

GETTING STARTED WITH VICON SHOGUN POST

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About this guide

About this guide

This guide provides an introduction and workflow for processing and exporting data with Vicon Shogun Post.

Videos of the procedures described in this guide, including many additional tips and examples, are available from the [Vicon Shogun playlist on YouTube](#)¹.



Note

As some videos were recorded using an earlier version of Shogun Post, you may notice minor differences in the user interface.

¹ <https://www.youtube.com/playlist?list=PLxtdgDam3USVknig2N6QU1ARXR22LXJfJ>

Introducing Shogun Post

These topics provide a brief introduction to Vicon Shogun Post.

- [Post - Splash screen \(page 5\)](#)
- [Post - Customize views \(page 6\)](#)
- [Post - Work with panels \(page 15\)](#)
- [Post - Set preferences \(page 20\)](#)
- [Post - File types \(page 31\)](#)
- [Post - Hot keys and shortcuts \(page 34\)](#)

These topics are useful if you are new to Shogun Post and want to familiarize yourself with the user interface, but if you're ready to start working straight away, go to [Review data quality \(page 42\)](#).



See also the Vicon video: [1 - Shogun Post - Introduction²](#), which also introduces Vicon Shogun Post.



Note

As the videos were recorded using an earlier version of Shogun Post, you may notice small differences in the user interface.

² <https://youtu.be/A4cdCdaDTII>

Introducing Shogun Post

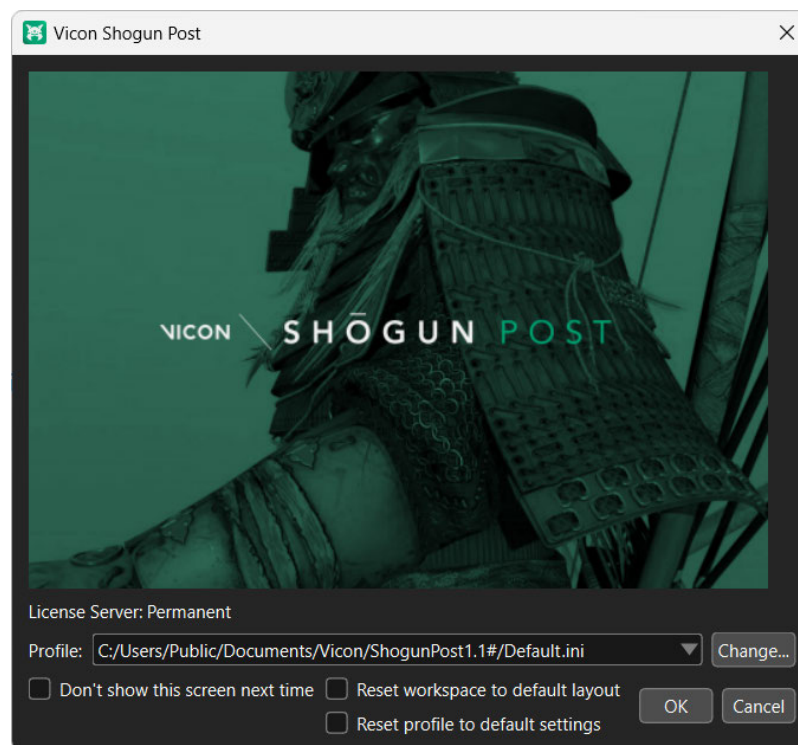
Post - Splash screen

After you start Shogun Post, a splash screen appears with options that let you change the default layout and settings.



Note

Profiles created in previous versions of Shogun Post are unsupported. Reset the **Profile** to the *default.ini* file provided (this is done by default) or select **Reset profile to default settings**.



Introducing Shogun Post

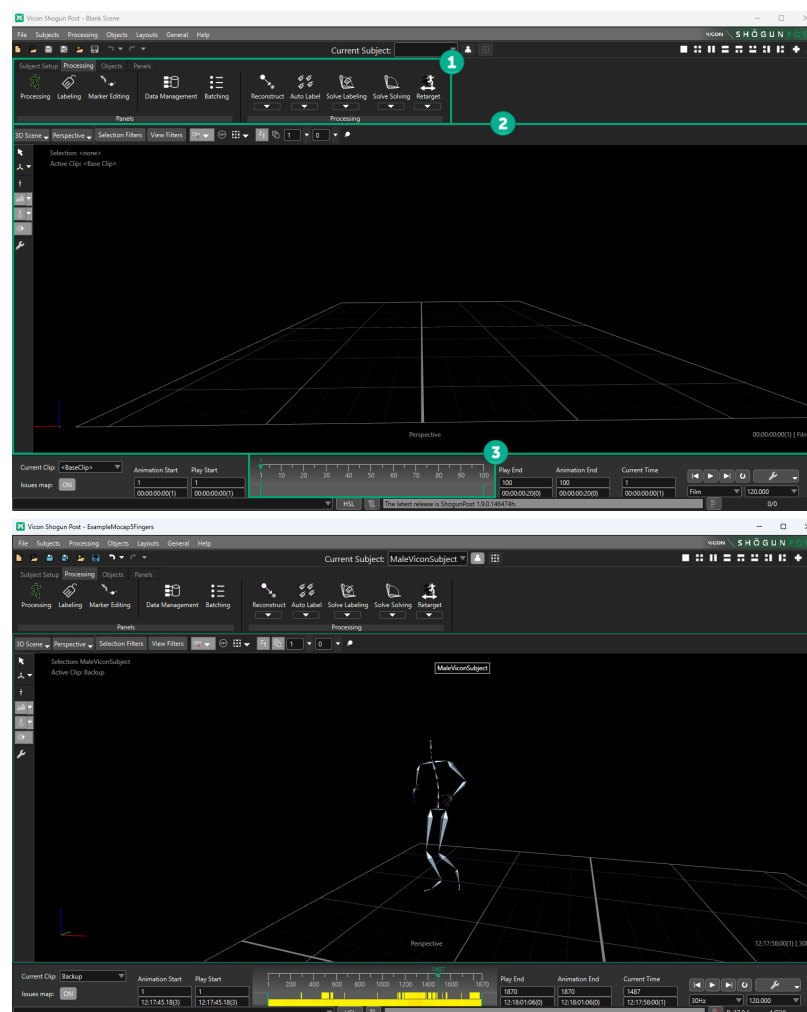
Post - Customize views

The default Shogun Post window is arranged to view and process a capture.

The **Processing** tab **1** is displayed on the ribbon. On the ribbon, the links to the panels are displayed in the order you are likely to want to use them (from left to right) and within each panel, the sections are arranged in order of a typical workflow.

Below the ribbon, a **3D Scene (Perspective)** view **2** is displayed.

The default time bar **3**, which displays an issues heat map (colored horizontal bars that indicate gaps in your data) when you load a mocap file, is displayed at the bottom of the window.



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To find out more about loading data into Shogun Post and using the time bar issues map, see [Load mocap data files into Shogun Post \(page 43\)](#) and [Get an overview with the time bar Issues map \(page 58\)](#).

For more information about how you can change the view pane in Shogun Post, see the following topics.

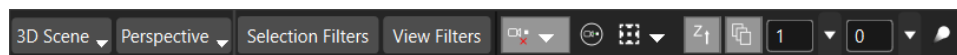
- [About the 3D Scene view \(page 8\)](#)
- [Change the display in the view pane \(page 9\)](#)
- [Move the camera view \(page 11\)](#)
- [Change the view type \(page 12\)](#)

Introducing Shogun Post

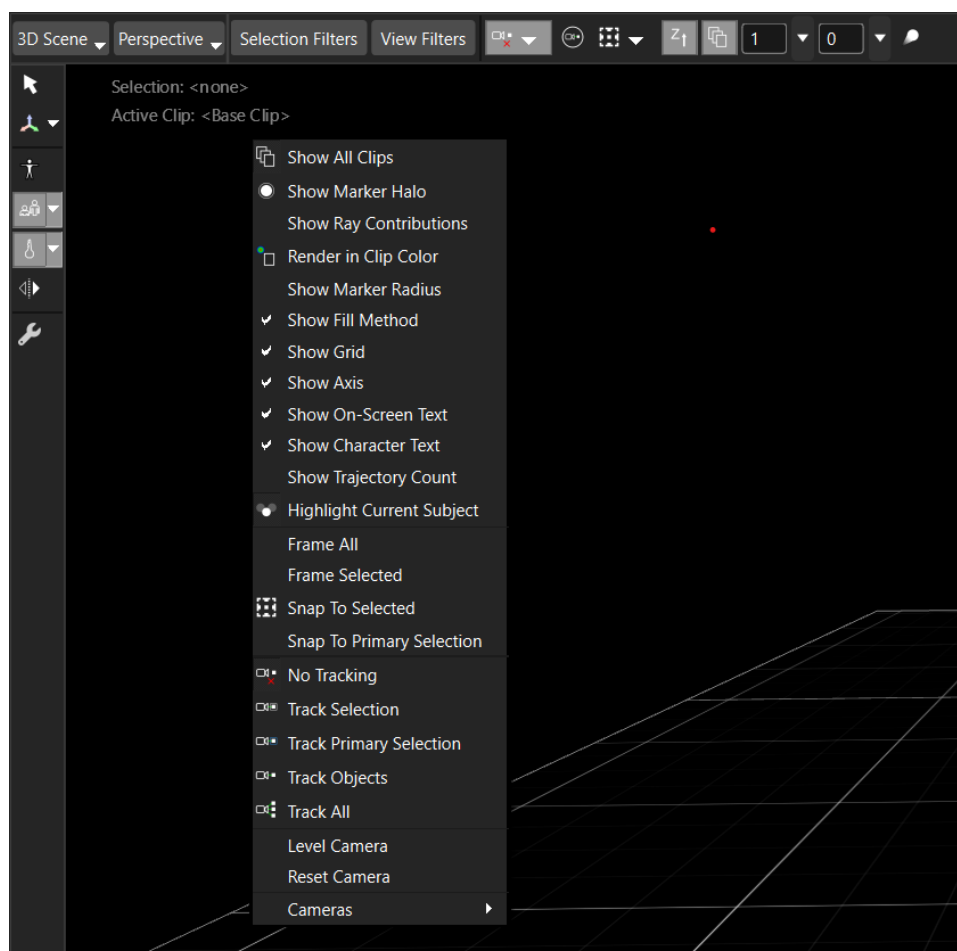
About the 3D Scene view

The default view in Shogun Post is the **3D Scene** view, which displays reconstructed motion capture data from all active Vicon cameras in 3D perspective.

The **3D Scene** view consists of a view pane and a toolbar (along the top). The toolbar contains buttons and menus to help you to manage the way 3D reconstructed data is displayed in the view pane.



A context menu (ALT+right-click) provides additional options that are not available from the toolbar.



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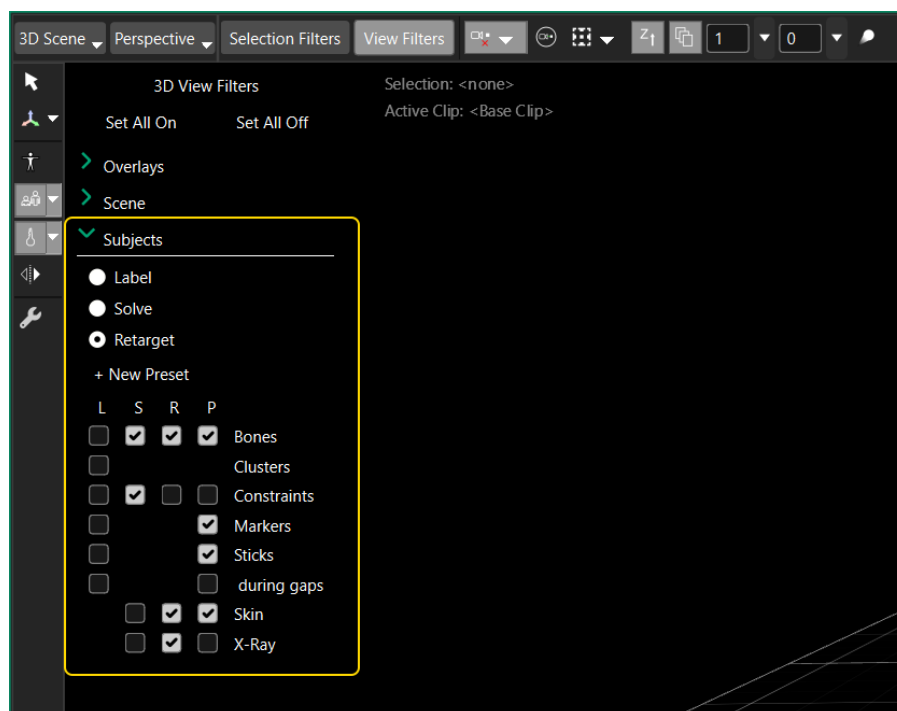
To select a layout for the view, click a button at the top right of the quick access toolbar.



Change the display in the view pane

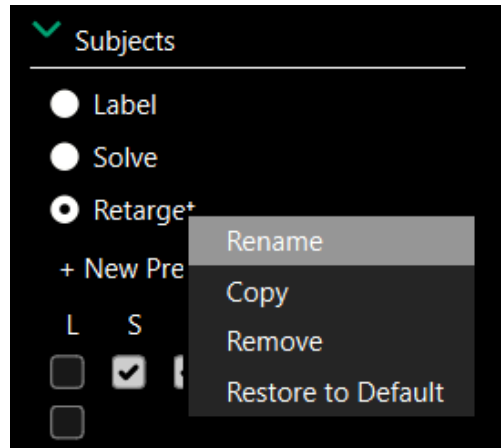
To change the type of data that is displayed in the view pane:

1. At the top of the view pane, select **View Filters**.
In the **Subjects** section, the view options are displayed in a matrix, with columns for Labeling, Solving, Retargeting and Props.
2. Choose a view configuration that suits your current task.
3. The default view filter sets are for labeling, solving, retargeting, and props, but you can add your own filter sets by selecting **New Preset**.



Introducing Shogun Post

4. To rename, copy, remove or restore any filter set to its default value, right-click on a filter set and then click the required option.



5. Your settings, including any custom presets, are automatically saved so that you can easily re-use them for different workflows.

Introducing Shogun Post

Move the camera view

In **Perspective** view panes, you can move the camera view in respect to the objects in the scene in the following ways:

To	Do this
Rotate (move the camera viewpoint around the focal point)	Click and drag
Translate (move the camera viewpoint along a horizontal or vertical axis)	Left- and right-click and drag
Zoom (move the camera viewpoint closer to or further away from the focal point)	Right-click and drag

The cursor changes shape for the intended navigation.

As you navigate the view pane, when the cursor reaches the edge of the pane, it wraps around to the other side to maintain a continuous movement, so you can keep dragging in one direction without having to release the mouse button.

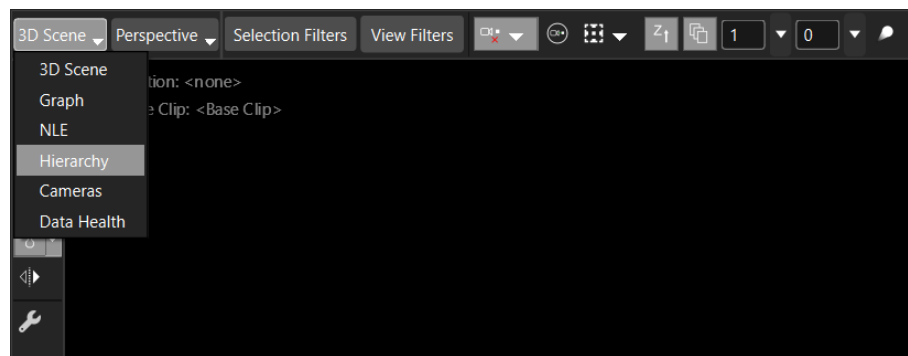
Introducing Shogun Post

Change the view type

In the view pane, you can change the type of data that is displayed, as well as the way in which the view is split, enabling you to view different types of data simultaneously. To save time, you can save and reload frequently used layouts.

To change the view type:

1. To select a different type of view, click the view type button at the top left of the view pane.



Introducing Shogun Post

2. Select the required view from the list.

- **3D Scene:** 3D reconstructions of Vicon camera data.

To select options that affect what is displayed in the **3D Scene**, click **View Filters** (see [Change the display in the view pane \(page 9\)](#)).

✓ **Tip:**

- To view markers and bones through the skin, select the **X-Ray** view option.
- To pre-select (ie highlight) objects, giving you an indication of what is about to be selected, hover the mouse pointer over objects in the workspace.

When you choose the **3D Scene** view, you can also select a **Perspective** view, or orthogonal views:

- **Perspective:** 3D view of data in the view pane
- **Front, Back, Right, Left, Top, or Bottom:** Orthogonal views of 3D data
- **Graph:** Manage keys which control the position of one or more markers on one or more frames
- **NLE (Non Linear Editor):** Clips of multiple markers from multiple takes, or subsets from a single session
- **Hierarchy:** Hierarchical view of objects in a scene, including markers, bones, actors and rigid bodies, showing the relationships between the objects.
- **Video:** Digital video data from video cameras
- **Cameras:** 2D optical data from Vicon cameras
- **Data Health:** Enables you to identify gaps (represented by gray bars) in trajectory labeling for the currently selected markers

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3. To select a layout for the view pane, select the required button at the right of the Shogun Post toolbar.



You can display a different view in each pane; for example, a 3D Scene view in one and a **Cameras** view in the other.

4. To save a favorite layout, on the **Layouts** menu, select **Export Custom Layout**.

By default, custom layouts (*.hsl files) are saved to C:
 \Users\Public\Documents\Vicon\ShogunPost1.x\Layouts.

✓ **Tip:** If you want to return to the default layout, re-start Shogun Post and select the option **Reset workspace to default layout**.

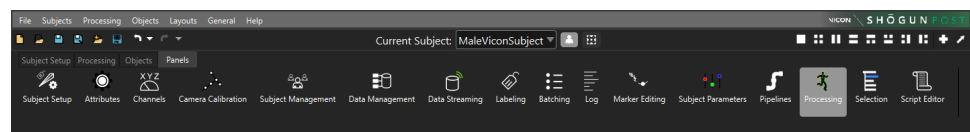
For information on changing the layout and visibility of the panels, see [Post - Work with panels](#) (page 15).

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Post - Work with panels

All the panels that you use for working with data in Vicon Shogun Post are available from the ribbon at the top of the default layout.

When you first open Post, the **Processing** tab is selected, but you can view all the panels by selecting the **Panels** tab.



On the ribbon, the panels are grouped into tabs that represent an area of activity. Each tab contains related panels and commands.

The tabs and the panels on them are arranged in the order you are likely to want to use them, from left to right.

To perform a task, on the ribbon, click the button that displays the required panel name, or click the equivalent command on the Vicon Post menu bar (above the quick access bar).



Note

The buttons toggle the display of the panels, so if you select a button for a panel that is already open, the panel closes.

To find out more about working with panels in Shogun Post, see the following topics.

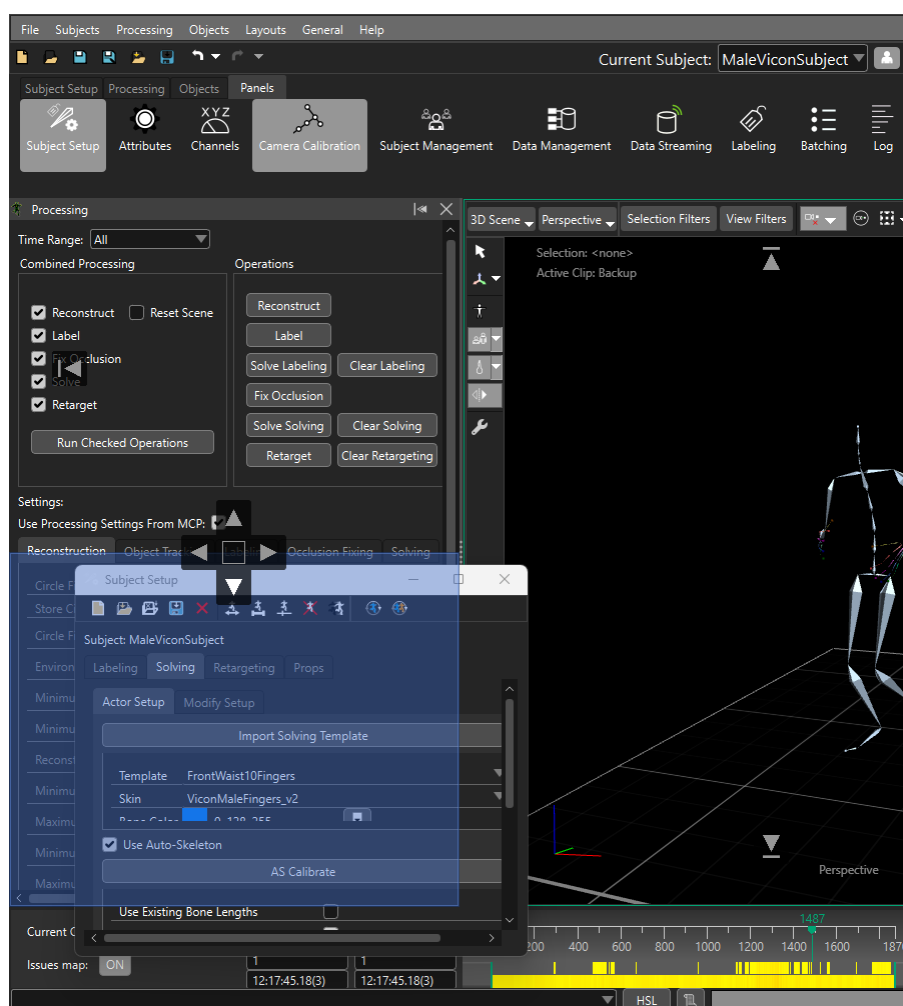
Introducing Shogun Post

Rearrange panels

You can re-position and hide or display the panels to suit your way of working.

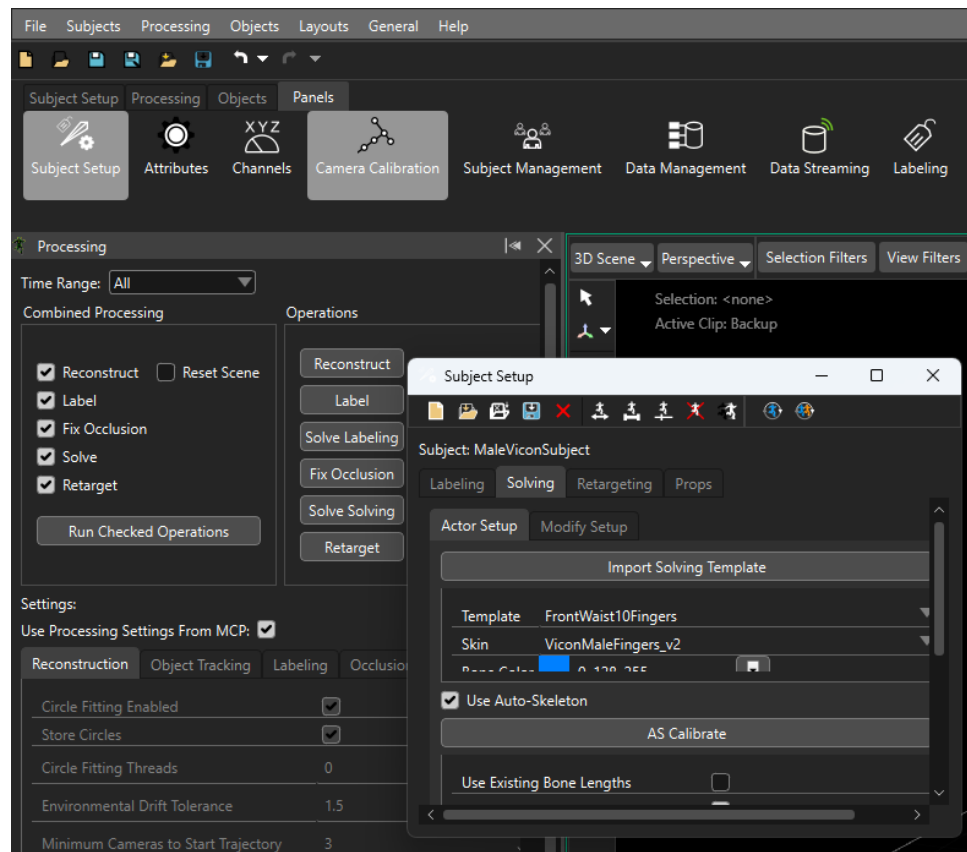
To re-position (dock) the panels:

Drag the panels by their title bars and drop them into place using the guides that overlay the main window.



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If you prefer, instead of docking the panels, you can leave panels floating in an independent window.



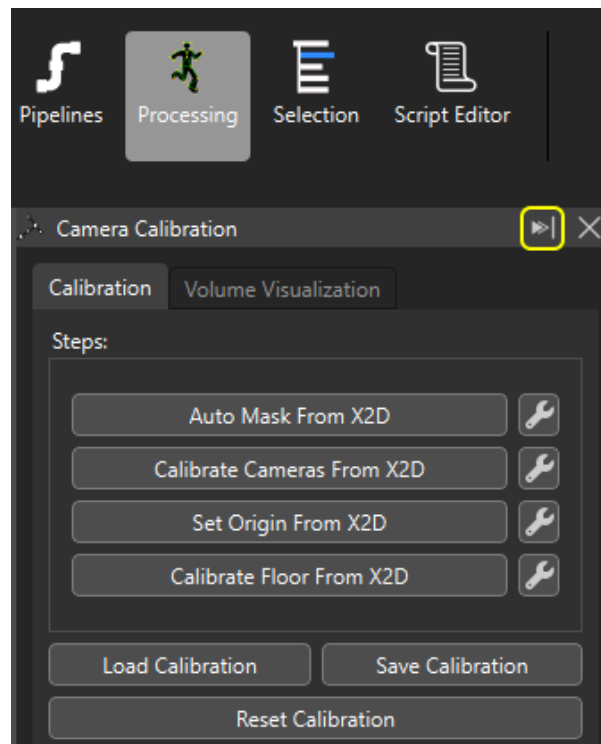
You can also hide panels, to give you more space in which to work.

Introducing Shogun Post

Hide/Display panels

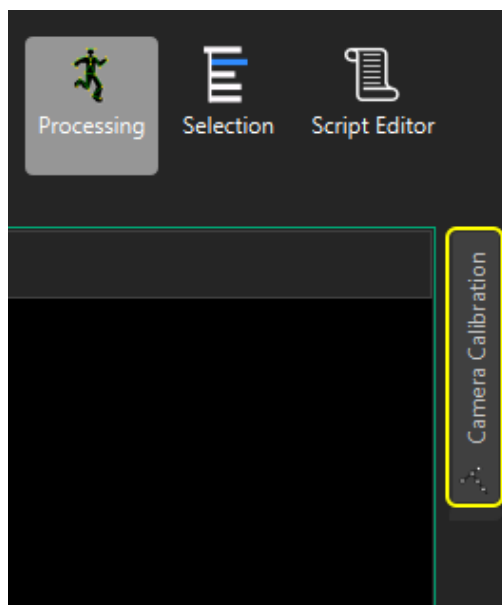
To auto hide/redisplay a panel:

- On the title bar of a docked panel, select the Pin button.



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The panel is hidden as a vertical tab along the edge of the main window.



If you auto-hide multiple panels, they are tabbed vertically along the edge of the main window.

To re-display a pinned panel:

1. Select the required tab on the edge of the main window.

The panel is displayed in a floating window.

2. To dock it again, select its Pin button.

Expand and collapse panel sections

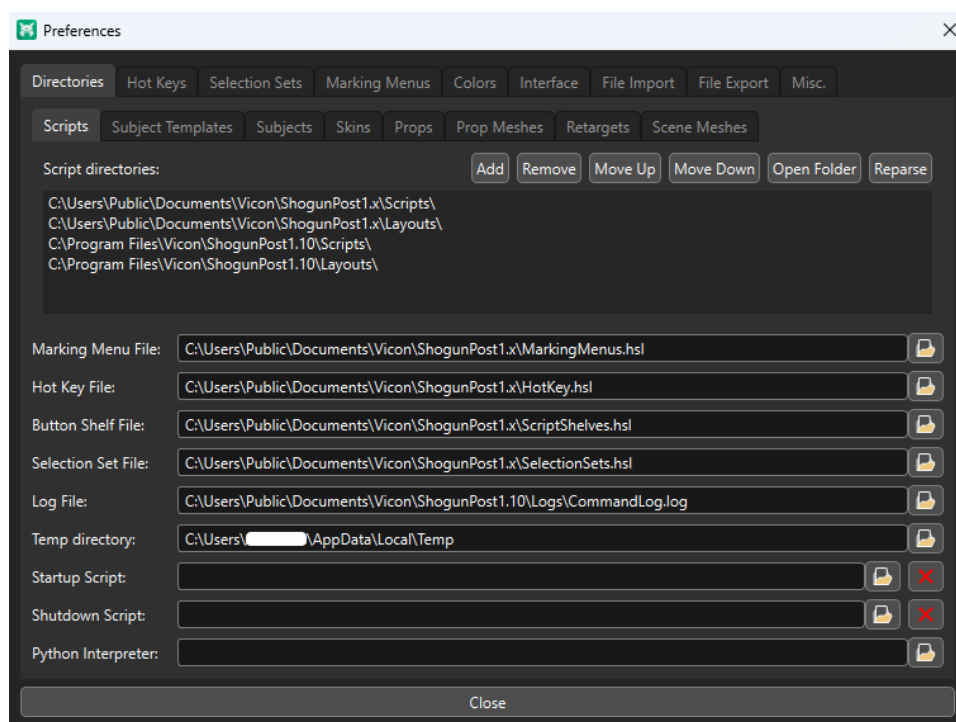
Within each panel, you can expand and collapse sections, to make it easier to access the controls you want to use.

Action	Mouse
Expand section	Select the right-pointing arrow 
Collapse section	Select the downward-pointing arrow 
Show/hide advanced options	Select Show advanced settings 

Introducing Shogun Post

Post - Set preferences

To access and change preferences such as folder locations, hot keys and default import and export options, as well as how you interact with the Shogun Post interface, you use the Preferences dialog box.



These topics introduce some of the ways you can customize Post.

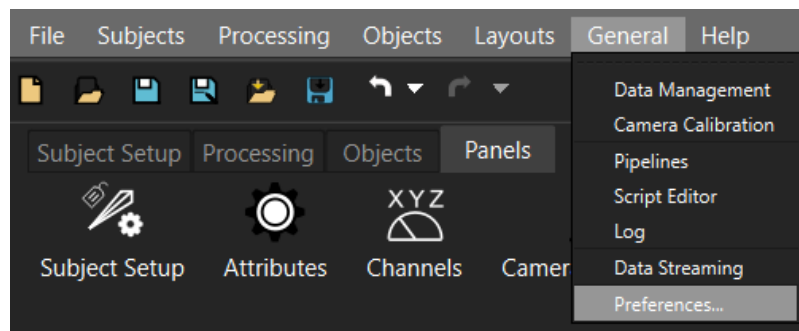
Introducing Shogun Post

Change Shogun Post folders

You set the location of Shogun Post folders and files on the **Directories** tab in the **Preferences** dialog box.

To open the Preferences dialog box:

1. On the **General** menu select **Preferences**.



2. In the Preferences dialog box select the **Directories** tab.

The **Directories** tab contains fields that enable you to specify the location of:

- Scripts folders. For more information, see [Set script folder locations \(page 22\)](#).
- Marking Menu file, Hot key file, Button shelf file, Selection set file, Log file, Temp directory, Startup script, Shutdown script, Python interpreter. For more information, see [Set file names and folder locations \(page 25\)](#).



Tip

The Marking Menu, Hot Key, Button Shelf, and Selection Set files are saved as Shogun scripts (.hsl files). These default Shogun .hsl files are stored in the Shogun Post folder (by default, C:\Users\Public\Documents\Vicon\ShogunPost#.#). You might find it useful to create different .hsl files to store particular categories of these files and/or to create your own folder for storing any of these files that you create or customize. You can specify the location of this folder in the appropriate fields on the Directories tab.

Introducing Shogun Post

Set script folder locations

The Shogun Post *Scripts* folder contains the default scripts supplied with Shogun Post, organized by category into sub-folders. By default, the *Scripts* folder is installed under the main Shogun Post program folder (C:\Program Files\Vicon\ShogunPost#\Scripts). Scripts in this folder can be selected from the **Pipelines** panel and the **Script Viewer** dialog box (available from the **Script Editor** toolbar and the Shogun Post status bar).

You can specify more than one *Scripts* folder on the **Directories** tab, but Shogun executes the first version of a given script file that it finds. That means that if you have two script files named *greatScript.hsl*, Shogun will execute the first one it finds as it searches the specified script folders in the order in which they appear in this field. You can use this search order to control when customized scripts are used over standard Shogun scripts.

Review the default scripts in the *Scripts* folder and all its sub-folders because they may save you time. Each script supplied with Shogun is documented, so you can quickly determine its function and modify its commands to meet your own needs. Most Shogun Post users find that these scripts can streamline many standard operations as written, and they also can be customized to meet other needs as required. For more information on using scripts, see the HSL scripting with Vicon Shogun Post.

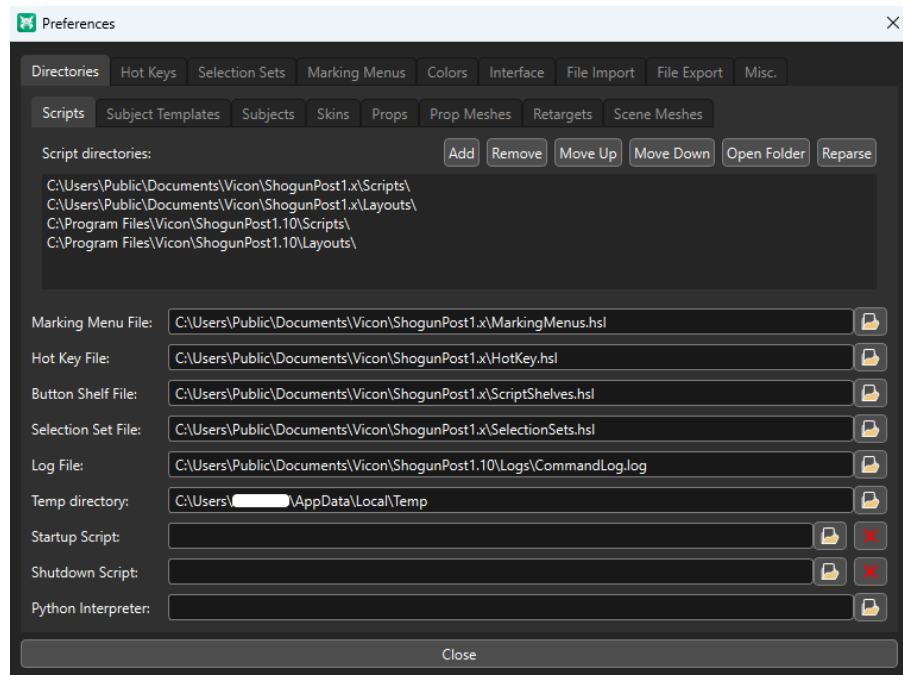
**Important**

Ensure you save a custom version of a Shogun script under a new file name. This ensures that if your script doesn't work, you still have the original.

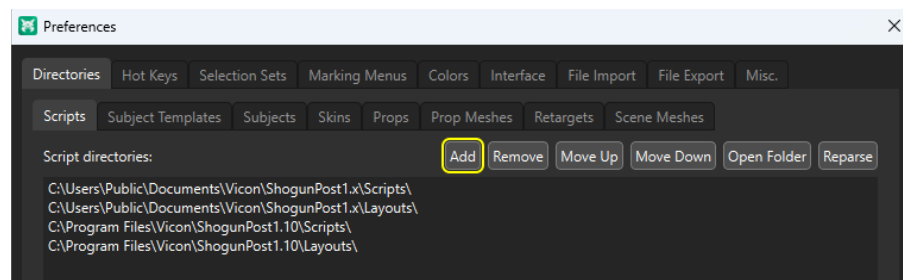
Introducing Shogun Post

To specify additional script file locations:

1. On the **General** menu select **Preferences**.
2. In the **Preferences** dialog box, select the **Directories** tab and view the **Script** directories section.



3. For each folder that you want to add, in the **Script** directories mini toolbar, Select the **Add** button.



4. In the **Select folder** dialog box, enter or browse to the desired location.

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You can also perform the following operations:

- Remove a selected script directory from the **Script directories** list.
- If you have specified multiple directories, use the **Move selected script up** and **Move selected script down** buttons to arrange the directories in the desired order.
- To view folder contents, select a folder in the list and select the **Open Folder** button on the toolbar.
- To update the contents of the selected folder, select the **Reparse** button.

Introducing Shogun Post

Set file names and folder locations

As well as specifying the location of scripts (see [Set script folder locations \(page 22\)](#)), you can specify a different location for the following files (and temp folder) on the **Directories** tab in the **Preferences** dialog box (**General** menu > **Preferences**).

Field	Description	Default location	Default file
Marking Menu file	Default marking menus.	C:\Users\Public\Documents\Vicon\ShogunPost#\	MarkingMenus.hsl
Hot key file	Hot key mappings.	C:\Users\Public\Documents\Vicon\ShogunPost#\	HotKey.hsl
Button shelf file	Script used by Shogun Post to build the Button Shelf interface. The button shelf tabs are displayed as custom tabs on the ribbon.	C:\Users\Public\Documents\Vicon\ShogunPost#\	ScriptShelves.hsl
Selection set file	Script used by Shogun Post to store selection set settings.	C:\Users\Public\Documents\Vicon\ShogunPost#\	SelectionSets.hsl
Log file	Multi-session text log file that contains the data displayed in the Log window.	C:\Users\Public\Documents\Vicon\ShogunPost#\Logs	CommandLog.log
Temp directory	Contains files that may be used by ViconSupport	C:\Users\<UserName>\AppData\Local\Temp	NA
Startup script	Script that runs when you start Shogun Post.	User-specified	User-specified
Shutdown script	Script that runs when you exit Shogun Post.	User-specified	User-specified

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Field	Description	Default location	Default file
Python interpreter	64-bit version of Python used by Shogun Post. For more information, see HSL scripting with Vicon Shogun Post.	C:\Program Files\Vicon\ShogunPost#\Python\	python.exe

You may find it useful to create your own folder and/or filename for storing any files you create or customize.

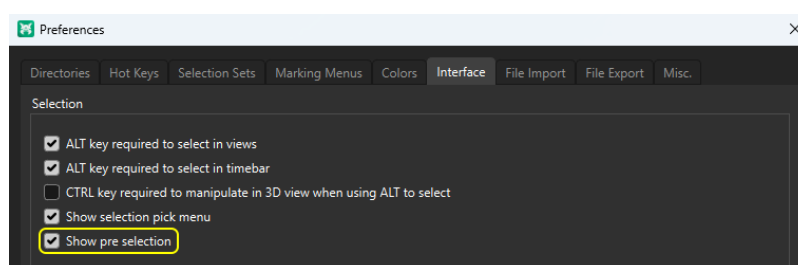
To specify a custom location:

1. Open the **Preferences** dialog box (see [Specify Vicon Shogun Post folders \(page 21\)](#)).
2. Select the **Directories** tab, and view the relevant field.
3. To the right of the field, select the **Open** button.
4. In the dialog box, enter or navigate to and select the appropriate file or folder that Shogun Post is to use and select **Open**.
You can select this **Open** button to open any previously saved *.hsl* files at any time during a Shogun Post session.

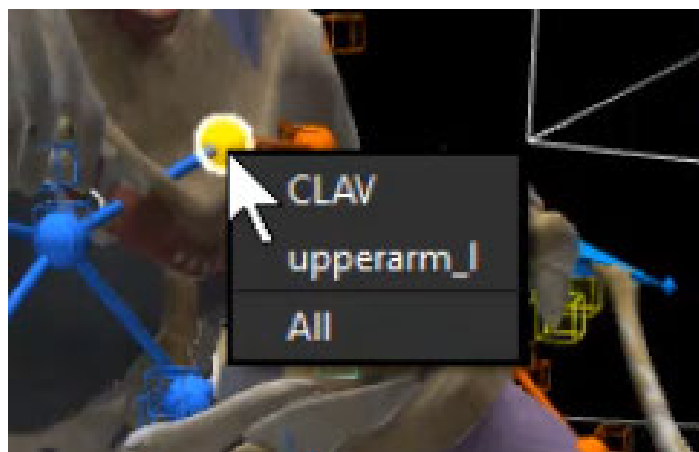
Introducing Shogun Post

Set pre-selection options

While pre-selection (the highlighting of the marker or object that the mouse pointer is currently hovering over) is useful in some circumstances, in others it may be distracting. In the **Preferences** dialog box (**General > Preferences**), an option on the **Interface** tab enables you to choose whether to **Show pre selection** in the 3D Scene view.



A related option, **Show selection pick menu**, enables you to choose whether to display the menu that is displayed when you hover the mouse pointer over several markers or objects that are on top of each other. When selected, you can quickly choose from a list of markers or objects, without having to use the Selection filters.



When cleared, no menu is displayed and you can select only the object that is directly under the mouse pointer.

See also [Vicon Shogun 1.3 Post Tutorial - Selection Toggles](https://youtu.be/i04aVAvYZ8w)³ on YouTube.

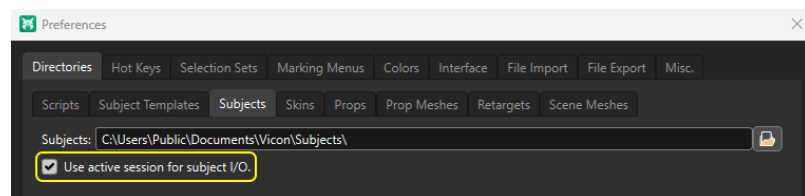
³ <https://youtu.be/i04aVAvYZ8w>

Introducing Shogun Post

Set a custom folder for saving subjects

To change the default folder to which to save subjects, in the **Preferences** dialog box, select the **Subjects** tab, where you can browse or specify the required folder.

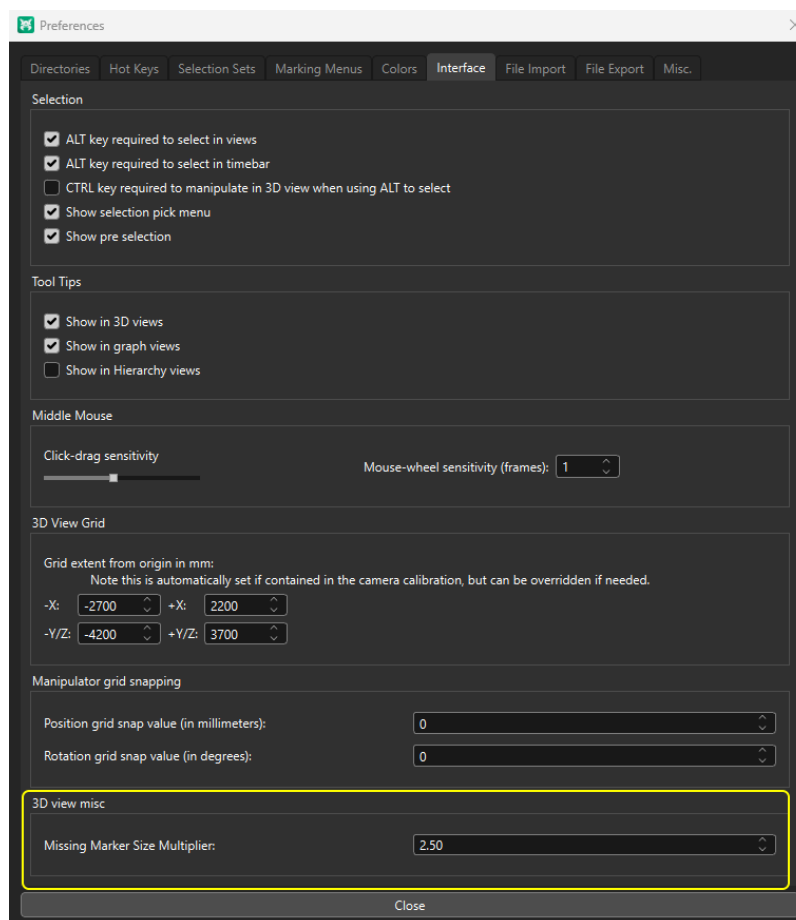
You can also specify that the current Eclipse session is used by selecting **Use active session for subject I/O**.



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Scale missing markers

To scale the displayed size of missing markers, in the **Preferences** dialog box, select the **Interface** tab and at the bottom, change the value of the **Missing Marker Size Multiplier** (the default is 2.50).

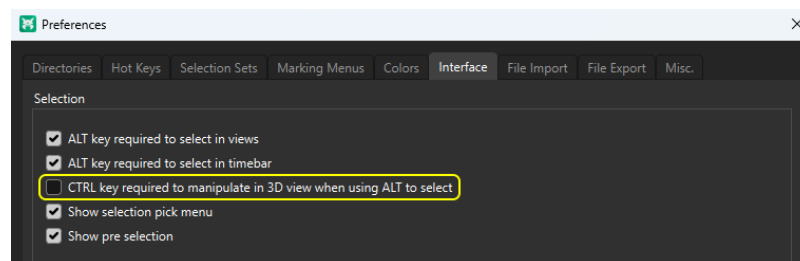


Introducing Shogun Post

Hold Ctrl to use the Manipulator

To avoid accidentally manipulating objects when using the Alt key to select, you can turn on the requirement for the Ctrl key to be held down to manipulate objects in the 3D Scene view by selecting this option on the **Interface** tab of the **Preferences** dialog box.

By default, the option is set to off.



Introducing Shogun Post

Post - File types

The following tables list the different types of file that may be used in Shogun:

- [Shogun Post export file types \(page 31\)](#)
- [Shogun Post import file types \(page 32\)](#)
- [Shogun Post internal file types \(page 33\)](#)

Shogun export file types

This table lists file types that you can export from Shogun Post.

File extension	Description
BVH	BioVision Hierarchy file
C3D	Binary motion file
CSM	Character Studio Motion file
FBX	FBX motion file
MCP	Vicon motion capture file
TRC	Motion Analysis Trajectory file (marker data)
USD	Pixar USD file
VSK	Vicon Labeling Setup file
VSR	Vicon Retargeting Setup file
VSS	Vicon Solving Setup file
VST	Vicon Labeling Setup file
XCP	Vicon Extended Camera Parameter file

Introducing Shogun Post

Shogun import file types

This table lists file types that you can import into Shogun Post.

File extension	Description
AMC	Acclaim Motion file
ASF	Acclaim Skeleton File
BVH	BioVision Hierarchy file
C3D	Binary motion file
CP	Legacy (Vicon iQ) Vicon Camera Parameterization file
CSM	Character Studio file
FBX	FBX file
HCD	Compressed Display file
HDF	Blade Data File
HTR	Motion Analysis Skeleton file
MCP	Real-time data recorded with Vicon Shogun Live
MKR	Marker Set file
OBJ	Wavefront Object file
TRC	Motion Analysis Trajectory file
TXT	Camera Track file
USD	Pixar USD file
VDF	Shogun Post Data file
VSK	Vicon Labeling Setup file
VSR	Vicon Retargeting Setup file
VSS	Vicon Solving Setup file

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File extension	Description
VST	Vicon Labeling Setup file
WAV	Wave Audio file
X2D	Vicon Video Data file
XCP	Vicon Extended Camera Parameter file

Shogun Post internal file types

This table lists file types and files that are created and used within Shogun Post:

File name	Description
*.hbc	Batch configuration file
*.history	Lists all commands executed since Shogun Post was opened. Located in same folder as CommandLog.log.
*.hsl	HSL script file
*.plf	Pipeline file
CommandLog.log	Log file. Located in the folder specified on the Directories tab (by default, C:\Users\Public\Documents\Vicon\ShogunPost#\#\Logs). For more information, see Post - Set preferences (page 20) .
HardwareSettings.xml	Hardware settings for each take. Can be loaded into Shogun Post.
LatestCalibration.xcp	Data about the last calibration. You may be asked for this by Vicon Support to aid troubleshooting.

Introducing Shogun Post

Post - Hot keys and shortcuts



Tip

To see a list of all current hot keys, on the **General** menu, click **Preferences** and then click the **Hot Keys** tab.

To create your own hot keys, in the **Command/Script** column, double-click the required command or script and in the **Set Hot Key** dialog box, specify the hot keys.

The following topics list commonly used shortcuts and explain working with objects, selection, and the context-sensitive menus.

- [Set hot keys in Post \(page 35\)](#)
- [Preserve your hot keys \(page 36\)](#)
- [3D Scene view shortcuts \(page 37\)](#)
- [Data Health view shortcuts \(page 38\)](#)
- [Graph view shortcuts \(page 39\)](#)
- [Work with objects \(page 40\)](#)
- [Work with the ALT key \(page 40\)](#)
- [Selecting and context-sensitive menus \(page 41\)](#)

Introducing Shogun Post

Set hot keys in Post

If you want to change what happens when you press a particular key or combination of keys, you can assign or un-assign commands to hot keys. The following instructions describe how to set or clear hot key for displaying the marking menu, but can be applied to any command for which you want to set a hot key.

To assign or clear hot keys:

1. Open the Preferences dialog box (**General > Preferences**).
2. Click the **Hot Keys** tab.
 - ✔ **Tip:** If you are clearing a hot key, you can save time by showing only the commands or scripts that have hot keys assigned to them. To do this, at the top, select **Show hot keyed only**.
3. Click the required command, for example **showMarkingMenu** to select it and then double-click to display the **Set hot key** dialog box, where you can set or clear the hot key for it.
4. Close the Preferences dialog box.

Introducing Shogun Post

Preserve your hot keys

When you install Shogun Post, the latest hot key file (*HotKey.hsl*) is installed in:

`C:\Program Files\Vicon\ShogunPost#.#\DefaultConfiguration`

However, the hot key file (*HotKey.hsl*) that Post uses by default is in:

`C:\Users\Public\Documents\Vicon\ShogunPost#. #`

To preserve any hot keys that you may have added, this file isn't modified by the installation. Post only recreates the hot key file from `\DefaultConfiguration` if a hot key file doesn't exist.

Update a hot key file

To install a later version of Post that includes updates to the hot key file:

1. Before installing the new hot key file as described in Step 2, save any hot keys that you have added by copying to another location the hot key file (*HotKey.hsl*) in:

`C:\Users\Public\Documents\Vicon\ShogunPost#. #`

2. Install the new hot key file in either of these ways:

- Before installing the latest version of Shogun Post, to force Post to use the new hot key file, delete *HotKey.hsl* in:

`C:\Users\Public\Documents\Vicon\ShogunPost#. #`

- After installing the latest version of Shogun Post, copy *HotKey.hsl* from:

`C:\Program Files\Vicon\ShogunPost#.#\DefaultConfiguration`

over the old hot key file in:

`C:\Users\Public\Documents\Vicon\ShogunPost#. #`

3. To restore your custom hot keys, open the file you saved in Step 1 and manually copy your custom hot keys to the new *HotKey.hsl* file.

Introducing Shogun Post

3D Scene view shortcuts

Action	Mouse/Hot key
Rotate	Click and drag
Zoom	Right-click and drag
Translate	Left- and right-click and drag
Snap the 3D view to selected object(s) without tracking	C
Track the selected object(s) and enable you to change the selection without stopping tracking the originally selected object.	X To stop tracking, click C.
Scale the manipulator	Press + (scale up) or - (scale down)
Switch between Label and Select modes when labeling a subject	L
Create a retargeting constraint between the selected solving and retargeting bones, or a solving constraint between the selected solving bone and marker. (In either case, the order of selection doesn't matter.)	CTRL+T
Create a retargeting rotation constraint between the selected solving and retargeting bones. (The order of selection doesn't matter.)	CTRL+R
In Labeling mode (in the Labeling panel, in the Manual Labeling Options , select Label), with the mouse in the view pane and the Labeling panel open, move up and down the list of labels.	Shift+click to go up through the list Shift+right-click to go down through the list

Introducing Shogun Post

Data Health view shortcuts

Action	Mouse/Hot key
Move current time indicator	Middle mouse button and drag*
Step through time	Middle mouse button (wheel) scroll
Zoom timeline	Right-click and drag
Pan (horizontally and vertically)	Click and drag or left- and right-click and drag
Select a time range	ALT+drag
Add time ranges to selection	CTRL+ALT+drag
De-select within selected range	SHIFT+ALT+drag
Select a gap (and marker)	Double-click on a gap
Select a gap (and marker) in addition to the currently selected gap	CTRL+double-click on a gap
De-select gap and marker	SHIFT+double-click selected gap
Select/deselect whole play range	ALT+double-click
Sort markers	ALT+right-click, then select required sorting method

*Also scrubs timeline in **Cameras** view

Introducing Shogun Post

Use the following key combinations to select markers in the marker list at the left of the **Data Health** view.

Action	Mouse/Hot key
Select one or more markers	ALT+click (drag to multi-select)
Add further markers to selected markers	CTRL+ALT+click
De-select a selected marker	SHIFT+ALT+click
De-select all markers	ALT+double-click

Graph view shortcuts

Use the following key combinations to scrub and resize the graph axes:

Action	Mouse/Hot key
Horizontal zoom (expand or collapse the graph's time axis)	Right-click+drag left or right
Vertical zoom (expand or collapse the graph's value axis)	Right-click+drag forward or backward
Translate right/left (scrub along the graph's time axis)	Click+drag left or right
Translate up/down (scrub along the graph's value axis)	Click+drag forward or backward

Introducing Shogun Post

Work with objects

Use the following key combinations to work with Shogun Post objects.

Action	Mouse
Select	Click on single object, CTRL+click and SHIFT+click on multiple objects. You can also drag to select (or if ALT key to select in views is selected (see below), ALT+drag)
Add to/ Remove from selection	CTRL+click or SHIFT+click on multiple objects.
Manipulate object	Click manipulator handle and drag
Duplicate objects	Select object and press Ctrl+D
Select all child objects	Right-click (or ALT+right-click) on an object and then click Select Branch to select all its child objects

Work with the ALT key

To change the behavior of the ALT key:

1. On the **General** menu, select **Preferences** and in the **Preferences** dialog box, select the **Interface** tab.
2. In the **Selection** area, clear or select the **ALT key to select in views**. This sets the ALT key as required when selecting.

When **ALT key to select in views** is cleared, the default behavior is selection without the ALT key.

Introducing Shogun Post

Selecting and context-sensitive menus

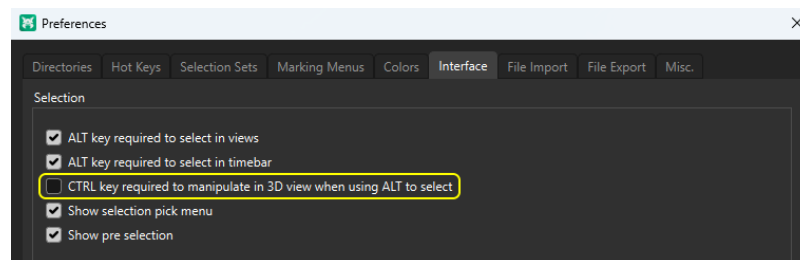
The context-sensitive menus in the **Perspective** and **Graph** views are sensitive to selection. When objects are selected, the menu may list commands based on the options available for the selected object. The list of available commands may also depend on factors such as the state or condition of the data in a selected object. For example, commands to fill a gap on a marker are displayed in a context menu only if there is a gap at the current frame.

To access selection-sensitive context menus:

- When **ALT key to select in views** is selected in the **Preferences** dialog box, use ALT+CTRL+ right-click.
- When **ALT key to select in views** is cleared in the **Preferences** dialog box, use ALT+ right-click.

To avoid accidentally manipulating objects when using the ALT key to select:

You can turn on the requirement for the CTRL key to be held down to manipulate objects in the 3D Scene view by selecting this option on the **Interface** tab of the **Preferences** dialog box. By default, the option is cleared (off).



Review data quality

After you have loaded your captured data files into Vicon Shogun Post, you can use its diagnostic tools to help you to identify any issues with the data. For more information, see:

- [Load mocap data files into Shogun Post \(page 43\)](#)
- [Review occlusion fixing \(page 47\)](#)
- [Check for swaps and other errors \(page 54\)](#)
- [Use video overlay to check accuracy \(page 55\)](#)
- [Get an overview with the time bar Issues map \(page 58\)](#)
- [Find issues using the Data Health view \(page 61\)](#)
- [Find issues using the Graph view \(page 64\)](#)
- [Work with time ranges \(page 66\)](#)

See also the Vicon videos:

- [2 - Shogun Post - MCP Loading⁴](#)
- [4 - Shogun Post - Checking Data Quality⁵](#)

⁴ <https://youtu.be/AxhaLTCw8Eg>

⁵ <https://youtu.be/MLnV4jYTrnw>

Load mocap data files into Shogun Post



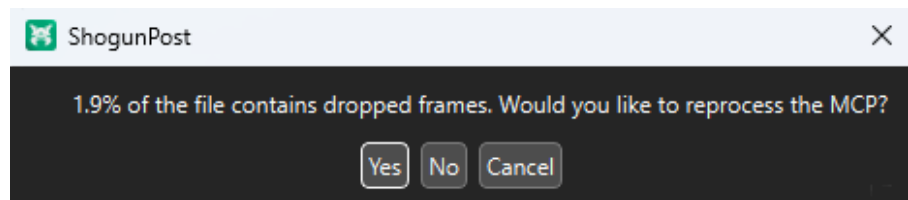
Note

Shogun Live and Shogun Markerless can record processed real-time data (.mcp files) along with raw 2D camera data (.x2d files). You can use .mcp files as a starting point for processing in Shogun Post. Because the frame rate during real time can vary, .mcp files may contain missing (dropped) frames. When you open an .mcp in Shogun Post, if dropped frames are detected, a dialog box prompts you to confirm whether you want to reprocess the .mcp. The fixing operation requires an .x2d with the same name as the .mcp file to exist in the same folder.

1. To load mocap data files (.mcp that contains everything captured in Shogun Live, or .vdf saved in Shogun Post) you can:
 - Open Windows Explorer, locate the files you saved and drag and drop them into the Shogun Post view pane
 - On the **File** menu, select **Open** and locate your files
 - In the **Data Management** panel, locate the required file icon (an .mcp has a purple icon) and double-click it.

Although the recommended workflow is to load an .mcp file (processed real-time data), you can instead import an .x2d (raw 2D data), but in this case, you must run reconstruct, label, and occlusion-fixing operations before proceeding with any required cleanup.

If you chose an .mcp file and if dropped frames are detected, a dialog box informs you of the percentage of dropped frames in the file and asks whether you want to reprocess to fix them.



Review data quality

2. To automatically reprocess the file to fix the dropped frames, select **Yes**.

The *.mcp* file is opened into the scene and the entire take is reprocessed.

The dropped frames are reconstructed, labeled and solved, smoothly integrating data from the related *.x2d* file into the existing data.

(If you select **No**, processing is quicker as Shogun Post just interpolates between the dropped frames, but note that no keys are created and you will still need to fix the dropped frames.)

3. You can now decide if you want to save the scene.

Fast MCP reprocessing

With Shogun 1.4 and later, you can use the following fast and easy ways to remove dropped frames from *.mcp* files in Shogun Post. This enables you to save time by reprocessing the *.mcp* files without having to load them into the scene. The method you use depends on whether you recorded the *.mcp* files using marker-based capture (Shogun Live) or markerless capture (Shogun Markerless).

- [Fast MCP reprocessing with HSL \(marker-based capture\) \(page 45\)](#)
- [Fast MCP reprocessing with HSL \(markerless capture\) \(page 45\)](#)

Review data quality

Fast MCP reprocessing with HSL (marker-based capture)

For marker-based capture recorded with Shogun Live, you can use the `quickPost` command options to perform drop frame fixing directly to `.mcp` files. For details, see `quickPost` in *HSL Scripting with Vicon Shogun Post*.

Fast MCP reprocessing with ShogunPostCL

You can also run the `quickpost` command to reprocess `.mcp` files directly from `ShogunPostCL`, for example:

1. To open `ShogunPostCL`, navigate to: `C:\Program Files\Vicon\ShogunPost#\` and then double-click `ShogunPostCL.exe` to open the terminal.
2. In the `ShogunPostCL` terminal window, enter:

Where:

- `processingLevel` = Any one of: `reconstruct`, `label`, `solve` or `retarget` (Note that if you specify `retarget`, the relevant retargeting setup must exist.)
- The path after `-readMCP` = The path to the `.mcp` file on which you want to run drop frame fixing. Ensure that the related `.x2d` file is located in the same folder.
- `myInputFile.mcp` = The name of the `.mcp` file on which you want to run drop frame fixing
- The path after `-writeMCP` = The path to the fully processed output `.mcp` file
- `myOutputFile.mcp` = A name for the fully processed `.mcp` file

Fast MCP reprocessing with HSL (markerless capture)

For markerless capture, you can remove dropped frames and reprocess `.mcp` files using the `processMarkerlessData` command. For details, see `processMarkerlessData` in *HSL Scripting with Vicon Shogun Post*.

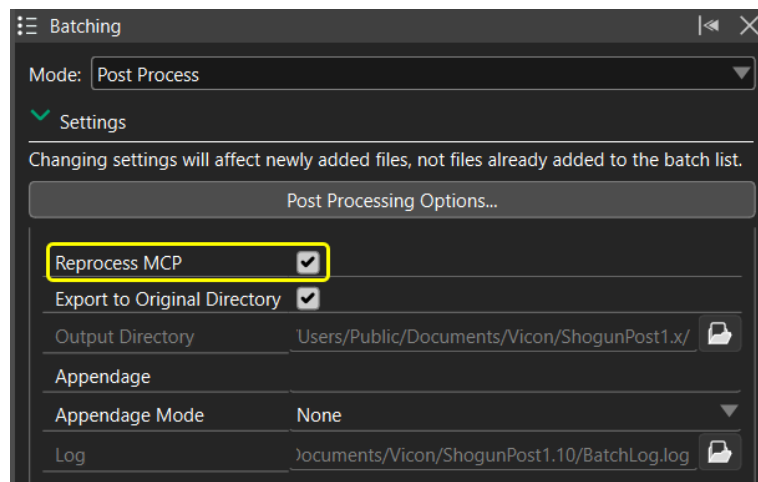
Review data quality

Fast MCP reprocessing in batch mode

If required, you can also fix dropped frames directly on multiple files in batch mode, as follows.

To directly reprocess MCP files in batch mode:

1. In the **Batching** panel, choose one of the following:
 - To reprocess marker-based files, set the mode to **Post Process**; or
 - To reprocess markerless files, set the mode to **Reprocess Markerless**.
⚠ Note: This mode performs processing only and doesn't include cleaning. To perform both processing and cleaning, instead choose **Custom** mode and for the **Script/Pipeline**, browse to `C:\Users\Public\Documents\Vicon\ShogunPost1.x\Scripts\Pipelines\` and select `Markerless_Post_Processing.plf`.
2. If you chose **Post Process** in the previous step, in the **Settings** section, ensure **Reprocess MCP** is selected.



3. Set the required file path and naming options.
4. In the **Processing** panel, set the required processing settings.
5. In the **Batching** panel, expand the **Files and Processing** section, select **Add Files** and add the required `.mcp` files to the batch.
6. Select **Start**.
 The `.mcp` files are processed without being loaded into Shogun Post. When you load the new `.mcp` file into Post, it is fully processed, with no dropped frames.

Review data quality

Review occlusion fixing

When you import an *.mcp* file or perform any processing that includes occlusion fixing, your first step is to review it to ensure that it is labeled correctly and that the automatic occlusion fixing worked well.

Note that although occlusion fixing is similar whether you are working with data captured using markers or with Shogun Markerless, the procedure is slightly different as explained in the following sections:

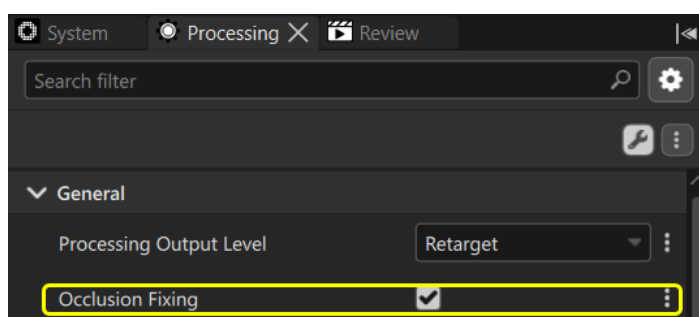
- [Occlusion fixing for marker-based mocap files \(page 48\)](#)
- [Occlusion fixing for markerless mocap files \(page 50\)](#)
- [Compare data before and after occlusion fixing \(page 50\)](#)

Review data quality

Occlusion fixing for marker-based mocap files

For marker-based capture made with Shogun Live, to review occlusion fixing in Shogun Post, the following (default) settings must be selected in Live and Post:

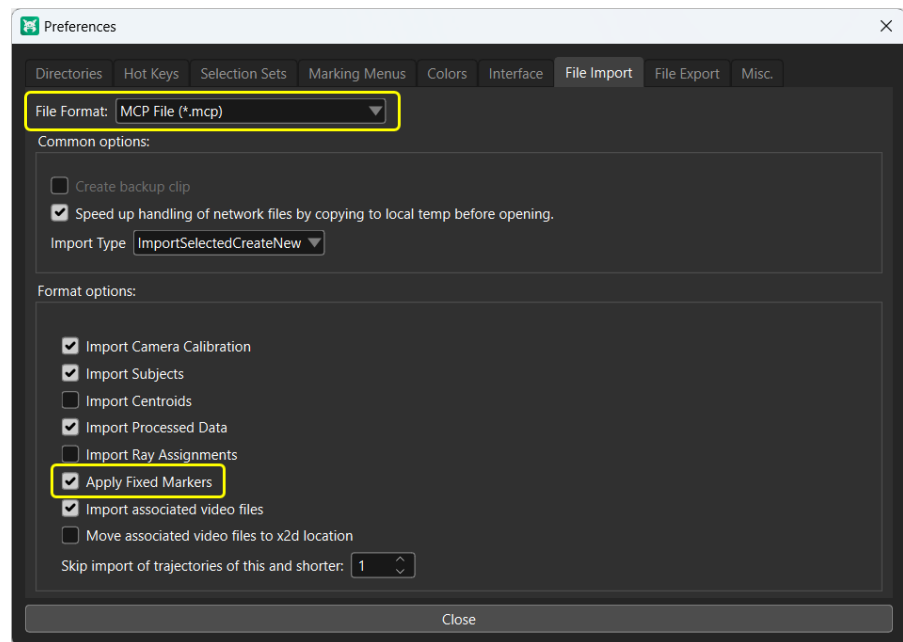
- In Shogun Live: Before capture, in the **General** section of the **Processing** panel, ensure **Occlusion Fixing** (an advanced option ) is selected.



This normally produces higher quality results, especially during occlusion-heavy moves such as interactions and when a subject is on the edge of the volume. Occlusion fixing is stored as a layer when the `.mcp` data is recorded.

Review data quality

- In Shogun Post: Before importing the .mcp file that was captured with Occlusion Fixing selected as described previously, in the Preferences (General > Preferences), select the File Import tab and make these selections:
 - In the File Format field, select MCP File.
 - Ensure Apply Fixed Markers is selected.

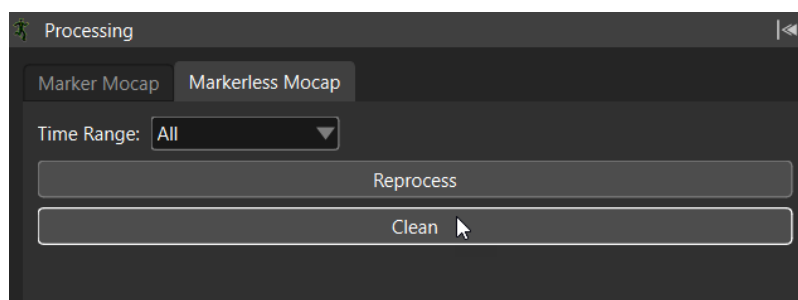


You can then compare the data before and after occlusion fixing in a 3D Scene view (or any other 3D view) in Post.

Review data quality

Occlusion fixing for markerless mocap files

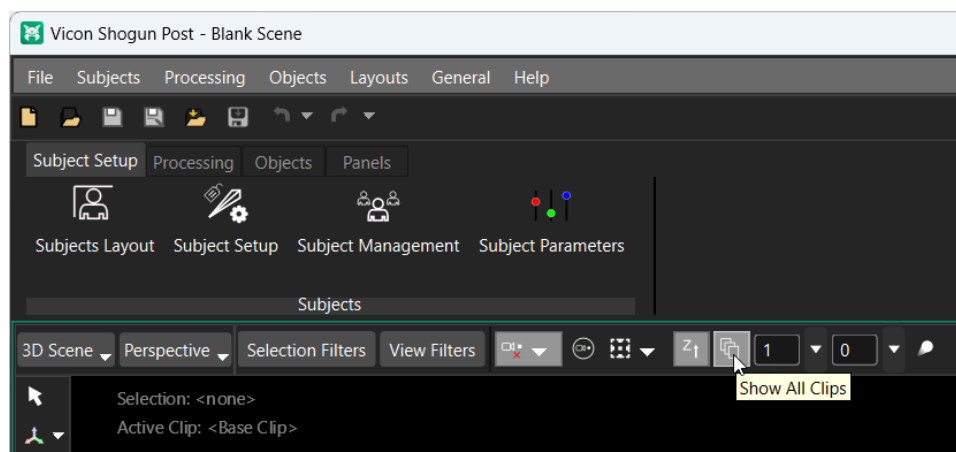
For captures made with Shogun Markerless, to perform occlusion fixing in Shogun Post, in the **Processing** panel, select the **Markerless Mocap** tab and then click **Clean**.



You can then use any of the occlusion fixing tools on your markerless data other than those on the **Marker Mocap** tab on the **Processing** panel.

Compare data before and after occlusion fixing

Note that, by default, in the 3D Scene view **Show All Clips** is selected:



This is necessary to enable you to view data from the backup clip, which contains the data before occlusion fixing, as well as the current (occlusion-fixed) clip.

Review data quality



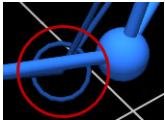
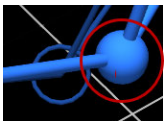
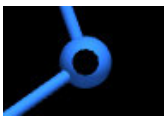
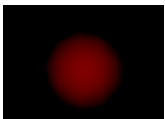
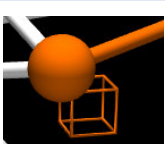
Important

If required, you can revert back to the raw data after loading the *.mcp* file into Shogun Post by using the **Restore** section of the **Marker Editing** panel.

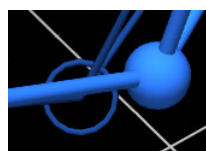
Note that the occlusion fixing algorithm affects **all** the markers on a subject. For this reason you should run occlusion fixing only once: either during capture in Shogun Live, or at the end of data processing in Shogun Post.

Before you start your review, ensure you can recognize the various types of data that may be displayed in the **3D Scene** view, as listed in the following table.

Review data quality

Symbol in 3D view	Description	Data type
	Circle	Original labeled markers from the backup clip. Displayed by default if the difference between the position of the original marker and the occlusion-fixed marker is greater than 1 cm.
	Sphere	Markers without gaps
	Sphere with a dot in the center	Markers that have been occlusion-fixed during a gap
	Sphere with a cross in the center	Markers that have had a gap manually filled
	Red sphere	Markers that are missing at the current frame
	Wireframe box	Constraint, showing expected location of marker

If circles are displayed for some markers during some time ranges, it indicates that the marker position was changed by more than 1 cm by occlusion fixing.



In this case, check the position of the occlusion-fixed marker. If it doesn't look right, the cause is likely to be either a labeling mistake or an occlusion-fixing error. To fix these problems, see [Correcting labeling mistakes \(page 53\)](#).

Review data quality

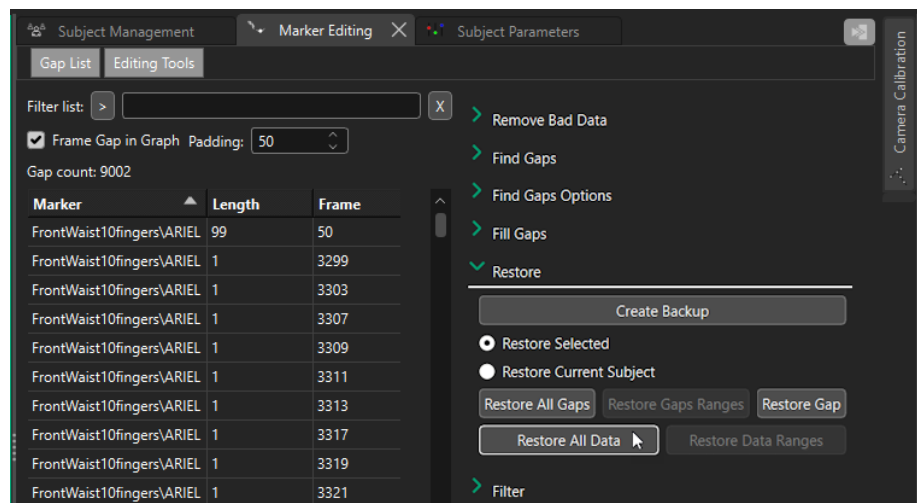
Correcting labeling mistakes

If you notice any swaps, mis-labels or other issues with marker data and the file has already been occlusion fixed, the recommended workflow is to restore the data back to its original state before it was occlusion-fixed.

You can do this on a per subject basis using the **Restore** section of the **Marker Editing** panel. Normally, restore the data across the whole take, because occlusion fixing across a range leads to jumps in the data.

The recommended workflow for dealing with problematic occlusion-fixed data is:

1. From the **Current Subject** chooser, select the required subject, or if you want to work on everything, select **All**.
2. In the **Restore** section of the **Marker Editing** panel, with selected subject active, click **Restore All Data**.



3. Fix any labeling issues that are present in your data. For more information, see [Use the Labeling panel \(page 81\)](#) and [Fix common labeling issues \(page 88\)](#).
4. Re-run occlusion fixing from the **Processing** panel.
5. Re-run **Solve Solving** to update the solving skeletons.

Review data quality

Check for swaps and other errors

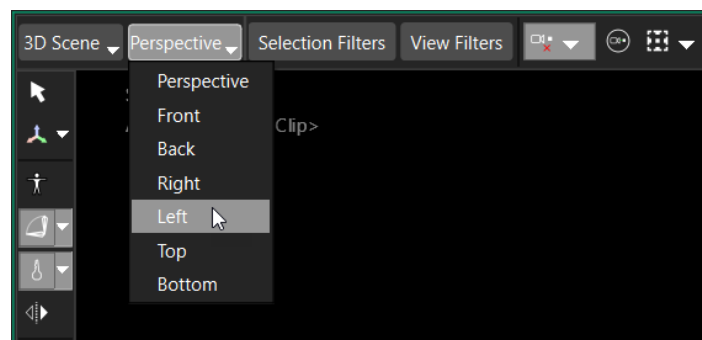


Important

Before filling gaps, you must find and fix any labeling swaps or errors in your data. Gap-filling in Shogun relies on the data before and after the gaps to predict marker location, so any labeling errors will cause gap-filling to fail.

To identify swaps and other errors, on the time bar, select Play  to view your data in the **3D Scene** view. For a closer look, slowly scrub through the whole take (drag the current time indicator along the timeline, or for finer control, press the A or S key), carefully checking for any 'popping', unexpected movement or obvious misalignment.

For a more detailed view, use the normal mouse actions to move around the view: drag to rotate the view, right-click and drag to zoom in or out, left- and right-click and drag to pan. If you need to view the image from a different angle, you can use one of the orthogonal views.



Use the **View Filters** options in the **3D Scene** view to make it easy to recognize any issues. For more information on recognizing and correcting swaps and other errors, see [Fix common labeling issues \(page 88\)](#).



Tip

To snap a 3D view camera to selected object(s), press C or select the **Snap** button  in the **3D Scene** view toolbar.

Review data quality

Use video overlay to check accuracy

If your system includes Vicon video cameras, you can check your data accuracy by comparing optical capture data with supported video data. You do this by overlaying the 3D data onto the video (.vvid or .mov) data.

Shogun Post supports the following types of video files:

- .vvid files captured from Vicon Shogun Live using Vicon Vue cameras
- .mov files that have been transcoded using Shogun Post or the standalone ViconVideoConverter tool (a command line tool that is installed with Vicon Video Viewer, by default to C:\Program Files\Vicon\ViconVideoViewer).

To overlay 3D data onto video files in Shogun Post:

1. Ensure that the video files are in the same folder as the required 3D data (.x2d or .mcp) file. If a different path was defined during capture (often an SSD per pair of cameras), use the batch transcoding feature of Shogun Post to ensure the files are moved to the correct location. For more information, see [Transcode video files](#).

✔ **Tip:** If video files are kept in a different folder from the 3D data files, when you load an .x2d or .mcp file, Shogun Post warns you that the video files cannot be located. To manually specify the video file path, in the **Selection** panel (or **3D Scene** view) select the video camera, then in the **Attributes** panel, expand the **Video (Offline)** section and set its **Video_File** attribute to the path of the file. This change is saved when you save the scene in Shogun Post.

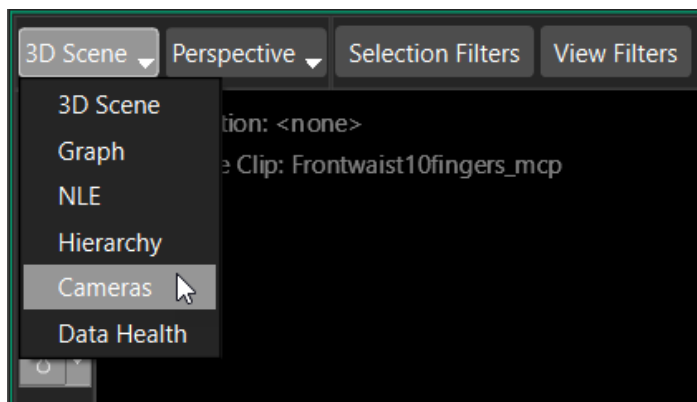
2. Open the .x2d or .mcp file (either from the **Data Management** panel, or click **Import** on the **File** menu, or drag and drop the relevant file from Windows Explorer, as described in [Load mocap data files into Shogun Post \(page 43\)](#)).

The video files are automatically loaded.

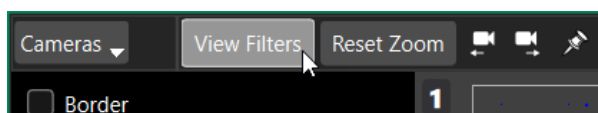
3. In the **Selection** panel, expand the **System** node and click the required camera.

Review data quality

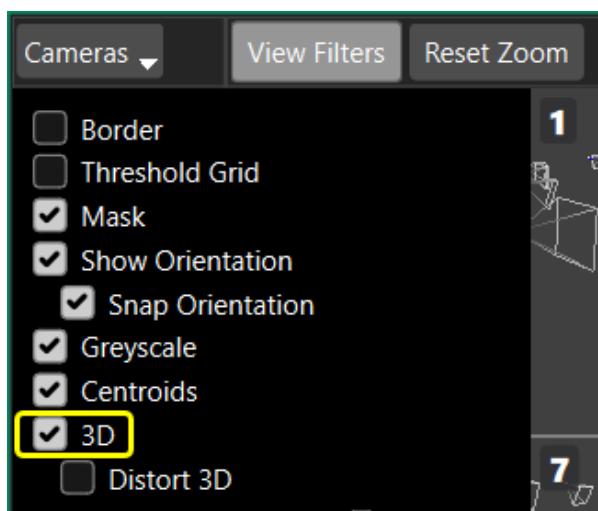
- At the top left of the view pane, click the current View type button, and then click **Cameras**.



- At the top of the **Cameras** view, select **View Filters**.

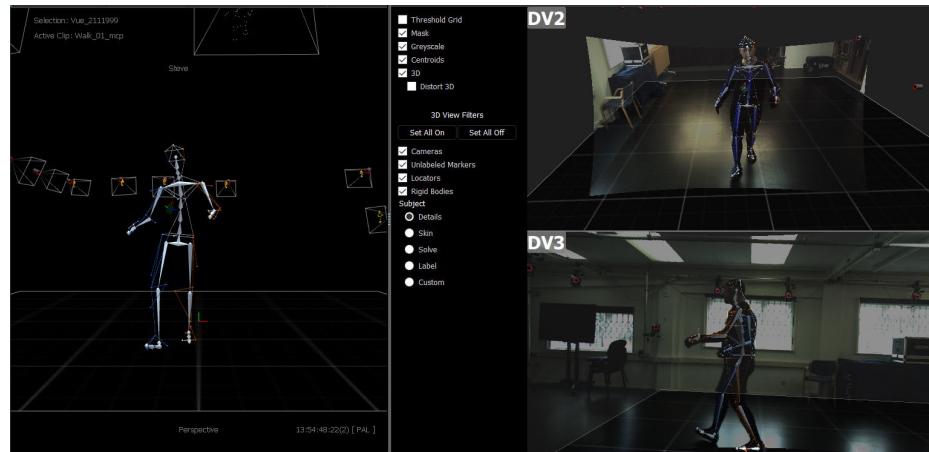


- Ensure the **3D** check box is selected.

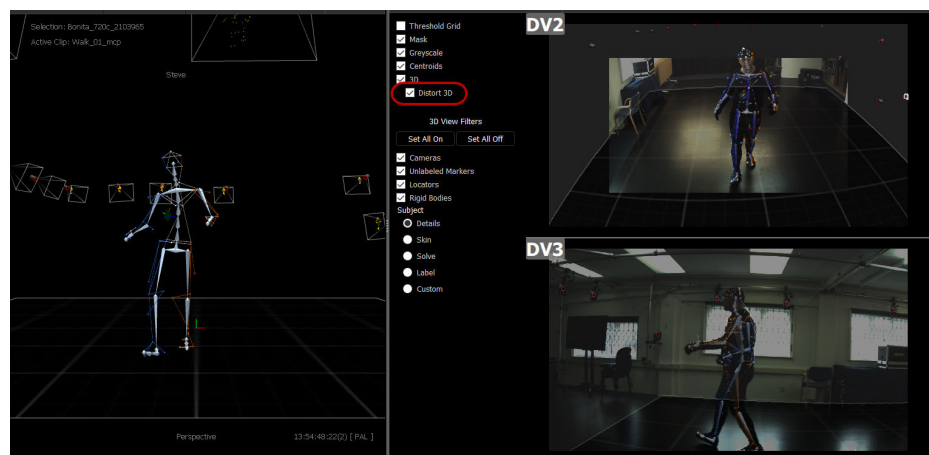


Review data quality

- The video for each Vicon video camera is displayed in a 3D overlay.
Video is in black and white or color, depending on the video camera used.



- To see the image plane of the camera corrected for lens distortion, select **Distort 3D**.



The 3D overlay should line up with the subject in the **Cameras** view and the grid should line up with the floor.

You can zoom and pan the video using normal **Cameras** view controls.

You can select or clear the **View Filters** to control which 3D elements are displayed.

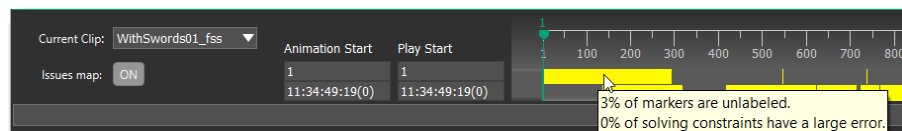
Review data quality

Get an overview with the time bar Issues map

To enable you to identify frames with issues, between the play range (green vertical) bars on the time bar, two horizontal colored bars are displayed. For each frame:

- The top bar indicates the percentage of markers that are labeled.
- As the top bar percentage may include markers that are incorrectly labeled, to help you identify issues further, the lower bar indicates the percentage of markers that have a high solving constraint error (that is, the number of markers whose solving constraint error is considered too large). This can indicate issues like mislabels, swaps, or a poor solve due to an incorrect fill, over filtering, etc.

For both bars, the color varies from yellow to red, depending on the number of markers with issues at each frame. In each bar, the longer the yellow part exists, the longer the issue exists, whereas the more red it turns, the more markers have issues. To show more information about the errors found at a particular frame, hover the mouse pointer over the relevant frame.



Note

The issues map is all red if there is no labeled data in the current scene.

Review data quality

You can use the mouse to work with the time bar as follows:

To	Do this
Show a tooltip that explains the issues that are present at this frame	Hover the mouse pointer over the frame.
Set the current time	Select the time bar or drag the current time indicator.
Set the current time (ie select a frame), highlight the markers that are missing labels or have high constraint errors, and snap the camera to them	Using the tooltip as a guide to where to click on the time bar, double-click on it.
Select a time range	ALT+drag. See also Work with time ranges (page 66) .

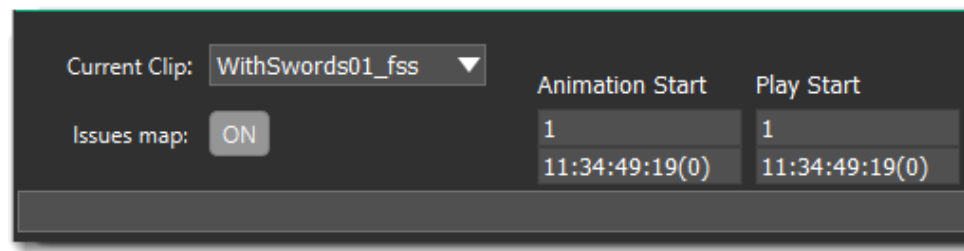
After you have gained an overview of your data with the time bar, you can use the **Data Health** view, the **Graph** view and/or the **Marker Editing** and **Labeling** panels to further identify and correct any issues.

To enhance system performance when working on a scene that contains very large amounts of data, you may want to turn off the **Issues map**.

Review data quality

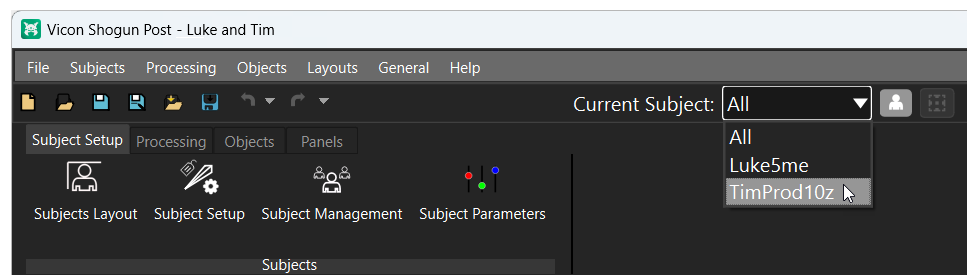
To turn the issues map on and off:

Select the Issues map button to the left of the time bar.



To set the issues map to show all issues or only those for a specific subject:

From the Current Subjectlist, select the required option.



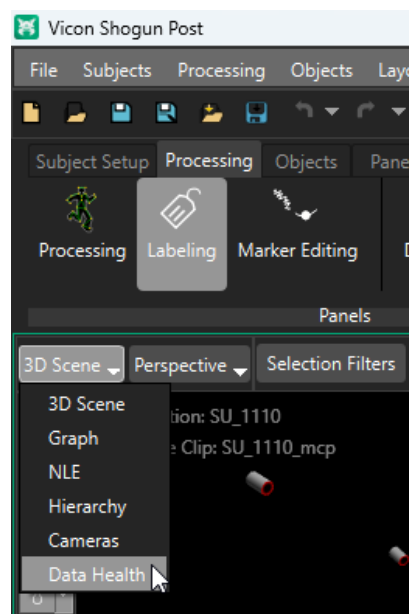
Note that you can snap the 3D view to the selected subject by selecting Snap 3D view  to the right of the Current Subject list.

Review data quality

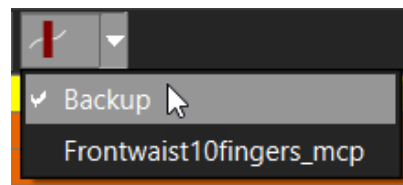
Find issues using the Data Health view

The **Data Health** view enables you to view detailed information about the labeling and gaps in the markers in the current scene.

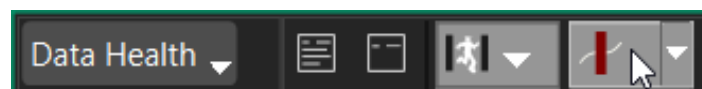
To open a **Data Health** view, in any view pane, select the **View type** button and then select **Data Health**.



By default, if a Backup clip exists, it is displayed, but if required, you can select a different clip by clicking the arrow on the **Display Gaps** button. (Clips contain keys for objects in your scene. The clip stores keys only; not markers, bones, or any other objects.)

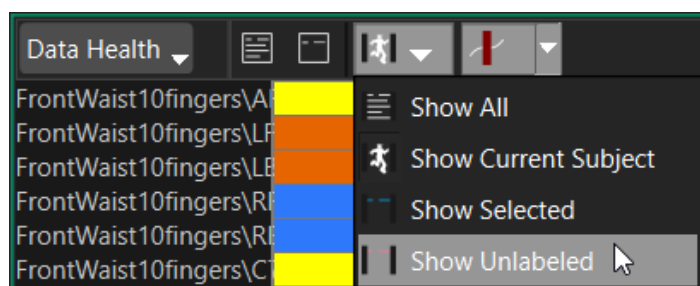


To display the time ranges for the gaps in the markers on the selected clip as gray rectangles, ensure the **Display Gaps** button is selected.

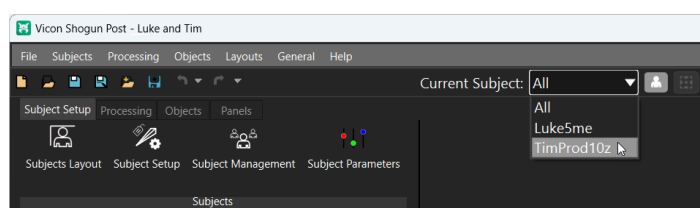


Review data quality

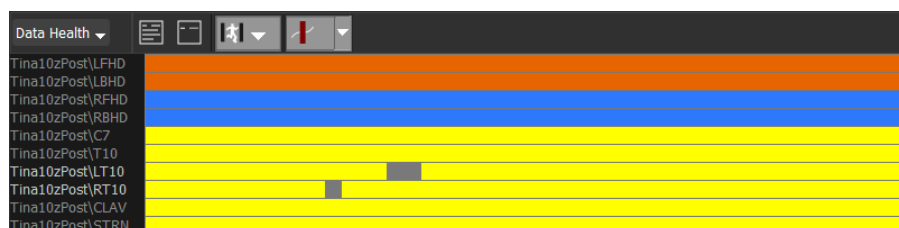
To view unlabeled markers, from the Show markers list (default is Show Current Subject), select Show Unlabeled.



To view the labeling for a different subject, from the Current Subject list at the top of the Shogun Post window, select the required name.

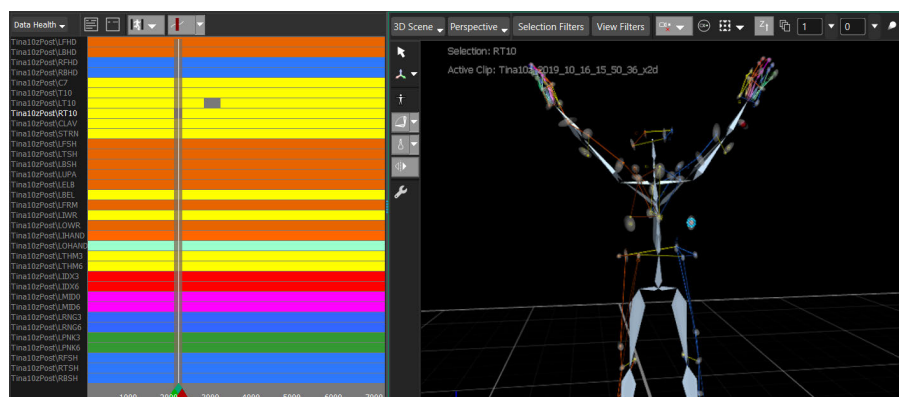


Use the marker list on the left of the Data Health view to find the required marker, then follow the line along to see the gray rectangles that indicate gaps.



Review data quality

To select the range of a gap, in the **Data Health** view, double-click the relevant gray rectangle. The following image shows a **Data Health** view and **3D Scene** view of a gap selected for a marker.



Note

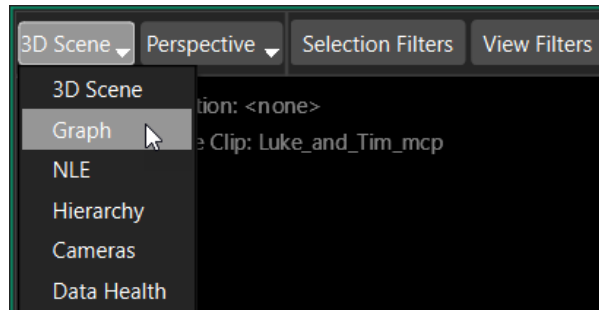
The **Show all markers** button  shows every marker in your scene. Select this option only if you need to see all markers because if, for example, someone is standing to one side but wearing a full marker set, you'll see all their markers listed, as well as the markers for the rest of the volume. Normally, it is more useful to have the **Show current subject's markers** button  selected.

Review data quality

Find issues using the Graph view

In the **Graph** view, you can see a graphical representation of the X, Y and Z positions, as well as gaps, for selected marker(s). This is useful during gap-filling, as it gives you another way of checking that the gap-filling looks reasonable for the data.

To open a **Graph** view, in a view pane, select the View type button and then select **Graph**.



To select and fill gaps in a marker:

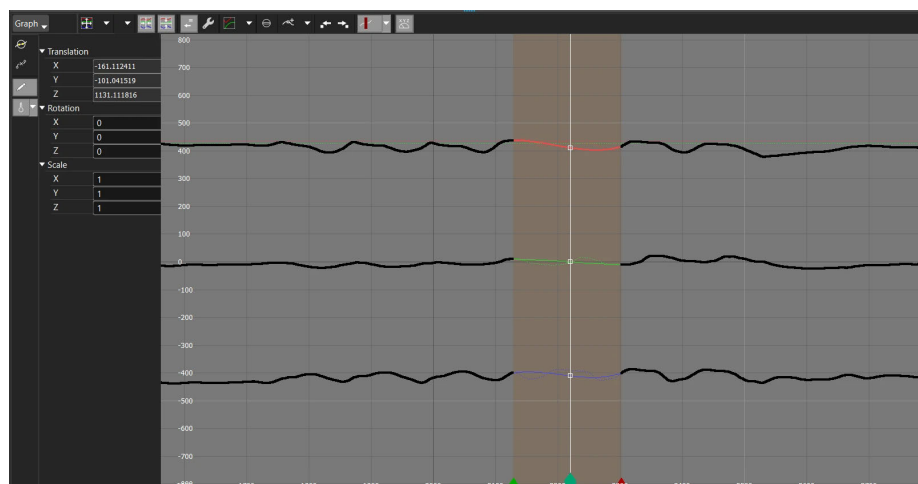
1. To keep the **Data Health** view open as well as a **3D Scene** view, split the screen by clicking one of the three-way split buttons at the top right of the window, such as the Three Views Split Left button .
2. As in the **Data Health** view, if there are multiple clips in your scene, you can select the required clip by selecting the arrow on the **Display Gaps on Specified Clip** button .

To display X, Y and Z values of the selected marker at the current position of the time indicator in the graph, click the **Show Display Channels** button .

3. In the **3D Scene** view, select the marker. In the **Data Health** view, double-click a gap to select its range.

Review data quality

The **Graph** view now displays all the keys for the selected marker.



As in the **Data Health** view, any gaps are clearly visible.

4. Zoom in by right-click and dragging for a clearer view or by using one of the options under the **Zoom** button .
5. You can now use the **Labeling** panel or one of the options from the extended context menu (press CTRL+ALT and right-click in the **Graph** view pane) as required.

For further tips on using the **Graph** view to identify and fix data issues, see [Fix common labeling issues](#) (page 88).

Review data quality

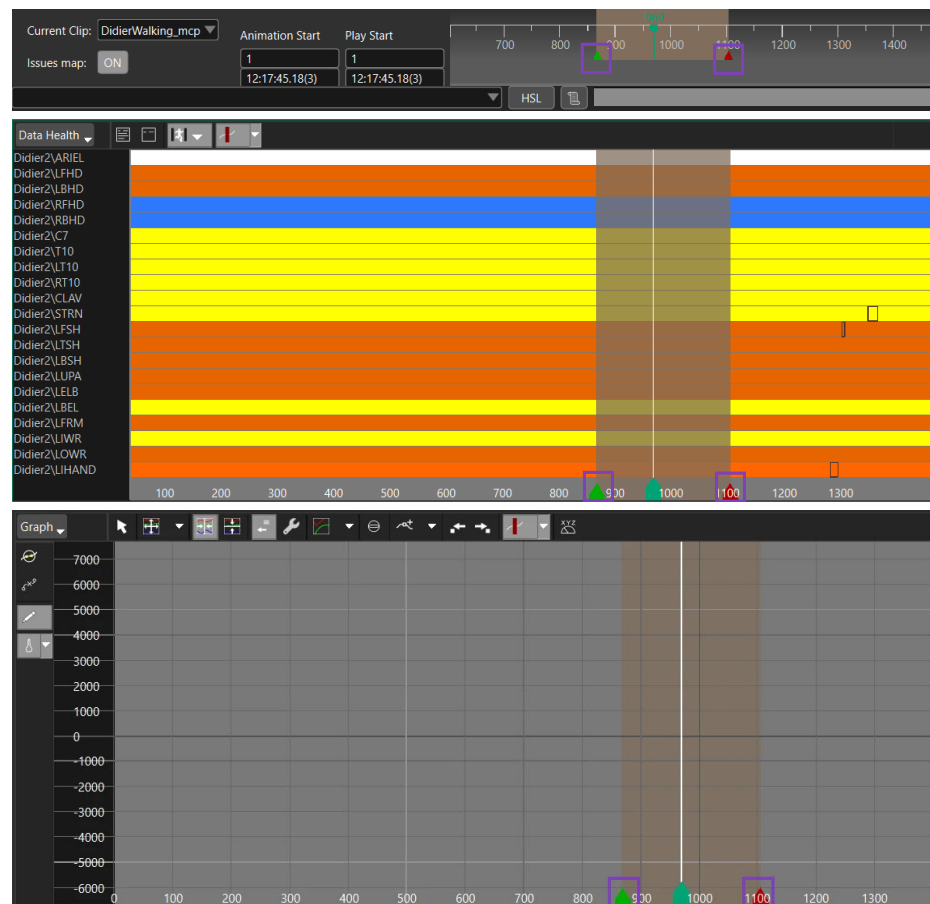
Work with time ranges

While identifying and fixing issues in your captured data, you will often need to select a particular time range on which to work.

To select and clear time ranges:

1. On the main time bar, and in the Data Health and Graph views, select a range (ALT+drag).

Green and red triangles that indicate the start and end of a selected range are displayed.



2. To adjust the start or end of the time range, on the time bar, or in the Data Health view or Graph, hover the mouse pointer over the required arrow and drag it.
3. To clear a selected range, ALT+double-click within the range.

Review data quality



Tips

- You can also update the range handles using hot keys:
 - , (comma) Sets the start handle
 - . (period or full stop) Sets the end handle
- To change these hot keys, on the **General** menu, click **Preferences** and then select the **Hot Keys** tab.

Clean up data

If your visual assessment and Vicon Shogun Post's diagnostic tools have revealed issues with your recorded data (see [Review data quality \(page 42\)](#)), you can use its cleanup tools to correct mislabels and fill any gaps.

**Important**

Before filling gaps, you must find and fix any labeling swaps or errors in your data. Gap-filling in Shogun relies on the data before and after the gaps to predict marker location, so any labeling errors will cause gap-filling to fail.

The following topics provide an introduction to fixing data issues.

- [Reprocess Shogun Markerless data \(page 69\)](#)
- [Use single click cleanup \(Shogun Markerless only\) \(page 72\)](#)
- [Find and fix bad data \(page 76\)](#)
- [Find and fix noise \(page 77\)](#)
- [Use the Labeling panel \(page 81\)](#)
- [Processing during cleanup \(page 87\)](#)
- [Fix common labeling issues \(page 88\)](#)

Note that, although these topics refer to cleaning data made with marker-based mocap, the procedure for cleaning markerless data is similar, with some minor differences.

See also the related Vicon videos: [5 - Shogun Post - Labeling Data](#)⁶ and [6 - Shogun Post - Marker Editing](#)⁷.

Note that each time you finish cleaning up a range, you must check its solve (see [Solve during cleanup \(page 87\)](#)).

⁶ <https://youtu.be/BBCqKjJ4ASc>

⁷ <https://youtu.be/ZoYldRNvWuc>

Clean up data

Reprocess Shogun Markerless data

Using Shogun Post to reprocess data captured in Shogun Markerless improves the results of your markerless captures. We strongly recommend that you use this automated process for all your markerless captures.

Note that although you can also perform reprocessing on marker-based data, this is a separate function (for more information, see [Load mocap data files into Shogun Post](#) (page 43) and subsequent topics).

Real-time vs local data

Shogun Markerless processes real-time video data from Vicon Vanguard cameras at quarter HD, 60 Hz. We chose these settings to provide the best balance of data quality while minimizing dropped frames and other potential errors that can occur as a result of higher settings.

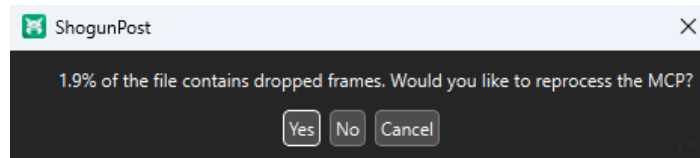
While you cannot increase the real-time capture resolution, you can increase the frame rate although we advise against this. We recommend that you use 60 Hz.

At the same time as real-time capture, the cameras save the same data locally at 1080p, 120 fps. This local data is then used in reprocessing. The increased resolution improves the data quality and the increased frame rate provides smoother results and additional data that can be used in editing workflows.

Clean up data

Reprocess markerless data

1. To load your markerless mocap data files (.mcp), do either of the following:
 - Open Windows File Explorer, locate the files you saved and drag and drop them into the Shogun Post view pane; or
 - On the **File** menu, select **Open** and locate your files.
2. If dropped frames are detected, you are prompted to reprocess the data.



3. We normally recommend that you click **Yes** but note that reprocessing takes on average four times as long as the take length, so a 10-second capture requires 40 seconds to reprocess.
If you only want to reprocess a section of your capture, to save time, we suggest that you do not reprocess data on opening the file and instead, crop the range of time required first.

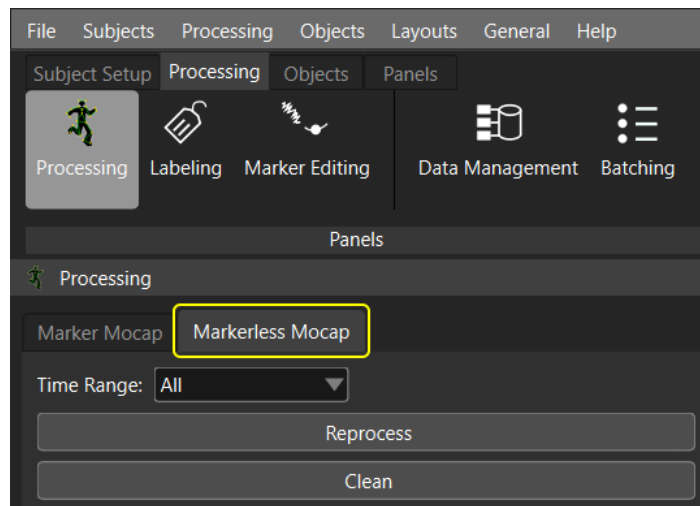
To crop to the required time range:

1. Play your capture and make a note of the start and end frames of the required range.
2. Enter these values into the **Play Start** and **Play End** inputs either side of your timeline to crop your play range.
Only this data will be reprocessed, saving you time.

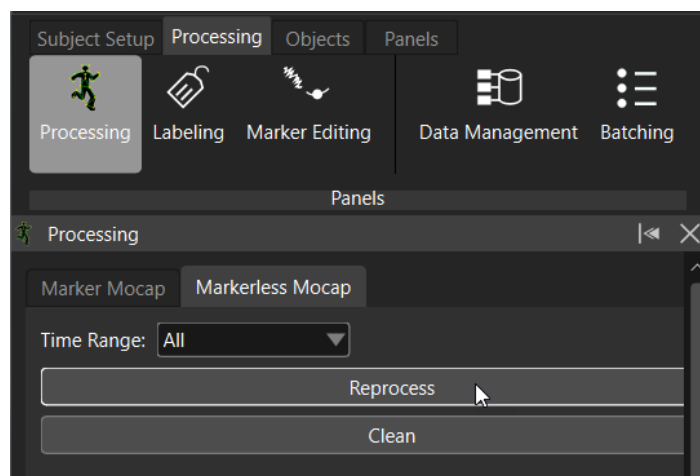
Clean up data

To reprocess the markerless data:

1. Open the **Processing** panel and select the **Markerless Mocap** tab.



2. To complete the process, click **Reprocess**.



Clean up data

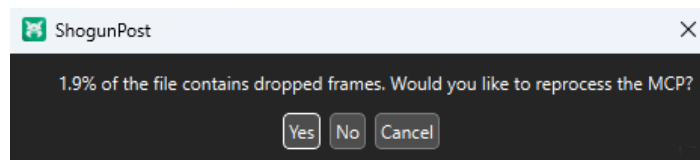
Use single click cleanup (Shogun Markerless only)

For captures made with Shogun Markerless, you can automatically clean the markerless data in Shogun Post, by opening the **Processing** panel, selecting the **Markerless Mocap** tab and then clicking **Clean**.

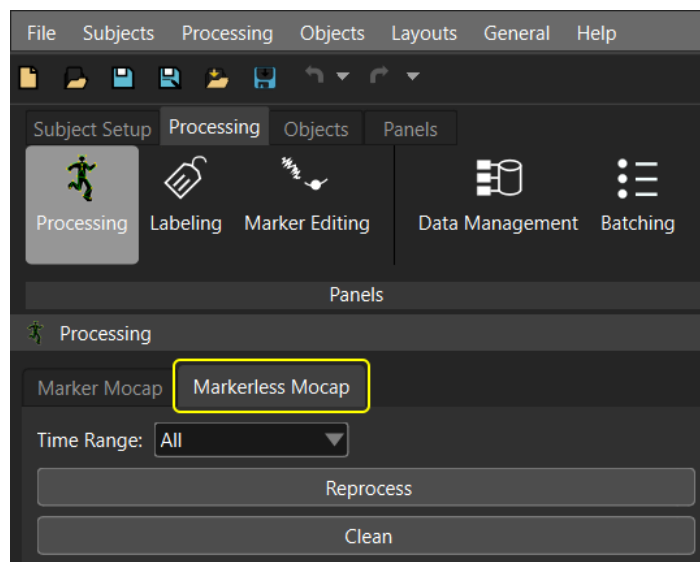
To automatically clean markerless data:

1. Load your capture in Shogun Post. For more information, see [Load mocap data files into Shogun Post \(page 43\)](#).
2. If the reprocessing dialog is displayed, you must reprocess the data before you can use Clean.

To reprocess your data, click **Yes**.

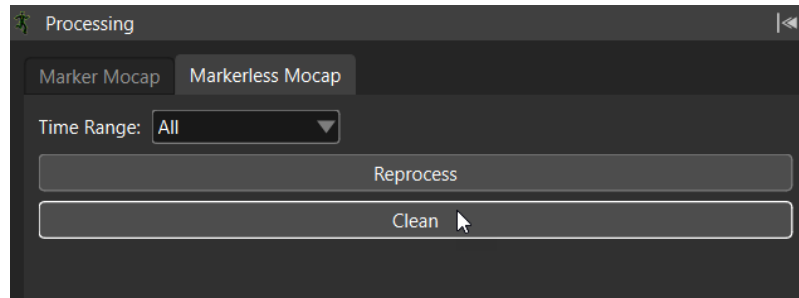


3. In the **Processing** panel, select the **Markerless Mocap** tab.



Clean up data

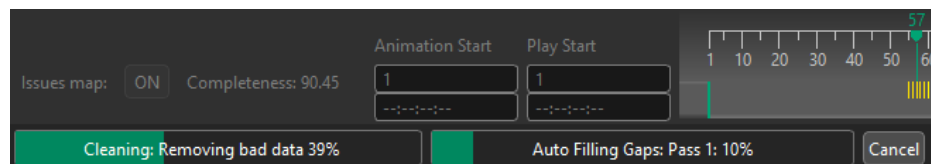
4. To clean your capture, click **Clean**.



This performs the following operations:

- Removes bad data
- Filters the data
- Runs occlusion fixing
- Resolves all skeletons (labeling, solving, retarget)

You can monitor the progress of the cleanup by looking at the progress bars in the bottom left corner of the app.



The bar on the left displays the progress of the entire cleanup process.

The bar on the right displays the progress of the individual steps of the cleanup process, such as Clean and Resolve labeling.

You can then use any of the data editing tools on your markerless data, other than those on the **Marker Mocap** tab on the **Processing** panel.

Clean up data

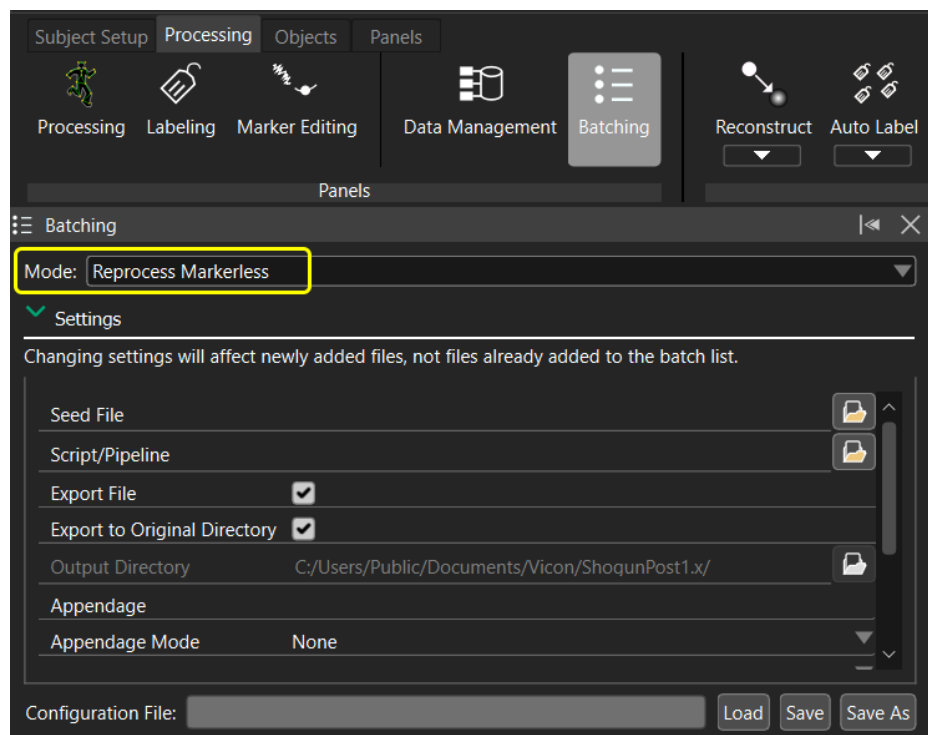
Clean markerless data with batch processing in Shogun Post

If you have multiple capture files to clean, you can load these files into Shogun Post and process them automatically using the batch processing feature.

Shogun Post can batch process files sequentially in the application or in parallel—the latter enables you to continue with other tasks while batch processing continues in the background. You can process files in parallel within a single PC, or “farm” out the work across multiple PCs.

To batch process files in Shogun Post:

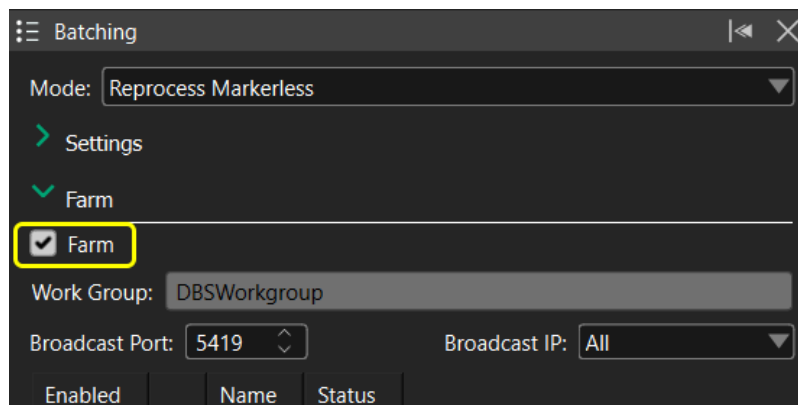
1. In Shogun Post, on the **Panels** tab of the ribbon, select **Batching**.
2. From the **Mode** list, select **Reprocess Markerless**.



3. Configure the options. For more information, see *Batch process files in Shogun Post* in *Getting more from Vicon Shogun Post*.

Clean up data

- (Optional) To farm out the batching process in parallel or across multiple PCs, expand the **Farm** section, select **Farm** and configure the options.



- Ensure the **Files and Processing** section is expanded and click **Add Files** to select the files to process.
- After you have added the files, click **Start**.

For more information on how to batch process files, see *Batch process files in Shogun Post* in *Getting more from Vicon Shogun Post*.

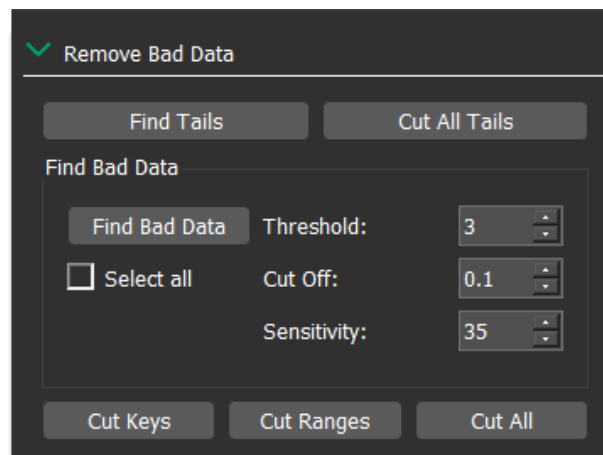
Clean up data

Find and fix bad data

To help you identify and fix bad data, you can use the **Marker Editing** panel.

To find and remove bad data:

1. To open the **Marker Editing** panel, in the **Processing** menu, select **Marker Editing** (or select **Marker Editing** on the **Processing** tab of the ribbon).
2. In the **Remove Bad Data** section, go to the **Find Bad Data** button and notice the options:
 - **Threshold** Allowable deviation
 - **Cut-Off** Data filter. Decreasing this value filters the data more heavily.
 - **Sensitivity** Amplifies the effect of the **Cut-Off** filter.

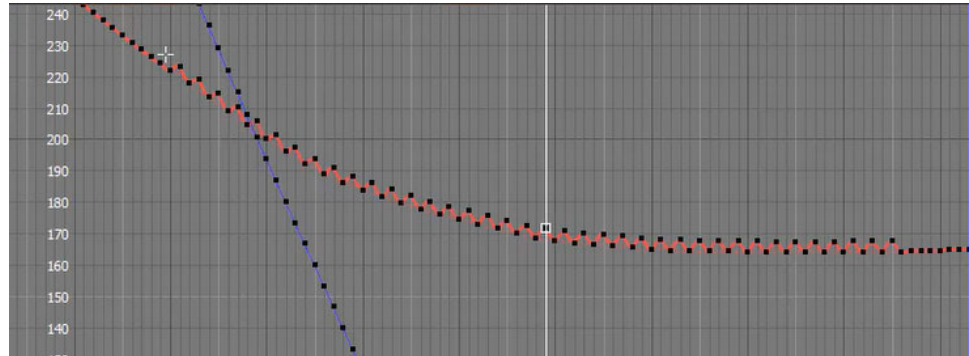


3. Select **Find Bad Data**.
4. Experiment with these values to find out what works best for your data.
5. When you have identified the bad data, remove it by selecting the appropriate **Cut** button, and apply a fill (see [Options for manual gap-filling](#) (page 105)).

Clean up data

Find and fix noise

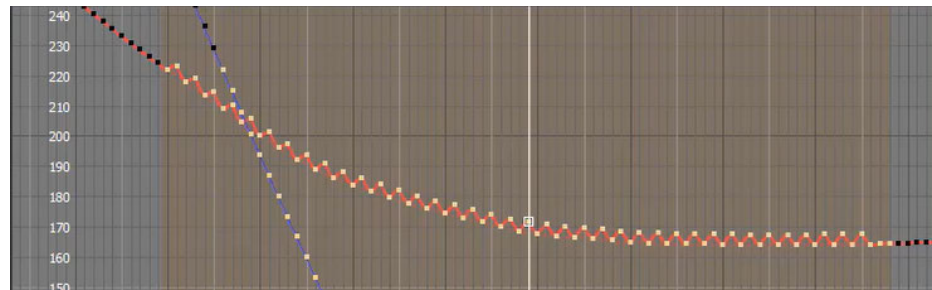
You can identify noise in a **Graph** view:



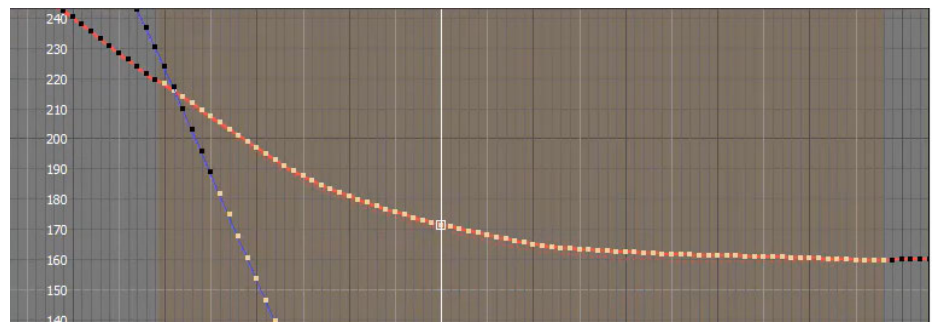
It also produces flickering as you play through a take in the **3D Scene** view. You can fix it with the filtering options in the **Marker Editing** panel.

To fix noisy data:

1. In a **Graph** view, ALT+drag to select it.



2. At the bottom of the **Marker Editing** panel, expand the **Filter** section, and select whether filtering applies to **Ranges**, as above, or to **Selected Keys**.
3. If you're not sure how much filtering to apply to your data, keep the default settings (**Cut Off**: 0.3 and **Threshold**: 15) and select **Apply**. You can reapply this as many times as required.



Clean up data

4. In the **Graph** view and **3D Scene** view, check that the trajectory is now smooth over the selected range.

✓ **Tip:** To display a tooltip for any of the controls, hover the mouse pointer over the relevant control.

Ensure smooth start and end to filtered trajectories

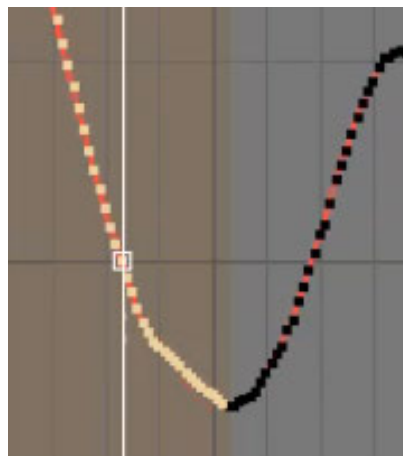
When you apply filtering, the **Smooth In/Out** option in the **Marker Editing** panel provides smooth blending at the start and end of the filtered section of a trajectory curve.

The following example shows a Graph view of a trajectory curve that requires smoothing.



Clean up data

With **Smooth In/Out** cleared, when filtering is applied, the curve is made smoother, but the start and end does not take into account what is on either side of the smoothed section, resulting in a straight line, with an unwanted angle at the end.



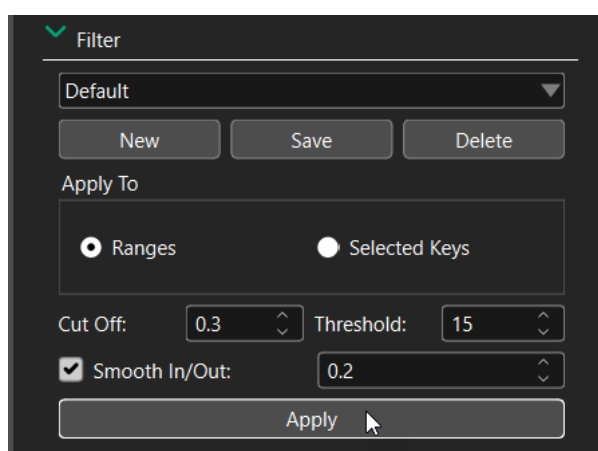
 For details, see the following steps or watch [Vicon Shogun 1.3 Post Tutorial - Filter in/out Smoothing](https://youtu.be/0csCqSmKe9E)⁸ on YouTube.

⁸ <https://youtu.be/0csCqSmKe9E>

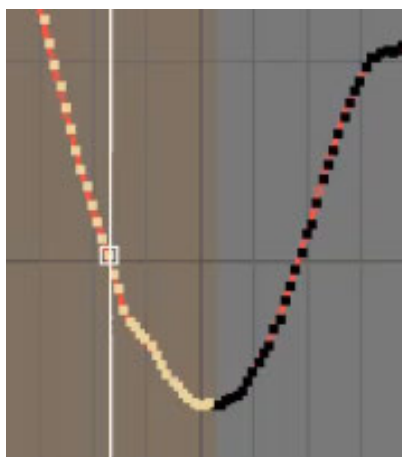
Clean up data

To give a smoother start and end to the filtered section of a trajectory:

1. In the **Marker Editing** panel, expand the **Filter** section and ensure **Smooth In/Out** is selected.
2. If you want to change how much of the trajectory is affected on either side of the gap, edit the value of the adjacent field. The default is 0.2 (20%).
Smoothing works by blending between the original and filtered result by progressively more or less, across the smoothing range.



The filtered section is smoothed at the start and end.



Clean up data

Use the Labeling panel

You can fix labeling issues using the tools in the **Labeling** panel. The following steps introduce the main components of the labeling panel. To go straight to examples of how to use it to fix labeling issues, see [Fix common labeling issues \(page 88\)](#).

To use the Labeling panel:

1. On the **Processing** tab on ribbon, select **Labeling**.
2. In the toolbar at the top of the Shogun Post window, ensure that the required subject is selected in the **Current Subject** list.

✔ **Tip:** By default, the selection in the **Current Subject** list at the top (middle) of the Shogun Post window determines which subject to label.

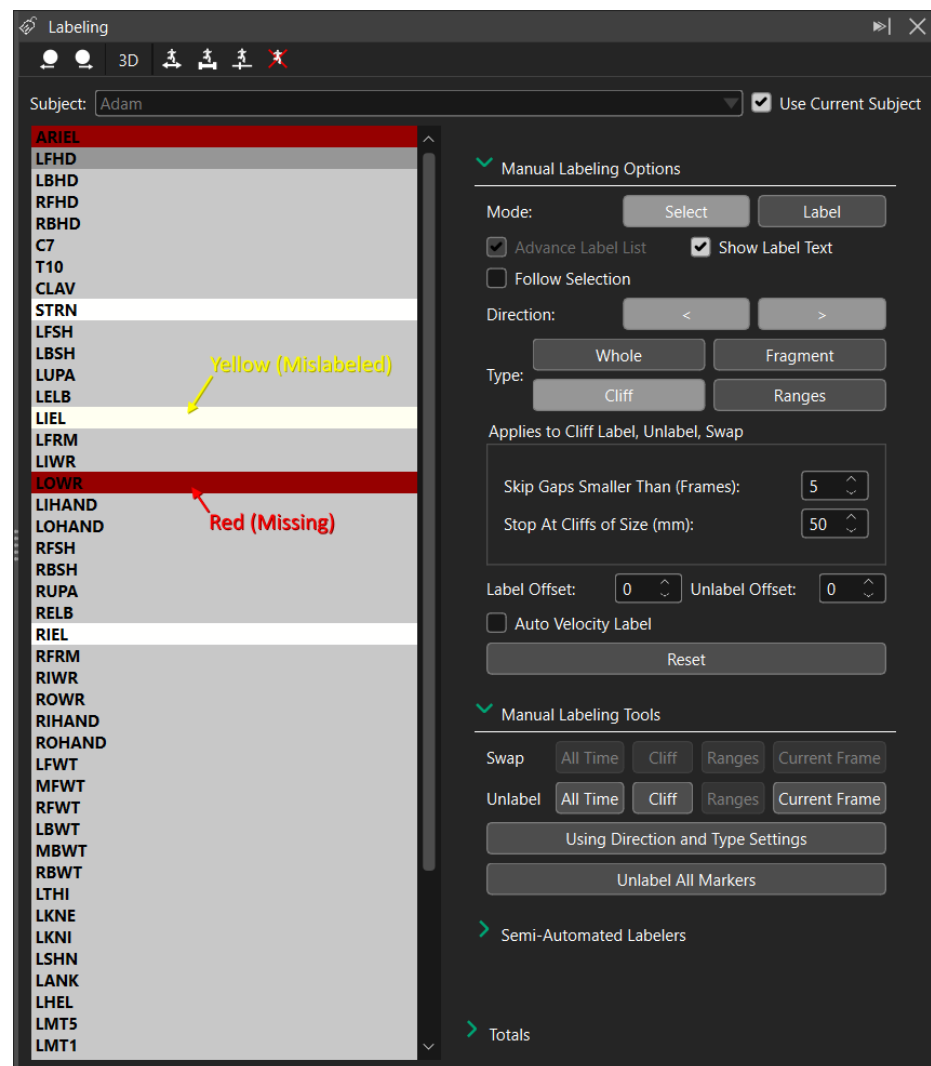
If **All** is selected in the **Current Subject** list, the labeler uses the last subject it was set to.

If you want to select a subject different from that specified in the **Current Subject** list, in the **Labeling** panel, clear the **Use Current Subject** box and select the required subject from the **Subject** list at the left of the check box.

Clean up data

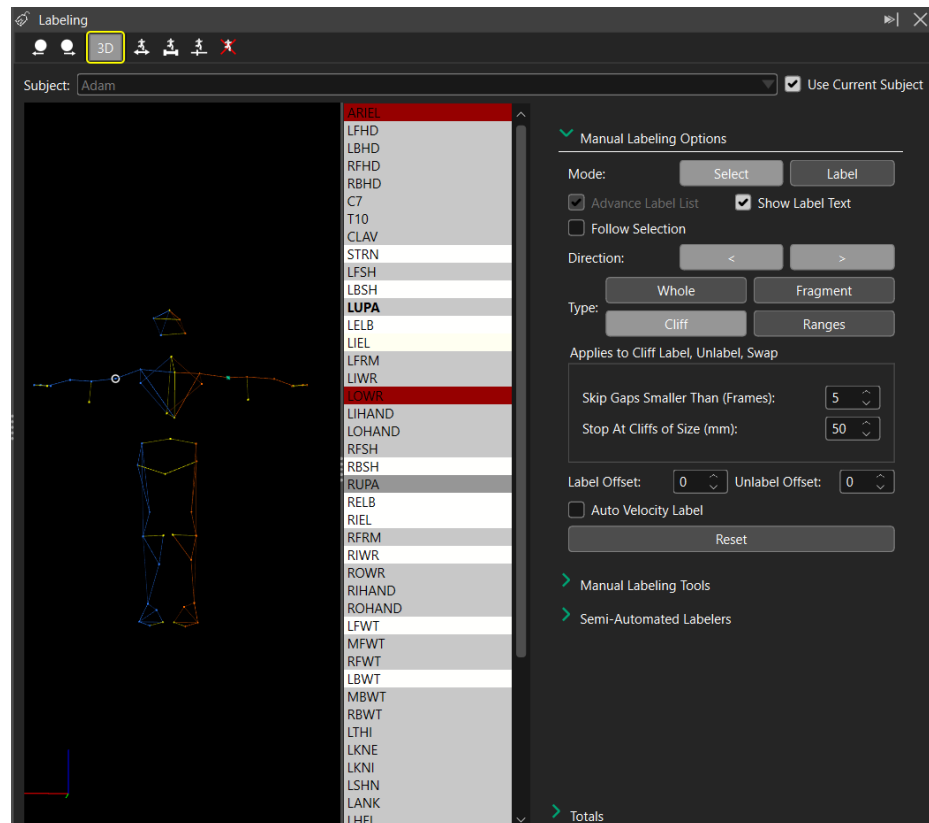
On the left of the **Labeling** panel, a list of labels for the selected subject is displayed. The color variations indicate marker issues:

- Yellow: Mislabeled or missing labels (the depth of the color indicates the severity of the issue, eg, more or fewer gaps)
- Red: Labels for this marker are missing from the current frame



Clean up data

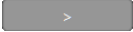
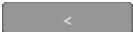
- To display a 3D representation of your labels for the current subject, click the 3D button at the top of the Labeling panel. The 3D view helps you to quickly identify where the markers should be. You can drag and drop labels from the 3D Labeling view to the 3D Scene view pane (and vice versa).



You can use the usual mouse actions (click and drag, right-click and drag, left-click and right-click and drag) in the 3D view, in the same way as in a 3D Scene view.

Clean up data

4. At the top of the **Labeling** panel, in the **Manual Labeling Options** section, select the **Mode** option (**Select** or **Label**), which affects the way in which you select and label markers.
 - **Select:** Select a marker on your subject in a **3D Scene** view and then select a label name in the list in the **Labeling** panel.
 - **Label:** Select the name of the label in the marker list and then select the required marker on the subject in the **3D Scene** view.

✓ **Tip:** To quickly switch between labeling and select modes when labeling a subject, you can use the default hot key (L) that duplicates the functionality of the **Label** and **Select** buttons at the top of the **Labeling** panel.
5. In the **Direction** line, choose to label forward  (through time) or backward .

You can also select both options (ie, label both forward and backward), but to help you avoid confusion, at least initially, choose either backward or forward and use only that option.

Clean up data

- From the **Type** options, select the way in which labeling will be applied:

Manual Labeling Options

Mode: Select Label

☒ Advance Label List ☒ Show Label Text

☐ Follow Selection

Direction: < >

Type: Whole Fragment

Cliff Ranges

Applies to Cliff Label, Unlabel, Swap

Skip Gaps Smaller Than (Frames): 5 ⬆ ⬇ ⬆

Stop At Cliffs of Size (mm): 50 ⬆ ⬇ ⬆

Label Offset: 0 ⬆ ⬇ ⬆ Unlabel Offset: 0 ⬆ ⬇ ⬆

☐ Auto Velocity Label

Reset

- **Whole:** Labels entire trajectory.
- **Fragment:** Labels the trajectory that intercepts the current frame.
- **Cliff:** Labels the current frame and continues until a specified value is encountered, which stops the labeling (see the text below in the **Labeling** panel, for example, the default is to skip gaps smaller than 5 frames and stop labeling at cliffs that are larger than 50 mm).
- **Ranges:** Lets you select an area on your graph or timeline and label only the selected time range.

Clean up data

In the **Manual Labeling Tools** section in the middle of the **Labeling** panel, you can correct swaps, unlabel information, and unlabel markers.

In the **Semi-Automated Labelers** section, you can access the **Velocity Labeler**, which is normally used after automated labeling, on a partially labeled take. You can use it to correct labeling where the path of a single marker consists of multiple trajectories that are consecutive in time with a small gap in between where the marker is unlabeled over part of its trajectory. The **Velocity Label** option is useful when a marker has been labeled for a range of time, and then becomes unlabeled, yet going forward or backward in time there are multiple trajectories that do not have a large gap between them and are all the same marker. It is best suited for cases when unlabeled trajectories are not many frames away from the labeled marker and the velocity of the marker around the end of the labeled marker and the start of the unlabeled trajectory is fairly constant.

Clean up data

Processing during cleanup

Note that the previous steps for fixing data issues assume that your existing .mcp data is largely of acceptable quality. However, in some circumstances (for example when you are trying to produce better quality data), rather than persisting in trying to fix a problematic .mcp file, you may need to clear the scene and start from the .x2d file, or unlabel all the data first. In this case, do not just open the **Processing** panel and click **Reconstruct** or **Label** or run other **Combined Processing** operations as this will not fix problems with the underlying data.

Clear existing data

To remove all unlabeled data and clear existing labels and solves, at the top of the **Processing** panel, select the **Reset Scene** check box. You can then run **Reconstruct**, etc. Note that you can't undo the reset.

To remove existing labels from the current file, on the **Labeling** tab of the **Processing** panel, select **Clear Existing Labels** and then run **Labeling** as required.

To remove occlusion fixing from your data, in the **Marker Editing** panel, expand the **Restore** section and select the required option.

Solve during cleanup

During the cleanup operation, each time you finish cleaning up a range, check its solve. To do this:

1. Ensure the range you cleaned up is selected.
2. On the **Processing** tab on the ribbon, select the arrow on the **Solve Solving** button.
3. Select **Solve Solving Ranges**.

The selected range is solved, enabling you to quickly check that your cleanup has been successful, without having to solve the whole take.

4. Proceed to clean up the next range that contains mislabels, gaps or noisy markers, etc.

After you have completed all the cleanup required, finish by solving the entire take. For more information see [Solve the data \(page 109\)](#).

Clean up data

Fix common labeling issues

The following basic procedures are just a few of the ways in which you can use Shogun Post to clean up data.

- [Identify issues \(page 89\)](#)
- [Correct a swap \(page 90\)](#)
- [Label an unlabeled marker \(page 93\)](#)
- [View and select gaps \(page 95\)](#)
- [Auto-fill with intelligent rigid fill \(page 97\)](#)
- [Manually fill gaps \(page 102\)](#)

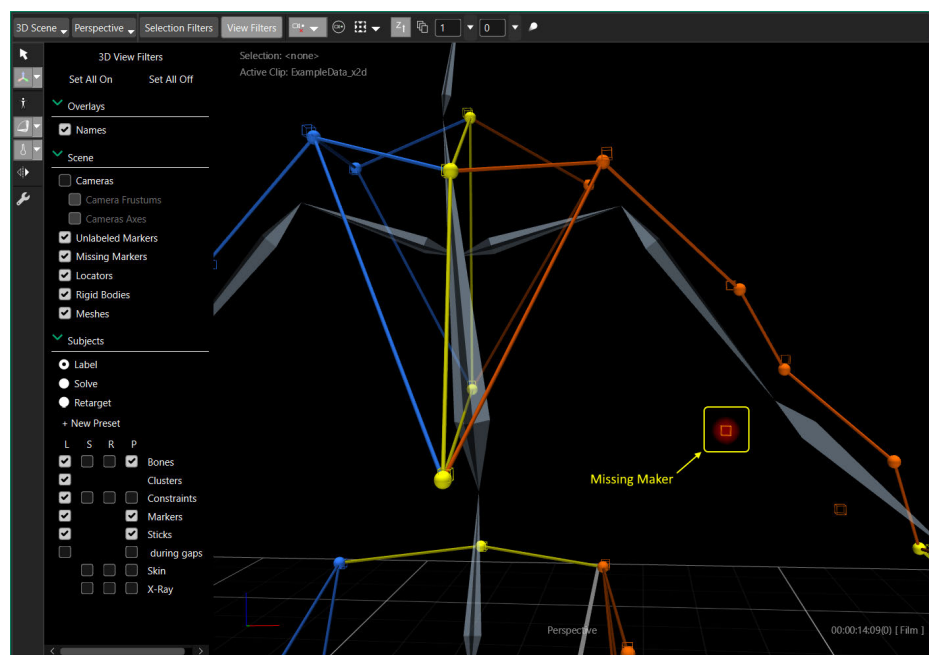
See also:  [Vicon Shogun 1.3 Post Tutorial - Gap List & Auto Rigid Fill⁹](#) on YouTube.

⁹ <https://youtu.be/U3jmKTqyOE>

Clean up data

Identify issues

1. To help you identify issues, in the 3D Scene view, select **View Filters**, and ensure that in the **Scene** section, **Missing Markers** is selected. Also ensure that in the **Subjects** section, **Label** is selected and that in the L(abeling) column of the views matrix, **Constraints** is selected.



2. In 3D Scene view, scrub through the whole take (drag the current time indicator along the timeline, or for finer control, press the A or S key), noting times when markers are likely to be occluded (sitting, crouching, subjects interacting, etc).
3. In the marker list in the **Labeling** panel, note any missing (red) markers and watch for 'popping' or moving in the 3D Scene view. Look for any swapped markers (for an example, see the Vicon video [5 - Shogun Post - Labeling Data](https://www.youtube.com/watch?v=BBCqKj4ASc)¹⁰, which shows an example of a swap of knee and heel markers).

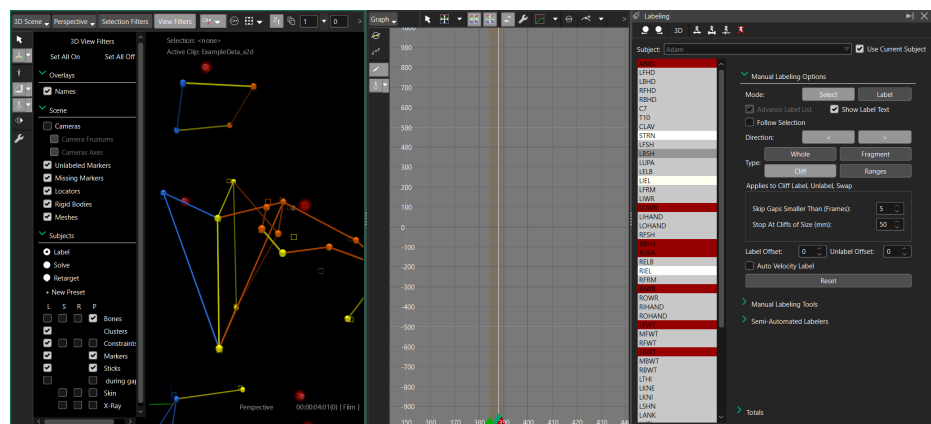
Missing markers are clearly visible, and highlighted in red. However, after you've identified the erroneous markers, it may help with labeling to clear **Missing Markers** and **Labeling Constraints**.

¹⁰ <https://www.youtube.com/watch?v=BBCqKj4ASc>

Clean up data

Correct a swap

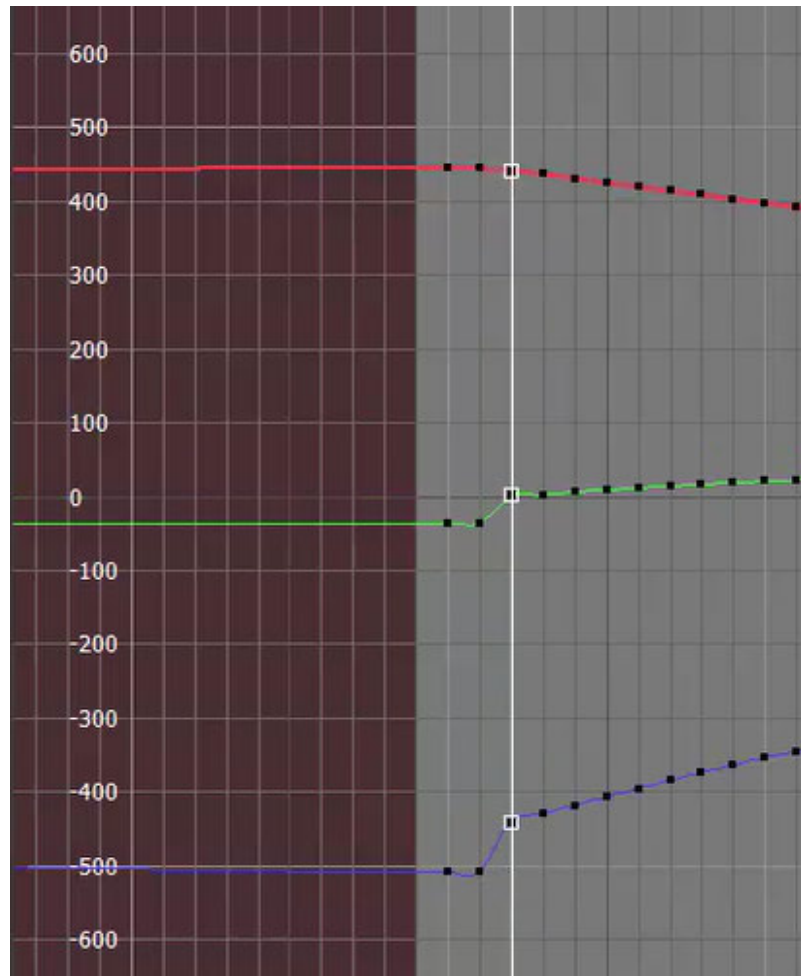
1. Ensure the Labeling panel is displayed.
2. Split the 3D Scene view (at the top right of the Shogun Post window, select the vertical split button ) and in one of the panes, change to a Graph view, so that you can now see a 3D Scene view, a Graph view and the Labeling panel.



3. In the Labeling panel, ensure Select mode, Forward direction (>), and Cliff are selected.

Clean up data

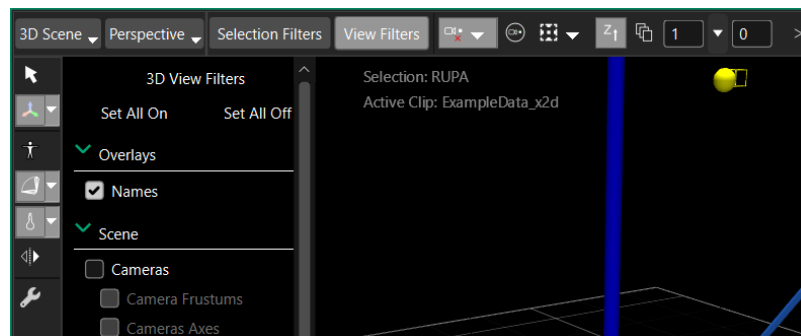
4. In the 3D Scene view, select a marker that is incorrectly labeled and in the Graph view, zoom in (right-click and drag) and go to the start of where the swap happens (this should be identifiable on the graph by a sharp change).



Clean up data

- From the position of the marker in the **3D Scene** view, decide which is the correct marker and click it in the 3D view.

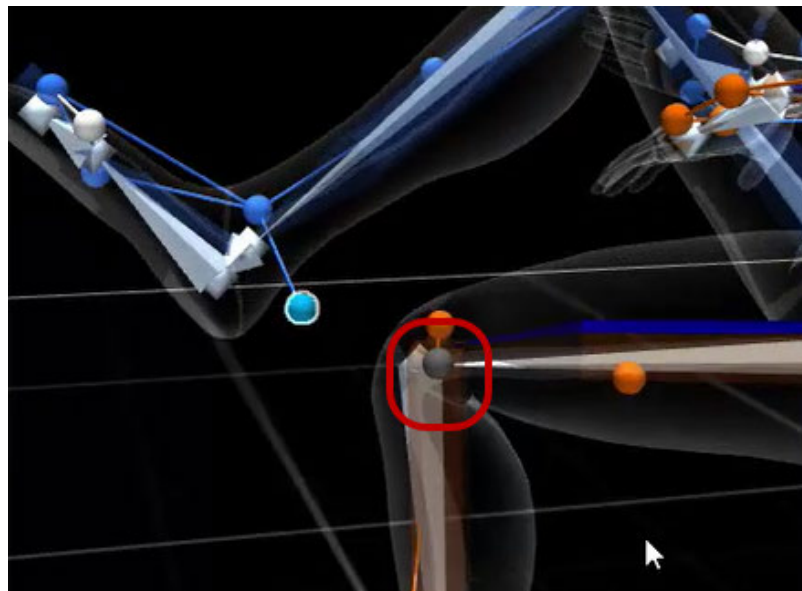
In the marker list, its name is displayed in heavier text, and at the top left of the **3D Scene** view, the **Selection** text displays the name of the selected marker.



- Select the wrongly labeled marker in the **3D Scene** view and then select the correct marker name in the **Labeling** panel list.

The marker is now correctly labeled. To check, scrub back and forward in the **3D Scene** view and check that the marker is now behaving correctly.

However, you now have a previously incorrectly labeled marker that is unlabeled from this point forward.



Clean up data

Label an unlabeled marker

1. In the **3D Scene** view, select the unlabeled marker. Scrub back and forward to identify where it is correctly labeled. This is the point at which it is correctly colored in the **3D Scene** view and the **Labeling** panel marker list. You can also observe this on the **Graph**.



Clean up data

2. To label a marker using the tools in the **Labeling** panel, do one of the following, depending on your chosen **Mode**:

If you prefer to label using **Label** mode:

- a. In the **Manual Labeling Options** section, in the **Mode** line, select **Label**.
- b. In the marker list in the **Labeling** panel, select the name of the marker and then in the **3D Scene** view, select the marker that is currently unlabeled.

Or, if you prefer to label by dragging, using **Select** mode:

- a. In the **Manual Labeling Options** section, in the **Mode** line, ensure **Select** mode is selected.
 - b. In the **Labeling** panel, select the required marker in the **3D** view.
 - c. SHIFT+CTRL then click+drag from the selected marker in the **Labeling** panel to the unlabeled marker in the **3D Scene** view.
3. As before, to check the labeling, scrub back and forward in the **3D Scene** view and check that the marker is now behaving correctly.

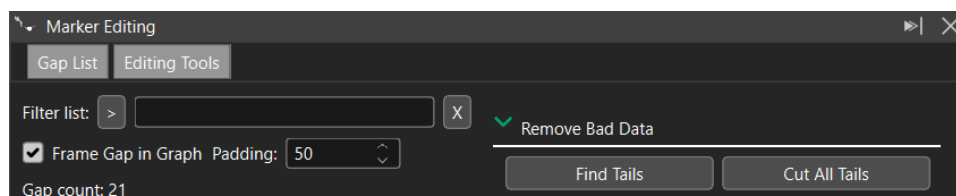
After you have corrected any swaps, you may want to use Shogun Post's diagnostic tools to help to identify gaps (see [Review data quality \(page 42\)](#)).

Clean up data

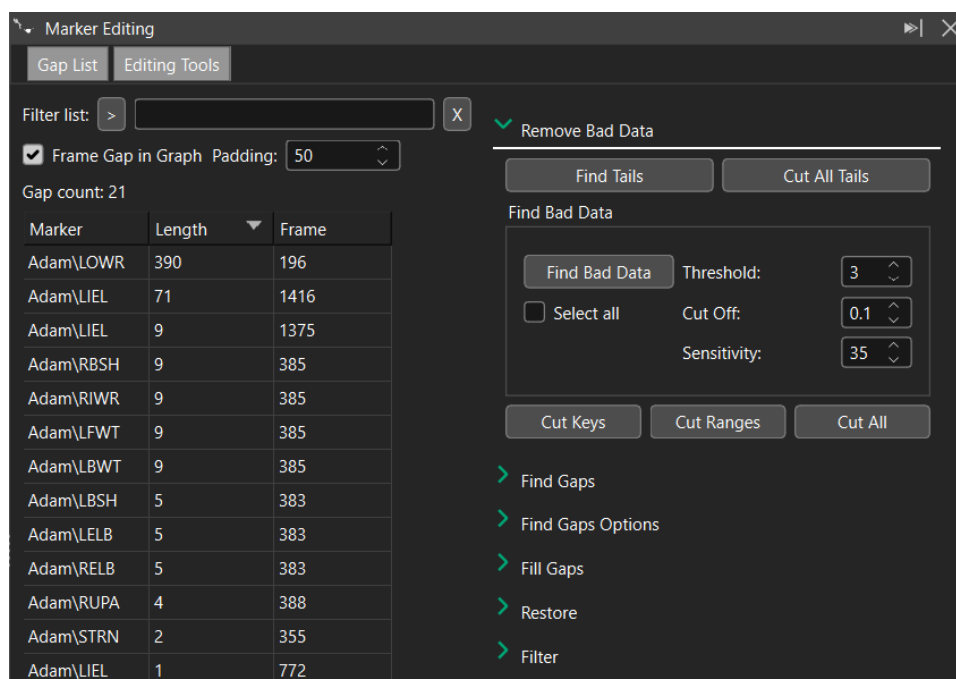
View and select gaps

You can find the automatically fill gaps feature in two places, the **Marker Editing** panel and the **Processing** panel. This section covers how to fill gaps in **Marker Editing** panel.

You can view all the gaps in your scene in the **Marker Editing** panel, in the **Fill Gaps** section, by looking at the **Gap List**. (If you can't see the list, at the top of the **Marker Editing** panel, click the **Gap List** button.)

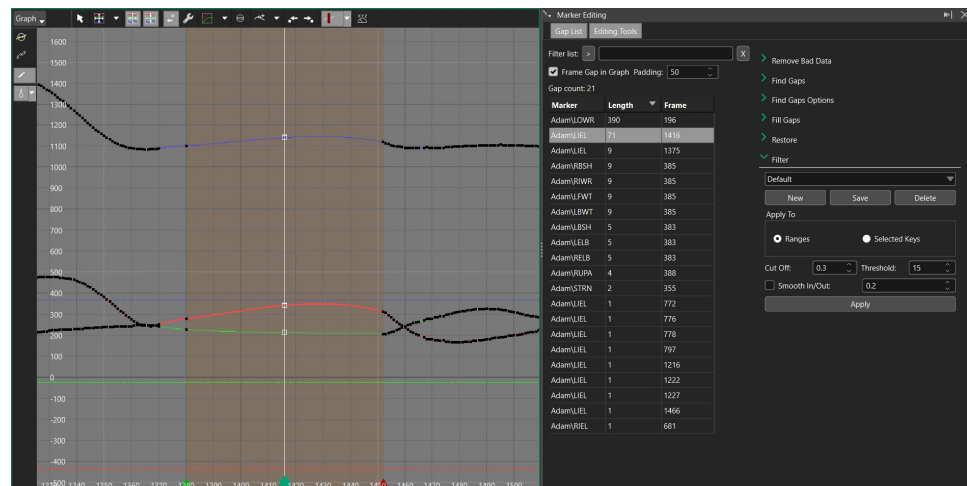


To make it easy to find the longest gaps, click the **Length** column heading to rearrange the list, with the longest gap at the top.



Clean up data

When you select a gap in the list, it is automatically displayed in the Graph view, enabling you to edit it.



You can then decide the best approach for filling the gaps:

- As a first step, try automatically filling as many gaps as possible (see [Auto-fill with intelligent rigid fill \(page 97\)](#)).
- If your scene still contains gaps after using the automatic fill, or if auto-fill is unsuitable, try manually filling the gaps (see [Manually fill gaps \(page 102\)](#)).

✓ **Tip:** To undo unwanted gap-filling, click the Undo symbol on the quick access toolbar .

Clean up data

Auto-fill with intelligent rigid fill

Automatic rigid gap-filling produces gap-filling for entire takes that is as good (and sometimes better than) occlusion fixing. Use this gap-filling method as an alternative to kinematic gap-filling. You can run these gap-filling methods when processing x2d files or using other processing combinations.

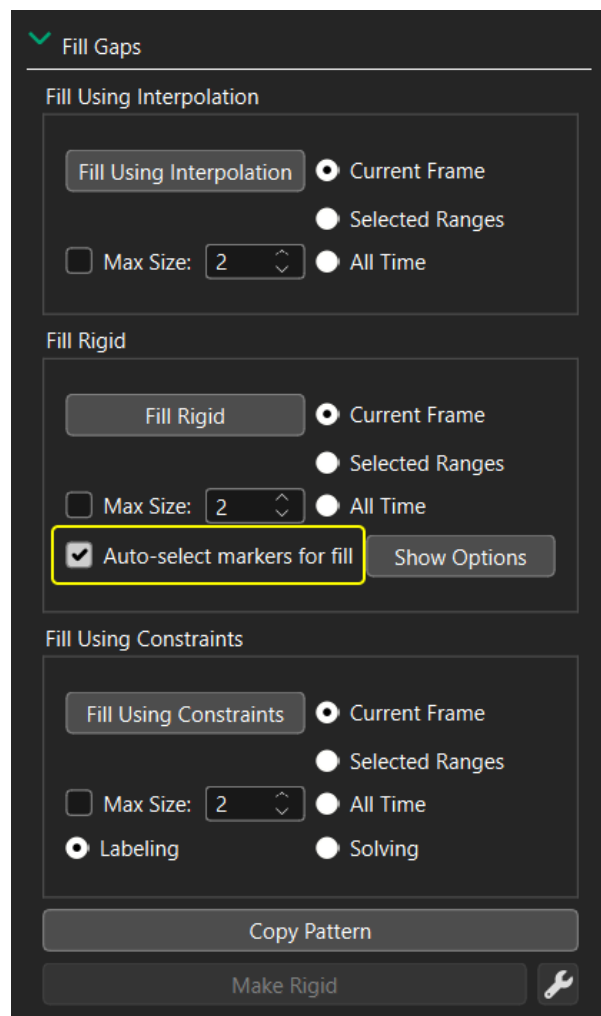
Shogun provides these ways to use auto-fill:

- [Auto-fill from the Marker Editing panel \(page 98\)](#)
- [Auto-fill from the Processing panel \(page 101\)](#)

Clean up data

Auto-fill from the Marker Editing panel

Shogun Post enables you to automatically fill gaps using a rigid fill operation. This looks at all the markers in your scene and then compares them against the marker you are trying to fill. It then uses a combination of similarly moving markers to fill the gap. Finally, it checks the fill to make sure it looks correct and if not, it chooses another set of markers.



This process is also available via scripting, using the `selectMarkersForRigidFill` command to select the markers and the `autoFillGaps` command to fill them. For information on these commands, see *HSL scripting with Vicon Shogun*.

Clean up data

To auto-fill a selected marker:

The following procedure for rigid gap-filling is semi-automated, in that you choose a marker for the fill:

1. In the **Marker Editing** panel, expand the **Fill Gaps** section and in the **Fill Rigid** area, select the **Auto-select markers for fill** check box.

To change the default options for auto-selection, click the **Show Options** button next to the check box. The options are:

- **Max Deviation:** Specifies in mm how rigid the set of markers used to fill must be, as the maximum deviation in distance between all pairs in the set. For example, a value of 60 enables the markers to flex in rigidity by 6 cm.
- **Max Distance:** Specifies in mm how far away the candidate can be from the selected marker. The default of 900 is just under 3 feet (1 m), because a greater distance is likely to be another subject or body part, which is unlikely to move rigidly during the gap.
- **Percent Time Rigid:** Specifies the percentage of time over the adjacent fragment ranges that the selected marker must be rigid with the chosen set. The default of 0.75 means 75% of the time.

2. Select a marker with a gap.
3. Ensure the current time is in the gap.
4. Select **Fill Rigid**.

Gaps are filled using the intelligent rigid fill.

Clean up data

To auto-fill selected markers or all markers:

In addition to the semi-automated procedure described above, you can also automatically fill all gaps on either all markers, or only those currently selected. To do this:

1. Depending on which markers you want to fill:
 - **Only selected markers.** Ensure you have selected the required markers.
 - **All markers.** Ensure no markers are selected.
2. In the **Marker Editing** panel, expand the **Fill Gaps** section and in the **Fill Rigid** area, select the **Current Frame**, **Selected Ranges** or **All Time** option.
3. Select **Auto-select markers for fill** and ensure the options are as required (see above).
4. Click **Fill Rigid**.

All gaps on the selected markers, or on all markers if no markers are selected, are filled over the play range, or selected ranges.

Note that in the case of all markers, only labeled markers are filled, though unlabeled markers can be auto-selected for filling the labeled marker.



Note

After running automated gap-filling, if Shogun did not find a set of rigid markers based on the settings, you may find that not all gaps are filled. You can either fill the remaining gaps manually, or you can try changing the settings, specifically by increasing **Max Deviation** from the default.

You can run automated gap-filling multiple times to achieve the required results, in particular, when:

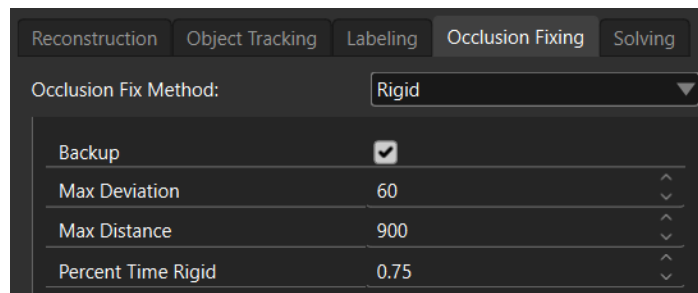
- After first run, it either made an unwanted fill or wasn't able to fill a gap due to a mislabel. Fix the mislabel and then run it again to fill the remaining gaps.
- After first run, it either made an unwanted fill or wasn't able to fill a gap due to the gap being too complex. Fill the gap manually, then run automated gap-filling again to fill any remaining gaps. These can now be filled due to more data being available.
- After first run, some gaps remain. Loosen the rigidity settings (see Note above) and run it again.

Clean up data

Auto-fill from the Processing panel

To use automatic rigid gap filling in the Processing panel.

1. In the Processing panel, click the Occlusion Fixing tab.
2. In Occlusion Fix Method, select Rigid.



3. Click Run Checked Operations.

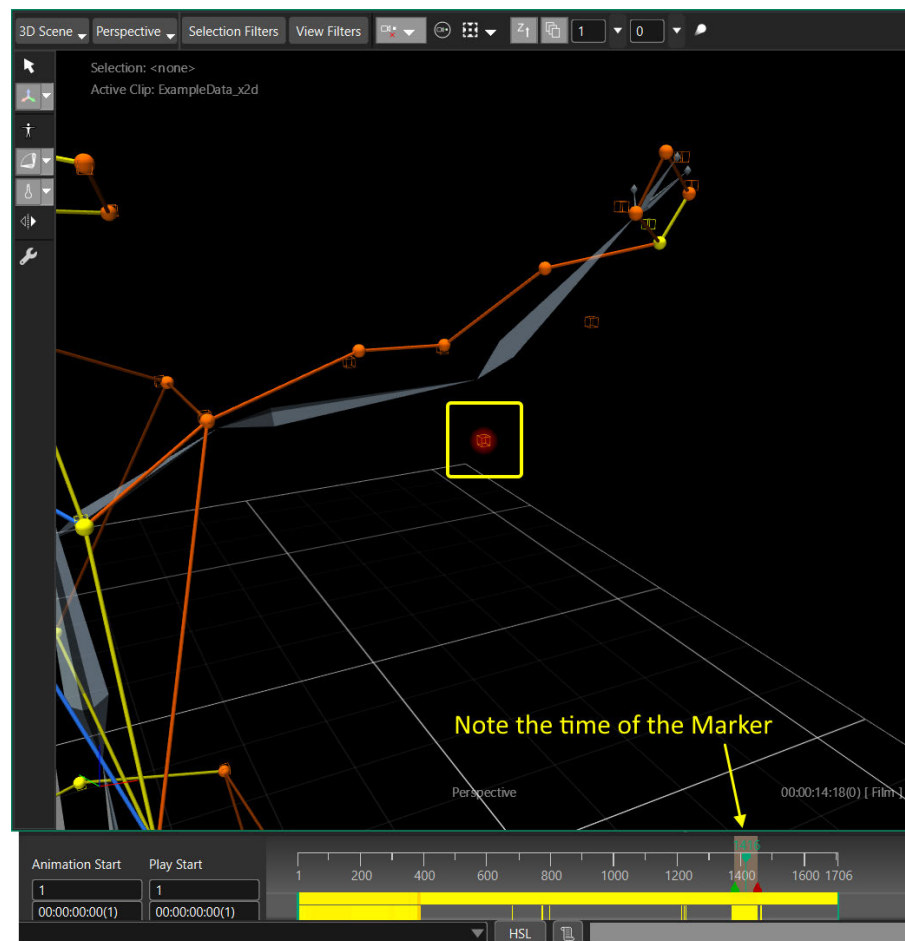
✓ **Tip**
If you want to run the kinematic occlusion fixing method, from the Occlusion Fix Method list, select Kinematic.

Clean up data

Manually fill gaps

You fill gaps using the **Marker Editing** panel, normally in conjunction with the **Data Health** view and/or a **Graph** view. The **Marker Editing** panel contains all the tools necessary to fill gaps, alter trajectory keys and filter your data.

For example, you might first notice a gap from the display on the time bar Issues map, then note which marker is affected in the **3D Scene** view:

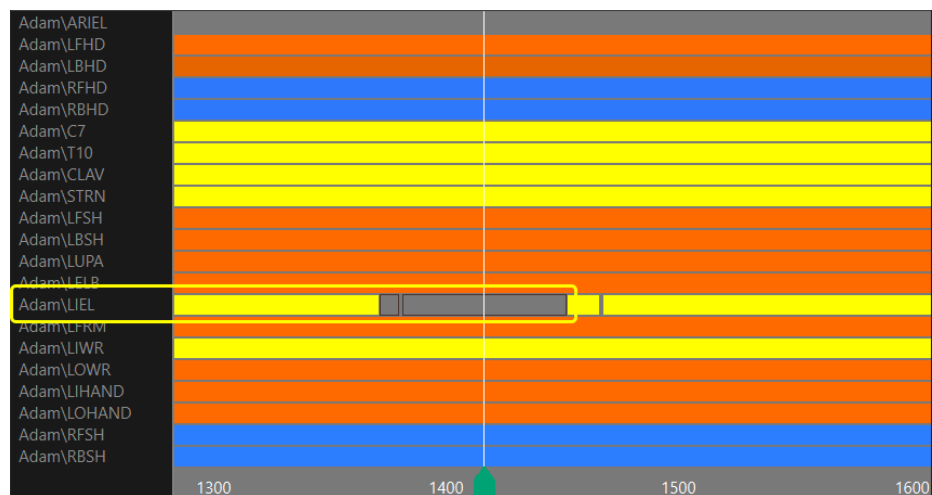


1. To quickly gap-fill the selected marker, on the time bar double-click to move the current time indicator to the relevant frame.

The affected marker is automatically highlighted in the **3D Scene** view (you can right-click and drag to zoom in further to check the marker).

Clean up data

2. To open a **Data Health** view and a **Graph** view, as well as a **3D Scene** view, split the screen by selecting the **Three Views Split Left** button  at the top of the Shogun Post window and change the views in the new panes.
3. If the **Marker Editing** panel is not already open, on the **Processing** tab on the ribbon, selecting **Marker Editing**.
4. In the **Data Health** view, find the relevant marker's line, which shows a gray rectangle that represents the gap.

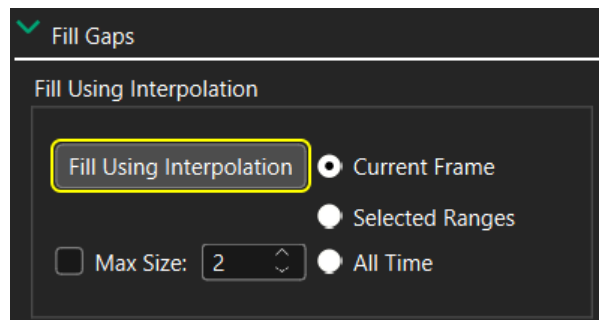


5. In the **Data Health** view, double-click to select the range of the gap.



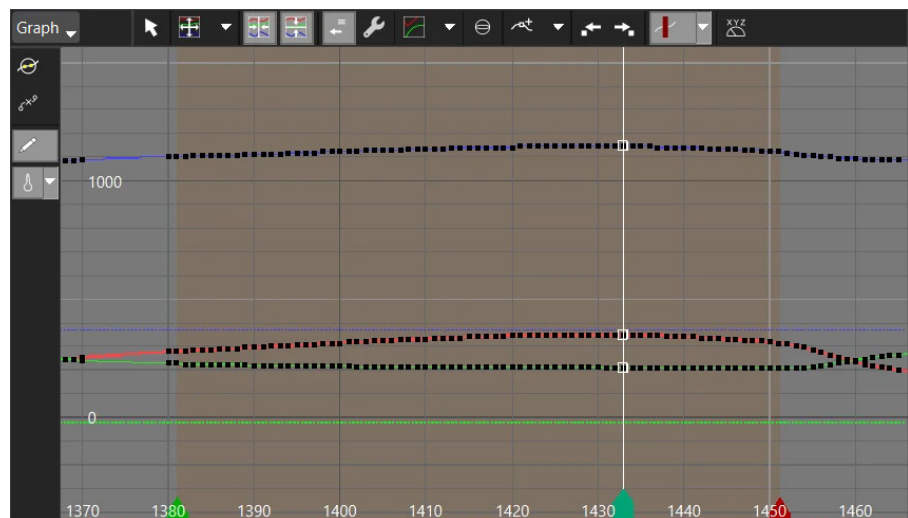
Clean up data

6. In the **Marker Editing** panel, expand the **Fill Gaps** section. In the **Fill Using Interpolation** area, select **Selected Ranges** (to fill only the current selection), and then select **Fill Using Interpolation**.



This looks at the keys on either side of the gap and fills it by interpolating between them. It works well for small gaps.

7. In the **3D Scene** view and **Graph** view, check that your fill has given the required result.



8. If the fill does not give an appropriate result, you can click **Undo** on the quick access toolbar , and try other gap-filling options in the **Marker Editing** panel (see [Options for gap filling \(page 105\)](#)).

Clean up data

Options for manual gap-filling

The appropriate option to use depends on the type of gap that you want to fill.

- [Short gaps \(page 105\)](#)
- [Sequence of short gaps \(page 106\)](#)

Short gaps

1. Manually select a short gap by double-clicking in a **Graph** view or **Data Health** view, and in the **Marker Editing** panel, expand the **Fill Gaps** section and select **Fill Using Interpolation**.

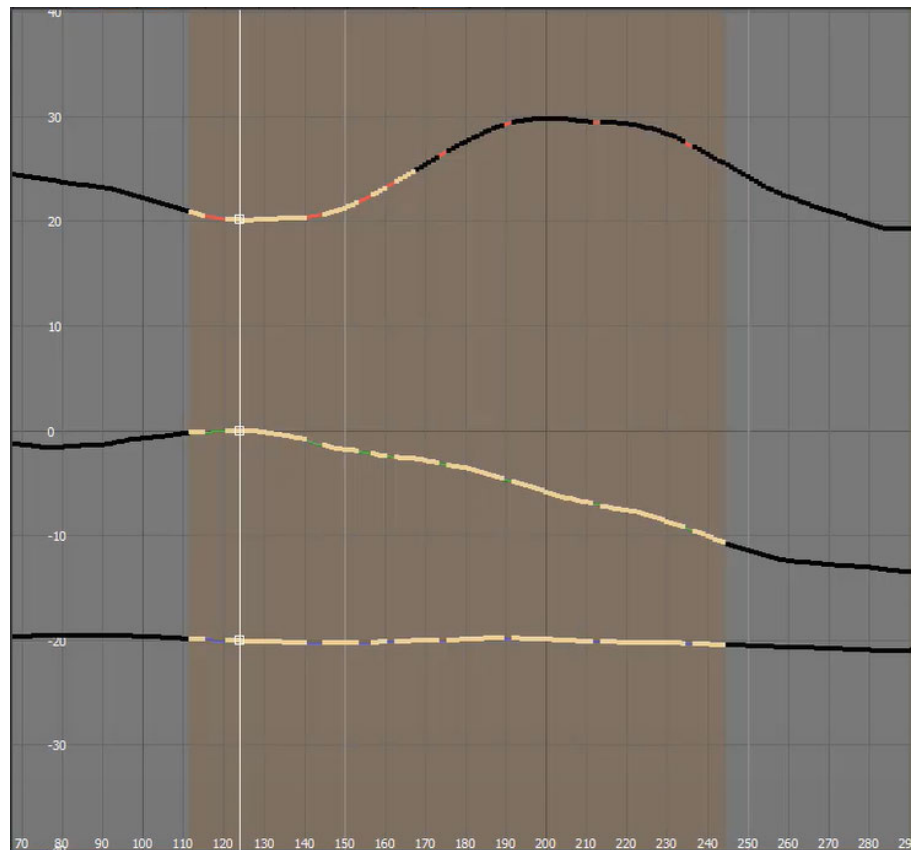
This looks at data before and after the gap and uses a spline fill to interpolate between them.

2. Check that the result looks reasonable in a **3D Scene** view and **Graph** view.

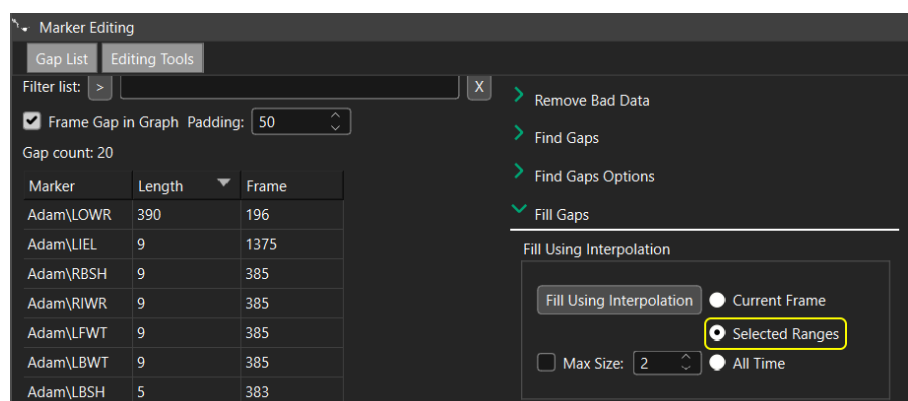
Clean up data

Sequence of short gaps

1. For a sequence of small gaps with a smooth line running through the gap in the Graph view, ALT+drag to select the affected data.



2. In the Fill Using Interpolation area, select Selected Ranges, and then click Fill Using Interpolation.

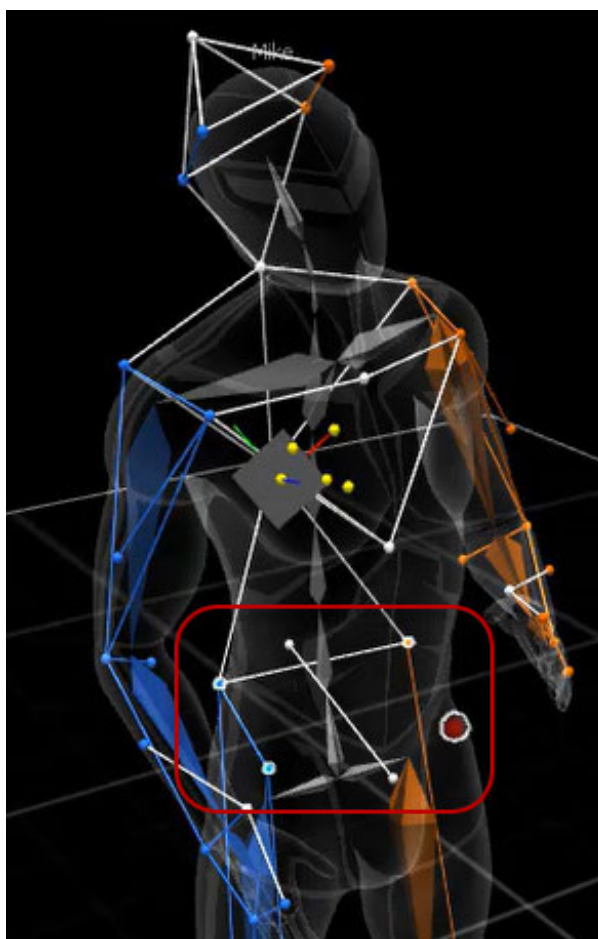


Clean up data

Non-linear motion

For non-linear motion, for example, where rotational movement is involved, as interpolation does not account for this kind of motion, a different approach is needed. If a missing marker is part of set of markers that are rigid (ie, remain in the same relation to each other, for example, a pelvis), you can use three or more markers in the rigid object (three in addition to the marker that has the gap is recommended) to help fill in the data for the missing marker.

1. To select the range of the gap, double-click in a **Graph** view or **Data Health** view, then select (CTRL+click) the three other markers in the rigid object.



Clean up data

2. In the **Marker Editing** panel, expand the **Fill Gaps** section.
3. In the **Fill Rigid** area, select **Selected Ranges** and select **Fill Rigid**.
The pattern of the present markers is copied onto the missing marker.
4. As usual, check in the **Graph** view and in a **3D Scene** view that the fill looks sensible.

Other rigid objects you can use in a default marker set include hands, forearm, upper arm, shoulders, thorax, and head.

Non-linear motion where rigid fill is impossible

In cases where the motion is non-linear, but a rigid fill is not possible due to all the related markers being absent, you can use the **Fill Using Constraints** option. This uses the labeling or solving skeleton to produce the fill. It requires a skeleton be present, the skeleton to be constrained by markers, and enough markers to have data that the solve is fairly good. The marker being filled must be constrained to the skeleton because it is the constraint offset that is used to determine where the marker should be during the fill.

Before using this type of fill, check that the bones and missing markers (by default displayed in red in the **3D Scene** view), are in sensible locations.

Solve the data

Solve the data

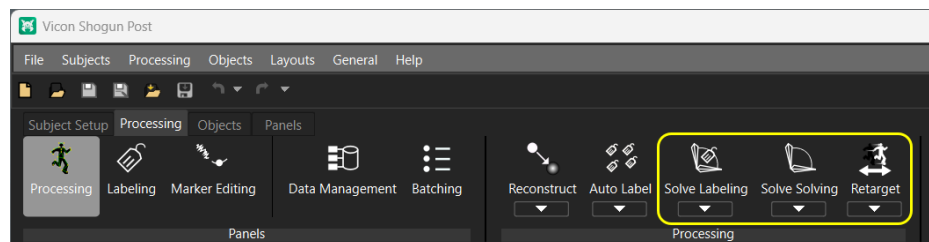
When you have finished any necessary cleanup of your data, run a final solve to produce the finished file ready for export.

To resolve markerless data, or to resolve marker-based data if you don't need to adjust the settings, click the Processing tab and use one of the solving options on the ribbon, as described in the following steps.

To resolve your markerless or marker-based data after making edits:

1. On the ribbon, click **Processing**.
2. Depending on your requirements, if you want to resolve the whole play range, click **Solve Labeling**, **Solve Solving**, or **Retarget**.

If you want to select a range, click the downward arrow on the relevant button and select the required option.



Tip

Even if you only had to clean up a single frame or a small range of frames, always run a final solve on the entire play range. You can run solves on smaller ranges so that you can review the results of your cleanup while you are working using the above process, but to avoid any jumps at the start and end of the solved range(s), when you have finished editing, you must run a solve of the whole play range.

If you are working with marker-based mocap and need to adjust the solving settings, see [Use the Processing panel to adjust solving settings for marker-based data \(page 110\)](#).

Solve the data

Use the Processing panel to adjust solving settings for marker-based data

If you are working with marker-based mocap data and need to adjust the settings for solving, open the Processing panel and make the required changes as follows.

1. On the **Processing** tab of the ribbon, select **Processing** to open the Processing panel.
2. On the **Solving** tab, adjust the settings as required.
If you are using any of the high fidelity fingers templates:
 - Ensure that the **Plausibility importance** option is set to a suitable value:
 - If you are using VST 3.7 or later (VST 3.7 was introduced with Shogun 1.10), the default, 12.5, is normally a good starting point. Smaller values produce better data fidelity (ie, the markers will better fit their constraints), but the pose likelihood may be weaker. Larger values produce better pose likelihood, but weaker data fidelity.
 - If you are using a version of Shogun earlier than 1.10, see [Work with skeletons from earlier versions of Shogun \(page 111\)](#).
 - Note that the **Mean pose ratio**, which affects the entire skeleton, has a strong impact on the final hand poses. Ensure it is set to a suitable value:
 - If you are using VST 3.7 or later (VST 3.7 was introduced with Shogun 1.10), the default, 0, is normally a good starting point, but if you need to adjust it (for example, if there is too much noise), try a lower value.
 - If you are using a version of Shogun earlier than 1.10, see [Work with skeletons from earlier versions of Shogun \(page 111\)](#).

The next time you run solving, any changes you made to the settings in this panel are applied.

See also the Vicon video [3 - Shogun Post - Processing and Solving](#)¹¹, which covers using the **Processing** panel, editing a solving skeleton, and solving.

¹¹ <https://youtu.be/gWb9KJfx2PM>

Solve the data

Work with skeletons from earlier versions of Shogun

To work well with VST 3.7 skeletons (introduced with Shogun 1.10), the solver included changes to these settings when compared with the values used with earlier VSTs:

- Less to no reliance on the **Mean-pose ratio**
- A much lower **Plausibility importance**

Because these changes are not suitable for use with previous VSTs, when you work on a scene that contains one or more full-body skeletons designed with VST 3.6 or earlier, you must restore the relevant solving settings (described below) to their legacy values.



Note

VST 3.7 skeletons produce good solving performance with the legacy solver settings, although performance is not as optimal as with the new settings.

If both the following conditions are true, a warning is displayed in the Log to let you know that you're using settings optimized for VST 3.7 or later:

- The scene contains a subject with fully articulated fingers
- The VST used is 3.6 or earlier



Note

You cannot simply convert a VST 3.6 skeleton (or earlier) to a VST 3.7 one to remove the warning as the file will not contain the required information – if you want to use a skeleton from VST 3.6 or earlier, change to the earlier default settings, as described below.

The warning identifies the relevant subject and advises you to change back to Shogun 1.9 default settings, which are:

- **Mean-pose ratio** = 0.75
- **Plausibility importance** = 25.0

When you switch to the recommended settings, the warning disappears.

Solve the data

About occlusion fixing



Note for Blade users:

Occlusion fixing in Shogun is similar to that available in Blade. However, by default, the .mcp files that are produced in Shogun Live are automatically occlusion fixed, so are unlikely to need further occlusion fixing when opened and processed in Shogun Post.

Occlusion fixing uses data from non-occluded markers to supply the missing data for the occluded markers. To give the best results and the smoothest trajectories, occlusion fixing may affect non-occluded markers throughout the take, even if you have selected a range before applying it. If you repeatedly run occlusion fixing in Post, the effect may be cumulative, resulting in greater (possibly unwanted) smoothing.

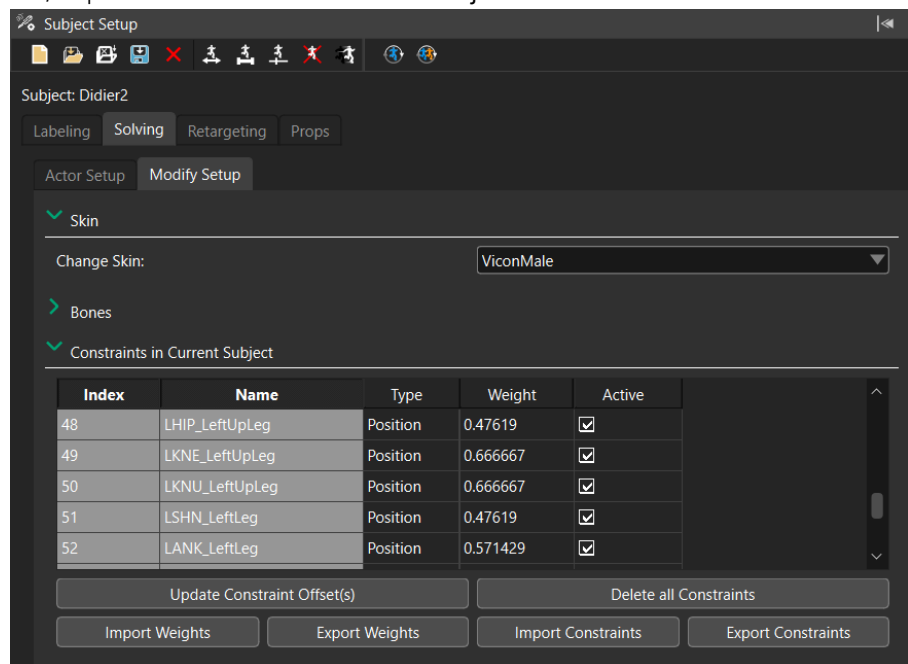
Solve the data

Interactive solving

If you want to perform a simple manipulation of a solving bone, you can save time and a lot of manual tweaking by using the interactive solving feature. This immediately updates the offsets for the constraints that drive the bone that you're adjusting as soon as you release the mouse button.

To manipulate a solving bone:

1. Ensure you have loaded the subject, which must have a solving skeleton.
2. In the **Subject Setup** panel, select the **Solving** tab, and on the **Modify Setup** tab, expand **Constraints in Current Subject**.



3. In the 3D Scene, select the joint you want to rotate.
4. On the right of the **Subject Setup** panel toolbar, select **Enable interactive solving of the solving subject**

At the top of the 3D Scene view, the text **Interactive Solving** is displayed.

5. Using the manipulator, rotate the subject's joint.
6. When you're happy with the new position of the joint, release the mouse button.

The offsets for the constraints which drive the bone are updated.

Solve the data



Note

Interactive solving works best when you want to apply a rotation in a single axis, for example, correcting head aim, hand flatness, etc.

You can follow a similar procedure to manipulate retargeting bones: see [Interactive retargeting \(page 146\)](#).

For information on the relevant HSL commands, see the following commands in *HSL Scripting with Vicon Shogun Post*.

- `getInteractiveSolveLabeling`
- `getInteractiveSolveSolving`
- `setInteractiveSolveLabeling`
- `setInteractiveSolveSolving`

Retarget with Shogun Post

Shogun Post's full retargeting pipeline enables you to create and solve motion capture data onto any custom FBX/USD biped.

You can use the resulting VSR file in Shogun Live and stream it to a game engine, or solve and export from Shogun Post for use in a CG app.

Retargeting is an integral part of many VFX and games animation pipelines. We therefore make iterative improvements to performance, functionality or usability with each release, to help you quickly and easily drive custom characters with your Vicon mocap data.

Retargeting terms:

- **Source skeleton:** Solving skeleton
- **Target skeleton:** Retargeting skeleton (game skeleton)
- **Map pose:** The pose that is used for mapping (creating constraints between the source (solving) and target (retargeting) skeletons and setting the offsets). For more information, see Map pose and best rig practices in *Getting more from Vicon Shogun Post*.
- **Base pose:** The pose of the skeleton when all keys are deleted and the rotation channel for all bones is set to zeros. It's defined by the pre-rotation, which is known as 'joint orient' in Autodesk® Maya®.

For more information, see:

- [Create an optimal target skeleton \(page 116\)](#)
- [Automatically set up a retarget \(page 119\)](#)
- [Manually set up a retarget \(page 132\)](#)
- [Modify a retarget \(page 144\)](#)
- [Export a retarget setup \(page 147\)](#)
- [Automate retargeting to MetaHuman \(page 151\)](#)

Retarget with Shogun Post

Create an optimal target skeleton

The following tips help you to ensure that your FBX, USD or VSR file works well as a target.

- [Use pre-rotation, not keys \(page 116\)](#)
- [Pay attention to degrees of freedom \(DoFs\) \(page 117\)](#)
- [Be aware of dummy bones \(page 117\)](#)
- [Know what's above the root bone \(page 118\)](#)
- [Know how to use scaling \(page 118\)](#)

Use pre-rotation, not keys

It's best to define the base pose of a skeleton using pre-rotation, not keys.

If keys put the skeleton into a T-pose, A-pose, or another suitable pose, and pre-rotations don't exist, you can still use the skeleton, but you'll need to know what the base pose looks like and use the map pose to both retain the pose used for mapping and to get best results. See [About map mode \(page 116\)](#) and, if your skeleton uses keys rather than pre-rotations, see also Map pose and best rig practices in *Getting more from Vicon Shogun Post*.

About map mode

The process of creating the constraints between the source (solving) and target (retargeting) skeleton and setting the offsets is called mapping. Before mapping, both skeletons must be in the same pose. This involves posing the target skeleton to match the source (which is its base pose) and you do this in map mode. First you pose the target, then you create the constraints. At the time a constraint is created, its offset is calculated. The offset is the difference in pose between the source and target.

If you need to tweak the setup, or just check how it was set up, you can return to map mode. When making any adjustments, the target must be in the same pose it was when it was mapped. The map pose makes this possible. If constraints exist, implying a map pose is likely to exist, entering map mode automatically places the target skeleton in the map pose.

Retarget with Shogun Post

In addition to restoring the pose you used for mapping, the map pose is also useful for retargeting. Retargeting is faster and easier if the map pose is set because it uses the map pose as a starting point instead of the base pose, which, for some skeletons, may differ widely from the map pose.

Pay attention to degrees of freedom (DoFs)

Most skeletons have Degrees of Freedom (DoFs), and generally, skeletons work best when they have them.

- **FBX files:** After you import an FBX, check that the DoFs are set correctly before setting up retargeting.
- **USD files:** The USD format doesn't currently support DoFs. If you want to use DoFs with a USD skeleton, set them in Post after importing the USD skeleton.

Be aware of dummy bones

End joints that are dummy bones (bones with zero DoFs) are ignored by retargeting in that any keys they may have aren't retained and a map pose isn't stored for them.

- For extremities like the ends of hands, toes, and fingers, this is fine because the end bones must be zero DoF dummy bones with no keys.
- For parts of a skeleton that define things such as face, hair, and clothes, this can be problematic if these bones don't use pre-rotation to define their base pose. If you use keys to define a pose that is required for the skin to look right, note that these keys are not stored in the VSR/map pose because all of these bones are treated as dummy bones. If they aren't dummy bones already, change them to dummy bones because they have no data and setting them to dummy bones enables retargeting to ignore them and therefore to run faster.

To convert unused bones to dummy bones in Shogun Post, set the DoFs to off. To do this:

- In the table on the **Retargeting** tab, select the bones you want to be dummy bones, then right-click and select **Disable Dofs**.

Retarget with Shogun Post

Know what's above the root bone

On import:

Sometimes, skeletons in CG apps like Autodesk® Maya® or Autodesk® MotionBuilder® contain one or many bones, locators, groups, etc, above the root. Generally Vicon Shogun doesn't support this. Aim to have no extra nodes between the Retargeting node and the root bone in Shogun Post. Dummy bones can exist above the root. These must have zero DoFs and the root must have six DoFs. If this isn't already the case on import, in the target Root field, right-click and to specify the correct root, which switches DoFs, select **Set Root**.

On export:

In Shogun Post, on the **Retargeting** tab, in the **Export Options** section, you can select or clear the **Include bones above root in VSR** check box, which controls whether the dummy bones above the root are exported in the VSR.

If any objects above the root have non-zero transforms, they can be successfully imported in FBX format, but you'll probably need to modify the hierarchy in Post to set them aside during setup. If you need them to exist in the exported FBX because it will be merged into the original file, you must restore the hierarchy to its original form after you finish retargeting. You can create export scripts to do this via batching.

Know how to use scaling

Scale (values in the **Scale** channel) is not supported on bones or anything above them.

Retargeting enables you to scale each joint so that it better matches the source skeleton. You can revert this back to the original scale on export, if desired (see [Export a retarget setup \(page 147\)](#)).

Retarget with Shogun Post

Automatically set up a retarget

Shogun Post 1.8 and later reduces the time required to set up a robust character retarget by providing default constraints that you can use as they are, or modify to suit your particular needs. You may find this particularly useful if you are new to retargeting with Shogun Post, or if you need to copy an existing constraint setup to multiple different retargeting skeletons.

You can set up a retarget in these ways:

- To set up a retarget automatically, see [Set up a retarget using default constraints \(page 120\)](#).

Or

- If you are using a version of Shogun Post earlier than 1.8, or if you want to use a wholly manual process for your retargeting setup, see [Manually set up a retarget \(page 132\)](#).

Watch the following video that explains the automatic retargeting procedure.

 [How do I quickly set up a default character retarget?](#)¹²

After you have set up a retarget, you may need to set up another retarget for a similar set of skeletons. This may be from a different actor to the same target skeleton, or a target skeleton which is similar, but has a different scale or proportions. For more information on reusing this setup, see [Set up a retarget based on an existing setup \(page 128\)](#).

¹² <https://www.youtube.com/watch?v=5-S2PRyLnfE>

Retarget with Shogun Post

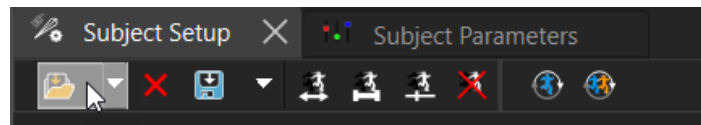
Set up a retarget using default constraints

To set up a retarget using the default constraints in Shogun Post, complete the following steps.

- [Prepare the target skeleton \(page 120\)](#)
- [Set the side and parts \(page 123\)](#)
- [Create the retargeting constraints \(page 125\)](#)
- [Export the target skeleton and constraints as a VSR \(page 126\)](#)
- [Test and refine the retarget setup \(page 126\)](#)

Prepare the target skeleton

1. To ensure your FBX, USD or VSR file works well as a target skeleton, review the tips in [Create an optimal target skeleton \(page 116\)](#).
2. Ensure the source skeleton is currently loaded.
3. Open the **Subject Setup** panel and select the **Retargeting** tab.
4. Load the target skeleton by clicking the Load Retarget button.



5. At the top of the **Retargeting** tab, click **Map Mode**.

The Map Mode button changes color and the text in the 3D Scene view changes, the play range is blank, and all skeletons are put into their base pose, indicating that you are now in map mode.

In this mode, you can pose the source and target skeletons without affecting the motion of the main clip.

Retarget with Shogun Post

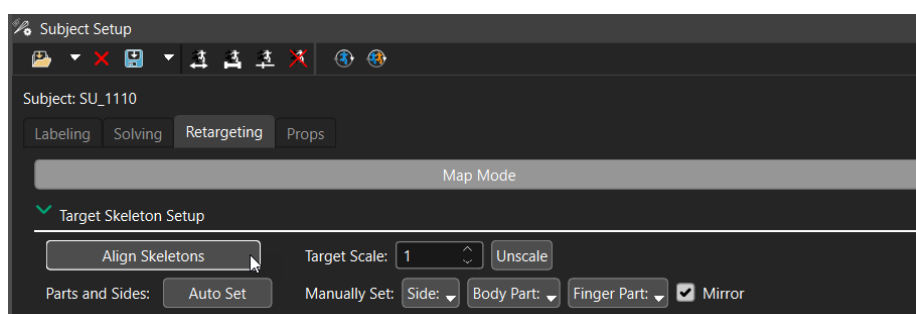
- In the **Target Skeleton Setup** section, ensure the correct bone (normally the hips or pelvis) is set as root on the target skeleton.

If necessary, right-click and select **Set Root** in the context menu to change it.

Index	Bone	Side	Part	DOFs
0	pelvis	Center	Pelvis	Show Inactive Bones
1	spine_01	Center	Back	Disable Dofs
2	spine_02	Center	Back	Set Root
				Cut Rotation Keys

Constraints

- Select **Align Skeletons** to automatically align the target skeleton to the solve skeleton.



If the target skeleton doesn't fully align with the solve skeleton, adjust it manually.

For tips on how to do this:

- Watch the video [Vicon Shogun 1.3 Post Tutorial - Retargeting Setup](https://youtu.be/S5otK-hx8QM)¹³
- See [Pose the skeleton](#) (page 135)

- If desired, use the **Target Scale** controls to adjust the target skeleton's scale.

¹³ <https://youtu.be/S5otK-hx8QM>

Retarget with Shogun Post

9. Ensure the DoFs are set. To do this:
 - a. In the **Target Skeleton Setup** section, in the **Parts and Sides** list, view the DoFs. (To do this, you may need to close the Constraints and Export Options sections).
 - b. Select any bones that should not receive animation by retargeting and use the option in the right-click context menu to disable their DoFs.

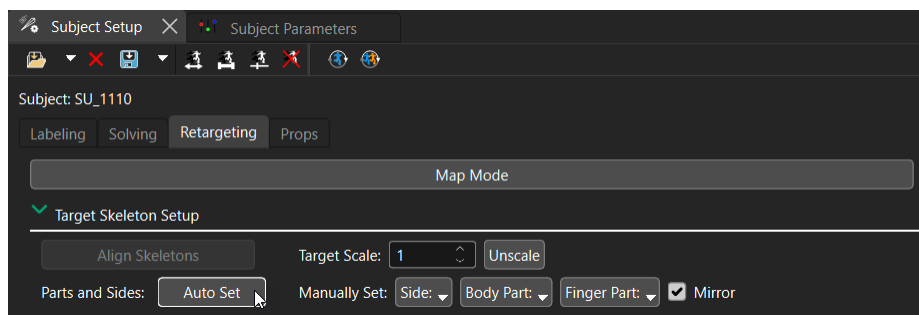
This ensures that those bones don't receive animation and helps the automation to determine which bones are to be constrained.
 - c. Modify the DoFs of each bone for its desired motion by selecting the bone and in the **Attributes** panel, edit the DoFs.

Using sensible DoFs produces a better retarget and animation.

Retarget with Shogun Post

Set the side and parts

1. In the Target Skeleton Setup section, next to Parts and Sides, click Auto Set.



This assigns the appropriate side name and part name to each bone that has active DoFs.

Index	Bone	Side	Part	DOFs
0	pelvis	Center	Pelvis	RX RY RZ TX TY TZ
1	spine_01	Center	Back	RX RY RZ
2	spine_02	Center	Back	RX RY RZ
3	spine_03	Center	Back	RX RY RZ
4	clavicle_l	Left	Collar	RX RY RZ
5	upperarm_l	Left	Shoulder	RX RY RZ
6	lowerarm_l	Left	Elbow	RX RY RZ
7	hand_l	Left	Hand	RX RY RZ

- Side names are set by first using each bone's name, for example, if it contains `center`, `left`, `right`, `l_`, `r_`, etc.

If the side can't be deduced from the bone's name, its position relative to the root is used.

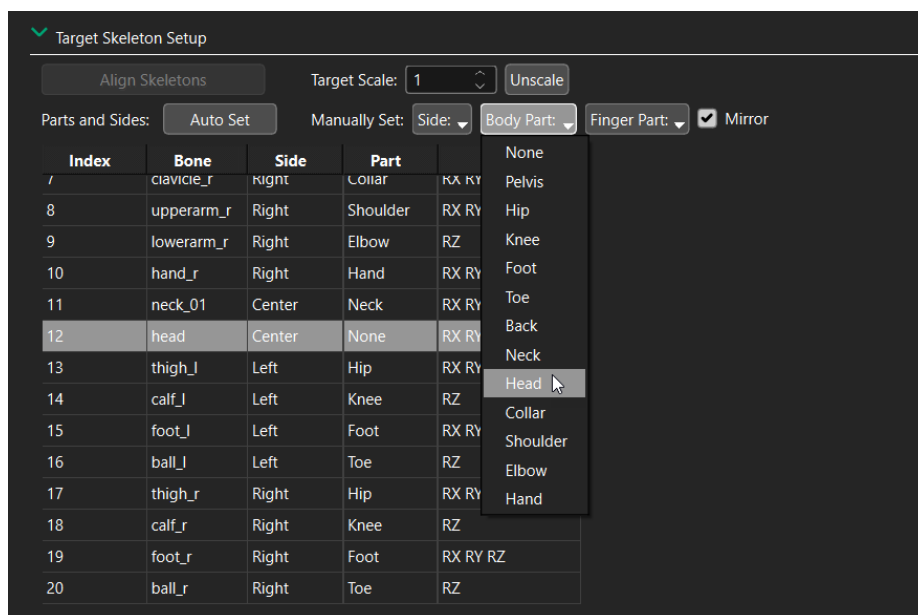
- The Part name is set based on the bone name matching commonly used names.

2. Verify that the sides and parts are set correctly.

If necessary, modify them by selecting bones in the list (or elsewhere in Post) and using the **Manually Set** buttons above the list.

Retarget with Shogun Post

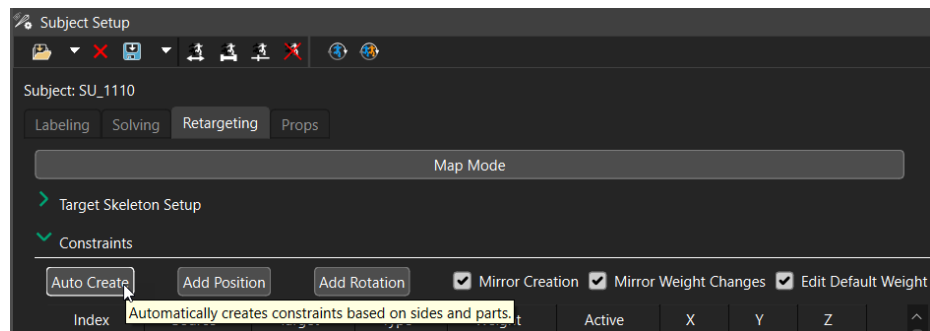
For example, if the part for the head is set to None, in the Target Skeleton Setup list, select the head and from the Body Part list above the list, select Head.



Retarget with Shogun Post

Create the retargeting constraints

1. Ensure the Constraints section is expanded.
2. Click **Auto Create** to automatically create a default constraint setup.



This uses the sides and parts as a mapping between the two skeletons.

Constraints									
Auto Create Add Position Add Rotation ☒ Mirror Creation ☒ Mirror Weight Changes ☒ Edit Default Weight									
Index	Source	Target	Type	Weight	Active	X	Y	Z	
0	Hips	pelvis	P	0.100000	☒	-70.2	54.6	0	
1	LeftFoot	foot_l	P	0.100000	☒	-70.6	-2.81	10.52	
2	RightFoot	foot_r	P	0.100000	☒	70.6	2.82	-10.52	
3	LeftHand	hand_l	P	0.000010	☒	0	0	0	
4	RightHand	hand_r	P	0.000010	☒	0	0	0	
5	Hips	pelvis	R	1.000000	☒	-90	-90	-90	
6	LeftUpLeg	thigh_l	R	1.000000	☒	170.71	-87.19	17.78	
7	RightUpLeg	thigh_r	R	1.000000	☒	-9.29	87.19	-17.78	
8	LeftLeg	calf_l	R	1.000000	☒	91.41	-81.88	91.65	
9	RightLeg	calf_r	R	1.000000	☒	-88.59	81.88	-91.65	
10	LeftFoot	foot_l	R	1.000000	☒	-88.49	-75.72	-88.84	

The default constraint setup contains:

- Position and Rotation for the root
- Position and Rotation for the feet, to ensure the target skeleton feet follow the solve feet in position.
- Position and Rotation for the hands to ensure the target skeleton hands can follow the solve hands in position when desired.
- Rotation constraints for the rest of the bones, so that the pose of the target skeleton matches the solve skeleton.

3. Modify the constraints as needed - add, remove, or change the weights.

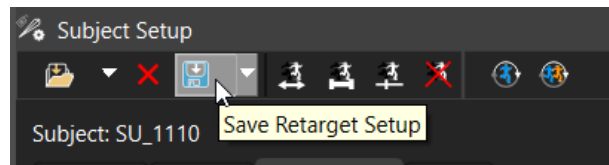
When you have finished adjusting the constraints, exit map mode by clicking **Map Mode** again.

Retarget with Shogun Post

Export the target skeleton and constraints as a VSR

To export the target skeleton and constraints as a VSR:

- At the top of the **Subject Setup** panel, click the Save Retarget Setup button and if necessary, browse to the required location.



By default, the VSR is saved to: *C:\Users\Public\Documents\Vicon\Retargets*

Test and refine the retarget setup

We recommend testing the retarget setup on a ROM and a few takes that represent typical and extreme motions. You can do this in Live or Post, by importing the VSR.

You can test the retarget setup in Shogun Post or in Shogun Live.

To test the retarget setup in Post:

When you have finished setting up, ensure you have selected **Map Mode** again to turn it off (the Map Mode button is not green).

1. You are returned to the motion in the file, ideally a ROM.
2. In the toolbar at the top of the **Subject Setup** panel, click the **Retarget skeleton(s) over current frame** button.



3. If the skeleton looks good, select the **Retarget over frame range** button (or select a range and use the **Retarget skeleton(s) over selected range** button).

After retargeting has finished, scrub the time bar to check that the motion and positioning of the retargeted skeleton now matches that of the target skeleton over the whole range (or selected range).

Retarget with Shogun Post

To test the retarget setup in Live:

1. Load the VSR. To do this, in the **Tracking** panel, ensure the subject is selected and click the **Properties** tab.
2. Click the **Retarget** field to display the files found in your *Retargets* folder, and select the retarget from the list.
3. In the **Processing** panel, in the **General** section, ensure that the **Processing Output Level** is set to **Retarget**.

Your FBX is displayed and is driven by the source skeleton. The retarget skeleton is recorded as part of the MCP capture.

After you have finished setting up a retarget, you may need to set up another retarget for a similar set of skeletons, for example, from a different actor to the same target skeleton, or a similar target skeleton with a different scale or proportions. To find out how to do this, see [Set up a retarget based on an existing setup](#) (page 128).

Retarget with Shogun Post

Set up a retarget based on an existing setup

After you have set up a retarget (see [Automatically set up a retarget \(page 119\)](#)), you may then need to set up another retarget for a similar set of skeletons. For example:

- From a different actor to the same target skeleton
- To a target skeleton which is similar, but with a different scale or proportions

If the initial setup was entirely automated, you can repeat that automation for the new skeletons. If you needed to do some manual work to produce the initial setup, you can save time and effort by reusing the first setup for subsequent setups for the same type of skeleton. An example of re-using an existing setup would be if you set up a retarget for one actor/character pair, then want to reuse the sides, parts, and DoFs for another pair that has the same target skeleton, but a different actor skeleton.

Example of re-using a retargeting setup

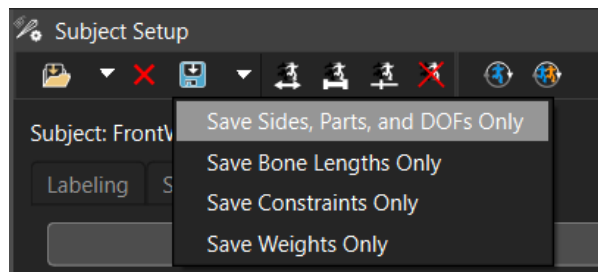
In the following scenario, we want to use an existing retarget to set up another retarget for a game character that uses the same skeleton as the existing one, but differs in size, proportions, and mesh:

- Actors A1 and A2 both have standard Shogun solving skeletons set up.
- Game characters G1 and G2 use the same skeleton, but have differences in scale, proportions, and mesh.
- We've already set up a retarget from A1 to G1.
- We now want to set up a retarget from A2 to G2.

Retarget with Shogun Post

To set up a retarget from an existing setup:

1. Export the target skeleton properties and constraint setup from A1_G1, which can be reused for similar setups. To do this:
 - a. Load the retarget setup for A1 to G2.
 - b. In the **Subject Setup** panel, select the **Retargeting** tab.
 - c. In the Subject Setup toolbar, select the downward arrow to the right of the **Save** button and select **Save Sides, Parts, and DOFs Only**.



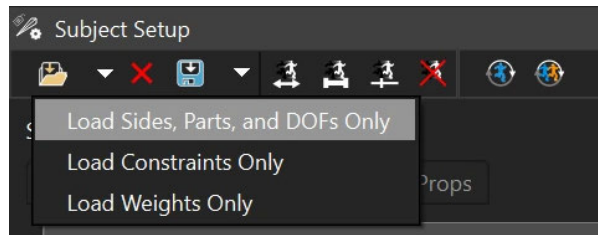
We recommend that you give this a generic name like *ShogunSolve_MyGameSkeleton_Properties*, as it will store the sides, parts, and DoFs that are common to these game skeletons.

- d. Select the downward arrow to the right of the **Save** button again and select **Save Constraints Only**.

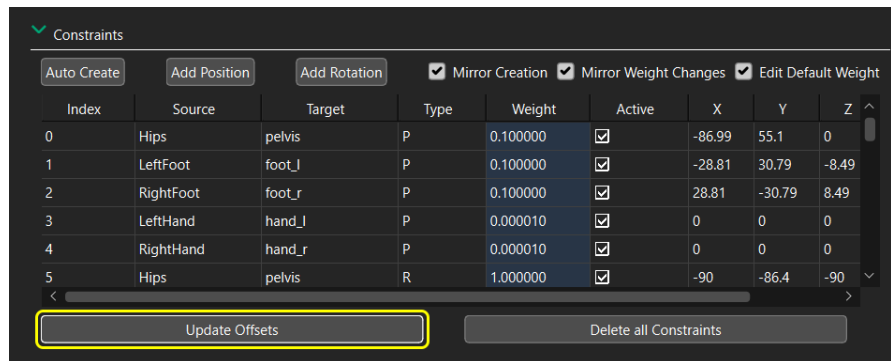
Again, we recommend that you give this a generic name like *ShogunSolve_MyGameSkeleton_Constraints* as it will store the constraint setup you'll use as a starting point for any actor using this Shogun solve skeleton to any character using this skeleton.

Retarget with Shogun Post

2. Set up A2 to G2 using the files saved in the previous steps. To do this:
 - a. Load the ROM for A2, at the top of the **Subject Setup** panel select **Map Mode** and load G2.
 - b. Click the downward arrow to the right of the **Load** button and select **Load Sides, Parts, and DOFs Only**.



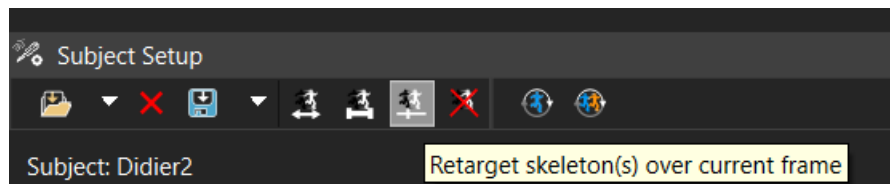
- c. Select the file exported from step 1a.
This sets the G2 skeleton to have the same sides, parts, and DOFs as G1.
- d. Align, scale, and pose the G2 skeleton.
- e. Select the downward arrow to the right of the **Load** button and select **Load Constraints Only**.
- f. Select the file exported from step 1a.
This sets the G2 skeleton to have the same constraints as G1.
- g. At the bottom of the **Constraints** section, click the **Update Offsets** button.



This updates the constraint offsets based on the relationship between A2 and G2, which differs from A1 and G1.

Retarget with Shogun Post

3. Test the setup
 - a. Exit map mode by selecting **Map Mode** again.
 - b. On the Subject Setup panel toolbar, select **Retarget Skeleton(s) over current frame** to run retargeting at the current frame and ensure the result looks as expected.



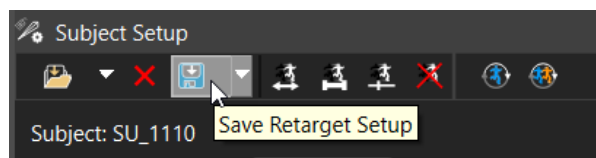
If not, you may need to tweak the setup if there are differences in A2 or G2 that need to be accounted for.

- c. Select the **Retarget over play range** button to run retargeting over the entire ROM and review the result.

Refine the setup as needed.

4. Save the A2 to G2 retarget setup. To do this:

- a. Select **Save** to save the retarget setup.



The resulting VSR contains the G2 skeleton and constraint setup for retargeting from A2 to G2. You can load it into Live or other takes containing A2.

Retarget with Shogun Post

Manually set up a retarget

If you're using versions of Shogun Post earlier than 1.7, or if you want to use the manual process to set up a retarget, see the following videos and instructions.

- [Import the target skeleton into Shogun Post \(page 133\)](#)
- [Prepare and pose the skeleton \(page 135\)](#)
- [Create retargeting constraints \(page 138\)](#)
- [Test the retarget setup \(page 143\)](#)

If you are using Shogun Post 1.8 or later and are new to retargeting with Shogun Post, or if you want to copy an existing constraint setup to other retargeting skeletons, see [Automatically set up a retarget \(page 119\)](#).

 [Vicon Shogun 1.3 Post Tutorial - Retargeting Setup](#)¹⁴

 [Vicon Shogun 1.3 Post Tutorial - Retargeting Test](#)¹⁵

 [Vicon Shogun 1.3 Post Tutorial - Streaming Retargets into Unreal](#)¹⁶

¹⁴ <https://youtu.be/S5otK-hx8QM>

¹⁵ https://youtu.be/FFYwa2_FSak

¹⁶ <https://youtu.be/3vUuTgp0PTE>

Retarget with Shogun Post

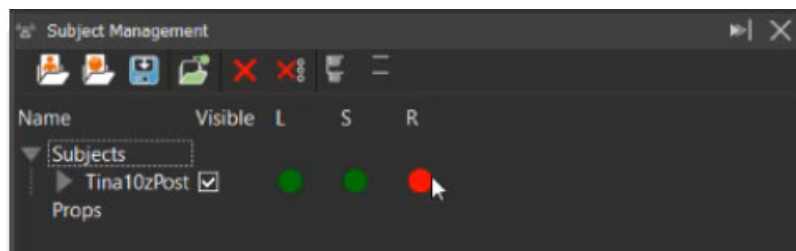
Import the target skeleton into Shogun Post

You can import the target skeleton as an FBX or USD file, or VSR, if a setup already exists. Ideally the imported file will contain just the skeleton and skin and as little else as possible.

To import the target skeleton:

1. In Post, open the relevant .MCP file and ensure that the required solving skeleton is selected in the **Current Subject** field.
2. To check that no target skeleton has been imported, open the **Subject Management** panel.

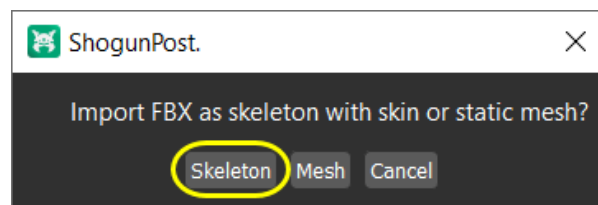
The Retargeting column displays a red circle, indicating that no retargeting setup is present.



 For more information on the Subject Management panel, watch [Vicon Shogun 1.3 Post Tutorial - Subject Management](https://youtu.be/QuA8akXSZTw)¹⁷ on YouTube.

3. Do either of the following:
 - In the **Subject Setup** panel, select the **Retargeting** tab, select **Load** and then select the required target.
 - Drag the target skeleton file into the Shogun Post view pane.

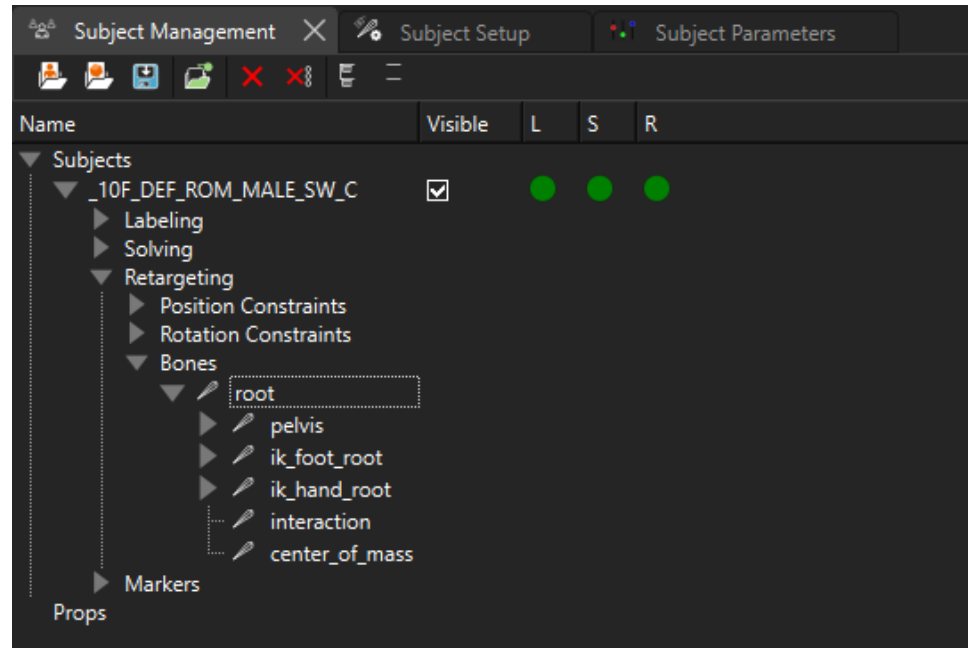
When you are prompted, choose **Skeleton**.



¹⁷ <https://youtu.be/QuA8akXSZTw>

Retarget with Shogun Post

The target skeleton is imported into the current subject hierarchy with the topmost bone of the target skeleton parented to a Retargeting node.



Note

When you import an FBX, it sometimes isn't added under the Retargeting node. In this case, manually parent the skeleton to the node (select the required nodes and on the **Objects** menu, click **Parent**).

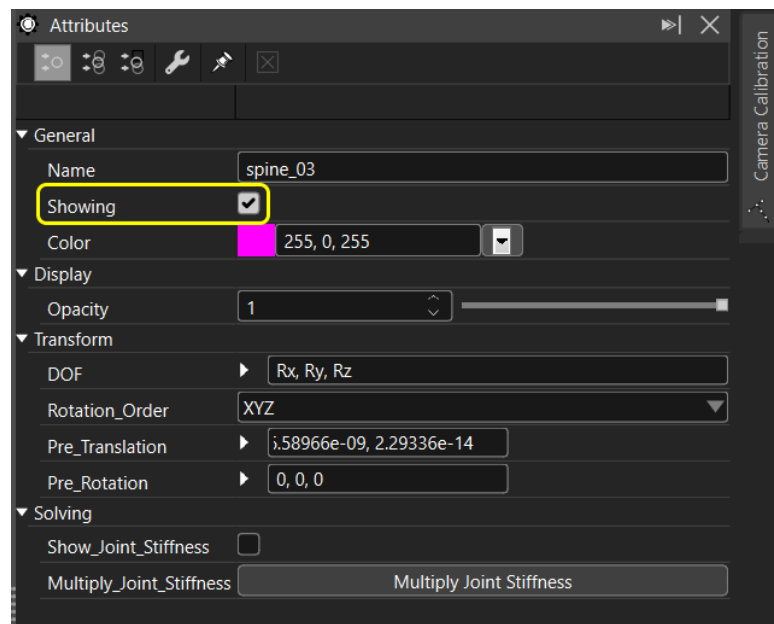
Retarget with Shogun Post

Prepare and pose the skeleton

Before retargeting the skeleton, ensure the target skeleton is keyed in the same pose as the source skeleton. Below are several tips on how to prepare your target skeleton for posing.

Prepare the skeleton before posing

1. Hide any unnecessary joints. To do this, select the bone, and in the **Attributes** panel, clear the **Showing** box.



2. On the **Retargeting** tab, select **Map Mode** (see [About map mode \(page 116\)](#)) to enable this mode.

This creates a separate clip that you use to pose the target skeleton relative to the source skeleton.

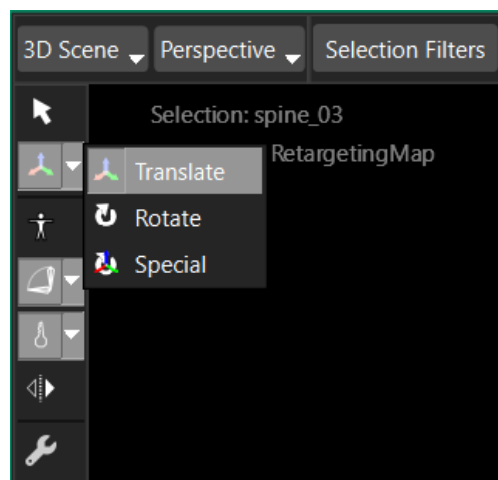
3. In the **Target Skeleton Setup** section, in the list of bones, find the bone that is the root, then right-click and select **Set Root**. This ensures the root has six DoFs and any bones above it have zero DoFs.
4. Confirm the target skeleton's DoFs were imported or set them as required.

Retarget with Shogun Post

5. If the source and target skeletons don't have roots in the same position or have a differing orientation, select **Align Skeletons**.

Shogun Post tries to put the skeletons into the same positions and root pose.

You can more closely align the skeletons using the **Translate** and **Rotate** manipulators (not the Special manipulator).



Be sure to move the root, not any dummy bones above it.

6. If you need to globally scale the target skeleton to be the same size as the source skeleton, on the **Retargeting** tab, change the **Target Scale** value. Ensure that the ankles and clavicles in the target and source skeletons match.

Retarget with Shogun Post

Pose the skeleton

1. Make sure that the target skeleton is keyed in the same pose as the source skeleton.
2. Start with the root. Make sure that you've selected the actual root and not any dummy bones above it. Using the **Translate** and **Rotate** manipulators (not the **Special** manipulator), move it to the same place as the source skeleton.
3. Use the **Rotate** manipulator (or enter values in the **Channels** panel) to rotate all the target bones to the same pose as the source skeleton.

Note you can also rotate the source skeleton to match the target skeleton or a mix of the two.

4. If you need to change bone length to make the target skeleton exactly the same proportion as the source (assuming your pipeline both allows this), use the **Special** manipulator. Note that you must remove the **GlobalScale** retargeting parameter. This removes the ability to perform global scaling and unscaling (using the **Unscale** button), so ensure you've scaled your target skeleton first.
5. When you have finished posing the skeleton, in the **Subject Setup** panel, on the **Retargeting** tab, click the **Map Mode** button again to store the matching pose. If you later modify the pose, remember to click this button again so that the map pose is updated.

Retarget with Shogun Post

Create retargeting constraints

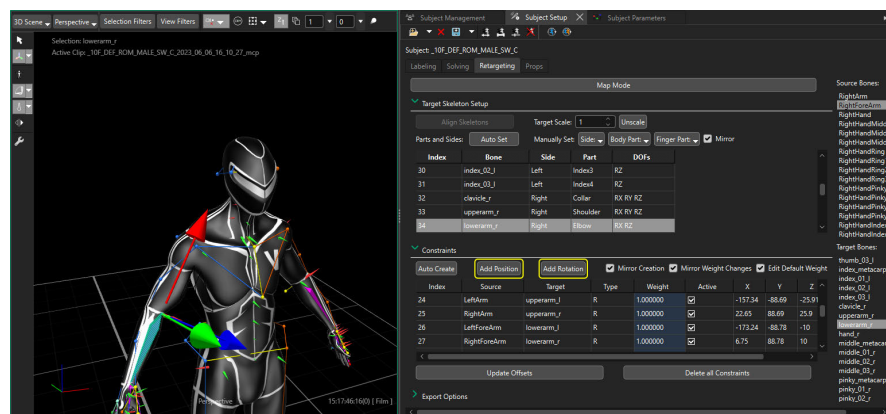


Tip

When creating constraints in Shogun Post 1.6 and later, note the following shortcuts:

- CTRL+T creates a retargeting constraint between the selected solving and retargeting bones, or a solving constraint between the selected solving bone and marker.
- CTRL+R creates a retargeting rotation constraint between the selected solving and retargeting bones.

1. In the lists on the right of the **Retargeting** tab (or anywhere else in Shogun Post), select a matching source and target bone, then click **Add Position** or **Add Rotation** to create a constraint between them. The order of selection does not matter.



2. As a starting point for the constraints, add a position on hands, feet and hips; and rotation on all joints.

If your target skeleton has more joints than the Vicon source skeleton, you can constrain multiple target joints to the same Vicon source joint.



Tip: You can use HSL scripting to speed up creating constraints. For information and examples, see attach in *HSL scripting with Vicon Shogun Post*.

Another way to speed things up is to mirror the changes you make to one side of the source and target skeletons onto the other side. See [Mirror constraints \(page 140\)](#) and [Mirror joint manipulation \(page 141\)](#).

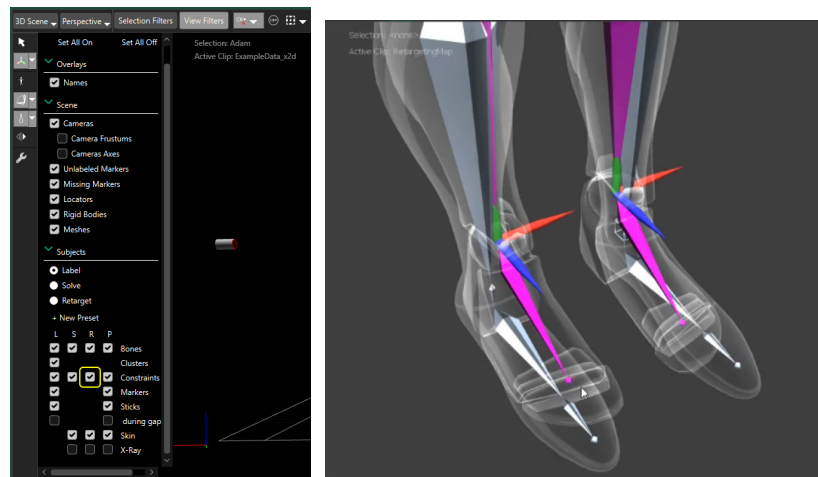
Retarget with Shogun Post

You can alter multiple constraint weights in the table on the **Retargeting** tab.

To enable you to immediately see the changes you're making, in the toolbar at the top, ensure the **Enable interactive retargeting** button  is selected (green).

You can also select or clear **Active** to turn constraints on or off.

3. To check targets, ensure that the **View Filters** option for **Constraints** (for **Retarget**) is selected.



4. Set weights for all rotations. The recommended value for Rotation weights is 200. To set multiple rotations to 200, on the **Retargeting** tab, drag to select the required rows in the table and then in the **Weight** column, set the value of one of them to 200.

All the selected rotation weights are updated to 200.

 **Tip:** If you want to automatically copy your changes to weights from one side of the skeleton to the other, ensure the **Mirror Weight Changes** option is also selected (see [Mirror weights \(page 142\)](#)).

5. To add keys, select the relevant line(s), right-click and select **Set Key**.
To fine-tune keyframes, you can use the controls in the Graph view. For example, you can use the right-click (context) menu in the Graph view to cut or insert sparse keys. You can also change the time of a key by clicking and dragging on the Graph view.
6. To save the VSR mapping file, at the top right of the **Retargeting** tab, click the **Save** button.

By default, VSR files are saved to C:

`\Users\Public\Documents\Vicon\Retargets.`

Retarget with Shogun Post

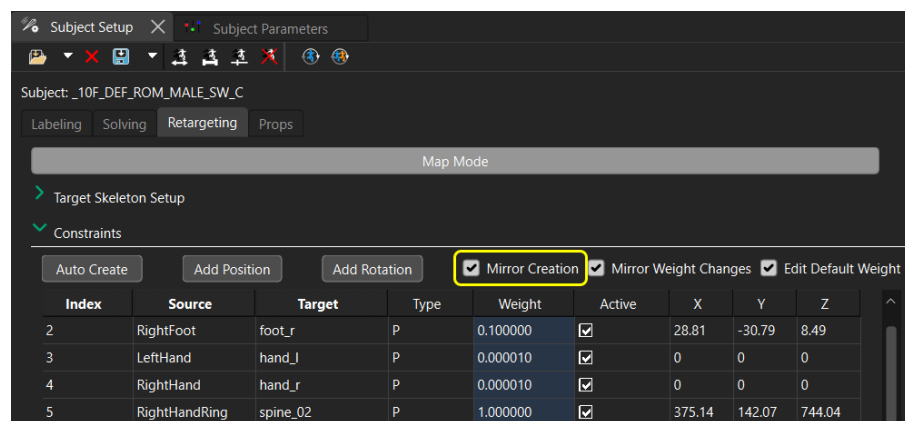
For information on the relevant HSL commands, see the following commands in *HSL Scripting with Vicon Shogun Post*.

- `getInteractiveRetargetCmd`
- `setInteractiveRetargeting`

Mirror constraints

To make the creation of retargeting constraints faster and less error-prone, you can choose to mirror the changes you make to one side of the source and target skeletons onto the other side.

The same option enables you to mirror edits to retargeting constraints.



To mirror retargeting constraints:

1. In the **Subject Setup** panel, click the **Retargeting** tab.
2. When you create or edit retargeting constraints, at the top of the **Constraints** section, ensure the **Mirror Creation** check box is selected (the default setting).

The constraints created between the source and target skeletons on one side are automatically mirrored on the opposite side.

Retarget with Shogun Post

Mirror joint manipulation

When posing a target or source skeleton during retarget setup, you often need to make the same adjustment to each side. To speed up pose adjustments, you can automatically mirror the change you've made to one side to the other side. You can use the same mirroring option when setting up a solve to mirror changes to the pose or bone length. A new button in the manipulator toolbar enables you to do this.

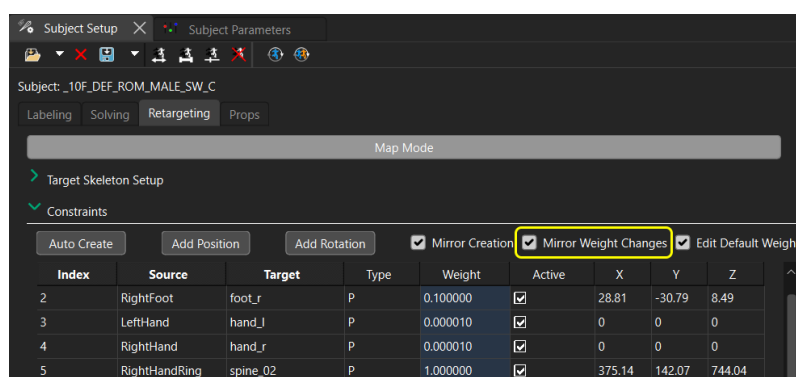
To mirror changes to the pose or bone length of a skeleton:

- In the Manipulator toolbar on the left of the view pane, ensure the Mirror manipulation button  is selected (green). When you create or make changes to one side of the subject, they are automatically copied to the other side.

Retarget with Shogun Post

Mirror weights

When you're adding or editing weights, you can use the mirroring option, **Mirror Weight Changes**, to make the same changes on both sides of the skeleton simultaneously.



To mirror weight constraints:

1. In the **Subject Setup** panel, click the **Retargeting** tab.
2. At the top of the **Constraints** section, ensure the **Mirror Weight Changes** check box is selected (the default setting).

When you adjust the weight values between the source and target skeletons on one side, they are automatically mirrored on the opposite side, so that weight values adjusted between, for example, the left lower arm on the source and target skeletons, are mirrored on the right lower arm of the source and target skeletons.

Retarget with Shogun Post

Test the retarget setup

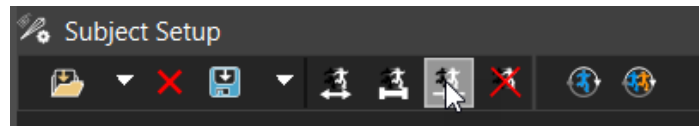
You can test the retarget setup in Shogun Post or in Shogun Live.

To test the retarget setup in Post:

1. When you have finished setup, ensure you have selected **Map Mode** again to turn it off (the Map Mode button is not green).

You are returned to the motion in the file, ideally a ROM.

2. In the toolbar at the top of the **Subject Setup** panel, click the **Retarget skeleton(s) over current frame** button.



3. If the skeleton looks good, select the **Retarget over frame range** button (or select a range and use the **Retarget skeleton(s) over selected range** button).

After retargeting has finished, scrub the time bar to check that the motion and positioning of the retargeted skeleton now matches that of the target skeleton over the whole range (or selected range).

To test the retarget setup in Live:

1. Load the VSR. To do this, in the **Tracking** panel, ensure the subject is selected and click the **Properties** tab.
2. Click the **Retarget** field to display the files found in your *Retargets* folder, and select the retarget from the list.
3. In the **Processing** panel, in the **General** section, ensure that the **Processing Output Level** is set to **Retarget**.

Your FBX is displayed and is driven by the source skeleton. The retarget skeleton is recorded as part of the MCP capture.

If after testing, you find that further changes are needed, return to map mode and modify the setup (see [Modify a retarget \(page 144\)](#)).

Retarget with Shogun Post

Modify a retarget

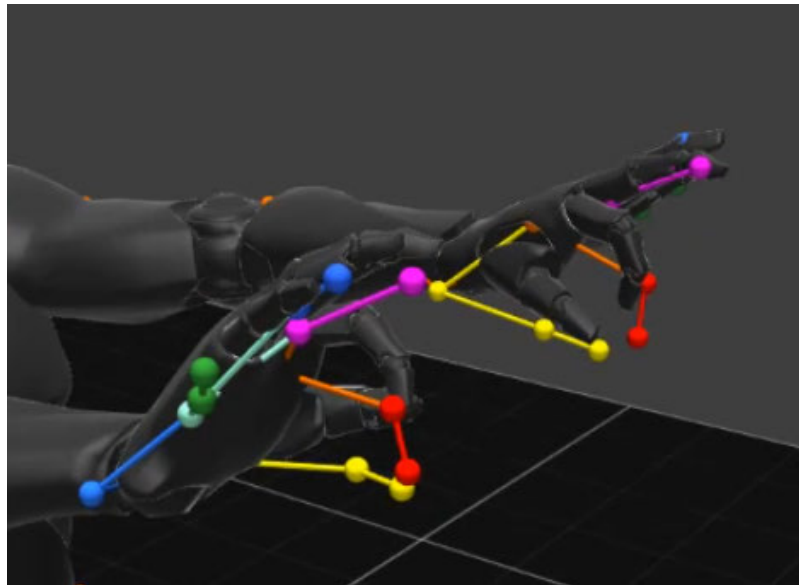
To check and modify your retargeting:

1. In Shogun Post, make sure you have turned off **Map Mode** and then run **Retarget** from the **Processing** menu.
2. Assess the results.

When checking the solve, if you need to reduce arm pull, try adding position targets on the clavicles. If the hands need to match more closely, consider zeroing the hand position offsets.

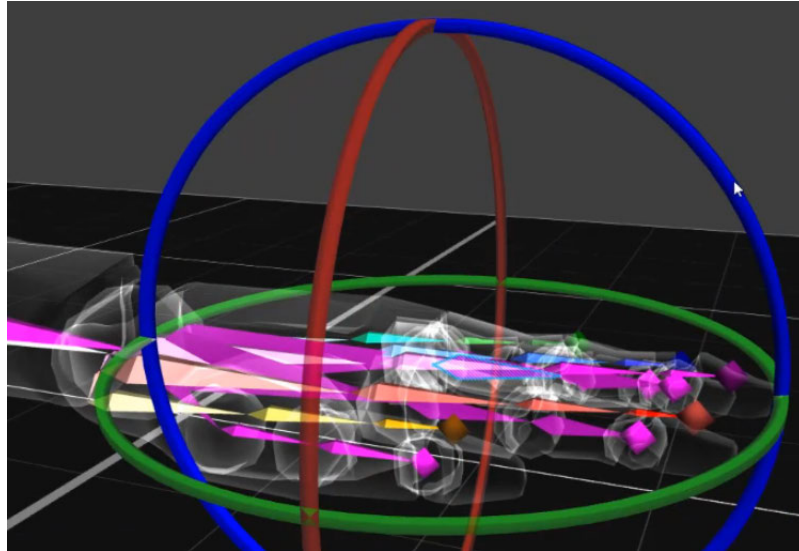
To see any changes, re-run **Retarget** from the **Processing** menu.

3. Pay particular attention to the finger solve. Make sure the hands look correct.



Retarget with Shogun Post

4. If necessary, update the joint placement to get a better fit.



For more information, see [Vicon Shogun 1.3 Post Tutorial - Finger Solve Adjustments](#)¹⁸ on YouTube.

5. When you have finished updating the joint placement, in the **Subject Setup** panel, on the **Retargeting** tab, select **Update Offsets** to use the new joint positions.
6. Re-solve the range and check the updated target.
7. Save the final VDF and export the updated VSR.

¹⁸ <https://youtu.be/IU4BMD1-5IU>

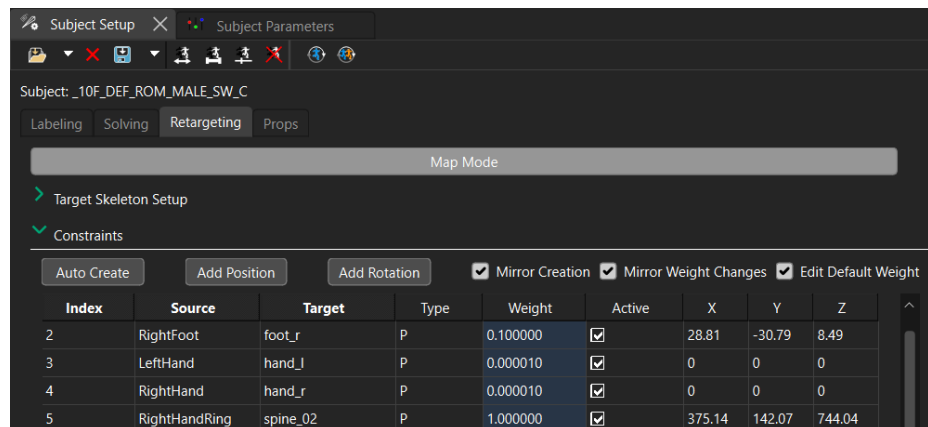
Retarget with Shogun Post

Interactive retargeting

If you want to perform a simple manipulation of a retargeting bone, you can save time and a lot of manual tweaking by using the interactive retargeting feature. This immediately updates the offsets for the constraints that drive the bone that you're adjusting as soon as you release the mouse button.

To manipulate a retargeting bone:

1. Ensure you have loaded the subject, which must have a retargeted skeleton.
2. In the **Subject Setup** panel, click the **Retargeting** tab and expand **Constraints**.



3. In the 3D Scene, select the joint you want to rotate.
4. From the buttons on **Subject Setup** panel toolbar, select **Enable interactive retargeting** . At the top of the 3D Scene view, the text **Interactive Retargeting** is displayed.
5. Using the manipulator, rotate the subject's joint.
6. When you're happy with the new position of the joint, release the mouse button. The offsets for the constraints which drive the bone are updated.

You can follow a similar procedure to manipulate solving bones: see [Interactive solving \(page 113\)](#).

For information on the relevant HSL commands, see the following commands in *HSL Scripting with Vicon Shogun Post*.

- `getInteractiveRetargetCmd`
- `setInteractiveRetargeting`

Retarget with Shogun Post

Export a retarget setup

When you're happy with the setup, or if you'd like to see how it works on other motions, export the file, which contains the retarget skeleton, the retargeting constraints, and the map pose.

For more information, see:

- [Export VSR \(page 148\)](#)
- [Export FBX \(page 148\)](#)
- [Export retarget constraints to HSL \(page 149\)](#)

Retarget with Shogun Post

Export VSR

When you export in VSR format, you can:

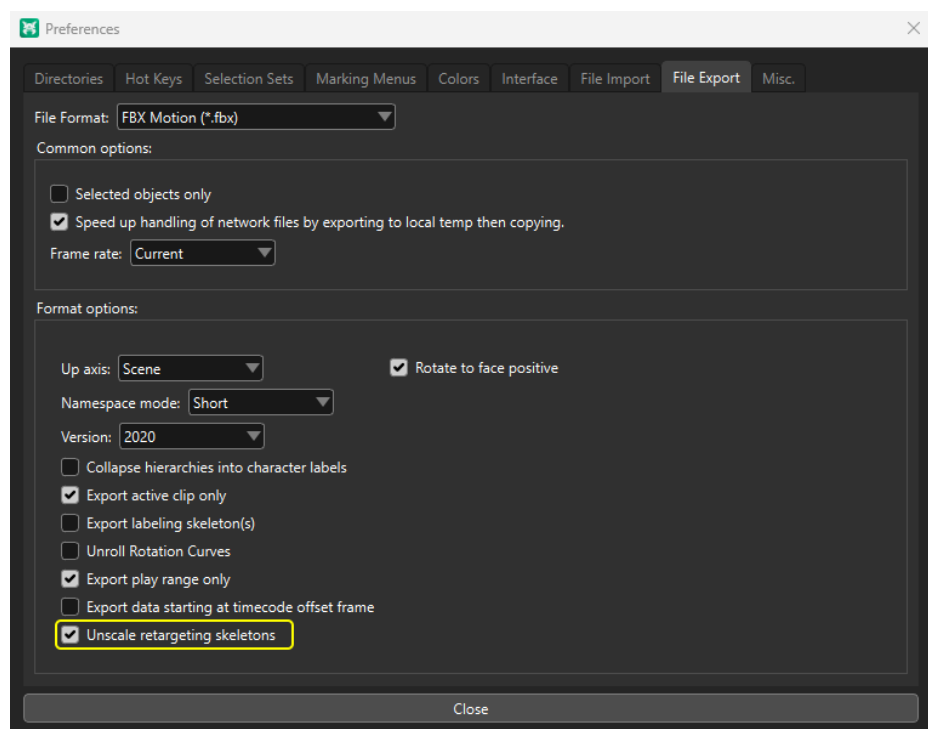
- Load the VSR into other takes that only have a solving skeleton and then run retargeting.
- Load the VSR into Shogun Live to use it in real time.

Export FBX

1. To export in FBX format, select the Retargeting node, then right-click and select **Select Branch**.

This selects the target skeleton, so that you can choose to export **Selected objects only** in the next step.

2. To choose what is exported and whether to reset scaling on export, open the **Preferences** dialog box (on the **General** menu, select **Preferences**), select the **File Export** tab and in the **File Format** box, select **FBX Motion**.
3. If you want to reset scaling on export, ensure that the **Unscale retargeting skeletons** option is selected.



Retarget with Shogun Post

See also [Export from Shogun Post \(page 156\)](#).

You can now test the exported FBX in your CG app.

Export retarget constraints to HSL

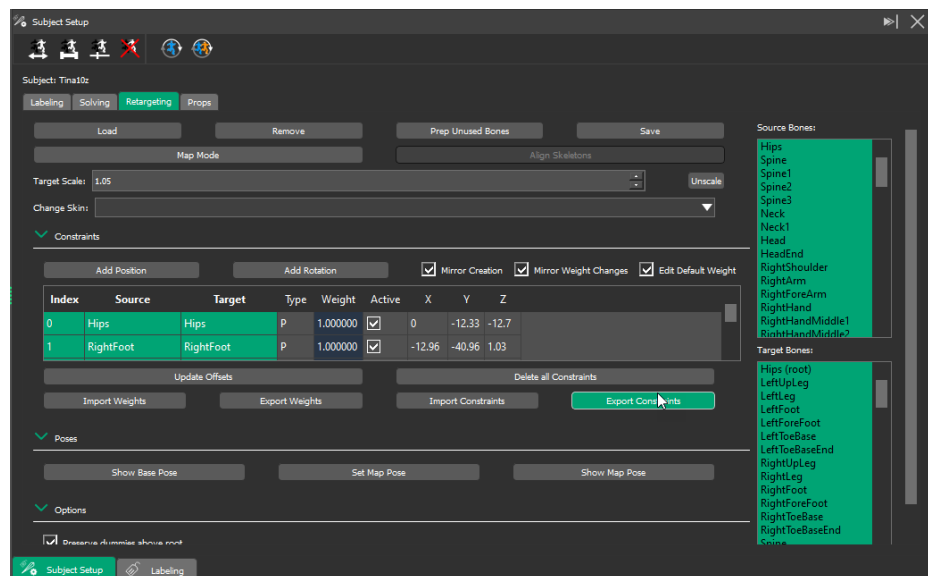
You can export your retargeting setup to an HSL file so that you can re-use it, using the **Export Constraints** feature (Shogun Post 1.6 and later). You do this in a similar way to the current process for exporting solving constraints.

To export retargeting constraints and weights:

1. Load a trial with a fully processed subject (VSK and VSS), which has an associated target skeleton (FBX) with a full set of constraints and weights.
2. In the **Subject Setup** panel, select the **Retargeting** tab and expand the **Constraints** section.

All the configured constraints and weights are listed.

3. To export constraints, click **Export Constraints**, which is on the right, underneath the list of constraints.



4. In the dialog box, enter or browse to a location and name for the constraints HSL file, and then select **Save** to export the constraints.
5. To export weights, select **Export Weights**, which is on the left, underneath the list of constraints.
6. In the dialog box, enter or browse to a location and name for the weights HSL file, and then select **Save** to export the weights.

Retarget with Shogun Post

To import the exported constraints and weights:

1. Load the MCP file in which you want to use the exported constraints. Ensure that the source bone names that affect constraints and weights are the same as those used in the original MCP file.

The subject and its solving skeleton are displayed in the 3D Scene view.

2. Load the associated FBX file. Ensure that the target bone names that affect constraints and weights are the same as those used in the original FBX file.

The FBX target skeleton is displayed in the 3D Scene view.

✔ **Tip:** To set the subject's view filter for retargeting, in the 3D Scene view, select **View Filters** and under **Subjects**, select **Retarget**.

3. To import the constraints from the HSL file that you exported earlier, in the **Constraints** section of the **Retargeting** tab, click **Import Constraints**, which is on the right, underneath the constraint list.
4. In the dialog box, enter or browse to the required location and select the constraints HSL file.
5. To import weights, click **Import Weights**, which is on the left, underneath the constraint list). Note that you must import the constraints first, before you import the weights.
6. In the dialog box, enter or browse to the required location and select the weights HSL file. Ensure the same target root bone is set, and a similar target scale is used as before.

The constraints and weights are listed in the **Constraints** section of the **Retargeting** tab.

7. Run the usual retargeting process.

Retarget with Shogun Post

Automate retargeting to MetaHuman

Use the supplied automated setup scripts to quickly retarget skeletons to Unreal Engine's Metahuman or Mannequin.



Note

The scripts for retargeting with fingers are automatically installed with Shogun Post 1.10 and later. If you used the equivalent scripts with Shogun Post 1.9, you must overwrite them with the equivalent scripts from the current version of Shogun Post.

Requirements for retargeting to MetaHuman or Mannequin

Before you start, ensure you have the following.

- An Unreal Engine FBX target skeleton that meets the following requirements:
 - The target must be either the MetaHuman or Mannequin character. We recommend that you use the Mannequin character model due to its simplicity compared with the Metahuman skeleton.
 - The Mannequin must be from Unreal Engine 5.0.3 or later to ensure it has the same skeleton as the MetaHuman.
 - For the scripts to work correctly, the FBX hierarchy must be in the form *Character\Retargeting\[Locator]root\pelvis*. The script expects *root* and *pelvis* objects to exist. It automatically sets the pelvis as the sixth DoF (degree of freedom) root and removes the DoFs from root. The name of the Locator can be as required.
- A solved standard Shogun VSS (Vicon Solving Setup).
- Your Shogun Post project. You may need to relaunch Shogun Post to ensure the new setup scripts are included.

Retarget with Shogun Post

Use the scripts to retarget to the Unreal Engine 5 MetaHuman

For most projects, to retarget to a UE5 MetaHuman skeleton you need to use only *SetupRetargetToUE5Mannequin.hsl*.

1. Ensure your current scene includes only one subject, which must be a solved standard Shogun VSS. A ROM usually works well.
2. To load the retarget skeleton, open the Subject Setup panel (on the **Subject Setup** ribbon, select **Subject Setup**) and on the **Retargeting** tab, click Load  on the toolbar and import a Unreal Engine Mannequin or MetaHuman FBX.
3. If required, adjust the scale of the retarget skeleton.
4. If the script is installed in the default location (*C:\Program Files\Vicon\ShogunPost1.1#\Scripts\Retargeting*), to run the required script, in the **Script Editor**, type *SetupRetargetToUE5Mannequin*; and click the play icon in the **Script Editor** toolbar.

If the script is not in the default location, add the relevant path to the Preferences (**General > Preferences > Directories > Scripts**) or click the Open button on the toolbar and browse to the location of the script to open and run it.

This automatically creates a default retarget setup.

5. Run a retarget over the play range and confirm the target skeleton's motion looks correct.

Retarget with Shogun Post

Semi-automatic setup and advanced use

For greater control over your project, you can choose to customize the provided scripts (found in `C:\Program Files\Vicon\ShogunPost1.1#\Scripts\Retargeting`) or pick and choose which portions of the setup you want to run.

The following table describes the provided scripts and how they fit together.

Script	Description
<i>AutoRetargetToUE5Mannequin_CreateFingerRotationConstraint.hsl</i>	This script creates a rotation retargeting constraint between two selected bones. It is called by <code>CreateUE5MannequinFingerConstraints</code> to create a rotation constraint for each finger bone.
<i>CreateUE5MannequinFingerConstraints.hsl</i>	This script is called in the main script, but can also be called separately or edited if you want to customize the process. If you want to include finger retargeting, run this script in your custom process to create finger constraints.
<i>DisableMetaHumanExtraBones.hsl</i>	This script is called in the main script, but can also be called separately or edited if you want to customize the process. It turns off DoFs and hides the extra bones in MetaHuman skeletons. Run this script in your custom process if you are using a MetaHuman FBX as the retarget skeleton rather than a Mannequin FBX.
<i>PoseUE5MannequinForMapMode.hsl</i>	This script is called in the main script, but can also be called separately or edited if you want to customize the process. It positions the target skeleton in the same pose as the solve skeleton. It also adjusts the translation of the root bone on the target skeleton so that both skeletons are standing on the floor. Run this script in your custom process before capturing a map pose to prepare the target skeleton for the best possible solve.

Retarget with Shogun Post

Script	Description
<i>PoseUE5MannequinLeftHandFingersForMapMode.hsl</i>	This script is called in the main script, but can also be called separately or edited if you want to customize the process. If you want to include finger retargeting, run this script in your custom process to position the target skeleton's left hand in the same pose as the solve skeleton. Run this script in your custom process before capturing a map pose to prepare the target skeleton for the best possible solve.
<i>PoseUE5MannequinRightHandFingersForMapMode.hsl</i>	This script is called in the main script, but can also be called separately or edited if you want to customize the process. If you want to include finger retargeting, run this script in your custom process to position the target skeleton's right hand in the same pose as the solve skeleton. Run this script in your custom process before capturing a map pose to prepare the target skeleton for the best possible solve.
<i>SetUE5MannequinDOFsSidesParts.hsl</i>	This script is called in the main script, but can also be called separately or edited if you want to customize the process. Run this script in your custom process to set the DoFs for the Mannequin or MetaHuman skeleton. To set the DoFs, go to the Subject Setup panel > Retargeting tab > Load button dropdown > Load Sides, Parts, and DoFs only.
<i>SetUE5MannequinDOFsSidesPartsWithFingers.hsl</i>	This script is called in the main script, but can also be called separately or edited if you want to customize the process. If you want to include finger retargeting, run this script in your custom process to set the DoFs for the Mannequin or MetaHuman skeleton.
<i>SetUE5MannequinGeoTwists.hsl</i>	This script is called in the main script, but can also be called separately or edited if you want to customize the process. Run this script in your custom process to set the geometry twist attribute of the target skeleton bones to a standard value.

Retarget with Shogun Post

Script	Description
<i>SetupRetargetToUE5Mannequin .hsl</i>	This is the main script. It calls all of the other scripts for a fully automated setup process. For most projects, this is the only script you need to run.

Export from Shogun Post

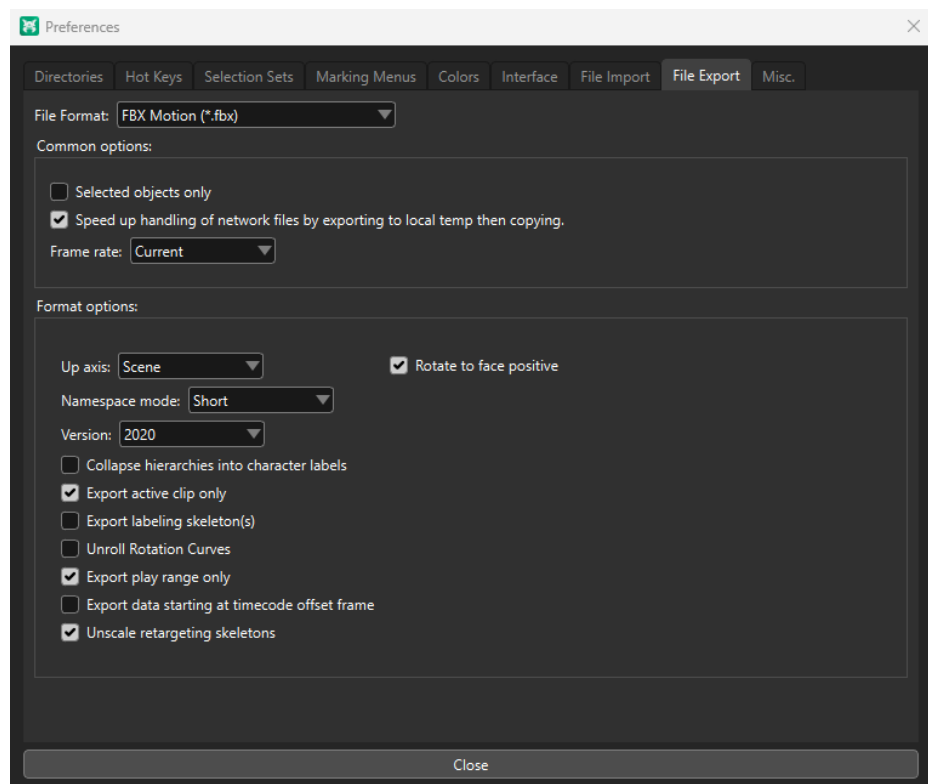
When you are happy with the quality of your data, you can export it from Shogun Post in a format that is appropriate for your chosen animation software.

If you are exporting to FBX, to ensure you choose an appropriate frame rate, first see [Frame rates supported by the FBX file format \(page 158\)](#).

If you are exporting an FBX file for use in Maya® software, see also [Export an FBX file for use in Maya® software \(page 159\)](#).

To export a take:

1. If you want to export only particular aspects of your take (eg bones), select them in your preferred way (eg, in the **Selection** panel, or by using the **Selection Filters** options in the **3D Scene** view, etc).
2. To specify the required options for your export, on the **General** menu, select **Preferences**, and in the **Preferences** dialog box, select the **File Export** tab.



3. Select the required export file format and, if you made a selection for export in Step 1, be sure to select the **Selected objects only** box. Select any other

Export from Shogun Post

options needed, such as the appropriate frame rate (for FBX, see [Frame rates supported by the FBX file format \(page 158\)](#)), and then select **Close**.

4. On the **File** menu, select **Export**.
5. In the **Export** dialog box, if necessary, change the location of the export and enter a name for your exported file.
6. Select the appropriate file type (e.g. FBX).
7. Select **Save** to export your file to the specified location.

For more information, see:

- [Frame rates supported by the FBX file format \(page 158\)](#)
- [Export an FBX file for use in Maya® software \(page 159\)](#)
- [BVH export \(page 161\)](#)

Frame rates supported by the FBX file format

The following are the frame rates supported by the FBX file format and so are the only frame rates that can be exported from Vicon Post to this format.

- 120 fps
- 100 fps
- 60 fps
- 50 fps
- 48 fps
- 30 fps (black and white NTSC)
- 30 fps (use when display in frame is selected in MotionBuilder, equivalent to NTSC drop)
- ~29.97 fps (drop color NTSC)
- ~29.97 fps (color NTSC)
- 25 fps (PAL/SECAM)
- 24 fps (Film/Cinema)
- 1000 milli/s (use for date time)
- ~23.976 fps
- 96 fps
- 72 fps
- ~59.94 fps
- 119.88 fps (requires custom MotionBuilder version)

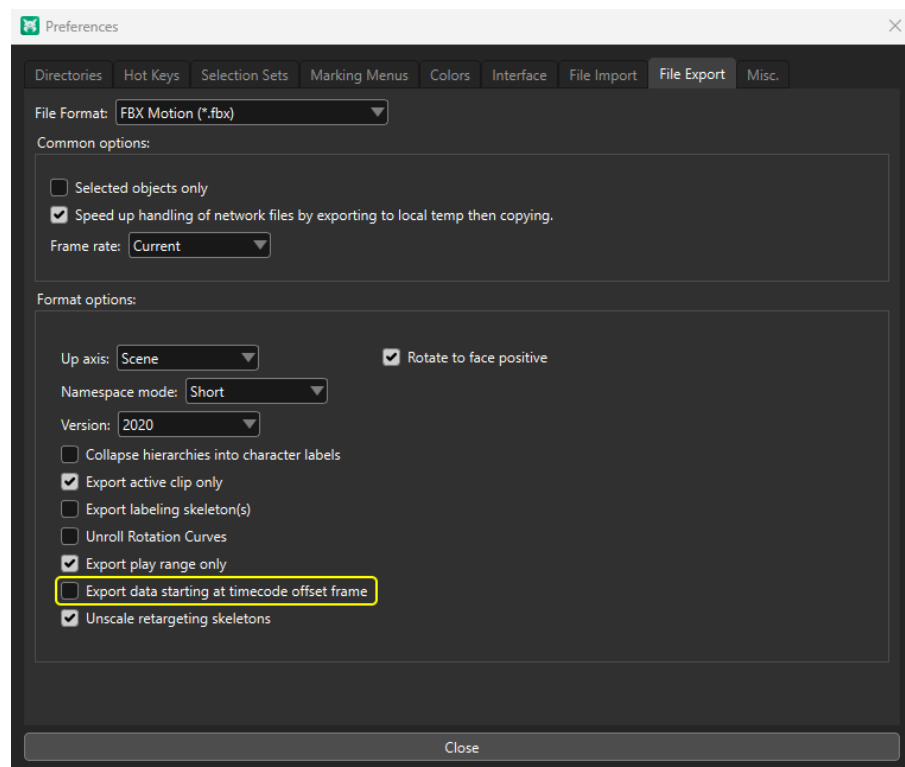
Export from Shogun Post

Export an FBX file for use in Maya® software

When exporting an FBX file for use in Maya® software, note the following points.

If a timecode is used in Post, the FBX export writes out a JSON file to the same location as the exported FBX file.

In the Preferences dialog box, the Export data starting at timecode offset frame option for FBX export also enables you to choose whether the exported data starts at the timecode start or from frame 1.



When the option is selected, the exported data starts at the timecode start.

When the option is cleared (the default), the exported data starts at frame 1. By running a supplied Python script, you can then use the exported JSON file to set the timecode in Maya, provided a timecode was used in Post.

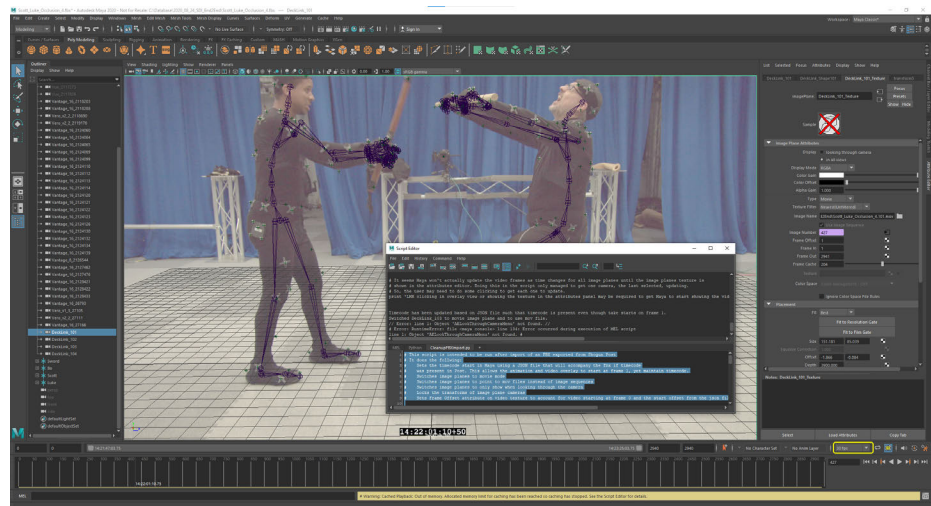
Export from Shogun Post

To use the FBX in Maya:

1. In Maya open (don't import) the FBX file.
2. With the file open, run the *CleanupFBXImport.py* script, by default found in:
`C:\Program Files\Vicon\ShogunPost1.#\Scripts\Maya\`
The script sets the scene in a number of ways (see the following list) including setting the correct timecode and linking the MOV file to the correct camera.

✓ **Tip:** To get Maya to show the video as time changes, you may need to click in Overlay view or select the camera in the Outliner and in the Attributes panel, select the texture tab (see following image).

3. Set the playback speed to the same speed as the video capture rate (eg, 30 fps, as shown in the following image).



In total, the script does the following:

- Sets the timecode start in Maya using the JSON file that is saved with the FBX if timecode was present in Post.

This allows the animation and video overlay to start at frame 1, yet maintains the timecode.

- Switches image planes to movie mode.
- Switches image planes to point to MOV files instead of image sequences.
- Switches image planes to only show when looking through the camera.
- Locks the transforms of image plane cameras.
- Sets the Frame Offset attribute on video texture to account for video starting at frame 0 and the start offset from the JSON file.

Export from Shogun Post

BVH export

With Shogun Post 1.6 and later, you can export takes in BVH format.

If a retargeting skeleton is present, it is exported. If no retargeting skeleton exists, the solving skeleton is exported, if present. As the BVH format permits only one skeleton per file, before you export the scene, ensure that it contains only a single subject/skeleton.

If errors are displayed when you import the resulting BVH, ensure all bones have at least one active DoF before export. (It doesn't matter if they have no keys to go with the DoF(s).)