



fTape

Multi-Mode Tape Machine
Plugin

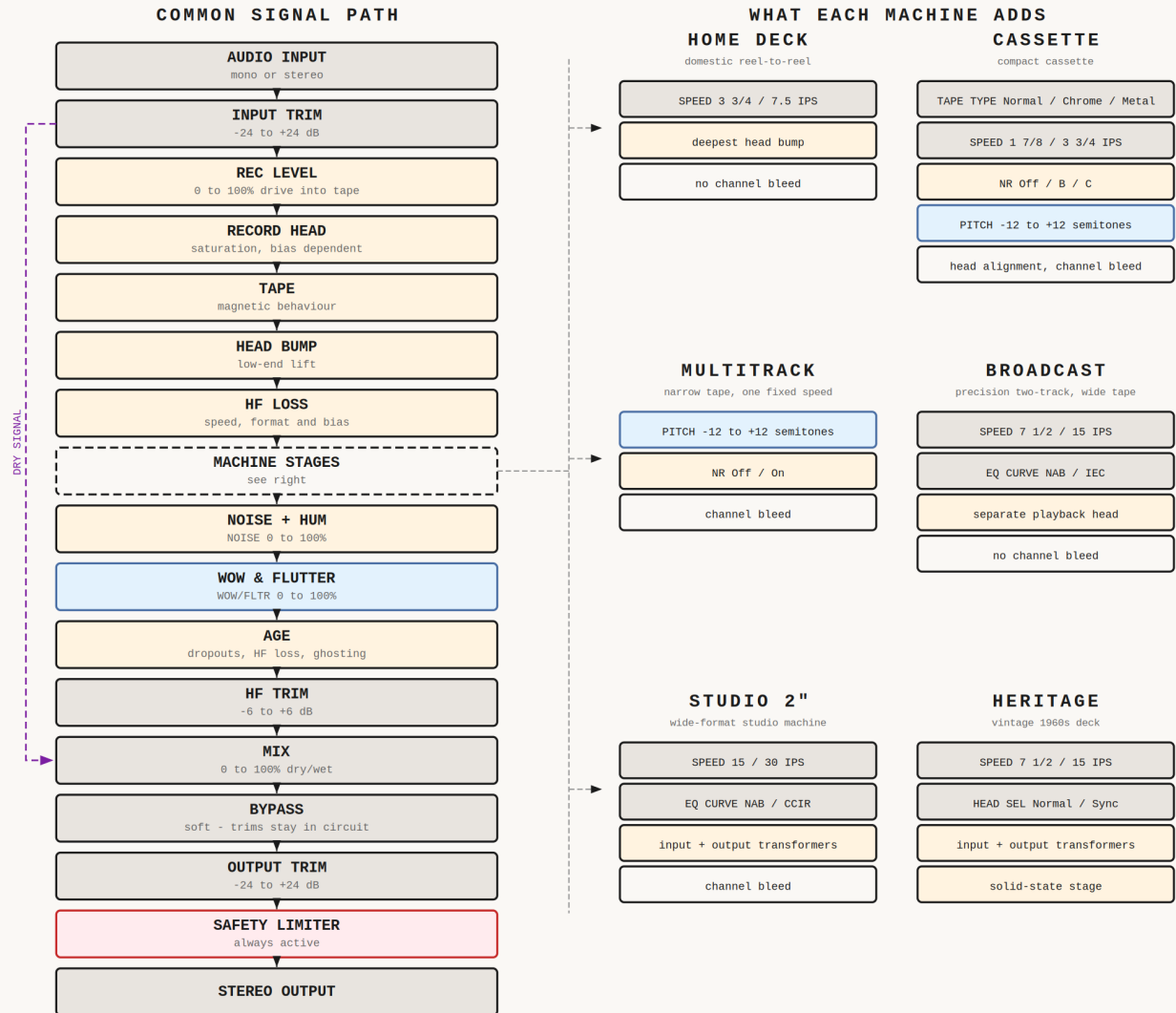
Product Manual

Build 1.0

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fTape - SIGNAL FLOW

HOME DECK · CASSETTE · MULTITRACK · BROADCAST · STUDIO 2" · HERITAGE



What fBox Is

fBox is a complete analogue mixing ecosystem - individual plugins, a universal rack processor, and a full 32-channel mixing console with built-in tape machine - built around a single idea: every piece of hardware that ever left a factory floor had its own personality, and your plugins should too.

Most plugin companies model hardware. They pick one unit, capture it as accurately as they can, and sell that one model to everyone. Your copy is identical to mine. The compressor on your kick is the same compressor on your vocal. It has always worked this way - and it is the reason in-the-box mixes sound in the box.

fBox is built on the opposite principle. Every plugin instance carries a unique serial-seeded analogue character, generated the moment it is created. Load three fComps in one session and you have three different compressors, each with its own voice. That serial is fixed to the instance forever - it never resets, and it travels with the session.

The choice is yours. Open a fresh instance whenever you like and it is a different unit with its own voice - or find one you love and keep it. Save it, recall it, and mix through it for as long as you like: the same character, every time. Learn how it sounds and it becomes an instrument you know. And a unit you keep is yours alone - its serial exists on no one else's machine, the same way a piece of hardware you buy is one specific unit and no other. Bought once, owned permanently, no subscription.

This is not emulation. This is character at the instance level.

What fTape Is

fTape is a six-machine tape processor from the fBox ecosystem. Each machine is a different piece of tape hardware with its own controls and its own voice, from a cheap domestic reel-to-reel to a professional studio machine on wide tape. It is not six plugins sharing a GUI: it is one integrated processor with six deeply modelled tape paths, each with its own saturation behaviour, transport character and noise floor. You pick a machine from the Mode selector in the header and the interface changes to show only that machine's controls.

The six machines are **Home Deck** (a 1970s domestic reel-to-reel at two speeds), **Cassette** (compact cassette with three tape formulations, switchable noise reduction and a pitch control), **Multitrack** (a semi-pro deck on narrow tape with a pitch wheel and switchable noise reduction), **Broadcast** (a precision two-track on wide tape with switchable NAB and IEC playback curves), **Studio 2 inch** (a professional machine on wide tape with transformers on the way in and out) and **Heritage** (a vintage 1960s studio deck with heavy iron, early solid-state electronics and a second playback head).

Everything in fTape interacts the way it does on real tape rather than the way a saturation plugin does. Driving the record level harder does not just add more distortion, it changes the character of it. Moving the bias reshapes the top end, the saturation and the magnetic behaviour at the same time. The wobble comes from a modelled transport, so it wanders and breathes rather than repeating. The hiss and the motor hum sit under everything, and the low-end bump sits where a playback head puts it. The machines that had noise reduction have its tracking errors too, and the machines that had transformers get their weight from them.

Every instance of fTape generates a unique serial number that defines its hardware character. The same serial seeds all six machines, so one unit's personality follows you from the Home Deck to the Studio 2 inch and back: this unit's bump sits where it sits, its top end gives out where it gives out, its transport wanders at its own rate. No two fTape instances sound exactly alike, just like no two real machines do. The serial is shown in the top-left watermark and is saved with your session.

fTape registers as an effect and runs in mono or stereo - it accepts a mono or stereo input and always delivers stereo out. Every control is automatable from your host, and the complete state of all six machines is saved with your session.

Getting Started

Sound working in a minute

1. Insert fTape on a track in your DAW.
 2. Pick a machine from the Mode selector. **Home Deck** is where fTape opens and the most obviously tape of the six.
 3. Play something. Every machine arrives with the tape already running, so you should hear it working straight away.
 4. Turn **Rec Level** up until it thickens the way you want, set **Output** to match, then A/B against **Bypass** to check you have improved things rather than just made them louder.
- If you hear nothing happening, check that Mix is above 0%, Bypass is off and Rec Level is up.

Tip: Start with Home Deck at 7.5 IPS, Rec Level around 55% and Mix at 100%. That is tape on a track without any argument about it. When you want something more obvious, drop the Speed switch to 3 3/4 and push Rec Level to 75%. When you want something less obvious, go to Broadcast at 15 IPS instead.

Rec Level sets the level as well as the sound

Rec Level is the main control on every machine, and it does two jobs at once. It drives the record head, which is where the saturation, the compression and the thickening come from - and it changes how loud the machine is. Low settings are quiet and clean, high settings are loud and thick, and fTape does not compensate for the difference.

Louder usually sounds better, so match your levels with Output Trim before you judge. Set Rec Level for the sound you want, then bring Output down until the output meter reads about where the input meter does, and only then decide whether you like it.

Important: Every recipe and setting in this manual gets louder as you dial it in. If you skip the level match you will conclude that everything sounds better, because everything does. Match first, judge second.

New to tape?

Tape cannot hold everything you give it, and almost everything people like about it follows from that.

Push it and the loud parts round off instead of getting louder. That is saturation, and it reads as warmth and weight rather than as distortion, because it happens gradually and mostly to the peaks. The transients settle down with it, which is where the glue people talk about comes from: tape flattens the difference between the loudest moment and the rest, so a busy mix hangs together.

The top end is never quite all there. Tape loses treble, more at slow speeds and on narrow formats, and that loss is a large part of why a slow cassette sounds like a slow cassette. HF Trim is there to put some of it back if you want it.

Underneath the music there is a noise floor - hiss from the tape and hum from the motors - and a transport that never runs at exactly the right speed. That instability is wow (the slow wander) and flutter (the faster shimmer). Both are flaws. Both are the reason tape sounds alive instead of rigid.

Start with one machine and learn it before moving on. The six here cover most of what tape can do, and they reward small moves more than big ones.

Tip: *If in doubt, set it where you like it and then take a third off. Tape colour is cumulative across a mix - four tracks with a little on each adds up to more than one track with a lot.*

Activation

The first time you load fTape it asks you to activate. Enter your email and click Send Verification Code for a 14-day free trial, or paste a licence key (it looks like FBOX-XXXX-XXXX-XXXX). Activation needs an internet connection once; after that fTape opens straight up.

Interface

fTape is laid out like the front of a tape machine. The transport fills the middle of the panel, the meters flank it, and the controls for the current machine sit in two rows underneath, each knob in its own labelled position. Switching machine changes those rows to match. The serial number and watermark sit at the top-left with the Unit button beside them, and the fTape nameplate is centred.

Across the header

Control	What it does
Quality	Eco, Studio or Master (see Quality).
Mode	Choose one of the six tape machines. The control rows change to match.
Unit	The unit menu - roll a new unit, save or recall one, and pin a default (see Units and Patch Cards).
FAULT (red)	Hidden unless invalid audio is detected. It stays lit until you clear it, so you cannot miss one. Click Reset Engine to clear it.
Reset Engine	Clears all internal DSP state on all six machines, and any fault. Your settings are kept.
Help	Opens the built-in help window.

Action buttons

Button	What it does
Reset	Returns the current machine's controls to their defaults. The Mode selector, the Quality tier, the serial and the other five machines are untouched.
Save Patch Card	Saves the whole plugin to a patch card file.
Load Patch Card	Loads a patch card (see Units and Patch Cards).

The control rows

The top row is the record path: Input, Bypass, the machine's own record-side controls, Rec Level, Bias and HF Trim. The bottom row is what comes back off the tape: Noise, Wow/Fltr, Age, Mix, the machine's own playback-side control and Output. The layout is the same on every machine, so once you know where Bias is you know where it is everywhere.

Drag a knob vertically to change it. Bypass, Speed, EQ Curve, Head Sel and Multitrack's NR are two-position switches, so a single click flips them. Tape Type and Cassette's NR have three positions and step as you drag.

Note: Double-clicking a knob sends it to zero. On Input, Output and HF Trim zero is the default, so double-click resets them. On the other knobs zero is the bottom of the range, so double-clicking Mix takes you fully dry and double-clicking Rec Level takes the drive off altogether.

The transport display

The reels are not decoration - they follow your session. They turn while the song is playing and stop when it is not, they run faster at the faster tape speeds and slow when a machine is pitched down, and the tape pack moves from one reel to the other as the song plays. They stop when Bypass is on, which makes Bypass visible from across the room. Cassette shows a cassette shell instead of reels, and each reel machine draws its own head block.

Window size

The small triangle in the bottom-right corner offers Small (75%), Medium (100%) and Large (150%). fTape opens at Medium and shrinks the window if the size you pick would not fit your display.

Signal Flow

Understanding the signal order helps explain why certain combinations of controls interact the way they do. Every machine shares the same common path and drops its own tape path into the middle of it. The signal passes through these stages in this order:

#	Stage	Notes
1	Audio Input	Mono or stereo accepted; the output is always stereo
2	Input Trim	Clean gain, -24 to +24 dB; sets how hard the record head is hit
3	Rec Level	The drive into the record head, and the main tape-colour control
4	Record Head	Saturation. How hard it bites and how bright it stays depend on Bias
5	Tape	The magnetic behaviour behind the saturation, also bias-dependent
6	Head Bump	The low-end lift. Where it sits depends on the machine and its speed
7	HF Loss	The top end tape does not keep; speed, format and bias dependent
8	Machine Stages	Noise reduction, EQ curves, transformers, head select, pitch - see the table below
9	Noise Floor	Tape hiss and motor hum, set by Noise
10	Wow and Flutter	Transport movement, set by Wow/Filtr
11	Age	Dropouts, extra HF loss, print-through and more channel bleed
12	Playback Head	The last of the tape colour on the way out
13	HF Trim	Your own brightness control, after the tape
14	Mix	Dry/wet blend, 0 to 100%
15	Bypass	Soft: mutes the tape so you hear the dry signal at a matched level (both trims stay in circuit)
16	Output Trim	Clean gain, -24 to +24 dB
17	Safety Limiter	Always active; catches runaway peaks so nothing can damage your output
18	Output	Stereo

Three things follow from that order.

Input Trim is applied before anything else, so it sets the level of everything downstream - which is why it doubles as a second drive control alongside Rec Level. Turn Input up and Rec Level down for the same amount of tape at a different level, or the reverse.

HF Trim sits after the tape rather than before it, so it puts brightness back that the tape has already taken off. It cannot un-saturate anything.

And because **Bypass** sits after the Mix in the chain, bypassing a machine leaves both trims and the unit's own noise floor in circuit, so the level does not jump when you toggle it. For a completely clean bypass, use your host's bypass instead.

Each machine replaces stage 8 with its own tape path. The machines and their key signal-path elements are:

Machine	Tape path	Key elements
Home Deck	Domestic reel, two speeds	Speed switch, the deepest head bump of the six, no channel bleed
Cassette	Narrow tape, three formulations	Tape Type, noise reduction encode and decode, pitch, head alignment offset, channel bleed
Multitrack	Narrow tracks, one fixed speed	Pitch, noise reduction encode and decode, channel bleed
Broadcast	Wide tape, three heads	Speed, NAB or IEC playback curve, separate playback head softening, no channel bleed
Studio 2 inch	Wide tape, transformer coupled	Input and output transformers, NAB or CCIR playback curve, channel bleed, print-through at all times
Heritage	Vintage wide tape, transformer coupled	Input and output transformers, early solid-state stage, Normal or Sync playback head, channel bleed

The Six Machines

fTape is six tape machines in one, chosen from the Mode selector. Each keeps its own independent settings, so switching machine never disturbs another machine's setup, and a patch card carries all six.

Machine	In a nutshell
Home Deck	A 1970s domestic reel-to-reel at two speeds. The warmest, darkest and wobblest of the reel machines.
Cassette	Compact cassette with three tape formulations, switchable noise reduction and a pitch control. Narrow, hissy and watery.
Multitrack	A semi-pro deck on narrow tape at a fixed speed, with a pitch wheel and switchable noise reduction. Early saturation, more hiss, audible bleed between the channels.
Broadcast	A precision two-track on wide tape with switchable NAB and IEC playback curves. Tight, quiet, and the cleanest stereo of the six.
Studio 2 inch	A professional machine on wide tape with transformers on the way in and out. The most headroom, the lowest noise, the most refined saturation.
Heritage	A vintage 1960s studio deck with heavy iron, early solid-state electronics and a second playback head. Dark and soft rather than accurate.

Tip: Two ways to choose. By era: *Heritage* for the 1960s, *Home Deck* and *Studio 2 inch* for the 1970s, *Cassette* and *Broadcast* for the 1980s, *Multitrack* for the end of the 1980s. Or by how much you want to hear it: *Studio 2 inch* and *Broadcast* are the subtle ones, *Home Deck* and *Heritage* are obvious, *Cassette* and *Multitrack* are somewhere between and get less subtle the moment you touch Age.

Common Controls

Every machine shares these controls, in the same place regardless of which machine is selected. The ranges are the same everywhere; the defaults differ per machine and are listed in each machine's own section, along with the controls that machine alone has.

Input

Range: -24 to +24 dB, in 0.5 dB steps. **Default:** 0 dB. Clean gain into the tape path. It sets how hard the record head is hit, so it works as a second drive control alongside Rec Level, and it is the right control for matching levels when you switch machine.

Rec Level

Range: 0 to 100%. **Default:** varies by machine. The main control: how hard the record head is driven. Low settings pass through comparatively clean and quiet, high settings saturate, compress and thicken. It changes the output level as well as the colour, so reach for Output after you move it.

Bias

Range: 0 to 100%. **Default:** 50% on most machines, deliberately lower on Multitrack and Heritage. Tape bias calibration, and the most interactive control here: it moves the top end, the saturation and the magnetic character all at once.

Under-biased, below the middle, is brighter, harder and grittier, with a little more noise. Over-biased, above the middle, is darker, smoother and more controlled. Small moves count, and a few percent is often all you need.

Tip: *Bias is the control that makes fTape sound like a machine rather than a plugin. If a track is dull through the tape, do not reach for HF Trim first - try dropping Bias five points instead. You get the brightness back with more bite rather than less, because you are changing how the tape behaves rather than filtering what it produced.*

HF Trim

Range: -6 to +6 dB, in 0.5 dB steps. **Default:** 0 dB. Brightness after the tape. Put back some of what the tape took off, or push it further down. This is a plain tone control and the only stage in fTape that does not model something.

Noise

Range: 0 to 100%. **Default:** varies by machine. The noise floor of the machine: tape hiss and the hum of its motors, and on Heritage the noise of its electronics too. At 0% it is silent. Under-biasing lifts it slightly.

Each machine has its own noise character - a wide-format machine is quiet and a cassette is not - and each unit has its own level of it, so two instances at the same Noise setting do not sit at quite the same place.

Wow/Fltr

Range: 0 to 100%. **Default:** varies by machine. Transport instability. Wow is the slow wander, flutter is the faster shimmer on top. Together they are the movement that stops tape sounding rigid. High settings are openly seasick.

The two channels share one transport, so the wobble is common to both rather than drifting them apart.

Age

Range: 0 to 100%. **Default:** varies by machine. How much life this tape has had. It brings in dropouts, extra high-frequency loss, more noise, print-through - a faint ghost of the audio arriving a moment after it played, printed across from the neighbouring layer of tape on the reel - and more bleed between the channels. At 0% the tape is fresh.

Age is quiet up to about 20% and then starts to bite; the dropouts and the ghosting both climb faster than the knob does.

Important: *Age is the one control that can make a track unusable rather than characterful. A dropout is a real momentary drop in level, so on an exposed vocal a high Age setting will eat words. On a synth pad or a drum loop it is free character. Set it last, and listen to a full pass rather than a few seconds.*

Mix

Range: 0 to 100%. **Default:** 100%. Dry/wet blend, for parallel tape - keep the dry signal intact and sit the tape underneath it.

Mix behaves the way you expect on every machine here: at 100% you hear the tape, and below that you hear your untouched signal alongside it.

Output

Range: -24 to +24 dB, in 0.5 dB steps. **Default:** 0 dB. Final level, always active, and the control you use to undo the level change that Rec Level made.

Bypass

Mutes the tape machine. This is a soft bypass: both trims and the unit's own noise floor stay in circuit, so levels do not jump when you toggle it. For a completely clean bypass, use your host's bypass.

Note: *fTape keeps a safety ceiling on its output, so a hard-driven setting cannot blow up your monitors. It can still get very loud - the ceiling is there to stop damage, not to master your track - so watch the output meter and use Output.*

Meters

Stereo input meters sit on the left (IL, IR) and stereo output meters on the right (OL, OR), showing the levels in real time. The input meters read after the Input trim, so they show the level actually going into the tape. Click a meter to switch it between Peak and RMS - the label reads PK or RMS to show which mode it is in, and the reading in dB sits underneath.

Peak follows the instantaneous highest sample level, so it jumps with every transient and shows the true maximum the signal reaches. RMS shows the average energy over a short window, so it sits steadier and reads much closer to how loud the signal actually sounds - the classic VU-style reading.

Tip: Use Peak to watch headroom and make sure nothing is clipping - keep the peaks below 0 dBFS. Use RMS to judge loudness and to balance one part against another by how loud they actually sound, since two sounds can share the same peak but sit at very different loudness. Peak for safety, RMS for balance. Aim to keep the input meter around the middle, peaks short of the top; if it is pinned, pull Input down, and if it is barely moving, bring it up.

The small red LED at the top of each meter lights when that side reaches full scale and holds briefly, so a peak that lasted one sample is still visible a moment later.

Tape changes the level by design, so expect the output meter to sit differently from the input one - a high Rec Level pushes it up, a low one pulls it down. Comparing input against output is the quickest way to check you have not quietly changed the level of the track: with both trims at zero and Rec Level where you like it, bring Output to whatever makes the two meters read about the same.

Home Deck

A domestic reel-to-reel from the middle of the 1970s: the sort of machine that sat in a living room rather than a studio, and it behaves like it. A big warm lump in the low end, a top end that gives up early, plenty of hiss and a transport that wanders. It is the machine to reach for when you want the tape to be obvious.

Home Deck is where fTape opens, and it is the one most people mean when they say they want something to sound like tape. It has the deepest head bump of the six and the least stable transport of the reel machines, so it colours in two directions at once: weight underneath and movement on top.

Controls

Speed

3 3/4 or 7.5 IPS. Default: 7.5 IPS. The whole personality of the machine hangs off this switch.

At **3 3/4 IPS** it is dark, saturated, noisy and wobbly, with the deepest and strongest low bump of the two. This is the lo-fi position, and on a bright source it is transformative rather than subtle.

At **7.5 IPS** it tightens up in every direction - brighter, quieter, steadier, with the bump higher and lighter - and still sounds unmistakably like tape. This is the default and the one to use when the track has to sit in a modern mix.

Defaults

Rec Level 65%, Bias 50%, Noise 22%, Wow/Fltr 18%, Age 8%, HF Trim 0 dB, Mix 100%.

Rec Level at 65% is already into the tape, so a fresh Home Deck is audibly coloured before you touch anything. Bias sits dead centre, so you have equal room to go bright and gritty or dark and smooth.

Character

Home Deck is the only reel machine here with no bleed between the channels, so despite being the roughest of the six it keeps a clean stereo image. What it does instead is move: at the default Wow/Fltr of 18% there is real wander in the transport, and on a sustained source - a pad, an organ, a held vocal note - you can hear it.

Above about 30% Age you get occasional dropouts, and the print-through appears: a faint ghost of the audio arriving a moment after it played. It grows quickly as Age rises, and at 3 3/4 IPS it arrives later than at 7.5 IPS, because the tape is moving more slowly past the layer above it.

Tips

3 3/4 IPS with Rec Level 80% and Bias 40% is the lo-fi setting: dark, gritty and loud. Vocals, synths, samples and anything that needs to sound like it came from somewhere else.

7.5 IPS with Rec Level 55% and Mix around 70% adds weight to a bus without anyone being able to point at it.

Tip: *If it gets too dull, lift HF Trim a decibel or two rather than backing the drive off. The dullness is the tape doing what tape does, and backing Rec Level off loses the thickening along with it. If you want brightness and more bite at once, drop Bias instead.*

Home Deck is the best of the six for the old-recording trick: Age 85%, Noise 45%, Wow/Filtr 55% at 3 3/4 IPS gives you dropouts, ghosting and deterioration. Put it on a loop rather than a lead vocal.

Cassette

Compact cassette: the narrowest tape here, running slowest, with the most hiss and the least stability of anything in fTape. It is also the most immediately recognisable - soft, hissy and faintly seasick.

Cassette is the machine with the most controls, because a cassette deck had the most decisions to make: which tape you put in it, whether you ran noise reduction, and whether the transport was any good. All three are here.

Controls

Tape Type

Normal, Chrome or Metal. Default: Normal.

Normal (the cheap ferric tape) is the warmest and mushiest: earliest to saturate, narrowest at the top, noisiest of the three. This is the cassette sound most people have in mind.

Chrome is the hi-fi and mixtape tape - brighter, with more headroom before it gives way, and noticeably less hiss.

Metal is the cleanest, widest and quietest. Use it when you want cassette character without the cassette penalty.

Speed

1 7/8 or 3 3/4 IPS. Default: 1 7/8 IPS. 1 7/8 is normal cassette speed and maximum lo-fi. 3 3/4 models a high-speed dubbing deck: wider at the top, less noise, less wobble and less saturation.

NR

Off, B or C. Default: Off. Noise reduction, with the tracking errors that come with it.

Off is the raw cassette with all its hiss. **B** is the gentler single-band system, fairly transparent, with a little high-frequency breathing behind loud material. **C** works harder and takes more hiss out, and its breathing is more obvious, especially on transients and as Age rises.

Every unit tracks slightly differently, so NR is one of the places you hear your own machine most clearly.

Pitch

Range: -12 to +12 semitones, in 0.1 semitone steps. **Default:** 0. Shifts the pitch of the signal.

Your audio does not speed up or slow down - the timing stays where your DAW put it - but the rest of the machine responds as though the tape were running slower or faster. Pitch down and the top end closes up, the hiss comes forward and the wow and flutter slow with it.

A few tenths of a semitone is the off-speed wobble of a tired deck, and it is convincing precisely because it is small. Large settings are sound design.

Defaults

Rec Level 50%, Bias 50%, Noise 20%, Wow/Fltr 15%, Age 0%, HF Trim 0 dB, Mix 100%.

Age starts at 0% here, unlike every other machine, so a fresh Cassette is a working deck with a new tape in it. Everything degraded about this machine is something you ask for.

Character

Bias is at its most dramatic on this machine, and most dramatic of all on Normal tape: a few percent either side of centre is clearly audible.

Two things happen here that do not happen on the reel machines. The heads are never perfectly square to the tape, so the right channel arrives a hair behind the left, and that gap widens with Age. It is part of the width and the haze of a cassette, and it is one of the reasons a cassette sounds wide without anything having been done to the stereo image.

And the two channels bleed into each other, more so as Age rises. Between them, those two effects mean Cassette is the machine most worth checking in mono.

Important: *If the mix has to fold down to mono - club systems, phone speakers, some broadcast - check Cassette in mono before you commit, particularly with Age up. The head alignment offset is doing exactly what a real deck does, which includes what a real deck does to a mono sum.*

Tips

Normal tape, Rec Level 78% and Noise 30% with NR Off is the cassette demo sound.

Chrome, Rec Level 45% and NR B is the hi-fi mixtape: warmth and width with the hiss kept in its place.

NR C with Age past 60% breathes and wobbles like a tape that has lived in a car.

Tip: *On anything that still has to be usable in a mix, Metal with Rec Level around 40% gives you the flavour without the fog. Cassette does not have to mean lo-fi - it is only lo-fi if you pick the cheap tape and the slow speed.*

Multitrack

A semi-pro deck from the end of the 1980s, running narrow tracks on quarter-inch tape. Narrow tracks saturate early, hiss more than wider formats and let the channels leak into each other. It has more grip than a consumer deck and more grit than a studio one.

This is the machine behind a great many records made in spare bedrooms, and it sounds like the compromise it was: a real transport and real electronics, working with less tape than the job wanted.

Controls

Pitch

Range: -12 to +12 semitones, in 0.1 semitone steps. **Default:** 0. The pitch wheel.

This machine's transport runs at one fixed speed, so Pitch is the only speed-related control it has. As on Cassette it shifts pitch without changing the timing of your audio, and the tape character follows the setting: pitch down and the machine darkens, the hiss lifts, the low bump drops and the wow and flutter slow.

NR

Off or **On**. **Default:** Off. Wideband noise reduction that squeezes the signal on the way to tape and stretches it back out on the way off.

It takes out a great deal of hiss, and in exchange it breathes: you can hear the noise floor move behind transients, particularly on sparse material. Off leaves you the raw tape - more hiss, cleaner transients.

Each unit's noise reduction overshoots by its own amount, so how much it breathes is part of your unit's character rather than a fixed number.

Defaults

Rec Level 62%, Bias 48%, Noise 16%, Wow/Fltr 6%, Age 5%, HF Trim 0 dB, Mix 100%.

Bias defaults just under centre at 48%, so this machine starts very slightly on the bright, gritty side of calibrated. That is deliberate and it is a good part of why it has more edge than the Broadcast machine.

Character

The bleed between channels is always there and gets worse with Age, along with dropouts, top-end loss and the print-through ghost. The transport is tighter than any consumer machine here - a servo capstan rather than a belt and a hope - so at the default Wow/Fltr of 6% it is steady, and you have to ask for movement to get it.

Tips

NR On with Rec Level 60% and Age 15% is the home studio sound: tight, hissless and slightly squeezed.

NR Off with Rec Level 80%, Noise 30% and Age 35% is dirtier and noisier, and closer to what those machines actually sounded like by the time anyone heard the record.

Tip: *On a bus, Rec Level 45% with Mix around 40% is a good way to get glue out of a machine that is really built for grit. The narrow-track saturation starts early, so you get the thickening at a lower drive than a wide-format machine would need - and the dry signal underneath keeps the transients.*

Broadcast

A precision two-track on wide tape, three-motor transport, three heads. This is the machine that sat between the home studio and the professional one: the transport holds speed properly, the noise floor drops away, the headroom is generous, and the separate playback head softens the very top rather than dulling it.

Of the six it has the cleanest stereo - it is the only machine here with no bleed between the channels at all - which makes it the one to reach for on a stereo bus or a mix.

Controls

Speed

7 1/2 or 15 IPS. Default: 15 IPS.

7 1/2 IPS is the workhorse speed: a stronger low bump, a little more noise and saturation, slightly less top.

15 IPS is the mastering speed and the sweet spot of the machine - the widest response, the lowest noise, the steadiest transport, and a lighter, higher bump.

EQ Curve

NAB or IEC. Default: NAB. The playback curve, and the signature control of this machine.

NAB puts real weight into the bottom - the warm, full sound most people mean when they say a mix sounds like tape. It is the American standard and the one that flatters.

IEC is flatter and leaner down there, brighter by comparison, and the one to choose when you want the tape without the extra bass. It is the European standard and the one that tells the truth.

Tip: *The quickest way to hear what NAB and IEC actually do is to put Broadcast on a bass or a kick and switch between them with everything else untouched. On a full mix the difference reads as warm or tight; on a bass it reads as several decibels in a place you care about.*

Defaults

Rec Level 58%, Bias 50%, Noise 10%, Wow/Fltr 4%, Age 3%, HF Trim 0 dB, Mix 100%.

Character

The bias sweet spot is wider here than on the consumer machines - changes are audible but never wild. The same is true of Wow/Fltr: even at moderate settings the transport barely moves.

The separate playback head is where the three-head sound comes from: a gentle softening at the very top of the range rather than a roll-off lower down, which is why

this machine can be quite coloured underneath and still sound open.

Tips

15 IPS, NAB, Rec Level 50% and Mix 70% is transparent warmth for a stereo bus.

The same thing with IEC instead is the tighter, more modern version, and the better choice if the low end is already where you want it.

7 1/2 IPS with Rec Level 60% and NAB adds weight and colour while keeping the transport steady - the most tape you can get from this machine without it starting to wobble.

Tip: *Broadcast is the machine to use when you want the mix to have been on tape rather than to sound like it was. Put it across the mix bus at 15 IPS, Rec Level 50%, and compare it against Bypass rather than against your memory - the difference is supposed to be small.*

Studio 2 inch

Shown in the Mode selector as Studio 2". The professional wide-format machine, and the one behind a great many classic records. Everything about it is bigger: the tape, the headroom, the low end.

It is one of the two machines here with transformers on the way in and out - Heritage is the other - and a good deal of the sound comes from them. Push it hard and it thickens rather than dirties.

Controls

Speed

15 or 30 IPS. Default: 15 IPS.

15 IPS is the standard professional speed, with a firm low bump and the classic character. This is what most of the records you are thinking of were recorded at.

30 IPS opens the top out, lifts the bump higher and lighter, tightens the transport further and trades a little warmth for a lot of clarity.

EQ Curve

NAB or CCIR. Default: NAB. NAB is the warmer, fuller curve with more weight underneath. CCIR is tighter and leaner in the low end and reads as more neutral. The gap between them is wider at 30 IPS than at 15.

Defaults

Rec Level 56%, Bias 50%, Noise 6%, Wow/Fltr 3%, Age 2%, HF Trim 0 dB, Mix 100%.

Character

This is the quietest and steadiest machine in fTape, with the widest bias sweet spot and by some distance the most headroom - Rec Level can go a long way up before it stops sounding composed.

The transformers are level-dependent, so the harder you drive, the more they contribute: a little extra weight underneath and a gentle polish on top. That is why this machine gets more expensive-sounding as you push it, where the consumer machines get dirtier.

A faint tape ghost sits behind the audio at all times on this machine, printed across from the layer of tape wound above it, and Age brings it up. Age also increases the small amount of bleed between the channels.

Tips

15 IPS, NAB, Rec Level 60% is the classic album setting, and it works on almost anything: drums, bass, vocals, a full mix.

30 IPS, CCIR, Rec Level 45% with Mix 80% is a light polish rather than an effect.
For something with obvious weight to it, 15 IPS, NAB, Rec Level 82% and Age 15%.
The transformers are working properly by that point.

Tip: *This is the machine to put on the mix bus if you only put one thing on the mix bus. At Rec Level 55 to 60% it does the two things a mix bus wants: it flattens the peaks a little so the loud moments stop poking out, and it puts weight under the whole thing. Set it early and mix into it rather than adding it at the end.*

Heritage

A studio machine from the middle of the 1960s, and the least accurate thing in fTape by a wide margin. Heavy iron transformers on the way in and out, early solid-state electronics with a little edge of their own, soft heads with a gentle saturation onset, and a bandwidth that runs out early. Dark, soft and coloured at every setting.

Heritage is the machine that changes a source rather than flattering it. If you want something to stop sounding like a modern recording, this is the fastest route in the plugin.

Controls

Speed

7 1/2 or 15 IPS. Default: 15 IPS.

7 1/2 IPS is the dark one: a big low bump, more saturation, more hiss, and a top end that closes in noticeably.

15 IPS opens it out and steadies it, and still sounds limited next to any later machine.

Head Sel

Normal or Sync. Default: Normal. Chooses which head you listen through.

Normal is the proper playback head: clearer at the top, with the standard low bump.

Sync listens through the record head instead, the way you would when overdubbing against an existing take. It is duller and warmer, with a lower, broader bump and a little added harmonic grain that grows as Age rises. Use it when Normal is too clean.

Defaults

Rec Level 64%, Bias 46%, Noise 18%, Wow/Fltr 12%, Age 10%, HF Trim 0 dB, Mix 100%.

Note: Bias defaults below centre at 46%, so Heritage arrives deliberately a little under-biased: brighter, grittier and more harmonically busy than a calibrated machine. Bring it up to 50% and above if you want it to behave. This is the only machine in fTape that ships out of alignment on purpose.

Character

Everything about this machine is more dramatic than the precision machines. Age does more damage here, and the sync head suffers faster than the normal one, so a high Age setting changes what the Head Sel switch does.

The channels bleed into each other. The transport moves more than any reel machine except the Home Deck. And the noise floor has three separate voices in it - hiss, motor hum and the electronics themselves - which is why Heritage at Noise 18% is busier

underneath than Broadcast at the same setting.

Tips

Leave it near its defaults and put a vocal through it - the defaults are set to that 1960s studio sound, and Rec Level 62 to 64% is where it wants to be.

7 1/2 IPS, Sync, Rec Level 70% and Age 25% is darker, softer and further back in the room. Good for anything that needs to sound like it is behind the rest of the mix rather than in front of it.

7 1/2 IPS with Noise 35%, Wow/Fltr 30%, Age 55% and Sync sounds like a machine well past its service life.

Tip: *Heritage and a bright modern synth is the pairing worth trying first. The bandwidth limit does most of the work, the transformers put weight under it, and the under-biased default keeps it from turning to mud. Whole tracks have been rescued from sounding too new by exactly this.*

Recipes

Named starting points. Each one begins from a freshly reset machine, so pick the machine first, then hit Reset - Reset only clears the machine you are on. Change only the controls listed; everything else stays at that machine's defaults.

Every recipe changes the output level. Set Output to match before you judge the sound.

Home Deck

Recipe	Settings	What you get
Warm glue	Speed 7.5, Rec Level 55, Mix 70	Weight and cohesion on a bus, with the transients still living in the dry signal. The safest thing in this list.
Charity shop tape	Speed 3 3/4, Rec Level 80, Bias 40, Noise 35, Wow/Fltr 40	Dark, gritty and openly wobbly. Vocals, synths, samples.
Found tape	Speed 3 3/4, Age 85, Noise 45, Wow/Fltr 55	Dropouts, ghosting and deterioration, for sound design. Put it on a loop, not a lead vocal.

Cassette

Recipe	Settings	What you get
Cassette demo	Tape Type Normal, Rec Level 78, Noise 30	NR stays Off. The bedroom demo sound.
Hi-fi mixtape	Tape Type Chrome, Rec Level 45, NR B	Cassette warmth and width with the hiss kept in its place.
Car tape	Tape Type Normal, Age 70, Wow/Fltr 45, NR C, Pitch -0.3	Breathing, wobble and a machine losing its grip.
Pitched down	Pitch -5.0, Tape Type Normal, Noise 25	Down a fourth, darker and hissier, with the wobble slowing to match.
Usable cassette	Tape Type Metal, Rec Level 40, Noise 8	The character without the fog, for a track that still has to sit in a modern mix.

Multitrack

Recipe	Settings	What you get
Home studio	NR On, Rec Level 60, Age 15	Tight, hissless and slightly squeezed. The spare bedroom sound.
Grit and hiss	NR Off, Rec Level 80, Noise 30, Age 35	The same machine with nothing hiding its noise floor.
Narrow-track bus	NR On, Rec Level 45, Mix 40	Early saturation under a clean signal, without the hiss coming with it.

Broadcast

Recipe	Settings	What you get
Transparent warmth	Speed 15, EQ Curve NAB, Rec Level 50, Mix 70	A stereo bus that sounds like it went through something.
Lean and tight	Speed 15, EQ Curve IEC, Rec Level 55	The same control without the extra bottom end.
Slow-speed broadcast	Speed 7 1/2, EQ Curve NAB, Rec Level 60	More bump and more colour, with the transport still steady.

Studio 2 inch

Recipe	Settings	What you get
Classic album	Speed 15, EQ Curve NAB, Rec Level 60	The default sound of professional tape. Works on almost anything.
Mix bus	Speed 15, EQ Curve NAB, Rec Level 55, Mix 100	Set it early and mix into it. Peaks flatten, weight arrives, nothing announces itself.
Mastering polish	Speed 30, EQ Curve CCIR, Rec Level 45, Mix 80	A light polish - check it against Bypass.
Driven 2 inch	Speed 15, EQ Curve NAB, Rec Level 82, Age 15	Thick, compressed and expensive, with the transformers working.

Heritage

Recipe	Settings	What you get
Sixties studio	Rec Level 62	Nothing else. The defaults are already the sound - try a vocal.
Sync head warmth	Speed 7 1/2, Head Sel Sync, Rec Level 70, Age 25	Darker, softer and further back in the room.
Well past its prime	Speed 7 1/2, Head Sel Sync, Noise 35, Wow/Fltr 30, Age 55	Dropouts, wobble and a closed-in top end.

Tip: Recipes are starting points, not destinations. The three controls worth moving after you have dialled one in are Rec Level (how much tape), Bias (bright and gritty against dark and smooth) and Mix (how much of the original you keep). Age and Noise are seasoning; add them last and less than you think.

Automation

Every on-screen control on every machine is exposed to your host and can be written and read through its automation lanes like any other parameter, including the Mode selector itself. Automating the mode selector is a real technique rather than a curiosity - switching from Studio 2 inch to Cassette for a middle eight is one gesture in one lane.

All six machines' controls are in the host's parameter list at once, not just the machine you are looking at, so they are prefixed to keep them apart: HD for Home Deck, Cass for Cassette, MT for Multitrack, BC for Broadcast, S2 for Studio 2 inch and HRT for Heritage.

The Quality selector is deliberately kept off the automation list. It is a CPU and character setting for the unit rather than a mix move, and having it in every automation lane list was more clutter than help. It is still saved and recalled with everything else.

fTape's complete state, including all six machines, the active machine and the serial, is saved with your session.

fTape reports a small fixed latency to your host, which compensates for it automatically. All six machines report the same latency whether or not a pitch control is in use, so switching machine mid-session never shifts your timing.

Tip: *The controls worth automating are not always the obvious ones. Rec Level is the big one - ride it up for a chorus and the track thickens and settles at the same time. After that: Mix, to bring the tape up under a section and take it away for the verse; Age, for a single degraded bar; Pitch on Cassette, for a slow sag into a downbeat; and the Mode selector itself, if you want the sound of the tape machine changing rather than the tape.*

Units and Patch Cards

fTape's character lives in its serial number. There are two ways to keep and move your work: units (the character) and patch cards (the whole setup).

The unit menu

A unit is this machine's character on its own - its serial and the analogue voice that serial produces, with no settings attached. The Unit button in the header opens the menu:

Menu item	What it does
New Unit	Roll a fresh unit with a new serial and a new voice.
Save Unit...	Save the current unit so you can recall it later. Saved units live in Documents/fBox Units/fTape.
Load saved unit	Recall a unit you saved, or browse for a unit file.
Recall my pinned unit	Jump back to your pinned default.
Pin this unit as my default	Make this unit the one every new instance opens with - this is how you keep one unit for good.
Use a new unit each time	Go back to a fresh unit on each new instance.

Patch cards

A patch card is a portable copy of the whole plugin - the serial and every setting across all six machines - written to a single file, so one card carries your entire fTape setup. Save Patch Card writes the current plugin to a card (a .json file) you choose the home for. Load Patch Card reads one back in, and if the card was saved on a different unit it asks how to bring it in:

Option	What it does
Recall Unit	Bring back the exact unit the card was saved on - its character and all its settings.
Apply Settings Only	Keep your current unit's character and drop the saved settings on top.

A patch card carries its identity, so a card saved for a different fBox product is refused with a note. The Reset button, by contrast, clears only the current machine's controls back to their defaults and never touches a card.

Important: *A unit is the character; a patch card is the character plus everything you set on top of it. Both save the serial, so the exact voice comes back with them.*

Quality

The Quality selector sets the processing quality of the analogue stages:

Tier	Use
Eco	Lowest CPU. Sounds great for tracking and dense sessions.
Studio	The sweet spot for mixing. Richer saturation and enhanced quality on the analogue path. The default.
Master	Maximum quality. For final mixes and mastering.

Tip: *Studio is the right choice for normal use. Drop to Eco if your computer is struggling; switch to Master for a final mix or master.*

fTape and the fBox Suite

fTape is a DAW plugin, and that is deliberate: it is the only fBox effect that does not load into the fBox Console or the fBox Rack, because both of those already have tape of their own. The fBox Console has a sixteen-track tape machine built into the desk, and the fBox Rack has its own tape mode. Put fTape on tracks, buses and mixes in your DAW; reach for the Console or the Rack when you want tape as part of a larger signal path.

The rest of the range does load anywhere. fComp, fEq, fPre, fSat, fMod, fVerb, fDelay and fDrone all run as plugins in a DAW, as inserts on a channel or bus in the fBox Console (both the plugin and the dawless Standalone application), and in a slot of the fBox Rack. All of them are built the same way as fTape, with the same serial-seeded hardware character, and all of them are bought once and owned permanently.

Performance and CPU

The quality of the analogue stages costs CPU. fTape gives you the same Eco / Studio / Master control the rest of the range uses, so you can mix light and render heavy.

Mix light, render heavy

Mix at Studio, or drop to Eco if your machine struggles - the sound still plays, just at lighter quality. Then, when you bounce, switch to Master and let your DAW render. The render is offline, so it takes as long as it needs and comes out at full Master quality however much the live playback stuttered. Close editor windows you are not using, and freeze or bounce the track when you want the heavy processing to run offline.

What fTape Writes To Your Computer

For transparency, here is everything fTape writes and where. It writes nowhere else, and sends nothing anywhere unless you choose to.

Folder	Contents
Documents/fBox/Diagnostics	Plain-text diagnostic logs, kept so a crash can be worked out afterwards. There is a folder per product.
Documents/ fBox Units	Your saved units, so you can find, back up and share them.
AppData/Roaming/fBoxAudio (Windows)	Your licence, and a small settings file recording which unit you have pinned.

Patch cards go wherever you save them. The plugin's own state lives in your session, not in a file of its own. Nothing is filed away somewhere you did not pick, and nothing is written to your Desktop.

When something goes wrong

Diagnostics are written automatically as fTape runs and survive a crash or freeze. If you hit a problem, zip the whole Documents/fBox/Diagnostics folder and email it to support@fboxaudio.com - send the entire folder, since what else was running alongside fTape often explains the problem. Tell us what you were doing, what you expected, and what happened. The logs are plain text; you are welcome to read them, but you do not need to.

If you hear clicks or dropouts, raise your host's buffer size (Master quality at a small buffer is the most demanding). If a fault ever appears, the red FAULT indicator and the Reset Engine button clear it without a reload; if it keeps returning, switch the Quality tier and back, or reload the plugin. If you cannot hear the tape, check that Mix is above 0%, Bypass is off and Rec Level is up. If you are hearing momentary drops in level you did not ask for, check Age - dropouts are a modelled fault and they climb quickly above about 30%.

Analogue Character

Every instance of fTape generates a unique serial number, shown in the top-left watermark. It defines the unit's hardware character across the whole signal path, and it shapes every one of the six machines.

On real analogue hardware, no two units from the same line sound identical. One machine is slightly warmer on the bottom, another holds the highs a little longer. The point where the tape starts to compress sits in its own place. The wow and flutter have a different rhythm. The hiss underneath sits at its own level and the motors hum at their own pitch, one channel runs a whisker louder than the other, and the noise reduction on the machines that have it tracks its own way. It is the same model, but it is not the same machine.

Put two fTapes on the same setting and listen to them side by side. The bump is not in quite the same place, the top end does not give out at quite the same point, and the transports wander against each other rather than together. Cassette is where you will hear it most - consumer cassette decks were built to a price and varied wildly, and each instance has its own.

The same serial seeds all six machines, so your unit's personality follows you from the Home Deck to the Studio 2 inch and back. Roll a new unit and all six change together.

fTape models these variations across every machine. No single one is obvious in isolation; the cumulative effect is what gives each unit its voice. The same serial always produces the same unit, different serials produce different units, and the serial is saved with your session and with any unit or patch card you keep.

Tip: *You cannot dial a unit's character to order any more than you can a real one - but you can learn it, and you can keep it. Find one you love, pin it, and it is the machine you open every time. If you want two identical units, save a patch card from one and load it on the other with Recall Unit - the serial and all its character transfer with the card.*

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