Articulate Presets
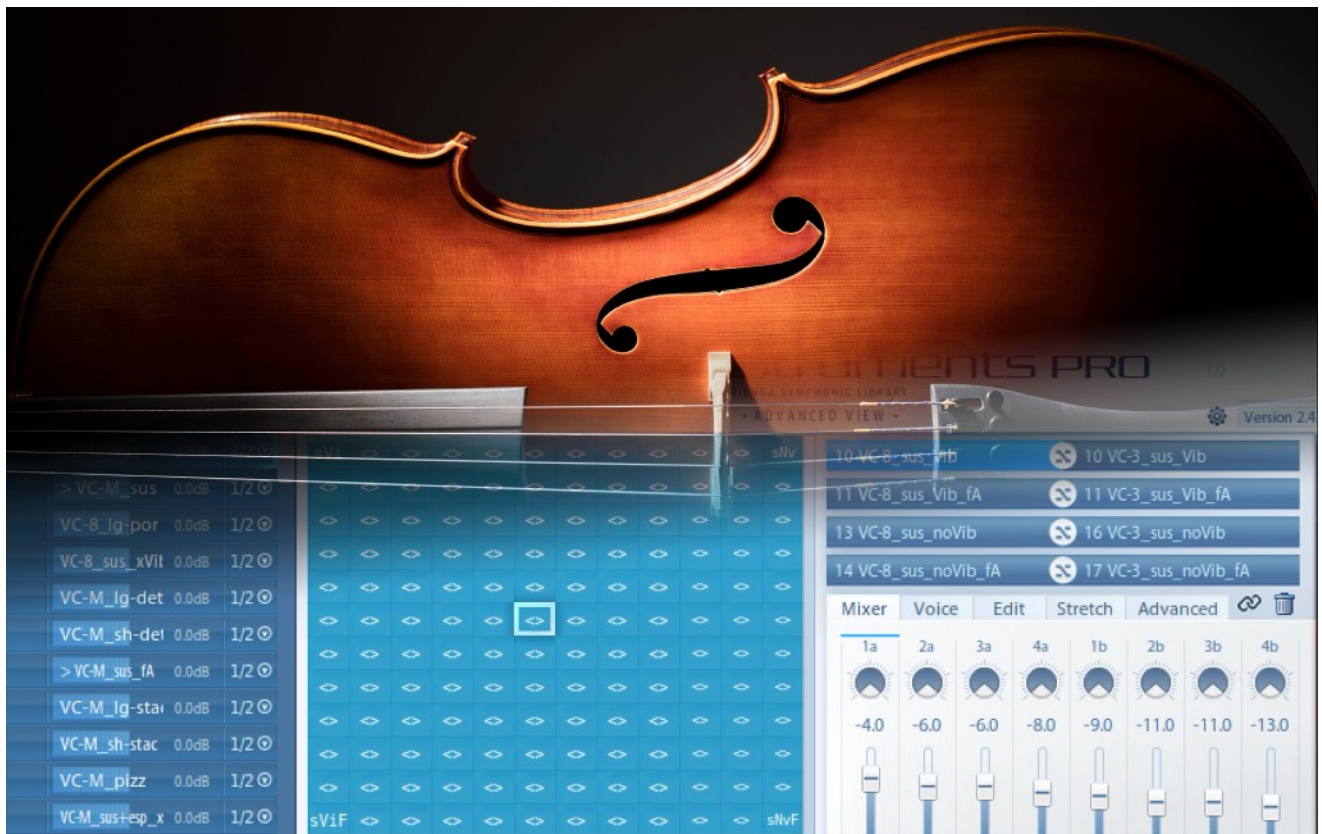
for the Vienna Symphonic Library

Turn your library into an instrument …

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User manual

8th Edition

1
Introduction

What are Articulate Presets?

The Vienna Symphonic Library (VSL) is the the largest orchestral sample database to date. As the name suggests, it started out as a sample "library", but it came a long way towards the goal of conveniently accessible and fully playable instruments with Vienna Instruments pro (VI pro), which is probably the most advanced sample player on the market. The last decade saw a steady increase in computer memory and the advent of fast solid state drives (SSD) for sample streaming. VI pro fully supports these advances and allows you to load up to 10 times more sounds when using fast SSDs and thereby enables you by now to have all these orchestral colors ready at your disposal. However, with all their advanced features, the VSL and VI pro have a steeper learning curve than some of their competitors and it presents a significant effort to directly access the entire content.

Articulate Presets for VSL offer a true "plug & play" solution that conveniently unlocks the full potential of these amazing libraries. They include *every* articulation of the corresponding libraries— up to many hundreds of thousand samples per preset—and are organized in a fully coherent way so that a sequence or part of the score can easily be moved from one instrument to another one. Articulate Presets take advantage of all the advanced features of VI pro, like humanize, auto-voicing, enveloped time-stretching, the APP sequencer and MIRx to get far more out of the recorded samples. Above all they expand on the expressive capabilities that virtual orchestras offer up to now and combine the sampled articulations into playable sounds that react to various continuous controllers to get you much closer to the gradual nuances that orchestral instruments are capable to produce. With its unmatched range of articulations and new 9-velocity-layer HD shorts the VI series still sets the state of the art of virtual orchestration. In conclusion, Articulate Presets are *complete*, *consistent* across the entire orchestra and give you unprecedented *control* over your sounds.

Articulate Presets are available for a growing number of VSL libraries, that include in particular the complete Symphonic Cube and the extensive Dimension Libraries. There are dedicated Articulate Presets for different VSL Editions that make it easy to upgrade or e.g. to use a sketching orchestra on the go. Last but not least they are fully integrated into the major Digital Audio Workstations (DAWs) via the record-breaking *Cubase Articulate Map* (>2500 definitions), the convenient *Studio One Articulate Variations,* and the amazing *Logic Articulate Tools*, fully supporting Logic's Articulation IDs and providing the tightest integration of a sample library into DAW. Moreover the *Dorico Articulate Map* and the associated *Playback Templates* seamlessly integrate the VSL into the probably most advanced Notation Software Dorico, providing unprecedented automatic playback and a completely new level of control for a Notation Software. All these allow you to conveniently access *all* articulations included in the VSL directly within your favorite music application.

In addition to this manual there are separate detailed manuals for the different music software integrations (Logic, Studio One, Cubase and Dorico) and there are full-featured Demos, that allow you to check out both Articulate Presets as well the extensive software integrations yourself.

2
Setup
What you need (to do) to get started

Requirements

Articulate Presets require licenses for VI pro as well as at least one of the presently supported libraries (Solo Strings I & II, Chamber Strings I & II, Orchestral Strings I & II, Appassionata Strings I & II, Dimension Strings I - III, Woodwinds I & II, Brass I & II, Dimension Brass I & II, Harps and Percussion), see Table II. The Articulate Presets for the *Strings M* for instance fully include the Orchestral and Chamber Strings libraries. They work with either of these libraries alone, but both are required to use the *Section Controller* described below. Separate Articulate Presets are available for Standard and Full VSL Collection Libraries and you will need the appropriate Presets for your VSL licenses.

Moreover your system should have enough memory (RAM). When they are fully loaded, each of the presets can take up to several GBs of memory (see Table II) when the *Default Preload* in the VI pro Settings is set to the standard value of 16384, appropriate for conventional hard disk drives (HDD). Yet, if you use a fast SSD this can be reduced considerably and e.g. setting it to 4096 will allow you to load all articulations of an entire orchestra (Strings, Woodwinds, Brass and Percussion) on a computer with only 16 GB of RAM—i.e. even on current notebooks streaming from the internal disk! Due to this, SSDs are strongly recommended, but there is surely also the option to standardly load only part of the included matrices and cells and simply activate the others as you need them.

Since Articulate Presets take advantage of continuous controllers (see section 3 for details) it is strongly recommended to have the necessary hardware controllers available for a convenient operation. There are two alternative ways to control Articulate Presets:

• Physical (or Virtual) Midi controllers, i.e a keyboard that can send program change messages and at least *three* continuous controllers (faders, knobs, wheels, ribbons, pedals, breath-controller, …).

• The VI pro Remote Control App for Tablets, which also provides all required control elements.

Finally a MIRx venue, or the MIR pro engine with a venue for which there are MIRx settings, is recommended (but not mandatory) for out-of-the-box mixdown, room placement and reverberation.

Installation

After downloading Articulate Presets you will find one or several zipped files. Unzipping a file (double clicking in OS X or pressing+holding and selecting "Extract All" in Windows) yields a folder containing documentation and a folder with the actual presets. To install Articulate Presets, move its contents to your *VSL Custom Data* Folder. This is where all your custom files (Presets and Matrices) are stored and it is described in the "Directory Manager" Section of the VI pro User Manual.

Standardly the Custom Data Folder is located in OS X at: Users/Shared/VSL Custom Data

and in Windows 7/8 at: Users\Public\Documents\VSL Custom Data

However, consider that you might have chosen a different file path in the VSL Directory Manager. To check where the Custom Data Folder is located, open the VSL "Directory Manager" (separate Application) and press the "Custom folder" button which will show the currently selected file path. The folder structure in the Custom Data folder directly reflects the folder structure you will see in the Preset Browser of VI pro, so you can arrange the presets within the Custom Data folder to your liking—in particular when you install Articulate Presets for different VSL libraries.

As mentioned before, if you are using SSDs it is advantageous to adjust the Default Preload parameter, if you have not done so already. This can be done for each VI pro instance individually in the settings, but it is convenient to perform it globally in the VI Directory Manager. Just open the Directory Manager (separate application), press the button Preload Size and adjust the value. The lower the value, the smaller the amount of memory is needed to load the same number of instruments and articulations. Should you experience problems (like dropouts) afterwards, your disk is likely not fast enough for such a low value and you will have to increase the Default Preload again.

Midi Configuration and Setup of the VI pro Tablet App

Articulate Presets for VSL typically include over 100 matrices covering all the different articulations in the corresponding VSL library, which are accessed by program change (PC) messages. Therefore ideally your master keyboard should be able to send program change messages to switch articulations. Please see the manual of your master keyboard for details on how to send program change messages. Another convenient way to access the different matrices is the VI Tablet App, which shows the scrollable list of matrices on the left. Finally there is also the option to use a dedicated continuous controller for matrix switching. This option is disabled by default and the corresponding controller has to be set in the global tab of VI pro, see the VI pro manual for details.

Articulate Presets support *three* main Continuous Controllers (CC) in addition to the standard VI controllers (see Table I below), like Velocity Xfade which is controlled by CC1. These are …

‣ CC2 - "*Vertical Controller*": This controller has many purposes, selecting different versions of a given articulation (see Table III in the Appendix), but for many articulations it controls the attack.

‣ CC3 - "*Horizontal Controller*": The function of this controller likewise depends on the particular articulation (see Table III), but often it controls the intensity of special "modulated" or altered playing styles (like vibrato, tremolo, flutter-tongue, con sordino, harmonics). In these latter cases this controller acts inversely, in the sense that increasing controller values decrease the intensity.

‣ CC20 (Slot XFade) - "*Section Controller*": This controller controls the size of the instrument section for all instruments and all articulations where different section sizes are available—yet for the expressive vibrato (xVib) matrices (PC4, 16, 76 & 88) it controls vibrato instead.

In addition the A/B switch is controlled by CC4 (A: 0-63, B: 64-127).

Most keyboards have a modulation wheel which standardly sends CC1. Other physical controllers, like sliders, faders, knobs, wheels, ribbons, pedals, …, have to be assigned to send the above Midi controllers (CC2, CC3, CC20). The A/B switch CC4 can either be assigned to any other continuous hardware controller or to a switch controller, like a button, foot switch, … . If you have more physical controllers it is a good idea to also assign (at least some of) the other standard controllers used by

the Vienna Symphonic Library, like Humanize (CC27), see Table I for details. Please see the manual of your master keyboard, fader box, …, on how to assign Midi controllers.

The setup of the VI pro Remote Control App for Tablets is rather straightforward and described in detail in the dedicated VSL manual for the App. The Tablet App allows you to control *all* functions of Articulate Presets, as described in more detail in section 3 below.

Table I: Used midi controllers

Midi Controller	Destination	Midi Controller	Destination
1 (modwheel)	Velocity X-fade	24	Master Filter
2 (breath)	Vertical (articulation specific, see Table III)	25	Delay Scaler
3	Horizontal (articulation specific, see Table III)	26	Tuning Scaler
4	A/B switch	27	Humanize
7	Volume	28	Velocity X-fade On/Off
11	Expression	29	Release Samples On/Off
14	Reverb Wet	30	Dynamic Range Scaler
15	Reverb On/Off	31	MIRx Wet/Dry
20	Section (or String for VI-D#, …) (controls section size via Slot XFade)	33	Legato Blur
21	Start Scaler (not activated)	64	Sustain
22	Master Attack	pitchbend wheel	Pitch
23	Master Release	program change	Articulation Selection (matrix number)

Having successfully set up Articulate Presets, you can immediately start checking out the included matrices (which are listed in Table 3 in the Appendix), by stepping through the different program numbers on your master keyboard (or by selecting them in the VI pro Tablet App), and test what the different continuous controllers (Vertical (CC2), Horizontal (CC3) and Section (CC20)) do for the individual articulations. Take into account that depending on the available sampled versions and your licenses not all of these controllers will be available for every matrix. Aside from the next subsection ("Design Objectives"), which gives you a brief overview of the concept and of the possibilities Articulate Presets offer, there is no need to read this entire manual at this point. You can check out particular topics while exploring, whenever you want to know more about a given feature. You will find that with the help of the additional continuous controllers already the sustained (PC1) or staccato matrix (PC9), the legato matrix (PC13) or the universal interval matrix (PC24, which is only available for Full Libraries) can get you very far without any matrix switching. *Enjoy …*

3
Features of Articulate Presets
How to turn a library into an instrument …

Design objectives and structure of Articulate Presets

The main design goal when creating Articulate Presets was to turn the various sampled articulations and sampled versions included in the Vienna Symphonic Library into readily usable instruments. This is achieved by making *all* the individual articulations directly accessible without having to use a file browser to load articulations and set them up—similar to a painter that has all palettes and brushes ready for work instead of going to the workshop to mix colors each time another one is needed.

Another important goal was to implement the concept *one instrument - one track/stave*, i.e. having each instrument with all its articulations and variations on a single track in your sequencer or stave in the score, and to keep the score untouched by *all* control events. The latter is achieved by switching articulations by Program Change (PC) messages instead of note events ("key-switches") and by performing all other control tasks by Continuous (Midi) Controllers (CC). Therefore, in complete analogy to the work with a real orchestra, the basic musical information—provided by the composer and represented by the notes of the score—can be supplemented by separate control events that determine the details and nuances of the performance—corresponding to the individual interpretation of an instrumentalist. This concept gives you complete freedom to shape your music to the level of detail you want and improve the rendition as your resources and time allow for this.

The final and most ambitious goal was to significantly improve the expressiveness of the VSL instruments. Sampled orchestral sounds are inherently limited to a finite number of recordings, whereas natural instruments are capable of creating gradual timbral changes that easily distinguish a real performance from a simple digital mockup. The VSL libraries contain various different versions of a given articulation that approximate the broad range of timbral changes—e.g. different attack variations ranging from soft to hard or different vibrato intensities ranging from strong to no vibrato—and Articulate Instruments fill in the intermediate steps to let you *continuously* control the sound. All these nuances are implemented in a way that does not compromise realism: no filters, LFOs or other digital modifications are applied to the pristine VSL recordings, but the intermediate nuances are made accessible by merely blending the various sampled versions. Actually you can control the performance in an up to *three-dimensional (3D) sound space*—e.g. simultaneously controlling the *attack behavior, vibrato intensity* and *section size,* similarly to positioning an object in ordinary 3D space— giving you unprecedented control over your music!
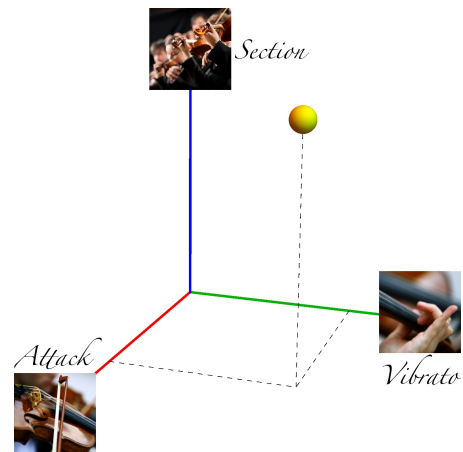
Sounds in Vienna Instruments Pro are organized into *Presets*, *Matrices*, and *Patches* (the latter include the actual samples that are not individually accessible)—see the VI pro manual for details. A Preset presents the highest level and can include over hundred matrices, each of which can include more than a thousand patches. Articulate Presets fully take advantage of this powerful structure.

There is generally a single Articulate Preset for each orchestral instrument. Only for the strings and brass, which come in very different section sizes, you will find different presets, named e.g. "Violins S", "Violins M", "Violins L", corresponding to small/solo, medium and large sections. Moreover, for the Dimension Strings and Brass libraries there are both *Individual Player Presets* containing only a particular player, e.g. "Violins D1", as well as *Section Presets*, e.g. "Violins D", including all players of a section. The Strings D Section Presets are with hundreds of thousands of samples per preset the most extensive presets ever created, but can due to limitations of VI pro only offer 2D control.

Each Articulate Preset contains *all* articulations of the corresponding libraries. Where different section sizes are available for an instrument the Preset will even contain the entire content of up to two different section sizes. The Strings M Presets include e.g. the complete content of the Orchestral Strings I & II and Chamber Strings I & II VSL Collection Libraries (see Table II in the appendix). I.e. the Violins M preset, in particular, includes *all* articulations of standard-sized violin sections both in normal and con sordino versions—offering versatile divisi options. If you only have licenses for part of these libraries the missing articulations will simply not be available: the cells in the matrices are colored in red and will neither play nor use up voices. For instance if you are missing licenses for the Chamber Strings libraries the Section Controller does nothing but lower the volume—so that you should keep it at a value of zero—yet aside from that the Presets and all other controllers will fully work.

All chromatic Articulate Presets have the same outline: PC1 for instance always yields sustained notes, PC8 gives staccato and PC13 legato (see Figure I below and the comprehensive Table III in the appendix for details)—you could think of this as the "General Midi Standard of Orchestral Sounds". For convenience there are in case of Percussion instruments Articulate Presets that include *all* instruments and *all* articulations of an entire percussion group (Drums, Cymbals & Gongs, Bells, Percussion, Mallets), which feature a different layout (listed in Table V in the appendix).

Completeness

Most of the key instruments of the Vienna Symphonic Library have been recorded more than 10 years ago when it required whole computer farms to run part of its extensive sound content. The technological advancement over the last years allows the user now finally to have the entire library readily available and Articulate Presets fully deliver on this promise. In order to make all the individual articulations and variations of a given instrument, included in its full library, easily accessible within a single Preset demands a well-thought-out layout and also requires over 100 matrices, which are only offered by VI pro. Due to this, changing matrices by key-switches is not a (direct) option (see below), because even if you would dedicate an entire grand-piano-sized keyboard to key-switching the keys simply would not be enough. Therefore, Articulate Presets use Program Change Messages to change articulations. This has the big advantage that—in contrast to standard VSL key-switches—Program Change Messages do *not* appear in the score!

Moreover, the sheer number of patches in the VSL libraries would not allow you to have a dedicated matrix with a unique program change number for every single patch. Yet, this would not be

desirable anyway since a VI pro matrix can in principle hold more than a thousand patches and offers powerful ways to combine them so that the resulting matrices can go far beyond the expressiveness of single patches. Therefore within Articulate Presets the available patches are distributed in a way so that qualitatively different articulations (e.g. sustained notes) are accessed by dedicated program change messages, but mere variations of a given articulation (e.g. different attack or vibrato variations), are accessed by continuous controllers. This is described in more detail below and the complete outline of the different matrices within Articulate Presets is given in the comprehensive Table III in the Appendix.

Articulation Banks

Even though key-switching is no direct option for the selection of articulations due to the sheer number of sounds in the VSL, and program change messages are used in Articulate Presets instead, in principle changing articulations by keyboard keys is extremely convenient. This is why it was used in most VSL factory presets. Actually with appropriate midi-processing, it is possible to transform key-switches into program change messages (which do not affect the score) before they are recorded in the sequencer and eventually reach VI pro. Yet, this still leaves the problem that there are not enough keys to switch over 100 different articulation matrices. The solution are: *Articulation Banks.* The idea is to group the up to 128 different articulations into different banks and then use keys to switch both banks and the articulations within a bank. This way only a small number of keys (e.g. a single octave) is required. To this end the different articulations are grouped into thematic banks of 12 articulations each (see Table III). Such a next generation key-switching solution is already available with the comprehensive *Articulate Tools* for Logic on Mac Systems.

The different articulation banks are:

I. basic (PC1-12): includes the basic articulations orchestral instruments offer

II. interval (PC13-24): contains all performance interval and trill matrices

III. repetition (PC25-36): contains all performance repetition matrices

IV. phrase (PC37-48): includes sampled phrases that have an inherent time structure

V. dynamics (PC49-60): includes all sampled dynamic transitions

VI. special (PC61-72): in contrast to the others, this bank contains instrument-specific articulations and generally has a different layout for each instrument, see Table IV, so that articulations in this bank in general inherently cannot be played by qualitatively different instruments. Yet, the same articulations are nevertheless accessed by the same program change messages, e.g. the *sustained clusters* are selected by PC68 wherever available (Strings L, woodwinds, trombones)

VII. muted basic (PC73-84): muted standard articulations and dynamics (analog to I. and V.)

VIII. muted advanced (PC85-96): muted performance instruments and phrases (analog to II. - IV.)

IX. sequencer (PC97-108): contains VSL factory matrices that use the APP sequencer of VI pro

X. individual (PC109-120): this bank contains patches that are otherwise part of larger matrices (e.g. individual strings, vibrato intensities, dynamic levels, interval speeds) for direct access

XI. custom (PC121-128): In this final (partial) bank you can add your own custom matrices. (For the strings S, M & L it is by default filled with the alternate "auto" versions and for the Dimension Strings *Section* versions with matrices implementing the alternate second controller, so that you could substitute the corresponding matrices in the previous banks, if you prefer this, and then use the bank for your own matrices). You can also use the custom bank for project-specific matrices, e.g. when you have to time-stretch a phrase to fit the tempo of your music. You are surely also welcome to adapt matrices in other banks according to your preferences (when doing so, you should keep a copy of the original version as a reference, though)—this adaptability is the big advantage of VI pro.

VI pro Sequencer matrices

VI pro includes the Auto Playback and Pattern (APP) Sequencer that can produce many phrases using the standard articulations in the VI libraries. This has e.g. the advantage that the time structure is not fixed, like for sampled phrases, but these phrases generally sync to the tempo of your (main) sequencer / DAW. For completeness Articulate Presets include extended versions of the available VI pro APP matrices (repetitions, runs & phrases, trills) in the *Sequencer* Bank (PC97-PC108), see Table III in the Appendix for details. Only for the strings there are sequenced arpeggios, and since at the same time there are mostly no recorded arpeggios for the strings, the APP Sequencer string arpeggios are included in the *Phrase* Bank (PC46&47)

Consistency

Great care has been taken to make sure that all the different Articulate Presets are consistent, in the sense that the different program change messages and continuous controllers select identical or analogous articulations for *every* chromatic instrument of the orchestra. This allows for the straightforward exchange of instruments and articulations as discussed in more detail below. When an articulation is not available for a given instrument it is replaced by a similar articulation. Replacement matrices are marked with a ">"-symbol in front of their name and are only there for compatibility purposes. I.e. when you record a new sequence, for it to be fully transferable you should use the proper version without the ">"-symbol.

The following paragraphs describe for particular articulations how they are laid out to ensure consistency across the entire orchestra:

Dynamics (PC 56, 58, 60, 62, 81 & 83)

Uni-directional dynamic transitions come in VSL libraries in up to three different strengths (light, medium and strong) and seven different lengths (1, 1.5, 2, 3, 4, 5 & 6s) have been sampled for the various instruments. For instance strong dynamics yields a crescendo all the way from *ppp* to *fff,* see your VSL manuals for more details. In Articulate Presets the different strengths are selected by different Program Change numbers. The different lengths are selected by the Vertical Controller (CC2) which always has seven controller ranges (1s: 0-18, 1.5s: 19-36, 2s: 37-54, 3s: 55-72, 4s: 73-90, 5s: 91-108, 6s: 109-127). Those lengths that have been sampled for a particular instrument are clearly labeled in the VI matrix and arranged so that a given duration is always accessed by the same controller range. In case a particular length has not been sampled it is, where available, replaced by the next longer duration and marked by a "=" sign.

Trills (PC 37, 38, 50, 52 & 91)

Trills are in the VSL generally available for different intervals that are in Articulate Presets accessed by 4 regions of the Vertical Controller (minor 2nd: 0-12, major 2nd: 13-63, minor 3rd: 64-114, major 3rd: 115-127). Even though for accelerando, dynamics & muted trills only two intervals are available, the same scheme is followed (minor 2nd: 0-12, major 2nd: 13-127) in order to easily replace trills. Only some flutes offer 4th-trills which are therefore included in the Special Articulations Bank.

Grace notes (PC 39)

Grace notes are available in intervals up to an octave that are accessed by the Vertical Controller (min 2.: 0-19, maj 2.: 20-29, min 3.: 30-39, maj 3.: 40-49, 4.: 50-59, min 5.: 60-69, maj 5.: 70-79, min 6.: 80-89, maj 6.: 90-99, min 7.: 100-109, maj 7.: 110-119, octave: 120-127), so that the tens digit specifies the number of half tones, which makes editing easy.

Mordents (PC 40)

Mordents are in the VSL available in six versions with characteristic musical patterns that are accessed by the Vertical Controller (v1: 0-12, v2: 13-37, v3: 38-63, v4: 64-89, v5: 90-114, v6: 115-127). See your VSL Library manual for details on the different patterns.

Fast repetitions and Upbeats (PC 41 & 66 and 48, 71 & 72)

Fast repetitions and upbeats are sampled at various different speeds. In order to be able to move a sequence between different instruments, the different speeds are arranged in a consistent way. For the fast repetitions there are nine regions of the Vertical Controller (140 bpm: 0-14, 150 bpm: 15-28, 160 bpm: 29-42, 170 bpm: 43-56, 180 bpm: 57-70, 190 bpm: 71-84, 200 bpm: 85-98, 210 bpm: 99-112, 220 bpm: 113-127) that select the different speeds. Triplet repetitions, that are only available for the flutes, feature six regions of the Vertical Controller (130 bpm: 0-21, …, 180 bpm: 106-127). Similarly for the upbeats there are twelve regions of the Vertical Controller (80 bpm: 0-10, …, 160 bpm: 85-95, 180 bpm: 96-105, 200 bpm: 106-116, 220 bpm: 117-127) that select the speed. The Horizontal Controller selects the number of upbeats (one: 0-12, two: 13-114, three: 115-127). Only some brass instruments include muted fast repetition dynamics, which are included in the Special Articulations Bank. Since there are no upbeats for the strings, PC48 gives ricochet or recorded arpeggios instead.

Runs and Arpeggios (PC 42 & 43 and 46, 47, 65 & 66)

Runs and Arpeggios are in the VSL libraries available in different keys. The selection of the key is in Articulate Presets performed with the Horizontal Controller (CC3), where the tens digit selects the base key (C: 0-19, C#: 20-29, D: 30-39, D#: 40-49, E: 50-59, F: 60-69, F# 70-79, G: 80-89, G#: 90-99, A: 100-109, A#: 110-119, B: 120-127), numbered from 1 (C) to 12 (B). The Vertical Controller (CC2) selects the particular version of the runs (major: 0-12, minor: 13-63, chromatic: 64-114, whole tone: 115-127) and arpeggios (major: 0-12, minor: 13-63, diminished: 64-114, augmented: 115-127). There are separate matrices for slow and fast versions.

Glissandi (PC 44 & 45, 67 - 69)

In the VSL there are different glissando intervals controlled by the Vertical Controller (min 2.: 0-19, maj 2.: 20-29, min 3.: 30-39, maj 3.: 40-49, 4.: 50-59, min 5.: 60-69, maj 5.: 70-79, min 6.: 80-89, maj 6.: 90-99, min 7.: 100-109, maj 7.: 110-119, octave: 120-127), so that the tens digit again specifies the number of half tones. These are generally available in slow and fast versions, whereas

for the bowed strings instead of a fast version there are harmonics glissandi. These as well as the harp glissandi have a special keyboard layout, see the VSL manuals. Since there are no special glissandi for the Strings L, PC45 gives recorded muted arpeggios instead which have a different layout than the wind arpeggios. For the various special harp glissandi (coming in slow, medium and fast versions PC67-69) the Vertical Controller choses the type (7 maj: 0-18, 7 min: 19-36, 6 whole: 37-54, 5 pent: 55-72, 4 maj: 73-90, 4 min: 91-108, 4 dim: 109-127) and the Horizontal Controller either the key or the available versions (see the VSL manual for details).

Performance Repetitions (PC 25 - 31, 92, 94 - 96)

Many performance repetitions offer several recorded speeds and are in Articulate Presets standardly speed-controlled (merely a few con sordino articulations offer two recorded speeds but these matrices do not offer speed control). Where available, the repetition matrices include both repetitions and repetition dynamics and via the Vertical Controller (CC2) all individual speeds can be accessed (rep. speed: 0-12, rep. slow: 13-29, rep. medium: 30-46, rep. fast: 47-63, rep. dyn. slow: 64-80, rep. dyn. medium: 81-97, rep. dyn. fast: 98-114, rep. dyn. speed: 115-127).

High Definition (HD) Shorts (PC 109 - 114)

Nearly all Articulate Presets for the Symphonic Cube offer the unique High Definition (HD) Shorts with *nine* velocity layers, discussed in detail below. They offer the same control as the Standard Definition (SD) matrices (portato: PC109 versus PC6, staccato: PC111 vs. PC9, spiccato: PC113 vs. PC17, muted portato PC110 vs. PC78, muted staccato PC112 vs. PC80, muted spiccato PC114 vs. PC89) and can therefore easily be exchanged for a very varied and realistic playback of short notes.

Performance Repetition Individual Dynamics (PC 114 & 115)

Even though somewhat hidden in the Resource Folder of VSL instruments, the Performance Repetition Dynamics ("Perf Rep Dyn"), which make the different dynamic levels of the Dynamics Repetition Performances individually accessible, can be very useful. In Articulate Presets the Vertical Controller (CC2) accesses the different levels and always has nine ranges (*ppp*: , 0-14, *pp*: 15-28, *p*: 29-42, *mp*: 43-56, *m*: 57-70, *mf*: 71-84, *f*: 85-98, *ff*: 99-112, *fff*: 113-127). In addition the Horizontal Controller (CC3) has six different ranges for the different repetition articulations (leg slow: 0-12, leg fast: 13-38, por: 39-63, stac: 64-90, spic: 91-114, harsh: 115-127).

Sequencer Articulations (PC 97 - 108)

The VSL matrices that use the APP sequencer are likewise slightly adapted in Articulate Presets and extended in order to implement the Section Controller. In line with the other matrices, the Vertical Controller (CC2) selects the different sequencer patterns (v1: 0-10, v2: 11-21, …, v12: 117-127). Only the special articulation selection within the sequencer is (due to limitations in VI pro) performed by key switches. However, the latter is rarely used anyway, since these phrases sound most realistic with the appropriate articulation (e.g. the "Thrilling Trills" with the dedicated performance trill).

Control

Articulate Presets introduce a new level of continuous control to gradually shape the timbre of most instruments and articulations. This is done by three dedicated Midi controllers, the *Section Controller* (CC20), the *Vertical Controller* (CC2) and the *Horizontal Controller* (CC3). Whereas the Section Controller is generally realized via the standard Slot Xfade feature in VI pro, the other two are realized directly via the two dimensions of VI matrices in a way that the different slots of each

cell have the appropriate volume adjustments to ensure a gradual transition as one moves along either matrix dimension (see Figure I). Correspondingly they are "quasi-continuous" in the sense that changing the controller results in only 12 instead of the 128 different states an ordinary continuous Midi controller offers. However, these 12 states are fortunately enough because it is virtually impossible both for an instrumentalist to play or for a listener to distinguish 128 different levels of e.g. the vibrato intensity. These quasi-continuous controllers even have several advantages: they can blend more than two different versions at a time, each note can play with its dedicated controller value in polyphonic sequences, and they typically use up less voices than Slot Xfade.

Blending the different versions generally gives a surprisingly smooth transition. In case of solo instruments, blending two different versions could in special cases and near the intermediate controller position let you sound out two instruments playing. Within a large orchestral arrangement this is generally no problem, but keep this in mind when you are not happy with the result while working on exposed solo passages and simply use a somewhat weaker mixture or the pure, sampled versions in this case.

Due to inherent limitations in VI pro, the *Section* versions of the Dimension Strings only offer 2D control, i.e. in addition to the Section controller *either* the Horizontal or the Vertical controller is implemented. Fortunately this is not a big restriction since the Dimension Strings libraries do not include the necessary samples (like fast attack or fast legato versions) to implement 3D control for key articulations anyway. In all other cases the presets include separate matrices so that you can choose if you want to use the Horizontal or Vertical controller.

The following paragraphs describe the detailed sound properties that can be controlled by the different continuous controllers within Articulate Presets:

Section Size (all, except xVib matrices PC 4, 16, 76 & 88)

Orchestral sections can have various different sizes and the number of players involved changes in addition to the volume also strongly the timbre. Even during the course of a typical orchestral work the number of players performing a given passage changes permanently either due to temporary divisi or unisono playing. In all of such cases it is useful to control the size of the instrument section.

In case of the VSL Dimension Libraries, where the players can be individually accessed, their number is controlled by the dedicated Section Controller (CC20) with *Auto-Divisi.* For the Dimension Violins it dials 8 (0-10), 6 (11-32), 4 (33/41-63), 3 (64-81), 2 (82/98-116) and 1 (117-127) players; for the Violas and Cellos 6 (0-10), 4 (11-32/40), 3 (41-81), 2 (82/98-116) and 1 (117-127) players; and for the Basses 4 (0-10), 3 (11-32), 2 (33/41-116) and 1 (117-127) players. Similarly for all Dimension Brass instruments it selects 4 (0-10), 3 (11-32), 2 (33/41-81) and 1 (82/98-127) players. I.e. when you e.g. choose two players and play a chord, the individual voices are automatically distributed among the different string desks/groups. Although there is full section control, auto-divisi is absent for performance interval and trill matrices, since in this case the distribution of overlapping legato notes among different players would not be desired. In addition the Section Controller also gives you direct manual access to the individual groups (I: 33-36 & II: 37-40) and individual desks/players (I: 82-85, II: 86-89, III: 90-93 & IV: 94-97) for string/brass instruments respectively.

For the other libraries you can approximately control the section size by crossfading the available sections, via the Section Controller (CC20). Whereas in case of most wind instruments the controller blends a solo instrument with a small ensemble, for the string instruments the controller can blend

two different section sizes, e.g. Orchestral and Chamber Strings. Despite the naive expectation that mixing different sections would result in an even "larger sound", (incoherently) crossfading the different versions—which is different from the (coherent) superposition of the waves in a venue as done for the Dimension Libraries within MIR—results usually indeed in a smooth transition between the two versions that can nicely approximate intermediate sized sections.

String control (Dimension Strings individual player presets and section presets PC109-120)

In contrast to the section versions of the Dimension Strings where CC20 controls the section size, for the individual instruments of the Dimension Strings (VI-D#, …) the "Section Controller" (CC20) lets you for every articulation select the string(s) on which the articulation is played. At a minimum value of CC20 (0-12) it yields for all Dimension Strings regular playing, while at the maximum value (115-127) open strings are used. The four sections in between select the individual strings of the different string instruments. In particular for the violins these are G (13-38), D (39-63), A (64-89), E (90-114), for the violas and cellos C, G, D, A and for the basses only the four lowest strings B, E, A, D are accessible.

For the section version of the Dimension Strings (VI-D, …) generally the regular version is used. However, in the "Individual" bank (PC109-120) full string control is available for the most important articulations (everything included in the standard library) via the Vertical Controller (CC2). In order to cover more articulations, the controller range 0-63 accesses the different strings of a first articulation and the range 64-127 those of a second articulation, where the order is inverted. For instance for the violins these are correspondingly arranged as O1, G1, D1, A1, E1, R1, R2, E2, A2, D2, G2, O2 so that it is particularly easy to access the open string versions of the two articulations.

Attack behavior (PC 1- 6, 8, 12, 61, 62, 65, 70, 71, 73, 74, 77, 78, 84, 109 - 110)

For natural instruments the dynamic level (i.e. *ppp*, … , *fff*), the attack behavior (e.g. soft/slow or hard/fast attack)—corresponding to the time it takes until the final dynamic level is reached—and the note length can to a large extent be chosen independently of each other. Whereas basically all sample libraries include several dynamic levels, controlled by velocity (or in VI pro alternatively by "Velocity Xfade"), in most sample libraries the attack behavior of a note is directly linked to the note length, in the sense that short (e.g. portato) notes have a hard attack and long (sustained) notes have a soft attack. VSL offers more options when it comes to the attack behavior and these different versions are used in many Articulate Preset matrices to continuously control the attack behavior with the Vertical Controller (CC2). The way this is implemented depends on the available patches: Whereas for sustained string articulations the normal and fast attack versions are blended, for the sustained wind sounds the available sustained and long portato versions are used to crossfade e.g. from the soft sustained attack through the harder long portato attack to a pronounced marcato attack, as shown in Figure I. For the Brass I Presets, where the long portato patches are rather short, they are further crossfaded into the sustained versions after the attack phase. In contrast for short articulations even shorter ones are added to accentuate the attack—for instance short on top of medium portato/detache and staccato on top of short portato/detache. Finally, the attack of the string performance marcato is enhanced by adding sforzato and harsh articulations.

Vibrato intensity (PC 1 - 5, 7, 14, 22, 49, 51, 53, 54, 56, 58 - 60)

Most orchestral instruments allow the player to add vibrato to enrich the sound. For natural instruments the vibrato intensity can continuously be adjusted by the player. To get closer to this,

the Horizontal Controller (CC3) enables the user of Articulate Presets to continuously adjust the vibrato intensity for all articulations where different vibrato versions have been sampled (see Table III). This is achieved by crossfading the different sampled vibrato versions. Since vibrato is the standard playing style for most instruments, *increasing* the controller value *lowers* the vibrato intensity. For most articulations at most two versions with vibrato and without vibrato are sampled, but for long notes of some solo wind instruments or Strings L even three different versions with strong, light and without vibrato are available and the controller crossfades between all of them (see Figure I). In case of the Vibraphone instead of the vibrato intensity the vibrato speed is varied.

Tremolo / Flutter-tongue (PC 12, 23 & 59)

Like vibrato, tremolo for strings and flutter-tongue for wind instruments is a periodic modulations of the sound whose intensity can be continuously adjusted by the player of the instrument. Articulate Presets allow the user to use the Horizontal Controller (CC3) to control the intensity by crossfading all tremolo or flutter-tongue articulations with the normal, unmodulated versions.

Bowing Position: Sul ponticello to sul tasto (PC 35, 61 - 65)

"Sul ponticello" is the technique were a stringed instrument is played near the bridge, whereas "sul tasto" denotes playing near the fingerboard. Depending on how close to the bridge or fingerboard the bowing is performed the timbre changes gradually. Therefore, for all such sampled articulations the bowing position—going continuously from the bridge to the fingerboard—is controlled via the Horizontal Controller (CC3) which crossfades between the sul ponticello version (0) through the normal version played away from both the bridge and the fingerboard (64) and the sul tasto version (127) (respectively "flautando", where sul tasto is not available, since it is typically performed near the fingerboard). The Dimension Strings already follow this outline, with the currently not yet available sul ponticello articulation for convenience likewise replaced by sul tasto.

Artificial harmonics (PC 33, 70 & 71)

A characteristic feature of natural instruments compared to most synthetic sounds are their rich and characteristic harmonics. Stringed instruments can be played in a way that the fundamental tone is reduced and the harmonics dominate the resulting sound. The harmonic content (partial 4 vs. 2, i.e. 2 vs. 1 octave above, the latter being hard to play on a string instrument) likewise can be varied continuously which is controlled by the Horizontal Controller (CC3) (crossfading harmonics and normal versions). Note: VSL artificial harmonics are mapped an octave lower than they sound.

Con sordino, Mutes, Stops (PC 73 - 96)

Damping of various string and brass instruments is an important variation to strongly alter the timbre of these instruments. Whereas in many cases the mute is fixed and not altered during the performance, for certain instruments the muting can be altered while playing. Even in the other cases there are different mutes available and the impact of the damping can to some extent be altered when attaching the mute. Therefore, Articulate Presets allow for controlling the intensity of the damping of muted articulations with the Horizontal Controller (CC3). This is done by crossfading muted articulations and their normal versions. In case of the Trombone, where even two different mutes have been recorded, the controller crossfades both of them and the normal version.

It is worth pointing out once more that for all matrices discussed so far the Horizontal Controller (CC3) always lowers the modulation (vibrato, tremolo, …). This is set-up this way, because when

you select a corresponding articulation, like e.g. tremolo, you generally want to get a modulated sound without increasing the controller first, and only in certain cases you might want to reduce it.

Speed Control (PC 13, 15 - 18, 23, 24, 25 - 30, 32, 34, 36, 92, 94, 96)

Matrices involving performance articulations, that are sampled at different speeds, generally use the *Speed Control* feature of VI which provides a very convenient way to intuitively play these sounds, since the appropriate version is automatically selected depending on how fast you play. Yet, if required you can also access the different speeds of the articulations individually. For performance interval articulations these are contained in the *Individual* Bank (PC 116 - 120), whereas for the Performance Repetition articulations these are accessed via the Vertical Controller (CC2).

Legato Performance (PC 13, 19, 22 & 85)

For the strings there are different legato versions and the Vertical Controller (CC2) continuously controls the legato performance from normal legato via slurred legato to a full-fledged portamento. Similar continuous control is implemented for woodwinds with performances grace patches and brass instruments that offer performance glissandi.

Legato Time (PC 19)

For strings and woodwinds the legato transition time can be continuously controlled via the Horizontal Controller (CC3). This is implemented via the *Time Stretch* feature of VI Pro that creates both a slower and a faster version and blends them with the normal version to continuously control the transition time of the various legato versions: namely legato, slurred legato, portamento and performance grace. This matrix requires additional hard disk space for the time-stretched samples and is therefore disabled by default. In case you standardly want to use it, simply activate the matrix, which will take some time to render the appropriate time-stretched samples, and then save the preset. The additional samples are stored in the *Time Stretch Cache* folder specified in the *Vienna Instruments Directory Manager.* Please make sure that you allocate enough disk space there.

Universal ("uni") matrices (PC 24 & 36)

These are the most extensive matrices included in Articulate Presets, as far as the included number of samples is concerned, and allow for very expressive (live) playing. They are extensions of the corresponding speed-controlled universal VI factory matrices, that are improved in several ways. First, like nearly all matrices in Articulate Presets, they implement the Section Controller. Secondly you cannot only switch the different included articulations but blend them with the Vertical Controller. Finally, the universal performance-interval matrix also includes the Performance Trill at the highest playing speed, which allows you to realistically play very fast figures.

X-fade velocity (xVel) matrix (PC 11)

Patches in VI pro generally switch from one velocity layer to the next at fixed velocity thresholds. Due to the limited number of recorded velocity layers, this can lead to audible steps where the sound changes drastically. Although there is in principle the so called "Velocity X-fade" controller that allows you to gradually crossfade the different velocity layers, Note-on Velocity is completely disabled, and traded in for the Velocity X-fade controller. Therefore, for the sustained articulation, where the individual layers are available, the "X-fade velocity" ("xVel") matrix provides, as far as possible in VI pro, an actual crossfade of the different layers controlled by Note-on Velocity and thereby smoothes out the hard steps. This works great for ensemble sounds as well as most solo

sounds and is particularly useful for realtime playing. For the Strings the Vertical Controller (CC2) in addition blends over to the (single-layer) *espressivo* patch in the highest velocity layer, where available, whereas in the case of the Horn(s) the same is done for the *blared* articulation.

Expressive Vibrato (xVib) matrices (PC 4, 16, 76 & 88)

The "*Expressive Vibrato*" (xVib) matrices are special in two ways. Compared to all other matrices for which corresponding samples are available, for these matrices you generally cannot control the section size and the "Section Controller" (CC20, realized by Slot XFade) controls vibrato instead. This allows you to change the vibrato of a note in real time while it is playing—blending two of the up to three available vibrato versions—and therefore can enable more expressive performances. In contrast to the other matrices that allow you to control vibrato, in the Expressive Vibrato matrices vibrato is absent by default and increasing the Slot XFade Controller introduces it. Similarly for the trombone there is an "*Expressive Mute*" (xMute) version, allowing you to blend the sampled mutes.

In case of the Dimension Brass *Section* presets and the Dimension Strings and Brass *Individual Player* presets the "Horizontal Controller" (CC3) is generally realized by VI pros Slot XFade feature, so that all parameters it controls (vibrato (for the strings), tremolo, muting, …) can be adjusted in realtime, analogous to the special xVib matrices. Correspondingly separate xVib or xMute matrices are not required. Therefore, CC20 acts in all matrices of these presets as a "Section Controller" or "String Controller". In contrast, for the *Section* version of the Dimension Strings, Expressive Vibrato control is *not* available in the standard presets (e.g. Violins D) due to limitations in VI pro. A Cell Xfade controller is not assigned at all in this case and the Cell Xfade slider always has to be kept at its maximum value for the matrices to function properly! Yet, since xVib control can be very useful there are special "expressive" presets (prefix "x", e.g. "xViolins D") where the xVib matrices do offer realtime vibrato control realized via Slot XFade using the additional controller CC5. IMPORTANT: These presets require special care, though, in the sense that CC5 has to be manually set to its maximum value whenever you switch back to another matrix.

Detuning (PC 4, 16, 76 & 88)

The Appassionata Strings offer sampled detuned versions and Articulate Presets allow you to continuously introduce the detuning via the Vertical Controller (CC2). This is can be a very useful feature if used appropriately, since adding these recorded detuned versions can significantly increase the realism that could in case of such large sections not be achieved via the Humanize feature of VI pro. Finally for the interval matrices there is in addition also an "*Expressive Tuning*" (xTune) feature which allows you to control the two recorded detuned versions (light and normal) in real time via the Slot XFade Controller, when detuning is introduced.

In addition to all these general possibilities there are many more specialized continuous control features for particular matrices, please see the extensive Table III in the Appendix for details.

High Definition Shorts

The Articulate Presets of the full Symphonic Cube instruments (strings, woodwinds & brass) include the unique High Definition (HD) Shorts with *nine* velocity layers! These offer portato and staccato for all instrument groups as well as spiccato for the strings. For most strings and brass these even come in standard and muted versions. These matrices are built out of the individual dynamic levels of the performance repetition dynamics, but their applicability goes far beyond the specialized

scope that these samples were initially recorded for. They can be intuitively played just like the corresponding Standard Definition (SD) short patches (portato, staccato, spiccato), that have merely 3-6 velocity layers. The HD matrices correspondingly provide an impressive dynamic range and resolution and, taking into account that basically no other sample library on the market offers such a detailed velocity response, they guarantee that the time-tested Symphonic Cube instruments, will remain at the forefront of what is technically and artistically possible for some time to come!

Like all Articulate Presets matrices they offer their signature 3D control, namely in this case dynamic velocity control, section control as well as another musical parameter. The latter depends on the playing technique and is identical to the corresponding SD version: for portato the attack behavior, for staccato morphing into a new (non-interval) legato (with 5 layers), for spiccato morphing into the likewise new HD harsh version, and in case of all muted playing techniques the mute strength. Therefore, the HD and SD versions can also easily be used interchangeably. Since the HD versions have in addition to their higher dynamic resolution also a somewhat different sound character (not always as polished and in-tune as the SD versions, yet as known from VI pro's Humanize feature exactly this can add realism), they give you a lot of freedom to vary the playback of short notes.

In contrast to the SD patches, that typically offer four alternations, the HD patches do not offer automatic alternations. However, since they are built from repetition samples, they work just perfectly with the corresponding normal VSL repetition samples, that are available for each of these playing techniques and that offer even *nine* repetitions. In addition, the HD matrices offer generally even *two* distinct sound versions (obtained from the corresponding individual samples of crescendo respectively decrescendo repetitions). Due to limitations in VI pro these cannot be accessed via a dedicated switch controller, but the second version can instead be selected simply by overlapping adjacent notes, i.e. by effectively "playing legato" (or by editing in your DAW or Dorico's Play mode). Since all these are short sounds (portato, staccato, spiccato), artificially slightly overlapping notes generally does not affect the playback at all otherwise. Therefore, you can this way nonetheless easily individually select these two distinct versions. All this gives you an impressive freedom to vary the playback using all these sonically distinct versions of short notes (SD, HDv1 and HDv2), for an unprecedentedly nuanced and realistic playback of fast musical passages!

Music software integration

Articulate Presets are fully integrated into the major Digital Audio Workstations (DAWs), *Cubase* and *Logic* and *Studio One*, as well as the most advanced Notation Software *Dorico*. All of these software integrations are completely unprecedented when it comes to their depth and their ease of use. They take full advantage of the special possibilities the corresponding software offers. In case of Dorico the focus is on the score and its automatic playback. In Cubase the focus is on the access of the entire VSL directly from within Cubase's editors. In case of Logic the focus is on live recording and realtime control of your music. Correspondingly, depending on whether you prefer to "write your music", and then, if you choose to, make that score sounds as good as possible by additional editing, or if you want capture the subtle details only a virtuous musical performance can create by directly "recording your music" with all the realism Articulate Presets offer, either Dorico, Cubase or Logic presents the best way for you to work with the VSL powered by Articulate Presets.

The Dorico implementation provides complete Playback Templates for all supported VSL full libraries. They include with a size of over 500GB of sample data most of the VSL Super Package,

i.e. basically every instrument arising in an orchestral context with all common playing techniques, that are chosen automatically based on standard musical symbols, or, owing to the advanced features of Dorico 3.5/4, even on the length of the notes. This way the Playback Templates allows you to automatically play any score with striking realism, that goes far beyond the default 8GB Halion Symphonic Orchestra included in Dorico Pro. Above all, the Dorico implementation gives you completely unprecedented control within a Notation Software to shape the playback of your score.

The Cubase integration is based on Cubase's comprehensive Expression Map implementation. The universal Cubase Articulate Map is very likely by far the biggest Expression Map ever created, including over 100 score symbols and text identifiers, and even implementing over 2500 individual expression definitions. This allows you do access *every* articulation and even literally *every single* articulation version included in the VSL (e.g. even a recorded fast minor upwards run in G#) directly in Cubase's Editors via self-explanatory attributes and directions that are properly displayed in the score. The Articulate Presets Cubase Expression Map is fully compatible with the VSL factory Expression Map, in the sense that all symbols and directions, that are defined there, work the same way. I.e. your present sequences should play as expected, yet the Articulate Presets version offers even far more detailed control and access to the entire VSL. Moreover, it is fully compatible with Articulate Presets signature 3D-control, so that you can even tune the nuances of your music unlike anything you could do so far starting from a score on a single track/stave.

The *Articulate Tools* for Logic provide a seamless integration of the VSL into Logic. they offer a next generation key-switching solution that allows you to access *all* articulations included in the VSL by convenient key switches. Moreover, it offers a quick access bank based on the universal Art Conductor layout compatible with nearly every library on the market. At any time you get a full directory of the entire VSL directly in Logic's main window and see the effect of the different continuous controllers supported by Articulate Presets (3D-control) for the selected instrument! While recording, articulations are automatically encoded in Logic's Articulation IDs of the notes themselves so that the articulation of a note is clearly displayed in Logic editors. Beyond this there are dedicated Articulation IDs that even allow you to select the most important articulation versions (e.g. a 2s medium decrescendo) in Logic's editors without the need for additional control events. Last but not least the Logic integration implements the novel concept of an articulation sequencer. By performing all the articulation switching automatically, it allows you to play musical lines with complicated articulation changes in real time so you can concentrate on the timing, phrasing and dynamics when recording them into Logic's sequencer—thereby bringing your music to life.

Finally the *Articulate Variations* for Studio One provide the same convenient display and selection of playing techniques in all editors as for the other implementation. In addition they include unique Control Variations that allow you to conveniently perform various tasks like divisi or vibrato control.

All these implementations allow you to get the most realistic digital rendition of orchestral music possible to date in an intuitive way. Please make sure to check out the implementation in your favorite music software to see how much all this simplifies the work with the VSL. There are full-featured demos and extensive manuals for the different implementations that explain all the details.

Mixdown, room placement and reverberation

Articulate Presets are already fully set up so that they provide out-of-the-box mixdown, room placement and reverberation. They use the *MIRx* feature of VI pro, which also works with the full

MIR engine. Standardly, the *Berlin TeldexStudio Aufnahmesaal* venue is selected, but since the *Synchronize* feature of MIRx is used you can change this easily for the entire orchestra to any other MIRx venue. Moreover, the *Natural Volume* feature of MIRx is employed which automatically takes care of the proper volume adjustment for each instrument for a realistic mix in the corresponding venue. This even holds for the different section sizes of a given instrument! For example if you dial the Section Controller in oder to morph from the Orchestral to the Chamber Violins, the appropriate volume adjustment (the smaller Chamber section being quieter) is automatically taken care of.

Layout and labeling of matrices and cells within Articulate Presets

The matrices and cells in Articulate Presets have a common labeling scheme in the VI pro player that gives you a direct overview of its contents. Like factory VSL matrices, the matrices in Articulate Presets are labeled by an abbreviation for the instrument or section followed by a description of the particular articulation. Since there are up to two different sections per preset, Articulate Presets use abbreviations that tell you immediately whether both sections are available for a particular articulation or only one of them. Where both are available the abbreviations in Table II are used. E.g. for the Violins M preset "VI-M" when both the orchestral and the chamber version is available. If only one of the two sections is available usually the corresponding VSL abbreviation, typically including the number of players, is used (also given in parentheses in Table II).

Cells that include unique VSL patches are labeled with an abbreviated identifier for that patch. Since cell labels consist only of a few characters (at most four), there is not enough room for a complete description of all the different patches and therefore the identifier typically only describes the aspects that distinguish the different versions of the particular articulation (e.g. with or without vibrato). In matrices that include continuous crossfades between different patches the pure articulations generally appear at the edges of the matrix (or also at its center and the middle of its sides in case three different versions are crossfaded. All other cells are marked by the symbol "<>", denoting that the cell gives a correspondingly mixed sound of the different sampled versions. In case a sound is added to another articulation, e.g. to accentuate the attack, this is shown by a "<" symbol (or a "<<" symbol if two sounds are added), where the name of the articulation that is added is given in the last cell corresponding to the maximum controller value.

Polyphony

Crossfading and adding different sampled versions obviously increases the used number of voices. In case of the Slot Xfade controller in VI pro, which is used for the different sections sizes, this always doubles the polyphony independent of whether the controller is used or not, i.e. even if it is kept at a value of 0. This is fortunately not the case for the quasi-continuous controllers realized via the two matrix dimensions. They only increase the number of used voices when they are set to an intermediate position, marked in the VI matrix with the symbols "<" or "<>", but otherwise they do not. This is advantageous because with the three continuous controllers in Articulate Presets every note would otherwise always use at least 8 voices, which could considerably tax your system when orchestrating large arrangements—in particular since this is multiplied by the number of velocity layers when Velocity Xfade is active. In Articulate Presets a note of an instrument for which different section sizes are not available (e.g. the Tuba) uses standardly only one voice, whereas a note for an instrument with different section sizes use typically two voices. As you set *either one* of the Vertical and Horizontal Controllers to an intermediate value, i.e. choose a cell horizontally or vertically in between two sampled versions (labeled in the matrix) these values generally double. When you set

both controllers to an intermediate value, i.e. a general cell inside the matrix, these values could in the worst case quadruple. Yet, the polyphony is for Articulate Presets only increased by that much when the corresponding sampled versions are actually available. For instance wind sections offer generally less vibrato and attack variations than solo instruments so that in reality the polyphony used by Articulate Presets is typically lower even when all three controllers are employed.

In addition for the sustained articulation (PC1) of the brass instruments the long portato versions are used to accentuate the attack behavior. Since for Brass 1 instruments the "long portato" sounds are rather short, they are crossfaded into the corresponding sustained sounds when they decay. Therefore, in this particular case the number of voices is further increased during the attack phase. In general the number of voices used for a note played by a given cell is equal to the number of filled slots, whose volume is not set to "-inf", and can be checked in the Advanced View of VI pro.

Figure I: Articulate Preset for the Trumpet in C in Vienna Instruments Pro
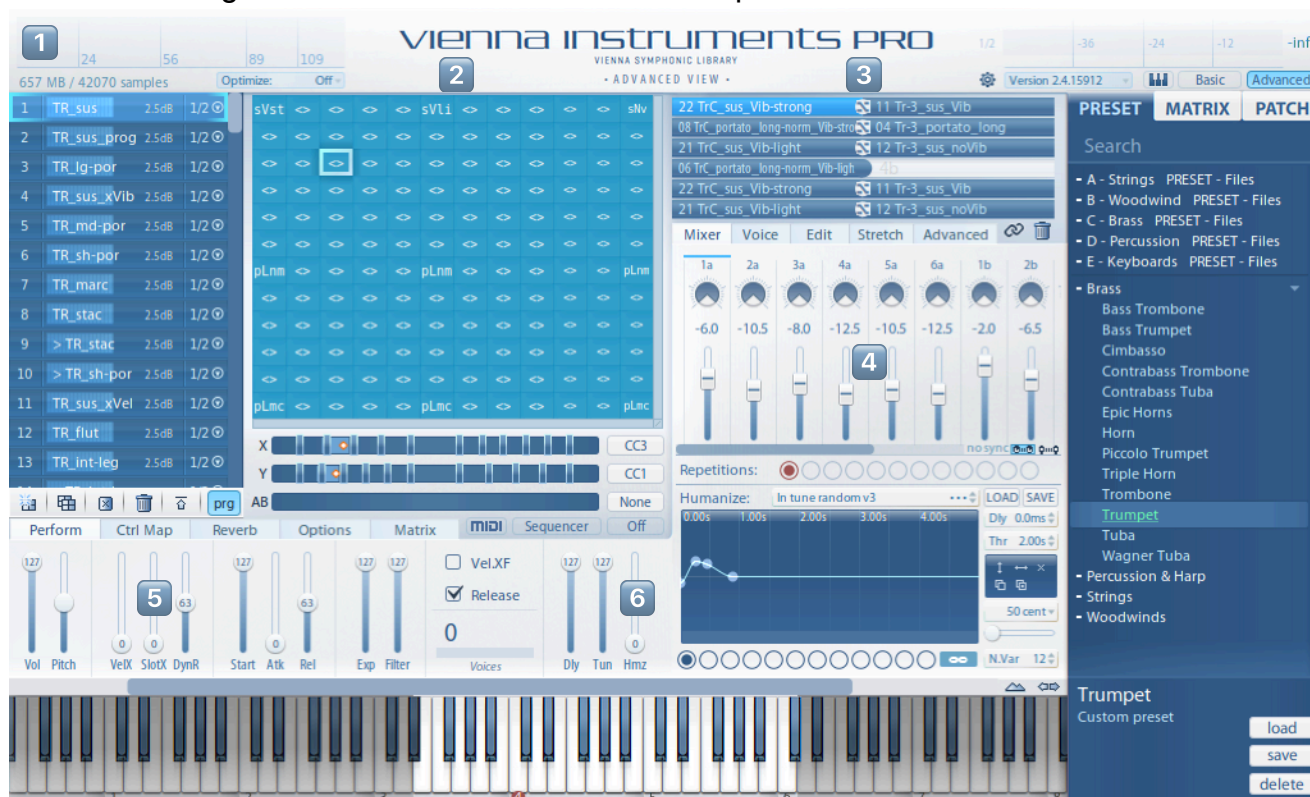
1 Matrices included in the Articulate Preset (accessed by program change messages)—there are up to 128

2 Cell-Matrix that implements the Horizontal (CC3) and Vertical Controller (CC2). They blend the different sampled versions (denoted by the corresponding abbreviations) in the cells in between (denoted by the symbol <>). In the example of the sustained articulation (PC1) in the figure, the Vertical Controller dials the attack behavior—crossfading (quasi-)continuously from the soft *sustained* through the harder *long portato* to the pronounced *marcato* attack—whereas the Horizontal Controller adjusts the vibrato intensity—crossfading from *strong* via *light* to *no vibrato*.

3 Slots of the selected cell … and the appropriate volume settings to obtain the desired transitions 4

5 The Slot Xfade controller (CC20) dials the section size. In the example it "morphs" the solo Trumpet C into the 3-player Trumpet Ensemble.

6 All other standard controllers offered by VI pro, like Humanize, are surely available as well through their default controller numbers listed in Table I.

4

Using Articulate Presets
How to realize your musical ideas …

Articulate Presets for VSL are designed for a convenient user experience in your sequencer. You only need one track per instrument in the score to record and play all available articulations of this instrument. Just load the corresponding Preset and you are ready to play and record your music.

Playing Articulate Presets

A big advantage of Articulate Presets is the chance to play an instrument live with significantly greater expressiveness due to the additional continuous controllers. In addition to the VI pro Tablet App discussed below, you can do this with any hardware Midi controller ranging from standard faders, knobs or pedals to touch-screen based solutions (which are e.g. provided by countless smartphone and tablet apps) or even with contact-free controllers. A particularly convenient way is to use Midi hardware that can send more than one continuous controller at the same time. Examples are certain wind controllers that also react to pressure and/or head movements, pressure-sensitive ribbons, joysticks, x/y-pads or additional food pedals. Such hardware allows you to control in addition to pitch and velocity for instance the Vertical and Horizontal Controllers (CC2 and CC3) simultaneously and thereby to shape the sound in great detail while playing. In case you have additional assignable Midi buttons or pads it can also be useful to assign special controller values to them - e.g. 0, 64 and 127 of CC3 to quickly access sampled vibrato or bowing position versions.

It is important to recall that the Vertical and Horizontal Controllers have to be set before a note is triggered and changing them while a note is playing has no effect on this note, which is an inherent limitation in VI pro. For even more expressive playing the various real time controllers provided by VI pro can be used in addition, like the Slot X-fade controller that can be altered while a given note is playing. Whereas this controller standardly controls the Section size, in case of the Expressive Vibrato (xVib) matrices this controller dials vibrato so that you can play continuous vibrato changes in real time. This can furthermore be combined with Velocity X-fade to realize subtle dynamic changes in real time, allowing for very expressive playing.

Controlling Articulate Presets with the VI pro Tablet App

An alternative way to control the advanced functions of Articulate Presets is the VI pro Remote Control App for Tablets. It gives direct access to *all* the main controllers used by Articulate Presets. To the left different articulations can be selected in the scrollable Matrix list. The large matrix pad gives access to both the Horizontal Controller and the Vertical Controller, as their names suggest. The matrix currently does not react to sliding movements like an ordinary continuous controller, but you have to select individual cells by pressing to get the different sampled versions or the desired mixture. Nevertheless, this way you can control both the Horizontal and the Vertical Controller simultaneously. In case one direction is controlled by Speed Control or Velocity you only need to control the other direction of the matrix. The Section Size is generally controlled by the Slot X-fade

Controller in the slider area below, which also offers other standard VI controllers, like e.g. Velocity X-fade. Finally there is also a dedicated A/B switch button.

The VI pro Remote Control App for Tablets can send Midi information if properly set up, see the dedicated VSL manual for this App, so that you can record all its control elements in your sequencer. In this case the controllers in Table I are recorded. These controllers can also be directly inserted in your sequencer to perform further editing as described below.

Recording within a sequencer

The detailed control opportunities that Articulate Presets provide make it harder without special Midi hardware to directly record a sequence including all the detailed nuances, because it can become challenging to control many different controllers simultaneously. Therefore it can be useful to record the notes and the various controllers successively. Corresponding record modes that add additional data to existing sequences are available in most sequencers.

Many sequencers also allow for recording data while the sequencer is paused, please see the manual of your sequencer for details. This is a convenient and simple way to add a control events for selected notes. Just move the playhead to the position of a given note, which is typically at a fixed separation (e.g. the second quarter note in bar ten) and then move the playhead back by a tiny time step (e.g. a single tick). Typically there are also key commands to do this. Then you can conveniently adjust the controller(s) to the desired value. This way you can in many sequencers even record controller data to several tracks simultaneously, to change e.g. the "size" of the entire orchestra, see the manual of your sequencer for details.

Editing and refining your music

Articulate Presets give you detailed control over the execution of your music beyond mere notes. This allows you to start from a basic version given only by note events, and then successively refine the execution of these notes to the level of detail you desire by adding various additional control events. A basic version of your music, that contains merely the notes, could either stem from a previous sequencer recording, a score created in a dedicated notation software respectively the score/note editor of your sequencer, or even from a downloaded Midi file of an orchestral work.

In case you started from a score in your music software, you might first of all want to select different articulations for the different notes. Some sequencers can (when properly set up) create the corresponding program change events automatically from corresponding articulation symbols in the score. Otherwise, changing the articulation of a given set of notes to any articulation included in the VSL library is as simple as inserting the corresponding program change event in your sequencer or notation software just before the corresponding notes. Some sequencers offer very convenient ways to do this, e.g. via key commands. For information on how to insert Midi control events please see the manual of your music software.

The next level of refinement is surely to adjust the velocities of the notes to obtain the desired result. As discussed before, there are even more nuanced ways to shape the way how notes are played. In addition to the standard VI pro controllers given in Table I, this is particularly done by the three Continuous Midi Controllers: Vertical (CC2), Horizontal (CC3) and Section (CC20). Inserting and adjusting these can strongly affect the way a given musical line is played.

The simplest one is the Section Controller realized by Slot XFade (CC20). Placing this controller at the beginning of each track of your piece or the beginning of sequences you can easily adjust the size of the orchestra that plays it (use the inverted Strings M & Horns L for consistency, see Table II). However, you can also change this controller during the performance, e.g. to realize divisi, or even during the duration of a given note, which can be particularly useful for the Expressive Vibrato (xVib) matrices. In contrast, changing the Horizontal or Vertical Controllers, realized via the VI pro matrix, after a note has been trigger has no effect on this note. Similar to program change messages, these controllers have to be dialed before the start of a note. Yet, this actually also has advantages: Whereas the Slot XFade controller always affects all playing notes in polyphonic or legato passages, the Vertical and Horizontal controllers can be adjusted for each note individually! Just insert the corresponding controller(s) right before the start of a given note to affect how it is played. You can even control the different notes in a chord individually by displacing the different notes undetectably by tiny time steps (e.g. a few ticks) and inserting the corresponding controllers in between.

Finally you can easily and at any time choose the venue in which your music is performed using VSLs MIR technology—thereby strongly altering the sound of your music! This feature distinguishes the *dry* VSL—recorded in the nearly anechoic "Silent Stage"—from the *wet* libraries of its competitors (which typically also require significantly more resources due to multiple sampled microphone positions). Other developers occasionally offer libraries recorded in different venues, yet they are generally incompatible (different articulation lists, controller assignments, velocity-sensitivity, …) and therefore force you to pick the venue from the outset. In Articulate Presets simply select the MIRx venue in the Reverb tab of VI pro of one of the instruments instantiated in your sequencer. Due to the activated Synchronize feature the rest of the orchestra automatically "follows to the new location". In case you purposely want to place certain instruments (e.g. percussion) in a different venue, simply deactivate Synchronize for the corresponding instruments.

Moving sequences between instruments and changing playing techniques

A big advantage of Articulate Presets is that they have a consistent layout across the entire orchestra. In addition to convenient access, this ensures that it is possible to move a musical sequence from one instrument track to another and it should play as expected. This is great because it allows you to experiment: Is this musical line better played by the Oboe or the English Horn? Does it sound good to double it in the lower octave with the Bassoon? Well, just check it out!

Moving sequences between different instruments works since the different articulations are accessed with dedicated program change messages, as shown in Table III in the appendix, that are the same for *every* chromatic instrument of the orchestra. As explained in section 3, this even holds for more complex articulations like phrases or dynamics where several versions are available that are accessed with additional continuous controllers. Say your sequence contains a 3s strong crescendo and you move it to another instrument, it will play exactly the same if this articulation has been sampled for the other instrument. If not it will generally be replaced by the next higher available length, so if the note in your sequencer is three seconds long there will still be a similar strong crescendo, it only might not fully reach *fff*. Similarly, e.g. light crescendos are only available for a few instruments and in case light crescendo is not available for the instrument you move the sequence to it will be replaced by a medium crescendo of the same length.

The fact that sequences moved to other instruments play correctly even holds for the various continuous controllers that are used by Articulate Instruments. For instance if a given note has a harder attack due to a corresponding value of the Vertical Controller (CC2), when moving it to another instrument the note will likewise play with a harder attack, if sampled versions are available.

When moving sequences from one instrument to another, you should take into account that the different instruments can inherently react slightly differently to velocity and the various other controllers, since the sampled velocity layers or sampled versions are generally different between different instruments. Therefore, even though the sequence should work well with the new instrument "out of the box", for perfect results it might be necessary to slightly tweak the velocity and controller values. Many sequencers have ways to scale the velocity and/or controller values of an entire sequence so that you can conveniently adjust this globally in case the new instrument should react more or less sensitively to one of them, instead of doing it on a note by note basis.

Similar to the consistent layout between different instruments, the assignment of the continuous controllers is even consistent between many different articulation types. Therefore, if you are asking yourself: Would this line sound better if played con sordino? Or maybe rather sul ponticello? Well, you know … just try it! Merely change the program change message in your sequencer to the value of the desired articulation, see Table III. Where available the continuous controllers will have the same effect. This obviously holds for the Section Controller which generally blends different sections sizes. Yet, it generally even holds for the other continuous controllers. For instance if you change a line from sustained to tremolo and the Vertical Controller was set to a harder attack for certain notes the tremolo line will likewise play with harder attacks. Similarly if you change a line from con sordino to sul ponticello and the Horizontal Controller was set to have a mild con sordino ("less tight mute") the sul ponticello will also be mild ("bowing near, but not too close to the bridge").

Using several instances of an instrument or section

Typical orchestral scores demand several players for woodwind and brass instruments as well as a second violin section. Articulate Presets offer alternate versions (prefix "a") for most instruments that are based on the same sample content but have different MIRx placement and equalizer settings, resulting in a somewhat different sound character. As long as these different versions play different notes or distinct variations of an articulation this should work perfectly. The various sampled versions of an articulation, accessed by the continuous controllers within Articulate Presets, offer various ways to effectively employ different samples for the same note, e.g. distinct vibrato or attack versions. However, mixing the same samples unisono can lead to phasing. The different MIRx settings already alleviate the problem. Yet, in case you have to employ the same (version of an) articulation more than once simultaneously, a trick to completely circumvent any phasing problems, is transposing the entire track for the second/third player or section up/down by half a tone in your sequencer and tuning it back down/up by half a tone (50 cents) with the pitchbend controller. This trick had also been used in the dedicated *Violins 2* patches included in VSL String libraries (which are not based on distinct—i.e separately recorded—samples). Yet, since the *Violins 2* versions in the VSL libraries unfortunately only feature a very limited set of articulations they are not used in Articulate Presets and using the included alternate Presets—with the above trick if necessary—provides far more flexibility for the second violin section.

Since VSL Strings, Horn and Trumpet come in four versions/section sizes (e.g. Solo, Chamber, Orchestral and Appassionata) it was due to limitations in VI pro not possible to include all into a

single preset, e.g. the *Violins*. Instead the String Presets come in three different section sizes (S, M & L) that still allow you to control the section size by blending two ("adjacent") of the above sampled sections. Yet, in case you own all (or most) of the above libraries it can be useful to mix all available sections to shape the string sound in even more detail. For instance even if you want a huge string ensemble, it can be useful to mix-in the Solo/Chamber Strings to emulate the first desk(s) and give the sometimes a bit "pad-like" Appassionata sound more definition. In this case it is necessary to instantiate the different sampled section sizes in several VSL pro instances and mix them using the mixer of your sequencer or within Vienna Ensemble (pro), instead of the Section Controller (which would not be sufficient to properly mix several signals anyway). The universal layout of Articulate Presets makes it possible that the same MIDI data simultaneously plays all these different instances. Whereas in a conventional sequencer this would require you to copy the sequences to different tracks, some sequencers (like e.g. Logic) even allow you to control all these different VI pro instances from a single sequence on a single track (in Logic e.g. via the concept of "track stacks"), please see the documentation of your sequencer for details. This gives you complete control over the strings sound while not compromising the intuitive operation that Articulate Presets offer.

Enabling/disabling content or working without presets

When streaming from SSD drive(s) on a current computer system, it can indeed be possible to run *all* VSL articulations of a *huge* orchestra. However, should your system be less powerful or in case you simply have too much sample content to load everything, VI pro offers the convenient option to disable and enable cells. With this you can tailor Articulate Presets according to your needs and enable only the content you need often. This way everything is still already set up and when you need more content you can load matrices or cells by enabling them at the press of a button. VI pro offers flexible ways to enable content: from whole matrices, individual rows and columns down to single cells. For instance if you want to disable the non-vibrato components in a typical Articulate Presets matrix, you can simply disable the entire matrix and then enable again the first column. To simplify the use of Articulate Presets in cases where memory is an issue, there are dedicated versions of the Presets (prefix "e"), where nearly all content is disabled, so that you can enable what you need and your system allows for, and then save them to be used in your VSL template.

Aside from the manual enabling of content, VI pro even offers the feature that sounds are automatically loaded as soon as you access them with the corresponding program change message. This way you could for instance disable memory-intensive, yet rarely used, phrases, but they are nevertheless available whenever you need them. Another available tool in the context of memory management is the *Learn* feature. See the VI pro manual for more details on these topics.

Everyone has a different working method and the big advantage of VI pro is that it is very flexible and supports all these different approaches to digital orchestration. In particular, some users prefer to start with an empty page respectively an empty VI pro instance and only load articulations as they are needed, in contrast to starting with a fully featured preset. For this reason, main matrices included in Articulate Presets—that provide powerful 2/3D control—are individually provided in a separate folder and you can easily extract other matrices and save them separately in case you need them. This way also users that do not like large scale templates and presets can fully take advantage of the extensive control possibilities implemented in the corresponding matrices—and thereby effectively "use Articulate Presets without Presets".

Appendix
All the details … just in case

This appendix contains detailed information on structure and control of Articulate Presets:

Table II shows the presently available Articulate Presets and also lists the included VSL libraries. Further, it gives the up to two sections for the corresponding instrument that can be x-faded by the Section Controller for nearly all articulations of an Articulate Preset. If you are missing licenses for a corresponding library the Section Controller might not work for some or all articulations and should in this case be kept in the corresponding extreme position. Finally, Table II also gives (for a standard Preload Buffer of 16384) the required RAM as well as the included number of samples.

The comprehensive Table III, extending over five pages, lists the generic layout and the corresponding articulation assignments of the Presets, and applies to all chromatic Articulate Presets, including chromatic percussion instruments like the timpani or mallets. It also gives the corresponding program change numbers to access the respective articulation. Clearly, depending on the included content in a given VSL library, not all these articulations are available for every instrument. The availability column lists in each case for which instruments the corresponding articulation is included in the *Full Library* of at least one of the up to two sections (the instrument abbreviations in Table II are used). The color-coding of the number column shows if the articulation is also included in the *Standard Library* of all (dark blue), some (medium) or none (light blue) of the listed available instruments. The table also lists the effect of the other main controllers provided by Articulate Presets (Vertical and Horizontal), as well as the effect of the Vienna Instruments Speed Controller (or the APP Sequencer speed). Finally the assignment of the A/B switch is given. Please see the legend below the last part for further details on the notation.

The *Special* Articulation bank (PC61-72) contains articulations that are specific to a given instrument or instrument group. Whereas Table III only lists the content of the Special Bank for the Strings S, Table IV shows the available articulations in this bank for all instruments. Since this bank includes instrument specific articulations, sequences using these articulations inherently cannot play back comparably when moved to a qualitatively different instrument (e.g. from a string to a brass instrument). However, they still play as expected when moved between similar instruments. The abbreviations listed in the legend of Table III are used. Colored large characters indicate which of the controllers (H: horizontal, V: vertical, S: section) are used for the corresponding articulation.

Table V gives the layout of the combination instruments for the various Percussion groups, where colored large characters again denote the available controllers (H: horizontal, V: vertical, S: section).

Finally, Table I in Section 2 lists all controllers that are used by Articulate Presets within VI pro. The main controllers of Articulate Presets are the Vertical Controller (CC2), the Horizontal Controller (CC3) and the Section Controller, realized by Slot XFade (CC20). In contrast to the standard VSL conventions the A/B switch is in Articulate Presets also controlled by a Midi controller (CC4), instead of key-switches, so that the score is not affected. For all other controllers the standard VI conventions are used.

Table II: Presets, Resources and Section Controller (Part I: Strings)

Preset*	Abr.	Section 1*	Section 2*	Collection(s)	RAM+ [MB]	Samples
Violins S	VI-S	Solo Violin (VI)	Chamber Violins (VI-6)	Solo Strings 1&2, Chamber Strings 1&2	4267/1443/850	68279
Violins S2	VI-S2	Solo Violin 2 (VI2)	Chamber Violins (VI-6)	Solo Violin 2, Chamber Strings 1&2	2359/—/—	37752
Violins M	VI-M	Orchestral Violins (VI-14)	Chamber Violins (VI-6)	Orchestral Strings 1, Chamber Strings 1&2	3159/942/643	50556
Violins L	VI-L	Orchestral Violins (VI-14)	Appassionata Violins (VI-20)	Orchestral Strings 1, Appassionata Strings 1&2	2698/814/521	43183
Violins D	VI-D	8, 6, Group 1&2, 4, 3, …	… Desk 1-4, 2, 1 Violins	Dimension Strings 1-3 + bonus content	10139/8323/—	324454
Violins D#	VI-D#	Dim. Violin Player #	— (Strings: R,G,D,A,E,O)	Dimension Strings 1-3	1777/—/—	56885
Violas S	VA-S	Solo Viola (VA)	Chamber Violas (VA-4)	as Violins S	3422/1248/752	54752
Violas M	VA-M	Orc. Violas (VA-10)	Chamber Violas (VA-4)	as Violins M	2787/849/570	44408
Violas L	VA-L	Orchestral Violas (VA-10)	Appassionata Violas (VA-14)	Orchestral Strings 1, Appassionata Strings 1&2	2255/688/450	36081
Violas D	VA-D	6, Gr. 1&2, 4, 3, …	… Desk 1-3, 2, 1 Violas	Dimension Strings 1-3 +	7495/5037/—	239844
Violas D#	VI-D#	Dim. Viola Player #	— (Strings: R,C,G,D,A,O)	Dimension Strings 1-3	1641/—/—	52516
Cellos S	VC-S	Solo Cello (VC)	Chamber Cellos (VC-3)	as Violins S	4047/1479/870	64752
Cellos S2	VC-S2	Solo Cello 2 (VC2)	Chamber Cellos (VC-3)	Solo Cello 2, Chamber Strings 1&2	2309/—/—	36946
Cellos M	VC-M	Orchestral Cellos (VC-8)	Chamber Cellos (VC-3)	Orchestral Strings 2, Chamber Strings 1&2	2822/905/615	45165
Cellos L	VC-L	Orchestral Cellos (VC-8)	Appassionata Cellos (VC-12)	Orchestral Strings 2, Appassionata Strings 1&2	2261/738/472	36185
Cellos D	VC-D	6, Gr. 1&2, 4, 3, …	… Desk 1-3, 2, 1 Cellos	Dimension Strings 1-3+P.	7386/5293/—	236268
Cellos D#	VC-D#	Dim. Cello Player #	— (Strings: R,C,G,D,A,O)	Dimension Strings 1-3	1714/—/—	54850
Basses S	DB-S	Cellos (VC-8)	Chamber Basses (DB-2)	as Violins S	2670/1142/685	42727
Basses M	DB-M	Orc. Basses (DB-6)	Chamber Basses (DB-2)	as Cellos M	2062/821/530	32992
Basses L	DB-L	Orchestral Basses (DB-6)	Appassionata Basses (DB-10)	Orchestral Strings 2, Appassionata Strings 1&2	972/399/257	15562
Basses D	DB-D	4, 3, Gr. 1&2, …	… 2, 1 Basses	Dimension Strings 1-3 +	4515/3249/—	144496
Basses D#	DB-D#	Dim. Bass Player #	— (Strings: R,B,E,A,D,O)	Dimension Strings 1-3	1532/—/—	49043
Strings S	ST-C	Chamber Strings	—	Chamber Strings 1&2	360/360/202	5766
Strings M	ST-M	Orchestral Strings (ST-O)	Chamber Strings (ST-C)	Orchestral Strings 1&2, Chamber Strings 1&2	608/608/311	9742
Strings L	ST-L	Orc. Strings (ST-O)	Appassionata Str. (ST-A)	Orc. & App. Strings 1&2	448/448/266	7183
Harp	HA	Harp 1 (HA1)	Harp 2 (HA2)	Harps	506/125/19	8110

Table II: Presets, Resources and Section Controller (Part II: Woodwinds)

Preset*	Abr.	Section 1*	Section 2*	Collection	RAM+ [MB]	Samples
Piccolo Flute	PFL	Piccolo Flute	—	Woodwinds 2	469/170/113	7506
Flute	FL	Flute 1 (FL1)	Flute Ensemble (FL-3)	Woodwinds 1	1746/406/250	27937
Second Flute	SFL	Flute 2 (FL2)	Flute Ensemble (FL-3)	Woodwinds 2&1	1206/400/237	19299
Alto Flute	AFL	Alto Flute	—	Woodwinds 2	645/274/135	10332
Bass Flute	BFL	Bass Flute	—	Special Woodwinds	514/119/—	8231
Oboe	OB	Oboe 2 (OB2)	Oboe Ensemble (OB-3)	Woodwinds 1	972/299/187	15563
Viennese Oboe	VOB	Oboe 1 (OB1)	Oboe Ensemble (OB-3)	Woodwinds 2&1	1180/290/167	18881
Oboe d'Amore	OA	Oboe d'Amore	—	Special Woodwinds	489/116/—	7824
English Horn	EH2	English Horn 2	—	Woodwinds 2	633/216/107	10143
Viennese English Horn	EH1	English Horn 1	—	Woodwinds 2	723/195/—	11571
Heckelphone	HPH	Heckelphone	—	Special Woodwinds	397/104/—	6364
Small Clarinet	CLE	Clarinet Eb	—	Woodwinds 2	947/266/163	15154
Clarinet	CL	Clarinet Bb (CL1)	Clarinet Ensemble (CL-3)	Woodwinds 1	1951/476/295	31216
Second Clarinet	SCL	Clarinet Bb 2 (CL2)	Clarinet Ensemble (CL-3)	—&Woodwinds 1	1202/435/—	19242
Bass Clarinet	BCL	Bass Clarinet	—	Woodwinds 2	762/280/150	12204
Contrabass Clarinet	CCL	Contrabass Clarinet	—	Special Woodwinds	481/135/—	7699
Basset Horn	BH	Basset Horn	—	Special Woodwinds	624/161/—	9986
Bassoon	BA	Bassoon 1 (BA1)	Bassoon Ensemble (BA-3)	Woodwinds 1	1479/462/269	23678
Second Bassoon	SBA	Bassoon 2 (BA2)	Bassoon Ensemble (BA-3)	—&Woodwinds 1	800/800/—	12808
Contra Bassoon	CBA	Contra Bassoon	—	Woodwinds 2	699/178/105	11193

Table II: Presets, Resources and Section Controller (Part IIIa: Brass)

Preset*	Abr.	Section 1*	Section 2*	Collection	RAM+ [MB]	Samples
Flugelhorn	FLH	Flugelhorn	—	—	496/496/—	7939
Horn	HO	Viennese Horn (HO1)	Horn Ensemble (HO-4)	Brass 1	2061/384/240	32985
Triple Horn	THO	Triple Horn (HO2)	Epic Horns (HO-8)	Brass 2	1192/432/305	19081
Horns D	HO-D	4, 3 Horns, Group 1&2, 2 Horns, …	… Player 1,2,3&4, 1 Horn	Dimension Brass 1&2	2190/1549/—	70096
Horns D#	HO-D#	Dimension Horn Player #	—	Dimension Brass 1&2	547/—/—	17524
Horns L	HO-L	Epic Horns (HO-8)	Horn Ensemble (HO-4)	Brass 2&1	1286/295/220	20577

Table II: Presets, Resources and Section Controller (Part IIIb: Brass)

Preset*	Abr.	Section 1*	Section 2*	Collection	RAM+ [MB]	Samples
Piccolo Trumpet	PTR	Piccolo Trumpet	—	Brass 2	612/138/87	9796
Trumpet	TR	Trumpet C (TRC)	Trumpet Ensemble (TR-3)	Brass 1	2632/465/405	42116
Second Trumpet	STR	Trumpet Bb (TRB)	Fanfare Trumpets (TR-6)	—&Special Brass	1503/1204/—	24048
Cornet	CO	Cornet	—	Special Brass	588/132/—	9423
Trumpets L	TR-L	Fanfare Trumpets (TR-6)	Trumpet Ensemble (TR-3)	Special Brass &1	1458/378/—	23330
Trumpets D	TR-D	4, 3 Trumpets, Group 1&2, 2 Trumpets, …	… Player 1,2,3&4, 1 Trumpet	Dimension Brass 1&2	1746/1221/—	55895
Trumpets D#	TR-D#	Dimension Trumpet Player #	—	Dimension Brass 1&2	436/—/—	13974
Bass Trumpet	BTR	Bass Trumpet	—	Brass 2	743/180/—	11889
Alto Trombone	ATB	Alto Trombone	—	Special Brass	615/120/—	9840
Trombone	TB	Tenor Trombone (TTB)	Trombone Ensemble (TB-3)	Brass 1	3043/492/396	48695
Trombones D	TB-D	4, 3 Trombones, Group 1&2, 2 Trombones, …	… Player 1,2,3&4, 1 Trombone	Dimension Brass 1&2	1913/1303/—	61224
Trombones D#	TB-D#	Dimension Trombone Player #	—	Dimension Brass 1&2	478/—/—	15306
Bass Trombone	BTB	Bass Trombone	—	Brass 2	753/203/153	12059
Contrabass Trombone	CTB	Contrabass Trombone	—	Brass 2	450/146/113	7212
Cimbasso	CI	Cimbasso	—	Brass 2	599/160/—	9596
Euphonium	EU	Euphonium	—	Special Brass	472/116/—	7565
Tuba	TU	Bass Tuba	—	Brass 1	726/212/124	11620
Low Brass D	LB-D	4, 3 Low Brass Instr., Group 1&2, 2 Low Brass Instruments, …	… Player 1,2,3&4 (Trombone 1&2, Bass Trombone, Tuba), 1 Low Brass Instrument	Dimension Brass 1	207/207/—	6648
Low Brass D#	LB-D#	Dimension Low Brass Player # (Trombone 1&2, Bass Trombone, Tuba)	—	Dimension Brass 1	51/51/—	1662
Wagner Tuba	WTU	Wagner Tuba	—	Brass 2	718/214/126	11502
Wagner Tubas D	WT-D	4, 3 Wagner Tubas, Group 1&2, 2 Wagner Tubas, …	… Player 1,2,3&4, 1 Wagner Tuba	Dimension Brass 2	853/853/—	27304
Wagner Tubas D#	WT-D#	Dimension Wagner Tuba Player #	—	Dimension Brass 2	213/213/—	6826
Contrabass Tuba	CTU	Contrabass Tuba	—	Brass 2	594/171/118	9511

Table II: Presets, Resources and Section Controller (Part IV: Percussion)

Preset*	Abr.	Section 1*	Section 2*	Collection	RAM+ [MB]	Samples
Timpani	TI	A	B	Percussion	389/117/—	6234
Glockenspiel	GL	A	B	Percussion	143/41/—	2299
Vibraphone	VIB	—	—	Percussion	167/66/—	2684
Marimbaphone	MAR	—	—	Percussion	265/81/—	4255
Xylophone	XYL	—	—	Percussion	238/91/—	3819
Celesta	CEL	—	—	Percussion	27/16/—	432
Tubular Bells	TUB	A	B	Percussion	228//194/—	3649
Mallets	—	Glockenspiel: A	Glockenspiel: B	Percussion	973/319/—	15569
Drums	—	Snare: A/B, Bass & Field: A	Snare: Ens., Bass & Field: B	Percussion	429/175/—	6877
Cymbals & Gongs	—	—	—	Percussion	242/40/—	3879
Bells	—	Tubular & Cow Bell: A	Tubular & Cow Bell: B	Percussion	128/56/—	2060
Percussion	—	—	—	Percussion	289/38/—	4636
Harpsichord	—	normal (8')	tutti (8' & 4')	Keyboards	50	813

* Although for each instrument there is a single preset that includes all articulations, there are up to three alternative versions of it:
  - Alternate version (prefix "a"): Alternative MIRx settings are employed, in order to be used as a second instrument (e.g. "aFlute").
  - Inverted version (prefix "i"): Section 1 and 2 are interchanged and MIRx settings for Section 2 are used.
  - Expressive vibrato version (prefix "x"): Expressive vibrato control for the Dimension Strings via CC5 - see main text for details.

The Standard Library and Special Edition versions of a Presets are distinguished from the Full Library version by prefixes "- " and "*".

+ The RAM requirement for the Full/Standard/Special Edition Articulate Presets is given for a standard buffer size of 16384. It can be reduced by up to a factor of ten when a SSD is used, see section 2 or the VI pro manual for details. This should allow you to load most instruments included in this table on a recent SSD-based computer. These values only include the actual sample data and specify only the RAM requirement: the total hard disk space of all listed libraries is below 500 GB and independent of the type of disk.

Table III: Articulation & Controller Assignment List (Part I)

#	Bank	Articulation	Availability	Vertical	Horizontal	Speed	A/B
1	basic	sustained / hit	strings & brass / percussion	attack behavior	vibrato intensity*	—	—
2		sustained progressive vibrato	strings S / D, L ex DB; FLs ex BFL, OB,VOB,EH2,SCL,BA;TRs,FLH,TB	A/B: prog. I down / attack behavior	vibrato intensity*	—	<—
3		long portato (unlooped)	strings M&L ex VI; winds ex BFL, HPH,SCL,CCL,SBA,THO,FLH	attack behavior	vibrato intensity*	—	—
4		sustained expressive vibrato (xVib)	FLs ex PFL, OB,OA,EH1,HPH, SCL, BAs ex BH; TRs, HO,FLH, TB,BTB, TU; strings S,M / L ex DB	attack behavior / <> tune	(Slot XFade: vibrato intensity)	A/B: section	<—
5		long detache / medium / long portato	strings / winds ex brass D / TR-D, HO-D, TB-D	attack behavior	vibrato intensity*	—	—
6		short detache / portato	strings / winds ex CTB,TU,CTU,CI	attack behavior	—	—	—
7		espressivo / marcato / blared	strings S; M, L / BA; TR,STR,BTR, HO,HO-L,FLH, TBs / brass D	<> marcato; attack behavior / — / —	— / vibrato intensity* / —	—	—
8		(long) staccato	violins L / all others	attack behavior	A/B: tight I lo. / —	—	<—
9		short / long staccato	strings ex D&DB-S / all others	<> sustained	—	—	—
10		pizzicato	strings M ex VC / L / VC-M / VI-S, VC-S / VA-S, DB-S, strings D	<> col legno <> snap	<> slow / +rand. /<> vib.<>sl./<>sec./—	—	—
11		sus. x-fade velocity (xVel) / tremolo speed	strings S&M ex DB, VA-L / HOs / all others / strings D	<> espressivo / <> blared / — / —	— (velocity) / trem. <> slow <> norm.	—	—
12		tremolo / bisbigliando / fluttertongue / rolls	strings / harp / winds / chromatic percussion	attack behavior	tremolo intensity*: tremolo <> normal	—	—
13	interval	legato	strings / STR, FLH / woodwinds ex S,SCL,BCL,SBA / TR-D, HOs, TBs ex BTB / all others	<> slur <> portam. / <> por. tight <> loose / <> grace / <> gliss. / —	—	interval	—
14		legato progressive / espressivo / 4V / vib.	VOB;strings S&L ex DB /D/M/PFL, EH1,CL2,BA2;TRs,HO,FLH,TB,TU	— / — / <> slur <> portamento / —	vibrato intensity* / id. / — / id.	— / — / interval / —	—
15		marcato / marcato trill	all ex CL2,BA2,STR,FLH,TU / str. D	attack behavior / —	—	interval / —	—
16		legato expressive vib. (xVib) / +xTune	strings S;EH1,CL2,BA2;TRs ex CO, HO,FLH, TB, TU / strings L ex DB	— / <> tune / (Slot XFade: intensity)	A/B: section	interval	<—
17		spiccato	strings S & VI-L / M, L ex VI	<> harsh / —	—	interval	—
18		performance trill	all ex BTR,BTB,CTB,TU / strings D	standard I speed / —	— / leg. <> marc.	legato I trill	—
19		legato time-stretched / id. / non-vibrato	strings / woodwinds / strings D	<> slur <> portam. / <> grace / <> portam.	transition time / id. / —	—	—
20		grace / zigane / espressivo / sfz / tune	woodwinds ex BCL / strings S&M ex DB / D / L ex DB / TR	— /<> porta. / id. / <> harsh / std. I fall rel.	—	—	—
21		portamento / id. / glissando	strings S, VI-M&L; STR / D / CL; TR-D, HOs, ATB,TB,CTB,TB-D	<> glissando / — / —	string / vib. int.* / glissando speed	—	—
22		legato sul (or str. vib.) / sustained	strings ex DB-L / winds ex THO,WTU	<> slur <> portamento / —	<>normal &zigane / vibrato intensity*	—	—
23		tremolo / detache / universal / sustained	VI&VA M&L / VI-S / strings D winds ex THO,WTU	— / — / — / <> marcato / —	tremolo / — / — / vibrato intensity*	— / — / — / interval	—
24		universal (uni) / id. / legato speed	winds ex TU,brass D / strings S, M , L / strings D	legato <> marcato / l. <> m. <> spic. / —	—	— / — / interv. I trill	—

Table III: Articulation & Controller Assignment List (Part II)

	Bank	Articulation	Availability	Vertical	Horizontal	Speed	A/B
25	repetition	legato	strings; winds *ex* BTB,CTB,CTU,CI,LB-D / CL2	repetition type: speed l slow l med. l fast l dynamics slow l med. l fast l speed	— / vibrato intensity	rep.	cre. l dec.
26		bow vibrato	VIs, VA-M&L, VC-S	repetition type	—	rep.	cre. l dec.
27		portato	all	repetition type	—	rep.	cre. l dec.
28		pizzicato	strings M&L	repetition type	—	rep.	—
29		staccato	all	repetition type	—	rep.	cre. l dec.
30		spiccato	strings	repetition type	<> harsh	—	cre. l dec.
31		harsh /tasto spic.	strings S, M, L / D	repetition type	<>snap / b.pos.*	—	cre. l dec.
32		upbeats 1	VI, VA & VC M&L; FL, VOB, CL, BA; TR, HO, HO-L, TB	repetition type	—	rep.	cre. l dec.
33		harmonics	strings S / M, L	art. l natural / —	<> legato	—	—
34		upbeats 2	as upbeats 1	repetition type	—	rep.	cre. l dec.
35		sul pontic. / tasto	strings S / D	repetition type	bowing pos.*	—	cre. l dec.
36		universal (uni)	all	leg. <> por. <> stac.	—	rep.	—
37	phrase	trills	strings S&M / L; woodwinds *ex* S, CBA; HOs, TU, CTU / PTR,TR,BTR	minor 2. l … l major 3. (4)	std. l baroque / — / slow l fast	—	—
38		trills accelerando	strings *ex* D, DB-M&L; FL, OBs, EHs, CLE, CL; PTR,TR	minor 2. l major 2.	—	—	—
39		grace notes	VI S / VA&VC S / strings M,L *ex* DB; winds *ex* S,BCL,THO,HO-L,CTB,WTU	minor 2. l … l octave (12)	sl. l fa. l zigane / std. l zig. / —	—	up l down
40		mordents / grace runs	PFL, FL1, OB1, PTR, TR / strings L	v1 l … l v6 / attack behavior	—	—	up l down
41		fast repetitions	strings S / M, L *ex* DB, D; FLs *ex* AFL, OA,CLE,CL,BA,BH; TRs, HOs, TBs *ex* CTB, EU, TU	140 l … l 220 bpm (9)	std. l long / —	—	—
42		runs legato	VI-S, strings M&L; FLs *ex* AFL, OBs, EH1, CL,BCL, BA; PTR,TR	runs: major l minor l chrom. l whole tone	key: C l … l B (12)	—	up l down
43		runs legato fast / special / spiccato	FL, CL / strings M, L / VI-S	runs / spic. maj. l furioso / runs	key (12)	—	up l down
44		glissandi / *id* / bends / falls	VI,VC,DB-S / VA-S,VI-M&L;CL;HOs, ATB,TB,CTB / SCL / TR,STR,BTR	interval: minor 2. l … l octave (12) / *id* / — / —	medium l fast / — / —	—	up l down
45		gliss. fa. / harm. / falls fa. / mu. arp.	CL; HOs, TB / strings S,M / SCL, TR,BTR / strings L *ex* DB	interval / — / — / — / —	— / nat. l art. / — / —	—	up l down
46		arpeggios stac. / sequencer	FLs *ex* AFL, CL; TR, HO, HO-L, TB / strings *ex.* DB	arp. scales: maj. l min. l dim. l aug. / seq. pat.	key (12) / —	—	up l down
47		arp. fast / mu. seq.	as arpeggios stac. / strings *ex.* DB	arp. scales / seq. pat.	key (12) / —	—	up l down
48		upbeats / ricochet / arpeggios	brass *ex* TRB,FLH / strings S / L *ex* DB	80 l … l 220 bpm (12) / *id* / —	1 l 2 l 3 / sp. l acc. l rit. l a3 / —	—	— / — / up l down

Table III: Articulation & Controller Assignment List (Part III)

#	Bank	Articulation	Availability	Vertical	Horizontal	Speed	A/B
49	dynamics	fortepiano	all	<> sforzato <> sforzatissimo	vibrato intensity*	—	—
50		trills dynamics	strings ex D / woodwinds ex PFL,CBA; TR, TU	minor 2. l … l major 3. (4)	std. l baroque l pfp / normal l fast / —	—	cre. l dec.
51		sforzato	all	—	vibrato intensity*	—	—
52		trills acc. dynamics	strings ex DB; FL, OBs, EHs, CLE,CL	minor 2. l major 2.	—	—	cre. l dec.
53		sforzatissimo	all ex PFL,SFL;PTR,LB-D	—	vibrato intensity*	—	—
54		crescendo-decrescendo	strings; winds ex BA2, BTB,CTU,CI, brass D	1s l 2s l 3s l 4s l 5s l 6s l 8s l 9s l 10s (9)	vibrato intensity*	—	—
55		decrescendo-crescendo	PFL, FL, VOB, EH1, CL, BA	4s l 5s l 6s l 8s (4)	—	—	—
56		strong dynamics	all ex strings D,CCL	1s l 1.5s l 2s l 3s l 4s l 5s l 6s (7)	vibrato intensity*	—	cre. l dec.
57		fast repetitions dynamics	strings ex D,DB-L; BFL, OA, CLE,CL, BH,BA; TRs ex STR, HOs ex FLH, ATB,TB,BTB, EU,TU	140 bpm l … l 220 bpm (9)	—	—	cre. l dec.
58		medium dynamics	all ex SCL,PFL,PTR,brass D	1s l 1.5s l 2s l 3s l 4s l 5s l 6s (7)	vibrato intensity*	—	cre. l dec.
59		tremolo / flutter. dynamics	strings ex DB-S / winds ex D,PFL,HPH,BCL,BA,CTU	1.5s l 3s or dyn l pfp / —	tremolo intensity*	—	cre. l dec.
60		light / sul pont. dynamics	CLE,CL,SCL;TR,TR-D, HO, THO,HO-D, TBs, TU / str. M, L	1s l 1.5s l 2s l 3s l 4s l 5s l 6s (7)	vibrato intensity* / bowing positions	—	cre. l dec.
61	special+	sul ponticello & sul tasto sustained	strings S	attack behavior	bowing position*: sul ponticello <> standard <> sul tasto	—	—
62		p. & t. detache	strings S	attack behavior	bowing position*	—	—
63		p. & t. staccato	strings S	<> sustained	bowing position*	—	—
64		p. & t. sforzato	strings S	sforzato <> sforzatissimo	bowing position*	—	—
65		p. & t. tremolo	strings S	attack behavior	bowing position*	—	—
66		mu. leg. prog.	strings S	—	mute strength*	—	—
67		mu. harm. stac.	strings S	<> sustained	mute strength*	—	—
68		muted artificial harmonics sus.	strings S	—	mute strength*: muted <> standard	—	—
69		col legno + snap pizzicato	strings S	—	—	—	col legno l snap
70		art. harmonics sustained	strings S	attack behavior	harmonic content*: harmonics <> std.	—	—
71		art. harm. stac.	strings S	<> sustained	harmonic content*	—	—
72		nat. harm. sus.	strings S	attack behavior	—	—	—

Table III: Articulation & Controller Assignment List (Part IV)

#	Bank	Articulation	Availability	Vertical	Horizontal	Speed	A/B
73	muted basic	sustained	strings L,D; muted brass: TR-D, HO,HO-L,HO-D, TB-D, TU,CTU / TB / TR,STR; strings S&M	attack behavior	mute strength*: muted ⬦ std. / m. A ⬦ B ⬦ s. / m. vib. ⬦ no v. ⬦ s.	—	—
74		sus. progressive vibrato / vibrato	strings S,L *ex* DB; TR,STR, TB / strings M,D	— / attack behavior	mute strength*	—	—
75		special dynamics	strings; muted brass	fp ⬦ sfz ⬦ sffz	mute strength*	—	—
76		sustained xVib / *id* / xMute	strings S,M, TR,STR / strings L *ex* DB / TB	— / ⬦ tune / — (Slot XFade: intensity)	mute strength*	—	section / — / —
77		long detache / medium portato	strings *ex* D,DB-L / muted brass *ex* HO-L	attack behavior	mute strength*	—	—
78		short detache / portato	strings S,M,D / TR,TR-D, HO-D, TB,TB-D	attack behavior	mute strength*	—	—
79		crescendo-decres.	strings S,M; TR,STR, TB	1s ∣ … ∣ 10s (9)	mute strength*	—	—
80		staccato	strings; mu. brass *ex* CTU	⬦ sustained	mute strength*	—	—
81		strong dynamics	strings S *ex* DB; mu. brass	1s ∣ 1.5s ∣ … ∣ 6s (7)	mute strength*	—	cre. ∣ dec.
82		pizzicato	strings	—	mute strength*	—	—
83		medium dynamics / light dynamics	strings *ex* D,DB-L; TR,STR HO,HO-L, TB / brass D	1s ∣ 1.5s ∣ … ∣ 6s (7)	mute strength*	—	cre. ∣ dec.
84		tremolo / fluttertongue	strings / TR,STR,TR-D, HO-D, TB,TB-D, TU	attack behavior	mute strength*	—	—
85	muted advanced	interval legato	strings S / M, L *ex* DB / muted brass *ex* TUs / TR	⬦ slur ⬦ portamento / *id* / ⬦ glissando / —	mute strength*	—	std. ∣ sul / — / — / —
86		interval legato speed	strings S, L *ex* DB, STR / strings M; TR	—	mute strength*	interval ∣ trill	—
87		interval marcato / interval sforzato	strings S; TR, TB / strings L *ex* DB	—	mute strength*	interval / —	—
88		int. legato xVib / +xTune / xMute	strings S,M; TR,STR / strings L *ex* DB / TB	— / ⬦ tune / — (Slot XFade: intensity)	mute strength*	—	section / — / —
89		interval spiccato	strings *ex* DB-L	—	mute strength*	—	—
90		performance trill	strings *ex* DB-L; TR,STR, brass D	—	mute strength*		
91		trills	VI,VA,VC M,L, TR	minor 2. ∣ … ∣ major 3. (4)	mute strength*	—	—
92		repetition legato	strings *ex* DB-L; TR,STR, HO,HO-L, TB, brass D	normal ∣ dynamics	mute strength*	repetition	cre. ∣ dec.
93		fast repetitions	as repetition legato	140 ∣ … ∣ 220 bpm (9)	mute strength*	—	—
94		repetition portato	as rep. legato, DB-L	normal ∣ dynamics	mute strength*	repetition	cre. ∣ dec.
95		repetition spiccato	strings *ex* DB-L	normal ∣ dynamics	mute strength*	—	cre. ∣ dec.
96		repetition staccato	as rep. legato *ex* strings D	normal ∣ dynamics	mute strength*	repetition	cre. ∣ dec.

Table III: Articulation & Controller Assignment List (Part V)

#	Bank	Articulation	Availability	Vertical	Horizontal	Speed	A/B
97	sequencer	repetitions	all *ex* LB-D	sequencer pattern	—	seq. sync.	—
98		muted repetitions	strings *ex* DB-L; TR,TR-D, HO,HO-L,HO-D, TB-D, TU	sequencer pattern	—	seq. sync.	—
99		repetitions dynamics	all *ex* PFL,CTB,CTU,LB-D	sequencer pattern	—	seq. sync.	—
100		muted repetitions dynamics	as muted rep. *ex* DB-M	sequencer pattern	—	seq. sync.	—
101		performance trills	all *ex* BTR,BTB,CTB,TU,LB-D	sequencer pattern	—	fixed	—
102		runs & phrase key	all *ex* LB-D	sequencer pattern	—	seq. sync.	—
103		muted runs & phrase key	as muted repetitions	sequencer pattern	—	seq. sync.	—
104		runs & phrase whole tone	all *ex* LB-D	sequencer pattern	—	seq. sync.	—
105		muted r. & p. whole tone	as muted repetitions	sequencer pattern	—	seq. sync.	—
106		runs & phrase chromatic	all *ex* LB-D	sequencer pattern	—	seq. sync.	—
107		muted r. & p. chromatic	as muted repetitions	sequencer pattern	—	seq. sync.	—
108		muted performance trills	strings *ex* DB-L; TR	sequencer pattern	—	fixed	—
109	individual	portato high definition (HD:9 layers) /sus.+tremolo strings	Cube *ex* PFL,SFL,PTR, CTB,CTU,HA / strings D	attack behavior / string:O1l…lO2 (12)	(note overlap: v2) / —	—	—
110		muted portato HD / detache+staccato strings	TR, HO, TB; strings S, M,L *ex* DB / D	(note overlap: v2) / string	mute strength / —	—	—
111		staccato HD / muted sus.+trem. strings	Cube *ex* PFL,SFL, CTB,CTU,HA / strings D	<> legato / string	(note overlap: v2) / —	—	—
112		muted staccato HD / muted det.+stac. strings	TR, HO, TB; strings S, M,L *ex* VI / D	(note overlap: v2) / string	mute strength / —	—	—
113		spiccato HD /pizz.+mu.strings	strings S, M, L / D	<> harsh / string	(note overlap:v2)/—	—	—
114		muted spiccato HD / rep. legato+portato strings	strings S / D	— / string	mute strength / —	—	—
115		repetition dynamic levels / mu. rep. leg.+por. strings	all *ex* PFL,CTU / strings D	dynamic level: ppp l … l fff (9) / string	leg. sl. l mute l fa. l por. l mu. l sta. l mu. l spi. l mu. l har. / —	—	—
116		interval legato speeds / legato+portamento strings	strings M,L / S; winds *ex* SCL,SBA,CO,CTB / str. D	sl. l slur l slur fa. l fa. / sl. l me. l fa. / string	std. l 4V / vibrato intensity* / —	—	—
117		mu. leg. speeds /+por. strings	TR; strings S, L *ex* DB / D	as previous	mute strength* / —	—	—
118		marc. speeds / fp+sfz strings	all *ex* BTBs,TU / strings D	sl. l me. l fa. / string	—	—	—
119		muted marcato speeds / gliss. / porta. / fp+sfz strings	TR / TR-D, HO-D, TB-D / strings *ex* DB-L / D	slow l fast / — / — / string /	mute strength* / *id* l *id* l —	—	—
120		spic.speeds /rep.+mu.strings	strings S, M, L / D	stac. l sl. l fa. / string	spic. l harsh / —	—	—

/ … separates similar articulations/versions available for different instruments — … not available for the given articulation

l … different versions are switched <> … different versions are crossfaded (#) … number of distinct controller regions

+ … shows the layout of the *special* bank of the Strings S, for other Presets see Table IV * … the controller acts inversely

id … identical articulation written out before in this cell *ex* … all corresponding instruments excluding the explicitly listed ones

Table IV: Special Techniques Bank for the different Articulate Presets (Part I: Strings & Brass)

#	Bank	Strings S	Strings S2	Strings M	Strings L	Strings D / D#
61	special	sul ponticello & tasto sustained VH	strong dynamics crescendo VH	sul ponticello & flautando sustained VH	sul ponticello & flautando sustained VH	sul ponticello & tasto sustained HS / H
62		sul ponticello & tasto detache VH	strong dynamics decrescendo VH	—	—	sul tasto detache HS / VH
63		sul ponticello & tasto staccato VH	medium dynamics crescendo VH	sul ponticello staccato VH	sul ponticello staccato VH	sul ponticello & tasto staccato HS / VH
64		sul ponticello & tasto sforzato VH	medium dynamics decrescendo VH	sul ponticello sforzato H	sul ponticello sforzato H	sul tasto sforzato HS / H
65		sul ponticello & tasto tremolo VH	—	sul ponticello tremolo VH	sul ponticello tremolo VH	sul ponticello & tasto tremolo HS / VH
66		mu. leg. prog. vib. HS	mu. legato speed HS	mu. leg. speed HS	mu. leg. prog. vib. HS	sul tasto legato HS / H
67		mu. harm. stac. VH	legato speed HS	muted trills dyn. VH	muted trills dyn. VH	sul ponticello & tasto tremolo slow HS / H
68		muted artificial harmonics sus. H	—	flautando VH	cluster sustained	sul tasto legato + porta. VS / noises V
69		col legno & snap ABS	—	col legno & snap ABS	col legno & snap ABS	col legno & snap ABS
70		art. harm. sus. VHS	art. harm. sus. VH	art. harm. sus. VHS	art. harm. sus. VHS	art. harm. sus. HS
71		art. harm. stac. VHS	art. harm. staccato VH	art. harm. stac. VHS	art. harm. stac. VHS	art. harm. stac. VHS
72		natural harmonics sustained VS	natural harmonics sustained V	natural harmonics sustained V	VI-L: sul-G; VC-L: nat. harm. sus. & stac. V	artificial harmonics tremolo speed HS / H

#	Bank	Trumpet C / Bb / Bass	Horn Vienna / Triple / L	Trombone / Contra	Tuba / Contra	Brass D / D#
61	special	muted sustained xVel S / id / —	muted sustained xVel / — / id	muted sustained xVel HS / —	—	muted unlooped sustained VS / V
62		muted long por. H / —	mu. long por. H / — / id	muted long por. H / —	muted long portato H	cluster fp V / —
63		sustained + fall release (fr) VH / —	— / chords V / id	muted dynamics med. vibrato VH / —	—	cluster flutter-tongue V / —
64		muted flutter-t. crescendo HS / —	— / chords V / id	muted flutter-tongue crescendo HS / —	muted flutter-tongue crescendo H	muted flutter-tongue crescendo HS / H
65		muted fast repetitions dynamics VHS / —	muted fast repetitions dynamics VH / — / id	muted fast repetitions dyn. VH / arpeggio	—	cluster portato V / —
66		muted upbeats VHS / mu. leg. prog. vib. / —	muted upbeats VH / — / id	muted A upbeats VHS / —	—	cluster legato V / —
67		muted trill dynamics VH / muted falls H / —	lip trills / — / —	mu. B upb. VHS / —	—	cluster rep. stac. V / —
68		int. leg.+fr VH / id. / —	blared sustained VS	cluster sus. / —	—	cluster sustained V / —
69		int. marcato+fr V / — / duophonics	blared portato / — / —	cluster staccato / duophonics A	—	cluster staccato V / —
70		sus.marc.+fr V / id. / duo.	—	cluster sfz / duo. B	—	cluster sfz V / —
71		tune+fr VH / slide H / —	—	cluster dyn. V / —	—	cluster dyn. V / —
72		rip + fr V / muted slide H / rip FX	—	cluster rep. V / —	—	cluster rep. por. V / —

Table IV: Special Techniques Bank for the different Articulate Presets (Part II: Woodwinds & Percussion)

#	Bank	Piccolo Flute	Flute / Second Flute	Oboe / Viennese Oboe	Clarinet / Second C.	Bassoon / S. / Contra
61	special	—	—	—	—	—
62		—	—	—	—	—
63		—	tongue-ram staccato / —	—	— / sustained + bend	—
64		—	mordents staccato / —	—	— / legato + bend	—
65		arpeggio legato	arpeggio legato / —	— / arpeggio legato	arpeggio legato / —	—
66		arpeggio legato fast	arpeggio legato fast	— / arpeggio legato fast	arpeggio legato fast / —	—
67		4. trill	— / 4. trill	—	—	—
68		—	cluster sustained	cluster sustained	cluster sus.	cluster sus. / *id* / —
69		—	—	—	— / multiphonics	— / — / low FX
70		—	cluster sfz	cluster sfz	cluster sfz	cluster sfz / *id* / —
71		—	fast repetition triplets	—	flap	— / fast repetitions double tongue / —
72		—	performance repetition triplets / —	—	slap	—

#	Bank	Glockenspiel / Vibraphone	Marimba	Xylophone	Timpani	Harp
61	special	roll metal VS / bowed long H	bowed long H	—	felt hit	pres de la table H
62		— / bowed short H	rubber	—	—	pres de la table H
63		roll chords V	roll chords V	roll chords V	medium hard	4-note arpeggio straight VH
64		roll big metal / —	handle	—	—	3-note arpeggio straight VH
65		—	finger	—	finger	3-note arpeggio slow VH
66		—	fingernail	—	upbeats 4 V	3-note arpeggio fast VH
67		—	superball	glissandi plastic VH	roll glissando stick V	glissandi slow VH
68		—	hit hard high V	hit plastic V	—	glissandi medium VH
69		—	roll hard high V	roll plastic V	roll glissando felt V	glissandi fast VH
70		—	hit soft low VH	hit cluster V	—	flageolet H
71		—	roll soft low V	roll cluster V	—	flageolet H
72		—	roll chords soft low	—	—	damped

Table V a: Drums Combi (colored symbols show the used controllers: V=Vertical, H=Horizontal, S=Section)

Snare	Piccolo	Field	Bass	Taiko	Concert Toms	Roto Toms	Tamburin
1. A off VHS	13. basic	25. A off VS	37. A soft VS	49. basic	61. low	73. standard	85. A
2. A on HS	14. rep. dyn.	26. A on S	38. A hard S	50. rep.	62. high	74. soft V	86. B
3. B off VS	15. —	27. B on	39. B	51. fx	63. low rep. dyn.	75. rep. dyn.	87. C
4. B on S	16. —	28. B rep. dyn.	40. A s. rep. d. VS	52. —	64. high rep. dyn.	76. soft rep. dyn. V	88. D
5. A rep. dyn. VHS	17. —	29. —	41. Ah.rep.dyn. S	53. —	65. —	77. —	89. A rep. dyn.
6. B rep. dyn. VS	18. —	30. —	42. B rep.dyn.	54. —	66. —	78. —	90. —
7. brush	19. —	31. —	43.—	55. —	67. —	79. —	91. —
8. timpani	20. —	32. —	44. —	56. —	68. —	80. —	92. —
9. —	21. —	33. —	45.—	57. —	69. —	81. —	93. —
10. —	22. —	34. —	46. —	58. —	70. —	82. —	94. —
11. —	23. —	35. —	47. —	59. —	71. —	83. —	96. —
12. —	24. —	36. —	48. —	60. —	72. —	84. —	96. —

Table V b: Percussion Combi (used controllers: V=Vertical, H=Horizontal, S=Section)

Triangle	Crotales & Japanese Bowls	Thunder Sheet & Steel	Chimes, Jingle & Waterphone	Ethnic	Log Drum & Boo Bam	Effects 1	Flexa Tone & Effects 2
1. A V	13. C. metal V	25. T.S. A	37. Glass Ch.	49. Castanets	61. L.D. soft V	73. Windmac.	85. F.T. A static
2. B	14. C. triangle	26. T.S. B	38. Metal Ch.	50. Claves	62. L.D. med	74. Rainm.	86. F.T. A gliss.
3. C V	15. C. bowed	27. T.S. C	39. Bamboo Chime	51. Anklung long	63. L.D. hard	75. Ocean Drum A	87. F.T. B glissandi
4. D	16. —	28. T.S. D	40. Jingle Ring A	52. Anklung medium	64. L.D. wood	76. Ocean Drum B	88. F.T. A fx
5. A rep.dyn. V	17. —	29. T.S. E	41. Jingle Ring B	53. Anklung short	65. —	77. Shots	89. F.T. B fx
6. B rep. dyn.	18. —	30. —	42. Jingle Ring C	54. Bongos	66. B.B. yarn	78. Whip	90. Cuica 1
7. —	19. J.B. rubber V	31. Rails	43. W.P. basic	55. Shaker bamboo	67. B.B. stick	79. Hammer	91. Cuica 2
8. —	20. J.B. wood	32. Brakes	44. W.P. mod.	56. Shaker chrome	68. B.B. rim	80. Ratchets	92. Cuica 3
9. —	21. J.B. secco	33. Springs	45. W.P. pizz.	57. Shaker kiwi	69. B.B. roll	81. Sirens	93. Waldteufel
10. —	22. —	34. —	46. W.P. rep.	58. Caixixi	70. B.B. rebounds	82. Spring Drum	94. Bull Roarer
11. —	23. —	35. Car Honks	47. W.P. arp.	59. Guiro wood	71. B.B. upbeats	83. Vibra Tone 1	95. Lion Roar
12. —	24. —	36. Bike Honks	48. W.P. fx	60. Guiro gourd	72. B.B. upbeats 4	84. Vibra Tone 2	96. —

Table V c: Cymbals & Gongs Combi

Piatti	Cymbal standard	Cymbal crash	Cymbal China	Cymbal ride	Cymbal splash	Cymbal splash	Tam tam	Tam tam	Gongs	China Gongs
1. A	13. A stick	25. 15" stick	37. 18" stick	49. 20" stick	61. 6" stick	73. 12" stick	85. A	97. C 30cm	109. hit soft V	121. China
2. B Chinese 11"	14. A mallet V	26. 15" mallet	38. 18" mallet	50. 20" mallet	62. 6" mallet	74. 12" mallet	86. B 52cm	98. C 40cm	110. hit wood	122. Peking Opera
3. B Zildjan 13"	15. B stick	27. 15" timpani	39. 18" timpani	51. 20" timpani	63. 6" timpani	75. 12" timpani	87. B 60cm	99. C 50cm	111. hit metal	123. —
4. B Zildjan 15"	16. B mallet V	28. 15" brush	40. 18" brush	52. 20" brush	64. 6" brush	76. 12" brush	88. B 85cm	100. C 60cm	112. roll soft V	124. —
5. B Zildjan 16"a	17. B metal	29. 15" rod	41. 18" rod	53. 20" rod	65. 6" rod	77. 12" rod	89. B 100cm	101. C 70cm	113. roll wood	125. —
6. B Zildjan 16"b	18. B brush	30. 15" bowed	42. 18" bowed	54. 20" bowed	66. 6" bowed	78. 12" bowed	90. B 110cm	102. C 80cm	114. roll cresc. soft V	126. —
7. B Istanbul 18"	19. C stick	31. 16" stick	43. 22" stick	55. 22" stick	67. 8" stick	79. finger	91. B 130cm	103. C 90cm	115. roll cresc. wood	127. —
8. B Istanbul 20"	20. C mallet V	32. 16" mallet	44. 22" mallet	56. 22" mallet	68. 8" mallet	80. —	92. —	104. —	116. bowed 1	128. —
9. B Zildjan 20"	21. C metal	33. 16" timpani	45. 22" timpani	57. 22" timpani	69. 8" timpani	81. —	93. —	105. —	117. bowed 2	—
10. B Zildjan 22"	22. D stick	34. 16" brush	46. 22" brush	58. 22" brush	70. 8" brush	82. —	94. —	106. —	118. —	—
11. —	23. D mallet V	35. 16" rod	47. 22" rod	59. 22" rod	71. 8" rod	83. —	96. —	107. —	119. —	—
12. —	24. D metal	36. 16" bowed	48. 22" bowed	60. 22" bowed	72. 8" bowed	84. —	96. —	108. —	120. —	—

Table V d: Bells Combi (colored symbols show the used controllers: V=Vertical, H=Horizontal, S=Section)

Tubular	Plate	Hand	Cencerros	Cow	Church	Various
1. hit soft VS	13. basic	25. metal V	37. felt V	49. wool V	61. wood	73. Burma
2. hit medium S	14. —	26. triangle	38. yarn V	50. wood	62. metal	74. Jingle
3. hit hard S	15. —	27. bowed	39. wood	51. triangle	63. —	75. Tree metal V
4. roll VS	16. —	28. —	40. metal	52. rub stick	64. —	76. Tree triangle
5. roll cresc. V	17. —	29. —	41. rub stick V	53. bowed	65. —	77. Miscellaneous
6. roll brush	18. —	30. —	42. bowed	54. —	66. —	78. —
7. fx	19. —	31. —	43.—	55. —	67. —	79. —
8.-12. —	20.-24. —	32.-36. —	44.-48. —	56.-60. —	68.-72. —	80.-84. —

Table V e: Mallets Combi (colored symbols show the used controllers: V=Vertical, H=Horizontal, S=Section)

Celesta	Glockenspiel	Xylophone	Vibraphone	Marimba	Marimba	Wood-blocks	Temple-blocks	Lithophone	Stir Xylophone
1. sustained	13. hit wood VHS	25. hit yarn V	37. hit soft VH	49. hit V	61. rubber	73. yarn soft V	85. yarn soft V	97. hit	109. small
2. sustained soft V	14. hit plastic HS	26. hit plastic V	38. hit medium H	50. hit secco V	62. super ball	74. yarn V	86. yarn V	98. roll	110. medium
3. staccato V	15. hit metal VHS	27. hit wood	39. hit hard H	51. roll V	63. handle	75. rubber	87. rubber	99. upbeats H	111. large
4. glissandi	16. hit big metal H	28. roll yarn V	40. hit no vibrato V	52. roll dyn. VH	64. finger + nail V	76. wood	88. wood	100. upbeats 4	112. —
5. —	17. roll wood VS	29. roll plastic V	41. hit secco	53. roll chords V	65. bowed	77. —	89. roll V	101. rubbed	113. —
6. —	18. roll plastic S	30. roll wood	42. roll V	54. gliss. slow VH	66. —	78. —	90. roll dyn. VH	102. —	114. —
7. —	19. roll metal VS	31. roll dynamics V	43. roll dynamic VH	55. gliss. fast V	67. —	79. —	91. roll dyn. acc. V	103. —	115. —
8. —	20. roll big metal	32. roll chords	44. roll chords V	56. hit hard high V	68. —	80. —	92. upbeats VH	104. —	116. —
9. —	21. roll crescendo V	33. gliss. plastic VH	45. glissandi H	57. roll hard high V	69. —	81. —	93. glissandi V	105. —	117. —
10. —	22. glissandi fast VS	34. gliss. wood H	46. gliss. fast	58. hit soft low VH	70. —	82. —	94. —	106. —	118. —
11. —	23. glissandi slow	35. hit cluster	47. bowed short H	59. roll soft low V	71. —	83. —	96. —	107. —	119. —
12. —	24. roll chords	36. roll cluster	48. bowed long H	60. roll ch. soft low	72. —	84. —	96. —	108. —	120. —