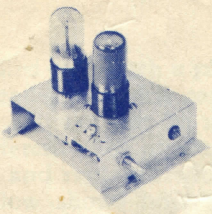

Allied Radio CORPORATION

AN Allied RADIO BUILDERS PROJECT

Knight Model 760

Wireless Phono Oscillator

SCHEMATIC DIAGRAM
PHONO-OSCILLATOR

35Z5GT
50L6GT
OSC. TRIMMER
ANTENNA
INPUT JACK
.0001
.02
.05
.0001
* 68,000
1 MEG
100,000
10 MEG
220 000 Ω
10,000 Ω
20 MFD 150 V
100,000
HEATER CIRCUIT
250 Ω, 5 WATT
115 VOLT AC-DC.
CHASSIS GROUND

* CONNECT THIS RESISTOR ONLY IF UNIT IS TO BE USED IN CONJUNCTION WITH A CARBON MICROPHONE.

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Notes on Construction and Operation

The Knight Model 760 Wireless Phono Oscillator permits playing of phonograph records or the making of "radio" announcements through your radio, without the necessity of a direct connection to the radio set itself. It can be used at any distance up to 50 feet from your radio. Power required is 110-125 volts, AC or DC.

A wireless phono oscillator is really a miniature broadcasting station which may be operated legally only because of its limited range. The unit described here is capable of "100% modulation", a feature not usually found in phono oscillators. A compact, high quality unit, it is the product of careful design for both efficiency and economy.

The Wireless Phono Oscillator can be used directly in conjunction with a crystal phono cartridge, the type found in most record players and changers. It can also be used with low output magnetic cartridges such as G.E. or Pickering, if a suitable phono preamplifier is employed.

For radio announcements it can be used with a carbon microphone by connecting a 68,000 ohm resistor from the input to B+. This resistor is indicated with an asterisk in the diagrams.

ASSEMBLY

The kit is supplied complete, down to the last screw. Only a small amount of hookup wire and solder, as well as a few basic tools are needed to construct the unit. The necessary tools are a soldering iron, a pair of long-nosed pliers, diagonal cutters, and a screwdriver set.

Check all parts supplied with your kit against the List of Materials on page 4. The values of all capacitors are marked on each unit. The various resistors are marked in accordance with the standard RTMA color code. If you are not familiar with these markings you can easily determine the resistor values by comparing them with the enclosed color code chart. If you can not identify some of the other parts by sight, it is suggested that you locate them on the pictorial diagram. The information given on this diagram will identify the part for you.

Begin the assembly by mounting the parts which are to be fastened to the chassis, in the following sequence:

(1) The tube sockets. These are mounted *from underneath* the chassis. Make sure that the tube guide slots face in the direction shown in the diagram.

(2) The modulation control.

(3) The oscillator trimmer capacitor. Make sure that the mounting nut for this capacitor is well tightened to prevent the capacitor from turning behind the chassis as the adjustment screw is rotated.

(4) The input jack.

(5) The antenna clip.

(6) The 2-terminal tie strip.

(7) The rubber grommet.

WIRING

After the above parts have been mounted you are ready to begin the actual wiring and soldering. If you have had little or no soldering experience be sure to read carefully the section on "HOW TO SOLDER" on page 4 of this manual.

Study the pictorial diagram carefully before wiring, to familiarize yourself with the placement of the various wires and parts. Begin by installing all wire leads, followed by the various resistors and capacitors.

Each connection must be well soldered with ROSIN CORE solder.

Keep all components close to the chassis with leads as short as possible. Clip off any excess leads from resistors and capacitors. If it appears that two or more leads from resistors or capacitors (leads not connected to the same point) might touch each other or some other tie point, cover these leads with "spaghetti" (varnished tubing).

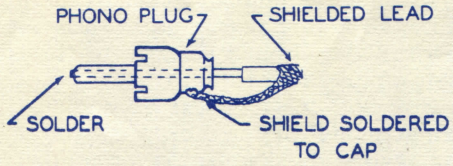
The last part to be installed and wired is the oscillator coil. This must be done carefully to prevent damage to the fine coil wires which are soldered to the coil lugs. If done properly, the installation of the coil is simple. First, attach and solder the .0001 mfd. mica capacitor between lug B and the tie lug of the coil. Then, bend lug B and the tie lug outward to an angle of 90° and "tin" these lugs; also "tin" the two lugs on the 2-terminal tie strip. This is done by heating each lug, in turn, with a hot soldering iron and applying enough solder to fill in the hole in each lug.

Hold the coil in such a way that the tinned lugs of the coil contact those of the tie strip, and heat one of the junctions with the hot iron. As soon as the solder which had previously been applied to each lug melts, remove the iron but hold the coil in place for a few seconds. You will find that, after the solder hardens again, the coil lug will be securely soldered to the tie strip. Repeat the above procedure with the second coil lug so that you will have one coil lug soldered to each tie strip lug.

After each wire and part has been connected and each junction soldered, carefully check every connection to make sure that no wiring error was made and that each solder joint is secure. Remember that a single poorly soldered connection may make the entire unit inoperative.

The final wiring step is the connection of the phono plug to the phono cartridge leads. Many record players

are supplied with such a plug already connected to their output leads, in which case the plug which is supplied with the kit will not be needed. If your record player has a different type of plug, however, it will have to be removed and replaced with the one furnished. The diagram below shows how to attach the phono plug to shielded phono cable. If your record player has two leads instead of shielded cable, one lead must be soldered to the shell of the plug, while the other is soldered into the plug.



HOW TO CONNECT SHIELDED CABLE TO PLUG

ADJUSTMENT AND OPERATION

Never use the oscillator within reaching distance of a grounded metal object, such as a radiator, water pipe, etc.

The Federal Communications Commission has requested that we advise you that the regulations under which low power radio transmitting apparatus may be operated without a license are contained in Section 15.7 of "Part 15—Incidental and Restricted Radiation Device", which is for sale by the Government Printing Office, Washington, D. C., at 5 cents per copy.

Remember that your phono oscillator acts as a small transmitter and that its operation is legal only so long as it does not interfere with your neighbor's radio. For this reason the unit must be operated so that it radiates only enough for satisfactory reception with your own radio. If your oscillator is to be used very near the radio, no antenna at all will be needed. For proper adjustment of the unit proceed as follows:

(1) Carefully tune your radio to a point between 600 and 800 KC. where no station is heard, even with the volume control of the radio turned up.

(2) Place the oscillator within 10 or 15 feet of the radio (do not connect an antenna to the oscillator) and insert the line cord plug into the wall outlet. Allow 2 or three minutes for the tubes to warm up.

(3) Adjust the modulation control on the oscillator to maximum (fully clockwise).

(4) Play a record or talk into the microphone and adjust the oscillator trimmer capacitor with a small screwdriver, until the record or your voice is heard through the radio.

(5) If the music or voice sounds distorted, turn the modulation control down (counterclockwise) until the distortion is cleared up. The modulation control should then be left permanently in this position, and all further volume adjustments should be made at the radio.

(6) Without disturbing the settings of any controls, unplug the oscillator and move it to its permanent location. If this location is a much greater distance from the radio than before, the volume at the radio will be considerably less, or you may not be able to hear the record at all. In this event, it will be necessary to add an antenna to the oscillator and to retune the unit. Take a roll of hookup wire (or antenna wire) and remove approximately ½ inch of the insulation from one end. Insert the bare wire end into the oscillator antenna clip and unroll about 10 feet of wire. Retune the trimmer capacitor until the record is again heard through the radio, with good volume. The volume may be adjusted at the radio but the modulation control should not be readjusted.

ALWAYS REMOVE THE LINE CORD PLUG FROM THE WALL SOCKET WHEN YOU ARE THROUGH USING THE PHONO OSCILLATOR.

GENERAL INFORMATION

The Phono oscillator may be mounted behind a wooden panel or installed in the phonograph cabinet. It can be mounted in any position.

If desired, the line cord of the oscillator may be wired across the line cord of the record player so that both units can be turned on and off at the same time by means of the "on-off" switch of the record player. To do this—

(1) Cut off the oscillator line cord plug.

(2) Split the line cord down the middle for a distance of 5 or 6 inches so that the two wires in the cord are separate.

(3) Remove the insulation from both wires for a distance of about ½ inch from the end.

(4) Locate the terminations of the ends of the record player line cord and solder the oscillator line cord wires to the same terminals as the record player line cord wires.

If your radio has push button tuning, a push button may be adjusted to the signal of the phono oscillator in the same manner as you would readjust a button for a radio station.

If the phono oscillator is placed a greater distance from the radio, it may be necessary to unwind more of the antenna wire attached to it. With sufficient antenna at the oscillator, background noise at the radio is minimized. As additional antenna is unwound, some change in tuning will take place, necessitating readjustment of the oscillator trimmer capacitor or of the radio. Always adjust the radio set until the record is heard clearly and with a minimum of noise. If there is a "howl" or "whistle" in the radio while records are being played, the frequency of the oscillator is too close to that of a broadcast station. In this case it will be necessary to set the receiver dial to a different position and to readjust the oscillator trimmer capacitor for this new setting.

NOTE: If EXCESSIVE hum is present in your radio when tuned to the phono oscillator, reverse the plug of the oscillator in the power outlet socket. If hum persists, reverse line cord plugs of the radio and record player, one at a time. If the oscillator line cord has been wired across the record player line cord, it may be necessary to reverse the wiring of the two oscillator line cord leads.

HOW TO SOLDER

Unless you have had previous soldering experience it will pay you to read these instructions carefully. Remember that a single poorly soldered connection may make the entire set noisy, intermittent, or completely inoperative.

If you are using a new soldering iron, or one with a new tip, the tip must be properly "tinned" before using. Plug the iron into the wall outlet and let the tip heat up to the point where it is just able to melt solder. Apply a small amount of rosin core solder to all surfaces of the tip so that the entire tip is covered with a thin layer. Wipe off any excess solder with a rag, being careful not to burn your hand. The tip is now properly tinned and will have a shiny appearance.

IMPORTANT: When tinning the iron, and in all subsequent radio soldering, use only a good grade of rosin core solder. Acid solder or acid flux will eventually corrode and make the entire set worthless.

If the tip of the iron is old it should be clean, free from all dirt and corrosion. It may be necessary to clean the tip with a piece of emery cloth or a fine file, and to re-tin, if it is badly corroded.

Every connection in a radio must be mechanically, as well as electrically, secure. When a wire must be soldered to a lug, always loop the wire around the lug so that it will not pull away. Then apply the hot tip of the iron to the connection to be soldered. After a few seconds, apply a small amount of solder to the junction. The lug, itself, should be hot enough to melt the solder so that it need not be applied directly to the tip. The solder will melt quickly and run into all crevices formed between the wire and the lug. Use only enough solder to fill these crevices and then withdraw the roll of solder. Leave the iron against the connection for another second or two and then remove it, being careful not to move the wire or wires in the lug. The melted solder will harden in a few seconds to form a good permanent connection.

When several wires are to be connected to one junction wait until all connections are made to that point before soldering.

LIST OF MATERIAL

1 Punched and formed chassis
1 50L6GT tube
1 35Z5GT tube
1 1 megohm potentiometer (modulation control)
1 Trimmer capacitor
1 Oscillator coil
1 20 mfd. 150v electrolytic
2 .0001 mfd. mica capacitor
1 .02 mfd. tubular capacitor
2 .05 mfd. tubular capacitors
1 250 ohm, 5 watt resistor
1 10,000 ohm ½ watt resistor
1 68,000 ohm ½ watt resistor
2 100,000 ohm ½ watt resistors
1 220,000 ohm ½ watt resistor
1 10 megohm ½ watt resistor
1 Line cord with plug
2 Octal sockets
1 Phono plug
1 Input jack
1 2-terminal tie strip
1 Fahnestock clip
1 Shouldered fiber washer
1 Plain fiber washer
1 Solder lug
1 6-32 x ½ BHM screw, for antenna clip
7 6-32 x 5/16 BHM screws
8 Hex nuts
1 Rubber grommet

83 S760 Complete kit, with tubes

ACCESSORIES YOU MAY WANT

59 S 335 Carbon "toy" Microphone

ALLIED RADIO CORPORATION

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