



Effect Unit Overview

✚ Church Audio ✚

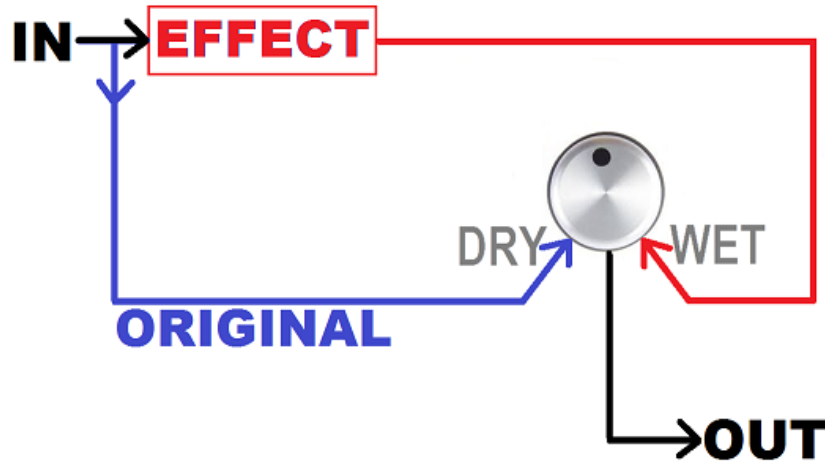
**ORIGINAL
SOUND IN**



**EFFECTED
SOUND OUT**



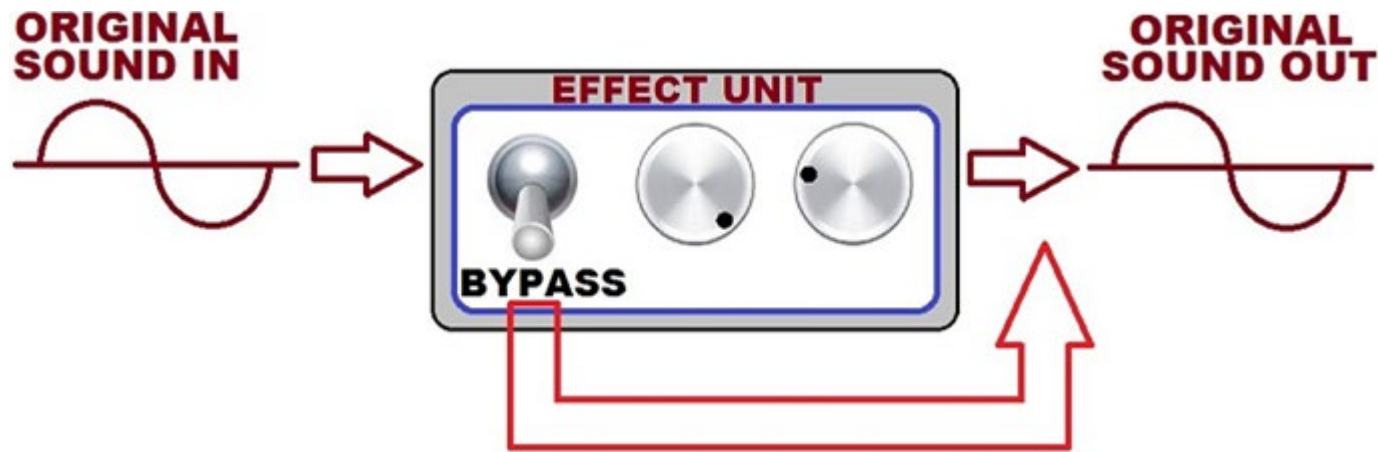
An Effect Unit takes a sound (input) and creates an effected version of it (output).



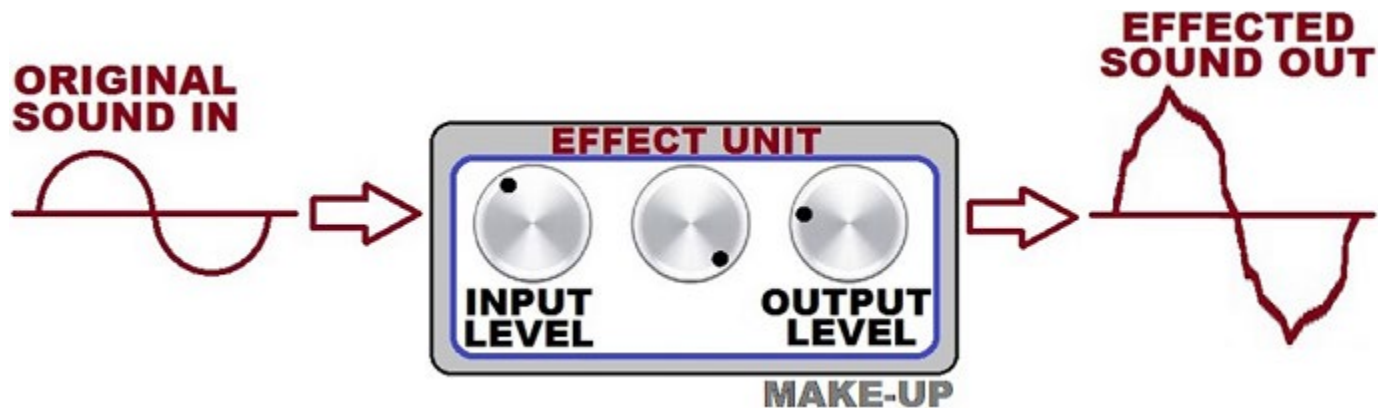
MIX (BALANCE) (WET/DRY).

Sometimes you only want the effected sound (wet) coming out of the Effect Unit., other times you may like to hear the original (dry) mixed in with the effect.

This choice is done using a Mix (Balance) control that allows you to balance the two, original and effect, as you require.



The ability to **bypass** is very important. This causes the incoming signal to bypass the Effects Unit completely, so you only hear the original. This permits you to hear your progress, flicking between original and effect to hear the difference. Sometimes you may only want to affect the sound in certain moments. Just flick the bypass in and out.

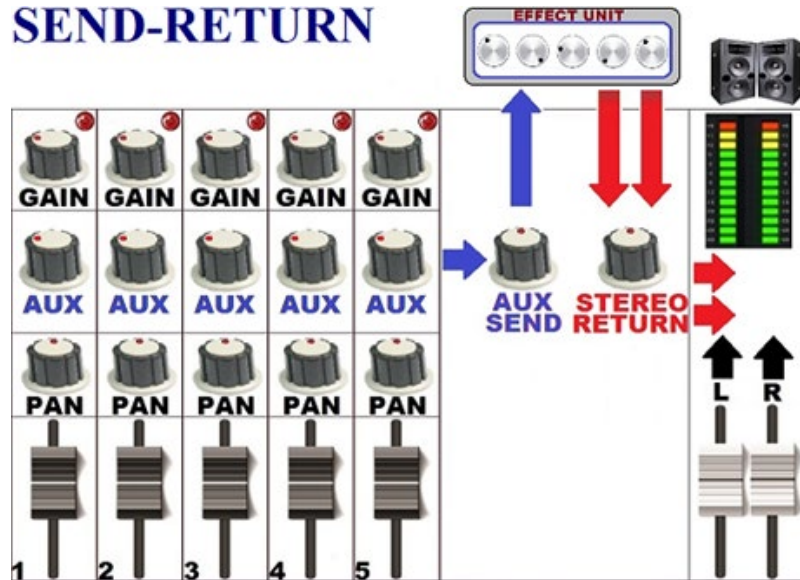


There may be a control to adjust the volume of the incoming, and/or the outgoing signal.

INPUT LEVEL: This is to ensure that a good signal level is arriving at the Effect Unit. Electronics won't work properly if the incoming signal is too low.

OUTPUT LEVEL: After effecting a sound it is often necessary to adjust the output volume as the effect may be very different in volume to the original.

SEND-RETURN



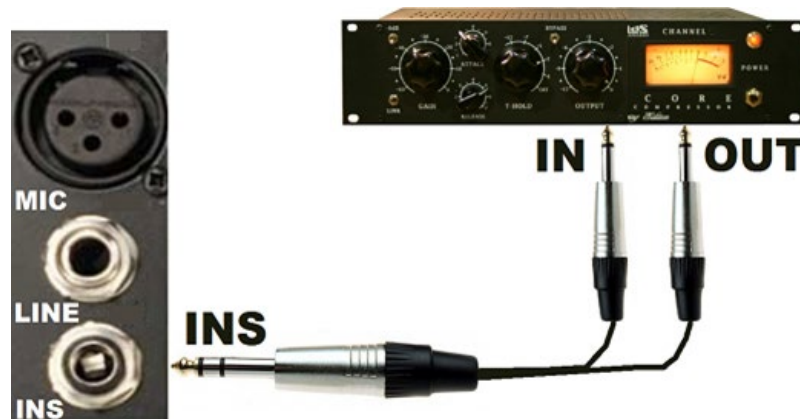
Connecting a Sound Effect Unit to an Aux Send on a Mixer

A Send/Return Loop involves taking the Aux Send master output from the Mixer and connecting it to the Input on the Effect Unit.

Because Effect Units often have stereo (L/R) outputs, Mixers typically provide Stereo Returns for you to receive the outputs back from an Effect Unit.

Now you can add some effect to the sound of any input channel by simply turning up the Aux on that channel.

The mix (balance) on the Effect Unit should be set to 100% wet (all effect, no original) because your original on each channel still goes to the L-R faders in the usual manner.



Inserting a Sound Effect Unit into a single Mixer channel

By using a Wye cable we can insert an Effect Unit directly into a channel. The Effect Unit will only affect the sound on that channel.

You will have to balance the effected sound (wet) with the original (dry) from the Effect Unit.

If the Effect Unit is a **Reverb**, you might balance it 70% original and 30% effect (reverb) for example.

If the Effect Unit is a **Compressor** then you need it 100% wet (all effect, no original) because you only want the compressed version coming back into the channel.

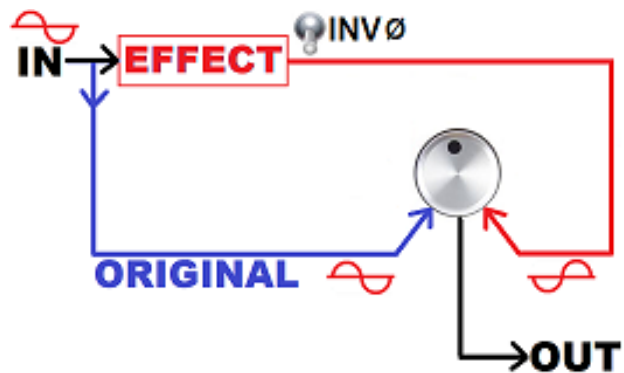


Some Mixing consoles come with an **Effects Unit incorporated**.

In this case one of the Aux Sends on each Input Channel will be connected directly to the Effects Unit. Normally, If you don't want to use the Internal Effects Unit you just turn the Effect Unit off, and then use the Aux Send for something else.

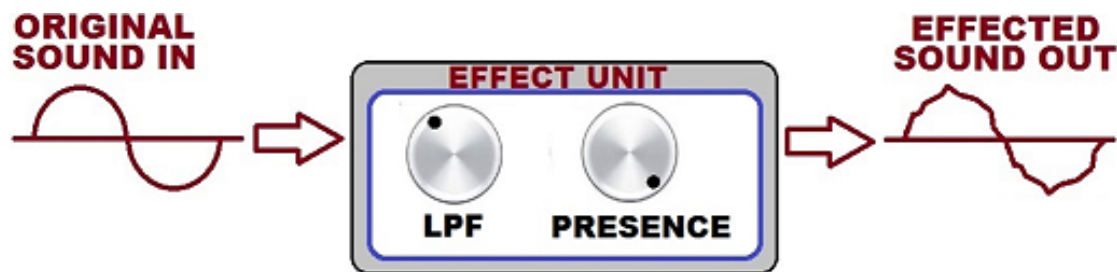
*These are **On-board** Effect Units.*

*Separate external Effect Units are called **Out-board** (stand-alone) Effect Units.*



PHASE REVERSE Ø

Sometimes you get a better sound by flipping (inverting) the effected wave, before adding it to the original. This causes phase clashes, which affect the sound... you never really know... flick it, listen, and choose the sound you like best.



L.P.F. (LOW PASS FILTER)

When using certain Effects, it may be necessary to cut some of the high frequencies to reduce ringing. e.g. *High feedback will cause a metallic ringing sound that may need filtering slightly.*

H.P.F. (HIGH PASS FILTER)

After effecting some sounds, it may be necessary to cut out some of the basses. e.g. *Large Cathedral Reverbs get muddy.*

PRESENCE (HIGH)

There may be a high frequency filter to help you set the freshness to suit your needs. This lets you boost or cut to improve clarity (+) or give more warmth (-).



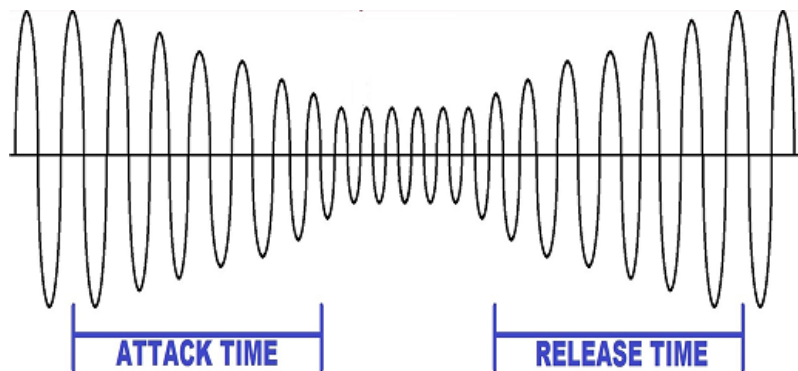
THRESHOLD

Sometimes there may be a volume required (input) before the Effect Unit will work. You can set this signal threshold volume to any point you desire. It means the signal must cross over this level before the Effect Unit will begin to work or stop working.



In the first diagram the electrical signal doesn't cross the threshold you set, and so the output from the Effect Unit has no effect added.

In the second diagram the electrical signal crosses the threshold you set, and so the output from the Effect Unit is effected.



ATTACK RELEASE

Once an incoming signal crosses the threshold you set, rather than the effect starting immediately, which can sound unpleasant, you may be offered the chance to slow down the time it takes for the effect to arrive at maximum (**Attack time**), and then the time to reduce the effect back to the original sound again later (**Release time**). This allows you to have a smooth transition between the effected and original sounds.

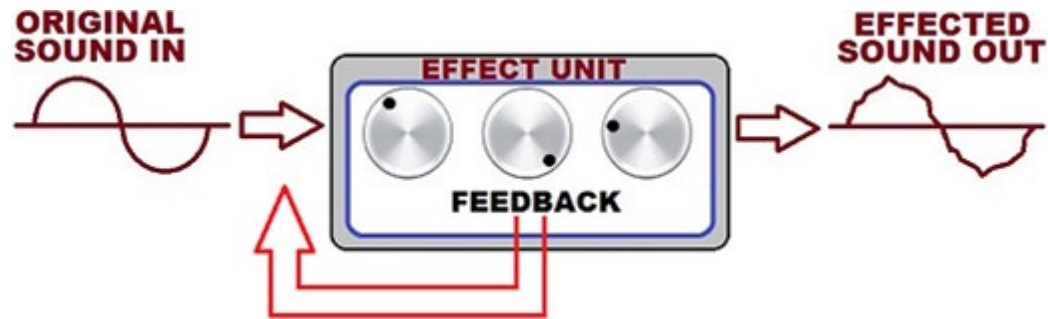
The diagram shows a sound gently going in (attack) to the central "effected" area then gently coming out (release) later.

Controlling the Attack time and Release times is crucial for Dynamic Processing effects such as Compressors. You can set the "Auto" feature available that will control the attack and release automatically if you prefer (*setting attack/release times isn't for everyone*).



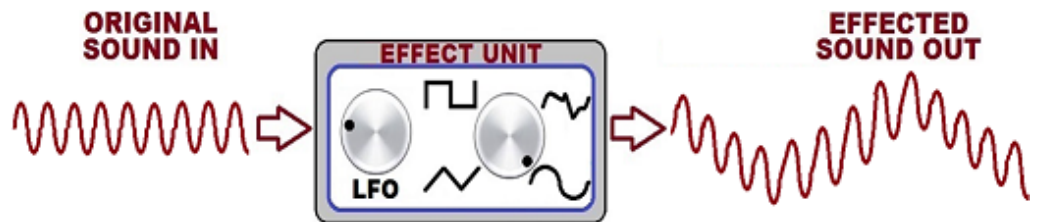
PRE-DELAY

Sometimes having the effect occurring immediately blurs and confuses the original sound. After the Threshold level has been crossed, you may be given the option to **wait** a certain number of milliseconds (mS) before the Unit is allowed to start. This causes the effect to stay slightly behind the original, resulting in a cleaner sound.



FEED-BACK

This feature carefully takes some of the output signal and feeds it back to the input. This is how we create repeating echoes in the Delay Units. *High feedback creates wild sci-fi sounds.*



L.F.O. (Low Frequency Oscillator)

This parameter causes the sweeping movement you hear in Chorus, Flange, Tremolo, Vibrato. Depending on the effect it is attached to, it makes the signal rise and fall, or the delay time move back and forth. LFO settings will let you choose the speed (frequency) of the movement, and the direction (wave shape) of the sweep.

CREDITS

This material is offered freely to the Christian Churches; downloadable at Pietango.com

Text: *Original, by the Author, a Christian Recording Engineer.*

Images: *Designed by the Author. Some photographs were sourced from the Internet, then re-worked.*

Ever since the creation of the world, God's invisible attributes and divine nature have been evident. They are clearly understood through his workmanship, and all the wonderful things that he has made. Therefore, those who fail to believe and trust in him are without excuse, or defence. **Romans 1:20**

All of us have sinned and fallen short of God's glory, but God treats us much better than we deserve.

Because of Christ Jesus, he freely accepts us and sets us free from our sins. God sent Christ to be our sacrifice. Christ offered his life's blood, so that by faith in him we could come to God. **Romans 3:23**

If you declare with your mouth, "Jesus is lord," and believe in your heart that God raised him from the dead, you will be saved. For it is with your heart that you believe and are justified, and it is with your mouth that you profess your faith and are saved. **Romans 10:9**

For the Scripture (*Isaiah 28:16*) says, "Whoever believes in Him will not be disappointed." **Romans 10:11**

These things have been written so that you may believe that Jesus is the Christ, the son of God; and that by believing, and relying on him, you may have new life in his name. **John 20:31**