**Guide for Understanding and Building MAME Files V8.00**

*This guide is for those who want to create or edit their own MAME files, or at the very least better understand how they work. Ultimately if you just want to use DOFLinx with MAME you don’t really need to use this guide.*

A core part of MAME files for DOFLinx is getting the live score so that both score changes and score milestones can be used as triggers for actions.

MAME includes a plugin to save and restore high scores. This is done by identifying the memory region that holds the high score, and normally the high score table as well. The plugin then saves this area of memory to a data file on exit and then restores it on start up again. The plugin does not attempt to interpret the information, it merely saves to raw RAM contents and restores it later.

DOFLinx builds on this logic by reading, not the high score memory location, but the current score memory location. In addition to this DOFLinx needs to be able to interpret the data into a score.

# MAME File Load Order

MAME files are very similar to FX3 files if you are familiar with them. If not don’t worry. A series of files are loaded to build the setup for the game being played. The Load order is;

1. ALL\_PRE.MAME
2. Game file
   1. GAMENAME.MAME, or;
   2. If the GAMENAME.MAME does not exist DEFAULT.MAME
3. ALL\_POST.MAME

In ALL\_PRE you have things that apply to all games. For example loading the ROM you want from DOF (generally for addressable LED effects), and for common outputs [COMMANDS] such as the pause key being turned on and off.

ALL\_POST loads after the game so you can globally modify things in many game files if you wanted to. You can add an overriding [COMMAND] for something that resets the parameter like BUTTONS\_ON= , or you can remove commands in the [CLEAR COMMANDS] section, just name the trigger such as led0.

The MAME file with the game’s (ROM) name contains the individual stuff for that game.

A GAMENAME.MAME file can contain a single line being USES=NAME where NAME is another MAME file. This allows games that have multiple ROMs with the same detail to only have one MAME file with all the details in it. You can not “chain” MAME files with the USES command, so a MAME file with a USES= must refence a GAMENAME.MAME with details in it.

For example, I have built an invaders.MAME for Space Invaders. There is also a ROM called invaders4 that has the same memory locations, so the invaders4.MAME file has a single line USES=invaders

# MAME file structure and sections

Here is my MAME file for Galaga

##################

#

# MAME configuration for galaga

# DOFLinx force feedback configuration file v1

#

##################

[STARTUP]

BUTTONS\_ON=BUT\_CN

BUTTONS\_ON\_COLOUR=BUT\_EX,DODGER\_BLUE

COLOUR\_PALETTE=White,Red,Blue,Green

[SHUTDOWN]

BUTTONS\_ON=

BUTTONS\_ON\_COLOUR=

[COMMANDS]

led0|ON|FF\_Button BUT\_P1,BA\_ON,0,0|FF\_DOF E51,-1

led0|OFF|FF\_Button BUT\_P1,BA\_OFF,0,0

led1|ON|FF\_Button BUT\_P2,BA\_ON,0,0|FF\_DOF E51,-1

led1|OFF|FF\_Button BUT\_P2,BA\_OFF,0,0

[SCORE]

S1=:maincpu|main|program|83f8|8

M1=,,24,1,NUMBER,REVERSE

S2=:maincpu|main|program|83e3|8

M2=,,24,1,NUMBER,REVERSE

DELAY=2000

# A single ship stationary or in flight

SC=50:160:FF\_Flasher DV\_FLCN,FL\_ON,1,100,100,Random|FF\_DOF E223,-1

# Boss Ship in flight

SC=400:400:FF\_Flasher DV\_FLOL,FL\_ON,1,250,100,Orange|FF\_Flasher DV\_FLOR,FL\_ON,1,250,100,Orange|FF\_DOF E514,-1|FF\_DOF E518,-1

# Boss ship in flight 1 wingman

SC=800:800:FF\_Flasher DV\_FLOL,FL\_ON,1,350,100,Cyan|FF\_Flasher DV\_FLOR,FL\_ON,1,350,100,Cyan|FF\_DOF E510,-1|FF\_DOF E512,-1

# Boss ship in flight 2 wingman

SC=1600:1600:FF\_Flasher DV\_FLCN,FL\_ON,1,350,100,Green|FF\_Flasher DV\_FLIL,FL\_ON,1,350,100,Green|FF\_Flasher DV\_FLIR,FL\_ON,1,350,100,Green|FF\_DOF E695,-1|FF\_DOF E701,-1|FF\_DOF E697,-1|FF\_DOF E703,-1|FF\_DOF E699,-1

# A challenge stage not perfect

SC=2000:9500:FF\_Colour Blue,RGB\_TT,1500|FF\_Flasher DV\_FLOL,FL\_TT,1,250,100,Blue|FF\_Flasher DV\_FLIL,FL\_TT,1,250,100,Blue|FF\_Flasher DV\_FLCN,FL\_TT,1,250,100,Blue|FF\_Flasher DV\_FLIR,FL\_TT,1,250,100,Blue|FF\_Flasher DV\_FLOR,FL\_TT,1,250,100,Blue|FF\_DOF E620,-1|FF\_DOF E607,-1|FF\_DOF E619,-1

# Challenge Stage Perfect

SC=10000:10000:FF\_Dev DV\_KN,-1|FF\_Colour White,RGB\_TT,1500|FF\_Flasher DV\_FLOL,FL\_TT,1,250,100,White|FF\_Flasher DV\_FLIL,FL\_TT,1,250,100,White|FF\_Flasher DV\_FLCN,FL\_TT,1,250,100,White|FF\_Flasher DV\_FLIR,FL\_TT,1,250,100,White|FF\_Flasher DV\_FLOR,FL\_TT,1,250,100,White|FF\_DOF E148,-1|FF\_DOF E162,-1|FF\_DOF E170,-1

# First New Ship

ST=30000:FF\_Dev DV\_MC,-1|FF\_Flasher DV\_FLOL,FL\_FL,6,750,100,Random|FF\_Flasher DV\_FLOR,FL\_FL,6,750,100,Random|FF\_Flasher DV\_FLIL,FL\_FL,6,750,100,Random|FF\_Flasher DV\_FLIR,FL\_FL,6,750,100,Random|FF\_Flasher DV\_FLCN,FL\_FL,6,750,100,Random|FF\_DOF E115,-1

# Subsequent New Ships

ST=80000:FF\_Dev DV\_MC,-1|FF\_Flasher DV\_FLOL,FL\_FL,6,750,100,Random|FF\_Flasher DV\_FLOR,FL\_FL,6,750,100,Random|FF\_Flasher DV\_FLIL,FL\_FL,6,750,100,Random|FF\_Flasher DV\_FLIR,FL\_FL,6,750,100,Random|FF\_Flasher DV\_FLCN,FL\_FL,6,750,100,Random|FF\_DOF E112,-1

Let’s pull it apart a piece at a time. I’ve coloured different parts to help with the explanation.

The Red section is the header, what is this why is it here. It is just a bunch of comments. Any line throughout the MAME file that begins with # is a comment line.

The Orange [STARTUP] section contains parameters for DOFLinx that are run as this file is loaded. This allows for specific setups for this game. In the sample file it turns on the Coin button LED, sets the Exit button RGB LED to dodger\_blue and limits the colour palette for this game which impacts the “RANDOM” option for colours.

The Blue [SHUTDOWN] section also contains parameters for DOFLinx. However these are run when the game changes or MAME closes. This allows the resetting of various items, usually those set in the [STARTUP] section.

The Green [COMMANDS] section is for triggers unique to this game. The trigger name, in the example above “led0” and “led1” comes from the MAME ROM and represents triggers built into the original game. In this section you can set and valid action. In the example the “ledX” triggers are turning on and off the Player 1 and Player 2 buttons just as the original game did. According to Google about 1600 MAME games have triggers.

DOFLinx can be set to save all triggers found by setting you MAME\_TRIGGER\_OUTPUT\_PATH= . Check the guide for details on this.

Finally the Purple {SCORE] section. This section has no parallel in FX2 / FX3 files. This is where you can setup to read scores from the MAME game in real time. Let’s walk through the line types.

## Sx=cpu|region type|region|address|length

Sx, where x is 1 to 4 being the player number

cpu, is the cpu to target, you will see this in the debugger memory window when you find the score memory address. It will mostly be “:maincpu”

region type, is the region type of RAM to read. If you are reading “program” ram this is set to “main”, if you are reading a shared memory region then set it to “shared”

region, the memory region with the score, again, you will see this in the debugger memory window.

Address, the address in hexadecimal to start reading at

Length, the length in hexadecimal to read from the above starting address

## Mx=region start,region end,filler string,multiplier,data type,order

Mx, where x is 1 to 4 being the player number

The “M” or score mask line is critical so that DOFLinx knows how to decrypt the score. The score is held in different games in different ways.

You can optionally grab a region of RAM with start and end fixed byte. If you set the region start and region end then after the memory is read the first step will be to trim out the bytes in between the markers. So if you read 8 bytes of RAM and got 0C 00 02 04 01 33 4A 4A with start region and end region fixed bytes set to 0C and 33 respectively, then the score section of that will be cut out leaving 00 02 04 01

In many score areas there are “filler” bytes because the score isn’t yet that large. So a score of 10 might take 2 bytes whereas a score of 10,000 will take 5 bytes in same machine. So in RAM you might read the score location of 6 bytes being 4A 01 00 00 00 00 for a score 10,000 and 4A 4A 4A 4A 01 00 for a score of 10. If you set the filler to 4A then this will simply be removed leaving the score.

Some games don’t store the actual score they store the score divided by 10, 100 or even 1000. This is because when you score in multiples of say 100, the last two digits are irrelevant as they are always “00” so a score of 1,000 might be stored as 10. By having a multiplier you can get the right score. In this example it would be 100.

Scores are not stored in MAME games in the same way, so the “data type” instruction helps DOFLinx decrypt the score. The current valid options are:

NUMBER – each bye represents a number, ie 01 03 01 00 05 is 13,105. You will note that each byte must be in the range of 0 to 9. Galaga is like this.

STRING – The bytes make a simple string of the score, ie 05 34 10 is a score of 53,410. Space Invaders is like this, but only two bytes long.

HEX – A straight hexadecimal conversion, ie a string of A7 71 is a score of 42,865

If you find a machine that doesn’t do either of these then let me know and I’ll add a new one along with the appropriate decryption.

The “Data order” again is required for score decryption. The valid options are currently:

FORWARD – The bytes are in forward order, ie a NUMERIC score of 130 is represented as 01 03 00

REVERSE – The bytes are in reverse order, ie a NUMBERIC score of 130 is represented as 00 03 01. Both Galaga and Space Invaders are like this

REVERSE4 – This is for 16 bit words that are in reverse order. Ie a STRING score of 11200 is represented as 1200 0001 0000. RType is like this.

While areas of memory have been saved and restored in MAME for save / restoring high scores, the decrypting of scores is something new. The order of events is;

1. Read the number of bytes specified by legth starting from the address supplied
2. If a start and end region byte are specified then trim the result
3. Remove any filler bytes if that is specified
4. Change the order as per the parameter
5. Determine the score based on the specified storage mechanism ie NUMERIC, STRING

## DELAY=xxxxx

Where xxxx is a number of milliseconds. This is the time from MAME starting until when DOFLinx starts to poll the memory address. It needs to be long enough for MAME to load and setup the game, some load quickly others no so much given their in game initialisation. If this is too short its possible that you can cause MAME to crash (due to my poor MAME programming for the memory polling no error catching properly), too long of course and you will miss scores when you star the game. Realistically though it takes you a few moments to press a coin button and select player 1 or 2, so the range is pretty forgiving.

## SC=From:To:Actions

This drive Actions when a “Score Change” (SC) is >=From and <=To. So SC=50:100:Actions will trigger the Actions when the score changes in one reading (default being every 250Ms) from 50 to 100. Something like a single ship being hit. Actions are the same as all other actions in DOFLinx, read the guide for these.

Note the “:” separator that then changes to a “|” separator between the string of actions

## ST=Total:Actions

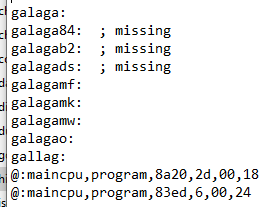
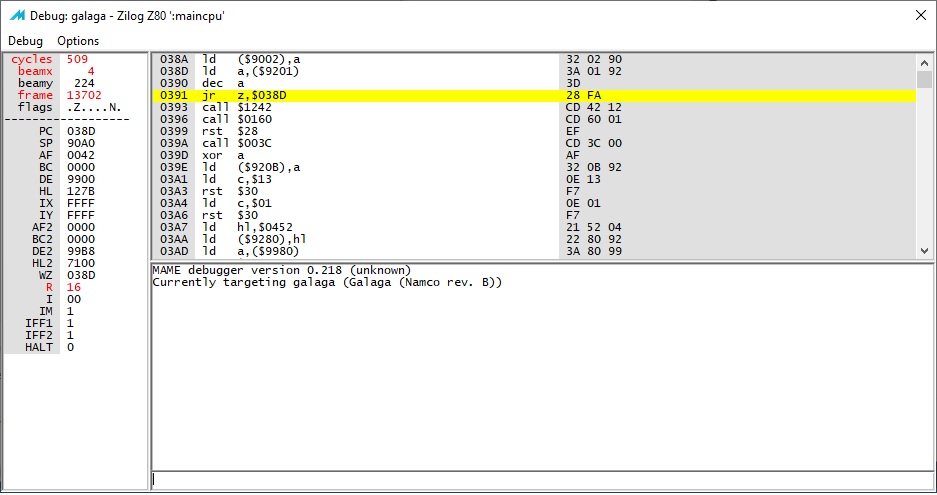
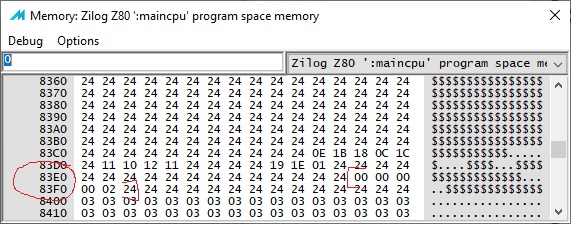
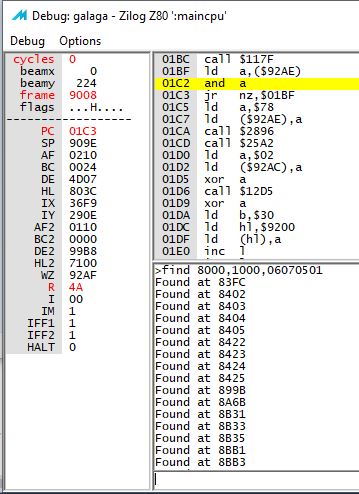
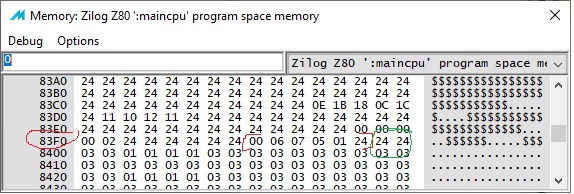
This drives Actions when a “Score Total” (ST) reaches the set amount. So ST=10000:Actions will trigger the Actions when the score equals of passes 10,000. Any SC amount can only be triggered once by each player during a single game.

## SE=From Score:Every Score:Iterations:Actions

This allows you to add a repeating Score Total using “Score Every” (SE). If you wanted set Actions to occur every 200,000 starting from 300,000 onwards for 10 times, so at 300k, 500k, 700k, 900k, etc, you would have

SE=200000:300000:10:Action 1|Action 2|Action 3

# Finding RAM address

1. Work out the game (ROM) you are going to work on. Make sure its not already done, no point doing it twice!
2. Have a look in \MAME\plugins\hiscore\hiscore.dat
3. Find the ROM name you are playing, ie galaga  
     
     
   The above means that the RAM addresses work for all of the ROM names above the memory lines. These addresses are not the ones we want as they are the high score, but using these gives us a good starting point.  
   The address(es) in hiscore.dat are, to state the obvious, for high scores. We can however use them to help locate the live score address.  
   The line with the small block (length 0x6) is likely the high score at the top of the screen, whereas the line with the larger block (length 0x2D) is likely the high score table.
4. Start up the game you are working on in a windowed mode with the debugger. Ie Mame64 galaga -window -debug  
     
   
5. Look up or dump out the address range for the single high score. In this case 0x83ED for 6 bytes.  
     
   You can see the six bytes are 00 00 00 00 02 24  
   From the line in the high score file, hiscore.dat, you can see that the starting byte is 00 and the ending byte 24, this makes the high score bytes 00 00 00 00 02.  
   So in this case we can see that the on screen high score of 20,000 is displayed backwards.
6. Now that we have deduced the storage format lets play the game and get a score. I play a little the simply pause the game.  
     
   You can see my score is 15760, when reversed it will be 00 06 07 05 01 in RAM
7. Now search the current score, probably wise not to break the high score and make them the same otherwise you might get the wrong address.  
     
   You will a number of possible addresses. It may take a couple of searches, even restarts of the game to be sure. I lucked in and started with the address closed to the high score address being 0x83FC
8. If we examine the RAM at this address we can see the score being 06 07 05 01 with 24 at the end. The 24 byte is a “filler”, it’s what is there when the score isn’t that big.  
     
   The extra couple of “blank” bytes (0x24) will allow for score expansion, if you play on you will see this.  
   So from this you can deduce that 0x83F8 (starting byte) for a length of 8 bytes is the current score area of RAM.
9. Now we need to combine this information to make the required memory string for reading player 1 score in galaga. The format of the lines required in the \*.MAME file is  
   Sx=cpu|memory type|memory name|start address|length  
   Mx=start byte marker|end byte marker|multiplier|Data type|order  
   x=player number  
   So it becomes  
   S1=:maincpu|main|program|83f8|6  
   M1=,,24,1,NUMBER,REVERSE
10. Put that into the appropriately named MAME file, galaga.MAME in the [SCORE] section and give it whirl.
11. Start up DOFLinx with DEBUG=1
12. Start up MAME in window mode
13. Play the MAME game and see if the score comes through. If you’ve got it horribly wrong MAME will crash, don’t worry, go again!
14. Now do the same again in two player mode, or when you get the hang of just do the whole thing in 2 player mode.

DOFLinx ROM commands for MX Effects

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| WORDS, Generic - Back MX |  |  |  |  |  |
| BEGIN | PF Back Effects MX | E51 | "BEGIN" letters flash | MULTI |  |
| START | PF Back Effects MX | E52 | "START" letters flash | MULTI |  |
| CREDIT | PF Back Effects MX | E53 | "CREDIT" letters flash | MULTI |  |
| COIN | PF Back Effects MX | E54 | "COIN" letters flash | MULTI |  |
| STARS - Back MX |  |  |  |  |  |
| Stars in Space - Back MX - White | PF Back Effects MX | E110 | Stars | White |  |
| Stars in Space - Back MX - Red | PF Back Effects MX | E111 | Stars | Red |  |
| Stars in Space - Back MX - Green | PF Back Effects MX | E112 | Stars | Green |  |
| Stars in Space - Back MX - Blue | PF Back Effects MX | E113 | Stars | Blue |  |
| Stars in Space - Back MX - Yellow | PF Back Effects MX | E114 | Stars | Yellow |  |
| Stars in Space - Back MX - Cyan | PF Back Effects MX | E115 | Stars | Cyan |  |
| Stars in Space - Back MX - Magenta | PF Back Effects MX | E116 | Stars | Magenta |  |
| Stars in Space - Back MX - Orange\_red | PF Back Effects MX | E117 | Stars | Orange\_red |  |
| STARS - Left MX |  |  |  |  |  |
| Stars in Space - Left MX | PF Left Effects MX | E118 | Stars | White |  |
| Stars in Space - Left MX | PF Left Effects MX | E119 | Stars | Red |  |
| Stars in Space - Left MX | PF Left Effects MX | E120 | Stars | Green |  |
| Stars in Space - Left MX | PF Left Effects MX | E121 | Stars | Blue |  |
| Stars in Space - Left MX | PF Left Effects MX | E122 | Stars | Yellow |  |
| Stars in Space - Left MX | PF Left Effects MX | E123 | Stars | Cyan |  |
| Stars in Space - Left MX | PF Left Effects MX | E124 | Stars | Magenta |  |
| Stars in Space - Left MX | PF Left Effects MX | E125 | Stars | Orange\_red |  |
| STARS - Right MX |  |  |  |  |  |
| Stars in Space - Right MX | PF Right Effects MX | E118 | Stars | White |  |
| Stars in Space - Right MX | PF Right Effects MX | E119 | Stars | Red |  |
| Stars in Space - Right MX | PF Right Effects MX | E120 | Stars | Green |  |
| Stars in Space - Right MX | PF Right Effects MX | E121 | Stars | Blue |  |
| Stars in Space - Right MX | PF Right Effects MX | E122 | Stars | Yellow |  |
| Stars in Space - Right MX | PF Right Effects MX | E123 | Stars | Cyan |  |
| Stars in Space - Right MX | PF Right Effects MX | E124 | Stars | Magenta |  |
| Stars in Space - Right MX | PF Right Effects MX | E125 | Stars | Orange\_red |  |
| Electrical Arcing Effects |  |  |  |  |  |
| Electrical Effects - Back MX - Red | PF Back Effects MX | E135 | Electrical Arcing Effects | Red |  |
| Electrical Effects - Left MX - Red | PF Left Effects MX | E135 | Electrical Arcing Effects | Red |  |
| Electrical Effects - Right MX - Red | PF Right Effects MX | E135 | Electrical Arcing Effects | Red |  |
| Electrical Effects - Back MX - Green | PF Back Effects MX | E136 | Electrical Arcing Effects | Green |  |
| Electrical Effects - Left MX - Green | PF Left Effects MX | E136 | Electrical Arcing Effects | Green |  |
| Electrical Effects - Right MX - Green | PF Right Effects MX | E136 | Electrical Arcing Effects | Green |  |
| Electrical Effects - Back MX - Blue | PF Back Effects MX | E137 | Electrical Arcing Effects | Blue |  |
| Electrical Effects - Left MX - Blue | PF Left Effects MX | E137 | Electrical Arcing Effects | Blue |  |
| Electrical Effects - Right MX - Blue | PF Right Effects MX | E137 | Electrical Arcing Effects | Blue |  |
| Electrical Effects - Back MX - Yellow | PF Back Effects MX | E138 | Electrical Arcing Effects | Yellow |  |
| Electrical Effects - Left MX - Yellow | PF Left Effects MX | E138 | Electrical Arcing Effects | Yellow |  |
| Electrical Effects - Right MX - Yellow | PF Right Effects MX | E138 | Electrical Arcing Effects | Yellow |  |
| Electrical Effects - Back MX - Cyan | PF Back Effects MX | E139 | Electrical Arcing Effects | Cyan |  |
| Electrical Effects - Left MX - Cyan | PF Left Effects MX | E139 | Electrical Arcing Effects | Cyan |  |
| Electrical Effects - Right MX - Cyan | PF Right Effects MX | E139 | Electrical Arcing Effects | Cyan |  |
| Electrical Effects - Back MX - Magenta | PF Back Effects MX | E140 | Electrical Arcing Effects | Magenta |  |
| Electrical Effects - Left MX - Magenta | PF Left Effects MX | E140 | Electrical Arcing Effects | Magenta |  |
| Electrical Effects - Right MX - Magenta | PF Right Effects MX | E140 | Electrical Arcing Effects | Magenta |  |
| Electrical Effects - Back MX - Orange | PF Back Effects MX | E141 | Electrical Arcing Effects | Orange\_red |  |
| Electrical Effects - Left MX - Orange | PF Left Effects MX | E141 | Electrical Arcing Effects | Orange\_red |  |
| Electrical Effects - Right MX - Orange | PF Right Effects MX | E141 | Electrical Arcing Effects | Orange\_red |  |
| Machine Gun - Sides |  |  |  |  |  |
| Machine Gun - Left - Bottom to Top | PF Left Effects MX | E182 | Streak bottom to top on Left MX | Yellow |  |
| Machine Gun - Right - Bottom to Top | PF Right Effects MX | E183 | Streak bottom to top on Left MX | Yellow |  |
| Machine Gun - Left - Top to Bottom | PF Left Effects MX | E184 | Streak bottom to top on Left MX | Yellow |  |
| Machine Gun - Right - Top to Bottom | PF Right Effects MX | E185 | Streak bottom to top on Left MX | Yellow |  |
| Lazer Blast - Sides - Bottom to Top |  |  |  |  |  |
| Left Laser Blast | PF Left Effects MX | E186 | Streak bottom to top on Left MX | White |  |
| Right Laser Blast | PF Right Effects MX | E187 | Streak bottom to top on Right MX | White |  |
| Left Laser Blast | PF Left Effects MX | E188 | Streak bottom to top on Left MX | Red |  |
| Right Laser Blast | PF Right Effects MX | E189 | Streak bottom to top on Right MX | Red |  |
| Left Laser Blast | PF Left Effects MX | E190 | Streak bottom to top on Left MX | Green |  |
| Right Laser Blast | PF Right Effects MX | E191 | Streak bottom to top on Right MX | Green |  |
| Left Laser Blast | PF Left Effects MX | E192 | Streak bottom to top on Left MX | Blue |  |
| Right Laser Blast | PF Right Effects MX | E193 | Streak bottom to top on Right MX | Blue |  |
| Left Laser Blast | PF Left Effects MX | E194 | Streak bottom to top on Left MX | Yellow |  |
| Right Laser Blast | PF Right Effects MX | E195 | Streak bottom to top on Right MX | Yellow |  |
| Left Laser Blast | PF Left Effects MX | E196 | Streak bottom to top on Left MX | Cyan |  |
| Right Laser Blast | PF Right Effects MX | E197 | Streak bottom to top on Right MX | Cyan |  |
| Left Laser Blast | PF Left Effects MX | E198 | Streak bottom to top on Left MX | Magenta |  |
| Right Laser Blast | PF Right Effects MX | E199 | Streak bottom to top on Right MX | Magenta |  |
| Left Laser Blast | PF Left Effects MX | E200 | Streak bottom to top on Left MX | Orange\_red |  |
| Right Laser Blast | PF Right Effects MX | E201 | Streak bottom to top on Right MX | Orange\_red |  |
| Lazer Blast - Sides - Top to Bottom |  |  |  |  |  |
| Left Laser Blast | PF Left Effects MX | E202 | Streak bottom to top on Left MX | White |  |
| Right Laser Blast | PF Right Effects MX | E203 | Streak bottom to top on Right MX | White |  |
| Left Laser Blast | PF Left Effects MX | E204 | Streak bottom to top on Left MX | Red |  |
| Right Laser Blast | PF Right Effects MX | E205 | Streak bottom to top on Right MX | Red |  |
| Left Laser Blast | PF Left Effects MX | E206 | Streak bottom to top on Left MX | Green |  |
| Right Laser Blast | PF Right Effects MX | E207 | Streak bottom to top on Right MX | Green |  |
| Left Laser Blast | PF Left Effects MX | E208 | Streak bottom to top on Left MX | Blue |  |
| Right Laser Blast | PF Right Effects MX | E209 | Streak bottom to top on Right MX | Blue |  |
| Left Laser Blast | PF Left Effects MX | E210 | Streak bottom to top on Left MX | Yellow |  |
| Right Laser Blast | PF Right Effects MX | E211 | Streak bottom to top on Right MX | Yellow |  |
| Left Laser Blast | PF Left Effects MX | E212 | Streak bottom to top on Left MX | Cyan |  |
| Right Laser Blast | PF Right Effects MX | E213 | Streak bottom to top on Right MX | Cyan |  |
| Left Laser Blast | PF Left Effects MX | E214 | Streak bottom to top on Left MX | Magenta |  |
| Right Laser Blast | PF Right Effects MX | E215 | Streak bottom to top on Right MX | Magenta |  |
| Left Laser Blast | PF Left Effects MX | E216 | Streak bottom to top on Left MX | Orange\_red |  |
| Right Laser Blast | PF Right Effects MX | E217 | Streak bottom to top on Right MX | Orange\_red |  |
| Bumper Blast |  |  |  |  |  |
| Bumper Blast | PF Back Effects MX | E218 | Fast horizontal Dashes - Top & Bottom - Center to Edge | White |  |
| Bumper Blast | PF Back Effects MX | E219 | Fast horizontal Dashes - Top & Bottom - Center to Edge | Red |  |
| Bumper Blast | PF Back Effects MX | E220 | Fast horizontal Dashes - Top & Bottom - Center to Edge | Green |  |
| Bumper Blast | PF Back Effects MX | E221 | Fast horizontal Dashes - Top & Bottom - Center to Edge | Blue |  |
| Bumper Blast | PF Back Effects MX | E222 | Fast horizontal Dashes - Top & Bottom - Center to Edge | Yellow |  |
| Bumper Blast | PF Back Effects MX | E223 | Fast horizontal Dashes - Top & Bottom - Center to Edge | Cyan |  |
| Bumper Blast | PF Back Effects MX | E224 | Fast horizontal Dashes - Top & Bottom - Center to Edge | Magenta |  |
| Bumper Blast | PF Back Effects MX | E225 | Fast horizontal Dashes - Top & Bottom - Center to Edge | Orange\_red |  |
| Strobes |  |  |  |  |  |
| Strobes | PF Back Strobe MX | E226 | Strobes on Back MX using User's Strobe "Shape" | White |  |
| Beacon |  |  |  |  |  |
| Beacon | PF Back Effects MX | E227 | Beacon - Two Dashes - Top & Bottom | White |  |
| Beacon | PF Back Effects MX | E228 | Beacon - Two Dashes - Top & Bottom | Red |  |
| Beacon | PF Back Effects MX | E229 | Beacon - Two Dashes - Top & Bottom | Green |  |
| Beacon | PF Back Effects MX | E230 | Beacon - Two Dashes - Top & Bottom | Blue |  |
| Beacon | PF Back Effects MX | E231 | Beacon - Two Dashes - Top & Bottom | Yellow |  |
| Beacon | PF Back Effects MX | E232 | Beacon - Two Dashes - Top & Bottom | Cyan |  |
| Beacon | PF Back Effects MX | E233 | Beacon - Two Dashes - Top & Bottom | Magenta |  |
| Beacon | PF Back Effects MX | E234 | Beacon - Two Dashes - Top & Bottom | Orange\_red |  |
| Circle Pulse - Animated Shape |  |  |  |  |  |
| Circle Pulse - Outer Left | PF Back Effects MX | E444 | Circle Pulse | White |  |
| Circle Pulse - Inner Left | PF Back Effects MX | E445 | Circle Pulse | White |  |
| Circle Pulse - Center | PF Back Effects MX | E446 | Circle Pulse | White |  |
| Circle Pulse - Inner Right | PF Back Effects MX | E447 | Circle Pulse | White |  |
| Circle Pulse - Outer Right | PF Back Effects MX | E448 | Circle Pulse | White |  |
| Circle Pulse - Outer Left | PF Back Effects MX | E449 | Circle Pulse | Red |  |
| Circle Pulse - Inner Left | PF Back Effects MX | E450 | Circle Pulse | Red |  |
| Circle Pulse - Center | PF Back Effects MX | E451 | Circle Pulse | Red |  |
| Circle Pulse - Inner Right | PF Back Effects MX | E452 | Circle Pulse | Red |  |
| Circle Pulse - Outer Right | PF Back Effects MX | E453 | Circle Pulse | Red |  |
| Circle Pulse - Outer Left | PF Back Effects MX | E454 | Circle Pulse | Green |  |
| Circle Pulse - Inner Left | PF Back Effects MX | E455 | Circle Pulse | Green |  |
| Circle Pulse - Center | PF Back Effects MX | E456 | Circle Pulse | Green |  |
| Circle Pulse - Inner Right | PF Back Effects MX | E457 | Circle Pulse | Green |  |
| Circle Pulse - Outer Right | PF Back Effects MX | E458 | Circle Pulse | Green |  |
| Circle Pulse - Outer Left | PF Back Effects MX | E459 | Circle Pulse | Blue |  |
| Circle Pulse - Inner Left | PF Back Effects MX | E460 | Circle Pulse | Blue |  |
| Circle Pulse - Center | PF Back Effects MX | E461 | Circle Pulse | Blue |  |
| Circle Pulse - Inner Right | PF Back Effects MX | E462 | Circle Pulse | Blue |  |
| Circle Pulse - Outer Right | PF Back Effects MX | E463 | Circle Pulse | Blue |  |
| Circle Pulse - Outer Left | PF Back Effects MX | E464 | Circle Pulse | Yellow |  |
| Circle Pulse - Inner Left | PF Back Effects MX | E465 | Circle Pulse | Yellow |  |
| Circle Pulse - Center | PF Back Effects MX | E466 | Circle Pulse | Yellow |  |
| Circle Pulse - Inner Right | PF Back Effects MX | E467 | Circle Pulse | Yellow |  |
| Circle Pulse - Outer Right | PF Back Effects MX | E468 | Circle Pulse | Yellow |  |
| Circle Pulse - Outer Left | PF Back Effects MX | E469 | Circle Pulse | Cyan |  |
| Circle Pulse - Inner Left | PF Back Effects MX | E470 | Circle Pulse | Cyan |  |
| Circle Pulse - Center | PF Back Effects MX | E471 | Circle Pulse | Cyan |  |
| Circle Pulse - Inner Right | PF Back Effects MX | E472 | Circle Pulse | Cyan |  |
| Circle Pulse - Outer Right | PF Back Effects MX | E473 | Circle Pulse | Cyan |  |
| Circle Pulse - Outer Left | PF Back Effects MX | E474 | Circle Pulse | Magenta |  |
| Circle Pulse - Inner Left | PF Back Effects MX | E475 | Circle Pulse | Magenta |  |
| Circle Pulse - Center | PF Back Effects MX | E476 | Circle Pulse | Magenta |  |
| Circle Pulse - Inner Right | PF Back Effects MX | E477 | Circle Pulse | Magenta |  |
| Circle Pulse - Outer Right | PF Back Effects MX | E478 | Circle Pulse | Magenta |  |
| Circle Pulse - Outer Left | PF Back Effects MX | E479 | Circle Pulse | Orange\_Red |  |
| Circle Pulse - Inner Left | PF Back Effects MX | E480 | Circle Pulse | Orange\_Red |  |
| Circle Pulse - Center | PF Back Effects MX | E481 | Circle Pulse | Orange\_Red |  |
| Circle Pulse - Inner Right | PF Back Effects MX | E482 | Circle Pulse | Orange\_Red |  |
| Circle Pulse - Outer Right | PF Back Effects MX | E483 | Circle Pulse | Orange\_Red |  |
| Cross Pulse - Animated Shape |  |  |  |  |  |
| Cross Pulse - Outer Left | PF Back Effects MX | E484 | Cross Pulse | White |  |
| Cross Pulse - Inner Left | PF Back Effects MX | E485 | Cross Pulse | White |  |
| Cross Pulse - Center | PF Back Effects MX | E486 | Cross Pulse | White |  |
| Cross Pulse - Inner Right | PF Back Effects MX | E487 | Cross Pulse | White |  |
| Cross Pulse - Outer Right | PF Back Effects MX | E488 | Cross Pulse | White |  |
| Cross Pulse - Outer Left | PF Back Effects MX | E489 | Cross Pulse | Red |  |
| Cross Pulse - Inner Left | PF Back Effects MX | E490 | Cross Pulse | Red |  |
| Cross Pulse - Center | PF Back Effects MX | E491 | Cross Pulse | Red |  |
| Cross Pulse - Inner Right | PF Back Effects MX | E492 | Cross Pulse | Red |  |
| Cross Pulse - Outer Right | PF Back Effects MX | E493 | Cross Pulse | Red |  |
| Cross Pulse - Outer Left | PF Back Effects MX | E494 | Cross Pulse | Green |  |
| Cross Pulse - Inner Left | PF Back Effects MX | E495 | Cross Pulse | Green |  |
| Cross Pulse - Center | PF Back Effects MX | E496 | Cross Pulse | Green |  |
| Cross Pulse - Inner Right | PF Back Effects MX | E497 | Cross Pulse | Green |  |
| Cross Pulse - Outer Right | PF Back Effects MX | E498 | Cross Pulse | Green |  |
| Cross Pulse - Outer Left | PF Back Effects MX | E499 | Cross Pulse | Blue |  |
| Cross Pulse - Inner Left | PF Back Effects MX | E500 | Cross Pulse | Blue |  |
| Cross Pulse - Center | PF Back Effects MX | E501 | Cross Pulse | Blue |  |
| Cross Pulse - Inner Right | PF Back Effects MX | E502 | Cross Pulse | Blue |  |
| Cross Pulse - Outer Right | PF Back Effects MX | E503 | Cross Pulse | Blue |  |
| Cross Pulse - Outer Left | PF Back Effects MX | E504 | Cross Pulse | Yellow |  |
| Cross Pulse - Inner Left | PF Back Effects MX | E505 | Cross Pulse | Yellow |  |
| Cross Pulse - Center | PF Back Effects MX | E506 | Cross Pulse | Yellow |  |
| Cross Pulse - Inner Right | PF Back Effects MX | E507 | Cross Pulse | Yellow |  |
| Cross Pulse - Outer Right | PF Back Effects MX | E508 | Cross Pulse | Yellow |  |
| Cross Pulse - Outer Left | PF Back Effects MX | E509 | Cross Pulse | Cyan |  |
| Cross Pulse - Inner Left | PF Back Effects MX | E510 | Cross Pulse | Cyan |  |
| Cross Pulse - Center | PF Back Effects MX | E511 | Cross Pulse | Cyan |  |
| Cross Pulse - Inner Right | PF Back Effects MX | E512 | Cross Pulse | Cyan |  |
| Cross Pulse - Outer Right | PF Back Effects MX | E513 | Cross Pulse | Cyan |  |
| Cross Pulse - Outer Left | PF Back Effects MX | E514 | Cross Pulse | Magenta |  |
| Cross Pulse - Inner Left | PF Back Effects MX | E515 | Cross Pulse | Magenta |  |
| Cross Pulse - Center | PF Back Effects MX | E516 | Cross Pulse | Magenta |  |
| Cross Pulse - Inner Right | PF Back Effects MX | E517 | Cross Pulse | Magenta |  |
| Cross Pulse - Outer Right | PF Back Effects MX | E518 | Cross Pulse | Magenta |  |
| Cross Pulse - Outer Left | PF Back Effects MX | E519 | Cross Pulse | Orange\_Red |  |
| Cross Pulse - Inner Left | PF Back Effects MX | E520 | Cross Pulse | Orange\_Red |  |
| Cross Pulse - Center | PF Back Effects MX | E521 | Cross Pulse | Orange\_Red |  |
| Cross Pulse - Inner Right | PF Back Effects MX | E522 | Cross Pulse | Orange\_Red |  |
| Cross Pulse - Outer Right | PF Back Effects MX | E523 | Cross Pulse | Orange\_Red |  |
| Diamond Box Pulse - Animated Shape |  |  |  |  |  |
| Diamond Box Pulse - Outer Left | PF Back Effects MX | E524 | Diamond Box Pulse | White |  |
| Diamond Box Pulse - Inner Left | PF Back Effects MX | E525 | Diamond Box Pulse | White |  |
| Diamond Box Pulse - Center | PF Back Effects MX | E526 | Diamond Box Pulse | White |  |
| Diamond Box Pulse - Inner Right | PF Back Effects MX | E527 | Diamond Box Pulse | White |  |
| Diamond Box Pulse - Outer Right | PF Back Effects MX | E528 | Diamond Box Pulse | White |  |
| Diamond Box Pulse - Outer Left | PF Back Effects MX | E529 | Diamond Box Pulse | Red |  |
| Diamond Box Pulse - Inner Left | PF Back Effects MX | E530 | Diamond Box Pulse | Red |  |
| Diamond Box Pulse - Center | PF Back Effects MX | E531 | Diamond Box Pulse | Red |  |
| Diamond Box Pulse - Inner Right | PF Back Effects MX | E532 | Diamond Box Pulse | Red |  |
| Diamond Box Pulse - Outer Right | PF Back Effects MX | E533 | Diamond Box Pulse | Red |  |
| Diamond Box Pulse - Outer Left | PF Back Effects MX | E534 | Diamond Box Pulse | Green |  |
| Diamond Box Pulse - Inner Left | PF Back Effects MX | E535 | Diamond Box Pulse | Green |  |
| Diamond Box Pulse - Center | PF Back Effects MX | E536 | Diamond Box Pulse | Green |  |
| Diamond Box Pulse - Inner Right | PF Back Effects MX | E537 | Diamond Box Pulse | Green |  |
| Diamond Box Pulse - Outer Right | PF Back Effects MX | E538 | Diamond Box Pulse | Green |  |
| Diamond Box Pulse - Outer Left | PF Back Effects MX | E539 | Diamond Box Pulse | Blue |  |
| Diamond Box Pulse - Inner Left | PF Back Effects MX | E540 | Diamond Box Pulse | Blue |  |
| Diamond Box Pulse - Center | PF Back Effects MX | E541 | Diamond Box Pulse | Blue |  |
| Diamond Box Pulse - Inner Right | PF Back Effects MX | E542 | Diamond Box Pulse | Blue |  |
| Diamond Box Pulse - Outer Right | PF Back Effects MX | E543 | Diamond Box Pulse | Blue |  |
| Diamond Box Pulse - Outer Left | PF Back Effects MX | E544 | Diamond Box Pulse | Yellow |  |
| Diamond Box Pulse - Inner Left | PF Back Effects MX | E545 | Diamond Box Pulse | Yellow |  |
| Diamond Box Pulse - Center | PF Back Effects MX | E546 | Diamond Box Pulse | Yellow |  |
| Diamond Box Pulse - Inner Right | PF Back Effects MX | E547 | Diamond Box Pulse | Yellow |  |
| Diamond Box Pulse - Outer Right | PF Back Effects MX | E548 | Diamond Box Pulse | Yellow |  |
| Diamond Box Pulse - Outer Left | PF Back Effects MX | E549 | Diamond Box Pulse | Cyan |  |
| Diamond Box Pulse - Inner Left | PF Back Effects MX | E550 | Diamond Box Pulse | Cyan |  |
| Diamond Box Pulse - Center | PF Back Effects MX | E551 | Diamond Box Pulse | Cyan |  |
| Diamond Box Pulse - Inner Right | PF Back Effects MX | E552 | Diamond Box Pulse | Cyan |  |
| Diamond Box Pulse - Outer Right | PF Back Effects MX | E553 | Diamond Box Pulse | Cyan |  |
| Diamond Box Pulse - Outer Left | PF Back Effects MX | E554 | Diamond Box Pulse | Magenta |  |
| Diamond Box Pulse - Inner Left | PF Back Effects MX | E555 | Diamond Box Pulse | Magenta |  |
| Diamond Box Pulse - Center | PF Back Effects MX | E556 | Diamond Box Pulse | Magenta |  |
| Diamond Box Pulse - Inner Right | PF Back Effects MX | E557 | Diamond Box Pulse | Magenta |  |
| Diamond Box Pulse - Outer Right | PF Back Effects MX | E558 | Diamond Box Pulse | Magenta |  |
| Diamond Box Pulse - Outer Left | PF Back Effects MX | E559 | Diamond Box Pulse | Orange\_Red |  |
| Diamond Box Pulse - Inner Left | PF Back Effects MX | E560 | Diamond Box Pulse | Orange\_Red |  |
| Diamond Box Pulse - Center | PF Back Effects MX | E561 | Diamond Box Pulse | Orange\_Red |  |
| Diamond Box Pulse - Inner Right | PF Back Effects MX | E562 | Diamond Box Pulse | Orange\_Red |  |
| Diamond Box Pulse - Outer Right | PF Back Effects MX | E563 | Diamond Box Pulse | Orange\_Red |  |
| Point Plop - Animated Shape |  |  |  |  |  |
| Point Plop - Outer Left | PF Back Effects MX | E564 | Point Plop | White |  |
| Point Plop - Inner Left | PF Back Effects MX | E565 | Point Plop | White |  |
| Point Plop - Center | PF Back Effects MX | E566 | Point Plop | White |  |
| Point Plop - Inner Right | PF Back Effects MX | E567 | Point Plop | White |  |
| Point Plop - Outer Right | PF Back Effects MX | E568 | Point Plop | White |  |
| Point Plop - Outer Left | PF Back Effects MX | E569 | Point Plop | Red |  |
| Point Plop - Inner Left | PF Back Effects MX | E570 | Point Plop | Red |  |
| Point Plop - Center | PF Back Effects MX | E571 | Point Plop | Red |  |
| Point Plop - Inner Right | PF Back Effects MX | E572 | Point Plop | Red |  |
| Point Plop - Outer Right | PF Back Effects MX | E573 | Point Plop | Red |  |
| Point Plop - Outer Left | PF Back Effects MX | E574 | Point Plop | Green |  |
| Point Plop - Inner Left | PF Back Effects MX | E575 | Point Plop | Green |  |
| Point Plop - Center | PF Back Effects MX | E576 | Point Plop | Green |  |
| Point Plop - Inner Right | PF Back Effects MX | E577 | Point Plop | Green |  |
| Point Plop - Outer Right | PF Back Effects MX | E578 | Point Plop | Green |  |
| Point Plop - Outer Left | PF Back Effects MX | E579 | Point Plop | Blue |  |
| Point Plop - Inner Left | PF Back Effects MX | E580 | Point Plop | Blue |  |
| Point Plop - Center | PF Back Effects MX | E581 | Point Plop | Blue |  |
| Point Plop - Inner Right | PF Back Effects MX | E582 | Point Plop | Blue |  |
| Point Plop - Outer Right | PF Back Effects MX | E583 | Point Plop | Blue |  |
| Point Plop - Outer Left | PF Back Effects MX | E584 | Point Plop | Yellow |  |
| Point Plop - Inner Left | PF Back Effects MX | E585 | Point Plop | Yellow |  |
| Point Plop - Center | PF Back Effects MX | E586 | Point Plop | Yellow |  |
| Point Plop - Inner Right | PF Back Effects MX | E587 | Point Plop | Yellow |  |
| Point Plop - Outer Right | PF Back Effects MX | E588 | Point Plop | Yellow |  |
| Point Plop - Outer Left | PF Back Effects MX | E589 | Point Plop | Cyan |  |
| Point Plop - Inner Left | PF Back Effects MX | E590 | Point Plop | Cyan |  |
| Point Plop - Center | PF Back Effects MX | E591 | Point Plop | Cyan |  |
| Point Plop - Inner Right | PF Back Effects MX | E592 | Point Plop | Cyan |  |
| Point Plop - Outer Right | PF Back Effects MX | E593 | Point Plop | Cyan |  |
| Point Plop - Outer Left | PF Back Effects MX | E594 | Point Plop | Magenta |  |
| Point Plop - Inner Left | PF Back Effects MX | E595 | Point Plop | Magenta |  |
| Point Plop - Center | PF Back Effects MX | E596 | Point Plop | Magenta |  |
| Point Plop - Inner Right | PF Back Effects MX | E597 | Point Plop | Magenta |  |
| Point Plop - Outer Right | PF Back Effects MX | E598 | Point Plop | Magenta |  |
| Point Plop - Outer Left | PF Back Effects MX | E599 | Point Plop | Orange\_Red |  |
| Point Plop - Inner Left | PF Back Effects MX | E600 | Point Plop | Orange\_Red |  |
| Point Plop - Center | PF Back Effects MX | E601 | Point Plop | Orange\_Red |  |
| Point Plop - Inner Right | PF Back Effects MX | E603 | Point Plop | Orange\_Red |  |
| Point Plop - Outer Right | PF Back Effects MX | E604 | Point Plop | Orange\_Red |  |
| Round And Round - Animated Shape |  |  |  |  |  |
| Round And Round - Outer Left | PF Back Effects MX | E605 | Round And Round | White |  |
| Round And Round - Inner Left | PF Back Effects MX | E606 | Round And Round | White |  |
| Round And Round - Center | PF Back Effects MX | E607 | Round And Round | White |  |
| Round And Round - Inner Right | PF Back Effects MX | E608 | Round And Round | White |  |
| Round And Round - Outer Right | PF Back Effects MX | E609 | Round And Round | White |  |
| Round And Round - Outer Left | PF Back Effects MX | E610 | Round And Round | Red |  |
| Round And Round - Inner Left | PF Back Effects MX | E611 | Round And Round | Red |  |
| Round And Round - Center | PF Back Effects MX | E612 | Round And Round | Red |  |
| Round And Round - Inner Right | PF Back Effects MX | E613 | Round And Round | Red |  |
| Round And Round - Outer Right | PF Back Effects MX | E614 | Round And Round | Red |  |
| Round And Round - Outer Left | PF Back Effects MX | E615 | Round And Round | Green |  |
| Round And Round - Inner Left | PF Back Effects MX | E616 | Round And Round | Green |  |
| Round And Round - Center | PF Back Effects MX | E617 | Round And Round | Green |  |
| Round And Round - Inner Right | PF Back Effects MX | E618 | Round And Round | Green |  |
| Round And Round - Outer Right | PF Back Effects MX | E619 | Round And Round | Green |  |
| Round And Round - Outer Left | PF Back Effects MX | E620 | Round And Round | Blue |  |
| Round And Round - Inner Left | PF Back Effects MX | E621 | Round And Round | Blue |  |
| Round And Round - Center | PF Back Effects MX | E622 | Round And Round | Blue |  |
| Round And Round - Inner Right | PF Back Effects MX | E623 | Round And Round | Blue |  |
| Round And Round - Outer Right | PF Back Effects MX | E624 | Round And Round | Blue |  |
| Round And Round - Outer Left | PF Back Effects MX | E625 | Round And Round | Yellow |  |
| Round And Round - Inner Left | PF Back Effects MX | E626 | Round And Round | Yellow |  |
| Round And Round - Center | PF Back Effects MX | E627 | Round And Round | Yellow |  |
| Round And Round - Inner Right | PF Back Effects MX | E628 | Round And Round | Yellow |  |
| Round And Round - Outer Right | PF Back Effects MX | E629 | Round And Round | Yellow |  |
| Round And Round - Outer Left | PF Back Effects MX | E630 | Round And Round | Cyan |  |
| Round And Round - Inner Left | PF Back Effects MX | E631 | Round And Round | Cyan |  |
| Round And Round - Center | PF Back Effects MX | E632 | Round And Round | Cyan |  |
| Round And Round - Inner Right | PF Back Effects MX | E633 | Round And Round | Cyan |  |
| Round And Round - Outer Right | PF Back Effects MX | E634 | Round And Round | Cyan |  |
| Round And Round - Outer Left | PF Back Effects MX | E635 | Round And Round | Magenta |  |
| Round And Round - Inner Left | PF Back Effects MX | E636 | Round And Round | Magenta |  |
| Round And Round - Center | PF Back Effects MX | E637 | Round And Round | Magenta |  |
| Round And Round - Inner Right | PF Back Effects MX | E638 | Round And Round | Magenta |  |
| Round And Round - Outer Right | PF Back Effects MX | E639 | Round And Round | Magenta |  |
| Round And Round - Outer Left | PF Back Effects MX | E640 | Round And Round | Orange\_Red |  |
| Round And Round - Inner Left | PF Back Effects MX | E641 | Round And Round | Orange\_Red |  |
| Round And Round - Center | PF Back Effects MX | E642 | Round And Round | Orange\_Red |  |
| Round And Round - Inner Right | PF Back Effects MX | E643 | Round And Round | Orange\_Red |  |
| Round And Round - Outer Right | PF Back Effects MX | E644 | Round And Round | Orange\_Red |  |
| Square Plop - Animated Shape |  |  |  |  |  |
| Square Plop - Outer Left | PF Back Effects MX | E645 | Square Plop | White |  |
| Square Plop - Inner Left | PF Back Effects MX | E646 | Square Plop | White |  |
| Square Plop - Center | PF Back Effects MX | E647 | Square Plop | White |  |
| Square Plop - Inner Right | PF Back Effects MX | E648 | Square Plop | White |  |
| Square Plop - Outer Right | PF Back Effects MX | E649 | Square Plop | White |  |
| Square Plop - Outer Left | PF Back Effects MX | E650 | Square Plop | Red |  |
| Square Plop - Inner Left | PF Back Effects MX | E651 | Square Plop | Red |  |
| Square Plop - Center | PF Back Effects MX | E652 | Square Plop | Red |  |
| Square Plop - Inner Right | PF Back Effects MX | E653 | Square Plop | Red |  |
| Square Plop - Outer Right | PF Back Effects MX | E654 | Square Plop | Red |  |
| Square Plop - Outer Left | PF Back Effects MX | E655 | Square Plop | Green |  |
| Square Plop - Inner Left | PF Back Effects MX | E656 | Square Plop | Green |  |
| Square Plop - Center | PF Back Effects MX | E657 | Square Plop | Green |  |
| Square Plop - Inner Right | PF Back Effects MX | E658 | Square Plop | Green |  |
| Square Plop - Outer Right | PF Back Effects MX | E659 | Square Plop | Green |  |
| Square Plop - Outer Left | PF Back Effects MX | E660 | Square Plop | Blue |  |
| Square Plop - Inner Left | PF Back Effects MX | E661 | Square Plop | Blue |  |
| Square Plop - Center | PF Back Effects MX | E662 | Square Plop | Blue |  |
| Square Plop - Inner Right | PF Back Effects MX | E663 | Square Plop | Blue |  |
| Square Plop - Outer Right | PF Back Effects MX | E664 | Square Plop | Blue |  |
| Square Plop - Outer Left | PF Back Effects MX | E665 | Square Plop | Yellow |  |
| Square Plop - Inner Left | PF Back Effects MX | E666 | Square Plop | Yellow |  |
| Square Plop - Center | PF Back Effects MX | E667 | Square Plop | Yellow |  |
| Square Plop - Inner Right | PF Back Effects MX | E668 | Square Plop | Yellow |  |
| Square Plop - Outer Right | PF Back Effects MX | E669 | Square Plop | Yellow |  |
| Square Plop - Outer Left | PF Back Effects MX | E670 | Square Plop | Cyan |  |
| Square Plop - Inner Left | PF Back Effects MX | E671 | Square Plop | Cyan |  |
| Square Plop - Center | PF Back Effects MX | E672 | Square Plop | Cyan |  |
| Square Plop - Inner Right | PF Back Effects MX | E673 | Square Plop | Cyan |  |
| Square Plop - Outer Right | PF Back Effects MX | E674 | Square Plop | Cyan |  |
| Square Plop - Outer Left | PF Back Effects MX | E675 | Square Plop | Magenta |  |
| Square Plop - Inner Left | PF Back Effects MX | E676 | Square Plop | Magenta |  |
| Square Plop - Center | PF Back Effects MX | E677 | Square Plop | Magenta |  |
| Square Plop - Inner Right | PF Back Effects MX | E678 | Square Plop | Magenta |  |
| Square Plop - Outer Right | PF Back Effects MX | E679 | Square Plop | Magenta |  |
| Square Plop - Outer Left | PF Back Effects MX | E680 | Square Plop | Orange\_Red |  |
| Square Plop - Inner Left | PF Back Effects MX | E681 | Square Plop | Orange\_Red |  |
| Square Plop - Center | PF Back Effects MX | E682 | Square Plop | Orange\_Red |  |
| Square Plop - Inner Right | PF Back Effects MX | E683 | Square Plop | Orange\_Red |  |
| Square Plop - Outer Right | PF Back Effects MX | E684 | Square Plop | Orange\_Red |  |
| Up Down - Animated Shape |  |  |  |  |  |
| Up Down - Outer Left | PF Back Effects MX | E685 | Up Down | White |  |
| Up Down - Inner Left | PF Back Effects MX | E686 | Up Down | White |  |
| Up Down - Center | PF Back Effects MX | E687 | Up Down | White |  |
| Up Down - Inner Right | PF Back Effects MX | E688 | Up Down | White |  |
| Up Down - Outer Right | PF Back Effects MX | E689 | Up Down | White |  |
| Up Down - Outer Left | PF Back Effects MX | E690 | Up Down | Red |  |
| Up Down - Inner Left | PF Back Effects MX | E691 | Up Down | Red |  |
| Up Down - Center | PF Back Effects MX | E692 | Up Down | Red |  |
| Up Down - Inner Right | PF Back Effects MX | E693 | Up Down | Red |  |
| Up Down - Outer Right | PF Back Effects MX | E694 | Up Down | Red |  |
| Up Down - Outer Left | PF Back Effects MX | E695 | Up Down | Green |  |
| Up Down - Inner Left | PF Back Effects MX | E696 | Up Down | Green |  |
| Up Down - Center | PF Back Effects MX | E697 | Up Down | Green |  |
| Up Down - Inner Right | PF Back Effects MX | E698 | Up Down | Green |  |
| Up Down - Outer Right | PF Back Effects MX | E699 | Up Down | Green |  |
| Up Down - Outer Left | PF Back Effects MX | E700 | Up Down | Blue |  |
| Up Down - Inner Left | PF Back Effects MX | E701 | Up Down | Blue |  |
| Up Down - Center | PF Back Effects MX | E702 | Up Down | Blue |  |
| Up Down - Inner Right | PF Back Effects MX | E703 | Up Down | Blue |  |
| Up Down - Outer Right | PF Back Effects MX | E704 | Up Down | Blue |  |
| Up Down - Outer Left | PF Back Effects MX | E705 | Up Down | Yellow |  |
| Up Down - Inner Left | PF Back Effects MX | E706 | Up Down | Yellow |  |
| Up Down - Center | PF Back Effects MX | E707 | Up Down | Yellow |  |
| Up Down - Inner Right | PF Back Effects MX | E708 | Up Down | Yellow |  |
| Up Down - Outer Right | PF Back Effects MX | E709 | Up Down | Yellow |  |
| Up Down - Outer Left | PF Back Effects MX | E710 | Up Down | Cyan |  |
| Up Down - Inner Left | PF Back Effects MX | E711 | Up Down | Cyan |  |
| Up Down - Center | PF Back Effects MX | E712 | Up Down | Cyan |  |
| Up Down - Inner Right | PF Back Effects MX | E713 | Up Down | Cyan |  |
| Up Down - Outer Right | PF Back Effects MX | E714 | Up Down | Cyan |  |
| Up Down - Outer Left | PF Back Effects MX | E715 | Up Down | Magenta |  |
| Up Down - Inner Left | PF Back Effects MX | E716 | Up Down | Magenta |  |
| Up Down - Center | PF Back Effects MX | E717 | Up Down | Magenta |  |
| Up Down - Inner Right | PF Back Effects MX | E718 | Up Down | Magenta |  |
| Up Down - Outer Right | PF Back Effects MX | E719 | Up Down | Magenta |  |
| Up Down - Outer Left | PF Back Effects MX | E720 | Up Down | Orange\_Red |  |
| Up Down - Inner Left | PF Back Effects MX | E721 | Up Down | Orange\_Red |  |
| Up Down - Center | PF Back Effects MX | E722 | Up Down | Orange\_Red |  |
| Up Down - Inner Right | PF Back Effects MX | E723 | Up Down | Orange\_Red |  |
| Up Down - Outer Right | PF Back Effects MX | E724 | Up Down | Orange\_Red |  |
| Left Right - Animated Shape |  |  |  |  |  |
| Left Right - Outer Left | PF Back Effects MX | E725 | Left Right | White |  |
| Left Right - Inner Left | PF Back Effects MX | E726 | Left Right | White |  |
| Left Right - Center | PF Back Effects MX | E727 | Left Right | White |  |
| Left Right - Inner Right | PF Back Effects MX | E728 | Left Right | White |  |
| Left Right - Outer Right | PF Back Effects MX | E729 | Left Right | White |  |
| Left Right - Outer Left | PF Back Effects MX | E730 | Left Right | Red |  |
| Left Right - Inner Left | PF Back Effects MX | E731 | Left Right | Red |  |
| Left Right - Center | PF Back Effects MX | E732 | Left Right | Red |  |
| Left Right - Inner Right | PF Back Effects MX | E733 | Left Right | Red |  |
| Left Right - Outer Right | PF Back Effects MX | E734 | Left Right | Red |  |
| Left Right - Outer Left | PF Back Effects MX | E735 | Left Right | Green |  |
| Left Right - Inner Left | PF Back Effects MX | E736 | Left Right | Green |  |
| Left Right - Center | PF Back Effects MX | E737 | Left Right | Green |  |
| Left Right - Inner Right | PF Back Effects MX | E738 | Left Right | Green |  |
| Left Right - Outer Right | PF Back Effects MX | E739 | Left Right | Green |  |
| Left Right - Outer Left | PF Back Effects MX | E740 | Left Right | Blue |  |
| Left Right - Inner Left | PF Back Effects MX | E741 | Left Right | Blue |  |
| Left Right - Center | PF Back Effects MX | E742 | Left Right | Blue |  |
| Left Right - Inner Right | PF Back Effects MX | E743 | Left Right | Blue |  |
| Left Right - Outer Right | PF Back Effects MX | E744 | Left Right | Blue |  |
| Left Right - Outer Left | PF Back Effects MX | E745 | Left Right | Yellow |  |
| Left Right - Inner Left | PF Back Effects MX | E746 | Left Right | Yellow |  |
| Left Right - Center | PF Back Effects MX | E747 | Left Right | Yellow |  |
| Left Right - Inner Right | PF Back Effects MX | E748 | Left Right | Yellow |  |
| Left Right - Outer Right | PF Back Effects MX | E749 | Left Right | Yellow |  |
| Left Right - Outer Left | PF Back Effects MX | E750 | Left Right | Cyan |  |
| Left Right - Inner Left | PF Back Effects MX | E751 | Left Right | Cyan |  |
| Left Right - Center | PF Back Effects MX | E752 | Left Right | Cyan |  |
| Left Right - Inner Right | PF Back Effects MX | E753 | Left Right | Cyan |  |
| Left Right - Outer Right | PF Back Effects MX | E754 | Left Right | Cyan |  |
| Left Right - Outer Left | PF Back Effects MX | E755 | Left Right | Magenta |  |
| Left Right - Inner Left | PF Back Effects MX | E756 | Left Right | Magenta |  |
| Left Right - Center | PF Back Effects MX | E757 | Left Right | Magenta |  |
| Left Right - Inner Right | PF Back Effects MX | E758 | Left Right | Magenta |  |
| Left Right - Outer Right | PF Back Effects MX | E759 | Left Right | Magenta |  |
| Left Right - Outer Left | PF Back Effects MX | E760 | Left Right | Orange\_Red |  |
| Left Right - Inner Left | PF Back Effects MX | E761 | Left Right | Orange\_Red |  |
| Left Right - Center | PF Back Effects MX | E762 | Left Right | Orange\_Red |  |
| Left Right - Inner Right | PF Back Effects MX | E763 | Left Right | Orange\_Red |  |
| Left Right - Outer Right | PF Back Effects MX | E764 | Left Right | Orange\_Red |  |
| Animated Effects and Shapes |  |  |  |  |  |
| Horizontaly Moving Dashes Side to side -2 Colours, and Stars | PF Back Effects MX | E765 | Horizontaly Moving Dashes Side to side -2 Colours, and Stars | Red | Blue |
| Horizontaly Moving Dashes Side to side -2 Colours, and Stars | PF Back Effects MX | E766 | Horizontaly Moving Dashes Side to side -2 Colours, and Stars | Purple | White |
| Pulsing Diamonds, Squares | PF Back Effects MX | E767 | Pulsing Diamonds, Squares | Yellow | Red |
| Horizontaly Moving Dashes Side to Center-2 Colours, and Stars | PF Back Effects MX | E768 | Horizontaly Moving Dashes Side to Center-2 Colours, and Stars | Blue | Cyan |
| Horizontaly Moving Dashes Side to side -2 Colours | PF Back Effects MX | E769 | Horizontaly Moving Dashes Side to side -2 Colours | Yellow | White |
| Pulsing Circles, Pulsing Point Plop | PF Back Effects MX | E770 | Pulsing Circles, Pulsing Point Plop | Purple | Blue |
| Pulsing Squares, Bottom Up | PF Back Effects MX | E771 | Pulsing Squares, Bottom Up | Red | Blue |
| Side to Side, Bottom Up | PF Back Effects MX | E772 | Side to Side, Bottom Up | Red | Orange |
| Top Bottom, Arrow Shift Right | PF Back Effects MX | E773 | Top Bottom, Arrow Shift Right | White | Purple |
| Right Left, Pulsing Diamonds | PF Back Effects MX | E774 | Right Left, Pulsing Diamonds | Green | Blue |
| Plasma Sideways - 2 colours | PF Back Effects MX | E775 | Plasma Sideways - 2 colours | Red | Blue |
| Square Plop, Up Down | PF Back Effects MX | E776 | Square Plop, Up Down | Cyan | Green |
| Circle 4, Round Plop | PF Back Effects MX | E777 | Circle 4, Round Plop | Green | Cyan |
| Circle Pulse, Cross Pulse | PF Back Effects MX | E778 | Circle Pulse, Cross Pulse | Yellow | Red |
| Diamond Pulse, Cross Pulse | PF Back Effects MX | E779 | Diamond Pulse, Cross Pulse | Blue | White |
| Cross, Round and Round | PF Back Effects MX | E780 | Cross, Round and Round | Orange | Purple |
| Pulsing Diamonds, Squares Plops | PF Back Effects MX | E781 | Pulsing Diamonds, Squares Plops | Red | Green |
| Arrow Shift Right, V-Line Pulse | PF Back Effects MX | E782 | Arrow Shift Right, V-Line Pulse | Blue | Yellow |
| Horizontaly Moving Dashes Side to side -2 Colours, and Stars | PF Back Effects MX | E783 | Horizontaly Moving Dashes Side to side -2 Colours, and Stars | White | Orange |
| Plasma - 2 colour, and Stars | PF Back Effects MX | E784 | Plasma - 2 colour, and Stars | Purple | Green |
| Pulsing Diamonds, Squares | PF Back Effects MX | E785 | Pulsing Diamonds, Squares | Blue | White |
| Pulsing Diamonds, Squares | PF Back Effects MX | E786 | Pulsing Diamonds, Squares | Purple | Cyan |
| Misc Effects |  |  |  |  |  |
| Afterburners | PF Left Effects MX | E799 | Reverse Electrical Power Effect | Orange\_Red |  |
| Afterburners | PF Right Effects MX | E799 | Reverse Electrical Power Effect | Orange\_Red |  |