DOVE X2

USER'S GUIDE

FCC WARNING

WARNING: This equipment generates, uses, and can radiate radio frequency and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

TABLE OF CONTENTS

THE DOVE X2

INTRODUCTION

Congratulations on your purchase of the new DOVE X2! With it, you will be able to reach new heights in your Multi-Image programming. The DOVE X2 is designed for the professional and engineered for simplicity and dependability.

DESCRIPTION

The DOVE X2 is a computerized dissolve playback module used to control three 35mm slide projectors. The DOVE X2 receives its digital instructions from either a GENESIS Computer or directly from tape. These instructions tell the DOVE X2 to dissolve projector lamps on or off and advance or reverse the slide projectors.

MAIN FEATURES

- Show Pro Software
- 230 Dissolve/Alternate Rates
- Expanded Auxiliary Rates
- Procall X and Version 5
- Playback of Older Version Procall Programming
- Completely Independent Accessing
- Posi-trak
- Cycle-trak
- Under 6-1/2 lbs.

- XLR Connections for Professional Interconnection
- 4-Step Setup Switch
- 3 Outlets for AC Power to Slide Projectors
- Z80B @ 6MHz
- State-of-The-Art Microprocessor
- Battery Backup Connection
- 50/60 Hz Auto Sensing
- Home Tray Sensing
- 2 Auxiliaries

Before you are introduced to the various controls and corresponding functions offered by the DOVE X^2, read the safety instructions that follow.

SAFETY INSTRUCTIONS

PREPARATION:

- Before operating the DOVE X^2, read and understand all the following Safety Instructions as well as the Operating Instructions contained in this manual.

- Heed all WARNINGS and FOLLOW ALL INSTRUCTIONS in this manual.

- Retain the instructions for reference when needed.

LOCATION AND HOOKUP:

- Use a properly grounded three-hole AC outlet (i.e., 115V AC -- Domestic, 220V AC -- Europe).

- Check on the bottom of the unit for the correct voltage setting before plugging in the unit.

- The DOVE X^2 was designed to work properly in either 50/60Hz.

- When plugging into 220 volts AC, use 24 volt lamps similar to the Kodak SAV projector. Remember, not all projectors can be switched to 220V. Check with the manufacturer of the projector for the proper operation.

- The DOVE X^2 should not be used near water.

- The DOVE X^2 should not be placed directly near a heat source.

- The DOVE X^2 should be positioned so that there is proper ventilation. Make sure side air vents are not blocked.

- The power supply cord should be routed so that it is not walked on or pinched by other items.

SERVICING:

- The user should not attempt to service the appliance. Servicing should be performed only by qualified service personnel. Contact your Dealer when any of the following have occurred:

  - The power supply cord or the plug has been damaged.

  - Objects have fallen, or liquid has been spilled into the unit.

  - The DOVE X^2 has been exposed to rain.

  - The DOVE X^2 does not appear to operate normally or exhibits a marked change in performance.

  - The DOVE X^2 has been dropped, or the enclosure damaged.

LOCATION OF CONTROLS
AND THEIR FUNCTIONS
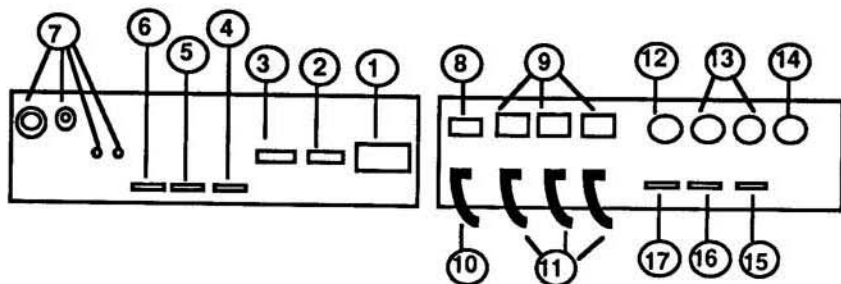
FRONT PANEL   BACK PANEL

FRONT PANEL

1. DOVE Number Switch

   This thumbwheel switch assigns the DOVE X^2 a number from 1 to 5. The DOVE X^2 only reads and executes the information pertaining to that assignment. For older shows (Procall Version 5 and older), this switch indicates screen numbers.

2. Setup

   This switch is used to turn projector lamps on for the purpose of aligning the projectors on one screen area. Press the setup button to check, align and focus the projectors. When you press the button the first time, the B (center) projector lamp powers on. Press the button a second time, and the B and A (top) projectors power on. Press the button a third time, and the B and

C (bottom) projector powers on. Press the button a fourth time and all three projectors, A, B, and C power on. Press the button a fifth time and all three projectors turn their lamps off.

3. Reset

    This button is used to return all projectors to home tray position and turn the lamps off.

4. Ready L.E.D.

    The Ready L.E.D. indicates system readiness, as well as the programming language in use. When steady, the DOVE X^2 is in PROCALL mode (for Version 5 and X), when flashing, the unit is in Show Pro mode. The language is changed automatically after receiving ten good cues. After power-off, then on, the DOVE X^2 returns to the default PROCALL mode.

    The Ready L.E.D. will flash for 2-3 seconds when powered on, this "sign on" indicates the current e-prom level.

5. Amp L.E.D.

    When lit, this indicator signifies that you DOVE X^2 is receiving a signal.

6. MT Error L.E.D.

    When lit, this indicator signifies bad data or a missed cue.

7. Play Link (RCA or XLR)

    This is the data input to your DOVE X^2. Two of each of the jacks are provided to enable daisy-chaining to other DOVES. You now have the capability of inputing using standard RCA phone plugs or using the professional XLR connectors. (See specifications for pin configuration.)

BACK PANEL

8. ON/OFF Power Switch

   This switch applies power to your DOVE X^2. If a red circle is displayed on the power switch, the DOVE X^2 is powered off.

   Note: Before turning the unit on, check that the 115/220 switch on the bottom of the unit is set to the proper voltage.

9. AC Projector Power Outlets

   Three AC outlets are supplied to provide power for each of the three projectors. These outlets are switched from the power switch, and each handles a maximum of 400 watts.

   Note: When switching the DOVE X^2 between 115 to 220 volts, the 115/220 switch does not switch the input voltage to the AC outlets. The AC output will be the same voltage as the input voltage. Check the projector for the correct voltage before plugging it in.

10. AC Power Cord

   Before plugging the cord into the AC outlet, set the 115/220 switch on the bottom of the unit. The DOVE X^2 can operate at 50 or 60hz with no switching required.

   CAUTION: When using 220V, be sure projectors are also at the proper voltage setting and are designed to handle that voltage.

11. Projector Dissolve Cords

   These control cords plug directly into the rear of each projector and control the projector's lamp on/off and forward/reverse functions.

12. Remote Cue

This jack accepts the standard Kodak Hand Control to provide cut, 2 sec. dissolve and reverse, and can also be used for tray switched homing. (See the OPTIONS section of this manual for additional information.)

13. Left and Right Auxiliary

Two auxiliary channels are available on the DOVE X^2. The auxiliary channels can be used for such options as turning on or off a 16mm Projector, house lights or a spot light for the podium. The Auxiliary channel itself can only handle 25 volts AC/DC at I Amp max. If more power is required, an AC Power Box is an available option from AVL. The contact is a dry closure, normally open, momentary close contact for a period of 500 miliseconds. To control the above devices requires a knowledge of their various interfaces. AVL recommends checking with those manufacturers for the accessories and procedures needed to perform those features that you require.

14. Battery Connector

This connector is a standard Kodak EBY plug. A normal 12 VDC battery can be connected; pin 4 positive, pin 5 negative. This feature prevents accidental loss of power to the internal circuitry. (See the CONNECTOR section of this manual for additional information .)

15. Sequence 2/3

This switch tells the DOVE X^2 that it will control either 2 or 3 projectors and sequence them accordingly.

Note: This switch is relevant only when playing old shows programmed from Show Pro III up to PROCALL VER 5 and the remote hand control function.

16. Posi-trak ON/OFF

Posi-trak locks your program to the audio track and automatically resyncs your shows should any showtime mishap occur. When reading Show Pro, the Posi-trak feature is always enabled regardless of the position of this switch.

17. Lamp 115/24

This switch tells the DOVE X^2 what type of projector is being used. If Kodak Ektagraphic B2, E2, E3, AF2, or B2AR is being used, position the switch at the 115 setting. If S-AV is being used, position the switch at the 24 setting. This will allow for the best possible dissolve curve for each projector.

Note: No harm will come to the projectors or to the DOVE X^2 if the wrong lamp is used.

18. 115/220 Switch (Bottom of Unit)

This switch enables the DOVE X^2 to operate on either voltage available to the user. This switch must be set to the proper setting before power is applied to the unit. This switch only switches the DOVE X^2. The switch does not switch the AC outlets (projectors) to the correct operating AC voltage. Normal operating voltage on 115V is 105V to 130V. For 220V, normal operating voltage is 200V to 250V.

SET UP INSTRUCTIONS

You'll find the DOVE X^2 a simple unit to set up, which will reduce your overall set up time dramatically. As you set up your unit, refer to the diagram on Page 13.

PROCEDURE: To Set Up The DOVE X2

1. Turn the power on/off switch to the OFF position (Red Circle showing) before plugging the power cord into an AC outlet.

2. Check that the 115/220 switch is set for the proper voltage before applying power. (Check AC Output voltage if applicable.) The DOVE X^2 will sense 50 or 60Hz and automatically compensate the dissolve curve depending on the setting of the lamp switch located on the back of the unit.

3. Check your AC outlets to see if they are properly wired. Use an AC receptacle tester such as AMP or Ideal #61-035. Proper grounding is essential. Also, check for proper voltage or 115 VAC operation (105V min. to 130V max). (For 220 VAC operation, 200V min to 250V max.)

4. Position your projectors on a 3-tier vertical stand. The DOVE X^2 has three projector cords with either Ektagraphic or S-AV male pin plugs. Insert the A plug into the receptacle of the top projector, the B plug into the center projector, and the C plug into the bottom projector. Then plug the three projector AC cords into the corresponding AC outlets on the rear of the DOVE X^2. This set up is for a standard three projector stack; other configurations are possible. Specific set up procedures should be supplied by the producer of the show.

5. Set lamp 115/24 according to the projectors you are using. 115 for B2, E2, AF2, and B2AR. 24 for S-AV and EIII. (Be certain that the projector lamp switch is set to the **Fan position**.)
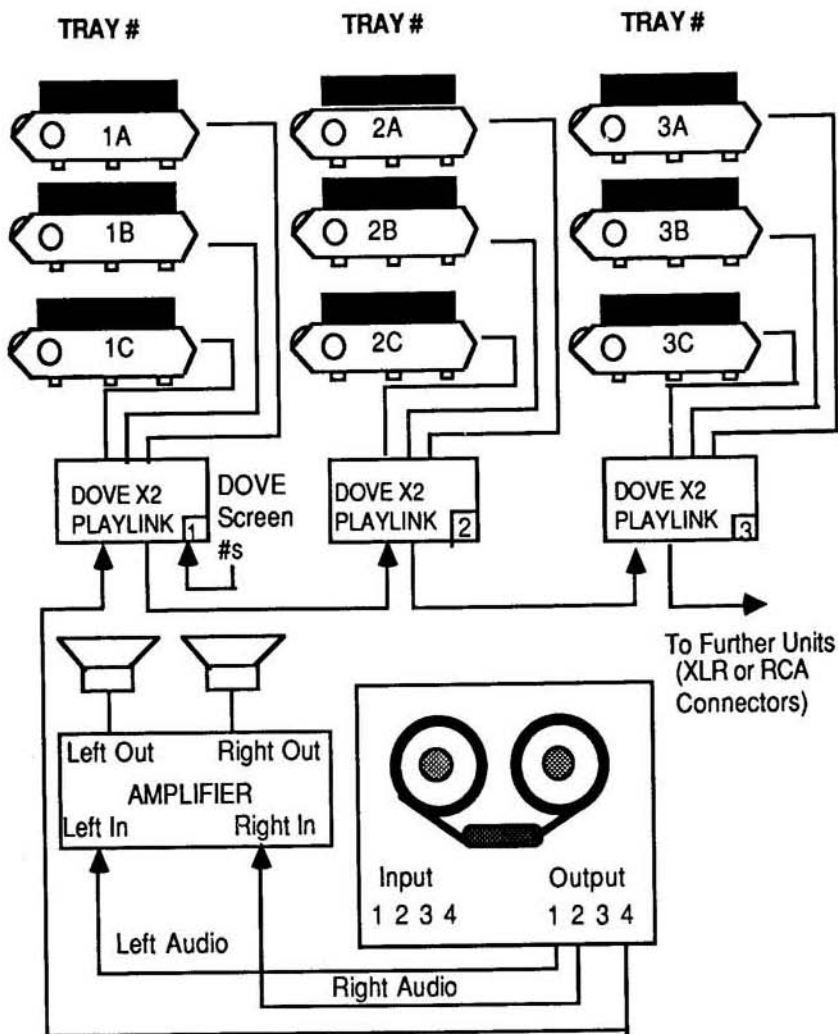
6. Set the sequence 2/3 switch to the proper postion. This position is normally "three".

7. For Procall X-1 and Procall 5, set the Posi-trak switch to the proper position. This position is normally on.

8. If a Kodak remote control is desired, plug it into the rear panel labelled, "Remote Cue." A standard Kodak hand control can be plugged into the back of DOVE X^2 for manual operation. The forward button initiates a 2 Second Dissove, the reverse button initiates a Cut, and the focus button initiates a Sequential Reverse. For domestic users, the Kodak EC-2 (red keydot) should be used. The Kodak EC-3 will not function properly.

9. Connect any auxiliary equipment via the five-prong plug marked "Aux" at the top rear of the DOVE X^2.

10. Plug the DOVE X^2 cord into the AC power outlet.

11. Apply power to the DOVE X^2. For the first 2-3 seconds the Ready L.E.D. will blink rapidly, this is the "sign-on" the DOVE X^2 is now ready to accept shows in the PROCALL languages. The Ready L.E.D. will now be steady and the MT ERR L.E.D. should be off. If Show Pro cues are input, the DOVE X^2 will automatically switch from PROCALL to Show Pro after receiving ten good cues. If PROCALL cues are then input, the unit will switch back to PROCALL. The automatic switcher requires ten good cues or Posi-trak data to change languages. By turning the DOVE X^2 off then on again the unit will be back to the default PROCALL MODE.

OPERATION

Your DOVE X^2 is capable of performing many complex multi-image operations. It is a multi-lingual computer that understands PROCALL, PROCALL X-1 and all SHOW PRO languages. That means that you are completely compatible with old show formats (See page B-1 for a listing of compatible products.) You are also free to use any formats that you create. You can use the DOVE X^2 alone for a 1 screen, 3 projector show or use it as a building block for a multi-screen extravaganza.

If you are running a show with more than 3 projectors, the screen layout of the projectors should be included with the producer's slide trays. You should also be provided with the information on how many projectors are used per screen and whether they are butted together, separated, overlaped, or any combination of these.

Usually 3 projects are used per screen. The illustration that follows shows a 9 projector single screen set up. To perform the set up requires 3 DOVE X^2s, 9 projectors, a tape deck, an amplifier, speakers, and interconnect cables.

TRAY #   TRAY #   TRAY #

○ 1A   ○ 2A   ○ 3A

○ 1B   ○ 2B   ○ 3B

○ 1C   ○ 2C   ○ 3C

DOVE X2 PLAYLINK 1   DOVE Screen #s   DOVE X2 PLAYLINK 2   DOVE X2 PLAYLINK 3

To Further Units (XLR or RCA Connectors)

Left Out   Right Out

AMPLIFIER

Left In   Right In

Input   Output
1 2 3 4   1 2 3 4

Left Audio

Right Audio

To properly set up your configuration, follow the procedures described in this manual under the section entitled "Set Up Instructions."

13

THE INTELLIGENT DOVE X^2

The DOVE X^2 will assist you in the preparation of shows to ensure flawless playback. DOVE X^2 is called "Intelligent" because it offers two special features.

POSI-TRAK

Posi-trak is digital update data that is interwoven with your program cues to keep projector trays and lamps exactly where they should be throughout your show. Posi-trak tells the DOVE X^2 where your trays and lamps should be located. Stopping your tape, rewinding it (even partially), damaging or stretching the tape does not create a problem for the DOVE X^2 -- Posi-trak will resync your trays and lamps automatically. Posi-trak will even resynch your show in the event the data cable is removed and reinserted.

CYCLE-TRAK

Cycle-trak senses a projector advance. If for some unforeseen reason your projector does not advance, the DOVE X^2 acknowledges and accounts for it. When the projector is returned to normal, the DOVE X^2 automatically advances it to the proper tray position. This feature has a twofold advantage. First, Cycle-trak is now dependent upon the projector. This means that the DOVE X^2 will allow faster sequencing of projectors during rapid fire effects and during homing. Second, the DOVE X^2 allows for bulb changes. If a lamp burns out, simply turn off the projector, change the bulb, and turn the projector back on. Cycle-trak allows the DOVE X^2 to advance or reverse your projector (with the lamp off) to return the show to perfect synchronization.

OPTIONS

BATTERY BACKUP

Attach a normal 12 volt battery to the battery connector in the rear of the unit. Connect the positive terminal to pin 4 and the negative terminal to pin 5. If a power failure occurs, all correct status information is retained, so the minute power is returned to the DOVE X^2. The show is resynced.

Note: The DOVE X^2 **does not** charge the battery.
(See the configuration in Appendix A.)

REMOTE CUE

The REMOTE CUE accepts a standard Kodak hand control (Model EC-2 for domestic). Pressing the button marked "forward", gives you a 2 second dissolve and advances the down going projector at the completion of the dissolve. Pressing the "reverse" button, causes a cut on the screen and advances the down going projector. The DOVE^2 will sequence the projectors automatically (see: the SEQUENCE paragraph that follows) each time this button is pressed. Pressing the "focus" button causes a sequential reverse. That is, each time this button is pressed, it will reverse the last projector, turn on its lamp and turn off the lamp of the other projector. These controls allow you to do canned shows, live shows or a combination of both.

SEQUENCE

TWO PROJECTOR CYCLE

If you are using just two projectors, the first projector turned ON will be the TOP or LEFT projector depending on whether your projectors are stacked one over the other, or side by side. Thereafter, the system simply alternates between the two projectors.

THREE PROJECTOR CYCLE

If you are using a three projector stack, the TOP ("A" projector) is turned ON first, the CENTER ("B" projector) second, and the BOTTOM ("C" projector) last. Remember, the next cycle is BACK TO THE TOP, NOT THE CENTER! The cycle is Top to Center to Bottom, and back to the Top.
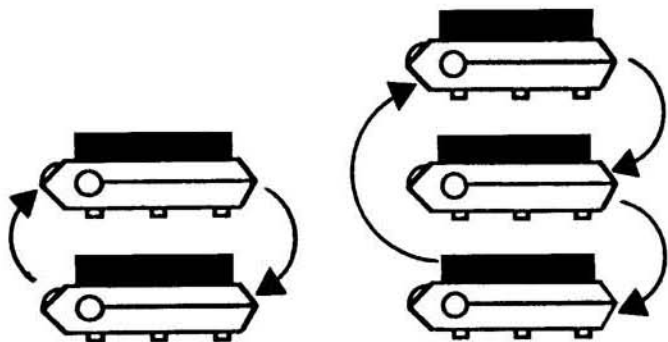
HOME TRAY POSITION INSTRUCTIONS

If a power failure occurs in the middle of your show, your projector tray position will not be at the home position. Once power is restored to a DOVE X^2 that is equipped with a home sense diode, and a Home cue is received or Reset is pressed, the DOVE X^2 will advance the projectors until it senses the mechanical switch closure on the projector. This is the Home position for the DOVE X^2 and the projectors.

Note: When Home Sensing is installed, the remote hand control function is no longer available. Also if wiring to projectors is not connected, when home tray sensing is installed, the DOVE X^2 will not function properly.

HOME TRAY SENSING

Home tray sensing is a feature that allows each projector to mechanically tell the DOVE X^2 when it has reached the Home position. To use this feature with Ektagraphic EII projectors, a normally closed switch must be mounted on each projector so that the switch opens when the tray has reached the Home position. The commons on each switch must be tied together and connected to pin 5 located on the Remote Cue jack of the Domestic DOVE X^2. The other switches for projectors A, B, and C are connected to pins 2, 3 and 1 of the Remote Jack (Domestic) respectively. Refer to the illustration on Page 19. This illustration shows how the projectors are wired and connected for home sensing.

In addition, the cover of the DOVE X^2 must be removed to place a diode into the open holes marked "A" located near the large 4000 uf capacitor. (See: the PC Layout on Page20 for the exact locations.) The band of the diode is to be placed towards the "A" marking using a IN914 diode (available from several manufacturers). This addition allows the Remote Jack on the DOVE X^2 to sense Home Tray positions. Remember, always unplug the DOVE X^2 from the AC outlet before opening the unit for any reason. The installation of this option should only be performed by qualified service personnel.

REMOTE JACK (Female Eby)

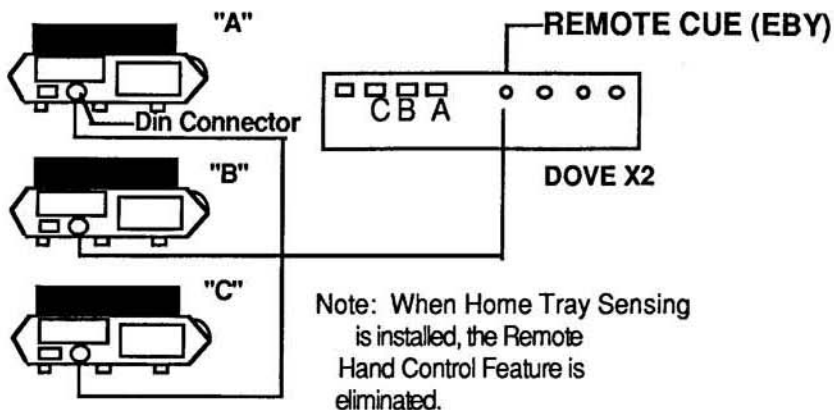| PIN	CONNECTION
1	C Projector
2	A Projector
3	B Projector
5	Common
4	No Connection

SAV projectors already have built-in switches that open when the trays reach position zero. To prepare the IEC version of the DOVE X^2 for Home Tray Sensing, it is necessary to remove the cover (keeping in mind all safety precautions), install the diode in the way mentioned for

Domestic Units, and connect the male and female Molex Connectors which are located at the rear of the unit.
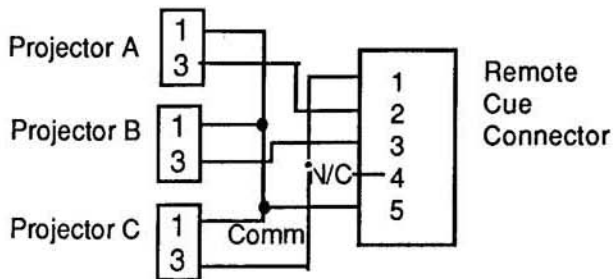
If you have a Kodak Ektagraphic EIII projector, your switch may or may not be built in. Check with your Kodak representative. If your EIII projector has a built-in switch, refer to the wiring diagram on Page 24.

For additional information on these options and modifications, contact the AVL Customer Support Department at (201) 679-5500.

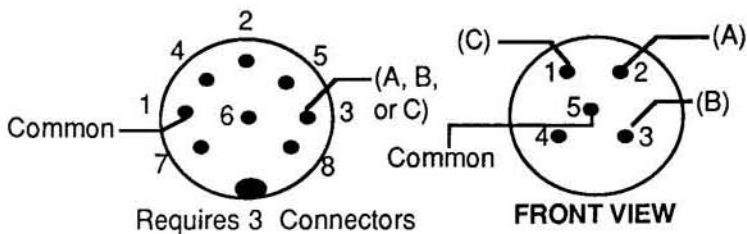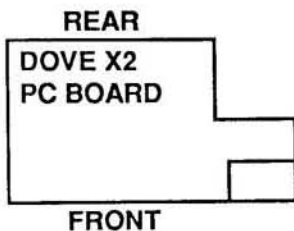# WIRING AND CONNECTION FOR HOME TRAY SENSING ON KODAK EIII PROJECTORS
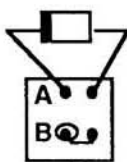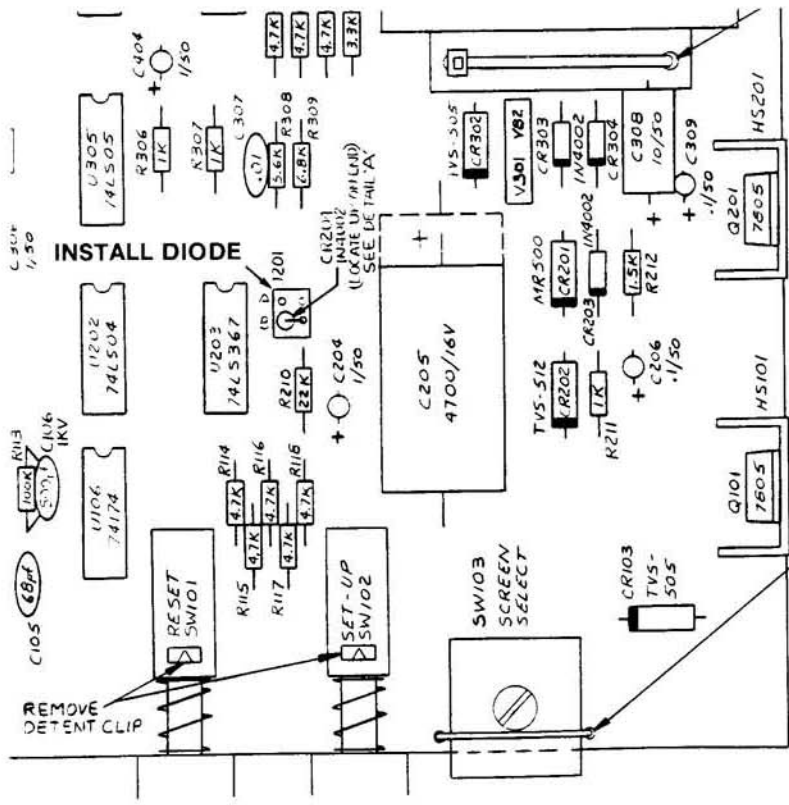

"A"

Din Connector

"B"

"C"

REMOTE CUE (EBY)

C B A

DOVE X2

Note: When Home Tray Sensing is installed, the Remote Hand Control Feature is eliminated.

DIN CONNECTOR

Projector A   1 3

Projector B   1 3

Projector C   1 3

Comm

Remote
Cue
Connector

N/C

1
2
3
4
5

DIN CONNECTOR

Common

2
4   5
1   6   3   (A, B, or C)
7   8

Requires 3 Connectors

REMOTE CUE (EBY)

(C)   (A)
1   2
5
4   3   (B)
Common

FRONT VIEW

19

REAR

**DOVE X2
PC BOARD**

FRONT

**Area Of Board
Where Diode Must
Be Installed**

INSTALL DIODE

REMOVE
DETENT CLIP

ADDITIONAL INFORMATION

CHANGING A FUSE

The fuse is contained within the unit near the internal connectors for the projector cords. Simply remove the blown fuse, replace it with a 1/2 AMP fuse and replace the cover. ALWAYS UNPLUG the DOVE X^2 from the AC outlet before removing the cover to replace a fuse.

Note: At 110V, use 1/2 Amp; at 220/240V, use 1/4 Amp fuse.

CAUTION: If the fuse blows again, consult the AVL Customer Support at (201) 679-5500, or Telex 710-722-9499.

LANGUAGES

The DOVE X^2 can read both PROCALL 5 and PROCALL X-1. Because PROCALL can be read, all current shows can be played through the DOVE X^2. The DOVE X^2 will read the new Show Pro programming software and automatically switch between languages.

AUXILIARIES

In Show Pro two types of contacts are available for programming auxiliaries. A Momentary Pulse to initiate single actions and a Latching contact to turn a function on until you turn it off. You may choose a pulse time from .05 to 1.5 seconds for Momentary Pulse programming or select the Latch on/off function.

Auxiliaries under PROCALL Version 5 are accessed by 1 L and R. They are independent as are the projectors, in PROCALL X. Auxiliaries under PROCALL provide a pulsed .25 msec. closure.

Refer to the table presented on the page that follows.

DOVE #	COMMAND (Procall X-1)	PROCALL (Version 5 & Lower)
1	AX A AX B	AX I Left AX I Right
2	AX C AX D	AX 2 Left AX 2 Right
3	AX E AX F	AX 3 Left AX 3 Right
4	AX G AX H	AX 4 Left AX 4 Right
5	AX I AX J	AX 5 Left AX 5 Right

TROUBLE SHOOTING CHECKLIST

1. No Ready Light

    Check:

    (a)   the power cord and connection.

    (b)   the power switch.

    (c)   the AC outlet to insure proper wiring.

    (d)   the 115/220 switch.

    (e)   the fuse (located inside the unit).

2. MT Error Light

    Check:

    (a)   your play link connections.

    (b)   your building grounds to insure that there is no ground loop among the GENESIS and other DOVE X^2s. Use the AVL Data Booster to eliminate the problem.

    (c)   the length of the data cable run. You may need the AVL Data Booster.

    (d)   replace the audio cables.

    (e)   inadequate data signal from tape deck; when using SHOW PRO tapes, the signal may not provide the "good cues" required to switch modes. You may need to regenerate the tape from the original to cure the problem.

3. No Projector Action.

Check:

(a)   the AMP ok L.E.D. to insure a data link (make sure that data is being received).

(b)   the projector dissolve cables for good connection.

(c)   the DOVE X^2 screen number to make sure that it is set to the correct screen, and that it is reading the proper data.

(d)   the projector by itself.

4. Constant Projector Lamps On.

Check:

(a)   the setup switch.

(b)   the projector power switch. It should be on "fan."

(c)   the projector power cables. They must be plugged into the DOVE X^2 to insure proper phase.

(d)   the voltage to make sure that it is at the proper level.

(e)   the Lamp switch for the proper voltage setting (115/24V).

5. No Apparent Posi-trak.

Check:

(a)   to determine if the Posi-trak switch is OFF.

(b)   if connected to a GENESIS, for the POF (Posi-trak Output Off) in the control command field. It can be cancelled by the PON (Posi-trak Output On) command.

6.   No Dissolve Action on Center Projector (Procall 5 Only).

Check:

(a)   the Sequence 2/3 switch.

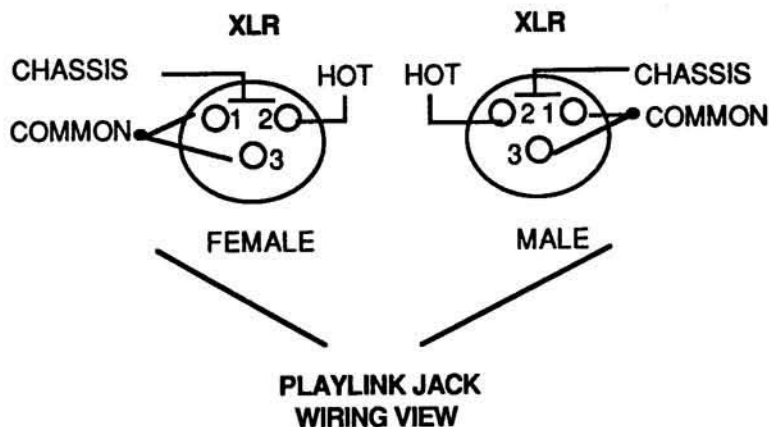7.   Steady AMP L.E.D. light displays even though neither the tape or programmer are running.

Check:

(a)   the Ground Loop Problem.

      1. Unplug all audio connectors.
      2. Plug each one, one at a time into the system to confirm the problem area.
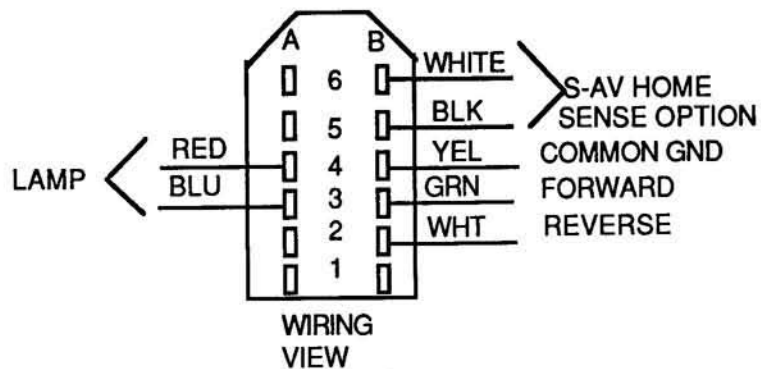   3. Use the AVL Data Booster to eliminate the problem.
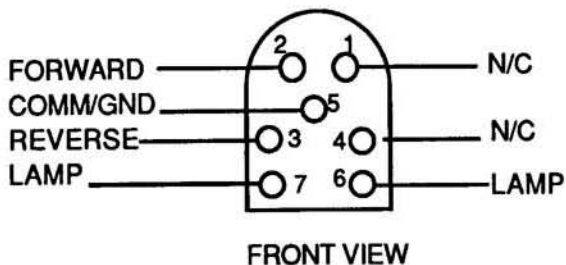
APPENDIX A
CONNECTORS

XLR   **XLR**

CHASSIS ——————— HOT   HOT ——————— CHASSIS

COMMON ●———— O1 2O ——●   O2 1O ——● COMMON

          O3   3O

FEMALE   MALE

PLAYLINK JACK
WIRING VIEW

DISSOLVE CORD

S-AV DISSOLVE CABLE
12 PIN
MALE CONNECTOR

	A	B		
	6		WHITE	S-AV HOME
	5		BLK	SENSE OPTION
RED	4		YEL	COMMON GND
BLU	3		GRN	FORWARD
	2		WHT	REVERSE
	1			

LAMP

WIRING
VIEW

A - 1

DISSOLVE CORD

KODAK DISSOLVE CABLE
7 PIN
MALE CONNECTOR

FORWARD —— 2 1 —— N/C
COMM/GND —— 5
REVERSE —— 3 4 —— N/C
LAMP —— 7 6 —— LAMP

FRONT VIEW

AUXILIARY

KODAK EBY
5 PIN
MALE CONNECTOR

AUX —— 2 1
CONTACT —— 5
3 4

FRONT VIEW

S-AV DIN
6 PIN @ 240°
MALE CONNECTOR

AUX —— 3
CONTACT —— 4 2
6
5 1
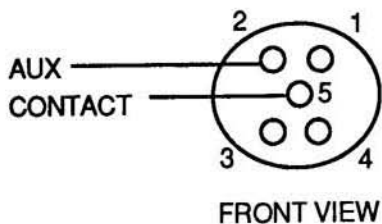
FRONT VIEW

REMOTE CUE

KODAK EBY
5 SOCKET
FEMALE RECEPTACLE
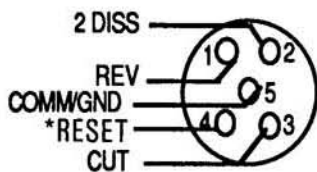
S-AV DIN
6 SOCKET @ 240°
MALE CONNECTOR

2 DISS
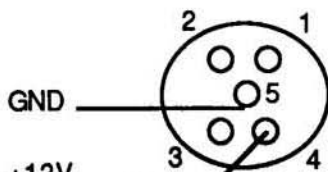REV
COMM/GND
*RESET
CUT

FRONT VIEW

CUT
REV
2 DISS
COMM/GND
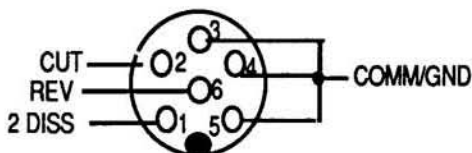
FRONT VIEW

*Pin 4 always provides reset using home sense regardless of diode presence.

BATTERY CABLE

KODAK EBY
5 PIN
MALE CONNECTOR

S-AV DIN
6 PIN @ 240°
MALE CONNECTOR

GND
+12V
FRONT VIEW
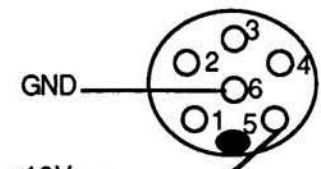
GND
+12V
FRONT VIEW

APPENDIX B
DOVE X2 COMPATIBLE PROGRAMS

The DOVE X2 can play back all show programs

- Genesis Show Pro
- Genesis VER 5 and X
- Eagle II VER 5 and X
- Road Runner VER 5 and X
- Standard Eagle VER 1 through 5
- Golden Eagle VER 1 through 5
- Coyote
- Chipmunk
- FX2
- PDs 2/3
- Show PRO 5
- Show PRO III*

*   If AUX O and Standby have been programmed
    SHOW PRO III, these commands will not play
    on the above equipment.