

## Multitrack Recording with the 8-Bus

Although the 8 Bus series are not compact mixers, we were on a roll and thought (and fondly hope) that this information might be useful.

Since you've bought a pretty large mixing console, we expect you'll occasionally be doing pretty big sessions. This section will describe at least one way of approaching a large session, one with a full drum kit, bass, guitar, piano, vocal, horns, and synthesizer. We'll go through recording the basic tracks and then doing overdubs.

### Setup

Let's assume you have a 24-track recorder (we hope it's a Mackie HDR24/96) with its outputs connected to the TAPE RETURNS and its inputs connected to the SUBMASTER/TAPE OUTPUTS. The 8-Bus console triples the outputs of the submaster busses (see "Double Bussing"), so the inputs to recorder tracks 1, 8, and 17 are duplicated, making it possible to send any input channel to any track.

Effects inputs and outputs are patched to a couple of SEND/RETURN pairs.

### Organizing A Multitrack Session

Decide where everyone's going to stand or sit in the studio, then draw a diagram of your studio setup, showing mic positions. Then assign an input channel to each mic.

Making logical microphone channel assignments now will help avoid confusion later. Group similar instruments together. If there's a left-to-right relationship to a group of mics (like drums mics or a vocal group), keep the same left-to-right sequence on the console. It's OK, in fact good practice, to leave some unused channels between groups, so if you decide you want to add one more drum or amplifier mic, you can put it near the others in its "family" rather than all the way at the opposite end of the console.

Plan your basic track assignments the same way. It's very confusing to have sources randomly strewn across the console when you're mixing. Don't put the sax track in between the floor and rack tom tracks.

Now, normal your console (also called "zeroing"). This means check the position of every switch and every knob to be sure they are in the normal, or expected position. Your normal may be different from someone else's, but generally it means all switches

off or up, all knobs either all the way down or at their Unity or centered position.



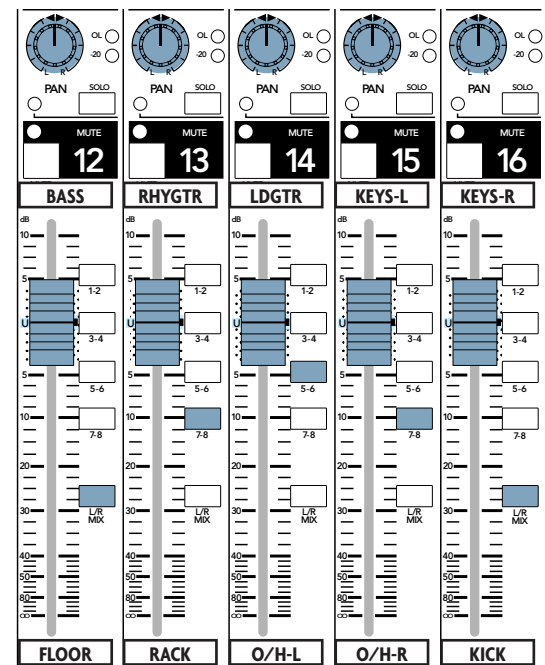
This is a good time to review the "Mixer Anatomy" part of this book to refresh your memory about the functions of some of the controls. A button in the wrong position or a level turned all the way down can cause a lot of hair-tearing when you expect to hear something and don't.

If a control has two available modes, for example, AUX 3-4/5-6 SHIFT or AUX 3-6 SOURCE (which you might want for tracking, but we'll get into that in a bit), now is the time to set them all.

### Label and Document

Label all your input channels – do it as you plug in each mic, DI, or synth. It'll save a lot of spaghetti handling later. Put a strip of 1/2" or 3/4" white paper tape below the channel faders and write on it with a non-smearing pen.

Depending on how you bus and patch channels to recorder tracks, the MIX-B channel names (where the tape returns are coming in during tracking) may not correspond directly to the input channels. Prepare a label strip for the MIX-B section and label each track as you record it. You'll need some narrow tape to squeeze labels in between the top of the faders and the MUTE buttons, but it'll save you some head scratching later. Here's an example:

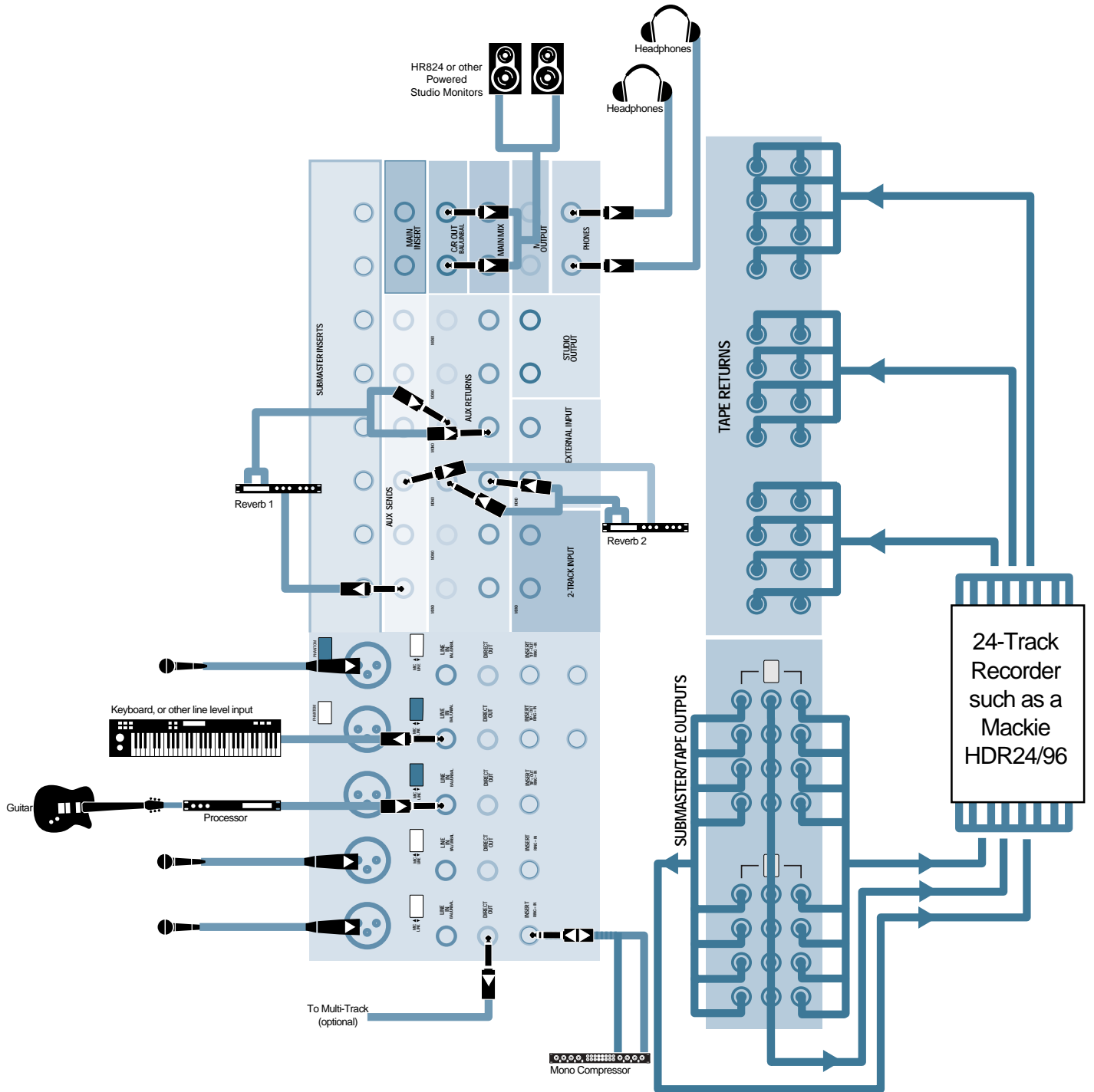


Unless you've crossed up some cables, the MIX-B channel numbers correspond to recorder track numbers, so when it's time to mix and you've FLIPped the channel inputs from MIC/LINE to TAPE, you can just move that MIX-B scribble strip down to the main faders and you'll have them labeled for mixdown.

Avoid masking tape or duct tape. It will slime your console. Take a trip to an office, art, or recording supply store and get some low-tack (non-gummy) artist's or correction tape. We like the Post-it® brand tape and Sharpie® pens.

Refer to the illustrations on the next two pages for the basic hookup and a bird's eye view of the controls you'll be using.

# 8-Bus Multitrack Recording – the Connections



# 8-Bus Recording – The Knobs and Buttons

Assign channels to the appropriate bus for the desired tape channel input.

**MACKIE**  
16x8x2 8-BUS MIXING CONSOLE  
**16•8**

Tinted knobs are used in this application

Tinted buttons are pressed in

## TRACKING PART 2: THE BOARD

## Using Buses

If you need to combine two or more inputs into one or two outputs (for example, when recording all the toms and drum overheads to two tracks – something you're likely to do if you have only eight tracks), you must assign the inputs to a common bus or pair of busses.

If you have only one source going to one tape track, you have a choice of how to get it there - you can assign the channel to the bus that's connected to that track, or you can patch the recorder's input to the channel's DIRECT or INSERT OUT. Take your pick.

Reasons for using a bus:

- It's there, it's easy, it sounds fine.
- You meet interesting people on the bus.

Reasons for using a DIRECT OUT:

- You've already assigned all eight of your buses to other duties.
- You're a purist and you think you can hear the additional circuitry used in a bus.



Using the INSERT OUT is actually the cleanest signal path if you're recording without applying any EQ to the track. Use a cable with a 1/4" TS plug inserted to the first click of the INSERT jack.

## MIX-B Monitoring

The most convenient way to monitor during a tracking or overdub session is by listening to MIX-B.

### Routing the Recorder to MIX-B

Set both the FLIP and MIX-B SOURCE buttons to their up positions. (Put this on your "zeroing the console" checklist.) This routes the TAPE RETURN inputs through the MIX-B Level and Pan controls.

Select MIX-B as the MONITOR source in the Control Room or Phones matrix. With the recorder connected as shown on the hookup diagram, MIX-B will be a mix of the recorder outputs, exactly what you need to hear.

### Recorder Monitor Switching

Just about every multitrack recorder made in the past 20 years is equipped with automatic input/playback monitor switching. With the recorder in the Auto Input Monitor mode it will automatically switch

its output between source and playback as you go between stop, play, and record. This way, you'll always hear what you need to hear, regardless of whether or not the tape is rolling. With the recorder stopped or recording, you hear what's going to the recorder tracks, which are armed for recording. In Play, you hear what's recorded on the track.

### MIX-B Monitor Mix

MIX-B allows you to set up a custom mix of the recorder tracks independent of the input channel levels. You can adjust level, pan, reverb and even EQ in your monitor mix while you record or listen to a playback without disturbing the settings on the input channels. This way, if you decide to make another pass, everything is set and ready to roll. You can even connect a cassette recorder to the MIX-B outputs to record a rough mix of the session.



When using MIX-B to monitor the tape returns, be sure that none of the input channels are assigned to L-R. Otherwise, you'll be monitoring a channel from two sources (the input channel and the tape return) when recording, and the tape return alone on playback. The difference in sound will confuse you.

## Headphone Cue Mix

Once you have your input channels assigned to recorder tracks, set the Phones 1 and 2 SOURCE to MIX-B. This way, musicians wearing headphones plugged into the console's Phones jacks will have something to listen to as they tune up and rehearse.

Putting the recorder in the All Input Monitor mode during setup will assure that everything routed to the recorder goes to Mix-B (don't forget to turn the MIX-B levels up!). Remember to switch the recorder back to Auto Input Monitor when you're ready to start tracking, though. Otherwise you'll panic when you hit Play and don't hear the playback of the tracks you just recorded.

### Alternate Cue Mixes

Using the Phones on Mix-B might work for the entire session, but usually the players will want one or more custom mixes in their headphones. Like stage monitor mixes, these aren't necessarily what you'd like to hear in the control room, but they help the players keep in time and in tune. The bass player and drummer may want bass and drums to be the loudest thing in their cans so they can stay in the groove, but that would annoy the vocalist to no end. Most likely,

no sooner will you get a pretty good sounding mix than someone will ask for a different one.

AUX SENDs 3-4 and 5-6 can be used to set up two different cue mixes from the source that's feeding Mix-B, which in this case is the recorder returns. Set AUX Sends 3 and 4 to Pre-fader (their PRE buttons down) and select MIX-B as the AUX 3-4 Source by pressing down the SOURCE button at the bottom of the AUX SEND section. Note that with MIX-B selected as the AUX 3-4 source, "Pre" refers to the Mix-B level controls, not the channel fader.

With the console configured in this way, you'll be able to create a custom mix on either AUX Sends 3-4 or 5-6 depending on the setting of the AUX SHIFT button. It's almost like having another Mix-B section (Mix-C?).

When AUX 3-4 or AUX 5-6 is selected as the Phones SOURCE, Sends 3 and 5 feed the left headphone and 4 and 6 feed the right headphone. When both knobs are in the same position, the sound will appear centered in the headphones. You can pan the source to the right or left by offsetting one or both knobs. It's not as convenient as a pan pot, but it works.



If you find that you still need more different headphone mixes, consider making the AUX 1-2 source modification (see Modifications in your mixer's manual). That will allow you to use all six AUX sends for Mix-B (tape returns) cue mixes.

## Wet or Dry Monitoring?

Usually, we don't record multitrack tracks wet (with reverb) unless it's an integral part of a sound, because you can't undo it later. It sometimes helps to hear a little reverb in the monitors as you're working however, and with the 8-Bus, you have the option of wet monitoring.

## Reverb Sends

Since you're monitoring MIX-B, that's where you should get the signal that you send to your reverb unit. When the SOURCE button below Sends 3-6 is depressed (MIX-B) but the PRE button is not, these sends are fed after the MIX-B level control and make great wet monitor reverb sends.

RETURNS 3 and 4 are a convenient place to connect the outputs of the reverbs that you want to use in your monitor mix. Once you have your sends happening, you can send RETURNS 3 and 4 to the headphones by pressing the Phones 1 or Phones 2 buttons

next to those Return level controls in the STEREO AUX RETURNS matrix. Even if you are using Send 6 to feed the reverb, there is no reason not to patch the reverb output into Return 3 or 4. The Send and Return numbers do not have to match.



But what about the extra cue mixes you made using AUX 3-4? Well, engineering, like life, is full of compromises. There are only so many knobs and jacks and even on the largest consoles, you eventually run out and have to seek a different path. You could set up your additional cue mixes on AUX 1-2 using a combination of the Sends on the input channels for the sources you're recording, and the tape returns (press the LINE/TAPE switch down) on the recorded channels.

## Reverb Returns to the Monitor

Getting reverb into the control room monitors is a little more involved since there is no return assignment switch to MIX-B. You have three choices:

- Assign MIX-B to L/R Mix in the MIX-B master section. Then, instead of monitoring MIX-B in the control room, select L/R MIX as the monitor source. Use Stereo AUX Returns 1-6 to bring the reverb into the L/R Mix buses. There is no disadvantage to this patch, unless you are already using the L/R Mix buses for some other function.
- Patch the returns into unused tape returns using the Tape In jacks on the rear of the console. Then route them into MIX-B, just as if they were additional tape tracks. This is a darn good reason to have purchased a console with more channels than you have recorder tracks. You did, didn't you?
- Patch the returns into unused channel strips using the Line In jacks. Then you can route the reverb anywhere your heart desires.

## Let's Record!

Here's one way to set the board up (another option is shown in the hook-up drawings. Either works just fine):

Input Channel	Source	Route to Recorder
1	Kick	Direct > Trk 1
2	Snare	Direct > Trk 2
3	O/H L	Bus 3 > Trk 3
4	O/H R	Bus 4 > Trk 4
5		
6	Floor Tom	Bus 3-4 > Trk 3-4
7	Lo Rack	Bus 3-4 > Trk 3-4
8	Hi Rack	Bus 3-4 > Trk 3-4
9	Bass Amp	Bus 5 > Trk 5
10	Bass DI	Bus 5 > Trk 5
11	Vocal (scr)	Direct > Trk 11
12	Gtr (close)	Bus 6 > Trk 6
13	Gtr (distant)	Bus 6 > Trk 6
14	Piano L	Bus 7 > Trk 7
15	Piano R	Bus 8 > Trk 8
16	Bone 1	Bus 1-2 > Trk 9-10
17	Bone 2	Bus 1-2 > Trk 9-10
18	Flugelhorn	Bus 1-2 > Trk 9-10
19	Trumpet	Bus 1-2 > Trk 9-10

Your monitoring and cue signals come from the MIX-B inputs, which corresponds to the tape tracks:

Mix B	Track	Source	What you hear
1	1	Tape Rtn 1	Kick
2	2	Tape Rtn 2	Snare
3	3	Tape Rtn 3	Drums L
4	4	Tape Rtn 4	Drums R
5	5	Tape Rtn 5	Bass
6	6	Tape Rtn 6	Guitar
7	7	Tape Rtn 7	Piano L
8	8	Tape Rtn 8	Piano R
9	9	Tape Rtn 9	Brass L
10	10	Tape Rtn 10	Brass R
11	11	Tape Rtn 11	Vocal



Notice that in this example the kick, snare, and scratch vocal channels are patched directly from the channel DIRECT OUTs to recorder inputs since those tracks contain nothing but a single source. The piano also gets a track for each of its mics, but we've chosen to use the busses to feed the recorder just for convenience. Feel free to patch it direct.

The bass amp and bass DI are both assigned to Bus 5 and recorded on Track 5. By adjusting the balance between the amp and direct signal you can get a wide range of tones from the bass. Since the two sources are mixed to a single track, you'll have to live with the bass tone you establish at tracking time. Keep in mind what else will be going into the mix and blend the two inputs for a tone that will fit. The two mics on the guitar amplifier (one close, one distant) are also recorded on a single track, so blend them for the tone you want while you're tracking.

The remaining drums (the toms and overheads) and the horn section are each recorded to a pair of tracks, setting their levels and panning with the channel faders and pan pots while listening to the stereo mix of those inputs from MIX-B.

Once you've patched, assigned, and made some notes, recording the basic tracks should pretty well take care of itself. Keep on top of the players - be sure they're in tune, keep them tight (but not too well lubricated). You'll have great basic tracks before midnight.

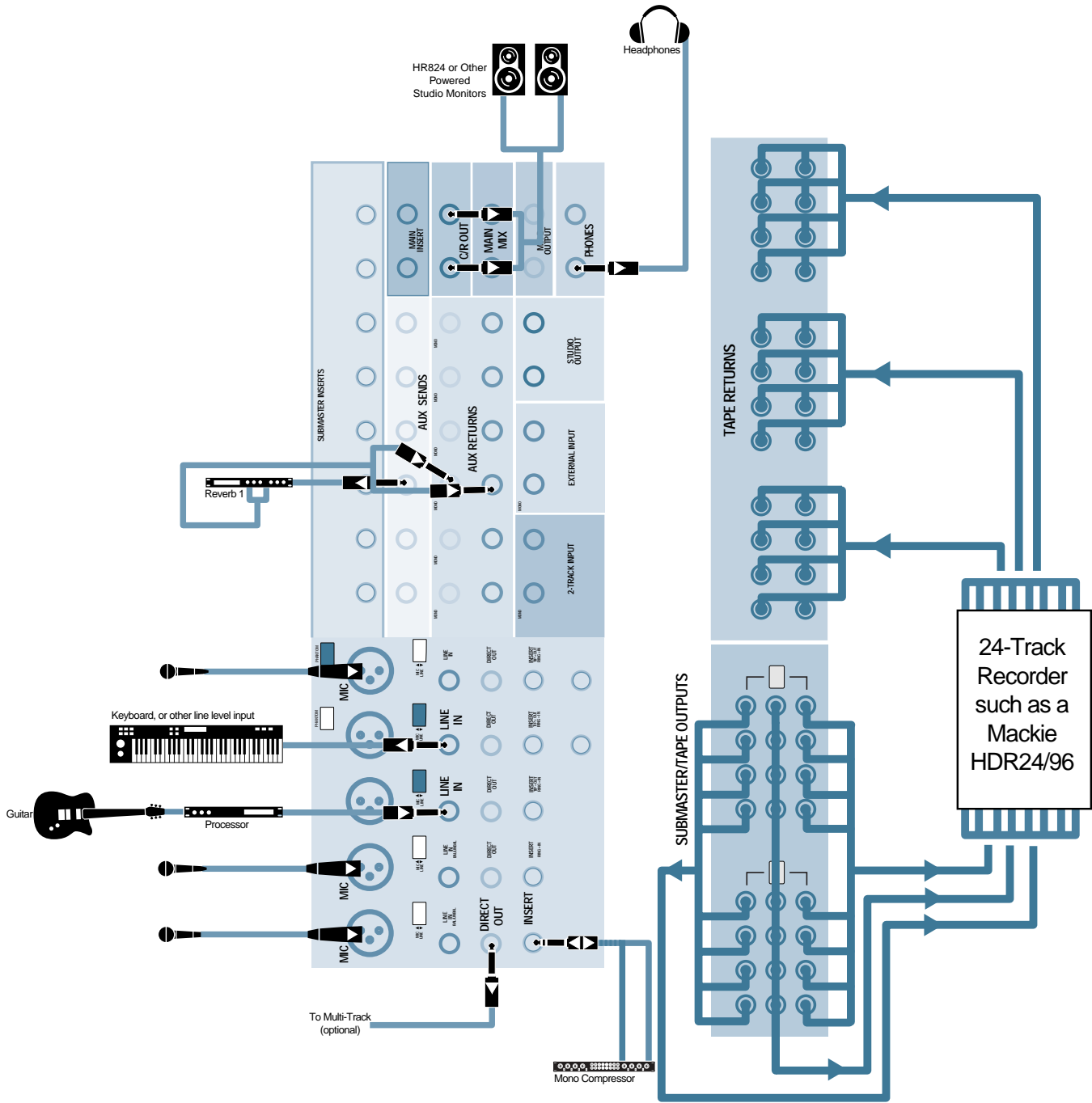
### Document! Document!

Once you've got your basic tracks down, take a few minutes to log all your settings, right down to headphone send levels and outboard compressor thresholds. You may be back next week doing it all over again, and you won't remember it all. Some engineers photograph the console. A digital camera is great for this, particularly if you're recording to a computer or just using a computer for your session notes. File the photos along with the notes and recording project. Others will grab a mic and a cassette, and just read the console settings into the recorder as if they were telling a story. To reset the console, listen to the playback and just follow your instructions.

One easy way to document your console is to copy the 8-Bus panel layouts from the end of your manual and mark your settings on them in color.

After you're happy with the basic tracks, it's time to start overdubbing the instrumental solos and vocals. The next two illustrations show typical hookups and the console controls.

# 8-Bus Overdubbing - Connections



# 8-Bus Overdubbing – The Board

Assign channels and adjust panpot to the appropriate bus for the desired tape channel input.

Tinted knobs are used in this application

Tinted buttons are pressed IN

## OVERDUBBING PART 2: THE BOARD

## Overdubbing

Start your overdub session by normalizing all the channels that you'll be using for instruments or vocals. If you're doing guitar overdubs with the same setup as you used for tracking, you can leave those as you've set them for tracking, though you might want to EQ a guitar differently when it's playing lead than when it was part of the rhythm section. Reset EQ, sends, anything that does not affect your MIX-B monitor and cue mixes. Do not change the FLIP switch settings yet.

Unless you have a string section or the Tower of Babel Choir coming in, overdubs are generally recorded one instrument or singer at a time, so you won't need all of the input channels. Pick a convenient input channel or two and use them as your inputs for overdubs. As you add each new part, use PAN and ASSIGN to send the input channel signal to the track you want that part to appear on. With the triple busing feature, unless you're a purist, you won't have to re-patch anything to feed up to a 24-track recorder.

Since your monitor and cue mix setups haven't changed (or you've reset them accurately according to your notes), during overdubbing, you'll hear the basic tracks just as you recorded them, using the same set of controls to adjust the cue and control room monitor mixes. At the end of the night, you can run the monitor mix into a cassette or DAT and take a rough mix home.

## Flipping Out Now

Here's another setup option you might find appealing. It takes a bit more time now, but might save you some time in the mixing stage of the project. Pick an input channel or two for your overdub mics that's out beyond the number of recorder tracks you have. If you're using a 24-track recorder, choose channels 25 and 26 for the overdub source inputs. Those are the channels you'll send to the recorder tracks using the ASSIGN switches and PAN pots.

Press the FLIP buttons on channels 1-24, including channels on which you'll be recording the overdubs. This will route the TAPE RETURNS to the main channel faders, and you can begin working on your mix with the full set of channel controls while monitoring the L/R Bus. You can work on EQing the horn section while the guitarist is on his 23rd take of the big solo.

Headphones can still be fed via the AUX Send of

your choice, or by selecting monitor as the Phones source. By the time you're done overdubbing, the mixdown will be just about done, or at least you'll have a good idea of how it's going to sound. Amaze the band!

## Bouncing Tracks

You never have enough chocolate, mixer inputs, or tracks. Bouncing, a technique for making your tracks go further, is a combination of mixing and overdubbing. Recording the four background singers four times in stereo gave you a really solid chorus, but the eight tracks you used didn't leave the guitarist much room to layer his part. So, after those multiple vocal parts are recorded, set up a mix on a pair of subgroup busses consisting of just the vocals, and record that mix on another two tracks.

Listen to that mix really good. When you're comfortable with the blend and you're satisfied that you've ducked all the clunkers, grit your teeth and erase the original 8 tracks, then tell the guitar player to get to work. Now you have six tracks available and haven't lost your huge chorus.

## Mixing Overview

Recording and overdubbing requires some tender loving care on the part of the recording engineer, but the focus during tracking really is on the performance. It's important to get a good sound, but it's more important to keep the musicians really happy with what they're doing, keep the energy up, and snag that killer track when it happens.

Good mixing, however, focuses solely on your creative and technical engineering skills. In tracking, you've taken the song apart and reduced it to a bunch of individual elements, all meticulously recorded. Now it's up to you to blend the tracks so they sound like music again. On the technical side, you must take into account such things as the sound of home and car speakers, mono compatibility, how human perception changes under different listening conditions, matching your recording to the sound to similar products in your market, not to mention tonal and level balance between songs, and meeting the technical requirements for mastering and replication.

### Tune Your Ears

Get a CD or DAT of a song with a sound that you'd like your mix to approximate, and patch the player into the external jacks on the console. Then you can compare your mix against this sonic model at the flick of a switch to see how closely you're approaching your desired sound.

You'll be surprised at how easy it is to focus on a particular sound in your model, say the snare, if you listen to the CD and then listen to just the snare in your mix. This technique can help you zero in on a sound that you're trying to achieve.

## Mixing Setup

Clean and align your tape deck according to the manufacturer's instructions. If you're using a digital recorder, sacrifice a full floppy disk in its presence to ensure smooth operation during mixdown.

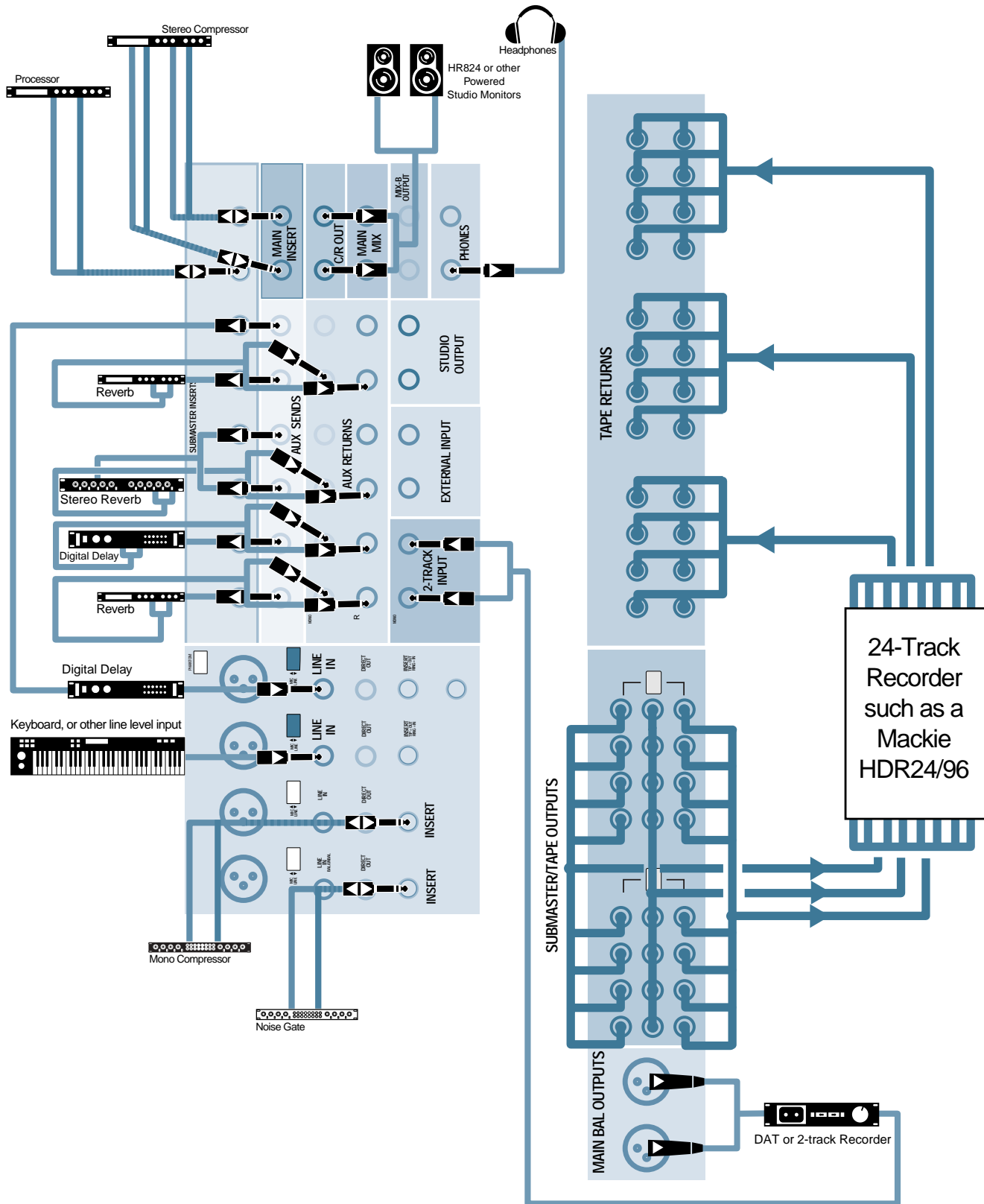
Try to arrange your inputs to have all vocals on adjacent channels, all the drums on adjacent channels, and so on. If you were diligent in tracking, you should be pretty close but you may want to re-patch some of the tape returns to get things in line. There's no technical reason why the output from Track 23, the last guitar overdub that you saved has to go to mixer channel 23 when the other "keeper" guitar parts are on tracks 12 and 13. They're just signals.

Re-label the faders. You've probably shed tears all over the old labels and can't read them any more, and besides, they now represent the recorder tracks rather than mics.

You might also find it handy to put narrow strips of tape vertically aside each fader to mark levels on channels that you'll have to ride during the mix.

Your setup will look something like this:

# 8-Bus Mixing – The Connections





## Assigning Inputs and Outputs

For mixing, engage the FLIP switches and assign all input channels to L/R (unless you are using the submasters to group channels – stay tuned). The FLIP switch routes the TAPE RETURNS to the channel inputs and the ASSIGN sends the channels to the MAIN mix. Lastly, select L/R MIX as your Monitor Source.

## Level Management

There is a tendency for levels to creep upwards as you add more and more tracks to your mix. One way to keep a handle on this is to start mixing with the L/R master fader set a few dB above its Unity Gain position. As you get closer and closer to your final mix and the level creeps up, ease the master fader down toward Unity Gain, which is where it should be. This will keep the monitor level fairly constant, so your ears don't get fooled because the mix is too loud.

Throw up some faders, start playback, and you should hear something that sounds at least a little like a mix. Where you actually start mixing from is a matter of personal preference. Some engineers start with all the tracks up, then see what needs to be taken away. Some start with the vocals and build the mix around that. Still others start with the drums, add the bass, then rhythm instruments. You'll figure it out.

## Consider Compression

You can mix an entire project without a lick of compression, though with today's popular music styles, not many engineers do. The dynamic range of a CD can certainly handle a mix with no compression. But consider - most people will be listening to your mix under less than studio conditions. There's background noise and road noise, distractions, and many people won't listen as loud as you mix (though others will listen considerably louder).

Gentle compression, whether on individual tracks or on the entire mix, can reduce the dynamic range somewhat and help to pull your mix together. Also, if you want to simulate what your mix will sound like over the airwaves, you can compress the heck out of it, like they do. Broadcast stations use very fancy compressors designed to make their audio as loud as possible while staying legal, but any compressor will give you an idea of what will happen when your mix gets squashed. But don't let your final mix sound like that or it will only get worse when it's played on the radio.

## Doing the Mix

Nearly all multitrack recorders have some sort of locator that will allow you to rewind to the beginning of the song and park there until you're ready to start a mix pass. Set up a locate point at the beginning, and perhaps other locate points at significant places in the song so you can get to them quickly.

If your recorder will do it, put it into loop mode so it will just play the song over and over. This is a timesaver when you're starting out and just want to get a feeling for the controls and what you can do with the mix.

A common way to start is by mixing a group of tracks that run throughout the song, usually the drums or the rhythm section. Set the panning, level, EQ, reverb and delay, and bring in more tracks as the mix begins to gel. Don't make any level marks on your "fader position" tape yet, but as the mix comes together, note which sections work without a lot of fader moves throughout the song. Listen for what appears to be the loudest part of the song. Sometimes turning the Control Room Level way down is a good way to hear parts that stick out or get swallowed up in the din.,

Now take a listen to the recording that you're using as your reference model. Make some adjustments in your mix to get it closer to the model. When you think it's getting reasonable, go to that loudest section and pull the master fader back to get the main mix meters reading close to 0 VU. Then start marking the position of the faders that you don't need to move during the song. You're getting close. Listen to the reference CD again to be sure you're in the sonic ballpark.

As you work on the parts where you need to move faders to keep things balanced, mark the position of the fader for each change on the piece of tape that you stuck next to it. Keep track, using the recorder's time display, of which position on which fader occurs at what time. You'll end up developing a road map for your fader moves. Repeat until it sounds like a hit. Serves four adults.

## Using "Outboards" – External Signal Processors

Compressors, gates and equalizers are generally inserted in line with the signal path. We call them "serial" processors since they're in series with the signal flow. The normal signal path is interrupted, the

signal takes a detour through the device, and after it's been processed, returns to the mixer to continue its way toward the final output.

Reverb, echo, and spatial enhancement gizmos and are usually set up as send/return or “parallel” devices. Some of the signal is “borrowed” from a channel via an AUX Send or Direct output, sent to the device, processed and returned to the mixer as a new, processed (or “wet”) signal via the AUX Returns or Line inputs, to be mixed with the original, “dry” signal.

Delays, chorus and flanging devices, and, aural exciters can work in either the serial or parallel configuration, depending on what they're doing. If you're delaying just one guitar, use a delay in a channel INSERT. If you're applying reverb to the all of the voices in the background vocal section, set it up in parallel.

### Insert Devices – Where?

A compressor/limiter after EQ will compress differently than one inserted before the EQ. A compressor/limiter inserted before a fader will limit consistently at any volume setting, but one after the fader will effectively have its threshold moved by the fader level. None of these choices are right or wrong, they just sound different – as the engineer, it's your choice. Your choice may be limited by the design of the mixer, but there are usually ways to work around this.

There are three common points for inserting processing devices in the signal path during mixing or tracking:

- At a pre-EQ channel insert point (for one channel only). This works on the channel input signal (which, on the 8-Bus, also includes the Tape Returns when they're sent to the main channel via the FLIP switch). When tracking, compression or limiting here will prevent overloading when the singer bellows. When mixing, compression will allow you to raise the average level of the track, but you may still need to “ride” the fader to pick up soft words.
- At a submaster INSERT point. The processor affects the whole group of signals assigned to that submaster.
- At the L/R MAIN INSET point. This affects the whole mix. A compressor here is generally used to increase the apparent loudness without overloading on peaks.

Compressors and equalizers are “straight through” devices – you want to return only the processed signal to the channel, not a portion of the unprocessed signal. Reverbs and other “coloring” effects are usually very much over-the-top when the fully “wet” output is used in a mix. That's why that breed of effect processor has a wet/dry mix control which adds some of the unprocessed signal back in to the processed signal. When inserting a reverb in-line with a single channel, adjust the reverb's Wet/Dry control for the desired amount of “wetness” to the signal going back into your mix.

### Send / Return Devices

Since you rarely need multiple headphone mixes during mixdown, you will usually have all six AUX sends available. Use a couple as your primary reverb sends, perhaps one for a bright plate and the second one a chamber with a slap or pre-delay. That leaves you four for special effects. You can also use the MIX-B outputs or an unused subgroup bus if you need additional sends. Keep the sends post-fader unless you don't want the effect to follow the fader moves.

If you're only using an effect on a single channel in the mix, you can use the channel Direct Out as a send. Since the DIRECT or INSERT output doesn't have a separate level control, use the Input Level control on the effect device to adjust the “send” level to the effect.

On the 8-Bus console, the DIRECT OUTPUT is post-fader (and EQ, too) but the channel INSERT is pre-both.



Remember that here is no rule against sending a signal out to a processor on AUX 3 and patching its outputs to RETURNS 5 or 6. If your reverb has a mono input (usually one of a pair of inputs is designated Mono), try feeding it a mono signal, using just one AUX Send. You'll still get a good stereo reverb sound and you can make your AUX SENDS go further this way. Stereo inputs are useful when you want the reverb to appear in the same position in the stereo field as the source, but that's something that rarely occurs in nature.

If you're using a mono effect or only one channel of a stereo effect, connecting its output to the Left input jack of a stereo AUX Return will place the effect in the center of the mix, or if you're using Returns 1 or 2, it can be panned anywhere.

If you plug the effect output into the Right jack, the effect will be placed on the right side in your mix. To put the effect on the left side only, patch

the return into the Left jack, and put a dummy plug into the Right jack. That will defeat the left-goes-to-center normalling and send the signal directly to the Left bus.

Of course you can also use empty channel inputs as effect returns. Simply patch the reverb output into a Line Input. Bonus: you now have console EQ available on your reverb return.



**Feedback Alert!** Be sure the AUX Send that feeds an effect processor is turned fully down on the channels being used as effect returns from that processor.

## Using Subgroups

At times, you'll want to set up subgroups within your mix. A subgroup allows you use just one or two (for stereo) faders to control a larger group of tracks (say drums, horns or background vocals). This makes for easier mixing, and also allows you to patch a single (or a pair for stereo) EQ or compressor on the set of tracks.

The Mackie 8-Bus console offers you several options using subgroups, depending on the situation.

To assign channels to a subgroup during mixing, first un-assign the channels you want to subgroup from the L/R MIX. Then choose the bus or pair of buses you'd like to use as a subgroup and assign the channels to that subgroup. Subgroup busses come in pairs, but you don't have to use both.

For a mono subgroup, the channel PAN pot selects to which of the two busses the channel signal is sent. For a stereo subgroup pair, the PAN pot controls the position of the channel source in the stereo field.

For example, if you want to use Bus 1 as a mono subgroup, assign the desired channels to 1-2 and pan those channels fully left. To group channels in stereo on SUBs 3 and 4, assign the desired channels to 3-4 and set the panning of each channel so its image appears where you want it in the mix. Trumpets on the left, trombones on the right.

But you're not done yet. Those subgroup busses need to go somewhere. You have three easy choices and a more flexible one that's a little more complicated.

There are two ASSIGN buttons associated with each SUB fader, a MONO (L+R) and either a LEFT or a RIGHT button depending on whether it's an odd or even numbered subgroup. If you want all the saxes you've assigned to SUB 1 to go in one heap on the

left, press the LEFT button above the SUB 1 fader. If you want them all in the center, press both the LEFT and MONO buttons. If you want them on the right, take two steps back. Assign them to Bus 2 by swinging the Pan pots fully clockwise, then press the RIGHT button above the SUB 2 fader.

A stereo subgroup will have one odd and one even numbered fader. Assign one LEFT, the other RIGHT, and the channel PAN pots can then be used to position the grouped sources across the stereo field.

So how do you move that pile of saxes somewhere off center, but not fully left or right? You'll need to send the SUB output to an input which can be panned anywhere in the L-R mix. If you have an unused channel, patch the SUB output to the channel LINE INPUT, assign that channel to L-R and pan to your heart's content. Bonus: You get to use the channel's EQ for overall equalization of the subgroup, and can use the AUX sends to put effects on the subgrouped channels.

If you've filled up all the main input channels, this would be a darn good use for all of those tape returns going to MIX-B that have been loafing during mix-down.

## Finding More Inputs: MIX-B to L & R Buses

Your unbridled creativity will find ways to use up every jack, whether you are routing the vocals through a pair of Leslie speakers or keying a gated set of reindeer bells with the snare signal.

The Mackie 8-Bus consoles can't give you an unlimited number of channels, (unless you buy an infinite number of console expanders – we'd like that) but you can double the number of mixdown inputs by using MIX-B. How's that for a deal?

If you're mixing using the setup from a few pages back, you engaged the channel FLIP switches to re-route the recorder returns into the main channel fader and EQ. FLIP also switches the Line Input jacks to the MIX-B inputs (it's those two sets of inputs that are flipped), and the line inputs can now be used as extra inputs to the MAIN L/R mix.

Since you can assign the MIX-B to the MAIN L/R bus, when FLIPped, the Line Inputs now go through the MIX B level controls, the MIX-B PANs, and then on to the L/R bus. Look over in the MIX-B MONITOR section above the Sub meters and you'll see the MIX-B TO L/R MIX ASSIGN button. That's the one that

does the trick. Voila! Twice as many inputs!

You can get an AUX Send for the extra inputs by using the SOURCE switch in the AUX Send 3/4/5/6 area, and you can SPLIT the channel EQ if you need to EQ the MIX-B input. You'll have to do some clever planning and a little dancing since there really is a finite number of resources, but we've provided the controls to route them to a few extra useful places.

As we mentioned above, you can use the AUX Return inputs as additional inputs to the mix, too.

## Monitoring and Listening Levels

Check your speakers and amplifiers to be sure that playback levels are balanced left-to-right and the speakers are mounted symmetrically to your mixing position. A 2dB shift in monitor balance will produce a 2dB shift in the opposite direction in your mix.

Also, check your speaker polarity (sometimes inaccurately called phase). This is a basic thing we all know about, but it's amazing the number of times we've found studio speakers (especially near-field monitors, which are connected and disconnected regularly) wired with opposing polarity. You should train your ears to notice out-of-polarity conditions instantly. It's easy to hear (to us it sounds like a combination of not hearing enough bass and feeling like our eyes are slightly crossed), and getting polarity right will save you much grief in mixing.

Remember that your mix needs to sound good on anybody's system. Be sure you have some real-world listening speakers available in addition to the monitors you like so well, and check back and forth frequently. There's nothing like making a CD or cassette of your mix and playing it in your car to tell you how your mix will sound when . . . well, when it's played in a car player. Try it at several speeds (driving speeds, that is, not cassette speeds) so you can get a sense of what parts of your mix get masked by road noise. Don't get a ticket. The judge won't accept "But You Honor, I was just trying out my new mix."

An outboard switch box such as the Mackie Big Knob is handy for switching between alternate monitors in the studio, but you can also feed alternate monitors from the console's Studio Outputs.

Check your mix at different volumes, too. A mix that sounds great loud may not necessarily sound good at a low volume. Listen at a barely audible level from time to time. You should still be able to hear the essential components of the mix.

Also, check your stereo mixes in mono regularly during the mixing process. Many people still hear television and radio in mono, and your mix has to sound its best in mono as well as stereo.

Take a hint from the film mixers, and monitor at a sound pressure level (SPL) of about 85dB at the mixing position. This is moderately loud but still considered in the normal volume range. If you have an SPL meter, use it to set the monitor volume at 85 dB C-weighted to get a sense of this volume. Radio Shack® has an inexpensive and remarkably accurate one (get the analog model if it hasn't been discontinued by the time you read this). No self-respecting set of ears should be without this tool.

Monitoring at a known and consistent volume will keep you honest, and keep your mixes balanced for playback. Sure, listen at very low levels, and crank it from time to time to remember why you're in this line of work, but stay at the moderate 85dB level most of the time. You'll save your hearing and also make better mixes.

## A Word About Automation

In the days before digital consoles, there were a number of outboard MIDI controlled fader/mute systems (including the discontinued Mackie Ultra-mix) which you could add to your console to provide automation for your mixes. Today, you have to find them on the used market. If you feel the need to automate, shop carefully and learn about the system you choose. For those of you without automation, there is hope. Billions and billions of great mixes have been done on non-automated consoles. Here are a few tips:

- Use subgroups, discussed earlier.
- "Mult" tracks that need EQ or effect changes during the mix to two channels, alternating between the two channels with the MUTE switches. Multing means connecting one output to two or more inputs. You can make mult boxes, a patchbay, or just use "Y- cables."
- Enlist several sets of hands.
- Bounce a track that needs more moves than you can handle in one pass to a new track, riding the fader or EQ during the bounce. This allows you to concentrate on just the one track that needs attention, pulling up a word here, ducking a gasp for breath there, and boosting a couple of dB at 4 kHz when the singer turned away from the mic for a word. When you have

the perfectly tweaked track, you can just put it up in the mix and leave it alone – one less hand and about a million fewer brain cells needed to concentrate on the mix.

- You might worry about a loss of fidelity or increase in noise resulting from copying another generation down. This is a valid concern if you're using an analog recorder, and digital users agonize over running the signal through another Analog/Digital conversion, but you'll just have to decide using your own ears whether it's a real problem. The degradation that you think you can hear if you really concentrate on one track, gets buried when you have 23 other tracks covering up the little blemish. Consider which is the bigger problem – the sonic loss in copying or the difficulty in fitting the track to the mix.
- And last, most terrifying, but most powerful and effective: edit between sections of your mix. This is particularly effective when you've integrated a computer audio workstation with your mixer.



If you've been wildly editing mixes for years and years, you know what we're talking about. If not, learn to do it. Whether you do it digitally or you use a razor blade, you can fix that tiny detail in an otherwise perfect mix; you can mix a complicated track in sections rather than one long marathon; you can go from 200 instruments to a single whispered vocal and back again in a heartbeat; you can even fix a mix weeks later without losing the original magic —you just remix the one chorus that needs fixing and cut it in.