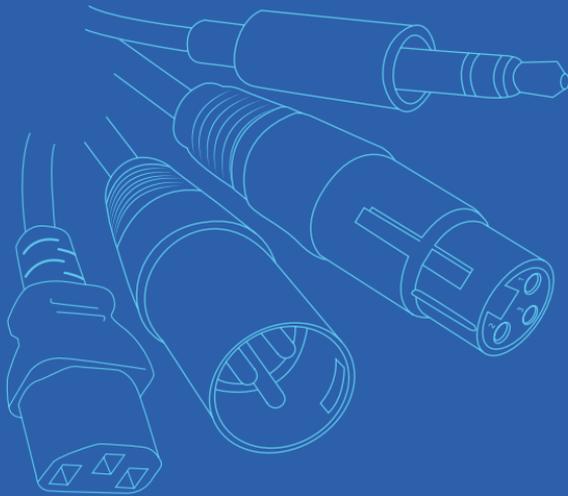


# MUSICIANS' TECHNICAL GUIDE





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# Technical Jargon

## Musicians' Technical Guide

For those performing in a live venue, there are many simple terms, phrases and pieces of equipment that you should familiarise yourself with. This will help to improve your understanding of the live arena, technical staff roles, and your own performance.

### Common Cables & Connectors

#### XLR

This is the most common form of audio connector. Often referred to as a 'mic cable', it is used to plug in microphones, DI Boxes, mixing desks and other audio equipment. The XLR has both a male and female connection. Generally, female XLR connections receive output signals, with male XLR connections inputting audio signals e.g. the female connector will plug in to a microphone to receive the signal, and the male connection will pass this to the mixing desk. (Fig. 1)

#### Jack Plugs

Jack plugs are used in conjunction with a diverse selection of audio equipment. This means that you will come across several variations and sizes.

#### ¼ Inch Jack Plug

This is another very common audio connector (often simply referred to as a 'Jack lead') that is available in two versions:

**Unbalanced (Mono)** The most common variation for carrying single channels of audio and primarily used for plugging in instruments (e.g. electric guitar). (Fig. 2)

**Balanced (Stereo)** This stereo connection can carry two channels of audio and is often used with recording equipment, home hi-fi systems, headphones etc. Balanced connectors are useful over longer distances, as they are less susceptible to interference from other equipment. (Fig. 3)

#### Mini-Jack

Commonly a stereo connector that is widely used for earphones/headphones. Also can be used for unbalanced and balanced connections like the larger ¼" Jack. (Fig. 4)

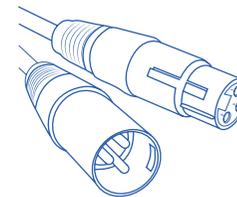


Fig. 1

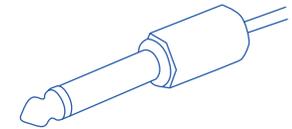


Fig. 2

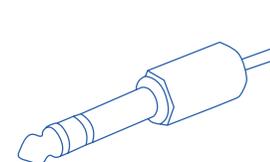


Fig. 3

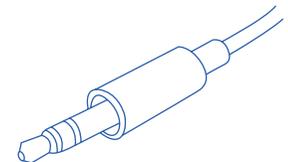


Fig. 4

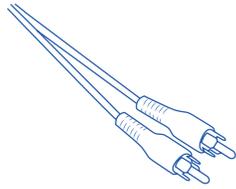


Fig. 5

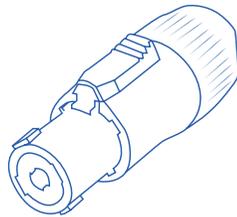


Fig. 6

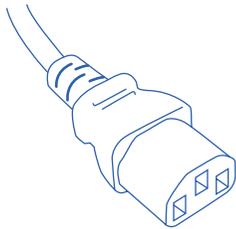


Fig. 7

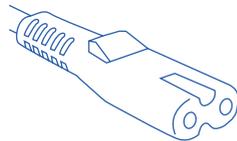


Fig. 8

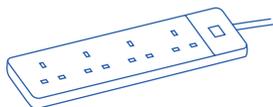


Fig. 9

## Phono

Phono is a two conductor connector used for audio on older equipment (originally developed for use with phonographs and speaker systems – hence the name Phono). The cable is normally comprised of two sockets or connectors, with one often being coloured red (right) and the other white (left). Normally used for playback devices such as interfaces, DVD players and turntables, where possible they are often replaced by more modern connection types including USB and HDMI. (Fig. 5)

## Speakon

Speakon connectors are primarily used for plugging in PA speakers, with a screw-in ring to ensure a secure connection. Also used for some bass and guitar amplifiers (e.g. Ashdown bass amps). (Fig. 6)

## Kettle Lead/IEC

This is a power cable used for powering guitar amps, speakers and... kettles. (Fig. 7)

## Less Common Connections

### Figure of 8 Lead

A power cable used for lower powered equipment such as Nord keyboards and DJ decks. (Fig. 8)

### 13 Amp Extension

Also known as an extension lead, this enables you to plug multiple pieces of powered equipment in to one main power supply outlet. (Fig. 9)

## Stage Equipment

### Monitor Speakers

These are performer-facing speakers placed on stage (sometimes referred to as 'Foldback' or 'Wedges'). (Fig. 10)

### Multicore/Loom/Stage box

This connects multiple pieces of equipment on stage such as microphones to the sound desk. Usually located on stage with a single run of cable to the sound desk, each end of the multicore is numbered to ensure the audio signal is received down the correct channel. (Fig. 11)

### DI Box (Direct Injection)

Used as a means of input for equipment with a ¼ inch Jack or XLR output. Commonly used for acoustic guitars, keyboards, and electronic drum pads, the DI Box converts unbalanced signals (mono) to balanced signals (stereo) to reduce feedback and interference. They are also used to help boost signal level from instruments like bass guitars and keyboards. (Fig. 12)

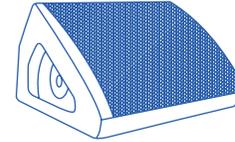


Fig. 10

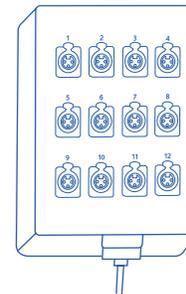


Fig. 11

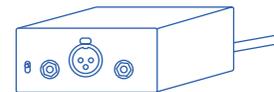


Fig. 12

## The Mixing Desk

The mixing desk (sometimes referred to as a 'mixing console' or 'mixing board') takes a number of audio signals from various sources (e.g microphones, DI boxes etc) and allows you to balance and effect these sources (i.e. 'mix the sound') in order to send the desired mix to the PA for the audience to hear.

The mixing desk will normally be operated by a sound engineer, whose job it is to ensure the performing band or artist can be heard by the audience in attendance. However, at some smaller venues, or when utilising rehearsal spaces, you may find that it is useful to understand some of the basic functions of the mixing desk. Below is a brief and basic guide to help you use a simple mixing desk set up (like those you might find in LCoM's own band room).

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### Channel Strip

A mixing desk is divided into a number of 'channels' with corresponding inputs that allow you to plug audio sources in to them. Each channel will accept just one audio signal (i.e. a vocal microphone). The controls for each channel normally run vertically from top to bottom. These are called 'channel strips'. The channel strips then run from left to right, each with their own audio input. (Fig. 13)

### Input

At the top of these channel strips you will find a couple of types of cable connection, such as XLR and Jack, that allow you to input your chosen audio signal. You will likely find that one of these channels also offers the option of a stereo connection, with two Jack sockets and phono sockets (for connecting things such as keyboards).

Once you have connected your audio signals to the mixing desk, you move down these vertical channel strips to find a variety of knobs and faders that each control an aspect of the corresponding input signal. (Fig. 14)

### Gain

Often confused with the word 'volume', the gain knob controls how much amplification is applied to an audio signal. This is still at the input end of the signal chain. Many microphones have a low signal, and so you are required to boost this signal with the gain knob. Each mic, room, and mix will need to be treated differently, as applying too much gain could cause the channel to distort (sometimes called 'clipping'), and too little will likely mean that the signal isn't audible. Appropriately 'gaining' each input will improve sound clarity and reduce the possibility of unwanted feedback. (Fig. 15)

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## EQ

Down from the Gain knob you may find a panel or cluster of knobs that control the EQ of that channel. Like you might find on a Hi-fi system, audio system in a car, or a guitar amplifier, you are presented with a number of parameters. On more basic desks these are often split in to low, mid and hi knobs. These refer to the types of frequencies they control, and allow you to adjust how much of each group of frequencies is present in the mix of each channel. On larger desks, you may find more options for this frequency control. (Fig. 16)

## Auxiliary Sends

Normally shortened to just 'Aux', this section of the channel strip can usually be ignored for simple set ups and use. It enables you to send a separate mix of each channel to another piece of equipment such as an external effects unit, or on stage monitor. (Fig. 17)

## Effects

Sometimes referred to as 'FX', this knob will allow you to control the amount of effect applied to the channel. How to use this is explained further in the 'Channel Effects' section. (Fig. 18)

## Pan

This knob controls how the signal is sent to a stereo output such as a pair of PA speakers. Sometimes referred to as 'balance' instead of 'Pan', it allows you to change how the signal is heard between these speakers/output, either as a blend between both (normally achieved by leaving the knob in an upright '12 o'clock' position), or moving to the left or right speaker/output. (Fig. 19)

## PFL

The PFL (Pre Fader Listen) button when pressed allows you to check the level of the input signal on that specific channel before sending it to your PA speakers. This is especially useful when gaining each channel. You can use a monitoring device to do this (such as a pair of headphones), although a visual representation on the level meters is displayed when the button is pressed, enabling you to see if the signal is too quiet or too loud. It also gives you chance to ensure you are happy with the sound of the channel, and that there are no problems with the sound due to a faulty channel, cable or other item of equipment. (Fig. 20)

## Level

More commonly, the level control will not be a knob, and is instead replaced with a 'fader'; a control that slides up and down, with its quietest setting being at the bottom position. This fader allows you to adjust how much of that channel can be heard in the mix i.e. how much you hear from your PA system (controlling the level at the output end of the signal chain). This is often confused with gain, although the two can work in tandem to find the right balance of volume in the mix. A simple way to try and understand the difference, is that the gain control makes the signal clear, and the level control makes it the right volume for the audience to hear. (Fig. 21)

### Channel Effects

Although limited, many small mixing desks will still offer some effects options, often including basic reverb and delay. An effects unit will normally be a small area on the right hand side of the desk, with a knob or slider that allows you to select your chosen effect. On each channel strip you will find an effects channel knob to control how much of the selected effect you wish to apply. There will then be a master FX level knob or fader back in the effects unit. This controls the overall volume output of the FX. As a rule of thumb, this should be set to 0db (unity) with the FX control for each channel adjusted to the required level. Generally on smaller mixing desks, you will only be able to apply one type of effect at any time across all channels (you can of course turn it off on the channels that do not require it).

### Master Fader/Volume knob

On the right-hand side of the desk there will be a control for the master level. This is usually a fader control. This control effects the volume of every channel being outputted/sent to the PA and the audience. This should be set to 0db generally but can be tweaked to an appropriate level. (Fig. 22)

### Power Order

To avoid loud bangs or broken audio equipment, it is key to ensure that you turn your equipment on and off in a particular order:

### Turning Equipment ON

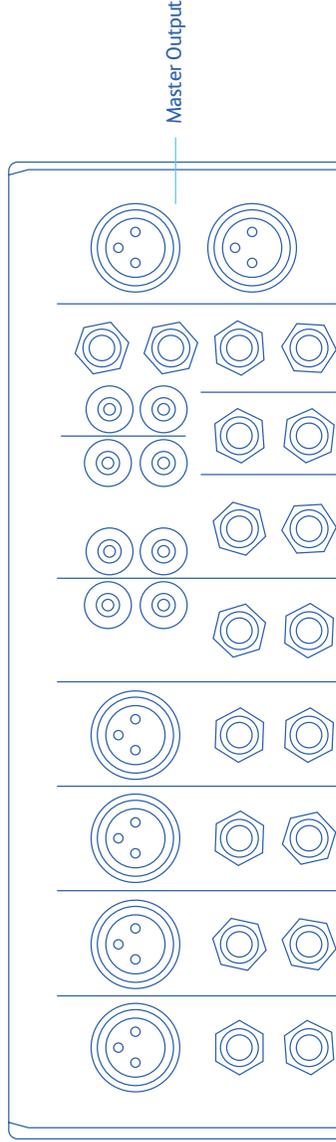
1. Make sure that the master volume on your mixing desk is turned all the way down.
2. Turn the mixer on.
3. Turn the PA (speakers) on last (or other powered amplifiers).

### Turning Equipment OFF

1. Make sure that the master volume on your mixing desk is turned all the way down.
2. Turn the PA (speakers) off (or other powered amplifiers).
3. Turn the mixer off.

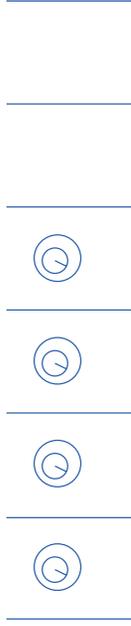
With the exception of the mixing desk master volume, you should notice that the process for turning equipment off is just the reverse order in which you should turn it on. For those using larger desks or setups, the procedure may include more items of equipment (such as external effects units etc), but the main thing to remember is that the PA speakers should be turned on last, but turned off first.

Input (Fig. 14)



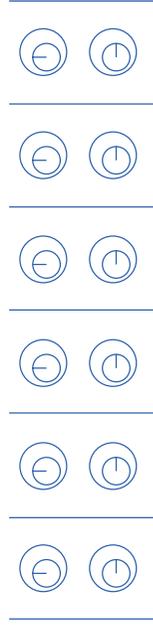
Channel Strip (Fig. 13)

Gain (Fig. 15)



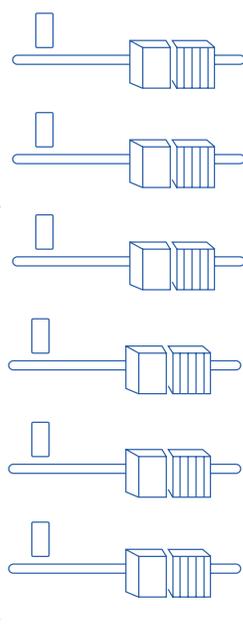
EQ (Fig. 16)

Aux (Fig. 17)

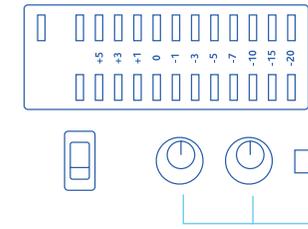
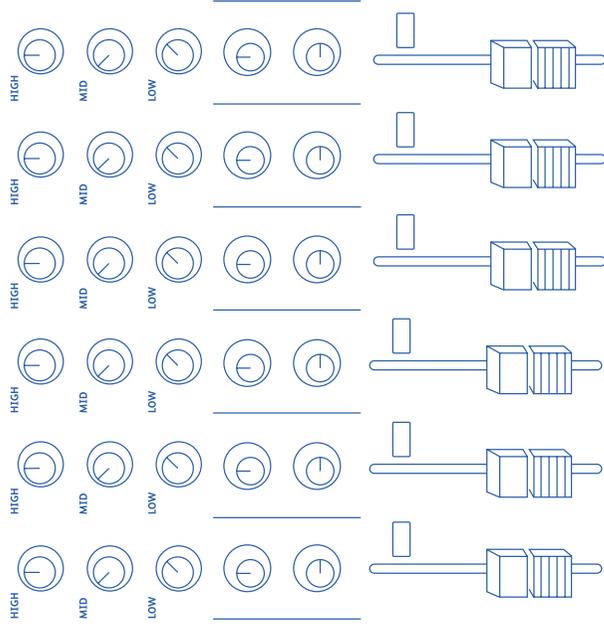


Pan (Fig. 19)

PFL (Fig. 20)

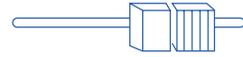


Levels (Fig. 21)



Level Meters

FX (Fig. 18)



Master Level (Fig. 22)

## Common Terms & Phrases

### Tech Spec (Technical Specifications)/Technical Rider

This is a document provided by the performer (often in advance) to let the venue/sound engineer know the technical requirements for their performance.

### PA System (Public Address System)

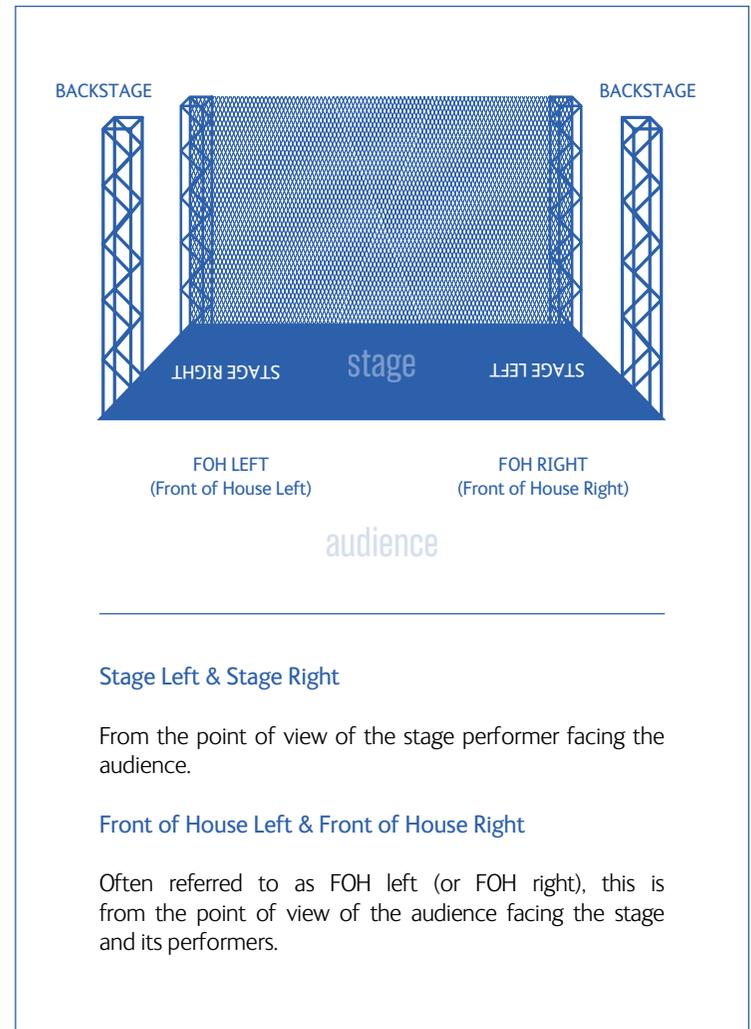
This refers to the audience-facing speaker system in the venue. The term 'Front of House' speakers can also be used to describe a PA system.

### FOH (Front of House)

"Front of House" is a term used by both the technical team and performers at live events to refer to an area within or behind the audience where the lighting, sound and audiovisual equipment is housed. However, staff such as venue managers or venue security sometimes use the term "Front of House" to refer to any space in which the audience or member of the public is free to access i.e. a theatre lobby or the box office. (Fig. 23)

### FOH Desk

The mixing desk that is normally located in or behind the audience to mix sound on. In smaller venues, monitor mixes are also done from here.



### Stage Left & Stage Right

From the point of view of the stage performer facing the audience.

### Front of House Left & Front of House Right

Often referred to as FOH left (or FOH right), this is from the point of view of the audience facing the stage and its performers.

Fig. 23

### Stage Monitors/Foldback

These are on stage speakers facing the performers. They enable the performers to hear themselves and the rest of the band. These are normally controlled by the main sound engineer but sometimes on larger shows can be controlled by a separate desk located on stage.

### House Equipment/In-House Equipment

Equipment owned by the venue. e.g. “They said we can use the in-house kit”. This refers to a drum kit that the venue has available for your performance.

### House Engineer/In-House Engineer

The venue’s own sound engineer.

### IEM’s (In Ear Monitors)

A custom made in ear system used in place of stage monitors.

### Backline

This refers to the musical equipment often located at the back of the stage, normally including drum kit and amplifiers. The availability of this equipment differs from venue to venue. Regardless of whether this is your own equipment or the venue’s, it is still referred to as Backline equipment.

### Breakables

Normally used in reference to just drums and percussion, it generally includes the pieces of equipment that you would not share due to their increased value and likelihood of damage, although the definition is loose. This often includes:

- Cymbals
- Sticks/Mallets etc
- Snare drum
- Bass drum pedal

The term breakables may also include drum stool, and in some cases can be used to describe similar pieces of equipment used by other musicians.

### Track/Click

This refers to a click track or audio track provided by the band for use within their performance. This can be supplied to the sound engineer in many different ways, and is best addressed in a tech spec ahead of the show.

## Technical Riders & Stage Layouts

Technical Riders (Tech Specs) and Stage Layouts are incredibly useful documents to have when looking to perform live in a venue (Figs. 24 & 25). They enable you to share your technical requirements with venue staff and engineers in a professional manner, helping to ensure that preparation for your performance includes the correct equipment and staging. It gives venues and engineers a chance to see if they can accommodate all of your requests ahead of your gig/ concert, gives you the artist the opportunity to go through all aspects of your live set-up, and in turn assists with making sure the show runs as smoothly as possible for all parties.

With input from a variety of sound engineers, we have provided examples of a technical rider and stage layout that should be applicable for any performance in the UK (found on p24 & p25).

Below are a few tips to help with putting these documents together:

- **Keep things simple** – don't over complicate your tech rider or stage layout. In many cases, you can likely just supply one or the other. If you have a large ensemble, it may be easier to supply both, but ensure you don't overdo the detail.
- **Provide names on your stage layout** – this helps the technical team/engineer learn your names and avoids people being addressed by the instrument they play.
- **Indicate any equipment you hope to have provided by the venue** – this would normally be agreed in advance of the performance. Make sure you clearly outline any equipment you can't provide, or anything you would like the venue or other performers to source.

Fig. 24

# The Sparrow Inspectors

Technical Rider

## Line Up

- Sheila – lead vocals, guitar
- Bob – electric guitar
- Gavin – bass guitar
- Rob – keyboard player, backing vocals
- Sally – drums, backing vocals
- Dave – Trumpet/Bugle
- Carly – Violin/Cello

Channel	Description
1	Kick
2	Snare
3	Tom 1
4	Tom 2
5	Hats
6	Ride/Overhead
7	Bass Guitar (Orange Combo) DI box required
8	Electric Guitar (Fender Bassman)
9	Lead Vocals Guitar (Marshall Combo)
10	Keyboard Stereo Left – DI box required
11	Keyboard Stereo Right – DI box required
12	Keyboard BV's
13	Drum BV's
14	Lead Vocals – own BETA mic supplied
15	Brass
16	Strings

## Channel List

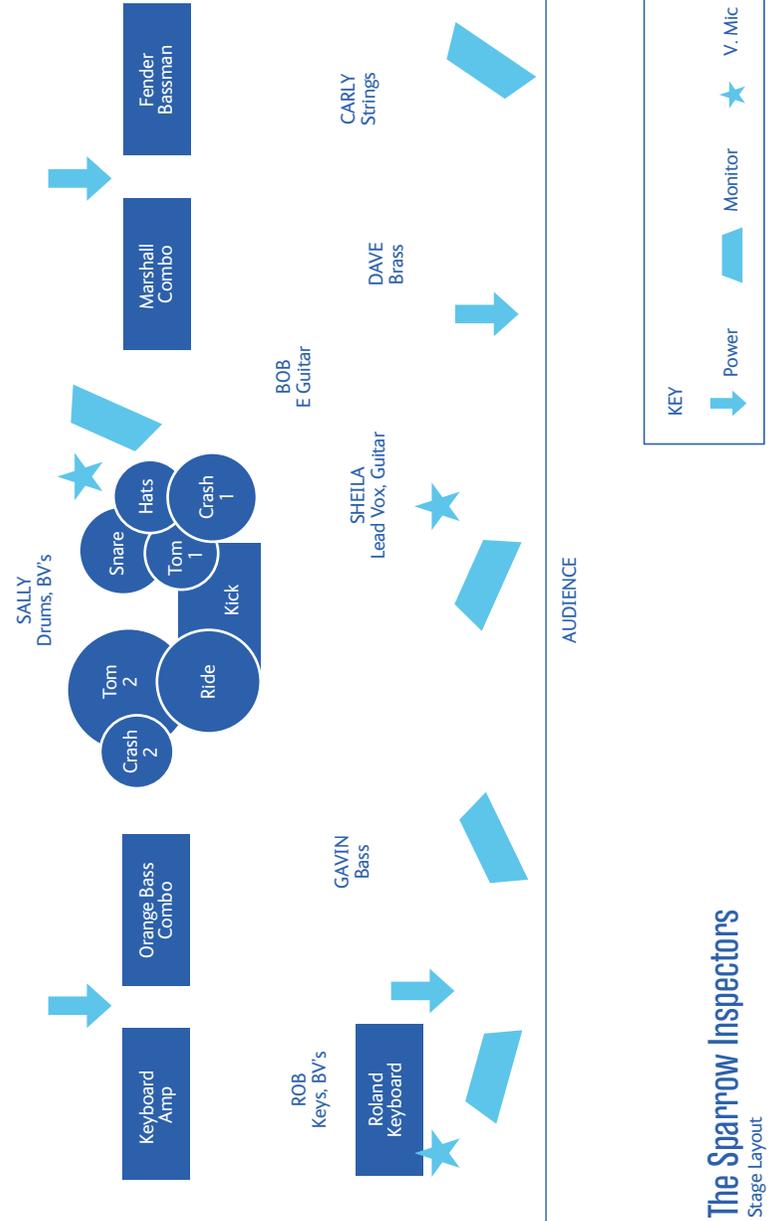
### Monitor Mixes

Ideally 4 separate mixes provided for band. No specifics other than a balance of all instruments in monitors, and lots of kick for Sheila.

### Band Contact

Gavin Brossdale | 07712345698 | gbforever92@gmail.co.uk

Fig. 25



## Hospitality Riders (Backstage Rider)

These documents are used to outline an artist's non-technical requests when performing at a venue. This will often include the provision of clean towels, drinks and sometimes food items. For unestablished acts, you can usually expect these basics to be provided without sending a rider request.

Hospitality riders for more established artists (commanding larger fees) will list many more requests such as accommodation specifics, luxury goods and other assorted services.

Be aware that if you do have specific hospitality rider requests, the cost of providing them may be deducted from any available performance fees.

Dependant on the venue and promoter, an artist may be offered the option of a 'Buy out' within their hospitality rider. This refers to funds that are to be allocated towards buying food provisions. This may replace any other items, or be in lieu of onsite catering facilities.

## Scenarios & Tips

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### “We will bring our own equipment/backline”

If you tell the venue/promoter that you are bringing your own musical equipment, ensure that it works, and that you provide a clear list of what you will bring.

### Make sure your own equipment is in full working order.

Try to test and maintain your equipment regularly so that you can help to rule out any potential problems stemming from your own gear and equipment. If spares are affordable and easily transported bring them e.g. strings, leads, batteries, drum skins.

### Communication is key.

Pre-performance: Always contact the venue/promoter ahead of a performance to discuss tech requirements, timings, load in etc.

Day of performance: On arrival at the venue, endeavour to introduce yourself to the promoter/sound engineer/venue manager and anyone else involved in the show. This will help clarify details and solve any last minute queries and issues.

### Don't assume equipment/people are going to be at the venue. Prepare.

If you use unusual equipment, or unusual amounts of equipment, it's easier to assume that you will need to provide these yourself i.e. if you require eight DI Boxes, it would be worth bringing as many as you can yourself. If you set-up on stage in an unusual manner, consider bringing extension leads or anything else that might help take the pressure off the venue equipment stock.

### Make sure you show up on time. Regardless of whether others do.

It is easy to fall in to the habit of arriving late due to others historically doing the same. If you do arrive on time you give yourself the best opportunity to have a successful performance. The music world (especially locally) is a very small, well-connected place, and your efforts and behaviours will be noticed and remembered.

### If you are waiting for your sound check make use of this time.

This time can be well utilised by preparing gear, tuning, planning stage positioning, and deciding on songs/instruments to prioritise during your sound check.

### Use your sound check productively.

Use your sound check as a sound check, not as a band rehearsal. Prior to going on stage, decide what you are going to play. Things to consider:

- Which song is the loudest, and which is the quietest?
- Which song is your strongest/current single/crowd pleaser?
- Which song uses different equipment/musicians?

Preparing in this way will not only support your own performance, but will help the show to run on time, which will ultimately please all involved.

If you have a complex setup there is no reason you can't prepare some of your equipment before going on stage.

Sometimes setting up off stage can be difficult, but if you have a lot of equipment/cabling it is worth building as much as possible before going on stage, especially if the stage/room is small and you are sharing it with other performers. Sometimes it may be possible to start preparing equipment on stage during other artist sound checks. This can of course save a lot of time, but be sure to ask that it is OK to do so first, and avoid getting in the way of the musicians that are scheduled to sound check.

This guide was developed and compiled by the LCoM Events and Enterprise Team.

As well as this Musicians' Technical Guide, you can find several editions of our Musicians' Survival Guide online ([www.lcm.ac.uk/survivalguide](http://www.lcm.ac.uk/survivalguide)) and in print.



This guide is available as a large print PDF.  
Please visit: [www.lcm.ac.uk](http://www.lcm.ac.uk)