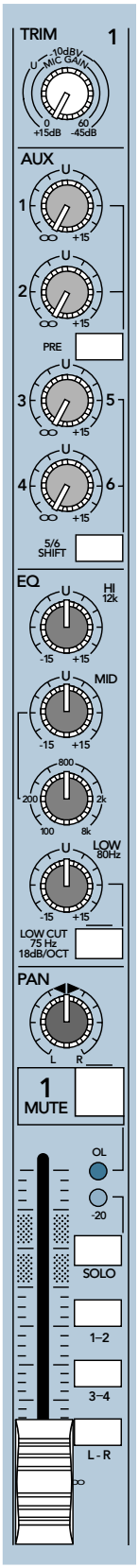
The Channel Strip

This is where most of the work is done, so let's take a tour of the strip. We'll use the 1604-VLZ PRO as an example, since it's typical of most mixers, and along the way we'll point out differences you'll find with other models.



TRIM

This control sets the sensitivity of the channel input stage to match the output level of the source connected to the channel mic or line input. A hot microphone on a kick drum will require a lower TRIM setting than a ribbon mic six feet from a classical guitar. The Level-Setting Procedure at the beginning of this book will guide you to the correct setting of the TRIM control.

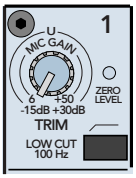
People are sometimes bothered by the fact that they have to turn the TRIM nearly all the way up in order to get a satisfactory mix level. Mackie preamps are designed to be clean and quiet even at maximum gain, so there's nothing to worry about. Quiet sources and low-output microphones such as older ribbons require a lot of gain. If you need it, use it.

Unless you change the input source or you've dialed in large EQ boosts on the channel, once you've set the TRIM properly, you can usually leave it alone throughout the session

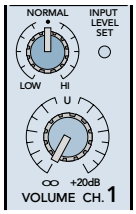
The TRIM control is located at the top of the channel strip and is identical in function and appearance on all the Mackie mixers with the exception of the PPM series. On the DFX and Onyx series mixers, this control is labeled GAIN, which is actually more accurate. We're mellowing in our old age.

On the PPM, the INPUT LEVEL control serves the same function as the TRIM. It's located just above the VOLUME control.

Input Level Indicators

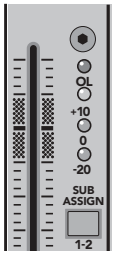


The CFX mixers have a Zero Level LED next to the TRIM control. It indicates the channel signal level after the preamp and low-cut filter, but before the equalizer.



There's a similar indicator on the PPM labeled INPUT LEVEL SET next to the input level control. This handy indicator glows when it receives a signal at or above 0 dBu. It's not as accurate for setting channel gain as using the Level-Setting Procedure, but it will clue you that an input is in danger of clipping on peaks when the band starts crankin' on stage. The DFX mixers have a similar indicator labeled LEVEL SET.

If the LED is on solid as opposed to flickering, turn the TRIM down. If it never flickers, you can safely turn the TRIM up.



The Onyx series actually has a mini LED meter next to each fader to indicate the pre-fader channel level. The four LEDs represent input levels of -20, 0, +10 dB and OUCH!!!!

"U" Like Unity Gain

Mackie mixers have a "U" symbol on almost every level control. U stands for "unity gain", meaning no change in signal level when the signal goes through the control or the stage it controls. Once you have performed the Level-Setting Procedure, even though TRIM may not end up set to unity gain, you can set every control at "U" and your signals will travel through the mixer at a safe, distortion-free level.

What's more, all Mackie level controls are labeled in decibels (dB), so you'll know what you're doing level-wise when you change a control setting.

Of course many of your settings will deviate from the Unity position – that's what mixing is all about - but you'll find that, for a balanced-sounding mix, they won't be too far off Unity. The unity gain point is a good benchmark to assure that you're not getting too close to overload or too far down into the noise floor of your system.

Channel Fader

The fader is almost the last control in a channel's signal path, but it's the one you'll probably use the most. Electrically, it comes after the EQ section and before the PAN control. It's located at the bottom of the channel strip where it's handy.

On the PPM series, the VOLUME knob is the equivalent of the Fader. On the 1202-VLZ PRO it's the knob marked GAIN. (Not to be confused with the input GAIN on the newer mixers. Sorry 'bout that.)

The Unity Gain mark (U) on the fader, known in engineering circles as "design center," is located about three-quarters of the way up. On most Mackie mixers, pushing the fader all the way up provides an additional 10dB of gain, should you need to boost a section of a song. If you find that the overall level is too quiet or too loud with a fader near Unity, that's an indication that the channel input level or your EQ settings have changed substantially since you initially set the TRIM. Get yourself back into the normal operating range by performing the Level-Setting Procedure again.

MUTE Switch

The MUTE switch (on all models except the PPM series) is nestled close to the PAN control. Engaging it turns the channel signal off in the Main outputs. It also removes the signal from the subgroup busses, except in the case of the 1202, the 1402-VLZ PRO, and the Onyx 1220/1620 models where it doubles as the subgroup assignment switch (see ALT 3-4).

Depending on the model, the MUTE switch may or may not mute the signal to the AUX busses. See the Auxiliary Sends section for a who's where.

SOLO/PFL Switch

Pressing the SOLO/PFL (Pre-Fader Listen) button interrupts the signal going to the headphones and control room output (where present) and replaces it with the soloed channel signal after the mic preamp.

The SOLO PFL signal is tapped off the channel ahead of the MUTE switch, so you can audition a muted channel in the headphones before bringing it up in the mix. It's also used in the Level Setting Procedure, since it sends the mic preamp output to the meter so you can check the level.

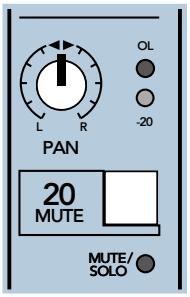
STATUS LEDs – Mute, Solo, Overload, and Signal Present

These LED indicators located in the vicinity of the PAN and MUTE controls (their arrangement and presence varies among models) give you some information about what's going on with the signals.

MUTE

This indicator lights when the channel is muted.

OL (Overload)



This LED monitors the signal level just ahead of the channel fader (after the mic preamp and EQ section) and lights when the peak signal exceeds the maximum level that the channel can pass without distortion. If you see this light blinking, it's time to back off on the TRIM control. (That ol' Level Setting Procedure again...)

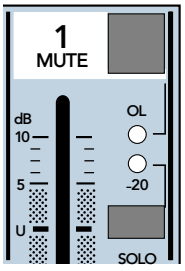
-20 (Signal Present)

This LED monitors the signal at the output of the mic preamp and illuminates when the signal level at that point is at least –20 dBu. It gives you a clue that there's actually something coming into the channel. By watching the blinking of the LED, you might even be able to guess what it is. For instance, a kick drum will cause the LED to pulse in time with the music (hopefully!) whereas a synth pad will cause it to light more steadily.

SOLO

The SOLO LED illuminates when the channel SOLO button is pressed. It works in conjunction with the RUDE SOLO light in the Master section, calling your attention to the fact that one or more channels are in SOLO and you might not be hearing the same thing in the headphones that everyone else is hearing.

Shared LEDs



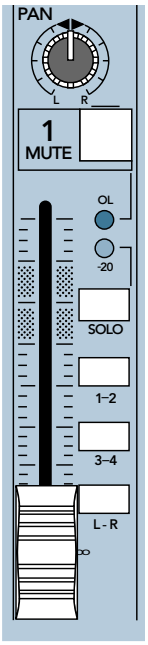
On some mixers, we've pressed a couple of the indicators into serving double duty. This saves space, but requires some explanation. Let's look at the 1642- VLZ PRO.

Notice the lines connecting the OL LED and MUTE button, and

the –20 LED and SOLO button. In normal operation, the OL indicator flashes when the channel signal level is too high. When the MUTE button is pressed, it lights brightly and continuously to indicate the muted channel. With a little practice you can tell the difference between a guitar amp turned up to 11 and a muted channel. (Your ears will help.)

Similarly, the –20 (signal present) LED blinks when the SOLO button is pressed. The SOLO indication is brighter than the signal present indication and blinks at a steady rate so you can tell one indication from the other. If the –20 LED is on steady, as long as the RUDE SOLO light isn't on, it's indicating a signal present.

Bus ASSIGN



Mackie makes 8-bus, 4-bus, 2-bus (stereo), and mono mixers. The bus ASSIGN switches, working in conjunction with the channel's PAN control, determine the bus to which the channel signal will go. This is one place where the channel strips on the different models diverge. We'll take a look at each of the variations.

4-Bus Consoles

Alongside each 1604-VLZ PRO channel fader you'll find three buttons, labeled 1-2, 3-4 and L-R, corresponding to the six main busses on the mixer. On the Onyx 1640, the L-R bus is labeled MAIN MIX. These are collectively referred to as channel assignment switches. 1, 3 and L are the left half of these bus pairs, and 2, 4 and R are the right half. Used in conjunction with the channel's PAN control, these switches determine the destination of a channel's signal.

The 1604-VLZ PRO, 1642-VLZ PRO, and SR series are what we call "true 4-bus" mixers. Each channel can be assigned to any of the subgroups without affecting the other subgroups or settings within the channel, and each subgroup is controlled by a master fader and has a dedicated output. In fact, since there are 4 subgroups and the MAIN L-R MIX, it's actually a 6-bus mixer. We could have named it the 1606-VLZ PRO. Darn!

With the PAN control set to the center position, the left and right or odd- and even-numbered busses receive equal signal levels from the channel fader. To send the channel signal to only one bus, just turn the PAN knob accordingly – fully counterclockwise for the left or odd-numbered busses, fully clockwise for the right or even-numbered busses .

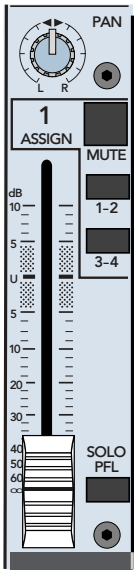
If you're doing a 2-track mixdown, simply engage the L-R switch on each channel that you want to include in the mix, and those channels will be sent to the MAIN L/R outputs. If you want to create a subgroup of certain channels, engage either the 1-2 or 3-4 switches instead of the L-R, and they'll be sent to the appropriate subgroup faders. The subgroups can then be sent to the MAIN MIX using switches in the Master section, allowing you to use the subgroup faders as a master control for those grouped channels.

If your recorder's inputs are connected to the mixer's bus 1-4 outputs, when recording new tracks or bouncing existing ones you'll also use the 1-2 and 3-4 switches, but without assigning the submasters to the L-R bus. You may find it useful for monitoring and rehearsal to assign channels with "live" inputs to L-R as well as a subgroup so you can hear what's going on in the studio.

However, if you're printing tracks via the DIRECT OUT jacks, all the channel assignment switches should be disengaged (up) other than those channels that you're monitoring while tracking. See the Recording Applications section for further details.

Bus assignment isn't mutually exclusive. You can assign a channel to both L-R and 1-2, feeding the PA system from the MAIN L-R busses and a radio broadcast or stereo recorder from busses 1-2. That gives you independent control over the two output levels, and lets you take certain channels out of the radio mix (for example, the obnoxious MC) or lets you keep the audience mics for your broadcast mix out of the PA. When sending your mixer's outputs to multiple destinations, using the bus outputs gives you a safety net, too. Since the busses are electrically isolated from one another, a shorted cable to the broadcast feed won't affect your PA mix – the show will go on.

CFX Series 4-Bus



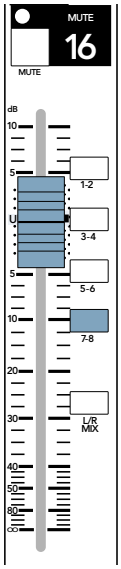
The ASSIGN setup on the CFX series is a bit different. There are four subgroup busses and the MAIN left and right busses, but channels cannot be assigned directly to the L-R busses (as in the 1604 family). They have to go to a subgroup first.

For stereo mixing applications, typically ASSIGN 1-2 will be engaged on all channels destined for the main mix. Assigning SUB 1 to the Left and SUB 2 to the Right main mix outputs using the switches next to the SUB faders in the Master section makes the ASSIGN 1-2 switches on the channel function as L-R ASSIGN switches.

Assigning a group of channels, say all the drums, to 3-4 creates a drum submix. With subs 3-4 similarly assigned to the main mix, you can adjust the level of the drums separate from the rest of the band.

If you're using a mono PA mix (typical for small clubs), you don't need to assign subgroups in pairs. By pressing the ASSIGN 3-4 button on all the background vocal channels and turning their PAN controls all the way to the left, you've assigned those vocals to Subgroup 3. You can control their level (or turn them off completely when they're not singing) by using the SUB 3 fader. Press the ASSIGN 3-4 button on the drum channels, pan fully right, and you have a submix of drums on BUS 4 to bring into your mix. For mono, you can have up to four subs. If you're doing a stereo mix, you can have two stereo subs, or one stereo and two mono subs.

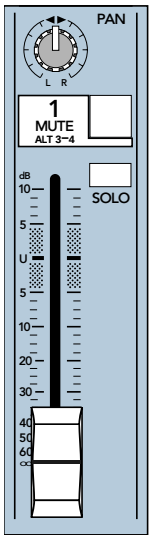
8-Bus Assign



The 8-Bus ASSIGN switches work just the same as those on the 1604 family of consoles, only there are twice as many assignment switches since there are eight busses rather than four. Each channel can be assigned directly to the MAIN L-R bus or any of four pairs of subgroup busses.

The 8-Bus has three output jacks for each of the eight subgroup busses so they can be used conveniently to feed up to 24 recorder tracks. (See Double Bussing on page 22.)

The ALT 3-4 Bus



The 1202-VLZ PRO and 1402-VLZ PRO, Onyx 1220 and 1620 (and the original CR1604 too) are also 4-bus mixers, but there are only four busses, not six. Channels can be assigned to either the MAIN mix (L-R) or to the ALT 3-4 busses.

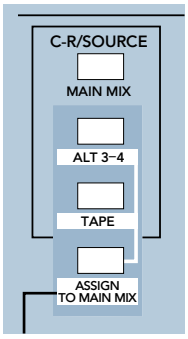
The bus assignment switch is labeled MUTE ALT 3-4. It's so labeled since it doubles as a channel mute switch if you're not using the ALT 3-4 bus.

Here are two examples of how the ALT 3-4 bus can be used:

Recorder Feed from ALT 3-4

Use the ALT 3-4 outputs to feed your 8-track recorder. Using Y-cables, you can mult the ALT 3-4 outputs so that one output feeds multiple tracks. Connect ALT OUT LEFT to tracks 1, 3, 5, and 7, and ALT OUT RIGHT to tracks 2, 4, 6, and 8. Tracks that are in Record or Input modes will hear the ALT 3-4 signals, and tracks in Playback or Safe modes will ignore them. By selecting tracks to record and using the PAN pot to switch the channel to odd or even tracks, you can build up 8 tracks from a single input or four stereo tracks from a pair of inputs.

ALT 3-4 as a Subgroup



When mixing live sound or doing a multitrack mixdown, subgroups can come in handy, and the ALT 3-4 bus provides you with one. Simply assign the channels you want to subgroup—for instance, background vocals—to the ALT 3-4 bus. Now, go over to the Master section CR SOURCE control group and press the ALT 3-4 and ASSIGN TO MAIN MIX switches.

In this configuration, the CTL ROOM/SUBMIX fader becomes the submaster for the channels assigned to ALT 3-4, controlling the level of the subgrouped channels in the MAIN mix.

Note that the meters read the input selected to go to the main mix. In this configuration, they no longer read the MAIN MIX level. As you raise the CTRL ROOM/SUBMIX fader, the subgrouped channels will come

up in the MAIN MIX, though the meter reading will not change. Also, you won't be able to monitor the main mix in the headphones.

Another way to accomplish the same thing while retaining proper output metering and headphone monitoring is to assign the subgroup channels to the ALT 3-4 bus, and then patch the ALT OUTs back into the main mix through an unused stereo channel. This gives you a bonus – EQ on the overall subgroup.

If you use this patch, don't ever engage the MUTE/ALT 3-4 switch on that stereo channel or you'll have every dog in the neighborhood howling along with your feedback loop.

ALT 3-4 as AFL (1202-VLZ PRO)

The 1202-VLZ PRO isn't equipped with a PFL/AFL SOLO MODE switch, but you can use the ALT 3-4 as an AFL (After Fader Listen). Just select ALT 3-4 as the Control Room SOURCE (Master section). When you engage a channel's MUTE/ALT 3-4 switch you'll get that channel, all by itself, in the CONTROL ROOM and PHONES. Beware, though, that MUTE means MUTE! This is handy for checking the mix going to a post-fader aux send, but you'll take those channels out of the main mix in the process. Don't try this with a PA mix unless you know what you're doing!

MUTE/ALT 3-4 is one of those clever concepts that can bewilder a newcomer, so take your time and play around with the controls. Once you've got it down, you'll probably think of a hundred uses for it!

PPM and DFX Bus Assignments

This is too easy. There are no bus assignment switches on the PPM or DFX series. Since these mixers are either stereo or mono, all channels are permanently assigned to the MAIN busses. On the DFX and stereo PPM models, the PAN control assigns the channel signal to Left, Right, or anywhere in between. There's no PAN on the mono versions because there's only one bus. Isn't that simple?

PAN POTS

(Note from the author: You have no idea how difficult it's been up to this point to be formal and scientific and write "pan control" when all my life, I, and every engineer I know has called it a "pan pot". That's going to change RIGHT HERE! – ahhh, I feel better now.)

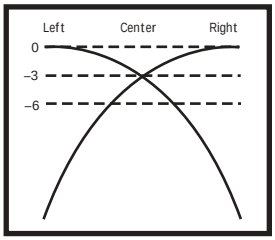
The PAN pot splits the channel signal into two branches and adjusts the level of the channel signal sent to one branch or the other. Those two branches go to the L-R main mix or odd-even subgroup bus pairs. Turning the PAN pot changes the phantom image (the apparent position where the sound appears between the stereo speakers).

With the PAN knob turned fully left, the channel signal is sent to only the Left MAIN or odd-numbered subgroup busses. Turning the PAN knob fully right sends the channel signal to only the Right MAIN or even-numbered busses. In the center, the signal is sent at equal levels to both Left and Right MAIN busses (or odd and even subgroups).

If you have a mono PPM mixer, don't look too hard trying to find the PAN control. There's no need for one since the channel is always assigned to the single MAIN bus.

Constant Power!!!

Mackie mixers employ a design called Constant Power panning. As you move the phantom image by turning the PAN knob from left to right, the volume of the panned sound will remain constant throughout the move.



In order to accomplish this, we build the PAN pots so that the signal level drops by 3 dB from its full left or right level when the knob reaches its center position. When the two -3 dB signals combine, they sum back to the original signal level.

It follows from this that when you pan a source from the center to full left or right, the left or right level will be 3 dB higher than it was in the center.

PAN on Stereo Inputs

Some Mackie mixers are equipped with stereo input channels that can accept either one or two inputs. When a stereo channel is used with a single (mono) input, the PAN pot works as described above.

With a stereo source (two inputs), the stereo channel's PAN pot works just like the Balance control on your stereo receiver. When it's centered, the Left bus gets the full Left input signal and the Right bus gets the full Right input signal. As you rotate the PAN knob to the left, the signal going to the Right bus drops in level. At full left rotation, the Right signal is completely off and only the Left input is fed to the Left bus. Vice versa when you turn PAN fully right.

Most of the time when using stereo inputs, L-R panning is established at the source – a CD, a multi-timbral synth, sampler, or drum machine. You'll probably leave stereo channel PAN pots centered most of the time other than for small tweaks.

EQUALIZATION (EQ or eee-QUE)

Usually we expect our electronics to have flat frequency response – all frequencies amplified equally. Sometimes, though, we want to tailor the frequency response of a channel to compensate for acoustics, alter the response of a microphone, modify the sound of an instrument or voice, or balance frequencies to get a track to "sit" better in the mix. The Tips section contains a more detailed discussion of the use of equalization, but since we're talking about channel strip controls, we'll introduce the knobs and concepts here.

Mackie mixers vary in the number of EQ controls and their functions. Consult your mixer's manual for particulars. We'll cover them all in general here.

EQ Parameters

You may have heard the term parametric equalization. This refers to the parameters that affect frequency response. Those are:

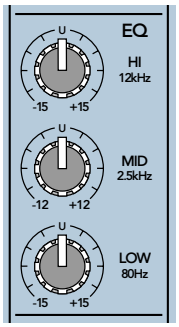
- Amplitude – the amount of boost or cut at or around a specific frequency.
- Frequency – the frequency that's being boosted or cut.
- Bandwidth – the width of the bump or dip in the frequency response curve resulting from an EQ boost or cut.

Some or all of those parameters are adjustable (others are fixed), depending on the model of your mixer.

EQ Bands

The audio spectrum is generally considered to be the range of 20 Hz to 20 kHz. We divide that into two, three, or four frequency ranges or bands so that we can have a manageable number of controls for our equalizer. The number of bands varies depending on the model and whether it's a mono or stereo channel.

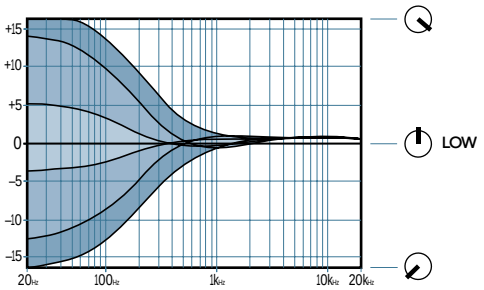
Here's a set of controls for a three-band equalizer. Each of the three controls cuts or boosts at its indicated frequency.

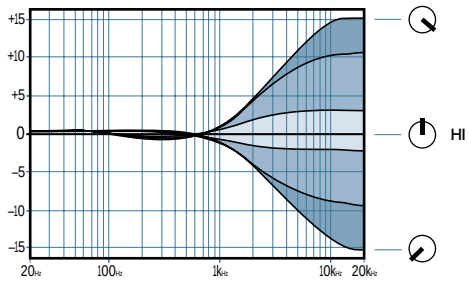


Of course the frequency that you're boosting or cutting with the EQ controls matters. We've chosen these fixed EQ bands carefully so their frequency range and bandwidth will be useful for solving problems and enhancing your mix musically.

The high and low frequency EQ bands have a shelving response. As you move below the nominal frequency of a low frequency EQ or above the nominal frequency of a high frequency EQ, the frequency response doesn't just keep rising (with a boost) or dropping (with a cut). It levels off, sort of like a shelf.

With all Mackie mixers, the high and low frequency EQ bands are fixed at 80 Hz and 12 kHz, with shelving response and boost/cut range of ±15 dB.





The low frequency EQ band emphasizes the punch of a bass drum or bass guitar, fattens synth patches, or puts a boom into serious bass male singers. The high frequency EQ band adds sizzle to cymbals and can add an overall sense of transparency or edge to keyboards, vocals, guitar, and bacon frying. Turn it down to reduce sibilance or to hide tape hiss.

The EQ frequencies are nominal values, not sharp "brick wall" cutoff points. Notice that on both the high and low bands, there's some boost or cut action as far away from the nominal frequencies as 1 kHz. This gentle slope up to the EQ frequency is part of what makes the EQ sound musical.

You may have heard the term “British EQ” to describe the sound of an equalizer. This means that the shape of the filter frequency response curves are modeled after some of the classic British consoles of the 1980s. The Perkins EQ in the Onyx series is designed with the British sound in mind (and ear).

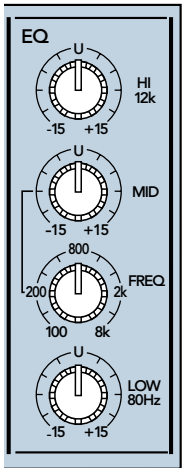
Mid-band EQ

The frequency response curve of the mid-band EQ has a peak/dip shape. The 1202 and 1402-VLZ PRO and PPM series have a single MID EQ band centered at 2.5 kHz. You'll find that this frequency adds presence to a voice and improves the definition of most instruments.

Stereo channels of the 1642-VLZ PRO, SR, and CFX mixers have two MID EQ bands, one centered around 800 Hz (400 Hz on the SR series) and another around 3 kHz. 400 Hz is a good frequency to cut when working with a ‘nasal’ vocalist, 800 Hz adds some body to a voice, and 3 kHz is a good ‘vocal presence’ frequency.

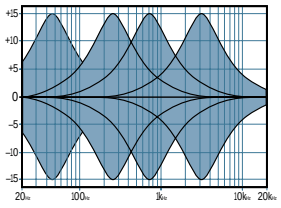
Sweep EQ

On some models, the frequency at which boosting or cutting takes place can be adjusted. This is what's called “Sweep EQ”, since you can sweep through a range of frequencies and fine tune the equalizer to work exactly where you need it.

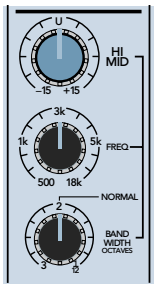


The mid-band section of the sweep EQ shown here has two controls. One adjusts the frequency and the other adjusts the amount of boost or cut at that frequency.

The mid-band EQ on the 1604-VLZ PRO, and on the mono channels of the 1642-VLZ PRO, SR, and CFX series mixers is sweepable over the range of 100 Hz to 8 kHz. The Onyx 1640 has two sweepable EQ bands. Here's what the MID EQ curves look like at several frequencies. Note the peak shape of the curve.

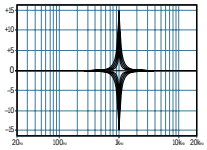


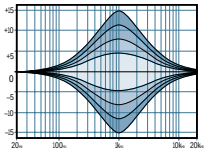
Bandwidth



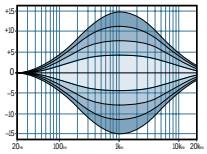
The 8-Bus console has two sweepable MID EQ bands, one covering the range of 45 Hz to 3 kHz, the other covering 500 Hz to 18 kHz.

The HI-MID EQ section has a third control marked in octaves that adjusts the width of the peak. The top graph shows the narrowest bandwidth, the middle graph shows the “normal” 1 octave bandwidth, while the bottom graph shows a 3-octave bandwidth. Note that curves get more sharply peaked both as the bandwidth narrows and the amount of boost or cut is increased.



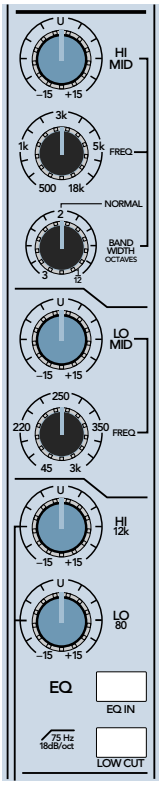


A narrow bandwidth is often called “surgical EQ” and is good for reducing annoying resonant peaks. A broader bandwidth is warmer and more musical.

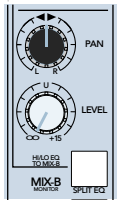


EQ Split (8-Bus Only)

Note the arrangement of the EQ controls on the 8-Bus. Unlike the other mixers, which arrange the EQ frequencies high to low from top to bottom, the HF and LF shelving EQ controls on the 8-Bus are located below the MID EQ group.



The HF and LF EQ bands can be removed from their normal position in the channel path and switched into the MIX-B path to provide EQ on this totally separate mix.



The SPLIT EQ button that does this neat trick is located in the MIX-B section of the channel strip, just below the MIX B LEVEL and PAN pots.

This is a very cool feature. Typically, when tracking a multitrack project you record the tracks flat (without EQ) since you're not sure just how things will fit together spectrum-wise once you get to the mixdown phase. Sometimes, though, it's nice to have a little EQ available on the monitor mix that you're listening to while you're tracking.

If you monitor using MIX-B (we'll get into that later), by pressing the SPLIT EQ button, you can twiddle the HF and LF EQ controls without affecting the multitrack recording. Be sure to make notes in case you find some settings that work well. You might want to use them when you do the final mix.

EQ IN/Bypass (8-Bus and Onyx)

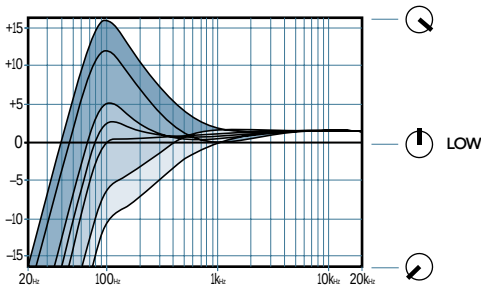
When the IN button is pressed, the EQ is in the channel path. Release the button and the EQ section is completely bypassed. If you're not EQ-ing the recorded tracks, bypassing the EQ will give you a cleaner signal path.

The Bypass switch bypasses only the section that's in the channel path, so you can bypass the EQ going to the recorder and still use the HF and LF controls on MIX B.

Low Cut Filter

All Mackie mixers with the exception of the PPM series are equipped with a sharp low-cut filter (sometimes called "high pass") on all mic input channels. This filter attenuates frequencies below 75 Hz (100 Hz on the CFX) and it has a steeper slope than the LF EQ. Once it starts cutting, it cuts fast. It's designed to stop rumble dead in its tracks. It will help tame explosives ("P-pops") on vocal mics, and may help to reduce wind noise and traffic rumble when you're working outdoors.

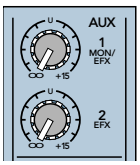
Since the LOW CUT filter is close to the working frequency of the LF equalizer, the two interact. This graph shows what happens to the low frequency response as you adjust the LF EQ with the LOW CUT filter engaged. Combining a LF EQ boost with the LOW CUT filter creates a peak around the "whomp" frequency of a kick drum. Be careful when using a lot of LF boost, though. Powerful lows can sap power from amplifiers, and you can blow a speaker before you can say "Oopsie! Wrong button!"



Other EQs

The CFX, PPM, and SR mixers have some equalization built into the Master sections. The CFX and PPM mixers have Graphic equalizers and the SR has a high frequency EQ that we call "Air". Since we're still working our way through the channel input section of the mixer, we'll cover those later, but we didn't want you to think we forgot.

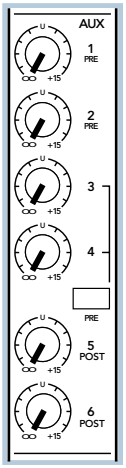
AUXiliary Sends



Here's a Channel Strip view of the AUX controls (disguised as EFX and MON controls on the PPM and CFX mixers). If you skipped over the explanation of PRE and POST, go back to it if you get lost here.

The AUX Send controls are arranged pretty much the same on all Mackie mixers. Models vary in the number of AUX busses, so they'll have a different number of controls and a different mix of pre- and post-fader choices. AUX Sends adjust the volume of the channel signal sent to the AUX bus (which ultimately appear at the AUX OUT).

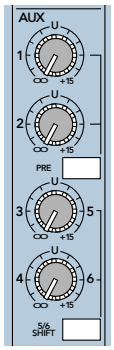
Let's look at the AUX section of the SR series:



On the SR mixers, AUX 1 and 2 are always Pre-fader, AUX 5 and 6 are always Post-fader, and AUX 3 and 4 give you a choice. The PRE button switches AUX 3 and 4 together between pre- and post fader.

In a sound reinforcement application where you might need several monitor mixes, you'd probably choose to set AUX 3 and 4 to PRE. For mixing a recording where you'll be using several effects processors fed from the AUX busses, Post (the PRE button disengaged) would be the usual preferred choice.

AUX Shifts



The 1604-VLZ PRO and 8-Bus have six Aux busses, but only four knobs.

The top two knobs always control the signal sent to the AUX 1 and AUX 2 busses, either pre- or post-fader as you've selected, but the other two buttons are shared among four busses. With the SHIFT button in the up position, they control the signal sent to the AUX 3 and

AUX 4 busses. Press the SHIFT button down and those same two knobs now send the channel signal to AUX busses 5 and 6. Twice the sends in half the space!

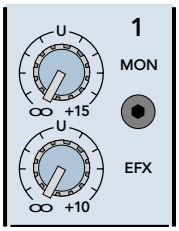
AUX SOURCE (8-Bus Only)

The 8-Bus console has a SOURCE button associated with the lower two AUX controls. This switch liberates AUX 3-6 from the main channel strip world that AUX Sends 1 and 2 are stuck in, allowing them to tap into a different source – the channel's MIX-B signal, either pre- or post-fader. This can be a very handy thing.

If you're using MIX-B for monitoring the recorder returns during tracking, these AUXs can be used for additional headphone cue feeds or to put reverb in the monitor without sending it to a track. If you're using the MIX-B section as additional inputs during mixdown (from MIDI synths, for example), pressing the SOURCE button turns AUX 3-6 into effects sends for those inputs.

EFX and MON Sends – AUXs in Disguise

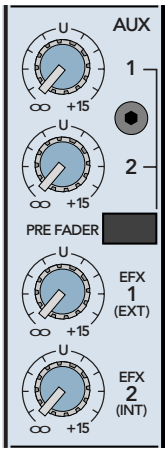
We've anticipated what you'll use AUX sends for most of the time on the CFX and PPM mixers, so someone got the bright idea to label them accordingly.



Since monitor mixes are usually pre-fader, on our PPM series you'll find a MON control. This is a pre-fader Auxiliary send.

The EFX knob is a post-fader Auxiliary send that's normally connected internally to the built-in EMAC effect processor. Turning up the EFX knob sends the channel signal to the EMAC processor or to an outboard effect processor that you've plugged into the EFX SEND jack.

The CFX series has a split personality. Equally at home in the studio or sound reinforcement world, it has both AUX and EFX labels on the controls that send the channel signal to the Auxiliary busses. AUX 1 and 2 are selectable (as a pair) to be pre- or post-fader sends. EFX 1 and 2 are post-fader sends that feed the EFX 1 and 2 output jacks.



EFX 2 (INT) is also normalled to the internal EMAC processor. Unless you've interrupted this connection by plugging something into the EFX 2 output jack, the EFX 2 knob controls the signal going into the EMAC. If you want to use an outboard processor as well as the EMAC, connect your processor to the EFX 1 output.

Using Stereo Effects

While we're talking about effects and sends, here's a word about outboard stereo processors. RTFM! (Read The Furnished Manual.) It's pretty common for effects processors such as reverb and chorus to have stereo outputs. Bring those into the mix for a nice spacious stereo effect. But what about their inputs?

Many effect units, particularly older ones, have separate Left and Right inputs, but they're mixed to mono before they hit the circuitry that produces the effect. If your processor unit works like this, there's no need to waste two AUX sends to feed it – one will do nicely, and you'll still get the stereo effect by bringing its Left and Right outputs back into the mix in stereo.

There's a good reason, though, why they have two inputs. Nearly every processor has a control to mix some of the input (dry) signal with the processed (wet) signal so that the output isn't 100% wet. This is an important feature if you're using the processor "in line," patching it into a single channel through the INSERT jacks or between units in a signal chain. Having two inputs preserves the Left/Right relationship of the dry signal that gets mixed with the wet signal before it reaches the processor's output jacks.

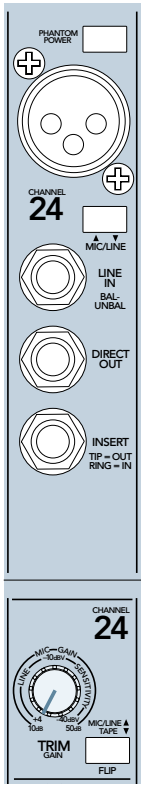
If you're feeding an outboard effects unit from an AUX output and bringing its output back into the mix through an Aux Return or a channel line input, be sure that the signal you're returning to the console is 100% wet – no point in bringing in another copy of a signal that's already in the mix.

Also, unless it's a true stereo effects device with a separate processing engine for each channel, it will sound the same whether you feed it one signal or two, so Save Your Sends.

Unique Channel Strip Switches

The 8-Bus console has a couple of switches on the channel strip that aren't found on other consoles. Here's what they do:

MIC/LINE Input Selector



The MIC/LINE switch is located all the way up top, just below the Mic jack. It selects whether the Mic jack or the LINE IN jack is the input to the channel strip.

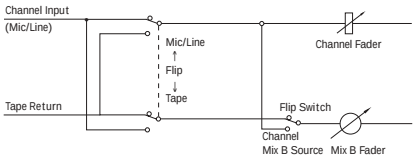
On other Mackie mixers, the Line and Mic inputs are both active all the time, and we assume that you'll have one or the other source connected to the channel, but not both. In the recording studio, however, you might use that channel with a mic when recording and with a synth when mixing. With this switch, you can have them both connected all the time.

The Onyx mixers have a variation on this switch, designated MIC/HiZ. On Channels 1 and 2, in the HiZ position, the Line Input jack becomes a high impedance input suitable for connecting instrument pickups.

FLIP Switch - MIC/LINE-TAPE

This button is located just below the 8-Bus TRIM control. It interchanges the input sources to the channel fader and the MIX-B level control (coming right up!).

As its label indicates, when the FLIP button is in the up position, the MIC/LINE signal (after the preamp stage) goes to the channel fader, while the signal from the TAPE RETURN inputs goes to MIX B. This is the normal mode for tracking and overdubbing, with the main faders controlling the signal going to the recorder and the Mix B rotary pots controlling your monitor mix.

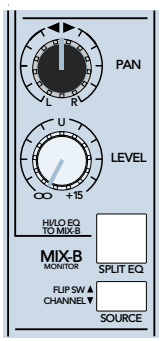


In the down, or FLIPPED position, the TAPE RETURN signal is fed to the full channel strip. This is the normal routing for mixdown, allowing full control of the mix using the main faders, channel EQ, and Aux Sends.

To recap – When FLIP is up, whatever is going into the MIC or LINE input (as selected by the MIC/LINE switch) feeds the channel, and the TAPE RETURNS feed the MIX-B section.

When FLIP is down, the channel is fed from the TAPE RETURNS and MIX-B is fed from the MIC/LINE input. The two sets of inputs are flipped. Get it? Now, about that MIX-B:

MIX-B/MONITOR



Each 8-Bus channel strip has a dual signal path with extremely flexible switching. This allows either the mic/line or tape return inputs to be routed through either the channel fader path or a separate stereo mixer with separate EQ and monitoring. That's the mysterious Mix-B!

This handy set of controls is how in-line monitoring (a standard feature in modern large multitrack recording consoles) is implemented on the Mackie 8-Bus console. We're not claiming that it's anything new, we've just added some extra features for more flexibility. MIX-B/Monitor routing options can get a bit complicated, so pay attention.

MIX-B is like another stereo mixer, independent of the eight-plus-two recording buses we've talked about so far. There are three input sources available to MIX-B: MIC/LINE, TAPE Return (as determined by the FLIP switch) and the channel strip pre-fader output (via the SOURCE switch). This can become a post-fader channel output (via the source switch) by modifying the channels. See the 8-Bus owner's manual for details on this surgery.

MIX-B SOURCE

When the Mix-B SOURCE switch is up, MIX-B receives its input from the FLIP switch. Remember, the FLIP switch exchanges the routing of the MIC/LINE and TAPE RETURN inputs between the Channel and MIX-B.

With the SOURCE switch up (to select the FLIP switch) and the FLIP switch is up ("un-flipped"), the MIX-B section gets its input from the TAPE RETURNS, allowing you to monitor the output of your multitrack recorder. This lets you hear the recorded tracks in a reasonable mix while you're overdubbing.

By using the Auto-Monitor switching feature common to most multitrack recorders and now some DAWs, you'll also hear the signals being fed to the recorder. This is the most common use of the MIX-B section during tracking and overdubbing.

With the MIX-B SOURCE switch up (to select the FLIP switch), and FLIP down (the normal destinations of the TAPE and MIC/LINE inputs flipped), LINE INPUTS (or MIC if it's selected) become inputs to the MIX-B mixer, where they can become "virtual tracks" from MIDI synths or additional effect returns during a mixdown. Simply plug the additional signal into the MIC or LINE jack for the channel and use the MIX-B level and pan controls to place it in the stereo mix.

Although they are normally independent mixes, a button in the Output section (MIX-B TO L/R MIX - coming up later) can add the output of the MIX-B buses to the L/R Mix buses. Voila! Double your mix inputs!

With the MIX-B SOURCE switch down (in the CHANNEL position), MIX-B taps its signal from the channel strip, just before the channel fader. MIX-B is separately pan-able, EQ-able and can be used as an alternate stereo mix, a stereo auxiliary send, a "mix-minus" mixer, a quadraphonic or surround feed—you name it. Mix B can also borrow AUX sends 3-6 to enhance the MIX-B Mix.

Notes