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# ADO

## AMPEX DIGITAL OPTICS

SOFTWARE BULLETIN
VERSION 8

AMPEX

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# ADO
# SOFTWARE BULLETIN
# VERSION 8

## 1 INTRODUCTION

ADO System Version 8 software implements new features and changes some existing operating characteristics. Information applies to all ADO 3000 units.

Information in this bulletin is presented in the following order:

- New Features
  - ADO with Concentrator
  - Multi-Channel Software
  - New Concentrator Program Mode
- Modified Characteristics
  - Keyboard Layout
  - Comm Mode
  - Program Mode
  - Run Mode
  - Setup Mode
- Version 8 Menu Guide
- Appendix: Version 8 Preliminary Operating Instructions—ADO Concentrator Infinity Option

## 2 NEW FEATURES

### 3 ADO with Concentrator

If you are a single-channel customer, most changes in Version 8 will be easy: parameters in slightly different places, some changes in keystroke sequences. However, customers with concentrators should take the time to at least skim these paragraphs: New Concentrator Program Mode, Comm Mode, Run Mode.

### 4 Multi-Channel Software

All Version 8 software is multi-channel software; hence, single-channel-only

software is no longer available. Perspective and rotation options are now determined by the hardware mix of boards in the signal system. Version 8 software offers only one form of control panel software.

## 5 New Concentrator Program Mode

Channel transparency and reflectivity have been moved to the new concentrator program mode, and are now programmed on concentrator keyframe boundaries. The light source, ambient light, and concentrator background color adjustments have moved to this mode as well, though their functions have not changed.

Edge softness and background z-value affect the 3D-keyer. When two or more planes are keyed together, the intersection edge has a softness, which avoids aliasing and which can be adjusted in this mode. The 3D-keyer keys the planes with respect to the background mat. This mat's z-value, or distance from the viewer, can also be adjusted in this mode. A background z-value of 0 puts the background mat at the same distance from the viewer as an untransformed picture.

The second-level soft keys in concentrator program mode are also new. The Fs PARAMS key selects the menu where trail and sparkle parameters are adjusted. Channel outputs can be changed in the Concentrator Flags menu to show the combine; z-clipping can also be enabled (with 3D-keyer only) in the Concentrator Flags menu.

## 6 MODIFIED CHARACTERISTICS

The following paragraphs describe Version 8 software changes in the keyboard and in the various operating modes.

## 7 Keyboard Layout

The keycap layout for use with Version 8 software has changed slightly. All the changes are in the keypad group, and in the transform key group (the lower group of ten keys, to the left of the keypad).

In the keypad group, the legends TO BEG, ALL KF, and TO END have been added to the 1, 2, and 3 keys. A left arrow and right arrow have been added to the "." (decimal) and ENTER keys, respectively. Decimal and ENTER key functions are used in jog mode, and described in paragraph 10.

The transform key group has been rearranged to make room for the new CONCEN key, which is used to select the concentrator program mode. To allow space for this key, the BORDER WIDTH and CROP TOP/LEFT functions have moved onto a single key, and BORDER COLOR has moved as well. Also, crop functions have been re-labeled to reflect their true relationship to x and y axes.

## 8 Comm Mode

**Modified characteristics:**

- In Versions 5 and 6 software, the GLOBAL key was used to switch between single-channel and multi-channel operation. This selection is now made with a soft key, which toggles between single- and multi-channel operation.
- Concentrator master timer select is now in the second level of soft keys in comm mode. As the key is pressed, it rotates the master timer for the concentrator from A to B to C to D, then back to A.

**Concentrator resource select:**

This feature is new with Version 8. A menu of concentrator resources (frame stores and 3D keyers) appears below the channel matrix if a concentrator is connected to the system, and if:

- the concentrator is communicating,
- the frame stores and 3D-keyers are properly installed in the concentrator, and
- more than one channel is acquired, or one channel is acquired and single-channel combines are enabled in the concentrator.

**Note**

**If single-channel combines are allowed and all channels are released, or if single-channel combines are not allowed and all but one channel is released, then all concentrator resources are automatically released, and the list of resources disappears from the Comm Mode menu.**

**Note**

**Be aware that the concentrator contains only two combines, so that when you are working with single-channel combines, the first two operators get the combines and no more combines are available for concentrator operation.**

The operator must acquire concentrator resources in the same way channels are acquired. To acquire concentrator resources (necessary to use Infinity [tm] options), press MORE once to access the level 2 soft key menu. Use the -> and <- soft keys to move the highlight to the resource desired. Press the **acquire** soft key to acquire the resource. The word ACQUIRED replaces FREE to the left of the resource name.

To release a concentrator resource, use the -> and <- soft keys to move to the acquired resource. Press the **release** soft key to release the resource. The word FREE replaces the word ACQUIRED to the left of the resource name.

## 9 Program Mode

**Grid menu:** The format of the Grid menu has changed slightly, so that when the **no grid** soft key is pressed, grid selections toggle through, from **source grid** to **safe**

**area** to **target grid.** At this point, the grid position and spacing menu appear, allowing changes to the target grid. When the soft key is pressed again, grids return to **no grid.**

**delete all soft key prompting:** With Version 8 software, when **delete all** soft key is pressed once, a prompt reminds the operator that one more press deletes the effect in this channel only. After the second press, another prompt reminds the operator that a third press deletes the effect in all channels, global, and concentrator, and returns the run-mode priorities to the default state.

**Enter name function:** A backspace function has been added, allowing easier name entry. Also, when the entered name exceeds 15 characters, a prompt is displayed, allowing changes to be made. In earlier versions, the name was automatically entered when the length reached 15 characters.

**List disk display:** Columns for each effect now list effect number, name, number of keyframes in channels 1, 2, 3, and 4, number of global keyframes, number of concentrator keyframes, and the software version under which the effect was created. Instead of a number of keyframes remaining, a percentage of disk remaining is displayed in the upper right-hand corner of the display. When recalling effects, the display notes the block being read, thereby informing the operator that something is happening.

**Four-channel shot box:** When using the ADO in single-channel mode, four single-channel effects can be recalled into channels 1 through 4, then selected quickly using the channel buttons.

## 10 Run Mode

The new concentrator channel status block contains four entries: output, framestore one, framestore two, and 3D-keyer. The output line indicates which channels and framestores are included in the output combine. These channels appear on any ADO whose output is selected to be the combine. Framestore lines indicate which channels go into each framestore, allowing trails, smears, and sparkles. A channel can go either into a framestore, or directly into the output combine, but not into both.

Concentrator output select has been moved to concentrator program mode, and is now programmed with other concentrator keyframe parameters.

Concentrator transparency, reflectivity, ambient light, and background color adjustment have been moved to concentrator program mode.

The 3D-key line indicates which channels will go through the 3D-keyer, allowing intersecting planes. For example, if channels 1, 2, and 3 are being used, and the operator wants sparkle trails on channels 1 and 2 on top of decaying trails on channel 3, and all three channels 3D-keyed together, the concentrator channel status block would look like this:

| | | | |
|---|---|---|---|
| out | fs1 | fs2 | |
| fsl | 1 | 2 | |
| fs2 | 3 | | |
| 3D-key | 1 | 2 | 3 |

To program a priority event, move to the desired time on the time line using the jog keys, joystick, or **ent y.** Press the **priority** soft key, and use the -> and <- keys to move to the line to be programmed. Use the channel keys and fs1 and fs2 soft keys to enter the priority sequence. The priority can be cancelled before entering by hitting the **cancel** soft key. Finish up with ENTER. Keypad keys 1 through 6 also map to channels 1 through 4, fs1, and fs2, in that order. Priority changes can be programmed anywhere along the time line. To remove channels from a line, move to that line, press Φ then ENTER.

A priority event along the time line is now indicated by a **p** above the time line. Pauses are still indicated by an **X,** but the **X** is now below the time line. Start and end times are indicated by an **S** and **E,** or an **O** if they are very near the same point.

ACE interface has been enhanced so that ACE can now run an effect from end to beginning—in other words, backwards.

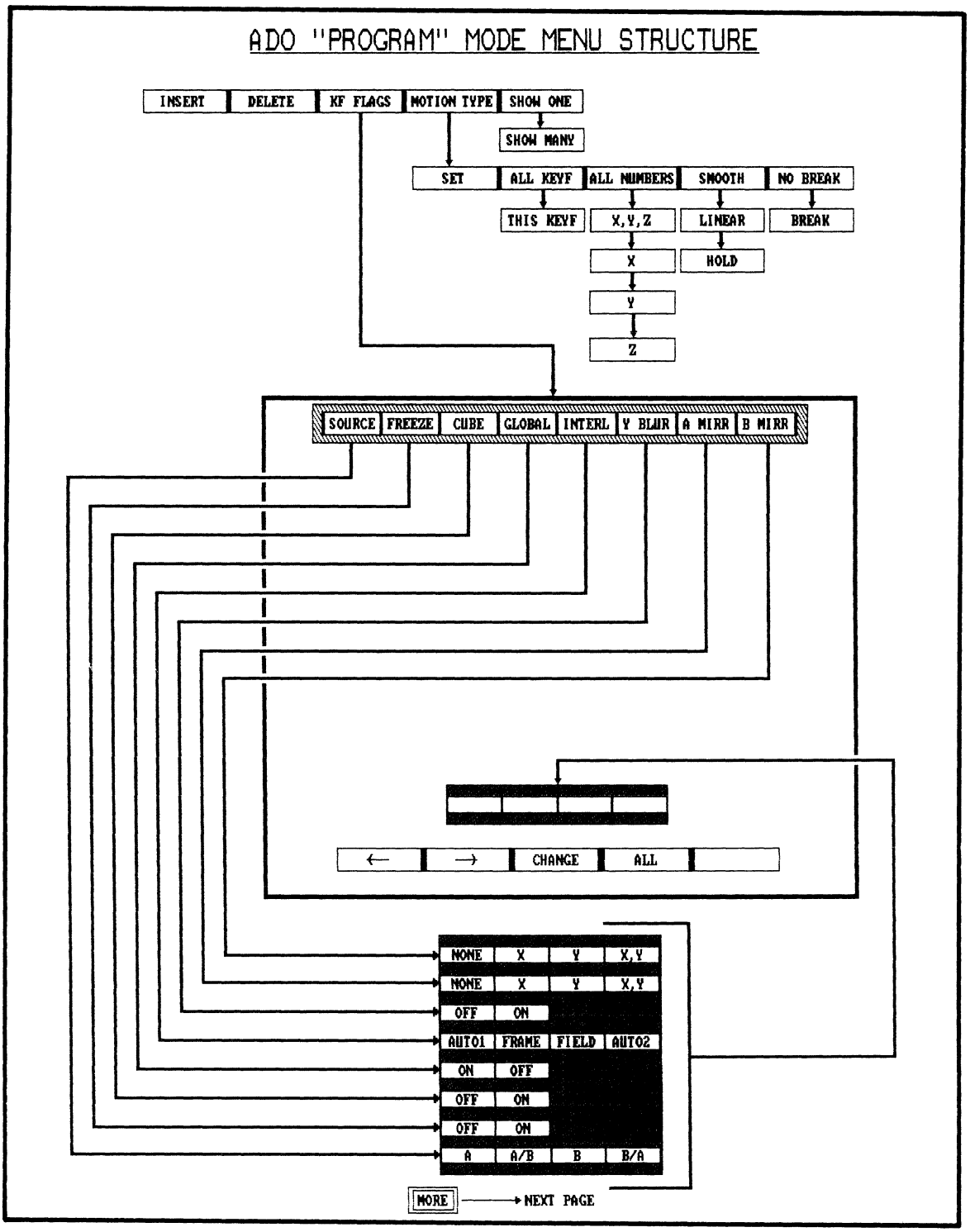
Jog mode allows moving along the time line in field or frame steps. A soft key determines the size of the steps, toggling between jog by frame and jog by field. To jog forward, press the →/ENTER key on the keypad. To jog backward, press the ←/. key. A decimal point between the seconds and frames of the time indicates the first or even field of the frame, a colon indicates the second or odd field of the frame.

## 11 Setup Mode

The **copy disk** function has moved within the Soft Key menu in setup mode, and has traded places with the format disk function.

The **su flags** function is new with Version 8. The first two selections allow the horizontal or vertical processing to be disabled in the signal system. Note that if both horizontal and vertical processing are disabled, no picture transformations are seen. The other two setup flags allow the cpp id number and television standard to be changed without opening the control unit. The last selection determines whether the cpp id and television standard will be set by the DIP switches in the control unit, or by using the su flag settings. The **su flags** are stored with the other setup parameters in the EEPROM, or on disk.

# VERSION 8 MENU GUIDE



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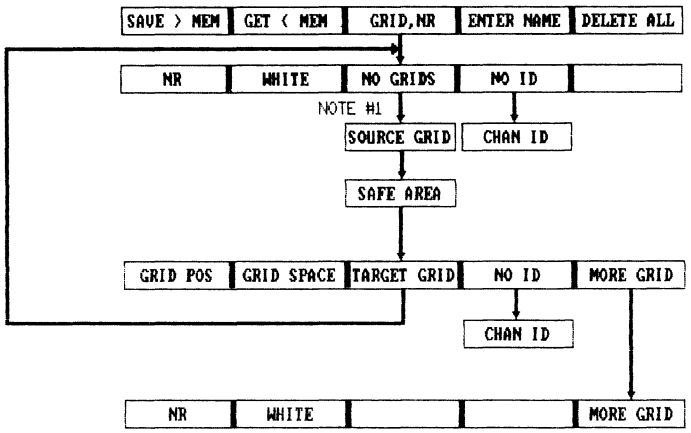


| NOTE #1 | GRID ITEMS WILL NOT CHANGE UNLESS A CHANNEL IS ACQUIRED. |
|---|---|

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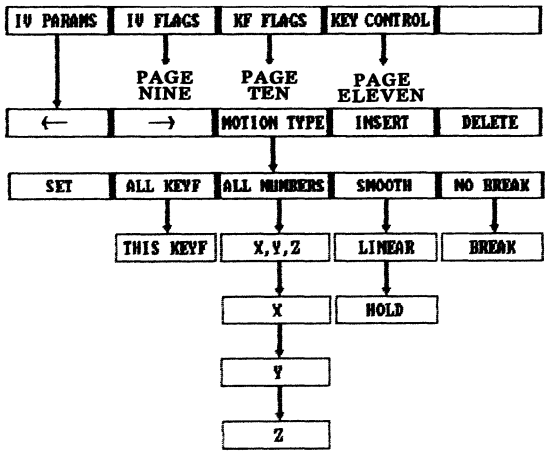
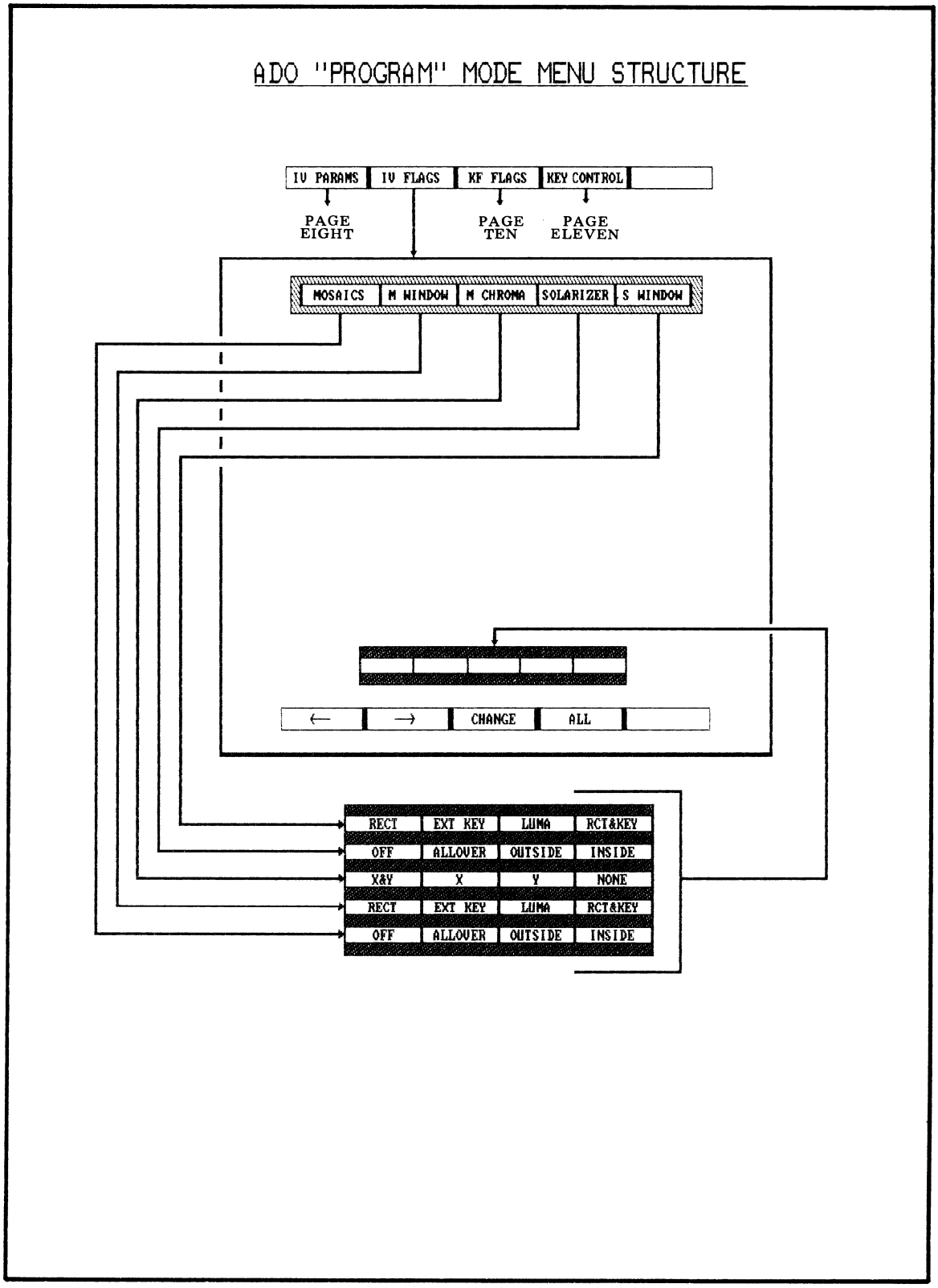
## ADO "PROGRAM" MODE MENU STRUCTURE




ADO "PROGRAM" MODE MENU STRUCTURE
IV PARAMS
IV FLAGS
KF FLAGS
KEY CONTROL
PAGE EIGHT
PAGE TEN
PAGE ELEVEN
MOSAICS
M WINDOW
M CHROMA
SOLARIZER
S WINDOW
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EXT KEY
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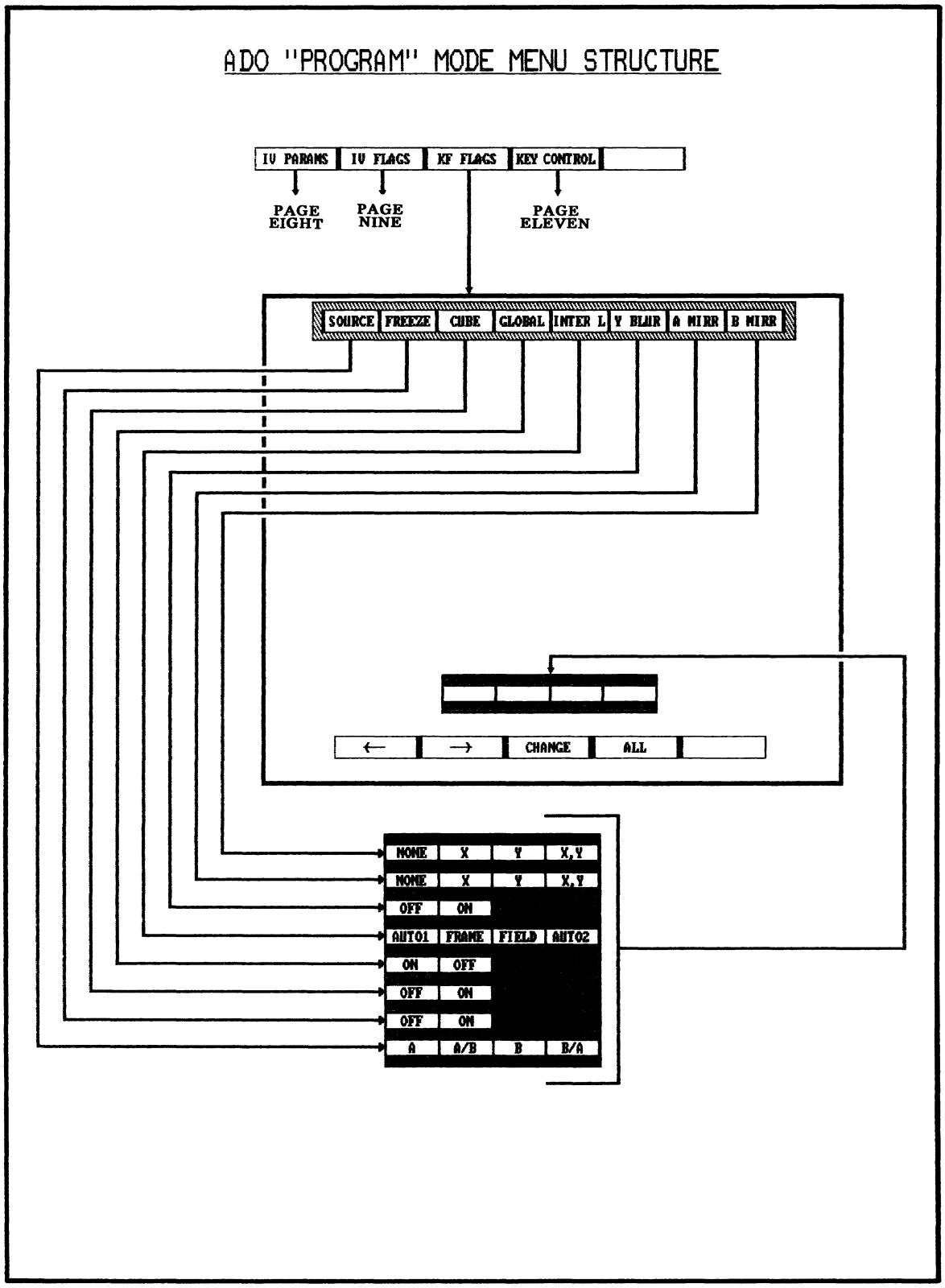
ADO "PROGRAM" MODE MENU STRUCTURE
IV PARAMS
IV FLAGS
KF FLAGS
KEY CONTROL
PAGE EIGHT
PAGE NINE
PAGE ELEVEN
SOURCE
FREEZE
CUBE
GLOBAL
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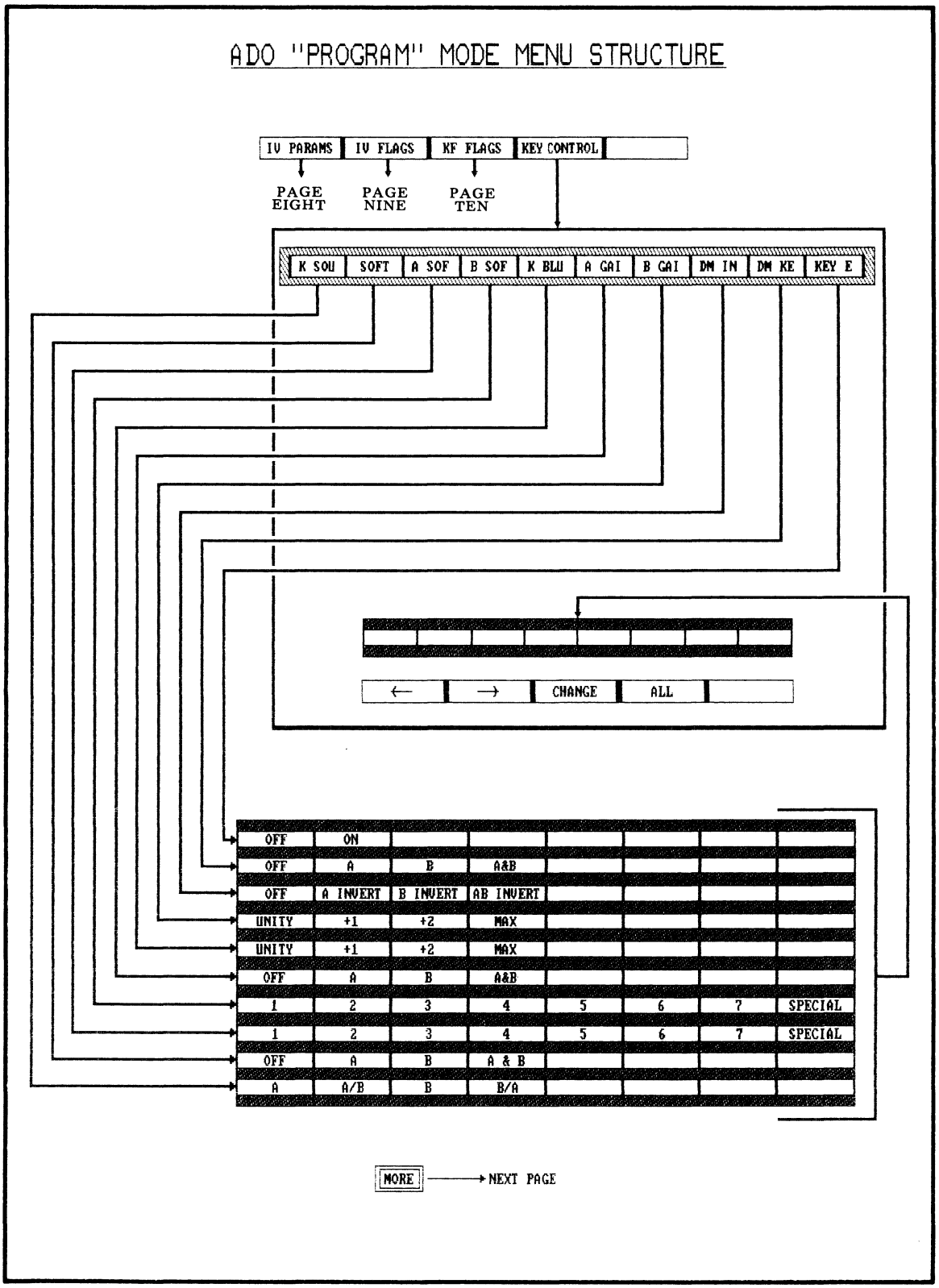
ADO "PROGRAM" MODE MENU STRUCTURE
IV PARAMS
IV FLAGS
KF FLAGS
KEY CONTROL
PAGE EIGHT
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ALL
OFF ON
OFF A B A&B
OFF A INVERT B INVERT AB INVERT
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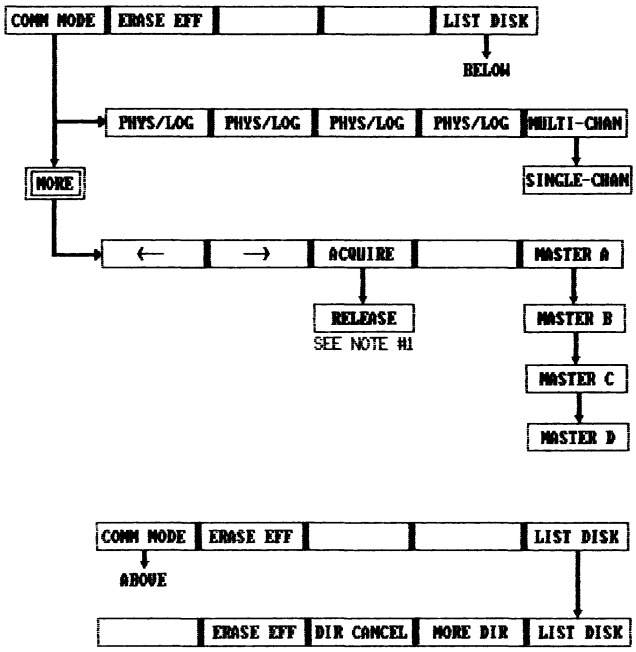
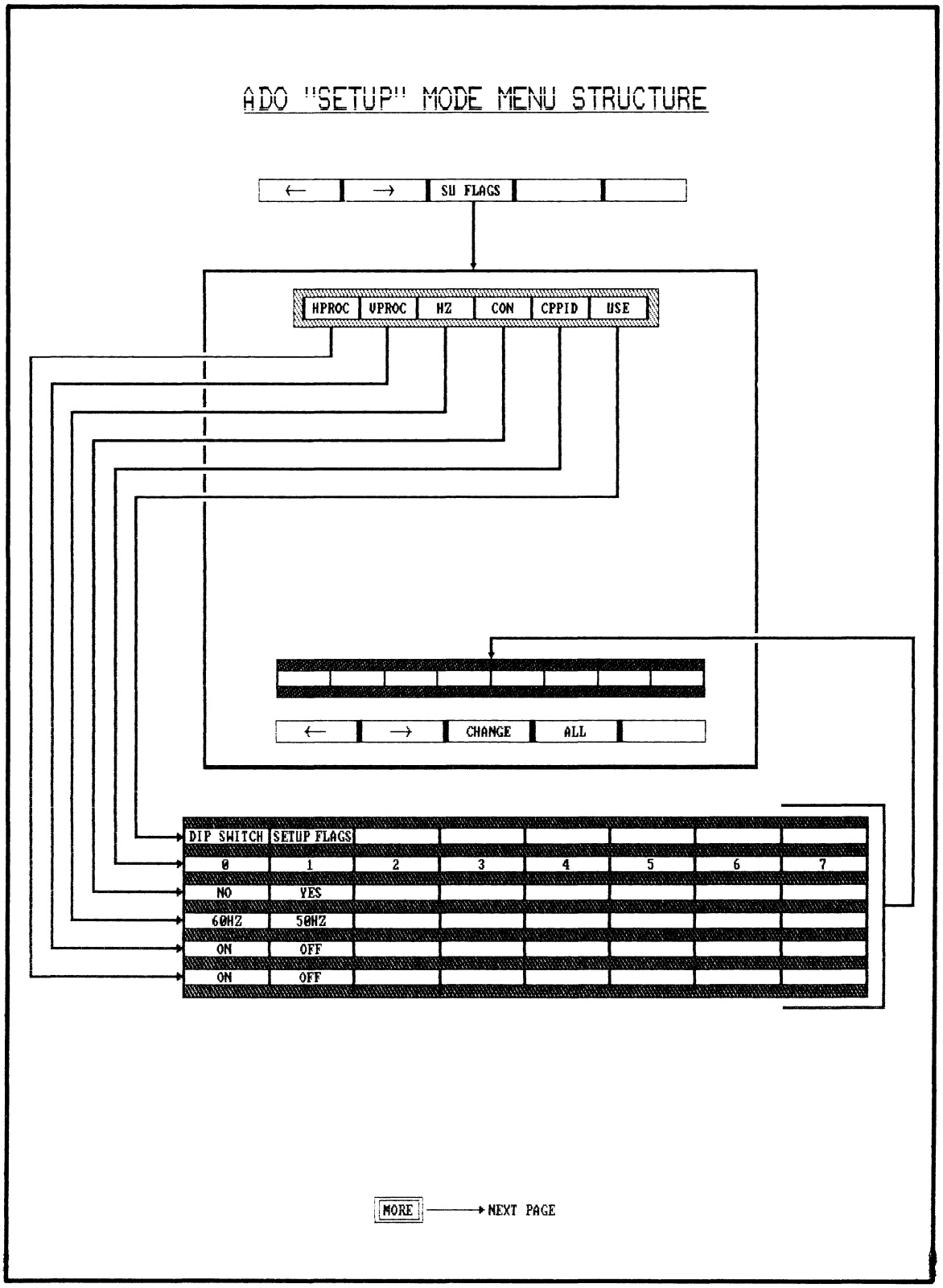
UNITY +1 +2 MAX
OFF A B A&B
1 2 3 4 5 6 7 SPECIAL
1 2 3 4 5 6 7 SPECIAL
OFF A B A & B
A A/B B B/A
MORE
NEXT PAGE

## ADO "PROGRAM" MODE MENU STRUCTURE




| NOTE #1 | ACQUIRE AND RELEASE ONLY APPEAR IF YOU ARE USING A CONCENTRATOR AND ARE IN THE MULTI-CHANNEL MODE. OTHERWISE, THAT MENU BLOCK WILL BE VACANT. |
|---|---|

MORE → PAGE 6


ADO "SETUP" MODE MENU STRUCTURE
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SU FLAGS
HPROC
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HZ
CON
CPPID
USE
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→
CHANGE
ALL
DIP SWITCH
SETUP FLAGS
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1
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3
4
5
6
7
NO
YES
60HZ
50HZ
ON
OFF
ON
OFF
MORE
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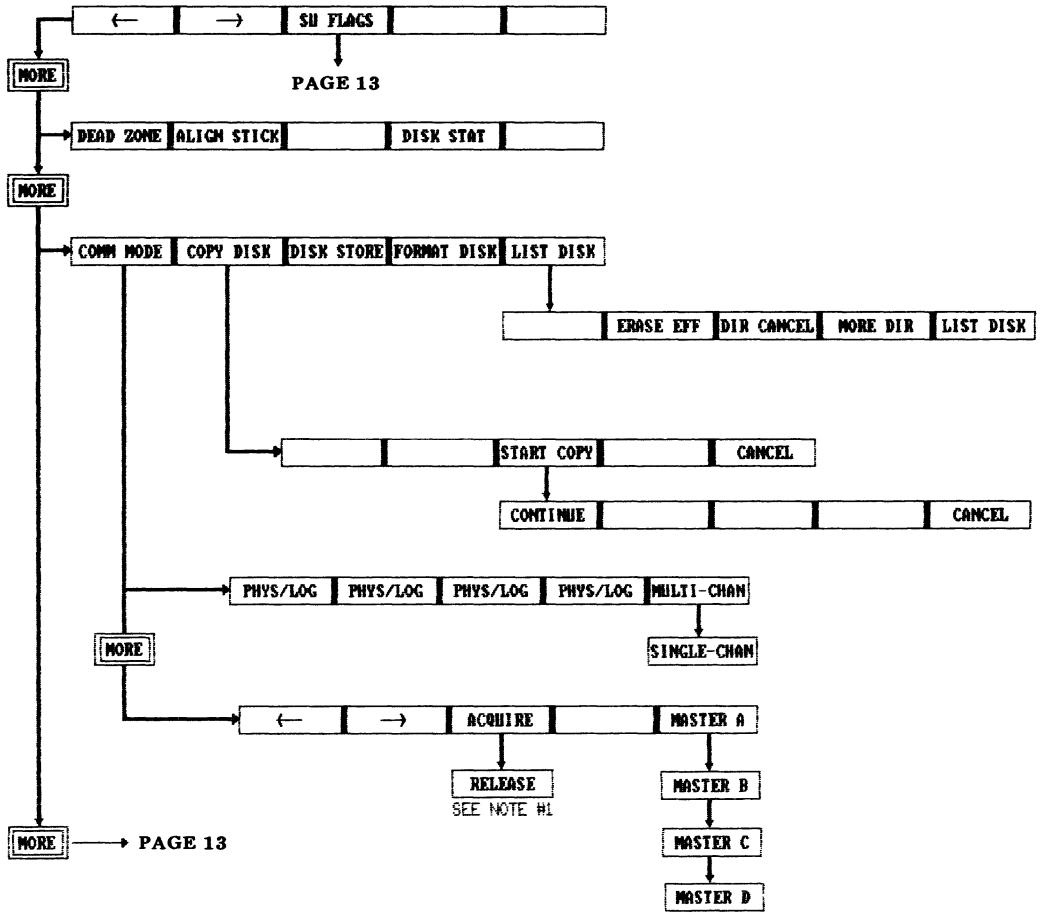
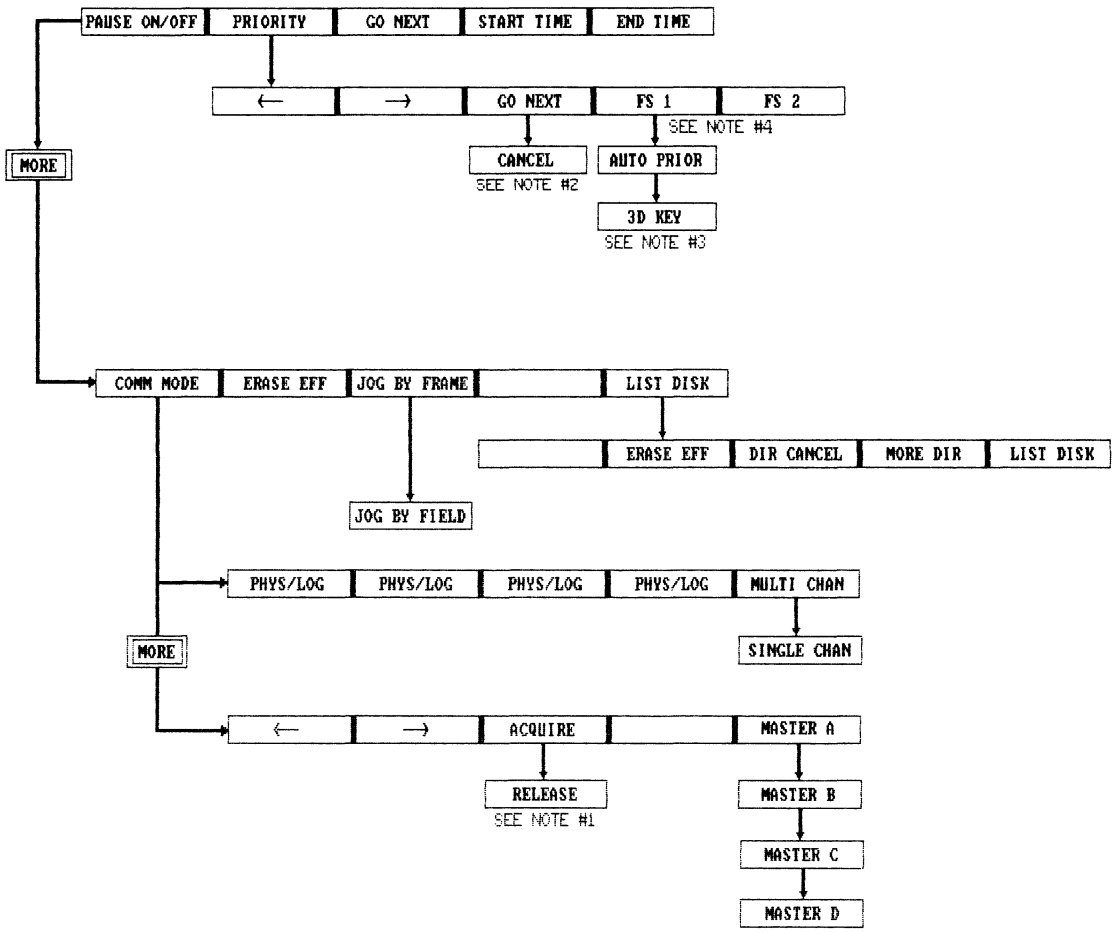
## ADO "SETUP" MODE MENU STRUCTURE



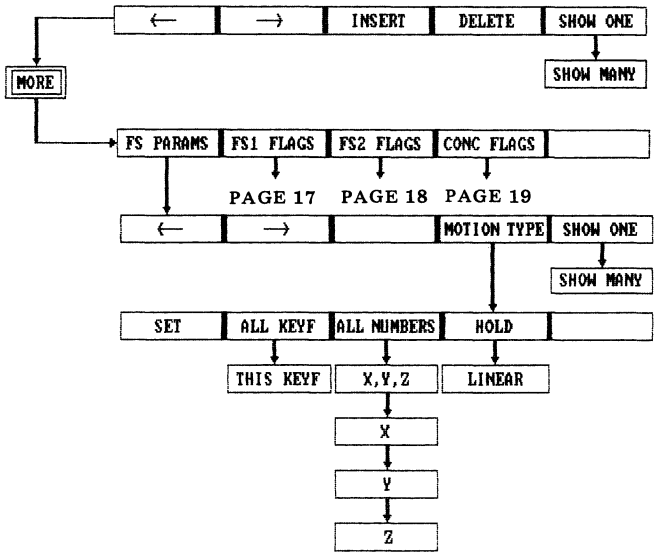

| NOTE #1 | ACQUIRE AND RELEASE ONLY APPEAR IF YOU ARE USING A CONCENTRATOR AND ARE IN THE MULTI-CHANNEL MODE. OTHERWISE, THAT MENU BLOCK WILL BE VACANT. |
|---|---|

# ADO "RUN" MODE MENU STRUCTURE

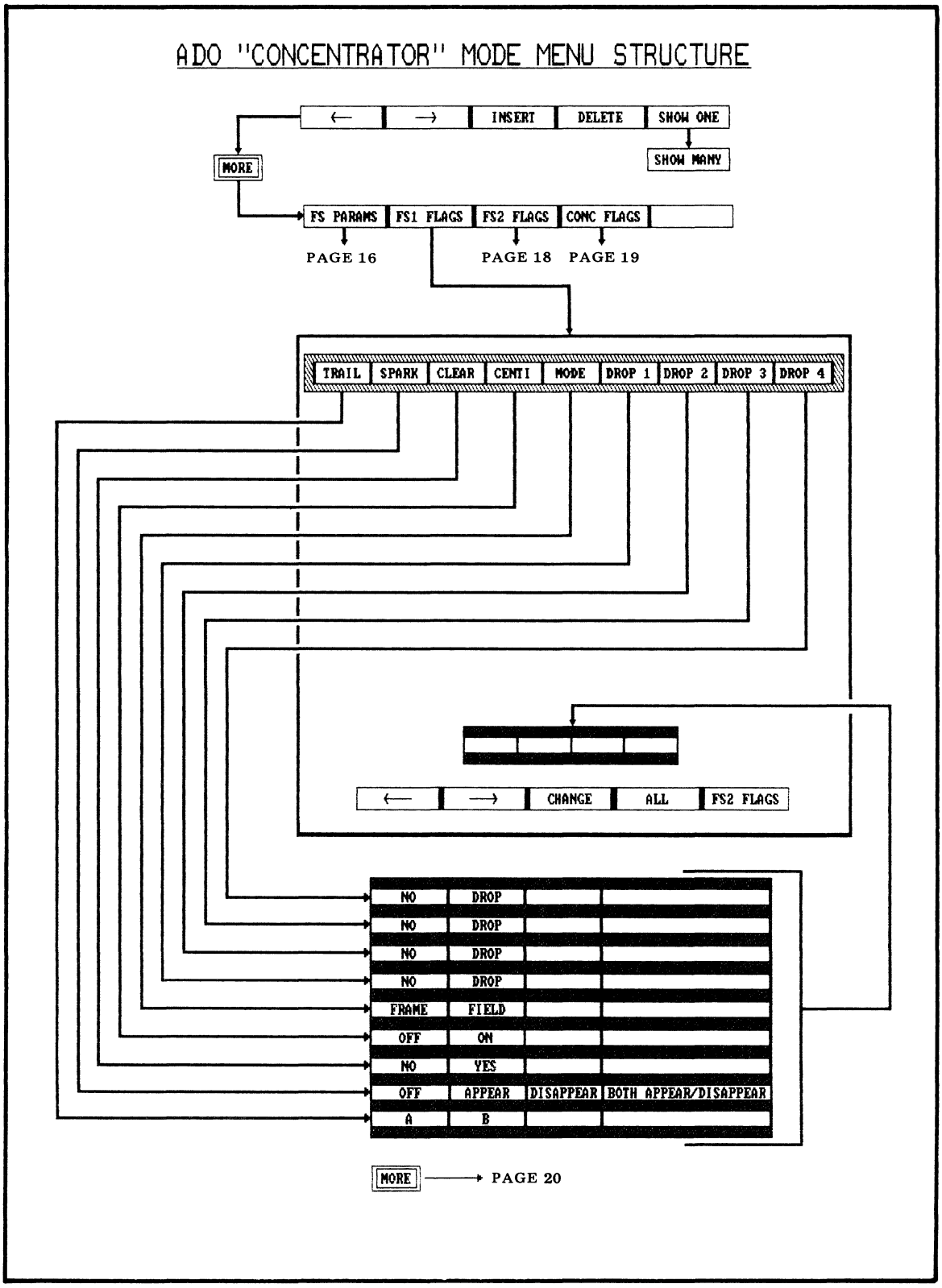



| | |
|---|---|
| NOTE #1 | "ACQUIRE" AND "RELEASE" ONLY APPEAR IF YOU ARE USING A CONCENTRATOR AND ARE IN THE MULTI-CHANNEL MODE. OTHERWISE THAT MENU BLOCK WILL BE VACANT. |
| NOTE #2 | "CANCEL" ONLY APPEARS WHEN AN INCOMPLETE PRIORITY ENTRY HAS BEEN ENTERED. |
| NOTE #3 | "3D KEY" AND "AUTO PRIOR" ONLY APPEAR WHEN "3D KEY" OR "AUTO" IS HIGHLIGHTED IN THE PRIORITY DISPLAY. |
| NOTE #4 | "FS 1" AND "FS 2" ONLY APPEAR WHEN "OUT" IS HIGHLIGHTED IN THE PRIORITY DISPLAY. |

## ADO "CONCENTRATOR" MODE MENU STRUCTURE




MORE → PAGE 20


ADO "CONCENTRATOR" MODE MENU STRUCTURE
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MORE
FS PARAMS
FS1 FLAGS
FS2 FLAGS
CONC FLAGS
PAGE 16
PAGE 18
PAGE 19
TRAIL
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MODE
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DROP 2
DROP 3
DROP 4
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FS2 FLAGS
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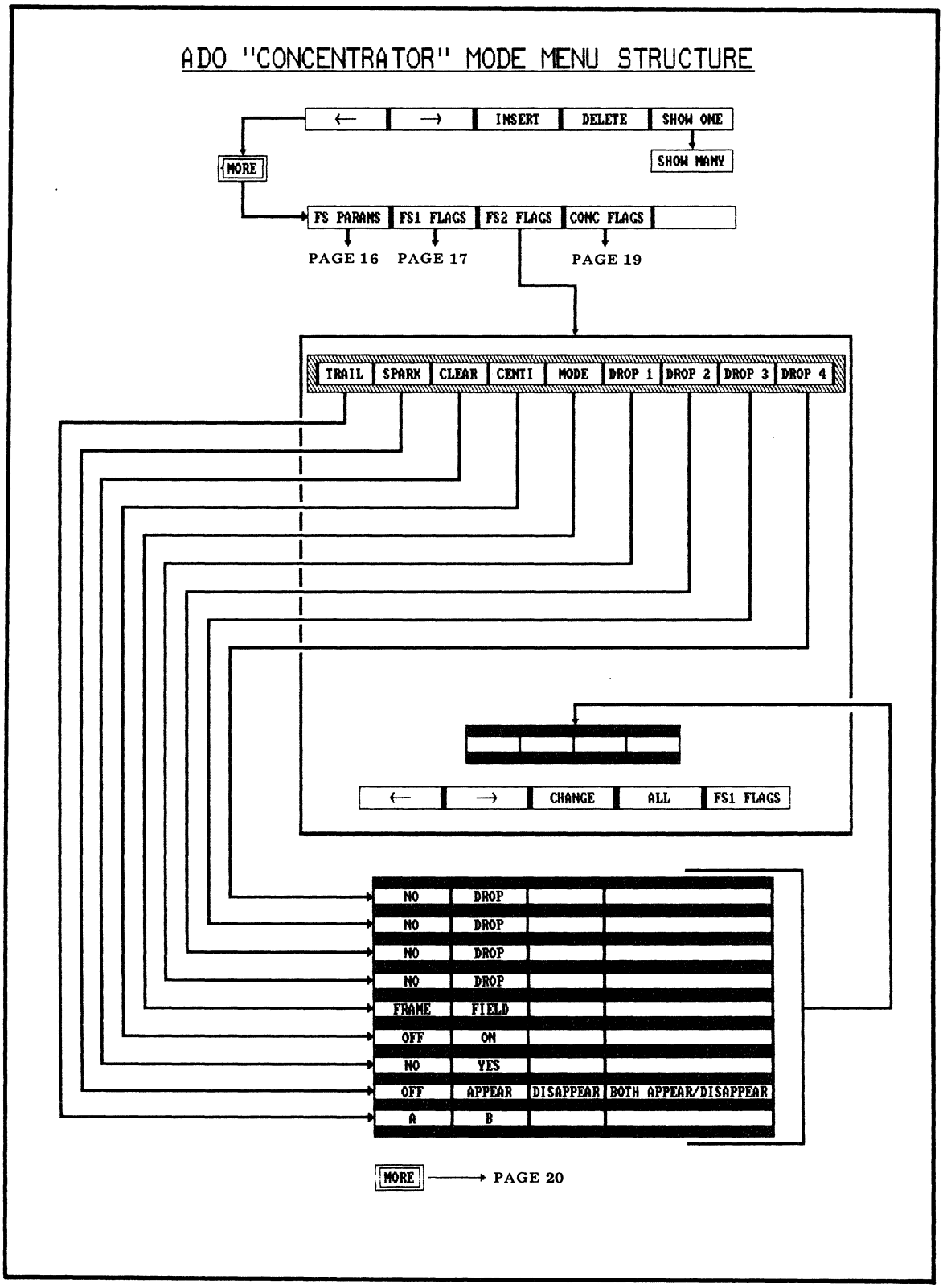
PAGE 20


ADO "CONCENTRATOR" MODE MENU STRUCTURE
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FS2 FLAGS
CONC FLAGS
PAGE 16
PAGE 17
PAGE 19
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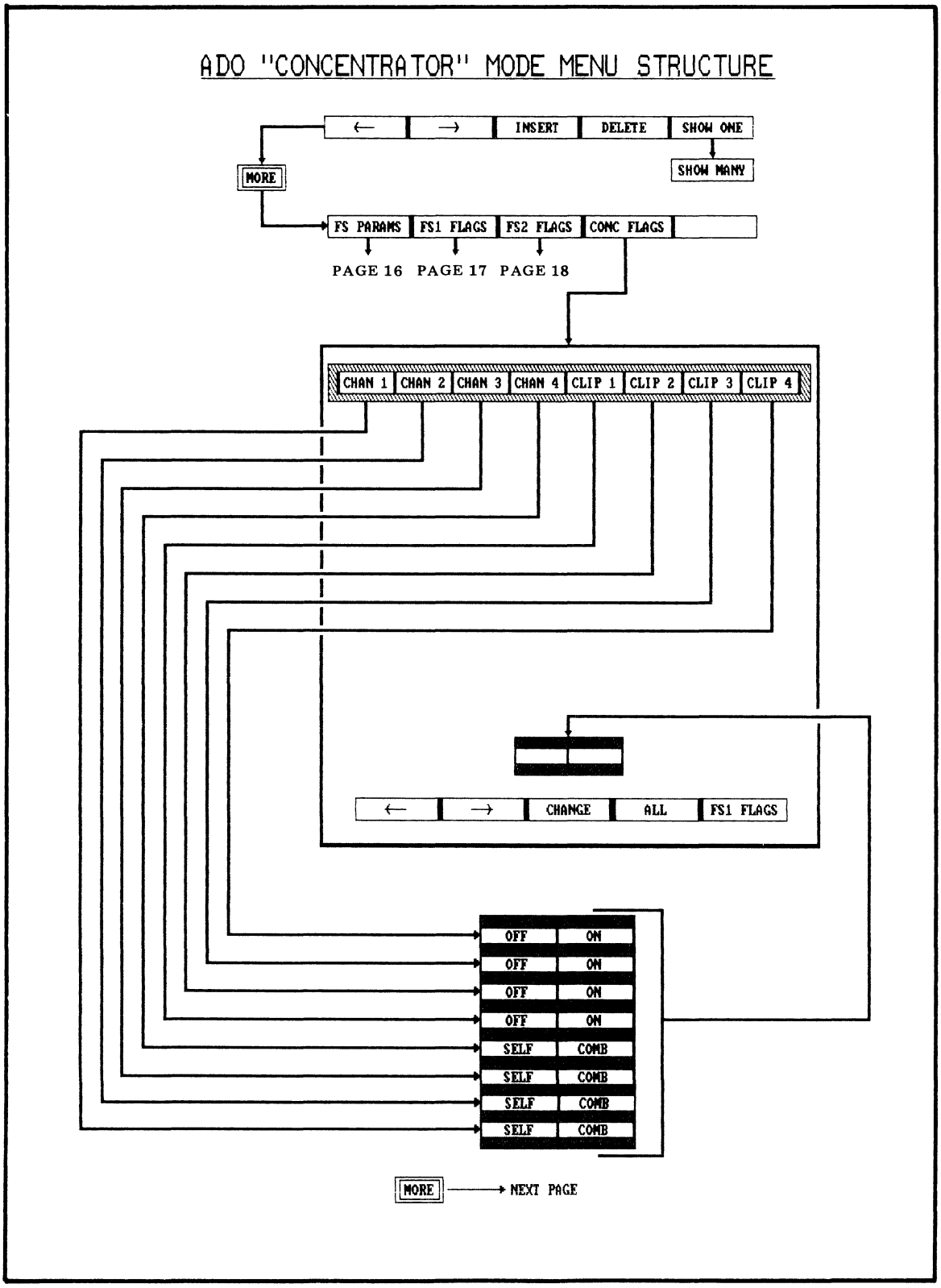
PAGE 20


ADO "CONCENTRATOR" MODE MENU STRUCTURE
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CHAN 3
CHAN 4
CLIP 1
CLIP 2
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FS1 FLAGS
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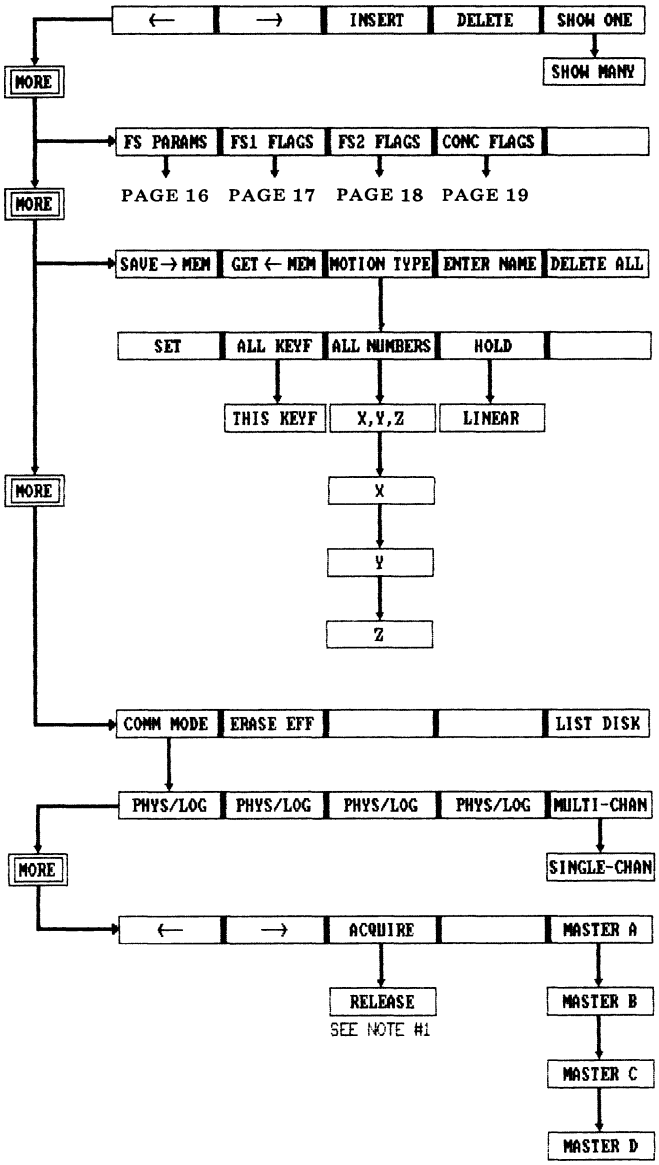
## ADO "CONCENTRATOR" MODE MENU STRUCTURE




| NOTE #1 | "ACQUIRE" AND "RELEASE" ONLY APPEAR IF YOU ARE USING A CONCENTRATOR AND ARE IN THE MULTI-CHANNEL MODE. OTHERWISE THAT MENU BLOCK WILL BE VACANT. |
|---|---|

# APPENDIX
# PRELIMINARY OPERATING INSTRUCTIONS
# ADO CONCENTRATOR INFINITY OPTION
# VERSION 8

## 1 INTRODUCTION

This appendix describes Concentrator menu and Run menu parameters, values, and soft keys, and provides programming examples, for ADO systems with the Infinity option. Use this appendix in conjunction with the ADO Software Bulletin, Version 8, which includes the Version 8 Menu Guide.

## 2 CONCENTRATOR MODE

With desired channels acquired and effects programmed, select Concentrator menu; if in program mode, press CONCEN. If not in program mode, press PROG, then CONCEN. With concentrator selected, use MORE key as needed to select the various soft key groups (see Version 8 Menu Guide). Use soft keys (paragraph 13) to select other concentrator-function menus and use MORE key to return to this soft key group from these other menus. Concentrator-function menus contain many of the same soft keys as used in ADO/Global Program menus. Functions and operation of these concentrator soft keys are the same as for Local/Global Program menu use. Typically, in concentrator mode, you will first select lighting conditions for each effect then will use the Concentrator Flags menu to set up concentrator combines, and the Run menu to set up channel/target framestore priorities. See paragraph 8 of ADO Software Bulletin for procedures for acquiring concentrator resources (target framestores and 3D keyers).

**Note**

**In general, keyframes programmed via the various concentrator-function menus will not occur at the same times as keyframes programmed via Program or Global menus (except where default duration values are used in both cases).**

## 3 LEVEL I CONCENTRATOR MENU

The initial menu in concentrator mode provides various lighting parameters, background color, edge softness, and background Z parameters. The top two lines of the display show the effect number, keyframe number, keyframe starting time, and keyframe duration. Using this menu, the operator simulates the effects of lighting through independently programmable ambient and direct lighting sources. Reflectance of each ADO channel can be independently adjusted. This parameter alters the amount of dimming an ADO channel undergoes as a result of rotation away from the direct light source. Displayed parameters and values are presented in the following paragraphs. Selection of parameters and values is described in the soft key discussion, paragraphs 8 through 11.

### 4 TRANS and REFLEC

These flags set the visual transparency **(TRANS)** and reflectance **(REFLEC)** of the image. They are set for each individual channel. Parameters and ranges of values are:

- **CHAN 1** through **CHAN 4 TRANS: 0 -100%** (X)
- **CHAN 1** through **CHAN 4 REFLEC: 0 - 100%** (Y)

### 5 LIGHT and AMBIENT

- **LIGHT** (spotlight, from front of screen): **0-100%** (X)
- **AMBIENT** (general light): **0-100%** (Y)

### 6 BACKG SAT, LUMA and HUE

This flag sets image background lighting. Parameters and ranges of values are:

- **SAT** (saturation): **0-100%** (X)
- **LUMA** (luminance): **0-100%** (Y)
- **HUE** (hue): **0-360** degrees (Z)

### 7 EDGE SOFT and BACKG Z

These parameters set the edge softness of a 3D line of intersection and set the background Z distance value, which can cause the image to intersect with the background. Ranges of values are:

- **EDGE SOFT** (edge softness): **1.006 - 16.000** (X)
- **BACKG Z** (background Z position): **±32,767** (Z)

### 8 Level I Concentrator Soft Keys

### 9 <- and ->

Use these arrow soft keys to select, and highlight, parameter to be changed. Then use joystick or keypad (and ENTER) to enter X, Y, and Z values.

### 10 insert

Press **insert** to duplicate the current keyframe; this places the duplicate immediately after the current keyframe. The keyframe just inserted becomes the current keyframe.

### 11 delete

Press **delete** to remove the curent keyframe from the effect.

### 12 show one/show many

Press **show one** to select one parameter version of Concentrator menu; press **show many** to select many parameter version. When pressed, soft key toggles to indicate the menu version currently *not* displayed.

## 13 LEVEL I PROGRAMMING EXAMPLE

With concentrator mode selected, the usual sequence for making lighting, background, and edge parameter adjustments is as follows.

STEP 1 Use <- or -> soft key to select **CHAN1 TRANS/REFLEC, CHAN2 TRANS/REFLEC, CHAN3 TRANS/REFLEC, CHAN4 TRANS/REFLEC, LIGHT/AMBIENT, BACKG SAT/LUM/HUE** or **EDGE SOFT, BACKG Z** for change.

STEP 2 Use joystick or keypad to adjust X, Y, Z parameters as required.

STEP 3 Repeat steps 1 and 2 as needed to accomplish other desired changes.

STEP 4 Use ← or → keyboard key to scroll to another keyframe, then repeat steps 1 through 3 as needed to accomplish desired changes.

STEP 5 Repeat step 4 as needed to make desired changes for other keyframes.

## 14 Level II Concentrator Soft Keys

From level I Concentrator menu, press MORE to access level II menu. The soft keys are:

### 15 Fs params

Press **Fs params** to select Framestore Parameters 1/2 menu (paragraph 19).

### 16 Fs1 Flags

Press **Fs1 Flags** to select Framestore 1 Flags menu (paragraph 24).

### 17 Fs2 Flags

Press **Fs2 Flags** to select Framestore 2 Flags menu (paragraph 24).

### 18 conc flags

Press **conc flags** to select Concentrator Flags menu (paragraph 40).

## 19 FRAMESTORE PARAMETERS MENU

Use of a target framestore produces "trails" of video motion, as framestore input video is combined with framestore recirculated video in each target framestore PWA. This menu is used to set the trail parameters for target framestores 1 and 2. Trails can be produced with sparkles or without sparkles.

The first two lines of this menu show the effect number, keyframe number, and keyframe time and duration. The main display presents four parameters to be set for each target frame store. The first set of parameters is for framestore 1; the second (identical) set is for framestore 2. Framestore 1 parameters and values are presented in the following paragraphs. Selection of parameters and values is described in the framestore parameters soft key discussion. From this menu, press MORE to return to concentrator level II display.

### 20 FS1 DECAY LUM/CHR

The X value selects the decay of the luminance trail, and the Y value sets the decay of the chroma trail. Ranges of values are:

- **FS1 DECAY LUM:** 0% (immediate luminance decay)—100% (no decay).
- **/CHR:** 0% (immediate chroma decay)—100% (chroma decays at luminance rate).

### 21 FS1 SMEAR

This parameter controls the input gain of the TFS (target framestore) video input signal. A TFS **SMEAR** value of 0% corresponds to an input gain of unity. As the value increases from 0% the input gain decreases, smearing any motion of the image and blurring any motion within the image. The (X) value ranges from 0% (no smearing or blurring) to 100% (maximum smearing or blurring).

### 22 FS1 1/2 LIFE, DECAY

These parameters control two aspects of the sparkle generator. The **1/2 LIFE** value (X) sets the activity level (frequency of sparkles) within the trail. A small **1/2 LIFE** value (such as 10%) produces a low activity level; a large value (such as 95%) produces a high activity level.

The sparkle generator replaces the **FS1** (or **2**) **DECAY LUM** value (normal trail) with randomly positioned rectangular areas of the **FS1** (or **2**) **DECAY** value (sparkle trail). Therefore, if **FS1** (or **2**) **DECAY LUM** AND **FS1** (or **2**) **DECAY** are the same value, no sparkle effect occurs. A maximum difference in these values produces a maximum sparkle effect.

In **disappear** sparkle mode (paragraph 29), if **FS1 DECAY LUM**, for example, is set at 100% (no decay), and **FS1 DECAY** is set at 0% (immediate decay), the randomly positioned rectangular blocks appear as holes punched through the trail (typically exposing the background), until the entire trail has disappeared. In **disappear** mode the sparkles affect the trail, but do not affect the video image.

In **appear** sparkle mode, if **FS1 DECAY LUM**, for example, is set at 90% and **FS1 DECAY** is set at 0% (immediate decay), the video is built up of randomly positioned rectangular blocks (sparkles), until a complete picture is seen. In **appear** mode, the sparkles affect the video, but do not directly affect the trail.

In **both appear/disappear** mode, the two actions are combined: the **appear** function causes sparkles to build up the video and, simultaneously, the **disappear** function causes sparkles to punch holes through the resulting trail.

### 23 FS1 SPARKLE SIZE

The X value sets the horizontal sparkle size; the Y value sets the vertical size. A sparkle size of 0 provides a horizontal width of 1/2 chroma pixel or a vertical height of one line. A sparkle size of X = 255 is a full screen width; a sparkle size of Y = 255 is a full screen height.

### 24 Framestore Parameters 1/2 Soft Keys

The framestore parameter soft keys are described in the following paragraphs.

### 25 <- and ->

Use these arrow soft keys to select, and highlight, parameter to be modified.

### 26 motion type

Press the **motion type** soft key to bring up the Motion Type menu. (See Version 8 Menu Guide.)

### 27 show one/show many

Press **show one** to select one parameter version of program menu; press **show many** to select many parameter version. When pressed, soft key toggles to indicate the menu version currently **not** displayed.

### 28 FRAMESTORE 1 (or 2) FLAGS MENU

The framestore flags display is the same for target framestores 1 and 2; this description applies to both. The top line identifies the menu, showing either **Fs1** or **Fs2.** The second line shows the flags controlled by this menu. The main display consists of the currently selected values, arranged in columns for each flag type, for each keyframe. The message window (line just above the bottom, soft key, line) shows the currently highlighted flag and its values; the selected value is highlighted. Framestore flags and values are described in the following paragraphs. Selection of flags and values is discussed in the soft key description, paragraphs 35 through 39.

### 29 Trail

This flag has two states, for selection of one of two trail types. This controls selection of trail type decay algorithms used in recirculation signal processing. In general, Trail Type B is most effective for long trails of rapidly moving images, and Trail Type A is most effective for short trails of slowly moving images. Experimentation will determine operator preference. The values are:

- A: Trail Type A selected
- B: Trail Type B selected

### 30 Spark

The sparkle (**Spark**) flag controls the sparkle generator, thus selecting random decay of the TFS trails. The flag has an off state and three states for controlling the mode of the sparkle generator:

- **off:** Normal input video; no sparkles.
- **appear:** Sparkles build up a complete video picture.
- **disappear:** Normal trail is punched through by sparkles.
- **both appear/disappear:** **appear** and **disappear** functions occur at the same time, as described in paragraph 29.

### 31 Clear

The **Clear** flag, when enabled, clears out any video currently in the target framestore. The values are:

- **no:** Normal operation
- **yes:** Clear target framestore

### 32 Centi

Enabling the centipede **(Centi)** flag produces the centipede trail effect. Centipede trails do not decay, but remain for a specified period of time before disappearing in the same order (of frames) in which they were created. In centipede mode, the **FS1** (or **2**) **DECAY LUM** value determines how long the trail remains before it begins to disappear. The higher the **DECAY LUM** % value (X), the longer the trail remains before starting to disappear. The rate at which the trail then disappears is determined by the motion of the original image; it disappears slowly for slow image motion and rapidly for fast image motion. Flag values are:

- **off:** Normal trails
- **on:** Centipede trails

### 33 Mode

This flag controls the update rate of the two field stores in the TFS system. The values are:

- **frame:** This selection updates each field store once per frame during the time it is the present field. This maintains the frame resolution within the trails (however, it allows any inter-field flicker which is present to remain visible).
- **field:** This selection updates both field stores every field by interpolating the missing field from the present field. This operation eliminates any inter-field motion flicker at the expense of reduced resolution in the picture content of the trails. The frame resolution of the input video is always preserved.

### 34 Drop 1 through Drop 4

The drop flag allows logical channel 1 **(DROP 1)** through logical channel 4 **(DROP 4)** to be applied to the target framestore for one field in field mode, or one frame in frame mode **(Mode** flag at **field** or **frame).** The values are:

- **no:** Normal operation
- **drop:** Input channel applied to framestore (for one field or one frame)

### 35 Framestore Flags 1 (or 2) Soft Keys

### 36 <- and ->

Use the arrow soft keys to select, and highlight, flag to be modified.

**37 change**

Press **change** as needed to select, and highlight, value for selected flag in current keyframe.

**38 all**

Press **all** to change value of selected flag in all keyframes to that of current keyframe.

**39 Fs2 Flags/Fs1 Flags**

Press **Fs2 Flags** to select Framestore 2 Flags menu; press **Fs1 Flags** to select Framestore 1 Flags menu.

**40 CONCENTRATOR FLAGS MENU**

This menu allows the operator to control the output of each logical channel to be the combine or to be itself, and also to activate negative-Z value clipping. The top line displays the four logical channel flags and the clipping flags for each of four logical channels. The main display shows the selected values for each flag, for each keyframe. The message window shows the currently highlighted flag and its values; the selected value is highlighted. The flags and their values are described in the following paragraphs. Selection of flags and values is described in the soft key discussion.

**41 chan 1 through chan 4**

This flag type allows the operator to select, for each logical channel, whether its output is to be the combine or itself. The values are:

- **comb:** Channel output is the combined image.
- **self:** Channel output is itself.

**42 Clip 1 through Clip 4**

These flags are used to clip negative-Z values, as needed, to prevent poke-through during certain 3D keyer manipulations. There is a flag for each of four logical channels. Values for each flag are:

- **on:** Negative-Z value clipping activated for that channel.
- **off:** Clipping disabled for that channel; poke-through is permitted.

**43 Concentrator Flags Soft Keys**

**44 <- and ->**

Use arrow soft keys to select, and highlight, flag to be modified.

**45 change**

Press **change** as needed to select, and highlight, value for selected flag in current keyframe.

**46 all**

Press **all** to change value of selected flag in all keyframes to that of current keyframe.

**47 Fs1 Flags**

Press **Fs1 Flags** to select Framestore 1 Flags menu. (Framestore 2 Flags menu can be selected from Framestore 1 Flags menu.)

**48 Level III Concentrator Soft Keys**

From level II Concentrator menu, press MORE to select level III soft key menu. The soft keys are:

**49 save→mem**

Press **save→mem** to recall keyframe stored in memory (but not on disk). Pressing this key writes over any keyframe stored previously. Keyframe data is lost when power is turned off at the control panel.

**50 get←mem**

Press **get←mem** to recall keyframe stored in memory, writing it into the current keyframe.

**51 motion type**

Press **motion type** to access Motion Type menu (see Version 8 Menu Guide).

**52 enter name**

Press **enter name** to bring up Enter Name menu.

**53 delete all**

Pressing **delete all** once causes the following prompt to appear: **Press delete all again to delete this channel's effect.** (At this point you can press STOP to cancel the delete all request, and prompt.)

With this prompt displayed, press **delete all** a second time to delete all keyframes for current channel; this returns all parameters for that channel to default values. The following prompt then appears: **Press** delete all **again to delete entire effect.** (You can press STOP to cancel further delete all action, and prompt.)

With second prompt displayed, press **delete all** a third time to delete all keyframes for all channels, including all program mode keyframes, global mode keyframes,and concentrator mode keyframes. This returns all parameters for all channels to default values. It also deletes all priority selections, pauses, and time line scaling. (Pressing **delete all** the third time has the same effect as turning the control panel power off then on again.)

**54 Level IV Concentrator Soft Keys**

**55 comm mode**

Press **comm mode** to bring up Communications menu.

**56 erase eff**

Press **erase effect** to enable erasing of an effect from disk (then follow menu prompts).

**57 list disk**

Press **list disk** to select List Disk menu (effects directory).

## 58 CONCENTRATOR MENU PROGRAMMING EXAMPLES

### 59 Varying Target Framestore Parameters

Acquire two channels and framestores 1 and 2 (see paragraph 8 of this Version 8 software bulletin), then perform the following steps.

STEP 1 In program mode, press **delete all** three times to clear out the previous effect.

STEP 2 Press RUN to bring up the Run Mode menu. Press the priority soft key and use the arrow soft keys to position the highlight on **Out**. Press the **Fs1** soft key, then the **Fs2** soft key, then ENTER. This puts the output of target framestore 1 on top of the target framestore 2 output, in the combine output. Move the highlight to **Fs1**. Press the CHAN 1 key, then ENTER, to put channel 1 into target framestore 1. Move the highlight to **Fs2**. Press the CHAN 2 key, then ENTER, to put channel 2 into target framestore 2.

STEP 3 Press PROGRAM, then CONCEN, to bring up the concentrator program menu. Press MORE, then **conc flags** soft key, to enter the Concentrator Flags menu. Press **change**, then -> soft key, then **change** again, to select both channels 1 and 2 outputs to be the combine output.

STEP 4 Press CHAN 1 key to enter the program menu for channel 1. Press SOURCE/ASPECT/SIZE, and enter a Z value of 0.3 to reduce the picture size. Press LOCATE 3D, enter an X value of -1.5 and a Y value of 1.5, to move the picture to the upper left corner of the screen. Press **insert**, and enter an X value of 1.5 and a Y value of -1.5, to move the picture to the lower right corner of the screen. Press CHAN 2 key, then SOURCE/ASPECT/SIZE, and enter a Z value of 0.3 to reduce the picture size. Press LOCATE 3D, enter an X value of 1.5 and a Y value of 1.5, to move the picture to the upper right corner of the screen. Press **insert**, then enter an X value of -1.5 and a Y value of -1.5, to move the channel to the lower left corner of the screen.

STEP 5 Press RUN to enter the Run Mode menu. Press the → keyboard key to run run the effect. The two channels will diagonally cross the screen, leaving decaying trails; the channel 1 trail will be on top.

**Note**

**Steps 6 and 9 use run mode procedures described in paragraphs 81-84.**

STEP 6 In run mode, press **priority** soft key, then use arrow soft keys to position the highlight on **Out.** Press the **Fs2** soft key, then the **Fs1** soft key, then ENTER. Run the effect again. Note that the channel 1 trail is now on the bottom.

STEP 7 Press PROGRAM, CONCEN, MORE, then **Fs params** to enter Framestore Parameters menu. Use arrow soft keys to move the highlight to **FS1 DECAY LUM/CHR.** Enter an X value of 90% to increase the trail persistence in framestore 1. Press RUN, and use → keyboard key, to run the effect.

STEP 8 Press PROGRAM, CONC, MORE, then **Fs params** soft key. Move the highlight to **FS2 DECAY LUM/CHR.** Use the joystick to change the X value to 100%. Press RUN, then → keyboard key, to run the effect. Now the trail in target framestore 2 does not decay at all.

STEP 9 Press **priority** soft key, then move the highlight to **Out.** Press **Fs1, Fs2,** then ENTER. This puts the target framestore 1 output on top again.

STEP 10 Press PROGRAM, CONCEN, MORE, and **Fs2 flags** soft key. Press -> soft key once, then press **change** soft key twice to turn the sparkles on in target framestore 2. Press RUN, and run the effect. Channel 2 leaves a permanent trail in target framestore 2, but the sparkles punch rectangular holes out of the trail. Press PROGRAM, MORE, then **Fs params** soft key. Move the highlight to **FS2 1/2 LIFE/DECAY.** Enter an X value of 98%. This increases the frequency of punching of sparkle holes in the trail. Press RUN, then → keyboard key to see this effect.

## 60 Concentrator Flags Menu

With Concentrator menu selected, press **conc flags** soft key to select Concentrator Flags menu.

## 61 Selecting Concentrator Channels

An ADO channel being used with a concentrator can display its own output, or the output of the concentrator combine. In 3D key priority (3D key option installed) this feature prioritizes the planes, pixel by pixel, allowing one plane to intersect another. Clipping prevents the portion of a plane which goes behind the eye point from wrapping back around (poke-through condition).

The following steps demonstrate the selection of concentrator channels:

STEP 1 To select output of a channel **(self** or **comb),** or clip value **on** or **off** for that channel, use the arrow soft keys to select the item for change.

STEP 2 Use the **change** soft key to select the desired value. If you want to change the selected flag in all keyframes to the value selected for the current keyframe, press the **all** soft key.

### 62 Removing Black Border from Trail

Normally each frame in a trail will have a narrow black border. This example demonstrates how to prevent or remove the border, by cropping and selecting a negative border width.

STEP 1 Press PROG to select program mode.

STEP 2 Press channel key corresponding to channel that is in the framestore.

STEP 3 Press CROP L/T BDR WD.

STEP 4 Use keypad or joystick to crop LEFT (X value) to -3.5.

STEP 5 Use keypad or joystick to crop TOP (Y value) to 2.5.

STEP 6 Use keypad or joystick to set BORDER WIDTH (Z value) to -0.1.

STEP 7 Press CROP R/B.

STEP 8 Use keypad or joystick to crop RIGHT (X value) to 3.5.

STEP 9 Use keypad or joystick to crop BOTTOM (Y value) to -2.5.

### 63 Framestore Parameters 1/2 Menu

Press **Fs params** soft key (Concentrator Program menu) to select Framestore Parameters 1/2 menu.

**Note**

**When using Framestore Parameters 1/2 menu, check flag settings per appropriate Framestore Flags menu.**

### 64 Adjusting Trail Decay Rate

This procedure demonstrates setting a luminance decay rate then setting a faster chrominance decay rate; the picture will first fade to black and white, then final decay will occur.

STEP 1 Use <- or -> soft key to select **FS1** or **FS2 DECAY LUM/CHR** (luminance decay/chrominance decay) parameter.

STEP 2 Use keypad or joystick to set **DECAY LUM** (X value) to 90%.

STEP 3 Use keypad or joystick to set **/CHR** (Y value) to 50%. This sets the chrominance decay rate to 1/2 its maximum value. Other representative values are:

- 0%—immediate chrominance decay
- 100%—chrominance decays at luminance decay rate

**Note**

**If the chrominance decay rate is set to a value greater than the luminance decay rate, it will appear that the chrominance decay rate is equal to the luminance decay rate. (This is because the luminance decay rate fixes the maximum trail decay rate.)**

### 65 Adjusting Smear

An example is given for the framestore 1 portion of the Framestore Parameters 1/2 menu.

STEP 1 Set **FS1 DECAY LUM/CHR** values to 100% (see paragraph 20).

STEP 2 Use <- or -> soft key to select **FS1 SMEAR** parameter.

STEP 3 Use keypad or joystick to set **FS1 SMEAR** (X value) to 95%, as an example, and run effect to observe smearing.

### 66 Adjusting Sparkle Generator

This framestore 1 example includes sparkle **appear** and **disappear** modes. Initially, start with **Spark** flag set to any value except **off.**

STEP 1 Use <- or -> soft key to select **FS1 1/2 LIFE, DECAY** parameters.

STEP 2 Use keypad or joystick to set **FS1 1/2 LIFE** (X value) to 90%.

STEP 3 Use keypad or joystick to select **FS1 DECAY** (Y value) to 0%. (No sparkle effect occurs if **DECAY** value equals **DECAY LUM** value; the maximum difference provides maximum sparkle effect.)

STEP 4 Use <- or -> soft key to select **FS1 SPARKLE SIZE** parameter.

STEP 5 Use keypad or joystick to set sparkles width (X value) to 0, and sparkles height (Y value) to 0.

**Note**

**A sparkle size of zero provides a width of 1/2 chroma pixel, or a height of one line. A sparkle size of 255 provides a full-screen width, or a height of a field.**

STEP 6 With sparkle flag set to **appear,** press RUN and use joystick to run effect.

STEP 7 With sparkle flag set to **disappear,** press RUN and use joystick to run effect, for comparison with step 6.

## 67 Framestore Flags Menu

Press **Fs1 flags** or **Fs2 flags** soft key (Concentrator menu) to select a Framestore (1 or 2) Flags menu. A generalized procedure is presented first; examples of specific procedures are given in succeeding paragraphs.

STEP 1 Use <- or -> soft key to select flag.

STEP 2 Use **change** soft key to highlight (select) one of the values shown in message window.

STEP 3 To change selected flag in all keyframes to value selected for current keyframe, press **all** soft key.

STEP 4 Repeat steps 1, 2, and 3 for each flag to be changed.

## 68 Centipede Flag

With Fs1 Flags menu selected, perform the following steps.

STEP 1 Use <- or -> soft key to highlight **Centi** flag.

STEP 2 Use **change** soft key to select **on** condition for centipede flag.

STEP 3 Press **all** soft key to turn centipede flag on for all keyframes.

**Note**

**Duration of trail in centipede mode is controlled by luminance decay rate (Framestore Parameters 1/2 menu). To change duration of trail, perform steps 4, 5, and 6.**

STEP 4 Press MORE (select level II Concentrator menu), then press **Fs params** soft key to select Framestore Parameters 1/2 menu.

STEP 5 Use <- or -> soft key to highlight **FS1 DECAY LUM/CHR** parameter.

STEP 6 Use keyboard or joystick to change luminance decay rate (X value) as desired.

STEP 7 Return to Framestore 1 Flags menu, if desired, by pressing MORE and then pressing **Fs1 flags** soft key (level II Concentrator menu).

## 69 Mode Flag

This procedure demonstrates the difference between field and frame modes. With FS1 Flags menu selected, perform the following steps.

STEP 1 Use <- or -> soft key to highlight **Mode** parameter.

STEP 2 Use **change** soft key (if necessary) to select **field** mode.

STEP 3 Press RUN, selecting Run menu.

STEP 4 Use joystick in forward direction to run effect, noting smoothness of target framestore effect.

STEP 5 Press CONC (returning to Concentrator menu) then press **Fs1 flags** soft key (selecting Fs1 Flags menu).

STEP 6 With **Mode** parameter highlighted, use **change** soft key to select **frame** mode.

STEP 7 Repeat steps 3 and 4, noting that inter-field flicker occurs; at the same time, vertical resolution is increased.

### 70 Clear Flag

This procedure demonstrates the effect of clearing keyframe 2 of a 3-keyframe effect, from target framestore. With channel 1 selected for target framestore 1, perform the following steps.

STEP 1 Program a simple effect of three or more keyframes, using three concentrator keyframes. You can use the effect from step 4 of paragraph 59, adding a third keyframe in both channels, then making three concentrator keyframes, all with default settings.

STEP 2 Select concentrator program mode, move to keyframe 2. Press **Fs1 flags** soft key.

STEP 3 Use the <- or -> soft key to select Clear flag.

STEP 4 Use **change** soft key to turn **Clear** flag to **yes** (on). This will cause trail to be cleared at the time of concentrator keyframe 2.

STEP 5 Verify that the **Clear** flag is set to **no** for keyframes 1 and 3.

STEP 6 Select run mode, and use joystick to run the effect. Note that the trail disappears when concentrator keyframe 2 becomes active.

### 71 Drop Flag

This procedure demonstrates the use of **DROP 1** and **DROP 2** flags. It inserts the channel 1 keyframe 1 into target framestore 1 and the channel 2 keyframe 1 into target framestore 2. The combined output consists of both channels and both framestores.

STEP 1 Acquire two channels as channel 1 and channel 2, and acquire framestore 1 and framestore 2.

STEP 2 Press RUN, press **priority** soft key, and (with **Out** highlighted on priority display, paragraph 75) press CHAN 1 key, CHAN 2 key, **fs1** soft key, **fs2** soft key, then ENTER, making the output priority: **1, 2, fs1, fs2.**

STEP 3 Create a 2-keyframe effect in each channel.

STEP 4 Press CONC, then MORE, then **Fs1 flags** soft key, selecting Framestore Flags 1 menu.

STEP 5 Use arrow soft keys to move to **DROP** 1 flag, then use **change** soft key to select **drop** state.

STEP 6 Press **Fs2 Flags** soft key to select Fs2 Framestore Flags menu and use keyboard → key to scroll to channel 2 line.

STEP 7 Use arrow soft keys to move to **DROP 2** flag, then use change key to select **drop** state.

**Note**

**At this point, the Framestore Parameter menu settings are at default values. After completion of step 7, vary framestore parameters and then run effect to see how the changes affect the dropped frame.**

STEP 8 Press RUN, then run effect. Note the dropped-in frame at beginning of effect (keyframe 1).

## 72 RUN MODE

Pressing RUN brings up the Run Mode menu. Run mode is used for previewing and running effects and for setting channel/framestore priorities (Infinity option use). It is also used for editing effect times, durations, and pauses. Various time-related functions are represented graphically on a time line display, including time line positions of priority changes.

## 73 LEVEL I RUN MENU

The space across the top of the Run menu is used for an error message display. Normally inactive, this window displays error messages as required. The top line of the display shows the number of the effect to be run, and the physical channels acquired. Just below this line **Multi-Chan** or **Single-Chan** is highlighted to indicate the system operating mode. A channel/framestore status/priority block is displayed just below the top line, at the right side of the menu. The time line display is in the center of the menu. Just above it, the effect status display gives the current time-position of the effect, in seconds and frames. Below the time line, **Start time, End time,** and **Effect duration** are displayed, all in seconds and frames. Parameters requiring numerical entry are prompted by a display at the left side of the menu space just above the soft keys. If no prompt is displayed, a numerical entry is assumed to be the time position of the time line cursor. Five soft keys are displayed on the bottom line. The time line, status/priority block, and soft keys are described in the following paragraphs.

## 74 Time Line

The effect time line consists of a row of dots representing the effect duration. The letter **X** just below the time line indicates a pause, start time, or end time, at that

point in time. The letter **p** just above the time line indicates a change in channel and/or framestore priorities. If two pauses occur very close together, they are indicated by a single **P**. Note that initially the start and end times for an effect both contain pauses. The start and end times are indicated by **S** and **E**, or by an **O** if they are very close together.

As the effect runs, a cursor (highlight) moves along the time line, continuously indicating the current time-position of the effect. To edit or preview the effect at a particular point in time the operator moves the cursor to the point, and can then add or delete a pause, make a priority change, or preview a frame of the stopped effect.

### 75 Status/Priority Display Block

This block displays four lines of entries: concentrator output **(Out)**; target framestore 1 **(Fs1)**; target framestore 2 **(Fs2)**; 3D keyer **(3dKey)** or, auto priority **(Auto)**. The **Out** line shows which channels and framestores are included in the concentrator output combine. These channels/framestores appear on any ADO signal system whose output is selected to be the combine. The **Fs1** and **Fs2** lines show which channels go into each target framestore, and the channel priority within the framestore. An ADO channel can either feed into a target framestore or directly into the concentrator output combine, but not into both. The **3dKey/Auto** line shows which channels are processed by the 3D keyer, allowing intersecting planes, or, by auto priority, which causes one of two intersecting planes to appear to be in front of the other.

For all four lines of this display block, concentrator resources are displayed (from left to right) in decreasing order of selected priority. For example, if channels 1, 2, and 3 are being used, and the operator wants sparkle trails on channels 1 and 2 to be on top of decaying trails on channel 3, with all channels 3D-keyed together, the status/priority display block would show:

**Out fs1 fs2**
**fs1 1 2**
**fs2 3**
**3dKey 1 2 3** (or, **Auto 1 2 3** if auto priority selected)

### 76 Level I Run Soft Keys

### 77 pause on/off

This soft key allows insertion or deletion of a pause at any point along the time line.

To insert a pause, first position the time line cursor; use joystick or keypad, or use jog by frame/field mode (see paragraph 98). Then press **pause on/off**. If a pause did not exist at this point, one is inserted, and an **X** now appears below the time line.

To delete a pause, first position time line cursor at location of pause. Use **go next** soft key (paragraph 78) to locate cursor at exact pause position. (When cursor is

positioned exactly at an event, it highlights the indicating letter: **S, E, p, P, O,** or **X**). Then press **pause on/off** to delete the pause.

**Note**

**In multi-channel mode, a pause affects all channels. In single-channel mode, pause affects only the channel it is programmed for.**

**78 priority**

Press **priority** to select Priority soft key menu (paragraphs 82 through 85).

**79 go next**

Press **go next** to move immediately to next time line event (pause, priority change, end time, or start time). Repeat as needed to go to other events. This is used to obtain exact positioning at a time line event.

**80 start time**

To change the start time, first press **start time** soft key. The effect **Start time** display begins flashing. Enter new value using numeric keypad and ENTER. The letter **S** moves to the new time line start position and the effect moves to the keyframe corresponding to the new time.

**81 end time**

To change the end time, first press **end time** soft key. The effect **End time** display starts flashing. Enter new value using numeric keypad and ENTER. The letter **E** moves to the new time line end position and the effect moves to the keyframe corresponding to the new time.

**82 Priority Soft Key Menu**

This soft key menu is used to enter system priority for channels 1 through 4 and for target framestores 1 and 2 (Infinity option installed).

**83 <- and ->**

Use these arrow soft keys to highlight the desired parameter on the status/priority display, enabling selection of channel/framestore priorities for this line. To enter framestore 1/framestore 2 priorities, see paragraph 85. To enter channel priorities, highlight parameter on status/priority display then use CHAN 1 to CHAN 4 keys to enter priority in order of decreasing priority (first channel number entered has first priority). Keypad keys can also be used for entering channels 1 through 4, framestore 1, framestore 2, in that order.

**Note**

**To remove items from a status/priority display line: use soft key arrows to highlight line, press 0, then press ENTER.**

### 84 go next/cancel

Press **go next** to move immediately to next time line event (pause or priority change). Repeat as needed to go to other events. This is used to obtain exact positioning at a time line event. This soft key position displays **cancel** when an incomplete priority entry is made. Press **cancel** to cancel incomplete entry; soft key then toggles to **go next.**

### 85 Fs1/Auto Prior/3dKey and Fs2

With **Out** highlighted on status/priority display, press **Fs1** then **Fs2** to give target framestore 1 priority over target framestore 2, or press **Fs2** then **Fs1** to give target framestore 2 first priority.

If fourth line of display shows **3dKey,** highlighting the line causes this soft key position to display **Auto.** Press **Auto** to display **Auto** on fourth line, for selection of auto priority of channels (automatic selection of which of two intersecting planes is made to appear as front plane). If line displays **Auto** and is highlighted, the soft key now displays **3dKey.** Press **3dKey** to display **3dKey** on fourth line.

### 86 Level II Run Soft Keys

### 87 comm mode

Press **comm mode** to select communications mode menu.

### 88 erase effect

To erase an effect from disk:

STEP 1 Press **erase eff** soft key to enable erase function. **Enter erase effect number** is then displayed at bottom of menu.

STEP 2 Using numeric keypad, enter number of effect to be erased, then press ENTER. The system indicates that the effect exists. Press ENTER again. The effect has now been deleted from disk.

### 89 jog by frame/field

Press this soft key as needed to toggle to desired mode, **field** or **frame.** With desired mode displayed on soft key, use numeric keypad arrow keys to jog forward or backward (by field or frame) as required.

### 90 list disk

Press **list disk** to select List Disk menu (effects directory).

### 91 RUN MODE PROGRAMMING EXAMPLES

Push RUN key to select run mode, used both for previewing and running effects. The following procedures demonstrate the use of run mode features.

## 92 Using Time Line Cursor

Three methods are available for using the time line cursor to select and highlight a position on the time line.

- Use joystick in positive or negative Y direction to move cursor to later or earlier time position, respectively.
- Use numerical keypad if no prompt displayed in data entry window: press ENT Y, enter time via keypad, then press ENTER.
- Jog time line cursor by frame or field increments.

## 93 Setting Pauses On and Off

STEP 1 Create a 3-second effect.

STEP 2 In run mode, press ENT Y, then 0 on keypad, then ENTER to go to beginning of 3-second effect.

STEP 3 Press → to run effect to the end. The effect takes 3 seconds to run, and stops at the end.

STEP 4 Press the pause **on/off** soft key. Note that the X disappears; you have removed the end pause.

STEP 5 Press → to run the effect from the beginning. Note that the picture no longer pauses at the end.

STEP 6 Press the pause **on/off** soft key. Note that the X disappears. You have removed the start pause.

STEP 7 Press → to run the effect. Note that it runs continuously, as there are no longer any pauses.

STEP 8 Press STOP key to stop the effect.

STEP 9 Press ENT Y, then 0 on keypad, then ENTER to go to time 0:00. Press **pause on/off** soft key to put a pause at beginning of effect. Do the same at time 3:00 to put a pause at end of the effect.

## 94 Changing Start and End Times

To change start and end times in order to run only part of the effect:

STEP 1 Press **start time** soft key. The following prompt appears, with a time value flashing at the bottom of the screen: **Enter start time.**

STEP 2 Enter 1:02 and press ENTER. The time line cursor moves to 1:02, and the **S** indicating start event is at that point. Also, the start time at the bottom left screen reads 1:02. Note that the start pause moves with the start time.

STEP 3 Press the end time soft key. The following prompt, and a flashing time value, appear: **Enter end time.**

STEP 4 Enter 1:27 and press ENTER. The time line cursor and the E indicating end event move to 1:27.

STEP 5 Press → to run the effect. Note that only the center portion of the effect runs.

**95 Jog**

STEP 1 In run mode, with **jog by frame** soft key displayed (level II menu), jog forward through effect by pressing keypad →/ENTER key. Note current time, above timeline, changes in frame increments. (A decimal point between seconds and frames indicates the first or even field of a frame; a colon indicates the second or odd field.) Press the keypad ←/. (decimal point) key to jog backwards.

STEP 2 Press **jog by frame** soft key, toggling it to **jog by field.** Now, use keypad arrow keys to jog forward or backward by fields.

**96 INFINITY 3D KEYER EXAMPLE**

STEP 1 In program mode, press **delete all** three times to clear out any existing effect.

STEP 2 Press MORE until the communications mode soft key appears at the lower left soft key position. Press the **comm mode** soft key to go to communications mode.

STEP 3 Acquire two physical channels for channels 1 and 2 and acquire tfs1, tfs2, and 3dkey1 (paragraph 8 of this Version 8 ADO Software Bulletin).

STEP 4 Press RUN to enter the Run Mode menu. To set output priority, first press **priority** soft key. Then use <- and -> soft keys to move the highlight to **Out.** Press the channel keys for the channels you have acquired (press channel 1 key then channel 2 key), then press ENTER. The priority sequence will appear on the upper right side of the screen, after the word **Out.**

STEP 5 Press PROGRAM, then CONCEN, to go to the concentrator program menu. Press MORE, then press **conc flags** soft key.

STEP 6 Use the arrow and **change** soft keys to change the entries under the logical channels you have acquired to read **comb.** Press the **change** soft key once to change channel 1 output to combine, press the -> soft key to move to channel 2, then press **change** to change the channel 2 output to combine.

STEP 7 Press CHAN 1 to bring up the channel 1 Program menu. Press SOURCE/ASPECT/SIZE, and enter a Z value of 0.5000. You will see channel 1, half size, on top of channel 2, full size. Press ROTATE 3D, enter an X value of 0.1 to rotate the picture slightly.

**Note**

**Steps 8 through 10 are for enabling the 3D Keyer.**

STEP 8 Press RUN. Press **priority** soft key, and use arrow soft keys to position the highlight on **3dkey.** Press the CHAN 1 key, the CHAN 2 key, then ENTER. You will see half of channel 1 disappear as it is 3D keyed with channel 2.

STEP 9 Press PROGRAM to return to channel 1 program mode. Move the channel around using ROTATE 3D and LOCATE 3D.

STEP 10 Press GLOBAL, then ROTATE 3D. Rotate the keyed channels around, to observe effect of 3D keying.