



Roadrunner

OWNER/OPERATOR MANUAL

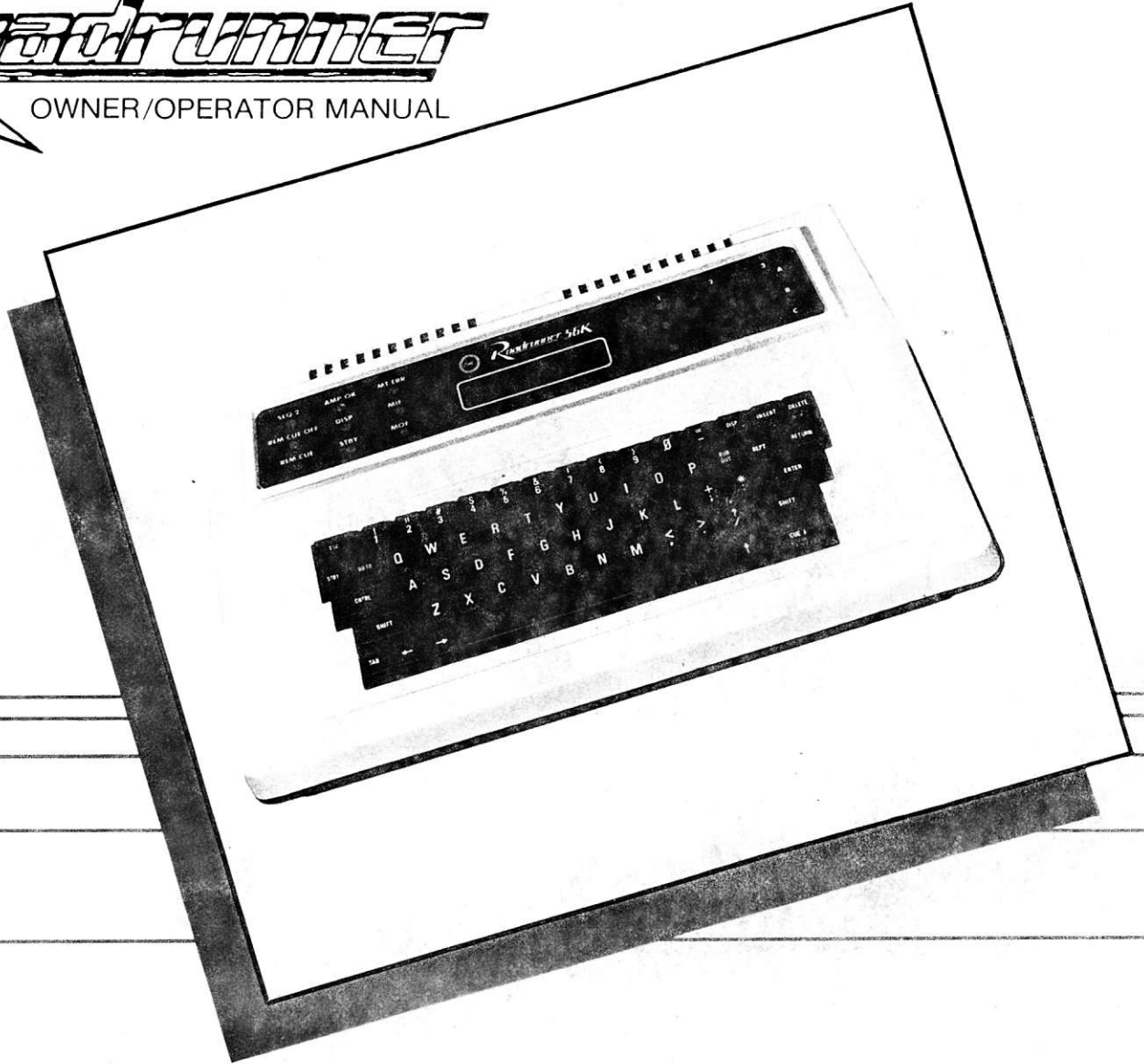


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GENERAL NOTE: For those of you that have never used the AVL EAGLE, we advise very strongly that you take the time to read the WHOLE STORY and all other parts of this manual before you attempt to use the ROAD RUNNER. The ROAD RUNNER is a very easy programmer to work with once you have a good understanding of how it works. Without a complete knowledge of the unit, you will frustrate yourself and end up reading the manual eventually. So do yourself a favor and start at the beginning and learn it the right way the first time. We know you will enjoy your ROAD RUNNER, because we enjoyed developing it for you.

This section will make note of the physical characteristics of the ROAD RUNNER and describe what the intended use is for each. The programmer has three basic areas to describe. They are the KEYBOARD, FRONT PANEL (located just above the keyboard), and the REAR (or back) PANEL.

KEYBOARD

The keyboard is very much like any ordinary typewriter keyboard. You will notice, however, it has a few extra keys with SPECIAL labeling. These keys are described in detail under the CODE heading of the SHORT and WHOLE STORY section of this manual.

FRONT PANEL

The FRONT PANEL is made up of 9 LEDs (Light Emitting Diodes) on the left half, the DISPLAY LINE in the center and 9 LEDs on the right half.

LEFT HALF OF FRONT PANEL

SEQ 2	SEQUENCE 2 - Lights when the ROAD RUNNER is told to sequence two projectors.
REM CUE OFF	REMOTE CUE OFF - Lights when told to ignore cues received at the remote jack provided on the rear panel.
REM CUE	REMOTE CUE - Lights when a remote cue is received at the remote jack on the rear panel.
AMP OK	AMPLITUDE OK - Lights when the PLAY IN jack on the rear panel is receiving a MAG TAPE signal.
DISP	DISPLAY - Lights when an important message is pending. Flashes when in Projector or Auxiliary Disconnect. Is connected with the DISP key for viewing the messages on the DISPLAY LINE.
STBY	STANDBY - Lights when in the STANDBY mode.
MT ERR	MAG TAPE ERROR - Lights when an error is detected in the MAG TAPE INPUT signal being received.
MIF	MAG TAPE INPUT OFF - Lights when told to ignore any type MAG TAPE INPUT that is received by the ROAD RUNNER.

MOF MAG TAPE OUTPUT OFF - Lights when told NOT to generate any MAG TAPE OUTPUT to the REC OUT jack.

DISPLAY LINE

The DISPLAY LINE acts as the ROAD RUNNERS primary communication path to you. It displays the cue you are presently working on or previews the next cue when in a RUN mode. It allows you view CUES and CONTROL COMMANDS as you enter them and it allows you to monitor additional status information in conjunction with the DISP key functions (Such as, tray position (assumes starting tray position to be "1")).

RIGHT HALF OF FRONT PANEL

These 9 LEDs represent the screens and their projector assignments respectively. The LED(s) will light when you assign the respective projector to turn on its lamp. In this way you can keep track of what projectors are ON and which are NOT.

REAR PANEL

Facing the REAR PANEL we will describe the features from right to left.

EXPANDER This feature is provided for expansion of the ROAD RUNNER at some future time.

REC OUT The RECORD OUT RCA jack is used for ALL outgoing DATA communications information. e.g. To hook to your dissolve units and other peripheral equipment, store program information, record your CLOCK TRAK information on your audio track and record your Real Time DATA on your audio track.

PLAY IN The PLAY IN RCA jack is used for ALL incoming DATA communications information. e.g. To load PROCALL, load in program information that is stored on MAG TAPE, play in CLOCK TRAK, VERIFY your SAVE tapes and play DATA information through the ROAD RUNNER without putting it into memory.

REM CUE The REMOTE CUE jack is a KODAK female type. It is used to CUE and REVERSE CUE the ROAD RUNNER from a remote location. e.g For speaker support. The REM CUE jack can be made inoperable by entering a RCF command in the CONTROL COMMAND mode. This will also light the REM CUE OFF LED on the FRONT PANEL. It is also tied to the REM CUE LED on the FRONT

PANEL so that each time a remote cue signal is received at the REM CUE jack it will light the REM CUE LED.

BATTERY

The ROAD RUNNER can be used with the EAGLE BATTERY PAK to protect the internal memory contents (the PROCALL and program portion) from being lost if the unit is disconnected from a power supply for whatever reason.

**POWER
RECEPTICAL**

Always make sure the POWER switch is turned OFF before plugging in the unit.

FUSE

The fuse is removed very easily with the FUSE PULL lever. The fuse itself is a #312 3AG 1/2 AMP 250 VOLT fuse.

You will notice in the fuse compartment a small card with "120" marked on it. This card is to allow you to change from 120 VOLTS to 240 VOLTS. With a small pliers you remove the card and turn it around so that the "240" now appears on the left in the cut away area where the "120" appeared before you removed the card. Make sure the card is secured. Now replace the fuse and you are ready to use 240 VOLT power.

CAUTION: Make sure this card is set to the proper voltage rating before you apply power to the ROAD RUNNER. Also if you can read "110" or "220" in the cut away space, the ROAD RUNNER will NOT operate.

ON/OFF

This switch applies power to the ROAD RUNNER when the ON is in the flat position. Always make sure the ROAD RUNNER is turned OFF before plugging into an AC outlet.

NOTES: Always make sure there is enough space around the ROAD RUNNER vents to allow proper cooling. These vents are located just above the REAR PANEL and underneath the unit.

The ROAD RUNNER is a professional piece of equipment. It should be treated as such and not be tampered with. If you ever have a problem with your ROAD RUNNER, you should have it checked by an AUTHORIZED AVL SERVICE REPRESENTATIVE. The ROAD RUNNER should NEVER be opened by anyone else. Failure to comply with this stipulation will cause your warranty to become invalid and could cause further serious problems with your ROAD RUNNER. We know you will enjoy your ROAD RUNNER. HAPPY MOTORING.

THE SHORT STORY

Knowing how excited you are about your new ROAD RUNNER, we have simplified this section to allow you to get right to the heart of how the ROAD RUNNER works. The ROAD RUNNER is a non-dedicated type computer similar to the EAGLE. This allows the ROAD RUNNER to be flexible and updatable. The ROAD RUNNER is given its intelligence from PROCALL which is loaded into the ROAD RUNNER from MAG TAPE. Once the ROAD RUNNER is loaded, it is a very powerful and versatile tool for programming slide projectors and other peripheral equipment.

DUPLICATION OF PROCALL TAPES

The magnetic PROCALL tapes that are used with your ROAD RUNNER can be duplicated to provide flexibility. This allows you to place the procall load on the front of your show tape, make a number of tapes for back-up or just to insure you have spares, etc. AVL will provide you with the same type of PROCALL tapes, that are "original" quality. The difference lies in the fact that any time you duplicate a tape you are moving one more step away from the original quality.

For this reason, AVL strongly suggests that you use a DATA BOOSTER between the two tape recorders to boost the signal to insure the best possible quality from duplication. If this suggestion is not followed, the possibility of your PROCALL load taking much longer is greater because the ROAD RUNNER may not receive the information the first (or second) time it tries to load, due to weak data.

The greatest reliability will come from those tapes purchased from AVL that are "originals". AVL will offer the following tape configurations:

CASSETTES	1 7/8 IPS (INCLUDED)
REEL-TO-REEL	7 1/2 IPS (OPTIONAL)
REEL-TO-REEL	15 IPS (OPTIONAL)

In this section, we will move very quickly through the procedures of LOADING PROCALL into the ROAD RUNNER, HOOKING UP your system, CODES used to control your ROAD RUNNER and SAVING your program onto MAG TAPE.

LOADING PROCALL INTO THE ROAD RUNNER

(1) After you have checked to make sure the ROAD RUNNER is turned OFF, plug the ROAD RUNNER into a grounded 120 volt electrical outlet. NOTE: For operation with 240 volt power see "POWER" listed in the INDEX.

(2) Connect the ROAD RUNNER PLAY IN jack to your tape recorder line output jack for the PROCALL load.

(3) Turn ON both your tape recorder and your ROAD RUNNER. When powered ON, the ROAD RUNNER will display "PLEASE LOAD TAPE". Start your tape recorder.

When the ROAD RUNNER starts to receive information from the tape, the AMP OK green LED will light and the DISPLAY LINE will change to "BLOCK 1 OF XX". A BEEP sound will occur each time a good BLOCK of information is received by the ROAD RUNNER and the number of blocks received will be indicated by the first number. When all XX BLOCKS of information have loaded correctly into the memory, the ROAD RUNNER will BEEP twice and the DISPLAY LINE will read "ROAD RUNNER Vx.x". Vx.x indicates the version of PROCALL you have loaded.

The ROAD RUNNER will automatically be in the MAG TAPE BYPASS condition after the PROCALL load.

HOOK UP

The ROAD RUNNER is connected to the dissolve via the "REC OUT" RCA phono jack on the rear panel of the ROAD RUNNER. AVL dissolve units label the projectors L,C,R (LEFT - CENTER - RIGHT), this notation will correspond respectively to the A,B,C of the projector status LEDs on the ROAD RUNNER front panel. NOTE: We recommend the use of high quality audio cables for ALL hook ups. e.g. TEAC TC 401xx (the xx indicates length).

STORING YOUR PROGRAM ON MAG TAPE

After you have created a program in memory, you will want to store that program onto mag tape. There are two methods for storing the program.

- (1) ROAD RUNNER and EAGLE configuration.
- (2) SHOW PRO V and pre-EAGLE compatible.

Below are outlined the basic set ups for both procedures and an explanation of the differences.

SET UP FOR STORING PROGRAMS ON MAG TAPE

1. Connect the "REC OUT" jack on the ROAD RUNNER to the line input of your tape recorder.

Connect the "PLAY IN" jack on the ROAD RUNNER to the corresponding "line output" jack on the tape recorder. This connection is used to VERIFY (described below).

2. In the CONTROL COMMAND mode, type in STL (SET LEVELS) and adjust the input levels of the tape recorder to between +1 and +3 db.

3. Press ESC (ESCAPE) to clear STL. This will put you into the normal programming mode.

4. Return to the CONTROL COMMAND mode and type in ONE of the following commands depending on the type of store you want to create.

CONTROL COMMAND STORE ENTRIES

(1) SAVE,ENTER - ROAD RUNNER/EAGLE CONFIGURATION

When the ENTER key is pressed, the DISPLAY LINE will start to run the cues as they are saved onto the tape. This method will SAVE the program just as it appears in the ROAD RUNNER memory. This method also codes the tape so that later when you reload the program, the ROAD RUNNER will automatically switch to the LOAD mode and then return to the MAG TAPE BYPASS condition after loading the program back into memory.

(1A) VER,ENTER - VERIFY

Once you have saved your memory with the SAVE method, you can VERIFY to see that what you recorded on the audio tape is the same as what is in the memory (program). Return the tape to the starting position of the SAVE on that tape. In the CONTROL COMMAND mode, type VER, than ENTER. Start the tape recorder and watch the cues count down.

(2) MTD,ENTER - MAG TAPE DUMP

This method will store the program to be compatible with SHOW PRO V and other pre-EAGLE AVL equipment. VERIFY will NOT work with this type store.

LOADING YOUR PROGRAMS INTO THE ROADRUNNER

Loading an existing ROAD RUNNER program into the memory will normally occur immediately after you have loaded the PROCALL language into the ROAD RUNNER. Any ROAD RUNNER program that was stored on MAG TAPE with the SAVE method has been coded so it can be loaded directly into the PLAY IN jack on the rear panel. For programs that were stored with the MTD, you will have to tell the ROAD RUNNER to load the program by turning off the MAG TAPE BYPASS. This is done by entering the CONTROL COMMAND mode and typing in LOAD and than entering it. Because the MTD store tapes are not coded, you will have to return the ROAD RUNNER to the MAG TAPE BYPASS condition manually by pressing any key. We recommend you use the SPACE BAR.

SELF TEST

The ROAD RUNNER has a built-in feature that is designed to test all internal functions of the ROAD RUNNER. When the ROAD RUNNER is powered ON, it performs one complete diagnostic routine of its memory. Due to the limited time involved, this routine can not test all the possibilities of error in the ROAD RUNNER. Therefore, AVL has developed a more comprehensive test that can be run prior to PROCALL loading in the event the unit itself detects an error or you feel there may be an error.

The SELF TEST allows you to test the DISPLAY functions, KEYBOARD functions, all internal MEMORY functions, and the MAG TAPE functions.

These tests are conducted after the unit is powered ON and BEFORE you load PROCALL. When the unit is powered ON, the ROAD RUNNER will display "PLEASE LOAD TAPE" in the DISPLAY LINE. At this time any one of the tests can be accessed.

For more information on these tests, please look under the SELF TEST section of the WHOLE STORY.

SHORT CODES

This section is broken into four major headings:

CODE ENTRIES
SCREEN ENTRIES
EDITING COMMANDS
CONTROL COMMAND MODE ENTRIES

CODE ENTRIES

DISSOLVE SPEEDS

CODES	DISCRIPTIONS
CT	CUT - Turns lamp ON or OFF instantaneously.
1D	DISSOLVES - Turns lamp ON or OFF in the designated amount of time in seconds.
2D	
3D	
4D	
6D	
8D	
16D	
32D	
HC	HARD CUT - Turns lamp ON or OFF faster than a CUT. Allows slide to advance faster.
AT	ALTERNATE or ALT - Turns lamp ON or OFF instantaneously with NO tray advance.
1A	DISSOLVE ALTERNATES - Turns lamp ON or OFF in the designated amount of time in seconds with NO tray advance.
2A	
3A	
4A	
6A	
8A	
16A	
32A	
FA	FAST ALTERNATE - Turns lamp ON or OFF faster than an alternate with NO tray advance.
FZ	FREEZE - Will stop any dissolve in progress at any light level.

- PS PRESET - Used to preset specific projectors to respond to the next action cue issued to the corresponding dissolve unit (screen number(s)).
- HCME PROGRAMMABLE RETURN TO BEGINNING OF PROGRAM
Used as a program function to return program, slide trays and lamp status to the home (cue #1) position.

PROJECTOR TRAY RELATED COMMANDS

- PF PROJECTOR FORWARD - Moves the designated projector(s) one position forward.
- PR PROJECTOR REVERSE - Moves the designated projector(s) one position reverse.

RUN SEQUENCES

The ROAD RUNNER has the capability of running series of cues at 10 CPS or 20 CPS. A run sequence is initiated by using a GO command (stopped by a STOP command) or with the use of time cues with the CLOCK TRAK. A run sequence will run until told to stop or wait for the next time cue. Run sequences are used to fire a series of cues rapidly with precise timing using wait cues.

- CURSOR 10 CPS - The cursor will flash slightly faster than once per second.
- 20 CPS - The cursor will flash slightly faster than twice per second.
- RUN SEQUENCES - The cursor will NOT flash when in the RUN mode running from memory.
- 10 CPS 10 CUES PER SECOND - Normal running speed.
- 20 CPS 20 CUES PER SECOND - Used to increase the running speed to 20 CPS.

W.05 WAIT TIMES - Waits the designated amount of time in
W.1 .05 second increments. Maximum of 10 seconds per
W.15 cue.

W.2

--

W9.90

W9.95

W10

WX WAIT X - Used when the proper timing of a sequence has not been determined before programming. The WX cue is resolved to the nearest .05 second by pressing the CUE key during the running of that particular section.

TX TIME X - Used to mark the beginning of a timed (RUN) sequence using the CLOCK TRAK. The X value is resolved when you press the CUE key.

TIME TIME - Indicates there is a specific time stored in the program memory for that cue.

N NOP - NO OPERATION - Has no affect on the screen action. Equals .1 second wait in 10 CPS and .05 second wait in 20 CPS.

RPxx REPEAT - Used to repeat a series of cues that start with a GO imbedded with the first cue of that sequence. xx = number of times to be repeated.

RPX REPEAT X - Repeats X number of times. X is resolved in the RUN mode while viewing the sequence as it will appear in your show.

RPO REPEAT UNTIL TERMINATED - Repeats until cued to terminate.

TBxx TAB - Used to mark a section of programming. The TAB can be used as TB or with two characters (letters and/or numbers).Ex. TBAL

D DOVE COMMANDS

The following commands are ONLY valid when you are using a D DOVE(s) to program and play back your show. This brief discription is only to list what the commands are. For a further understanding of how the D DOVE and the commands work, please refer to the D DOVE manual provided later in this manual.

CODE	DISCRIPTION
LL	LOAD LOOP - Alerts the version "D" DOVE to store a series of cues (ACTION CUES) in its memory as a routine.
LG	LOOP GO - Used to tell the LOOP to execute.
LS	LOOP STOP - Used to tell the LOOP to stop exectuing.
BG	BLINK GO - Used to start a BLINKING routine inside the D DOVE.
BS	BLINK STOP - Used to stop the BLINKING routine.
SG	SMOOTH GO - Used to tell the D DOVE to change the way the lamp is ramped on a dissolve.

SS SMOOTH STOP - Used to tell the D DOVE to return to the normal ramping of dissolves.

AUXILIARY AND X15 COMMANDS

AX AUXILIARY - Used with a screen and projector assignment to fire an auxiliary hooked up to a dissolve unit.

XS SHORT PULSE - Momentary closure of 50 milliseconds.

XL LONG PULSE - Momentary closure of 1/2 second.

XN LATCH ON - Unlike the momentary closure, Latch On keeps the selected channel(s) contacts closed until interrupted by a new command. That command can be XS or XL which will cause the contact to open momentarily and close again.

XF LATCH OFF - Cancels Latch On command.

NOTE:

1. All auxiliary cues must specify screen and projector independents.
2. You CANNOT have an auxiliary command for the X15 and one for a DOVE in the same cue.

SCREEN ENTRIES

- G GO - Used in the "screen area" of the DISPLAY LINE, to designate one of the following:
1. To mark the beginning of a REPEAT sequence.
 2. To initiate a RUN sequence.
 3. As a reference point.
- S STOP - Used in the "screen area" of the DISPLAY LINE, to designate one of the following:
1. To mark the end of a RUN sequence.
 2. To stop the screen action when using CLOCK TRAK.
- 12345 SCREEN NUMBER - The ROAD RUNNER will default to 123. However, you may program any three screens of your choice by using the ~~AS~~_{SA} control command.
- ABC PROJECTOR ASSIGNMENTS - The ROAD RUNNER will default to ABC. However, you may choose to use LEFT - CENTER
LCR RIGHT or TOP - CENTER - BOTTOM by using the ~~AP~~_{PA} control
TCE command.

EDITING COMMANDS

Editing is a very important part of programming. To simplify this task, the following commands have been outlined to allow single and combined entries that will assist you to do editing tasks rapidly and with great ease. Certain keys have dual purposes and some are used in the CONTROL COMMAND mode. For notation purposes, to indicate that two keys are to be pressed simultaneously, "/" will be used to separate the two keys. Example, ADD-A-CUE will be designated "CNTRL/A".

- ENTER Pressing this key will enter the command into the ROAD RUNNER memory.
- CUE ↓ Used to command the ROAD RUNNER to execute a cue or run sequence from memory.
- DISP DISPLAY - This is to provide a monitor for when you enter a condition that is not "normal" to the operation of the ROAD RUNNER. The DISP LED will light when an abnormal condition exists and will flash when in PROJECTOR OR AUXILARY DISCONNECT. This function will also display tray position. Press to view the conditions, press again to view the tray position for the first set of three projectors again to view the second set, again to view the third set and again to get back to the programming mode. NOTE: ROAD RUNNER assumes trays start at "1".
- ↑ REVERSE CUE - When pressed, this key will move the program (memory) in the REVERSE direction;
 1. ONE cue if you are not in a RUN condition
 2. To the previous GO in a RUN mode.
 3. To the previous TIME cue when using CLOCK TRAK.
- Q STEP CUE - Steps through the program one cue in the FORWARD direction each time you push the key.
- CNTRL/Q STEP REVERSE CUE - Steps through the program in the REVERSE direction one cue each time the "Q" is pressed while holding down the CONTROL key.
- Q/REPT or CNTRL/Q/REPT FAST FORWARD/REVERSE - Allows you to move through your program rapidly by pressing "Q" or CNTRL/Q together with the REPT key.
- > CURSOR RIGHT - Used as a tab to move from the CODE area of the DISPLAY LINE to the SCREEN area. If the key is pressed again, it will cause the program to advance to the next cue with the cursor in the CODE area of the display. In the CONTROL COMMAND mode, the cursor will move one character to the right each time the key is pressed.

<-- CURSOR LEFT - Used as a tab to move from the SCREEN area of the DISPLAY LINE to the CODE area. In the CONTROL COMMAND mode, the cursor will move one character to the left each time the key is pressed.

SPACE BAR Used to move one character to the right without changing the character the cursor is moving across.

RUBOUT Used to clear an entire entry in either the PROGRAM or the CONTROL COMMAND mode.

CNTRL/A ADD-A-CUE - Allows you to "open up" the memory to insert a cue into the your program.

INSERT ADD-A-CUE - Same as CNTRL/A.

CNTRL/D DELETE CUE - Deletes (removes) the cue that is being previewed and closes up the memory.

DELETE DELETE CUE - Same as CNTRL/D.

CNTRL/R REPEAT CUE - Repeats the previous cue once each time the CNTRL/R is pressed.

ESC ESCAPE - Allows you to ESCAPE (stop) any action that is being carried out by the ROAD RUNNER. This key also returns you to the programming mode from the CONTROL COMMAND mode.

CNTRL/G, ENTER Issues a HOME cue to the attached dissolve units and returns the program to CUE #1.

CNTRL/P PROJECTOR DISCONNECT - This command disconnects or disables any projector related cues from going out of the ROAD RUNNER.

CNTRL/X AUXILIARY DISCONNECT - Disconnects or disables the auxiliary cues from going out of the ROAD RUNNER.

TAB FORWARD TO NEXT TAB - Allows you to access the next TAB cue quickly.

CNTRL/TAB REVERSE TO PREVIOUS TAB - Allows you to access your previous TAB cue.

CNTRL/B REVERSE TO PREVIOUS TAB - Same as CNTRL/TAB

CNTRL/S STANDBY - Will bring down the lamps of ALL projectors and light the STANDBY (STBY) LED.

STBY STANDBY - Same as CNTRL/S.

CONTROL COMMAND ENTRIES

The following commands must be entered in the CONTROL COMMAND mode.

CNTRL/C	CONTROL COMMAND - Allows you to enter the CONTROL COMMAND mode.
SAVE,ENTER	Allows you to SAVE your ROAD RUNNER program memory onto mag tape for storage.
LOAD,ENTER	Allows you to load program memory into the ROAD RUNNER from mag tape or directly from the EAGLE.
VER,ENTER	VERIFY - Allows you to verify the information that has been saved onto mag tape for storage before clearing the program from memory.
COM,ENTER	CLOCK OUTPUT MODE - Used to generate CLOCK TRAK on your audio tape.
STL,ENTER	SET LEVELS - Outputs a continuous test tone from the REC OUT RCA jack on the rear panel of the ROAD RUNNER to adjust the record level of your tape recorder.
CNTRL/G, xxxx, ENTER	Issues a command to the ROAD RUNNER memory to go to a specific cue # in the memory (xxxx = the desired cue #).
RCF, ENTER	REMOTE CUE OFF - Turns OFF the remote cue.
RCN, ENTER	REMOTE CUE ON - Turns the remote cue back ON.
PAxxx,ENTER	PROJECTOR ASSIGNMENT - Allows you to determine how the projectors will be assigned. (ABC, LCR, or TCB)
SAxxx,ENTER	SCREEN ASSIGNMENT - Allows you to use the ROAD RUNNER to program on any three of five screens by assigning the desired screen numbers. (12345)
MOF, ENTER	MAG TAPE OUTPUT OFF - Turns OFF mag tape output.
MON, ENTER	MAG TAPE OUTPUT ON - Turns the mag tape output control back ON.

MIF, ENTER MAG TAPE INPUT (PLAY) OFF - Turns OFF mag tape input so that it ignores any input from an external source.

MIN, ENTER MAG TAPE INPUT (PLAY) ON - Turns the mag tape input control back ON.

BPF, ENTER BEEPER OFF - Allows you to turn the BEEPER OFF.

BPN, ENTER BEEPER ON - Turns the BEEPER to the normally ON condition.

CAC, ENTER CLEAR ALL CUES - Allows you to clear ALL cues from the memory.

CNTRL/T, xx, ENTER GOTO TAB xx - Allows you to access any designated (xx) TAB from any location in the program.

SEQ2, ENTER SEQUENCE 2 - Allows you to sequence between two of the three available projectors (A and C). NOTE: You can still independently access the "B" projector.

SEQ3, ENTER SEQUENCE 3 - Allows you to return to sequencing three projectors.

MTD, ENTER MAG TAPE DUMP - Allows you to store the program in a configuration that is compatible with the SHOW PRO V and pre-EAGLE equipment.

PIF, ENTER POSITRAK INPUT OFF - Will ignore any incoming POSITRAK while in the PIF mode.

PIN, ENTER POSITRAK INPUT ON - Used to tell the ROAD RUNNER to turn ON the input and process any POSITRAK that is being received.

POF, ENTER POSITRAK OUTPUT OFF - Used to tell the ROAD RUNNER NOT to generate POSITRAK.

PON, ENTER POSITRAK OUTPUT ON - Used to tell the ROAD RUNNER to restore POSITRAK generation.

THE WHOLE STORY

The ROAD RUNNER is a non-dedicated type computer similar to the EAGLE. This is very useful to you and to the industry in that it allows the ROAD RUNNER to be flexible and updatable. This flexibility will allow the ROAD RUNNER to keep abreast of new software developments and will allow interfacing with new hardware.

The ROAD RUNNER receives its intelligence by loading a software program into its memory that tells it what it is and how it works. This program is called PROCALL (PROgrammable Computer Audio-visual Language Library). The PROCALL intelligence will be retained in the memory of the ROAD RUNNER only as long as the unit is powered ON. This is also true of the program you enter for your slide show. With PROCALL loaded, you will have approximately 1000 cues for programming.

Once the ROAD RUNNER is loaded, it is a very powerful and versatile tool for programming slide projectors and other peripheral equipment.

DUPLICATION OF PROCALL TAPES

The magnetic PROCALL tapes that are used with your ROAD RUNNER can be duplicated to provide flexibility. This allows you to place the procall load on the front of your show tape, make a number of tapes for back-up or just to insure you have spares, etc. AVL will provide you with the same type of PROCALL tapes, that are "original" quality. The difference lies in the fact that any time you duplicate a tape you are moving one more step away from the original quality.

For this reason, AVL strongly suggests that you use a DATA BOOSTER between the two tape recorders to boost the signal to insure the best possible quality from regeneration. If this suggestion is not followed, the possibility of your PROCALL loading taking much longer is greater because the ROAD RUNNER may not receive the information the first (or second) time it tries to load, due to weak data.

The greatest reliability will come from those tape purchased from AVL that are "originals". AVL will offer the following tape configurations:

CASSETTES	1 7/8 IPS (INCLUDED)
REEL-TO-REEL	7 1/2 IPS (OPTIONAL)
REEL-TO-REEL	15 IPS (OPTIONAL)

Before you start, here are a few suggestions for more efficient operation.

1. Use your ROAD RUNNER keyboard as you would a typewriter (after all that's what it is). Two handed operation is faster and easier, allowing you to concentrate on the task of programming. We have found this is much faster than "Hunt and Peck" methods typically used on dedicated keyboards.

2. Find a work space that is a comfortable height for programming (typing).
3. Allow enough space around you for your peripheral equipment such as a tape recorder to load and save your program, easel for programming storyboards, this manual for reference, etc.

LOADING PROCALL INTO THE ROAD RUNNER

(1) Now that you have found a comfortable work space, place your ROAD RUNNER on the desk next to your tape deck. On the rear panel of your ROAD RUNNER you will find a three pin connector (between the fuse and the receptacle marked "BATTERY") for the power cord. After you have checked to make sure the ROAD RUNNER is turned OFF, plug the the appropriate end of the power cord into this connector then into a grounded 120 volt electrical outlet. NOTE: For operation with 240 volt power see "POWER" in the INDEX.

(2) Plug one end of an RCA phono jack into the PLAY IN female RCA phono jack on the rear panel of the ROAD RUNNER and the other end into the "line output" jack of your tape recorder which corresponds to the proper channel of the tape that has the PROCALL load for the ROAD RUNNER.

(3) Turn ON both your tape recorder and your ROAD RUNNER. When powered ON, the ROAD RUNNER will display "PLEASE LOAD TAPE", at this time you will start your tape recorder running at the proper speed indicated on the PROCALL LOAD tape you are using for this load.

When the ROAD RUNNER starts to receive information from the tape, the AMP OK green LED will light (letting you know a signal is being received) and the DISPLAY LINE will change to "BLOCK 1 OF XX" (the XX represents the total number of BLOCKS which may vary with each version of PROCALL). At this time you will also hear a BEEP sound which indicates that the PROCALL is indeed being loaded into the ROAD RUNNER's memory. A BEEP sound will occur each time a correct BLOCK of information is received by the ROAD RUNNER and the number counter will increase by one each time a correct block is loaded. When all XX BLOCKS of information have loaded correctly into the memory, the ROAD RUNNER will BEEP twice (BEEP..BEEP..) to let you know that it has completed this loading function. This BEEPING is most handy if you are busy hooking up other equipment or off getting a cup of coffee, (BEEP..BEEP..) letting you know the ROAD RUNNER is ready for action. After PROCALL is loaded, the DISPLAY LINE will read "ROAD RUNNER Vx". Vx indicates the version of PROCALL you have loaded. At this time you can stop the tape recorder or disconnect the line feed.

(4) The data blocks are recorded sequentially on the tape with the entire program repeated continuously the length of the tape on all four tracks. This enables you to start loading the program anywhere on the tape, on either side of the cassette. The ROAD RUNNER will simply load the first block inputted, label it block 1 of XX and continue to load until all of the required blocks are loaded into the memory. AVL advises against rewinding the tape for each PROCALL load as that will tend to cause unnecessary wear on the first section of the tape. A

better procedure would be to stop the cassette after a load is completed and then start from that point the next time the ROAD RUNNER is loaded. This will distribute more evenly the wear on the tape and extend its useful life.

If for some reason the ROAD RUNNER should happen to miss a block of data the MAG TAPE ERROR light will flash briefly, the count will not be incremented and the ROAD RUNNER will proceed to load the next block of data. The program load will continue until all blocks but the missed one are loaded, at that point the ROAD RUNNER will continue to BEEP without incrementing the block count. The ROAD RUNNER will keep track of which block it is missing and when the needed block is repeated on the tape again it will load it, BEEP twice and be ready for use. Each pass of PROCALL is over a minute long on the tape so depending on which block was missed you may have to wait up to a minute for the needed block to be repeated.

NOTE: The ROAD RUNNER will automatically be in the MAG TAPE BYPASS condition after the PROCALL load. This allows you the flexibility to:

1. Run a show that has the DATA TRAK on tape through the ROAD RUNNER and bypass loading the program into the memory.
2. LOAD a program directly into the memory after PROCALL load, then go directly to the show that is run with a DATA TRAK allowing you to mix "live" from the memory and "canned" from the DATA TRAK.
3. LOAD a program into memory after the PROCALL load and run from a tape that has a DATA TRAK and a CLOCK TRAK.

HOOK UP

The ROAD RUNNER is connected to the dissolve via the "REC OUT" RCA phono jack on the rear panel of the ROAD RUNNER. The first dissolve unit is connected directly to the ROAD RUNNER, the second is connected to the first, the third to the second, etc.

NOTE: When hooking up your system you may want to place a "Y" connector into the REC OUT jack on the ROAD RUNNER to allow one side of the Y to go to the dissolves and the other to your tape recorder to eliminate having to change connector when you go to store (SAVE) your program. We recommend the use of high quality audio cables on ALL hook ups such as the TEAC TC 401xx (xx indicates the length).

You can also use this method to view your show while recording your real time DATA TRAK onto your show audio tape.

AVL dissolve units label the projectors L,C,R (LEFT - CENTER - RIGHT), this notation will correspond respectively to the A,B,C of the projector status LEDs on the ROAD RUNNER front panel.

STORING ROAD RUNNER "PROGRAMS" ON MAG TAPE

After you have created a program in memory, you will want to store that program onto mag tape. There are two methods for storing the program. One method is designed to let you reload the ROAD RUNNER with the same information that was in the original program or directly from an EAGLE. The second method is designed to be compatible with SHOW PRO V and other pre-EAGLE AVL compatible equipment. In either case, you must be at cue #1 to store the whole program or at the cue number that begins the section you wish to store.

Below are outlined the basic set ups for both procedures and an explanation of the differences.

SET UP FOR STORING PROGRAMS ON MAG TAPE

To set up for storing the memory, you will need a TAPE RECORDER, a good quality audio tape and 2 RCA phono cables.

1. Connect one end of one RCA cable to the "REC OUT" jack on the rear panel of the ROAD RUNNER and other end to the "line input" of your tape recorder.

Connect the other RCA cable to the "PLAY IN" jack on the ROAD RUNNER and to the corresponding "line output" jack on the tape recorder. This connection is used to VERIFY (described below).

2. In the CONTROL COMMAND mode, type in STL, ENTER (SET LEVELS) and adjust the input levels of the tape recorder to between +1 and +3 db.

3. Press ESC (ESCAPE) to clear STL. (This will put you back in the normal programming mode.)

4. After you return to the CONTROL COMMAND mode, you will type in ONE of the following commands depending on the type of store you want to create. You must remember that as soon as you press the ENTER key, the ROAD RUNNER will start the SAVE routine. Therefore, you want to have your tape recorder running when you press ENTER. NOTE: Use the counter on your tape recorder to mark the start of storage.

CONTROL COMMAND STORE ENTRIES

(1) SAVE, ENTER - ROAD RUNNER/EAGLE CONFIGURATION

This method will SAVE the program just as it appears in the ROAD RUNNER memory. Therefore, when you put this program back into the ROAD RUNNER (or into an EAGLE) it will fill the same amount of cue space. When the ENTER key is pressed, the DISPLAY LINE will start to run the cues as they are saved onto the tape. This method also codes the tape to automatically return to the MAG TAPE BYPASS condition after the program is loaded into the memory.

(1A) VER, ENTER - VERIFY

Once you have saved your memory with the SAVE method, you can VERIFY to see that what you recorded on the audio tape is the same as what is in the memory (program). Return the tape to the starting position of the SAVE on that tape. In the CONTROL COMMAND mode, type VER, than ENTER. Start the tape recorder and watch the cues count down. If the ROAD RUNNER stops before it reaches the end of the program, you have a bad

cue at that point. The red "MT ERR" LED will light and the DISPLAY LINE will display the first incorrect cue that did NOT verify with the tape. When this happens, start the SAVE routine over.

(2) MTD,ENTER - MAG TAPE DUMP

This method will store the program to be compatible with SHOW PRO V and other pre-EAGLE AVL equipment. For this type storage, you will have the ROAD RUNNER hooked up to the tape recorder in the same manner as for a SAVE. You will also set the record levels using STL. After the levels are set, you type in MTD in the CONTROL COMMAND mode. Start your tape recorder and press ENTER. You will see the ROAD RUNNER DISPLAY LINE count by the cues as they are dumped to the tape. With this type storage you will not be able to verify the tape to the program in the ROAD RUNNER since the program in memory is not identical to what is on the tape.

LOADING YOUR PROGRAMS INTO THE ROADRUNNER

Loading an existing ROAD RUNNER program into the memory will normally occur immediately after you have loaded the PROCALL language into the ROAD RUNNER. Any ROAD RUNNER program that was stored on MAG TAPE with the SAVE method will be coded so it can be loaded directly into the PLAY IN jack on the rear panel without further instruction to the ROAD RUNNER.

For programs that were stored with the MTD, you will have to tell the ROAD RUNNER to load the program by turning off the MAG TAPE BYPASS. This is done by entering the CONTROL COMMAND mode and typing in LOAD and then entering it. Because the MTD store tapes are not coded, you will have to return the ROAD RUNNER to the MAG TAPE BYPASS condition manually by pressing any key (we recommend the SPACE BAR).

LOAD,ENTER - Turns off the normal MAG TAPE BYPASS condition and allows you to load MTD programs into the memory. To return to MAG TAPE BYPASS, press any key (we recommend the SPACE BAR).

SELF TEST

The ROAD RUNNER has a built-in SELF TEST feature that is designed to test all internal functions of the ROAD RUNNER. This feature will be most handy to use: prior to a show, when the unit is to be shipped (to use as a test to be performed before the unit is shipped and again when it arrives on location) or when you feel there may be an error in the system that is causing a malfunction.

When the ROAD RUNNER is powered ON, it performs a diagnostic routine of its memory. Due to the limited time involved, this routine can not test all the possibilities of error in the ROAD RUNNER. Therefore, AVL has developed a more comprehensive test that can be run prior to PROCALL loading in the event the unit itself detects an error or you feel there may be an error.

The SELF TEST has four parts to complete all the tests needed to determine if anything is faulty within the ROAD RUNNER itself. This complete test allows you to test the DISPLAY functions, KEYBOARD functions, all internal MEMORY functions, and the MAG TAPE functions.

These tests are conducted after the unit is powered ON and BEFORE you load PROCALL. When the unit is powered ON, the ROAD RUNNER will display "PLEASE LOAD TAPE" in the DISPLAY LINE. At this time any one of the tests can be accessed. However, we recommend for your convenience that you perform the four tests in the following order unless you are testing for one particular function.

NOTE: In order to get out of any of the tests and load PROCALL, you simply press the letter "L" and the ROAD RUNNER will display PLEASE LOAD TAPE.

DISPLAY FUNCTION TEST

You enter this test by pressing the letter "T". This puts the ROAD RUNNER in the test mode at which time the unit will display "G000" in the DISPLAY LINE. Next you press and hold the "DISP" key. The unit will light ALL 18 LEDs (9 on the left and 9 on the right), light ALL segments generated by the alphanumeric DISPLAY LINE and sound the BEEPER. The alphanumeric characters will look like 16 asterisks inside boxes. This test is to determine that all lights and characters and the beeper are functioning properly. When you have determined that all is working properly you will release the "DISP" key.

NOTE: This DISP key is also used to clear and restart the SELF TEST described below.

KEYBOARD FUNCTION TEST

To enter the KEYBOARD test mode, Press and Hold the letter "K" until the DISPLAY LINE has cleared. The KEYBOARD TEST is used to check all the keys to be sure they are functioning properly. As you press each key on the keyboard, the character will appear on the right side of the DISPLAY LINE as the character that appears on the lower half of that

key. The previous character will move to the left as each new key (or the same key) is pressed. We suggest you move left to right and top to bottom.

NOTE: While doing this KEYBOARD test do not press the letters "T" and/or "L". "T" will put you in the MEMORY test mode and "L" will put you in the "PLEASE LOAD TAPE" mode. If you enter one of these modes, simply Hold down "K" to get back to the KEYBOARD test mode and continue with your test.

As you move across the board, you will notice SPECIAL keys. These keys are listed below with the corresponding character they will display. Most of these SPECIAL Keys will also display a caret ("^" meaning "CNTRL") in front of a letter designation as follows:

SPECIAL KEY	DISPLAY LINE DESIGNATION
ESC	^[
DISP	Z
INSERT	^A
DELETE	^D
STBY	^S
GOTO	^G
RUB OUT	Creates a space on the DISPLAY LINE.
REPT	Will function to repeat any key when held down together.
RETURN	^M
CNTRL or	
SHIFT	Will not affect the DISPLAY LINE.
ENTER	^M
TAB	B
LEFT ARROW	^H
RIGHT ARROW	^I
SPACE BAR	Creates a space on the DISPLAY LINE.
UP ARROW	^K
CUE↓(DOWN ARROW)	^J

Next you will press the following LETTER keys together with the CONTROL key to check their CONTROL COMMAND functions. This will also display a caret ("^" meaning "CNTRL") in front of the character.

C/C KEY	DISPLAY
CNTRL/Q	^Q
CNTRL/R	^R
CNTRL/P	^P
CNTRL/A	^A
CNTRL/S	^S
CNTRL/D	^D
CNTRL/G	^G
CNTRL/X	^X
CNTRL/B	^B
CNTRL/TAB	^B

NOTE: These are the only valid combinations and any other combination of keys may generate confusing results.

MEMORY FUNCTION TEST

To test the memory you simply press the letter "T" and hold for a moment. The ROAD RUNNER will display "G000" in the DISPLAY LINE. This four (4) digit alphanumeric number will act as the Pass Counter. This counter uses a computer Hexadecimal (Base 16) system. Therefore, the counter will display a series of letters and numbers, always beginning with the letter "G". As long as the 4 digit display continues to count, the ROAD RUNNER is not encountering any errors.

In the event there is an error, the letter "B" will appear in the 6th character position of the DISPLAY LINE followed by 6 characters (letters or numbers). The B followed by 6 characters indicates the error. The ROAD RUNNER will continue to perform the test, so the first 4 digits will continue to count. At this point you want to write down what is being displayed and make sure this information is kept with the unit and furnished to your AVL service representative. This information will assist them in determining where and what the error is and will help to put your unit back on line as soon as possible.

Example: The DISPLAY LINE may look something like this, G2CD B2F2341 if an error occurs.

NOTES: (1) At power ON, the ROAD RUNNER may display the "G000" in the DISPLAY LINE due to a transient power problem. The unit thinks it detected an error in the initial diagnostic routine and proceeds to the MEMORY test to perform a more indepth test to check the error. When this happens, press the "L" key to clear this condition. After you press "L", the unit will display "PLEASE LOAD TAPE". When this occurs the condition is transient and there is no need to be concerned.

If the problem is not transient, the unit will go back to the MEMORY test mode (G000) and continue to perform the test until it finds the error. Here you will want to observe the unit to watch for the ROAD RUNNER to display the error in the DISPLAY LINE.

(2) Use 15 minutes as a minimum length of time to do this test. This will cover about 98% of the possibilities. We recommend that when you want a 100% test, to leave the unit in the MEMORY test mode with the MAG TAPE TEST over night.

MAG TAPE CIRCUIT TEST

The MAG TAPE test can ONLY be performed while in the SELF TEST mode. This simple test involves the connection of the "REC OUT" jack to the "PLAY IN" jack creating a loop. The REC OUT jack generates a test signal that is received by the PLAY IN jack to test the functions of the MAG TAPE circuitry. The ROAD RUNNER will display "MT G" on the right side of the DISPLAY LINE. In the event the MAG TAPE circuitry is in error the display will change to "MT E".

NOTE: If "MT E" is displayed while you are plugging in the connectors press the DISP key to clear this condition. Also when you encounter a "MT E" check to make sure your RCA connector is OK.

CODES

With the slide projectors now in use by our industry, we can do 4 major functions; 1) turn the lamp ON, 2) turn the lamp OFF, 3) forward the tray position and 4) reverse the tray position. With the technology of the micro-processor computers and the versatile intelligence of the ROAD RUNNER, you as a programmer will be able to do much more with your projectors and therefore with your shows as a whole.

DISPLAY LINE - This line of alphanumeric characters is to let you know what you have entered into the ROAD RUNNER. To let you know where on the line you will enter information, a CURSOR is provided. The CURSOR is a "flashing" "-". The cursor will move to indicate where in the field you are at any one particular time. If you should make an incorrect entry, the ROAD RUNNER will BEEP and the cursor will show a "?" to let you know of the error. The cursor has other functions covered in this section under CODE ENTRIES.

Some of the functions of the DISPLAY LINE are:

(1) **PROGRAMMING MODE** - In this mode the line may look like this:

0001 32D-123ABCG.

The 0001 represents the CUE #.

The 32D is the CODE ENTRY area and in this case represents a 32 second dissolve.

The 123ABCG is the SCREEN ENTRY area and represents screens 123 and projectors ABC. The G at the end of the SCREEN ENTRY area is to tell the ROAD RUNNER to enter a GO mode.

(2) **CONTROL COMMAND MODE** - In this mode the line may look like this: C/C: GOTO 654. The C/C: means you are in the CONTROL COMMAND mode. GOTO 654 is a control command function that is entered by pressing the CNTRL key and the letter "G" together or pressing the GOTO key and entering the desired cue number you wish to access.

(3) **DISPLAY MODE** - This mode provides a monitor for when you enter a condition that is not "normal" to the operation of the ROAD RUNNER. In this mode the line may look like this:

PN AD PON PIN.

PN/PD - PROJECTORS NORMAL/DISCONNECT
AN/AD - AUXILIARIES NORMAL/DISCONNECT
PON/POF - POSITRAK OUTPUT NORMAL/OFF
PIN/PIF - POSITRAK INPUT NORMAL/OFF

The DISPLAY mode also displays the Tray position. Press the DISP key:

The first time will display the above information.
Second time will display the first three tray positions.
Third time will display the second three positions.
Fourth time will display the third three positions.

Pressing the key a last time will return you to the programming mode.

NOTE: The ROAD RUNNER assumes the trays started on "1".
By using the SPACE BAR, you can return to the programming mode after any of the above steps.

4) Other modes for the DISPLAY LINE will be covered in their respective areas.

What follows is a description of the codes and commands of the ROAD RUNNER and what this means to you in terms of time and versatility.

This section is divided into four major sections.

CODE ENTRIES
SCREEN ENTRIES
EDITING COMMANDS
CONTROL COMMAND MODE ENTRIES

CODE ENTRIES

CONTROLLING DISSOLVE SPEEDS

CODES DISCRIPTIONS

- CT CUT - This command turns the lamp ON or OFF instantaneously. If the lamp is already ON, this will turn the lamp OFF and initiate a tray advance. If the lamp is OFF, this will bring the lamp ON. If you wish to cross from one visual to another instantaneously, a CUT will turn the ON lamp OFF and the OFF lamp ON instantaneously, and the projector with the down going lamp will do a tray advance.
- 1D DISSOLVES - This command turns the lamp ON or OFF in
2D the designated amount of time in seconds creating a
3D dissolve or a fade effect (ex. 2D is a 2 second
4D dissolve). You can create a cross-fade or dissolve
6D from one visual to another using a dissolve in
8D conjunction with 2 or more projectors. Again, the
16D projector with the down going lamp will have a tray
32D advance.
- HC HARD CUT - A hard cut was designed with 2 things in mind, 1) move images faster, and 2) create a sharper, harder image change on the screen. The way a hard cut works; the gate of the slide projector is initiated to close, shutting off the light before the lamp is turned OFF, advancing the tray to the next image, therefore allowing that projector to be ready to be turned ON again with the next slide. When HARD CUT's are used to make a transition between 2 visuals the abruptness of the change is much crisper than a CUT. (This can also be used to create the flicker of an old time movie when moving through many visuals rapidly.)
- AT ALTERNATE or ALT - Looks visually like a CUT on the screen, except there is NO tray advance.

- 1A DISSOLVE ALTERNATES - Look visually like DISSOLVES on
2A the screen, except have NO tray advance.
3A
4A
6A
8A
16A
32A
- FA FAST ALTERNATE - A simple explanation is that it is like a HARD CUT, when running in 20 CPS (cues per second, described later) without a tray advance. A little more in-depth description sounds like this; The lamp in a slide projector does not turn ON and OFF instantaneously with the application or removal of power, because the lamp requires fractions of a second to heat up and to cool down. This is called the "thermal lag" of the lamp, and is different for turn-ON than turn-OFF. All AVL computerized dissolve controls automatically compensate for this effect for dissolves and alternates. For CUT and ALT there is what AVL calls an "afterburner" to remove any possibility of a "blink" on the screen, and has the additional advantage of allowing the visuals to attain full brilliance when moving at the rate of 10 cues per second. However, a lamp may NOT be alternated at a rate of 20 cues per second with "ALT" because the afterburner feature will hold the lamp ON. In order to remove the afterburner in this special case, the FAST ALT (FA) is programmed to allow solo flashing and/or moving visuals at 20 cues per second.
- FZ DISSOLVE FREEZE - Like the SPV and the EAGLE, the ROAD RUNNER has the ability to stop any rate dissolve alternate in progress and hold the light level at any desired light intensity. This code also allows you to continue the dissolve in the same direction at the same rate or at a different rate or change directions at the same rate or at a different rate. This will be covered in more detail in the section; ADVANCED PROGRAMMING TECHNIQUES. NOTE: ONLY Dissolve Alternates should be used with FREEZE.
- PS PRESET - Used to notify specific projectors to respond to the next action cue issued to the corresponding dissolve unit. This allows you to access projectors that do not have like projector assignments and not have to wait the normal 1/10th (or 1/20th) of a second between cues. Preset allows simultaneous action on the assigned preset projectors when told to do so. Preset can also be used to deselect. In this case, you will select the projectors you do not want to have action on and then when you release them, assign all projector to that dissolve (screen) and the preset projectors will not respond.
NOTE: See "PROGRAMMING YOUR ROAD RUNNER".

HOME PROGRAMMABLE RETURN TO THE BEGINNING OF THE PROGRAM
This command can be entered into the program to return the ROAD RUNNER to the beginning of the program (cue #1) as a program function. HOME brings the lamps down, returns the memory to cue #1 and return the lamps and trays to their original starting position by the shortest route.
NOTE: When HOME is part of a run sequence in the program, the program will assume it is to continue to run and start to execute cue #1 and all subsequent cues in the program until it encounters a STOP command.

PROJECTOR TRAY RELATED COMMANDS

PF PROJECTOR FOWARD - Used in conjunction with a screen(s) and a projector(s) designation, the assigned projector(s) will move the tray Forward ONE position without affecting the lamp status. If ONLY the screen(s) designation is used, the ROAD RUNNER will assume you want ALL projectors on that screen(s) to move Forward ONE position.

PR PROJECTOR REVERSE - This command functions the same as the PROJECTOR FORWARD except this command will Reverse the tray(s) ONE position.

RUN SEQUENCES

The ROAD RUNNER has the capability of running at 10 CPS or 20 CPS (cues per second). At 10 CPS (normal run speed) the ROAD RUNNER waits 1/10th of a second between the time one cue is issued and the subsequent cue is issued. To run at the higher speed of 20 CPS, you must tell the ROAD RUNNER by entering a speed change into the program. Likewise, if you wish to return to 10 CPS you must again program this change. At 20 CPS the ROAD RUNNER waits 1/20th of a second between the time one cue is issued and the following cue is issued. Either of these cues can be used at any point in the program.

CURSOR 10 CPS: The cursor will flash at a rate of a little more than one (1) time per second in the 10 CPS speed.

20 CPS: The cursor will flash at a rate of a little more than two (2) times per second in 20 CPS speed. This relationship is a relative 2:1 ratio and will serve as a reminder of which speed you are in.

RUN SEQUENCES: The cursor will NOT flash when in the RUN mode and running from memory. This lets you know

that the ROAD RUNNER is in the RUN mode while watching the DISPLAY LINE and running from CLOCK TRAK, hand cueing or remote cueing.

- S10 10 CUES PER SECOND - Normal run speed for the ROAD RUNNER. Used to decrease the speed from 20 CPS to 10 CPS. When the system is first LOADED, when ALL CUES are CLEARED and when you do a HOME, the system is automatically in 10 CPS.
- S20 20 CUES PER SECOND - Used to increase the running speed to 20 CPS.
- W.05 WAIT TIMES - Waits are computer-generated timings that
W.1 allow you to time out action sequences precisely to
W.15 accommodate your specific designs. These times are
W.2 entered into the program in the form of wait times
-- ranging from .05 seconds to 10 seconds in increments
W9.90 of .05 seconds. If a time longer than 10 seconds is
W9.95 desired, you use additional wait cues to accommodate
W10 the longer time.
NOTE: Because of the power and convenience of the CLOCK TRAK, we strongly suggest you use the it instead of WAIT times in excess of 1.5 to 2 seconds. See "PROGRAMMING YOUR ROAD RUNNER" for more on the subject of the CLOCK TRAK and its use.
- WX WAIT X - Used when the proper timing of a sequence has not been determined before programming. The WX cues are entered into the program and resolved during the running of that particular section. When the ROAD RUNNER sees the WX it starts timing, when you press the CUE key the ROAD RUNNER resolves the WX to the nearest 1/20 of a second and enters that time in the X slot of the memory. (ex. WX becomes W2.25) NOTE: A wait cue of .05 second in 10 CPS will actually time out to 1/10th second. The ROAD RUNNER will not accept a cue that is shorter in time than the rate at which it is running. Therefore, the W.05 will look like W.1 and the 1/10th cue to cue time will make your wait total 2/10th seconds.
- TX TIME X - Is used to mark the beginning of a timed (RUN) sequence using the CLOCK TRAK to synchronize your program.
You enter the TX in the program, start your tape and press the "CUE" key. The ROAD RUNNER will replace the TX with TIME and store in its memory the appropriate time for that sequence to begin. The ROAD RUNNER will not display the time, but will remember it.
NOTE: It is NOT possible for you to type in TIME as a cue, so if you encounter a TIME cue in your program, you know there is a time in the memory for that cue.
NOTE: See "PROGRAMMING YOUR ROAD RUNNER".

- TIME** **TIME** - Indicates there is a specific time stored in the program memory for that cue.
- N** **NOP - NO OPERATION** - This "no operation" cue has no affect on the screen action. This cue is used to:
1. Allow a GO or STOP in the program without any screen action.
 2. Flag a section of your program where you wish to add cues at a later time.
 3. Act as a wait cue (.1 second at 10 CPS and .05 second at 20 CPS).
- RPxx** **REPEAT** - Used to repeat a series of cues that start with a GO imbedded with the first cue of that sequence. xx = number of times to be repeated. The REPEAT cue itself has zero cue time and acts as a GOTO to the previous cue with a GO. RP can be used to repeat a sequence from 1 to 255 times and will allow up to 10 consecutive (nested) RP commands to be used. **NOTE:** Bear in mind that if you have a sequence repeated 23 times the sequence will actually happen 24 times due to the one time the sequence occurred during the set up. This also applies to REPEAT X. **CAUTION:** With the use of nesting, it is possible to create a sequence that has billions of cues. Therefore, use nesting with extreme caution.
- RPX** **REPEAT X** - Like the WAIT X, the REPEAT X allows you to determine the number of times the sequence has to repeat while you are in the RUN mode and actually viewing the sequence as it will appear in your show. You simply enter the RPX into the program, start the sequence running and when the correct number of repeats have gone by you press the CUE key to move on to the next part of your program. The ROAD RUNNER will resolve the X to the appropriate number of times the sequence repeated. (ex. RPX becomes RP23) **NOTE:** When you press the CUE key to resolve the RPX, the ROAD RUNNER will finish the sequence in progress before moving on.
- RPO** **REPEAT UNTIL TERMINATED** - Used when an undetermined number of REPEATS is desired. This RPO can be resolved by pressing the CUE key or a REMOTE cue. This command will be most useful for "live" portions of your program when the length of a sequence is not pre-determined.
- TBxx** **TAB** - Used to mark a place in your program. This TAB can be used to mark the beginning of live sections, different speakers speeches, the beginning of different canned programs in one large canned show or just the beginning of a certain animation sequence. TB can be used by itself or with as many as two characters (letters and/or numbers). e.g. TB1 or TBJD to represent the beginning of JANE DOE's speech. If TB is used by itself, you can only access it by

pressing the TAB key to go forward to the next TAB until you reach that TB. If you use the TB with a designation (TBJD) you can access this TAB by CNTRL/T (GOTO TBxx) then entering the "JD" and ENTER. This will take you right to TBJD. NOTE: If you use more than one TB or TBJD (TBxx with the same letter designation) you will only be able to access the first one with the CNTRL/T(xx). You will, however, be able to access them with the TAB key in the forward direction or with CNTRL/B (CNTRL/TAB) in the reverse direction.

D DOVE COMMANDS

The following commands are ONLY valid when you are using a D DOVE(s) to program and play back your show. This brief description is only to list what the commands are. For a further understanding of how the D DOVE and the commands work, please consult your D DOVE manual.

CODE	DESCRIPTION
LL	LOAD LOOP - Alters the version D DOVE to store a series of cues (ACTION CUES) in its memory as a routine.
LG	LOOP GO - Used to tell the LOOP to execute.
LS	LOOP STOP - Used to tell the loop to stop.
BG	BLINK GO - Used to start a BLINKING routine inside the D DOVE.
BS	BLINK STOP - Used to stop a BLINKING routine.
SG	SMOOTH GO - Used to tell the D DOVE to change the way the lamp is ramped on a dissolve.
SS	SMOOTH STOP - Used to tell the D DOVE to return to the normal ramping of dissolves.

AUXILIARY AND X15 COMMANDS

AX	AUXILIARY - Used in conjunction with a screen and projector designation, will cause a momentary closure to the connected dissolve unit.
XS	SHORT PULSE - Causes a momentary 50 millisecond closure of the contacts. This contact closure time is usually sufficient for most auxiliary equipment.
XL	LONG PULSE - Causes a momentary closure of a 1/2 second duration. This contact closure is used for equipment that requires longer than the Short Pulse duration, such as S-AV projectors.
XN	LATCH ON - Unlike the momentary closure, Latch On keeps the selected channel(s) closed until interrupted by a new command. That command can be an XS or XL which will cause the contact to open momentarily and close again.

10/3/80

XF LATCH OFF - Cancels the Latch On status and renders the assigned channel inactive.

NOTES:

1. The ROAD RUNNER allows you to use one X15 in line with your dissolve units and allows you to use both the X15 and dissolve auxiliaries with their respective commands.
2. All auxiliary cues must specify screen and projector independents.
3. You can NOT have an auxiliary command for the X15 and an auxiliary in your dissolve unit in the same cue.

SCREEN ENTRIES

- G GO - Used in the "screen area" of the DISPLAY LINE, to designate one of the following:
1. To mark the beginning of a REPEAT sequence.
 2. To initiate a RUN sequence when running manually out of memory using a CUE or a remote cue to control the ROAD RUNNER.
 3. As a reference point when programming a long sequence to be accessed quickly with the REVERSE CUE key.
- S STOP - Used in the "screen area" of the DISPLAY LINE, to designate one of the following:
1. To mark the end of a RUN sequence.
 2. To stop the screen action (when you are using CLOCK TRAK) at the end of a program that still has cues after it. This is important when you have "live" and "canned" sections in the same program.
- 12345 SCREEN NUMBERS -The ROAD RUNNER WILL DEFAULT TO 123. However, you may program any three of the five screens by assigning which three of the five you wish to use. To assign the appropriate screens, you use AS - ASSIGN SCREENS in the CONTROL COMMAND mode with the screens you want to use.
- ABC PROJECTOR ASSIGNMENTS - The ROAD RUNNER will default to ABC. However, you may choose to use LEFT - CENTER
LCR RIGHT or TOP - CENTER - BOTTOM. To assign these
TCB alternates use AP - ASSIGN PROJECTORS in the CONTROL COMMAND mode with the appropriate projector assignment.

EDITING COMMANDS

Editing is a very important part of programming. To simplify this task, the following commands have been outlined to allow single and combined entries that will assist you to do editing tasks rapidly and with great ease.

In order to utilize the same key to perform more than one function the ROAD RUNNER must be informed of the change in function. The CONTROL (CNTRL) key does this for you when you hold down the CONTROL key in conjunction with pressing another key. An example of this is the "A" key will designate an ALTERNATE when followed by a "T" in the CODE area of the DISPLAY LINE or the "A" projector if used in the SCREEN area of the DISPLAY LINE. On the other hand, when "A" is pressed when you are holding down the CONTROL key, the ROAD RUNNER will interpret this to mean ADD-A-CUE, and automatically open a space in memory for you to add the desired cue.

For notation purposes, to indicate that two keys are to be pressed simultaneously, "/" will be used to separate the two keys. Examples; ADD-A-CUE will be designated "CNTRL/A" or GOT will be "CNTRL/G".

- ENTER** Pressing this key will enter the command to the ROAD RUNNER to be executed. Except for certain editing cues, it will be necessary to press this key to enter any information into the memory of the ROAD RUNNER.
- CUE ↓** Used to command the ROAD RUNNER to execute a cue from memory. If using the CLOCK TRAK, the ROAD RUNNER will execute a chain of commands from memory until the next time cue is encountered. If you are hand cueing or remote cueing the ROAD RUNNER, CUE will move one cue at a time or start a run sequence if that cue has a GO embedded with it.
- DISP** DISPLAY - This key is provided to use the DISPLAY LINE to display conditions that have been entered into the ROAD RUNNER. These conditions are keyed to the DISP LED on the left side of the front panel. When a condition that is not "normal" is entered, the DISP LED will light. When you enter PROJECTOR and/or AUXILIARY DISCONNECT the LED will FLASH. If you forget what conditions you entered, you simply press the DISP key and the DISPLAY LINE will clear and monitor the pending conditions. The DISP key is also used to display TRAY POSITION. NOTE: The ROAD RUNNER assumes your trays start on the "#1" (ONE) position.

The DISP key works like this:

Press the key once and you will monitor the following conditions:

PN/PD	PROJECTORS NORMAL/DISCONNECT
AN/AD	AUXILIARIES NORMAL/DISCONNECT
PIN/PIF	POSITRAK INPUT NORMAL/OFF
PON/POF	POSITRAK OUTPUT NORMAL/OFF

Press the key again (second time) to display the tray positions for your first screen area:

EXAMPLE: 1 A=01 B=01 C=01

Press the key again (third time) to display the tray positions for your second screen area:

EXAMPLE: 2 A=01 B=01 C=01

Press the key again (fourth time) to display the tray position for your third screen area:

EXAMPLE: 3 A=01 B=01 C=01

Press the key again (fifth time) to return you to the normal programming mode.

To return to the PROGRAMMING mode after any one of the above functions press the SPACE BAR.



REVERSE CUE - When pressed, this key will move the program (memory) in the REVERSE direction:

1. ONE cue if you are not in a RUN condition
2. To the previous GO in a RUN mode.
3. To the previous TIME cue when using CLOCK TRAK. provided there is not a GO between where you are and where the TIME cue is.

The ROAD RUNNER will move the trays to the proper location and update the lamp status.

Q STEP CUE - Steps through the program one cue in the FORWARD direction each time you push the key. The projectors will respond to each cue as it is executed. To move through the cues more rapidly, you can hold down the "Q" key and the REPEAT (REPT) key. To stop, just release the REPT key.

CNTRL/Q STEP REVERSE CUE - Steps through the program in the REVERSE direction one cue each time the "Q" is pressed holding down the CONTROL key. To move one cue at a time rapidly, you can hold down the CONTROL key and the "Q" key with one hand and press the REPEAT (REPT) key with the other hand. To stop, just release the REPT key.

- Q/REPT FAST FOWARD/REVERSE - The function allows you to
CNTRL/Q/REPT move through your program rapidly in the forward
or reverse direction and see the cues you are
moving past on the DISPLAY LINE. To move forward, hold
down the REPT key together with "Q", or with CNTRL/Q
for reverse movement. The trays and lamp status will
wait until you have stopped moving to update to the
present status.
- > CURSOR RIGHT - Used as a tab to move from the CODE
area of the DISPLAY LINE to the SCREEN area. If the
key is pressed again, it will cause the program to
advance to the next cue with the cursor in the CODE
area of the display. In the CONTROL COMMAND mode, the
cursor will move one character to the right each time
the key is pressed.
- <-- CURSOR LEFT - Used as a tab to move from the SCREEN
area of the DISPLAY LINE to the CODE area. In the
CONTROL COMMAND mode, the cursor will move one
character to the left each time the key is pressed.
- SPACE Used to move one character to the right without
BAR changing the character the cursor is moving across.
Also can be used to space through the program to check
the program or to make changes. At the end of the
SCREEN area, the SPACE BAR will move the program to
the next cue. NOTE: Will not allow you to space
through an invalid cue.
- RUBOUT Used to clear an entire entry in either the PROGRAM
or the CONTROL COMMAND mode.
- CNTRL/A ADD-A-CUE - Allows you to "open up" the memory to
insert a cue into your program by moving all cues
down one cue number in the ROAD RUNNER memory.
- INSERT ADD-A-CUE - Same as CNTRL/A.
- CNTRL/D DELETE CUE - Deletes (removes) the cue that is being
previewed and closes up the memory.
- DELETE DELETE CUE - Same as CNTRL/D.
- CNTRL/R REPEAT CUE - Repeats the "Previous" cue once each time
the CNTRL/R is pressed. If there are cues already in
the memory, CNTRL/R will automatically insert the
repeated cue and move all subsequent cues down in
memory. A way to repeat cues rapidly is to hold down
CNTRL/R in conjunction with the REPEAT key. To stop,
just release the REPT key.
- ESC ESCAPE - Allows you to ESCAPE (stop) any action that
is being carried out by the ROAD RUNNER. ESCAPE will
turn OFF the MAG TAPE INPUT to ignore CLOCK TRAK or
a DATA track. To turn the MAG TAPE INPUT back ON, you
can press an entry type key. We recommend you use
the SPACE BAR to turn the MAG TAPE INPUT ON.

The ESC key is also used to return to normal programming mode from the CONTROL COMMAND mode. When in the CONTROL COMMAND mode, ESC will return you back to the PROGRAMMING mode.

NOTE: The ROAD RUNNER always returns to the programming mode after ENTERING a command in the CONTROL/COMMAND field EXCEPT for STL and COM which you will ESC from these conditions.

- CNTRL/G, ENTER Issues a HOME cue to the attached dissolve units and returns the program to CUE #1. The lamps will come down and the trays will move to their original home position. This command is the same as pressing the GOTO key and the ENTER key.
- CNTRL/P PROJECTOR DISCONNECT -Used in the PROGRAMMING mode, to disconnect or disable cues so they are not sent out to the connected dissolve units.
- CNTRL/X AUXILARY DISCONNECT - Used to tell the ROAD RUNNER that it is NOT to send cues out to the auxiliaries.
- TAB FORWARD TO NEXT TAB - Allows you to fast access your next TAB position.
- CNTRL/TAB REVERSE TO PREVIOUS TAB - Allows you to access your previous TAB cue.
- CNTRL/B REVERSE TO PREVIOUS TAB - Same as CNTRL/TAB.
- CNTRL/S STANDBY - Will bring down the lamps (only) of all projectors and light the STANDBY (STBY) LED. The projectors will still respond to advances and reverses and keep track of the lamp and tray status. To return to the normal lamp status, press CNTRL/S again.
- STBY STANDBY - Same as CNTRL/S.

CONTROL COMMAND FUNCTIONS

The following commands must be entered in the CONTROL COMMAND mode. To enter the CONTROL COMMAND mode you must press CNTRL and the letter "C" together.

- CNTRL/C CONTROL COMMAND - Allows you to enter the CONTROL COMMAND mode.
- COM CLOCK OUTPUT MODE - Used to generate CLOCK TRAK on your audio tape. See CLOCK TRAK section of this manual for more detail.
- STL, ENTER SET LEVELS - Outputs a continuous test tone to the REC OUT RCA jack on the rear panel of the ROAD RUNNER. This tone is used to adjust the record level of your tape recorder prior to recording the memory information or generating CLOCK TRAK from the ROAD RUNNER. The recommended level for recording data is between +1 and +3 db.
- SAVE, ENTER Allows you to SAVE what is the ROAD RUNNER memory onto mag tape for storage. SAVE will save the program in the ROAD RUNNER/EAGLE format that will not be able to be played into a SHOW PRO V. In order to save in SHOW PRO V format, you must use MTD.
- LOAD, ENTER Allows external cues to be loaded into the memory of the ROAD RUNNER from mag tape or directly from the EAGLE. However, when you use LOAD to load a program, the ROAD RUNNER will NOT automatically return to the normal MAG TAPE BYPASS mode and you will have to tell the ROAD RUNNER to return to MAG TAPE BYPASS by pressing any key (we recommend you use the SPACE BAR).
NOTE: It is NOT necessary to use LOAD to reload a ROAD RUNNER program that was stored with the SAVE method. The ROAD RUNNER codes the tape and recognizes the stored information as a LOAD. The ROAD RUNNER also codes the tail end of the SAVE to tell it to automatically return to the MAG TAPE BYPASS mode after completing the LOAD.
- VER, ENTER VERIFY - Allows you to verify the information that has been SAVED (using the SAVE method) onto mag tape for storage before clearing the program from memory.

CNTRL/G, xxxx,
ENTER Issues a command to the ROAD RUNNER memory to go to a specific cue # in the memory (xxxx = the desired cue #). Tray and lamp status will update and follow. Used to move from any cue in memory to any other cue in memory. Using 999 as the cue #, you can move to the end of your program very quickly since the GOTO will take you directly to the last cue in your program.

RCF, ENTER REMOTE CUE OFF - Turns OFF the remote cue.

RCN, ENTER REMOTE CUE ON - Turns the remote cue back to "normally" ON.

PAXxx PROJECTOR ASSIGNMENT - Allows you to determine how the projectors will be assigned:
1. ABC = Automatically defaults to this assignment.
2. LCR = LEFT - CENTER - RIGHT
3. TCB = TOP - CENTER - BOTTOM

SAXxx SCREEN ASSIGNMENT - Allows you to use the ROAD RUNNER to program on any three of five screens by assigning the desired screen numbers.
(12345)

MOF, ENTER MAG TAPE OUTPUT OFF - Turns OFF mag tape output.

MON, ENTER MAG TAPE OUTPUT ON - Turns the mag tape output control back to the normally ON condition.

MIF, ENTER MAG TAPE INPUT (PLAY) OFF - Turns OFF mag tape input so that it ignores any input from an external source.

MIN, ENTER MAG TAPE INPUT (PLAY) ON - Turns the mag tape input control back to the normally ON condition.

BPF, ENTER BEEPER OFF - Allows you to turn the BEEPER OFF.

BPN, ENTER BEEPER ON - Turns the BEEPER to the normally ON condition.

CAC, ENTER CLEAR ALL CUES - Allows you to clear ALL cues from the memory. A HOME command is issued to the dissolves units.
NOTE: Use this command with caution. Make certain you have stored the information or that you do NOT, in fact, want the information.

CNTRL/T, xx,
ENTER GOTO TAB xx - Allows you to access any designated (xx) TAB from any location in the program.

SEQ2, ENTER SEQUENCE 2 - Allows you to sequence between two of the three available projectors. In SEQ 2, the ROAD RUNNER will access the A and C (left and right) projectors only. In SEQ 2 the SEQ 2 LED on the left side of the front panel will light. NOTE: You can still access the "B" projector by assigning it independently with its screen and projector designation. Make sure your dissolve unit is also set to sequencing two projectors.

SEQ3, ENTER SEQUENCE 3 - Allows you to return to sequencing three projectors.

MTD, ENTER MAG TAPE DUMP - Allows you to store the program in a configuration that is compatible with the SHOW PRO V and pre-EAGLE equipment.

PIF, ENTER POSITRAK INPUT OFF - Used to tell the ROAD RUNNER to ignore any POSITRAK being received by the unit.

PIN, ENTER POSITRAK INPUT ON - Used to tell the ROAD RUNNER to turn on the input and process any POSITRAK that is being received.

POF, ENTER POSITRAK OUTPUT OFF - Used to tell the ROAD RUNNER NOT to generate POSITRAK.

PON, ENTER POSITRAK OUTPUT ON - Used to tell the ROAD RUNNER to restore POSITRAK generation.

PROGRAMMING YOUR ROAD RUNNER

We will assume that you have read at least one of the two stories and have a fair knowledge of the functions of the ROAD RUNNER. If this is not true, you may want to do so before reading this section.

CLOCK TRAK

The ROAD RUNNER's strengths lie in its versatility and its CLOCK TRAK. The CLOCK TRAK is a time coded audio signal that reads like a clock starting at 0 time and proceeding to a maximum time of 11:00:00.00 (11 hours). You record this time code on your audio sound track on one of the available (open) channels. As you play your sound track, the CLOCK TRAK on the audio tape is telling the ROAD RUNNER what time it is in the show.

As you program your show, you enter TX commands into the program. This TX acts as the beginning point for some action to happen (this is similar to a sync point if you were using a SYNC track on your audio tape). Now, when you go back to time (sync) the program to the sound track, you will press the CUE key when the action is supposed to happen. The ROAD RUNNER will record the time (in the program memory) that was being fed into it (from the CLOCK TRAK on the audio tape) at the precise time that you pressed the CUE key. The ROAD RUNNER will also replace the TX with TIME to let you know that that time (TX) is resolved. The ROAD RUNNER will now command that cue (sequence of cues) to happen at that precise time every time you playback the show.

Lets say that you were a little late when you pressed the CUE key for an action sequence to happen. With a normal sync track you would have to rerecord that sync pulse. With the ROAD RUNNER, you will go back to the TIME cue where the action was supposed to happen, enter a TX where it says TIME (to erase the time stored in the memory and tell the ROAD RUNNER you wish to re-enter a new time cue) and recue to the right time in the show.

NOTE: The ROAD RUNNER does not allow you to see the time at any point (when going onto tape, when playing back nor when you resolve a TX). This is NOT necessary. The power lies in the fact that you record CLOCK TRAK once and NEVER have to do recording on the sound track again. This means you can put your CLOCK TRAK on your master recording. In this way you can make duplicates even BEFORE the programming is done, you can give a rough tape to the programmer and then mix to the program, etc. The flexibility is much greater than ANY sync track. We also want to note that the CLOCK TRAK is compatible with the EAGLE.

Finding a particular timing point on the CLOCK TRAK is much easier also. The CLOCK TRAK code allows the ROAD RUNNER to know where in the show the program (and the slides) are to be at any one time. If you were to roll your tape into the show 2 or 3 minutes, the CLOCK TRAK on the sound track will tell the ROAD RUNNER what time in the show it is and send the program to that time cue (it will actually send it to the

next TIME cue to allow the ROAD RUNNER to get the trays and lamps to the proper status). In the same way, if you feel one of your TIME cues are off a little, you can find that point in the program with the sound track (CLOCK TRAK), change the TIME cue to a TX and back up the tape and get the right time this time through. You can do this as many times as you need to get it right. Even if there is a TIME cue right next to the one you are working on, you do NOT have to worry about erasing it or any other TIME cues because you are not changing anything on the tape and you are only changing that TIME cue and NO other.

Also if you wish to work on a particular section of the show and you know the section by the music, you can start the tape just before the section where you are working and the ROAD RUNNER will then GOTO the proper TIME cue in the program and proceed to execute cues for that portion of your show. If there are a lot of slides that have to advance to that section you will want to stop the tape and allow the slides to catch up before you continue the tape.

In order to fully understand the use of the CLOCK TRAK, we will take a closer look at its operation.

For the rest of this section, you will need a tape recorder with a selection of music on at least one channel and one open channel to record the CLOCK TRAK, an assortment of slides that will work with the music you have chosen, a dissolve unit (preferably a D DOVE), three projectors and trays, the ROAD RUNNER and all connectors needed to interface the above equipment. (You may also want to story board your slides.)

1. You will first load PROCALL into the ROAD RUNNER. (This is a task that is always necessary unless the unit has already been loaded.)
2. You will now connect the REC OUT jack to the "line in" on the channel of your tape where you wish to record your CLOCK TRAK.
3. You are now ready to record the CLOCK TRAK information on your audio tape. NOTE: You must ALWAYS have at least 3 seconds of CLOCK TRAK before the point where your first cue will fall in the show. An easy way to figure this is at 7 1/2 IPS you will need 24 inches of tape before the first cue and at 15 IPS you will need 45 inches of tape.

(A) After you have determined where to start the tape to record the CLOCK TRAK, you will enter the CONTROL COMMAND mode (CNTRL/C) and type in POF and enter it. This will turn off the POSITRAK information going out.

(B) Return to CNTRL/C and enter STL. This will send out a steady tone for you to set the level on the tape recorder. Once you have the level set at around +1 db (the signal needs to be recorded at a level that will play back at 0 db) you will press ESC (ESC will turn OFF the level set tone and return you to the programming mode).

(C) Return to the CONTROL COMMAND mode and type in COM (CLOCK OUTPUT MODE). Before you press ENTER, you want to start the tap recorder rolling (because as soon as you press enter the time code will be sent out).

NOTE: The ROAD RUNNER will ALWAYS start the CLOCK OUTPUT (COM) at 0 time.

(D) Immediately after you start the tape recorder, you press ENTER. The cursor will disappear to let you know the ROAD RUNNER is putting out the CLOCK TRAK information. You will be able to see that the CLOCK TRAK is being received by the tape recorder by observing the VU meter. It is good to listen to the sound track at the same time so you can tell when to terminate the recording of the CLOCK TRAK.

IMPORTANT: Allow about 5 - 10 seconds of CLOCK TRAK after the audio portion or after the point where your last TIME cue will occur in the show. Whichever comes LAST. This is due to the nature of the CLOCK TRAK and how it controls the program (covered in the next few paragraphs).

4. When you reach the 5-10 seconds past the end of your sound track you will turn OFF your tape recorder and press ESC to terminate the output of the CLOCK TRAK information. Rewind your tape to the beginning.

5. Now that you have the CLOCK TRAK recorded on your sound track, you will connect the "line out" (CLOCK TRAK channel) of the tape recorder to the PLAY IN jack on the rear panel of the ROAD RUNNER. This allows the CLOCK TRAK on the tape to tell the ROAD RUNNER what time it is in the sound track.

6. We will do a short exercise to show you more of how the CLOCK TRAK works.

(A) Enter the following cues into the ROAD RUNNER.

	CODE	SCREEN
0001	TX	
0002	2D	3A
0003	TX	
0004	2D	3AB
0005	TX	
0006	1A	3 BCG
0007	W.25	
0008	1A	3A C
0009	W.25	
0010	1A	3AB
0011	W.25	
0012	RP8	
0013	1D	3 BC
0014	W.25	
0015	1D	3A C
0016	W.25	
0017	1D	3AB
0018	TX	
0019	3D	3 BC
0020	TX	
0021	4A	3 C
0022	1D	3A
0023	W1	
0024	FZ	3C
0025	TX	
0026	2A	3A C

NOTE: You will notice that TX commands are used throughout this program. We can not stress heavily enough, the power in using the CLOCK TRAK. By using the CLOCK TRAK, you create a timing link to the sound track that will keep you closer to the timing of your music and/or narration than the use of WAIT times to do your timing. The use of WAIT cues therefore, is reserved for the sequences that have tight timing or precise timing within an animation. An example of tight timing may be like cues 0020-0024 in the above program. This example is to show how to FREEZE a dissolve in progress, so we can super a title slide over it.

- 0020. TX - Starts the sequence running.
- 0021. 4A - 4 second dissolve alternate to take OFF 3C.
- 0022. 1D - 1 second dissolve to bring ON 3A (for the super).
- 0023. W1 - WAIT 1 second (to allow time for cue 21 to dissolve OFF 3C).
- 0024. FZ - FREEZE to stop the 4 second (in cue 21) in progress to create a less bright image so we can have the title slide (cue 22) super over it.

An example of animation timing may look like cues 0005-0017.

- 0005. TX - Starts the sequence running.
- 0006. 1A - 1 second dissolve alternate from 3B to 3C with a G to tell the REPEAT (RP8) in cue 0012 where to repeat from.
- 0007. W.25 - WAIT .25 seconds.
- 0008. 1A - 1 second dissolve alternate from 3C to 3A.
- 0009. W.25 - WAIT .25 seconds.
- 0010. 1A - 1 second dissolve alternate from 3A to 3B.
- 0011. W.25 - WAIT .25 seconds.
- 0012. RP8 - REPEAT cues 0006 through 0011 eight (8) times to create an animation type sequence.
- 0013. 1D - 1 second dissolve from 3B to 3C. (also to move on to the next set of slides.)
- 0014. W.25 - WAIT .25 seconds (to keep the same relative action time as when REPEATING the animation sequence.)
- 0015. 1D - 1 second dissolve from 3C to 3A.
- 0016. W.25 - WAIT .25 seconds.
- 0017. 1D - 1 second dissolve from 3A to 3B ending the sequence with the same slide we started with.

(B) Return to cue #1. (GOTO,ENTER)

(C) Start your tape and when you want the slide to appear on the screen press the CUE key.

(D) After you have run through all the above cues, stop the tape and return to cue #1.

(E) You will notice that cue #1 is now TIME instead of TX. When the time is resolved the ROAD RUNNER will change the TX to TIME.

(F) Rewind your tape to the beginning of the CLOCK TRAK and run through the section you just programmed. NOTE: If you watch the DISPLAY LINE, you will notice the TIME cue (#1) will go away and it will preview the next (#2) cue when the CLOCK TRAK begins. This is normal. The ROAD RUNNER is processing the first (TIME) cue. The ROAD RUNNER will ALWAYS be previewing the next cue that is to be

executed when you are running with the CLOCK TRAK (or any run sequence).

(G) Stop the tape and return to cue #1. Now, without the sound track press the CUE key. The cues will run with the same relative timing as when the sound track was running. This is due to the internal clock that is in the ROAD RUNNER. When the ROAD RUNNER has no external clock to tell it the time, the internal clock can run the program. (This is handy for just running through the program to check slides or to check how sequences look without sound.)

This is an important concept. In order to make the ROAD RUNNER handle ALL program situations properly, it was developed to run in what is called the CLOCK EDIT MODE. This mode is so defined:

Whenever the ROAD RUNNER is running from the external clock source (CLOCK TRAK), the internal clock will be the slave to that clock and will adjust to run with that timing. However, should the external clock (CLOCK TRAK) stop, the internal clock will also stop, therefore stopping the program in progress.

It was defined this way for two very important reasons:

1. So when you are programming and you want to stop your tape and your program at a particular point to do editing you can do so without the program continuing on.

2. So when you are doing a show that has live and canned portions or when there is more than one show to your presentation and you finish one and there is a break between them, the show will not continue to run into the next section.

Also, if for some reason you wanted to stop a show in progress, you can do so by stopping the tape deck. (The status of the lamps will stay where they are at that point. To bring the lamps down in an emergency, you can press STB (STANDBY or CNTRL/S).

Run the program back and forth with the CLOCK TRAK a couple of times to get familiar with how it can work to your advantage. Then go back and change all the TIME cues back to TX cues. Now program the slides to the sound track again, only in a different manner this time to see how easy editing a TIME cue or a series of TIME cues can be.

POSITRAK

Before we move on to more involved programming, we want to explain another very important feature of the ROAD RUNNER, POSITRAK. POSITRAK is ONLY valid when using DOVES, D DOVES, TRAVELERS or a SHOW PRO VC.

POSITRAK is information that is sent out with the data that is sent to the DOVES (meaning any of the above mentioned compatible dissolves). An explanation of how the POSITRAK works, goes like this:

Every time you enter a command into the ROAD RUNNER, it sends out a coded DATA pulse that corresponds to the command that you entered. It is received by the DOVE and is executed. This all takes a fraction of a second. The same thing holds true when you run a show from memory. The coded DATA pulses are sent out with the timing that you have given them in your program.

Just for example, let's say the code going out looked li this: (left to right is relative time and a "D" is a DATA pulse)

DD DDD D D D D D D D D D

We will add POSITRAK to the data going out and the same relative time will look like this: (the "P" represents the POSITRAK information)

DDPPPDDDDPPPPPPPPPPDPPPPPPDPPDPDPDPPPPDPPPPPPDPPPPPPDPPPPDPPPD

Now to define what POSITRAK is. All POSITRAK is, is a message that is constantly being sent out to all the connected DOVES to let each projector know what tray position and lamp status it is suppose to be at at any one time. Therefore, when the ROAD RUNNER has no cues going out, it will be all POSITRAK. When you are running at 20 CPS and you have only cues going out there will be no POSITRAK going out until a time when there are no cues being sent out (e.g. during WAITS or between sequences when you are waiting for the next TIME cue).

The POSITRAK becomes most important when you record your DATA on your show tape to use to playback your show through your DOVES and not have to use your ROAD RUNNER. The DATA is recorded along with the POSITRAK on your audio tape and is fed to the DOVES just the same as the ROAD RUNNER would, if it were attached. Just as the CLOCK TRAK allowed you to move back and forth through t program and keep track of where it was according to the time given to the ROAD RUNNER by the CLOCK TRAK, the POSITRAK on the audio tape can now do the same thing by letting all the projectors know at what tray position and what lamp status it is supposed to be at any time.

To record the DATA and POSITRAK information onto the audio tape, do the following:

1. Place a "Y" connector (one male to two female) into the REC OUT jack on the rear panel of the ROAD RUNNER. Connect one end to you DOVES and the other to the "line input" on your tape recorder of an open channel where you wish to put your DATA TRAK.
2. In the CNTRL/C mode, enter STL. Set the level on the tape recorder to about +3db (this will play back around 0db).
3. Put your tape recorder in the "sync" mode to monitor from the record head so the DATA you put on the tape will be in sync with your sound.
4. In the programming mode with the ROAD RUNNER set at the starting cue for the section you are recording, put your tape recorder in the record mode to record your DATA and start the tape recorder.

The CLOCK TRAK will run the show, the cues will go to the DOVES and the same information will be recorded on the audio tape on your DATA TRAK. After you have finished your recording, home your trays to the starting position, rewind your tape, reconnect so the "line out" fr the DATA TRAK channel of the tape recorder is connected to the DOVES a restart your tape recorder. Your show will now run with just the tape recorder and the DOVES. To see how POSITRAK works, stop the tape about half way into the show, rewind a little, restart the tape recorder and watch the program back up to the proper position, resync and continue on

through the show.

NOTE: The DOVES are designed to keep the lamps off until all trays of that DOVE have reached the proper position before restoring the lamp status.

ADVANCED PROGRAMMING WITH YOUR ROAD RUNNER

Our intention in this section is NOT to teach you how to program. It is to show you some of the more advanced approaches to programming. In this section we will cover most of the basic kinds of entries. The best way for you to understand the material covered, is to review it with whatever slides you have available, place them in trays per the short description at the beginning of each section and enter the command as you move along. If you reach a section of the program that needs different slides take the time to change them, so you can view the effect the way it is intended.

You will be able to grasp the concept of the exercises if you use just one D DOVE and three projectors on screen #3 (If you use a dissolve unit other than a D DOVE, you will not be able to do D DOVE routines). The other screens are used mainly to show reference to other programming moves.

NOTES: Wherever TXs are entered into the program, you will go back to the beginning of that section and resolve them with the internal clock. The first time you press the CUE key it will start the clock. To resolve the first TX you will have to press the CUE key again. If you feel you can not enter any commands, press ESC to escape whatever condition you have fallen into. ESC will always return you to the normal programming condition. ESC will also turn OFF MAG TAPE INPUT (MIF LED will light) so following the ESC you want to press the SPACE BAR to clear MIF (assuming you wish to again allow tape input). When you are using the internal clock to resolve your time cues, make sure you go to the preceding TIME cue in order to get the clock started on the right time so you don't resolve a TX to a TIME that is smaller than the previous or don't allow enough time for the last sequence to finish before trying to start another one. If your program seems to skip ahead, that is most likely what has happened.

EXERCISES

1. A three step animation that dissolves in and out again.

	CODE	SCREEN	
0001	TX		
0002	BG	3	
0003	3D	3ABC	
0004	TX		
0005	3D	3A	
0006	TX		
0007	3D	3 B	
0008	TX		
0009	3D	3 C	
0010	TX		Wait for the lamp to go OFF before resolving this one.

0011 BS 3

This exercise is to show you how to start an animation sequence with the lamps OFF, dissolve the lamps ON while animating the three projectors, time the animation to dissolve OFF at the next series of TX cues that dissolve those projectors OFF individually and stop the animation (BLINKING) with the last TX cue.

NOTE: With this method, you are limited to a three step animation.

In order to do an intensity controlled dissolve animation using more than 3 projectors, you will have to use the FA (FAST ALTERNATE) method described below.

The BLINK GO can be used either before or after the dissolve for the controlled projectors. The difference depends on what you want the lamp status to be when you assign the BLINK STOP. The rule is: The BLINKING projectors will assume the status of what the status was when the BLINK GO was assigned.

Go back and reverse the order of cues #2 and #3. You will now see that 3A,B and C will come on after you assign the BLINK STOP.

You can also see how the effect will look at a faster rate by inserting a 20 CPS cue in between #1 and #2. To do this you:

A. GOTO 2. You should now be looking at cue #2. Press either CNTRL/A or the INSERT key to open up a space to insert a cue. Now there will only be the cursor at #0002.

B. Type in "S20" and press the ENTER key. The ROAD RUNNER has advanced to the #0003. You will notice the cursor is now flashing at a faster rate to let you know you are in 20 CPS.

2. Dissolving an animation sequence that uses more than three projectors using the FA and RP method.

CODE	SCREEN
0012	TX
0013	S20
0014	3D 23A C
0015	FA 23A C
0016	FA 2 A
0017	FA 2 A CG
0018	FA 23 C
0019	FA 3A C
0020	FA 23A
0021	RPX
0022	HC 2 A C
0023	HC 23 C
0024	HC 3A C
0025	TX
0026	3D 3A

In this case, the four projectors are told to dissolve ON, and to FA between the four of them X amount of times. When the light intensity gets to full brilliance or whenever you want the flashing to stop you terminate the REPEATING by pressing the CUE key to resolve the REPEAT. After the repeat is complete, the animation sequence will HARD CUT, allowing the last move of the

animation to remain on the screen. The next TIME cue will dissolve that slide OFF and begin a new sequence.

NOTE: The lamps must be told to come ON all at the same time or go OFF at the same time in order for the effect to work properly.

3. Moving through a number of visuals rapidly to demonstrate another use of the REPEAT function.

	CODE	SCREEN
0027	TB2	
0028	TX	
0029	HC	3 G
0030	W.5	
0031	RPX	
0032	HC	3

In this example, the TB2 (TAB) is used to mark the beginning of a new section. (It makes it easier to find.) The HARD CUT in cue 0029 will bring the A projector ON (since there is NO assignment and there are NO projectors ON on that screen, it will assume the A projector is to come ON) and then proceed to change from A to B to C to A to B, etc. until you resolve the RPX. When you resolve the X the program will move to the next cue, in this case, 0032 HARD CUT on screen #3. The intention is for 0032 to HARD CUT the last visual OFF, therefore when you have resolved the RPX, it will just proceed to the next projector in the sequence. When the program stops, you want to STEP REVERSE CUE (CNTRL/Q) to the last cue 0032. Now you can change it to take OFF whatever projector is on for your number of REPEATS. e.g. If you had RP12, your program would have ended with 3A being ON. So you will make #0032 look like this:

0023	HC	3A
------	----	----

Another use for REPEATS is to use them with ALTs or FAs to create a flashing routine. This is more easily done with the BLINKING routines (Read the D DOVE MANUAL (see INDEX) for more information on D DOVE routines). Press CNTRL/T (GOTO TB) and type 2 and ENTER to return to the beginning of this sequence (TB2).

4. The use of PRESETS to maximize time and control.

	CODE	SCREEN
0033	TB3	
0034	TX	
0035	1D	2 A
0036	PS	2 AB
0037	PS	3A
0038	TX	
0039	HC	23

In this sequence, you want to bring ON 2A. The next thing you want to do is bring on 2B and 3A and take OFF 2A. This is what happens:

1. You assign 2A to dissolve ON at the intended rate.
2. You PRESET (assign) the projectors you want to react to the next action command you give for that (those) screen(s).
3. You assign the command you wish for the intended projectors.

In this case, we only wanted two projectors to come ON and one to go OFF. We can also use PRESETs to access all BUT the projectors that are PRESET.

Now that we have 2B and 3A ON, say we want to leave them ON and bring on 2A, 2C, 3B, and 3C.

	CODE	SCREEN
	0040	PS 3A
	0041	PS 2 B
	0042	TX
	0043	HC 23ABC

We have now used it to hold back projectors.

NOTE: We want to stress the fact that PRESETs are NOT necessary in MOST programming instances. In the two examples above, the PRESET allowed us to control the appropriate projector(s) to do a HARD CUT on all at exactly the same time. Because of the nature of a HARD CUT, if all projectors did not respond at exactly the same time, you would see the different projectors cut at different times. In a sequence, like either of the above, where you wanted to dissolve the projectors instead of HARD CUT (or even CUT, ALT or FA) you could have assigned each screen (and projector) to come ON (or go OFF) individually and the 1/10th (or 1/20th) of a second between the dissolves would NOT be noticeable.

EXAMPLE: Cues 0040-0043 may look like this:

	CODE	SCREEN
	0040	TX
	0041	2D 2 A C
	0042	2D 3 BC
	0043	TX
	0044	3D 3 BC
	0045	3D 2 ABC

With this method we save a cue and therefore save ourselves time. PRESETs were designed to help you out of tight timing jams. They are NOT designed for general use. In fact they will cause you more programming time and more cue space if they are not used properly. Use them with discretion.

5. We want to make a note on the use of INDEPENDENTS. Independents means the use of specifically assigning the screen(s) AND projector(s) on which a particular action will take place. We also want you to

understand how screen assignments work.

The projectors will always sequence in the following manner if you DO NOT assign them independently (using just screen assignment and NO projector assignment):

NO projectors ON	- "A" projector will come ON.
"A" projector ON	- "A" goes OFF, "B" comes ON.
"B" projector ON	- "B" goes OFF, "C" comes ON.
"C" projector ON	- "C" goes OFF, "A" comes ON.
"A&B" projectors ON	- "A" goes OFF, "B" stays ON.
"B&C" projectors ON	- "B" goes OFF, "C" stays ON.
"A&C" projectors ON	- "A" goes OFF, "C" stays ON.
"AB&C" projectors ON	- "A&B" go OFF, "C" stays ON.

When you use INDEPENDENTS, the projectors you assign will either come ON or go OFF according to the status they are at at that time.

"A" is ON	- You assign "AB" - "A" goes OFF, "B" comes ON.
"A&C" ON	- You assign "ABC" - "A&C" go OFF, "B" comes ON.
None ON	- You assign "AB" - "A&B" come ON.

These are just a few examples of the way the independents work. It means you are independently telling each projector what to do.

The advantage to using independents lie with knowing exactly what will happen in any instance and knowing that you have yourself covered if one of your dissolve units are not set to the proper sequencing. Also it is easier to keep track of your sequencing if you go back and change a cue in the program that will change the status of a projector going into a sequence.

The advantage to NOT using independents is you don't have that extra entry to make and you can come up with some unusual LOOPING routines and RP sequences by accessing in a random order. To understand what all this means, you will want to work with both methods and determine the way that allows you to be the most creative (you may want to use a mix of the two).

6. FREEZING a dissolve to control the brightness of the lamp (and therefore the brightness of the slide) for looks, Supers or to create other special effects.

CODE	SCREEN	
0046	TX	
0047	3D	3A
0048	WX	
0049	FZ	3A
0050	1D	3 B (SUPER)
0051	TX	
0052	1D	(This can be another FZ if you wish to continue the dissolve at the same rate.)
0044	TX	

The FREEZE is used to freeze the dissolve in progress, you assign a dissolve to the projector you wish to FREEZE, than waiting the amount of time to get the lamp to the proper intensity (if you use a WX you will be able to see the lamp fade to the point you

want, than press CUE to resolve it) than assign the FREEZE.

To have the lamp continue in the same direction it was going when told to FREEZE, you give a dissolve assignment with NO screen or projector assignment. If you want it to continue at the same rate you can just assign it to FREEZE again (WITH screen and projector assignment), actually telling it to release the FREEZE.

If you wish to reverse the direction, you assign the new dissolve rate with the screen and projector assignment.

The best way to learn anything, is to get in there with "both hands" and practice. The more you use the ROAD RUNNER, the more its operation will become second nature to you. Create small programming assignments for yourself, and carry them out like you would a project. In this way, you will be more prepared for the larger tasks as you progress through your learning cycle.

NEW "D" DOVE COMMANDS

With the New "D" DOVE it is now possible to do four (4) new screen effects that were not possible with the standard DOVE with the ease that the New "D" DOVE allows. These four new effects will be covered in detail as you move along through the manual.

The new software in the DOVE now allows for the SETTING UP of routines inside the DOVE that are carried out solely by the DOVE and need no further commands from the EAGLE or ROADRUNNER once the routine commands have been fed to the DOVE.

IMPORTANT: It is suggested that you use ALTERNATES with the BLINKING routines at least until you have a grasp on what the routine is capable of doing for you.

A brief description of the New Effects are as follows:

(1) LOOPING

The LOOP LOAD command allows you to set up a looping routine in a DOVE(s) to loop a series of 1,2 or all 3 projectors controlled by the DOVE(s) assigned. A LOOP can include more than one DOVE with the capability of controlling up to 30 projectors in one large continuous LOOP. Once you have assigned the individual projectors that will be contained in the loop you tell the DOVE(s) to LOOP GO on the selected DOVE(s). To stop the looping you assign a LOOP STOP to the selected DOVE(s).

(2) BLINKING

BLINKING allows you to blink a projector or a series of projectors at one of 4 different rates. To start the BLINKING you enter a BLINK GO command on the selected DOVE(s) and a cut or dissolve command to the selected projectors on the DOVE you want to BLINK. To stop the BLINKING you have to enter a BLINK STOP on the selected DOVE(s).

(3&4) SMOOTH

SMOOTH allows you to do one of two (or both) things. First the SMOOTH is a change in the way the lamp in the projector is RAMPED ON and OFF. WITHOUT SMOOTH the lamp will ramp on faster at first to allow light to reach the screen faster and to make a smooth transition between the oncoming and the outgoing slides. WITH SMOOTH the lamp no longer has this fast start up and therefore has a SMOOTH start up and follow through throughout the entire dissolve.

Second, in SMOOTH the lamp will no longer come to full brilliance on an oncoming dissolve when you tell it to go OFF before it has reached its full intensity or all the way OFF when you are doing a dissolve OFF and tell it to come ON again. This now allows you to do a ripple dissolve effect or what is termed a continuous dissolve effect.

EXAMPLE: If you do a 4 SEC ALT on screen 1L and a WAIT 2 SEC then another 4 SEC ALT and another 2 SEC WAIT etc. the effect that will occur on the screen will be one where the lamp starts on with a 4 second dissolve and after 2 seconds will change directions and begin to dissolve OFF then after 2 seconds begin to dissolve ON

ON again and so on. To return back to normal dissolve, program a Smooth Stop.

THE NEW "D" DOVE EAGLE or ROADRUNNER COMMAND ENTRIES

CUES	STATEMENT	SCREENS	
LL	LOOP LOAD	12345 67890	(NOTE 1)
LG	LOOP GO	12345 67890	(NOTE 2)
LS	LOOP STOP	12345 67890	(NOTE 3)
BG	BLINK GO	12345 67890	(NOTE 4)
BS	BLINK STOP	12345 67890	(NOTE 4)
SG	SMOOTH GO		(NOTE 5)
SS	SMOOTH STOP		(NOTE 5)

NOTE 1: LL (LOOP LOAD) cues alert version "D" DOVE(s) to store a series of cues (ACTION CUES) in its memory as a routine that will be repeated until told to stop.

These ACTION CUES are WAITS, ALT, 1 SEC ALT, and FREEZE. Although any type of cue may be within a LOOP LOAD routine, ONLY ACTION CUES will be accepted by the EAGLE or ROADRUNNER as such and sent to the designated LOOP LOAD screen and all other cues will be executed as normal cues (these normal cues will appear as appropriate wait cues to the DOVE(s) in the LOOP LOAD).

ACTION CUES with GO, STOP or PROCEED CODES are INVALID within a LOOP.

A LOOP LOAD is INVALID if another LOOP LOAD is in progress.

The MAXIMUM number of ACTION CUES per DOVE is 4 plus 5 WAIT cues. The MAXIMUM WAIT time between cues is 6 SECONDS in increments of .05 SECONDS.

This means if you are starting a LOOP LOAD on screens 1,3 and 5 you will be allowed 4 ACTION CUES per DOVE or a total of 12 ACTION CUES plus WAITS and any other projector assignments.

NOTE 2: LG (LOOP GO) cues will cause ALL specified LOOPS to be repeated until told to STOP. A LOOP GO without a LOOP LOAD in progress is INVALID.

NOTE 3: LS (LOOP STOP) cues will STOP ALL LOOP GO'S in

progress on the designated DOVE(s).

NOTE 4: BLINK is similar to FAST ALT except that with FAST ALT it is necessary to repeat that cue the amount of times you wanted it to flash ON and OFF. Likewise with FAST ALT, if you wanted to do an intensity controlled dissolve you also have to repeat the FAST ALT. Now with BLINK simply enter a BG with screen number(s) and a dissolve for the projector and an intensity controlled dissolve will occur with no further commands from the EAGLE or ROADRUNNER except to stop the BLINKING. The EAGLE or ROADRUNNER is now free to perform other functions. (see section under BLINK for BLINKING rates and ratios.)

NOTE 5: A SG (SMOOTH GO) will allow you to step on a dissolve and change its direction WITHOUT having it flash ON or OFF. You also have the capability to produce a ripple dissolve effect.

If you are using a video monitor SMOOTH will be HI-LITED in the SCREEN STATUS area replacing the word STATUS whenever in the SMOOTH mode. When a SG(Smooth Go) is issued all Doves are in this mode and will remain in this state until a SS(Smooth Stop) or Home is issued.

SPECIAL NOTES REGARDING "D" DOVE CUES.

It is NOT possible to use BLINKING and LOOPING routines in the same DOVE(s) at the same time. You have to end (stop) one before entering (starting) the other.

It is recommended that you use independents when assigning projectors that are contained inside a LOOP LOAD sequence when all three projectors controlled by that DOVE are not involved in the LOOPING sequence. Failure to comply may end up in the projector(s) that is not involved in the LOOPING routine having its lamp controlled by the LOOPING that is taking place in that DOVE.

When you execute an ESCAPE, ALL action will stop and the status of the projectors will take the status at the time of the assignment of the LOOP GO and/or the BLINK GO.

When you execute a GOTO or an ESCAPE the action will be stopped but you will be able to tell which projectors are in which modes from the screen status area of the video monitor(note that you need a video monitor option to have this feature on your ROADRUNNER). The projectors with Bs in front of them are in a BLINKING mode and the projectors with Ls in front indicate a LOOPING routine in that DOVE(s).

NOTE: After GOTO's and ESCAPES, in order to resume (begin) BLINKING/LOOPING routines you must go to a point preceding the appropriate BLINK GO/LOOP LOAD.

If you are sitting or running between a LOOP LOAD and a LOOP GO and

you do a STEP or RUN REVERSE, a LOOP GO and a BLINK STOP will be sent to the DOVE automatically and a GOTO to the LOOP LOAD cue will be executed. Likewise, if you are reverse cueing through your program (in either step or run reverse) and you come across a LOOP LOAD sequence, the EAGLE or ROADRUNNER will force you from the LOOP GO to the LOOP LOAD only allowing you to reach a cue in that sequence in the forward direction. The same holds true when you try to do a GOTO to a cue inside a LOOP LOAD sequence. The EAGLE or ROADRUNNER will take you to the LOOP LOAD command of that sequence and allow you to access any cue in that sequence only from the forward direction.

In order to stop smoothly from a LOOPING routine use a Loop Stop (LS). This command will allow the loop to continue to the end of the routine and then stop the screen action and start accepting cues. Always allow enough wait time to stop the loop before issuing cues to a Dove that was in a loop. Once you have sent the DOVE the BLINKING or LOOPING routine it automatically shuts off POSITRAK coming into it, therefore when you tell it to stop, the Dove assumes it is to stop with the same status with which it began.

In the situations where you wish to let a sequence finish out the routine before going on to something else, you HAVE TO make sure there is enough time allowed to let the routine finish, than turn ON or OFF any projectors necessary to continue your effect. This is to avoid a "hick-up" but more importantly to avoid any failure of losing status when you may be going right into another LOOPING routine. What you are doing is to allow the DOVE to recover, let POSITRAK resume for a moment verifying that the status in the DOVE compares with that in the EAGLE or ROADRUNNER than starting the new routine or going on to other programming.

IMPORTANT: In regards to the last two points, it is even more important when you are running from MAG TAPE to make sure all the BLINKING and LOOPING routines are satisfied and ended properly.

LOOP LOAD and BLINK routines may look different when you step through them than when you are running through them. For this reason it is suggested you always go back to the beginning or even back to a point where there is no Blinking or Looping taking place to start your run to make sure the effect looks the way it was intended. This is most important when you are moving from one routine to another.

BLINKING

There are four rates of BLINK. These are obtained by the way you enter the commands. BLINK is set up by the EAGLE or ROADRUNNER and carried out by the DOVE. When BLINK is assigned to a DOVE the DOVE will assume it is to blink all projectors it controls. The DOVE sets up the BLINKING routine internally and waits for a command to turn the lamp(s) ON/OFF. The BLINKING routine will continue to be stored in the DOVE until you tell it to stop with a BLINK STOP command. This means if you do a BLINK GO on Screen #1, dissolve the LCR projectors ON, then dissolve the LCR projectors OFF later WITHOUT stopping the BLINK, the next time you dissolve any of the projectors on Screen #1 ON, they will BLINK because the DOVE was not told to stop the BLINK routine.

Assigning BLINK GO to a selected screen does nothing more than set up a BLINKING routine inside the DOVE controlling that screen. A lamp control command (Cut, Alt, Dis, etc.) must be entered for that screen in order to bring the lamp ON. BLINK STOP simply stops the BLINKING routine leaving the projectors ON or OFF depending upon their status at the time of the BLINK GO. There is another way to end routines other than calculating/keeping track of status to insure that you end with the proper status. A BLINK GO immediately before the BLINK STOP can be used instead as:

The BLINK GO will update the routine to the status and the BLINK STOP will in turn stop the routine with the new status. This can be used to stop BLINKING or LOOPING routines.

REMINDERS: The BLINK GO can be put at any location previous to the BLINK STOP as long as there is NO subsequent change in status for that DOVE(s)

An explanation of how the four BLINK rates work.

(1) Running at 10 cps, when you enter a dissolve on a particular screen followed by a BLINK command the DOVE will set up a 1:2 ratio and create a looping effect on the three projectors of that screen. This means that the left projector will be OFF for 1 part of the time and ON for 2 parts of the time. Likewise the center and right projectors will be OFF for 1 part and ON for 2 parts, respectively. The DOVE assumes the LEFT projector goes OFF first and the looping effect is created by this ratio.

EXAMPLE #1

CODE	STATEMENT	SCREENS
1. TIME	5.35	
2. 8A	8 SEC ALT	1 LCR
3. BG	BLINK GO	1
4. TIME	8.23	
ETC.		

Here all three projectors will come ON. 1/10th of a second later the BLINKING effect will start with the LEFT projector going OFF,

1/10th second later the CENTER projector will go OFF and the LEFT projector will come ON, 1/10th second later the RIGHT projector will go OFF and the CENTER will come ON, 1/10th second later the LEFT goes OFF and the RIGHT comes ON, ETC.,ETC. This BLINKING loop will continue until you stop it with a BLINK STOP command from the EAGLE or ROADRUNNER or from MAG TAPE.

The following is what happens.

TIME		ACTION
5.35		1 LCR start to dissolve ON with an 8 second alternate.
5.45	1st 10th	1 LEFT goes OFF.
5.55	2nd 10th	1 LEFT comes ON and 1 CENTER goes OFF.
5.65	3rd 10th	1 CENTER comes ON and 1 RIGHT goes OFF.
5.75	4th 10th	1 RIGHT comes ON and 1 LEFT goes OFF.
5.85	5th 10th	1 LEFT comes ON and 1 CENTER goes OFF.
ETC.		ETC.

EXAMPLE #2

If you blink only two of the projectors on that screen it will still blink at a ratio of 1:2 causing each to be flashing ON for 2/10th of a second and OFF for 1/10th of a second, where the first is ON for 2/10th of a second, the second projector ON for 2/10th of a second (overlapping the first 1/10th after the first comes ON) then back to the first.

CODE	STATEMENT	SCREENS
7. TIME	15.04	
8. 8A	8 SEC ALT	1 LC
9. BG	BLINK GO	1
10. TIME	23.09	
ETC.		

In this example only the LEFT and CENTER projectors will be BLINKING. The LEFT projector will come ON for 1/10th of a second, 1/10th later the CENTER projector will come ON, 1/10th later the LEFT will go OFF, 1/10th later the CENTER will go OFF and the LEFT will come ON, than back through the cycle again until the cycle is terminated by a BLINK STOP command from the EAGLE or ROADRUNNER or from MAG TAPE. (This is exactly the same as if you were using the three projectors except the third projector is not in the loop.)

EXAMPLE #3

Using one projector we can set up a flashing effect.

CODE	STATEMENT	SCREENS
22. TIME	45.97	
23. 6A	6 SEC ALT	1 L
24. BG	BLINK GO	1

25. TIME 1:05.99
ETC.

Here again the DOVE will set up a 1:2 ratio, this time using only one projector (1L). In this case the left projector will be ON for 2/10th of a second and OFF for 1/10th of a second.

All BLINKING commands set up inside the DOVE can only be terminated by BLINK STOP.

2) Running at 20cps will give you the same effects only faster.

(3) A different effect can be created by using a PRESET with the BLINK command.

This PRESET will allow you to do two different things. First it will allow you to BLINK projectors in a dissolve loop and also dissolve projectors that are NOT BLINKING in that same loop as long as the projector you want to dissolve is not blinking. Second it will allow you to BLINK projector(s) at a rate of 1:1. This means any one, two or all three projectors on that screen will BLINK ON for 1/10th and OFF for 1/10th repeating until told to stop.

EXAMPLE #5

	CODE	STATEMENT	SCREEN	
	97. TIME	2:45.98		
	98. 4A	4 SEC ALT	1	L
	99. PS	PRESET	1	L
	100. BG	BLINK GO	1	
	101. W5	WAIT 5 SEC		
	102. 3D	3 SEC DIS	1	C
	103. W3.25	WAIT 3.25 SEC		
	104. FA	FAST ALT	1	R
	105. TIME	3:23.88		
	ETC.			

In this example the PRESET is used to preset the BLINK GO. With the use of the PRESET the DOVE will set up a BLINK routine for that projector (1L) ONLY, this time with a 1:1 ratio. After waiting 5 seconds 1C will dissolve ON followed by a FAST ALT on 1R 3.25 seconds later.

In this example you could have PRESET 1 LEFT AND CENTER or 1 LEFT and RIGHT or any combination of one, two or all three projectors. Remember when you use more than one projector, both or all three projectors will BLINK at a 1:1 ratio ALL ON for 1/10th and ALL OFF for 1/10th when you use this PRESET.

(4) Using 20 cps will give the same effects only faster.

NOTES:

1. Other effects can be obtained with the use of different timing, waits, and presets. Allow time to play with the New software to familiarize yourself with the many possibilities.
2. You cannot use a LOOP STOP (LS) to stop a BLINK.
3. After issuing a BLINK STOP (BS) always wait 1/10 of a second before issuing another command to that Dove.

LOOPING

LOOPING might be described as an easy way to do repeats. LOOPING was created to allow you to do looping routines that will continue to run leaving the EAGLE or ROADRUNNER free to carry out other programming functions. LOOP LOAD cues will now alert the version "D" DOVE(s) to store a series of ACTION CUES in its memory as a routine that will be repeated until told to stop. The most significant difference is that LOOPING routines are limited to ACTION CUES. These ACTION CUES are 1 SEC ALTs, ALTs, FREEZEs plus WAITS. Although any type of cues may be within a LOOP LOAD routine, ONLY ACTION CUES will be accepted by the EAGLE or ROADRUNNER as such and sent to the designated LOOP LOAD "D" DOVE(s). All cues assigned to other projectors not in the LOOP LOAD mode will be executed as normal cues and appear as appropriate waits for those projectors in the LOOP. (Refer to the third example under ANIMATION).

It is important to note that there is a MAXIMUM of 4 ACTION CUES per DOVE plus 5 wait cues per LOOP LOAD sequence. Other limitations are noted under NEW "D" DOVE COMMANDS.

LOOP LOAD can be used to create some old and new effects with greater ease and simplicity. The following are just an example of some of the things that can be done.

ANIMATION

Three step animation.

CODE	STATEMENT	SCREEN	
1. AT	ALT	1	L GO
2. LL	LOOP LOAD	1	
3. AT	ALT	1	LC
4. W.1	WAIT .1 SEC		
5. AT	ALT	1	CR
6. W.1	WAIT .1 SEC		
7. AT	ALT	1	L R
8. W.1	WAIT .1 SEC		
9. LG	LOOP GO	1	

In this typical example, the sequence is set up similar to that of a repeat sequence.

1. The projector that is to start the LOOP is turned ON.
2. The LOOP LOAD routine is assigned to the intended DOVE(s).

3-8. The ACTION CUES are assigned for the desired effect.

9. The LOOP GO instructs the DOVE(s) it is to LOOP (repeat) the routine until told to stop.

The ACTION CUES can be manipulated with more or less time or 1 SEC ALTs in the place of the ALTs to create other effects.

Another type of three projector animation might be to have the animation move back and forth or in and out as follows:

CODE	STATEMENT	SCREEN		
1. AT	ALT	1	L	GO
2. LL	LOOP LOAD	1		
3. AT	ALT	1	LC	
4. AT	ALT	1	CR	
5. W.2	WAIT .2 SEC			
6. AT	ALT	1	CR	
7. AT	ALT	1	LC	
8. W.2	WAIT .2 SEC			
9. LG	LOOP GO	1		

More than three projectors in an animation would mean you need more than one DOVE. A 6 projector animation might look something like this:

CODE	STATEMENT	SCREENS		
1. AT	ALT	1	L	GO
2. LL	LOOP LOAD	12		
3. AT	ALT	1	LC	
4. W.1	WAIT .1 SEC			
5. AT	ALT	1	CR	
6. W.1	WAIT .1 SEC			
7. AT	ALT	12	R	
8. 3D	3 SEC DIS	4	L	
9. AT	ALT	2	CR	
10. W.1	WAIT .1 SEC			
11. AT	ALT	2	LC	
12. W.1	WAIT .1 SEC			
13. AT	ALT	12	L	
14. W.1	WAIT .1 SEC			
15. LG	LOOP GO	12		

Again the sequence is set up and carried out like in the three projector animation. In this example you will notice the WAIT cue in number 8 was replaced with a 3 SEC DIS on screen 4 LEFT. This is to demonstrate the flexibility of using non-ACTION CUES inside the LOOP LOAD sequence set-up. This cue will still appear to the LOOP routine as a .1 second wait.

FLASHING

You may want to use the looping to create flashing, random or syncopated animation. By entering a non-uniform pattern of waits mixed with Alts

and 1 Sec Alts you can create random effects. This may be used to create effects where you have logos or other graphics that have more than one step or pieces where you want to animate the pieces in different way than the normal continuous motion animation.

OTHER USES

Using FREEZES as part of the ACTION CUES you can now control dissolves to make effects by locking and unlocking the FREEZE (dissolve) in the looping routine. This can be used to prolong dissolves and to create effects based on the different wait times and different dissolve rates you use:

CODE	STATEMENT	SCREEN	
1. 8A	8 SEC ALT	1	LCR GO
2. FZ	FREEZE	1	LCR
3. FZ	FREEZE	1	L
4. LL	LOOP LOAD	1	
5. FZ	FREEZE	1	LC
6. W.8	WAIT .8 SEC		
7. FZ	FREEZE	1	CR
8. W.8	WAIT .8 SEC		
9. FZ	FREEZE	1	L R
10. W.8	WAIT .8 SEC		
11. LG	LOOP GO	1	

This first example accesses projectors independently:

1. Dissolve projectors ON.
2. Freeze all projectors before they have a chance to start to dissolve.
3. Unfreeze the first of the series.
4. Loop Load the selected screen.
5. Cross freeze the left to the center.
6. Wait .8 sec.
7. Cross freeze the center to the right.
8. Wait .8 sec.
9. Cross freeze the right to the left.
10. Wait .8 sec.
11. Start the Loop routine on selected screen.

This can also be accomplished another way:

CODE	STATEMENT	SCREEN	
1. 8A	8 SEC ALT	1	LCR GO
2. LL	LOOP LOAD	1	
3. FZ	FREEZE	1	
4. W.8	WAIT .8 SEC		
5. FZ	FREEZE	1	
6. LG	LOOP GO	1	

The second example does NOT use independents:

1. Dissolve projectors ON.
2. Loop Load the selected screen.
3. This Freeze command will Freeze the projectors in the loop.
4. Wait .8 Sec.
5. This Freeze command will unfreeze the projectors involved
6. Start the Loop routine on the selected screen.

SMOOTH

SMOOTH allows you to do one of two (or both) things. First the SMOOTH is a change in the way the lamp in the projector is RAMPED ON and OFF. WITHOUT SMOOTH the lamp will ramp on faster at first to allow light to reach the screen faster and to make a smooth transition between the oncoming and the outgoing slides. In the SMOOTH mode the lamp no longer has this fast start up, therefore, creating SMOOTH start ups from black, cross-dissolves and follow throughs throughout the entire dissolve. Second, in SMOOTH the lamp will no longer come to full brilliance on an oncoming dissolve when you tell it to go OFF before it has reached its full intensity nor all the way OFF when you are doing a dissolve OFF and tell it to come ON again. This now allows you to do a ripple dissolve effect or what is termed a continuous dissolve effect.

EXAMPLE: If you do a 4 SEC ALT on screen 1L and a WAIT 2 SEC than another 4 SEC ALT and another 2 SEC WAIT etc. the effect that will occur on the screen will be one where the lamp starts on with a 4 second dissolve and after 2 seconds will change directions and begin to dissolve OFF in 4 seconds than after 2 seconds begin to dissolve ON again and so on.

SMOOTH used in conjunction with Freezes in a Loop can prolong dissolves to obtain very long dissolve rates.

EXAMPLE:

CODE	STATEMENT	SCREEN
1. SG	SMOOTH GO	
2. 32A	32 SEC ALT	1 L GO
3. LL	LOOP LOAD	1
4. FZ	FREEZE	1 L
5. W.2	WAIT .2 SEC	
6. LG	LOOP GO	1

This example will produce a Dissolve approximately 60 seconds long. You will have to adjust the wait times to make sure there is not too much wait time which can create a jerky dissolve effect on the screen, unless that is what you want.

You also have to remember that SMOOTH affects ALL screen areas. If you were to start the above example, you will not be able to remove the smooth effect until the 60 seconds of the dissolve have past or the dissolve may not be a smooth one.

You can also use SMOOTH with BLINKS and LOOPS in other ways:

EXAMPLE:

CODE	STATEMENT	SCREEN
1. NO	NO OPERATION	GO
2. SG	SMOOTH GO	
3. 4A	4 SEC ALT	1 LCR GO
4. BG	BLINK GO	1
5. W2	WAIT 2 SEC	
6. RP12	REPEAT 12 TIMES	

In this example you will see the dissolve never reaches full brilliance on the screen and has a rippling effect and a Blinking at the same time.

You will find many new effects can be created with the capabilities of the NEW "D" DOVE. We recommend you order the "D" Dove Exercise kit which consists of both slides and sample programs if you would like additional examples.

The more time you spend with the "D" DOVE and the NEW VERSION of SOFTWARE, the better you will understand the capabilities of them and will be able to design more effective slides and program them more efficiently.

QUICK REFERENCE CODES AND COMMANDS

This section is broken into four headings:

CODE ENTRIES
 SCREEN ENTRIES
 EDITING COMMANDS
 CONTROL COMMAND MODE ENTRIES

CODE ENTRIES

DISSOLVE SPEEDS

CODES	DESCRIPTIONS
CT	CUT
1D	DISSOLVES IN SECONDS
2D	
3D	
4D	
6D	
8D	
16D	
32D	
HC	HARD CUT
AT	ALTERNATE
1A	DISSOLVE ALTERNATE
2A	
3A	
4A	
6A	
8A	
16A	
32A	
FA	FAST ALTERNATE
FZ	FREEZE
PS	PRESET
HOME	

PROJECTOR TRAY RELATED COMMANDS

PF	PROJECTOR FOWARD
PR	PROJECTOR REVERSE

RUN SEQUENCES

10 CPS	10 CUES PER SECOND
20 CPS	20 CUES PER SECOND
W.05	WAIT TIMES (From .05 to 10 sec in increments of .05)
--	
W10	

WX WAIT X
 TX TIME X
 TIME WHEN A CLOCK TRAK TIME IS STORED IN THE MEMORY
 N NO OPERATION
 RPXX REPEAT A FIXED NUMBER OF TIMES
 RPX REPEAT X
 RPO REPEATS UNTIL TOLD TO STOP
 TB TAB

D DOVE COMMANDS

LL LOAD LOOP
 LG LOOP GO
 LS LOOP STOP
 BG BLINK GO
 BS BLINK STOP
 SG SMOOTH GO
 SS SMOOTH STOP

SCREEN ENTRIES

G GO
 S STOP
 12345 SCREEN NUMBERS
 ABC PROJECTOR ASSIGNMENTS
 LCR
 TCB

EDITING COMMANDS

ENTER ENTER INTO THE ROAD RUNNER MEMORY
 CUE↓ EXECUTE A CUE
 DISP DISPLAY
 ↑ REVERSE CUE
 Q STEP CUE
 CNTRL/Q STEP REVERSE CUE
 Q/REPT FAST FORWARD
 CNTRL/ FAST REVERSE
 Q/REPT
 --> CURSOR RIGHT
 <-- CURSOR LEFT
 SPACE MOVE A SPACE
 BAR
 RUB CLEARS THE DISPLAY LINE
 OUT
 CNTRL/A ADD-A-CUE
 INSERT ADD-A-CUE
 CNTRL/D DELETE-A-CUE
 DELETE DELETE-A-CUE
 CNTRL/R REPEAT CUE
 ESC ESCAPE
 CNTRL/G, ENTER GOTO CUE #1
 CNTRL/P PROJECTOR DISCONNECT
 CNTRL/X AUXILIARY DISCONNECT
 TAB GOTO NEXT TAB
 CNTRL/B GOTO PREVIOUS TAB

CNTRL/ GOTO PREVIOUS TAB
TAB
CNTRL/S STANDBY
STBY STANDBY

CONTROL COMMAND ENTRIES

CNTRL/C	CONTROL COMMAND
SAVE, ENTER	STORE PROGRAM ON MAG TAPE
LOAD, ENTER	LOAD PROGRAM FROM MAG TAPE
VER, ENTER	VERIFY MAG TAPE SAVE
COM, ENTER	CLOCK OUTPUT MODE
STL, ENTER	SET LEVELS
CNTRL/Gxxxx, ENTER	GOTO DESIGNATED CUE NUMBER
RCF, ENTER	REMOTE CONTROL OFF
RCN, ENTER	REMOTE CONTROL ON
PAxxx, ENTER	PROJECTOR ASSIGNMENT
SAxxx, ENTER	SCREEN ASSIGNMENT
MOF, ENTER	MAG TAPE OUTPUT OFF
MON, ENTER	MAG TAPE OUTPUT ON
MIF, ENTER	MAG TAPE INPUT OFF
MIN, ENTER	MAG TAPE INPUT ON
BPF, ENTER	BEEPER OFF
BPN, ENTER	BEEPER ON
CAC, ENTER	CLEAR ALL CUES
CNTRL/Txx, ENTER	GOTO TAB xx
SEQ 2	SEQUENCE 2 PROJECTORS
SEQ 3	SEQUENCE 3 PROJECTORS
MTD, ENTER	MAG TAPE DUMP
PIF, ENTER	POSITRAK INPUT OFF
PIN, ENTER	POSITRAK INPUT ON
POF, ENTER	POSITRAK OUTPUT OFF
PON, ENTER	POSITRAK OUTPUT ON

INDEX

The INDEX is designed to aid you in finding information that is not easy to find using the TABLE OF CONTENTS, looking under specific headings for what you need.

The manual itself is designed so that you will be able to find the same information in the same relative position in any one of the three stories. Therefore, if you are not able to find what you need in this index, go to the "NO STORY" (pg. 68) find what you need there, then if you need more information on subject, refer to one of the other stories under the same heading in the same relative position. For example: If you want to know how to clear the cues from your system, you would go to the "NO STORY", find the information (CAC-CLEAR ALL CUES), if that does not tell you enough, find CAC in the "WHOLE STORY" (under the same heading CONTROL COMMAND FUNCTIONS) and read more on how to use the command

If what you need pertains more to programming or to the physical characteristics of the ROAD RUNNER itself you will be able to find that information under those headings in the TABLE OF CONTENTS.

The page number designation is as follows:

PG - page number (general headings)

SS - designation refers to the page number in the
SHORT STORY

WS - designation refers to the page number in the
WHOLE STORY

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