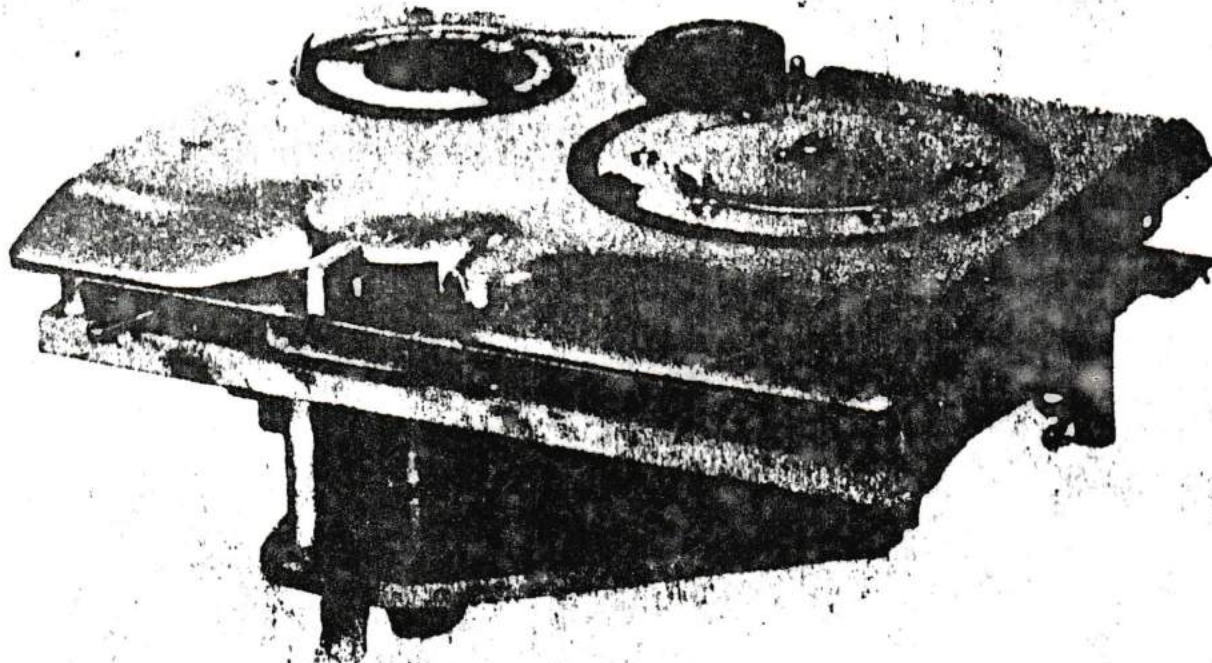


INSTRUCTION MANUAL
for
MODEL 79 WIRE RECORDER
FOUNDATION UNIT



WEBSTER



CHICAGO

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INSTRUCTION MANUAL

FOR

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GENERAL

The Webster-Chicago Model 79 is a wire recorder foundation unit for those who prefer to build their own wire recorder. It may be used in any location where sound recording is desired and where a source of 105-120 volt 50-60 cycle current is available.

consists of:

- A. A complete, reversible, wire transporting mechanism driven by a four pole, shaded pole induction motor. (50-60 cycle, 105-120 volt).
- B. A triple purpose head which records, plays back or erases. This head is mounted on the unit and is actuated by the mechanism to level wind the wire in either the run or rewind position.
- C. A 15 minute spool of .004 stainless steel wire which may be used for thousands of successive recordings and from which a recording may be played back thousands of times. Accessory spools of wire are available in 15 minute, 30 minute and one hour lengths.
- D. A special oscillator coil designed to give the best results in recordings and erasing when used as recommended in the accompanying circuit diagrams.

The Model 79 mechanism is identical to that used in the Model 80 portable wire recorder.

PURPOSE

The purpose of this unit is to give the experimenter, amateur and professional engineer a basic unit around which to build his own wire recorder and player. It is not in itself a complete recorder. Neither are the accompanying circuit diagrams so complete as to stifle ingenuity or individual accomplishment. Each constructor can best work out his own circuits to meet his exact

requirements. However, a simple, basic circuit is offered under the heading "Amplifier Construction". The results obtained from the completed recorder will be largely dependent upon the skill used in following the basic diagrams and in building the necessary amplifier-oscillator circuits.

Those desiring a completely assembled recorder should consider the Webster-Chicago Model 80 Wire Recorder.

MOUNTING INSTRUCTIONS

The Model 79 mechanism must be mounted horizontally and will not operate properly if mounted on a slant or in a vertical position. The motor is mounted on pivot points and is physically shifted to the run and rewind positions. When mounted in a radio console, to be used for recording radio programs and playing back through the radio amplifier and speaker, the wire recorder mechanism should be mounted in much the same manner as an automatic record changer. Four holes for mounting on wooden braces by means of wood screws or on metal supports by means of bolts are accessible by removing the top cover. The Model 79 cover is shaped to permit mounting flush with the panel, which results in a neat, professional appearance in the completed recorder.

If used in locations where excessive vibration is experienced, such as in an automobile, sound truck, small boat or airplane, it is recommended that the entire unit be spring mounted to prevent the motor from bouncing away from the rubber drive wheel.

SHIPPING SCREWS

Before placing the instrument in operation, remove the two shipping screws which hold the motor rigid. The recorder will not operate until these have been removed. Be sure to replace



these screws if the Model 79 is reshipped. However, they are not required for normal carrying or travelling.

While the top plate is off, note that the AC line fuse is located in the far righthand corner of the sub plate.

TO REMOVE SHIPPING SCREWS

1. Remove the four top plate screws.
2. Lift the top plate straight up, exposing the wire transporting mechanism.
3. Remove the two shipping screws, indicated by red washers.
4. Replace the top plate and the screws.

LINE VOLTAGE

The Model 79 mechanism is designed to operate on 105-120 volt 60 cycle current, and has a power consumption of 18 watts. It may be used on 50 cycle current providing that recording and playback are made at the same line frequency. On 50 cycle operation, however, the motor will run about 17% slower which will somewhat impair the fidelity of the recording.

CAUTION: DO NOT connect the Model 79 to Direct Current or to sources of any other voltage or frequency. If in doubt, call the local power company and give them your address; they will tell you what current you use.

AMPLIFIER CONSTRUCTION

Recordings which have been made properly on a magnetic wire recorder may be played back through a good high gain amplifier. In other words, the output of the recording head voice coil on the Model 79 (terminals 1 and 2) could be connected to any good microphone amplifier for playback only.

In designing a complete unit for recording and playback, the following functional circuits must be considered:

1. A recording amplifier with high gain for microphone and low gain for radio-phono recording.

2. An oscillator to provide a "supersonic bias" for recording and erase voltage.
3. A playback amplifier.
4. A power supply.

In the interests of cost and size, it is also desirable to keep the number of tubes and associated circuits at a minimum and to construct the amplifier from standard parts which are readily available. This can lead to complications since in using the same tubes for recording and playback, normal construction would bring the grid of the first tube and the plate of the second tube into an unshielded switch in an "in phase" condition. This would result in regeneration in the amplifier.

SUGGESTED CIRCUIT

In order to overcome this and other problems and as a guide to the experimenter who wishes to build his own amplifier, Webster-Chicago engineers have developed this suggested circuit for recording and playback. It is designed to record from a crystal or high impedance dynamic microphone with a sensitivity of about -55DB or from a crystal phono pickup or the second detector of a radio receiver when the signal is approximately 1.0 volt.

The output on playback is approximately 1.0 volt which may be used for listening or monitoring with earphones or can be used to drive a power amplifier. When used with an external amplifier, the output of the Model 79 amplifier is fed into the phono input of the amplifier.

When a radio receiver is provided with a phono input, the wire recorder output may be connected into the phono-input jack. When it is not provided with a special input jack, the recorder may be connected directly into the circuit as explained later under the section on "connections".

The compensating R-C network consisting of R-1 and C-1 is designed to flatten the middle register response which is characteristic of magnetic recording. These components may be varied to give more highs or more lows but as specified should give good response from 50 to 5,000 cycles.