OMNI-LOC 848 MICRO PROGRAMMER

Property of: _____

Serial Number: _____

Version: _____

Memory Capacity: _____

ARION CORPORATION
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INTRODUCING THE OMNI-LOC MICRO PROGRAMMER

You are about to use the Omni-Loc Micro Programmer, the most advanced computer-based control center for the operation of multi-image projection control systems made in the world. Manufactured by ARION, the Omni-Loc Micro Programmer will execute up to thousands of commands in the control of the simplest to the most complex and artistically imaginative multi-image presentations.

This booklet is intended to help you learn how to get the most out of the Micro Programmer. Right now, plug it in (the switch on the bottom selects 110 or 220 Volts A.C.) and turn it on (the power switch is on the rear panel). Right away the display will light up and the Micro Programmer introduces itself with the model number.

Without hooking up the Controllers or any projectors, try the keyboard. By correctly giving the Micro Programmer commands, you will be putting those commands into its memory. Try a few entries. First of all, tell it that you are going to program by pressing the **Shift** key and, while holding it down, press the **Program** key.

What happened? The Micro Programmer acknowledged your instruction and did so by showing **Pro** in the display, meaning it is ready to accept commands from you. Also, under the word CUE on the display panel, a number **1** appears, meaning the entries you are about to make will be part of the first Cue* of your program.

The projectors to be used have a letter and number designation. (Use the letter keys and number keys sequentially as illustrated.) Press, for example, **A1, A2, C1.** Notice the projector lamp indicators on the display.

Want these lamps to turn off two seconds later? The lettered keys (**A, B,... H**) have a white legend above them. The legend represents the time in seconds of a Wait* command. Press **Shift** and, while holding it down, press the **2.0** second Wait key. Press projector keys **A1, A2, C1** again. When these commands are executed, the lamps that were first turned on will turn off two seconds later, at a Cut fade rate (1/4 second).

Want to change the fade rate? Press one of the fade rate keys in the top row. The display shows your new rate above the word FADE. Turn on eight projector lamps, say A-1 through A-4, and B-1 through B-4.

Now enter a Wait of 5 seconds. Press **Shift** and, while holding it down, press the **5.0** second Wait key. Next tell the Micro Programmer that these projector lamps are to turn off at a 3 second fade rate. Press **Shift** and, while holding it down, press the **3** second fade rate key. Now enter a 2 second Wait, i.e. press **Shift** and, while holding it down, press the **2.0** second Wait key.

*Precisely what is meant by these terms will be revealed in the coming pages.

Turn projector lamps A-1 through A-4 off. To turn all of the "B" projector lamps off eight seconds later, first enter an 8 second Wait. You can construct the 8 second Wait by combining the 5.0, 2.0, and 1.0 second Waits. To do this, press **Shift** and, while holding it down, press the **5.0** second Wait key. Now release the keys. Press **Shift** again and, while holding it down, press the **2.0** second Wait key. Release the keys and repeat the procedure, entering the 1.0 second Wait. Then press the projector keys **B1** through **B4.** For the last entry press **Cue.**

Now to view what you have programmed, press **Reset,** then **Update** - press **Execute** and watch the display.

Don't worry about damaging the Omni-Loc Micro Programmer with contradictory or erroneous information. If it doesn't understand an entry, a question mark appears in the display.

By carefully reading the following information and instructions while actually operating your Micro Programmer, you will soon master this sophisticated yet highly simplified system for multi-image control. The Omni-Loc 848 Micro Programmer is a new departure - more versatile, simpler, and, once you have mastered it, faster to operate.

The ARION Omni-Loc Micro Programmer may be used in conjunction with up to eight Controllers, each of which can operate four Kodak Ektagraphic slide projectors. The Controllers plug into receptacles on the back of the Micro Programmer and are coupled to special Fader/Sensors, each of which is attached directly to the back of each projector to control projector functions (fade on and off, forward and reverse, etc.).

The following instructions are intended to help the new user of the Omni-Loc Micro Programmer learn how to instruct, or program, the unit to perform each of the many (dozens, hundreds or even thousands) of individual steps that make up a professional multi-image presentation. Of course, the variety and mix of such steps are the result of the imagination and creativity of the producer. However, the Omni-Loc Micro Programmer is capable of being programmed to perform just about any function you might think of.

PROGRAMMING FUNDAMENTALS

Loc-Trac

A preliminary step in the programming process is the recording of a Loc-Trac. The Loc-Trac is a signal recorded on your show tape, on a track separate from the audio track(s). In fact, the Loc-Trac is a digital time signal, in minutes, seconds and hundredths of a second. The simple recording of this signal is made once; it is the only recording you have to make to synchronize your audio and visual messages.

The Loc-Trac lets the Micro Programmer know exactly where the tape is at all times - so you can start the tape at any point. The Micro Programmer will automatically update the system.

Components of a Program

A multi-image program is composed of three building blocks: **Steps, Frames** and **Cues.**

The **Step** is the fundamental building block of a program - one command programmed into the Micro Programmer. For example, telling it not to forward the slide tray after a projector lamp turns off is a Step. And telling the Micro Programmer to turn a projector lamp off is still another Step. Several Steps (or even just one) constitute the next component, the Frame.

A **Frame** is a group of Steps that the Micro Programmer will put into effect simultaneously. A single Frame for example, could call for dissolves to begin on different screen areas, and all at different rates.

The Steps within a Frame are numbered according to the order in which they were entered.

A **Cue** consists of a group of Frames that are to be executed sequentially. The time between the occurance of each Frame is determined by commands appropriately referred to as Waits.

The Step-Frame-Cue architecture of a program will be helpful both in operating your Omni-Loc Micro Programmer, and in the planning and organization of your multi-image presentation. This structure will enable you to add or remove slides and to do other editing up until the last minute with no difficulty.

Synchronization

The synchronization of Cues with a sound track is accomplished by assigning to each one a precise time, based on the Loc-Trac. This time is called a **Cue Point.** It is entered by simply executing a Cue at the appropriate moment while listening to the sound track. Cue Points are stored in the Micro Programmer and are considered part of your program.

It is an exclusive feature of the Omni-Loc System that the Cue Points, like Cues, are not recorded in relation to the sound track. They can be manipulated within the Micro Programmer right up until show time - without making any recordings.

The Keyboard

The keyboard of your Omni-Loc Micro Programmer is divided into four clusters. The primary function of each key is indicated by the legend on its face (e.g. the left vertical row of number keys and the letter keys identify particular projectors, etc.). Most of the keys have secondary functions which are indicated by white legends on the panel above, below or beside the keys. Depressing and holding down the **Shift** key moves any key into its secondary function.

NOTE: "Shifted" keys are referred to in terms of their functions, e.g. when **Shift** is held down, the **Reset** key becomes the **Erase** key, etc..

The Display

The display is designed to give you as much information as possible within a small area. The compactness of the display contributes to the remarkable portability of the Micro Programmer. To be sure, the details supplied by the optional Omni-Loc video monitor can greatly facilitate the programming process. But when your show is ready to go before an audience, the modularity of the Omni-Loc System allows you to dispense with the weight and fragility of a video display.

An important thing to remember is that the Omni-Loc Micro Programmer always displays the mode that it is in at any given moment; it always tells you what it has been instructed to do by you, the operator. For example, when you wish to begin programming Cues, you must first tell the Micro Programmer your intentions. To do this, push and hold the **Shift** key and press the **Program** key. **Pro** appears under the word MODE on the display panel.

The particular point in your program revealed in the display, is identified by Cue, Frame, and Step numbers.

As you program, various symbols appear above the word FUNCTION. The letter **A**, for example, means that the Micro Programmer will automatically forward the slide projectors when their lamps turn off. A variation which is described later, will enable the Micro Programmer to "hold" certain projectors, which means they are kept from forwarding after their lamps fade off. When this type of function is in effect, the letter **h** appears above the word FUNCTION.

Note that the display also has a location for indicating the fade rate. Once again, you, the producer of the multi-image show, are kept informed of the ever-important dominant rate for fade on and fade off, so that you can change it if you wish.

The matrix of lights for A through H and 1 through 4 indicates which projector lamps are on at any particular moment. And the auxiliary display below tells you which, if any, auxiliary channels have been programmed to turn on or off. (These auxiliary functions enable the Omni-Loc Micro Programmer to perform simple

on/off commands for such utilities as house lights, spotlights, curtain openers, etc..)

Also on the display of your Micro Programmer is a light labeled simply STATUS. This indicator works for you in three different ways:

First, a steady illumination indicates that all projector lamps are off and are "standing by". With the Status light on, if you press the Update key, the projector lamps corresponding to the indicators that are lit in the display, come on. The Status light turns off, and all projectors are locked to the Micro Programmer.

A second purpose for the Status light is to confirm the reception of the Loc-Trac. When the Loc-Trac tape is rolling, the Status light flashes every second to indicate that the Loc-Trac signal is being received by the Micro Programmer.

The third purpose for the Status light is to convey an Alert condition. When a projector is in trouble for any reason (blown lamp, jammed, unplugged, etc.), the Status light flashes rapidly, immediately informing you, the operator, that trouble exists.

LOC: What it means and how to get out of the LOC condition

The Micro Programmer has been designed in such a way that persons who are unfamiliar with the keyboard, will not accidentally erase data or put any visuals out of synchronization. If **LOC** appears in the display, it means that the keys pressed at that time would have either altered the memory or put the show out of synchronization. The intelligence of the Micro Programmer is so powerful that it actually knows when to disconnect the keyboard, viz. before any damage is done. To get out of the **LOC** condition:

1) Press **Shift** and, while holding it down, press **Program**
2) Press **Reset**

A SAMPLE PROGRAM

At this point, you are asked to plug in your Omni-Loc Micro Programmer and to enter an elementary program - one provided below. Briefly you will be told what Steps to enter, what is to be accomplished with each one, and how the Micro Programmer will respond.

Using your Micro Programmer, go through the sample program with this booklet next to you. Get a feel for the machine; no need to hook up projectors or any other equipment at this time. Just use the keyboard and observe the display.

The Steps that are presented below are explained in much greater detail later in this booklet. You can consult this booklet at any time to aid you in performing the operations that you have chosen for your own multi-image presentations.

Recording the Loc-Trac

Using your Omni-Loc Micro Programmer, you record the Loc-Trac signal on an open channel of the show tape. To familiarize yourself with the process of recording the Loc-Trac, use a blank tape. Here is how you do it:

First of all, connect the OUT jack on the back of the Micro Programmer to the input of your tape recorder.

NOTE: The recording of the Loc-Trac should begin at least 4 seconds, but less than 59 seconds before the first Cue is to be executed.

At the Micro Programmer keyboard:

1) Press **Reset**
2) Press **Table A**
3) Press number **7**
4) Press **Execute**
5) Put the tape recorder into Record. Set the record level to approximately -3db on the VU meter. Start the tape.
6) To start the Loc-Trac signal, press **Execute**
   The display begins counting in seconds and hundredths of a second as the Loc-Trac signal goes onto the tape.

The Loc-Trac is recorded uninterruptedly from the head of the show straight through to the tail. Press **Reset** to turn off the Loc-Trac signal.

To make sure that the Loc-Trac was correctly recorded, with the tape stopped:

Plug the tape recorder output corresponding to the Loc-Trac into the IN jack.

1) Press **Reset**
2) Press **Table A**
3) Press number **8**
4) Press **Execute**
5) Play tape that has a Loc-Trac.

The display responds to the Loc-Trac signal coming into the Micro Programmer. You will see an accumulation of time in the display if the Loc-Trac was recorded correctly. If not, repeat the "recording Loc-Trac" procedure after double-checking the record and playback levels, cables etc..

The Starting Point

When you turn Micro Programmer on, it introduces itself with its model number in the display. It also presents in the display two very helpful pieces of information. Above the word FUNCTION the Micro Programmer tells you with the letter **A** that it automatically advances the tray of each slide projector when the lamp turns off. And, above the word FADE, the display shows the letter **C**, which stands for Cut (1/4 second); it is the fade rate currently in effect.

Now, in order to ready the Omni-Loc Micro Programmer for programming, erase the memory (even though it is erased when the power is turned off):

1) Press **Reset**
2) Press the **Shift** key and, while holding it down, press **Erase**
3) Press **Execute**

Then tell the Micro Programmer that you wish to enter a program:

1) Press **Reset**
2) Press **Shift** and, while holding it down, press **Program**
   The display shows **Pro** under the word MODE.

   Below the word CUE is the number **1**, meaning the first Cue is about to be programmed. Below the word FRAME no number appears until you enter the first Step, at which time the Frame will be number 1 and the Step will be number 1.

Now, let's say that you want your first visuals to fade on at a 2 second rate.

1) Press **2** (upper row).
   This is now the fade on and off rate for all projectors.

Turn on projector lamps A-1, B-1, and C-1.

1) Press keys **A1, B1,** and **C1**

Enter a Wait of 2.7 seconds.

1) Press **Shift** and, while holding it down, press the **2.0** Wait key
2) Press **Shift** again and, while holding it down, press the **.70** Wait key

   The display, under the word FRAME, shows first 2.00 and then 2.70, the total Wait you have entered. This Wait represents the end of a Frame.

Now turn off lamps A-1 and C-1. (You are now on Frame 2.)

1) Press keys **A1** and **C1**

Turn on projector lamps A-2 and C-2.

1) Press keys **A2** and **C2**

Again, enter a Wait of 2.7 seconds.

1) Press the **Shift** key and, while holding it down, press the **2.0** Wait key
2) Press the **Shift** key and, while holding it down, press the **.70** Wait key

Now put in a faster fade rate, in this case a Hard Cut rate.

1) Press **Shift** and, while holding it down, press the **Hard** key

Turn off projector lamp B-1 and turn on lamp B-2.

1) Press keys **B1** and **B2**

Enter a Wait of 1.0 second.

1) Press **Shift** and, while holding it down, press the **1.0** Wait key

Now you want one of the projectors, B-2, not to forward after its lamp turns off.

1) Press the **Hold** key
   An **h** appears in display above the word FUNCTION.
2) Press **B2**
   The projector lamp goes off and the corresponding indicator on the display turns off, but the projector does not forward. The next time its lamp turns on, you will see the same slide. Remember that the Hold function is now in effect and all projectors will "hold" unless they are instructed to do otherwise.

Enter a .50 second Wait, then turn projector lamp B-2 back on.

1) Press **Shift** and, while holding it down, press **.40**
2) Press **Shift** again and, while holding it down, press **.10**
3) Press keys **B2**
   B-2 will turn on here, after having been off for .50 seconds.

Enter a .50 second Wait, then turn lamp B-2 off.

1) Press **Shift** and, while holding it down, press **.40**
2) Press **Shift** again and, while holding it down, press **.10**
3) Press keys **B2**
   B-2 will turn off here, after having been on for .50 seconds.

Again, enter a .50 second Wait, then turn lamp B-2 back on.

1) Press **Shift** and, while holding it down, press **.40**
2) Press **Shift** again and, while holding it down, press **.10**
3) Press keys **B2**

Now you no longer want projector B-2 to continue holding its tray position each time its lamp turns off. To restore the Normal function:

1) Press the **Normal** key

Enter a Wait of 2.0 seconds, and turn B-2 off.

1) Press **Shift** and, while holding it down, press **2.0**
2) Press **B2**

Lamps A-2 and C-2 are on; turn them off and turn on A-3, B-3, and C-3.

1) Press keys **A2, A3, B3, C2,** and **C3**
   Remember that each lamp will still fade up or down at a Hard Cut rate.

Now, move on to Cue number 2.

1) Press **Cue**

Turn off projector lamp A-3.
1) Press **A3**

Enter a .40 second Wait, then turn off B-3.
1) Press **Shift** and, while holding it down, press **.40**
2) Press **B3**

Enter a .40 second Wait, then turn off C-3.
1) Press **Shift** and, while holding it down, press **.40**
2) Press **C3**

Enter a .40 second Wait, then turn on A-1, B-1, and C-1.
1) Press **Shift** and, while holding it down, press **.40**
2) Press keys **A1**, **B1**, and **C1**

Terminate this Cue and begin a new one.
1) Press **Cue**

Change the fade rate to 1 second.
1) Press **Shift** key and, while holding it down, press **1** second fade rate key

Turn on lamps A-2, B-2, and C-2.
1) Press **A2**, **B2**, and **C2**

Wait 1.7 seconds.
1) Press **Shift** and, while holding it down, press **1.0**
2) Press **Shift** again and, while holding it down, press **.70**

Turn on A-3, B-3, and C-3.
1) Press **A3**, **B3**, and **C3**

Wait 1.7 seconds.
1) Press **Shift** and, while holding it down, press **1.0**
2) Press **Shift** again and, while holding it down, press **.70**

Turn on A-4, B-4, and C-4.
1) Press **A4**, **B4**, and **C4**

Wait 1.7 seconds.
1) Press **Shift** and, while holding it down, press **1.0**
2) Press **Shift** again and, while holding it down, press **.70**

Turn off lamps A-1 through A-4.
1) Press **A1**, **A2**, **A3**, and **A4**

Wait 1.7 seconds.
1) Press **Shift** and, while holding it down, press **1.0**
2) Press **Shift** again and, while holding it down, press **.70**

Turn off B-1 through B-4.
1) Press **B1**, **B2**, **B3**, and **B4**

Wait 1.7 seconds.
1) Press **Shift** and, while holding it down, press **1.0**

2) Press **Shift** again and, while holding it down, press **.70**

Turn off C-1 through C-4.
1) Press **C1, C2, C3,** and **C4**

Terminate this Cue.
1) Press **Cue**

End of program.

In the above exercise, you no doubt noticed that the procedure for constructing the 1.7 second Wait was the same every time, and was repeated five times. No other Waits intervened. When this type of situation occurs, you can reduce the number of key entries and reduce the amount of memory being used, by employing what is known as a Wait Ditto.

You have entered an elementary program into the Micro Programmer. At this stage, it would be a good idea to take a look at what you have programmed.

Reviewing Cues

The Update key is used to bring the status of the projectors and auxiliaries into correspondence with the point (Cue, Frame and Step) shown in the display. The Status indicator turns off when the system is Updated.

With or without projectors connected, by making the following key entries your entire program, every Cue, can perform for you on the Micro Programmer's display:

1) Press **Reset**
2) Press **Update**
3) Press **Execute**
   Each Cue will run by in the display exactly as it was programmed. To move on to subsequent Cues, simply press **Execute.**

   During the execution of a Cue the display says **Run** under the word MODE. Also during this time the keyboard is "locked out".(There is an operation that you can use during rehearsals that unlocks the keyboard, and is explanied in a later section.)

Synchronizing

With the sample program in the Micro Programmer, you can synchronize it with your practice Loc-Trac recording by doing the following:

Connect the tape recorder output corresponding to the Loc-Trac, to the IN jack.

1) Press **Reset**
2) Put the tape recorder into Play, setting the playback level to approximately -3db on the VU meter.
3) Press **Execute** for each Cue ...

and press **Execute** once more when you are finished.

Do not let 1 minute or more elapse between consecutive depressions of the Execute key.

Rehearsing

Now you can watch the Cues run in relation to the tape. Press **Reset.** Without changing the connection between the Micro Programmer and the tape recorder, just rewind the tape and play it. It doesn't matter where you start to play the tape - the synchronization of your show remains intact.

Program Label

When you have completed a program for a multi-image presentation (or for a portion of one), you may choose to store it on magnetic tape (using the Send operation described below). However, instead of, or in addition to, putting the program on the lead end of your show tape, you may wish to store it on a "library" tape which contains your other multi-image presentation programs. To distinguish one program from another, each is labeled with a letter and number. This **Program Label** is assigned at the moment you Send a program from the Micro Programmer memory to magnetic tape.

Send: Putting your program on magnetic tape for safekeeping

Storing the program that you have put into the memory of your Micro Programmer is achieved by "sending" all of the data to magnetic tape. Using a blank tape, store the sample program by doing the following:

Connect the Micro Programmer OUT jack to the tape recorder input.

1) Press **Reset**
2) Press **Send**
3) Put the tape recorder into Record. Set record level to approximately -3 db on the VU meter. Start the tape.

4) At this point, one channel of the tape recorder is in Record. With the tape reels in motion, you assign a **Program Label** to the program being sent by entering a letter and a number (e.g. **A1**).

   The Micro Programmer immediately begins sending what it has in memory to magnetic tape. The display initially shows the number of Steps in memory, and counts down as the Steps are transferred to the tape. During this Send period the keyboard of the Micro Programmer is locked out and key entries will not affect the memory. When the display shows **0**, the Send operation is finished.

NOTE: Be sure to perform the Check Load operation after you have completed the Send operation. It is your "insurance" that your program is safely and correctly stored.

Check Load: How to verify program data stored on tape

After the Send is complete, it must be verified that the data were clearly and completely recorded on the tape. This operation is called Check Load. Rewind the tape.

Connect the tape recorder ouput corresponding to the stored program, to the Micro Programmer IN jack.

1) Press **Reset**
2) Press **Shift** and, while holding it down, press **Check Load**
3) Enter your **Program Label** (e.g. **A1**)
4) Play the tape.
   The display counts down from the original number of Steps to zero if the tape has picked up the entire program from memory. *

Load: Putting a program stored on tape into the Micro Programmer

Putting a program back into the Micro Programmer from magnetic tape is called "loading" the Micro Programmer. For practice, erase the Micro Programmer memory by following the first procedure shown on page 1-7. Then Load the sample program that you stored on tape. Rewind the tape and have it ready to roll. The loading is done this way:

Connect the tape recorder ouput corresponding to the stored program, to the Micro Programmer IN jack.

1) Press **Reset**
2) Press the **Load** key
3) Enter your **Program Label** (e.g. **A1**)
4) Play the tape.
   The display counts down from the original number of Steps to zero if the Micro Programmer has picked up the entire program from tape. *

If you command the Micro Programmer to select and Load a program other than that which is on the tape, the Function area of the display flickers on and off but there will not be a countdown of Steps, i.e. that program is not being accepted by the Micro Programmer.

* If the Micro Programmer received incomplete or incorrect data (e.g. the tape had a wrinkle, or there was electrical interference), the symbol **Eror 5** would appear in the display, and Wait indicators at the bottom of the display would turn on - one for each faulty command.

If you do indeed get an Error 5 during a Check Load operation, you should repeat the Send and Check Load operations to insure safe and correct program storage. If an Error 5 occurs while Loading, repeat the Load operation. (Check record and playback levels, cables, physical condition of the tape, etc..)

By now you should have a basic feel for how the Omni-Loc Micro Programmer takes commands and how it communicates with you in response. The sample program you have just put into the Micro Programmer's memory stays there even after you perform the Send operation. It can be erased from the memory deliberately, by using the Erase procedure provided on page _. Unplugging or turning off the power to the Micro Programmer also erases the program. If you expect to be away from the Micro Programmer awhile, it would be best that you Send the work you have done to magnetic tape, then Load the Micro Programmer when you return.

The operations encountered in this introduction, and others, are explained in more detail on the following pages.

LOC-TRAC

Recording the Loc-Trac

When you have completed your sound track, record the Loc-Trac signal on a separate channel. The resulting sound track/Loc-Trac tape is called a **Master Show Tape.**

NOTE: The recording of the Loc-Trac should begin at least 4 seconds, but less than 59 seconds before the first Cue is to be executed.

Connect any standard audio cable (shielded) from the Micro Programmer OUT jack, to the appropriate tape recorder input.

1) Press **Reset**
2) Press **Table A**
3) Press number **7**
4) Press **Execute**
5) Put the tape recorder into Record, set the record level to approximately -3db on the VU meter, and start the tape.
6) With the tape rolling, press **Execute**
   Pressing Execute in this step tells the Micro Programmer to begin sending the Loc-Trac signal.

The Loc-Trac is recorded uninterruptedly from the head of the show straight through to the tail. Press **Reset** to turn off the Loc-Trac signal.

Displaying the Loc-Trac

Displaying the Loc-Trac is useful for confirming that it was properly recorded. Using any standard audio cable (shielded), plug the tape recorder output corresponding to the Loc-Trac, into the Micro Programmer IN jack.

1) Press **Reset**
2) Press **Table A**
3) Press number **8**
4) Press **Execute**
5) Play tape that has a Loc-Trac.

If the time in the display fails to count up as the Loc-Trac plays back, record the Loc-Trac again after double-checking the record and playback levels, cables etc..

Master Show Tape Duplication

The tape that you use during the synchronization and running of your presentation is called a **Show Tape.** Rather than use your Master Show Tape for that purpose, it is recommended that duplicates of it be used as Show Tapes. With the Master Show Tape safely tucked away, you can enjoy the comfort of knowing that a high quality Show Tape can be produced in the event that the one being used is misplaced or annihilated.

As is always the case with magnetic tape duplication, be sure to try out the Show Tapes that you make, to verify that the sound track and Loc-Trac were duplicated satisfactorily.

PROGRAMMING I

Reset:

The key entries for many of the Micro Programmer operations begin with Reset. Pressing **Reset** sets the program to the beginning of the first Cue and clears the right half of the display. The Status light is on to indicate that the projectors and auxiliaries are not in the "Updated" condition (see **Update**).

Memory Balance:

The Memory Balance key is used to determine how many Steps may be entered into the Micro Programmer at any given moment.

The Omni-Loc Micro Programmer is available from Arion with various memory capacities. When you have just turned the Micro Programmer on, or when its memory has been erased, you can find out the total Step capacity of the memory by pressing **Memory Balance.** Also, once you know the memory capacity, you can use the Memory Balance key to see if the memory is empty. If any number other than the memory capacity of your Micro Programmer appears when you press the Memory Balance key, you know that some Steps are in the memory.

Erase:

The Erase key is used to clear the memory of the Micro Programmer in preparation for programming or Loading. To prevent accidental erasure of a program, Erase is a two-step operation:

With the Micro Programmer reset,

1) Press **Shift** and, while holding it down, press **Erase**
2) Press **Execute**

NOTE: Operation of the Omni-Printer, Omni-Scanner, or Omni-Mate requires that an accessory program be Loaded prior to entering or Loading your own program. For Micro Programmer versions 4.7 and up, the Erase procedure does not affect the accessory program. **CL** appears in the Step area of the display to indicate that all but the accessory program has been cleared from the memory.

For Micro Programmers prior to 4.7, the Erase procedure clears the entire memory. Do not use the Erase key if you want to preserve the accessory program. Instead, delete Cues using Table A 3 and delete Cue Points using Table A 10 (see pages 2-10 & 2-12).

Program:

Pressing this key puts the Micro Programmer into the Program mode. This is the mode in which a program is constructed; the Steps that you enter are immediately stored in the memory of the Micro Programmer.

When the mode is changed there is no need to remember the point at which you stopped entering. When you press Program again, programming automatically resumes from where you left off.

Hold/Normal:

Normally, when fading a projector lamp off, the slide tray advances when the lamp is finally off. This type of projector function is automatically in effect when the Micro Programmer power is turned on; it is indicated with an **A** above the word FUNCTION.

You may however, want to project a slide more than once. Pressing **Hold** while in the Program or Insert mode, changes the function so that slide trays "hold" their positions after lamps are turned off. An **h** appears above the word FUNCTION to indicate that the Hold function is in effect.

When a command to fade a lamp off occurs while the Hold function is in effect, the corresponding slide tray will not advance at the completion of the fade. You will see the same slide when the lamp fades on again.

To return to the normal "advance-when-off" function, just press **Normal** while in the Program or Insert mode.

Fade Rates

The rate at which a fade will occur is the rate present in the display at the time the fade command is entered. Upon turning the Micro Programmer power on, the Cut (1/4 second) fade rate is in effect. You can enter a different rate by simply pressing one of the fade rate keys while in the Program or Insert mode. Whatever rate is shown in the display will remain in effect until it is changed.

NOTE: One fade rate may be in effect per channel (e.g. B-1, B-2, B-3, B-4) in a single Frame.

Variable Fade Rate

The Variable fade rate key automatically represents a 12 second rate upon turning the Micro Programmer power on. Chances are, you have a different rate in mind. To specify a fade rate for the Variable key:

With the Micro Programmer in the Program or Insert mode,

1) Press **Shift** and, while holding it down, press **Table B**
2) Press number **2** (left vertical row)
3) Press **Execute**
   In the display you will see **SUF** (an acronym derived from Set User Fade rate). In the area of the display normally reserved for the Step number, appears the fade rate currently represented by the Variable key.
4) Enter your own fade rate using the shaded keys.
   You can enter any rate up to and including 18 seconds, and any even rate thereafter up to 98 seconds.
5) Press **Execute**

This procedure is for setting the fade rate corresponding to the Variable key. To make this rate a part of your program, just press **Variable** while in the Program or Insert mode. A **U** appears above FADE to indicate that the rate represented by the Variable key is in effect.

To simply display the rate that the Variable key currently represents, perform steps 1 through 3. Press **Reset** after you have found out what the rate is.

Fade

Each of the possible 32 projectors controlled by the Micro Programmer is identified by letter and number (e.g. **A1, D3, G2,** etc.) Commanding a lamp to fade is merely a matter of entering a letter and number, while in the Program or Insert mode. The letter/number entry will fade a lamp off if it was on, or fade a lamp on if it was off.

NOTE: Consecutive fade commands begininng with the same letter, such as **C1, C2, C4,** can be entered simply as **C1, 2, 4.**

Dissolve:

The Dissolve operation is a programming convenience that allows you to enter two fade commands (two Steps) at a time. The Dissolve key treats the lamps of a given channel as though they were part of a dissolve loop. At the time that the Micro Programmer is turned on, the dissolve loop is automatically set to involve 3 lamps. To program a dissolve using the Dissolve key:

With the Micro Programmer in the Program or Insert mode,

1) Enter a letter for the desired channel.
2) Press **Dissolve**

NOTE: Only one lamp in the dissolve loop can be on before you press Dissolve.

If none of the lamps of the dissolve loop were on before you pressed Dissolve, the #1 lamp of the specified channel is commanded to fade on.

Setting the number of lamps in the dissolve loop

You can specify the number of lamps that you want to take part in the dissolve loop by doing the following:

While in the Program or Insert mode,

1) Press **Shift** and, while holding it down, press **Dissolve**
2) Press **2, 3,** or **4** (using the leftmost keys)
   The number that you enter appears in the Step area of the display.

Waits

A Wait is entered at the end of a Frame. It tells the Micro Programmer exactly how long to wait until executing the next Frame.

White legends above the letter keys represent the time, in seconds, of a Wait command. A Wait is entered by pressing **Shift** and, while holding it down, pressing one of the Wait keys - while in the Program or Insert mode. Entering a Wait causes all of the previous Steps of the Frame to be executed.

Waits entered one after the other, in immediate succession, add to yield a single effective Wait. To obtain a Wait of .50 second for example, you could press **.10**, release the keys and then press **.40.**

While in the Program or Insert mode, a Wait or Wait Ditto is shown numerically in the display - seconds in the Frame area, hundredths of a second in the Step area. In the case of consecutive Wait entries, it is the total Wait that is displayed.

Wait Dittos

Wait Dittos are used when a long string of Frames are to have the same Wait between them. A Wait is "dittoed" by pressing **Execute** while in the Program or Insert mode. Entering a Wait Ditto simply duplicates the last total Wait that was entered.

Editing is made simpler because a change in the Wait being dittoed automatically effects the same change in the corresponding Wait Dittos. Also, the use of Dittos can conserve space in the Micro Programmer memory. A Wait made up of several Steps (e.g. 1.6 seconds) may be duplicated by entering a Wait Ditto, which is one Step.

NOTE: It is recommended that you not enter Wait Dittos in immediate succession to construct a single effective Wait, e.g. **.40, Execute, Execute** for a 1.2 second Wait. Although doing this does not impair the running of your show, it can complicate the process of editing.

Auxiliaries

The auxiliary feature allows you to use the Micro Programmer to control up to 16 auxiliary appliances in conjunction with a multi-image presentation. The appliances might include house lights, curtains, fans, tape recorders, etc. (see Auxiliary Accessories section).

NOTE: The Omni-Loc System can provide control for lights (using LD88 Light Dimmers) and a tape recorder (using the 807 Tape Transport Control) without using up any auxiliary channels.

While in the Program or Insert mode, entering a letter and then pressing the **Aux** key commands one of the "Normal" auxiliaries to turn on or off. For the "Shifted" auxiliaries, enter a letter then press **Shift** and, while holding it down, press **Aux.**

When a Normal auxiliary is turned on, an auxiliary indicator for the appropriate channel flashes - with the light off more than on. When a Shifted auxiliary is turned on, the indicator flashes, but with the light on more than off. When the Normal and Shifted auxiliaries of a given channel are on together, the indicator is steadily lit.

NOTE: "Normal" and "Shifted" are just labels for the two groups of 8 auxiliaries. There is no difference between the operation and electrical properties of the two groups.

Cue:

The present Cue is terminated and you can begin making entries for the next one, by pressing **Cue** while in the Program mode. The Cue key can be used in the Insert mode to split one Cue into two Cues (see page __).

Pressing Cue enters a space that identifies the head of a Cue (and the end of the last Cue of your program). This space is indicated with a Cue number present in the display, and the Frame and Step areas blank.

You do not have to press Cue at the beginning of the first Cue; a space is automatically at the head of it.

REVIEWING & EDITING

Quick and easy access to the individual Steps of your program is made possible by putting the Micro Programmer into the Check-Program mode. With this mode in effect you can review and/or change what has been entered. The Check-Program mode is brought about by pressing any one of the shaded keys. The Status light turns on to indicate that the projectors and auxiliaries are not in the "Updated" condition (see **Update**).

Previous Cue/Next Cue:

The process of "zeroing in" on a particular area if your program usually begins with locating the head of a Cue. You can proceed backward through a program, one Cue at a time, by pressing **Prev Cue.** Press **Next Cue** to go forward.

Go To Cue:

To proceed directly to the head of **any** Cue:

1) Press **Shift** and, while holding it down, press **Go To**
2) Enter the Cue number using the shaded keys.
3) Press **Execute**

If the system was not Updated before you pressed Go To, the mode at the end of the procedure is Check-Program.

If the system was Updated before you pressed Go To, the mode is CUE (see **Update**).

Previous Step/Next Step:

You can proceed backward through a program, one Step at a time, by pressing **Prev Step.** Press **Next Step** to go forward.

Fast Next Step:

Sometimes you may have to proceed through a large number of Steps to locate a particular point in your program. The process can be speeded up considerably by making use of the Fast key.

Simply press **Shift** and, while holding it down, press **Fast.** As long as you hold the Fast key down, the Micro Programmer rapidly scans through the Steps of your program. Release the key when you reach the desired Step.

Update:

When the Micro Programmer is in the Program or Check-Program mode, the projector lamps, tray positions and the auxiliaries can be brought "up to date" with the Step (or space at the beginning of a Cue) shown in the display. This is done by pressing **Update.** The Status light turns off to indicate that the system is Updated.

While in the Program mode, once the system has been Updated, it will remain up to date with the entry of each Frame until the mode is changed. This means you can have the projectors and auxiliaries respond to the Micro Programmer as you program.

When the Micro Programmer is reset or in the Check-Program mode, pressing Update changes the mode to CUE as well as bring the system up to date.

Whenever CUE appears for the mode, the Cue whose number is displayed, is ready to be executed. The CUE mode can be brought about by 1) pressing Update, 2) by pressing Execute while in the Check-Program mode, or 3) if the Cues have been synchronized, by playing the Loc-Trac into the Micro Programmer.

During the execution of a Cue, **Run** is displayed under MODE and the keyboard is locked out. This unique lock-out feature protects the running of your show from interruption or alteration.

Manual Cue Execution

As you check through your program it is sometimes more convenient to execute a Cue without having to Update the system and wait for the trays to find their proper positions. When in the Check-Program mode, pressing Execute changes the mode to CUE - but the projector lamps and trays remain as they were.

When the mode is CUE as the result of using the Update or Execute keys, pressing **Execute** causes the Cue whose number is displayed (or remainder of it) to be executed.

Programming instructions for a presentation with taped and "live" portions are found in PROGRAMMING II.

Manual Frame Execution

It is also possible to manually execute each Frame of your program. While in the Check-Program mode, Update the system to a point ahead of the Frame(s) to be executed.

1) Press **Shift** and, while holding it down, press **Execute**
   The display changes to show **FrS** under MODE.
2) Each Frame is executed by pressing **Execute**

Press Prev Step, Next Step, Prev Cue, Next Cue, or Shift/Execute to return to the Check-Program mode.

Insert:

A Step can be inserted into the midst of a program by making use of the Insert key. First locate and display the Step that is to preceed the inserted Step. In the case where the inserted Step will be the first Step of a Cue, locate the space at the head of the Cue.

While in the Check-Program mode,

1) Put the Micro Programmer in the Insert mode by pressing **Insert.** **In-P** appears under the word MODE.
2) Enter a Step.
   Immediately after the Step is entered, the mode changes back to Check-Program. The succeeding Steps are automatically renumbered.

Follow this procedure for each Step that is to be inserted.

If **End** appears under MODE when you press the Insert key, the Micro Programmer memory is full.

Delete:

Each time you press the Delete key, while in the Progam or Check-Program mode, the Step shown in the display is erased. After a Step is Deleted, the previous Step appears in the display and the subsequent Steps are renumbered accordingly. Using the Delete key repeatedly, you can backtrack through any number of Steps, erasing as you go.

While in the Program mode, pressing Delete erases the last Step in your program at the time. If you make a mistake as you are programming, the Delete key allows you to back up without leaving the Program mode so that corrections can be quickly entered.

When operating in the Check-Program mode, you can locate and Delete any Step of your program. Again, pressing Delete does not change the mode; you can immediately proceed to another area in your program that requires editing.

Changing a Step

The usual procedure for changing a Step, i.e. for replacing one entry with another, is the following. Locate the Step to be changed. With the Micro Programmer in the Check-Program mode,

1) Press **Delete**
2) Press **Insert**
3) Enter the new Step.

To prevent complications that can arise when changing some of the Steps that are mentioned in PROGRAMMING II, the following procedure is recommended. Locate the Step to be changed. With the Micro Programmer in the Check-Program mode,

1) Press **Insert**
2) Enter the new Step.
3) Press **Prev Step**
4) Press **Delete**

Deleting Cues

An entire Cue or range of Cues can be erased from the Micro Programmer memory by using a Table A operation. To delete Cues:

1) Press **Reset**
2) Press **Table A**
3) Press number **3**
4) Press **Execute**
   dL appears under MODE.
5) Enter range of Cues to be deleted:
   (lower Cue number), **Execute**, (higher Cue number), **Execute**

   If just one Cue is to be deleted:
   (Cue number), **Execute**, **Execute**

The Cue or range of Cues is erased and subsequent Cues are automatically renumbered.

NOTE: Cue Points are not affected by this operation.

SYNCHRONIZATION

Programming Cue Points - Synchronizing visuals with the sound track

At this stage the Loc-Trac signal has been recorded parallel to the sound track. With the Cues of your program in the Micro Programmer memory, the basic question of what activity is to be executed has been answered. Now it is time to determine when this activity is to take place, i.e. you are ready to synchronize your visuals (and house lights, special effects, etc.) with the sound track.

Some of the basics concerning Loc-Trac have already been mentioned, viz. it is an electronic time signal (provided by the Micro Programmer), recorded on an unused channel of the tape which comprises the sound track. This recorded time-keeping channel allows you to indicate to the Micro Programmer, using the keyboard, exactly when the Cues are to be executed relative to the sound track. With or without projectors connected, here is the procedure for "locking" your audio and visuals together:

Connect any standard audio cable (shielded) from the tape recorder output corresponding to the Loc-Trac, to the Micro Programmer IN jack on the rear panel.

With a program already in the Micro Programmer,

1) Press **Reset**
2) Put the tape recorder into Play, setting the playback level to approximately -3db on the VU meter.

   The STATUS indicator begins flashing, telling you that the Micro Programmer is receiving the Loc-Trac signal. **PCU** (an acronym derived from Program CUe points) in the display indicates the mode that the Micro Programmer is in. *

3) With your audio cue sheet (see page ___) in hand, and your ears tuned to the sound track, press **Execute** for each Cue Point.

   No more than 59.99 seconds can elapse between consecutive Cue Points. A Cue which requires 1 minute or more to complete its execution may be divided into two or more "shorter" Cues (see page ___).

   After you have programmed the last Cue Point, press **Execute** once more to indicate the completion of this procedure.

While programming Cue Points, the Loc-Trac signal on the tape is playing back in to the Micro Programmer. Remember that the Loc-Trac is, in effect, a clock that you have recorded on tape. When you press the Execute key, you are actually "taking a picture" of the time on the tape at that instant, and putting that time into a memory.

* If **PCU 0** appears: stop the tape, press **Execute**, rewind the tape and begin with step #2.

NOTE: It is a unique distinction of the Omni-Loc System that programming Cue Points, like programming the Cues themselves, does not involve the recording of any information on tape. That means that the process of synchronizing the audio and visual components of your show is accompanied by the highest degree of reliability and edit-ability.

Deleting Cue Points

Cue Points can be deleted from your program by using a Table A operation.

With the tape stopped,

1) Press **Reset**
2) Press **Table A**
3) Enter the number **10**
4) Press **Execute**
   The Cue whose number appears in the display under FRAME, and all subsequent Cues have no corresponding Cue Points.
5) To delete Cue Points, enter a lower Cue number to replace that which was displayed for step #4 above. *
6) Press **Execute**
   Now all Cues beyond and including the Cue identified in step #5 have no corresponding Cue Points.

Consider for example a situation in which you had programmed 16 Cue Points (17 would be displayed for step #4). You could remove the last five Cue Points of your program by entering 12 in step #5.

* To delete all Cue Points, enter **1**.

  Do not enter 2, this leaves only one Cue Point in your program. At least two Cue Points must be part of your program in order to be able to resume programming subsequent Cue Points (see below). Instead, delete all of the Cue Points and begin the synchronization process again.

Resume programming Cue Points

You do not have to synchronize all the Cues of your program with the sound track in one sitting. To resume programming Cue Points from where you left off,

1) Rewind the tape to a point ahead of the second to the last Cue Point that was programmed.

2) Put the tape recorder into Play
   CUE is displayed under MODE. When the mode is CUE and the Loc-Trac is playing into the Micro Programmer, the keyboard is "locked out", i.e. pressing the Execute key will have no effect. The Micro Programmmer automatically "unlocks" the keyboard and shows **PCU** in the display at the moment programming Cue Points may resume.

Changing Cue Points

1) Press **Shift** and, while holding it down press **Prev Cue**
   The display shows **nuE** under the word MODE.
2) Enter the number of a Cue Point that is to be changed.
3) Press **Execute**
   The display shows **dCU** under the word MODE.
4) Hold down the **Table A** key and note the exact time corresponding to the Cue Point. The change that you make is verified by comparing this time with the time displayed at the end of the procedure.

To execute a Cue (or range of Cues)

EARLIER:

5) Press **Prev Cue**
   The display shows **EAr** under the word MODE.

LATER:

5) Press **Next Cue**
   The display shows **Ltr** under the word MODE.

6) Enter the range of Cues whose Cue Points are to be changed:
   (lower Cue number), **Execute,** (higher Cue number), **Execute**

   If just one Cue Point is to be changed:
   (Cue number), **Execute, Execute**

   The display shows **SEC** under the word MODE.

7) Enter the number of seconds (maximum of 9 *), **Execute**
   The display shows **Hun** under the word MODE.
8) Enter the number of hundredths of a second (maximum of 99 *), **Execute**

* If it is required to change a Cue Point(s) by more than 9.99 seconds, simply repeat the operation.

PROGRAMMING II

Do-loops

Do-loop is a programming technique that allows you to easily repeat a sequence of Steps and conserve memory space.

While in the Program or Insert mode,

1) Press **Shift, Table B,** number **3**
2) Press **Execute**
   The display shows the word **do,** which means that the Micro Programmer wants to know how many times you want the sequence repeated.
3) Enter the number of repeats (1 to 99)
4) **Execute** *
   The display returns to the Program mode.
5) Enter the sequence of Steps that is to be repeated

To mark the end of the sequence to be repeated:

After entering a Wait,

6) Press **Table B,** number **4**
7) Press **Execute**

The symbol used to represent the end of a repeated sequence while in the Check Program mode is **n.** This **n** is displayed above FUNCTION.

* Do not change the mode at this point. You will not be able to return to the Program mode. If this does occur, proceed to where the **do** command is located (Check-Program mode) and delete it. Now you can resume programming.

Freeze:

A **Freeze Fade** is so named because, during a fade (on or off), there is an interruption (a Freeze) at which the light holds at a selected level. The Omni-Loc Micro Programmer is designed to allow you to Freeze a fade at 10 different levels. Furthermore, you can resume fading, up or down, from a Freeze level at a different rate.

Setting a Freeze level must be the first Step of a Frame.

To specify a Freeze level:

While in the Program or Insert mode,

1) Press **Shift** and, while holding it down, press **Freeze**
   The display shows **FrL** under MODE.
2) Enter the Freeze level (1-10)
   Entering 10 allows the lamp intensity to return to 100%.
3) Press **Execute**
4) Enter a fade rate, if you wish to use one other than the rate displayed above FADE.
5) Enter a fade command for the appropriate projector(s) (e.g. **A1, C3**).
6) Enter a Wait to terminate the Frame.

The projector lamp indicators on the display flash on and off, indicating the Micro Programmer is holding the lamp(s) at the specified **Freeze** level.

A Freeze fade requires one Frame. If you want lamps to Freeze at different levels, a Freeze fade Frame must be programmed for each different level.

Advance:

A projector tray can be advanced by making use of the Advance key.

A tray Advance command must be the first Step of a Frame.

While in the Program or Insert mode,

1) Press **Shift** and, while holding it down, press **Advance**
2) Enter a letter and number* to identify the projector tray(s) to be Advanced (e.g. **B3, F1**).

* Enter the number repeatedly for the desired number of tray Advances (e.g. entering **B3,3,3,3** and **F1,1** would Advance the tray on projector B-3 by four positions and the tray on projector F-1 by two positions). Trays may also be Advanced by more than one position by including the Advance Frame in a Do-loop.

3) Enter a Wait to terminate the Frame.

SET ANIMATE

Animation is the illusion of motion created by a rapid fire sequence of on/off lamp commands to one or more projectors without a slide advance.

EXAMPLE: Three projectors (1, 2 & 3) are superimposed on one screen area (A). Each slide in each projector has a small circle on a black background in three different areas of the slide.

If all three slides were projected at the same time, the image on the screen would look like this:

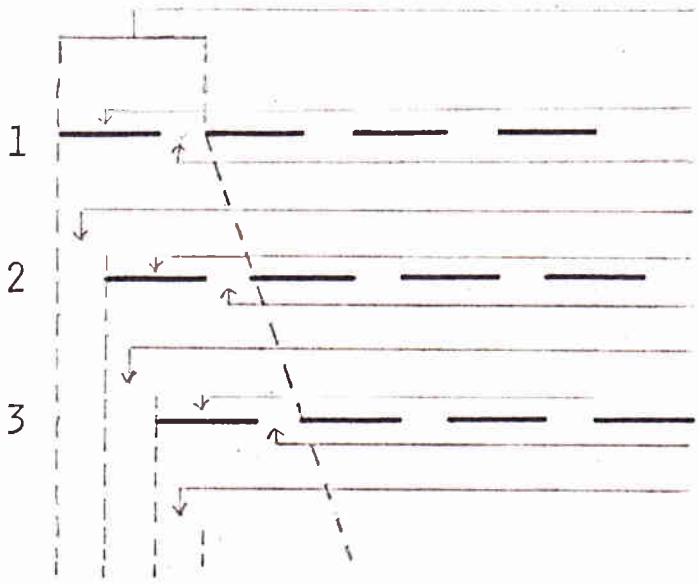
Problem: Make the circles rotate around an imaginary center axis.

Solution: Rapidly turn each lamp on and off, in a repeating 1, 2, 3 sequence, without advancing the slides.

There's a little more to it than that, however. The memory must be told how long each lamp will be on and how long each lamp will be off. It must also be told how long to wait between lamp off in one projector and lamp on in the next projector.

Assume that each of the three lamps will be on for .2 second and off for .1 second. Further, assume that .1 second after each lamp goes off, the next lamp will come on.

Now it's too complicated, right? Not really. Plot the on/off times on a piece of graph paper as illustrated. Each square represents .1 second. To make it even easier, all you have to do is program the sequence one time. The memory will repeat it continuously until instructed to stop.



Program just this, the rest is automatic

.2 sec. lamp 1 on
.1 sec. lamp off
.1 sec. later
.2 sec. lamp 2 on
.1 sec. lamp 2 off
.1 sec. later
.2 sec. lamp 3 on
.1 sec. lamp 3 off
.1 sec. later

1) In SET ANIMATE mode, the time for lamp on and lamp off is not programmed as a time interval. Lamp time is entered with a number key. Each number key representing a tenth of a second. The number 2 key becomes .2 second. The number 4 key becomes .4 second. The number 7 key becomes .7 second, etc. In SET ANIMATE, .9 second is the maximum time a lamp can be either on or off.

2) In the above illustration "time later" is programmed as a regular time interval (Shifted letter).

3) All times (on, off. time interval) are entered before the projectors are programmed to fade or dissolve. In other words, internal animation is already in progress before the projectors involved actually fade on.

4) While animation is in progress other projectors not in the animation can fade on and off normally.

PROGRAMMING ANIMATION

If you now have something in memory you can add the following animation exercises to it, but since you may want to keep a separate tape copy of the animation exercises it is suggested that you erase what you have in memory and start fresh. Don't forget to transfer it to tape before erasing should you desire to keep the memory.

1) Erase the memory.
2) Press RESET.
3) Press SHIFT, and while holding it down . . .
4) Press PROGRAM.

Using the preceding ON/OFF/TIME LATER illustration as a guide, program the following:

	KEYS	DISPLAY
Cue 1		
1.	Press SET ANIM	Ani
2.	Press 2 (.2 on)	2 (lower right)
3.	Press 1 (.1 off)	21 " "
4.	Press EXECUTE	Pro
5.	Press A then 1 (proj. A1)*	A1 (flashing)
6.	Press .1 (time interval)	10
7.	Press SET ANIM	Ani
8.	Press 2 (.2 on)	2
9.	Press 1 (.1 off)	21
10.	Press EXECUTE	Pro
11.	Press A then 2 (proj. A2)*	A1 & A2 (flashing)
12.	Press EXECUTE (ditto .1 time later)	10
13.	Press SET ANIM	Ani
14.	Press 2 (.2 on)	2
15.	Press 1 (.1 off)	21
16.	Press EXECUTE	Pro
17.	Press A then 3 (proj. A3)*	A1, A2 & A3 (flashing)
18.	Press EXECUTE (ditto .1 time later)	10
19.	Press CUT (fade rate)	C
20.	Press A 1, 2, 3 (lamp on)	
21.	Press CUE	

*This assigns the preceding on/off time to the designated projector. It is not a lamp on command.

NOTE: 1 through 18 above sets up the animate internally.
19 through 21 makes it happen on the screen.

To see what you have just programmed;

1. Press RESET
2. Press UPDATE
3. Press EXECUTE

Once the internal memory is set for animation, it will continue until stopped. Before stopping the animation now in memory, try programming these additional cues.

Cue 2

1. Press HOLD — Since the same slides and images will be used throughout the following exercise, the HOLD key should be pressed to cancel the normal tray advance. In actual use, the HOLD key is not required for animation.
2. Press A 1 2 3 (off) — Lamps go off but internal animatio continues.
3. Press CUE

Cue 3

1. Press 8 (fade rate)
2. Press A 1 2 3 (on) — Lamps fade on at 8 seconds with animation in progress.
3. Press CUE

Cue 4

1. Press A 1 2 3 (off) — Lamps fade off at 8 seconds. Internal animation continues.
2. Press CUE

Cue 5

1. Press FREEZE (SHIFT/HOLD) 5
2. Press EXECUTE
3. Press CUT (fade rate)
4. Press A 1 2 3 — Lamps cut to level 5. Animation continues.
5. Press CUE

Cue 6

1.	Press	FREEZE (SHIFT/HOLD) 10	
2.	Press	EXECUTE	
3.	Press	A 1 2 3	Lamps cut to level 10. Animation continues.
4.	Press	CUE	

Cue 7

1.	Press	FREEZE (SHIFT/HOLD) 4	
2.	Press	EXECUTE	
3.	Press	A 1 2 3	Lamps to cut to level 4. Animation continues.
4.	Press	CUE	

Cue 8

1.	Press	A 1 2 3 (off)	Lamps go off. Internal animation continues.
2.	Press	CUE	

Cue 9

1.	Press	A 1 2 3 (on) B 1 (on) C 1 (on)	A123 fades on with animation in progress while B1 & C1 fade on normally.
2.	Press	CUE	

Cue 10

1.	Press	8 (fade rate)	All lamps fade off. Internal animation continues.
2.	Press	NORM	This cancels the HOLD entered back at Cue 2.
3.	Press	A 1 2 3 (off) B 1 (off) C 1 (off)	All lamps fade off. Internal animation continues.
4.	Press	5 sec (SHIFT/H)	8 sec. later - - -
5.	Press	2 sec (SHIFT/G)	
6.	Press	1 sec (SHIFT/F)	
7.	Press	CLEAR ANIMATE (SHIFT/SET ANIM)	the internal animation affecting A123 stops.
8.	Press	A 1 2 3	
9.	Press	CUE	

To play it back - - - RESET, UPDATE, EXECUTE

Animation may be stopped with or without the animating images on the screen.

To stop animation with the animating images on,

Press CLEAR ANIMATE (SHIFT/SET ANIM)

Press letter and number keys of only those projectors involved in the animation (Cue 10, 7 & 8 above).

To stop animation after images have faded off, allow enough time to complete the fade off before stopping the animation. The best way is with time intervals. If animation fades off at 8 seconds, enter 8 seconds of time before stopping the animation (Cue 10, 4 thru 6 above).

After completing the preceding animation exercise, lay out some of your own combinations. Start with a single projector flashing off and on and work up to as many projector and screen combinations as you wish.

MIXED LIVE AND CANNED PRESENTATION

A mixed live and canned presentation involves a show that makes use of multi-image projection as well as live narration. Mixing a live and canned presentation with the Omni-Loc system is very simple. Remember that all programming procedures are the same as for shows that have no live portions. The difference is in the procedure for putting program cues into the Loc-Trac.

Here's what you do:

1) Program a tape stop command in the Cue that the tape is to stop.
2) Next, place a tape start command in the Cue that is to start the tape.
3) With the tape rewound to the start of the show, start the tape and Program Cue Execution up to and including the Cue that contains the tape stop command.

The tape should now be stopped. (By either a 807 tape transport control or by manually stopping the recorder.)

4) Now continue to Program the Cue Execution all of the live cues up to the Cue that contains the tape start command. When the Cue with the tape start is executed, the tape will start.
5) Continue to Program Cue execution to the end of the show or next live section.

If a presentation switches back and forth more than once, simply repeat the procedure for each occurrence.

SETTING UP THE OMNI-LOC SYSTEM

Tray Bands

Among the many features exclusive to the Omni-Loc System is its ability to be certain of the exact positions of slide trays - in spite of any projector malfunctions. Even if you have to remove a tray (e.g. to correct a slide jam) the Fader/Sensor insures that the tray is in the proper position after it is placed back on the projector.

Omni-Loc Tray Bands provide the information about the trays' positions. The Fader/Sensors "look at" the black and white pattern to assure proper automatic positioning of the trays.

Applying Tray Bands

Orient a Tray Band in front of you with the black and white pattern facing you. Notice the small white backward L on the bottom edge of the Tray Band. This mark is used as a reference in applying the band to a Universal 80 slide tray.

With the surface of the tray free from all labels, dust, etc.:

1) Remove the protective papers from the 5 adhesive sections on the back of the Tray Band. Avoid touching the adhesive.

2) Holding the band firmly against the flange at the bottom of the slide tray, line up the reference mark on the Tray Band with the numeral 1 on the tray flange. (The small white triangle points to the numeral 0.)

   Press to secure the adhesive behind the refernce mark and triangle.

3) Wrap the portion of Tray Band which is to the left of the reference mark, around the tray, keeping its edge against the flange of the tray.

   Press to secure the adhesive on the left end of the Tray Band.

4) Wrap the portion of Tray Band which is to the right of the reference mark, around the tray. Keep it taut but not excessively stretched, and again guide its edge aloang the flange of the tray.

   As you wrap, press to secure the adhesives behind the white dots corresponding to tray numerals 60 and 40.

5) Note that the band has a dot on the lower right end, and a white rectangle on the left end. Continue wrapping the band around the tray until the dot just covers the white rectangle. Then rub (using one of the protective papers for the adhesives) the overlapping edge; the adhesive bonds to the Tray Band and is securely positioned on the tray.

There are three white rectangular areas on the lower half of the Tray Band for tray identification. The upper half of the band must be kept clean of nicks, cuts and other marks that will interfere with sensing.

Reserving Trays

At this stage, you may also want to **Reserve** the trays. Without Reserving, a tray can be placed on any projector (1, 2, 3, and 4) and it will operate. But the trays can be Reserved to operate on certain projectors only. This is done by applying one or two 1/4-inch black squares in various positions on the white zone of a tray band at position 21.

A white zone with no black squares will allow the tray to work on any projector (1 through 4). With the squares placed as shown, you can Reserve a tray for only projector 1, or 2, or 3. Then, if you put a tray on the wrong projector, the alert light on the Controller will begin flashing.

Connecting the Components of the Omni-Loc System

The essential components of the Omni-Loc System are:

1) Micro Programmer
2) Controllers
3) Fader/Sensors

The rear panel of the Micro Programmer has eight 14-pin receptacles labeled **A** through **H** (corresponding to the lettered keys on the keyboard). The gray plug on the 16-foot ribbon-type cable supplied with each Controller, plugs into one of these receptacles. The other end of the cable (the black plug) plugs into the INPUT socket on the front of the Controller. Ribbon cable extensions of up to 200 feet are available.

The next step in system setup is to connect a Fader/Sensor to each projector. Utilizing a standard Kodak Ektagraphic projector, the procedure is:

1) Set the projector power switch to the **FAN** position.
2) Pull up the wire loop on the top of the Fader/Sensor.
3) Take the Fader/Sensor in hand and place the hook located on its right side, under the projector casing; then swing the left side of the Fader/Sensor toward the projector and press the plug firmly into the projector's remote control socket.
4) Push the wire loop down inside the lip of the tray well.

Plug the power cord of each projector into one of the receptacles on the rear panel of the Controller - the Controller to which that projector's Fader/Sensor is to be connected.

Each Fader/Sensor connects, by means of a permanently attached 5-foot ribbon cable, to one of the four receptacles on the top of the Controller. Extensions of up to 20 feet are available.

Using trays with Tray Bands

With the trays banded and, presumably, Reserved, put them on their appropriate projectors, seating them firmly in the tray well.

Turn on the Controller power switch on the rear panel of the unit. What happens? The projectors turn on, and a green and red indicator for each projector will light on the Controller.

The projector trays proceed to position 0 if they are not already there, then advance to position 1; and the projector power turns off - all this immediately upon your turning on the Controller power switch.

Using trays without Tray Bands

Your Omni-Loc system is designed to handle trays with Tray Bands, and also to handle trays that do not have Tray Bands.

If you have not "banded" the trays, the optical sensors have nothing to read. To prevent them from searching for information that is not there, cover the optical sensors with an opaque shield, such as non-transparent tape.

When you put an unbanded tray on a projector equipped with an Omni-Loc Fader/Sensor, and turn the corresponding Controller on, the tray reverses once to find position 0. The Fader/Sensor governing the tray movement will be incapable of sensing any tray movement and will flash its Alert indicator. The green Normal and red Alert indicators on the Controller also flash. Pressing the **Restore** button turns the Alert indicator off and the tray will proceed to the number 1 position and the projector power turns off. From this point on the Normal indicators continue to flash during a show, indicating that the sensors for that particular projector are turned off.

The sensors on the Fader/Sensor are inoperative (because of the opaque "blinder"), but the Controller still keeps track of the forward/reverse cycles of the tray, and will be able to move the tray to the positions called for by the commands from the Micro Programmer.

NOTE: If the Controller is turned on before the tray is placed on top of a projector, the Controller ignores all the information supplied by the Fader/Sensor on that projector. If you put a tray on a projector after the Controller has been turned on, simply:

1) Turn the Controller power off then back on.
2) Press the **Restore** and **Setup** buttons simultaneously

Setting Up Projectors: Positioning, focus and alignment

Hook up the projectors to the Controllers, and go through the initialization procedure just described. The yellow **Standby** light on the Controller will be on. Press the **Setup** button once. The projector power, if it was off, will turn on. Press the **Setup** button again and the lamp in projector number 1 will turn on (to half brilliance). Press the Select button on the projector and rotate the tray to the slide used for focus and alignment. Registration slides are provided at the

back of this booklet for your convenience. Focus and center the image on the screen.

To turn on the lamps of the remaining projectors, continue pressing the **Setup** button. The **Setup** button, if pushed repeatedly, brings up eight combinations of four projectors. At first it will bring on projectors individually, then 1 and 2 simultaneously, then 2 and 3, then 3 and 4. With the projectors operating simultaneously, you can adjust projection alignment for imposing images on the screen.

If you want to view specific slides, inform the Controller by pressing **Setup** (once). Then manually rotate the slide tray forward or backward to the desried slide. When the tray is moved from position 1 the lamp automatically turns on.

When all focusing and alignment is complete, press the Controller's **Restore** button. All the lamps turn off and the trays, if fitted with Omni-Loc Tray Bands return to position 1, and the projector power turns off.

Using the Controller in this mode also allows you to check the performance of the Fader/Sensor against the Tray Band. By rotating the tray backward, past position 80 all the way to position 1, the projector lamp comes on right away and turns off when you reach position 1, indicating that the sensor has counted all 80 slide positions, and that your Tray Band is on the tray properly and has not been defaced, marred or damaged.

Controller Functions

Each time a command is sent to the Controller from the Micro Programmer the green **Command** light flashes on the Controller. Up to now, the Controller's yellow **Standby** light has been on. The first command from the Micro Programmer turns the **Standby** light off, and also turns on projector power (if it is off; and if a Setup sequence was in progress, it is cancelled). This first command also renders the **Setup** button inactive until the Controller is released by the Micro Programmer, or until the Controller's power is turned off and then back on, thus triggering the initializing process.

When the Micro Programmer sends its first command and all trays are at the correct position, the projector lamps begin turning on in response to commands from the Micro Programmer. Likewise, when all trays are in proper position, the projector lamps fade on or off as programmed into the Micro Programmer's memory.

How to interpret the indicators

The red **Alert** lights at the Controllers turn on for each Controller channel without a projector, or with malfunctioning projectors.

Remember that following the wrong sequence of steps in the initializing process, putting the wrong trays on the projectors, or using trays without Tray Bands, are procedures which require corrective steps. Here's what you do:
If projector trays have been Reserved and you put the wrong tray on a projector, the tray (when the Controller power is turned on) stays at position 0, the red

Alert light on the Fader/Sensor of the culprit projector flashes on, and the projector power remains on. When this happens, correct the trays, and then press the Controller's **Restore** button. The projector tray can now go to position 1, and the projector power shuts off. (This procedure is also followed when cables have to be moved to different plugs because Fader/Sensors have been plugged into the wrong Controller outlets.)

When the Micro Programmer sends its first command, if a projector tray is not at the position specified by the Micro Programmer, the red **Alert** light will flash on the Controller and the out-of-positon tray will advance or reverse to the correct location. (Again, if the tray has no Omni-Loc Tray Band, the only "correct" position will be that position retained by the Controller in keeping count of the tray's cycling forward and backward.)

Replacing Blown Projector Lamps

If a projector lamp fails, the corresponding **Normal** light on the Controller will turns off, and the red **Alert** light flashes. The power to that projector lamp turns off and all commands to that projector cease. To re-lamp the projector:

1) be sure the slide tray locking ring is tight
2) carefully turn the projector upside down, supporting the projector by the tray.
3) Open the lamp access door, remove the old lamp and insert the new lamp. There may be a brief arc when the lamp pins touch the socket, but the lamp cannot be turned on by the Controller.
4) Close the lamp access door, then turn the projector right side up, holding the tray tight to the projector.
5) Position the projector, then press the **Restore** button on the Controller.

   The tray goes to its proper position and its lamp turns on as required.

INSTALLATION OF OMNI-LOC TRAY BAND ON 81 POSITION SLIDE TRAY

1) Be sure that the slide tray is clear of any labels, etc.

2) Carefully remove five release papers from tray band. Avoid touching pressure sensitive adhesive.

3) Line up #1 position on tray with vertical line on bottom edge of band (6-3/4" from left end). The small triangle will center on the number "0".

4) Hold band tight towards bottom edge of tray, then secure adhesive strip just to the right of position zero.

5) Wrap left end of band around tray to about 1" from edge, press toward bottom of tray and secure left end adhesive strip. (It will snap over raised tray position numbers.)

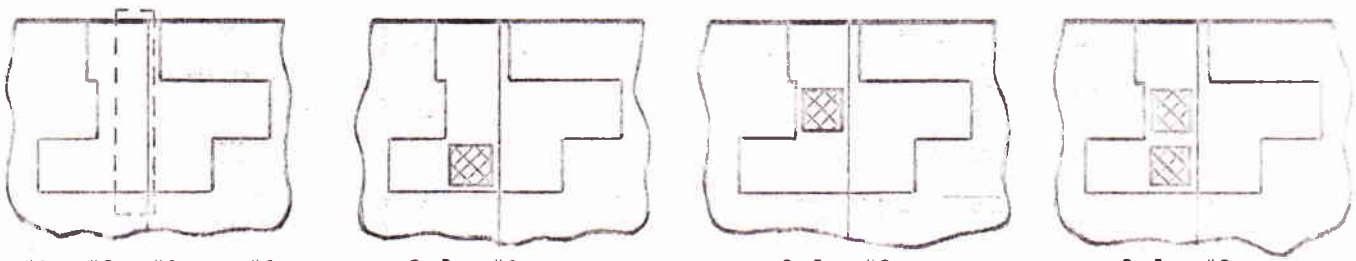
6) Now wrap right end of band around tray, keeping band taut but not stretched, and all the way down to lower edge of tray side.

7) Stop when band is approximately 1" from right end, push down to bottom edge of tray, then secure right end of band.

8) When installed correctly, dot on lower-right end of band will just cover white rectangle on left end of band. Then rub overlapped edge with a piece of release paper to insure good adhesion.

NOTE: As installed, tray will operate on projector channel #1, #2, #3 or #4. Tray may be coded for operation only on #1, #2, or #3 projector by applying one or two ¼" square black pads (supplied w/tray bands) as shown below. Then, if tray is connected to wrong channel, projector power will not go off after 804 power is applied, and alert LED will show faulty tray.

You may write projector/screen & show info on lower areas of tray band, but all code blocks must be clear. Avoid nicking, soiling band and keep free from dust.



#1, #2, #3 or #4 Only #1 Only #2 Only #3

TABLE A REFERENCE

Press Reset before performing any of the Table A operations

To perform the selected operation:

While in the Reset mode,

1) Press **Table A**
2) Enter number of the operation you desire
3) Press **Execute**

	Operation	Display	Additional Entries
0	Delete Seq + Sync Points	dL	
1	Set trays to the '0' position	+	None (Not available with AI 3)
2	Select starting tray position	POS	(desired position), **Execute**
3	Delete a range of Cues	dL	(smaller Cue number), **Execute,** (larger Cue number), **Execute** (if 1) = 0
4	Set lamp power to 100%	+	None
5	Set lamp power to 50%	+	None
7	Record LOC-TRAC	P 00	Pressing **Execute** starts the LOC-TRAC signal
8	Display LOC-TRAC from tape	L 00	None
9	Display Sequence Timing	dEL	
10	Delete Cue Points New Sync Point	~~nuE~~ CnO	(number of Cue whose Cue Point and all subsequent Cue Points will be deleted), **Execute**
11	Enter date for print-out	t	(enter month), **Execute,** (enter day), **Execute,** (enter year e.g. 81), **Execute**
12	Enter Show Title for print-out	Sho	Refer to the Omni-Printer instructions (Video Display)
13	~~Select List print format~~ Mate Track on	L	None (AI not available)
14	~~Select Storyboard print format~~ Mate Track off	+	None
15	Unlock keyboard (for rehearsal)	+	None
16	Lock the keyboard (cancel #15)	+	None

Shift Prev/Line

		Operation	Display	Additional Entries
17	-	Use with pause tape stop (Latching / Momentary)	+	None
18	-	For normal tape stop (~~cancel #17~~)	+	None
19	-	Start/Stop ~~Stopwatch~~ (Lec Time)	SCL ~~A 00~~	Minute to Start **Execute** to start clock, **Execute** to stop
20	-	~~Lap type Stopwatch~~ (Baud Rate for Printer)	BdL ~~B 00~~	Select Rate with key 1-4 ~~Execute to start, Execute for lap time~~
21	-	~~Start/Stop/Reset Stopwatch~~ (Print Sequences)	Pt ~~C 00~~	Smaller #, EX, Larger #, EX ~~Execute to start clock, Execute to stop, Execute to reset and start~~
22	-	~~Start/Lap/Start Stopwatch~~ (Print Sequence Timing)	Pt ~~D 00~~	as above ~~Execute to start clock, Execute display lap time, Execute to reset and start~~
23	-	Adjust screen area	AdJ	(present projector position), (desired projector position), (repeat for each projector) **Cue, Reset**

TABLE B REFERENCE

In the Program or Insert mode,

1) Press **Shift** and, while holding it down, press **Table B**
2) Enter the number of the desired operation.
3) Press **Execute**

	Operation	Display	Additional Entries
0	- Home trays to starting position	+	None
1	- Turn off projector power *	+	None
2	- Set rate for Variable key	SUF	(desired rate), **Execute**
3	- Repeat sequence (Do-loop)	do	(number of repeats), **Execute**
4	- End of sequence to be repeated	+	None
5	- Automatic execution of Cue #1	+	None
6	- Tape Start command	GO	None
7	- Tape Stop command	Ht	None
8	- Automatic Erase and Load	+	None

* Table B 1 may be used to manually turn projector power off when the Micro Programmer is reset, or while in the Check-Program or CUE mode.

QUESTION MARK REFERENCE

Unlike Error messages, the appearance of question marks (e.g. ?? 3) does not require that the Micro Programmer be reset.

Question Mark	Display	Cause
0 - Inappropriate entry	?? 0	The key last pushed cannot be used in conjunction with the current mode.
1 - Entry out of range	?? 1	The number entered is not valid for the present entry.
2 - Incorrect dissolve command	?? 2	A dissolve to a projector with its lamp already on was attempted.
3 - Incorrect order of entry	?? 3	The entry attempted must be the first entry of a new Frame.
4 - Duplicate fade command	?? 4	A projector lamp was told to turn on then off with no time between commands.
5 - Improper Screen Adjustment	?? 5	Inappropriate projector position or sequence of projector positons was entered. Reset and start operation over.

To continue programming, simply press **Shift** and, while holding it down, press **Program.**

Error: How to respond to Error indications on the display

While programming with the Omni-Loc Micro Programmer, you may enter certain commands which are not appropriate. Unlike programming situations in which the display shows question marks ("??"), an Error indication requires that you Reset the Micro Programmer. It is recommended if and when you get an Error indication, that you make a note of the Cue in which the Error indication was brought about.

When you make a programming Error, the word **Eror** is displayed under MODE and the Error number appears in the Step area of the display.

Clear the Error message by pressing **Reset,** then resolve the problem by referring to the cause of the Error listed below.

ERROR MESSAGE REFERNCE

Error Message	Cause
1 - Inappropriate Send	The Send key was pressed while there was no program in the memory.
3 - Step memory is full	The maximum number of Steps was exceeded when Loading a program.
4 - Improper deletion of Cue(s)	An attempt was made to delete part of a Do-loop while deleting a range of Cues.
5 - Incorrect Data	Micro Programmer received incomplete and/or incorrect program from tape.
9 - Improper Do-loop entry	A Table B 4 command was not preceded with a Wait and/or a corresponding Table B 3 command.
10 - Inappropriate Cue number	The Cue number entered is beyond that of the last Cue in the current program.
12 - Improper Cue Point programming	More than 59.99 seconds elapsed between Cue Points.
13 - Improper Cue Point deletion	An attempt to delete this Cue Point would render a time greater than 59.99 seconds between Cue Points.
14 - Cue Point memory is full	The maximum number of Cue Points was exceeded when programming Cue Points.

Error Message	Cause
15 - Improper Cue range	The Cue range was entered beginning with the larger Cue number rather than the smaller Cue number.
16 - Negative result	The operation attempted would have rendered a unfavorable result.
17 - Improper change of Cue Point	An attempt was made to change a Cue Point, earlier or later, by more than 9.99 seconds.
18 - Improper Table B 5 location	An attempt was made to enter a Table B 5 command in a location other than the first Step in a program.
19 - End of Loc-Trac	When recording the Loc-Trac signal, it was allowed to to run to the maximum time of 127.99 minutes.
20 - Inappropriate Freeze level	A number other than 1 through 10 was entered to select a Freeze level.
23 - Improper Accessory operation	There is not a corresponding Accessory program in the Micro Programmer.