

On the higher frequencies a short antenna will usually give better results, and on the 10 meter band a 16 ft. vertical generally proves most efficient.

The only advantage obtained in using a doublet antenna would be to locate the antenna pick-up portion out of a noisy field, such as is usually found in a location near a street car line or much traveled highway. In locations of this kind the antenna proper can be located as far away as possible from the disturbing factor, and the long lead-in can be brought to the receiver without a great amount of loss. Almost all commercially made doublets are furnished with the matching transformer equipped with electro-static shields to eliminate any capacity pick-up in the lead-in. There are many coupling transformers on the market that may be obtained by anyone who desires to construct their own doublet, but when this is done a matching transformer should be used that is equipped with electro-static shield.

SPEAKER BAFFLE: The 12-inch speaker supplied with the receiver requires a baffle of at least 4 ft. tone travel. Needless to say, the wall of a room makes an ideal baffle, but if a wall is used it is important that the rear of the speaker be open to give best possible tone quality. Any kind of soft heavy material such as white pine or Celotex makes an ideal material to use. To add auxiliary speaker, use one of the permanent magnet dynamic type, and connect across the two wires that lead to the small prongs of the speaker plug which is furnished as regular equipment with the receiver.

NOISE SILENCER CONTROL: The noise silencer is equipped with a filament switch that turns the two noise silencer tubes off when in the extreme left position. To operate the silencer the control should be turned to the right, and after the tubes have had sufficient time to heat advancing the control will cause the set to block when a station is tuned in. The point of operation is very critical and just below the blocking point. The weaker the signal the more effective becomes the noise silencer. It is worthless on a strong signal and on certain types of noise. The silencer cannot be used on local or extremely strong signals. The silencer is not a cure-all for static generally speaking, but it is very efficient in eliminating certain types of interference.

COMMUNICATION SWITCH: The communication switch disconnects the audio amplifier from the radio and connects it to the tip jacks on the rear of the chassis. The middle terminals on rear of chassis are connected to the 200 ohm line, the bottom one of which is grounded to the chassis. The terminals nearest the speaker plug when opened break the B+ to the RF portion of the receiver. Needless to say, these terminals are hot

with respect to the chassis. The audio amplifier will drive any type of final amplifier, and if used as a modulator, will modulate approximately 100 watts. When using the receiver as a modulator, a modulation transformer with a 200 ohm primary and a secondary with a correct load to match the transmitter must be used. Numerous speaker transformers when reversed will operate satisfactorily for this purpose and several manufacturers have special transformers expressly made for this service, such as Inca Models N18 and N17.

A large number of amateurs are modulating at speech frequencies, 100W transmitters. In case feed back difficulties are encountered, try reversing connections on the external transformers and shielding all connecting wires. Sometimes a separate switch on the B+ terminals will be necessary while transmitting. A microphone transformer and volume control will be necessary for high level carbon microphones, and a high gain preamplifier is necessary for low level microphones. A single high gain stage is generally sufficient for the diaphragm type crystal microphone.

The filament and plate power for the preamplifier stage can be supplied by the receiver. On rotary type communication switch extra terminals are supplied to turn transmitter on with the communication switch.

AUDIO VOLUME CONTROL: The audio volume control is connected between the first audio and the second detector.

CRYSTAL PHASING CONDENSER: To obtain results with the crystal circuit, a complete understanding of crystal selectivity must be had by the operator.

Let us consider the ordinary C. W. signal as received by a super with the crystal in the off position. The band width of the carrier is about 10,000 cycles and is heard as a series of dot and dash hissing sounds as the receiver is tuned thru the range of the 10,000 cycles. If the beat oscillator is turned on and adjusted when the dial is set to the center of the carrier, you will notice that the C. W. signal becomes a howl and the pitch varies as the beat oscillator adjustment is turned from one side to the other. It starts as an extremely high pitch howl down to a zero beat point and then up the other side until the pitch becomes so high it is lost to the ears.

Now set the beat oscillator until a 1,000 cycle note is heard. Next adjust the crystal trimmer until the background noise is at minimum and a ringing sound is heard in the speaker. The C. W. signal will probably have been lost during this operation and the main dial will have to be readjusted until you find the narrow peak of the signal.

Remember that the peak of the crystal is only 50 cycles wide compared to 10,000 cycles without crystal. You can understand by comparing the above figures why the average amateur never finds the C. W. peak on the crystal and is ready to condemn its performance. The signal strength should not change as the trimmer is turned from the left hand off position to the right hand position.

Greatest selectivity of the crystal will be found as the trimmer is turned about two-thirds of the way to the right. If the signal strength changes as the trimmer is adjusted, the signal is not tuned in on the peak or else the beat oscillator is not adjusted 1,000 cycles to one side of zero beat. Different degrees of selectivity can be obtained on C. W. by not bringing the crystal trimmer in exact

phase. The broad positions are on either side of where minimum noise is heard.

For phone reception leave beat oscillator off and keep crystal in either position. At best the reception will be poor.

On C. W. turn the volume control three-quarters on and use the manual control to bring up the signal level. Do not advance it too far on the crystal as it will overload the first detector and motor boating will result.

TUNING CONTROL: The tuning control has a simplified 2-speed action that automatically goes into high speed after the large knob has been rotated three times in either direction. If fairly slow speed tuning is desired, remove the brass arms behind the large knob. This can be accomplished by merely removing the knob itself.

BAND SWITCH: Trimmers and coils are mounted on the band switch and should not be tampered with. Rotate the band switch slowly to allow the calibrated dial to follow with the least amount of strain and to minimize arcing in the contacts.

TOPE CONTROL AND AC SWITCH: The tone control carries the AC switch and turning same to left hand position disconnects the radio from the AC line. It is not necessary to turn any of the other controls to accomplish this purpose. This allows the user to leave the radio tuned to any station and upon returning only the AC switch need be turned.

BEAT FREQUENCY OSCILLATOR SWITCH: The beat oscillator control turns the R meter off and converts the vacuum tube volt meter tube into a beat oscillator. It also shorts out the AVC circuit requiring the manual volume control to be turned to the left to keep from blocking the receiver.

To locate weak stations, turn beat oscillator switch to the right. This should produce a hissing sound in the speaker, and as the tuning dial is rotated, all stations will be heard with a definite squeal. After locating station, retune to greatest volume.

Adjust beat oscillator by turning the condenser shaft extending through the bottom front, left corner until the desired pitch is obtained. To make the beat oscillator adjustable from the front panel solder a heavy wire or handle to the shaft and allow it to extend out under the base pan.

RF GAIN CONTROL OR MANUAL VOLUME CONTROL: The RF gain control is used for code reception and should be rotated to the left when silent tuning is desired.

R METER ADJUSTMENT: To adjust the R meter, disconnect the antenna, and after the receiver has been on a few minutes, turn the control marked "R" METER ADJUSTMENT until the pointer swings to the maximum left hand position. The meter is at ground potential and cannot be damaged except through rough handling in a mechanical way.

ANTENNA TRIMMER ADJUSTMENT: Adjust the antenna trimmer on any station around 14 megacycles. Turn adjusting screw carefully until greatest signal strength is shown on the R meter. DO NOT ADJUST ANY OTHER TRIMMERS. The trimmer is adjusted correctly at the factory and should not require over 1/2 turn in either direction.

GUARANTEE

The manufacturer warrants each new Bretting receiver manufactured by it to be free from defects in material and workmanship under normal use and service, its obligation under the warranty being limited to making good at its factory any part or parts thereof, including tubes and speaker, which shall within ninety (90) days after making delivery of such receiver to the original purchaser be returned to it with transportation charges prepaid, and which its examination shall disclose to its satisfaction to have been thus defective; this warranty being expressly in lieu of all other warranties expressed or implied and of all other obligations or liabilities on its part, and it neither assumes nor authorizes any other person to assume for it any liability in connection with the sale of its receivers. This warranty shall not apply to any receiver which shall have been repaired or altered by anyone outside of the factory which has been subject to misuse, negligence or accident.



ECT 36

ditional cost of air-trimmed transformers is
en justified in this type of job.
An alternative scheme is to tinker with the
coupling of existing i.f. transformers—usually
profitably.

Tuning and Signal-Strength Indicators

A "tuning meter" in the broadcast receiver
seems rather pointless since such a device
seldom permitted to work without interference,
besides which the operator is concentrating
on the signal and will tune it in "on the
nose" without any meter-waverings to alarm
him. Therefore, merely putting a d.c. supply
to the plate-supply lead common to the
tubes, while easily possible, was not done in
the set shown here, because it had not been
used during the "breadboard" stage. Incidentally,
such meters start to operate about the time
the a.v.c. goes to work, and are therefore useful
mainly on strong signals of the "R9 plus plus"
type which we get on alternate Fridays. They
are enough from interference to know which signal
the meter is reading.

On the other hand, it is certainly necessary
to know something about the signal strength,
which may justify such a meter. It must be
read with some fixed position of the manual
gain control governing the r.f. and i.f. stages,
for instance, wide open. As an alternative one
can always adjust the meter to the zero point
on its scale by setting the manual gain control
to get that reading. This is the scheme used in
the well-known ACR-175 receiver and of
course requires some sort of a signal strength
scale on the gain control. If you can borrow a
"microvolter" you can calibrate the control in
microvolts as in the ACR-175. Otherwise, you
"guess in" an "R" scale by listening. These
meters are somewhat slow in action, but as well
as well to drop the meter idea altogether and
instead use a 6E5 "electric eye" but as an
indicator, gauging the signal strength by the flicker
of the gain control which will flicker on
"eye" to flickering on c.w. or just after it
close up on voice. This is, incidentally, useful
for detecting any serious modulation fault in
a voice signal—but don't take that too far.

Odds and Ends

I do not know how many accessories
with headsets nowadays, but find that the
tendency is to use the headset only when the
receiver has a particularly terrible headstage.
In this case no headset jack was incorporated,
all, nor has there been one on any other
ceiver used at W1FG. When a headset is
ed it is connected in by clipping one end to
to chassis, and the other to the plate of the

tube in series with a pair of condensers
which are in series, because one might break
and it is a good headset). The audio
is lowered to give a proper headset level
the speaker is essentially silent. At least
plan is simple. I like it; but mostly I like
speaker—a good big decent speaker. The
thing on the rig shown is not all that could
be desired, by the way. It is good enough for
but for voice this baffle is extended by
"wings" of thick celotex extending backward
the speaker panel at both sides and at the
Note that the rack uprights extend above
panel to permit this. The wings are a foot
fore-and-aft and make quite a difference.
Incidentally, if you use a cloth-covered grill it
will be found hard to cement the cloth to either
wood or masonry until one uses canvas cement
which is employed in building canvas canoes.
This is tremendous stuff; don't let it dry on
your fingers!

One parting warning. Some receivers have
trimmers in the most impossible places, and
there always comes a time when one needs to
adjust them. In the case of the A-82 shown

here all trimmers are accessible when the set is
mounted as shown: that is, screwed down with
its original mounting screws passing through
a pair of 1" x 2" wooden strips held by wood-
screws passing through the steel brackets into
the end of the strips. By merely unplugging the
speaker and dismounting the lower panel, nearly
anything can be done to the receivers. The
"sentry box" unit which contains the r.f. system
can be dismounted if necessary. It is al-
most equally easy to take the set from the panel,
as it is only necessary to remove the control
knobs, lean the panel forward, and unscrew the
4 hold-down screws. From a repair standpoint,
the panel mounting is more convenient than the
original cabinet, besides putting the controls
nearer the table top and within easier reach.

Three Tube Kilowatt

[Continued from Page 27]

coil of the individual band giving the trouble
or more capacity may be added to the circuit
from the neutralizing end of the coil to ground,
until this capacity is equal to the inter-electrode
capacity of the tube. Of course, the neutralizing
end of the coil should be connected to the ro-

Important Announcement

Bretting PRESENTS...

A NEW COMMUNICATIONS RECEIVER FOR 1937

"A worthy companion to the now famous BRETING 12"

AT YOUR DEALERS SOON

We wish to take this opportunity to thank the Amateurs throughout
the country for their enthusiastic acceptance of our product in the past
and assure them that their confidence in us will continue to be justified
in the future.

For further particulars write us.

Bretting
RADIO MFG. CO.

2117 VENICE BLVD.

LOS ANGELES

NEW TRANSMITTING TUBE

The 834

R.C.A. has released to amateurs a new purpose "low-C" tube that is adapted to u.h.f. work. The grid is supported from the top of the envelope by individual leads which are brought out through separate seals. This construction insures low interelectrode capacitance and minimum lead inductance. This new tube is of the type number 834, and may be operated at a maximum rating at frequencies up to 100 mc., and at reduced input up to 150 mc. This new tube has a thoriated tungsten filament drawing 3.25 amperes at 7½ volts, and 35 watt plate dissipation. Performance at frequencies may be taken as approximately the same as that of the well-known 833 tube at frequencies above 50 mc. An improvement has been noticed, due to the shorter internal distance between the filament and the grid, resulting in a more efficient elimination of supporting material.

New High Mu, Low C, 35 Watt. One of our engineers, after gaining experience in (or maybe he just sneaked in) the sanctum sanctorium of the laboratory of the well-known transmitting tube makers, returned with a story of a new tube, low C, 35 watt that is soon to be released. He very nearly got away with one of the experimental models, but was unfortunately caught having an overcoat on at the time. However, we hope to have samples to "play with" by the time this appears in print, and by next month we will have all the dope and plans for a transmitter using the new tube. The tube has a μ of 27; approximate transconductance of 50 μ mhos; 35 watt plate dissipation; interelectrode capacities of less than one p.f. between any two elements. The plate circuit is a tuned circuit, and the plate is mounted on a lead out the isolantite base. The maximum power output in class C is 90 watts at 100 mc. The class B audio output (peak) is 100 watts. The plate voltage is 130 volts. The filament is thoriated tungsten and draws 4 amperes at 7½ volts.

W9DUM is a college station.

TRADE IN YOUR RE

- HAMMARLUNDS-NATIONALS-BIG
- MCMURDO-SILVER-PATTERSON

SCHWARZ RADIO S
15 LAWRENCE AVE. DUN

Contest

It is convinced that there are dozens of authors in the amateur ranks who "hide their light under a bushel" and, as potential authors, need some stimulus or incentive to rouse them to "taking pen in hand". We are sponsoring a contest for the express purpose of encouraging retiring amateurs.

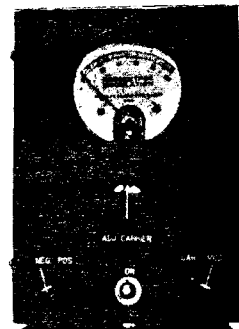
The purpose of this article contest are as follows:

- The contest is open to anyone who has not published a feature-length article published in any radio magazine since July 1, 1934.
- The article must be technical in scope to include constructional articles will be given "points" than non-constructional articles of the same merit. Photos count 25%.
- Manuscripts must be postmarked by March 1, 1935.
- All articles accepted for publication will be paid for at regular rates without regard to the contest.
- The author of the article that is chosen as the winner of all entries submitted will receive, in addition to payment for the article at regular rates, a bonus of \$50.00.
- All accepted manuscripts returned unless accompanied by a stamped, addressed envelope.
- The members of the Radio technical staff will act as judges.
- The story must be original and must not have appeared in other periodicals.
- It is reserved the right to declare "no contest" should not more than two entries suitable for publication be received and accepted at regular rates.

USE A

Modulation Monitor

to Comply with FCC Rule 381



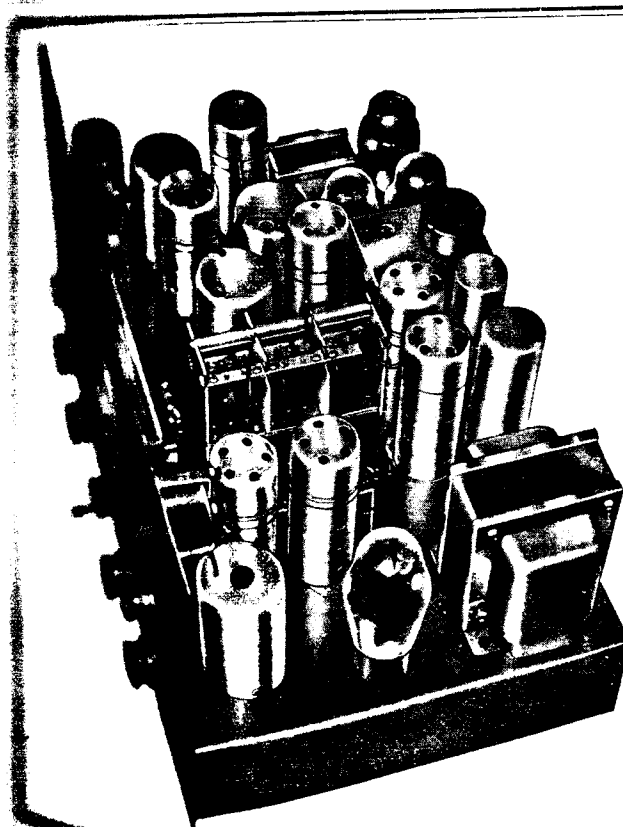
★ This modulation monitor reads directly percentage modulation on either positive or negative peaks and indicates carrier shift during modulation. May be used on frequencies from 500 to 30,000 kc.

A simplified version of the type of required by the FCC in all broadcast stations by November 1, 1936. Requires no changes in your "rig".

Net Price \$20.00

DOOLITTLE & FALKNOR, Inc.
7421 SOUTH LOOMIS BLVD.
CHICAGO, ILL.

MAR 1936 RADIO



THE...

BRETING 12

• An outstanding receiver especially adapted to amateur requirements, designed by Ray Gudie, generally conceded the most competent and successful designer of short wave radio today. We invite comparison, band for band, with any receiver on the market today, regardless of price or the number of tubes used. Your verdict will be the same as that of hundreds of amateurs who are Breting owners.

- Frequency coverage—550 to 32,000 kc.
- Audio Output—Flat from 30 to 11,000 cycles, 18 watts at 5% distortion.
- Meters—Two, one for carrier strength and one for percentage modulation.
- Communication switch—Allows use of receiver as speech amplifier or modulator.
- Price—\$93.00 net, complete with 12" speaker, crystal, and tubes, F.O.B. Los Angeles. Weight packed for shipment, 63 lbs.

See your local jobber or write

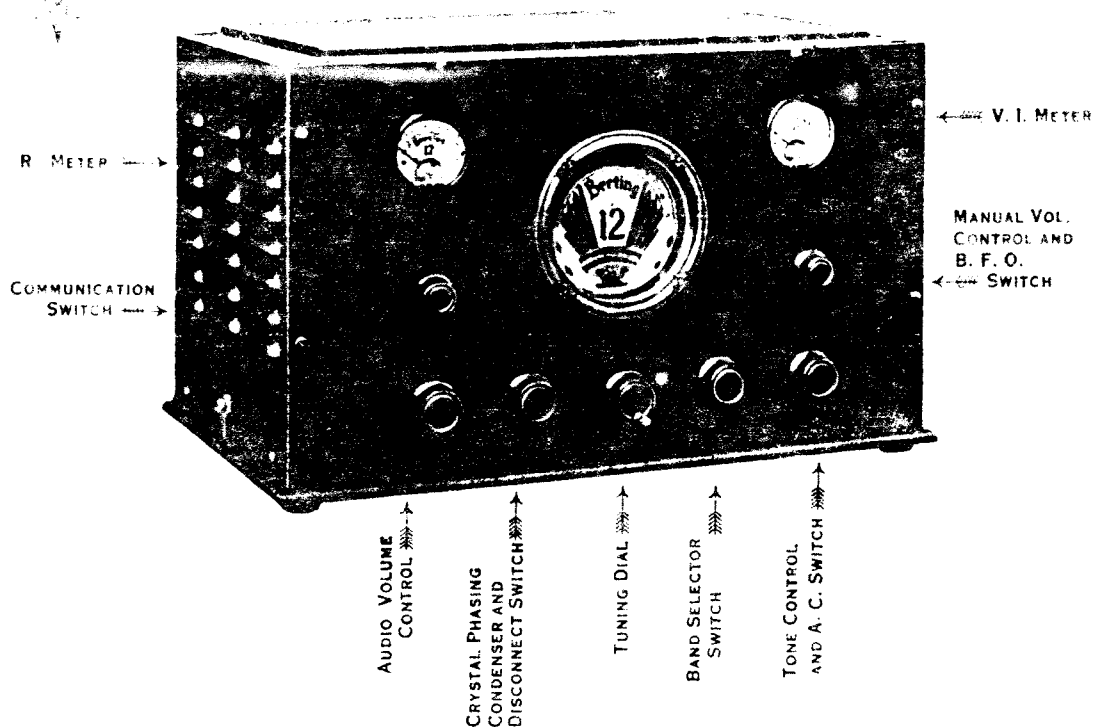
BRETING RADIO MFG. CO.
2117 Venice Blvd. Los Angeles, U.S.A.

A N N O U N C I N G ★

The NEW
★ Breting ★ "12"

SCIENTIFICALLY CORRECT

D • X • R A D I O



ENGINEERING

Precision engineering, the first requisite in a radio receiver of this type, was of course, the most important factor in designing the Breting 12. The ideal situation naturally would be to find a specialist among Radio Engineers who had made a particular study of the science of DX communication and one who had a practical working knowledge of the exacting requirements demanded by the Radio Amateur.

Such specialists are rare in the radio industry today and we were fortunate in having the outstanding exponent of this type engineering to design and build the Breting 12 precision instrument.

The radio amateur, peer of all critics in the field, will welcome the announcement that the designer of this most modern receiver is Mr. Ray Gudie, the successful designer of really efficient DX radio for the amateur and professional experimenter.

Mr. Gudie places the Breting 12 ahead of anything he has accomplished in this specialized field and we are proud of having the privilege of presenting his latest achievement to you.

WE EARNESTLY INVITE COMPARISON, BAND FOR BAND, WITH ANY RECEIVER ON THE AMERICAN OR FOREIGN MARKET TODAY.

PERFORMANCE

It is common practice among some Radio Manufacturers to build their advertising on exaggerated claims and statements which in the final analysis are nothing more than an insult to the readers' intelligence. Suffice to say that the Breting 12 receiver is an instrument containing sound engineering and the finest component parts and workmanship obtainable. We leave it to the users of our product to furnish the superlatives and confidently leave the decision in their hands in cases where comparisons are made. There is no substitute for quality, which accounts for our confidence in the product.

SPECIFICATIONS

CABINET: The cabinet, as pictured, is constructed of 18 gauge auto body steel, and because of its unique design, is a part of the chassis itself. This feature insures perfect alignment and will not require removal when making inspection of any part of the receiver. Same is finished in black crackle of a superior quality and is set off by the oxidized silver escutcheon and handles. It will be noted that our mechanical engineers have combined beauty as well as practicability in designing the case which houses the instrument itself.

DIMENSIONS: Over all dimensions of the complete set are 17½" wide, 11¼" deep, and 10½" high. These permit relay rack mounting. Weight of the complete set packed for shipment is 63 pounds.

CHASSIS: The chassis is constructed of 18 gauge auto body steel with life time chromium plate exterior finish and copper and cadmium interior. This is necessary to isolate all high frequency currents. All aluminum parts such as tube shields, etc., are highly polished and give the entire assembly a very beautiful appearance.

TUBES: Tube specifications are as follows:

- 1—6B7 as first stage high frequency amplifier.
- 1—6D6 as second stage high frequency amplifier.
- 1—6D6 oscillator.
- 1—6C6 first detector.
- 2—6D6 intermediate amplifiers.
- 1—6B7 combination second detector, A. V. C. and first audio.
- 1—12 as second audio or driver.
- 2—12 class A-B push pull output.
- 1—5Z3 rectifier.
- 1—6D6 beat frequency oscillator.

FREQUENCY COVERAGE:

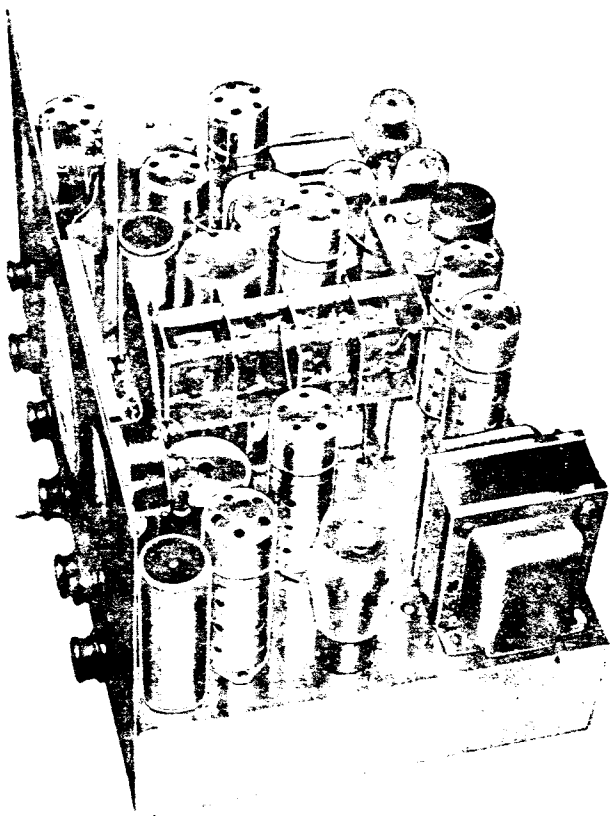
32,000 kilocycles to 550 kilocycles in five bands as follows:

- *32,000 KC to 11,500 KC
- 11,500 KC to 7,000 KC
- 7,000 KC to 3,500 KC
- 3,500 KC to 1,500 KC
- 1,500 KC to 550 KC

All bands use one stage of R. F. with the exception of the 11,500 to 7,000 KC band which uses two stages. This gives greatest amplification where needed most, the 20 and 40 meter amateur bands.

The first detector and oscillator are of the screen coupled type and work very efficiently on 10 meters.

*The receiver can be balanced to take in the 813 meter police band, but due to poor transmitting on such high frequencies we do not attempt to cover this on standard receivers. However, the set can be supplied in this manner when demanded.



★ **INTERMEDIATE AMPLIFIER—432-KC.** Two stages. First stage link coupled, low impedance transmission line. Second stage, four tuned circuit band pass. This gives the ideal type selectivity with a wide top curve instead of the ordinary sharp peak and wide skirt, so commonly used, which produces critical tuning and poor rejectivity. All coils are litz wound and tuned with non-drifting compression type trimmers. The over all selectivity is approximately 9 KC.

CRYSTAL FILTER in receivers equipped with crystal filter, the first stage is separated into two units and a low impedance transmission line is used to couple the two circuits. The crystal and phasing condenser operate in series position in the low impedance line. The crystal disconnect switch is operated with the same knob controlling the phasing condenser. All crystals supplied have only one peak.

SECOND DETECTOR: A combination duo-diode pentode controls the A. V. C. as well as providing rectification and is highly filtered to eliminate any R. F. in the audio circuit. The pentode part of the second detector acts as first audio stage and provides tremendous voltage amplification. A phone jack at ground potential is located in the plate circuit and positively disconnects the speaker when the head phones are connected.

AUDIO OUTPUT: Two 42 tubes driven by a single 42. The final stage is operated with 40 volts fixed bias and 365 volts on the plate, operating class A at low volume and class B at high volume, delivering 18 watts to the speaker. The output transformer is mounted in the receiver and carries a 200 ohm winding as well as a 2 ohm voice coil winding.

METERS: The R meter, calibrated in R strength, is connected in a bridge circuit and does not require the use of a tube in its operation.

The volume indicator is connected across the 200 ohm output winding and uses as rectifier the diode part of the first R. F. stage. This meter is arbitrarily calibrated in units. Modulation percentage, or strength of C. W. stations, can be accurately read. An audio level switch is incorporated in the volume control to provide a fixed output.

COMMUNICATION SWITCH: The communication switch disconnects the audio amplifier from the receiver and connects it to the tip jacks on the rear of the chassis. This provides the amateur with an audio amplifier having 96 DB gain and 25 to 30 watts of power across the 200 ohm winding. The input tip jacks go directly to the grid of the 6B7 first audio. The over all response of the audio channel is flat from 30 cycles to 11,000 and has zero hum level.

DIAL: The individually calibrated bands are shown complete in the upper window of the dial as the band selector switch is rotated. The band spread is purely mechanical, operating on an 11 to 1 ratio, and is positively geared to the condenser gang at all times. All back lash has been eliminated, providing positive calibration even while working stations not in the amateur bands.

BEAT OSCILLATOR: Can be controlled from the front panel and is turned on and off in conjunction with the manual volume control.

LIST PRICES—F. O. B. LOS ANGELES

| | |
|--|----------|
| Chassis Complete, Tubes, 12" Speaker (Less Crystal and Meters) - - - | \$135.00 |
| Chassis Complete, Tubes, 12" Speaker (With Crystal) - - - | \$145.00 |
| Metal Cabinet Complete, Tubes, 12" Speaker (Less Crystal) - - - | \$115.00 |
| Metal Cabinet Complete, Tubes, 12" Speaker (With Crystal) - - - | \$155.00 |

(Above prices net cash)

Standard sets built for 105-135 Volt—50-60 Cycles.

For any voltages or frequencies other than standard add \$5.00 to list price.

Licensed Under RCA-Hazeltine and Latour Patents

MANUFACTURED BY

Breting Radio Mfg. Co.

★
★
★

GENERAL INFORMATION—The condition of tubes in any radio receiving set are so vital to its successful operation that we would first call attention to these before any test or check of the receiver is made.

A new tube is not necessarily a good tube and for that reason this first step in diagnosing trouble should be gone into thoroughly, irrespective of the length of time a receiver might have been in operation. A great deal of unnecessary effort and waste of time can be eliminated, in some cases, by adopting this common sense procedure. If a tube is going to give trouble the defect will generally be apparent during the first thirty days of operation. It necessarily follows that the more tubes used in a given receiver the greater the possibility for tube trouble.

The Breting receiver is of course thoroughly checked, inspected and tested by the most competent factory trained men; but, as it is impossible to operate each individual receiver several days, defects may show after the receiver has been shipped. It is for this reason that we outline in the following paragraphs a general mode of procedure that should cover any problems that may confront the Service Man.

HUM—The push pull 12 tubes require balancing. Remove the 12 tube nearest the front of the chassis and interchange with the two tubes in the rear until minimum hum is heard in the speaker. Try placing an 8 mfd. condenser across the filter units of the set, determine this way if any are open. Check the paper by pass condensers the same way, starting at the plate circuit of the second detector and continuing through to the final stage. Sometimes a .1 condenser connected across the speaker field will balance out hum due to poor power factor.

REBALANCING—A good all wave oscillator and a crystal oscillator are required.

1—Balance the I.F. by placing the crystal in an oscillating condition and connecting a short wire to the grid terminal of the first detector. Diminish the output of the oscillator by either a gain control or moving the oscillator from the receiver until a reading of about R 6 is indicated on the "R" Meter. Carefully adjust the trimmer screws on each I.F. and the crystal unit both above and below the chassis until maximum indication is noted on the R meter. Under no condition unless the receiver has been tampered with should any of the trimmers require more than a quarter of a turn for maximum peak.

2—Balance the Broadcast and High Frequency bands by connecting the output of the all wave oscillator to the antenna and ground posts. Turn the oscillator to 1400 K.C. and be sure the dial pointer reads 1400 K.C. Adjust trimmer as shown on diagram (rear section) until the oscillator note is heard in the speaker. This denotes that the oscillator section of the receiver is aligned correctly at that frequency. Change the oscillator to 600 K.C. and turn dial pointer to 600 K.C. Adjust padding condenser indicated on the diagram until the oscillator is again heard in the speaker. If the receiver was very far off it will be necessary to recheck 1400 K.C. again.

3—Diminish the output of the oscillator until the "R" meter reads "R"-6 and then carefully adjust the two trimmers marked 1400 K.C. until maximum swing has been obtained on the "R" meter. Adjust the balance of the bands in the same way using the points and trimmers indicated on the diagram. A little thought and study of the layout of the receiver will be of great help.

**DO NOT BEND ANY OF THE CONDENSER PLATES.
IT IS NOT NECESSARY.**

The circuit diagram is practically self-explanatory. The audio system is ordinarily supplied connected as a modulator unit for a transmitter. Different switch drawings are shown on the diagram sheet and by shorting out the terminals, indicated by the arrow in each case, will connect the audio system for the different uses.

To align IF: Let receiver and signal generator warm up thoroughly. Set crystal filter in ON position. Tune signal generator back and forth until exact crystal frequency is found as indicated by a sharp rise in output. Then align IF at that frequency (with xtal off.).

GUARANTEE—The Breting receiver is guaranteed against defective workmanship and material for a period of ninety days. To conform with our policy it is necessary that any part proving defective within the guarantee period be sent to us at 2117 Venice Blvd., Los Angeles, California. We will not replace a part under any circumstances unless the defective unit is returned to us with a letter giving the serial number of the receiver from which it is taken and also the information from whom the receiver was purchased.

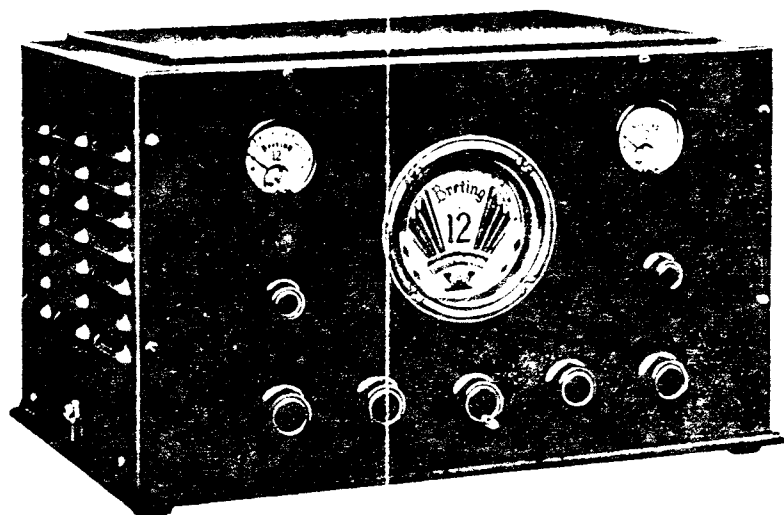
★

Breting Radio Mfg. Co.

2117 VENICE BLVD.

LOS ANGELES

SERVICE MANUAL



The NEW
★ Breting ★ "12"
SCIENTIFICALLY CORRECT
D • X • R A D I O

ALAN S. DOUGLAS
Box 225
Pocasset, Mass. 02559



RCA Victor Company, Inc.

ADDRESS FOR RADIOGRAMS
VICTOR

CAMDEN, N.J., U.S.A.

July 25, 1993

Hi,

Wow, I just looked at the postmark on your letter -- a month ago -- I should get my tail in gear if you want any timely comments on the Gilfillan/Breting business. Not that I can say much; the story is a bit choppy but then, so is the basic information. One thing that bothered me while reading it was the third paragraph, but if you omitted "for Emmitt Patterson" and "for Emmitt" I think it would read more smoothly.

In the "stupendous revelations" category, have you noticed that the Breting model numbers correlate perfectly with the number of tubes? "49" would be 4 + 9 and "40" would be 4 + 10.

The story could sure use more padding, couldn't it? Did Breting or Gudie ever write up their sets for Radio or another magazine?

I'm all set on old IRE volumes, sorry. Too bad it wasn't a yearbook. I still have only scattered issues after 1932. Funny they never turn up -- the early ones do. I think I have a spare 1930 or 31 around here somewhere, if you wanted it. Another useful titke is Who's Who In Engineering; I have a 1922-23 volume, Doug Furney out in Colorado has the next one, but I've never even seen one after that and am not sure how long it lasted.

Yes, RCA reduced the royalty to 5%. Can't guarantee the date, but 1932 sounds right. Maclaurin is pretty reliable. Incidentally, Hugh Aitken once told me he had checked to see if Maclaurin's files still existed, but found nothing. Would have been 15 - 20 years ago, when he was researching for his books.

I'm getting interested in the beginnings of hi-fi radio in the early 30s. Philco seems to have been the prime mover, though why they pushed so hard I'm not quite sure. Pet project of Jim Skinner, Philco president, most likely. No doubt it helped Philco's image but I doubt that it improved the bottom line. Any West Coast angles on early fi that you know of? One thing I don't have much of a feel for, is the extent of the hi-fi fad, if it even rates as a fad, maybe only a few audio nuts anywhere. Certainly there wasn't much program material to listen to. I wonder, for instance, how many people bought Western Electric theater sound equipment for home use. Some did in England, and got writeups in Wireless World. I have a pair of W.E. 555 electrodynamic horn drivers (one dated 1932) set up here in the library on large sectoral horns. They sound very nice (playing CDs!) and will blow you out of the room at 3 watts (6BX7 dual triode each channel, an amp I built in college).



73

Alan

H. L. CHADBOURNE
530 MIDWAY STREET
LA JOLLA, CALIFORNIA 92037
(619) 454-4989

18 February 1987

Dear Floyd:

Looks like you've made a discovery! I too thought Breting was involved only with communication receivers, and there's nothing in my file on the co. to indicate otherwise. But the logo you drew is certainly one used by Breting, so the firm must have been behind at least one home receiver.

Some years ago Morgan McMahon told me that he knew Breting, who was still alive and living in the L.A. ^{area.} I think (but am not positive) that his first name was Ralph. At the time I tried without success to locate him. Perhaps Morgan has some info. that might help you.

You ask about us. I hope you and your family have had a much better time the past few months than we've had here. Eve my wife had to have a hip replacement operation in October. It was successful, but she underwent considerable pain and had great difficulty in getting around for a long time. She's recently graduated from a walker to crutches.

I've been fighting Lymphoblastic Leukemia, a form of cancer. This has involved a painful operation, a hospital stay for intensive chemotherapy, and more (and extremely unpleasant) chemotherapy divided between home and injections at the doctor's office. I'm better, but vestiges of the cancer remain, so I still have to have treatment.

Ours was not at all a merry christmas, but we have had love for each other, and that's more important than presents, turkeys, and parties.

Regards,

Chad

ARN OCT 37 - PR-15 - Patterson
ARN NOV-DE 37 Pearson -

4-24-85

Dear Floyd,

As you have probably guessed by my late reply, I have little knowledge to help you on your research on Patterson & Pierson - Delane. I do know that Breting produced at least these models:

| | <u>Model</u> | <u>Remarks</u> |
|---------------|--------------|---|
| NOV 35 R/q | Breting 12 | 1st model. appeared in 1935. 12 tubes |
| JUL 37 RAN | " 14 | 14 tubes, metal tubes. Same circuit as Breting 12 plus Noise silencer |
| R.A.N. Apr 38 | Breting 9 | 9 tubes. Don't know year. |
| | " 6 | 6 tubes " " " |
| ? → | " 10 | 10 " " " " |
| | Breting 40 | Saw one at our first Readings meet. may be a 1940 model. Had metal tubes. |

Walt Curry had an ad from some old radio magazine that featured the Breting 6 and the Breting 10.

H.L. Chadbourne in La Jolla, a former SCARS member, has been collecting material for a book and may know some answers. He may be saving it for his book though. His phone no. is (619) 454-4989. Address: 530 Midway St., La Jolla CA. 92037.

I would sure like to have a good, full-size copy of the Breting 9 Ad that appears on page 12 of the current Gazette. How can I get one?

Regards, Jim Whitaker