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The BOSS BOOK

The Ultimate Guide to the World's Most Popular Compact Effects for Guitar

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The COMPLETE LINEUP of BOSS Effects

"We must develop unique and innovative effects for the world's guitarists."

– So declared BOSS's founder 25 years ago, when they debuted their first pedal, the CE-1.

And BOSS still stands by that philosophy 25 years later, even as they move into the 21st century.

BOSS effects just keep on coming like the colors of the rainbow.

They awaken beginners to the profound world of guitar sound,

and experienced players come back to them in their painstaking quest for excellence.

Here we shall explore the enduring appeal of the BOSS effect pedal.


Distortion DS-1
OUTPUT
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OverDrive OD-3
BALANCE
SPECTRUM
Spectrum SP-1
Tremolo
DEPTH
OCT 2
Octaver OC-2
TURBO OverDrive OD-2
TURBO Distortion DS-2
REMOTE

OD-1
Over Drive

The first BOSS pedal was the revolutionary Over Drive

From the beginning, the OD-1 was a masterpiece. It grabbed the limelight as an essential piece of gear for adding fat, powerful gain to large stack amps. BOSS's unique "asymmetrical overdrive circuit" creates distortion with a distinctive, crisp sound, and the richly-nuanced tone of an overdriven tube amp. The OD-1 accurately reproduces the subtleties of picking and fingering. It was a key player in the L.A. metal scene of the mid-80s, and still enjoys a formidable reputation as a legendary BOSS pedal.

DATA
CONTROL • LEVEL / OVER DRIVE
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from November 1977 to July 1985

SD-1
SUPER Over Drive

A distortion pedal standard, with plenty of flexibility

The SD-1 distorts while maintaining the harmonics of the original input signal, so you get quality BOSS over drive that doesn't mask the intrinsic character of your guitar. Almost 20 years of consistent sales testify to the highly perfected design of the SD-1. Similar to the OD-1 in basic circuit design, the SD-1 adds a tone control that can boost or cut highs for greater versatility. The SD-2 is flexible enough for use in all genres of music, and that's the key to its mass appeal.

DATA
CONTROL • LEVEL / DRIVE / TONE
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from February 1981 to present

OD-2
TURBO Over Drive

Equipped with Turbo Mode for hardcore distortion

The OD-2 is unique in having two types of over drive circuits – each producing over drive with a different character. When it first came out, the ads said, "Kick your expressive power into turbo," and that's just what the Turbo switch does. When it's off, you get the smooth and natural BOSS overdrive you're familiar with. But when you switch it on, look out! You get a bone-crunching high-gain distortion you've never experienced with any conventional over drive. The OD-2 has a split personality – kind of like Dr. Jekyll and Mr. Hyde.

DATA
CONTROL • LEVEL / TONE / DRIVE / TURBO (ON / OFF)
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from August 1985 to November 1994

OS-2
Over Drive/Distortion

Unique circuitry for 2-in-1 hybrid distortion

The combination of over drive and distortion meets a wide range of distortion needs. The OS-2 has a Color knob to continuously vary the amount of distortion from over drive to full-bore distortion, so the player can freely mix and balance the two. The center position is a 50:50 mix, and each effect can be used alone by turning the knob all the way to the left or right. For beginners, the OS-2 is an easy-to-handle 2-in-1 bargain, and for advanced players, the combination of Drive and Color controls is interesting to experiment with.

DATA
CONTROL • LEVEL / TONE / DRIVE / COLOR
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from May 1990 to present

SD-2
DUAL Over Drive

A switch toggles between two distortion modes

The SD-2 is ready to do battle, with two completely independent, switchable overdrive circuits: Crunch for high-definition, bright distortion, and Lead for gain-boosted, fat distortion. Dual knobs are used for all controls, so different settings can be dialed in for each channel. In other words, you can get the same sort of sound variations as with a dual channel amp. The SD-2 also has a Remote jack for switching channels with an external switch.

DATA
CONTROL • LEVEL (CRUNCH / LEAD)/ TONE (CRUNCH / LEAD) / DRIVE (CRUNCH / LEAD) / MODE (CRUNCH ←→ LEAD / LEAD /CRUNCH [REMOTE])
JACK • INPUT / OUTPUT / REMOTE / AC ADAPTOR
Sold from April 1993 to December 1998

ODB-3
Bass Over Drive

A Balance knob for exploiting bass characteristics

The ODB-3 is a distortion pedal designed specifically for bass. It has circuits specially tuned to the bass frequency band to eliminate the sound thinning that tends to occur when guitar effects are used with bass. It provides clean distortion while maintaining punch and fatness. A distinctive feature is the Balance knob, which enables a step-free progression from dry to effected, allowing you to get just the right mix of direct and distorted signal. The range of the gain control also deserves mention, as does the dual EQ knob for boosting and cutting highs and lows.

DATA
CONTROL • LEVEL / EQ (HIGH / LOW) / BALANCE / GAIN
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from October 1994 to present

OD-2R
TURBO Over Drive
A remote jack enhances practicality and potential

The OD-2R goes another step beyond the OD-2. When Turbo is off, you get an over drive sound with more compression than the SD-1 (compression is the tone characteristic of tube amps like the Marshall). When Turbo is on, you get the heavy gain of the OD-2, with the added bonus of a Remote terminal for on/off control of Turbo using an external footswitch (the FS-5L, sold separately). With this feature, you can incorporate the OD-2R into your rack and tidy up your floor space. Due to persistent customer requests, BOSS increased the level when Turbo is on in this model.

DATA
CONTROL • LEVEL / TONE / DRIVE / TURBO (ON [REMOTE] / OFF)
JACK • INPUT / OUTPUT / REMOTE / AC ADAPTOR
Sold from November 1994 to July 1999

BD-2
Blues Driver
An old-school pedal for technique-oriented players

Blues guitar requires a delicate, nuanced technique, and the BD-2 incorporates the best of both the old and the new. Its vintage tube amp distortion allows fretboard technique to shine through. BD-2 tone is designed to flexibly respond to what's happening on the guitar side: factors such as the guitarist's picking attack, touch and volume/tone settings. Naturally, you can use the BD-2 as a gain booster by lowering Gain and turning up Level. You can get a wide array of distortion sounds by experimenting with different knob settings.

DATA
CONTROL • LEVEL / TONE / GAIN
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from March 1995 to present

PW-2
Power Driver
A new type of distortion for the individualist

The PW-2 represents a new type of overdrive, with two new types of control knob: Muscle to control the mid-range -- the crucial backbone of rock guitar distortion -- and Fat to control the bottom. By adjusting the four knobs of the PW-2, you can get a full range of power distortion, from incredibly chunky rhythms to grungy sounds with low-end emphasis. Experiment a little, and you'll see the amazing potential of the PW-2.

DATA
CONTROL • LEVEL / FAT / MUSCLE / DRIVE
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from August 1996 to October 2000

OD-3
Over Drive
Living up to a legend: The king of distortion

The OD-3 is an awesome pedal that brings together everything BOSS has learned about distortion. A newly designed dual-stage over drive circuit produces beautiful harmonics and fat lows, so the sound is not only natural, but also deeper and more rock-solid. When used as a booster, the OD-3 has a distinctive sound that's a little different from the SD-1. The OD-3 is the new king of the BOSS over drive world, with enough depth to appeal to enthusiasts, and ease-of-use for beginners.

DATA
CONTROL • LEVEL / TONE / DRIVE
JACK • IINPUT / OUTPUT / AC ADAPTOR
Sold from August 1997 to present

DS-1
Distortion

The original BOSS distortion pedal

In the BOSS pantheon of famous distortion pedals, the DS-1 ranks right alongside the OD-1. The DS-1 produces razor-sharp distortion and long-lasting sustain by electrically clipping the originally signal waveform and generating a new waveform rich with harmonics. The DS-1 doesn't bury the original sound in unrestrained distortion. It can express both powerful and gentle sounds. It has a versatile tone control to meet a wide range of distortion needs – from mild, soft distortion to hard distortion with a cutting high-end edge.

DATA

CONTROL • TONE / LEVEL / DIST
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from June 1978 to February 1989

MT-2
Metal Zone

Dual-axis pots for the heaviest distortion and widest range

In the BOSS distortion line-up, the MT-2 is a bestseller with the most powerful distortion available. It has a distinctively fat mid-range distortion that resonates in your gut. In addition to the usual Level and Distortion knobs, the MT-2 has a 3-band equalizer comprised of a high and low control as well as a parametric equalizer-type mid control. (The two dual-axis pots in the center are the equalizer controls.) This 3-band equalizer enables the free adjustment of the high, middle and low ranges for more precise tone control.

DATA

CONTROL • LEVEL / EQUALIZER (HIGH / LOW) / EQUALIZER (MIDDLE / MID FREQ) / DIST
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from March 1991 to present

HM-2
Heavy Metal

Fatter distortion with a wider range of expression

DATA

CONTROL • LEVEL / COLOR MIX L / COLOR MIX H / DIST
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from October 1983 to October 1991

The HM-2 is not just a badass distortion pedal. It achieves fat distortion while maintaining the nuances and core personality of the original sound. When this pedal first debuted, there must've been a lot of guitar punks who got excited when they read the ad that said, "The third generation of distortion starts with the HM-2." The HM-2 has a new circuit that builds on the "asymmetric over drive circuit" of the OD-1, and to the human ear, it has an expanded dynamic range that seems impossible for a 9V effect. Other attractive features are the elimination of distortion-induced thinning and a long, robust sustain.

DF-2
SUPER Feedbacker & Distortion (SUPER Distortion & Feedbacker)

Just step on the pedal for a fun feedback effect

The DF-2 has a hard distortion circuit for getting large amp-style power distortion, even when using a small amp. Also notable is a unique function for generating simulated feedback when the pedal is pressed. This pseudo-feedback works with any note, regardless of your distance from, or angle toward, the amp. As long as you hold the pedal down, the sound is enriched with overtones and is almost indistinguishable from real feedback. Using the 2-mode pedal switch, you can easily switch between distortion and feedback.

DATA
CONTROL • LEVEL / TONE / DIST / OVERTONE
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from September 1984 to April 1994

DS-2
TURBO Distortion

Highly perfected twin turbo distortion

The DS-2 offers twin turbo distortion with two different turbo modes. Mode I is classic straight distortion, with no sound thinning, while Mode II is super-heavy hard distortion, reminiscent of box resonance that occurs when you're driving a large amp at full volume. The satisfying feel of this distortion is particularly notable. Mode switching can be done remotely using a footswitch, so you can switch effortlessly between backup and lead settings during live performance.

DATA
CONTROL • LEVEL / TONE / DIST / TURBO (I / II [REMOTE])
JACK • INPUT / OUTPUT / REMOTE / AC ADAPTOR
Sold from December 1987 to present

MZ-2
Digital Metalizer

A pioneering multi-effect with a range of digital effects

Prior to the MZ-2, analog was the standard for distortion units. But the MZ-2 introduced digital circuitry to achieve a versatile distortion effect in a compact pedal. The biggest feature of the MZ-2 is that its six modes provide different forms of distortion – such as doubling distortion and chorus distortion – that you can ordinarily obtain only with multiple effects. It's also equipped with stereo output jacks for powerful spatial effects.

DATA
CONTROL • LEVEL / TONE / DRIVE / MODE (SGL / DOUB [I / II / III]/ CHO [I / II])
JACK • INPUT / OUTPUT A/ OUTPUT B / AC ADAPTOR
Sold from December 1987 to August 1992

HM-3
HYPER Metal

Retains sharp definition even with monster distortion

The HM-3 was designed for full-bore monster distortion with a sharp metallic edge. Distortion is applied smoothly over the entire tonal range from high to low. The distorted signal retains good definition with minimal muffling and muddiness, and dynamic response is excellent so you don't lose the rich low end that enhances overall power. This pedal is truly a must for hard rock and heavy metal guitarists. High and Low Color Mix knobs give you a powerful weapon for tone control.

DATA

CONTROL • LEVEL / COLOR MIX LOW / COLOR MIX HIGH / DIST

JACK • INPUT / OUTPUT / AC ADAPTOR

Sold from April 1993 to December 1998

XT-2
Xtortion

A new BOSS distortion strategy for overwhelming power

This distortion is exciting and fierce. It can definitely hold its own against the MT-2, which is regarded as the nastiest pedal in the BOSS distortion line-up. The XT-2 was developed to respond to the new types of rock that emerged in the 90s, like slash metal and grunge. It has two new knobs, Contour and Punch, for sculpting state-of-the-art distortion. The Punch control for emphasizing the mid-range is particularly dramatic.

DATA

CONTROL • LEVEL / CONTOUR / PUNCH / DIST

JACK • INPUT / OUTPUT / AC ADAPTOR

Sold from August 1996 to December 1998

FZ-2
HYPER Fuzz

A fusion of old school and new school

The FZ-2 resurrects old-school fuzz distortion in a pedal with modern flexibility. The FZ-2 is equipped with three conventional knobs – Level, Tone (treble/bass 2-axis type) and Gain – and a mode knob with two fuzz settings: Fuzz I for booming sound, and Fuzz II for a trebly sound. Using these modes, you can recreate anything from vintage fuzz distortion to grunge style heavy fuzz. It also has a Gain Boost Mode for more advanced applications in combination with amp distortion.

DATA

CONTROL • LEVEL / TONE (TREBLE / BASS) / GAIN / MODE (FUZZ I /FUZZ II / GAIN BOOST)

JACK • INPUT / OUTPUT / AC ADAPTOR

Sold from April 1993 to June 1997

FZ-3
Fuzz

Uncompromising pursuit of the vintage fuzz sound

In developing the FZ-3, BOSS analyzed every aspect of vintage fuzz tone – including distortion, resonance, and muddying and blending between strings – and then recreated the fuzz sound of yesteryear based on that data. The result is a fuzz fanatic's dream. Internal circuitry is 100% discrete, with no ICs, for reduced noise and lower power consumption. Also notable is a tone control that can be continuously varied to recreate the distinct personalities typical of vintage fuzz machines. The determination and excellence of the BOSS engineering staff is evident throughout this labor of love.

DATA

CONTROL • LEVEL / TONE / FUZZ

JACK • INPUT / OUTPUT / AC ADAPTOR

Sold from February 1997 to January 1999

CE-1
Chorus Ensemble

The BOSS legend started here

This is where the saga of BOSS began, the now famous CE-1 Chorus Ensemble. With the CE-1, BOSS introduced a number of features that were way ahead of their time (namely 1976) – such as the first use of a BBD element in an effect, electronic switches to eliminate click noise during on/off switching, and stereo output jacks. The chorus effect is uniquely warm and spacious, and the unit is also equipped with a variable vibrato effect.

DATA

CONTROL • level control / chorus intensity / vibrato (depth / rate)
JACK • input (high / low) / output (mono / stereo)
SWITCH • normal ⟷ effect / vibrato ⟷ chorus
Sold from June 1976 to May 1984

CE-2 Chorus

Fat tone with a warm and mild sparkle

The CE-2 inherited the internal circuitry of the famous CE-1. It's an analog chorus employing a 1024 row BBD element in the delay circuit. Performance is improved with better noise-reduction circuitry, and the whole package is miniaturized to fit into a compact pedal. By doubling an electronically shifted pitch with the original signal, the CE-2 adds thickness and breadth to guitar sound, and creates a transparent, sparkling resonance similar to a 12-string guitar. In addition to this warm and gentle chorus, the CE-1 also adds a thick midrange boost when it's turned on.

DATA

CONTROL • RATE / DEPTH JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from October 1979 November 1982

DC-2
Dimension C

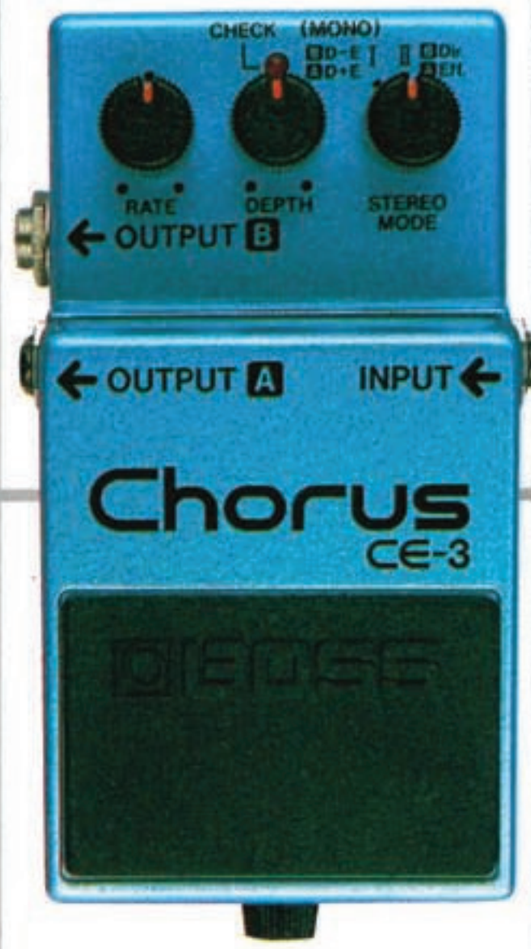
An effect as unique as it looks

This spatial device adds thickness and depth to make sound more 3-dimensional. There are switches for only four preset modes, but the unusual look of the control panel accurately reflects the unusual quality of the effects. The basic principle is similar to chorus, but in addition to two independent built-in chorus circuits, the DC-2 keeps tremolo down to a comfortable minimum, and thereby achieves a more natural and spacious sound than ordinary chorus. The DC-2 has stereo out jacks and built-in noise reduction.

DATA
CONTROL • MODE SELECTOR 1–4
JACK • INPUT / OUTPUT A / OUTPUT B / AC ADAPTOR
Sold from December 1985 to September 1989

CE-3 Chorus

The original ad for the CE-3 said: "Why not get rid of half your CE-1?"



This analog chorus is equipped with two modes designed to make the most of its stereo output. In Mode I, the original signal + pitch shift is output from Output A, and the 180° phase inversion of that is output from Output B. The result is a spacey effect that seems like you're using two chorus effects. In Mode II, the traditional chorus sound of the CE-1 is output from Output A, and the original signal is spatially synthesized from B (that is, sounds output in stereo from the amp are mixed in space). The result is a clear three-dimensional chorus effect. Midway through production, the knobs on the CE-3 changed.

DATA
CONTROL • RATE / DEPTH / STEREO MODE (I & II)
JACK • INPUT / OUTPUT A / OUTPUT B / AC ADAPTOR
Sold from October 1982 to February 1992

DC-3
Digital Space-D (Digital Dimension)

Clear tremolo and natural ambience

By applying two-phase modulation in stereo, this fully digital, hybrid chorus effect achieves a stunningly spacious sound, and a clear tremolo with less of the modulation feel of ordinary chorus. With four control knobs and stereo output, the DC-3 is capable of sensitive, natural effects, as well as versatile spatial processing for multilayer chorus effects with greater depth and breadth. Originally, this pedal was called "Digital Dimension," but the name was later changed to "Digital Space-D."

DATA
CONTROL • E. LEVEL / EQ / RATE / DEPTH
JACK • INPUT / OUTPUT A (MONO) / OUTPUT B / AC ADAPTOR
Sold from March 1988 to August 1993

CH-1
SUPER Chorus

Equipped with EQ for a wide range of tones – from soft to hard

Carrying on the tradition of the BOSS Chorus Series that began with the CE-1, the CH-1 is a stereo chorus with improved sharpness and definition. An EQ knob allows a wide range of settings: from mild, easy-listening effects to hard chorus that gives just the right edge to chunky muted rhythms. The CH-1 uses spatial synthesis for a more natural and real sound image. Its effects are catchy, and its operation intuitive.

DATA
CONTROL • E. LEVEL / EQ / RATE / DEPTH
JACK • INPUT / OUTPUT A (MONO) / OUTPUT B / AC ADAPTOR
Sold from May 1989 to present

CE-5
Chorus Ensemble

All-in-one chorus with a two-band filter

BOSS has developed many chorus-based pedals, and all that technical know-how is concentrated in the CE-5. Particularly notable is the high/low 2-band filter – conveniently designed as a 2-axis knob – that enables a vast range of chorus effects going far beyond conventional pedals. Three-dimensional chorus is achieved using stereo out jacks and spatial synthesis. As its name implies, BOSS has full confidence in this successor to the original BOSS effect, the CE-1.

DATA
CONTROL • E. LEVEL / RATE / DEPTH / FILTER (HIGH / LOW)
JACK • INPUT / OUTPUT A (MONO) / OUTPUT B / AC ADAPTOR
Sold from November 1991 to present

CE-2B
Bass Chorus

Clear chorus for bass without muddiness and thinning

The CE-2B is a chorus effect designed specifically for bass. It adds breadth to the bass sound while retaining the heavy and powerful bottom of the original signal. The effect is only applied to the harmonics, not the root note, so chorusing is clear, with no mud or thinning of those essential lows. The CE-2B can be set for bass techniques such as picking and slapping by adjusting the Effect Level and other control knobs.

DATA
CONTROL • RATE / E. LEVEL / DEPTH
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from February 1987 to February 1995

CEB-3
Bass Chorus

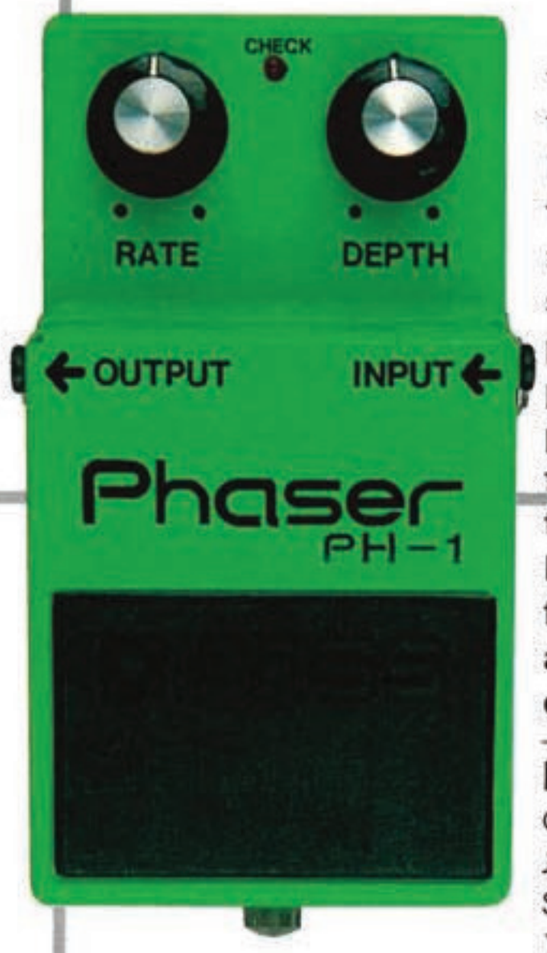
A new system for enhancing the expressiveness of bass chorus

The CEB-3 builds on the system, proven with the CE-2B, of applying chorus only to harmonics. But it goes a step further with a Low Filter knob for setting the range where chorus is applied. So you can adjust it to suit your style: a light effect where chorus is only applied to harmonics, or a heavy chorusing over the entire frequency range. Like other BOSS chorus pedals, the CEB-3 employs spatial synthesis using the two stereo out terminals. Incidentally, the four lines above the model name are a new addition that indicates the pedal is designed for bass.

DATA
CONTROL • E. LEVEL / LOW FILTER / RATE / DEPTH JACK • INPUT / OUTPUT A (MONO) / OUTPUT B / AC ADAPTOR
Sold from February 1992 to present

PH-1
Phaser

This pedal was the green light in BOSS's original "Traffic Light Series"



The PH-1 debuted together with the OD-1 (yellow) and SP-1 (red) in the first BOSS product line. At BOSS, the staff playfully called this the "Traffic Light Series." Electronically, the PH-1 adds a sense of speed and surge by varying the phase of the original signal with a phase-shifting circuit. Since the phase effect can be freely adjusted from an ultra-low speed of 16 sec to a high speed of 100 msec, the PH-1 can handle a range of settings for sharp rhythm accentuation, soft arpeggios or jet sounds in combination with distortion.

DATA
CONTROL • RATE / DEPTH
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from November 1977 to November 1981

PH-1R
Phaser

An additional third knob for greater versatility

The PH-1R adds a Resonance knob to the preceding PH-1. This knob provides a unique tonal character by adjusting the degree of feedback. (Incidentally, the R in the model number stands for "Resonance.") This allows not only more emphatic phase effects, but also harsh wah-like tonal changes, so the PH-1R is far more expressive than the previous model. Low-noise design is used throughout to ensure practicality in all venues, from the live stage to the studio.

DATA
CONTROL • RATE / DEPTH / RES (PHASE SHIFT: 4 STEP)
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from October 1980 to May 1985

PH-2
SUPER Phaser

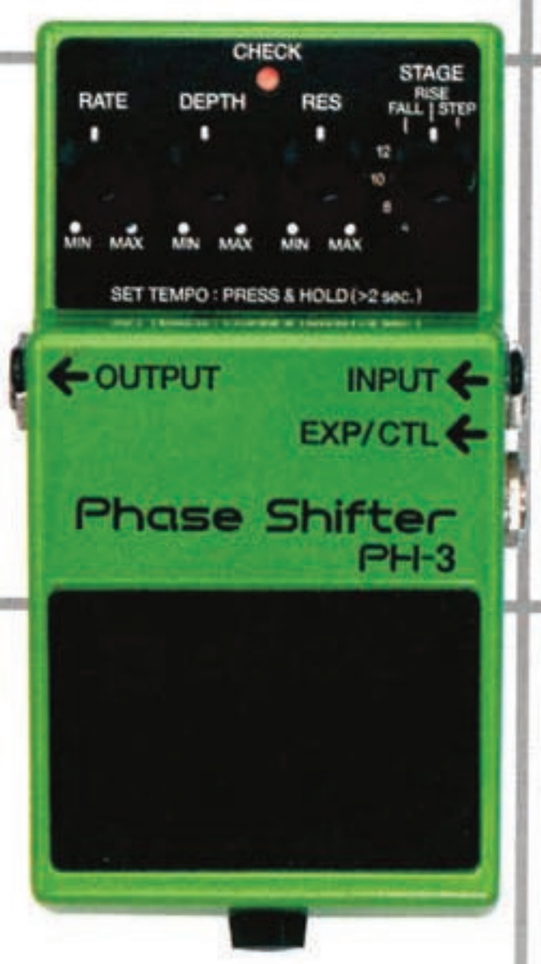
Up to 12 levels of phase shift for incredibly smooth rotary effects

The PH-2 achieves incredibly smooth, professional sound undulation (phase shifting) using a circuit with up to 12 levels of phase shift. Three knobs enable adjustment of the phase sound. Two modes can be selected: Mode I for a refreshing phase effect ideal for West Coast rock, and Mode II for funky deep phasing. This versatile effect can be adjusted to suit the situation: hiding in the mix sometimes, and sometimes stepping out with a sharp radical sound.

DATA
CONTROL • RATE / DEPTH / RES / MODE (I & II) (PHASE SHIFT: 12 STEP)
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from September 1984 to March 2001

PH-3
Phase Shifter

New effects and endless creative potential



The PH-3 is equipped with a multi-step 4, 8, 10, and 12 level phaser for freely adjusting phase undulation and speed, and the rate can be adjusted by tapping on the effect pedal. The rate can also be controlled in realtime using an external pedal. The PH-3 also has two new phase effects that have never been seen before: Rise (a perpetually rising effect) and Fall (a perpetually falling effect).

DATA
CONTROL • RATE / DEPTH / RES / STAGE (4 / 8 / 10 / 12 / FALL / RISE / STEP)
JACK • INPUT / OUTPUT / EXP/ CTL / AC ADAPTOR
Sold from October 2000 to present

BF-2 Flanger

The purple pedal that's been flanging for 20 years

A flanger creates a distinctive, high-impact undulating sound by mixing the original signal with its electronically delayed copy. It's almost as if the sound is being turned inside out. With four control knobs (Manual, Depth, Rate and Res), the BF-2 has a wide range of applications – from harsh jet sounds, to short delay, chorus, or vibrating effects that sound like a subtle tremolo. Except for the knobs, the BF-2 hasn't changed a bit since it debuted 20 years ago.

DATA
CONTROL • MANUAL / DEPTH / RATE / RES
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from June 1980 to present

HF-2 Hi Band Flanger

A flanger for enthusiasts – popular for its clean and bright effects

The HF-2 flanges a band one octave higher than the BF-2 for a cleaner, brighter effect. The HF-2 has a unique, refreshing sound, and if you set the rate low and the depth high, you get an elegant and refined modulation ideal for enhancing synthesizer strings. Naturally, you can set the four control knobs for the rushing jet sound that's more commonly associated with flangers.

DATA
CONTROL • MANUAL / DEPTH / RATE / RES
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from October 1985 to February 1995

BF-2B Bass Flanger

The cool, understated look of the first in BOSS's bass line-up

The BF-2B is a flanger developed specifically for bass. It extracts harmonics from the original sound components and applies the effect only to them so the bass doesn't thin out or get buried in the mix as tends to happen when a bass is used with a guitar effect. The BF-2B always retains the original clarity and low-end of the bass while providing solid, strong flanging. The four control knobs are the same as a guitar flanger, so it's easy for bassists to make the switch to this bass-dedicated model.

DATA
CONTROL • MANUAL / DEPTH / RATE / RES
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from February 1987 to November 1994

VB-2
Vibrato

A playful and loveable one-of-a-kind effect

The VB-2 creates vibrato effects for electronic instruments. The vibrato width and speed can be freely adjusted, so you can get a feel similar to guitar hand vibrato, or vibrato that's much deeper and faster. The VB-2 has a full range of pedal modes, including Unlatch, where the effect is applied only while the pedal is depressed. The lead copy in the first ad for the VB-2 said, "You may decide not to use this pedal – BOSS," but under that was the caveat, "Beginners should buy after they've mastered vibrato." Just another ad showing how much BOSS cares about guitarists!

DATA

CONTROL • RATE / DEPTH / RISE TIME / MODE (UNLATCH ←→ BYPASS ←→ LATCH)
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from April 1982 to April 1986

SG-1
Slow Gear

The unique, single-function pedal with a strong following

This effect automatically adjusts volume. The SG-1 creates an effect like a violin performance where a sounded note gradually attacks. In addition to this soft volume variation, the SG-1 can also keep up with rapid passages that can't be handled by hand, particularly with guitars such as the Les Paul where the volume knob is far away from the strings, or by using a pedal. The SG-1 was a little ahead of its time, and only became popular after it went out of production. However, its function has been recreated in BOSS multi-effects such as the SE-70 and GT-5.

DATA

CONTROL • SENS / ATTACK JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from May 1979 to February 1982

PN-2 Tremolo/Pan

An unusual and collectible pedal

This pedal not only creates traditional tremolo by modulating amplitude (volume), but also features a left-right stereo panning effect. It also has selectable triangle or square waveforms to simulate different kinds of tremolo effects. Square wave, for example, can create a gated or interrupted sound, almost like the sound is being cut on and off. These features, combined with the unique panning effects, make this pedal a true original, and one sought after by collectors.

DATA
CONTROL • RATE / DEPTH / MODE (PAN x 2 / TREMOLO x 2)
JACK • INPUT A (MONO)/ INPUT B / OUTPUT A / OUTPUT B / AC ADAPTOR
Sold from May 1990 to March 1995

TR-2 Tremolo

Real tremolo sounds with extra edge

Designed to reproduce the true tremolo sounds of vintage amps, like the original "British spy movie" sound and the famous California surf sound of the 60's. It uses a powerful LFO to control the tremolo wave, which is continuously variable from triangle to Square wave, making the TR-2 suitable for many different kinds of sounds, from traditional to brand-new.

DATA
CONTROL • RATE / WAVE / DEPTH
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from February 1997 to present

PS-2

Digital Pitch Shifter/Delay

A combination pedal that can produce pitch shift or digital delay

The PS-2 represents the first BOSS compact pedal pitch shifter. Offering pitch shifting of up to one full octave above or below the original note, the PS-2 also features a 2000 ms digital delay – two seconds! These features are perfect for sounding like two guitars playing simultaneously, or guitar and bass at the same time.

DATA
CONTROL • BALANCE / F.BACK / FINE MANUAL / MODE (1: 125ms / 2: 500ms / 3: 2s / 4: MANUAL / 5: +1oct / 6: -1oct)
JACK • INPUT / OUTPUT / TUNER OUT / AC ADAPTOR
Sold from October 1987 to March 1994

PS-3

Digital Pitch Shifter/Delay

A great leap ahead of other pitch shifters, with true multi-function pitch shifting

The PS-3 evolved from the earlier BOSS pitch shifter, the PS-2, which, with 24-bit DSP, had features and performance formerly reserved for large and expensive professional equipment. The PS-3 has two independent voices, each with a range of two octaves up or down from original pitch. And it has even more features: it's also a digital delay, and it even has as reverse mode that plays the sound backwards! You can select from 11 different modes: eight pitch shift modes and three delay modes. There's also an Expression pedal input, which lets you create whammy-bar and other pitch shift effects with your foot.

DATA
CONTROL • BALANCE / PITCH A (F.BACK / F.BACK) / PITCH B (PITCH /D. TIME / MODE [1–3: DELAY / 4–7: SINGLE P.S. / 8–10: DUAL P.S. / 11: EXP])
JACK • INPUT / EXP / OUTPUT A (MONO)/ OUTPUT B / AC ADAPTOR
Sold from March 1994 to January 1999

HR-2 Harmonist

A smart pitch shifter

The compact HR-2 is a high-performance pitch shifter with "smart processing" to precisely detect the input pitch and shift it to match a selected key. Two harmony voices can be set independently in a range of 3 to 6 semitones, or an octave, above or below the input tone. The HR-2 is perfect for classic twin lead, harmony and octave effects, and can also create detuned chorus effects with a unique resonance and subtle wavering quality.

DATA

CONTROL • E. LEVEL (A / B)/ VOICE A / VOICE B / KEY

JACK • INPUT / OUTPUT A / OUTPUT B / DETECTOR IN / AC ADAPTOR

Sold from December 1994 to January 1999

PS-5 SUPER Shifter

The ultimate in pitch shift functionality

With a load of powerful features, the PS-5 gives you everything you need for advanced pitch shifting and harmony. Pitch shift and whammy bar intervals can be set to 1, 2, 5, 7, 12 or 24 half steps, and the built-in Harmonist (familiar from the HR-2) can harmonize at a 3rd, 4th, 5th, 6th, 1 octave or 2 octaves, either up or down. Just like the HR-2, the PS-5 has "smart" circuitry for harmonizing with a selected key. It also has a unique new simulated cricket flutter effect, and an Expression pedal input for driving whammy bar and harmony effects with a footswitch.

DATA

CONTROL • BALANC E / [D. TIME / SPEED] / HR.KEY (C/Am – B/G♯m)/ PITCH (P.S,T.ARM : ± 1, 2, 5, 7, 12 [1 OCT], 24 [2 OCT] / HARMONIST : ± RD, 4TH, 5TH, 6TH, 1 OCT, 2 OCT) / MODE (PITCH SHIFTER/ HARMONIST /DETUNE /T.ARM / FLUTTER)

JACK • INPUT / OUTPUT A (MONO)/ OUTPUT B / EXP / AC ADAPTOR

Sold from October 1999 to present

OC-2 Octave (Octaver)

The definitive octave pedal, with stable rapid response

The OC-2 provides independent volume control for mixing three separate tones, the direct input, one octave above, and one octave below. Response to peaking is smooth. Long a favorite of working musicians, the OC-2 is a fixture of many professional racks. When it first went on sale two decades ago, BOSS knew they had a winner, with ads proclaiming: "At last, the first and final real thing." Incidentally, when the OC-2 first came out it, was called the "Octaver."

DATA

CONTROL • OCT1 / OCT2 / DIRECT LEVEL

JACK • INPUT / OUTPUT / AC ADAPTOR

Sold from April 1982 to present

COMPRESSION SUSTAINER

LIMITER

CS-1
Compression Sustainer

A unique mini-switch gives a distinctive look and sound

By suppressing loud signals and boosting quiet ones, the CS-1 creates long-lasting, robust sustain. The effect is especially striking with guitars like the Strat, which have the characteristic rapid onset and decay of single coil pickups. When set to Treble, the mode switch gives sustain with high-end emphasis. It can also act as a limiter, smoothing out excessive peaks in choppy rhythm styles.

DATA
CONTROL • LEVEL / MODE (NORMAL ←→ TREBLE)/ SUSTAIN
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from July 1978 to February 1982

CS-2
Compression Sustainer

Natural-sounding sustain while maintaining tone

When the second model in the CS series came out, the BOSS ads asked an unexpected question: "Is color the only thing new about this pedal?" Of course, the answer was: NO! The main technical improvement was attack control, provided by a new real-time VCA (Voltage Controlled Amplifier). This VCA speeds up the signal processing involved in signal compression and expansion, and thereby controls problems like sound thinning, flutter, tone changes and loss of drive in quick, brief phrases. Optimal sustain is achieved when playing gently or with long notes, where attack tends to be weak.

DATA
CONTROL • LEVEL / ATTACK / SUSTAIN
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from December 1981 to June 1986

CS-3
Compression Sustainer

Noise and distortion control for clear sustain

Designed to minimize noise, the latest CS series pedal provides even clearer degradation-free sound. The original ad for the CS-3 made it into a joke: "Some of our new products don't like to stand out." But the fact is: sound quality and function were drastically improved, in everything from limiter-style applications for power chords to long clean sustain. The CS-3 also has a tone knob for nuanced compression with a mellow or biting tone, so you can create a wider range of sounds than ever before.

DATA
CONTROL • LEVEL / TONE / ATTACK / SUSTAIN
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from September 1986 to present

LM-2 Limiter

It's not flashy, but it gets the job done

The LM-2 compresses only the signal peak without changing the original sound, and is designed to prevent distortion caused by signals that are too hot. It also acts to balance out irregularities in the sound due to the height of the pickup pole piece, string height and string thickness, and is especially good for choppy rhythm work. A compression effect can be obtained by turning down the threshold setting. A key design criterion for the LM-2 was low noise. An indispensable behind-the-scenes player in the professional rack, the LM-2 is quiet and stealthy – like a ninja.

DATA
CONTROL • LEVEL / TONE / RELEASE / THRESHOLD
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from March 1987 to December 1992

LM-2B
Bass Limiter

The original BOSS bass limiter, with wide-range response

A limiter for smoothing output is a must for any bass player. The LM-2B is specially designed to accommodate the wide dynamic range of real-world bass playing. It also has the outstanding response necessary for techniques like slap bass. Sound contours are distinct, and the pedal has an enhancer knob to bring out the power of the bass so it doesn't get buried in the mix. As always, BOSS was a leader in developing bass-dedicated effects like the LM-2B.

DATA
CONTROL • ENHANCE / LEVEL / THRESHOLD
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from April 1990 to December 1994

LMB-3
Bass Limiter Enhancer

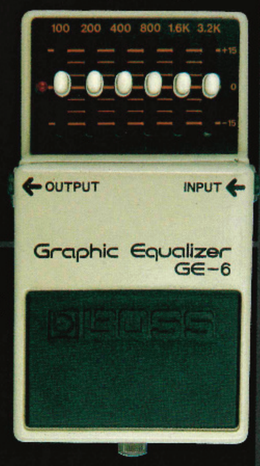
Four knobs for more precise control

This bass limiter features a new ratio knob for more precise control of limiting effects. Whatever your bass technique – finger picking, plectrum or slap – you can adjust the versatile LMB-3 to perfectly suit your style. The enhancer onset and range are designed specifically for bass, so you can sharpen and define those all-important lows that tend to muffle with less sophisticated processing.

DATA
CONTROL • LEVEL / ENHANCE / RATIO / THSHD
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from February 1995 to present

GE-6
Graphic Equalizer

A second generation compact pedal



Graphic equalizers not only correct sound – they can also improve it. The GE-6 provides segmented control over the six frequency bands that are the critical determinants of electric guitar tone, so you can dial in the exact killer tone you're looking for. Because the GE-6 covers such a wide frequency range, it can also be used to boost treble for soloing, or to boost bass. At the time it came out, the GE-6 had a rare but attractive feature for a graphic equalizer: an on/off switch.

DATA
CONTROL • 100Hz / 200Hz / 400Hz / 800Hz / 1.6kHz / 3.2kHz
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from January 1978 to June 1981

GE-7
Equalizer

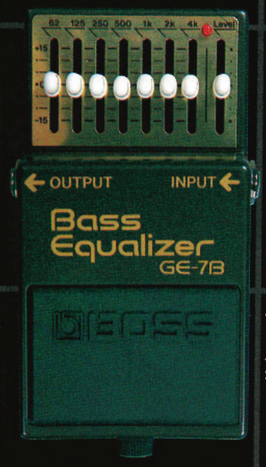
Perfection proven by consistent sales

The GE-7 graphic equalizer can cut or boost specific frequency bands by ±15dB so you can creatively sculpt sound and prevent howling. This pedal was perfected by drawing on the know-how and experience BOSS developed with the pre-compact GE-10 and the preceding GE-6. Control over the ultrahigh 6.4kHz band is particularly useful for eliminating distracting high-end noise components, or sharpening highs with harmonics. A level slider controls volume when the pedal is switched on.

DATA
CONTROL • Level / 100Hz / 200Hz / 400Hz / 800Hz / 1.6kHz/ 3.2kHz / 6.4kHz
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from July 1981 to present

GE-7B
Bass Equalizer

The first 7-band compact EQ for bass



This graphic equalizer for bass enables control of 7 bands set at octave intervals: 62Hz, 125Hz, 250Hz, 500Hz, 1kHz, 2kHz and 4kHz. Each band can be varied over ±15dB, so the GE-7B can handle a range of applications – from finer tone control than amp tone knobs, to overall sound adjustment and control of noise and howling. This pedal is a must for bass players who live for tone.

DATA
CONTROL • Level / 62Hz / 125Hz / 250Hz / 500Hz / 1kHz / 2kHz / 4kHz
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from February 1987 to February 1995

GEB-7
Bass Equalizer

The next step in graphic EQ for bass

This GEB-7 was perfected by carefully studying the frequency bands that are most effective for bass tone control. Bandwidths are designed to be wide at the low end, and tight in the mid-range, which is the crucial determinant of sound character. The top 10kHz band uses "shelving"– an equalizer type that controls all of the frequencies above the nominal frequency – thereby enabling sensitive yet bold tone control for a variety of playing styles and situations.

DATA
CONTROL • Level / 50Hz / 120Hz / 400Hz / 500Hz / 800Hz / 4.5kHz / 10kHz
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from February 1995 to present

SP-1 Spectrum

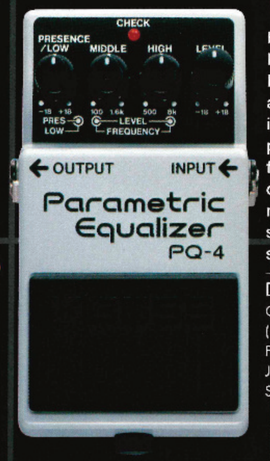
The legendary Spectrum – a BOSS pedal like no other

Even more than the OD-1 – a legendary pedal from the early line-up – the SP-1 has attained cult status among BOSS enthusiasts. Simply put, the SP-1 is a single-band parametric equalizer with two knobs. The first, Spectrum, enables continuously variable setting of a frequency in the range of 500Hz to 5kHz, and the second, Balance, sets the peak of that frequency. When it first came out, the SP-1 was mainly a hit with bassists, but naturally guitarists also used it to create subtly nuanced sounds, such as the fixed wah pedal sound of Michael Schenker.

DATA
CONTROL • BALANCE / SPECTRUM
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from November 1977 to November 1981

PQ-4 Parametric Equalizer

A step forward in power and control

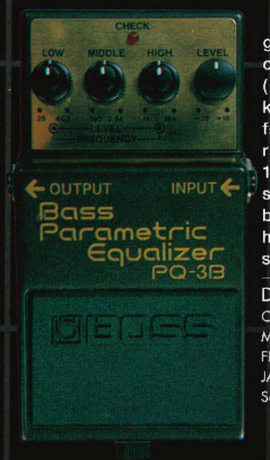


This parametric equalizer provides band control using high, middle, low and presence knobs, and the EQ characteristics of each band are optimized for guitar. Each band is adjustable over ±18dB (compared with ±15dB with the GE-7) for bolder and more dynamic tone control. The PQ-4 opens up rich new vistas of tone, and is ideal for serious players who can't get satisfaction with amp tone knobs.

DATA
CONTROL • LOW / PRESENCE / MIDDLE (LEVEL / FREQUENCY)/ HIGH (LEVEL / FREQENCY)/ LEVEL
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from March 1991 to November 1997

PQ-3B Bass Parametric Equalizer

A favorite of professional bassists

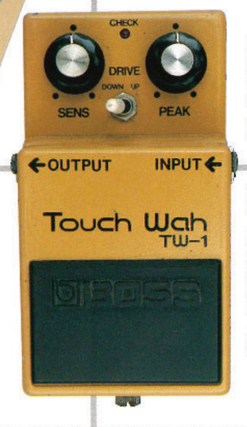


The PQ-3B puts real professional-grade parametric bass EQ into a compact pedal. The three EQ knobs (low, middle, and high) have an inner knob for level, and an outer knob for frequency. The unit covers a wide range of frequencies from 25Hz to 1.6kHz, so it can easily handle five- and six-string basses, and each band can be varied over a wide ±18dB. It also has adjustable input level for use with synth basses.

DATA
CONTROL • LOW (LEVEL / FREQUENCY) / MIDDLE (LEVEL / FREQUENCY) / HIGH (LEVEL / FREQUENCY) / LEVEL
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from March 1991 to December 1995

TW-1 T Wah (Touch Wah)

The original auto wah, with two modes



Touch Wah automatically applies wah by detecting input signal dynamics, determined by guitar volume and the picking attack characteristics. When you pick with an aggressive attack, the tone is radically altered, but a more delicate tone emerges when you play with a soft touch. The tone shift pattern can be selected with the DRIVE switch: UP to shift from hard to mellow, and DOWN to do the reverse. Real BOSS enthusiasts know that the early models were labeled Touch Wah, which was later shortened to T Wah.

DATA
CONTROL • SENS / PEAK / DRIVE (DOWN ⟷ UP)
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from July 1978 to May 1987

FT-2 Dynamic Filter

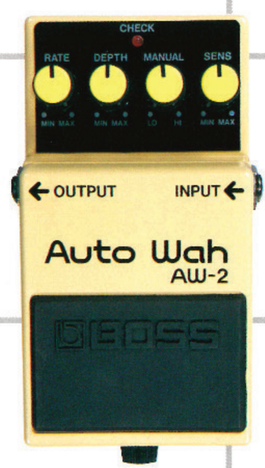
Auto Wah with an Expression pedal jack

By adding a cutoff frequency knob to set the central frequency, the FT-2 provides more active control that goes a step beyond Auto Wah. In Manual mode, the unit has EQ-like capabilities for creating tonal effects with a specific frequency. A unique feature is the Expression pedal jack that enables the FT-2 to double as a wah-wah pedal. Innovative and playful, the FT-2 had a limited sales life, but it was a revolutionary pedal that was ahead of its time.

DATA
CONTROL • SENS / CUTOFF FREQ / Q / MODE (DYNAMIC UP / DYNAMIC DOWN / MANUAL / EXP)
JACK • INPUT / OUTPUT / EXP IN / AC ADAPTOR
Sold from October 1986 to December 1988

AW-2 Auto Wah

"Modulation wah" adds a new dimension



To the usual auto wah – where tone changes are triggered by the picking attack – the multifunctional AW-2 adds "modulation wah" by applying a periodic tremolo. Auto wah and modulation wah can also be mixed to obtain a distinctive effect known as "double-wah." When using modulation wah, the Manual knob adjusts the frequency where the effect kicks in. Finding the right setting is a bit of a trick, but that just makes working with the AW-2 that much more fun.

DATA
CONTROL • RATE / DEPTH / MANUAL / SENS
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from November 1991 to January 1999

AW-3
Dynamic Wah

A next generation filter, with "Humanizer"

The AW-3 is a highly evolved auto wah with 5 modes: Up and Down for ordinary auto wah, Sharp for a synthesizer effect, "Humanizer" that simulates vowel sounds of the human voice, and Tempo that produces a wah effect according to the tempo with which the AW-3 pedal is tapped. The Sens knob sets the wah band for a fixed-pedal wah effect. The AW-3 has a dedicated bass input and an Expression pedal jack for realtime control of wah and the "Humanizer" effect.

DATA

CONTROL • DECAY / MANUAL / SENS / MODE (TEMPO / HUMANIZER / SHARP / DOWN / UP)
JACK • GUITAR IN / BASS IN / OUTPUT / EXP/CTL / AC ADAPTOR
Sold from October 2000 to present

DM-2
Delay

An acclaimed analog delay with a distinctive warmth

The DM-2 was the first BOSS compact analog delay. Although it's been out of production for some time now, it still has many passionate fans because of its tape echo-like repeat effect, and its reverb. Its appeal lies in the warm, soft, easy-on-the-ear reverberation, which is characteristic of analog delay. Delay time is continuously variable from 20msec to 300msec. The simple 3-knob configuration (Repeat Rate, Intensity, Echo) is classic.

DATA

CONTROL • REPEAT RATE / INTENSITY / ECHO (Delay Time 20msec – 300 msec)
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from June 1981 to February 1984

DD-2
Digital Delay

The world's first compact digital delay

This revolutionary pedal brought BOSS recognition and respect from around the world. With delay time adjustable over a wide range of 12.5msec to 800msec, the DD-2 far exceeded anything that analog delay could offer. The DD-2 has superb flat frequency characteristics from 40Hz to 7kHz. It has features, such as Hold, that you can only get with digital, and two jacks for stereo output. The DD-2 was a ground-breaking compact pedal which heralded the coming of a new era.

DATA

CONTROL • E.LEVEL / F.BACK / D. TIME / MODE (S: 50msec / M: 200msec / L: 800msec / HOLD)
JACK • INPUT / OUTPUT (MONO) / OUTPUT (STEREO) / AC ADAPTOR
Sold from December 1983 to August 1986

DM-3
Delay

A masterful analog delay with pure sound quality

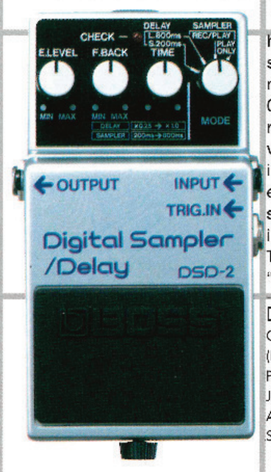
This analog delay can be continuously adjusted from 20msec to 300msec. The uniquely shaped knobs were influenced by the rack effects that were going mainstream at the time. The DM-3 employs rapid-response noise reduction and precision filter circuits to suppress the noise and distortion that are the Achilles heel of analog, and thus achieve clear, high-quality output. Analog is little different than digital – a little warmer and milder – and the DM-3 made it possible without all the problems. It's also equipped with stereo jacks for more expansive output.

DATA

CONTROL • REPEAT RATE / INTENSITY / ECHO (DELAY TIME: 20msec – 300 msec)
JACK • INPUT / OUTPUT / DIRECT OUT / AC ADAPTOR
Sold from May 1984 to May 1988

DSD-2
Digital Sampler/Delay

Equipped with a sampler to meet new needs



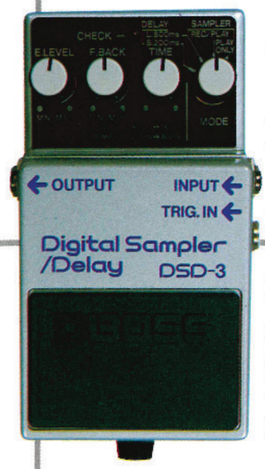
This multifunctional pedal combines a high-quality digital delay with a digital sampler. Delay time is 50msec to 800 msec. With a maximum sampling time of 0.8sec, the 2-mode sampler digitally records voice, musical instruments or virtually any other type of sound for use in musical compositions. The DSD-2 is equipped with a trigger-in jack for synching echo with rhythm, or fro implementing your own original ideas. The original ad for the DSD-2 said: "Warning: Prepare for digital impact!"

DATA

CONTROL • E.LEVEL / F.BACK / TIME / MODE (DELAY: S.200msec / L.800msec / SAMPLER: REC PLAY / PLAY ONLY)
JACK • INPUT / OUTPUT / TRIG.IN / AC ADAPTOR
Sold from April 1985 to August 1986

DSD-3
Digital Sampler/Delay

An improved model with better cost performance



The DSD-3 has the high performance and quality of the DSD-2 at a much lower price. This was made possible by the rapid progress in digital technology taking place at the time. In addition to DSD-2 circuitry, the DSD-3 has a phrase sampler – a revolutionary first for a guitar device. BOSS has continued to pioneer guitar sampling, and recently introduced the RC-20 Loop Station as part of its Twin Pedal line commemorating the 21st century.

DATA

CONTROL • E.LEVEL / F.BACK / TIME / MODE (DELAY: S.200msec / L.800msec / SAMPLER : REC PLAY / PLAY ONLY)
JACK • INPUT / OUTPUT / TRIG.IN / AC ADAPTOR
Sold from August 1986 to December 1988

DD-3
Digital Delay

The digital delay standard with improved functionality

The best-selling DD-3 has been the industry standard for delay from its debut in 1986 to today. Delay time can be switched between three levels, and then further fine-tuned with the delay time knob anywhere in the range from 12.5msec to 800msec. The Hold mode allows infinite playback of delay. The DD-3 is packed with potential, and can be used for doubling (short delay), reverb, or more advanced long delay effects.

DATA

CONTROL • E.LEVEL / F.BACK / D.TIME / MODE (S: 50msec M: 200msec / L: 800msec / HOLD) (DELAY TIME: 12.5 msec – 800 msec) (HOLD TIME: 200 msec – 800 msec)
JACK • INPUT / OUTPUT / DIRECT OUT / AC ADAPTOR
Sold from August 1986 to present

DD-5
Digital Delay

High-performance, high-quality delay, with 11 built-in modes

This practical digital delay can easily hold its own against much larger studio equipment. It has 11 modes, including: reverse delay (for backward playback), panning delay (where the output pans between the left and right speaker), hold mode for sampling or auto loop playback (up to two seconds), and tempo delay where sound output timing can be controlled in realtime with a foot switch. A maximum long delay setting of two seconds deserves special mention. The DD-5 is also equipped with an AF-type A/D converter for high-quality 20-bit digital sound.

DATA

CONTROL • E.LEVEL / F.BACK / D. TIME / MODE (1–4: DELAY / 5: HOLD / 6: REVERSE / 7: E/D / 8–11: TEMPO)
JACK • INPUT / OUTPUT (MONO)/ PANNING OUT / TEMPO / AC ADAPTOR
Sold from March 1995 to present

RV-2
Digital Reverb

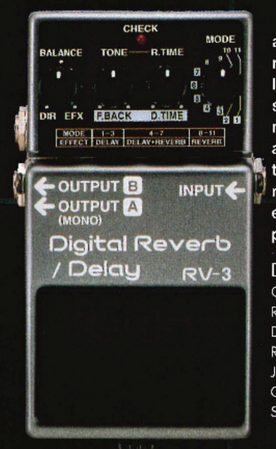
The world's first compact reverb

This revolutionary pedal debuted as the world's first compact reverb. The RV-2 has reverb simulation modes for room, hall (2 types), plate and gate, and a panning delay mode, so it can stand shoulder-to-shoulder with professional rack mount reverb in terms of sound quality and personality. It's also equipped with a Pre EQ knob for fine tone adjustment, so everything you need for spot-on reverb is all here in this one unit.

DATA
CONTROL • E.LEVEL / PRE EQ / TIME / MODE (1: ROOM / 2–3: HALL / 4: PLATE / 5: DELAY / 6: GATE)
JACK • INPUT / OUTPUT A (MONO) / OUTPUT B / AC ADAPTOR
Sold from August 1987 to January 1990

RV-3
Digital Reverb/Delay

This highly evolved digital reverb allows simultaneous combination with delay



Using four basic modes – Room 1 and 2, Hall and Plate – the RV-3 can recreate the soft, rich reverb of a large hall, fat reverb perfect for guitar solos, or reverb that simulates a marble room. It's also equipped with a 32msec to 2000msec digital delay that can be used simultaneously with reverb. AF circuitry ensures precise expression of the guitar sound and performance nuances.

DATA
CONTROL • BALANCE / TONE (F.BACK) / R.TIME (D.TIME)/ MODE (1–3: DELAY / 4–7: DELAY + REVERB / 8–11: REVERB [ROOM1 / ROOM2 / HALL / PLATE])
JACK • INPUT / OUTPUT A (MONO)/ OUTPUT B / AC ADAPTOR
Sold from March 1994 to present

EH-2
Enhancer

A powerful ally for effect freaks

Guitar signals tend to get buried in the mix if you use multiple effects or too many spatial effects. The EH-2 solves this problem for effect freaks by enhancing the contours of guitar sound and improving definition. It also clarifies dynamics when playing straight to line-in without speakers, and thus is effective for recording chunky rhythm work and arpeggios. The EH-2 is also a friend to bass players – particularly those who play slap bass.

DATA
CONTROL • MIX / FREQ / SENS
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from April 1990 to December 1998

LS-2
Line Selector

A multifunctional switching pedal

The LS-2 enables centralized switching between solo and backup settings, or between amps. It has two send/return lines (Loop A and B), and 6 modes for switching between the two (using various combinations of mix and bypass). When connected to an AC adapter, the LS-2 can also act as power supply for driving other BOSS pedals from the 9-volt out terminal.

DATA
CONTROL • LEVEL x 2 / MODE (A⇔B / A⇔BYPASS / B⇔BYPASS / A→B→BYPASS / A+B MIX⇔BYPASS / OUTPUT SELECT)
JACK • SEND A,B/ RETURN A,B / INPUT / OUTPUT / AC ADAPTOR / 9V OUT
Sold from November 1991 to present

NF-1
Noise Gate

BOSS's first ruthless noise killer

The NF-1 debuted in the lineup fairly early. It was designed to eliminate the annoying noise and hum you hear while you're taking a break and there's no signal from the guitar. It eliminates not only residual noise from the instrument and hum noise picked up by wire shielding, but also noise from external sources such as lighting fixtures. By adjusting the decay knob, you can improve noise control for all types of electrical instruments while maintaining the natural decay profile of the original sound.

DATA
CONTROL • SENS / DECAY
JACK • INPUT / OUTPUT / AC ADAPTOR
Sold from February 1979 to May 1988

NS-2
Noise Suppressor

This second-generation noise killer wipes out noise with a new system

The NS-2 uses a proprietary method to differentiate between guitar sounds and noise components, so it can wipe out noise without losing the attack of the original signal. Effects that are prone to noise can be cleaned up by connection to the send/return jacks of the NS-2. (With delay-type effects, however, it's best to connect after the output terminal so a clean decay is retained.) When connected to an AC adapter, the 9-volt out jack of the NS-2 can be used to power other BOSS pedals.

DATA
CONTROL • THRESHOLD / DECAY / MODE (REDUCTION / MUTE)
JACK • INPUT / OUTPUT / SEND / RETURN / AC ADAPTOR
Sold from September 1987 to present

AC-2
Acoustic Simulator

A dramatic effect you'd expect from an innovator like BOSS

This acoustic simulator makes an electric guitar sound like an acoustic. It has four modes for simulating different kinds of acoustic and electric/acoustic guitars, and fine-tuning knobs to control the simulation of guitar body resonance, picking attack and harmonics. The AC-2 has two output jacks so you can switch between electric and acoustic by stepping on the pedal. This acoustic simulation is so real, it'll blow away even acoustic lovers!

DATA
CONTROL • LEVEL / BODY / TOP / MODE (STANDARD / JUMBO / ENHANCE / PIEZO)
JACK • INPUT / OUTPUT / E.G.OUT / AC ADAPTOR
Sold from February 1997 to present

SYB-3 Bass Synthesizer

The world's first compact bass synthesizer

The SYB-3 debuted as the world's first compact bass synthesizer. It has bass synth settings with different sound onset characteristics, as well as built-in auto wah. Sound character can be varied by selecting any of 11 modes (including two types of auto wah). The SYB-3 also has a Hold setting for holding a synth sound. The volume of the synth sound and direct input can be controlled independently, and output through different jacks. The SYB-3 provides unique sound effects and tonal coloring.

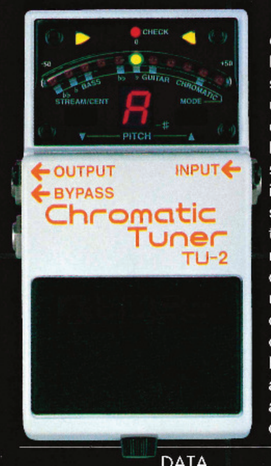
DATA
CONTROL • EFFECT / DIRECT / FREQ / RES / SENS / DECAY / MODE (1–7: INTERNAL SOUND / 8–9: W SHAPE / 10–11: T WAH)
JACK • INPUT / OUTPUT A (MONO)/ OUTPUT B / AC ADAPTOR
Sold from August 1996 to present

PSM-5
Power Supply & Master Switch
A power station to drive BOSS compact effects

The PSM-5 can supply stable power to up to seven 9-volt effects, and can also act as a master switch for centralized on-off switching of multiple effects. The LED lights red when effects are on, and green when they're off. It comes with an AC adapter, and parallel DC cord for supplying power to 7 BOSS pedals. Designed for integration, it coincides with the debut of the BCB-6 (a carrying case for holding up to 6 BOSS pedals).

DATA
JACK ▪ AMP / GUITAR / SEND / RETURN / 9V IN / 9V OUT
Sold from January 1983 to January 1999

TU-2
Chromatic Tuner
TU series know-how in a compact pedal



The TU-2 is a chromatic tuner in a compact effect body. It has high-brightness LEDs and a dome-shaped panel for easy visibility under bright spotlights. The meter can be switched to display cents like a needle-based tuner, or to strobe, where the pitch difference is indicated by the direction and speed of LED flashing. The TU-2 has two tuning modes: guitar/bass mode, in which the string number is displayed (this mode can also be used with a 5-string bass), and chromatic mode, in which the name of the tone is displayed. It can handle flat and double flat tunings, and when connected with an AC adapter can also supply power to other BOSS pedals.

DATA
CONTROL ▪ PITCH ▼{STREAM / CENT}/ PITCH ▲{MODE}
JACK ▪ INPUT / OUTPUT / BYPASS / AC ADAPTOR / 9V OUT
Sold from October 1998 to present

GE-10 Graphic Equalizer
This model was a standard in the early days of BOSS

This graphic equalizer features 10 frequency bands centered on 1kHz to enable use with both guitar and bass: 31Hz, 62Hz, 125Hz, 250Hz, 500Hz, 1kHz, 2kHz, 4kHz, 8kHz, and 16kHz. The level of each band can be adjusted over ±12dB. Fans used to call it the "lunch box" because of the square shape of its metal box. And we mustn't forget that at the time – back in 1976 – a bypass switch was a surprising innovation. A lot of guitarists loved the GE-10, and even today there are some who say, "I can't record without it."

DATA
Sold from December 1976 to April 1985

BF-1 Flanger
This notorious effect made its lead engineer cry

This single-function flanger was a first not only for BOSS, but for Japan. At the time it was developed, there was almost no one in Japan who even knew what a flanger was. According to Mr. Kubo, current head of quality control at Roland and a member of the BF-1 development team, "We just knew it was called a 'flanger.' We developed it without the slightest idea what it did." So it was like the blind leading the blind when circuit design got underway. Yet another tale of hardship from the maverick early days of the effect industry!

DATA Sold from August 1977 to October 1980

DB-5 BOSS Driver
A combination booster with three built-in effects

This gain and tone booster has three built-in effects: a graphic equalizer (five band: 100Hz, 300Hz, 600Hz, 1.2kHz, and 3kHz, with each band adjustable through ±12dB), attack (an early compressor) and distortion. However, you can't use all three effects simultaneously. You can only switch between three modes: EQUALIZER, ATTACK+EQ and DIST+EQ. Although they called it "Distortion," the effect was rough, and closer to fuzz.

DATA
Sold from June 1977 to February 1980

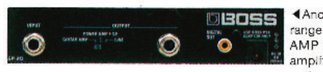
DM-1 Delay Machine
This analog stereo delay used a CCD

When this machine appeared, Roland had already established a name for itself with the popular delay machines in the Space Echo Series (which used tape echo), but the DM-1 was an analog stereo delay that debuted under the BOSS brand. In trying to squeeze out just a little more delay time, BOSS engineers used a CCD (an imaging component used today to capture images in video cameras) instead of a BBD as the delay element at the heart of the delay circuit.

DATA
Sold from January 1978 to October 1979

BOSS moves into the next century! Introducing the "Twin Pedal" Series!!

BOSS has always developed the most innovative new products in the world of rock guitar, and they've launched a new "Twin Pedal Series" based on the exciting concept of single function with highest quality and two pedals. Used with other effects, it's easy to imagine the new possibilities in sound creation. These are three boxes you should definitely keep in mind for your starting line-up!



◀Another great feature of the GP-20 is its wide range of output options. In addition to GUITAR AMP for connecting straight into a guitar amplifier, and POWER AMP+SP for using the system as a pre-amp, the unit has a line terminal and a digital out terminal for recording.

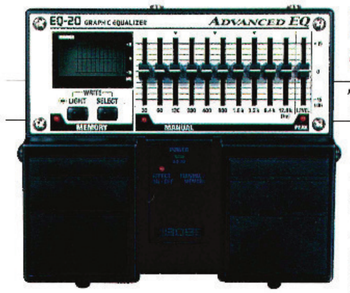
GP-20
GUITAR AMP PROCESSOR "AMP FACTORY"

Precise and realistic modeling of 22 famous amps

This amazing amp-modeling machine faithfully recreates the circuits of 22 famous amps from guitar history — amps used in classic rock performances. The modeling is comprehensive, all the way up to part characteristics and operation.

Each classic amp sound can be faithfully created by combining one of the 22 amp types with one of the five selectable speaker types. If speaker modeling is turned off, the system can be used as a pre-amp to exploit the characteristics of your own cabinet, and you can also switch instantaneously between two channels — Memory and Manual. The unit's equipped with a digital output for high-quality recording. Part of the appeal is that you can expand your sound even further by linking it with other compact effects. For example, you can connect a BOSS distortion-type effect like the SD-1 or OD-3 in front of the GP-20.

DATA
CONTROL • ON-OFF PEDAL / MANUAL-MEMORY PEDAL / GAIN / BASS / MIDDLE / TREBLE / PRESENCE / MASTER / MODEL (JC CLEAN , CRUNCH , LEAD , BLACK PANEL , TWEED , AMERICAN COMBO , BRIT COMBO , VINTAGE STACK , R-FIER STACK , MODERN STACK , METAL STACK)/ VARIATION / SPEAKER CABINET (ORIGINAL , 4×12", 4×10", 2×12", 1×12", OFF)
JACK • INPUT / OUTPUT (GUITAR AMP , POWER AMP+SP , LINE)/ DIGITAL OUT / AC ADAPTOR



◀If the "EQ-20" is connected to the send/return of an amp, and LEVEL switching is set to SEND/RETURN, sound created in the amp's pre section can be equalized at line level and sent to the power section, thereby allowing you to create a low-noise, EQ'd amp sound before applying distortion.

EQ-20
GRAPHIC EQUALIZER "ADVANCED EQ"

The first of its kind in the world! A pedal-type programmable EQ

This is a 10-band graphic equalizer that covers the frequency band characteristics of both guitar and bass. Although it's the size of two compact effect boxes, it combines both a manual mode — where you set your EQ using sliders — and a memory mode for calling up preset EQ settings. Up to 9 setting types can be stored. You can switch between the two modes using pedals. By exploiting the advantages you've come to expect from a programmable unit, you can easily and instantly switch between settings such as lead, bucking and booster. Naturally, the unit can also be used with the GP-20, and with other BOSS compact effects — the pedals on all of the twin pedal units are at the same height as the switch pedals of other BOSS compact effects. The EQ-20 will certainly appeal to fans of BOSS's vintage GE-10, with its great sound and usefulness.

DATA
CONTROL • EFFECT ON-OFF PEDAL / MANUAL-MEMORY PEDAL / 30Hz / 60Hz / 120Hz / 200Hz / 400Hz / 800Hz / 1.6kHz / 3.2kHz / 6.4kHz / 12.8kHz / LEVEL / WRITE (LIGHT , SELECT)/ LEVEL (GUITAR/BASS , GUITAR AMP SEND/RETURN)
JACK • INPUT / OUTPUT / AC ADAPTOR

◀The unit is also equipped with a reverse mode for creating backwards phrases (the mode can be turned ON and OFF with the foot switch). Recording starts when you begin to play, and the system automatically adjusts the loop-end timing. During recording, anybody can easily perform a perfectly looped phrase, without having to count measures as they play.

RC-20
PHRASE RECORDER "LOOP STATION"

A multi-functional pedal recorder with a wealth of creative potential

Of the three devices in the Twin Pedal Series, the RC-20 has the most distinctive personality. In essence, it's a pedal-type recorder that can be used to record guitar, vocals and various other types of audio. It can be used for sound-on-sound work previously achieved with tape echo, or for gimmicks such as using the pedal to insert a finished phrase into a musical arrangement. You might call this a "wonder pedal," with a world of sonic possibilities based on each user's own ideas and techniques. In introducing the RC-20 as the first member of the new Twin Pedal family, you can clearly see the commitment to creativity that's always been BOSS's trademark. There's no doubt that BOSS fans will be delighted. The RC-20's color fits in perfectly with the look of classic BOSS pedals, reminding you of one those famous models that developed such a fanatic following...

DATA
CONTROL • REC-PLAY-OVERDUB PEDAL / STOP-TAP TEMPO PEDAL / LEVEL / GUIDE / PHRASE SELECT (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 [ONE SHOT]) / MIC / INST / REVERSE / TAP TEMPO / WRITE / EXIT / AUTO START / MODE
JACK • INST / MIC / AUX IN / PHRASE SHIFT / REVERSE / OUTPUT / AC ADAPTOR

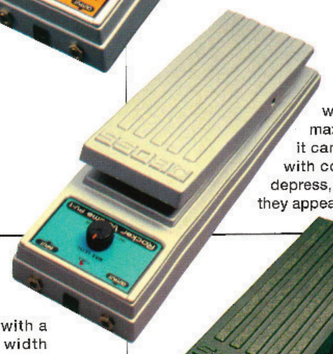
Popular accessories for enhancing compact effectors

Arranged all around a guitarist, these pedals and accessories help to create great sound together with BOSS compact effects. BOSS's creativity is evident in the sheer variety of units available. We've collected a few typical models, including some vintage units that helped define a musical era.

PEDAL

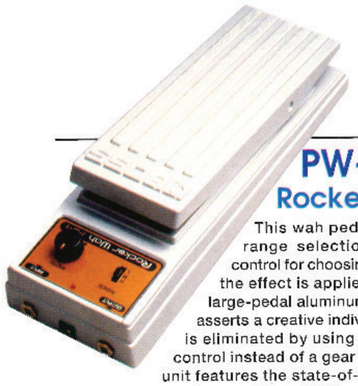
PD-1
Rocker Distortion

This distortion pedal enables real-time control of distortion depth by varying the pedal angle. It features a triple control system for minimum distortion level (set at power-on) tone and level, and is equipped with a warp switch — when the pedal is pressed one notch further, high-gain distortion close to the phase can be obtained for as long as the pedal is held down.



PV-1
Rocker Volume

This volume pedal completely eliminates scratching noise, using a electronic volume control just like the PW-1. The pedal is equipped with a variable max level knob for varying the maximum volume when depressed up to +20dB, so it can also be used as a pedal booster. Compared with competing models, the PV-1 is much easier to depress, and the pedal angle and stroke are deeper than they appear.



PW-1
Rocker Wah

This wah pedal is equipped with a range selection switch and width control for choosing the range over which the effect is applied. In appearance, the large-pedal aluminum diecast body design asserts a creative individuality. Scratch noise is eliminated by using an electronic volume control instead of a gear pot. In every way, this unit features the state-of-the-art design you've come to expect from BOSS.

FV-100
Guitar Volume

This volume pedal is designed specifically for guitarists, with a pedal angle and stroke designed based on ergonomic principles. It's equipped with a minimum volume to enable the free setting of the minimum volume when the pedal is returned to its heel position. The unit is a low-cost version of its predecessor, the PV-1, and the 1.3kg weight of the PV-1 has been reduced by 300g while maintaining a sturdy diecast design.

AMPLIFIER

MA-15
Micro Monitor Amp

This is a compact monitor speaker (width 30cm) for instruments. Output is 15W, and the unit is equipped with two inputs (high and low) that can be selected to suit the instrument output. It's equipped with one 12-inch speaker. Later on, this model was further refined into the MA-15A. As a sister model, the BOSS product line also includes the MA-5 with lower output (5A) and more compact size (width 24cm). Its slanted face provides the kind of elegant appearance you've come to expect from BOSS.

FA-1 FET Amplifier

This is a compact pre-amp in the BOSS Pocket Series. It can handle a variety of applications as a gain booster, pre-EQ, and unit for preventing acoustic guitar howling (it's also equipped with a low-cut switch). When this unit first went on sale, BOSS wrote in its catalog: "If you hang this unit from your waist with a belt clip, you have tone adjustment at your fingertips, even during live performance." This is the kind of dynamic technique that's typical of BOSS, where they're always thinking of how guitarists want to play.

MA-1 Mascot Amplifier

This conveniently sized mascot amp can fit into your pocket (it's slightly larger than a pack of cigarettes, and has a belt clip on the back side). It's equipped with two input terminals (GUITAR and LINE IN) and volume control for each. You can also enjoy playing along with a tape audio source. The MA-1 has cute BOSS-style coloring and design. Output is 0.5W, and the unit is driven by a 9V battery.

FV-60
Volume Pedal

This is a volume pedal that's even lighter and more compact that our previous pedal series. It features 2-input/2-output specs that are compatible with stereo out effects like chorus and delay, and it's equipped with a minimum volume knob for setting the minimum volume. It also incorporates a very practical output terminal specially for tuners.

FV-50L VolumePedal
FV-50H VolumePedal

Each of these two volume pedal models is designed for use with either a high or low input impedance. The high-impedance FV-50H prevents high-end signal loss for guitarists who want a volume pedal before their effects. Conversely, the low-impedance FV-50L is highly resistant to external noise, and is for guitarists and keyboardists who connect their volume pedal after their effects. These are the successors of the FV-60, developed to meet user tastes, needs and sound quality requirements.

HA-5 Play Bus

With the advent of the Rockman unit developed by Tom Schultz, the guitarist from the group Boston, the early 80s saw a boom in headphone amps for guitarists. BOSS responded by releasing the HA-5, which features built-in effects such as overdrive, stereo chorus and short delay, and uses slider controls with outstanding operability and design. The unit was also revolutionary in advocating networking using P-Bus terminals to enable connection of multiple units for simultaneous jamming. In a sense, this was a pioneering forerunner of today's communication systems for compact game terminals. One useful trick that musicians discovered is to use the HA-5 as an amp simulator. Today, the separately sold special-purpose headphones RH-11M (with mike) are an extremely rare and difficult-to-obtain item.

MG-10 Guitar Amplifier

This is a compact guitar amp with built-in twin speakers, developed and designed in Los Angeles in '83, when L.A. Metal ruled the rock scene. In addition to three volume and three tone controls, the system is equipped with presence control for manipulating the ultra-high range, an innovative feature at that time. It's also equipped with a warp mode for bold distortion.

FW-3
Foot Wah

In the middle of the 80s, after production stopped four our highly popular PW-1, BOSS released this foot wah in response to user demand. The FW-3 is equipped with a peak control for expressing a wide range of effects, from soft filter effects to a hard and sharp wah sound. It's also equipped with a remote terminal so a separately sold foot switch can be connected to enable on/off control regardless of the pedal position.

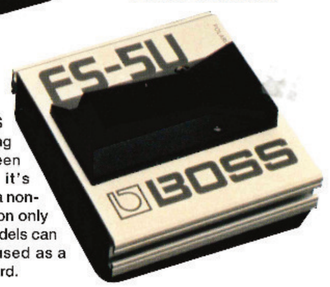
FV-300L
Foot Volume/Expression

This design offers both sturdier construction and better sound quality than previous models. The FV-300L is a foot volume/expression pedal for guitar or bass that's already passed through an effect it should therefore be connected to a position near the amp. It's also equipped with 2-in/2-out stereo, a minimum volume knob for varying the sound quality adjustment range, and a tuner out port. It can also be used with keyboards.

FOOT SWITCH

FS-5L
Foot Switch

FS-5U
Foot Switch



These two foot switch models expand real-time effect control by handling the remote functions of BOSS effects. The FS-5L is a latching device that switches between ON and OFF each time it's depressed, and the FS-5U is a non-latching device that remains on only while it's depressed. Both models can be horizontally linked and used as a multiple integrated switchboard.

ROLAND effects...These created the foundation upon which BOSS was born.

Prior to the advent of the BOSS compact effects that now dominate the world's rock guitar scene, a solid foundation was laid by Roland effects, and the first on that list was the AF-100 Bee Baa. We've selected a number of these highly unique products, including some ultra-rare models that are hard to find in the used market and make fanatics drool.

AS-1 Sustainer

This was the first guitar effect made by Roland. A forerunner of today's compressors, this model was famous as a "non-fuzz sustainer." This and the other nine products showcased here were made by BOSS's forerunner, MEG Electronics.

AP-2 Phase-II

This is a single-function phaser that uses a simple dual-control system for rate and resonance. The unit employs a unique cabinet design that began with the AS-1 and continued through to the BF-1 Flanger that was later made by BOSS.

AD-50 Double Beat

This wow fuzz effector combined a pedal wow function – on the left side of main unit — with a phase circuit, semicircular part on right side. It's equipped with a tone selector function to enable selection of two preset tones.

AF-100 Bee Baa

This was the most popular fuzz box in the line-up. The unit was named by the Chairman of ROLAND, Mr. Ikutaro Kakehashi, who said, "If you listen to the sound, you'll understand (laugh)."

AP-5 Phase Five

This is a more evolved phaser housed in a sand-type cabinet, reminiscent of the later BOSS CE-1. The unit exhibits multi-functionality, with finer control and two switches in addition to ON/OFF.

AW-10 Wah Beat

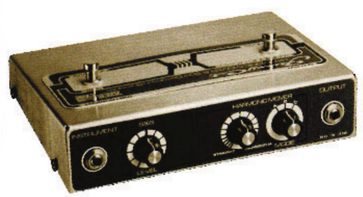
This is a pedal wah. Even here, you can feel the unique creativity that would later emerge in BOSS's silver face rocker pedal series.

AF-60 Bee Gee

This was ROLAND's second fuzz box, and features a different flavor of distortion than the AF-100. However, it was never quite as popular as the "Bee Baa." (You should know by now where the name came from!)

AP-7 Jet Phaser

This combined-function phaser is equipped with jet/phase mode switching. This comprehensive range of phaser models vividly shows the unique individuality and technical skills that ROLAND brought to the table as a keyboard instrument-maker.



AG-5 Funny Cat

Within the line-up, this product was the most versatile from the standpoint of sound effects. It was filter-based for a nuanced auto-wah sound, and featured some rather gnarly tonal variations.

Due to fading of the original product photographs, the coloring in the pictures above is different from the actual products.

Here are some SUPER-PREMIUM RAREST MODELS you have to know about!

It's indisputable! Anybody who knows should know by just looking at the photos.
Let's check out some legendary super-rare models that even collectors rarely encounter!!

B-100
PREAMPLIFIER

This is the first model ever to appear with the BOSS name. It's widely believed that the first model under the BOSS brand was the CE-1 chorus effect announced in June of 1976, but in fact, this B-100 acoustic guitar contact mike and pre-amp set went on sale in the U.S. as a BOSS product before that in 1974. Even among BOSS fanatics, there are probably many who are seeing this unit for the first time in these pages.

As you can see in the photo, the unit was sold in a special wood box, but unfortunately, even the manufacturer no longer has the contact mike — it was a triangular ceramic type that was attached to the guitar body. The model number BPA 100 is stamped on the side of the pre-amp. The logo on the pre-amp is in a different font than today's BOSS logo — it's also written vertically — and it's amusing to note the early specifications, with imperfections such as the mismatch with the logo used on the wood box, which is the same as the one used today.

DS-1 Distortion
"To celebrate 6,000,000 units"

This super-special-version DS-1 has a gorgeous visual impact, with a dazzling gold finish. This commemorative model celebrates the achievement of six million BOSS compact effects shipped worldwide, and was produced in a special limited edition in February 1998. Among ordinary users, there's probably no one who has actually seen the real article. That's as it should be because this DS-1 is the rarest of the rare, and was only presented to overseas joint venture firms, in honor of their great contribution to BOSS sales. In general, replicas of this model often lack the function of the original, but the insides of this DS-1 are exactly the same as the original. In other words, if you plug in a guitar, it'll give you distortion. The inscriptions on the input and output jack also enhance the box's elegance.

No photo retouching, here. This is for real!!

Introducing the greatest BOSS collector in the world!

interview & text by GiGS Editorial Staff
photos by Shinya Yamada

Everything started about 20 years ago
when he first saw the SD-1 and CE-2.
"I want to get the same sound as the guitarists
I love," he said, and the salesman at the store
recommended the yellow and blue box.
When the box was placed at the feet
of the young guitarist, he was captivated
by its inexpressible sense of presence and
its tone, and before long he was drawn in and
started to collect more of these colorful boxes.
The collector didn't know he was collecting.
He just wanted to connect to the guitar to
an effect he was interested in and start playing...
With that kind of pure feeling towards
BOSS effects, and the spirit of pursuit
that derived from that feeling, Mr. M. continues to
be the world's greatest BOSS user.
Let's take a look at Mr. M.'s secret, rare collection!

Collection No.001

"SD-1" & "CE-2" made in the early 80s

▶The first two he bought. "Maybe I've stepped on them 99,997 times... They'll probably break if I step on them three more times (laughs)."

Collection No.002

Various kinds of "DS-1"

▼A line-up of DS-1 effects from different eras! Note the different boxes. "With the DS-1, you can get a really good distortion feeling if you set the tone at less than half. That's a key point!"

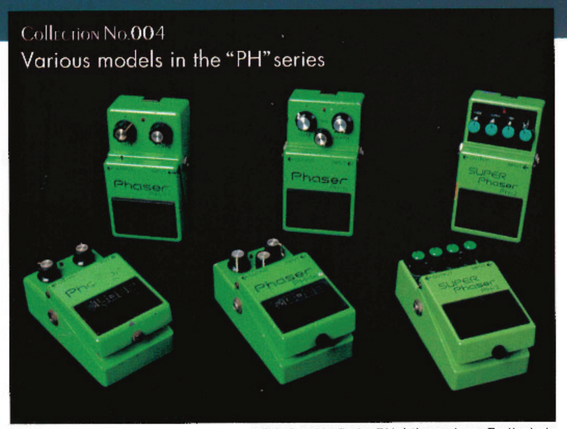
Collection No.003

"OD-1" models from different eras

▼These are OD-1 produced at different times. On the left side is an early model, and on the right is a late model. The one in the middle was produced between the other two.

Collection No.004

Various models in the "PH" series



▲"It's hard to find a PH-1 these days. Particularly ones in nice condition with a box. You hardly ever see them." The color is really vivid, just like you've come to expect from BOSS!

"Even if you step on a BOSS switch 100,000 times, it won't break." ...It looks like this guy got a knock-out punch.

Mr. M. has more than 120 BOSS compact effects! And of course desirable rare models which are hard to obtain today appear from time to time. How in the world do you amass a collection of this size? That's what we wanted to know, sitting in front of the colorful array of effects filling up the entire floor of a room, our eyes spinning in their sockets...

"One day I noticed 'Hey, I've got quite a few of these.' Since I was a child, I've definitely had a tendency to collect things. If I think back, it probably started with Masked Rider cards. But I'm not the type to collect by spending all my money on big cards. I'm not that kind of collector – I'm very particular about that. To tell the truth, I just fell deeply in love with BOSS effects and their sound. I just wanted to play guitar with each one, and I just sort of ended up with this many. So, even when I have more than one of the same effect, it's because sometimes a model I like breaks, and I miss it."

So says the modest owner of this collection, a guitar player named Mr. M. (at his request, we are not revealing his name). Even so... Why did we pursue Mr. M. this far? To dig deeper, we asked him to reflect on his first experience with BOSS effects.

"I first started playing electric guitar when I was 13. At that time, I liked Masayoshi Takanaka, but while I was trying to copy his songs, I started to wonder 'How can I get that nice sound like Takanaka?' Then a friend of mine told me, 'Well, you have to use this thing called an effect. When you step on it, you get that sound.'"

Hearing that, Mr. M. didn't really understand, but he went to the music store anyway, hoping to get this thing called an "effect" so he could get the same sound as Takanaka. There he asked one of the salesmen, and the salesman said, "If you're

Collection No.005
An incredible array of "SP-1"

▲Maybe you can't believe your own eyes, but there they are. "I love red, but this red is particularly nice." Some of them don't work, but, "That's okay. As long as they have this color and shape, I'm happy."

The hardest one to find was the SP-1. It was an obsession, and he kept searching for 13 years.

going to copy Takanaka, you're going to need more than just one effect. If you buy these two – this yellow one, and this blue one – you can be Masayoshi Takanaka, starting today!"

"My friends also said, 'If you're going to buy an effect, get a BOSS,' and even though I myself didn't know what a BOSS was, I told the salesman I want something called a 'BOSS'."

He said, "This yellow one and blue one are BOSS. For the yellow one, there are two kinds, one that came out a while ago, and one that just came out."

"What's the difference in price?" I asked.

"About $10. The newer one is more expensive."

"Okay, I'll take the new one."

"That's how I bought the SD-1 (SUPER OverDrive) and CE-2 (Chorus). I took them home, quickly plugged them in and checked out the sound. The blue one had a beautiful ringing echo sound. "It's just like Takanaka!" I thought. Then I tried out the yellow one to see what it was like, and the sound was sort of rough and muddy. I though "Hmm, maybe now this one is my favorite *(laughs)*." That's how I first got involved with effects."

It makes you wonder how the BOSS compact effects were seen in Mr. M.'s eyes when he saw them the first time at the music store.

"Compared with models from other companies, the shape of the BOSS units had the best styling. What really knocked me out at the time was the advertising slogan: 'You can step on a BOSS switch 100,000 times, and it won't break.' I wondered, 'Did they really step on it 100,000 times?' *(laughs)*. But the best part was their overwhelming beauty. Compared with other products, they were so refined. BOSS won me over. For me they are like the Louis Vuitton of effects."

Mr. M. was completely captivated by BOSS after his first encounter. Since then, he has carefully checked out new models each time they're released, and bought the ones he likes. He uses them faithfully in the live shows and recordings of his band (where he is the guitarist), and is always using his own best unique settings and effect techniques.

"Still, the one I feel closest to is the SD-1 I bought first. Because it muddied the sound, I didn't use it for a while, and put it back in the box. I first took it out and really used it in my second year of high school, after I bought a Marshall amp. The SD-1 was just right as a booster for the Marshall. After that the SD-1 become a key item in all my live shows and recordings. Naturally, I'm still using it today."

"The one that was hardest for me to find

Collection No.006

A rare line-up that's hard to get!

▲A big collection of rare of models. "The advertising said that the SG-1 could keep up with fast playing, but it didn't (laugh). So I waited a while and tried again, and it kept up. Apparently you needed precision playing skills...That's BOSS for you!"

was the SP-1. I obsessively searched for it for 13 years. Even when it first went on sale, I saw the Spectrum in the stores. At that time, I asked the salesman, 'What is this one?' He said, 'It's a treble booster. It just makes the high sounds ring. Somebody like you who plays like Takanaka probably doesn't need this one.' So I thought, 'Oh, I don't need it,' and I never worried about it. But some years after that, there was an article in Young Guitar magazine that said the Spectrum was the secret behind the guitar sound of Yuji Adachi from DEAD END. I thought 'I need to get this,' and started searching, but I couldn't find it anywhere. I told all my friends, 'If you see it, get it for me immediately!' but you couldn't find it anywhere. Then – maybe this was about 3 years ago – I saw an ad from a music store in Chiba, and they had a used Spectrum for sale. The ad didn't give a price, it just said 'Ask!' So I gave it a shot and asked, and they said it was '$600.' I said you've got be joking *(laughs)*. I can't buy it at that price. Then, quite recently, I made a successful bid for one on an Internet auction. That was the first SP-1 I got a hold of. Since then, I've been finding them overseas and buying them."

"Even so, it must have been really difficult to collect 18 of these extremely rare SP-1s. Collecting your other rare models must have been tough..."

"No, I bought a lot of them in realtime... Like the VB-2 (Vibrato) and the DM-2 (Delay). "Speaking of delays, there's something that made me really mad. When I was a high school student, the "DD-2 (Digital Delay)" went on sale with a slogan like, 'Introducing the world's first compact digital delay!' but when I looked at the price is was $ 275! 'Well, I've got to get this,' I thought, and decided to get a part-time job. But, at that time, I was in a band and had long hair, so I couldn't get a decent job. I had no choice but to do manual labor... I dug up Midosuji Avenue during the subway construction for Osaka *(laughs)*. With the money I earned, I cheerfully bought the DD-2. I really liked it and was bragging about it to everyone. Then one day a while later, a guy in my class said, 'I'm going to buy one too.' And then he asked me, 'How much did you pay for it?' I told him, 'I paid $ 275 with a 20% discount.'

"'Hmm... this one is cheaper than that.'"

"'What? Why? It's the same... Let me see it. The knobs and everything are the same. Huh? But this is a DD-3. What's the difference?'"

"'The price.'"

"'What!?'" *(laughs)*.

"I bought the TW-1 (T-Wah) when it was first released. I told my girlfriend in my junior high school days that I want an effect for my birthday this year."

"'What's that?'" she asked.

"'It's this thing you step on with your foot.'"

"She said 'hmmm,' or something, but then she really bought it for me. 'I bought it for you, sweety,' she said. And then, even though she was the delinquent type, she wrapped it up for me *(laughs)*. Even now, I treasure that TW-1."

That was quite an amusing episode. Talking to Mr. M., I got the feeling that if I kept asking, he would have a wonderful little anecdote about every unit in his collection. I wondered

Introducing the greatest BOSS collector in the world!

Collection No.007

Other lost treasures

▲Mr. M.'s collection extends even to BOSS products other than compact effects, as well as old Roland models. Among these, probably the one with the highest rarity value is the DB-5 BOSS Driver (third from the bottom on the left side). It's in pristine, mint condition. You'd probably never find another in as fine a condition as this one. Naturally, he has the first effect made by Roland, the AS-1 Sustainer (very bottom on the right side). The AMDEK Chorus (third from the left on the bottom) shows what a knowledgeable collector Mr. M is.

if he'd discovered anything unexpected in amassing so many models. I asked him.

"There are a lot of things which I discovered without realizing it, because I've spent so much time looking at these things. The slight changes in form, the difference in screw shapes... For instance, there's been about three different versions of those silver screws. I have a lot of other sources of information too, and sometimes I think I should collect all the results of my long years of research into effects into a book someday."

I'd like to see that! Finally I asked Mr. M., the BOSS fanatic, for some final words on his beloved BOSS effects.

"Simple and ultimate... That sums it all up. You know, think about it carefully. In the old days, MXR had the market share. But after BOSS came on the scene, MXR introduced its command series. They used an electronic switch to eliminate click noise, and improved their units with LED lamps. And even the models of other companies have started looking like BOSS. That's how great the worldwide power of BOSS is. And it's still continuing today. Also, BOSS doesn't try to return to the past. Trends are always rising and falling in the instrument world – for example the electric guitar seems to have returned more to the standard era, but BOSS never turns back... In other words, "Simple and ultimate." Overdrive is yellow and chorus is light blue... BOSS has gone that far in building solid categories and product image. That's why they have set the trends for the world's effects over these last 25 years. I hope they continue forever in that spirit, as the best in the world."

"Simple and ultimate." That's really well put. Finally, I asked Mr. M. about his hopes and desires for future development of BOSS compact effects.

"I hope BOSS will continue to base their work on the idea ... 'simple and ultimate,' and that they will value simplicity in all their new, future models. There should only be three control knobs. Four is too complicated, and they should steer clear of that. My personal wish is for a compact "Sitar simulator." You could sell those!"

Can you find the difference between them?

Seeing that Mr.M. has been doing BOSS research for almost 20 years, we'll report on some of the "special picks" he's discovered.

Please refer to pages 51 - 57 for more details.

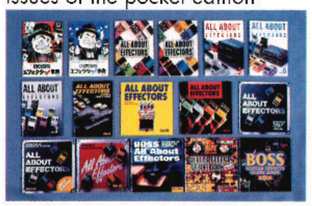
▲Although they're the same model, the thickness of the logo is different! If you look carefully you'll see other subtle differences in letter size... (The sticker on the left is a picture of the gallant Mr. M. in his younger days.)

◀This SD-1 is in a whole different dimension of rarity. It's the "Zakk Wylde" model, which was issued in a limited edition of five units by Ishibashi Music. He discovered this one by accident in a store, and bought it on the spot.

▼Here we see two PH-2s with slightly different colors on the knob heads. This was not caused by fading over time. It's thought to be due to differences in the times they were manufactured.

◀Even though it's widely known that the OC-2 model name was changed, probably only a few people know that the coloring also changed.

Collection No.008
Issues of the pocket edition



▲This is another phase of the BOSS obsession. "Unfortunately, I'm still missing a few..." The real bummer is that he had to fill in the missing spots with overseas versions that weren't distributed in Japan (two issues at the bottom right).

Collection No.009
Real figured BOSS watches

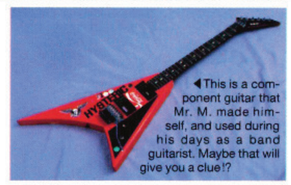
▶These are the popular BOSS watches. He has watches made in '98 (left), '99 (bottom) and 2000 (right). He got the case by begging at a music store. Apparently the TR-2, in particular, was produced in low volume and is hard to find.

Collection No.010
Happy BOSS goods

▼The tapestry is a rare item that was used for overseas PR. The gray case below it is the "3-shot board (BCB-3)" which is still very popular today. It was a sales promotion item from November 1989 to January 1990, and only 7,000 units were distributed in Japan.

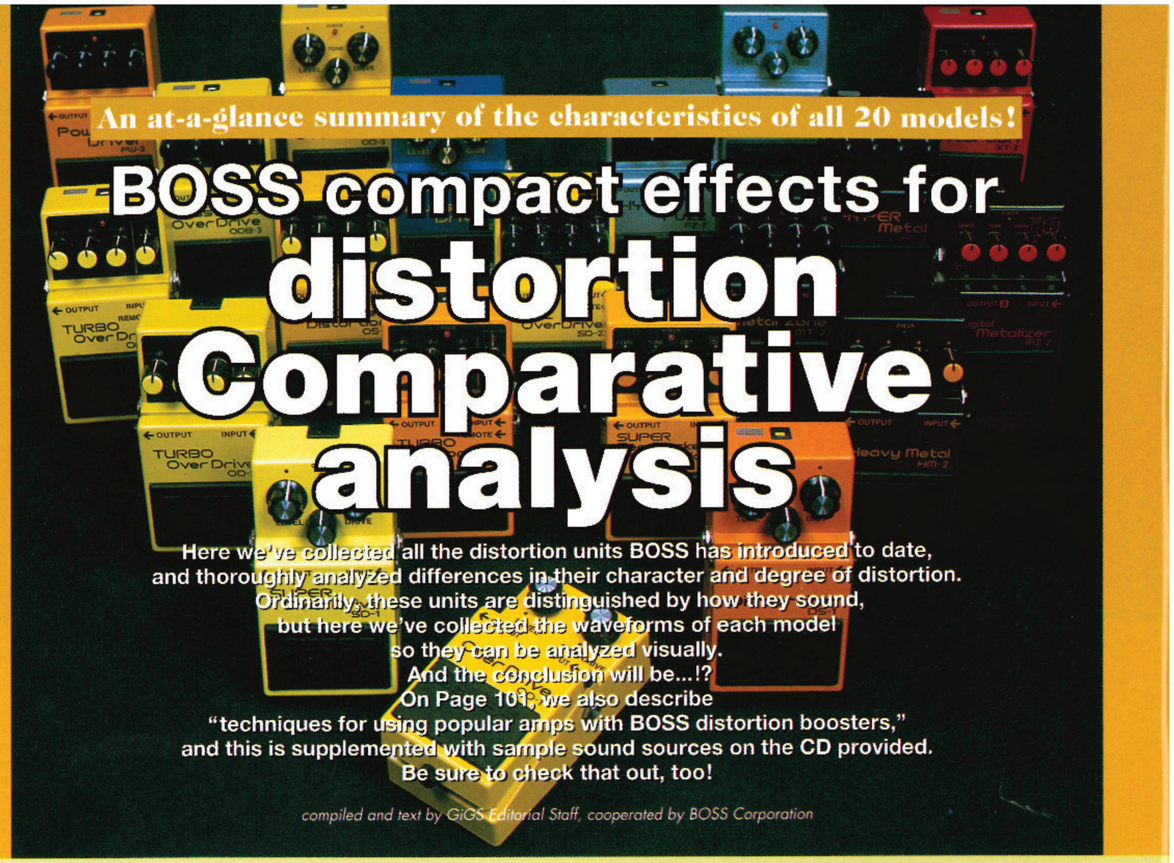
◀This is nostalgic! It's the 9V manganese battery that came with BOSS compact effects in the early days. Later, the BOSS battery was changed to a black manganese and alkali type with the Roland brand.

Who is Mr.M.?
What is Mr.M.'s real identity?



◀This is a component guitar that Mr. M. made himself, and used during his days as a band guitarist. Maybe that will give you a clue!?

Mr. M. doesn't just collect compact effects. He collects everything with the BOSS name on it except canned coffee (a popular beverage sold in vending machines in Japan)! During the interview, he gave us a lot of precious information about BOSS compact effects that he's learned so far. Based on that, we produced a detailed analysis, which starts on P.116. But wait a minute... Who in the world is this Mr. M.? We've included the above photo as a hint to his real identity. Will those who know him figure it out!?



An at-a-glance summary of the characteristics of all 20 models!

BOSS compact effects for distortion Comparative analysis

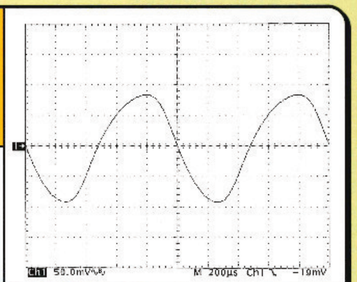
Here we've collected all the distortion units BOSS has introduced to date,
and thoroughly analyzed differences in their character and degree of distortion.
Ordinarily, these units are distinguished by how they sound,
but here we've collected the waveforms of each model
so they can be analyzed visually.
And the conclusion will be...!?
On Page 101, we also describe
"techniques for using popular amps with BOSS distortion boosters,"
and this is supplemented with sample sound sources on the CD provided.
Be sure to check that out, too!

compiled and text by GiGS Editorial Staff, cooperated by BOSS Corporation

Using waveforms to explore the distinctive character of all 20 distortion models

**Given below are the signal waveforms for all 20 distortion models,
sampled with an oscilloscope under controlled conditions.
Data was collected in each mode – for models with mode switching – and with all knobs set to their center position.**

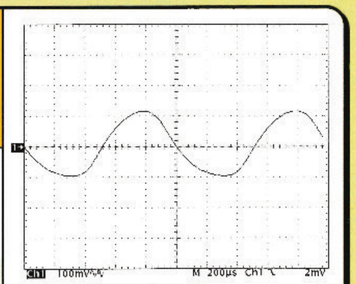
OD-1



The waveform of an asymmetrical overdrive circuit

This waveform is the hallmark of BOSS's unique asymmetrical overdrive circuit. Notice that the waveform height and width differ on the top and bottom. Even the clipped waveform traces an extremely smooth curve.

SD-1



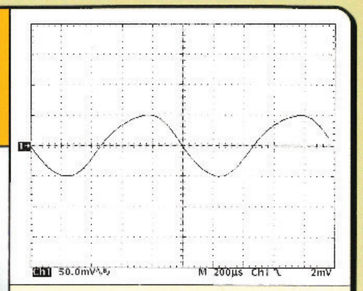
The royal distortion curve of BOSS overdrive

Just like the "OD-1"– to which it is similar in character – this unit has a distortion waveform that's vertically asymmetrical to the degree that the upper curve peak is high, and the foot of the peak is narrower than the trough width.

Note: *The input signal for waveform sampling was a 1kHz sine wave sent from an oscillator, and the input level was slightly raised or lowered in each case in order to check the characteristics of each model in an easy-to-understand way. These are just typical waveforms sampled in the 1kHz frequency range, so please understand that the units may produce a different waveform with other frequency bands. The fact that the waveform curves are similar does not necessarily mean that the distortion and tonal characteristics are the same.*

OD-2

TURBO OFF

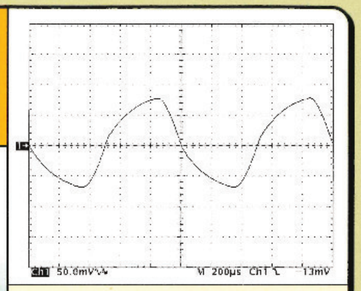


A gentle waveform that evokes a mild tone

As indicated by the ad copy, "You can obtain OD-1 distortion with TURBO OFF," this unit produces a gentle, vertically asymmetrical waveform with a shape similar to the OD-1.

OD-2

TURBO ON

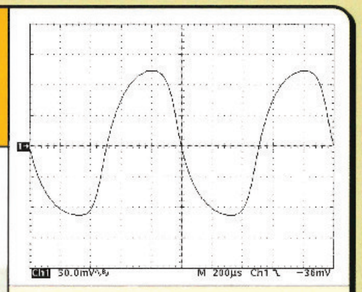


You can sense the power of the turbo mode from the waveform

Compared with TURBO OFF, this is a higher-gain waveform with greater angularity near the waveform peaks. Without even listening, you can see the amplification due to TURBO ON in the waveform.

OS-2

COLOR OD

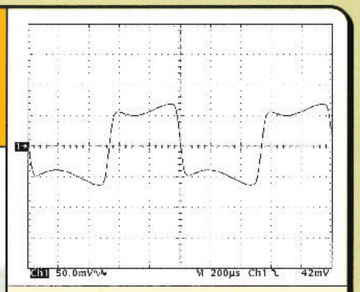


A natural, parabolic curve without angles

This is a typical overdrive waveform – a distinctive rounded path without angles – that traces a vertically asymmetrical, natural parabolic curve.

OS-2

COLOR DS

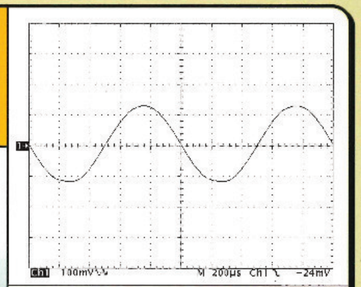


Notice the distinctive curve evident at the peaks

Compared with the smooth waveform line obtained from overdrive units, this has a slightly more angular feel. From the standpoint of sound, this waveform emphasizes the low frequency range, with a light emphasis on the high range.

SD-2

CRUNCH

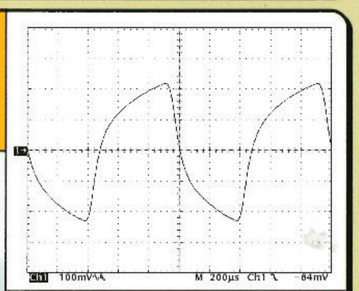


A clipped aspect appears in the bottom side waveform

At a glance, this curve is vertically asymmetrical, but you can probably see that only the lower side is distinctly clipped – the rounding of the peak is cut flat – compared with other overdrive units.

SD-2

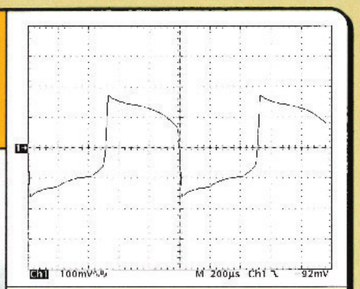
LEAD



A waveform with a strong distortion component that emphasizes the low and mid frequency range

This waveform is sharply angular and resembles the TURBO II setting of the DS-2 (see P.45). Technically speaking, the high range is suppressed, and the mid and low ranges are emphasized as a result of that suppression.

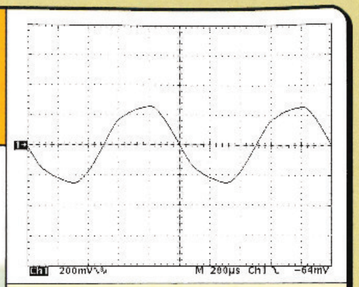
ODB-3



Vertically different distortion characteristics with a sharp high range

An extremely sharp high range – the rising part of the curve is quite steep, and that's apparent where there's an angle on the left shoulder of the top side peak. The distortion is also the kind where the top and bottom halves of the curve differ.

BD-2

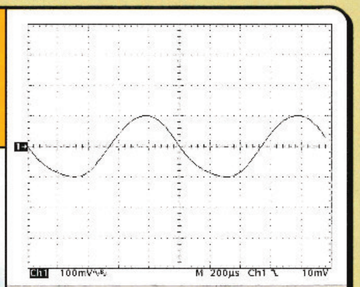


A unique distortion flavor that can even be seen in the waveform

Compared with the curves exhibited by other overdrive units, this curve has an angular, clipped waveform. A new direction in BOSS distortion units is evident here.

OD-2R

TURBO OFF

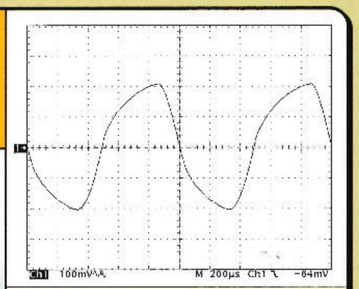


The secret is an internal circuit with a vertically inverted waveform

This waveform is the exact vertical inversion of the OD-2 with TURBO OFF – here the bottom side amplitude width is wider than the top side – and this is because the unit has an inverted amplitude circuit.

OD-2R

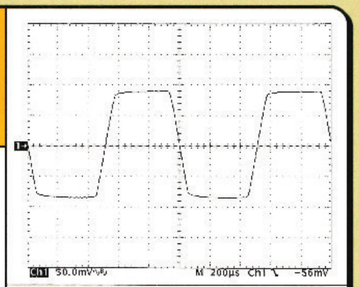
TURBO ON



The waveform reveals improvement due to refinement

Compared with the OD-2 with TURBO ON, the waveform has a larger vertical width, so you can see that volume has been significantly increased in refining the OD-2.

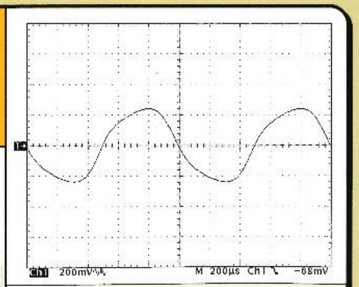
PW-2



A clipped waveform that shows the traces of subtle sound design

The waveform has a slight vertical asymmetry, and is clipped straight. Comparing the left and right shoulder of the peak, it's clear that the high range (left shoulder) is suppressed just a little bit.

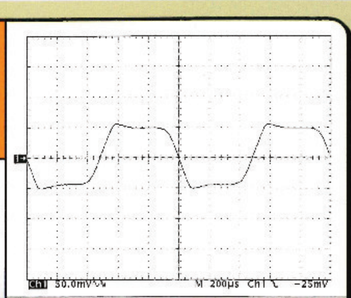
OD-3



A clearer clip start point is the key feature

This is somewhat milder than the waveform of the BD-2, but it's notable in that the clip start point – the point where angle begins – is more distinct than other overdrive units.

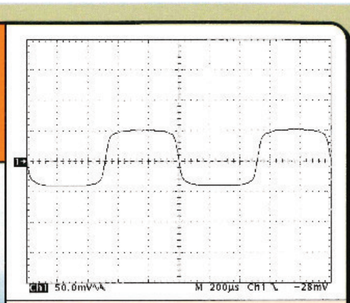
DS-1



A typical clipped waveform for distortion

This is different than an overdrive unit that traces out a smooth, rounded curve. The DS-1 traces out an obviously clipped curve – a rectangular wave with corners – that's the hallmark of a distortion unit.

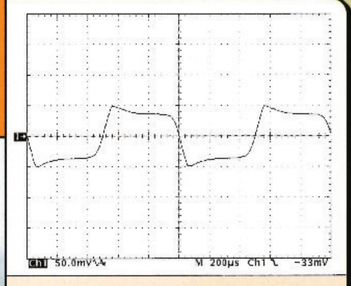
HM-2



Another typical clipped waveform, with high range suppression

This is a straight clipped waveform. Compared with the waveform for the DS-1, this waveform has a slightly lower left shoulder for the peak, so the high range is suppressed slightly after clipping.

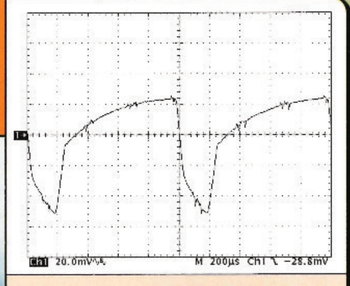
DF-2



Unique sonic characteristics are evident in the waveform

Compared with the DS-1, this unit has greater high-range emphasis due to filter processing after clipping. Notice how the waveform rises from the lower side to the top side.

MZ-2

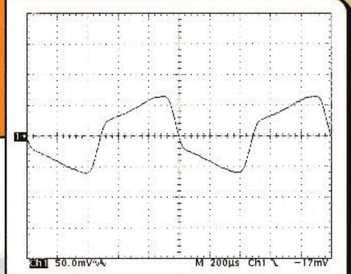


An odd curve that's clearly different from the other models

This waveform is vertically asymmetric for hard distortion, and unneeded highs are cut off. That is apparent in the smoothness of the left shoulder line running up to the peak.

DS-2

TURBO I

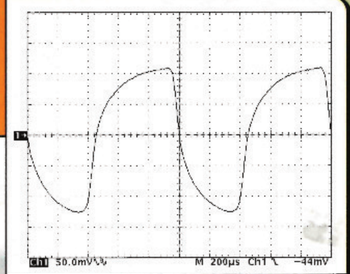


A clipped waveform with low-range emphasis

The right shoulder of the peak is lifted higher than the left shoulder, and this indicates that the low-range side is emphasized after clipping.

DS-2

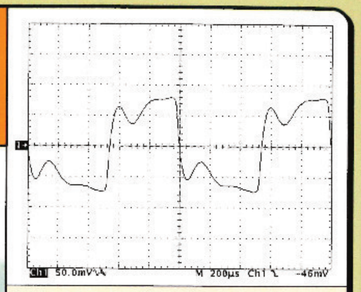
TURBO II



A sharply clipped waveform with high-range suppression

This unit features hard clipping, while suppressing unnecessary highs. Notice the rounding of the waveform rising edge, and the smooth curve on the left shoulder of the peak. Another important feature is the asymmetrical distortion.

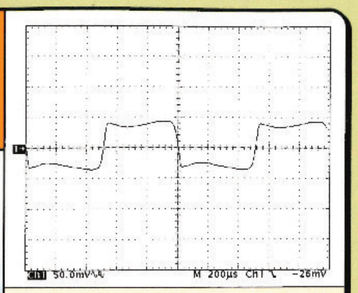
MT-2



A complex waveform produced by filter processing

This waveform has an extremely complex line, due to the action of filters before and after clipping. This shows the strength of the MT-2's sonic character.

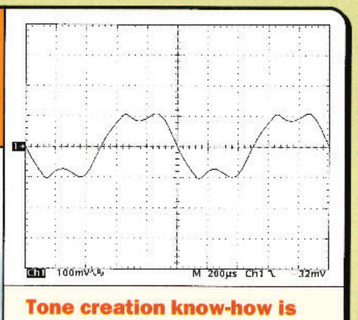
HM-3



A clipped waveform of the hollow type

Compared with the HM-2 waveform, this model has an indented peak, so it has somewhat hollow sound characteristics, with emphasized high and low ranges.

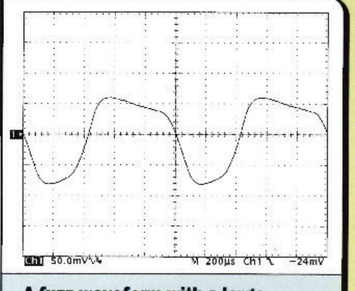
XT-2



Tone creation know-how is evident in this waveform

After clipping, only a certain frequency band is cut, and this can be seen in the conspicuous droop in the peak. The uniqueness of the XT-2 is visually obvious.

FZ-3

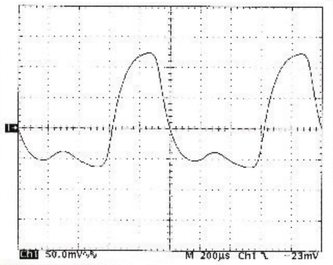


A fuzz waveform with a large difference between top and bottom

Compared with the FZ-2, which is also a fuzz box, this is a relatively gentle waveform, but the large difference between the upper and lower waveforms is common to all fuzz effects, and is also evident in the FZ-2 waveform.

FZ-2

FUZZ I

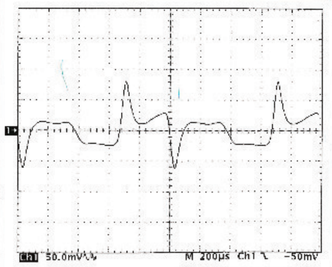


An irregular waveform that produces distinctive overtones

Notice that the waveform is completely different on the top and bottom side. This sort of large difference in the top and bottom curve is the trick that produces the overtones that are the hallmark of fuzz.

FZ-2

FUZZ II

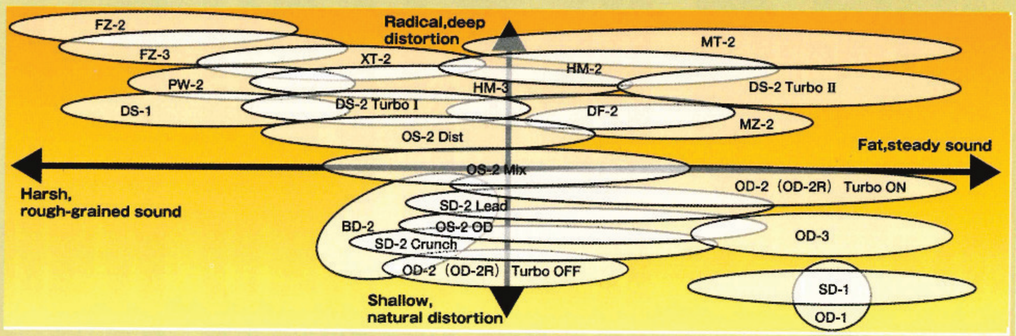


A harsh waveform with edge emphasis

In this mode, even more intense differences are evident between the upper and lower parts of the waveform. The sound has quite an edge, as you can see from this unique waveform.

Relationship atlas for all 20 distortion models

BOSS distortion units have a truly wide variety of characters.
You can visually understand the differences between them by referring to the following chart.
Sometimes a model has an unexpected, hidden distortion nuance, so you should check that out too!



Distortion character distribution diagram

Character analysis table for all 20 models

		Distortion depth	Mid range fatness	Bottom sound	High range brightness	Edge sharpness	Overtone lushness	Picking control fidelity	Sustain	Distortion variation	Sound variation using tone, EQ	Functionality	Things to try
OD-1		★☆	★★★☆	★	★	★	★	★★★	★★☆	★	☆	☆	A mild, vintage sound. This is good as a booster, and for a West Coast sound with a clean amp. This is the original booster for stack amps.
SD-1		★☆	★★★	★☆	★☆	★☆	★	★★☆	★★☆	★	★	★	A comfortable mid sound when used as a stack amp booster.
OD-2 OD-2R	OFF	★	★★☆	★	★★	★☆	★	★★☆	★★	★★★☆	★☆	★★★☆	Bucking and solos in American hard rock, and power chords with a humbucker.
	ON	★★★	★★	★☆	★★★☆	★★★	★☆	★★☆	★★★★				
OS-2	OD	★	★★☆	★	★☆	★☆	★	★★☆	★☆	★★★★★	★☆	★★★★	Distortion with a very natural feel when color mix is set to the center.
	DS	★★★☆	★	★☆	★★☆	★★★☆	★★	★★	★★★☆				
SD-2	CRUNCH	★	★	★★	★★★★☆	★★	★★★	★★★★☆	★☆	★★★★☆	★☆	★★★★★	Check the natural distortion, with the feeling of channel switching from a guitar pre-amp.
	LEAD	★★☆	★★	★★★	★★	★★☆	★☆	★★★☆	★★★				
ODB-3		★★★★	★	★★★★	★★★★	★★★☆	★★★★	★★★	★★★	★★★★☆	★★★★	★★★	This is a mix of direct sound and overdrive sound, and the fat bass sound is yours! If you set the balance knob all the way to the OD side, you can get an exciting fat sound even with a guitar.
BD-2		★★☆	★★	★★★	★★★★	★★★★	★★★	★★★★★	★★★☆	★★★☆	★★★	★☆	A clean sound when guitar volume is reduced.
PW-2		★★★★	★★	★★★	★★★★	★★★★☆	★★☆	★★★★☆	★★★★	★★	★★★☆	★★	Low/mid heft when using the front (center) PU.
OD-3		★★	★★★★	★★★★	★★★☆	★★★	★★★★	★★★★	★★★★	★☆	★★☆	★	The beautiful high-range sound of a Strat half-tone, and the excellent definition of a Les Paul.
DS-1		★★★☆	★	★★	★★★★	★★★★	★★☆	★★	★★★	★	★★★	★	Sonic sharpness in riffs with an edge.
HM-2		★★★☆	★★	★★★	★★	★★★	★★	★★	★★★	★☆	★★★★	★★	Low range weight, with powerful color mix.
DF-2		★★★☆	★★	★☆	★★★☆	★★★★	★★☆	★★☆	★★★☆	★	★★★	★★★★	Good for power chords with hum-buckers. Turn on feedback on the best bits! Although it tends to be hidden in the shadow of feedback, this is a quality distortion with truly outstanding humbucker compatibility.
DS-2	I	★★★☆	★	★☆	★★★	★★★☆	★★	★★	★★★☆	★★★☆	★★	★★★☆	Bright chord playing when set to Mode I, and clear melodic and solo playing when set to Mode II.
	II	★★★☆	★★★★	★☆	★★	★★	★☆	★☆	★★★☆				
MZ-2		★★★☆	★★	★★★	★★☆	★★☆	★★	★★☆	★★★	★☆	★☆	★★★★☆	Playing metal-based riffs in the doubling mode is fantastic! Be sure to try it with the stereo out.
MT-2		★★★★★	★★★☆	★★☆	★★★	★★★★	★★	★☆	★★★★	★★★☆	★★★★★	★★★	The power of EQ settings, and the power when drive is increased.
HM-3		★★★★	★☆	★★★☆	★★☆	★★★☆	★★	★★★	★★★☆	★★	★★★★	★★	Low-range weight, with powerful color mix.
XT-2		★★★★☆	★☆	★★☆	★★☆	★★★★★	★★★☆	★☆	★★★☆	★★☆	★★★★☆	★★☆	A wide range of sound variations, based on contour and punch.
FZ-2		★★★★★	☆	★★★	★★★☆	★★★☆	★★★★★	☆	★★★	★★★	★★★	★★★☆	Fantastic upper octaves if you play high-range single tone phrases with the guitar tone down.
FZ-3		★★★★★	★★★	★★★☆	★★☆	★★☆	★★	★	★★★	★	★★	★	Nothing to do but go wild on songs suited to fuzz.

★=indicates 1 point ☆=indicates 0.5 point
Stars indicate the amount of effects. Full amount of effects is indicated with 5 Black Stars.

BOSS CHRONOLOGY

TABLE of RELEASE YEARS for ALL MODELS

★The numbers before and after the model indicate the release month and the sales discontinuation month.

'76 '77 '78 '79 '80 '81 '82 '83 '84 '85 '86 '87 '88 '89 '90 '91 '92 '93 '94 '95 '96 '97 '98 '99 '00 '01

OVERDRIVE

- 11 OD-1 Over Drive — 7
- 8 OD-2 TURBO Over Drive — 11
- 8 OD-3 Over Drive — NOW
- 11 OD-2R TURBO Over Drive — 7
- 2 SD-1 SUPER Over Drive — NOW
- 5 OS-2 Over Drive / Distortion — NOW
- 4 SD-2 DUAL Over Drive — 12
- 10 ODB-3 Bass Over Drive — NOW
- 3 BD-2 Blues Driver — NOW
- 8 PW-2 Power Driver — 10

DISTORTION

- 6 DB-5 BOSS Driver — 2
- 12 DS-2 TURBO Distortion — NOW
- 6 DS-1 Distortion — NOW
- 10 HM-2 Heavy Metal — 10
- 4 HM-3 HYPER Metal — 12
- 9 DF-2 SUPER Feedbacker & Distortion (SUPER Distortion & Feedbacker) — 4
- 8 XT-2 Xtortion — 12
- 12 MZ-2 Digital Metalizer — 2
- 3 MT-2 Metal Zone — NOW

FUZZ

- 4 FZ-2 HYPER Fuzz — 6
- 2 FZ-3 Fuzz — 1

CHORUS

- 6 CE-1 Chorus Ensemble — 5
- 5 CH-1 SUPER Chorus — NOW
- 10 CE-2 Chorus — 11
- 2 CE-2B Bass Chorus — 2
- 2 CEB-3 Bass Chorus — NOW
- 10 CE-3 Chorus — 2
- 12 DC-2 Dimension C — 9
- 11 CE-5 Chorus Ensemble — NOW
- 3 DC-3 Digital Space-D (Digital Dimension) — 8

PHASER

- 11 PH-1 Phaser — 11
- 9 PH-2 SUPER Phaser — 3
- 10 PH-1R Phaser — 5
- PH-3 Phase Shifter — 10 NOW

FLANGER

- 8 BF-1 Flanger — 10
- 10 HF-2 Hi Band Flanger — 2
- 6 BF-2 Flanger — NOW
- 2 BF-2B Bass Flanger — 11

SLOW GEAR

- 5 SG-1 Slow Gear — 2

VIBRATO

- 4 VB-2 Vibrato — 4

TREMOLO/PAN

- 5 PN-2 Tremolo/Pan — 3
- 2 TR-2 Tremolo — NOW

PITCH SHIFTER

- 10 PS-2 Digital Pitch Shifter / Delay — 3
- 12 HR-2 Harmonist — 1
- 3 PS-3 Digital Pitch Shifter / Delay — 1
- PS-5 SUPER Shifter — 10 NOW

OCTAVER

- 4 OC-2 Octave (Octaver) — NOW

COMPRESSION SUSTAINER

- 7 CS-1 Compression Sustainer — 2
- 9 CS-3 Compression Sustainer — NOW
- 12 CS-2 Compression Sustainer — 6

LIMITER

- 3 LM-2 Limiter — 12
- 2 LMB-3 Bass Limiter Enhancer — NOW
- 4 LM-2B Bass Limiter — 12

GRAPHIC EQUALIZER

- 1 GE-6 Graphic Equalizer — 6
- 7 GE-7 Equalizer — NOW
- 2 GE-7B Bass Equalizer — 2
- 2 GEB-7 Bass Equalizer — NOW

PARAMETRIC EQUALIZER

- 11 SP-1 Spectrum — 11
- 3 PQ-4 Parametric Equalizer — 11
- 3 PQ-3B Bass Parametric Equalizer — 12

AUTO WAH

- 7 TW-1 T Wah (Touch Wah) — 5
- 11 AW-2 Auto Wah — 1
- FT-2 Dynamic Filter — 10 — 12
- AW-3 Dynamic Wah — 10 NOW

DELAY

- DM-1 Delay Machine — 1 — 10
- 6 DM-2 Delay — 2
- 5 DM-3 Delay — 5
- 12 DD-2 Digital Delay — 8
- 8 DD-3 Digital Delay — NOW
- DSD-2 Digital Sampler / Delay — 4 — 8
- 3 DD-5 Digital Delay — NOW
- DSD-3 Digital Sampler / Delay — 8 — 12

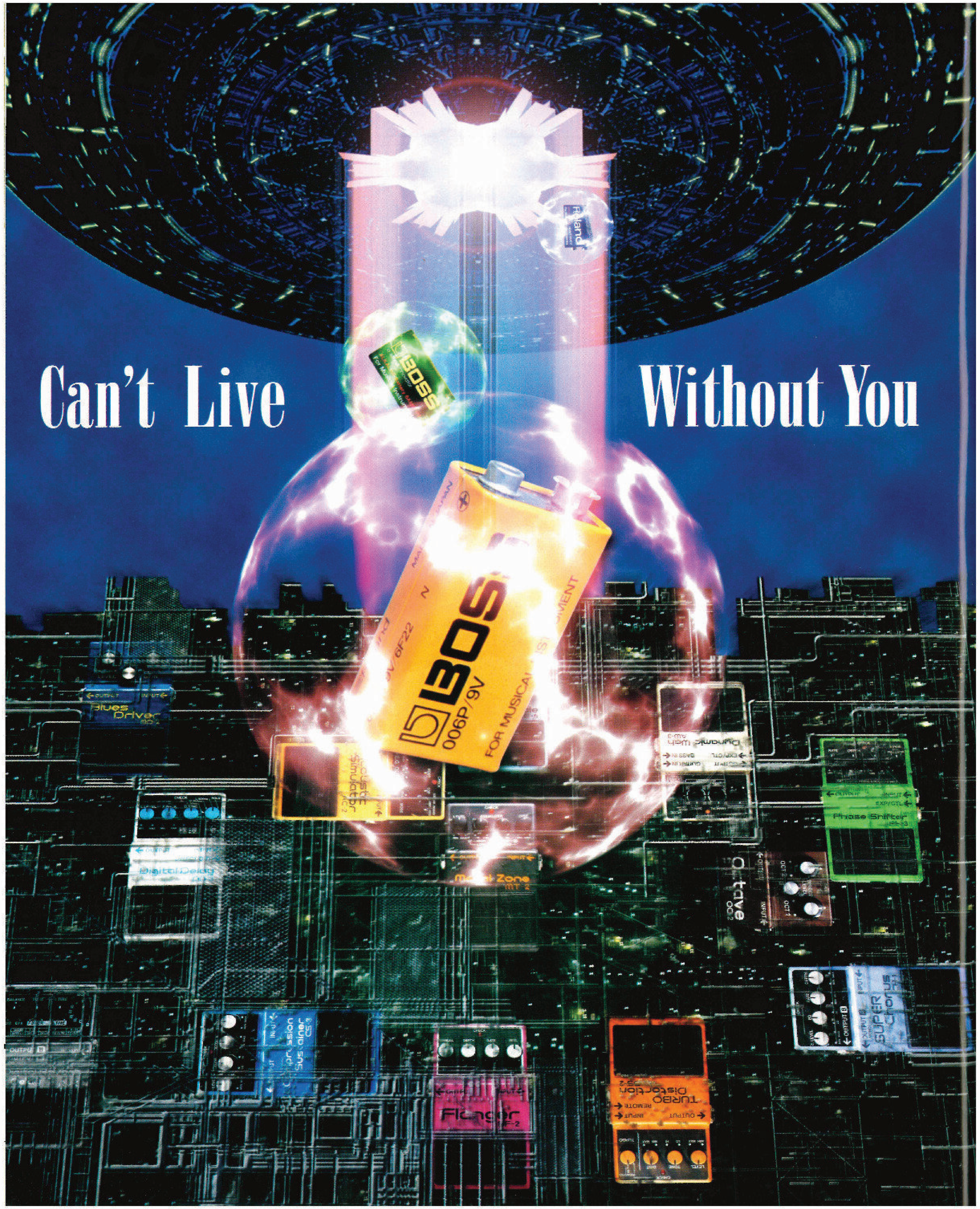
REVERB

- 8 RV-2 Digital Reverb — 1
- 3 RV-3 Digital Reverb / Delay — NOW

OTHERS

- 2 NF-1 Noise Gate — 5
- 4 EH-2 Enhancer — 12
- 2 AC-2 Acoustic Simulator — NOW
- 8 SYB-3 Bass Synthesizer — NOW
- 9 NS-2 Noise Suppressor — NOW
- 11 LS-2 Line Selector — NOW
- 1 PSM-5 Power Supply & Master Switch — 1
- TU-2 Chromatic Tuner — 10 NOW

'76 '77 '78 '79 '80 '81 '82 '83 '84 '85 '86 '87 '88 '89 '90 '91 '92 '93 '94 '95 '96 '97 '98 '99 '00 '01


Can't Live
Without You
BOSS
006P/9V
FOR MUSICAL INSTRUMENT
Phase Shifter
Flanger
TURBO Distortion
SUPER Chorus
Blues Driver
Octave
Digital Delay
Metal Zone

BOSS compact effects

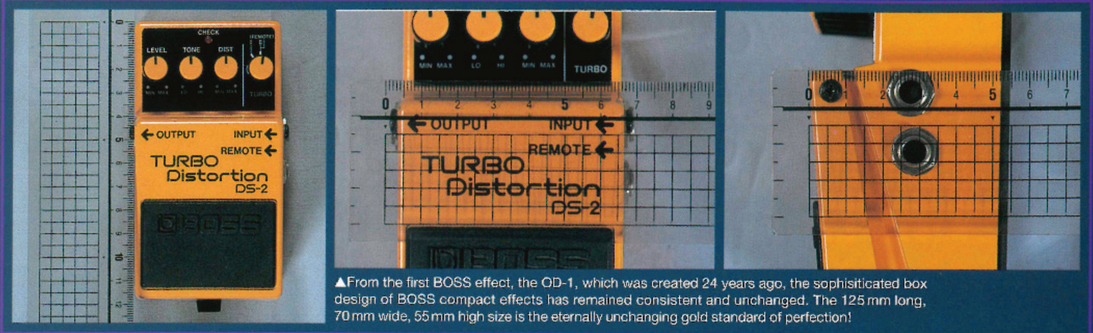
The ultimate collector's guide

Those who are spellbound
by the unique BOSS sounds will also be captivated
by the beautiful look and strong specs of BOSS effects.
Come with us as we reveal the hidden details of
the unique BOSS design philosophy,
and explore the unique worldview
that provides the foundation of BOSS effects.

From basic angle

Design and basic concept

SCALE

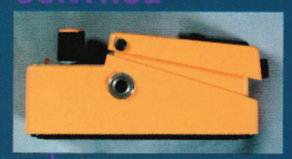


▲From the first BOSS effect, the OD-1, which was created 24 years ago, the sophisiticated box design of BOSS compact effects has remained consistent and unchanged. The 125 mm long, 70 mm wide, 55 mm high size is the eternally unchanging gold standard of perfection!

LED INDICATOR

▲LED with battery check function. In early models, the LED lit up only as the effect was turned on, but later models were changed so the LED was always lit when the effect was on.

CONTROL



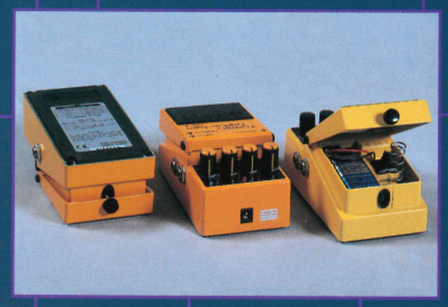
▲The control section is a step lower than the switch pedal surface. This is to prevent setting changes due to accidental foot contact as you turn the effect on and off.

FET SWITCH

▲BOSS was among the first to use electronic switches. These switches completely eliminate the clicking noise produced by conventional mechanical switches.

SWITCH PEDAL

▲The switch pedal has a large, non-slip rubber pad so the switch operates reliably, no matter where you step on it.



THUMB SCREW

▲The thumb screw led to a quantum improvement in battery replacement convenience. The first BOSS models used a coin screw.

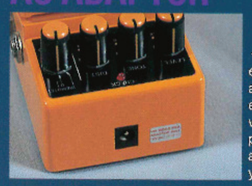
BOTTOM BASE

▲The bottom side has a non-slip rubber pad. Even on a slope at a 60° angle, the pad has stubborn sticking power!

BODY

▲The aluminum die cast body is renowned as the ultimate universal form. About 100,000 boxes are made from a single die.

AC ADAPTOR



◀BOSS effects are equipped with an AC adaptor terminal to eliminate power supply worries during long performances. This was a revolutionary idea 24 years ago.

Detailed Info for the BOSS Fanatic

A thorough investigation of changes in specs and details

classify of KNOBS

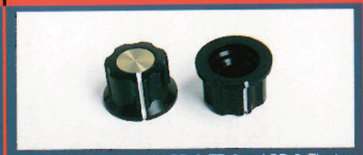
TYPE -I (ver.1)

▲This type has a side hole fastening screw, and was used in early BOSS effects like the OD-1 that had two and three knobs (V-shaped layout).

TYPE-I (ver.2)

▲The successor of TYPE-I (ver. 1). The screw hole is gone, together with the internal metal cover.

TYPE-I (ver.3)



▲This type is used in the BD-2, TR-2 and OD-3. The top plate was changed from silver to gold.

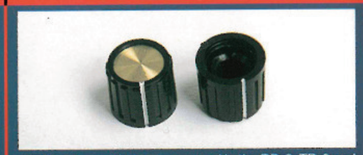
TYPE-II (ver.1)

▲This is a small knob with a side hole fastening screw, and was used in early period models with three knobs (V-shaped layout) like the DS-1.

TYPE-II (ver.2)

▲This is the successor of the TYPE-II, with no screw hole, and is used in current models with three knobs (V-shaped layout) like the SD-1, except in the early period.

TYPE-II (ver.3)



▲This is the gold plate type, used in the BD-2, TR-2 and OD-3, in combination with TYPE-I (ver. 3).

TYPE-III

▲This was used in the BF-2 and CE-3 (later changed to TYPE-IV in those two models), and is still used in the VB-2. This knob was originally designed for use on synthesizers.

TYPE-IV

▲This type originally appeared on the HM-2, which went on sale in October 1983. The top plate comes in many colors. This type exemplifies the middle period.

TYPE-V

▲These specifications are only for the DM-3. If TYPE-IV knobs are arranged in a V-shape, there is a conspicuous gap, so a skirt was added to this type.

TYPE-VI

double concentric knobs

▲This revolutionary two-axis knob first appeared on the MT-2, which went on sale in March 1991. The pot shaft is slimmer than the ordinary type.

TYPE-VII

▲Just like TYPE-VI, this was first used in the MT-2. It is the main type even today. The top of the knob is grooved to prevent slipping.

TYPE-VIII

▲This is the slider knob used in the four BOSS graphic equalizer models: GE-6, GE-7, GE-7B and GEB-7.

changes in the SWITCH

▶Except for the early period, the switch part of all models up to the present is a black part, as shown here.

◀The switch section used in early models was a skeleton design, as shown here.

changes in the BACK PANEL

1st period

▲Notice the bottom part of the panel. The "Roland Japan" lettering is from the first period.

2nd period

▲In the second period, a "MADE IN JAPAN" sticker with black background and white lettering was affixed (this one is a little peeled-off).

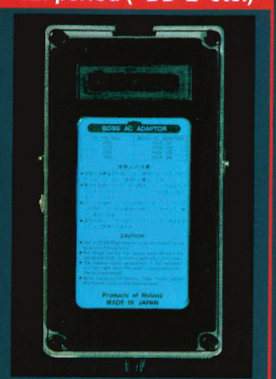
3rd period

▲The bottom parts says "Products of Roland MADE IN JAPAN." The top part of the panel says "POWER DC-9V."

4th period

▲The top part of the panel says "BOSS AC ADAPTOR" again, and the bottom part is the same as in the second period.

4th period ("DD-2"etc.)



▲This is the exception to the 4th period, seen in digital models with high power consumption. An AC adapter recommendation has been added.

5th period

▲In fifth-period devices, a sticker with the serial number is affixed at the bottom of the panel.

6th period

▲After the move to the RTC factory in December 1986. The bottom part says "Products of Roland MADE IN TAIWAN."

7th period

▲The panel is longer than before, and the top/bottom space for the BOSS logo at the top is narrower.

8th period (present)

▲In devices from the 8th period (the current period), "BOSS Corporation" has been added together with the CE mark at the bottom.

"PSM-5"

▲Only the PSM-5 has a design with an illustration, including an explanation of use and connection.

SERIAL NUMBER location

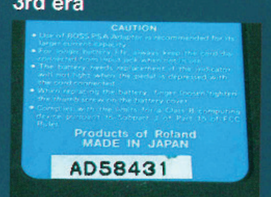
1st era

▲The 4- to 5-digit serial numbers from the first period were stamped here, behind the switch section inside the pedal.

2nd era

▲In the second period, a sticker was affixed to the bottom of the battery box. Serial numbers were six digits, and midway through, the stamp font was changed from this type to a thicker font.

3rd era



▲In the third period, the sticker became long and thin, and was affixed at the bottom of the back panel. The format changed to two alphabetic letters and 5 digits.

present

▲The font changed from the third period, and the corners of the sticker were rounded. Both the letters and numerals have gone through a number of font changes to date.

SNAP

TYPE-I

▲Products in the first period had a slightly bluish gray battery snap.

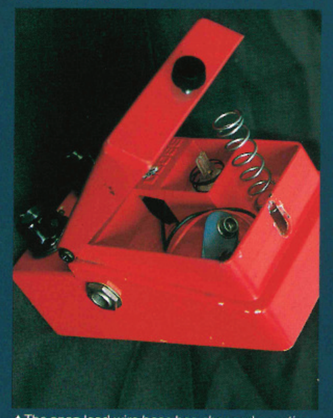
TYPE-II

▲In the middle period, the snap became whiter and wider than the original type.

TYPE-III

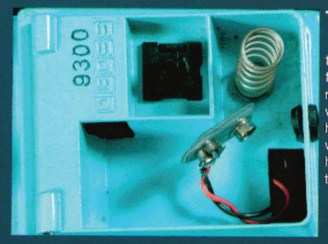
▲Today's models have a slim black snap with an opening in the middle, which exposes two lead wires.

ONE HOLE



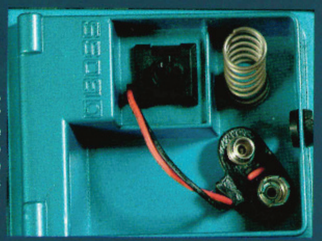
▲The snap lead wire base has changed over time. In the first period, it was the one-hole type, which emerged from the far, right side of the battery box.

TWO HOLES



◀In the middle period, the lead wire base hole from the first period still remained, but the design was changed to a two-hole type where a shorter wire emerged from a hole on the near side of the box.

NO HOLE



▶After the middle period type, and up to the present, the lead wire emerges from near the switch.

transition of SCREW

COIN SCREW

▲Among the coin screws in first period products (so-called "silver screw" units have been confirmed up to around BF-2 serial no. 10000), there are a number of different types, with subtle differences in form.

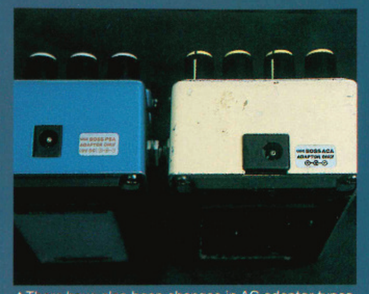
THUMB SCREW

▲Thumbscrews have also come in a number of types, with different knob thicknesses and screw lengths, depending on the manufacturing period. Moving from left to right in the photo, the screws are in production-period sequence, from the first period to close to today.

PEDAL PAD

▲In current models, the pedal rubber pad is affixed with double-sided tape, but products in the first period used adhesive.

kinds of ADAPTORS

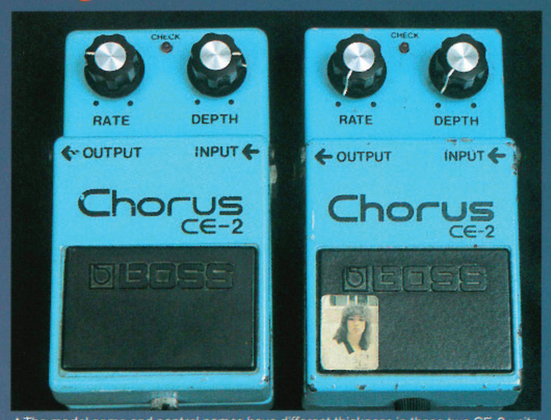


▲There have also been changes in AC adaptor types. Models in the early period (right) used ACA specifications. Later this was changed to PSA specifications. All new products sold today use PSA specifications.

finish of BACK PANEL

▲Models in the first period (right) were painted in the same way as the front, even on the edges at the back of the body.

a slight difference in LOGO



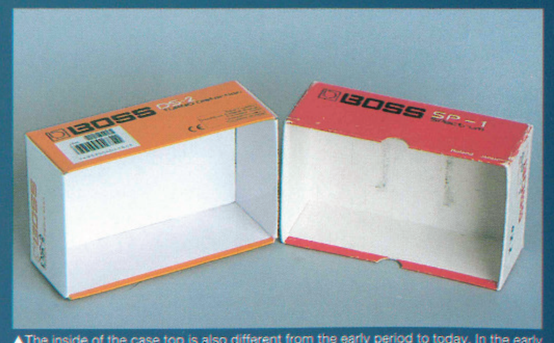
▲The model name and control names have different thickness in these two CE-2 units. This is due to the production period and differences in the base die, but the width of the bodies also differ on the micro level (the unit on the left is slightly wider).

different styles of MINI-SCREW

▲The screws that fasten the switch pedal on the left and right come in two types: the type with a washer (left: DS-1) and without a washer (right: SP-1 produced in the early period).

CASES

▲The packaging cases have also evolved. The current type (two on left side – CS-3 and DS-2) has a glossy finish, but the surface of packages for early period products (two on right side – TW-1 and SP-1) have a thin, almost matte finish.



▲The inside of the case top is also different from the early period to today. In the early period (right), the overlap width-folded part was short (there is a semicircular pinch cut on both sides), while today (left) the paper is folded back more deeply.

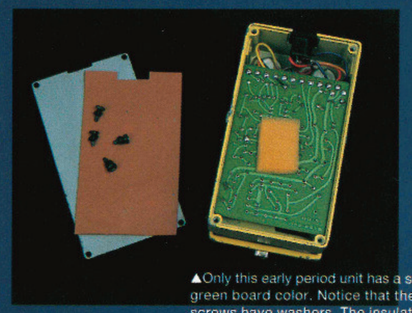
analysis of 3 types of "OD-1"

New facts about famous models revealed!

The OD-1 was sold for 7 years and 8 months – from November 1977 to July 1985. During that time, BOSS products were produced at a factory in Japan, so all the OD-1 units that came into the world were "MADE IN JAPAN"... or so they say. But when we were interviewing the collector "Mr. M." for this book (see pages 36 to 41), we learned a surprising new fact. When we opened the back cover and looked inside Mr. M.'s three OD-1 units, – produced at different times – we found that the board for the most recent OD-1 was labeled "MADE IN TAIWAN." From the finish to the details, the board shows no flaws compared to the other OD-1 units, so there is no doubt it is genuine. Is this a new mystery...?

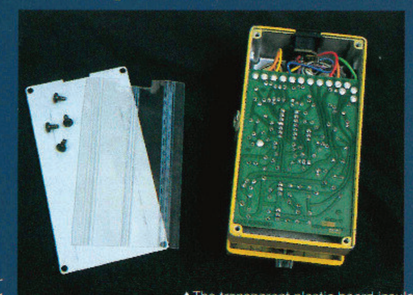
◀Three OD-1 units made at different times: an early period model (left), a model after the change to the thumbscrew (middle) and an ultra-rare late model (right) with a "MADE IN TAIWAN" board.

model produced in the EARLY PERIOD



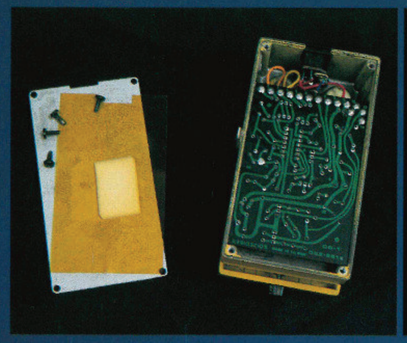
▲Only this early period unit has a somewhat faded yellow-green board color. Notice that the back cover fastening screws have washers. The insulation sheet between the back cover and the board is made of paper.

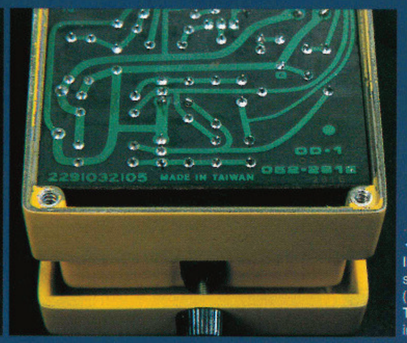
model produced in the MIDDLE PERIOD



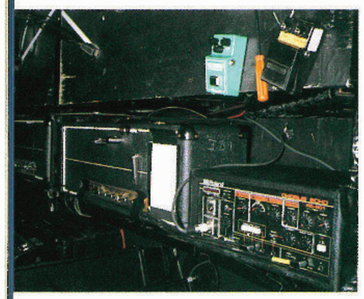
▲The transparent plastic board insulation sheet is the same as current specifications, so it may be that the original sheet has been replaced.

model produced in the FINAL PERIOD





◀The fact that the board is labeled "MADE IN TAIWAN" indicates that, prior to the full-scale move to the Taiwan plant, some work (like board fabrication) was shifted to Taiwan, and the board was then finally installed in Japan.



Bang on BOSS, Hit it hard!!

The Black OD-1
"...Then I found his OD-1 laying in the back of the stage.
It was painted pitch black to hide the maker and model number..."

Quote referring to Jeff Beck's equipment used live at the December '80 "There and Back" Japan tour.

The HISTORY of BOSS compact effects

The immortal Hendrix was already sadly missed and EVH was yet to unleash his fireworks on the music scene...

1976 signaled the end of a great pioneering age and the dawn of a new era.

On the rock guitar scene there was a portentous event.

Holding the promise of becoming the standard against which all guitar sounds would be measured,

the brand would soon be inspiring mid-century guitarists worldwide.

Just four simple letters of the alphabet that conjure up an image of strength.

Even so, the reality overflowed with a rich, subtle sonic rainbow of infinite colors.

Here, from all angles, you'll find the complete lowdown on the origin and evolution of these magic boxes.

A History of the Birth and Development of BOSS compact effects

interview & text by Masaki Fukuda

Immediate worldwide success generated by creativity and positive motivation

These days, you find Roland is still pushing ahead with the development sound field technology. Think of the sound field as basically the environmental space for listening to music. While electric musical instruments allow both free control of volume and easy adjustment of tone settings, sound field research considers acoustic reflection. The general idea is to enable the creation of mimetic sound textures that reproduce the sonic atmosphere that exists in different types of total archi-tectural settings. There is still a lot of potential for progress.

The RSS (Roland Sound Space/ sound field support technology) is an acoustic system that, unlike conventional reverb devices, tries to deal with overall ambience. On a visit to the Roland factory I was able to discuss the concept with Ikutaro Kakehashi, the Executive Chairman of Roland, and had the opportunity to experience first-hand the presence that RSS creates. Even using an unremarkable CD as the sound source, when RSS was applied it felt, as if by magic, like we were being acoustically transported into a Gothic cathedral and other spaces. It was awesome to experience the mysteries of the soundscape phenomenon. At the same time, it was reassuring to realize Roland has been focusing so intensely on the future and has already given it such a solid form.

As Executive Chairman Kakehashi wrote in his book," I BELIEVE IN MUSIC (published by Hal Leonard Corp.)","To express image in sound, in vision, in form, and combining these... that is the challenge that Roland has set itself."

RSS is a prime example of this positive thinking. It provides an insight into the culture at Roland, where they have taken to heart the company motto, "We design the future."

Needless to say, this spirit also permeates BOSS. The positive attitude there has enabled BOSS to continuously provide groundbreaking effects to the world. Naturally, sound quality is always given top priority. There's also focus, however, both on taking the player's side to implement original ideas and on producing an complete lineup up that quickly accommodates current trends and playing genres. There's no way that the effort of BOSS technicians would pay off, in the form of sterling products, if they lacked real passion and determination "to express image in sound, ... in form." Even when confronted by countless setbacks and obstacles, fired by the enduring spirit of true artisans, they have solved the problems and crafted products that continue to make BOSS a favorite of musicians worldwide.

Pioneering spirit and foresight born from willingness to try anything: Prehistory of BOSS compact effects

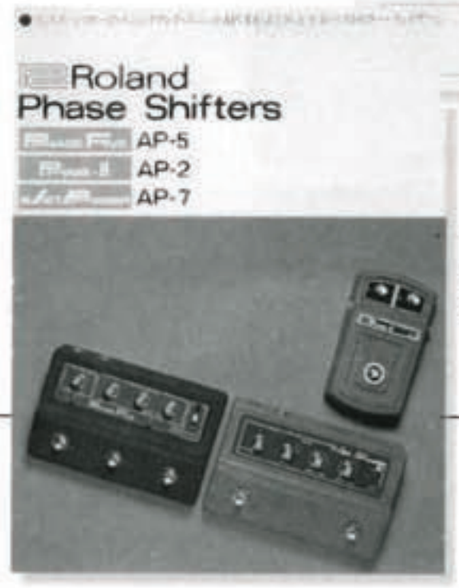
Back in 1953, Roland Executive Chairman Kakehashi set up Kakehashi Wireless, an electrical retail shop in Osaka's Abeno-ku. This was where everything started. After this, betting on expansion, the shop was reorganized as Ace Electric Company, Ltd. Then, in 1960, to start manufacturing, he founded Ace Electronic Industry. A few years later the company began dealing with the import of Hammond organs, eventually resulting in a 1968 joint venture with the Hammond Organ Company. At that time the company developed and brought out a number of devices, consisting mainly of organs, amps, and rhythm machines.

As a pioneering company in Japan, Ace Electronic raised the curtain for effects on the Japanese scene with products such as the Ace Tone brand FM-3 Fuzz Master, LH-100 Stereo Phaser, and QH-100 Graphic Equalizer.

After that, Mr. Kakehashi left both companies to set up Roland in 1972. From that point on, he made a serious commitment to the development of effects. Three decades ago, when the transition from

◀Premises of MEG Electronics, later to become BOSS, on 13 March 1973, when the company was first established. This is the place of origin for the BOSS effects legend.

◀Page from important catalog of the early period featured six early effects models, including the AF-100 Bee Baa, made by Roland.



◀This page similarly shows three early Roland effects. Here you can see the phaser line up.

Ace-Tone to Roland took place, hardly anyone had an effect, and this naturally meant that there was little idea of what such devices should actually do. In this kind of environment the company initially faced the trial of proving itself.

"At that time, effects were unfamiliar devices. Lots of people were opposed to their use as being somehow not right. Even though we tried to explain the benefits, it was like trying to persuade a person who has never eaten octopus to try a slice. Nobody knew what was right. Our business was distortion, but no one knew the optimal amount of distortion to apply. When we went to the wholesalers they said things like, 'if we try and use those things you're selling, all they do is break up the chords.' This was only natural for them, so all we could do was say 'sorry' and bring the products back. *(laughs)*"– *Kakehashi*

From the second half of the 60s to the start of the 70s, the British-style of hard rock was in its heyday and the flower power of the Woodstock generation was making its presence felt in the States and overseas. It was a creative period when musicians conjured up their own sounds unrestricted by conventional frameworks. In this ferment, the people who were trying to produce effects could not envision the final result and were largely left groping in the dark. Creating a great product inevitably involves great hardships, but they were not even at that stage yet. As the CEO's comments show, during this birth period there were severe labor pains and it was not easy to get amateur musicians to put effects between their instruments and their amps.

Even in these conditions, the company was able to come out with the AS-1 Sustainer, which was able to use compression to add natural sustain without distortion; the AF-100 Bee Baa and AF-50 Bee Gee, which were named after the sound effects that they added; the AD-50 Double Beat, which combined wah and fuzz; the AP-5 Phase Five phaser; and other effects that established a foothold for the triumphant advance of later devices.

Effects still had not gained the kind of acceptance that they currently enjoy, but these early products were beginning to change the prevailing common sense that regarded effects as special, niche devices. You could regard these original effects as opening acts for the current star performers.

Following this, to concentrate more intensely on the guitar market, the MEG Electronics Corporation (Music Engineering Group) was launched. The goal was to produce the MEG brand of guitar effects. In those days, Roland had the image of being a pioneer in opening up the new field of synthesizer music. With this in mind, it's easy to see how the company, wanting to make progress with the development of effects and avoid confusion in the minds of both designers and users, decided to spin off a new company. However, there were issues with the MEG brand name because it was considered too feminine. So, before long the company name was changed.

"Just before the products were launched, someone wondered about the name MEG, which is a common short form of a girl's name in the States. The name was not likely to have much impact in the world of rock and roll."– *Kakehashi*

As a result, a name with a totally different connotation, a name that said "lead role," was chosen. Thus, the "BOSS" name was born.

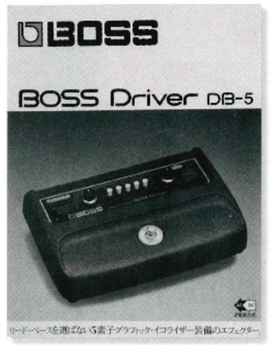
BOSS seen as the real thing: In the early days, a flash of inspiration plays dramatic role

It's generally believed that the first BOSS product was the CE-1 Chorus Ensemble. The CE-1 charted territory that other companies had not explored and provided a serious chorus sound in this sophisticated device that people still associate with BOSS effects. Although this model would be worthy of being called the first BOSS product, this honor belongs elsewhere. The first item to go on sale in America was the B-100, a pre-amp designed to boost the signal from contact mics attached to acoustic guitars. Thanks to Mr. Kakehashi,

▲The BOSS CE-1 and GE-10 appeared inside a Roland catalog in March 1977. The headline proclaimed, "BOSS is a new brand of sound effects."

▲Along with the CE-1 and GE-10, the KM-6 six-channel mixer was in the earliest lineup of BOSS products.

▲The KM-4 four-channel mixer. In the early days, mixer products helped to establish the BOSS brand image.



◀The DB-5 came out before the launch of the long-lasting, compact CE-1, which marked debut of the compact effects series.

the Chairman, we were able to see the B-100. Its case sported the current BOSS logo, but the logo was not present on the device itself. This handmade feel is typical of the spirit of those times. Even though present-day BOSS technicians either don't know or have forgotten about the device, it has already been elevated to the status of company treasure. If there were an effect museum, the B-100 would for sure be given the place of pride.

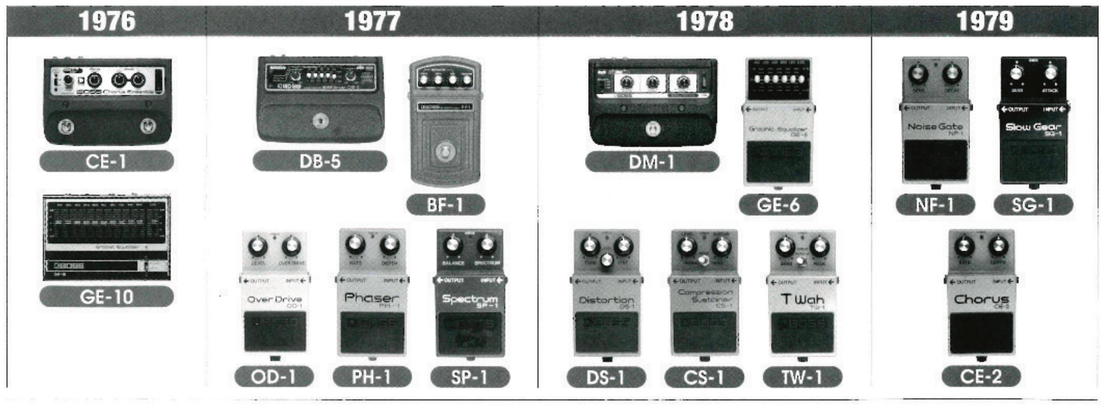
The CE-1 came out after that, in 1976. Applying effects to the built-in circuitry of the Roland JC-120, which had achieved fame for setting new standards for amp technology, this model did not attract widespread support from the start, despite its satisfying and inimitable chorus sounds that were way ahead of anything else.

Kanji Kubo, who in those days worked in the Roland Quality Control department and was involved in the launch of the BOSS brand, had the following to say about the situation at that time.

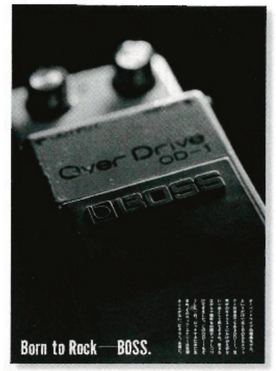
"Although there was an obvious spatial effect just from having sound come out of an amp (JC-120) plugged into the guitar jack, no one could hear the sound of a stereo effect unless they used two amps. However, there were not many guitarists who actually had two amps. So all you could get was monaural output. You do get sound with monaural but any effects are bound to be thin. You could say that spatial synthesis was the CE-1's killer effect, but few guitarists were in a position to properly appreciate it. This gave us some concern because we didn't know how we could get the CE-1 recognized as an effect... The fact is that the launch was not handled particularly skillfully."

You could say that the CE-1, even though the world was not yet ready for it, is typical of the distinctive Roland/BOSS approach, where the attitude is to meet challenges that others would not attempt. Some studios found the CE-1 useful, but for some time it could not rise above this narrow niche. It's ironic that this groundbreaking stereo effect should be held back precisely because it was too ahead of its time.

After a while, as everyone now knows, there was a reversal of fortune. In America and Europe fusion musicians were conquering the music scene. These musicians were aiming for exciting performances full of sonic adventurousness and dimensionality, and sought a means of creating spatiality in their sound as well. Someone



▶The BF-1 also predated the compact series. Run-ning off an AC adapter, it embodied the innovative thinking at BOSS.



◀From the first wave, the OD-1 became an image leader for the following BOSS compact series.

▶The third wave hit in 1978 with the DS-1, CS-1, and TW-1, seen here in a catalog of the time. Now that the lineup of core models was established, items such as the SG-1 would later be released for more specialized niches.

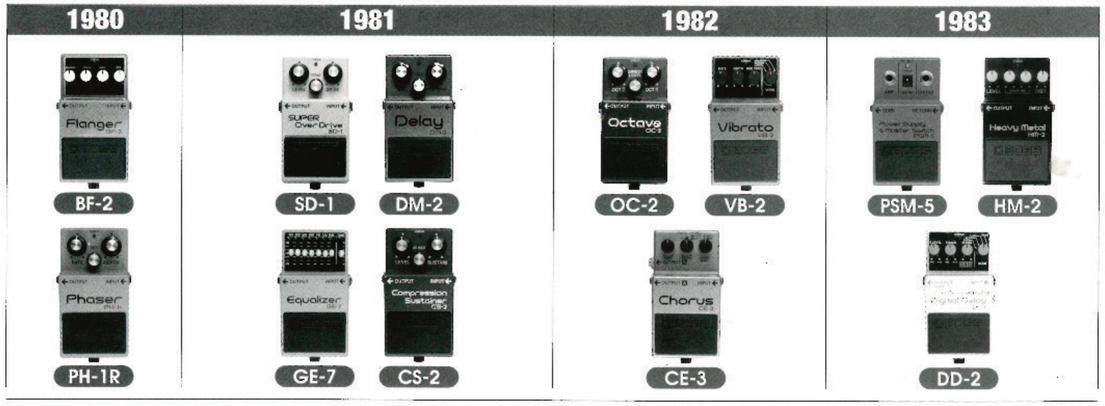
discovered that the chorus effect of the CE-1 provided exactly what was needed. Once this was realized, fusion keyboard players and guitarists were converted, and soon the virtues of the CE-1 were in demand across the rock spectrum... The company was faced with the surprising situation of having stock, which had languished in inventory for 18 months, selling out within a month. As such, the BOSS logo was burned into the minds of musicians all over the world.

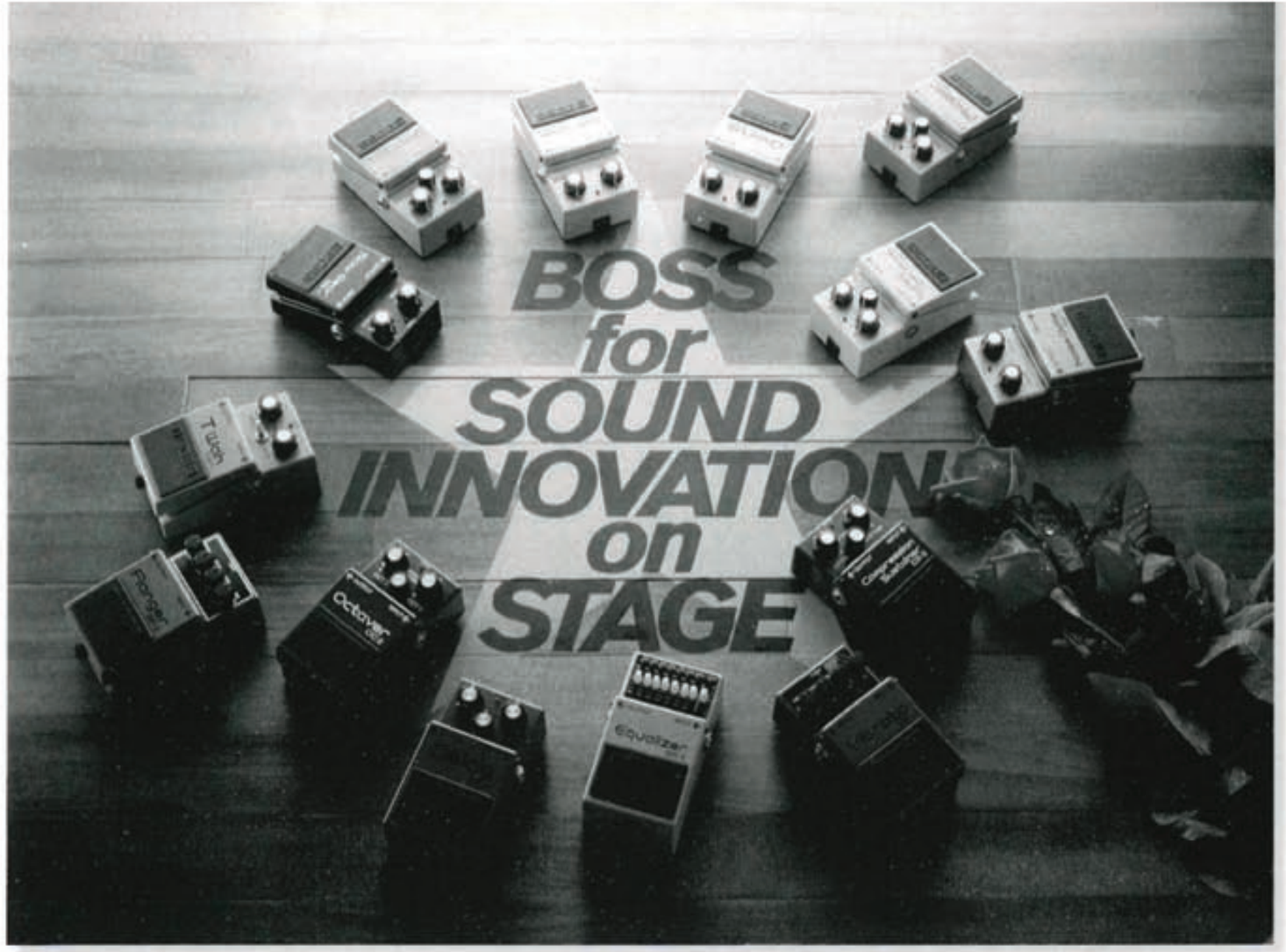
After the CE-1, the next formally released models were the GE-10, a ten-band graphic equalizer and the KM-6 and KM-4 compact mixers. These were well-received by audiophiles who were fussy about sound. These products, including even the CE-1, were developed to appeal to a broad range of users rather than being intended exclusively for guitarists. In these early days, this wider appeal probably played a large role in consolidating confidence in the company as an effect-maker. In a time when effects were not regarded all that seriously, the ability to come out with a line of devices that offered showy effects that appealed to hard-core techies greatly helped to establish the company and get BOSS to be seen as the real thing.

In the following year, the DB-5 BOSS Driver, BF-1 Flanger, and DM-1 Delay Machine were announced. This further fleshed out the range of devices available. At this time, BOSS was still seen as little more than an extension of Roland. Although the name was widely known and associated with high quality, it had essentially inherited the past of Roland, including the designs, and it lacked a distinctive brand image. Later, in November of the same year, with the launch of the Compact Effect Series, the perception of BOSS was to change completely.

BOSS Compact Series scores big by squeezing groundbreaking ideas into the ultimate, universal form

Ushering in a new era, the first Compact Series models to burst onto the effect scene had a profound effect on what was to come later.





▲In this compact series image photo from 1982, the star logo is likely to make some BOSS fans nostalgic for the old days. After this, the copy was changed to "a sound innovator."

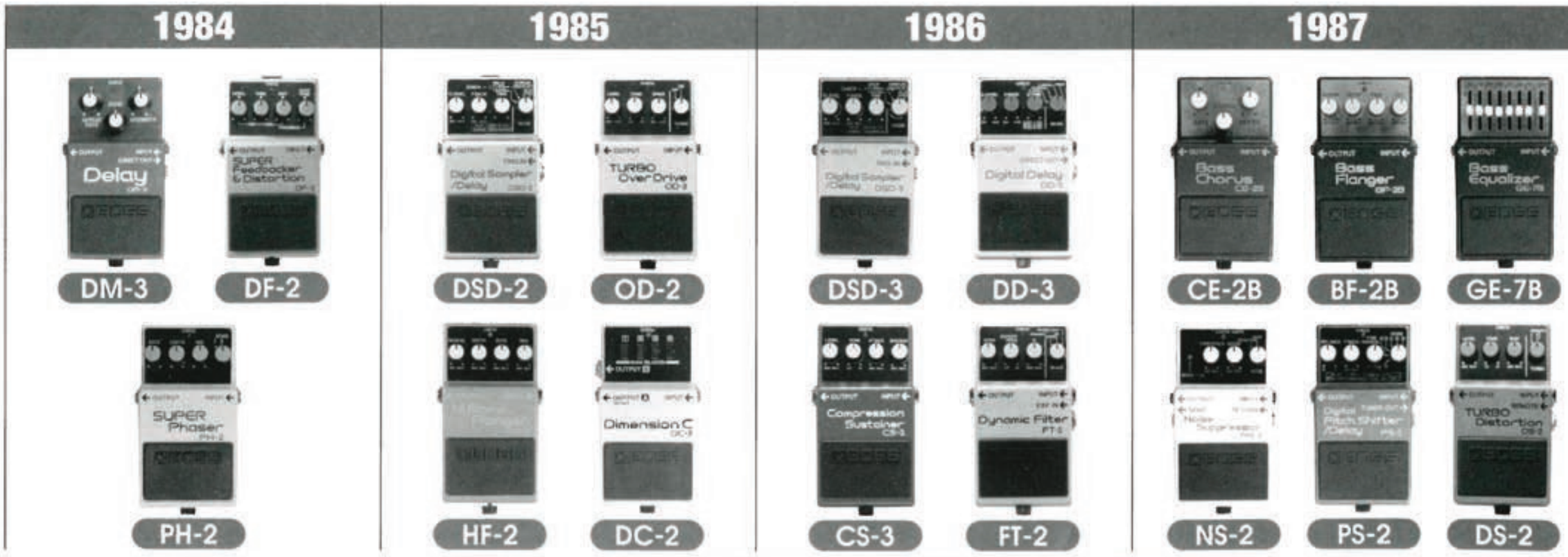
Rather than internal workings, the main sensation was caused more by the exterior, that is, by the design of the box. Of course, the layout of the controls differed according to the type of effect, but the design and size of the aluminum die-cast body defined what could be called the "BOSS standard." From the start, it was decided that different types in the series would come in their own colors. This type of foresight and resolution, absent until now, came to be a decisive factor in giving distinctiveness to the BOSS brand.

One of the most prominent design features was the use of electronic FET switches to reduce on/off-switch noise. Until then, it was normal to use foot-operated contact switches that produced undesirable noise. For example, in many live albums from the 1960s and 1970s you can tell that the solo is about to begin from the noise of the effect being switched on. These recordings now have a certain charm, but noise is noise, and it was once regarded as an inevitable accompaniment to effect use. BOSS relieved guitarists of this unintended consequence by using FET switches. Now, all the player had to do to turn effects on and off was simply place a foot on the non-slip rubber pad. This was a major breakthrough in effect design.

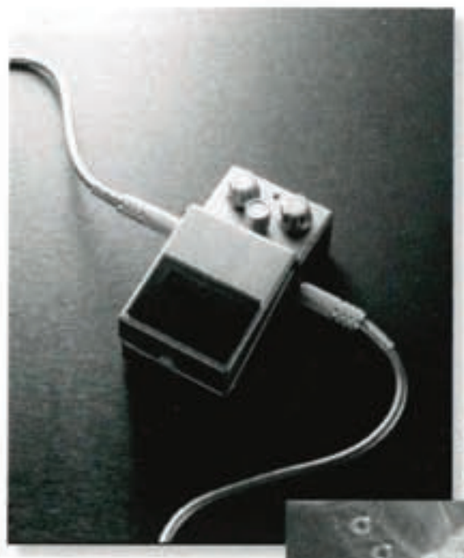
Besides this, battery replacement was made into a no-fuss procedure. In the early days, before the change to the easy-to-use thumbscrew, it could be easily opened with a coin. Users no longer had to use a screwdriver to remove numerous screws when they had to change the batteries. Another thoughtful touch not solely related to sound was the provision for using both batteries and an AC power source. No other maker had considered such excellent real-world features, which were now part of the "BOSS standard."

It goes without saying that this well-received "concentration of ideas" went on to become the standard for compact effects. Except for some inevitable changes to the materials used for certain parts, the design has survived unaltered to the present day. The clarity of foresight to produce, a quarter century ago, the complete and recognized standard in an ultimate, universal design is nothing less than amazing.

After brilliantly coming out with a winning design format, the BOSS technicians did not rest on their laurels. Now that the form of the box was too perfect to change, the challenge was to continue innovating by somehow fitting circuitry and functions into the format.



▶In 1987 the number of BOSS-branded products shipped worldwide broke the five million mark. This ad appeared in the commemorative campaign.



◀▼In addition to resolving the problems that had plagued effects from other makers, the BOSS compact models squeezed stunningly innovative ideas into "universal ultimate form." BOSS design principles have not changed in the 25 years since this fundamental concept was first established.

▲In November 1983, the obvious appeal of the DD-2, the world's first compact digital delay, to pro and amateur guitarists all over the world left other makers reeling.

Getting everything into the case subsequently became the first obstacle to clear in any new design and this alone was a severe challenge in the development process.

"For example, with the DD-2 Digital Delay we decided to try using a custom chip. Width-wise we just managed to fit the chip in and thought, 'Hey, this is going to work!' The DD-2 took the longest of any product to develop. After that, I recall the RV-2 Digital Reverb as being the next most time-consuming. We couldn't fit all the components on a single circuit board. In the end we used a two-layer substrate, but it was tough finding a board maker able to do the job, never mind seeing the negotiations through to the end. The PS-2 Digital Pitch Shifter/Delay was the third greatest challenge. There was this one capacitor that we just couldn't get to fit on the circuit board. In the end we had to leave it floating in a space inside the case and fit the wire to it in a tube. Without considerable ingenuity it would have been impossible to fit the parts into a body with restricted height. In this respect, that model was more than a little over-the-top *(laughs)*."– *Masao Takahashi, BOSS Development Division*

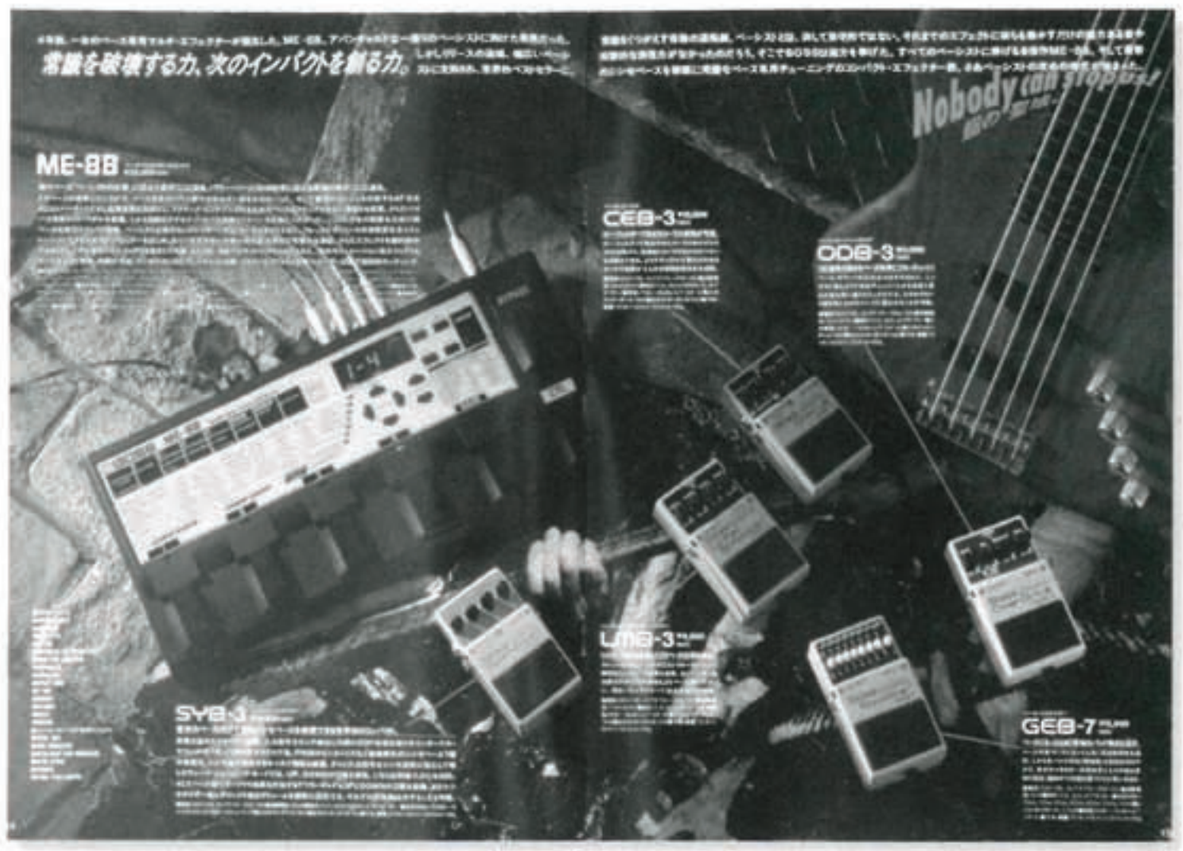
This type of hardship persistently dogged progress. When you talk to the people who were actually involved, however, you can tell that overcoming challenges led to other techniques and new ideas. You get an inkling of the extremely positive and stimulating vibes that they brought to their work. That being said, maybe you can now see why it's such a bad idea to satisfy your curiosity by disassembling the devices. Once you get the device in pieces, you'll have a devil of time getting all the parts back into the case!

Hit products that cleverly meet the needs of the day. Moving on to meet challenges of the new century

So, using the BOSS universal design, the compact effect series kicked off with three original models, the OD-1 Over Drive, PH-1 Phaser, and SP-1 Spectrum. Parametric equalizers were not a familiar item when the SP-1 came out, but this had been a challenge that

1987	1988	1989	1990	1991	1992
LM-2, RV-2, MZ-2	DC-3	CH-1	EH-2, LM-2B, OS-2, PN-2	MT-2, PQ-4, PQ-3B, AW-2, CE-5, LS-2	Multi-effects: Debut of ME Series 3, etc.

◀The 1990s saw the release of a string of new multi-effects, such as the ME-5. These were leading products that offered new convenience.



▲Always the pioneer, BOSS actively developed compact multifunction models and items, especially for the bass.

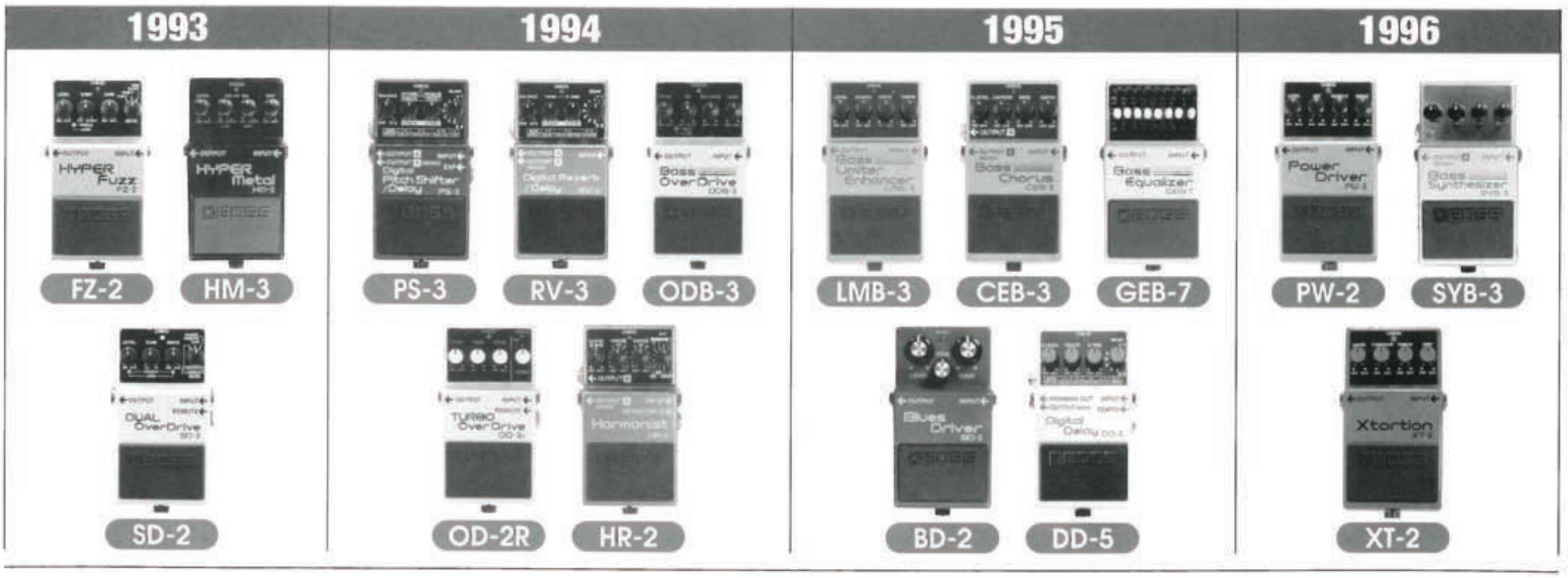
▶As a follow up to the DD-2, the BOSS development team again demonstrated to the world its impressive technical expertise by producing the RV-2 digital reverb.

stimulated the BOSS spirit. Anyway, whichever way you look at it, the OD-1 was, without a doubt, the scene-stealer.

"Fuzz in those days, or such other diode-clip distortion, was not in favor. In fact, the sound you can hear on old records is not that kind of distortion. It's actually natural distortion from the amps. Even though you could get sound from a good amp, our feeling was that it was better, as far as possible, to get that sound from an effect." – *Kubo*

When the product was first released, one of the aims was to get people used to just the idea of fuzz without other distortion. Already, bands such as Steely Dan, the Doobie Brothers, and the Eagles – along with West Coast session guitarists – had created an environment in which "parched" distortion could flourish. Advocacy for natural distortion, seen as neither fuzz nor even distortion, was bound to fall off sooner or later. When the time came for an effect, the OD-1 recorded amazing sales. Incidentally, the term "overdrive sound," which is now widely used, came into common use after the OD-1 came out. This is another good example of how BOSS changed the way the world hears things.

After this, there were other technical breakthroughs such as, with the DD-2, a reduced format for digital delays from the commonly used rack-mount to a compact size. BOSS consistently left users wondering what they would think of next. Just think of the BD-2 Blues Driver, which zeroed in on the blues feeling, or the acoustic sound produced by the AC-2 Acoustic Simulator. Then there was the TR-2 Tremolo, so handy for the sound of surf music, and numerous other displays of imaginative ingenuity. You can't help but notice how the company seemed to have its finger on the pulse of the times and so was able to supply what players wanted. On both of these counts,



◀In 1997 BOSS announced the FZ-3 and TR-2 for lovers of retro, and the AC-2, which was renowned for its fresh ideas.

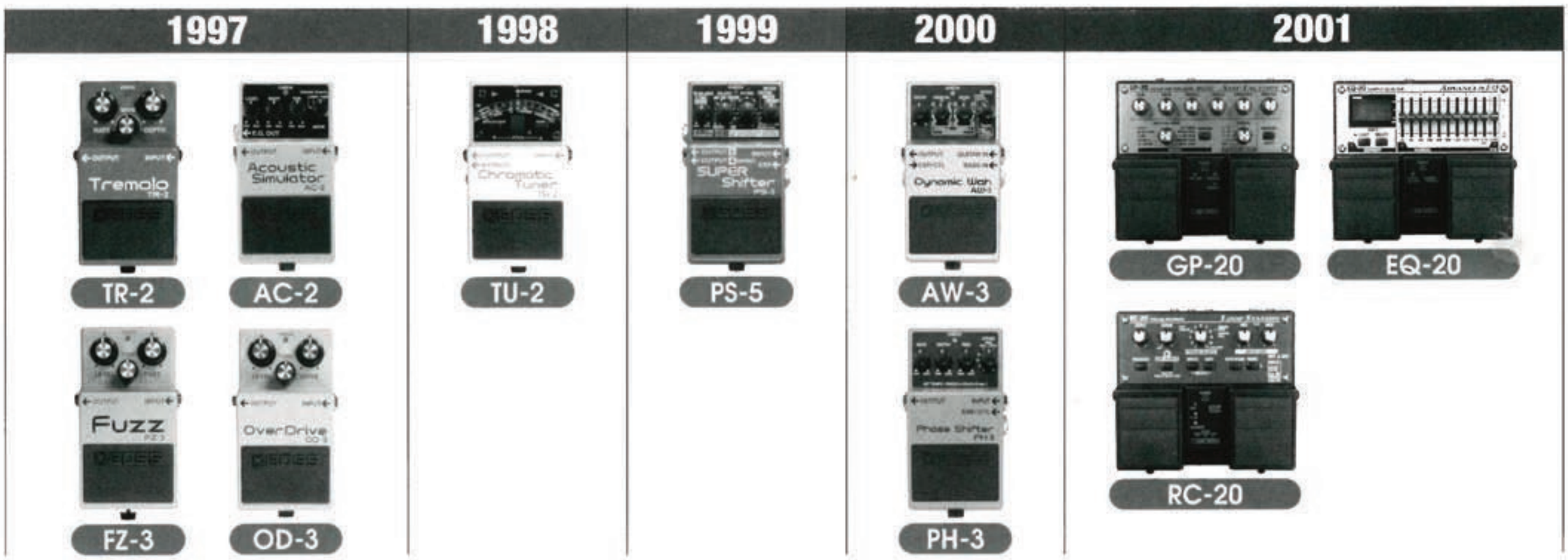
▶The first in a new lineup for the 21st century, the Twin Pedal Series and the multi-effects ME-33, marked a new facet for BOSS.

▲The development team succeeded in coming up with numerous classic effects at the new BOSS headquarters in Hamamatsu City, Shizuoka Prefecture. BOSS moved here from Osaka's Suminoe Ward in 1993.

BOSS defines what effects should and can be, and looking back from 2002, BOSS continues to lead the market after 26 years. To commemorate this continuing leadership, the company started a new series with the introduction of a twin pedal offering over twice the number of usual functions. It achieves the perfect balance between number of functions and compactness. In the 21st century, BOSS is still finding and meeting new challenges. "We design the future" is an undying flame that fires the spirit of the company. This commitment is probably at work at this very moment creating another classic device.

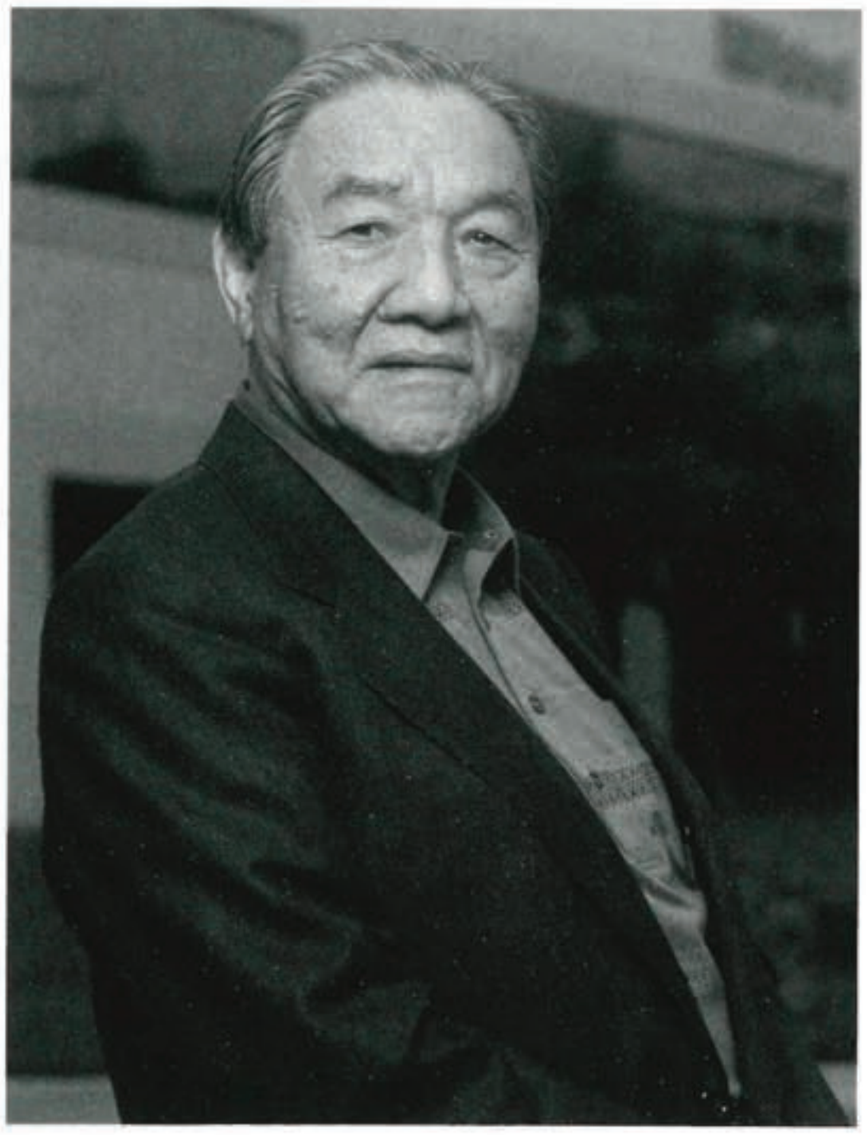
As you know, BOSS products are built to professional specifications. Although the company has never entered into any endorsement agreements, many professional musicians have created their own distinctive sounds using BOSS products, which are all sold through regular channels. In other words, amateurs can get satisfaction from using equipment that is exactly the same as that used by professionals. You enter the pro dimension simply by using BOSS.

BOSS users on the rock scene include the big three: Eric Clapton, Jeff Beck, and Jimmy Page. But there are other users who have made guitar history, such as Michael Schenker, Gary Moore, Eddie Van Halen, Yngwie Malmsteen, Stevie Vai, Paul Gilbert, and a constellation of other stars. You would be hard-pressed to find a guitarist who has not used one of the BOSS effects. In the instrumental field, the BOSS name is now up there with Fender, Gibson, Marshall, and other heavyweights. Put simply, BOSS has set the standard for effects. Alas, we can only wonder what Jimi Hendrix would have said if he had been able to step on an OD-1.



Special Interview

Ikutaro Kakehashi



Founder and Chairman of Roland Special Advisor since 22 June 2001

"The principle behind BOSS compact effects: work within severe constraints to deliver maximum potential to musicians."

interview by Takeshi Mori, Masaki Fukuda
compiled & text by GiGS Editorial Department

BOSS compact effects: part of the scene for a quarter century.
Few people can give a detailed first-hand account of the whole era.
Among them, there's one pioneering developer of electronic musical instruments,
a man who, more than any other,
laid the creative foundation for Roland and BOSS products.
A man still committed to challenging the frontiers
of instrumental sound production and acoustics.
Here, Mr. Kakehashi shares with us some valuable stories
from the days since BOSS was first founded.
These are stories that only he can tell.
We asked him to reveal some of the secrets
behind the development of classic devices,
such as the CE-1 and the OD-1.

PROFILE

Born Osaka, 1930. While carrying out watch repairs and putting together television sets, Ikutaro Kakehashi set up his own electrical shop in Osaka in 1954. While running the shop, he started to try his hand at making organs and electronic musical instruments. Then, in 1960, he started Ace Electronic Corporation, and entered into a joint venture with the Hammond Organ Company of America in 1968. With pioneering products such as Ace Tone brand rhythm machines, amps, and electric organs, Kakehashi contributed greatly to the development of electronic musical instruments. In 1972 he left the company to establish Roland. Driven by his creative urge, Roland has unleashed on the world revolutionary electronic pianos, electronic organs, synthesizers, and even guitar-synthesizers. Similarly, with the BOSS brand, he has been responsible for the radical rethinking of guitar effects.

▲The Ace Tone FM-3 Fuzz Master had both booster and fuzz effects built-in.

◀Ace Tone LH-100 stereo phaser. The stereo out specification included balance control of both stereo channels.

▲The first issue of the Roland general catalog. Pride of place was given to the System 700, the first serious sound synthesizer made in Japan.

Ace Tone - Roland - Boss
The course of effect development in Japan

During the interview we hope to touch on some interesting topics, especially episodes from the early days of the development of BOSS compact effects.

Well, you know, you can't talk about BOSS without mentioning Roland. Customers may think that BOSS is completely separate, but at the beginning, the same brain was behind both ventures. You could say that when BOSS was set up, it was like someone putting on a different hat and coat *(laughs)*, and that this transformed the way the people thought about things. This was how it was when BOSS got off the ground. In fact, in those early days, the same engineers were working behind the scenes in both companies.

So that's really how it was. Before that, if I understand correctly, you had set up Ace Tone, and so had already been involved in developing and selling electronic musical instruments.

Yes, that's right. During the Ace Tone days, the main products were guitar amps, rhythm machines, and single-voice melody instruments. At that time, you know, I was dealing with both Ace Tone and Hammond. I suppose organs accounted for half my effort, with amps and rhythm machines taking up the other half. Although Ace Tone did guitar research, the company didn't manufacture guitars. Looking back, I think that this was probably for the best. Shortly afterwards, guitar makers fell on really difficult times. Ace Tone made it through because it was dealing with rhythm machines, amps, and organs.

In those days, Ace Tone had a popular fuzz pedal effect, didn't it?

That's right. It must have been right before the 1970s.

Looking back, would it be reasonable to say that the Ace Tone Fuzz and the fuzz effect made by Honey – which was on sale at the same time – were the devices that pioneered Japanese effect technology?

Yes, that's true. But in those early days, no one knew what was right or wrong for fuzz. People listened to records and said, "That's the sound I want!" But, really, people had no idea what kind of equipment was used in making the sound. This led to trial and error, with some musicians even causing tears in their speaker cones trying to get a certain sound *(laughs)*. That was how things were then. Then the first fuzz device to be put on sale in Japan was a Gibson model. It had a triangular profile with a slope like this (gesture). Although the Gibson pedal was marketed first, it wasn't much longer before Ace Tone started to make a fuzz pedal. Before fuzz became really popular, however, Gibson stopped production. The fuzz fad didn't really catch on until later. In other words, when the Ace Tone Fuzz started to go on sale, Gibson had already discontinued their product.

So did you base the Ace Tone fuzz pedal on a certain model?

Yes, we used the Gibson. At that time, no products from other manufacturers were being imported. Be that as it may, we didn't know what the optimal amount of distortion was. But then, you know, when we went to the wholesalers, they told us off: "If we try strumming a chord, all your things do is break up the sound." All we could do was say "sorry" and bring the products back *(laughs)*. Fuzz is actually supposed to break up the sound, but then, that's what it was like in those days. Finding the right level of distortion, that was the problem. All-out clipping is one way of doing things, and nowadays there are various kinds of distortion, but back then, well, clipping was all we could use. That's why we had to go ahead with development without an idea of what was right, without knowing what standard we should be aiming at.

So, you didn't, for example, try an approach that involved getting opinions from Japanese artists who tried out prototype products?

No. That didn't happen. The top players of the time were in bands like the Blue Comets, the Spiders, and the Tigers. Compared to what we're used to today, you know, they sounded pristine. None of these top players used fuzz. More often than not, ordinary amateurs would passionately try to copy the popular records of the day. It was these people who told music shops what they wanted. The wholesalers passed these demands on to us, and it was up to us to provide products that met their needs. That was the cycle that we were caught up in. I wonder if it was Hendrix who pulled us out? When he became popular, fuzz suddenly took off.

Fuzz has its roots in the Japanese Shamisen!?

That must have been around 1970. Besides fuzz, were there any other kinds of effect?

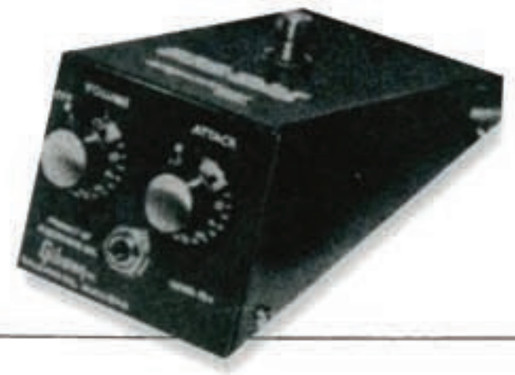
That's a good question, other effects besides fuzz... Let's just say that fuzz is a very flexible term. At the very least, some kind of distortion was applied...

Was there anything like the overdrive of today?

Ah, yes! The first fuzz prototype we came up with was already no good for anything but solos. All you had to do was just strum a chord and the sound would already begin to thicken a little. But even then, some players already wanted to get that kind of nuance from distortion. Despite this, nothing like that came out as an actual product at that time. The demand was still too low. Nearly everyone was after a showy effect that was obvious as soon as the string was struck.

I get the impression that you didn't really approve of breaking up the sound so much. What did you think about the way

◀The Ace Tone QH-100 graphic equalizer provided 8-bands, spanning 63 Hz - 8kHz (adjustable to 12 dB).



◀At the end of the sixties, Ace Tone modeled its first fuzz box on the Gibson Fuzz Tone.

things were going musically?

No, no. It wasn't like that. The first time I heard the sound, I have to admit, yes, I did think it was a bit over-the-top. Then when I heard it in the context of a band it was more like, "So that's it!" I mean, the Marshall produces distortion, doesn't it? Even at around the time of the Beatles, it wasn't really accepted. I mean, to tell it like it is, the sound came from a transformer winding mistake. But to call it a winding error probably sounds a bit rude *(laughs)*. Anyway, mild distortion resulted from the unconventional matching balance that was produced. On the other hand, it resonated with chords being played in a different way than fuzz distortion. So if you want to talk about effects other than fuzz, yes, the music scene had already started, for some reason or other, to acquire a taste for different effects. Then, if you're talking about effects, there's always the Shamisen. You know, the Shamisen is the prototypical fuzz instrument. The strings, first, second, and third, are numbered in the opposite order to those on the guitar, aren't they? On the guitar, the first string is the one with the highest pitch. The Shamisen has only three strings and the one with the lowest pitch is called the first string. This first string is the only one that doesn't ride on the kamigoma, a kind of bridge. This structure is called the "sawari." When you press the first string onto the fret, a distinctive sound is produced, and the melody is played on the other two strings. The first string makes a buzzing sound. Looked at from a broad perspective, this is obviously a fuzz sound. It's this that gives the Shamisen its overall sound character. There are several theories about the roots of three-stringed instruments, but we can say that the Shamisen completed its development in Japan and that the sawari was invented by the Japanese. The comforting effect of the resulting sound was already well known here. That's why I have no problems claiming that the Japanese were the first to come up with fuzz. It's there for you to hear. It's just that no one called it "fuzz." Anyway, that's what I think. Although the sound was an important discovery, I don't think that they went out of their way to invent it. It wasn't a conscious thing, but it was a great creation nonetheless.

I'm surprised to find out that the Shamisen is the original source of fuzz. Wow! That's a very interesting way of looking at things.

It stands to reason. Even with regular instruments, it's not enough just to make beautiful chords. Music is richer when some dissonance is mixed in. You can consciously add distortion to the melody to create a new sound. I guess it was a case of the players originally getting this sound by following their ear. With the electric guitar, the intense sound provided by amplification made the sound perfect for rock music, don't you think? I reckon that amplification was the only way to go for people who wanted to get a heavier sound than the Beatles.

Before, you said that you used the Gibson fuzz pedal as a model for the first effect. What did you think when you first opened it up and saw the circuitry?

I thought that they must have made a mistake with the wiring. One thing was left unwired. Transistors usually have three leads, don't they? But we found a lead that wasn't soldered. That's why I thought there was something wrong.

Well, was it really wrong?

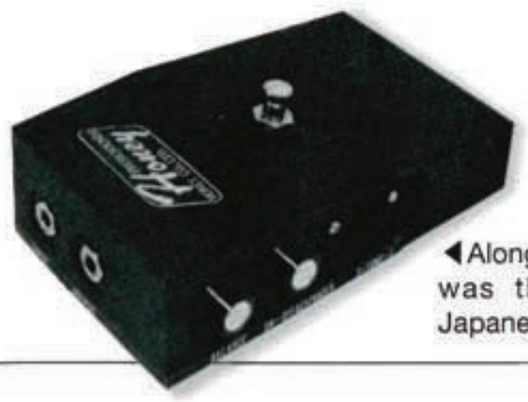
No. It was deliberate. Eventually we saw the reasoning behind it: to cause distortion, the lead was left unattached. Once we properly understood it, the theory enabled us to fully create our own sound.

That was in the Ace Tone period. After that you set up Roland and then continued with the development of effects.

To help explain the way things went in that period, it's probably better for me to sketch out a matrix (Fig. 1). The horizontal axis goes from linear (hardly any change in the original sound) to non-linear (progressive change in sound coloration applied to the original sound). The vertical axis goes from solo – monophonic – to polyphonic. On the matrix, non-linear solo effects are top right (Fig. 1-2). Linear effects do not come from distortion, but fuzz may already be present in this zone. But it's difficult to really call anything in this top left area an effect. No dramatic changes take place here. The equalizer is used to control the tone. The same is true down at the bottom right (Fig. 1-4) in the non-linear polyphonic zone. Then, as you can see, you come into the linear-poly zone at bottom left (Fig. 1-3), which is chorus territory. All you can have here are things like chorus and echo. Looking at it like this, these days everyone is under the spell of chorus and echo, but in those days there was nothing available in the entire polyphonic region (Fig. 1-3 and 4). I thought about the situation using the grid of this matrix and realized that customers were first discovering a need for fuzz. But the matrix gave us clues to anticipate where the next need might be coming from. I could use it to anticipate what kind of products users might be wanting next. We could base our ideas on the matrix and give form to products in advance of actual demand. The next product spawned from the matrix was the space echo (RE Series). It had a long sales run. It was a linear-poly device. It fit right into the bottom left zone. The Octaver was definitely non-linear solo. I mean, the effect would only work with solo playing. Over here, bottom right, is the current Roland GR (guitar synthesizer) and the VG (virtual guitar system). Those types of products are the only way we can cover this zone. But, because we knew the zone was there, we set out to develop the guitar synthesizer 23 years ago. The point I'm trying to make is that ever since Roland started, we have taken our bearings from planning devices like this matrix. In the four or five years from the

FIGURE 1

	Linear	Non-linear
Solo (monophonic)	❶ Equalizer Compressor	❷ Fuzz Overdrive distortion Octaver
Polyphonic	❸ Chorus Delay Echo Phaser, flanger, wah, and sound on sound also belong here.	❹ GR GR Guitar synth VG VG virtual guitar system



◀Along with Ace Tone, Honey was the other pioneering Japanese maker of effects.

▲Making tape echo possible, the RE-201 Space Echo was an early Roland best-seller.

◀The inside of the RE-301, which provided both tape echo and a chorus effect. This shot hints at the company's leading expertise in the analog technology of the time.

Ace Tone period to Roland, American products were out in front. After that, using this matrix, we were able to take the lead.

Roland was hardly set up when effect development started at BOSS

I wonder if you'd mind going back to something you mentioned earlier? What was the first product that Roland developed?

It was a rhythm machine.

And after that, were there effects, as well?

Hmm, yes. They came out at about the same time. Let me see... there was the Roland brand Funny Cat (AG-5) and the Bee Baa (AF-100). They had stainless steel cases. They were the first things that came out under the Roland brand.

Didn't the sustainer (AS-1) come out some time soon after Roland was set up, too?

Yes, that's right. These days we'd call it a compressor. There is a tendency to keep the output level of compressor circuits constantly fixed. That's how we did things with that model.

But the name "sustainer" was easy to understand, wasn't it? I expect that in those days guitarists wouldn't have got it if you had called it a "compressor"...

Well, the name was borrowed from the electronic organ. They had a sustain lever that the player pushed with the knee to stretch the sound. We took the word "sustain" and, to say that sustain is what the device would do, we added 'er' and came up with "sustainer." At the time, for me, it was half in jest *(laughs)*. I also came up with the name Bee Baa. It said what kind of sound would come out, a kind of "bee-baa" feel *(laughs)*.

In that early period, what kind of reaction did you get to the first Roland products? What kind of sensation did they create?

How can I put it... Let's just say it was like trying to persuade a person who has never eaten octopus to try a slice *(laughs)*. It was like... well, if you see someone really enjoying the pleasure of eating it, you might be prepared to give it a try. That's what it was like in those days.

Is that why you lost no time in setting up BOSS?

Not really. You should realize that, at the beginning, BOSS was hardly separate from Roland. When I left Ace Tone to start up Roland, more people than I expected quit Ace Tone and came over to Roland. The feeling was, "We want to do musical instruments." But the company wasn't in a position to rapidly organize a system to do that. I may have said, "Hold on," but since they 'd come over, I had to give them something to do, didn't I ?*(laughs)* That's why MEG Electronics, the predecessor to BOSS, was set up. MEG was short for Music Engineering Group. Then, just before the products were due to be launched with that brand name, someone wondered about the name MEG, which is a common short form of a girl's name in the States. The name was not likely to have much impact in the world of rock and roll *(laughs)*. That's why we changed the name to "BOSS." You know, the first BOSS product was a contact mic. You know the Barcus Berry? The mic was for sticking on an acoustic guitar and a preamp was used for amplification... well, that's what we made. That was the first BOSS. That was just at the time that MEG turned into BOSS. Right through, you know, the development teams of Roland and MEG/BOSS shared the work.

You mean to say that the development staff were much the same?

Yes, that's right. In those days, companies producing echo machines were Binson and Semprini in Italy, and Mirano in Japan. Our answer to their products was the Roland-brand Space Echo. We even considered putting it out under the BOSS name. Just about the only people who wanted to use echo were guitarists, but we were confident that vocalists would succumb to the charms of an exceptionally appealing device. In the end it was sold under the Roland brand. The sticker price of about 100,000 yen was also way out of the BOSS price range, wasn't it?

So, when MEG Electronics was transformed into BOSS, the company was already moving toward being a brand recognized for concentrating exclusively on specialist guitar effects?

Yes. The policy had become to concentrate on the guitar market and go for it. When MEG Electronics was set up, Roland had not yet tried its hand at electronic pianos and organs. It had started out in synthesizers. Now, keyboard players and guitar players are two different species of customer. There is a completely different mood in the two fields. Roland's future was in pianos and organs, and catering to guitarists would probably have caused problems. It would have caused confusion to have the same brand for both, and there would have been a loss of focus in the manufacturing process. With that in mind, right from the beginning, the two fields were completely separated. That's how things were. The first product was the B-100 contact mic and a preamp to use with it. Then the preamp came out on its own. This was it (see photo on page 35).

Really? This is the first time I've ever seen one!

One of these made a set with the pick up. It was lumpy triangular shape, wasn't it? But, as you can see, the logo on the preamp is not the same BOSS logo of today. Even so, there on the box it came in you can see the familiar BOSS logo *(laughs)*. We still hadn't standardized things within the company.

This B-100; about how many were made?

Hmm. I suppose it must have been 2,000 to 3,000 units. I think that's about right. And now, this is all we've got left.

What year was it made in?

It must have been around 1974. It came out just a little before the CE-1 Chorus Ensemble.

Scoop on development of the famed CE-1: Heart is JC amp

Could you provides us some details on the CE-1. Is the circuitry

◀Coming later, the JC amp and CE-1 inherited Roland's original dimensional acoustic theory and chorus effect, but the first implementation was actually in the Revo Sound System, a Leslie Speaker simulator.

really exactly the same as the JC-120 Jazz Chorus amp?

Almost the same. The JC came out first. Then we thought about taking out the chorus section and adapting it in another product that produces effects.

It seems to me that the sound and the types of effect are subtly different depending on which device they come from.

I would say that's because of the types of speakers they're connected to – there's no way to know what the CE-1 might get connected to. The sound quality is ultimately changed depending on the amp and the sound that's put out by the speakers. That's why it's no surprise if the sound is different.

The Chorus Ensemble was an all-out effect. It was the first of its kind in the world, wasn't it?

As an effect unit, yes. But keyboards already had something similar. There was the Freeman keyboard made in Europe. They used a BBD (delay element) on it. At that time, only Philips was making the BBD; no one in Japan was producing it. This meant it wasn't possible to get a chorus effect unless you went through import channels. Then came a time when Matsushita Electric Industrial Co. and Philips got together in a technical partnership, so it was OK to make the BBD in Japan. Even so, at Matsushita they didn't really seem to have any idea about the fields of application for it. They didn't know what it was used for, but they had a license to make it, so they made it. That's how we came to be their first customer. We were held up in the middle of the JC and CE-1 projects until they made it. The BBD is just a tiny IC chip. We had to wait, then, as soon as we got it, we built it in to the circuitry and shipped the products. That's how things were back then.

So what was the initial concept behind the JC chorus circuits?

Back then distortion and things like that were called "fuzz." A succession of people who wanted to use the various types of distorted sound had already appeared. Up to that time, the main way of doing this was to use linear technology, you know, in tube amps like the Fender Twin Reverb. Other amps valued for their distortion capabilities were the Marshall amps. That's why we decided to give the JC a clean, spatial sound. This clean, spatial sound... it was a surprise when the shift came from mono to stereo. But it was only natural that stereo would take over. If you're used to listening to stereo sound, it's hard to understand. But if you just switch to mono, you get an idea of what it's like. You're going to say, "Ergh! What's that sound?" We could see great potential there. That's why we started to make the JC. I think I have to say something here about space mixing: Two speakers need two entirely separate amps for stereo – each amp independently drives one speaker. If you take two speakers and a single amp and connect both the speakers to the amp, even though you have two speakers, the sound will always be monaural. This wasn't the case with the JC. The JC had two amps and each was connected to a separate speaker. That's what we used the BBD for. With it, we could shift the source signal and do a spatial mix of the output sound. When slightly different wavelengths are mingled just so, the sound gets this spatial quality. Space is what you get. Less-wild musical groups were more into the JC than the clean Twin Reverb sound. the JC was particularly favored for FM-style music. Afterwards it became more mainstream. Although still true today, back then, there were players who were out for something fresher than the Twin Reverb sound – they were the ones who found what they wanted in the JC.

The JC wasn't the same size as the CE-1. It must have been technically tough to do that?

It wasn't difficult at all. Once we made the JC with its stereo out, we could take the original source and, using BBD, delay the source sound and output two separate sounds. If each of these output circuits was connected to an independent amp, when each was played through its own speaker, it gave the same effect as the JC. At that time, however, it was terribly expensive to have two power amps. For players who were able to afford two power amps, we thought it would be a good idea to just transplant the heart of the chorus circuitry. We thought we'd give it a try and we came up with the CE-1.

Was there any added value in providing vibrato?

If you applied the effect quite strongly, it sounded like vibrato. But that was not the purpose of the device. Musicians in general, you know, always push equipment in ways that pain the maker to think about *(laughs)*. But then it's, "So that's what they want!" We discover lots of things we didn't think about. It's true, the people who design and make the devices are really surprised with the way the things get used. I don't think that it's so unreasonable to be surprised. I mean, look at what DJs do to vinyl. In our generation, we made only enough to afford maybe one analog LP a month. We would never think of doing that to an album! *(laughs)* It's already gone beyond common sense. Even so, there's been a breakthrough in the way turntables are used. That's why, as far as music is concerned, common sense does not apply.

You had to plug the CE-1 into an AC power socket. Was this because it needed so much electricity?

Yes. We would've had to put the CE-1 into a really large case if we wanted to use battery power. It would've needed a lot of large-size batteries.

I seem to recall that the idea of an AC-powered effect caused something of a sensation at the time.

Right, but there was no other way to do it. The BBD operates stably at higher voltage. I reckoned that it needed 15 V. Using 1.5-volt batteries. With 9-volt batteries, even two of those, the power would soon run down. It was no good if the batteries ran out during a performance. AC was the only way to go. You can see that, to make it work, we had to come to a bold decision. When the CE-1 came out, it cost the same as

◀Cover of the four-page catalog from the time when the CE-1 was released. The double-page spread inside was chock full of photos and illustrations of soon-to-be classic devices that heralded a new era.

◀The famed Roland Jazz Chorus, a Japanese guitar amp that still retains its great reputation, was an early success story.

◀The first guitar synthesizer, the GR-500, seen here with the GS-500 (guitar controller), came out in 1977.

three or four of the usual type of pedals in use at the time.

Was the BBD an especially expensive part in those days?

Yes, it was pricey. The company could get it wholesale for close to $ 20. It was extremely expensive and that helped to drive up the price ($ 260) of the product. We wondered if any potential customers would be able to afford it. We talked about that a lot within the company. "If we take the heart of the JC and put it into the CE-1, what will happen to the sales of the JC?" But at first the CE-1 just didn't sell. We had piles of the things in the stock room for about a year and half. Someone was always saying what a problem it was.

How did sales of the JC go?

The JC kept selling all right. It was the CE-1 that wasn't wanted. The chorus effect was completely new back then. It took a while to get across the basic concept of how to use it. Customers had to understand that, to do a space mix, the original sound and the effect sound had to come separately from the left and right speakers. Then again, not many players had two guitar amps – that's why sales were so sluggish. That changed when a picture appeared in a magazine: there on the floor, beside a shot taken of Herbie Hancock playing keyboard, was a glimpse of a CE-1. That picture was the catalyst that suddenly set sales in motion. America is such a big place, it's hard to find a spark to light the fire. But then, once the fire has caught, it leads to scorching sales. In just a month we unloaded stocks that we'd been stuck with for 18 months. They went, just like that. So the CE-1 brought commercial success and was the first hit product for BOSS. This set the stage for the release of the compact design.

BOSS destiny sealed in November 1977: three compact models announced!

So, now we come to 1977, when BOSS compact effects hit the scene. I'd like you to tell us about the design concept. How did you settle on that form?

There is another manufacturer called "MXR." In those days MXR was really popular with pros. Their pedals, I think, may have been a little smaller than BOSS. In the middle of the pedal was the button for the footswitch, but the case of the MXR was really just an off-the-shelf box that they got from an electrical supplier.

So it wasn't a custom-designed diecast box?

No, it wasn't, at least in those early days. I can't say what happened later on. In the beginning they were making them like I just said. I suppose that gave them a certain kind of character, though. But if you picked one up, you'd notice the weight. That alone gave us a bit of a hint, and we took it from there. As it was, dirt would get in the gap when you pressed the footswitch. To make the switch work smoothly, oil was applied, but dirt would mix with the oil and the switch action would get rough. Then you'd have to stamp down on the switch any number of times before it'd cut in. That kind of toggle switch would eventually stop working properly. This was the cause of an overwhelming number of device breakdowns. On top of that, during a performance, when the switch was pressed, an abrupt electrical noise could be heard. These were all weak points. On the music scene, the issues raised by these product characteristics had already been talked about for a long time. So, at BOSS we were determined to trim down the profile into something more stylish. We decided that that was what users were hoping for. And, we just couldn't put up with all those breakdowns or the mechanical switch noise. Of course, the only solution was to use an electronic switch. Back then, however, there weren't any suitable electronic switches. But around that time, the FET (field effect transistor) had just come out. We could work with that, using it instead of mechanical contacts. The FET let us do without the mechanical switch and the problems it caused. Then we had to give some tactile feedback when the effects were switched on and off, so we made activation dependent on the travel of a sprung mechanism. That's how we were able to design noiseless switching. The first design we went ahead with was the OD-1, which contained our innovative circuitry. But we wanted to keep using the same box for future models so, to get the design right, we ended up spending a lot of money working out all the details of the form. Then because we weren't going to vary the form, all the cases would look the same. So we decided to start making the cases in different colors. Also, at first we were told that the switch had a poor feel since it didn't make a noise upon contact anymore. Well, there are many feet that disagree with that! *(laughs)*"

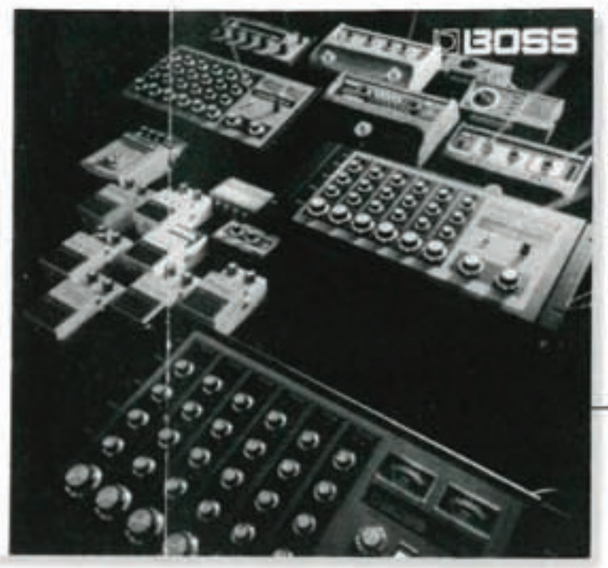
So, they're saying something is missing? *(laughs)*

Right, missing. There's none of the noise that you get with mechanical switches. In practical use, when the effect is switched on there is no electrical noise. That's why it rapidly gained widespread acceptance."

The design also had one-touch battery replacement. I think that was another killer idea.

Credit for that goes to Yamamoto (the former head of BOSS, Kastsumi Yamamoto, now deceased, was largely responsible for the original and subsequent development and sales and compact effects). He came from an organ-playing background and didn't have much to do with guitars. On the other hand, he was someone who would go amazingly deeply into any matter. It was he who made prototypes of the BOSS compact effect. Compared with the effort that used to be required to get the battery cover off, replacement now is quite a bit simpler. That's a good example of the kind of ingenuity and attention to detail that has paid off in accumulated improvement, invention, and discovery. That's why BOSS compact effects have come to achieve the functionality that players enjoy today. And I think it was all because Yamamoto took responsibility and provided leadership.

Anyway, you were telling us product design only went ahead



◀The first overseas edition of the BOSS catalog was issued in November 1978. It featured the KM Series of mixers and seven compact effects.

after the profile and case design were settled.

Absolutely. That's because circuit design had already been worked out. It wasn't that we had no idea of what was going inside the case. Rather, the feeling was, "Let's make sure that the pedal easily fits inside a guitar case." Right from the start of development, every angle was covered in the list of design concepts.

So in November 1977, the first lineup...

There were three units, the OD-1 Over Drive, SP-1 Spectrum, and PH-1 Phaser.

It's easy to understand Over Drive and Phaser, but maybe Spectrum a was bit of a strange name for a product...

The Spectrum is an atmospheric filter, a really different kind of effect. It was intended for producing a flashy, shimmering kind of sound.

So it wasn't distortion like other already developed effects, or a chorus. Does that mean that it was derived from your product development matrix and designed as a new kind of effect?

That's right. We thought something like this: Usually, if someone uses a device to make a sound that gets popular, others are going to want to imitate it. Amateurs are going to say, "I want to get that sound, so I'll get the same equipment." Pros, on the other hand, are more likely to say, "I don't want that sound, I want my own original sound." So to catch the eye of those kinds of pro, it's no good unless you come up with something different. When pros start to use a particular device, its use will spread.

Effects were newcomers to the scene back then. It wasn't at all like these days, was it? Today you can get anything; in those days the choice was limited. On the other hand, it must have felt like anything was possible.

That's a good point. Everything was a world-first *(laughs)*. Some of the devices were bought by lots of people, but we were stuck with others that just didn't sell.

Incidentally, when the first three units came out, there must have been other ideas and candidates that were laid aside.

Not at all. At that time, the kind of circuitry that we could fit into those boxes was limited. Those three units were the right models at the right time. Actually, the Phaser was a real pain. You know, it isn't so easy to get a deeply sculpted sound and then make it move across space. Then, to get batteries into that size of box was a challenge. Once the switch circuits were in place, the only space they would fit into was under the knobs. There were a lot of headaches. It wasn't a time when things were being worked out according to theoretical principles *(laughs)*. No, really, that's what it was like. Theory went out the window. We were more concerned with trying to work out what the next big thing would be. In those days, you know, it was really hard to tell what was going to come next.

What was the reaction to the first lineup?

Very encouraging. At the time there were only MXR, a foreign company, Maxon, a Japanese company, European products, and us. Products imported from England were particularly expensive. At one time, the pound was worth 700 to 800 yen. People who really wanted those products would pay anything to get them, but there was a limit on the numbers that made it into the Japanese market.

I'm going off on a tangent here, but did you buy all the overseas effects to check out the internal circuitry?

"If we had bothered with things like that, it would only have held us up *(laughs)*. Naturally, we were keen to hear various opinions from third parties. We didn't collate the evaluations and then try to plan our next product. We've never done that and still don't do it today. You could say that our history has caught up with us. In Korea, they've been making perfect copies of our units! The shape, the color, the circuitry, they're all identical. The same things seem to have been going on in Taiwan. It took two years to stop the patent and design copyright infringements. Even so, if there are people out there making copies, ours must be the real thing and theirs the imitations. It's a measure of how incredibly far we've come. But there's nothing fun in using that as a measure of our success. The only way that we can prevent fake products is to enforce our patent rights. People who copy haven't incurred all the development costs and they can undercut us on price. We've keenly felt the effects of that.

How did the different case colors get to be chosen?

The main colors were limited to seven. Then pastel shades came out, then metallic... then again, the surface gloss was changed. That kind of thing. There was this finish that looked like gun metal, too. Beige is beige, but the surface can be finished in various different ways. But when you think of yellow, the image of the Over Drive naturally comes to mind. In this regard we have to pay attention to customer expectations; we don't want to confuse them.

The secret of the legendary OD-1, which introduced a new concept of distortion

The OD-1 enjoys a legendary status today, but did it take any ideas from previous devices?

No, there was nothing like it before. The Ace Tone Fuzz and the Bee Baa from the early days of Roland were part of a trend, but this was the first device to provide a kind of standard against which other distortion devices could be measured. There was nothing like that before. This may have been the fate of the Over Drive, but this Over Drive concept, and the name... It was distortion, but it was a bit of a different type of distortion. The usual way to create distortion was to equally cut the sine waves at the top and bottom of the unaltered signals as they entered the effect circuitry. But there's another way to create distortion by asymmetrically trimming the top and bottom of the sine waves. Up until then, equal trimming was used to create fuzz and distortion, but then technology gradually made asymmetrical trimming an option. The OD-1 used this asymmetrical method. At the time, it was the only device to do this.

◀Adorning the cover of the Compact Dictionary of Effects Vol. 1 was an early BOSS image character. Does it remind you of somebody?

◀In October, 2000, in recognition of his long-standing contribution to the world of music, Mr. Kakehashi was immortalized with his set of handprints in Hollywood's Rock Walk.

So this was what was meant by that famous term, "Asymmetrical Over Drive Circuit."

Yes. In the case of vacuum tubes, when the signal goes in, it's not possible to squarely distort the up and down sides of the waves. When the signal goes into a vacuum tube, characteristically, the bias point changes and the pivot point is skewed. This special characteristic of tubes is one of the reasons for tube distortion... it's not the whole story, but it's a factor. Using transistors, it's become technically possible to simulate this kind of distortion. Slowly, slowly we got to understand how we could use transistors to create various types of distortion. Then we could even use filters to change the sound after introducing distortion. When it came to choosing which filters to put in, we decided to put in filters only for the effects that produced an original sound. One of our methods was to mix these again with the original sound. We also applied a little bypass. The company had gained some competence with those techniques. That's why BOSS compact effects, even while using distortion to produce effects, was able to vary the types of distortion. Later, we even came out with the digital metalizer (MZ-2) sound. At the time, there was a general feeling that we had discovered something new and were making break-throughs. It was from that time that we held our own against American companies.

About how many were on the development staff at that time?

At BOSS alone there must have been eight to ten. There were usually one or two people working on each device. They were moving on to the next thing as soon as the last one was finished. Listing names from the earliest period onwards, there were Kubo, Shimada, and Okita. After that, and still leading development there today, came Yamada and Takahashi. But the developers have always relished their work. At BOSS they really got on well and always worked with a great team spirit. I smile when I think of them. Of course, there are enduring connections with Roland. Experts at both companies always share their specialized knowledge and this boosts the power of the team even further.

I'd like to come back to the OD-1 again. It came without a tone control, didn't it? Did you think about adding a tone control during development?

It wasn't so much a case of not thinking about it. Rather, we were focusing on the over drive concept itself. In essence, the nuance of the over drive sound changes according to distortion derived from the strength of picking. Before over drive appeared, fuzz was the common distortion effect. It didn't matter whether the picking was strong or soft – the sound was uniformly effected. Say you wanted to give a sense of level. It didn't matter if you applied distortion to a lower level or a signal with a higher amplitude. In both cases, it was difficult to effectively distort the sound. The good thing about over drive was that it enabled the player to enhance expression according to the type of sound. If we added tone control to that, it would just overlap the tone control function that's already on the amp. If we had put a tone control on the pedal and, for example, you cut the bass, there would be no point in trying to turn it up at the amp. Whatever you did, there would be no way to put back what was no longer there. So we decided that with pedals, the idea is to provide as much material as possible for the amp and leave tone control to the amp. I mean, look what we already had to squeeze in, in terms of circuits and parts into such a compact area. We were always paring down this and paring down that, trying to concentrate things down to the absolute essentials. Surely this is what makes BOSS compact effects so good, don't you think? It's because we work within tight constraints to provide musicians with maximum potential. It was that type of thinking that told us it was better not to provide a tone control.

Even so, after the OD-1, there was a gradual trend to add tone control to more advanced models, such as the SD-1 and the turbo-mode OD-2. I wonder how you felt about this. Did you feel it was really necessary?

That's a good question, but we have to be able to provide extreme effects for players who want them. Even though I don't think it's such a good idea to make changes just because the same model has been out for two years, what can you do when the feeling in the lab is that they want to try something new? On the other hand, you know, there've been some complaints in the market about model changes: "Why are you sending us this new thing just when we've got on top of the old one?" It's not like effects were things that you could find anywhere. I mean, it's great that you can get hold of a Les Paul locally. The same could be true of BOSS pedals. Wouldn't it be great if players everywhere saw them like they see the Les Paul? If only Twin Reverbs were available in rental rehearsal rooms. But then, that's the kind of world we live in. Things have a tendency to settle down to a fixed pattern. If you try and make improvements, people might come back and say, "Hey, this isn't what we're used to." Customers tend to be very sensitive.

So, even if you change a knob...

Absolutely. It doesn't seem to matter what you do to the insides – if you change the shape of a knob, someone's going to complain. That happens, but then there are also, in fact, stale products that keep selling just from market momentum. Those are the models whose momentum is broken the very instant you change them. You can understand how no changes would happen at all if we didn't have the courage to make bold decisions. On top of that, timing is crucial, and this is incredibly hard to judge.

And who has to handle all the work involved when products are launched or discontinued?

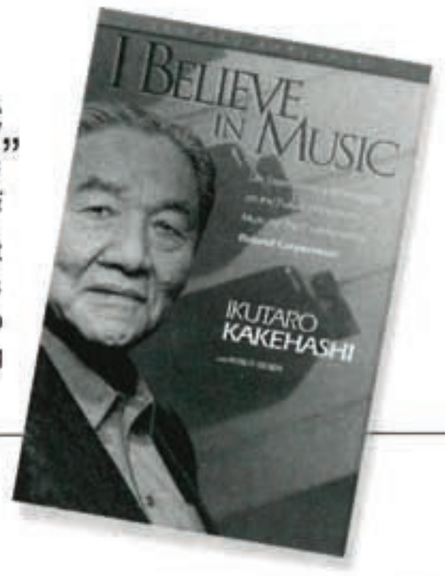
Me *(laughs)*. Recently, though, the main reason for products reaching the end of their run has been because we can no longer get

"I BELIEVE IN MUSIC"

Life Experiences and Thoughts on the Future of Electronic Music

Written by Ikutaro Kakehashi

Mr. Kakehashi adopted a global viewpoint in writing his latest book about the electronic musical instrument field. In addition to little-known facts about the development of famous devices that swept the world, he also highlights the vitality and commitment of people dedicated to creating useful products. (Published by Hal Leonard Corp.)



Ikutaro Kakehashi

the parts to make them. In particular, semiconductor manufacturers have stopped making some of the chips that we used for digital processing. That's another reason why we only tend to use basic transistor types. Special items soon tend to go out of production. These days, specification changes mainly result from changes in the types of parts and materials we can get. Look at the JC amp. It used to have a lever switch. Then the maker decided to stop making the lever switch. We couldn't get it any more. There was nothing we could do but change the switch. On the JC, another problem was that the rivet spacing widened slightly. Spacing that was too close wouldn't look good, and if the spacing was uneven, the wound fibers would unravel. It took several years to find the proper spacing so that the fibers wouldn't unravel.

Twin pedals are worthy inheritors of the innovative BOSS spirit of development

From the second half of the '70s BOSS made a large-scale commitment to compact effects. From around which point in time did you envision it as a company specializing in effects?

Coming into the '80s the prospects were looking quite good. Except, that is, for the extremely cheap copies that had started to appear. The parts may have been different, but the circuit designs were the same. This made them effectively the same as our pedals. You know why they could make them so cheaply? Because the copiers didn't have to pay the development costs.

That seems to be the fate of top runners.

Well, it's no good to passively accept it. I mean, if we had reduced our prices in order to compete with cheap copies, where would we get the cash to pay for the development of future models?

In the mid-1980s you started bringing out multi-effects for rack mounting. At that stage the popularity of compact effects was waning, wasn't it? Was the anxiety ever serious enough to make you wonder about winding down the compact business altogether?

Some people were expressing doubts. But the reality turned out to be completely different. In the end, the player population increased. Some went for multi-effects, but there were others who preferred the compact models. In the end, there was no decline in the numbers sold.

Recently, the trend has reversed and more players are using compact effects again, aren't they?

The downside of the earlier period was that guitar playing was not very forward-looking. The sound recalled the days before the electric guitar. When that happened, players started to want something conspicuously different. With the Beatles, volume was on the rise. The next sound with a different personality came out in the form of heavy metal. While this was happening, the type of pedals that were in demand kept changing. At that point, the "Let's be ready for anything" multi-effect came out. At any rate, there was a demand in a sector of the market for devices that provide compre-hensive coverage while producing only basic versions of each effect. Other players preferred the feel of the compact saying, "That's real compact pedal distortion." They could use the equipment with complete confidence and I think that went some way towards putting them at ease and satisfying their desires. That reassuring feeling came with affection for something with which they were intimately familiar. Rather than the 'Do anything with it' functionality of the multi-effect, the good thing about the compacts is that they provide a reassuring feeling of quality in each effect that the multi-effects don't.

In line with these trends, what kinds of things are you currently considering in your plans for future development?

Well, in the $ 250 to $ 350 price range, a new Twin Pedal Series has been launched. Meanwhile the current price of compact effects is around $100 to $190. On the other hand, if you pay the $ 150 difference, you get more than enough effects to keep you happy for a long time to come. It's the same approach that we used with the CE-1. In the recent line of twin pedals, we've again been able to include the functions of the CE-1. The twin-pedal design has enabled us to incorporate functionality that no one expected to see in a compact format. We didn't shift focus because the compacts are dying; we're confident that there's still an established market for compact effects. Although multi-effects do let you do everything, they're still a little complicated to use. Some users find this a drawback. For them, distortion is distortion and chorus effects are chorus effects. For them we've put together a fully finished and complete package that, while keeping the two sets of effects separate, offers all the functions of both sets. On the other hand, those are the only functions you get. There are many players who prefer things this way. That's the twin pedal for you. We've positioned it as a product between the compact and the multi-effect. That's why, depending on the product, the cost of the corresponding multi or twin is likely to be higher, but it's not so much a case of having neat pricing ranges. We wanted to give exploratory players, who wanted access to any simple function they might need within the total effect range, something comprehensive. If we did this, one knob wouldn't be enough and the pedal size would have to increase. Then we began to see that combination in the twin pedal format promised a much wider potential than with single pedals. Four times wider potential, we reckoned. That's a big leap. And that's the major goal of twin pedals. When the CE-1 came out, it was as a single pedal. But if we were to bring it out today, we would be able to make it an amazing Twin Pedal CE-1.

You could say that the Twin Pedal Series is really the distillation of all the know-how that BOSS has cultivated up to now. But, speaking personally, what kind of music do you like?

I couldn't really say that I particularly favor one kind over another. I listen to just about anything. If pushed for an answer I would say that, recently, I've been listening to a lot of Baroque music.

And, obviously, do you listen to rock?

Let's just say that, this being my business, I have to listen to a lot of rock *(laughs)*."

At last the inside story is out!
In interviews totaling 520 minutes, four key people relate the secret stories behind the entire range of BOSS compact effects.

The inside story of BOSS compact effects

You were never expecting to hear all this! With eyes twinkling, key development staff representing each generation of the BOSS history pour out their stories in such depth that you'll wonder if they aren't saying too much! Get the emotional full story behind 79 BOSS models, told with love, laughter and nostalgia in this wonderful song of praise to the BOSS effects from over the years!

Interviewees

Ikutaro Kakehashi	• *Chairman, Roland Corporation*
Kanji Kubo	• *Quality Assurance Department, Roland Corporation* *Responsible for: OD-1, PH-1, GE-6, DS-1, SG-1, SD-1, CS-2, HM-2, OC-2, PSM-5 and BCB-6*
Yasuyuki Yamada	• *Development Department, BOSS Corporation* *Responsible for: OD-2, PH-2, HF-2, HM-2, and Roland GP-8, etc.*
Masao Takahashi	• *Development Department, BOSS Corporation* *Responsible for: DS-2, NS-2, PS-2, RV-3, PS-3, and LM-2 etc.*
Tetsuya Okada	• *Marketing Manager, BOSS Corporation*
Hiroyuki Iyama	• *Advertising and Promotion Department, Roland Corporation*

Note: Titles are abbreviated in the article.

1977

• PH-1 Phaser

Moderator: The PH-1 Phaser was the first BOSS phase shifter, and it covered a wide 16sec to 100msec range.

Kubo: The rotation followed an elliptical shape, as is characteristic with phasers, but it was compact and didn't have many stages. We used the FET resistance to vary the phase *(Editor's note: regular transistors amplify current, but a FET [Field Effect Transistor] amplifies voltage)*. However, because it rotates the FET phase for the four stages simultaneously, the characteristics of the four FETs have to be well matched in order for the sound to rotate cleanly. So after we made the decision to mass-produce the PH-1, the first step was to sort the FETs into four groups so that we could form sets with matched characteristics. Because of the extra work involved, I think that we began production with the understanding that we would only be able to produce 500 units in the first month.

Moderator: Alongside the OD-1 and SP-1, it formed the first edition of the Compact Series, and with the only controls being rate and depth, it really has the feel of an early model.

1978

• GE-6 Graphic Equalizer

Moderator: When the GE-6 was announced, there was already a popular 6-band equalizer made by MXR on the market.

Kubo: The MXR had a variable range of ±12dB, so we gave the GE-6 ±15dB because we don't like to be beaten *(laughs)*. However, due to the parts available at the time, we were limited to using six frequency bands.

Moderator: For this reason, the GE-6 had six bands like the MXR, but in addition to having a wider range, it also had the BOSS personality stamped on its frequency band.

Kubo: Yes. Normally the center frequency is set at 1kHz, but we boldly decided to set it to 800Hz because 800Hz is the juiciest part of the variable range for Wah. For guitars, sounds with Wah are important, so we chose 800Hz as the center frequency in order to cover the frequency band for variations in this region. This means that we placed a point in the middle range that most changes the timbre for a guitar. We set the other frequencies at octave steps, and this is why the GE-10 can't produce the same kind of sound as the GE-6.

• DS-1 Distortion

Moderator: The DS-1 was the first BOSS distortion unit.

Kubo: There are two types of distortion: the noisy phase-type sound and the thumping bass distortion that sounds as if it passes through an octaver. We couldn't decide on which type we wanted to put in, so we decide to put both in, and this lead to the development of the DS-1 circuit. I think that this is why the DS-1 has been used by such a wide variety of guitarists. Also, distortion systems generally use op-amps for amplification, so the noise output really goes up as you increase the gain, but the circuit we used in the DS-1 is a little special and the noise level is low. I have heard that this is why it's used by so many studio musicians in Japan.

Moderator: The DS-1 is no longer sold in Japan, so now the only way to get your hands on one is to reverse import from abroad, and except for the fact that parts that are no longer available have been replaced by parts with the same characteristics, the circuit is basically the same as the original, and of course the sound is the same as the original as well.

• TW-1 T-Wah (Touch Wah)

Moderator: Up until then the popular choices for Auto (Touch) Wah units that could produce a Wah effect in response to picking strength were the MU-TRON III and MXR Envelope Filter. When the fusion boom occurred in the latter half of the 70s, the TW-1 T-Wah filter-system effect began to attract a lot of attention. It had a unique soft feel that was different again to Pedal Wah, and its popularity has become firmly rooted.

Kubo: Like the CS-1, the TW-1 T-Wah uses photocouplers to vary the timbre, but the sound it produces is quite close to Wah. However, if you put it beside your amp it will pick up hum.

Yamada: The TW-1 had a pure Wah circuit in it, didn't it?

Takahashi: Yes, I'm sure that it did. The moving parts in the pedal were replaced by photocouplers. Almost all Auto-Wah-type products of that time have the feel of what we know today as parametric equalizers.

Kubo: This also applies to the MXR products and almost all Auto Wah products before the TW-1.

1979

• NF-1 Noise Gate

Kubo: We now had seven models from the OD-1 to the TW-1 in our lineup, so we decided to do something a bit different *(laughs)*. These days there are so many effects out there and in use, but the thing is, if you hook up a lot of them, the noise level increases considerably.

Moderator: If you look at the BOSS product naming policy up until then, this product should have been called the NG-1.

Kubo: We thought that because NG could be interpreted as "No Good," it might have an adverse effect on the product image *(laughs)*, so we decided to call it the NF-1, with the "F" standing for "Filter." Because this is not an effect, it's not supposed to change the fundamental tone of the sound, and it seems that the designers had a hard time ensuring that it didn't modify the sound when connected. This type of circuit is difficult, but all the same, they managed to produce a very good one *(laughs)*, and there is no sound degradation even when it's outputting sound normally. Also, because it would have been difficult to get a product that didn't produce any dramatic effect past the company's internal approval committee, we made the presentation to them with distortion connected *(laughs)*.

• CE-2 Chorus

Moderator: The CE-2 followed on from the JC and the CE-1, and I've heard that there was a lot of pressure on the designers when it came to making a compact version because these chorus units were such prominent BOSS products.

Kubo: The Chairman was very particular about our chorus effects, so it was particularly difficult. The peaks of the triangular waveform used to perform the modulation were rounded, and I think that to eliminate this, the circuit designers went through a hard time.

Moderator: When you compare the CE-1 and CE-2, you get the impression that the "thickness" of the mid-range is different, with the CE-2 being "fatter" in the middle region.

Yamada: The CE-1 has lower input im-pedance, and I think that this is influencing it.

Kubo: So the CE-1 is mild, and the highs of the CE-2 feel a little more intense. Also, although sound with a shifted pitch is added to the

fundamental tone, that added sound does not extend to the treble region, and that energy unavoidably leans to the middle region. As a result, it sounds as if the middle region has been boosted. Anyway, this is a characteristic of our analog chorus units.

1980

• PH-1R Phaser

Moderator: The PH-1R Phaser was an improved version of the PH-1, which was announced as a first edition Compact Series model in 1977.

Kubo: We added resonance, or in other words, feedback control.

Takahashi: A lot of Phasers at this time had feedback control, didn't they?

Kubo: I think t. c. electronic put out a phaser with nicely applied feedback. It allowed both a fixed phase effect and an dynamic phase effect, and because of the feedback control it gave quite an intense tremolo-like clattering effect that was really beautiful. The feedback applied in the PH-1 was light for a phaser, and there were requests from users who wanted the kind of sound that I just described, so we decided to add feedback control. There was a considerable increase in circuitry because it required amplifiers at the front and rear ends. The problem was that the designers had to use the feedback to prevent oscillation, and that was a key point during the development.

1981

• SD-1 SUPER Over Drive

Moderator: The SD-1 followed the OD-1 as the second member of the BOSS Over Drive lineup. The distinguishing point of the SD-1 was

CE-1 Chorus Ensemble

Securing BBD supply was a big development bottleneck!

Moderator: In our interview with Mr. Kakehashi (Pages 68 to 76), we learned that the Contact Pickup and its dedicated preamp, the B-100 (photo on Page 35), were the first products produced under the BOSS brand, but the first effect was, as we always thought, the CE-1.

Kubo: BOSS was launched in April of '76, one year after I joined Roland, and at the time we had a prototype of the CE-1. The case was the same as the final production version, and the circuit was the same as the JC chorus circuit. It was to be the world's first chorus effect – and under the new BOSS brand – and I was transferred from my position in charge of synthesizers at Roland to set up the mass production equipment and tools for it. That was where it all started.

Moderator: The JC was released in '75 with the claim of clear sound and a chorus effect, and it's still selling today. The CE-1 was a follow-on type effect and inherited the chorus circuit unchanged from the JC amp.

Kakehashi: The release price was $ 260, or between three and four times the price of the other effects on the market at the time, so there was a lot of discussion in the company as to whether or not it would sell. There was concern that if we sold the 'heart' of the JC, then the JC itself would stop selling. What happened was that the CE-1 didn't sell at first, and for about a year we had a mountain of stock and were really concerned about it *(laughs)*.

Kubo: When you play a guitar connected to the JC you can clearly hear the space effect of the chorus, but with the CE-1 connected in mono to a single amp, the effect is thin. Because of this we were worried about the degree to which the CE-1 would be recognized as an effect. And there's no doubt that the start was not good in terms of early sales.

Moderator: As both of you say, the early sales of the CE-1 caused some concern, but a magazine photo of Herbie Hancock playing with the CE-1 at his feet was to prove to be the point from which it started to attract attention, and went on to gain full citizenship as a new space effect that was different from both phasers and flangers.

Kubo: The fusion guitarists at the time started using two amps to construct a stereo system, and it seemed that finally the inherent chorus effect of the CE-1 had become recognized.

Moderator: The CE-1 splits the input signal into two. One part is the normal sound, and the other is passed through a BBD (a delay element that was also used in the early analog delays). These sounds were mixed to create that spread-out chorus effect. Initially, however, securing a supply of the BBD components was a problem.

Kakehashi: The BBDs were being made by Phillips at the time, and since there were no Japanese manufacturers, we had to rely on imports. Matsushita Electric Industrial formed technical ties with Phillips and started to manufacture the BBDs in Japan, but it's probable that they didn't really understand the field of application that they were being used in, and we were their first customer. It was just a little IC chip, but without it we couldn't make the JC or the CE-1. We would have them half-built on the production line waiting for delivery of the BBDs, and when they came we would finish and ship them out. That was what it was like in those days."

▲The JC-120 was the flagship of the famous Jazz Chorus Series of amps that were the source of development for the CE-1. The original models had lever-type switches, but these became unavailable and were changed to the current button-type switches.

that it had tone controls that the OD-1 lacked.

Kubo: When we first released the OD-1, some felt that the sound was too "sweet" and that the frequency range was insufficient, and this is why we added the tone controls to the SD-1.

Moderator: It's well known that Jeff Beck used to use the OD-1, but I've also heard that he was given an SD-1.

Kubo: Jeff Beck was to appear in concert at the Osaka Prefecture Gymnasium on December 5, 1980, so we gave his crew the PV-1 Rocker Volume and a beta version of the SD-1, which we were still developing (it was called "OD-2" at the time). In terms of circuitry, it was an OD-1 with tone controls added. However, the SD-1 that was given to Jeff Beck was slightly different than the one we finally released to market, and I think that it had a narrow tone adjustment range. We found the OD-1 that had been placed on the stage for that concert, but it was painted black so that you couldn't see the name or model number.

• BF-2 Flanger

Moderator: The BF-2 Flanger has been a flagship flanger for BOSS, and has sold well since its release in 1980. The original color was a bright pink, wasn't it?

Yamada: I've seen it in old magazine advertisements. That pink really was something! *(laughs)*

Kubo: Our overseas affiliates complained that colors like pink and light purple were lingerie colors and were unsuitable, so we quickly changed it. I wonder how many pink ones we sold?

Okada: I think that the only pink ones were the prototypes and those used for the publicity shots.

Kubo: Oh yeah, that's right. That color was called "Baby Pink" *(laughs)*. We had heard from America that because of the experience of the Vietnam War we should not use colors like dark green or moss green that would make people think of the army.

Moderator: So there just may be a few pink BF-2s that made it to

OD-1 Over Drive

A smitten designer's search for

Moderator: The legendary OD-1 had a different flavor from the distortion effects that preceded it. The effect is a natural type of distortion similar to the distortion produced when the volume of a valve (tube) amp is set to full. The world-first over drive sound produced by the revolutionary OD-1 was to change the concept of distortion.

Kubo: The original plan was to make the OD-1 a distortion effect, but eventually it came into being as my preference: an over drive *(laughs)*. Personally I didn't like the fuzz distortion of the time... The sound that you hear from records is not that kind of distortion – it's the sound distorted by the amp. That was why I wanted to produce this sound from an effect.

Moderator: Being the first compact model, you had plenty of time to develop it, but what was the response when you presented the completed prototype?

Kubo: We were told that the effect was too subtle. We persuaded them by saying that this was the "new sound"! *(laughs)* In actual fact, the initial response after the release was not good, because fuzz was the mainstream, and over drive didn't distort much *(laughs)*. We had pro guitarists use the prototype, but they seemed to think that it was no good because the treble dropped off. Eventually, however, that was the distortion that we went with in the final product. All you have to do is change the value of one capacitor and one resistor to slightly alter the sound, but it's really difficult to decide on the final values to use for mass production.

SP-1 Spectrum

Based on an amp just like the CE-1!

Moderator: BOSS freaks still speak with passion about the SP-1 as a "phantom" effect. Although the effect is difficult to guess from the name "Spectrum," simply put, it's a single-band parametric equalizer. It covers a frequency band of 500Hz to 5kHz (set using the spectrum control) and allows you to create a variety of sounds by using the balance control to move the peak where you want it."

Kubo: I wasn't actually involved in the development, so I'm not really sure of the details, but the series before the JC included a guitar amp called the SR-120, and it had a control called "Spectrum" for switching the tone. This was probably thought to be interesting, and a decision was made to make a compact version. The GE-10 preceded it, so it may have been like a compact version of that. The Spectrum control system on the SR-120 switched between fixed filters to vary the tone, but the SP-1 allows continuous variation. Everything, including the f characteristic (frequency characteristic) and the frequency band, can be changed.

Moderator: The idea of extracting a feature from an amp and releasing it in a standalone effect is the same as that behind the CE-1. This was an approach used in the early days of the company. So how was the SP-1 received when it was released?

Kubo: Honestly speaking, not well *(laughs)*. But it was when BOSS had just started, and we were all fired up – we didn't want to copy products from other companies. It was not like we wanted to make innovative products, it was just that we wanted our products to have a high degree of originality.

Moderator: You soon realize if you try it that the SP-1 does not produce any dramatic change in the sound when you switch it on. The impact is not as strong as the distortion effects, phasers or flangers, and that may be why the response from users was less than overwhelming. It was too early to put out an effect that was aimed at the fundamentals of sound creation, but that style has BOSS written all over it.

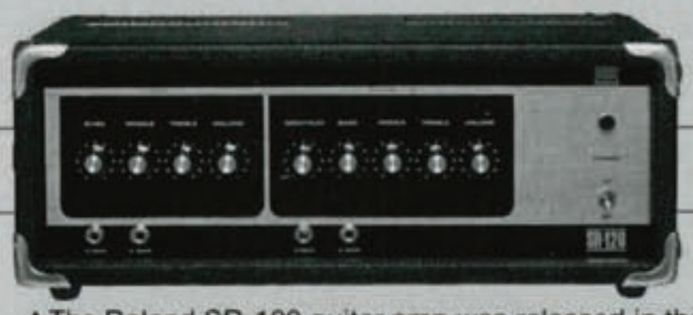
"true distortion"

Everyone you ask has their own opinion, but, ultimately, you have to hold onto the image that you want for the sound during development or you'll never be able to make a decision. In the end, the developer must make this decision by himself. That's why there's so much pressure associated with the decision. The development phase is fun, though *(laughs)*.

Takahashi: When developing distortion effects, I certainly do listen to what other people are saying, but I never implement a suggestion as is. When it comes to distortion, people have likes and dislikes, and the gap between can be very big. There is no right or wrong. So you have a variety of people listen to the sound, and just take note of how different people interpret it.

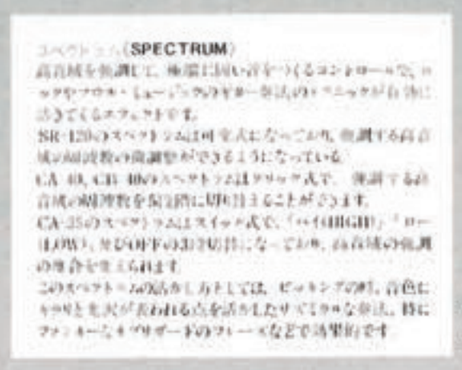
Moderator: A feature of the circuit is the "asymmetric over drive."

Kubo: With gain feedback, normally it's straight through or via a resistor, but with a 9V power supply it always clips at 9V. However, if you pass it through a diode, it doesn't clip, and you get a rounded waveform. That's how you get the over drive sound, but if you make the positive and negative halves of the waveform asymmetric, you can have about half of the positive side distorting and all of the negative side distorting. In other words, by making the distortion asymmetric, the distortion generated from the harmonics increases. Because of this, even with a lot of distortion, the sound is still close to the original sound – you could call it "clean" distortion. A lot of people used it in place of a preamp with Marshall amps and the like.



▲The Roland SR-120 guitar amp was released in the mid 70s. It was equipped with a Spectrum control.

▶Early Roland amps such as the CA-35 guitar amp (featuring a three-stage spectrum with High, Low and Off settings), CA-40 guitar amp and CB-40 bass amp (both with a five-stage switchable spectrum) were also equipped with the same controls.


(SPECTRUM)

◀An explanation of the Spectrum control appeared in the March 1977 edition of the Roland catalog.

My beloved yellow effect

by Manabu Matsuzaka (MATT GUITARS)

As I ambled down the long slope away from the station, the building halfway down – my destination – came into view. It was the end of the line....

I muttered to myself that I had to brace for the negotiations to come. I was here for one reason alone: to get my hands on that yellow box and get a jump on the other guitarists in my class at school. The yellow box was in a league of its own. According to the manufacturer's sales copy, this little monster had a new asymmetric over drive circuit that produced lots of even harmonics. Anyway, blurb aside, with just this little yellow box I could produce the valve-like sound I had hitherto been laboring to construct. This little yellow box was the BOSS Over Drive OD-1.

I climbed the dim and narrow stairs towards the source of strange music emanating from the shop on the second floor. I entered to an unenthusiastic greeting from a sales girl with dyed brown hair. From now on, it was up to my bargaining skills! All of a sudden it was fighting at close quarters.

"Let me try the BOSS Over Drive," I said.

"It sounds great," she replied, but I wondered if she had any idea. Anyway, she took it from the shop window and quickly started to set it up. Up until the OD-1 arrived, the only choices for distortion effects were the harsh fuzz units that used germanium transistors in a Darlington configuration, and the ones that used diodes and op amps ('angry'amplification) to produce what was called 'hard' distortion. These were all far away from the then-fashionable, natural-sounding soft distortion sound (we called it 'soft' in those days, not over drive) produced by over driving a valve amp. Of course, if I could've used a good valve amp at full volume, I wouldn't have had to worry about using an effect, but as a poor middle-school student, an expensive tube amp and a place to play it loud were not options. To be able to produce good distortion at reasonable volume using this effect would be the ultimate in cool – what an uncool thing to say! – and I thought that it was just revolutionary. In fact the BOSS Over Drive effect with its musically soft tone distortion was a big hit around the world.

The gear was soon ready to test, and I started to play a pretty phrase, but quietly so that no one would realize that I couldn't play too well. Straight away the brown-haired girl asked, "Well... do you like it?"

The time had come. "Yeah, it seems really good! What's the price anyway?" I replied, feeling the tension. "It's **** yen." came the answer. As I expected, the first price was the same as the other shops' – now came the battle. "Can you take off 500 Yen?" I shot back. "Well..." she said, then silence, and finally, "OK, but don't say anything to the other shops!" The words I had been waiting for! I calmed myself, and replied "OK, I'll take it at that price." Negotiations had been easier than I expected.

That's the story of how I first got hold of the famous BOSS Over Drive OD-1 more than 20 years ago. By the way, I just broke my promise about keeping the discount a secret, but that strange shop halfway up the hill doesn't exist any more, so I wonder if the statute of limitations is up?

CS-1 Compression Sustainer

Delicate analog design givesrise to a unique flavor

Moderator: Probably the first production model compressor from Japan was the Roland AS-1, although the function of a compressor effect was not well understood at the time, and the name 'Sustainer' was used, meaning that it stretched out the sound. The CS-1 was a follow on to this.

Kubo: The CS-1 used photocouplers like the AS-1.

Takahashi: The input signal illuminates an LED, and a CdS *(Editor's note: photo-electric component that detects variations in light intensity, typically used in camera exposure meters)* varies resistance to control the amp gain. In other words, the signal enters the circuit, lights a lamp, and in response to this, the CdS changes a resistance, so the start of the initial sound is delayed. This is what gives it its characteristic flavor.

Moderator: The compression effect of the CS-1 is certainly different from that of the CS-2 and subsequent models.

Yamada: The CS-2 and later models employed a VCA *(Editor's note: an abbreviation of "Voltage Controlled Amplifier," an amplifier in which the gain is controlled by a DC voltage level, often used in early analog synthesizers)* instead of a photocoupler. Using a solid-state component like a VCA makes the response significantly faster. Also, compared to models from other manufacturers, while the photocoupler part of the CS-1 was fundamentally the same, the rectifier circuit used to light the LED was different.

Takahashi: A carefully designed rectifier circuit and one that's just thrown together without special care produce totally different results in terms of the smoothness of the compression effect.

Moderator: The man on the street with no knowledge of electronics can just say that the CS-1 and CS-2 have a different personality, but if the circuitry is clearly explained like this, you gain an understanding and appreciation as to why they sound different.

the market! If someone has one, it should command a rarity premium.

• DM-2 Delay

Moderator: The DM-2 Delay was the first BOSS compact analog delay.

Kubo: The DM-2 uses a BBD (delay element) just like the CE-1, but the BBD in the CE-1 had only 512 stages. Put simply, there are 512 buckets in the element, and the input signal is sequentially relayed across these buckets. The DM-2 BBD has 4096 stages, so you can make the delay time proportionally longer. However, it really went through the batteries! *(laughs)*

Yamada: To get the maximum delay time of 300msec. we really had to stretch the 4096-stage BBD to the limit, and suppress the "f" response(frequency response). Because of this, its frequency response is quite low. This gives rise to a "mild" flavor, and I think that this led to the analog delay being characterized as having a unique "warm" sound. This was something rather unusual for our development team.

Takahashi: I think that Yngwie Malmsteen is still using the analog DC-10 (made by Roland) for this reason.

• GE-7 Equalizer

Moderator: The GE-7 was an upgraded version of the GE-6 with seven bands and level controls.

Kubo: Slim-type slide potentiometers became available just around that time, and we decided that this would allow us to fit seven of them inside the case.

Takahashi: The GE-6 went up to 3.2kHz, and we added another frequency at 6.4kHz to the GE-7.

Kubo: When you equalize, you can't avoid changing the volume of the original sound. In the case of the GE-10, it's almost always left connected, and is not switched between "Normal" and "Effect" so there's not a large relationship to the volume, but in the case of a compact unit, players tend to switch the equalizer on and off using the pedal. This is why we wanted a total level control. The initial proposal was to have eight bands and no level control, but in the end we decided to go with seven bands and add a total level control.

Moderator: The level control is used to adjust the difference in sound volume when the effect is switched on and off, but it can also be set to full up for power bursts.

▲The Roland DC-10 Analog Echo (now discontinued) being used to produce an SE effect at a live performance by Yngwie Malmsteen.

• CS-2 Compression Sustainer

Moderator: From the name it would appear that the CS-2 is an upgrade of the CS-1, but in fact it uses a completely different circuit.

Kubo: It's a variation of the VCAs (Voltage Controled Amplifiers) used in synthesizers, so the response speed is fast. Because of the fast response speed, the picking attack has a slightly different nuance than that of the CS-1, and it's more of a sudden snap than the relaxed feel of the CS-1. To cover for this, we added an attack control. From this model on, we eliminated the wiring between the potentiometers and the circuit board, and thereby eliminated faults that used to occur in this area. Because compact effects tend to get carried around a lot, components joined by wires are subject to vibration and the connections can sometimes break. Previously this had occurred in a few of our models, but after the change such faults largely disappeared. There are amplifier designers who are opposed to using solder wiring, but in the case of effects this has almost no effect on sound quality.

The CS-1 and the Ultra Guard!

by GiGS Editorial Department

Do you know what "TDF-PO1" stands for? No, it isn't "Tremolo + Feedbacker & Distortion + Pitch Shifter + Octaver." If it rings a bell with you, I bet that we could talk all night about what happened to Spell Starman and the rest. You got it! TDF-PO1 is the designation for the patrol car Pointer that the Ultra Guard of the Terrestrial Defense Force in the TV program "Ultra Seven" use. To those poor souls who have no idea what I'm talking about, I apologize. I'm going to continue with this, so please feel free to skip this part.

If you're with me still, then the phrase "Course gate open!" should also give you a jolt. It was the stock phrase used when the Ultra Hawk took off from the Defense Army base (located at the foot of Mt. Fuji). The voice was provided by a guy called Kazuho Mitsuda who was one of the directors of the series, and if you want further details, I recommend that you watch his explanation included in the Ultra Seven Vol. 2 DVD. Following this, Hawk No. 1 would be jet-propelled out of the catapult and glide off into the wide blue yonder. It was so cool!

As a kid, when the instruments and control switches in the cockpit of the Hawk No. 1 (the Alpha, Beta and Gamma triple-unit formation machines were also excellent!) were shown during the program, I just couldn't tear my eyes off the screen. I loved the switches in particular, and I still remember the round buttons used to launch the missiles. In the amusement parlors around that time (actually game corners on top of department stores) there was a ride called Capsule Capture, and luckily the switches in it were very similar to those in the Hawk, so even without putting a coin in I could supplant my imagination and experience what they felt like to actually press. In contrast, the rows of pin switches in the Defense Army machines were used for engine-starting and standby, and both visually and functionally they were a bit less glamorous. All the same, when the crew switched them on one-by-one and shot off into the sky, it was enough to give me goose bumps.

You may think that I'm being a little out there, but the parts that bring on waves of personal nostalgia for me are the mini switches on the CS-1. Ever since I first touched one at a friend's house when I was a Junior High student, whenever I come across a CS-1, I take delight in clicking the switches on and off. In the process, of course, the effect sound has become ingrained in my ears. At first the sound seems to get sucked in for an instant, and then it stretches out like elastic – I feel that that's the special flavor of the CS-1 – to the extent that it should be called another effect hidden under the name"compressor." Really – it's the only effect that does it.

The only BOSS effects with mini switches were the CS-1 and the TW-1, and both were early models, and I'm really sad that they 've disappeared. So how about it, BOSS? Why don't you revive them for all of us out here with a switch fetish? Either that or change the four button switches on my DC-2 to mini switches.

SG-1 Slow Gear

Development difficulties shadowed this unique product...

Moderator: The SG-1 is a unique effect that mechanically produces the "violin touch" used in guitar volume controls and foot volume controls.

Kubo: This was a tough one *(laughs)*. The NF-1 Noise Gate was completed before it, and we were told to make an effect using the same circuit. The operation is the opposite to that of the NF-1. Normally, the sound from a guitar decays away, but the idea of the SG-1 is to raise this fading sound. To raise the fading part of the original sound, you can only use the attack portion. We tried using sustain to extend the end part and a variety of other tricks, but we just couldn't get it to work well. It was really difficult to make an envelope that created an appealing effect. In contrast, creating the sound for a distortion effect is really enjoyable *(laughs)*. But we battled along and finally arrived at the completed design. Regarding the name, we had already decided to use the word "Slow" but we couldn't decide what word should follow it. In the end, Mr. Kakehashi decided on "Slow Gear" *(laughs)*.

Yamada: It was a revolutionary product; the concept, too. I was a user when the SG-1 came out, and when I heard it I slapped my knee without even thinking! *(laughs)*

Takahashi: On Les Paul guitars, the volume control is positioned a long way away, so it was pretty hard to do "violin touch." There were quite a few Strat users doing it, and it seems that the Les Paul users were pretty impressed.

Kubo: In the case of the NF-1, it was easier because the goal had been decided, but nothing like the SG-1 existed, and it was difficult to imagine what it should do. And the effect is totally dependent on the rise curve – that's what made it hard to decide on the circuit.

Moderator: This ability to experiment and come up with unique effects that other manufacturers don't make is one of the most attractive features of BOSS.

1982

• OC-2 Octave (Octaver)

Kubo: In terms of circuitry there are two methods that can be used to create an sound image that is one octave below the fundamental tone. With the first method you make the original waveform the first wave, then subsequently delete the first wave and set the frequency to one octave lower. The second method is to repeat the original phase, and this is the method that we used in the OC-2.

Yamada: With the method used in the OC-2, the second waveform is repeated, but as the fundamental tone is repeated, all the harmonics and nuances included in it are included as it is in the sound that's one octave lower.

Kubo: The circuits used by other companies attempt to remove the harmonics that are generated at the places where the waveform tapers off using filters, but there are places where they can't entirely remove them.

Takahashi: This is why the OC-2 wave-form is smooth.

Kubo: So the OC-2 produces a nice sound with a small number of filters. This circuit was imitated a lot, but it was not the first time that our competitors copied a BOSS effect! *(laughs)* The original tone and the tones that are one octave and two octaves lower than the original tone can be mixed in the same way as you would with an organ draw bar *(Editor's note: the timbre setting bar used on organs like the Hammond)*, and it's very easy to use.

• VB-2 Vibrato

Kubo: This also uses a BBD (delay element). It's the CE-1 with vibrato added, isn't it? Anyway, that's the effect. In the old days, amps always had reverb and tremolo, and there weren't many effects that could produce that kind of swaying effect... A phaser has a slightly different personality. That's why we made the VB-2. The circuit is designed so that the effect is not applied suddenly as soon as you hit the pedal, but rather, it comes in gradually.

Yamada: There are two modes that you can select from; Latch and Unlatch. In Latch mode, the effect is applied continuously after you switch it on, and in Unlatch mode, it's only applied for the duration that the switch is pressed.

Kubo: When the demo performance for this model was presented, it was announced as an effect that could easily and automatically produce "choking vibrato" *(laughs)*.

Yamada: Even using a tremolo arm it's difficult to produce that beautiful sway! *(laughs)*

• CE-3 Chorus

Moderator: The CE-3 was the third generation BOSS chorus unit, and the first compact type with stereo output.

Kubo: Our models up until then with three knobs had them arranged in a "V" shape, but in the CE-3 they were arranged in a straight line. We could use a straight-line layout because smaller potentiometers than the ones we'd been using had become available. Unfortunately, this new knob layout was not well-received because the LED in the middle was difficult to see when looking down from above *(laughs)*. I think that these were synthesizer knobs and were the same as those first used in the BF-2.

▲The BCB-6 carrying box sold at the same time as the PSM-5. Minor changes were made and it was brought out again as the BCB-6G. This product is now discontinued.

Takahashi: I'm sure that the three knobs were placed in a line as a result of the move to a stereo output.

Kubo: That was it, wasn't it? This was also the first time that metallic coloring was used. The chorus units are flagship BOSS effects, and also it was the first time that we had used stereo jacks, so we decided to spend a little money on the external appearance *(laughs)*. Apart from the mode selection option and the stereo output, it was basically the same as the CE-2.

1983

• PSM-5 Power Supply & Master Switch

Moderator: While it's no problem to connect up one or two effects, if you're using a lot, and running each off its own AC adapter, the wiring becomes messy. This is the reason behind the development of the PSM-5. One unit can provide a stable power supply to up to a maximum of seven 9-volt effects, and it also provides a centralized ON/OFF switch.

Kubo: We made this in order to power the BCB-6 effect set, which is an effect board that can combine six compact effects and also doubles as a carrying case. Up until that time, there was nothing available that could power the effects in parallel, and for this reason we also made a parallel cord at the same time.

Takahashi: I think that it was generally regarded as a power supply, but because it has a send/return attached, it can also be used as an output selector like an A/B box. Either we did not explain that well enough or that type of function was just not very well known at that time.

• HM-2 Heavy Metal

Kubo: Depending on the circuit used, the sound produced by distortion effects is completely different, and with the HM-2 we used a different method to produce distortion from our more conventional models. The intention was to create an effect that could produce the Marshall sound. With conventional circuits, it wasn't possible to reproduce the characteristic Marshall treble tone control. We tried to do this using a single potentiometer but could not get it to feed back well, and the resulting circuit raised the treble.

Yamada: We extensively investigated the Marshall waveform at that time.

Kubo: That's right. In Marshall amps the distortion is full on, but the raw sound is properly included in the sound that comes out of the speaker, and the distortion is also very clean. I don't know why this is, but after trying a lot of circuits we eventually came up with a compact version of the Marshall amp drive stage that was something like a compressed version.

Yamada: When you play in front of a Marshall amp, the acoustic pressure seems to actually be pushing you in the back, and the HM-2 can produce this feel.

1984

• DM-3 Delay

Moderator: The DM-3 was the successor to the DM-2, and with high-speed noise reduction and a special filter circuit, it kept the noise down to a minimum and enabled a clear delay effect to be obtained. This noise had been a drawback with analog delays.

DD-2 Digital Delay

The custom IC that just barely squeezed into a compact case

Moderator: It was generally accepted in the industry that digital delays were rack-mounted devices, so when the revolutionary compact DD-2 appeared, competing manufacturers both in Japan and abroad received quite a severe shock.

Yamada: The Roland SDE-3000 rack-mounted delay was already around, and to build it, they made a dedicated delay chip. I think that this was probably an industry first. We decided to see if we could use the same chip in a compact.

Takahashi: We tried to fit the custom IC in a compact and found to our surprise the it would go in! That's when the project started. If the chip would fit, then we thought that it would probably work out *(laughs)*.

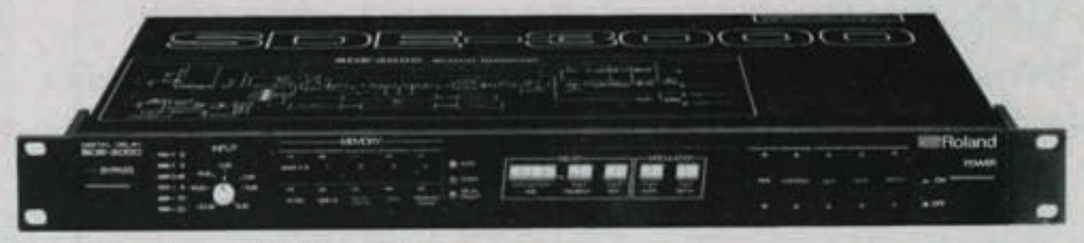
Kubo: If the IC went in lengthwise, the peripheral circuits wouldn't fit, so it went in breadth wise, and we put the other components in front and behind it. It just happened to fit with no room to spare, and after that it was just a matter of physical strength *(laughs)*.

Yamada: When designing circuit boards, the resistors are supposed to face a certain way – usually either lengthwise or breadth wise. However, in this case, these design rules were the least of our problems *(laughs)*. We ignored the theory and placed the resistors at any angle that would enable us to fit all of the components in the fixed case size. It was a big problem, and we decided to enlist the help of some of the younger staff members because they had the strength to withstand the heavy workload. We put them in a small room and told them not to come out until all the parts fit in the case! *(laughs)* That's an exaggeration – but not by much.

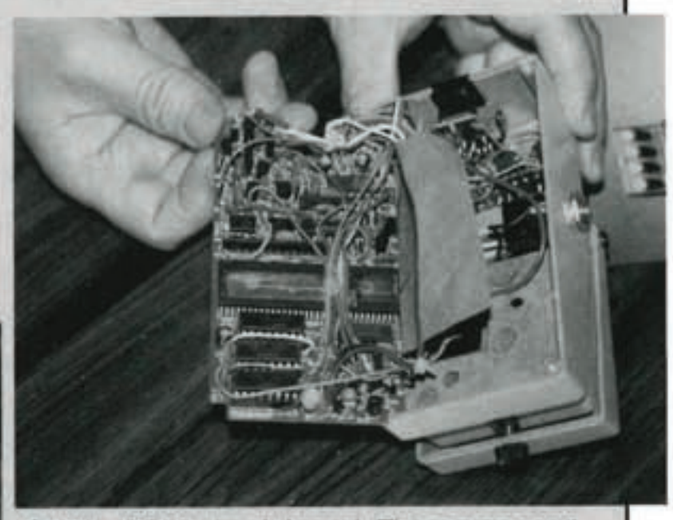
Moderator: When you open the back of the DD-2 case, it's so packed with parts that it looks like a jigsaw puzzle.

Yamada: The delay chip is right in the middle of the circuit board, and the pins that connect the parts to the circuit board substrate are really close together. Any closer and the circuit wouldn't work.

Takahashi: We started the development in '88, and during the period of the development we didn't release any new products. It was as if we just wanted to devote ourselves to the DD-2. The development took a long time.



▲The Roland rack-mounted SDE-3000 Digital Delay. Development of the DD-2 began when it was discovered that the custom IC developed for this model would also fit in a Compact Series case.



◀▲The DD-2 circuit board. The component in the middle is the custom IC. This key component was just small enough to fit breadth wise in the case. The rear of the circuit board (left photo) shows the dense wiring, and illustrates well the unusually high component density in the DD-2.

Takahashi: We changed the BBD to a low-voltage, low-noise type. The prices for the digital DD-2 and analog DM-2 were set at $ 275 and $ 199.50 respectively, so the feeling may have been that the DM-2 was a little expensive. For this reason, we set the price for the DM-3 at $ 189. Apart from this, it was different from the DM-2 in having two outputs.

Okada: Anyway, the DM-2 was popular despite the fact that it was analog.

Iyama: Also, it would also have been difficult from and business perspective to do the digital DD-2 only, and competing on price would have been tough... that's why we released the DM-3.

• DF-2 SUPER Feedbacker & Distortion (SUPER Distortion &Feedbacker)

Yamada: Comments in the user cards returned to us suggested that users wanted a feedback effect, and we decided that we could do this, because all it required was to add an oscillator circuit to the overdrive circuit. We did it on overtime on that same day! *(laughs)* So in terms of development time this is the fastest that we've ever finished a model! *(laughs)* When it comes to feedback, Santana has to be the band. This is what we kept in mind when we made the first overdrive, but in the end the sales side also had their say and we went the distortion way.

Takahashi: The distortion is close to that of the DS-1, but it distorts more than the DS-1. The circuit itself was very difficult. If you keep your foot on the switch the feedback is applied continuously.

Moderator: The original name was "SUPER Distortion & Feedbacker", but DiMarzio had already registered "Super Distortion" so it was changed to "SUPER Feedbacker & Distortion."

• PH-2 SUPER Phaser

Yamada: Do you remember the Bi-Phase? *(Editor's note: The MU-TRON Bi-Phase was a professional unit with two phase circuits.)* It was priced somewhere between $ 1,000 and $ 1,500. I really like that sound, and I also like the sound of phasers like the MXR Phase 100 and those from t. c. electronic. Anyway, the idea behind making the PH-2 was to produce the sound of these high-priced units in a compact model, and

we used a VCA chip that was used in synthesizers. The Bi-Phase used lots of photocouplers, and that's why it was the size that it was, but with VCF we got by with one chip.

Takahashi: This model was made possible by the existence of custom chips like that.

Yamada: Phasers up until then had four-stage phase. This wasn't enough, and we thought that we should have a 12-stage phaser. When you increase the number of phase stages, the depth increases and the filter effect becomes intense. Because of this, the peak frequencies are emphasized and the sound is like a bubble bursting. This aspect was inherited by the PH-3.

1985

• DSD-2 Digital Sampler / Delay

Takahashi: At the time, samplers themselves had not really permeated the market. Although, of course, there were models being used in studios, they were not the kind of thing that the individual musician could easily make use of. If anything, it was probably a little early to produce a sampler targeted at guitarists! *(laughs)*

Moderator: This effect really showed its stuff with reggae and house dub mixing, but there is certainly a question as to whether guitarists could ever master it.

Takahashi: The sampling time was short, and you couldn't do a great deal with it... Yes, it was definitely too soon! *(laughs)* However, we had been experimenting with samplers themselves for quite some time before that. At BOSS we were involved even before the Roland S series samplers. In the end, we released the DSD-2, thinking that if it was compact it would work, but I remember that it didn't sell very well *(laughs)*.

Moderator: From where we sit now, I think that it's an interesting effect, and it's one of those unique models that I would like to see high on the re-release list.

• OD-2 Over Drive

Yamada: I made this one. I was a fan of the OD-1 even before I joined the company, and as the OD-2 was to follow it, we decided to make it a low-noise model using discrete circuit components *(Editor's note: individual transistors rather than integrated circuits)*. We also decided that it should be able to produce the OD-1 sound as well, so we added a mode switch. I spent about three months creating the sound. The whole time, I locked myself away in a soundproof room fiddling with the circuit and circuit constants. When I finished it, I took it along to Kubo, who was the father of the first generation OD-1 and asked him what he thought *(laughs)*.

Kubo: I was no longer in BOSS at the time, so I well remember him bringing it to me.

Yamada: I remember it well! You told me that I better make the tone effect a little stronger. I replied, "Yes, indeed *(laughs)*." In the early stage of development we made it with the mode selection labels called "Turbo I/II," but we decided that ON/OFF better carried the impact of the turbo power increase. We changed it to ON/OFF in the prototype.

• HF-2 Hi Band Flanger

Moderator: The HF-2 was a second-stage model that followed the BF-2. As you would imagine from the light purple coloring, its specialty was a more refined, 'mild' flanging effect.

Yamada: It has the characteristic elastic effect application, and that's due to the Comb Filter operation by which the delay time length determines the frequencies that the filter will be applied to. By adjusting this, we made it so that the HF-2 effect would come out in the center of the treble region.

Takahashi: The BF-2 flanging was powerful, but the opinion was that it was too powerful and that it was strident. The reason that we made the HF-2 was to create a more refined flanger.

Yamada: The BBD in the BF-2 had 1024 stages, but to create the effect we were after with the HF-2, it was necessary to reduce this. We also thought that this would lead to cost savings, but the supply of 1024-stage BBDs was so great that, in the end, we were not able to reduce our costs.

1986

• DSD-3 Digital Sampler / Delay

Moderator: The DSD-3 Digital Sampler/ Delay replaced the DSD-2. In terms of functions and construction it was identical to the DSD-2, and the delay time is 50msec to 800msec. The sampling function had two modes to select from: REC PLAY and PLAY ONLY. It's equipped with a Trigger In, so it's possible to produce a synchronized delay that's synchronized with the rhythm. The DSD-3 was released 16 months after the DSD-2, and the key point with the product was that it was considerably cheaper.

Takahashi: There was a sudden drop in semiconductor prices just around that time, and we were able to achieve considerable cost savings.

• DD-3 Digital Delay

Moderator: As was the case with the DSD-2 and DSD-3, the DD-3 was a lower cost version of the DD-2 with identical functions.

Kubo: At the time, the price of D-RAM was dropping each month.

Takahashi: We had already dropped the price of the DD-2 , and then the price of D-RAM fell again. When we were discussing further price cuts for the DD-2, we decided that it didn't look good to be continually dropping the price of a model. This is why we changed the model name to DD-3.

Moderator: The label on the output jack was changed, but otherwise it's identical to the DD-2, and it's still part of the lineup today. In other words, ignoring the name change, the DD-2 has been in production since 1983, and this is testimony to the high-level of refinement that the product had at the time of its release.

• CS-3 Compression Sustainer

Yamada: The reason for the appearance of the CS-3 was that the VCA that we were using in the CS-2 went out of production. We wanted the CS-3 to have fundamentally the same personality as the CS-2, but as you would expect, is turned out to be somewhat different.

Takahashi: There were also some things that we intentionally changed. The CS-2 had quite a harsh, irritating sound didn't it, although it was a bit better than the CS-1 in that respect. Anyway, the intention was to remove as much as possible the annoying nature of the tone, and to create a more natural attack feel.

Moderator: Isn't it tough on designers to have to use another component when the one that they've been using up until then becomes unavailable?

Kubo: Yes, it can be. On the other hand, the new VCA had better performance, and because of this we could make the compression range wider. However, because the circuit is different, the personality

DC-2 Dimension C

A "super" personality effect with a highly distinctive appearance

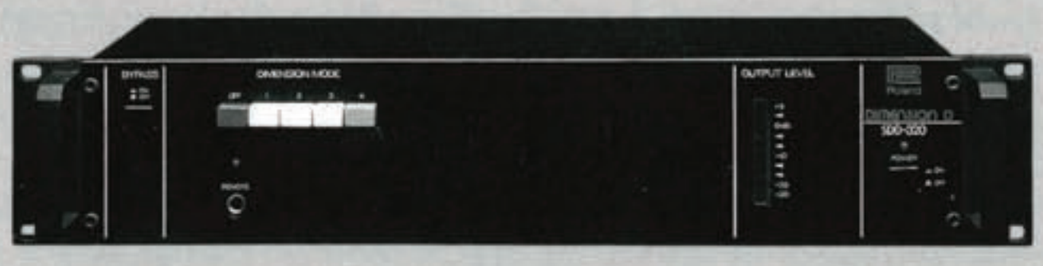
Moderator: Even though the BOSS Compact Series models are known for having a lot of personality, the appearance of the DC-2 is still remarkably conspicuous. There are no knobs, and the only things on the control panel are four long and slender buttons. In other words, all it has is four preset patterns that you access using these four buttons – very pure. The source of this unit was the SDD-320, first released by Roland in '79, and an indispensable item in studios for professionals.

Yamada: The rack Dimension was well-received, so we decided to do a compact version. We managed to fit BBD chorus circuits for two independent channels into this little space. It was the first two-layer chorus. We did it in analog, and it involves applying reverse phase modulation with a high-frequency and a low-frequency clock together. Putting a two-layer chorus like this into a 2U rack is no problem, but in a small case such as that of a compact, the clocks interfere with each other, and if they approach each other you get this high-pitched sound like a mouse squealing. To suppress this, we included noise reduction.

Moderator: With the rack model you could press two or three of the buttons together (an undocumented and unintended "feature" of the rack Dimension that increased the number of variations by allowing effects to be overlaid), but this isn't possible with the compact.

Yamada: That was something that the users discovered. It even says in the DC-2 manual not to press more than one button at a time or you'll damage the unit! *(laughs)*

Moderator: It's like the four-input Marshall link. No one knows who started it, but there was an unintended method of operation hidden in the SDD-320 that even the manufacturer didn't know about. The DC-2 has a wonderful pedigree and it inherited this mania-like following, helped, no doubt, by the presence it generates with its own distinctive appearance. It's a little sad that the DC-2 with its refined "floating" ambient sound has been discontinued, but the respect that it receives from effect connoisseurs remains undiminished.



▲The Roland rack-type SDD-320 DIMENSION D. The ability to create more effects by pressing combinations of buttons simultaneously was an unintended feature.

A dimension of authority!

by Masaki Fukuda

It's their dedication to what should be called "space" effects... When I take a close look at manufacturers like Roland and BOSS I feel that there's something really strong there. While distortion effects like the famous OD-1 Over Drive have already become symbolic world standards, you can keep going back even further. What about the Roland RE Series Space Echo, a tape echo; the chorus ensemble function in the legendary and incomparable JC-120 Jazz Chorus, and its reappearance in the BOSS debut effect follow-on model, the CE-1 Chorus Ensemble; then the BOSS Compact Series that has given us modulation-based effects and pitch-changing effects? It's difficult to drag your eyes from their efforts to develop effects that expand musical possibilities. This is personality – the identity of a manufacturer.

The SDD-320 Dimension D, or just "Dimension," is another effect that has had a major influence and simply cannot be ignored. It's a 2U-size rack model, but on the front panel there's just an ON/OFF switch and four mode-switching buttons. While the operation selections are very limited, it's different again from the innovative CE-1, and because its fundamental characteristic is its extreme sound transparency, its simplicity was embraced by users. It truly embodies a rare quality.

The effect was inherited from the DC-2 Dimension C from the compact lineup, and the essence of the effect is that the swing of the pitch (in terms of steps) is lower than that of a usual chorus effect. In other words, it has an ambient spread without the feeling of tonal variation in the sound and undulation that modulation systems tend to have. This is known as "Dimension Chorus," and in the eighties it brought a new freshness that had a deluxe feel to it.

In particular, recording studios at the time thought that it was extremely useful. Because it was a rack unit, it's unlikely that many individuals owned one, but it proved to be an indispensable weapon for studios because of its ability to engender the fusion-like clarity that was dominant in studios at the time, and, for example, because it could give a stereo feel to electronic pianos, clarity to guitar parts, and expansive arpeggios.

It was also possible to operate two of the four mode-switching buttons at one time – some people would even press three and four together, although this does not work with the DC-2 compact model. For example, with the Strat, even if you put the pickup selector switch in the rear pickup + center pickup position, it was as if you generated a halftone that was not simply an addition of the two. This ability to use combinations of the four modes to create different sounds was one of its features, and it's amusing to hear that the developers had not intended this. In this age of technological control, it's difficult to imagine such a thing happening, but the Dimension produced an effect that the designers didn't intentionally plan, and I believe that this is representative of the good things in the analog age!

also changes, so when components are updated, you must also put out a new effect or you won't keep up with the times.

• FT-2 Dynamic Filter

Yamada: Do you recall the GP-8 Multi Effect? This was Roland's first rack-mount Multi Effect, and was developed at BOSS. We made a wah for this, but instead of using a band-pass filter as is normally the case with a wah, we used a low-pass filter to move the peaks. This produced quite a different feel, and the FT-2 was our attempt to reproduce this in a compact model. Ultimately, however, it was not well-received, and this model was a bit of a disappointment *(sighs)*.

Takahashi: It certainly didn't sell, did it! *(laughs)* The bass region output was different than the TW-1. The FT-2 had thumping bass output, and the tone itself was fatter than the TW-1.

Yamada: It was just the wah-like metal-drum feel of the thing... that was perhaps felt to be a little out of place. All the same, this was also the first model to come with an expression pedal jack, and models with expression pedal jacks began appearing after this.

Iyama: Perhaps the reason that it didn't sell was the name. It might have been difficult to understand the effect from the name "Dynamic Filter" *(laughs)*.

1987

• CE-2B Bass Chorus
• BF-2B Bass Flanger
• GE-7B Bass Equalizer

Takahashi: At the time, bassists used to use guitar effects like graphic equalizers and chorus effects. However, the sound of these models had basically been created with guitar characteristics in mind, and when they were used with a bass guitar, the chorus effect, for example, had too much effect down in the bass region. The fundamentals of the bass were lost, and the sound had no body. There was considerable clamoring for dedicated bass effects, so we made dedicated bass versions of our graphic equalizer, chorus, and flanger effects that were most commonly used by bassists.

Moderator: Apart from setting the frequency band to suit bass guitars, they used the same circuits as the guitar effects.

Takahashi: So the development itself was very quick.

Moderator: Up until this time, the effects were colored according to their effect: the overdrive units were yellow, the chorus units were blue, and the phasers were green. However, with this bass series the same color was used for all three effects.

Takahashi: We put quite a bit of thought into what coloring to use, and eventually decided to go with a slightly deluxe image because the units were specially designed for bassists. The problem was that, lined up in the shop they all looked the same, and the feedback on this point was not so good.

Kubo: It looked like the same model just lined up, so the shops would refuse to stock them all *(laughs)*.

• LM-2 Limiter

Moderator: The effect of a limiter effect is to compress only the peaks of the input signal and prevent distortion due to input overload without losing the basic tone of the guitar. As a system it's close to a compressor, but the effect is slightly different.

Takahashi: This effect is often used by bass players, but because it can also be used with guitars, rather than make it part of the bass series, we released it with the claim that it could be used with both guitars and basses. Ultimately, however, it did not become popular with guitarists *(laughs)*.

Kubo: This is why we later re-released it as the LM-2B for basses.

Takahashi: Unlike an effect that changes the tone, a good limiter should change the original tone as little as possible. I don't think that the guitarists at the time could accept this.

• RV-2 Digital Reverb

Moderator: The RV-2 was the world's first compact digital reverb, and was packed with BOSS's signature advanced technology.

Yamada: This used a first-generation DSP (Digital Signal Processor). A DSP is a chip that processes digital signals, and we developed our own to build the RV-2. This was a technological leap for us."

Takahashi: It was originally developed as a reverb for the MICRO RACK series, and at that time, there were not many other companies that made their own custom ICs.

Yamada: But we couldn't use batteries, so it didn't do as well as the DD-2 delay. *(Editor's note: it was sold with an AC adapter, so the packaging for the RV-2 was larger than that for the compact models)*

Takahashi: Inside it had the same two-story circuit board layout as the PS-2. There were a lot of components, and since we were going to use an AC adapter anyway, there was a debate about whether or not to put components in the space where the batteries would normally have gone. In the end, of course, this idea was discarded and we went with the two-story circuit board layout.

• NS-2 Noise Suppressor

Takahashi: Around this time we started to move towards making new versions of older models such as the CS-3. This led to the decision that it was about time to upgrade the NF-1, and we began design work on the NF-2. At the time, rack-type noise reduction units were starting to appear, and I think that we were conscious of the HUSH as a competitor. The challenge was to cut just the noise, while even further reducing the effect on the original timbre of the sound. This is quite a restrained model, but it took a long time to develop.

Moderator: Not only was the name changed from "Noise Gate" to "Noise Suppressor," but the effect method is different as well.

Takahashi: The NF-1 is a noise gate, so when it cuts noise, it does it abruptly. The NS-2, on the other hand, smoothly squeezes the noise off rather than sharply switching it on and off, and for this reason, it reduces the noise in a more natural-sounding way. Also, rather than sharply cutting off a guitar's trailing notes, it eliminates just the noise and leaves the sound. Its performance is held in high regard, and among the compact models that I've been responsible for, I am highly satisfied with the result.

• DS-2 TURBO Distortion

Moderator: The DS-2 is a twin turbo distortion effect equipped with two kinds of turbo mode.

Takahashi: The OD-2 sold really well, and we decided to make the DS-2 in response to calls for us to produce an upgraded version of our distortion unit like we did with the OD-2. The Turbo I mode sound is similar to the DS-1 system, not exactly the same, but we were quite conscious of it. Turbo II mode was to give a high-gain 'fat' sound that the DS-1 couldn't do, but at the same time, we didn't want a heavy metal sound like the HM-2. This proved to be quite difficult. At the time there was a lot more pressure in being responsible for the distortion and overdrive models than the other models.

Moderator: I also heard that the original name was not "TURBO Distortion," either.

Takahashi: The original name was "Red Zone" and the concept for the product itself was different. The prototype case was metallic red with the "Red Zone" logo on it, and although within the company everyone thought it was great, the final word was that it had a "Communist bloc" image, and it was rejected. It was too bad really, because it looked really cool. The black type on red made an excellent contrast to the MZ-2, and we had thought that when the two were released together, the opposite coloring would give good mutual contrast.

• MZ-2 Digital Metalizer

Moderator: The MZ-2 is a state-of-the-art device that adds doubling and chorus digital delay circuits to distortion to allow users to create multifaceted sounds almost like a multi-effect.

Takahashi: We used a two-story circuit board layout with the RV-2 and realized that even with this size, it's possible to fit a lot of components in. Around that time, there were a lot of guitarists who were applying a short delay to distortion to give it a fat sound, so we decided to see if we could combine these two effects into one unit. I think that the DS-2 provided the basis for the distortion component. That gave a feeling that more slightly lent towards metal.

Moderator: From this time on, the units were shipped with either alkaline or manganese batteries, depending on the model."

Yamada: The MZ-2 draws between 50mA and 60mA, and we started shipping alkaline batteries with models that draw more than 30mA.

Takahashi: The MZ-2 was initially shipped with manganese batteries, but these would only provide about 15 minutes of continuous use! *(laughs)* That's why we switched to alkaline batteries.

1988

• DC-3 Digital Space-D (Digital Dimension)

Moderator: The DC-3 is a high-grade digital version of its analog predecessor the DC-2, and allows users to obtain a clearer dimensional effect.

Yamada: It uses the chip from the Digital Chorus. At first we were intending to use the same push-button control as the DC-2, but in the end we went with a setup that can be changed according to preference. So, for example, the sound could be changed so that it's closer to a chorus.

Moderator: In 1987 nine models were announced, including those for bass use, but in 1988 there was just the DC-3.

Yamada: The situation was that we had to come up with lots of multi-effects.

Takahashi: The GP-8 had really sold well, so we thought that multi-effects were really going to take off. We made the ME-5, but it was really tough to develop.

Yamada: After that we released the BE-5.

Iyama: That was when we shifted development to multi-effects, wasn't it?

Takahashi: Yes, we just didn't have the resources to make compacts around that time.

PS-2 Digital Pitch Shifter / Delay

A circuit that resembles a futuristic metropolis in miniature

Moderator: The PS-2 was released in '87 as part of the digital lineup that started with the DD-2. Fitting a pitch shifter and delay into a compact effect case was certainly an exploit worthy of BOSS.

Takahashi: Initially we planned to make a pitch shifter for the MICRO RACK Series, and we developed a dedicated pitch shifter IC for it. But at the time we also had the DD-2, so we naturally assumed that we would be able to make a pitch shifter in a compact version. It was the same situation that occurred with the RV-2 – the components wouldn't fit onto one board, so we used two boards with a double-deck construction, and just managed to squeeze everything in *(laughs)*. Also, the DD-2 has a little headroom above the circuit board, but with the PS-2 we used every bit of space available. Getting it to fit in the space was harder than designing the circuitry. No matter how carefully we arranged the components, we couldn't seem to fit them all in *(laughs)*. In the end there was just this one capacitor that there was just no room for on the board, so we insulated the legs and left it floating in space above the board. I remember that it was a battle right to the end *(laughs)*. Because we had already made the DD-2, we absolutely had to have a reverb and pitch shifter in the compact format as well – that was the feeling in the air anyway.

Moderator: If you actually open the case of the PS-2 (something very few people would do since there was no need to open it when changing batteries) you would see just how little space there is left. Since the two circuit boards are just packed with components, you wouldn't fail to be impressed even if you didn't know much about electronics.

Yamada: We didn't want to be overtaken by our competitors, so it was imperative for us to release a compact version of the product.

Moderator: This is no doubt due to pride among the BOSS staff over their position as leaders of the compact effect market.

▶ Shown from left to right are the circuits for the DD-2, PS-2 and RV-2. Notice that the PS-2 and RV-2 have double-deck circuit boards. The limited space created problems for the designers and the component density is nothing short of amazing!

1989

• CH-1 SUPER Chorus

Moderator: And in the following year, 1989, the CH-1 was the only compact effect released.

Takahashi: Unlike now, a lot of the development work had to be done by hand. It was also the time when we started work on many different projects such as the 1U rack wireless and the graphic equalizer.

Kubo: The CH-1 had a tone control didn't it?

Takahashi: The CH-1 couldn't produce highs, and when the new generation digital chorus equipment began to appear, there were many calls for us to make a chorus with a frequency characteristic that extended to a good high. This was technically feasible for us, so we decided to make a chorus that extended to the treble region, but by doing this we lost the conventional 'warm' chorus sound, and that's why we added the tone control. By doing this you could produce both the sweet old-style chorus, and a slightly gaudy sharp sound.

Kubo: Perhaps the reason for the "-1" in the model number instead of "-2" is that we made this when I returned to development after a five-year absence, and maybe someone forgot to write "-2" on the product plan! *(laughs)*

1990

• EH-2 Enhancer

Moderator: The EH-2 is used a lot for recordings by professional musicians. By adding treble harmonic components to sounds buried in an ensemble, you obtain the ability to more clearly hear them without changing their volume. This effect is similar to the Exciter *(Editor's note: Exciter is a registered trademark of Effects Inc.)*.

Takahashi: It's close to an equalizer, but you can apply a filter effect that's not possible with an equalizer, and you can moderate the extent of the effect by varying your picking strength. It's quite a subdued effect, though...

Yamada: The word from outside of Japan was that it was a "mystery pedal," and some even said that it was a bypass pedal! *(laughs)*

Takahashi: It's no good if you apply it to the extent that you can clearly hear it. The right level is where you can just notice when it's switched off.

Iyama: These models with subdued effects also have subdued sales *(laughs)*. The color was pretty subdued as well.

Takahashi: Yes, the color was classy wasn't it? I think that it was well-matched to the effect *(laughs)*.

• LM-2B Bass Limiter

Moderator: The LM-2B was a professional-spec model that used a version of the LM-2 circuit that was refined for bass use. It also included an enhancer.

Takahashi: We built the LM-2 because we wanted to offer a limiter to guitarists, but it didn't sell at all. We realized then that limiters are for bassists! *(laughs)*

Kubo: We had a lot of requests for a limiter from bass players around then. That's why we made it. When you put on the limiter, the sound goes a little quiet, so we added the enhancer to compensate and bring the sound up.

Iyama: When you use it with a bass the effect is easy to hear.

Takahashi: Yes, it is. This was a really good product.

Iyama: The LM-2B sold pretty well as a bass effect.

Takahashi: We sure did the right thing converting our limiters for bass use! *(laughs)*

Okada: I think that it sold more than anything else.

Iyama: Yes, among our bass effects, anyway.

• OS-2 Over Drive / Distortion

Takahashi: The OS-2 was based on the Over Drive/Distortion circuit in the BE-5 Multi.

Moderator: I think that the main point here is the fact that instead of switching between the distortion effects using a switch, you use a potentiometer to continuously vary from overdrive to distortion and back."

Kubo: If you include independent overdrive and distortion controls they overlap. The idea here was to use one balance potentiometer to mix the two types of distortion.

Takahashi: Originally we had included a switch to toggle between overdrive and distortion, but at the time it was cheaper to use a potentiometer. We decided to give it a try, and came to the conclusion that it would work. That's how the OS-2 came about.

Yamada: Phase shift between two circuits can lead to problems like mutual cancellation and it required a considerable amount of our technical know-how to prevent this.

• PN-2 Tremolo / Pan

Yamada: Actually, a long time ago I made my own panning effect for a friend, and I still had some of the circuit diagrams. However, I don't remember why we decided to make one at BOSS.

Takahashi: There were requests for an effect that produced tremolo – that may have been the reason.

Kubo: "But at the time we couldn't have produced a product with just tremolo alone – it's just not interesting enough *(laughs)*. That's why we added panning and 2 in / 2 out jacks.

Moderator: As a compact-type tremolo effect this model led the pack. Maybe it's just the fate of models like this, but it wasn't for a while after it was released that the unique tremolo effect was appreciated.

Iyama: It was quite early for a tremolo, wasn't it?

Kubo: Yes, it was. Tremolo came into fashion after this.

Takahashi: The coloring was classy... maybe this adversely affected the initial reception *(laughs)*.

1991

• PQ-4 Parametric Equalizer

Moderator: With a graphic equalizer, the frequency range is divided into a number of bands, and you can boost and cut each band to change the tone of the sound. In the case of a parametric equalizer, you can freely select a frequency band and also set where you want to move the peak to. This gives you finer control over the character of the sound.

Takahashi: It was a very orthodox parametric equalizer design. We already had a graphic equalizer, and we made this thinking that it would be good to have a parametric equalizer in the lineup as well. However, there was a feeling that a parametric equalizer would be a little too difficult for guitarists, and it didn't really hit the spot in terms of sales either *(laughs)*.

Iyama: The operating method that we advocated was to insert it before the distortion stage as a pre EQ, but it was not as well received

as the graphic equalizer. Perhaps it was just too hard to understand how to use it.

Takahashi: But when you do learn how to use it, I think that it's actually easier to use than a graphic equalizer in terms of creating the sound that you want.

• PQ-3B Bass Parametric Equalizer

Moderator: The PQ-3B is a parametric equalizer for bass guitars, and the frequency band is set from 25Hz to 16kHz. A dual-shaft controller makes it possible to set the level/frequency for the low, middle and high bands.

Takahashi: I think that the circuit in the PQ-B3 is just the same as the guitar model circuit with the frequencies altered for bass guitar use. This didn't sell as well as the bass version graphic equalizer either.

Yamada: That graphic equalizer barrier was really hard to cross*(laughs)*.

• AW-2 Auto Wah

Takahashi: This was our reconsideration of the FT-2 *(laughs)*. We wanted to produce an Auto Wah that produced a Wah-like sound. The circuit is also completely different from that of the FT-2.

Moderator: A feature of the AW-2 is that, in addition to the regular Auto Wah effect, it has a Modulation function that periodically shifts the sound. With this great variety of functions, there were some who thought that it was difficult to set up.

Takahashi: It's probably true that the settings required fine adjustment. If it wasn't set up correctly, you couldn't get good sound out of it.

Yamada: Adjusting the envelope of an Auto Wah is difficult. If you try to make the filter operate smoothly, the response slows down. To get a "wah" sound when you strike the strings, the filter must be lowered. If you don't do this, it stays stuck in the high frequencies when you pick continuously. Therefore, the filter has to be set so that after each pick it returns to the bottom before going up. This adjustment is really hard to do.

• CE-5 Chorus Ensemble

Moderator: The CE-5 is really a refinement of the BOSS Chorus Ensemble series that began with the CE-1, and, of course, it used stereo out as well.

Takahashi: Stereo output is really the point with a chorus effect. Also, for a compact type using a BBD, the equalization width of the CE-5 was big.

Iyama: The filter can give a sweet chorus-like feel to the sound.

Takahashi: That's because we made the variable range of the filter a little wider.

Iyama: The ability to produce a low-fi character like the CE-1 was also a selling point for the CE-5. The CE-1 also has tone controls, so it can also do that kind of sound to a certain extent, but the sound is slightly different.

Takahashi: That's because the tone effect is different than the CE-1's.

Moderator: The fact that the majestic name "Chorus Ensemble" was revived for a model that followed the CE-1 also indicates the confidence in the refinement of the product.

Kubo: Although we always called the CE-1 a chorus, this made us conscious again that the CE-1 was actually a Chorus Ensemble.

• LS-2 Line Selector

Iyama: The LS-2 has more jacks than any other model in the BOSS compact lineup. There are a total of six.

Moderator: All of the jacks have a shield attached – it kind of looks like a crab, and there certainly is a visual impact.

Iyama: And the part with the different colored knobs attached is the body *(laughs)*. From a functional perspective, the really excellent thing is that you can use these knobs to adjust the volume of the A and B loops. This is extremely convenient. Also, when you think about the compact models that pros use, the first thing that springs to mind is distortion effects, but in fact the LS-2 was probably also one of our top models. It can supply power, and the pedal-switching mode provides a

MT-2 Metal Zone

Don't be deceived by the specific nature of the name!

Moderator: Of all the effects in the luminous and varied BOSS lineup, the MT-2 has the highest gain and can produce the most intense distortion effect.

Takahashi: The measured value of the gain is also the highest. But I think that when the HM-3 was around, it had perhaps slightly higher gain. If anything, the distortion type is more mechanical than natural, and it's popular because it's well-matched to the general user's needs.

Kubo: It has seven filters, and this is a lot more than our other models. There are a variety of filters at each stage to enable a variety of sounds to be created.

Moderator: The MT-2 was the first effect to use two pots. One is for the tone control and the other is a middle-range parametric-type control used to change the frequency band. The midrange has the greatest influence on the sound made by a guitar, and by using a parametric equalizer it's possible to get a range of sound variation. In terms of total sales, the MT-2 is at the very top.

Yamada: We didn't expect it to sell as well as this *(laughs)*. I think that the sound-creation ability that we put in at the very end completely changed the sales results *(laughs)*.

Takahashi: Using two pots made it more expensive than our other effects, and that's why we honestly didn't think that sales would be as good as they are.

Okada: It has sold equally well in Japan and abroad. The sound really is the thing.

Iyama: Initially we were a little concerned that the name "Metal Zone" would limit sales to a certain type of user.

Moderator: To be sure, from the name it does sound like it's exclusively for the metal genre, but with tone control for three bands it's a flexible performer suitable for any genre.

Iyama: If you raise the mid band right up and throttle down the distortion you get the nice feel of an Over Drive, and if you open the distortion right up, it's great for Slash Metal.

variety of selection branches to choose from – these are characteristic features of the LS-2. One interesting thing that it has is the A + B mix mode. For example, you can plug a distortion effect like the MT-2 into Loop A and put a lightly-applied enhancer and chorus into Loop B, and use the A + B mix mode to get a strange distortion sound that lets the chord sound linger very nicely.

1992

Moderator: 1992 saw the expansion of the multi-effect ME Series – ME-6, ME-10 and ME-5B – and the development of the half-rack size MICRO RACK PRO. No new compact models were released.

1993

• FZ-2 Hyper Fuzz

Moderator: Fuzz effects were the dominant distortion-type effects through the 60s and 70s, but in the 80s a more natural type of distortion became the fashion, and fuzz effects were relegated to the position of representing the analog effects of the past. In the 90s, however, fuzz effects went through a revival, and the extreme distortion that fuzz effects produced started to sound fresh again. As a result, Japanese and foreign manufacturers began releasing models one after the other.

Yamada: Broadly speaking, there are two types of fuzz.

Kubo: It's like there were two approaches, isn't it? The made-in-Japan fuzz used by the people at GS (Group Sounds) and the foreign fuzz effects.

Yamada: Yeah, and from that perspective, the FZ-2 sound was typical of the fuzz units made in Japan. There was a reaction to it because the sound has a slightly different personality than the units from abroad. Overseas, the sound of units like the Fuzz Face had made a strong impression, and that was what people imagined fuzz to be.

Takahashi: We gave the FZ-2 a totally retro look. It has a booster that you access by switching modes. In the past there were more that a few models with a booster that simply increased the gain.

Yamada: If you're talking about boosters and fuzz then the "Bee Baa" really sums it up doesn't it? *(laughs)*

• HM-3 Hyper Metal

Okada: I think that we came up with the form of the HM-3 in response to requests from our overseas affiliate. This is often the case with models that have words like "Super" and "Hyper" in the name.

Takahashi: Basically we refined the tone of the HM-2. I'm pretty sure that the gain is also higher that the HM-2.

Yamada: In March of '91 we released the MT-2, and sales took off like wildfire. Don't you think that the popularity of the HM-2 dropped off a little due to this?

Takahashi: That's why we put out the HM-3 to carry on the product, but in terms of the sound-generation, the heavy metal scene was a little – well...

Yamada: The quality of the distortion was rough, wasn't it?

Takahashi: Yeah, rough – totally different to the detailed distortion of the MT-2. I think that maybe the HM-3 lost out simply because of the name "Hyper Metal."

Iyama: It's like "Metal Zone" is OK, but "Hyper Metal" is no good *(laughs)*.

• SD-2 Dual Over Drive

Moderator: The SD-2 has two over drive systems – crunch and lead – split over a dual-shaft pot. Because you can control them independently, you can get variations similar to a dual-channel amp by connecting a foot switch to the remote terminal.

Takahashi: This was very well-received. The OS-2 could do both over drive and distortion, but you could only use one at a time, and people were asking us to do something about this. That's why we made the SD-2 – so that the backing and lead could be used completely independently of each other.

Iyama: The SD-2 distortion is well-matched to the Stratocaster.

Takahashi: The crunch channel is more natural than the OD-1. If you turn down the guitar volume, the sound becomes clean. The mid range of the lead channel had more emphasis than the DS-1. By this I mean that in terms of strength it was between the MT-2 and the DS-1. This contrast between the crunch and the lead was well-liked.

1994

• PS-3 Digital Pitch Shifter / Delay

Moderator: The PS-3 uses a 24-bit DSP, and so all the functions of its predecessor, the PS-2, were greatly upgraded. The quality approached that of a rack-type model for pro use.

Takahashi: The circuit design of the PS-2 was now out of date, and we wanted to improve the S/N ratio a bit *(Editor's note: the S/N, or signal-to-noise, ratio is a measure of how much noise there is in the output signal – the larger the value, the smaller the amount of noise)*. We started the refining process by designing a new DSP chip, and that's why the performance is so much better. This went on to become a hit product.

Moderator: In addition to a pitch shift variation width of two octaves up and down compared to one for the PS-2, it also included other surprising functions for a compact effect such as two-voice independent pitch shift and reverse playback.

• RV-3 Digital Reverb / Delay

Takahashi: The RV-3 is also a refinement model. It was done at the same time as the PS-3 and uses the same DSP chip. The only real difference from the PS-3 is the program – the insides are almost identical. Around this time, the prices of some of custom chips and A/D and D/A converters were starting to gradually decline, and parts that we had only been able to use in fairly expensive rack-type models could be used in our compact effects. Because of this, the quality of the compact effects really jumped. In terms of sound quality and functions, the RV-3 was in a different league than the RV-2.

Moderator: The RV-2 was the predecessor to the RV-3, and used a double-deck circuit board arrangement that was just packed with components. The RV-3, on the other hand, had more functions but needed just the one circuit board.

Takahashi: You don't need as many components because almost all of the functions can be put on the custom DSP chip. The RV-2 didn't sell very well, but the RV-3 went through the roof *(laughs)*. It was seen as a low-cost digital reverb, and it seems that a lot of people used it hooked up to a mixer...

• ODB-3 Bass Over Drive

Moderator: The ODB-3 was the first BOSS over drive for bass use. It employs a special circuit to match the over drive to the bass frequency range, so you don't get that thin sound you get when you

use a guitar over drive effect with a bass. You get a fat over drive effect while retaining the inherent sound of the bass. Another feature is the continuously variable balance control that allows you to mix the dry and effect.

Takahashi: Up until the LM-2B, the case color for our bass models was brown. But if we made everything brown, it would not be possible to distinguish them in the shop, so from the ODB-3 we started using a different color for each compact bass model. Also, for the bass series, we started silkscreening four yellow lines on the case to represent the strings on a bass guitar. This is the sort of thing that bassists were asking us to do. They couldn't understand why the bass models were so plain when our guitar models were so colorful *(laughs)*.

• OD-2R TURBO Over Drive

Moderator: When the Turbo mode is off, the OD-2 produces the same sound as the OD-1, and when you switch the Turbo mode on, a different circuit operates and you get intense distortion. The OD-R is an updated version of the OD-2 and has a special jack for connecting an external remote control – the separately sold FS-5L. You can switch the turbo on and off with the foot switch so it's great for live performances, and you can also put the body in a rack and use the foot switch on its own.

Yamada: We made the OD-2R because there were many requests from users, and we were even hearing that people were adding their own remote control jack to the OD-2.

• HR-2 Harmonist

Takahashi: Even though we had added an octave and five degrees of harmony to the PS-3, we were not able to musically add three degrees of harmony, and this is why we made the HR-2. The PS-3 sold pretty well, so we thought that the HR-2 would as well. We were to be disappointed, however... *(laughs)*.

Iyama: You could use the rising and falling phrases to change the harmony... it was really together both technologically and musically.

Yamada: But if the guitar wasn't tuned perfectly you couldn't get a nice effect.

Takahashi: Also, if it didn't read the pitch you played correctly it wouldn't harmonize nicely. It's really difficult to read the pitch of a waveform that has distortion applied to it, so if you connected the HR-2 after the distortion, it wouldn't work well.

Moderator: That's why it has the Detector In terminal – to enable it to accurately read the pitch of the sound signal from the guitar.

Takahashi: If you really want to use it properly, you have to split the signal from the guitar output and send it to the Detector In terminal as well to make sure the HR-2 reads the pitch accurately. This required complicated wiring, and maybe is the reason that it wasn't well-received in general.

1995

• LMB-3 Bass Limiter Enhancer
• CEB-3 Bass Chorus
• GEB-7 Bass Equalizer

Yamada: These are second-generation bass series models that followed the ODB-3. They're quite colorful *(laughs)*. But the color is not the only thing that's different – for example, the frequency characteristic of the CEB-3 was radically changed for bass use.

Takahashi: Yeah, the color was not the only change. We reviewed the insides completely as well. They're not simply a conversion for bass use – we refined them as well.

Okada: Sales didn't take off like the models for guitar use, but the bass series has been a real steady seller.

Takahashi: Unlike guitars, equipment for basses doesn't go in and out of fashion. With the guitar equipment, when a new genre comes along, say, heavy metal, for example, it means that sales of gear like the HM-2 just takes off. That doesn't happen with the bass effects.

Okada: If anything, it's the plain equalizers and chorus units that are the steady sellers. Their personality isn't "in-your-face" but they've established their position as indispensable effects for bass players.

• DD-5 Digital Delay

Moderator: The DD-5 is a high-grade model that's an advancement on the DD-2 released in '82. The maximum delay time is two seconds,

BD-2
Blues Driver

A new bestseller that exploits the guitar's volume control!

Moderator: The release of the Gary Moore albums, "Still Got the Blues" ('90) and "After Hours" ('92), brought blues back to the fore, and was followed by the Eric Clapton blues cover album "From the Cradle" in '95. The BD-2 was released in '95 in anticipation of a new blues boom.

Yamada: We decided on the name "Blues Driver" first, and then started on the development. We were after a new crunch-like distortion. If you distort using the amp and turn the guitar volume down, you can get a clean sound. This was the idea, and the BD-2 was the first effect that allowed you to control the distortion using the volume control on the guitar. It has the same feel as the analog version of amp simulation. The circuit is completely different from circuits up until then because it represented a completely new direction.

Moderator: It's basically an Over Drive unit, but it responds to delicate picking, and as Mr. Yamada mentioned, its attraction is that the sound can be changed by the volume control on the guitar.

Yamada: In the case of distortion and over drive, in general, when you turn down the guitar volume it effects the filters in the circuit, and the sound gets a little muddy – this is a weakness of distortion and over drive. On the other hand, when you increase the volume, you get a great sound. With the BD-2 and the BOSS COSM amp modeling, you get a crunch-like sound from amp distortion even when you turn the guitar volume down.

Moderator: The color is blue, and not the normal yellow that you use for effects. Is this because it's for blues? *(laughs)*

Yamada: That's it *(laughs)*. This has sold really well right from Day One. A connoisseur's favorite... that was the feeling at first. Now it's popular at all levels.

and it also has a variety of other functions that rival those found in rack type effects, such as panning delay, reverse play delay, a hold mode that can do sampling/ auto loop play (two seconds maximum), and tempo delay that lets you control the delay period using the foot switch.

Yamada: Initially we'd thought that the DD-5, with its new functions, would replace the DD-3, but it turned out that the DD-3 had established its position as the successor to the DD-2 – and the DD-2 had made a very powerful impact. As a delay, it's quite simple however. Anyway, that's why we decided to leave the DD-3 as it was, and introduce the DD-5 as well.

Takahashi: The coloring is inherited from the DD-2. This is the face of our digital delays... and it's testimony to the strength of the DD-2's impact.

1996

• PW-2 Power Driver

Moderator: Not only is it fair to say that among the BOSS distortion effects this has a unique sound character, but also, instead of using names like "Middle" and "Bass" for the controls, you adopted the names "Muscle" for the mid-band control region that's the heart of the guitar sound, and "Fat" for the control that adds thickness to the sound.

Yamada: The names of these parameters (controls) are quite unusual, and their adoption perhaps had the reverse effect of being hard to fathom *(laughs)*. Maybe it's why they were not well-received.

Takahashi: The natural distortion is left as it is and the gain is high – if anything, we're aiming at a rough sound. That's why it's not clean distortion. The image of the conventional BOSS over drive/distortion effects is that the distortion is clean, so we decided that it would be a good idea to add a rough one that was the polar opposite to this.

Iyama: It's grunge-style distortion... the sound of bands like Nirvana.

• SYB-3 Bass Synthesizer

Moderator: The SYB-3 was the world's first compact bass synthesizer. It has two synth bass and auto wah functions, and you can choose the sound character from one of eleven types. It also has a hold function that continuously outputs the synthesizer sound. It's also possible to output the synth sound and direct sound separately.

Takahashi: The SYB-3 was pretty popular in the dance music market. It was just when the Roland MC-303 *(Editor's note: a sequencer for dance music use)* appeared. At the new product announcement meeting we introduced it together with other dance music equipment. The sound itself was not bad. It's the sound of what's now called "Modeling Bass Synthesizer." While the sound was highly regarded, the issue was whether or not the average bassist would produce the bass synthesizer sound, given the existing situation in the music world. From that perspective the release was too early, and was slightly unmatched to the sound-generation source. There was also an opinion at the time that we should release a guitar version.

• XT-2 Xtortion

Moderator: The XT-2 had a flashy red body, and its intense distortion characte-ristics have become symbolic.

Takahashi: The concept was the same as for the PW-2. The aim was to roughen the sound of the MT-2. The red coloring with lamination in it was the color that we originally investigated for the DS-2, but it didn't get the go-ahead then. We decided to revive it for the XT-2.

Yamada: I think that the main musical characteristic of the sound was the mid-boost-like sound.

Iyama: From around that time, other manufacturers started putting out gear with grunge-like names.

Yamada: This was really good for playing solos... so we think it should've sold a little better *(laughs)*. As with the PW-2, we named the XT-2 parameters "Punch" and "Contour," but I feel that this may have held the XT-2 back to a degree *(laughs)*. That we should not use unusual names for the PW-2 and XT-2 parameters was a good lesson for us *(laughs)*.

Moderator: Both the PW-2 and the XT-2 have quite an unusual sound, but in the end, in terms of short life they're ranked an No. 1 and No. 2. In the future, however, there's a good possibility that these "phantom effects" will attract a premium...

1997

• TR-2 Tremolo

Moderator: For some reason, the tremolo on Fender and VOX amps started becoming popular during the second half of the 90s, and models began appearing from both Japanese and foreign manufacturers. The TR-2 Tremolo followed the PN-2, which was discontinued in '95. The sales point was that it has a Wave control that can be used to continuously vary the waveform of the LFO *(Editor's note: Low Frequency Oscillator – an oscillator that produces frequencies below the human hearing range and creates tremolo or vibrato in the audible signal)* used to create the tremolo effect from triangular to square. Even the knobs were the old-style ones.

Takahashi: The PN-2 had been discontinued, and while it wasn't like they were asking for the impossible, people were asking for tremolo to be revived. So we decided to make a single-function effect that did a pure tremolo-like sound only. We added the so called Wave parameter – there's a lot of know-how in the waveform section, and we have data about what makes guitarists feel good.

Yamada: But that's a company secret! *(laughs)*

• AC-2 Acoustic Simulator

Moderator: You can add a pickup to an acoustic guitar and make it electric. The AC-2 was just the opposite idea – an effect that makes an electric guitar sound like an acoustic.

Yamada: This did even better than we expected. The product developed an excellent reputation. We had no idea that it would do so well *(laughs)*. Before this there was an acoustic guitar pedal for rock players called the "ROCK-AP," but even before this, we had done the VG-8 or "V-Guitar System" in digital, and the starting point for the AC-2 was our decision to make a compact version of this. The idea was for Standard mode to sound like a Martin, Jumbo mode to sound like a Gibson, and Piezo mode to sound like an Ovation. The guy in charge of the development told me that instead of working numerically with data like the frequency characteristic, they actually played a guitar and adjusted the filters to get the sound that they wanted. By doing this it seems that they were able to more closely approximate the sound that they wanted compared to taking a numerical approach.

Yamada: This model had more com-ponents than any other of our compact effects at the time – it's just packed with filters.

• FZ-3 Fuzz

Moderator: There's no doubt that vintage fuzz has a lot of noise, but above and beyond this there's a certain characteristic flavor and personality. By carefully analyzing the characteristics of this vintage fuzz sound, right through to even the degree of distortion, sound mixing technique and degree of murkiness, the BOSS engineers created this traditional fuzz sound with the high level of quality that we've come to expect.

Takahashi: Our overseas affiliate pointed out that the sound of the FZ-2 was slightly different, so we decided to make a fuzz that sounded like the systems from Fuzz Face and Roger Myer. The depth of the distortion itself is almost the same in the FZ-2 and FZ-3, but the sound is totally different.

Moderator: The FZ-2 had a four-control system with a dual-shaft tone control and mode selector, but the FZ-3 controls are really simple.

Takahashi: The Fuzz Face controls were simple, and we were conscious of this. With more controls, it starts to lose the tremolo-like feel.

Yamada: The coating had a special finish that looked like it had been hit with a hammer. That also served to highlight its tremolo-like feel.

• OD-3 Over Drive

Moderator: The OD-3 was added to the lineup after a long hiatus for simple distortion units. It had the same simple control structure as the SD-1 with level, drive and tone.

Takahashi: It had been a while since we put out a new compact model with the name "Over Drive Distortion," so it was as if we had been looking for an opportunity to do it. The OD-2 was released way back in '85, and the OD-2R that came after was basically the same as the OD-2. This is why we decided to put together a model with the classic "Over Drive" name.

Yamada: The circuit was totally different than what we had done up until that time. It's called "Dual-Stage Over Drive."

Takahashi: The gain is very high – perhaps not too different from distortion. Around that time we were learning about a variety of new things, such as COSM (Composite Object Sound Modeling), and the timing was right for us to incorporate this new know-how into the development of our compacts.

1998

• TU-2 Chromatic Tuner

Takahashi: For a long time people had been asking us to make a pedal tuner. We seemed to be going through a repeating cycle of planning one and then canceling it.

Yamada: Every year a market survey arrives from our overseas affiliate, and it was always asking for a pedal tuner. That's why we ended up making one. We had no idea that it would sell as well as it does.

Takahashi: It's so popular that we're kicking ourselves for not making it earlier!

Okada: Looking at the market situation, tuners were going for around $20 to $30. But if we put the same functions into a compact unit, it was going to be around $100. We thought that, regardless of the amount of demand, it wouldn't sell at a price that was five times higher. Technically it was not difficult to do. Anyway, the requests were so persistent that we decided to make it, and it really sold well *(laughs)*. It was probably popular because of the convenience of having a mute right at your feet and the fact that it was in the same case as a compact.

1999

• PS-5 SUPER Shifter

Yamada:The HR-2 had gone out of production, and we decided to make a successor... and add a few new functions, too. The PS-5 is mostly the Harmonist, but it can also produce an effect that resembles that of the VB-2. This didn't attract much attention, but the sound is really Hawaiian, and is very intriguing *(laughs)*. When you hit the pedal the pitch drops initially, and then it sounds like vibrato is being applied. If you change the settings you get a simulated Cricket flutter effect.

Yamada: It also has an "Arm Down" mode. However, we've had a tendency to pack too many functions into our effects, and it appears that this detracts from the uniqueness of each individual function, and dulls the spotlight on them to a degree. We're planning to use this lesson to good advantage for the next model *(laughs)*.

2000

• AW-3 Dynamic Wah

Yamada: During the discussion about the AW-2, I explained how difficult it is to adjust auto wah circuits. With the AW-3 we used a new process – patent pending at the moment. With this new process, we've been able to improve the response compared to our auto wah units up until now.

Moderator: In addition to the superior auto wah effect, the AW-3 also includes an original and unique BOSS effect called "Humanizer" that produces an effect that sounds like a person talking.

Yamada: The Humanizer effect was first used on the ME-8 Multi Effect, but in a multi-effect, even a fascinating effect like the Humanizer just doesn't seem to stand out enough. We decided to put it into a compact effect so that it would attract more attention.

Moderator: Incidently, the thing that prompted us to develop the Humanizer was the album "Flexable" by Steve Vai. Interestingly, the surname of the person in charge of development is made up of two vowels, just like the Humanizer effect. I have a mysterious feeling that somehow this product was pre-destined to be developed by this man (whom I now have the urge to call Mr. Humanizer!).

• PH-3 Phase Shifter

Moderator: The predecessor to the PH-3 was the PH-2 – a versatile, high-quality and feature-laden model designed to rival high-end equipment. The PH-3 built on the PH-2 by adding new effects. It's an advanced phaser that is also practical.

Yamada: The PH-3 inherited the philosophy of the PH-2, and, in addition included the new effects of "Infinite Rise," a strange effect that spirals the sound continually up, and "Infinite Drop" – the opposite – an effect that spirals the sound continually down. These effects were the sales points.

Moderator: It also has a jack for connecting an expression pedal that provides realtime control over the effects, and it really is a synthesis of all the know-how that BOSS had accumulated in the process of developing its compact effects up until that time. I also think that the return to the original name of "Phase Shifter" is a reflection of the strong confidence that the BOSS staff had in this product.

All About BOSS Compact Effects Processors

Get your answers here!

You've no doubt come in contact with other users who gave you all sorts of information about compact effects processors, some of which may be erroneous or misleading. Continuing from the previous article, which provided the inside story of each product's development, we've compiled some of the typical questions circulating among users and took them straight to the source, the development staff, to get the real story. We not only found out the answers to our questions, but also learned a whole lot more, and we're happy to pass on the new facts that have emerged from our discussions. Settle back for a good read, because this is information you'll be glad to have.

Interview & text by GiGS Editorial Department

Q Sometimes there's a "-2" model but no "-1." How do you guys decide the numbering sequence?

A Some models have numbers that proceed in sequence, like "OD-1," "OD-2", and so on, but some jump right to a higher number, like the HM-2. We wondered if maybe the HM-1 was a prototype model that never actually came into being, but we were told that wasn't the case. The developers said that they if they start with the "-1" number, it reminds users of the BF-1 or whatever model was available before the new effect came out, and they worry that people will think the new compact model is old, before it even hits the shelves. Also, Okada tells us that now that most models are numbered "-2" or "-3," it's like taking a step backwards to number the latest one "-1." That's why they decided to start off with "-2" or "-3." In other words, it's a question of image. So how come the Chorus series starts with "CE-3" and "CE-5," then jumps to "CH-1," but doesn't have a "CH-4?" Yamada tells us, laughing, "The number 4 is unlucky in Japan, so we skipped it." So how about the "PQ-4"? Yamada laughs again. "Our bad luck started after we added that '4' model, and we don't have any more '4' models in our lineup." Takahashi adds, "Actually, the staff doesn't often get to choose the model numbers. Those are decided by people farther up in the hierarchy."

Q Even among the same models, the sound is different depending on when it was manufactured. How can that be?

A With a long-selling model like the SD-1, some people have said that the sound was better when it first came out, but is that really true? Takahashi says, "It's a fact that people sometimes tell us they think the sound has changed, that it's not as good as when the model first came out. I think the reason may be that because the model has been selling over a long period of time, there are natural changes in the parts between the units produced 20 years ago and the ones produced a year ago. Capacitor capacities change, and other small changes take place. Those elements might affect the sound in minor ways. Also, in a number of the models, production of the parts used in some of the circuits has actually been discontinued, so we had to change those parts. But we make sure those changes don't change the sound in any way." It may be that, like guitars, as the effects processor ages, changes occur at the parts level over the course of time. At any rate, those changes appear to be very minor ones.

Q There are various versions of the OD-1 on the market, depending on when it was manufactured. Why is that?

A This is one of the questions that comes up most often. The reason is that the OD-1 underwent a number of minor changes while it was being marketed. Kubo agrees, "Yes, that's right. In the first version, we used the 'Quad-Ope' operational amplifier made by Raytheon, an overseas maker, which could handle both the in/out buffer and the overdrive circuit with one unit. But because the 'Quad-Ope' had four operational amplifiers, if one of them went bad, you had to replace the whole thing. ICs made overseas had quite a high defect rate, so a lot of those had to go back for repairs. To avoid that, we switched to using a Japanese-made operational amplifier. That was the second version. This was about the only change made internally, but we made some other changes, such as instead of the LEDs lighting only when switches were pressed, as they did in the first model, we changed them so they stayed lit whenever the unit was on, and that became the third model." So in actuality, there were three different versions of the OD-1 model. Getting even more picky, there are other differences, too; for example, if you open the rear cover of some of the OD-1 units, you'll see that the circuit boards are in different colors, like brown, yellow, or green. Kubota says, "That may be because different makers manufacture their boards in different colors. The colors were different depending on how many lots we ordered from a particular manufacturer. That has no effect whatsoever on the sound."

Q How did the BOSS compact effects processor come into being?

A The user never sees anything but the finished product, but we wondered what steps the BOSS compact effects processor actually went through before reaching the final product stage. We asked the development staff about the manufacturing process. Yamada replies, "First, somebody comes up with an idea, and we draw the circuit diagrams. Next, we make a temporary circuit board called a 'test board,' and we place the parts on it. We draw up the planning diagrams during that time. The test board is still out in the open at that stage, and hasn't yet been placed in a case. When the board is ready, we connect it to a guitar and amp, try producing sound from it, and we decide whether or not we can use that for the final product. Depending on the item, we sometimes go through that process two or three times, adding improvements as we go, until we reach the final product stage." Takahashi laughs, "At the test board stage, we place the parts on the board and take them back off repeatedly so often that when we finally finish the development of the model, the board surface is so plastered with solder that it looks like it's been silver-plated."

Q Distortion effects processors come in all different looks. How is the sound decided for each one?

A Yamada says, laughing, "When we developed the OD-2, we were listening to distorted sounds from morning till night, until we couldn't judge anymore whether the sounds were good or bad. You don't get closer to a good sound just by producing one distortion after another and trying to judge whether the previous one was better, or the current one is better. It's not a linear progression, so we always have a hard time with that." So are there any tricks to deciding which sound to use? For example, getting enough sleep the night before? Takahashi says, "Your physical state really does affect how you evaluate the sound." Kubo adds, "Having a cold or having a stuffed-up nose affects your ability to hear some of the pitch ranges." But as hard as developers might try to stay healthy during the development process, there are bound to be times when the results aren't as hoped. On the other hand, there might be times when a sudden intuitive response on the part of the developer changes the whole outcome. That's the hard part of creating distortion, but it's also what makes it interesting. Yamada says, "What I remember particularly when it comes to deciding distortion sounds is the MT-2. We always have a final stage when we decide to go with a particular sound, but when we got to that stage with the MT-2, the sound still wasn't what we wanted. So we decided to try changing the constant for a certain section, and when we made that 11th-hour change, it produced a different sound altogether, an unbelievably better sound." Getting into more detail, with guitars and pickups of different types, like the Stratocaster and Les Paul guitars, you have to imagine the sound and then make very fine adjustments to it. Kubo says, "We always worry a lot about that. Especially with the Stratocaster and Les Paul, because the output levels are completely different. It's very difficult to find exactly the right level. With the OD-1, we started off using the Les Paul to create the sound, but the OD-1 has a low gain level, so when you use it with a Stratocaster, the sustain sound is drawn out. That was why we changed it little by little, at the development stage, so it could also be used with a Stratocaster." Did you know that the OD-1 was developed based on a sound characteristic of the Les Paul?

Q Why was the OD-1 so highly valued as a booster item?

A In the mid-80s, the OD-1 and SD-1 BOSS OverDrive effects were highly popular among guitarists active on the metal scene in L.A., but people felt differently about the overdrive effect itself. Kubo explains, "The OD-1 was put on the market as a distortion-type effects processor, but a lot of guitarists, like Jeff Beck, were using it as a pre-amp type of booster, instead of as the effects processor we meant it to be. I think, in that case, the distortion part of it was being significantly subdued." Takahashi says, "Not many people are cranking up their instruments starting at the 9:00 position" In other words, a lot of the popularity came from people exploring the hidden potential of the OD-1 as a booster, which worked well with a Marshall amp. So how was the OD-1 used in a booster capacity, and specifically what kinds of effects could be obtained from it? Kubo says, "The low pitch ranges tend to break through in a Marshall amp. So people changed the settings of the OD-1 so they could filter out the low pitches. That's the only reason I can think of that people would use a distortion-type effects processor with the Marshall amp, which already has strong distortion." The usual pattern is to raise the level of the signal coming from the guitar to put a heavier load on the amp and achieve a higher gain volume, and that's how it's used as a booster. When the OD-1 is added as another type of booster, on top of that effect, the narrow pitch range of the OD-1 effectively acts as a high-and-low cutoff filter, which emphasizes the middle pitch range, the boldest part of the guitar sound. "I think people used it as a booster with the expectation that it would act as an equalizer."

Q Does setting the dials right in the center produce what the developers thought was the optimum sound?

A There's a misconception that setting the BOSS compact effects processor dials at the 12:00 position gets you the sound most recommended by the developers. That would make a lot of beginners happy if it were true. Kubo says, "It doesn't necessarily mean you get the best sound, because effects processors can distort the sound over a whole range. When some people first buy an effect, though, they're not sure which setting will produce the best sound. The settings are designed so that, if all of the controls are set at the center positions, you can use them pretty much as they are. Also, we have to make the variable ranges fairly wide on either side of the center position in order to provide a large degree of freedom for the settings. You have to be able to change the effect as much as you want, or there's no point to it." Yamada adds, "So rather than setting the dial as far as it will go, you want to set it so that there's still a little room left. Rather than going only to 100%, you want the effect to go all the way to 120%." Kubo says, "But with some of the effects, like Feedback and Resonance, if you turn the dial all the way up, you get a oscillation, so controls like that should be set only to the point where they don't cause oscillation." Of course, there are some exceptions, especially in space-based effects like Delay, so you should take whatever distortion-type model you have on hand, and try setting all of the dials to the 12:00 position.

Q How are the serial numbers on the BOSS compact effects processors organized?

A People who are really into this big-time will probably notice that the location at which the serial number is stamped on a BOSS compact effects processor varies depending on when the unit was manufactured (you can find more detailed information about that starting on page 116). Incidentally, can you tell the date of manufacture from the order of the digits in the serial number? Okada tells us, "Sorry about that, but serial numbers are a trade secret. There is an order to them, and we can tell what units were manufactured in what month, and what year." Some true fanatics have already broken the code, but the rest of us will remain in the dark.

Q On a related subject, do any professional guitarists have endorsement contracts for the BOSS?

A The answer is no. Usually, the maker of an effects processor that's as highly acclaimed worldwide as BOSS would have endorsement contracts with renowned guitarists all over the world. Okada says, "Our policy is not to have BOSS endorsements. We ask professionals who like our products to go ahead and buy them." Kubo says, "In many cases, you can't even tell from photos what the musicians are using. That's because the musicians aren't endorsing the products, they've bought them. They don't position them so that the name shows." Okada continues, "So, partly because of that situation, some professional musicians really like our effects but they can't use them in front of other manufacturers whose products they're endorsing." It's fantastic that BOSS has so much confidence in the perfection and quality of their own products that they don't have to rely on endorsements by professional musicians!

The Special Relationship

Between Compact Effects and Multiple Effects Processors

**Behind every compact effect there is a multiple effects processor,
and behind every multiple effects processor there is a compact effect.
If you check out the history of the BOSS multiple effects processor,
you'll discover the unique relationship between the compact and multiple effects processors.
The following summarizes what the staff told us about that relationship.**

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compiled & text by GiGS Editorial Department

The birth of the BOSS multiple effects processor

At the beginning of the 1980s, we had a complete lineup of BOSS compact effects processors in place. Amateur guitarists could choose from any number of compact effects. The wide range of effects available gave guitarists a much broader spectrum of expressive possibilities, but the drawback was that they were kept busy pressing pedals during live performances. Eventually, professional musicians started separating out the pedal effects processors that they liked and putting them together on one board, and that innovation started gradually making its way into the amateur world as well.

This gave rise to the SCC-700 Series, which hit the market in 1982. The lineup consisted of the SCC-700C, a control center that made it possible to turn up to seven compact controllers on and off, determine the connection sequence using computer control, and which could also store up to 32 types of effects in memory; the SCC-700F, a special foot controller that could be used to load memory numbers instantaneously; and the SCC-700B, an effects processor board and carrying case that could integrate seven compact effects processors. Guitarists of the time went crazy over the system, which was the predecessor of the present multiple effects processor (the BOSS catalog in which the SCC-700 made its debut says that Neal Schon is "wild about the program function"). BOSS, which was already making use of the basic multiple effects processor concept 20 years ago, was surprisingly advanced for its time.

◀The above was taken from the catalog featuring the SCC-700, first used in Japan by Masaki Matsubara and his group.

Although the product concept itself may have been good, it couldn't keep up with the digital technology coming out around then, and the overall price was too high, at $ 1570 (of course, the compact effects were sold separately). In addition, when the compact effects were added in, the system weighed more than 20kg. Due to these factors, the SCC-700 was less than successful in terms of sales. But its underlying concept found a successful expression in a product using the digital technology moving rapidly forward at the time. The first multiple effects processor, the GP-8, developed in 1987, integrated BOSS technology (it was brought out under the Roland brand). Eight effects processors could be placed in one U-shaped rack, and the ON/OFF settings and parameter settings could be stored in memory inside the main unit. That was the first product that could truly be called a "multiple effects processor," and it had an overwhelming impact on the rock guitar scene at the time. The following year, in 1988, the ME-5 came out, as the world's first foot-pedal type of

Developed with a keen eye : BOSS multi effects up to now

Early System

SCC-700 Sound Control Center

FOOTBOARD TYPE

BE-5M

ME-5

BE-5

BE-5B

ME-6

ME-6B

programmable multiple effects processor. That's the history behind the BOSS multiple effects processor, which developed from the ME-33 to the GT-3, the GT-5, and the VF-1.

The correlation between the compact and multiple effects processors

All of the know-how and the wealth of experience gained through the development of compact effects has been built into the effects processors that come in the BOSS multiple effects processor. One example of this is the Pre-EQ mode, one of the overdrive modes that comes with the ME-6. Placing the EQ in front of the distortion effects processor allows more effective control of the distortion's character. However, if you look at most of the compact effects processors being used back then, you'll find that the EQ was placed after the distortion, and that multiple effects processors were put together in the same sequence. Developers wanted to make it possible to create music with Pre-EQ, so they built it into the ME-6, and that's how the multiple effects processor of today came about.

It was not uncommon that effects and concepts developed for the multiple effects processor debuted as new compact effects. The Dynamic Filter built into the GP-8 rack-type multiple effects processor was later developed into the FT-2 Dynamic Filter compact effect. But BOSS went far beyond merely selecting and inserting effects into new products. The FT-2 was the first compact effects processor to include realtime control of effect parameters from a connected external foot pedal. Subsequently, compact effects processors were developed that allowed a wider range of functions to be performed using foot pedals, such as switching modes – this became possible with the DS-2 and OD-2R – inputting delay tempos (the DD-5), and many others. The distortion of the BE-5, a multiple effects processor acclaimed for its small size, was designed to allow the mixing of overdrive and distortion sounds. People recognized the resulting sound as something that couldn't be achieved simply by connecting the overdrive and distortion serially, and that led to the OS-2 Over Drive/Distortion being marketed as a stand-alone unit that continues to be a bestseller even today. Other models that came out after that included the PS-3 Digital Pitch Shifter/Delay, a model that allowed pitch to be shifted using an external foot pedal like the pitch shifter found in the ME-10. Also, the world's first Acoustic Guitar Simulator found in the GT-5 debuted as the AC-2 Acoustic Simulator. The developers in charge of the ME-8 later built in a human voice effect called the "Humanizer" that was one of the functions included with the AW-3 Dynamic Wah.

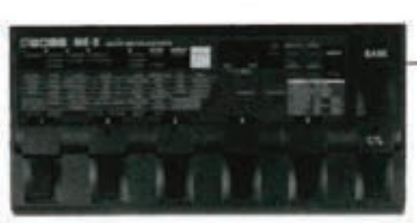
The effects processor makes a comeback with multiple built-in effects

We can see that there are compact effects that developed from the multi-effects processor and, at the same time, there are compact effects, no longer marketed, that have made a comeback in a multi-effect device. One example is the OD-1 Over Drive, an early BOSS compact effect. Although this compact effect has become so legendary that it commands quite a premium, its sound can actually be found today as one of the overdrives in BOSS multiple effects processors. In multi-effects processors built subsequent to the ME-8, in particular, the OD-1 sound simulation has been strengthened to the point where it deserves extra careful attention during use. The SG-1 Slow Gear and VB-2 Vibrato dreamy effects processors, as well as the even more interesting DF-2 SUPER Feedbacker & Distortion feedback simulator, have come back in even stronger form in the ME-33, one of the newest arrivals on the multiple effects processor scene. The SG-1 and VB-2 are now extremely rare effects processors that can only occasionally be found on the used equipment market, at high prices, but if you get a multiple effects processor, you get their rare effects built right in.

No compromises in either multi- or compact effects

The BOSS development staff, who work with both compact effects and multiple effects processors, basically maintain no separation between the two divisions. That's why they don't take the easy road when creating an inexpensive multiple effects processor. They put the same painstaking care into each individual effect that goes into a multi-effect as that which goes into individual compact effects. Not only that, but as we noted earlier, they're able to take the development know-how gained in one place and apply it to another, so that the same uncompromisingly high level of quality is maintained throughout the full line of BOSS effects processors.

RACK TYPE


ME-8


ME-10


ME-30


ME-33


GT-5


GT-3


Roland GP-8


SE-50


SE-70


VF-1


GX-700


SX-700

Where did the BOSS compact effects processor get its start?

Looking back at trends in effected sounds for the rock guitar

Looking at the history of how the BOSS compact effects processor developed within a larger framework, we first find the "effected sound" that brought both new ideas and sensibilities to the rock guitar scene of the time, and started the whole process leading to the BOSS series.

compiled & text by GiGS Editorial Division

Trends from the latter half of the 60s into the 70s, typified by the Wah pedal and the Fuzz

The "effected sound" of the rock guitar scene came into full bloom starting in the latter half of the 60s, as the style of playing at that time became more advanced. Tape echo and organ sounds that developed out of studio recording know-how were representative of effects in the period prior to that time, culminating in the Leslie speaker, which created an audio effect based on physical space (the Leslie type sound source is recorded on Track No. 22 of the "BOSS CD-1" CD included with this book). The Beatles, a unique presence in the field, used recording technology that was on the cutting edge at that time to produce a totally new, more effected band sound. As many readers are no doubt aware, their later works – those that came after "Sgt. Pepper's Lonely Hearts Club Band" (which came out in 1967) – featured a particularly unique approach to sound production rich with sonic experimentation.

The pedal-type effect that allowed the sonic character of the instrument to be varied without resorting to studio effects was first seen in the Fuzz and Wah pedal effects that were produced on an experimental basis and were used by a number of artists starting in the 50s. What brought the rough distortion of the Fuzz effect into the spotlight was its use by Keith Richards of the Rolling Stones in *(I Can't Get No) Satisfaction*, where the guitar refrain used a Fuzz tone as a sound source for the first time on a hit record. Other artists at the forefront of the new sound were Jeff Beck of the Yardbirds; the lead guitarist in the later days of the Yardbirds, Jimmy Page, who later formed Led Zeppelin; and Jimi Hendrix, who introduced a totally unique guitar sound in a daring combination with the Wah pedal. (A simulated sound source has been recorded on Track 23 of the CD.) Eric Clapton of Cream also made an unforgettable contribution with his memorable Wah style of playing in *Tales of Brave Ulysses* and *White Room*.

Representative effects processor brands at that time included Color Sound, Vox, JEN, Maestro, Mutron, and in Japan, Honey, Ace Tone, and the Shinei made familiar by Uni-Vibe. Getting into the 70s, MXR brought out the Phase 90 – a phase shifter that incorporated Leslie speaker-type effects – and came up with a compact type of effects processor, represented by the Dyna comp, Distortion, and others. This was the moment at which trends in effective sounds on the rock guitar scene really began to flower.

Those trends led to the development of the first BOSS effects processor, the CE-1. It came out in 1976 and drew the attention of top guitarists worldwide for a while. It was also given a boost to fame as a favorite of Lee Ritenour, a standout on the fusion/crossover scene. The ambient sound of the CE-1 was perfect for the fusion tone that used a compressor and phaser to create a whispering, murmuring sound. Additionally, the OD-1, a frontrunner in the BOSS series of compact effects that came out in 1977, had a natural Overdrive sound that was different from the Fuzz and Distortion sounds, and added a new dimension to the Distortion sound being used by rock guitarists at the time.

Inspired by the increasingly diverse array of compact effects available, rock guitarists began to combine them to create a broadening spectrum of effected sound variations. Frank Marino & Mahogany Rush performed with an expansive lineup of effects processors at his feet. Robin Trower, known for an aggressive playing style and a spacey sound that sounded very much like Zeppelin, and Pat Travers, who used an ADA flanger to create radical hard funk riffs, were among the wave of guitarists who made effective use of the diverse effects and the potential of compact effects during this developmental period. They left us with countless performances that still remain compelling today.

Incidentally, Jeff Beck is mentioned elsewhere in this publication as a pro user who used a modified OD-1. When Beck was touring Japan, back when BOSS had just produced trial models of improved versions of this product, a telephone call was received from Beck's manager, who said that Beck was using the OD-1 and liked it very much. In response, a trial version of the unit was made available to Beck. People tend to think that the OD-2 must be an upgraded version of the original OD-1, but actually, the OD-2 has three tone controls, and thus is more similar to the SD-1 that came out very shortly after that. Also, it may seem strange if you think back to the playing style of Eric Clapton at the time, but you can

hear the bold distortion sound that Eric achieved with the HM-2 (Eric was influenced by having seen the machine that Steve Lukather was using in the early 80s, and had Bob Bradshaw build the HM-2 into a rack-mounted system along with the CE-1) in *Forever Man*, an album produced by Phil Collins that included "Behind the Sun" (1985) and that heralded a switch into a whole new and controversially commercial genre for Clapton. The CE-2, following on the heels of the CE-1 that Clapton was using, had an analog chorus sound that attracted many professional users. Jimmy Page began using the CE-2 all-out starting from the time of The Firm, and even now the model is incorporated into the effect board system made by Pete Cornish.

Diversity in effected sounds that developed along with playing techniques in the 80s

In 1978, Edward Van Halen hit the rock scene with a whole new dimension of guitar technique, including fretboard tapping. The hard-driving guitar sound he achieved on his first album, "Van Halen," opened lots of eyes and ears – many guitarists still list the distortion he used on the album as the best guitar sound of all time – but he also used the MXR Flanger and Phaser effects creatively and skillfully (a simulated sound source is recorded on Track No. 26 of the CD).

Following Van Halen's debut, the hard rock/heavy metal movement that exploded into being, mostly on the rock scene in and around L.A. in the early to mid-80s, was characterized by technical playing styles that drew on remarkable advances in technology. Rather than relying solely on the Marshall amp for their distortion – the only source available to them in the past – rock guitarists began looking for harder gain as their skills advanced. One example of how artists were creating their own sounds was their use of the gain booster and amp in combination. Eventually, many guitarists began performing with a full lineup of overdrive effects processors such as the BOSS OD-1 and SD-1 at their feet to provide extra boost. (In addition to increased gain, filtering the sound through these instruments narrowed the range of the sound, emphasizing the middle frequency range, the most crucial part of the guitar sound, in a kind of equalizing effect.) Along similar lines in equalizing and boost techniques, Michael Schenker began stopping the Wah pedal before it hit the floor, creating a unique mid-boost tone that influenced many amateur guitarists at the time (a simulated sound source using the SP-1 is recorded on Track No.28). Around the same time, carrying boxes and control systems designed especially for compact effects such as the BCB-6 and SCC-700 appeared and proved popular with Neal Schon, Gary Moore, Jake E. Lee, and other guitarists who made heavy use of compact effects. The same trend was extended to include customized effect boards such as those made by Pete Cornish, in which the case was removed from the compact effects processor and the contents were combined with a switch system. This trend was a transitional movement that led into the full-scale use of multiple effects grouped in a rack-mounted system. Even if some commonly used effects such as those produced by distortion-type effects could not be obtained, the BOSS OC-2, acclaimed as having both style and glamour, was an example of such a system. The OC-2 was highly acclaimed as a frontrunner in that movement because of its high level of reliability and its unique effects.

In addition to the hard rock/heavy metal scene noted earlier, no discussion of that era would be complete without mentioning David Gilmour of Pink Floyd, The Edge and U2, all of whom used a wide array of digital delay techniques representative of the effected sounds that made those days memorable. The 8th-note delay effect for which The Edge was renowned spread like wildfire and was picked up by numerous guitarists, amateurs and professionals alike, and incorporated into their sound repertoires. And speaking of effected sounds with delay woven into them, Andy Summers of Police came up with a hard, clean sound using a compressor that gave him a long delay with full depth, and made a strong impression on the music scene around the mid-80s (a simulated sound source with a delay interweave is recorded on Track No.29 and 31). Jamie West Orlam (The Fixx) and Phil Manzanera (Roxy Music) used similar delay tricks in pop music of the time.

The popularity of the rack-mounted system, definitively established by Steve Lukather, began to fade as the use of compact effects waned in the mid-to late-80s. The Harmonizer by Eventide found its way into the racks of many guitarists, and various companies began bringing out high-quality multiple effects processors, pushing compact effects farther into the shadows. For some artists, however, like Warren Cuccurullo of Missing Persons, the compact effects processor was an integral part of their style, and many guitarists continued to use it side-by-side with rack-mounted systems. One example was Trevor Rabin of Yes – which had come back together at that point – and the full, heavy pitch shifter sound he used in *Owner of a Lonely Heart* (a simulated sound source is recorded on Track No.30), which epitomized the effective sound prevalent in that generation.

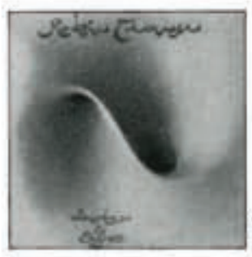
Essential listening to hear the effects
Part-1 ● Wah/Fuzz

'65
OUT OF OUR HEADS
THE ROLLING STONES
Keith Richards
Listening selection:
(I Can't Get No) Satisfaction

'67
LITTLE GAMES SESSION & MORE
THE YARDBIRDS
Jimmy Page
Listening selection:
Think About It

'68
ELECTRIC LADYLAND
JIMI HENDRIX EXPERIENCE
Jimi Hendrix
Listening selection:
Voodoo Child (Slight Return)

'68
WHEELS OF FIRE
CREAM
Eric Clapton
Listening selection:
White Room



'75
BRIDGE OF SIGHS
ROBIN TROWER
Robin Trower
Listening selection:
Too Rolling Stoned

'80
THE MICHAEL SCHENKER GROUP
THE MICHAEL SCHENKER GROUP
Michael Schenker
Listening selection:
Into The Arena

'87
STEVIE SALAS COLORCODE
STEVIE SALAS COLORCODE
Stevie Salas
Listening selection:
Stand Up!

'96
CHARACTER
CHAR
Char
Listening selection:
The Leading of The Leaving<loneliness>

BOSS Pro Guitarists
100 Top Choices by Users!

BOSS compact effectors are the first choice of guitarists all over the world. Whether in the studio or on stage, many professional guitarists list BOSS products as the ones they want on hand. This section lists just a few of the many renowned guitarists who choose BOSS products first. (Guitarists and bassists are classified by the years in which they were most actively using BOSS effects processors.)

• Late 70s to early 80s •

Jeff Beck
OD-1 [Over Drive](Original & Modified)/
BF-2 [Flanger]/DD-3 [Digital Delay]/
DSD-3 [Digital Sampler/Delay]/(BCB-6)

Eric Clapton
CE-1 [Chorus Ensemble]/
HM-2 [Heavy Metal]

Lee Ritenour
CE-1 [Chorus Ensemble]

Buzz Feiten
CE-1 [Chorus Ensemble]/
GE-10 [Graphic Equalizer]

Jimmy Page
SD-1 [SUPER Over Drive]/CE-2 [Chorus]

Johnny Winter
CE-2 [Chorus]

Joe Walsh
CE-1 [Chorus Ensemble]

Carlos Santana
CE-2 [Chorus]/CE-3 [Chorus]/
DD-2 [Digital Delay]

John Tropea
OD-1 [Over Drive]/
CS-1[Compression Sustainer]/
BF-1 [Flanger]

Eric Gale
OD-1 [Over Drive]/CE-3 [Chorus]

Brian May
CE-1 [Chorus Ensemble]

Rick Derringer
OD-1 [Over Drive]

David Gilmour PINK FLOYD
HM-2 [Heavy Metal]/
MZ-2 [Digital Metalizer]/
CS-2 [Compression Sustainer]/
CE-2 [Chorus]/DM-2 [Delay]/
DD-2 [Digital Delay]/GE-7 [Equalizer]

Richard Thompson
FAIRPORT CONVENTION
CE-1 [Chorus Ensemble]/
DD-3 [Digital Delay]

New horizons open in distortion sounds with the re-emergence of the single-function pedal effects processor in the 90s

The rock music sound of the late 80s and early 90s basically carried over the distortion sound of the earlier hard rock/ heavy metal scene, but became more dramatic and radical with the appearance of slash metal. BOSS effects processors on the scene at the time included the MT-2 and HM-3, along with a distortion item from earlier rock guitar days: the FZ-2, which first appeared when there was a revival of Fuzz, and added a driven intensity to the sound.

During this time, when rack-mounted systems were in common use among professional guitarists, the DD-3 and DD-5 proved that there were still rock guitarists with an ongoing affinity for compact digital delay. The high quality and outstanding operability of the BOSS compact effects – the use of these in combination with the LS-2 opened up an even broader range of possibilities – proved once again, down at the feet of professional guitarists, that they could hold their own against the high-quality rack-mounted systems on the market at the time.

Under the influence of alternative/grunge, represented by Nirvana, the rock guitar sound of the mid- to late-90s shifted from the distortion-based sound that had been prevalent up to that time, to a crunch- and fuzz-based distortion (a simulated sound source is recorded on Track No. 32). Other fads, such as digital rock, played their part in moving toward a fuller expression of effected sounds. This gave rise to a new generation of guitarists in search of a knock-'em-dead, highly individualistic effects processor sound. They were moving away from the conventional, fixed mindset and choosing effect items that allowed the unique characteristics of their sound and the uniqueness of their effects to come through. They snatched up such items and made them a part of their sound systems. That brought the single-function compact effects processor back into the limelight, because it eliminated the hassles of meticulous settings, enabling simple operation in realtime using switches positioned underfoot, and at the same time highlighted that particular effect. For BOSS, which had presented a diverse lineup of products ever since the company was first established, the fierce devotion to sound was undoubtedly a welcome development. In response, BOSS brought out a series of ultra-individualistic models that included the FZ-3, TR-2, AC-2, and SYB-3. Additionally, BOSS underscored its already high reputation in distortion devices by bringing out the BD-2, XT-2, PW-2, OD-3 and others that made this period an especially distinctive one for the company.

So BOSS compact effects are back in the lineup, at the feet of musicians such as Tom Morello (Rage Against the Machine) and Wes Borland (Limp Bizkit). Those effects processors, and the exciting effects that emerge from them, are now embraced by guitarists the world over as the magic wands that will open up new horizons in the rock guitar sounds of the 21st century.

Essential listening to hear the effects
Part-2 • Modulation

'00
LIVE AT THE FILLMORE EAST
JIMI HENDRIX
Jimi Hendrix
Listening selection:
Machine Gun

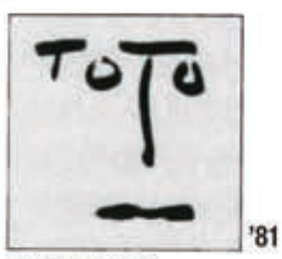
'76
LIVE
FRANK MARINO & MAHOGANY RUSH
Frank Marino
Listening selection:
The World Anthem

'76
CAPTURED LIVE!
JOHNNY WINTER
Johnny Winter
Listening selection:
Bony Moronie

'76
PRESENCE
LED ZEPPELIN
Jimmy Page
Listening selection:
Nobody's Fault But Mine

'78
VAN HALEN
VAN HALEN
Edward Van Halen
Listening selection:
Atomic Punk

'79
LIVE! GO FOR WHAT YOU KNOW
PAT TRAVERS
Pat Travers
Listening selection:
Hooked On Music



'81
TURN BACK
TOTO
Steve Lukather
Listening selection:
English Eyes

'93
ARE YOU GONNA GO MY WAY
LENNY KRAVITZ
Lenny Kravitz
Listening selection:
Are You Gonna Go My Way

Keeping up with Jeff Beck on guitar effects processors

text by Akihiko "Jeff" Sato

The debut of the BOSS compact effect had an enormous impact on Japan's younger generation of guitar enthusiasts, who played their instruments with rows of BOSS products at their feet. This article is an overview of what guitarists and users were actually using at the time. It also takes a close look at advances in the rock guitar sound of Jeff Beck – a guitarist much admired on a personal level – who became an aficionado of BOSS products at the time. This is a topic that I find personally interesting, but that I'm sure will be fascinating to many of you as well.

Effects processors in Japan in the 1970s

Way back when I started playing the electric guitar as a junior high school student, in the 70s, it was impossible to find guitar string sets that started from a line gauge of .010 in Japan. I had heard that this gauge made playing much easier, so in order to achieve a more pliant effect, I took off all six strings and re-strung them, moving each one over, and then ran two strings in place of each previously single string (or in some cases I used a thin string, such as a banjo string, in place of one of the guitar strings). At the time, I was using a copy of the Greco Les Paul being promoted, which had a neck that was fixed in place, as opposed to a Stratocaster guitar, which had a detachable neck. The first effects processor I came across was a Guyatone (or maybe it was an Elk) that combined wow and fuzz effects, and I bought that at the same time.

Back at that time, the only effect that effects processors had, in addition to wow and fuzz, was a tape-type echo. Amps had only one dial, and the idea of using the amp to create a natural distortion had not yet occurred to anyone. The most anyone had come up with was using the reverb and tremolo effects of the Fender amp. The fuzz effect was very different from what we would call fuzz today; it was merely a distortion of the sound, and even at a low level, it often resulted in too much distortion and produced a buzzing sound, and if you repeatedly pressed it and let go, the sound was thinned out and you got a lot of noise. But at the time, it was radical! As far as I was concerned, there was little difference between my playing style and those of professional guitarists, and I considered myself quite the hero (!?) at school festivals and other events. It was just at that time, in 1966 and 1967, that the Stones and Kinks were bringing out albums with a fuzz tone.

Overseas, though, effects like the crying tone used by Eric Clapton of Cream and the powerful distortion sound immortalized by Jimi Hendrix were becoming popular, and I yearned for the natural distortion sound that could be produced by Marshall amps and other types of amps. In Japan, distortion came in the form of the Elk, which came out around 1973 and was a copy of the square metallic box-type Big Muff made by Electro-Harmonix. What had the greatest impact on my hard rock sound was the round, fat, heavy distortion sound like that used by the Jeff Beck group in its early days, in "Truth", and in "Nantucket Sleighride" by Leslie West of Mountain. I had only a small amp at the time, and the amps we used at practice studios were not very good, so this type of effects processor was extremely beneficial to us.

The emergence of overdrive and phase effects processors

In the mid-70s, rapid advances were being made in effects processors, both in Japan and abroad. That was the time when amps that used a master dial to create distortion, such as the Mesa Boogie, were popular. Overdrive came out around then as a type of distortion, and people were exploring the effects of natural distortion created using the

• Mid- to late 80s •

Edward Van Halen
SD-1 [SUPER Over Drive]/
GE-10 [Graphic Equalizer]/OC-2 [Octave]

Steve Lukather
CE-1 [Chorus Ensemble]

Gary Moore
DS-1 [Distortion]/CE-3 [Chorus]/
DC-2 [Dimension C]/BF-2 [Flanger]/
DM-2 [Delay]/OC-2 [Octave]/PSM-5
[Power Supply & Master Switch]/(BCB-6)

Uli Jon Roth
SCORPIONS▶ELECTRIC SUN etc.
VB-2 [Vibrato]

Neal Schon JOURNEY etc.
OD-1 [Over Drive]/SD-1 [SUPER Over
Drive]/DS-1 [Distortion]/BD-2 [Blues
Driver]/CS-1 [Compression Sustainer]/
CS-3 [Compression Sustainer]/
BF-2 [Flanger]/GE-6 [Graphic Equalizer]

The Edge U2
SD-1 [SUPER Over Drive]/OD-2 [TURBO
Over Drive]/GE-7 [Equalizer]/(SCC-700)

Midge Ure
THIN LIZZY▶ULTRAVOX
OD-1 [Over Drive]/CE-2 [Chrous]

George Lynch DOKKEN etc.
DS-1 [Distortion]/CE-5 [Chorus Ensemble]/
GE-7 [Equalizer]

Jake E. Lee
OZZY OSBOURNE▶BADLANDS
DF-2 [SUPER Feedbacker & Distortion]/
FZ-2 [HYPER Fuzz]/LM-2 [Limiter]/
DC-3 [Digital Dimension]/
CE-1 [Chorus Ensemble]/
BF-2 [Flanger]/HF-2 [Hi Band Flanger]/
PH-2 [SUPER Phaser]/
DD-3 [Digital Delay]/GE-7 [Equalizer]/
EH-2 [Enhancer]/LS-2 [Line Selector]/
(SCC-700)

Warren DeMartini RATT
OD-1 [Over Drive]/
SD-1 [SUPER Over Drive]/OC-2 [Octave]

Robin Crosby RATT
SD-1 [SUPER Over Drive]

Vivian Campbell
DIO▶WHITESNAKE▶DEF LEPPARD
OD-1 [Over Drive]/GE-7 [Equalizer]

Carlos Cavazo QUIET RIOT
HM-2 [Heavy Metal]/NF-1 [Noise Gate]/
PSM-5 [Power Supply & Master Switch]

Steve Clark DEF LEPPARD
CE-2 [Chorus]/DM-2 [Delay]

Richie Sambora BON JOVI
SD-1 [SUPER Over Drive]/
CE-2 [Chorus]/ CH-1 [SUPER Chorus]/
PN-2 [Tremolo/ Pan]

Yngwie J. Malmsteen
CS-3 [Compression Sustainer]/
CE-1 [Chorus Ensemble]/
CE-5 [Chorus Ensemble]/
BF-2 [Flanger]/OC-2 [Octave]/
GE-7 [Equalizer]/NS-2 [Noise Suppressor]

Paul Gilbert
RACER X, MR.BIG
OD-2 [TURBO Over Drive]/
DS-1 [Distortion]/CS-3 [Compression Sustainer]/CH-1 [SUPER Chorus]/
CE-5 [Chorus Ensemble]/
DD-3 [Digital Delay]/ TR-2 [Tremolo]/
OC-2 [Octave]/AC-2 [Acoustic Simulator]

John Norum EUROPE
DS-1 [Distortion]/CS-2 [Compression Sustainer]/DC-2 [Dimension C]/
CE-5 [Chorus Ensemble]/
DM-2 [Delay]/DD-3 [Digital Delay]/
OC-2 [Octave]/NF-1 [Noise Gate]/
NS-2 [Noise Suppressor]/(BCB-6)

Adrian Vandenberg
VANDENBERG▶WHITESNAKE etc.
SD-1 [SUPER Over Drive]

Tracii Guns L.A.GUNS
CE-3 [Chorus]/DD-2 [Digital Delay]/
PS-2 [Digital Pitch Shifter / Delay]

Vinnie Moore
BF-2 [Flanger]/DD-3 [Digital Delay]

Ronni Le Tekro TNT etc.
OD-1 [Over Drive]/SD-2 [DUAL Over Drive]/CE-2 [Chorus]/BF-2 [Flanger]/
DD-3 [Digital Delay]/OC-2 [Octave]

Joe Satriani
DS-1 [Distortion]/CE-2 [Chorus]/
CH-1 [SUPER Chorus]/
DD-2 [Digital Delay]/OC-2 [Octave]

Steve Vai
OD-1 [Over Drive]/SD-1 [SUPER Over Drive]/DS-1 [Distortion]/DS-2 [TURBO Distortion]/CE-5 [Chorus Ensemble]

Allan Holdsworth
CE-1 [Chorus Ensemble]

Alex Lifeson RUSH
PH-2 [SUPER Phaser]/DD-5 [Digital Delay]

Akira Takasaki LOUDNESS
CE-1 [Chorus Ensemble]

Char
SD-1 [SUPER Over Drive]/OC-2 [Octave]

• Early to mid-90s •

Zakk Wylde
OZZY OSBOURNE, B.L.S etc.
SD-1 [SUPER Over Drive]/
CH-1 [SUPER Chorus]

Michael Schenker
CE-5 [Chorus Ensemble]/
DD-3 [Digital Delay]

amp, in which the depth could be changed based on how hard the strings were picked. This was called "tube distortion" or "natural distortion."

The appearance of phase-based effects processors such as the phaser, used in the fusion music that was highly popular at the time (it was also called a "crossover" back then) and brought into the limelight by musicians such as Return to Forever (Al Di Meola), the Crusaders (Larry Carlton), and Lee Ritenour and Staff (Cornell Dupree /Eric Gale), was an epochal change to those of us making the switch from hard rock to a more laid-back style and fusion. There were no domestic versions of the phaser available; the only one out at the time was a compact one by MXR, but because of the low value of the yen, even that was high-priced, at $ 200 to $ 300, and was far beyond the reach of us students. That was when the BOSS CE-1 chorus ensemble made its appearance, and I made my first acquaintance with BOSS instruments. The chorus sound, produced from a unit the size of a lunch box, made a huge impact on us. The phase-based effects processors available up until then consisted of the Leslie speakers used on organs (those couldn't really be called effects processors, though) and the Tremolo section of the Fender amp. Those of us who were already sustaining shock waves from the phaser were blown totally away by the stereo chorus effect, with its unique breadth of sound, and it rapidly became an integral element of the fusion sound and slow ballad numbers. A lot of the amateur guitarists I knew, though, used the compressor effect too heavily, almost like the phaser and chorus, if I recall. But truth be told, I was guilty of the same thing myself.

Incidentally, the know-how involved in the chorus ensemble had its start in the highly popular "Jazz Chorus" guitar amp by Roland. What made it an enduring favorite, right up there with the Marshall and Fender names, was the beauty of its chorus sound. Even rock guitarists who were stalwart supporters of the Marshall genre used the Jazz Chorus when they wanted a clean arpeggio sound in studio recordings. A feature particularly convenient to chorus freaks was the stereo output, in which two speakers were built into one unit.

Getting acquainted with BOSS

My closest involvement with BOSS was from the mid- to late-70s, when the fusion boom was taking place. The MXR was too expensive for me to afford, and what prompted me to jump into the effects processor scene was the debut of compact effects by BOSS and Maxon, both of which cost around $ 100. It was common for fusion guitarists such as Lee Ritenour and Masayoshi Takanaka to use as many as ten effects processors back then (!), and I was no exception. More fusion guitarists were using effects processors than rock guitarists. Some of them had a lineup

Essential listening to hear the effects
Part-3 • Space effects

'74
SHEER HEART ATTACK
QUEEN
Brian May
Listening selection:
Brighton Rock

'79
THE WALL
PINK FLOYD
David Gilmour
Listening selection:
Run Like Hell

'79
REGGATTA DE BLANC
POLICE
Andy Summers
Listening selection:
Walking On The Moon

'80
FLESH AND BLOOD
ROXY MUSIC
Phil Manzanera
Listening selection:
Same Old Scene

'82
DIVER DOWN
VAN HALEN
Edward Van Halen
Listening selection:
Cathedral

'84
GRACE UNDER PRESSURE
RUSH
Alex Lifeson
Listening selection:
Distant Early Warning

'87
THE JOSHUA TREE
U2
The Edge
Listening selection:
With Or Without You

'88
CARM ANIMALS
THE FIXX
Jamie West Orlam
Listening selection:
Driven Out

consisting of an equalizer, compressor, overdrive, distortion, wah-wah, phaser, flanger, chorus, digital delay, volume pedal, octaver, touch wah, as well as a jet machine (the "Jet Phaser", a lunch-box sized effects processor series brought out by Roland). I would continue buying effects processors until I sometimes had more than ten of them, and eventually I would get sick of using so many and get rid of a lot of them. Then I would start buying them again, and that process went on repeatedly. But the constants in the lineup were the BOSS OD-1 overdrive (or the Maxon yellow-green, slightly oversized compact overdrive) and the CE-1 chorus ensemble (which eventually came out in a compact size). I also used the JEN crybaby (wah-wah) on an ongoing basis. Even now, 20 years later, these three effects processors play a fundamental role in my lineup, and probably always will. I choose other effects processors based on the project going on at the time, or depending on my current mood, but I get tired of many of them very quickly.

The fantastic sound of BOSS products and the high-performance electronic FET switch

The reason that I started using BOSS products so much was that, first, they were compact, produced little noise, and had a fantastic sound. The Color Sound and Electro-Harmonix products, and the rack-mounted effects processors, had a great sound but they were somewhat large and involved complicated settings (although nowadays most manufacturers have a lot of compact products on the market). Given the logistics of moving up to ten effects processors, and the time involved in setting them up, compact effects made a lot of sense, and you could have as many as ten without running into difficulties. And nowadays, most compact effects have the same performance as their rack-mounted counterparts, probably due to advances in electronic components and miniaturization. Another reason I preferred BOSS was that they were the first to incorporate an electronic FET switch into their products. That solved a problem that was plaguing me when I used effects processors. The BOSS effects didn't click when you turned them on or off, had a foot-pedal type of switch that did what you wanted it to, and had a long-lasting design that never changed. Mechanical switches had a clicking noise no matter how well they were designed, and the button-type switch often didn't stay where you put it during live performances (or maybe it was just me!?).

The unique and colorful sound of Jeff Beck's "Blow by Blow"

Jeff Beck, my favorite guitarist of all time, played a Telecaster during the early part of

Essential listening to hear the effects
Part-4 ● Refined, off the wall

'73
DIXIE CHICKEN
LITTLE FEAT
Lowell George
Listening selection:
Dixie Chicken

'73
THE SMOKER YOU DRINK. THE PLAYER YOU GET.
JOE WALSH Joe Walsh
Listening selection:
Rocky Mountain Way

'75
BLOW BY BLOW
JEFF BECK
Jeff Beck
Listening selection:
Thelonius

'77
CAPTAIN FINGERS
LEE RITENOUR
Lee Ritenour
Listening selection:
Captain Fingers

'91
AH VIA MUSICOM
ERIC JOHNSON
Eric Johnson
Listening selection:
Cliffs Of Dover

'81
DISCIPLINE
KING CRIMSON
Adrian Belew
Listening selection:
Elephant Talk

'82
SPRING SESSION M
MISSING PERSONS
Warren Cuccurullo
Listening selection:
Tears

'83
90125
YES
Trevor Rabin
Listening selection:
Owner Of A Lonely Heart

Nuno Bettencourt EXTREME etc.
CE-2 [Chorus]/CE-3 [Chorus]/DD-2 [Digital Delay]/DD-3 [Digital Delay]/PS-2 [Digital Pitch Shifter/Delay]/OC-2 [Octave]/ GE-7 [Equalizer]/LS-2 [Line Selector]/ NF-1 [Noise Gate]/PSM-5 [Power Supply & Master Switch]

Marty Friedman MEGADETH etc.
MT-2 [Metal Zone]/CE-2 [Chorus]/HF-2 [Hi Band Flanger]/DD-2 [Digital Delay]/ DD-5 [Digital Delay]/HR-2 [Harmonist]/ AC-2 [Acoustic Simulator]

John Sykes
THIN LIZZY▶WHITESNAKE▶BLUE MURDER etc.
CE-2 [Chorus]

Reb Beach WINGER▶DOKKEN
SD-1 [SUPER Over Drive]

Doug Aldrich
LION▶BAD MOON RISING etc.
DS-1 [Distortion]/FT-2 [Dynamic Filter]/ DD-3 [Digital Delay]/OC-2 [Octave]

Bill Leverty FIREHOUSE
CS-3 [Compression Sustainer]

Kai Hansen GAMMA RAY
GE-10 [Graphic Equalizer]

Chris Duarte
DS-1 [Distortion]/CE-2 [Chorus]/ CE-5 [Chorus Ensemble]/ DD-3 [Digital Delay]

Joe Perry AEROSMITH
FZ-2 [HYPER Fuzz]

Brad Whitford AEROSMITH
SD-2 [DUAL Over Drive]/ CS-3 [Compression Sustainer]/ CE-5 [Chorus Ensemble]/ DD-5 [Digital Delay]/GE-7 [Equalizer]

Slash GUNS N' ROSES etc.
DD-5 [Digital Delay]/GE-7 [Equalizer]

Richie Kotzen POISON▶MR.BIG
OC-2 [Octave]

Stevie Salas
SD-1 [SUPER Over Drive]/CE-2 [Chorus]/ OC-2 [Octave]/GE-7 [Equalizer]

T.M.Stevens
OC-2 [Octave]

Takahiro Matsumoto B'z
SD-1 [SUPER Over Drive]

Tomoyasu Hotei
CS-2 [Compression Sustainer]/ DM-2 [Delay]/VB-2 [Vibrato]

Al Pitrelli
MT-2 [Metal Zone]/CE-3 [Chorus]/ DD-5 [Digital Delay]/HR-2 [Harmonist]/ AC-2 [Acoustic Simulator]

Kerry King SLAYER
GE-7 [Equalizer]

John Frusciante
RED HOT CHILI PEPPERS
DS-1 [Distortion]/DS-2 [TURBO Distortion]/
FZ-3 [Fuzz]/CE-1 [Chorus Ensemble]

Steve Stevens
BF-2 [Flanger]/GE-7 [Equalizer]

Pete Lesperance
HAREM SCAREM, RUBBER
CS-2 [Compression Sustainer]

Kiko Loureiro ANGRA
OS-2 [Over Drive/Distortion]/
DD-3 [Digital Delay]/LS-2 [Line Selector]

Buddy Guy
OC-2 [Octave]

Mike Keneally
DD-5 [Digital Delay]

Kurt Cobain NIRVANA
DS-2 [TURBO Distortion]

• Late 90s to present •

Larry Carlton
BD-2 [Blues Driver]

John Scofield
GE-10 [Graphic Equalizer]

Phil Upchurch
CE-1 [Chorus Ensemble]/OC-2 [Octave]

Adrian Belew
CS-3 [Compression Sustainer]/
PH-3 [Phase Shifter]

Al McKay
BD-2 [Blues Driver]/CH-1 [SUPER Chorus]/
PH-3 [Phase Shifter]/OC-2 [Octave]

Andrew Latimer CAMEL
CE-2 [Chorus]

Bill Frisell
DD-3 [Digital Delay]

Mike Stern
DS-1 [Distortion]

Tony Levin
CS-2 [Compression Sustainer]/DD-2 [Digital Delay]

Lenny Kravitz
CE-1 [Chorus Ensemble]/DD-5 [Digital Delay]/OC-2 [Octave]

Warren Haynes
THE ALLMAN BROTHERS BAND ▶
GOV'T MULE
OC-2 [Octave]

Joe Stamp
CS-2 [Compression Sustainer]/
OC-2 [Octave]/NS-2 [Noise Supressor]

Helge Engelke FAIR WARNING
AW-2 [Auto Wah]

his career, from when he first made his debut with the Yardbirds until he joined BBA (Beck, Bogert and Appice) in the early 70s, followed by a Les Paul and then a Stratocaster. Despite these changes in guitars, he rarely used effects processors, except for distortion and wah-wah. Starting in the early 70s, he started leaning towards fusion, and effects processors were becoming more sophisticated, so he began using them far more frequently. By the time "Blow by Blow" and "Wired" came out, Beck had honed his technique to the highest level ever, and was producing a strongly colorful tone with a fairly heavy use of effects processors. In "Blow by Blow" he used a Stratocaster with a white body and rose-colored neck, along with a Telecaster that had two Gibson Humbuckers customized by Seymour Duncan. He normally used the latter, commonly known as the Tele-Gibson, and made use of a broad spectrum of effects processors, among them the overdrive, tone bender, octaver, touch wah, and ring modulator. BOSS products were not yet on the market at that time, and Beck was using mainly Color Sound effects processors, along with a few others such as the Maestro echo-plex and the wah-wah by JEN (crybaby). Basically, he relied on the overdrive for the most part, but he sometimes switched to tricky effects processors that were different in various songs to change the sound, which increased the impact he had on his audiences. The way that he used distortion in *You Know What I Mean* and *Scatterbrain* and the way that he used the octaver in *Thelonius* were particularly unique (Note: the OC-2 was used on Track No.24, "BOSS CD-1", of the appendix CD-ROM, to produce a sound source with the same kind of effect). More than anything else, the talking modulator that can be heard in *She's A Woman* was a sound that became almost synonymous with the name "Jeff Beck." Joe Walsh and Peter Frampton were also using it, but very few other rock guitarists ever did, and there were few available on the market. Incidentally, the word is that the one Beck used was a custom-made one worn on the shoulder that he got from Stevie Winwood. That album was acclaimed by many of Beck's fans as a masterpiece, partly because of his guitar technique, the choice of songs, and the outstanding sound, but also because of his colorful guitar tone and highly individual use of effects processors. He used the latter boldly and conspicuously, and from both a technical and a sound standpoint, that was the album that influenced me most as a guitarist.

The beginning of the Beck/BOSS duo

"Wired", which was released in 1976, took the strongest approach to jazz/fusion of all Beck's albums, and featured the most innovative use of effects processors to date.

Essential listening to hear the effects
Part-5 • Flying tools/Noise art

'93
FAR BEYOND DRIVEN
PANTERA
Dimebag Darrell
Listening selection:
Becoming

'95
ONE HOT MINUTE
RED HOT CHILI PEPPERS
Dave Navaro
Listening selection:
One Big Mob

'95
G
GARBAGE
Steve Marker
Listening selection:
Supervixen

'96
EVIL EMPIRE
RAGE AGAINST THE MACHINE
Tom Morello
Listening selection:
People Of The Sun

'99
ISSUES
KORN
Head & Munky
Listening selection:
Falling Away From Me

'00
CHOCOLATE STARFISH AND
THE HOT DOG FLAVORED WATER
LIMP BIZKIT Wes Borland
Listening selection:
My Generation

'01
MORE LIGHT
J.MASCIS + THE FOG
J.Mascis
Listening selection:
Ammaring

'01
TEN RAPID
MOGWAI
Stuart Braithwaite, John Cummings
Listening selection:
ithica 27-9

He first got involved with BOSS products when he was recording that album, and the unique breadth of his sound in *Sophie* is undoubtedly due to the sound of the CE-1 chorus ensemble, which had just come out at the time. From that time, Beck and BOSS products were an insepa-rable duo. That was when Beck first began using delay-based effects processors regularly, and was also when he came out with *Goodbye Pork Pie Hat*, in which he used a ring modulator, *Blue Wind*, with a flanger, and the space echo by Roland. He also produced "With Jan Hammer Live," an album of a live performance on tour in which he apparently used a Tycobrahe flanger. Much of his music was characterized by relatively deep effects settings, no matter what instrument he used; rather than using a large number of effects processors with less depth, he never used more than two at one time. The outstanding quality of his sound was due in large part to how he used effects processors, which was straight-forward but at the same time highly effective. Later, in 1980, he came out with the "There and Back" album, in which he used a Stratocaster fitted with a Schecter pickup and assembly, and although this album did not show the same striking growth in his use of effects processors that his previous albums had, he used the GR-500, a guitar synthesizer by Roland, when he came to Japan with Stanley Clark in 1978, creating a new guitar sound and indicating his interest in Roland BOSS products. After that tour, however, the guitar synthesizer disappeared from his instrument lineup.

Jeff Beck brings out the best in BOSS effects processors

When Beck came to Japan on his "FLASH" tour in 1985, he used the "RAT" for distortion, along with other instruments such as the BOSS overdrive and the RE-501 chorus echo by Roland. It wasn't until 1989, around the time that the "Guitar Shop" album came out, that he began using BOSS products on a full scale. At that time he had begun playing a yellow prototype Stratocaster called the Fender Jeff Beck model. When he came to Japan, he was using numerous BOSS products that included the DD-3 digital delay, the DSD-3 digital sampler/delay, the BF-2 flanger, and the FV-100 volume pedal, along with a Rockman sustainer and stereo chorus/delay, a combination that enabled stunning technical feats. Incidentally, *People Get Ready*, recorded on the "Flash" album, apparently was done using line recording with a Rockman, which may have been behind the incredible sound which put that particular number in a class by itself. Rather than incorporating large-sized rack-mounted effects processors into his lineup, Beck selected his effects processors intuitively, depending on what he felt was right for the piece, and paid little attention to who made it or what it cost. He used different guitars and amps each time he came to Japan, and evidently was not terribly focused on collecting any particular models.

The Jeff Beck of today

Beck still uses BOSS effects, but most of the works on his "Who Else!" album of 1999 and "You Had It Coming" of 2000 do not include effects processors, either from the BOSS lineup or by any other makers (except for some effects processors used for recording, when mixing). In live performances, however, he relies heavily on the BOSS overdrive and, in *Even Odds* and *Blue Wind*, he uses a flanger and wah-wah. His tremolo arm and finger-picking techniques are beyond description these days, and he has polished his finger picking to the point where he no longer even needs effects processors (!?). He relies on machines only to the very minimum extent necessary.

In an aside, my own recent setup consists of the GE-7 BOSS equalizer (mainly with the Stratocaster; I want a sound like the Les Paul Humbucker only for the lead), the OD-3 overdrive (it has a tone that the OD-1 didn't have), and the CH-1 super chorus because of its compact size and its sound, which approaches that of the CE-1. After these three the only other one I use is the JEN crybaby effect. It may not be the greatest idea to throw together such an eclectic mix of effects, but I use whatever fits my technique level and my own preferences. I think that effects processors are going to be an ongoing part of my musical efforts in the future.

Max Cavalera SOULFLY
PH-2 [SUPER Phaser]/BF-2 [Flanger]/
DD-5 [Digital Delay]/
PS-3 [Digital Pitch Shifter/ Delay]

Judah Bauer
THE JOHN SPENCER BLUES EXPLOSION
PN-2 [Tremolo/Pan]

Bernard Butler
PN-2 [Tremolo/Pan]

Noodles OFFSPRING
BF-2 [Flanger]

Tom Morello
RAGE AGAINST THE MACHINE
DD-3 [Digital Delay]

Munkey KOЯN
RV-3 [Digital Reverb/Delay]/
PS-3 [Digital Pitch Shifter/Delay]

Head KOЯN
FZ-3 [Fuzz]/CE-5 [Chorus Ensemble]/
RV-3 [Digital Reverb/Delay]/TR-2 [Tremolo]

John 5 MARILYN MANSON
SD-1 [SUPER Over Drive]/
CH-1 [SUPER Chorus]/
PN-2 [Tremolo/Pan]

Twiggy Ramirez
MARILYN MANSON
OC-2 [Octave]/SYB-3 [Bass Synthesizer]

Billy Corgan
THE SMASHING PUMPKINS
CH-1 [SUPER Chorus]/DM-2 [Delay]

James Iha
THE SMASHING PUMPKINS
AW-2 [Auto Wah]

Keith Nelson BUCKCHERRY
GE-7 [Equalizer]

Yogi BUCKCHERRY
DD-5 [Digital Delay]

Meegs Rascon COAL CHAMBER
CH-1 [SUPER Chorus]/BF-2 [Flanger]/
PH-2 [SUPER Phaser]/
RV-3 [Digital Reverb/Delay]/
TR-2 [Tremolo]/GE-7 [Equalizer]/
SYB-3 [Bass Synthesizer]/
PSM-5 [Power Supply & Master Switch]

Ace SKUNK ANANSIE
PH-2 [SUPER Phaser]/DD-3 [Digital Delay]/
AC-2 [Acoustic Simulator]/
PN-2 [Tremolo/Pan]/
NS-2 [Noise Suppressor]

Wes Borland LIMP BIZKIT
MT-2 [Metal Zone]/PH-2 [SUPER Phaser]/
DD-3 [Digital Delay]/PS-5 [SUPER Shifter]/
RV-3 [Digital Reverb / Delay]/
GE-7 [Equalizer]/SYB-3 [Bass Synthesizer]/
OC-2 [Octave]/TR-2 [Tremolo]/
NS-2 [Noise Suppressor]/
LS-2 [Line Selector]

A few musings on makers and their products ...

The individual style of BOSS proves itself in competition against its rivals

Before BOSS arrived on the effects processor scene, the two leading brands were Electro-Harmonix and MXR. Both controlled the effects processor market much as Godzilla, Mothra, and King Kong reigned supreme in monster movies. Each of the three companies puts its own unique features into its products, but let's take another look here at the individuality of the BOSS series of compact effects processors.

planned & compiled by GiGS Editorial Division, text by Atsushi Fukatami

Battle Stage 1

Electro-Harmonix vs BOSS

Godzilla Meets Goliath

The first effects processor that I owned was an imitation model of the Big Muff sustainer by Electro-Harmonix, which came with a Sustainer function. The sound was thin, and the Fuzz effect sounded kind of cheap, but I loved it anyway and used it and used it day after day without ever growing tired of it. I recall that it was back in 1974.

It was well after that when I got my first real Electro-Harmonix, and what I went crazy over wasn't so much the sound or anything else, but the body. It looked like something from a dubious back-street shop in Akihabara – the electronics shopping district in Toky – and the lettering was nothing to write home about, but that unfashionable look was exactly what I dreamed about, although, looking back, it may have been more of a nightmare than a dream.

And then, along came BOSS. The first one I bought was the first Chorus processor, the CE-1. A high school friend had bought the JC, an amp with a Chorus/Ensemble effect, and unlike a phaser, it was able to maintain the sharp edge of the sound and still create a dark, murky atmosphere that strongly attracted me. Later, when the series of compact effects processors headed by the OD-1 came out, I started buying BOSS models until they comprised fully half of my lineup. They had the sound character I wanted, and they were also designed with such foresight that they have required almost no major changes over the 20 years that they've been on the market. They are truly cool products.

Truth be told, I actually liked the effects processors much more than the musical instruments themselves. The compact effects processor, with which you could input something on one end and have it undergo dramatic changes – even though some of them didn't quite come off – before being output from the other end was like a dream come true for someone like me, a novice at musical instruments.

For BOSS, the first stage of the battle was to take on Electro-Harmonix in a sort of Godzilla versus Goliath war between two giants. In this case, BOSS was Godzilla and Electro-Harmonix took on the role of Goliath.

BOSS offered comprehensive design in its bodies, high-grade effects designed for intuitive use even by the uninitiated (although there were a few awful ones that made me wonder about the creator's state of mind), a clean, straightforward, lighthearted feeling, an emphasis on clean lines, and a sense of integrity. With Electro-Harmonix, on the other hand, it was hard to coax that lighthearted feeling to the surface.

BOSS occasionally missed the mark, as with the SG-1, which was an outstanding example of a failure because, when you tried to use the pedal to achieve a performance with any depth to it, it was like slogging through quicksand. The idea may have been great, but it didn't come off in the execution. I actually used that effect, even though it was appallingly hard to work with. In order to use it in live performance, I had to practice the picking attack endlessly to get it smooth. It was really putting the cart before the horse. Not only that, but because it could only be used for one piece, and only in the intro on that, the cost/performance ratio was miserable.

Well, BOSS occasionally produced total

Battle Stage 2

MXR vs BOSS

A Porsche, a Ferrari and "Charlie's Angels"

Recently, Drew Barrymore starred in a re-make of "Charlie's Angels," a movie based on the TV show of the same name from the late 70s and early 80s. When the original series came out, older Japanese guys in their 40s and upwards fell madly in love with the young green-eyed blonde, Farrah Fawcett-Majors, while middle aged women took to hairdressers in droves, trying to coax their straight Japanese hair into a Farrah-like style. No matter how good Drew Barrymore may be, those who sat glued in front of the TV set for the original series are bound to come away from the movie feeling let-down.

Japan, in its wave of enthusiasm for all things Western, embraced "Charlie's Angels" with open arms.

A parallel can be drawn in the effects processor industry, with MXR playing the lead. Until MXR came along, most effects processors, such as the Electro-Harmonix products, had a rough-hewn look as though they had been put together by hand from parts scrounged from back-street stores. But MXR made radical changes and broke new barriers in the body, adding sharp, eye-catching coloring. They used the same look throughout the whole series, giving it a feel of coherence, and both the design and the coloring were fresh and vivid.

Even more radical than the revamped design was the performance. Even now, when digital effects processors are at their pinnacle, the earlier MXR products are selling for large amounts of money on the used-instrument market. A quick glance tells you why they made such a startling splash back then.

Going back to "Charlie's Angels," both Hollywood movies and TV programs had stirred a longing in the Japanese people, a yearning for something that had long been missing in their lives. There was a huge gap between what people saw in movies and on TV as the average American lifestyle, and the everyday lives that they themselves trudged through, and even though the intrinsic beauty and stalwart resolve of the Japanese people were recognized worldwide, the Japanese still felt a wall between themselves and the Americans that couldn't be overcome. Then "Charlie's Angels" came along and launched a change in the way the Japanese perceived that abyss.

Simply put, the Japanese realized that the American physique and furnishings were never going to be accessible to them, but that they could enjoy a taste of Western lifestyles anyway without actually becoming Americans in the process. In the 80s, the Japanese started becoming Americanized, but through a Japanese filter. The era of the "Japanese-American" had arrived.

The BOSS series of compact effects processors came out around this time. Without reading the history of BOSS development elsewhere in this book, I can only make a guess, but I would surmise that MXR was at the root of the BOSS series development. The MXR series had the same aluminum diecast body and coloring running through the whole series, and the same comprehensive downsizing that produced a compact body. The BOSS series in general used similar elements. The BOSS effects, which were designed by Japanese developers, also introduced a number of new functions incorporating painstaking attention to detail.

First, a FET switch had been added. In

failures like that one, but for the most part they gave us brands that were right on target in terms of user needs. But Electro-Harmonix ... It's true that their products were well-made, like the BOSS products. The Bass Balls that was renowned for its auto wow effect – it was originally developed for the bass, but it could also be used for guitars, and in fact was more effective that way – and featured distortion that met Hall of Fame standards, the Big Muff, and other achievements gave them a great reputation. But there was something a little off about them. Really off. I mean, really off!

First, the body, which looked like it had been bought in a back-street store of ill repute in Akihabara, was suspicious, a "black box" in the world of instruments. If somebody had come along and told me, "You know, this effects processor is actually the first flanger in the history of the world that runs on atomic power. They call it the 'nuclear mistress'. So you'd better be careful with it. It might melt down on you ...," I think I might've believed it. It was that suspicious-looking. When I was a high school student, I had this image of the Electro-Harmonix effects processor as being made deep underground in the U.S., by a mad scientist in a white coat. (Many years later I saw the movie "Back to the Future" and I thought the doctor in that movie would have made a marvelous developer for Electro-Harmonix effects processors... That's probably not the way your average person in society would think, I guess.) Those effects processors looked so strange, you were never quite sure that they wouldn't just blow up. First of all, look at the names. Electric Mistress (don't you just imagine some S&M scene, with the queen using an electric cord instead of a whip, and playing around with electric shocks? – or is it only me?). And then the Bad Stone (that was the phaser – it really lived up to its name in that the sound wobbled like it was stoned – and don't forget the sister product called the Small Stone!). Then there was the Memory Man (an analog delay that draws on the memory, as the name implies). They sure came out with a whole procession of weird names!

Not just the names, but the effects themselves were pretty weird. I have the Poly-flange, the Stereo Memory Man, the Bad Stone, the Baseballs, the Electric Mistress, the Bass Synthesizer, and an early model of the Big Muff, and what they all have in common is that they have no finesse. The Poly-flanger is one example. Its peculiarities become clear when you compare it with the BF-2 that BOSS presently has on the market. The BOSS instrument offers a good S/N ratio, very little noise when switched on, and a sound character that isn't intrusive unless you really set the settings to extreme levels. But look at the Electro-Harmonix instrument. You can't really compare the S/N ratios, because the times have changed. But the instant you turn it on, it produces a really peculiar noise, and added to that is a wavering sound from the flanger. And the sound itself is something else!

The sound is so strange that sometimes I wonder if there's a steel plate or an oil reverb inside the body. Myself, I like a kind of cheap sound. But when it comes to recording a live performance, I'll take a BOSS anytime. The Electro-Harmonix has such a strong sound that it's intrusive, it's hard to work with. The next example is the Stereo Memory Man. No current BOSS product has a similar analog delay. Nowadays, all of the compact series effects are digital. So we have to use an analog delay from way back (it has a body like the CE-1, only black) for comparison, and here, too, the line is clear between winner and loser. First, let's take the DM-1 analog delay that came out in the late 70s. It was just about perfect. The response was good, and the delay time was pretty good for that time. Noise was a problem, but I think there was more to that effect than people gave it credit for. A long time later, I got a hold of an MXR analog delay (the one with the green body), which was said to be the pinnacle of compact analog delays, but the BOSS instrument offered a more individual sound that I liked better. Now we come to the Electro-Harmonix Stereo Memory Man. This is really something else!

They missed the mark totally when it came to delaying the sound source, which was the whole point. First of all, the quality of sound changed when the delay was added. Not only that, but sometimes the delay time just changed, on its own (or maybe the one I owned simply had a mind of its own). There was something capricious and impish about it, though, that made it a great effect. I half-imagined that there was a little "memory man" inside it, and if you handled the instrument too roughly, he would complain, "Hey, I'm getting tired. I can't keep up when things are moving that fast."

Not that the two can be compared, but there's a big difference between the BOSS and Electro-Harmonix effects in terms of sound character. The BOSS is designed so that the quintessential sound of that particular effects processor can be easily manipulated even by those unfamiliar with the instrument. So you might think that, therefore, gimmicky effects won't work with it, but that's not true. You can use gimmicks, but the instrument is designed to stay basically true to its integral sound. The Electro-Harmonix, on the other hand, has a definitely mischievous aspect. So that the manufacturer won't come back and take a stab at me later in some dark alley, I will say that Electro-Harmonix is the best overall manufacturer of compact effects processors on the market today, at least in the individuality of the sound character. In terms of impact, I'm convinced that they hold the ace. All effects processors are capable of a certain level of basic performance and can produce the sound required from that particular machine. But with an Electro-Harmonix effect, when you go beyond the basic level you really start hearing the essential character of the effect.

BOSS, a hero that can save you in any situation, and the Electro-Harmonix, a mystery that was the result of some weird experiment conducted in an underground laboratory – to me, they are completely different in character.

Moving away from that basic component and into the area of gimmicks, the Electro-Harmonix is way ahead of BOSS. What made me a convert was that the frequency analyzer (ring modulator) stands out head and shoulders above the rest, not just among Electro-Harmonix effects processors, but all of them. A long time ago, I heard E,L&P, and the keyboard produced a deep, ringing sound, like a bell. I asked a dealer about it, and they

contrast to the sharp click of the MXR, the BOSS effects produced no noise when they were turned on and off. In hard rock and heavy metal, it doesn't matter much if there's some noise when effects are switched, but because other types of performers wanted to incorporate subtle nuances into their music, the FET switch represented a significant advancement. A few users complained that it was hard to tell whether an effect was on or off, but BOSS put LED indicators on their products right from the beginning, making it possible to check the status of effects on a dark stage (with some effects, like distortion, the performer could tell from the sound, but it was harder with effects like Comp and the parametric EQ).

The next striking feature of the BOSS effects was their potential for expansion and development. The MXR effects being re-manufactured today have a jack that allows an AC adaptor to be used, but the original ones didn't. Batteries were the only source of power back then. Even the earliest BOSS effects had an AC adaptor as a standard feature, and it's my guess that they were built right from the start on the assumption that they would be used with effects processor boards.

What was most remarkable about BOSS effects, though, was that the company listened to what users were saying, and developed an ongoing lineup of products with increasingly attractive features. That was really the biggest difference between the two companies. The MXR effects processor was an outstanding instrument, but starting at the end of the 70s, rapid changes began to take place on the music scene. There were two different approaches going on at the time. One was, "We've already got the products out, so you can choose whatever one fits your particular musical style." The other was, "We've developed a comprehensive lineup that can accommodate subtle nuances to fit the changes taking place in music. It may take some time and effort to find the right one for you, but you will definitely find an instrument that fits your individual style." It's clear which strategy was going to win out. It seems to me, looking at how BOSS effects developed over time, that the development was synchronized to changes taking place in the culture, as Japan became more Americanized and then, in the 90s, began to develop its own responses to American and European trends. At first, Japanese products were seen as clever imitations of other products, but the BOSS development staff had dreams on a bigger scale. That was what laid the foundation for where BOSS is today. Seen in that light, the battle between MXR and BOSS epitomized the fable of the tortoise and the hare.

If you think the story has pretty much played itself out, think again. Things are just warming up. It may seem inconceivable today, but in the 70s, MXR was the Porsche, the Ferrari, of compact effects processors. To give you an idea of how high-class those effects were back then, the earliest models sell today on the used-instrument market for largely the same price they cost in the 70s. We're talking about 20 years ago, but if you imagine what prices were like back then, you get some idea of what I'm talking about. As a high school student, I used to stand in front of music store windows and stare longingly at those MXR effects.

Right around that time, Johnny Winter came out with "Captured Live!," an album that hit the top of the charts and nearly soared right off. The material itself was almost too hot to touch, but even more than that, it was the way the phaser was used that was so radical. Where I was living at the time, in the Mitama area, that album launched an unbelievable boom in phasers. You couldn't call yourself a rock musician unless you were using a phaser. That was driven home by Robin Trower, who shook the foundations of rock with the way he used the phaser. After those albums came out, high school students who had the money ran to buy the MXR Phase 90, but those who didn't sent them sideways looks of scorn and said defiantly, "Who needs effects processors? Anybody who has to depend on those things..." Right at that time, MAXON came out with a phaser that looked like an exact copy of the MXR effect, but with a price tag that had less wealthy high school students standing in line. My guess is that MAXON sold a lot of those phasers. It may have been only a local phenomenon, but everybody around me had one.

By that stage, the Mitama area had fallen completely under the spell of the phaser, and it was a given that the music being performed was evolving into the styles of performers like Robin Trower and the Doobie Brothers.

The MAXON phaser was pretty good for its time, but it didn't work all that well with the bass guitar. The only resource for a bassist like myself was to go ahead and buy the MXR Phase 90. The Dyna comp was also a must for the bass, along with the Blue Box being used by Jeff Beck (incidentally, the Blue Box could be used with a bass in much the same way as with a guitar). I decided that I wanted both, and I got serious about saving some money, but it wasn't enough. I ended up only buying the Phase 90, and didn't get hold of the Dyna comp until after I had graduated from university. It wasn't until just recently that I acquired a used Blue Box. Just when I was about the buy the Phase 90, BOSS brought out the CE-1, an indicator of how fast things were changing. The BOSS series of compact effects processors made their debut after that, and suddenly there was a whole spectrum of variations to choose from. Makers were hurrying to expand their lineups, and it became possible to do just about anything at home with the right equipment. That doesn't mean I wasn't still yearning for an MXR, though.

The three-set MXR product I had my eye on took on much the same intensity for me as the "Charlie's Angels" craze did for the Japanese. I yearned for it the way that the Japanese longed for the American lifestyle, and I felt that possessing it would open up a new horizon of possibilities in my life. Between then and now, makers have brought out countless products, but I still treasure the MXR products I bought back then, and they still hold the same promise for me today. The MXR Phase 90, with its individualistic oscillation, the Dyna comp, with its elusive ambiance based on a solid sound core, and the Blue Box are no longer crucial necessities today because there are a lot of products around that have more subtle ways of applying the same picking effects and are available at lower prices, as well as being easier to operate. But the strongly characteristic sound of those earlier instruments still appeals even now, and they still have their

said, "They must be using a ring modulator." Ever since then, I've been under the spell of the ring modulator. I wanted one in the worst way, but they were beyond my price range, so recently I had a studio engineer build one for me that has almost endless possibilities. I tried it out immediately using a bass, and it was fantastic! It sounded just like a bell! But I didn't have the faintest idea of how to use it. I still don't know what the developer had in mind when he came up with it. It's still in the realm of illusion for me. Also, the micro-synthesizer series, selling at a high price on the vintage market, is a remarkable piece of work. It was developed for both the guitar and the bass, but if you use it the wrong way, you lose the whole instrument sound and end up producing nothing but bizarre noises. You can get the same or similar effects with the BOSS multiple effects processors currently on the market. But Electro-Harmonix already developed the same effects processor and had it on the market 20 years ago, which can only mean that they were scheming to take over the world of effects processors even then. They are really a maker to watch out for. But that doesn't mean that BOSS has lost the war. The development battle is still being fought. BOSS has the advantage, but Electro-Harmonix will never disappear from the scene as long as there are enthusiasts like me around!

Electro-Harmonix's flagship product: The Big Muff model (early version)

A closeup look at the *rival* Electro-Harmonix

by Takeshi Mori

Mike Matthews, the founder of Electro-Harmonix, was born in Brooklyn, New York. After graduating from university, he joined IBM and began working as a computer salesman. On his own time, he put the experience acquired at school as a member of a band to work in developing his own fuzz box, which evidently later became the basis for the Big Muff. Its potential was recognized by the Guild company and the product was eventually put on the market. Suffused with confidence from that endeavor, Mike started Electro-Harmonix in 1968, investing $1,000 of his own money and borrowing $5,000 from a bank for a total capital funding of $6,000. Ten years later, in 1978, the company's overall sales amounted to $5 million. Mike Matthews is a quintessential example of the American dream come true.

The first models hit the market in 1968. They were the LPB-1/Linear Power Booster, the Screaming Bird Treble Booster and the MOLE/Bass Booster. They were designed to connect to the input jack of the amp and had a sliding ON/OFF switch and effects controls. They measured about two short cigarette boxes in size.

The Big Muff, a legend among Fuzz instruments, came out at the beginning of the 70s and sealed Electro-Harmonix's reputation. Just how popular the Big Muff was can be seen in the lineup of variations that followed on its heels, among them the Muff Fuzz, Little Muff, Little Big Muff, and Deluxe Big Muff. These were succeeded by the Micro Synthesizer and a number of other unique products that were coveted by analog effects processor enthusiasts. Some of these are now making a comeback as replicas of the originals, fusing earlier tastes with today's needs to produce a modern blend of characteristics.

place on the music stages of today.

MXR changed the history of the compact effects processor in a lot of ways, but ultimately the company never went beyond maintaining what it was making at that time, and wasn't able to come up with anything new as the times changed. It was BOSS that aggressively seized the initiative and opened up a wealth of future possibilities.

The thoughts and ideas that started with MXR and were taken over by BOSS significantly influenced the development of rock. Those instruments weren't just tools used to add distortion and oscillation to the guitar sound; compact effects processors played a large role in the development of the music scene by making it both possible and easy to tailor the music specifically to the performer's intentions. Even today, new musical styles are emerging from those colorful and compact bodies. Without compact effects processors, music might have been about five years behind where it is now.

The "Distortion +": An MXR Triumph The earliest model with the cursive-style logo

A closeup look at the *rival* MXR

by Takeshi Mori

MXR products that came out in the 70s offered not only high sound quality, but also an integrated design and color-coded models, features that made the lineup a central focus of interest. Effects processors manufactured later by other makers were all influenced to some extent by the MXR lineup, at least in terms of their appearance, indicating just how sensational the MXR products were at the time.

Without having detailed materials on hand it's hard to say just when the various models came out, but I recall that the first to draw keen interest was the Phase 90. It was priced at $ 470, and the Phase 45, a slightly watered-down version, was tagged at $ 290, putting both models well out of the reach of amateurs. Other models were generally high-priced as well: the Dyna comp was $ 330 and the Distortion + $ 250, whereas the OD-1 was only $ 94.50 at the time. The Phase 100, at the top of the phaser lineup, was priced at $ 548.

Large-sized series took precedence over compact effects processors in the late 70s, and the Flanger sold for $ 730, the Stereo Chorus for $ 980, and the Analog Delay for $ 1000. The prices, sky-high in those days, indicate the extent to which those models were designed for professional users.

Unfortunately, production has been discontinued, but Jim Dunlop brought out a reissued model that was less than half the going price, and brought it closer to what the amateur could afford. The logo mark and model name were in cursive script (later on, and now, block lettering is used, but the reissued model of the Blue Box octaver also featured the cursive script). Those vintage effects processors now sell at premium prices, so if you decide to go for one, you can expect to shell out some big bucks, depending on the condition of the instrument.

This CD-ROM contains the unique sounds of more than 50 renowned BOSS models

ranging from vintage effects such as the CE-1 and SP-1 to the latest available models

Special appendix

BOSS CD-1: Sound File Contents

Sound source creation cooperation and text by BOSS Corporation / Yutaka Nakano / Akira Ambo
Guitar playing by Yutaka Nakano (Track Nos. 01 to 10 / 34 to 70, 72) / Hideyuki Yonekawa (Track Nos. 11 to 33, 71)

The search for the best match between well-known, popular amps and distortion models!

We took three all-time favorite amps and combined them with six different distortion-based models to hear them in action. We hope you'll use these recordings as a reference when you're using a booster and when you're creating distortion.

Practice environment for Track Nos. 01 to 10

Guitars used for recording
Fender '63 STRATOCASTER
Gibson '71 LES PAUL CUSTOM
Gibson '94 LES PAUL STANDARD Historic Collection

Amps used for recording
Marshall JCM800
(SETTING: vol I = 4 / vol II = 2 / bass = 10 / middle = 10 / treble = 10 / presence = 1 / input = I+II)
Vox AC30
(SETTING: vibrato <speed = 0 / vib = 0> / vol <vib = 0 / normal = 8 / bright = 0> / tone <treble = 9 / bass = 4.5 / cut = 0 / input = normal high)
Fender TWIN REVERB
(SETTING: bright sw = off / vol=10 / treble = 7 / middle = 4.5 / bass = 5.5 / master vol = 4 <pull on> / input = 1)

Track No. 01 SD-1+Marshall JCM800

▲LEVEL=6 / DRIVE=2 / TONE=3 – 4

The SD-1 goes on when the CD time reaches 0'05. We added distortion little by little while letting the personality of the Marshall amp come through, extending the sound in the upper pitch ranges and capturing the feeling of sound compression.

Track No. 02 OD-3+Marshall JCM800

▲LEVEL=7 / DRIVE=0.5 / TONE=5

The OD-3 goes on when the CD time reaches 0'05. The lower pitch range was extended and the higher range enhanced to obtain a powerful sound. The overall distortion was increased.

Track No. 03 DS-2+Marshall JCM800

▲LEVEL=6 – 7 / TONE=4 / DIST=3 / TURBO I

The DS-2 goes on when the CD time reaches 0'05. DS-2 offers stronger distortion, but a potent boost sound can be achieved by manipulating the settings.

Track No. 04 SD-1+Vox AC30

▲LEVEL=7 / DRIVE=2 – 3 / TONE=6

The SD-1 goes on when the CD time reaches 0'04. We left the sound source as it was and enjoyed the natural sound of the SD-1!

Track No. 05 BD-2+Vox AC30

▲LEVEL=6 – 7 / GAIN=3 – 4 / TONE=4

The BD-2 goes on when the CD time reaches 0'04. Pay special attention to the voicing of the clear, pleasant sound produced when chords are played, and to the granularity of the sound. A bold sound is achieved in the lower pitch ranges.

Track No. 06 OS-2+Vox AC30

▲LEVEL=6 – 7 / TONE=4 / DRIVE=3 / COLOR=3

The OS-2 goes on when the CD time reaches 0'06. This sound tends to be a little wild and defiant, but creates a better sustain and a powerful sound with plenty of body.

Track No. 07 SD-1+Fender TWIN REVERB

▲LEVEL=10 / DRIVE=2 – 3 / TONE=4

The SD-1 goes on when the CD time reaches 0'04. The sound changes to a highly realistic voicing that brings out the shadings achieved by using stronger or lighter picking. Much more vivid expression, too!

Track No. 08 BD-2+Fender TWIN REVERB

▲LEVEL=9 / GAIN=0.5 / TONE=4

The BD-2 goes on when the CD time reaches 0'05. We were able to produce a distinct presence that wasn't covered up by the band sound, while still maintaining the blues mood.

Track No. 09 OD-3+Fender TWIN REVERB

▲LEVEL=6 – 7 / DRIVE=2 – 3 / TONE=6

The OD-3 goes on when the CD time reaches 0'04. A slight distortion and deep low-pitch sound were added without changing the overall impression of the sound.

Track No. 10 MT-2+Fender TWIN REVERB

▲LEVEL=4 / DIST=3 – 4 / EQ <HI=6 / LO=5 / MID=6 / MID FREQ=4>

The MT-2 goes on when the CD time reaches 0'03. We produced a distortion with power and energy, with a slash metal vibe, by combining the MT-2 with a Fender amp.

Bringing back rare legendary sounds: Recordings of the fantastic sounds of renowned BOSS compact effects

Track No. 11 DF-2 / 1) Feedbacker OFF 2) Feedbacker ON

Track No. 12 CE-1 / 1) Effect OFF 2) Chorus ON
3) Effect OFF 4) Vibrato ON

Track No. 13 CE-2 / 1) Effect OFF 2) Effect ON

Track No. 14 DC-2 / 1) Effect OFF 2) Effect ON (MODE-4)

Track No. 15 SG-1 / 1) Effect OFF 2) Effect ON

Track No. 16 VB-2 / 1) Effect OFF 2) Effect ON

Track No. 17 CS-1 / 1) Effect OFF 2) Effect ON

Track No. 18 SP-1 / 1) Effect OFF 2) SPECTRUM half
3) SPECTRUM full

Track No. 19 FT-2 / 1) Effect OFF 2) Effect ON
3) with Expression Pedal

Track No. 20 DM-2 / 1) Effect OFF 2) Effect ON

Track No. 21 RV-2 / 1) Effect OFF 2) Effect ON

BOSS compact effects processors bring back the effective sounds that dominated the music world!

Track No. 22 **60s-style Leslie speaker effect (BD-2 → CE-5 → amp)**
Vibrato effects such as the Uni-Vibe by Shinei first came out in the 60s. The CE-5 is used here, but if a gentle swelling with a clear pitch is desired, the same type of effect can be reproduced using other types of chorus and flanger effects.

Track No. 23 **JH-style wow/fuzz + panning effect (FZ-3 → AW-3 → PN-2 → amp)**
Hendrix was famous for his fuzz sound, in which he stayed away from deep distortion and used something close to today's overdrive. The key here is settings that preserve the original characteristics of the sound while adding an edge to the fuzz.

Track No. 24 **JB-style octaver sound (OC-2 → amp)**
This simulates a sound close to that of the octaver used in "Blow by Blow". The quality of the OC-2 sound is so good, and the lower pitch range so rich, that it could almost be used in place of a bass. (In a band, the low octave can clash with a real bass unless the bass range of frequencies is suppressed and the middle frequency range is emphasized.)

Track No. 25 **West coast-style lead sound (SD-1 → PH-3 → amp)**
With modulation-type effects processors such as the phaser, the effect varies depending on where the effects processor is connected. Here, in order to obtain a clear effect at a slow speed, we connected it after the SD-1. This nicely matches the crisp distortion obtained with the SD-1.

Track No. 26 **EVH-style flanging sound (OD-3 → BF-2 → amp)**
The initial sound of Eddie's distortion is obtained using a Marshall amp, so if you're going to use a distortion-based effects processor, you'll need to connect the flanger in front of it. In this case, however, the best effect was obtained by connecting the effects processor after the OD-3, perhaps because the amp sound was distorted to the point of crunching.

Track No. 27 **Fusion-type compressor + phaser sound (CS-3 → CE-5)**
Lee Ritenour, a performer from the 80s, uses these settings to obtain a cutting, sustained effect when playing lead. Therefore, the compression is fairly deep. The cutting effect depends on the attack setting, so adjustments can be made while playing a phrase.

Track No. 28 **MS-style sound with semi-pressed Wah-pedal (SP-1 → amp)**
The original sound source simulated here is obtained using a simple setup consisting of a Wah pedal and Marshall amp, but with the SP-1, the same sound can be obtained every time simply by turning it on. The effect can be deepened for both the Wah and the SP-1 by connecting them after a distortion-based effects processor.

Track No. 29 **Compressor + delay clean (CS-1 → CE-3 → DD-5 → GP-20)**
The effect is set up so that the sound can be sustained over two bars using the compressor and delay. A single-coil guitar is used, but adjustments can be made either by using the tone dial or by using the center pickup.

Track No. 30 **80s-style progressive-style pitch shift sound (DF-2 → GP-20 → PS-5)**
In order to improve the clarity of the effect sound, a PS-5 set to a 5th tone higher was connected after the GP-20. In live performance, the connection sequence of a distortion-type effects processor → PS-5 → amp works, but when recording, the clean tone is the primary sound, and the LS-2 is indispensable for changing the sound.

Track No. 31 **Dotted 8th note delay effect (CS-3 → CE-5 → GP-20 → DD-5)**
Here, the delay time is simply set to an dotted 8th note length, and the arpeggios are played using 8tth notes. The left and right mute backings were achieved by recording a similar delay in stereo. It's worth noting how mono and stereo are used to change the sense of separation between sound images.

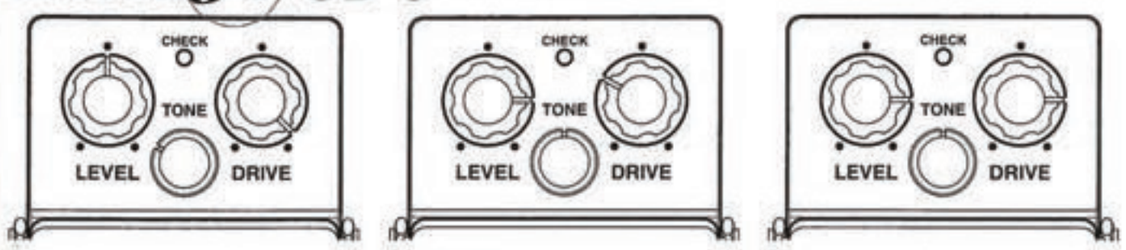
Track No. 32 **Grunge/alternative-style power crunch (PW-2 → amp)**
In order to double the distortion sound, the dry original sound and the PW-2 were recorded separately and a small amount of equalization applied. The only difference between this and the original sound is whether the PW-2 is on or off. Listening to this distortion will remind you of how good the PW-2 really was! (It's no longer in production.)

Track No. 33 **90s-style heavy-style pedal pitch shift (PS-5 with EV-5 → GP-20)**
The distortion sound of a non-effects amp (GP-20) is doubled, and the sound one octave higher is doubled with phrases that don't use the lower pitched strings. Additionally, the sound of the pedal of the EV-5 connected to the PS-5 is doubled when choking is used, producing the powerful sound of six separate instruments.

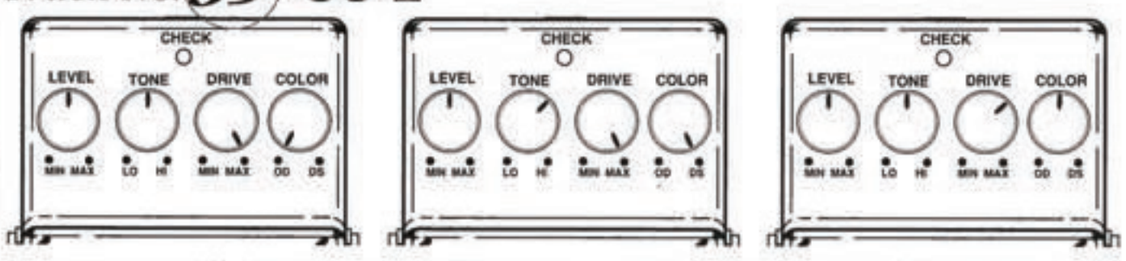
A collection of sound samples illustrating the most useful application of today's models

(The setting diagrams correspond to the recorded sound sources on CD-1.)

Track No. 34 OD-3

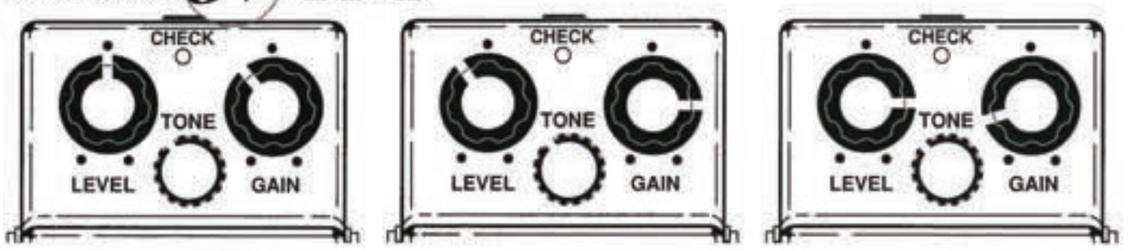


Track No. 35 OS-2

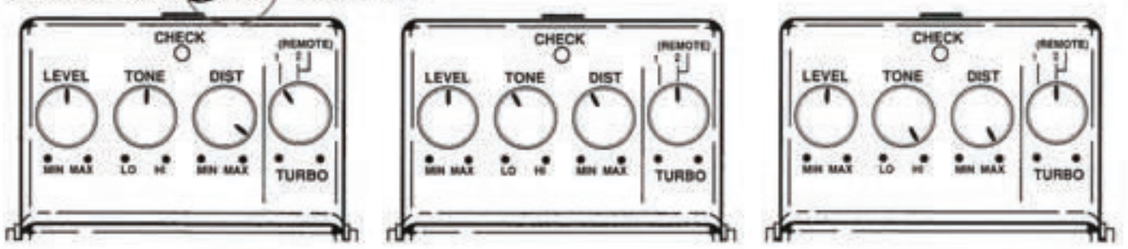


Track No. 36 SD-1

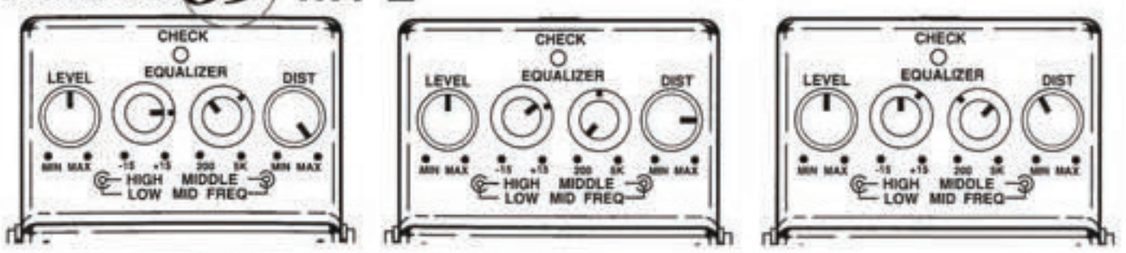
Track No. 37 BD-2



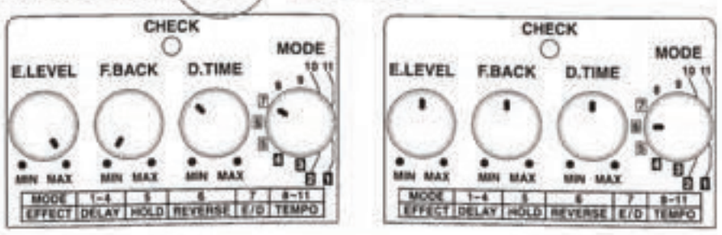
Track No. 38 DS-2



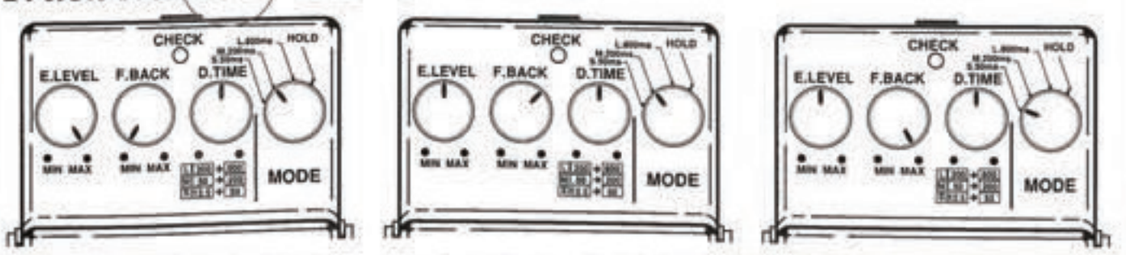
Track No. 39 MT-2



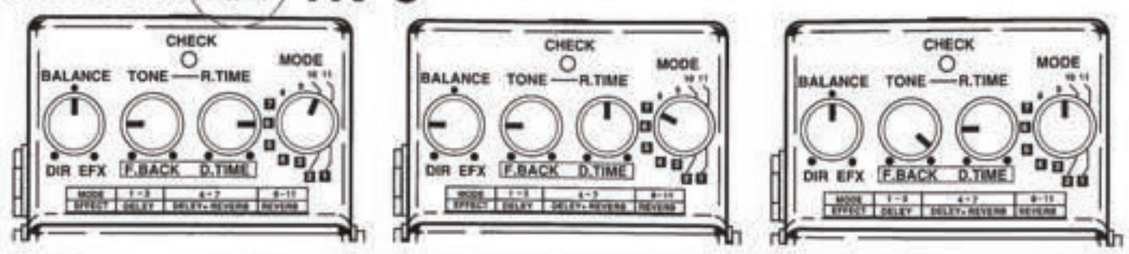
Track No. 40 DD-5



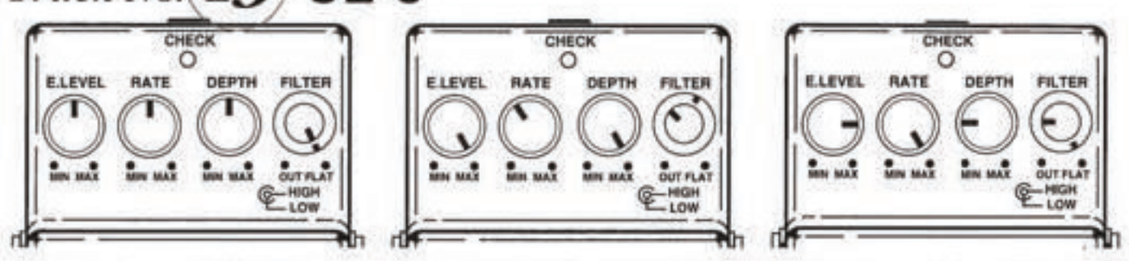
Track No. 41 DD-3



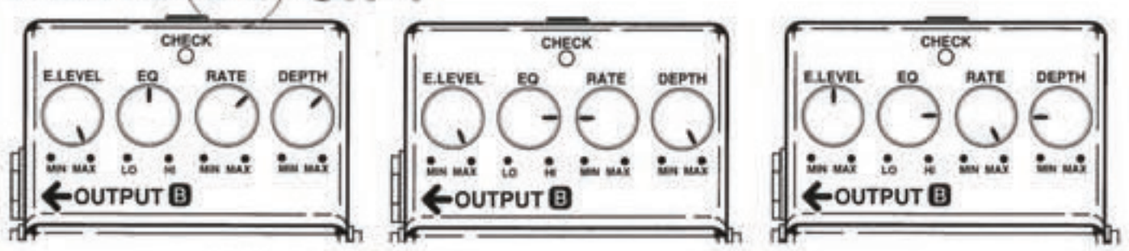
Track No. 42 RV-3



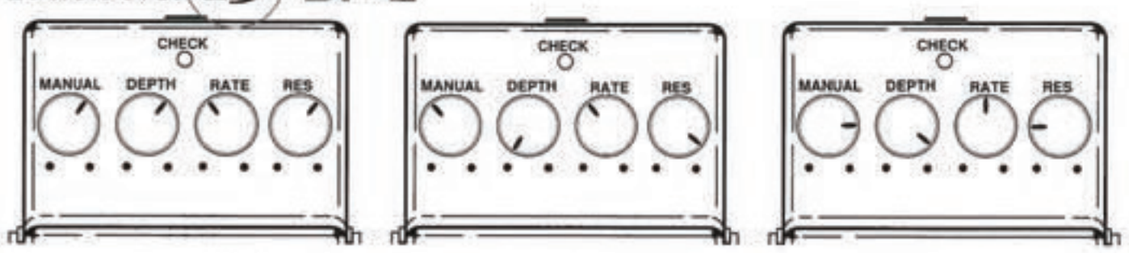
Track No. 43 CE-5



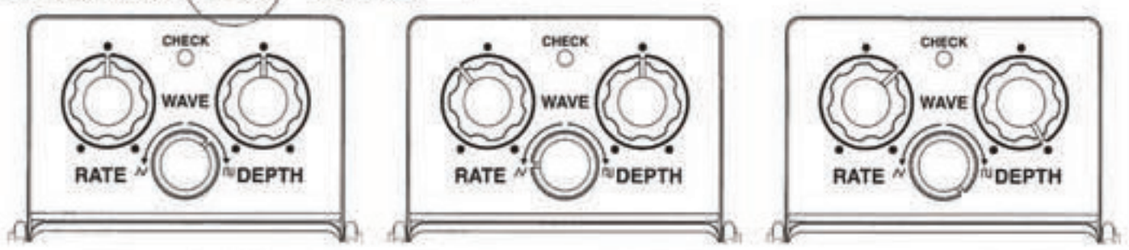
Track No. 44 CH-1



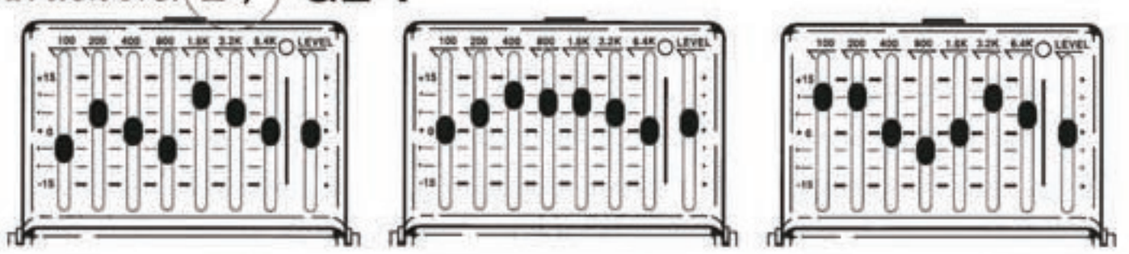
Track No. 45 BF-2



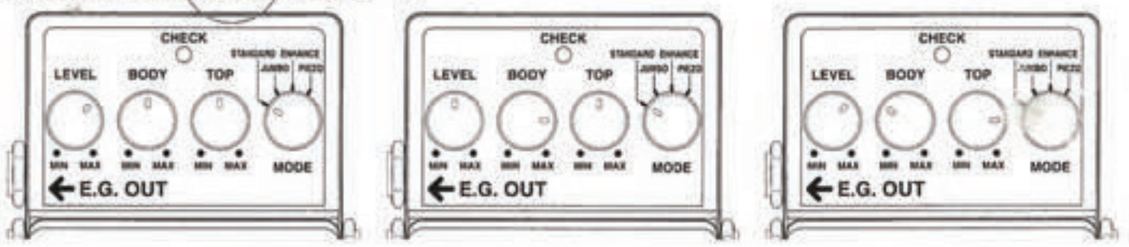
Track No. 46 TR-2



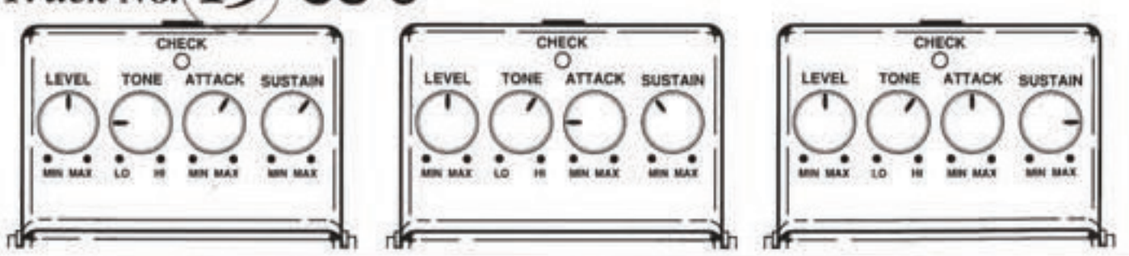
Track No. 47 GE-7



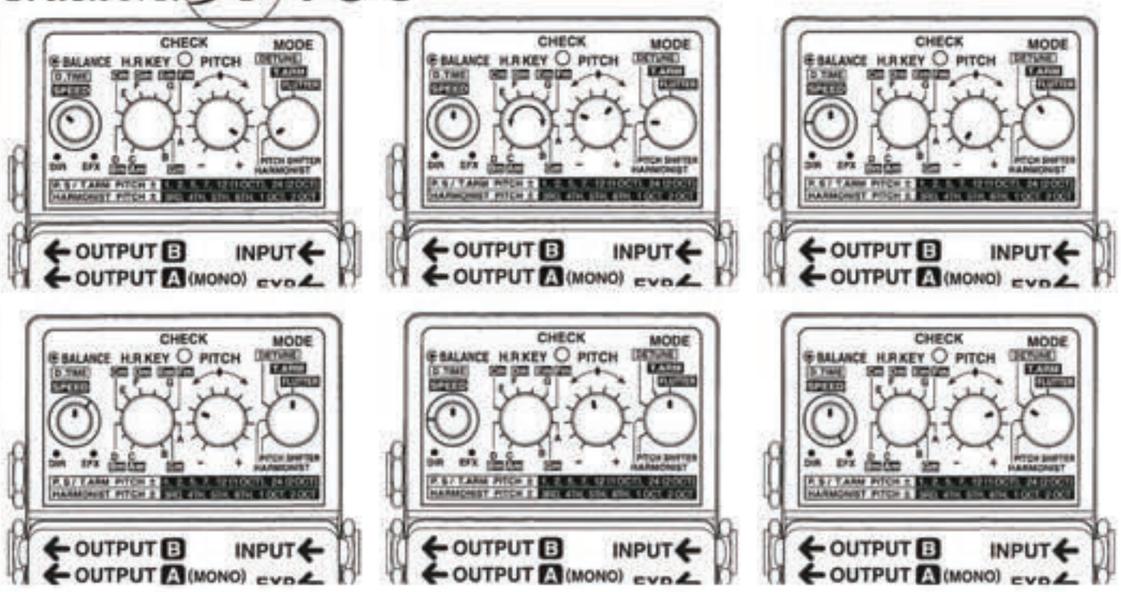
Track No. 48 AC-2



Track No. 49 CS-3

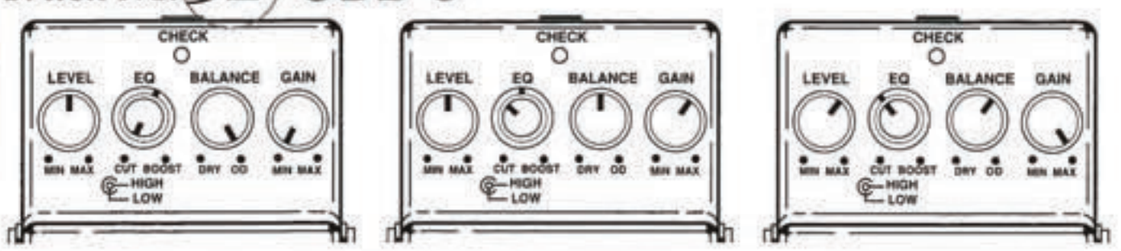


Track No.50 PS-5

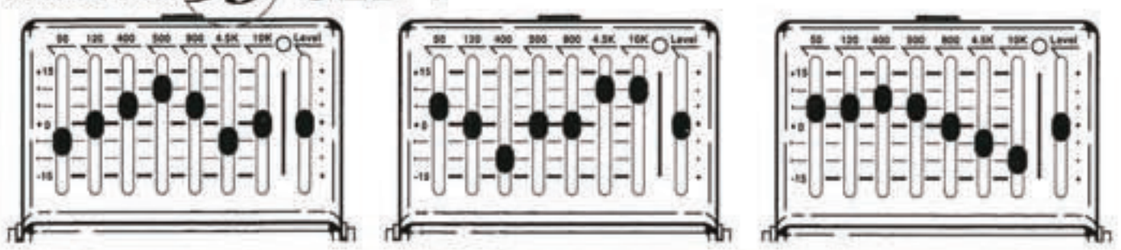


Track No.51 OC-2

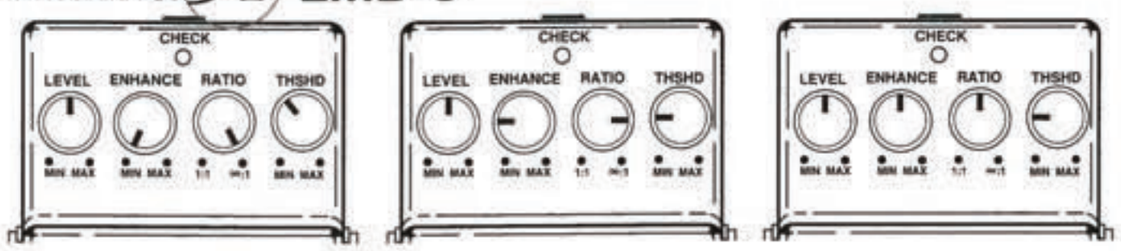
Track No.52 ODB-3



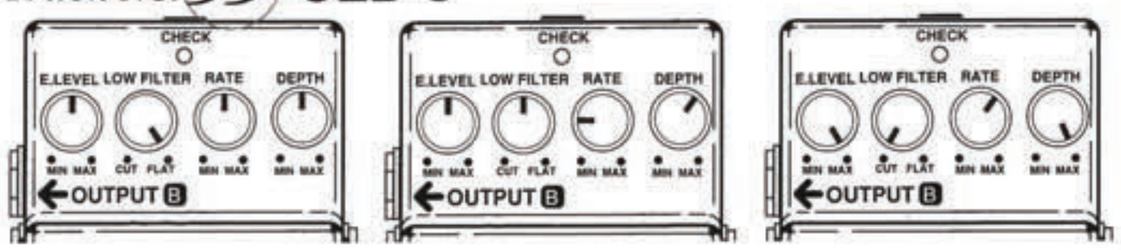
Track No.53 GEB-7



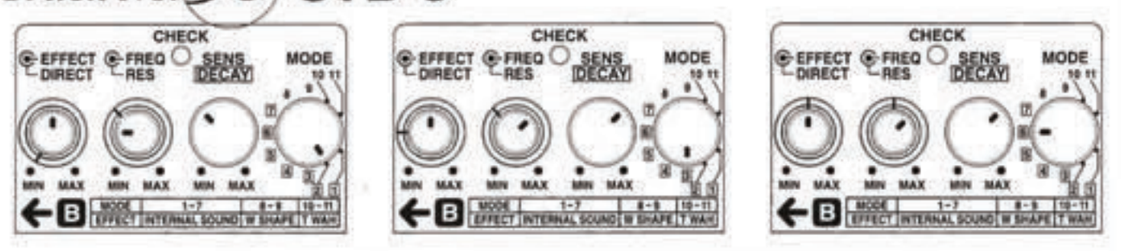
Track No.54 LMB-3



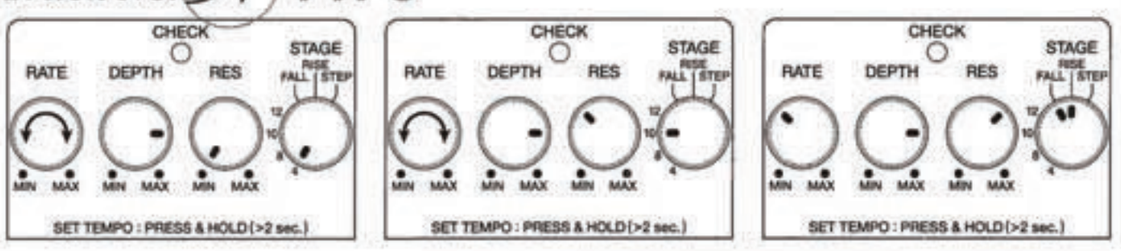
Track No.55 CEB-3



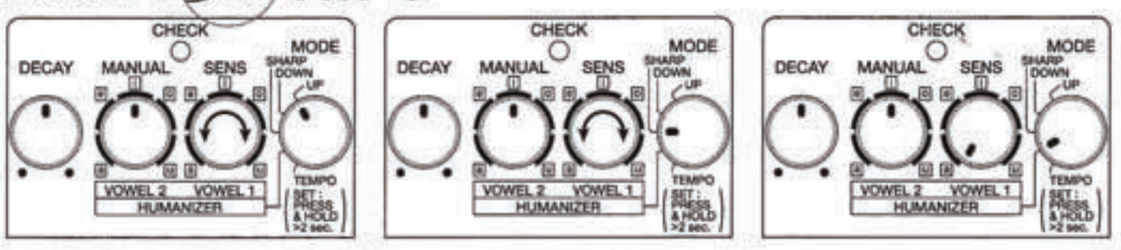
Track No.56 SYB-3



Track No.57 PH-3



Track No.58 AW-3



Best sounds of discontinued models

- Track No.59 DS-1
- Track No.60 SD-2
- Track No.61 OD-2R
- Track No.62 HM-3
- Track No.63 PW-2
- Track No.64 XT-2
- Track No.65 FZ-3
- Track No.66 PH-2
- Track No.67 AW-2
- Track No.68 HR-2
- Track No.69 PS-3

Experience the power of three models with the latest available twin pedals!

Track No.70 GP-20
(Sound comparison of the features of modeling with the various amps)

R-FIRE STACK	– CD Time: 0'00" ▷ 0'06"
LEAD	– CD Time: 0'09" ▷ 0'15"
CRUNCH	– CD Time: 0'16" ▷ 0'22"
CLEAN	– CD Time: 0'24" ▷ 0'30"
MILD CRUNCH	– CD Time: 0'32" ▷ 0'37"
TWEED CRUNC	– CD Time: 0'39" ▷ 0'45"
TWEED CLEAN	– CD Time: 0'46" ▷ 0'52"
VINTAGE STACK	– CD Time: 0'54" ▷ 1'00"
MATCH DRIVE	– CD Time: 1'02" ▷ 1'08"
MODERN STACK	– CD Time: 1'09" ▷ 1'15"
60's BRIT COMBO	– CD Time: 1'19" ▷ 1'25"
METAL STACK	– CD Time: 1'28" ▷ 1'35"

Track No.71 EQ-20
(5 patterns selected from preset settings)

Track No.72 RC-20
(Duplex play using sound-on-sound)

Bestseller Rankings

BOSS Compact Effects

Rankings are based on the production data compiled to date.
Any surprises? Is it what you expected?
Would you have made the same choices?

Best 7 Models with the largest production volumes

as of the end of January 2002

1st	**MT-2 Metal Zone**	Went on the market in March 1991, sold for 10 years and 10 months
2nd	**DS-1 Distortion**	Went on the market in June 1978, sold for 23 years and 7 months
3rd	**DD-3 Digital Delay**	Went on the market in August 1986, sold for 15 years and 5 months
4th	**GE-7 Equalizer**	Went on the market in July 1981, sold for 20 years and 6 months
5th	**HM-2 Heavy Metal**	Went on the market in October 1983, sold for 8 years until production was discontinued in October 1991
6th	**BF-2 Flanger**	Went on the market in June 1980, sold for 21 years and 7 months
7th	**SD-1 SUPER Over Drive**	Went on the market in February 1981, sold for 20 years and 11 months

Best 5 Ranking of long-selling models

as of the end of January 2002

1st	**DS-1 Distortion**	Marketing started in June 1978, sold for 23 years and 7 months
2nd	**BF-2 Flanger**	Marketing started in June 1980 / 21 years and 7 months
3rd	**SD-1 SUPER Over Drive**	Marketing started in February 1981 / 20 years and 11 months
4th	**GE-7 Equalizer**	Marketing started in May 1981 / 20 years and 8 month
5th	**OC-2 Octave**	Marketing started in April 1982 / 19 years and 9 months

Best 5 Rare finds these days, the following are the shortest-lived models

as of the end of January 2002

1st	**PW-2 Power Driver**	In production for 9 months
2nd	**XT-2 Xtortion**	In production for 1 year and 9 months
3rd	**FZ-3 Fuzz**	In production for 2 years
4th	**FT-2 Dynamic Wah**	In production for 2 years and 11 months
5th	**LM-2 Limiter**	In production for 4 years
	DC-3 Digital Dimension→Digital Space-D	In production for 4 years

Distortion models that took the world by storm

Right now, the MT-2, the most exciting distortion model in the history of BOSS compact effects processors, is creating shock waves! You might find this surprising for a model that's considered highly idiosyncratic, but it's for real, and it just goes to show how highly the character of the MT-2 is valued worldwide. Incidentally, the Chorus family of effects for which BOSS is so well-known didn't make the list, but with so many models that come with Chorus, Phaser and other such effects, we can assume their popularity as well. The models that include chorus tend to have lower production volumes than models that only have one type of sound.

Regular long-term members of the BOSS product family

Typical "Simple and Ultimate" distortion gradually climbed to the top of the popularity list.

The same applies to all of the models included in the list – these are the steady front-runners in the BOSS lineup!

Models that remain consistently popular – Get them now, or lose the opportunity!

The PW-2 had the shortest production span of all, but if you listen to the CD-1 included in the appendix of this book (Track No. 32), you'll discover the powerful distortion of this model, its roughness and fine granularity. I'm sure many of you will consider this a knockout pedal. The fish that gets away is always bigger, right? The FZ-3 is still a popular item on the used equipment market, and is being looked at in a new light, so if you're going to pick up one of these, better do it now.

Finally, revealed!

Facts about the BOSS compact effects manufacturing process! We've obtained documentary evidence!

Based on the evidence, we have uncovered the secrets of the BOSS compact effect production process, and discovered the surprising truth...

BOSS compact effects are famous throughout the world music scene. Because BOSS products are so widely used, there are probably many people who imagine that the factory where the products are made is fully automated with computer control. But hold on! The minute we got a hold of these pictures of the production process, taken at the current Taiwanese factory, that futuristic image was blown away. We were surprised to see photos of human hands at work. At the body painting station, a skilled craftsman is holding a spray gun in his right hand and spraying color onto a line of cases. If you don't call this "hand-made," what do you call it? Just as in the body-painting scene, we find in these pictures a very human production site, totally different from the image of mass-production. In fact, the scene isn't really different from the boutique effect makers that have recently become popular due to their claims of high hand-made quality and sound quality. In other words, it is no exaggeration to say that BOSS compact effects are actually hand-made.

In December 1986, BOSS shifted its production base from the domestic factory in Japan where BOSS products were previously produced, to RTC (Roland Taiwan Electronic Music Corp.), a new company that was established in Taiwan. Together with that move, we also began to produce compact effects at a factory in Taiwan. This is why models produced since that time have the label "MADE IN TAIWAN." Maybe this'll lead to a change of opinion among extreme BOSS fans who prefer "MADE IN JAPAN."

Pedal immediately after molding

▲This is what the pedal you can step on 100,000 times without breaking looks like when it's first created.

Case machining

▲This is what the box looks like before painting. Even at this stage, it has the distinctive BOSS sense of presence.

Body painting

▲Amazingly, boxes are lined up one by one and painted by human hands.

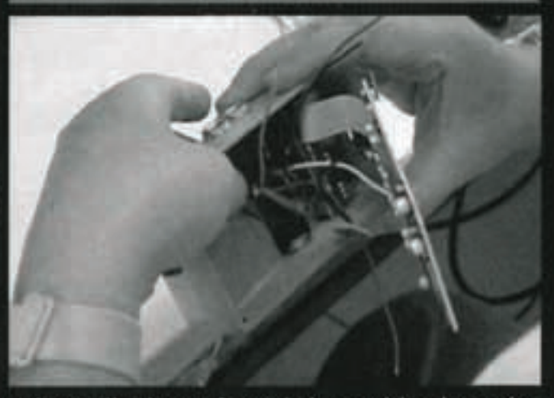
Silk-screen (Logo) printing

▲Not even a slight shift is allowed in logo printing. This too is a craftsman's job!

Nut tightening

▲Tightening without leaving scratches or creating a "used" appearance... This takes expert skill!

Board installation

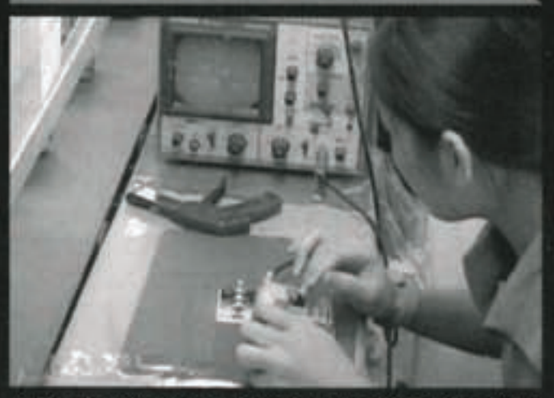


▲Installation of each board is done by hand, as you can see.

Soldering

▲Even soldering is done manually. This is precise handwork.

Operation check



▲Each effect is rigorously checked after board installation and wiring.

Knob mounting

▲Seeing this should give you a feeling of affection for each knob.

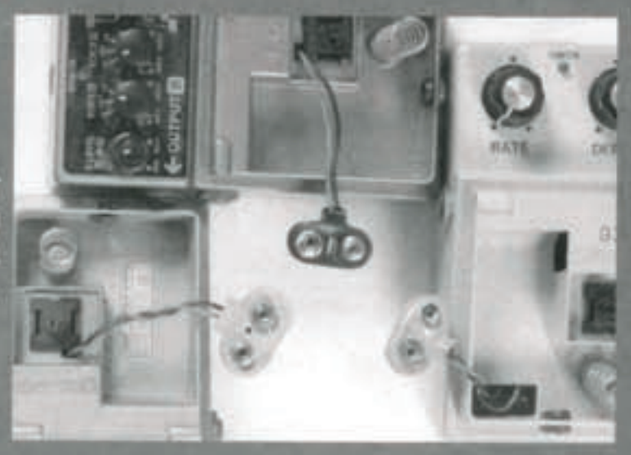
*The photos on this page, which include pictures captured from video, vary in picture quality.

These are the BOSS weak points!

BOSS is famous for being the toughest around, but even BOSS has weaknesses. But, hey, what's wrong with that? A little vulnerability makes the relationship more intimate. You'd just get sick of somebody who's totally perfect. Right?

Weak point 1 Don't pull too hard on the battery snap

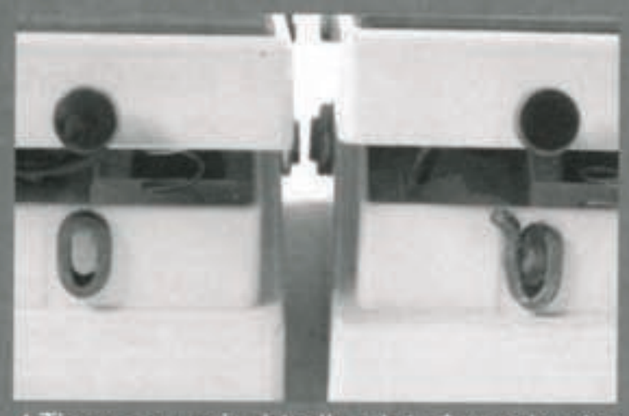
A long time ago – 24 years ago to be exact – the BOSS compact effect dramatically solved the problem of inconvenient battery replacement. This is because the pedal section, which is also the battery box lid, was redesigned to open simply by turning a screw with your finger. However, when you remove the old battery from the battery box during replacement, you need to be a bit careful when pulling the snap off the battery. In early and middle period boxes in particular, the lead wire that comes out from the near side of the battery box is short, and unsnapping the battery may be a little more difficult than with models from later periods. If you pull the wire too roughly, you may end up breaking it.



▶You need to be particularly careful about pedals in which the lead wire base comes out from the near side of the box, as in the CE-2 on the right.

Weak point 2 Don't loosen the thumbscrew halfway

As was noted in the section on the battery snap, the thumbscrew is very convenient. It's easy to grip, and it makes you want to turn it, even if you don't have a good reason. That's okay, but if you do turn it, don't leave it at the middle position. Be sure to turn it all the way. If you think, "That's probably okay..." and don't loosen it exactly to the correct position, the screw tip will remain sticking out, and it'll wear and rip the rubber pad around the screw. So, even if the battery goes dead during a live performance – by the way, you can avoid that by using an AC adapter! – don't forget to be nice to your beloved BOSS compact effect. Keep turning and turning and turning, and make sure you turn the screw more than you usually do to ensure a margin of safety.



▲There are undoubtedly a lot of people who have ripped the rubber pad around the screw, as you can see at right.

A bad example you must not follow!

▲No matter what, the halfway position is no good. Thinking, "It's only sticking out a little" is a good way to damage your effect.

In this position, you don't have to worry

◀That's it. If you always make sure to loosen the screw this much, there won't be any wear, and both you and the rubber pad will be happy.

Weak point 3 Carefully close the box your effect came in

What's that? You say the rolled-up instruction manual is also a weak point? Don't be such a nitpicker! What you ought to be worried about is tearing the inside of the box with the thumbscrew (aka, the "bellybutton" of a BOSS effect). At first, you may have thought, "Hey, is this box dented in?" but when you keep pulling out the effect and putting it back in, it gets ripped before you know it... To take good care of the box, there are two things you need to watch out for. First of all, you should never loosen the thumbscrew halfway, and second, you should be gentle and careful when removing the effect from the box and putting it back in. These protective measures show how much you love your effect.

▲If you look at the thumbscrew as a "bellybutton," it makes your effect a little sexy. It's also a good idea to alternate the way the effect faces when you put the effect back into the box.

The BOSS BOOK
General index of all listed compact effects models

Bold numeral indicates pages with photos, CD sound source links and related description.

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FZ-2 HYPER Fuzz
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CHORUS / PHASER / FLANGER / VIBRATO

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PH-1 Phaser
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VB-2 Vibrato
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PN-2 Tremolo/Pan
P.**018**, 036, **039**, **049**, 051, 065, **090**, 094, 103, 107, **114**

TR-2 Tremolo
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HR-2 Harmonist
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CS-2 Compression Sustainer
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CS-3 Compression Sustainer
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DD-2 Digital Delay
P.**026**, 036, 039, **049**, 051, 055, 063, 065, 077, 080, **085**, 089, 093, 102, 104, 105, 106

DM-3 Delay
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TU-2 Chromatic Tuner
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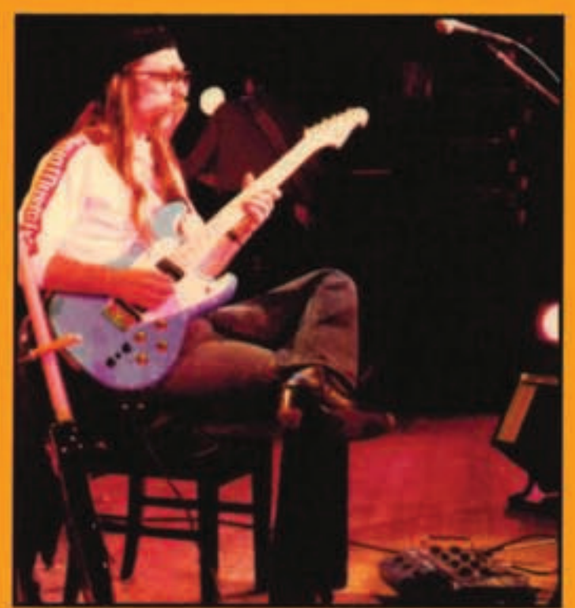

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