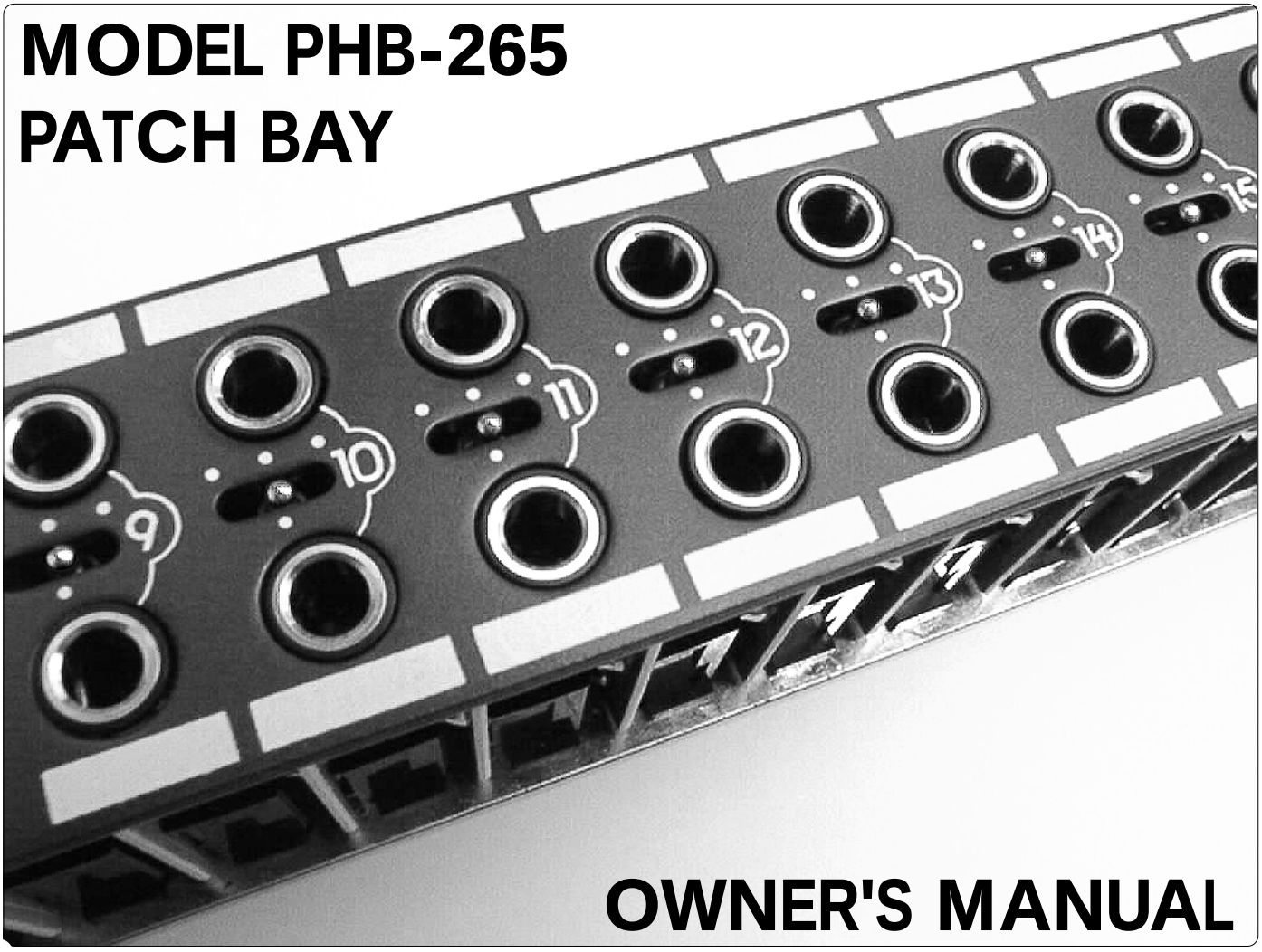
Hosa®

MODEL PHB-265
PATCH BAY



OWNER'S MANUAL

Hosa® PHB-265
Switchable Patch Bay

Patch Bay Instructions

Three Different Patch Bays in One.

Patch bays are intended for insertion into the signal path between multi-track recorders and audio mixing consoles in home and commercial studios. Connecting the patchbay between the tape deck and mixer allows very convenient and flexible signal-routing and re-patching, without crawling behind the equipment every time a change becomes necessary.

The inputs and outputs of outboard signal processors like reverbs, delays and compressors are also routed through the patch bay, making it simple to add such effects into the signal path by employing short, patch-bay cables to connect one device's output to another device's input at the front of the bay (much the way old-time telephone operators connected telephone calls). Often, multiple patch bays are used so that every sound source, every signal processor, and every sound destination can be within fingertip reach.

Certain conventions and terminology have developed over the years, regarding the manner in which studio gear is connected to the patch bay, and regarding the type of patch bays used. This manual follows and explains those conventions and attempts to de-mystify the terminology used to describe the various types of patch bays. ***Each channel* of your new Hosa model PHB-265 can be easily configured via front-panel switches to any of the three main types of bays.**

Tip!

Patch-bay connections can seem confusing at first until you've grasped the concepts. As you read this manual, it will help if you maintain a vivid mental picture of the *direction of signal flow*, as though your audio signal was water flowing through pipes, and your cables were hoses. And when looking at a vacant jack in the bay, learn to think of it as a **source** or a **load**, meaning that it's either offering signal *to* you or accepting it *from* you, but never both!

Patch-Bay Types

Patch Bays can be divided into three main categories, based upon the way signal may be routed. These types are often referred to by the terms "Open" (De-Normalled), "Full-Normalled", and "Half-Normalled".

What Does "Normalled" Mean?

In a *general sense*, "Normalled" means "usually (normally) connected", and it refers to the vertically-oriented jack pairs at the rear of the bay. (See **Fig. 1.**, this page.) For example, most recording studios have the mixer's OUTPUTS "usually connected" with the recorder's INPUTS as we have done in **Fig.1.** For recording purposes, it is very convenient to have signal "loop" through the bay in this manner (with the permanent connections made at the rear) because we can now intercept, divert or make substitutions for the signal easily at the front of the bay in a number of ways, depending upon the patch bay's configuration.

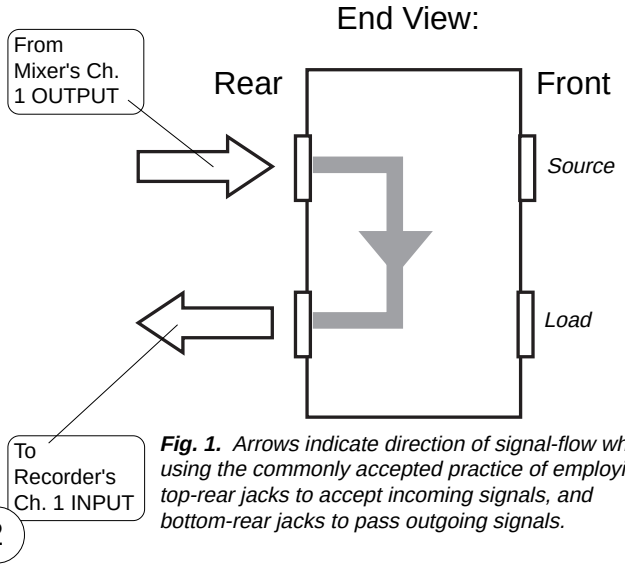
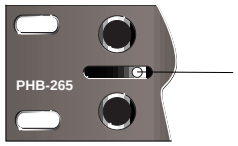


Fig. 1. *Arrows indicate direction of signal-flow when using the commonly accepted practice of employing top-rear jacks to accept incoming signals, and bottom-rear jacks to pass outgoing signals.*

Patch-Bay Types (Continued)

"Half-Normalled"



For "Half-Normalled" operation, switch to the right, using a ball-point pen or other pointed object. Switches are recessed to prevent accidental changes.

A "Half-normalled" bay is one which allows you to break the connection between the *rear* top and bottom jacks simply by plugging a cable into the *bottom-front* jack. This is a very versatile configuration, allowing a number of different signal-flow scenarios. Let's continue to build upon our original example.

2 a., b., c.

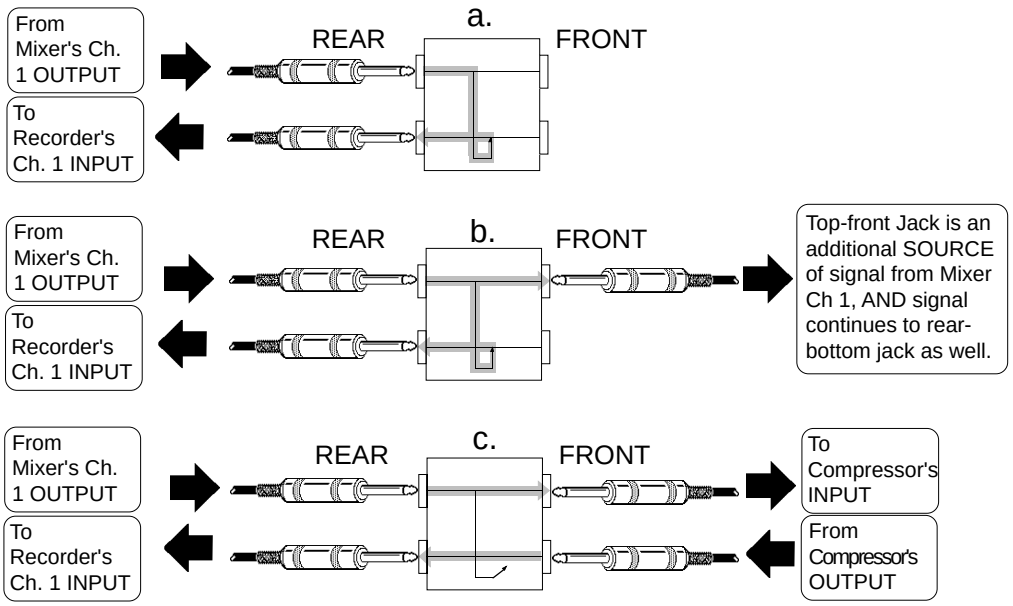


Figure 2 (a., b., c.) *Arrows indicate direction of signal flow. Notice that until a cable is inserted into the bottom-front jack, signal is passed from top rear to bottom rear without interruption (a), and may also be accessed at the top front jack (b). But when a cable is inserted into the bottom-front jack, signal flow from top jacks to bottom jacks is interrupted (c).*

Figure 2a. (above) shows a detail of the switching jack (bottom-front position). With nothing connected to the switching jack, signal passes directly from top rear to bottom rear, or from mixer OUT to recorder IN in our example, and the same mixer OUT signal is also available at the top-front position. (**Figure 2b.** above.) In other words, the top-front jack is now a SOURCE; an extension of the mixer OUT.

Notice however that when a cable is plugged into the bottom-front jack, (**Figure 2c.**) the connection is broken between top and bottom jacks at the rear of the bay. To examine why that's a good thing, let's say we wanted to run our Mixer's Channel 1 OUTPUT into a compressor before we send the signal on to the recorder. All we have to do is connect the compressor's IN and OUT to the corresponding front jacks on the bay (**Figure 2c.**) and signal now flows from the mixer's OUT to the compressor's IN and from the compressor's OUT to the recorder's IN. And this is all accomplished without crawling around on your hands and knees behind your equipment.

In addition to inserting devices into the signal path, the half-normalled bay configuration also allows you to substitute a different signal altogether. In our

example, let's say we needed to send a signal other than the mixer's output signal to the recorder's Channel 1 input. (A keyboard, for example.) All you would have to do is plug that keyboard's cable into the corresponding *bottom-front* jack of the bay. The signal from the mixer's Channel 1 Output would be interrupted, and the keyboard's signal would be substituted. (**Fig 2 d.**, below.)

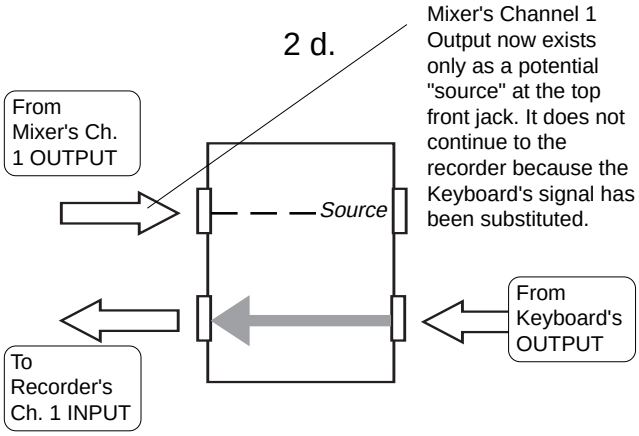
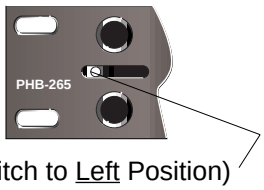


Figure 2 d. *Arrows indicate direction of signal flow. Here, we have interrupted the "usually-connected" mixer-to-recorder signal path just by connecting a keyboard's signal to the bottom-front jack (which breaks the connection between top and bottom in the back).*

"Full-Normalled"



A "Full-normalled" bay is one which allows you to break the connection between the *rear* top and bottom jacks by plugging a cable into either the *bottom-front jack or* the *top-front jack*.

This configuration is the most versatile of the various types of bays because you can either "steal" source signals or substitute different load signals simply by plugging into either the top or bottom jacks.

Notice, however that the scenario in **Figure 2b.** on Page 2 is not possible with a full-normalled bay configuration. With a full-normalled bay, a signal could never be sent to top front *and* bottom rear at the same time as it can in a half-normalled bay.

Fig. 3. Full-Normalled

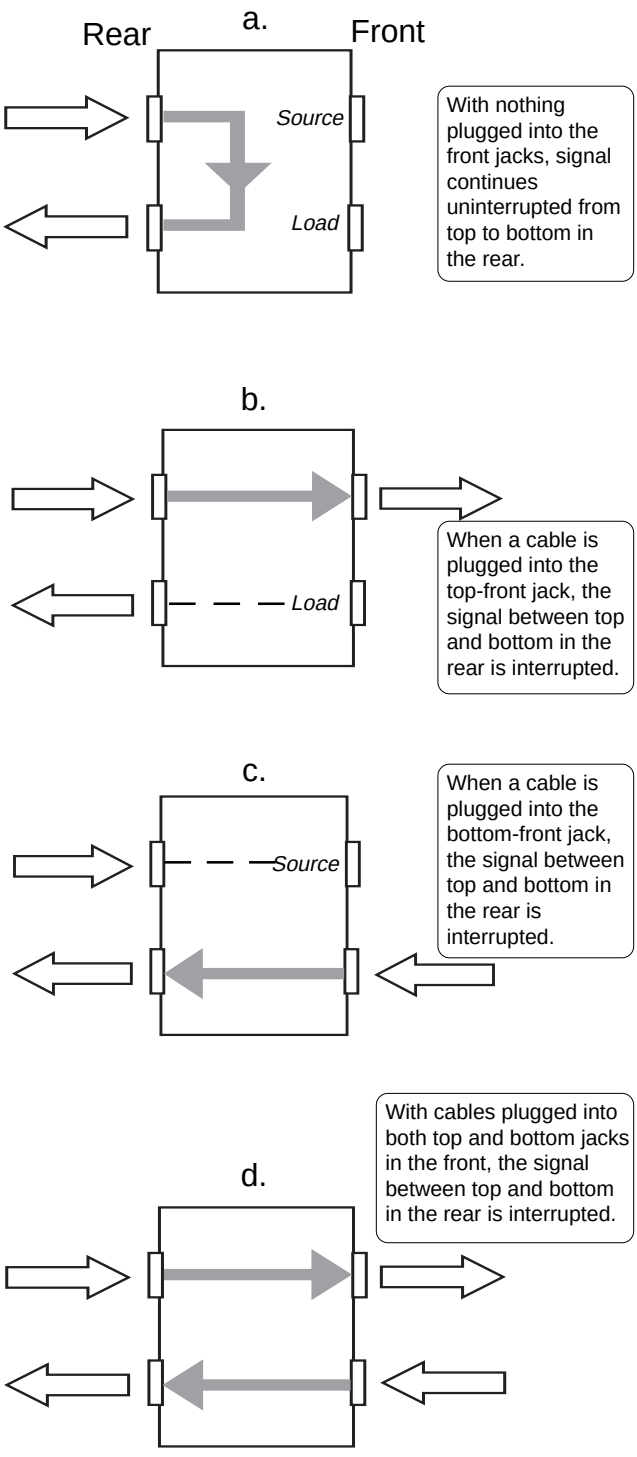


Figure 3 (a., b., c., d.) *Arrows indicate direction of signal flow. The full-normalled bay acts just like a half-normalled bay except for scenario "b." above. When a plug is inserted into the top-front position of a full-normalled bay, signal between top and bottom in the back is interrupted. (Compare with half-normalled bay,* ***Fig. 2b.****, Page 2.)*

Open or "De-Normalled"

(Switch to Middle Position)

In the Open or "De-Normalled" bay, signal applied to the top-rear jacks is available at the top-front jacks, and signal applied to the bottom-front jacks is available at the bottom-rear jacks. Top-rear and bottom-rear jacks are never connected to each other.

One use for the Open configuration is to connect outboard reverbs or compressors or other signal-processing gear. With the module set to "De-Normalled", you can avoid unwanted signal loops such as the one that would happen if you were to connect a reverb's outputs directly to its own inputs. **Figure 4 a.** shows how this works.

Another use for the Open configuration is to connect pieces of equipment that have no inputs of their own. For example, the Left and Right outputs of a CD player could be connected to separate modules of the bay, but since there are no corresponding "loads" for those two channels (*i.e.,* You can't send any signal TO the CD player, because it has no inputs), there would be nothing to plug into the top-front jacks. Therefore for the CD player and other "play-only" gear, it makes sense to save space by doubling-up and plugging the Left and Right CD Outputs one above the other into the Top-Front and Bottom-Front positions of a single bay module. (See **Figure 4 b.**)

Notice that **Figure 4 b.** is the only diagram showing signal flowing from front to back in both top and bottom positions. This is one instance where it is helpful to break the "top-rear IN; bottom-rear OUT" convention adhered to in every other diagram. Make sure you label any such dual inputs clearly to avoid confusion!

4 a.

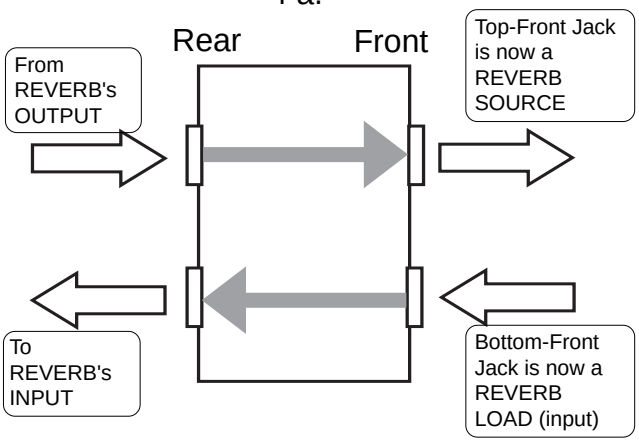


Figure 4a. *Arrows indicate direction of signal flow. The rear top & bottom jacks of Open ("De-Normalled") bays are never connected to each other, even when no cables are connected to the corresponding front jacks.*

4 b.

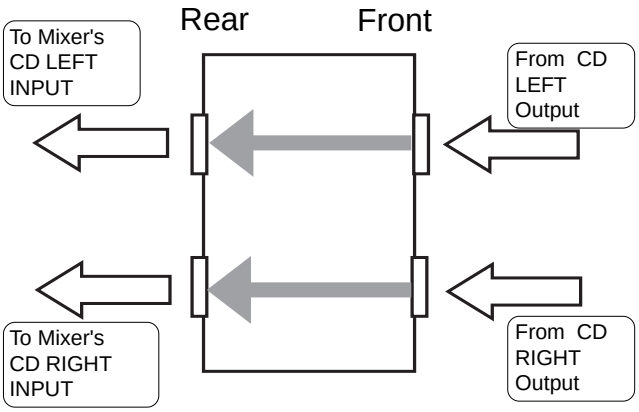


Figure 4b. *Arrows indicate direction of signal flow. Open or "De-Normalled" bays modules are often used to input signal from devices that have no inputs of their own. This is one instance that defies the convention of top-rear-IN, bottom-rear-OUT. It's a great way to save space in the bay.*

Using the Whole Bay

Take a moment o look at **Fig.2c**. again (Page 2). It shows how a mixer's signals could be routed out to a compressor and then back through the bay to the recorder. What it *doesn't* show, is how the cables were run to and from the compressor's input and output. One way, of course would be to string cables directly to and from the compressor's input and output, but if the compressor isn't near the patch bay, the long cable runs to the front of the bay would be in the way. A better way to accomplish this would be to connect the compressor's ins and outs to the rear panel of the patch bay, too. (*See **Fig. 5,** Page 5*) Then, all we need are short patch cables from the corresponding front-panel jacks that represent the compressor's in and out to the front-panel jacks that represent the mixer (source) and the recorder (load) at patchbay Channel One.

In this manner, each signal source and each destina

Figure 5

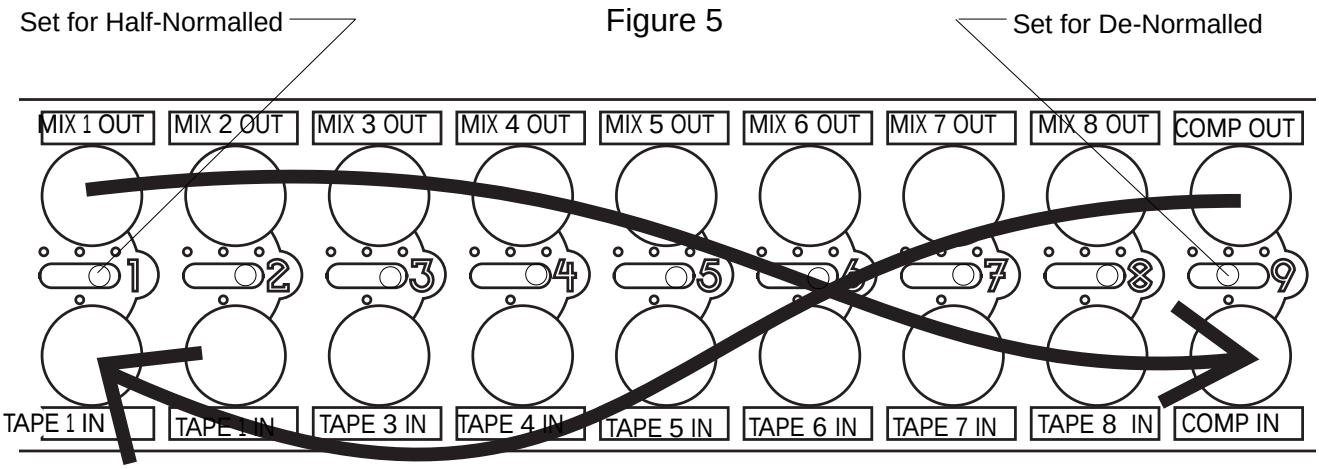


Figure 5. *Arrows indicate direction of signal flow. After plugging the compressor's input and output into the* **rear** *jacks of patch-bay Channel 9, we have created a Compressor "source" at the top-***front** *jack of Channel 9, and a Compressor "load" (input) at the bottom-***front** *jack of Channel 9. Therefore, using short patch cables as shown above, we have created the following signal path: Mixer's Output to Compressor's Input, and Compressor's Output to Recorder's Input. So the signal from Channel One at the Mixer will now be compressed before recording.*

Note also, that Patch-bay Channel One is set for HALF-NORMALLED, meaning that with nothing plugged into the bottom-front jack for that channel, signal will continue from the mixer to the recorder. But when we plug in the patch cables as above, signal is diverted first to the Compressor and then back to the Recorder. The Compressor's patch-bay channel however, is set for DE-NORMALLED, so that we won't create an unwanted loop from the Compressor's outputs to its own inputs when cables are removed from the patch bay's front panel.

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tion, including all outboard reverbs, delays, compressors and other signal processors, can have its own patch-bay channel, allowing easy connections to any other piece of gear. Studios with large mixing consoles, multiple reocrders and dozens of pieces of outboard equipment require more than one patch bay to meet their needs. Multiple bays are usually racked one-above-the-other in a single rack so that short patch cables can reach all front-panel ins and outs.

Balanced/Unbalanced Connections

The PHB-265 is an UNBALANCED patch bay when used in the Half-Normalled or Full-Normalled configurations. But it can be used as a BALANCED bay in the Open or De-Normalled configuration only (with the switch in the center position).

"Balanced" audio connections have three conductors representing positive, negative and ground. Audio signal is kept separate from the ground conductor in such connections. "Unbalanced" audio connections allow the ground to "share" the negative conductor and are transmitted through cables and jacks having only two conductors.

If you intend to use the PHB-265's full-normalled or half-normalled configurations with balanced audio gear, you should use a cable that "unbalances" the signal before it gets to the bay:

Figure 6

a. Incoming signal

Hosa PXF-100 Series Cables

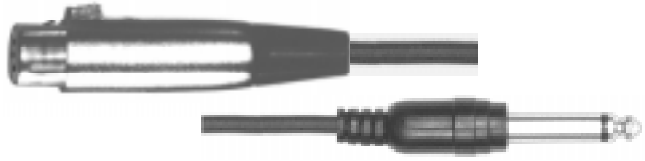


Figure 6a. *For signals coming into the bay from balanced equipment that features XLR outputs, use a cable like Hosa's PXF-100 series, which "unbalances" the signal (ground "shares" the negative conductor) for use with the PHB-265 when using the half-normalled or full-normalled configurations.*

b. Incoming/Outgoing signal

Hosa CPP-100 SERIES

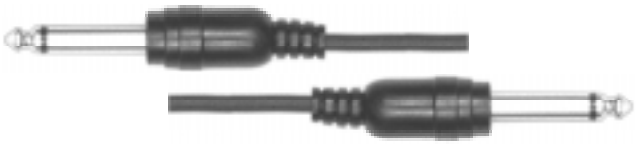


Figure 6b. *For signals entering or leaving the bay and connecting to balanced equipment that features balanced 1/4" (Tip, Ring, Sleeve) jacks, use a cable like Hosa's PXM-100 series which "unbalances" the signal, allowing ground to "share" the negative conductor.*

Figure 6 c.
Outgoing signal
Hosa PXM-100 SERIES

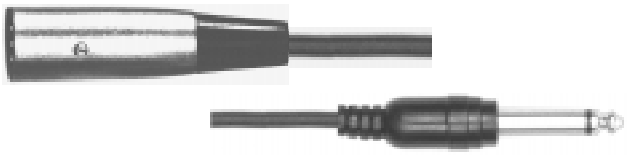
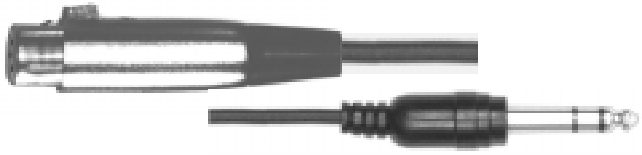


Figure 6c. *For signals leaving the bay and connecting to balanced equipment that features balanced XLR inputs, use a cable like Hosa's PXM-100 series which "unbalances" the signal for use with the PHB-265 bay when using the either half-normalled or full-normalled configurations.*

Balanced signal connections are less prone to interference than unbalanced, especially in long cable runs. But in most cases, unbalancing runs of 10-15 feet to outboard gear in the manner detailed above will make no audible difference in the audio. If your studio is in an electronically "noisy" location, and you experience increased noise in the audio signal when unbalancing the signal runs to otherwise balanced equipment as outlined above, then switch the patchbay channels that are affected to the de-normalled (middle) switch position, and use balanced cables as in **Fig. 7**.

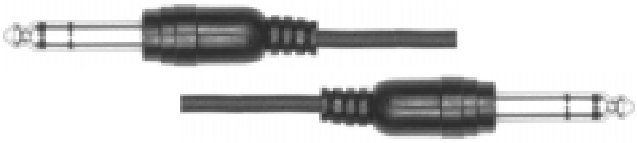
Although neither full nor half-normalling is possible in the de-normalled (middle) switch position, it is still possible to patch signals from top-rear to bottom-rear jack positions by using a short patch cable between top and bottom in the front as shown in the photo below. (For balanced gear, use a balanced cable like the the one shown in Fig. 7b.)

Figure 7. BALANCED CABLES
a. Incoming signal
Hosa STX-100F Series Cables



b. Incoming/Outgoing signal

Hosa CSS-100 Series Cables



c. Outgoing signal

Hosa STX-100M Series Cables

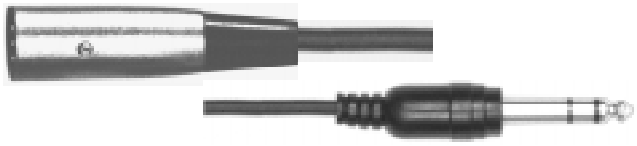
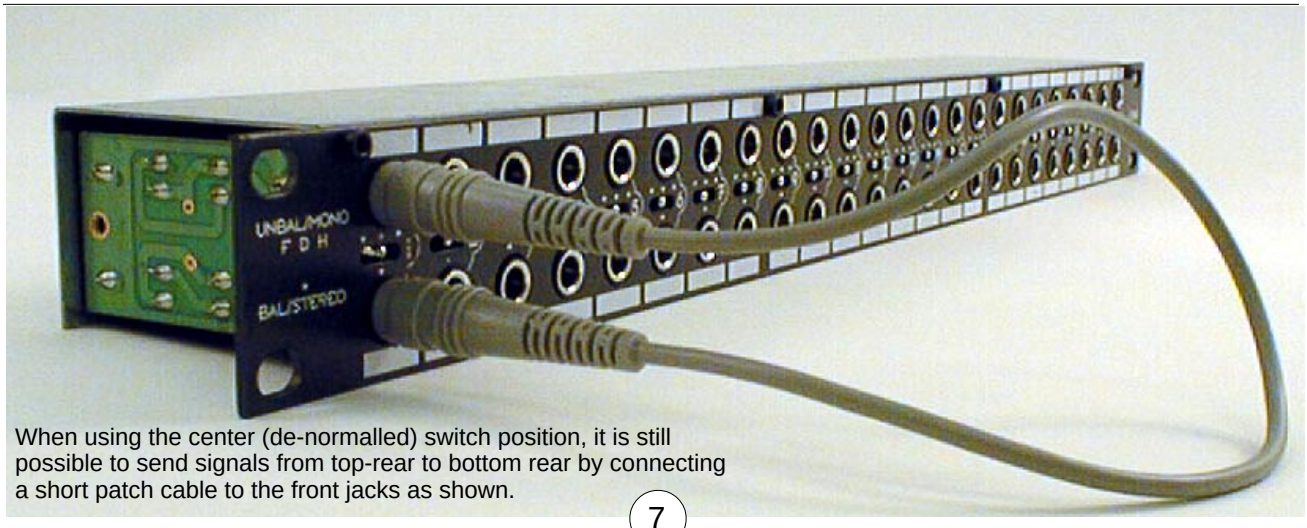


Figure 7 a, b, c. *For patchbay modules set to the de-normalled position (middle switch position), balanced connections can be maintained to balanced gear by using the appropriate balanced cable such as these (above) offered by Hosa.*



When using the center (de-normalled) switch position, it is still possible to send signals from top-rear to bottom rear by connecting a short patch cable to the front jacks as shown.

Patch-Bay Cable Sets

For connections at the front of the bay, you'll need multiple, short patch cables in either balanced 1/4" phone or unbalanced 1/4" phone. Hosa offers color-coded patch-bay cable sets of eight shielded cables each. They are available terminated in unbalanced 1/4" phone (CPP-830, CPP-845, CPP-890) and balanced 1/4" phone (CSS-845 and CSS-890), in a variety of convenient lengths specifically for use with professional patch bays. The dealer from whom you purchased your PHB-265 can help you find an appropriate set of patch-bay cables.

Hosa
CSS-845
BALANCED
PATCH CABLE SET

Labelling

By now, you're probably aware of the importance of labelling all of your patch-bay connections. With so may dozens of patch points (especially when more than one patch bay is employed), you'll never keep track of them all without labelling. The white areas above and below the front-panel jacks are available for labelling each jack. Make sure to use a "wipe-off" marker, like the ones used on white presentations boards, or get a "grease" pencil from an art supply store. DON'T use permanent markers. If you do, and then decide later to reconfigure the bay, you'll be stuck with your old labels! ❑

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YOUR TALENT. OUR CONNECTIONS.