Mixers

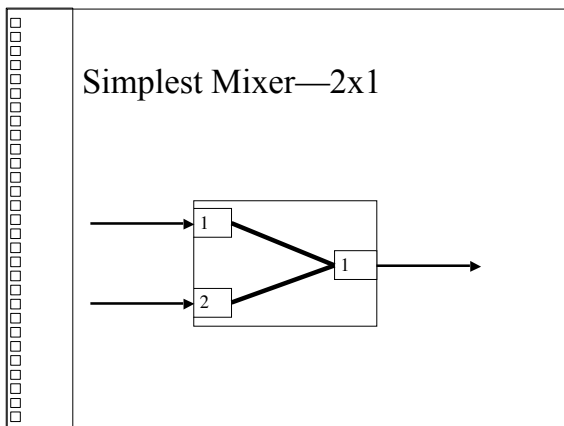## Definition

- Combines 2 or more inputs into 1 or more outputs
- Separate volume control of each input
- Separate volume control of each output

Simplest Mixer—2x1

Mixer Types-Recording

- Tracks often pass straight through during recording
- 1 Mic goes to 1 output
- Often called "tracking" consoles

Mixer Types-Mixdown

- Many tracks, usually 2 outputs
- Can be mode on recording console
- Automation commonly used and is getting cheaper

Mixer Types-Live

- Many inputs, fewer outputs
- Audio routed into "groups"
- Groups routed to mains

Mixer Types--Monitor

v Many outputs, many inputs
v Many modern consoles can do both

Physical/Electronic Relationship

v In an analog mixer, channel strip models signal flow
v In a digital mixer, all audio is processed digitally and the control surface is just control (no audio)

Mixer Schematic

Buss

Input Gain
Control

1

2

Output Gain
Control

Summing
Amplifier
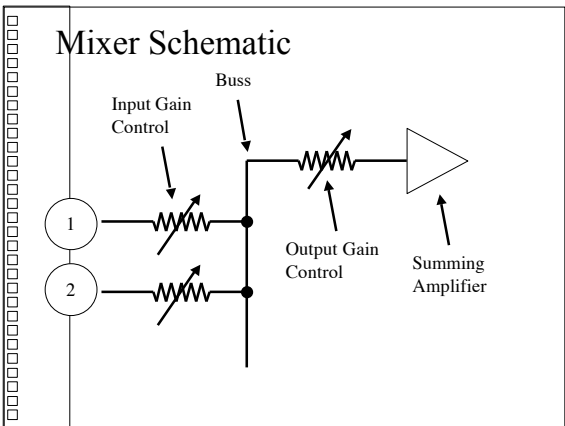
Mixer Size Terminology
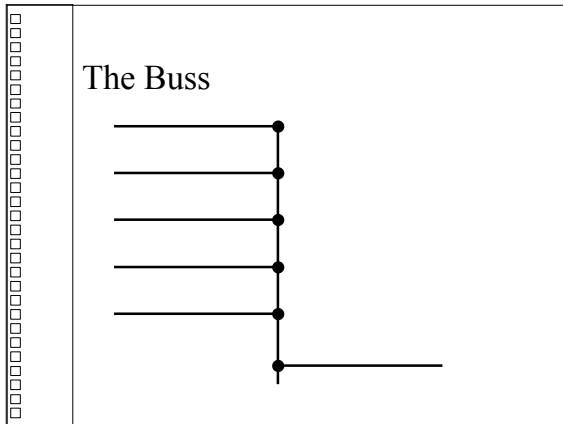
A mixer is described by the number of inputs times the number of outputs

8 x 2

4 x 1

16 x 4

etc

Compound Mixers

v Many mixer consist of multiple mixers arranged in series

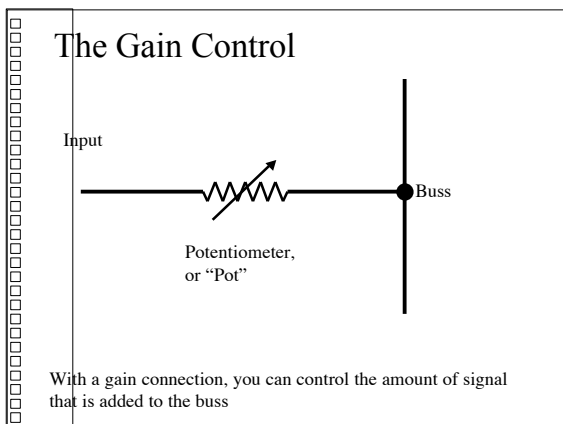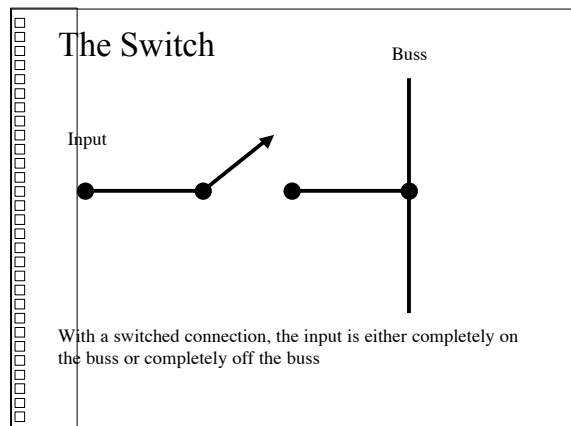## Sub Outs

16x4

4x2
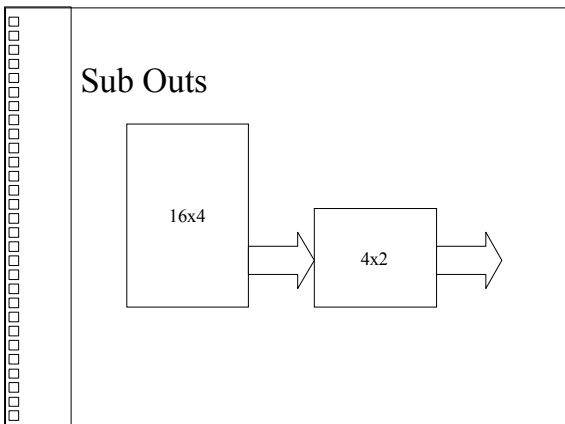
The Buss

The Buss Explained

- Each Output has its own buss
- Each Input is allowed access to each buss
- In some cases, there are specific inputs with limited buss access

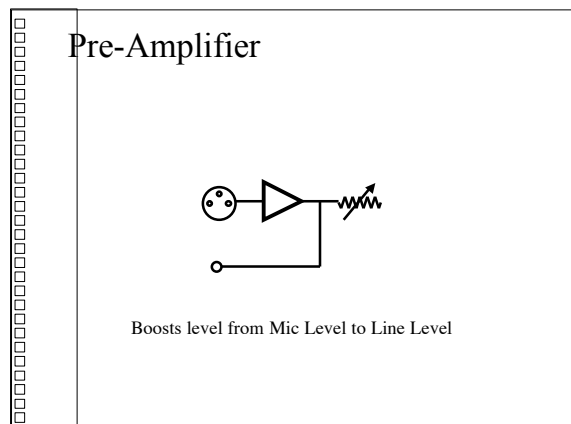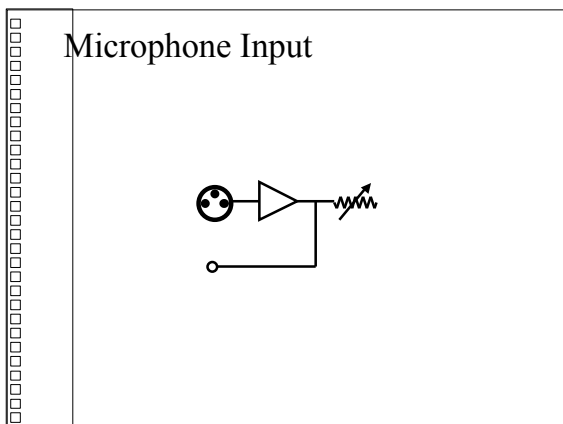## Two ways of assigning to the Buss

ν The Switch
ν The Gain Control

The Switch

Buss

Input

With a switched connection, the input is either completely on the buss or completely off the buss

The Gain Control

Input

Buss

Potentiometer, or "Pot"

With a gain connection, you can control the amount of signal that is added to the buss
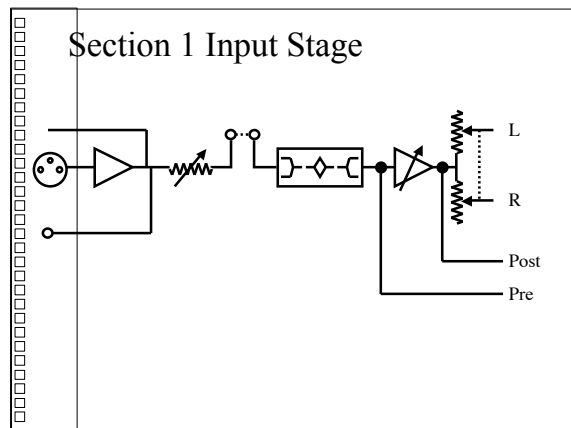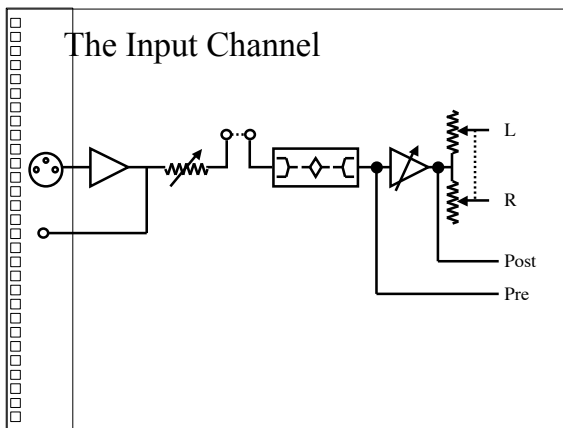
Metering

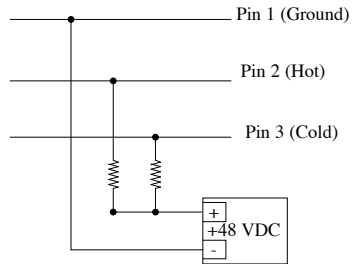ν Input Meters
ν Clipping
ν VU Meters

Mute

ν Leaves all settings intact, but "mutes" sound

Solo/Pre-Fade Listen
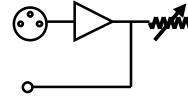
ν Allows operator to listen to one channel and mute all others, or listen to one channel before the "fader"

The Input Channel

Section 1 Input Stage

Microphone Input

Pre-Amplifier

Boosts level from Mic Level to Line Level

Phantom Power
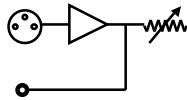
Pin 1 (Ground)

Pin 2 (Hot)

Pin 3 (Cold)

+
+48 VDC
-

Input Gain Control

Line Level input

Equalization

ν Covered in signal processing class later
ν Treble/bass controls

Main gain Control

ν Sets volume level

Post Fade Assignment

ν Assigns audio signal to bus
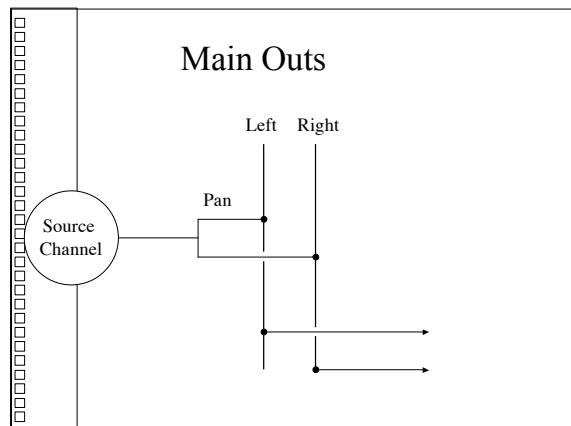
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Pan Control

v Like "Panorama", allows sounds to be placed left/right in stereo field

Types of Outputs

v Main
v Sub Mixes
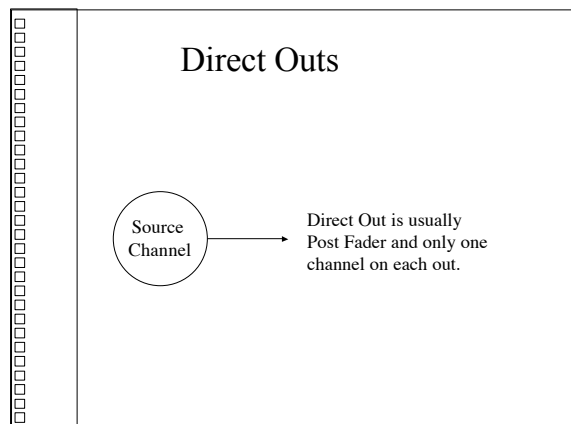v Auxiliary Mixes
v Direct Outs
v Matrix

Remember, an Out is an Out is an Out

v Do not get mislead by nomenclature.
v Determine the appropriate out by the signal path and required gain stages.

Main Outs

Left   Right

Source Channel — Pan

Main Outs

v Fed from a buss
v Switched

Direct Outs

Source Channel →   Direct Out is usually Post Fader and only one channel on each out.

Mixers

Matrix Outs

ν Types of outputs that have an array of individual controls.
ν Maximum control, but requires more adjustments, harder operate.

Matrix Layout.

Outputs

Inputs

Auxiliary Outs

L

R

Post
Pre

Aux Out—Used to feed:

ν Monitors
ν Effects (reverb, etc)
ν Backstage monitoring
ν Broadcast Mixes
ν Etc.

Aux Outs Pre/Post Fade

ν Pre-Fade—Before the fader, aux level set no matter where the faders are
ν Post-Fade—After the fader, aux level set dependent on level set by faders

Mixers