

# McIntosh MX 117

## AM-FM STEREO TUNER-PREAMPLIFIER

The MX 117 AM-FM Stereo Tuner-Preamplifier concept is a total McIntosh master control center that allows you to select the matching McIntosh power amplifier for your individual requirements. All needed inputs such as two record players, two tape recorders and auxiliary can be accommodated, along with the built-in AM-FM stereo tuner. The advanced circuits and performance features of the McIntosh MX 117 make it an ideal and especially convenient solution for the most discriminating stereo listener.



**MX 117** The McIntosh MX 117 is shown in optional walnut veneer cabinet.

# MX 117 F

## 1. FM AFL AUTOMATIC FREQUENCY LOCK

The Automatic Frequency Lock is a patented McIntosh circuit that activates when you tune to the center frequency of an FM station. A varactor diode fine tunes the tuner with a correction voltage from the AFL circuit. When the center ON-station vertical LED indicator lights, the AFL circuit is in operation and the tuner stays locked to the signal. There will be no drift from this accurate tuning, insuring minimum distortion and best overall FM performance.

## 2. ELECTRONIC FET ANALOG INPUT SWITCHING

All critical input switching is done electronically using field effect transistor analog switches. The front panel selector simply switches small amounts of control DC voltage which turn the FET analog switches on or off. Since the FET analog switches are located near the input jacks, the length of interconnecting leads is much shorter. This design eliminates switching noise as well as frequency loss caused by the longer signal leads

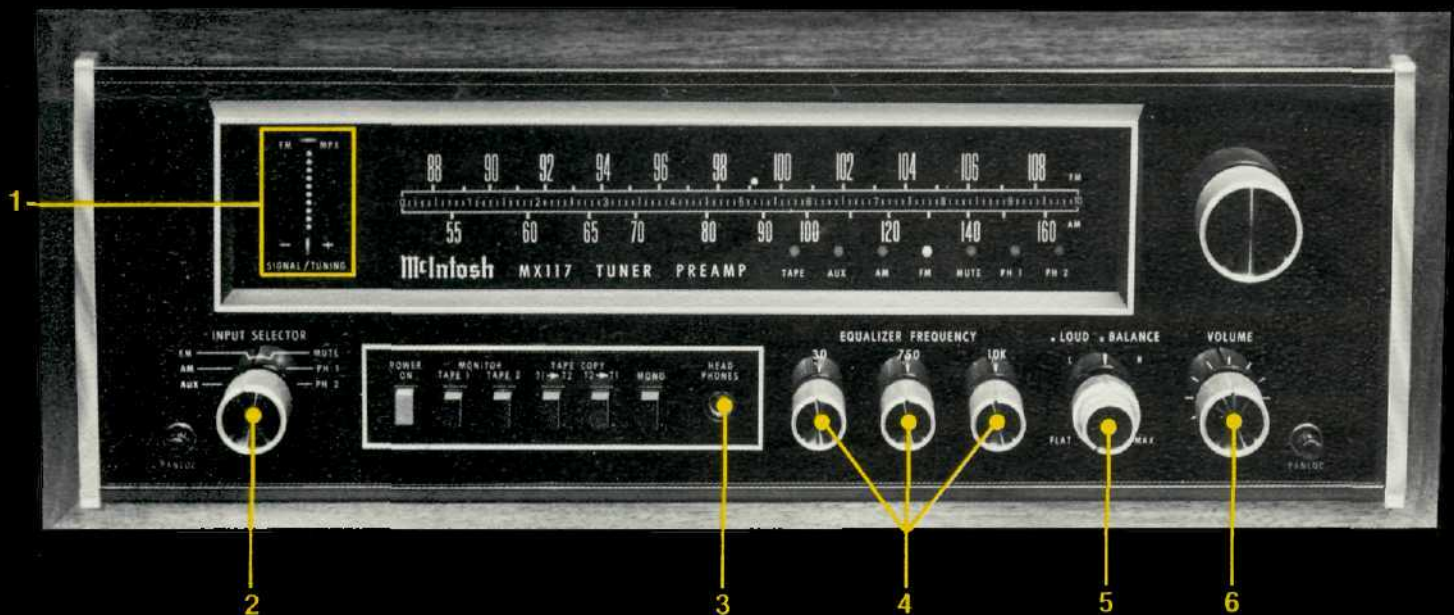
necessary in conventional circuits.

## 3. HEADPHONE—OUTPUT AMPLIFIER

The built-in headphone amplifier is capable of driving a pair of dynamic headphones with less than 0.02% harmonic distortion. Because of its extremely low distortion and power capability, it is also the main preamplifier output.

## 4. TRI-FREQUENCY PROGRAM EQUALIZER

Three separate controls allow the balance and response of musical information to be adjusted with far more flexibility than with conventional tone controls. The center frequencies of the controls are 30 Hz, 750 Hz and 10 kHz. Plus and minus 12 dB of control is available. Use of the program equalizer controls does not affect in the slightest the low noise, low distortion performance of the tuner-preamplifier. When the equalizer controls are in their center detent or flat position, their action is neutral and response of the tuner-preamplifier is absolutely flat.



## 5. TRUE LOUDNESS COMPENSATION

The MX 117 active circuit loudness control is continuously variable with constant midrange gain and operates independently of the volume control. The loudness contour is accurately modeled after the Fletcher Munson family of "Equal Loudness" curves. Use of this control restores proper perceived frequency response at even the softest listening levels.

## 6. PRECISION TRACKING VOLUME CONTROL

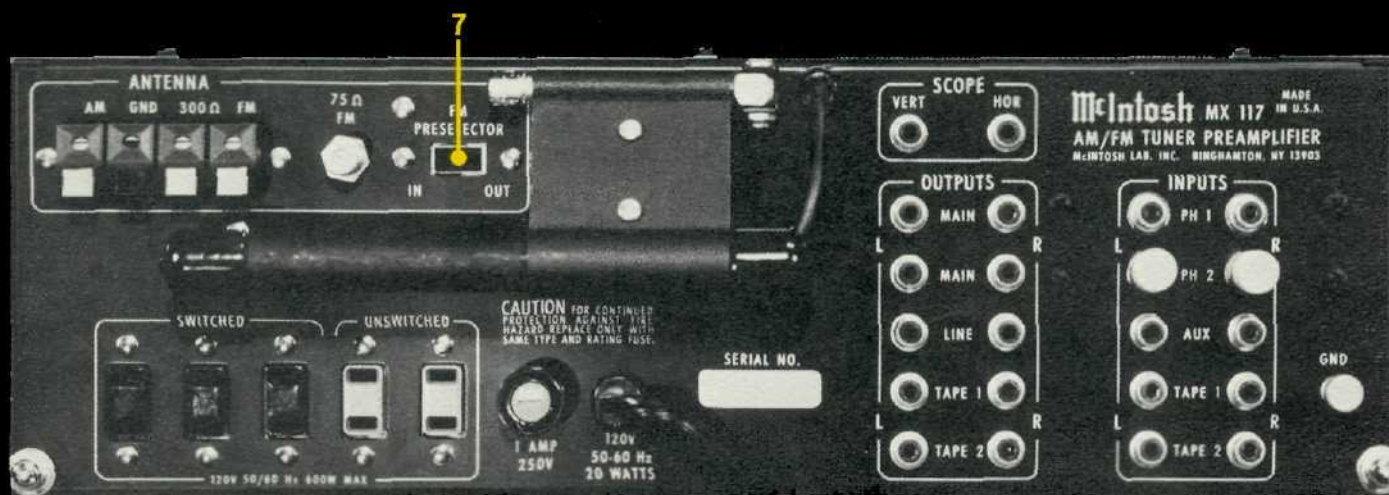
The volume control manufactured for McIntosh Laboratory is a step attenuator which has tracking accuracy within 1 dB throughout its entire range. Such extremely accurate matching is achieved through electronically controlled trimming of the resistance material deposited on pairs of miniature printed circuits. Tracking accuracy and quiet performance are permanently maintained. Use does not affect performance as in ordinary volume controls.

# EATURES

## 7. ELECTRONIC FET RF SELECTIVITY SWITCHING

A back panel switch gives additional FM RF selectivity for best performance in areas with extremely strong station signal strengths. This switch feeds

a control DC voltage to PIN semiconductor diodes which electronically perform the RF switching functions.



## AUTOMATIC STEREO NOISE SUPPRESSION

A new third generation phase locked loop stereo decoder incorporates a unique variable stereo separation - noise reduction control circuit. This circuit operates from the IF amplifier signal strength detector. When listening to weak or distant FM stations, optimum stereo separation and signal to noise ratio is automatically provided. You get a smooth transition between stereo and mono depending on the prevailing signal conditions. This means that with the McIntosh MX 117 you always get the most noise-free reception of weaker stereo signals. Since this circuit automatically adjusts in varying amounts, you never hear the abrupt switching present in conventional circuits.

## UNIQUE AM TUNER SECTION

The AM circuit in the MX 117 is unique in design

for a superheterodyne tuner. The AM RF amplifier circuit has constant selectivity, constant sensitivity and high image rejection across the complete AM band. In addition there is no loss of audio frequency response at the low end of the band. No conventional AM circuit can offer all these features simultaneously. These advanced AM performance characteristics of the MX 117 bring about a re-discovery of AM listening.

## INTEGRATED CIRCUIT OPERATIONAL AMPLIFIERS

Both the magnetic phono and the equalizer amplifier stages utilize new high technology integrated circuit operational amplifiers. Noise factors are incredibly low and distortion levels are at or below the limits of the best present day test equipment.

# WHY YOU SHOULD OWN McINTOSH

- McIntosh instruments have always been designed for long life with low maintenance cost and high quality performance.
- McIntosh dedication, not only to improvements but also to fundamentals, has justified many patents on refinements as well as basic circuit structures.
- McIntosh invests more on a percentage basis in research and test equipment than any of its competitors.
- After thirty years of existence, amplifier clinics held all over North America have shown most McIntosh instruments produced, regardless of age, are still in use today.
- Used McIntosh instruments enjoy the highest resale value of any products in the home music field.
- Since its beginning in 1949, McIntosh Laboratory remains under the same management. More than 58 competitors have come and gone during the same period.



# MX 117 PERFORMANCE LIMITS

Performance limits are the maximum deviation from perfection permitted for a McIntosh Instrument. We promise you that when you purchase a new MX 117 from a McIntosh Franchised dealer it will be capable of performance at or exceeding these limits or you can return the unit and get your money back. McIntosh is the only manufacturer that makes this statement.

## PREAMP SECTION

### FREQUENCY RESPONSE

+ 0 - 0.5 db from 20 Hz to 20 kHz

### RATED OUTPUT LEVELS

Main Out	2.5V
Line Out	1.25V
Headphone	750mV
Tape Out	250mV

### DISTORTION

0.02% maximum at 2.5V output from  
20 Hz to 20 kHz

### INPUT SENSITIVITY AND GAIN

#### Input to Main Out

Phone 1 and 2	2.2mV in for 2.5V out (61.1 dB gain at 1 kHz)
AUX, Tape 1 and 2	250mV in for 2.5V out (20 dB gain at 1 kHz)

#### Input to Line Out

Phono 1 and 2	2.2mV in for 1.25V out (55 dB gain at 1 kHz)
AUX, Tape 1 and 2	250mV in for 1.25V out (14 dB gain at 1 kHz)

#### Input to Headphone Out

Phono 1 and 2	2.2mV in for 750mV out (50.7 dB gain at 1 kHz)
AUX, Tape 1 and 2	250mV in for 750mV out (9.5 dB gain at 1 kHz)

#### Input to Tape Out

Phono 1 and 2	2.2mV in for 250mV out (41.1 dB gain at 1 kHz)
AUX, Tape 1 and 2	250mV in for 250mV out (0 dB gain at 1 kHz)

### SIGNAL TO NOISE

Phono 1 and 2	-90 dB IHF A-weighted, below 10mV input -80 dB unweighted, below 10mV input
AUX, Tape 1 and 2	-100 dB IHF A-weighted, below 250mV input -90 dB unweighted, below 250mV input

### INPUT IMPEDANCE

Phono 1 and 2	47k $\Omega$ and 50pF
AUX, Tape 1 and 2	47k $\Omega$

### OUTPUT IMPEDANCE

Main Out	less than 100 $\Omega$ (to operate into 5k $\Omega$ or greater)
Line Out	600 $\Omega$
Headphone	8 $\Omega$
Tape Out	less than 200 $\Omega$ (to operate into 5k $\Omega$ or greater)

### EQUALIZER CONTROL RESPONSE

Center Frequencies	30, 750, and 10 kHz
Boost and Cut	$\pm 12$ dB

## AM SECTION

### SENSITIVITY

75 $\mu$ V IHF with external antenna

### SIGNAL TO NOISE RATIO

45 dB minimum IHF or 55 dB at 100% modulation

### FREQUENCY RESPONSE

+ 0 - 6 dB from 20 Hz to 3500 Hz

### HARMONIC DISTORTION

0.8% maximum at 30% modulation

### ADJACENT CHANNEL SENSITIVITY

30 dB minimum IHF

### IMAGE REJECTION

65 dB minimum from 540 kHz to 1600 kHz

## FM SECTION

### USABLE SENSITIVITY

2 $\mu$ V (11.2dBf) IHF

### QUIETING SENSITIVITY

5 $\mu$ V (19.1dBf) IHF	-50dB (Mono)
50 $\mu$ V (39.5dBf) IHF	-50 dB (Stereo)

### SIGNAL TO NOISE RATIO

70 dB IHF minimum both Mono and Stereo

### HARMONIC DISTORTION

0.18% (Mono) IHF maximum
0.38% (Stereo) IHF maximum

### ALTERNATE CHANNEL SELECTIVITY

75 dB IHF minimum

### IMAGE REJECTION

100 dB IHF minimum

### STEREO SEPARATION

45 dB minimum at 1 kHz

## GENERAL INFORMATION

### POWER REQUIREMENT

120 Volts 50/60 Hz, 45 Watts

### SEMI CONDUCTOR COMPLEMENT

24 Bipolar Transistors
18 Field Effect Transistors
62 Diodes
24 Integrated Circuits

## MECHANICAL INFORMATION

### SIZE

Front panel measures 16 inches wide (40.6 cm) by 5 7/16 inches high (13.8 cm). Chassis measures 14 3/4 inches wide (37.5 cm) by 4 13/16 inches high (12.2 cm) by 13 inches deep (33 cm), including connectors. Knob clearance required is 1 1/4 inches (3.2 cm) in front of mounting panel.

### FINISH:

Front panel is anodized gold and black with special gold/teal nomenclature illumination. Chassis is black.

### MOUNTING:

Exclusive McIntosh developed professional PANLOC.

### WEIGHT:

24 pounds (10.9 kg) net, 36 pounds (16.3 kg) in shipping carton.

The continuous improvement of its products is the policy of McIntosh Laboratory Incorporated, who reserves the right to improve design without notice.

FRANCHISED DEALER

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Printed in U.S.A.