The Blüthner Digital Model One
Concert Grand Piano

by Ernest Cholakis and Dan Dean

Semperoper Hall Dresden, Germany

OPERATION MANUAL

Users Guide written by: Native Instruments GmbH.
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Bluthner Digital Model One Operation Guide written by: Dan Dean
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ProAudioVault
http:www.proaudiovault.com

Dan Dean Productions, Inc.
P.O. Box 1486
Mercer Island, WA 98040
info@dandeanpro.com
http://www.dandeanpro.com

Numerical Sound
P.O. Box 1275, Station K
Toronto, ONTARIO
CANADA M4P 3E5
info@numericalsound.com
http://www.numericalsound.com

Native Insruments/Germany
Native Instruments, GmbH
Schlesische Straße 28
D-10997 Berlin
Germany
www.native-instruments.de

Native Instruments/USA
Native Instrument USA, Inc.
5631A Hollywood Blvd.
Los Angeles, CA 90028
www.native-instruments.com

Julius Blüthner
Pianofortefabrik, GmbH
Julius Blüthner Pianofortefabrik
GmbH
Dechwitzer Straße 12
04463 Großpösna (bei Leipzig)
GERMANY
+49 - (0) 34297 - 7513
+49 - (0) 34297 – 75150 fax
info@bluethner.de

Blüthner im Alten Rathaus
Markt 1
04109 Leipzig
+49 0341 960 32 45
+49 0341 960 32 46 fax
shop@bluethner.de
www.bluethner.de/leipzig

Blüthner USA
5660 West Grand River Avenue
Lansing, MI 48906
info@bluthnerpiano.com
1-800-954-3200
1-517-886-1574 fax

Blüthner/United Kingdom
Blüthner Piano Centre Ltd.
1 Davies Street, Berkeley Square
Mayfair, London W1K 3DB
+44 (0)20 7753 0533
+44 (0)20 7753 0535 fax
info@bluthner.co.uk
www.bluthner.co.uk

Blüthner/Benelux
Patrijsweg 114
2289 EZ Rijswijk
Nederland
+31-(0)70-390 64 98
+31-(0)70-415 09 25 fax
 info@bluethner.nl

Blüthner/Poland
+48 – 501 – 154 809
+48 – 71 – 788 98 61
bluethner@bluethner.pl
http://www.bluethner.pl/

Blüthner Japan

東京ショールーム
〒164-8721　東京都中野区本町1−32−2　ハーモニータワー1F
TEL　03-5351-1591
大阪ショールーム
〒532-0004　大阪府大阪市淀川区西宮原2-1-3SORA新大阪21
TEL　06-6392-0200
技術センター
〒438-0802　静岡県磐田郡豊田町東原349−7
TEL　0538-37-6880

Blüthner China

联系地址：

中国广州天河北路创新科技广场 595-599号二楼

邮编:510620

电话:+86-20-38822355 传真:+86-20-38822119

EMail:**bluthner@163.com**

专卖店申请表 市场调查表|

Blüthner Russia

Адрес:
115054, Москва,
Космодамианская набережная
дом 52, строение 8.
Магазин-салон "Рояли и пианино"
Телефон: 7300080
Факс: 7300080
E-mail: **info@bluethner.ru**
Наши web-сайты:
в Германии
в Англии
в Америке|

The **Blüthner Digital Model One Concert Grand Piano**
# Powered by the **KONTAKT PLAYER 2**

Thank you for purchasing the **Blüthner Digital Model One Concert Grand Piano**, powered by Native Instruments **KONTAKT2 PLAYER**. This manual is designed to get you up and running quickly and guide you through the installation process as well as show you around the features available to you in the program.
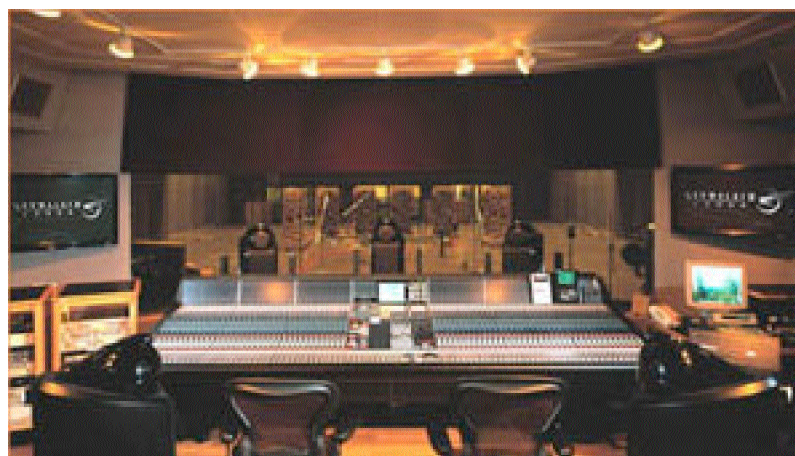
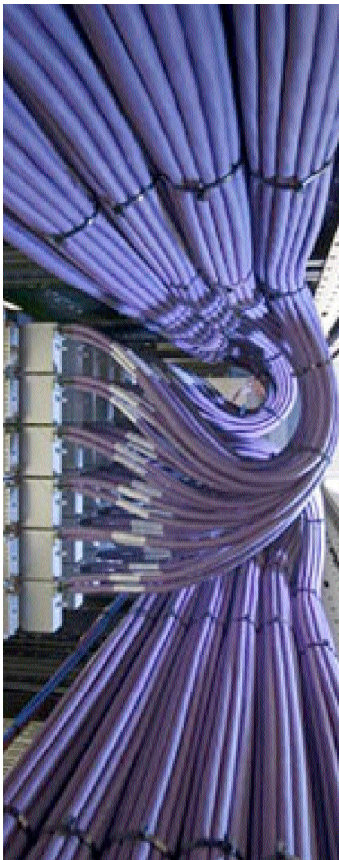# Blüthner Digital Model One Concert Grand Piano Features

The **Blüthner Digital Model One** is a completely new direction in sampled instruments with a collection of powerful new features, designs and new technologies.
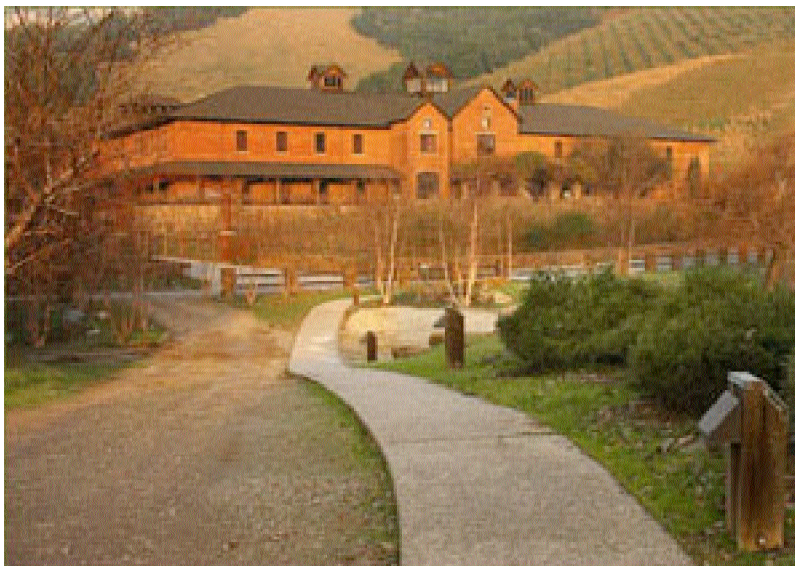
Recorded at Skywalker Sound™ (a division of Lucasfilm Limited).
The **Blüthner Digital Model One** was sampled in the scoring stage at Skywalker Sound™ in San Rafael, California. Skywalker Sound™ is truly one of the world's finest studios with one of the quietest noise floors. Located out in the wilderness, Skywalker's scoring stage is dead quiet. There is no low frequency rumble from freeways or roads because there are no freeways or roads anywhere close by. The acoustics are superlative. Skywalker's electronics are all optimized for maximum performance. There are no hums, buzzes or anything in the signal path to detract from the tonal purity of the **Blüthner Digital Model One**. Everything at Skywalker Sound™ is carefully grounded and electrically dead quiet. The samples that comprise the Digital Model One are as pristine as you could achieve.

**Lowest Noise Floor Ever Achieved in a Sampled Piano**

Ernest devised a proprietary noise reduction technology tailored specifically for the **Blüthner Digital Model One**. It doesn't work on any other piano – just the **Digital Model One**. After many hours in the lab and countless hours consulting with colleagues in the fields of Physics and Digital Audio, Ernest created a system that reduces noise to levels unattainable in the real physical world. Electrons moving about inside various integrated circuits and audio components create a certain amount of hiss and operational noise. This is simply one of the laws of Physics. Even after hand selecting the highest quality cabling, highest performance microphones and quietest microphone preamps to optimize both the sound quality and minimize the noise floor of the **Digital Model One**, we still wanted to push the envelope further. Using Ernest's process, the **Digital Model One's** noise floor is even below what you might find in a near absolute-zero centigrade environment. It is really quiet – without the chill.

Ein, Zwei, Dry Samples

The samples that make up the Blüthner Digital Model One are close miked. Other libraries tout the fact that their pianos are "dry". They are not. Reverb/ambience can mask a "multitude" of audio "sins". Use the **Blüthner Digital Model One** "dry" (adding no reverb or ambience) – and you will immediately find its sound will engulf you. Its warm, smooth, wide, deep and lush stereo field gives you amazing definition – its like being inside of the piano instead of 12 feet away from from it. There are 12 velocity controlled stereo samples per note in both pedal up and pedal down modes – this means that you have access to 24 stereo samples for each single key on the piano. There are well over 2,000 samples in all, exceeding 4.5 Gigabytes of audio data. We captured the **Blüthner Digital Model One** dry for a number of reasons, but mainly to optimize the sound files for use with our pro-prietary convolution technology. The **Blüthner Digital Model One** samples, being as dry as they are, will "take" reverb and other DSP better than other leading pianos because they are neutral, containing no reverb or ambience. Once a sample has reverb in it, you can't remove it. Any ambience or reverb you add to an already colored sound will combine with the existing reverb in the sample, making the result muddy and ill-defined. The **Blüthner Digital Model One** samples don't do this.

The following graphs are close-miked comparisons of four pianos on the pitch D1 – the blue traces are the **Blüthner Digital Model One,** the red traces are from 3 leading competitors' pianos. You will notice from these graphs that there are many occurances where the red traces disappear and the blue traces remain. What you are seeing is the actual result of room reflections interacting with the natural acoustics of the piano. These room reflections create an uneven frequency response in the piano due to out of phase anomalies contained in wall reflections unevenly combining with the piano's natural dry/direct sound. Recording the piano truly "dry" provides a much smoother frequency response without these "holes" in the frequency spectrum.
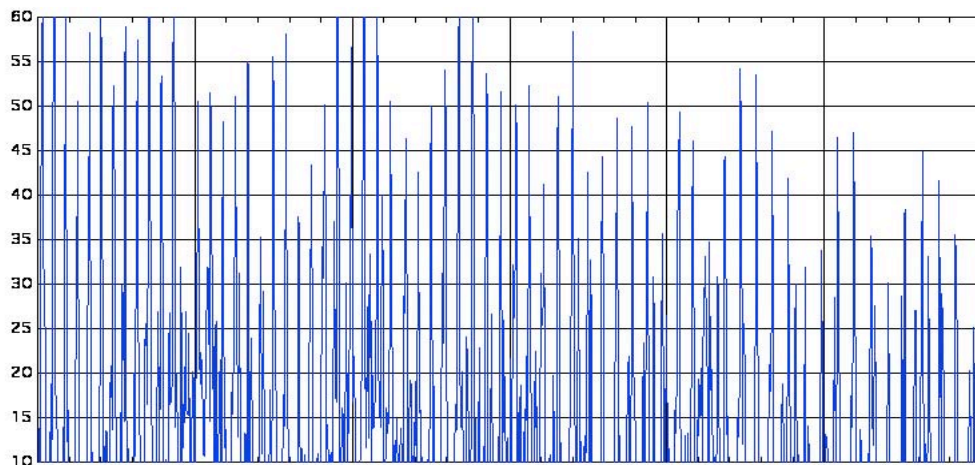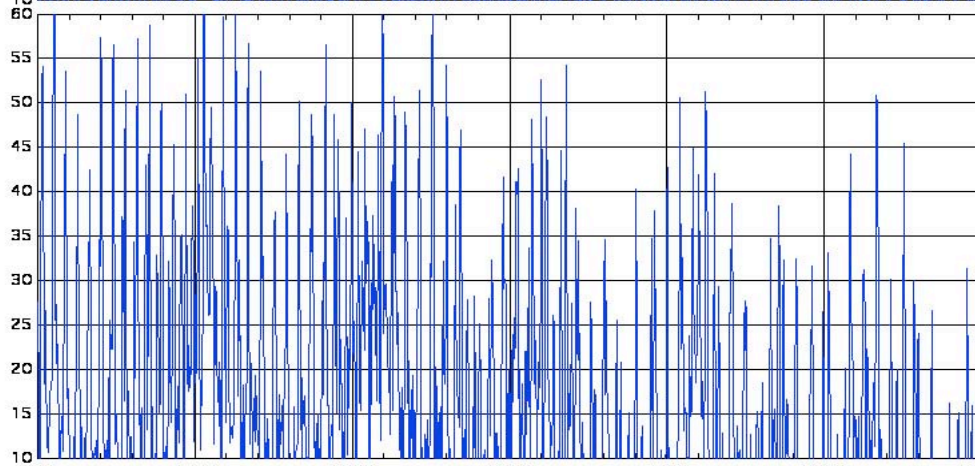
Blüthner Harmonics
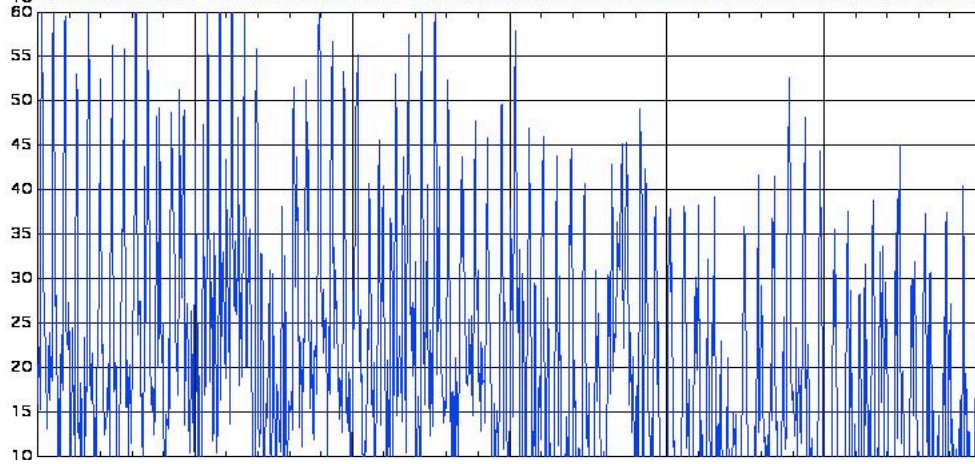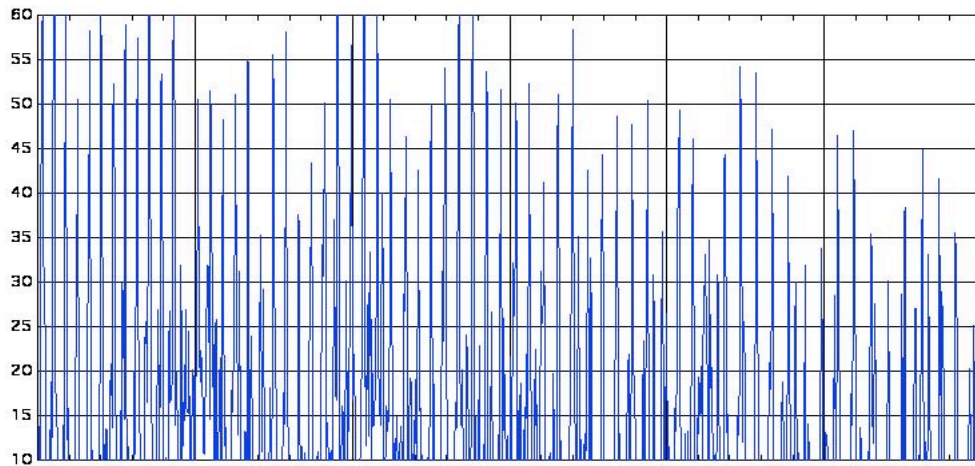
Competitors Harmonics

Blüthner Harmonics

Competitors Harmonics
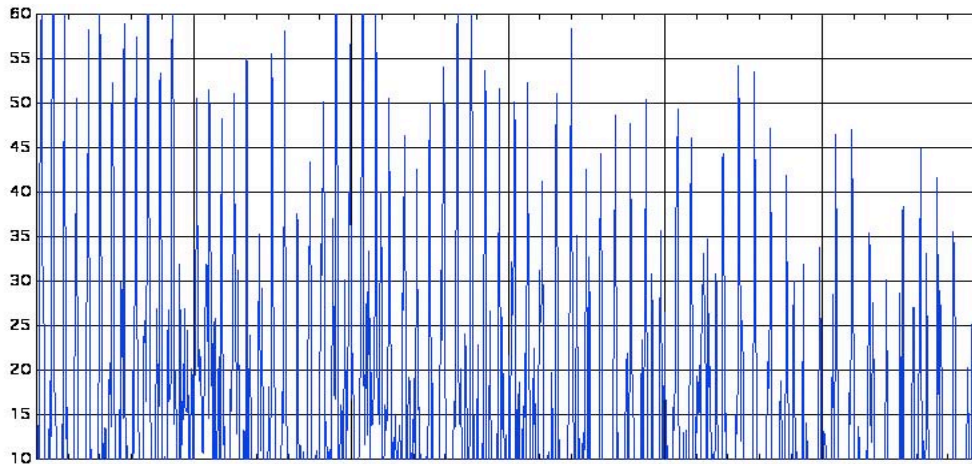
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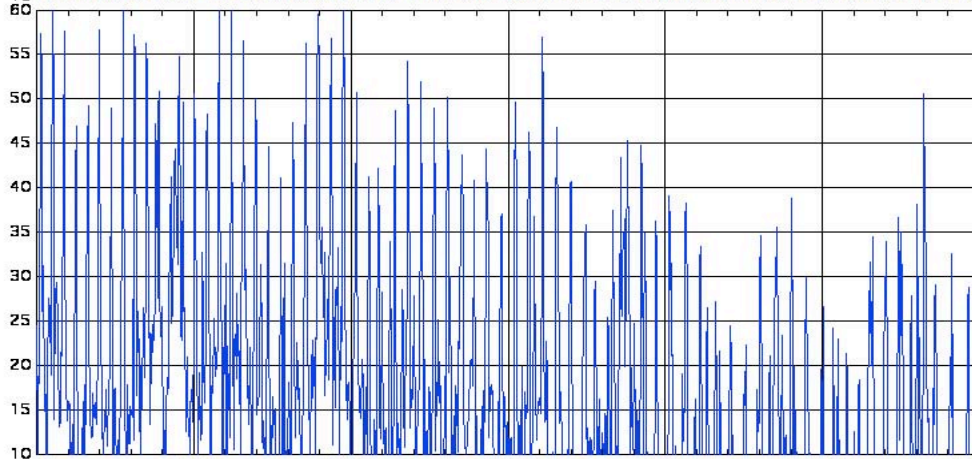
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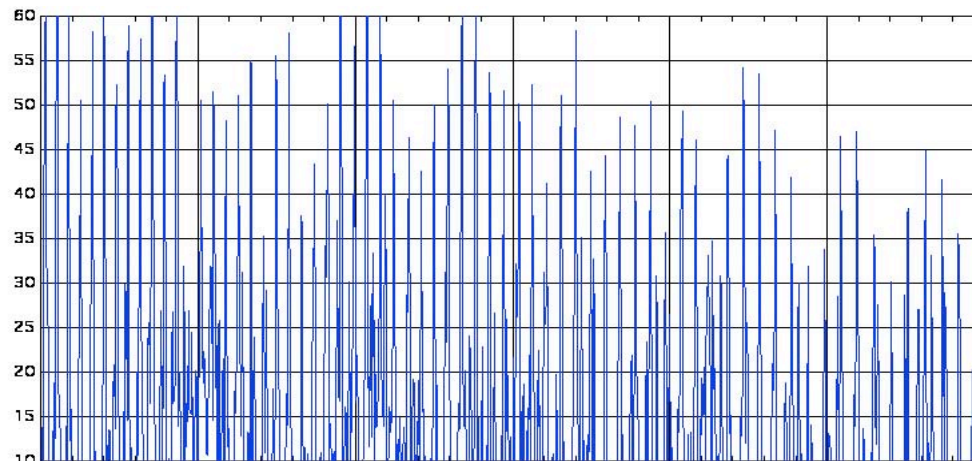
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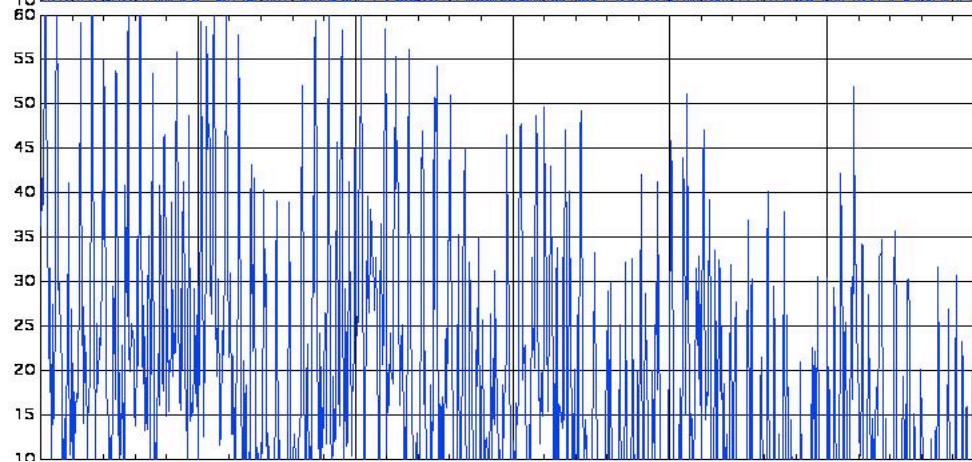
Competitors Harmonics

The Digital Model One is an Officially Licensed Product
of Julius Blüthner Pianofortefabrik, GmbH

The Digital Model One
is the first piano of its kind to be officially licensed by the actual manufacturer, Julius Blüthner Pianofortefabrik, GmbH in Leipzig Germany. We have worked closely together with the Blüthner family to create a product that maintains their highest standards of excellence.

(Dr. Blüthner, Ernest Cholakis, Dan Dean)

Three Kinds of Convolution. Timbral. Reverb. Sustain.

Timbral Impulse Tonal Modeling. Proprietary Timbral Impulses created specially for the **Blüthner Digital Model One** by Ernest Cholakis of Numerical Sound (leaders in **IR** or **impulse response** technologies) coupled with the power of **Kontakt2's** convolution engine provide you with new, unprecedented sonic options never before attainable in the sampling world – a degree of realism that simply can't be attained using current sampling technologies. Timbral "fingerprints" of over 250 pianos were captured and analyzed from an array of the world's greatest recordings, recording sessions and other sources from around the world. A Herculean effort, each of these tonal signatures were then interpolated, carefully calibrated then encoded into the **BDMO**. Choose **Timbral Impulse Tonal Modeling** from a wide range of different categories like: Classical Pianos, Jazz Pianos, Custom Designs, Jazz and Pop Pianos, R&B Pianos, Pianos (Timbral Modeled from the world's piano manufacturers) or our Vocal Piano. At the click of a mouse, you can transform the **Digital Model One's** sound into a stunning number of other pianos! The **Classical** Pianos of some of the world greatest virtuosos, the **Jazz** Piano sounds of the giants of Jazz, the Blues and **R+B** piano sounds from New Orleans and popular funk and R+B recordings, the signature piano sounds of your favorite rock and **Pop** recordings, historical pianos from over 100 years ago, the sonic fingerprints of the world's finest Japanese, American and European pianos – even custom created **Vocal** resonances - are all just a click away. You have access to the sounds of over 250 different pianos right at your fingertips. Why settle for the sound of just one piano when you can have them all?

Custom Reverb Impulses. Add just a tiny bit of air around the **Digital Model One**. Maybe a touch of very small room tone or a tad of ambience to your sound. Recreate the sound of a small studio space or a sound stage or a recital hall or a lush concert hall or symphony hall. Get just the reverb you're looking for with our custom created Reverb Impulses. Choose from **Crisp, Clear, Warm** and **Dark** variations of each of the Reverb Impulses to accurately tailor the reverb the way you want it. And unlike most Reverb Impulses, each **Blüthner Digital Model One** Reverb Impulse is instrument-optimized, calibrated to the sonic qualities of this beautiful piano. Actual acoustic spaces captured from around the world, custom created for **BDMO**.

Proprietary Sustain Impulses. Realistic-sounding piano sustain is a tremendously complex, near 3 dimensional component. It is an incredible challenge to achieve. True sustain has very small amounts of pitch, harmonic and pan movement, depth of field dynamics and other factors that combine to create a psychoacoustic 3 dimensional field. It is virtually impossible to capture true sustain using discrete samples only. We recorded very accurate pedal-down samples that were specially recorded to provide our unique True Sustain for this essential component of the **Blüthner Digital Model One.** Additional recordings were made of the **Digital Model One** from which very complex **Sustain Impulses** were derived from our custom algorithms. When combined with our pedal-down samples, these SI's provide the 3 dimensional component that you hear in a real piano.

The graph below shows 5 different colored plots. Each of these curves is a frequency plot of one of our custom designed Sustain Impulses, showing both the complexity and variation in our SI's.

The Impulse Response basic "rule of thumb" is that the more complex the assortment of peaks and valleys there are in a given impulse, the more realistic the result.

Notice that these Sustain Impulse plots from the **Blüthner Digital Model One** are all different, yet very complex as far as numbers of peaks and valleys.
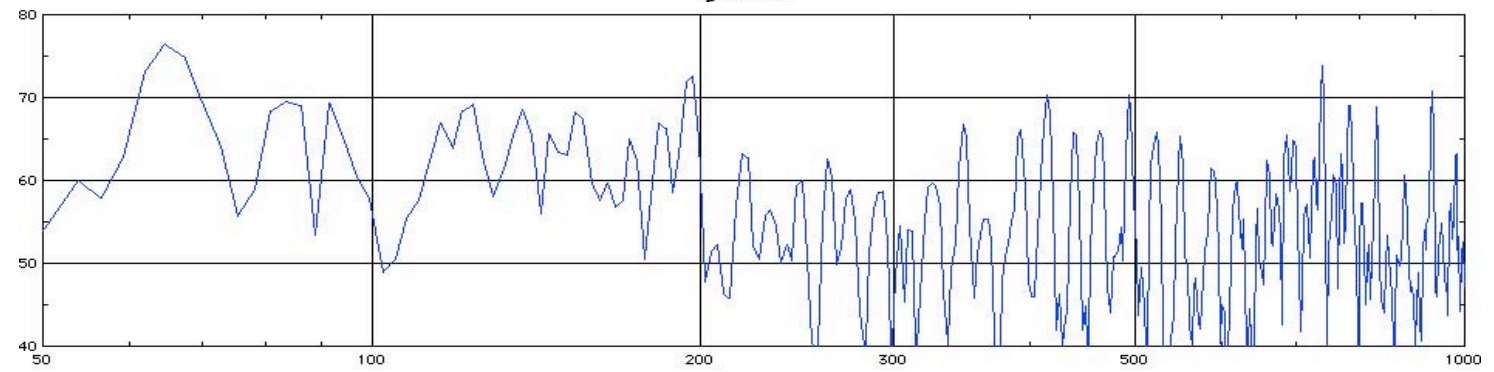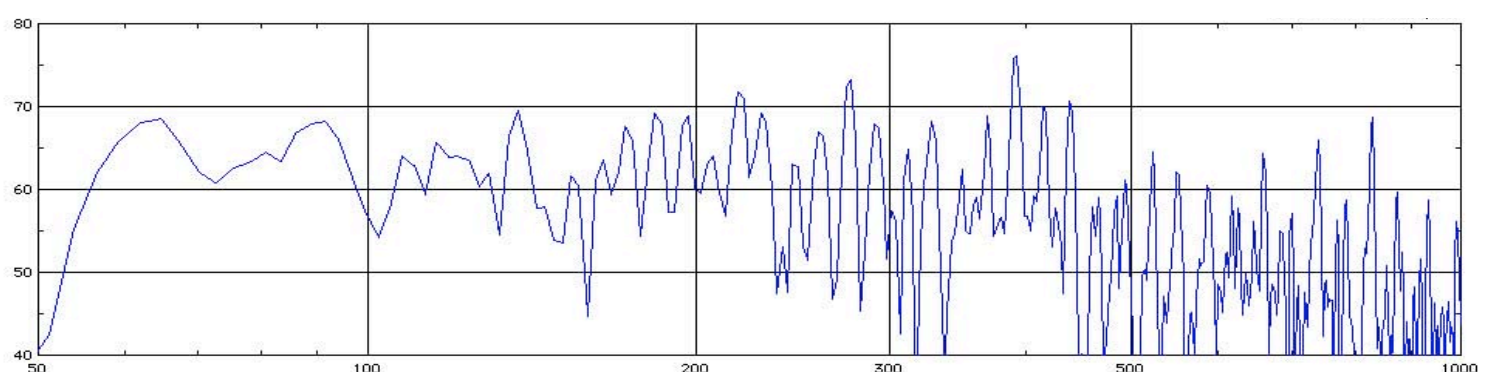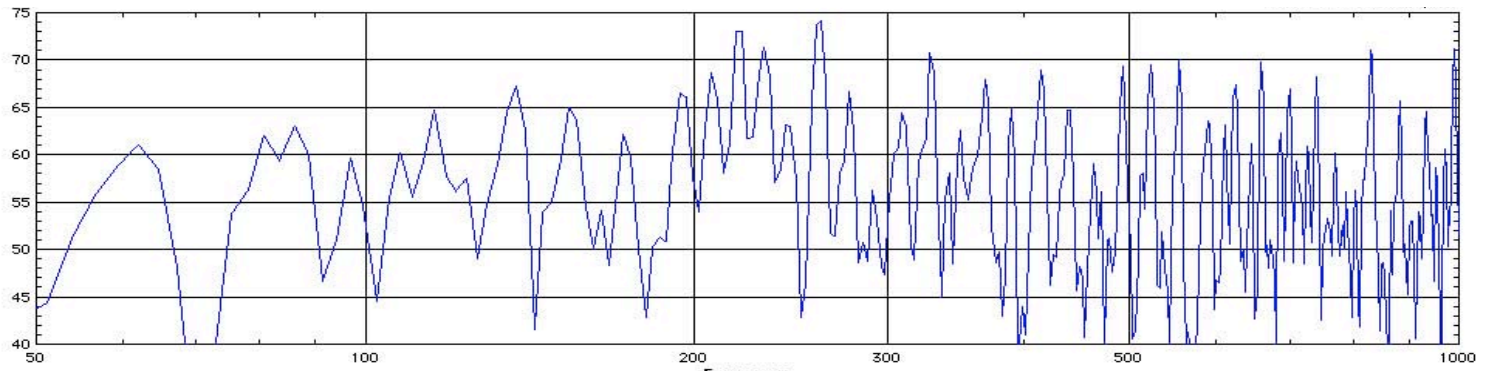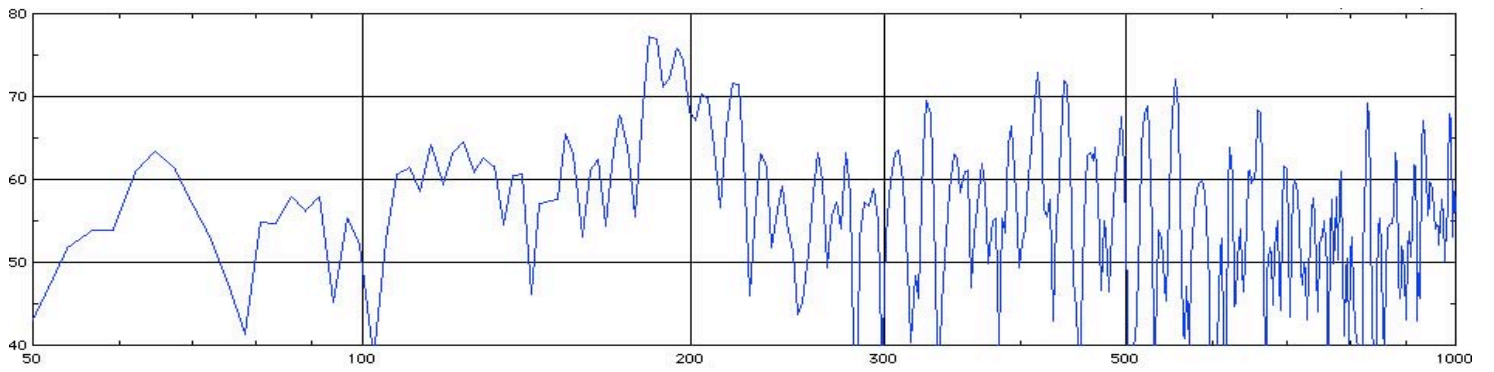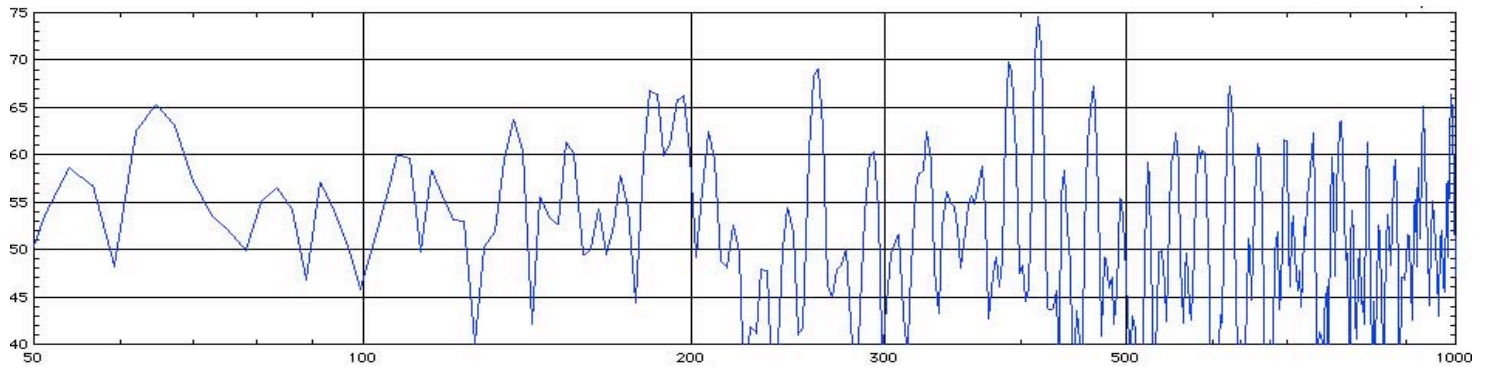
Linear db Keyboard Velocity - True piano dynamics

Proprietary **Linear db Scaling™** accurately recreates the true dynamics of the **Blüthner Model One**. Special calibration methods were employed to imbed the actual **Blüthner Model One's** dynamics directly into the playing characterisics of the **Digital Model One**. Each individual sample has its own calibrated dynamic level derived from the actual acoustics of the **Blüthner Model One**. Other digital pianos don't give you true piano dynamics, but provide a single layer of interpolated dynamics as a function of keyboard dynamic scaling. These curves are inaccurate and do not reflect what actually occurs in an acoustic instrument. Again, the true dynamics of an instrument are like a fine tapestry of very complex hills and valleys and non-linear variations in level. Most current digital pianos use linear curves and logarithmic curves and all sorts of variations on these themes, but none of them accurately reproduce the natural dynamic characterisics of the acoustic piano. The result of our **Linear db Scaling™** is a superior feeling, natural sounding, better playing digital instrument.
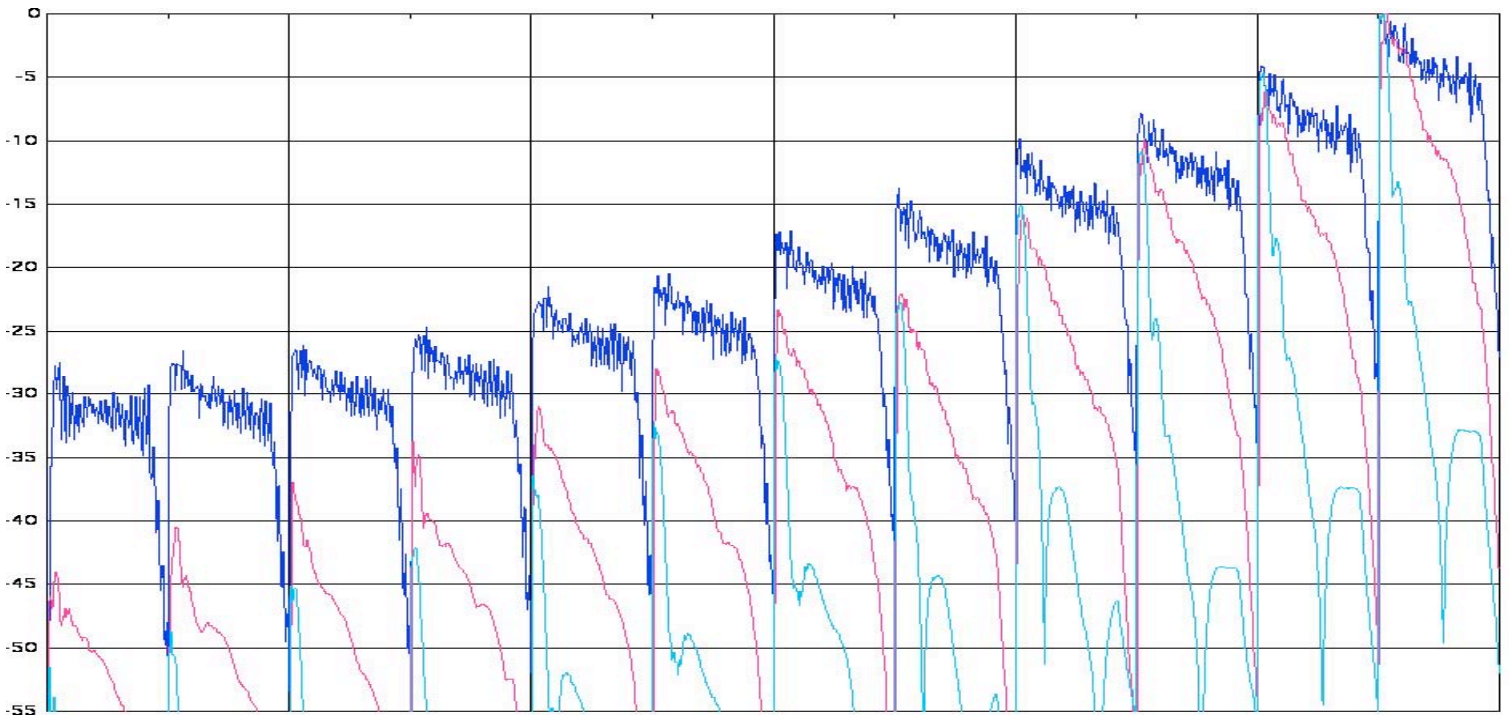
The Bluthner Digital Model One dynamics. Note that the BDMO dynamic range mirrors an actual acoustic Piano with unique values for all 88 notes.
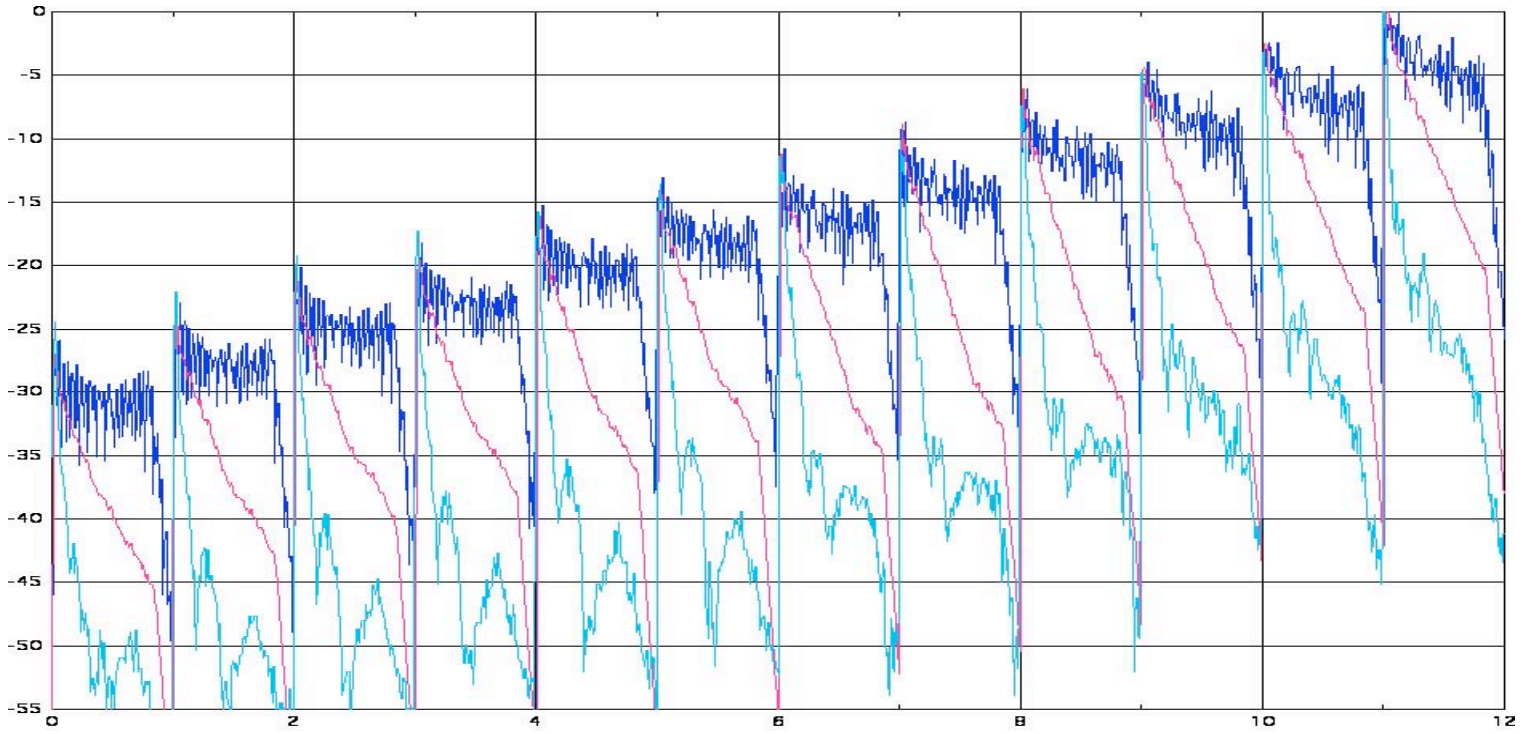
A Competitor's Piano with Linear dynamic range where each dynamic is the same.
Notice the absence of dynamic variation.
Key: The blue is note A0, the red is A4, and bright green is A6.
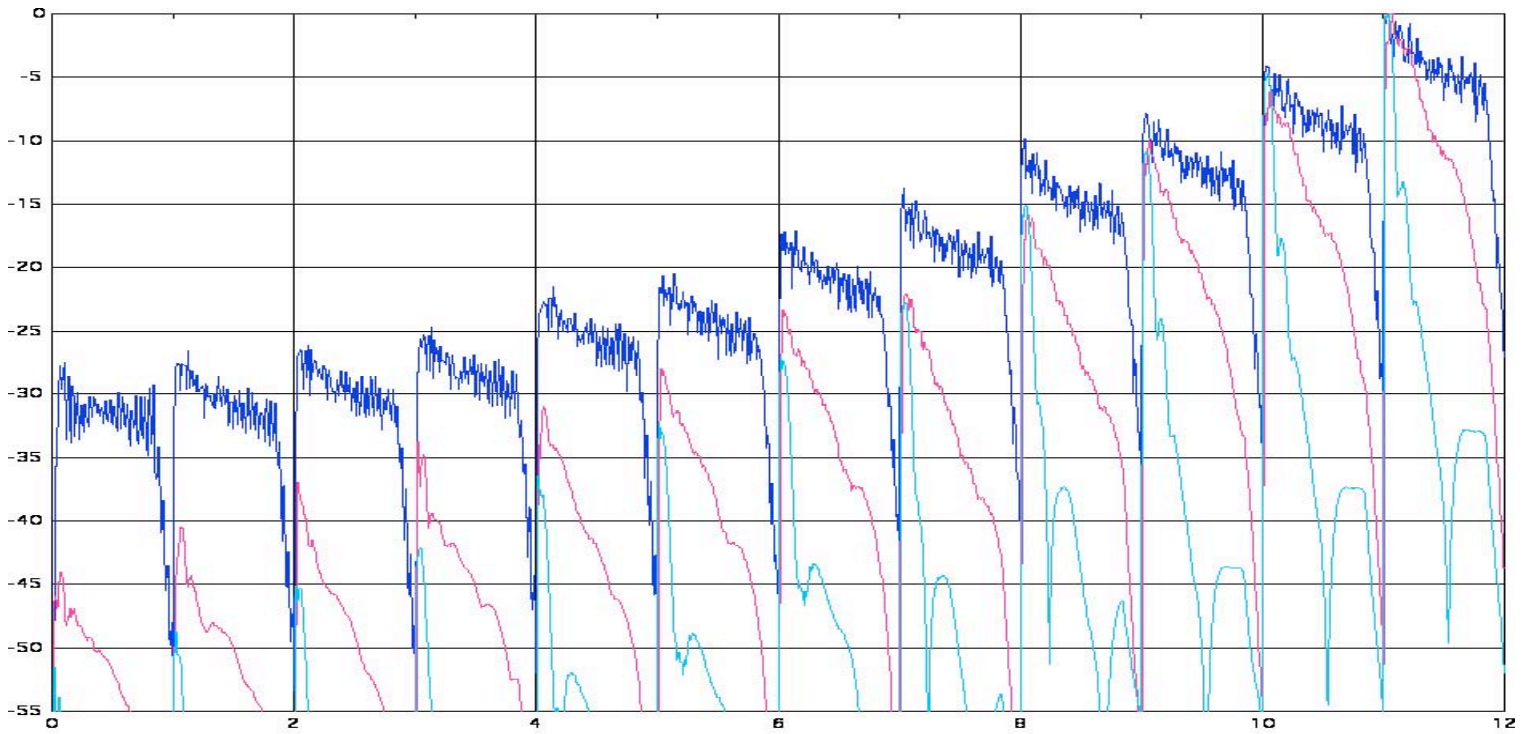
A Competitor's piano with linear dynamic range but insufficient dynamic range in the upper register.
Key: The blue is note A0, the red is A4, and bright green is A6.

Blüthner Model One Piano at Skywalker

High Quality Sample Recordings

To create the Blüthner Digital Model One we used the finest components available.

The beautiful Blüthner Model One.

The amazing acoustics and extra-quiet signal path of **Skywalker Sound™**.

Grace Design™ microphone preamps and reference preamps.
MIT cables.
Hand selected and modifed microphones.
Pacific Microsonics™ HDCD A to D converters, and much more.
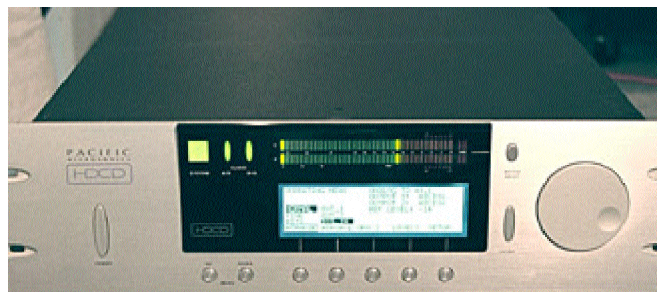
PAV "Discrete Sustain" Release Sample Technology

The **Digital Model One** features another new technology - Discrete Sustain. Using discrete release samples (not computer-modeled release samples) we recreate the "air" and space of the actual sustain characteristics of the **Blüthner Model One**. Our sustain samples all have "air" and depth in a spacious stereo field. Each sustain sample is unique, not modeled or generated. You can actually almost "feel" the air when you step on the sustain pedal and play a single note. There are two reasons for this. First, Blüthner's patented Aliquot system provides a 4th sympathetic string on the top register of the piano. (Most pianos only have 3 strings in this upper region.) These additional resonating strings provide for the signature Blüthner sound which coupled with our Discrete Sustain and Sustain Impulse technologies, accurately capture all of these various resonances.

(Don Grusin at the Bluthner Model One at Skywalker's Sound Stage capturing a performance with the Moog Piano Bar™. Using the Piano Bar, we were able to accurately calibrate each and every single note played on the Model One by correlating each audio file to its MIDI counterpart.)

Special Thanks

Dan & Ernest outside Skywalker Sound, San Rafael, CA.

Kontakt2 Player Basic Navigation

The view below shows you what the **Bluthner Digital Model One** Kontakt2 Player looks like.

Let's start at the top of the **BDMO** window and locate the **Browser Button**.

When you press the **Browser Button**, the KONTAKT2 Player will invisify the **Browser** which was previously seen on the left side of the player. Press the **Browser Button** again, and the **Browser Window** will reappear.

The next button to the right is the **Outputs Button**. Click it and you'll notice a mixer window pop open from which you can set levels, add inserts, edit effects and configure the outputs of the **BDMO**. Click the **Outputs Button** again, and the window will close.

The third button on the top row is called the **Keyboard Button** which displays or invisifies the keyboard at the bottom of the **BDMO/Kontakt2** window.
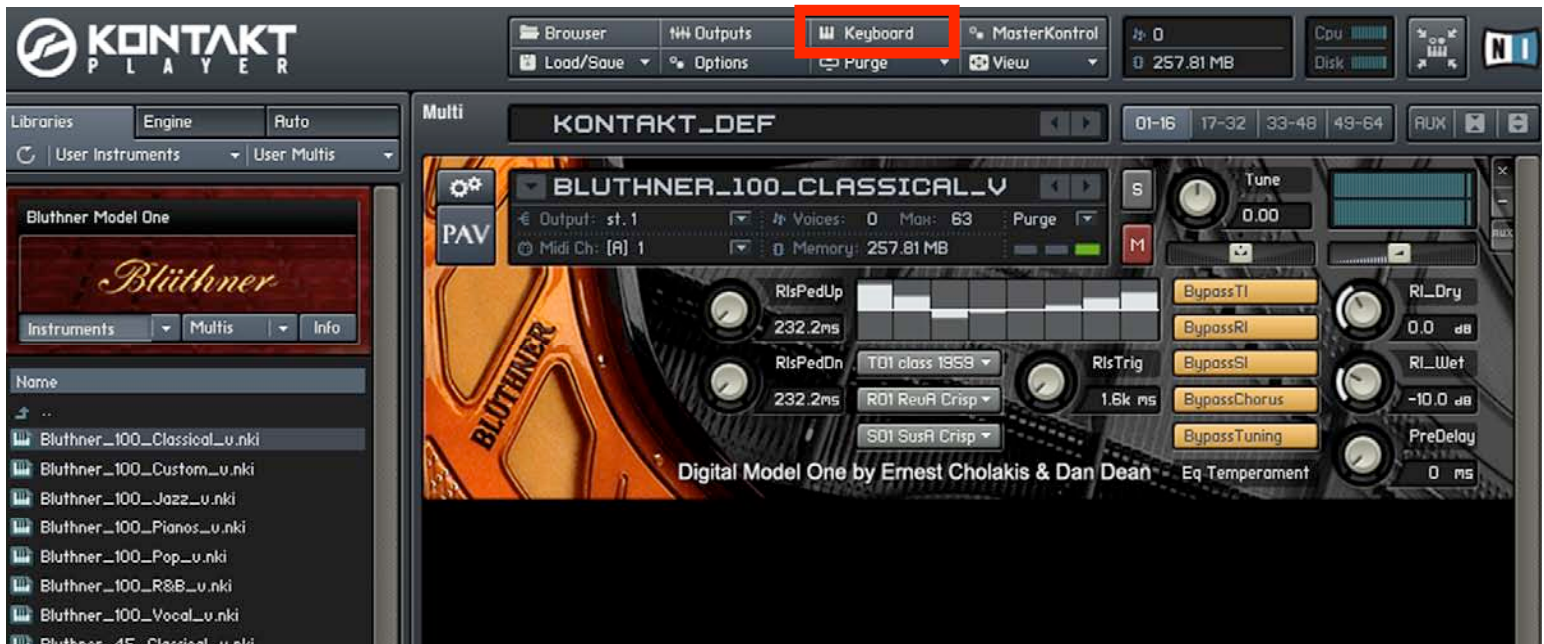
As with the other buttons, press the **Keyboard Button** again to display the keyboard.

Next up is the **MasterKontrol Button**. Press this button and a metronome with a tap pad for determining tempo, metronome volume and metronone on/off switch, master tune knob with Hertz display and reference tone with note display, on/off switch and volume control will pop up. Press the **MasterKontrol Button** again and the section will become invisible.

The first button on the left side of the bottom row in this section is called the **Load/Save Button**. If you press this button, a drop-down menu provides you with loading and saving options.

The next button to the right is called the **Options Button** and allows you access to settings of the interface, audio engine (Default levels, CPU, MIDI), Handling (Keyboard Velocity, Solo Mode, Browser behaviors, MIDI Assignment and the Installation Base Path – where your **BDMO** is installed on your computer), Load options, Search Options and DFD.
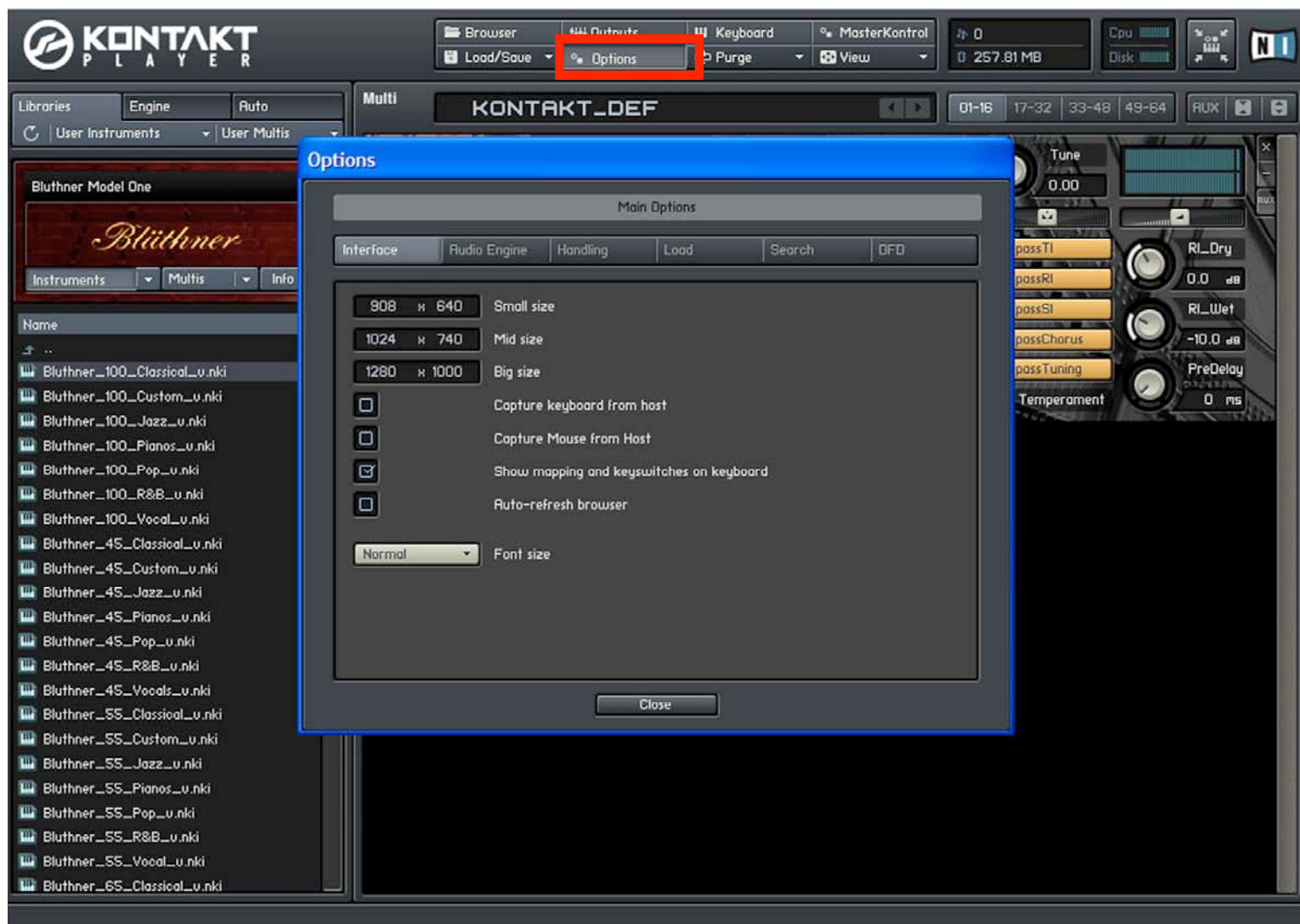
The **Purge Button** calls up a drop-down menu which allows you to use the purge functions included in the **BDMO/Kontakt2 Player**. Purge analyzes which samples were not used in an arrangement and removes them from RAM. This greatly reduces RAM usage and allows more instruments to be loaded at one time. Consult the Kontakt2 Player .pdf manual for more on this feature.

The last button in this section is called the **View Button**, and when pressed, allows you to select the **BDMO/Kontakt2 Player** display size (normal, bigger and large).

The **Gears Button** opens the **Instrument Options** settings. Here you can tweak Voice Stealing, MIDI options, DFD and Load options, Controller Options and find information about the instrument.
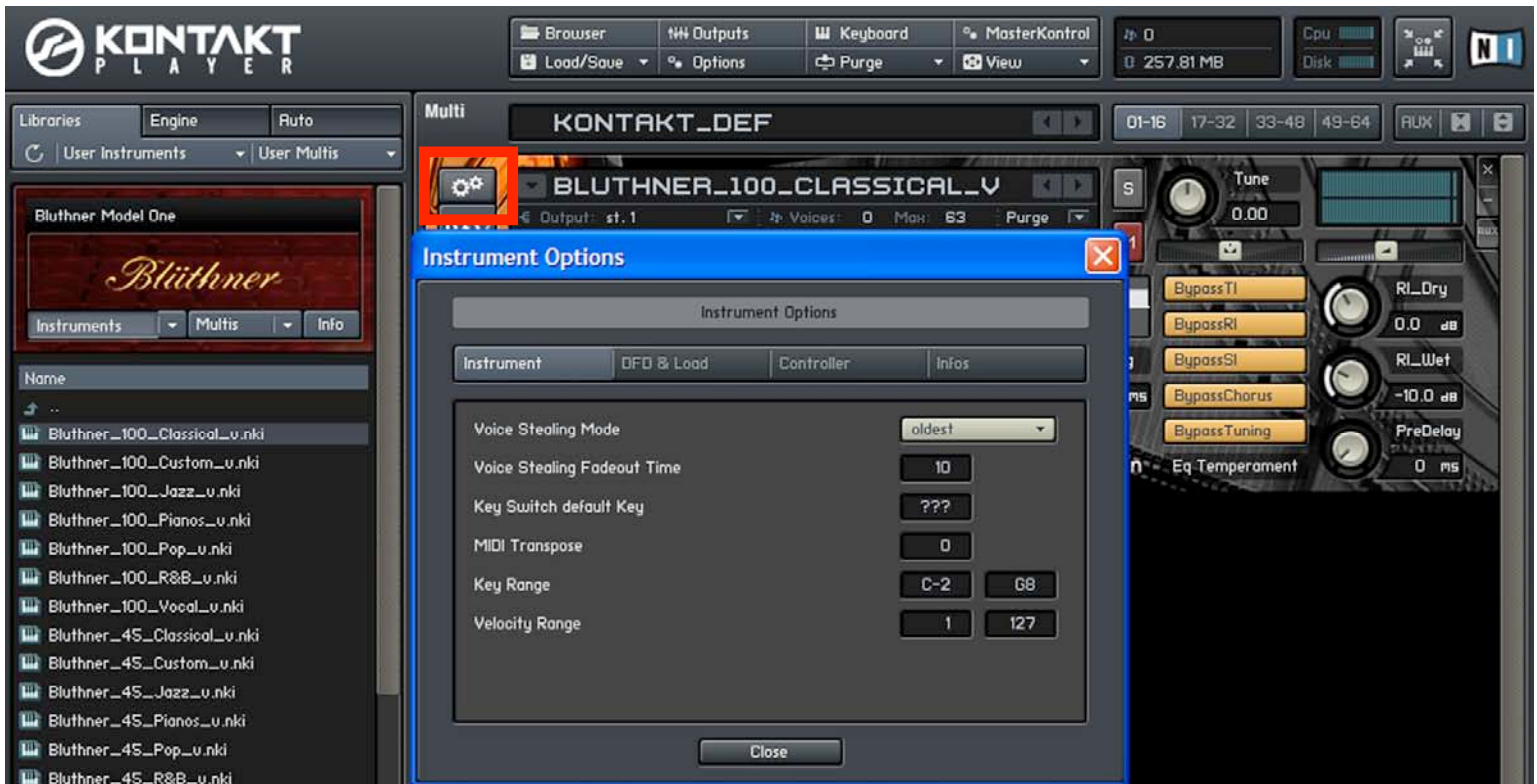
Click on the **PAV Logo Button** below the **Gears Button**, and you'll notice the "scripting" part of the **BDMO** closes. Access to our various features such as Timbral Impulses, Reverb Impulses and so on becomes invisible until you re-click the "logo" button again. If you are loading a number of different instruments into your player, this is a handy feature which allows you access to a number of instruments simultaneously by saving space in the main display window.

BDMO/Kontakt2 Player Basic Navigation

Once you have loaded the **Bluthner Digital Model One,** you'll see this basic player image showing the **BDMO** operational controls.

In the image below, you will notice a column of three buttons. These are the **Impulse Select Controls**. The top pull-down is called the **Timbral Impulse Select**, the middle button is the **Reverb Impulse Select** and the bottom button is the **Sustain Impulse Select**.

TIMBRAL IMPULSE SELECT


```
IR: 01_ee.aif        ◀ ▶  Bits: 16   Length: 105.8ms   Ch: 1
TAIL
```

TIMBRAL IMPULSE SELECT

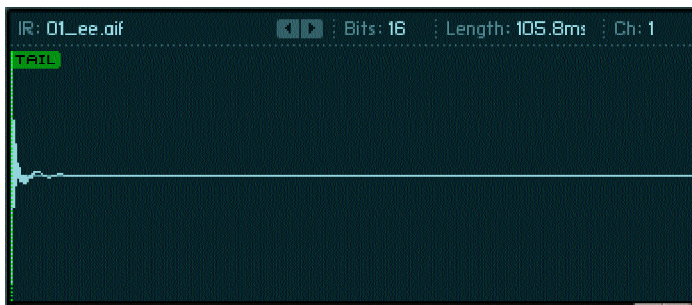Each collection of **Timbral Impulses** is grouped by **Type**. A **Timbral Impulse** always begins with the letter **"T"**, followed by the **TI** number, **TI** type and the year that the **Timbral Impulse** source material was created.

Upon startup, you will see that the following **TI** is loaded (by default) if any of the Classical Group instruments are selected:

`T01 class 1959 ▼`

This tells you that the impulse is **Timbral, number 01** from the **Classical** TI Group and was created from source material dating back to **1959**.

There are 7 **Timbral Impulse Groups**:

Classical (class)
Custom
Jazz
Pianos
Pop
R+B
Vocal

USING TIMBRAL IMPULSES

Timbral Impulse technology is new to the sampling world. At the click of a button you can completely transform the already beautiful sound of the Bluthner Digital Model One into any number of other pianos. Classical pianos from the world's most prized recordings, Rhythm and Blues pianos taken from performances and recordings, Pop Pianos from Rock recordings, concerts and private recordings, Timbral Impulses from other manufacturer's pianos from around the world, Jazz Pianos from award-winning recordings and concerts and private sources, vocal sounds transformed into timbral impulses which create vowel sounds and phonemes shaping the piano sound and finally, custom impulses of a very complex nature created by Ernest. Over 250 impulses to transform the Bluthner Digital Model One into 250 different pianos at your fingertips.

You can select whichever **Group** you prefer from the **Browser** by either click+dragging the object into the main window (as previously shown) or by simply double clicking the instrument.
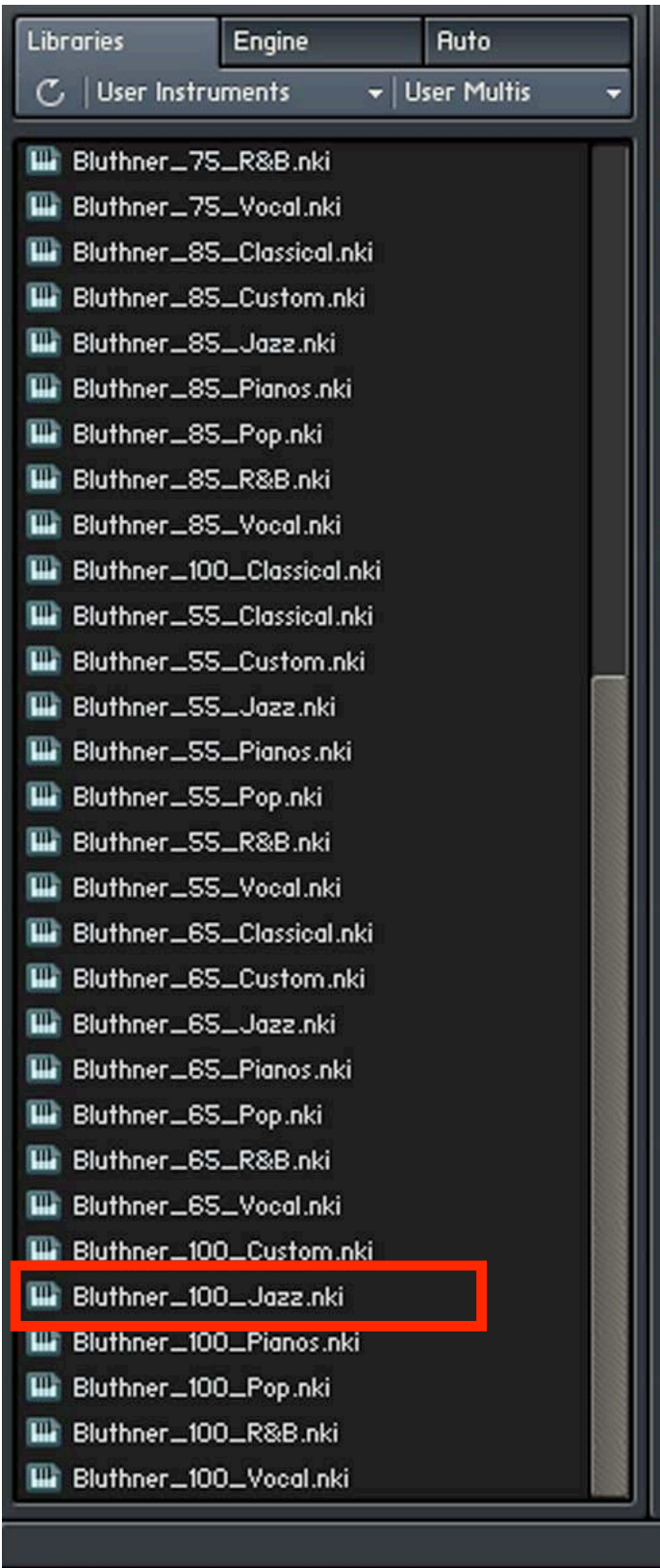
While we're at it, let's take a quick look at the **instrument names** to see what other information is contained within them. In the middle of the **Browser**, you'll see the following instrument:

Bluthner_100_Classical

This tells you that the **Instrument** is the:

Bluthner Digital Model One

with dynamic scaling programmed to **100%**

using the **Classical Group Timbral Impulses**

If you wanted to load the Instrument with **100% Dynamic Scaling**, but instead from the **Jazz Group** of **Timbral Impulses** instead, you would load this one:

Bluthner_100_Jazz.nki

Getting back to the **Timbral Impulse Select Button,** click+hold the mouse button down with any instrument from the **Classical Group**, and you'll see the following drop-down menu appear.

CLASSICAL TIMBRAL IMPULSE GROUP (50 Impulses)

If you drag the mouse pointer over a specific **TI** in the pull-down list, its color will change from gray to highlighted orange. This tells you that you have selected a particular **TI** and by releasing the mouse button, it will load.

Notice that your selected **TI** has been loaded.
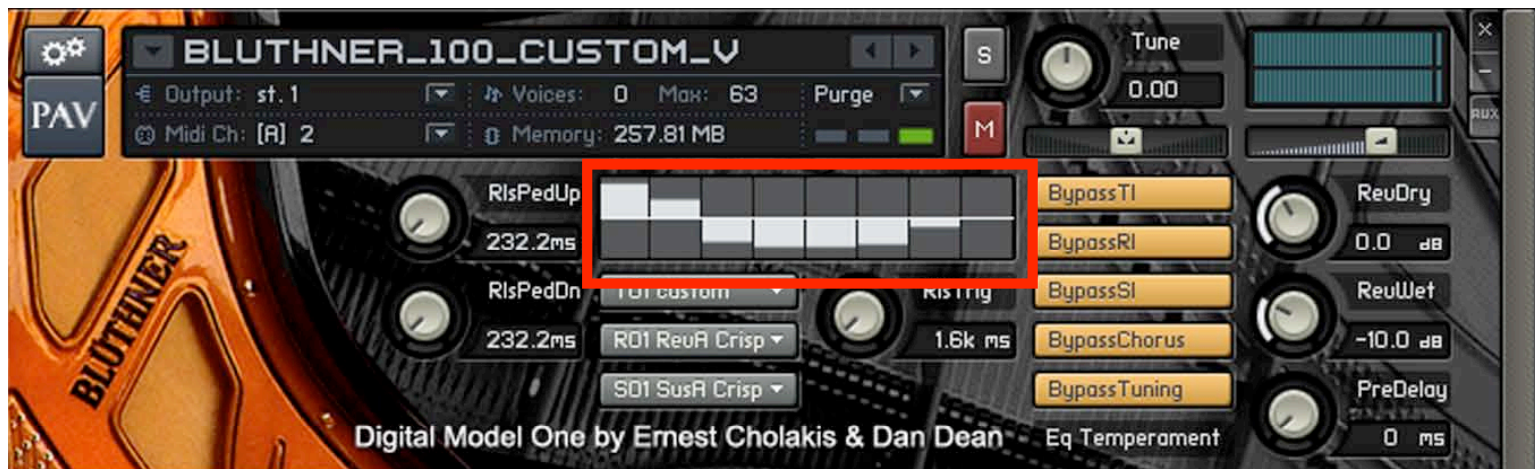
Also notice that the **Timbral Impulse Graphic Display** has changed, showing the frequency response characteristics of the new loaded **Timbral Impulse**.

TIMBRAL IMPULSE GRAPHIC DISPLAY

The Timbral Impulse Graphic Display shows the frequency spectrum in 8 bands at the bottom of the display. Frequency is displayed in Hertz(hz). Bars above the zero axis are positive (+db), below the zero axis, negative (-db).
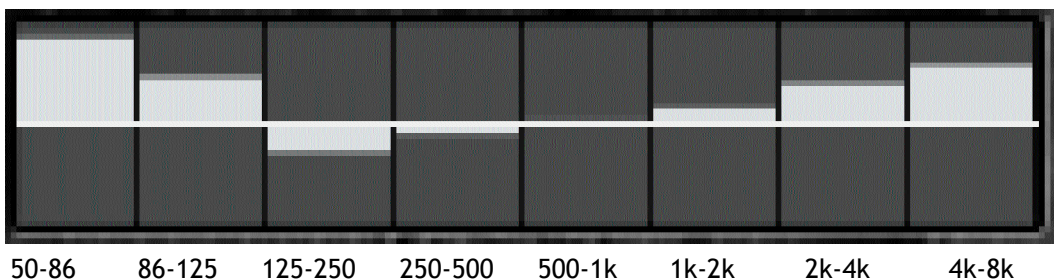
One quick glance at the **Timbral Impulse Frequency Display** and you can see the frequency curve of your selected **Timbral Impulse**. Every time you select a new **Timbral Impulse**, its characteristics are shown on the **TI Graphic Display**.

| 50-86 | 86-125 | 125-250 | 250-500 | 500-1k | 1k-2k | 2k-4k | 4k-8k |

Timbral Impulse Information Classical Group

Timbral Impulse	Recording Year	Piano Make	Recording Source
1 Classical	1959	na	Recording
2 Classical	2004	Bluthner Model 1	Skywalker
3 Classical	2001	na	Recording
4 Classical	2000	na	Recording
5 Classical	1989	na	Recording
6 Classical	2004	Bluthner Model 1	Skywalker
7 Classical	1996	Austrian Piano A	Recording
8 Classical	1995	na	Recording
9 Classical	1962	na	Recording
10 Classical	1967	na	Recording
11 Classical	1996	na	Recording
12 Classical	1975	na	Recording
13 Classical	1990	Japan Piano A	Recording
14 Classical	1973	na	Recording
15 Classical	2003	Japan Piano B	Recording
16 Classical	1990	na	Recording
17 Classical	1982	na	Recording
18 Classical	2001	USA Piano A	Recording
19 Classical	2001	Italian Piano A	Recording
20 Classical	2005	Bluthner Model 1	Skywalker
21 Classical	1972	na	Recording
22 Classical	1982	na	Recording
23 Classical	1990	Japan Piano A	Recording
24 Classical	1995	na	Recording
25 Classical	1983	USA Piano A	Recording
26 Classical	1995	na	Recording
27 Classical	1989	na	Recording
28 Classical	1962	na	Recording
29 Classical	1973	na	Recording
30 Classical	1990	French Historic Piano A 1842	Recording
31 Classical	1932	na	Recording
32 Classical	1935	na	Recording
33 Classical	1965	na	Recording
34 Classical	1975	na	Recording
35 Classical	1974	na	Recording
36 Classical	2002	Bluthner Model 1	Recording
37 Classical	2003	Italian Piano A	Recording
38 Classical	2004	Bluthner Model 1	Skywalker
39 Classical	2002	na	Recording
40 Classical	2004	na	Recording
41 Classical	1992	na	Recording
42 Classical	1995	na	Recording
43 Classical	2000	German Piano A	Recording
44 Classical	1996	German Piano A	Recording
45 Classical	2004	Bluthner Model 1	Skywalker
46 Classical	1972	na	Recording
47 Classical	1992	German Piano A	Recording
48 Classical	1977	na	Recording
49 Classical	1983	German Piano A	Recording
50 Classical	1981	Japan Piano A	Recording

CUSTOM TIMBRAL IMPULSE GROUP (5 Impulses)

Timbral Impulse Information Custom Group

Timbral Impulse Resonance

1 Custom	Even Full
2 Custom	Even Full Slightly Softer
3 Custom	Clear
4 Custom	Clear
5 Custom	Crisp
6 B 1863	1863 Blüthner 6ft 8in *
7 B up52'	1908 Blüthner Upright 52in Original Parts *
8 B up44'	1978 Blüthner Upright 44in
9 B up48'	1980 Blüthner Upright 48in
10 B 6'2"	2006 Blüthner Grand 6ft 2in
11 B 6'10"	2006 Blüthner Grand 6ft 10in
12 B 6'10"	2006 Blüthner Grand 6ft 10in
13 B 9'	1989 Blüthner Grand 9ft

The Blüthner Pianos supplied for the analysis were from Kasimoff-Blüthner Piano Co. 337 North Larchmont Boulevard, Los Angeles, CA 90004. Timbral Impulses 6 to 13 in all the Custom Impulse that adjust the overall sound of the BDMO to transform the character to other models of Blüthner pianos.

* picture of these pianos is on the following page.

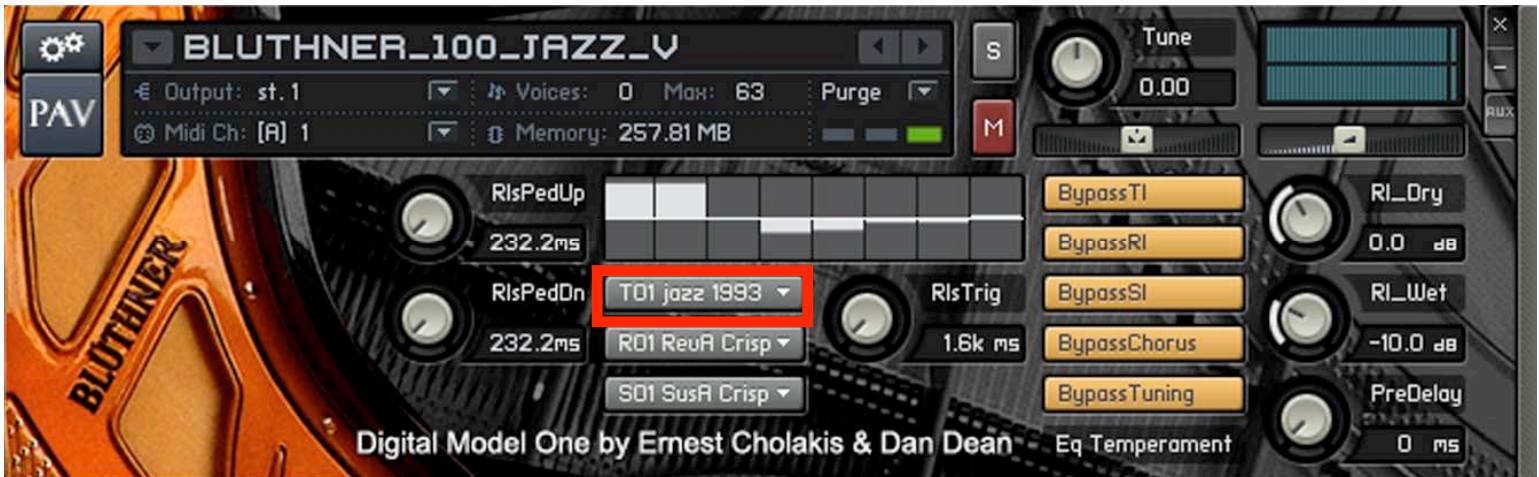# Historic Blüthner Pianos courtesy of Kasimoff-Blüthner Piano Co., Los Angeles

1863 Blüthner played by Serge Kasimoff

1908 Blüthner with original parts 52 inches in height.

JAZZ TIMBRAL IMPULSE GROUP (52 Impulses)

Timbral Impulse Information Jazz Group

Timbral Impulse	Recording Year	Piano Make	Recording Source
1 Jazz	1993	Austrian A	Recording
2 Jazz	1999	na	Recording
3 Jazz	1996	na	Recording
4 Jazz	1997	na	Recording
5 Jazz	1982	na	Recording
6 Jazz	2002	na	Recording
7 Jazz	1968	na	Recording
8 Jazz	1997	Japan A	Recording
9 Jazz	1982	na	Recording
10 Jazz	1979	na	Recording
11 Jazz	1994	na	Recording
12 Jazz	2004	Bluthner	Slywalker
13 Jazz	1996	na	Recording
14 Jazz	1996	na	Recording
15 Jazz	1996	na	Recording
16 Jazz	2004	Bluthner	Slywalker
17 Jazz	2006	Japan A	Recording
18 Jazz	1996	na	Recording
19 Jazz	1959	na	Recording
20 Jazz	1971		Recording
21 Jazz	1996	na	Recording
22 Jazz	1996	na	Recording
23 Jazz	1994	na	Recording
24 Jazz	1991	na	Recording
25 Jazz	2001	na	Recording
26 Jazz	1992	Austrian A	Recording
27 Jazz	2001	na	Recording
28 Jazz	1996	na	Recording
29 Jazz	1955	na	Recording
30 Jazz	1991	na	Recording
31 Jazz	1993	na	Recording
32 Jazz	1957	na	Recording
33 Jazz	2004	Bluthner	Skywalker
34 Jazz	2004	Bluthner	Skywalker
35 Jazz	2004	na	Recording
36 Jazz	1959	na	Recording
37 Jazz	1991	na	Recording
38 Jazz	2001	na	Recording
39 Jazz	1978	na	Recording
40 Jazz	1993	na	Recording
41 Jazz	2001	na	Recording
42 Jazz	1965	na	Recording
43 Jazz	1996	na	Recording
44 Jazz	1965	na	Recording
45 Jazz	1980	na	Recording
46 Jazz	1975	na	Recording
47 Jazz	1999	na	Recording
48 Jazz	1997	na	Recording
49 Jazz	1997	na	Recording
50 Jazz	1962	na	Recording
51 Jazz	1964	na	Recording
52 Jazz	1992	na	Recording

PIANOS TIMBRAL IMPULSE GROUP (51 Impulses)

Timbral Impulse Information Pianos Group

Timbral Impulse	Recording Year	Piano Make	Recording Source
1 Pianos	na	Japan Company C	Digital Piano
2 Pianos	na	German Piano A	Sampled Piano
3 Pianos	na	German Piano B	Sampled Piano
4 Pianos	na	Austrian Piano A	Sampled Piano
5 Pianos	na	US Company A	Digital Piano
6 Pianos	na	Austrian Piano A	Sampled Piano
7 Pianos	na	German Piano A	Sampled Piano
8 Pianos	na	Japan Company C	Digital Piano
9 Pianos	na	German Piano F	Sampled Piano
10 Pianos	na	Japan Company A	Digital Piano
11 Pianos	1995	Japan Company B	Private Recording
12 Pianos	1999	Japan Piano A	Private Recording
13 Pianos	na	USA Piano B	Private Recording
14 Pianos	na	Japan 7 foot Piano	Sampled Piano
15 Pianos	na	German Piano A	Sampled Piano
16 Pianos	na	Japan Company A	Digital Piano
17 Pianos	na	Japan Company A	Digital Piano
18 Pianos	na	German Piano A	Sampled Piano
19 Pianos	na	Austrain Piano A	Sampled Piano
20 Pianos	na	German Piano A	Sampled Piano
21 Pianos	2004	USA Piano A 7 foot	Private Recording
22 Pianos	na	Japan Company A	Digital Piano
23 Pianos	na	German Piano B	Sampled Piano
24 Pianos	na	Japan Company A	Digital Piano
25 Pianos	na	Japan Company D	Digital Piano
26 Pianos	na	Japan Company A	Digital Piano
27 Pianos	na	Austrian Piano A	Sampled Piano
28 Pianos	na	Japan Company C	Digital Piano
29 Pianos	na	Japan Company D	Digital Piano
30 Pianos	1993	German Piano A	Recording
31 Pianos	2003	USA Piano A	Private Recording
32 Pianos	na	Japan Company A	Digital Piano
33 Pianos	na	German Piano C	Recording
34 Pianos	na	Japan Company A	Digital Piano
35 Pianos	na	Japan Company C	Digital Piano
36 Pianos	na	Japan Company D	Digital Piano
37 Pianos	na	German Piano A	Sampled Piano
38 Pianos	1993	Italian Piano A	Recording
39 Pianos	1993	Austrian Piano A	Recording
40 Pianos	na	Historic Piano 1813	Recording
41 Pianos	1993	Japan Piano A	Recording
42 Pianos	1993	German Piano B	Recording
43 Pianos	na	Japan Piano A 7 foot	Recording
44 Pianos	na	German Piano A	Recording
45 Pianos	na	USA Piano C	Recording
46 Pianos	na	Historic Piano 1850	Recording
47 Pianos	na	Sweden Piano A	Recording
48 Pianos	2000	German Piano E Upright	Sampled Piano
49 Pianos	2001	Historic German Piano A 1906	Recording
50 Pianos	1986	Australian Piano A	Recording
51 Pianos		German Piano D	Recording

POP TIMBRAL IMPULSE GROUP (59 Impulses)

T18 pop 1970	
T19 pop 1999	
T20 pop 1993	
T21 pop 1982	
T22 pop 1978	
T23 pop 2003	
T24 pop 1976	
T25 pop 1988	
T26 pop 1972	
T27 pop 1973	
T28 pop 1977	
T29 pop 2000	
T30 pop 2004	
T31 pop 1970	
T32 pop 2006	
T33 pop 1959	
T34 pop 1988	
T35 pop 2002	
T36 pop 1972	
T37 pop 1970	
T38 pop 1979	
T39 pop 1970	
T40 pop 1978	
T41 pop 1975	
T42 pop 2003	
T43 pop 1968	
T44 pop 1968	
T45 pop 1970	
T46 pop 1971	
T47 pop 1999	
T48 pop 1982	
T49 pop 1990	
T50 pop 1972	
T51 pop 1975	
T52 pop 1975	
T53 pop 1977	
T54 pop 1968	
T55 pop 1973	
T56 pop 1968	
T57 pop 1996	
T58 pop 1998	
T59 pop 1972	

Timbral Impulse Information Pop Group

Timbral Impulse	Recording Year	Recording Location
1 Pop Rock	1997	Canada
2 Pop Rock	1970	UK
3 Pop Rock	1996	Canada
4 Pop Rock	1969	USA
5 Pop Rock	1975	USA
6 Pop Rock	1977	UK
7 Pop Rock	1973	London
8 Pop Rock	1968	London
9 Pop Rock	1968	London
10 Pop Rock	1977	USA
11 Pop Rock	1970	UK
12 Pop Rock	1995	Ireland
13 Pop Rock	1976	USA
14 Pop Rock	1977	USA
15 Pop Rock	1969	London
16 Pop Rock	2003	USA
17 Pop Rock	1976	USA
18 Pop Rock	1970	UK
19 Pop Rock	1999	USA
20 Pop Rock	1993	UK
21 Pop Rock	1982	UK
22 Pop Rock	1978	USA
23 Pop Rock	2003	USA
24 Pop Rock	1976	London
25 Pop Rock	1988	Ireland
26 Pop Rock	1972	USA
27 Pop Rock	1973	London
28 Pop Rock	1977	USA
29 Pop Rock	2000	USA
30 Pop Rock	2004	USA
31 Pop Rock	1970	London
32 Pop Rock	2006	USA
33 Pop Rock	1959	USA
34 Pop Rock	1988	Ireland
35 Pop Rock	2002	London
36 Pop Rock	1972	USA
37 Pop Rock	1970	UK
38 Pop Rock	1979	Sweden
39 Pop Rock	1970	London
40 Pop Rock	1978	USA
41 Pop Rock	1975	London
42 Pop Rock	2003	USA
43 Pop Rock	1968	London
44 Pop Rock	1968	London
45 Pop Rock	1970	London
46 Pop Rock	1971	London
47 Pop Rock	1999	USA
48 Pop Rock	1982	USA
49 Pop Rock	1990	USA
50 Pop Rock	1972	France
51 Pop Rock	1975	UK
52 Pop Rock	1975	London
53 Pop Rock	1977	Switzerland
54 Pop Rock	1968	London
55 Pop Rock	1973	USA
56 Pop Rock	1968	London
57 Pop Rock	1996	Canada
58 Pop Rock	1998	USA
59 Pop Rock	1972	USA

R+B (RHYTHM & BLUES) TIMBRAL IMPULSE GROUP (28 Impulses)

Timbral Impulse Information R+B Group

Timbral Impulse	Recording Year	Recording Location
1 R&B	2005	USA
2 R&B	1969	USA
3 R&B	1969	USA
4 R&B	1972	New Orleans, USA
5 R&B	1949	New Orleans, USA
6 R&B	1973	USA
7 R&B	1972	USA
8 R&B	1985	London
9 R&B	2002	New Orleans, USA
10 R&B	1970	USA
11 R&B	1968	USA
12 R&B	2002	New Orleans, USA
13 R&B	1957	USA
14 R&B	1972	USA
15 R&B	1988	USA
16 R&B	1970	USA
17 R&B	1979	New Orleans, USA
18 R&B	1968	USA
19 R&B	1979	New Orleans, USA
20 R&B	1968	USA
21 R&B	1969	USA
22 R&B	1996	Canada
23 R&B	1996	Canada
24 R&B	1977	USA
25 R&B	1980	USA
26 R&B	1976	New Orleans, USA
27 R&B	1974	USA
28 R&B	1973	USA

VOCAL TIMBRAL IMPULSE GROUP (24 Impulses)
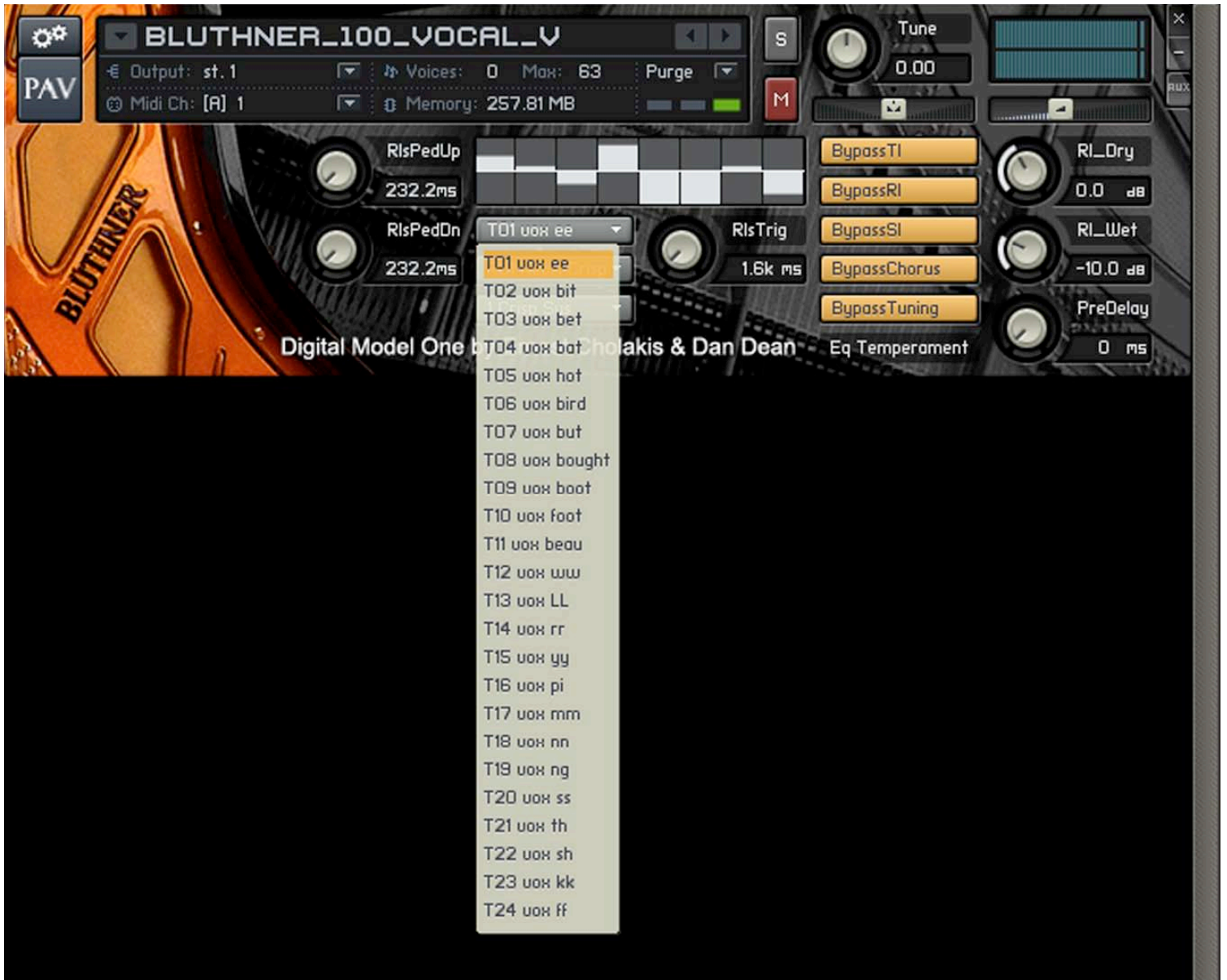
Timbral Impulse InformationVocal Group

Timbral Impulse	VocalResonance		Timbral Impulse	VocalResonance
1 Vocal	ee		13 Vocal	LL
2 Vocal	bit		14 Vocal	rr
3 Vocal	bet		15 Vocal	yy
4 Vocal	bat		16 Vocal	pi
5 Vocal	hot		17 Vocal	mm
6 Vocal	bird		18 Vocal	nn
7 Vocal	but		19 Vocal	ng
8 Vocal	bought		20 Vocal	ss
9 Vocal	boot		21 Vocal	th
10 Vocal	foot		22 Vocal	sh
11 Vocal	beau		23 Vocal	kk
12 Vocal	ww		24 Vocal	ff

REVERB IMPULSE SECTION
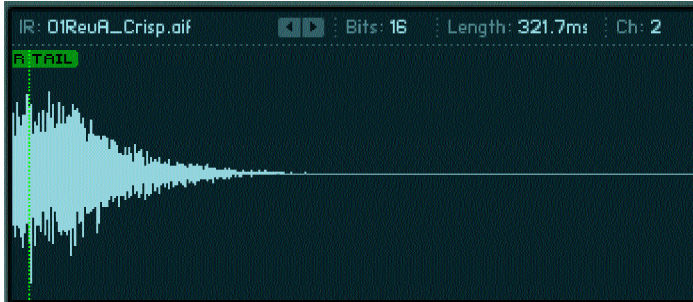
The next button down in the column is called the **Reverb Impulse Select Button**.

Like the **Timbral Impulse Selector**, the **RI Select Button** gives you access to the next kind of convolution (probably the one you are most familiar with) – **Reverb**.

The **Reverb Impulse Select Button** allows you to access Reverbs A through T (19 basic reverb cores) with 4 variations (Crisp, Clear, Warm and Dark) of each. The Reverbs at the top of the list are smaller spaces, getting larger and more reverberant as you proceed down the list from top to bottom.

A **Reverb Impulse** always begins with the letter **"R"**, followed by the **RI** number, the name of the Reverb (A through T) and type of **RI** enhancement.

These **Reverb Impulses** were created specially for the **Bluthner Digital Model One** by Ernest and utilize very complex algorithms to create an extremely natural sounding reverb collection specifically engineered to maximize the tonal qualities of the **Bluthner Model One Grand Piano**.

Select from an array of custom created **Reverb Impulses** ranging from the sound of an isolation booth, to gobo'ed studios, small rooms, medium rooms, large studios, recital halls, large performance halls and concert halls. Every one of them is very dense in complexity, very natural and - unique.

The **Reverb Impulse** set included with the **BDMO** is laid out the same in all the various instruments

REVERB IMPULSE PULL DOWN MENU

REVERB SECTION CONTROL KNOBS

RevDry, RevWet & PreDelay

We've included some basic level controls for the **Reverb Impulse** section – **RevDry**, **RevWet** and **Predelay**. These terms stand for **Reverb Dry, Reverb Wet** and **Pre Delay**. We "preset" these levels at 0db for the **dry signal** and –10db for the wet signal as a basic point of departure for you to work from. Essentially, **Reverb Dry** and **Reverb Wet** controls are simply a "quick" 2 knob mixer allowing you to set your own source and reverb mix levels. In order to use these controls, you must select a **Reverb Impulse** from the drop down list and enable the **Reverb Impulse** (turned it on) in the **Bypass Column.**
TIP: When the Bypass is orange, the **RI** section is "off".
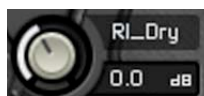
The **RevDry Knob** controls the level of the dry signal coming from the instrument without Reverb.

The **RevWet Knob** controls the level of the **Reverb Impulse** coming from the convolution engine of Kontakt2.

The **PreDelay Knob** delays the send of the wet level to the convolution engine. Prior to the digital era, we used to do this by running the echo/reverb send from the console to either a mono or 2 track tape recorder and then patch its output from the playback head into the input of the chamber or plate. Since these tape machines had separate heads for playback and record separated by a few inches, there was a delay between the input and output signals.Because the distance between the two heads was fixed, so was the delay time. If you were really lucky, the studio might have a VSO (Variable Speed Oscillator) so you could adjust the tape speed and "rough sync" the delay to a quarter note or half note value for musical effect. **PreDelay** adds depth and space to the reverb by giving it more delay before you hear it. This has the psychoacoustic effect of simulating a larger acoustic space.

SUSTAIN IMPULSE SECTION

The last button in this column is called the **Sustain Impulse Select Button**.

Like its neighbors to the north, the **Sustain Impulse Select Button** gives you access to the last type of convolution used in the **BDMO** called - **The Sustain Impulse**. The **Sustain Impulse** is one of our proprietary features just for the **BDMO**.

A Sustain Impulse is neither a **Timbral** or **Reverb Impulse**, but one created specifically to alter the Sustain charateristics of the **Bluthner Digital Model One**. There are two basic core **Sustain Impulse** groups (A & B) which have been engineered to enhance crispness, clarity, darkness, evenness and smoothness. A **Sustain Impulse** always begins with the letter **"S"**, followed by the **SI** number and type of **SI** enhancement.

SUSTAIN PULL DOWN MENU

THE BYPASS COLUMN

When these buttons are "illuminated" (or orange) their effect is BYPASSED.

When these buttons are dark or gray, their effect is "on".

The **Bypass TI** (or Timbral Impulse) button enables/disables the Timbral Impulse features of the Bluthner Digital Model One.

The **Bypass RI** (or Reverb Impulse) button enables/disables the Reverb features of the Bluthner Digital Model One.

The **Bypass SI** (or Sustain Impulse) button enables/disables the Sustain Impulse features of the Bluthner Digital Model One.

CHORUS EFFECT

To activate the chorus, click on the **Bypass Chorus Button**. It should look like the screen shot below.

TIP: For a thicker **Chorus,** click on the **BypassRI Button**, enabling the **Reverb Impulse Section**. Select one of the Warm or Dark Reverbs RevA, RevB, RevC, RevD, or RevE. Change both the RevDry and RevWet levels to -3db and add 2 ms to the **PreDelay.**

RELEASE CONTROLS

We have included **Release Control** knobs for the pedal up samples, pedal down samples and the release triggered damper pedal samples of the BDMO.

The **RlsPedUp (Release Pedal Up)** and **RlsPedalDn (Release Pedal Down)** samples default to 232.2 ms upon load-up but can be varied from 51.9 ms to 1.2 kms (or 1.2 seconds) depending on your personal taste and the type of music being performed.

The **RlsTrig (Release Trigger damper pedal)** sample release is set to the default of 1.6 kms (or 1.6 seconds). You can adjust this release time from 51.9 ms to 5.5 kms (5.5 seconds).

TIP: A very important thing to keep in mind is that the higher you set these values, the more polyphony you will use.

TIP: We have preset the voices on the BDMO to 63. You can increase the voices up to 127. If you set the Release Controls to a high value, increasing the voices setting can improve performance.

When to vary these settings: if you are playing something very percussive requiring a short release, try lowering the **RlsPedUp** values. If you are playing something which is very legato, try increasing the **RlsPedUp** and RlsPedDn settings.

REGULAR AND VARIABLE SUSTAIN PEDAL CONTROL

One of our new features for the **Bluthner Digital Model One** is **Variable Sustain Pedal Control**. Rather than a conventional on/off footswitch, **Variable Sustain** allows you to control the amount of sustain by using a special footswitch. The lighter the foot pressure on the sustain, the less pedal down sustain amount. The more pressure on the the sustain pedal, the greater the sustain sample level. Using this **Variable Sustain Controller**, you'll find that the action of the pedal is much closer to the feel of an acoustic piano. You can adjust the sustain amount and depth by pedal pressure.

If you have a **Variable Sustain Pedal Controller**, we have created special presets that allow you to take advantage of it. In the Browser Window, after clicking the instruments button, you'll notice 2 folders. The first contains instruments specially programmed for a **Variable Sustain Pedal** and a second folder for a **Regular on/off Sustain Pedal**.

If you have a **Variable Sustain Pedal**, select the first folder.

Double click on this selection, and the **Variable Sustain Pedal** instruments will open. At this point, scroll and make your selection of the instrument and either double click the instrument or click+drag it into the empty pane on the right, next to the Browser window.

If you do not have a **Variable Sustain Pedal**, use the **Regular Sustain Pedal** presets by selecting the **Regular Sustain Pedal** folder and double clicking on it.

This will open the **Regular Sustain Pedal** instruments. As above, make a selection from the list of instruments by either double clicking it or click+dragging it to the empty pane to the right of the Browser Window.
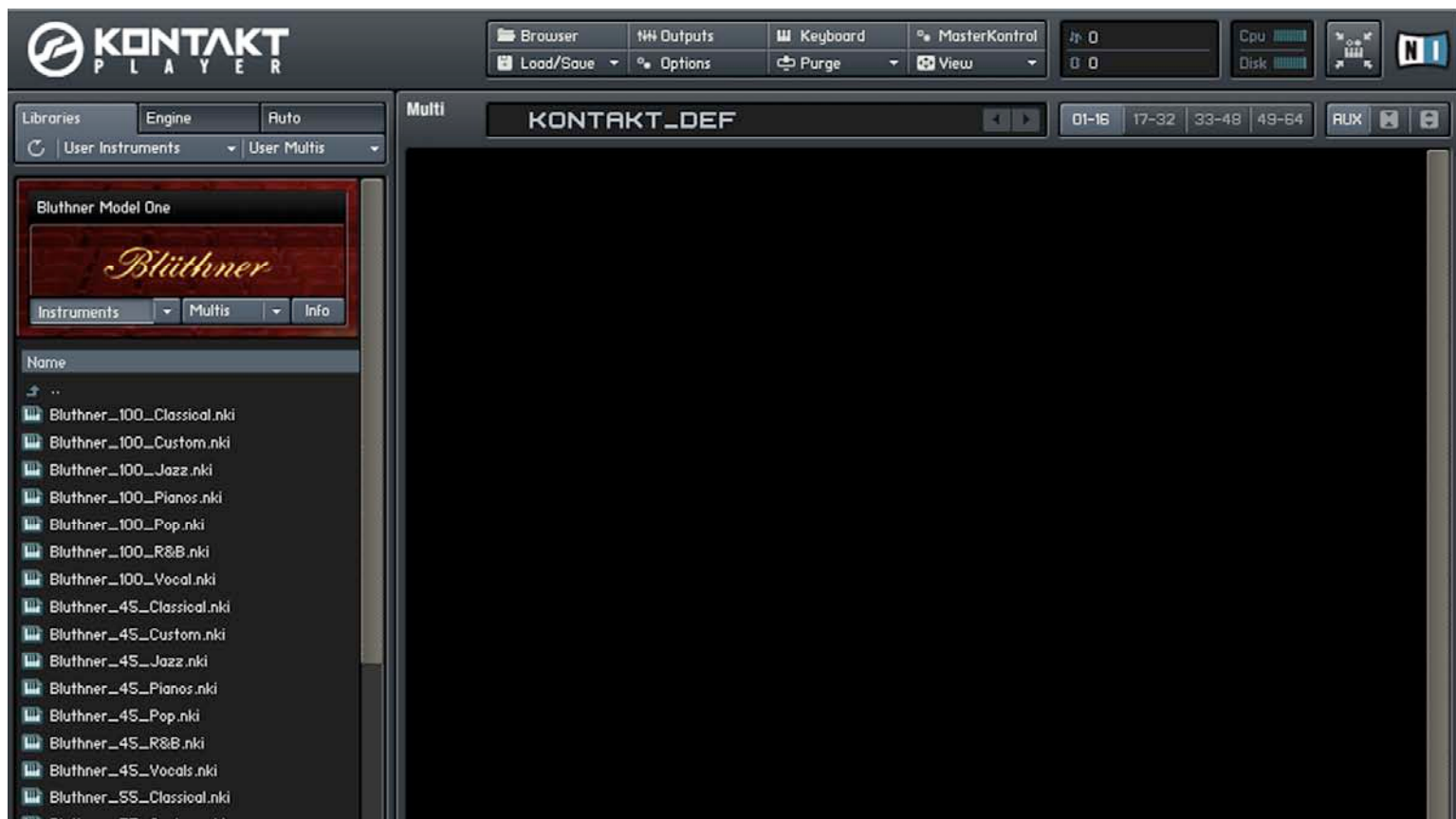
ADJUSTING THE TUNING OF THE PIANO

In Western music, the dominant tuning system has been the 12 tone **Equal Temperament** (ET) system. In this system all the notes within an octave are divided into 12 equal distances. Unfortunately ET is a tuning system that does not correctly represent what really happens at a micro pitch level when an orchestra, jazz or vocal ensemble plays. Unfortunately, a piano cannot adjust for temperament (smooth sounding chords) as an ensemble easily can.

The historical advantage of ET has been that the misrepresentation pure harmony is evenly distributed among the 12 notes of an octave so that the level of the error is equal in all 12 keys. This allows for modulation in any key with an equal amount of roughness relative to the pure sounding harmonies that ensembles can achieve. The solution to this tuning problem is to use **just intonation**. In this system, one can set the tuning to the key of C **just intonation**, then as long as one plays in the key of C, the listener is able to hear the smooth sounding harmonies of ensemble playing from a piano. The challenge for a keyboard player arises when an ensemble changes key, because the tuning of each pitch also changes to refect the new key. The practical problem for keyboard players is that they cannot change the tuning of their instrument unless software allows this feature. Unfortunately, most software is not real-time friendly. To add to the difficulties, often ensembles will think vertically and the tuning is in reality a floating just intonation system where each chord is referenced to itself and not referenced to a particular key. This system gives the maximum harmonic smoothness for each chord regardless of the key. For a keyboard player to follow this, the **just intonation** key has to be changed before every chord (the key would be the root of each chord) so a C maj 7th chord would require a C **just intonation** tuning but if the next chord is F# min7 then the tuning has to be changed to **F# just intonation** before the notes of this chord are played.

There is a now a solution to this variable tuning that keyboardist can use. It is embedded in the Blüthner Digital Model One. The system enables a keyboardist to adjust the tuning in real time. The floating just intonation system however is more realistically achievable if one uses a sequencer. In the BDMO the tuning can be changed in two ways. Both approaches can be recorded into a sequencer and also edited after the original performance. There are two approaches both require the user to press the tuning button - outlined in a red rectangle on the upper screen shot below. The lower screen shot shows that the tuning is active because the same button colour has changed to a grey tint.

To activate the tuning feature press the BypassTuning button - when it turns grey the feature is activated.

VARIABLE TUNING APPROACH ONE

The first approach: use the lowest midi notes (below A0) in order to adjust to the tuning key. Even though these notes do not trigger a sound the **BDMO** converts to the just intonation key to the note played in this range. In this example we will use an Oxygen V2 keyboard. First set the octave range to -4 now all the notes from the lowest C to the upper G will trigger a change in tuning scale. The only exception occurs when G#0 is played - it converts the keyboard back into **equal temperament**. The advantage of this is that you can quickly switch to any **just intonation** key, then switch back into equal temperament by triggering G#0. Because the sequencer can record these notes, this is all programmable. In a real time performance, a keyboardist can have 2 keyboards one a small Oxygen 2 octave keyboard for adjusting the tuning and a regular sized one for playing.

In this range C-1 to G0 you can select the just intonation key by triggering (and recording) one of these notes. To change the just intonation key simply trigger the desired note. To switch back into equal temperament simple play the G#0 note (has a red rectangle around it.

A0

When Octave set to 04 this A note is the lowest note of the piano midi pitch is 21

When you change to the 12 just intonation keys or equal temperament the tuning information box (outlined in red in the screen shot above) informs you of the key the BDMO is in.

VARIABLE TUNING APPROACH TWO

The second approach requires that you program a knob or slider on the keyboard to send midi CC#16 data. When the slider value is moved slightly (CC#16) value has to be greater is greater than 10 the notes from middle C (C4 up to C5) are muted. The keyboard player then selects the note they wants the tuning key to be in then slides the knob/slider back to the zero position (less than 10). The muted octave becomes active but the tuning has changed. When the CC16 value is greater than 9 and you select C5 the keyboard switches back into Equal temperament.

In this example knob C5 is programmed to output midi CC#16 data.