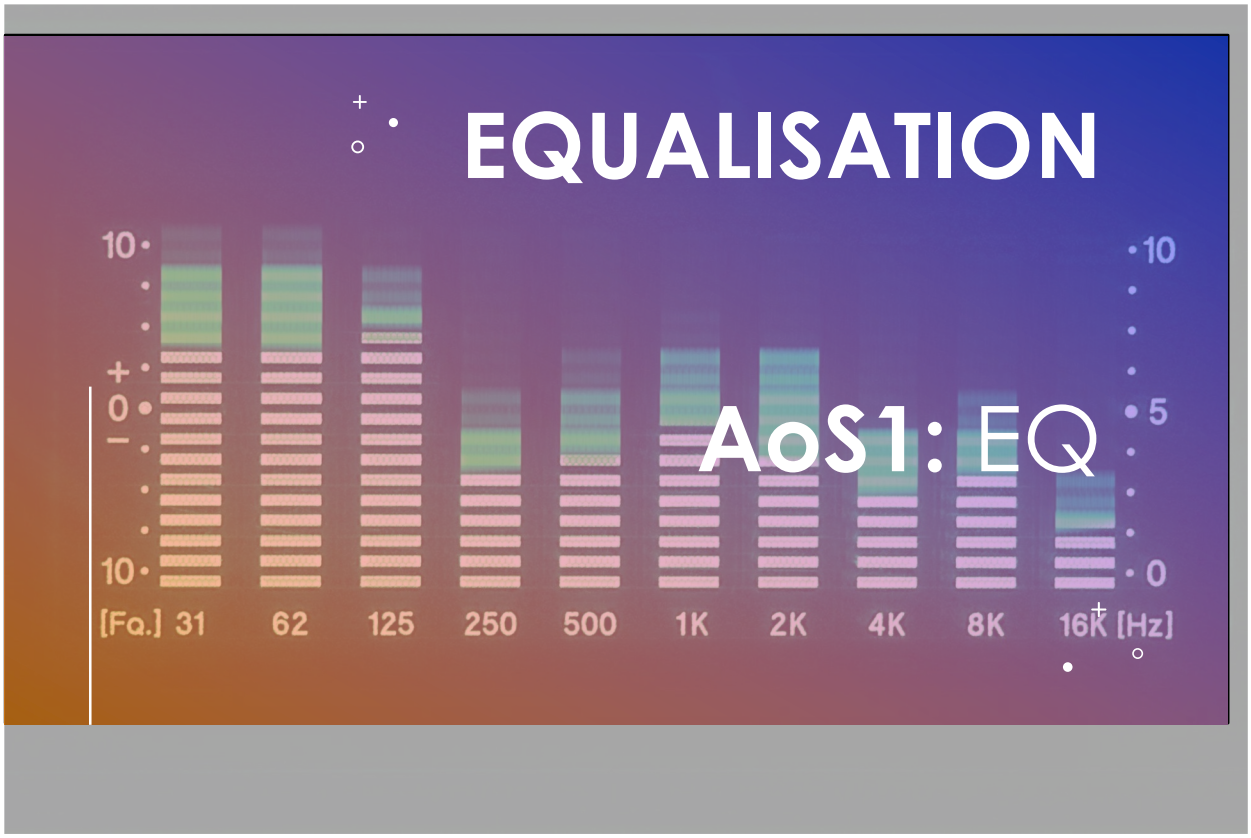
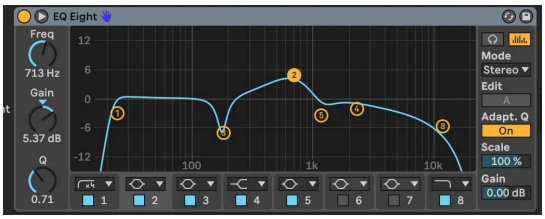

EQUALISATION
AoS1: EQ
10
+
0
−
10
[Fq.] 31
62
125
250
500
1K
2K
4K
8K
16K [Hz]
10
5
0

What is EQ?

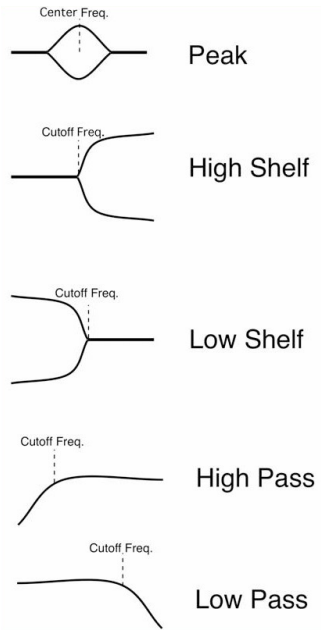
- Controls the volume level of different **frequency ranges** through the use of **filters**
- Can come in both **hardware** and **software** forms



- An EQ unit supplies a combination of various filters that can be used in conjunction with one another
- Hardware EQs are limited by the components used when designed and built
  - Space on the physical unit for controls
  - Still have desirable sonic qualities
- Software EQs (plug-ins) have almost limitless features and filter type combinations

Filters

- Lets some signal through without altering it but will **cut** or **boost** the level of a specific **frequency range**
- Common to see single filters as DAW plug-ins



- Filter examples: LP, HP, BP, Shelves
- Automation would be applied to control their individual parameters

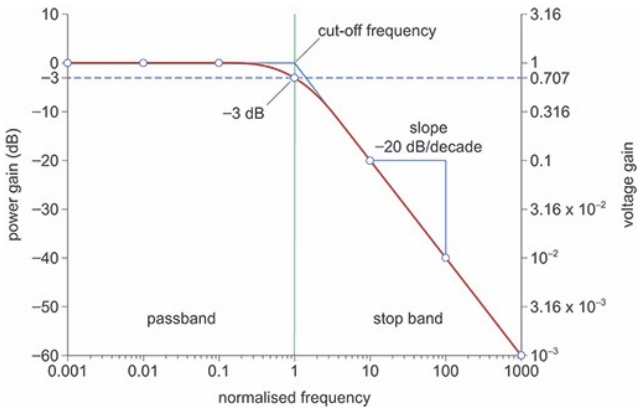
Filter Parameters

Parameter	Definition
Cut-off Frequency	Determines which frequencies will pass through the filter unaffected and which frequencies will be boosted/attenuated Measured at the point where there is a volume reduction of 3dB
Centre Frequency	Determines the frequency around which a band pass filter allows frequencies to pass through
Gain	Determines how much cut or boost is applied to the affected frequencies
Resonance	A narrow boost applied to frequencies around the cut-off
Q-Factor	The width of a band pass filter
Slope	Determines how sharply the filter will act at its cut-off frequency (measured in dB/Oct)

Resonance can sound 'whistly'
High Q-Factor = Small bandwidth = Narrow filter
dB/Oct = number of decibels removed per octave (1 octave = frequency doubled)

Low Pass Filters

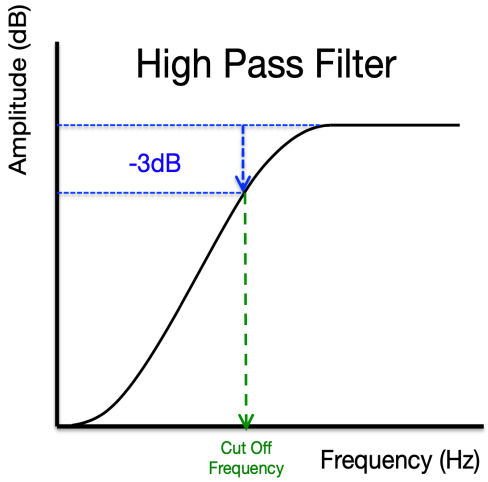
- Allows all frequencies below the cut off frequency through with no attenuation
- Cut-off frequency = point at which attenuation is -3dB



- Commonly heard in dance tracks to create a muffling effect that becomes clearer due to a gradual increase in the cut-off frequency
- Also used to create filter sweep effects, usually in combination with a resonant peak to help highlight the effect

High Pass Filters

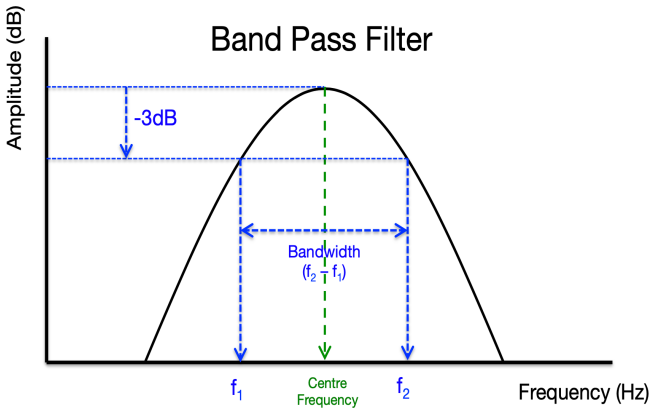
- Allows all frequencies above the cut off frequency through with no attenuation
- Cut-off frequency = point at which attenuation is -3dB



- Commonly used as rumble filters (when cut-off is set around 80-150Hz)
- Also used to reduce the effect of plosives and the proximity effect

Band Pass Filters

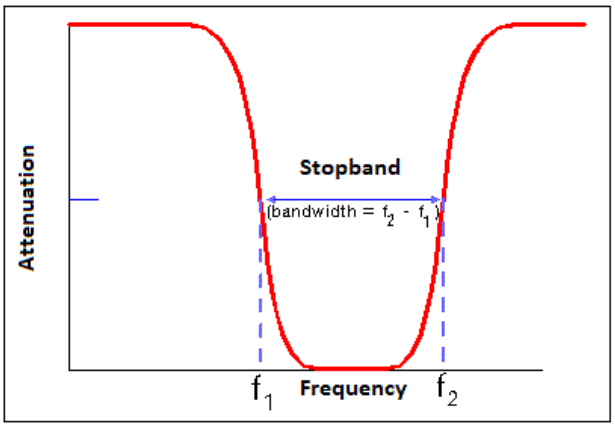
- Allows all frequencies within the specified frequency range through
- Amount of attenuation depends on proximity to centre frequency
- Width of the curve is dependent on the Q factor



- Used in wah pedals where the centre frequency is swept

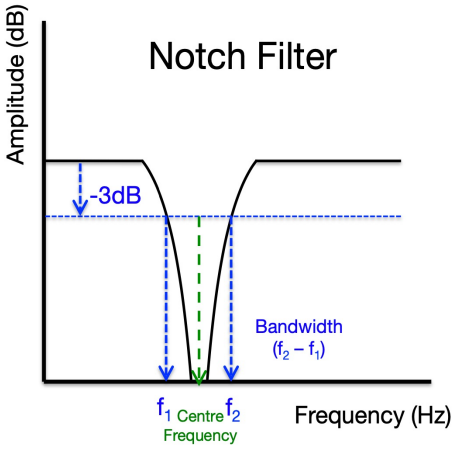
Band Stop Filters

- Allows all frequencies outside of the specified frequency range through
- Amount of attenuation depends on proximity to centre frequency
- Width of the curve is dependent on the Q factor



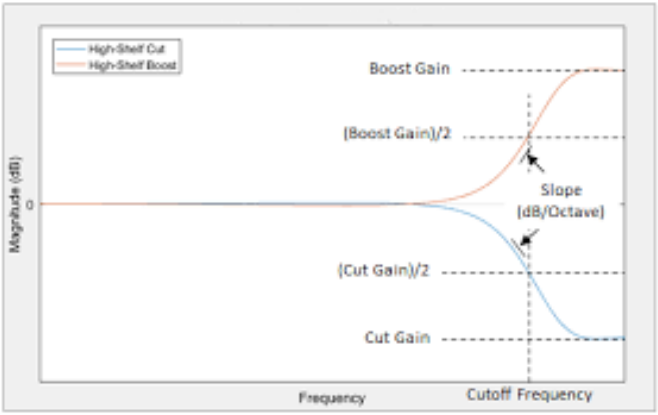
Notch Filters

- A band stop filter with a very high Q factor



Shelf Filters

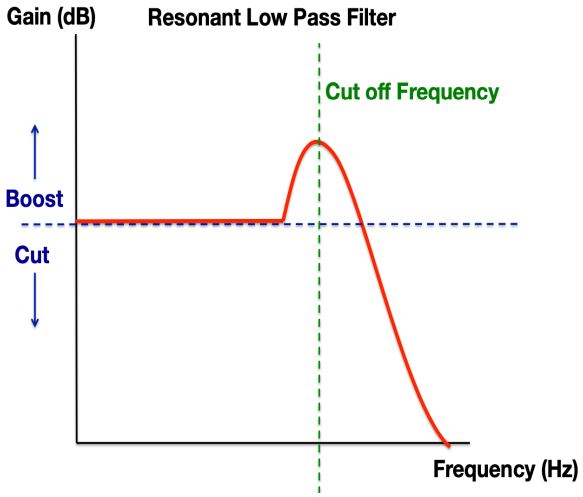
- Applies a boost or cut after or before a specified frequency



- Low shelf an be used to boost the low frequency content in instruments (bass guitar, kick drum)
- High shelf can be used to bring things forward in the mix

Resonant Filters

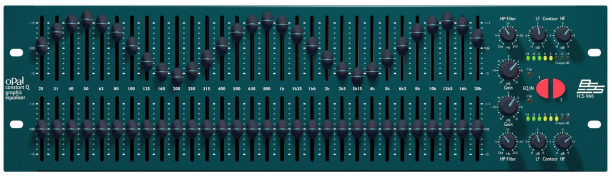
- Boosts the frequencies in close proximity to the cut-off frequency
- Q factor determines how wide the curve is
- Resonance can create a 'whistly' tone



When over used, can introduce self-oscillation (the filter sounds like it is generating a musical note)

Graphic EQ

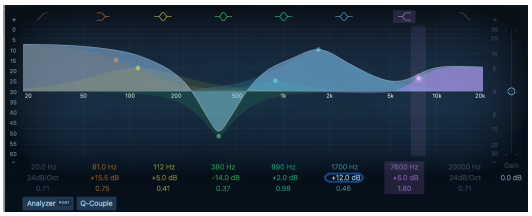
- Uses a bank of filters to individually cut/boost parts of the frequency spectrum
- Labels represent the **fixed centre frequencies** of each filter



- Named due to the heights of the faders creating a graph when being used
- Each filter also has a fixed bandwidth

Parametric EQ

- Provide **variable** centre frequencies to boost/cut around
- Allows you to change the bandwidth (Q-Factor)
- Can be used to attenuate resonant frequencies



Useful for targeting specific frequency ranges

Semi-parametric EQ = Parametric EQ with fixed Q-factor