



OPERATION HANDBOOK

Multifex DIGITAL IMAGE PROCESSOR

**MF-3000
MF-3000P**

(1st EDITION)

FOR-A COMPANY LIMITED

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MF-3000 OPERATIONAL HANDBOOK

3.

"A FEW THINGS YOU SHOULD KNOW BEFORE STARTING"

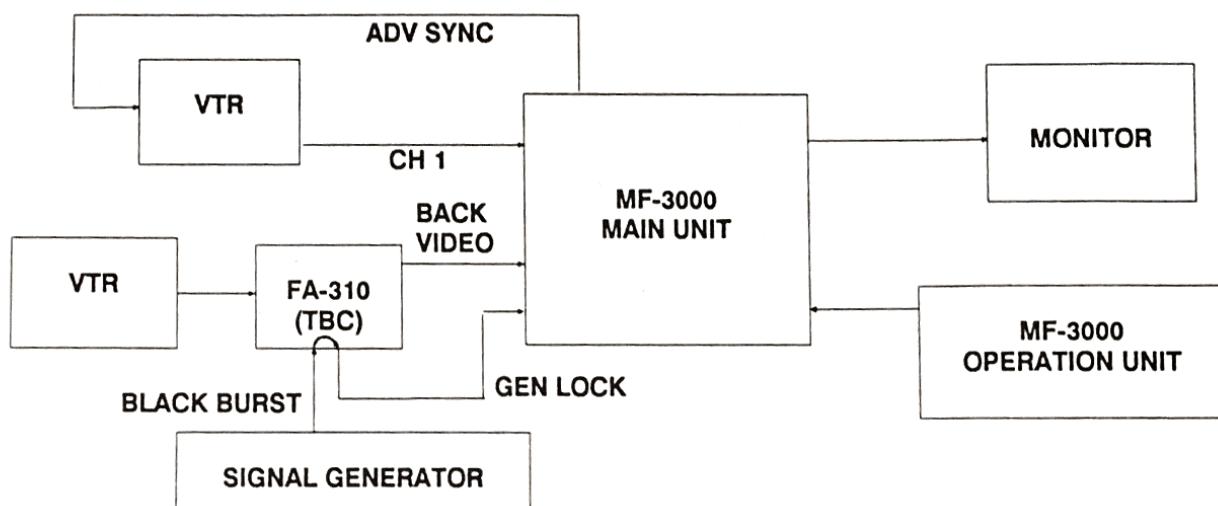
The following instructions have been written to allow first time operators of the MF-3000 to familiarize themselves with the effects available in addition to basic operational and programming procedures.

Since this handbook is designed to be a simple run through of the MF-3000, complex explanations or information which are not immediately necessary will be left for the manual to cover in more detail. Furthermore, this manual only covers the standard single TBC/single channel configuration. Operations related to the optional dual TBC/single channel and dual TBC/dual channel configurations will be covered in other publications.

SET UP

1. Connections

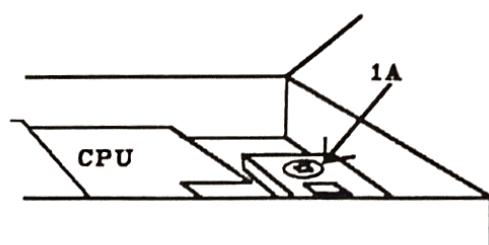
The minimum configuration for operational run through of the MF-3000 is shown below.



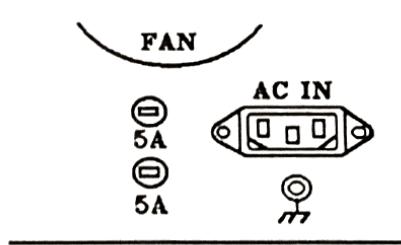
2. Check

After configuring the MF-3000 as shown, and prior to turning power "ON", check the following points:

- Are all connections correct and secure?
- Is all of the equipment in the configuration powered "ON", except the MF-3000?
- Does the MF-3000 have a reference video input?
- Does the MF-3000 have a video signal input to either the CH 1 or CH 2 input on the back panel of the main unit?
- Are all fuses installed and of the proper rating?



INTERIOR /OPERATION UNIT



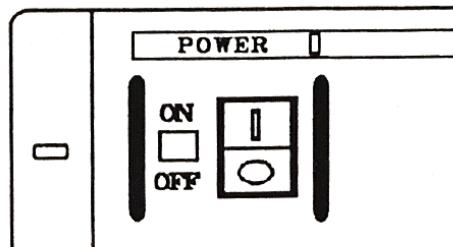
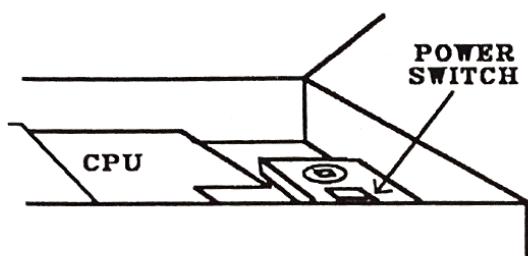
REAR PANEL /MAIN UNIT

(All fuses are slow blow type unless otherwise indicated.)

- Does your monitor screen show bypassed video (i.e., no change from the source equipment output)?

3. Power "ON"

- After all of the preceding points have been checked and you are certain the MF-3000 is ready for operation, set each power switch on the main and operation units to "ON". (ON/OFF Indicators near each switch will light to indicate power is "ON".)



**** CAUTION ****

When powering "ON" the operation unit, DO NOT touch or move the joystick on the operation panel or an operational fault will occur!

GENERAL INFORMATION RELATED TO OPERATION

1. OPERATION PANEL KEY INDICATIONS

The function keys (switches) of the MF-3000 operation panel either light or do not light to indicate the following.

- OFF: Key is not lit and is inactive. Not available for next operation selection.
- ORANGE: Key is available for next operation selection, but currently inactive.
- GREEN: Currently selected and active.

2. CLEAR (DIRECT TAKE section)/DEFAULT (MEMORY section)

The **CLEAR** and **DEFAULT** keys are used if parameters/settings are entered incorrectly while operating the MF-3000. However, the operator must keep in mind that the two keys have totally different functions.

- **CLEAR:** Pressing [**CLEAR**] in the DIRECT TAKE section erases all parameters/settings entered during the current operation only. It will not erase any parameters/settings entered previously.
- **DEFAULT:** Pressing [**DEFAULT**] in the MEMORY section returns all parameters/ settings to their factory set values. This means all operations are cleared, previous and current.

3. INPUT CHANGE section

Since the configuration for this handbook is single channel, only one input signal will be present, either CH A or CH B.

Pressing [**MANUAL**] will cause the MF-3000 to switch between the two channels. The image you are using should appear on the monitor only when the channel having the input is selected. If the unused channel is selected, no image should appear.

[**AUTO**] will not be explained at this time since it is primarily used for dual channel operation. Please refer to the manual for further details.

4. JOYSTICK AND NUMERICAL KEYPAD

Either the joystick or numerical keypad can be used to change effects parameters in most cases; however, some effects can only be entered from the keypad or can not be precisely set when entered with the joystick. You will quickly learn which works best for each effect with repeated practice.

In addition, the numerical keypad only is used to determine the direction in which some of the DIRECT TAKE effects will occur. (This is covered further during the DIRECT TAKE explanation later.)

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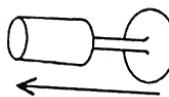
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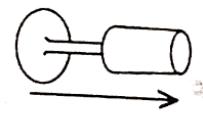
For purposes of simplicity, all operations covered in this handbook will use the joystick to change parameters, or for positioning purposes. Keypad only operations will be explained using the numerical keypad to change parameters. For further details on keypad usage, please consult your manual.

- The joystick has three main movement patterns when used to change effects parameters.

Push LEFT



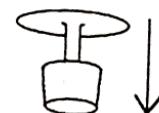
or RIGHT



Push UP



or DOWN



Twist CLOCKWISE



or COUNTER-CLOCKWISE



Which parameters/settings are changed by which joystick movement will depend on the keys selected on the operation panel.

5. ENGINEERING SELECT section

This section is used primarily to indicate status, select INT (internal) MIX "ON" or "OFF" (depending on whether video is mixed by the MF-3000 or by external equipment) and change joystick speed. Since this handbook is only trying to give the first time operator a simple explanation, only the following two functions are of importance at this time.

- [OPERATE]: Lights to indicate the MF-3000 main unit is connected and operational.
- [CH1 ONLINE]: Lights to indicate the main unit and operation panel are operating in the single configuration.

For further details on ENGINEERING SELECT, please refer to the operation manual.

BEGINNING OPERATION

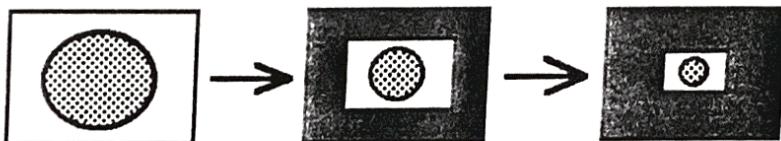
"BUT....WHAT CAN IT DO?"

Now that you have your MF-3000 powered up, try running through a few of the following procedures (all if you feel ambitious) to get a clearer picture of exactly what your new unit is capable of.

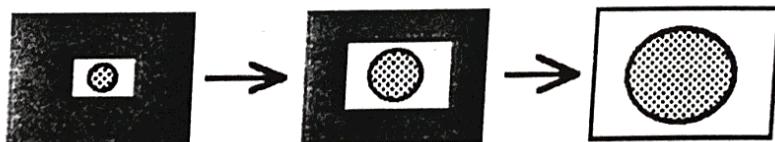
1. POSITIONING AND SIZING

In the course of using your MF-3000, perhaps your most valuable key is [POS/SIZE] in the PICTURE CONTROL section. This key (switch) allows you to move your chosen input image around (or off) the screen and shrink or expand (zoom) image size.

- Press [POS/SIZE] in the PICTURE CONTROL section.
- Turn the joystick counter clockwise. 
- The image on the screen will decrease.



- Turn it clockwise and image size increases.



- For now, position the image to cover part of the center screen area.

For example:



- Next, move the joystick around and note how it affects image movement.



- * For most of the following procedures, always [CLEAR] the current operation and start the new operation with a reduced image to clearly see the effects produced by your actions.

2. AUTO CENTERING

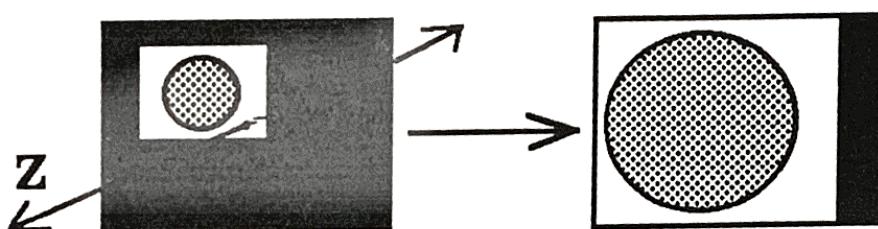
The MF-3000 has 4 auto centering keys which will automatically center your selected image on the center plane of the chosen axis (or axes), without changing the relative position of the image. To see how auto centering works, first look at the JOYSTICK section on the operation panel.

- Shrink (zoom out) and position the image slightly off center.

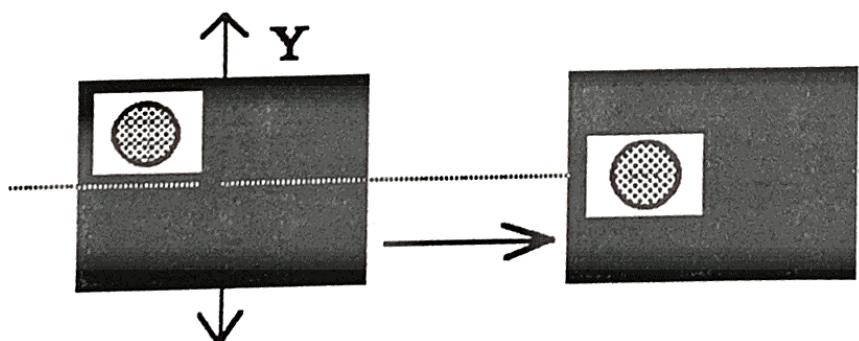
- For example:



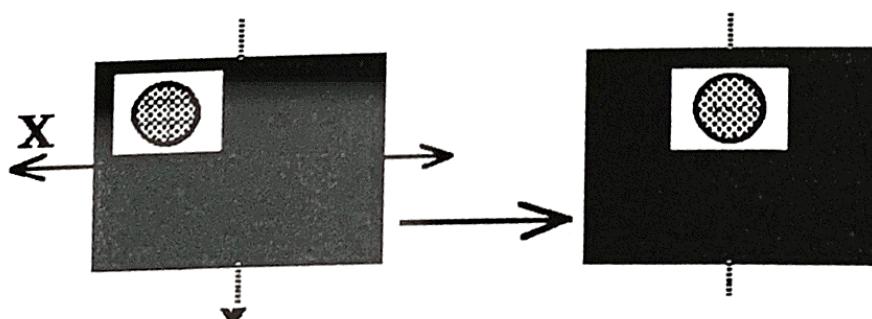
- Press [CENTER Z]. The image will return to full size as it positions on the center of the Z axis, but will maintain its relative position.



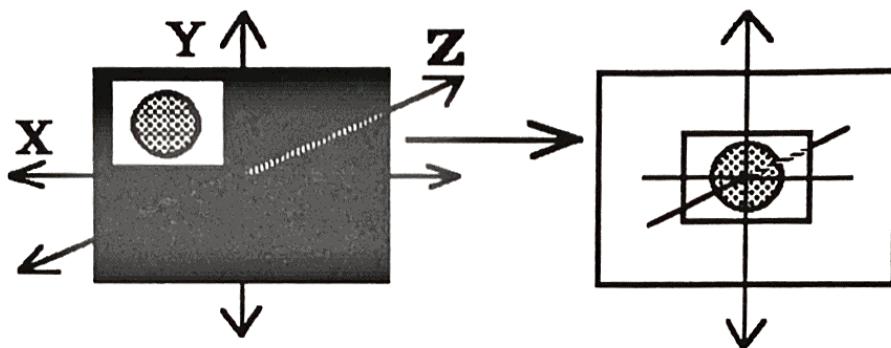
- Press [POS/SIZE] and reposition the image again. Press [CENTER Y]. This time the image will automatically align with the Y axis center.



- Reposition the image again and press [CENTER X]. The image will align on the X axis center



- Reposition the image again. Press [CENTER XYZ]. The image will auto center on all three axes.



During the course of moving the joystick around to position the image, you probably noticed the parameters shown by the display above the ENGINEERING SELECT section changing values as the joystick moved.

DISPLAY

(SIZ)	(HP)	(VP)
*****	*****	*****

- (SIZ) = Image size
- (HP) = Horizontal positioning parameter (+ or -)
- (VP) = Vertical positioning parameter (+ or -)

The display always shows either parameter (related to the effects you are performing or unit status) or programming information.

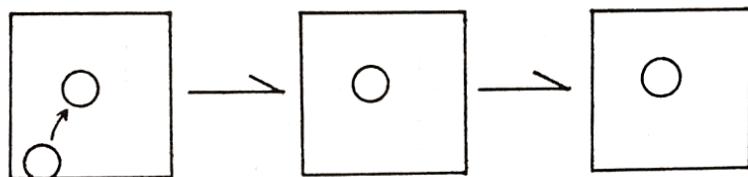
For the present, do not pay too much attention to the display and just notice what the MF-3000 can do.

SUB EFFECTS

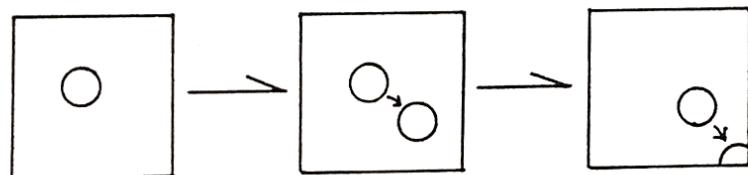
Now, let's take a look at the effects offered by the MF-3000. To do this, press and reposition the image again. (Don't forget to press [POS/SIZE] first.)

1. FREEZE

- Next, take a look at the function keys in the SUB EFFECT section and press [FREEZE]. Movement within your selected image should suddenly stop.

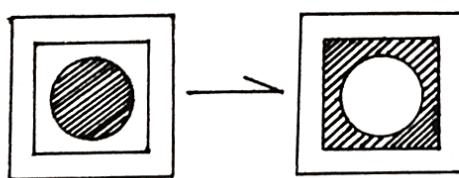


- Press [FREEZE] again and the image will return to normal.

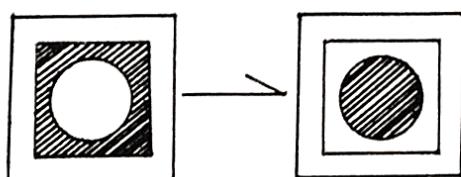


2. NEG

- Press [NEG] (negative). The image will change to a reverse monochrome of the original (i.e., areas that were light colored will now be dark and dark areas will be light).

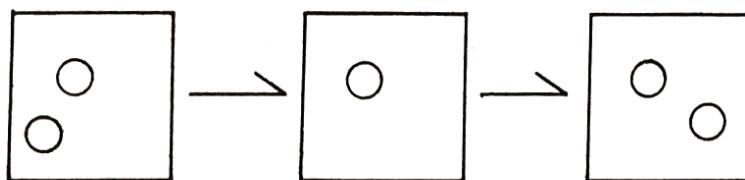


- Press [NEG] again to return the image to normal.

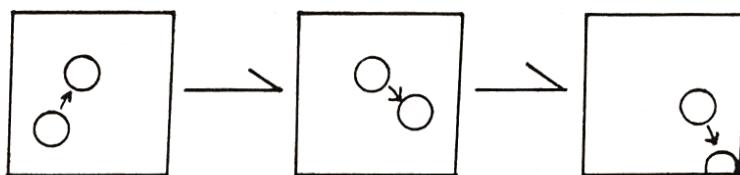


3. STROBE

- To initiate [STROBE] you must first press either [FREEZE] or [NEG]. Next, press [STROBE]. Movement within the image should change from smooth and continuous to broken with pauses in between moves.

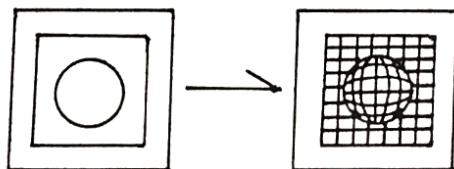


- Press [STROBE] and either [FREEZE] or [NEG] again to return the image to normal.



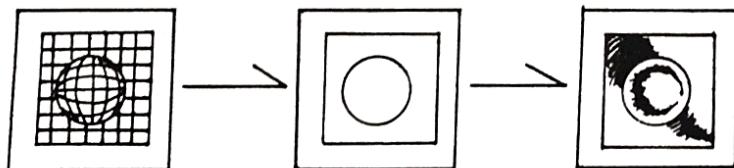
4. MOSAIC

- Pressing [MOSAIC] gives a "digitized" appearance to the image, making it seem like a pattern of blocks.



5. PAINT

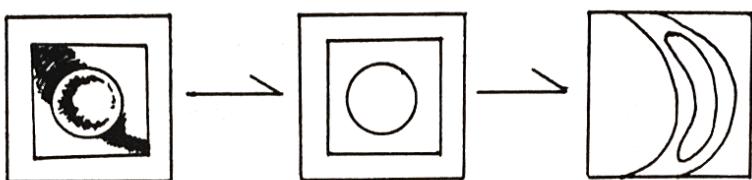
- Release [MOSAIC] and press [PAINT].



- Highlights and shadows become color saturated making the image appear like a moving painting.

6. CURVE

- Release [PAINT] and press [CURVE].

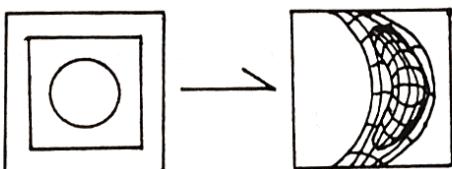


- The image will distort as if bent along a curved line.

7. COMBINING SUB EFFECTS

All of the sub effects can be combined or used individually, except [STROBE]. [STROBE] must always be used with either [FREEZE] or [NEG], only then can it be combined with other effects.

To see how this works, perform a simple effects combination by pressing [CURVE] and [MOSAIC].



Next, press [NEG] and [STROBE]. Note that all of the selected effects are applied to the image.

CHANGING EFFECTS PARAMETERS

At this point you need to learn the basic procedure for modifying the effects parameters of the MF-3000.

While running through the SUB EFFECT functions, you probably noticed a "new" parameter display appeared every time a "new" effect was chosen.

For example:

- Press [PAINT] =

(PAINT)
*

 or press [MOSAIC] =

(MOSAIC)
*

The degree of both of these effects is selectable from 0 (no paint/mosaic) to 7 (maximum paint/mosaic). Even though 0 is the default value, all units are factory set to 7 prior to shipment and 7 should appear in the display if this is the first use of the unit.

The procedure for modifying effects parameters is essentially the same for nearly all of the MF-3000 effects. To start, simply press [MODIFY] in the joystick section.

Next, select the effect whose parameters you wish to change.

For example:

- Press [CURVE] =

(HP)	(VP)
*****	*****

Note that the display designations are fairly logical and easy to understand in relation to the chosen effect.

- Curve effect: (HP) = Horizontal positioning
(VP) = Vertical positioning

Unlike [PAINT] or [MOSAIC], this effect has more than one parameter. To move between parameters when using the numerical keypad, press either [NEXT] or [PREV] in the MEMORY section. In this case, the flashing area indicating the changeable parameter will move from (HP) to (VP) when [NEXT] is pressed and from (VP) back to (HP) when [PREV] is pressed.

If you are using the joystick to set parameters, ignore the flashing indication and simply notice which joystick movement direction affects which parameters. Like the display headings, the movement patterns are fairly logical in relation to the effect being changed.

In the case of [CURVE]: (HP) =



(negative) (POSITIVE)

(VP) =



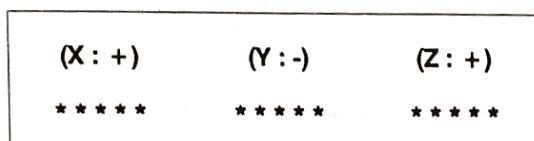
PICTURE CONTROL

Now that you have some idea of how MF-3000 effects and effects parameters work, move to the PICTURE CONTROL section and continue with the operational run through you started in the SUB EFFECT section.

1. AXIS

[AXIS] is not an effect, but is required to change the relationship between the image and axial coordinates for effects performance. These parameters are changed in the same way as explained earlier.

- Press [AXIS] and the following display will appear.

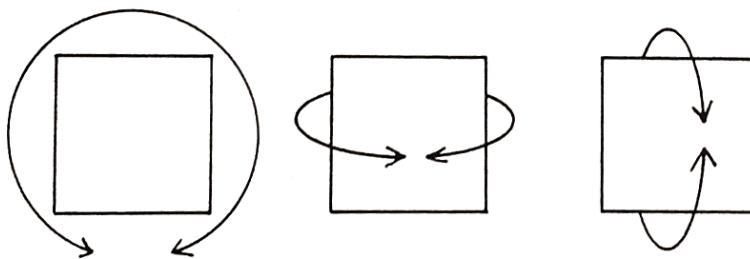


- Range = X: -7999 to +7999 / Y: -7999 to +7999 / Z: -7999 to +7999
- Simply move the joystick around until you obtain the axial relationship you want, then leave the setting. Pressing [SET] is not necessary.

2. LOCAL ROT

- As before, shrink and reposition the image so that all edges are clearly visible on the screen.
- Next, press [LOCAL ROT] (local rotation) and rotate the joystick in several directions. The image will rotate around its three personal axes, unrelated to the overall axial coordinates.

For example:



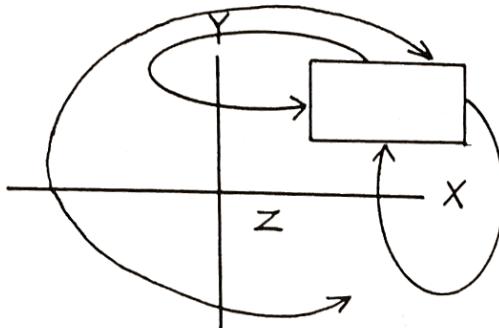
- Take note of how the image moves as you move the joystick around.

3. GLOBAL ROT

Before performing [GLOBAL ROT] (global rotation), first press [AXIS] and use the joystick to change the axial relationship so you can clearly see the difference between this and [LOCAL ROT].

- After changing the axial parameters, press [GLOBAL ROT] and move the joystick in several directions. Note that rotation occurs in relation to the axial coordinates, not the personal coordinates of the image.

For example:

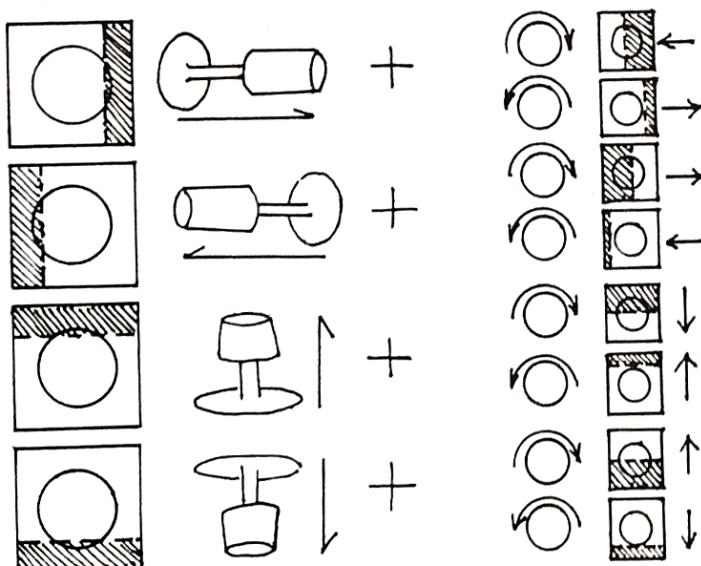


- Take note of how image movement differs from [LOCAL ROT].

4. CROP

- Press [CLEAR], then shrink and reposition the image again.
- Next, press [CROP]. [CROP] is used to "blank out" selected widths of the image edges, thus creating an area in which effects can not be performed.
- As before, the display parameter headings are fairly easy to understand and crop parameters are set almost the same as explained previously.
- The difference in this case is that the joystick must be twisted and pushed to change parameters.

For example:

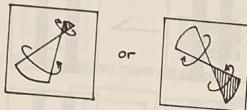


- Once the desired crop is obtained, simply leave the setting, pressing [SET] is not required.

5. TWIST

- Shrink and reposition the image again, then press [TWIST].
- To see how joystick movement affects the image, move it around in various directions and/or twist the top. The angle and degree of twist will change accordingly.

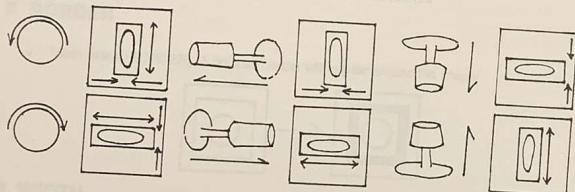
For example:



6. ASPECT

- Clear the last effect, then shrink and reposition the image.
- This time, press [ASPECT]. [ASPECT] allows you to modify the H/V ratio of the image using the parameter change procedure.

The following results will occur for the following joystick movements.



7. PERSPECTIVE

- Clear and reposition the image again, then press [PERSPECTIVE]. [PERSPECTIVE] changes the viewing angle of a rotated image.
- Position the image at an angle (use either [LOCAL ROT] or [GLOBAL ROT] to do this) on either the X or Y AXIS and twist the joystick.

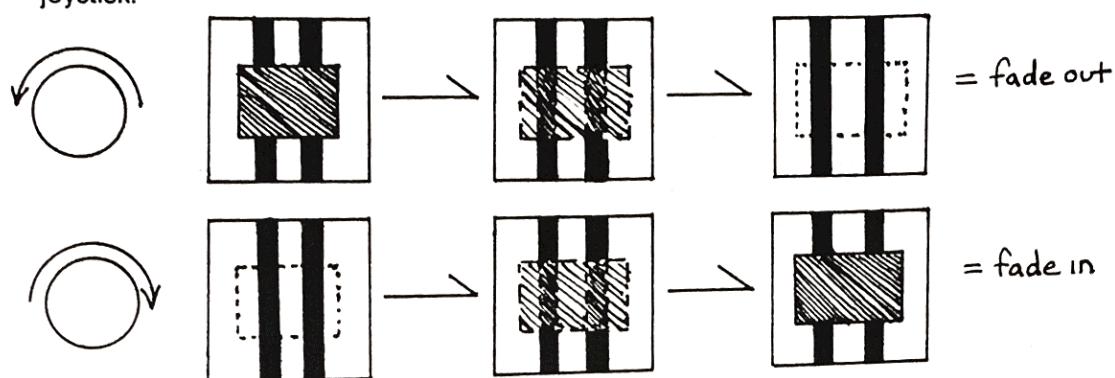


- Twisting the joystick either lengthens or shortens the viewed area. Twisting in the same direction only changes the viewed area.

8. TRANSPARENT

Pressing [TRANSPARENT] allows fade in/out of the image to be performed.

- To see how this occurs, clear and reposition the image, then press [TRANSPARENT] and twist the joystick.



9. SMOOTH AND CUT

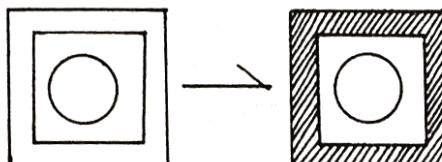
[SMOOTH] and [CUT] are used to change interpolation parameters and will be explained under programming in this handbook.

BORDER/MATTE

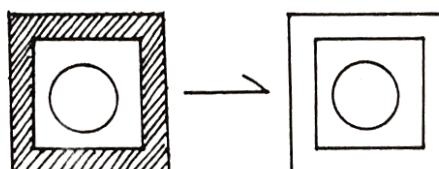
To see how matte and border effects work, reduce the image and position it approximately in the center of the monitor screen.

1. MATTE

- Press [MATTE] and a colored matte will appear behind the image.

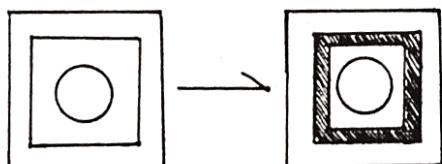


- Press [MATTE] again, and the back color will disappear.



2. BORDER

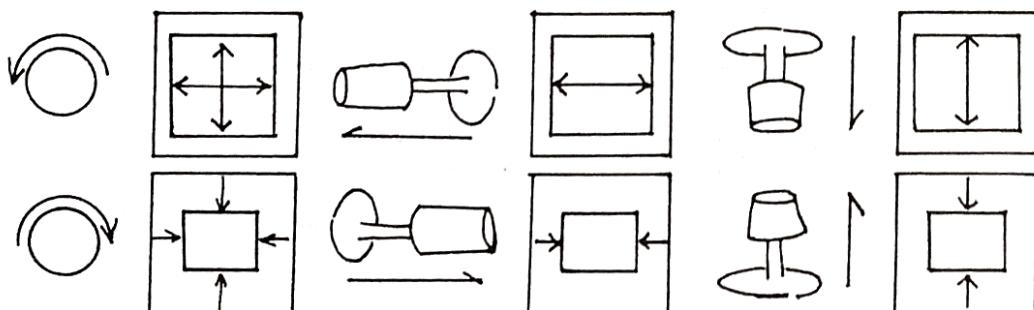
- Next, press [BORDER]. A colored border will appear around the image.



3. WIDTH

Border width parameters are easily changed using the standard modification procedure and the joystick.

- Press [WIDTH], then move the joystick as follows.

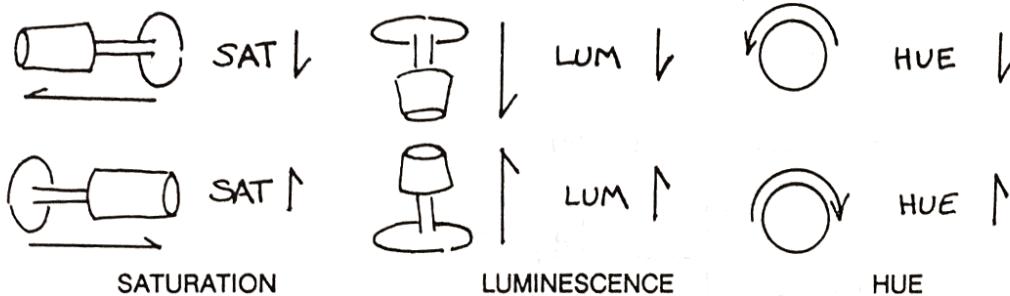


- When the desired border is obtained, simply leave the setting, pressing [SET] is not necessary.

4. COLOR SET

Matte and border color can be independently changed using [COLOR SET].

- Reposition the image as before. Press [MODIFY], either [BORDER] or [MATTE], then [COLOR SET].
- Color parameters are changed according to the following joystick movements.

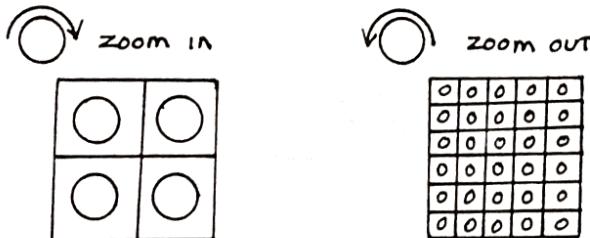


NOTE: If the [DEFAULT] is active when you set color parameters for memorization in [PATT STORE], the set colors will not be memorized correctly (i.e., they will be different when recalled).

5. INFINITE MULTI

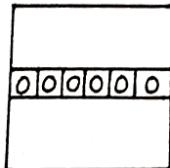
[∞ MULTI] is one of the most important effects the MF-3000/MF-3000P has to offer. This effect can be combined with effects in both the PICTURE CONTROL and SUB EFFECT sections and with [FADE], [FADE] + [REV], [MIRROR H], [MIRROR V] and [SPIN] in the DIRECT TAKE section.

- First clear and return the image on the monitor screen to its full size and press [∞ MULTI]. An infinite number of repeated images will appear on the screen as twist the joystick.

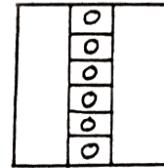


- By modifying the horizontal and vertical display parameters, you can create a "film strip" effect.

If (V) is set to 0

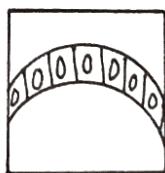


If (H) is set to 0

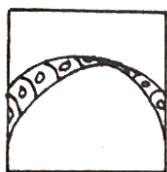


- To get a better idea of what you can produce with [∞ MULTI], try adding some other effects.

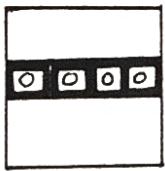
- For example, [CURVE] + [∞ MULTI]:



- Now add [TWIST]:



- And keep adding until you obtain the desired effect.
- You can even add a border to each of the multiple images by pressing [BORDER] + [∞ MULTI].



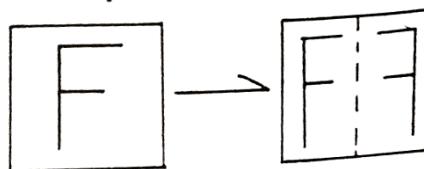
DIRECT TAKE

The effects you have not yet tried at this point are functions of the DIRECT TAKE section. Several of these are "directional" effects and require the use of the numerical keypad. Also, any of the directional-type effects in this section can be performed either automatically (press [AUTO] in the TAKE section) or manually (press [MANUAL] and move the fader lever).

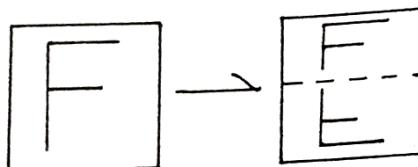
First, let's take a look at the simpler effects in the DIRECT TAKE section.

1. MIRROR H and MIRROR V

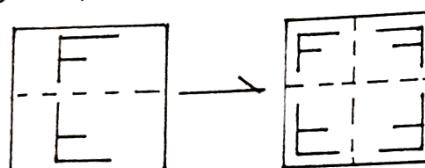
- Clear the last infinite multi effects combination you tried and return the image to full size on the monitor screen. Press [MIRROR H]



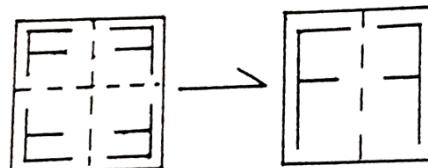
- Clear the image and press [MIRROR V]



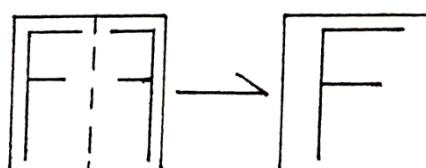
- Without pressing clear, press [MIRROR H] again.



- Now, press [MIRROR V] again.



- To return the image completely to normal, press either [MIRROR H] or [CLEAR].



While these two effects are useful, they are somewhat limited. The only effects they can be used with are those in the **EFFECT**, **SUB-EFFECT**, and **[BORDER]** sections.

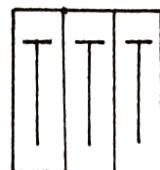
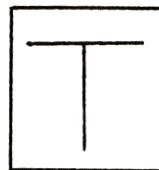
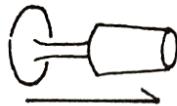
2. MULTI MOVE

Like [∞ MULTI], [MULTI MOVE] allows you to create a multiple image effect. However, in the case of [MULTI MOVE], the effect is limited to a maximum of 81 repeated images (9×9).

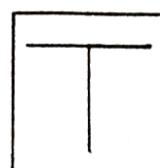
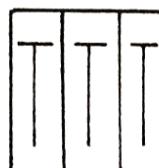
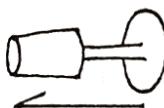
- Press [MULTI MOVE]. The ratio of horizontal to vertical images is modified by using either the numerical keypad or the joystick.

For example:

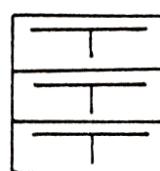
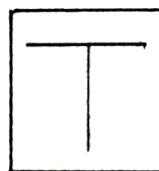
- Increases up to 9 images.



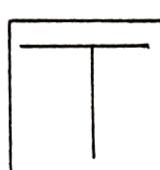
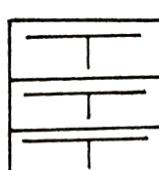
- Decreases down to 1 image.



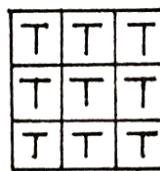
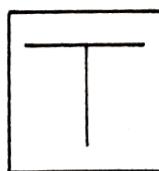
- Increases up to 9 images.



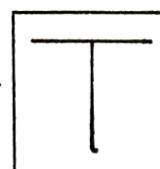
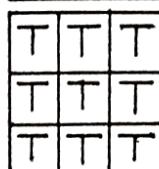
- Decreases down to 1 image.



- Increases up to 9×9 images.



- Decreases down to 1×1 (1) image.



[MULTI MOVE] can only be performed with the same effects [MIRROR H] and [MIRROR V] are limited to.

3. SPIN

[SPIN] adds spin, tumble and/or rotation effects to your image and can only be used with [FADE] and/or [FADE] + [REV].

- First, shrink and position your image again, then press [SPIN].

A display similar to the following will appear.

SPN	TMB	ROT	SYN -
+ 3	- 4	+ 2	REV -

- SPN (spin) = number of spins



- TMB (tumble) = number of tumbles



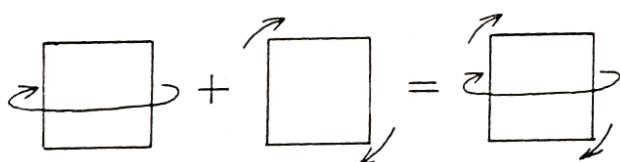
- ROT (rotation) = number of rotations



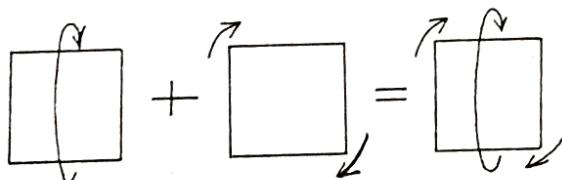
- SYN either inhibits (-) or allows (+) inversion to occur.

Simply set how many times you want the image to spin (say 3) and/or how many times you want it to tumble (say 2), then how many times you want the total number of spins and tumbles to repeat (ROT).

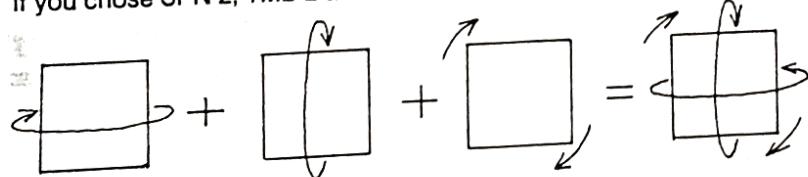
- For example, if you chose SPN 3, TMB 0 and ROT 3, spin and rotate combines.



- If you chose SPN 0, TMB 3 and ROT 2, tumble and rotate combines.



- If you chose SPN 2, TMB 2 and ROT 3, all three effects combine

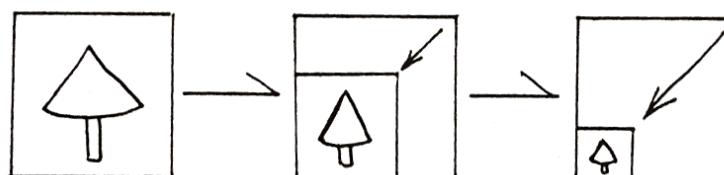


- Now repeat your chosen effect both with and without inversion (SYN) to see the difference.

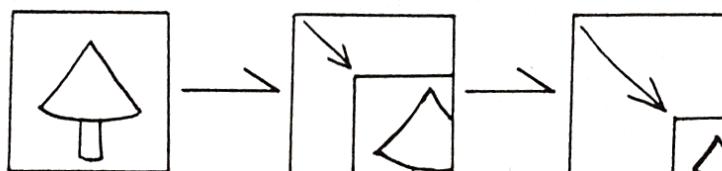
4. COMP, PUSH AND WIPE

Of the direction-type effects in this section the simplest are [COMP] (compression), [PUSH] and [WIPE]. In the case of these three, the direction of the effect is determined by the direction of the arrows marked on the numerical keypad.

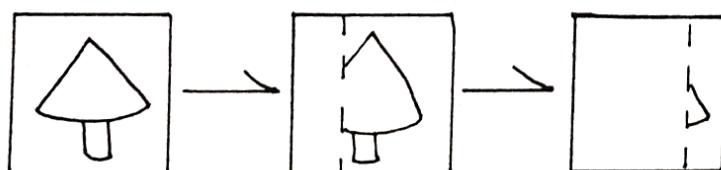
- Return the image to its original size and press [COMP].
- Choose a direction, say [1], pressing [ENTER] is not necessary.
- Next, press either [AUTO] (for automatic performance of the compression) or [MANUAL] (operator performs the compression by moving the fader lever).



- Clear the image, press [PUSH], choose another direction, say [3], and press [AUTO] or [MANUAL].



- Clear the image, press [WIPE], and select a third direction, say [6].



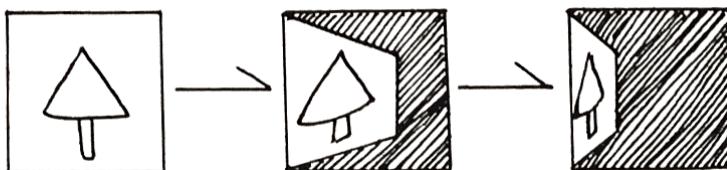
- When finished, return the image to normal.

5. MOVE 1,2,3 AND 4

The four [MOVE] keys are directional like [COMP], [PUSH] and [WIPE]; however, they offer a wide variety of different moves depending on the key and direction chosen.

- For example, pressing [MOVE 1] plus direction [4] may give you a "fall back" effect.

- But, [MOVE 1] plus direction [2] may give you something different, not the same move in a different direction. Perhaps you'll get a "flip back" to another position.

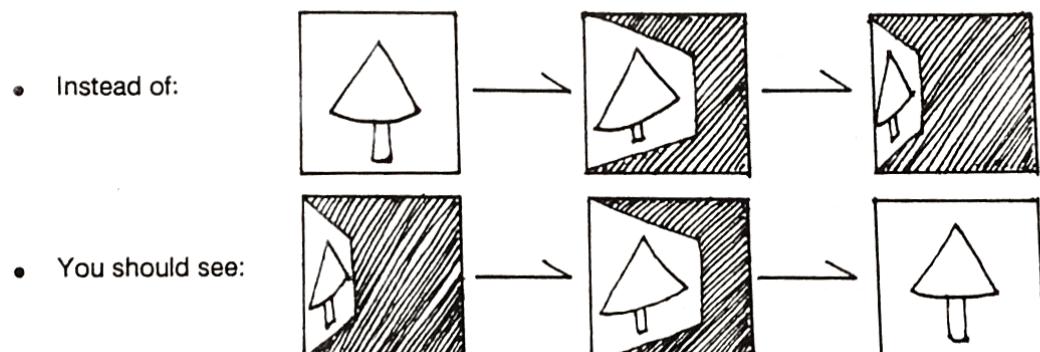


- Because of this, the operator should take time to familiarize himself with all of the directional effects possibilities for each [MOVE] key in all directions.

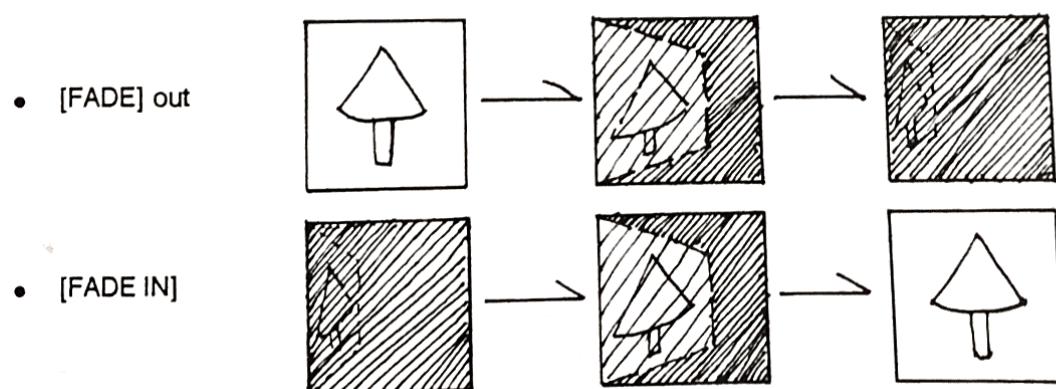
6. FADE AND REV

[FADE] and [REV] can be used with all of the effects in the DIRECT TAKE section; however, the result is slightly different with [MULTI MOVE], [MIRROR H] and [MIRROR V]. Since the last three are not directional effects, the selection of [FADE] + [REV] only produces a reverse fade effect.

- [REV] simply reverses the direction in which a directional effect is performed (except for the three functions mentioned above).
- For example, press [MOVE 1] plus direction [4] for the "fall back" effect shown previously, then [REV].



- [FADE] simply causes the image to "fade in" or "fade out" as it moves. Taking the same example:



BASIC PROGRAMMING

Since this handbook is primarily designed to familiarize the beginning operator with the effects the MF-3000 has to offer, only fundamental terms and procedures related to programs and programming sequences will be explained here. Refer to your operation manual for explanations of MEMORY section functions not covered in this handbook (i.e., [EDIT], [CORRECT], [INST], [DELETE], [STOP], [PATTERN STORE] and [PATTERN RECALL]).

1. PROGRAMMING TERMS

There are four programming terms commonly used in regards to the MF-3000 that the operator should be familiar with.

- **EFFECTS PATTERN:** Any effect stored in memory ([PATT STORE]) for later use. Total memory capacity is 100 patterns.
- **KEY FRAME:** A key frame is a basic program unit and refers to an image to which effects have been added. Effects can be added to an image by using the effect keys or by recalling previously stored effects patterns.
- **PROGRAM:** Refers to the movement/operation of a series of keyframes. Total program memory capacity is up to 20 types (programs) of up to 30 steps (key frames) each.
- **PROGRAMMING SEQUENCE:** Refers to a series of programs stored and executed in sequential order. Total sequence memory capacity is up to 32 types (sequences) of up to 30 steps (programs) each.

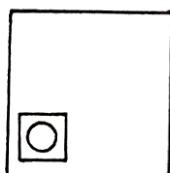
2. PROGRAM SET UP

Now that you know some of the terms, try setting up a simple program based on the following information.

Image movements are composed of a series of key frames (images to which effects have been added) which together make up a program.

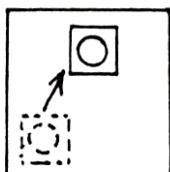
As your first step towards programming, try to program 3 reduced images to move from point A to point C. Try setting the key frames as follows.

- A)

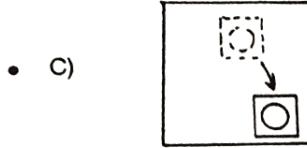


KF1 = (STEP 1): Reduce and position the image.

- B)

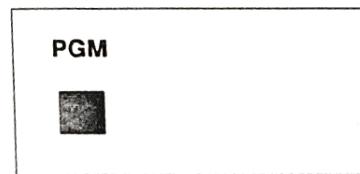


KF2 = (STEP 2): Reposition image.



KF3 = (STEP 3): Reposition the image a third time.

- To start setting these three images in memory, first select [PGM] (program) in the MEMORY section. The following display will appear.



- Now, select a program number using the numerical keypad. In this case, select [1] and press [ENTER].

The following display will appear.

PGM	NO	DUR	MODE
01	01	02 : 00	NOM

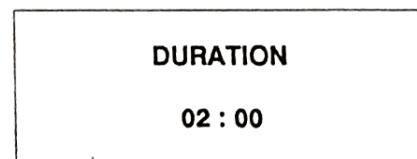
NOTE: MODE is a status indication only. It can not be changed and should be mostly ignored at present.

The three important display parameters are:

- PGM = The designation number of the program being performed/set up.
- NO = Which keyframe in the program is being performed/set up. Each program can contain up to thirty.
- DUR = The length of time the total program will take to be performed. The first two digits (00.00) equal the total number of seconds (0 to 59 possible) it takes to run the program.

3. DURATION

- To change program duration, select [DURATION] in the TAKE section. The display will appear as follows.



Last digit will be flashing.

- Use the numerical keypad to set the desired duration time and press [ENTER]. Assume 02 : 20 has

- The original display will return and show the new duration time.

PGM	NO	DUR	MODE
01	01	02 : 20	NOM

4. SETTING KEYFRAMES AND INTERPOLATION

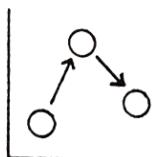
- Select [POS] and use the joystick to position key frame 1 at point A (shown previously). A display will appear similar to the following.

<SZ>	<HP>	<VP>
*****	*****	*****

- The "brackets" around the parameter headings will change, depending on the type of interpolation (movement) chosen.

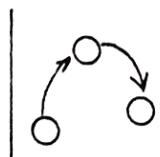
Linear interpolation moves the image directly from point to point in a straight line.

< > = linear =



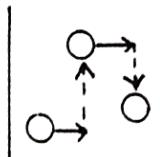
Curvature interpolation "rounds out" the movement between key frames to give a smooth motion flow.

() = curvature =



No interpolation causes the image to move from point to point with a "slide" and "jump" motion.

[] = no interpolation =



- To change the interpolation of each or all of the parameters, use [SMOOTH] and [CUT] in the PICTURE CONTROL section.
- Pressing [SMOOTH] will switch the parameter brackets between < > (linear) and () (curvature).
- Pressing [CUT] will move them between < > (linear) and [] (no interpolation).
- Once the desired interpolation and other parameters (positioning) are shown on the display, press [SET].

5. FINISHING AND PLAYING THE PROGRAM

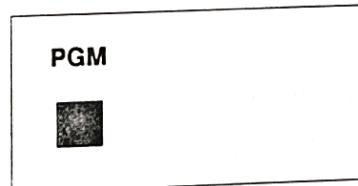
After pressing [SET] to set the parameters of your first key frame, the following display will appear.

PGM	NO	DUR	MODE
01	02	02 : 20	NOM

- Note the NO parameter has changed to 2 to indicate the unit is ready for the second key frame to be set.
- Set the parameters of the second key frame same as you did the first.
- The next display will read:

PGM	NO	DUR	MODE
01	03	02 : 20	NOM

- Repeat the procedure again to set the three key frame.
- At this point, store all three key frames in memory by pressing [END] in the MEMORY section.
- Next, review the results of your programming efforts by pressing [PLAY] in the MEMORY section.
- The following display will appear:



- Select program 1 using the numerical keypad and select either [MANUAL] (to perform the program using the fader lever) or [AUTO] (to perform the program automatically according to the set duration time).
- Now, set up two more programs (2 & 3) using the same three keyframes, but use a different interpolation setting for each.
- After setting up both of the new programs, review the results of programs 1, 2 and 3. Note the difference in image movement for each interpolation setting.

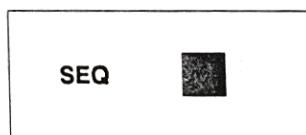
SETTING UP A SEQUENCE

You now have three programs of three key frames each with three different interpolations.

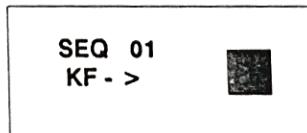
Now try to use these programs to set up a simple sequence. Sequences are memorized and played back similar to programs, but with differences.

1. PROGRAMMING

- To start, select [SEQUENCE], then [PGM]. The following display will appear.

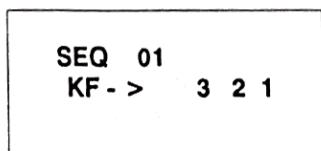


- Select a designation number for the sequence using the numerical keypad.
- The display will change to:



During sequence programming, KF (key frame) stands for the programs to be used to make up the sequence. Just as one key frame is one component of a total program, one program is one component (key frame) of a total sequence.

- In this case, select the three programs you have in memory in reverse order; i.e., 3, 2 and 1.
- [ENTER] must be pressed after each program is selected. Hence, select 1 / press [ENTER], select 2 / press [ENTER], etc.
- When you have entered all three programs the display should appear as follows. indicating program 1 as the last program in the sequence.



- When all of the sequences required for the program are entered, press [END], same as for program set up.

2. PLAYING THE SEQUENCE

To play back the sequence you have just entered, first press [sequence], then [PLAY].

Next, select the sequence number and press [ENTER].

If you have used the three previously stored sequences as suggested, the following display should appear.

SEQ	STEP	KF	NO
1	01	03	

- SEQ (sequence) = The designation number of the sequence currently chosen for operation.
- STEP = Which of the programs is currently playing / is set to play next. STEP refers to the order of the actual sequence. For example, if you had entered programs 5, 12 and 9; 5 = STEP 1, 12 = SEP 2 and 9 = STEP 3.
- KF (key frame) = Which of the programs is currently playing / set to play next. Remember, in sequence programming a program is equal to a key frame.
- NO (number) = Shows the last key frame played in the previous program.
- To initiate sequence play, press either [AUTO] or [MANUAL] in the TAKE section, same as for program play.
- As the first program plays, the display should remain as follows.

SEQ	STEP	KF	NO
1	01	03	

- When the first program finishes playing, the display will change to:

SEQ	STEP	KF	NO
1	02	02	03

- And effects movement will stop with the end of the first program.

This is because the sequence programming of the MF-3000 operates only as a sequential file to set up programs in the desired order of performance. Unlike some other switchers, it does not automatically initiate the next program upon completion of the previous one.