Sound Check Checklist

Below is a general outline for a sound check before band practice. It's important to remember these basic rules (preferably in order) to avoid larger issues. Communication with the band members at this point is key to ensure the rest of band practice can proceed without specific input from the mixing team. Use your talkback microphone to direct members of the band. Use your headphones (usually on one ear) so you can hear the levels in the room but also the levels coming through the board. This process should take no longer than 5 mins. Throughout the sound check the sound engineer needs to be in charge of this evolution and should direct band members accordingly. Once it is complete, the leadership of the team can be turned back over to the band leader to commence practice.. After step 4 the band practice can be turned back to the band leader and step 5 and possibly step 3 can be adjusted as the practice continues. Once practice has completed no changes should be made to the soundboard between Wednesday practice and Sunday morning.

An abbreviated version of this check should happen Sunday morning with steps 1, 2, and 4 being the focus.

1. Line Check

Verify that all microphones and instruments are connected to the mixing board and are producing a signal.

This often involves tapping microphones or playing a simple note or chord on instruments to ensure the signal is reaching the board.

2. Setting Gain Levels:

Adjust the gain on each channel to ensure a clear and strong signal without clipping or distortion.

This involves using the input level meters on the mixing board to monitor the signal strength.

Remember, "Mixing from 0" is critically important to ensuring effective volume control in the room and in the mix.

3. EQ

Apply cuts, gates, boosts, or filters, as you set up each channel or alternatively as the band plays through the reference song. Use the attached cheat sheets to hit all the common problem points.

3. Reference Song/Jam:

Use a representative song or a jam to get a feel for the overall sound and to make any necessary adjustments to the mix. This can be the same song every week or simply a song the band leader wants to play.

4. Monitor Mixes:

Allow individuals to set up the monitor mix, ensuring they can hear themselves and the other band members at a comfortable level.

5. Situational Notes:

Listen as the band plays through the songs and note changes in levels (vocals, guitar solos, etc) that should happen for each song. Each song will have a different feel so noting it at practice will help Sunday morning.
Example: "for *Ancient of Days* the bass needs to be lowered in the mix and vocals need to be elevated"

Instrument Cheat Sheets

Use the following sheets when you are mixing sound during practice or troubleshooting issues during a performance. These are just generic guidelines but they should eliminate most of your issues each week.

Kick drum

Low-end punch: 60–80 Hz
Added knock: 100–200 Hz
Boxiness: 200–500 Hz
Attack and click: 1–5 kHz

To bring out the low-end punch and definition of a kick drum, start by boosting the frequencies in the range of 60–80 Hz. This will enhance the fundamental low-frequency impact. For added weight and warmth, a gentle boost around 100–200 Hz can be applied. To tighten up the sound and reduce boxiness, a cut around 200–500 Hz can be useful. If you want more attack and click, a boost around 1–5 kHz can bring out the beater sound. Experiment with these ranges to achieve the desired balance between power, clarity, and attack in your kick drum.

Songs:

Notes:

Snare drum

Below 80 Hz: rumble that might not be needed
Body: 150–250 Hz
Boxiness: 300–500 Hz
Ring: A narrow frequency somewhere between 400 and 700 Hz
That weak papery sound: 900 Hz–1.5 kHz
Attack and cut: 2–3.5 kHz
Snares and air: 8 kHz and above

To shape the sound of a snare drum, start by boosting the fundamental around 150–250 Hz. This can add weight and thickness to the sound, though it can also conflict with the vocal. For a brighter and more cutting snare, a boost in the range of 2–3.5 kHz can enhance the snap and attack. Sometimes snares have a weak, papery sound—like hitting a cardboard box with a paint brush. That's usually in the 900 Hz–1.5 kHz range, and you can cut that if you don't want it, or emphasize it if you do. Remember you might find ringing in the midrange, between 400 and 600 Hz. Additionally, a high-pass filter can be applied to remove unwanted low-frequency rumble.

Songs:

Notes:

Toms

Fundamental bottom-end: 60 Hz–120 Hz, roughly
Muddiness: 250–600 Hz, roughly
Attack and presence: 800 Hz–1.5 kHz

Toms can benefit from similar EQ techniques as the kick and snare drums, although the specific frequencies may vary depending on the size and tuning of the toms. To enhance the body and depth of the toms, boost the lower frequencies around 60–120 Hz. Be careful not to boost too much, or else you'll cause these low frequencies to ring out for longer than they would otherwise—and you don't want a tom sticking around longer than it has to For added attack and presence, a boost in the range of 800 Hz–1.5 kHz can bring out that stick sound. To avoid any muddiness, consider cutting frequencies around 250 Hz, give or take. Experiment with these ranges to achieve a balanced and impactful tom sound.

Songs:

Notes:

Cymbals and overhead mics

Conflicting low end: possible below 150 Hz
Harshness: around 4 kHz
Air: 8–12 kHz

Overhead mics don't just capture cymbals, but the overall sound of the drum kit. They provide a sense of space and give the kit its stereo image. To preserve the natural tonal balance of the drums, minimal EQ adjustments are recommended for overheads. However, if there are any frequency build-ups or resonances, gentle cuts in problematic areas can help. Often 4 kHz can be a slight problem, and a little nip there can do you some good. Additionally, if more cymbal definition is desired, a subtle boost around 8–12 kHz can enhance the shimmer and presence.

Some engineers also like to high-pass the low end from the overheads to let the kick handle that area more. In general, use EQ on overheads sparingly to maintain the integrity of the overall drum sound.

Songs:

Notes:

Room mics

Rumble: 40 Hz
Body: 40–120 Hz
Warmth: 120–400 Hz
Boxiness: 400–500 Hz
Presence or harshness: 1–4 kHz
Aggression: 4–8 kHz
Air: 8–12 kHz

Room mics capture the ambience and depth of the drum kit, and often sound quite different depending on the mics used, the room, and the recording engineer.

You can, if you want, get creative with room mics: If the room sound lacks warmth, a boost around 400 Hz can add depth and body. On the wrong kit though, this could be the exact wrong choice. Use EQ on room mics boldly—but sparingly—to shape the overall drum sound and create the desired sense of space.

Songs:

Notes:

Bass Guitar

Low end: 40–120 Hz
Body: 120–250 Hz
Mud: 300–500 Hz
Presence: 800 Hz–1 kHz

Here's the truth about the bass guitar: most of them are recorded with pretty much everything they need in the low-end department. If you have to start by boosting, you're probably in trouble.

Where basses tend to need a hand is in the articulation and definition department. Here, a gentle boost in the range of 800 Hz to 1 kHz can bring out the attack and string noise. To avoid any muddiness, a cut around 200 to 400 Hz can help clean up the sound. Additionally, be mindful of any clashing frequencies with other instruments, especially the kick drum.

Songs:

Notes:

Acoustic Guitar

Possibly unnecessary: below 70 Hz
Body or mud: 200–400 Hz
Presence or harshness: 1.5–2.5 kHz
Air: 8–12 kHz

When equalizing an acoustic guitar, the goal is to enhance its natural resonance and clarity while addressing any frequency imbalances. You can often begin with a high-pass filter to remove unwanted low-frequency rumble or handling noise, if it exists. Boosting the mid-range frequencies around 1.5 kHz can help an acoustic guitar cut through without getting too harsh. To bring out the sparkle and detail in the higher frequencies, a gentle boost in the range of 8 to 12 kHz can enhance string definition. Sometimes, a cut in the lower register is in order, anywhere between 150–300 Hz. Be cautious with excessive EQ adjustments that might alter the natural character of the acoustic guitar. Aim for a balanced and natural sound that complements the mix.

Songs:

Notes:

Electric Guitar

Possible unnecessary: below 100 Hz
Body: 150 Hz–300 Hz
Possible tubbiness: 200–300 Hz
The meat of the sound: 300 Hz–1.5 kHz
Aggression or harshness: 2–5 kHz
A frequency that often needs cutting: somewhere between 3 and 6 kHz

Electric guitars can sometimes get a bit harsh around 3 to 6 kHz, or a bit tubby in between 200–300 Hz. They can also conflict with basses or drums in the low low end, so a high-pass filter might be in order.

Songs:

Notes:

Piano

The subs of the piano: 20–60 Hz
Low end body: 60–200 Hz
Possible mud: 200–500 Hz
Possible harshness: 2–4 kHz

When dealing with the piano, there are several common frequency issues that may arise. You may come across a buildup of mud in the lower midrange frequencies, which can result in a lack of clarity and definition in the piano's sound. This can be addressed by applying a gentle, broad cut somewhere between 200–500 Hz to reduce the excessive warmth, and to create more space in the mix. On the other hand, the higher frequencies of the piano, particularly in the 2–4 kHz range, can sometimes feel a bit harsh or piercing. Here you would use a subtle dip in this area to help tame any harshness, ensuring a smoother and more pleasing tone in the process.

Songs:

Notes:

Vocals

Possibly unnecessary low end: below 100–250 Hz, depending on singer
That annoying nasal quality: between 500 Hz and 1.2 kHz
Possible harshness: 5–8 kHz
Air and sparkle: 10 kHz and above

When working with vocals, it's important to address common frequency issues to ensure clarity and balance. One common problem area is the low-end frequencies, typically below 100 Hz, which can cause muddiness and interfere with the overall intelligibility of the vocals. By applying a gentle high-pass filter to roll off these unwanted low frequencies, you can fight clashes and make room for other instruments.

Vocals can sometimes feel nasal or pinched between 500 and 1.2 kHz, depending on the singer; so that can be a cause for dipping. Additionally, vocals can sometimes exhibit harshness in the high frequencies, particularly around 5–8 kHz. If sibilance or harshness isn't an issue, a gentle shelf in the air frequencies (10 kHz and above) can really open things up.

Songs:

Notes:

Orchestral Instruments

Equalizing orchestral instruments requires a delicate touch to preserve their natural timbre while ensuring clarity and balance in the mix. Each instrument within the orchestra will have its own unique EQ considerations, and can absolutely be ruined by excessive EQ.

The most common orchestral instruments you'll come across in popular music are strings and brass, usually in overall sections. So I'll give a few guidelines on those sections.

String section:

Possible low end to be cut: below 100 Hz
Possible muddiness: 200–500 Hz
Possible presence or harshness: 1–4 kHz
Air and sparkle: 10 kHz or above

Brass section:

Possible low end to be cut: below 150 Hz
Possible honkiness or boxiness: 500–800 Hz
Attack or harshness: 1–5 kHz
Annoying aggression or air, depending on the situation: 5 kHz and up

For individual instruments, do your best to leave them alone. If something is amiss, just handle areas that are in direct conflict with the sound you want to achieve.

Songs:

Notes:

Helpful Tips

1. Work slowly and systematically. Remember, the mics and mains (speakers) have settings too.

2. If the front of house position (mixing board) is toward the back of the room, you need to understand you should be mixing fairly quiet, as most of the audience is getting a much louder show than you are.

3. Walk the venue every so often, or get a trusty assistant to audit the loudness for you in other locations.

4. Another problem I see is console operators getting lost in the show and not catching the song's natural cues for musician solos, most *soloists* do not pump up the volumes enough in large rooms. Thus, the *engineer* is responsible for goosing the fader a touch when a solo happens.

5. Inattentive mixing of a show takes emotion away from the performance, very similar to a lighting director who paints a different color wash per song without providing accent cues as the music presents them.

6. When your ears are working, but something needs to come to the top of the mix, the easiest thing to do is goose the chosen source's fader up 5 dB in the hope of curing the problem. But if you do not keep an eye on things, you will soon succumb to "fader creep" and have to periodically rebalance everything in the mix.

7. Bump something up by bumping everything else down. There is no harm in this. Use those beautiful things called subgroups masters

8. *Just because they are available does not mean that every EQ knob must be tweaked and re-tweaked continuously during the performance.*

9. I find that if I flatten up the EQ sections of every channel, with a few exceptions, I tend to get a high fidelity copy of what is going on for the sound onstage.

10. Trust the Mic

11. Garbage-in, garbage-out is true. This is why sound checks are so important. If something still sounds bad after the sound check you can always lower it in the mix, remember this when running your final mix.