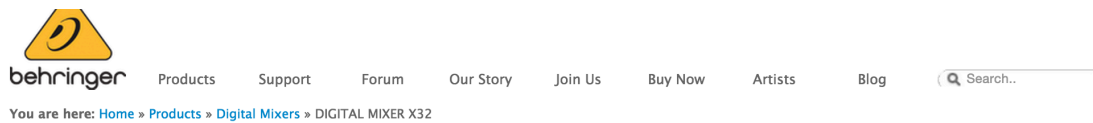


Chisnallwood Sound Tech Training Summary 2015

Name _____

Behringer X32 Digital Mixer webpage

<http://www.behringer.com/EN/Products/X32.aspx>



Game Changed.

DIGITAL MIXER
X32

40-Input, 25-Bus Digital Mixing Console with
32 Programmable MIDAS Preamps,
25 Motorized Faders, Channel LCD's,
32-Channel Audio Interface and
iPad/iPhone® Remote Control

[Buy now!](#)



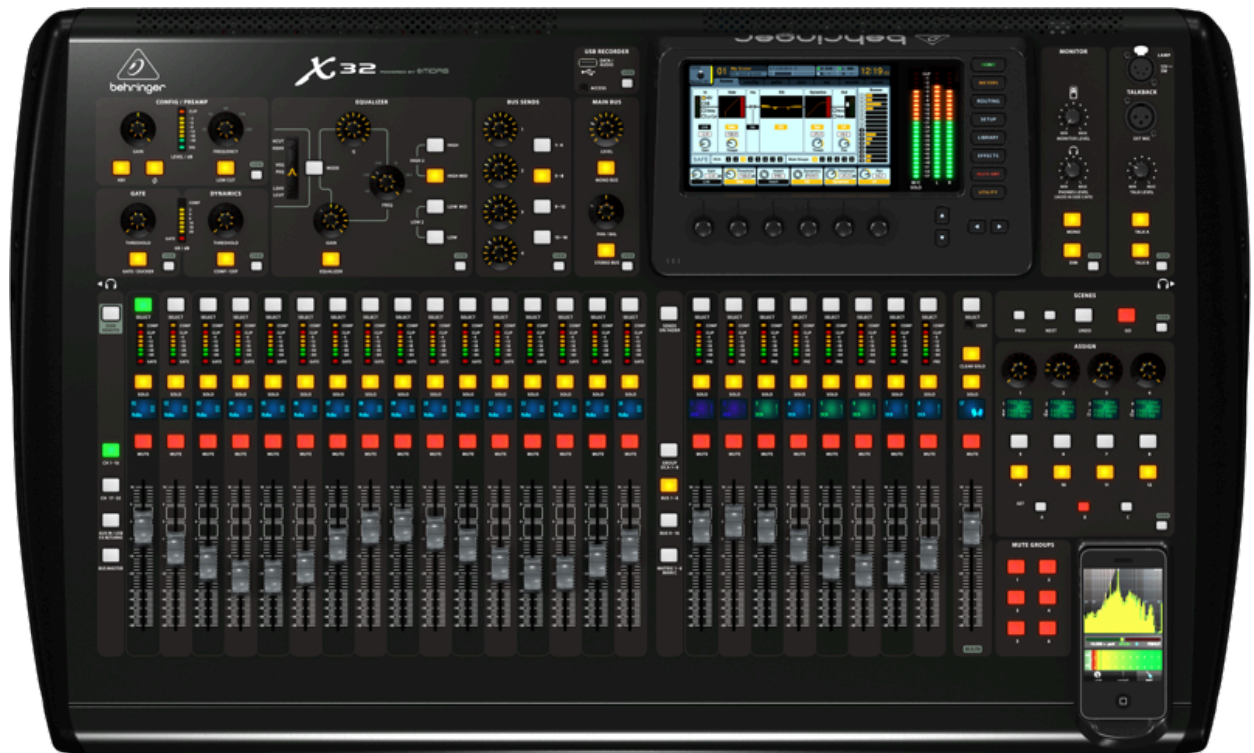
[Overview](#) [Videos](#) [Reviews](#) [Related Products](#) [Downloads](#)

Read all about
the mixer here

Watch some videos
about the mixer

Download an app
for your phone or iPad/
tablet or computer
to control the mixer

X32

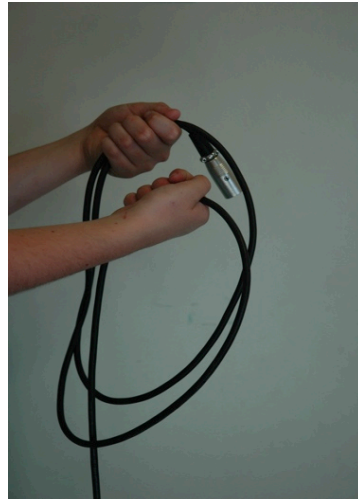


Sends on Fader





Coiling Leads



- Look after leads carefully
- make sure there are no knots
- size of loops - not too small or large
- alternating loops
- when finished the ends of leads should be close together – not dangling
- <https://youtu.be/0yPcJD7RVuY>

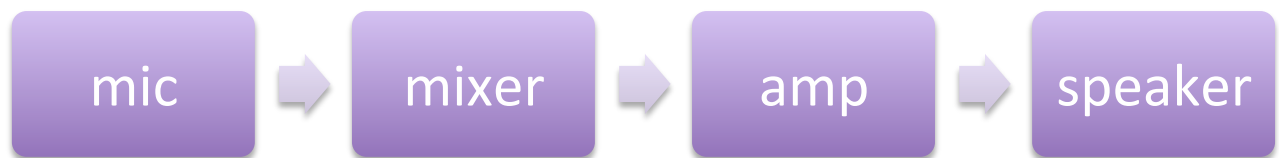
How to adjust a mic stand

- Always **loosen** before adjusting
- Coin to tighten the mic clip
- NT5s require different mic clip
- Guess the height of the performer when setting up

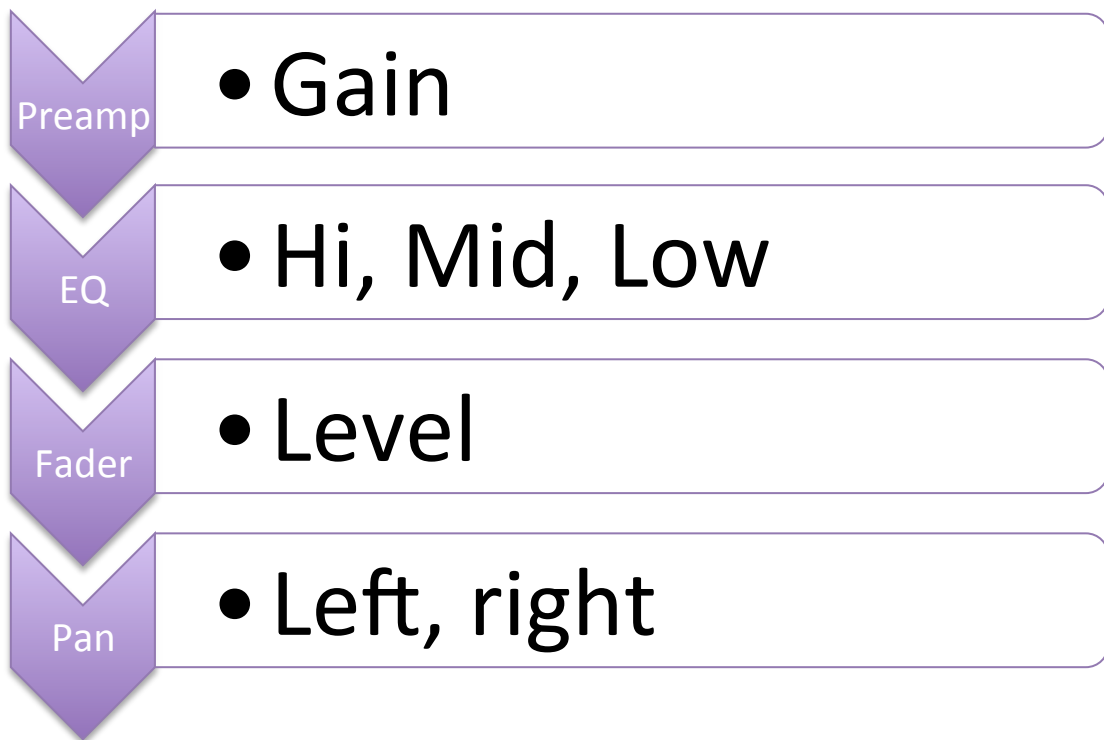


Sound Reinforcement System

Basic building blocks



Block diagram of basic mixer system



Hearing curves: frequency and decibels

- Facts:
- 3db is minimum change ears can perceive
- An increase of 3db requires DOUBLING of power
- eg 100W amp is 3db louder than a 50W amp
- and is only just perceptible
- To double the perceived loudness
- requires 10db increase
- 10db increase requires a TEN-FOLD INCREASE in power
- eg to double the loudness of 100W requires 1000W

<http://www.phys.unsw.edu.au/jw/hearing.html>

Getting the Best Sound

- Beforehand, get to know performance
- Select the right microphones
- Position microphones in optimum locations to give best sound and least feedback
- Set gain structure for optimum quality (no noise or distortion) and adjust overall sound level

Plugging in the mics: hall stage

Type of mics used in the hall:

- **lectern mic** (needs phantom power),
- **SM58s** (common and reliable),
- lapel mic,
- hand-held mic,
- NT5 condensers used for groups such as choir (needs phantom)



SM58

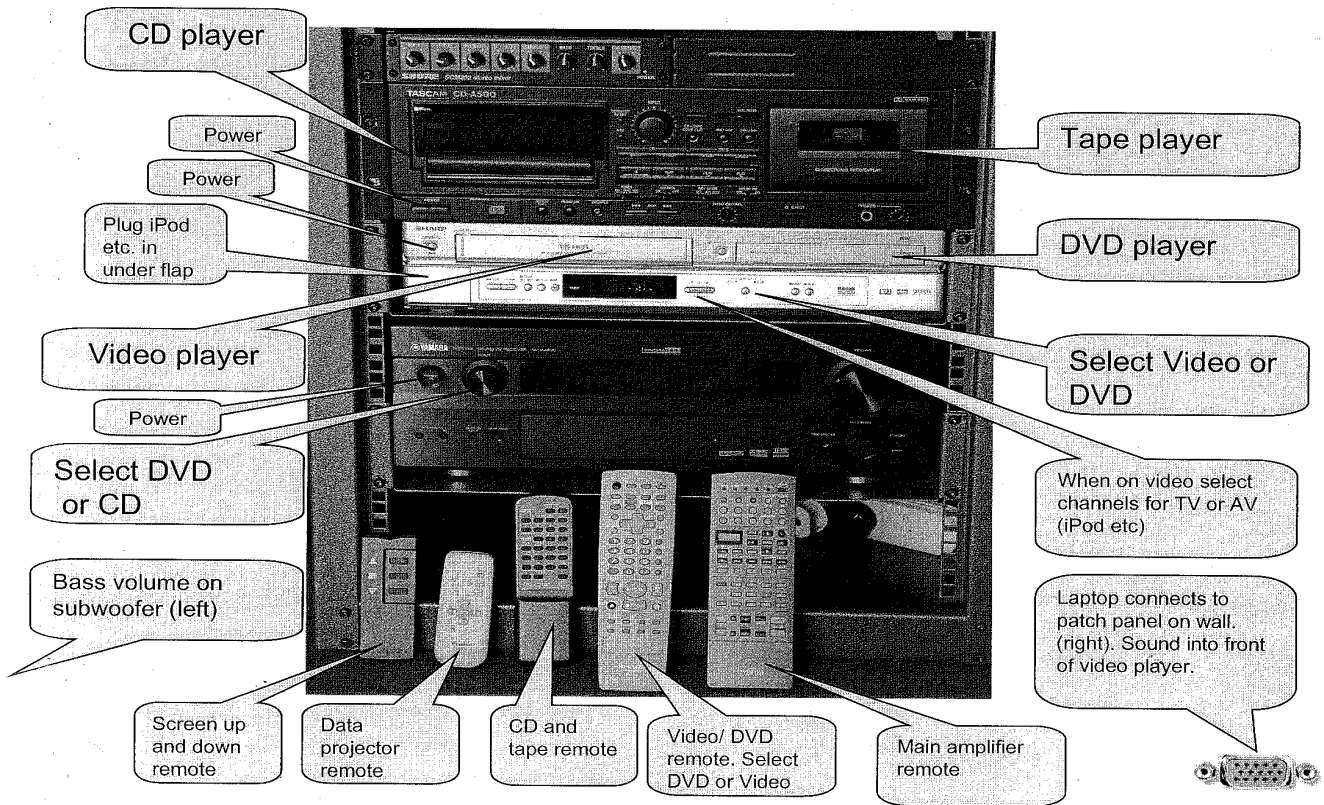
Plug into on-stage snake - the channel number matches the channel number on the mixing desk in the control room.



Microphones



Media Room Sound System



Powered Mixer



Back of the Powered Mixer

Speakon (or twist lock) outputs and jack

USE NON-POWERED SPEAKERS ONLY
from the back of the powered mixer

Powered Speaker



- XLR INPUT Jack from the output on the mixer (front) to male XLR INPUT (adjust channel 1 knob for volume and check that the button is down)
- INPUT mic lead directly
- LINE INPUT eg. Jack from electric drums – adjust channel 2&3 knob
- You can use the speaker OUTPUT to link to another speaker's input
- Use pencil to change the button from Mic to Line

DI (Direct Input)

- Cuts down need to run jack over long distance
- Isolates to stop earth loops
- Jack in and XLR out
- If using an amp use between instrument and amp – eg guitar to DI to amp and mixer



Amplifiers in the Hall

- **AMPLIFIER RULE:** the amps are always the **last thing to turn on** (after the mics are plugged in and mixer get turned on) and the first to turn off at the end.

There are 3 amp switches for the hall - one for the front of house speakers, and one for the foldback speakers – and the 3rd one on the right is for the outdoor speakers and foyer.



Using the hall data projectors to show video

- Screen remotes
- Data projector remote needs to be set VIDEO to show the live camera feeds and also to show DVDs or videos. (There is a player in the control room)
- The video switcher can switch either of the data projectors between camera (on or off stage and DVD etc)



Using the Video Switcher

- Knob 1 goes to the left data projector
- Knob 2 goes to the right data projector
- Knob 3 goes to the foyer TV
- Knob 4 goes to the booth TV

- **A** comes from the control-room video camera (RCA to BNC)
- **B** comes from the on-stage BNC camera (use RCA to BNC)
- **C** comes from the built in DVD/video player in the control-room
- **D** comes from the DVD player under the booth TV



Front view

Back view

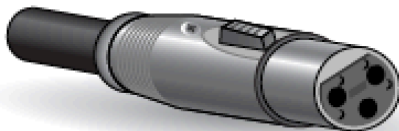


Common Connectors

The Sturdy XLR



Male

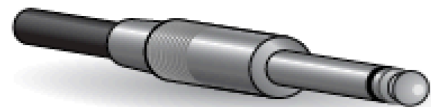


Female

The Versatile Phone Jack

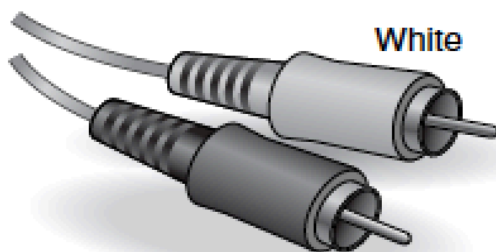


Stereo/TRS phone plug



Mono phone plug

The Venerable RCA Pin Jack



White

Red

XLR or mic cables – pins or sockets
– male and female ends. The
sound is always going out the
pins and into the sockets.



Put the correct picture number beside each description



1



2



3



4



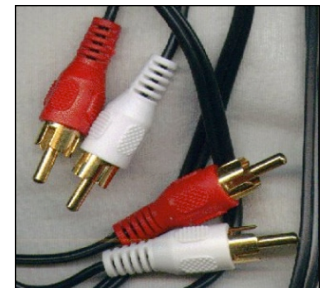
5

11



- Canon mic cable
- Connect DI box to mixer
- Connect guitar to amplifier
- Connect iPod to stereo
- Connect keyboard to DI box
- Connect mic to mixer
- Connect speaker to amplifier
- Connect small headphone socket to mixer
- IEC power plug
- Jack to jack
- Minijack to minijack
- Minijack extension cable
- Double RCA to minijack
- RCA to RCA
- Speakon cable
- "Jug cord"
- XLR Microphone cable
- VGA computer cable
- BNC video cable
- snake

6



7



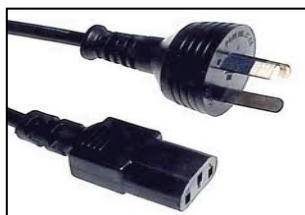
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9

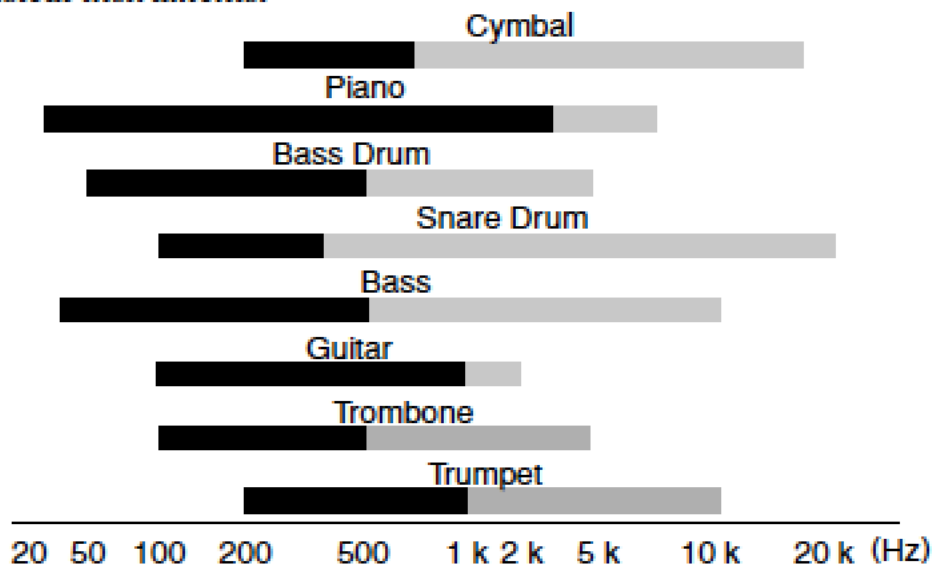


10



Some Frequency Ranges (Hz)

The fundamental ■ and harmonic ■ frequency ranges of some musical instruments.

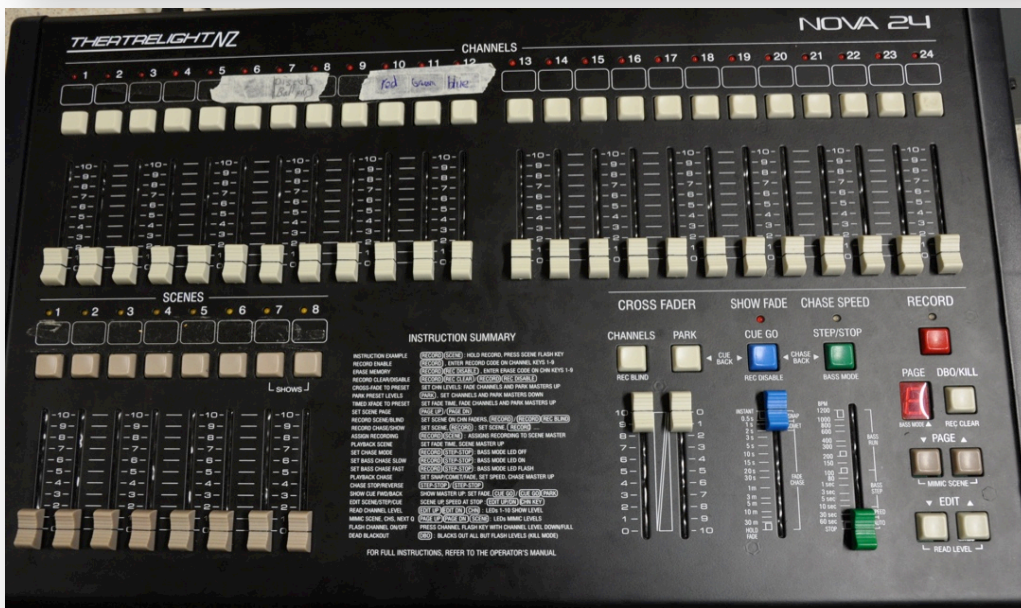


- Fundamental: The frequency that determines the basic musical pitch.
- Harmonics: Multiples of the fundamental frequency that play a role in determining the timbre of the instrument.

Hall Lights



- Par Can Lights
- Cyc Lights
- House Lights (and stage)
- Dimmer pack
- Lighting desk



CHECK LIST for SIMPLE ASSEMBLY 🎵

- lecturn mic, lecturn and lead (into channel 1)
- amps on
- tested
- camera - Data projector
- computer – visual - Windows or mac?
- computer – audio
- DVD or video?
- CD (CD player)
- lights
- amps off first, then all items turned off and away. Windows closed. Bench and floor left tidy.

ALWAYS ASK EARLY WHAT WILL BE REQUIRED

(Mrs Hamilton, Mr Henderson and Mrs Bell)

eg. guest speakers requirements or items or presentations?

Eg. Guest may need:

- Hand held mic (have a spare SM58 plugged in for backup)
- Lapel or head mic (have a spare SM58 plugged in for backup)
- batteries for radio mics
- Data projector and/or sound (DI) from on-stage computer

See separate sheet for band/dance gear checklist

ALWAYS TEST BEFOREHAND

CHECK LIST for BAND type performance 🎵

- mics – how many vocals, instruments, drum mics? – always have a spare mic.
- make channel list (onstage), label channels on mixer
- Keyboard – DI
- guitar amp(s) – mic amps?
- bass amp – DI?
- Foldbacks for singers/dancers/keyboard/drums to hear
- onstage camera? As well as front camera
- lights
- Check every mic, every instrument, every foldback and front speakers

SOUND CHECK

- can you hear the vocalist and all instruments from the front?
- can each of the band members hear themselves and the band?

JOB DESCRIPTIONS

Sound technician

Lighting

Camera

Stage manager

SOUND TECH TEST

Date _____ NAME _____

1. Always turn the amplifier on _____ (first or last)
2. When finished turn the amplifiers off _____ (first or last)
3. When setting up mics on stage, always leave leads
 - A.in a knot at the base of the mic stand
 - B.tidy and around the edge where people won't stand or trip on them
 - C.in a straight line from the mic to the patch panel so as to use the minimum length of leads.
4. If the lecturn mic isn't working, which of the following should you check?
 - A.the phantom power is turned on
 - B.the lead is dud
 - C.the mixer is on
 - D.the correct channel is selected on the mixer and the slider is up
 - E.the front of house speakers are turned up
 - F.the amplifiers are switched on
 - G.the video switcher is selected to the correct input
5. Where do you turn the phantom power on when using the hall system?
6. Where do you turn the phantom power on when using the portable PA in the music room?
7. Two of these words can mean the same thing.
Circle the one that has a different meaning.

foldback / feedback / monitor

8. Always tighten knobs before adjusting mic stands. True/False



9. Which of the following requires phantom power?

- A. SM58 mic
- B. Digital video camera
- C. DI unit
- D. Lecturn mic
- E. Condensor mics – NT5s
- F. Lapel mic
- G. Hand-held wireless mic

10. Name a use for each of the following

- SM58 mic
- DI
- Lecturn mic
- Condensor mics (NT5s)

11. On a mixer channel what do the following controls do?

- A. Gain
- B. EQ
- C. Foldback
- D. Effects (FX)
- E. Pan
- F. Volume slider



12. What is the name this mic?

13. In an XLR cable does the sound signal go out the pins or the sockets?
Do you plug the mic into the pins or sockets end of the cable?



14. Describe a sound chain. Name four objects the sound may travel through (in the correct order!)

Links

- Check out the Sound Tech page on www.chisnallwoodmusic.org.nz
- Hz and dBs in music

[http://mikfielding.com/
Hz's dB's.shtml](http://mikfielding.com/Hz's_dB's.shtml)

[http://www.phys.unsw.edu.au/jw/
hearing.html](http://www.phys.unsw.edu.au/jw/hearing.html)

iPad remote mixer app Roland M-200i
Remote