LIGHTBOARD M/1

OPERATOR'S MANUAL

P/N 2-450045-020(A)

Strand
Lighting

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LIGHTBOARD M/1
MANUAL

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INTRODUCTION TO LIGHTBOARD M/1

LIGHTBOARD M/1 is a microprocessor based memory control system equipped with two-scene preset as well as submaster controllers. M/1's greatest virtues are its ease of operation, flexibiity, and range of operations. The command language is straight forward and easily assimilated. Operation follows the pattern of previous Strand control systems with the exception that more commands are immediate action; meaning that an "execute" command is often unnecessary, saving operational time and key strokes.

I.) **FEATURES**

    A.) 156 <u>memories</u>:

        1.) 132 with timed split cross-fade control and autosequencing playback
        2.) 24 permanently devoted to submasters
        3.) 8 assigned to analog inputs
        4.) 24 permanently assigned to effects

    B.) Capacity of 60 <u>control channels</u> in a 2-scene preset arrangement with:

        1.) Timed split cross-fade control
        2.) Bump buttons
        3.) 12 channels per module

    C.) Capacity of 24 overlapping <u>submasters</u> with:

        1.) Bump buttons
        2.) 24 controllers in a single module

    D.) Special <u>effects generator</u> with:

        1.) Master level control
        2.) Channel or Memory chase
        3.) Rotary step time control

    E.) Capacity of 384 <u>dimmers</u> with:

        1.) Electronic proportional patch
        2.) Direct dimmer access

II.) WORDS OF ADVICE

A.) Environment

Being a microprocessor based system, a good computer environment is most suitable for proper operation of LIGHTBOARD M/1:

1.) Temperature: 20 degrees + or - 5 degrees centigrade or 60 degrees + or - 9 degrees Fahrenheit.

2.) Humidity: maximum 90% relative humidity with no condensation.

3.) Dust: Good office environment.

4.) Static Electricity: Eliminate any source of ambient static electricity.

B.) Power Supply

The primary power should be exclusively for the console and should not be used for other devices.
The console should always be connected to a 120 V., 60 Hz., 15 A. source.
While a power conditioner (line voltage regulator) is not required, it is recommended that a fused multi-tap outlet be employed to protect against power surge.
The console should remain connected to the power supply unless maintenance is being performed or the console is not in use for long periods of time.

C.) Memory Retention

LIGHTBOARD M/1 is equipped with "Super Cap" capicitors capable of maintaining memory for 72 hours in case of primary power failure.

D.) Questions and/or Problems

Questions or problems concerning LIGHTBOARD M/1 should first be referred to your local Strand service representative and then to the nearest Strand field service office.

III.) HOW TO USE THIS MANUAL

The three remaining sections of this manual are designed to help you understand and operate LIGHTBOARD M/1.

Section Two identifies each component of the three LIGHTBOARD M/1 modules and briefly comments on individual functions where necessary.

Section Three explains the various functions performed by LIGHTBOARD M/1. This section is the most explicit and detailed of the three.

Section Four is a quick reference guide to basic system functions. Use this section for information on "How to . . ." with very little explanation.

Any one of the three sections can be read and understood independently of the others. However, for the most thorough operational understanding, it is recommended that each section be read completely and in order.

SYSTEM DESCRIPTION

I.)   THE COMMAND MODULE
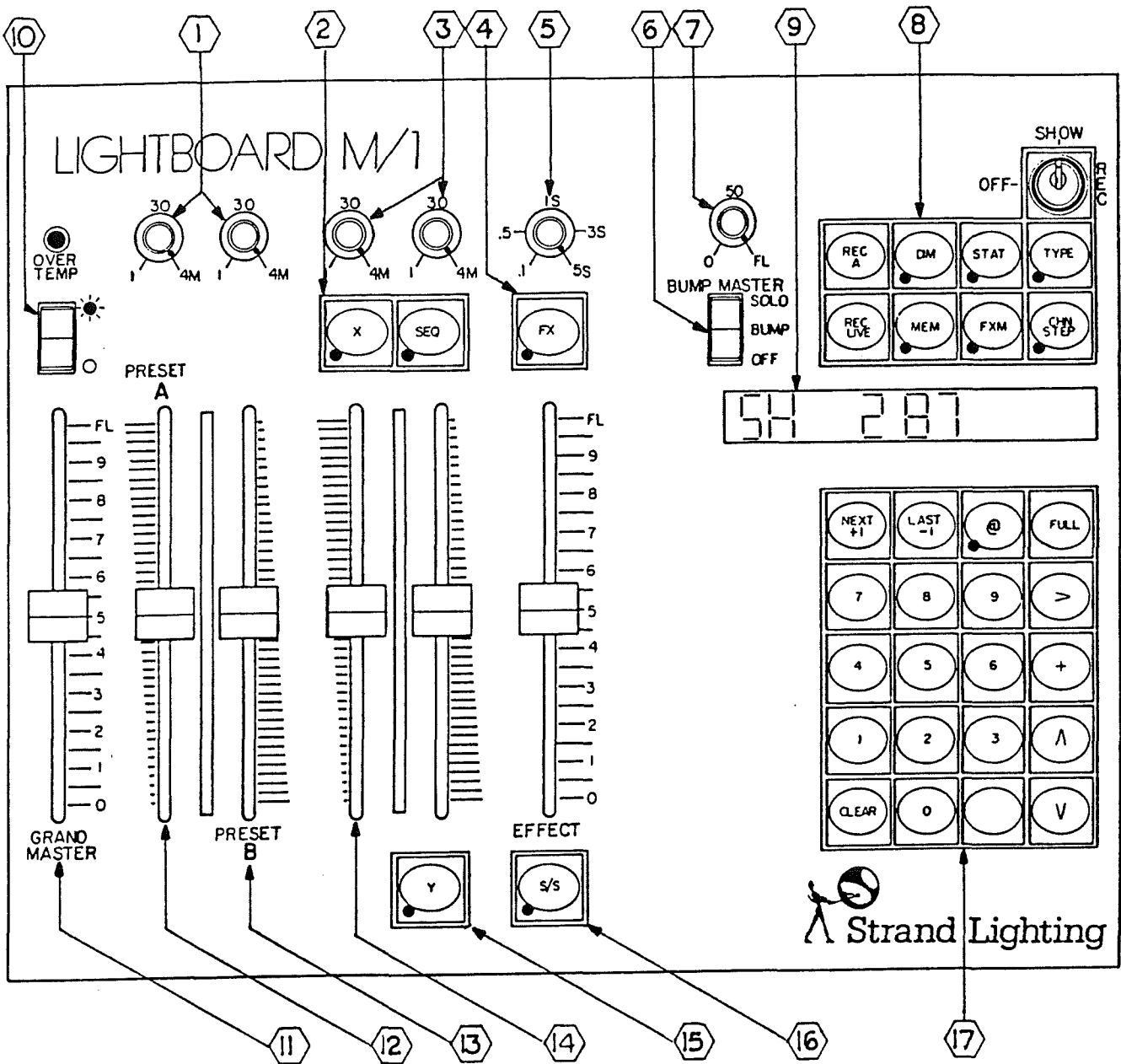
1.) A-B fader time control -- rotary dials

2.) X fader push button

3.) X-Y fader time control -- rotary dials

4.) FX (Effects) fader push button

5.) Effect step rate control -- rotary dial

6.) Three position bump switch: solo, bump, or off

7.) Bump level control -- rotary dial

8.) Command key pad
    a.) <u>Key</u> <u>switch</u> = Three position: off, show, and
                            record
    b.) <u>REC</u> <u>A</u> = Record contents of preset A
    c.) <u>DIM</u> = Dimmer
    d.) <u>STAT</u> = Status
    e.) <u>TYPE</u> = Effect type
    f.) <u>REC</u> <u>LIVE</u> = Record stage
    g.) <u>MEM</u> = Memory
    h.) <u>FXM</u> = Effects Memory
    i.) <u>CHN/STEP</u> = Channel or Effect Step

9.) 10-digit LED display window

10.) Master blackout switch

11.) Grand Master

12.) Preset A Fader

13.) Preset B Fader

14.) X Fader for memory control

15.) Y Fader for memory control

16.) Effect stop/start pushbutton

17.) Display key pad
    a.) <u>NEXT</u> <u>+1</u> = Next in sequence
    b.) <u>LAST</u> <u>-1</u> = Previous in sequence
    c.) <u>@</u> = At
    d.) <u>0-9</u> = Numeric keys
    e.) <u>></u> = Through
    f.) <u>+</u> = And
    g.) <u>∧</u> = Increase
    h.) <u>CLEAR</u>
    i.) <u>V</u> = Decrease

II.) SUBMASTER MODULE

BUMP BUTTONS
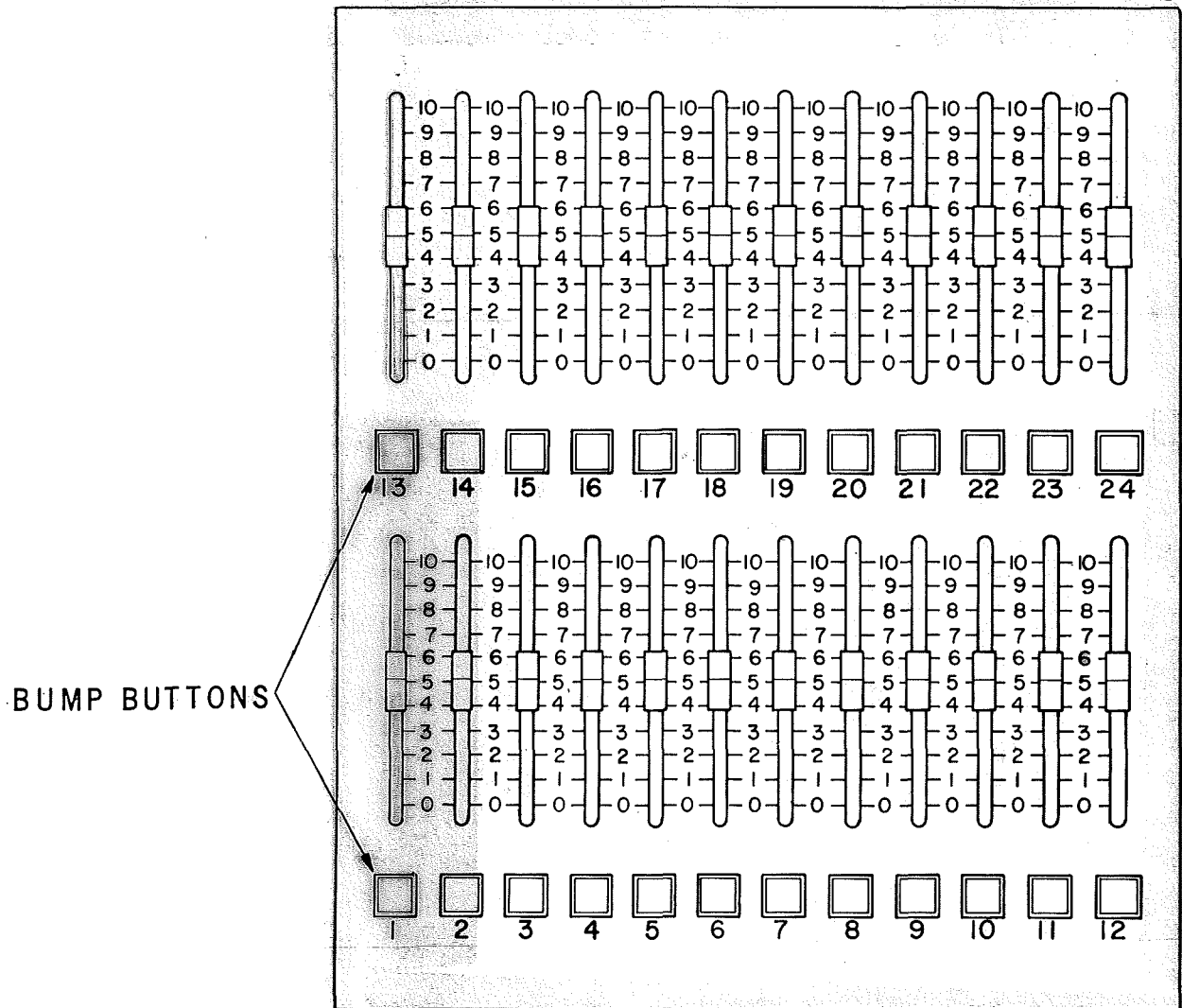
III.) CHANNEL MODULE

CHANNEL "A" →

CHANNEL "B" →
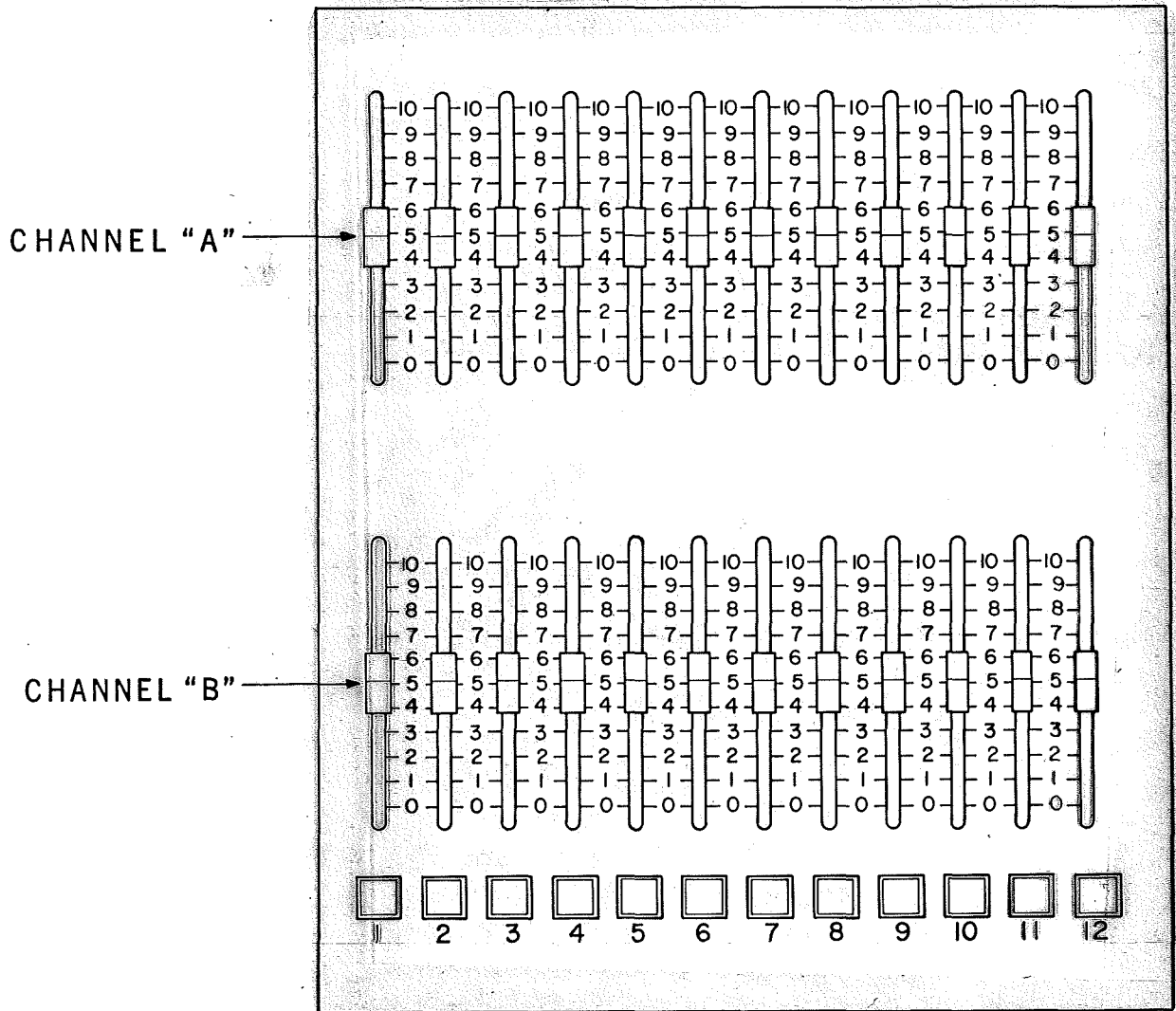
SYSTEM FUNCTIONS

I.) THE KEY SWITCH

LIGHTBOARD M/1 has a three-position key switch located just above the upper keypad of the Command Module. This lock is provided to prohibit unauthorized use as well as to act as a selector switch. The three positions are:

> OFF -- console output is disabled
>   **Note:** The off position does not turn power off. It is read by the processor as "output zero to all console displays and dimmers".
> SHOW -- enables playback functions only
> REC -- Record: all console functions are enabled

II.) CHANNEL MODULE MANUAL PRESETS

A.) INDIVIDUAL CONTROLLERS

LIGHTBOARD M/1 has two rows of manual controllers which function as a two-scene preset. The top row is referred to as Scene A and the bottom row as Scene B. The combined outputs of the controllers in either one of the scenes is called a preset. Each controller will set the level of its corresponding channel in the preset from zero to 100%.

BUMP BUTTONS -- Associated with each channel and located under preset Scene B are momentary-action pushbuttons. The operation of these buttons is determined by the position of the three-position bump master switch located above the Command Module's LED display. This switch functions as follows:

Upper Position -- labeled SOLO: The bump button will flash the channel to an assigned level and force all other channels to zero. This action will not affect those channels being controlled by submasters.

Middle Position -- labeled BUMP: The bump button will flash the channel to an assigned level and have no effect on other channels.

Bottom Position -- labeled OFF: The bump buttons will be inoperative.

The assigned level is determined by the position of the bump
level control rotary dial also located in the Command
Module. The range of this dial is from zero to full.

B.) PRESETS (A-B) CROSSFADER

        The A-B split crossfaders located in the Command
Module act as master controllers over their respective
presets. When both faders are in the upper position, preset
A is output. When both faders are in the lower position,
preset B is output. In any mid-range position, both presets
will be output in a proportional manner.
    These are pile-on and dipless crossfaders, each with a
LED that tracks its travel. The LED associated with the
cross-fader will track a fade whether it is timed or manual.

        TIME CONTROL -- Above each of the two faders is a
time control rotary dial. The range of this dial is from
one second to four minutes.
    A timed crossfade is initiated by moving the fader to
the opposite end of its range. Such a fade may be halted at
any time by matching the progress (as indicated by the LED)
with the fader handle. In addition, if a timed fade has
been halted, the fade may be reversed by continuing the
fader handle in the reverse direction.

C.) PRESET OPERATION

        To set a manual preset on stage, the operator fol-
lows these steps:

    1.) Make sure that the grand master is up, the
         blackout button on, and the A playback fader up.
    2.) Channels selected on Scene A will now be displayed
         on stage.

    Presets may be recorded into memory either from a live
stage picture or "blind" from Scene A.

To record a live stage picture, select a memory number by
depressing the MEM key followed by a number key (1 - 132).
Your selection will appear in the first of the LED display
windows. Then, simply depress the REC LIVE key:

            (MEM) [number]   (REC LIVE)

The action is immediate. LIGHTBOARD M/1 confirms by dis-
playing three dots in the last LED display window.

To record a preset blind, make sure that the A fader handle is down and that the desired channels are set on the preset A (upper) bank. Select a memory number as above and then depress the REC A key:

(MEM) [number]   (REC A)

III.) SUBMASTERS

The LIGHTBOARD M/1 submaster module contains 24 controllers which allow for proportional, overlapping, and pile-on control of lighting groups. Outputs from various submaster controllers are combined on a highest-takes-precedence basis.

SUBMASTER MEMORY SELECTION -- Submasters 1 - 24 control the contents of memories # 101 - 124. Therefore, submaster # 1 will control the recorded contents of memory # 101, submaster # 2 controls memory # 102, etc.

BUMP BUTTONS -- Associated with and located under each submaster controller is a momentary-action pushbutton. These buttons function exactly like the channel controller bump buttons. Operation is determined by the position of the bump button switch:

Upper Postion -- labeled SOLO: The bump button will flash the submaster to an assigned level and force all other subs to zero. This action only affects those channels controlled by submasters.

Middle postion -- labeled BUMP: The bump button will flash the submaster to the assigned level and have no effect on other subs.

Bottom postion -- labeled OFF: The bump button will be inoperative.

The level at which a submaster will bump is determined by the setting of the bump level control rotary dial.

SUBMASTER OPERATION -- Submasters allow for the proportional control of any number of channels with a single controller.

Submaster operation is affected by the grand master and blackout switch. Any submaster memory may be cross-faded with any other memory by using the memories (X-Y) crossfader.

IV.) MEMORIES (X-Y) CROSSFADER

The X-Y split crossfaders located in the Command Module act as master controllers over information stored in LIGHTBOARD M/1's memory. Function is identical to the A-B presets crossfader. When both the X and Y fader handles are in the top position, the memory assigned to the X fader is output. When both fader handles are in the bottom position, the memory assigned to the Y fader is output.

TIME CONTROL -- Above each of the two faders is a time control rotary dial which functions identically to those above the preset crossfaders. Time range is from one second to four minutes.

X and Y PUSHBUTTONS -- These momentary-action buttons cause the memory selected on the command keypad to be loaded onto the designated fader.

The current status of either the X or Y faders may be checked by depressing the STAT (STATUS) button followed by either the X or Y pushbutton:

(STAT) (X) or (Y)

The number of the memory currently active on the selected fader will appear in the first window of the LED display window and the fade time as set on the rotary dial will show in the last window (dynamic display):

```
┌────────────────────────────────────┐
│  0 4 7              1.3 0           │
└────────────────────────────────────┘
  MEM No.                    TIME
```

If nothing is currently loaded on the selected fader, the LED display will show three dashes in the first window and the time as set on the rotary dial in the third window.

SEQUENCE PUSHBUTTON -- When depressed this pushbutton causes the next memory in order to be automatically loaded on the outgoing fader handle as soon as the fade is complete. The sequence button LED will illuminate when sequence is active.

MEMORY FADER OPERATION -- In order to load a
memory onto a memory fader, depress the MEM key followed by
the desired memory number. Then depress either the X or Y
pushbutton:

(MEM) [number] "load" (X) or "load" (Y)

The memory is not automatically cleared from the controller
when a crossfade is completed unless sequence is being used.
However, memory # 0 has been permanently assigned as a
blackout memory and can be used to clear the crossfader.
When memory # 0 is loaded, the fader is immediately emptied
and the LED extinguished.

Memories # 1 - 132 can be played back on the X/Y crossfader.

V.)   EFFECTS (FX)

LIGHTBOARD M/1 offers a pre-programmed forward
chase of channels or memories controlled by a master fader
labeled FX. This fader acts as a proportional master over
the effect being output.

A.)   EFFECTS CONTROLS

TIME CONTROL -- The time control rotary dial lo-
cated above the effects fader will adjust the effect step
time from .1 second to 3 seconds.

FX PUSHBUTTON -- Located directly above the ef-
fects fader is a momentary-action pushbutton labeled FX.
Like the X-Y fader buttons, depressing the FX pushbutton
will load an effect onto the fader.
Loading memory # 0 (blackout memory) onto the FX fader will
clear the fader and extinguish the FX LED.

Current status of the FX fader can be determined by depress-
ing the STAT (STATUS) button followed by the FX button:

(STAT)   (FX)

The memory number loaded onto the fader as well as the
effect's step time as set on the rotary dial will appear in
the LED display windows:

```
┌─────────────────────────────────┐
│                                 │
│   1 4 2               0.9       │
│                                 │
└─────────────────────────────────┘
```
FXM No.   **STEP TIME**

STOP/START (S/S) BUTTON -- The effects stop/start
button located under the effects fader is an alternate ac-
tion button which initiates or terminates the running of the
selected effect.
If an effect is halted by this button with the FX fader
still up, the effect end state will remain live on stage.
It is then possible to fade the end state out with the FX
fader.
The stop/start button LED is lit when an effect is running.

B.) CREATING AN EFFECT

An effect requires one of LIGHTBOARD M/1's memories --
133 - 156. Any single effect memory can have up to 60
steps. Each step can consist of either a single channel or
a combination of channels in the form of a memory. In order
to design an effect, the operator follows these steps:

   a.) Select a memory number by depressing FXM followed
        by the desired number (133 - 156).
   b.) Select the step number by depressing the CHN/STEP
        button followed by the desired number (1 - 60).
   c.) Select the memory or channel number to be used by
        depressing the AT (@) key followed by the desired
        number.

        (FXM) [number]   (STEP) [number]   (AT) [number]

The LED display window will confirm your selections:

```
┌─────────────────────────────────┐
│   1 3 3     0 1     0 5 0        │
└─────────────────────────────────┘
```
FXM No.   **STEP**   **CHN No.**

   d.) Continue (return to step b) until complete.
   e.) When finished, terminate your effect by going to
        the next step and depressing the AT (@) key fol-
        lowed by the THROUGH (>) key.
   f.) Select an effect type by depressing the TYPE key
        followed by either the number 1 or 9:

                # 1 for a forward chase of channels
                              or
                # 9 for a forward chase of memories

        Default is Type # 1.

C.) EFFECTS OPERATION

To define, load, and run a chase the operator follows five steps:

- a.) Depress the FXM button followed by the desired memory number (133 - 156).
- b.) Depress the FX button to load the memory onto the fader.
- c.) Select the desired effect step time on the time control rotary dial (STAT will display).
- d.) Move the fader to full.
- e.) Depress the S/S button to begin the effect.

Steps d.) and e.) may be reversed.

The effect will continue to run until it is either faded out or stopped by depressing the S/S button.

This effect memory will remain loaded until removed by loading and playback of memory # 0 (Blackout Memory).

VI.) KEYPAD CONTROL

The Command Module contains two keypads: the command keypad located above the three-window LED display and the entry keypad located directly below the display windows. Direct entry and modification of memory and patch data can be achieved through these keypads.

A.) COMMAND KEYPAD BUTTONS

Specific buttons on the command keypad have LEDs which illuminate to indicate currently selected modes.
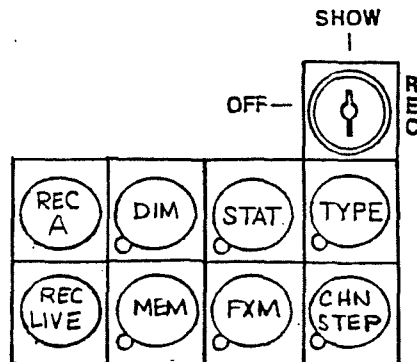
(REC A) BUTTON -- Depressing the REC A button after selecting a memory number will record the current channel readings of Scene A into the selected memory.

(DIM) BUTTON -- Depressing the DIM button will access the patch mode or allow direct dimmer control. If a selected dimmer number is followed by depressing the CHN (channel) button, patch is enabled.
If the DIM button is followed by the @ (AT) key, the operator will have direct dimmer control (not channel control). This function is recommended for dimmer or focus checks and allows access to a dimmer even if it is not currently patched.

(STAT) BUTTON -- The STAT button is used to determine the current status of LIGHTBOARD M/1's three assignable faders: X, Y, and FX. Depressing the STAT button followed by any one of the fader buttons will cause the currently active memory number to be displayed in the first of the LED windows and current time (either fade or step) to be displayed in the third window. This display is dynamic.

(TYPE) BUTTON -- Depressing this button allows the operator to select the type of effect desired: either a forward chase of channels (type # 1) or a forward chase of memories (type # 9).

Default is type # 1 (forward chase of channels).

(REC LIVE) BUTTON -- Depressing the REC LIVE button after selecting a memory number will record the current stage picture (excluding effects) into the selected memory.

(MEM) BUTTON -- Depressing the MEM button allows for memory selection for recording or playback. As soon as MEM is depressed, the LED display windows will clear and await a number selection from the Entry Keypad. The system will accept Memories # 0 - 132, with Memory # 0 being a permanent blackout.

(FXM) BUTTON -- Depressing the effects memory button allows the operator to access any of the effects memories (# 133 - 156).

(CHN / STEP) BUTTON -- Depressing the CHN/STEP button while working on an effect will allow the operator to select an effect step number. If working on a memory, the operator may select a channel or channels. Otherwise, this button allows the operator to select a channel number for patching.

B.)   ENTRY KEYPAD BUTTONS

          (NEXT +1) BUTTON -- The NEXT or +1 button allows
the operator to step in ascending order through a series of
memories, channels, dimmers, or effect steps as displayed in
the LED windows.

          (LAST -1) BUTTON -- The LAST or -1 button allows
the operator to step in descending order through a series of
memories, channels, dimmers, or effect steps as displayed in
the LED windows.

          (@) BUTTON -- The @ key is used in a command line
to enter information in the third widow of the LED display.
An example is in setting a dimmer AT a level:
                    DIM [number] @   [number]

          (FULL) BUTTON -- This button is used to set a
level at full or 100%.

          (>) BUTTON -- The through key is used in con-
structing a list. For instance, typing DIM 12 > 26 is much
easier than typing each dimmer number.

          (+) BUTTON -- The and key is used to construct a
list, as in Channels 16 + 17. The > and + keys may be used
together: Channels 16 > 20 + 25.

          (∧) BUTTON -- The increase button will allow the
operator to scroll channel and dimmer levels up.

(CLEAR) BUTTON -- The CLEAR key will clear the three-window LED display, but will <u>not</u> clear a fader (use the blackout memory # 0 to clear a fader).

(V) BUTTON -- The decrease button will allow the operator to scroll channel and dimmer levels down.

C.) THE MEMORY MODE

LIGHTBOARD M/1 has a total of 156 memories which are allocated as follows:

# 0	Permanently assigned blackout
# 1 - 132	Regular Memories --
	# 101 - 124 assigned to Submasters
	# 125 - 132 assigned to analog
	inputs
# 133 - 156	Effect memories only

In order to load a preset into the memory, the MEM button must be depressed. As soon as this happens, the LED display will clear and any number or set of numbers (0 - 132) selected from the entry keypad will appear in the first of the three LED windows. Any number over 132 will not be accepted by the system.

Depressing the NEXT +1 key will increment the selected memory number, while depressing the LAST -1 key will decrement the memory number.
The C or CLEAR key will always erase the currently selected memory number.

<u>COPY</u> <u>FUNCTION</u> -- If the operator wishes to copy one memory to another, the following keystrokes are necessary:

(MEM) [number]   (@) [number]   (FULL)

Whereas the first number entered is the memory to be copied from and the second number entered is the memory to be copied to. It is necessary to depress the FULL key to confirm.

The display window will confirm the completion of this action with three LED periods in the center window:

```
 ┌─────────────────────────────────────┐
 │  008  .  .  .  009                   │
 └─────────────────────────────────────┘
```

MEM No.   **MEM No.**

CLEARING MEMORY -- To clear **all** memory, the operator depresses the MEM key while switching the console on. Clearing memory does not effect patch.

D.) THE DIMMER MODE

Direct dimmer control.

This mode is used to set a dimmer at a specific level, and will be very helpful in doing dimmer checks.

After depressing the DIM button and selecting a dimmer number on the keypad, the operator can set that dimmer at a level by depressing the AT (@) key and then selecting a level from 0 through 100% :

(DIM) [number]   @   [number]

Default for dimmer level is full or 100%.

The NEXT +1 key will set the next dimmer to level.
The LAST -1 key will set the previous dimmer to level.
The C (CLEAR) key will erase the last dimmer number listed.

E.) THE MEMORY CHANNEL MODE

This mode is selected in order to directly modify channel levels in memory.

The operator begins by selecting a memory number in MEM mode. This selection will appear in the first LED window.
Next, the CHN pushbutton is depressed. After selecting this mode the operator lists one or more channel numbers.

The + (AND) and > (THROUGH) keys may be used to construct a list of numbers; while the NEXT +1 and LAST -1 keys can be used to alter a number displayed. The last number selected in a list will be displayed in the second LED window.

After selecting the channel or channels, the operator will specify a level using the @ (AT) key followed by a number selection from zero to 100%:

(MEM) [number] (CHN) [number(s)] (@) [level number]

Default for level is full or 100%.

3-11

The ∧ (INCREASE) or V (DECREASE) keys can be used to raise and lower channel levels.

The C (CLEAR) key will erase the last number listed.

```
┌─────────────────────────────────────┐
│  0 7 5      1 9          7 5  │
└─────────────────────────────────────┘
   MEM No.      CHN No.        LEVEL
```

F.) THE DIMMER CHANNEL (PATCH) MODE

           This mode is selected to enter dimmer-to-channel patch information.

     The operator begins by depressing the DIM pushbutton. After selecting this mode, the operator will list one or more dimmer numbers.

The + (AND) and > (THROUGH) keys may be used to list a series of dimmers. The last number selected in the list will be shown in the first window of the LED display.

     After selecting a dimmer number or numbers, the operator will depress the CHN (CHANNEL) key followed by a single channel number:

          (DIM) [number(s)]   (CHN) [number]

The channel level defaults to full or 100%.

           PROPORTIONAL LEVELS -- If it is desirable to set one or more dimmers at a level other than full, the following action is taken:

(DIM) [number(s)]   (CHN) [number]   (@) [proportion number]

The LED windows display this information as follows:

```
┌─────────────────────────────────────┐
│  0 4 0      1 2          8 0  │
└─────────────────────────────────────┘
   DIM No.      CHN No.        PRO. No.
```

3-12

The NEXT +1 and the LAST -1 keys may be used respectively to increment and decrement the last dimmer or channel number selected.
The ∧ (INCREASE) and V (DECREASE) keys may be used to raise or lower proportional levels.
The C (CLEAR) key will clear the last number entered.

CLEARING PATCH AND MEMORY -- To clear patch and memory, the operator depresses the CLEAR key while switching the console on. A reset patch will default to a one to one dimmer to channel relationship.

VII.) ANALOG INPUTS

LIGHTBOARD M/1 is equipped with the capacity for eight 0 - 5 volt analog inputs. A single connector located in the rear panel of the command module will accept these control signals.

The eight inputs are designed to access memory stores # 125 - 132. The most common application for these analog inputs will be remote submaster control.

HOW TO . . .

A.) ADDRESS A CHANNEL(S)

Method A: USING THE CHANNEL MODULE
    1.)   Make sure that the Grand Master is up and the Blackout
          switch is in the proper position.
    2.)   Move the A Playback Master to 10 or full.
    3.)   Select channel level(s) on Scene A of the
          channel module. Levels will appear on stage.

Method B: USING THE KEYPAD
    1.)   Depress MEM (MEMORY) button and select a memory
          number.
    2.)   Depress the X button above the X Playback fader.
    3.)   Make sure that the Grand Master is up and the Blackout
          switch is in the proper position.
    4.)   Move the X Playback Fader up to 10 or Full.
    5.)   Depress CHN (CHANNEL) button and select a channel
          number. You now have the selected channel live
          on stage.
    6.)   Depress the @ (AT) button followed by a level.

B.) RECORD INTO MEMORY

Method A: MANUAL-LIVE
    1.)   Set a manual preset on stage (see A above).
    2.)   Depress MEM (MEMORY) button and select a memory
          number.
    3.)   Depress REC LIVE (RECORD LIVE) button.

Method B: MANUAL-BLIND
    1.)   Set a manual preset on Scene A with playback
          fader at 0 (off).
    2.)   Depress MEM (MEMORY) button and select a memory
          number.
    3.)   Depress REC A (RECORD A) button.

Method C: KEY PAD
        1.) Depress MEM (MEMORY) button and select a memory
             number.
        2.) Depress CHN (CHANNEL) button and select channel
             number(s).
        3.) Depress @ (AT) key and select level (default is
             full).
        4.) Continue (return to step # 2).
        5.) When complete, depress REC LIVE.

C.)   PLAYBACK A RECORDED MEMORY

        1.) Depress MEM (MEMORY) button and select a memory
             number.
        2.) Depress the X button above the X Playback Fader.
        3.) Make sure the Grand Master is up and the Blackout
             switch is in the proper position.
        4.) Move the X Playback Fader to 10 or Full. Selected
             memory will appear on stage.

D.)   RECORD A SUBMASTER

        1.) Depress MEM button and select a memory number between
             101 and 124 inclusive.
        2.) Proceed as indicated in "RECORD INTO MEMORY" (B --
             previous page).

E.)   RECORD AN EFFECT

        1.) Depress FXM and select an effect memory number between
             133 and 156 inclusive.
        2.) Depress CHN/STEP key and select an effect step
             number (1-60).
        3.) Depress the AT (@) key and select a memory or
             channel number.
        4.) Continue (Return to step # 2) until complete.
        5.) When complete, go to the next step and depress the AT
             (@) key followed by the THROUGH (>) key. This action
             will terminate the effect.
        6.) Depress TYPE and select an effect type--# 1 for
             channels or # 9 for memories (default is type
             # 1).

F.) PLAYBACK AN EFFECT

    1.) Depress FXM and select an effects memory number (133-156).
    2.) Depress FX button to load memory onto fader.
    3.) Move the effects fader to 10 or full.
    4.) Depress STOP/START (S/S) button to begin effect.

G.) EDIT AN EFFECT

    1.) Select the effect memory number to be edited.
    2.) Select the step number to be edited.
    3.) Depress the @ key and select the new channel or memory number.
    4.) Repeat steps # 2 and # 3 until complete.

H.) CLEAR THE EFFECTS FADER

    1.) Depress the FXM key and select Memory # 0 (Blackout).
    2.) Load Memory # 0 onto the Effects Fader by depressing the FX button.
    3.) Play the blackout memory by depressing the STOP/START button twice.

I.) COPY A RECORDED MEMORY INTO ANOTHER

    1.) Depress MEM and select the memory number to copy from.
    2.) Depress @ and select a memory number to copy to.
    3.) Depress FULL to confirm.

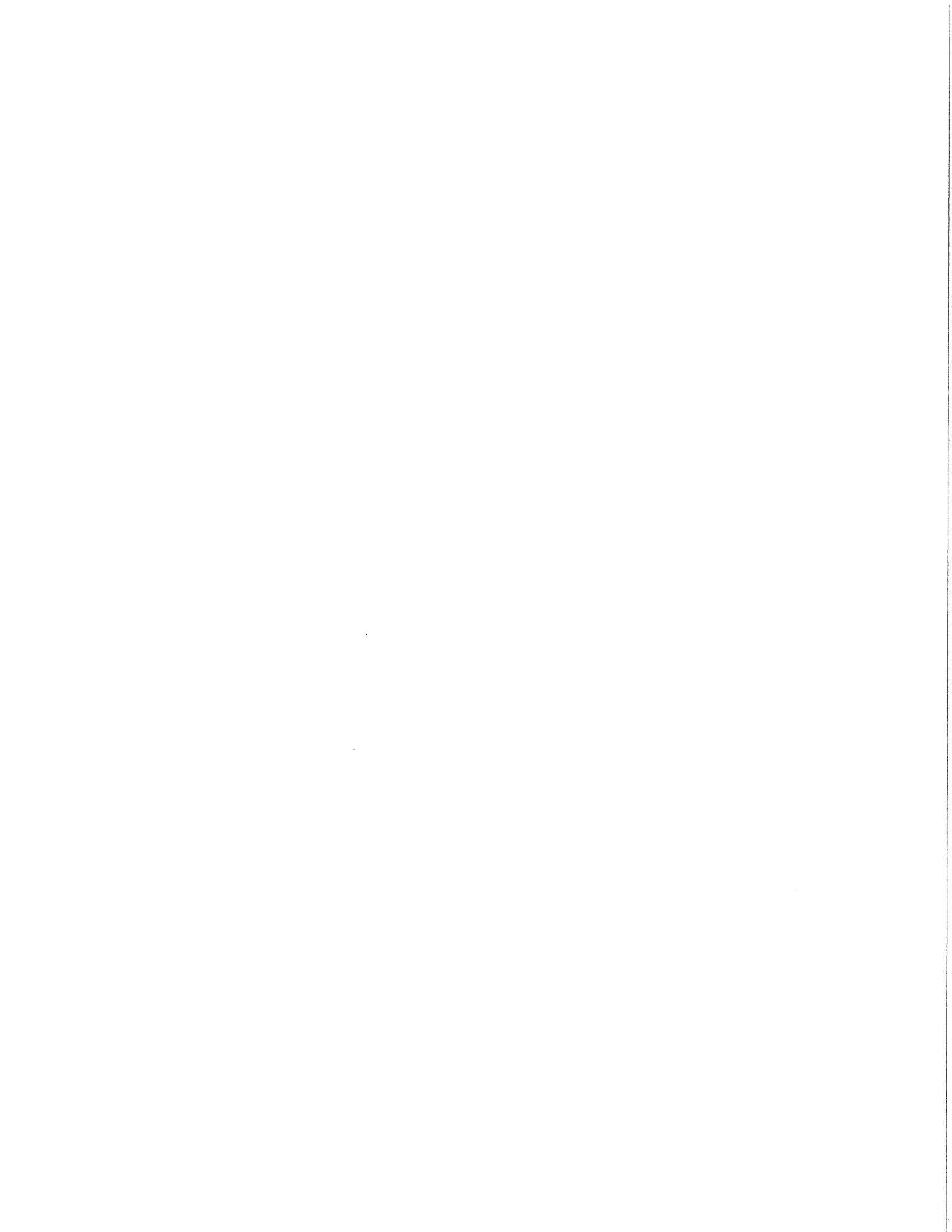J.) PATCH
    1.) Depress DIM (DIMMER) Key and select dimmer number(s).
    2.) Depress CHN (CHANNEL) Key and select channel number.
    3.) Depress @ (AT) key and select the desired proportional level for the dimmer (default is full).
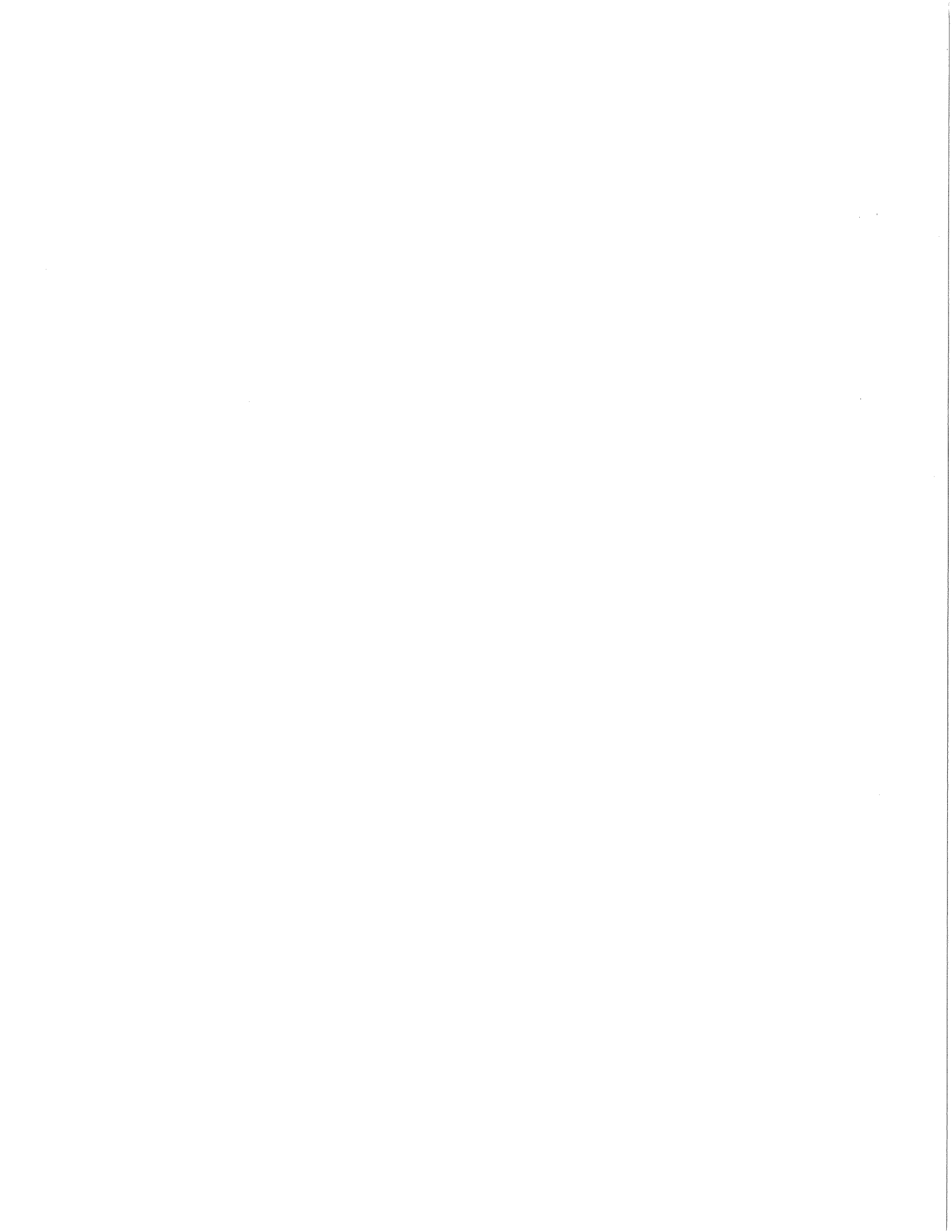

K.) CLEAR MEMORY

    Depress the MEM key while switching the console on.
    (Will clear memory, but leave patch intact)

L.) CLEAR PATCH AND MEMORY

    Depress the CLEAR key while turning the console off and on again. Wait until the numbers 0 - 9 appear in the LED display windows.