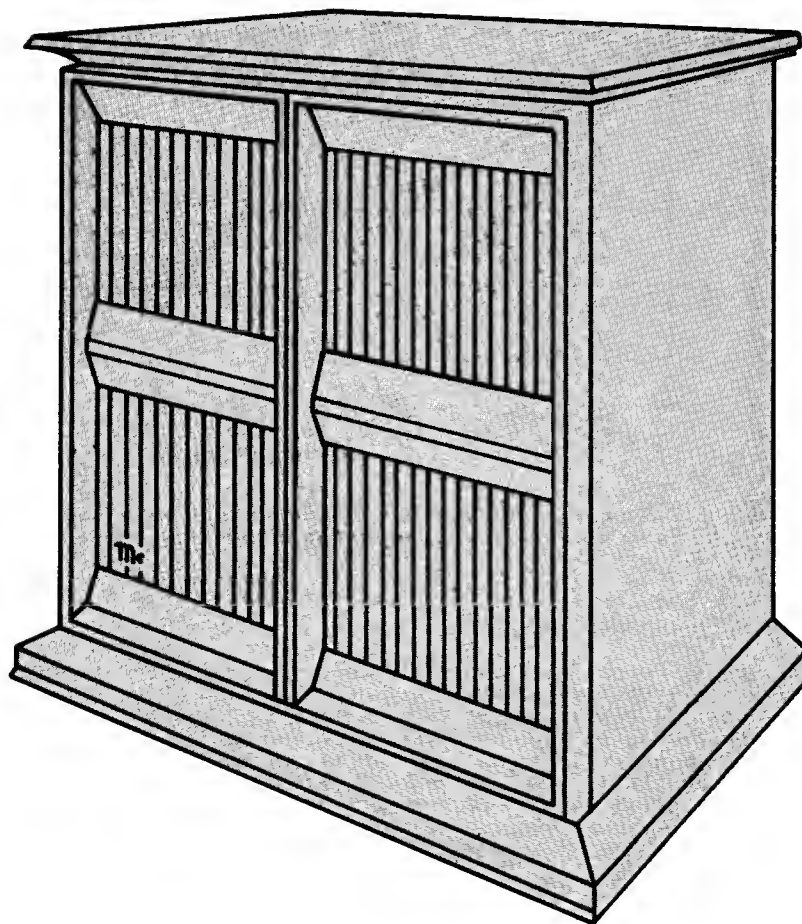


# McIntosh

## ML 2C LOUDSPEAKER SYSTEM



## SERVICE INFORMATION

SERIAL NO. L3C225 AND ABOVE  
BC4187 AND ABOVE

# SPECIFICATIONS

## SPEAKER SIZE

Woofers two 12" dia. frame size (10" dia. radiators)  
Low mid-range 8" dia. frame size (5" dia. radiator)  
Mid mid-range 1-1/2" dia. dome radiator  
High mid-range 1-1/2" dia. dome radiator  
Tweeter 1-5/8" dia. coaxial super radiator

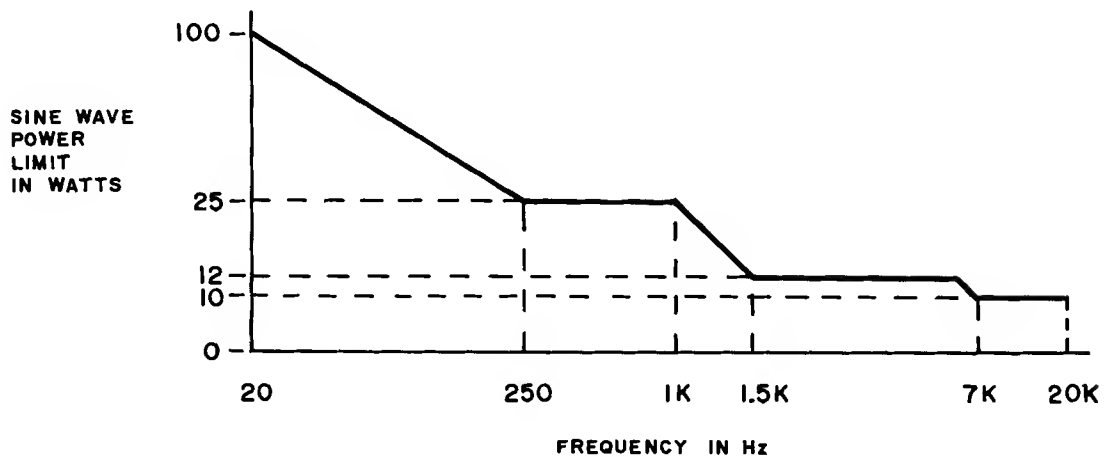
## CROSSOVER FREQUENCIES

250Hz, 1.5kHz, 3kHz, & 7kHz

## IMPEDANCE

8 $\Omega$  Nominal

## POWER HANDLING: Sine Wave steady state



Avoid operating the speaker system with sustained sine wave signals at power levels greater than the indicated limits. Permanent damage may result.

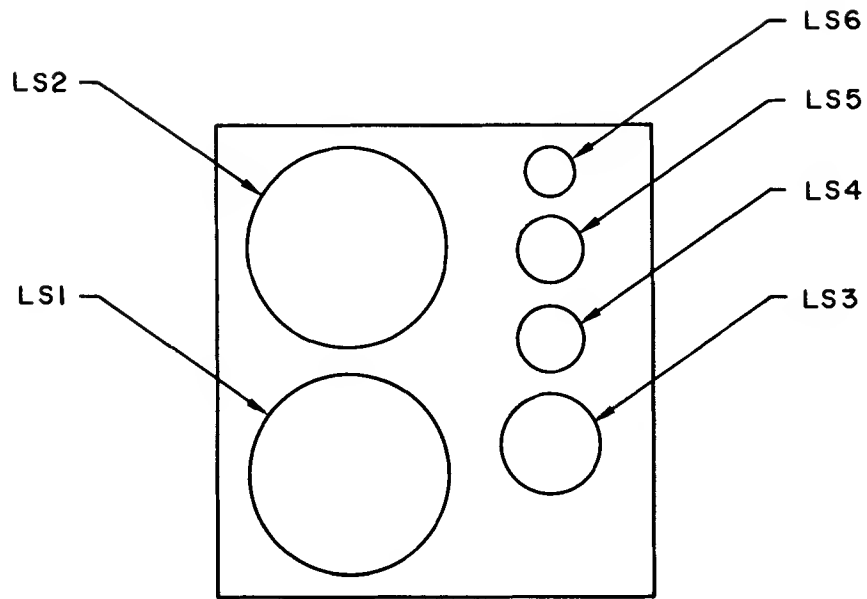
## POWER HANDLING: Program Material

High energy peaks normal to orchestral music are easily and faithfully reproduced by the speaker system. These peaks are of relatively short duration and do not produce the heating effect caused by sustained tone operation. The ML-4 speaker system will handle up to 300 watts of orchestral music program material. Care must be taken, however, to use a power amplifier that has an adequate power rating. If a low power amplifier is used, the loudest passages may be "clipped" by the amplifier. This clipping will cause the speaker to sound distorted. The large harmonic content of a badly "clipped" signal can cause excessive heating and resulting damage to the high frequency speaker elements and crossover network.

## OUTPUT LEVEL

In a reverberant room the system will nominally produce an 89dB sound pressure level when driven at a one watt level referred to 8 $\Omega$ .

# SPEAKER LOCATION

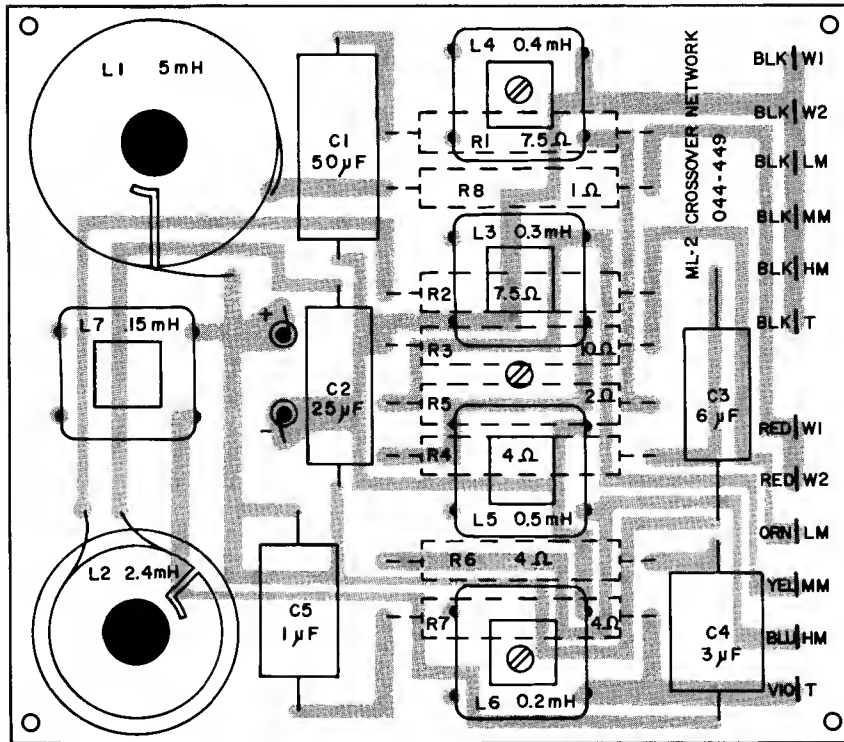


REMOVE REAR PANEL TO SERVICE CROSSOVER NETWORK

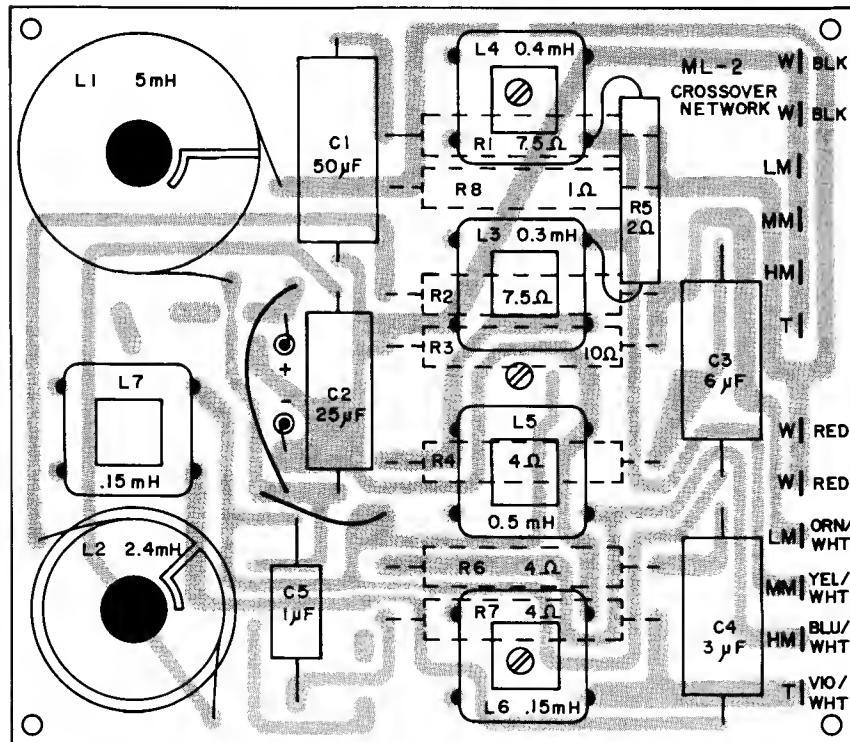
## SCHEMATIC NOTES

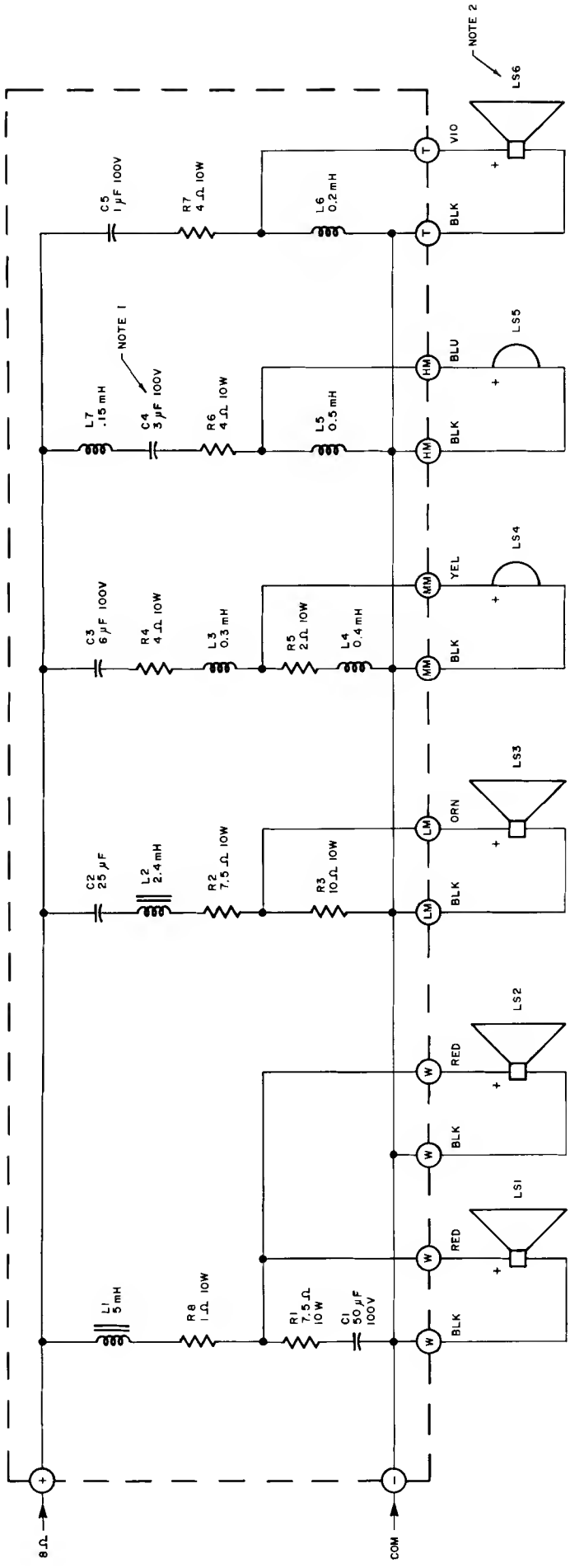
1. In early units C4 is 3.3 $\mu$ F.
2. In early units LS6 is 036-005 16 $\Omega$  impedance. LS6 can be replaced with 036-012 8 $\Omega$  impedance. Acoustic output will be the same.

# CROSSOVER NETWORK



TWO DIFFERENT CIRCUIT BOARDS HAVE BEEN USED.  
THE SCHEMATIC IS THE SAME FOR BOTH.





SYSTEM SCHEMATIC

# SERVICE NOTES

Speaker element failure can be quickly located by using FM hiss at a low power level. Listen at each speaker to verify if all the speakers are at least working. A low power (1-5 watt) sine wave sweep 20-20kHz can be used as a quick check for distortion. A speaker element with obvious distortion must be replaced.

To determine if the speaker element is dead, remove the speaker and momentarily connect a 1.5 to 6V battery across the terminals. If no sound is heard, the speaker element must be replaced.

The crossover network must be inspected when burned out speaker elements are replaced. The network must also be inspected if a speaker element produces sound with the battery test but does not play when connected in the system. The woofer must be removed to get to the crossover. Check for bad connections, broken wires, etc. Be sure to check the resistors mounted on the plate underneath the printed circuit board. A broken lead on these resistors can also be the cause of intermittent or partial failure of the system.

When a system has been driven excessively hard by a "clipped" amplifier for long periods of time, the dome mid-range may appear to have weak or no output. In addition to a burned out mid-range, the 7 $\mu$ F capacitor may also be damaged. This will be evident if a new mid-range has been installed and also appears to have weak or no output.

Use only McIntosh replacement capacitors. These have been specially selected for low ESR.

Use RTV silicone rubber under replacement parts mounted on the printed circuit board. In addition to the solder connections, this insures a vibration free bond to the board.

The solid colored wire (other than black) always goes to the red marked terminal on the speaker. This is the positive terminal. If the polarity of a speaker is unknown, momentarily connect a 1.5 to 6V battery to the terminals. When the cone moves away from the magnet, it means the + terminal of the battery is connected to the + terminal of the speaker.

When installing speakers or crossover network in the cabinet, care must be taken to insure a tight air seal to the cabinet. Replace the black caulking material or foam gasket if necessary. Mortite caulking compound or equivalent could be substituted but care must be taken that it will not be visible after the part is installed.

If a woofer screw strips out in the wood of the cabinet, the speaker can be rotated and new mounting holes drilled.

After the system is reassembled, it must be checked for air leaks. This can be done by putting a 20Hz sine wave into the system at 50 watts (20 volts). By listening around the speakers closely for hissing sounds, areas can be located that must be sealed. The system must also be swept from 20Hz to 250Hz at 25 watts (14 volts) to insure there are no vibrations due to wires hitting the woofer cone, etc.

All defective parts must be packed well and returned to McIntosh Laboratory Loudspeaker Division.

# REPLACEMENT PARTS

All parts not listed are common items obtainable from radio parts jobbers.

Replacement parts may be obtained when ordered by PART NUMBER from:

McIntosh Laboratory, Inc.  
Customer Service Department  
2 Chambers Street  
Binghamton, New York 13903  
(telephone 607-723-3512)

## CAPACITORS

Symbol Number	Description	Part Number
C1	Elect. 50 $\mu$ F 100V	066-192
C2	Elect. 25 $\mu$ F 100V	066-189
C3	Mylar 6 $\mu$ F 100V	064-114
C4	Mylar 3.3 $\mu$ F 100V	064-117
C5	Mylar 1 $\mu$ F 250V	064-104

## CHOKES

L1	Choke 5mH	122-124
L2	Choke 2.4mH	122-125
L3	Choke .3mH	122-122
L4	Choke .4mH	122-127
L5	Choke .5mH	122-126
L6	Choke .2mH	122-123
L7	Choke .15mH	122-128

## RESISTORS

R1,2	Wirewound 7.5 $\Omega$ 10W	139-090
R3	Wirewound 10 $\Omega$ 10W	139-089
R4	Wirewound 4 $\Omega$ 10W	139-086
R5	Wirewound 2 $\Omega$ 10W	139-085
R6,7	Wirewound 4 $\Omega$ 10W	139-086
R8	Wirewound 1 $\Omega$ 10W	139-084

## LOUDSPEAKERS

LS1,2	12" Woofer	036-001
LS3	8" Midrange	036-025
LS4,5	1-1/2" Dome Midrange	036-016
LS6	2-1/4" Tweeter	036-012

## MISCELLANEOUS ITEMS

Terminal Red	084-086
Terminal Black	084-087
Shipping Carton	033-127
Grille	030-012
Front Panel Assy.	044-312
Speaker Gasket 12" Woofer	094-092
Speaker Gasket 2-1/4" Tweeter	094-096
Speaker Gasket 1-1/2" Dome	094-100
Speaker Gasket 8" Midrange	094-094
Network Gasket	094-106

**McIntosh**

**McINTOSH LOUDSPEAKER DIVISION**

2 CHAMBERS ST., BINGHAMTON, N.Y. 13903





# SERVICE BULLETIN

## REPLACEMENT OF 8" LOUDSPEAKER 036-002

MODEL: ML-2C and ML-2M Loudspeakers.

PURPOSE OF MODIFICATION: To maintain the same acoustic output.

WHAT UNITS ARE AFFECTED: ML-2C Serial No. L1C001 through L1C429.  
ML-2M Serial No. L1D001 through L1D145.

WHEN MODIFICATION SHOULD BE MADE: When replacing defective 036-002 8" loudspeaker.

McINTOSH MODIFICATION KIT: No kit available.

### PARTS REQUIRED:

QUANTITY	PART NUMBER	DESCRIPTION
1	139-090	Wirewound Resistor: 7.5Ω, 10W
1	036-025	8" Loudspeaker

### PROCEDURE:

- Step 1 Remove rear panel.
- Step 2 Locate 10Ω, 10 watt resistor in series with the 8" loudspeaker. Remove and replace with 7.5Ω, 10 watt resistor.
- Step 3 Replace rear panel.

(over)

