

# McIntosh

## FM STEREO TUNER

# MR71

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# OWNER'S MANUAL

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MR71

# MR71 FM STEREO TUNER

## INTRODUCTION

The McIntosh MR71 is a precision engineered, highly sensitive FM Multiplex Tuner.

The research staff of McIntosh Laboratory has developed five new tuner circuit improvements for the MR71.

1. A new computer designed filter to reduce noise from stations broadcasting sub-carrier auxiliary music services. No other tuner uses such a filter.

2. Automatic stereo-mono switching that is "clickless" and completely electronic. (Patent applied for.)

3. New D'Arsonval movement meters of increased sensitivity which do not need zero setting adjustments.

4. Multipath indicator to eliminate multipath reception by showing when your antenna is rotated to the correct position for picking up only the desired signal.

5. Double tuned input circuits before the first R.F. amplifier to reduce spurious responses.

The finest possible reception of FM monophonic and FM multiplex stereophonic broadcasts is assured by the McIntosh MR71 Tuner.

The MR71 also uses the new, exclusive McIntosh PANLOC method of installation.

The PANLOC system gives you absolute ease of installation, operation, and maintenance. PANLOC is the first professional installation technique to be used on stereo instruments.

In the PANLOC system a metal shelf is mounted first, then the tuner slides into position on this shelf. Depressing the PANLOC buttons on the front panel locks the tuner firmly into place for normal operation. To unlock the tuner depress the PANLOC buttons a second time. The tuner can now slide forward to a position approximately 3 inches from the front panel. The tuner will lock into this position, preventing accidental release of the tuner from the installation. Depressing the holding latches allows the tuner to be taken out of the PANLOC shelf or to slide back into position against the mounting panel.

Once you have enjoyed the outstanding performance of the MR71, you will understand why McIntosh products have earned their reputation as "THE BEST." Your McIntosh MR71 tuner will give you years of the finest possible FM reception, and will become a highly valued part of your home music system.

## TECHNICAL DESCRIPTION

The MR71 tuner has a 6DS4 high-gain Nuvistor for the first RF amplifier. The Nuvistor (triode) operates into a second triode tube to form a cascode amplifier. Careful design of the operating characteristics allows the cascode amplifier to handle a wide dynamic range of signals with excellent signal-to-noise ratio.

A double-tuned RF input circuit combined with the Nuvistor-tube cascode amplifier reduces spurious signals to an extremely low value. Sensitivity is increased to the highest possible rating, while still retaining high selectivity.

A newly developed Automatic Frequency Control (AFC) circuit greatly simplifies tuning. As the tuning knob is moved, the AFC circuit automatically cuts off for sharpest tuning. After the station is tuned in, the AFC circuit gradually comes into operation over a 3 second interval. The AFC action automatically brings the electrical tuning to the correct point for minimum distortion. This automatic tuning repeats its action each time the tuning dial is moved to a different station. The amount of AFC action is fully adjustable with a front panel control.



The AFC circuit is quite unique. It uses a silicon diode in place of a conventional tube. The silicon diode improves the overall AFC performance since it is unaffected by temperature changes, has no warm-up drift and eliminates the chance of tube filament hum. A special temperature-compensated narrow band detector supplies operating signals to the AFC circuit. This insures positive AFC action. The narrow band detector also operates the FM tuning meter amplifier and the ultrasonic muting circuit.

The McIntosh-developed ultrasonic muting circuit automatically suppresses all interstation noise, including the noises usually heard tuning in and out of a station. Weak or distant stations that don't override the background noise and interference are also suppressed by the muting. A switch on the front panel allows muting to be cut off for listening to these weak and noisy stations. A back panel adjust control is factory-set to the proper muting threshold level.

The mixer output is amplified through five intermediate frequency stages with flat-topped highly selective response curves. The IF transformers are designed for wide band response with maximum adjacent channel rejection. Construction of the IF transformers assures electrical stability and resistance to mechanical shock and vibration. More than adequate gain is provided to operate both limiters on the weakest signals. Two complete limiters are used to insure the best possible signal-to-noise ratio.

A separate wide band detector handles only the audio frequencies for low distortion and wide frequency response.

Both the RF and IF circuits are completely shielded and exceed the FCC requirements for suppression of radiation from the FM oscillator and IF frequencies.

The MR71 multiplex decoder uses a special McIntosh developed detector. One of the many advantages of this circuit is the elimination of critical adjustments necessary with commonly used multiplex matrixing methods. The L-R (left minus right) stereo sidebands are detected and then automatically combined with the L+R main carrier

signal. The left and right channel signals are then produced with excellent separation.

A temperature stabilized 19 KC amplifier locks-in a highly stable 38 KC synchronous oscillator. This method provides exceptional noise immunity. Balanced detectors cancel the 38 KC signal components in the output for lowest distortion and reduced susceptibility to spurious signals. Tape recording interference is also minimized by this method.

An additional highly selective computer-designed filter reduces noise from stations broadcasting auxiliary music services. This filter reduces the frequency band from 63-74 KC approximately 50 db. The filter has a response slope of 275 db per octave. The noise is eliminated without affecting normal program material.

The MR71 has a multiplex stereo indicator that lights whenever the dial pointer crosses a station broadcasting multiplex stereo. A unique circuit using a transistor as a switch operates the MPX stereo indicator lamp. The transistor is controlled by a special noise-rejecting differential detecting bridge circuit. This circuit automatically discriminates between noise and the 19 KC multiplex pilot signal. The indicator will light only on the 19 KC signal present in a multiplex stereo broadcast.

The MR71 includes a new and unique McIntosh developed automatic mono-stereo switching circuit. (Pat. Pend.) The switching is fully electronic without switching clicks or transients.

The circuit switches smoothly and silently whenever the 19 KC multiplex carrier is present.

The electron ray tube at the left on the tuning dial is a multipath signal indicator, a unique and exclusive McIntosh development. Multipath signal reception causes moderate or severe distortion and poor stereo channel separation. By knowing the presence of multipath reception, a directional FM antenna may be properly rotated to reduce or eliminate the multipath signal and the poor sound quality it causes. The MR71 multipath indicator shows whether multipath signals are present by rapid fluctuations of the elec-

tron ray beams. When the antenna is correctly positioned, the indicator beams remain relatively steady, showing that multipath distortion has been eliminated.

Two pairs of audio output jacks are on the back panel. One pair of jacks is controlled only by the front panel volume control. The other pair of jacks is controlled only by the back panel output adjust controls. Two stage feedback type preamplifiers on both channels provide low impedance outputs. More

than sufficient output volume is available to feed power amplifiers as well as preamplifiers.

A new type of mechanical tuning assembly gives the MR71 extremely smooth fly-wheel tuning action. The tuning capacitor is driven directly, and in turn drives the pointer. Backlash is practically eliminated with this method of design. A teflon lined pointer carriage and nylon pulleys reduce friction and wear to give an unusually smooth and quiet dial action.

## SPECIFICATIONS

### Useable Sensitivity

2.5 microvolts at 100% modulation ( $\pm 75$ KC deviation) for less than 3% total noise and harmonic distortion in accordance with IHFM standards.

### Audio Frequency Response

Within  $\frac{1}{2}$ db from 20 to 20,000 cycles.

### Distortion

Less than 0.5% at 100% modulation  $\pm 75$ KC deviation.

### Capture Ratio

1.5db at 100% modulation.

### Muting

IF injected ultrasonic muting: at least 60db noise reduction between stations.

### Oscillator Drift

Less than 25KC with AFC disabled; negligible with AFC in operation.

### Image Rejection

Better than 80db at 90MC; better than 70db at 105MC.

### Hum

Better than 70db below 100% modulation.

### Output

Approximately 2.5 volts; low impedance.

### Antenna Inputs

300 ohms balanced; 75 ohms unbalanced.

### RF Amplifier

Cascode with 6DS4 Nuvistor in first stage.

### IF Stages

Five, with 200KC bandwidth, flat top response.

### Limiters

Two.

### Radiation

Substantially below FCC requirements.

### Multiplex Channel Separation

Better than 30db at 1000 cycles.

### Multiplex Filter

Greater than 48db suppression of 19KC pilot and 38KC carrier.

### Multiplex Indicator

Front panel multiplex stereo light activated by 19KC carrier-only.

### Multiplex Type

Peak-detecting, self-matrixing detector.

### SCA Filter

50 db down at 67KC to 74 KC 275db per octave slope.

### Automatic Mono-Stereo Switch

An exclusive McIntosh development; all-electronic automatic mono-stereo switching circuit. (Pat. Pend.).

### Tube and Semiconductor Complement

1—6DS4 Nuvistor, 1st RF.

1—12AT7, 2nd RF and Mixer.

1—6BN4A, Oscillator.

1—6AU6, 1st IF.

1—6AU6, 2nd IF.

1—6AU6, 3rd IF.

1—6AU6, 4th IF and 1st Limiter.

1—6CS6, 5th IF 2nd Limiter and Muting.

1—6BN8, Muting Amplifier, Muting Detector, AVC Clamper.

- 2—6BL8, Left and Right, 1st and 2nd Audio Amplifiers.
- 1—6U8, MPX Amplifier, MPX Indicator Control.
- 1—6HU6/EM87 Multipath Indicator.
- 1—12AU7, MPX Oscillator.
- 1—ST2-275, Voltage Reference
- 1—MA113 (Transistor), MPX Indicator Lamp Switch.
- 2—1N542 Diodes, Wide Band Discriminator.
- 2—1N542 Diodes, Narrow Band Discriminator.
- 4—1N542 Diodes, Balanced MPX Detector.
- 2—1N542 Diodes, Balanced Detector for MPX Indicator.

- 2—Selenium Rectifiers, High Voltage Power Supply.
- 1—No. 1850 Lamp, MPX Indicator.

**Power Consumption**

70 watts, 105 to 125 volts, 50 to 60 cycles.

**Dimensions**

Front Panel; 16 inches wide by 5<sup>7</sup>/<sub>16</sub> inches high; chassis (including PANLOC shelf) 15 inches wide by 5 inches high by 13 inches deep, including connectors; clearance in front of mounting panel including knobs, 1<sup>1</sup>/<sub>2</sub> inches.

**Weight**

Chassis only, 27 pounds.  
In shipping carton, 37 pounds.

**FRONT PANEL INFORMATION**

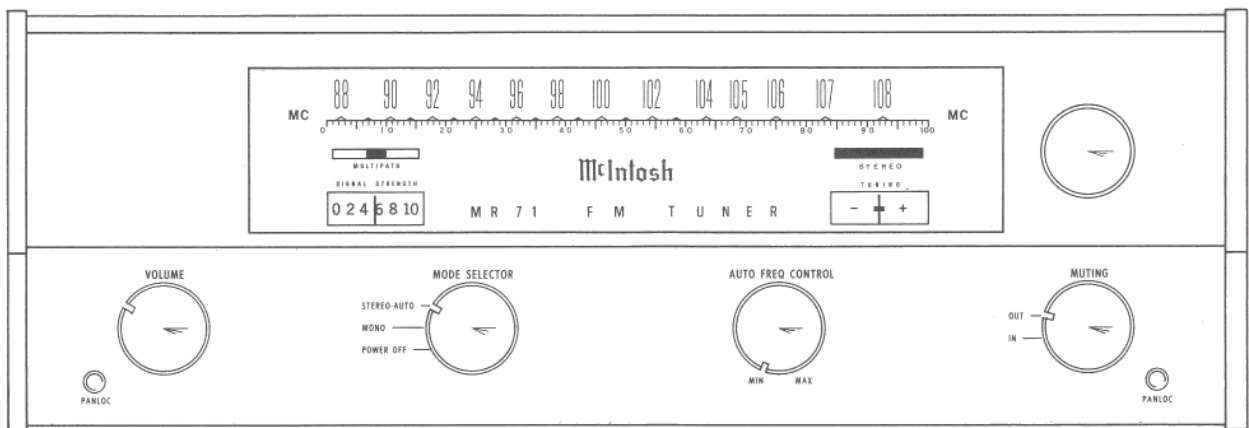


Figure 1. MR71 Front Panel.

**TUNING DIAL SCALES**

The MR71 has two dial scales—the 88 to 108 scale marked in megacycles and the 0-100 logging scale. The dial scale marked in megacycles indicates the positions of FM stations in the 88 to 108 megacycle band. The logging scale with linear divisions from 0-100 is located directly beneath the 88 to 108 scale. The logging scale can be used to accurately retune any station. You may find it easier to keep a record of your favorite stations by use of the logging scale.

**INDICATORS**

The MR71 has four indicators on the dial panel—MULTIPATH indicator, SIGNAL

STRENGTH indicator, STEREO indicator, and the TUNING indicator.

**MULTIPATH INDICATOR**

The MR71 MULTIPATH indicator is a new and exclusive McIntosh development.

- The MR71 MULTIPATH indicator makes it possible to improve F.M. reception by making the best use of your F.M. antenna.
- Reduce distortion due to multipath reception.
- Reduce noise due to multipath reception.
- Improve stereo separation and the accuracy of your STEREO INDICATOR by reducing multipath reception.



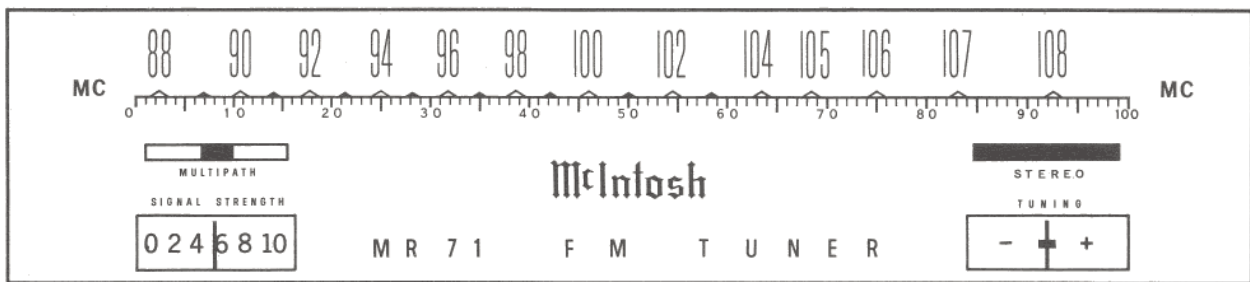


Figure 2. MR71 Indicators.

The MR71 MULTIPATH INDICATOR displays distortion resulting from multipath signal reception. Multipath reception causes the two beams on the indicator to fluctuate rapidly with the incoming signal. When the antenna is rotated to the correct position, the indicator beams will remain steady. The directional antenna is then picking up only the desired signal and rejecting the reflected multipath signals. In certain locations it is possible for best reception to occur by picking up a strong reflected signal rather than the direct signal. Whenever you tune to a different station, the multipath indicator will tell you if multipath distortion is present. Multipath distortion is practically independent of signal strength.

#### SIGNAL STRENGTH INDICATOR

The amount of SIGNAL STRENGTH meter pointer deflection indicates the relative signal strength of a station being received. Maximum meter deflection for a particular station occurs when the antenna is pointed in the direction for best signal pickup. Weaker stations will cause a smaller amount of meter deflection than strong local stations.

#### STEREO INDICATOR

The stereo indicator will light whenever the dial pointer crosses a station broadcasting multiplex stereo. The special circuit used causes the indicator to light ONLY on the 19KC multiplex carrier present in a multiplex stereo broadcast. The indicator will not light on noise pulses or interference.

#### TUNING INDICATOR

An FM station is correctly tuned when the indicator pointer is within the black area at

the center of the indicator scale. The action of TUNING indicator is substantially independent of station signal strength.

#### VOLUME

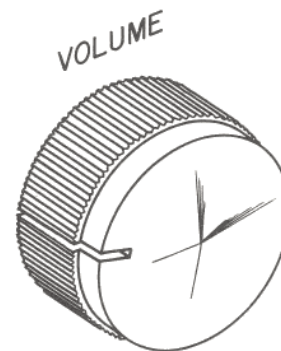


Figure 3. MR71 VOLUME Control.

Controls the output volume level of the tuner at the right hand pair of AUDIO OUTPUT jacks on the back panel. This pair of jacks is marked FRONT PANEL CONTROLLED. The other pair of audio output jacks, located to the left, is not affected by the front panel VOLUME control. The output volume level at these jacks is controlled by the dual concentric OUTPUT ADJ controls to their left. (See section titled ADJUSTMENTS.)

#### MODE SELECTOR

##### POWER OFF

Turns off the tuner AC power and also turns off the AC outlet on the tuner back panel.

##### MONO

Provides monophonic FM at both pairs of left and right channel audio output jacks.

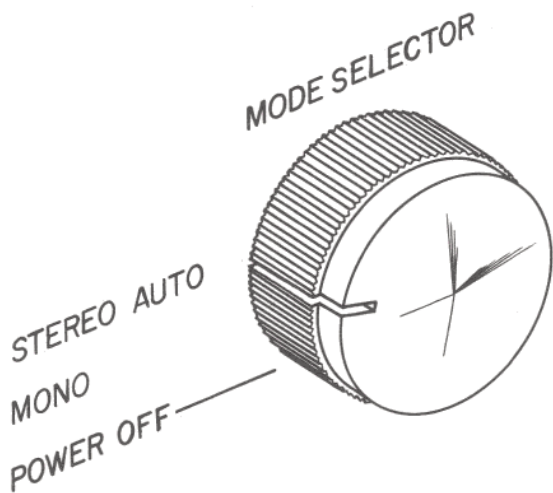


Figure 4. MR71 MODE SELECTOR.

### STEREO AUTO

The STEREO AUTO position provides both monophonic FM and FM multiplex stereo at the left and right channel audio output jacks. Assume that you have set the MR71 MODE SELECTOR in the STEREO AUTO position and are listening to a station broadcasting FM monophonic. Now the station switches to a MPX stereo broadcast. In the STEREO AUTO position the MULTIPLEX indicator will light and the MR71 will automatically switch to the FM multiplex stereo operation. If mono broadcast is resumed the MR71 will automatically switch back to FM monophonic.

### AUTO FREQ CONTROL



Figure 5. MR71 AUTO FREQ. CONTROL.

The Automatic Frequency Control (AFC) circuit makes FM tuning easier. It also eliminates the possibility of the tuner drifting off the station. The AFC circuit in the MR71 is electronically delayed in its action. This is an exclusive McIntosh development. As the tuning dial is moved, the AFC circuit is temporarily cut off. After the dial pointer has come to rest on a particular station, the AFC gradually comes into operation over a three second interval. The AFC automatically brings the electrical tuning to the correct point for minimum distortion. This automatic tuning repeats itself each time the tuning dial is moved to a different station.

The degree of AFC action is adjustable with the AUTO FREQ CONTROL. Full left (MIN) position of the control cuts off AFC action. Full right (MAX) position gives maximum AFC action.

Normally, the best tuning occurs with the AUTO FREQ. CONTROL set at or near MAX position. If several stations are very close together on the dial, or if a desired station is very close to a much stronger station, a lower AFC setting is usually needed for best tuning.

### MUTING

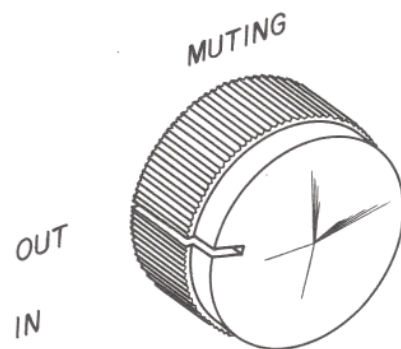


Figure 6. MUTING Control.

#### In

This position turns on the muting circuit. Muting suppresses all background hiss and noise usually heard when tuning between stations. Weak or distant stations that may not override the background noise and interference are also suppressed by the muting.

## Out

This position turns off the muting to allow conventional tuning with inter-station noise present. Use this setting to listen to weak or distant stations that may be mixed with noise or interference.

## PANLOC BUTTONS

At the bottom front corners are the PAN-LOC buttons. After a tuner is installed on the

PANLOC shelf, depressing the PANLOC buttons will lock the tuner firmly in position. Depressing the PANLOC buttons a second time (as with a ball-point pen) will release the tuner. The tuner can then be slid forward to the inspection and adjustment position. The PANLOC system gives you absolute ease of installation, operation and maintenance.

## BACK PANEL INFORMATION

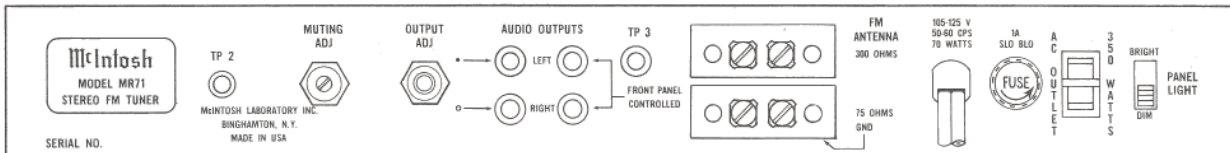


Figure 7. MR71 Back Panel.

## TP 2

Test point TP 2 is provided for tuner circuit alignment. Refer to the MR71 Maintenance Manual for complete alignment procedure and suggested test equipment.

## OUTPUT ADJ

This dual concentric control adjusts the output volume levels at the left-hand pair of AUDIO OUTPUT jacks. The center shaft adjusts the LEFT channel output, and the outer sleeve adjusts the RIGHT channel output. These output control settings for the left pair of jacks are not affected by the MR71 front panel volume control. (See section titled ADJUSTMENTS.)

## MUTING ADJ

Adjusts the operating threshold of the ultrasonic muting circuit. (See MUTING ADJUST under ADJUSTMENTS section.)

## AUDIO OUTPUT—LEFT—RIGHT

The left-hand pair of AUDIO OUTPUT jacks provides FM signals unaffected by the MR71 front panel VOLUME control. The dual concentric OUTPUT ADJUST controls set the volume levels. Use these output jacks to connect the tuner to a stereo control preamplifier which has its own master volume control.

This pair of jacks is recommended for McIntosh preamplifiers.

The right hand pair of AUDIO OUTPUT jacks provides FM signals controlled by the MR71 front panel VOLUME control. Use these output jacks to connect to external power amplifiers, tape recorders, or any equipment which requires continuous front panel control of tuner output volume.

## 300 OHM—75 OHM ANTENNA

Terminals for connecting FM antennas to the MR71. (See section titled CONNECTING.)

## 1A SLO BLO FUSE

A 1 amp "Slo-Blo" fuse protects the tuner circuits. This fuse does not protect additional equipment connected to the back panel AC outlet.

## AC OUTLET

Provides 117 volt AC power up to 350 watts maximum for additional equipment such as turntables or other tuners. This outlet is not fused and turns on and off with the front panel MODE SELECTOR switch.

## PANEL LIGHT SWITCH

Adjusts the front panel lights to bright or dim.



## INSTALLATION

The McIntosh MR71 tuner may be installed on a table, on a shelf, in a custom built-in cabinet, or in a professional equipment rack. For best appearance in an open installation, mount the MR71 in the attractive McIntosh L10W or L10WO cabinet. The L10W is finished in walnut veneer. The L10WO is natural oiled walnut.

The MR71 tuner is installed by the new exclusive McIntosh PANLOC method. Refer to the special PANLOC SYSTEM INSTALLATION instructions included with your MR71.

Allow at least 13 $\frac{3}{4}$  inches behind the mounting panel for the MR71 chassis including clearance of leads and connectors. Allow inside dimensions of at least 16 $\frac{1}{2}$  inches in width and 6 inches in height for adequate air circulation. The back of the MR71 cabinet should be left as open as possible for best ventilation. Avoid mounting the tuner directly over a power amplifier. The heat from the amplifier may change the precision tuner calibration. Adequate ventilation will insure your tuner a long and trouble-free life.

## CONNECTING

### AUDIO OUTPUTS

Use the FIXED OUTPUT jacks (left-hand pair of jacks next to OUTPUT ADJ) to connect to a conventional control preamplifier which has its own volume control. Full tuner output is available at all times from the FIXED OUTPUT jacks.

Use the FRONT PANEL CONTROLLED jacks to connect to a conventional control preamplifier when continuous front panel control of tuner volume is desired. These jacks may also be used to connect to external equipment such as power amplifiers or tape recorders where control of tuner volume is necessary. There is no difference in the signal quality or available output levels at each pair of output jacks.

### STEREOPHONIC FM MULTIPLEX

Connect a shielded cable from the tuner LEFT channel AUDIO OUTPUT jack to the control preamplifier LEFT channel tuner or auxiliary input jack.

Connect a second shielded cable from the RIGHT channel tuner AUDIO output jack to the corresponding control preamplifier RIGHT channel tuner or auxiliary input jack. When the MR71 mode selector is set to MONO or STEREO AUTO position, a monophonic broadcast will automatically be present at both left and right outputs. For a stereo broadcast set the MODE SELECTOR in the STEREO AUTO position. (See section titled FRONT PANEL INFORMATION.)

### MONOPHONIC FM

The MR71 may be used strictly for monophonic reception if desired.

Connect a shielded cable from either the left OR right audio output jack to the monophonic control preamplifier auxiliary or tuner input jack. With the MR71 MODE SELECTOR set to MONO, the monophonic FM signal appears at both the left and right channel AUDIO OUTPUT jacks.

### REMOTE AMPLIFIERS

The pair of audio output jacks not being used in an installation may be connected to external or remote amplifiers. FM programs may then be fed to speaker systems apart from the main sound system.

### OFF-THE-AIR RECORDING

Tape recorders or tape decks with record-playback preamplifiers are normally connected to the Tape Output jacks on the control preamplifier. Any FM program coming through the tuner into the preamplifier can then be recorded on tape. You may also connect the extra pair of tuner audio output jacks directly to the recorder inputs if desired.

### ANTENNA CONNECTIONS

Satisfactory FM multiplex stereo reception requires from the antenna approximately 10 times as much signal as the equivalent FM monophonic reception would need. Monophonic installations that were satisfactory

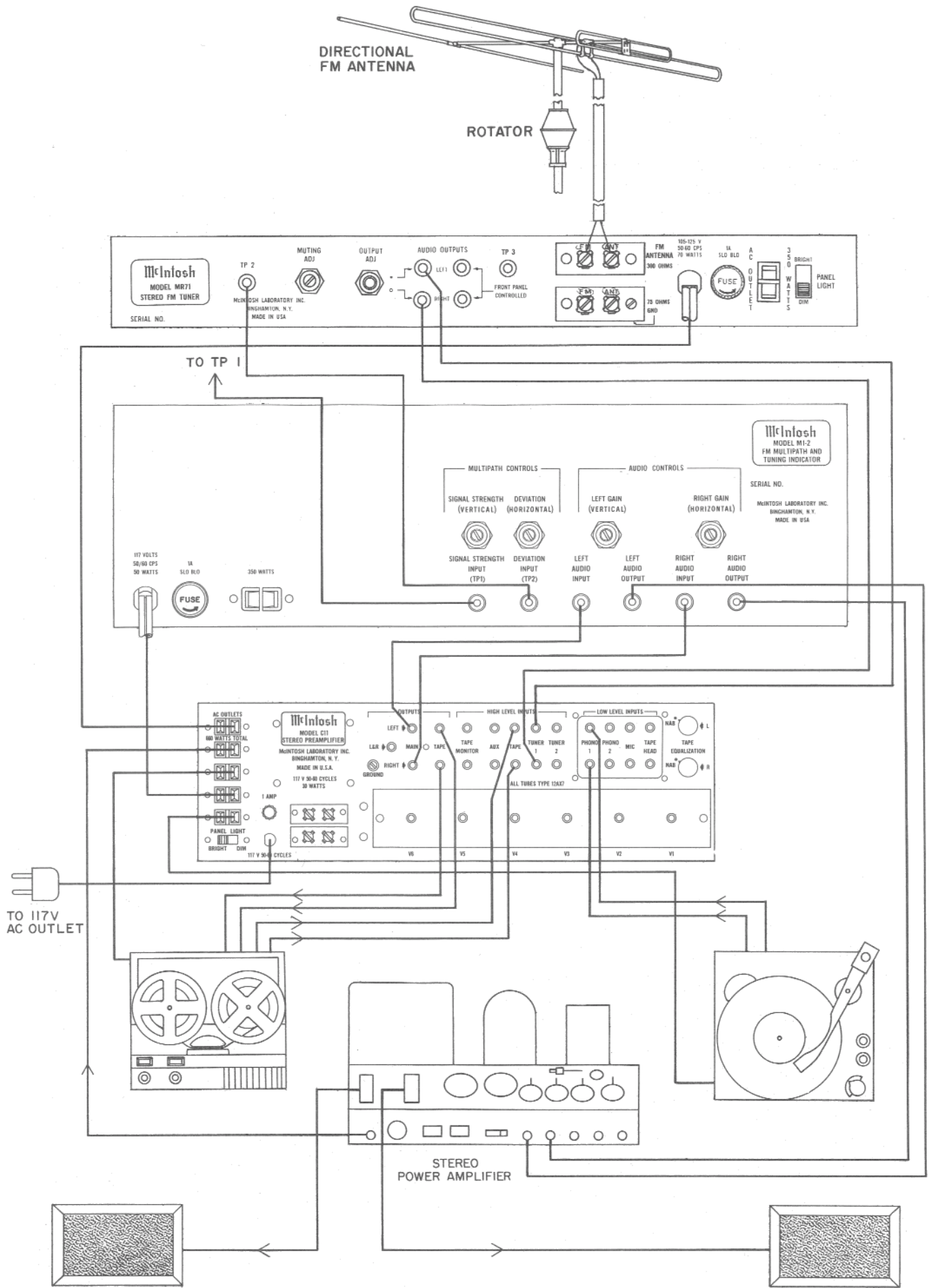


Figure 8. MR71 Typical Hookup.

with an indoor FM antenna may require an outside or directional FM antenna for equivalent multiplex stereo reception. A good directional antenna with a rotator also makes it possible to eliminate or minimize multipath distortion. The MR71 multipath indicator quickly shows the correct antenna position for reception without multipath distortion.

### INDOOR FLEXIBLE FM DIPOLE

Indoor Dipole (300 ohm) Antenna

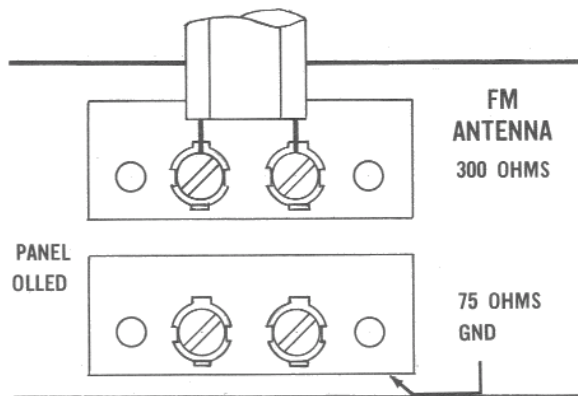


Figure 9. Connection of 300-Ohm Indoor Antenna.

A convenient flexible indoor FM dipole (300 ohm) antenna is supplied with the MR71 tuner. This antenna is easy to install and is suitable for good FM reception in urban or high intensity signal areas.

Connect the two leads of the dipole antenna to the two terminals marked 300 OHM on the MR71 back panel.

The flexibility of the thin flat wire allows the dipole to be easily located behind the equipment enclosure or in any position near the tuner. Open the dipole into a "T" and extend the arms as straight as possible. The dipole antenna is somewhat directional and may have to be positioned in a particular location for best reception of desired stations.

Experimenting with the dipole position may also be necessary to reduce multipath distortion on certain stations. Since it is not convenient to continually change position of the flexible dipole, it may have to be set for minimum multipath on your favorite station.

### IMPORTANT

Keep the dipole away from large metal objects or surfaces since they may interfere with the efficiency of the antenna.

### OUTDOOR FM ANTENNA

300 ohm Outdoor FM Antenna

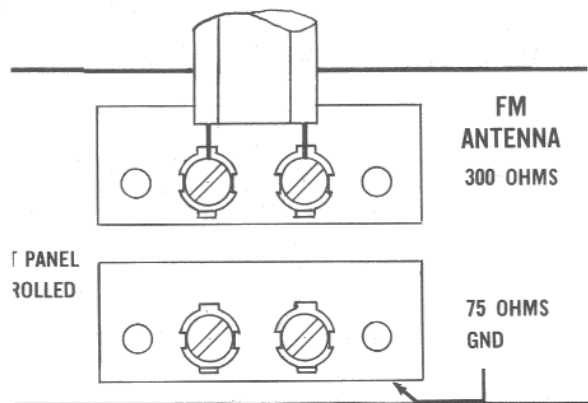


Figure 10. Connection of 300-Ohm Outdoor Antenna.

An outdoor FM antenna is always recommended for best FM reception under all conditions. In fringe or outlying areas especially, a highly directional FM antenna used in conjunction with a rotator will give the finest possible FM reception. Rotate the antenna until it points in the direction of the station, or until it receives the best possible signal. Use the multipath, signal strength and tuning indicators to position the antenna correctly.

### 75 OHM ANTENNA

Coaxial 75 ohm FM Antenna

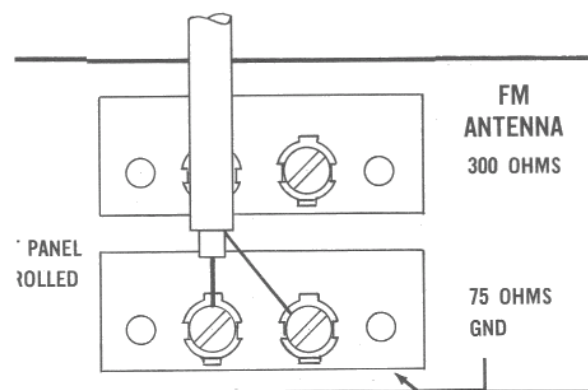


Figure 11. Connection of 75-Ohm Coaxial Antenna.

An unbalanced 75 ohm FM antenna may also be used with the MR71. Connect the center lead of the coaxial lead-in cable to the 75 ohm terminal. Connect the outer shield of the coaxial to the ground screw next to the 75 ohm terminal.



## OPERATING INSTRUCTIONS

### STEREOPHONIC FM MULTIPLEX

1. Turn the MODE SELECTOR to STEREO AUTO.

2. Turn MUTING to IN.

Muting suppresses all background noise and hiss usually heard when tuning between stations. Use MUTING IN for all normal listening.

Weak or distant stations that don't override the background noise, are also suppressed. Turn MUTING OUT to listen to these weaker stations.

3. Turn the FM TUNING dial to the desired station.

The TUNING indicator pointer should be in the black area at the center of the indicator for precise tuning. If the red MPX STEREO indicator is lighted, the station is broadcasting a 19KC carrier for multiplex stereo and the MR71 will automatically switch to stereo Mode. The MPX STEREO indicator lights ONLY when the tuner is receiving a station broadcasting a 19KC carrier for multiplex stereo. The indicator will not light on noise pulses or interference. If the same station is broadcasting a regular monophonic FM program, without the 19KC carrier, the MPX

STEREO indicator will remain off and the tuner will switch to Mono Mode.

4. Adjust the volume control for desired listening level.

If the fixed audio output jacks are being used, the tuner volume control will not affect the volume.

### MONOPHONIC FM

1. Turn the MODE SELECTOR to MONO to listen only to monophonic FM.

**Note:** If you wish to receive monophonic FM and have the MR71 automatically switch to a stereo broadcast available on the same station set the MODE SELECTOR to STEREO AUTO. (See section titled FRONT PANEL INFORMATION.)

2. Turn the MUTING to IN.

3. Turn the FM TUNING dial to the desired station. The TUNING indicator pointer should be in the black area at the center of the indicator for precise tuning and lowest distortion.

4. Rotate the directional antenna for best reception as shown by the signal strength and multipath indicators.

5. Adjust the VOLUME control for desired listening level.

## ADJUSTMENTS

### MUTING THRESHOLD

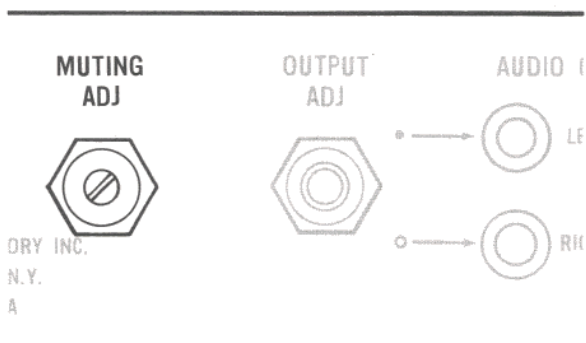


Figure 12. Muting Adjustment.

The MR71 ultrasonic muting circuit suppresses all noise between stations. It also suppresses all weaker stations not strong enough to override the background noise.

The muting threshold setting determines the strength of the signal which can be heard with muting in operation. The muting threshold is carefully adjusted to optimum at the factory using precision test instruments. Casual adjustment of the muting threshold is not recommended.

If it is necessary to adjust the muting threshold, use the MUTING ADJ control on the tuner back panel. Turn the MUTING ADJ control to the RIGHT (clockwise) to lower the muting threshold. This allows weaker, noisier stations to be heard at the MUTING IN set-

ting. Turn the MUTING ADJ control to the LEFT (counterclockwise) to raise the muting threshold. This allows only the more powerful stations to be heard at the MUTING IN setting.

### DIAL PANEL LIGHTS

Adjust the brightness of the dial panel lights by means of the PANEL LIGHT switch on the tuner back panel. Set the switch to BRIGHT for maximum panel light. Set the switch to DIM for less dial light and extended lamp life.

### OUTPUT ADJUST

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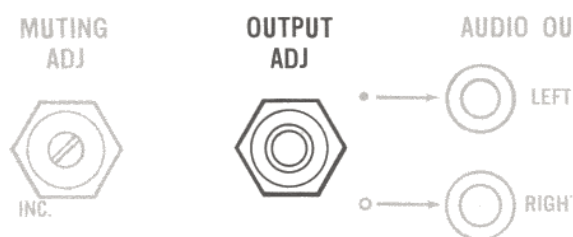


Figure 13. Output Adjustment.

The dual concentric OUTPUT ADJ controls (on the tuner back panel) adjust the output volume level of the left hand pair of AUDIO OUTPUT jacks. The center shaft of the control adjusts the left channel output. The outer sleeve of the control adjusts the right channel output.

Before making this adjustment, connect the left hand AUDIO OUTPUT jacks to the tuner inputs of the control preamplifier being used. Set the preamplifier selector to phono and the volume control to normal listening level for a typical stereo disc recording. Switch the preamplifier back to the tuner. Set the MR71 MODE SELECTOR to MONO and tune in a local station. Turn the OUTPUT ADJ controls until the levels of each channel are equal to each other and also equal to the volume level of the previous phono recording. You can now switch the preamplifier selector from the MR71 to other program sources without need for readjusting the main volume control.

Your McIntosh MR71 tuner will give you many years of pleasant and satisfactory performance. If you have any questions concerning the operation or maintenance of this tuner please contact:

Customer Service  
McIntosh Laboratory Inc.  
2 Chambers Street  
Binghamton, New York  
Our telephone number is 723-5491.  
The direct dial area code is 607.

### **GUARANTEE**

McIntosh Laboratory Incorporated guarantees this equipment to perform as advertised. We also guarantee the mechanical and electrical workmanship and components of this equipment to be free of defects for a

period of 90 days from date of purchase. This guarantee does not extend to components damaged by improper use nor does it extend to damage incurred during transportation to and from McIntosh Laboratory, Inc.

### **3-YEAR FACTORY SERVICE CONTRACT**

An application for a FREE 3-YEAR FACTORY SERVICE CONTRACT is included in the pocket in the back cover of this manual. The FREE 3-YEAR FACTORY SERVICE CONTRACT will be issued by McIntosh Laboratory upon receipt of the completely filled out application form. The term of this contract is de-

finied in the 3-year factory service contract. If the application is not mailed to McIntosh Laboratory, only the services offered under the standard 90-day guarantee will apply on this equipment. TAKE ADVANTAGE OF 3 YEARS OF FREE FACTORY SERVICE BY FILLING IN THE APPLICATION NOW.

In Canada: manufactured under license by:  
McCurdy Radio Industries, Ltd.  
22 Front Street West  
Toronto, Canada





# McIntosh LABORATORY, INC.

2 CHAMBERS STREET, BINGHAMTON, N. Y.

Made in U.S.A.

Phone—Area Code 607-723-5491