MIDWEST RADIO CORPORATION

OPERATING INSTRUCTIONS AND SERVICE BULLETIN #171

You have just purchased a really fine radio. But in addition to this radio you have received:- (1) a public address system powerful enough to address groups of several hundred people, (2) (In the K and N Models) a high quality amplifier for playing your favorite records, (3) (In the KR and NR Models) a device for making your own records of favorite radio programs, (4) (In KR and NR Models) a device recording your own programs through a studio quality microphone.

All this, through careful design, has been made extremely easy to operate, however, for best results we suggest careful reading and following of these instructions.

After unpacking, examine carefully for damage during trasnportation. If damage is found obtain a statement of damage from the carrier and send it to us at once. Unless this statement is obtained at once we cannot obtain adjustment from the carrier.

Before plugging set into power line be sure voltage and frequency are correct. Unless otherwise ordered and stated on attached card this set is designed for use on 105 to 125 volts - 60 cycles alternating current.

Be sure the tubes are firmly seated in their sockets. They may have been jarred loose in shipping.

Be sure the plug on the cord from the speaker is well seated in socket in rear of chassis.

Loosen the screws, at each end of the chassis, which hold the chassis to shelf during shipment. If those screws are not loosened the set may howl when you tune in weak short wave stations.

After set is plugged in turn left hand knob to Right hand position (Radio), triangle on Knob up, and turn Right hand knob to Loop, triangle on Knob up. Set may then be turned on by turning center knob (Tone) to right. Allow about 1/2 minute for tubes to warm up. Stations may then be tuned in with the Manual Tuning Knob and volume adjusted with Volume Control Knob.

When band switch is in Loop position you are using the built-in loop aerial. This loop can be revolved. For strong stations its position is immaterial. For weak stations pickup is greatest when loop is pointed toward station. We suggest tuning in weakest stations desired and revolving loop until signal is strongest.

This loop is a very efficient type of aerial. But regardless of its efficiency it is obvious, because of its limited size, it cannot pick up as much signal as a long outdoor aerial. Therefore, for long distance reception of weak stations we recommend an outside aerial, preferably the Midwest Red Head Noise Reducing Double Doublet Aerial.

Any position of band switch other than loop require an external aerial.

When Band Switch is in position

E - Set tunes to long waves. This band is occupied chiefly by aircraft beacon stations, aircraft weather reports and operators orders, also ships at sea. Most of these are very low power and long distance reception is not possible.

A - Set tunes to the standard broadcast band. Tuning on this band is well known and require no special instruction. However, notice the glorious tone quality and extremely low noise level of this Midwest Radio. Also the selectivity which prevents one station from interfering with another.

B - This band - (1.6 to 4.2 Megacycles) tunes police calls, amateur telephones and aeroplane transmitters. Aeroplane transmitters are hard to tune in because they operate intermittantly. Frequencies where voice broadcast may usually be heard are underscored in Red.

C - This band (4.3 to 12 Megacycles) tunes to costal phone, aviation, amateur and most important 3 short wave broadcast bands. While short wave broadcast may be found anywhere on this band they are most likely to be found in the positions underscored in red. The band at 6 Megacycles is mostly occupied by South American, Spanish speaking stations. Long Distant reception is best on this band after dark. The two other bands (9.5 to 11.5 Megacycles) are occupied by American, European and Asiatic stations. Long distant reception is best in the late afternoon but is possible at all hours.

D - This band (12 to 30 Megacycles) tunes the extremely short wave stations. Positions where broadcast may most likely be heard are underscored in Red. Long distant reception is extremely erratic but may usually be had during day light hours. Radio is very sharp on this band and slow, careful tuning is necessary.

CONTROLS

1. Selector Switch

This switch selects the one of five conditions required. In the right hand position (Radio) normal radio reception is obtained.

In the second position (Phono) phonograph records may be played through the high quality audio amplifier. If a separate record player is used connect the pickup to the jack on the back of the chassis marked Phono. Notice also that there is a power outlet on the back of the chassis. The record player motor may be connected here. Tone and Volume are controlled by the knobs on the panel.

In the third position (Radio record) records may be made from the programs tuned in on the radio. In this position the speaker is partially muted but it is still loud enough to monitor record cutting etc. See further instructions under Recording.

In the fourth position (Mike record) your own voice and programs may be recorded. Any high quality crystal microphone may be used. We recommend the Microphone shown on page 23 of our catalog. This Microphone has the same elements as used in $25.00 to $50.00 studio microphones but because of the inexpensive case and base is sold to Midwest users only at the extremely low price of $7.50. See further instructions under Recording.

In the fifth position (P.A.) (Public Address) this set may be used as an address system with sufficient power to cover groups of several hundred people. In this position a trouble called feed back will be encountered if the volume is high and the microphone near the speaker. Sound from the speaker is picked up by the Microphone, amplified and reproduced by the speaker again. This causes a loud howling noise. It can be eliminated by lowering the tone and volume and keeping the microphone as far from the speaker as possible.

2. Volume

This is an extremely smooth, compensated, volume control and should be used as such. Tune the stations accurately and adjust volume with this control. Do not detune with Tuning Knob to lower volume. This only destroys tone quality and increases noise.

3. Tone

This control turnes set off and on and adjusts high tones. In the right hand position high tones are emphasized and in the left hand position highs are reduced. For music, you will probably prefer less highs. For voice highs are required for clear crisp enunciation.

4. Tuning

This is a super smooth, high ratio ball bearing control designed for accurate tuning. For Short Wave stations tune slowly and carefully. This is especially true on Band "D".

5. Band Switch

This switch selects the band desired. In the Loop position broadcast stations are received on the built-in Loop aerial. On all other positions an external aerial is required.

On the Escutcheon are two slide switches. The one on the left is the STAT-OMIT. In the down position it is normal, in the up position it is quiet. It has two distinct methods of noise reduction. One called limiting action which prevents any noise coming through which is louder than the signal being received. Thus bursts of static or auto ignition noises are eliminated. The other action is to reduce volume when no signal is tuned in. This eliminates crackling and popping usually heard between stations when tuning.

The Switch on the right is the FIDEL-A-STAT. When down, tone is normal. When up Bass tones are boosted. This, combined with the tone control gives the user perfect control of tone quality. Any tone correction which pleases the listener may be obtained.

Please bear in mind that this, or any other high powered, long distance radio can be improperly handled and made to sound noisy, and just like a fine musical instrument when improperly played, can be objectionable.

Rear of Chassis

On the rear of chassis are several sockets all clearly marked. When viewed from the rear the left hand socket is for a standard power plug. It may be used for a table lamp often placed on the radio, for a floor lamp or possibly for a record player motor. The second one, an eight prong socket, is used for the Midwest Record Recorder-Player combination. The third, five prong, socket

accommodates the speaker plug. The Loop aerial may be plugged into the fourth socket. Next is the aerial and ground binding posts. The ground post should be connected to a good ground, preferably a cold water pipe. The antenna post should be connected to a good external aerial. We recommend the Midwest Red Head Noise reducing doublet aerial described on page 23 of our catalog. At the extreme right hand end are two sockets, the first is provided for a crystal type phonograph pickup. It may also be used with the proper converter, for television sound or frequency modulation when and if these services become available in your locality. The last socket accommodates a crystal type microphone. We suggest the one listed on page 23 of our catalog.

The Push Buttons

Six push buttons are provided for easy tuning of your favorite stations. They are of the automatic mechanical drift proof type that are easily adjusted using only a small screw driver. Any button may be set for any station but it is more logical to set the stations on the left hand side of the dial on the left hand button and station on the right hand side of the dial on the right hand button using proper frequency sequence. When accurately set, the buttons will tune in stations perfectly.

Setting the Push Buttons

These easy acting push buttons are extremely simple to set. The moulded pushes are merely caps covering the mechanism. They may be removed by pulling.

To set a button to the desired station proceed as follows:

1. Grip button between thumb and fore finger and pull - button will slide off. This exposes locking screw.
2. With small screw driver loosen locking screw about 1 full turn.
3. With locking screw loose and button depressed (it may be held depressed with screw driver) tune in desired station ACCURATELY.
4. Tighten screw and replace moulded cap.
5. Choose proper station call letter tab from the sheets supplied and place in recess in push button. Cover this with protective celluloid cover and operation is completed.

Repeat for other buttons and stations.

WARNING: Do not loosen locking screw more than four turns. Screw may come out and be very hard to replace.

Recording - (Making your own records)

This set has been designed to make it easy for you to make good records from the very start. However, as your skill increases you will make better and better recordings until they approach professional quality. Major faults with amateur recordings are as follows:

1. Over cutting or under cutting. You don't have to shout into the microphone. Talk in a normal voice about 6" from mike. Adjust volume control until eye just closes on maximum volumes. Over cutting causes grooves to run together and phono pickup jumps out of grooves. Under cutting causes low volume and high needle scratch. A little experience will enable you to avoid these troubles.

2. Avoid sudden change in volume. Don't move suddenly toward or away from the microphone. Don't change the volume control setting quickly.

3. Too much bass is not desirable. A record cannot take as much bass as you probably like when listening to the radio. Always record with FIDEL-A-STAT in down or normal position. Never with Bass Boost.

4. Threads getting under cutting needle. Keep these threads brushed away from the needle with soft brush or match stick.

5. On your first records combining solo voice with piano or other accompaniment the voice may drown out the music or vise versa. Study your records and experiment to get the proper balance.

Recording from Radio

Before cutting make the following adjustments:

1. Insert cutting stylus (needle) in cutting head with flat portion of shank toward knurled thumb screw. Tighten firmly. This stylus will cut many records before it becomes dull but it may come loose in cutting head. Tighten before each recording.
2. In moving cutter arm always raise it to an angle of at least 45°; this disengages feed screw and prevents damage to the same.

3. Place a record on the turn table allowing the spring pin to come through hole in record and lower cutting head till the cutting stylus rests on record. The cutting head should then be 1/4" above record. If not, raise arm and adjust screw under arm. This adjustment is made in the factory but it should be checked.

4. Turn selector switch on panel to Radio Record position. Tune in desired program and adjust volume until magic eye just closes on peaks.

5. Lower cutting head on outside of record and you are making a record.

6. Keep thread coming from cutter away from cutting needle with soft brush or match stick.

7. After cutting always replace cutting head on support. Turn selector switch on panel to Phono and play back the record with phono pickup.

To cut records from microphone essentially the same procedure is followed except the selector switch is turned to Mike Record. Precautions under Recording - (Making your own records) must be followed

Depth of Cut

This is very important. After a record is made examine it carefully under a light. The width of the cut should be about as wide as the space between grooves. If the cut is too deep it will slow down the motor and make "wows" in the recording. An extremely deep cut will cut through the coating. If you are using a metal base record this will ruin the cutting stylus. If the cut is too shallow the phono pickup will jump out of grooves.

A screw on the top of the cutting arm controls depth of cut. To increase depth of cut turn the screw to the right (clockwise). To decrease depth of cut turn screw to the left (counterclockwise). Make adjustments in steps of not more than 1/4 turn.

SPECIFICATIONS

Power Supply	105 - 125 Volts - 60 cycle unless otherwise specified.
Sensitivity	Better than 1 microvolt (1 Millionth of a volt)
Selectivity	5 KC at 2:1 - 22 KC at 1000:1
Audio Fidelity	FIDEL-A-STAT at Normal - Tone up: - Flat plus or minus 1 db from 20 cycles to 16,000 cycles. FIDEL-A-STAT boosts Bass (40 cycles) 15 db.
Radio Fidelity	Under same conditions as audio. Flat 20 cycles to 7000 cycles. 10,000 cycles down 40 db to remove heterodyne whistle.
Harmonics	Less than 2% at 10 watts.
Tubes	Metal, G or GT types may be substituted. If different types than those supplied with the set are used set should be re-aligned by a competent service man.
Frequency Range	Band E--- 125 to 350 KC Band A--- 550 to 1600 KC Band B--- 1.6 to 4.3 MC Band C--- 4.3 to 12 MC Band D--- 12 to 30 MC
Intermediate Frequency	456 KC
Aerial	Use external aerial on all Band switch positions except "Loop".