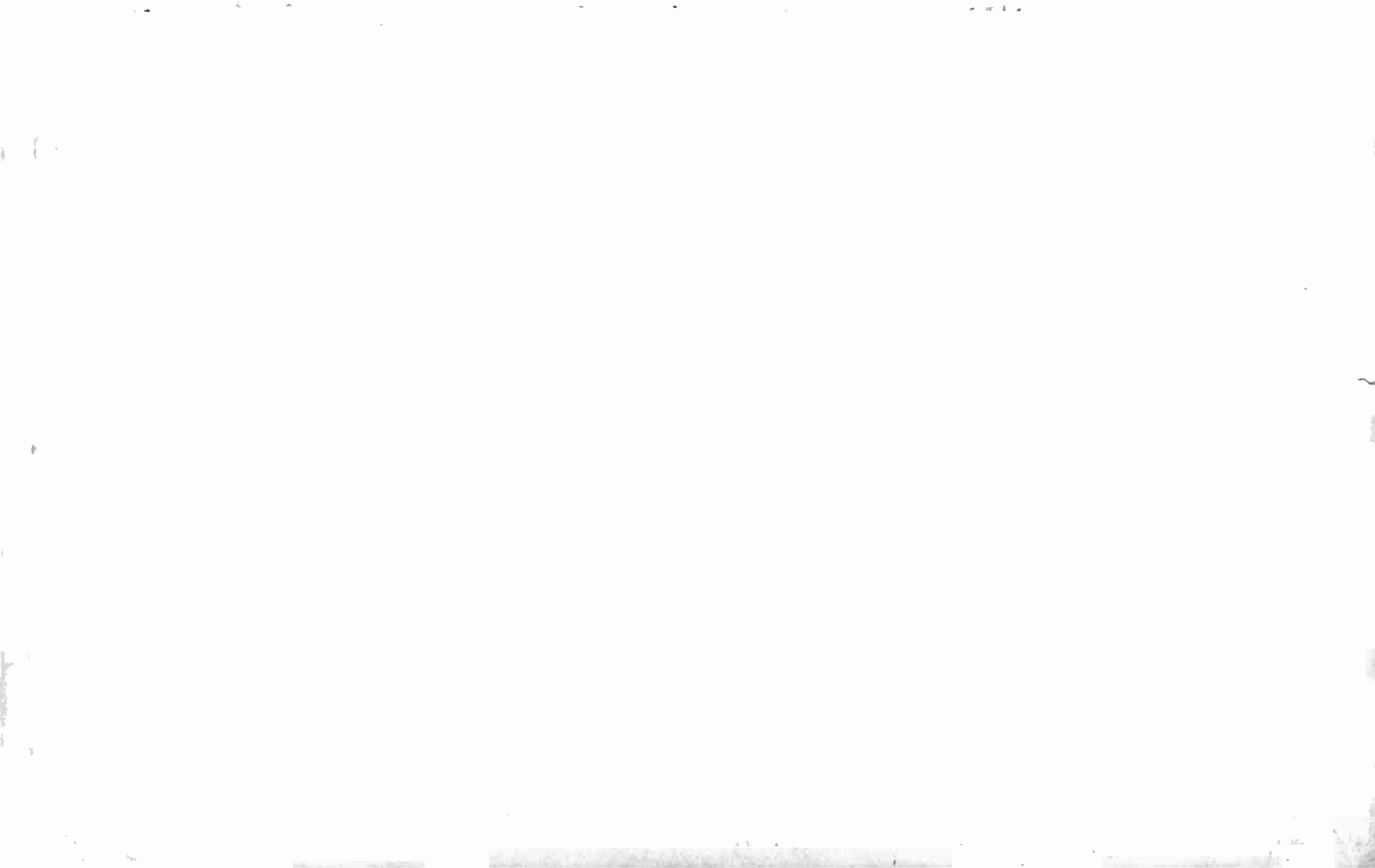


KING **IN** **RADIO**

**INSTRUCTIONS
FOR INSTALLING
AND OPERATING
KING FIVE
BROADCAST
RECEIVERS**





6780

FIFTEEN years of specialized work in Radio, plus twenty years experience in the manufacture of quality precision products is behind our guarantee that the King Five Broadcast Receiver will give you the best of radio reception—
“King in Radio.”

KING QUALITY PRODUCTS, Inc.
BUFFALO, N. Y.

BRANCHES: CHICAGO—KANSAS CITY—BRIDGEBURG, ONT.



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SOME FACTS CONCERNING THE KING FIVE BROADCAST RECEIVER

THE engineers and manufacturers experimented many months to perfect a means of shielding this set so that it would eliminate extraneous reception, and confine the operation of the set to the will of the operator, insofar as the science of Radio has been developed along this line. Interstage coupling, both magnetic and capacity, are also eliminated by the shield. Each circuit must do its work without interfering with others, thereby producing the utmost in performance.

The set always receives a station in the same manner; in other words, a station once received can always be heard by simply placing the dials at the position which brought it in before.

No reflex arrangement is used. Instead each tube and each part does its full duty in reception, and when this is being done, engineers hold that reflexing the circuit is not advisable for best results.

When the King Five Broadcast Receiver is properly installed in accordance with the instructions contained in this book, it will give wonderful results—good volume, extreme selectivity, real musical quality, and maximum distance. If it does not do each of these things, there is something wrong in the installation which should be corrected immediately.

Keep this instruction book with the receiver at all times, and consult it whenever there is doubt about anything connected with the set.

The King Five Broadcast Receiver represents the latest advance in the science of radio reception. It combines all the most desirable features in radio development.

The engineers in designing this set kept three main ideas before them in all stages of the work—the ultimate in simplicity, the ultimate in reliability and the ultimate in selectivity.

By simplicity they had in mind a set which could be operated by anyone, regardless of age or knowledge of Radio. By reliability they meant a receiver which could be depended upon to produce the maximum in volume and clarity under any conditions, and with a uniform method of tuning at all times. By selectivity they meant a receiver which could be depended upon to eliminate the local stations without difficulty in order to allow the reception of more distant and weaker stations.

ADDITIONAL PARTS NEEDED TO COMPLETE INSTALLATION

SIX separate items are needed to complete the installation of this King Five Broadcast Receiver. They are:

1. Five UV-201A or C-301A tubes or their equal.
2. One six-volt, 90 to 120 ampere-hour storage battery.
3. Two 48-volt storage "B" batteries or two 45-volt dry cell "B" batteries of good quality.
4. One good loud speaker. A loud speaker cannot be too good, as results are as dependent on the speaker as on the set. No plug is needed with loud speaker or headphones, if the operator desires to use them. Any good headphones are acceptable.
5. (Optional) If the owner of the set wishes, he may install a battery charger for use with his storage batteries, either "A" or "B."
6. Antenna equipment: This includes wire, lightning arrester, ground clamp, insulators, etc.

IMPORTANT—

Do not use tubes that draw more than one-quarter of an ampere for the filament, regardless of advice to the contrary. Also be careful to get either C-301A or UV-201A tubes, or tubes of their equal, especially for the detector.

The tubes are the heart of your radio set and with the installation properly done, it then depends upon the tubes whether or not you get good reception, provided receiving conditions are normal.

The battery cable furnished with this set is of the proper length; it is six feet long and is as long as should be used, therefore place the batteries accordingly. A longer cable may result in loss of receiving efficiency; this is important. When you charge your batteries be sure to first disconnect them from your set; if you do not, you may burn out your tubes. It is a simple thing to install a switch so that connecting the charger will automatically disconnect the set.

AERIAL AND GROUND

THE King Five Broadcast Receiver is designed so that best results are obtained from the use of an outdoor aerial. However, where it is not practicable to use an outdoor aerial certain types of indoor aeriels may be used to good advantage. This set is not intended for operation on a loop.

Outdoor Antenna

THE outdoor aerial should be from 50 to 80 feet long, of single or multiple wire, and as high as possible. The length of the aerial is measured over its horizontal portion and does NOT include the length of the lead-in.

In erecting your outdoor aerial, be sure that it is near no metal or grounded object. If you are running your aerial over the house you will probably find that part of the aerial which passes over the building is of little value as compared to that portion away from the structure. You must have good clearance from all high dielectric substances.

Securely solder your lead-in to the aerial at the point nearest your set. Make it as short and direct as possible. Keep it at least three feet away from the house, and use either a porcelain tube or the regulation lead-in insulator to bring the wire inside. Have the set near the wall or window where the lead-in enters, so as to save wire and assist the operation and selectivity of your set.

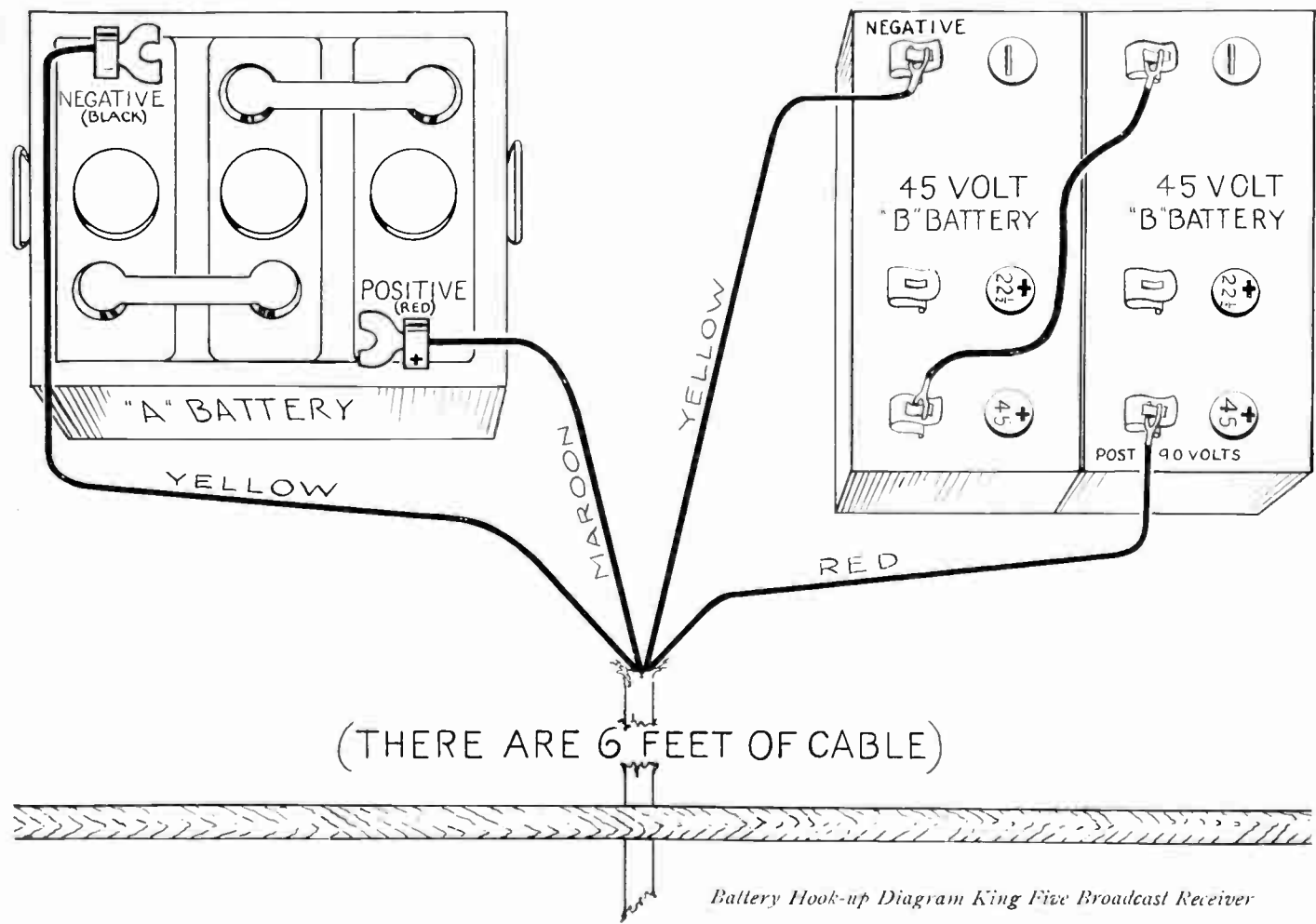
Indoor Antenna

ONE of the best possible indoor antennas for any set is a length of galvanized fly screen, three feet wide and 25 feet long. This should be supported on insulators at the highest point in the home with the flat surface parallel to the ground. This is for attic installation, but in many instances has given excellent results on lower floors placed under a rug.

In connecting the lead-in, solder it to the most convenient point on the screen and run directly to the set.

This type of antenna will not work satisfactorily under a metal roof, for that matter. even the outdoor aerial should be kept away from metal roofs, drain pipes and other grounded objects.

5



Battery Hook-up Diagram King Five Broadcast Receiver

GROUNDS

A GOOD ground connection is of prime importance in the operation of the King Five Broadcast Receiver. The best ground usually is made to a water pipe. A gas pipe is sometimes used though in many localities this is frowned upon by the Board of Fire Underwriters. The water pipe is the best connection anyway.

Another practice often employed is to drive about six or seven feet of galvanized iron pipe into the ground, then attach the ground clamp to this; be sure you use an approved ground clamp that will make a tight and firm connection. Also be sure that all dirt and rust are cleaned off the pipe before making the connection.

A lightning arrester should be connected between the aerial lead-in and the ground, before reaching the set.

CONNECTING UP THE KING FIVE BROADCAST RECEIVER

THERE are nine things to do in connecting the King Five Broadcast Receiver. They are to be done in the following order.

1. Pick a location for the receiver which will allow a short lead-in for the antenna, usually along an outside wall. Place the equipment in this position.

2. Connect the two "B" batteries in series—that is, the negative pole of one battery to the 45-volt positive of the other, as shown in the drawing.

3. Place the storage battery in position. If you have a radio table or console model, a good place for the battery is in the left hand compartment. Then connect the cable, which you will find in the rear of your set, according to the drawing.

4. Connect the bright red wire to the only 45-volt positive "B" battery pole which will be unoccupied if you have followed instruction number two.

5. Connect the maroon wire to the positive pole on your "A" battery: use a good lead covered clamp for this.

6. Connect one of the yellow wires to the negative pole on your "A" battery and the other to the negative pole on your "B" battery. The negative poles are marked with a dash (—) as shown in the diagram.

7. Connect the ground and aerial wires to the binding posts marked for this purpose at the left side of your set.

8. Connect the loud speaker or phones: the red or marked wire of your loud speaker or phone cords should go into the jack which carries the red washer, while the black wire goes into the jack marked with a black

washer. This prevents depolarization of your loud speaker or phones and gives much better quality.

9. Check your battery connections carefully; then test your connections by picking one tube and trying only this tube in each of the five sockets, turning the switch off and on for the test in each socket, in order that you may determine whether your connections are all properly made. Then put in all your tubes; be careful in handling them, as they are quite delicate and require but little rough handling to ruin them. Now you are ready to tune in. It might be best to again check up on the work you have done with this installation, by going back over the nine steps to make sure that you have done each thing as it has been explained here.

THE PANEL OF THE KING FIVE BROADCAST RECEIVER



BEFORE tuning in you must make sure you are familiar with the panel of your receiver for here is the means of getting reception.

The three pointers constitute the tuning control. Hereafter in this book they will be called first, second and third controls, reading from the left to the right as marked in the photograph shown.

The first control is the antenna tuner and the second and third controls are the tuned radio frequency circuits.

There is a horizontal device underneath the second dial labeled "volume control." The use of this will be described in the tuning instructions. Briefly, it controls the volume you receive from any station within the limits of the radiated power of that station.

To the right of the dials there is a double filament control. This is a combination switch and rheostat. The smaller knob or switch turns the battery current on and off, while the rheostat section or large knob controls the amount of voltage reaching the filaments of the tubes.

With this in mind you may now start tuning your set. If in doubt about the tuning instructions consult the section regarding the panel.

TUNING IN

ADJUST the filament control to read about 80 with new batteries.
Set the volume control to one.

Adjust the second and third controls to read alike. About 40 is a good place to start.

Turn the switch until the arrow points either straight up or straight down. When the arrow is horizontal, the current is turned off.

Now turn the first control slowly until you hear a disturbance. This may be either a station, motor interference or static. Change the setting of the second and third control if necessary.

Keep testing until you hear a station. After locating a station if you find that the first control reads much higher or lower than the second and third, raise the lid of your cabinet and on top of the first coil you will find an adjustment. Pull out the cord tip and insert it into another cord tip jack and start tuning again, and soon you will find that the three controls read very nearly the same.

In case you hear a whistle in the loud speaker just as you tune in to a station, you may get rid of this by turning the volume control toward 20. There should be no whistle if your volume control is properly adjusted.

After you have one station, mark the dial settings down in your log, which will be found in the back of this book. You will find it a big benefit if you will mark the settings of each station on this log.

TUNING POINTERS

MANY whistles that do not originate in the set will be heard in any type of radio receiver, especially if the set is in good shape and batteries well charged. These whistles are caused by others tuning the cheaper types of sets or they may be caused by two transmitting stations operating on nearly the same wave-length.

Whether or not the whistle originates within the set may be easily determined: merely listen to the whistle while turning the center dial back and forth. If the pitch or note of the whistle does not change but the volume changes, the noise is not from within the set but from outside. If the pitch or note changes, the trouble is within the set and may be corrected by properly adjusting the volume control toward 20.

After you tune in your first distant station it is advisable to shift the tubes around until best results are obtained. Radio tubes vary greatly, and in this manner you can determine which is the best for the detector and which of the others is the best for the different types of amplification. When shifting tubes you may find it necessary to change the controls slightly to determine the results.

Microphonic tubes may be located in this manner. Microphonic tubes will be unheard in the loud speaker if they are employed in number one and number two compartments.

Remember, when you go hunting for distant stations that you cannot expect as uniformly clear reception from distant as from closer stations. There may be many atmospherical conditions and changes arising over several hundred or thousands of miles.

The time of the year or the time of night or day often will have a great bearing on the reception.

Static is possibly the greatest enemy of broadcast reception. The result of any evening's tuning depends almost entirely upon this uncontrollable energy. When static is more powerful than the station you are trying to receive, it is useless to listen to this particular station. You may hear the concert, but it will be broken up so badly that you cannot possibly enjoy it. It is much better to tune in on a closer station or a louder station.

It is not fair to judge your set by one night's trial. After you have had it several weeks or even several months you will still find new things about it. This is one of the great points of interest in a radio set. It has an individuality the same as a person.

Causes of Broad Tuning

BROAD tuning—in other words the reception of a station over many points of the controls or the inability to separate one station from another—may be caused by several things.

Your antenna may be too long.

The tap on your antenna coil may be adjusted wrongly. Try changing it.

Your "B" batteries may be low in voltage. Test them out. Do not let them get below 80 volts en bloc or below 40 volts each.

The "A" battery may be run down or the connections reversed, i. e., you may have the positive wire connected to the negative post.

Do not judge the quality of the reception by listening to one station. The quality of the broadcasting of different stations varies. Listen to two or three. It is a good idea to listen to some standard station such as WEAf or WGY before you decide that the reception is not right.

Often when a set is used near a powerful local station, difficulty is experienced in tuning it out. This is more or less unavoidable. The best thing to do, as a rule, is to use a shorter antenna and be sure the batteries are fully charged and that your tubes are in good condition.

Outside Noises

SOMETIMES you will hear crackling noises in your receiver. These are usually caused by outside interference.

A constant rough, loud hum which comes in at almost any dial setting, or more especially between numbers 10 and 40 may be caused by a sparking motor, an X-ray machine, an arc light, violet ray machine, automatic ice plant or some similar local condition. These things are beyond the control of the manufacturer and should be traced to their source and corrected there.

There are other things which cause annoying sounds in the horn aside from static or inductive disturbances. Among these are noisy "B" batteries or dirty tube contacts. In order to determine whether the latter mentioned disturbances are the cause or not, disconnect your aerial and ground and tune in your set in the same manner you would to get a station. If the sputtering continues you will find it is caused by a noisy dry "B" battery, dirty tube connections or corroded battery terminals. In case you use storage "B" batteries, make sure that the terminals are clean and free from corrosion. They should be cleaned frequently to prevent the set from becoming noisy. The tops of storage batteries should be kept clean or noises will occur.

When "B" batteries are run down, especially dry cells, they often become noisy. This can be corrected by getting new batteries.

THE LISTENER'S CATECHISM

THE following is a summary of questions most often asked and the correct answers to the same.

Q.—In case of trouble with the receiver what shall I do?

- A.—1. Test your "A" and "B" batteries.
2. Borrow or obtain a set of tubes which are giving good service in another set and see if they work all right or if any of them help your reception.
 3. Check your wiring carefully with the drawing.
 4. If you are bothered with stray noises, read the section preceding this one. There is nothing in a King Five Broadcast Receiver which can cause noise. It is only a matter of locating the cause of the noise.

Q.—How much plate voltage should I use for best results?

- A.—Under ordinary conditions 90 or 100 volts should be sufficient. In case your tubes are not up to standard, you may increase this voltage as high as 150 volts in order to obtain better results.

Q.—How can I stop a bell-like noise when I operate my set?

- A.—Move your loud speaker away from your set if possible. Change the tubes about in their positions or get another detector tube. The detector tube is in the third compartment, counting from left to right.

Q.—What may cause a buzz to be heard on a low wave-length?

- A.—It is undoubtedly caused by local interference such as a sparking motor.

Q.—Is it possible to hear whistles in my receiver which do not emanate from the set itself?

- A.—Yes. Often a radiating receiver nearby will cause this. It will be noticed that when an operator discontinues the operation of his set the noises will disappear.

Q.—Is reception as good in the daytime as at night, or as good in summer as in winter?

- A.—No; signals are only about 1/10 as strong in the daytime as they are at night, and 1/5 as strong in the summer as they are in winter. This, of course, does not apply to local stations.

Q.—How should antenna lead run as compared with the battery wires?

- A.—It should run away from and not parallel to the battery wires.

Q.—How long should dry "B" batteries last?

A.—Usually from four to five weeks if the set is used an average length of time each day. This, of course, will vary according to the number of hours sets are used each day.

Q.—Should I use a patented aerial connection to the electric light line?

A.—These are often successful though a great deal depends upon the nature of the connection and the type of electric wiring and the location. Only a trial will prove whether or not you should use them.

Q.—What value grid leak should be used?

A.—Five to seven megohms.

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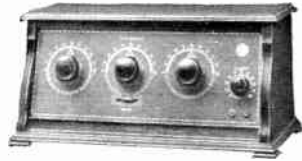
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THE KING FIVE BROADCAST RECEIVER IS MADE IN THREE MODELS TO MEET EVERY TASTE

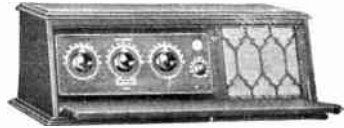
THE King Five Broadcast Receiver is made in three models—the table type which presents King reception in its most simple form, a table type with built-in reproducer in which the loud speaker unit is perfectly matched to the horn, insuring the very finest reproduction of the splendid tone characteristic of the King Five Broadcast Receiver: the console model with its beautiful cabinet, compartments for battery and charger.

In all models of the King Five Broadcast Receiver the reception is the same—the very best. Every part used is made and assembled in the King plant. Each part passes through a careful system of inspection. The performance of the complete receiver is put through a series of careful tests to insure it being up to King standards before it leaves the factory.

The mechanical advantages of the King Five Broadcast Receiver cannot be outlined here, but users are familiar with them. Your experience with your own set will prove to you that it really does give the results we claim—excellence of tone, selectivity, distance, dependable performance and ease of operation.



MODEL 30—Plain Table Type.



MODEL 30-S—With built-in reproducer in which loud speaker unit and horn are perfectly matched.



MODEL 30-C—A magnificent console receiver, outstanding for design, quality of workmanship and results.

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RECEPTION RECORD

Call Letters	LOCATION	Dials			Wave Length	Remarks
		1	2	3		
KDKA	E. Pittsburgh, Pa.			24	309.1	
KDPM	Cleveland, Ohio				250	
KDYL	Salt Lake City				333.1	
KFAE	Pullman, Wash.				348.6	
KFAF	Denver, Colo.				278	
KFAU	Boise, Idaho				275	
KFDM	Beaumont, Texas				315.6	
KFI	Los Angeles, Cal.	60	62	60	468.5	
KFKB	Milford, Kan.				273	
KFKU	Lawrence, Kan.				275	
KFKX	Hastings, Neb.	11	2	20	288.3	
KFMQ	Fayetteville, Ark.				500	
KFMX	Northfield, Minn.				336.9	
KFNF	Shenandoah, Iowa				266	
KFOA	Seattle, Wash.				454.3	
KFPR	Los Angeles, Cal.				231	
KFPT	Salt Lake City, Utah				261	
KFRU	Bristow, Okla.				394.5	
KFSG	Los Angeles, Cal.				278	
KFUO	St. Louis, Mo.				545.1	
KFVE	St. Louis, Mo.				240	
KFVJ	San Jose, Cal.				226	
KFVK	Sacramento, Cal.				248	
KFWA	Ogden, Utah				214.2	
KFWB	Hollywood, Cal.				252	
KFWD	Arkadelphia, Ark.				266	
KGO	Oakland, Cal.				361.2	
KGU	Honolulu, H. I.				270	
KGW	Portland, Ore.				491.5	
KHJ	Los Angeles, Cal.				500	
KJR	Seattle, Wash.				384.4	
KJS	Los Angeles, Calif.				293.9	
KLX	Oakland, Calif.				508.2	
KNX	Los Angeles, Calif.				336.9	
KOA	Denver, Colo.				322.4	
KOB	State College, N. M.				348.6	
KOP	Detroit, Mich.				278	
KPO	San Francisco, Cal.				428.3	

RECEPTION RECORD

Call Letters	LOCATION	Dials			Wave Length	Remarks
		1	2	3		
KQV	Pittsburgh, Pa.				275	
KSAC	Manhattan, Kansas				340.7	
KSD	St. Louis, Mo.				545.1	
KSL	Salt Lake City, Utah				299.8	
KTHS	Hot Springs, Ark.				371.8	
KTW	Seattle, Wash.				451.3	
KUOM	Missoula, Mont.				214	
KYW	Chicago, Ill.				535.4	
WAAW	Omaha, Neb.				278	
WABN	La Crosse, Wisc.				211	
WAHG	Richmond Hill, N. Y.				315.6	
WBAK	Harrisburg, Pa.				275	
WBAP	Fort Worth, Texas				475.9	
WBAV	Columbus, Ohio				293.9	
WBBG	Mattapoisett, Mass.				218	
WBCN	Chicago, Ill.				266	
WBZ	Springfield, Mass.		30	5	333.1	
X WCAE	Pittsburgh, Pa. X	60	60	60	461.3	
WCAJ	University Place, Neb				275	
WCAL	Northfield, Minn.				336.9	
X WCAP	Washington, D. C.				468.5	
WCAU	Philadelphia, Pa.				278	
WCBD	Zion, Ill.				314.6	
WCCO	Minneapolis, Minn.				416.4	
WCEE	Elgin, Ill.				275.1	
WCX	Detroit, Mich.			3	516.9	
WDAF	Kansas City, Mo.	1	32		365.6	
WDBY	Chicago, Ill.				258	
WDWF	Cranston, R. I.				440.9	
X WEAF	New York, N. Y.				491.5	
WEAI	Ithaca, N. Y.				254	
WEAO	Columbus, Ohio				293.9	
WEAR	Cleveland, Ohio				389.4	
WEAY	Houston, Texas				270	
WEBH	Chicago, Ill.				370.2	
WEBJ	New York, N. Y.				273	
WEBW	Beloit, Wisc.				268	
WEEL	Boston, Mass.				475.9	

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RECEPTION RECORD

Call Letters	LOCATION	Dials			Wave Length	Remarks
		1	2	3		
WEMC	Berrien Springs, Mich.				285.5	
WFAA	Dallas, Texas				475.9	
WFBH	New York, N. Y.				273	
WFI	Philadelphia, Pa.				394.5	
WGBS	New York, N. Y.				315.6	
WGN	Chicago, Ill.				370.2	
WGR	Buffalo, N. Y.				319	
WGST	Atlanta, Ga.				270	
WGY	Schenectady, N. Y.				379.5	
WHA	Madison, Wisc.				535.4	
WHAA	Iowa City, Ia.				483.6	
WHAS	Louisville, Ky.				399.8	
WHAZ	Troy, N. Y.				379.5	
WHB	Kansas City, Mo.				365.6	
WHN	New York, N. Y.				361.2	
WHO	Des Moines, Iowa				526	
WHT	Chicago, Ill.				399.8	
WIP	Philadelphia, Pa.				508.2	
WJAR	Providence, R. I.				305.9	
WJAS	Pittsburgh, Pa.				275	
WJJD	Moosehart, Ill.				302.8	
WJY	New York, N. Y.				405.2	
WJZ	New York, N. Y.				151.3	
WKAR	E. Lansing, Mich.				285.5	
WLBL	Stevens Point, Wisc.				278	
WLIT	Philadelphia, Pa.				394.5	
WLS	Chicago, Ill.				344.6	
WLW	Cincinnati, Ohio				422.3	
WMAK	Lockport, N. Y.				166	
WMAQ	Chicago, Ill.				147.5	
WMBB	Chicago, Ill.				250	
WMBF	Miami Beach, Fla.				384.4	
WMC	Memphis, Tenn.				199.7	
WMCA	New York, N. Y.				340.7	
WMH	Cincinnati, Ohio				422.3	
WNAC	Boston, Mass.				280.2	
WNYC	New York, N. Y.				526	
WOAI	San Antonio, Texas				394.5	

RECEPTION RECORD

Call Letters	LOCATION	Dials			Wave Length	Remarks
		1	2	3		
WOAN	Lawrenceburg, Tenn.				282.8	
WOAW	Omaha, Neb.				526	
WOC	Davenport, Iowa				433.6	
WOI	Ames, Iowa				270	
WOO	Philadelphia				508.2	
WOQ	Kansas City, Mo.				278	
WOR	Newark, N. J.				405.2	
WORD	Batavia, Ill.				275	
WOS	Jefferson City, Mo.				440.9	
WPG	Atlantic City, N. J.				299.8	
WPSC	State College, Pa.				261	
WQAA	Parkersburg, Pa.				220	
WQJ	Chicago, Ill.				447.5	
WRBC	Valparaiso, Ind.				278	
WRC	Washington, D. C.				468.5	
WREO	Lansing, Mich.				285.5	
WRL	Schenectady, N. Y.				360	
WRM	Urbana, Ill.				273	
WRW	Tarrytown, N. Y.				273	
WSAG	St. Petersburg, Fla.				266	
WSAI	Cincinnati, Ohio				325.9	
WSB	Atlanta, Ga.				428.3	
WSMB	New Orleans, La.				319	
WSUI	Iowa City, Ia.				483.6	
WSY	Auburn, Ala.				250	
WTAM	Cleveland, Ohio				389.4	
WTAS	Elgin, Ill.				302.8	
WTAY	Oak Park, Ill.				250	
WTIC	Hartford, Conn.				348.6	
WWAE	Joliet, Ill.				242	
WWJ	Detroit, Mich.				352.7	

CANADIAN BROADCASTERS

Call Letters	LOCATION	Dials			Wave Length	Remarks
		1	2	3		
CFAC	Calgary				430	
CFCA	Toronto				400	
CFCJ	Quebec				410	
CFRC	Kingston				450	
CGAC	Vancouver				430	
CKAC	Montreal				430	
CKCE	Toronto				450	
CHNA	Toronto				350	
CHCB	Toronto				440	
CKY	Winnipeg				450	
CKOC	Hamilton				410	
CKCX	Calgary				440	
CNRW	Winnipeg				450	
CNRT	Toronto	24	36	35	400	
CNRR	Regina				420	
CNRO	Ottawa	33	33	3	435	
CNRM	Montreal				431	
CNRC	Calgary				430	
CKCK	Regina				420	
CKCE	Toronto				450	
CKCD	Vancouver				410	
CJCN	Toronto				410	
CFCF	Montreal				440	
CJBC	Toronto				312	

Handwritten notes:
 1000 25% dials 2 1/2
 1 1/2 - 1 3/4 1 1/2 2 1/2

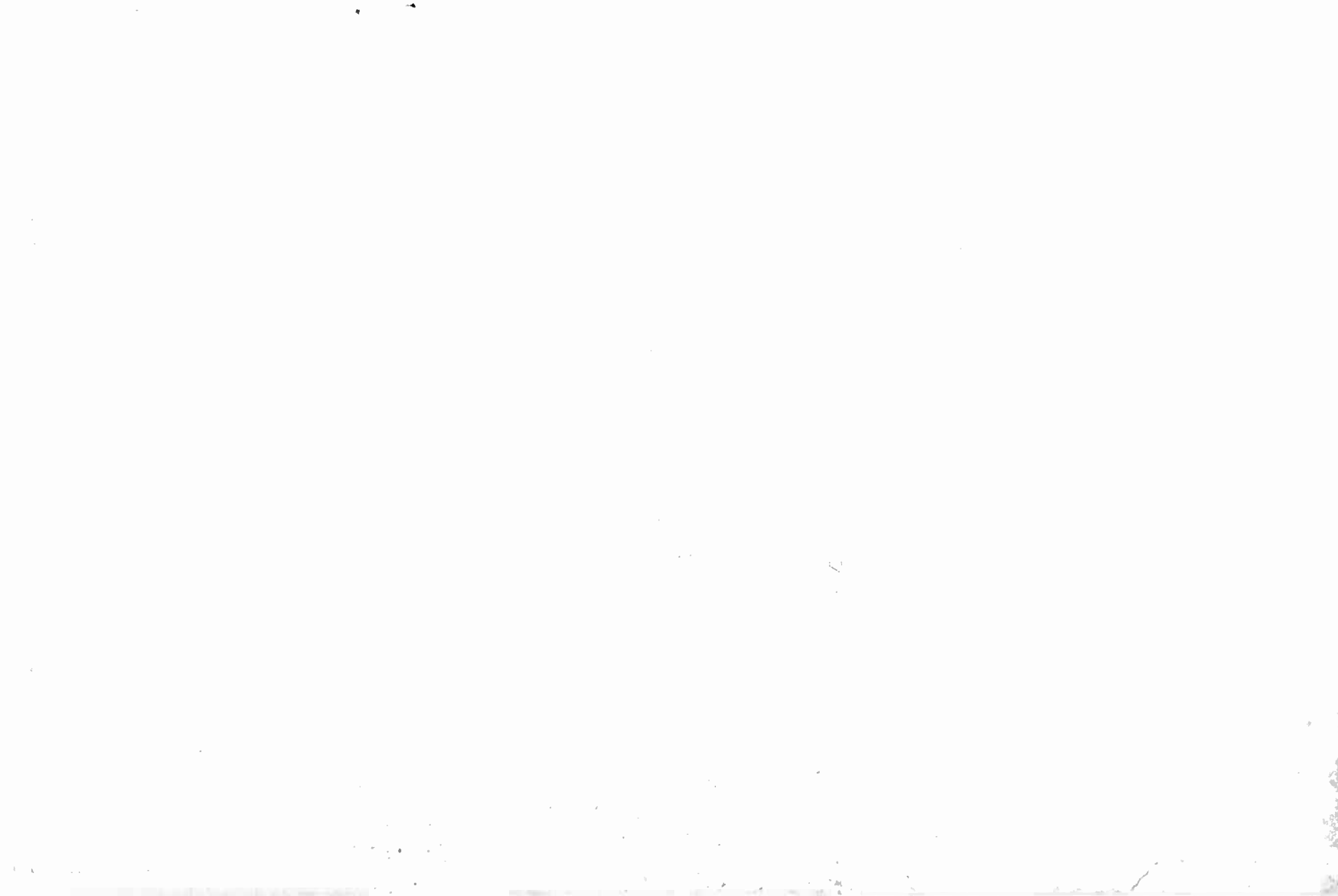




KING IN RADIO

INSTRUCTIONS
FOR INSTALLING
AND OPERATING
KING-HINNERS
NEUTRODYNE
RECEIVERS

KING
NEUTRODYNE
HINNERS



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THE KING-HINNERS NEUTRODYNE is a receiving set in which the very latest advances in radio engineering and craftsmanship have been incorporated.

The Radio Frequency Transformers are of unique design, in that windings of greater length and smaller diameter are used, thereby affording higher amplification and greater selectivity. Interstage magnetic effects between coils are reduced. The direct influence upon the coils themselves from nearby powerful broadcasting stations, so destructive to fine tuning, is also greatly reduced.

The full advantage derived from the improved coil system is attained by the perfect shielding afforded by the use of a continuous metal panel. The coil system employed is not only properly engineered as to form and position, but every improvement known to Prof. Hazeltine and his staff, supplemented by the work of our own engineers, is embodied.

This receiver is not only provided with a split grid antenna coil and twin winding neutralizing coils, but a new type pinion operated balance condenser is used, producing a perfectly balanced neutrodyne.

The use of a two position antenna switch, together with perfect control of the vacuum tubes amplifying the radio frequency impulses, affords the utmost in selectivity.

To get the most out of this receiver, read these instructions carefully.

AERIAL

To obtain the best results from a radio receiver, the aerial through which passing waves must enter before affecting the receiver, should be erected with great care. Unsatisfactory operation of radio receivers is more frequently traced to improperly installed aerials than to any other cause. For this reason our instructions should be followed closely.

Outdoor Aerial

Aerial erection outdoors has many advantages because the space needed is usually more readily available.

The aerial should run in a straight line and be about 80 to 100 feet long as measured from the free end of the aerial wire to the point where the ground wire actually fastens to the ground. This length should include the aerial wire, the lead-in wire and the ground connecting wire.

If longer aerials are used, stations will be heard with increased volume but the capacity of the receiver to separate two stations operating on wave lengths close together—in a word, the selectivity—will be reduced.

In areas congested with numerous local broadcasting stations, as in some of the larger cities, when aerials of too great length are used, local stations are separated from each other with difficulty and while they are operating, distant stations often cannot be heard.

The outdoor aerial should be thirty feet or more above the ground whenever possible. An increase in the height of the aerial improves both the volume with which stations are heard and the range of the receiver on distant stations. The height of aerial wires effective in receiving depends upon their height above the surface of the roof, wherever they pass over metal roofs as in apartment houses. Such aerials should be elevated above the roof by not less than ten feet. Aerials closer to such roofs will, of course, operate the receiver, but the volume from distant stations and the number of these received will be somewhat reduced.

The aerial wire may be either solid or stranded. The wire, wherever fastened, must attach to insulators so that

no leakage of the aerial currents can take place to ground through direct contact with the building or pole holding the aerial.

At points where the aerial is supported, insulators should be so placed that the aerial wherever it comes close to the building, walls, poles, etc., is kept away from these by at least one foot. This applies in particular to the outer end of the aerial wire and the lead-in wire.

Lead-in

The lead-in wire in entering the building should pass through a porcelain tube or well insulated flexible metal strip, fitting between a window and its sash. For best results the lead-in wire in passing down should be kept one foot away from the building walls.

Ground

A ground connection made to a water or heater pipe is usually satisfactory. The pipe should first be scraped clean and a ground clamp firmly fastened over the cleaned part of the pipe. The use of gas pipes for the ground connection is not approved by the fire underwriters. The ground wire must not be smaller than No. 14 B&S gauge copper wire.

Indoor Aerial

Receivers operated from indoor aerials, when receiving distant stations, are less troubled by the interference caused by broadcasting stations operating locally. Being more selective, the results obtained from such aerials are very satisfactory in large cities where numerous stations are broadcasting. A single wire run indoors in an attic or hallway, about fifty feet in length if possible, will be satisfactory. Often an insulated wire run along the picture moulding of the living room will produce good results.

The indoor aerial, being shorter and lower than the outdoor type, will reduce the receiving range and volume in comparison with a good outdoor aerial. Under atmospheric conditions prevailing in hot weather, however, this aerial sometimes produces better results than an outdoor aerial.

Lightning Arrester

A lightning arrester is required by the Fire Underwriters where an outdoor aerial is employed. This should be installed in accordance with instructions furnished with the arrester.

Tubes

The King-Hinners Neutrodyne Receiver has been designed for UV-201-A and C-301-A vacuum tubes. Five of either type should be used.

Batteries

The following batteries will be required:

“A” Filament lighting battery. — A six-volt storage battery of a capacity of sixty or more ampere-hours.

“B” Plate batteries. — Two 45-volt dry cell batteries. (These should be the larger size.)

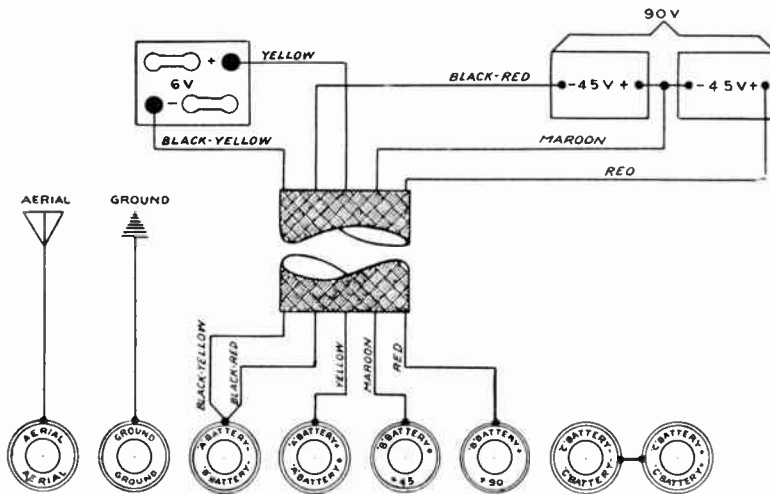


DIAGRAM OF CONNECTIONS
KING HINNERS NEUTRODYNE
MODEL 25

Connecting Up Set

The connection to the radio set and batteries is to be made by the cable furnished. It is best to connect the two batteries together first before connecting them to the battery cable of the receiver.

Caution

The wires connecting the aerial and ground to the set should enter the receiver as directly as possible from the left. In no case should the aerial wire pass behind the receiver from the right to the left. If this method of running the aerial wire is necessary, keep lead three feet away from the back of the receiver.

TO OPERATE RECEIVER

Examine carefully the connection to the batteries to be certain no mistake has been made. After this inspection it is safe to insert the vacuum tubes in the sockets.

To insert tubes in the sockets merely locate pin in slot and press vacuum tube down until pin hits bottom.

Detector Tube

The detector tube is inserted in the bakelite cushioned socket located in position three.

Loud Speaker

Connect loud speaker or head phones by passing cord through opening in back of cabinet. Insert positive cord tip, which usually has striping or differently colored tracer, into the phone tip jack with the red marker.

Battery Switch

Turn on switch button located on lower right hand control knob within arrow marked "set filament voltage." Voltmeter should now register. If voltmeter fails to register, examine storage battery connection; if voltmeter reads

backwards, the "A" battery connections are wrong and must be reversed. Rotate neighboring knob located within arrow marked "Volume" in direction of this arrow until it hits stop.

Button underneath word "Audio" is to be pulled out. All tubes should now burn.

To accommodate different aerial lengths, an aerial tap switch having two positions is provided on the first left hand coil. Move this switch so it engages contact on right when receiver is faced from front.

Set right hand knob located within arrow marked "set filament voltage" until voltmeter pointer reads 5 and is over red line. The receiver is now ready for tuning.

Tuning

Tuning is controlled by three Neutrodials 1, 2 and 3. Usually these three Neutrodials have the same numerical setting when in tune. Begin operating the receiver by matching up the setting of the three neutrodials. With Neutrodials 2 and 3 set to the same number of divisions, move the first neutrodial five or more divisions above or below this number. When in tune a rushing sound will be heard in the loud speaker. These sounds, caused by atmospheric and other electrical impulses, will be found helpful in tuning. By passing over the entire scale of the receiver, with the three neutrodials always being matched up to produce the rushing sounds in the loud speaker, any broadcasting stations operating within your receiving radius will be picked up.

Continued practice will enable you in a very short time to tune this receiver satisfactorily. As the settings obtained from this receiver for any particular station remain fixed, a chart noting the settings of the neutrodials should be made. If the neutrodials are again set to correspond with the notation on the chart, the same station will be heard if operating and atmospheric conditions permit.

Volume Control

The left control within arrow marked "Volume" adjusts the brilliancy of the amplifier tubes working at radio fre-

quencies. By means of this control, local as well as distant stations, can be controlled gradually and to any shade of loud speaker volume, giving perfect clarity and comfort to the listener. This control introduces no distortion whatever and makes unnecessary the practice of detuning heretofore used in its place. The variation of this control changes the voltmeter reading only slightly.

Audio Control

The plunger switch marked "Audio" permits four or five tubes to be used in the receiver. When pushed in, the number of tubes used is four; when pulled out, all five are in use. When pushed in, only four tubes remain lighted—the fifth and idle tube is disconnected—reducing the drain from the storage as well as the "B" batteries.

Voltmeter

The voltmeter is included in the receiver in order to produce the most economical receiver operation from the standpoints of battery consumption and vacuum tube life. The receiver should never be operated with more than five volts upon the filament of the vacuum tubes, and this practice, if diligently carried out, will prolong the life of the vacuum tubes. When the voltmeter cannot be set at five with the filament control knob turned on full, it means that the storage battery is discharged. The battery should then be placed on charge to replenish the current withdrawn from it in operating the receiver.

Receiver Selectivity

Selectivity is the property of a receiver which denotes its capacity to separate stations operating on different wave lengths. It is influenced by a considerable number of conditions, some directly related to the nature of the transmission from the radio stations themselves and to the geographical location of receiver, and others due to the adjustment of the receiver. The first two are beyond the control of the listener but the installation and the adjustment of the receiver itself are within his control.

It is important the aerial length does not exceed one hundred feet, as stated elsewhere in the instructions. List-

eners located less than five miles from powerful broadcasting stations may find that an aerial eighty feet in length is too long and that a shorter aerial of fifty feet or even less gives best results.

To further control the influence that aerial lengths exert upon the receiver, the antenna coil tap switch is provided. As a general rule this receiver will produce best results, especially in receiving stations of longer wave lengths, when the switch lever is turned to the right hand contact. In receiving stations of shorter wave lengths some difficulty may be experienced in separating stations. In such cases the antenna coil switch is to be moved to the left position. It will of course be necessary to re-adjust the setting of Neutrodial 1.

Second to the proper use of the antenna coil switch, the control knob located within the arrow marked "Volume" is of great assistance in obtaining still further selectivity. With the voltmeter adjusted to five volts, i. e., to the red line, it is rarely necessary to have the volume control knob advanced to the full position. It will be found that in manipulating this control a point is reached beyond which any advance in the setting of the knob results in no gain in volume. When receiving stations whose wave lengths are close together it will be found that complete elimination of the undesirable stations is obtained only by setting this knob below the point above mentioned. The volume from the desired stations will be reduced by turning back the volume control but this sacrifice is inevitable. It should be recognized that this step is necessary only in the extreme case.

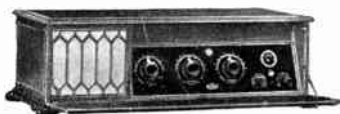
A further gain in selectivity is obtained by using only four instead of the five vacuum tubes through operating with the audio plunger switch pushed "in."



King-Hinners Neutrodyne Receiver Models to Meet All Tastes.



Model 25—Plain Table Type.



Model 25-S—With built-in reproducer in which loud speaker unit and horn are perfectly matched.



Model 25-C—A magnificent console combining luxury, correct design and life-like reproduction.

THE King-Hinners Neutrodyne Receiver is made in three models—the plain table type, a table type with built-in reproducer in which the loud speaker unit is perfectly balanced with the horn insuring the highest quality of reproduction, and a beautiful console model with built-in reproducer, space for battery and charger, and drawer for logs and radio papers—a receiver which is outstanding for design and quality of workmanship.

While the King-Hinners Neutrodyne models differ in style, the quality of reception is the same—the very best.

There are 27 separate points in which the King-Hinners Receiver is superior—points which mark it “King In Radio”—but it is not these features alone which give the King-Hinners Neutrodyne Receiver its excellence of tone, selectivity and ease of operation. Its performance is largely due to the extreme care with which each part is made—all the advantages of Neutrodyne plus King-Hinners workmanship. Not only is each part given the most careful inspection, but the completed receiver must pass exacting tests before it leaves the factory, thus insuring the highest quality of performance.

RECEPTION RECORD

Call Letters	LOCATION	Dials			Wave Length	Remarks
		1	2	3		
KDKA	E. Pittsburgh, Pa.				309.1	
KDPM	Cleveland. Ohio				250	
KDYL	Salt Lake City				333.1	
KFAE	Pullman, Wash.				318.6	
KFAF	Denver, Colo.				278	
KFAU	Boise, Idaho				275	
KFDM	Beaumont, Texas				315.6	
KFI	Los Angeles. Cal.				468.5	
KFKB	Milford, Kan.				273	
KFKU	Lawrence. Kan.				275	
KFKX	Hastings, Neb.				288.3	
KFMQ	Fayetteville, Ark.				500	
KFMX	Northfield, Minn.				336.9	
KFNF	Shenandoah. Iowa				266	
KFOA	Seattle, Wash.				154.3	
KFPR	Los Angeles, Cal.				231	
KFPT	Salt Lake City, Utah				261	
KFRU	Bristow, Okla.				394.5	
KFSG	Los Angeles, Cal.				278	
KFUO	St. Louis. Mo.				515.1	
KFVE	St. Louis. Mo.				210.	
KFVJ	San Jose, Cal.				226	
KFVK	Sacramento, Cal.				248	
KFWA	Ogden, Utah				214.2	
KFWB	Hollywood, Cal.				252	
KFWD	Arkadelphia, Ark.				266	
KGO	Oakland, Cal.				361.2	
KGU	Honolulu, H. I.				270	
KGW	Portland, Ore.				191.5	
KHJ	Los Angeles, Cal.				500	
KJR	Seattle, Wash.				384.4	
KJS	Los Angeles, Calif.				293.9	
KLX	Oakland, Calif.				508.2	
KNX	Los Angeles, Calif.				336.9	
KOA	Denver, Colo.				322.4	
KOB	State College, N. M.				348.6	
KOP	Detroit, Mich.				278	
KPO	San Francisco, Cal.				428.3	

RECEPTION RECORD

Call Letters	LOCATION	Dials			Wave Length	Remarks
		1	2	3		
KQV	Pittsburgh, Pa.				275	
KSAC	Manhattan, Kansas				340.7	
KSD	St. Louis, Mo.				545.1	
KSL	Salt Lake City, Utah				299.8	
KTHS	Hot Springs, Ark.				374.8	
KTW	Seattle, Wash.				454.3	
KUOM	Missoula, Mont.				244	
KYW	Chicago, Ill.				535.4	
WAAW	Omaha, Neb.				278	
WABN	La Crosse, Wisc.				244	
WAHG	Richmond Hill, N. Y.				315.6	
WBAK	Harrisburg, Pa.				275	
WBAP	Fort Worth, Texas				475.9	
WBAV	Columbus, Ohio				293.9	
WBBG	Mattapoissett, Mass.				248	
WBCN	Chicago, Ill.				266	
WBZ	Springfield, Mass.				333.1	
WCAE	Pittsburgh, Pa.				461.3	
WCAJ	University Place, Neb				275	
WCAL	Northfield, Minn.				336.9	
WCAP	Washington, D. C.				468.5	
WCAU	Philadelphia, Pa.				278	
WCBD	Zion, Ill.				344.6	
WCCO	Minneapolis, Minn.				416.4	
WCEE	Elgin, Ill.				275.1	
WCX	Detroit, Mich.				516.9	
WDAF	Kansas City, Mo.				365.6	
WDBY	Chicago, Ill.				258	
WDWF	Cranston, R. I.				440.9	
WEAF	New York, N. Y.				491.5	
WEAI	Ithaca, N. Y.				254	
WEAO	Columbus, Ohio				293.9	
WEAR	Cleveland, Ohio				389.4	
WEAY	Houston, Texas				270	
WEBH	Chicago, Ill.				370.2	
WEBJ	New York, N. Y.				273	
WEBW	Beloit, Wisc.				268	
WEEI	Boston, Mass.				475.9	

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RECEPTION RECORD

Call Letters	LOCATION	Dials			Wave Length	Remarks
		1	2	3		
WEMC	Berrien Springs, Mich.				285.5	
WFAA	Dallas, Texas				475.9	
WFBH	New York, N. Y.				273	
WFI	Philadelphia, Pa.				394.5	
WGBS	New York, N. Y.				315.6	
WGN	Chicago, Ill.				370.2	
WGR	Buffalo, N. Y.				319	
WGST	Atlanta, Ga.				270	
WGY	Schenectady, N. Y.				379.5	
WHA	Madison, Wisc.				535.4	
WHAA	Iowa City, Ia.				483.6	
WHAS	Louisville, Ky.				399.8	
WHAZ	Troy, N. Y.				379.5	
WHB	Kansas City, Mo.				365.6	
WHN	New York, N. Y.				361.2	
WHO	Des Moines, Iowa				526	
WHT	Chicago, Ill.				399.8	
WIP	Philadelphia, Pa.				508.2	
WJAR	Providence, R. I.				305.9	
WJAS	Pittsburgh, Pa.				275	
WJJD	Moosehart, Ill.				302.8	
WJY	New York, N. Y.				405.2	
WJZ	New York, N. Y.				454.3	
WKAR	E. Lansing, Mich.				285.5	
WLBL	Stevens Point, Wisc.				278	
WLIT	Philadelphia, Pa.				394.5	
WLS	Chicago, Ill.				344.6	
WLW	Cincinnati, Ohio				422.3	
WMAK	Lockport, N. Y.				466	
WMAQ	Chicago, Ill.				447.5	
WMBB	Chicago, Ill.				250	
WMBF	Miami Beach, Fla.				384.4	
WMC	Memphis, Tenn.				499.7	
WMCA	New York, N. Y.				340.7	
WMH	Cincinnati, Ohio				422.3	
WNAC	Boston, Mass.				280.2	
WNYC	New York, N. Y.				526	
WOAI	San Antonio, Texas				394.5	

RECEPTION RECORD

Call Letters	LOCATION	Dials			Wave Length	Remarks
		1	2	3		
WOAN	Lawrenceburg, Tenn.				282.8	
WOAW	Omaha, Neb.				526	
WOC	Davenport, Iowa				483.6	
WOI	Ames, Iowa				270	
WOO	Philadelphia				508.2	
WOQ	Kansas City, Mo.				278	
WOR	Newark, N. J.				405.2	
WORD	Batavia, Ill.				275	
WOS	Jefferson City, Mo.				440.9	
WPG	Atlantic City, N. J.				299.8	
WPSC	State College, Pa.				261	
WQAA	Parkersburg, Pa.				220	
WQJ	Chicago, Ill.				117.5	
WRBC	Valparaiso, Ind.				278	
WRC	Washington, D. C.				168.5	
WREO	Lansing, Mich.				285.5	
WRL	Schenectady, N. Y.				360	
WRM	Urbana, Ill.				273	
WRW	Tarrytown, N. Y.				273	
WSAG	St. Petersburg, Fla.				266	
WSAI	Cincinnati, Ohio				325.9	
WSB	Atlanta, Ga.				128.3	
WSMB	New Orleans, La.				319	
WSUI	Iowa City, Ia.				483.6	
WSY	Auburn, Ala.				250	
WTAM	Cleveland, Ohio				389.4	
WTAS	Elgin, Ill.				302.8	
WTAY	Oak Park, Ill.				250	
WTIC	Hartford, Conn.				348.6	
WWAE	Joliet, Ill.				242	
WWJ	Detroit, Mich.				352.7	

CANADIAN BROADCASTERS

Call Letters	LOCATION	Dials			Wave Length	Remarks
		1	2	3		
CFAC	Calgary				430	
CFCA	Toronto				400	
CFCJ	Quebec				410	
CFRC	Kingston				450	
CGAC	Vancouver				430	
CKAC	Montreal				430	
CKCE	Toronto				450	
CHNA	Toronto				350	
CHCB	Toronto				440	
CKY	Winnipeg				450	
CKOC	Hamilton				410	
CKCX	Calgary				440	
CNRW	Winnipeg				450	
CNRT	Toronto				400	
CNRR	Regina				420	
CNRO	Ottawa				435	
CNRM	Montreal				431	
CNRC	Calgary				430	
CKCK	Regina				420	
CKCE	Toronto				450	
CKCD	Vancouver				410	
CJCN	Toronto				410	
CFCF	Montreal				440	
CJBC	Toronto				312	

FIFTEEN years of specialized work in radio, plus twenty years experience in the manufacture of quality precision products, is behind our guarantee that the King - Hinners Neutrodyne Receiver will give you the very best of radio reception—

“King In Radio.”

KING QUALITY PRODUCTS, INC.
BUFFALO, N. Y.

BRANCHES—CHICAGO - KANSAS CITY - BRIDGEBURG, ONT.



