

The Barge Concepts MB-1 – “The Grinder”

The MB-1 is a thoroughly modern implementation of an Envelope-Controlled Filter (ECF), with a wide range of controls to allow an even greater range of effects and sounds. The MB-1 is based largely on the design of the out-of-production Lovetone 'Meatball'®, perhaps the most highly respected and sought-after ECF available until now. The MB-1 builds on the capabilities of the Meatball, adding a number of features and performance enhancements.

This document will describe every aspect of the MB-1: all the jacks, switches, knobs, and LEDs. Don't be discouraged if some of the description is too technical – there's a lot to the MB-1 and even if you don't absorb all of this the first time through, you'll have a better understanding of how the unit works.

In addition to this document, a number of other MB-1 related FAQs can be found on our web site. For a general introduction to ECFs, see [the Barge Concepts ECF guide](#). For hardcore specification junkies, even more detailed technical information is available in the [MB-1 Technical Specifications](#). For expression pedal compatibility, setup information, and recommendations, see [xxxxcomingsoonxxx](#).

Basic Input and Output Jacks

IN - A fully buffered, high impedance input whose buffered output is always connected to the envelope generator (EG). Inserting a ¼ inch mono (T/S) plug into this jack also activates the internal 9V battery, turning the unit on, so remember to unplug when not in use.

SEND – A fully-buffered, low impedance output that is always the same in amplitude and phase as the signal applied to IN. It is fully buffered to avoid any interaction with IN.

RECEIVE – A fully buffered, high impedance input whose output is internally connected to the input of the filter. When nothing is plugged into RECEIVE, the input of the filter is connected to the buffered equivalent of the signal applied to the IN jack, leaving both the filter and EG connected to the same signal.

OUT – A fully buffered, low impedance output. It is the output of the BLEND and OUTPUT GAIN controls described later in this document.

Envelope Generator Controls

ENVELOPE LEVEL – This knob controls how much of the signal at the Input jack is applied to the envelope generator (EG). The EG has a substantial amount of fixed gain, so this control has the effect of a combined input level/gain control. Fully counter-clockwise (CCW) reduces the EG input signal to zero and guarantees no EG output. Likewise, fully CW insures maximum gain and can cause the EG to 'max out' when presented with most reasonable signals at the Input jack - more on this later.

ENV B/W – A three-position rotary switch that controls the portion of the bandwidth applied to the EG. MAX applies nearly everything in the audible spectrum to the EG, while MED and MIN concentrate on successively higher portions of the spectrum. Thought of a different way, as the control is turned from MAX to MIN, the EG is less and less responsive to low frequency signals.

SWEEP ATTACK – All of the controls of the EG result in changing (charging and discharging) the voltage on a filter capacitor. This voltage is then used to control the magnitude, or range, of the filter sweep. How much and how fast that voltage is changed results from the various changes in settings. The SWEEP ATTACK knob controls how fast the capacitor gets charged in response to an increasing signal amplitude at the input jack. The knob can be thought of as ‘Attack Speed’, so fully CW is fastest, and fully CCW is slowest.

SWEEP DECAY – Whereas the SWEEP ATTACK knob controls the charging of the capacitor, the SWEEP DECAY knob controls the discharging of the capacitor. The same rules apply in how to think of the knob; it’s really ‘Decay speed’, so fully CW is the fastest decay, while fully CCW is slowest. It MUST be remembered that SWEEP ATTACK and SWEEP DECAY are interactive; it’s possible to set either control such that there is no apparent change when the other is turned. Starting near midpoints is generally recommended, so that final settings can be approached more gradually as the effect of each is better understood.

Filter Controls

FILTER TYPE – A three-position rotary switch that selects one of the three available filter types; high pass (HP) which provides uniform amplitude response above the corner frequency, low pass (LP) which provides uniform amplitude response below the corner frequency, and band pass (BP) which provides declining amplitude response on either side of the center frequency.

FILTER FREQ – A four-position rotary switch that sets the operating frequencies for all of the filter types. These are settings for the nominal, or starting, values of frequency, but all are changed when the EG is actively sweeping the filter.

FILTER COLOR – This knob controls the resonance of the filter, making it noticeably more responsive when a specific frequency has been reached. It also results in considerably higher amplitude response from the filter, and should be used with reasonable care. Starting near the midpoint is generally recommended, so that the final setting can be approached more gradually.

Sweep Controls and Indicator

SWEEP DIRECTION – The filter can be made to sweep up or down in frequency, from the filter nominal frequency to the upper limit set by the settings of other controls. If everything else is left constant, the UP position will make the filter sweep up in frequency from its nominal value, while the DOWN position will make it sweep down in frequency from whatever the current settings establish as the upper frequency. When sweeping downward, the lowest possible frequency will be the nominal, as set by the FILTER FREQUENCY switch. When set to the OFF position, no sweep happens, independent of the settings of all other controls.

SWEEP DEPTH – This knob is the final control that affects the operation of the sweep. With everything else set up to do a sweep – level, bandwidth, attack, decay, up/down – the magnitude of the sweep will be determined by the SWEEP DEPTH knob. Fully CCW is minimum sweep, while fully CW is maximum sweep that all the other settings will allow. SWEEP DEPTH directly controls the optically-isolated resistors in the filter.

SWEEP (LED) – The SWEEP LED serves as an indicator of sweep activity. It is useful when setting up the various controls of the unit as it gets brighter or dimmer based on all the variables that control sweep. During initial setup, it’s sometimes easier to leave the SWEEP DEPTH control

fully CW until the appropriate bright/dim cycling of the SWEEP LED is observed, then turning SWEEP DEPTH down until the desired effect is heard.

Other Controls and Indicators

OUTPUT GAIN – This knob provides up to 11 dB of gain at the OUT jack. The MB-1 is normally a unity-gain device, but a bit of gain on the output is sometimes useful. Fully CCW is unity gain; fully CW is maximum gain.

EFFECT BLEND – This knob controls the mix of clean signal from the IN jack and the output of the filter. Fully CCW is clean only, and fully CW is filter only. The 12:00 position is 50% wet and 50% dry.

Bypass Switch & LED – The 3PDT stomp switch alternates between true bypass (LED Red) and active (LED Blue). The LED also serves as a power indicator, as either Red or Blue will be on any time the unit is on. In the bypass mode, there is a 2.20 Megohm resistor to ground in the signal path to help suppress switching clicks and pops.

16V MAX – This external DC power input is a Boss-style jack that will accept filtered DC from virtually all of the popular DC sources that conform to the Boss specifications. When an appropriate plug from an AC adapter is inserted into this jack, the internal 9V battery is disconnected and the adapter supplies power to the MB-1. The MB-1 is turned on any time an active adapter is plugged into the DC jack, independent of whether or not anything is plugged into the IN jack. The MB-1 is designed to operate with a voltage anywhere between 5 and 16 volts, at a current less than 40 mA (milliamps). At no time should more than 16V be applied to the MB-1, as internal devices may be damaged. Be aware that some regulated supplies aren't really regulated very well, and a wall wart rated at 16V may actually provide a much higher voltage. Be sure of the output of your adapter before plugging it in. Just as a reminder, in the Boss standard, negative is on the center pin, and positive on the shell.

Expression Pedal Input Jacks

BLEND X – This jack accepts virtually any modern expression or volume pedal that changes its Tip-to-Sleeve resistance. Pedals whose minimum resistance is at or near zero, and whose maximum resistance is between about 8 KOhms and 250 KOhms can be accommodated and properly trimmed in on the MB-1 to completely duplicate the function of the EFFECT BLEND knob. When the expression pedal is plugged in, it automatically disables the EFFECT BLEND knob and transfers control to the pedal. It's important to perform the internal MB-1 adjustments of the small DIP switch and trimmer pot to insure that the full blend range is controlled by the pedal. The X blend circuit of the MB-1 insures full signal integrity by performing the blend inside the unit, not inside the pedal. This eliminates the signal losses associated with normal expression pedal circuits.

DECAY X – This jack is designed to add the resistance of the expression pedal to the value of the SWEEP DECAY pot. There is no internal adjustment for different pedal types, and we recommend a pedal with a Tip-to-Sleeve resistance of 50 KOhms – 100 KOhms to allow an appropriate range of adjustment. If the SWEEP DECAY knob is fully CW, a 100 KOhm pedal then closely duplicates the operation of the knob. If the SWEEP DECAY knob is in some intermediate position, the pedal will then allow longer decay times than would be possible with the knob alone. The rule of thumb for DECAY X is that you can only make decay slower than the knob setting, never faster.

DEPTH X – As with DECAY X, DEPTH X works in conjunction with its corresponding knob, SWEEP DEPTH, though a different rule of thumb applies. With DEPTH X, you can never get less depth than what is dialed in with the knob, only more. We recommend a pedal similar to the one we recommend for DECAY X – a Tip-to-Sleeve resistance between 50 KOhms and 100 Kohms. If the SWEEP DEPTH knob is fully CCW, a 100 Kohm pedal will (more or less) duplicate the range of the SWEEP DEPTH knob. With SWEEP DEPTH set to some intermediate value, the pedal will allow an increase in depth under foot control.

Warranty Statement

All Barge Concepts products are backed by a lifetime transferable warranty. If your Barge Concepts product ever fails, we will repair or replace the unit free of charge. Of course, the warranty doesn't cover abuse, and sometimes you will have to pay for the cost of shipping.

We hope you enjoy your Barge Concepts product. If you have any questions, please drop us an email at info@bargeconcepts.com. Also, sign up for our mailing list to be kept up-to-date on product news and special offers. Send your signup request to mailinglist@bargeconcepts.com.

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