

MACKIE®



MIDI
information

Using with
Traktion 2

(Click any button or area for more details)

(PC interface shown)

ZR-3 drawbar organ plug-in for Traktion 2



What is the ZR-3?

The ZR-3 plug-in is an emulation of a drawbar organ, providing two keyboards and a pedal section. It's not a close tonewheel emulation, but you can choose between different basic waveforms in addition to the "clean" sound of pure sine waves.

The ZR-3 features the basic drawbar control, click emulation, sustain, percussion and pitch bend.

The effects include a versatile valve (tube) distortion /overdrive section and rotating-speakers emulation.

It can be played through separate MIDI channels or in keyboard split mode. The two independent keyboards Manual 1, and Manual 2, and the Pedals section all share the Main, Percussion, Valve Distortion, and Rotary Speaker parameters.

Please Note:

The interface requires two mouse-clicks before you can move a Drawbar, knob or other control.

See the next page for details about adding the ZR-3 in Tracktion.

Adding the ZR-3 in Tracktion

Open up Tracktion and open your project. Drag the icon labelled “new filter...” located in the top right of the Tracktion screen, and drop it on an existing MIDI track, or onto a track that you will be connecting a MIDI instrument. (In Tracktion, a filter is another name for a plug-in.)



The area under the new filter icon is glowing red so you can tell where it can be placed. Once the icon has been dropped, a list of available filters will appear, as if by magic. The ZR-3 is located in the "Instruments/Pianos Organs" folder.



Wrapping the ZR-3 into a Rack Filter

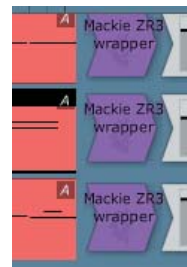
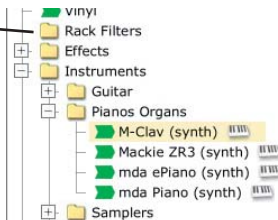
For the ZR-3 to work with three MIDI channels simultaneously, set it up as a rack filter. To do this, right-click on the ZR-3 icon you just added to a track, and select “wrap this filter in a new rack filter.”

For the second track (to be Manual 2), and third track (Pedals), add this new ZR-3 rack filter from the menu, not the ZR-3 itself.

Select a track clip, and change its MIDI channel to 1, 2 or 3, in the lower area of the Tracktion screen, depending on if you want it to be: Manual 1 (MIDI 1), Manual 2 (MIDI 2), or Pedals (MIDI 3).



(MIDI 1), Manual 2 (MIDI 2), or Pedals (MIDI 3).



Main: Mono

This switches the whole machine into monophonic mode. This is probably best for bass sounds.

Main: Click

This controls the click amount. Range: 0 to 100

Main: Bender

This defines the number of halftones to pitch when pitch bend midi controls are received. Range: 0 to 12

Main: Sustain

This is the sustain time (it's actually the release time). Sustain can be enabled separately for each voice (Manual 1, Manual 2 or Pedals). Range: 0 to 100

Main: Shape

This defines the basic waveform. Here are the options:

- 1 - pure sine wave *
- 2 - sine wave with slight saturation
- 3 - sine wave with medium saturation
- 4 - sine wave with heavy saturation
- 5 - triangle wave
- 6 - sawtooth

* The ZR-3 tries to simulate a “tonewheel” instrument. These early electronic organs had small rotating metal discs with an attached pickup as tone generators. Such generators did not produce pure sine waves, and neither does ZR-3; The sine wave is a little “dirty”. However, ZR-3 does not simulate different tonewheels. It can be thought of as a single master tonewheel being used by the whole instrument.

Triangle and sawtooth waveforms are probably best for bass sounds.

Percussion: Drawbar

This selects the pitch of the percussion sound. It provides the same registers as the drawbars do. Percussion can be enabled separately for each voice. Options: 0, 16, 8, 5.33, 4, 2.66, 2, 1.6, 1.33, 1

Percussion: Volume

This controls the percussion volume. Range 0 to 100.

Percussion: Fade

This defines how fast the percussion sound decays. Range 0 to 100.

Volume: Manual 1

This controls the output volume of the Manual 1 emulation. Range 0 to 100.

Volume: Manual 2

This controls the output volume of the Manual 2 emulation. Range 0 to 100.

Volume: Pedals

This controls the output volume of the Pedals emulation. Range 0 to 100.

Volume: Master

This controls the Master output volume. Range 0 to 100.

Drawbars

Drawbars are the core concept of this instrument. They can be interpreted as a straight simulation: All electronic organs use them, and these, in turn, were designed to simulate church organs.

The number depicts the length of the church-organ pipes in feet: 16', 5 1/3', 8', 4', 2 2/3', 2', 1 3/5', 1 1/3', and 1'.

The third section emulates a bass pedal and features five drawbars: 16', 5 1/3', 8', 4', and 2 2/3'.

Each pipe has a drawbar marked from 1 to 8, which can be pulled in or out with the mouse.

There is another way to understand drawbars: They represent the ground tone and the first eight natural overtones. There is one exception, though: For musical reasons the first and second overtone have been swapped in their order. Anyway, whoever is into Fourier synthesis will look at drawbars as a nice method to practice it.

The three sections can be played using MIDI channel 1, 2 or 3. A split mode is available to play the first section and the bass pedal section using MIDI channel one.



Perc

This enables Percussion for the current channel.

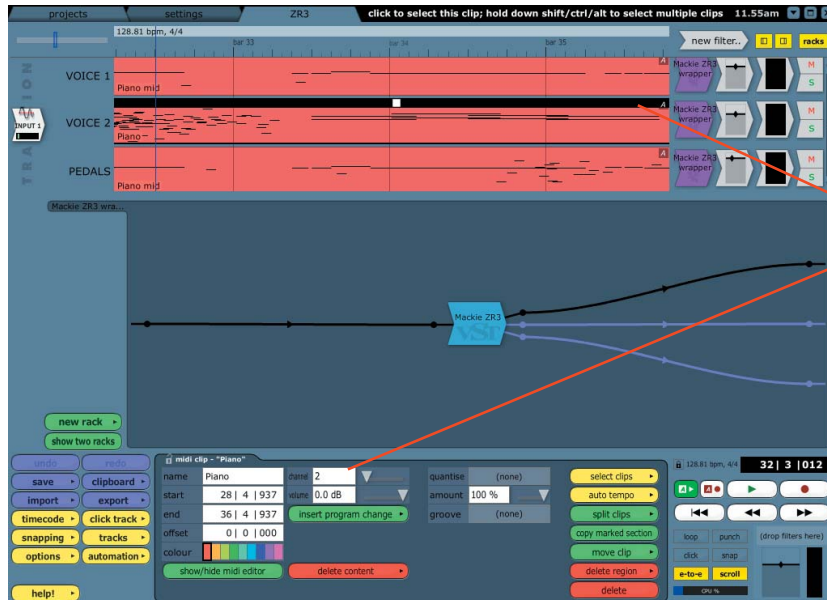
Sust

This enables Sustain for the current channel.

MIDI channels 1, 2 and 3 lights

These light up when MIDI channel 1, 2 or 3 is playing.

As described on page 3, the ZR-3 should be setup as a rack filter. Three tracks can be played through it, each assigned to a MIDI channel. For example, here is a setup with three MIDI tracks, each with a different MIDI channel number, and each playing through the same rack filter containing your lovely ZR-3.



As each track plays, the Lights come on in the ZR-3 interface, reminding us of which section is active. Then you can adjust that channel's drawbars as needed for the enjoyment of your fine musical senses.

This clip is selected, and its MIDI channel number can be changed here to 1, 2 or 3.

FX and Voice

These buttons are not active in the Mackie ZR-3, but thanks for dropping by.

Service for your ZR-3 plug-in

Should your plug-in require repair, please take it to your nearest authorized Drawbar Organ Plug-in Lube/Filter/and all-you-can-eat/Service-o-Rama™, knock twice and tell them you were sent by a Mr. Beasleythwaite.

After some time of non-use, the virtual organ pipes created inside your computer may become full of pixel dust, and you may even find nano-mice nesting inside. This is perfectly normal. The remedy is to play something really grand, on a vast, expansive, majestic, and triumphant-heroic scale, such as the 1812 overture, or selections from Phantom of the Opera™.

Valve Distortion

Use this switch to engage/disengage the Valve Distortion section. This emulates smooth and heavy saturation, distortion, dirty fuzz and simple low-pass filtering. Range 0 to 100.

Valve Distortion: Drive

This sets the amount of saturation. If set to zero, no distortion will take place regardless of the Set parameter. Range 0 to 100.

Valve Distortion: Set

This controls additional dirty distortion and fuzz. When this is set to zero, only saturation will take place. Range 0 to 100.

Valve Distortion: Tone

This sets the built in low-pass filter. The displayed number is the center frequency measured in Hz. Frequency range: 300 to 3800 in steps of 35 Hz.

Valve Distortion: Mix

This is a cross fader between the distorted and the original sound. Range 0 to 100.

Here are some hints upon how to set parameters:

A. Smooth saturation and warmth

Keep SET at zero. Turn up DRIVE and TONE. Move MIX above 50% and compare with the original sound. Add warmth by turning down TONE. Add dirt by slightly turning up SET.

B. Heavy fuzz

With SET up to 100%, turn MIX over to 100% and first check the pure distorted sound. Twiddle DRIVE to find the dirt. Keep the aggressiveness under control with TONE. Move MIX back to a reasonable amount.

C. Low pass filter

Set DRIVE to zero. No distortion will take place. Turn MIX up and set TONE.

Rotary Speaker

Use this switch to engage/disengage the Rotary Speaker section. This emulates a double rotating speaker cabinet with a bass rotor, a mid/high rotor, and a microphone.

Rotary Speaker: Complex

This enables more complexity for the lower speaker rotor. The sound can get thicker, but it costs some processor power.

Rotary Speaker: MIDI Pedal Speed Control

This enables another interpretation of MIDI controls: The MIDI pedal controller switches the rotation speed instead of triggering the hold mode. The modulation controller is routed to the sweller gain.

Rotary Speaker: Speed Switch (FAST or SLOW)

This turns the speed up and down. It responds to the modulation wheel midi control.

Rotary Speaker: L. Slow and L. Fast Controls

These two controls set the actual speeds of the rotating bass speaker emulation. Use the Fast/Slow switch to toggle either fast or slow rotation. Range 0 to 1.0, in steps of 0.01.

Rotary Speaker: U. Slow and U. Fast Controls

These two controls set the actual speeds of the rotating upper-frequency speaker emulation. Use the Fast/Slow switch to toggle either fast or slow rotation. Range 0 to 1.0, in steps of 0.01.

Rotary Speaker: Belt

This emulates the tightness of the rubber belt connecting the virtual motor with the virtual rotating horn plate. The tighter the belt is, the faster the speed changes. Range 0 to 100.

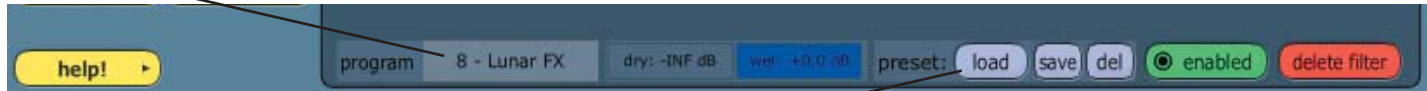
Rotary Speaker: Spread

This sets the microphone position. The more the microphones are spread, the heavier the stereo effect becomes. You will also experience a difference in the way the sound “passes” the microphones: If you listen from only one position you will mainly hear one speaker rotating from one side to the other. If you position your microphones at opposite sides of the cabinet, you will experience a more complex mixture of both horn speakers moving forth and back. Range 0 to 100.

Preset Window

The ZR-3 comes with some nice factory presets that you can select by clicking on the window, holding the mouse button down, and moving the mouse up and down.

It also shows the plugin version number, the currently selected program number and the program name. If a value of a program has been changed, “modified” is displayed in the third line of the window. You can rename a preset by clicking here at the bottom of the Tracttion screen (when the ZR-3 icon is highlighted).



You can also Load presets, Save current settings as a preset and Delete presets in this area.

Compare

This temporarily loads the parameters of the original, unchanged preset. All parameters appear “frozen” and can’t be changed when Compare is active.

Modified Programs can be stored into other locations:

After making the desired parameter changes, press the Compare button and select the preset program you want to store to. Press Save and the program will then be stored at the new position.

Save

This stores a modified preset over the current preset.

Pedal Midi Split

This allows the definition of a splitpoint for simultaneous play of the Manual 1 section and the bass pedal section through MIDI channel one.

If you have a single keyboard, you can play the bass pedals with the lower keys, until you reach the splitpoint key, and then the keys to the right of this will play the Manual 1 section.

This works like this:

1. Press this button,
2. Press the MIDI key you want as the uppermost note for the bass pedal section

or

3. Press this button again to remove the splitpoint.

The splitpoint can be saved inside a program.

MIDI Implementation

ZR-3 responds to:

NOTE ON	CHANNELS 1-3
NOTE OFF	CHANNELS 1-3
PITCH BEND	CHANNELS 1-3
PROGRAM CHANGE	CHANNELS 1-3
CONTROL CHANGES	CHANNELS 1-3

MIDI COMMAND (HEX)	MIDI COMMAND (DEC)	DESCRIPTION
0X01	01	MODULATION WHEEL ROTOR SPEED
0X03	03	CHANNEL VOLUME
0X07	07	MAIN VOLUME
0X40	64	HOLD PEDAL OR ROTOR SPEED (WHEN MIDI PEDAL SPEED IS ON IN THE ROTARY SPEAKER SECTION)
0X4B	75	DRAWBAR 16"
0X4C	76	DRAWBAR 5 1/3"
0X4D	77	DRAWBAR 8"
0X4E	78	DRAWBAR 4"
0X4F	79	DRAWBAR 2 2/3"
0X50	80	DRAWBAR 2" ONLY CHANNEL 1 AND 2
0X51	81	DRAWBAR 1 3/5" ONLY CHANNEL 1 AND 2
0X51	82	DRAWBAR 1 1/3" ONLY CHANNEL 1 AND 2
0X53	83	DRAWBAR 1" ONLY CHANNEL 1 AND 2

Lock

If this is pressed, the ZR-3 interface will not disappear when you select other items or areas in Tracktion.

Hide

This hides the ZR-3 interface from view, and is useful if you have previously selected "Lock."