XR50

Loudspeaker System

Owner's Manual

WARNING - TO REDUCE RISK OF FIRE OR ELECTRICAL SHOCK, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL.

To prevent the risk of electric shock, do not remove cover or back. No user-serviceable parts inside.

IMPORTANT SAFETY INSTRUCTIONS!

PLEASE READ THEM BEFORE OPERATING THIS EQUIPMENT.

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a non-abrasive dry soft cloth.
7. Install in accordance with the manufacturer's instructions.
8. **This Loudspeaker is capable of producing extremely high sound pressure levels, even when connected to amplifiers of moderate power output. User caution is advised. Ear protection is recommended when playing at high volumes as continued exposure to high sound pressure levels can cause permanent hearing impairment or loss. The use of a Sound Level Pressure Meter will greatly aid in determining when high volume levels are occurring.**

9. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
10. Only use attachments/accessories specified by the manufacturer.
11. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
12. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

13. Do not expose this equipment to dripping or splashing and ensure that no objects filled with liquids, such as vases, are placed on the equipment.
14. **WARNING: When this Loudspeaker is connected to an amplifier that is Powered On, the connection terminals may have hazardous live voltages present with a risk of electric shock.**

Thank You

Your decision to own this McIntosh XR50 Loudspeaker System ranks you at the very top among discriminating music listeners.. You now have "The Best." The McIntosh dedication to "Quality," is assurance that you will receive many years of listening enjoyment from this unit.

Please take a short time to read the information in this manual. We want you to be as familiar as possible with all the features and functions of your new McIntosh.

Please Take A Moment

The serial number, purchase date and McIntosh Dealer name are important to you for possible insurance claim or future service. The spaces below have been provided for you to record that information:

Serial Number: _____

Purchase Date: _____

Dealer Name: _____

Technical Assistance

If at any time you have questions about your McIntosh product, contact your McIntosh Dealer who is familiar with your McIntosh equipment and any other brands that may be part of your system. If you or your Dealer wish additional help concerning a suspected problem, you can receive technical assistance for all McIntosh products at:

McIntosh Laboratory, Inc.
2 Chambers Street
Binghamton, New York 13903
Phone: 607-723-3512
Fax: 607-724-0549

Customer Service

If it is determined that your McIntosh product is in need of repair, you can return it to your Dealer. You can also return it to the McIntosh Laboratory Service Department. For assistance on factory repair return procedure, contact the McIntosh Service Department at:

McIntosh Laboratory, Inc.
2 Chambers Street
Binghamton, New York 13903
Phone: 607-723-3515
Fax: 607-723-1917

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General Information

1. For additional connection information, refer to the owner's manual(s) for any component(s) connected to the XR50 Loudspeaker.
2. The design of XR50 Loudspeaker took into account the acoustic characteristics of the Front Panel Grille and it should be attached to the Loudspeaker for the best sonic performance.
3. If there is an obvious lack of high, mid or low frequencies after extended periods of overdrive, the Protection Device(s) may have activated. These devices will automatically reset when the volume level is greatly reduced until the output of the affected Loudspeaker Driver(s) returns to normal.
4. When discarding the unit, comply with local rules or regulations. Batteries should never be thrown away or incinerated but disposed of in accordance with the local regulations concerning battery disposal.
5. For additional information on the XR50 and other McIntosh Products please visit the McIntosh Web Site at www.mcintoshlabs.com.

Connector/Cable Information

Power Control Connectors
The XR50 Power Control Jacks (IN/OUT) receive and pass on an ON/OFF signal from +5 to +12 volts. An additional connection passes on Meter Illumination Control for compatible Power Amplifiers. The 1/8 inch stereo mini phone plug connects to a McIntosh Preamplifier or A/V Control Center Power Control Output.

Power Control
Meter Illumination Control Pass Thru
Ground
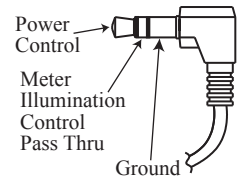
Introduction

McIntosh Acoustic Engineers have achieved in the design of the XR50 Loudspeaker System, a level of high performance. The XR50 provides superior spaciousness sound reproduction with unusual sound stage depth in a full range system.

The XR50 utilizes a three-quarter inch Titanium Dome Tweeter and 2 two inch Midrange Inverted Titanium Dome Drivers. Refer to figures 1 and 2. Since the audio power is distributed among all the drivers, each driver does not have to work as hard, resulting in greater power handling capability, dramatic reduction in distortion and greater dynamic range.

Figure 1

Figure 2

The Low Frequency Section of the System consists of a newly designed six inch Woofer. Refer to figure 3.

Figure 3

The Woofer incorporates McIntosh's Patented LD/HP® [1] Magnetic Circuit Design. Finite Element Analysis and testing resulted in a design concept which utilizes a pair of aluminum shorting sleeves in the magnetic circuit. Refer to figure 4. The sleeves greatly reduce the negative influence of the fluctuating voice coil field on the permanent magnet field. This results in lower distortion due to more linear magne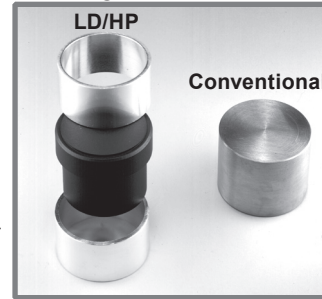tic flux in the voice coil gap. Refer to figure 5. Additional benefits are less volume compression due to improved heat transfer through the sleeves and a cooler operating voice coil. Both measurements, as well as critical listening, reveal ten times less distortion than previous designs. A good example of this low distortion is incredible smoothness and clarity in the reproduction of the human voice.
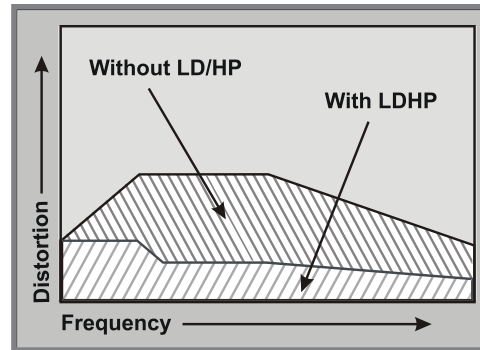

Figure 4

Figure 5

The Crossover Network used in the XR50 Loudspeaker System is designed to ensure an even frequency response over the entire audible range. The Second Order Designed Network utilizes Capacitors and Inductors with high current capacity. Refer to fig-

Figure 6

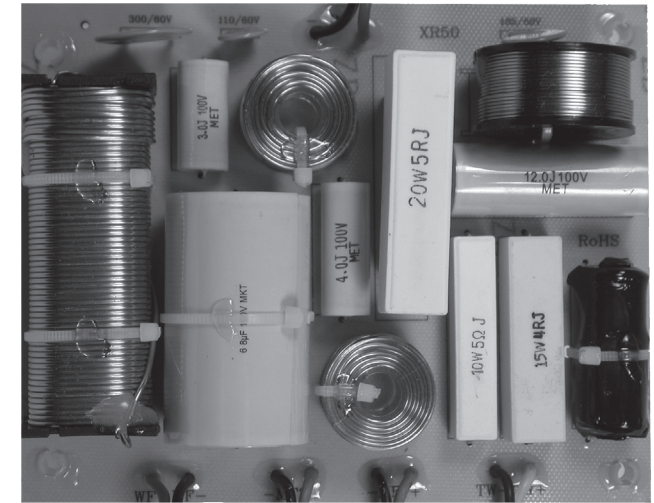ure 6. The XR50 uses low loss (DCR) Inductors in the crossover network. The type of Inductor used in each section of the crossover network has been chosen for high linearity, even at high power levels. This prevents distortion of the music at any frequency. The Capacitors used are the low loss (ESR) types. The Network also utilizes self resetting high current PTC Fuses to provide an extra measure of protection.

The enclosure is an important part of the XR50 Loudspeaker System. It has a front to back and side to side internal brace to form a dampened rigid Loudspeaker enclosure. The Loudspeaker's small footprint allows for a variety of different placements in a room.

[1]LD/HP Pat. No 5,151,943

Performance Features

• Patented LD/HP® Technology
The McIntosh Low Frequency Loudspeaker Elements feature the patented LD/HP Magnetic Circuit Design. This design, when compared to conventional Loudspeaker Drivers, reduces distortion significantly. It also increases power handling and efficiency.

The rear vent through the magnetic assembly offers improved heat dissipation. The die cast basket has an open air area under the voice coil/spider assembly to prevent displacement noise. The polypropylene cone with a rubber surround has a four layer copper voice coil and is rigid to perform as a near perfect air piston.

Altogether these advances in woofer design construction and materials produce the very important first several octaves of music, with a high degree of accuracy and superb transient response. This performance level rivals woofers twice the size of the XR50 woofer.

• Neodymium-Iron-Boron Alloy Magnets
The two inch Midranges and three-quarter inch Dome Super Tweeter all use this Alloy. The Neodymium-Iron-Boron Alloy has the highest flux density per unit of volume. This allows for a smaller physical size driver and thus closer driver to driver placement for improved dispersion.

• Low Harmonic and Intermodulation Distortion
The XR50 Loudspeaker System is capable of reproducing the full dynamic range of a symphony orchestra with very low audible distortion of any kind.

• Low Frequency Port
The XR50 Loudspeaker System utilizes a vertical port with a rear opening to increase bass output, reduce distortion and improve the overall efficiency of the Loudspeaker.

• High Power Handling
The Loudspeaker Elements and Crossover Components of the XR50 are all chosen for use with amplifiers up to 300 watts, yet can be driven with a 75 watt amplifier.

• Superior Imaging
Locating the Super Tweeter between the two Midranges generates a symmetrical polar response for superior imaging.

• Loudspeaker Enclosure
The XR50 Loudspeaker enclosure is constructed with non-parallel internal sides to reduce internal standing waves and is available in various finishes.

• McIntosh Custom Binding Posts
McIntosh patent pending gold plated input terminals accept high current signals. They accept large diameter wire and spade lugs. Banana plugs may also be used.

• Power Control
The Power Control Input supplies power to illuminate the XR50 McIntosh Logo and Power Control Output supplies power for remote turn-on of additional Components.

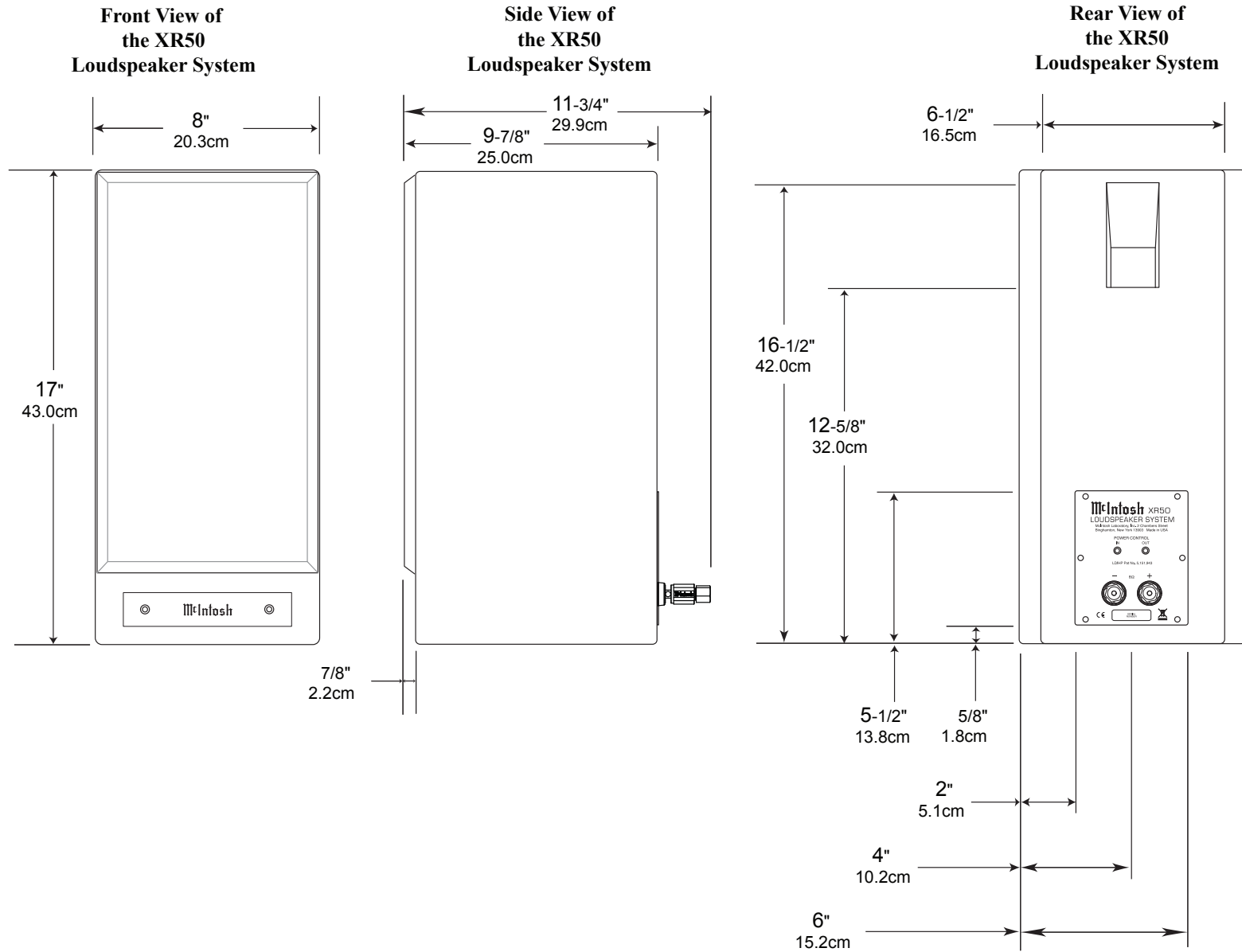**• Solid State Front Panel Logo Illumination**
The even Illumination of the Front Panel Logo is accomplished by the combination of custom designed Light Diffusers and extra long life Light Emitting Diodes (LEDs).
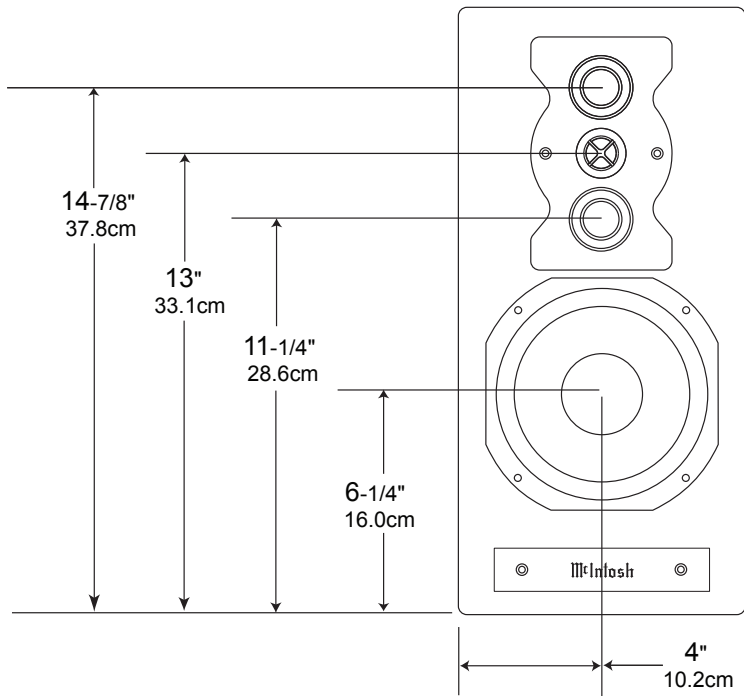
Dimensions

The following dimensions can assist in determining the best location for your XR50.

**Front View of
the XR50
Loudspeaker System**

8"
20.3cm

17"
43.0cm

McIntosh

**Side View of
the XR50
Loudspeaker System**

11-3/4"
29.9cm

9-7/8"
25.0cm

7/8"
2.2cm

**Rear View of
the XR50
Loudspeaker System**

6-1/2"
16.5cm

16-1/2"
42.0cm

12-5/8"
32.0cm

McIntosh XR50
LOUDSPEAKER SYSTEM
McIntosh Laboratory, Inc. 2 Chambers Street
Binghamton, New York 13903 Made in USA
POWER CONTROL
IN   OUT

5-1/2"
13.8cm

5/8"
1.8cm

2"
5.1cm

4"
10.2cm

6"
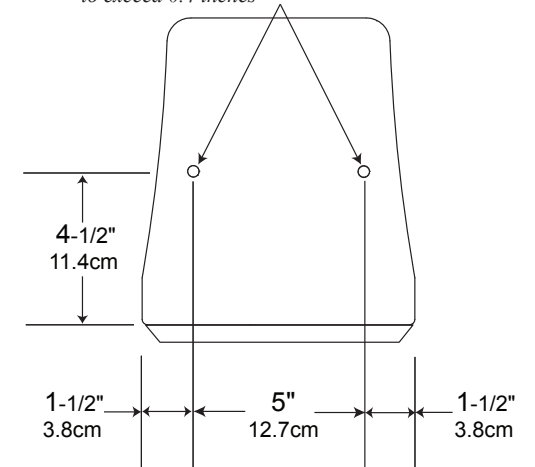15.2cm

**Front View of
the XR50
Loudspeaker System**

**Top End View
of the XR50
Loudspeaker System**
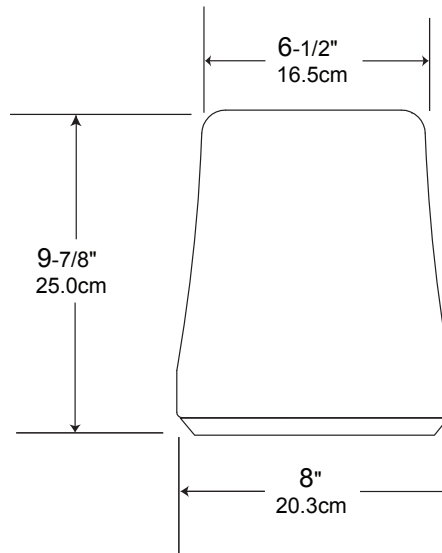
**Bottom End View
of the XR50
Loudspeaker System**

When mounting the XR50 to a Loudspeaker Stand use machine screws (1/4 inch, 20 threads per inch) with a length going into the XR50 not to exceed 0.4 inches

14-7/8"
37.8cm

13"
33.1cm

11-1/4"
28.6cm

6-1/4"
16.0cm

4"
10.2cm

6-1/2"
16.5cm

9-7/8"
25.0cm

8"
20.3cm

4-1/2"
11.4cm

1-1/2"
3.8cm

5"
12.7cm

1-1/2"
3.8cm

McIntosh

Unpacking the Loudspeaker

To protect the fine finish of the XR50 Loudspeaker System during the installation process, it is advisable to prepare a suitable area. A freshly vacuumed carpeted area covered with a soft, clean fabric, such as a large bed linen or blanket would be suitable.

It is recommended that the Professionals at your McIntosh Dealer, who are skilled in all aspects of installation and operation, install the XR50 Loudspeaker System and any associated audio equipment.

1. Remove the top foam cap from the shipping carton.
2. Remove the inner carton containing the Loudspeaker Grille.
3. Remove the Loudspeaker System by lifting up on the bottom of the Loudspeaker.
4. Carefully remove the protective fiber cover and protective plastic film from the Loudspeaker System so as not to mar the finish.
5. Carefully remove the protective poly cover from the Loudspeaker Grille.

The XR50 Loudspeaker Grille is secured to the Loudspeaker Cabinet with magnetic fasteners.

6. Orient the Loudspeaker Grille so the word "TOP" (located on the inside of the Grille Frame) is pointing upward. Refer to figure 7.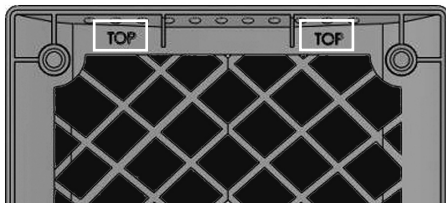 Next place the Loudpeaker Grille onto the Front of the Loudspeaker Cabinet, making sure to align the Grille Top with the Top of the Cabinet.

Figure 7

7. Optionally, attach the four rubber bumpers to the bottom of the cabinet to protect the finish.

Installation

Loudspeaker Placement

Loudspeaker placement in a room can greatly affect performance. The XR50 Loudspeaker is designed for both Music and Home Theater Systems. The optimal method for selecting speaker locations includes the use of a real time spectrum analyzer operated by an experienced system installer. An uncompromising installation would take into consideration the floor, wall and ceiling coverings, the type and placement of furniture and can even include the architectural design of the room and its construction materials. In those instances where placement in the room is fixed, an enviromental equalizer may be needed to restore proper musical balance.

Placement near a wall, corner, floor, ceiling or any intersecting surfaces will reinforce or diminish some bass frequencies. The bass frequencies that are altered by placement in a particular location is dependent on the dimensions of the room. If professional measurement equipment is not available, listen to the Loudspeaker. Try various locations by listening to music containing continuous bass and finding a location where there is an over all musical balance in the sound and the bass content does not dominate.

The XR50's Smooth Frequency Response may be altered by a large object(s) located in the sound waves path or by locating the Loudspeaker too close to a side wall. There should be an unobstructed area in front of the Loudspeaker of at least 30 degrees either side from the center axis for the best performance. Refer to figure 8.
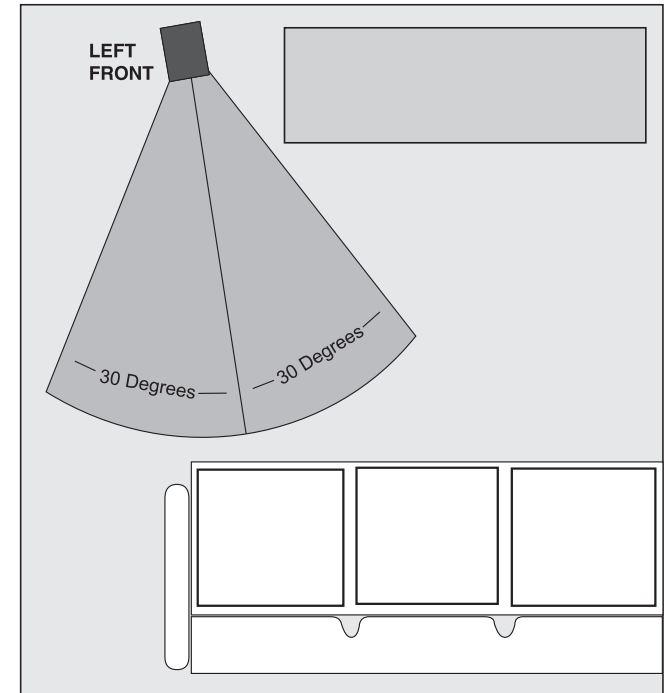

Figure 8

Locating Loudspeakers for use in Home Theater

In a Home Theater application, the placement of Left and Right Front Loudspeakers can be limited by such considerations as the size and location of the video monitor. The locating suggestions in the "for use in a Music System" section can still be helpful as a starting place. Refer to figure 9.
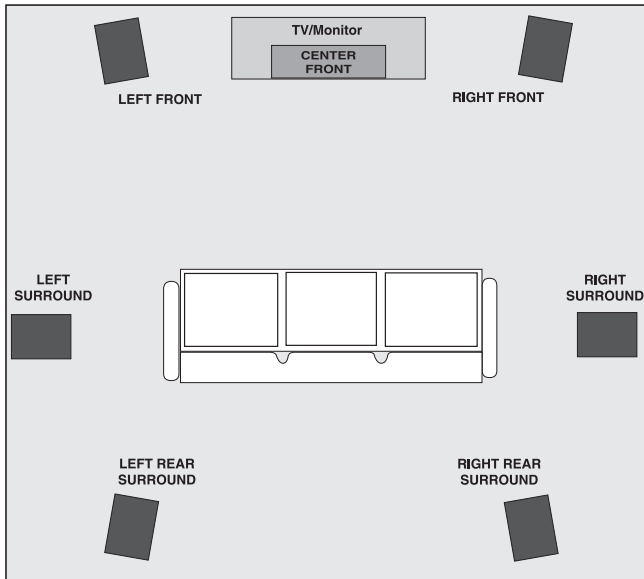
Figure 9

Locating Loudspeakers for use in a Music System

When used in a Music System, the distance between the Loudspeakers and the listener to the Loudspeakers should form an equilaterial or an acute isosceles triangle. If the speakers are too far apart relative to the listener, some imaging can be lost. Refer to figure 10.
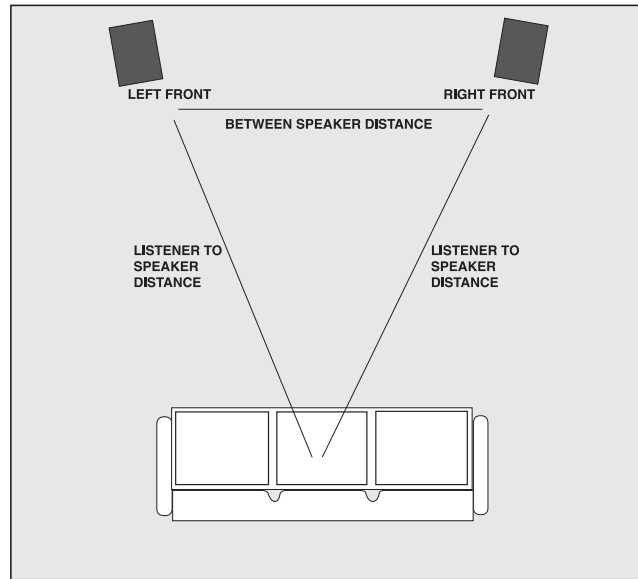
Figure 10

Input Terminals

When connecting the Loudspeaker Hookup Cables to the XR50 Loudspeaker Input Terminals please follow the steps below:

1. Rotate the end of the Input Terminal Post counterclockwise until an opening appears. Refer to figures A and B.

2. Insert the Loudspeaker hookup cable into the Input Terminal Post opening or the cable spade lug around the center post of the Input Terminal. Refer to figure C.

3. Rotate the end of the Input Terminal Post clockwise until it is finger tight. Refer to figure D.

4. Place the supplied McIntosh Wrench over the end of the Input Terminal and rotate it one quarter of a turn (90°) to secure the Loudspeaker Cable Connection. **Do not over tighten.** Refer to figure E.

Opening

Figure A   Figure B

Figure C   Figure D

Figure E
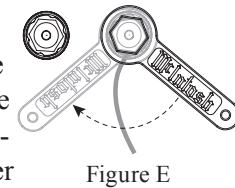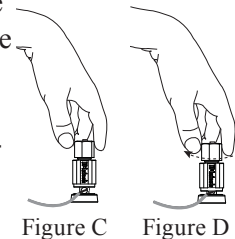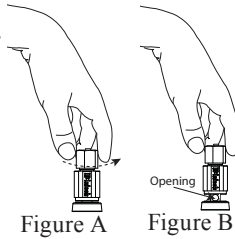
How to Connect

Caution: The AC Power Cord should not be connected to the Amplifier until after the Loudspeaker Connections have been made. Failure to observe this could result in Electric Shock.

1. For illumination of the XR50 Loudspeaker McIntosh Name Plate, connect a Power Control Cable from the Power Amplifier (or Integrated Amplifier) Power Control Output to the XR50 POWER CONTROL IN.

2. Connect a second Power Control Cable from the first XR50 Loudspeaker POWER CONTROL OUT to the next XR50 POWER CONTROL IN.

3. Connect any additional McIntosh Loudspeakers with illuminated McIntosh Name Plates in a similar manner, as outlined in steps 1 and 2.

When connecting a XR50 Loudspeaker to an amplifier it is very important to use cables of adequate size, so there is little to no power loss in the cables. The size is specified in Gauge Numbers or AWG (American Wire Gauge). The smaller the Gauge number, the larger the wire size:

Loudspeaker Cable Distance vs Wire Gauge Guide			
Loudspeaker Impedance	25 feet (7.62 meters) or less	50 feet (15.24 meters) or less	100 feet (30.48 meters) or less
2 Ohms	12AWG	10AWG	8AWG
4 Ohms	14AWG	12AWG	10AWG
8 Ohms	16AWG	14AWG	12AWG

4. Prepare Loudspeaker cables by choosing one of the methods below:

Bare wire cable ends:

Carefully remove sufficient insulation from the cable ends, refer to figures 12, 13 & 14. If the cable is stranded, carefully twist the strands together as tightly as possible.

0.5 inches 12.7mm

Figure 12   Figure 13   Figure 14
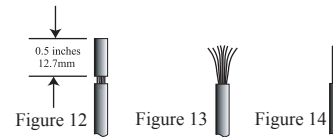
Notes: 1. If desired, the twisted ends can be tinned with solder to keep the strands together.
2. The prepared bare wire cable ends may be inserted into spade lug connectors.
3. Banana plugs are for use in the United States and Canada only.

Banana Plugs are for use in the United States and Canada only:

5. Attach the previously prepared bare wire cable ends into the banana plugs and secure the connections. Refer to figure F.

6. Rotate the top of the Output Terminal Post clockwise until it is finger tight. Refer to figure G. Then using the McIntosh Wrench, rotate the top of the Output Terminal one quarter of a turn (90°). **Do not over tighten.** Refer to figure E.

Figure F

Figure G

7. Referring to figure H and the illustration on the next page, connect the Loudspeaker hookup cables with banana plugs into the hole at the end of the terminal to the XR50 Negative (-) Input Terminal and Positive (+) Input Terminal
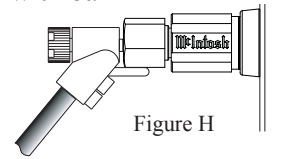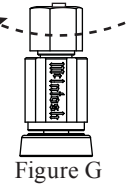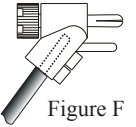
Figure H

Note: It is important to maintain the correct polarity at both ends of the Loudspeaker cables.

8. Connect the other end of Loudspeaker cables coming from the XR50 Negative (-) Input Terminal to the Left Channel COM (-) Output Terminal of the Amplifier.

9. In a similar manner, connect the Loudspeaker cables coming from the XR50 Positive (+) Input Terminal to the Left Channel 8 ohm (+) Output Terminal of the Amplifier.

10. Connect the second XR50 Loudspeaker in a similar manner to the Amplifier Right Channel Terminals.

Spade Lug or Wire Connections:

11. Referring to the illustration on the next page, connect the Loudspeaker hookup cables to the XR50 Negative (-) Input Terminal and Positive (+) Input Terminal. Insert the spade lug connect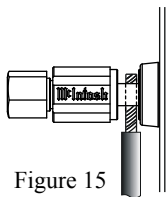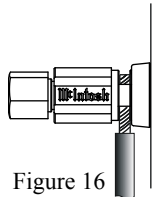or or prepared section of the cable end into the terminal side access hole, and tighten the terminal cap until the cable is firmly clamped into the terminals so the lugs or wire cannot slip out. Refer to figures 15 and 16.

    Note: It is important to maintain the correct polarity at both ends of the Loudspeaker cables.

11. Connect the other end of Loudspeaker cables coming from the XR50 Negative (-) Input Terminal to the Left Channel COM (-) Output Terminal of the Amplifier.

12. In a similar manner, connect the Loudspeaker cables coming from the XR50 Positive (+) Input Terminal to the Left Channel 8 ohm (+) Output Terminal of the Amplifier.

13. Connect the second XR50 Loudspeaker to the Amplifier in a similar manner.

14. Connect the second XR50 Loudspeaker in a similar manner to the Amplifier Right Channel Terminals.

Figure 15   Figure 16

Power Amplifier

XR50 Right Channel

XR50 Left Channel
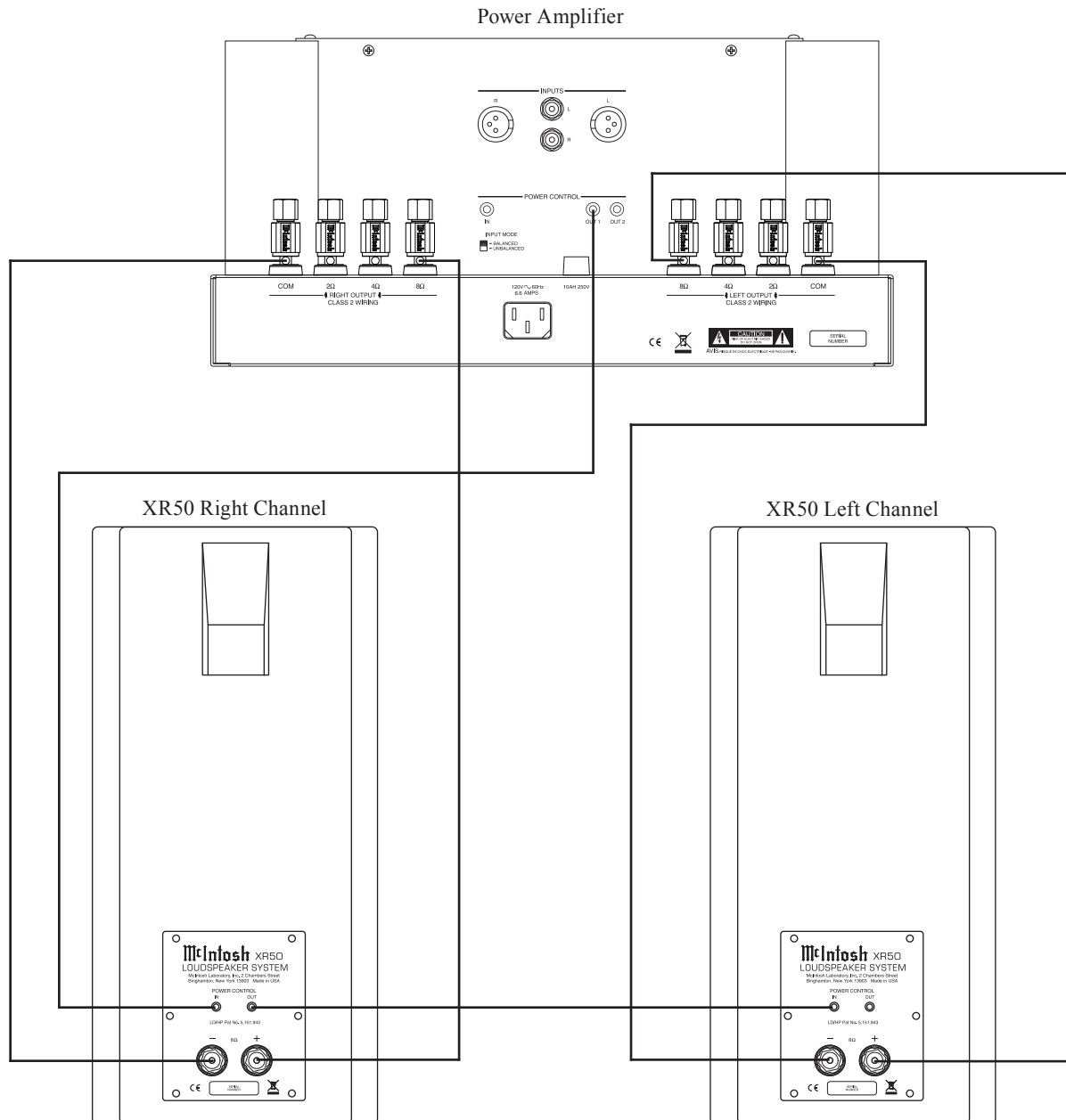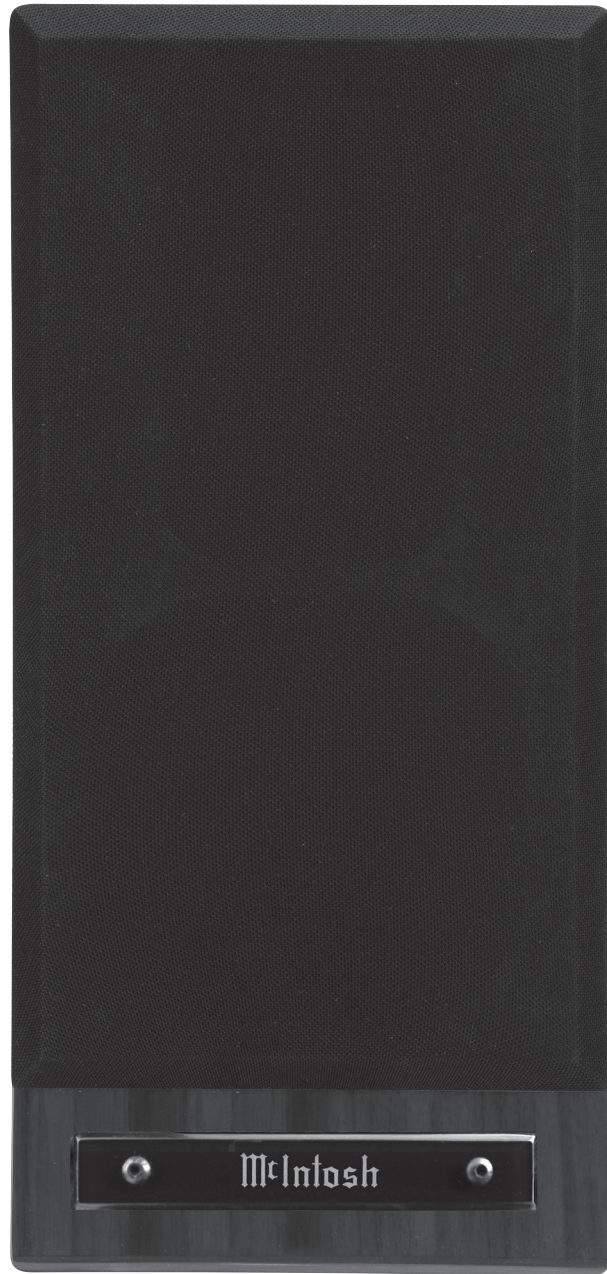
Specifications

System Driver Complement
One 6 inch Woofer (incorporating LD/HP[1])
Two 2 inch Titanium Inverted Dome Midranges
One 3/4 inch Titanium Dome Tweeter

Impedance
8 ohms Nominal

Frequency Response
40Hz - 45,000Hz

Sensitivity
81dB (2.83V/1m equivalent)

Crossover Frequencies
500Hz
8,000Hz

Recommended Power Range
75 Watts to 300 Watts

Maximum Power Handling
300 Watts

General Specifications

Enclosure Finish
Available in various real wood veneers with
a high gloss polyester finish

Grille Finish
Black Knit Cloth

Overall Dimensions
Height is 17 inches (43.00cm)
Width is 8 inches (20.30cm)
Depth is 11-3/4 inches (29.85cm)

Weight
19.5 pounds (8.9kg) net
25 pounds (11.kg) in shipping carton

Shipping Carton Dimensions
Width is 15-1/2 inches (39.37cm)
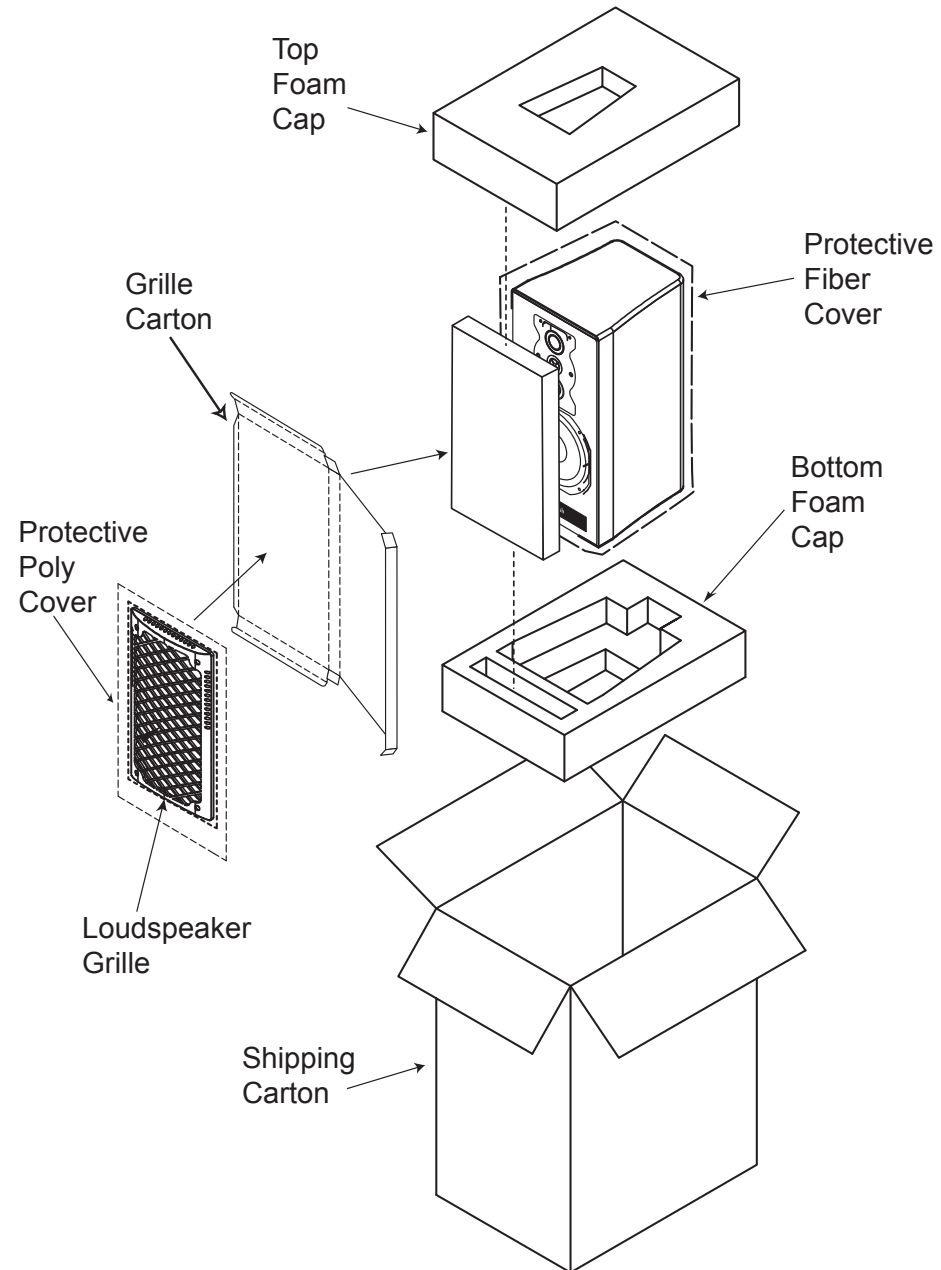Depth is 12 inches (30.48cm)
Height is 21 inches (53.34cm)

[1]LD/HP Pat. No 5,151,943

Packing Instructions

In the event it is necessary to repack the equipment for shipment, the equipment must be packed exactly as shown below. To protect the finish of the Loudspeaker it is advisable to wrap the Loudspeaker Cabinet with a durable plastic film. Then place wraped Loudspeaker into the protective fiber cover, before inserting it into the shipping carton.

Use the original shipping carton and interior parts only if they are all in good serviceable condition. If a shipping carton or any of the interior part(s) are needed, please call or write Customer Service Department of McIntosh Laboratory. Please see the Part List for the correct part numbers.

Quantity	Part Number	Description
1	03450700	Shipping carton
1	03451700	Top foam cap
1	03451600	Bottom foam cap
1	03452500	Protective fiber cover
1	03453400	Protective poly cover
1	03453300	Grille carton

Top Foam Cap

Protective Fiber Cover

Grille Carton

Bottom Foam Cap

Protective Poly Cover

Loudspeaker Grille

Shipping Carton