

# The Fisher RC-70

## Stereophonic Tape-Cassette Recorder

### Operating Instructions

**NOTE:** This manual was included with the original documentation from a 1970 Fisher S-695-IP Statesman console.

**THE FISHER®**  
**RC-70™**  
**Stereophonic Tape-Cassette Recorder**



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**INSTALLING THE RECORDER**

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**POWER REQUIREMENTS**

This recorder will operate safely and correctly only on 60 Hz (cps) AC power between 105 and 130 volts (120 volts nominal). If the AC line frequency and voltage in your locality differ from these figures, or if local power is DC, do not connect the recorder to your electrical outlet; you'll seriously damage it.

**LOCATING AND CONNECTING THE RECORDER**

- ① Place the recorder a *minimum* of five to six inches from your stereo music system's main control unit (receiver, control amplifier, control preamplifier). This distance will minimize the chances of induced hum or accidental tape erasure by the main unit's power transformer. To prevent possible heat damage, never place the recorder directly on top of the control-unit chassis. For enhanced appearance, the recorder may be placed in the FISHER 12W base; this attractive enclosure is available at your dealer. While the recorder may be installed in the base at any time, this procedure is simplest when performed before you've made any connections.
- ② The rear of your music system's main control unit should have a pair of tape output jacks marked RCDR OUT,

TAPE OUT, TO TAPE RECORD., or the like. Using one of the color-coded dual-cable assemblies supplied, connect the left-channel (or A or 1) jack in the pair to the L HI LEVEL INPUT jack at the rear of the recorder and the right-channel (or B or 2) jack in the pair to the R HI LEVEL INPUT jack at the rear of the recorder.

- ③ The main control unit should also have a pair of tape input jacks marked MON IN, TAPE MON, TAPE IN, FROM TAPE AMP, or the like. If it doesn't, it will probably have, instead, jacks marked AUX/TAPE, AUX IN, SPARE, or the like. Using the remaining dual-cable assembly, connect the left-channel jack in the pair to the recorder's L PLAYBACK OUTPUT jack and the right-channel jack in the pair to the recorder's R PLAYBACK OUTPUT jack. **Never connect the recorder's PLAYBACK OUTPUT jacks to any jacks on the main control unit marked TAPE HEAD; this will cause severe distortion and boominess during playback.**

**IMPORTANT: Do not plug the microphones supplied into the recorder's MIC jacks until you actually intend to use them; leave them disconnected at all other times. (When plugged in, the microphones automatically disconnect any signal coming from the music system's main control unit.)**

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## INSERTING AND REMOVING A CASSETTE

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- 1 Press the recorder's STOP/EJECT button; the lid covering the cassette well will open.
  - 2 Hold the cassette with its open edge (tape exposed) facing you and its fully loaded reel hub (or the hub with the most tape) at your *left* (as viewed through the cassette window). On a brand new cassette, such as the C-60 supplied, this should coincide with the "A" or "1" side *up*. (On a used cassette, this will hold true only if it's been rewound fully after previous recordings and playings.)
  - 3 Push the rear of the cassette down under the spring hook located at the center-rear of the cassette well; then snap the cassette straight down over the recorder's drive shafts and guide pins. Close the top lid.
  - 4 To *eject* the cassette, press the recorder's STOP/EJECT button *fully*; the top lid will open and the cassette will automatically pop part way out of the well for easy removal. This may be done at *any* point along tape travel, and is one of the distinct advantages of the cassette system, permitting you to change cassettes without completing a side or rewinding, if desired. (We suggest, however, that you rewind each cassette to its original starting point before placing it back in its container; it will simplify subsequent playback or recording.)
  - 5 To use the cassette's *other* side, simply turn it over (with the exposed tape still facing you) and reinsert it in the recorder as previously described.
- NOTE:** A C-60 label on a cassette indicates that its total recording or playing time is 60 minutes (30 minutes per side). Various tape manufacturers also produce C-30, C-90, and C-120 cassettes (30, 90, and 120 minutes duration, respectively).

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## PLAYBACK

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The following instructions apply to playing back both *commercially* prerecorded cassettes and any cassettes that you have recorded. Simply adjust your main control unit for tape playback (Selector switch to Tape Play, Aux, etc., or Tape Monitor switch to Tape, On, etc.). Then operate the recorder as follows:

- 1 Press the rear part of the recorder's POWER switch; the POWER lamp behind the VU meters will light to indicate that the unit is on. Don't worry if the VU-meter pointers momentarily deflect upscale; this is perfectly normal during turn-on.
- 2 Place a *prerecorded* cassette in the recorder as previously described.
- 3 Reset the recorder's three-digit index counter to "000" by pressing the adjacent pushbutton. If you remember to do this before playing or recording each side of a cassette, you can use the counter to locate specific selections on the tape. (When playing or recording a cassette for the first time, simply jot down the index-counter readings coinciding with the beginnings of all selections on a side; then use these readings to locate the selections during subsequent playback.)
- 4 Press the recorder's PLAY/RCRD button. Simply adjust playback volume, mono/stereo mode, balance, and tone at your main control unit as you would for any other program source played through your music system — and that's essentially all there is to playback. Note that, as the tape in the cassette starts running from left to right, the index counter will light and begin counting to verify tape motion. (In addition, the VU-meter pointers will fluctuate in step with the music or speech signals on the tape, but these indications are relatively unimportant during playback.)
- 5 Unless you purposely press the PAUSE, F FWD, or RWND buttons (described in subsequent steps) or eject the cassette altogether, the cassette will play through continuously to the end of the side. The recorder will then automatically stop the cassette and, after a few seconds delay, will also shut off the motor (indicated by the index-counter lamp going off). This auto-stop feature (effective at the beginning and end of each side) completely eliminates the possibility of pulling tape off either hub of the cassette. The motor will remain off until you either rewind the cassette or turn it over and start playing the other side.
- 5 To halt the cassette temporarily at any point during playback, simply press the PAUSE button; to resume playing again, just release the PAUSE button.
- 6 To skip one or more selections while playing, press the F FWD button and let the cassette run at high speed until the index counter indicates that you're approaching the desired selection. Then press the PLAY/RCRD button again and the cassette will instantly resume playing at normal speed. (To advance quickly to the end of the side, press the F FWD button and let the cassette run until the recorder automatically stops it.)
- 7 To go back to a particular selection, press the RWND button and let the cassette run backwards until the index counter indicates that you've reached the desired selection. Then press the PLAY/RCRD button again and the

cassette will instantly resume playing at normal speed. (To rewind completely to the *beginning* of the side, press the RWND button and let the cassette run until the recorder automatically stops it.)

**NOTE 1:** Should you inadvertently press the red RCRD button while the cassette is running (either forward or backward), the recorder will automatically *stop* to prevent accidental erasure of your valuable recording. It will not start again until you purposely press the appropriate tape-motion button. (Commercially prerecorded cassettes contain special erasure-protection lock-outs that make it *impossible* for you to press the RCRD button. To incorporate this extra safety feature on any cassettes

that you've recorded, refer to *ERASURE PROTECTION* in the *RECORDING* section of this manual.)

**NOTE 2:** Because tape-cassette manufacturing tolerances vary from brand to brand, some cassettes may exhibit slight noise in operation while others may run slower than normal in the rewind and fast-forward modes. Some faulty cassettes may even *stall* the recorder (especially in the normal play and record modes). To establish that these malfunctions are *not* the recorder's fault, play a cassette that you know has functioned properly in the past. (You may be able to improve the faulty cassette's performance by running it back and forth a few times through the recorder in rewind and fast-forward. This may help to reduce tape and hub friction.)

## RECORDING

### RECORDING FROM YOUR MUSIC SYSTEM

To record a radio broadcast, phonograph record, or any other program source that normally plays through your music system, first make sure that the microphones are *disconnected* from the recorder. Then choose the desired program source with the main control unit's Selector switch and operate the recorder as follows:

**NOTE:** In almost all cases, the main unit's Volume, Balance, Mono/Stereo, and Tone controls will *not* affect the signals going to the recorder. Simply adjust them in the usual manner to suit your listening tastes and make all recording adjustments at the *recorder*.

- 1 Press the rear part of the recorder's POWER switch; the POWER lamp behind the VU meters will light to indicate that the unit is on.
- 2 Place the C-60 cassette supplied (or any other blank, unrecorded cassette) in the recorder as previously described. Of course, you can also use a cassette on which you've previously recorded, but remember that you'll automatically *erase* the original recording as you make the new one. Do not attempt to use *commercially prerecorded cassettes since their erasure-protection lock-outs make it impossible to rerecord on them.* (To incorporate this safety feature on any cassettes that you've recorded, refer to *ERASURE PROTECTION*.)
- 3 Reset the three-digit index counter to "000" by pressing the adjacent button.
- 4 If the program you're about to record is stereophonic, set the recorder's STEREO/MONO switch to STEREO. If the program is monophonic, set the switch to MONO. (This will record the mono program on *both* tracks of the side so that, during subsequent playback, you will hear it through the music system's left *and* right channels.)
- 5 Press the recorder's PAUSE button. (This will enable you to preview and adjust recording levels properly *before* starting the recording.)
- 6 Press the recorder's PLAY/RCRD and red RCRD buttons *simultaneously* so that *both* lock in position. The RECORD lamp behind the VU meters will light to indicate that the machine is in the recording mode, but you're not yet recording because the PAUSE button is in.

7 With sample program material playing, adjust the RECORD LEVEL control so that the fluctuating VU-meter pointers swing just up to (or slightly below) 0 VU during the loudest peaks. (With a stereo program, concentrate on adjusting for the meter giving the *higher* of the two readings.) Don't let the pointers swing consistently into the red segments of the scales or you'll produce severely overloaded and distorted recordings; conversely, excessively *low* meter readings will produce weak, noisy recordings.

8 Release the PAUSE button and you're now recording whatever you're listening to. Monitor the VU meters occasionally and adjust the RECORD LEVEL control, if necessary, to ensure that you don't over- or under-record. To delete unwanted interruptions while recording (radio station-breaks or commercials, pauses between record sides, etc.), press the PAUSE button to temporarily halt the cassette. To resume recording, *release* the button.

9 As soon as you've recorded as much as you want, press either the RWND button (to go back to the beginning of the side for playback) or the STOP/EJECT button (if you've come to the end of the side and wish to turn over the cassette and record on the *other* side). In either case, the recorder will switch *out* of the record mode (indicated by the RECORD lamp going off).

### RECORDING WITH MICROPHONES

**CAUTION:** Whenever recording with microphones, make sure that your main control unit is *not* set for tape playback (Selector switch away from Tape Play, Aux, etc., or Tape Monitor switch set to Source, Off, etc.) and that its Volume control is *down*. This will prevent the possibility of acoustical feedback (an annoying 'howling' or 'squealing' noise caused by sound from the music-system's speakers leaking back into the microphones).

**MONO RECORDING**—Connect *one* of the dynamic microphones supplied to the L or R MIC jack on the recorder's control panel and set the recorder's MONO/STEREO switch to MONO. When recording a single speaking or singing voice monophonically, place the microphone about one to two feet from the subject's mouth. Bringing the microphone too close will produce

a 'breathy', distorted recording, while placing it too far from the subject will accentuate background noise and room echo. Louder sound sources, such as an instrumental group, will, of course, require greater microphone-to-subject distances which you'll have to determine experimentally in each case. Follow steps 1-9 of *RECORDING FROM YOUR MUSIC SYSTEM* for general recording instructions.

**STEREO RECORDING** — Connect the left microphone (left as viewed *facing* the subject) to the recorder's L MIC jack and the right microphone to the R MIC jack; then set the recorder's MONO/STEREO switch to STEREO. Just how far apart you'll have to place the microphones depends to a very great extent on the size and nature of the subject to be recorded. Small groups such as vocal or instrumental duos, trios, and quartets will require anywhere from 4 to 8 feet, but you'll have to determine the ideal separation in each case experimentally. The distance from the microphones to the subject

should be about the same as the distance *between* the microphones. Follow steps 1-9 of *RECORDING FROM YOUR MUSIC SYSTEM* for general recording instructions.

#### ERASURE PROTECTION

After making a recording, you may, if you wish, protect it permanently against accidental erasure by making a slight modification in the cassette. With the cassette's open edge (tape exposed) facing you, use a pencil or key to break off the plastic tabs blocking the two small holes on the *rear* edge of the cassette. (To protect only *one* side, make sure that side is facing *up* and break off the tab in the *left-rear* hole.) Whenever you play the protected side(s), the recorder's red RCRD button will be mechanically locked *out*, making erasure or re-recording impossible. Should you ever want to make a side recordable again, simply place a piece of adhesive tape over the appropriate hole.

## TECHNICAL SPECIFICATIONS

<b>Tape Cassette</b>	Philips Cassette System	<b>Channel Separation (at 1 kHz)</b>	32 db
<b>Tape Speed</b>	1½ IPS ± 2%	<b>Bias Oscillator Frequency</b>	105 kHz ± 5 kHz
<b>Frequency Response</b>	30 to 12,000 Hz	<b>Sensitivities and Impedances</b>	
<b>Signal-to-Noise Ratio (Weighted)</b>	Better than 43 db	<b>Microphone Inputs</b>	0.2 mV (± 3 db) for 0 VU at 600 ohms
<b>Playback Amplifier Distortion</b>	Less than 0.5% at 0 VU	<b>Hi-Level Inputs</b>	100 mV (± 3 db) for 0 VU at 100 k ohms
<b>Record Amplifier Distortion</b>	Less than 0.5% at 0 VU	<b>Playback Outputs</b>	700 mV (± 3 db) for 0 VU at 5 k ohms
<b>Wow and Flutter (Weighted)</b>	0.25% RMS		

Hertz (Hz), Kilohertz (kHz), and Megahertz (MHz) have been used in this material to conform to the standards established by the IEEE. They replace cycles per second (cps), kilocycles (kc), and Megacycles (Mc), respectively.

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