IMPORTANT

The Manual of

OPERATING INSTRUCTIONS

for your

ZENITH

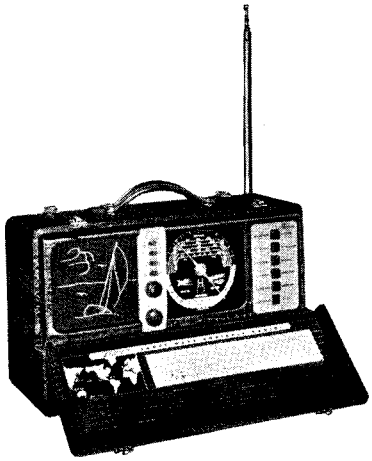
Deluxe Model 7G605

TRANS-OCEAN CLIPPER SHORTWAVE
AND BROADCAST PORTABLE RECEIVER

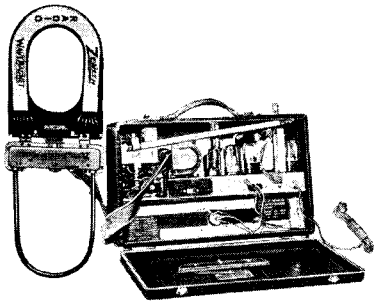
ZENITH RADIO CORPORATION
CHICAGO, ILLINOIS

202-339R

Enjoy new listening thrills at home or while traveling with the portable radio that gives you in addition to standard broadcasts, shortwave reception in trains, planes and boats. Here is a portable that is also a fine home radio. Use it on the A.C. or D.C. house current . . . or when traveling, it operates on the self-contained batteries.

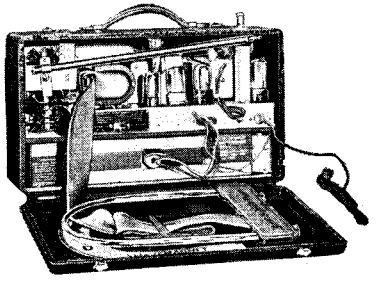


Luggage style front cover protects the controls and dial from damage.



WAVEROD OPERATION (Telescope Aerial)

. . for super-efficient shortwave reception when not confined within steel-shielded construction. Telescope type that extends to 5 feet. Automatically switched off when folded into case.



WAVEMAGNET AND SHORT-WAVEMAGNET OPERATION

Attach to window with handy suction cups for reception on ships, planes, trains, autos or in steel-shielded buildings. (U.S. Patent No. 2,164,251.)

STANDARD OPERATION

. . . with the Waverod and Wavemagnets left in case as shown for listening to standard broadcasts under ordinary conditions.

THE GENERAL FEATURES

Your Zenith Trans-Ocean Clipper Deluxe Portable is designed to receive standard broadcast and shortwave stations in any location whether it be a moving train, a plane, a boat or your home. It is precision-built, incorporating an advanced design with the latest circuit innovations so that you will be assured of efficient radio reception at all times.

This receiver is an A.C.- D.C. or BATTERY operated seven tube superheterodyne, including rectifier, covering the standard broadcast and foreign-domestic shortwave bands. A three-section tuning condenser with a tuned R.F. stage insures good sensitivity (the ability to hear distant stations); seven tuned circuits insure sharp selectivity. It is equipped with a five-inch permanent-magnet speaker and a four button "RADIORGAN" tone control. The built-in movable duplex WAVEMAGNET assembly (incidentally, an exclusive Zenith patent) consists of the standard WAVEMAGNET along with the recently developed Zenith Shortwave Magnet, each specifically designed for reception in its own band or bands. A WAVEBOOSTER has been built into the Shortwave Magnet so that shortwave stations may be peaked for maximum volume. The WAVEROD, which may be "telescoped" in and out of its operating position, is provided for average shortwave reception and also for broadcast reception in rural or isolated areas where signal strength is apt to be extremely low. It is automatically incorporated into the circuit by the Robot-Switch as the WAVEROD is unfolded from the cabinet. The Time-Band Selector on the front panel indicates and permits selecting the shortwave band most suitable to the time of day. Each shortwave band is "electrically" spread, which means that shortwave stations are separated from each other to a greater extent and also that elusive shortwave stations are tuned with greater ease and accuracy. The 16, 19, 25, 31 and 49 meter bands each have *full* bandspread tuning. A calibrated, "second scale" has been provided on the dial face along with a separate logging chart so that various SW stations may be quickly identified and easily relocated. All wavebands (coils) are fully compensated against variations in temperature and climatic conditions—the performance of the receiver does not vary with seasonal or geographical changes.

UNPACKING

After the receiver has been removed from its shipping carton, unlatch the back cover and remove the wooden block at the lower outer edge of the cabinet. Insert the two "A" flashlight batteries in their holder inside

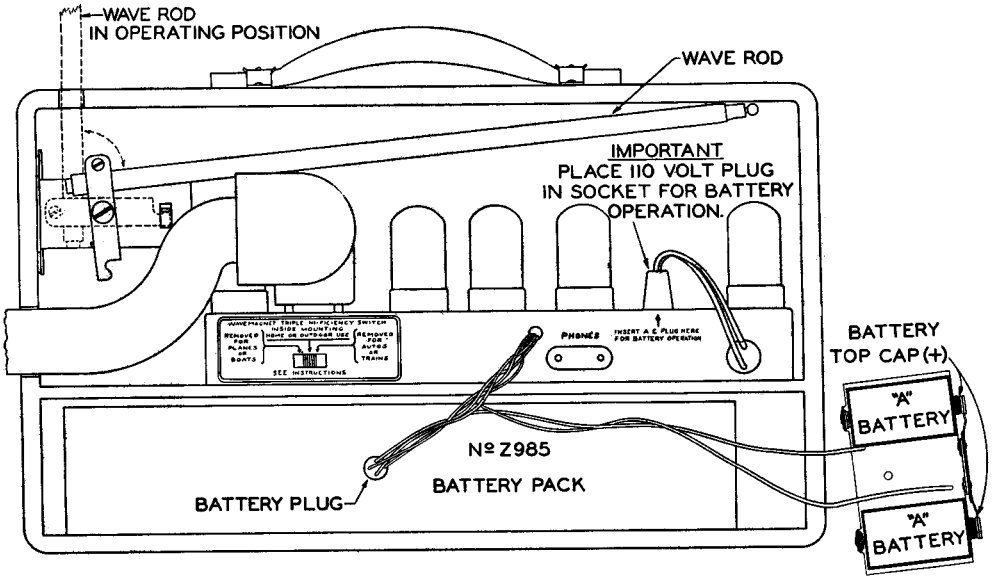


Fig. 1 — Rear View of Receiver

the cabinet, lower right corner, in the position as shown in Figure 1. The larger battery may then be placed in its compartment with the power socket facing the back cover. Place the battery cable plug into the battery pack as shown in Figure 1. Replace the wooden block in its original position.

POWER SOURCE

The receiver can be operated from any one of three sources of power, as follows:

1. The Portable Z-985 Zenith dry battery pack and two standard flashlight batteries.
2. Alternating Current (A.C.) 110 to 125 volts, 25 to 60 cycles.
3. Direct Current (D.C.) 110 to 125 volts.

The power consumption of the radio is 25 watts.

BATTERY OPERATION

IMPORTANT: The 110 volt plug must be inserted in the changeover socket (see Fig. 1) to operate the receiver on its self-contained dry batteries; this automatically operates a safety switch. The excess 110 volt line cord must be stored above the tubes at the rear right side of the case. The back-cover is then closed and the receiver is ready for operation.

Note: The batteries should be checked from time to time (three to six months) to determine their condition. If the flashlight batteries are weak or dead, they may be replaced by any standard make although we recommend the metal-covered leak-proof type No. 2LP because of the protection against corrosion and leakage. The large battery pack, Zenith part No. Z-985, is obtainable through your Zenith dealer.

OPERATION ON D.C. OR A.C. POWER

(110 to 125 volts)

Remove the line cord plug from the socket in the rear of the receiver and plug it into the 110-volt power outlet.

The battery saver switch is automatically operated when the 110-volt plug is removed from the receptacle on the chassis and prevents any drain from the dry battery pack while the receiver is being operated from an electrical outlet.

PLACING THE RECEIVER IN OPERATION

Unwind the line cord and insert the plug into a convenient electrical outlet. Opening the hinged front-cover exposes the dial, controls and speaker, as shown in Figure 2.

To turn the receiver "ON," rotate the combination OFF-ON switch and volume control to the right; continued rotation of this knob to the right increases the volume. The maximum audio power output of the radio is 350 milliwatts.

The red square "A" in the lower center of the dial indicates that the receiver has been turned ON. CARE SHOULD BE TAKEN TO SEE THAT THIS RED INDICATOR DISAPPEARS WHEN YOU ARE THROUGH LISTENING TO THE RADIO.

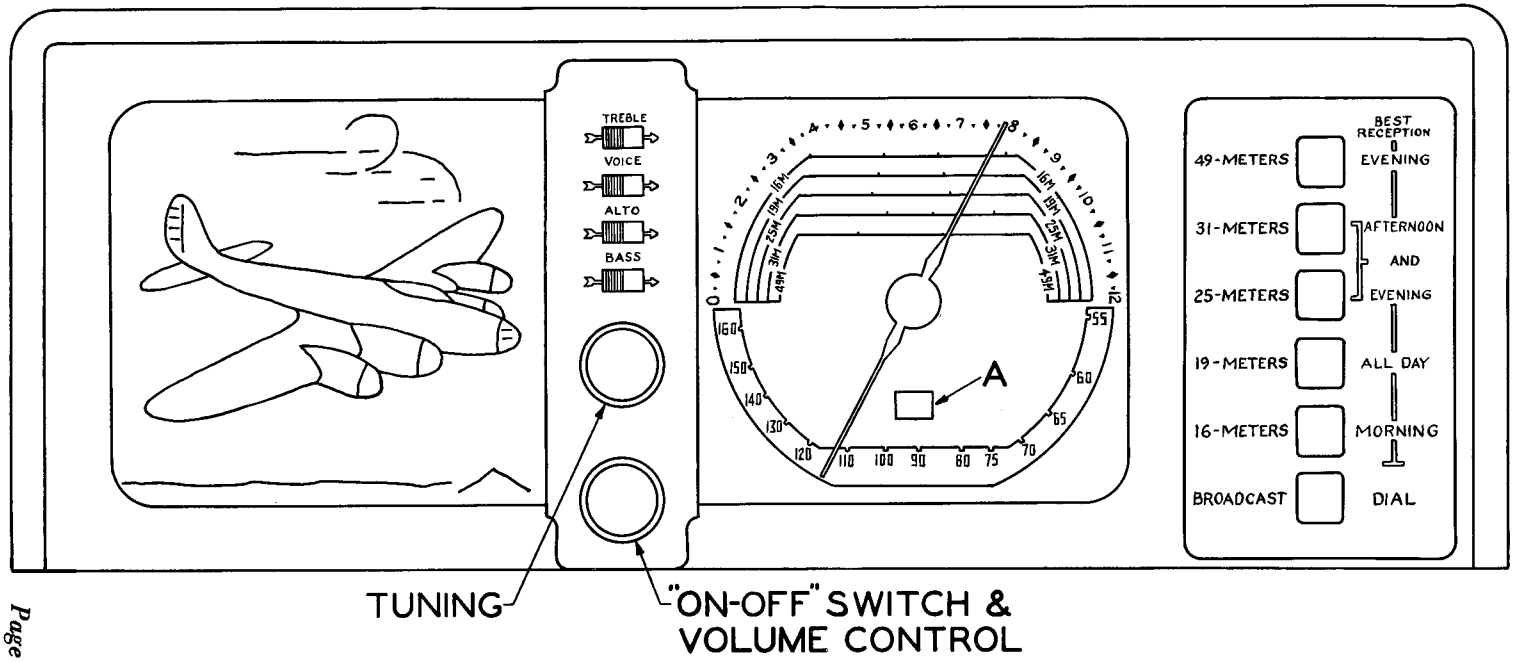


Fig. 2 — Controls

Approximately one minute will be required for the tubes to reach operating temperature. If the receiver fails to operate within one minute when connected to direct current (D.C.), reverse the plug at the electrical outlet. This procedure may also be helpful in suppressing hum or electrical interference (vacuum cleaners, etc.) when the receiver is operated on alternating current (A.C.).

TUNING

The Time-Band Selector switch, located to the right on the front panel provides a means of selecting one of the following bands:

1. Broadcast.....540 to 1620 Kc.
2. 49 Meters.....6.0 to 6.5 Mc.
3. 31 Meters.....9.4 to 9.8 Mc.
4. 25 Meters.....11.7 to 11.9 Mc.
5. 19 Meters.....15.1 to 15.3 Mc.
6. 16 Meters.....17.6 to 18.0 Mc.

Note: Kc. indicates kilocycles; Mc. indicates megacycles

Tuning the Broadcast Band

Press in the BROADCAST button, thereby switching in the broadcast band. Tuning is accomplished by the upper control knob, shown in Figure 2. The pointer should be moved over the station until the exact center of the wave is found; otherwise the tone will be distorted.

After the tuning has been properly adjusted the volume may be regulated to the proper level by adjusting the volume control. Never reduce the volume of the radio by detuning the station as tone distortion will result.

Under average receiving conditions for broadcast reception, it is not necessary to remove the WAVEROD or the duplex WAVEMAGNET from the cabinet. Simply turn on the receiver and follow the above procedure.

For broadcast reception in remote or isolated areas, or for out-of-town stations, unfold the WAVEROD (See Fig. 1) from the cabinet and extend it to its full length. This automatically connects the WAVEROD, thereby increasing the sensitivity of the receiver.

For broadcast reception in steel-enclosed locations such as airplanes, trains, or automobiles, fold the WAVEROD into the cabinet and attach the duplex WAVEMAGNET to a window as described under the following section headed "BUILT-IN MOVABLE DUPLEX WAVEMAGNET."

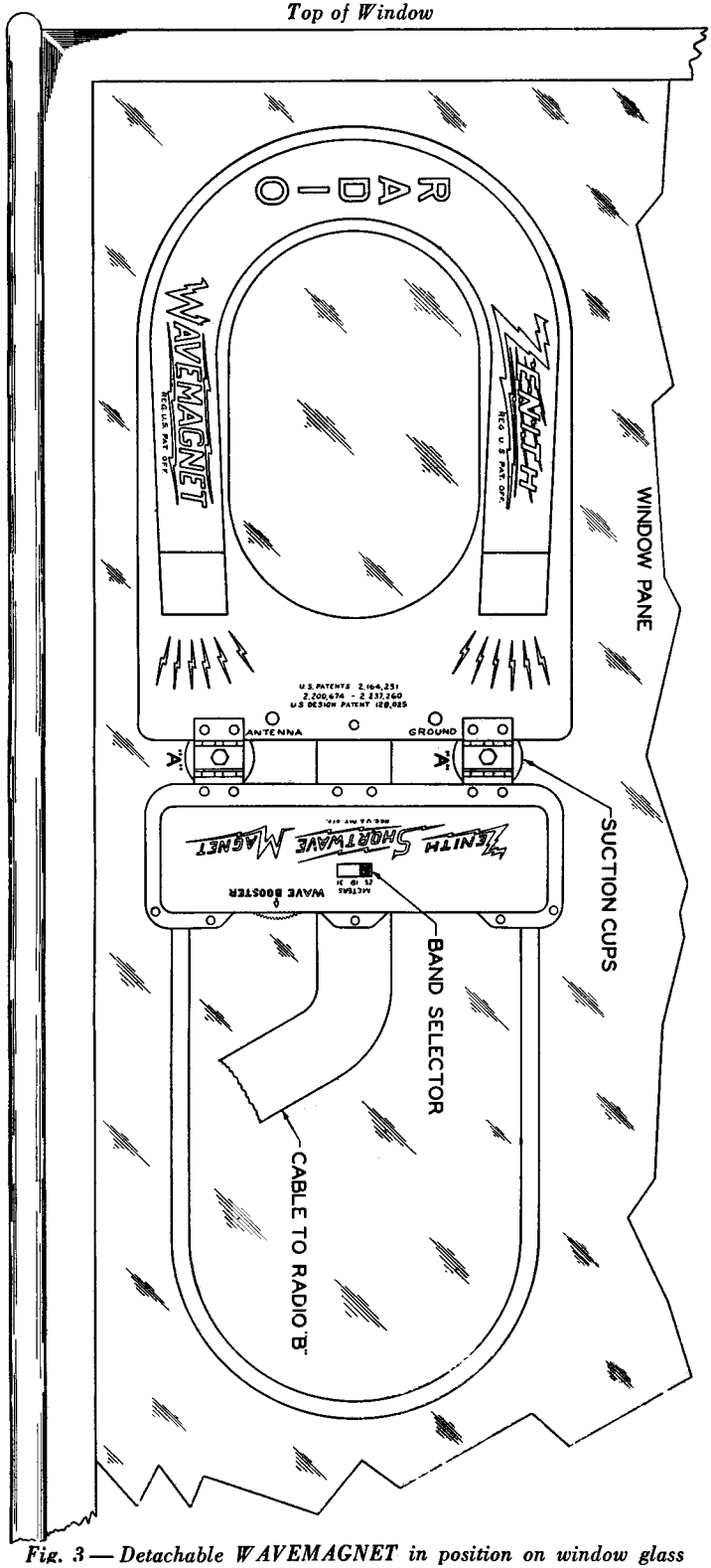


Fig. 3 — Detachable WAVEMAGNET in position on window glass

Tuning the 49, 31, 25, 19 or 16 Meter Shortwave Bands

Determine which band is most suitable to the time of the day by consulting the logging chart or the Time-Band Selector. Press in its associated push-button, thereby switching in the proper band for tuning.

Under average shortwave receiving conditions, unfold the WAVEROD from the cabinet and extend it to its full length. Follow the same procedure as set forth in "Tuning the Broadcast Band," being certain to rotate the tuning knob slowly so as not to pass over, unnoticed, the weaker, more distant stations.

Shortwave reception in steel-enclosed locations is limited to the 19, 25 and 31 meter bands, for which the Shortwave Magnet is designed. It will be necessary to attach the duplex Wavemagnet to a window after folding the WAVEROD into the cabinet as described in the following section.

THE BUILT-IN MOVABLE DUPLEX WAVEMAGNET

This receiver is equipped with a Detachable Duplex WAVEMAGNET, which is an exclusive Zenith feature, making possible efficient operation in steel-enclosed locations where other portables without this feature operate poorly or not at all. The WAVEMAGNET assembly must be removed from the back of the cabinet and attached to a window in the position as shown in Figure 3 if optimum performance is expected in any one of the following locations:

AIRPLANES — BOATS — TRAINS — BUSES — AUTOMOBILES OR STEEL BUILDINGS, ETC.

More than likely best shortwave reception will be revealed with the duplex WAVEMAGNET assembly placed in a vertical position on the glass next to the edge of the window. However, this is not always the rule as different results will be noted in different locations.

IMPORTANT: Make certain the WAVEROD is completely folded into the cabinet when using the duplex WAVEMAGNET.

The duplex WAVEMAGNET is connected to the receiver by a flexible cable (B in Fig. 3) and is held within the back-cover of the cabinet by means of two clamps. This cable is so designed as to fold evenly

when the WAVEMAGNET assembly is placed within the cabinet cover and care should be taken that it is always so folded when within the cabinet.

Unlatch the back-cover and remove the WAVEMAGNET assembly for placement on the window.

Best reception with least interference will be revealed by experimenting with the Duplex WAVEMAGNET; try it in different positions and angles with respect to the glass.

It is recommended that the receiver be tuned to a weaker broadcast station during the experimental period. The duplex WAVEMAGNET should first be tried in a position parallel to the glass. Then it should be tried at different angles with respect to the glass, for, while a position parallel to the glass is usually best, this is not always the case. The suction cups ("A" in Fig. 3) are hinged to permit setting the WAVEMAGNETS at the best angle.

Once the best position on the glass and the best angle with respect to the glass have been determined, both for best reception and minimum noise, the duplex WAVEMAGNET should be attached securely to the glass as shown in Figure 3 by means of the two rubber suction cups ("A" in Fig. 3) which are first moistened with water or glycerine to make them adhere firmly to the glass.

Adjustments To Be Made For Broadcast Reception

This receiver incorporates an ultra high efficiency duplex WAVEMAGNET, the characteristics of which may be preserved regardless of the position or location in which it is used by means of the "Triple Hi-Ficiency Switch," located on the rear of the chassis (see Fig. 1).

This switch has three positions; it should be in the center position whenever the duplex WAVEMAGNET is used within the cabinet.

The two outside positions of the switch allow compensation for variations of the WAVEMAGNET characteristics when it is used outside the receiver case. When the duplex WAVEMAGNET is mounted on the window of a train, plane or automobile, etc., a weak station should be tuned in and reception noted with the switch in each of the three positions. USE THE POSITION GIVING THE BEST RECEPTION.

Adjustments To Be Made For Shortwave Reception

First, a reminder that when using the Shortwave Magnet inside steel-enclosed locations, shortwave reception is limited to the 19, 25 and 31 meter bands. Reception on all shortwave bands is obtainable when the receiver is in a location where the WAVEROD may be used.

After selecting the most suitable shortwave band for the time of day and pressing in its associated push-button, the band selector on the Shortwave Magnet (see Fig. 3) must be placed in the corresponding position. The two band selectors must correspond to each other whenever the Shortwave Magnet is to be used.

Upon completing the switching, a station is tuned in the regular manner and then the WAVEBOOSTER (see Fig. 3) on the Shortwave Magnet may be adjusted to the point where greatest volume is attained. Slight readjustment of this control is necessary for each shortwave station tuned.

In general, for both broadcast and shortwave reception, the receiver, duplex WAVEMAGNET and connecting cable, should at all times be kept away from lamps, wires, or exposed electrical wiring which might cause electrical interference and noisy reception.

When operating this receiver in an observation car or club car of a train, it may be necessary to remove the plug of any nearby table lamp from its receptacle should this lamp be in close proximity to the receiver, duplex WAVEMAGNET or connecting cable.

USING THE RECEIVER IN AN AUTOMOBILE

The procedure is much the same as given in the preceding section except a little more experimentation is necessary to determine which window will work best for the duplex WAVEMAGNET.

Tune the receiver to a station in the broadcast band and then move the duplex WAVEMAGNET around in different positions on the various windows to find the window and position for best reception. It is suggested that one of the rear door windows be tried first and then that the other windows also be tried to determine which is best in your automobile. There are no two windows which will be alike; it may be the lower rear

corner of one of the rear windows—it may be the forward lower corner—it may be one of the top corners or it may be the middle, although the middle of the window is usually the position where reception is poorest.

The best location for the duplex WAVEMAGNET should first be found without the engine running. Then with the engine running, the duplex WAVEMAGNET should be tried at different angles to the glass to determine the setting for minimum motor noise.

It is again emphasized that no two automobiles are alike, that no two windows are alike, that this device (the duplex WAVEMAGNET) is specifically designed to permit the user to determine the position resulting in best reception.

Once the best position and angle with respect to the glass have been determined, the duplex WAVEMAGNET may be attached to the glass by means of the two rubber suction cups ("A" in Fig. 3).

The procedure for tuning a station is then the same as given under the "Adjustments To Be Made For Broadcast Reception" and "Adjustments To Be Made For Shortwave Reception" portions of the "Built-In Movable Duplex Wavemagnet" section.

THE SHORTWAVE LOGGING CHART

The shortwave logging chart, contained within the front cover of the receiver, is used in conjunction with the calibrated "second scale" of the dial (uppermost scale on receiver) for the purpose of recording the band and approximate dial locations of various shortwave stations that have been received.

An example of its function may be taken from one of the stations that was prelogged at the factory. Note that the letter "E" has been posted in the 25 meter band in line with the number "4" of the chart's projected scale. By consulting the logging code of the chart (lower left-hand corner), we learn that (1) the letter "E" stands for England, and (2) that England was received in the 25 meter band with the dial pointer in close proximity to number "4" of the second scale.

Similarly, if you receive Geneva, Switzerland, in the 16 meter band with the dial pointer at number "8" of the second scale, the log entry

may be made in the following manner: Place an "S," preferably penciled, in the 16 meter section of the chart in line with number "8."

Any shortwave station that you hear and would care to identify for relocation purposes may be logged in this manner.

The logging chart also has a map in Mercator projection for your convenience in identifying the points of origin of foreign shortwave broadcasts. The condensed operating instructions serve as a reminder and guide of the basic operating procedure. A table showing powerful shortwave stations along with the bands in which they operate and their frequencies is provided for the shortwave listener's information.

HOW TO ENJOY THE FULL VALUE OF YOUR ZENITH TRANS-OCEAN CLIPPER PORTABLE RECEIVER

A real thrill awaits you in tuning distant and foreign shortwave stations, for your Zenith receiver is capable of bringing you shortwave broadcasts from many foreign countries in various parts of the world. The table below will help to acquaint you with which bands to tune for foreign countries at various hours.

Shortwave broadcast stations are not found throughout the entire shortwave range, as on the standard broadcast band. Most shortwave stations are grouped together at 16, 19, 25, 31 and 49 meters and your Zenith receiver is designed to "spread" the dial at these important points of the shortwave range, making tuning shortwave stations easier than ever before.

The table below shows the band on which best reception is most likely at different times. This table is compiled for reception in North America, and does not necessarily hold for other parts of the world. In any case it is only approximate as there are seasonal and other variations to be considered.

SHORTWAVE BAND	TIME OF BEST RECEPTION
49 meters	*Evening*
31 meters	*Afternoon and evening*
25 meters	
19 meters	*All day*
16 meters	*Morning*

DIAL NUMBERS

A. BROADCAST BAND. The broadcast portion of the dial scale (black numbers on white background) is calibrated in kilocycles with the last zero being deleted as a matter of convenience.

Radio sections of newspapers and magazines usually list station frequencies in kilocycles or numbers derived directly from kilocycles. Therefore, you can easily locate a desired station by rotating the tuning knob until the dial pointer is at the number corresponding to the listed frequency.

For example, a station listed as operating on 650 kilocycles will be found at 65 on your dial. A station listed at 1450 kilocycles will be tuned in at 145—and so on.

B. SHORTWAVE BANDS. The shortwave dial scales are indicated in meters (bands) and—where the scales follow a straight line—calibrated in megacycles.

The procedure for locating SW stations is the same as described under "Broadcast Band"; merely substitute "megacycles" for "kilocycles."

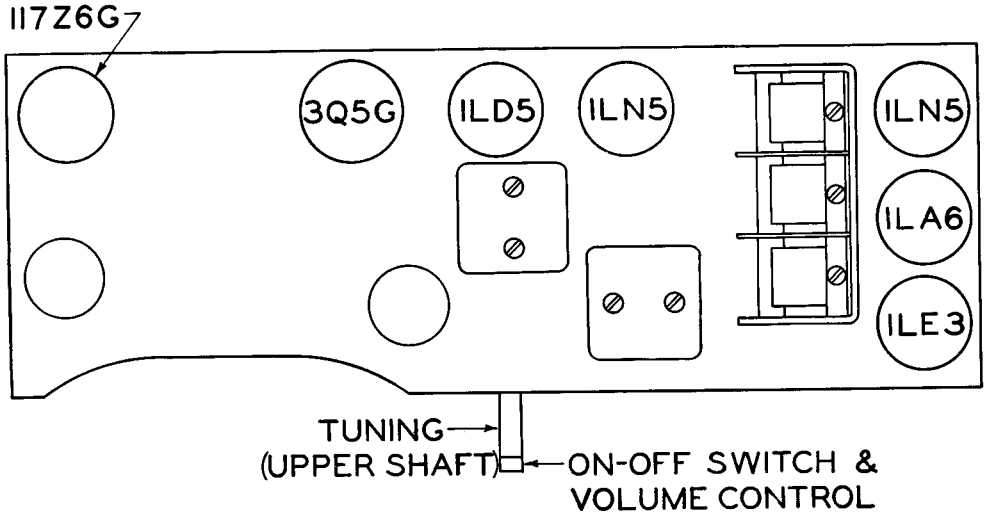


Fig. 4 — Tube Positions

For example, the table in the lower right corner of the logging chart shows that SW station WCBX of New York operates in the 49 meter band on its frequency of 6.17 megacycles and would be found by switching to the 49 meter band and tuning at the approximate dial calibration of 6.17 Mc.

RADIORGAN TONE MASTERY

The tonal characteristics of the radio may be regulated to the listener's personal preference by means of the four buttons contained in the "RADIORGAN."

To operate the buttons, they are placed in the position toward the arrowhead. The portion of the tonal range affected is shown above each button. There are sixteen different tonal combinations available.

HEADPHONES

In trains, dormitories, hospitals or schools, etc., it may be necessary to use the receiver without annoying nearby persons. They are a real necessity while operating the receiver during airplane travel. A special low-impedance Zenith Headphone, part No. 39-10, is easily adaptable to the receiver by inserting the terminals in the headphone connector shown in Figure 1. Attaching the headphones automatically disconnects the speaker. A special headphone adapter is not necessary.

This accessory is available through your Zenith dealer.

TUBES

The following tube complement lists the purpose of each tube:

1LN5	*RF Amplifier*
1LE3	*Oscillator*
1LA6	*Mixer*
1LN5	*IF Amplifier*
1LD5	*2nd Detector and AF Pentode*
3Q5G or GT	*Power Amplifier*
117Z6G or GT	*Rectifier*

Figure 4 shows the correct socket for each tube. If the tubes are removed from the chassis for test or replacement, be certain that they are replaced in their respective sockets as shown in Figure 4. Otherwise the receiver will not operate and the tubes may become damaged. G and GT type tubes are interchangeable.

WARRANTY

The Zenith Radio Corporation guarantees each new Zenith receiver and each Zenith quality tube to be free from defects in workmanship and material.

Our obligation under this warranty is limited to making good at our factory any part or parts of the receiver which within 90 days from date of purchase shall be returned to us with transportation charges prepaid, and which on examination shall be found to our satisfaction to have become thus defective. This warranty is expressly in lieu of all other warranties expressed or implied, and we neither assume nor authorize any representative or other person to assume for us any other liability in connection with the sale of Zenith receivers or Zenith quality tubes.

This warranty shall not apply to any receiver which shall have been repaired or altered outside our factory, nor which has been subject to misuse, negligence or accident, nor which has had the serial number or name altered, defaced or removed. Neither shall this warranty apply to any receiver in which other than ZENITH QUALITY TUBES and GENUINE ZENITH DRY BATTERY PACKS have been used.

ZENITH RADIO CORPORATION **CHICAGO, U. S. A.**