GUITAR

---

by Wikibooks contributors

Developed on **Wikibooks**,
the open-content textbooks collection

Principal authors: Kef Li Eric Marcus X-Schecter (C) · Daniel (C) · GABaker (C) · NickPenguin (C) · Michael Hoffman (C) · Meemo (C) · Sameer Kale (C)

Cover: A guitar. Photo taken by PJ. (GFDL)

The current version of this Wikibook may be found at:
http://en.wikibooks.org/wiki/Guitar

Contents

Introduction

The **guitar** is a very popular stringed musical instrument. This book is mainly concerned with standard six-stringed acoustic or electric guitars; twelve string guitars are also applicable in most cases. It is definitely not necessary to understand music theory to read this book, although it can yield a deeper understanding of the principles contained herein.

1 DIFFERENT TYPES OF GUITARS

Acoustic guitars

Acoustic guitars are used in a variety of genres. Because of the long history of the acoustic guitar, there are many different kinds; some kinds are rarely considered guitars, such as the ukulele.The guitar is the most popular instrument in today's society. The body of the guitar is large and hollow, allowing the sounds to resonate and providing a natural means of amplification. The sound of the acoustic guitar is characterized partly by a weak sustain, meaning notes will fade after being struck. However, some master-built classical guitars ("concert guitars") feature very good sustain and excellent overall performance.

Acoustic guitars are often used in performance. When the performance is in a personal setting or in an amphitheater an acoustic guitar can often be heard with no amplification. In most other performance scenarios amplification is required for the audience to be able to hear the guitar well. An acoustic guitar can be amplified by placing an amplified microphone near (possibly within several inches) the soundhole of the guitar or by installing an electric pickup in the guitar. An acoustic guitar with an installed electric pickup is not considered an electric guitar.

When we refer to acoustic guitars, we usually think of the 'flat top' guitar, with a distinctive soundhole. They are usually bigger than classical guitars (described below), and feature a somewhat thinner neck and metal (steel) strings. They come in a variety of sizes, from the smaller 'parlour' and 'concert' sizes, to the larger 'dreadnought' and 'jumbo' sizes with the most typical being the 'dreadnought'. They have a distinctive warm (although sometimes metallic) sound and can be strummed for playing rhythm in a wide range of popular music genres, including country, pop and rock, or played 'fingerstyle' for country blues, ragtime and folk. A plectrum or 'pick' can be used, for instance in the bluegrass 'flatpicking' style.

Unlike the electric guitar, the traditional acoustic guitar is not dependent on any external device for amplification. The shape and resonance of the guitar itself creates acoustic amplification. However, the unamplified guitar is not a loud instrument; that is, it cannot "compete" with other instruments commonly found in bands and orchestras, in terms of sheer audible volume. Many acoustic guitars are available today with built-in electronics to enable amplification.

Electric guitars

The electric guitar is the workhorse of rock music, but has its uses in other genres such as blues, jazz and pop music. While an acoustic guitar can be played

right off the rack, an electric guitar requires amplification (It is possible to hear an electric guitar without amplification for the purposes of practicing, but it will be much quieter than an acoustic guitar, and electric guitars are never played this way in performances.) The sound of an amplified electric guitar is very different from that of an acoustic guitar, even when no effects or distortion are used - the pickups and amplifier define the guitar's sound to a large extent. Like the acoustic guitar, the electric guitar has a poor sustain. However, amplification and especially overdrive will increase the apparent sustain, and feedback can allow a note to be sustained indefinitely, even for several minutes.

Many people who play the electric guitar wish to use the distortion and other effects. This is covered in more detail in Anatomy of a Guitar.

Technically speaking an electric guitar is any guitar with an electromagnetic pickup to amplify the sound created by the vibration of the strings. Electric guitars come in a variety of shapes and sizes which are not always limited to the acoustical qualities of the shapes and thus can be more comfortable to play. Electric guitars are typically easier to play since the strings usually are much thinner (the strings do not have to resonate as much as with an acoustic), and are closer to the neck, requiring less force to press them down. The multitude of variations amongst these guitars allow them to have a vast variety of different tones. The two most popular basic shapes of electric guitar are the Stratocaster style and the Les Paul style. Most electric guitars that are solid body create very little sound on their own and therefore require an amplifier for all performance purposes.

Solid Body guitars

The typical electric guitar is a solid body guitar. They are called solid body because they are made from one solid piece of wood (or several pieces of wood glued together) and have no soundhole or obvious body cavities. With no apparent soundhole to project the sound they make very little sound on their own and therefore require an amplifier for all performance purposes. It has to have an amplifier not like other guitars. With out it, it would not be loud and make an odd sound..

Archtop Guitars

An archtop guitar is typically a hollow body acoustic or electric guitar which uses steel strings and has an arched top which creates unique resonance. The hollow body archtop is a guitar whose form is much like that of a mandolin or violin family instrument in that the body of the guitar is hollow. Archtop guitars may be acoustic or electric and can look very similar, the only certainly distinguishing feature being an electromagnetic pickup. Some solid body electric guitars are also considered archtop guitars based strictly on their body shape which includes an arched top although usually 'Archtop guitar' refers to the

hollow body form. Archtop guitars have been particularly popular in jazz music, usually using thicker strings than acoustic guitars(the thicker strings add tone). These are often louder than a typical dreadnought acoustic guitar. The electric hollow body archtop guitar has a distinct sound among electric guitars.

Twelve string guitars

The twelve string guitar is usually an acoustic instrument, but electric twelve string guitars exist, usually in the form of a double-neck guitar. Twelve string guitars produce a more ringing tone, however, they are a bit harder to play and maintain than the standard guitar and are usually confined to niche roles, and are usually used strictly for rhythm. They are played in the same fashion as a six string guitar, as the strings are paired together. Playing them is more difficult than a six string guitar however, because the additional strings require more pressure to depress. It is also more difficult to bend notes tunefully. They are usually more expensive than your average acoustic or electric, and tend to wear out faster due to the additional strain on the neck.

Steel guitars

The steel guitar is distinctive in being played horizontally, either across the players knees or on its own legs. There are two main varieties of the instrument, which is played using the metal slide, or 'steel', from which the guitar takes its name. The steel is held in the left hand, when used by a right-handed player. The two main variations are the lap steel guitar, which typically has six strings, and the pedal steel guitar, which can have more - and sometimes two or even three separate sets, each tuned differently. Pedals and knee levers are used to alter the tuning on particular strings whilst playing which, along with the sliding action of the steel, gives the pedal steel its distinctive voice, most often heard in country music and western swing.

Resonator Guitars

Often mistakenly referred to as 'steel' guitars (some models have metal bodies), the acoustic resonator guitar is distinctive in not having a regular soundhole, but a large - usually circular - plate which conceals the resonator cone. The cone closely resembles an audio loudspeaker, though made from spun aluminium. The bridge of the guitar is connected either to the centre of the cone or to the edge (by an aluminium 'spider'), and the strings' vibrations are thus amplified and projected outwards through the perforated plate on the guitar's top. The most common resonator guitars have a single cone, although the original model (the tri-cone) has three. Resonators possess a loud, bright voice, making them easily heard in a large room or in the open air. They are popular with blues musicians, and country players. They can be played in the conventional style, or with a metal or glass slide.

Bass guitars

See the dedicated bass guitar page.

live version • discussion • edit chapter • comment • report an error

2 ANATOMY OF A GUITAR

Both acoustic and electric guitars share many parts in common. For instance, they all have a *body*, *neck*, *fretboard*, and *headstock*.
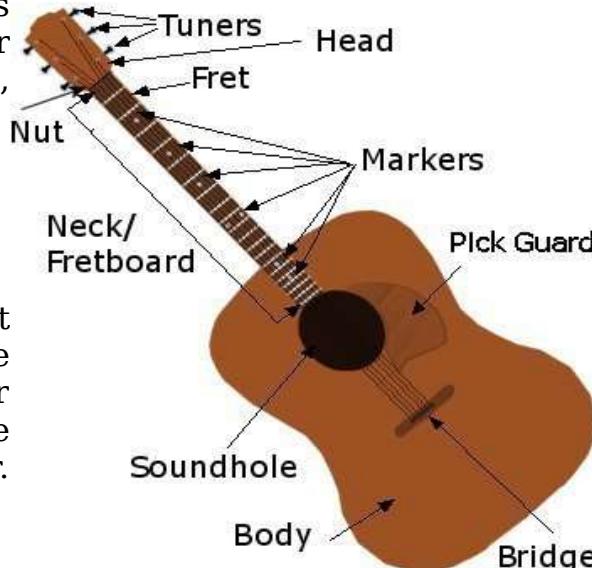
The Anatomy of the Acoustic Guitar, by Decstuff (GFDL)

Body

The guitar's body is of utmost importance: it provides the resonance that shapes the tone of an electric or acoustic guitar and provides the volume (or heft) of an acoustic guitar. It also may consist of:

flattop (or just top):
     the "front" of the guitar.
treble/upper bout:
     the (usually) smaller curved part closest to the strings.
base/lower bout:
     the (usually) larger curved part behind the bridge.
waist:
     the inwardly curved part between the two bouts.

Factors that affect a guitar body's tonal qualities include the type of wood, the construction (whether layered or one-piece, hollow or solid-body), shape and size, and more. However, a solid-body electric guitar's shape is mostly aesthetic rather than functional.

Bridge

The bridge is found somewhere between the middle and bottom of the body. Depending on the guitar, the strings may originate from the bridge or they might simply be supported by it. Most electric guitars allow the bridge to be raised or lowered, an adjustment necessary in setting up the guitar which may easily and safely be performed by any guitarist. This is typically done by adjusting screws, which are either thumbscrews which can be rotated with the fingers, or traditional screws requiring a screwdriver.

Acoustic guitars usually have a bridge and saddle arrangement. The strings originate at the bridge, usually held in by pegs. The strings then pass over a saddle, a flat piece of material held on its side. The saddle can be made of many materials, but the most common are either plastic or bone. Synthetic bone

substitutes are becoming more common.

Tremolo bar

The tremolo bar, also called the "tremolo arm," "whammy bar," or "vibrato bar," is found on some electric guitars. It was popularized on the Fender Stratocaster, and is now seen on many different models, including some hollow-body electrics. Another popular type of tremolo bar is the Floyd Rose. Its base will be located below the bridge. Pushing down on the bar will lower the pitch of the strings, and pulling it up will raise the pitch. Rapidly pushing and releasing (or pushing and pulling for exaggerated effect) will produce a modulation in pitch, called *vibrato*. Vibrato is often confused with tremolo (modulation in volume), hence the misnomer tremolo bar.

Neck

The neck of a guitar extends from the body. Some guitars may have it glued on, which is a set neck, and some may have it bolted on. A few guitars are made entirely of one piece of wood, or at the least, one piece of wood comprises the neck and part of the body, up to where the bridge is located, with the sides attached. Set necks are almost universal amongst acoustic guitars. The bolt-on or screw-on neck is similarly common with electric guitars. Both acoustic and electric guitars usually have a steel *truss rod* going through the neck. It counteracts the pull of the strings on the neck, strenghtening it, and reducing its curvature to an appropriate amount, also allowing for further adjustments if needed. Classical guitars do not require a truss rod, because there is less tension from their strings. Adjusting the truss rod is a step in setting up the guitar, but only an experienced luthier are encouraged to perform this adjustment. There have been several examples of alternative materials for the manufacture of guitar necks, the most noteable being a carbon fibre composite, the neck being the only structural requirement for string tension.

Fretboard

On the front side of the neck is the fretboard, or fingerboard. These are commonly made of rosewood. On it will be a number of metal *frets*, usually 20 to 24. Strings are held down behind a fret to change the note a string will produce. The first fret is the one nearest the nut (see below), unless there is one *immediately* after the nut, which is called a "zero fret".

Nut

All strings pass through the nut at the end of the fretboard. It roughly divides

the fretboard and headstock. Its function is to maintain proper string spacing and provide an endpoint for the string. On acoustic guitars, the nut and saddle are usually made of similar material. Electric guitars commonly use plastic, synthetics, and sometimes metal. As tremolo bars can cause tuning problems, guitars equipped with them usually have some manner of locking nut, where the strings are clamped down. Fender has recently introduced the roller nut, a nut incorporating a system of ball bearings similar to a locking nut, but easier on the strings.

Headstock (Head)

The headstock lies at the end of the guitar's neck. The major mechanical purpose of the headstock is to support the tuning machines (tuners) which terminate the strings of the instrument. A secondary purpose is identification; many guitar makers use a distinctive headstock shape, perhaps with logo or model information, or imitate that of a more well-known brand.

Amplifier and effects

The amplifier is not part of a guitar per se, but it is nevertheless absolutely necessary in playing the electric guitar (except for very simple practicing) and sometimes also used for accoustic guitar. The amplifier is often considered part of the guitar in the sense that different amplifiers will give the guitar a different sound. Many amplifiers have effects built in, especially distortion. The most common kind of distortion is called *overdrive*. If the amplifier has a "lead" channel, then turning up the pre-amplifier (or "pre-amp") will overdrive the amplifier's tubes or transistors, causing the amplification not to be linear, but adding a certain distortion to the sound. The higher it is, the more distortion there will be. Turning up the pre-amplifier will, by definition, increase the volume of the sound, so to compensate there is a "gain" knob, which can be turned down to reduce the volume after overdrive. *Heavy amplification can result in dangerously loud sounds* even on small 25-watt amplifiers, therefore, when adjusting an unfamiliar system, one should turn down the gain knob all the way, adjust the pre-amplification, and then pluck a string or chord on the guitar, while slowly and carefully turning up the gain until it is at the desired level, then plucking again to double-check. Distortion can also be provided by effects pedals, and other pedals can apply effects such as chorus, reverb, wah-wah, compression, or countless others. Sometimes these effects may be built directly into the amplifier.

live version • discussion • edit chapter • comment • report an error

3 BUYING A GUITAR

There are two things that held true, whether you are buying a guitar or an amplifier:

1. A guitar that doesn't get played is worthless at any price.
2. There are no such thing as bad tone; There are only tones that you may not like.

A guitar is an excellent instrument for almost anyone. A difficult guitar is not a good choice for a beginner. It takes dedication to learn and if the guitar is not difficult for the player then it is easier to learn.

Whether you are buying a beginner guitar for yourself or a parent buying a guitar for your beginner child it is not worth spending any money on a guitar that the player won't enjoy.

What to look for (and what to look out for)

• Guitars meant for regular playing (non-resonator guitars, not meant for slide playing) that have extremely high action (meaning, the strings are uncomfortable to press down). This may be a sign that the neck is warped, and, while this can be fixed, it can be costly and most players would want to avoid buying a new guitar with too high a fretboard action.

• A guitar's intonation. Intonation is a guitar's relative harmonics depending on the straightness of the neck, nut, bridge, and scale of the frets. A player should usually try playing natural harmonics (played by barely resting the finger over the string, not fretting it) on the guitar (12th fret high e string) along with the lowest E string to check, the 5th fret lowest E along with the open high e string, and finally, with natural harmonics, 5th of low e to the 7th of a, 5th of a to 7th of d, 5th of d to 7th of g. The guitar should be played from its first to last fret as well, to check for fret buzzing, which is undesirable. (the guitar may have to be tuned first, a guitar that is out of tune does not necessarily mean it has bad intonation, perhaps it has just been sitting for a while and the strings have went slack, also be aware of tone temperament)

• Stamp of Inspection. Even a guitar made in Indonesia can be a good quality if it's inspected well.

• Read reviews on places like www.amazon.com, to foreshadow problems down the road. Stick to the more well-known brands.

What makes someone NOT love a guitar

- The player may not be comfortable with getting their hand around the neck of the guitar. Almost against reason, a player with smaller hands will likely prefer wider necks, because the wider space between the strings allows more lenience when arching your fingers.
- A guitar that is difficult for the player to play is often a poor choice for that person, and is almost always a poor choice for a beginner.
- High action on fret: makes for a steeper learning curve, but if you don't mind that, they also allow you to play harder without buzzing out.
- Low action on fret: makes the string buzz a lot.
- Cracks/splits, bad joints: Need I say more?

Buying situations to avoid

Here are some "don't's". These may seem to provide a guitar at a very low price which may seem like a good deal, but they will possibly provide you with a difficult, damaged, or poor sounding guitar which is a bad deal at any price.

- Don't buy from a pawn shop (possible undetectable damage)
- Don't buy from any department store (difficult to play, damage easily, don't last, poor sound)
- Don't buy from eBay (too many ways to get scammed out of a lot of money)
- Preferably, don't buy from online shops, unless you can return it in 45 days. Even some very good makes may have some deviations, and even good quality guitars from well established manufacturers may not suit the player no matter how good they sound on paper—some people prefer wider necks, while some prefer narrows necks. The only way to know whether it is actually good is to play test them in the shop.

Acoustic guitar

There are basically two kinds of acoustic: classical guitar and steel-string guitar.

Classical guitar typically employ nylon strings, and have a wider fretboard. The peg box is also slightly different from a steel string guitar, which resembles quite a bit of the peg box of a violin; the body is also smaller. The tone is more mellower than the steel string guitar, and thus is much better for classical music. Disadvantage is that classical guitar is slightly more difficult in string maintenance, with the string needing to be settled in for a while.

Steel string-guitar, also known as folk guitar and dreadnought guitar, typically have a much larger sound box, and thus make it louder. Disadvantage is that the steel string also makes it hard to press, even in comparison to the

classical guitar; picking is also harder on these, as it was better suited to use a guitar pick to play. This is the typical guitar employed in blues, jazz, country, and early rock.

Electric guitar

Tremolo bar (aka Whammy bar, Vibrato bar)

The purpose of a whammy bar is for dive bombs and other various guitar tricks.

If it's your first guitar (or prefer ease of maintenance), avoid locking tremolos (Floyd Rose); while it has superb bending capability and is capable of staying in tune, it is very difficult to change strings (you need an allen key just to unlock the top lock). The way to tell if it's a locking tremolo is to see if it has a set of locks at the nut section. If you prefer to stay in tune, however, then you can try Yamaha's "finger clamp" locking tremolo, which require no tools when setting up.

Even if it's a normal tremolo, it would be proper to ask whether it is suitable for the player. Tremelo system, especially the strat-style and the floating bridge design, can easily make the strings out of tune. Bigsby do not go out of tune as much, but the only way to rarely go out of tune is to either use the Floyd Rose tremolo or a hardtail (no tremolo)

Pickup

Then there's also the choice of pickups and pick up arrangement. Typically they are

- Passive Single Coil (best for clean sounds, or slight overdrive, e.g. Stevie Ray Vaughan)
- Passive Humbuckers (For rich, thick, naturally decaying distortion, e.g. Dimebag Darrell)
- Active Humbuckers (For rich, thick distortion with long sustain e.g. James Hetfield)

Single-coils are typically found on Strats and Strat copies, and provide a bright, clean sound. Humbuckers, however, eliminate the hum induced from the AC current, providing it a warmer and fatter sound; and unexpected consequence of this is that it allows more overdriven gain, and thus is favored among metal players. In a slight interesting irony, many archtop guitars (used mainly by blues and jazz players) also use dual humbuckers. Active pick up are those that either use battery or phantom power to provide enhanced sensitivity, and thus have longer sustain.

Ultimately, however, both kinds of pickups are suitable for any kind of musics:

some people use humbuckers for blues and jazz, while others may use the single coil for the sound they prefer. (Besides, amplifier and effect pedals also change the tone of the guitar)

To make it even harder to decide, there are different arrangements for pickups:

- S-S - telecaster style
- S-S-S - Strat and and Strat copy
- S-S-H - "Fat strat", basically the pickup at the bridge is replaced by a humbucker. A common choice for people who may like both the clean tone and hum-free fat (and dirty) tone.
- H-H - Gibson Les Paul, and common humbucker arrangement.
- H-S-H - "super strat". Typically used for metal, such as Ibanez's Steve Vai signature model.
- H-H-H - Gibson Firebird VII and Squier Deluxe Hot Rails Strat

Typically, there will be a pickup selector that allow you to choose which pick up to use: 3 pick up guitar—commonly called strat-type— the pick up selection is five ways

- neck
- neck-middle
- middle
- middle-bridge
- bridge pickup.

2 pickup system usually have a 3 way switch:

- neck
- Both
- Bridge

For humbuckers there could be either 3 ways (as mentioned above) or five ways:

- neck
- neck at parallel (which produce a tone similar to single coil)
- both humbuckers
- both humbuckers, each in single coil mode
- bridge humbuckers

Since you are buying an electric guitar, you will also need to buy an amplifier; read Here

"Special" guitars

In here, when I mean special guitars, I indicate, for example, bass guitar,

hollow body guitars, 12-string guitars, and numerous other special guitars such as electric sitar (still play like a guitar)

As we mentioned, if the player is interested, than that's fine. However, there are a few things have to keep in mind:

- **Archtop** (hollowbody and semi hollowbody) is heavier and larger, with sometimes heavy guage string, giving the feel of an acoustic more than electric solid body in terms of playing. Its tone, however, is still electric. Due to the fact that it's electric, it is also suitable for rock music -- Seven Nation Army by White Stripes is played on a hollowbody, and The Young Brothers of AC/DC have played on Archtops on many of their songs. Do note that it is prone to feedback.
- **Bass guitar** is much larger, with a 34 inch fret. If the player have a small hand, it could be impossible for them to play. Also, bass is the "straight man" of the band, requiring him to be able to keep rhytmn, and do not do as much solo.
- **12 string guitar** require additional dexterity due to the extra string (player need to press two at the same time). Try playing Stairways on a normal guitar first before trying on this
- On that note, Doubleneck Guitar is very heavy (you are wearing two guitars). Also very expensive.

Many other special makes may have their pitfalls, such as difficulty in maintaining, or very expensive. Luckily, most are of good quality productions.

I am not saying that beginners should stay away from archtops, or even bass - just as I personally believe one can start on a chromatic harmonica. However, there will be pitfalls that makes it difficult to play, which is what usually deter learning.

Buying the guitar

Where to buy the guitar

In this day and age guitars are sold by many vendors. The place you choose to acquire the guitar can be as important as any other choice you make. Acquire (but don't steal) a guitar from these places:

- A trusted friend or relative - often a friend or relative who had a beginner guitar but has since upgraded still has that beginner guitar. If they recommend that guitar and will sell it for a good price then this is ideal. Simply take this guitar to a local music store and have it professionally 'set up'.
- A local guitar or music store that seems to have plenty of satisfied customers. If you can find a deal on a guitar you are comfortable with from

a store like this, go for it. If they tell you that they do 'set up' on their guitars before they leave the store then this is a good buying scenario. Look up 'musical instrument retail' in the phone book to find one of these stores. Even a used instrument from a local store is a good idea.

More experience with buying guitars is required to buy in any other scenarios.

- Online guitar superstores or mail-order guitars. The major difference between these and a local store is that the player cannot hold the guitar in their hands before they buy it. Just like some tall people cannot comfortably drive a 1990 Honda Civic, some people's hands are bigger than others. Luckily the necks of guitars come in all shapes and sizes. An uncomfortable guitar is less likely to get played so contact a local music store and try to find a similar guitar to try before you buy. If you must buy without ever seeing the guitar, first verify that the business has a liberal and long (preferably 45-day) return policy then cross your fingers and order. If the return policy works well then if the guitar didn't fit you could send it back for the cost of shipping.
- Pawn shops or eBay are not a good idea for buying a beginner's first guitar. There are a myriad of problems that can arise from these situations and, while good deals can still be found, unless you really know what you are doing, it's not a good idea for a beginner guitar.

Buying a guitar for a beginner

The key to buying a guitar for a beginner is to get one that the player enjoys and is excited about. If the player does not enjoy playing their guitar then it will be more difficult to continue. They will get frustrated easier and give up easier. Getting a guitar that the player will not be frustrated with will help naturally encourage or allow the player to be the best they can be.

Acoustic or Electric?

Let the player decide, since if they don't enjoy the guitar it will be less likely that they will play. For rock music an electric would be most appropriate.

An electric will typically be better for a beginner because it is easier to play (meaning that the strings are easier to push down and pluck), so feelings of success will come much sooner and frustration will be less likely. These things are important for a beginner. However, if you start on electric, and decide you want to move to acoustic, you have the rest of the learning curve ahead of you anyway, so if you plan on using both, it might be a better idea to start off with an acoustic.

If the player is excited about an acoustic guitar and feels they can overcome the more significant learning curve (compared to an electric) then they will find

in the future that playing an electric guitar will come much easier. (The acoustic guitar's strings are more difficult to fret than those of the electric.) On the other hand, the more significant learning curve on the acoustic may be enough to frustrate the player and cause them to lose interest.

If you want to play metal or shred, stick with the electric, as an acoustic will not work well with those styles.

If the guitar that they want is too expensive, there are always a more affordable model of the same kind:

- Fender --> Squier
- Gibson --> Epiphone
- Ibanez: Anything with a "G" as a suffix is the cheaper model. For example, GRX model is the cheaper version of their RG guitar.

Another way to tell what guitar should be bought is to see what kind of music they are interested. Someone who like to listen to metal will probably dislike classical guitar.

What else will you need?

Once you've chosen the guitar there are accessories the dealer will want to sell you. You will probably need:

- Guitar strap to enable the player to play standing up (~$10USD)
- Some picks (Get at least 5, some thin for strumming and some thick for playing individual notes.) (~$1;a local store will throw in some for free). Though picks are not necessary for fingerpicking, it's best to give the player options to see which one suit them
- A guitar stand to set the guitar on when its not being played, or a guitar hanger to hang the guitar on the wall (each $10-$30USD)
- A tuner of some kind - preferably an electronic one with a built-in microphone and guitar cable plug. (~$20USD) Especially important for people without perfect pitch.
- A case or a gig bag - These are protection for the guitar. The case ($50-100USD) is a hardshell case suitable for airline transportation and is an excellent protection(if you get a case a gig bag is not required). A Gig Bag ($20-$50USD) is typically a thick padded(1-2" of padding) zipper bag in the shape of the guitar which provides good protection and is necessary to avoid large scrapes and dings, but a gig bag is not suitable for airline transportation. If you are fine with the scrapes and dings, and/or you do not plan on transporting the guitar often, a case might not be necessary.
- A string winder — very useful for changing strings. It's cheap (about $1 - 3 USD), so may as well as get them now.
- While you do not need guitar polish immediately, it can always be useful; even the medicore Squier strat is an investment, and the best way to make it work is to keep in maintain well.

You won't need an extra sets of strings (~$5USD for acoustic, ~$10USD for electric) at the time of purchase, but will be necessary soon after, since the strings should probably be changed about every 2 months or 30 to 40 hours of playing time (probably more often but that doesn't really matter as long as the player is comfortable). Old strings will start to lose their tone and become brittle. They will also show corrosion and discoloration. If you do not live that far away from the guitar shop, it's best to buy them only when needed. However, changing old strings is not an absolute necessity unless they break, so if your budget is that tight, don't buy too many packs. Also, the difference between the cheaper and more expensive strings is subtle at best, so as long as it is the right gauge, you are good to go. I personally prefer the sound of old strings, as new ones sound "tinny". Most people do not agree with me, however.

You won't need a humidifier unless your guitar is acoustic and quite valuable (and a valuable guitar is probably not best for a beginner anyway)

Virtually all guitar dealers (like mattress or car dealers), mark up the price of their products but their prices are negotiable (consider saying "I've been thinking about this item what's your best price?"). Most of these accessories (including a gig bag) can be thrown in for free. The hardshell case is usually an exception. Don't forget to calculate the sales tax on top of all that. For example, the Guitar Center near where I live will rarely if ever bring down the price for the cheaper goods, but are more than willing to throw in extra accessories, and sometimes will offer to set it up for you.

For electric guitar, the player have many options when practice; with a special plug, player can even plug into a stereo, making amplifier slightly needless. However, it does not sound as good; if you want to sound like your favorite electric guitarist, however, an amplifier will obviously be neccessary. Buying an electric guitar with no amplifier can be a way to get a player a good guitar of the type they want without spending too much at first.

Another good substitute for an amplifier can be playing the guitar through a mixer or computer's sound card (especially a good sound card, like those made by m-audio), and there is some decent guitar effect software available that allow amplifier modelling. Also, as mentioned in buying an amplifier article, you can use a direct injection box to make amplifier modeling even mroe accurate. using these modellers/direct injection box have an additional benefit in that they can also be used with a standard amplifier as an effect unit.

All guitars require some maintenance over time since wood changes with pressures and humidity.

This probably adds up to a large sum. However, there's a saving grace. Whenever you buy a guitar from a guitar shop, you can usually get some of your accessories for free with minimal or no haggling. Just tell a salesperson that you want to buy a guitar, and he will probably start suggesting things he can throw in for free, and if not, you can suggest some accessories yourself.

Also, check out the beginner-packs. These include most things a beginner would need to start off with, and you end up saving if you plan on buying those things separately.

Ultimately, as mentioned before, the "totally bad" guitar are usually those that a made bad and just play poorly. After that, intonation, features, etc. depend on the personal taste of the player.

Buying a new guitar for someone who already plays

Unless you know very well what they want, buy the guitar with the person. Players who played long enough know what they like and what they don't like. If you really cannot figure their taste, the best option is to give them a gift certificate.

Shopping

Examine your local options by looking up "musical instruments" in the phone book and finding out which ones have guitars(electric or acoustic or both). It is recommended to get the player to feel and play many guitars before buying. There are so many varieties (57 varieties) that it's hard to know what's desired even after playing many different guitars. Also remember (and this will be obvious after visiting several shops) every single guitar is different so even if the guitar is exactly the same make and model and color, it may play completely different than the next. The way the shop or the manufacturer sets up the guitar is related to this but is not the whole picture, and in some cases one guitar will be great and another seemingly identical guitar will be a dud.

External links

- Wiki Guitar Buyers Guide

live version • discussion • edit chapter • comment • report an error

4 BUYING AN AMPLIFIER

Size and Wattage

Speaker configuration

Some amplifiers, such as many 50 watts combo amps, or even MG15MSII "Microstack" offered by Marshall, have 2 speakers, despite having basically the same amplification circuit of its single-speaker siblings. Sometimes, such 2 speakers configuration may even use a smaller diameter speakers (eg: 2 x 10 inch instead of 1 x 12 inch).

One thing to keep in mind is that a multiple speaker configuration will create phase cancellation., as well as producing frequencies from different speakers that arrive at the ear at very slightly different point in time. The end result of phase cancellation is that it creates a smoothing and rounding off effect, with a slight blurring of the notes. This can give a feeling of a fat texture. Obviously, the flipside is that it lose the tightness and definition of the sound.

Obviously, by having more speaker cones, it will have greater air moved: For example, given the depth is approximately equal, a 2x10 have the surface area of 157sqin, while a 1x12 only have 113sqin. Also, it will have increase power-handling capability, or more precisely, they split the amp output. Thus, given same amplification head, a 2 speaker configuration will have louder volume, but not as much power.

Types of Unit

DI Unit (including amp modelers)

Many so called Amp modelers and micro-amps, especially in regard to Rockman, are actually DI Units. basically, these units transform the unbalanced, high impedence signal from the guitar into a signal that can be used by the headphone, or even connect directly to line-in or balanced mic-input, allowing direct input of guitar to the mixing desk in a recording studio without losing the tone and quality of an amp. Furthermore, the guitar oreinted amp modelers can also be used as modelers or effect units that can be plugged into a guitar amplifier to provide volume.

Another benefit of using a DI unit is that they are compact, while they can go loud and getting that particular tone. This is particularly true for amp modelers and "headphone amplifiers", as their embedded electronics frequently a very

good approximation of a tube amp, and if you are going to hook up to a P.A. system most of the time, these may provide a much better alternative, as they are usually cheaper: The Behringer V-Amp 2, for example, is less than $100 dollars.

There are two kinds: one is an analog modeler, which is commonly used in modeling amp (Amplifier that actually tries its best to emulate a certain tone instead of just amping it), and digital computer modeling, such as Line6's POD 2.0. The benefit of using amp modeler is that it allows you to use such effects even in recording, as well as a more easy to maintain equipment — true tube, after all, is a nightmare to maintain.

What amp modelers and effect units does not do, however, is provide the volume; for those, you will need to hook it up to a powerful amplifier, or a loud P.A. system.

Combo Amps

Busking amps
    In essence, they are practice amps that have a battery attached. Naturally,
    that means they are gonna be more expensive. 15 watts on average, but
    Pignose Hog 30 can go to 30 watts, while Crate's Taxi Series have some that
    have 50 watts with 10 inch speakers. They will usually provide 6 to 10 hours
    in one charge. Also, make sure they can take AC power in too when needed.
    Do note that they are actually quite weak in terms of overdrive. On the other
    hand, rock and metal music is not exactly busking music, either — soft and
    light music that add to the atmosphere (usually a park or something) is
    usually preferred, and thus, the watt amounts is usually enough. A good one
    is Vox's DA5 (veyr tiny and small) and DA15, as they have modelling
    processors for an approximation of a tube amp.

Small gig amplifiers
    From 30 watts upward, these combo amplifiers the smallest package which
    is considered suitable as a stand-alone amplifier for small gigs. The standard
    is usually 50 or more watts of power and one 12 inch speakers, though some
    manufactures may use less wattages of 30 and 40, while employing more
    than one speakers. In better models, sound quality begins to approach levels
    acceptable to professional musicians. Quality is always important, but
    perhaps even more so in the case of the 1x12 combo - with a good one, you'll
    prove the doubters wrong, but with one of the many duds, you won't be
    taken seriously. The 1x12 is not a big amp, and if you want to bring it to a
    serious audition or gig without enduring a storm of eye-rolling and
    chuckling, it had better stand out from the crowd. These cost about 180 to
    450 dollars.

Heads, Cabinets, and Stacks

When purchasing the two, make sure of the ohmage of the cabinet, and the power rating for the head at that ohmage. Make sure the cabs RMS rating is about the same as the head's power output at the ohmage of the cab. A head can be solid-state or tube, the latter being less durable, but sounds better and is more expensive. A good solid-state head costs 200 to 600 dollars and a good tube head costs 500 to 1400 dollars. A cab in a half stack should be a 1x15, a 2x12, a 4x10 or a 6x10. These typically range from 250 to 650 dollars.

Tube vs Solid State

On the note of volume, a tube amp is in general louder, given the same watt; a 5 watt tube amp can rival the power of the 30 watt solid state amp.

Tubes amps have a very organic tone and are sensitive to their input signal. The harder you dig in with your pick, the more they tend to break up and distort. The softer you strum, the warmer and breathier they appear to sound. Multiple preamp gain stages can sometimes push an amp to the point where you do not hear the pick attack on the string. Finding a balance where pick attack and sustain are clearly articulated is the sign of a superior matched preamp and power section. With a great tube amp, the subtle changes you make with your pick and finger pressure can be heard so that you can create your own identifiable style.

Modeling

Another solution is to use modeling amp with onboard effects, which is basically a combination of a very clean power amplifier with the tone modeling unit producing all the tone. Some may consider this as the swiss-army knife of amplifier. The best of these amps can reproduce the sound of many other units with passable accuracy, and you have instant access to those cool effects that make even crappy guitarists sound good - delay, chorus, flanger, reverb, etc. With enough effects, your little old grandmother can sound like a rock star. Okay, that's an exaggeration, but if guys like me can sound good, you can too.

Another note to keep in mind is that solid-state amps have a fast attack time, where the note is immediately present when strumming. Modeling amplifiers seem to have a bit of a lag between your pick attack and the sound produced. Tube amps have a compression that is dependent upon pick attack. Ultimately, what sounds right depends on the player.

Physical size

Just because you can afford to have a very powerful amplifier (in both money

and wattage) does not imply you should get said amplifier. A problem for a traveling musician (especially those poor students that take public transportation) is that, for a high wattage, you will have to pick up a big amplifier that can be too cumbersome to carry, while a small enough amplifier may be bad for gigging.

For example, if you live in a small partment (especially Japanese apartment), you may have to get a smaller and weaker amplifier. Aside from obvious quieter sound, the smaller physical space available may also make storing even a full size 1x12 amplifier difficult.

In another example, Traynor's TRM30 (1 x 10" x 30w)and TRM40 (2 x 8" x 20w) are both good audition amplifiers. However, the TRM30 is taller, while TRM40 is wider. Furthermore, TRM30 is at 21 pounds, while the TRM40 is at 34 pounds, about one and a half times as heavy. Considering that a some people may have to carry their entire recording setup — a laptop, effect units, guitar— the slight difference in mass and dimension may makes the difference in the ease of carry.

Typical features

Essential

- Input - where you guitar cable goes in
- Power button - turn it off and on
- Master Volume - on a tube amp, this could be the only knob that you can touch, which in this case double as gain

An amplifier that only have these three is Epiphone's Valve Junior, seen as the cheapest reliable tube amplifier.

Almost standard

- Gain — determines the amount of distortions. The higher it goes, the more over drives it has. (And shattering your dreams: 11 doesn't mean it's better than 10 of another amp, if both are turned to the max!)
- EQ / Tone - Used to control the tone of the sound. May have only 1 knob (simply general tone), two (treble and bass), or even a 7 band EQ that not control treble, midrange, and bass, but also other including prescene.
- Phone output — used to plug in headphone so you can practice in the middle of the night.
- Channel selection — most modern solid-state practice amp have two channels; one for clean signal, and one for a overdriven output

Other stuff

- Modeling - One way to solve the clipping problem in solid state amp is the use of DSP modeling, which allows one to play tube-like overdriven sound.
- Extra effects — some units have build in effects, such as reverb and chrous, which can be easily controlled right on the panel by one or more knobs
- Effect loop — can be a single plug (and need to be split), or seperate plug as "effect send" and "effect return". Used for time-based effects (delay, chrous, looping, phase shift, and flanging), as using the effect loop will preserve the sound and effect of the amp.
- Line in, 1 or 2 — used to plug in external audio sources. they come out without passing through the preamp, and thus just louder.
- Line out - used to connect to another power amplifier or PA system.
- Speaker out - connect to another guitar speaker. Typically only found in head units, but some combo units have them too to make the output even louder.
- Footswitch plug—allow the use of footswitch to control internal effects, or may even select channel.

Tips

- For most beginners, a 15 watt amp will be more than enough for your bedroom and small gigs.

live version • discussion • edit chapter • comment • report an error

5 THE BASICS

The purpose of this section is to show the most simple concepts of guitar. Please make contributions.

Holding The Guitar

Sitting down: Sit up straight on a chair, with your feet on the ground. Place the waist of your guitar on the right leg, keeping the guitar completely vertical across its width. Rest your right upper arm on the side of the guitar so that it is comfortable. Your arm should bend with your thumb resting on the sixth string parallel to it. Your hand should cover the soundhole. On an electric, imagine a soundhole and keep your hand where the soundhole would be. Take your fingers of your left hand and rest it on the strings around the fifth fret. Place your right thumb behind the fingers directly behind the neck. Your shoulders should be relaxed. Now, lean forward slightly and relax. Most people without serious back ailments should feel comfortable and should be able to stay in this position without effort. If you are not, something is not right.

Using a Pick

Hold the pick in between your index finger and your thumb. Dont pinch it, hold it like a gun trigger, with the pick flat in between the side of your index finger and the bottom of your thumb. Your thumb should be in line with the first segment of the index finger, with the pick firmly (but not tightly) between. When you pick, your wrist should be straight, and when you strum, make sure to use your forearm and not your wrist for strength. Your wrist should be loose enough, but controlled, and you should strum with your forearm.

Using the Fretboard

Depress the guitar string firmly to the fretboard, close to the metal fret. If the string is not depressed enough, the string will strike the frets when vibrating and the note played will have a "buzzing" sound. If the string is depressed too hard, not only will the pitch of the note be higher than desired, but also you will use a lot of strength and get tired easily. You'll have to practice to get the right amount of pressure.

6 TUNING THE GUITAR

Sound is caused by the disturbance of particles in the air, usually by vibrations. The disturbance propagates through the air as a wave. When a string is attached to two points, like the strings on a guitar, striking it causes it to vibrate at a certain frequency which causes a soundwave of similar frequency. The length, thickness and tightness of the string determine the frequency of vibration and therefore the pitch of the note it produces. When a string is plucked the string is stretched to set it in vibration. A shorter or tighter string is harder to stretch and therefore vibrates faster than a longer or looser string. A thicker string produces lower notes than a thinner string because the higher mass of the thicker string is more difficult to set in motion. For this reason the strings of the lower notes usually have extra metal cladding to increase their mass.

There are many different ways to tune a guitar, but the most common is called standard tuning, or E tuning. In standard tuning the strings should be tuned to the notes EADGBe. This means that the thickest string should play the low E note, and then the next thinner should play an A and so on, finishing with the thinnest playing a high E. When the guitar is tuned, strumming all the strings at once produces a chord. Chords are explained in greater depth in the chords chapter.

Standard tuning is often represented visually like in the diagram below. Note that the upper case E represents the thickest string, and the lower case e represents the thinnest string, which means that the lowest string on the diagram is the highest string on the guitar. This is meant to represent how the guitar looks when a player looks down on it.

```
e|----------------------|
B|----------------------|
G|----------------------|
D|----------------------|
A|----------------------|
E|----------------------|
```

To adjust the pitch of a string, you twist the tuning peg. To adjust to a higher pitch the string must be tightened, and to lower the pitch the string must be loosened. When doing this, it is important to make sure you are turning the correct peg for the string you are trying to tune. It is both confusing and embarassing when you turn the wrong peg, often because you have to start all over again.

Until you have developed your musical ability, it may be difficult to know exactly what a particular note should sound like. Any guitar or music store will sell tuning aids, such as tuning forks, pitch pipes and electric tuners. When properly used, these allow you to precisely tune each string to the appropriate

pitch. Almost every guitar player owns some sort of tuning aid, and new players are encouraged to purchase one.

On the guitar neck, fingering each fret raises the pitch of the note a half-tone. In an octave, there are twelve half-tones, which means that if you play any note, the note 12 frets above that is twice as high in pitch. Any two notes are related by a certain number of half tones, which is called an interval. The interval between the low E string and the A string is called a fourth, which means that the two notes are separated by five half-tones or frets. This relationship of a fourth is the same for any string and the one below it, except for the G and B strings. The note G is separated by only four half-tones or frets, which makes this interval a third. Scales are explained in much greater depth in the scales chapter. Information on general music theory, including scales and intervals can be read in the Music wikibook.

Tuning by ear

Regular Tuning

Tuning by ear (also known as the fifth fret method) involves getting a single string at the correct pitch, and then using that as a reference point to tune the other strings. Because of this, a tuning aid is useful to ensure that the first string is properly tuned. It is best to use the A as the reference string, because it lies in the middle of the root notes of the most commonly played chords. A perfectly tuned A string resonates at a frequency of 440 Hz.

To tune by ear, begin by hitting the A string, and then the low E string. Pick the notes hard, and let the sound ring out, since the louder it is, the easier it is to hear the difference between notes. Turn the tuning peg up or down to bring the notes into unison When the notes are close together, you should be able to hear a very fine oscillation between them. This should get slower when the notes are closer together, and should disappear entirely when they are in tune. Your ability to hear this oscillation is a skill that develops over time, and you should not become quickly discouraged if it is at first difficult. Once the two notes have been brought into unison continue onto the next string.

On the diagram below, each string has a number indicates the fret you play to tune the string above it.

```
e|------------------0---|
B|--------------0---5---|
G|----------0---4-------|
D|-------0---5----------|
A|---0---5--------------|
E|---5------------------|
```
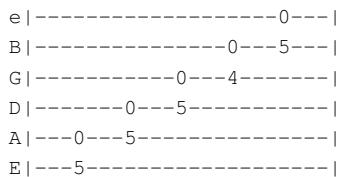
Also, when tuning it is always a good idea to tune the string upwards to it's proper pitch. By just tuning down to a pitch, you introduce slack into the string

and it goes out of tune much faster. So if the string is too high, it is best to tune it very low, and then back up to the correct pitch.

A good way to tell whether the string is perfectly in tune is to see if the other string resonates to it. For example, if you wanted to make sure the A string is in tune with the E, pluck the fifth fret of the E string (hard) and mute it. If the strings are tuned perfectly, the A string should be ringing even after the E string is muted, with little appreciable change in volume.

Harmonic tuning

Another, more advanced method of tuning is called harmonic tuning. In this method of tuning, you use the harmonic tones of the strings to produce high pitch sounds, and then use these to tune. Because the notes are of a higher pitch, they are easier to tune because even minor changes in pitch are more easily noticable. Rather than actually touching the string to a fret, simply touch the string directly above the fret. Then, pluck the string and quickly remove your finger. This should produce a high pitched ringing tone, known as a harmonic.

The easiest places on the string to produce a harmonic are on the 3rd, 5th, 7th, 9th and 12th fret. More information on why is available in the harmonics chapter of this book. Because of the interval between the G and B strings is a third, to tune the string harmonically you must use the low E string.

The diagram below shows the frets one must his to create the necessary harmonics for standard tuning.

```
e|---------------------7*---|
B|------------------0---5*---|
G|------------7*-----------|   * = Play a harmonic at this fret
D|--------7*---5*-----------|
A|---7*---5*---------------|
E|---5*------------7*-------|
```
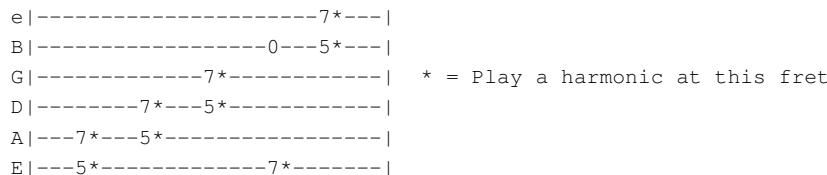
It is also be noted that this method will not provide perfect equal temperament tuning. It is extremely similar, but a picky guitar player may prefer the previous technique.

If there is a substantial difference in pitch when tuning via regular or harmonic, the intonation on your guitar is off. The easiest way to tell, is to perfectly tune your 12th fret harmonic with a tuner, and then fret at the twelfth. If the 12th fret is not in tune, while the harmonic is, your intonation needs adjustment.

Using a Tuning Fork, Pitchpipe, or Keyboard

Tuning Forks

A tuning fork is a piece of U-shapes piece of metal that, when struck, emits a particular tone. Tuning forks are good becuase, unless bent, they will always emit the same note. The most common tuning forks resonate at either an A, which at the frequency of 440 hertz, or C. Using a tuning fork is generally reccomended for more advanced players.

To use a tuning fork, gently striking the it against the heel of your hand and it will vibrate. Then, set the base of the fork against the body of the guitar. The sound of the fork will then be amplified through the guitar, and you can use it to tune your strings. It is important not to strike the fork against a hard surface, as this may bend the fork out of tune.

If you are using an A tuning fork, then you should tune first to the harmonic on A string. However, you can also use the 5th fret on the low E string, the 7th fret of the D string, the 2nd fret on the G string, or the 5th fret on the high E string. All of these frets produce an A, although some are in a higher octive.

Pitchpipes

A pitchpipe is much like a tuning fork, in that it only plays one note and that note is used for tuning. To use a pitchpipe, you blow through the end like a whistle. You can also purchase electronic pitchpipes, which emit notes through a speaker. Some electronic tuners also have this feature.

Keyboard

Using a keyboard can help as it has all the necessary keys and never goes out of tune. Strike the string and hit the key at the same time to recieve the appropriate tension. It is preferable to own a pedal for the keyboard for this approach.

Using an Electronic Tuner

Electronic tuners are a quick, accurate, and precise method of tuning. A tuner can be used in two ways, either through a built in microphone which detects sound, or by directly jacking in an electric guitar. When a note is played, the tuner determines the note you are playing, and then represents visually how sharp or flat the note is. Most models use a combination of lights and a display screen to indicate the tone of the note.

Electronic tuners can be easily drowned out by background noise when you do not jack directly into them. Because of this, they are best used in a quiet environment.

Factors to Consider While Tuning

Modern instruments use equal temperament tuning, and the guitar is no exception. Older methods of tuning have the problem of certain intervals sounding out of tune, while others did not. Advances in guitar manufacture has solved some of these issues, but they are still extremely sensitive to their environment. When the guitar experiences a change in humidity, the amount of moisture in the wood changes, causing it to either expand or contract. Likewise, both the wood of the guitar and the metal strings expand and contract due to changes in temperature. Extreme changes in humidity or temperature can damage your guitar, so you should treat it with proper care. Some structural aspects of the guitar, like the next, fretboard or truss rod, can be adjusted. See the Adjusting the Guitar appendix.

Guitars can be temperamental. If you tune in a room with a set temperature and humidity, then take the guitar into another room that is hotter/colder and/or more/less humid, some guitars can go out of tune. This is because when wood is introduced into an environment where the humidity is different the wood will either absorb moisture or release moisture. When wood does this it swells or contracts in reaction to a high humidity environment or a low humidity environment respectively. This is most apparent in the neck and fretboard of a guitar and truss rod adjustments may need to be made accordingly. See adjustments in the appendices for more information. Additionally the metal strings act in a similar fashion but instead due to temperature, the cooler it is the more they contract and the hotter it is the more they expand. It is best to let the guitar acclimate itself in the room in which it will be played then make adjustments and re-tune it.

When fresh strings have been put on a guitar, they will often fall out of tune very easily. This is because after having been put on the guitar, the strings still have a lot of slack. It will take time to work all the slack out of the string, but the process can be sped up somewhat. After the strings have been put on, loosen them a fair bit and then bend the string gently. Turn the tuning peg up, and then bend the string again. After this, strum chords enthusiastically for a few minutes and tune again. Most of the slack should be gone from the strings, and the guitar should stay in tune.

live version • discussion • edit chapter • comment • report an error

7 CHORDS

A chord is a combination of notes played simultaneously. The name of a chord is determined by its root note, and the relationship between the root note and the chord's other notes. A root note is usually the lowest note in a chord, but this is not always the case. Chords may be strummed or picked through. Beginners will find strumming much easier, and picking is examined in more depth in the Picking and Plucking chapter. Traditionally, a chord is defined as three notes played together. Because of this, double-stops and power chords are not kinds of chords, but kinds of intervals.

While chords are primarily used for rhythm guitar, basic chord knowledge is important for lead playing as well. The lead parts of many songs often require the use of chords, and in certain styles of playing, chords can make up the lead part entirely. Additionally, many lead patterns revolve around arpeggios, which are chords with their notes played in sequence, rather than together. For more information on arpeggios, see the Arpeggio and Sweep Picking chapter.

Chords are easy to play, but to understand why they sound how they do and why certain chords work better together than others, it is important to understand scales. While it is not necessary to have prior knowledge of scales to find this section useful, prior understanding of scales will definitely improve one's understanding of chords. It is recommended that before reading this section, one should familiarise themselves with general music theory first.

Different Kinds of Chords

Major Chords use the first, third and fifth note of the major scale. They are bright and happy sounding chords.

Minor Chords use the first, third and fifth note of the minor scale. They sound dark and melancholy.

Seventh Chords adds a seventh note (seven notes from the root on a major or minor scale) to the given chord. They sound slightly dissonant, and directs the focus of the progression to what follows it.

Sixth Chords adds a sixth to the chord. It does not sound dissonant like a seventh chord, because the sixth note is a major third below the root of the octave.

Suspended Chords removes the third from the chord, replacing the note with a second or a fourth. The guitar part in John Lennon's "Happy Christmas" uses suspended chords.

Barre Chords are chords you make while pressing all the strings down with your index finger. Barring is an important technique and greatly opens up the depth of the instrument.

Appendix

Full list of fingering positions for standard tuning

live version • discussion • edit chapter • comment • report an error

8 Double-stops and Power Chords

The **double-stop** is the next step up from single notes. They are used in all kinds of music, from country to heavy metal, and by both lead and rhythm guitarists. Heavy overdriven guitar uses them almost exclusively in the form of **power chords**.

A double-stop is two notes played at the same time. (This term is exclusive to stringed instruments; for instance, one cannot play a double-stop on a clarinet, while one can play a double-stop on a violin or piano.) Perfect fourths (e.g., C-F) and perfect fifths (e.g., C-G) and are the most consonant kind of double-stop, not counting unison and octave double-stops. For this reason, they are often called *power chords*, especially in the context of overdriven guitar.

This diagram shows the hand positioning for a G5/D power chord:

```
  EADGBE
  xx00xx
1 ......
2 ......
3 ......
4 ......
5 ......
```

The top row shows open strings (shown as the number zero here; non-textual diagrams usually use a circle), and strings which are not played (shown as the letter 'x'). Each row below that indicates a fret (numbered for clarity). However, this diagram has no fretted strings. Therefore, to play this double-stop, simply strike the middle two strings as open.

Here are three fingerings for a G5 power chord:

```
  EADGBE        EADGBE        EADGBE

  ---xxx        ---xxx        ---xxx
1 ......      1 ......      1 ......
2 ......      2 ......      2 ......
3 1.....      3 1.....      3 1.....
4 ......      4 ......      4 ......
5 .34...      5 .33...      5 .44...
```

These are all the same notes at the same frets, just different fingerings. The numbers indicate the number of finger to use. Finger #1 is the index finger, #2 the middle finger, #3 the ring finger, and finger #4 is the pinky finger. The thumb is not used except while fingerpicking and we will not worry about it yet. To strike this chord, arrange your fingers as shown: index finger on the third fret of the sixth string, and one or two fingers on the fifth fret of the fifth and fourth strings. The second and third fingerings are often more versatile but they are more difficult for the beginner to play. Which fingering is correct depends on both the player and the situation. For now, any fingering will do.

Omitting the sixth string's note makes this the same G5/D chord as before: the strings will have the same pitch. However, it may sound a bit different, because the strings have different tension. In general, the guitar's thinner strings will have a brighter, more ringing sound. The G5 chord is named such because its root (lowest) note is G and its second note, D, is a fifth apart. (Its third note is also G.) The G5/D is called such because it is also a G5 chord, but has D as its bass note. If it were interpreted as a D chord, it might be a D4, following the same logic — however, because it is a kind of suspended chord, it is called a "D suspended fourth", or Dsus4. Which name fits depends entirely upon the context, but its use as a G5/D is far more common.

Now another variation of the G5:

```
  EADGBE
  --xxxx
1 ......
2 ......
3 1.....
4 ......
5 .3....
```

Like the G5/D, this double-stop is obtained from removing a note from the full G5 power chord. When played with overdrive, all three of these chords sound remarkably alike, though not identical. Without overdrive they become more distinct.

This is the full G5 chord, although power chords are usually considered to have only two or three notes:

```
  EADGBE
  --00--
1 ......
2 ......
3 1...22
4 ......
5 .4....
```

This is a hard fingering for the beginner and is only given as an example. The A and D strings are in unison, that is, they sound the same note. If the D string were instead fretted at the fifth fret (as in our second example), then the middle two strings would be in unison. Any number of these strings can be omitted, and as long as there are at least two notes, and one is a D and the other a G, it is some kind of G5 chord.

live version • discussion • edit chapter • comment • report an error

9 SCALES

Easy scales to get you going

I would recommend starting off by learning the minor pentatonic, which is the single most popular scale for solos in western music. Most guitarists know this shape of the pentatonic scale by heart.

It can be used for pretty much anything, so learn it well!

This shape can be moved up and down the fretboard for play in any key (like all scale shapes that aren't open).

This is in A:

The numbers represent the fret numbers. The numbers in parentheses represent the optional Blue Note which, as the name suggests, give a bluesy kind of vibe to your playing. However, it is not actually part of the Minor Pentatonic scale, only very often added for extra colour.

```
e |--5--------8--
B |--5--------8--
G |--5-----7-(8)-
D |--5-----7-----
A |--5-(6)-7-----
E |--5--------8--
```

This is the basic shape, just learn it starting with the bottom E-string, one note at a time. Once you have learned the shape by heart, practice playing the scale at different places on the fretboard. This is essential - and start early on, or else familiar shapes will seem unfamiliar at different places on the fretboard.

Once you've mastered that, try the harmonic minor scale, a harder scale by far, but definitely satisfying over some minor chords. It gives you a rather "middle-eastern" kind of sound.

Again written in A

But the shape works in any key, just move the shape up or down the neck:

```
e |--4--5-----7--8--
B |-----5--6--------
G |--4--5-----7-----
D |--------6--7-----
A |-----5-----7--8--
E |-----5-----7--8--
```

This looks a little more complicated, and is certainly more difficult to get to sound nice, but when you have mastered it it will sound great!

There are many different scales: 7 modes of the major scale, three different forms of the minor scale, the blues scale above, the pentatonic scale, the whole tone scale, the diminished scale and some scales that originated in Spain and India. There are also very interesting scales from eastern music. It is possible to create your own scales by altering another as you wish, or completely coming up with your own. Remember, most of the scales were built musically, not randomly, using ideas such as a cycle of perfect fifths for the major scale.

live version • discussion • edit chapter • comment • report an error

10 Rhythm

Good rhythm is almost essential to good guitar, and probably the simplest to understand. Let's start with some terms:

Beat
Measure
Time signature

All measures consist of a number of beats. You see the beats with the time signature, for example, 4/4. However, 4/4 is known as common time, and has special notation.

4/4 means that there are four beats in the measure, and that a whole note consists of four beats. Here are the other notes:

whole note
half note
quarter note
eigth note
sixteenth note

and so on.

A whole note consists of the number of beats in the bottom half of the time signature, in this case 4. So, each whole note consists of four beats. Each half note is two, quarter note is one beat, etc. There are other possible signatures, 3/4, 2/4, 6/8, 7/4 are the common ones.

To apply what we have read, let's pull out the most basic of progressions, where we will play G and D in alternate measures, with a 4/4 time signature.

It will look like this(each measure separated by a pipe and each beat denoted with a dash):

```
  G         D
 |- - - -  |- - - -|
  v v v v   v v v v
```

The "v" from now on denotes a downstroke and a "^" denotes an upstroke. Here. you are playing a downstroke on each beat (each tick of the metronome) and nothing in between. Some people find it easier to practice this without

playing any chord, and muting all the strings. Try that too.

Let's do some upstrokes now.

```
  G         D
 |- - - - |- - - - |
  v^v^v^v^  v^v^v^v^
```

Here, you are downstroking on the tick (intuitively called the 'downbeat') and upstroking in between the ticks (the upbeat. A good way to do this is to count your beats, "one-and two and three and four" going down on the numbers and up on the ands. Most strumming patterns you can here this going on, but slightly more complicated. Make sure you are going down on downbeats and up on upbeats. A lot of people who start playing tend to not follow this, and it mixes up your rhythm badly. If you keep to this pattern, even with more complicated patterns, you will not lose track of the beat.

If you listen to the above pattern, it will start to sound boring. But it is the basis of all other patterns. When you hear a more complicated pattern, most likely the player is missing some strums. Like this:

```
  G         D
 |- - - - |- - - - |
  v^v^v^v^  v^v^v^v^
```

live version • discussion • edit chapter • comment • report an error

11 TABLATURE

It is *important* for the guitarist to learn both tablature and standard notation. Each has its advantages, and each conveys information the other does not. For this reason, many guitar songbooks feature both standard notation and tablature; some even feature a "tab-staff" variant, where rhythm notation is combined with tablature.

Instead of describing the notes that are played, tablature describes *how* they are played: which strings and which frets. For instance, here is the very first song:

A demonstration of tablature, by Furrykef (presumed GFDL)

This is a very simple song. The top line represents the first string, which you will recall is the high E string. The spaces between the lines are not used. Each number on a line represents a fretted note on that string. The number zero is an open string, the number one is the first fret, and so on. Try playing the tune. Take as much time as needed and do not worry yet about the timing.

Of course, print-quality sheet is impossible to write with plain text. Even when images can be used, they are often inconvenient: they take up more space and not everybody can write them. For this reason, there is a very informal and loose standard of "Internet tablature", using only ASCII characters. For example, the above tune would be written:

```
e---0-1-3-5-3-1-0----|----------------||
B-----------------3-|-1--------------||
G-------------------|----------------||
D-------------------|----------------||
A-------------------|----------------||
E-------------------|----------------||
```

This version contains less information. Without the standard notation (staff), rhythm can only be suggested by spacing, or less commonly by adding symbols above each note, such as Q for quarter note. Much Internet tablature does not even contain bar lines; timing must be discerned by listening to the original piece.

(On the other hand, "tabs" are much more convenient than standard notation for conveying a specific finger positioning, precisely. Especially with alternate tunings, this is a clear advantage.)

There are hundreds of tabs for popular music freely available at the On-Line Guitar Archive (OLGA). These can serve as an excellent starting point for beginning guitarists.

TabWiki also has hundreds of free tabs and allows you to add and edit them as well for continual improvement.

live version • discussion • edit chapter • comment • report an error

12 BASS GUITAR

Bass guitars have similar design features to other types of guitar but scaled up: thicker strings, longer neck and larger body, etc. This allows lower notes to be created when the strings are tuned to a playable tension. They are sometimes categorized as guitars but are also occasionally categorized as a separate instrument. Although there are many variations, the standard bass guitar has four strings tuned EADG, one octave lower than the bottom four strings of a guitar in standard tuning. Although the bass guitar can be played like an oversized guitar, it also draws much inspiration from double basses and the instrument has a vocabulary of playing styles and music all of its own.

Slapping And Popping

One of the distinguishing features of the bass guitar is the slap style. It is typically distinct to the bass guitar, although it has been used on acoustic guitars by skilful players.

Slapping is accomplished by percussively striking the string - usually E or A on a standard tuned 4-string bass - with the left hand side of the thumb (for a righthanded player). This is done towards the neck of the bass. The thumb is then pulled away as quickly as possible, to create a distinct, fretty noise.

Popping is accomplished by curling the fingertip of the index or middle finger under the string - usually the D or G string. The string is then plucked to create a similar sound to slapping on the thicker strings. This is, again, performed towards the neck of the bass.

- Slap Bass Tutorial Video (Free)

Next is a simple combination of right hand slapping and popping with left hand hammer-on to create an enhanced, motor slap sound.

The first clip is a very slow version with simple chart showing each note of the lick. Use the control buttons on the Flash applet to play and pause the clip:

- Hammer-On Slap Technique Video A (Free)

The second clip is the same simple lick run at regular speed with simple chart showing each note of the lick. Use the control buttons on the Flash applet to play and pause the clip:

- Hammer-On Slap Technique Video A (Free)

Different Basses

The standard bass is a 4 string bass, tuned EADG (low to high). Other variations of this tuning include DADG and CGCF. These lower tunings are often used in metal and heavier music, as it gives the possibility of creating lower sounds, but also the strings hit off of the fretboard creating a rattly noise.

To achieve a clear tone on notes lower than standard tuning, it is strongly recommended to buy a 5-string bass, which is tuned BEADG (low to high). The fifth string is thicker and so can be tuned lower whilst still being relatively tight.

The notes are always symmetric along the fretboard.

live version • discussion • edit chapter • comment • report an error

13 ALTERNATE PICKING

Alternate picking is used to play much faster, and much more precisely, than you could do with just downstrokes or fingerpicking. The basic idea is that you do a downstroke and when you bring the pick back again you touch the string again with an upstroke. Got it? It doesn't sound too hard, but it will take some time to master it really fast. Ideally, you will subconciously decide whether to alternate pick or not, depending on the underlying rhythm.

   Use whichever method feels best for you. Only the top of your pick should be seen and touch the string. That way, it costs you less strength. Your movement should only come from your wrist, not from your whole arm.

   Maybe you start with simply alternate picking the lower e string. Get faster and faster, until you've reached your maximum. That's how fast you could play at the moment, but it will take some time to synchronize both of your hands, so you can read

```
B|-----------------------------------------------------1--2--3--
4----------------------------|
G|---------------------------------------------1--2--3--
4-------------------------------------------|
D|-----------------------------1--2--3--
4---------------------------------------------------------|
A|-------------1--2--3--
4----------------------------------------------------------------------|
E|-1--2--3--
4------------------------------------------------------------------------------|


B|-4--3--2--
1------------------------------------------------------------------------------|
G|----------------4--3--2--
1---------------------------------------------------------------|
D|-----------------------------4--3--2--
1--------------------------------------------------|
A|-----------------------------------------4--3--2--
1-----------------------------------------|
E|--------------------------------------------------------4--3--2--1--2--3--4--
5-----------------|
```

Play this down again and up the whole neck.

   Or simply fret a chord and pick it with alternate picking.

   Here are some other exercises I found helpful:

```
E|--------------------------------------------------------------------------|
B|--------------------------------------------------------------------------|
G|--------------------------------------------------------------------------|
D|-------------------------------------1-------1-2-----1-2-3---1-2-3-4------|
```

```
A|---------1-------1-2-----1-2-3---1-2-3-4---2-3-4-----3-4-------4-------------|
E|-1-2-3-4---2-3-4-----3-4-------4--------------------------------------------|
```

And so on. Finally, I've got two licks for you. The first one is Highway Star by Richard Blackmore:

```
e|-5--5--6--8--5--5--6--8--5--5--6--8--5--5--6--8-|-5-5--6--8--5--5--6--8--5--5--6--8--5--5--6--
8-|-6--6--8--10--6--6--8--10-- and so on
```

The second riff combines palm muting and alternate picking. You find riffs like this in many metal songs, this example is taken from Metallica's One:

```
E|-----------------------------------------------------------------|
B|-----------------------------------------------------------------|
G|-----------------------------------------------------------------|
D|------------2--------------2--------------2--------------2--3---|
A|------------2--------------2--------------2--------------2--3---|
E|-0-0-0-0-0-0-----0-0-0-0-0-0-----0-0-0-0-0-0-----0-0-0-0-0-0--------|
```

Palm mute the open notes.

live version • discussion • edit chapter • comment • report an error

14 SLIDES

The **slide** is one of the simplest guitar techniques. There are two kinds of slides: shift slides and legato slides. In a shift slide, a note is fretted, then the fretting finger slides up or down to a different fret, and the string is struck again. A legato slide differs in that the string is struck only for the first note.

Guitar Slide, by Furrykef (presumed GFDL)

The first slide pictured is a shift slide; the second is a legato slide. A few tablature writers do not distinguish between the two slides, using only shift slide notation. The abbreviation "sl." for slide may be omitted. When sliding from a higher fret to a lower fret, the slanted lines are usually changed to have a downward slope instead of an upward slope, to emphasize the sliding "down". It is possible to slide up from an open string, but this often does not sound as clean because this requires a hammer-on at the first fret (or for really fast slides, a higher fret) before sliding up. Likewise, it is possible to slide down to an open string but it requires a pull-off at the first (or some other) fret.

In Internet tablature, a slide from the third fret to the fifth might be written like any of these:

```
3/5
3>5
3>s>5
3s5
```

Internet tablature rarely distinguishes between the two kinds of slides.

Less commonly, tablature can instruct the guitarist to "slide into" or "slide out of" a note. In printed tablature, they are notated identically except, in the case of slide-into, the first note is omitted, and in the case of slide-out-of, the second note is omitted. In other words, the note slides in from nowhere, or out to nowhere. It simply tells the guitarist to quickly slide from or to an arbitrary point, usually only a few frets away.

Good sliding keep the new note audible, while keeping the note in tune. If you don't press the string hard enough, you mute the string or buzz it on the frets.

Too hard and the string bends out of tune. The latter does not happen often, but sounds awful and should be avoided.

live version • discussion • edit chapter • comment • report an error

15 Hammer-ons, Pull-offs, and Trills

Hammer-ons and pull-offs are two closely related techniques. They are used to play *legato*, that is, in a smooth manner, and are also used to help the guitarist to play faster. They are most commonly used in electric guitar work, but can be used in acoustic tunes as embellishments.

The hammer-on

Strike an open E on the first string. While the note is still ringing, quickly and firmly press a finger on the third fret. If done properly, a G note should be sounding. This is called "hammering on" the string. Without electric amplification, the hammer-on tends to make the sound quieter — a lot quieter if one hasn't practiced it! (Although, because the strings are closer to the fingerboard, hammer-ons are easier to execute on an electric guitar, they are used extensively by acoustic guitarists as well.) The hammer-on can just as easily be played with fretted notes: just play the note normally and hammer onto another (higher-numbered) fret on the same string.

The pull-off

The pull-off is the opposite of the hammer-on. Hold the E string on the third fret. Strike the string and, while the note is still ringing, release the fretting finger. If done properly, the G should be followed by an open E. Like the hammer-on, this tends to make the sound quieter. To help alleviate this, a slight sideways motion of the finger while pulling off will add extra vibration to the string, preserving the volume. It is very hard for a beginner to accomplish, and the sideways movement helps greatly.

A pull-off looks like this:

```
D|---7p5--5p4--4p2--2p0--|
```

The trill

A trill is two alternating notes, such as an A and A#. Only the first note is struck; the rest are rapidly hammered-on and pulled off

16 PICKING AND PLUCKING

There are three common ways of playing the guitar. Using a pick (also called a plectrum) is probably the most popular way to play the guitar. However, surprisingly, using a pick is not for everyone. Some people will claim, for instance, one cannot play rock without a pick. This is not true! Any genre can be played with or without a pick, from country to death metal. (The lone exception is classical guitar, which is invariably played *without* a pick.) The following may help the player decide what is right for him or her.

Using a pick

The primary advantages of the pick are speed, its ease of striking large chords and, because the fingernails and fingertips are not involved, the player's nails and fingertips will remain intact. Furthermore, use of a pick makes a louder and brighter sound. Its primary disadvantage is its imprecision, making muting strings necessary. Also, if the player wishes to switch to the tapping style, he or she must get the pick out of the way, for example, by tucking it between the fingers, or by using the middle finger to tap.

Strumming and fingerpicking

Players wishing not to use a pick may try *strumming*. This is accomplished by holding the picking hand's index finger to the thumb, much as one might hold a pick, and striking the strings with the index fingernail. Anything in this book written for a pick can just as easily be played by strumming.

Another style, readily available to the strummer, is fingerpicking. This usually means plucking or striking the strings with the fingernails or fingertips. Most classical guitarists alter the shape of their picking hand fingernails for the purpose of producing a desired sound. Fingernails in non-classical fingerpicking are not necessary at all.

Fingerpicking is surprisingly easy on an electric guitar, which is strange because fingerpicking is often regarded as an acoustic style. The player may hold his or her picking hand's pinky finger against the right edge (left edge on a left-handed guitar), and if it is held straight and steady, this technique may be used to brace the hand. This technique is called anchoring, and is frowned upon by some players. It is possible on acoustic guitars by using the bridge similarly, but this is not as effective as it will deaden the sound. Classical guitarists never anchor while playing.

Tapping

Tapping was popularized by Eddie van Halen. For some people, such as Stanley Jordan, it is an entire style of playing, but for most guitarists, it is simply a special solo technique. Furthermore, playing tapping style is very different from the other two styles.

Another Type of tapping so to speak is using harmonics to change notes....look up Erik Mongrain and you will see a great example of this.

live version • discussion • edit chapter • comment • report an error

17 TAPPING

Tapping is the short name of *fretboard tapping* or *finger tapping*: the act of tapping the fingers against the strings in order to produce sounds, rather than striking or plucking the strings. Specifically, it usually refers to two-handed tapping, that is, tapping involving both the left and right hand. It is not clear who discovered tapping, but it was certainly popularized, but not discovered, by Eddie van Halen. Van Halen was listening to "Heartbreaker" by Led Zeppelin, and he was quite inspired by the solo, which contained a variation of tapping. This is arguably the song that pushed Van Halen to popularize and use "tapping" frequently. A rather different kind of independent two-handed tapping, which is a whole playing method rather than a technique, was discovered by Harry DeArmond and named "The Touch System" by his student Jimmie Webster. Another method of independent tapping was discovered by Emmett Chapman, where the right hand comes over the fretboard and lines up with the frets like the left. Therefore this book dubs the three kinds of tapping *Interdependent tapping* and *The Touch System", and the "Free Hands Method."*

Interdependent tapping

Interdependent tapping is by far the most common type of tapping. It is generally used as a lead guitar technique, most commonly during solos; however, a small number of songs are entirely tapped. The player's picking hand leaps out to the fretboard and begins to tap the strings with the fingers. However, one must get the pick out of the way in order to tap. Some players do this by sticking the pick between their fingers; others simply use the middle finger to tap. The Van Halen technique of getting rid of the pick is done by moving the pick into the space between the first and second joints of his middle finger.

Eruption by Eddie Van Halen is a good example of this technique.

The Touch System

As mentioned before, this is a whole playing style and a whole book could be written about it. The first musician to play this way was pickup designer Harry DeArmond in the 1940's, who used tapping as a way to demonstrate the sensitivity of his pickups. While each hand could play it's own part, DeArmond held his right hand in the same orientation as conventional guitar technique. This meant the ability of that hand to tap scale-based melody ines was limited. He taught his approach to Gretch Guitars employee Jimmie Webster, who wrote an instruction book called "The Touch System for Amplified Spanish guitar." Webster made a record and travelled around demonstrating the method. Even though it inspired a few builders (Dave bunker, for example), the Touch System was limited by the lack of eqaul movements for the right hand and never caught

on.

The Free Hands Method

In 1969 Emmett Chapman, who had no previous knowledge of DeArmond, Webster or any other tapping guitarists, discovered that he could tap on the strings with both hands, and that by raising the neck up could align the right hand's fingers with the frets as on the left, but from above the fretboard. This made scale-based melody lines just as easy to tap in the right hand as the left, and a new way of playing a stringed instrument was born. Chapman redesigned his home-made 9-string guitar to support his new playing method, and began selling his new instrument (The Chapman Stick) to others in 1974. In 1976 Chapman published his volume of collected lessons he used for teaching guitarists and Stick players as "Free Hands: A New Discipline of Fingers on Strings."

It has been popularised by players such as Tony Levin, Nick Beggs, John Myung and Greg Howard, and is currently experiencing a surge in popularity due to the internet.

Stanley Jordan became famous in the 1980s for using the same method on the guitar. Jordan discovered the method independently after Chapman did, was signed to Blue Note Records, and released several successful albums.

The method that Chapman invented and Jordan also used allows complete self-accompaniment and counterpoint, as on piano.

live version • discussion • edit chapter • comment • report an error

18 HARMONICS

Harmonics are fun sounds to produce. They can be quiet and bell-like, as on an acoustic guitar, or they can be loud and squealy, as on an overdriven electric guitar.

List of natural harmonics

These will be explained shortly.

- 12th fret: octave above open string
- 7th or 19th fret: Octave plus a perfect fifth above open string
- 5th or 24th fret: Two octaves above open string
- 4th, 9th, or 16th fret: two octaves plus four semitones above open string

There are more harmonics than these, but these are the easiest to produce and the most audible. They are ordered from lowest to highest in pitch.

Natural harmonics

Natural harmonics are the easiest to produce. A good place to begin is the 12th fret of the first string. With your fretting hand, lightly touch the finger against the string directly above the 12th fret. Do not hold it down, just touch it. Then strike it with your picking hand, and immediately release the string with your fretting hand. If executed properly, the result should he a high-pitched, ringing E (on a standard tuned guitar). It will be the same note as pressing against the fret will produce. Try it again at the 7th, 5th, and 4th frets, as in the list of natural harmonics: each will produce even higher sounds, much higher than can be produced on the guitar without using harmonics! However, each will also be quieter, so the higher harmonics may be nearly inaudible without overdrive.

A good example of natural harmonics is in the song Imperium by Machine Head, clear 5th fret harmonics can be heard enforcing the low drop B tuning.

Pinch harmonics

A.K.A. Artificial Harmonics (though there is really nothing artificial about them). This is an advanced technique and was popularized by Billy Gibbons and many others as early as the 1970s including many Heavy Metal artists. These harmonics follow the same principles of physics as a natural harmonic, the

difference being how the harmonic is produced. In this case a note is struck in a downwards motion with the pick and in the same motion the string is touched(one might really say brushed) with the edge of the thumb that is holding the pick. Or one can do it with the edge of the index fingernail, followed by the pick.

Pinch harmonics are most effective and audible using an electric guitar with overdrive or distortion and in some cases these harmonics are virtually inaudible using a clean(not distorted or overdriven) electric guitar or an acoustic. It can sound good when used properly even without much overdrive(Billy Gibbons is the master of low overdrive Pinch Harmonics) but it's not always clear or detectible. Use overdrive or distortion for best results especially while learning and practicing this technique.

With regards to difficulty: this technique, although rewarding, is mostly rewarding only in advanced situations (soloing and intense expressive riffing). It is difficult enough to easily frustrate a beginner and some intermediate players and since there are so many more rewarding and useful techniques worth spending time on as a beginner(scales, soloing, blues, riffing, strumming patterns), this technique is only recommended for intermediate or advanced players.

As mentioned above these harmonics are produced by striking a note with the pick and touching the string with the picking thumb. Grip the pick so that the tip barely peeks out between your fingertips(this is why they are called "pinch" harmonics). It's easier when you are fretting a note with the left hand so try fretting a note (perhaps the 5th fret on the 4th(D) string), and plucking the string just below the neck pickup pole pieces (maybe 1/8" toward the bridge from the pole pieces). With luck the artificial harmonic will ring, but if not don't despair.

The position of the plucking along the length of the string is one of the most important parts of this technique. While with regular picking the position of the picking along the string can make slight variations in the sound of the note, when executing pinch harmonics the right position is vital and tiny positional differences can make entirely different harmonics. So try adjusting the picking hand just millimeters up and down the string around the area of the pickups.

Try imagining the pick and your picking thumb plucking the string at the same time although the thumb is really just brushing past it. Consider it to be really one motion. Try thinking of your thumb and the pick as one entity and instead of picking straight down, pick down and a little bit(millimeters) out away from the face of the guitar so your picking motion is a sort of 'letter J' out from the face of the guitar and so the thumb brushes past the string and remember that the thumb should only touch the string for an instant just like the pick does.

This technique requires practice. Try executing pinch harmonics while fretting different notes and by striking the string in slightly different places all around the pickup area of the guitar. Many kinds of harmonic ringing sounds may be produced.

Without a pick, this technique may be simulated by plucking the string with the fingertip and lightly touching it with the fingernail, but this is even trickier and not very useful in practice.

These harmonics, as opposed to natural harmonics, end up being much more practical to use while playing and when mastered can be used boldly like Zakk Wylde making the harmonic part of the riff, or subtly and possibly unintentionally to add color and character to the notes or chords while playing almost anything.

Pinch harmonics can easily and effectively be combined with other techniques, such as bending or vibrato.

To hear pinch harmonics in action check out the following:

- Ozzy Osbourne's Ozzmosis(and several other albums) features many different examples of pinched harmonics in various solos.
- In the movie Rock Star at the beginning, the lead guitarist in Blood Pollution (the Steel Dragon cover band) is "not hitting the squeal". The squeal they're speaking of is a pinch harmonic.
- One of the best examples of a bend and a pinch harmonic is Judas Priest's Lochness off the album Angel of Retribution at about 1:10.
- In System of a Down's hit song BYOB it is the first bend in the chorus (Every bodys going to the party) part. It is the only PH in the song, so listen carefully

Don't despair if you can't get harmonics as clear as Judas Priest or Zakk Wylde, they've got equipment made just for making sounds like that. They both have expensive high gain amplifiers and their guitars are equipped with pickups that are naturally very good at pinch harmonics. Some pickups amplify pinch harmonics better than others (some pickups hardly amplify them at all). Judas Priest and Zakk Wylde both play guitars with EMG humbuckers, which are some of the hottest pickups and some of the best at amplifying pinch harmonics. Hot pickups(EMG, Duncan JB, Duncan Live Wire, Bill Lawrence 500XL, etc.) do an excellent job of picking up pinch harmonics. Once you've practiced at home, ask to try out a guitar with "hot pickups" and a "high gain" amplifier at the local guitar shop if you want a taste(warning: it's easy to get spoiled/hooked!).

Tapped harmonics

This technique, like tapping itself, was popularized by Eddie van Halen. Tapped harmonics are an extension of the tapping technique. The note is fretted as usual, but instead of striking the string, the string is tapped at one of the frets listed in the natural harmonic list. Do not hold the string down with the tapping hand, just bounce the finger lightly on and off the fret. This technique can be extended by fretting a note, then tapping relative to the fretted note. For instance, hold the third fret, and tap the fifteenth fret, for the twelfth fret harmonic, because 12+3=15.

Other techniques

A final technique is a sort of combination between the natural and tapped harmonic techniques. Fret the note normally, and place the picking hand index finger on a natural harmonic relative to the fretted note (just as in tapped harmonics). Pluck the string with another finger and release the index finger, just as if producing a natural harmonic.

- Ditch the Guitar Pick

live version • discussion • edit chapter • comment • report an error

19 MUTING AND RAKING

Muting

Muting a string is simple: with the fretting hand, touch the string with a finger, but do not press it down, and strike the string. It is usually best to do this where a harmonic will not result, but strings can be muted at harmonics for special effect. In tablature, muted notes are marked with an "x" instead of a fret number.

Palm muting

Palm muting may or may not make the pitch of the string discernable. Very lightly rest the palm of the hand on or near the bridge, then fret and strike strings normally. Palm-muted notes are sometimes notated the same way as muted notes when the pitch is not discernable; otherwise fret numbers are given normally and the muted notes are marked "P.M." in tablature.

The Palm Muting Technique

The idea is not to mute the strings, but to dampen them, so that the notes are still clear, but with less sustain. To start, hold your guitar like you normally would, but let your palm brush against the strings, near the bridge. Remember to "let" the strings brush against your palm, not putting any force on the strings. The closer to the bridge, the more forgiving it is. As you get better, try adjusting the amount of muting by keeping your palm at different distances from the bridge.

Raking

Raking is not a kind of muting, but a technique for applying it. It is vaguely related to sweep picking, but instead of an arpeggio, the result is usually a single percussive-sounding note. (However, sweep picking is sometimes incorrectly notated as a rake in tablature, and sloppy sweep picking may accidentally become a rake.) Between two and four strings are struck, only one containing the desired note and the rest muted. Rakes may be notated in various ways; the most common way is to add muted grace notes, possibly adding the word "rake" to the tablature for clarification.

20 BENDING AND VIBRATO

Bending and **vibrato** are two related effects which help give extra "life" to notes, especially sustained notes, by changing their pitch. The techniques are not commonly used on the acoustic guitar or general rhythm playing. However, they are *extremely* important to many styles involving distorted guitar, e.g., rock or metal, even when playing rhythm (though, in that case, bends and vibratos are usually embellishments). Bending or an equivalent effect is not possible on all instruments; the piano, for example, cannot have notes that change in pitch. This is one reason why it is important to know how to bend: because you can!

Bending

Bending is exactly as it sounds: bending the string to the side by pushing it (towards the sixth string) or pulling it (towards the first string), often while a fretted note is ringing. The first three strings are normally pushed, and the others are normally pulled. This is particularly important on the first and sixth strings, as you do not want the string to fall off the fretboard. Whether the string is pushed or pulled, the note will be raised in pitch.

Many aspiring guitarists cannot bend properly. The *sound* of a bend is more important than how it is actually executed or how it looks, but a bad bending technique usually leads to a bad sound. Your favorite guitarist might bend using just his or her fingertips and you might be inclined to copy this — don't! Your hands can sound every bit as good as your hero's without copying his or her technique. There are two keys to bending properly: proper thumb positioning, and bending with the proper muscles. Do not keep your thumb behind the neck, where it usually is, but bring it up perpendicular to the neck (a position that is *normally* incorrect, but not in the case of bending). Keep the fingers firm. Do not bend your fingers, but push or pull with your forearm. You will hardly see your forearm move, possibly just see a couple of muscles flex. It will feel awkward at first, but if you can bend with the thumb in the proper position and without bending the fingers, you are probably doing it correctly.

Many guitarists will have trouble bending more than 1/4 step (half a semitone) or perhaps 1/2 step (one semitone) with only one finger, especially on frets close to the nut and on the thinner strings. It is much easier to bend with more than one finger, for instance, with the index finger on the first or second fret and the ring finger on the third, and pushing or pulling with both fingers in order to bend at the third fret. More fingers may be used if this is not enough. It should be possible to bend at least a full step (the pitch difference of two frets) this way.

Pre-bending

Bending, whether by pushing or pulling the string, raises the tension in the vibrating portion of the string, and thus always *raises* the pitch of the note. This means it is easier to slide up rather than down in pitch. To create the impression of bending down, the guitarist uses a technique called *pre-bending*, that is, bending *before* the string is struck, then releasing the bend (either gradually or quickly, depending on the intended effect).

Bend and release

The ideas of bending and pre-bending can be combined for a "bend and release", that is, striking a note, bending it up, then releasing it as you would with a pre-bend. This will often be perceived as a "bounce" in pitch, especially if played quickly. The reverse is also possible: pre-bend, release, and bend. Repeatedly and steadily bending and releasing is called *vibrato*.

Vibrato

Players of many instruments, including the human voice, use vibrato to help add expression to sustained notes. Vibrato is performed by rapidly bending the string back and forth, causing a modulation in pitch; therefore, all of the information above about bending applies here. A small, subtle vibrato might not require the assistance of other fingers; the fretting finger should be sufficient.

The vibrato bar

The effects of bending and vibrato can be produced in a completely different way by manipulating the guitar's *vibrato bar* (often called a *tremolo bar* after Leo Fender misnamed it) if the guitar has one. However, using the vibrato as a substitute for fretting-hand bending is not good practice; it is best used for very heavy bends or vibratos. It is more difficult to be subtle with a vibrato bar, and it is usually a bit out of the way for the picking hand to reach, making it harder to use. In short, while in some cases which style of bending or vibrato is used is a matter of taste, the two techniques are not interchangeable and are used for different effects.

Bass Runs

Bass runs are particularly nice sounding. For example if one wants to change from a C chord to an Am chord, they could do a nifty bass run.

```
   --C chord--                              --Am Chord--
```

```
E A D G B E                E A D G B E                E A D G B E
===========     ==>        ===========     ==>        ===========
| 3 2 | 1 |                | 2 2 | 1 |                | | 2 2 1 |
```

live version • discussion • edit chapter • comment • report an error

21 TREMOLO PICKING

What is Tremolo Picking?

Tremolo means a modulation in volume; in the context of stringed instruments, usually refers to repeatedly striking or bowing a single string in a steady rhythm, especially the fastest rhythm the player can maintain. (This technique is particularly common on the acoustic mandolin.) In guitar literature, this is called *tremolo picking*, and one of the few places the term "tremolo" is consistently used "correctly" in guitar literature (whose convention usually reverses tremolo and vibrato). This technique has nothing to do with a "tremolo bar" (really a vibrato bar) or a "tremolo" effects box.

How to hold the Pick

Tremolo picking, though appearing hard at first, is actually quite easy. It is merely alternate picking at a faster speed. To start off, a pick makes tremolo picking much easier and is highly recommended when attempting it, but even though most people find tremolo picking much easier with a pick, it is possible without a pick. The best way to hold your pick is between your thumb and the side of the first knuckle of your pointing finger, but if you feel more comfortable holding it another way, such as with your thumb and middle finger then go ahead.

Grip

An important aspect of tremolo picking that many beginners fail to realise is that you must have a relaxed grip on the pick, as when you try to pick when holding the pick tensely, you will find that the pick hits the string harder therefore making it harder to pass through the string, causing it to sound sloppy. Maintaining a relaxed grip becomes harder when playing faster, but you will get used to it.

Things to Remember

When tremolo picking make sure you use your whole forearm and not just your wrist, as this will make it much easier to pass through the string. Also, when you pick the string, make sure your hand doesn't go to far away from it, as this will slow you down. The impact from hitting the string usually forces your hand to leave the string, but after practice, avoiding this will become easier.

live version • discussion • edit chapter • comment • report an error

22 ARPEGGIOS AND SWEEP PICKING

The word **arpeggio** (ar-*peh*-jee-oh) is Italian for, roughly, "like a harp", as it is a common technique for playing chords on the harp. To play an arpeggiated chord on the guitar, simply strum or pick the chord slowly, one string at a time, such that the ringing of each string is distinct. Arpeggios occur in all kinds of music, from classical to metal.

Sweep picking is a more specialized technique, occurring most often in metal. It involves playing a fast arpeggio with a special technique: when switching from one string to the next, mute the note currently ringing by lifting the fretting finger. A sweep can become a rake if notes are muted incorrectly. Rakes can sound nice, but they are not sweeps. Remember only 1 note can ring out at a time or it won't sound good. It takes practice and it helps to start slow and build up speed.

Below is example tablature of sweep picking:
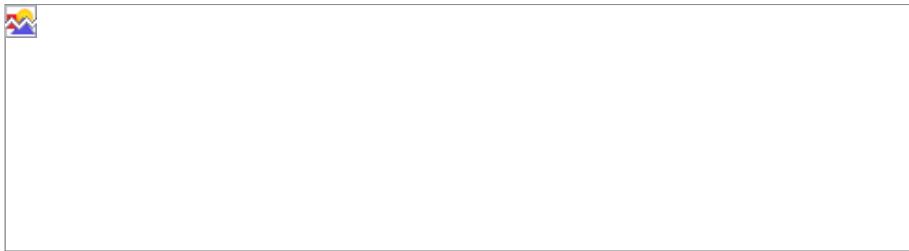
This is not the only way to notate sweeps. Small sweeps can be indicated with grace notes or even the arpeggio notation with the word "sweep" (or, less correctly, "rake") written above.

In a more classical approach, arpeggios must follow a distinct pattern of notes depending on the chord/scale we're playing. This is similar to playing chords note-by-note on a piano (not on a guitar).

The basic chords (the major and minor triads) are composed of three tones: the first, the third and the fifth note of the scale (major or minor, depending on the chord type).

For instance, the C major scale is: C D E F G A B. So, according to the 1-3-5 principle, the C major triad consists of C, E and G. Note that the C major chord on a guitar also consists only of these three notes but they are not always in the 1-3-5 order. Now, while playing "classical arpeggios", you would not just pick around the chord randomly but you would play C, E, G, then C, E, G an octave higher, etc. This is what is called an arpeggio scale. You can play around it, up and down with complete freedom or just use the 1-3-5 pattern as a bass line. This method can also be used with more complex chords (sus4, maj7, etc.) but then it follows a pattern different from 1-3-5 structure, depending on the chord type. In

all, this is a very simple but effective method for composing.

While playing guitar, this might not appear as interesting as picking "full" six-string chords but it can be used to give your music a classical edge. It also has a more lead quality to it than using full chords and requires more skill. Playing fast arpeggios like these is sometimes used in metal music with very satisfactory results. The "classical arpeggios" are in no way better than the "harp like chords" and it is ultimately up to the player/composer to choose what is best for the song in question.

live version • discussion • edit chapter • comment • report an error

23 SLIDE GUITAR

A slide is a metal/glass/ceramic tube which fits over a finger (most commonly the ring finger or little finger, but any will work). If you wish to experiment with slide guitar, but do not have a slide, objects ranging from lighters and glass bottles to sections of metal pipe and batteries can work just as well, and in some cases provide entertainment and stage presence to a performance. *Do not press the string down.* The slide rests on the string, not enough to give fret buzz, but enough to stop the string buzzing against the slide. Some players will lightly deaden the string behind the slide with a trailing finger to stop any unwanted vibrations.

Practice getting a crisp note without sliding first. Because the slide rests on the strings, the slide playing a single note should be directly above the fret, not behind it as with the fingers. Usually the slide guitarist keeps the slide moving backwards and forwards slightly at all times.

A common technique found in slide guitar is playing fingerstyle as opposed to the use of a pick or plectrum. The benefits of fingerstyle playing includes the ability to more easily pick the desired strings, while using the other fingers to dampen the other strings from undesired vibration.

Slide guitar is often played in open chord tunings, Open G and Open D being the most common, but playing slide in standard tuning can add a new dimension to your playing.

24 LEAD GUITAR AND RHYTHM GUITAR

Lead guitar and **rhythm guitar** are mildly confusing terms, especially to the beginner. Of course, a guitar should almost always follow some sort of rhythm, whether loose or tight. And many times guitars are very prominent, like a lead part, but still not really a lead. And sometimes the lead guitar doesn't even play a lead part! How to untangle this mess?

The distinction is somewhat arbitrary. Many bands in contemporary music feature two guitarists. The Beatles are a particularly famous example. The sort of contribution to the band's sound they make are usually fundamentally different. Leads are characterized partly by guitar solos: any guitar playing a solo is a lead. Perhaps a more accurate description is a lead part contributes more to melody than to accompaniment, having few or no chords but still following a chord structure. However, the distinction gets fuzzy as often a lead player will add *some* chords, and in some cases a guitar part may double as melody *and* accompaniment (especially power-chord riffs, commonly found in rock and metal).

In bands with two guitarists, usually one would specialize in "lead" and the other in "rhythm". Some bands feature a single guitarist who can act as either, by either assuming one role at a time or, in a recording studio, overdubbing a lead track over a rhythm track. For example, the band Dire Straits has been in both situations: in the early days, David Knopfler played rhythm while Mark Knopfler played lead. Then David left, and Mark usually played both parts on studio albums, while hiring another guitarist to play rhythm for live shows. Some guitarists reached such technical proficiency, that they were able to play both parts "simultaneously". A famous example of this techinique is Jimi Hendrix, particularly on songs such as Little Wing or Voodoo Child (Slight Return).

Another explanation of the difference between lead guitar and rhythm guitar is that they are two different parts of a band that happen to be played by the same instrument. That is, rhythm guitar is part of the underlying rhythm section (bass, drums, and [at times] piano, for example), while lead guitar is a solo voice like vocals (lead), piano (lead), etc.

Lead guitar

Very often, a lead guitar part is played by an electric guitar with moderate to heavy distortion. For this reason, many amplifier manufacturers refer to their distortion channel as a lead channel. The more powerful sustain is one reason why, as with shredding and tapping, techniques typical of guitar solos tend to come out much more cleanly. Bending and vibrato tend to be employed, sometimes heavily or with great emphasis, to shape the musicality of a lead guitar part. Of course, many of these ideas may still be transferred to acoustic

guitar.

Rhythm guitar

Rhythm guitar is characterized by sounding "chordy," that is, playing mostly chords in patterns. It can just as easily be electric or acoustic, clean or distorted. Technique is less about expressiveness of individual notes, but about choosing good chords or chord voicings that enrich the overall sound, which may add its own expressive tone to the music.

live version • discussion • edit chapter • comment • report an error

25 Learning Songs

You can learn songs easily if you have sheet music for the song you are trying to learn (e.g., tab books, PowerTabs,Guitar Pro). At first, you have to figure out the parts you want to play (rhythm guitar or lead guitar), then try playing the song part by part. When learning a song, it is recommended that you have a drum-machine or metronome in order to remain within rhythm.

If the song is too fast, play it with a slower tempo — extremely slow if need be. When you can play it flawlessly, increase the tempo until you begin to stumble. Repeat until you can play the song at a rate you are content with.

Songs can also be learned "by ear", with no sheet music. This can be done in a variety of ways, for instance first transcribing the sheet music for yourself, or by simply picking up the instrument and trying to match what is played. Knowledge of music theory is particularly helpful for this method.

A program such as GuitarVision (Pay) or a site such as ActionTab.com will allow you to play along with an on-screen guitar fretboard. The fretboard shows you where to place your fingers while a MIDI file of the song plays.

There are many free song tabs as well as beginner guitar lessons at ilearnmusic.com

26 WRITING SONGS

Where the songwriter is also a guitar player, or even a multi talented player of several instruments, it is worth the effort to first invent a melody form with a string or chord sequence around which your song will be focused. Song writing for the popular vote requires a 'hook' as it is known. The hook may be simply a melodic structure, but is perhaps preferably a mix of the melody coupled with a clever line of words.

For instance, in the well known 'Danny Boy' or 'Derry Air' as it is sometimes called, the 'hook' is found where the melody appears to try to surge forward into the chorus and the words "But come ye back" accompany that surge in chord progression.

The reverse process, putting music to words, is a lot more difficult and is also less successful in most formats.

But there are certain cases where putting music to words is a better option... for instance, a rhyming poem or free verse with a regular meter can easily be made a song. Basic chords lend themselves well, the I - IV - V progression and iv - IV - V - I chords work.

For more details, read Writing Effective Songs.

27 IMPROVISING

Improvisation, or **improv**, boils down to having a basic knowledge of music theory and some moderate amount of talent or skill. Musicians often have *jam sessions* where friends play anything that tickles their fancy. It can be done in any situation, but for our purposes we will consider mostly the context of improvisation within a jam session.

Improvising 101

Since the guitar is a fretted string instrument it is possible to play either single ("lead") notes or chords ("rhythm") on it.

There is also a basic approach to improvising which is more simple than playing over a chord accompaniment. It also predates Western tuning systems and chords. It is produced by playing a moving melody on one higher-pitched string, while leaving a lower note ringing on another **"open"**, or lower-pitched (unfretted) string. The static bass note is referred to as a "pedal tone". The lower note drones or stays the same and the upper note moves, creating both simple harmonic and melodic motion. Traditional instruments which have fewer strings and a smaller range than the guitar use this technique. It can be heard in many musical styles in both Eastern and Western musical traditions including those with guitar.

This technique can be found both within Western tuning systems which use 12 semitones per octave as well as beyond in more complex Eastern tuning systems. Therefore before attempting to improvise a solo over a chord progression or a series of chords in a particular key, it is useful to practice playing simple melodies on one (upper) string to familiarize your ear with the **intervals**, or distances between those fretted notes and a static open, un-fretted (lower) string below it which is sounding simultaneously. Another advantage of this is that with each pair of notes you play, different intervals are sounded. Your ear begins to detect these and this is a basic form of ear training.

Staying in the right key

Suppose you are playing in a jam session as a lead guitarist and are playing with a rhythm guitarist. When playing with two guitars that are improvising you will have your rhythm guitarist play a set run in a certain key. For example, the rhythm guitarist might be playing a three chord blues riff in the key of B minor. You can often figure out the key that is being played by ear based on the first chord played. If you were to play a small solo, you should stick to a B minor scale such as the B minor blues scale. Any style of scale — modal, pentatonic, etc. — can be used and each one will give a different flavor to your improvisation. For

example, the Phrygian mode has traditionally been the "Spanish scale".

Listen

The key to improvisation is to listen to the interplay of the rest of the instruments, and to add to that whatever sounds best. This is, unfortunately, a very neglected practice among beginning musicians, and, really, musicians of all stripes in general.

A common tendency, especially among those who have just begun to get a solid foundation in scale theory and technique, is to noodle around aimlessly on the fretboard with little or no regard for the shape of the song that is being played or the structure of the arrangement. This is a mistake, and it leads to music that no one wants to listen to; worse yet, it does nothing to develop the musician who plays it.

Listen to the music that is being played around you. Add to it only when it is necessary. You should begin to hear the lines that you want to play before you play them. What you are shooting for here is something akin to the old koan about sculpting: the figure is already in the marble, and you are just trying to release it.

It is also important to make sure that you do not take up too much "space" in the arrangement, which is to say, do not play so loudly that other instruments must fight to be heard. This is especially a problem for rhythm guitarists in jam sessions, who must be careful not to drown out soloists.

Well-known Improv Bands

- The Grateful Dead
- Throbbing Gristle
- The Jimi Hendrix Experience
- Led Zeppelin
- King Crimson
- Can (band)
- Phish
- moe.
- Particle
- The Disco Biscuits
- Widespread Panic
- Cream
- Dave Matthews Band

External Link

- Musical improvisation

live version • discussion • edit chapter • comment • report an error

28 How to Continue Learning

- Watch others play. Notice what they have to pay attention to and what seems like magic.
- Practice arbitrary scale runs. Go up and or down 3 or 4 notes and then move up the scale with the same interval.
- Jam up with friends who are better than you as frequently as possible
- Get some friends along who are at the same skill level and form a band of your own
- Play some serious air-guitar. This will make you think about where your hands would be positioned when playing the notes, as well as giving you a chance to develop your stage presence, without having to focus on technique.
- Listen to your favorite music and try to envision what the guitarist is doing to make the notes come out as they do.
- Listen to different music. It may open your mind to techniques and phrasing you never imagined using before. It may also expand your musical library. Pick any genre you're not familiar with. Get a feel for the timing and note choice. Into classical? Try bluegrass. Headbanger? Pick up some jazz or blues. Then move on to your hero's heros. Find out what musical influences got Jimmy, Jimi, B.B., or C.C. primed for stardom.

29 HARMONICA AND GUITAR COMBO

A common and novel way of playing harmonica is through self-accompaniment with a guitar. Whether this sounds good is often up to debate, but if done properly, will definitely provide entertainment to both the ears and the eyes.

Obviously, to play both instruments, one would need a way to hold a harmonica while the hands chord and strum the guitar. This is done by the harmonica holder, which goes around the neck, allowing the harmonica to be always in front of your mouth. However, there are a few things to keep in mind of:

- Instead of moving the hamronica as proper, you will now move the head in order to play the proper notes. Thus, the movements will be more awkward, and often slower.
- Hand-related effects, such as hand vibrato, will be unavailable. Also, due to the lack of hands, there will be no additional resonance from the cupped hands.

Furthermore, since one is actually multitasking, it's best to know how to play both instruments individually **very well**, in order to spend less time on thinking each notes and chords.

Like playing the blues, the harmonica will usually be played on 2nd position (of course one can try other positions). Often, the guitar provide the chord, while the harmonica provide the melody notes. This is because guitar usually have a much lower octave range than the harmonica; furthermore, guitar can play any notes (and thus chords) it wants. Harmonica, being on higher ranges, penerate better than guitar's sound, making it better for melody. Still, this should not forbid one to inverse the role, as long as it sound pleasing

It is possible to play chromatic harmonicas with a guitar. This can be done with the following:

- Valved Diatonic or XB-40
- Tombo S-50. Problem is that this is difficult to find in North America.
- Take off the mouthpiece of a **straight tuned** chromatic harp. However, one may need to make sure the body's edge is smooth
- Use the handless chromatic; essentially a special mouthpiece that move up and down between the rows, controlled by the movement of the head.

30 ALTERNATE TUNINGS

Many guitar players use different tunings apart from the standard tuning. Use of nonstandard tunings is rare in classical guitar, but less rare in blues guitar. They are common enough, and their tonal effects interesting enough, that casual and serious guitarists alike may want to try them out.

Most alternate tunings involve downtuning ("dropping") strings. Uptuning the strings is less common, partly because it increases tension on the neck. Strings can even snap if tuned up too high!

A few bands, especially Sonic Youth, are noted for rarely or never using standard tuning.

Dropped D (DADGBE)

The most common alternate tuning is the dropped D (or "drop D") tuning. The lower E string is tuned down to a D. This tuning allows one to play power chords on the fourth, fifth and sixth strings with only one finger, and of course allows for lower bass notes. Used commonly in heavy metal, but also in nearly every other form of guitar music.

Double Dropped D (DADGBD)

Similar to Dropped D above, for this tuning just drop both 'E' strings a full tone. Neil Young often tunes his guitars this way.

Open D (DADF#AD)

Open D, like all open tunings, produces a major chord (in this case, D major) when all strings are strummed. Drop the sixth, first, and second strings down two semitones, and the third string one semitone. It is also called "DAD-fad" after its notes. Uses the same chord shapes as Open E but is easier on a guitar neck as the strings are detuned lessening the tension.

Chord shapes in Open D

Here are some handy chord shapes:

G/D: (020120) Em7/D: (022120)

DADGAD

DADGAD (pronounced as a word: "DAD-gad"), one of the most versatile tunings, is named after the tuning of its strings. The sixth, second, and first strings are dropped two semitones to D, A, and D. Strumming all the strings open forms a Dsus4 chord; fretting the second fret of the third string (or muting the third string) produces a D5 chord, or D power chord. Most songs for DADGAD are in D major, or in G major with a capo at the fifth fret.

Open E (EBEG#BE)

Used by Cat Stevens and a popular choice for slide guitarists. Strumming in the open position yields a Emajor chord. You can easily play any chord by barring across the neck at different fret positions. This does however have some disadvantages; mainly that it is slightly more difficult to play minor chords. Some artists overcome this by tuning to EBEGBE. This allows both minor and major chords to be played easily. Because tightening the strings more than is intended can break the strings or put unneeded stress on the neck, many players opt to tune in Open D and put a capo on the second fret; the result is the same.

Open G (DGDGBD)

Another common open chord tuning - popular with slide guitarists. Tune the 1st and 6th strings down to D, and the 5th string to G. Keith Richards uses this tuning extensively after 1968. (See Brown Sugar, Honky Tonk Women, Start Me Up) He also removes the bottom 1st string because the root of the chord is on the 2nd string in Open G. Sometimes referred to as "Spanish Tuning".

Chord Shapes

Uses the same chord shapes as Open A. C/D: (002010)

FA#D#G#CC

The tuning used probably exclusively by Placebo. It suits singers with a higher-than-average voice.

More information

Alternate Tuning Guide for Contemporary Folk Music

live version • discussion • edit chapter • comment • report an error

31 ADJUSTING THE GUITAR

live version • discussion • edit chapter • comment • report an error

Many beginning or even intermediate guitarists are unaware that their guitar should be **"set up"**. The adjustments described in the adjustment subsections below (along with restringing and tuning) are called a **"set up"**.

What difference does a set up make?

When a guitar is set up properly:

- the guitar will feel and sound its best
- all the strings will sound with exactly the notes they are supposed to
- all notes will sound correct when played at each fret up and down the neck
- the guitar will be as easy as possible to play
- strings will break less frequently.

If a guitar plays easily and sounds its best then it's easy for the player to feel successful.

When a guitar is not set up properly:

- the guitar may not feel or sound quite right
- some notes may sound correct while some others may sound sharp or flat
- the guitar may be difficult to play
- strings will break more often
- damage could be occurring to the instrument unbeknownst to the player

When to Set Up?

When a guitar is brand new and fresh from the factory it may or may not have had these adjustments done. As a rule, a guitar should be set up when first purchased(used or new) and again when switching string gauges. Consider getting a set up anytime the guitar sounds or feels different than it used to. Perhaps after a guitar travels (altitude changes, pressure changes, and humidity can affect the wood in the guitar) and just like changing oil in a car it is a good idea to get a set up every now and then for maintenance purposes (perhaps twice a year).

Poor set up may be obvious to a player or it might not. In some cases the guitar may be unplayable because it hasn't been set up. A maladjusted guitar can cause strange quirks, for instance frets near the bottom of the neck being too

sharp, or can even cause damage (e.g., by using .012 gauge strings on a nut designed for .009 strings, and the tension messes up the nut), and it can easily frustrate the player when their playing is perfectly correct yet things still don't sound right.

In particular if your guitar ever becomes difficult for you to play, a set up will probably help.

It is not absolutely *required* to set up a guitar, but it is nonetheless a good idea, *especially* if the guitar is to be taken to the stage. Some people never get their guitar set up. Some get their guitar set up even when nothing previously seemed wrong with it, then find such a dramatic change in the guitar's playability and sound that they wish they had set it up sooner.

How to get a Set Up

These adjustments should generally be done by a professional, qualified repair person. They require precision instruments, some hard to find tools, a steady hand, quite a bit of time and know-how.

Virtually all musical instrument stores will be able to perform a professional set up. Some will do the job better than others. Call a local music store and ask them "Do you do set ups for electric (or acoustic) guitars and how much would you charge?". Getting a set up will probably cost from $30 to $75 USD.

Adjustments

Adjusting action at the bridge

This is a simple adjustment that can usually be performed without professional assistance. The bridge saddles should be lowered if the string action is too high, that is, the strings are too far up off the fretboard. In some cases it may be desirable to raise the saddles for a higher string action.

Most electric guitars have two small screws on the saddle which can be used to raise or lower the saddle. Some saddles have screws that can be rotated using the fingers; others require an allen key. Lower the saddles too much and the strings might rattle against certain frets (this may or may not be inconsequential on an electric guitar; listen through an amplifier). In more extreme cases, pressing a string against one fret might actually fret the string against a different fret, usually the one under the intended one. In both cases, filing the frets might alleviate the problem if the saddle really should be that low. Otherwise, simply raising the saddle a small amount on the side with the problem should be fine.

Filing frets

Filing frets should only be done by a qualified repair person and only to correct problems with frets buzzing or strings being presssed at the wrong fret (see "adjusting action at the bridge", above).

Filing the nut

Filing the nut should only be done by a qualified repair person and is used to reduce pressure at the nut to allow a heavier gauge of strings to be used. It may not be necessary if the new strings are detuned lower (e.g., when switching from .009's to .010's, the nut will need no adjustment if the guitar is tuned to Eb-Ab-Db-Gb-Bb-Eb instead of E-A-D-G-B-E).

Neck/truss rod adjustment

This particular adjustment has been known to ruin guitars when performed incorrectly, so here referral to a professional repair person is highly recommended. A guitar will need a truss rod adjustment if the neck is not straight. One way to check the straightness of the neck is to play 12th and 19th harmonics on the low and high strings. After sounding each harmonic, fret the note there and play it again: it should be exactly the same pitch. If it is not, the neck *may* be in need of adjustment. However, this may be indicative of an intonation problem as well, which *can* be fixed without the aid of a repair person; see below. If adjusting the intonation does nothing for you, give the guitar to a repair person.

Adjusting intonation

You may notice each string on the bridge sits in a "saddle". Depending on your setup, you might notice the saddles may be in different positions: some might be pushed forward and others might be pushed back, sometimes slightly. The positioning of the saddle effectively changes the length of the vibrating string. Tune the guitar to concert pitch with the aid of an electronic tuner, making sure the open strings are *perfectly* in tune. Play the 9th and 12th fret harmonics, then play the fretted notes. If the fretted notes are sharp, the string is too short and the saddle needs to be pushed back toward the base of the bridge. If the note is flat, the string is too long and the saddle needs to be pushed up toward the nut. Repeat this procedure for each string. Adjusting the intonation should be done every few months or at least twice a year.

32 STRINGING THE GUITAR

Aside from the physical shape of the guitar body, strings are the most important thing for determining the sound of a guitar. New strings sound bright and full, while old strings tend to sound dull and dead. Many guitarists believe that strings should be changed regularly, not just when they break. This is because sweat and dirt corrode the strings, and over time this degrades their sound quality. Other guitarists believe that new strings sound much worse than old ones, feeling that a string's tonal quality only improves over time. Individual string quality may vary drastically from string to string.

When one breaks a string, all of the strings should be changed at once. This is especially true if the newer string is of a different brand or gauge. The string's manufacturing process, thickness and age all affect its tone, and one new string being played with a bunch of old strings can make your guitar sound strange. Players should be advised that guitars are usually set up for a particular gauge of string. The guitar will still function fine with a different gauge of strings, however for optimal sound, the guitar may need to be adjusted. See the chapter on adjusting the guitar for more details.

Because there are several different types of guitar, and each type is designed differently, each type has its own method of stringing.

Different Types of Strings

Each type of guitar uses its own type of strings. Strings are specifically designed for a type of guitar to give it a particular sort of sound. The differences between string types affect the guitar's tone, and it is not recommended to use a set of strings not made for your guitar. Not only would the result not sound good, but attempting to string a guitar with the wrong kind of strings would be both difficult and frustrating. In some cases, it may even damage the instrument.

The most common type of guitar is the six string acoustic. A set of acoustic strings has four bronze wound strings and two silvered steel strings, the steel ones being the thinnest and highest pitched. A twelve string acoustic has the same set of strings as a six string acoustic, but there are also six other silvered steel strings. A classical guitar has three bronze wound strings and three strings made out of nylon, which are the higher pitched. An electric guitar's strings are similar to an acoustic guitar's, except the strings are made of nickel instead of bronze and steel. There are four wound strings and two nickel strings.

Gauges and Brands of Strings

The two most common gauges for the high E string in electric guitars are

.009 inches and .010 inches (these measurements appear to be used often even in countries using the metric system). Often a whole set of strings is referred to by the gauge of the high E string, e.g., "nines" or "tens" for .009 and .010 gauges respectively. The beginning guitarist is recommended to start with .009s; many professionals also use this gauge, so many guitarists never "outgrow" it.

Three of the best and most popular brands of guitar strings for both acoustic and electric guitar are currently Ernie Ball, D'Addario, and Elixir. Ernie Balls and D'Addarios are much cheaper than Elixirs, but Elixirs will keep their bright tone for months (which is why they are higher-priced). But Elixirs can break as easily as any other strings, so they are perhaps best left to people who have been playing a long time and rarely snap strings. The difference between the other two brands is a matter of taste; try them both.

Stringing Acoustics

Twelve String Acoustic

It has the same principal to the sixth string. But every two strings were tuned with the same sound *(RDT)

Classical Guitar

To unstring a classical guitar one method is:

Loosen the string by turning the tuning peg, then at the bridge push the string back into the hole a little, this will loosen the "knot" enough to unknot and pull the string out of the hole. Then feed the string around the peg loop by loop until the last hoop which is inserted through the hole in the peg is available, push the string out of the loop, then pull the loop out of the hole.

To string a classical guitar one method is:

Reverse of the unstringing. Bend about an inch of string at one end to form an open loop, push that through the peg hole, wrap the other end of the string around the peg and through the loop, then pass it down the guitar body to the bridge and into the hole there. Loop back to the neck (about two or three inches) and twist back around the string, then you can put two or three twists in which should end up on top of the bridge, pull the string from the middle of the guitar to draw the twists taut. Then wind the peg to tighten the string. You should take it easy when tuning up for the first time to give the string time to "settle in", you may also find that the string may go out of tune easily for a day or two as it beds in.

Stringing Electrics

The first thing you need to do when stringing an electric guitar is to take off the old strings. To do this, turn the tuning peg to decrease tension, until the string is completely unwound from the peg. In most cases, the string is bent at the end where it was inserted, to insure that it would stay during tuning. Unbend the string, then pull it out of the peg hole and slide it out of the bridge at the bottom end of the guitar. Some people string one at a time to make sure the neck sustains tension, or they just take all of the strings off at the same time.

For the 6th string (the low E), take the string out of the package and insert the end through the bridge of the guitar. Pull it all the way through until the ball at the end of the string stops it from being pulled further. This is optional: Make a kink in the string to insure that it will not slip away from the turning of the peg, (usually about one or two inches from the peg). Wind the string around halfway and insert the end through the hole. Pull the string to add tension, so the string will stay around the peg during tuning. Turn the tuning peg to increase tension until the string is around the desired pitch, to make certain it will stay on properly. Check that the string is in the notch in the nut and the bridge, if it is not, decrease tension on the string until you can move it into the notch, tune it back up. Do this for the rest of your strings and you are done!

Another method:

String the low E and other strings as mentioned. Align the tuning peg's hole with the direction of the string and slip it through the peg in the direction of the headstock. Facing the guitar with the headstock to your right, pull the string taut with your left hand.

With your opposite thumb and forefinger, twist the string in an "s" at the twelfth fret so that it touches both sides of the twelfth fret. You will have to let some of the string out to do this. This method tells you the optimum length of the string to wind around the tuning peg.

Hold the string with your right hand below the tuning peg so that the pointy end is sticking out the other side. Slowly tighten the peg so that the string is winding on the INSIDE of the headstock -- inside right for E A D, and inside left for G B E. Allow the string to wind once underneath itself, and then wrap it over top of itself the rest of the way. Make sure you hold tight as you go so that there is little slippage later.

If possible, hold the string with your right thumb and middle finger while regulating the pressure on the string with your right index finger.

Tips

- Note that taking off all strings at once is not recommended if you have:

1. a floating tremolo system (e.g. Floyd Rose II), which can be difficult to get the tremolo angle back to the right level when restrung;
2. a bridge which is not fixed (one that will just fall off when the strings are removed)

• Try not to bend the string in the same place excessively otherwise the string will break at the bend

Twelve String Electric

Online Resources

• Cyberfret's tutorial - Perhaps the most common way to string the guitar. Covers acoustic and electric.
• Alan Horvath's tutorial - A different way to string the guitar. Covers acoustic, electric, and classical.
• Uncle Tim's How To String A Guitar - How to string a guitar so it never falls out of tune.
• Shredaholic's Tips For Stringing Guitars Other useful tips and observations on stringing electric guitars.
• [1] Detailed guide to stringing an electric bass guitar

live version • discussion • edit chapter • comment • report an error

33 Chord Reference

Open Chords

Open chords are frequently played on acoustic guitars. They tend to sound "richer" than corresponding barre chords. An open chord is any chord that has one or more strings sounded without being fretted.

Open Major Chords

A Major Chord

```
  EADGBE
  x0---x
1 ......
2 ..123.
3 ......
```

B Major Chord

```
  EADGBE
  x--x--
1 ..x...
2 .x...x
3 ......
```

C Major Chord

```
  EADGBE
  x--0-0
1 ....1.
2 ..2...
3 .3....
```

D Major Chord

```
  EADGBE
  xx0---
1 ......
2 ...1.2
3 ....3.
```

E Major Chord

```
  EADGBE
  0---00
1 ...1..
2 .23...
3 ......
```

F Major Chord

```
  EADGBE
  xx----
1 ....11
2 ...2..
3 ..3...
```

G Major Chord

```
  EADGBE
  --00--
1 ......
2 .1....
3 2....3
```

Open Minor Chords

A Minor Chord

```
  EADGBE
  x0---0
1 ....1.
2 ..23..
3 ......
```

B Minor Chord

```
  EADGBE
  xx----
1 ......
2 .....1
3 ....2.
4 ..34..
```

D Minor Chord

```
  EADGBE
  xx0---
1 .....1
2 ...2..
3 ....3.
4 ......
```

E Minor Chord

```
  EADGBE
  0--000
1 ......
2 .23...
3 ......
4 ......
```

Bar Chords

B Major Chord

```
  EADGBE
  x-----
1 ......
2 .1<---
3 ......
4 ..234.
```

B Minor Chord

```
  EADGBE
  x-----
1 ......
2 .1<---
3 ....2.
4 ..34..
```

F Major Chord

```
  EADGBE
  ------
1 1<----
2 ...2..
3 .34...
4 ......
```

F Minor Chord

```
  EADGBE
  ------
1 1<----
2 ......
3 .34...
4 ......
```

Chord Reference

Many of the common guitar chords are given below. The numbers indicate the fingering fret position for each chord.

```
A or Amaj [0 0 2 2 2 0] (Db E A) : major triad
A or Amaj [0 4 x 2 5 0] (Db E A) : major triad
A or Amaj [5 7 7 6 5 5] (Db E A) : major triad
A or Amaj [x 0 2 2 2 0] (Db E A) : major triad
A or Amaj [x 4 7 x x 5] (Db E A) : major triad
A #5 or Aaug [x 0 3 2 2 1] (Db F A) : augmented triad
A #5 or Aaug [x 0 x 2 2 1] (Db F A) : augmented triad
A/Ab [x 0 2 1 2 0] (Db E Ab A) : major triad (altered bass)
A/B [0 0 2 4 2 0] (Db E A B) : major triad (altered bass)
A/B [x 0 7 6 0 0] (Db E A B) : major triad (altered bass)
```

```
A/D [x 0 0 2 2 0] (Db D E A) : major triad (altered bass)
A/D [x x 0 2 2 0] (Db D E A) : major triad (altered bass)
A/D [x x 0 6 5 5] (Db D E A) : major triad (altered bass)
A/D [x x 0 9 10 9] (Db D E A) : major triad (altered bass)
A/G [3 x 2 2 2 0] (Db E G A) : major triad (altered bass)
A/G [x 0 2 0 2 0] (Db E G A) : major triad (altered bass)
A/G [x 0 2 2 2 3] (Db E G A) : major triad (altered bass)
A/Gb [0 0 2 2 2 2] (Db E Gb A) : major triad (altered bass)
A/Gb [0 x 4 2 2 0] (Db E Gb A) : major triad (altered bass)
A/Gb [2 x 2 2 2 0] (Db E Gb A) : major triad (altered bass)
A/Gb [x 0 4 2 2 0] (Db E Gb A) : major triad (altered bass)
A/Gb [x x 2 2 2 2] (Db E Gb A) : major triad (altered bass)
A5 or A(no 3rd) [5 7 7 x x 5] (E A): root and 5th (power chord)
A5 or A(no 3rd) [x 0 2 2 x 0] (E A) : root and 5th (power chord)
A5 or A(no 3rd) [5 7 7 x x 0] (E A) : root and 5th (power chord)
A6 [0 0 2 2 2 2] (Db E Gb A) : major triad plus 6th
A6 [0 x 4 2 2 0] (Db E Gb A) : major triad plus 6th
A6 [2 x 2 2 2 0] (Db E Gb A) : major triad plus 6th
A6 [x 0 4 2 2 0] (Db E Gb A) : major triad plus 6th
A6 [x x 2 2 2 2] (Db E Gb A) : major triad plus 6th
A6/7 [0 0 2 0 2 2] (Db E Gb G A) : major triad plus 6th, minor 7th
A6/7 sus or A6/7 sus4 [5 5 4 0 3 0] (D E Gb G A) : sus4 triad plus 6th, minor 7th
A6/7 sus or A6/7 sus4 [x 0 2 0 3 2] (D E Gb G A) : sus4 triad plus 6th, minor 7th
A7 or Adom 7 [3 x 2 2 2 0] (Db E G A) : major triad, minor 7th
A7 or Adom 7 [x 0 2 0 2 0] (Db E G A) : major triad, minor 7th
A7 or Adom 7 [x 0 2 2 2 3] (Db E G A) : major triad, minor 7th
A7(#5) [1 0 3 0 2 1] (Db F G A) : minor 7th, sharp 5th
A7/add11 or A7/11 [x 0 0 0 2 0] (Db D E G A) : major triad, minor 7th, plus 11th
A7sus4 [x 0 2 0 3 0] (D E G A) : sus4 triad, minor 7th
A7sus4 [x 0 2 0 3 3] (D E G A) : sus4 triad, minor 7th
A7sus4 [x 0 2 2 3 3] (D E G A) : sus4 triad, minor 7th
A7sus4 [5 x 0 0 3 0] (D E G A) : sus4 triad, minor 7th
A7sus4 [x 0 0 0 x 0] (D E G A) : sus4 triad, minor 7th
Aadd9 or A2 [0 0 2 4 2 0] (Db E A B) : major triad plus 9th
Aadd9 or A2 [x 0 7 6 0 0] (Db E A B) : major triad plus 9th
Aaug/D [x x 0 2 2 1] (Db D F A) : augmented triad (altered bass)
Aaug/G [1 0 3 0 2 1] (Db F G A) : augmented triad (altered bass)
Ab or Abmaj [4 6 6 5 4 4] (C Eb Ab) : major triad
Ab #5 or Abaug [x 3 2 1 1 0] (C E Ab) : augmented triad
Ab/A [x x 1 2 1 4] (C Eb Ab A) : major triad (altered bass)
Ab/F [x 8 10 8 9 8] (C Eb F Ab) : major triad (altered bass)
Ab/F [x x 1 1 1 1] (C Eb F Ab) : major triad (altered bass)
Ab/Gb [x x 1 1 1 2] (C Eb Gb Ab) : major triad (altered bass)
Ab/Gb [x x 4 5 4 4] (C Eb Gb Ab) : major triad (altered bass)
Ab5 or Ab(no 3rd)[4 6 6 x x 4] (Eb Ab): root and 5th (power chord)
Ab6 [x 8 10 8 9 8] (C Eb F Ab) : major triad plus 6th
Ab6 [x x 1 1 1 1] (C Eb F Ab) : major triad plus 6th
Ab7 or Abdom 7 [x x 1 1 1 2] (C Eb Gb Ab) : major triad, minor 7th
Ab7 or Abdom 7 [x x 4 5 4 4] (C Eb Gb Ab) : major triad, minor 7th
Abdim/E [0 2 0 1 0 0] (D E Ab B) : diminished triad (altered bass)
Abdim/E [0 2 2 1 3 0] (D E Ab B) : diminished triad (altered bass)
Abdim/E [x 2 0 1 3 0] (D E Ab B) : diminished triad (altered bass)
Abdim/E [x x 0 1 0 0] (D E Ab B) : diminished triad (altered bass)
Abdim/Eb [x x 0 4 4 4] (D Eb Ab B) : diminished triad (altered bass)
Abdim/F [x 2 0 1 0 1] (D F Ab B) : diminished triad (altered bass)
Abdim/F [x x 0 1 0 1] (D F Ab B) : diminished triad (altered bass)
Abdim/F [x x 3 4 3 4] (D F Ab B) : diminished triad (altered bass)
Abdim7 [x 2 0 1 0 1] (D F Ab B) : diminished triad, diminished 7th
Abdim7 [x x 0 1 0 1] (D F Ab B) : diminished triad, diminished 7th
Abdim7 [x x 3 4 3 4] (D F Ab B) : diminished triad, diminished 7th
```

```
Abm [x x 6 4 4 4] (Eb Ab B) : minor triad
Abm/D [x x 0 4 4 4] (D Eb Ab B) : minor triad (altered bass)
Abm/E [0 2 1 1 0 0] (Eb E Ab B) : minor triad (altered bass)
Abm/E [0 x 6 4 4 0] (Eb E Ab B) : minor triad (altered bass)
Abm/E [x x 1 1 0 0] (Eb E Ab B) : minor triad (altered bass)
Abm/Gb [x x 4 4 4 4] (Eb Gb Ab B) : minor triad (altered bass)
Abm7 [x x 4 4 4 4] (Eb Gb Ab B) : minor triad, minor 7th
Absus or Absus4 [x x 6 6 4 4] (Db Eb Ab) : no 3rd but a 4th from a major triad
Absus2/F [x 1 3 1 4 1] (Eb F Ab Bb) : sus2 triad (altered bass)
Adim/Ab [x x 1 2 1 4] (C Eb Ab A) : diminished triad (altered bass)
Adim/E [0 3 x 2 4 0] (C Eb E A) : diminished triad (altered bass)
Adim/F [x x 1 2 1 1] (C Eb F A) : diminished triad (altered bass)
Adim/F [x x 3 5 4 5] (C Eb F A) : diminished triad (altered bass)
Adim/G [x x 1 2 1 3] (C Eb G A) : diminished triad (altered bass)
Adim/Gb [x x 1 2 1 2] (C Eb Gb A) : diminished triad (altered bass)
Adim7 [x x 1 2 1 2] (C Eb Gb A) : diminished triad, diminished 7th
Am [x 0 2 2 1 0] (C E A) : minor triad
Am [x 0 7 5 5 5] (C E A) : minor triad
Am [x 3 2 2 1 0] (C E A) : minor triad
Am [8 12 x x x 0] (C E A) : minor triad
Am/B [0 0 7 5 0 0] (C E A B) : minor triad (altered bass)
Am/B [x 3 2 2 0 0] (C E A B) : minor triad (altered bass)
Am/D [x x 0 2 1 0] (C D E A) : minor triad (altered bass)
Am/D [x x 0 5 5 5] (C D E A) : minor triad (altered bass)
Am/Eb [0 3 x 2 4 0] (C Eb E A) : minor triad (altered bass)
Am/F [0 0 3 2 1 0] (C E F A) : minor triad (altered bass)
Am/F [1 3 3 2 1 0] (C E F A) : minor triad (altered bass)
Am/F [1 x 2 2 1 0] (C E F A) : minor triad (altered bass)
Am/F [x x 2 2 1 1] (C E F A) : minor triad (altered bass)
Am/F [x x 3 2 1 0] (C E F A) : minor triad (altered bass)
Am/G [0 0 2 0 1 3] (C E G A) : minor triad (altered bass)
Am/G [x 0 2 0 1 0] (C E G A) : minor triad (altered bass)
Am/G [x 0 2 2 1 3] (C E G A) : minor triad (altered bass)
Am/G [x 0 5 5 5 8] (C E G A) : minor triad (altered bass)
Am/Gb [x 0 2 2 1 2] (C E Gb A) : minor triad (altered bass)
Am/Gb [x x 2 2 1 2] (C E Gb A) : minor triad (altered bass)
Am6 [x 0 2 2 1 2] (C E Gb A) : minor triad plus 6th
Am6 [x x 2 2 1 2] (C E Gb A) : minor triad plus 6th
Am7 [0 0 2 0 1 3] (C E G A) : minor triad, minor 7th
Am7 [x 0 2 0 1 0] (C E G A) : minor triad, minor 7th
Am7 [x 0 2 2 1 3] (C E G A) : minor triad, minor 7th
Am7 [x 0 5 5 5 8] (C E G A) : minor triad, minor 7th
Am7(b5) or Ao7 [x x 1 2 1 3] (C Eb G A) : diminished triad, minor 7th : half-diminished 7th
Am7/add11 or Am7/11 [x 5 7 5 8 0] (C D E G A) : minor triad, minor 7th, plus 11th
Amaj7 or A#7 [x 0 2 1 2 0] (Db E Ab A) : major triad, major 7th
Amin/maj9 [x 0 6 5 5 7] (C E Ab A B) : minor triad, major 7th plus 9th
Asus or Asus4 [0 0 2 2 3 0] (D E A) : no 3rd but a 4th from a major triad
Asus or Asus4 [x 0 2 2 3 0] (D E A) : no 3rd but a 4th from a major triad
Asus or Asus4 [5 5 7 7 x 0] (D E A) : no 3rd but a 4th from a major triad
Asus or Asus4 [x 0 0 2 3 0] (D E A) : no 3rd but a 4th from a major triad
Asus2 or Aadd9(no3)[0 0 2 2 0 0] (E A B) : no 3rd but a 2nd from a major triad
Asus2 or Aadd9(no3)[0 0 2 4 0 0] (E A B) : no 3rd but a 2nd from a major triad
Asus2 or Aadd9(no3)[0 2 2 2 0 0] (E A B) : no 3rd but a 2nd from a major triad
Asus2 or Aadd9(no3)[x 0 2 2 0 0] (E A B) : no 3rd but a 2nd from a major triad
Asus2 or Aadd9(no3)[x x 2 2 0 0] (E A B) : no 3rd but a 2nd from a major triad
Asus2/Ab [x 0 2 1 0 0] (E Ab A B) : sus2 triad (altered bass)
Asus2/C [0 0 7 5 0 0] (C E A B) : sus2 triad (altered bass)
Asus2/C [x 3 2 2 0 0] (C E A B) : sus2 triad (altered bass)
Asus2/D [0 2 0 2 0 0] (D E A B) : sus2 triad (altered bass)
Asus2/D [x 2 0 2 3 0] (D E A B) : sus2 triad (altered bass)
```

```
Asus2/Db [0 0 2 4 2 0] (Db E A B) : sus2 triad (altered bass)
Asus2/Db [x 0 7 6 0 0] (Db E A B) : sus2 triad (altered bass)
Asus2/Eb [x 2 1 2 0 0] (Eb E A B) : sus2 triad (altered bass)
Asus2/F [0 0 3 2 0 0] (E F A B) : sus2 triad (altered bass)
Asus2/G [3 x 2 2 0 0] (E G A B) : sus2 triad (altered bass)
Asus2/G [x 0 2 0 0 0] (E G A B) : sus2 triad (altered bass)
Asus2/G [x 0 5 4 5 0] (E G A B) : sus2 triad (altered bass)
Asus2/Gb [x 0 4 4 0 0] (E Gb A B) : sus2 triad (altered bass)
Asus2/Gb [x 2 4 2 5 2] (E Gb A B) : sus2 triad (altered bass)
Asus4/Ab [4 x 0 2 3 0] (D E Ab A) : sus4 triad (altered bass)
Asus4/B [0 2 0 2 0 0] (D E A B) : sus4 triad (altered bass)
Asus4/Bb [0 1 x 2 3 0] (D E A Bb) : sus4 triad (altered bass)
Asus4/C [x x 0 2 1 0] (C D E A) : sus4 triad (altered bass)
Asus4/C [x x 0 5 5 5] (C D E A) : sus4 triad (altered bass)
Asus4/Db [x 0 0 2 2 0] (Db D E A) : sus4 triad (altered bass)
Asus4/Db [x x 0 2 2 0] (Db D E A) : sus4 triad (altered bass)
Asus4/Db [x x 0 6 5 5] (Db D E A) : sus4 triad (altered bass)
Asus4/Db [x x 0 9 10 9] (Db D E A) : sus4 triad (altered bass)
Asus4/F [x x 7 7 6 0] (D E F A) : sus4 triad (altered bass)
Asus4/G [x 0 2 0 3 0] (D E G A) : sus4 triad (altered bass)
Asus4/G [x 0 2 0 3 3] (D E G A) : sus4 triad (altered bass)
Asus4/G [x 0 2 2 3 3] (D E G A) : sus4 triad (altered bass)
Asus4/G [x 0 0 0 x 0] (D E G A) : sus4 triad (altered bass)
Asus4/Gb [0 0 0 2 3 2] (D E Gb A) : sus4 triad (altered bass)
Asus4/Gb [0 0 4 2 3 0] (D E Gb A) : sus4 triad (altered bass)
Asus4/Gb [2 x 0 2 3 0] (D E Gb A) : sus4 triad (altered bass)
Asus4/Gb [x 0 2 2 3 2] (D E Gb A) : sus4 triad (altered bass)
Asus4/Gb [x x 2 2 3 2] (D E Gb A) : sus4 triad (altered bass)
Asus4/Gb [x 5 4 2 3 0] (D E Gb A) : sus4 triad (altered bass)
Asus4/Gb [x 9 7 7 x 0] (D E Gb A) : sus4 triad (altered bass)
B or Bmaj [x 2 4 4 4 2] (Eb Gb B) : major triad
B #5 or Baug [3 2 1 0 0 3] (Eb G B) : augmented triad
B #5 or Baug [3 x 1 0 0 3] (Eb G B) : augmented triad
B/A [2 x 1 2 0 2] (Eb Gb A B) : major triad (altered bass)
B/A [x 0 1 2 0 2] (Eb Gb A B) : major triad (altered bass)
B/A [x 2 1 2 0 2] (Eb Gb A B) : major triad (altered bass)
B/A [x 2 4 2 4 2] (Eb Gb A B) : major triad (altered bass)
B/Ab [x x 4 4 4 4] (Eb Gb Ab B) : major triad (altered bass)
B/E [x 2 2 4 4 2] (Eb E Gb B) : major triad (altered bass)
B/E [x x 4 4 4 0] (Eb E Gb B) : major triad (altered bass)
B5 or B(no 3rd) [7 9 9 x x 2] (Gb B): root and 5th (power chord)
B5 or B(no 3rd) [x 2 4 4 x 2] (Gb B): root and 5th (power chord)
B6 [x x 4 4 4 4] (Eb Gb Ab B) : major triad plus 6th
B7 or Bdom 7 [2 x 1 2 0 2] (Eb Gb A B) : major triad, minor 7th
B7 or Bdom 7 [x 0 1 2 0 2] (Eb Gb A B) : major triad, minor 7th
B7 or Bdom 7 [x 2 1 2 0 2] (Eb Gb A B) : major triad, minor 7th
B7 or Bdom 7 [x 2 4 2 4 2] (Eb Gb A B) : major triad, minor 7th
B7/add11 or B7/11 [0 0 4 4 4 0] (Eb E Gb A B) : major triad, minor 7th, plus 11th
B7/add11 or B7/11 [0 2 1 2 0 2] (Eb E Gb A B) : major triad, minor 7th, plus 11th
B7sus4 [x 0 4 4 0 0] (E Gb A B) : sus4 triad, minor 7th
B7sus4 [x 2 4 2 5 2] (E Gb A B) : sus4 triad, minor 7th
Baug/E [3 x 1 0 0 0] (Eb E G B) : augmented triad (altered bass)
Baug/E [x x 1 0 0 0] (Eb E G B) : augmented triad (altered bass)
Bb or Bbmaj [1 1 3 3 3 1] (D F Bb) : major triad
Bb or Bbmaj [x 1 3 3 3 1] (D F Bb) : major triad
Bb or Bbmaj [x x 0 3 3 1] (D F Bb) : major triad
Bb #5 or Bbaug [x x 0 3 3 2] (D Gb Bb) : augmented triad
Bb b5 [x x 0 3 x 0] (D E Bb) : flat 5th
Bb/A [1 1 3 2 3 1] (D F A Bb) : major triad (altered bass)
Bb/Ab [x 1 3 1 3 1] (D F Ab Bb) : major triad (altered bass)
```

```
Bb/Ab [x x 3 3 3 4] (D F Ab Bb) : major triad (altered bass)
Bb/Db [x x 0 6 6 6] (Db D F Bb) : major triad (altered bass)
Bb/E [x 1 3 3 3 0] (D E F Bb) : major triad (altered bass)
Bb/G [3 5 3 3 3 3] (D F G Bb) : major triad (altered bass)
Bb/G [x x 3 3 3 3] (D F G Bb) : major triad (altered bass)
Bb5 or Bb(no 3rd)[6 8 8 x x 6] (F Bb): root and 5th (power chord)
Bb5 or Bb(no 3rd)[x 1 3 3 x 6] (F Bb): root and 5th (power chord)
Bb6 [3 5 3 3 3 3] (D F G Bb) : major triad plus 6th
Bb6 [x x 3 3 3 3] (D F G Bb) : major triad plus 6th
Bb6/add9 or Bb6/9 [x 3 3 3 3 3] (C D F G Bb) : major triad plus 6th and 9th
Bb7 or Bbdom 7 [x 1 3 1 3 1] (D F Ab Bb) : major triad, minor 7th
Bb7 or Bbdom 7 [x x 3 3 3 4] (D F Ab Bb) : major triad, minor 7th
Bb7sus4 [x 1 3 1 4 1] (Eb F Ab Bb) : sus4 triad, minor 7th
Bbadd#11 [x 1 3 3 3 0] (D E F Bb) : major triad, augmented 11th
Bbaug/E [2 x 4 3 3 0] (D E Gb Bb) : augmented triad (altered bass)
Bbdim/C [x 3 x 3 2 0] (C Db E Bb) : diminished triad (altered bass)
Bbdim/D [x x 0 3 2 0] (Db D E Bb) : diminished triad (altered bass)
Bbdim/G [x 1 2 0 2 0] (Db E G Bb) : diminished triad (altered bass)
Bbdim/G [x x 2 3 2 3] (Db E G Bb) : diminished triad (altered bass)
Bbdim/Gb [2 4 2 3 2 2] (Db E Gb Bb) : diminished triad (altered bass)
Bbdim/Gb [x x 4 3 2 0] (Db E Gb Bb) : diminished triad (altered bass)
Bbdim7 [x 1 2 0 2 0] (Db E G Bb) : diminished triad, diminished 7th
Bbdim7 [x x 2 3 2 3] (Db E G Bb) : diminished triad, diminished 7th
Bbm [1 1 3 3 2 1] (Db F Bb) : minor triad
Bbm/Ab [x 1 3 1 2 1] (Db F Ab Bb) : minor triad (altered bass)
Bbm/D [x x 0 6 6 6] (Db D F Bb) : minor triad (altered bass)
Bbm/Gb [x x 3 3 2 2] (Db F Gb Bb) : minor triad (altered bass)
Bbm7 [x 1 3 1 2 1] (Db F Ab Bb) : minor triad, minor 7th
Bbmaj7 or Bb#7 [1 1 3 2 3 1] (D F A Bb) : major triad, major 7th
Bbmaj9 or Bb9(#7) [x 3 3 3 3 5] (C D F A Bb) : major triad, major 7th plus 9th
Bbsus2 or Bbadd9(no3)[x x 3 3 1 1] (C F Bb) : no 3rd but a 2nd from a major triad
Bbsus2/G [x 3 5 3 6 3] (C F G Bb) : sus2 triad (altered bass)
Bbsus4/Ab [x 1 3 1 4 1] (Eb F Ab Bb) : sus4 triad (altered bass)
Bdim/A [1 2 3 2 3 1] (D F A B) : diminished triad (altered bass)
Bdim/A [x 2 0 2 0 1] (D F A B) : diminished triad (altered bass)
Bdim/A [x x 0 2 0 1] (D F A B) : diminished triad (altered bass)
Bdim/Ab [x 2 0 1 0 1] (D F Ab B) : diminished triad (altered bass)
Bdim/Ab [x x 0 1 0 1] (D F Ab B) : diminished triad (altered bass)
Bdim/Ab [x x 3 4 3 4] (D F Ab B) : diminished triad (altered bass)
Bdim/G [1 x 0 0 0 3] (D F G B) : diminished triad (altered bass)
Bdim/G [3 2 0 0 0 1] (D F G B) : diminished triad (altered bass)
Bdim/G [x x 0 0 0 1] (D F G B) : diminished triad (altered bass)
Bdim7 [x 2 0 1 0 1] (D F Ab B) : diminished triad, diminished 7th
Bdim7 [x x 0 1 0 1] (D F Ab B) : diminished triad, diminished 7th
Bdim7 [x x 3 4 3 4] (D F Ab B) : diminished triad, diminished 7th
Bm [2 2 4 4 3 2] (D Gb B) : minor triad
Bm [x 2 4 4 3 2] (D Gb B) : minor triad
Bm [x x 0 4 3 2] (D Gb B) : minor triad
Bm/A [x 0 4 4 3 2] (D Gb A B) : minor triad (altered bass)
Bm/A [x 2 0 2 0 2] (D Gb A B) : minor triad (altered bass)
Bm/A [x 2 0 2 3 2] (D Gb A B) : minor triad (altered bass)
Bm/A [x 2 4 2 3 2] (D Gb A B) : minor triad (altered bass)
Bm/A [x x 0 2 0 2] (D Gb A B) : minor triad (altered bass)
Bm/G [2 2 0 0 0 3] (D Gb G B) : minor triad (altered bass)
Bm/G [2 2 0 0 3 3] (D Gb G B) : minor triad (altered bass)
Bm/G [3 2 0 0 0 2] (D Gb G B) : minor triad (altered bass)
Bm/G [x x 4 4 3 3] (D Gb G B) : minor triad (altered bass)
Bm7 [x 0 4 4 3 2] (D Gb A B) : minor triad, minor 7th
Bm7 [x 2 0 2 0 2] (D Gb A B) : minor triad, minor 7th
Bm7 [x 2 0 2 3 2] (D Gb A B) : minor triad, minor 7th
```

```
Bm7 [x 2 4 2 3 2] (D Gb A B) : minor triad, minor 7th
Bm7 [x x 0 2 0 2] (D Gb A B) : minor triad, minor 7th
Bm7(b5) or Bo7 [1 2 3 2 3 1] (D F A B) : diminished triad, minor 7th : half-diminished 7th
Bm7(b5) or Bo7 [x 2 0 2 0 1] (D F A B) : diminished triad, minor 7th : half-diminished 7th
Bm7(b5) or Bo7 [x x 0 2 0 1] (D F A B) : diminished triad, minor 7th : half-diminished 7th
Bm7/add11 or Bm7/11 [0 0 2 4 3 2] (D E Gb A B) : minor triad, minor 7th, plus 11th
Bm7/add11 or Bm7/11 [0 2 0 2 0 2] (D E Gb A B) : minor triad, minor 7th, plus 11th
Bmaj7/#11 [x 2 3 3 4 2] (Eb F Gb Bb B) : major triad, major 7th, augmented 11th
Bsus or Bsus4 [7 9 9 x x 0] (E Gb B) : no 3rd but a 4th from a major triad
Bsus or Bsus4 [x 2 4 4 x 0] (E Gb B) : no 3rd but a 4th from a major triad
Bsus2 or Badd9(no3)[x 4 4 4 x 2] (Db Gb B): no 3rd but a 2nd from a major triad
Bsus2 or Badd9(no3)[x x 4 4 2 2] (Db Gb B) : no 3rd but a 2nd from a major triad
Bsus2/E [x 4 4 4 x 0] (Db E Gb B) : sus2 triad (altered bass)
Bsus4/A [x 0 4 4 0 0] (E Gb A B) : sus4 triad (altered bass)
Bsus4/A [x 2 4 2 5 2] (E Gb A B) : sus4 triad (altered bass)
Bsus4/Ab [0 2 2 1 0 2] (E Gb Ab B) : sus4 triad (altered bass)
Bsus4/Ab [0 x 4 1 0 0] (E Gb Ab B) : sus4 triad (altered bass)
Bsus4/Ab [2 2 2 1 0 0] (E Gb Ab B) : sus4 triad (altered bass)
Bsus4/Db [x 4 4 4 x 0] (Db E Gb B) : sus4 triad (altered bass)
Bsus4/Eb [x 2 2 4 4 2] (Eb E Gb B) : sus4 triad (altered bass)
Bsus4/Eb [x x 4 4 4 0] (Eb E Gb B) : sus4 triad (altered bass)
Bsus4/G [0 2 2 0 0 2] (E Gb G B) : sus4 triad (altered bass)
Bsus4/G [0 2 4 0 0 0] (E Gb G B) : sus4 triad (altered bass)
Bsus4/G [0 x 4 0 0 0] (E Gb G B) : sus4 triad (altered bass)
Bsus4/G [2 2 2 0 0 0] (E Gb G B) : sus4 triad (altered bass)
C or Cmaj [0 3 2 0 1 0] (C E G) : major triad
C or Cmaj [0 3 5 5 5 3] (C E G) : major triad
C or Cmaj [3 3 2 0 1 0] (C E G) : major triad
C or Cmaj [3 x 2 0 1 0] (C E G) : major triad
C or Cmaj [x 3 2 0 1 0] (C E G) : major triad
C or Cmaj [x 3 5 5 5 0] (C E G) : major triad
C #5 or Caug [x 3 2 1 1 0] (C E Ab) : augmented triad
C b5 [x x 4 5 x 0] (C E Gb) : flat 5th
C/A [0 0 2 0 1 3] (C E G A) : major triad (altered bass)
C/A [x 0 2 0 1 0] (C E G A) : major triad (altered bass)
C/A [x 0 2 2 1 3] (C E G A) : major triad (altered bass)
C/A [x 0 5 5 5 8] (C E G A) : major triad (altered bass)
C/B [0 3 2 0 0 0] (C E G B) : major triad (altered bass)
C/B [x 2 2 0 1 0] (C E G B) : major triad (altered bass)
C/B [x 3 5 4 5 3] (C E G B) : major triad (altered bass)
C/Bb [x 3 5 3 5 3] (C E G Bb) : major triad (altered bass)
C/D [3 x 0 0 1 0] (C D E G) : major triad (altered bass)
C/D [x 3 0 0 1 0] (C D E G) : major triad (altered bass)
C/D [x 3 2 0 3 0] (C D E G) : major triad (altered bass)
C/D [x 3 2 0 3 3] (C D E G) : major triad (altered bass)
C/D [x x 0 0 1 0] (C D E G) : major triad (altered bass)
C/D [x x 0 5 5 3] (C D E G) : major triad (altered bass)
C/D [x 10 12 12 13 0] (C D E G) : major triad (altered bass)
C/D [x 5 5 5 x 0] (C D E G) : major triad (altered bass)
C/F [x 3 3 0 1 0] (C E F G) : major triad (altered bass)
C/F [x x 3 0 1 0] (C E F G) : major triad (altered bass)
C5 or C(no 3rd) [x 3 5 5 x 3] (C G): root and 5th (power chord)
C6 [0 0 2 0 1 3] (C E G A) : major triad plus 6th
C6 [x 0 2 0 1 0] (C E G A) : major triad plus 6th
C6 [x 0 2 2 1 3] (C E G A) : major triad plus 6th
C6 [x 0 5 5 5 8] (C E G A) : major triad plus 6th
C6/add9 or C6/9 [x 5 7 5 8 0] (C D E G A) : major triad plus 6th and 9th
C7 or Cdom 7 [x 3 5 3 5 3] (C E G Bb) : major triad, minor 7th
C7sus4 [x 3 5 3 6 3] (C F G Bb) : sus4 triad, minor 7th
C9(b5) [0 3 x 3 3 2] (C D E Gb Bb) : diminished 5th, minor 7th, plus 9th
```

```
Cadd9 or C2 [3 x 0 0 1 0] (C D E G) : major triad plus 9th
Cadd9 or C2 [x 3 0 0 1 0] (C D E G) : major triad plus 9th
Cadd9 or C2 [x 3 2 0 3 0] (C D E G) : major triad plus 9th
Cadd9 or C2 [x 3 2 0 3 3] (C D E G) : major triad plus 9th
Cadd9 or C2 [x x 0 0 1 0] (C D E G) : major triad plus 9th
Cadd9 or C2 [x x 0 5 5 3] (C D E G) : major triad plus 9th
Cadd9 or C2 [x 10 12 12 13 0] (C D E G) : major triad plus 9th
Cadd9 or C2 [x 3 2 0 3 0] (C D E G) : major triad plus 9th
Cadd9 or C2 [x 5 5 5 x 0] (C D E G) : major triad plus 9th
Cdim/A [x x 1 2 1 2] (C Eb Gb A) : diminished triad (altered bass)
Cdim/Ab [x x 1 1 1 2] (C Eb Gb Ab) : diminished triad (altered bass)
Cdim/Ab [x x 4 5 4 4] (C Eb Gb Ab) : diminished triad (altered bass)
Cdim/D [x 5 4 5 4 2] (C D Eb Gb): diminished triad (altered bass)
Cdim7 [x x 1 2 1 2] (C Eb Gb A) : diminished triad, diminished 7th
Cm [x 3 5 5 4 3] (C Eb G) : minor triad
Cm [x x 5 5 4 3] (C Eb G) : minor triad
Cm/A [x x 1 2 1 3] (C Eb G A) : minor triad (altered bass)
Cm/Bb [x 3 5 3 4 3] (C Eb G Bb) : minor triad (altered bass)
Cm6 [x x 1 2 1 3] (C Eb G A) : minor triad plus 6th
Cm7 [x 3 5 3 4 3] (C Eb G Bb) : minor triad, minor 7th
Cmaj7 or C#7 [0 3 2 0 0 0] (C E G B) : major triad, major 7th
Cmaj7 or C#7 [x 2 2 0 1 0] (C E G B) : major triad, major 7th
Cmaj7 or C#7 [x 3 5 4 5 3] (C E G B) : major triad, major 7th
Cmaj9 or C9(#7) [x 3 0 0 0 0] (C D E G B) : major triad, major 7th plus 9th
Csus or Csus4 [x 3 3 0 1 1] (C F G) : no 3rd but a 4th from a major triad
Csus or Csus4 [x x 3 0 1 1] (C F G) : no 3rd but a 4th from a major triad
Csus2 or Cadd9(no3)[x 10 12 12 13 3] (C D G): no 3rd but a 2nd from a major triad
Csus2 or Cadd9(no3)[x 5 5 5 x 3] (C D G): no 3rd but a 2nd from a major triad
Csus2 or Cadd9(no3)[x 3 0 0 3 3] (C D G) : no 3rd but a 2nd from a major triad
Csus2 or Cadd9(no3)[x 3 5 5 3 3] (C D G) : no 3rd but a 2nd from a major triad
Csus2/A [x 5 7 5 8 3] (C D G A): sus2 triad (altered bass)
Csus2/A [x x 0 2 1 3] (C D G A) : sus2 triad (altered bass)
Csus2/B [3 3 0 0 0 3] (C D G B) : sus2 triad (altered bass)
Csus2/B [x 3 0 0 0 3] (C D G B) : sus2 triad (altered bass)
Csus2/E [3 x 0 0 1 0] (C D E G) : sus2 triad (altered bass)
Csus2/E [x 3 0 0 1 0] (C D E G) : sus2 triad (altered bass)
Csus2/E [x 3 2 0 3 0] (C D E G) : sus2 triad (altered bass)
Csus2/E [x 3 2 0 3 3] (C D E G) : sus2 triad (altered bass)
Csus2/E [x x 0 0 1 0] (C D E G) : sus2 triad (altered bass)
Csus2/E [x x 0 5 5 3] (C D E G) : sus2 triad (altered bass)
Csus2/E [x 10 12 12 13 0] (C D E G) : sus2 triad (altered bass)
Csus2/E [x 5 5 5 x 0] (C D E G) : sus2 triad (altered bass)
Csus2/F [3 3 0 0 1 1] (C D F G) : sus2 triad (altered bass)
Csus4/A [3 x 3 2 1 1] (C F G A) : sus4 triad (altered bass)
Csus4/A [x x 3 2 1 3] (C F G A) : sus4 triad (altered bass)
Csus4/B [x 3 3 0 0 3] (C F G B) : sus4 triad (altered bass)
Csus4/Bb [x 3 5 3 6 3] (C F G Bb) : sus4 triad (altered bass)
Csus4/D [3 3 0 0 1 1] (C D F G) : sus4 triad (altered bass)
Csus4/E [x 3 3 0 1 0] (C E F G) : sus4 triad (altered bass)
Csus4/E [x x 3 0 1 0] (C E F G) : sus4 triad (altered bass)
D or Dmaj [x 5 4 2 3 2] (D Gb A): major triad
D or Dmaj [x 9 7 7 x 2] (D Gb A): major triad
D or Dmaj [2 0 0 2 3 2] (D Gb A) : major triad
D or Dmaj [x 0 0 2 3 2] (D Gb A) : major triad
D or Dmaj [x 0 4 2 3 2] (D Gb A) : major triad
D or Dmaj [x x 0 2 3 2] (D Gb A) : major triad
D or Dmaj [x x 0 7 7 5] (D Gb A) : major triad
D #5 or Daug [x x 0 3 3 2] (D Gb Bb) : augmented triad
D/B [x 0 4 4 3 2] (D Gb A B) : major triad (altered bass)
D/B [x 2 0 2 0 2] (D Gb A B) : major triad (altered bass)
```

```
D/B [x 2 0 2 3 2] (D Gb A B) : major triad (altered bass)
D/B [x 2 4 2 3 2] (D Gb A B) : major triad (altered bass)
D/B [x x 0 2 0 2] (D Gb A B) : major triad (altered bass)
D/C [x 5 7 5 7 2] (C D Gb A): major triad (altered bass)
D/C [x 0 0 2 1 2] (C D Gb A) : major triad (altered bass)
D/C [x 3 x 2 3 2] (C D Gb A) : major triad (altered bass)
D/C [x 5 7 5 7 5] (C D Gb A) : major triad (altered bass)
D/Db [x x 0 14 14 14] (Db D Gb A) : major triad (altered bass)
D/Db [x x 0 2 2 2] (Db D Gb A) : major triad (altered bass)
D/E [0 0 0 2 3 2] (D E Gb A) : major triad (altered bass)
D/E [0 0 4 2 3 0] (D E Gb A) : major triad (altered bass)
D/E [2 x 0 2 3 0] (D E Gb A) : major triad (altered bass)
D/E [x 0 2 2 3 2] (D E Gb A) : major triad (altered bass)
D/E [x x 2 2 3 2] (D E Gb A) : major triad (altered bass)
D/E [x 5 4 2 3 0] (D E Gb A) : major triad (altered bass)
D/E [x 9 7 7 x 0] (D E Gb A) : major triad (altered bass)
D/G [5 x 4 0 3 5] (D Gb G A): major triad (altered bass)
D/G [3 x 0 2 3 2] (D Gb G A) : major triad (altered bass)
D5 or D(no 3rd) [5 5 7 7 x 5] (D A): root and 5th (power chord)
D5 or D(no 3rd) [x 0 0 2 3 5] (D A): root and 5th (power chord)
D6 [x 0 4 4 3 2] (D Gb A B) : major triad plus 6th
D6 [x 2 0 2 0 2] (D Gb A B) : major triad plus 6th
D6 [x 2 0 2 3 2] (D Gb A B) : major triad plus 6th
D6 [x 2 4 2 3 2] (D Gb A B) : major triad plus 6th
D6 [x x 0 2 0 2] (D Gb A B) : major triad plus 6th
D6/add9 or D6/9 [0 0 2 4 3 2] (D E Gb A B) : major triad plus 6th and 9th
D6/add9 or D6/9 [0 2 0 2 0 2] (D E Gb A B) : major triad plus 6th and 9th
D7 or Ddom 7 [x 5 7 5 7 2] (C D Gb A): major triad, minor 7th
D7 or Ddom 7 [x 0 0 2 1 2] (C D Gb A) : major triad, minor 7th
D7 or Ddom 7 [x 3 x 2 3 2] (C D Gb A) : major triad, minor 7th
D7 or Ddom 7 [x 5 7 5 7 5] (C D Gb A) : major triad, minor 7th
D7sus4 [x 5 7 5 8 3] (C D G A): sus4 triad, minor 7th
D7sus4 [x x 0 2 1 3] (C D G A) : sus4 triad, minor 7th
D9 or Ddom 9 [0 0 0 2 1 2] (C D E Gb A) : major triad, minor 7th plus 9th
D9 or Ddom 9 [2 x 0 2 1 0] (C D E Gb A) : major triad, minor 7th plus 9th
D9 or Ddom 9 [x 5 7 5 7 0] (C D E Gb A) : major triad, minor 7th plus 9th
D9(#5) [0 3 x 3 3 2] (C D E Gb Bb) : augmented 5th, minor 7th plus 9th
Dadd9 or D2 [0 0 0 2 3 2] (D E Gb A) : major triad plus 9th
Dadd9 or D2 [0 0 4 2 3 0] (D E Gb A) : major triad plus 9th
Dadd9 or D2 [2 x 0 2 3 0] (D E Gb A) : major triad plus 9th
Dadd9 or D2 [x 0 2 2 3 2] (D E Gb A) : major triad plus 9th
Dadd9 or D2 [x x 2 2 3 2] (D E Gb A) : major triad plus 9th
Dadd9 or D2 [x 5 4 2 3 0] (D E Gb A) : major triad plus 9th
Dadd9 or D2 [x 9 7 7 x 0] (D E Gb A) : major triad plus 9th
Daug/E [2 x 4 3 3 0] (D E Gb Bb) : augmented triad (altered bass)
Db or Dbmaj [4 4 6 6 6 4] (Db F Ab) : major triad
Db or Dbmaj [x 4 3 1 2 1] (Db F Ab) : major triad
Db or Dbmaj [x 4 6 6 6 4] (Db F Ab) : major triad
Db or Dbmaj [x x 3 1 2 1] (Db F Ab) : major triad
Db or Dbmaj [x x 6 6 6 4] (Db F Ab) : major triad
Db #5 or Dbaug [x 0 3 2 2 1] (Db F A) : augmented triad
Db #5 or Dbaug [x 0 x 2 2 1] (Db F A) : augmented triad
Db b5 [x x 3 0 2 1] (Db F G) : flat 5th
Db/B [x 4 3 4 0 4] (Db F Ab B) : major triad (altered bass)
Db/Bb [x 1 3 1 2 1] (Db F Ab Bb) : major triad (altered bass)
Db/C [x 3 3 1 2 1] (C Db F Ab) : major triad (altered bass)
Db/C [x 4 6 5 6 4] (C Db F Ab) : major triad (altered bass)
Db5 or Db(no 3rd)[x 4 6 6 x 4] (Db Ab): root and 5th (power chord)
Db6 [x 1 3 1 2 1] (Db F Ab Bb) : major triad plus 6th
Db7 or Dbdom 7 [x 4 3 4 0 4] (Db F Ab B) : major triad, minor 7th
```

```
Dbaug/D [x x 0 2 2 1] (Db D F A) : augmented triad (altered bass)
Dbaug/G [1 0 3 0 2 1] (Db F G A) : augmented triad (altered bass)
Dbdim/A [3 x 2 2 2 0] (Db E G A) : diminished triad (altered bass)
Dbdim/A [x 0 2 0 2 0] (Db E G A) : diminished triad (altered bass)
Dbdim/A [x 0 2 2 2 3] (Db E G A) : diminished triad (altered bass)
Dbdim/B [0 2 2 0 2 0] (Db E G B) : diminished triad (altered bass)
Dbdim/Bb [x 1 2 0 2 0] (Db E G Bb) : diminished triad (altered bass)
Dbdim/Bb [x x 2 3 2 3] (Db E G Bb) : diminished triad (altered bass)
Dbdim/D [3 x 0 0 2 0] (Db D E G) : diminished triad (altered bass)
Dbdim/D [x x 0 0 2 0] (Db D E G) : diminished triad (altered bass)
Dbdim7 [x 1 2 0 2 0] (Db E G Bb) : diminished triad, diminished 7th
Dbdim7 [x x 2 3 2 3] (Db E G Bb) : diminished triad, diminished 7th
Dbm [x 4 6 6 5 4] (Db E Ab) : minor triad
Dbm [x x 2 1 2 0] (Db E Ab) : minor triad
Dbm [x 4 6 6 x 0] (Db E Ab) : minor triad
Dbm/A [x 0 2 1 2 0] (Db E Ab A) : minor triad (altered bass)
Dbm/B [0 2 2 1 2 0] (Db E Ab B) : minor triad (altered bass)
Dbm/B [x 4 6 4 5 4] (Db E Ab B) : minor triad (altered bass)
Dbm7 [0 2 2 1 2 0] (Db E Ab B) : minor triad, minor 7th
Dbm7 [x 4 6 4 5 4] (Db E Ab B) : minor triad, minor 7th
Dbm7(b5) or Dbo7 [0 2 2 0 2 0] (Db E G B) : diminished triad, minor 7th : half-diminished 7th
Dbmaj7 or Db#7 [x 3 3 1 2 1] (C Db F Ab) : major triad, major 7th
Dbmaj7 or Db#7 [x 4 6 5 6 4] (C Db F Ab) : major triad, major 7th
Dbsus2 or Dbadd9(no3) [x x 6 6 4 4] (Db Eb Ab) : no 3rd but a 2nd from a major triad
Dbsus4/Bb [x x 4 3 2 4] (Db Gb Ab Bb) : sus4 triad (altered bass)
Ddim/B [x 2 0 1 0 1] (D F Ab B) : diminished triad (altered bass)
Ddim/B [x x 0 1 0 1] (D F Ab B) : diminished triad (altered bass)
Ddim/B [x x 3 4 3 4] (D F Ab B) : diminished triad (altered bass)
Ddim/Bb [x 1 3 1 3 1] (D F Ab Bb) : diminished triad (altered bass)
Ddim/Bb [x x 3 3 3 4] (D F Ab Bb) : diminished triad (altered bass)
Ddim/C [x x 0 1 1 1] (C D F Ab) : diminished triad (altered bass)
Ddim7 [x 2 0 1 0 1] (D F Ab B) : diminished triad, diminished 7th
Ddim7 [x x 0 1 0 1] (D F Ab B) : diminished triad, diminished 7th
Ddim7 [x x 3 4 3 4] (D F Ab B) : diminished triad, diminished 7th
Dm [x 0 0 2 3 1] (D F A) : minor triad
Dm/B [1 2 3 2 3 1] (D F A B) : minor triad (altered bass)
Dm/B [x 2 0 2 0 1] (D F A B) : minor triad (altered bass)
Dm/B [x x 0 2 0 1] (D F A B) : minor triad (altered bass)
Dm/Bb [1 1 3 2 3 1] (D F A Bb) : minor triad (altered bass)
Dm/C [x 5 7 5 6 5] (C D F A) : minor triad (altered bass)
Dm/C [x x 0 2 1 1] (C D F A) : minor triad (altered bass)
Dm/C [x x 0 5 6 5] (C D F A) : minor triad (altered bass)
Dm/Db [x x 0 2 2 1] (Db D F A) : minor triad (altered bass)
Dm/E [x x 7 7 6 0] (D E F A) : minor triad (altered bass)
Dm6 [1 2 3 2 3 1] (D F A B) : minor triad plus 6th
Dm6 [x 2 0 2 0 1] (D F A B) : minor triad plus 6th
Dm6 [x x 0 2 0 1] (D F A B) : minor triad plus 6th
Dm7 [x 5 7 5 6 5] (C D F A) : minor triad, minor 7th
Dm7 [x x 0 2 1 1] (C D F A) : minor triad, minor 7th
Dm7 [x x 0 5 6 5] (C D F A) : minor triad, minor 7th
Dm7(b5) or Do7 [x x 0 1 1 1] (C D F Ab) : diminished triad, minor 7th : half-diminished 7th
Dm7/add11 or Dm7/11 [3 x 0 2 1 1] (C D F G A) : minor triad, minor 7th, plus 11th
Dmaj7 or D#7 [x x 0 14 14 14] (Db D Gb A) : major triad, major 7th
Dmaj7 or D#7 [x x 0 2 2 2] (Db D Gb A) : major triad, major 7th
Dmin/maj7 [x x 0 2 2 1] (Db D F A) : minor triad, major 7th
Dsus or Dsus4 [5 x 0 0 3 5] (D G A): no 3rd but a 4th from a major triad
Dsus or Dsus4 [3 0 0 0 3 3] (D G A) : no 3rd but a 4th from a major triad
Dsus or Dsus4 [x 0 0 0 3 3] (D G A) : no 3rd but a 4th from a major triad
Dsus or Dsus4 [x x 0 2 3 3] (D G A) : no 3rd but a 4th from a major triad
Dsus2 or Dadd9(no3)[5 5 7 7 x 0] (D E A): no 3rd but a 2nd from a major triad
```

```
Dsus2 or Dadd9(no3)[x 0 0 2 3 0] (D E A): no 3rd but a 2nd from a major triad
Dsus2 or Dadd9(no3)[0 0 2 2 3 0] (D E A) : no 3rd but a 2nd from a major triad
Dsus2 or Dadd9(no3)[x 0 2 2 3 0] (D E A) : no 3rd but a 2nd from a major triad
Dsus2 or Dadd9(no3)[x x 0 2 3 0] (D E A) : no 3rd but a 2nd from a major triad
Dsus2/Ab [4 x 0 2 3 0] (D E Ab A) : sus2 triad (altered bass)
Dsus2/B [0 2 0 2 0 0] (D E A B) : sus2 triad (altered bass)
Dsus2/B [x 2 0 2 3 0] (D E A B) : sus2 triad (altered bass)
Dsus2/Bb [0 1 x 2 3 0] (D E A Bb) : sus2 triad (altered bass)
Dsus2/C [x x 0 2 1 0] (C D E A) : sus2 triad (altered bass)
Dsus2/C [x x 0 5 5 5] (C D E A) : sus2 triad (altered bass)
Dsus2/Db [x 0 0 2 2 0] (Db D E A) : sus2 triad (altered bass)
Dsus2/Db [x x 0 2 2 0] (Db D E A) : sus2 triad (altered bass)
Dsus2/Db [x x 0 6 5 5] (Db D E A) : sus2 triad (altered bass)
Dsus2/Db [x x 0 9 10 9] (Db D E A) : sus2 triad (altered bass)
Dsus2/F [x x 7 7 6 0] (D E F A) : sus2 triad (altered bass)
Dsus2/G [x 0 2 0 3 0] (D E G A) : sus2 triad (altered bass)
Dsus2/G [x 0 2 0 3 3] (D E G A) : sus2 triad (altered bass)
Dsus2/G [x 0 2 2 3 3] (D E G A) : sus2 triad (altered bass)
Dsus2/G [5 x 0 0 3 0] (D E G A) : sus2 triad (altered bass)
Dsus2/G [x 0 0 0 x 0] (D E G A) : sus2 triad (altered bass)
Dsus2/Gb [0 0 0 2 3 2] (D E Gb A) : sus2 triad (altered bass)
Dsus2/Gb [0 0 4 2 3 0] (D E Gb A) : sus2 triad (altered bass)
Dsus2/Gb [2 x 0 2 3 0] (D E Gb A) : sus2 triad (altered bass)
Dsus2/Gb [x 0 2 2 3 2] (D E Gb A) : sus2 triad (altered bass)
Dsus2/Gb [x x 2 2 3 2] (D E Gb A) : sus2 triad (altered bass)
Dsus2/Gb [x 5 4 2 3 0] (D E Gb A) : sus2 triad (altered bass)
Dsus2/Gb [x 9 7 7 x 0] (D E Gb A) : sus2 triad (altered bass)
Dsus4/B [3 0 0 0 0 3] (D G A B) : sus4 triad (altered bass)
Dsus4/B [3 2 0 2 0 3] (D G A B) : sus4 triad (altered bass)
Dsus4/C [x 5 7 5 8 3] (C D G A): sus4 triad (altered bass)
Dsus4/C [x x 0 2 1 3] (C D G A) : sus4 triad (altered bass)
Dsus4/E [x 0 2 0 3 0] (D E G A) : sus4 triad (altered bass)
Dsus4/E [x 0 2 0 3 3] (D E G A) : sus4 triad (altered bass)
Dsus4/E [x 0 2 2 3 3] (D E G A) : sus4 triad (altered bass)
Dsus4/E [5 x 0 0 3 0] (D E G A) : sus4 triad (altered bass)
Dsus4/E [x 0 0 0 x 0] (D E G A) : sus4 triad (altered bass)
Dsus4/Gb [5 x 4 0 3 5] (D Gb G A): sus4 triad (altered bass)
Dsus4/Gb [3 x 0 2 3 2] (D Gb G A) : sus4 triad (altered bass)
E or Emaj [0 2 2 1 0 0] (E Ab B) : major triad
E or Emaj [x 7 6 4 5 0] (E Ab B) : major triad
E #5 or Eaug [x 3 2 1 1 0] (C E Ab) : augmented triad
E/A [x 0 2 1 0 0] (E Ab A B) : major triad (altered bass)
E/D [0 2 0 1 0 0] (D E Ab B) : major triad (altered bass)
E/D [0 2 2 1 3 0] (D E Ab B) : major triad (altered bass)
E/D [x 2 0 1 3 0] (D E Ab B) : major triad (altered bass)
E/D [x x 0 1 0 0] (D E Ab B) : major triad (altered bass)
E/Db [0 2 2 1 2 0] (Db E Ab B) : major triad (altered bass)
E/Db [x 4 6 4 5 4] (Db E Ab B) : major triad (altered bass)
E/Eb [0 2 1 1 0 0] (Eb E Ab B) : major triad (altered bass)
E/Eb [0 x 6 4 4 0] (Eb E Ab B) : major triad (altered bass)
E/Eb [x x 1 1 0 0] (Eb E Ab B) : major triad (altered bass)
E/Gb [0 2 2 1 0 2] (E Gb Ab B) : major triad (altered bass)
E/Gb [0 x 4 1 0 0] (E Gb Ab B) : major triad (altered bass)
E/Gb [2 2 2 1 0 0] (E Gb Ab B) : major triad (altered bass)
E11/b9 [0 0 3 4 3 4] (D E F Ab A B) : major triad, minor 7th, flat 9th, plus 11th
E5 or E(no 3rd) [0 2 x x x 0] (E B) : root and 5th (power chord)
E5 or E(no 3rd) [x 7 9 9 x 0] (E B) : root and 5th (power chord)
E6 [0 2 2 1 2 0] (Db E Ab B) : major triad plus 6th
E6 [x 4 6 4 5 4] (Db E Ab B) : major triad plus 6th
E7 or Edom 7 [0 2 0 1 0 0] (D E Ab B) : major triad, minor 7th
```

```
E7 or Edom 7 [0 2 2 1 3 0] (D E Ab B) : major triad, minor 7th
E7 or Edom 7 [x 2 0 1 3 0] (D E Ab B) : major triad, minor 7th
E7 or Edom 7 [x x 0 1 0 0] (D E Ab B) : major triad, minor 7th
E7/add11 or E7/11 [x 0 0 1 0 0] (D E Ab A B) : major triad, minor 7th, plus 11th
E7/b9(b5) [0 1 3 1 3 1] (D E F Ab Bb) : diminished 5th, minor 7th, flat 9th
E7sus4 [0 2 0 2 0 0] (D E A B) : sus4 triad, minor 7th
E9 or Edom 9 [0 2 0 1 0 2] (D E Gb Ab B) : major triad, minor 7th plus 9th
E9 or Edom 9 [2 2 0 1 0 0] (D E Gb Ab B) : major triad, minor 7th plus 9th
Eadd9 or E2 [0 2 2 1 0 2] (E Gb Ab B) : major triad plus 9th
Eadd9 or E2 [0 x 4 1 0 0] (E Gb Ab B) : major triad plus 9th
Eadd9 or E2 [2 2 2 1 0 0] (E Gb Ab B) : major triad plus 9th
Eb or Ebmaj [x 1 1 3 4 3] (Eb G Bb) : major triad
Eb or Ebmaj [x x 1 3 4 3] (Eb G Bb) : major triad
Eb or Ebmaj [x x 5 3 4 3] (Eb G Bb) : major triad
Eb #5 or Ebaug [3 2 1 0 0 3] (Eb G B) : augmented triad
Eb #5 or Ebaug [3 x 1 0 0 3] (Eb G B) : augmented triad
Eb/C [x 3 5 3 4 3] (C Eb G Bb) : major triad (altered bass)
Eb/D [x 6 8 7 8 6] (D Eb G Bb) : major triad (altered bass)
Eb/Db [x 1 1 3 2 3] (Db Eb G Bb) : major triad (altered bass)
Eb/Db [x 6 8 6 8 6] (Db Eb G Bb) : major triad (altered bass)
Eb/Db [x x 1 3 2 3] (Db Eb G Bb) : major triad (altered bass)
Eb/E [x x 5 3 4 0] (Eb E G Bb) : major triad (altered bass)
Eb5 or Eb(no 3rd)[x 6 8 8 x 6] (Eb Bb): root and 5th (power chord)
Eb6 [x 3 5 3 4 3] (C Eb G Bb) : major triad plus 6th
Eb7 or Ebdom 7 [x 1 1 3 2 3] (Db Eb G Bb) : major triad, minor 7th
Eb7 or Ebdom 7 [x 6 8 6 8 6] (Db Eb G Bb) : major triad, minor 7th
Eb7 or Ebdom 7 [x x 1 3 2 3] (Db Eb G Bb) : major triad, minor 7th
Ebaug/E [3 x 1 0 0 0] (Eb E G B) : augmented triad (altered bass)
Ebaug/E [x x 1 0 0 0] (Eb E G B) : augmented triad (altered bass)
Ebdim/B [2 x 1 2 0 2] (Eb Gb A B) : diminished triad (altered bass)
Ebdim/B [x 0 1 2 0 2] (Eb Gb A B) : diminished triad (altered bass)
Ebdim/B [x 2 1 2 0 2] (Eb Gb A B) : diminished triad (altered bass)
Ebdim/B [x 2 4 2 4 2] (Eb Gb A B) : diminished triad (altered bass)
Ebdim/C [x x 1 2 1 2] (C Eb Gb A) : diminished triad (altered bass)
Ebdim7 [x x 1 2 1 2] (C Eb Gb A) : diminished triad, diminished 7th
Ebm [x x 4 3 4 2] (Eb Gb Bb) : minor triad
Ebm/Db [x x 1 3 2 2] (Db Eb Gb Bb) : minor triad (altered bass)
Ebm7 [x x 1 3 2 2] (Db Eb Gb Bb) : minor triad, minor 7th
Ebmaj7 or Eb#7 [x 6 8 7 8 6] (D Eb G Bb) : major triad, major 7th
Ebsus2/Ab [x 1 3 1 4 1] (Eb F Ab Bb) : sus2 triad (altered bass)
Ebsus4/F [x 1 3 1 4 1] (Eb F Ab Bb) : sus4 triad (altered bass)
Edim/C [x 3 5 3 5 3] (C E G Bb) : diminished triad (altered bass)
Edim/D [3 x 0 3 3 0] (D E G Bb) : diminished triad (altered bass)
Edim/Db [x 1 2 0 2 0] (Db E G Bb) : diminished triad (altered bass)
Edim/Db [x x 2 3 2 3] (Db E G Bb) : diminished triad (altered bass)
Edim/Eb [x x 5 3 4 0] (Eb E G Bb) : diminished triad (altered bass)
Edim7 [x 1 2 0 2 0] (Db E G Bb) : diminished triad, diminished 7th
Edim7 [x x 2 3 2 3] (Db E G Bb) : diminished triad, diminished 7th
Em [0 2 2 0 0 0] (E G B) : minor triad
Em [3 x 2 0 0 0] (E G B) : minor triad
Em [x 2 5 x x 0] (E G B) : minor triad
Em/A [3 x 2 2 0 0] (E G A B) : minor triad (altered bass)
Em/A [x 0 2 0 0 0] (E G A B) : minor triad (altered bass)
Em/A [x 0 5 4 5 0] (E G A B) : minor triad (altered bass)
Em/C [0 3 2 0 0 0] (C E G B) : minor triad (altered bass)
Em/C [x 2 2 0 1 0] (C E G B) : minor triad (altered bass)
Em/C [x 3 5 4 5 3] (C E G B) : minor triad (altered bass)
Em/D [0 2 0 0 0 0] (D E G B) : minor triad (altered bass)
Em/D [0 2 0 0 3 0] (D E G B) : minor triad (altered bass)
Em/D [0 2 2 0 3 0] (D E G B) : minor triad (altered bass)
```

```
Em/D [0 2 2 0 3 3] (D E G B) : minor triad (altered bass)
Em/D [x x 0 12 12 12] (D E G B) : minor triad (altered bass)
Em/D [x x 0 9 8 7] (D E G B) : minor triad (altered bass)
Em/D [x x 2 4 3 3] (D E G B) : minor triad (altered bass)
Em/D [0 x 0 0 0 0] (D E G B) : minor triad (altered bass)
Em/D [x 10 12 12 12 0] (D E G B) : minor triad (altered bass)
Em/Db [0 2 2 0 2 0] (Db E G B) : minor triad (altered bass)
Em/Eb [3 x 1 0 0 0] (Eb E G B) : minor triad (altered bass)
Em/Eb [x x 1 0 0 0] (Eb E G B) : minor triad (altered bass)
Em/Gb [0 2 2 0 0 2] (E Gb G B) : minor triad (altered bass)
Em/Gb [0 2 4 0 0 0] (E Gb G B) : minor triad (altered bass)
Em/Gb [0 x 4 0 0 0] (E Gb G B) : minor triad (altered bass)
Em/Gb [2 2 2 0 0 0] (E Gb G B) : minor triad (altered bass)
Em6 [0 2 2 0 2 0] (Db E G B) : minor triad plus 6th
Em7 [0 2 0 0 0 0] (D E G B) : minor triad, minor 7th
Em7 [0 2 0 0 3 0] (D E G B) : minor triad, minor 7th
Em7 [0 2 2 0 3 0] (D E G B) : minor triad, minor 7th
Em7 [0 2 2 0 3 3] (D E G B) : minor triad, minor 7th
Em7 [x x 0 0 0 0] (D E G B) : minor triad, minor 7th
Em7 [x x 0 12 12 12] (D E G B) : minor triad, minor 7th
Em7 [x x 0 9 8 7] (D E G B) : minor triad, minor 7th
Em7 [x x 2 4 3 3] (D E G B) : minor triad, minor 7th
Em7 [0 x 0 0 0 0] (D E G B) : minor triad, minor 7th
Em7 [x 10 12 12 12 0] (D E G B) : minor triad, minor 7th
Em7(b5) or Eo7 [3 x 0 3 3 0] (D E G Bb) : diminished triad, minor 7th : half-diminished 7th
Em7/add11 or Em7/11 [0 0 0 0 0 0] (D E G A B) : minor triad, minor 7th, plus 11th
Em7/add11 or Em7/11 [0 0 0 0 0 3] (D E G A B) : minor triad, minor 7th, plus 11th
Em7/add11 or Em7/11 [3 x 0 2 0 0] (D E G A B) : minor triad, minor 7th, plus 11th
Em9 [0 2 0 0 0 2] (D E Gb G B) : minor triad, minor 7th plus 9th
Em9 [0 2 0 0 3 2] (D E Gb G B) : minor triad, minor 7th plus 9th
Em9 [2 2 0 0 0 0] (D E Gb G B) : minor triad, minor 7th plus 9th
Emaj7 or E#7 [0 2 1 1 0 0] (Eb E Ab B) : major triad, major 7th
Emaj7 or E#7 [0 x 6 4 4 0] (Eb E Ab B) : major triad, major 7th
Emaj7 or E#7 [x x 1 1 0 0] (Eb E Ab B) : major triad, major 7th
Emaj9 or E9(#7) [0 2 1 1 0 2] (Eb E Gb Ab B) : major triad, major 7th plus 9th
Emaj9 or E9(#7) [4 x 4 4 4 0] (Eb E Gb Ab B) : major triad, major 7th plus 9th
Emin/maj7 [3 x 1 0 0 0] (Eb E G B) : minor triad, major 7th
Emin/maj7 [x x 1 0 0 0] (Eb E G B) : minor triad, major 7th
Emin/maj9 [0 6 4 0 0 0] (Eb E Gb G B) : minor triad, major 7th plus 9th
Esus or Esus4 [0 0 2 2 0 0] (E A B) : no 3rd but a 4th from a major triad
Esus or Esus4 [0 0 2 4 0 0] (E A B) : no 3rd but a 4th from a major triad
Esus or Esus4 [0 2 2 2 0 0] (E A B) : no 3rd but a 4th from a major triad
Esus or Esus4 [x 0 2 2 0 0] (E A B) : no 3rd but a 4th from a major triad
Esus or Esus4 [x x 2 2 0 0] (E A B) : no 3rd but a 4th from a major triad
Esus2 or Eadd9(no3)[7 9 9 x x 0] (E Gb B): no 3rd but a 2nd from a major triad
Esus2 or Eadd9(no3)[x 2 4 4 x 0] (E Gb B): no 3rd but a 2nd from a major triad
Esus2/A [x 0 4 4 0 0] (E Gb A B) : sus2 triad (altered bass)
Esus2/A [x 2 4 2 5 2] (E Gb A B) : sus2 triad (altered bass)
Esus2/Ab [0 2 2 1 0 2] (E Gb Ab B) : sus2 triad (altered bass)
Esus2/Ab [0 x 4 1 0 0] (E Gb Ab B) : sus2 triad (altered bass)
Esus2/Ab [2 2 2 1 0 0] (E Gb Ab B) : sus2 triad (altered bass)
Esus2/Db [x 4 4 4 x 0] (Db E Gb B) : sus2 triad (altered bass)
Esus2/Eb [x 2 2 4 4 2] (Eb E Gb B) : sus2 triad (altered bass)
Esus2/Eb [x x 4 4 4 0] (Eb E Gb B) : sus2 triad (altered bass)
Esus2/G [0 2 2 0 0 2] (E Gb G B) : sus2 triad (altered bass)
Esus2/G [0 2 4 0 0 0] (E Gb G B) : sus2 triad (altered bass)
Esus2/G [0 x 4 0 0 0] (E Gb G B) : sus2 triad (altered bass)
Esus2/G [2 2 2 0 0 0] (E Gb G B) : sus2 triad (altered bass)
Esus4/Ab [x 0 2 1 0 0] (E Ab A B) : sus4 triad (altered bass)
Esus4/C [0 0 7 5 0 0] (C E A B) : sus4 triad (altered bass)
```

```
Esus4/C  [x 3 2 2 0 0]  (C E A B) : sus4 triad (altered bass)
Esus4/D  [0 2 0 2 0 0]  (D E A B) : sus4 triad (altered bass)
Esus4/D  [x 2 0 2 3 0]  (D E A B) : sus4 triad (altered bass)
Esus4/Db [0 0 2 4 2 0]  (Db E A B) : sus4 triad (altered bass)
Esus4/Db [x 0 7 6 0 0]  (Db E A B) : sus4 triad (altered bass)
Esus4/Eb [x 2 1 2 0 0]  (Eb E A B) : sus4 triad (altered bass)
Esus4/F  [0 0 3 2 0 0]  (E F A B) : sus4 triad (altered bass)
Esus4/G  [3 x 2 2 0 0]  (E G A B) : sus4 triad (altered bass)
Esus4/G  [x 0 2 0 0 0]  (E G A B) : sus4 triad (altered bass)
Esus4/G  [x 0 5 4 5 0]  (E G A B) : sus4 triad (altered bass)
Esus4/Gb [x 0 4 4 0 0]  (E Gb A B) : sus4 triad (altered bass)
Esus4/Gb [x 2 4 2 5 2]  (E Gb A B) : sus4 triad (altered bass)
F or Fmaj [1 3 3 2 1 1]  (C F A) : major triad
F or Fmaj [x 0 3 2 1 1]  (C F A) : major triad
F or Fmaj [x 3 3 2 1 1]  (C F A) : major triad
F or Fmaj [x x 3 2 1 1]  (C F A) : major triad
F #5 or Faug [x 0 3 2 2 1]  (Db F A) : augmented triad
F #5 or Faug [x 0 x 2 2 1]  (Db F A) : augmented triad
F/D  [x 5 7 5 6 5]  (C D F A) : major triad (altered bass)
F/D  [x x 0 2 1 1]  (C D F A) : major triad (altered bass)
F/D  [x x 0 5 6 5]  (C D F A) : major triad (altered bass)
F/E  [0 0 3 2 1 0]  (C E F A) : major triad (altered bass)
F/E  [1 3 3 2 1 0]  (C E F A) : major triad (altered bass)
F/E  [1 x 2 2 1 0]  (C E F A) : major triad (altered bass)
F/E  [x x 2 2 1 1]  (C E F A) : major triad (altered bass)
F/E  [x x 3 2 1 0]  (C E F A) : major triad (altered bass)
F/Eb [x x 1 2 1 1]  (C Eb F A) : major triad (altered bass)
F/Eb [x x 3 5 4 5]  (C Eb F A) : major triad (altered bass)
F/G  [3 x 3 2 1 1]  (C F G A) : major triad (altered bass)
F/G  [x x 3 2 1 3]  (C F G A) : major triad (altered bass)
F5 or F(no 3rd) [1 3 3 x x 1]  (C F): root and 5th (power chord)
F5 or F(no 3rd) [x 8 10 x x 1]  (C F): root and 5th (power chord)
F6  [x 5 7 5 6 5]  (C D F A) : major triad plus 6th
F6  [x x 0 2 1 1]  (C D F A) : major triad plus 6th
F6  [x x 0 5 6 5]  (C D F A) : major triad plus 6th
F6/add9 or F6/9 [3 x 0 2 1 1]  (C D F G A) : major triad plus 6th and 9th
F7 or Fdom 7 [x x 1 2 1 1]  (C Eb F A) : major triad, minor 7th
F7 or Fdom 7 [x x 3 5 4 5]  (C Eb F A) : major triad, minor 7th
Fadd9 or F2 [3 x 3 2 1 1]  (C F G A) : major triad plus 9th
Fadd9 or F2 [x x 3 2 1 3]  (C F G A) : major triad plus 9th
Faug/D  [x x 0 2 2 1]  (Db D F A) : augmented triad (altered bass)
Faug/G  [1 0 3 0 2 1]  (Db F G A) : augmented triad (altered bass)
Fdim/D  [x 2 0 1 0 1]  (D F Ab B) : diminished triad (altered bass)
Fdim/D  [x x 0 1 0 1]  (D F Ab B) : diminished triad (altered bass)
Fdim/D  [x x 3 4 3 4]  (D F Ab B) : diminished triad (altered bass)
Fdim/Db [x 4 3 4 0 4]  (Db F Ab B) : diminished triad (altered bass)
Fdim7 [x 2 0 1 0 1]  (D F Ab B) : diminished triad, diminished 7th
Fdim7 [x x 0 1 0 1]  (D F Ab B) : diminished triad, diminished 7th
Fdim7 [x x 3 4 3 4]  (D F Ab B) : diminished triad, diminished 7th
Fm  [x 3 3 1 1 1]  (C F Ab) : minor triad
Fm  [x x 3 1 1 1]  (C F Ab) : minor triad
Fm/D  [x x 0 1 1 1]  (C D F Ab) : minor triad (altered bass)
Fm/Db [x 3 3 1 2 1]  (C Db F Ab) : minor triad (altered bass)
Fm/Db [x 4 6 5 6 4]  (C Db F Ab) : minor triad (altered bass)
Fm/Eb [x 8 10 8 9 8]  (C Eb F Ab) : minor triad (altered bass)
Fm/Eb [x x 1 1 1 1]  (C Eb F Ab) : minor triad (altered bass)
Fm6 [x x 0 1 1 1]  (C D F Ab) : minor triad plus 6th
Fm7 [x 8 10 8 9 8]  (C Eb F Ab) : minor triad, minor 7th
Fm7 [x x 1 1 1 1]  (C Eb F Ab) : minor triad, minor 7th
Fmaj7 or F#7 [0 0 3 2 1 0]  (C E F A) : major triad, major 7th
```

```
Fmaj7 or F#7 [1 3 3 2 1 0] (C E F A) : major triad, major 7th
Fmaj7 or F#7 [1 x 2 2 1 0] (C E F A) : major triad, major 7th
Fmaj7 or F#7 [x x 2 2 1 1] (C E F A) : major triad, major 7th
Fmaj7 or F#7 [x x 3 2 1 0] (C E F A) : major triad, major 7th
Fmaj7/#11 [0 2 3 2 1 0] (C E F A B) : major triad, major 7th, augmented 11th
Fmaj7/#11 [1 3 3 2 0 0] (C E F A B) : major triad, major 7th, augmented 11th
Fmaj9 or F9(#7) [0 0 3 0 1 3] (C E F G A) : major triad, major 7th plus 9th
Fsus or Fsus4 [x x 3 3 1 1] (C F Bb) : no 3rd but a 4th from a major triad
Fsus2 or Fadd9(no3)[x 3 3 0 1 1] (C F G) : no 3rd but a 2nd from a major triad
Fsus2 or Fadd9(no3)[x x 3 0 1 1] (C F G) : no 3rd but a 2nd from a major triad
Fsus2/A [3 x 3 2 1 1] (C F G A) : sus2 triad (altered bass)
Fsus2/A [x x 3 2 1 3] (C F G A) : sus2 triad (altered bass)
Fsus2/B [x 3 3 0 0 3] (C F G B) : sus2 triad (altered bass)
Fsus2/Bb [x 3 5 3 6 3] (C F G Bb) : sus2 triad (altered bass)
Fsus2/D [3 3 0 0 1 1] (C D F G) : sus2 triad (altered bass)
Fsus2/E [x 3 3 0 1 0] (C E F G) : sus2 triad (altered bass)
Fsus2/E [x x 3 0 1 0] (C E F G) : sus2 triad (altered bass)
Fsus4/G [x 3 5 3 6 3] (C F G Bb) : sus4 triad (altered bass)
G or Gmaj [x 10 12 12 12 10] (D G B): major triad
G or Gmaj [3 2 0 0 0 3] (D G B) : major triad
G or Gmaj [3 2 0 0 3 3] (D G B) : major triad
G or Gmaj [3 5 5 4 3 3] (D G B) : major triad
G or Gmaj [3 x 0 0 0 3] (D G B) : major triad
G or Gmaj [x 5 5 4 3 3] (D G B) : major triad
G or Gmaj [x x 0 4 3 3] (D G B) : major triad
G or Gmaj [x x 0 7 8 7] (D G B) : major triad
G #5 or Gaug [3 2 1 0 0 3] (Eb G B) : augmented triad
G #5 or Gaug [3 x 1 0 0 3] (Eb G B) : augmented triad
G/A [3 0 0 0 0 3] (D G A B) : major triad (altered bass)
G/A [3 2 0 2 0 3] (D G A B) : major triad (altered bass)
G/C [3 3 0 0 0 3] (C D G B) : major triad (altered bass)
G/C [x 3 0 0 0 3] (C D G B) : major triad (altered bass)
G/E [0 2 0 0 0 0] (D E G B) : major triad (altered bass)
G/E [0 2 0 0 3 0] (D E G B) : major triad (altered bass)
G/E [0 2 2 0 3 0] (D E G B) : major triad (altered bass)
G/E [0 2 2 0 3 3] (D E G B) : major triad (altered bass)
G/E [x x 0 12 12 12] (D E G B) : major triad (altered bass)
G/E [x x 0 9 8 7] (D E G B) : major triad (altered bass)
G/E [x x 2 4 3 3] (D E G B) : major triad (altered bass)
G/E [0 x 0 0 0 0] (D E G B) : major triad (altered bass)
G/E [x 10 12 12 12 0] (D E G B) : major triad (altered bass)
G/F [1 x 0 0 0 3] (D F G B) : major triad (altered bass)
G/F [3 2 0 0 0 1] (D F G B) : major triad (altered bass)
G/F [x x 0 0 0 1] (D F G B) : major triad (altered bass)
G/Gb [2 2 0 0 0 3] (D Gb G B) : major triad (altered bass)
G/Gb [2 2 0 0 3 3] (D Gb G B) : major triad (altered bass)
G/Gb [3 2 0 0 0 2] (D Gb G B) : major triad (altered bass)
G/Gb [x x 4 4 3 3] (D Gb G B) : major triad (altered bass)
G5 or G(no 3rd) [3 5 5 x x 3] (D G): root and 5th (power chord)
G5 or G(no 3rd) [3 x 0 0 3 3] (D G) : root and 5th (power chord)
G6 [0 2 0 0 0 0] (D E G B) : major triad plus 6th
G6 [0 2 0 0 3 0] (D E G B) : major triad plus 6th
G6 [0 2 2 0 3 0] (D E G B) : major triad plus 6th
G6 [0 2 2 0 3 3] (D E G B) : major triad plus 6th
G6 [x x 0 12 12 12] (D E G B) : major triad plus 6th
G6 [x x 0 9 8 7] (D E G B) : major triad plus 6th
G6 [x x 2 4 3 3] (D E G B) : major triad plus 6th
G6 [0 x 0 0 0 0] (D E G B) : major triad plus 6th
G6 [x 10 12 12 12 0] (D E G B) : major triad plus 6th
G6/add9 or G6/9 [0 0 0 0 0 0] (D E G A B) : major triad plus 6th and 9th
```

```
G6/add9 or G6/9 [0 0 0 0 0 3] (D E G A B) : major triad plus 6th and 9th
G6/add9 or G6/9 [3 x 0 2 0 0] (D E G A B) : major triad plus 6th and 9th
G7 or Gdom 7 [1 x 0 0 0 3] (D F G B) : major triad, minor 7th
G7 or Gdom 7 [3 2 0 0 0 1] (D F G B) : major triad, minor 7th
G7 or Gdom 7 [x x 0 0 0 1] (D F G B) : major triad, minor 7th
G7/add11 or G7/11 [x 3 0 0 0 1] (C D F G B) : major triad, minor 7th, plus 11th
G7sus4 [3 3 0 0 1 1] (C D F G) : sus4 triad, minor 7th
G9 or Gdom 9 [x 0 0 0 0 1] (D F G A B) : major triad, minor 7th plus 9th
G9 or Gdom 9 [x 2 3 2 3 3] (D F G A B) : major triad, minor 7th plus 9th
Gadd9 or G2 [3 0 0 0 0 3] (D G A B) : major triad plus 9th
Gadd9 or G2 [3 2 0 2 0 3] (D G A B) : major triad plus 9th
Gaug/E [3 x 1 0 0 0] (Eb E G B) : augmented triad (altered bass)
Gaug/E [x x 1 0 0 0] (Eb E G B) : augmented triad (altered bass)
Gb or Gbmaj [2 4 4 3 2 2] (Db Gb Bb) : major triad
Gb or Gbmaj [x 4 4 3 2 2] (Db Gb Bb) : major triad
Gb or Gbmaj [x x 4 3 2 2] (Db Gb Bb) : major triad
Gb #5 or Gbaug [x x 0 3 3 2] (D Gb Bb) : augmented triad
Gb/Ab [x x 4 3 2 4] (Db Gb Ab Bb) : major triad (altered bass)
Gb/E [2 4 2 3 2 2] (Db E Gb Bb) : major triad (altered bass)
Gb/E [x x 4 3 2 0] (Db E Gb Bb) : major triad (altered bass)
Gb/Eb [x x 1 3 2 2] (Db Eb Gb Bb) : major triad (altered bass)
Gb/F [x x 3 3 2 2] (Db F Gb Bb) : major triad (altered bass)
Gb6 [x x 1 3 2 2] (Db Eb Gb Bb) : major triad plus 6th
Gb7 or Gbdom 7 [2 4 2 3 2 2] (Db E Gb Bb) : major triad, minor 7th
Gb7 or Gbdom 7 [x x 4 3 2 0] (Db E Gb Bb) : major triad, minor 7th
Gb7(#5) [2 x 4 3 3 0] (D E Gb Bb) : minor 7th, sharp 5th
Gb7/#9 [x 0 4 3 2 0] (Db E Gb A Bb) : major triad, minor 7th augmented 9th
Gb7sus4 [x 4 4 4 x 0] (Db E Gb B) : sus4 triad, minor 7th
Gbadd9 or Gb2 [x x 4 3 2 4] (Db Gb Ab Bb) : major triad plus 9th
Gbaug/E [2 x 4 3 3 0] (D E Gb Bb) : augmented triad (altered bass)
Gbdim/D [x 5 7 5 7 2] (C D Gb A): diminished triad (altered bass)
Gbdim/D [x 0 0 2 1 2] (C D Gb A) : diminished triad (altered bass)
Gbdim/D [x 3 x 2 3 2] (C D Gb A) : diminished triad (altered bass)
Gbdim/D [x 5 7 5 7 5] (C D Gb A) : diminished triad (altered bass)
Gbdim/E [x 0 2 2 1 2] (C E Gb A) : diminished triad (altered bass)
Gbdim/E [x x 2 2 1 2] (C E Gb A) : diminished triad (altered bass)
Gbdim/Eb [x x 1 2 1 2] (C Eb Gb A) : diminished triad (altered bass)
Gbdim7 [x x 1 2 1 2] (C Eb Gb A) : diminished triad, diminished 7th
Gbm [2 4 4 2 2 2] (Db Gb A) : minor triad
Gbm [x 4 4 2 2 2] (Db Gb A) : minor triad
Gbm [x x 4 2 2 2] (Db Gb A) : minor triad
Gbm/D [x x 0 14 14 14] (Db D Gb A) : minor triad (altered bass)
Gbm/D [x x 0 2 2 2] (Db D Gb A) : minor triad (altered bass)
Gbm/E [0 0 2 2 2 2] (Db E Gb A) : minor triad (altered bass)
Gbm/E [0 x 4 2 2 0] (Db E Gb A) : minor triad (altered bass)
Gbm/E [2 x 2 2 2 0] (Db E Gb A) : minor triad (altered bass)
Gbm/E [x 0 4 2 2 0] (Db E Gb A) : minor triad (altered bass)
Gbm/E [x x 2 2 2 2] (Db E Gb A) : minor triad (altered bass)
Gbm7 [0 0 2 2 2 2] (Db E Gb A) : minor triad, minor 7th
Gbm7 [0 x 4 2 2 0] (Db E Gb A) : minor triad, minor 7th
Gbm7 [2 x 2 2 2 0] (Db E Gb A) : minor triad, minor 7th
Gbm7 [x 0 4 2 2 0] (Db E Gb A) : minor triad, minor 7th
Gbm7 [x x 2 2 2 2] (Db E Gb A) : minor triad, minor 7th
Gbm7(b5) or Gbo7 [x 0 2 2 1 2] (C E Gb A) : diminished triad, minor 7th : half-diminished 7th
Gbm7(b5) or Gbo7 [x x 2 2 1 2] (C E Gb A) : diminished triad, minor 7th : half-diminished 7th
Gbm7/b9 [0 0 2 0 2 2] (Db E Gb G A) : minor triad, minor 7th flat 9th
Gbmaj7 or Gb#7 [x x 3 3 2 2] (Db F Gb Bb) : major triad, major 7th
Gbsus or Gbsus4 [x 4 4 4 2 2] (Db Gb B) : no 3rd but a 4th from a major triad
Gbsus2/Bb [x x 4 3 2 4] (Db Gb Ab Bb) : sus2 triad (altered bass)
Gbsus4/E [x 4 4 4 x 0] (Db E Gb B) : sus4 triad (altered bass)
```

```
Gdim/E [x 1 2 0 2 0] (Db E G Bb) : diminished triad (altered bass)
Gdim/E [x x 2 3 2 3] (Db E G Bb) : diminished triad (altered bass)
Gdim/Eb [x 1 1 3 2 3] (Db Eb G Bb) : diminished triad (altered bass)
Gdim/Eb [x 6 8 6 8 6] (Db Eb G Bb) : diminished triad (altered bass)
Gdim/Eb [x x 1 3 2 3] (Db Eb G Bb) : diminished triad (altered bass)
Gdim7 [x 1 2 0 2 0] (Db E G Bb) : diminished triad, diminished 7th
Gdim7 [x x 2 3 2 3] (Db E G Bb) : diminished triad, diminished 7th
Gm [3 5 5 3 3 3] (D G Bb) : minor triad
Gm [x x 0 3 3 3] (D G Bb) : minor triad
Gm/E [3 x 0 3 3 0] (D E G Bb) : minor triad (altered bass)
Gm/Eb [x 6 8 7 8 6] (D Eb G Bb) : minor triad (altered bass)
Gm/F [3 5 3 3 3 3] (D F G Bb) : minor triad (altered bass)
Gm/F [x x 3 3 3 3] (D F G Bb) : minor triad (altered bass)
Gm13 [0 0 3 3 3 3] (D E F G A Bb) : minor triad, minor 7th, plus 9th and 13th
Gm6 [3 x 0 3 3 0] (D E G Bb) : minor triad plus 6th
Gm7 [3 5 3 3 3 3] (D F G Bb) : minor triad, minor 7th
Gm7 [x x 3 3 3 3] (D F G Bb) : minor triad, minor 7th
Gm7/add11 or Gm7/11 [x 3 3 3 3 3] (C D F G Bb) : minor triad, minor 7th, plus 11th
Gm9 [3 5 3 3 3 5] (D F G A Bb) : minor triad, minor 7th plus 9th
Gmaj7 or G#7 [2 2 0 0 0 3] (D Gb G B) : major triad, major 7th
Gmaj7 or G#7 [2 2 0 0 3 3] (D Gb G B) : major triad, major 7th
Gmaj7 or G#7 [3 2 0 0 0 2] (D Gb G B) : major triad, major 7th
Gmaj7 or G#7 [x x 4 4 3 3] (D Gb G B) : major triad, major 7th
Gsus or Gsus4 [x 10 12 12 13 3] (C D G): no 3rd but a 4th from a major triad
Gsus or Gsus4 [x 3 0 0 3 3] (C D G) : no 3rd but a 4th from a major triad
Gsus or Gsus4 [x 3 5 5 3 3] (C D G) : no 3rd but a 4th from a major triad
Gsus or Gsus4 [x 5 5 5 3 3] (C D G) : no 3rd but a 4th from a major triad
Gsus2 or Gadd9(no3)[5 x 0 0 3 5] (D G A): no 3rd but a 2nd from a major triad
Gsus2 or Gadd9(no3)[3 0 0 0 3 3] (D G A) : no 3rd but a 2nd from a major triad
Gsus2 or Gadd9(no3)[x 0 0 0 3 3] (D G A) : no 3rd but a 2nd from a major triad
Gsus2 or Gadd9(no3)[x x 0 2 3 3] (D G A) : no 3rd but a 2nd from a major triad
Gsus2/B [3 0 0 0 0 3] (D G A B) : sus2 triad (altered bass)
Gsus2/B [3 2 0 2 0 3] (D G A B) : sus2 triad (altered bass)
Gsus2/C [x 5 7 5 8 3] (C D G A): sus2 triad (altered bass)
Gsus2/C [x x 0 2 1 3] (C D G A) : sus2 triad (altered bass)
Gsus2/E [x 0 2 0 3 0] (D E G A) : sus2 triad (altered bass)
Gsus2/E [x 0 2 0 3 3] (D E G A) : sus2 triad (altered bass)
Gsus2/E [x 0 2 2 3 3] (D E G A) : sus2 triad (altered bass)
Gsus2/E [5 0 0 0 3 0] (D E G A) : sus2 triad (altered bass)
Gsus2/Gb [5 x 4 0 3 5] (D Gb G A): sus2 triad (altered bass)
Gsus2/Gb [3 x 0 2 3 2] (D Gb G A) : sus2 triad (altered bass)
Gsus4/A [x 5 7 5 8 3] (C D G A): sus4 triad (altered bass)
Gsus4/A [x x 0 2 1 3] (C D G A) : sus4 triad (altered bass)
Gsus4/B [3 3 0 0 0 3] (C D G B) : sus4 triad (altered bass)
Gsus4/B [x 3 0 0 0 3] (C D G B) : sus4 triad (altered bass)
Gsus4/E [3 x 0 0 1 0] (C D E G) : sus4 triad (altered bass)
Gsus4/E [x 3 0 0 1 0] (C D E G) : sus4 triad (altered bass)
Gsus4/E [x 3 2 0 3 0] (C D E G) : sus4 triad (altered bass)
Gsus4/E [x 3 2 0 3 3] (C D E G) : sus4 triad (altered bass)
Gsus4/E [x x 0 0 1 0] (C D E G) : sus4 triad (altered bass)
Gsus4/E [x x 0 5 5 3] (C D E G) : sus4 triad (altered bass)
Gsus4/E [x 10 12 12 13 0] (C D E G) : sus4 triad (altered bass)
Gsus4/E [x 5 5 5 x 0] (C D E G) : sus4 triad (altered bass)
Gsus4/F [3 3 0 0 1 1] (C D F G) : sus4 triad (altered bass)
```

External links

- http://www.howtotuneaguitar.org/chord-finder-guitar/chordbot.html
  Over 1800 guitar chords

- http://www.guitarwiki.com/index.php/Guitar_Chords Much bigger list of chords at GuitarWiki.com
- http://www.guitarconsultant.com/guitarchords.html
- http://www.guitarnotes.com/guitar/notes2/ultimate11.shtml
- http://www.chordgenie.com Chord finder on your mobile phone for standard and alternate tunings
- http://www.zworkbench.com/products.html - cool guitar chord reference for your cell phone
- http://wikiguitar.net/index.php?title=Chord_Dictionary - Visual chord reference.

live version • discussion • edit chapter • comment • report an error

34 PHILOSOPHY

The basics of guitar can be learned by doing. Finding your 'own style' of playing, and understanding how to interface that style musically with others is something that may take some figuring out. This book is about the **Philosophy of Guitar**, understanding what the guitar player is expected to do, and know and contribute to a band.

New categories

- Guitar:What is music about? - 'Fitting in' musically and spiritually with others.

The act of playing music is for the most part about playing with other people. One can listen to music with others, but these days, music tends to be a more personal thing. Headphones and closed cars make for isolated private spaces where we can enjoy music without irritating or being irritated by others.

The guitar at its essence remains a social instrument - from its earliest days where it was called a lute, and before then a harp - the multi-stringed portable instrument was made for public hearing. The musicians job then was to ingratiate themselves with their public. The pleasing sounds of happy music may have provided the means by which court jesters and troubadours could sing lyrics that were less than happy - sorrowful, romantic, or critical. Words alone can be too dry, and draw the ire of an unhappy listener.

- Playing solo
- Playing with others
    - Communication - a priority
    - Tone and Volume issues
    - Listening to others
    - Reading - using simple or detailed guides

- **Guitar/Philosophy**
    - Being useful and versatile
    - Ways to break out of the rut
        - Learning, experimentation, doing things differently

- Guitar/Tone and volume
    - What is tone?
        - Equipment only offers choices of tones - not the right tone
        - Fitting your tone to others, environment
    - Electric - amps, effects
        - Controlling preamp and power-tube distortion and volume
    - Acoustic - micing, feedback

- Guitar/Tuning your ear, then your guitar
  - Reference tuning - tuning to human voice
  - Off tuning - using dissonance as a tool
  - Using the capo and alternate tunings

live version • discussion • edit chapter • comment • report an error

35 EXTERNAL RESOURCES

live version • discussion • edit chapter • comment • report an error

Guitar resources

- Guitar War Online Guitar Competition. Guitarists from around the world battle it out since 2000.
- TopGuitars.info - Guitars reviews Hundreds of guitar reviews and other stringed musical instruments, guitar amps and guitar effects.
- GuitarWiki.com Wiki based guitar resource with lessons, chord library, music theory, a gear section and tabs.
- Guitar section at About.com Lessons, a chords library and gear info
- Vintage Marshall Amp Mods
- Wiki Guitar Wiki Guitar site with tablature, lessons, resources, articles, and forums.
- Ney Mello On Practicing & The Principles.

Guitar lessons

- Online Guitar Lessons Guitar Tricks 45 Guitar Instructors
- Online Guitar Lessons Reviews (Free) In-Depth reviews and User-Reviews for online guitar courses.
- Free Online Guitar Lessons Guitar lessons
- The Online Guitar Directory Free online guitar lessons.
- Free Online Guitar Lessons Free video guitar lessons for kids & adults
- Free Shred Guitar Lessons
- Free Video Lessons Free Video Guitar Lessons - blue, rock and metal. Beginner to Intermediate.
- Free Guitar Chords Free Guitar Chords eCourse with video. Basic and bar chords.
- Free Guitar Chord Chart Learn to play just about any song, by learning the basic guitar chords.
- Free Online Guitar Lessons Guitar lessons, chord charts, useful links, and how to set-up your guitar.
- GuitarNationLive.com | Learn and Play Giutar Learn, play and master your guitar with comprehensive guitar lessons. Topics range from complete beginners to advanced.
- The Online Guitar Directory A human-reviewed and edited directory listing guitar related links.
- Free beginner guitar lessons as well as tablature from the Beatles, Led Zeppelin, and more....
- How To Play The Guitar in 30 Days
- Learn Your Favourite Song on the guitar
- Learn To Play Lead Guitar
- Free Jazz Guitar Lessons

- Guitar Amp modeling Great information on Guitar amp software, Presents, banks, settings and cabinet impulses.
- Guitar software for beginners to professionals
- Guitar effects software for PC
- Free Guitar Lessons
- More Free Guitar Lessons, plus player interviews
- "THE" Online Guitar Community
- UK Guitar Museum
- Guitar Tabs Axetopia has a good resource list and search .
- Guitar Tuning Tips has information on basic tuning, along with alternative guitar tunings.
- GuitarGearHeads offers free lessons and professional reviews on guitar equipment.
- WholeNote On-Line Guitar Community has tab, reviews, and interactive lessons.
- Fret Wizard Guitar Lessons lessons and information for guitar beginners
- Sight-Reading Rhythm Patterns offers rhythmic exercises for guitarists (notes+MIDI)

Guitar tablature & chords

- - Guitar Chords Over 1800 guitar chords, organized by type of key. As well 8 Chord Inversions for each chord
- Classical Guitar TabsClassical Guitar Tabs, Guitar Forum.
- Chord Chart Learn to play any song, by learning basic guitar chords
- Ultimate-guitar.com Over 200,000 guitar tabs, bass tabs and chords. Also features lessons, columns, forums and news updates.
- Tablaunch.com An extensive database of guitar, bass, drum, tablature.
- Free beginner guitar lessons as well as tablature from the Beatles, Led Zeppelin, and more.... (requires Windows software)
- Guitarboard.com has a guitar, bass and drum tablature archive. They also have a more serious, not too busy forum
- Guitaretab.com has a large guitar archive without too many ads
- Guitarsrule.com Community web site for guitarists
- Olga.net was one of the first guitar tablature sites on the net!
- Tabcrawler.com is one of the early guitar sites and is quite popular
- www.power-tab.net Useful guitar tab editor named Powertab that lets you play back the song as MIDI.
- Powertab Archive A collection of tab files for Powertab editor.
- All-Guitar-Chords.com gives many variations on different guitar chords.
- Guitar Chords Online lessons, charts, pictures, songs & chord finder.
- The Guitar Players Toolbox Site provides practical tools and information on guitar chords, chord charts, and guitar playing.
- Guitar Chords and Scales Search and view chords and scales notes on a guitar fretboard
- chordie an excellent guitar songbook website

- mysongbook an extremely well kept listing of tabs of ALL genres
- Abc-tabs A lot of guitar tabs
- 911tabs.com A tab database.

live version • discussion • edit chapter • comment • report an error

36 HISTORY & DOCUMENT NOTES

Wikibook History

This book was created on 2004-01-01 and was developed on the Wikibooks project by the contributors listed in the next section. The latest version may be found at http://en.wikibooks.org/wiki/Guitar.

PDF Information & History

This PDF was created on 2007-07-15 based on the 2007-07-14 version of the Guitar Wikibook. A transparent copy of this document is available at Wikibooks:Guitar. The SXW source of this PDF document is available at Wikibooks:Image:Guitar.sxw. The template from which the document was created is available at Wikibooks:Image:PDF template.sxw.

37 AUTHORS & IMAGE CREDITS

Principal Authors

- **Kef Li Eric Marcus X-Schecter** is the esoteric pen name of the former primary author of (er, contributor to) this book. He is, in his own words, not entirely qualified to write this book: he is learning as much as the readers are! He plays the electric guitar in the fingerpicking style exclusively, and has written a small number of songs. He currently enjoys writing and transcribing guitar tablature for the Power Tab Archive.
- **Daniel** made various minor contributions.
- **GABaker**, who has had a lot trouble tuning cheap guitars, contributed to the section on tuning.
- **NickPenguin** redesigned the tuning page and created the Guitar template.
- **Michael Hoffman** explained classic techniques for shaping distortion tones and controlling distortion independently from listening volume, in the Philosophy section.
- **Meemo** created and added much content to the different types of guitars section and added the paragraph on stringing guitars, which seemed important until he read the list of external tutorials...
- **Sameer Kale** Did a good bit of the Chords section a while ago, started off the Rhythm section, along with adding a few bits to ther places. He doesn't know why such a page as this exists, but does not want to be left out.

All Authors

AdRiley, Akagu, Alexofaz, Alsocal, Aya, Az1568, Basswulf, BimBot, Bmonkey, Brutulf, Businessdepot, Chesemonkyloma, ChrisSerrano, Chrono, Cspurrier, Daniel, Daveamz, Decstuff, Derbeth, Dethomas, Dragontamer, Easyas12c, Felipec, Furrykef, GABaker, Gavintlgold, Geocachernemesis, George Leung, Hagindaz, Herbythyme, Ikana, Intermeddle, Jclee, Jechasteen, Jguk, Jimregan, Jmcgarey, Johnd91711, Jomegat, Karl Wick, Kasperl, Kenlars99, Krischik, Liblamb, Li, Lumpymusic, Lynx7725, MR.MAN, Mattb112885, MichaelSHoffman, Michael Campbell, Mjchael, Mjk, Mkn, NickPenguin, Pandamel, Paul Donnelly, PeterisP, Piyushs, Quartz25, Robert Harper, Sameerkale, Schaput, Siesta, Slide, Stinky613, Stpfuel20, Theresa knott, Tigru, TrbleClef, Trogdor, WarrenWilkinson, Water Bottle, Whiteknight, Withinfocus, Xania, Xerol, Yann, Zoso

Image Credits

All images used in this book are either in the public domain or licensed under the GFDL. Creators of GFDL images are given in the caption of each image.

38 GNU FREE DOCUMENTATION LICENSE

Version 1.2, November 2002

0. PREAMBLE

The purpose of this License is to make a manual, textbook, or other functional and useful document "free" in the sense of freedom: to assure everyone the effective freedom to copy and redistribute it, with or without modifying it, either commercially or noncommercially. Secondarily, this License preserves for the author and publisher a way to get credit for their work, while not being considered responsible for modifications made by others.

This License is a kind of "copyleft", which means that derivative works of the document must themselves be free in the same sense. It complements the GNU General Public License, which is a copyleft license designed for free software.

We have designed this License in order to use it for manuals for free software, because free software needs free documentation: a free program should come with manuals providing the same freedoms that the software does. But this License is not limited to software manuals; it can be used for any textual work, regardless of subject matter or whether it is published as a printed book. We recommend this License principally for works whose purpose is instruction or reference.

1. APPLICABILITY AND DEFINITIONS

This License applies to any manual or other work, in any medium, that contains a notice placed by the copyright holder saying it can be distributed under the terms of this License. Such a notice grants a world-wide, royalty-free license, unlimited in duration, to use that work under the conditions stated herein. The "Document", below, refers to any such manual or work. Any member of the public is a licensee, and is addressed as "you". You accept the license if you copy, modify or distribute the work in a way requiring permission under copyright law.

A "Modified Version" of the Document means any work containing the Document or a portion of it, either copied verbatim, or with modifications and/or translated into another language.

A "Secondary Section" is a named appendix or a front-matter section of the Document that deals exclusively with the relationship of the publishers or authors of the Document to the Document's overall subject (or to related matters) and contains nothing that could fall directly within that overall subject. (Thus, if the Document is in part a textbook of mathematics, a Secondary Section may not explain any mathematics.) The relationship could be a matter of historical connection with the subject or with related matters, or of legal, commercial, philosophical, ethical or political position regarding them.

The "Invariant Sections" are certain Secondary Sections whose titles are designated, as being those of Invariant Sections, in the notice that says that the Document is released under this License. If a section does not fit the above definition of Secondary then it is not allowed to be designated as Invariant. The Document may contain zero Invariant Sections. If the Document does not identify any Invariant Sections then there are none.

The "Cover Texts" are certain short passages of text that are listed, as Front-Cover Texts or Back-Cover Texts, in the notice that says that the Document is released under this License. A Front-Cover Text may be at most 5 words, and a Back-Cover Text may be at most 25 words.

A "Transparent" copy of the Document means a machine-readable copy, represented in a format whose specification is available to the general public, that is suitable for revising the document straightforwardly with generic text editors or (for images composed of pixels) generic paint programs or (for drawings) some widely available drawing editor, and that is suitable for input to text formatters or for automatic translation to a variety of formats suitable for input to text formatters. A copy made in an otherwise Transparent file format whose markup, or absence of markup, has been arranged to thwart or discourage subsequent modification by readers is not Transparent. An image format is not Transparent if used for any substantial amount of text. A copy that is not "Transparent" is called "Opaque".

Examples of suitable formats for Transparent copies include plain ASCII without markup, Texinfo input format, LaTeX input format, SGML or XML using a publicly available DTD, and standard-conforming simple HTML, PostScript or PDF designed for human modification. Examples of transparent image formats include PNG, XCF and JPG. Opaque formats include proprietary formats that can be read and edited only by proprietary word processors, SGML or XML for which the DTD and/or processing tools are not generally available, and the machine-generated HTML, PostScript or PDF produced by some word processors for output purposes only.

The "Title Page" means, for a printed book, the title page itself, plus such following pages as are needed to hold, legibly, the material this License requires to appear in the title page. For works in formats which do not have any title page as such, "Title Page" means the text near the most prominent appearance of the work's title, preceding the beginning of the body of the text.

A section "Entitled XYZ" means a named subunit of the Document whose title either is precisely XYZ or contains XYZ in parentheses following text that translates XYZ in another language. (Here XYZ stands for a specific section name mentioned below, such as "Acknowledgements", "Dedications", "Endorsements", or "History".) To "Preserve the Title" of such a section when you modify the Document means that it remains a section "Entitled XYZ" according to this definition.

The Document may include Warranty Disclaimers next to the notice which states that this License applies to the Document. These Warranty Disclaimers are considered to be included by reference in this License, but only as regards disclaiming warranties: any other implication that these Warranty Disclaimers may have is void and has no effect on the meaning of this License.

2. VERBATIM COPYING

You may copy and distribute the Document in any medium, either commercially or noncommercially, provided that this License, the copyright notices, and the license notice saying this License applies to the Document are reproduced in all copies, and that you add no other conditions whatsoever to those of this License. You may not use technical measures to obstruct or control the reading or further copying of the copies you make or distribute. However, you may accept compensation in exchange for copies. If you distribute a large enough number of copies you must also follow the conditions in section 3.

You may also lend copies, under the same conditions stated above, and you may publicly display copies.

3. COPYING IN QUANTITY

If you publish printed copies (or copies in media that commonly have printed covers) of the Document, numbering more than 100, and the Document's license notice requires Cover Texts, you must enclose the copies in covers that carry, clearly and legibly, all these Cover Texts: Front-Cover Texts on the front cover, and Back-Cover Texts on the back cover. Both covers must also clearly and legibly identify you as the publisher of these copies. The front cover must present the full title with all words of the title equally prominent and visible. You may add other material on the covers in addition. Copying with changes limited to the covers, as long as they preserve the title of the Document and satisfy these conditions, can be treated as verbatim copying in other respects.

If the required texts for either cover are too voluminous to fit legibly, you should put the first ones listed (as many as fit reasonably) on the actual cover, and continue the rest onto adjacent pages.

If you publish or distribute Opaque copies of the Document numbering more

than 100, you must either include a machine-readable Transparent copy along with each Opaque copy, or state in or with each Opaque copy a computer-network location from which the general network-using public has access to download using public-standard network protocols a complete Transparent copy of the Document, free of added material. If you use the latter option, you must take reasonably prudent steps, when you begin distribution of Opaque copies in quantity, to ensure that this Transparent copy will remain thus accessible at the stated location until at least one year after the last time you distribute an Opaque copy (directly or through your agents or retailers) of that edition to the public.

It is requested, but not required, that you contact the authors of the Document well before redistributing any large number of copies, to give them a chance to provide you with an updated version of the Document.

4. MODIFICATIONS

You may copy and distribute a Modified Version of the Document under the conditions of sections 2 and 3 above, provided that you release the Modified Version under precisely this License, with the Modified Version filling the role of the Document, thus licensing distribution and modification of the Modified Version to whoever possesses a copy of it. In addition, you must do these things in the Modified Version:

A. Use in the Title Page (and on the covers, if any) a title distinct from that of the Document, and from those of previous versions (which should, if there were any, be listed in the History section of the Document). You may use the same title as a previous version if the original publisher of that version gives permission.
B. List on the Title Page, as authors, one or more persons or entities responsible for authorship of the modifications in the Modified Version, together with at least five of the principal authors of the Document (all of its principal authors, if it has fewer than five), unless they release you from this requirement.
C. State on the Title page the name of the publisher of the Modified Version, as the publisher.
D. Preserve all the copyright notices of the Document.
E. Add an appropriate copyright notice for your modifications adjacent to the other copyright notices.
F. Include, immediately after the copyright notices, a license notice giving the public permission to use the Modified Version under the terms of this License, in the form shown in the Addendum below.
G. Preserve in that license notice the full lists of Invariant Sections and required Cover Texts given in the Document's license notice.
H. Include an unaltered copy of this License.
I. Preserve the section Entitled "History", Preserve its Title, and add to it an item stating at least the title, year, new authors, and publisher of the

Modified Version as given on the Title Page. If there is no section Entitled "History" in the Document, create one stating the title, year, authors, and publisher of the Document as given on its Title Page, then add an item describing the Modified Version as stated in the previous sentence.

J. Preserve the network location, if any, given in the Document for public access to a Transparent copy of the Document, and likewise the network locations given in the Document for previous versions it was based on. These may be placed in the "History" section. You may omit a network location for a work that was published at least four years before the Document itself, or if the original publisher of the version it refers to gives permission.

K. For any section Entitled "Acknowledgements" or "Dedications", Preserve the Title of the section, and preserve in the section all the substance and tone of each of the contributor acknowledgements and/or dedications given therein.

L. Preserve all the Invariant Sections of the Document, unaltered in their text and in their titles. Section numbers or the equivalent are not considered part of the section titles.

M. Delete any section Entitled "Endorsements". Such a section may not be included in the Modified Version.

N. Do not retitle any existing section to be Entitled "Endorsements" or to conflict in title with any Invariant Section.

O. Preserve any Warranty Disclaimers.

If the Modified Version includes new front-matter sections or appendices that qualify as Secondary Sections and contain no material copied from the Document, you may at your option designate some or all of these sections as invariant. To do this, add their titles to the list of Invariant Sections in the Modified Version's license notice. These titles must be distinct from any other section titles.

You may add a section Entitled "Endorsements", provided it contains nothing but endorsements of your Modified Version by various parties--for example, statements of peer review or that the text has been approved by an organization as the authoritative definition of a standard.

You may add a passage of up to five words as a Front-Cover Text, and a passage of up to 25 words as a Back-Cover Text, to the end of the list of Cover Texts in the Modified Version. Only one passage of Front-Cover Text and one of Back-Cover Text may be added by (or through arrangements made by) any one entity. If the Document already includes a cover text for the same cover, previously added by you or by arrangement made by the same entity you are acting on behalf of, you may not add another; but you may replace the old one, on explicit permission from the previous publisher that added the old one.

The author(s) and publisher(s) of the Document do not by this License give permission to use their names for publicity for or to assert or imply endorsement of any Modified Version.

5. COMBINING DOCUMENTS

You may combine the Document with other documents released under this License, under the terms defined in section 4 above for modified versions, provided that you include in the combination all of the Invariant Sections of all of the original documents, unmodified, and list them all as Invariant Sections of your combined work in its license notice, and that you preserve all their Warranty Disclaimers.

The combined work need only contain one copy of this License, and multiple identical Invariant Sections may be replaced with a single copy. If there are multiple Invariant Sections with the same name but different contents, make the title of each such section unique by adding at the end of it, in parentheses, the name of the original author or publisher of that section if known, or else a unique number. Make the same adjustment to the section titles in the list of Invariant Sections in the license notice of the combined work.

In the combination, you must combine any sections Entitled "History" in the various original documents, forming one section Entitled "History"; likewise combine any sections Entitled "Acknowledgements", and any sections Entitled "Dedications". You must delete all sections Entitled "Endorsements."

6. COLLECTIONS OF DOCUMENTS

You may make a collection consisting of the Document and other documents released under this License, and replace the individual copies of this License in the various documents with a single copy that is included in the collection, provided that you follow the rules of this License for verbatim copying of each of the documents in all other respects.

You may extract a single document from such a collection, and distribute it individually under this License, provided you insert a copy of this License into the extracted document, and follow this License in all other respects regarding verbatim copying of that document.

7. AGGREGATION WITH INDEPENDENT WORKS

A compilation of the Document or its derivatives with other separate and independent documents or works, in or on a volume of a storage or distribution medium, is called an "aggregate" if the copyright resulting from the compilation is not used to limit the legal rights of the compilation's users beyond what the individual works permit. When the Document is included in an aggregate, this License does not apply to the other works in the aggregate which are not themselves derivative works of the Document.

If the Cover Text requirement of section 3 is applicable to these copies of the Document, then if the Document is less than one half of the entire aggregate, the Document's Cover Texts may be placed on covers that bracket the Document within the aggregate, or the electronic equivalent of covers if the Document is in electronic form. Otherwise they must appear on printed covers that bracket the whole aggregate.

8. TRANSLATION

Translation is considered a kind of modification, so you may distribute translations of the Document under the terms of section 4. Replacing Invariant Sections with translations requires special permission from their copyright holders, but you may include translations of some or all Invariant Sections in addition to the original versions of these Invariant Sections. You may include a translation of this License, and all the license notices in the Document, and any Warranty Disclaimers, provided that you also include the original English version of this License and the original versions of those notices and disclaimers. In case of a disagreement between the translation and the original version of this License or a notice or disclaimer, the original version will prevail.

If a section in the Document is Entitled "Acknowledgements", "Dedications", or "History", the requirement (section 4) to Preserve its Title (section 1) will typically require changing the actual title.

9. TERMINATION

You may not copy, modify, sublicense, or distribute the Document except as expressly provided for under this License. Any other attempt to copy, modify, sublicense or distribute the Document is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

10. FUTURE REVISIONS OF THIS LICENSE

The Free Software Foundation may publish new, revised versions of the GNU Free Documentation License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns. See http://www.gnu.org/copyleft/.

Each version of the License is given a distinguishing version number. If the Document specifies that a particular numbered version of this License "or any later version" applies to it, you have the option of following the terms and conditions either of that specified version or of any later version that has been published (not as a draft) by the Free Software Foundation. If the Document does

not specify a version number of this License, you may choose any version ever published (not as a draft) by the Free Software Foundation.

External links

- GNU Free Documentation License (Wikipedia article on the license)
- Official GNU FDL webpage