

Position FX Engine

Plugin Guide

v 1.5.0



GIAFFO DESIGNS

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Plugin Overview

The Position FX Engine Plugin is a GrandMA2 plugin that builds a dynamic position effect page. This page allows the user to quickly setup and change position effects on the fly during show operation. The plugin is designed to allow for greater variety of easy-to-access position effects during a punted lighting show.

System Requirements

- o GrandMA2 version 3.2.2.16 or later.

DISCLAIMER:

GIAFFODESIGNS AND ITS PRODUCTS ARE IN NO WAY AFFILIATED WITH OR REPRESENTATIVE OF MA LIGHTING OR ANY OF ITS SUBSIDIARIES.

BY USING THIS PLUGIN YOU AGREE THAT GIAFFODESIGNS IS NOT TO BE HELD LIABLE FOR DAMAGES RESULTING FROM ANY PLUGIN MALFUNCTIONS.

ALWAYS TEST PLUGINS BEFORE USING THEM IN A LIVE SETTING.

Plugin Use

1-1: Importing The Plugin

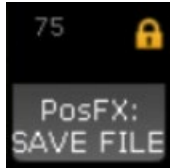
The Position FX Engine is packaged as a multi-part plugin. The plugin script cannot be copied and pasted into the Plugins Pool the way that individual plugins can. The MA2 built-in Import plugin function must be used. *(For more detailed help with this, refer to the [GiaffoDesigns Multi-Export Plugin](#).)*

To import the Position FX Engine:

- Place all 3 of the .lua files and the .xml file (4 files total) into your plugins directory
 - C:\ProgramData\MA Lighting Technologies\grandma\gma2_v_[VERSION]\plugins\ for the internal folder
 - X:\gma2\plugins\ for thumb drives
- Find 3 consecutive empty slots in the Plugins Pool.
 - *Note: if there are already plugins stored to any of these five consecutive pool items, they will be overwritten. This cannot be undone or “Oops-ed.”*
- Right click the first of these pool items and use the **Import** button to import to import the Position FX plugin package on the drive you added the files to.
- Import is complete. 3 plugins should have been imported into the Plugins Pool.
 - If only an empty plugin was imported, please double-check that you included all of the .lua files in the \plugins\ directory, and not just the .xml

1-2: Functions of Each Plugin

The 3 plugins that were imported into the Plugins Pool each have a unique function for the Position FX Engine:



PosFX: SAVE FILE

This plugin contains all of the settings and data needed for the Position FX Engine to run. It is referenced by name in the PosFX Engine Plugin and is therefore locked to avoid accidentally altering the file. This plugin should not be unlocked or altered in any way.



PosFX Engine

This plugin contains all of the code that runs the PosFX plugin after installation. It includes a handful of user-configurable options (discussed later) and has the ability to change installation-related settings after the initial install, if necessary.



PosFX Installer/Uninstaller

This plugin handles installation and uninstallation of the PosFX system in your showfile.

2-1: Installer Configuration

Before running the installer, you will want to Edit it to check that the user-config variables work with your showfile's needs, and make any edits where needed.

NOTE: for any storage needs (where the plugin builds macros, layouts, etc.) the plugin will detect conflicts and move to the next available location to ensure existing objects are not overwritten

```

----- INSTALLATION SETTINGS -----
config.PRESET_START = 201

config.VIEW_SLOT = 1

config.MACRO_START = 1
config.LAYOUT_SLOT = 1
config.SEQ_START = 1

config.PAGE_NAME = "PosFX"

config.EFFECT_START = 1001
config.EFFECT_NAME = "PosFX"
config.EFFECT_NAME_EXT = "_fx"
config.EFFECT_EXEC = '100.1'

config.BACKGROUND_COLOR = '000032'

config.PATCH_START = {univ=200, address=1}
config.REMOTE_FIX_ID = 50001

```

----INSTALLATION SETTINGS----

These settings will affect the names, locations, and appearance of generated content.

Variable	Description	Example	Result
PRESET_START	Starting location for 8 created position presets used by plugin	201	Slots 201 through 208 in the Position Preset Pool will be used to store presets for position effects
VIEW_SLOT	Location in Views Pool where generated PosFX view will be stored	1	Generated PosFX view will be stored to View 1, or the first available view after slot 1
MACRO_START	Starting location in Macros Pool where generated PosFX macros will be stored	1	Generated macros will be stored starting with Macro 1, or the first available macro after slot 1 in the pool
LAYOUT_SLOT	Slot in Layout Pool where generated PosFX layout will be stored	1	Generated Position FX view will be stored to Layout 1, or the first available layout after slot 1
SEQ_START	Starting location in Sequence Pool where 4 generated PosFX command-sequences will be stored	1	Generated sequences will be stored to Sequence 1 thru 4

PAGE_NAME	Name assigned to generated PosFX page, layout, and associated macros	"PosFX"	The PosFX page, layout, and macros will be labelled with "PosFX"
EFFECT_START	Starting location in Effects Pool where 3 position effects will be stored	1001	Created effects will be stored to Effect 1001 thru 1003
EFFECT_NAME	Base name assigned to generated effects	"PosFX"	Generated effects will be labelled: "PosFX Full" "PosFX Pan" "PosFX Tilt"
EFFECT_NAME_EXT	Name of an extension applied to generated effects (to be able to target the effects by name in your own macros, if needed)	"_fx"	Generated effects will include suffix "_fx", (for example, the main effect will be labelled "PosFX Full_fx")
EFFECT_EXEC	Default location that 3 effect executors are assigned to	100.1	Effect executors will be assigned to executors 1, 2, and 3 on page 100
BACKGROUND_COLOR	Background color of generated FX layout, written as hex values (rrggbb, 0-f)	'000032'	The background of the created Position FX layout will be dark blue
PATCH_START	Patch for DMX Remotes; 4 DMX channels will be used	{univ=200, address=1}	DMX Remotes will be patched at addresses 1 through 4 of universe 200
REMOTE_FIX_ID	Starting Fixture ID for 2 DMX-remote fixtures (using 2 channels each)	50001	The DMX remotes will be given fixture IDs of 50001 through 50004

```

----- POSITION ENGINE SETTINGS -----
userconfig.groups = {0, 2, 3, 4, 5, 8}
userconfig.phase = {
  {val=0, name='SYNC'},
  {val=90, name=''},
  {val=180, name=''},
  {val=360, name='1x'},
  {val=720, name='2x'},
  {val=1080, name='3x'},
}

```

----POSITION ENGINE SETTINGS----

These settings will affect the names, locations, and appearance of generated content.

Variable	Description	Example	Result
groups	list of Groups options that will be created for the PosFX layout	{0, 2, 3, 4, 5}	The generated Position FX layout will include macros to change the effect to trigger Groups of 0, 2, 3, 4, and 5
phase	Phase options that will be created for PosFX layout; blank value for the "name" field will apply value as name	{val=0, name='SYNC'}, {val=90, name=''}, {val=180, name=''},	The generated Position FX layout will include the following Phase presets: Phase of 0..0, labelled "SYNC" Phase of 0..90, labelled "90" Phase of 0..180, labelled "180"

2-2: Running The Installer

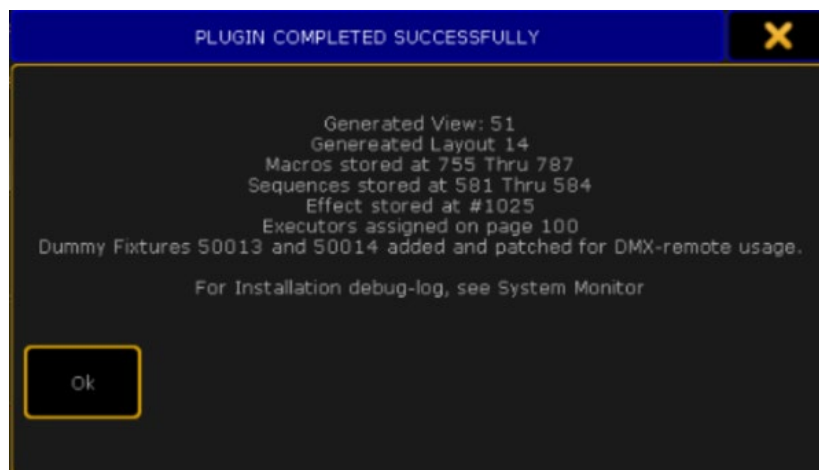
The PosFX Installer will ask for some data input, which should be pulled up in windows or written down before running it.

- 1) **Groups:** Group numbers to be dynamically included/excluded while using the plugin
 - the group *numbers* will be referenced by the plugin when it is running, not their contents at the time of installation. This means if you change the contents of the group later, it will change which fixtures get added to/removed from the effect during execution. As such, you will probably want to keep these groups separate from other groups you are using for programming
 - Fixture order does not matter in these groups
- 2) **Selection-Order Groups:** Group numbers to be referenced for their selection orders when the plugin is running
 - The engine will use these groups to determine the selection order of any included fixture groups from the previous step. See [3-2: Using the Position FX Engine](#) for more information
- 3) **Executor Page:** Page number to store Action Button executors to
- 4) **Effect Executor:** Executor number to store the 3 generated effect handles to
 - in Page.Exec format (101.1 for Page 101, Executor 1)

Once you have this information collected, run the “(Un)Installer” plugin, choose Install, and follow the prompts.

There will be a short pause as the plugin generates all content.

Once the installer has finished running, a confirmation window will appear. This window will display the locations of all generated content relating to the Position FX Engine.

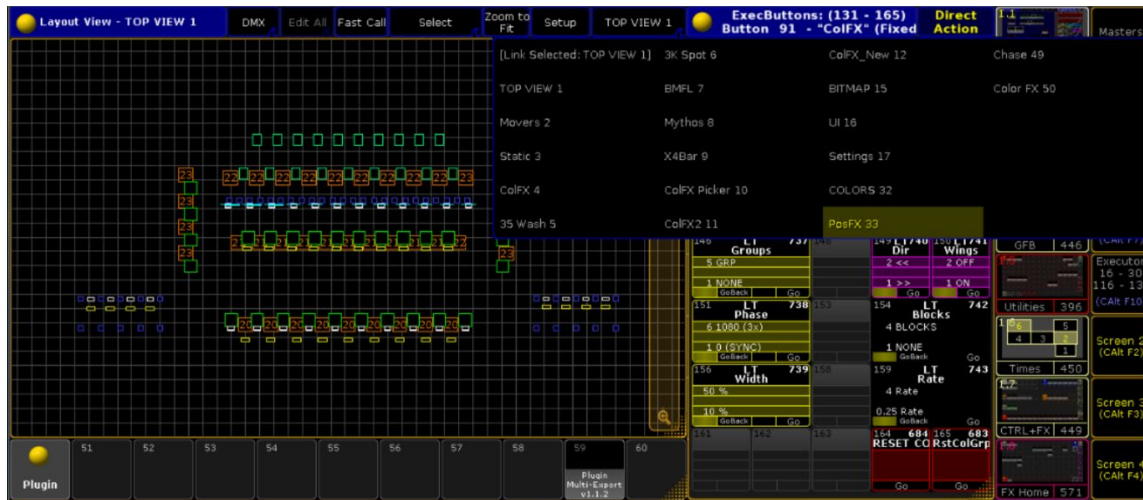


Please note the “Generated View” number. You can call this view by number or assign it to a ViewButton after installation.

2-3: Post-Installation Tweaks

Updating the Generated View

The Position FX Engine will include a layout window and all associated executors. The Position FX layout will not yet be open in the Layout View window on the page. It must be selected with the dropdown menu in the top-right corner of the Layout View window. This screen can now be stored as an update to the PosFX View that the installer generated or stored as a new view in the sidebar.



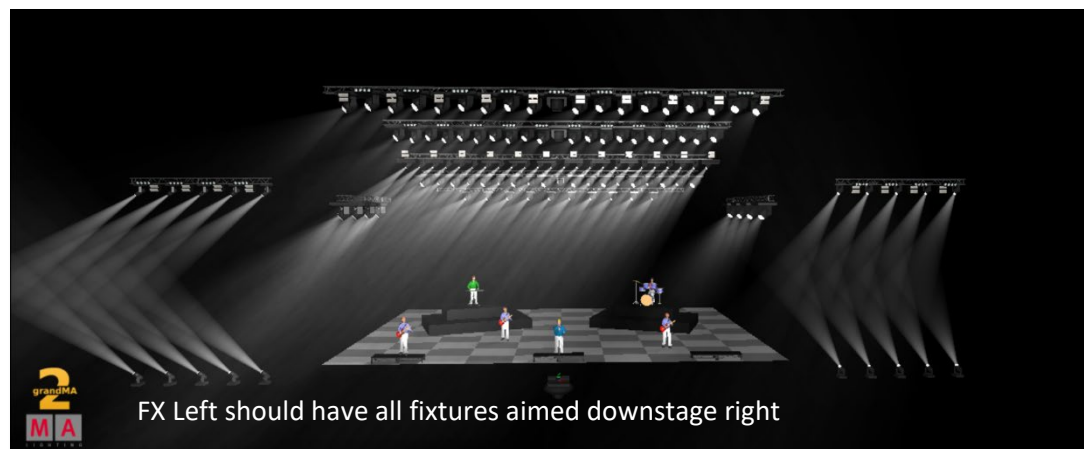
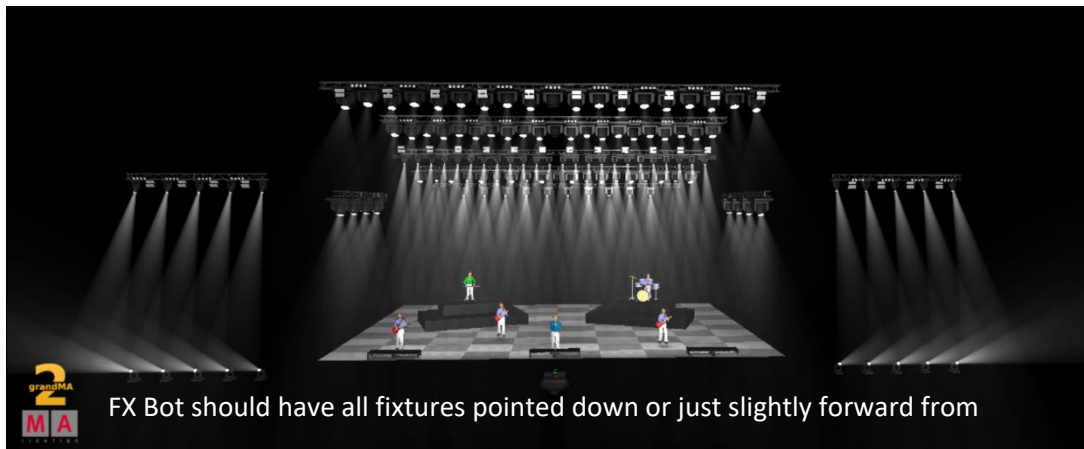
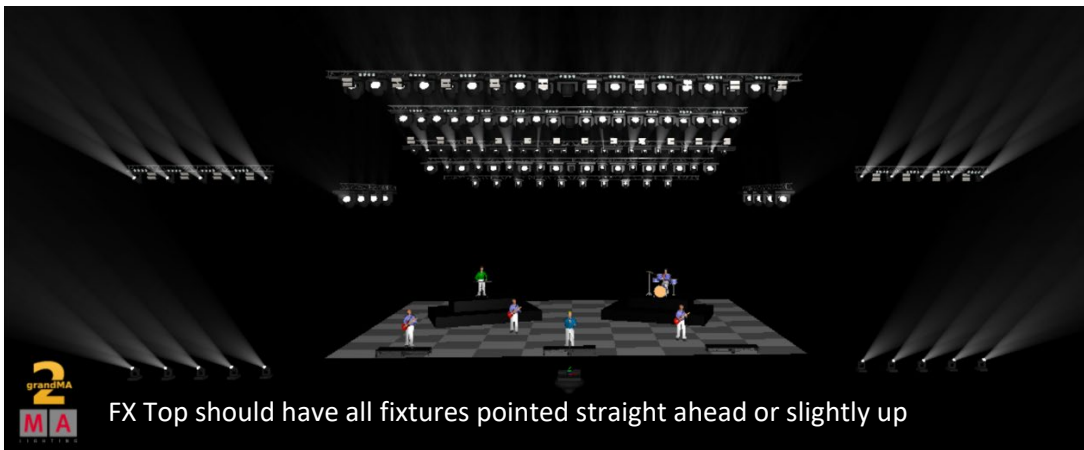
In the bottom-right corner of the view, there is a macro called "RstCoGrp" stored to executor 165 that must be pressed to reset the groups.

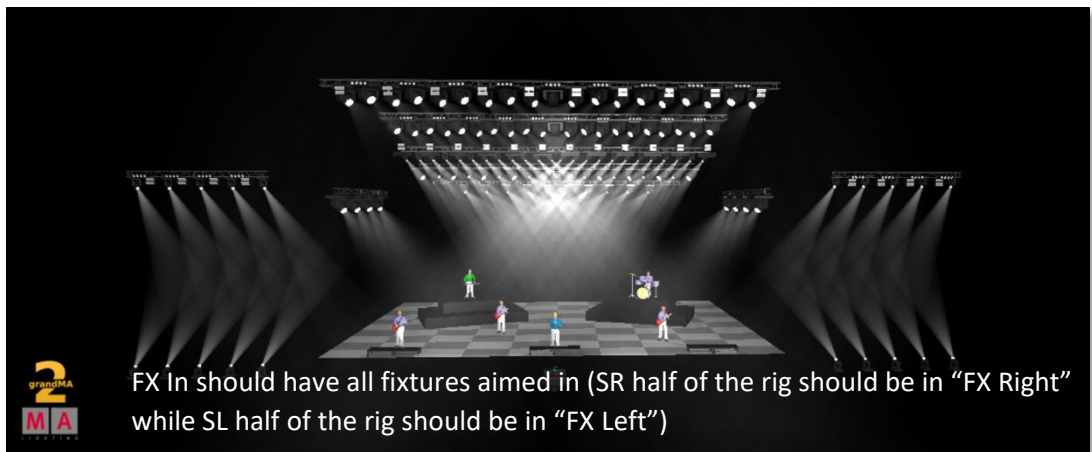
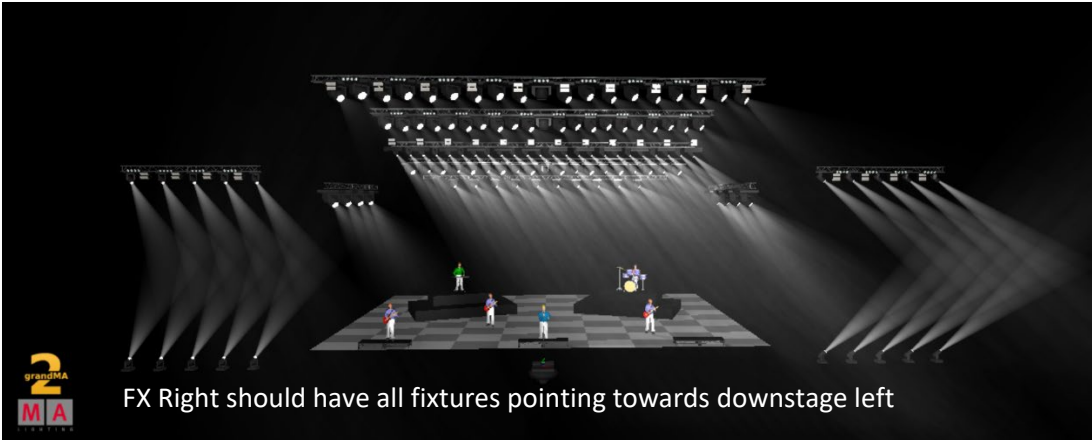
Updating the Generated Presets

Open the position presets pool and find the newly created position presets – all of which have names starting with "FX" – and update the presets to be accurate to the current rig, using the descriptions below. FX Out #2 and FX In #2 should not be adjusted. They are used by the plugin when making changes to the running position effect.

PosFX Read High, PosFX Read Low

Preset	Purpose
FX Bot	Tilt reference for effect Low value
FX Top	Tilt reference for effect High value
FX Left	Pan reference for house-left (stage-right) for asymmetrical effects
FX Right	Pan reference for house-right (stage-left) for asymmetrical effects
FX In	MUST BE UPDATED. Pan reference for symmetrical effects
FX Out	MUST BE UPDATED. Pan reference for symmetrical effects
FX Read High	DO NOT EDIT. For use by plugin engine (left+right/in+out are copied here)
FX Read Low	DO NOT EDIT. For use by plugin engine (left+right/in+out are copied here)





3-1: Engine Configuration

```

-- base groups used by engine when using fx-groups >
-- using 0 for any of these will default to using the
-- these can be overridden using the "Selection Follow
baseGroup.INTERLEAVE_ASYM = 0      -- group number t
baseGroup.INTERLEAVE_SYM  = 21     -- group number t
baseGroup.BLOCKS          = 17     -- group number t

-- Rates used by FAST and SLOW flash-buttons
rate.NORMAL    = 0.5      -- default rate applied t
rate.MULT_HIGH = 1.5     -- number that rate.NORMA
rate.MULT_LOW  = 0.25    -- number that rate.NORMA

```

The PosFX Engine plugin also has configuration settings to be edited for personalized in the following categories:

- baseGroup: default groups used for selection orders
 - a value of 0 for any of these will use the default order as defined in your patch
 - **IT IS IMPORTANT TO BUILD AND UPDATE THESE**
- rate: variables for altering the rate of the generated effect

Variable	Description	Example	Result
baseGroup.INTERLEAVE_ASYM	Group used for selection order when applying an interleave (Groups) to asymmetrical effects (default of 0 is recommended)	0	Fixture ID order is used for asymmetrical interleave effects
baseGroup.INTERLEAVE_SYM	Group used for selection order when applying an interleave (Groups) to symmetrical effects (see next page for instructions)	2	Group 2's selection order is used for symmetrical interleave effects
baseGroup.BLOCKS	Group used for selection order when using the Blocks group mode. A left-to-right lass of the full rig is recommended.	3	Group 2's selection order is used for block-group effects
rate.NORMAL	Default Rate value applied to position FX	0.5	Rate applied to position effects will default to 0.5
rate.MULT_HIGH	Value to multiply the "RATE_NORMAL" value when using the "FAST" flash button.	1.5	Rate when flashing button will be 50% faster than the normal effect rate
rate.MULT_LOW	Value to multiply the "RATE_NORMAL" value when using the "SLOW" flash button.	0.25	Rate when flashing SLOW button will be ¼ of the normal effect rate

To build a symmetrical interleave group (for the setting baseGroup.INTERLEAVE_SYM):

- Build a “patch order” group (Fixture 1 Thru, then store as a group)
- Use the free [Symmetrical Group Builder](#) plugin to build a symmetrical version of it.
 - Reference the Symmetrical Group Builder video for instructions on how to use that plugin

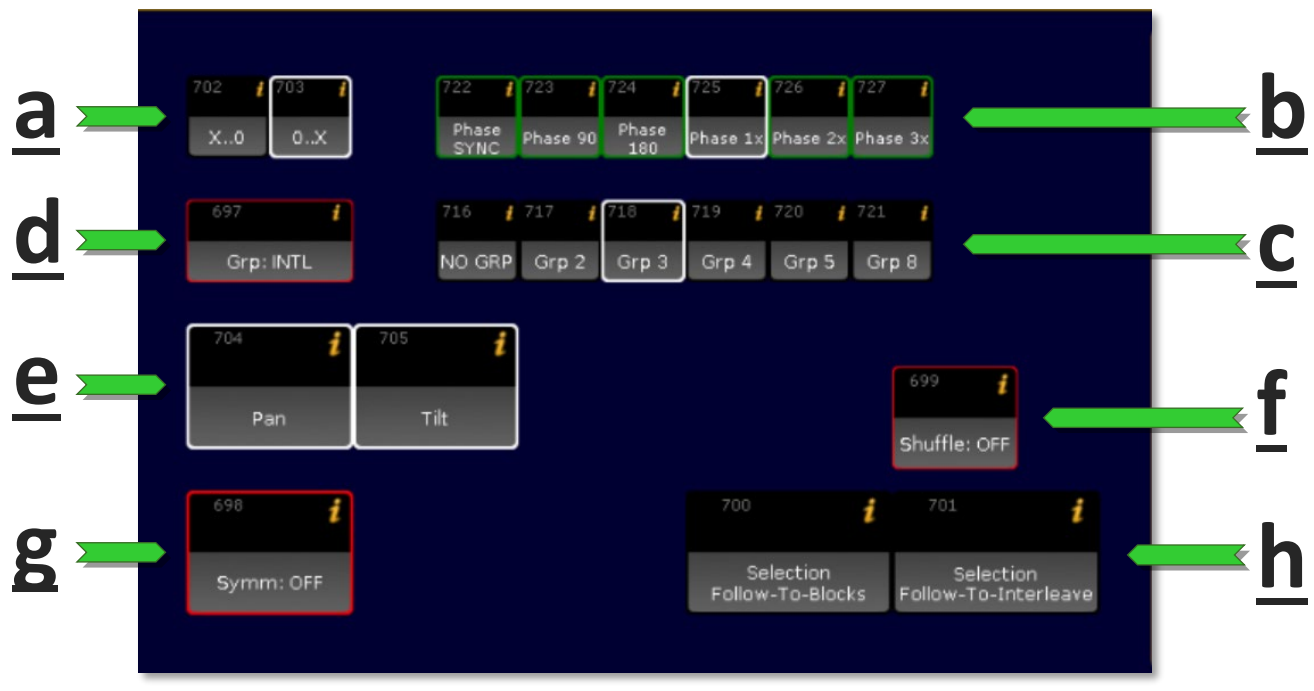
Once these steps are complete, the Position FX Engine is ready for user!

3-2: Effect Handles

The plugin creates three separate effects that are all modified by the PosFX Engine: one with the full effect, one with only pan, and one with only tilt. Each of these effects is assigned to a separate executor during installation, but may be deleted from the executor page without causing any issues. This is done to allow the user independent handles for pan and tilt control if desired while only needing to interact with one interface to edit their parameters.

The effects are assigned to SpeedMaster 1 by default. Make sure to edit this to fit your needs.

3-3: Using The Layout Interface



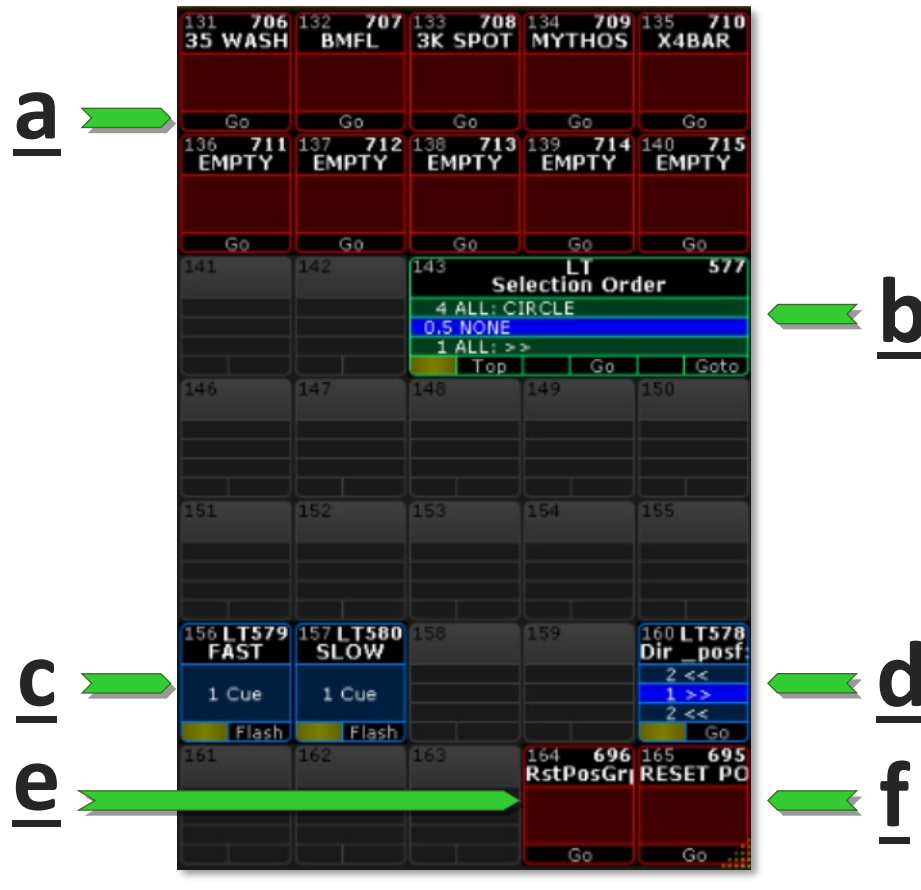
On the left half of the created view is the Position FX Layout. There are many options for buttons that can be used to adjust the position effects:

- a. X...0 and 0...X change the direction in which your effect phase is applied (essentially reversing your selection order) where X represents the selected phase option (b). Selecting one of these will de-select the other. With X..0 selected, the effect will run the effect according to current selection order. With 0..X selected, the effect will run with selection order reversed. Note that this is not the same as reversing direction in the effect. Reversing effect direction will reverse the motion on each individual fixture. Reversing phase will keep individual fixtures making their circle in the same direction, but the path that the effect “moves through the rig” with will be reversed.

- b. Phase options: These are the phase options that were included during plugin installation. Unless customized, there will be 6 options, including 0 (“SYNC”- all fixtures at the same phase), 0..90, 0..180, 0..360 (“1x”), 0..720 (“2x”), and 0..1080(“3x”).
- c. Groups: The groups section of the layout will affect the number of groups or steps the effect is split into
- d. Group mode: this button toggles between interleaved groups and blocks.
The “interleave” will distribute phase in the normal way. For example, interleave groups of 3 will mean that every 3rd fixture in the selection order will do the same thing.
The “blocks” option will split the rig as a whole into blocks from one side of the stage to the other. For example, with groups of 3 set, the left third of your rig will all be at a phase of 0, the middle third of your rig will be at a phase of 120, and the right third of your rig will be in a phase of 240.
Both of these rely on group numbers set in the baseGroup settings in the PosFX Engine plugin.
- e. Pan/Tilt disable: By clicking the pan or tilt buttons in the layout, the pan or tilt can be quickly disabled (stomped) on the PosFX Full executor, to toggle between the two with just the PosFX Full effect running. Only one of these can be disabled at a time – for example, if pan is disabled and you try to disable tilt, tilt will be disabled and pan will be automatically enabled at the same time.
- f. Shuffle: will shuffle selection order
- g. Symmetry: During plugin installation, several position presets were created. These are used as the low and high values for the position effect. Symm: ON will reference the FX In and FX Out presets. This will create a mirrored effect on stage. Symm: OFF will instead reference the FX Left and FX Right position presets for high and low values instead.
Selectiong symmetry will rely on group numbers set in the baseGroup settings in the PosFX Engine plugin.
- h. Selection Follow-To-Blocks, Selection Follow-To-Interleave:
These buttons allow the user to disable the functionality that forces the use of the three baseGroup configuration settings in the PosFX Engine plugin.
Enabling “Follow To Blocks” will keep the current Selection Order group from the Action Buttons during the use of Block groups.
Enabling “Follow To Interleave” will do the same when using Interleave groups.

I have never once used these two buttons in a live setting (they are actually deleted out of my punt page), but I wanted to provide the option if wanted by other people.

3-4: Using The Action Buttons



The right half of the PosFX view is taken up by action buttons. These executors and macros all change a different parameter of the generated position effect.

- The top two rows in this section are the “Group Inclusion” macros that toggle on and off individual fixture groups for being used in the effect. To include a group of fixtures in the effect, click the macro with that group’s label. It will turn blue to indicate that the group is now part of the running effect. To remove that group from the effect, click the macro again and it will turn red to show that the fixture group is no longer included in the effect.
- The **Selection Order** sequence will include a cue for each of the selection order groups that were input during installation. It also includes a cue 0.5 “**NONE**” to be used when none of the other selection orders are desired.
- There are two flash buttons, labelled “FAST” and “SLOW” that can be left on this page or moved to a physical button. These flash buttons speed up or slow down the running effect by a factor set in the PosFX Engine’s “rate” settings (see [3-1: Engine Configuration](#)). This can be used as during hits or other specific moments in a song to add a little flair to the show. (I enjoy combining the Slow button with a sync strobe)

- d) The **Dir** sequence will reverse the direction of the effect
- e) The **RstPosGrp** macro will disable all of the groups in the effect, and will also reset the effect's fixture selection in case any extra fixtures were accidentally stored in the effect.
- f) The **RESET POSFX** macro will reset all of the effect-parameter executors in the Position FX layout to default values, but will not disable any fixture groups that are currently included in the effect.

3-5: Updating for a New Rig

To update the plugin installation for a new rig, you will need to update the following components:

- The contents of your “inclusion” Groups (which add/remove fixtures from the active effect)
- The contents of your selection-order groups
 - Don’t forget the groups referenced by your configuration settings in the Engine plugin!
- The 6 position presets (up, down, left, right, in, out)

4-1: Uninstalling the Position FX Engine

If the PosFX plugin needs to be removed from your showfile, run the “(Un)Installer” plugin. The menu’s second option will be “Uninstall PosFX Engine”. Select this option and follow the confirmation prompts, and the plugin’s installed components will be deleted.

The uninstaller will prompt you separately about deleting the generated preset (in case they are used elsewhere in your showfile), so you have the opportunity to uninstall the plugin without losing those presets.

Uninstallation of the Position FX Engine cannot be undone or “Oops-ed.” Be sure to save a backup of the show file before uninstalling.

FAQ

Q: Why isn't the Position FX Layout appearing on my PosFX View?

A: The plugin cannot automatically save the PosFX Layout as the default visible layout in the PosFX View. To fix this, after installation be sure to use the dropdown in the layout window of the PosFX View to select the PosFX Layout, then re-store the view.

Q: Why does the effect stop panning when I enable symmetry?

A: Make sure you have updated the FX In and FX Out position presets. Once these are updated, you will need to toggle the Symmetry option off and on again to see the changes be applied.

Q: Why isn't the effect running after I update effect parameters?

A: Make sure the fader that the effect is assigned to is pushed up. The effect is built to be linked to an executor rather than automatically running when parameters are active, to allow the user to set up the desired effect parameters before pushing the effect fader up to have it running on stage.

For additional help and resources, please visit GiaffoDesigns.com.

Contact at GiaffoDesigns.com/contact

Position FX Engine tutorial videos can be found [here](#).