MOTOR PEDAL MANUAL

CONGRATULATIONS ON PURCHASING THE MOTOR PEDAL!

YOU ARE HOLDING A PIECE OF HISTORY -
THE WORLD'S FIRST ELECTROMECHANICAL SYNTH ENGINE IN PEDAL FORMAT!

THE MOTOR PEDAL IS THE RESULT OF FIVE RELENTLESS YEARS OF INVENTION, FRUSTRATION, OBSESSION, AND BREAKTHROUGH MOMENTS – ALL DRIVEN BY GAMECHANGER AUDIO'S MISSION TO CHALLENGE THE STATUS QUO OF MUSIC TECHNOLOGY AND OFFER TRULY NEW SOUND EXPERIENCES.

INSIDE THIS BOX IS A LIVING, BREATHING, SPINNING MOTOR OSCILLATOR -
A NEW SOUND-SOURCE SHAPED BY ELECTRICITY, MAGNETISM, AND YOUR PLAYING.
IT'S NOISY. IT'S RAW. IT'S PHYSICAL. AND IT DOESN'T SOUND LIKE ANYTHING ELSE.

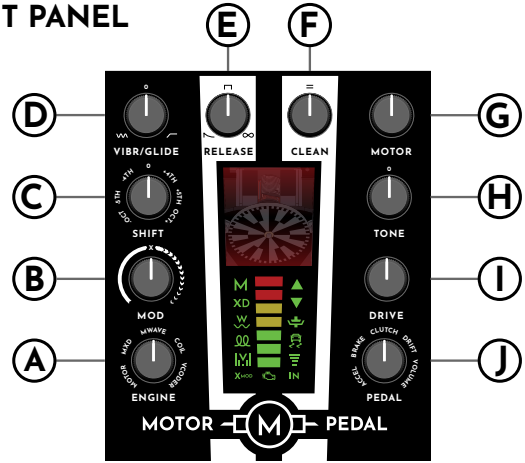
WE BUILT THIS FOR PLAYERS WHO WANT MORE THAN PRESETS.
WE BUILT THIS FOR THE CURIOUS, THE FEARLESS, AND THE HANDS-ON.
SO STEP ON THE GAS, CRANK UP THE VOLUME & LET IT ROAR!

OVERVIEW

The MOTOR Pedal is a monophonic synthesizer that responds to your instrument's pitch in real time. When you play a note, the input signal is analyzed by the internal **Pitch-Tracking Engine -** locking onto the note you're playing with speed & precision. This pitch and note information is then used to drive the MOTOR Oscillator: a brushed DC electromotor module with three rotating coils and a fixed electromagnetic pickup.

The Motor's Revolution Per Second (rps) to Hertz (Hz) ratio is 1:3 - **for example:** If the input signal is an A4 note at 440Hz, the MOTOR oscillator will need to spin at 146.6 revolutions per second (rps) to produce the target note.

FRONT PANEL



(A) ENGINE SELECTOR

The MOTOR PEDAL offers five unique MOTOR Synthesis modes:

MOTOR

Raw sound of the MOTOR's rotating coils being picked up by the inductor!
The MOD Knob lets you add extra grit using signal layering.

MxD

Multiplies the MOTOR Oscillator's signal with a variety of digital waveforms.
This produces a sharp and aggressive sound - MOD Knob changes waveshapes.

M-WAVE

Here the MOTOR Oscillator is used to control a digital waveform generator
Any jitter, glitch, or stall in the MOTOR is reflected in the digital oscillator's output!

COIL (not spinning)

Instead of using Direct Current (DC) to create movement, this mode uses Alternating Current (AC) to resonate the MOTOR's coils - this is known as the "Singing Coil" effect and it emits a strong electromagnetic signal that's also picked up by the inductor! MOD Knob adds warble using Pulse-Width Modulation!

VCODER

A vocoder-style engine, where the CLEAN input is the CARRIER, while the MOTOR signal is the MODULATOR. A multiband filter applies dynamics from the CLEAN input onto the MOTOR signal. MOD introduces movement via envelope-following.

(B) MOD / XMOD

A dual-range knob with two distinct functions:
Left Side (MOD): Engine-specific modulator (e.g., wavefolding, timbral shifts, waveform morphing). Intensity increases from MIN; Behaviour varies per ENGINE.

Right Side (X-MOD): Routes the MOTOR signal through an analog multiplier IC, where it is modulated by the MAIN Input Signal (K) - producing a wide range of complex, gritty textures, and essentially "fusing" the two signals together.

Indicated by the **XMOD** *symbol on the front panel - flashing white with dynamics!*

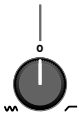
(C) SHIFT

Rotary selector for setting a pitch offset interval that changes the MOTOR oscillator's output relative to the input signal.
Pitch offset positions: **–1 Oct, –5th, –4th, 0, +4th, +5th, +1 Oct**

(D) VIBR / GLIDE

No Effect

Left Side (VIBR): Introduces a vibrato effect to the MOTOR oscillator. Ranges from subtle & slow modulation (~2Hz) to an intense & fast vibrato (~16Hz).



Right Side (GLIDE): Applies a portamento effect to MOTOR oscillator, creating smooth slides between notes. Slide length is based on pitch distance between notes.

(E) RELEASE

Center:
follows input gate exactly

Left Side: Shortens the note decay time, allowing you to create tighter, more percussive & articulated sounds.

Right Side: Increases release length all the way up to a sustained, continuous drone that only reacts to pitch, not input volume.

(F) CLEAN VOL

Controls the volume of the CLEAN (dry) input signal present in main OUTPUT (P)

Center:
Unity gain (same level as input);

Left Side: Clean signal muted.

Right Side: Clean signal boosted up to 2x.

(G) MOTOR VOL

Sets the volume of the MOTOR signal present in the main OUTPUT (P)
Does NOT apply to the instrument's clean signal, or the TRACK In signal.

(H) MOTOR TONE

Analog Tilt-EQ shapes the MOTOR Output - Does NOT apply to CLEAN signal!
Center position is Neutral; turn Left to boost Bass; turn Right to boost Treble.

(I) MOTOR DRIVE

Send the MOTOR Signal into a dedicated Analog Distortion circuit -
for added gain, grit & volume. Does NOT apply to CLEAN signal!

(J) PEDAL MODE SELECTOR

Five-way switch that determines the behaviour of the built-in expression pedal:

The pedal has two stages: the mechanical range, and a deeper "floor it" zone:

Normal range:
From raised pedal to fully depressed!

Floor-it range:
Extra force applied at the end of the pedal's range.

as you apply extra pressure - you will see the mode symbols turn orange!
Pressure needed to enter "floor it" zone can be adjusted in Settings (see next page)

ACCELERATE

Normal (Green):
Raises pitch by a full octave.

Floor-it (Orange): Gradually raises the pitch up by another octave.

BRAKE

Normal: Lowers pitch by a full octave.

Floor-it: Gradually drops the pitch down by another octave.

CLUTCH

Normal:
Temporarily disables the pitch tracking engine:
The currently playing pitch will hold until you release the pedal.

Floor-it:
"Locks" the pitch in place even when pedal is released - indicated by the Orange symbol.
Press again to unlock (Green symbol).

DRIFT

Normal: Introduces a responsive vibrato effect.

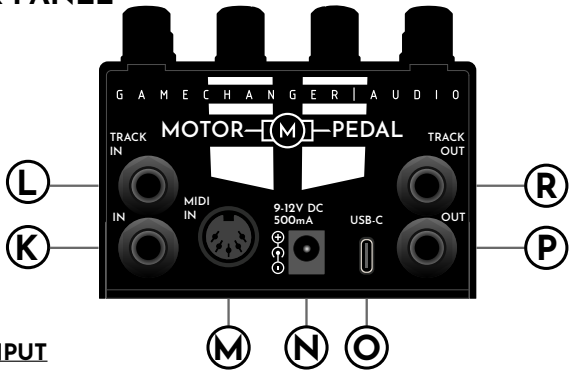
Floor-it: Fast, chaotic fluctuations—unpredictable and wild sound!

VOLUME

Normal:
Controls MOTOR signal volume from 0% to 100%.
No output when pedal released!

Floor-it: (Symbol turns orange) will switch the volume pedal to a boosted range: going from 50% to 100%.
Flooring the pedal again returns it to normal mode 0-100% (Green Symbol).

BACK PANEL



Ⓚ INPUT

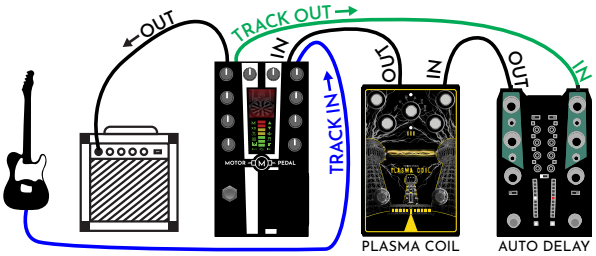
MAIN INPUT Ⓚ (mono), which passes signal through the MOTOR Pedal to the MAIN OUTPUT Ⓟ; it's VOLUME is adjustable with the CLEAN VOL knob Ⓕ

IN Signal is used for **X-MOD in all engines**, as the **VOCODER** Modulator, and for **PITCH TRACKING, if no separate input is routed into TRACK INPUT Ⓛ**

Ⓛ TRACK INPUT

Separate Input for the pedal's TRACKING signal - the audio signal that the pedal's tracking engine will analyse and use to regulate the MOTOR's pitch. TRACKING ENGINE will **prioritise TRACK IN Ⓛ signal, over MAIN INPUT Ⓚ**

*YOU CAN USE THE TRACK INPUT Ⓛ TO **GO AROUND** SIGNAL-ALTERING PEDALS - THUS ENSURING PRECISE TRACKING:*



*THEN **BACK OUT FROM TRACK OUT** TO SIGNAL ALTERING PEDALS*

TRACK IN Ⓛ signal is used for pitch-tracking, and the **TRACK OUT** Ⓡ goes into AUTO Delay & PLASMA Coil, then sent back into MOTOR Pedal's MAIN IN Ⓚ, used as audio signal for the **X-MOD** engine and as **VOCODER** Modulator signal.

(M) MIDI INPUT

MIDI 5 PIN DIN cable input - suitable for playing the MOTOR Pedal as a mono synth (Notes & Velocity), or for controlling the MOTOR Pedal's parameters via PC & CC messages - please refer to the **MIDI TABLE** for MIDI addresses.

(N) DC POWER INPUT

CENTER NEGATIVE Pedal Power supply 9-12 V, with a minimum of 500 mA;

DO NOT USE AN 18 VOLT POWER SOURCE!

(O) USB-C

Connect device for firmware updates, diagnostics, and MIDI over USB.

(P) OUTPUT

The main audio OUTPUT for the signal generated by
the MOTOR Pedal + the CLEAN Signal (WET + DRY SIGNAL).

(R) TRACK OUTPUT

Provides a copy of the tracking signal - whatever is plugged into TRACK IN (L), or if nothing is plugged into TRACK IN, then an unaffected copy of the instrument plugged into MAIN INPUT (K) will be provided.
In all cases, the TRACK OUTPUT is not affected by the CLEAN VOL Knob (F) and is independent of the pedal's on/off state.

INFO ABOUT THE MOTOR

The MOTOR Module used in the MOTOR Pedal is based on a type 030 Brushed electromotor - **MOTOR MODULE ASSEMBLY part name is MMB1.**
MOTOR Module is rated for a minimum of 300 hours continuous operation at Top speed.
Conservative estimate between 900-1500 hours of musical playing -
or equivalent to 2 years of heavy usage. When this limit is reached (above 400 Million revolutions) - the front panel CHECK ENGINE light will turn ORANGE.

ORANGE ENGINE LIGHT - Motor Replacement due!
This will still let you use the MOTOR without issues for an indefinite amount of time - but you should already order a replacement motor and prepare to change it soon.

RED ENGINE LIGHT - Motor will fail soon!
This means that the MOTOR is physically drawing more current than it's supposed to, which is a strong indication that the MOTOR is physically faulty
and can potentially stop at any moment!

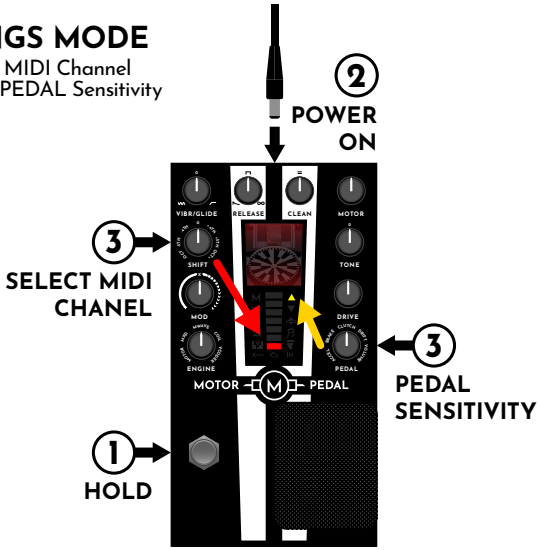
In the case of Motor Failure during playing - there is no danger being posed to the MOTOR Pedal, to neighboring devices or to the user!

MOTOR REPLACEMENT PROCEDURE:
FOLLOW LINK BELOW, or **SCAN QR CODE** →

www.gamechangeraudio.com/motor-pedal-update-support/

SETTINGS MODE

for selecting **MIDI Channel**
& adjusting **PEDAL Sensitivity**



With power cable unplugged

1 PRESS & HOLD THE ON/OFF FOOTSWITCH

2 PLUG IN THE POWER CABLE

While holding the footswitch wait for the pedal to start up. Red and yellow light on the dashboard indicates that the pedal is in SETTINGS MODE.

3 ADJUST

In SETTINGS MODE you can adjust two parameters:

MIDI CHANNEL

Select the MIDI channel 1-7 using the SHIFT Knob Ⓒ.
Red light in the dashboard BAR indicates the current MIDI channel setting.

MIDI CHANNEL:
7 –
6 –
5 –
4 –
3 –
2 –
1 –

PEDAL SENSITIVITY

Select Pedal sensitivity LVL 1-5 with PEDAL knob.
The yellow light on the right of the dashboard indicates current pedal sensitivity setting.

TABLE TOP / HAND 5 –
LIGHT / SITTING 4 –
NORMAL / SITTING 3 –
NORMAL / STANDING 2 –
HEAVY / LEAD-FOOT 1 –

Once everything is set, you can save and exit the SETTINGS MODE by **RELEASING THE ON/OFF FOOTSWITCH**.

SAFETY INFORMATION

FOR THE US:
This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with these instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: - reorient or relocate the receiving antenna. - Increase the separation between the equipment and receiver. - connect equipment into an outlet or a circuit different from that to which the receiver is connected. - consult the dealer or an experienced radio / TV technician for help. This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Unauthorized changes or modifications to the system can void the user's Authority to operate this equipment. This equipment requires shielded interface cables in order to meet FCC Class B limit.

FOR EUROPE:
This product complies with the requirements of Electromagnetic Compatibility Directive
2014 / 30 / EU.

FOR CANADA:
This class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations. AVIS: cet appareil numérique de la classe B respecte tout les exigences du règlement sur le matériel brouilleur du Canada.

WARRANTY & RETURNS

You have a 30 day return period when you may return the product and receive a full refund. You will only be responsible for return shipping charges. Each MOTOR Pedal manufactured by Gamechanger Audio is warranted to be free from defects in materials and workmanship for one year from the date of shipping or longer if required by the relevant legislation. This warranty shall not apply to any unit which in the opinion of the manufacturer has been used improperly or has been mechanically or otherwise damaged by accident, misuse or negligence or has been altered or repaired in such a way to impair performance, nor shall it apply to cosmetic defects (considered normal wear and tear). Other parts, such as knobs, rubbers, cables, cable connectors, are non replaceable. The manufacturer reserves the right to make changes in the design or construction of this equipment without obligation to install similar changes in equipment already sold.

MANUFACTURER ADDRESS:
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RoHS

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MOTOR PEDAL MIDI TABLE & TECH SPECS

CC	NAME	MSB value range	MSB and LSB val range (CC_msb+32 is CC_lsb)
1 (MODWHEEL)	MOD	[0…127] = [min MOD…max MOD]	[0…16383] = [min MOD…max MOD]
8	SHIFT	[0…17] = [-Oct], [18…35] = [-5th], [36…53] = [-4th], [54…72] = [0], [73…90] = [+4th], [91…108] = [+5th], [109…127] = [+Oct]	[0…2340] = [-Oct], [2341…4680] = [-5th], [4681…7021] = [-4th], [7022…9361] = [0], [9362…11702] = [+4th], [11703…14042] = [+5th], [14043…16383] = [+Oct]
9	RELEASE	[0…127] = [min RELEASE…max RELEASE]	[0…16383] = [min RELEASE…max RELEASE]
10	VIBR/GLIDE	[0…63] = [max VIBR…min VIBR], [64…127] = [min ACCEL…max ACCEL]	[0…8192] = [max VIBR…min VIBR], [8193…16383] = [min ACCEL…max ACCEL]
11	MOD	[0…127] = [min MOD …max MOD]	[0…16383] = [min MOD…max MOD]
12	ENGINE	[0…25] = [ENGINE 1: MOTOR], [26…51] = [ENGINE 2: MxD], [52…76] = [ENGINE 3: MWAVE], [77…102] = [ENGINE 4: COIL], [103…127] = [ENGINE 5: VOCODER],	[0…3276] = [ENGINE 1: MOTOR], [3277…6553] = [ENGINE 2: MxD], [6554…9829] = [ENGINE 3: MWAVE], [9830…13106] = [ENGINE 4: COIL], [13107…16383] = [ENGINE 5: VOCODER],
13	PEDAL	[0…25] = [PEDAL MODE 1: ACCEL], [26…51] = [PEDAL MODE 2: BRAKE], [52…76] = [PEDAL MODE 3: CLUTCH], [77…102] = [PEDAL MODE 4: DRIFT], [103…127] = [PEDAL MODE 5: VOLUME],	[0…3276] = [PEDAL MODE 1: ACCEL], [3277…6553] = [PEDAL MODE 2: BRAKE], [6554…9829] = [PEDAL MODE 3: CLUTCH], [9830…13106] = [PEDAL MODE 4: DRIFT], [13107…16383] = [PEDAL MODE 5: VOLUME],
14	EFFECT ON (FSW)	[0…63] = OFF, [64…127] = ON	[0…8191] = OFF, [8192…16383] = ON
15	PEDAL VALUE	[0…127] = [off … fully pressed (normal range)]	[0…16383] = [off … fully pressed (normal range)]
16	FLOOR-IT VALUE	[0…127] = [pressed…max pressure (floor-it)]	[0…16383] = [pressed…max pressure (floor-it)]
17	MIDI NOTE ONLY MODE (disable instrument input pitchtracker e.g. for vocoding)	[0…63] = OFF, [64…127] = ON	[0…8191] = OFF, [8192…16383] = ON
18	PEDAL + PRESSURE VALUE	[0…90] = [off…fully pressed (normal range)], [91…102] = [deadzone], [103…127] = [pressed…max pressure (floor-it)]	[0…11469] = [off…fully pressed (normal range)], [11470…13106] = [deadzone], [13107…16383] = [pressed…max pressure (floor-it)]

PC	1	2	3	4	5	11	12	13	14	15
	ENGINE 1: MOTOR	ENGINE 2: MxD	ENGINE 3: MWAVE	ENGINE 4: COIL	ENGINE 5: VOCODER	PEDAL MODE 1: ACCEL	PEDAL MODE 2: BRAKE	PEDAL MODE 3: CLUTCH	PEDAL MODE 4: DRIFT	PEDAL MODE 5: VOLUME

Connections		
Inputs	IN MONO	6.35mm(1/4'')TS socket
	TRACK IN	6.35mm(1/4'')TS socket
	MIDI IN	MIDI 5 PIN DIN cable input
Outputs	OUT MONO	6.35mm(1/4'')TS socket
	TRACK OUT	6.35mm(1/4'')TS socket
Data	USB-C	MIDI & Firmware update
SOUND		
Built-in analog signal multiplier (X-mod) and 5 MOTOR synthesis modes		
	ENGINE	MOTOR, MxD, MWAVE, COIL, VOCODER
	MOD	Waveshaping, timbre and analog signal multiplier depth
	SHIFT	-OCT, -5th, -4th, 0, +4th, +5th, +Oct
	VIBR / GLIDE	Max vibrato: +/-100c, max glide: 5
	RELEASE	200ms to infinite
	DRIVE	Analog hard-clipping drive circuit
	TONE	Analog tilt boost/cut EQ, Fc=300Hz, +/-6dB
	CLEAN	Analog CLEAN channel volume mixer
	MOTOR	Analog MOTOR channel volume mixer
Built-in spring-loaded expression "accelerator" pedal		
	PEDAL	ACCEL, BRAKE, CLUTCH, DRIFT, VOLUME
Indication		
	MOTOR DISC LED	Red LED shining on disc indicating effect on/off
Dashboard	ENGINE LED bar	Indicates selected ENGINE
	REV LED bar	Indicates current motor RPM (in COIL mode: pitch)
	PEDAL MODE LED bar	Indicates built-in expression pedal mode
	X-MOD LED	Green when MOD knob is on the right side. White when recieving signal
	ENGINE LED	Motor module health status
	IN LED	Green when recieving input signal. Blue when recieving MIDI input
Signal specification		
Signal level	IN / OUT / TRACK IN / TRACK OUT	4Vpp max
Impedance	Audio Input impedance	500 kOhm
	Audio Output impedance	100 Ohm
Motor System		
	Motor Module Assembly	Type 030 brushed DC motor, encoder and pickup assembly - GCA partname: MMB1
	Min speed:	400 rpm (20Hz)
	Max speed:	Range 26000 ... 42000 rpm (1300Hz ... 2100Hz) depending on power supply (9V 500mA ... 9V 1A)
Power		
	DC Power input	Center negative 9-12 V, Minimum 500 mA, 2.1 x 5.5 mm plug
Weight & Dimensions		
	Dimensions	18 x 10 x 8 (cm) / 7.1" x 4" x3.2" (L x W x H)
	Weight	1.07kg / 2.4lbs