OPERATING INSTRUCTIONS
FOR THE
SOUND AND TELEVISION SYSTEMS

(FOR THE AUDIO/VISUAL SPECIALIST)

These instructions are intended for the Audio/Visual Specialist who is called upon to set up the sound ad television systems.

Generally, the instructions are written for a person with minimal technical training. In some cases a more technical explanation is also given for the benefit of those with a greater technical background.

CHAPEL SOUND SYSTEM

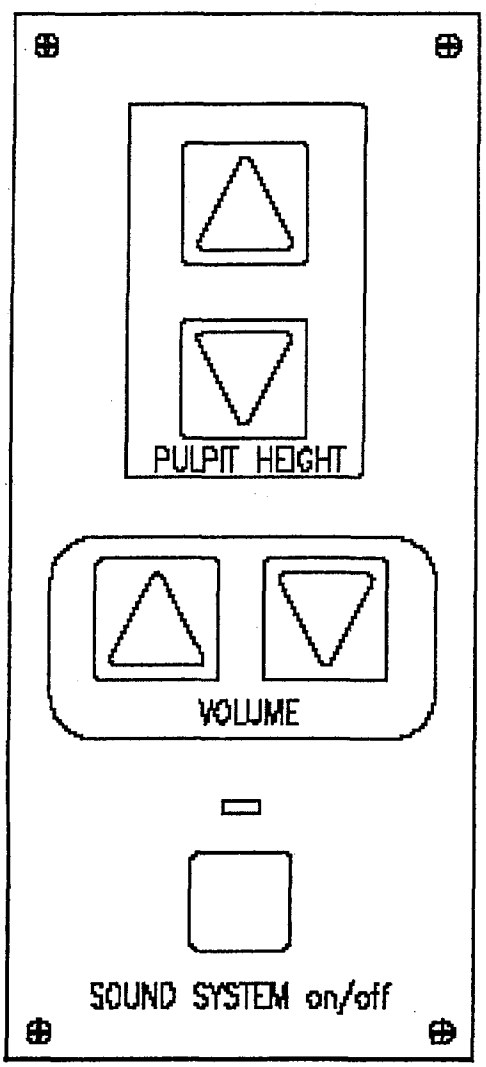
DESIGN CRITERIA

The Chapel has been designed acoustically to strike an appropriate balance between speech and music for Latter-day Saint services. The reverberation time has been chosen to enhance instrumental music and hymn singing by the choir and congregation, but has been kept low enough for good speech intelligibility and control of unwanted noise. Wherever possible, room surfaces are designed to avoid repeating echoes (flutter) and many wall and ceiling surfaces are sloped to reflect and enhance choral and congregational singing.

The sound reinforcement system is designed primarily for natural and intelligible speech reinforcement. Another consideration is the playback of music, as in satellite broadcasts. Most live music in the Chapel will be performed using the natural acoustics without electronic reinforcement, except for a microphone placed near an instrument or a soloist.

The system is designed to be used by lay members who are not professionally trained in public speaking and operated by people who are not technically experienced.

The sound system is computer controlled and is secured by proprietary software and access codes. THERE ARE NO USER CONTROLS AVAILABLE FOR ADJUSTMENT.



CHAPEL CONTROL PEDESTAL

The Chapel sound system is controlled from the control pedestal on the rostrum. Power, volume and pulpit height are controlled here as explained earlier. Satellite volume is controlled by the satellite control.

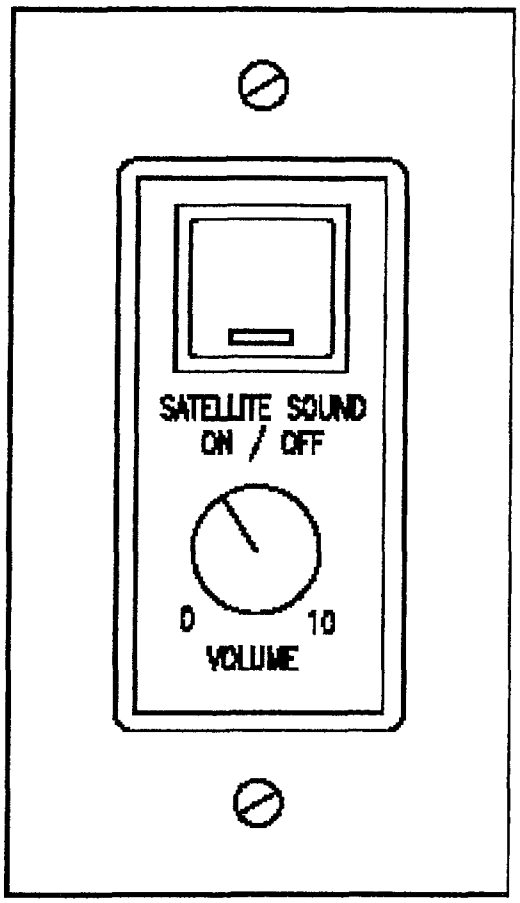
The following is additional information concerning these controls:

POWER

The power switch may be left on throughout the day without reducing the life of the equipment, and power consumption is low. The only significant advantage in turning the system off is to prevent small children from playing with the sound system.

VOLUME

The volume control is limited to a range of 10 dB so that even if the control is inadvertently left at the lowest setting, the system will still be functional. With the volume control at the highest setting, the system will not go into feedback.



SATELLITE VOLUME (separate panel)
This control adjusts the volume of the satellite audio and is labeled SATELLITE because it typically controls one of the language channels from the satellite receiver. Both the power switch on the control pedestal and the satellite switch must be pushed for the satellite sound to be heard. The level is adjusted on the satellite control. When the satellite switch is pushed, the other Chapel microphones will NOT work.

AUTOMATIC MIXER
This system uses an automatic mixer which performs tasks usually performed by a human operator with a conventional mixer, only the automatic mixer does them faster and more accurately. The input is turn on when someone speaks into the microphone and is turned off when the microphone is not being used.

The automatic mixer automatically keeps the overall system gain at the maximum possible level, depending on the number of microphones being used.

SACRAMENT TABLE MICROPHONE
The sacrament table microphone is switched on when the microphone cover is pulled down, exposing the printed prayers. The prayers are intentionally printed with small type to encourage the Priesthood holder to get close to the microphone. It is recommended that separate printed cards containing the prayers not be placed at the sacrament table, so the Priesthood holder must remember to open the microphone and thus turn on the microphone.

AUXILIARY MICROPHONE JACKS

Microphones for blessing of babies, testimony bearing, language interpretation, or musical numbers may be connected to a microphone input jack on the front of the rostrum or the input near the piano, if provided.

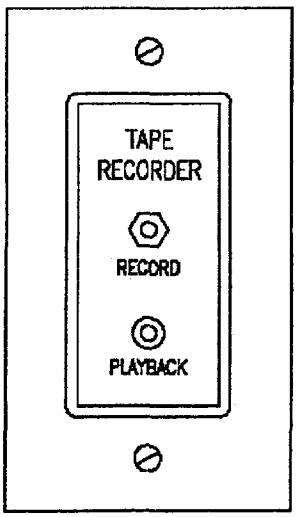
The multi-input adapter box, described later, may also be connected to these inputs to reproduce the sound from a VCR, tape player, or other audio playback device.

Electronic amplification of the choir should not be necessary. The pulpit microphone normally provides satisfactory pickup of the choir for the Cultural Center, Mothers' Room, Foyer, and other overflow areas.

OTHER MICROPHONES

The sound system has been balanced and equalized for optimum performance with the microphones supplied with the system. Substituting other microphone types will result in degradation of quality. Refer to the maintenance section if replacements are needed.

Wireless microphones are not used in meetinghouses because of cost considerations, complexity, and reliability. They are neither furnished nor maintained by the Church.



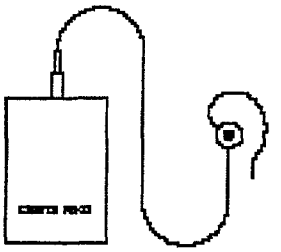
RECORDING AND PLAYBACK

A recording jack is provided for recording certain types of meetings in the Chapel. This output is "line level". This is intended for the auxiliary input of an audio cassette recorder. The use of this feature is at the discretion of the presiding authority.

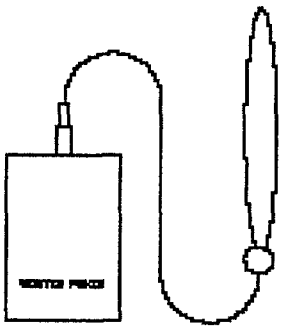
Cassettes can also be played back into the sound system. The output from the cassette player headphone jack is plugged into the playback input. The level is adjusted with the volume control on the cassette player.

HEARING IMPAIRED SYSTEM

Church members who use a personal hearing aid often find that it does not adequately receive the sound from the sound system. Others with minor hearing impairment, although not requiring a hearing aid in their normal everyday activities, also find it difficult to understand speech in public assembly rooms. To help these people, the Chapel sound system includes a wireless hearing impaired system.



A low power radio transmitter broadcasts to small pocket-size receivers worn by each user. The receiver sends the sound to a small earphone. A special neck loop is also available that re-transmits the signal to the user's own hearing aid. The hearing aid must be of the type that has a switch for use with a telephone, and the switch must be in the "T" (telephone) position.



The Church hearing impaired systems operate in the 70 MHZ band. Wherever possible, all of the meetinghouses in a Stake operate on the same channel so that members attending Stake Conferences can use the same receiver as at the ward building.

Each new meetinghouse sound system comes equipped with two receivers. Additional receivers can be obtained by calling your Facilities Manager.

To prevent interference with other radio services, the power radiated by the hearing impaired system transmitter is limited by the Federal Communications Commission. This typically restricts reception to within the meetinghouse. The intent of the Church is to provide hearing assistance to those seated in the Chapel and Cultural Center. The transmitter or antenna should not be modified in an attempt to increase the coverage.

The users should be instructed that the earphone jack is also the power switch so the earphone or neck loop should be unplugged when not in use. Earphones should be given to repeat users because of sanitary reasons. The pocket sized receivers should be checked out of the materials center.

PERIPHERAL ROOMS

If there is an overflow room between the Chapel and Cultural Center, the sound is automatically switched "on" to this area by opening the folding door to the Chapel. The volume has been preset for the proper balance.

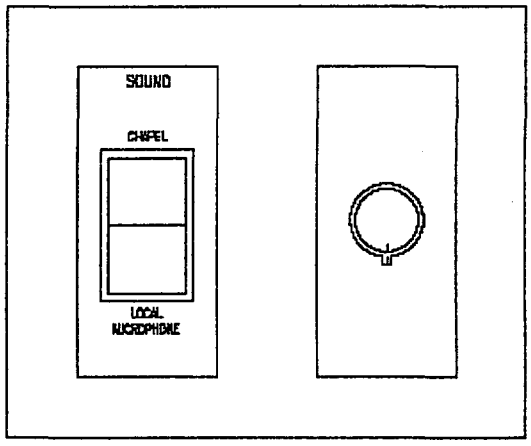
Some rooms in the meetinghouse are equipped with loudspeakers that receive overflow sound from the Chapel or Cultural Center. A volume control in each room adjusts the level.

If the Chapel is on, the peripheral rooms and the hearing impaired transmitter receive sound from the Chapel. If the Cultural Center is on and the Chapel is off, the sound originates in the Cultural Center. If both rooms are turned on, the Chapel is heard.

CHILDREN'S MEETING ROOM AND RELIEF SOCIETY ROOM

These rooms may receive overflow sound from the Chapel or Cultural Center or may be used independently using microphones in the room.

SWITCH



CHAPEL

To overflow from the Chapel or Cultural Center, press the top portion of the switch.

OFF

To turn the sound off in the room, move to the center position of the switch.

LOCAL MICROPHONE

To turn on the microphones in the room, press the bottom portion of the switch.

VOLUME CONTROL

This volume control adjusts the volume level for both overflow and local microphone volume. The 7 o'clock position is off. The 5 o'clock position is maximum. Volume increases as the volume control is turned clockwise from the 7 o'clock (off) position.

CULTURAL CENTER

DESIGN CRITERIA

The Cultural Center ceiling and walls have been acoustically designed to lower the reverberation time for suitable speech reproduction and to lower the sound level of sports activities.

The sound reinforcement system has been designed for the reinforcement of both speech and live music at moderate volume levels. Some specific examples for which the system is well suited include overflow from the Chapel, announcing of sporting events, enhancement of stage plays and musicals, and playback of recorded music at reasonable levels for dances and aerobics classes.

The system is designed to be used by lay people who are not professionally trained in public speaking and operated by people who are not necessarily technically proficient.

The Cultural Center sound system has been designed to meet the needs of normal programs of the LDS Church. It is not intended to reproduce the high sound levels usually present at rock concerts and commercial dance halls, nor is it intended to have the complexity and versatility of large professional theater sound systems.

CONTROL PANEL

POWER BUTTON

To turn the system **on** press the power button. The folding door between the Chapel or Overflow and Cultural Center must be closed.

MANUAL MODE

This is used when more control is wanted of the microphone levels. The button overrides the automatic mixer and gives the user control of the microphone levels using the volume controls.

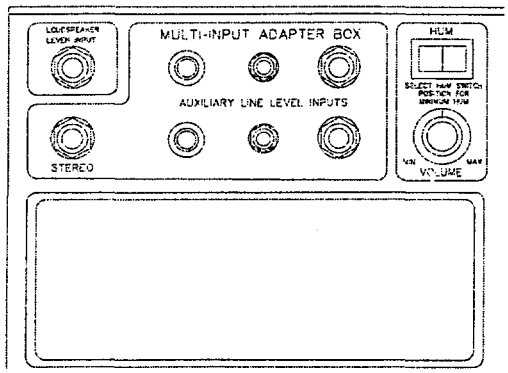
MIC 1, MIC 2, and MIC 3
In the manual mode:
Mic 1 controls microphone 1 input in the room.
Mic 2 controls microphone 2 input in the room.
Mic 3 controls the microphone input and the 2 auxiliary inputs on the control panel.

CULTURAL CENTER MIXER
The Cultural Center mixer is preset so that a single microphone or multiple microphones may be used in the Cultural Center with minimal set up. Simply press the power button and plug the microphones into any jack in the room. The Cultural Center sound system will be configured this way for most activities such as Primary meetings, aerobics classes, or sporting events.

OTHER MICROPHONE TYPES
The sound system has been equalized for optimum performance with the microphones supplied with the system. The system will not perform as well with microphones that have different frequency response, phase, and directional patterns. If additional microphones are needed, the FM Group can obtain microphones with the same performance as those provided.

The microphones supplied are directional (super-cardioid), so they will be more sensitive to the sound from the performer in front of the microphone and will reject unwanted sound from behind it. Omni-directional or hemispherical pattern boundary microphones do not discriminate between wanted and unwanted sound, and consequently give less gain before feedback than the cardioid microphones supplied.

ADAPTER BOX



A multiple input adapter box (EJ-8) is provided in each meetinghouse to connect outside playback devices to the sound system. This can be used to connect a portable cassette player, video cassette player, compact disk player, portable stereo ("Boom Box"), an auxiliary sound mixer, or similar device to a microphone input jack of the Chapel, Cultural Center or other meetinghouse sound systems.

Instructions for these and other uses are found in the booklet in the inside pocket of the adapter box cover.

SOUND SYSTEM CABINET

A metal equipment cabinet contains the sound system amplifiers, mixers, equalizers, and related equipment. All user controls are located in the Chapel, Cultural Center, or other rooms in the building. **There are no user controls within the cabinet, so it should remain locked.** All sound equipment has been adjusted and equalized for optimum system performance by the sound/acoustical consultant using sophisticated computerized acoustical measurement equipment. **CHANGING ANY OF THE SETTINGS ON THE EQUIPMENT IN THIS CABINET WILL VOID THE WARRANTY. ANY NECESSARY SERVICE WILL BE AT LOCAL EXPENSE.**

TELEVISION DISTRIBUTION SYSTEM

The television distribution system is used to distribute the audio and video of a satellite broadcast from Salt Lake City or a function held within a stake center. The picture can be displayed on a large screen projector in the Chapel or Cultural Center or on television receivers in designated classrooms. The sound is heard over the room sound systems or the television receiver. Authorized recordings can be made on VCRs placed in any of the rooms with television jacks.

DEFINITION OF TERMS

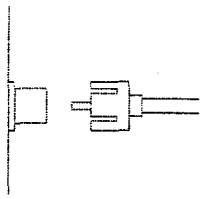
Selected terms will be defined before discussing the operation of the television distribution system. The type of connectors used for each type of signal and their labeling will also be described.

AUDIO

Sound, in the form that it can be transmitted or processed electronically. Sound is converted to audio by a microphone and then amplified, recorded or transmitted, and then converted back to sound by a loudspeaker.

VIDEO

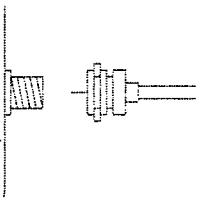
An image or picture in the form that can be transmitted or processed electronically. An image is converted to video by a camera and then transmitted or recorded, and then converted back to an image by a television receiver.



The connectors used in the meetinghouse television distribution system for video are of the type called "RCA" jacks. These are the same type usually used for video inputs and outputs on VCR's and home TV cameras.

RF (Radio Frequency)

Audio, video, or audio and video combined, that have been converted to a Radio Frequency signal by a modulator, in our case, to a standard TV broadcast channel. It is distributed on the television distribution cable and received by a standard TV receiver. At home, RF is what the TV set receives from the rooftop antenna or cable provider. The RF input on a VCR is often labeled "ANT" while the RF output on a VCR or television camera is labeled "TV." In keeping with this convention, RF outputs in the meetinghouse are also labeled "TV."



The connectors are "F" type, commonly used in 75 ohm coaxial cable TV antenna systems.

MODULATOR

Modulators receive audio and/or video signal and converts it to RF. The modulator converts the audio and video signals to a standard VHF broadcast television channel, usually Channel 3 or Channel 4. Other channels are used for different languages and for Stake Conference overflow in Stake Centers.

TELEVISION RECEIVER

Any standard consumer style television set can receive an RF signal (standard TV channels).

LARGE SCREEN TV PROJECTOR

Projectors display video signals on a large screen. Most large screen TV projectors accept only video signals and not RF.

SATELLITE RECEIVER
The satellite receiver inputs an RF signal (satellite channels) from the satellite dish and converts the signal to separate audio and video signals. The satellite channels are completely independent of the standard TV broadcast channels.

SATELLITE LANGUAGES (NOT IN ALL BUILDINGS)
If multiple languages are installed, they can be accessed on different TV channels.

STAKE CONFERENCE OVERFLOW
Video distribution originating in the building is also on a separate TV channel. Video is sent to the modulator from a camera plugged into the camera jack. Audio is fed directly from the sound system.

VCR RECORDING
The VCR inside the video system cabinet can be used for recording purposes. An A/V cart with a VCR and TV receiver can also be plugged into the auxiliary RF jack in the video cabinet or the RF jacks in other perimeter rooms.

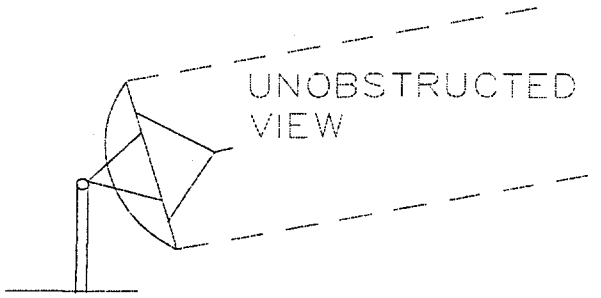
If simultaneous multiple recordings are required, it is recommended to use multiple RF jacks, rather than 75 ohm antenna splitters due to signal degradation.

Verify with Priesthood leaders that any recording is permitted by Church policy and copyright laws.

TELEPHONE JACK
A telephone jack is provided in or near the video equipment cabinet. The jack is connected as an extension to the Ward or Stake office telephone that has been selected by the local Priesthood leadership. A Salt Lake "Help Number" is available in case of problems during satellite broadcasts.

SATELLITE RECEIVING SYSTEM

The satellite receiving system consists of a parabolic dish receiving antenna with a Low Noise Block Converter (LNB) and satellite receiver.



SATELLITE DISH

The satellite dish has been aimed to the only satellite the Church uses for satellite broadcasts so it should not be moved.

Check the dish before each broadcast and carefully sweep out any accumulation of debris or snow. Be careful not to scratch the dish's finish. Accumulated ice can be washed out with diluted antifreeze. Check a small area first to verify that the paint will not be damaged.

If you are in an area where the dish is aimed to a very low angle of elevation, be sure there are no vehicles parked in front of the dish. Some satellite dish enclosures have large gates in front of the dish that must be opened during a broadcast. Barricade the parking stalls in front of the dish if necessary to prevent vehicles from obstructing the dish. Trees or other vegetation should be kept from obstructing the view of the satellite dish.

SATELLITE RECEIVER POWER

All of the equipment in the video system cabinet should be left on all the time except the television and the VCR. This will not shorten its life and the power consumption is low.

VIDEO EQUIPMENT CABINET (NOT IN ALL BUILDINGS)

The video equipment cabinet contains the satellite receiver and television distribution equipment. This cabinet contains user operated equipment.

MAINTENANCE OF SOUND, SATELLITE, AND TELEVISION SYSTEMS

This section describes the maintenance of these systems that should be performed by the local Stake Leaders and describes how to obtain maintenance service for more serious repairs.

WARRANTY

The sound, satellite, and television systems, including parts and labor, are under warranty by the Contractor for one year. If the system needs repair within the warranty period, it should be referred to the Facilities Manager.

RESPONSE If the Contractor is notified before Wednesday that the Chapel or Cultural Center system is inoperative, the Contractor will repair or provide a back up system in time for Sunday services.

ABUSE The warranty does not apply if the system has been abused. One example of abuse that voids the warranty is tampering with the equipment inside the equipment cabinet or changing the settings on the amplifiers, mixers, equalizers, etc. The cost for repairing a system that has been abused is not covered under warranty.

EXTENDED WARRANTY Some equipment carries a manufacturer's warranty beyond one year. Where applicable, the contractor will arrange for extended warranty service by the manufacturer.

REPORTING PROBLEMS

The service technician will be able to locate and repair the problem faster if the conditions under which the failure occurred can be duplicated. Try to document the following:

* Does the problem occur only with certain persons speaking?
* Are the complaints only from certain members of the audience, especially of one age group?
* Is the problem confined to listeners in one or two particular seating areas?

* What microphones and cables were in use? Is the malfunction confined to just one microphone?
* Does the problem only occur during certain meetings? i.e., Primary Sharing Time, Stake Conferences, etc.

SOUND SYSTEM MAINTENANCE (BEYOND WARRANTY)

MICROPHONE EXTENSION CABLES

Of all the equipment in the sound system, the microphone extension cables usually require the most maintenance. If a microphone fails to operate, or especially if it operates intermittently, the extension cable should be inspected first. Test the cable by speaking continuously into the microphone while wiggling and shaking the cable to see if the sound cuts out. Verify by replacing the suspect cable with another cable known to be good.

A replacement can be obtained from your Facilities Manager.

Premature failure of extension cables is usually due to abuse from disconnecting the cable from the wall jack by pulling on the cable rather than the connector. Another cause is twisting the cable excessively by winding it up over your elbow. The correct way is to coil it into one hand with the cable's natural lay without adding any twist. When properly done, the cable will coil into a figure "8."

ROUTINE MAINTENANCE

Except in the case of equipment failure or tampering, the sound system requires no routine maintenance. The system has been properly balanced and equalized by the Acoustical/Sound Consultant and requires no further adjustments within the sound equipment cabinet.

SATELLITE RECEIVING SYSTEM MAINTENANCE (BEYOND WARRANTY)

SATELLITE DISH ALIGNMENT

The dish should be routinely checked for proper aiming. Dishes installed in areas with high winds may require more frequent checks. Contact your Facilities Manager if there is an increase in video noise in the form of small intermittent specks, or "sparkles."

DISH SURFACE

The dish is designed to focus the satellite signal into the LNB. To do so efficiently, it must be smooth, clean, and free of dents. The dish may be washed occasionally with water but take care not to spray water into the LNB.

Where necessary, any accumulation of ice or snow must be carefully swept out with a broom. The surface may also be washed out with a mixture of non-corrosive antifreeze and water. Check a small area first to verify that it does not dissolve the paint.

PAINT

Do not paint the dish. Call Church Headquarters for instructions if there are unusual circumstances requiring the dish to be refinished.