Ensemble

A divide-down string machine whose four string sections each sit left, centre, right or on both sides, each place with its own three-phase ensemble.

> **A Lab plug-in.** The Lab is where new GFX plug-ins are built in the open: they may change sound or controls between versions.

Overview

Ensemble is a string machine in the spirit of the classic 70s string synths. Like the originals, it uses twelve master oscillators and divides them down for every octave, so every key can sound at once, nothing is ever cut off, and all the notes of the same name are locked in phase.

Four string sections are mixed together: VIOLIN (a bright 8'), VIOLA (a mellow 8'), CELLO (16') and BASS (16' plus 32', on the lower keys only). Each key has its own simple envelope: ATTACK fades it in, RELEASE lets it ring on after you let go. The ENSEMBLE - three delay lines swept by a slow and a fast wobble, 120 degrees apart - turns the plain, buzzy oscillators into the lush, shimmering string sound.

This Lab version **places each section in the stereo field**. Every section has L, C and R keys: left, centre or right, or L and R together to play it on both sides at once, the two sides gently detuned against each other. Each place has its own ensemble, so a section on the left stays on the left instead of being smeared across the field by one shared chorus - violins on one side and cellos on the other, as an orchestra sits. With every section at C and DRIFT at 0 it sounds exactly as the Stable Ensemble.

Reach for it for

- Lush 70s and 80s string pads with real left-right depth
- Orchestra-style seating: violins left, violas centre, cellos and basses right
- Wide, gently beating strings with a section on both sides
- Slow swells and evolving backgrounds
- Disco string stabs
- Dark cello and bass drones

Playing it

Ensemble is an instrument: it has no audio input and makes its sound from MIDI.

1. Insert Ensemble on a track.
2. Arm the track for recording and set its input to your MIDI keyboard (or draw notes in a MIDI item).
3. Play. The MIDI light glows while notes are sounding, and the display shows how many keys are sounding.
4. Try the Orchestra Seating preset, then move the sections about with their L, C and R keys.
5. If you use a multi-channel MIDI setup, set CHANNEL in the MIDI section; OMNI listens to all channels.

There is no limit on how many keys sound at once. It responds to all-notes-off (CC120 and CC123); incoming MIDI is passed on down the chain.

Controls

The header

PRESETS, arrows and display	PRESETS (or a click on the display) opens the list of factory presets; the arrow keys step through them. A preset sets the STRINGS, ENSEMBLE, placement and TONE controls; TUNE, the MIDI channel, DRIFT, OUTPUT, SAT, the output stage and the stereo controls are left as they are. The last entry resets everything to the defaults. The presets can also be chosen from REAPER's parameter list (Preset), for screen-reader users.
MIDI	Lights when a note arrives and while keys are sounding.
S / M / L	Panel size: small, medium or large. The panel also scales to fit the plugin window.
?	Opens a pop-up with the design credit, the GFX website address and the address of this manual. Click anywhere to close it.

The display

On the left, the three ensemble wobbles moving, ENSEMBLE THREE-PHASE (or ENSEMBLE OFF), and KEYS: the number of keys sounding. On the right, the stage: L, C and R columns with each section's name (VLN, VLA, CEL, BAS) in the place it sits - in both L and R when it plays on both sides. A section turned down to 0 is shown dimmed.

ENSEMBLE

ON	Switches the ensemble on or off. Off gives the dry, buzzy oscillators.
DEPTH	How far the delay lines are swept, 0 - 100%. More depth gives more shimmer and detune.
SPEED	The speed of both wobbles, 25 - 200% of the standard rate (100%).
WIDTH	The stereo width of each ensemble, 0 - 100%. At 0 each place is a point; a section on the left or right is always a little narrower than one in the centre, so it stays on its side.
SPREAD	How far out the left and right places sit, 0 - 100% (70% by default). At 100% they are hard left and hard right; at 0

	everything is in the centre.

STRINGS

VIOLIN	The level of the bright 8' section, 0 - 100%.
VIOLA	The level of the mellow 8' section, 0 - 100%: softer and more hollow than the violin.
CELLO	The level of the 16' section (an octave down), 0 - 100%.
BASS	The level of the 16' and 32' bass section, 0 - 100%. It plays only on the keys below C3 (MIDI note 48).
L / C / R	Where each section sits. C puts it in the centre. L and R are switches: light L for left, R for right, or both for both sides at once, the left copy a little flat and the right copy a little sharp (see DETUNE) so they beat gently, like two players. Turning off the last of L and R puts the section back in the centre. A move crossfades over 15 ms, so it never clicks, even with notes held.
ATTACK	How long each key takes to fade in, 5 - 2000 ms. Short for stabs, long for swells.
RELEASE	How long each key rings on after you let go, 50 - 5000 ms.
VELOCITY	How much your playing dynamics matter, 0 - 100%. At 0 (default) every note plays at the same level, like an organ, as on the originals.
DETUNE	How far apart the two sides of a section with L and R both lit are tuned, 0 - 20 cents (5 by default): half of it flat on the left, half sharp on the right. At 0 the two sides are in tune.

VOICE

TONE	A low-pass tone control on the whole sound, 0 - 100%. Lower is darker.
TUNE	Fine tuning, -50 to +50 cents.

MIDI

CHANNEL	The MIDI channel Ensemble listens to: OMNI (all) or 1 - 16.
SOUNDING	The number of keys sounding.
PANIC	Stops every key at once.

MASTER

DRIFT	See Drift below.
SAT	Band saturation on the way out, 0 - 100%: only the lows and highs are saturated (the mids stay clean), with a soft curve that loosens as the level rises.
OUTPUT CLIP	A soft clipper on the output (always on) catches overs at the ceiling.
MONO	Makes everything below the set frequency mono, 20 - 500 Hz (fully left = OFF). Use it to keep the low end centred.
WIDTH	Widens the stereo image above the MONO frequency, from +0% up to +100% (twice the side signal).
OUTPUT	The output level, -24 to +12 dB.
OUT meters	Output level, left and right.

Drift

DRIFT (0 - 100%, 25% by default) makes the three places sound like three separate machines breathing. The left, centre and right ensembles each wander slowly in speed and depth on their own, so the stereo picture moves gently; each of the twelve note names drifts a few cents on its own (up to 8 cents at 100%), while every octave of a note stays locked to it, as on a divide-down machine; and the whole instrument wanders slowly in pitch and tone. At 0 nothing moves.

Presets

Most presets place the sections apart. Where sections sit apart their levels are set a little lower, as they sound fuller than the same sections in one place, so every preset plays at about the same loudness.

Classic Strings	The default: all four sections in the centre, as on the original machine, a 150 ms attack, a 0.9 s release and the ensemble on.
Violins Only	Just the violins, on both sides at once (7 cents apart), a quick attack, a deep, slightly faster ensemble and a brighter tone.
Dark Cellos	Mostly viola, cello and bass with little violin: violas left, cellos right, violins and basses in the centre, a slow attack, a long release and a darker tone.
Space Pad	Violins and violas on both sides (10 cents apart), cellos and basses in the centre, a slow 0.9 s attack, a 4 s release and a deep, slow ensemble, SPREAD at 90%.
Disco Stabs	Violins left and violas right, with the cellos in the centre, a fast attack and short release, and some velocity response for accents.
Full Orchestra-ish	All four sections with plenty of bass and cello: violins on both sides, violas left, cellos right, basses in the centre, a medium attack and a long release.
Dry (no ensemble)	The default sections, all in the centre, with the ensemble off.
Slow Swell	Violins left, violas right and a little cello on both sides, with a 1.2 s attack, a 5 s release and the deepest, slowest ensemble.
Orchestra Seating	Violins left, violas centre, cellos and basses right, as an orchestra sits, with SPREAD at 70%.
Mirror Seating	The orchestra seen from the back of the stage: violins right, basses left, violas and cellos in the centre, a little narrower.
Antiphonal	Violins and cellos left, violas and basses right, hard apart (SPREAD 100%), so the high and low parts answer across the stereo field.

Dry Quartet	Violins left, violas centre, cellos right, no basses and no ensemble: a small, dry group with a quick attack and some velocity response.
Wide Choir	Every section on both sides (8 cents apart): a broad, gently beating wall, SPREAD at 80%.
Detuned Wall	Violins, violas and cellos on both sides, hard apart and 18 cents apart, the basses in the centre: thick, wide and bright.
Wide Low End	Mostly cellos and basses on both sides (6 cents apart), with a little violin and viola in the centre, and a dark tone. Use MONO to keep the very lowest notes centred if you need to.
Twin Shimmer	Violins hard left and violas hard right, no low sections, a slow attack, a long release and a deep, slow ensemble.
Reset all to defaults	Every control back to its starting value, including the placement, SPREAD, DETUNE, TUNE, the MIDI channel, DRIFT, OUTPUT, SAT, the output stage and the stereo controls.

Tips

- Light L and R together on the violins for wide, beating strings around a centred cello; raise DETUNE for a stronger chorus, lower it for a subtle widening.
- Sections placed apart play a little louder than the same sections all in the centre: trim them down a touch, or bring OUTPUT down.
- Keep SPREAD below 100% on headphones - hard-panned sections can sound unnatural there.
- Keep the BASS in the centre, or set MONO to about 150 Hz, so the low end stays solid in mono.
- Hold a chord and switch the ensemble ON and off to hear what it does - most of the sound is in the ensemble.
- For a pad that blooms, set ATTACK to 500 ms or more and RELEASE to 2 s or more, and overlap the chords.

`File: gfx-lab-g-ensemble.jsfx`