Four Types of Audio Compressors and Their Applications

Here is a combined list of the four main types of audio compressors, along with descriptions of what they are suited for and examples of models:

FET (Field Effect Transistor) Compressors

Suited for: Punchy tones and a bold sound [1, 2]. They excel on fast-paced sounds like hi-hats or a drum set needing a compressor that can keep up [2]. FET compressors are great for bringing out the body of a sound [2]. They work well on drums, vocals, and guitars [2, 3]. They are particularly effective on aggressive performances [3] and transient-heavy material such as drums, acoustic guitars, and bass guitars [4]. They add colour, tone, and texture to a sound [1], imparting a warmer, brighter, and more aggressive tone [5]. They are known for their incredibly fast attack times, making them useful for clamping down on transients, especially when recording [1]. They can give an artist confidence by controlling dynamics and can provide confident and controlled performances on vocals or instruments [1]. They are not typically suited for master buses as they can be too choppy, bouncy, and reactive [2], or introduce aggressive harmonic distortion [6].

Models:

- 1176 limiting amplifier [1-3, 5-7] (Universal Audio 1176 [2, 5], Urei 1176 [3])
- Logic 1 (emulation of 1176) [7]
- Softube FET [2]
- Analog Obsession FETISH [2]
- JST Bus Glue Bold mode [6]
- Billy Decker Bus Glue Guitars Clamp [6]
- Billy Decker Bus Glue Vocals Push [6]
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VCA (Voltage Controlled Amplifier) Compressors

Suited for: Offering the most control and flexibility over attack, release, threshold, and gain reduction [1]. They are often appreciated for their precision, stability, and reliability [5, 8]. VCAs are a good choice for keeping loud transients or spikes in volume in check due to their aggressive gain reduction [2]. They can be very transparent and are great for individual tracks where you want to control dynamics without imparting too much tone [1]. They

are also frequently used on mix buses and for mastering due to their control, flexibility, and low distortion, adding punch and energy to mixes in a very transparent way [1, 5, 8]. They can be excellent on drum buses because of their fast and clean nature [4, 6]. However, depending on the design, they can also add character, warmth, brightness, and saturation [1].

Models:

- SSL style compressor [9] (SSL G Series [2], based on the SSL 4000 board [2], Waves plugins emulation [2], SSL bus compressor [5, 6, 8])
- API compressors (e.g., API 2500 [4-6, 8])
- dbx 160 [4, 6, 8]
- Neve compressors [1]
- Distressor by Empirical Labs [1]
- Acoustica TAN [2]
- Shadow Hills Mastering compressor (discrete VCA dynamics section) [8, 10]
- JST and Joel Wanisek Bus Glue RVCA based [6]

Optical (Opto) Compressors

Suited for: Providing a very clean, smooth, and musical sound with little to no distortion [3, 6]. They are known for compressing based on the average of a signal rather than fast transients, due to a delay caused by the light source and photocell [1]. They are a great choice for vocals, providing a rich colour and smooth compression, making them feel controlled and upfront [2, 10]. Optical compressors can also be used on mix buses or master buses for smooth, controlled compression [2]. They can be good for brass sounds, synths, and any sound that needs rounding off or smoothing out [2, 10]. They are generally not the best for material relying on initial transient response like hi-hats or full drum sets (unless on a bus) [6]. They tend to colour the signal slightly and make it brighter, though not as pronounced as a FET compressor [5].

Models:

- LA-2A [1, 2, 5, 6, 10, 11] (Teletronics LA2A [5, 10])
- LA3A [10]
- Tube Tech CL1B [6, 10]

- Waves Renaissance Compressor (R-Comp) [2]
- Waves R-Vox [2]
- Shadow Hills Mastering compressor (optical section) [10]
- JST Bus Glue Vocals Transparent and Bouncy modes [6]
- JST BG Guitars Tame mode [6]

Tube (Variable Mu/Delta Mu) Compressors

Suited for: Providing glue and warmth to mixes and subgroups due to their circuit topology [1]. They are often used on mixes and subgroups and can smooth out the average of a signal, such as vocals after a faster compressor [1]. While the compression itself can be transparent, the circuitry often imparts a lovely tone, warming up the audio [1]. They excel at gluing a whole mix together and are often used on mix buses or master buses to create a more smooth, rich, and controlled sound [2, 6, 12]. Their slower attack time helps preserve transients [1, 5]. They can add a unique kind of warmth and colour to the source [5, 12]. They can also work brilliantly on drum bus overheads or room mics, helping to open up the drum sound [13]. However, they are not ideal when you want punch or to solve particularly wild dynamics [13]. The ratio in these units increases with gain reduction, leading to a non-linear compression [12].

Models:

- Fairchild 670 or 660 [1, 5, 6, 13, 14]
- Manley Vari-mu [6, 13]
- Waves Tweak Child 670 [2]
- Klanghelm MJUC Junior [2]
- Sonimus Tuco [2]