

# **HILTON MA-220**

## **SOUND SYSTEM**

### **OPERATING INSTRUCTIONS**

Please read this manual carefully, and keep it in a safe place for future reference. It contains valuable information about your new Hilton MA-220 sound system: its features, how to operate it, how to take care of it, how to avoid damage to it, what to do if any problems should occur.

If you should encounter any problem in setting up or in operating your Hilton sound system, or if you have any question which is not answered in this manual, please write or phone.

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## TABLE OF CONTENTS

GUARANTEE OF SATISFACTION.....	Page 1
TOP DECK PANEL .....	Page 3
FRONT EDGE PANEL.....	Page 3
REAR PANEL.....	Page 4
CONNECTING THE SIGNAL SOURCE .....	Page 5
SETUP AND OPERATION.....	Page 6
SPEAKER HOOKUP.....	Page 6
GETTING THE MOST FROM YOUR HILTON .....	Page 8
MAKING RECORDINGS .....	Page 9
CONNECTING TO AN EXTERNAL AMPLIFIER.....	Page 10
ROUTINE INSPECTION AND MAINTENANCE .....	Page 10
IN CASE OF TROUBLE .....	Page 11
MULTIPLE SPEAKER HOOKUP DIAGRAMS.....	Page 13

## GUARANTEE OF SATISFACTION

Any purchaser of Hilton sound equipment, if not completely satisfied with it, may return such equipment in undamaged condition, freight charges prepaid, within 30 days after original purchase, for full refund of its purchase price.

## TWO-YEAR LIMITED WARRANTY

For a period of two years after initial purchase, Hilton Audio Products will, at its option, either repair or replace without charge any Hilton sound system or component thereof which fails in normal service, subject to the exceptions listed below. Any reasonable shipping and transit insurance charges, within the continental U.S.A., incurred in the course of warranty service will be paid by Hilton Audio Products.

### EXCEPTIONS TO WARRANTY:

Warranty is restricted to correction of any defect which becomes evident in the course of normal use and operation, and does not cover any of the following:

1. Repair of normal wear and tear: scratches, nicks, dents, etc.
2. Modernization or alteration to specifications which were not in effect at the time of original purchase.
3. Repair of damage which is caused by accident or abuse and not by any defect in the sound system.
4. Reimbursement for any repair charges not authorized by Hilton Audio Products.
5. Repair of damage which is caused by connecting the sound system to any portable generator or inverter.
6. Repair of damage which is caused by using any other connection or hookup which is stated in this manual to be improper and likely to cause damage to the sound system.
7. Replacement of any unit which has been modified or altered in any way, by adding inputs or outputs, by permanently changing its appearance by painting, engraving in an exposed spot, etc.

8. Payments of any transit charges, freight, insurance, customs charges or brokerage fees, which may be incurred in providing warranty service involving international customers. Any such charges, if advanced by Hilton Audio Products, will be invoiced to the owner of the equipment.

9. Hilton Audio Products assumes no responsibility for any special, incidental or consequential damage.



## TOP DECK PANEL

### AUX. MUSIC & VOICE SECTION:

The VOICE or MUSIC out put signal level is individually adjusted with these controls.

### MUSIC SECTION:

The MUSIC volume control adjusts the loudness of the music program when playing a Laptop Computer, MP3, CD or other signal through the two AUXILIARY inputs. Adjustment of music volume can also be done by using the Hilton remote volume control assembly in conjunction with the volume control.

MUSIC BASS AND TREBLE CONTROLS: Adjust the bass and treble compensation for the music program. They have no effect on any of the voice program channels. Very wide latitude is provided, and we recommend using only the minimum adjustment from normal which will give you the music sound that you desire. See also the section titled GETTING THE MOST FROM YOUR HILTON.

### MICROPHONE SECTIONS:

Four high impedance microphone inputs are provided. Volume and tone controls are completely independent of each other, and of the music program.

MICROPHONE TONE CONTROLS: One of the features which makes the Hilton sound systems outstanding is the ability of their voice circuits to reproduce cleanly the high frequencies which are absolutely essential for voice clarity. If you have a voice in the bass range, turn the tone control to the right far enough to be sure that there is no boomingness; if you are a baritone, leave it near the normal setting.

### AUX 1/AUX 2 INPUTS:

These four controls are used to feed signals into the MUSIC section of the MA-220's preamp. Examples of signal input sources would be Laptops, MP3, CDs, Mini-Discs or Turntables. The controls marked BALANCE and LEVEL are input controls. These four controls are fed by the 3.5mm stereo jacks marked AUX 1 and AUX 2 on the Front Edge of the MA-220. The BALANCE adjusts the signal level between A & B of a two track or stereo signal. The LEVEL control sets the volume feeding the MUSIC section.

### POWER:

This red light comes on as soon as the AC power switch is turned ON.

#### AUXILIARY AC OUTLETS:

Two, three prong switched auxiliary AC sockets are provided. These outlets are switched off/on by the power switch in the POWER ENTRY MODULE. These are meant to be used for low wattage external devices such as: a wireless microphone, tape recorder, or CD player. Do not exceed 60 Watts combined. The circuit does go through the main fuse in the POWER ENTRY MODULE. **The voltage will be the same as the supplied line voltage.**

### FRONT EDGE PANEL

#### MUSIC OUT / VOICE OUT:

Two gold RCA phono jacks are provided for connecting to an external amplifier for monitoring either the voice or the music program. These outputs may also be used to connect an Assistive Listening System, a recorder, amplified speaker, or other system. The line level output signals are adjustable.

#### AUX 1 & AUX 2:

Two 3.5mm stereo jacks are provided for feeding signals into the MUSIC section of the MA-220.

Jacks AUX 1 and AUX 2 are used to feed signals into the system. The Top Panel controls marked BALANCE and LEVEL adjust the signal from these two jacks before the signal reaches the MUSIC section. Left and Right stereo signals can be connected directly to the two jacks or two separate signal sources can be connected. Examples of using these two jacks are: The left and right channel of a CD to AUX 1 and a MP3 player into AUX 2. See the section PLAYING LAPTOPS, MP3's, CD's, & ?, for more details on using these jacks.

#### MUSIC MUTE JACK

By connecting a Hilton microphone remote cable with reset button to this RCA jack the music may be muted for teaching or other purpose. When the reset button is pressed the panel indicator light will be red and the music will be muted until the button is pressed again. Pressing the button a second time and the music will resume playing and the indicator light will be green.

#### REMOTE CONTROL JACK:

By plugging in the Hilton remote volume control assembly into MUSIC REMOTE, the music volume can be adjusted with the knob at the microphone, without touching the knob on the top panel.

Recommended operation: Plug in the remote control cord and turn its volume full on. Set the MUSIC volume control at a level slightly higher than you need for best voice-music balance. With the remote control, decrease



the music level so that your voice comes out clearly over the music. Without touching the amplifier knob you can now adjust the music volume from the remote cord.

The remote will not turn the music totally off. If you do not want any music, use the MUSIC VOLUME control or the remote MUSIC MUTE feature.

#### MIC 1, 2, 3, & 4:

Four high impedance (mono 1/4" phone jacks) microphone inputs are provided.

### REAR PANEL

#### SPEAKER OUTPUT JACKS:

Two speaker jacks are located on the rear of the MA-220.

The speaker outputs are mono 1/4" phone jacks, compatible with standard mono 1/4" phone plugs. The jacks are connected in parallel with each other. Optimum impedance load is 4 to 16 ohms. Do not connect any combination of speakers which produces a net impedance load of less than 4 ohms. One series Y connector is furnished with the MA-220, for use in connecting more than two speakers. See the section titled SPEAKER HOOKUP for detailed instructions for hookup of multiple speakers.

Do not connect a tape recorder or any other sound equipment to the speaker jacks of the MA-220. Doing so could cause overheating of the amplifier, and possibly damage it.

#### SIGNAL OUT:

Two gold RCA jacks are provided, one marked HIGH and the other LOW. Both jacks will vary in volume with the setting of the MUSIC and MIC volume and the tone controls.

The HIGH jack is a variable line level signal (sometimes referred to as an auxiliary level). It is used to feed a line level signal to an exterior system.

The LOW jack is a variable microphone level signal. It is used to feed a microphone level signal to an exterior system.

These two jacks may be used for making monaural recordings from the MA-220, or to connect a slave amplifier to gain even more power and coverage. When using these outputs remember they are dependent on the volume and tone setting of the MUSIC and MIC controls.

See the sections titled MAKING RECORDINGS and CONNECTING TO AN EXTERNAL AMPLIFIER.

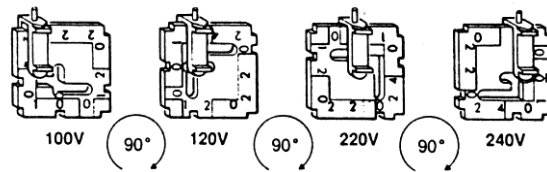
#### POWER ENTRY MODULE:

The power entry module contains the power off/on switch, fuse holder, voltage selector and power cord receptacle.

Units which have been damaged by connecting to a wrong power source will not be covered by the warranty.

To open the power entry module to replace the fuse or change voltage, use a small screwdriver or similar device.

Remove the power cord, at a 45 degree angle notches between the and the power module pressure towards the outward.



insert the tip of the tool into one of the power cord receptacle cover, and apply pressure towards the outward. pry cover while prying

To change the fuse: remove the fuse holder that is located under the cover and the fuse is easily removed and replaced. Recommended fuses for 100V or 120V operation: one MDQ3, (3 amp, 250V), for 230V or 240V operation; two GDC1.6, (1.6 amp, 250V), one for each power leg. Unplug the aux input before turning the unit on again. If the fuse again blows almost immediately, unplug the amplifier and do not attempt to use it until the cause of the problem has been determined. Refer to the trouble shooting section of this manual.

To Change Selected Voltage: Four AC voltages can be used with the MA-220: 100V, 120V, 230V or 240V. To change between voltages, pull the voltage selector card straight out of the housing using the indicator pin. Orient the selector card so that the desired voltage is readable at the bottom of the card. Orient the indicator pin to point up when the desired voltage is readable at the bottom. Insert the voltage selector card into the housing with the edge showing the selected voltage entering first and the printed side of card facing the fuse compartment. Reinstall the cover and verify the indicator pin shows the desired voltage.

#### **Voltage Selector Card Orientation**

If required, the fuse holder may be changed to take either a single North American fuse or two European standard fuses. To change, open the power entry module door and remove the fuse holder, insert the correct fuses, turn the holder over and reinstall. You will not see the fuses when the fuse holder is correctly installed in the power entry module. The European arrangement requires two fuses. Older model MA-220's require a Phillips screw driver to change the fuse type from European to North American type fuses.

The MA-220 is further protected by an internal thermal circuit breaker. In the event of too much heat build-up, the thermal circuit breaker will turn the MA-220 off. Once the heat has dissipated, the thermal circuit breaker will automatically reset itself. Turn the power switch off, and before restarting, check for the cause of the overheating. Improper speaker hook-up resulting in a low (under 4 ohms) speaker impedance is the most likely cause of overheating. A shorted speaker cord or Y connector are other possible causes.

### CONNECTING THE SIGNAL SOURCE AND PLAYING BACK LAPTOPS, MP3's, CD's, & ?

Why, you may ask, the ? in the above title? New products are coming out all the time in the audio industry. It is likely that other new systems are on the drawing boards or in the minds of engineers that we could not even guess at. Because of this, the MA-220 was designed with enough flexibility that all current, as well as future, designs will work with your MA-220!

We can make the last statement with confidence because of the design flexibility of the playback circuit in the MA-220. That being said, we must also point out that having this amount of flexibility requires a greater understanding of how to use it on your, the owner's, part.

**CAUTION:** Do not use the microphone inputs for tape playback.

**HUM OR BUZZ WHEN USING YOUR LAPTOP? — SEE PAGE 12 FOR THE EASY FIX.**

First let's go over some general rules for playing back through the MA-220. Later in this section we will get into specifics on connecting particular types of devices to the MA-220.

## SETTING THE CONTROLS:

Use caution in setting the INPUT LEVEL control and output volume from your signal source. Setting either too high can result in distortion, especially during peaks in the music program. Keep in mind that you are using the INPUT LEVEL controls and output control on the signal source to set the proper signal level going into the MA-220, not as volume controls. Once these are set, then use the MUSIC control to adjust the volume.

Before connecting the Laptop, MP3, CD, or ?, do the following to the MA-220. Set the music volume control at or below nine o'clock and the music bass and treble controls at normal. Set the BALANCE and the LEVEL controls at midway position. Connect the signal source as described below. With CDs and Mini-Disc players use the line out jack. Once connected, turn up only enough volume on the recorder or other signal source to get a soft listening level. If your unit has an auxiliary out jack, this may also be used, but the signal has a fixed level from the source. Now adjust the music bass and treble controls to get the sound quality that you want.

## PLAYING BACK MONAURAL MP3, CD, MINI-DISC, TURNTABLE OR OTHER SIGNAL SOURCE:

Connect a shielded cord from the output of the recorder or other signal source to either the AUX 1 or AUX 2 jacks on the Front Edge Panel. Set the controls as described above.

## PLAYING BACK STEREO MP3, CD, MINI-DISC, TURNTABLE OR OTHER SIGNAL SOURCE:

Connect a shielded stereo cord from the output of the recorder or other stereo signal source to AUX 1 or AUX 2 jacks on the front edge panel. Set the controls as described above.

## SETUP AND OPERATION

Set the unit on a smooth flat surface, avoid carpeting or any surface that may block the air vent slots on the bottom of the unit. Clearance under the unit is required to allow sufficient air flow for cooling.

Turn all the volume controls off, the power switch off, and set the tone controls at normal. Connect and turn on the music source. Set up your speaker or speakers. Connect them to the amplifier, following the instructions given in the section titled SPEAKER HOOKUP. Plug in your microphone.

Check to be sure that the power source is the correct voltage. Plug in the power cord, and turn the system on. Turn on the microphone and test by speaking into it--not by blowing into it. Adjust the music volume and tone controls. In a unfamiliar area, walk the floor to make sure that your speakers are properly located to cover the

entire area with a comfortable level of sound.

### SPEAKER HOOKUP

The minimum impedance load for the MA-220 is 4 ohms.

Depending upon the size, shape, and acoustic characteristics of a hall, getting comfortable sound coverage may require one, two or more speakers. It is important to locate them properly, for best coverage of all areas of the floor. For information on locating speakers in the hall, see the heading SPEAKER LOCATION in the section titled GETTING THE MOST FROM YOUR HILTON.

It is also very important to connect them properly, to the amplifier and to each other, to get the best performance from the amplifier and from the speakers.

In a multiple speaker hookup, it is necessary to consider impedance. This is the electrical resistance of the voice coils of the speakers. The lower the impedance, the more electrical energy is applied to the speakers. This is why specifications on power amplifiers will show a given power rating into an 8-ohm load, and a higher power output into a 4-ohm load.

If a loudspeaker were 100% efficient, all of the electrical energy delivered to it by the amplifier would be converted into sound energy. Unfortunately, speakers are not 100% efficient; in fact even the highest quality speakers in the best designed enclosures are no more than 25% efficient. The electrical energy which is not converted to sound by a speaker is converted into another form of energy--heat. This heat must be dissipated at two points: the voice coil of the speaker, and at the amplifier. Excessive heat at either point can cause damage to the sound system.

Improper hookup can cause excessive heat dissipation, and this problem is compounded when less efficient speakers are used.

By carefully following the instructions in this manual for speaker hookup, you will maintain the best net impedance load for various speaker combinations. Improper hookup of speakers can cause embarrassing interruptions of your program, even if you are using Hilton speakers. Over-driving speakers with low power ratings or connecting them improperly can cause damage to the speakers, and in the event of a shorted voice coil, possibly cause damage to your amplifier.

#### ONE HILTON PS-10 OR LB-1 SPEAKER

Plug directly into one of the speaker jacks. Impedance: 4 ohms.

#### ONE HILTON WORKSHOPPER OR FOLDED HORN SPEAKER (FH-10 OR FH-12)

Plug directly into one of the speaker jacks. Impedance: 8 ohms.

#### TWO HILTON PS-10 OR LB-1 SPEAKERS

Plug each speaker into a series Y, then plug the Y into one of the speaker jacks. Impedance: 8 ohms.

#### TWO HILTON WORKSHOPPER OR FOLDED HORN SPEAKERS (FH-10 OR FH-12)

Either plug both speakers into the amplifier or plug one speaker into the amplifier and connect the second speaker to the first speaker. Impedance: 4 ohms, either way.

#### MORE THAN TWO SPEAKERS

DO NOT CONNECT MORE THAN TWO 8 OHM SPEAKERS OR MORE THAN ONE 4 OHM SPEAKER TO THE MA-220 WITHOUT CAREFULLY READING THE INSTRUCTIONS WHICH FOLLOW, AND THE DIAGRAMS CONTAINED IN THIS MANUAL.

#### HOW TO DETERMINE NET IMPEDANCE

To determine the net impedance of a given combination of speakers, it is necessary to understand and apply the following:

IMPEDANCE: The resistance produced by the voice coil of a speaker, expressed in ohms. Hilton Folded Horn and Workshopper speakers are 8 ohms, the PS-10 and LB-1 are 4 ohms; other makes have varying impedances, usually from 4 to 16 ohms.

PARALLEL CONNECTION: A hookup in which the output of the amplifier is divided among speakers, with part of the output going to each speaker. The speaker jacks are connected in parallel. The jacks on top of the Hilton Folded Horn speaker are also connected in parallel with each other.

SERIES CONNECTION: A hookup in which all of the amplifier output passes through each speaker in turn, instead of being divided up among them. If you plug a series Y connector into the amplifier and connect one speaker to each leg, you have the speakers connected in series.

SERIES-PARALLEL CONNECTION: If you have two groups of speakers which are connected in parallel within the group, and connect one group to each leg of a series Y connector, you have a series-parallel connection.

NET IMPEDANCE--The combined impedance of all speakers in a hookup:

(Each speaker must be the same impedance)

IN PARALLEL--the impedance of 1 speaker, divided by the number of speakers in the parallel hookup.

IN SERIES--the impedance of 1 speaker, multiplied by the number of speakers in the series hookup.

IN SERIES-PARALLEL--the net impedance of each parallel group, multiplied by the number of parallel groups connected in series.

The minimum impedance load for the MA-220 amplifier is 4 ohms, for best operating results. Hilton Workshopper and Folded Horn speakers are 8 ohms and the LB-1, WA-180, and PS-10 are 4 ohms. Two 8 ohm speakers connected direct to the MA-220 produces a 4-ohm load. If you should connect four 8 ohm speaker in parallel or two 4 ohm speakers directly to the MA-220, this parallel connection produces a 2 ohm load, which at high drive levels will produce excessive energy which is dissipated in the form of heat and cause the MA-220 to shut down.

The hookup diagrams in this manual show correct use of the series Y connectors for hookup of 4, 6, and 8 speakers, to obtain equal volume level from each speaker and maintain proper net impedance. If it should be necessary to connect 5 or 7 speakers, a slave amplifier should be used. It is impossible to get equal volume from these combinations with a single amplifier.

If you must use a speaker hookup not shown in these diagrams, or if you plan multiple hookup of speakers not manufactured by Hilton, the following points must be considered:

1.You must use a hookup which will produce a net impedance load of 4 ohms or higher.

2.The net impedance to each leg of a series Y connector should be the same, or the speakers driven by one leg will receive more energy and therefore produce more volume than those driven by the other leg.

3.Different makes and types of speakers have different degrees of efficiency and will produce different sound volumes when driven at the same amplifier output level. Mixing different types of speakers is not recommended, but if you must do so, use the more efficient speakers nearest the center to cover the main portion of the floor, and the less efficient ones at the ends to cover the two front corners of the floor.

#### CONNECTING SPEAKERS OTHER THAN HILTON SPEAKERS

Any one speaker with the impedance of 4 ohms or higher can be connected directly to the MA-220.

Before connecting two speakers, first find out their impedance. If they are 8 ohms or higher, use the same hookups as for the Hilton Workshopper or Folded Horn speakers. Two 4-ohm speakers must be connected in series, use the hook-up for two Hilton PS-10 or LB-1. For other combinations, follow the instructions given above to obtain a net impedance of no less than 4 ohms.

CHECK THE POWER RATING OF THE SPEAKER AND BE CAREFUL NOT TO EXCEED IT. Over-driving of a speaker with a low power rating can result in any of the following: 1. Distortion of the program. 2. The voice coil may become jammed at one end of its excursion, making the speaker inoperative. 3. A short circuit may occur in the voice coil, ruining the speaker and possibly causing damage to your amplifier.

**NEVER CONNECT TWO AMPLIFIERS TO THE SAME SPEAKER OR SPEAKERS!**

### GETTING THE MOST FROM YOUR HILTON, AND AVOIDING DAMAGE TO IT

#### MICROPHONE TECHNIQUE

Always work close to your microphone -- never let it get more than an inch from your lips. Work straight into it, as much as possible. Holding the microphone too far from your lips, or speaking across it rather than into it, can rob you of more than half the power and efficiency which is built into your Hilton. If you hold your microphone two inches from your lips, it won't pick up half as much sound as at one inch--it will pick only one-fourth as much. If you then try to turn up four times as much gain in an attempt to be heard, you will be fighting feedback.

#### FEEDBACK

The feedback squeal can occur at any time that power is turned up on an amplifier and an open microphone is near a loudspeaker. The more power is turned up, or the closer the microphone is to the speaker, the more likely feedback will occur. The squeal is caused by sound from the speaker being picked up by the microphone and fed back into the amplifier. It is almost always the result of bad microphone technique, working so far from the microphone that you have to turn up an excess of power in order to cover the floor. It can also be caused by standing too close to a speaker. Only very rarely is feedback caused by any defect in the sound system.

#### SPEAKER LOCATION

Speakers should be placed so that the entire area is covered with sound. You should set up so that you can get close enough to a speaker to be able to hear the voice-music balance, but not so close that you are continually fighting feedback. Try never to aim a speaker directly at a hard, flat, painted or paneled wall, which will cause



echo and bounce-back of sound. If you must direct speakers towards such a surface, tilt them downward. Wherever it is practicable, direct speakers towards an absorbent surface--one which is draped or acoustically treated.

### USING YOUR TONE CONTROLS

In a hall which is excellent acoustically, you can set your tone controls, within limits, almost any way you choose, to get the sound quality of voice and music that you prefer.

But in a hall which is reverberant, not only must the voice-music balance be adjusted to compensate for the acoustic conditions, but the tone controls for both music and voice must also be adjusted. In a reverberant hall, not only must you cut the music volume down, but you should also use your tone controls to remove excess bass boominess from the music, and take out some of the highs in the music.

### REVERBERATION TIME

To determine the reverberation time of a hall, stand in the center of the empty hall, clap your hands, and carefully count the number of seconds before the sound dies away completely. 1 second or less: excellent acoustic conditions. 2 to 2-1/2 seconds: not good, but with speakers placed properly and careful attention to voice-music balance and tone compensation, it is possible to get fairly good sound, with good intelligibility. 3 seconds or more: the sound will not be good, no matter what equipment you use or how well you operate it. Only acoustic treatment of such a hall will help produce better sound.

### HANDLING AND TRANSPORTING

Your Hilton is designed for ruggedness, and with the normal handling to be expected in portable use, it will give you years of trouble-free service. You may stow components in any position for transporting, as long as they are protected from being excessively bumped or banged around.

### MAKING RECORDINGS

There are many types and brands of recorders on the market, ranging from very compact and inexpensive, up to premium quality models with quite sophisticated features. Even within the same price range, one model may have different characteristics from another, and the same hookup which produces good results with one recorder may not do so with another. Therefore, it may require a bit of experimenting to arrive at the hookup and adjustments which give the best results with a given recorder.

### CAUTION

Do not allow anyone to connect a recorder directly to the speaker socket, to the series Y connector, or to any

socket on a speaker. Some recorders have inputs of such low impedance that if they are connected in a speaker circuit they produce the same effect as an improper speaker hookup: overheating and possible damage to the MA-220.

### MONAURAL RECORDINGS

Use the SIGNAL OUT jacks on the Rear Panel to make Monaural recordings with full program (the same as is going to the speaker). The HIGH jack is an adjustable line level signal and would be connected to the Line or Auxiliary input of your recorder. The LOW jack is an adjustable microphone level signal and would be connected to the Microphone input of your recorder. The signal strength at these two jacks is dependent on where the MUSIC and MIC volume (and tone) controls are set. If you have a choice of using either one with your recorder we suggest you make short test recordings both ways to find which one works best with your recorder.

If you have a recorder that has an automatic recording level control (ARL or ALC) and you use this feature, it will record with a wide range of input signal strength. But during pauses with no signal, there may be annoying hash or background noise. Some of these units also have a manual adjustment for recording level, therefore we recommend using the manual control to avoid this noise problem.

Another way to make monaural recordings is by the use of a telephone pickup (also referred to as "inductive pickup's"). These are available at many outlets--Radio Shack, for instance. To use one of these pickups, loop your speaker cord around it and secure it snugly with a rubber band. Plug the other end of the cord into the microphone input on the recorder. With some recorders, this produces better results than a direct hookup. No matter what recorder is used, no damage can be caused because there is no direct contact with your sound system; the pickup is made through the insulation on the speaker cord. One other advantage is multiple recorders can be connected. The speaker cord must be connected to a speaker, or no signal will be produced.

### TWO TRACK RECORDINGS

By connecting a stereo recorder to the MUSIC OUT and VOICE OUT gold RCA jacks on the front panel, two track recordings with voice on one track and the music on the other track may be made. A patch cord with two RCA plugs on one end and the other end to match the record jack/s on the recorder is required. The signals level out from the MA-220 is adjustable with the AUX. MUSIC OUT and AUX. VOICE OUT volume controls.

### CONNECTING TO AN EXTERNAL AMPLIFIER

The gold RCA jacks, OUTPUTS - LOW and HIGH, on the Rear Panel can be used for feeding a signal to an

external amplifier or a "House" sound system. The LOW output is used to connect into a high impedance microphone input of another amplifier, or recorder. Use the HIGH output to connect into a "line", or, auxiliary input.

If the slave amplifier must be located more than 30 feet away from the main amplifier, the use of a plain shielded high impedance cable is not recommended, because of the noise that will be introduced into the system. In this case, you must use sufficient length of LOW IMPEDANCE cable, and a pair of LINE MATCHING TRANSFORMERS.

Disconnecting a slave hookup: Before disconnecting, make sure that both the main and the slave amplifiers are turned off. If they are turned on and volume controls are turned up, unplugging will cause a loud pop in the speakers, and even possibly damage them.

### ROUTINE INSPECTION AND MAINTENANCE

Routine cleaning and inspection of your sound system, microphone and cords will help in preventing trouble and maintain the appearance and performance of your Hilton.

#### POWDER COATED AND FINISHED SURFACES

Clean all of the powder coated and finished surfaces and knobs with a soft cloth or sponge dampened with a mild detergent solution. Do not use harsh chemical cleaners or solvents as they may damage the surface. A vacuum cleaner with a duster brush attachment does a good job cleaning dust and loose dirt on the amplifier.

#### CHECKING OF PLUGS, SOCKETS, AND CORDS

Cords, plugs, and sockets take more punishment than any other component of your sound system. For this reason, they should get extra attention, more frequent checkups, and extra care in handling and stowing to prevent failure in operation. Fortunately, there are advance warning signals before these components fail. If you know what to look for, you can avoid embarrassing failures.

To check your cords, set up your sound system and plug in your mic. Wiggle each plug in its socket and flex each cord along its length; do this for all mic and speaker cords. Listen for static and interruptions, which are warning signals of future trouble.

#### CHECKING THE MICROPHONE

Check your microphone from time to time -- has its response changed? A mic whose diaphragm is starting to

drag will lose its bass response and sound tinny, and there will be an increased susceptibility to feedback. Care of a microphone is fairly simple. Don't drop it, don't blow into it and don't spray or squirt anything into it in an attempt to clean it. Keep your microphone in a dry place when not in use. Excessive moisture inside the microphone can cause corrosion and oxidation resulting in unnatural sound or a complete microphone failure. While checking your microphone look for any screws that might have loosened on the mic itself or on the remote cord assembly. Carefully tighten any loose screws or nuts, and replace any that are missing. Examine the microphone cable especially where the wires enter the plugs -- look for frayed or bare wires and loose connections. With the microphone plugged into the amplifier and turned on, speak into the mic while moving the cable. Listen for crackling noises or intermittent operation indicating broken or loose wire/s. Microphone cables are constructed with shielded cable and like any wire will withstand only so many twists and bends before the wires will break. When storing your mic cord, coil the cord avoiding sharp bends -- this will certainly extend the life of your microphone cord assembly.

### CHECKING SPEAKERS

If a speaker has been dropped or handled roughly, it may develop a misalignment of the voice coil resulting in a "dragging cone". To check for this, hook up the speaker to the amplifier and play some music. Turn the volume off, and set the bass at maximum and the treble at minimum. Put your ear close to the speaker and turn up the volume only enough to hear the music clearly. If the cone is dragging, you will hear a rasp on each bass note. The speaker may sound normal at your usual volume and tone setting, but over time the problem may become worse and will require replacing the speaker. While the speaker is connected set your tone controls for normal and turn up the volume while playing the music. Listen for any rattles or vibrations caused by loose grill or trim. Tighten any screws as necessary.

Establishing a routine schedule of cleaning and examination of your sound equipment could very well keep you from having an equipment failure at a most important time. Whenever you set up or take down your equipment, keep your eyes open for signs of wear, corrosion, looseness, etc. and correct any of these problems as soon as possible. Your equipment serves you well and without it you're out of business -- give it the care it deserves.

### IN CASE OF TROUBLE

Your Hilton was carefully assembled and tested before it was delivered to you. It is backed by our two-year warranty against failure of any component in normal use. Refer to page two for complete warranty information. If trouble should occur in the course of normal use and operation, which is not caused by accident or abuse, we will promptly honor the terms of our warranty, PROVIDED THAT YOU NOTIFY US BEFORE ATTEMPTING REPAIR. Upon such notification, we will make every effort to correct the problem, by having repair done locally if feasible, or by replacement of the defective unit at our expense, or by furnishing loaner equipment for your use

while we do the necessary repair.

**NON-WARRANTY REPAIR:** Even when your warranty is no longer in effect, we advise that if a problem should develop, it would be wise to phone us before attempting repair. It is quite possible that we could save you time and money in helping you get your sound system back in operation. There is also repair and servicing information on our web site

#### BEFORE NOTIFYING US:

If any part of your Hilton sound system should develop a problem, the information that you give us should be as detailed as possible, in order for us to provide you the best and fastest service possible.

For example, if a microphone should stop working, the source of the trouble might be in the microphone itself, in the cord, or in the input of the amplifier. A few simple tests before notifying us would be of great value in isolating the source of the problem and correcting it quickly for you. Listed below are some tests that you could make in the event of trouble, which would be of great help to us in giving you the best possible customer service.

#### NO VOICE OR MUSIC:

Recheck your speaker hookup to be sure that all terminals are firmly connected, and not worn or corroded.

If this problem occurs while you are using only one speaker, if possible check the same speaker with another cord and the same cord with another speaker, to see if the problem is in the speaker, the cord, or the amplifier.

If this should occur while you are using two or more speakers with a series Y connector, remove the Y connector and check each speaker and cord individually by plugging one speaker at a time directly into the amplifier. This will determine if the problem is in one of the speakers, one of the cords, the Y connector, or in the amplifier itself. In a series hookup, if one speaker or one cord has a bad connection, you will get no sound at all from the other speakers. By eliminating a faulty component from a series hookup, the rest of the system may be reconnected and will operate properly.

If your cords, speakers, and Y connectors all check out OK, the problem is in the amplifier. If you do these tests before calling us, we can identify and correct your problem much more quickly.

#### MUSIC ONLY--NO VOICE:

Try one of the other microphone inputs. If possible, try another microphone and another mic cord before notifying us.

#### VOICE ONLY--NO MUSIC:

Check connecting cables from the music source. Try both AUX 1 and AUX 2 inputs. Also check the AUX 1 &

2 INPUT LEVEL and BALANCE controls for correct setting. Check the MUSIC OFF/ON indicator light. It should be green.

#### DISTORTION:

Check to see if both music and voice are distorted. If music only, try decreasing the volume at the AUX input level control. Also try decreasing the volume at the source - the tape or CD player. Remember that these controls are only to match the signal source to the MUSIC volume controls. Homemade tapes are often over recorded -- such a tape will always have distortion when played back. Try another tape -- with settings left alone -- to make certain you are not fighting an over-recorded tape. If voice only, try another mic input; try a different microphone. If both voice and music are distorted, check if with another speaker. If using two speakers check to see if both are distorting.

#### SPEAKER DEAD OR INTERMITTENT:

Recheck all speaker connections. Switch cords and speakers to see if the fault is in the speaker or in the cord.

#### AMPLIFIER GOES DEAD:

Check to see if the power switch is on. If it is, check the AC hookup and source of power. Take out and check the fuse. IF USING MORE THAN TWO SPEAKERS, MAKE SURE THAT Y CONNECTORS ARE IN USE AND PROPERLY CONNECTED. MAKE SURE THAT NO TAPE RECORDER IS CONNECTED TO ANY SPEAKER OR SPEAKER SOCKET. If the amplifier is hot, wait until it cools before restarting.

#### HUM OR BUZZ WHEN USING A LAPTOP COMPUTER

If your laptop computer has a three prong AC power cord where it plugs into the wall AC outlet you may need a 2 prong adapter. Laptop computers use a "Switch Mode" power supply and unfortunately these tend to generate noise on the ground line that can be picked up and amplified by the sound system. An easy check — if your laptop does not have this problem when used on it's battery, the problem is the switch mode power supply.

## MULTIPLE SPEAKER HOOKUP DIAGRAMS

