

SOUNDCHECK LIKE A PRO

A Workshop for Performers

Created and Presented
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Outline:

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Know Your Way Around the Sound System

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KNOW YOUR WAY AROUND THE STAGE

Stage Directions:

standing in the center of the stage facing the audience...

to your right is STAGE RIGHT

to your left is STAGE LEFT

toward the audience is DOWNSTAGE, the audience area is the HOUSE

your back is turned UPSTAGE

between the lip of the stage and the audience is often a PIT (or Orchestra pit)

if the PIT is raised to stage level and extends out into the house, it's an APRON

the arch or framework dividing the HOUSE from the STAGE is the PROSCENIUM

on either side out of sight of the audience are WINGS, one of which often contains the ROPES

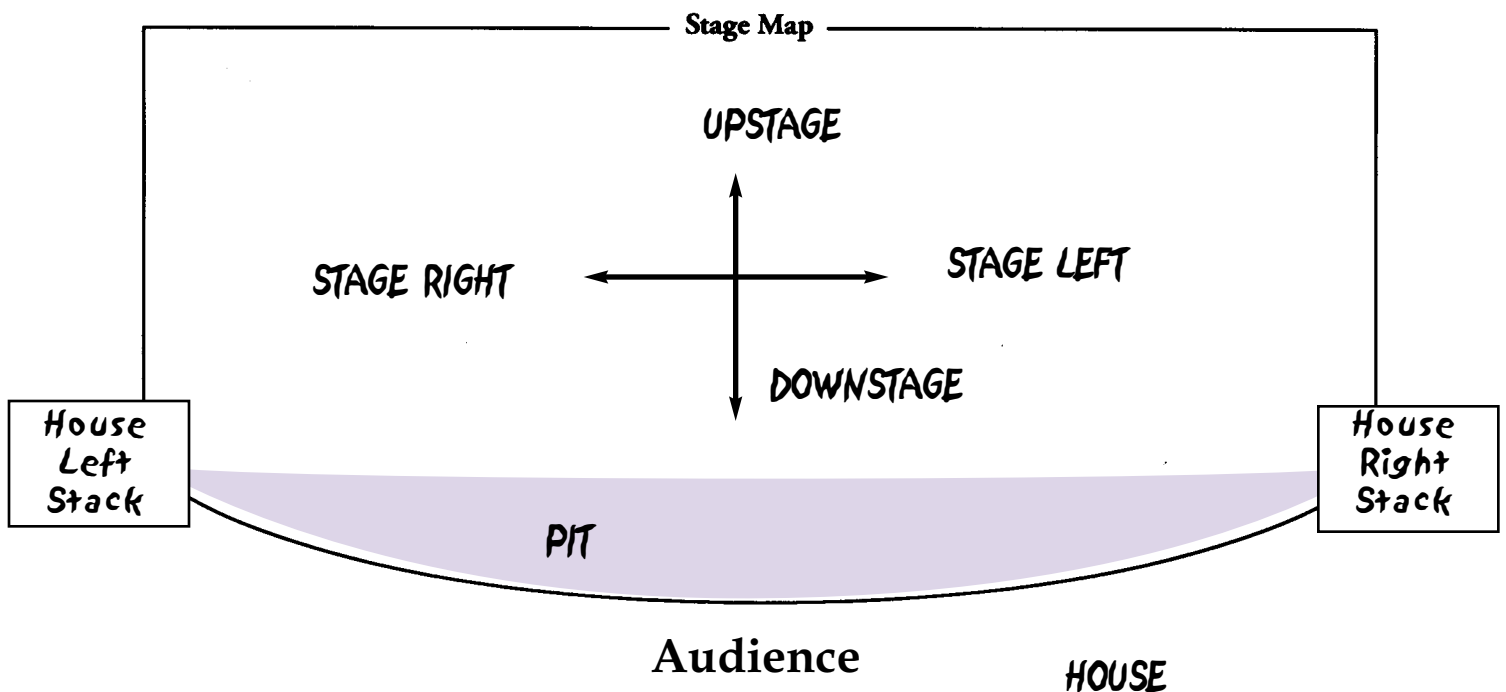
overhead are the FLIES, containing BATTANS to hang scenery from and ELECTRICS to hang lights from

also hanging from BATTANS are DRAPES, variously known as BORDERS, TEASERS, LEGS, TRAVELLERS, and, as a group, GOODS (or softgoods)

there may be STACKS of speakers on either side of the stage and these are generally known as HOUSE LEFT and HOUSE RIGHT, meaning they are just the opposite of STAGE RIGHT and LEFT

loitering around backstage may be actors, who are called HAMS because pork fat was once used to remove greasepaint makeup.

if you don't feel like you now know more about stage directions than you really wanted to, go find a HAM and ask him about the DIRECTOR. Then try to get him to shut up. Good luck.



KNOW YOUR WAY AROUND THE SOUND SYSTEM

An incomplete glossary of terms you might hear tossed around by audio types. Organized around functional stages:

1. Input
2. Mixing & Processing
3. Output
4. General

1. INPUT

Microphone
Vocal Mic
Instrument Mic
Handheld
Lavalier
Headset
Condenser
Phantom Power
Dynamic
Cardioid
Proximity Effect
Stand Adaptor
Wireless
Diversity
Direct Box
Impedance Matching
Ground Lift
Acoustic Electric
Pickup
Amp
Cable
XLR (Cannon)
1/4"
TRS, TS
RCA
Jack / Plug
Snake
MIDI
Preamp
Effects
Tone
Timbre
Tuner

2. MIXING/PROCESSING

Mixer
Mic/Line
Channels
Trim
Fader
EQ
Parametric EQ
Aux Out / In
Solo
Sub Outs
Main Out
Phones
Pre/Post
Pans
Insert Points
Send/Return
Unity Gain
Mute
Talkback
Effects
Reverb
Delay
Compression
Dry/Wet
Filter
DSP
A/D D/A
Digital
Analog
Clipping
Routing (assign)
I/O
Playback
Powered mixer
Gain

3. OUTPUT

Speaker
Subwoofer
Midrange
Tweeter
Horn
Cone
Impedance
Crossover
Passive
Active
Stage Monitor
Studio Monitor
Main
Powered Speaker
Power Amp
Headphones
Feedback
Distortion
Time alignment
Delay

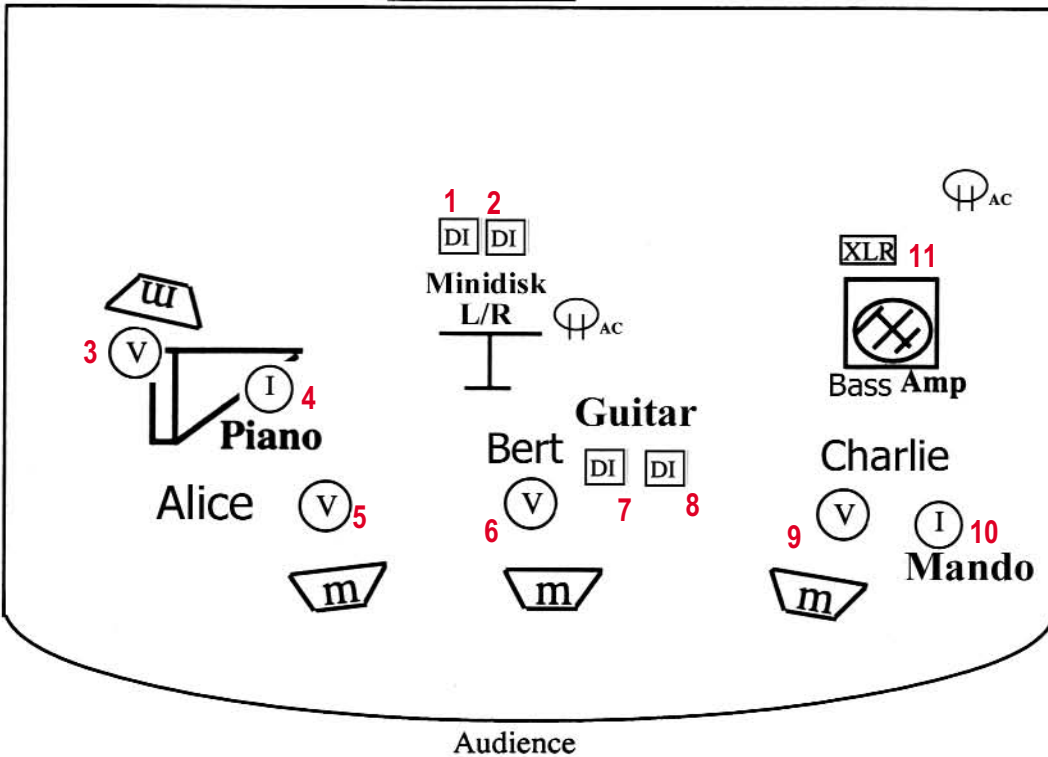
4. GENERAL

Frequency
Hz/Khz (hertz)
Signal
Level
Volume
Attenuate
Balanced /
Unbalanced
Cable
dB (Decibel)
Ground
Tinnitus

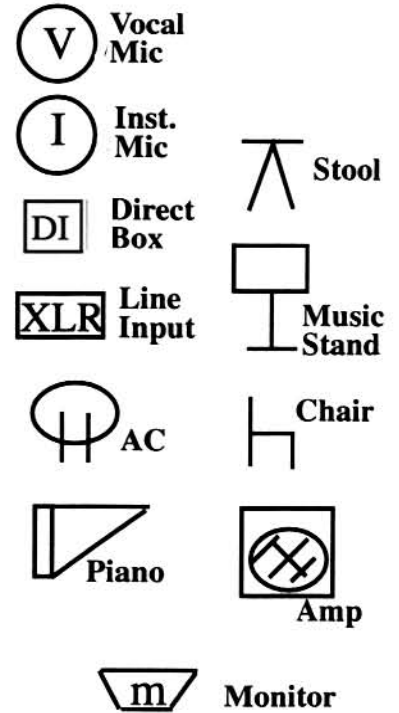
Audio Tech Sheet

Performer/Group Name: The Hypothetical Trio

STAGE MAP



Suggested Icons



INPUT LIST (rear to front, left to right)

| <u>Input No.</u> | <u>Name & Voice or Instrument</u> | <u>Type of Mic</u> | <u>Notes</u> |
|------------------|---------------------------------------|--------------------|-----------------------|
| 1/2 | Minidisk L/R | RCA | for drum tracks |
| 3 | Piano Vocal | Beta 87 | will bring own mic |
| 4 | Piano | AKG414 | or DI from keyboard |
| 5 | Alice Vocal/Fiddle | Beta 87 | will bring own |
| 6 | Bert Vocal | Beta 58 | compression |
| 7 | Bert 6 Str Guitar | DI | Baggs acoustic preamp |
| 8 | Bert 12 Str Guitar | DI | |
| 9 | Charlie Vocal | SM 58 | |
| 10 | Charlie Mandolin | SM81 | |
| 11 | Charlie Bass | direct | xlr out from amp |

Note: if acoustic piano is unavailable, Alice will bring elect. keyboard: stereo or mono RCA outs. Please provide long boom stand for piano vocal.

3 monitor mixes if available, (if 2, put Charlie and Bert on one, Alice & piano on other)

Determining Your Sound Needs

Use The Hypothetical Trio as an example. Here's their story

The Hypothetical Trio is primarily a jazz and pop lounge act, with the occasional foray into bluegrass and cajun styles. The leader is guitarist Bert, his wife Alice plays piano and fiddle, and Alice's cousin Charlie plays bass and occasionally steps in on mandolin. They all sing. For their tour promoting their sudden and unexpected hit (Bert's 12-string guitar version of "Mellow Yellow") they had to come up with a technical rider for their contract. First they determined where each performer was going to be in relation to the others, and what instruments he/she would be using. They bought a minidisk for the drum track and put it upstage on a table, with stereo RCA (phono) outputs. They brought along 1/4" adapters for DIs just in case.

Alice would need two vocal mics, one at the piano and one downstage center for her Janis cover and also for the fiddle. Her favorite vocal mic is her Shure Beta 87 condenser, so that's what she listed. The piano would need to be mic'ed but they knew that some gigs would be in piano-deprived halls, so Alice determined to take along her Casio just in case (See the notes section).

Bert would need his vocal - a Shure Beta 58 - and a DI, or Direct Input for each of his guitars. He plays the 12 direct, but likes his Baggs preamp for the 6-string.

Charlie plays Bass through his GK combo, which has a built-in direct out for balanced (XLR) line to the mixer. He likes to use a Shure SM58 vocal mic, and a Shure SM 81 instrument mic for the mandolin.

Monitors are a constant variable - from venue to venue and even from night to night sometimes. The HT listed their "Cadillac" want, a monitor in each performance position and a monitor mix for each, and included instructions for fewer mixes. They hired a tolerant sound engineer to work with them for a rehearsal, so they could adjust to different combinations of monitor wedges, mixes, and EQ availability. They were also able to try out several different vocal and instrument mics and arrive at suitable substitutes if their preferred mics were unavailable.

The attached tech sheet is what they came up with for their contract rider.

Here's how to **Create Your Own Audio Tech Sheet** for your group:

Print out or photocopy (you might want to make several copies, just in case...) the Audio Tech Sheet form below. If your group is humongous or you each play a dozen different instruments, you may wish to split the form into a full-page stage map and a full-page input list; adding as many inputs as needed.

Start by noting (decide now, if you haven't already done so) stage position for each performer. Note that the stage orientation on the tech sheet form has the audience down.

HT: Alice is to Bert's RIGHT, Charlie is to Bert's LEFT

List on the stage map by name and by instruments. Remember, as well known as you may be among the truly musically hip, sound guys are notoriously dense, and may not have all your names and instruments, as well as album titles, ex-girlfriends and favorite author memorized.

Specify Vocal Mic locations

Determine What You Need & Create An Audio Tech Sheet (Cont.)

Specify how instrument sounds are sent to PA and where onstage they are sent from. You can use the suggested icons from the HT's sheet, or make up your own, or just list things where they go. For instance, if you have a drum kit, you may want to just draw a box on the stage map and specify inputs on the input list. A very high percentage of engineers put the kit at the extreme left end of the mixer - thus the kick drum is traditionally input #1, followed by snare, hat, toms, cymbals, overheads, and so forth.

By the way, don't be alarmed if the sound engineer uses different mixer channel numbers than the input numbers listed on your tech sheet. The exception to this is if you have a sound engineer travelling with you - he/she will want to specify mixer channels on the input list..

Note monitor wedge locations and mixes. If you're using in-ear monitors, be sure to make note and specify where you wish to control the IEM mix from. Many performers rightly insist on setting their own levels from the stage. Your IEM system must incorporate hard limiting to protect you from hearing damage. Ask the engineer or the IEM manufacturer if you're unsure of this safety measure.

Note locations for amps, furniture, AC power, stands, etc.

Make a complete input list starting from upstage to downstage (e.g. drums first) and from stage right to stage left. This puts the input list in the same orientation as the sound guy sees the channel numbers on his mixer.

Note on the Input list preferences for mic types and even specific mics. If you travel with your own, indicate this, too.

Note any effects or inserts needed (vocal reverb is common, especially outdoors)

HT: Bert's vocal channel has compression inserted to even out extreme variations between the loudest and softest singing volumes.

Be sure to include contact phone numbers and email.

Finally, be sure to send an up-to-date tech sheet. If Cousin Charlie falls in love and ditches the band in Iowa, and Alice has to add a bass keyboard to cover until nephew Danny can get up to speed, have Bert call or email an updated sheet, or at least a note with corrections.

If you have any questions, comments or suggestions about this process, please call, fax, email, or snailmail them to:

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WHAT TO BRING TO SOUNDCHECK

- all your group members and every instrument they will be using on stage, in working order and with all accessories (straps, wall warts, preamps, stands, etc.)
- extras of everything - strings, picks, reeds, guitar cords, batteries, drum keys, etc. - Do not assume the venue will provide anything you haven't discussed and/or contracted for
- special mics, preamps, or adaptor cables you may wish to use
- a copy of your tech sheet, just in case the engineer didn't get one

WHAT TO NOT BRING TO SOUNDCHECK

- children, pets, non-band-member observers, relatives, and/or other attention-demanding entities
- mind/mood/atmospheric altering chemicals and beverages - save them for the party after the gig
- Rock-Star attitudes

THE ETIQUETTE OF EFFICIENCY

- be on time. This goes for both performer and technician.
- take your stage position and stay in it, or be readily available while other band members are checking
- pay attention to the process: noodling, side conversations, and daydreaming waste everyone's time. This is not practice time. If you need time to work with mics and monitors, and get used to the stage sound and placement, do that after the mix is set.
- listen carefully to be sure everything sounds ok, remember that the sound dynamics change, some times radically, when you add audience to the mix.

STEPS IN THE SOUNDCHECK PROCESS

If all goes well, the audio tech and stage crew will have received your tech sheet and have everything in place, wired and operational by the time you arrive, so all you have to is the actual sound check. Whether this is so or not, the first thing you need to do is to unpack, set up, power up and tune your instruments, then patch into the system as needed. Always check with the board operator that the channel is muted before plugging or unplugging gear into direct lines. From here on out, the sequence is a matter of preference. I like to have performers beginning on stage right or in the rear (i.e. drum kit) set individual levels for their instruments, then vocals, monitors and house together, then work the mixes as a whole group. If there is a separate monitor console, set monitors first; many performers prefer to set monitor levels first anyway, and add house sound in later. Your call. The final mix should entail portions of both the loudest and the softest numbers, and should include all vocal blends and instrument combinations which will be used. In a festival setting, there is often no chance for a formal soundcheck, and you are at the mercy of the sound guy. You can retain some semblance of control and autonomy by taking a few seconds before launching into your first song, to do a quick mic & instrument check, one person at a time, from back to front, stage right to stage left. Then keep in mind that the mix will be adjusted throughout your first song, so you may want to avoid songs that require delicate or complex balancing during the early parts of the set. Sound check lasts until everyone is happy with the sound, or until the time runs out, whichever comes first.

WHY SOUND GUYS GENERALLY HATE GUITAR AMPS

We don't, really, but it is often difficult and sometimes impossible to get a good vocal/instrument balance when a guitar or bass amp is cranked. The principle is this: the loudest element on stage sets the basic volume for the entire stage-everything else has to be adjusted to balance with it. In many situations, the sound energy onstage is so hot, the vocal monitors cannot compete without feedback, and merely add noise. This is often a problem with drums, as well. Another problem is directionality -- if the guitar amp speaker is pointing at a segment of the audience, the mix will be different for that part of the audience than for the rest of the house.

Here is one solution. Place the amp so that it faces you, not the audience; either side-ways across stage, or even in front of you. Many companies are now producing "kickback" speaker sets, which allow the amp to act as a monitor, while the output signal is carried through the house system, allowing the sound guy to create better mixes. You can also make a simple kickback frame to set your amp speaker in, or simply get a monitor wedge and use it as an independent guitar monitor.

Another solution is one that you will often hear. Turn it down. More.

WHAT IS THE SOUND GUY DOING OUT THERE?

thanks to Pete & Maura Kennedy for this material from "Soundchecking Without Tears"

Phase one—Setting the monitor levels

- 1) Setting the rough overall level of your monitor.
- 2) Setting the individual level of each instrument and voice in the monitor
- 3) Adjusting eq to eliminate feedback in the monitor
- 4) Adjusting eq again for vocal clarity
- 5) Repeating steps 1-4 for each mix, if there are multiple mixes
- 6) Re-adjusting the overall level to compensate for eq changes.

Phase two—Setting the levels going to the front of the house

- 7) Starting with drum set, if there is one, because it includes 5-8 instruments and covers the widest frequency and dynamic range.
- 8) Bass is usually next, followed by guitars and keys
- 9) Vocals are added last because, as the primary instrument, it's crucial that their level be set after everything else is roughed in, to make sure that they stand out above the mix.
- 10) Setting the final overall level of the entire mix.

TALKING THE SAME LANGUAGE

Take note of the fact that setting the monitors involves six steps. They may not sound perfect until the last step. This is normal. Adjust your expectations accordingly. The sound person needs clear communication from you to perform steps two, three, and four properly. She will be adjusting frequencies in decibels, or db's. If you can communicate with her in terms of frequencies and decibels, she will be able to make the adjustments quickly and accurately.

HOW DO I COMMUNICATE IN FREQUENCIES AND DECIBELS?

Let's deal with dbs first. A decibel is a relative term that can't be specifically measured the way an "inch" can, but there are common-practice agreements as to what a db is.

-One db is the smallest change that people with normal hearing can detect. Don't use it in a live situation. A change that small is not audible above normal background ambience in a venue.

-Two db is usually the smallest change you would ask for. It means "just a hair" or "just nudge it"

-Three db is a very common change. It means "don't go crazy, but change it enough so that I can hear it".

-Four db, obviously, means, 'enough so that I can hear it, and then just a little more'

-Six db is the most you would normally ask for. It means "change it a lot"

-Twelve db, in a live situation, means "turn it off. You can also say "mute it".

Dbs apply to volume *changes* both up and down. Caution: a 6db increase usually results in feedback unless the signal was very low to begin with. Small changes make a big difference, so use two or three db changes. If you need more, ask for another two or three db change. Sound people would much rather change in small increments.

SOME NOTABLE FREQUENCIES

If you can identify a few frequencies and learn to hear them in the monitor mix, you can much more clearly communicate what you want to hear. Frequencies are referred to in cycles per second or "hertz" (abbr: hz, sounds like 'hurts'). You've heard of "kilohertz" - that's simply cycles per second times one thousand; most often referred to as kHz or even just "K".

Guitar open low E string = 80hz

Guitar open A String = 110hz

Guitar open D String = 150hz

Guitar open G String = 200hz

Guitar open High E String = 315hz

"A440" = 440 hz (1st string fifth fret)

Middle C = 262hz

piano lowest note (A) = 27hz

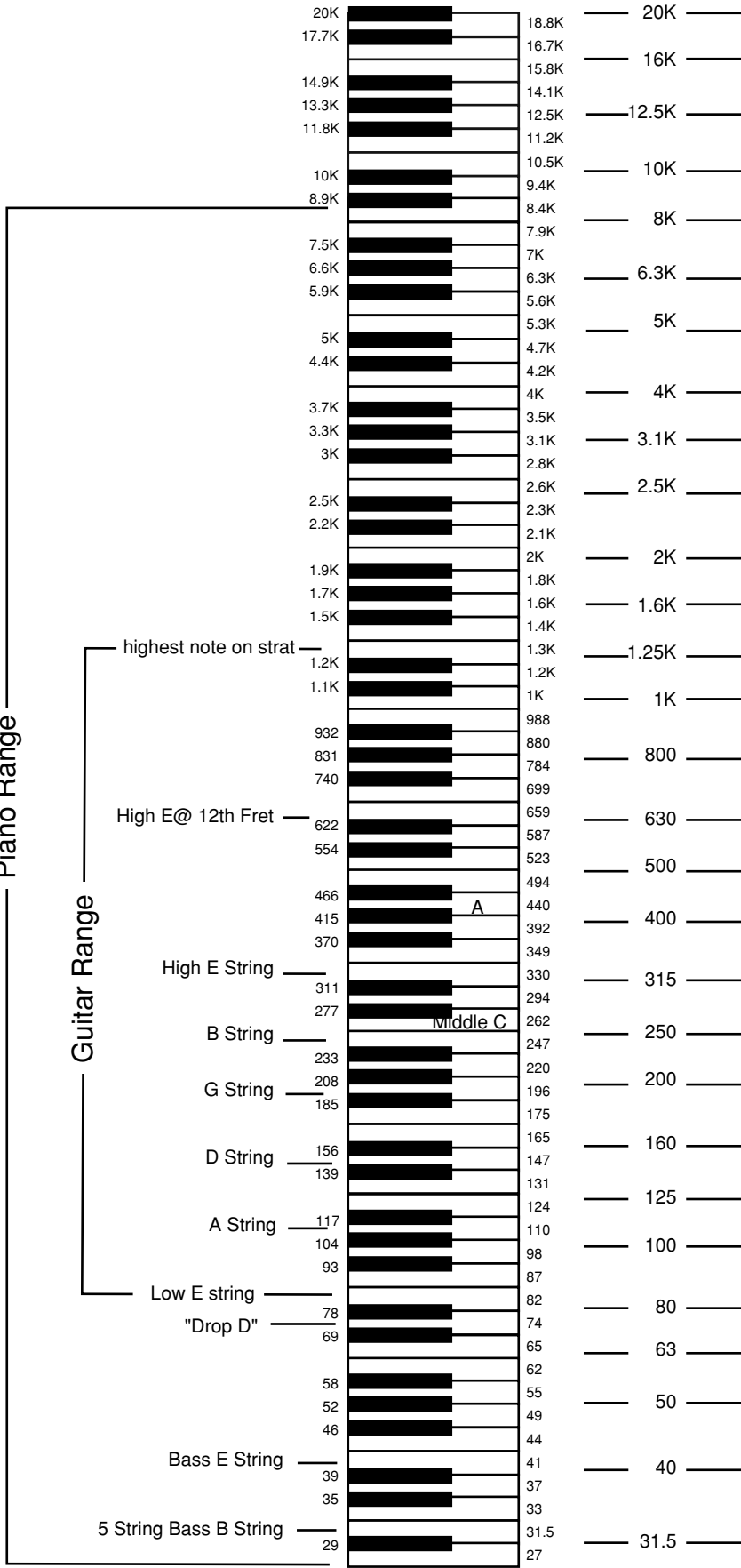
piano highest note (C) = 8.4Khz

"Vocal clarity range" = 2Khz

Find more of your favorite frequencies in the chart below, which indicates frequency bands for the typical 1/3 octave graphic equalizer used by sound engineers.

Piano Range

Guitar Range



Standard 1/3 Octave EQ Center Frequencies

(25)
(20)