



MULLIGAN

Hands-On Plugin Control for Pro Tools

REFUSE SOFTWARE, LLC

VERSION 1.7.0

Introduction

Welcome to a New Plugin Workflow

Thank you for trying Mulligan, the standalone app that enables you to use real knobs to control any plugin in **Pro Tools™**, while using the MIDI controllers of your choice.

At its core, Mulligan connects a bank of **eight hardware knobs** to the currently selected plugin. It also provides a **Heads-Up Display** onscreen, as a transparent overlay window, to show at a glance which plugin parameters are mapped to your knobs.

In addition, Mulligan enhances your workflow with a slate of controls for the **current track** (level, solo, mute, pans, sends), as well as commands for plugin navigation, track navigation, and **transport** control. (You can view the [full list of Mappable Commands here](#).)

The term “mulligan” means a “do-over” or a second chance, and that’s how this project started for us – as a second chance for hands-on plugin control, after the Novation™ Nocturn (which we were big fans of) dropped Pro Tools compatibility. Once tactile control becomes second nature, it’s hard to go back to just clicking with a mouse!

Our intent with Mulligan was to design a compact, affordable, task-focused tool to enhance your mixing process. We look forward to your feedback helping us to shape future updates. Please [keep in touch](#) and let us know about your experience with Mulligan.

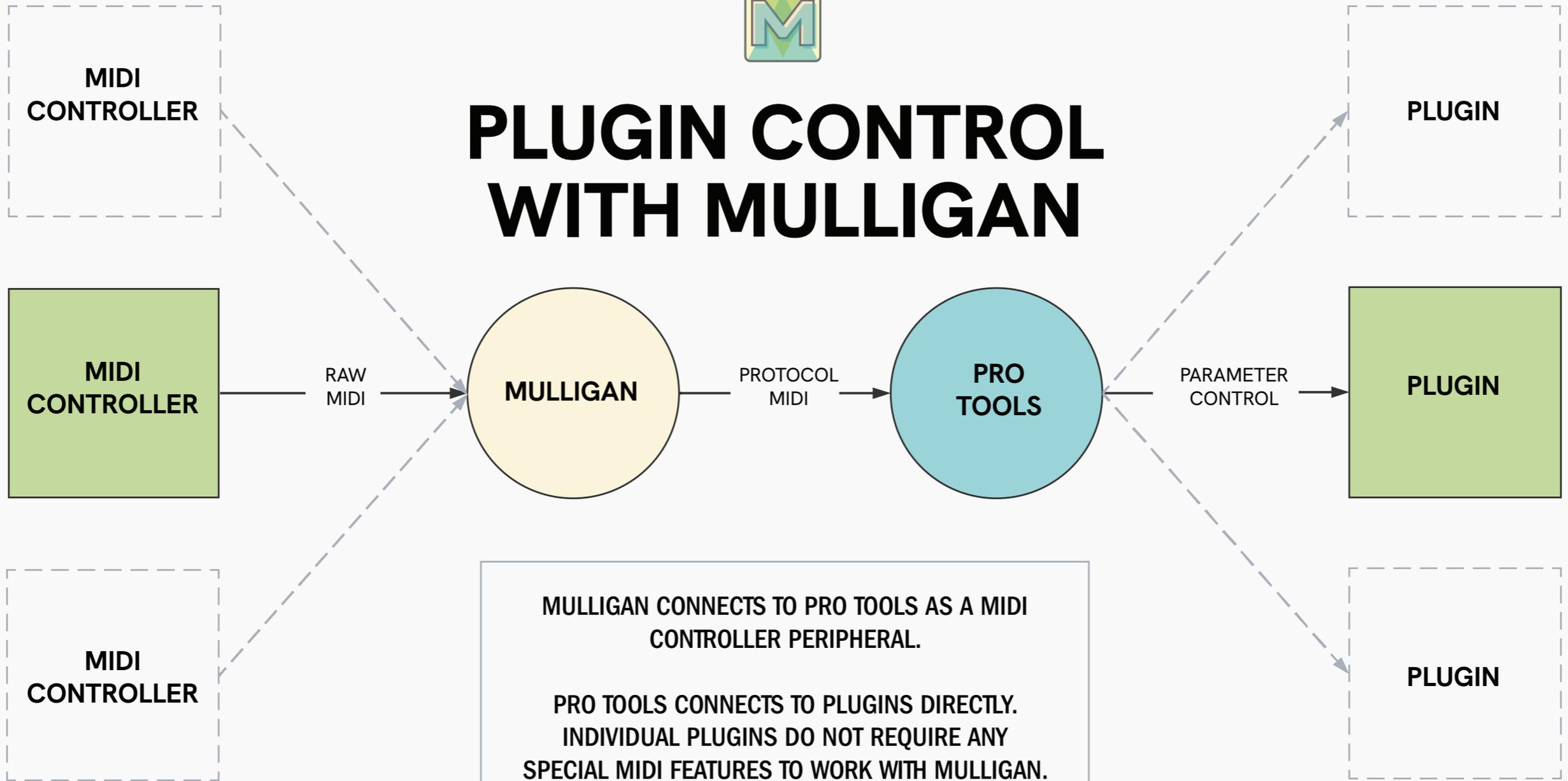
PS: This manual provides an in-depth look at Mulligan’s features, but we also have a **Quick Start Tutorial video** to get you up and running in minutes:

<https://www.refusesoftware.com/documentation/videos/17>

System Diagram



PLUGIN CONTROL WITH MULLIGAN





Section 01
SETUP

01 Setup

Connecting Mulligan and Pro Tools

On macOS, Mulligan creates its own virtual MIDI ports for communication with Pro Tools.

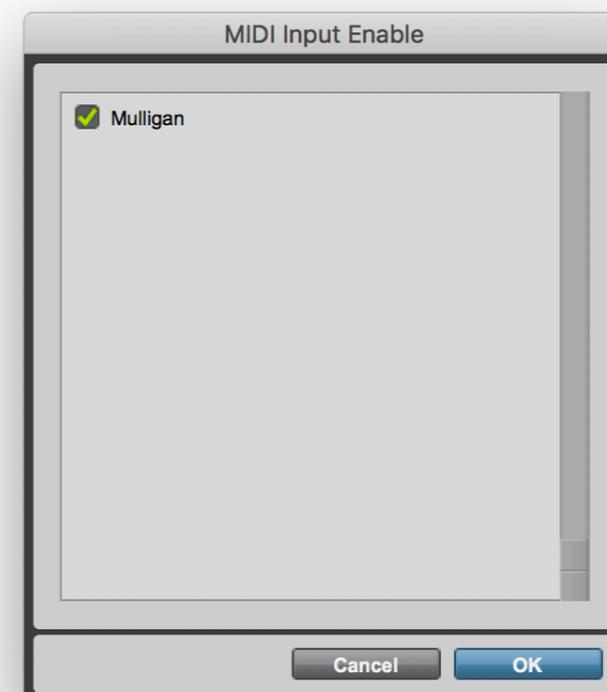
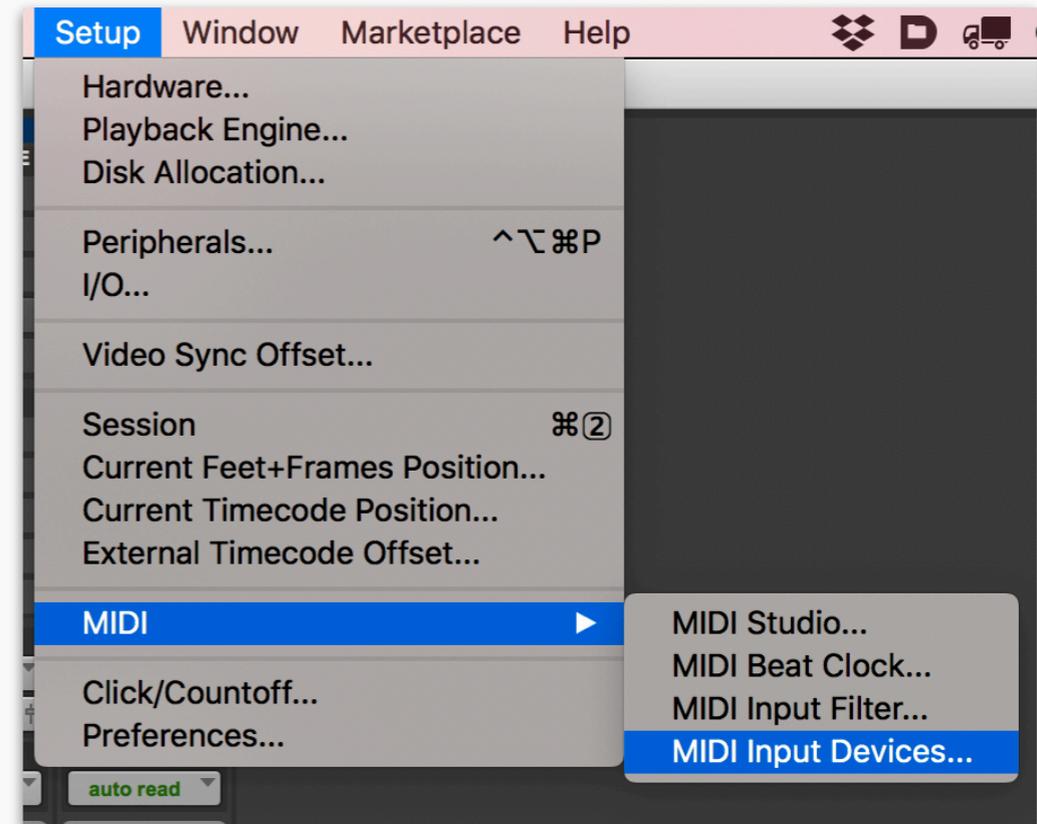
On Windows, before continuing with these setup steps, you will need to use a utility app (like the free [loopMIDI](#)) to create two MIDI ports, and name them **Mulligan In** and **Mulligan Out**.

Enable Mulligan as a MIDI Input Device

1. Launch Mulligan.
2. Launch Pro Tools.
3. In Pro Tools, choose the menu item: **Setup > MIDI > MIDI Input Devices...**
4. In the **MIDI Input Enable** dialog box, check the box next to **Mulligan** (or **Mulligan Out** on Windows).
5. Click OK.



Continue to the next page to complete the connection steps.

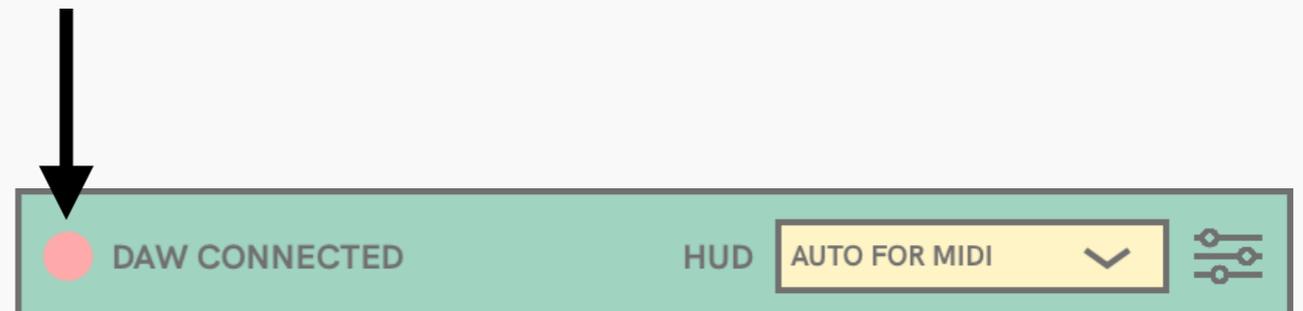
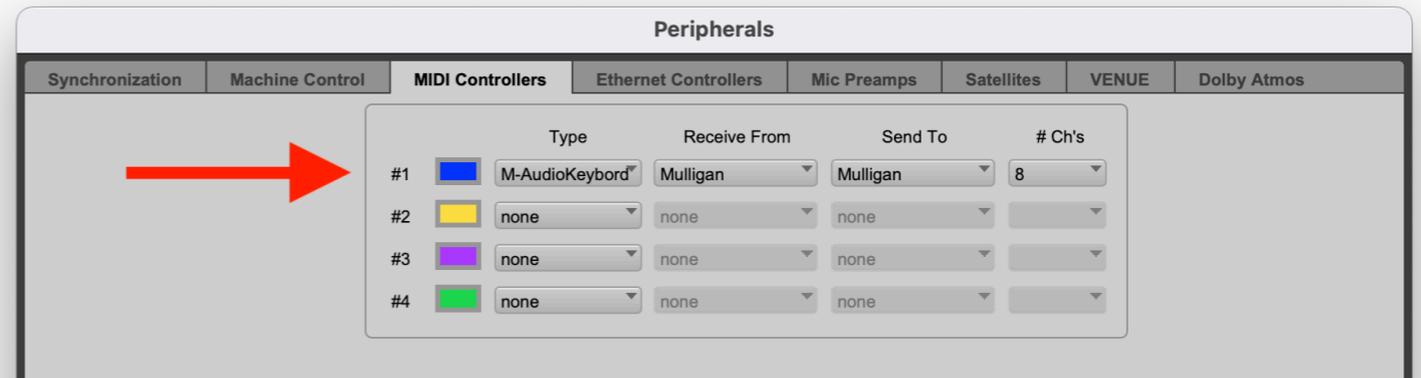


01 Setup

Select Mulligan as a MIDI Controller

1. In Pro Tools, choose the menu item: **Setup > Peripherals...**
2. Click on the **MIDI Controllers** tab.
3. In the first row, select **Type** **M-Audio Keyboard** from the menu.
4. In that same row, for both the **Receive From** and **Send To** menus, select **Predefined > Mulligan**.*
5. Click **OK**.

The setup for connection between Mulligan and Pro Tools is now complete. The **DAW Connected** light in Mulligan should now be green, to show that the connection is active.



! These are one-time setup steps that you will not have to repeat in the future, as long as you launch Mulligan **before** launching Pro Tools.

If you do happen to launch Mulligan **after** Pro Tools, you can just repeat steps 1-3 of *Select Mulligan as a MIDI Controller* to reconnect them. When you click **OK** to close the Peripherals window, Pro Tools will reconnect with Mulligan.

* On Windows, for **Receive From** select **Mulligan Out**, and for **Send To** select **Mulligan In**.

01 Setup

Authorizing Mulligan

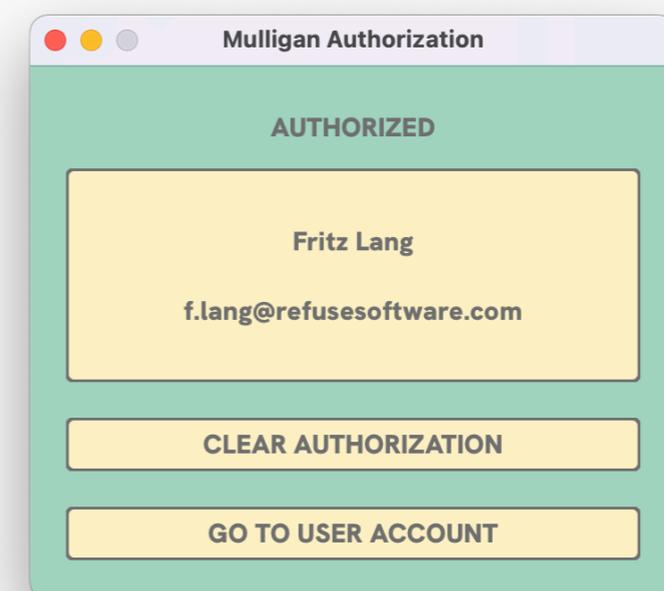
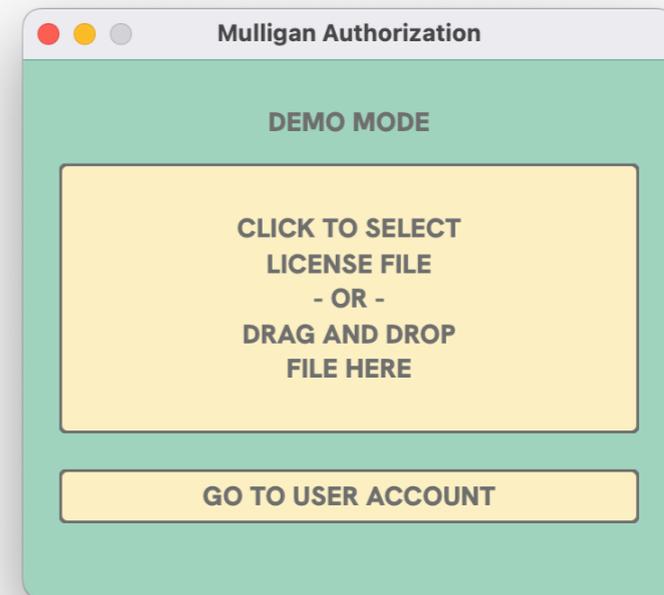
Until authorized with a license file, Mulligan will operate in demo mode. While in demo mode:

- The controller mappings you assign in the Mapping Window won't be saved when you quit the application
- Custom plugin and parameter names you enter into the HUD won't be saved when you quit the application
- Mulligan will timeout and stop sending control messages to the DAW 20 minutes after launching the application

After the 20 minute demo timeout, you are free to quit and relaunch Mulligan. However, you will need to remap your MIDI controller and reconnect Mulligan to the DAW at each launch.

To authorize Mulligan and remove these demo limitations, purchase a license at our website, and then log in to your user account and download a license file.

Once you have your license file, use the **Authorization** window in Mulligan to unlock the app. The Authorization window automatically opens when Mulligan is launched in demo mode, and can also be opened with the **Help > Licenses** menu item.



Section 02

COMMAND MAPPING

The Mapping Window

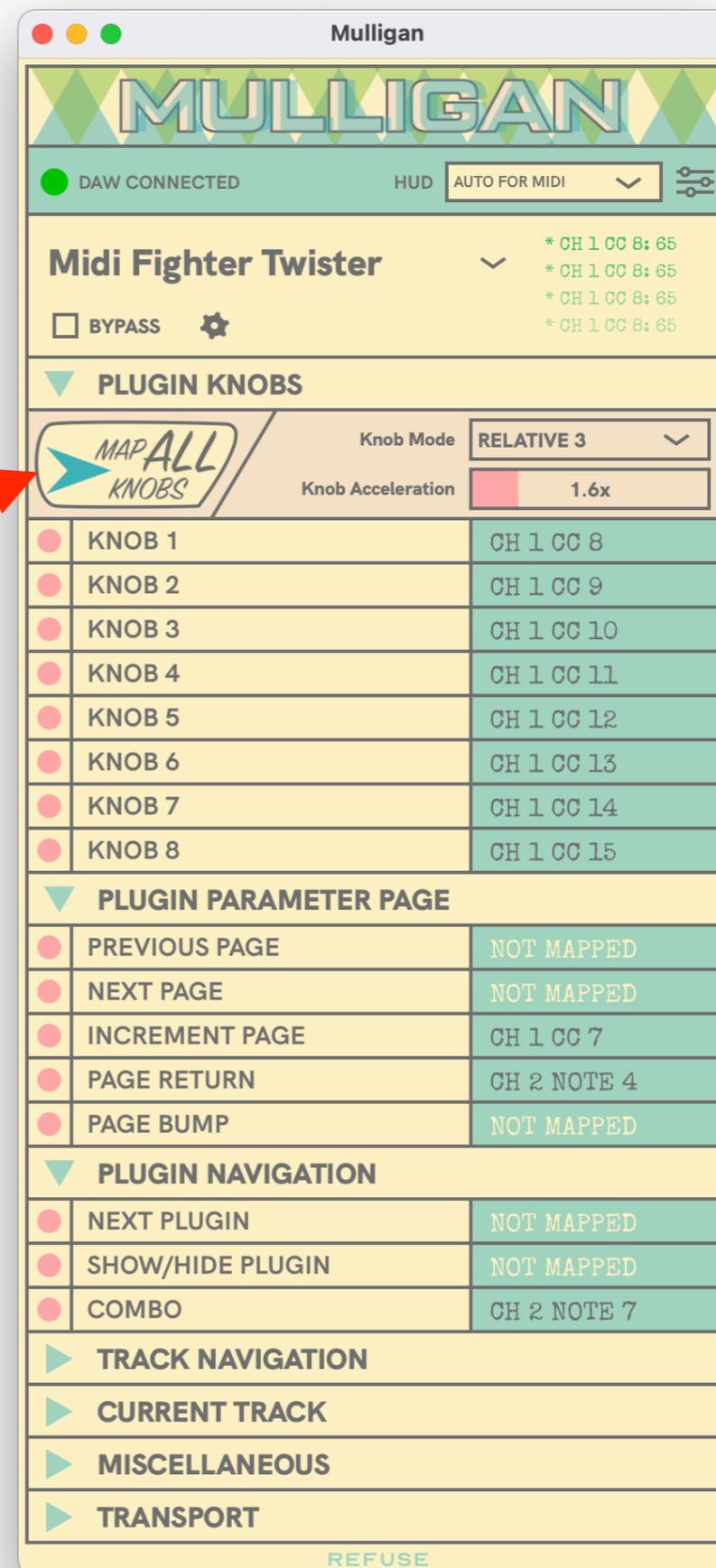
The **Mapping Window** is where you map MIDI controller knobs and buttons to Mulligan's commands. You can use multiple MIDI controllers simultaneously, and each controller has its own separate map.

Use the **MIDI device menu** at the top of the mapping window to select the current MIDI device to edit.

For your first mapping, we suggest that you start with the **Map All Knobs** button. This allows you to quickly map all eight of the Plugin Knobs. Click the Map All Knobs button, then turn the first hardware knob **slowly to the left** (counterclockwise). Mulligan maps the knob you turned to Plugin Knob 1, and then automatically maps the rest of the plugin knobs to consecutive CC numbers. So with one click and one turn of a knob, all eight knobs in the Plugin Knobs section are now ready to use.

The other commands are mapped individually. The steps for mapping are simple:

1. **Click** a command to select it. The **Mapping Assistant** window will pop up to give additional information about the selected command.
2. **Turn** a knob (**SLOWLY** to the left) or **push** a button on your MIDI hardware. The Mapping Assistant's status



bar changes from **Ready To Map** to **Mapped**, and the knob or button is now mapped to that command.

If you want to remap a command to a different knob or button, select it and press the **Delete** key to erase the existing mapping. This will then re-arm the command for mapping.

We'll mention briefly here that Mulligan works best when used with encoder knobs sending incremental MIDI data, or what we call "**Relative**" knobs. To learn more about setting up your mappings to get the most out of your Mulligan experience, please see the [Optimizing Your Mappings](#) section.

Finishing Your Controller Mapping

It is important to note that you are not required to map *all* the available commands to your MIDI controller! Mulligan allows you to pick and choose, to customize your workflow in whatever way feels most intuitive to you.

In addition, some commands are intended to be *alternates* for others, and it would be redundant to map all of them. For example, the **Plugin Parameter Page** section includes the commands **Previous Page**, **Next Page**, and **Increment Page**. In most situations, you would either map **Previous Page** and **Next Page** to a pair of buttons, *or* you would map

Increment Page to a knob – but you probably wouldn't map all three.

This flexibility allows you to lay out the commands in a way that makes the most sense for your MIDI controller. If your MIDI controller has more buttons than knobs (e.g. the X-Touch Mini), then you'd probably want to map your parameter page controls to a pair of buttons. However, if your MIDI controller has more knobs than buttons (e.g. the MIDI Fighter Twister), then you might prefer the space-saving approach of using a single knob to switch parameter pages.

A [complete list of all the Mappable Commands](#) is included in the Appendix of this manual.

Example: Mapping the Current Track Level

Mulligan

DAW CONNECTED HUD AUTO FOR MIDI

Midi Fighter Twister

MAP ALL KNOBS

Knob Mode: RELATIVE 3

Knob Acceleration: 1.0x

●	KNOB 1	CH 1 CC 8
●	KNOB 2	CH 1 CC 9
●	KNOB 3	CH 1 CC 10
●	KNOB 4	CH 1 CC 11
●	KNOB 5	CH 1 CC 12
●	KNOB 6	CH 1 CC 13
●	KNOB 7	CH 1 CC 14
●	KNOB 8	CH 1 CC 15

PLUGIN PARAMETER PAGE

PLUGIN NAVIGATION

TRACK NAVIGATION

CURRENT TRACK

●	SOLO	CH 2 NOTE 3
●	MUTE	CH 2 NOTE 2
●	LEVEL	NOT MAPPED
●	SEND A	NOT MAPPED
●	SEND B	NOT MAPPED
●	SEND C	NOT MAPPED
●	SEND D	NOT MAPPED
●	SEND E	NOT MAPPED

REFUSE

1. Click the Level command in the Current Track section to select it.

The Mapping Assistant window pops up to give additional information about the command.

LEVEL

Control the level of the current track

READY TO MAP

Turn a knob SLOWLY to the left to map it.



Mulligan

DAW CONNECTED HUD AUTO FOR MIDI

Midi Fighter Twister

MAP ALL KNOBS

Knob Mode: RELATIVE 3

Knob Acceleration: 1.0x

●	KNOB 1	CH 1 CC 8
●	KNOB 2	CH 1 CC 9
●	KNOB 3	CH 1 CC 10
●	KNOB 4	CH 1 CC 11
●	KNOB 5	CH 1 CC 12
●	KNOB 6	CH 1 CC 13
●	KNOB 7	CH 1 CC 14
●	KNOB 8	CH 1 CC 15

PLUGIN PARAMETER PAGE

PLUGIN NAVIGATION

TRACK NAVIGATION

CURRENT TRACK

●	SOLO	CH 2 NOTE 3
●	MUTE	CH 2 NOTE 2
●	LEVEL	CH 1 CC 2
●	SEND A	NOT MAPPED
●	SEND B	NOT MAPPED
●	SEND C	NOT MAPPED
●	SEND D	NOT MAPPED
●	SEND E	NOT MAPPED

REFUSE

2. Turn a knob SLOWLY to the left (counterclockwise).

The Mapping Assistant's status bar changes from Ready To Map to Mapped, and the knob is now mapped to the Level command.

LEVEL

Control the level of the current track

MAPPED

KNOB MODE: RELATIVE 3

To remap, press DELETE key to clear mapping.

Mapping Window Tips

- When mapping any of the knobs, you must turn them **slowly to the left (counterclockwise)**. That is the only way that Mulligan can **correctly detect which knob mode** your knobs are sending.
- The **Map All Knobs** button allows you to map the entire bank of 8 Plugin Knobs, just by turning the first one (again, **slowly to the left**). It works like magic, assuming that your 8 knobs send their MIDI CC messages using consecutive controller numbers.
- The **Plugin Knobs section** has a unique header with a few extra controls that affect only the Plugin Knob commands:
 - * The **Knob Mode menu** displays the knob mode detected for the bank of plugin knobs *only* – it has no effect on other commands.
 - * The **Knob Acceleration slider** appears only for **Relative** encoders. If the knobs onscreen seem to be turning too slowly in response to the physical knob, try increasing the Knob Acceleration. It is a subjective matter of

feel, and it won't break anything. The default is 1.0 (no acceleration).

- * The **Soft Takeover checkbox** is available only for **Absolute** Plugin Knobs. When checked, Mulligan waits until the hardware knob's position matches that of the plugin's onscreen knob, before it starts affecting it.
- Jump in with one of the **Starter Packs** that we have provided for select MIDI controllers (see the Mulligan download for a complete list of the Starter Packs included). Created with input from experienced Mulligan users, a Starter Pack gives you an instant command layout optimized for your controller. Once you import the mapping from the Starter Pack, you are free to modify it like any other mapping, to adapt it to your own workflow.

Optimizing Your Mappings

The basic mapping instructions covered thus far will get you up and running quickly with Mulligan. After a little time with it, however, you may wish to tweak your controller setup a bit further to optimize your mappings. The information in this section will help you to do that.

Knob Mapping & Knob Modes

Mulligan uses knobs for many of its commands. In addition to the bank of eight **Plugin Knobs**, there are the **Increment Page** and **Increment Track** commands, the **Master Fader** command, and most of the **Current Track** section (except for the Solo and Mute buttons). Whenever setting a mapping for a knob, Mulligan needs to know what kind of data the knob is sending, in order to correctly set the **knob mode** for it.

That is why we emphasize that you must turn knobs **slowly to the left** during mapping – because that is the only way Mulligan can detect the correct knob mode.

There are two basic modes that knobs can use to send data: Absolute and Relative. The technical details about that difference are explained further in the **All About MIDI Controller Knobs** section of this manual.

As mentioned earlier, **we highly recommend using Relative knobs** (encoders sending incremental data) for almost all of Mulligan’s knob commands*, instead of Absolute knobs.

If your MIDI controller uses **pots** (which have hard “stop” points at the ends of their rotation) for its knob hardware, then it can *only* send Absolute knob data, and Mulligan will translate that data internally (from Absolute to Relative) when necessary.

However, if you have a controller with **encoders** for knobs, yet Mulligan is still detecting the Absolute knob mode for it, then we recommend you investigate how to change it to send Relative knob data instead. See the **Setting Up for Optimal Performance** section for more details.

Please note that the **Knob Mode menu** at the top of the Plugin Knobs section displays the knob mode detected *for the bank of plugin knobs only*. For the commands in other sections that use knobs, the knob mode is detected individually per command, and is displayed in the Mapping Assistant window.

* The one exception to this rule is the Master Fader command, which is best mapped to an Absolute knob, or an actual fader.

Button Mapping

Some of Mulligan's commands are intended to be mapped to buttons, and it wouldn't really make sense to map them to knobs (for example, **Previous Page** and **Next Page**, or any of the transport commands).

For these types of commands, we recommend configuring your MIDI controller for a "Momentary" or "Hold" style button behavior (the terminology varies across manufacturers). Often, this is the default behavior, so you may not need to adjust anything. In Mulligan's MIDI Monitor you should see a Note or CC message with a value of 127 when the button is pressed down, followed by another message with a value of 0 when the button is released.

What you *don't* want is a "Toggle" button behavior, where alternate button presses send out different values (e.g. on first press, the button sends a value of 127, but then it requires a second press to send a value of 0).

A Note About the Current Track Commands

Mulligan includes a set of commands that affect the currently focused track in a session. These include track **Level**, **Pan L**, **Pan R**, levels for **Sends A-E**, and **Pan Combo** (which combines Pan L and Pan R into a single knob).

The M-Audio Keyboard protocol was designed to work only with **encoders** for these track controls. In order to allow them to work with knobs that are pots or linear faders, Mulligan performs a special translation so that these types of controls can emulate encoders.

If possible, **we recommend mapping the Current Track commands to Relative encoders**, to avoid this translation.

If you *do* map Current Track commands to pots or linear faders, they will work, but their physical positions won't directly correspond to the positions of the faders and knobs onscreen. Moving the physical control will move the onscreen control immediately (without any "Soft Takeover" type of pick-up). This works well for making small adjustments, but you may run out of physical control range. If this should happen, the pot or fader can be "recalibrated" by sweeping it through its full range.

Also, please note that MIDI feedback is not sent out for Current Track commands, so LED rings on MIDI controllers won't show any values for them.

MIDI Device Controls

At the top of the Mapping Window are controls for working with your MIDI controllers on a per-device basis.



The **MIDI device menu** shows the name of the current MIDI device, and allows you to select a different MIDI device to focus on. **All connected MIDI devices are simultaneously active in Mulligan** (unless bypassed, see below), but the Mapping Window only displays mappings and controls for one device at a time.

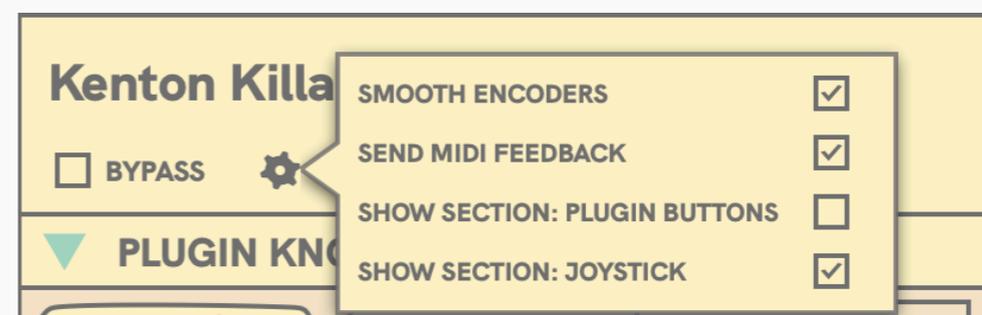
The other controls described here affect only the currently focused MIDI device.

The **Bypass** checkbox allows you to suspend accepting input from the current MIDI device.

The **MIDI Monitor** on the right side shows recent MIDI messages received from the current device. When a MIDI message matches a command mapping, it will be shown in green. Unmapped messages are shown in red.

Device Settings Menu

Accessed from the small gear icon under the MIDI device menu, the Device Settings Menu allows tweaking some behaviors for the current MIDI device.



Smooth Encoders applies a filter to clean up incoming data from encoders sending relative knob data. If your MIDI device has smooth (as in non-stepped) encoders for knobs, you should enable this option.

Send Midi Feedback defaults to "On", and you probably want to keep it on. It allows Mulligan to send MIDI to your device to provide visual feedback (e.g. LED rings around knobs). However, if you have a MIDI device that's acting strangely in response to the MIDI feedback, perhaps you would want to shut it off for troubleshooting.

Show Section: Plugin Buttons and **Show Section: Joystick** shows/hides these optional sections of commands. Look in the Optional Commands section for more detail about what these are.

User Data

Saving

Mulligan automatically handles saving your user data, so you don't have to manually save anything. This includes your MIDI controller mappings, general application settings, and any custom plugin and parameter names you enter in the HUD.

Backing Up / Restoring

If you wish to backup or share your saved data, please use the **Export User Data** command in the **File** menu. This will create a zip file archive of your settings files, and allow you to save that zip file wherever you choose.

If you need to restore from a backup, double-click the zip file to unzip the contents. Then the XML files found within it should be placed into the folder:

```
~/Music/reFuse Software/Mulligan
```

You can use **File > Show User Data Folder** to reveal this folder in the filesystem.

Please note that altering the XML files can render them unreadable by Mulligan, so editing them is not encouraged.

Importing

To import a mapping for a MIDI device from an XML file, use **File > Import Map**. From there, navigate to a `Mappings.xml` file that was generated by Mulligan.

Importing mapping data from a `Mappings.xml` file only imports the map for the **currently selected** MIDI input device. Any other maps (i.e. for other MIDI controllers) that you might have will be left untouched.

While Import Map does completely **replace** the current device map with the imported one (it does not attempt to **merge** the two maps), you can use **Edit > Undo Import Map** to revert to your previous mapping if you don't like the results.

Section 03

PLUGIN MAPPING

Custom Plugin Mapping in Pro Tools

When you first try out a plugin under Mulligan control, there will be a default map in Pro Tools that determines how the plugin's parameters are mapped to the 8 plugin control knobs.

If a plugin has more than 8 parameters, there will also be multiple "pages" of parameters, that you can navigate through using Mulligan's **Plugin Parameter Page** commands.

Sometimes a plugin's default map will be fine as-is, but if not, Pro Tools allows you to change the order of the parameters by creating custom plugin maps. This is not directly a feature of Mulligan, but since many users have never seen these mapping features in Pro Tools before, we will point them out here.

Pro Tools displays its **Plug-In Map Controls** at the top of each plugin window **only** when a compatible control surface is connected (in this case, Mulligan). They look like this:



The **Map Options menu** (the little circle with the down arrow at the top) allows you to save, load, rename, delete, import, and export map presets. Multiple maps per plugin are allowed, and you can select which one should be the default using this menu.

The **Map Presets menu** (where it initially says "Factory Default Map") is where your custom plugin maps will show up after you create them.

Create A Custom Plugin Map

To create a custom plugin map, start by clicking the **LEARN** button. Then, either click a plugin control onscreen, or make a selection from the **Parameter Menu** (located directly to the left of the Learn button). Now, turn a knob on your MIDI controller, and the mapping is established.

(If the plugin doesn't respond when you click controls onscreen to map them, [please see this FAQ.](#))

Repeat the "click control then turn knob" process to include all the parameters you are interested in.

Use Mulligan's **Plugin Parameter Page** commands to navigate through multiple pages while mapping, and expand your custom map beyond a single page of 8 parameters.

02 Use

When you are satisfied with your custom plugin map, click the **LEARN** button onscreen again to exit learn mode and resume normal operation.

After creating your custom plugin map, you might be surprised to see that the parameter pages from the Factory Default Map are still appearing (they will appear *after* any parameter pages you have added). In order to hide the default pages, check the **Hide Factory Default Pages** option in the Map Options menu.

One important caveat when making custom plugin mappings is that **mono and stereo instances of the same plugin use completely separate mappings** (and so does each multichannel format). Because of this, if you create a custom mapping using a mono instance of a plugin, then switch to a stereo instance, you won't see your custom map in the Map Presets menu. Yes, this is rather inconvenient. No, there's nothing we can do about it, as that functionality is all internal to Pro Tools.

To learn more about the plugin mapping facilities provided by Pro Tools, please see the *Pro Tools Reference Guide* section titled "**Plug-In Mapping**".

Custom plugin mapping is also covered as part of our [Quick Start Tutorial video](#).



Section 04

HEADS-UP DISPLAY

The Heads-Up Display (HUD)

Mulligan’s Heads-Up Display (HUD) is an overlay window that can automatically pop up at the bottom of the screen when adjusting plugins. Even when Pro Tools is the current application, the HUD window will float in front of it.

The HUD’s purpose is to be a fast visual onscreen reference when you are adjusting knobs on your controller. It shows:

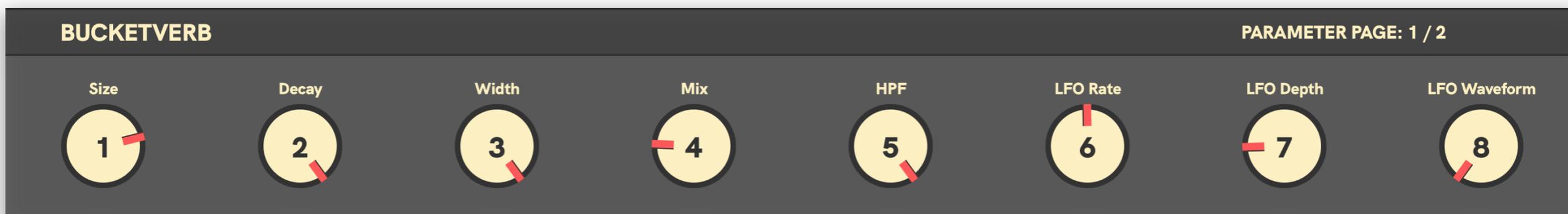
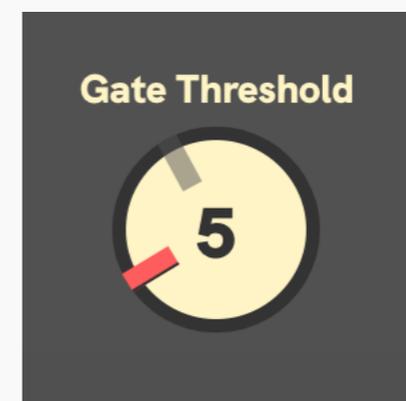
- The name of the plugin currently being controlled
- The 8 parameters of that plugin that are currently mapped to the 8 knobs of your MIDI controller
- The current Parameter Page (bank of 8 parameters)

Although the HUD displays parameter values on a dial, these are for reference only. You cannot turn the HUD dials with a mouse.

The only form of direct interaction with the HUD is to click on a plugin or parameter name, to allow you to **type in your**

own version of that name. See the FAQ [Why do I see a mangled bunch of letters in the HUD where a plugin or parameter name should be?](#) for more details on that.

If you are using a controller with Absolute knobs, and have **Soft Takeover** engaged, the HUD also offers visual feedback to help you match up the knob position. It superimposes a “ghost” pointer (in grey) showing the hardware knob’s position, with the regular pointer (in red) showing the parameter value:



There are four **HUD display modes**, selectable from the **HUD** menu at the top of the Mapping Window:

- 1. OFF**
Never show the HUD.
- 2. AUTO FOR MIDI**
Only show the HUD when controlling a mapped plugin using a MIDI controller.
- 3. AUTO FOR ALL**
*Same as **Auto for MIDI**, plus will also show the HUD when a mapped parameter is changed using an onscreen control or DAW automation.*
- 4. KEEP ON**
Always keep on, while the DAW connection is active.



The **HUD View Options** panel opens by clicking on the button to the right of this menu. You can adjust the size, placement, opacity, and other display settings for the HUD with this panel.

Heads-Up Display (HUD) Tips

- Pressing and **holding** any of the **Plugin Navigation buttons** will keep the HUD showing for as long as the button is held down. This is helpful when first switching to a new plugin or a new plugin parameter page, to allow extra time to identify which knob is mapped to the parameter you'd like to change. Note that this feature only works if the Plugin Navigation buttons send a message (of value 0) upon button release.
- Initially, you may wish to keep Mulligan's HUD in the **Keep On** or **Auto for All** modes, as you get a feel for how the parameter mappings work. Eventually, however, the **Auto for MIDI** mode may feel the most intuitive, only showing the HUD when you are working hands-on with your MIDI controller.

Section 05

COMMANDS

03 Commands

Commands List

The following commands are available for mapping in Mulligan. These descriptions also appear in the **Mapping Assistant** popover window when you click on a command.

Command	Description
Plugin Knobs	
Knob 1	Control plugin parameter 1
Knob 2	Control plugin parameter 2
Knob 3	Control plugin parameter 3
Knob 4	Control plugin parameter 4
Knob 5	Control plugin parameter 5
Knob 6	Control plugin parameter 6
Knob 7	Control plugin parameter 7
Knob 8	Control plugin parameter 8
Plugin Parameter Page	
Previous Page	Move to previous page of plugin parameters
Next Page	Move to next page of plugin parameters
Increment Page	Use a knob to select parameter page
Page Return ¹	Reset page in Learn mode; jump b/t first & last pages
Page Bump ²	While pressed, temporarily bumps up to next page
Plugin Navigation	
Next Plugin	Cycle through the plugins on a track
Show/Hide Plugin	Show/hide the active plugin window
Combo	A short tap triggers Next Plugin, while a long hold triggers Show/Hide Plugin

Track Navigation	
Previous Track	Move to previous track
Next Track	Move to next track
Increment Track	Use a knob to select current track
Current Track	
Solo	Solo the current track
Mute	Mute the current track
Level	Control the level of the current track
Send A	Control the level of Send A on the current track
Send B	Control the level of Send B on the current track
Send C	Control the level of Send C on the current track
Send D	Control the level of Send D on the current track
Send E	Control the level of Send E on the current track
Pan L	Control the left (or mono) pan of the current track
Pan R	Control the right pan of the current track
Pan Combo	Control left and right panning with a single knob
Miscellaneous	
Master Fader	Control the rightmost Master Fader
Show/Hide HUD	Manually show/hide the HUD
Transport	
Stop	Stop the DAW transport
Play	Play the DAW transport
Stop/Play	Use a single button to Stop/Play the DAW transport
Rewind	Rewind the DAW transport
Fast Forward	Fast forward the DAW transport
Record	Arm the DAW for recording
Loop Play	Toggle Loop Playback on/off

03 Commands

Notes on Commands

1. Page Return

When switching in or out of plugin Learn mode in Pro Tools (i.e. when doing custom plugin mapping), Page Return will return you to the last parameter page you were on before entering Learn mode. (Pro Tools automatically jumps back to page 1 whenever entering or leaving Learn mode, which is not always desirable.)

Under normal operation (*not* involving Learn mode) Page Return will hop between the first and last parameter pages.

2. Page Bump

Page Bump provides a way to temporarily access the next parameter page of a plugin mapping, without taking your hand off the knob. **Map this command to the pushbutton function of your first plugin knob.** While you hold the knob down, you access parameter page +1, and when you release the knob, it reverts to the original page. When you design custom plugin mappings around this concept, **it's like adding another bank of virtual knobs to your controller.**

For example, you could map 4 bands of EQ across 8 knobs, as follows: each EQ band gets mapped to a pair of knobs. Start with Knob 1 mapped to the Low band frequency, and Knob 2 mapped to the Low band gain. Then, on the *next*

parameter page, map Knob 1 to Low band enable, and Knob 2 to Low band Q control.

Repeat this pattern for the other three EQ bands, assigning the knobs in pairs. So now the two parameter pages would look like this when viewed in the HUD:



Then in practice it would work like this: you could mostly use parameter page 1, where you control frequencies and gains for the four EQ bands. But for doing a quick tweak of the Q, or enabling/disabling the band, you would push down on a knob and engage Page Bump. That would put the Enable and Q parameters right there under your fingers, on the same knobs.



Even though you only map the Page Bump command to the *first* plugin knob's pushbutton function, Mulligan will automatically detect when *any* of the eight plugin knobs are pushed (provided that the knob pushbuttons send consecutive note numbers), and use them to engage Page Bump as well.

03 Commands

Optional Section: Plugin Buttons

This section of commands allows you to map buttons to plugin parameters. The Plugin Buttons work in parallel to the Plugin Knobs section – meaning that they work simultaneously, and they affect the same set of eight plugin parameters as the knobs.



The **Plugin Buttons** section will only be visible for a MIDI device when it is activated in the Device Settings Menu.

When you press a Plugin Button, it increments the value of the plugin parameter by +1. After it reaches the top value, an additional button press will loop it back around to the bottom value.

▼ PLUGIN BUTTONS		
●	BUTTON 1	CH 11 NOTE 36
●	BUTTON 2	CH 11 NOTE 37
●	BUTTON 3	CH 11 NOTE 38
●	BUTTON 4	CH 11 NOTE 39
●	BUTTON 5	CH 11 NOTE 40
●	BUTTON 6	CH 11 NOTE 41
●	BUTTON 7	CH 11 NOTE 42
●	BUTTON 8	CH 11 NOTE 43

Plugin Buttons could be helpful in different mapping schemes, including:

1. If your eight plugin knobs have pushbuttons built in, map the Plugin Buttons to the push function of the knobs. Then for plugin controls that are toggles or multi-position switches, it may feel more natural to tap the knob to cycle through the options, rather than spin the knob.
2. If you have a small controller with only four knobs, but also some buttons (e.g. a Stream Deck +), you could map the controller's four knobs to **Plugin Knobs 1-4**, and then map four controller buttons to **Plugin Buttons 5-8**. You would then want to set up custom plugin mappings in the DAW to ensure that suitable plugin parameters were mapped to the knobs versus the buttons.

03 Commands

Optional Section: Joystick / XY

This section of commands is for mapping input from **joysticks** (either free or center-sprung) and **XY pads**. These commands are specialized to deal with these types of inputs, which by their nature behave differently than knobs. (For the remainder of this section, we will refer to both these types of inputs collectively as just “joystick” inputs, for brevity’s sake.)



The **Joystick / XY** section will only be visible for a MIDI device when it is activated in the Device Settings Menu.

▼ JOYSTICK / XY			
●	X1	KNOB 1	▼ CH 1 CC 19
●	Y1	KNOB 2	▼ CH 1 CC 20
●	X2	NONE	▼ NOT MAPPED
●	Y2	NONE	▼ NOT MAPPED

Commands are provided for two joysticks. **X** means the horizontal axis of the joystick, and **Y** means the vertical axis.

So therefore, we have **X1** and **Y1** for the first joystick, and **X2** and **Y2** for the second (for those of you so lucky as to have a controller with dual joysticks!).

As you can see in the screenshot, each joystick command includes a popup menu in The Mapping Window, to select which action will be mapped to that joystick axis. These actions can be any of the eight **Plugin Knobs**, or any of the continuous controls found in the **Current Track** section.

While it was previously possible to map a joystick directly to one of those other commands, it would have meant you couldn’t simultaneously have a knob mapped to it.

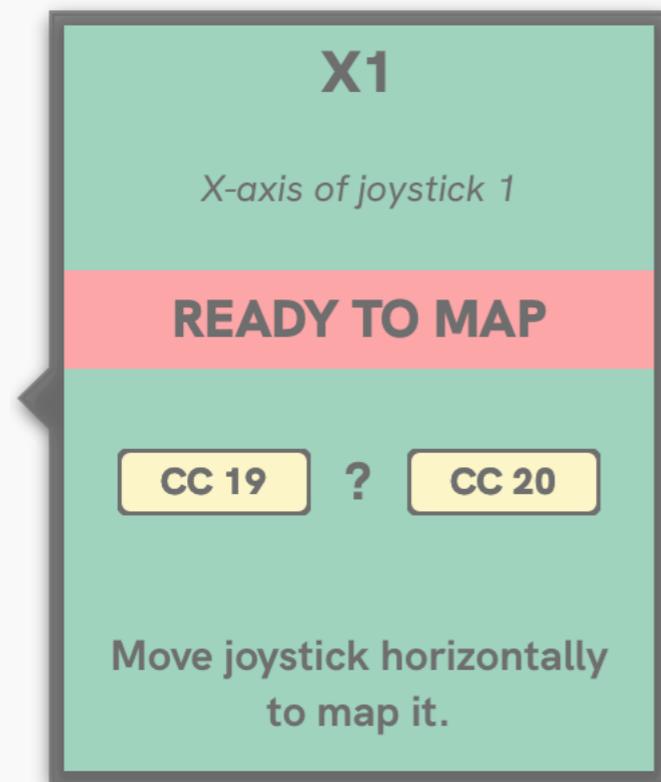
Now, with a dedicated joystick section, you could have 8 knobs mapped to the 8 plugin controls per usual, and then *also* have a joystick mapped to 2 of those plugin controls at the same time. For some plugins (those with XY grids onscreen, or EQs with frequency/gain plots), joystick input feels intuitive and makes sense, but for other plugins it might feel sort of pointless. Now, with both knobs and joystick mapped, you can grab the joystick when it's a good match for a particular plugin, or just use knobs if it's not a good match.

In addition to this dual-mapping convenience, the joystick commands are optimized for handling joystick input data. One of the extra features they include is a mapping confirmation page in their Mapping Assistant windows. For knobs, the mapping process is pretty foolproof: click a command to map it, and turn the knob. However, with a

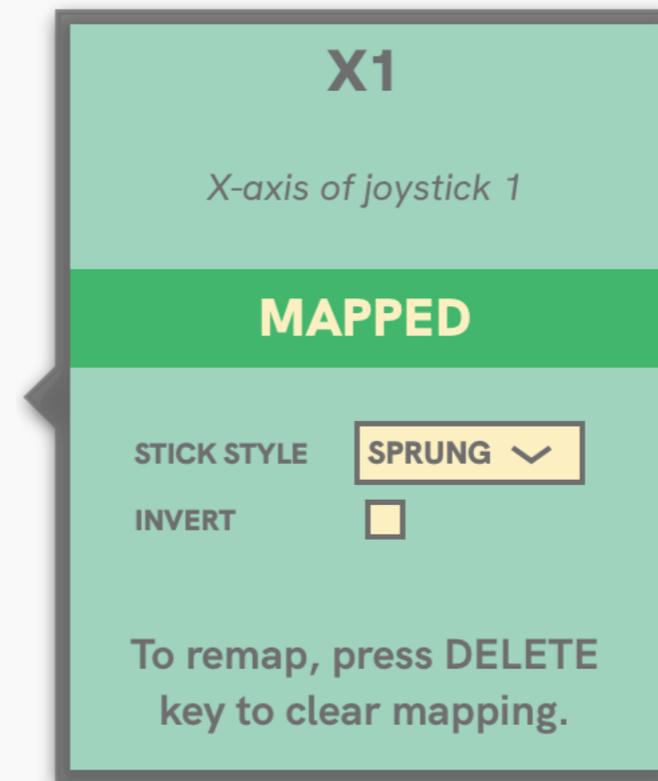
03 Commands

Mulligan 1.6 adds an optional section of commands for mapping input from **joysticks** (either free or center-sprung) and **XY pads**. These commands are specialized to deal with these types of inputs, which by their nature behave differently than knobs. (For the remainder of this section, we will refer to both these types of inputs collectively as just “joystick” inputs, for brevity’s sake.)

Commands are provided for two joysticks. **X** means the horizontal axis of the joystick, and **Y** means the vertical axis.



So therefore, we have **X1** and **Y1** for the first joystick, and **X2** and **Y2** for the second (for those of you so lucky as to have a controller with dual joysticks!).



As you can see in the screenshot, each joystick command includes a popup menu in The Mapping Window, to select which action will be mapped to that joystick axis. These actions can be any of the eight **Plugin Knobs**, or any of the continuous controls found in the **Current Track** section.

While it was previously possible to map a joystick directly to one of those other commands, it would have meant you couldn’t simultaneously have a knob mapped to it.

Section 06

FAQ

Why do I see a mangled bunch of letters in the HUD where a plugin or parameter name should be?

What you're seeing there is the shortened (8 character) form of those names, just as they are sent to Mulligan from the DAW. It's not very pretty, and in some cases, it's downright nonsensical.

Mulligan attempts to substitute more readable versions of those garbled names for its display, but it does not have names for every plugin and parameter under the sun.

As a solution: You can click on the offending name in the HUD, and type in your own more readable substitution. This will be saved automatically with your user data.

Why isn't the Learn button in the Pro Tools plugin window responding to clicking?

This seems to be a bug in Pro Tools. The workaround is when setting up the MIDI Controllers window, to make sure that Mulligan is in slot #1.

If you also use another controller that works best when in slot #1 (like a HUI device), then it may make sense to create

custom plugin maps for all the plugins you regularly use, and then move Mulligan to another slot.

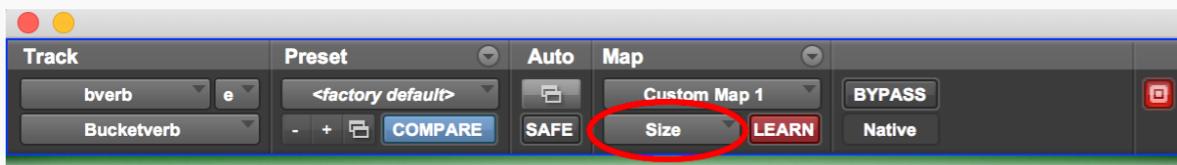
I mapped a knob, but now it either stutters in place, or jumps between minimum and maximum, when I try to turn it. What went wrong?

These behaviors indicate that an incorrect knob mode was set for that command. The knob mode detected by Mulligan must match the actual mode that your MIDI controller is using to send data from that knob.

Please repeat mapping the command in the Mapping Window, being sure to turn the knob *slowly* to the left so that Mulligan can detect the correct knob mode.

I'm trying to make a custom plugin map in Pro Tools, but when I click on a plugin control, nothing happens. What do I do?

There is a known issue with certain plugin brands, where their code is missing a required linkage between the plugin GUI and the plugin parameter system. Fortunately, there are a couple workarounds for it, which will allow you to create custom plugin maps regardless.



1. You can always use the **Parameter Menu** in the plugin window (the popup menu just to the left of the **LEARN** button) to select a parameter for mapping. The parameter menu defaults to reading "No Control". After clicking the Learn button, select the parameter you'd like to map from the menu, and twist a knob. Then pick another parameter from the menu, and twist a knob. This works just like the click & twist mapping method, except you're using the menu instead of clicking.

However, selecting the parameter from a menu is slower than just getting to click on it, and for some plugins with dozens (or even hundreds) of parameters, scrolling through that menu can be rather awkward. So, there is a second method, which *can* work, but again is dependent on the plugin manufacturer's implementation, so it's not guaranteed to work:

2. After clicking the **LEARN** button, hold down the "3-finger salute" keyboard shortcut and click on an onscreen control, aka Command-Option-Control-click. This may get the plugin to recognize that you're clicking on a control, even if it ignores plain clicks with no keyboard modifiers. (The shortcut of just Command-Control-click may also work for many plugins – so if the first one fails, try that one instead.)

Section 07

APPENDIX

All About MIDI Controller Knobs

When choosing a MIDI controller to use with Mulligan, the factor that can make the biggest difference to your experience is the type of knobs it has.

The bottom line is: **Mulligan works best with Encoders sending Relative knob data.** To understand why, we need to delve into knobs in detail.

Pots vs Encoders

There are two kinds of knob hardware found on controllers:

- **Pots** have hard “stop” points at the ends of their rotation
- **Encoders** (aka *incremental knobs* or *rotary encoders*) can keep spinning endlessly in either direction

Absolute Data vs Relative Data

There are two kinds of data that a knob can send:

- **Absolute** data describes the *position* of the knob, in the range from 0 to 127.
- **Relative** data describes the *change* in a knob when turned, with values like +1 (for a small clockwise turn), or -3 (for a larger counter-clockwise turn).

So how does **Pots vs Encoders** relate to **Absolute vs Relative**?

Pots are *only* capable of sending absolute knob data. However, most controllers with **encoders** have the ability to send either absolute or relative knob data. We’ll call those two modes **absolute encoders** and **relative encoders** for short – but to be clear, the actual knob hardware is identical. The difference is just in which type of data the MIDI controller sends from the encoders.

For use with Mulligan, the hierarchy of preference for these knob types are:

Relative Encoders > Absolute Encoders > Pots

The reason for this is twofold.

First, why are encoders better than pots? With **encoders**, you never have to worry about a mismatch between the hardware knob and the onscreen knob. It's like the hardware knob automatically matches the position of the onscreen control.

In contrast, with **pots** you might have the hardware knob at 9 o'clock, but the onscreen knob is at 3 o'clock. If you turn the physical knob just a little bit, the onscreen knob will suddenly jump from 3 o'clock to 9 o'clock. Mulligan offers an

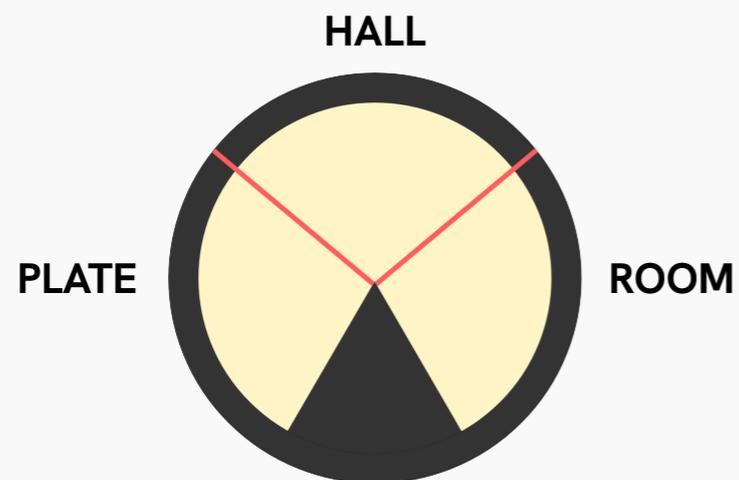
05 Appendix

optional **Soft Takeover** mode to prevent these jumps when using pots, but it is faster and more intuitive to use an encoder.

Second, why are relative encoders more optimal than absolute encoders? Relative encoders do better with plugin controls that are on-off or multi-position **switches**.

Say you have a reverb plugin with a control for three different modes: *Plate*, *Hall*, and *Room*. With a **relative encoder**, it only takes a small turn to change modes. If you're currently on *Hall*, it's always one click to the right for *Room*, or one click to the left for *Plate*.

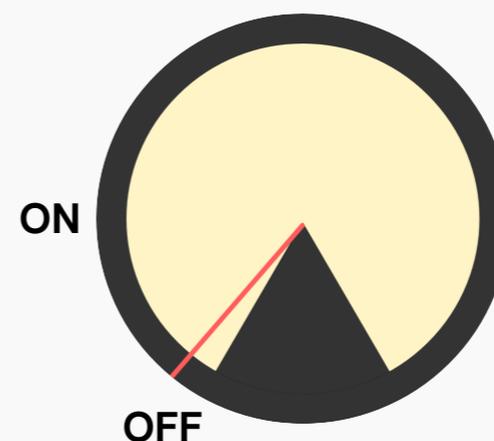
However, with an **absolute encoder**, it's a different story. The knob's sweep would be divided into three zones:



In order to switch between modes, you might have to turn the knob just a little (if it happens to be near one of those boundary lines) or a lot. This makes the knob action

unpredictable, and it can result in a lot of knob turning with no visible response, which does not feel intuitive in practice.

Even worse is using an absolute encoder with an on-off switch, because these are often divided into unequal zones. For example, an EQ *band enable* switch might have these two zones, where only a zero value turns it off:



When you bring up this EQ plugin, if the control is in the *On* position, the absolute encoder will be turned up to its maximum. Therefore, in order to change it to *Off*, you'd have to sweep the control all the way down to the very bottom, which on an absolute encoder can require multiple spins of the knob. As before with the reverb mode example, this results in a lot of knob turning with no visible effect, instead of the instant response you would get from a relative encoder.

Setting Up Knobs for Optimal Performance or: Beware the Absolute Encoder!

Given all the benefits we have shown to using relative encoders instead of absolute encoders, it is unfortunate that **most MIDI controllers with encoders send absolute data by default.**

For optimal performance with Mulligan, you must change your controller to send relative data instead. Depending on the make and model, this can be done by setting onboard options, or by using a software editor supplied by the manufacturer.

Further confusing the issue is the fact that there are multiple formats for sending relative encoder data, and that there is no consistent naming standard for those. In Mulligan, we have opted to name the relative knob modes as **Relative 1**, **Relative 2**, **Relative 3**, and **Relative 4**. Other companies have used technically descriptive names, like Signed Bit, Signed Bit 2, Bin Offset and Twos Complement. Still others have used rather cryptic looking names like **ENC 3FH/41H** (looking at you, MidiFighter Twister!).

Even among companies that use a simple numbered naming scheme like we do, one company's "Relative 1" might actually be a different format than another company's "Relative 1". So **you can't rely on matching the relative knob modes by name.**

Fortunately, Mulligan's automatic knob mode detection makes the naming a moot point. When configuring your MIDI controller, just pick the first relative mode available, and make sure that it's the same for all the encoders.

Then, when mapping your controller in Mulligan, turn the knobs *slowly* to the left. This allows Mulligan to detect which knob mode is in use. Don't worry if the knob mode name in Mulligan doesn't match what you had selected in your MIDI controller setup – if it works right, it *is* right.

Enhanced Visual Feedback

Mulligan offers enhanced visual feedback for certain models of MIDI controller. The main purpose of this is to visually distinguish between when a knob is *unassigned* in the current parameter page, versus when a knob is *assigned* but its parameter is at its minimum value (e.g. zero or off).

How this might be visually represented depends on the particular model of controller, and it requires of course that the hardware have some kind of LEDs around its knobs.

Currently Mulligan detects the following MIDI controllers by name, and automatically sends extra messages to them for enhanced visual feedback:

Midi Fighter Twister

When a knob is unassigned in the current parameter page, the multi-color (RGB) LED under the knob will be turned off. When a knob is assigned, the RGB LED under the knob will be lit (using the color set in the [Midi Fighter Utility app](#)).

In order for this to work, the *Switch MIDI Number* and the *Encoder MIDI Number* for each knob must be set to the same value. (They can have different *MIDI Channel* settings, however.)

Kenton Killamix

When a knob is unassigned in the current parameter page, the knob's LED ring will have no segments lit. When a knob is assigned, but the parameter is set at its minimum value, the lowest segment of the LED ring will be lit.

Behringer X-Touch Mini

When a knob is unassigned in the current parameter page, the knob's LED ring will have no segments lit. When a knob is assigned, but the parameter is set at its minimum value, the lowest segment of the LED ring will be lit.

In order for this to work, the Global Channel setting in the X-Touch Editor application must be left as channel 1 (the default).

TouchOSC

Mulligan sends out plugin and parameter names in a custom SysEx format to enable displaying them in the [TouchOSC](#) control surface app. See the "TouchOSC iPad" Starter Pack included with the Mulligan download for details.

Menu Commands

File

Import Map...

Imports a controller map for the *currently selected* MIDI input device only.

Export User Data...

Saves a zip file containing all user data.

Show User Data Folder

Reveals the user data folder in the filesystem.

Edit

Undo

Undo any action that adds or deletes MIDI mappings. This includes:

- Mapping a single command
- Using Map All Knobs
- Importing a controller map
- Deleting a single mapping
- Delete All Mappings

Note that Mulligan maintains a separate undo history for each MIDI device. So if you make changes to one device's map, then switch focus to another device using the MIDI Device Menu, the undoable actions from the first device won't appear in the Undo menu. You can, however, switch *back* to the first device, and its undo history will again be accessible in the Undo menu.

Delete Mapping

Deletes the currently selected mapping.

Delete All Mappings...

Deletes all mappings for the current device.

Window

Shrink Mapping Window

Toggles the Mapping Window between normal and minimal sizes. In its minimal size, only the top header with the DAW Connected light and HUD controls are visible.

Heads-Up Display

Toggles the visibility of the Heads-Up Display (HUD) window.

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Customized Plugin Names

This window displays any user-entered plugin or parameter names. The left column shows the short or “stub” names (8 characters max) that are sent by the DAW, and the right column shows the long form of the names that will be displayed in the HUD.

These “long names” can be edited within the window, or alternately they can be edited in the HUD when they are displayed there.

To remove an entry, simply delete the full long name, to revert it to a blank.

Note that *parameter* names entered here or in the HUD are placed in a general pool of parameter name substitutions. They do not “belong to” any particular plugin.

For more info, see the FAQ [Why do I see a mangled bunch of letters in the HUD where a plugin or parameter name should be?](#)

Guides

The items in the Guides menu open quick one-page visual references to help you accomplish a specific task.

Help

Licenses

Opens the Authorization window, where you can unlock Mulligan with a license file, review which license your installation is running under, or clear the current authorization.

Online Resources

The Help menu contains a number of links to online help resources, which will open in your default web browser.

Diagnostic Info

Last but not least, this handy utility displays the current version number of Mulligan, and also copies a page of diagnostic text to your system’s clipboard. Please paste this text into any support requests.

Other Keyboard Shortcuts

The following shortcuts do not appear in the menubar:

Action	Shortcut
Toggle transport stop/play	Spacebar
Show simple Authorization dialog	A
Show HUD View Options panel	,
Close current popup window	Esc

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